

General information

- Electronic control unit (ECU) incorporates self-diagnosis function.
- ABS warning lamp will illuminate in the event of system failure.
- Trouble codes can be accessed with suitable code reader connected to the data link connector (DLC) or diagnostic socket [Fig. 1](#).
- For DLC or diagnostic socket location refer to System layout and components.

Accessing trouble codes

- Ensure ignition switched OFF.
- Bridge data link connector (DLC) terminals TBS and GND [Fig. 2](#).
- Connect LED test lamp between terminals FBS and GND [Fig. 3](#).
- Switch ignition ON.
- Check that LED flashes.
- Long flashes indicate the 'tens' of the trouble code [Fig. 4](#) [A].
- Short flashes indicate the 'units' of the trouble code [Fig. 4](#) [C].
- A short pause separates each flash [Fig. 4](#) [B].
- A long pause separates each trouble code [Fig. 4](#) [D].
- For example: Trouble code 12 displayed [Fig. 4](#).
- Count warning lamp flashes. Compare with trouble code table.
- Switch ignition OFF.
- Remove bridge wire.

Erasing trouble codes

- Bridge data link connector (DLC) terminals TBS and GND [Fig. 2](#).
- Switch ignition ON.
- Any stored trouble codes should be indicated.
- Depress and release brake pedal 10 times within 10 seconds.
- Remove bridge wire.

Trouble code identification

Trouble code	Fault location
11	Wheel speed sensor, right front
12	Wheel speed sensor, left front
13	Wheel speed sensor, right rear
14	Wheel speed sensor, left rear
15	Wheel speed sensors
22	Hydraulic modulator - harness (626/MX-6 → 6/94)
22	Hydraulic modulator - harness (Xedos 6 → 4/94)
22	Hydraulic modulator solenoid valve, RH front
24	Hydraulic modulator solenoid valve, LH front
26	Hydraulic modulator solenoid valve, RH rear
28	Hydraulic modulator solenoid valve, LH rear
29	Hydraulic modulator
29	Brake line - RH front, LH rear
30	Hydraulic modulator
30	Brake line - LH front, RH rear
51	System relay
53	Pump motor
53	Pump motor relay
61	Electronic control unit (ECU)

Supply voltage - battery, alternator

ABS warning lamp

Correct operating sequence - → 1994

- Switch ignition ON.
- Lamp illuminates.
- Start engine.
- Lamp extinguishes.

Correct operating sequence - 1994 →

- Switch ignition ON.
- Lamp illuminates.
- Lamp extinguishes after 3 seconds.

General test procedures

NOTE: Due to small size of ECU harness multi-plug pins it is advisable to use a breakout box.

Warning lamp circuit

Checking - Fig. 5

- Switch ignition ON.
- Check warning lamp illuminates.
- If not: Switch ignition OFF.
- Check fuses.
- Disconnect relay module multi-plug.
- Disconnect ECU multi-plugs.
- Connect breakout box to 18-pin ECU harness multi-plug.
- Bridge breakout box terminal 2L and earth.
- Switch ignition ON.
- Check warning lamp illuminates.
- If not: Switch ignition OFF.
- Check bulb and wiring.

Wheel speed sensors

Preparatory conditions

- Check wheel bearings for excessive play. Adjust or replace as necessary.
- Check wheel speed sensors for mechanical security.
- Inspect wheel speed sensor rings visually for damage and cleanliness.

Checking air gap

Technical Data	
Air gap	0,3-1,1 mm
Tightening torque	16-23 Nm

- No adjustment of wheel speed sensor air gaps is possible.
- If removed or replaced: Tighten fixing to specified torque.

Checking resistance - front - Fig. 6 & Fig. 7

Technical Data		
Terminals	Wheel speed sensor	Resistance
2O & 2P	Left hand	1600-2000 Ω
2N & 2M	Right hand	1600-2000 Ω

- Ensure ignition switched OFF.
- Disconnect ECU multi-plugs.
- Connect breakout box to 18-pin harness multi-plug.
- Check resistance between breakout box terminals [Fig. 6](#) .
- If resistance not as specified:
- Disconnect relevant wheel speed sensor multi-plug.
- Check resistance between wheel speed sensor terminals [Fig. 7](#) .
- If resistance as specified: Check wiring.
- If resistance not as specified: Suspect faulty wheel speed sensor.
- Repeat test for other wheel speed sensor.

Checking resistance - rear - [Fig. 6](#) & [Fig. 7](#)

Technical Data		
Terminals	Wheel speed sensor	Resistance
2R & 2Q	Left hand	1600-2000 Ω
2S & 2T	Right hand	1600-2000 Ω

- Ensure ignition switched OFF.
- Disconnect ECU multi-plugs.
- Connect breakout box to 18-pin harness multi-plug.
- Check resistance between breakout box terminals [Fig. 6](#) .
- If resistance not as specified:
- Disconnect relevant wheel speed sensor multi-plug.
- Check resistance between wheel speed sensor terminals [Fig. 7](#) .
- If resistance as specified: Check wiring.
- If resistance not as specified: Suspect faulty wheel speed sensor.
- Repeat test for other wheel speed sensor.

Checking voltage - front - [Fig. 8](#) & [Fig. 9](#)

Technical Data		
Terminals	Wheel speed sensor	Voltage
626/MX-6		
2O & 2P	Left hand	0,25-3,0 V ac
2N & 2M	Right hand	0,25-3,0 V ac
Xedos 6		
2O & 2P	Left hand	0,25-1,2 V ac
2N & 2M	Right hand	0,25-1,2 V ac

- Ensure ignition switched OFF.
- Raise vehicle.
- Disconnect ECU multi-plugs.
- Connect breakout box to 18-pin harness multi-plug.
- Adjust voltmeter to measure alternating current.
- Turn road wheel at 60 rpm.
- Check voltage between breakout box terminals [Fig. 8](#) .

- If voltage not as specified:
- Disconnect relevant wheel speed sensor multi-plug.
- Turn road wheel at 60 rpm.
- Check voltage between wheel speed sensor terminals **Fig. 9** .
- If voltage as specified: Check wiring.
- If voltage not as specified: Suspect faulty wheel speed sensor.
- Repeat test for other wheel speed sensor.

Checking voltage - rear - **Fig. 8 & Fig. 9**

Technical Data		
Terminals	Wheel speed sensor	Voltage
626/MX-6		
2R & 2Q	Left hand	0,25-3,0 V ac
2S & 2T	Right hand	0,25-3,0 V ac
Xedos 6		
2R & 2Q	Left hand	0,25-1,2 V ac
2S & 2T	Right hand	0,25-1,2 V ac

- Ensure ignition switched OFF.
- Raise vehicle.
- Disconnect ECU multi-plugs.
- Connect breakout box to 18-pin harness multi-plug.
- Adjust voltmeter to measure alternating current.
- Turn road wheel at 60 rpm.
- Check voltage between breakout box terminals **Fig. 8** .
- If voltage not as specified:
- Disconnect relevant wheel speed sensor multi-plug.
- Turn road wheel at 60 rpm.
- Check voltage between wheel speed sensor terminals **Fig. 9** .
- If voltage as specified: Check wiring.
- If voltage not as specified: Suspect faulty wheel speed sensor.
- Repeat test for other wheel speed sensor.

Checking wave form - front - **Fig. 10**

Technical Data	
Terminals	Wheel speed sensor
2O & 2P	Left hand
2N & 2M	Right hand

- Ensure ignition switched OFF.
- Raise vehicle.
- Disconnect ECU multi-plugs.
- Connect breakout box to 18-pin harness multi-plug.
- Connect oscilloscope between breakout box terminals.
- Turn road wheel at approximately 60 rpm.
- Check wave form of wheel speed sensor.
- If wave form not as specified:
- Disconnect relevant wheel speed sensor multi-plug.
- Turn road wheel at approximately 60 rpm.
- Check wave form between wheel speed sensor terminals.
- If wave form as specified: Check wiring.
- If wave form not as specified: Suspect faulty wheel speed sensor.
- Repeat test for other wheel speed sensor.

Checking wave form - rear - [Fig. 10](#)

Technical Data	
Terminals	Wheel speed sensor
2R & 2Q	Left hand
2S & 2T	Right hand

- Ensure ignition switched OFF.
- Raise vehicle.
- Disconnect ECU multi-plugs.
- Connect breakout box to 18-pin harness multi-plug.
- Connect oscilloscope between breakout box terminals.
- Turn road wheel at approximately 60 rpm.
- Check wave form of wheel speed sensor.
- If wave form not as specified:
 - Disconnect relevant wheel speed sensor multi-plug.
 - Turn road wheel at approximately 60 rpm.
 - Check wave form between wheel speed sensor terminals.
 - If wave form as specified: Check wiring.
 - If wave form not as specified: Suspect faulty wheel speed sensor.
- Repeat test for other wheel speed sensor.

Relay module

NOTE: Relay module incorporates system relay and pump motor relay.

Checking supply voltage - [Fig. 11](#)

Technical Data		
Terminals	Condition	Voltage
b & earth	Ignition OFF	Battery voltage
d & earth	Ignition ON	Battery voltage

- Ensure ignition switched OFF.
- Remove relay module.
- Check voltage between relay module base terminal and earth.
- Switch ignition ON.
- Check voltage between relay module base terminal and earth.
- If voltage not as specified: Check wiring and fuses.

Checking earth connection - [Fig. 11](#)

Technical Data	
Terminals	Resistance
a & earth	Zero

- Ensure ignition switched OFF.
- Remove relay module.
- Check resistance between relay module base terminal and earth.
- If resistance not as specified: Check wiring.

Checking operation - system relay contacts - [Fig. 12](#)

Technical Data		
Terminals	Condition	Resistance
a & e	Battery voltage disconnected	Zero
b & e	Battery voltage disconnected	∞
a & e	Battery voltage connected	∞
b & e	Battery voltage connected	Zero
Battery + to terminal d		
Battery - to terminal c		

NOTE: Ensure battery voltage supply is connected correctly. Otherwise relay module could be damaged.

- Ensure ignition switched OFF.
- Remove relay module.
- Check resistance between relay module terminals.
- Connect battery voltage supply to specified relay module terminals.
- Check resistance between relay module terminals.

Checking resistance - system relay contacts - [Fig. 12](#)

Technical Data	
Terminals	Resistance
c & d	60-100 Ω

- Ensure ignition switched OFF.
- Remove relay module.
- Check resistance between relay module terminals.

Checking operation - pump motor relay contacts - [Fig. 13](#)

Technical Data		
Terminals	Condition	Resistance
b & f	Battery voltage disconnected	∞
b & f	Battery voltage connected	Zero
Battery + to terminal g		
Battery - to terminal h		

NOTE: Ensure battery voltage supply is connected correctly. Otherwise relay module could be damaged.

- Ensure ignition switched OFF.
- Remove relay module.
- Check resistance between relay module terminals.
- Connect battery voltage supply to specified relay module terminals.
- Check resistance between relay module terminals.

Checking resistance - pump motor relay contacts - [Fig. 13](#)

Technical Data	
Terminals	Resistance
e & h	50-90 Ω

- Ensure ignition switched OFF.
- Remove relay module.
- Check resistance between relay module terminals.

Electronic control unit (ECU)

Checking supply voltage - [Fig. 14](#)

Technical Data		
Terminals	Condition	Voltage
626 2WD/Xedos 6/MX-6		
1H & earth	Ignition ON	Battery voltage
626 4WD		
2B & earth	Ignition ON	Battery voltage

- Ensure ignition switched OFF.
- Disconnect ECU multi-plugs.
- Connect breakout box to harness multi-plugs.
- Switch ignition ON.
- Check voltage between breakout box terminal and earth.
- Start engine.
- Allow to idle.
- Check voltage between breakout box terminal and earth.

Checking earth connection - [Fig. 14](#)

Technical Data	
Terminals	Resistance
1E & earth	Zero
1F & earth	Zero

- Ensure ignition switched OFF.
- Disconnect ECU multi-plugs.
- Connect breakout box to harness multi-plugs.
- Check resistance between breakout box terminals and earth.

Hydraulic modulator solenoid valves

Checking - [Fig. 15](#)

Technical Data		
Terminals	Solenoid valve	Resistance
626 4WD		
A & H	LH rear	3 Ω approx.
B & G	RH rear	3 Ω approx.
C & F	LH front	3 Ω approx.
D & E	RH front	3 Ω approx.
626 2WD/MX-6/Xedos 6		
A & E	LH rear	3 Ω approx.
B & F	RH rear	3 Ω approx.
C & G	LH front	3 Ω approx.
D & H	RH front	3 Ω approx.

- Ensure ignition switched OFF.
- Disconnect hydraulic modulator 8-pin multi-plug.
- Check resistance between hydraulic modulator terminals.

Checking supply voltage - [Fig. 16](#)

Technical Data	
Terminals	Voltage
E & earth	Battery voltage
F & earth	Battery voltage
G & earth	Battery voltage
H & earth	Battery voltage

- Ensure ignition switched OFF.
- Disconnect hydraulic modulator 8-pin multi-plug.
- Switch ignition ON.
- Check voltage between harness multi-plug terminals and earth.

Pump motor

Checking resistance - [Fig. 17](#)

Technical Data	
Terminals	Resistance
3a & 3b	1 Ω max.

- Ensure ignition switched OFF.
- Disconnect hydraulic modulator 2-pin multi-plug.
- Check resistance between hydraulic modulator terminals.

Checking operation - [Fig. 18](#)

NOTE: DO NOT allow pump motor to run for more than 2 seconds.

- Ensure ignition switched OFF.
- Disconnect ECU multi-plugs.
- Remove relay module.
- Bridge relay module base terminals b and f with a switched lead.

- Operate switch.
- Pump motor should run.
- If not: Suspect faulty pump motor.

Brake pedal position (BPP) switch

Checking - [Fig. 19](#)

Technical Data		
Terminals	Condition	Voltage
1M & earth	Pedal released	Zero
1M & earth	Pedal depressed	Battery voltage

- Ensure ignition switched OFF.
- Disconnect ECU multi-plugs.
- Connect breakout box to 12-pin harness multi-plug.
- Check voltage between breakout box terminal and earth.
- Depress brake pedal.
- Check voltage between breakout box terminal and earth.
- If voltage not as specified: Check wiring and fuses.

G-force sensor - 626 4WD

Checking voltage - [Fig. 20](#)

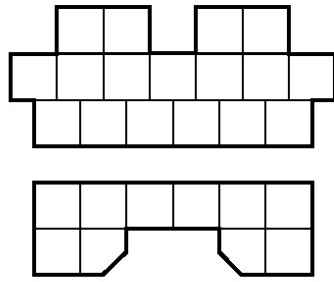
Technical Data	
Terminals	Voltage
2E & earth	2 V approx.

- Ensure ignition switched OFF.
- Disconnect ECU multi-plugs.
- Connect breakout box to 18-pin harness multi-plug.
- Switch ignition ON.
- Check voltage between breakout box terminal and earth.

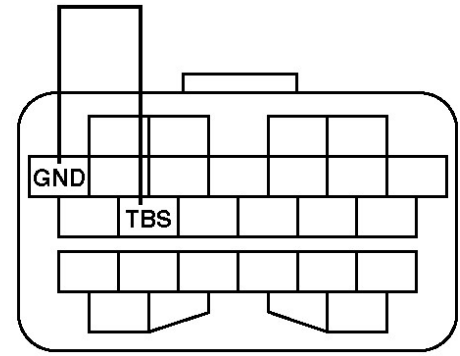
Hydraulic system

Bleeding

- Ensure ignition switched OFF.
- Ensure reservoir topped up to MAX.
- Bleed in sequence: RH rear, LH rear, RH front, LH front.
- Connect tube to bleed screw and immerse end in jar of clean fluid.
- Depress brake pedal firmly two or three times.
- Open bleed screw.
- Depress brake pedal fully.
- Close bleed screw. Tightening torque: 6,9-9,8 Nm.
- Allow brake pedal to return.
- Repeat process until fluid is air free.
- Maintain fluid level in reservoir during bleeding procedure.
- Top up reservoir to MAX.

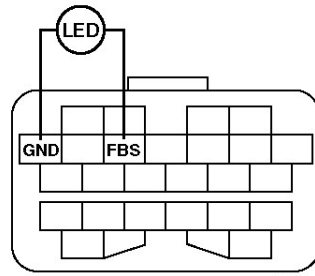


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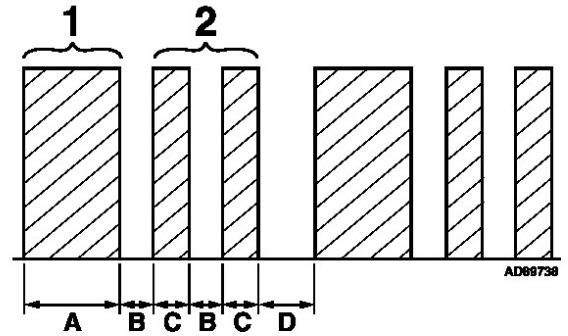
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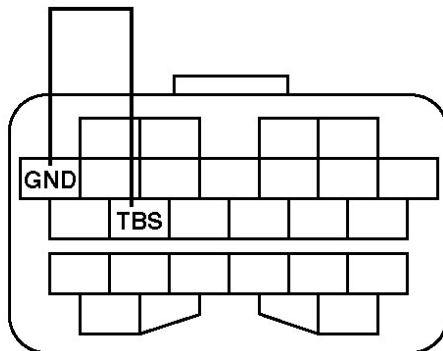
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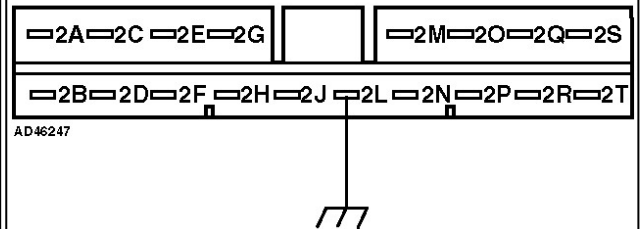
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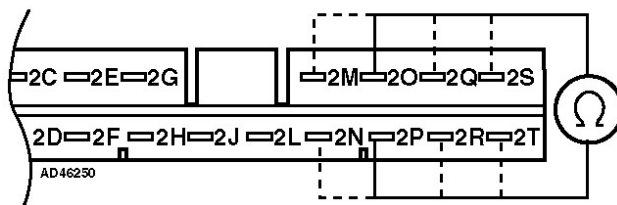
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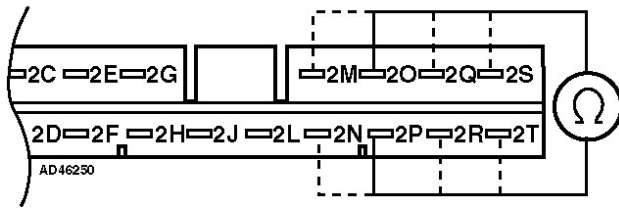
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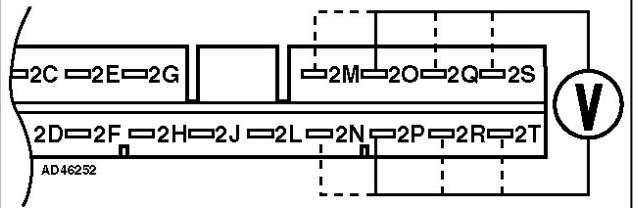


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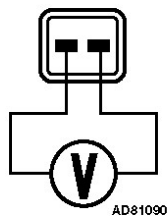
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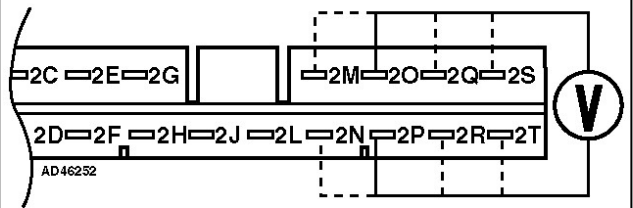
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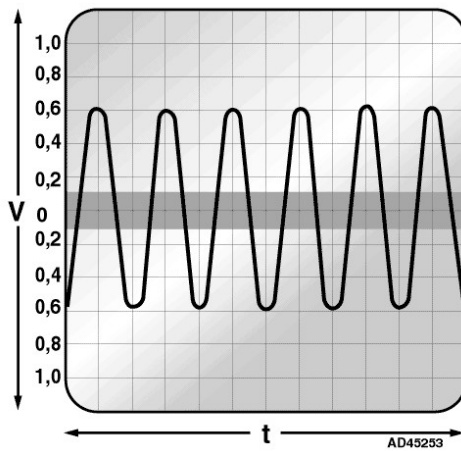
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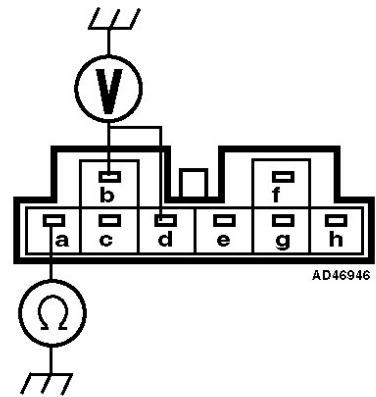
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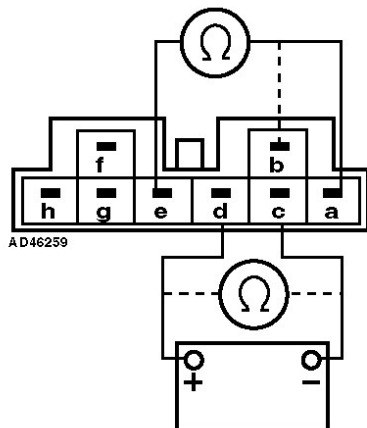
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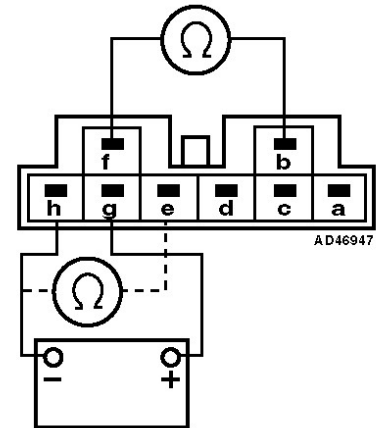
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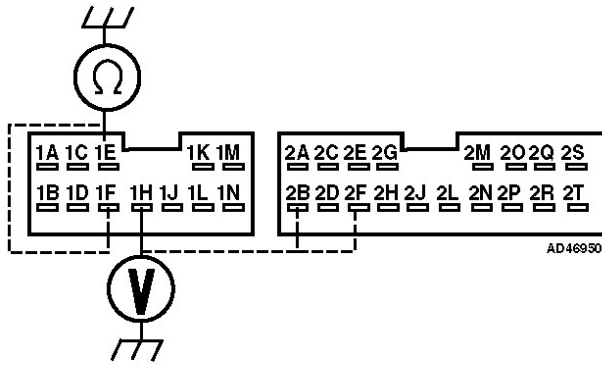
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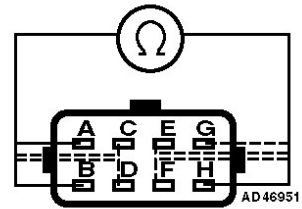
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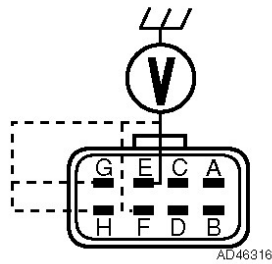
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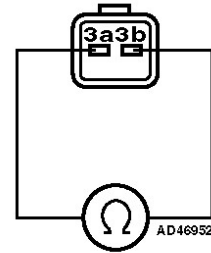
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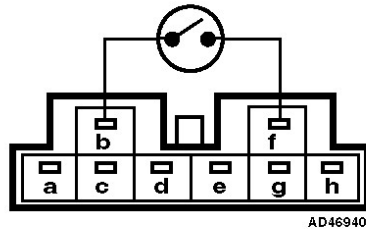
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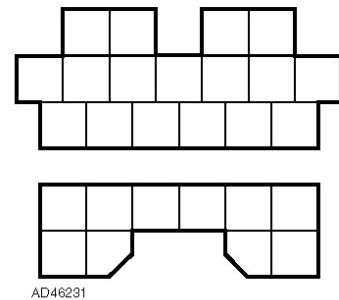
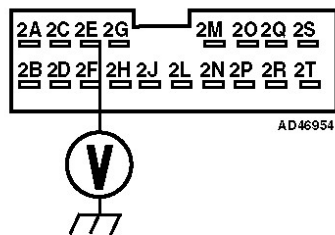
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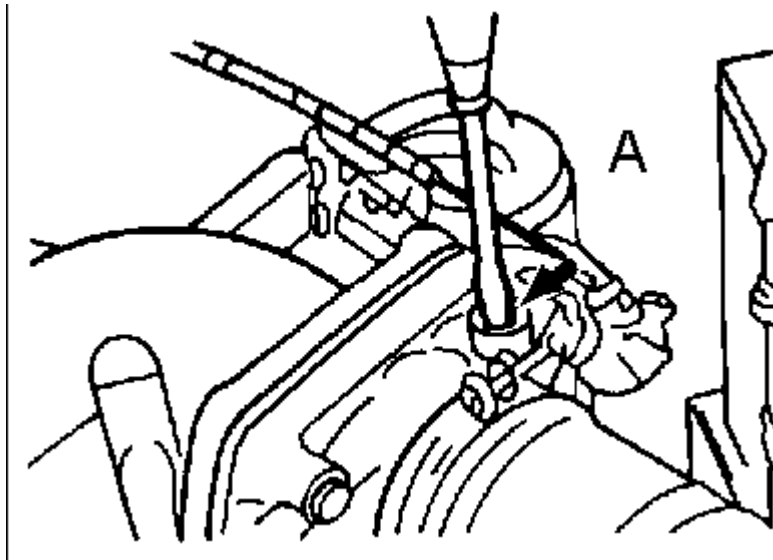


Adjustment Data

MAZDA - Xedos 6 - 2.0i V6 24V - KF

Engine (general)

Item	Values	Units
Engine code	KF	
Capacity	1995	(cc)
Idle speed	670 ±30	(rpm)
Valve clearance		
Hydraulic		
Compression pressure		
Normal	15	(bar)
Minimum	11.0	(bar)
Oil pressure	2.0/1000	(bar / rpm)
Fuel system (make & type)	Mazda VRIS	
Adjustment screws (A = idle speed B = CO)	A	



Firing order	1-2-3-4-5-6	
Timing stroboscopic (before TDC)	10 ± 1/670	(° / rpm)
Ignition-coil resistance, primary	0.81 - 0.99	(ohms)
Ignition-coil resistance, secondary	10500 - 15000	(ohms)
Spark plugs (make & type)	NGK BKR6E-11 ChampionRC9YCC4	
Spark-plug gap	1.0 - 1.1	(mm)
Fuel-pump pressure	6.2	(bar)
Injection pressure / system pressure	2.8	(bar)
CO exhaust gas	< 0.5	(%)
CO2	> 12	(%)
HC	100	(ppm)
O2	0.1 - 0.5	(%)
Lambda	0.97 - 1.03	
Lambda change (Delta Lambda)	0.03	
Oil temperature during test	60	(°C)

Fast-idle speed	2500-2800	(rpm)
CO at fast-idle speed	< 0.3	(%)

Cooling system

Item	Values	Units
Cap pressure	0.75 - 1.05	(bar)
Thermostat opens at	80 - 84	(°C)
Fan on at	100	(°C)

Electrical

Item	Values	Units
Battery	48	(Ah)
Alternator	90	(A)

Brakes

Item	Values	Units
Disc thickness, front, min.	22.0	(mm)
Disc thickness, rear, min.	8.0	(mm)

Steering and wheel alignment

Item	Values	Units
Toe-in, front	0° 17' ± 17'	(°)
Camber, front	-0° 15' ± 45'	(°)
Castor, front	2° 45' ± 45'	(°)
K.P.I., front	14° 50'	(°)
Toe-in, rear	0° 17' ± 17'	(°)
Camber, rear	-0° 62' ± 45'	(°)

Wheels and tyres

Item	Values	Units
Tyre size	195/60R15	
Front tyre pressure	2.0	(bar)
Rear tyre pressure	2.0	(bar)

Capacities

Item	Values	Units
Engine sump, incl. filter	4.2	(l)
Manual transmission		
Gearbox refill	2.7	(l)
Automatic transmission		
Gearbox refill	6.8	(l)
Cooling system	7.5	(l)
Air-conditioner refrigerant	700	(g)
Air-conditioner compressor oil	175	(ml)

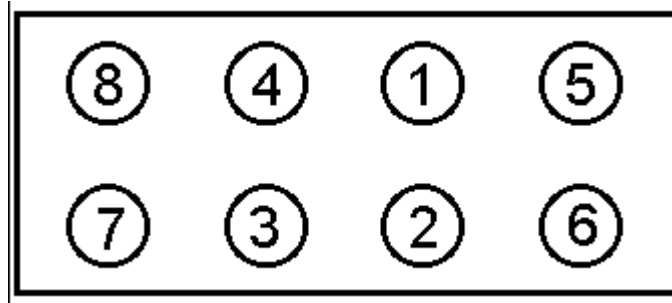
Torque settings

Item

Values

Units

Cylinder head



Stage 1

23 - 26

(Nm)

Stage 2

90°

(°)

Stage 3

90°

(°)

Front hub

236 - 318

(Nm)

Rear hub

177 - 235

(Nm)

Wheel nuts

89 - 117

(Nm)

Spark plugs

15 - 22

(Nm)

System description

- Optional driver's airbag.
- Airbag location identified by the inscription 'SRS'.
- Front crash sensors mounted separately.
- With airbag: SRS control module mounted separately.
- 1994 → : Pyrotechnic pretensioners fitted as standard on front seat belts.
- Without airbag: Pyrotechnic pretensioner control module mounted separately.

Special attention

- To prevent personal injury, expansion area of all airbags MUST remain clear.
- Steering wheel spiral cable has limited rotary movement.
- Centralise steering before disconnecting steering column. To prevent damage, ensure steering wheel and spiral cable DO NOT rotate before or during reassembly.
- With airbag: Pyrotechnic pretensioners are electrically triggered by SRS control module.
- Without airbag: Pyrotechnic pretensioners are electrically triggered by pyrotechnic pretensioner control module.

SRS warning lamp

Operation

- Switch ignition ON.
- SRS warning lamp illuminates.
- If warning lamp does not illuminate: Suspect SRS warning lamp.
- Lamp extinguishes after approximately 6 seconds.
- If not: Suspect wiring or SRS control module.
- If warning lamp flashes:
- 3 flashes: Suspect supply voltage open circuit.
- 4 flashes: Suspect safing sensor.
- 5 flashes: Suspect crash sensor.
- 6 flashes: Suspect driver's airbag or spiral cable.
- 9 flashes: Suspect crash sensor/SRS control module wiring.
- 10 flashes: Suspect SRS control module.

Disarm the system

When

- Fascia/instrument panel removal or replacement.
- Front seat belt removal or replacement.
- Repair work around SRS components, especially airbags and pretensioners.
- SRS component removal or replacement.
- Steering wheel/column repair or replacement.
- Welding operations.

How

- Ensure ignition switched OFF.
- Disconnect battery earth lead. Make sure accidental reconnection is not possible.
- Disconnect spiral cable.
- Disconnect pyrotechnic pretensioners.

Arm the system

Manufacturer: Mazda

Model: Xedos 6 (CA) 2,0

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Engine code: KF

Output: 103 (140) 6000

26.03.2007

Tuned for: R-Cat

Year: 1995-00

V5 500-

/Autodata

How

- Ensure ignition switched OFF.
- Reconnect spiral cable.
- Reconnect pyrotechnic pretensioners.
- Ensure vehicle interior is unoccupied.
- Reconnect battery earth lead.
- Switch ignition ON.
- Check SRS warning lamp operation.

After deployment

Check

- All mounting brackets for SRS components.
- Fascia/instrument panel.
- Seat assemblies.
- Seat belts, including buckles and anchorage points.
- Steering wheel and column.
- Surrounding components and trims.
- SRS wiring harness and multi-plugs for charred or damaged areas.

Renew

- Driver's airbag.
- Fascia/instrument panel, if damaged.
- Front seat belts.
- Mounting brackets, if damaged.
- Seat belt(s), if damaged.
- Seat components, if damaged.
- Spiral cable, if damaged or noisy.
- Steering column, if damaged.
- Steering wheel, if damaged.
- Surrounding components and trims, if damaged.
- Front crash sensor(s), if damaged.
- SRS control module.
- SRS wiring harness and multi-plugs, if charred or damaged areas found.

Disposal

- Vehicle manufacturer suggests that deployed SRS components are sealed in a plastic bag and disposed of in accordance with local regulations.

Front safing sensor - behind fascia, passenger's side

Steering wheel removal and installation

Special attention

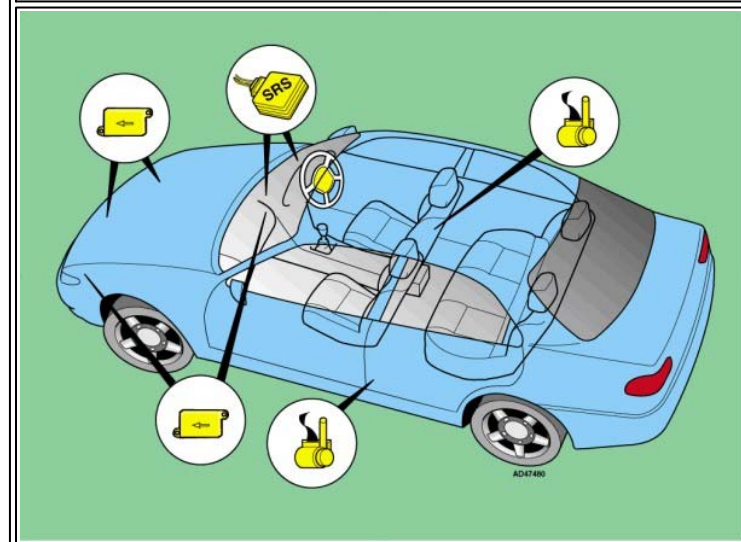
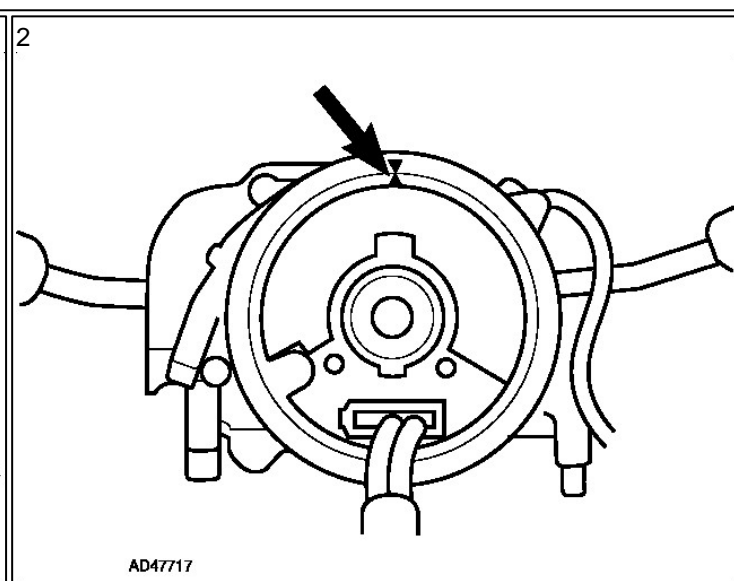
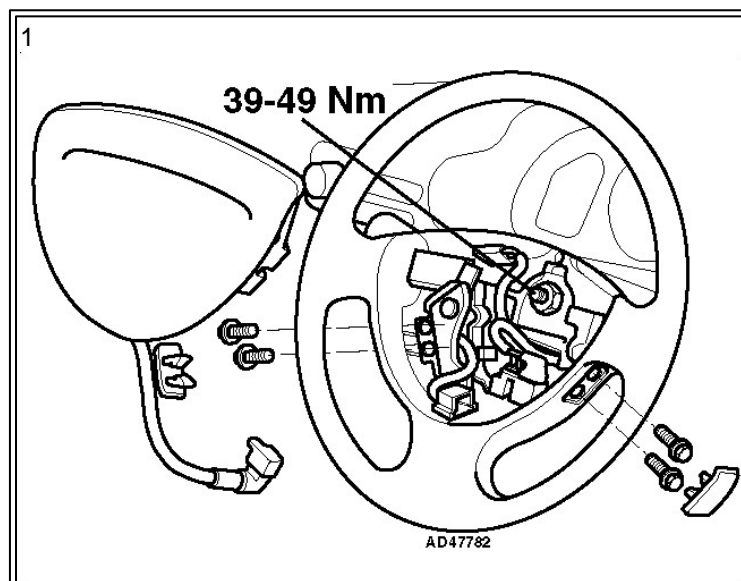
- Disarm system and remove driver's airbag.
- Centralise steering and disconnect spiral cable multi-plug before removing steering wheel.
- Spiral cable should not be allowed to rotate once steering wheel removed.
- To centralise spiral cable, slowly rotate clockwise until resistance is felt and then rotate approximately 2turns anti-clockwise until alignment marks aligned.
- Ensure spiral cable remains centralised during reassembly.

Steering wheel and airbag assembly **Fig. 1**

Spiral cable alignment marks **Fig. 2**

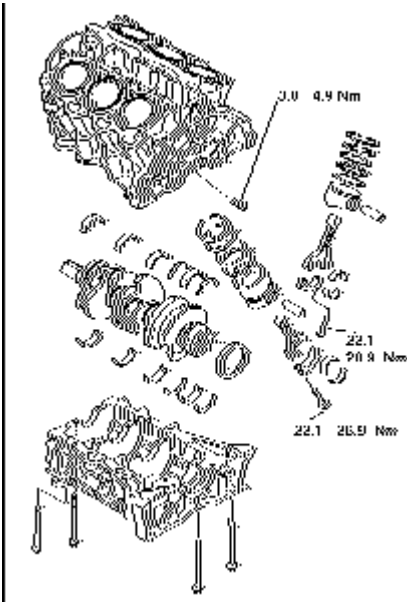
Tightening torques

Driver's airbag	Not specified
Front crash sensor	9-13 Nm
Front safing sensor	7-10 Nm
Front seat	38-51 Nm
Front seat belt inertia reel	39-78 Nm
Front seat belt buckle	39-78 Nm
Front seat belt upper anchorage point	39-78 Nm
Steering wheel	39-49 Nm
SRS control module	Not specified



MAZDA - KF

General cylinder block data



Cylinder bore

Bore

Standard	78.000 - 78.022	mm
1st Oversize	78.250 - 78.272	mm
2nd Oversize	78.500 - 78.522	mm

Cylinder bore ovality

Limit	0.020	mm
-------	-------	----

Taper

Limit	0.022	mm
-------	-------	----

Pistons

Piston diameter

Standard	77.953 - 77.985	mm	
1st Oversize	78.203 - 78.235	mm	
2nd Oversize	78.453 - 78.485	mm	
Measuring point	16.5	mm	below oil-scraping ring groove

Piston clearance

Limit	0.028 - 0.056	mm
-------	---------------	----

Piston pin bore diameter

Limit	0.13	mm
-------	------	----

Piston rings

1st Compression ring gap	0.15 - 0.30	mm
Limit	1.0	mm
2nd Compression ring gap	0.25 - 0.40	mm
Limit	1.0	mm

* Data from secondary source; No manufacturer's information

MAZDA - KF

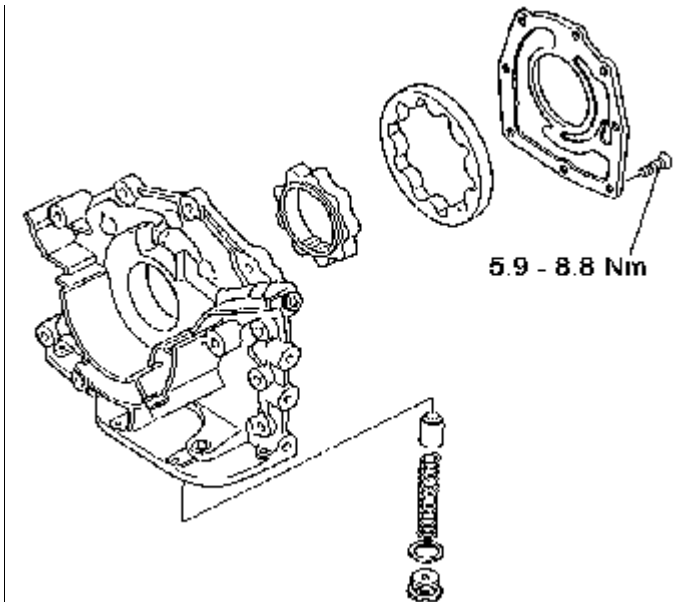
Oil-scraper ring gap	0.20 - 0.70	mm	
Limit	1.0	mm	
Side clearance 1st compression ring	0.020 - 0.065	mm	
Limit	0.15	mm	
Side clearance 2nd compression ring	0.030 - 0.065	mm	
Limit	0.15	mm	
Side clearance oil scraper ring	0.025 - 0.052	mm	
Limit	0.15	mm	
Connecting rod			
Center distance of big and small end bore	140.60 - 140.70	mm	
Big end bearing radial clearance	0.023 - 0.043	mm	
Limit	0.08	mm	
Big end, end play	0.178 - 0.330	mm	
Limit	0.40	mm	
Small end bore	18.943 - 18.961	mm	
Radial play piston pin	0.008 - 0.026	mm	
Radial play in small end	-0.013 - -0.037	mm	press fit
Crankshaft			
Max. crankshaft swing			
Limit	0.015	mm	
Number of bearings	4		
Main journal diameter, standard	61.938 - 61.955	mm	
Main journal diameter, 1st Undersize	61.688 - 61.705	mm	
Max. main journal ovality			
Limit	0.05	mm	
Main bearing clearance	0.037 - 0.057	mm	
Limit	0.064	mm	
Crankshaft end play	0.080 - 0.282	mm	
Limit	0.32	mm	
Crank-pin diameter			
Standard	47.940 - 47.955	mm	
1st Undersize	47.690 - 47.705	mm	
Max. pin journal ovality			
Limit	0.05	mm	
Thickness crankshaft thrust halfring			
Standard	2.000 - 2.050	mm	

* Data from secondary source; No manufacturer's information

MAZDA - KF

1st Oversize	2.125 - 2.175	mm
2nd Oversize	2.250 - 2.300	mm

Oil pump



Type		rotor
Clearance inside rotor - outside rotor	0.02 - 0.18	mm
Limit	0.20	mm
Clearance outside rotor - pump housing	0.113 - 0.186	mm
Limit	0.22	mm
Axial play outside rotor - pump housing	0.03 - 0.08	mm
Limit	0.13	mm

* Data from secondary source; No manufacturer's information

CANISTER PURGE SOLENOID

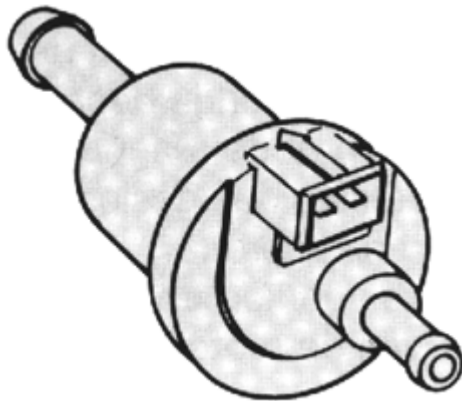
Function

The evaporative gases produced in the fuel tank are absorbed by the activated charcoal in the carbon canister. As the purge control solenoid valve opens, these gases are delivered to the intake manifold for combustion purposes. The purge control solenoid valve is controlled by the control unit. The control unit operates this valve during the time the lambda control loop is active.

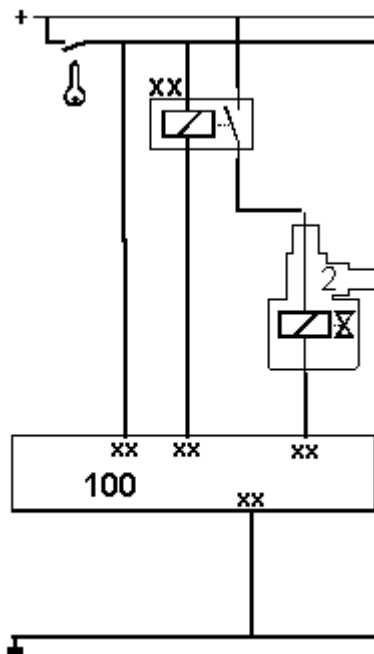
Specifications

RESISTANCE:

resistance:	± 50 ohms
supply voltage:	12 Volts
current:	± 250 mA



Electrical control



Most solenoids are normally closed. This means that the connection between the canister and the intake manifold is closed. The solenoid has a connector with two terminals. On one of those terminals is connected to the battery voltage. This supply-voltage is often switched with a relay. The other terminal leads directly to the control unit. The current through the solenoid is switched on during the time the control unit connects this terminal to ground. The voltage on this terminal is during this time 0 Volts. During the time the solenoid is switched off, the voltage on this terminal is 12 Volts. Some motormanagement systems control the amount of gases delivered to the intake manifold by switching the solenoid on and off with a certain duty cycle. In this case the duty-cycle depends on engine RPM and engine load.

Electrical diagnosis

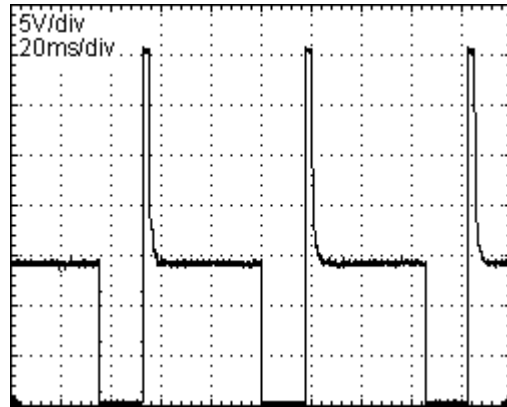
STATIC

General

- To perform this measurements the relay switching the power to the solenoid should be closed. Short circuit the switch in the relay if necessary.

Measurements

- Measure the voltage on the control unit. Use the pin which switches the solenoid.



result: **12 V**

- solenoid and wiring are electrically OK

0 V

- check the relay switching the power to the solenoid
- check the wiring between the relay and the solenoid
- check the solenoid resistance
- check the wiring between the solenoid and the control unit
- check the control unit

Capacities

MAZDA - Xedos 6 - 2.0i V6 24V - KF

Item	Values	Units
Engine sump, incl. filter	4.2	(l)
Manual transmission		
Gearbox refill	2.7	(l)
Automatic transmission		
Gearbox refill	6.8	(l)
Cooling system	7.5	(l)
Air-conditioner refrigerant	700	(g)
Air-conditioner compressor oil	175	(ml)

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General information

Except Xedos 9 2,3

- Trouble codes are displayed by using an LED connected to the data link connector (DLC).
- Except 323 1998 → , 626/Estate/MX-5 1997 → : Engine control module (ECM) displays all available diagnostic information for immobilizer system.
- DLC without wiring/terminals in positions FAT & TAT: Engine control module (ECM) incorporates transmission control function.
- DLC with wiring/terminals in positions FAT & TAT: Transmission control module (TCM) mounted separately.
- The ECM fault memory can also be checked and erased using diagnostic equipment connected to the data link connector (DLC).

Xedos 9 2,3

- Trouble codes are displayed by using an LED connected to the data link connector (DLC).
- Engine control module (ECM) displays all available diagnostic information for immobilizer system.
- Transmission control module (TCM) mounted separately.
- Data bus connecting ECM to TCM allows faults relating to both systems to be displayed when accessing ECM fault memory.
- The ECM/TCM fault memory can also be checked and erased using diagnostic equipment connected to the data link connector (DLC).

Accessing

- Ensure ignition switched OFF.
- Bridge data link connector (DLC) terminals GND and TEN [Fig. 1](#) .
- Connect LED test lamp between terminals FEN and B+ [Fig. 1](#) .

NOTE: Connect LED test lamp positive connection to DLC terminal B+.

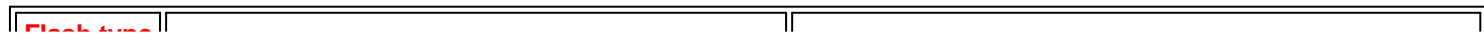
- Switch ignition ON.
- Count LED flashes. Note trouble codes. Compare with trouble code table.
- Two digit trouble codes are displayed as follows:
- Long flashes indicate the 'tens' [Fig. 2](#) [A].
- Short flashes indicate the 'units' [Fig. 2](#) [C].
- For example: Trouble code 12 displayed [Fig. 2](#) .
- Four digit trouble codes are displayed as follows:
- Each trouble code consists of four groups.
- A long flash indicates the start of each group [Fig. 3](#) [A].
- Short flashes indicate the digits of each group [Fig. 3](#) [B].
- No short flashes in a group indicate '0'.
- For example: Trouble code 0120 displayed [Fig. 3](#) .
- Switch ignition OFF. Rectify faults as necessary.

Erasing

- Ensure ignition switched OFF.
- Disconnect battery earth lead for at least 30 seconds.
- Depress brake pedal for at least 20 seconds.
- Reconnect battery earth lead.
- Repeat checking procedure to ensure no data remains in ECM fault memory.

WARNING: Disconnecting the battery may erase memory from electronic units (e.g. radio, clock).

Trouble code identification



Manufacturer: Mazda	Model: Xedos 6 (CA) 2,0	© Autodata Limited 2004
Engine code: KF	Output: 103 (140) 6000	26.03.2007
Tuned for: R-Cat	Year: 1995-00	V5 500- /Autodata

Flash type 2-digit	Fault location	Probable cause
01	Ignition pulse missing	Wiring, tachometer, ignition coil, distributor, ECM, TCM
02	Diesel: Engine speed (RPM) sensor - no signal	Wiring, RPM sensor
02 1	Petrol: Crankshaft position (CKP) sensor/engine speed (RPM) sensor - no signal	Wiring, sensor supply voltage, CKP/RPM sensor
03	Camshaft position (CMP) sensor - no signal	Wiring, sensor supply voltage, CMP sensor
04	Diesel: Crankshaft position (CKP) sensor - no signal	Wiring, sensor supply voltage, CKP sensor
04 2	Petrol: Crankshaft position (CKP) sensor/engine speed (RPM) sensor - no signal	Wiring, sensor supply voltage, CKP/RPM sensor
05	Knock sensor (KS)	Wiring, KS
06	Vehicle speed sensor (VSS)	Wiring, speedometer, VSS
08	Mass air flow (MAF) sensor/volume air flow (VAF) sensor	Wiring, MAF/VAF sensor
09	Engine coolant temperature (ECT) sensor	Wiring, ECT sensor
10	Intake air temperature (IAT) sensor	Wiring, IAT sensor
11	Intake air temperature (IAT) sensor	Wiring, IAT sensor
12	Throttle position (TP) sensor	Wiring, TP sensor adjustment, TP sensor
14	Barometric pressure (BARO) sensor	Wiring, BARO sensor, ECM
15	Except V6: Oxygen sensor (O2S)/heated oxygen sensor (HO2S) - no activity	Intake leak, fuel pressure/pump, wiring, O2S/HO2S, injector(s), ECT sensor, MAF sensor, spark plugs
15	V6: Heated oxygen sensor (HO2S), bank 2 - no activity	Intake leak, fuel pressure/pump, wiring, O2S/HO2S, injector(s), ECT sensor, MAF sensor, spark plugs
16	Exhaust gas recirculation (EGR) valve position sensor	Wiring, EGR valve position sensor
17	Except V6: Oxygen sensor (O2S)/heated oxygen sensor (HO2S) - incorrect signal	Intake leak, fuel pressure/pump, wiring, O2S/HO2S, injector(s), ECT sensor, MAF sensor, spark plugs
17	V6: Heated oxygen sensor (HO2S), bank 2 - incorrect signal	Intake leak, fuel pressure/pump, wiring, O2S/HO2S, injector(s), ECT sensor, MAF sensor, spark plugs
18	Fuel quantity adjuster	Wiring, fuel quantity adjuster/position sensor
19	Fuel quantity adjuster position sensor	Wiring, fuel quantity adjuster position sensor
22	Fuel shut-off solenoid	Wiring, fuel shut-off solenoid
23	Diesel: Fuel temperature sensor	Wiring, fuel temperature sensor
23	Petrol: Heated oxygen sensor (HO2S), bank 1 - no activity	Intake leak, wiring, O2S/HO2S, injector(s), ECT sensor, MAF sensor, spark plugs
24	Heated oxygen sensor (HO2S), bank 1 - incorrect signal	Intake leak, fuel pressure/pump, wiring, O2S/HO2S, injector(s), ECT sensor, MAF sensor, spark plugs
25	Fuel pressure regulator control solenoid	Wiring, fuel pressure regulator control solenoid
26	Evaporative emission (EVAP) canister purge valve	Wiring, EVAP canister purge valve
28	Exhaust gas recirculation (EGR) solenoid - vacuum	Wiring, EGR solenoid
29	Exhaust gas recirculation (EGR) solenoid - vent	Wiring, EGR solenoid
34	Idle air control (IAC) valve	Wiring, IAC valve
35	Fuel pressure regulator control solenoid 2	Wiring, fuel pressure regulator control solenoid
36	Glow plug relay	Wiring, glow plug relay
41	Intake manifold air control solenoid 1	Wiring, intake manifold air control solenoid
43	Fuel injection timing sensor	Wiring, fuel injection timing sensor/solenoid
46	Petrol: Intake manifold air control solenoid 2	Wiring, intake manifold air control solenoid
46	Diesel: Closed throttle position (CTP) switch	Wiring, CTP switch
49	Engine control module (ECM) - defective	ECM
52	Module coding plug	Wiring, module coding plug

55	Input shaft speed (ISS) sensor/turbine shaft speed (TSS) sensor	Wiring, ISS/TSS sensor
56	323: Engine control module (ECM) - supply voltage	Wiring, ECM
56	626: Transmission fluid temperature (TFT) sensor	Wiring, TFT sensor
57	Engine control relay	Wiring, engine control relay
60	Shift solenoid (SS) A, 1-2	Wiring, SS
61	Shift solenoid (SS) B, 2-3	Wiring, SS
62	Shift solenoid (SS) C, 3-4	Wiring, SS
63	Torque converter clutch (TCC) control solenoid	Wiring, TCC control solenoid
64	Shift timing solenoid, 3-2	Wiring, shift timing solenoid
65	Torque converter clutch (TCC) solenoid	Wiring, TCC solenoid
66	Transmission fluid pressure (TFP) solenoid	Wiring, TFP solenoid
67	Engine coolant blower motor relay - low temperature	Wiring, engine coolant blower motor relay
68	Engine coolant blower motor relay - high temperature	Wiring, engine coolant blower motor relay
69	Engine coolant blower motor temperature sensor	Wiring, engine coolant blower motor temperature sensor
71	Engine control module (ECM)/immobilizer control module - communication error	Wiring, immobilizer control module, ECM
72	Ignition key - not programmed into ECM	ECM incorrectly programmed/not programmed
73	Engine control module (ECM)/immobilizer control module - immobilizer codes do not match	Incorrectly programmed immobilizer control module/ECM
74	Engine control module (ECM)/immobilizer control module - ignition key codes not match	Incorrect/damaged key, ECM incorrectly programmed
75	Engine control module (ECM) - EEPROM error	ECM
76	Engine control module (ECM) - immobilizer code not stored	ECM incorrectly/not programmed
77	Immobilizer control module - communication error	Incorrect/damaged key, wiring, reader coil, immobilizer control module

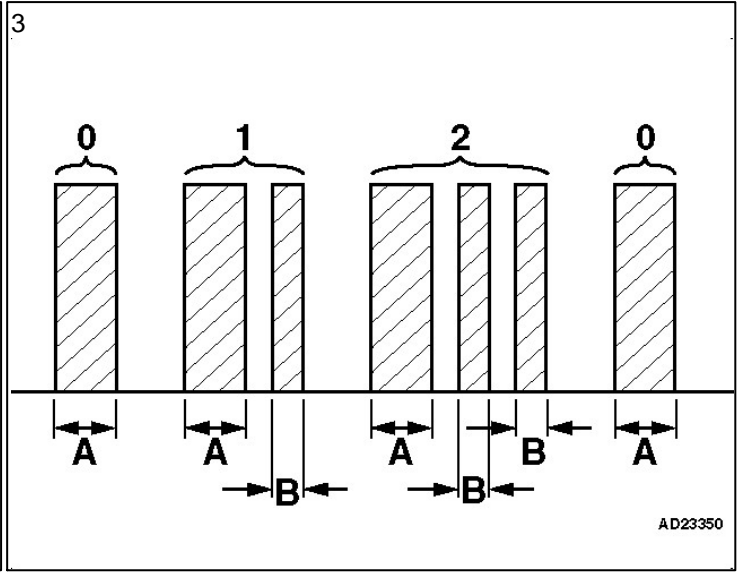
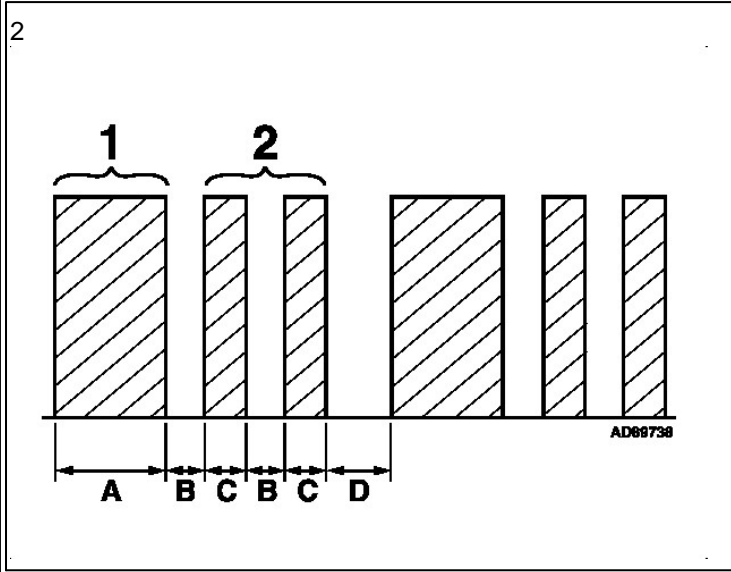
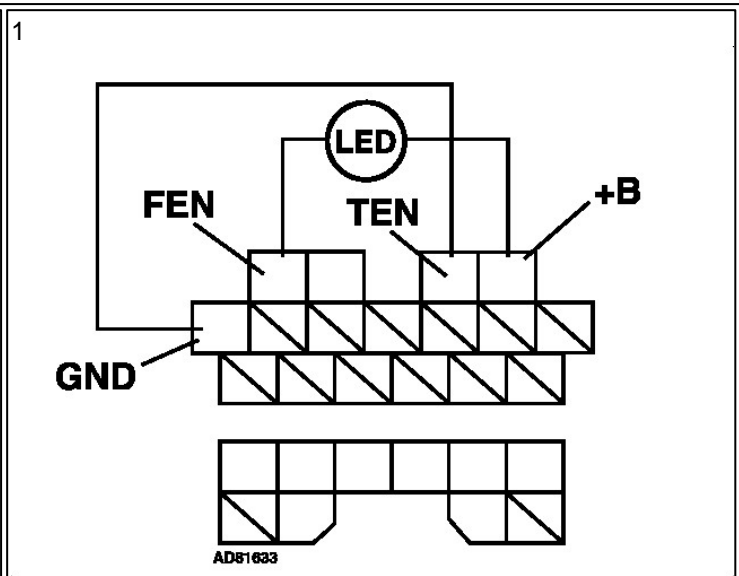
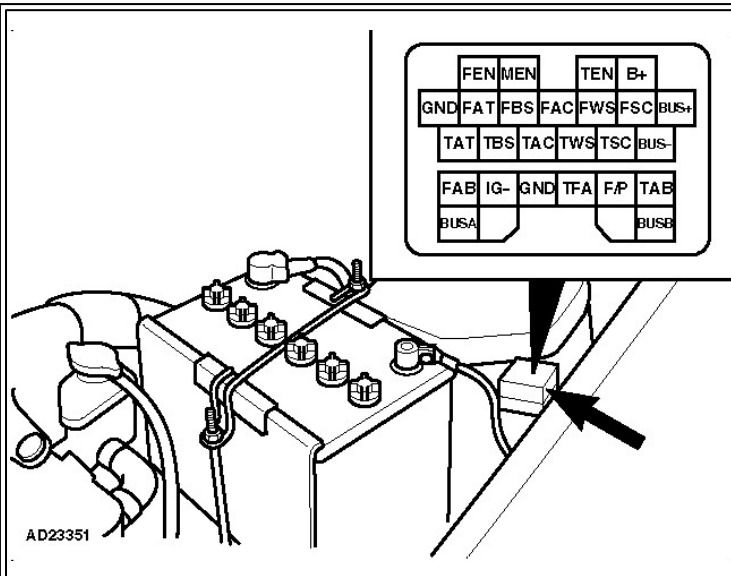
P type 4-digit	Fault location	Probable cause
P0	Refer to EOBD trouble code table	-
P1100	Mass air flow (MAF) sensor - circuit intermittent	Wiring, MAF sensor
P1101	Mass air flow (MAF) sensor - circuit intermittent	Wiring, MAF sensor
P1110	Intake air temperature (IAT) sensor 2	Wiring, IAT sensor
P1112	Intake air temperature (IAT) sensor - circuit intermittent	Wiring, IAT sensor
P1113	Intake air temperature (IAT) sensor 2	Wiring, IAT sensor
P1117	Engine coolant temperature (ECT) sensor - circuit intermittent	Wiring, ECT sensor
P1120	Throttle position (TP) sensor - low input	Wiring short to earth, TP sensor
P1125	Throttle position (TP) sensor - circuit intermittent	Wiring, TP sensor
P1130	Fuel trim (FT) - control limit exceeded	Intake/exhaust leak, fuel pressure/pump, EVAP/EGR system, wiring, HO2S
P1131	Heated oxygen sensor (HO2S) - low voltage	Intake/exhaust leak, fuel pressure low, hose connection, HO2S/wiring short to earth, injector(s), MAF sensor/wiring
P1132	Heated oxygen sensor (HO2S) - high voltage	Intake/exhaust blockage, fuel pressure high, EVAP/EGR system, HO2S/wiring short to positive, injector(s), MAF sensor
P1170	Oxygen sensor (O2S)/heated oxygen sensor (HO2S), bank 1 - incorrect signal	Intake leak, fuel pressure/pump, wiring, O2S/HO2S, injector(s), ECT sensor, MAF sensor, spark plugs
P1173	Oxygen sensor (O2S)/heated oxygen sensor (HO2S), bank 2 - incorrect signal	Intake leak, fuel pressure/pump, wiring, O2S/HO2S, injector(s), ECT sensor, MAF sensor, spark plugs

P1182	Fuel shut-off solenoid	Wiring, fuel shut-off solenoid
P1189	Fuel injection pump position/speed sensor	Wiring, fuel injection pump speed sensor
P1190	Module coding plug	Wiring, module coding plug
P1195	Barometric pressure (BARO) sensor	Wiring, BARO sensor, ECM
P1196	Ignition switch, start signal - circuit malfunction	Wiring, starter motor
P1221	Traction control system (TCS) - malfunction	Wiring, TCS malfunction
P1226	Fuel quantity adjuster position sensor - circuit malfunction	Wiring, fuel quantity adjuster position sensor
P1250	Fuel pressure regulator control solenoid	Wiring, fuel pressure regulator control solenoid
P1252	Fuel pressure regulator control solenoid 2	Wiring, fuel pressure regulator control solenoid
P1279	Fuel quantity adjuster position sensor - range/performance problem	Wiring, fuel quantity adjuster position sensor
P1298	Fuel quantity adjuster control module - circuit malfunction	Wiring, fuel quantity adjuster control module
P1312	Fuel injection timing valve	Wiring, fuel injection timing valve
P1318	Fuel injection timing valve position sensor - circuit malfunction	Wiring, fuel injection timing valve position sensor
P1319	Fuel injection timing valve position sensor - range/performance problem	Wiring, fuel injection timing valve position sensor
P1345	Camshaft position (CMP) sensor - no signal	Wiring, sensor supply voltage, CMP sensor
P1402	Exhaust gas recirculation (EGR) valve position sensor	Wiring, EGR valve position sensor
P1409	Exhaust gas recirculation (EGR) valve - circuit malfunction	Wiring, EGR valve
P1474	Engine coolant blower motor relay - circuit malfunction	Wiring, engine coolant blower motor relay
P1485	Exhaust gas recirculation (EGR) solenoid - vacuum	Wiring, EGR solenoid
P1486	Exhaust gas recirculation (EGR) solenoid - vent	Wiring, EGR solenoid
P1487	Manifold absolute pressure (MAP) sensor solenoid	Wiring, MAP sensor solenoid
P1496	Exhaust gas recirculation (EGR) valve, motor coil 1	Wiring, EGR valve
P1497	Exhaust gas recirculation (EGR) valve, motor coil 2	Wiring, EGR valve
P1498	Exhaust gas recirculation (EGR) valve, motor coil 3	Wiring, EGR valve
P1499	Exhaust gas recirculation (EGR) valve, motor coil 4	Wiring, EGR valve
P1500	Vehicle speed sensor (VSS) - intermittent signal	Wiring, VSS
P1504	Idle air control (IAC) valve	Wiring, IAC valve
P1508	Bypass solenoid 1	Wiring, bypass solenoid
P1509	Bypass solenoid 2	Wiring, bypass solenoid
P1521	Intake manifold air control solenoid 1	Wiring, intake manifold air control solenoid
P1522	Intake manifold air control solenoid 2	Wiring, intake manifold air control solenoid
P1523	Intake manifold air control solenoid 1	Wiring, intake manifold air control solenoid
P1524	Intercooler bypass solenoid	Wiring, intercooler bypass solenoid
P1525	Air bypass valve solenoid - vacuum	Wiring, air bypass valve solenoid
P1526	Air bypass valve solenoid - vent	Wiring, air bypass valve solenoid
P1540	Air bypass valve control	Hose leak/blockage, wiring, air bypass valve actuator/solenoid
P1562	Engine control module (ECM) - supply voltage low	Battery, alternator, wiring
P1601	Data bus, TCM	Wiring, ECM, TCM

P1602	Engine control module (ECM)/immobilizer control module - communication error	Wiring, reader coil, ignition key, immobilizer control module, ECM
P1603	Ignition key - not programmed into ECM	ECM incorrectly/not programmed
P1604	Engine control module (ECM) - immobilizer code not stored	ECM incorrectly/not programmed
P1606	Engine control relay	Wiring, engine control relay
P1608	Engine control module (ECM)	ECM
P1609	Engine control module (ECM) - knock control	ECM
P1621	Engine control module (ECM)/immobilizer control module - immobilizer codes do not match	Incorrectly programmed immobilizer control module/ECM
P1622	Engine control module (ECM)/immobilizer control module - ignition key codes not match	Incorrect/damaged key, ECM incorrectly programmed
P1623	Engine control module (ECM) - EEPROM error	ECM
P1624	Engine control module (ECM) - immobilizer deactivation signal missing	Battery disconnected - erase trouble code, immobilizer system malfunction
P1627	ECM/ABS electrical connection - communication error	Wiring, ABS control module, ECM
P1631	Alternator - output voltage low	Wiring, alternator drive belt, alternator
P1632	Engine control module (ECM) - supply voltage low	Wiring, alternator, battery
P1633	Engine control module (ECM) - supply voltage high	Wiring, voltage surge when battery disconnected, alternator
P1634	Alternator - output voltage high/battery voltage low	Wiring, alternator, battery
P1649	Engine control module (ECM) - defective	ECM
P1650	Power steering pressure (PSP) switch	Wiring, PSP switch
P1720	Vehicle speed sensor (VSS)	Wiring, speedometer, VSS
P1743	Torque converter clutch (TCC) control solenoid	Wiring, TCC control solenoid
P1744	Torque converter clutch (TCC) solenoid	Wiring, TCC solenoid
P1765	Shift timing solenoid, 3-2	Wiring, shift timing solenoid
P1770	Overrunning clutch solenoid	Wiring, overrunning clutch solenoid
P1790	Throttle position (TP) sensor	Wiring, TP sensor

EOBD codes

- All EOBD codes starting with P zero have standard meanings irrespective of vehicle make or model.
- For EOBD codes, other than those starting P zero, refer to model specific chapters.
- The following list covers all P0 codes allocated at the time of publication.



Trouble code	Fault location	Probable cause
P0000	No fault found	-
P0001	Fuel volume regulator control - circuit open	Wiring, regulator control solenoid
P0002	Fuel volume regulator control - circuit range/performance	Wiring, regulator control solenoid
P0003	Fuel volume regulator control - circuit low	Wiring short to earth, regulator control solenoid
P0004	Fuel volume regulator control - circuit high	Wiring open circuit/short to positive, regulator control solenoid
P0005	Fuel shut-off valve - circuit open	Wiring open circuit, fuel shut-off valve
P0006	Fuel shut-off valve - circuit low	Wiring short to earth, fuel shut-off valve
P0007	Fuel shut-off valve - circuit high	Wiring short to positive, fuel shut-off valve
P0008	Engine position system, bank 1 - engine performance	Mechanical fault
P0009	Engine position system, bank 2 - engine performance	Mechanical fault
P0010	Camshaft position (CMP) actuator, intake/left/front, bank 1 - circuit malfunction	Wiring, CMP actuator, ECM
P0011	Camshaft position (CMP), intake/left/front, bank 1 - timing over-advanced/system performance	Valve timing, engine mechanical fault, CMP actuator
P0012	Camshaft position (CMP), intake/left/front, bank 1 - timing over-retarded	Valve timing, engine mechanical fault, CMP actuator
P0013	Camshaft position (CMP) actuator, intake/left/front, bank 1 - circuit malfunction	Wiring, CMP actuator, ECM

P0014	Camshaft position (CMP) actuator, exhaust/right/rear, bank 1 - timing over-advanced/system performance	Valve timing, engine mechanical fault, CMP actuator
P0015	Camshaft position (CMP) actuator, exhaust/right/rear, bank 1 - timing over-retarded	Valve timing, engine mechanical fault, CMP actuator
P0016	Crankshaft position/camshaft position, bank 1 sensor A - correlation	Wiring, CKP sensor, CMP sensor, mechanical fault
P0017	Crankshaft position/camshaft position, bank 1 sensor B - correlation	Wiring, CKP sensor, CMP sensor, mechanical fault
P0018	Crankshaft position/camshaft position, bank 2 sensor A - correlation	Wiring, CKP sensor, CMP sensor, mechanical fault
P0019	Crankshaft position/camshaft position, bank 2 sensor B - correlation	Wiring, CKP sensor, CMP sensor, mechanical fault
P0020	Camshaft position (CMP) actuator, intake/left/front, bank 2 - circuit malfunction	Wiring, CMP actuator, ECM
P0021	Camshaft position (CMP), intake/left/front, bank 2 - timing over-advanced/system performance	Valve timing, engine mechanical fault, CMP actuator
P0022	Camshaft position (CMP), intake/left/front, bank 2 - timing over-retarded	Valve timing, engine mechanical fault, CMP actuator
P0023	Camshaft position (CMP) actuator, exhaust/right/rear, bank 2 - circuit malfunction	Wiring, CMP actuator, ECM
P0024	Camshaft position (CMP), exhaust/right/rear, bank 2 - timing over-advanced/system performance	Valve timing, engine mechanical fault, CMP actuator
P0025	Camshaft position (CMP), exhaust/right/rear, bank 2 - timing over-retarded	Valve timing, engine mechanical fault, CMP actuator
P0026	Intake valve control solenoid circuit, bank 1 - range/performance	Wiring, intake valve control solenoid
P0027	Exhaust valve control solenoid circuit, bank 1 - range/performance	Wiring, exhaust valve control solenoid
P0028	Intake valve control solenoid circuit, bank 2 - range/performance	Wiring, intake valve control solenoid
P0029	Exhaust valve control solenoid circuit, bank 2 - range/performance	Wiring, exhaust valve control solenoid
P0030	Heated oxygen sensor (HO2S) 1, bank 1, heater control - circuit malfunction	Wiring, HO2S, ECM
P0031	Heated oxygen sensor (HO2S) 1, bank 1, heater control - circuit low	Wiring short to earth, HO2S, ECM
P0032	Heated oxygen sensor (HO2S) 1, bank 1, heater control - circuit high	Wiring short to positive, HO2S, ECM
P0033	Turbocharger (TC) wastegate regulating valve - circuit malfunction	Wiring, TC wastegate regulating valve, ECM
P0034	Turbocharger (TC) wastegate regulating valve - circuit low	Wiring short to earth, TC wastegate regulating valve, ECM
P0035	Turbocharger (TC) wastegate regulating valve - circuit high	Wiring short to positive, TC wastegate regulating valve, ECM
P0036	Heated oxygen sensor (HO2S) 2, bank 1, heater control - circuit malfunction	Wiring, HO2S, ECM
P0037	Heated oxygen sensor (HO2S) 2, bank 1, heater control - circuit low	Wiring short to earth, HO2S, ECM
P0038	Heated oxygen sensor (HO2S) 2, bank 1, heater control - circuit high	Wiring short to positive, HO2S, ECM
P0039	Turbo/super charger bypass valve, control circuit - range/performance	Wiring, bypass valve
P0040	Oxygen sensor signals swapped, bank 1 sensor 1/bank 2 sensor 1	Wiring

P0041	Oxygen sensor signals swapped, bank 1 sensor 2/bank 2 sensor 2	Wiring
P0042	Heated oxygen sensor (HO2S) 3, bank 1, heater control - circuit malfunction	Wiring, HO2S, ECM
P0043	Heated oxygen sensor (HO2S) 3, bank 1, heater control - circuit low	Wiring short to earth, HO2S, ECM
P0044	Heated oxygen sensor (HO2S) 3, bank 1, heater control - circuit high	Wiring short to positive, HO2S, ECM
P0045	Turbo/super charger boost control solenoid - circuit open	Wiring, boost control solenoid
P0046	Turbo/super charger boost control solenoid - circuit range/performance	Wiring, boost control solenoid, mechanical fault
P0047	Turbo/super charger boost control solenoid - circuit low	Wiring short to earth, boost control solenoid
P0048	Turbo/super charger boost control solenoid - circuit high	Wiring short to positive, boost control solenoid
P0049	Turbo/super charger turbine - over-speed	Mechanical fault
P0050	Heated oxygen sensor (HO2S) 1, bank 2, heater control - circuit malfunction	Wiring, HO2S, ECM
P0051	Heated oxygen sensor (HO2S) 1, bank 2, heater control - circuit low	Wiring short to earth, HO2S, ECM
P0052	Heated oxygen sensor (HO2S) 1, bank 2, heater control - circuit high	Wiring short to positive, HO2S, ECM
P0053	Heated oxygen sensor (HO2S), bank 1, sensor 1 - heater resistance	Wiring, HO2S
P0054	Heated oxygen sensor (HO2S), bank 1, sensor 2 - heater resistance	Wiring, HO2S
P0055	Heated oxygen sensor (HO2S), bank 1, sensor 3 - heater resistance	Wiring, HO2S
P0056	Heated oxygen sensor (HO2S) 2, bank 2, heater control - circuit malfunction	Wiring, HO2S, ECM
P0057	Heated oxygen sensor (HO2S) 2, bank 2, heater control - heater circuit low	Wiring short to earth, HO2S, ECM
P0058	Heated oxygen sensor (HO2S) 2, bank 2, heater control - circuit high	Wiring short to positive, HO2S, ECM
P0059	Heated oxygen sensor (HO2S), bank 2, sensor 1 - heater resistance	Wiring, HO2S
P0060	Heated oxygen sensor (HO2S), bank 2, sensor 2 - heater resistance	Wiring, HO2S
P0061	Heated oxygen sensor (HO2S), bank 2, sensor 3 - heater resistance	Wiring, HO2S
P0062	Heated oxygen sensor (HO2S) 3, bank 2, heater control - circuit malfunction	Wiring, HO2S, ECM
P0063	Heated oxygen sensor (HO2S) 3, bank 2, heater control - circuit low	Wiring short to earth, HO2S, ECM
P0064	Heated oxygen sensor (HO2S) 3, bank 2, heater control - circuit high	Wiring short to positive, HO2S, ECM
P0065	Air assisted injector - range/performance problem	Air assisted injector
P0066	Air assisted injector - circuit malfunction/circuit low	Wiring short to earth, air assisted injector, ECM
P0067	Air assisted injector - circuit high	Wiring short to positive, air assisted injector, ECM
P0068	Manifold absolute pressure (MAP) sensor/mass air flow (MAF) sensor/throttle position correlation	Wiring, MAP sensor, MAF sensor, mechanical fault
P0069	Manifold absolute pressure (MAP) sensor/barometric pressure (BARO) sensor correlation	MAP sensor, mechanical fault
P0070	Outside air temperature sensor - circuit malfunction	Wiring, outside air temperature sensor, ECM
P0071	Outside air temperature sensor - range/performance problem	Outside air temperature sensor

P0072	Outside air temperature sensor - low input	Wiring short to earth, outside air temperature sensor, ECM
P0073	Outside air temperature sensor - high input	Wiring short to positive, outside air temperature sensor, ECM
P0074	Outside air temperature sensor - circuit intermittent	Wiring, poor connection, outside air temperature sensor, ECM
P0075	Intake valve control solenoid, bank 1 - circuit malfunction	Wiring, intake valve control solenoid, ECM
P0076	Intake valve control solenoid, bank 1 - circuit low	Wiring short to earth, intake valve control solenoid, ECM
P0077	Intake valve control solenoid, bank 1 - circuit high	Wiring short to positive, intake valve control solenoid, ECM
P0078	Exhaust valve control solenoid, bank 1 - circuit malfunction	Wiring, exhaust valve control solenoid, ECM
P0079	Exhaust valve control solenoid, bank 1 - circuit low	Wiring short to earth, exhaust valve control solenoid, ECM
P0080	Exhaust valve control solenoid, bank 1 - circuit high	Wiring short to positive, exhaust valve control solenoid, ECM
P0081	Intake valve control solenoid, bank 2 - circuit malfunction	Wiring, intake valve control solenoid, ECM
P0082	Intake valve control solenoid, bank 2 - circuit low	Wiring short to earth, intake valve control solenoid, ECM
P0083	Intake valve control solenoid, bank 2 - circuit high	Wiring short to positive, intake valve control solenoid, ECM
P0084	Exhaust valve control solenoid, bank 2 - circuit malfunction	Wiring, exhaust valve control solenoid, ECM
P0085	Exhaust valve control solenoid, bank 2 - circuit low	Wiring short to earth, exhaust valve control solenoid, ECM
P0086	Exhaust valve control solenoid, bank 2 - circuit high	Wiring short to positive, exhaust valve control solenoid, ECM
P0087	Fuel rail/system pressure too low	Fuel pump, fuel pressure regulator, fuel supply pipe blockage, mechanical fault
P0088	Fuel rail/system pressure too high	Fuel pump, fuel pressure regulator, fuel return pipe blockage, mechanical fault
P0089	Fuel pressure regulator - performance problem	Fuel pressure regulator, mechanical fault
P0090	Fuel metering solenoid - open circuit	Wiring open circuit, fuel metering solenoid, ECM
P0091	Fuel metering solenoid - short to earth	Wiring short to earth, fuel metering solenoid, ECM
P0092	Fuel metering solenoid - short to positive	Wiring short to positive, fuel metering solenoid, ECM
P0093	Fuel system leak - large leak detected	Wiring, fuel pressure sensor, mechanical fault
P0094	Fuel system leak - small leak detected	Wiring, fuel pressure sensor, mechanical fault
P0095	Intake air temperature (IAT) sensor 2 - circuit malfunction	Wiring, poor connection, IAT sensor, ECM
P0096	Intake air temperature (IAT) sensor 2 - circuit range/performance	Wiring, poor connection, IAT sensor, ECM
P0097	Intake air temperature (IAT) sensor 2 - circuit low input	Wiring short to earth, IAT sensor, ECM
P0098	Intake air temperature (IAT) sensor 2 - circuit high input	Wiring short to positive, IAT sensor, ECM
P0099	Intake air temperature (IAT) sensor 2 - circuit intermittent/erratic	Wiring, poor connection, IAT sensor, ECM
P0100	Mass air flow (MAF) sensor/volume air flow (VAF) sensor - circuit malfunction	Wiring, MAF/VAF sensor, ECM
P0101	Mass air flow (MAF) sensor/volume air flow (VAF) sensor - range/performance problem	Intake leak/blockage, MAF/VAF sensor
P0102	Mass air flow (MAF) sensor/volume air flow (VAF) sensor - low input	Wiring short to earth, MAF/VAF sensor, ECM
P0103	Mass air flow (MAF) sensor/volume air flow (VAF) sensor - high input	Wiring short to positive, MAF/VAF sensor, ECM

P0104	Mass air flow (MAF) sensor/volume air flow (VAF) sensor - circuit intermittent	Wiring, poor connection, MAF/VAF sensor, ECM
P0105	Manifold absolute pressure (MAP) sensor/barometric pressure (BARO) sensor - circuit malfunction	Wiring, MAP sensor, BARO sensor, ECM
P0106	Manifold absolute pressure (MAP) sensor/barometric pressure (BARO) sensor - range/performance problem	Intake/exhaust leak, wiring, MAP sensor, BARO sensor
P0107	Manifold absolute pressure (MAP) sensor/barometric pressure (BARO) sensor - low input	Wiring short to earth, MAP sensor, BARO sensor, ECM
P0108	Manifold absolute pressure (MAP) sensor/barometric pressure (BARO) sensor - high input	Wiring short to positive, MAP sensor, BARO sensor, ECM
P0109	Manifold absolute pressure (MAP) sensor/barometric pressure (BARO) sensor - circuit intermittent	Wiring, poor connection, MAP sensor, BARO sensor, ECM
P0110	Intake air temperature (IAT) sensor - circuit malfunction	Wiring, IAT sensor, ECM
P0111	Intake air temperature (IAT) sensor - range/performance problem	IAT sensor
P0112	Intake air temperature (IAT) sensor - low input	Wiring short to earth, IAT sensor, ECM
P0113	Intake air temperature (IAT) sensor - high input	Wiring open circuit/short to positive, earth wire defective, IAT sensor, ECM
P0114	Intake air temperature (IAT) sensor - circuit intermittent	Wiring, poor connection, IAT sensor, ECM
P0115	Engine coolant temperature (ECT) sensor - circuit malfunction	Wiring, ECT sensor, ECM
P0116	Engine coolant temperature (ECT) sensor - range/performance problem	Coolant thermostat, poor connection, wiring, ECT sensor
P0117	Engine coolant temperature (ECT) sensor - low input	Coolant thermostat, wiring short to earth, ECT sensor
P0118	Engine coolant temperature (ECT) sensor - high input	Coolant thermostat, wiring open circuit/short to positive, earth wire defective, ECT sensor
P0119	Engine coolant temperature (ECT) sensor - circuit intermittent	Wiring, poor connection, ECT sensor, ECM
P0120	Throttle position (TP) sensor A/accelerator pedal position (APP) sensor A - circuit malfunction	Wiring, TP/APP sensor, ECM
P0120	Throttle position (TP) switch A/accelerator pedal position (APP) switch A - circuit malfunction	Wiring, TP/APP switch, ECM
P0121	Throttle position (TP) sensor A/accelerator pedal position (APP) sensor A - range/performance problem	Accelerator cable adjustment, TP/APP sensor
P0121	Throttle position (TP) switch A/accelerator pedal position (APP) switch A - range/performance problem	Accelerator cable adjustment, TP/APP switch
P0122	Throttle position (TP) sensor A/accelerator pedal position (APP) sensor A - low input	Wiring short to earth, TP/APP sensor, ECM
P0122	Throttle position (TP) switch A/accelerator pedal position (APP) switch A - low input	Wiring short to earth, TP/APP switch, ECM
P0123	Throttle position (TP) sensor A/accelerator pedal position (APP) sensor A - high input	Wiring short to positive, TP/APP sensor, ECM
P0123	Throttle position (TP) switch A/accelerator pedal position (APP) switch A - high input	Wiring short to positive, TP/APP switch, ECM
P0124	Throttle position (TP) sensor A/accelerator pedal position (APP) sensor A - circuit intermittent	Wiring, poor connection, TP/APP sensor, ECM
P0124	Throttle position (TP) switch A/accelerator pedal position (APP) switch A - circuit intermittent	Wiring, poor connection, TP/APP switch, ECM
P0125	Insufficient coolant temperature for closed loop fuel control	Wiring, cooling system, coolant thermostat, ECT sensor
P0126	Insufficient coolant temperature for stable operation	Wiring, cooling system, coolant thermostat, ECT sensor
P0127	Intake air temperature too high	Wiring short to earth, IAT sensor 2, mechanical fault, ECM

P0128	Coolant thermostat - coolant temperature below thermostat regulating temperature	Mechanical fault
P0129	Barometric pressure too low	Wiring, BARO sensor, mechanical fault
P0130	Heated oxygen sensor (HO2S) 1, bank 1 - circuit malfunction	Heating inoperative, poor connection, wiring, HO2S
P0130	Oxygen sensor (O2S) 1, bank 1 - circuit malfunction	Wiring, O2S, ECM
P0131	Heated oxygen sensor (HO2S) 1, bank 1 - low voltage	Exhaust leak, wiring short to earth, HO2S, ECM
P0131	Oxygen sensor (O2S) 1, bank 1 - low voltage	Exhaust leak, wiring short to earth, O2S, ECM
P0132	Heated oxygen sensor (HO2S) 1, bank 1 - high voltage	Wiring short to positive, HO2S, ECM
P0132	Oxygen sensor (O2S) 1, bank 1 - high voltage	Wiring short to positive, O2S, ECM
P0133	Heated oxygen sensor (HO2S) 1, bank 1 - slow response	Heating inoperative, wiring, HO2S
P0133	Oxygen sensor (O2S) 1, bank 1 - slow response	Wiring, O2S
P0134	Heated oxygen sensor (HO2S) 1, bank 1 - no activity detected	Wiring open circuit, heating inoperative, HO2S
P0134	Oxygen sensor (O2S) 1, bank 1 - no activity detected	Wiring, O2S
P0135	Heated oxygen sensor (HO2S) 1, bank 1, heater control - circuit malfunction	Fuse, wiring, HO2S, ECM
P0136	Heated oxygen sensor (HO2S) 2, bank 1 - circuit malfunction	Heating inoperative, wiring, HO2S, ECM
P0136	Oxygen sensor (O2S) 2, bank 1 - circuit malfunction	Wiring, O2S, ECM
P0137	Heated oxygen sensor (HO2S) 2, bank 1 - low voltage	Exhaust leak, wiring short to earth, HO2S, ECM
P0137	Oxygen sensor (O2S) 2, bank 1 - low voltage	Exhaust leak, wiring short to earth, O2S, ECM
P0138	Heated oxygen sensor (HO2S) 2, bank 1 - high voltage	Wiring short to positive, HO2S, ECM
P0138	Oxygen sensor (O2S) 2, bank 1 - high voltage	Wiring short to positive, O2S, ECM
P0139	Heated oxygen sensor (HO2S) 2, bank 1 - slow response	Heating inoperative, wiring, HO2S
P0139	Oxygen sensor (O2S) 2, bank 1 - slow response	Wiring, O2S
P0140	Heated oxygen sensor (HO2S) 2, bank 1 - no activity detected	Wiring, heating inoperative, HO2S, ECM
P0140	Oxygen sensor (O2S) 2, bank 1 - no activity detected	Wiring, O2S, ECM
P0141	Heated oxygen sensor (HO2S) 2, bank 1, heater control - circuit malfunction	Wiring, HO2S, ECM
P0142	Heated oxygen sensor (HO2S) 3, bank 1 - circuit malfunction	Wiring, HO2S, ECM
P0143	Heated oxygen sensor (HO2S) 3, bank 1 - low voltage	Exhaust leak, wiring short to earth, HO2S, ECM
P0143	Oxygen sensor (O2S) 3, bank 1 - low voltage	Exhaust leak, wiring short to earth, O2S, ECM
P0144	Heated oxygen sensor (HO2S) 3, bank 1 - high voltage	Wiring short to positive, HO2S, ECM
P0144	Oxygen sensor (O2S) 3, bank 1 - high voltage	Wiring short to positive, O2S, ECM
P0145	Heated oxygen sensor (HO2S) 3, bank 1 - slow response	Heating inoperative, wiring, HO2S
P0145	Oxygen sensor (O2S) 3, bank 1 - slow response	Wiring, O2S
P0146	Heated oxygen sensor (HO2S) 3, bank 1 - no activity detected	Wiring, HO2S, ECM
P0146	Oxygen sensor (O2S) 3, bank 1 - no activity detected	Wiring, O2S, ECM
P0147	Heated oxygen sensor (HO2S) 3, bank 1, heater control - circuit malfunction	Wiring, HO2S, ECM
P0148	Fuel delivery error	Fuel pump/fuel injection pump
P0149	Fuel timing error	Fuel pump/fuel injection pump
P0150	Heated oxygen sensor (HO2S) 1, bank 2 - circuit malfunction	Wiring, HO2S, ECM
P0150	Oxygen sensor (O2S) 1, bank 2 - circuit malfunction	Wiring, O2S, ECM
P0151	Heated oxygen sensor (HO2S) 1, bank 2 - low voltage	Exhaust leak, wiring short to earth, HO2S, ECM

P0151	Oxygen sensor (O2S) 1, bank 2 - low voltage	Exhaust leak, wiring short to earth, O2S, ECM
P0152	Heated oxygen sensor (HO2S) 1, bank 2 - high voltage	Wiring short to positive, HO2S, ECM
P0152	Oxygen sensor (O2S) 1, bank 2 - high voltage	Wiring short to positive, O2S, ECM
P0153	Heated oxygen sensor (HO2S) 1, bank 2 - slow response	Heating inoperative, wiring, HO2S
P0153	Oxygen sensor (O2S) 1, bank 2 - slow response	Wiring, O2S
P0154	Heated oxygen sensor (HO2S) 1, bank 2 - no activity detected	Wiring, HO2S, ECM
P0154	Oxygen sensor (O2S) 1, bank 2 - no activity detected	Wiring, O2S, ECM
P0155	Heated oxygen sensor (HO2S) 1, bank 2, heater control - circuit malfunction	Wiring, HO2S, ECM
P0156	Heated oxygen sensor (HO2S) 2, bank 2 - circuit malfunction	Heating inoperative, wiring, HO2S, ECM
P0156	Oxygen sensor (O2S) 2, bank 2 - circuit malfunction	Wiring, O2S, ECM
P0157	Heated oxygen sensor (HO2S) 2, bank 2 - low voltage	Exhaust leak, wiring short to earth, HO2S, ECM
P0157	Oxygen sensor (O2S) 2, bank 2 - low voltage	Exhaust leak, wiring short to earth, O2S, ECM
P0158	Heated oxygen sensor (HO2S) 2, bank 2 - high voltage	Wiring short to positive, HO2S, ECM
P0158	Oxygen sensor (O2S) 2, bank 2 - high voltage	Wiring short to positive, O2S, ECM
P0159	Heated oxygen sensor (HO2S) 2, bank 2 - slow response	Heating inoperative, wiring, HO2S
P0159	Oxygen sensor (O2S) 2, bank 2 - slow response	Wiring, O2S
P0160	Heated oxygen sensor (HO2S) 2, bank 2 - no activity detected	Wiring, HO2S, ECM
P0160	Oxygen sensor (O2S) 2, bank 2 - no activity detected	Wiring, O2S, ECM
P0161	Heated oxygen sensor (HO2S) 2, bank 2, heater control - circuit malfunction	Wiring, HO2S, ECM
P0162	Heated oxygen sensor (HO2S) 3, bank 2 - circuit malfunction	Wiring, HO2S, ECM
P0162	Oxygen sensor (O2S) 3, bank 2 - circuit malfunction	Wiring, O2S, ECM
P0163	Heated oxygen sensor (HO2S) 3, bank 2 - low voltage	Exhaust leak, wiring short to earth, HO2S, ECM
P0163	Oxygen sensor (O2S) 3, bank 2 - low voltage	Exhaust leak, wiring short to earth, O2S, ECM
P0164	Heated oxygen sensor (HO2S) 3, bank 2 - high voltage	Wiring short to positive, HO2S, ECM
P0164	Oxygen sensor (O2S) 3, bank 2 - high voltage	Wiring short to positive, O2S, ECM
P0165	Heated oxygen sensor (HO2S) 3, bank 2 - slow response	Heating inoperative, wiring, HO2S
P0165	Oxygen sensor (O2S) 3, bank 2 - slow response	Wiring, O2S
P0166	Heated oxygen sensor (HO2S) 3, bank 2 - no activity detected	Wiring, HO2S, ECM
P0166	Oxygen sensor (O2S) 3, bank 2 - no activity detected	Wiring, O2S, ECM
P0167	Heated oxygen sensor (HO2S) 3, bank 2, heater control - circuit malfunction	Wiring, HO2S, ECM
P0168	Fuel temperature too high	Wiring, fuel temperature sensor, mechanical fault
P0169	Incorrect fuel composition	Wiring, fuel composition sensor, mechanical fault
P0170	Fuel trim (FT), bank 1 - malfunction	Intake leak, AIR system, fuel pressure/pump, injector(s), EVAP canister purge valve, HO2S
P0171	System too lean, bank 1	Intake/exhaust leak, AIR system, MAF/VAF sensor, fuel pressure/pump, injector(s), HO2S
P0172	System too rich, bank 1	Intake blocked, EVAP canister purge valve, fuel pressure, EGR system, injector(s), HO2S
P0173	Fuel trim (FT), bank 2 - malfunction	Intake leak, AIR system, fuel pressure/pump, injector(s), EVAP canister purge valve, HO2S
P0174	System too lean, bank 2	Intake/exhaust leak, fuel pressure/pump, injector(s), AIR system, hose connection(s)

P0175	System too rich, bank 2	Intake blocked, EVAP canister purge valve, fuel pressure, EGR system, injector(s), HO2S
P0176	Fuel composition sensor - circuit malfunction	Wiring, fuel composition sensor, ECM
P0177	Fuel composition sensor - range/performance problem	Fuel composition sensor
P0178	Fuel composition sensor - low input	Wiring short to earth, fuel composition sensor, ECM
P0179	Fuel composition sensor - high input	Wiring short to positive, fuel composition sensor, ECM
P0180	Fuel temperature sensor A - circuit malfunction	Wiring, fuel temperature sensor, ECM
P0181	Fuel temperature sensor A - range/performance problem	Fuel temperature sensor
P0182	Fuel temperature sensor A - low input	Wiring short to earth, fuel temperature sensor, ECM
P0183	Fuel temperature sensor A - high input	Wiring short to positive, fuel temperature sensor, ECM
P0184	Fuel temperature sensor A - circuit intermittent	Wiring, poor connection, fuel temperature sensor, ECM
P0185	Fuel temperature sensor B - circuit malfunction	Wiring, fuel temperature sensor, ECM
P0186	Fuel temperature sensor B - range/performance problem	Fuel temperature sensor
P0187	Fuel temperature sensor B - low input	Wiring short to earth, fuel temperature sensor, ECM
P0188	Fuel temperature sensor B - high input	Wiring short to positive, fuel temperature sensor, ECM
P0189	Fuel temperature sensor B - circuit intermittent	Wiring, poor connection, fuel temperature sensor, ECM
P0190	Fuel rail pressure (FRP) sensor - circuit malfunction	Wiring, fuel rail pressure sensor, ECM
P0191	Fuel rail pressure (FRP) sensor - range/performance problem	Wiring, FRP sensor
P0192	Fuel rail pressure (FRP) sensor - low input	Wiring short to earth, FRP sensor
P0193	Fuel rail pressure (FRP) sensor - high input	Wiring short to positive, FRP sensor
P0194	Fuel rail pressure (FRP) sensor - circuit intermittent	Wiring, poor connection, FRP sensor
P0195	Engine oil temperature (EOT) sensor - circuit malfunction	Wiring, EOT sensor, ECM
P0196	Engine oil temperature (EOT) sensor - range/performance problem	EOT sensor
P0197	Engine oil temperature (EOT) sensor - low input	Wiring short to earth, EOT sensor
P0198	Engine oil temperature (EOT) sensor - high input	Wiring short to positive, EOT sensor
P0199	Engine oil temperature (EOT) sensor - circuit intermittent	Wiring, poor connection, EOT sensor, ECM
P0200	Injector - circuit malfunction	Wiring, injector, ECM
P0201	Injector 1 - circuit malfunction	Wiring, injector, ECM
P0202	Injector 2 - circuit malfunction	Wiring, injector, ECM
P0203	Injector 3 - circuit malfunction	Wiring, injector, ECM
P0204	Injector 4 - circuit malfunction	Wiring, injector, ECM
P0205	Injector 5 - circuit malfunction	Wiring, injector, ECM
P0206	Injector 6 - circuit malfunction	Wiring, injector, ECM
P0207	Injector 7 - circuit malfunction	Wiring, injector, ECM
P0208	Injector 8 - circuit malfunction	Wiring, injector, ECM
P0209	Injector 9 - circuit malfunction	Wiring, injector, ECM
P0210	Injector 10 - circuit malfunction	Wiring, injector, ECM
P0211	Injector 11 - circuit malfunction	Wiring, injector, ECM
P0212	Injector 12 - circuit malfunction	Wiring, injector, ECM
P0213	Cold start injector 1 - circuit malfunction	Wiring, cold start injector, ECM
P0214	Cold start injector 2 - circuit malfunction	Wiring, cold start injector, ECM
P0215	Fuel shut-off solenoid - circuit malfunction	Wiring, fuel shut-off solenoid, ECM
P0216	Fuel injection timing control - circuit malfunction	Wiring, fuel injection timing control solenoid, ECM
P0217	Engine over temperature condition	Wiring, cooling system, coolant thermostat, ECT sensor
P0218	Transmission over temperature condition	Wiring, TFT sensor, ECM
P0219	Engine over speed condition	Incorrect gear change

P0220	Throttle position (TP) sensor B/accelerator pedal position (APP) sensor B - circuit malfunction	Wiring, TP/APP sensor, ECM
P0220	Throttle position (TP) switch B/accelerator pedal position (APP) switch B - circuit malfunction	Wiring, TP/APP switch, ECM
P0221	Throttle position (TP) sensor B/accelerator pedal position (APP) sensor B - range/performance problem	Accelerator cable adjustment, TP/APP sensor
P0221	Throttle position (TP) switch B/accelerator pedal position (APP) switch B - range/performance problem	Accelerator cable adjustment, TP/APP switch
P0222	Throttle position (TP) sensor B/accelerator pedal position (APP) sensor B - low input	Wiring short to earth, TP/APP sensor, ECM
P0222	Throttle position (TP) switch B/accelerator pedal position (APP) switch B - low input	Wiring short to earth, TP/APP switch, ECM
P0223	Throttle position (TP) sensor B/accelerator pedal position (APP) sensor B - high input	Wiring short to positive, TP/APP sensor, ECM
P0223	Throttle position (TP) switch B/accelerator pedal position (APP) switch B - high input	Wiring short to positive, TP/APP switch, ECM
P0224	Throttle position (TP) sensor B/accelerator pedal position (APP) sensor B - circuit intermittent	Wiring, poor connection, TP/APP sensor, ECM
P0224	Throttle position (TP) switch B/accelerator pedal position (APP) switch B - circuit intermittent	Wiring, poor connection, TP/APP switch, ECM
P0225	Throttle position (TP) sensor C/accelerator pedal position (APP) sensor C - circuit malfunction	Wiring, TP/APP sensor, ECM
P0225	Throttle position (TP) switch C/accelerator pedal position (APP) switch C - circuit malfunction	Wiring, TP/APP switch, ECM
P0226	Throttle position (TP) sensor C/accelerator pedal position (APP) sensor C - range/performance problem	Accelerator cable adjustment, TP/APP sensor
P0226	Throttle position (TP) switch C/accelerator pedal position (APP) switch C - range/performance problem	Accelerator cable adjustment, TP/APP switch
P0227	Throttle position (TP) sensor C/accelerator pedal position (APP) sensor C - low input	Wiring short to earth, TP/APP sensor, ECM
P0227	Throttle position (TP) switch C/accelerator pedal position (APP) switch C - low input	Wiring short to earth, TP/APP switch, ECM
P0228	Throttle position (TP) sensor C/accelerator pedal position (APP) sensor C - high input	Wiring short to positive, TP/APP sensor, ECM
P0228	Throttle position (TP) switch C/accelerator pedal position (APP) switch C - high input	Wiring short to positive, TP/APP switch, ECM
P0229	Throttle position (TP) sensor C/accelerator pedal position (APP) sensor C - circuit intermittent	Wiring, poor connection, TP/APP sensor, ECM
P0229	Throttle position (TP) switch C/accelerator pedal position (APP) switch C - circuit intermittent	Wiring, poor connection, TP/APP switch, ECM
P0230	Fuel pump relay - circuit malfunction	Wiring, fuel pump relay, ECM
P0231	Fuel pump relay - circuit low	Wiring short to earth, fuel pump relay, ECM
P0232	Fuel pump relay - circuit high	Wiring short to positive, fuel pump relay, ECM
P0233	Fuel pump relay - circuit intermittent	Wiring, poor connection, fuel pump relay, ECM
P0234	Engine boost condition - limit exceeded	Hose connection(s), wiring, TC wastegate regulating valve, TC wastegate
P0235	Engine boost condition - limit not reached	Hose connection(s), wiring, TC wastegate regulating valve, TC wastegate, TC
P0236	Manifold absolute pressure (MAP) sensor A, TC system - range/performance problem	Intake/exhaust leak, hose connection(s), MAP sensor
P0237	Manifold absolute pressure (MAP) sensor A, TC system - low input	Wiring short to earth, MAP sensor, ECM
P0238	Manifold absolute pressure (MAP) sensor A, TC system - high input	Wiring short to positive, MAP sensor, ECM

P0239	Manifold absolute pressure (MAP) sensor B, TC system - circuit malfunction	Wiring, MAP sensor, ECM
P0240	Manifold absolute pressure (MAP) sensor B, TC system - range/performance problem	Intake/exhaust leak, hose connection(s), MAP sensor
P0241	Manifold absolute pressure (MAP) sensor B, TC system - low input	Wiring short to earth, MAP sensor, ECM
P0242	Manifold absolute pressure (MAP) sensor B, TC system - high input	Wiring short to positive, MAP sensor, ECM
P0243	Turbocharger (TC) wastegate regulating valve A - circuit malfunction	Wiring, TC wastegate regulating valve, ECM
P0244	Turbocharger (TC) wastegate regulating valve A - range/performance problem	TC wastegate regulating valve
P0245	Turbocharger (TC) wastegate regulating valve A - circuit low	Wiring short to earth, TC wastegate regulating valve, ECM
P0246	Turbocharger (TC) wastegate regulating valve A - circuit high	Wiring short to positive, TC wastegate regulating valve, ECM
P0247	Turbocharger (TC) wastegate regulating valve B - circuit malfunction	Wiring, TC wastegate regulating valve, ECM
P0248	Turbocharger (TC) wastegate regulating valve B - range/performance problem	TC wastegate regulating valve
P0249	Turbocharger (TC) wastegate regulating valve B - circuit low	Wiring short to earth, TC wastegate regulating valve, ECM
P0250	Turbocharger (TC) wastegate regulating valve B - circuit high	Wiring short to positive, TC wastegate regulating valve, ECM
P0251	Injection pump A, rotor/cam - circuit malfunction	Wiring, injection pump, ECM
P0252	Injection pump A, rotor/cam - range/performance problem	Injection pump
P0253	Injection pump A, rotor/cam - circuit low	Wiring short to earth, injection pump, ECM
P0254	Injection pump A, rotor/cam - circuit high	Wiring short to positive, injection pump, ECM
P0255	Injection pump A, rotor/cam - circuit intermittent	Wiring, poor connection, injection pump, ECM
P0256	Injection pump B, rotor/cam - circuit malfunction	Wiring, injection pump, ECM
P0257	Injection pump B, rotor/cam - range/performance problem	Injection pump
P0258	Injection pump B, rotor/cam - circuit low	Wiring short to earth, injection pump, ECM
P0259	Injection pump B, rotor/cam - circuit high	Wiring short to positive, injection pump, ECM
P0260	Injection pump B, rotor/cam - circuit intermittent	Wiring, poor connection, injection pump, ECM
P0261	Injector 1 - circuit low	Wiring short to earth, injector, ECM
P0262	Injector 1 - circuit high	Wiring short to positive, injector, ECM
P0263	Cylinder 1 - contribution/balance fault	Wiring, fuel system, ECM
P0264	Injector 2 - circuit low	Wiring short to earth, injector, ECM
P0265	Injector 2 - circuit high	Wiring short to positive, injector, ECM
P0266	Cylinder 2 - contribution/balance fault	Wiring, fuel system, ECM
P0267	Injector 3 - circuit low	Wiring short to earth, injector, ECM
P0268	Injector 3 - circuit high	Wiring short to positive, injector, ECM
P0269	Cylinder 3 - contribution/balance fault	Wiring, fuel system, ECM
P0270	Injector 4 - circuit low	Wiring short to earth, injector, ECM
P0271	Injector 4 - circuit high	Wiring short to positive, injector, ECM
P0272	Cylinder 4 - contribution/balance fault	Wiring, fuel system, ECM
P0273	Injector 5 - circuit low	Wiring short to earth, injector, ECM
P0274	Injector 5 - circuit high	Wiring short to positive, injector, ECM
P0275	Cylinder 5 - contribution/balance fault	Wiring, fuel system, ECM
P0276	Injector 6 - circuit low	Wiring short to earth, injector, ECM
P0277	Injector 6 - circuit high	Wiring short to positive, injector, ECM

P0278	Cylinder 6 - contribution/balance fault	Wiring, fuel system, ECM
P0279	Injector 7 - circuit low	Wiring short to earth, injector, ECM
P0280	Injector 7 - circuit high	Wiring short to positive, injector, ECM
P0281	Cylinder 7 - contribution/balance fault	Wiring, fuel system, ECM
P0282	Injector 8 - circuit low	Wiring short to earth, injector, ECM
P0283	Injector 8 - circuit high	Wiring short to positive, injector, ECM
P0284	Cylinder 8 - contribution/balance fault	Wiring, fuel system, ECM
P0285	Injector 9 - circuit low	Wiring short to earth, injector, ECM
P0286	Injector 9 - circuit high	Wiring short to positive, injector, ECM
P0287	Cylinder 9 - contribution/balance fault	Wiring, fuel system, ECM
P0288	Injector 10 - circuit low	Wiring short to earth, injector, ECM
P0289	Injector 10 - circuit high	Wiring short to positive, injector, ECM
P0290	Cylinder 10 - contribution/balance fault	Wiring, fuel system, ECM
P0291	Injector 11 - circuit low	Wiring short to earth, injector, ECM
P0292	Injector 11 - circuit high	Wiring short to positive, injector, ECM
P0293	Cylinder 11 - contribution/balance fault	Wiring, fuel system, ECM
P0294	Injector 12 - circuit low	Wiring short to earth, injector, ECM
P0295	Injector 12 - circuit high	Wiring short to positive, injector, ECM
P0296	Cylinder 12 - contribution/balance fault	Wiring, fuel system, ECM
P0297	Vehicle over-speed condition	Wiring, VSS, mechanical fault
P0298	Engine oil temperature too high	Wiring, EOT sensor, mechanical fault
P0299	Turbo/super charger - low boost	Mechanical fault
P0300	Random/multiple cylinder(s) - misfire detected	Spark plug(s), HT lead(s), injector(s), ignition coil(s), low compression, wiring
P0301	Cylinder 1 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0302	Cylinder 2 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0303	Cylinder 3 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0304	Cylinder 4 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0305	Cylinder 5 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0306	Cylinder 6 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0307	Cylinder 7 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0308	Cylinder 8 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0309	Cylinder 9 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0310	Cylinder 10 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0311	Cylinder 11 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0312	Cylinder 12 - misfire detected	Engine mechanical fault, wiring, ignition/fuel system, injector, ECT/MAF sensor, ECM
P0313	Misfire detected - low fuel level	Fuel system, mechanical fault
P0314	Single cylinder misfire - cylinder not specified	Engine mechanical fault, wiring, ignition/fuel system, injector

P0315	Crankshaft position system - variation not learned	Engine mechanical fault, wiring
P0316	Misfire detected during start-up - first 1000 revolutions	Engine mechanical fault, wiring, ignition/fuel system, injector
P0317	Rough road hardware not present	Wiring, ECM
P0318	Rough road sensor signal A - circuit malfunction	Wiring, rough road sensor A, mechanical fault
P0319	Rough road sensor signal B - circuit malfunction	Wiring, rough road sensor B, mechanical fault
P0320	Crankshaft position (CKP) sensor/engine speed (RPM) sensor - circuit malfunction	Wiring, CKP/RPM sensor, ECM
P0321	Crankshaft position (CKP) sensor/engine speed (RPM) sensor - range/performance problem	Air gap, metal particle contamination, insecure sensor/rotor, wiring, CKP/RPM sensor
P0322	Crankshaft position (CKP) sensor/engine speed (RPM) sensor - no signal	Wiring, CKP/RPM sensor, ECM
P0323	Crankshaft position (CKP) sensor/engine speed (RPM) sensor - circuit intermittent	Wiring, poor connection, CKP/RPM sensor, ECM
P0324	Knock control system error	Wiring, poor connection, KS, ECM
P0325	Knock sensor (KS) 1, bank 1 - circuit malfunction	Wiring, poor connection, KS
P0326	Knock sensor (KS) 1, bank 1 - range/performance problem	Wiring, KS incorrectly tightened, KS
P0327	Knock sensor (KS) 1, bank 1 - low input	Insecure KS, poor connection, wiring short to earth, incorrectly tightened, KS, ECM
P0328	Knock sensor (KS) 1, bank 1 - high input	Wiring short to positive, KS incorrectly tightened, KS, ECM
P0329	Knock sensor (KS) 1, bank 1 - circuit intermittent	Wiring, poor connection, KS, ECM
P0330	Knock sensor (KS) 2, bank 2 - circuit malfunction	Wiring, KS, ECM
P0331	Knock sensor (KS) 2, bank 2 - range/performance problem	Wiring, KS incorrectly tightened, KS
P0332	Knock sensor (KS) 2, bank 2 - low input	Insecure KS, poor connection, wiring short to earth, KS incorrectly tightened, KS, ECM
P0333	Knock sensor (KS) 2, bank 2 - high input	Wiring short to positive, KS incorrectly tightened, KS, ECM
P0334	Knock sensor (KS) 2, bank 2 - circuit intermittent	Wiring, poor connection, KS, ECM
P0335	Crankshaft position (CKP) sensor - circuit malfunction	Wiring, CKP sensor, ECM
P0336	Crankshaft position (CKP) sensor - range/performance problem	Insecure sensor/rotor, air gap, wiring, CKP sensor
P0337	Crankshaft position (CKP) sensor - low input	Wiring short to earth, CKP sensor, ECM
P0338	Crankshaft position (CKP) sensor - high input	Wiring short to positive, CKP sensor, ECM
P0339	Crankshaft position (CKP) sensor - circuit intermittent	Wiring, poor connection, CKP sensor, ECM
P0340	Camshaft position (CMP) sensor A, bank 1 - circuit malfunction	Wiring, CMP sensor, ECM
P0341	Camshaft position (CMP) sensor A, bank 1 - range/performance problem	Insecure sensor/rotor, air gap, wiring, CMP sensor
P0342	Camshaft position (CMP) sensor A, bank 1 - low input	Wiring short to earth, CMP sensor, ECM
P0343	Camshaft position (CMP) sensor A, bank 1 - high input	Wiring short to positive, CMP sensor, ECM
P0344	Camshaft position (CMP) sensor A, bank 1 - circuit intermittent	Wiring, poor connection, CMP sensor, ECM
P0345	Camshaft position (CMP) sensor A, bank 2 - circuit malfunction	Wiring, CMP sensor, ECM
P0346	Camshaft position (CMP) sensor A, bank 2 - range/performance problem	Insecure sensor/rotor, air gap, wiring, CMP sensor
P0347	Camshaft position (CMP) sensor A, bank 2 - low input	Wiring short to earth, CMP sensor, ECM
P0348	Camshaft position (CMP) sensor A, bank 2 - high input	Wiring short to positive, CMP sensor, ECM

P0349	Camshaft position (CMP) sensor A, bank 2 - circuit intermittent	Wiring, poor connection, CMP sensor, ECM
P0350	Ignition coil, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0351	Ignition coil A, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0352	Ignition coil B, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0353	Ignition coil C, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0354	Ignition coil D, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0355	Ignition coil E, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0356	Ignition coil F, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0357	Ignition coil G, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0358	Ignition coil H, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0359	Ignition coil I, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0360	Ignition coil J, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0361	Ignition coil K, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0362	Ignition coil L, primary/secondary - circuit malfunction	Wiring, ignition coil, ECM
P0363	Misfire detected - fuelling disabled	Fuel system, mechanical fault
P0365	Camshaft position (CMP) sensor B, bank 1 - circuit malfunction	Wiring, poor connection, CMP sensor, ECM
P0366	Camshaft position (CMP) sensor B, bank 1 - circuit range/performance	Wiring, poor connection, CMP sensor
P0367	Camshaft position (CMP) sensor B, bank 1 - circuit low input	Wiring short to earth, CMP sensor, ECM
P0368	Camshaft position (CMP) sensor B, bank 1 - circuit high input	Wiring short to positive, CMP sensor, ECM
P0369	Camshaft position (CMP) sensor B, bank 1 - circuit intermittent	Wiring, poor connection, ECM
P0370	Timing reference, high resolution signal A - malfunction	Wiring, CKP/RPM/CMP sensor, ECM
P0371	Timing reference, high resolution signal A - too many pulses	Wiring, CKP/RPM/CMP sensor, ECM
P0372	Timing reference, high resolution signal A - too few pulses	Wiring, CKP/RPM/CMP sensor, ECM
P0373	Timing reference, high resolution signal A - intermittent erratic pulses	Wiring, poor connection, CKP/RPM/CMP sensor, ECM
P0374	Timing reference, high resolution signal A - no pulses	Wiring, CKP/RPM/CMP sensor, ECM
P0375	Timing reference, high resolution signal B - malfunction	Wiring, CKP/RPM/CMP sensor, ECM
P0376	Timing reference, high resolution signal B - too many pulses	Wiring, CKP/RPM/CMP sensor, ECM
P0377	Timing reference, high resolution signal B - too few pulses	Wiring, CKP/RPM/CMP sensor, ECM
P0378	Timing reference, high resolution signal B - intermittent erratic pulses	Wiring, poor connection, CKP/RPM/CMP sensor, ECM
P0379	Timing reference, high resolution signal B - no pulses	Wiring, CKP/RPM/CMP sensor, ECM
P0380	Glow plugs, circuit A - malfunction	Wiring, glow plug relay, fuse, glow plugs, ECM
P0381	Glow plug warning lamp - circuit malfunction	Wiring, glow plug warning lamp, ECM
P0382	Glow plugs, circuit B - malfunction	Wiring, glow plug relay, glow plugs, ECM
P0385	Crankshaft position (CKP) sensor B - circuit malfunction	Wiring, CKP sensor, ECM
P0386	Crankshaft position (CKP) sensor B - range/performance problem	Insecure sensor/rotor, air gap, wiring, CKP sensor
P0387	Crankshaft position (CKP) sensor B - low input	Wiring short to earth, CKP sensor, ECM
P0388	Crankshaft position (CKP) sensor B - high input	Wiring short to positive, CKP sensor, ECM
P0389	Crankshaft position (CKP) sensor B - circuit intermittent	Wiring, poor connection, CKP sensor, ECM
P0390	Camshaft position (CMP) sensor B, bank 2 - circuit malfunction	Wiring, poor connection, CMP sensor, ECM

P0391	Camshaft position (CMP) sensor B, bank 2 - circuit range/performance	Wiring, poor connection, CMP sensor
P0392	Camshaft position (CMP) sensor B, bank 2 - circuit low input	Wiring short to earth, CMP sensor, ECM
P0393	Camshaft position (CMP) sensor B, bank 2 - circuit high input	Wiring short to positive, CMP sensor, ECM
P0394	Camshaft position (CMP) sensor B, bank 2 - circuit intermittent	Wiring, poor connection, ECM
P0400	Exhaust gas recirculation (EGR) system - flow malfunction	Hose leak/blockage, basic setting not carried out (if applicable), wiring, EGR valve, EGR solenoid, ECM
P0401	Exhaust gas recirculation (EGR) system - insufficient flow detected	Hose leak/blockage, basic setting not carried out (if applicable), wiring, EGR valve, EGR solenoid, ECM
P0402	Exhaust gas recirculation (EGR) system - excessive flow detected	Hose leak/blockage, basic setting not carried out (if applicable), wiring, EGR valve, EGR solenoid, ECM
P0403	Exhaust gas recirculation (EGR) - circuit malfunction	Wiring, EGR solenoid, ECM
P0404	Exhaust gas recirculation (EGR) system - range/performance problem	Hose leak/blockage, wiring, EGR valve/solenoid
P0405	Exhaust gas recirculation (EGR) valve position sensor A - low input	Wiring short to earth, EGR valve position sensor, ECM
P0406	Exhaust gas recirculation (EGR) valve position sensor A - high input	Wiring short to positive, EGR valve position sensor, ECM
P0407	Exhaust gas recirculation (EGR) valve position sensor B - low input	Wiring short to earth, EGR valve position sensor, ECM
P0408	Exhaust gas recirculation (EGR) valve position sensor B - high input	Wiring short to positive, EGR valve position sensor, ECM
P0409	Exhaust gas recirculation (EGR) sensor A - circuit malfunction	Wiring, poor connection, EGR sensor, ECM
P0410	Secondary air injection (AIR) system - malfunction	Wiring, AIR valve, AIR solenoid, ECM
P0411	Secondary air injection (AIR) system - incorrect flow detected	AIR pump, AIR valve, AIR hose(s)
P0412	Secondary air injection (AIR) solenoid A - circuit malfunction	Wiring, AIR solenoid, ECM
P0413	Secondary air injection (AIR) solenoid A - open circuit	Wiring open circuit, AIR solenoid, ECM
P0414	Secondary air injection (AIR) solenoid A - short circuit	Wiring short circuit, AIR solenoid, ECM
P0415	Secondary air injection (AIR) solenoid B - circuit malfunction	Wiring, AIR solenoid, ECM
P0416	Secondary air injection (AIR) solenoid B - open circuit	Wiring open circuit, AIR solenoid, ECM
P0417	Secondary air injection (AIR) solenoid B - short circuit	Wiring short circuit, AIR solenoid, ECM
P0418	Secondary air injection (AIR) pump relay A - circuit malfunction	Wiring, AIR pump relay, ECM
P0419	Secondary air injection (AIR) pump relay B - circuit malfunction	Wiring, AIR pump relay, ECM
P0420	Catalytic converter system, bank 1 - efficiency below threshold	Catalytic converter, wiring, HO2S 2
P0421	Warm up catalytic converter, bank 1 - efficiency below threshold	Catalytic converter, wiring, HO2S 2
P0422	Main catalytic converter, bank 1 - efficiency below threshold	Catalytic converter, wiring, HO2S 2
P0423	Heated catalytic converter, bank 1 - efficiency below threshold	Catalytic converter, wiring, HO2S 2
P0424	Heated catalytic converter, bank 1 - temperature below threshold	Catalytic converter, wiring, HO2S 2
P0425	Catalytic converter temperature sensor, bank 1	Wiring, poor connection, catalytic converter temperature sensor, ECM

P0426	Catalytic converter temperature sensor, bank 1 - range/performance	Wiring, poor connection, catalytic converter temperature sensor
P0427	Catalytic converter temperature sensor, bank 1 - low input	Wiring short to earth, catalytic converter temperature sensor, ECM
P0428	Catalytic converter temperature sensor, bank 1 - high input	Wiring short to positive, catalytic converter temperature sensor, ECM
P0429	Catalytic converter heater, bank 1 - control circuit malfunction	Wiring, relay, ECM
P0430	Catalytic converter system, bank 2 - efficiency below threshold	Catalytic converter, wiring, HO2S 2
P0431	Warm up catalytic converter, bank 2 - efficiency below threshold	Catalytic converter, wiring, HO2S 2
P0432	Main catalytic converter, bank 2 - efficiency below threshold	Catalytic converter, wiring, HO2S 2
P0433	Heated catalytic converter, bank 2 - efficiency below threshold	Catalytic converter, wiring, HO2S 2
P0434	Heated catalytic converter, bank 2 - temperature below threshold	Catalytic converter, wiring, HO2S 2
P0435	Catalytic converter temperature sensor, bank 2	Wiring, poor connection, catalytic converter temperature sensor, ECM
P0436	Catalytic converter temperature sensor, bank 2 - range/performance	Wiring, poor connection, catalytic converter temperature sensor
P0437	Catalytic converter temperature sensor, bank 2 - low input	Wiring short to earth, catalytic converter temperature sensor, ECM
P0438	Catalytic converter temperature sensor, bank 2 - high input	Wiring short to positive, catalytic converter temperature sensor, ECM
P0439	Catalytic converter heater, bank 2 - control circuit malfunction	Wiring, relay, ECM
P0440	Evaporative emission (EVAP) system - malfunction	Hose connection(s), intake leak, EVAP canister purge valve
P0441	Evaporative emission (EVAP) system - incorrect flow detected	Hose connection(s), intake leak, EVAP canister purge valve
P0442	Evaporative emission (EVAP) system - small leak detected	Hose connection(s), intake leak, EVAP canister, EVAP canister purge valve
P0443	Evaporative emission (EVAP) canister purge valve - circuit malfunction	Wiring, EVAP canister purge valve, ECM
P0444	Evaporative emission (EVAP) canister purge valve - open circuit	Wiring open circuit, EVAP canister purge valve, ECM
P0445	Evaporative emission (EVAP) canister purge valve - short circuit	Wiring short circuit, EVAP canister purge valve, ECM
P0446	Evaporative emission (EVAP) system, vent control - circuit malfunction	Wiring, EVAP canister purge valve, ECM
P0447	Evaporative emission (EVAP) system, vent control - open circuit	Wiring open circuit, EVAP canister purge valve, ECM
P0448	Evaporative emission (EVAP) system, vent control - short circuit	Wiring short circuit, EVAP canister purge valve, ECM
P0449	Evaporative emission (EVAP) system, vent valve - circuit malfunction	Wiring, EVAP canister purge valve, ECM
P0450	Evaporative emission (EVAP) pressure sensor - circuit malfunction	Wiring, EVAP pressure sensor, ECM
P0451	Evaporative emission (EVAP) pressure sensor - range/performance problem	EVAP pressure sensor
P0452	Evaporative emission (EVAP) pressure sensor - low input	Wiring short to earth, EVAP pressure sensor, ECM
P0453	Evaporative emission (EVAP) pressure sensor - high input	Wiring short to positive, EVAP pressure sensor, ECM

P0454	Evaporative emission (EVAP) pressure sensor - circuit intermittent	Wiring, poor connection, EVAP pressure sensor, ECM
P0455	Evaporative emission (EVAP) system - large leak detected	Hose connection(s), intake leak, EVAP canister, EVAP canister purge valve
P0456	Evaporative emission (EVAP) system - very small leak detected	Mechanical fault, hose connection(s), EVAP pressure sensor
P0457	Evaporative emission (EVAP) system - leak detected (filler cap loose/off)	Mechanical fault, hose connection(s), EVAP pressure sensor
P0458	Evaporative emission (EVAP) system, EVAP valve - circuit low	Wiring short to earth, EVAP valve
P0459	Evaporative emission (EVAP) system, EVAP valve - circuit high	Wiring short to positive, EVAP valve
P0460	Fuel tank level sensor - circuit malfunction	Wiring, fuel tank level sensor, ECM
P0461	Fuel tank level sensor - range/performance problem	Wiring, fuel tank level sensor
P0462	Fuel tank level sensor - low input	Wiring short to earth, fuel tank level sensor, ECM
P0463	Fuel tank level sensor - high input	Wiring short to positive, fuel tank level sensor, ECM
P0464	Fuel tank level sensor - circuit intermittent	Wiring, poor connection, fuel tank level sensor, ECM
P0465	Evaporative emission (EVAP) canister purge flow sensor - circuit malfunction	Wiring, EVAP canister purge flow sensor, ECM
P0466	Evaporative emission (EVAP) canister purge flow sensor - range/performance problem	EVAP canister purge flow sensor
P0467	Evaporative emission (EVAP) canister purge flow sensor - low input	Wiring short to earth, EVAP canister purge flow sensor, ECM
P0468	Evaporative emission (EVAP) canister purge flow sensor - high input	Wiring short to positive, EVAP canister purge flow sensor, ECM
P0469	Evaporative emission (EVAP) canister purge flow sensor - circuit intermittent	Wiring, poor connection, EVAP canister purge flow sensor, ECM
P0470	Exhaust gas pressure sensor - circuit malfunction	Wiring, exhaust gas pressure sensor, ECM
P0471	Exhaust gas pressure sensor - range/performance problem	Exhaust gas pressure sensor
P0472	Exhaust gas pressure sensor - low input	Wiring short to earth, exhaust gas pressure sensor, ECM
P0473	Exhaust gas pressure sensor - high input	Wiring short to positive, exhaust gas pressure sensor, ECM
P0474	Exhaust gas pressure sensor - circuit intermittent	Wiring, poor connection, exhaust gas pressure sensor, ECM
P0475	Exhaust gas pressure control valve - circuit malfunction	Wiring, exhaust gas pressure control valve, ECM
P0476	Exhaust gas pressure control valve - range/performance problem	Exhaust gas pressure control valve
P0477	Exhaust gas pressure control valve - low input	Wiring short to earth, exhaust gas pressure control valve, ECM
P0478	Exhaust gas pressure control valve - high input	Wiring short to positive, exhaust gas pressure control valve, ECM
P0479	Exhaust gas pressure control valve - circuit intermittent	Wiring, poor connection, exhaust gas pressure control valve, ECM
P0480	Engine coolant blower motor 1 - circuit malfunction	Wiring, engine coolant blower motor, ECM
P0481	Engine coolant blower motor 2 - circuit malfunction	Wiring, engine coolant blower motor, ECM
P0482	Engine coolant blower motor 3 - circuit malfunction	Wiring, engine coolant blower motor, ECM
P0483	Engine coolant blower motor, rationality check - malfunction	Wiring, engine coolant blower motor, ECM
P0484	Engine coolant blower motor - circuit over current	Wiring, engine coolant blower motor, ECM
P0485	Engine coolant blower motor, power/earth - circuit malfunction	Wiring, engine coolant blower motor, ECM

P0486	Exhaust gas recirculation (EGR) valve position sensor B - circuit malfunction	Wiring, poor connection, EGR valve position sensor, ECM
P0487	Exhaust gas recirculation (EGR) system, throttle position control - circuit malfunction	Wiring, poor connection, ECM
P0488	Exhaust gas recirculation (EGR) system, throttle position control - range/performance	Wiring, poor connection, ECM
P0489	Exhaust gas recirculation (EGR) system - circuit low	Wiring short to earth, EGR valve
P0490	Exhaust gas recirculation (EGR) system - circuit high	Wiring short to positive, EGR valve
P0491	Secondary air injection (AIR) system, bank 1 - malfunction	Wiring, AIR solenoid, hose connections, mechanical fault
P0492	Secondary air injection (AIR) system, bank 2 - malfunction	Wiring, AIR solenoid, hose connections, mechanical fault
P0493	Engine coolant blower motor over-speed (clutch locked)	Blower motor clutch, mechanical fault
P0494	Engine coolant blower motor speed - low	Wiring, relay, blower motor, mechanical fault
P0495	Engine coolant blower motor speed - high	Wiring, relay, blower motor, mechanical fault
P0496	Evaporative emission (EVAP) system - high purge flow	Wiring, EVAP valve, mechanical fault
P0497	Evaporative emission (EVAP) system - low purge flow	Wiring, EVAP valve, hoses blocked, mechanical fault
P0498	Evaporative emission (EVAP) system, vent control - circuit low	Wiring short to earth, EVAP valve
P0499	Evaporative emission (EVAP) system, vent control - circuit high	Wiring short to positive, EVAP valve
P0500	Vehicle speed sensor (VSS) - circuit malfunction	Wiring, VSS, ECM
P0501	Vehicle speed sensor (VSS) - range/performance problem	Wiring, speedometer, VSS, CAN data bus
P0502	Vehicle speed sensor (VSS) - low input	Wiring short to earth, VSS, ECM
P0503	Vehicle speed sensor (VSS) - intermittent/erratic/high input	Wiring, poor connection, other connected system, instrument panel, VSS
P0504	Brake switch - A/B correlation	Wiring, mechanical fault
P0505	Idle speed control (ISC) system - malfunction	Wiring, ISC actuator/IAC valve, throttle motor, throttle valve tight/sticking, ECM
P0506	Idle speed control (ISC) system - rpm lower than expected	Wiring, ISC actuator/IAC valve, throttle motor, throttle valve tight/sticking, ECM
P0507	Idle speed control (ISC) system - rpm higher than expected	Wiring, ISC actuator/IAC valve, throttle motor, throttle valve tight/sticking, ECM
P0508	Idle air control (IAC) - circuit low	Wiring short to earth, IAC valve, ECM
P0509	Idle air control (IAC) - circuit high	Wiring short to positive, IAC valve, ECM
P0510	Closed throttle position (CTP) switch - circuit malfunction	Wiring, CTP switch, ECM
P0511	Idle air control (IAC) - circuit malfunction	Wiring, poor connection, IAC valve, ECM
P0512	Starter request circuit - malfunction	Wiring, immobilizer system, relay
P0513	Incorrect immobilizer key	Immobilizer system
P0514	Battery temperature sensor - circuit range/performance	Wiring, poor connection, battery temperature sensor
P0515	Battery temperature sensor - circuit malfunction	Wiring, poor connection, battery temperature sensor
P0516	Battery temperature sensor - circuit low	Wiring short to earth, battery temperature sensor, ECM
P0517	Battery temperature sensor - circuit high	Wiring short to positive, battery temperature sensor, ECM
P0518	Idle air control (IAC) - circuit intermittent	Wiring, poor connection, IAC valve, ECM
P0519	Idle air control (IAC) - circuit performance	Wiring, poor connection, IAC valve, ECM
P0520	Engine oil pressure sensor/switch - circuit malfunction	Wiring, engine oil pressure sensor/switch, ECM
P0521	Engine oil pressure sensor/switch - range/performance problem	Engine oil pressure sensor/switch
P0522	Engine oil pressure sensor/switch - low voltage	Wiring short to earth, engine oil pressure sensor/switch, ECM

P0523	Engine oil pressure sensor/switch - high voltage	Wiring short to positive, engine oil pressure sensor/switch, ECM
P0524	Engine oil pressure too low	Mechanical fault
P0525	Cruise control system, actuator control - circuit range/performance	Wiring, poor connection, cruise control actuator
P0526	Engine coolant blower motor speed sensor - circuit malfunction	Wiring, poor connection, blower motor speed sensor, ECM
P0527	Engine coolant blower motor speed sensor - circuit range/performance	Wiring, poor connection, blower motor speed sensor
P0528	Engine coolant blower motor speed sensor - no signal	Wiring, poor connection, blower motor speed sensor, ECM
P0529	Engine coolant blower motor speed sensor - circuit intermittent	Wiring, poor connection, ECM
P0530	AC refrigerant pressure sensor - circuit malfunction	Wiring, AC refrigerant pressure sensor, ECM
P0531	AC refrigerant pressure sensor - range/performance problem	AC refrigerant pressure sensor
P0532	AC refrigerant pressure sensor - low input	AC refrigerant pressure too low (incorrectly charged), wiring, AC refrigerant pressure sensor, ECM
P0533	AC refrigerant pressure sensor - high input	AC refrigerant pressure too high (cooling fault/incorrectly charged), wiring, AC refrigerant pressure sensor, ECM
P0534	AC refrigerant charge loss	AC leak, wiring, AC refrigerant pressure sensor
P0535	AC evaporator temperature sensor - circuit malfunction	Wiring, poor connection, AC evaporator temperature sensor, ECM
P0536	AC evaporator temperature sensor - circuit range/performance	Wiring, poor connection, AC evaporator temperature sensor, ECM
P0537	AC evaporator temperature sensor - circuit low	Wiring short to earth, AC evaporator temperature sensor, ECM
P0538	AC evaporator temperature sensor - circuit high	Wiring short to positive, AC evaporator temperature sensor, ECM
P0539	AC evaporator temperature sensor - circuit intermittent	Wiring, poor connection, AC evaporator temperature sensor, ECM
P0540	Intake air heater A - circuit malfunction	Wiring, relay, intake air heater
P0541	Intake air heater A - circuit low	Wiring short to earth, intake air heater
P0542	Intake air heater A - circuit high	Wiring short to positive, intake air heater
P0543	Intake air heater A - circuit open	Wiring, intake air heater
P0544	Exhaust gas recirculation temperature (EGRT) sensor, bank 1 - circuit malfunction	Wiring, EGRT sensor, ECM
P0545	Exhaust gas recirculation temperature (EGRT) sensor, bank 1 - low input	Wiring short to earth, EGRT sensor, ECM
P0546	Exhaust gas recirculation temperature (EGRT) sensor, bank 1 - high input	Wiring short to positive, EGRT sensor, ECM
P0547	Exhaust gas temperature sensor, bank 2 sensor 1 - circuit malfunction	Wiring, poor connection, exhaust gas temperature sensor, ECM
P0548	Exhaust gas temperature sensor, bank 2 sensor 1 - circuit low	Wiring short to earth, exhaust gas temperature sensor, ECM
P0549	Exhaust gas temperature sensor, bank 2 sensor 1 - circuit high	Wiring short to positive, exhaust gas temperature sensor, ECM
P0550	Power steering pressure (PSP) sensor/switch - circuit malfunction	Wiring, PSP sensor/switch, ECM
P0551	Power steering pressure (PSP) sensor/switch - range/performance problem	PAS system, PSP sensor/switch
P0552	Power steering pressure (PSP) sensor/switch - low input	Wiring short to earth, PSP sensor/switch, ECM
P0553	Power steering pressure (PSP) sensor/switch - high input	Wiring short to positive, PSP sensor/switch, ECM

P0554	Power steering pressure (PSP) sensor/switch - circuit intermittent	Wiring, poor connection, PSP sensor/switch, ECM
P0555	Brake servo pressure sensor - circuit malfunction	Wiring, poor connection, brake servo pressure sensor, ECM
P0556	Brake servo pressure sensor - circuit range/performance	Wiring, poor connection, brake servo pressure sensor, ECM
P0557	Brake servo pressure sensor - circuit low input	Wiring short to earth, brake servo pressure sensor, ECM
P0558	Brake servo pressure sensor - circuit high input	Wiring short to positive, brake servo pressure sensor, ECM
P0559	Brake servo pressure sensor - circuit intermittent	Wiring, poor connection, brake servo pressure sensor, ECM
P0560	System voltage - malfunction	Wiring, poor connection, battery, alternator
P0561	System voltage - unstable	Wiring, poor connection, battery, alternator
P0562	System voltage - low	Wiring, poor connection, battery, alternator
P0563	System voltage - high	Alternator
P0564	Cruise control system, multi-function switch input A - circuit malfunction	Wiring, poor connection, multi-function switch, mechanical fault
P0565	Cruise control master switch, ON signal - malfunction	Wiring, cruise control master switch, ECM
P0566	Cruise control master switch, OFF signal - malfunction	Wiring, cruise control master switch, ECM
P0567	Cruise control selector switch, RESUME signal - malfunction	Wiring, cruise control selector switch, ECM
P0568	Cruise control master switch, SET signal - malfunction	Wiring, cruise control master switch, ECM
P0569	Cruise control selector switch, COAST signal - malfunction	Wiring, cruise control selector switch, ECM
P0570	Cruise control system, APP sensor signal - malfunction	Wiring, APP sensor, ECM
P0571	Cruise/brake switch A - circuit malfunction	Wiring, cruise/brake switch, ECM
P0572	Cruise/brake switch A - circuit low	Wiring short to earth, cruise/brake switch, ECM
P0573	Cruise/brake switch A - circuit high	Wiring short to positive, cruise/brake switch, ECM
P0574	Cruise control system - vehicle speed too high	Mechanical fault
P0575	Cruise control system - input circuit malfunction	Wiring, poor connection, mechanical fault, ECM
P0576	Cruise control system - input circuit low	Wiring short to earth
P0577	Cruise control system - input circuit high	Wiring short to positive
P0578	Cruise control system, multi-function switch input A - circuit stuck	Wiring, poor connection, multi-function switch, mechanical fault
P0579	Cruise control system, multi-function switch input A - circuit range/performance	Wiring, poor connection, multi-function switch, mechanical fault
P0580	Cruise control system, multi-function switch input A - circuit low	Wiring short to earth, multi-function switch, mechanical fault
P0581	Cruise control system, multi-function switch input A - circuit high	Wiring short to positive, multi-function switch, mechanical fault
P0582	Cruise control system, vacuum control - circuit open	Wiring, vacuum control solenoid
P0583	Cruise control system, vacuum control - circuit low	Wiring short to earth, vacuum control solenoid
P0584	Cruise control system, vacuum control - circuit high	Wiring short to positive, vacuum control solenoid
P0585	Cruise control system, multi-function switch input A/B - correlation	Mechanical fault
P0586	Cruise control system, vent control - circuit open	Wiring, vent control solenoid
P0587	Cruise control system, vent control - circuit low	Wiring short to earth, vent control solenoid
P0588	Cruise control system, vent control - circuit high	Wiring short to positive, vent control solenoid
P0589	Cruise control system, multi-function switch input B - circuit malfunction	Wiring, poor connection, multi-function switch, mechanical fault

P0590	Cruise control system, multi-function switch input B - circuit stuck	Wiring, poor connection, multi-function switch, mechanical fault
P0591	Cruise control system, multi-function switch input B - circuit range/performance	Wiring, poor connection, multi-function switch, mechanical fault
P0592	Cruise control system, multi-function switch input B - circuit low	Wiring short to earth, multi-function switch, mechanical fault
P0593	Cruise control system, multi-function switch input B - circuit high	Wiring short to positive, multi-function switch, mechanical fault
P0594	Cruise control system, actuator control - circuit open	Wiring, actuator
P0595	Cruise control system, actuator control - circuit low	Wiring short to earth, actuator
P0596	Cruise control system, actuator control - circuit high	Wiring short to positive, actuator
P0597	Thermostat heater control system - circuit open	Wiring, relay, thermostat heater
P0598	Thermostat heater control system - circuit low	Wiring short to earth, relay, thermostat heater
P0599	Thermostat heater control system - circuit high	Wiring short to positive, relay, thermostat heater
P0600	CAN data bus - malfunction	Wiring, connected system, ECM
P0601	Engine control module (ECM) - memory check sum error	ECM
P0602	Engine control module (ECM) - programming error	ECM
P0603	Engine control module (ECM) - KAM error	ECM
P0604	Engine control module (ECM) - RAM error	ECM
P0605	Engine control module (ECM) - ROM error	ECM
P0606	Engine control module (ECM)/powertrain control module (PCM) - processor fault	ECM/PCM
P0607	Control module - performance problem	Control module
P0608	Engine control module (ECM), VSS output A - malfunction	ECM
P0609	Engine control module (ECM), VSS output B - malfunction	ECM
P0610	Control module - vehicle options error	Control module
P0611	Fuel injector control module - performance problem	Fuel injector control module
P0612	Fuel injector control module - control relay circuit	Wiring, relay, fuel injector control module
P0613	Transmission control module (TCM) - processor error	TCM
P0614	Engine control module (ECM)/transmission control module (TCM) - mismatch	ECM/TCM
P0615	Starter motor relay - circuit malfunction	Wiring, poor connection, starter motor relay, ECM
P0616	Starter motor relay - circuit low	Wiring short to earth, starter motor relay, ECM
P0617	Starter motor relay - circuit high	Wiring short to positive, starter motor relay, ECM
P0618	Alternative fuel control module - KAM error	Alternative fuel control module
P0619	Alternative fuel control module - RAM/ROM error	Alternative fuel control module
P0620	Alternator, control - circuit malfunction	Wiring, alternator, battery, ECM
P0621	Alternator warning lamp - circuit malfunction	Wiring, alternator warning lamp, ECM
P0622	Alternator, field control - circuit malfunction	Wiring, alternator, battery, ECM
P0623	Generator control lamp - circuit malfunction	Wiring, poor connection, bulb, ECM
P0624	Filler cap control lamp - circuit malfunction	Wiring, poor connection, bulb, ECM
P0625	Generator field terminal - circuit low	Wiring short to earth, generator
P0626	Generator field terminal - circuit high	Wiring short to positive, generator
P0627	Fuel pump control - circuit open	Wiring, relay, fuel pump
P0628	Fuel pump control - circuit low	Wiring short to earth, relay, fuel pump
P0629	Fuel pump control - circuit high	Wiring short to positive, relay, fuel pump
P0630	VIN not programmed or mismatch - ECM/PCM	ECM/PCM
P0631	VIN not programmed or mismatch - TCM	TCM
P0632	Odometer not programmed - ECM/PCM	ECM/PCM

P0633	Immobilizer key not programmed - ECM/PCM	ECM/PCM
P0634	PCM/ECM/TCM - internal temperature too high	Mechanical fault, PCM/ECM/TCM
P0635	Power steering control - circuit malfunction	Wiring, poor connection, power steering pressure (PSP) switch, ECM
P0636	Power steering control - circuit low	Wiring short to earth, power steering pressure (PSP)switch, ECM
P0637	Power steering control - circuit high	Wiring short to positive, power steering pressure (PSP)switch, ECM
P0638	Throttle actuator control, bank 1 - range/performance problem	Basic setting not carried out (if applicable), ISC actuator/throttle motor, APP sensor
P0639	Throttle actuator control, bank 2 - range/performance	Wiring, throttle control unit
P0640	Intake air heater control - circuit malfunction	Wiring, relay, intake air heater
P0641	Sensor reference voltage A - circuit open	Wiring short to positive
P0642	Engine control module (ECM), knock control - defective	ECM
P0643	Sensor reference voltage A - circuit high	Wiring short to positive
P0644	Driver display, serial communication - circuit malfunction	Wiring, CAN data bus, ECM
P0645	Air conditioning (AC)	Wiring, AC system
P0646	AC compressor clutch relay - circuit low	Wiring short to earth, AC compressor clutch relay
P0647	AC compressor clutch relay - circuit high	Wiring short to positive, AC compressor clutch relay
P0648	Immobilizer control lamp - circuit malfunction	Wiring, poor connection, bulb, ECM
P0649	Cruise control lamp - circuit	Wiring, poor connection, bulb, ECM
P0650	Malfunction indicator lamp (MIL) - circuit malfunction	Wiring, MIL, ECM
P0651	Sensor reference voltage B - circuit open	Wiring short to positive
P0652	Sensor reference voltage B - circuit low	Wiring short to earth
P0653	Sensor reference voltage B - circuit high	Wiring short to positive
P0654	Engine rpm, output - circuit malfunction	Wiring, ECM
P0655	Engine hot lamp output - circuit malfunction	Wiring, engine hot lamp, ECM
P0656	Fuel level output - circuit malfunction	Wiring, ECM
P0657	Actuator supply voltage - circuit open	Wiring
P0658	Actuator supply voltage - circuit low	Wiring short to earth, actuator
P0659	Actuator supply voltage - circuit high	Wiring short to positive, actuator
P0660	Intake manifold air control solenoid, bank 1 - circuit open	Wiring, intake manifold air control solenoid
P0661	Intake manifold air control solenoid, bank 1 - circuit low	Wiring short to earth, intake manifold air control solenoid
P0662	Intake manifold air control solenoid, bank 1 - circuit high	Wiring short to positive, intake manifold air control solenoid
P0663	Intake manifold air control solenoid, bank 2 - circuit open	Wiring, intake manifold air control solenoid
P0664	Intake manifold air control solenoid, bank 2 - circuit low	Wiring short to earth, intake manifold air control solenoid
P0665	Intake manifold air control solenoid, bank 2 - circuit high	Wiring short to positive, intake manifold
P0666	PCM/ECM/TCM internal temperature sensor - circuit malfunction	Wiring, poor connection, internal temperature sensor, ECM
P0667	PCM/ECM/TCM internal temperature sensor - range/performance	Wiring, poor connection, internal temperature sensor, ECM
P0668	PCM/ECM/TCM internal temperature sensor - circuit low	Wiring short to earth, internal temperature sensor, ECM
P0669	PCM/ECM/TCM internal temperature sensor - circuit high	Wiring short to positive, internal temperature sensor, ECM
P0670	Glow plug control module - circuit malfunction	Wiring, poor connection, glow plug control module, glow plug, ECM
P0671	Glow plug, cylinder 1 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM

P0672	Glow plug, cylinder 2 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0673	Glow plug, cylinder 3 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0674	Glow plug, cylinder 4 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0675	Glow plug, cylinder 5 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0676	Glow plug, cylinder 6 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0677	Glow plug, cylinder 7 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0678	Glow plug, cylinder 8 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0679	Glow plug, cylinder 9 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0680	Glow plug, cylinder 10 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0681	Glow plug, cylinder 11 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0682	Glow plug, cylinder 12 - circuit malfunction	Wiring, poor connection, relay, glow plug control module, glow plug, ECM
P0683	Glow plug control module/ECM/PCM communication - malfunction	Wiring, poor connection, glow plug control module, ECM/PCM
P0684	Glow plug control module/ECM/PCM communication - range/performance	Wiring, poor connection, glow plug control module, ECM/PCM
P0685	ECM/PCM power relay - circuit open	Wiring, ECM/PCM power relay
P0686	ECM/PCM power relay - circuit low	Wiring short to earth, ECM/PCM power relay, ECM
P0687	Engine control relay - short to earth	Wiring short to earth, engine control relay, ECM
P0688	Engine control relay - short to positive	Wiring short to positive, engine control relay, ECM
P0689	ECM/PCM power relay - sense circuit low	Wiring short to earth, ECM/PCM power relay, ECM
P0690	ECM/PCM power relay - sense circuit high	Wiring short to positive, ECM/PCM power relay, ECM
P0691	Engine coolant blower motor 1 - short to earth	Wiring short to earth, engine coolant blower motor, ECM
P0692	Engine coolant blower motor 1 - short to positive	Wiring short to positive, engine coolant blower motor, ECM
P0693	Engine coolant blower motor 2 - short to earth	Wiring short to earth, engine coolant blower motor, ECM
P0694	Engine coolant blower motor 2 - short to positive	Wiring short to positive, engine coolant blower motor, ECM
P0695	Engine coolant blower motor 3 - control circuit low	Wiring short to earth, blower motor
P0696	Engine coolant blower motor 3 - control circuit high	Wiring short to positive, blower motor
P0697	Sensor reference voltage C - circuit open	Wiring short to positive
P0698	Sensor reference voltage C - circuit low	Wiring short to earth
P0699	Sensor reference voltage C - circuit high	Wiring short to positive
P0700	Transmission control system - malfunction	Wiring, ECM/PCM/TCM
P0701	Transmission control system - range/performance problem	Wiring, ECM/PCM/TCM
P0702	Transmission control system - electrical	Wiring, ECM/PCM/TCM
P0703	Torque converter/brake switch B - circuit malfunction	Wiring, torque converter/brake switch, ECM/PCM/TCM
P0704	Clutch pedal position (CPP) switch - circuit malfunction	Wiring, CPP switch, ECM/PCM/TCM
P0705	Transmission range (TR) sensor/switch, PRNDL input - circuit malfunction	Wiring, TR sensor/switch, ECM/PCM/TCM

P0706	Transmission range (TR) sensor/switch - range/performance problem	Wiring, TR sensor/switch
P0707	Transmission range (TR) sensor/switch - low input	Wiring short to earth, TR sensor/switch, ECM/PCM/TCM
P0708	Transmission range (TR) sensor/switch - high input	Wiring short to positive, TR sensor/switch, ECM/PCM/TCM
P0709	Transmission range (TR) sensor/switch - circuit intermittent	Wiring, poor connection, TR sensor/switch, ECM/PCM/TCM
P0710	Transmission fluid temperature (TFT) sensor - circuit malfunction	Wiring, TFT sensor, ECM, ECM/PCM/TCM
P0711	Transmission fluid temperature (TFT) sensor - range/performance problem	Wiring, TFT sensor
P0712	Transmission fluid temperature (TFT) sensor - low input	Wiring short to earth, TFT sensor, ECM/PCM/TCM
P0713	Transmission fluid temperature (TFT) sensor - high input	Wiring short to positive, TFT sensor, ECM/PCM/TCM
P0714	Transmission fluid temperature (TFT) sensor - circuit intermittent	Wiring, poor connection, TFT sensor, ECM/PCM/TCM
P0715	Turbine shaft speed (TSS) sensor - circuit malfunction	Wiring, TSS sensor, ECM/PCM/TCM
P0716	Turbine shaft speed (TSS) sensor - range/performance problem	Wiring, TSS sensor
P0717	Turbine shaft speed (TSS) sensor - no signal	Wiring, TSS sensor, ECM/PCM/TCM
P0718	Turbine shaft speed (TSS) sensor - circuit intermittent	Wiring, poor connection, TSS sensor, ECM/PCM/TCM
P0719	Torque converter/brake switch B - circuit low	Wiring short to earth, torque converter/brake switch, ECM/PCM/TCM
P0720	Vehicle speed sensor (VSS) - circuit malfunction	Wiring, VSS, ECM/PCM/TCM
P0721	Vehicle speed sensor (VSS) - range/performance problem	Wiring, VSS
P0722	Vehicle speed sensor (VSS) - no signal	Wiring, VSS, ECM/PCM/TCM
P0723	Vehicle speed sensor (VSS) - circuit intermittent	Wiring, poor connection, VSS, ECM/PCM/TCM
P0724	Torque converter/brake switch B - circuit high	Wiring short to positive, torque converter/brake switch, ECM/PCM/TCM
P0725	Engine RPM input - circuit malfunction	Wiring, CKP/RPM sensor, ECM/PCM/TCM
P0726	Engine RPM input - range/performance problem	Wiring, CKP/RPM sensor
P0727	Engine RPM input - no signal	Wiring, CKP/RPM sensor, ECM/PCM/TCM
P0728	Engine RPM input - circuit intermittent	Wiring, poor connection, CKP/RPM sensor, ECM/PCM/TCM
P0730	Incorrect gear ratio	Wiring, TR sensor/switch, shift solenoids, transmission mechanical fault
P0731	Gear 1 - incorrect ratio	Wiring, TR sensor/switch, shift solenoids, transmission mechanical fault
P0732	Gear 2 - incorrect ratio	Wiring, TR sensor/switch, shift solenoids, transmission mechanical fault
P0733	Gear 3 - incorrect ratio	Wiring, TR sensor/switch, shift solenoids, transmission mechanical fault
P0734	Gear 4 - incorrect ratio	Wiring, TR sensor/switch, shift solenoids, transmission mechanical fault
P0735	Gear 5 - incorrect ratio	Wiring, TR sensor/switch, shift solenoids, transmission mechanical fault
P0736	Reverse - incorrect ratio	Wiring, TR sensor/switch, shift solenoids, transmission mechanical fault
P0737	TCM engine speed - output circuit	Wiring, TCM
P0738	TCM engine speed - output circuit low	Wiring, TCM
P0739	TCM engine speed - output circuit high	Wiring, TCM
P0740	Torque converter clutch (TCC) solenoid - circuit malfunction	Wiring, TCC solenoid, ECM/PCM/TCM

P0741	Torque converter clutch (TCC) solenoid - performance or stuck off	Wiring, TCC solenoid
P0742	Torque converter clutch (TCC) solenoid - stuck on	Wiring, TCC solenoid
P0743	Torque converter clutch (TCC) solenoid - electrical	Wiring, TCC solenoid, ECM/PCM/TCM
P0744	Torque converter clutch (TCC) solenoid - circuit intermittent	Wiring, poor connection, TCC solenoid, ECM/PCM/TCM
P0745	Transmission fluid pressure (TFP) solenoid - circuit malfunction	Wiring, TFP solenoid, ECM/PCM/TCM
P0746	Transmission fluid pressure (TFP) solenoid - performance or stuck off	Wiring, TFP solenoid
P0747	Transmission fluid pressure (TFP) solenoid - stuck on	Wiring, TFP solenoid
P0748	Transmission fluid pressure (TFP) solenoid - electrical	Wiring, TFP solenoid, ECM/PCM/TCM
P0749	Transmission fluid pressure (TFP) solenoid - circuit intermittent	Wiring, poor connection, TFP solenoid, ECM/PCM/TCM
P0750	Shift solenoid (SS) A - circuit malfunction	Wiring, shift solenoid, ECM/PCM/TCM
P0751	Shift solenoid (SS) A - performance or stuck off	Wiring, shift solenoid
P0752	Shift solenoid (SS) A - stuck on	Wiring, shift solenoid
P0753	Shift solenoid (SS) A - electrical	Wiring, shift solenoid, ECM/PCM/TCM
P0754	Shift solenoid (SS) A - circuit intermittent	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0755	Shift solenoid (SS) B - circuit malfunction	Wiring, shift solenoid, ECM/PCM/TCM
P0756	Shift solenoid (SS) B - performance or stuck off	Wiring, shift solenoid
P0757	Shift solenoid (SS) B - stuck on	Wiring, shift solenoid
P0758	Shift solenoid (SS) B - electrical	Wiring, shift solenoid, ECM/PCM/TCM
P0759	Shift solenoid (SS) B - circuit intermittent	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0760	Shift solenoid (SS) C - circuit malfunction	Wiring, shift solenoid, ECM/PCM/TCM
P0761	Shift solenoid (SS) C - performance or stuck off	Wiring, shift solenoid
P0762	Shift solenoid (SS) C - stuck on	Wiring, shift solenoid
P0763	Shift solenoid (SS) C - electrical	Wiring, shift solenoid, ECM/PCM/TCM
P0764	Shift solenoid (SS) C - circuit intermittent	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0765	Shift solenoid (SS) D - circuit malfunction	Wiring, shift solenoid, ECM/PCM/TCM
P0766	Shift solenoid (SS) D - performance or stuck off	Wiring, shift solenoid
P0767	Shift solenoid (SS) D - stuck on	Wiring, shift solenoid
P0768	Shift solenoid (SS) D - electrical	Wiring, shift solenoid, ECM/PCM/TCM
P0769	Shift solenoid (SS) D - circuit intermittent	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0770	Shift solenoid (SS) E - circuit malfunction	Wiring, shift solenoid, ECM/PCM/TCM
P0771	Shift solenoid (SS) E - performance or stuck off	Wiring, shift solenoid
P0772	Shift solenoid (SS) E - stuck on	Wiring, shift solenoid
P0773	Shift solenoid (SS) E - electrical	Wiring, shift solenoid, ECM/PCM/TCM
P0774	Shift solenoid (SS) E - circuit intermittent	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0775	Pressure control solenoid B - malfunction	Pressure control solenoid
P0776	Pressure control solenoid B - performance or stuck off	Wiring, pressure control solenoid
P0777	Pressure control solenoid B - stuck on	Wiring, pressure control solenoid
P0778	Pressure control solenoid B - electrical malfunction	Wiring, pressure control solenoid
P0779	Pressure control solenoid B - circuit intermittent	Wiring, poor connection, pressure control solenoid
P0780	Gear selection - shift malfunction	Wiring, TR sensor, shift solenoids, transmission mechanical fault
P0781	Gear selection, 1-2 - shift malfunction	Wiring, TR sensor, shift solenoids, transmission mechanical fault

P0782	Gear selection, 2-3 - shift malfunction	Wiring, TR sensor, shift solenoids, transmission mechanical fault
P0783	Gear selection, 3-4 - shift malfunction	Wiring, TR sensor, shift solenoids, transmission mechanical fault
P0784	Gear selection, 4-5 - shift malfunction	Wiring, TR sensor, shift solenoids, transmission mechanical fault
P0785	Shift/timing solenoid - circuit malfunction	Wiring, shift/timing solenoid, ECM/PCM/TCM
P0786	Shift/timing solenoid - range/performance problem	Wiring, shift/timing solenoid
P0787	Shift/timing solenoid - low	Wiring short to earth, shift/timing solenoid, ECM/PCM/TCM
P0788	Shift/timing solenoid - high	Wiring short to positive, shift/timing solenoid, ECM/PCM/TCM
P0789	Shift/timing solenoid - intermittent	Wiring, poor connection, shift/timing solenoid, ECM/PCM/TCM
P0790	Transmission mode selection switch - circuit malfunction	Wiring, transmission mode selection switch, ECM/PCM/TCM
P0791	Intermediate shaft speed sensor - circuit malfunction	Wiring, poor connection, intermediate shaft speed sensor, ECM/PCM/TCM
P0792	Intermediate shaft speed sensor - range/performance problem	Wiring, poor connection, intermediate shaft speed sensor, ECM/PCM/TCM
P0793	Intermediate shaft speed sensor - no signal	Wiring, poor connection, short to earth, intermediate shaft speed sensor, ECM/PCM/TCM
P0794	Intermediate shaft speed sensor - intermittent circuit malfunction	Wiring, poor connection, intermediate shaft speed sensor, ECM/PCM/TCM
P0795	Transmission fluid pressure (TFP) solenoid C - circuit malfunction	Wiring, poor connection, TFP solenoid, ECM/PCM/TCM
P0796	Transmission fluid pressure (TFP) solenoid C - performance or stuck off	Wiring, poor connection, TFP solenoid, ECM/PCM/TCM
P0797	Transmission fluid pressure (TFP) solenoid C - stuck on	Wiring, poor connection, TFP solenoid, ECM/PCM/TCM
P0798	Transmission fluid pressure (TFP) solenoid C - electrical malfunction	Wiring, poor connection, TFP solenoid, ECM/PCM/TCM
P0799	Transmission fluid pressure (TFP) solenoid C - intermittent circuit malfunction	Wiring, poor connection, ECM/PCM/TCM
P0800	Transfer box control system, MIL request - malfunction	Wiring, mechanical fault
P0801	Reverse inhibit circuit - malfunction	Wiring, poor connection
P0802	Transmission control system, MIL request - circuit open	Wiring, mechanical fault
P0803	1-4 Upshift (Skip shift) solenoid - circuit malfunction	Wiring, poor connection, upshift solenoid
P0804	1-4 Upshift (Skip shift) warning lamp - circuit malfunction	Wiring, poor connection
P0805	Clutch position sensor - circuit malfunction	Wiring, poor connection, clutch position sensor, ECM/PCM/TCM
P0806	Clutch position sensor - range/performance problem	Wiring, poor connection, clutch position sensor, ECM/PCM/TCM
P0807	Clutch position sensor - low input	Wiring, short to earth, clutch position sensor, ECM/PCM/TCM
P0808	Clutch position sensor - high input	Wiring, short to positive, clutch position sensor, ECM/PCM/TCM
P0809	Clutch position sensor - intermittent circuit malfunction	Wiring, poor connection, clutch position sensor, ECM/PCM/TCM
P0810	Clutch position control error	Wiring, poor connection, ECM/PCM/TCM
P0811	Excessive clutch slip	Wiring, poor connection, mechanical fault, ECM/PCM/TCM
P0812	Reverse gear - input circuit malfunction	Wiring, poor connection, ECM/PCM/TCM
P0813	Reverse gear - output circuit malfunction	Wiring, poor connection, ECM/PCM/TCM

P0814	Transmission range (TR) display - circuit malfunction	Wiring, poor connection, TR sensor, ECM/PCM/TCM
P0815	Upshift switch - circuit malfunction	Wiring, poor connection, upshift switch, ECM/PCM/TCM
P0816	Downshift switch - circuit malfunction	Wiring, poor connection, downshift switch, ECM/PCM/TCM
P0817	Starter disable circuit - malfunction	Wiring, poor connection, ECM/PCM/TCM
P0818	Driveline disconnect switch - circuit malfunction	Wiring, poor connection, upshift switch, ECM/PCM/TCM
P0819	Up/down shift switch to transmission range correlation	Wiring, poor connection, TR sensor, ECM/PCM/TCM
P0820	Gear lever X-Y position sensor - circuit malfunction	Wiring, poor connection, gear lever position sensor, ECM/PCM/TCM
P0821	Gear lever X position sensor - circuit malfunction	Wiring, poor connection, gear lever position sensor, ECM/PCM/TCM
P0822	Gear lever Y position sensor - circuit malfunction	Wiring, poor connection, gear lever position sensor, ECM/PCM/TCM
P0823	Gear lever X position sensor - circuit intermittent	Wiring, poor connection, gear lever position sensor, ECM/PCM/TCM
P0824	Gear lever Y position sensor - circuit intermittent	Wiring, poor connection, gear lever position sensor, ECM/PCM/TCM
P0825	Gear lever push-pull switch - circuit malfunction	Wiring, poor connection, gear lever push-pull switch, ECM/PCM/TCM
P0826	Up/down shift switch - input circuit	Wiring, up/down shift switch
P0827	Up/down shift switch - input circuit low	Wiring short to earth, up/down shift switch
P0828	Up/down shift switch - input circuit high	Wiring short to positive, up/down shift switch
P0829	5-6 Upshift	Mechanical fault
P0830	Clutch pedal position (CPP) switch A - circuit malfunction	Wiring, poor connection, CPP switch, ECM/PCM/TCM
P0831	Clutch pedal position (CPP) switch A - low input	Wiring, short to earth, CPP switch, ECM/PCM/TCM
P0832	Clutch pedal position (CPP) switch A - high input	Wiring, short to positive, CPP switch, ECM/PCM/TCM
P0833	Clutch pedal position (CPP) switch B - circuit malfunction	Wiring, poor connection, CPP switch, ECM/PCM/TCM
P0834	Clutch pedal position (CPP) switch B - low input	Wiring, short to earth, CPP switch, ECM/PCM/TCM
P0835	Clutch pedal position (CPP) switch B - high input	Wiring, short to positive, CPP switch, ECM/PCM/TCM
P0836	Four wheel drive switch - circuit malfunction	Wiring, poor connection, four wheel drive switch, ECM/PCM/TCM
P0837	Four wheel drive switch - range/performance problem	Wiring, poor connection, four wheel drive switch, ECM/PCM/TCM
P0838	Four wheel drive switch - low input	Wiring, short to earth, four wheel drive switch, ECM/PCM/TCM
P0839	Four wheel drive switch - high input	Wiring, short to positive, four wheel drive switch, ECM/PCM/TCM
P0840	Transmission fluid pressure (TFP) sensor A - circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0840	Transmission fluid pressure (TFP) switch A - circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0841	Transmission fluid pressure (TFP) sensor A - range/performance problem	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0841	Transmission fluid pressure (TFP) switch A - range/performance problem	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0842	Transmission fluid pressure (TFP) sensor A - low input	Wiring, short to earth, TFP sensor, ECM/PCM/TCM
P0842	Transmission fluid pressure (TFP) switch A - low input	Wiring, short to earth, TFP switch, ECM/PCM/TCM
P0843	Transmission fluid pressure (TFP) sensor A - high input	Wiring, short to positive, TFP sensor, ECM/PCM/TCM
P0843	Transmission fluid pressure (TFP) switch A - high input	Wiring, short to positive, TFP switch, ECM/PCM/TCM

P0844	Transmission fluid pressure (TFP) sensor A - intermittent circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0844	Transmission fluid pressure (TFP) switch A - intermittent circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0845	Transmission fluid pressure (TFP) sensor B - circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0845	Transmission fluid pressure (TFP) switch B - circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0846	Transmission fluid pressure (TFP) sensor B - range/performance problem	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0846	Transmission fluid pressure (TFP) switch B - range/performance problem	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0847	Transmission fluid pressure (TFP) sensor B - low input	Wiring, short to earth, TFP sensor, ECM/PCM/TCM
P0847	Transmission fluid pressure (TFP) switch B - low input	Wiring, short to earth, TFP switch, ECM/PCM/TCM
P0848	Transmission fluid pressure (TFP) sensor B - high input	Wiring, short to positive, TFP sensor, ECM/PCM/TCM
P0848	Transmission fluid pressure (TFP) switch B - high input	Wiring, short to positive, TFP switch, ECM/PCM/TCM
P0849	Transmission fluid pressure (TFP) sensor B - intermittent circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0849	Transmission fluid pressure (TFP) switch B - intermittent circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0850	Park/neutral position (PNP) switch - input circuit malfunction	Wiring, PNP switch, ECM/PCM/TCM
P0851	Park/neutral position (PNP) switch - input circuit low	Wiring, short to earth, PNP switch, ECM/PCM/TCM
P0852	Park/neutral position (PNP) switch - input circuit high	Wiring, short to positive, PNP switch, ECM/PCM/TCM
P0853	Drive switch - input circuit malfunction	Wiring, drive switch, ECM/PCM/TCM
P0854	Drive switch - input circuit low	Wiring, short to earth, drive switch, ECM/PCM/TCM
P0855	Drive switch - input circuit high	Wiring, short to positive, drive switch, ECM/PCM/TCM
P0856	Traction control input signal - malfunction	Wiring, poor connection, ECM/PCM/TCM
P0857	Traction control input signal - range/performance problem	Wiring, poor connection, ECM/PCM/TCM
P0858	Traction control input signal - low	Wiring, short to earth, ECM/PCM/TCM
P0859	Traction control input signal - high	Wiring, short to positive, ECM/PCM/TCM
P0860	Gear shift module communication circuit - malfunction	Wiring, poor connection, gear shift module, ECM/PCM/TCM
P0861	Gear shift module communication circuit - low input	Wiring, short to earth, gear shift module, ECM/PCM/TCM
P0862	Gear shift module communication circuit - high input	Wiring, short to positive, gear shift module, ECM/PCM/TCM
P0863	Transmission control module (TCM) communication circuit - malfunction	Wiring, poor connection, TCM
P0864	Transmission control module (TCM) communication circuit - range/performance problem	Wiring, poor connection, TCM
P0865	Transmission control module (TCM) communication circuit - low input	Wiring, short to earth, TCM
P0866	Transmission control module (TCM) communication circuit - high input	Wiring, short to positive, TCM
P0867	Transmission fluid pressure (TFP) sensor	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0868	Transmission fluid pressure (TFP) sensor - low	Wiring, short to earth, TFP sensor, ECM/PCM/TCM
P0869	Transmission fluid pressure (TFP) sensor - high	Wiring, short to positive, TFP sensor, ECM/PCM/TCM
P0870	Transmission fluid pressure (TFP) sensor C - circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0870	Transmission fluid pressure (TFP) switch C - circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM

P0871	Transmission fluid pressure (TFP) sensor C - range/performance	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0871	Transmission fluid pressure (TFP) switch C - range/performance	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0872	Transmission fluid pressure (TFP) sensor C - circuit low	Wiring, short to earth, TFP sensor, ECM/PCM/TCM
P0872	Transmission fluid pressure (TFP) switch C - circuit low	Wiring, short to earth, TFP switch, ECM/PCM/TCM
P0873	Transmission fluid pressure (TFP) sensor C - circuit high	Wiring, short to positive, TFP sensor, ECM/PCM/TCM
P0873	Transmission fluid pressure (TFP) switch C - circuit high	Wiring, short to positive, TFP switch, ECM/PCM/TCM
P0874	Transmission fluid pressure (TFP) sensor C - intermittent circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0874	Transmission fluid pressure (TFP) switch C - intermittent circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0875	Transmission fluid pressure (TFP) sensor D - circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0875	Transmission fluid pressure (TFP) switch D - circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0876	Transmission fluid pressure (TFP) sensor D - range/performance	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0876	Transmission fluid pressure (TFP) switch D - range/performance	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0877	Transmission fluid pressure (TFP) sensor D - circuit low	Wiring, short to earth, TFP sensor, ECM/PCM/TCM
P0877	Transmission fluid pressure (TFP) switch D - circuit low	Wiring, short to earth, TFP switch, ECM/PCM/TCM
P0878	Transmission fluid pressure (TFP) sensor D - circuit high	Wiring, short to positive, TFP sensor, ECM/PCM/TCM
P0878	Transmission fluid pressure (TFP) switch D - circuit high	Wiring, short to positive, TFP switch, ECM/PCM/TCM
P0879	Transmission fluid pressure (TFP) sensor D - intermittent circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0879	Transmission fluid pressure (TFP) switch D - intermittent circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0880	Transmission control module (TCM) - power input signal malfunction	Wiring, poor connection, TCM
P0881	Transmission control module (TCM) - power input signal range/performance	Wiring, poor connection, TCM
P0882	Transmission control module (TCM) - power input signal low	Wiring, short to earth, TCM
P0883	Transmission control module (TCM) - power input signal high	Wiring, short to positive, TCM
P0884	Transmission control module (TCM) - power input signal intermittent malfunction	Wiring, poor connection, TCM
P0885	Transmission control module (TCM) power relay - control circuit open	Wiring, poor connection, TCM power relay, TCM
P0886	Transmission control module (TCM) power relay - control circuit low	Wiring, short to earth, TCM power relay, TCM
P0887	Transmission control module (TCM) power relay - control circuit high	Wiring, short to positive, TCM power relay, TCM
P0888	Transmission control module (TCM) power relay - sense circuit malfunction	Wiring, poor connection, TCM power relay, TCM
P0889	Transmission control module (TCM) power relay - sense circuit range/performance	Wiring, poor connection, TCM power relay, TCM
P0890	Transmission control module (TCM) power relay - sense circuit low	Wiring, short to earth, TCM power relay, TCM
P0891	Transmission control module (TCM) power relay - sense circuit high	Wiring, short to positive, TCM power relay, TCM
P0892	Transmission control module (TCM) power relay - sense circuit intermittent malfunction	Wiring, poor connection, TCM power relay, TCM

P0893	Multiple gears engaged	Mechanical fault
P0894	Transmission component slipping	Mechanical fault
P0895	Shift time too short	Mechanical fault
P0896	Shift time too long	Mechanical fault
P0897	Transmission fluid deteriorated	Mechanical fault
P0898	Transmission control system - MIL request - circuit low	Wiring, poor connection, short to earth
P0899	Transmission control system - MIL request - circuit high	Wiring, poor connection, short to positive
P0900	Clutch actuator - circuit open	Wiring, clutch actuator, ECM/PCM/TCM
P0901	Clutch actuator - circuit range/performance	Wiring, poor connection, clutch actuator, ECM/PCM/TCM
P0902	Clutch actuator - circuit low	Wiring, short to earth, clutch actuator, ECM/PCM/TCM
P0903	Clutch actuator - circuit high	Wiring, short to positive, clutch actuator, ECM/PCM/TCM
P0904	Transmission gate select position circuit - malfunction	Wiring, poor connection, ECM/PCM/TCM
P0905	Transmission gate select position circuit - range/performance	Wiring, poor connection, ECM/PCM/TCM
P0906	Transmission gate select position circuit - low	Wiring, short to earth, ECM/PCM/TCM
P0907	Transmission gate select position circuit - high	Wiring, short to positive, ECM/PCM/TCM
P0908	Transmission gate select position circuit - intermittent circuit malfunction	Wiring, poor connection, ECM/PCM/TCM
P0909	Transmission gate select control error	Mechanical fault
P0910	Transmission gate select actuator - circuit open	Wiring, transmission gate select actuator, ECM/PCM/TCM
P0911	Transmission gate select actuator - circuit range/performance	Wiring, poor connection, transmission gate select actuator, ECM/PCM/TCM
P0912	Transmission gate select actuator - circuit low	Wiring, short to earth, transmission gate select actuator, ECM/PCM/TCM
P0913	Transmission gate select actuator - circuit high	Wiring, short to positive, transmission gate select actuator, ECM/PCM/TCM
P0914	Gear shift position circuit - malfunction	Wiring, poor connection, ECM/PCM/TCM
P0915	Gear shift position circuit - range/performance	Wiring, poor connection, ECM/PCM/TCM
P0916	Gear shift position circuit - low	Wiring, short to earth, ECM/PCM/TCM
P0917	Gear shift position circuit - high	Wiring, short to positive, ECM/PCM/TCM
P0918	Gear shift position circuit - intermittent malfunction	Wiring, poor connection, ECM/PCM/TCM
P0919	Gear shift position control - error	Wiring, poor connection, ECM/PCM/TCM
P0920	Gear shift forward actuator - circuit open	Wiring, gear shift forward actuator, ECM/PCM/TCM
P0921	Gear shift forward actuator - circuit range/performance	Wiring, poor connection, gear shift forward actuator, ECM/PCM/TCM
P0922	Gear shift forward actuator - circuit low	Wiring, short to earth, gear shift forward actuator, ECM/PCM/TCM
P0923	Gear shift forward actuator - circuit high	Wiring, short to positive, gear shift forward actuator, ECM/PCM/TCM
P0924	Gear shift reverse actuator - circuit open	Wiring, gear shift reverse actuator, ECM/PCM/TCM
P0925	Gear shift reverse actuator - circuit range/performance	Wiring, poor connection, gear shift reverse actuator, ECM/PCM/TCM
P0926	Gear shift reverse actuator - circuit low	Wiring, short to earth, gear shift reverse actuator, ECM/PCM/TCM
P0927	Gear shift reverse actuator - circuit high	Wiring, short to positive, gear shift reverse actuator, ECM/PCM/TCM
P0928	Gear shift lock solenoid - circuit open	Wiring, gear shift lock solenoid, ECM/PCM/TCM
P0929	Gear shift lock solenoid - circuit range/performance	Wiring, gear shift lock solenoid, ECM/PCM/TCM

P0930	Gear shift lock solenoid - circuit low	Wiring, short to earth, gear shift lock solenoid, ECM/PCM/TCM
P0931	Gear shift lock solenoid - circuit high	Wiring, short to positive, gear shift lock solenoid, ECM/PCM/TCM
P0932	Hydraulic pressure sensor - circuit malfunction	Wiring, poor connection, hydraulic pressure sensor, ECM/PCM/TCM
P0933	Hydraulic pressure sensor - range/performance	Wiring, hydraulic pressure sensor, ECM/PCM/TCM
P0934	Hydraulic pressure sensor - circuit low input	Wiring, short to earth, hydraulic pressure sensor, ECM/PCM/TCM
P0935	Hydraulic pressure sensor - circuit high input	Wiring, short to positive, hydraulic pressure sensor, ECM/PCM/TCM
P0936	Hydraulic pressure sensor - circuit intermittent	Wiring, poor connection, hydraulic pressure sensor, ECM/PCM/TCM
P0937	Hydraulic oil temperature sensor - circuit malfunction	Wiring, poor connection, hydraulic oil temperature sensor, ECM/PCM/TCM
P0938	Hydraulic oil temperature sensor - range/performance	Wiring, hydraulic oil temperature sensor, ECM/PCM/TCM
P0939	Hydraulic oil temperature sensor - circuit low input	Wiring, short to earth, hydraulic oil temperature sensor, ECM/PCM/TCM
P0940	Hydraulic oil temperature sensor - circuit high input	Wiring, short to positive, hydraulic oil temperature sensor, ECM/PCM/TCM
P0941	Hydraulic oil temperature sensor - circuit intermittent	Wiring, poor connection, hydraulic oil temperature sensor, ECM/PCM/TCM
P0942	Hydraulic pressure unit	Mechanical fault
P0943	Hydraulic pressure unit - cycling period too short	Mechanical fault
P0944	Hydraulic pressure unit - loss of pressure	Mechanical fault
P0945	Hydraulic pump relay - circuit open	Wiring, hydraulic pump relay, ECM/PCM/TCM
P0946	Hydraulic pump relay - circuit range/performance	Wiring, hydraulic pump relay, ECM/PCM/TCM
P0947	Hydraulic pump relay - circuit low	Wiring, short to earth, hydraulic pump relay, ECM/PCM/TCM
P0948	Hydraulic pump relay - circuit high	Wiring, short to positive, hydraulic pump relay, ECM/PCM/TCM
P0949	ASM - adaptive learning not done	ECM/PCM/TCM
P0950	ASM control circuit	Wiring, poor connection, ECM/PCM/TCM
P0951	ASM control circuit - range/performance	Wiring, poor connection, ECM/PCM/TCM
P0952	ASM control circuit - low	Wiring, poor connection, short to earth, ECM/PCM/TCM
P0953	ASM control circuit - high	Wiring, poor connection, short to positive, ECM/PCM/TCM
P0954	ASM - intermittent circuit malfunction	Wiring, poor connection, ECM/PCM/TCM
P0955	ASM mode circuit - malfunction	Wiring, poor connection, ECM/PCM/TCM
P0956	ASM mode circuit - range/performance	Wiring, poor connection, ECM/PCM/TCM
P0957	ASM mode circuit - low	Wiring, poor connection, short to earth, ECM/PCM/TCM
P0958	ASM mode circuit - high	Wiring, poor connection, short to positive, ECM/PCM/TCM
P0959	ASM mode circuit - intermittent circuit malfunction	Wiring, poor connection, ECM/PCM/TCM
P0960	Pressure control (PC) solenoid A - control circuit open	Wiring, poor connection, pressure control solenoid, ECM/PCM/TCM
P0961	Pressure control (PC) solenoid A - control circuit range/performance	Wiring, poor connection, pressure control solenoid, ECM/PCM/TCM
P0962	Pressure control (PC) solenoid A - control circuit low	Wiring, short to earth, pressure control solenoid, ECM/PCM/TCM
P0963	Pressure control (PC) solenoid A - control circuit high	Wiring, short to positive, pressure control solenoid, ECM/PCM/TCM

P0964	Pressure control (PC) solenoid B - control circuit open	Wiring, poor connection, pressure control solenoid, ECM/PCM/TCM
P0965	Pressure control (PC) solenoid B - control circuit range/performance	Wiring, poor connection, pressure control solenoid, ECM/PCM/TCM
P0966	Pressure control (PC) solenoid B - control circuit low	Wiring, short to earth, pressure control solenoid, ECM/PCM/TCM
P0967	Pressure control (PC) solenoid B - control circuit high	Wiring, short to positive, pressure control solenoid, ECM/PCM/TCM
P0968	Pressure control (PC) solenoid C - control circuit open	Wiring, poor connection, pressure control solenoid, ECM/PCM/TCM
P0969	Pressure control (PC) solenoid C - control circuit range/performance	Wiring, poor connection, pressure control solenoid, ECM/PCM/TCM
P0970	Pressure control (PC) solenoid C - control circuit low	Wiring, short to earth, pressure control solenoid, ECM/PCM/TCM
P0971	Pressure control (PC) solenoid C - control circuit high	Wiring, short to positive, pressure control solenoid, ECM/PCM/TCM
P0972	Shift solenoid (SS) A - control circuit range/performance	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0973	Shift solenoid (SS) A - control circuit low	Wiring, short to earth, shift solenoid, ECM/PCM/TCM
P0974	Shift solenoid (SS) A - control circuit high	Wiring, short to positive, shift solenoid, ECM/PCM/TCM
P0975	Shift solenoid (SS) B - control circuit range/performance	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0976	Shift solenoid (SS) B - control circuit low	Wiring, short to earth, shift solenoid, ECM/PCM/TCM
P0977	Shift solenoid (SS) B - control circuit high	Wiring, short to positive, shift solenoid, ECM/PCM/TCM
P0978	Shift solenoid (SS) C - control circuit range/performance	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0979	Shift solenoid (SS) C - control circuit low	Wiring, short to earth, shift solenoid, ECM/PCM/TCM
P0980	Shift solenoid (SS) C - control circuit high	Wiring, short to positive, shift solenoid, ECM/PCM/TCM
P0981	Shift solenoid (SS) D - control circuit range/performance	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0982	Shift solenoid (SS) D - control circuit low	Wiring, short to earth, shift solenoid, ECM/PCM/TCM
P0983	Shift solenoid (SS) D - control circuit high	Wiring, short to positive, shift solenoid, ECM/PCM/TCM
P0984	Shift solenoid (SS) E - control circuit range/performance	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0985	Shift solenoid (SS) E - control circuit low	Wiring, short to earth, shift solenoid, ECM/PCM/TCM
P0986	Shift solenoid (SS) E - control circuit high	Wiring, short to positive, shift solenoid, ECM/PCM/TCM
P0987	Transmission fluid pressure (TFP) sensor E - circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0987	Transmission fluid pressure (TFP) switch E - circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0988	Transmission fluid pressure (TFP) sensor E - circuit range/performance	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0988	Transmission fluid pressure (TFP) switch E - circuit range/performance	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0989	Transmission fluid pressure (TFP) sensor E - circuit low	Wiring, short to earth, TFP sensor, ECM/PCM/TCM
P0989	Transmission fluid pressure (TFP) switch E - circuit low	Wiring, short to earth, TFP switch, ECM/PCM/TCM
P0990	Transmission fluid pressure (TFP) sensor E - circuit high	Wiring, short to positive, TFP sensor, ECM/PCM/TCM
P0990	Transmission fluid pressure (TFP) switch E - circuit high	Wiring, short to positive, TFP switch, ECM/PCM/TCM
P0991	Transmission fluid pressure (TFP) sensor E - circuit intermittent	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0991	Transmission fluid pressure (TFP) switch E - circuit intermittent	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0992	Transmission fluid pressure (TFP) sensor F - circuit malfunction	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0992	Transmission fluid pressure (TFP) switch F - circuit malfunction	Wiring, poor connection, TFP switch, ECM/PCM/TCM

P0993	Transmission fluid pressure (TFP) sensor F - circuit range/performance	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0993	Transmission fluid pressure (TFP) switch F - circuit range/performance	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0994	Transmission fluid pressure (TFP) sensor F - circuit low	Wiring, short to earth, TFP sensor , ECM/PCM/TCM
P0994	Transmission fluid pressure (TFP) switch F - circuit low	Wiring, short to earth, TFP switch, ECM/PCM/TCM
P0995	Transmission fluid pressure (TFP) sensor F - circuit high	Wiring, short to positive, TFP sensor, ECM/PCM/TCM
P0995	Transmission fluid pressure (TFP) switch F - circuit high	Wiring, short to positive, TFP switch, ECM/PCM/TCM
P0996	Transmission fluid pressure (TFP) sensor F - circuit intermittent	Wiring, poor connection, TFP sensor, ECM/PCM/TCM
P0996	Transmission fluid pressure (TFP) switch F - circuit intermittent	Wiring, poor connection, TFP switch, ECM/PCM/TCM
P0997	Shift solenoid (SS) F - control circuit range/performance	Wiring, poor connection, shift solenoid, ECM/PCM/TCM
P0998	Shift solenoid (SS) F - control circuit low	Wiring short to earth, shift solenoid, ECM/PCM/TCM
P0999	Shift solenoid (SS) F - control circuit high	Wiring short to positive, shift solenoid, ECM/PCM/TCM

MAZDA - KF

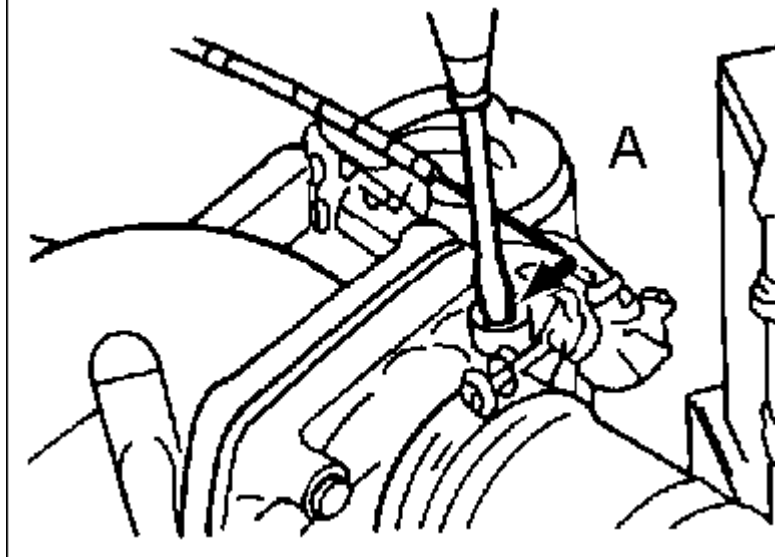
Compression		
Compression pressure	10.8 - 14.7	bar
Idle speed	800 ± 50	1/min
Exhaust gas emissions		
CO content at idle speed	< 0.5	vol. %
CO2 content at idle speed	14.5 - 16.0	vol. %
HC content at idle speed	100	ppm
Oil pressure		
At rated power	3.4 - 5.0	bar
Thermostat opening temperature	84 - 89	°C
Valve clearance		hydraulic
Firing order	1-2-3-4-5-6	

* Data from secondary source; No manufacturer's information

Environmental Data

MAZDA - Xedos 6 - 2.0i V6 24V - KF

Item	Values	Units
Engine code	KF	
Idle speed	670 ±30	(rpm)
Fuel system (make & type)	Mazda VRIS	
Adjustment screws (A = idle speed B = CO)	A	

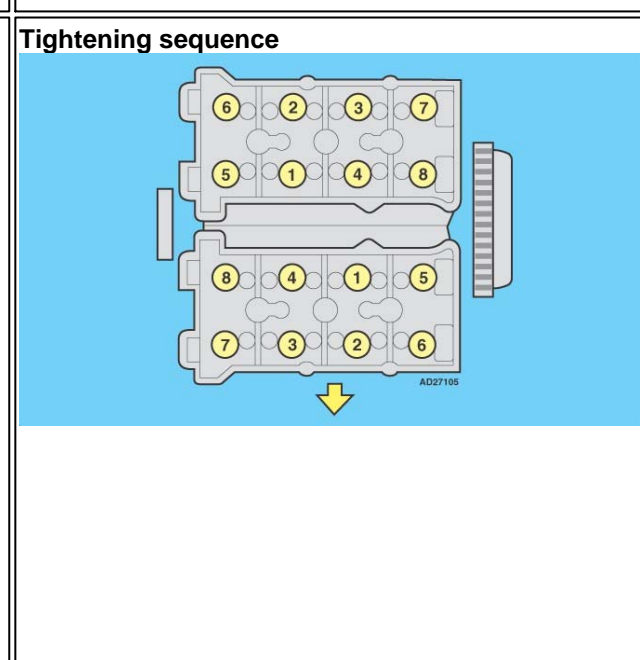
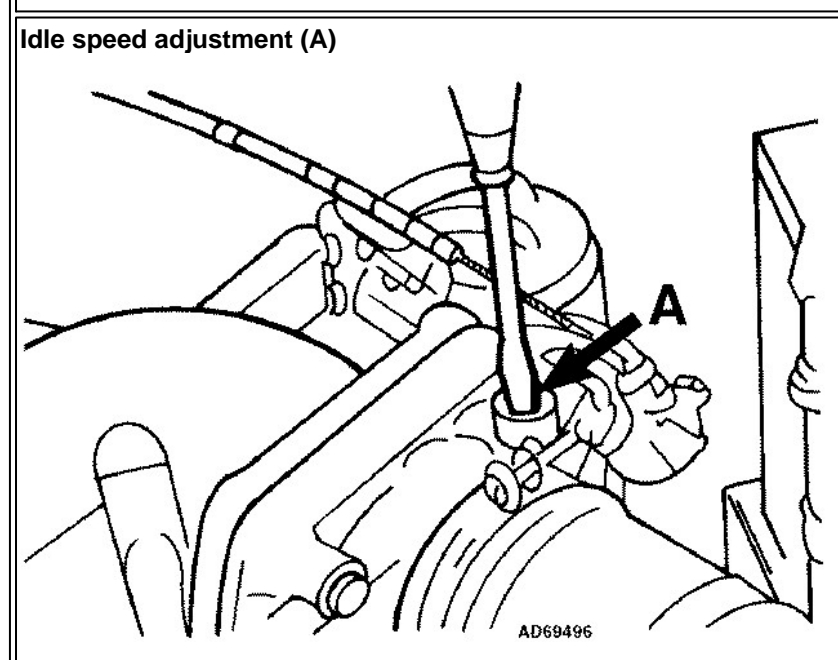
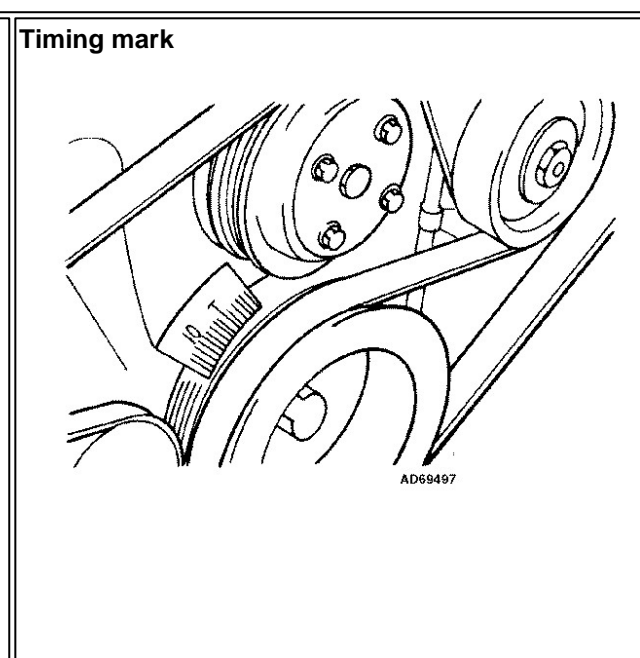
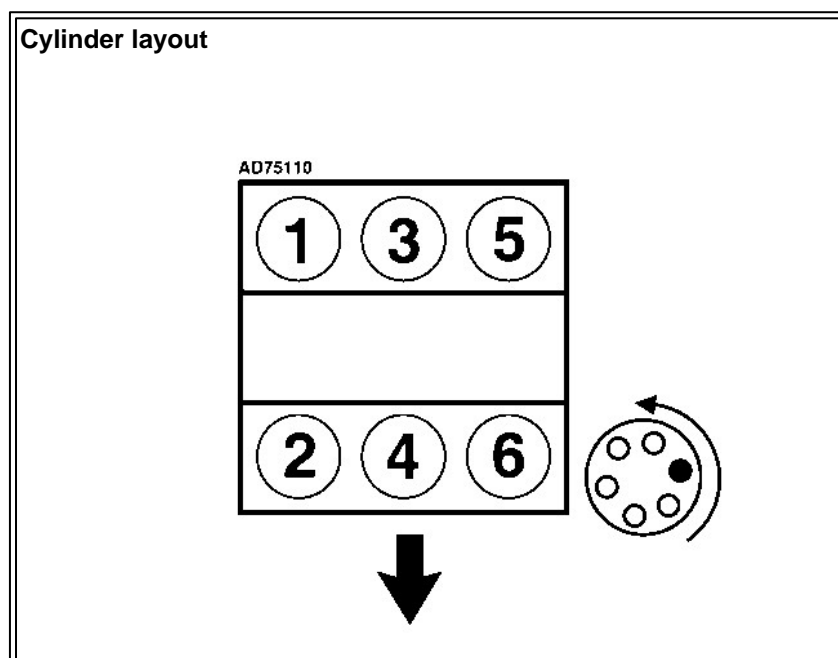


Timing stroboscopic (before TDC)	10 ± 1/670	(° / rpm)
Fuel-pump pressure	6.2	(bar)
Injection pressure / system pressure	2.8	(bar)
CO exhaust gas	< 0.5	(%)
CO ₂	> 12	(%)
HC	100	(ppm)
O ₂	0.1 - 0.5	(%)
Lambda	0.97 - 1.03	
Lambda change (Delta Lambda)	0.03	
Oil temperature during test	60	(°C)
Fast-idle speed	2500-2800	(rpm)
CO at fast-idle speed	< 0.3	(%)

Notes			Specified value	Measured value
Vehicle identification				
	No. of cylinders	Type	6/DOHC	
	Capacity (Fiscal)	cc	1995 (1978)	
	Compression ratio	:1	9,5	
	Suitable for unleaded petrol		Yes	
	Minimum octane rating	RON	95	
	Ignition system	Type	ESA	
	Ignition system	Description	Map-i	
	Trigger location		Distributor/ Crankshaft	
	Fuel system	Make	Mazda	
	Fuel System	Type	VRIS	
	Fuel System	Description	MFI-s	
	Air metering	Type	Flow	
	Combined ignition and fuel ECM		Yes	
	Diagnostic socket		Yes	
Ignition system				
	Ignition coil	Make	Denso	
	Ignition coil supply voltage	+ with ballast V	11,0	
	Primary resistance	Ohm	0,81-0,99	
	Secondary resistance	Ohm	10000-15000	
	Firing order		1-2-3-4-5-6	
Tuning and emissions				
7	Tuning conditions			
	Ignition timing - basic BTDC	°Engine/rpm	10/670	
	Ignition advance checks	°Engine/rpm	ECM Controlled	
	Idle speed	rpm	670±50	
	Oil temperature for CO test	°C	60	
	CO level at idle speed - tailpipe	Vol. % CO	0,5 Max Not adjustable	
	HC level at idle speed	ppm	100	
	CO2 level at idle speed	Vol. % CO2	14,5-16	
	O2 level at idle speed	Vol. % O2	0,1-0,5	
	Increased idle speed for CO test	rpm	2500-2800	
	CO content at increased idle speed	Vol. %	0,3	
	Lambda at increased idle	λ	0,97-1,03	
Spark plugs				
	Spark plugs	Original equipment	Denso	
	Spark plug	Type	K20PR-U11	
	Electrode gap	mm	1,1	
	Spark plugs	Make	Autolite	
	Spark plug	Type	AP3923	
	Electrode gap	mm	1,1	
	Spark plugs	Make	Beru	
	Spark plug	Type	14FR-7DUX	
	Electrode gap	mm	1,1	
	Spark plugs	Make	Bosch	
	Spark plug	Type	FR7DCX	
	Electrode gap	mm	1,1	
	Spark plugs	Make	Champion	
	Spark plug	Type	RC9YCC4	
	Electrode gap	mm	1,1	
	Spark plugs	Make	NGK	
	Spark plug	Type	BKR6E-11	
	Electrode gap	mm	1,1	
Fuel system				
	Fuel pump delivery pressure	bar	4,9-6,3	
	System pressure without vacuum	bar	2,6-3,2	

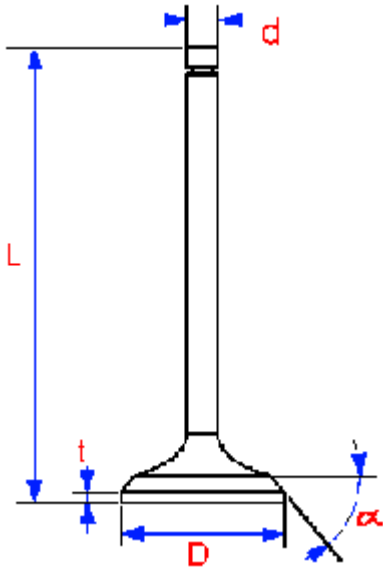
	Engine coolant temperature (ECT) sensor	Ohm/°C	290-350/80	
	RPM/TDC sensor	Ohm	520-580	
	Injector	Ohm	12-16	
	Idle speed control valve	Ohm	11-12	
	Oxygen sensor heater	Ohm	6	
Service checks and adjustments				
	Valve clearance -INLET	mm	Hydraulic	
	Valve clearance -EXHAUST	mm	Hydraulic	
	Compression pressure	bar	14,7	
	Oil pressure	bar/rpm	3,4/3000	
	Radiator cap	bar	1,0	
	Thermostat opens	°C	88	
Lubricants and capacities				
	Engine oil grade - cold climate	SAE	5W/30	
	Engine oil grade - moderate climate	SAE	10W/30	
	Engine oil grade - hot climate	SAE	20W/40	
	Engine oil classification	API/ACEA	SJ/A2-96	
	Engine oil grade - alternative - moderate climate	SAE	10W/40	
	Engine oil classification - alternative - moderate climate	API/ACEA	SJ/A2-96	
	Engine with filter	litres	4,0	
	Gearbox oil grade	SAE	75W/90	
	Gearbox 4/5 speed	litres	2,7	
	Automatic transmission fluid	Type	Dexron II	
	Cooling system	litres	7,5	
	Brake fluid	Type	DOT 3	
	Power steering fluid	Type	Dexron II	
	Power steering fluid	litres	1,2-1,3	
Tightening torques				
	Cylinder head instructions			
Cylinder head				
		Maximum bolt length	135 mm	
	Stage 1	Tighten	23-26 Nm	
	Stage 2	Tighten	90°	
	Stage 3	Tighten	90°	
Other tightening torques				
16	Big end bearings	Stage 1		
	Oil pump to cylinder block		20-25 Nm	
61	Sump bolts			
	Sump drain bolt		30-40 Nm	
	Flywheel/driveplate		64 Nm/64 Nm	
	Clutch to flywheel		18-26 Nm	
	Crankshaft pulley/damper		157-166 Nm	
	Camshaft sprocket/gear		123-140 Nm	
	Camshaft carrier/cap		11-14 Nm	
	Camshaft/rocker cover		5-9 Nm	
	Inlet manifold to cylinder head		20-25 Nm	
	Exhaust manifold to cylinder head		20-25 Nm	
	Spark plugs		15-22 Nm	
	Oxygen sensor (Lambda)		30-49 Nm	
	Knock sensor (KS)		20-34 Nm	
	Front hub		236-318 Nm	
	Rear hub		177-230 Nm	
	Steering track rod end		31-44 Nm	
	Brake caliper to carrier	Front	47 Nm	
	Brake caliper carrier to hub	Front	90 Nm	
	Brake caliper to carrier	Rear	37 Nm	
	Brake caliper carrier to hub	Rear	51 Nm	
	ABS sensor	Front	20 Nm	

ABS sensor		Rear	20 Nm
Road wheels			87-117 Nm
Starting and charging			
Battery		V/RC(Ah)	12/90 (58)
Maximum cranking amps		A	157-191
Alternator output at engine speed		A/V/rpm	90/14,5/3000
Brake disc and drum dimensions			
Minimum disc thickness - ventilated		Front	22 mm
Minimum disc thickness		Rear	8 mm
Disc runout		Front	0,10 mm
Disc runout		Rear	0,10 mm
Minimum pad thickness		Front	1 mm
Minimum pad thickness		Rear	1 mm
Handbrake travel		No. of notches	5-7
Air conditioning			
Air conditioning refrigerant		Type	R134a
Air conditioning refrigerant quantity		grams	700
Air conditioning oil		Type	Atmos GU10
Air conditioning oil quantity		cmi	175



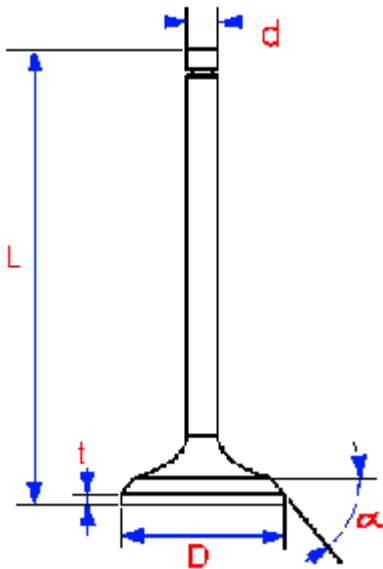
MAZDA - KF

Valve length (L)



Intake new	94.11	mm
Limit	93.61	mm
Outlet new	95.19	mm
Limit	94.69	mm

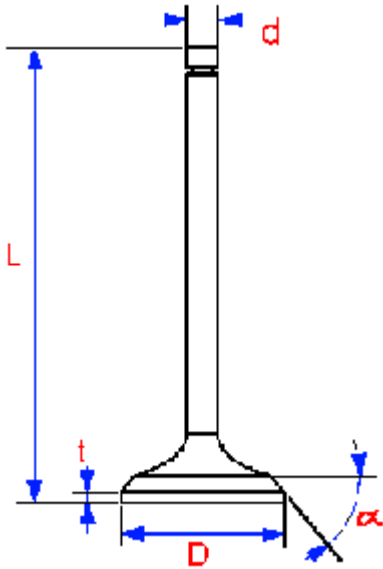
Valve stem diameter (d) intake



Standard	5.970 - 5.985	mm
Limit	5.920	mm

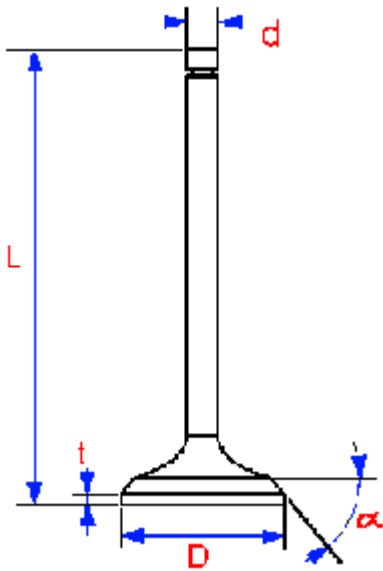
* Data from secondary source; No manufacturer's information

Valve stem diameter (d) outlet



Standard	5.965 - 5.980	mm
Limit	5.915	mm

Valve dish thickness (t)



Intake	> 0.9	mm
Outlet	> 1.0	mm

Valve springs

Length unladen

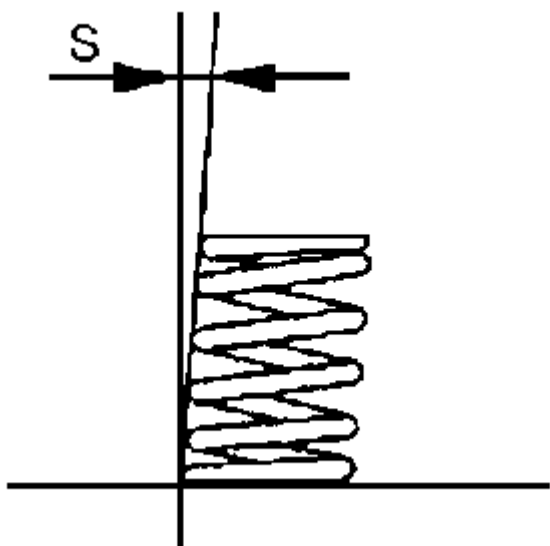
Intake	46.92	mm
Outlet	46.92	mm

Min. length at prescribed force 1

* Data from secondary source; No manufacturer's information

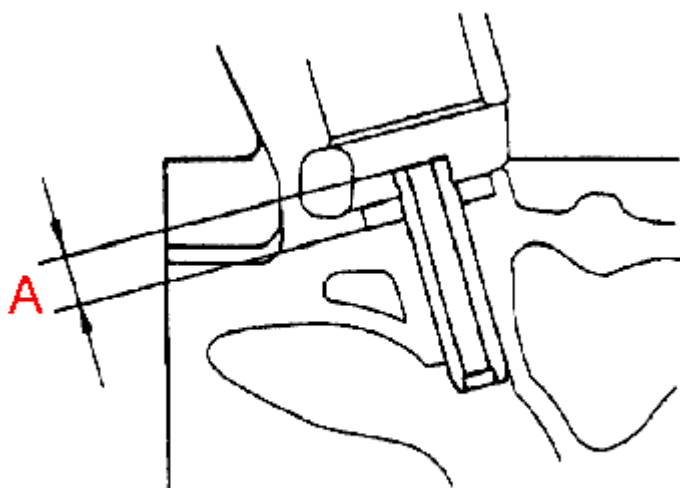
MAZDA - KF

Intake	233 - 263 N: 38.7	mm
Outlet	233 - 263 N: 38.7	mm
Inclination(s)	1.63	mm



Valve guides

Fitting height



Intake	A = 14.7 - 15.3	mm
Outlet	A = 12.2 - 12.8	mm
Inner diameter, standard		
Intake	6.01 - 6.03	mm
Outlet	6.01 - 6.03	mm

Clearance between valve stem and guide

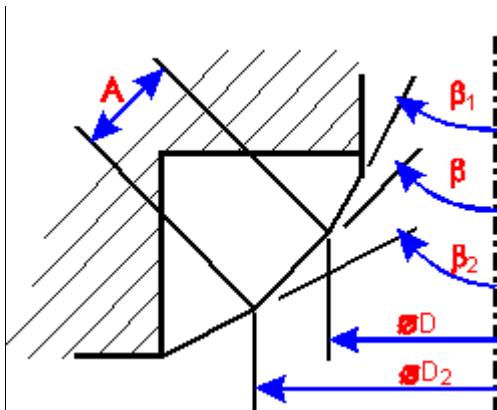
* Data from secondary source; No manufacturer's information

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Intake	0.025 - 0.060	mm
Limit	0.20	mm
Outlet	0.030 - 0.065	mm
Limit	0.20	mm

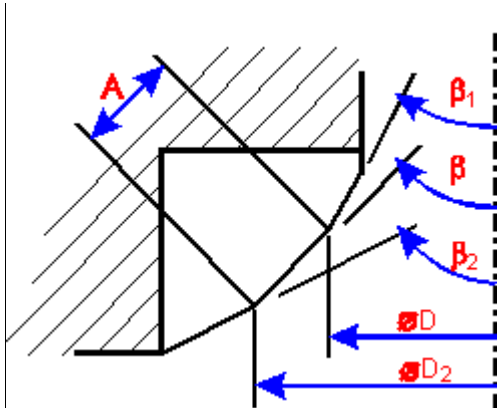
Valve seats

Seating angle (°)



Intake	45	°
Outlet	45	°

Seating size (A)

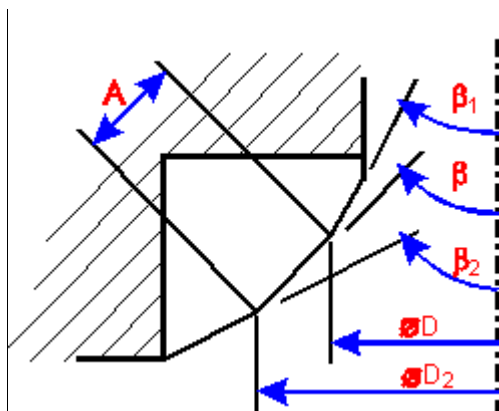


Intake	0.8 - 1.4	mm
Outlet	0.8 - 1.4	mm

* Data from secondary source; No manufacturer's information

MAZDA - KF

Seat diameter (D2)



Intake	28.1	mm
Outlet	22.7	mm

Camshaft

Camshaft journal diameter, standard

1st Bearing	25.940 - 25.960	mm	exhaust, right hand side
Limit	25.890	mm	
1st Bearing	29.975 - 29.995	mm	intake, right hand side
Limit	29.925	mm	
1st Bearing	29.975 - 29.995	mm	exhaust, left hand side
Limit	29.925	mm	
1st Bearing	25.940 - 25.960	mm	intake, left hand side
Limit	25.890	mm	
2nd Bearing	25.910 - 25.930	mm	
Limit	25.860	mm	
3rd Bearing	25.910 - 25.930	mm	
Limit	25.860	mm	
4th Bearing	25.910 - 25.930	mm	
Limit	25.860	mm	
5th Bearing	25.940 - 25.960	mm	
Limit	25.890	mm	

Camshaft bearing radial clearance

1st Bearing	0.040 - 0.081	mm
Limit	0.120	mm
2nd Bearing	0.070 - 0.111	mm
Limit	0.150	mm
3rd Bearing	0.070 - 0.111	mm
Limit	0.150	mm

* Data from secondary source; No manufacturer's information

MAZDA - KF

4th Bearing	0.070 - 0.111	mm
Limit	0.150	mm
5th Bearing	0.040 - 0.081	mm
Limit	0.120	mm
<hr/>		
Camshaft end play	0.05 - 0.10	mm
Limit	0.14	mm
<hr/>		
Max. camshaft swing		
Limit	0.02	mm
<hr/>		
Total camheight		
Intake new	42.864	mm
Intake min.	42.664	mm
Outlet new	43.516	mm
Outlet min.	43.316	mm

* Data from secondary source; No manufacturer's information

MAZDA - Xedos 6 - 2.0i V6 24V - KF

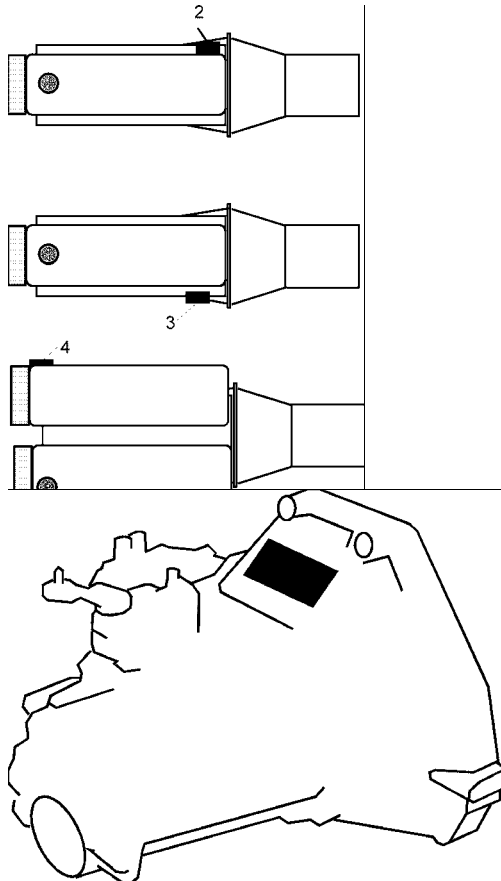
1 VIN

2 Engine code B3 / B5 / B6 / PN

3 Engine code BP / FP / FS

4 Engine code 6-cylinder

5 Manual transmission code



IDLE SPEED CONTROL VALVE

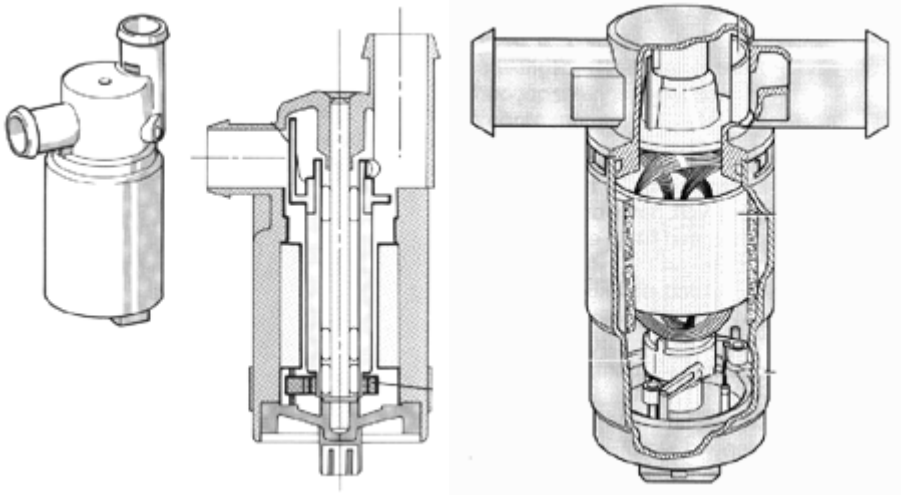
Function

The idle control valve is located in a tube bypassing the throttle. The control unit controls this device to ensure stable idling in all operating conditions.

Specifications

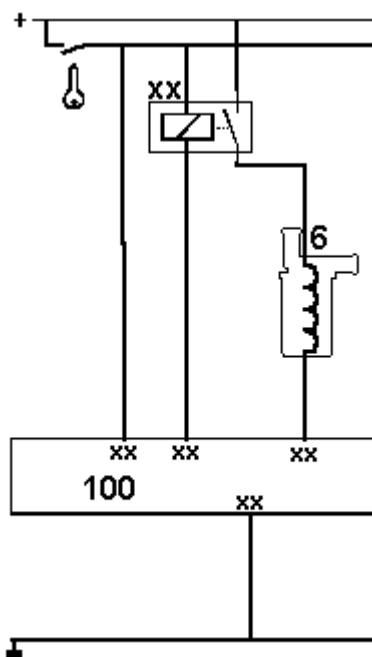
resistance coil(s):	± 20 ohms
supply voltage:	12 Volts

A rotary slide valve attached to the armature is turned to open the air bypass until the desired idle speed is obtained. The position of the armature is controlled by the force of an internal spring opposing the force of a solenoid (types with two terminals) or controlled by two solenoids energised alternately which exerts opposing forces on the armature (types with three terminals).



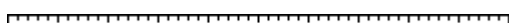
Electrical control

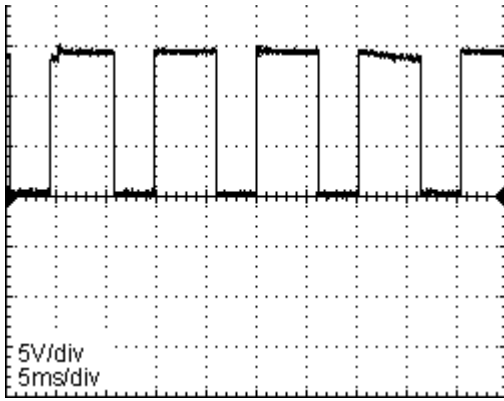
Types with two terminals



As a current flows through the coil the armature is turned against the spring force. As the current increases the airflow and the idle speed increases. If the current through the coil is switched off due to a malfunctioning system, the valve is forced into a position which results in a (too) high idle speed.

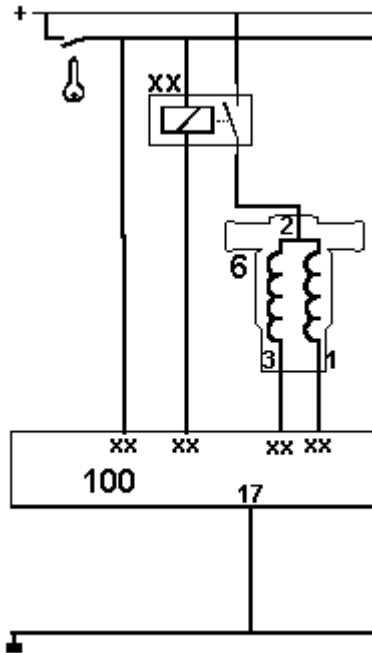
The idle control valve has a connector with two terminals. On one of those terminals is connected to the battery voltage. This supply-voltage is often switched with a relay. The other terminal leads directly to the control unit. The current through the coil is switched on during the time the control unit connects this terminal to ground. The voltage on this terminal is during this time 0 Volts. During the time the current through the coil is switched off, the voltage on this terminal is 12 Volts.



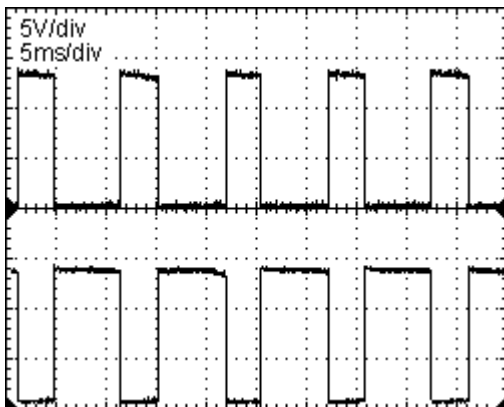


The control unit controls the current through the coil switching the current on and off with a certain duty cycle. The current increases as the duty-cycle increases. The duty cycle varies between approx. 35% (valve closed) and 85% (valve opened). Nominal idle speed is obtained when slightly open.

Three terminal types



The two coils inside this type of idle speed control valve are connected with the supply voltage using one common terminal. The other two terminals lead directly to the control unit. The control unit switches the current through the solenoid on and off alternately with a duty cycle between 35 and 85%.



Electrical diagnosis

STATIC

- To perform this measurements the relay switching the power to the idle control valve should be closed. Short circuit the switch in the relay if necessary.

Measurements:

Disconnect the connector and

DYNAMIC TESTS THREE TERMINAL TYPES

- Remove the idle control valve but leave the electrical connections in place. Fully open or close the rotating plunger. Switch on the ignition.

measure the resistance of the coil(s). The nominal value is app. 20 ohms.

- Check the relay switching the power to the idle control valve
 - Check the wiring between the relay and the idle control valve
 - Check the wiring between the idle control valve and the control unit
 - Check the control unit
- result:
- Switch on the ignition. The rotating plunger must move to a position equivalent to app. 50% opening, and remain there.

Mechanical diagnosis

- Check the air chamber on air leakage.
- Check engine on air leaks into the intake system.
- Remove the idle control valve. The plunger should rotate or move easily. Clean if necessary.

IGNITION COIL

Function

The ignition coil transforms the battery voltage into the high voltage needed to create a spark.

The ignition coil consists of an electromagnet (the primary coil) and a high voltage coil (secondary coil).

By switching the current through the primary coil on, a magnetic field is induced. The moment the current is switched off, the magnetic field suddenly disappears.

This change of magnetic field creates an induction voltage in the secondary coil, high enough to ionise the mixture. The ionised mixture is a conductor and a current flows through the spark plug.

Specifications

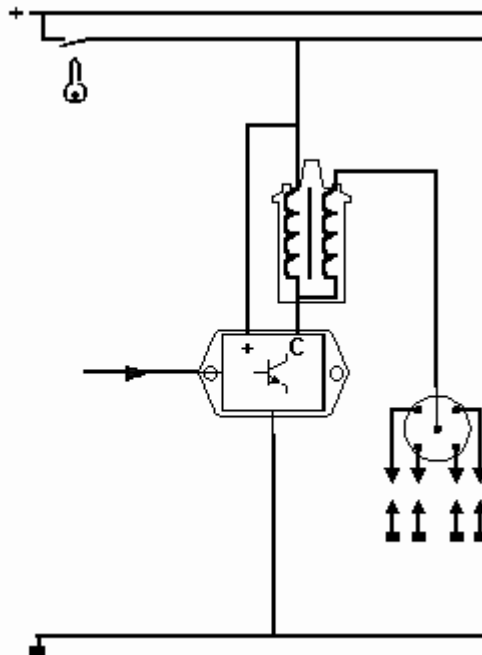
RESISTANCE:

primary:	$\pm 0,3 - 2$ ohms
secondary	$\pm 5k - 20k$ ohms
supply voltage:	12 V
current limited at:	$\pm 7A$

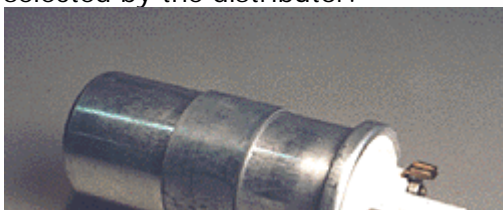
Systems with a distributor

Ignition coils used in combination with a distributor consists of one primary and one secondary coil.

The high voltage, induced in the secondary coil is connected to one of the spark plugs



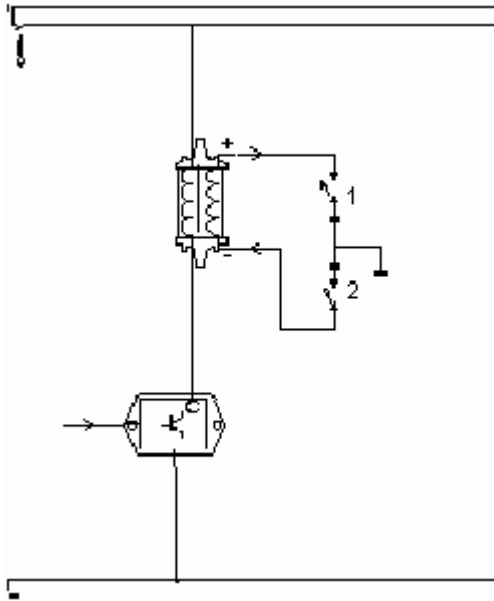
selected by the distributor.



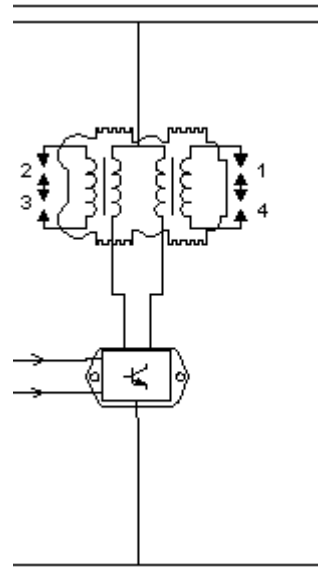


Wasted spark ignition coils

The secondary coil has two ends. In a normal ignition coil one of those ends delivers the high voltage to a spark plug. The other end is connected to either the positive (+) or the negative (-) terminal of the primary coil. In a wasted spark ignition coil both ends are connected to a spark plug. Therefore both spark plugs will spark at the same time.

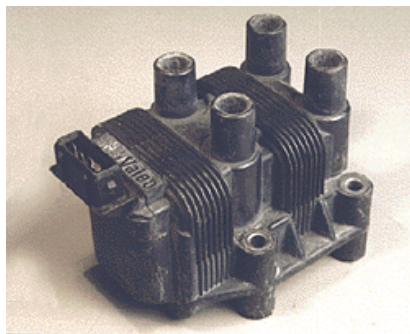
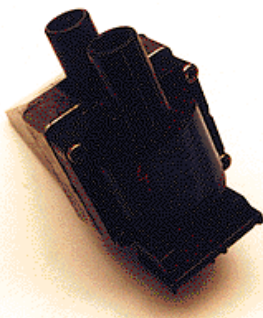


wasted spark ignition coil on 2- cylinder 4-stroke engine



a wasted spark ignition coil on a 4- cylinder 4-stroke engine

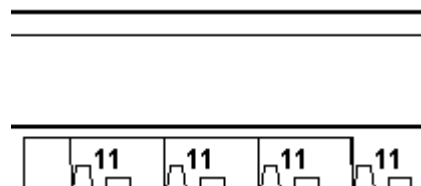
To supply the four spark plugs of a 4 cylinder engine, two ignition coils are needed. The picture below (left) shows an ignition coil for two spark plugs. The ignition coil in the right picture incorporates two of those. This ignition coil supplies four spark plugs.

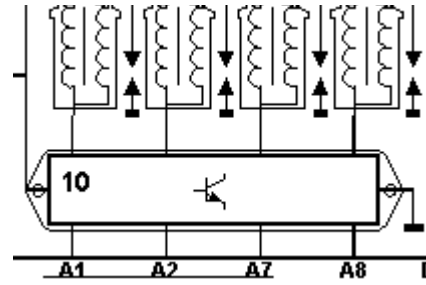


Sequential ignition

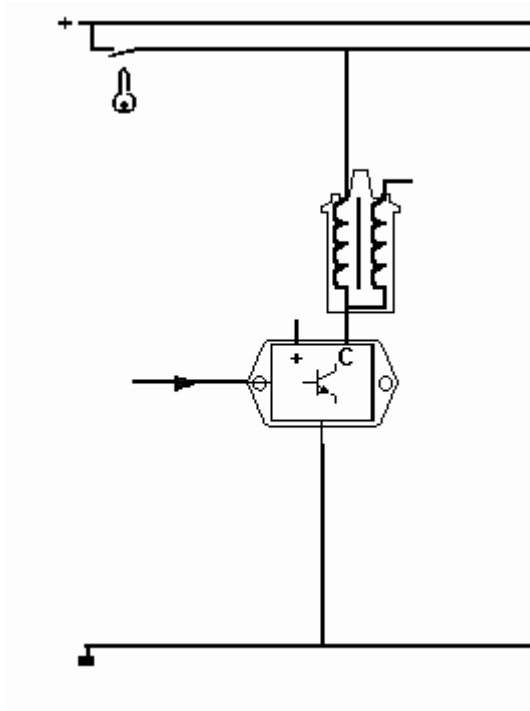
Sequential ignition systems are distributor less ignition systems using one ignition coil per cylinder.

Each ignition coil is controlled by the control unit individually.





Electrical control



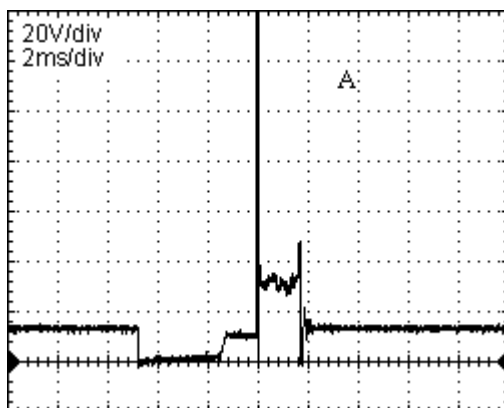
A current through the primary coil induces a magnetic field. The moment the current is switched off, the magnetic field suddenly disappears. This change of magnetic field induces an induction voltage and causes a spark.

The amperage before switching the current off should be high enough to create a high change of magnetic field the moment the current is switched off.

Therefore the current through the primary coil is controlled electronically.

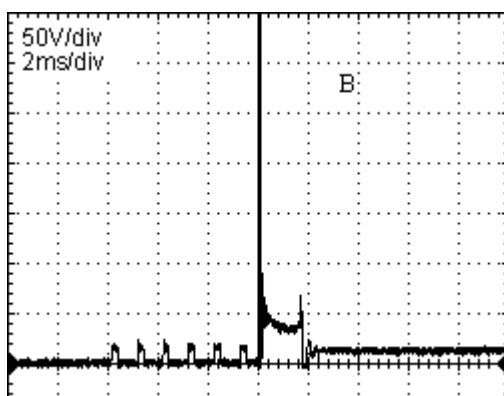
The ignition module is supplied with a current limited circuit. Using this in combination with a low resistance ignition coil the amperage does not depend on the battery voltage.

During the time the current is switched off, the voltage over the ignition module is 12 Volts. The moment the current is switched on, the voltage drops to 0 Volts. From this moment on the current increases until the limiting value is reached.

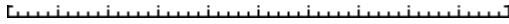


The oscilloscope images A and B gives you an example of the primary voltage measured on two different current limiting circuits.

By increasing the voltage over the ignition module, the voltage over the primary coil decreases. This causes a limited current in oscilloscope image A.



The ignition module in oscilloscope image B switches the current on and off to limit the current.



Electrical diagnosis

STATIC

To perform this measurements the ignition should be switched on.

Measurements:

- Measure the primary and secondary resistance of the ignition coil.
- Measure the voltage on the positive terminal of the ignition module.

The voltage should be equal to the battery voltage.

result: **Voltage is lower than battery voltage.**

- disconnect positive terminal and repeat measurement

result: **Voltage is equal to battery voltage.**

- check primary resistance of the ignition coil
- check ignition module
- check wiring between ignition module and ignition module.

result **Voltage is still lower than battery voltage.**

- check ignition lock
- check wiring between ignition lock and ignition coil

DYNAMIC

Start the engine and measure the primary voltage using an oscilloscope.

result: **0 V**

- check power supply.

12 V

- check ignition module

Mechanical diagnosis

Not available for this subject !

MAZDA - Xedos 6 - 2.0i V6 24V - KF

Engine

Motor oil API SG	Below 0 °C	SAE 5W-30
Motor oil API SG	Above -25 °C	SAE 10W-30

Cooling system

Coolant	All temperatures
---------	------------------

Manual transmission

Gear oil API GL-4	All temperatures	SAE 75W-90
Gear oil API GL-5	All temperatures	SAE 75W-90
Gear oil API GL-4	Above 5 °C	SAE 80W-90
Gear oil API GL-5	Above 5 °C	SAE 80W-90

Automatic transmission

ATF Dexron II	All temperatures
ATF M-III	All temperatures

Transfer box

Gear oil API GL-5	Above -20 °C	SAE 90
Gear oil API GL-5	Below -20 °C	SAE 80W

Differential, rear (4x4)

Gear oil API GL-5	Above -20 °C	SAE 90
Gear oil API GL-5	Below -20 °C	SAE 80W

Power steering

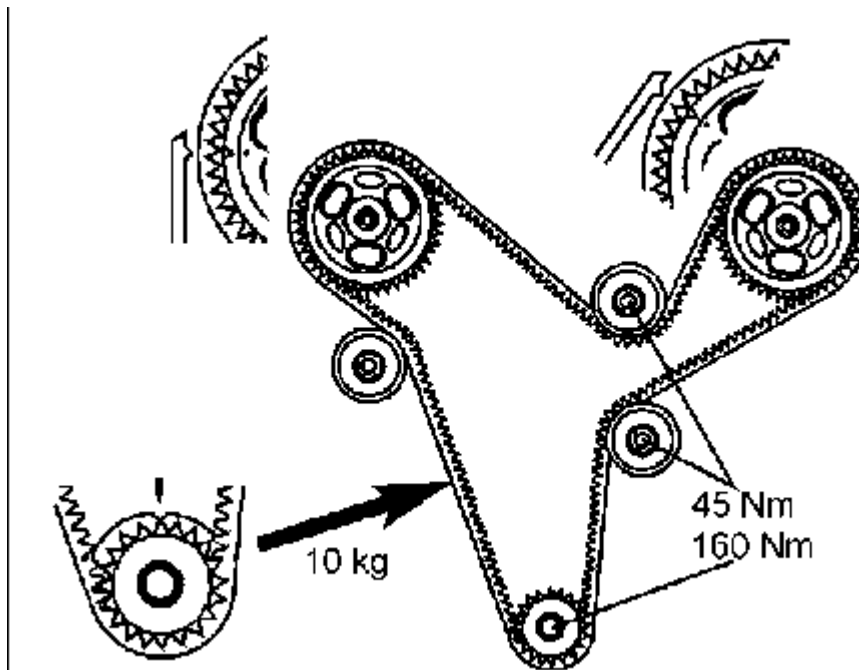
ATF Dexron II	All temperatures
ATF M-III	All temperatures

Brakes system

Brake fluid DOT 3	All temperatures
-------------------	------------------

Timing

MAZDA - Xedos 6 - 2.0i V6 24V - KF



General

Item

Note

Always check the timing marks before timing belt removal

Removal

Item

Note

- Disconnect the battery
- Remove the lower and side engine covers
- Remove the alternator belt
- Remove the water-pump pulley
- Remove the ribbed belt tensioner
- Remove the power steering pump
- Remove the crankshaft pulley
- Support the engine
- Remove the engine support
- Remove both timing-belt covers
- Align the timing marks
- Loosen the tensioner
- Remove the upper supporting wheel
- Remove the timing belt

Installation

Item

Note

- Press the tensioner pin slowly into the tensioner gauge
- Lock the tensioner, use a locking pin
- Check the timing marks

Fit the timing belt	
Fit the upper supporting wheel	45 Nm
Keep the tensioner in position and lock it with your free hand	20 Nm
Remove the locking pin	
Turn the engine 2 rotations by hand	
Check the timing marks again	
The tension is set if the belt can be twisted by:	6.0 - 8.0 mm (98 N/10 Kg)
Refit all other parts in reverse order of removal	

Torque settings

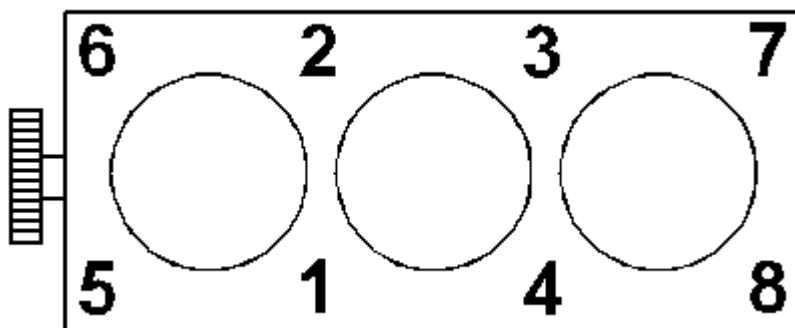
Item	Note
Tensioner:	20 Nm
Crankshaft pulley:	160 Nm
Power steering pump:	40 Nm
Engine support:	95 Nm
Lower power steering pump bolt:	20 Nm
Water-pump pulley:	10 Nm

Special tools

Item	Note
Special tools are not required	

MAZDA - KF

Cylinder-head bolts



Stage 1	23.1 - 25.9	Nm	
Stage 2	90° ± 5°	°	
Stage 3	90° ± 5°	°	
Max. bolt length	133.7 - 134.3	mm	
Limit	135.0	mm	
Main bearing cap			main bolt(s)
Stage 1	23.1 - 25.9	Nm	
Stage 2	80° ± 5°	°	bearing 4
Stage 2	70° ± 5°	°	bearing 1 - 3
Max. bolt length	135.7 - 136.3	mm	
Limit	138.5	mm	
Main bearing cap			secondary bolt(s)
Stage 1	18.2 - 21.0	Nm	
Stage 2	60° ± 5°	°	
Max. bolt length	119.7 - 120.3	mm	
Limit	121.0	mm	
Connecting-rod bearing cap			
Stage 1	22.1 - 26.9	Nm	
Stage 2	90° ± 7°	°	
Max. bolt length	46.7 - 47.3	mm	
Limit	48.0	mm	

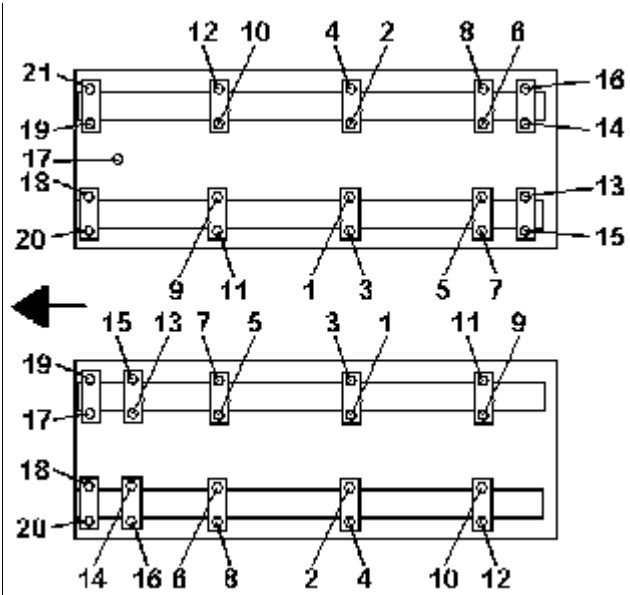
* Data from secondary source; No manufacturer's information

MAZDA - KF

Camshaft-bearing cap

11.3 - 14.2

Nm



Camshaft sprocket

123 - 140

Nm

primary gear wheel

69 - 78

Nm

secondary gear wheel

Crankshaft sprocket

157 - 166

Nm

Timing-belt idler pulley

38 - 51

Nm

Timing cover

7.9 - 10.7

Nm

Valve cover

5.0 - 8.8

Nm

Flywheel

61 - 67

Nm

Drive plate

61 - 67

Nm

Intake manifold

19 - 25

Nm

Exhaust manifold

16 - 22

Nm

Oil pump

19 - 25

Nm

Alternator

38 - 51

Nm

Oil-sump

19 - 25

Nm

long bolt(s)

7.9 - 10.7

Nm

short bolt(s)

Spark plug

15 - 22

Nm

Detonation sensor

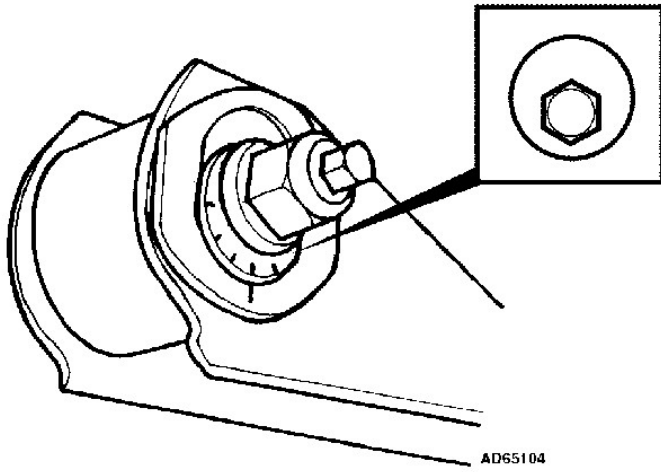
20 - 34

Nm

* Data from secondary source; No manufacturer's information

Dimensions				
Notes			Specified value	Measured value
	Wheelbase	mm	2610	
	Track - front/rear	mm	1470/1480	
Tightening torques				
Notes			Specified value	Measured value
	Tightening torque - steel wheels		89-117 Nm	
	Tightening torque - alloy wheels		89-117 Nm	
	Trackrod locknut/clamp		69-98 Nm	
Checking range - Front wheels				
Notes			Specified value	Measured value
	Load positioning		unladen	
	Fuel tank - percentage full	%	100	
	Toe-in (N = negative, toe-out)	mm	0,62N - 4,14P	
	Toe-in	deg	0°6'N - 0°40'P	
	Toe-in	deg-1/100	0,10N - 0,67P	
	Camber	deg	1°9'N - 0°51'P	
	Camber	deg-1/100	1,15N - 0,85P	
	Castor	deg	1°27' - 3°27'	
	Castor	deg-1/100	1,45 - 3,45	
Setting data - Four wheels				
Notes			Specified value	Measured value
	Load positioning		unladen	
	Fuel tank - percentage full	%	100	
	Toe-in (N = negative, toe-out)	mm	1,76±0,62	
	Toe-in	deg	0°17'±6'	
	Toe-in	deg-1/100	0,28±0,10	
	Camber	deg	0°9'N±1°	
	Camber	deg-1/100	0,15N±1	
	Tolerance left/right	deg	1°30'	
	Tolerance left/right	deg-1/100	1,50	
	Camber adjustment		Not adjustable	
	Castor	deg	2°27'±1°	
	Castor	deg-1/100	2,45±1	
	Tolerance left/right	deg	1°30'	
	Tolerance left/right	deg-1/100	1,50	
	Castor adjustment		Not adjustable	
	KPI (SAI)	deg	14°31'	
	KPI (SAI)	deg-1/100	14,52	
	Included angle	deg	14°22'	
	Included angle	deg-1/100	14,37	
	Lock angles - max. inner	deg	38°±2°	
	Lock angles - max. inner	deg-1/100	38±2	
	Lock angles - max. outer	deg	33°±2°	
	Lock angles - max. outer	deg-1/100	33±2	
	Rear toe-in	mm	0±0,62	
	Rear toe-in	deg	0°±6'	
	Rear toe-in	deg-1/100	0±0,10	
	Rear toe-in adjustment		\$ADJ	
	Rear camber	deg	0°43'N±1°	
	Rear camber	deg-1/100	0,72N±1	
	Rear tolerance left/right	deg	1°30'	
	Rear tolerance left/right	deg-1/100	1,50	
	Rear camber adjustment		Not adjustable	

Rear toe-in adjustment



AD65104