

Mazda RX-4·929
WORKSHOP MANUAL
CHASSIS

mazda

1976

Mazda RX-4·929

WORKSHOP MANUAL
CHASSIS

SUPPLEMENT

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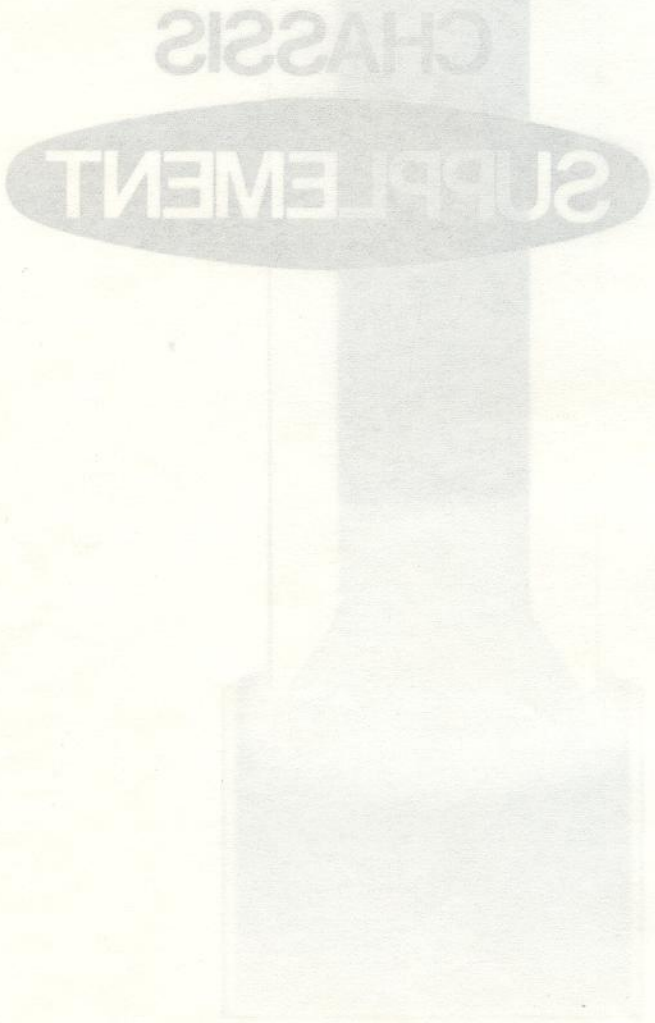
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Mazda RX-4-929

This manual is a supplement to the RX-4, 929 (CHASSIS) workshop manual. Service information contained in this manual covers only those features that are new for 1975 RX-4, 929 (CHASSIS). Refer to the RX-4, 929 (CHASSIS) workshop manual for service procedures common to previous and 1975 models.



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Section 11. BRAKE

1. Power Brake Unit

The power piston diameter has been changed from 6" to 7.5". Since its construction and function are the same as before, service should be performed based on the Workshop Manual.

2. Rear Wheel Cylinder

The shapes of the rear wheel cylinder and material have been changed. Since disassembling, checking, assembling and service data are the same as before, service should be performed based on the Workshop Manual.

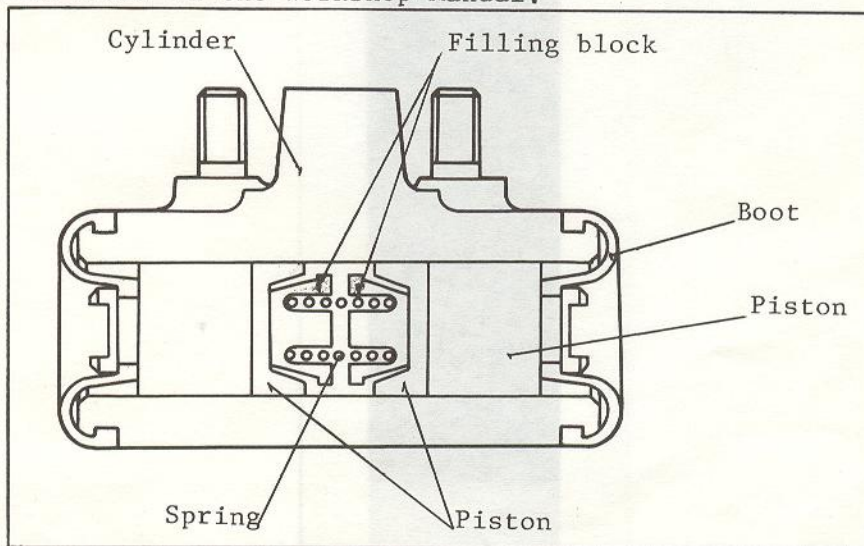


Fig. 1 Rear wheel cylinder

Applied Models, Car Nos. & Production Dates:

Models	Car Nos.	Production Dates
929 Sedan	No. 155538	Oct. 2, 1974
929 Wagon	No. 116233	Sept. 28, 1974
RX-4 Sedan RX-4 Wagon	Will be applied from our November on 1974 production.	

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CHASSIS

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Note :

The specifications and design details contained in this manual are not binding. We reserve the right to carry out the modifications without previous notice.

FOREWORD

This manual is a supplement to the RX-4, 929 (CHASSIS) workshop manual. Service information contained in this manual covers only those features that are new for 1976 RX-4, 929 (CHASSIS).

Refer to the RX-4, 929 (CHASSIS) workshop manual for service procedures common to previous and 1976 models.

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Section 9. Rear Axle

1. Final Gear Ratio

The final gear ratio has been changed from 3,900 to 3,909.

This modification will be applied from our October production in 1975.

2. Ring Gear Tightening Torque

In order to further improve the mechanical characteristic of the ring gear bolts, the material of the bolts has been changed.

According to this modification, the tightening torque of the ring gear bolts has been also changed from 5.5 ~ 6.5 m-k_g (40 ~ 47 ft-lb) to 6.5 ~ 7.5 m-k_g (47 ~ 54 ft-lb). (Refer to Service Information M024/75)

Applied Models, Car Nos. & Production Dates:

Models	Car Nos.	Production Dates
929 Sedan	No. 164708	December 13, 1974
929 Wagon	No. 119474	December 13, 1974
RX-4 (573 cc X 2 =35.0 cu-in X 2)	No. 155719	December 24, 1974

Section 10. Steering

1. Steering Ball Joint

New ball joint manufactured by T.R.W Co., Ltd., is put in use for all RX-4 and 929 models. The configuration of the knuckle arm, pitman arm and center link have been altered accordingly.

The tightening torque of the ball joint nuts has been changed to 3.0 ~ 4.5 m-k_g (22 ~ 33 ft-lb) from 2.5 ~ 3.5 m-k_g (18 ~ 25 ft-lb). (Refer to Service Information M038/75)

Applied Models, Car Nos. & Production Dates:

Models	Car Nos.	Production Dates.
929 Sedan	No. 170900	February 4, 1975
929 Hard Top	No. 170901	February 4, 1975
929 Wagon	No. 121672	February 4, 1975
RX-4 Sedan	No. 155749	February 5, 1975
RX-4 Hard Top	No. 155750	February 5, 1975
RX-4 Wagon	From September production in 1975	

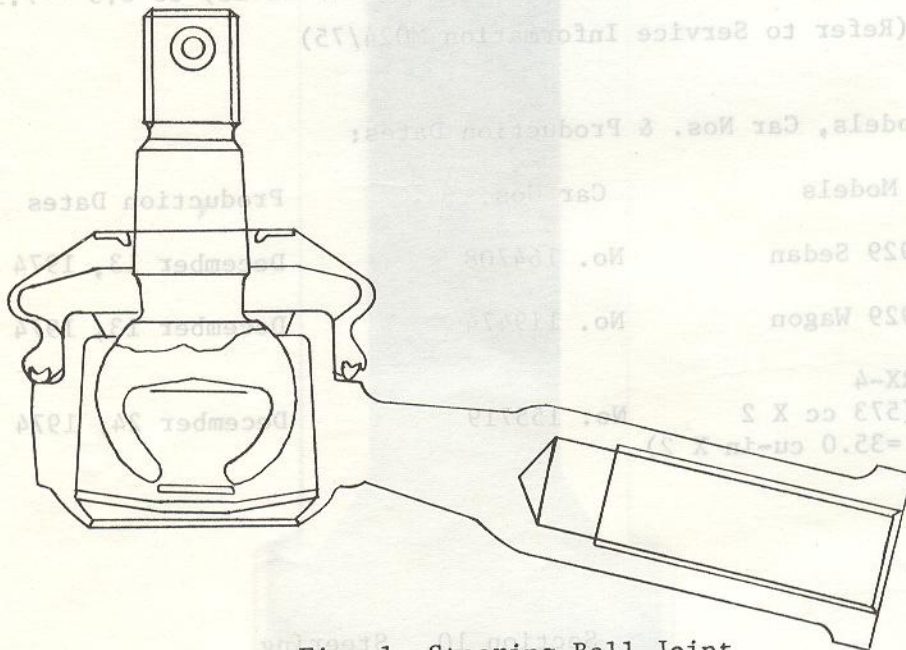
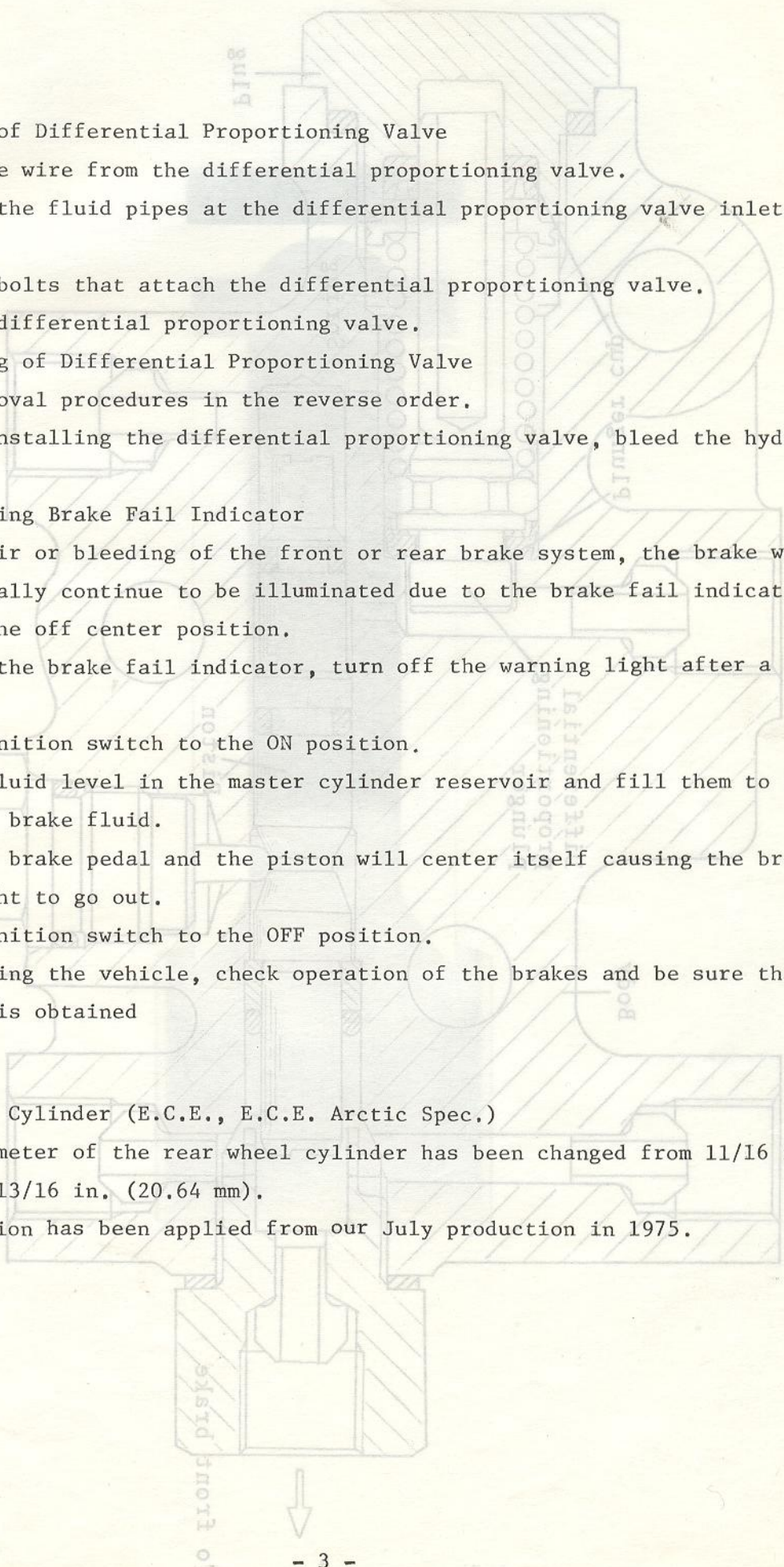


Fig. 1 Steering Ball Joint

Section 11. Brakes

1. Differential Proportioning Valve (E.C.E., E.C.E. Arctic Spec.)
 The differential proportioning valve has been newly equipped on E.C.E. vehicles, and the fail indicator is included in this valve.
 The differential proportioning valve is serviced as an assembly and never adjusted or overhauled.

This modification has been applied from our July production in 1975.



1-A Removing of Differential Proportioning Valve

1. Pull off the wire from the differential proportioning valve.
2. Disconnect the fluid pipes at the differential proportioning valve inlets and outlets.
3. Remove the bolts that attach the differential proportioning valve.
4. Remove the differential proportioning valve.

1-B Installing of Differential Proportioning Valve

Follow the removal procedures in the reverse order.

Note: After installing the differential proportioning valve, bleed the hydraulic system.

1-C Centralizing Brake Fail Indicator

After any repair or bleeding of the front or rear brake system, the brake warning light will usually continue to be illuminated due to the brake fail indicator remaining in the off center position.

To centralize the brake fail indicator, turn off the warning light after a repair operation.

1. Turn the ignition switch to the ON position.
2. Check the fluid level in the master cylinder reservoir and fill them to 3/4 full of the brake fluid.
3. Depress the brake pedal and the piston will center itself causing the brake warning light to go out.
4. Turn the ignition switch to the OFF position.
5. Before driving the vehicle, check operation of the brakes and be sure that a firm pedal is obtained

2. Rear Wheel Cylinder (E.C.E., E.C.E. Arctic Spec.)

The inside diameter of the rear wheel cylinder has been changed from 11/16 in. (17.46 mm) to 13/16 in. (20.64 mm).

This modification has been applied from our July production in 1975.

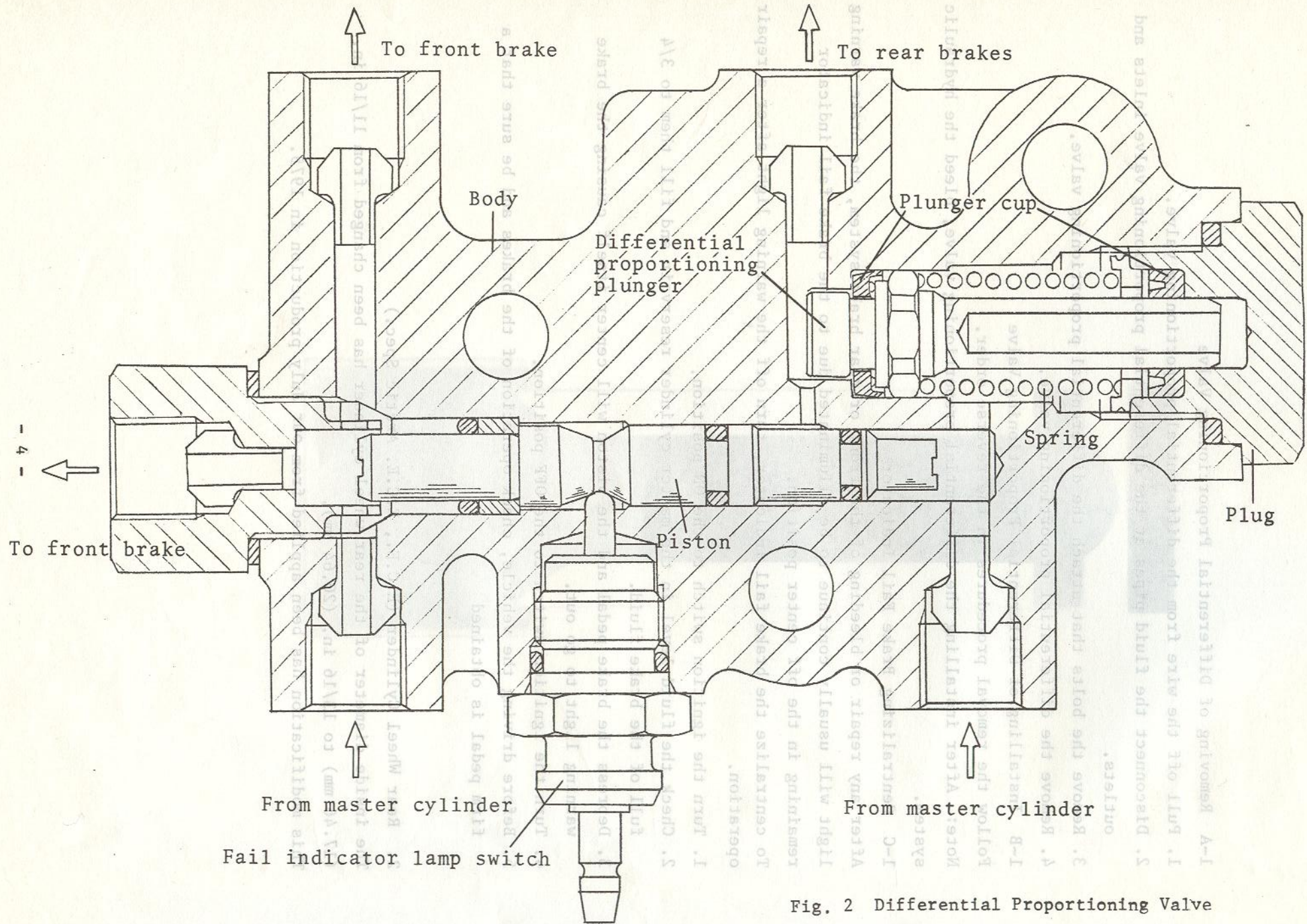


Fig. 2 Differential Proportioning Valve

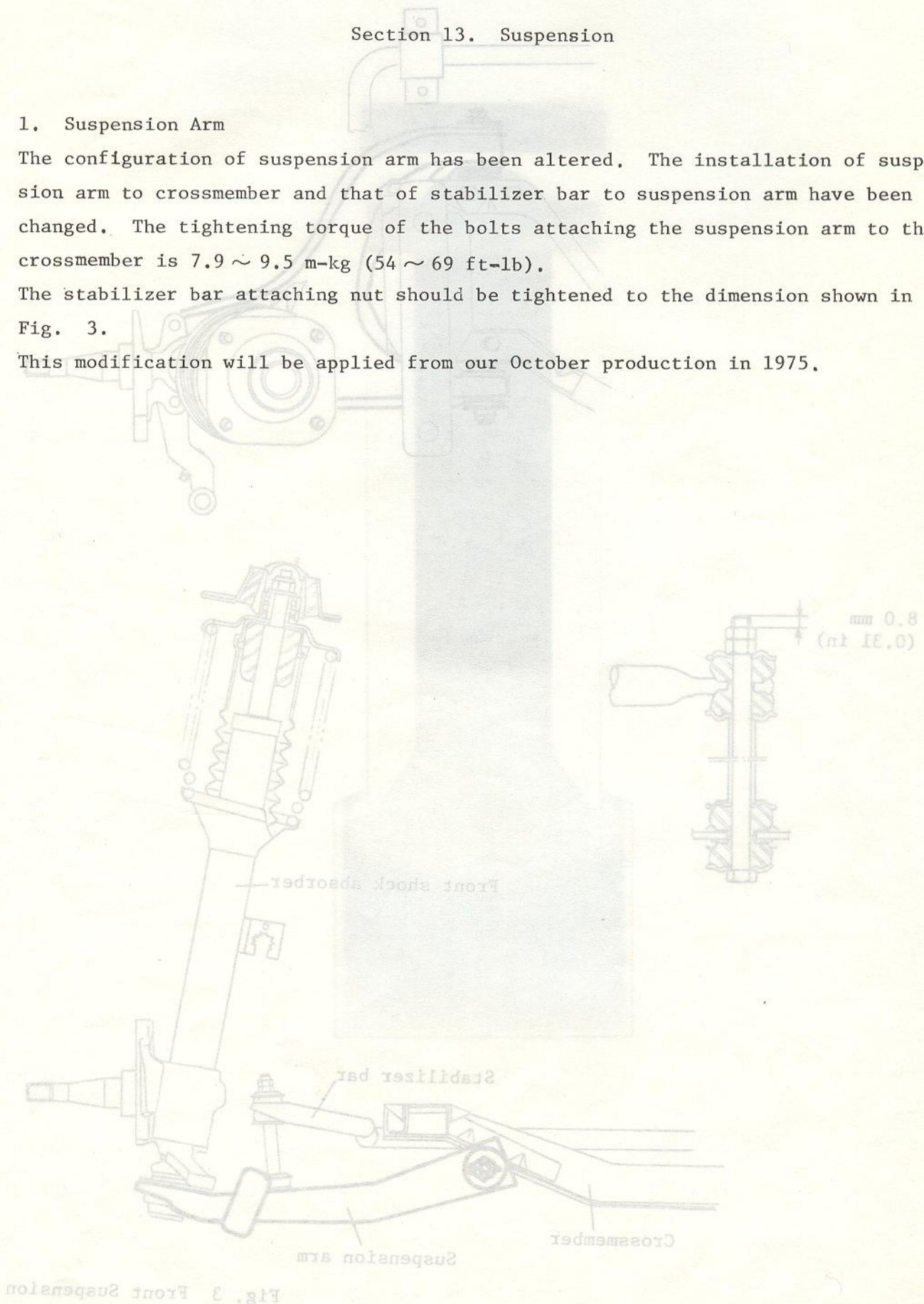
Section 13. Suspension

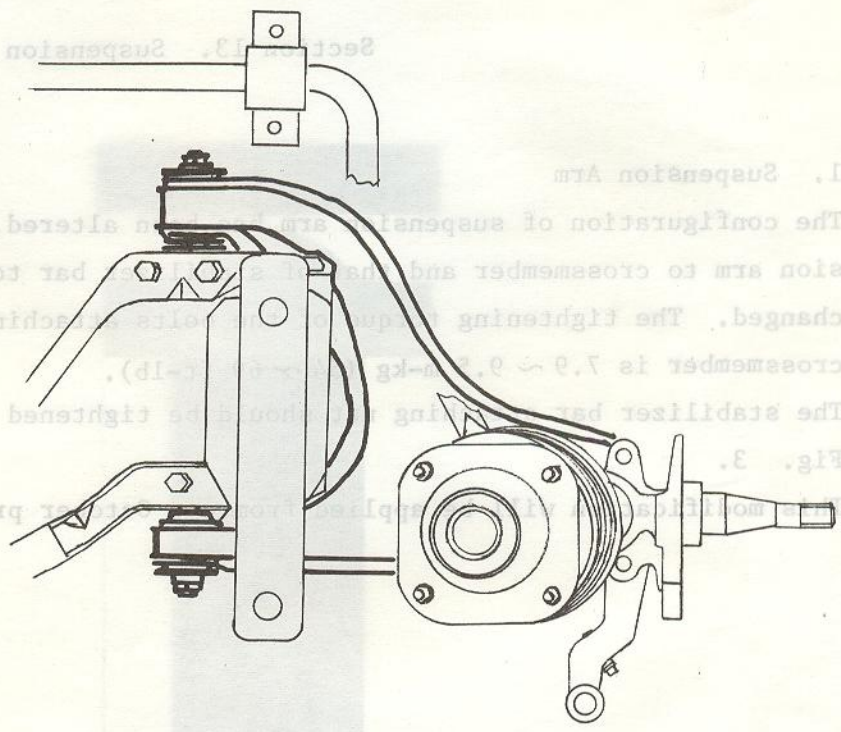
1. Suspension Arm

The configuration of suspension arm has been altered. The installation of suspension arm to crossmember and that of stabilizer bar to suspension arm have been changed. The tightening torque of the bolts attaching the suspension arm to the crossmember is 7.9 ~ 9.5 m-k_g (54 ~ 69 ft-lb).

The stabilizer bar attaching nut should be tightened to the dimension shown in Fig. 3.

This modification will be applied from our October production in 1975.





8.0 mm
(0.31 in)

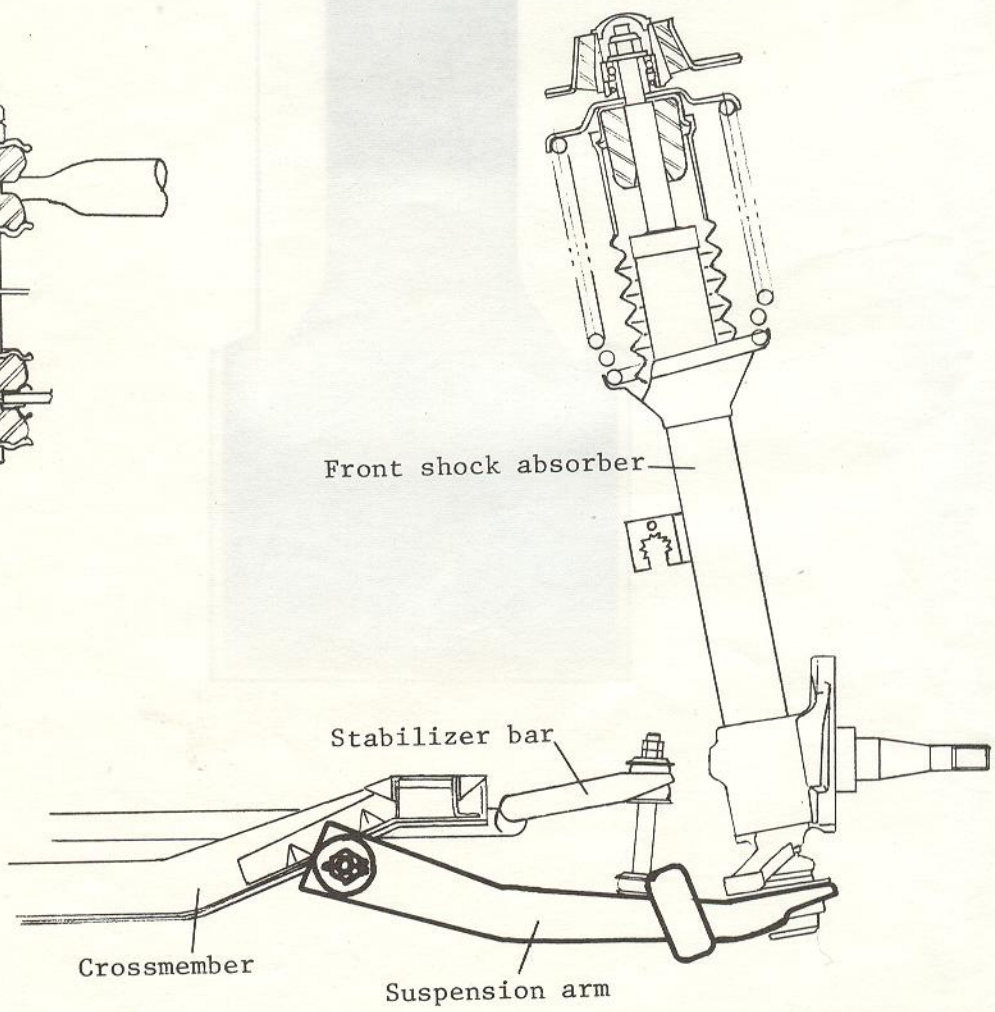
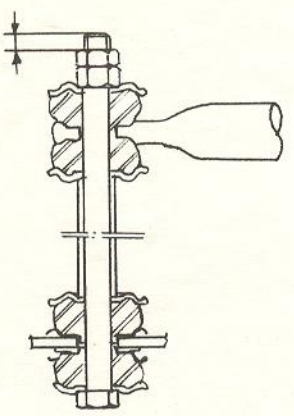


Fig. 3 Front Suspension

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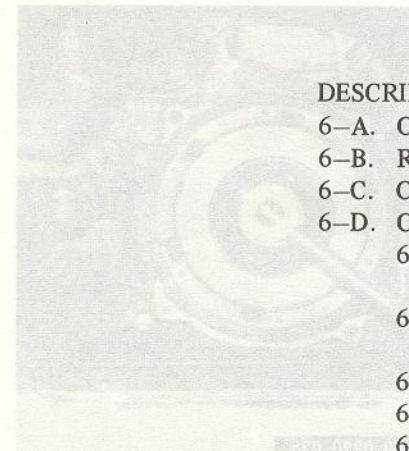
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CLUTCH (RX-4)

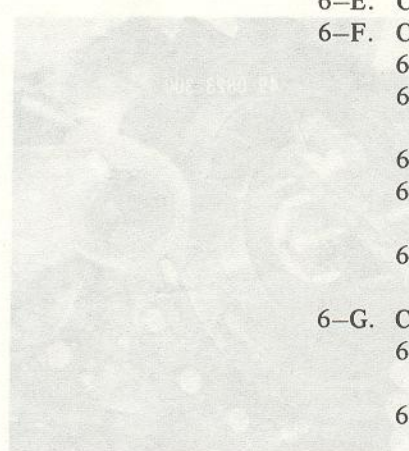
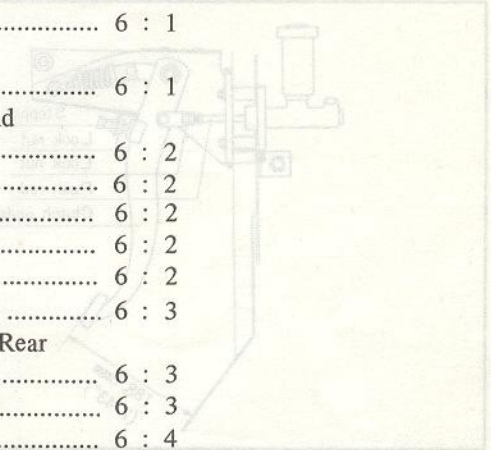
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DESCRIPTION
The clutch is of the single dry disc type. The clutch assembly consists of the clutch disc assembly, clutch cover and pressure plate assembly and clutch release mechanism.
The clutch operating mechanism is of the dash mounted type, consisting of a dash mounted master cylinder and a clutch release cylinder mounted on the clutch housing.

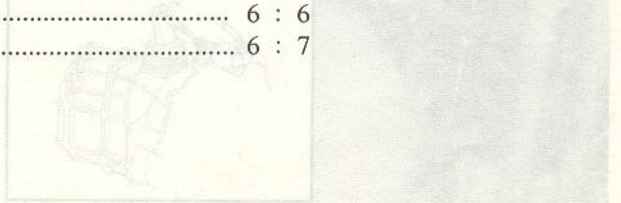
6-C. CLUTCH REMOVAL
To remove the clutch from the vehicle, proceed as follows:
1. Remove the transmission.
2. Install the ring gear brake (49 0820 060A).



6-A. CLUTCH PEDAL ADJUSTMENT
The free travel of the clutch pedal before the rod contacts with the piston should be 0.5 to 1.0 mm (0.02 to 0.12 in).
To adjust the free travel, turn the push rod until the rod contacts with the piston. Tighten the lock nut after adjustment is completed.



6-B. RELEASE FORK ADJUSTMENT
To adjust the free play, proceed as follows:
1. Unhook the release fork return spring from the fork.
2. Loosen the release rod lock nut and turn the release rod until the free play is 3.0 to 4.0 mm (0.12 to 0.16 in).
3. Tighten the lock nut and hook the return spring from the fork.



6-D. CLUTCH INSPECTION
6-D-1. Checking Release Bearing and Fork
Note: The release bearing is packed with lubricant.

Fig. 6-3 Adjusting release fork free play

DESCRIPTION

The clutch is of the single dry disc type. The clutch assembly consists of the clutch disc assembly, clutch cover and pressure plate assembly and clutch release mechanism.

The clutch operating mechanism is of the hydraulic type, consisting of a dash mounted master cylinder and a clutch release cylinder mounted on the clutch housing.

6-A. CLUTCH PEDAL ADJUSTMENT

The free travel of the clutch pedal before the push rod contacts with the piston should be **0.5 to 3.0 mm (0.02 to 0.12 in)**.

To adjust the free travel, loosen the lock nut and turn the push rod until the proper adjustment is made. Tighten the lock nut after adjustment is completed.

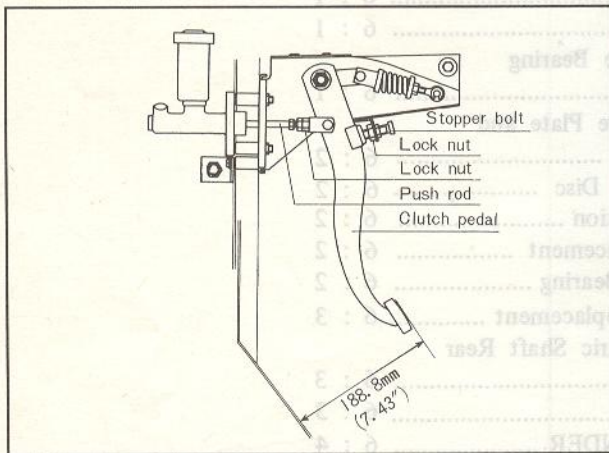


Fig. 6-1 Clutch pedal

6-B. RELEASE FORK ADJUSTMENT

To adjust the free play, proceed as follows :

1. Unhook the release fork return spring from the fork.
2. Loosen the release rod lock nut and turn the free play adjusting nut until the correct free play is obtained. The free play is **3.0 ~ 4.0 mm (0.12 ~ 0.16 in)**.
3. Tighten the lock nut and hook the return spring.

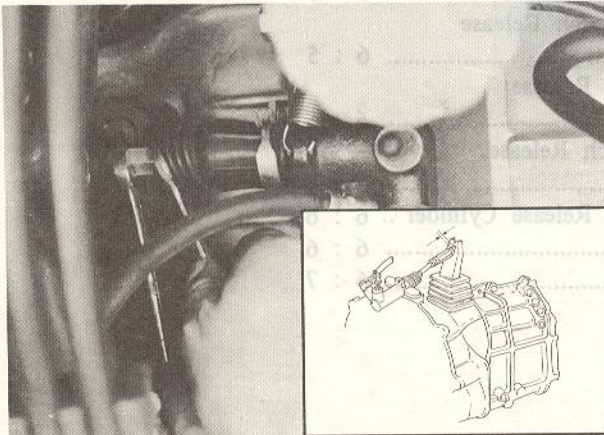


Fig. 6-2 Adjusting release fork free play

6-C. CLUTCH REMOVAL

To remove the clutch from the vehicle, proceed as follows:

1. Remove the transmission.
2. Install the **ring gear brake (49 0820 060A)**.
3. Remove the 4 standard bolts and 2 reamer bolts holding the clutch cover assembly to the flywheel and remove the clutch cover assembly and the clutch disc.
4. Straighten the tab of the lockwasher. With the **wrench (49 0820 035)**, loosen the nut that attaches the flywheel to the eccentric shaft and remove the nut.

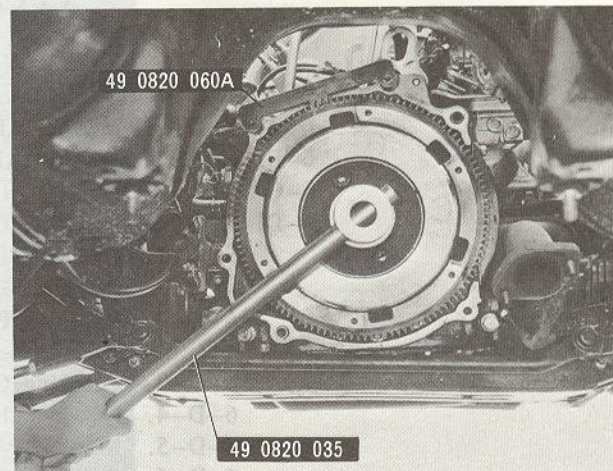


Fig. 6-3 Loosening flywheel nut

5. Using the **puller (49 0823 300)**, remove the flywheel from the eccentric shaft.

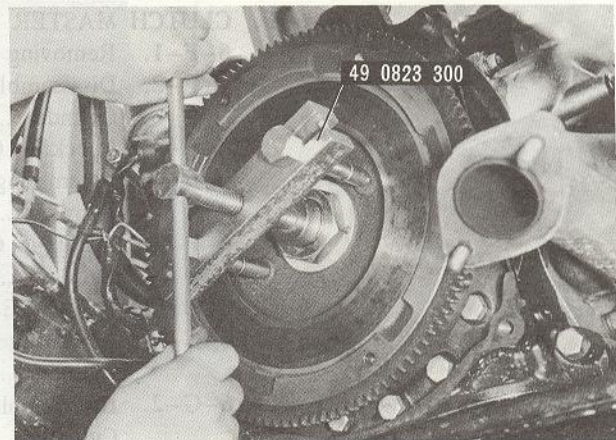


Fig. 6-4 Removing flywheel

6. Remove the return spring for the clutch release bearing and slide off the release bearing.
7. Pull the release fork outward until the spring clip of the fork releases from the ball pivot. Remove the fork from the clutch housing.

6-D. CLUTCH INSPECTION**6-D-1. Checking Release Bearing and Fork**

Note: The release bearing is packed with lubricant

which is intended to last the whole life time of the bearing. Therefore, the bearing must not be washed in gasoline or any other solvent.

Check the release bearing by pressing and turning the front race slowly by hand. Replace if the bearing feels rough or seems noisy when turning.

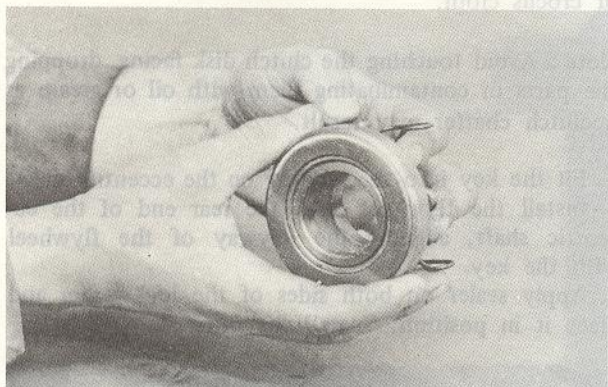


Fig. 6-5 Checking release bearing

Examine the clutch housing carefully to be certain there are no burrs on the outer surface of the clutch housing which pilots the release bearing. Check the release fork for crack or bend. If necessary, replace the fork.

6-D-2. Checking Pressure Plate and Cover Assembly

Check the contact surfaces of the pressure plate with the clutch facing for wear, damage or warpage. If it is slight, correct it by lapping with compound or by turning a lathe. But if severe, replace with a new one.

Check the diaphragm spring and cover and if any wear or damage is found, replace the pressure plate and cover assembly.

6-D-3. Checking Clutch Disc

Inspect the clutch disc for warpage with a dial indicator or a feeler gauge, as shown in Fig. 6-6.

If it is **more than 1.0 mm (0.039 in)**, replace with a new one.

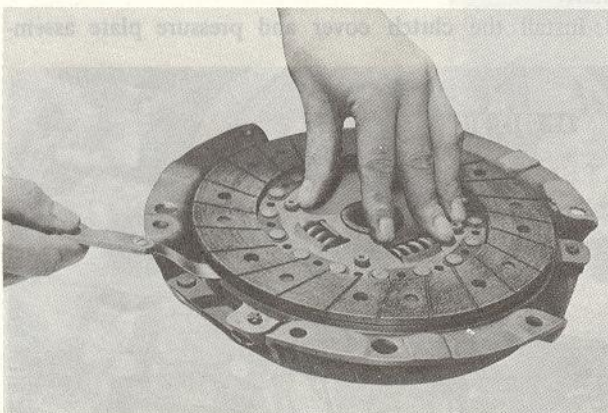


Fig. 6-6 Checking clutch disc for warpage

Excessively worn facing will cause slippage or score

the pressure plate and flywheel due to the projected heads of rivets.

Check the depth between the facing surface and the rivet using a depth gauge, as shown in Fig. 6-7. If the reading is **less than 0.30 mm (0.012 in)**, replace the clutch disc.

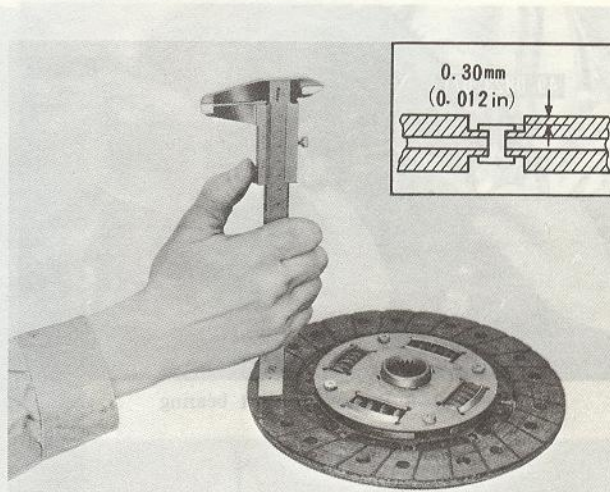


Fig. 6-7 Checking clutch disc for wear

If oil is evident on the facing, clean or replace the facing and eliminate the cause of oil leakage. Make certain that the clutch disc slides easily on the main drive shaft without any excessive play.

6-D-4. Flywheel Inspection

Inspect the contact surface of the flywheel with the clutch facing for burnt surface, scored surface or rivet grooves.

If it is slight, it can be reconditioned by grinding in a lathe. If the damage is deep, the flywheel should be replaced.

Check the ring gear teeth and replace if the ring gear teeth are broken, cracked or seriously burred.

Check the oil seal contacting surface of the flywheel for roughness. Repair or replace the flywheel if necessary.

Note: On the vehicle equipped with an automatic transmission, the ring gear and drive plate should be replaced as an assembly.

6-D-5. Ring Gear Replacement

1. Heat the old ring gear and remove it from the flywheel.
2. Heat a new ring gear **evenly 250 to 300°C (480 to 570°F)**.
3. Place the ring gear on the cold flywheel, making sure that the **chamfer on the teeth is faced to the engine**.
4. Allow the ring gear to cool slowly to shrink it onto the flywheel.

6-D-6. Checking Pilot Bearing

Check the transmission main drive shaft pilot bearing which is pressed into the rear end of the eccentric

shaft.
If the bearing is loose or rough, it should be replaced.

6-D-7. Pilot Bearing Replacement

1. Remove the bearing and seals from the rear end of the eccentric shaft with the **remover** (49 0823 071).

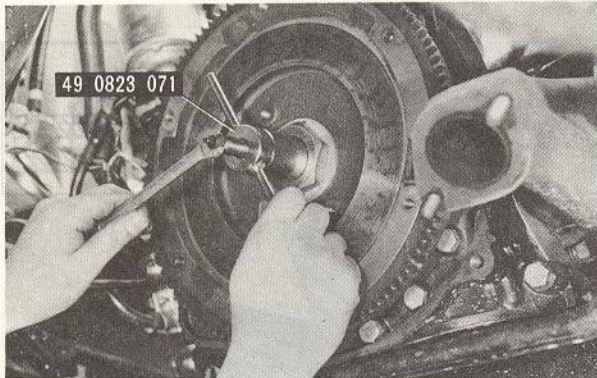


Fig. 6-8 Removing pilot bearing

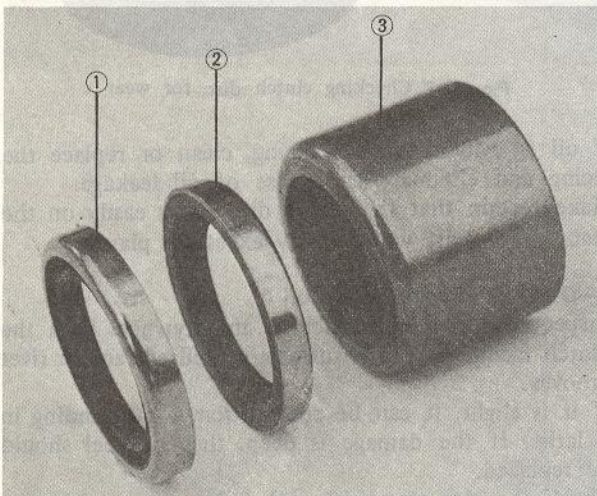


Fig. 6-9 Pilot bearing and seal
1 & 2. Seal 3. Pilot bearing

2. Install a new bearing with the **installer** (49 0823 072).
3. Install the seals.

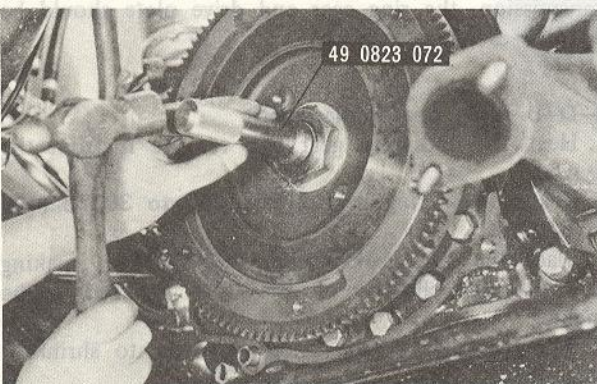


Fig. 6-10 Installing pilot bearing

6-D-8. Checking Eccentric Shaft Rear Oil Seal

Check the oil seal fitted into the rear stationary gear

for wear or damage.
If traces of oil leakage are found, replace the oil seal.

6-E. CLUTCH INSTALLATION

1. Clean the contact surfaces of the flywheel, pressure plate and disc thoroughly with fine sandpaper or crocus cloth.

Note : Avoid touching the clutch disk facing, dropping the parts or contaminating them with oil or grease as a clutch chatter may result.

2. Fit the key into the keyway on the eccentric shaft.
3. Install the flywheel onto the rear end of the eccentric shaft, aligning the keyway of the flywheel with the key.
4. Apply sealer on both sides of the lockwasher and place it in position. Install the nut.

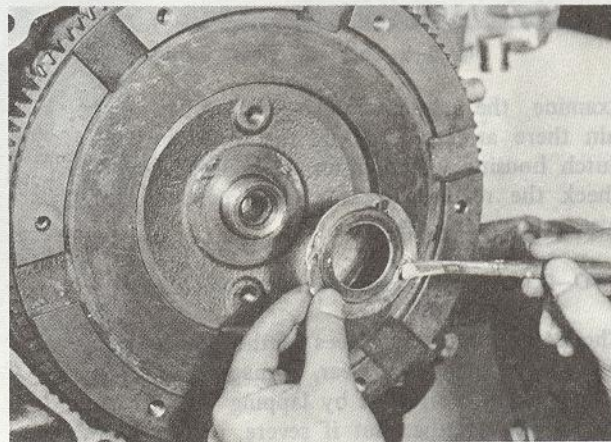


Fig. 6-11 Applying sealer to lockwasher

5. Install the **ring gear brake** (49 0820 060A) and with the **wrench** (49 0820 035) tighten the nut to **40 ~ 50 m·kg (289 ~ 362 ft·lb)**.
6. Bend the tab of the lockwasher to prevent loosening.
7. Hold the clutch disc in its mounting position with the **clutch disc centering tool** (49 0813 310).
If the tool is not available, use a spare main drive shaft.
8. Install the clutch cover and pressure plate assembly.

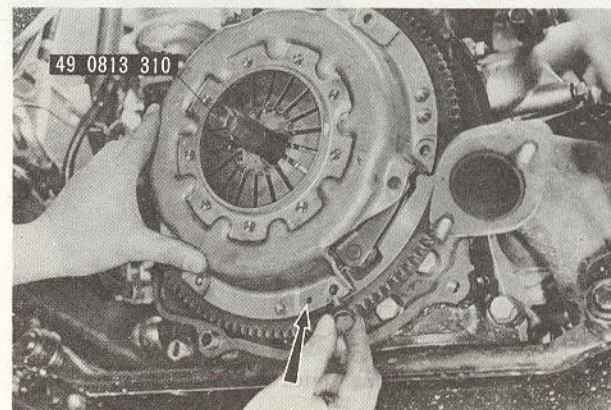


Fig. 6-12 Installing clutch cover assembly

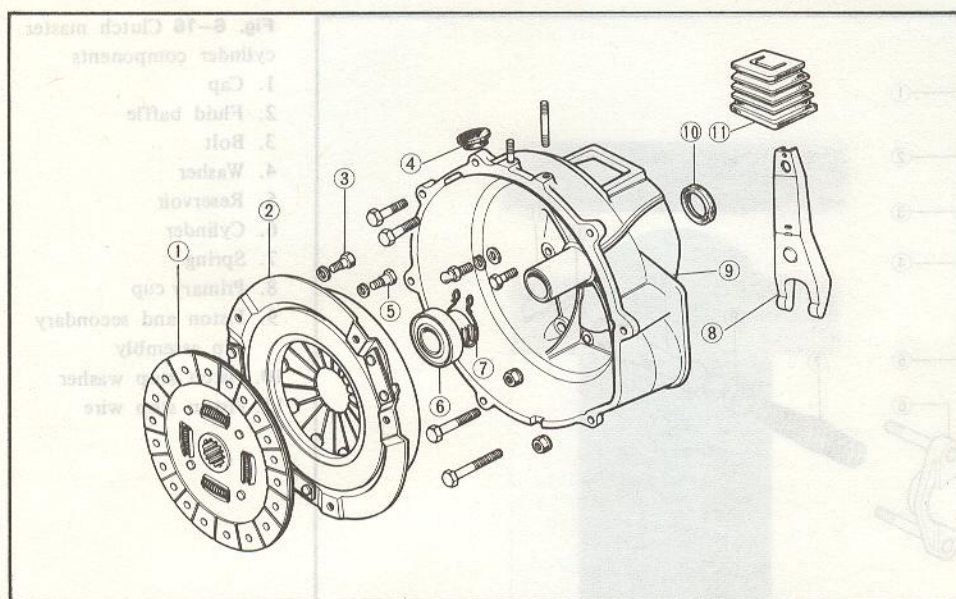


Fig. 6-14 Clutch components

1. Clutch disc
2. Clutch cover and pressure plate assembly
3. Bolt
4. Service hole cover
5. Reamer bolt
6. Release bearing
7. Spring
8. Release fork
9. Clutch housing
10. Oil seal
11. Dust boot

bly, aligning the "O" marks of the clutch cover and flywheel and install the 4 standard and 2 reamer bolts finger tight. To avoid pressure plate cover distortion, tighten the bolts a few turns at a time until they are all tight.

9. Torque the bolts to 1.8 ~ 2.7 m-kg (13 ~ 20 ft-lb).

10. Remove the disc centering tool and ring gear brake.

11. Apply grease to the pivot pin. Insert the release fork through the dust boot and press it inward so that the spring clip of the fork fits to the ball pivot.

12. Apply a light film of grease to the face of the release bearing and the bearing retainer of the clutch housing. Install the release bearing and the return spring. Operate the release fork to ensure that the bearing slides on the retainer back and forth smoothly.

13. Install the transmission and propeller shaft. Care should be taken in order not to bend the clutch disc by allowing the transmission to hang.

6-F. CLUTCH MASTER CYLINDER

6-F-1. Removing Clutch Master Cylinder

If it becomes necessary to remove the master cylinder for repair or overhaul, proceed as follows:

1. Disconnect the fluid pipe at the master cylinder

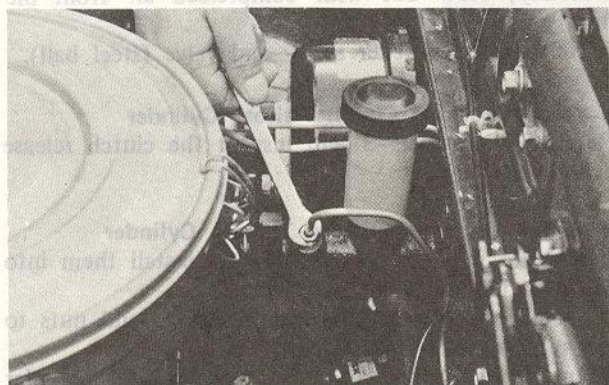


Fig. 6-13 Removing master cylinder

outlet.

2. Remove the nuts that attach the master cylinder to the dash panel.

3. Pull the master cylinder straight out and away from the dash panel.

6-F-2. Disassembling Clutch Master Cylinder

The procedures for disassembling the master cylinder after removing the master cylinder are as follows:

1. Clean the outside of the master cylinder thoroughly and drain the brake fluid.

2. Remove the piston stop wire with a screwdriver and remove the stop washer.

3. Remove the piston assembly, primary cup and return spring from the cylinder.

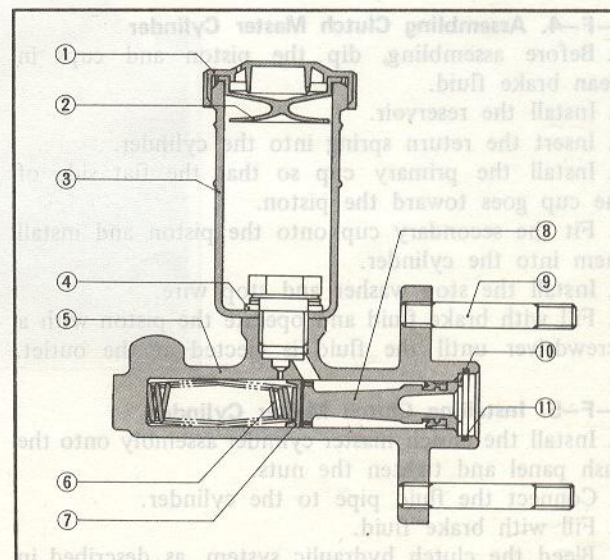


Fig. 6-15 Clutch master cylinder cross section

1. Cap
2. Fluid baffle
3. Reservoir
4. Washer
5. Cylinder
6. Spring
7. Primary piston cup
8. Piston and secondary cup assembly
9. Bolt
10. Stop washer
11. Stop wire

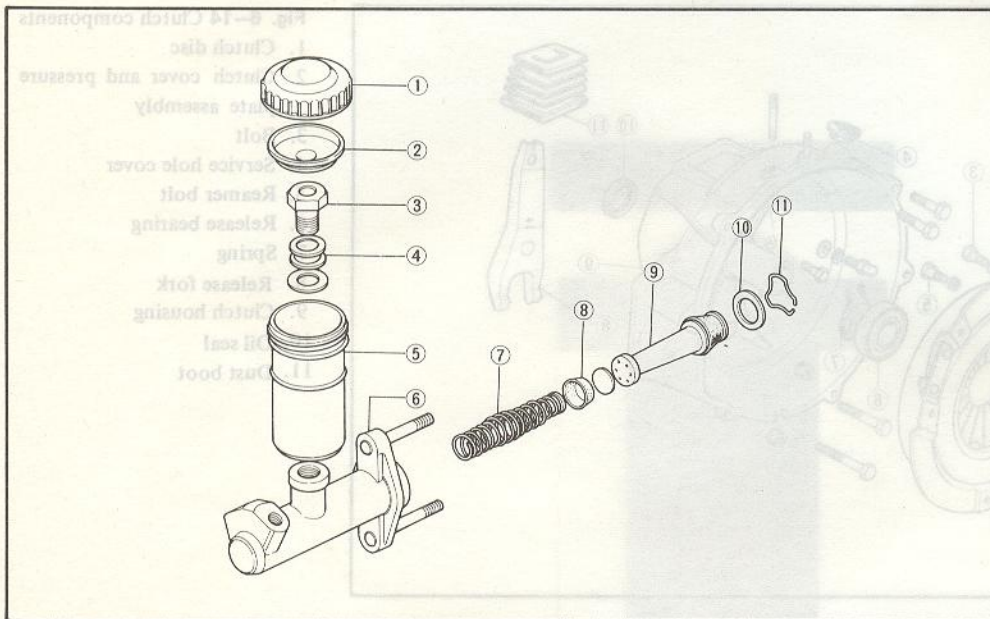


Fig. 6-16 Clutch master cylinder components

1. Cap
2. Fluid baffle
3. Bolt
4. Washer
5. Reservoir
6. Cylinder
7. Spring
8. Primary cup
9. Piston and secondary cup assembly
10. Piston stop washer
11. Piston stop wire

4. Remove the reservoir from the cylinder.

6-F-3. Checking Clutch Master Cylinder

1. Wash the parts in clean alcohol or brake fluid. **Never** use gasoline or kerosene.
2. Check the piston cups and replace if they are damaged, worn, softened, or swelled.
3. Examine the cylinder bore and piston for wear, roughness or scoring.
4. Check the clearance between the cylinder bore and the piston. If it is **more than 0.15 mm (0.006 in)**, replace the cylinder or piston.
5. Ensure that the compensating port on the cylinder is open.

6-F-4. Assembling Clutch Master Cylinder

1. Before assembling, dip the piston and cups in clean brake fluid.
2. Install the reservoir.
3. Insert the return spring into the cylinder.
4. Install the primary cup so that the flat side of the cup goes toward the piston.
5. Fit the secondary cup onto the piston and install them into the cylinder.
6. Install the stop washer and stop wire.
7. Fill with brake fluid and operate the piston with a screwdriver until the fluid is ejected at the outlet.

6-F-5. Installing Clutch Master Cylinder

1. Install the clutch master cylinder assembly onto the dash panel and tighten the nuts.
2. Connect the fluid pipe to the cylinder.
3. Fill with brake fluid.
4. Bleed the clutch hydraulic system, as described in Par. 6-H.

6-G. CLUTCH RELEASE CYLINDER

6-G-1. Removing Clutch Release Cylinder

1. Disconnect the fluid pipe at the clutch release

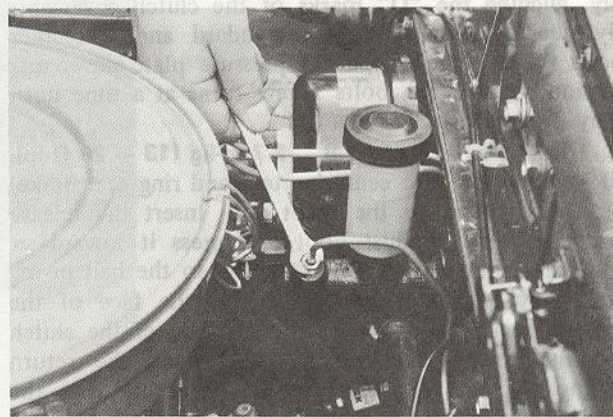


Fig. 6-17 Removing clutch release cylinder

- cylinder.
2. Unhook the release fork return spring.
3. Remove the nuts attaching the cylinder to the clutch housing. Remove the release cylinder.

6-G-2. Disassembling Clutch Release Cylinder

1. Clean the outside of the cylinder thoroughly.
2. Remove the dust boot from the cylinder.
3. Remove the release rod and spring assembly.
4. Remove the piston and cups from the cylinder. If necessary, blow out with compressed air from the fluid passage.
5. Remove the bleeder screw and valve (steel ball).

6-G-3. Checking Clutch Release Cylinder

- Refer to Par. 6-F-3 and inspect the clutch release cylinder.

6-G-4. Assembling Clutch Release Cylinder

1. Fit the cups to the piston and install them into the cylinder.
2. Install the spring seat, spring, washer and nuts to the release rod.
3. Install the release rod assembly into the cylinder and adjust the clearance between the piston and re-

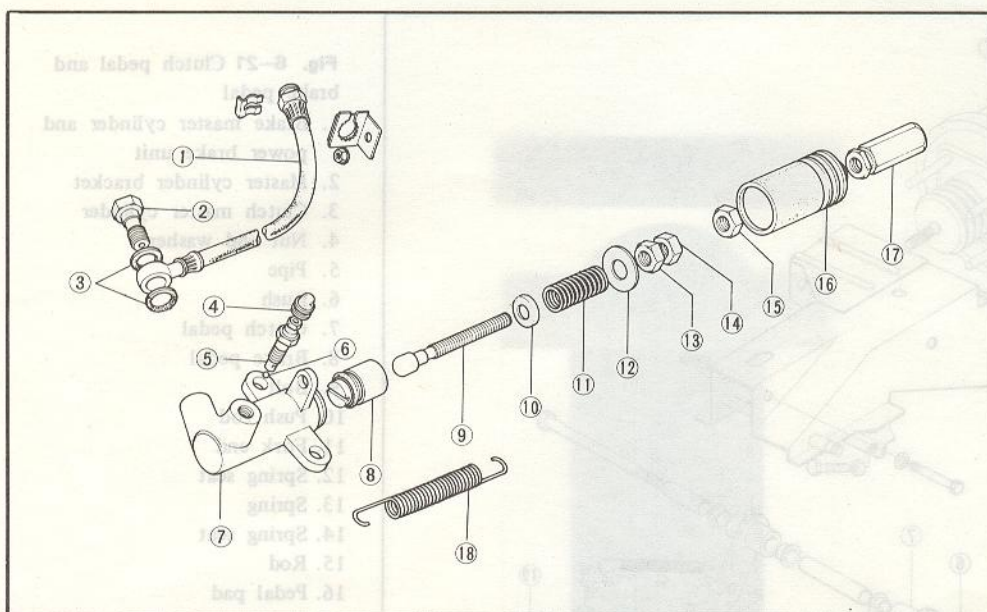


Fig. 6-19 Release cylinder components

1. Flexible hose
2. Connection bolt
3. Gasket
4. Rubber cap
5. Bleeder screw
6. Valve (steel ball)
7. Cylinder
8. Piston assembly
9. Rod
10. Spring seat
11. Spring
12. Washer
13. Adjusting nut
14. Lock nut
15. Lock nut
16. Boot
17. Adjusting nut

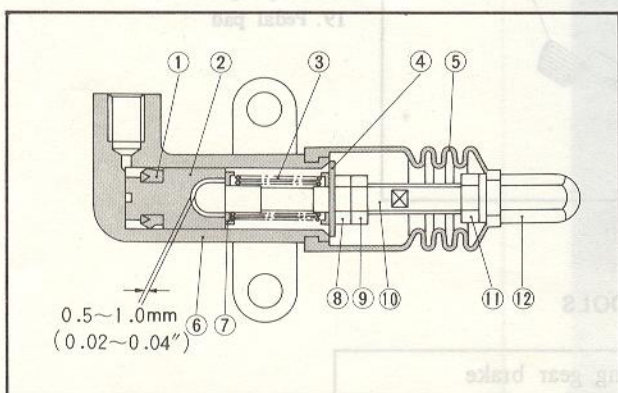


Fig. 6-18 Release cylinder

- | | |
|---------------|-------------------|
| 1. Piston cup | 7. Spring seat |
| 2. Piston | 8. Adjusting nut |
| 3. Spring | 9. Lock nut |
| 4. Washer | 10. Rod |
| 5. Boot | 11. Lock nut |
| 6. Cylinder | 12. Adjusting nut |

lease rod to 0.5 ~ 1.0 mm (0.02 ~ 0.04 in).

To adjust, push the release rod toward the piston until the spring seat touches the piston. Then, tighten the nut so that the washer comes in contact with the cylinder. Tighten the lock nut.

4. Install the valve (steel ball) and bleeder screw into the bleeder hole. Fit the bleeder cap.

5. Install the dust boot.

6-G-5. Installing Clutch Release Cylinder

1. Install the clutch release cylinder assembly to the clutch housing with two nuts.

2. Connect the fluid pipe.

3. Fill the reservoir of the master cylinder with brake fluid and bleed the system, as described in Par. 6-H.

4. Adjust the free play of the release fork, as instructed in Par. 6-B.

5. Hook the return spring.

6-H. AIR BLEEDING

The clutch hydraulic system must be bled whenever a fluid line has been disconnected or air enters the system. To bleed the clutch system, remove the rubber cap from the bleeder screw and attach the bleeder tube and fixture of the bleeder screw.

Place the end of the tube in the glass jar and submerge in brake fluid. Open the bleeder valve.

Depress the clutch pedal and allow it to return slowly. Continue this pumping action and watch the flow of fluid in the jar. When air bubbles cease to appear, close the bleeder valve. During bleeding the reservoir of the master cylinder must be kept at least 3/4 full of the brake fluid. After the bleeding operation, remove the tube, fit the cap to the bleeder screw, fill the reservoir and fit the filler cap.

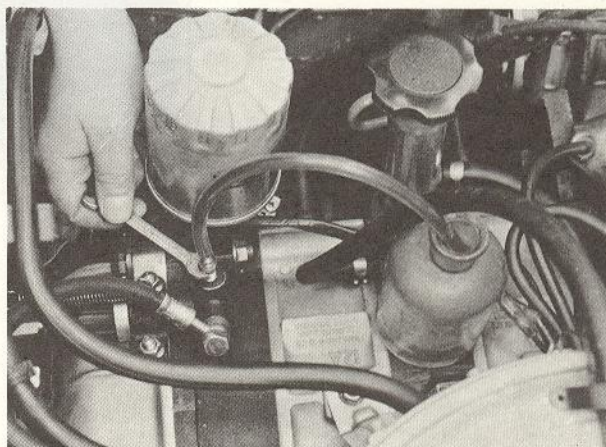


Fig. 6-20 Bleeding clutch hydraulic system

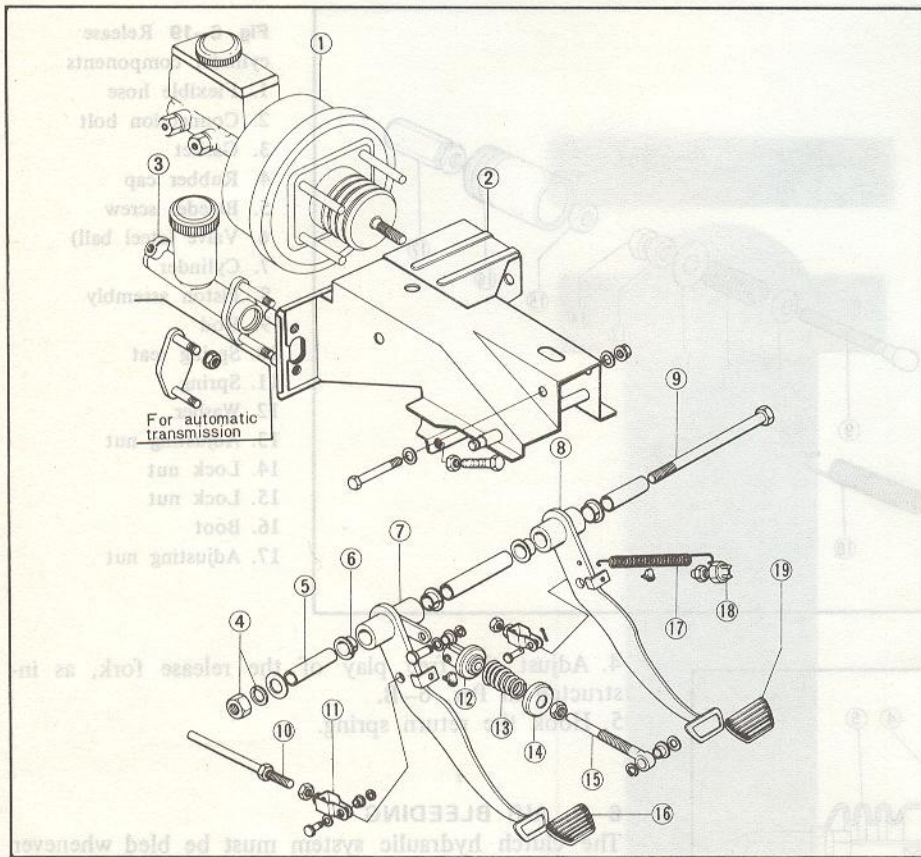


Fig. 6-21 Clutch pedal and brake pedal

1. Brake master cylinder and power brake unit
2. Master cylinder bracket
3. Clutch master cylinder
4. Nut and washer
5. Pipe
6. Bush
7. Clutch pedal
8. Brake pedal
9. Bolt
10. Push rod
11. Fork end
12. Spring seat
13. Spring
14. Spring seat
15. Rod
16. Pedal pad
17. Spring
18. Stop light switch
19. Pedal pad

SPECIAL TOOLS

49 0820 060A	Ring gear brake
49 0820 035	Wrench for flywheel nut
49 0823 300	Flywheel puller
49 0823 071	Pilot bearing remover
49 0823 072	Pilot bearing installer
49 0813 310	Clutch disk centering tool

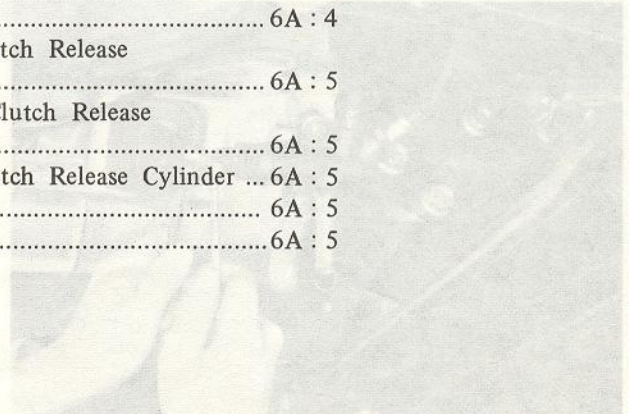
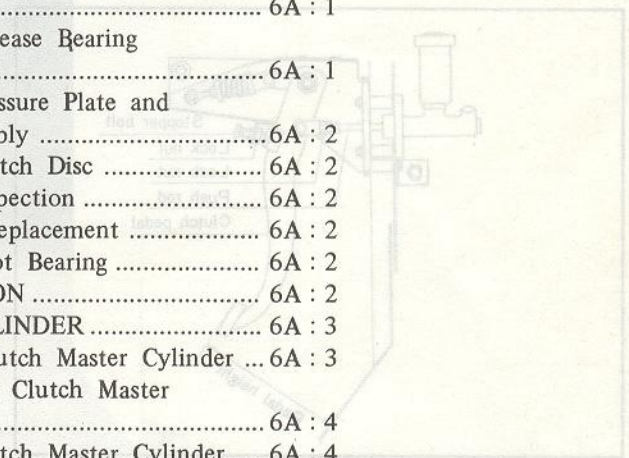


Fig. 6-20 Bleeding clutch hydraulic system

6-H
fluid and bleed the system, as described in Par.
3. Fill the reservoir of the master cylinder with brake
clutch housing with two nuts.
1. Install the clutch release cylinder assembly to the
6-G-5. Installing Clutch Release Cylinder
5. Install the dust boot.
the bleeder hole. Fit the bleeder cap.
4. Install the valve (steel ball) and bleeder screw into
cylinder. Tighten the lock nut.
the nut so that the washer comes in contact with the
until the spring seat touches the piston. Then, tighten
To adjust, push the release rod toward the piston
release rod to 0.2 ~ 1.0 mm (0.02 ~ 0.04 in).

CLUTCH (929)

DESCRIPTION	6A : 1
6A-A. CLUTCH PEDAL ADJUSTMENT	6A : 1
6A-A-1. Pedal Height Adjustment	6A : 1
6A-A-2. Free Travel Adjustment	6A : 1
6A-B. RELEASE FORK ADJUSTMENT	6A : 1
6A-C. CLUTCH REMOVAL	6A : 1
6A-D. CLUTCH INSPECTION.....	6A : 1
6A-D-1. Checking Release Bearing and Fork	6A : 1
6A-D-2. Checking Pressure Plate and Cover Assembly	6A : 2
6A-D-3. Checking Clutch Disc	6A : 2
6A-D-4. Flywheel Inspection	6A : 2
6A-D-5. Ring Gear Replacement	6A : 2
6A-D-6. Checking Pilot Bearing	6A : 2
6A-E. CLUTCH INSTALLATION	6A : 2
6A-F. CLUTCH MASTER CYLINDER	6A : 3
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6A-G-1. Removing Clutch Release Cylinder	6A : 4
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6A-H. AIR BLEEDING	6A : 5
SPECIAL TOOLS.....	6A : 5



Tighten the lock nut after adjustment is completed.

6A-B. RELEASE FORK ADJUSTMENT

Adjust the free play of the release fork, proceed as follows:

1. Loosen the release fork return spring.

2. Loosen the lock nut and turn the adjusting nut until a clearance of 2.5 to 3.5 mm (0.10 to 0.14 in).

3. Tighten the lock nut securely and hook the return spring.

DESCRIPTION

The clutch is of the single dry disc type. The clutch assembly consists of the clutch disc assembly, clutch cover and pressure plate assembly, and clutch release mechanism.

The clutch operating mechanism is of the hydraulic type, consisting of a dash mounted master cylinder and a clutch release cylinder mounted on the clutch housing.

6A-D-1. Checking Release Bearing and Fork

Note: The release bearing is packed with lubricant which is intended to last the whole life time of the bearing. Therefore, the bearing must not be washed in gasoline or any other solvent.

Fig. 6A-2 Adjusting release fork free play

DESCRIPTION

The clutch is of the single dry disc type. The clutch assembly consists of the clutch disc assembly, clutch cover and pressure plate assembly, and clutch release mechanism.

The clutch operating mechanism is of the hydraulic type, consisting of a dash mounted master cylinder and a clutch release cylinder mounted on the clutch housing.

6A-A. CLUTCH PEDAL ADJUSTMENT

6A-A-1. Pedal Height Adjustment

The standard pedal height from the floor, as shown in Fig. 6A-1, is 172 mm (6.77 in) for right hand drive vehicle and 177 mm (6.97 in) for left hand drive vehicle.

To adjust the pedal height, loosen the lock nut and turn the stopper bolt until the correct height is obtained. After adjustment is completed, securely tighten the lock nut.

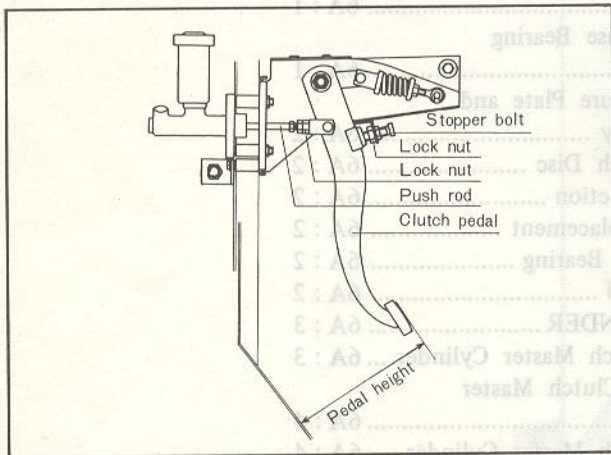


Fig. 6A-1 Clutch pedal

6A-A-2. Free Travel Adjustment

The free travel of the clutch pedal before the push rod contacts with the piston should be 0.5 to 3.0 mm (0.02 to 0.12 in).

To adjust the free travel, loosen the lock nut and turn the push rod until the proper adjustment is made.

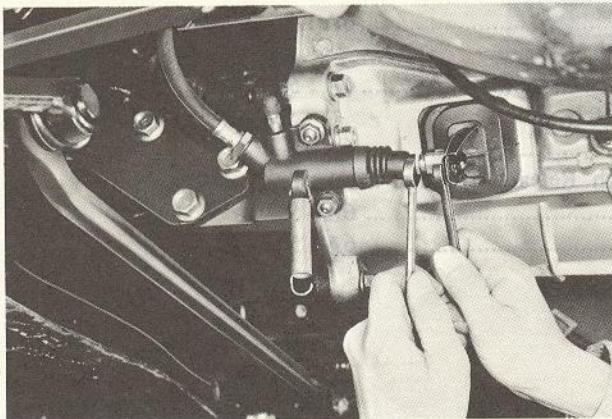


Fig. 6A-2 Adjusting release fork free play

Tighten the lock nut after adjustment is completed.

6A-B. RELEASE FORK ADJUSTMENT

To adjust the free play of the release fork, proceed as follows:

1. Unhook the release fork return spring.
2. Loosen the lock nut and turn the adjusting nut until a clearance of 2.5 to 3.5 mm (0.10 to 0.14 in) is obtained.
3. Tighten the lock nut securely and hook the return spring.

6A-C. CLUTCH REMOVAL

To remove the clutch from the vehicle, proceed as follows:

1. Remove the transmission.
2. Install the ring gear brake (49 0221 030A).
3. Remove the 4 standard bolts and 2 reamer bolts holding the clutch cover assembly to the flywheel, and remove the clutch cover assembly and the clutch disc.

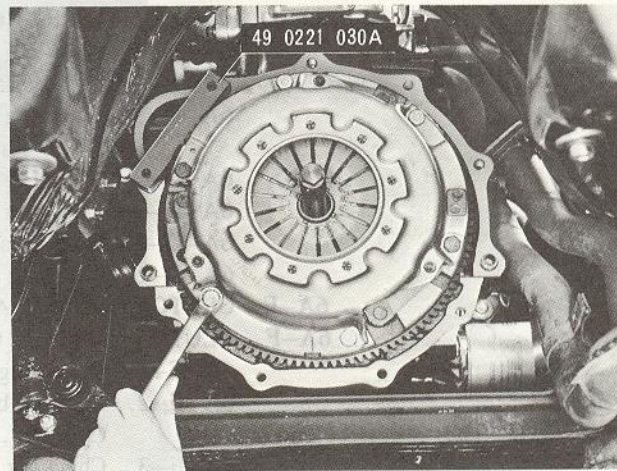


Fig. 6A-3 Removing clutch cover assembly

4. Remove the bolts that attach the flywheel to the crankshaft. Remove the flywheel.

Note:

After removing the flywheel, inspect for oil leaking through the engine rear main bearing oil seal.

5. Remove the return spring for the clutch release bearing and slide off the release bearing.
6. Pull the release fork outward until the spring clip of the fork releases from the ball pivot. Remove the fork from the clutch housing.

6A-D. CLUTCH INSPECTION

6A-D-1. Checking Release Bearing and Fork

Note: The release bearing is packed with lubricant which is intended to last the whole life time of the bearing. Therefore, the bearing must not be washed in gasoline or any other solvent.

Check the release bearing by pressing and turning the front race slowly by hand. Replace if the bearing feels rough or seems noisy when turning.

Examine the front cover of the transmission carefully to be certain there are no burrs on the outer surface of the front cover which pilots the release bearing. Check the release fork for crack or bend. If necessary, replace the fork.

6A-D-2. Checking Pressure Plate and Cover Assembly

Check the contact surfaces of the pressure plate with the clutch facing for wear, damage or warpage. If it is slight, correct it by lapping with compound or by turning a lathe. But if severe, replace with a new one.

Check the diaphragm spring and cover and if any wear or damage is found, replace the pressure plate and cover assembly.

6A-D-3. Checking Clutch Disc

Inspect the clutch disc for warpage with a dial indicator or a feeler gauge, as shown in Fig. 6A-4.

If it is more than 1.0 mm (0.039 in), replace with a new one.

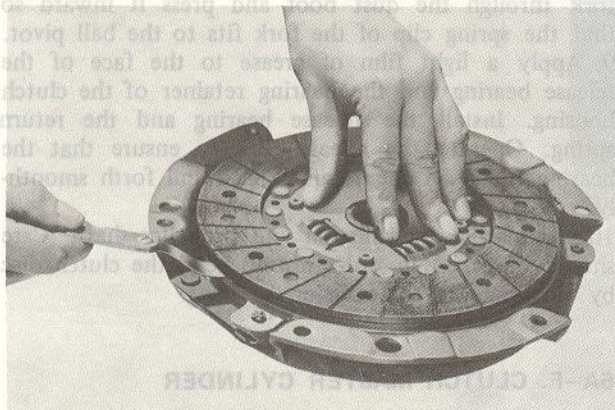


Fig. 6A-4 Checking clutch disc for warpage

Replace excessively worn facing as it will cause slippage, or scores the pressure plate and flywheel due to the projected heads of rivets.

Check the depth between the facing surface and the

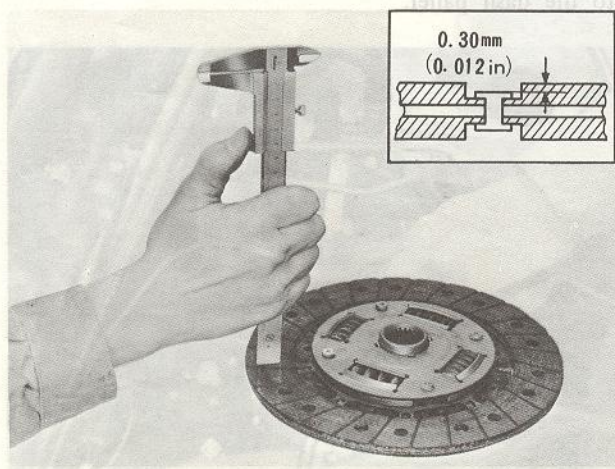


Fig. 6A-5 Checking clutch disc for wear

rivet using a depth gauge, as shown in Fig. 6A-5. If the reading is less than 0.30 mm (0.012 in), replace the clutch disc.

If oil is evident on the facing, clean or replace the facing and eliminate the cause of oil leakage.

Make certain that the clutch disc slides easily on the main drive shaft without any excessive play.

6A-D-4. Flywheel Inspection

Inspect the contact surface of the flywheel with the clutch facing for burnt surface, scored surface or rivet grooves.

If it is slight, it can be reconditioned by grinding in a lathe. If the damage is deep, the flywheel should be replaced.

Check the ring gear teeth and replace if the ring gear teeth are broken, cracked or seriously burred.

Note: On the vehicle equipped with an automatic transmission, the ring gear and drive plate should be replaced as an assembly.

6A-D-5. Ring Gear Replacement

1. Heat the old ring gear and remove it from the flywheel.
2. Heat a new ring gear evenly 250 to 300°C (480 to 570°F).
3. Place the ring gear on the cold flywheel, making sure that the chamfer on the teeth is faced to the engine.
4. Allow the ring gear to cool slowly to shrink it onto the flywheel.

6A-D-6. Checking Pilot Bearing

Check the transmission main drive shaft pilot bearing which is pressed into the center of the flywheel.

If the bearing is loose or rough, it should be replaced.

6A-E. CLUTCH INSTALLATION

1. Clean the contact surfaces of the flywheel, pressure plate and disc thoroughly with fine sandpaper or crocus cloth.

Note: Avoid touching the clutch disc facing, dropping

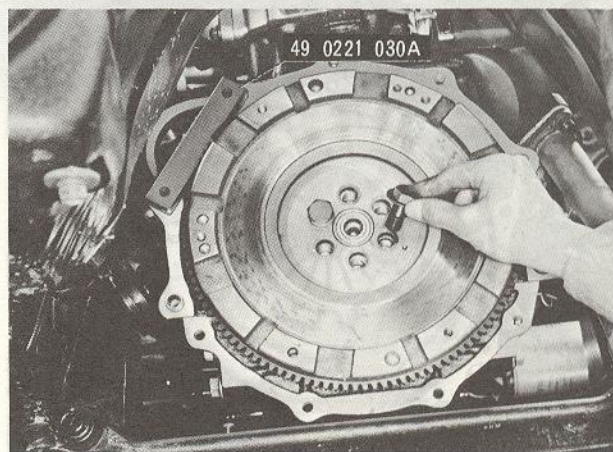


Fig. 6A-6 Installing flywheel

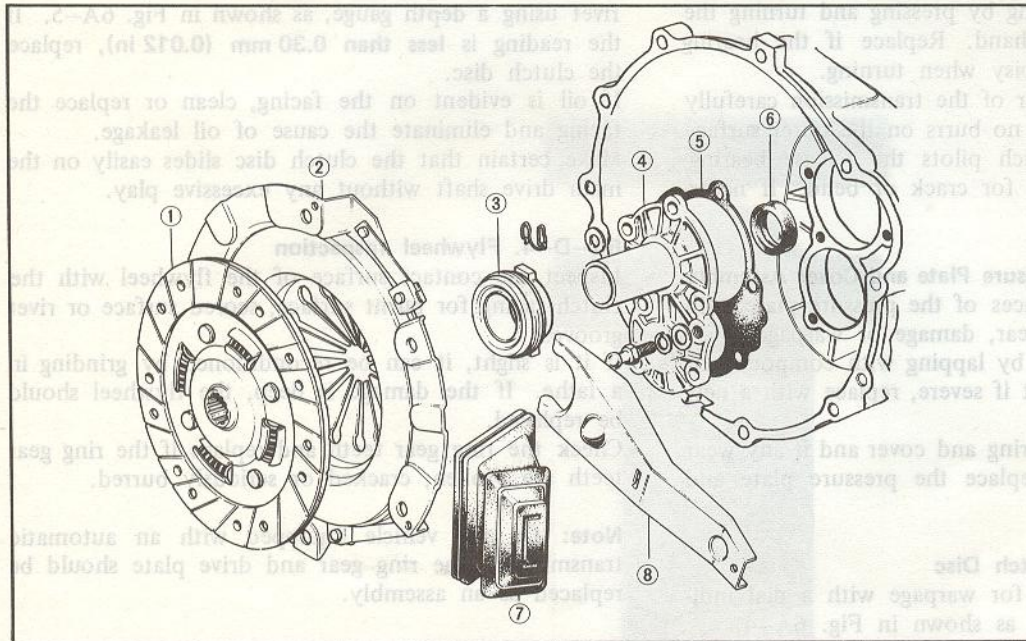


Fig. 6A-8
Clutch components

1. Clutch disc
2. Clutch cover and pressure plate assembly
3. Release bearing
4. Front cover
5. Gasket
6. Oil seal
7. Dust boot
8. Release fork

the parts or contaminating them with oil or grease as a clutch chatter may result.

2. Install the flywheel onto the rear end of the crankshaft with six bolts. When doing so, align the "O" marked hole on the flywheel with the reamer hole on the crankshaft and install the reamer bolt in the "O" marked hole.
3. Use the ring gear brake (49 0221 030A) and tighten the bolts to **15.5 ~ 16.3 m-k (112 ~ 118 ft-lb)**.
4. Hold the clutch disc in its mounting position with the **clutch disc centering tool (49 0813 310)**. If the tool is not available, use a spare main drive shaft.
5. Install the clutch cover and pressure plate assembly, aligning the "O" marks of the clutch cover and flywheel and install the 4 standard and 2 reamer bolts finger tight. To avoid pressure plate cover distortion, tighten the bolts a few turns at a time until they are all tight.
6. Torque the bolts to **1.8 ~ 2.7 m-k (13 ~ 20 ft-lb)**.
7. Remove the disc centering tool and ring gear brake.

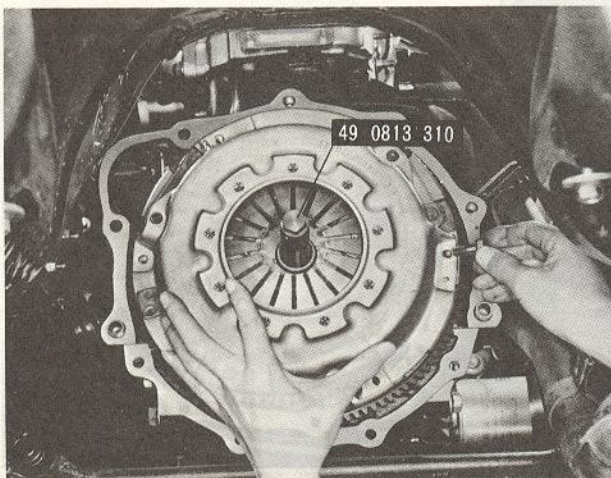


Fig. 6A-7 Installing clutch cover assembly

8. Apply grease to the ball pivot. Insert the release fork through the dust boot and press it inward so that the spring clip of the fork fits to the ball pivot.
9. Apply a light film of grease to the face of the release bearing and the bearing retainer of the clutch housing. Install the release bearing and the return spring. Operate the release fork to ensure that the bearing slides on the retainer back and forth smoothly.
10. Install the transmission and propeller shaft. Care should be taken in order not to bend the clutch disc by allowing the transmission to hang.

6A-F. CLUTCH MASTER CYLINDER

6A-F-1. Removing Clutch Master Cylinder

If it becomes necessary to remove the master cylinder for repair or overhaul, proceed as follows:

1. Disconnect the fluid pipe at the master cylinder outlet.
2. Remove the nuts that attach the master cylinder to the dash panel.

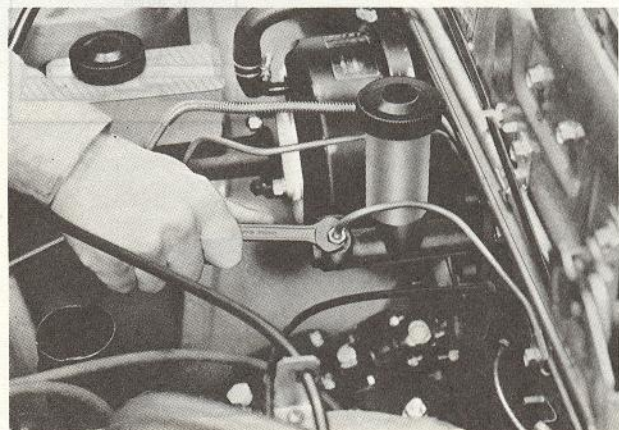


Fig. 6A-9 Removing master cylinder

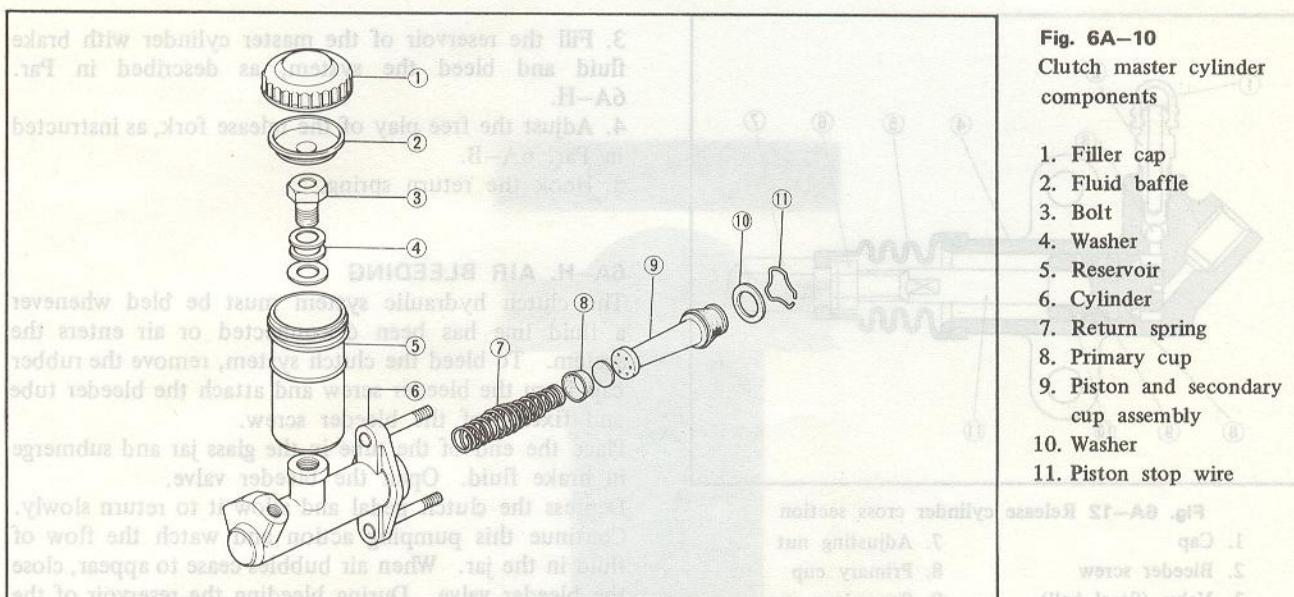


Fig. 6A-10
Clutch master cylinder
components

1. Filler cap
2. Fluid baffle
3. Bolt
4. Washer
5. Reservoir
6. Cylinder
7. Return spring
8. Primary cup
9. Piston and secondary cup assembly
10. Washer
11. Piston stop wire

3. Pull the master cylinder straight out and away from the dash panel.

6A-F-2. Disassembling Clutch Master Cylinder

The procedures for disassembling the master cylinder after removing the master cylinder are as follows:

1. Clean the outside of the master cylinder thoroughly and drain the brake fluid.
2. Remove the piston stop wire with a screwdriver and remove the stop washer.
3. Remove the piston assembly, primary cup and return spring from the cylinder.
4. Remove the reservoir from the cylinder.

6A-F-3. Checking Clutch Master Cylinder

1. Wash the parts in clean alcohol or brake fluid. **Never** use gasoline or kerosene.
2. Check the piston cups and replace if they are damaged, worn, softened, or swelled.
3. Examine the cylinder bore and piston for wear, roughness or scoring.
4. Check the clearance between the cylinder bore and the piston. If it is **more than 0.15 mm (0.006 in)**, replace the cylinder or piston.
5. Ensure that the compensating port on the cylinder is open.

6A-F-4. Assembling Clutch Master Cylinder

1. Before assembling, dip the piston and cups in clean brake fluid.
2. Install the reservoir.
3. Insert the return spring into the cylinder.
4. Install the primary cup so that the flat side of the cup goes toward the piston.
5. Fit the secondary cup onto the piston and install them into the cylinder.
6. Install the stop washer and stop wire.
7. Fill with brake fluid and operate the piston with a screwdriver until the fluid is ejected at the outlet.

6A-F-5. Installing Clutch Master Cylinder

1. Install the clutch master cylinder assembly onto the

dash panel and tighten the nuts.

2. Connect the fluid pipe to the cylinder.
3. Fill with brake fluid.
4. Bleed the clutch hydraulic system, as described in Par. 6A-H.

6A-G. CLUTCH RELEASE CYLINDER

6A-G-1. Removing Clutch Release Cylinder

1. Disconnect the fluid pipe at the clutch release cylinder.
2. Unhook the release fork return spring.
3. Remove the nuts attaching the cylinder to the clutch housing. Remove the release cylinder.

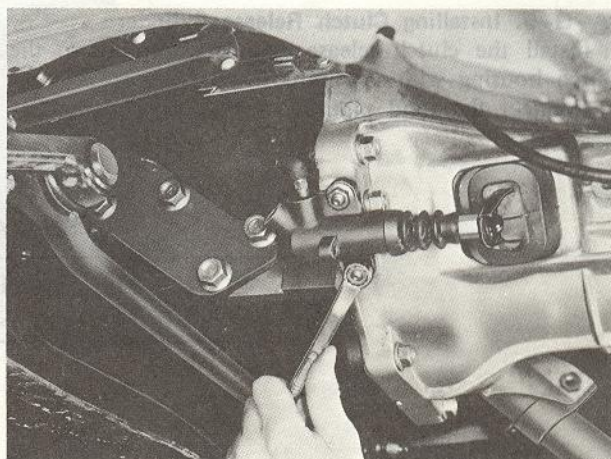


Fig. 6A-11 Removing release cylinder

6A-G-2. Disassembling Clutch Release Cylinder

1. Clean the outside of the cylinder thoroughly.
2. Remove the dust boot from the cylinder.
3. Remove the release rod.
4. Remove the piston and cups from the cylinder. If necessary, blow out with compressed air from the fluid passage.
5. Remove the bleeder screw and valve (steel ball).

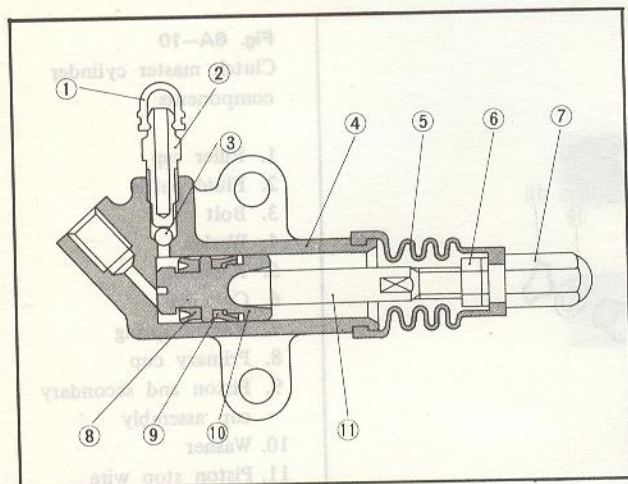


Fig. 6A-12 Release cylinder cross section

- | | |
|-----------------------|------------------|
| 1. Cap | 7. Adjusting nut |
| 2. Bleeder screw | 8. Primary cup |
| 3. Valve (Steel ball) | 9. Secondary cup |
| 4. Cylinder | 10. Piston |
| 5. Boot | 11. Release rod |
| 6. Lock nut | |

6A-G-3. Checking Clutch Release Cylinder
Refer to Par. 6A-F-3 and inspect the clutch release cylinder.

6A-G-4. Assembling Clutch Release Cylinder
1. Fit the cups to the piston and install them into the cylinder.
2. Install the rubber boot on the end of the cylinder.
3. Install the valve (steel ball) and bleeder screw into the bleeder hole. Fit the cap.
4. Install the clutch release rod.

6A-G-5. Installing Clutch Release Cylinder
1. Install the clutch release cylinder assembly to the clutch housing with two nuts.
2. Connect the fluid pipe.

3. Fill the reservoir of the master cylinder with brake fluid and bleed the system, as described in Par. 6A-H.
4. Adjust the free play of the release fork, as instructed in Par. 6A-B.
5. Hook the return spring.

6A-H. AIR BLEEDING

The clutch hydraulic system must be bled whenever a fluid line has been disconnected or air enters the system. To bleed the clutch system, remove the rubber cap from the bleeder screw and attach the bleeder tube and fixture of the bleeder screw.

Place the end of the tube in the glass jar and submerge in brake fluid. Open the bleeder valve.

Depress the clutch pedal and allow it to return slowly. Continue this pumping action and watch the flow of fluid in the jar. When air bubbles cease to appear, close the bleeder valve. During bleeding the reservoir of the master cylinder must be kept at least 3/4 full of the brake fluid. After the bleeding operation, remove the tube, fit the cap to the bleeder screw, fill the reservoir and fit the filler cap.

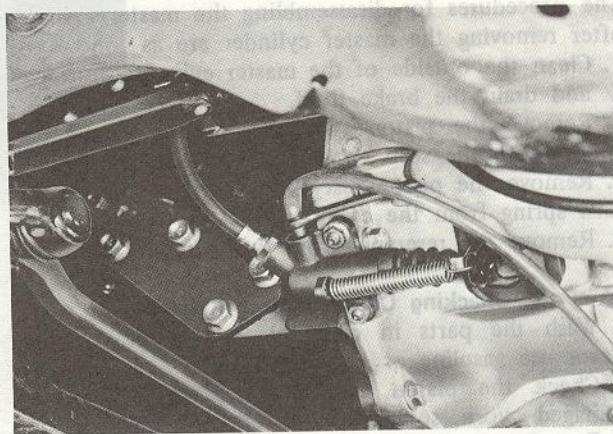


Fig. 6A-13 Air bleeding clutch hydraulic system

SPECIAL TOOLS

- | | |
|--------------|----------------------------|
| 49 0221 030A | Ring gear brake |
| 49 0813 310 | Clutch disc centering tool |

FOUR SPEED TRANSMISSION (RX-4)

DESCRIPTION	7 : 3
7-A. BACK-UP LAMP SWITCH REPLACEMENT	7 : 3
7-B. MAIN SHAFT OIL SEAL REPLACEMENT	7 : 3
7-C. TRANSMISSION REMOVAL	7 : 3
7-D. TRANSMISSION DISASSEMBLY	7 : 5
7-E. TRANSMISSION INSPECTION	7 : 7
7-E-1. Checking Transmission Case and Clutch Housing	7 : 7
7-E-2. Checking Bearings	7 : 7
7-E-3. Checking Gears	7 : 7
7-E-4. Checking Main Shaft and Main Drive Shaft	7 : 7
7-E-5. Checking Counter Shaft	7 : 7
7-E-6. Checking Control Lever and Shift Fork Shaft	7 : 7
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7-E-8. Checking Clutch Sleeve	7 : 7
7-E-9. Checking Synchronizer Ring	7 : 7
7-E-10. Checking Synchronizer Key and Spring	7 : 8
7-E-11. Checking Clutch Hub	7 : 8
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7-E-13. Checking Speedometer Gears	7 : 8
7-F. TRANSMISSION ASSEMBLY	7 : 9
7-G. TRANSMISSION INSTALLATION	7 : 14
SPECIAL TOOLS	7 : 14

Fig. 7-1 Transmission cover and main shaft

35. Gearset
36. Transmission case cover
37. Counter shaft and gear
38. Main shaft
39. Gearset
40. Counter shaft rear bearing
41. Counter shaft front bearing
42. Main shaft front bearing
43. Main shaft rear bearing
44. Main shaft oil seal
45. Main shaft lock ball
46. Speedometer drive gear
47. Main shaft key

48. Main shaft
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94. Main shaft
95. Main shaft
96. Main shaft
97. Main shaft
98. Main shaft
99. Main shaft
100. Main shaft

7-F. TRANSMISSION ASSEMBLY

1. Assemble the first-and-second synchronesh mechanism by installing the clutch hub to the sleeve, placing the three synchronizer keys into the clutch hub key slots and installing the key springs to the clutch hub.

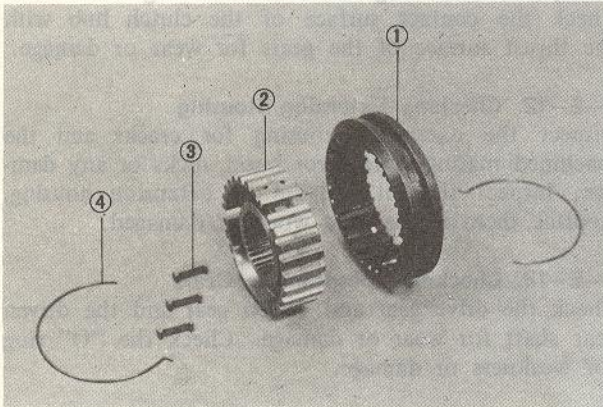


Fig. 7-21 Synchronesh mechanism

- 1. Clutch sleeve
- 2. Clutch hub
- 3. Synchronizer key
- 4. Key spring

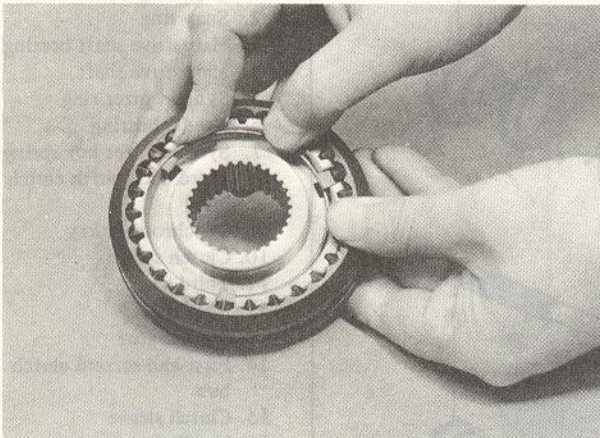


Fig. 7-22 Installing synchronizer key spring

Note :

When installing the key springs, the open ends of the springs should be kept 120° apart as shown in Fig. 7-23, so that the spring tension on each key

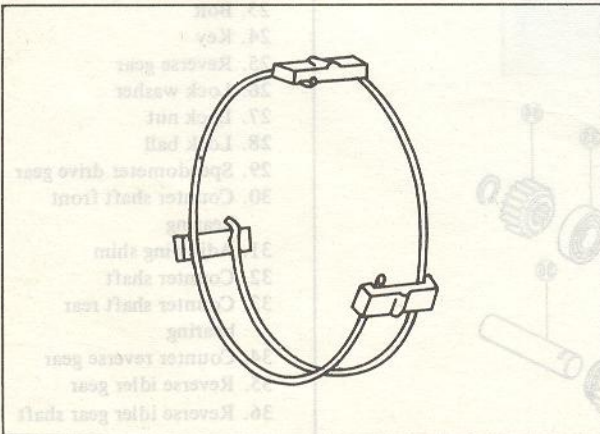


Fig. 7-23 Installing key spring

will be uniform.

2. Assemble the third-and-fourth synchronesh mechanism in the same manner as first-and-second synchronesh mechanism.

3. Place the synchronizer ring on the second gear and slide the second gear to the main shaft with the synchronizer ring toward the rear of the shaft.

4. Slide the first-and-second clutch hub and sleeve assembly to the main shaft with the oil grooves of the clutch hub toward the front of the main shaft and press in the bearing inner race for the first gear. Make sure that the three synchronizer keys in the synchronesh mechanism engage the notches in the second synchronizer ring.

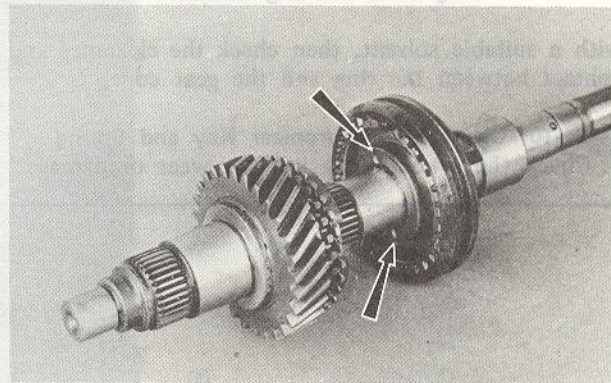


Fig. 7-24 Installing clutch hub and sleeve assembly

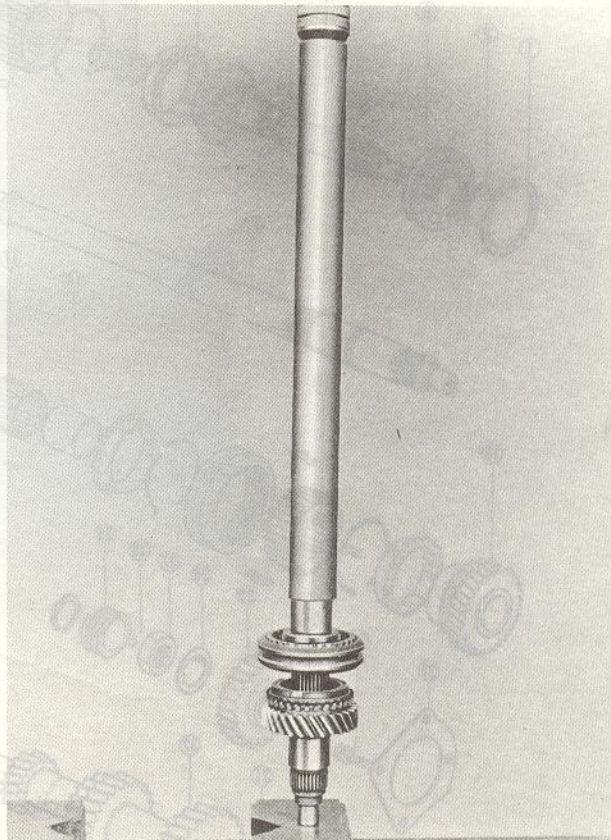


Fig. 7-25 Installing clutch hub and sleeve assembly

5. Slide the needle bearing for the first gear to the main shaft.

6. Place the synchronizer ring on the first gear and slide the first gear to the main shaft with the synchronizer ring toward the front of the shaft. Rotate the first gear as necessary to engage the three notches shaft in the synchronizer ring with the synchronizer keys in the first-and-second.
7. Install the original thrust washer to the main shaft.

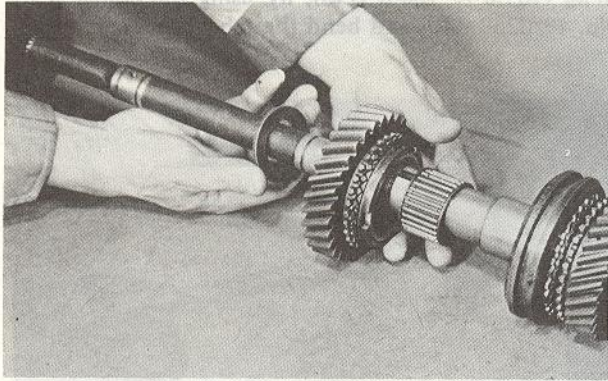


Fig. 7-26 Installing first gear

8. Place the synchronizer ring on the third gear and slide the third gear to the front of the main shaft with the synchronizer ring toward the front.
9. Slide the third-and-fourth clutch hub and sleeve assembly to the front of the main shaft making sure

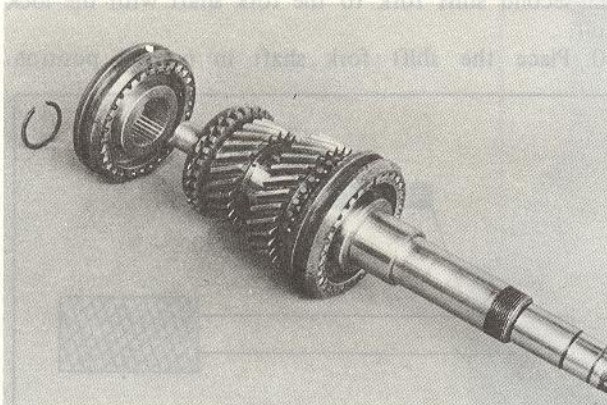


Fig. 7-27 Installing clutch hub and sleeve assembly

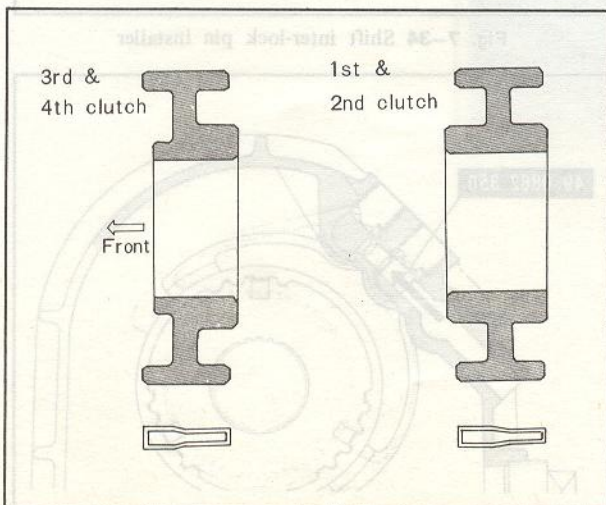


Fig. 7-28 Direction of clutch hub assembly

that the three synchronizer keys in the synchromesh mechanism engage the notches in the synchronizer ring.

Note :

The direction of the third-and-fourth clutch hub and sleeve assembly should be as shown in Fig. 7-28.

10. Install the snap ring to the front of the main shaft.
11. Position the main shaft and gears assembly in the case.

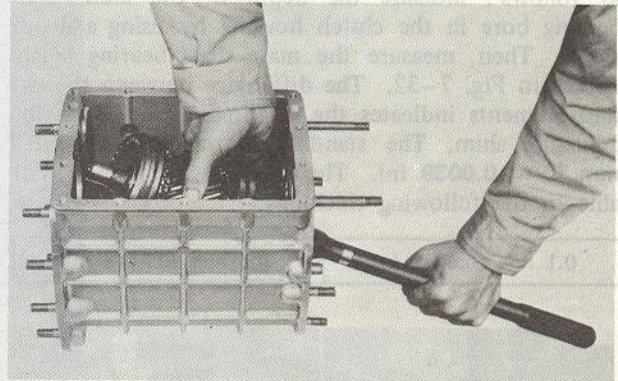


Fig. 7-29 Installing main shaft and gears assembly

12. Place the needle bearing to the front end of the main shaft.
13. Place the synchronizer ring on the main drive shaft gear (fourth gear) and install the main drive shaft gear to the front end of the main shaft making

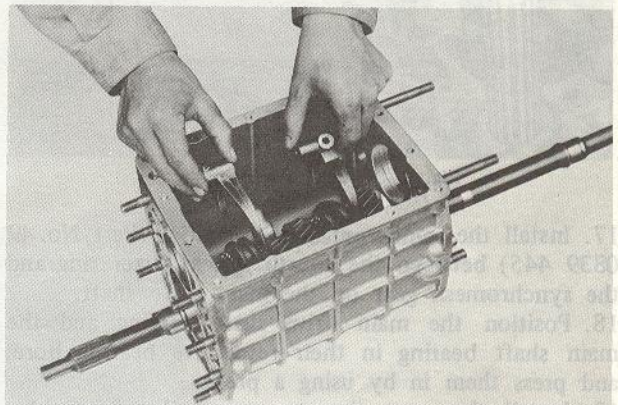


Fig. 7-30 Installing shift forks

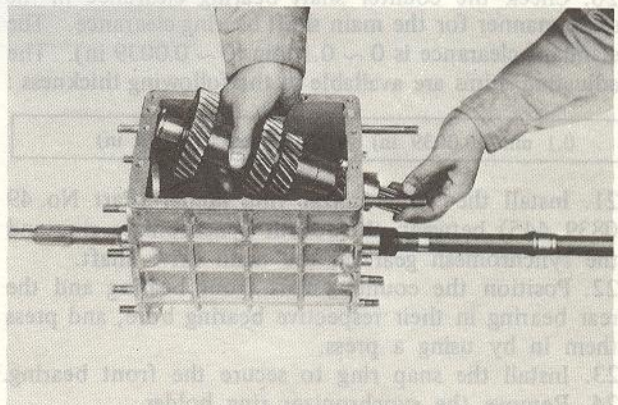


Fig. 7-31 Installing counter shaft gear

sure that the three synchronizer keys in the third-and-fourth synchromesh mechanism engage the notches in the synchronizer ring.

14. Position the first-and-second shift fork and third-and-fourth shift fork in the groove of the clutch hub and sleeve assembly, as shown in Fig. 7-30.

15. Position the counter shaft gear in the case, making sure that the counter shaft gear engage each gear of the main shaft assembly.

16. Check the main shaft bearing clearance, proceed as follows: Measure the depth of the main shaft bearing bore in the clutch housing by using a depth gauge. Then, measure the main shaft bearing height shown in Fig. 7-32. The difference between the two measurements indicates the required thickness of the adjusting shim. The standard clearance is 0 ~ 0.1 mm (0 ~ 0.0039 in). The adjusting shims are available in the following thickness:

0.1 mm (0.0039 in)	0.3 mm (0.0118 in)
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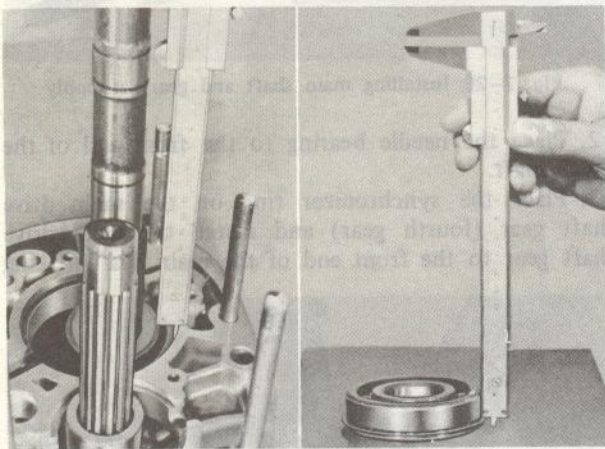


Fig. 7-32 Checking clearance

17. Install the **synchronizer ring holder** (Part No. 49 0839 445) between the fourth synchronizer ring and the synchromesh gear on the main drive shaft.

18. Position the main drive shaft bearing and the main shaft bearing in their respective bearing bore, and press them in by using a press.

19. Install the snap ring to secure the main drive shaft bearing.

20. Check the counter shaft bearing clearance in the same manner for the main shaft bearing clearance. The standard clearance is 0 ~ 0.1 mm (0 ~ 0.0039 in). The adjusting shims are available in the following thickness:

0.1 mm (0.0039 in)	0.3 mm (0.0118 in)
--------------------	--------------------

21. Install the **synchronizer ring holder** (Part No. 49 0839 445) between the fourth synchronizer ring and the synchromesh gear on the main drive shaft.

22. Position the counter shaft front bearing and the rear bearing in their respective bearing bore, and press them in by using a press.

23. Install the snap ring to secure the front bearing.

24. Remove the synchronizer ring holder.

25. Install the counter reverse gear to the rear end

of the counter shaft and secure it with the snap ring.

26. Install the reverse idler gear shaft to the transmission case.

27. Install the bearing cover to the transmission case and tighten the attaching bolts.

28. Install the reverse gear with the key to the main shaft. Tighten the main shaft lock nut to 21.0 ~ 25.0 m·kg (151.0 ~ 180.0 ft·lb), by using the holder (Part No. 49 0259 440) and bend the tab of the lock washer.

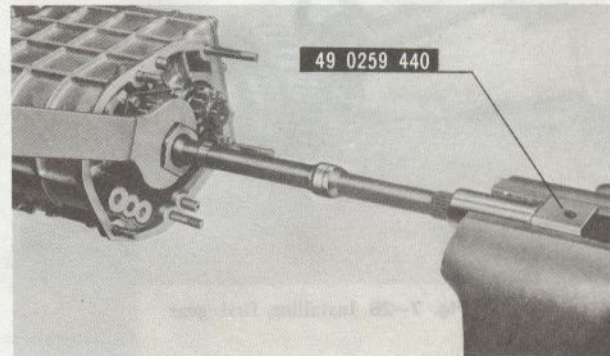


Fig. 7-33 Tightening lock nut

29. Slide the first-and-second shift fork shaft into the case from the rear of the case. Secure the first-and-second shift fork to the fork shaft with the lock bolt.

30. Place the shift fork shaft in neutral position.

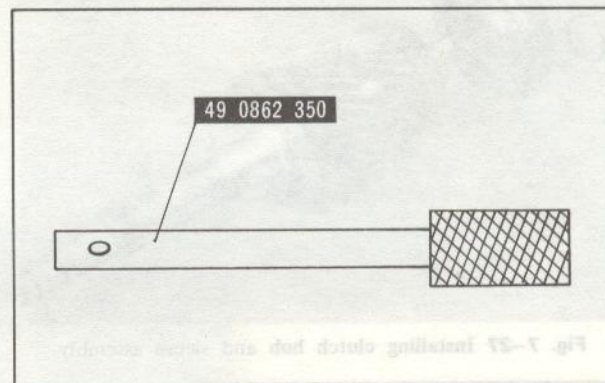


Fig. 7-34 Shift inter-lock pin installer

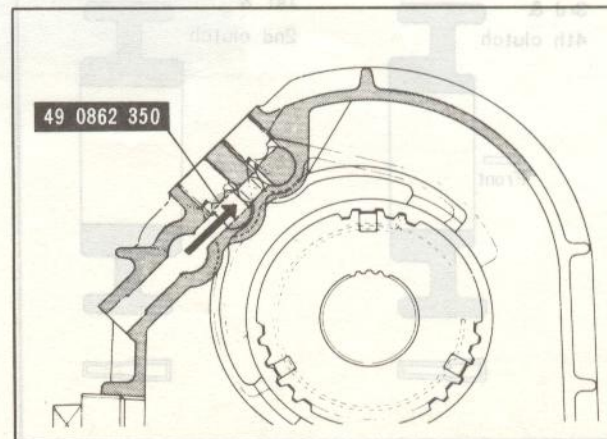


Fig. 7-35 Inserting shift inter-lock pin

Using the **shift inter-lock pin installer** (Part No. 49 0862 350) shown in Fig. 7-35, insert the shift inter-lock pin into the case.

31. Slide the third-and-fourth shift fork shaft into the case from the rear of the case. Secure the third-and-fourth shift fork to the fork shaft with the lock bolt.

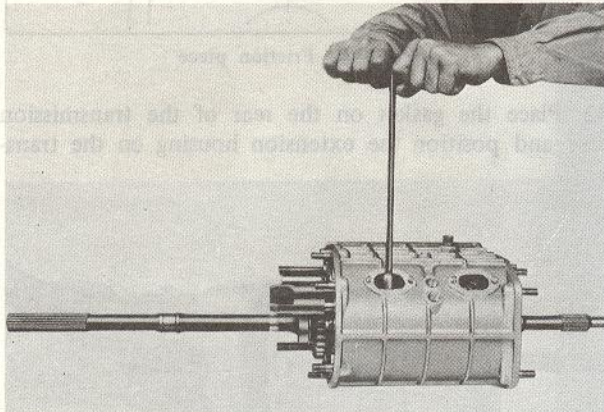


Fig. 7-36 Securing shift fork

32. Insert the shift inter-lock pin into the case by using the **installer** (Part No. 49 0862 350).

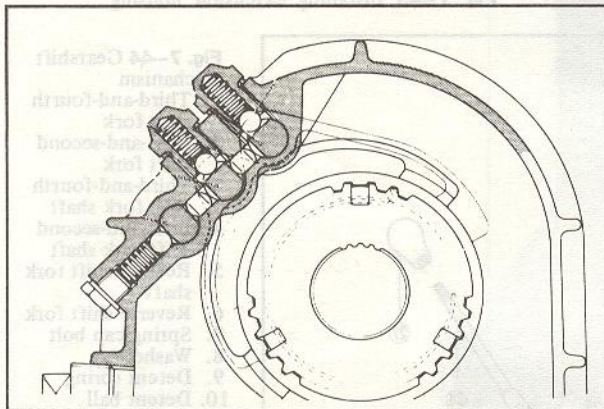


Fig. 7-37 Inserting shift inter-lock pin

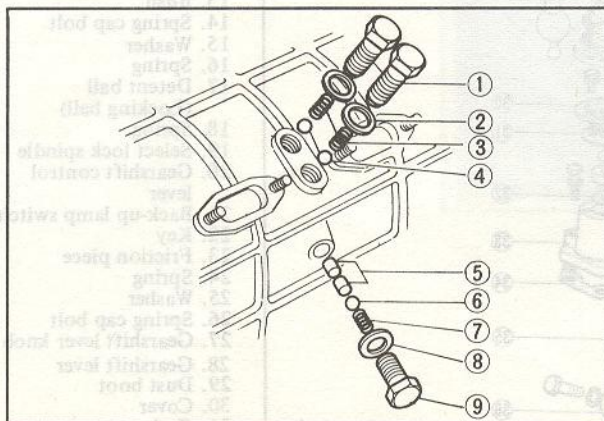


Fig. 7-38 Spring cap bolts

- | | |
|-------------------------|--------------------|
| 1. Spring cap bolt | 6. Detent ball |
| 2. Washer | 7. Detent spring |
| 3. Detent spring | 8. Washer |
| 4. Detent ball | 9. Spring cap bolt |
| 5. Shift inter-lock pin | |

33. Slide the reverse shift fork shaft with the reverse idler gear into the case from the rear of the case. Secure the reverse shift fork to the fork shaft with the lock bolt.

34. Position the three detent balls and three springs into the case and install the spring cap bolts.

35. Place the second-and-third clutch sleeve in the third gear.

36. Check the clearance between the synchronizer key and the exposed edge of the synchronizer ring with a feeler gauge. This measurement should be **0.66 ~ 2.0 mm (0.026 ~ 0.079 in.)**. If the measurement is greater than 2.0 mm (0.079 in), the synchronizer key could pop out of position.

If the measurement exceeds 2.0 mm (0.079 in), exchange the thrust washer (selective fit). The thrust washers are available as in the following table.

2.5 mm (0.098 in)	3.5 mm (0.138 in)
3.0 mm (0.118 in)	

If the measurement corrects, bend the tab of the lock washer.

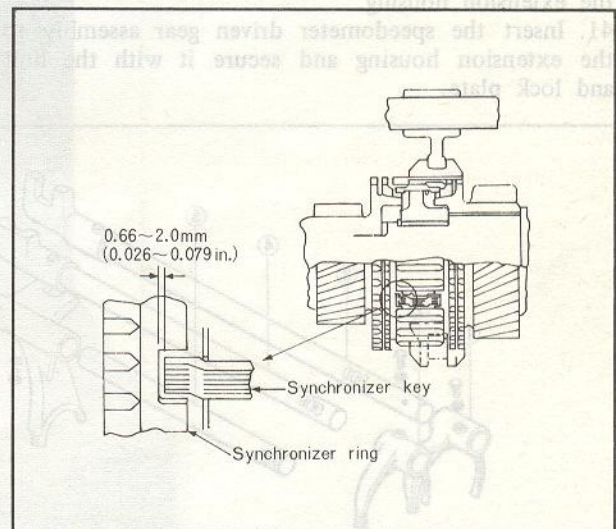


Fig. 7-39 Checking clearance

37. Install the two blind covers and gaskets to the case and tighten the attaching nuts.

38. Install the lock ball, speedometer drive gear and snap ring to the main shaft from the rear of the main shaft.

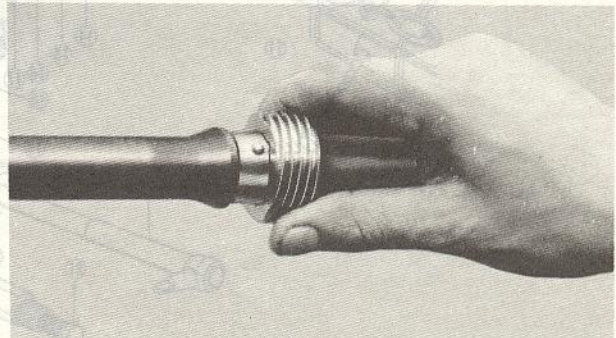


Fig. 7-40 Installing drive gear

39. Insert the gearshift control lever through the holes from the front of the extension housing. Position the woodruff key in place and slide the gearshift control lever end to the gearshift control lever. Secure the lever end to the control lever with the bolt.

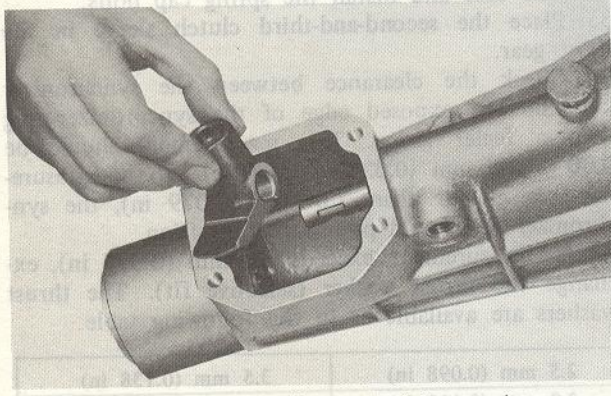


Fig. 7-41 Installing control lever end

40. Position the spring and friction piece in the extension housing and tighten the spring cap bolt to the extension housing.

41. Insert the speedometer driven gear assembly to the extension housing and secure it with the bolt and lock plate.

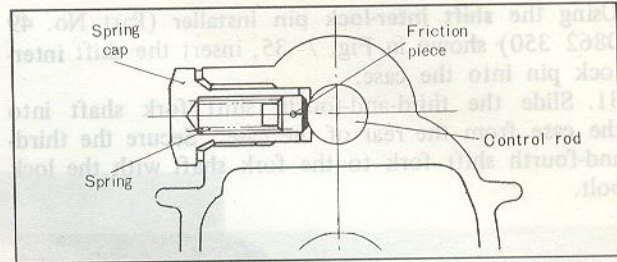


Fig. 7-42 Friction piece

42. Place the gasket on the rear of the transmission case and position the extension housing on the trans-

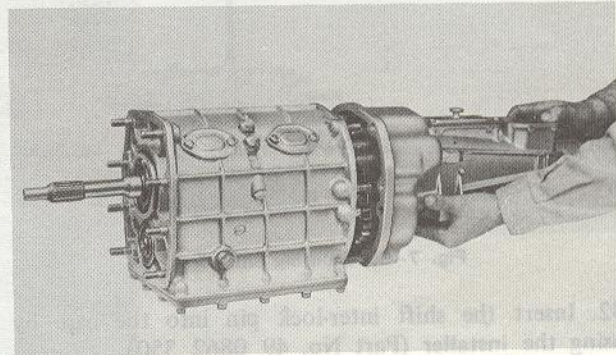


Fig. 7-43 Installing extension housing

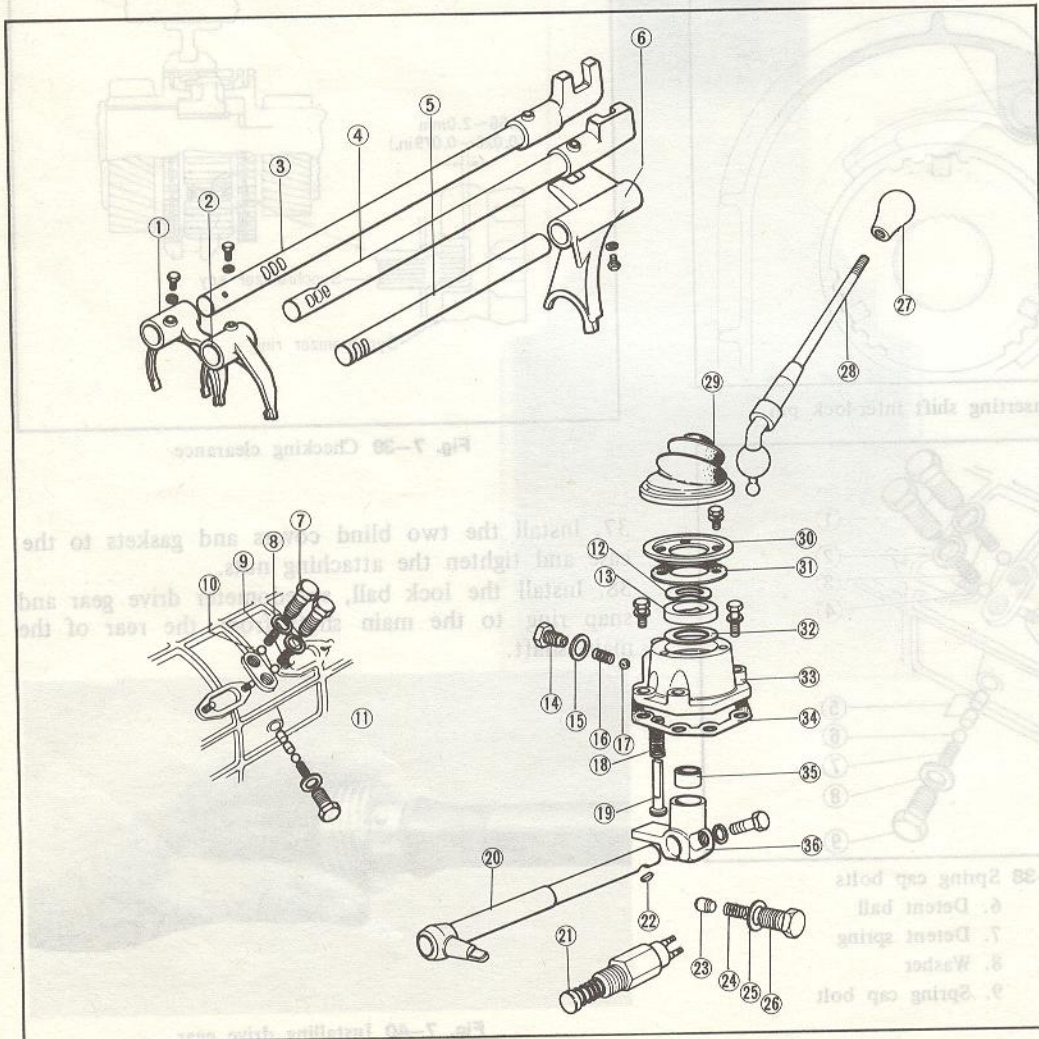


Fig. 7-44 Gearshift mechanism

1. Third-and-fourth shift fork
2. First-and-second shift fork
3. Third-and-fourth shift fork shaft
4. First-and-second shift fork shaft
5. Reverse shift fork shaft
6. Reverse shift fork
7. Spring cap bolt
8. Washer
9. Detent spring
10. Detent ball
11. Shift interlock-pin
12. Washer
13. Bush
14. Spring cap bolt
15. Washer
16. Spring
17. Detent ball (Locking ball)
18. Spring
19. Select lock spindle
20. Gearshift control lever
21. Back-up lamp switch
22. Key
23. Friction piece
24. Spring
25. Washer
26. Spring cap bolt
27. Gearshift lever knob
28. Gearshift lever
29. Dust boot
30. Cover
31. Gasket
32. Shim
33. Gearshift lever retainer
34. Gasket
35. Bush
36. Gearshift control lever end

mission case with the gearshift control lever end laid down to the left as far as it will go. Tighten the attaching nuts.

43. Check to ensure that the gearshift control lever operates properly.

44. Install the transmission case cover to the case and tighten the attaching bolts.

45. Insert the select lock spindle and spring from the inside of the gearshift lever retainer. Position the lock ball and spring in alignment with the select lock spindle and tighten the spring cap bolt.

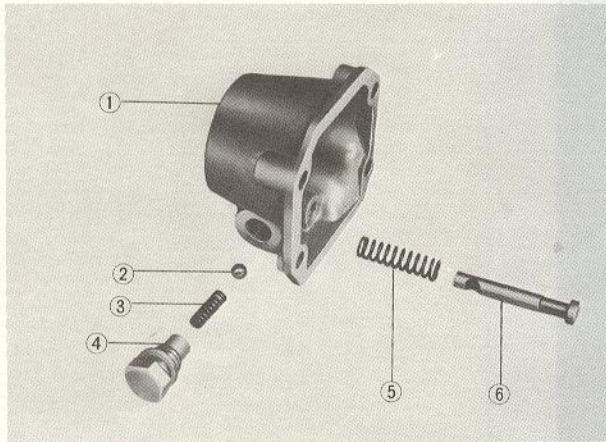


Fig. 7-45 Gearshift lever retainer

- | | |
|-----------------|------------------------|
| 1. Retainer | 4. Spring cap bolt |
| 2. Locking ball | 5. Spring |
| 3. Spring | 6. Select lock spindle |

46. Position the gasket and gearshift lever retainer to the extension housing, and tighten the attaching bolts.

47. Check the bearing clearance as follows :

Measure the depth of the main drive shaft bearing bore in the clutch housing using a depth gauge. Then, measure the bearing height shown in Fig. 7-46. The

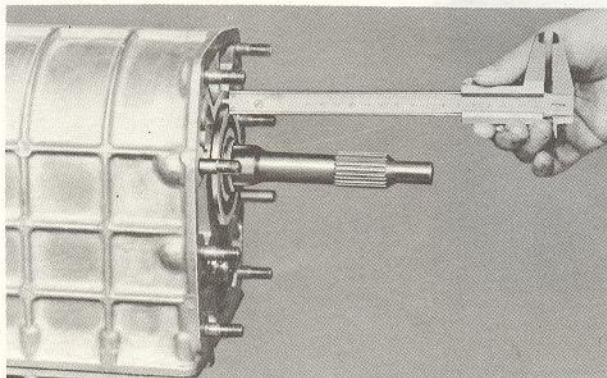


Fig. 7-46 Measuring bearing height

difference between two measurements indicates the required thickness of the adjusting shim. The standard clearance is 0 ~ 0.1 mm (0 ~ 0.0039 in). If necessary, select and use the properly sized shim. The shims are available in the following thickness :

0.1 mm (0.0039 in)	0.3 mm (0.0118 in)
--------------------	--------------------

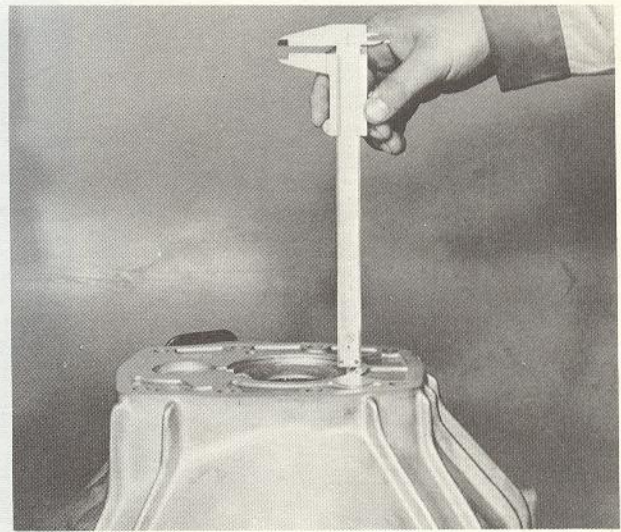


Fig. 7-47 Measuring bearing bore depth

48. Apply lubricant to the lip of the oil seal in the clutch housing.

49. Place the gasket on the front side of the case and install the clutch housing to the case. Tighten the attaching nuts.

50. Install the release bearing, return spring, release fork and release fork boot to the clutch housing.

7-G. TRANSMISSION INSTALLATION

Follow the removal procedures in the reverse order.

Note :

(a) Apply a thin coat of grease to the splines of the main drive shaft.

(b) Use the **clutch disc arbor** (Part No. 49 0813 310) to align the splines of the main drive shaft and clutch disc.

(c) Fill the transmission case with lubricant until the lubricant overflows from the level hole.

SPECIAL TOOLS

49 0839 425A	Bearing puller	49 0862 350	Shift inter-lock pin installer
49 0259 440	Main shaft holder	49 0813 310	Clutch disc arbor
49 0839 445	Synchronizer ring holder	49 0259 440	Transmission oil plug

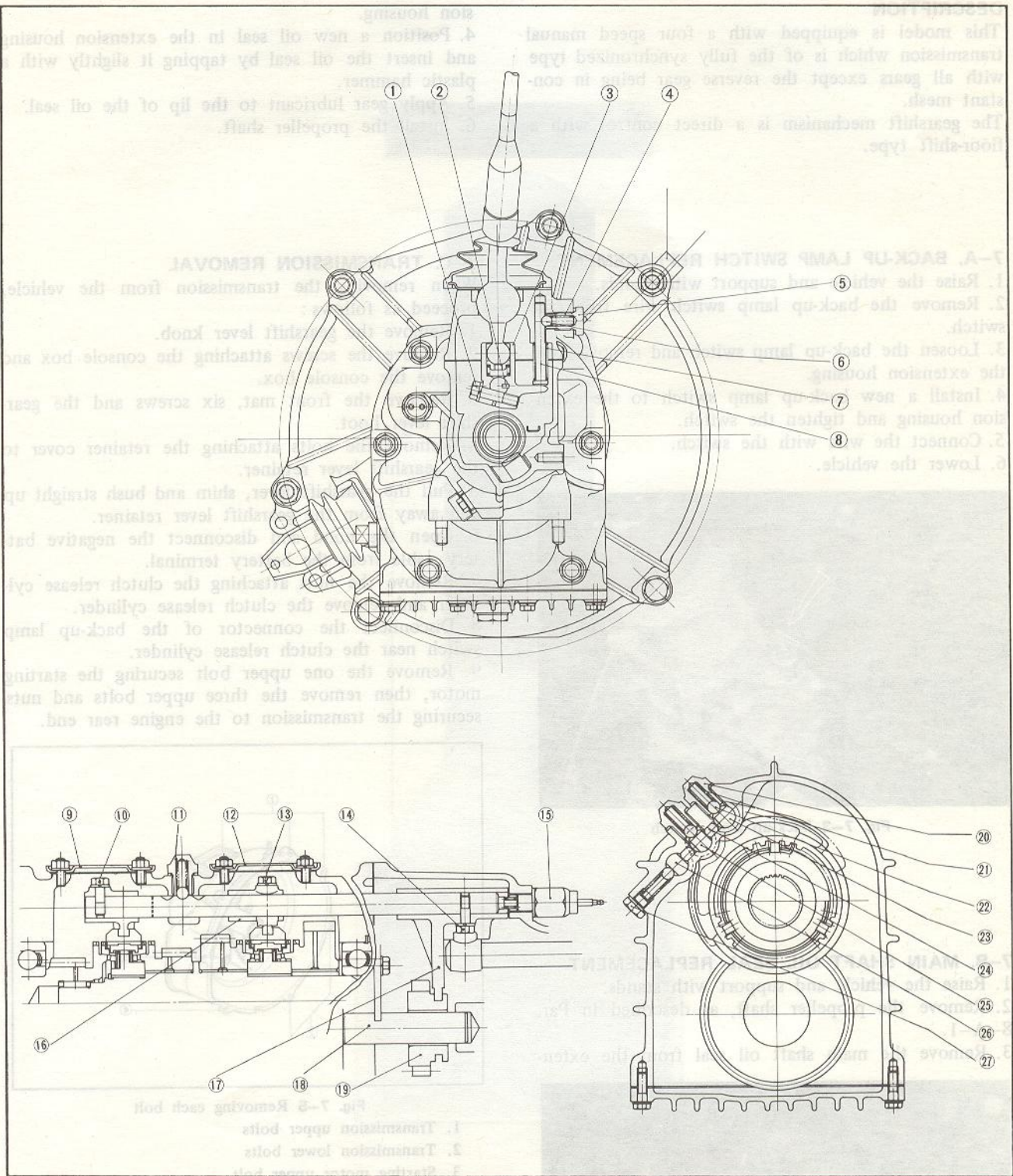


Fig. 7-2 Transmission cross section (2)

- | | | |
|------------------------|---------------------------------|---------------------------------------|
| 1. Reamer bolt | 10. Screw | 19. Reverse idler gear |
| 2. Key | 11. Spring cap bolt | 20. Spring cap bolt |
| 3. Control lever end | 12. Blind cover | 21. Spring |
| 4. Spring | 13. Screw | 22. Detent ball |
| 5. Spring cap bolt | 14. Screw | 23. First-and-second shift fork shaft |
| 6. Detent ball | 15. Back-up lamp switch | 24. Shift inter-lock pin |
| 7. Spring | 16. First-and-second shift fork | 25. Third-and-top shift fork shaft |
| 8. Select lock spindle | 17. Reverse shift fork | 26. Reverse shift fork shaft |
| 9. Blind cover | 18. Reverse idler gear shaft | 27. Spring cap bolt |

DESCRIPTION

This model is equipped with a four speed manual transmission which is of the fully synchronized type with all gears except the reverse gear being in constant mesh.

The gearshift mechanism is a direct control with a floor-shift type.

7-A. BACK-UP LAMP SWITCH REPLACEMENT

1. Raise the vehicle and support with stands.
2. Remove the back-up lamp switch wire from the switch.
3. Loosen the back-up lamp switch and remove from the extension housing.
4. Install a new back-up lamp switch to the extension housing and tighten the switch.
5. Connect the wire with the switch.
6. Lower the vehicle.

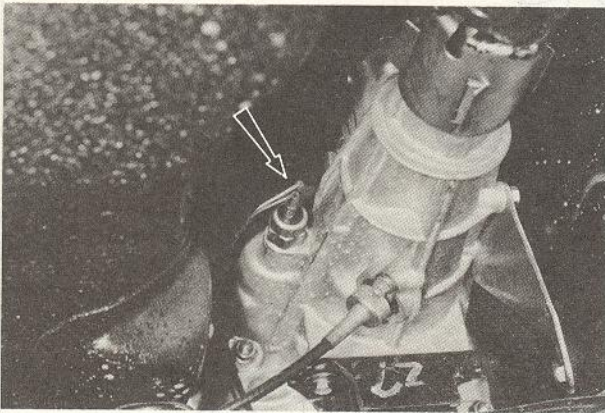


Fig. 7-3 Back-up lamp switch

7-B. MAIN SHAFT OIL SEAL REPLACEMENT

1. Raise the vehicle and support with stands.
2. Remove the propeller shaft, as described in Par. 8-A-1.
3. Remove the main shaft oil seal from the exten-

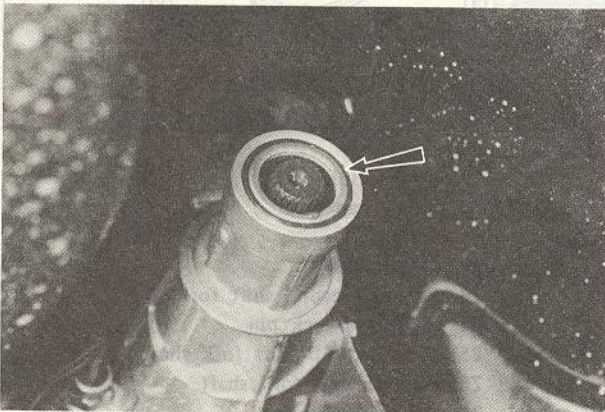


Fig. 7-4 Main shaft oil seal

sion housing.

4. Position a new oil seal in the extension housing and insert the oil seal by tapping it slightly with a plastic hammer.
5. Apply gear lubricant to the lip of the oil seal.
6. Install the propeller shaft.

7-C. TRANSMISSION REMOVAL

When removing the transmission from the vehicle, proceed as follows:

1. Remove the gearshift lever knob.
2. Remove the screws attaching the console box and remove the console box.
3. Remove the front mat, six screws and the gearshift lever boot.
4. Remove the bolts attaching the retainer cover to the gearshift lever retainer.
5. Pull the gearshift lever, shim and bush straight up and away from the gearshift lever retainer.
6. Open the hood and disconnect the negative battery cable from the battery terminal.
7. Remove the nuts attaching the clutch release cylinder and remove the clutch release cylinder.
8. Disconnect the connector of the back-up lamp switch near the clutch release cylinder.
9. Remove the one upper bolt securing the starting motor, then remove the three upper bolts and nuts securing the transmission to the engine rear end.

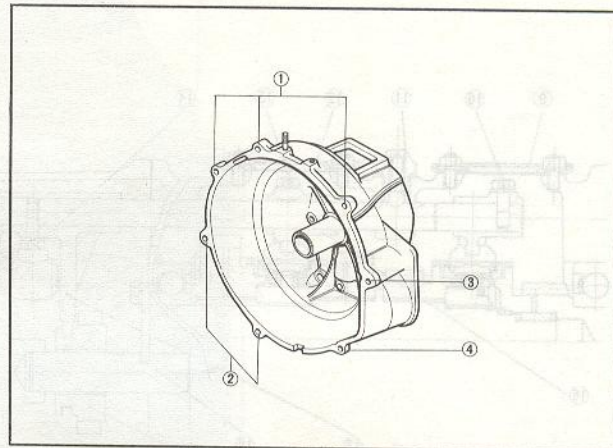


Fig. 7-5 Removing each bolt

1. Transmission upper bolts
2. Transmission lower bolts
3. Starting motor upper bolt
4. Starting motor lower bolt

10. Raise the vehicle and support with stands.
11. Disconnect the exhaust front pipe flange from the exhaust manifold by removing the bolts and nuts. Remove the bolts and nuts attaching the front pipe flange to the main silencer, and remove the exhaust front pipe.
12. Remove the bolts attaching the heat insulator to the underbody and remove the heat insulator.
13. Remove the propeller shaft, as described in Par.



Fig. 7-6 Transmission oil plug

8-A-1, and insert the **transmission oil plug** (Part No. 49 0259 440) into the extension housing.
 14. Disconnect the speedometer cable from the extension housing.
 15. Remove the lower bolt securing the starting motor to the clutch housing and remove the starting motor. Disconnect the wire at the starting motor.
 16. Place a jack under the front side of the transmission and support the transmission with the jack.
 17. Remove the bolts securing the transmission support to the body.
 18. Remove the two lower bolts securing the transmission to the engine rear end.
 19. Slide the transmission rearward until the main drive shaft clears the clutch disc and carefully withdraw it downward from the vehicle.

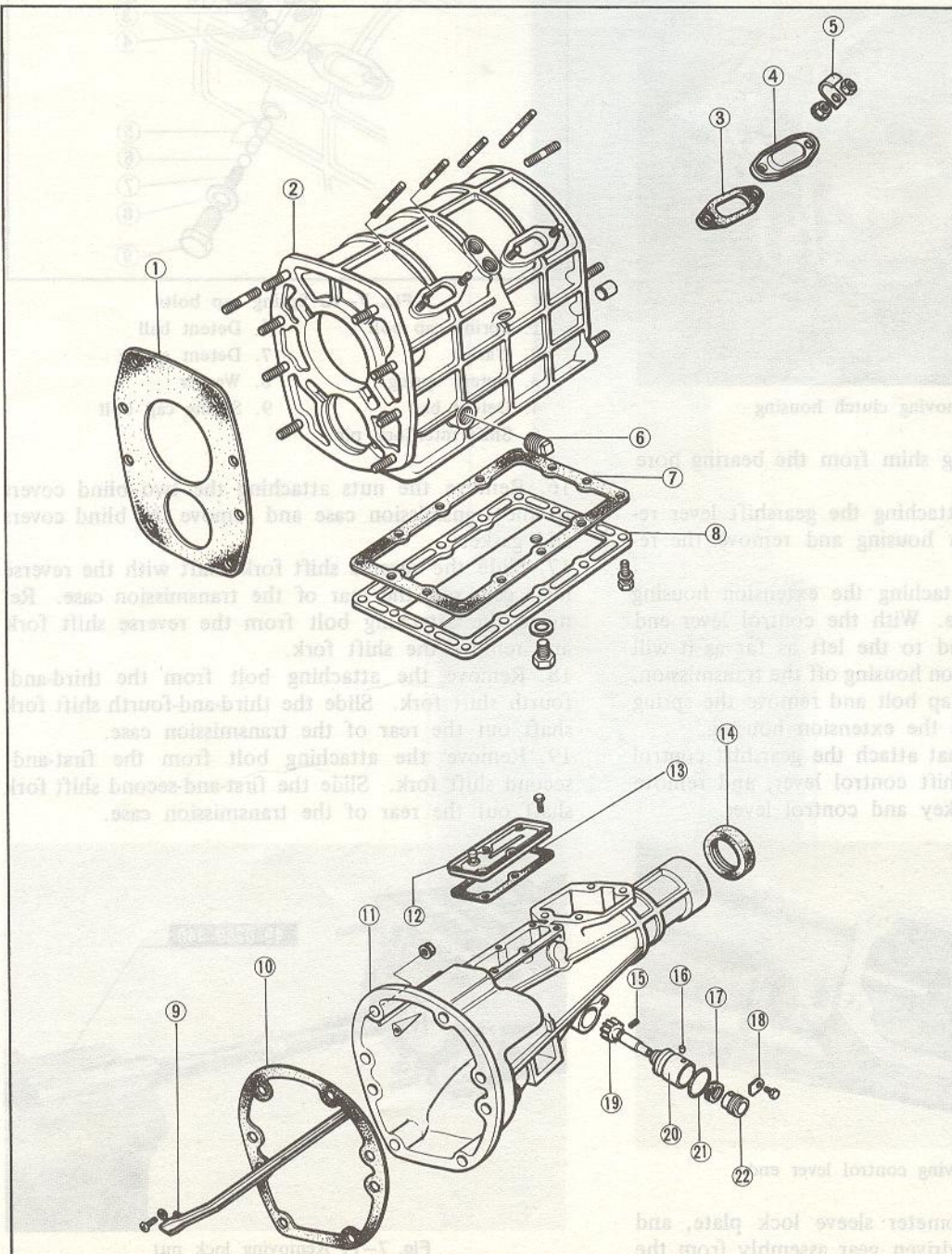


Fig. 7-7 Transmission case and extension housing.

1. Gasket
2. Transmission case
3. Gasket
4. Blind cover
5. Clip
6. Drain plug
7. Gasket
8. Transmission cover
9. Oil pass
10. Gasket
11. Extension housing
12. Cover
13. Gasket
14. Main shaft oil seal
15. Pin
16. Pin
17. Oil seal
18. Lock plate
19. Speedometer driven gear
20. Sleeve
21. "O" ring
22. Cable joint

7-D. TRANSMISSION DISASSEMBLY

The procedures for disassembling the transmission after removing the transmission from the vehicle are as follows:

1. Place the transmission on a work stand.
2. Remove the drain plug, and drain the lubricant from the transmission. Clean the metal fillings adhered on the magnet of the drain plug if necessary. Refit the drain plug after draining lubricant.
3. Unhook the release bearing return spring from the clutch housing and slide off the release bearing.
4. Pull the release fork outward until the fork retaining spring release itself from the ball stud. Remove the fork and boot from the clutch housing.
5. Remove the nuts attaching the clutch housing, and remove the clutch housing and gasket.

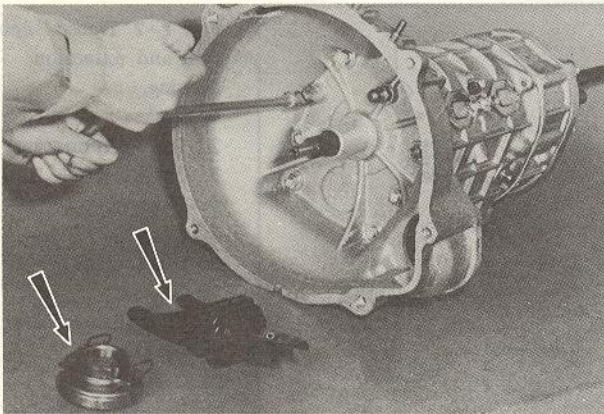


Fig. 7-8 Removing clutch housing

6. Remove the adjusting shim from the bearing bore of the clutch housing.
7. Remove the bolts attaching the gearshift lever retainer to the extension housing and remove the retainer and gasket.
8. Remove the nuts attaching the extension housing to the transmission case. With the control lever end in neutral, press the end to the left as far as it will go, and slide the extension housing off the transmission.
9. Remove the spring cap bolt and remove the spring and friction piece from the extension housing.
10. Remove the bolt that attach the gearshift control lever end to the gearshift control lever, and remove the control lever end, key and control lever.

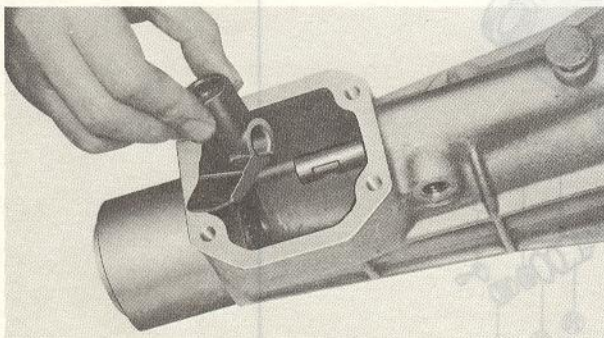


Fig. 7-9 Removing control lever end

11. Remove the speedometer sleeve lock plate, and remove the sleeve and driven gear assembly from the

extension housing.

12. Remove the back-up lamp switch from the extension housing.
13. Remove the snap ring that secures the speedometer drive gear to the main shaft. Slide the drive gear off the main shaft, and remove the lock ball.
14. Evenly loosen the bolts securing the case cover to the transmission case and remove the cover and gasket.
15. Remove the three spring cap bolts and remove the detent springs and detent balls (locking balls) from the transmission case.

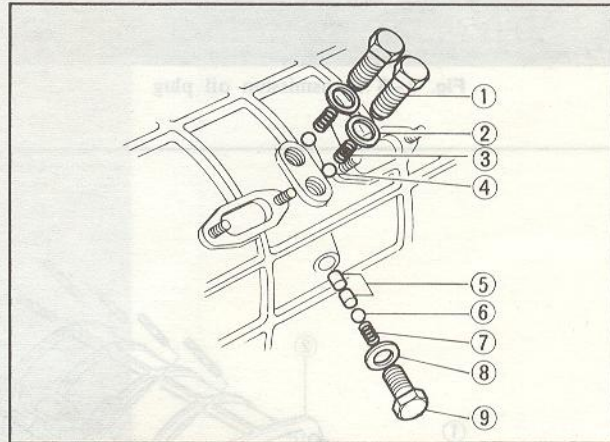


Fig. 7-10 Spring cap bolts

- | | |
|-------------------------|--------------------|
| 1. Spring cap bolt | 6. Detent ball |
| 2. Washer | 7. Detent spring |
| 3. Detent spring | 8. Washer |
| 4. Detent ball | 9. Spring cap bolt |
| 5. Shift inter-lock pin | |

16. Remove the nuts attaching the two blind covers to the transmission case and remove the blind covers and gaskets.
17. Slide the reverse shift fork shaft with the reverse idler gear out the rear of the transmission case. Remove the attaching bolt from the reverse shift fork and remove the shift fork.
18. Remove the attaching bolt from the third-and-fourth shift fork. Slide the third-and-fourth shift fork shaft out the rear of the transmission case.
19. Remove the attaching bolt from the first-and-second shift fork. Slide the first-and-second shift fork shaft out the rear of the transmission case.

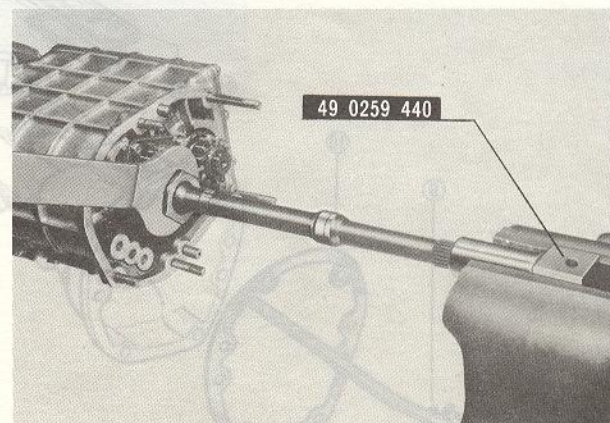


Fig. 7-11 Removing lock nut

20. Straighten the tab of the lock washer, hold the rear end of the main shaft with the **holder** (Part No. 49 0259 440) as shown in Fig. 7-11 and loosen the main shaft lock nut. Slide the reverse gear off the rear of the main shaft, and remove the key.
21. Remove the snap ring from the rear end of the counter shaft and remove the counter reverse gear.
22. Remove the bolts attaching the bearing cover to the transmission case and remove the bearing cover.
23. Remove the reverse idler gear shaft from the transmission case.
24. Install the **synchronizer ring holder** between the fourth synchronizer ring and the synchromesh gear on the main drive shaft.
25. Remove the snap ring that secures the counter shaft front bearing to the front end of the counter shaft. Using the **bearing puller** (Part No. 49 0839 425A) shown in Fig. 7-12, remove the counter shaft front bearing.

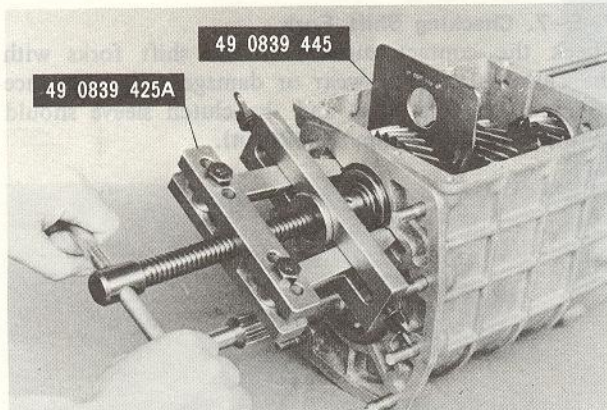


Fig. 7-12 Removing counter shaft front bearing

26. Remove the adjusting shim from the counter shaft front bearing bore of the transmission case.
27. Remove the counter shaft rear bearing from the counter shaft with the **puller** (Part No. 49 0839 425A).
28. Using the **puller** (Part No. 49 0839 425A) shown in Fig. 7-13, remove the main shaft bearing.
29. Remove the adjusting shim from the main shaft bearing bore of the transmission case.
30. Remove the snap ring that secures the main drive shaft bearing to the main drive shaft. Remove the main drive shaft bearing with the **puller** (Part

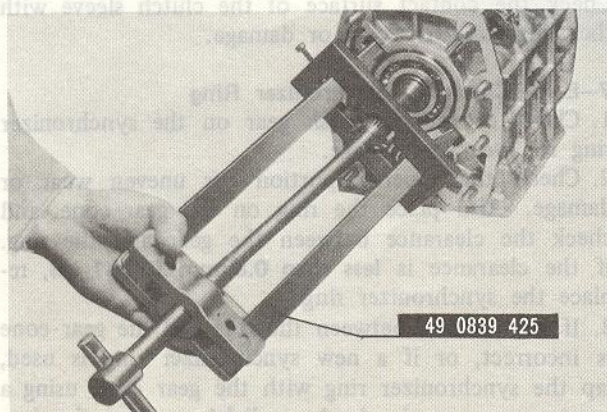


Fig. 7-13 Removing main drive shaft bearing

- No. 49 0839 425A).
31. Take out the counter shaft and gear from the transmission case.
32. Separate the main drive shaft from the main shaft and remove the main drive shaft from the case. Remove the fourth synchronizer ring and needle bearing from the main drive shaft.
33. Take out the main shaft and gears assembly from the case, as shown in Fig. 7-14.

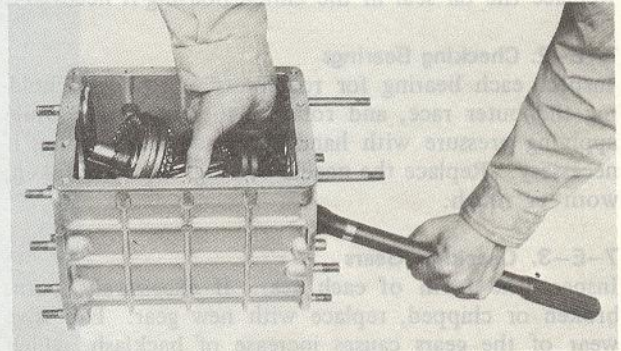


Fig. 7-14 Removing main shaft and gears assembly

34. Remove the first-and-second shift fork and third-and-fourth shift fork from the case.
35. Remove the two shift inter-lock pins from the case.
36. Remove the snap ring that secures the third-and-fourth clutch hub and sleeve assembly. Slide the third-and-fourth clutch hub and sleeve assembly, third synchronizer ring, third gear out the front of the main shaft. **Do not** mix the synchronizer rings.
37. Slide the first gear and needle bearing out the rear of the main shaft.
38. Remove the needle bearing inner race, second gear, first-and-second clutch hub and sleeve assembly from the main shaft. Press out the second gear to facilitate the removal if necessary.

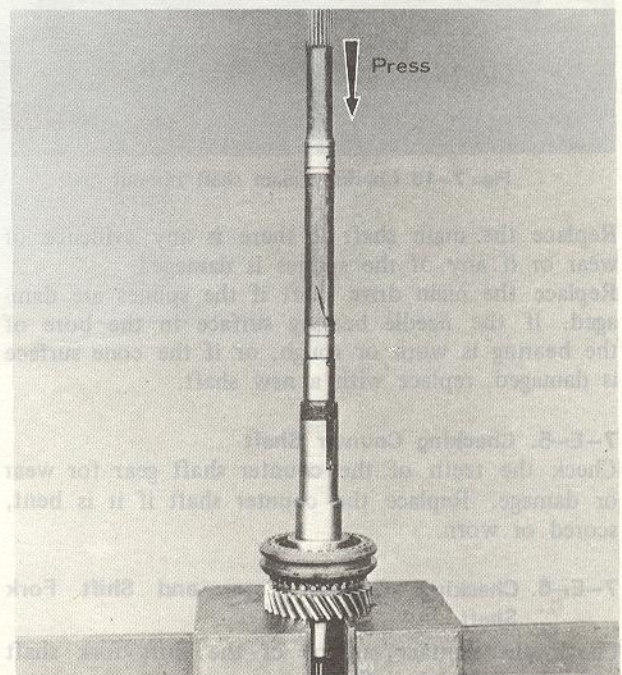


Fig. 7-15 Removing clutch hub and sleeve assembly

7-E. TRANSMISSION INSPECTION

Thoroughly clean all the parts. Inspect the parts for wear, damage and other defects. The parts found defective must be repaired or replaced.

7-E-1. Checking Transmission Case and Housing Clutch

Inspect the case for cracks or any damage. Check the clutch housing for cracks or any damage. Replace the oil seal in the clutch housing if necessary.

7-E-2. Checking Bearings

Inspect each bearing for roughness or noise by holding the outer race, and rotating the inner race while applying pressure with hand. Replace the bearings if necessary. Replace the needle bearings that are broken, worn or rough.

7-E-3. Checking Gears

Inspect the teeth of each gear. If excessively worn, broken or chipped, replace with new gear. Excessive wear of the gears causes increase of backlash, which results in producing noises or may cause the gear to work off while running.

7-E-4. Checking Main Shaft and Main Drive Shaft

Check the main shaft run-out with a dial indicator. If the run-out exceeds **0.03 mm (0.0012 in)**, correct with a press or replace with a new one.

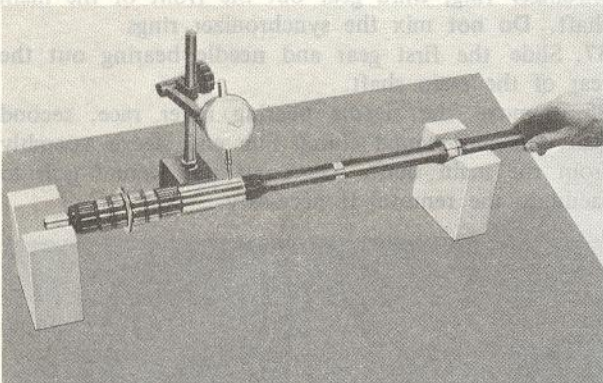


Fig. 7-16 Checking main shaft run-out

Replace the main shaft if there is any evidence of wear or if any of the splines is damaged.

Replace the main drive shaft if the splines are damaged. If the needle bearing surface in the bore of the bearing is worn or rough, or if the cone surface is damaged, replace with a new shaft.

7-E-5. Checking Counter Shaft

Check the teeth of the counter shaft gear for wear or damage. Replace the counter shaft if it is bent, scored or worn.

7-E-6. Checking Control Lever and Shift Fork Shaft

Check the contact surface of the shift fork shaft with the detent ball for wear or damage. Check the contact surface of the shift fork shaft

with the control lever for wear. The clearance between the shift fork shaft and the control lever should be **more than 0.8 mm (0.031 in)**.

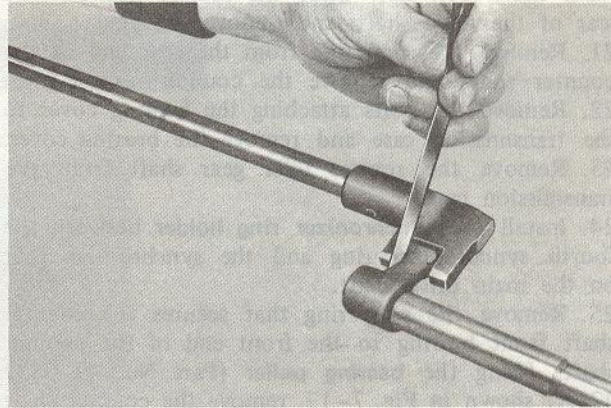


Fig. 7-17 Checking clearance

7-E-7. Checking Shift Fork

Check the contact surface of the shift forks with the clutch sleeve for wear or damage. The clearance between the shift fork and the clutch sleeve should be **more than 0.5 mm (0.020 in)**.



Fig. 7-18 Checking clearance

7-E-8. Checking Clutch Sleeve

Check the clutch sleeves for free movement on their hubs.

Check the splines of the clutch sleeve for wear or damage.

Check the contact surface of the clutch sleeve with the shift fork for wear or damage.

7-E-9. Checking Synchronizer Ring

1. Check the synchromesh gear on the synchronizer ring for wear or damage.

2. Check the tapered portion for uneven wear or damage. Also place the ring on the gear cone, and check the clearance between the gear and the ring. If the clearance is **less than 0.8 mm (0.031 in)**, replace the synchronizer ring.

3. If the contact between the ring and the gear cone is incorrect, or if a new synchronizer ring is used, lap the synchronizer ring with the gear cone using a lapping compound. Apply a light pressure for lapping. After lapping, clean the ring and the gear cone

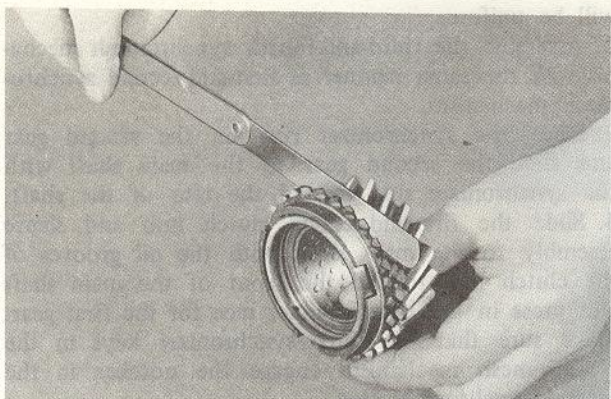


Fig. 7-19 Checking clearance

with a suitable solvent, then check the clearance and contact between the ring and the gear cone.

7-E-10. Checking Synchronizer Key and Spring

1. Check the synchronizer key for wear or damage.

2. Check the synchronizer key spring for wear or weakness.

7-E-11. Checking Clutch Hub

Check the splines for wear or damage.

Check the contact surface of the clutch hub with the synchronizer ring for wear or damage.

Check the contact surface of the clutch hub with the thrust surface of the gears for wear or damage.

7-E-12. Checking Extension Housing

Inspect the extension housing for cracks and the machined mating surface for burrs, nicks or any damage. Inspect the oil seal in the extension housing. Replace them if they are worn or damaged.

7-E-13. Checking Speedometer Gears

Check the drive gear and driven gear and the driven gear shaft for wear or damage. Check the "O" ring for weakness or damage.

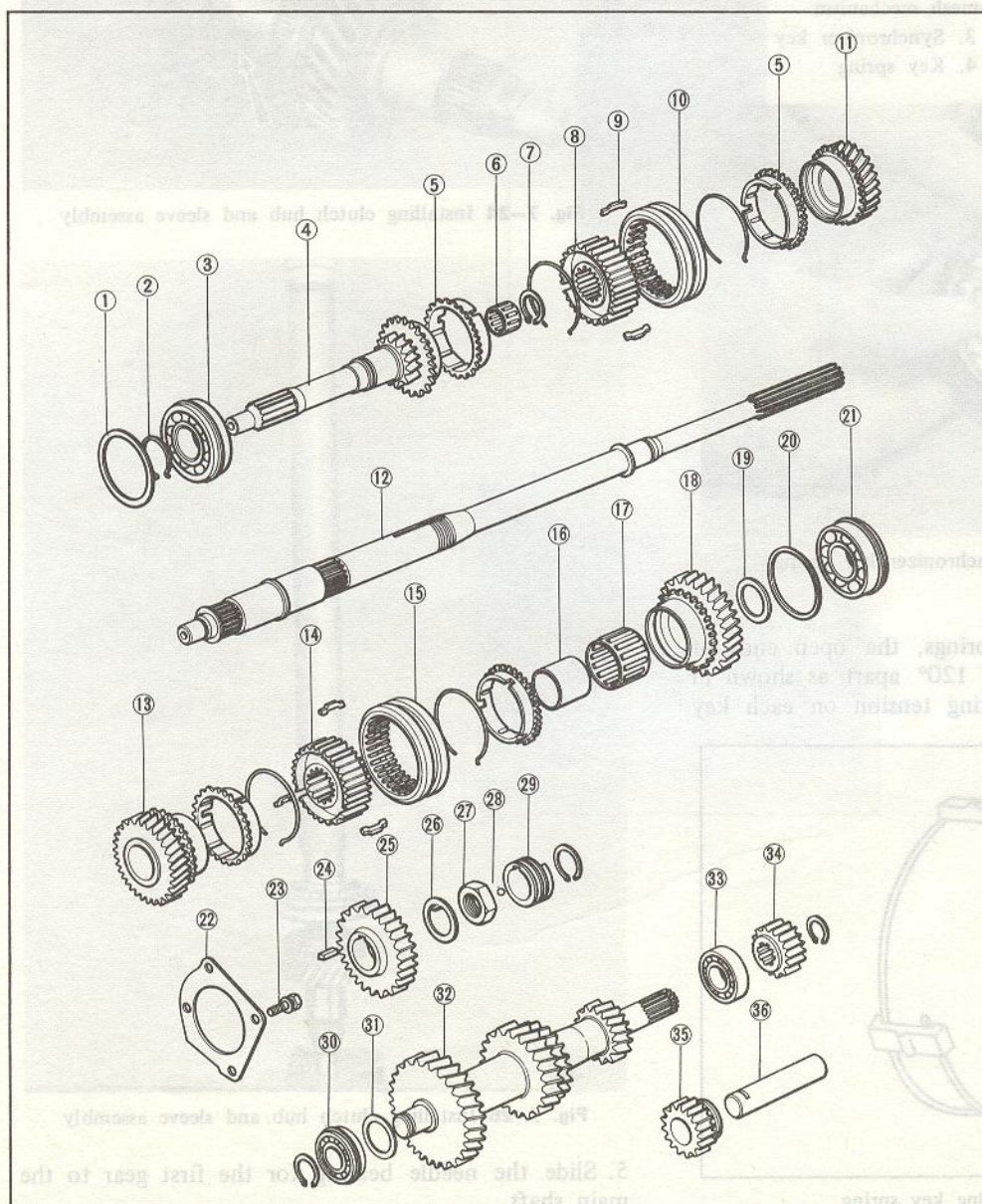


Fig. 7-20 Shafts and gears

1. Adjusting shim
2. Snap ring
3. Main drive shaft bearing
4. Main drive shaft
5. Synchronizer ring
6. Needle bearing
7. Synchronizer key spring
8. Third-and-fourth clutch hub
9. Synchronizer key
10. Clutch sleeve
11. Third gear
12. Main shaft
13. Second gear
14. First-and-second clutch hub
15. Clutch sleeve
16. Needle bearing inner race
17. Needle bearing
18. First gear
19. Thrust washer
20. Adjusting shim
21. Main shaft bearing
22. Bearing cover
23. Bolt
24. Key
25. Reverse gear
26. Lock washer
27. Lock nut
28. Lock ball
29. Speedometer drive gear
30. Counter shaft front bearing
31. Adjusting shim
32. Counter shaft
33. Counter shaft rear bearing
34. Counter reverse gear
35. Reverse idler gear
36. Reverse idler gear shaft

AUTOMATIC TRANSMISSION

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c. Other checks in driving

1. Check each range for faulty performance or shifting. Check to see, for instance, that:

- (1) Firm locking is effected when "P" is selected.
- (2) Reversing is effected when "R" is selected.
- (3) Completely neutral condition is attained by selecting "N".
- (4) $D_1 \leftrightarrow D_2 \leftrightarrow D_3$ shifts take place in "D" range.
- (5) Kick-down takes place.
- (6) When "1" is selected from "D", there occur $D_3 \rightarrow I_2 \rightarrow I_1$ or $D_3 \rightarrow I_1$ shifts with engine braking effected in I_2 and I_1 .
- (7) The transmission does not shift up in "I" range.
- (8) In "2" range, the transmission is fixed to 2nd speed.

2. Check to see that shifting is smooth without conspicuous shock and there is no marked creep. (Slight creep in each range is normal.)

3. Check to see that shifts are effected promptly without drag.

4. Check for abnormal gear noise, clutch, band squeal, poor acceleration or oil leak.

7B-C-3. Oil Pressure Test

When there is slippage in the gear train or when shifts do not feel proper, line pressure and governor pressure must be checked.

The following chart shows standard line pressures (before cut back).

Manual Range	Line Pressure kg/cm ² (lb/in ²)	
	Engine Idling	Stall
"R"	4.0 ~ 7.0 (57 ~ 100)	15.5 ~ 19.0 (220 ~ 270)
"D"	3.0 ~ 4.0 (43 ~ 57)	9.5 ~ 11.0 (135 ~ 156)
"2"	8.0 ~ 12.0 (114 ~ 170)	10.0 ~ 12.0 (142 ~ 170)
"1"	3.0 ~ 4.0 (43 ~ 57)	9.5 ~ 11.0 (135 ~ 156)

a. Line pressure test

Place the transmission in "D", "2", "1" and "R", and check respective line pressure at engine idling and stall conditions. Compare the results with specified pressures to trace the cause of trouble.

b. Line pressure test procedures

1. Warm up the engine to bring the converter oil to operating temperature 60°~ 100°C (140 ~ 212°F).
2. Line pressure for "R" range is taken out at an inspection hole at the left front of the transmission case, and for "D", "2" and "1" ranges the inspection hole is at the right rear. Connect a pressure gauge to the inspection hole and put it where it is visible from the driver's seat.
3. Firmly check the front and rear wheels and apply the hand brake as in the stall test.

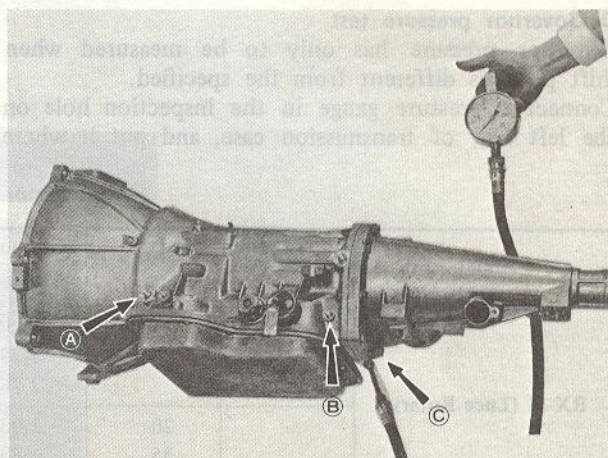


Fig. 7B-11 Oil pressure test

- A. For line pressure in "R" range
- B. For governor pressure
- C. For line pressure in forward ranges

4. With the manual lever put in the range to be checked, run the engine at engine idling condition and read the pressure gauge.

5. With the brake pedal depressed fully, press the accelerator pedal gradually to the wide open position. While checking whether the pressure rises smoothly, read the pressure gauge at the stall condition. The test time from starting accelerator depression to its release must not exceed 5 seconds.

6. Measure line pressure for each of other ranges in the same manner. Be sure to interpose more than one minute cooling time at 1,200 rpm with the manual lever placed in "P" or "N".

7. After above, check whether the cut-back function to release the shock at gear shifting is operative properly. The cut-back function can be judged normal if the line pressure drops suddenly when the car is accelerated gradually and reaches to the certain running speed.

c. Diagnosis from measurements

1. When line pressure at idling is low in all of "R", "D", "2" and "1", possible causes include a fault in the pressure supply system, e.g. increased side clearance in the oil pump, reduced pump output because of bolts left untightened, oil leak from pump, valve body or transmission case, and sticking of regulator valve or vacuum throttle valve.
2. In case line pressure at idling is low in one range only, there probably are pressure leaks in some devices or oil passages for the relevant range.
3. In case line pressure at idling is high in all ranges, possible cause is throttle pressure rise due to leak from vacuum tube or vacuum diaphragm, or regulator valve sticking.
4. When pressure does not rise at stall condition, the vacuum rod possibly may not be installed.
5. When pressure side is not smooth or pressure at stall condition does not come within the specified range, possible cause is sticking of vacuum throttle valve, pressure regulator valve or pressure regulator plug.

D. Governor pressure test

Governor pressure has only to be measured when shift point is different from the specified.

Connect a pressure gauge in the inspection hole on the left rear of transmission case, and put it where

it is visible during driving. Read governor pressure when the car is going at required speeds for each model. If the result is out of the specified range shown in the following table, disassemble and check the governor valve.

Governor Pressure (1)

Model	Driving speed		Out-put shaft speed rpm	Standard governor pressure	
	km/h	mile/h		kg/cm ²	lb/in ²
RX-4 (Luce Rotary)	30		950 ~ 1,065	0.8 ~ 1.3	11 ~ 18
	55		1,785 ~ 1,900	1.5 ~ 2.2	21 ~ 31
	85		2,765 ~ 2,910	2.7 ~ 3.6	38 ~ 51
		20	1,030 ~ 1,130	0.8 ~ 1.3	11 ~ 18
		35	1,830 ~ 1,960	1.5 ~ 2.2	21 ~ 31
		55	2,900 ~ 3,050	3.0 ~ 3.9	43 ~ 55

Governor Pressure (2)

Governor Type	Break Point	at 1,000 rpm	at 2,000 rpm	at 3,000 rpm
38	400 ~ 600 rpm	0.9 ~ 1.3 kg/cm ² (13 ~ 18 lb/in ²)	1.6 ~ 2.2 kg/cm ² (23 ~ 28 lb/in ²)	3.0 ~ 3.8 kg/cm ² (43 ~ 54 lb/in ²)

7B-D. TROUBLE DIAGNOSIS CHART

7B-D-1. Items to Check

- (1) Inspection with automatic transmission on the car.
 - A. Oil level
 - B. Range select linkage
 - C. Inhibitor switch and wiring
 - D. Vacuum diaphragm and piping
 - E. Downshift solenoid, kick-down switch and wiring
 - F. Engine idling speed
 - G. Oil pressure
 - H. Engine stall speed
 - I. Rear lubrication
 - J. Manual control valve
 - K. Governor valve
 - L. Band servo
 - M. Transmission air check
 - N. Oil drain check
 - O. Ignition switch and starter motor
 - P. Engine adjustment and brake inspection

- (2) Inspection after inspecting automatic transmission on the car.
 - a. Rear clutch
 - b. Front clutch
 - c. Band brake
 - d. Low & reverse brake
 - e. Oil pump
 - f. Leak from hydraulic passages
 - g. One-way clutch in torque converter
 - h. One-way clutch in power train
 - i. Front clutch check ball
 - j. Parking linkage
 - k. Planetary gear

Range	Manual
"1"	3.0 ~ 4.0 (43 ~ 57)
"2"	8.0 ~ 12.0 (114 ~ 170)
"D"	3.0 ~ 4.0 (43 ~ 57)
"R"	4.0

7B-D-2. Trouble Diagnosis Chart

The numerals show the sequence of inspection for detecting trouble.

Trouble	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	a	b	c	d	e	f	g	h	i	j	k
Engine won't start in "N" and "P" ranges	.	2	3	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.
Engine starts in other ranges than "N" and "P" ranges	.	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Excessive shock on "N" → "D" range shift	.	.	.	2	.	1	3	.	.	4	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.
Car won't move in "D" range (but moves in "2", "1" and "R" ranges)	.	1	.	.	.	.	.	2	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.
No drive, excessive slip or very poor acceleration in "D", "2" or "1" range (Driver in "R" range)	1	2	.	.	.	.	4	.	.	5	.	.	6	3	.	7	8	10	.	.	.	9	.	.	.	.	.

Trouble	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	a	b	c	d	e	f	g	h	i	j	k
No drive, excessive slip or very poor acceleration in "R" range (but Drives in "D", "2" and "1" ranges)	1	2	.	.	.	.	3	.	.	5	.	.	6	4	.	.	⑨	⑧	.	⑦	.	⑩	.	.	⑪	.	.
Car won't move in any range	1	2	.	.	.	.	3	.	.	5	.	.	6	4	.	.	.	.	.	.	⑦	⑧	.	.	.	⑨	.
Tendency to slip when starting	1	2	.	6	.	.	3	.	.	5	.	.	7	4	.	.	.	.	.	.	⑧	⑨	.	.	.	.	.
Car moves in "N" range	.	1	.	.	.	.	.	.	.	3	.	.	.	2	.	.	④	.	.	.	.	.	.	.	.	.	.
Maximum speed too low and poor acceleration	1	2	.	.	.	.	4	5	.	7	.	6	.	3	.	8	⑪	⑫	⑨	⑩	⑬	.	.	.	.	.	.
Car braked when "R" range is selected	.	.	.	.	.	.	.	.	.	.	.	3	2	1	.	.	④	.	⑤	.	.	.	.	.	.	⑥	.
Excessive creep	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
No creep at all	1	2	.	.	.	3	.	.	.	5	.	.	.	4	.	.	⑧	⑨	.	.	⑥	⑦	.	.	.	.	.
No D1 → D2 change	.	1	.	2	3	.	.	.	.	5	6	8	7	4	.	.	.	⑨	.	.	⑩	.	.	.	.	.	.
No D2 → D3 change	.	1	.	2	3	.	.	.	.	5	6	8	7	4	.	.	.	⑨	.	.	⑩	.	.	.	⑪	.	.
D1 → D2 and D2 → D3 shift-points too high	.	.	.	1	2	.	3	.	.	5	6	.	.	4	.	.	.	.	.	.	.	.	⑦	.	.	.	.
D1 → D3 change without through D2	.	.	.	.	.	.	.	.	.	2	4	.	3	1	.	.	⑤	.	.	.	⑥	.	.	.	.	.	.
Excessive shock on D1 → D2 change	.	.	.	1	.	.	.	2	.	4	.	5	.	3	.	.	.	⑥	.	.	.	.	.	.	.	.	.
Excessive shock on D2 → D3 change	.	.	.	1	2	.	3	.	.	3	.	5	4	.	.	.	⑥	.	.	.	.	.	.	.	.	.	.
Practically no shift shock or excessive slip on D1 → D2 change	1	2	.	3	.	.	4	.	.	6	.	8	7	5	.	.	.	⑨	.	.	⑩	.	.	.	.	.	.
Practically no shock; or excessive slip; or engine runaway on D2 → D3 change	1	2	.	3	.	.	4	.	.	6	.	8	7	5	.	.	.	⑨	.	.	⑩	.	.	.	⑪	.	.
Car braked on D1 → D2 change	.	.	.	.	.	.	.	.	.	2	.	.	.	1	.	.	④	.	③	.	.	.	⑤	.	.	.	.
Car braked on D2 → D3 change	.	.	.	.	.	.	.	.	.	3	.	2	.	1	.	.	.	④	.	.	.	.	.	.	.	.	.
No D3 → D2 change	.	.	.	1	.	.	.	.	.	3	4	6	5	2	.	.	.	⑦	⑧	.	.	⑨	.	.	.	.	.
No D2 → D1 or D3 → D1 change	.	.	.	1	.	.	.	.	.	3	4	6	5	2	.	.	.	⑦	.	.	.	.	.	⑧	.	.	.
Shift shock felt when accelerator is released and deceleration occurs	.	1	.	2	3	.	4	.	.	5	6	.	.	.	.	.	.	.	.	.	.	.	⑦	.	.	.	.
D3 → D2 and D2 → D1 shift-points too high	.	1	.	2	3	.	4	.	.	5	6	.	.	.	.	.	.	.	.	.	.	.	⑦	.	.	.	.
No kick-down on accelerator depression in D3 (within kick-down speed limits)	.	.	.	2	3	.	4	.	.	4	5	.	.	.	.	.	.	.	.	.	.	.	⑦	.	.	.	.
Abnormal rise of engine speed on accelerator depression in D3 (above kick-down upper limit)	.	1	.	2	.	.	3	.	.	5	6	.	7	4	.	.	.	⑧	.	.	⑨	.	.	.	.	.	.
Engine runaway or slip on D3 → D2 change	.	.	.	1	.	.	2	.	.	4	.	6	5	3	.	.	.	⑦	⑧	.	.	⑨	.	.	⑩	.	.
No D3 → 2 change on "D" → "2" range shift	.	1	.	.	.	.	2	.	.	4	.	5	.	3	.	.	.	⑥	.	.	⑦	.	.	.	.	.	.
2 → 1, 2 → D, or 2 → D3 change in "2" range	.	1	.	.	.	.	2	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
No shift shock or engine run-away on "1" → "2" range shift	1	2	.	3	.	4	.	1	.	6	.	.	7	5	.	.	.	⑨	.	⑩	.	.	.	.	.	.	.
No D3 → 1 change on "D" → "1" range shift	.	1	.	.	.	.	2	.	.	4	5	7	6	3	.	.	.	⑧	⑨	.	.	⑩	.	.	.	.	.

Trouble	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	a	b	c	d	e	f	g	h	i	j	k
No engine braking in "1" range	.	1	.	.	.	.	2	.	.	4	.	.	5	3	.	.	.	.	⑥	.	⑦	.	.	.	.	.
1 → 2 or D2 change, or 2 or D2 → D3 change in "1" range	.	1	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	③	.	.	.	.
No 12 → 11 change on "D" → "1" range shift	1	2	.	.	.	.	.	.	.	4	5	6	7	3	.	.	.	.	.	⑧	.	⑨	.	.	.	.
Excessive shift shock on 12 → 11 change in "1" range	.	.	.	1	.	.	.	2	.	4	.	.	.	3	.	.	.	.	.	⑤	.	.	.	.	.	.
Car moves in "P" range, and parking gear not removed when "P" range is disengaged.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	②	.
Transmission overheats	1	.	.	.	.	.	3	4	2	6	.	8	7	5	.	.	.	⑨	⑩	⑪	⑫	⑬	⑭	.	.	⑮
Oil spurring up or white exhaust during running	1	.	.	3	.	.	5	6	2	7	.	.	8	4	.	.	.	⑨	⑩	⑪	⑫	⑬	⑭	.	.	⑮	
Offensive smell from oil charging pipe	1	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	③	④	⑤	⑥	⑦	⑧	⑨	.	.	⑩
Transmission noisy in "P" and "N" ranges	1	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	③	.	.	.	.	.
Transmission noisy in "D", "2", "1" and "R" ranges	1	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	③	.	.	.	④	.	⑤	.	.	⑥

7B-D. REMOVAL OF TRANSMISSION

When dismantling the automatic transmission from a vehicle, pay attention to the following point. Before dismantling the transmission, rigidly inspect it by aid of the "Trouble-Diagnosis Chart", and dismount it only when considered to be necessary. The transmission should be removed in the following sequence :

1. Remove the battery earth.
2. Jack up the vehicle and support it with safety stands.
3. Remove the heat insulator attaching bolts and the exhaust pipe bracket attaching bolts. Then disconnect the exhaust pipe joints on the right side of the converter housing and on the rear of the pre-silencer, and remove the exhaust pipe with heat insulator.
4. Remove the four propeller shaft attaching bolts and remove the center bearing attaching bolts. Then pull it out from the extension housing. Apply a plug to prevent oil leak.
5. Disconnect the speedometer cable from the extension housing.

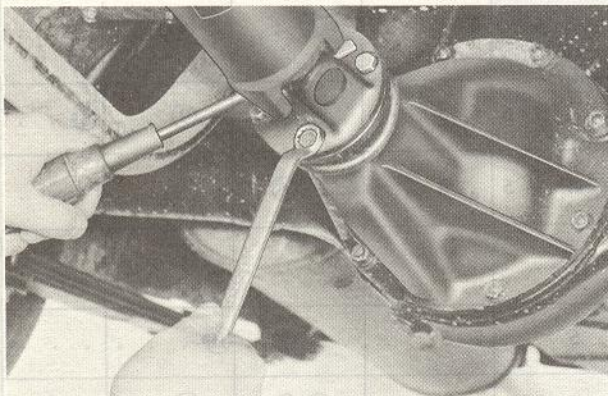


Fig. 7B-12 Removing propellar shaft

6. Disconnect the control rod.
7. Remove the vacuum hose from the vacuum diaphragm. Also disconnect the wire connections of down-shift solenoid and remove the wires from the clip.
8. Disconnect the feed pipe and return pipe for cooling on the left side of the transmission.

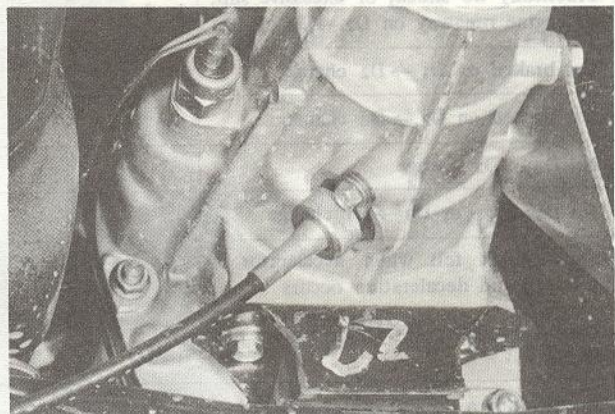


Fig. 7B-13 Removing speedometer cable

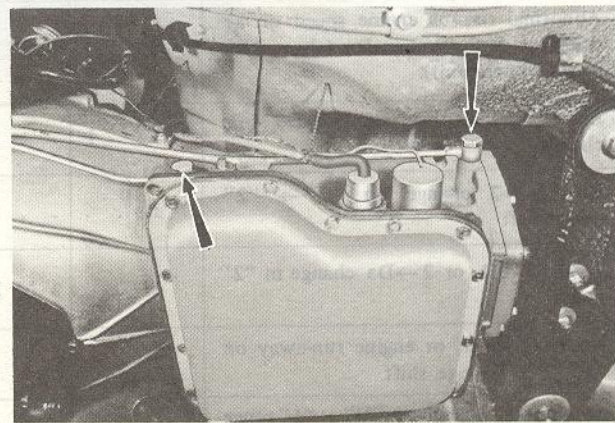


Fig. 7B-14 Removing pipes

9. Remove the undercover (or service cover) on the converter housing.

10. Remove the starting motor and fix the ring gear with the **ring gear brake** (49 0877 060), then loosen and remove four bolts that attach the torque converter to the drive plate by using the **special wrench** (49 0877 435). At the same time, make aligning mark across torque converter and drive plate.

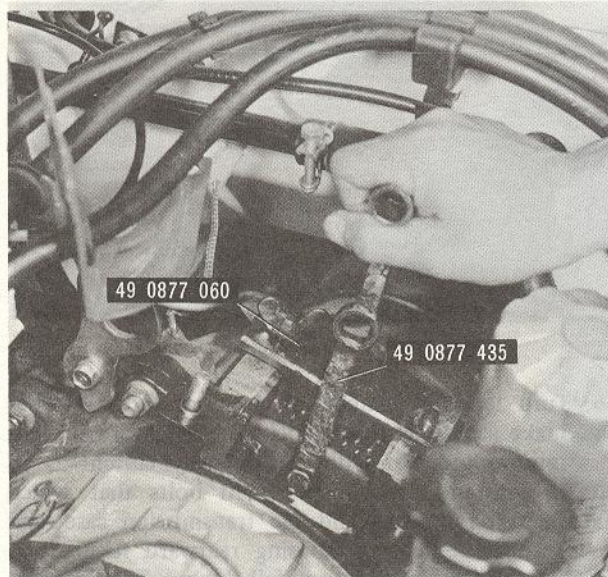


Fig. 7B-15 Loosening bolts on the converter

11. With the transmission supported with the transmission holder, remove the tightening nuts of the transmission member and take out the member.

12. Lower the transmission holder, widen the clearance between the transmission and the floor. Then loosen and remove the bolts that connect the engine and the top of the torque converter housing to disconnect the transmission and engine.

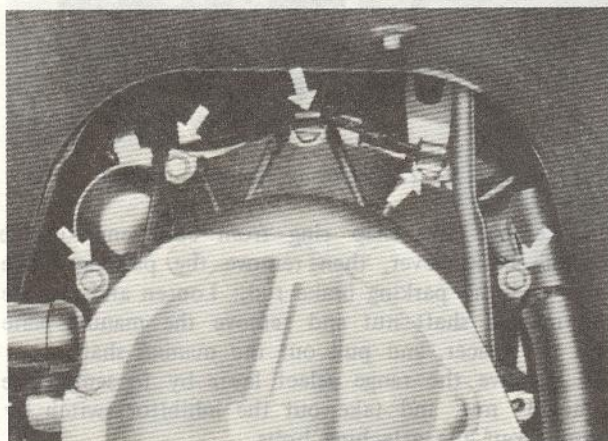


Fig. 7B-16 Bolts on engine & converter housing

13. Return the transmission to the level position. While slowly prying a screw driver or something between the converter and the drive plate, pull out the transmission rearward with the converter attached to it. Then lower the holder and dismount the transmission.

7B-F. DISASSEMBLY OF TRANSMISSION COMPLETE

Attention must be paid to the following matter in disassembling the transmission :

- (1) Clean the outside of the transmission thoroughly before overhauling. In case of that, see that the steam does not enter the transmission and the gasoline is not used in using rubber parts.
- (2) Disassembly should be made in a clean workshop, preferably in a dust-proof workshop.

7B-F-1. Disassembly Procedure

1. Remove the torque converter from the housing taking care not to have the converter oil spill. Then tilt the transmission housing and drain the oil in the oil pan through the end of the extension housing into a vessel.
2. Loosen the bolt for the oil gauge tube and remove it together with the "O" ring.
3. Remove the connecting rod attached to the range select lever.
4. Loosen and remove the bolts that attach the converter housing and the transmission case, and remove the converter housing.

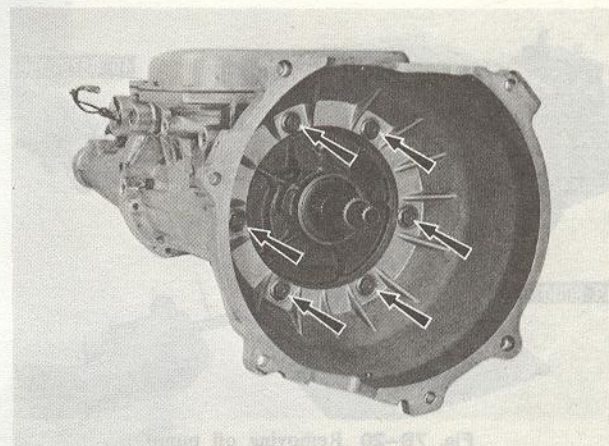


Fig. 7B-17 Bolts on converter housing and case

5. Loosen and remove out the oil pan bolts and take out the oil pan.

6. Turn the downshift solenoid and the vacuum diaphragm unit by hand and remove them together with "O" rings. Take care not to forget taking out the vacuum diaphragm rod.

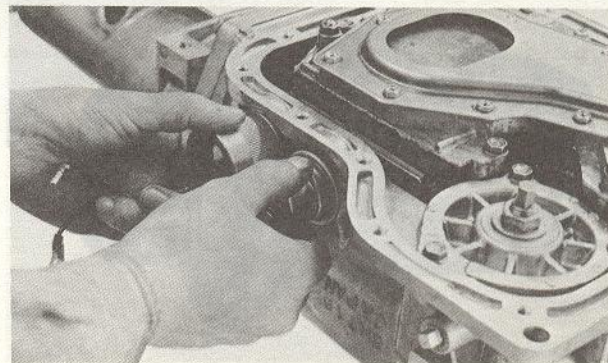


Fig. 7B-18 Removing downshift solenoid

7. Remove the control valve assembly by loosening out seven attaching bolts.

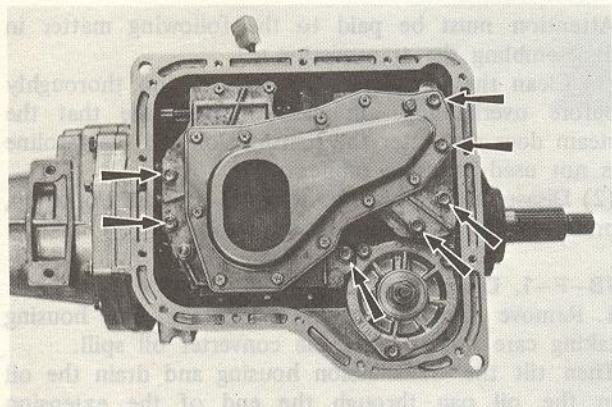


Fig. 7B-19 Control box setting bolts

8. Pull out the input shaft.

9. Loosen lock nut on piston stem. Then tighten piston stem in order to prevent from falling front clutch drum down when oil pump is withdrawn.

10. Pull out the oil pump with the oil pump remover (49 0378 390) as shown in Fig. 7B-16.

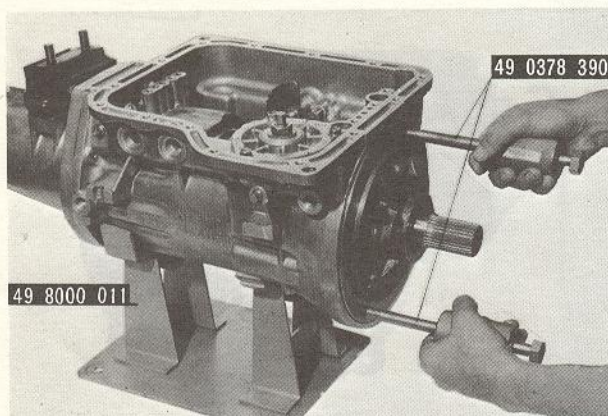


Fig. 7B-20 Removing oil pump

11. Loosen the piston stem and take out the band strut.

12. Remove the following as one set: band, front clutch assembly, rear clutch assembly, front planet carrier assembly with sun gear.

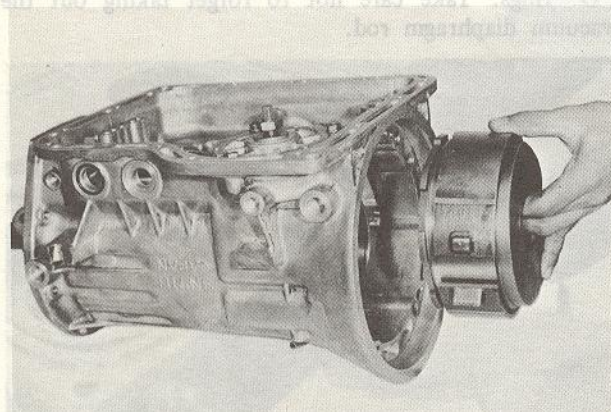


Fig. 7B-21 Removing clutch ass'y

13. Take out the rear planet carrier by removing the snap ring which fastens the rear planet carrier to the connecting drum.

14. Take out the output shaft snap ring and the internal drive flange.

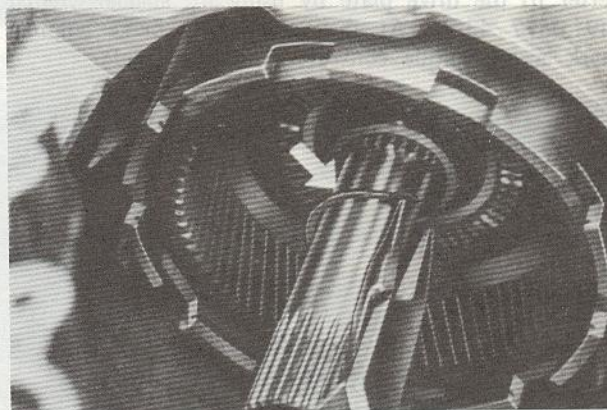


Fig. 7B-22 Removing snap ring

15. Turn left the connecting drum as far as it goes and make sure it is firmly locked. Then turn it right and remove together with the one-way clutch.

16. Loosen and remove the eight bolts that attach the extension housing and the transmission case, and pull out the extension housing rearward taking care so that the washer does not fall down. Then remove the parking pawl, spring and washer.

17. Pull out the output shaft rearward. Then remove the oil distributor together with governor and take out the needle bearing remaining on the transmission case side.

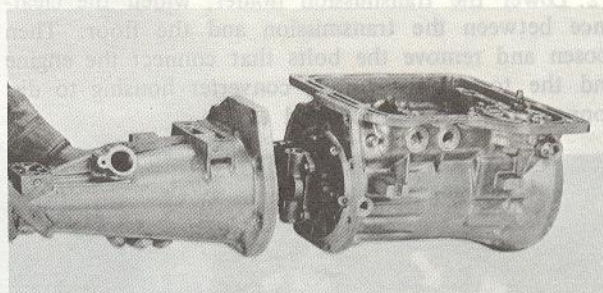


Fig. 7B-23 Removing extension housing

18. Remove the snap ring from each end of the parking brake lever, then remove the parking brake lever and the parking brake rod. Loosen and remove the manual shaft nut and remove the manual plate and the spacer, and pull out the manual shaft.

19. Remove the range select lever by loosening the attaching nut, and take out the inhibitor switch by turning out the attaching bolts.

The above operations complete the disassembly of the principal transmission parts excepting the low-reverse brake which still remain on the transmission case. The low-reverse brake can of course be removed from the transmission case but the disassembling operations of it are described in the next section dealing with overhaul of principal components.

7B-G. OVERHAUL OF MAIN COMPONENTS

The specifications of component parts for each model may be different due to the difference of the engine capacity.

However they have common procedures of overhauling. The principal components each include a large number of similar parts finished to high precision. So all related parts of each component should be placed apart from others to avoid confusion. Overhaul should be made in the following sequence. (Bearings and bearing races must be checked with respect to parts to which they are mounted.)

7B-G-1. Torque Converter

1. The torque converter is welded all along the circumference and so cannot be disassembled.

To Inspect

1. Check for external damages, oil leak, distortions, dents, etc., and replace if necessary.

Note :

If the converter oil is found markedly degenerated or fouled, thoroughly rinse the inside of the converter with approximately 0.5 liter (1.0 U.S. pints, 0.5 U.S. quart, 0.9 Imp. pint) of cleaning solvent (none-lead gasoline or kerosene) and make it drain for half an hour with the rear side of the converter facing down. Then fill it with converter oil and stir it well and drain it again in the same procedure.

7B-G-2. Front Clutch Assembly

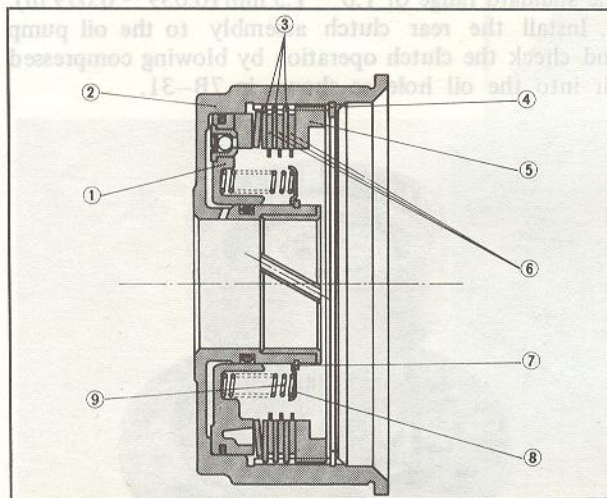


Fig. 7B-24 Front clutch ass'y

- | | |
|----------------------|--------------------|
| 1. Piston | 6. Inner plate |
| 2. Front clutch drum | 7. Snap ring |
| 3. Outer plate | 8. Spring retainer |
| 4. Snap ring | 9. Coil spring |
| 5. Retaining plate | |

To Remove

1. Remove the snap ring with a screw driver or something, then take out the retaining plate, inner plates, outer plates and dished plate.
2. Remove the coil spring retainer snap ring by using the clutch spring compressor (49 0378 375).

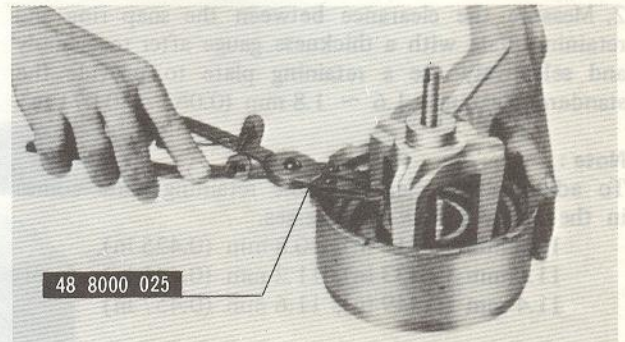


Fig. 7B-25 Removing snap ring

3. Remove the coil spring retainer and 10 coil springs.
4. Remove the piston by blowing compressed air into the oil hole as shown in 7B-26.

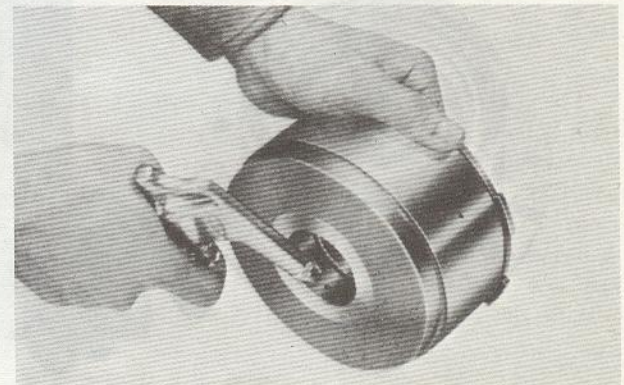


Fig. 7B-26 Blowing out piston

To Inspect

1. Check the inner plates for worn or damaged facings.
2. Check to see that the coil spring retainer is not deformed.
3. Check to see that the coil spring has not lost tension.
4. Check to see that the seal around the piston and the "O" ring inside the clutch drum are not damaged.
5. If defective parts are found, replace them with new ones.

To Reassemble

1. All parts are smeared with converter oil and reassembled in the reverse sequence of the disassembly.



Fig. 7B-27 Measuring clearance

2. Measure the clearance between the snap ring and retaining plate with a thickness gauge after reassembly and selectively use a retaining plate to provide the standard clearance 1.6 ~ 1.8 mm (0.062 ~ 0.071 in).

Note :

To adjust above clearance, the retaining plate comes in the following six thicknesses.

- 10.6 mm (0.417 in), 10.8 mm (0.425 in),
- 11.0 mm (0.433 in), 11.2 mm (0.441 in),
- 11.4 mm (0.449 in), 11.6 mm (0.457 in)

3. Install the front clutch assembly to the oil pump. Blow compressed air into the oil hole as shown in 7B-28 and check the clutch operation.

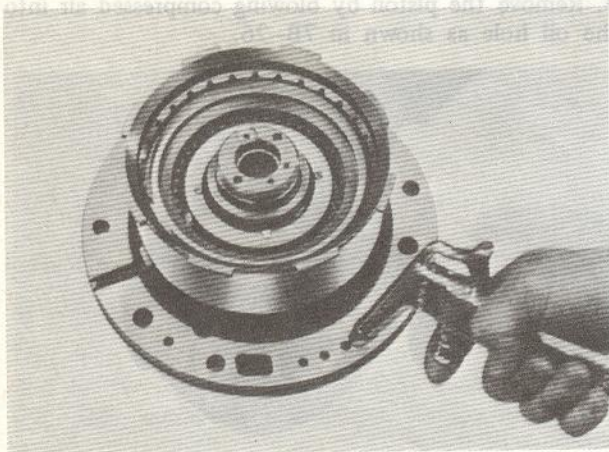


Fig. 7B-28 Testing front clutch

7B-G-3. Rear Clutch Assembly

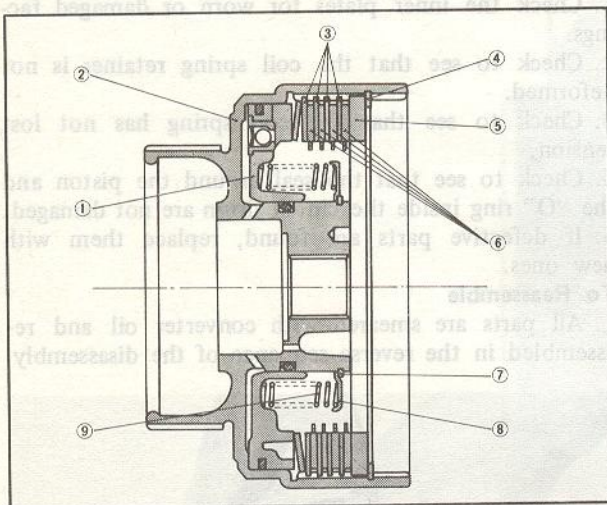


Fig. 7B-29 Rear clutch ass'y

- | | |
|---------------------|--------------------|
| 1. Piston | 6. Inner plate |
| 2. Rear clutch drum | 7. Snap ring |
| 3. Outer plate | 8. Spring retainer |
| 4. Snap ring | 9. Coil spring |
| 5. Retaining plate | |

To Remove

1. Remove the snap ring, retaining plate, outer plates, inner plates and dished plate in the same procedure as for the front clutch assembly.

2. Remove the coil spring retainer snap ring by the use of the clutch spring compressor. Then remove the coil spring retainer and 10 coil springs.

3. Remove the piston by blowing compressed air into the oil hole.

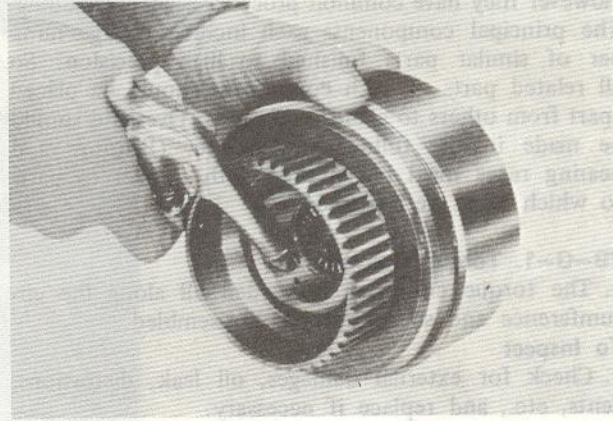


Fig. 7B-30 Blowing out piston

To Inspect

1. Make the same inspection as for the front clutch assembly and replace any defective parts with new ones.

To Reassemble

1. All parts are reassembled with converter oil smeared in the reverse sequence of the disassembly, as in the case of the front clutch.

2. After reassembly, check to see that the clearance between the snap ring and retaining plate is within the standard range of 1.0 ~ 1.5 mm (0.039 ~ 0.059 in).

3. Install the rear clutch assembly to the oil pump and check the clutch operation by blowing compressed air into the oil hole as shown in 7B-31.



Fig. 7B-31 Rear clutch testing hole

7B-G-4. Low and Reverse Brake Assembly

To Remove

1. Remove the snap ring of the low and reverse brake. Remove the retaining plate, friction plates, pressure plates and dished plate.

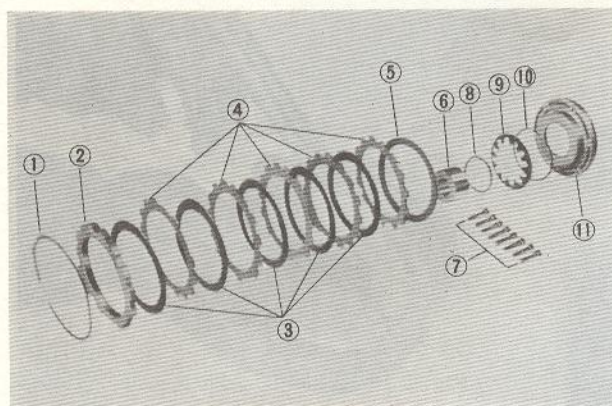


Fig. 7B-32 Low & reverse brake

- | | |
|--------------------|-------------------------|
| 1. Snap ring | 7. Bolt |
| 2. Retaining plate | 8. Snap ring |
| 3. Friction plate | 9. Piston return spring |
| 4. Steel plate | 10. Spring ring |
| 5. Dished plate | 11. Piston |
| 6. Inner race | |

2. The inner race of the one-way clutch is tightened with 8 bolts from the rear of the case. Loosen and remove all the bolts using the **hex-head extension** (49 8000 040), then remove the inner race, snap ring, piston return spring and ring.

3. Remove the piston by blowing compressed air into the low and reverse brake oil hole located at the rear of the transmission case.

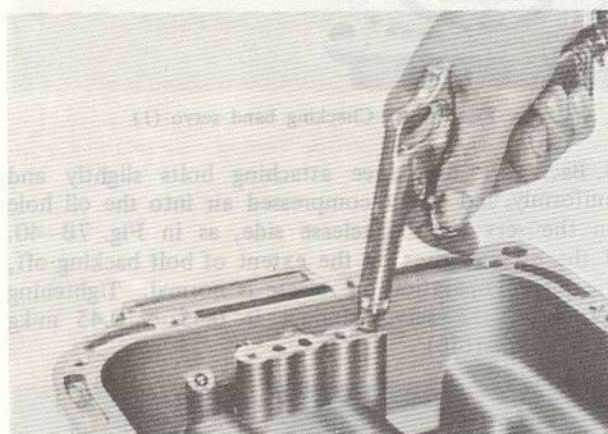


Fig. 7B-33 Blowing out piston

To Inspect

1. Check the friction plate for worn or damaged facing.
2. Check to see that the piston return spring has not lost tension.
3. Check to see that there is no deformation on the snap ring (stopper) for piston return spring, attached on the one-way clutch inner race.
4. Check to see that the seal rubber on the inside and outside of the piston are not damaged.
5. If any defective part is found, replace with new one.

To Reassemble

1. Lubricate the piston with converter oil and install it into the transmission case.

2. Install on the piston the return spring support ring, return spring, snap ring and one-way clutch inner race in this order. Then tighten the inner race, from rear of the case, with eight bolts by using the **hex-head extension** (49 8000 040) to a specified torque of 1.5 ~ 2.0 m-kG (11 ~ 15 ft-lb).

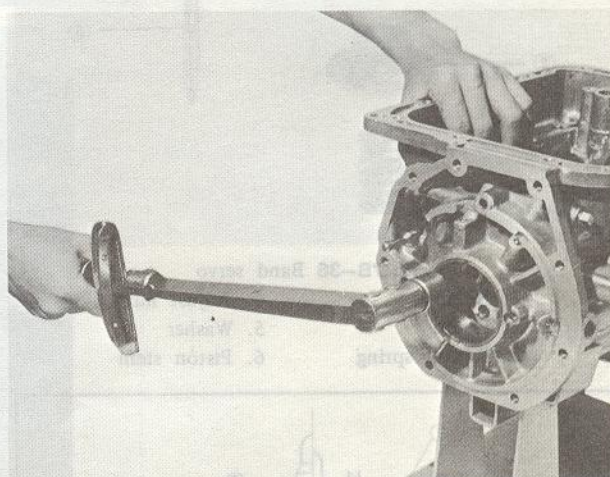


Fig. 7B-34 Tightening inner race

3. Reassemble the dished plate, steel plates, friction plates and retaining plate in the reverse order, smearing each with converter oil. Then fit the snap ring.

4. After reassembly, measure the clearance between the snap ring and retaining plate and select the retaining plate to provide a standard clearance of 0.8 ~ 1.05 mm (0.032 ~ 0.042 in).

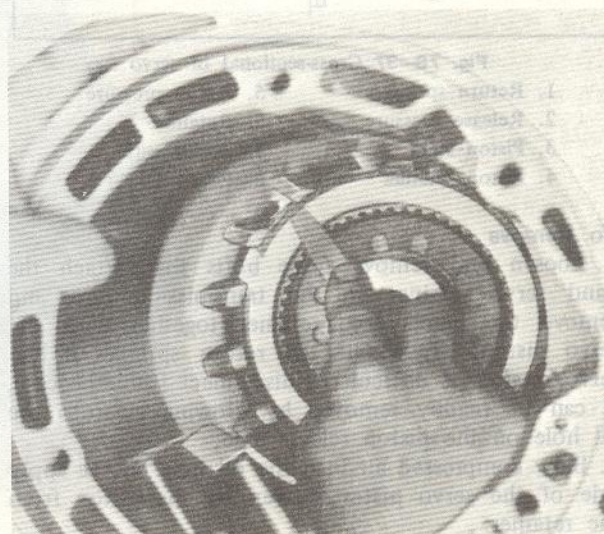


Fig. 7B-35 Measuring clearance

Note :

To adjust above clearance the retaining plate is available in the following six thicknesses.

- | | |
|---------------------|---------------------|
| 11.8 mm (0.465 in), | 12.0 mm (0.472 in), |
| 12.2 mm (0.480 in), | 12.4 mm (0.488 in), |
| 12.6 mm (0.496 in), | 12.8 mm (0.504 in) |

5. Check the operation of the low and reverse brake by blowing air into the oil hole as shown in Fig. 7B-33.

7B-G-5. Band Servo

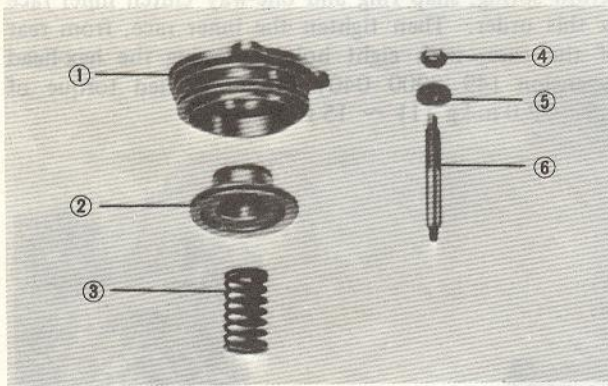


Fig. 7B-36 Band servo

- | | |
|------------------|----------------|
| 1. Retainer | 4. Adjust nut |
| 2. Piston | 5. Washer |
| 3. Return spring | 6. Piston stem |

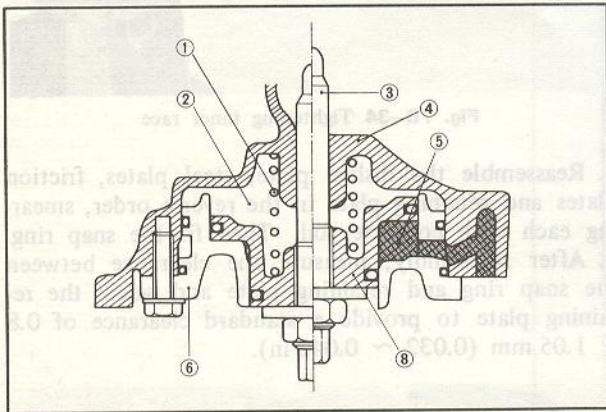


Fig. 7B-37 Cross-sectional of servo

- | | |
|---------------------|-------------------|
| 1. Return spring | 5. Apply pressure |
| 2. Release pressure | 6. Retainer |
| 3. Piston stem | 7. Adjust nut |
| 4. Piston retainer | 8. Piston |

To Remove

1. Loosen and remove three bolts that attach the band servo retainer to the transmission case, and remove the band servo retainer together with the servo piston. Take out the return spring. If the servo retainer is difficult to disconnect from the case, it can be readily removed by blowing air into the oil hole on the piston release side.

2. Blow compressed air into the oil hole on the apply side of the servo piston to remove the piston from the retainer.

To Inspect

1. Check to see that two "O" rings on the servo retainer and the seal rubber on the servo piston are not damaged.
2. Check to see that there are no damages on the servo retainer, piston, piston stem and the portion of transmission case where those parts are fitted.
3. Check the return spring for decline or deformation.
4. Check the brake band lining for wear or damages.

To Reassemble

1. Apply converter oil on all parts and reinstall them in the reverse order of disassembly.

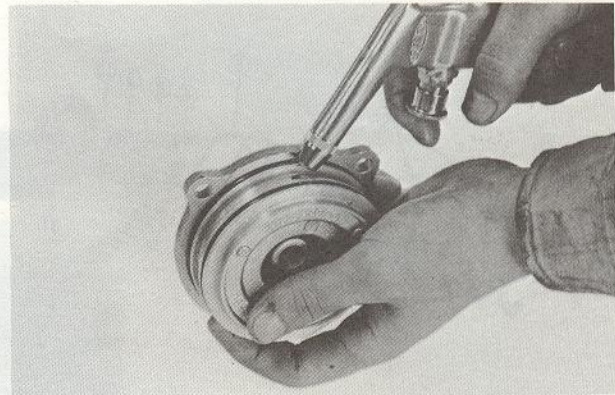


Fig. 7B-38 Blowing out piston

2. Blow compressed air into the oil hole on the servo piston apply side to make sure that the piston operates properly, as in Fig. 7B-39.

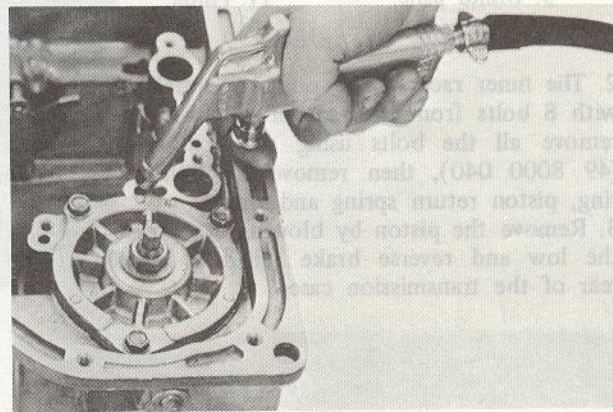


Fig. 7B-39 Checking band servo (1)

3. Back off the three attaching bolts slightly and uniformly, and apply compressed air into the oil hole on the servo piston release side, as in Fig. 7B-40. If the retainer rises by the extent of bolt backing off, the piston operation on release is normal. Tightening torque of the servo retainer is 0.35 ~ 0.45 m-kg (2.5 ~ 3.2 ft-lb).

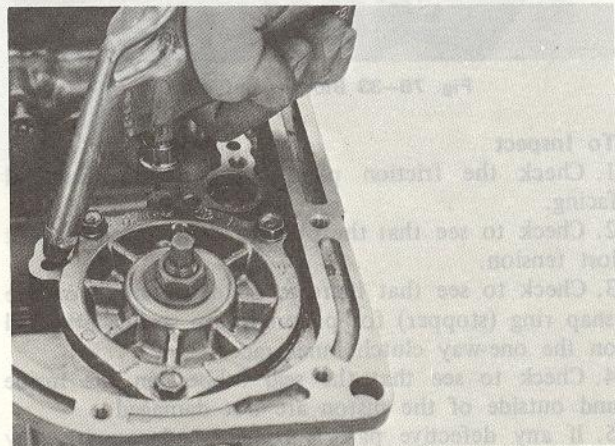
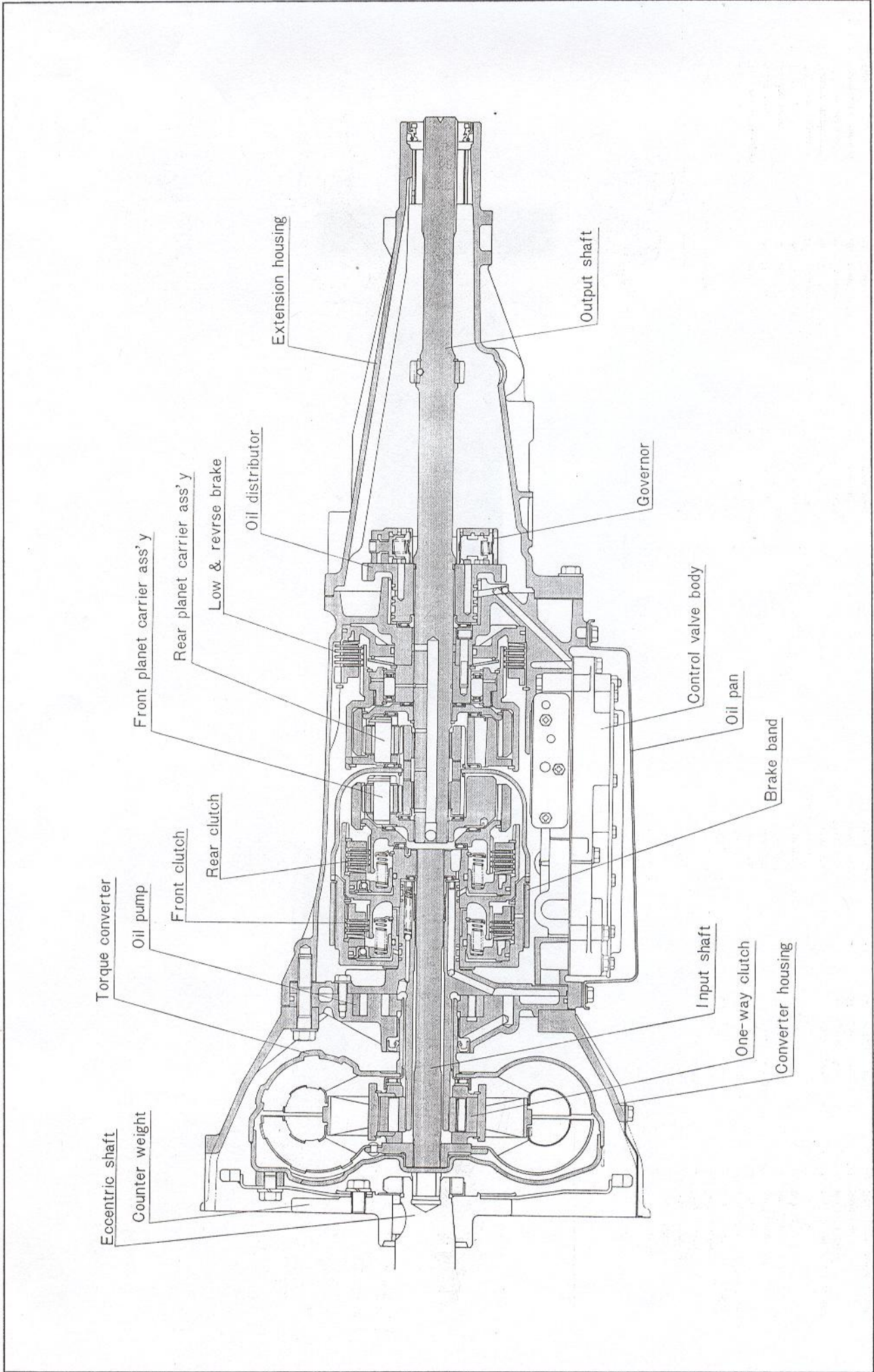


Fig. 7B-40 Checking band servo (2)



AUTOMATIC TRANSMISSION MODEL 3N71B (JATCO)

7B-G-6. Governor Valve Assembly

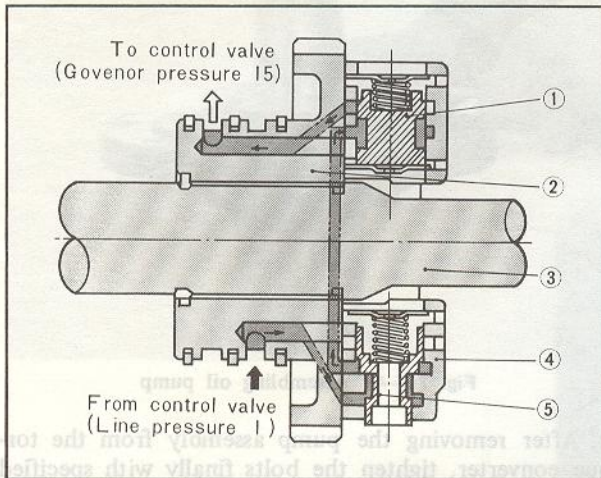


Fig. 7B-41 Cross-sectional view of governor

- | | |
|--------------------|------------------------|
| 1. Primary valve | 4. Governor valve body |
| 2. Oil distributor | 5. Secondary valve |
| 3. Output shaft | |

To Remove

1. Loosen and remove four bolts that attach the governor. Remove the governor from the oil distributor.
2. Remove the secondary governor retainer plate. Then remove the spring and secondary governor valve from the body.
3. Remove the primary governor valve in the same procedure as for the secondary, if primary governor is to be disassembled for any purpose.

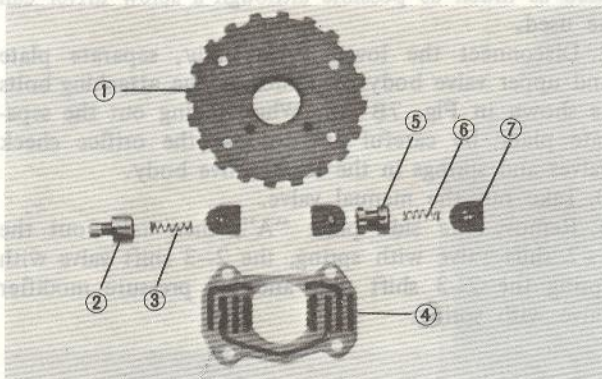


Fig. 7B-42 Governor valve

- | | |
|--------------------|-------------------|
| 1. Oil distributor | 5. Primary valve |
| 2. Secondary valve | 6. Spring |
| 3. Spring | 7. Retainer plate |
| 4. Valve body | |

To Inspect

1. Check the valve and the body to see that there is nothing that may cause valve sticking or catching.
2. Check to see that the spring has not lost tension and the retainer plates are not deformed.
3. Check the side clearance between the sealing and groove as shown in Fig. 7B-43. The standard clearance is $0.04 \sim 0.16$ mm ($0.002 \sim 0.006$ in). When disassembling the seal ring, squeeze it up so that its joint will rise above the groove, and disconnect the joint.

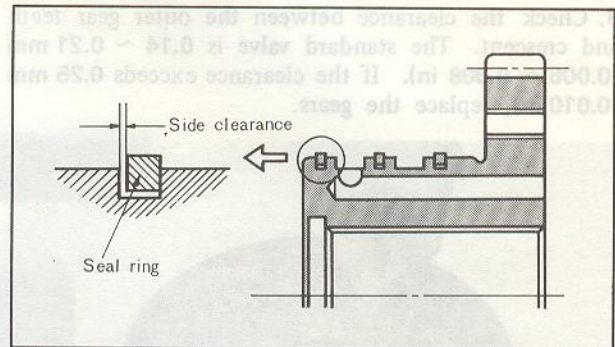


Fig. 7B-43 Clearance of oil seal ring

To Reassemble

1. Lubricate all parts with converter oil and reinstall them in the reverse order of disassembly so as not to confuse primary with secondary. After reassembly, make sure that the governor spring is straight and there is no catch in the governor valve movement.
2. Tighten the governor to the oil distributor with four bolts to a standard torque of $0.50 \sim 0.70$ m-k ($3.6 \sim 5.1$ ft-lb).
3. To determine if secondary governor is in good condition, blow air under light pressure into line pressure hole in Fig. 7B-41 to listen for noise like a model plane.

7B-G-7. Oil Pump Assembly

To Remove

1. Disconnect the pump cover from the pump housing by loosening five bolts that attach them.
2. Take out the inner gear and the outer gear from the pump housing. At the same time, put a sign indicating the installing side with quick-dry ink or something and not with a punch, to avoid erroneous assembly.

To Inspect

1. Check to see that tooth faces of the inner and outer gears are not damaged or worn.
2. Check the side play of the inner (or outer) gear by using a straight edge and thickness gauge as in Fig. 7B-44. The standard valve is $0.02 \sim 0.04$ mm ($0.001 \sim 0.002$ in). If the clearance exceeds 0.03 mm (0.003 in), replace the gears with those selected from the three kinds. Make sure that the inner and outer gears are replaced as a set.

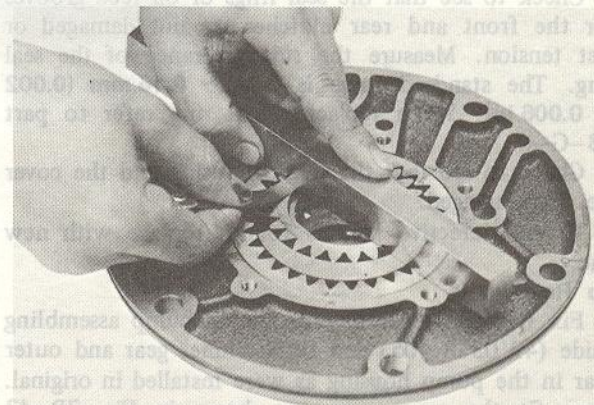


Fig. 7B-44 Measuring clearance (1)

3. Check the clearance between the outer gear teeth and crescent. The standard valve is **0.14 ~ 0.21 mm (0.006 ~ 0.008 in)**. If the clearance exceeds **0.25 mm (0.010 in)**, replace the gears.

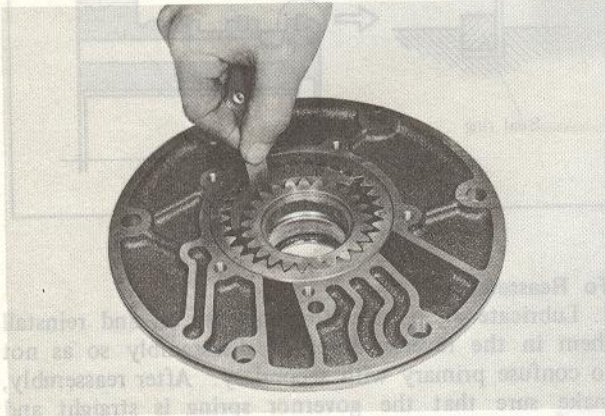


Fig. 7B-45 Measuring clearance (2)

4. Check the clearance between the outer gear and the housing. The standard valve is **0.05 ~ 0.20 mm (0.002 ~ 0.008 in)**. If the clearance exceeds **0.25 mm (0.010 in)**, replace the gears as a set.



Fig. 7B-46 Measuring clearance (3)

5. Check to see that the seal rubber attached on the pump housing periphery is not damaged.

6. Check to see that the oil seal lip is not damaged and the spring has not lost tension.

7. Check to see that the seal rings of oil feed grooves for the front and rear clutches are not damaged or lost tension. Measure the side clearance of the seal ring. The standard valve is **0.04 ~ 0.16 mm (0.002 ~ 0.006 in)**. When replacing seal ring refer to part 7B-G-6.

8. Check to see that the pump housing and the cover are not damaged.

9. If any defective part is found, replace with new one.

To Reassemble

1. Fix the pump housing to the oil pump assembling guide (49 0378 405) and fit the inner gear and outer gear in the pump housing as were installed in original. Then fit the pump cover as shown in Fig. 7B-43 and tighten it temporarily with five bolts.

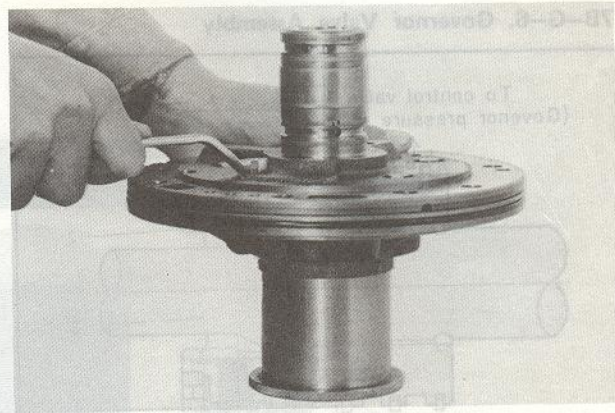


Fig. 7B-47 Assembling oil pump

2. After removing the pump assembly from the torque converter, tighten the bolts finally with specified torque **0.6 ~ 0.8 m-kg (4.3 ~ 5.8 ft-lb)**.

7B-G-8. Control Valve Assembly

The control valves are composed of the most accurate of the automatic transmission parts and so particular care must be paid in disassembly and reassembly. Also, since a number of similar parts are used, they must be arranged in the order of disassembly to facilitate reassembly.

To Remove

1. Loosen and remove the bolts and nut, that attach the oil strainer, and remove the oil strainer. In loosening the 8 mm bolt, a box wrench should be used as much as possible although a screw driver can be used.

2. Disconnect the lower valve body, separate plate and upper valve body by removing the attaching bolts as shown in Fig. 7B-48. When taking out the separate plate, be careful not to lose the orifice check valves and springs in the lower valve body.

3. Take out the manual valve.

4. Remove the side plate "A", then take out the 1-2 shift valve with spring, the 2-3 shift valve with spring the 2-3 shift plug and the pressure modifier valve with spring.

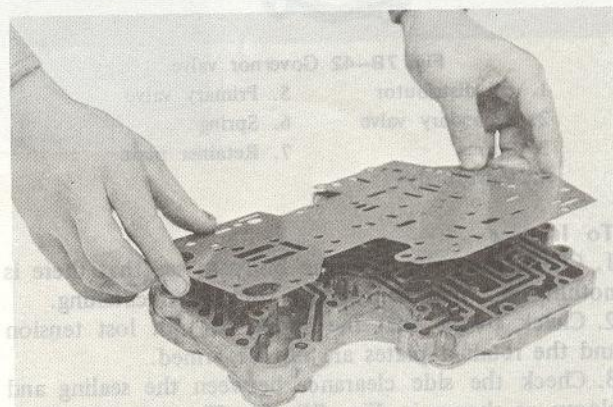


Fig. 7B-48 Removing separate plate

5. Remove the side plate "B", then take out the solenoid downshift valve with spring, the throttle

back-up valve with spring, the vacuum throttle valve and the 2-3 timing valve with spring.
6. Remove the side plate "D", then take out the

pressure regulator plug sleeve, pressure regulator plug, spring seat, spring, pressure regulator valve and second lock valve with spring.

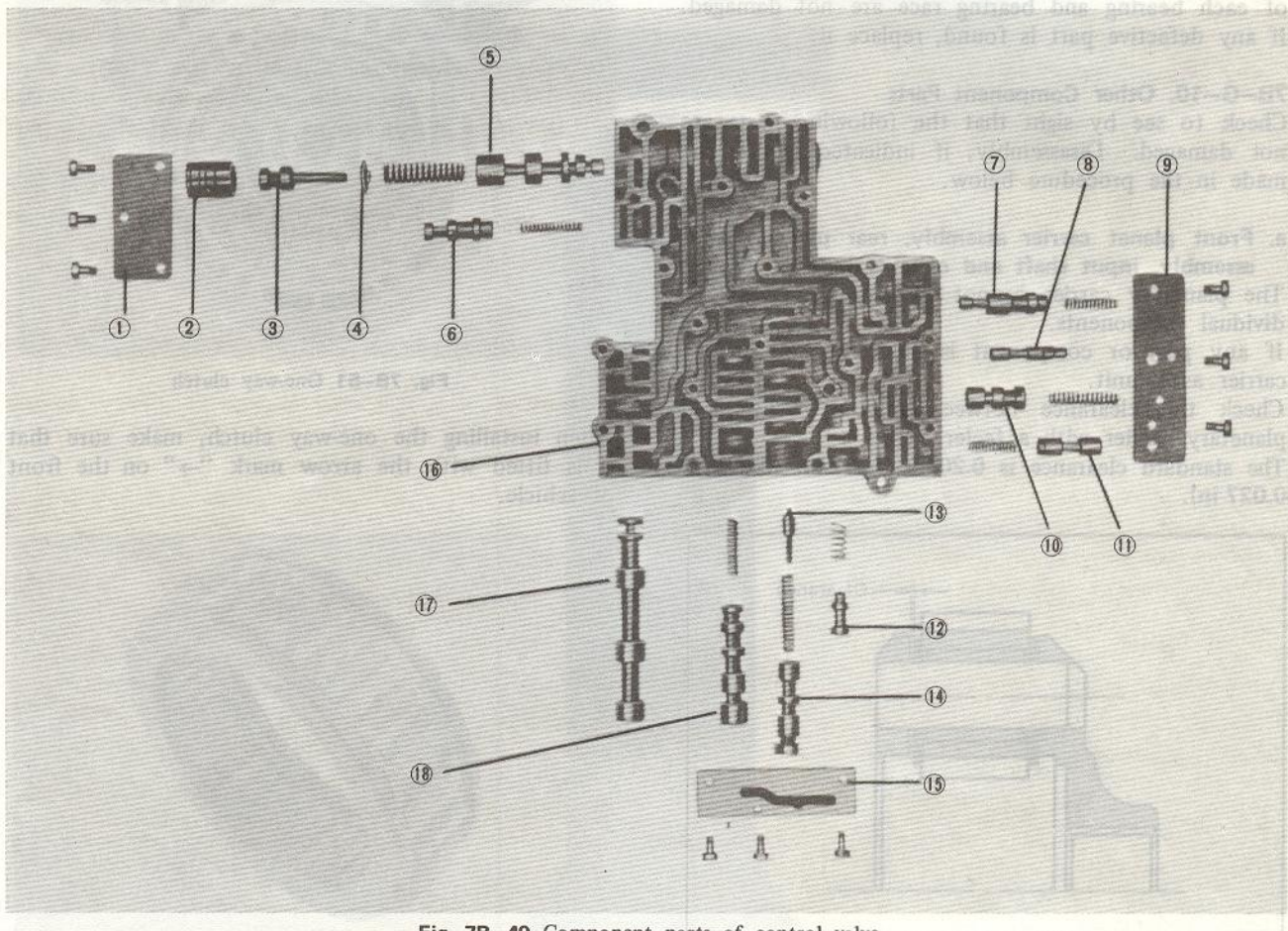


Fig. 7B-49 Component parts of control valve

- | | | |
|-----------------------------|----------------------------|----------------------|
| 1. Side plate "D" | 7. 2-3 timing valve | 13. 2-3 shift plug |
| 2. Plug sleeve | 8. Vacuum throttle valve | 14. 2-3 shift valve |
| 3. Regulator pressure plug | 9. Side plate "B" | 15. Side plate "A" |
| 4. Spring seat | 10. Throttle back-up valve | 16. Upper valve body |
| 5. Regulator pressure valve | 11. Down-shift valve | 17. Manual valve |
| 6. Second lock valve | 12. Modifier valve | 18. 1-2 shift valve |

To Inspect

1. Check each valve for anything that might cause sticking.
2. Check to see that valve springs and check valve springs have not lost tension.
3. Check to see that the oil strainer is not damaged.
4. Check for possible abnormal oil passage developing on the separate plate.
5. Check for possible damages or other abnormalities in the oil passages of valve body.
6. If any defective part is found, replace with new one.

To Reassemble

1. Reassemble in the reverse order to disassembly paying special attention to the following points:
 - a. Install small valves and springs by referring to the components parts of control valve Fig. 7B-49.

- b. Lubricate all valves and springs with converter oil before installing.
- c. If there is any valve that is difficult to insert, do not force it in but give it a light, straight push.
- d. Make sure that the followings are strictly tightened to **0.25 ~ 0.35 m-kg (1.8 ~ 2.5 ft-lb)**.
 - Side plate to valve body
 - Lower valve body to upper valve body
 - Oil strainer to lower valve body

7B-G-9. Bearing and Bearing Race

Check each bearing and bearing race after cleaning carefully. Also check to see that the mating parts of each bearing and bearing race are not damaged. If any defective part is found, replace it.

7B-G-10. Other Component Parts

Check to see by sight that the following parts are not damaged. Disassembly, if indicated, should be made in the procedure below.

a. Front planet carrier assembly, rear planet carrier assembly, input shaft and output shaft

The planetary carrier cannot be divided into its individual components.

If any part or component is defective, replace the carrier as a unit.

Check the clearance between pinion washer and planetary carrier with a feeler.

The standard clearance is $0.20 \sim 0.70$ mm ($0.008 \sim 0.027$ in).

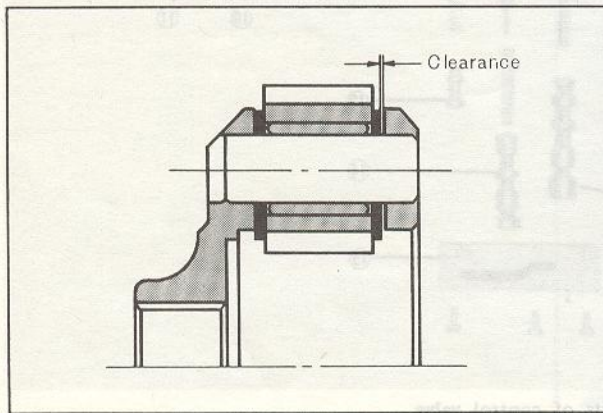


Fig. 7B-50 Clearance of planetary gear

If the clearance exceeds 0.80 mm (0.032 in), replace with new one.

b. Shell and sun gear assembly

Remove the snap rings and draw out the sun gear from the connecting shell.

c. Internal drive flange assembly

Remove the snap ring and disconnect the flange from the internal gear.

d. Connecting drum assembly

The operation of the one-way clutch can be checked by assuring that the connecting drum assembly (or outer race) turns clockwise and not counter-clockwise, before removing the connecting drum assembly from the case. See 7B-F "DISASSEMBLY OF TRANSMISSION COMPLETE"—15.

Draw out the one-way clutch by removing the snap ring from each end. Remove the outer race snap ring and draw out the outer race rearward from the drum.

After disassembly, check to see that the one-way clutch is not damaged. Check at the same time whether there is any damage on the contacting sur-

face of the outer race or inner race.

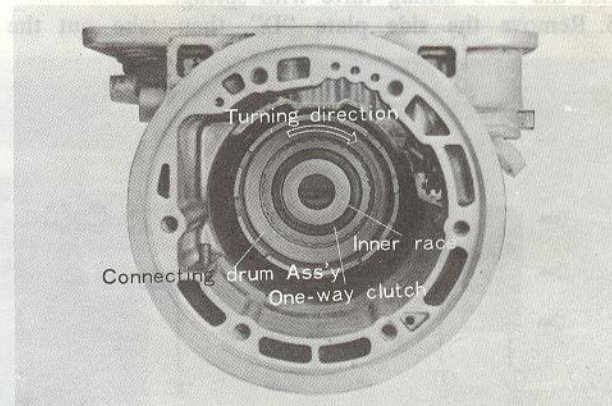


Fig. 7B-51 One-way clutch

When installing the one-way clutch, make sure that it is fitted with the arrow mark "→" on the front of vehicle.



Fig. 7B-52 Mark on the one-way clutch

e. Manual control system and parking lock system

Removal and disassembly of these parts are omitted.

7B-H. REASSEMBLY OF TRANSMISSION

Reassembling the major component parts on the transmission case are described below.

Install them in the procedure reverse to that of 7B-F "DISASSEMBLY OF TRANSMISSION" and make sure to lubricate each with converter oil before installation. All gaskets must be replaced with new ones. As to various component parts, refer to 7B-G "OVERHAUL OF MAIN COMPONENT".

1. Install the low and reverse brake assembly on the transmission case. (7B-G-4)
2. Turn clockwise and push in the connecting drum assembly, engaging it with the friction plates.
3. Mount the needle bearing and bearing race for the front face of the oil distributor assembly on the transmission case side. Then install the oil distributor assembly with governor to the case, taking care not to damage the seal rings.
4. Install the output shaft.
5. Mount the needle bearings on the front and rear

faces of the internal drive flange, fit the flange on the output shaft and lock it with the snap ring.

6. Mount the bearing race on the rear face of the rear planet carrier and the needle bearing on its front face. Fit the rear planet carrier into the internal drive flange, and lock the carrier by placing the snap ring on the connecting drum.

7. Push in the manual shaft into the case and tighten the spacer and manual plate with the nut. Then mount the parking lever and parking rod.

8. Install the band servo on the case. (7B-G-5)

9. Install the spacer, return spring and parking wahl on the shaft. Fit the rear end of the parking rod between the two steel balls in the supporter, then install the extension housing onto the case. Tighten the bolts to a specified torque of 2.0 ~ 2.5 m·kg (15 ~ 18 ft·lb).

10. Mount the needle bearing on the rear face of the rear clutch hub and the bearing race on the front face of the front planet carrier. Assemble the rear clutch hub and the planet carrier, and install its assembly on the sun gear and connecting shell.

11. Put the above assembly with the rear clutch hub side facing upward. Mount the needle bearing on the front face of the rear clutch hub and the bearing race on the rear face of the rear clutch assembly, and install the rear clutch assembly downward on the

rear clutch hub. In doing so, turn it a little so that the teeth of the clutch plates may come into engagement with the clutch hub spline.

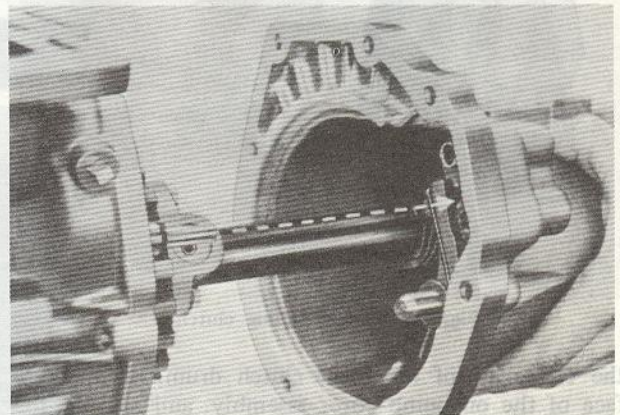


Fig. 7B-53 Installing extension housing

12. Install the front clutch assembly into the rear one as in the case of the rear clutch assembly.

13. Install the assembly including the connecting shell and the front clutch into the transmission case.

14. Temporarily mount the brake band on the front clutch drum and fit the strut.

15. Set the front clutch thrust washer, which adjusts

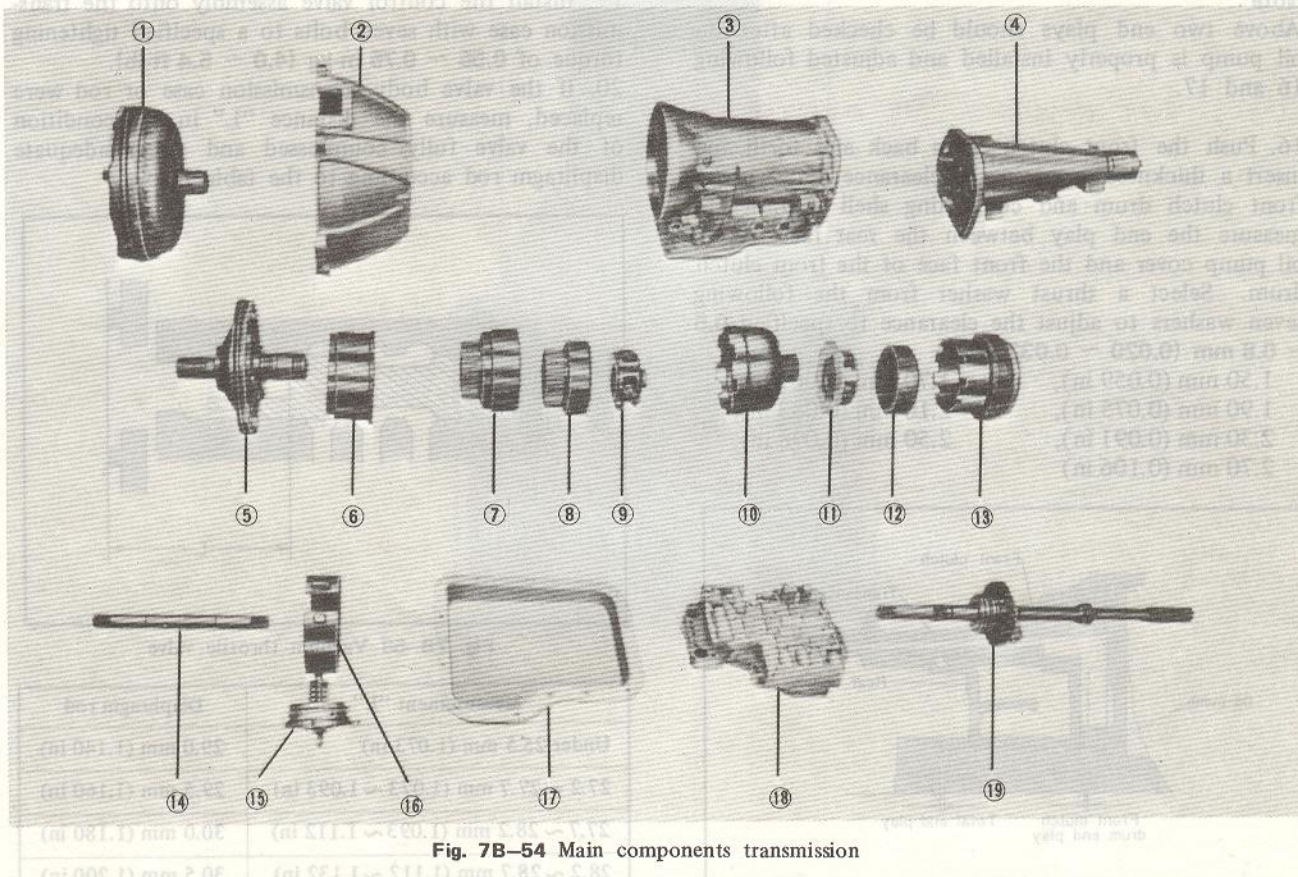


Fig. 7B-54 Main components transmission

- 1. Torque converter
- 2. Converter housing
- 3. Case
- 4. Extension housing
- 5. Oil pump ass'y

- 6. Front clutch ass'y
- 7. Rear clutch ass'y
- 8. Rear clutch hub ass'y
- 9. Rear planet carrier ass'y
- 10. Shell & sun gear ass'y

- 11. Rear planet carrier ass'y
- 12. Drive flange ass'y
- 13. Low & reverse brake ass'y
- 14. Input shaft
- 15. Brake band

- 16. Servo piston ass'y
- 17. Oil pan
- 18. Control valve ass'y
- 19. Governor valve ass'y and output shaft

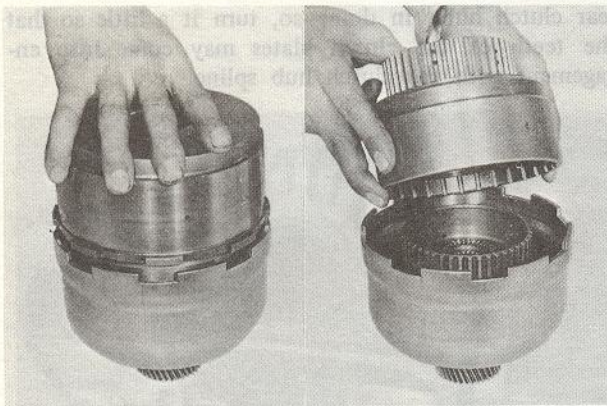


Fig. 7B-55 Assembling clutches

the end play of the front clutch drum, on the rear face of the oil pump cover assembly, and also set the bearing race, which adjusts the total end play, on the rear end of the oil pump cover. Apply some amount of vaseline to prevent bearing race falling.

Install the oil pump assembly with packing to the transmission case. Then tighten the converter housing onto the transmission case with five bolts to **4.0 ~ 5.0 m-kG (29 ~ 36 ft-lb)** torque. Insert the input shaft.

Note :

Above two end plays should be checked after the oil pump is properly installed and adjusted following 16 and 17.

16. Push the front clutch drum back and forth and insert a thickness gauge in the clearance between the front clutch drum and connecting shell in order to measure the end play between the rear face of the oil pump cover and the front face of the front clutch drum. Select a thrust washer from the following seven washers to adjust the clearance to specified **0.5 ~ 0.8 mm (0.020 ~ 0.032 in)**.

- 1.50 mm (0.059 in),
- 1.90 mm (0.075 in),
- 2.30 mm (0.091 in),
- 2.70 mm (0.106 in),
- 1.70 mm (0.067 in),
- 2.10 mm (0.083 in),
- 2.50 mm (0.098 in),

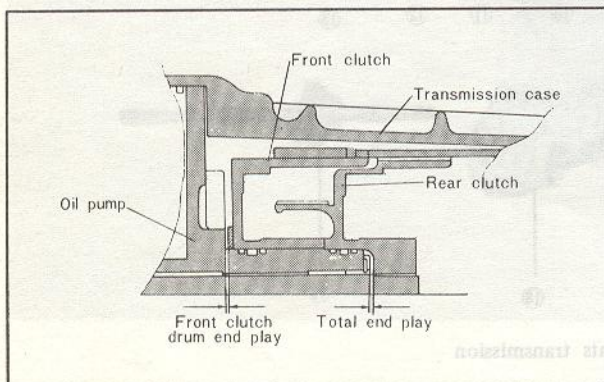


Fig. 7B-56 End plays

17. In measuring the total end play, apply the dial gauge on the tip of the input shaft and move the connecting shell fore and aft, and read the needle

vibration. The standard clearance is **0.25 ~ 0.50 mm (0.010 ~ 0.020 in)**. Adjust end play by selecting a proper race in the followings.

- 1.20 mm (0.047 in),
- 1.60 mm (0.063 in),
- 2.00 mm (0.079 in),
- 1.40 mm (0.055 in),
- 1.80 mm (0.071 in),
- 2.20 mm (0.087 in)

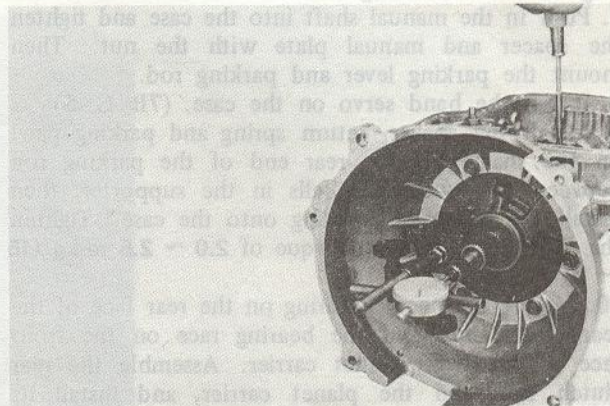


Fig. 7B-57 Checking end play

18. Tighten the stem of the servo piston to a torque of **1.2 ~ 1.5 m-kG (8.6 ~ 11.0 ft-lb)**. Then loosen it by two turns and lock with the lock nut to a tightening torque of **3.0 ~ 4.0 m-kG (22 ~ 29 ft-lb)**.

19. Install the control valve assembly onto the transmission case with seven bolts to a specified tightening torque of **0.55 ~ 0.75 m-kG (4.0 ~ 5.4 ft-lb)**.

20. If the valve body, transmission case or rod were replaced, measure the distance "L" in the condition of the valve fully compressed and select adequate diaphragm rod according to the table below.

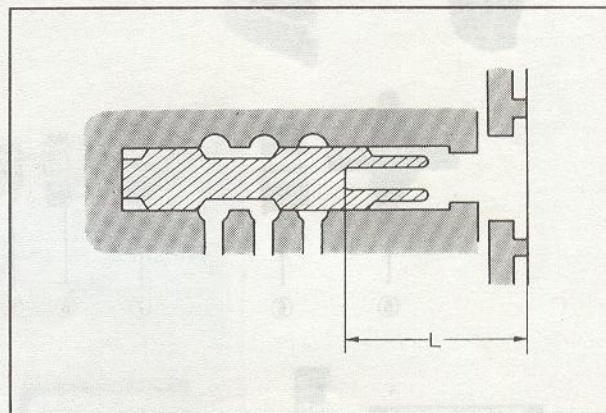


Fig. 7B-58 Vacuum throttle valve

Measurement "L"	Diaphragm rod
Under 25.5 mm (1.073 in)	29.0 mm (1.140 in)
27.2 ~ 27.7 mm (1.073 ~ 1.093 in)	29.5 mm (1.160 in)
27.7 ~ 28.2 mm (1.093 ~ 1.112 in)	30.0 mm (1.180 in)
28.2 ~ 28.7 mm (1.112 ~ 1.132 in)	30.5 mm (1.200 in)
Over 28.7 mm (1.132 in)	31.0 mm (1.220 in)

21. Install the oil pan together with the packing to a tightening torque of **0.35 ~ 0.45 m-kG (2.5 ~ 3.2 ft-lb)**.

7B-I. INSTALLATION AND ADJUSTMENT OF TRANSMISSION

1. Before installing the transmission, measure the run-out of the torque converter drive plate with a dial gauge. The runout must be within **0.3 mm (0.012 in)**. In case the runout exceeds **0.5 mm (0.020 in)**, replace the drive plate.
2. When combining the converter with oil pump, check whether they are rightly combined with each other by using the confirmation gauge (49 0378 480) as shown in Fig. 7B-59. If there is clearance between confirmation gauge and the converter housing, the converter may be damaged because the clearance shows that the converter is not rightly combined with the transmission.

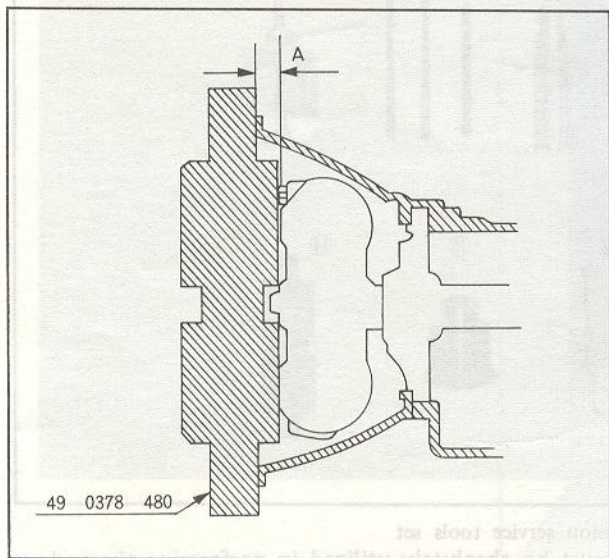


Fig. 7B-59

3. Installation procedure for the transmission is reverse to the removing procedure, referring to "REMOVAL OF TRANSMISSION" in 7B-E. In tightening the torque converter and the drive plate, temporarily tighten four bolts first, then lock the drive plate with the ring gear brake. And tighten the four bolts to a specified torque of **4.5 ~ 5.5 m-kg (33 ~ 40 ft-lb)**. In case of confirming the tightening torque accurately, it is recommendable to proceed as follows: Install a torque wrench to the hole in the center of the special wrench (49 0877 435), and tighten the bolt until the reading on the torque wrench comes to the value to be obtained by the undermentioned formula.

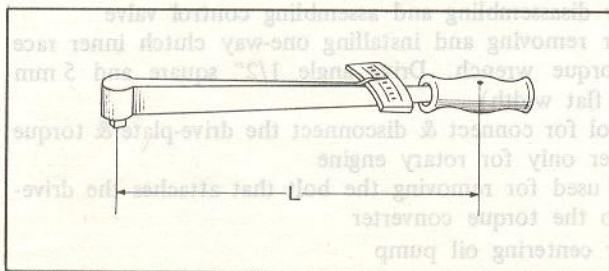


Fig. 7B-60 "L" length of torque wrench

"L" indicates the effective length of the torque wrench. In the case of the torque wrench expressed in the m-kg unit, measure the "L" in terms of cm, and substitute the value (for example, 30 in case of 30 cm) into formula (1). In the case of the ft-lb torque wrench, on the other hand, measure the "L" in the inch unit, and substitute the value into formula (2). The prescribed tightening torque will thus be obtained.

$$\frac{5L}{10 + L} \text{ . m-kg(1)}$$

$$\frac{35L}{4 + L} \text{ . ft-lb (2)}$$

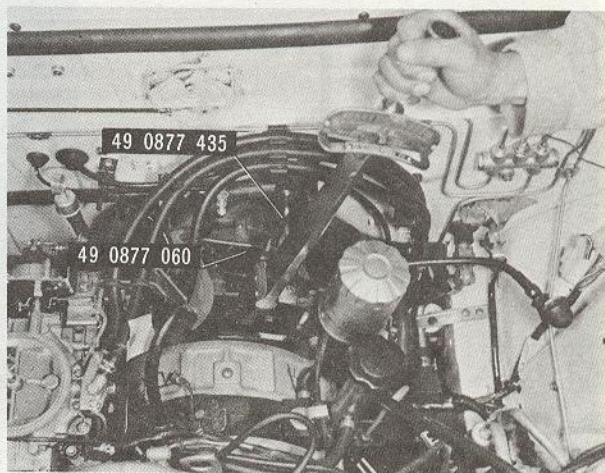


Fig. 7B-61 Measuring tightening torque

4. When the installation is finished, rotate the crankshaft and check to see that there is no interference in the transmission. Then make the following check:
 - (1) Fill converter oil. The converter, when empty, can hold **5.5 liters (11.6 U.S. pints, 9.7 Imp. pints, 5.7 U.S. quarts)**. (7B-B-1)
 - (2) Check and regulate the manual linkage. (7B-B-4)
 - (3) Check and regulate the inhibitor switch. (7B-B-5)
 - (4) Check and regulate the engine idling. (7B-B-2) Apply the band brake. With the engine idling, place the manual lever in "N", "D", "2", "1" and "R", and check to see that there is a slight shock of the transmission.
 - (5) Confirm the operation of the kick-down switch and downshaft solenoid. (7B-B-3)
 - (6) Check the oil level again.
5. When checking and regulating are over, conduct stall test, road test and hydraulic test referring to diagnostic test items (7B-C) in order to make sure that the transmission works normally.

SERVICE SPECIAL TOOLS

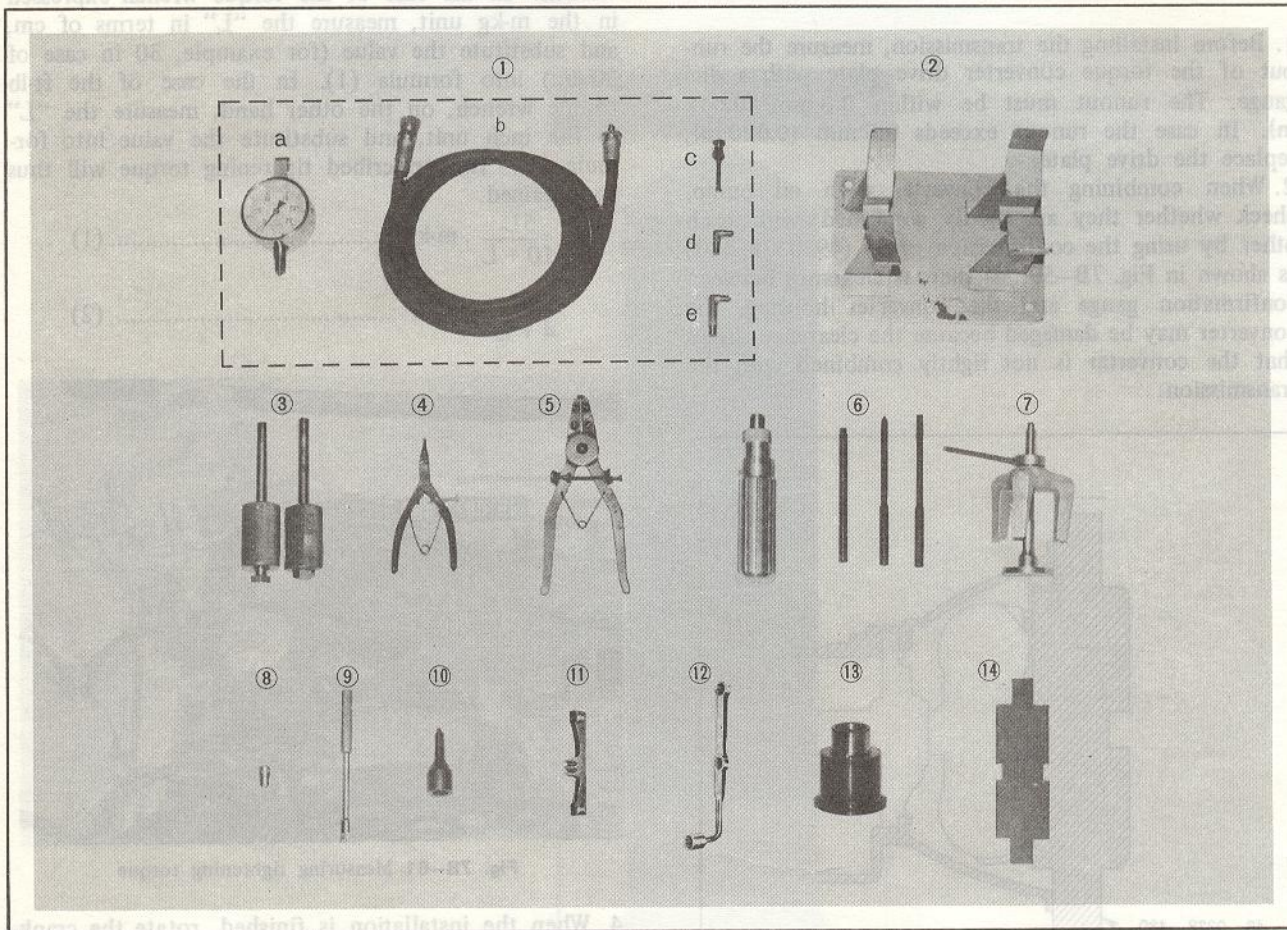


Fig. 7B-62 Automatic transmission service tools set

It is essential that the service special tools in this manual must be absolutely utilized in performing the various operations of trouble shooting, disassembling and assembling of the 3N71B type automatic transmission.

1. Oil pressure gauge set	49 0378 400	Use for checking hydraulic pressure
a. Oil pressure gauge	49 8000 001	This is included in the oil pressure gauge set (49 8000 000)
b. Rubber hose	49 0378 401	- do -
c. Joint pipe	49 0378 402	- do -
d. Hose adaptor	49 0378 403	- do -
e. Hose adaptor	49 0378 404	- do -
2. Transmission case stand	49 0378 320	Use for setting transmission
3. Puller oil pump	49 0378 390	Use for removing oil pump
4. Snap ring remover	49 8000 015	Use for removing or installing snap ring
5. Snap ring remover	49 8000 025	Use for removing or installing snap ring
6. Torque driver	49 8000 021	Use for tightening in accurate torque Max. torque 1.04 m·kg (90 lb·in)
7. Clutch spring compressor	49 0378 375	Use for assembling or disassembling front and rear clutch
8. Hexagon wrench	49 8000 031	Use for disassembling and assembling control valve
9. Spinner handle	49 8000 035	Use for disassembling and assembling control valve
10. Hex-head extension	49 0378 346	Use for removing and installing one-way clutch inner race with torque wrench. Drive angle 1/2" square and 5 mm (across flat width)
11. Ring gear brake	49 0877 060	This tool for connect & disconnect the drive-plate & torque converter only for rotary engine
12. Special wrench	49 0877 435	A tool used for removing the bolt that attaches the drive-plate to the torque converter
13. Oil pump assembling gauge	49 0378 405	Use for centering oil pump
14. Confirmation gauge	49 0378 480	

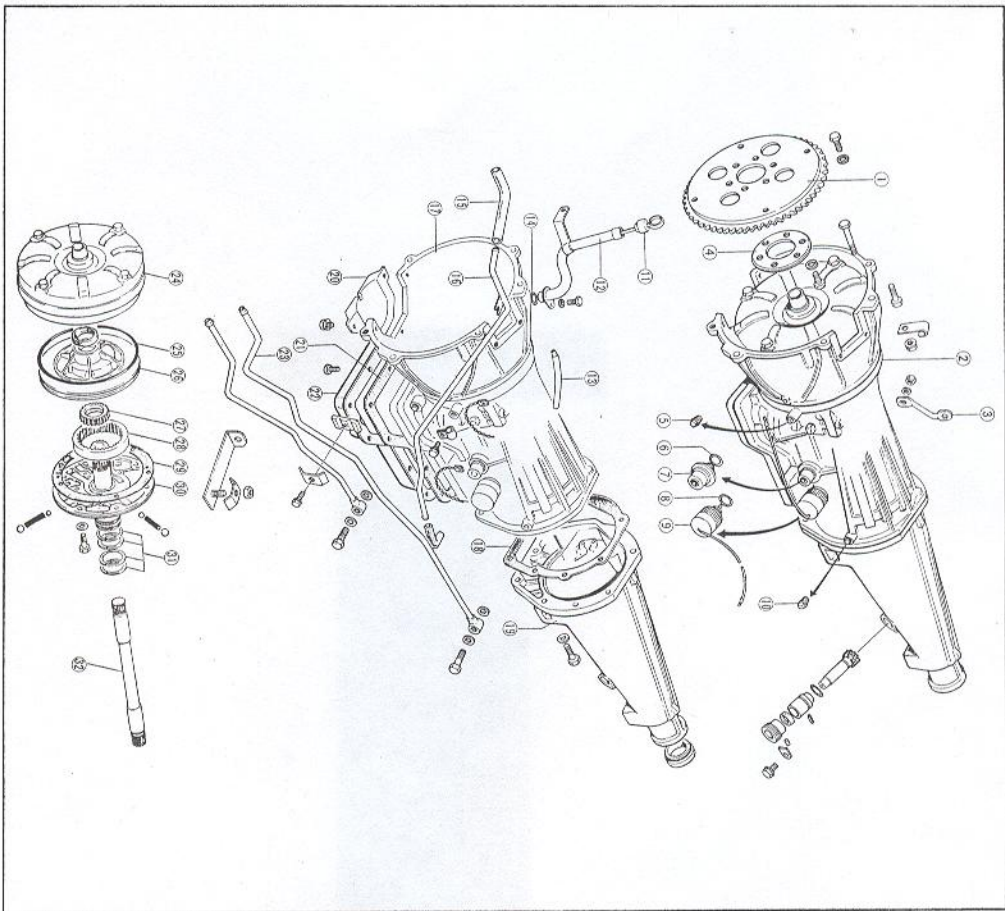


Fig. 7B-1 Automatic transmission component (1)

- | | | |
|--------------------------|------------------------------|----------------------|
| 1. Drive plate | 12. Oil filler tube | 23. Oil pipe |
| 2. Transmission shipping | 13. Breather pipe | 24. Torque converter |
| 3. Select lever | 14. "O" ring | 25. Seal ring |
| 4. Backing plate | 15. Pipe | 26. Pump housing |
| 5. Plug | 16. Vacuum pipe | 27. Inner gear |
| 6. "O" ring diaphragm | 17. Torque converter housing | 28. Outer gear |
| 7. Vacuum diaphragm | 18. Gasket | 29. Pump cover |
| 8. "O" ring solenoid | 19. Extension housing | 30. Pump cover |
| 9. Down shift solenoid | 20. Under cover | 31. Seal ring |
| 10. Plug | 21. Gasket | 32. Input shaft |
| 11. Oil level gauge | 22. Oil pan | |

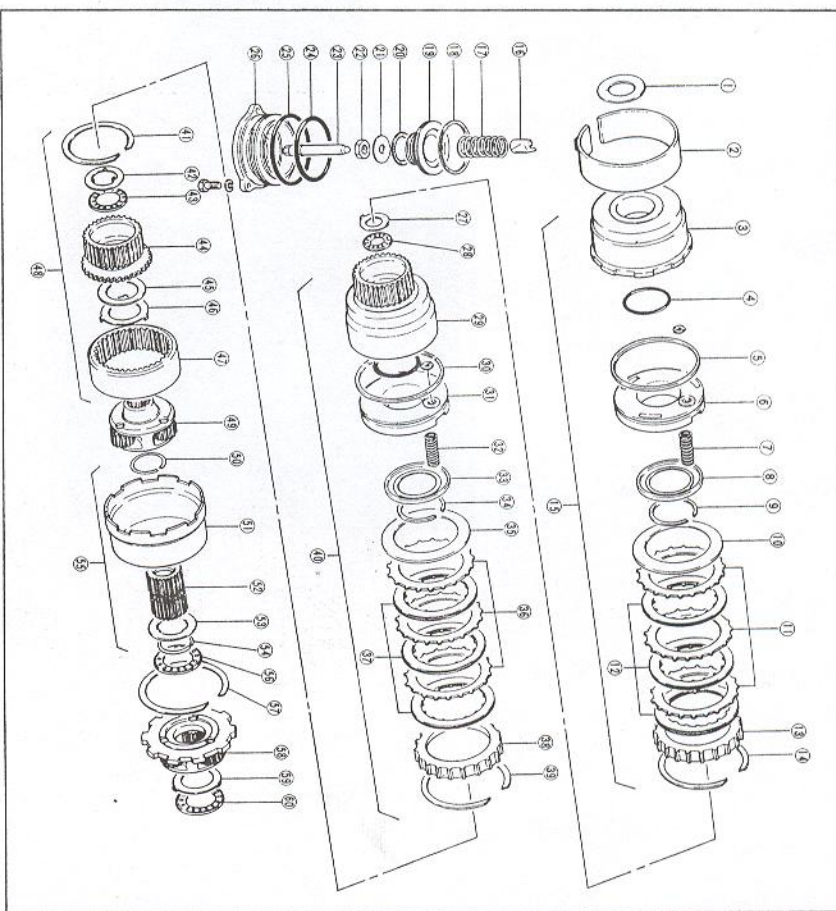


Fig. 7B-2 Automatic transmission component (2)

- | | | |
|-------------------------------|--------------------------|-----------------------------------|
| 1. Adjusting washer | 21. Washer | 41. Snap ring |
| 2. Brake band | 22. Band adjust nut | 42. Bearing race |
| 3. Front clutch drum assembly | 23. Piston stem | 43. Needle bearing |
| 4. Seal ring | 24. Seal ring | 44. Rear clutch hub |
| 5. Seal ring | 25. Seal ring | 45. Needle bearing |
| 6. Front clutch piston | 26. Servo retainer | 46. Bearing race |
| 7. Return spring | 27. Bearing race | 47. Internal gear |
| 8. Spring retainer | 28. Needle bearing | 48. Rear clutch hub assembly |
| 9. Snap ring | 29. Rear clutch drum | 49. Front planet carrier assembly |
| 10. Dished plate | 30. Seal ring | 50. Snap ring |
| 11. Outer plate | 31. Rear clutch piston | 51. Connecting shell |
| 12. Inner plate | 32. Return spring | 52. Sun gear |
| 13. Retaining plate | 33. Spring retainer | 53. Bearing race |
| 14. Snap ring | 34. Snap ring | 54. Snap ring |
| 15. Front clutch assembly | 35. Dished plate | 55. Shell & sun gear assembly |
| 16. Band strut | 36. Outer plate | 56. Needle bearing |
| 17. Servo return spring | 37. Inner plate | 57. Snap ring |
| 18. Piston seal | 38. Retaining plate | 58. Rear planet carrier assembly |
| 19. Servo piston | 39. Snap ring | 59. Bearing race |
| 20. Piston seal | 40. Rear clutch assembly | 60. Needle bearing |

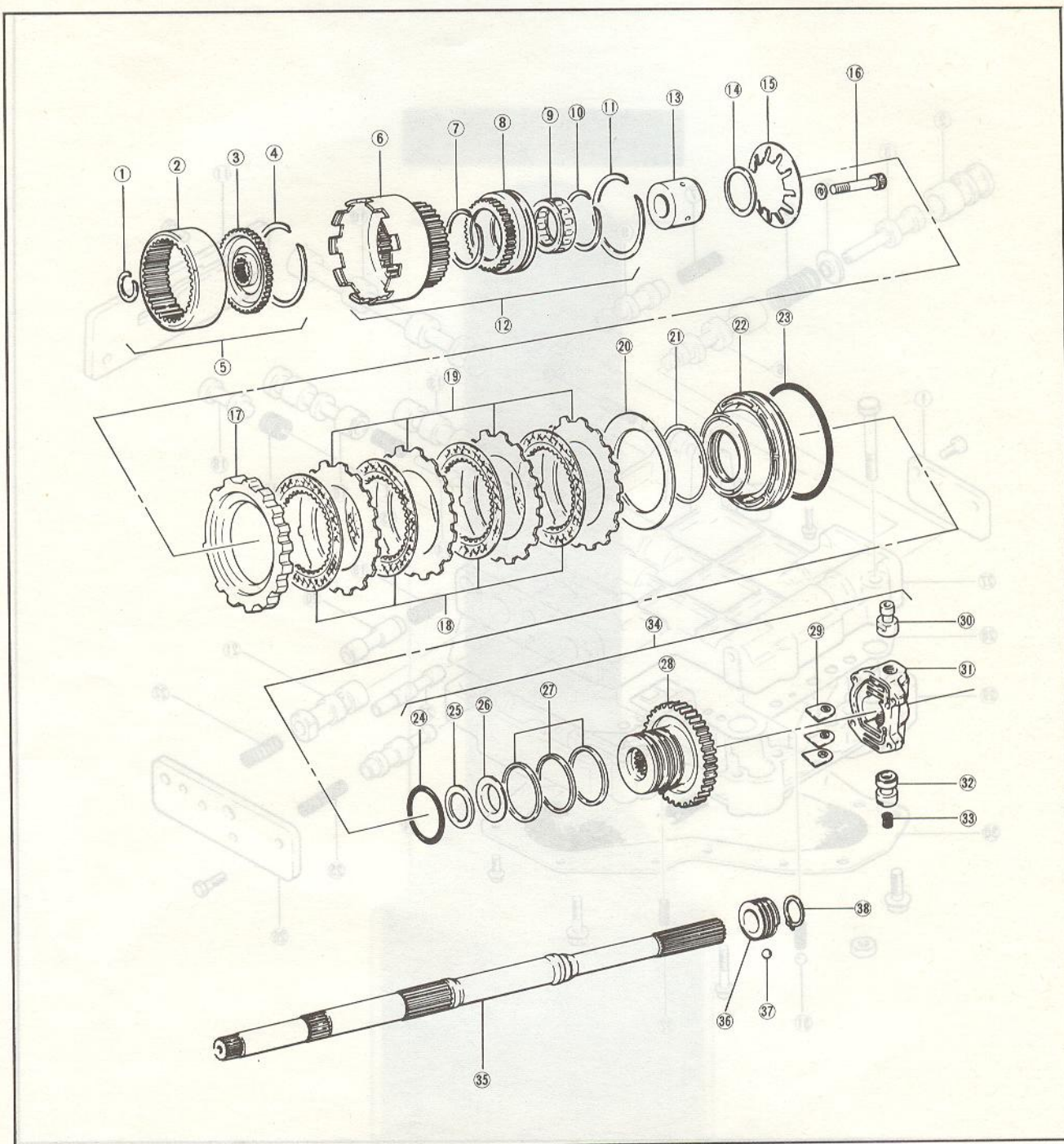


Fig. 7B-3 Automatic transmission component

- | | | |
|------------------------------|--------------------------------|------------------------------|
| 1. Snap ring | 14. Snap ring | 27. Seal ring |
| 2. Flange | 15. Piston return spring | 28. Oil distributor |
| 3. Drive flange | 16. Bolt | 29. Retainer plate |
| 4. Snap ring | 17. Retaining plate | 30. Secondary governor valve |
| 5. Drive flange assembly | 18. Friction plate | 31. Governor valve body |
| 6. Drum | 19. Steel plate | 32. Primary governor valve |
| 7. Snap ring | 20. Dished plate | 33. Governor valve spring |
| 8. Outer race | 21. Spring ring | 34. Oil distributor assembly |
| 9. One-way clutch | 22. Low & reverse brake piston | 35. Out-put shaft |
| 10. Snap ring | 23. Piston seal | 36. Speedometer drive gear |
| 11. Snap ring | 24. Seal ring | 37. Steel ball |
| 12. Connecting drum assembly | 25. Needle bearing | 38. Snap ring |
| 13. Inner race | 26. Bearing race | |

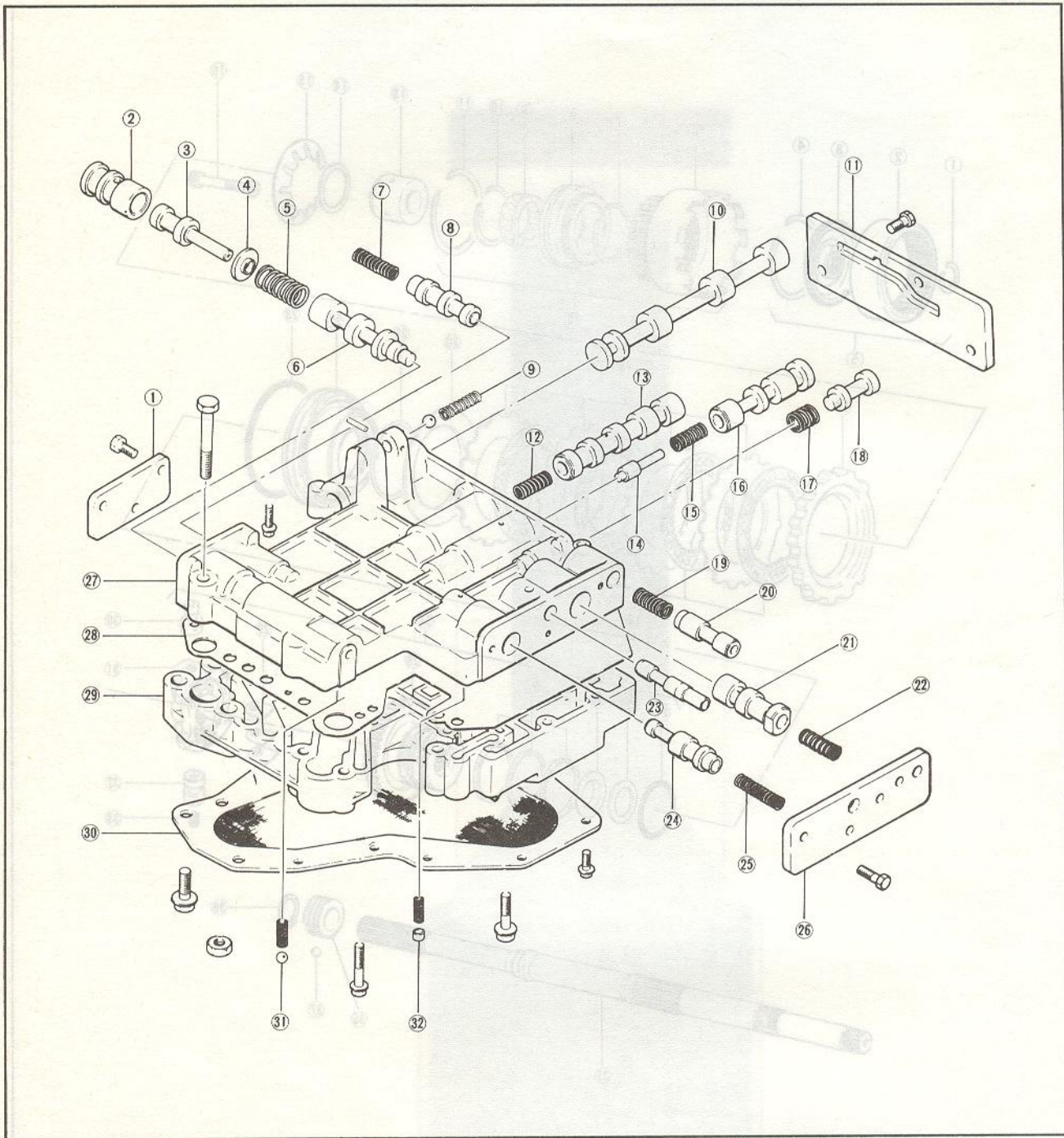


Fig. 7B-4 Automatic transmission component

- | | | |
|---------------------------------|-------------------------------|------------------------------------|
| 1. Side plate "D" | 12. 1st-2nd shift spring | 23. Vacuum throttle valve |
| 2. Plug sleeve | 13. 1st-2nd shift valve | 24. 2-3 timing valve |
| 3. Pressure regulator plug | 14. 2nd-3rd shift plug | 25. 2-3 timing spring |
| 4. Spring seat | 15. 2nd-3rd shift spring | 26. Side plate "B" |
| 5. Pressure regulator spring | 16. 2nd-3rd shift valve | 27. Control valve body |
| 6. Pressure regulator valve | 17. Pressure modifier spring | 28. Separator plate |
| 7. Second lock spring | 18. Pressure modifier valve | 29. Lower valve body |
| 8. Second lock valve | 19. Solenoid downshift spring | 30. Oil strainer |
| 9. Manual plate spring and ball | 20. Solenoid downshift valve | 31. Relief ball and spring |
| 10. Manual valve | 21. Throttle back-up valve | 32. Orifice check valve and spring |
| 11. Side plate "A" | 22. Throttle back-up spring | |

7B-A. TROUBLE DIAGNOSIS AND ADJUSTMENT

In trouble-shooting an automatic transmission it is necessary first of all to correctly define a faulty phenomenon, and then make efficient and orderly check to determine possible causes so that a proper remedy can be effected.

To grasp a faulty phenomenon, check whether the automatic transmission functions normally in all aspects under all conditions including starting, running and stopping. Find out a corresponding trouble from among the troubles in the TROUBLE DIAGNOSIS CHART, and check "Items to Check" in the sequence as indicated.

In diagnosing according to the TROUBLE DIAGNOSIS CHART, make sure to first check and adjust the following items (described in 7B-A-1):

1. Oil level
2. Idling speed
3. Down-shift solenoid and kickdown switch
4. Manual linkage
5. Inhibitor switch

It is meaningless to proceed to check other items without checking the above items carefully.

In the case of the automatic transmission particularly, there are a great number of troubles which can be solved by inspecting and regulating the above items with the transmission mounted on the vehicle.

So do not remove or disassemble the transmission without checking such items first. Also there are some troubles which require further detailed diagnostic tests including stall test, road test and hydraulic pressure test before removing the transmission from the vehicle. Such tests are described in 7B-C.

If a trouble should prove not correctable by inspection, adjustments and repairs made according to TROUBLE DIAGNOSIS CHART with the transmission installed, that is, if removal and overhauling are indicated by diagnosis, only then, the transmission should be removed and overhauled in the procedure mentioned later.

7B-B. ITEMS TO CHECK AND ADJUST

7B-B-1. Torque Converter Oil

a. Oil level check

Put the vehicle on a level surface and move the manual shift lever through all driving ranges applying brake with the engine idling condition. Then place the lever in "P". Insert the dipstick fully and take it out quickly before splashing oil adheres to the gauge, and then observe the level on the cold side of the dipstick when the engine is cold or on the hot side when the engine is hot. Be sure to check on the dipstick in either case with the engine idling. The oil level must be somewhere between L and F marks and never be outside the limits. The engine is said to be cold when the oil temperature is on the order of 40°C (104°F) which is reached

by approximately two minutes of idling at 1,200 rpm after engine is started, and it is said to be hot when the oil temperature is on the order of 80°C (176°F) which is attained by running the vehicle for about 8 km (5 miles) after engine is started.

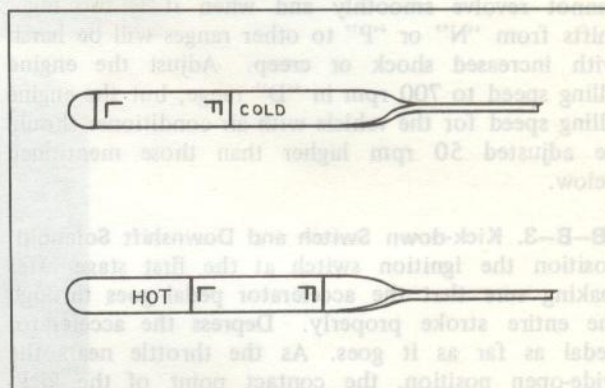


Fig. 7B-5 Dipstick gauge

Note :

1. The recommended oil is Genuine Automatic Transmission Fluid Dexron or Automatic Transmission Fluid Dexron of any make. Do not mix with other type of automatic transmission fluid than mentioned above.
2. Periodic oil change is not necessary, but the oil level must be checked at least every 6,000 km (4,000 miles).
3. The total amount of oil is 5.5 liters (11.6 U.S. pints, 9.7 Imp. pints, 5.8 U.S. quarts) and the difference between the amounts shown by L and F marks on the dipstick is about 0.4 liter (0.9 U.S. pints, 0.7 Imp. pints, 0.4 U.S. quart).

b. Oil leakage check

When the oil level is lower than specified, add it and at the same time check carefully for possible leaks and repair any if found.

Note :

1. Torque converter oil is of a red-wine color and is distinguishable from engine oil.
2. In checking for possible leak from the transmission breather pipe, jack up one of the rear wheels and run the engine to simulate the running condition. When the oil level is over the "F" limit, the oil never fails to spurt out from the breather pipe. When water is contained in it, the oil sometimes spurts out even when the oil level is within the specified range.

c. Oil condition check

In checking the condition of oil by the oil sticking on the dipstick, note that, if the oil appears like varnish, it might cause control valves to stick, and if it is black, it shows that linings of clutch or brake band have been scorched. In case such oil deterioration is found severe, it sometimes indicates that overhaul should be made without conducting tests listed in TROUBLE DIAGNOSIS CHART. If it is difficult to readily determine whether or not to make such tests, oil should be drained for confirmation.

7B-B-2. Engine Idling Speed

The engine idling speed should be properly adjusted to the specified revolution by using a tachometer for servicing rather than the one installed on the vehicle. If the engine idling speed is too low, the engine cannot revolve smoothly and when it is too high, shifts from "N" or "P" to other ranges will be harsh with increased shock or creep. Adjust the engine idling speed to 700 rpm in "D" range, but the engine idling speed for the vehicle with air conditioner should be adjusted 50 rpm higher than those mentioned below.

7B-B-3. Kick-down Switch and Downshift Solenoid

Position the ignition switch at the first stage after making sure that the accelerator pedal goes through the entire stroke properly. Depress the accelerator pedal as far as it goes. As the throttle nears the wide-open position, the contact point of the kick-down switch is closed with a light click from the solenoid.

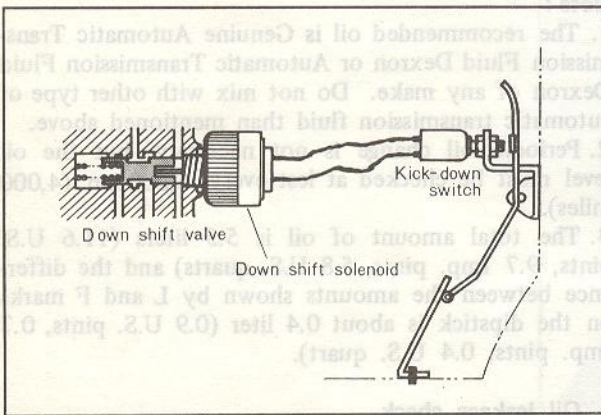


Fig. 7B-6 Kick-down switch and down shift solenoid

The kick-down switch must begin to operate in between 7/8-15/16 of the entire pedal travel or full throttle. If not, adjust the kick-down switch. If the solenoid should not make any clicking sound it indicates some abnormality, so check with a tester must be made.

Note :

When the solenoid is removed for replacing, some one liter of fluid leaks out. So a receptacle should be made ready to catch it.

7B-B-4. Manual Linkage

The adjustment of linkage is equally important as "Inspection of oil level" for the automatic transmission. Therefore, great care should be exercised because defective adjustment will result in the breakdown of the transmission.

Pull the manual lever toward you and turn it so far as "P" to "1" range, where clicks will be felt by hand. This is the detent of manual valve in the body, and indicates the correct position of the lever. Inspect whether the pointer of selector dial corresponds to this point, and also whether the lever comes in alignment with the stepping of position plate when

it is released.

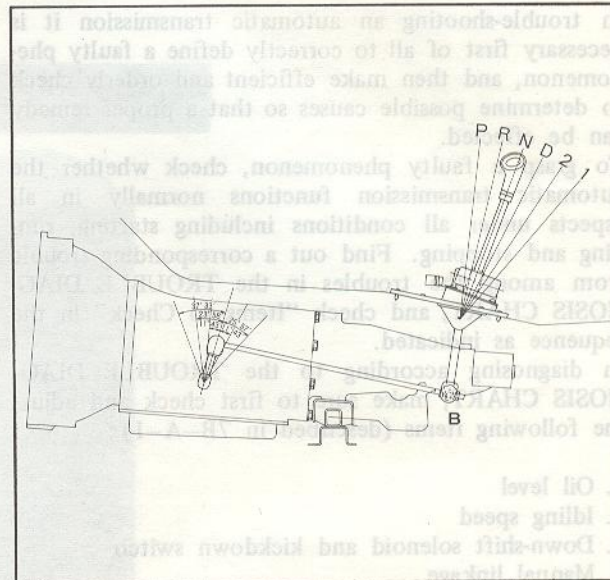


Fig. 7B-7 Manual linkage

When the position of the manual lever is found incorrect, disconnect the T joint on the lower rod, and place in "N" the range select lever on the transmission (where the slot of the manual shaft is positioned vertically).

Adjust the position of the manual lever by turning the T joint so as to position the manual lever in "N". Finally make sure that the lever travels to "P" and "1" ranges correctly. Check at the same time to see that the linkage has no looseness.

7B-B-5. Inhibitor Switch

The inhibitor switch permits the reverse lamp to light up only when "R" range is selected and the starter motor to revolve only when the lever is in "N" or "P" position, so that when "D", "2" or "1" is selected, the reverse lamp does not light up and the starter motor cannot revolve.

If any abnormality is found in any range, check and adjust the manual linkage; if the manual linkage is found normal, then check the inhibitor switch.

Engage the manual lever in each range and check the connection of the inhibitor switch with a tester. Check also the extent through which the electrical connection is made for "R", "N" and "P". If anything wrong is revealed as a result of the conductivity check of the inhibitor switch, make adjustments in the following procedures.

1. Adjust the select lever so that the clearance between pin and guide plate will be 0 ~ 0.3 mm when the lever is in "N" position by using the adjusting nut "B" of the rod.
2. Adjust the inhibitor switch so that the pin hole of the switch body will be aligned with the pin hole of the sliding plate when the select lever is in "N" position.
3. The starter switch should turn on only when "N" and "P" range are selected.

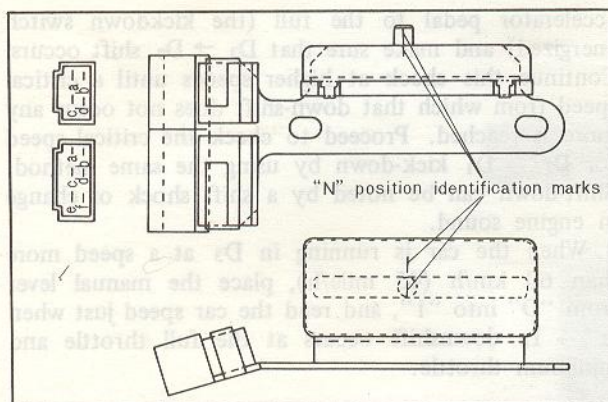


Fig. 7B-8 Inhibitor wiring

Color	
GL	Warning lamp "P" ~ Inhibitor switch
GB	Warning lamp "N" ~ Inhibitor switch
GR	Warning lamp "D" ~ Inhibitor switch
GW	Warning lamp "2" ~ Inhibitor switch
G	Warning lamp "1" ~ Inhibitor switch
BY	Starter switch ~ Inhibitor switch
RY	Reverse lamp ~ Inhibitor switch
GY	Fuse box Ig. ~ Inhibitor switch
BY	Key switch St. ~ Inhibitor switch

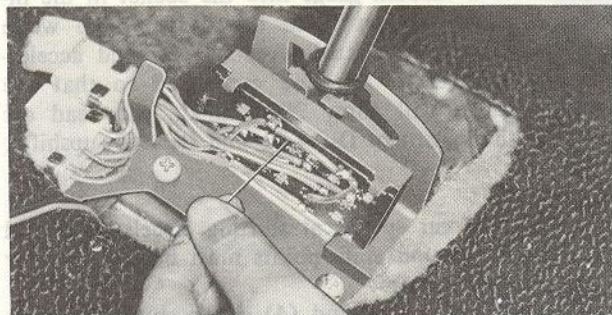


Fig. 7B-9 Inhibitor switch

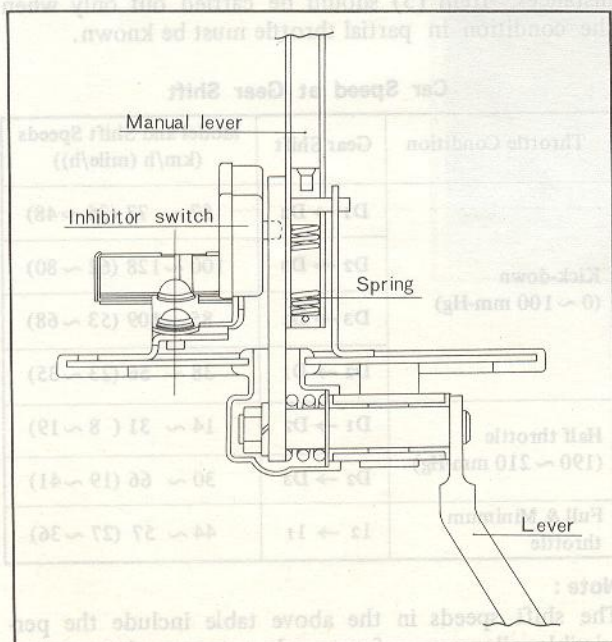


Fig. 7B-10 Inhibitor switch

7B-C. DIAGNOSTIC TEST ITEMS

Make sure that all the inspection items described in 7B-B are normal before starting the diagnostic tests—stall test, road test and oil pressure test.

7B-C-1. Stall Test

The purpose of this test is to check the transmission and engine for trouble by measuring the maximum numbers of the engine revolutions while the vehicle is held in a stalled condition and the carburetor is in full throttle operation with the manual lever in ranges "D", "2", "1" and "R" respectively and by comparing the measured results with the standard values.

The specified stall revolution is in the following table.

Model	Stall revolution (rpm)	
	Before breaking in	After breaking in
RX-4	2,200 ~ 2,450	2,250 ~ 2,500

a. Stall test procedure :

1. Check the levels of engine coolant, engine oil and torque converter oil. Warm up the engine at about 1,200 rpm for several minutes with the manual lever in "P" in order to heat the torque converter oil to a suitable temperature of 60° ~ 100°C (140° ~ 212°F).
2. Mount the engine tachometer at a location that allows good visibility from the driver's seat and put a mark on specified revolutions on the meter.
3. Secure the front and rear wheels completely with chocks and apply the hand brake. Be sure to depress the brake pedal firmly with the left foot before depressing down the accelerator pedal.
4. Place the manual lever in "D" range.
5. Gradually step on the accelerator pedal to the wide-open position. As soon as the engine speed becomes constant, read the engine speed and release the accelerator pedal.
6. Place the manual lever in "N" or "P" and run the engine at about 1,200 rpm for more than one minute to cool down the torque converter oil and coolant.
7. Proceed to do the stall test for "2", "1" and "R" in the same manner as for "D".

Note :

The stall test operation as specified in the item (5) should be made within five seconds. If it takes too long, the oil deteriorates and the clutches, brake and band are adversely affected. Sufficient cooling time should be given between each test for the four ranges "D", "2", "1" and "R".

b. Judgement

By comparing the measured stall speed and the specified one, troubles can be surmised as follows :

1. Standard stall revolution
Both transmission control elements and engine performance are normal, and the one-way clutch of the torque converter is not slipping though whether or not there is sticking is unknown.

- * In the road test, if the maximum speed cannot be attained and the torque converter oil is found to be at unusually high temperature, the one-way clutch of the torque converter is diagnosed to be sticking.
- 2. High stall revolution more than standard revolution.

If the engine revolution in stall condition is higher than the standard values, it indicates that one or more clutches in the transmission are slipping and, therefore, no further test is required. For the following abnormalities, the respective causes are presumed.

High rpm in all ranges

Line pressure is low or all clutches, brake and band are slipping.

High rpm in "D", "2" and "1" (normal in "R")

The rear clutch is slipping.

High rpm in "D" (normal in "2", "1" and "R")

The one-way clutch is slipping.

High rpm in "R" (normal in "D", "2" and "1")

The front clutch or the low and reverse brake is slipping.

- * In the road test, if there is no engine braking in "1" range, the low and reverse brake is slipping, and if there is engine braking in "1" range, the front clutch is slipping.

High rpm in "2" (normal in "D", "1" and "R")

The band is slipping.

3. Low stall revolution less than standard

The one-way clutch of the torque converter is slipping, or the engine performance is poor.

- * In the road test, if poor acceleration is noted at various speeds, indicates poor engine performance or incorrect engine adjustment. In case the starting acceleration is poor while acceleration at high speeds is normal, the one-way clutch of the torque converter is slipping.

7B-C-2. Road Test

An accurate knowledge of the automatic transmission is prerequisite to its exact diagnosis by a road test.

The purpose of road test is to make a comprehensive check of the transmission under varying running conditions to detect and analyze troubles and to clear up the cause of troubles.

a. Shift Point Check

Check to see that the up-shift and down-shift occur within the range specified in the shift point table below, following the checking procedures.

b. Shift point check procedure

1. Make sure that the tire air pressure is in the standard range and preheat the converter oil to appropriate temperature about 60 ~ 100°C (140 ~ 212°F) in engine idling condition.
2. Place the manual lever in "D" range and accelerate in wide open throttle (kick-down switch energized), and read the car speed at the instant of D₁ → D₂ and D₂ → D₃ up-shifts with speedometer which is installed on this car.
3. Drive the car with the manual lever in "D". When it is running at a constant speed in D₃, depress the

accelerator pedal to the full (the kickdown switch energized) and make sure that D₃ → D₂ shift occurs. Continue this check at higher speeds until a critical speed from which that down-shift does not occur any more is reached. Proceed to check the critical speed for D₂ → D₁ kick-down by using the same method. Shift-down can be noted by a shift shock or change in engine sound.

4. When the car is running in D₃ at a speed more than 60 km/h (45 mile/h), place the manual lever from "D" into "1", and read the car speed just when l₂ → l₁ downshift occurs at the full throttle and minimum throttle.

Note :

Care must be taken not to shift from "D" to "1" (from "2" to "1") in exceeding the speed in "2" range ("1" range) shown below to avoid the engine overrun.

Model	Engine Max. speed (rpm)	"1" Range	"2" Range
		Km/h (Mile/h)	Km/h (Mile/h)
RX-4 (Luce Rotary)	6,500	70 (45)	120 (75)

5. Connect a vacuum gauge into the socket in the intake manifold and set it so that it is visible while driving. Place the manual lever in "D" and accelerate with accelerator pressure controlled so that the vacuum gauge will show 200 mm-kg, and read car speed at the instant of D₁ → D₂ and D₂ → D₃ upshifts.

Note :

1. In reading car speeds at shifting, acceleration and deceleration around shift points must be made gently except for (2) above.
2. Checks of (2), (3) and (4) above should indicate general condition of shift point except in very rare instances. Item (5) should be carried out only when the condition in partial throttle must be known.

Car Speed at Gear Shift

Throttle Condition	Gear Shift	Model and Shift Speeds (km/h (mile/h))
Kick-down (0 ~ 100 mm-Hg)	D ₁ → D ₂	57 ~ 77 (35 ~ 48)
	D ₂ → D ₃	100 ~ 128 (62 ~ 80)
	D ₃ → D ₂	85 ~ 109 (53 ~ 68)
	D ₂ → D ₁	38 ~ 56 (23 ~ 35)
Half throttle (190 ~ 210 mm-Hg)	D ₁ → D ₂	14 ~ 31 (8 ~ 19)
	D ₂ → D ₃	30 ~ 66 (19 ~ 41)
Full & Minimum throttle	l ₂ → l ₁	44 ~ 57 (27 ~ 36)

Note :

The shift speeds in the above table include the permissible allowance of a speedometer on the car. Therefore check the shift speed with the speedometer on the car.

3. Remove the main shaft oil seal from the extension housing.
 4. Position a new oil seal in the extension housing and insert the oil seal by tapping it slightly with a mallet.
 5. Apply grease lubricant to the lip of the oil seal.
 6. Install the propeller shaft.

DESCRIPTION
 This model is equipped with a four speed manual transmission which is of the fully synchronized type with all gears except the reverse gear being in selective sliding mesh type. The gearshift mechanism is direct control with a floor-shift type.

FOUR SPEED TRANSMISSION (929)

TRANSMISSION REMOVAL
 1. Raise the vehicle and support with stands.
 2. Disconnect the back-up lamp switch wire.
 3. Loosen the back-up lamp switch and remove the extension housing.
 4. Install a new back-up lamp switch in the extension housing and tighten the retaining cover to the housing.
 5. Connect the wire to the back-up lamp switch.
 6. Lower the vehicle.

7C-A. BACK-UP LAMP SWITCH REPLACEMENT
 1. Raise the vehicle and support with stands.
 2. Disconnect the back-up lamp switch wire.
 3. Loosen the back-up lamp switch and remove the extension housing.
 4. Install a new back-up lamp switch in the extension housing and tighten the retaining cover to the housing.
 5. Connect the wire to the back-up lamp switch.
 6. Lower the vehicle.

DESCRIPTION.....	7C : 1
7C-A. BACK-UP LAMP SWITCH REPLACEMENT.....	7C : 1
7C-B. MAIN SHAFT OIL SEAL REPLACEMENT.....	7C : 1
7C-C. TRANSMISSION REMOVAL.....	7C : 1
7C-D. TRANSMISSION DISASSEMBLY.....	7C : 2
7C-E. TRANSMISSION INSPECTION.....	7C : 4
7C-E-1. Checking Transmission Case and Bearing Housing.....	7C : 4
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7C-E-5. Checking Counter Shaft.....	7C : 4
7C-E-6. Checking Control Lever and Shift Rod.....	7C : 5
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7C-E-8. Checking Clutch Sleeve.....	7C : 5
7C-E-9. Checking Synchronizer Ring.....	7C : 5
7C-E-10. Checking Synchronizer Key and Spring.....	7C : 5
7C-E-11. Checking Clutch Hub.....	7C : 5
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SPECIAL TOOLS.....	7C : 9

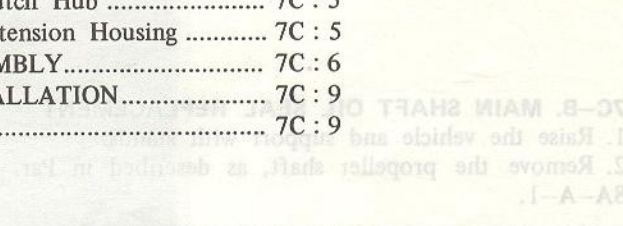
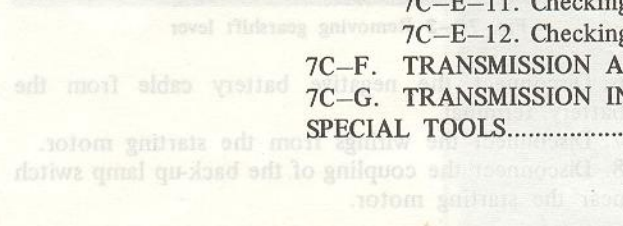
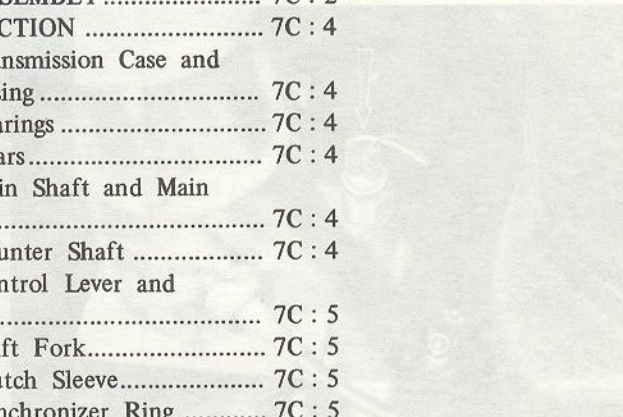
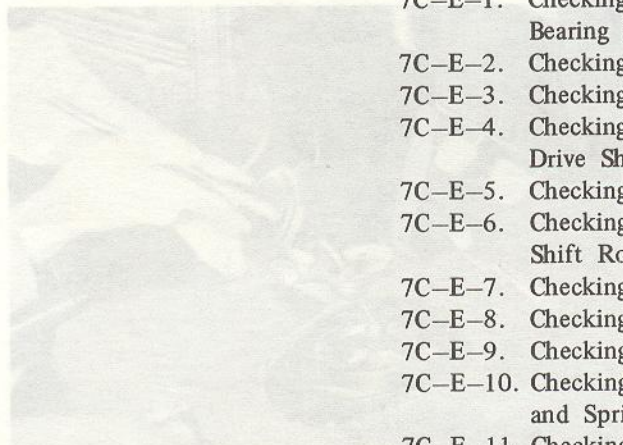


Fig. 7C-4 Back-up lamp coupling

Fig. 7C-5 Installing oil seal

- 37. Apply a thin coat of sealing agent onto contacting surfaces of the bearing housing and extension housing.
- 38. Position the extension housing onto the bearing housing with the gearshift lever end laid down to the left as far as it will go. Tighten the attaching nuts.
- 39. Check to ensure that the gearshift control lever operates properly.
- 40. Insert the select lock spindle and spring from the inside of the gearshift lever retainer. Position the lock ball and spring in alignment with the select lock spindle and install the spring cap bolt.

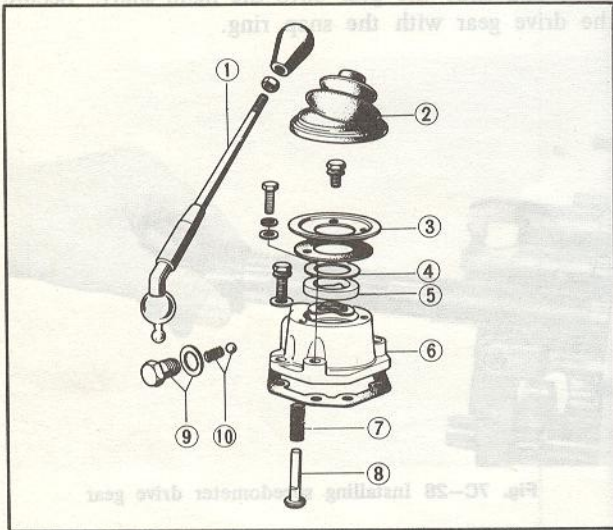


Fig. 7C-30 Select lock spindle and retainer

- 1. Gearshift lever
- 2. Boot
- 3. Retainer cover
- 4. Shim
- 5. Bush
- 6. Retainer
- 7. Spring
- 8. Select lock spindle
- 9. Cap bolt and washer
- 10. Steel ball and spring

- 41. Position the gearshift lever retainer and gasket onto the extension housing and tighten the attaching bolts.
- 42. Apply lubricant to the lip of the oil seal in the front bearing cover.
- 43. Position the front bearing cover onto the transmission case and tighten the attaching nuts.

Note :
When the front bearing cover is installed, the clearance between the main shaft front bearing outer race and the front bearing cover should be less than 0.15 mm (0.006 in). This clearance can be adjusted by inserting the adjusting shim of 0.15 mm (0.006 in) or 0.30 mm (0.012 in).

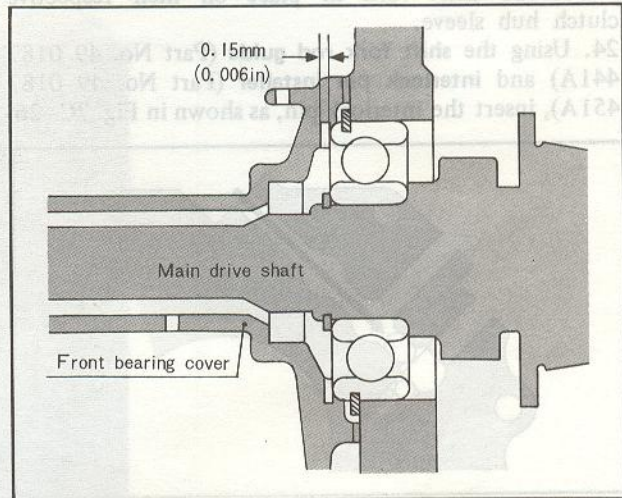


Fig. 7C-31 Bearing end play

- 44. Install the release bearing, return spring and release fork.

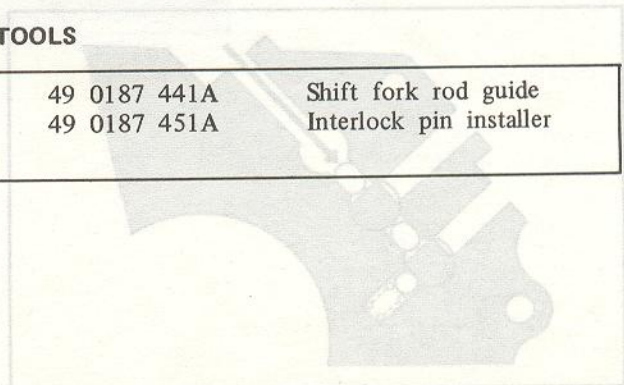
7C-G. TRANSMISSION INSTALLATION

Follow the removal procedures in the reverse order.

- Note :**
- 1. Apply a thin coat of grease onto the splines of the main drive shaft.
 - 2. Use the **clutch disc arbor** (Part No. 49 0813 310) to align the splines of the main drive shaft and clutch disc.
 - 3. Fill the transmission case with lubricant until the lubricant overflows from the level hole. Lubricant capacity is about 1.4 liters (1.5 U.S. quarts., 1.2 Imp. quarts.).

SPECIAL TOOLS

49 0259 440	Main shaft holder	49 0187 441A	Shift fork rod guide
49 0305 430	Main shaft pusher	49 0187 451A	Interlock pin installer
49 0164 631A	Spanner		



DESCRIPTION

This model is equipped with a four speed manual transmission which is of the fully synchronized type with all gears except the reverse gear being in selective sliding mesh type. The gearshift mechanism is a direct control with a floor-shift type.

3. Remove the main shaft oil seal from the extension housing.
4. Position a new oil seal in the extension housing and insert the oil seal by tapping it slightly with a plastic hammer.
5. Apply gear lubricant to the lip of the oil seal.
6. Install the propeller shaft.

7C-A. BACK-UP LAMP SWITCH REPLACEMENT

1. Raise the vehicle and support with stands.
2. Disconnect the back-up lamp switch wire from the switch.
3. Loosen the back-up lamp switch and remove from the extension housing.
4. Install a new back-up lamp switch to the extension housing and tighten the switch.
5. Connect the wire with the switch.
6. Lower the vehicle.

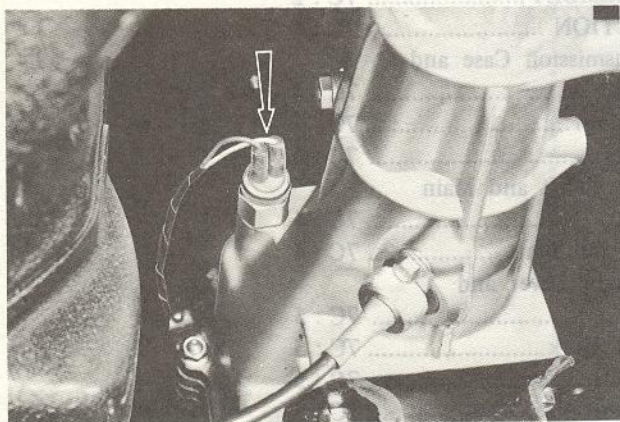


Fig. 7C-1 Back-up lamp switch

7C-C. TRANSMISSION REMOVAL

When removing the transmission from the vehicle, proceed as follows:

1. Remove the gearshift lever knob.
2. Remove the screws attaching the console box and remove the console box.
3. Remove the gearshift lever boot.
4. Remove the bolts attaching the retainer cover to the gearshift lever retainer.
5. Pull the gearshift lever, shim and bush straight up and away from the gearshift lever retainer.



Fig. 7C-3 Removing gearshift lever

7C-B. MAIN SHAFT OIL SEAL REPLACEMENT

1. Raise the vehicle and support with stands.
2. Remove the propeller shaft, as described in Par. 8A-A-1.



Fig. 7C-2 Installing oil seal

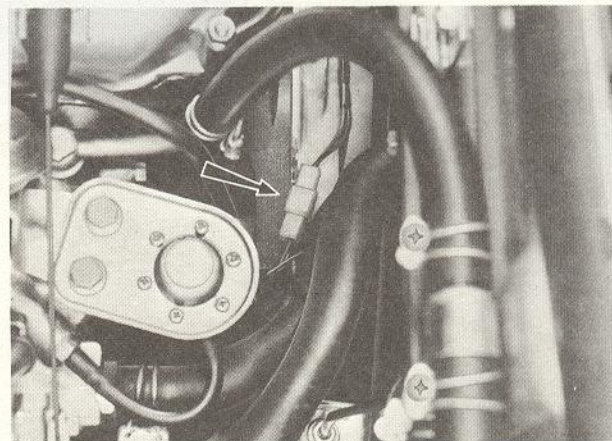


Fig. 7C-4 Back-up lamp coupling

6. Disconnect the negative battery cable from the battery terminal.
7. Disconnect the wirings from the starting motor.
8. Disconnect the coupling of the back-up lamp switch near the starting motor.

9. Remove the propeller shaft, as described in Par. 8A-A-1, and insert the main shaft holder (Part No. 49 0259 440) into the extension housing for prevent lubricant from running out of the housing.

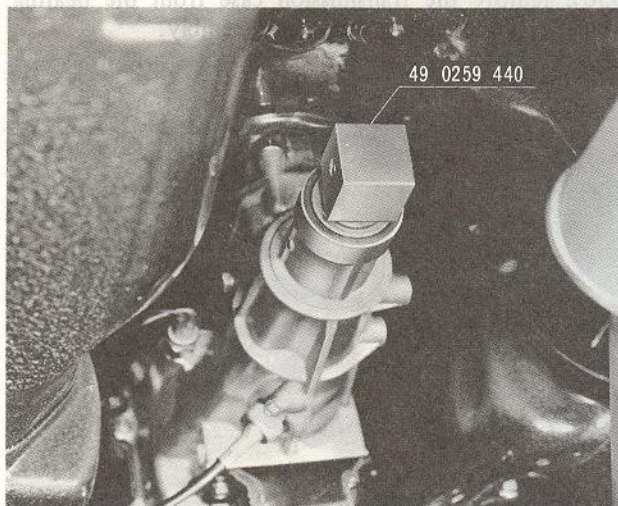


Fig. 7C-5 Installing main shaft holder

10. Disconnect the speedometer cable from the extension housing.

11. Remove the bolts attach the exhaust pipe to the bracket on the transmission.

12. Unhook the clutch release fork return spring and remove the clutch release cylinder from the clutch housing.

13. Remove the starting motor.

14. Remove the bolts holding the transmission to the engine rear end.

15. Place a jack under the engine, protecting the engine oil pan with a block of wood.

16. Remove the nuts holding the transmission support to the cross member.



Fig. 7C-6 Removing transmission cross member

17. Remove the bolts holding the cross member to the body and remove the cross member.

18. Lower the jack, slide the transmission rearward until the main drive shaft clears the clutch disc, and remove the transmission from under the vehicle.

7C-D. TRANSMISSION DISASSEMBLY

The procedures for disassembling the transmission after removing the transmission from the vehicle are as follows:

1. Place the transmission on a work stand.
 2. Remove the drain plug, and drain the lubricant from the transmission. Clean the metal fillings adhered on the magnet of the drain plug if necessary. Refit the drain plug after draining lubricant.
 3. Remove the clutch release bearing return spring and slide the bearing off the transmission front bearing cover.
 4. Pull the release fork outward until the fork retaining spring release itself from the pivot pin. Remove the fork from the transmission housing.
 5. Remove the nuts attaching the front bearing cover to the transmission case and remove the front bearing cover, shims and gasket.
- Do not damage the oil seal which is inside the front bearing cover.

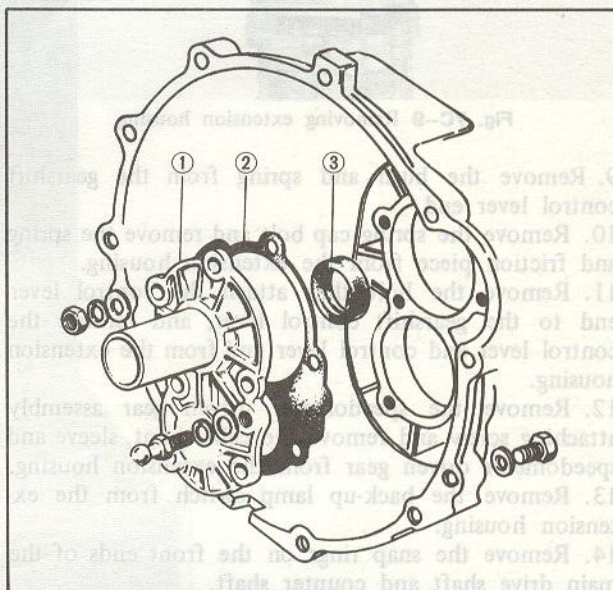


Fig. 7C-7 Transmission front bearing cover

- | | |
|------------------|-------------|
| 1. Bearing cover | 3. Oil seal |
| 2. Gasket | |

6. Remove the bolts that attach the gearshift lever retainer to the extension housing and remove the retainer and gasket.

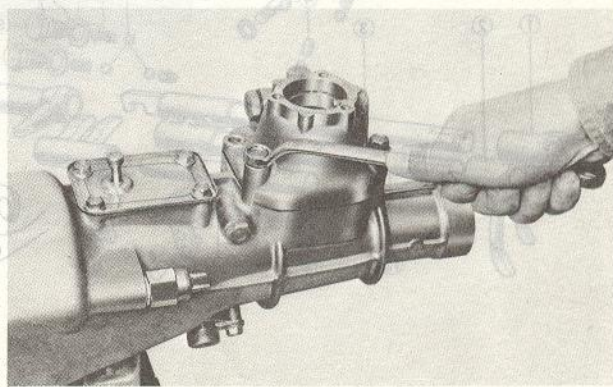


Fig. 7C-8 Removing gearshift lever retainer

7. Remove the spring cap bolt and remove the spring and steel ball, select lock spindle and spring from the gearshift lever retainer.
8. Remove the nuts that attach the extension housing to the transmission case. Slide the extension housing off the main shaft, with the gearshift control lever end laid down to the left as far as it will go.

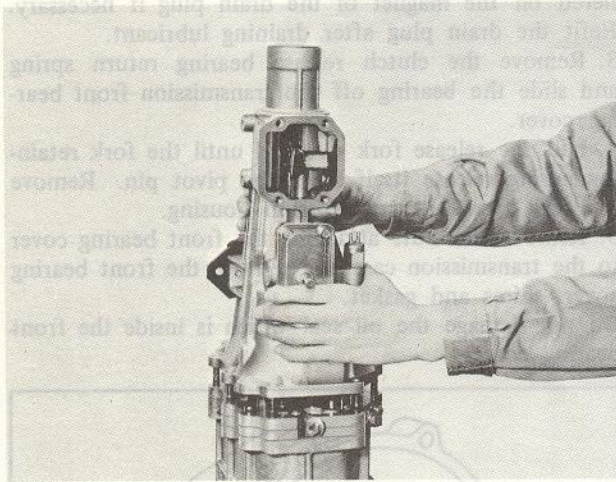


Fig. 7C-9 Removing extension housing

9. Remove the bush and spring from the gearshift control lever end.
10. Remove the spring cap bolt and remove the spring and friction piece from the extension housing.
11. Remove the bolt that attach the control lever end to the gearshift control lever, and remove the control lever and control lever end from the extension housing.
12. Remove the speedometer driven gear assembly attaching screw and remove the cable joint, sleeve and speedometer driven gear from the extension housing.
13. Remove the back-up lamp switch from the extension housing.
14. Remove the snap rings on the front ends of the main drive shaft and counter shaft.

15. Remove the snap ring that secures the speedometer drive gear to the main shaft. Slide the drive gear off the main shaft and remove the lock ball.
16. Using the **main shaft pusher** (Part No. 49 0305 430), remove the transmission case from the bearing housing (intermediate housing) assembly.

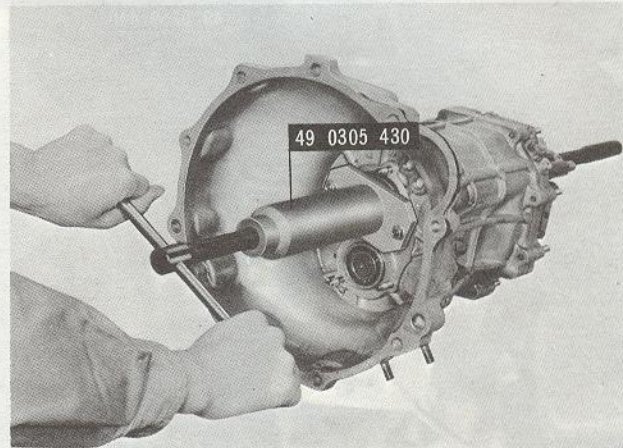


Fig. 7C-10 Removing bearing housing assembly

17. Remove the bearings from the transmission case.
18. Remove the three spring cap bolts and remove the detent springs (locking springs) and detent balls (locking balls) from the bearing housing.
19. Remove the shift lever attaching nut and remove the reverse shift rod together with the reverse idle gear and shift lever from the bearing housing.
20. Remove the attaching bolt from the third-and-fourth shift fork. Slide the third-and-fourth shift rod out the rear of the bearing housing and remove the shift fork.
21. Remove the attaching bolt from the first-and-second shift fork. Slide the first-and-second shift rod out the rear of the case and remove the shift fork.
22. Remove the reverse shift rod detent ball, spring and interlock pins from the bearing housing.

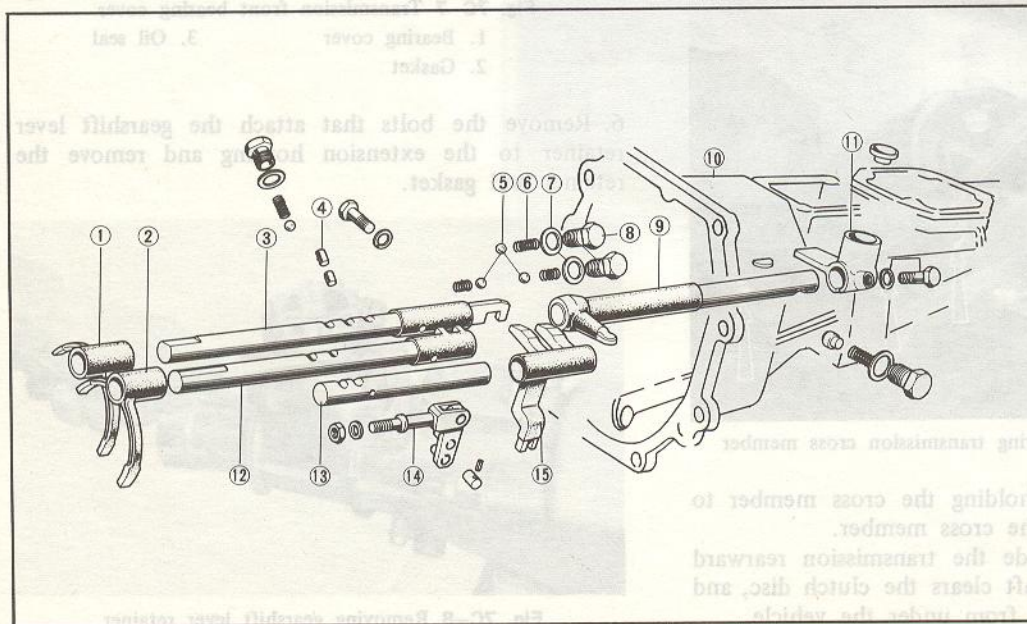


Fig. 7C-11

- Change control system
1. Shift fork (1st & 2nd)
 2. Shift fork (3rd & 4th)
 3. Shift rod (1st & 2nd)
 4. Interlock pin
 5. Detent ball
 6. Detent spring
 7. Washer
 8. Spring cap
 9. Gear shift control lever
 10. Extension housing
 11. Control lever end
 12. Shift rod (3rd & 4th)
 13. Shift rod (Reverse)
 14. Reverse shift lever
 15. Shift fork (Reverse)

23. Straighten the tab of the lockwasher, hold the main shaft with the **main shaft holder** (Part No. 49 0259 440) as shown in Fig. 7C-12 and loosen the lock nut by using the **spanner** (Part No. 49 0164 631A). Slide the reverse gear off the main shaft.

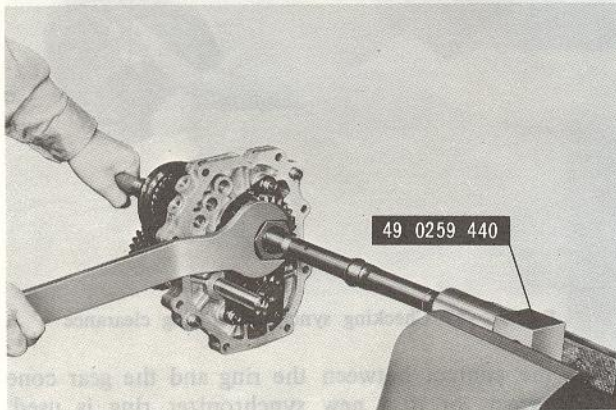


Fig. 7C-12 Loosening lock nut

24. Remove the snap ring from the rear end of the counter shaft and slide off the counter reverse gear.
25. Remove the bolts that attach the rear bearing cover to the bearing housing and remove the rear bearing cover.
26. With a plastic hammer, tap the rear ends of the main shaft and counter shaft in turn, being careful not to damage the shafts, and remove these shafts from the bearing housing.

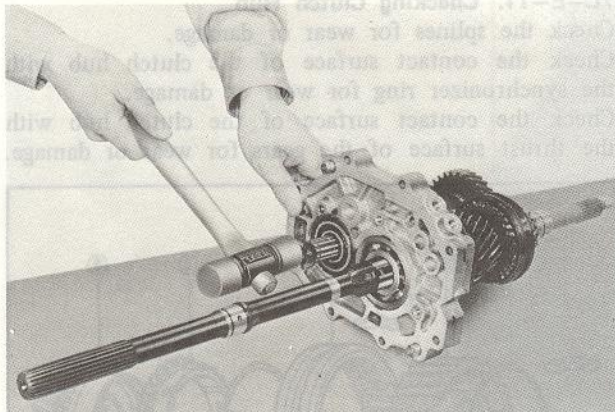


Fig. 7C-13 Removing main shaft and counter shaft

27. Remove the bearings from the bearing housing.
28. Remove the main drive shaft from the main shaft and then remove the fourth synchronizer ring and needle bearing from the main drive shaft.
29. Remove the snap ring from the front of the main shaft.
30. Slide the third-and-fourth clutch hub and sleeve assembly, third synchronizer ring and third gear out the front of the main shaft. **Do not** mix the synchronizer rings.
31. Slide the thrust washer, first gear, first synchronizer ring, first gear sleeve, first-and-second clutch hub and sleeve assembly, second synchronizer ring and second gear out the rear of the main shaft in sequence.

7C-E. TRANSMISSION INSPECTION

7C-E-1. Checking Transmission Case and Bearing Housing

Inspect the case and bearing housing for cracks and the machined mating surfaces for burrs, nicks or any damage.

Note :

As the bearing housing is machined under the condition of being fitted with the transmission case, the center of the bearing housing and transmission case are completely matched. Therefore, the bearing housing only should not be replaced. Replace the front bearing cover that is bent or distorted. Replace the oil seal in the bearing cover if necessary.

7C-E-2. Checking Bearings

Inspect each bearing for roughness or noise by holding the outer race, and rotating the inner race while applying pressure with hand. Replace the bearings if necessary.

Replace the needle bearings that are broken, worn or rough.

7C-E-3. Checking Gears

Inspect the teeth of each gear. If excessively worn, broken or chipped, replace with new gear. Excessive wear of the gears causes increase of backlash, which results in producing noises or may cause the gear to work off while running.

7C-E-4. Checking Main Shaft and Main Drive Shaft

Check the main shaft run-out with a dial indicator. If the run-out exceeds **0.03 mm (0.0012 in)**, correct with a press or replace with a new one. Replace the main shaft if there is any evidence of wear or if any of the splines is damaged.

Replace the main drive shaft if the splines are damaged. If the needle bearing surface in the bore of the bearing is worn or rough, or if the cone surface is damaged, replace with a new shaft.

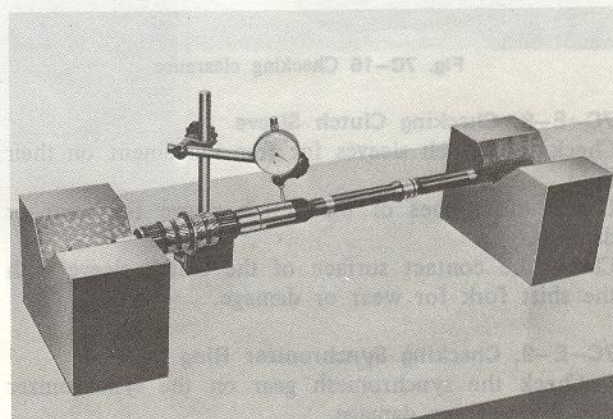


Fig. 7C-14 Checking main shaft run-out

7C-E-5. Checking Counter Shaft

Check the teeth of the counter shaft gear for wear or damage. Replace the counter shaft if it is bent, scored or worn.

7C-E-6. Checking Control Lever and Shift Rod

Check the contact surface of the shift rod with the detent ball for wear or damage. Check the contact surface of the shift rod with the control lever for wear. The clearance between the shift rod end fork and the control lever should be less than 0.8 mm (0.031 in).

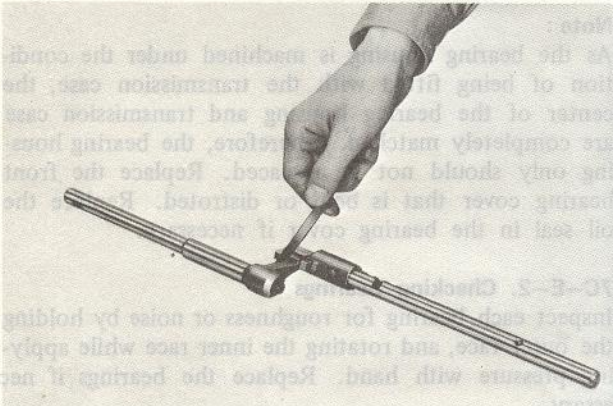


Fig. 7C-15 Checking fork clearance

7C-E-7. Checking Shift Fork

Check the contact surface of the shift forks with the clutch sleeve for wear or damage. The clearance between the shift fork and the clutch sleeve should be less than 0.5 mm (0.020 in).

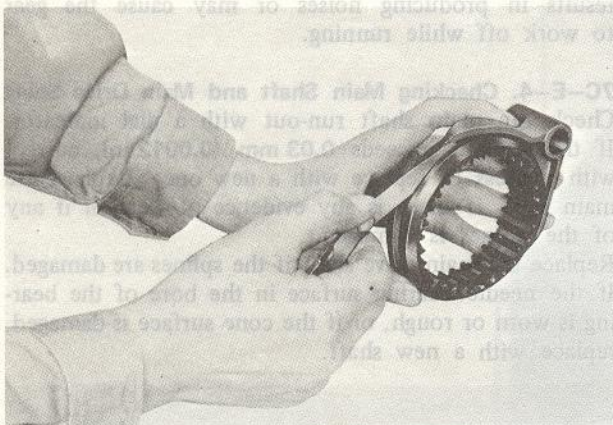


Fig. 7C-16 Checking clearance

7C-E-8. Checking Clutch Sleeve

Check the clutch sleeves for free movement on their hubs. Check the splines of the clutch sleeve for wear or damage. Check the contact surface of the clutch sleeve with the shift fork for wear or damage.

7C-E-9. Checking Synchronizer Ring

1. Check the synchromesh gear on the synchronizer ring for wear or damage. 2. Check the tapered portion for uneven wear or damage. Also place the ring on the gear cone, and check the clearance between the gear and the ring. If the clearance is less than 0.8 mm (0.031 in), replace the synchronizer ring. The standard clearance is 1.5 mm (0.059 in).

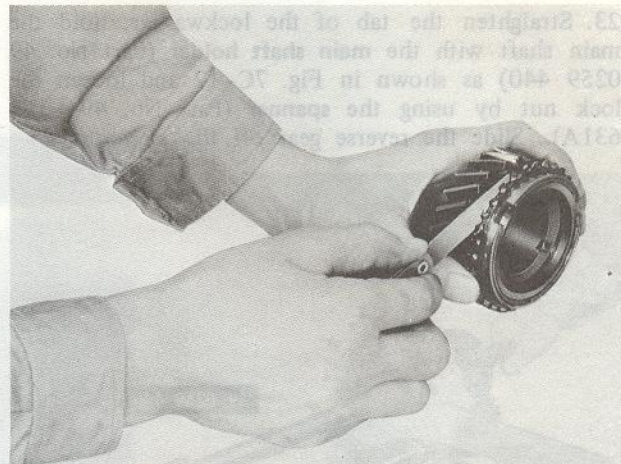


Fig. 7C-17 Checking synchronizer ring clearance

3. If the contact between the ring and the gear cone is incorrect, or if a new synchronizer ring is used, lap the synchronizer ring with the gear cone using a lapping compound. Apply a light pressure for lapping. After lapping, clean the ring and the gear cone with a suitable solvent, then check the clearance and contact between the ring and the gear cone.

7C-E-10. Checking Synchronizer Key and Spring

1. Check the synchronizer key for wear or damage. 2. Check the synchronizer key spring for wear or weakness.

7C-E-11. Checking Clutch Hub

Check the splines for wear or damage. Check the contact surface of the clutch hub with the synchronizer ring for wear or damage. Check the contact surface of the clutch hub with the thrust surface of the gears for wear or damage.

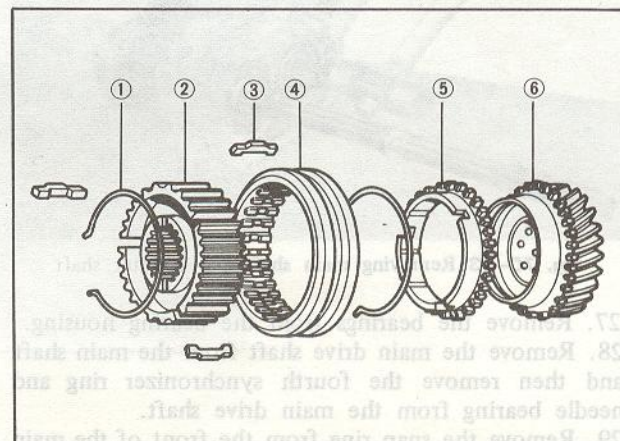


Fig. 7C-18 Synchronizer mechanism

1. Synchronizer key spring 2. Clutch hub 3. Synchronizer key 4. Clutch sleeve 5. Synchronizer ring 6. Gear

7C-E-12. Checking Extension Housing

Inspect the extension housing for cracks and the machined mating surface for burrs, nicks or any damage. Inspect the oil seal in the extension housing. Replace them if they are worn or damaged.

7C-F. TRANSMISSION ASSEMBLY

1. Assemble the third-and-fourth synchronizer mechanism by installing the clutch hub onto the sleeve, placing the three synchronizer keys into the clutch hub key slots and installing the key springs onto the clutch hub.



Fig. 7C-19 Installing synchronizer key spring

Note :
When installing the key springs, the open ends of the springs should be kept 120° apart as shown in Fig. 7C-20, so that the spring tension on each key will be uniform.

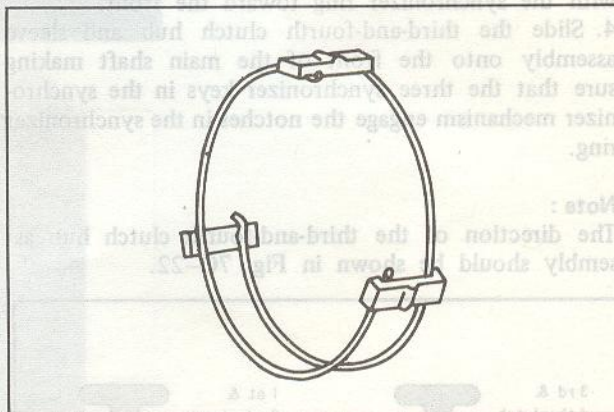


Fig. 7C-20 Position of synchronizer key and spring

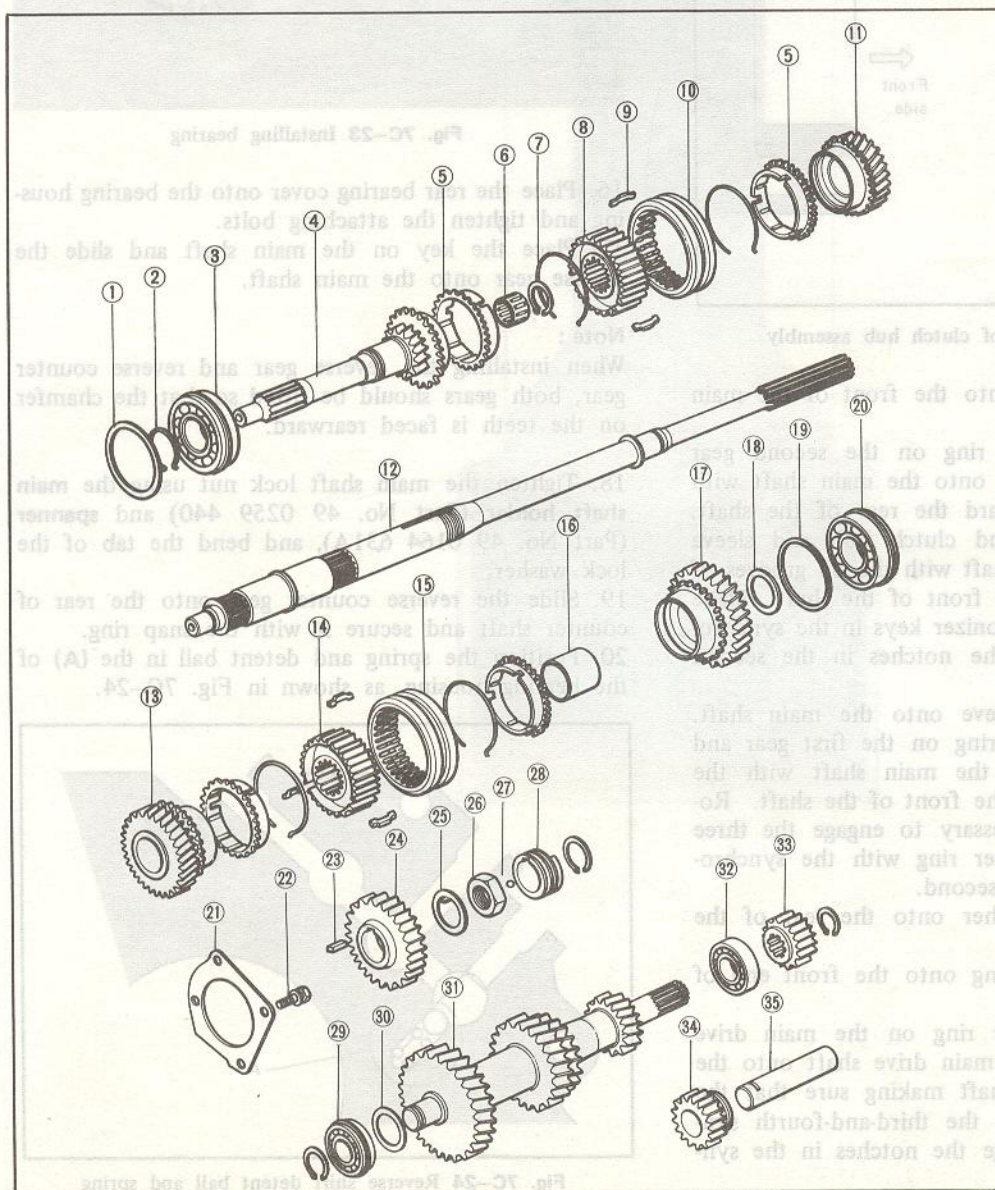


Fig. 7C-21 Shafts and gears

1. Adjusting shim
2. Snap ring
3. Main drive shaft bearing
4. Main drive shaft
5. Synchronizer ring
6. Needle bearing
7. Synchronizer key spring
8. Third-and-fourth clutch hub
9. Synchronizer key
10. Clutch sleeve
11. Third gear
12. Main shaft
13. Second gear
14. First-and-second clutch hub
15. Clutch sleeve
16. Bush
17. First gear
18. Thrust washer
19. Adjusting shim
20. Main shaft bearing
21. Bearing cover
22. Bolt
23. Key
24. Reverse gear
25. Lock washer
26. Lock nut
27. Lock ball
28. Speedometer drive gear
29. Counter shaft front bearing
30. Adjusting shim
31. Counter shaft
32. Counter shaft rear bearing
33. Counter reverse gear
34. Reverse idler gear
35. Reverse idler gear shaft

2. Assemble the first-and-second synchronizer mechanism in the same manner as third-and-fourth synchronizer mechanism.
3. Place the synchronizer ring on the third gear and slide the third gear onto the front of the main shaft with the synchronizer ring toward the front.
4. Slide the third-and-fourth clutch hub and sleeve assembly onto the front of the main shaft making sure that the three synchronizer keys in the synchronizer mechanism engage the notches in the synchronizer ring.

Note :

The direction of the third-and-fourth clutch hub assembly should be shown in Fig. 7C-22.

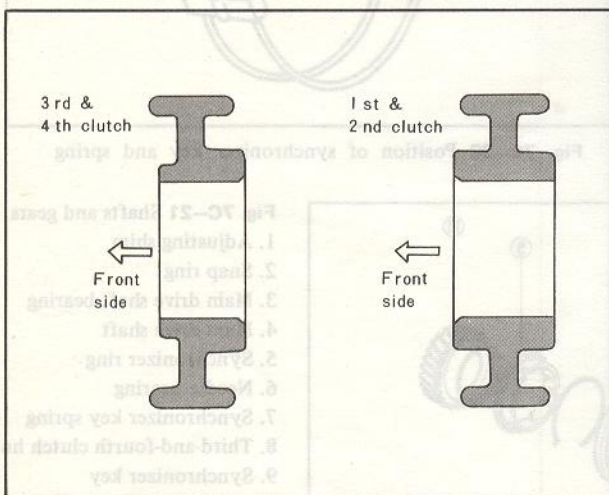


Fig. 7C-22 Direction of clutch hub assembly

5. Install the snap ring onto the front of the main shaft.
6. Place the synchronizer ring on the second gear and slide the second gear onto the main shaft with the synchronizer ring toward the rear of the shaft.
7. Slide the first-and-second clutch hub and sleeve assembly onto the main shaft with the oil grooves of the clutch hub toward the front of the shaft. Make sure that the three synchronizer keys in the synchronizer mechanism engage the notches in the second synchronizer ring.
8. Slide the first gear sleeve onto the main shaft.
9. Place the synchronizer ring on the first gear and slide the first gear onto the main shaft with the synchronizer ring toward the front of the shaft. Rotate the first gear as necessary to engage the three notches in the synchronizer ring with the synchronizer keys in the first-and-second.
10. Install the thrust washer onto the rear of the main shaft.
11. Place the needle bearing onto the front end of the main shaft.
12. Place the synchronizer ring on the main drive shaft gear and install the main drive shaft onto the front end of the main shaft making sure that the three synchronizer keys in the third-and-fourth synchronizer mechanism engage the notches in the synchronizer ring.

13. Press fit the counter shaft rear bearing with shim onto the bearing housing.
14. Install the counter shaft to the counter shaft rear bearing in the bearing housing by using a press.
15. Support the thrust washer and first gear to prevent them from sliding off the shaft. Position the main shaft assembly in the bearing housing, making sure that each gear of the main shaft assembly engages the counter shaft gear. Then, install the main shaft rear bearing with shim onto the bearing housing.

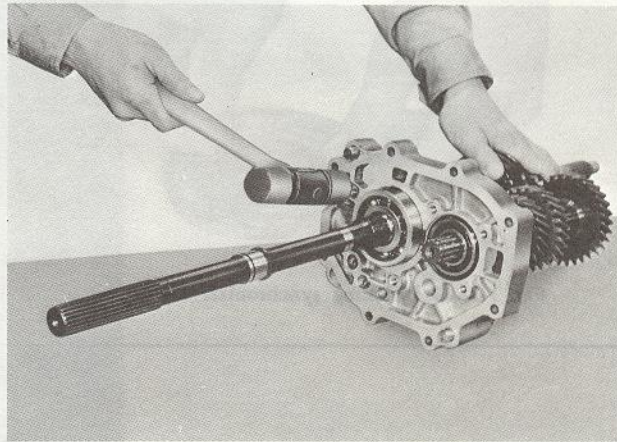


Fig. 7C-23 Installing bearing

16. Place the rear bearing cover onto the bearing housing and tighten the attaching bolts.
17. Place the key on the main shaft and slide the reverse gear onto the main shaft.

Note :

When installing the reverse gear and reverse counter gear, both gears should be fitted so that the chamfer on the teeth is faced rearward.

18. Tighten the main shaft lock nut using the **main shaft holder** (Part No. 49 0259 440) and **spanner** (Part No. 49 0164 631A), and bend the tab of the lock washer.
19. Slide the reverse counter gear onto the rear of counter shaft and secure it with the snap ring.
20. Position the spring and detent ball in the (A) of the bearing housing, as shown in Fig. 7C-24.

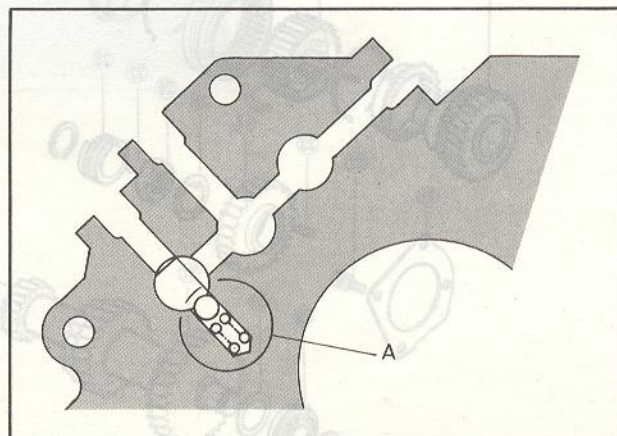


Fig. 7C-24 Reverse shift detent ball and spring

21. Pushing down the detent ball with a screwdriver, install the reverse shift fork rod and shift lever with the reverse idle gear at same time. Tighten the nut attaching the shift lever to the bearing housing.
22. Place the reverse shift rod into neutral position.
23. Position the third-and-fourth shift fork and first-and-second shift fork in place on their respective clutch hub sleeve.
24. Using the shift fork rod guide (Part No. 49 0187 441A) and interlock pin installer (Part No. 49 0187 451A), insert the interlock pin, as shown in Fig. 7C-26.

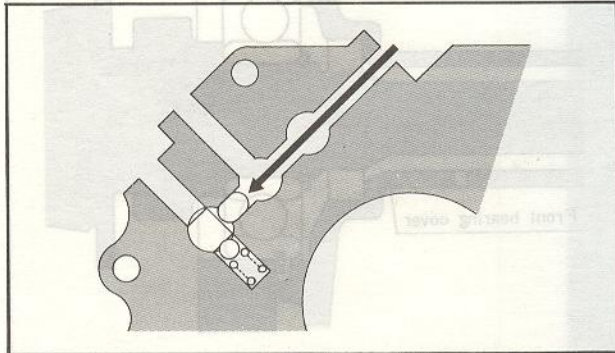


Fig. 7C-25 Installing interlock pin

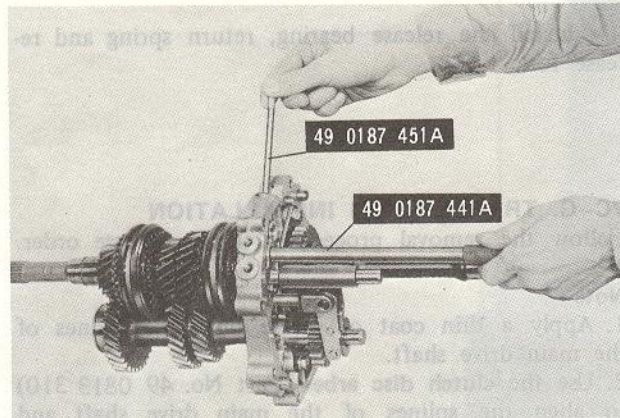


Fig. 7C-26 Installing interlock pin

25. Remove the tools and install the third-and-fourth shift rod through the holes of the bearing housing and fork.
26. With the same tools that were used in step 24, and install the interlock pin.

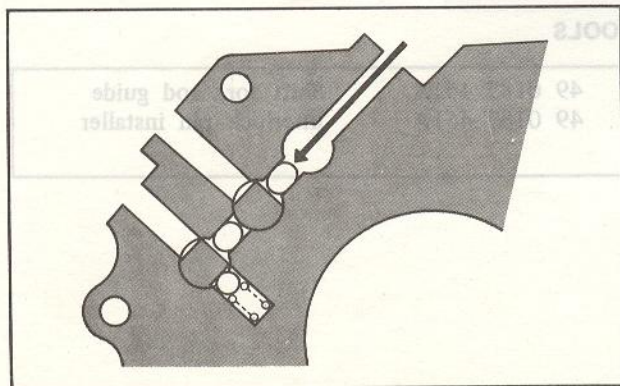


Fig. 7C-27 Installing interlock pin

27. Remove the tools and install the low-and-second shift rod.
28. Align the lock bolt holes of the shift fork and rod. Install the lock bolt and tighten it.
29. Install the three detent balls and springs into their respective positions and install the three spring cap bolts onto the bearing housing.
30. Apply a thin coat of sealing agent onto contacting surfaces of the bearing housing and transmission case.
31. Position the bearing housing assembly onto the transmission case.
32. Position the speedometer drive gear lock ball in place and slide the gear onto the main shaft. Secure the drive gear with the snap ring.

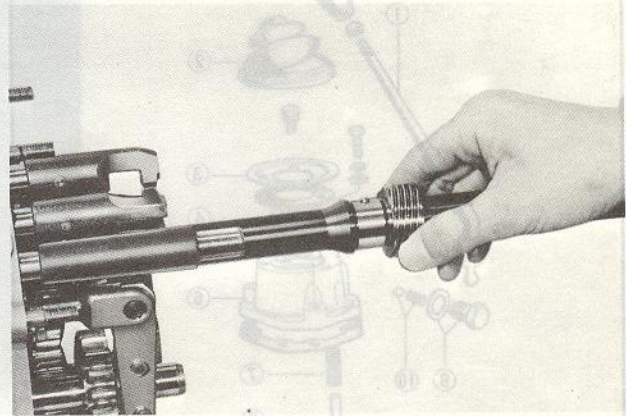


Fig. 7C-28 Installing speedometer drive gear

33. Install the main shaft front bearing and counter shaft front bearing onto the transmission case and secure them with the snap rings.

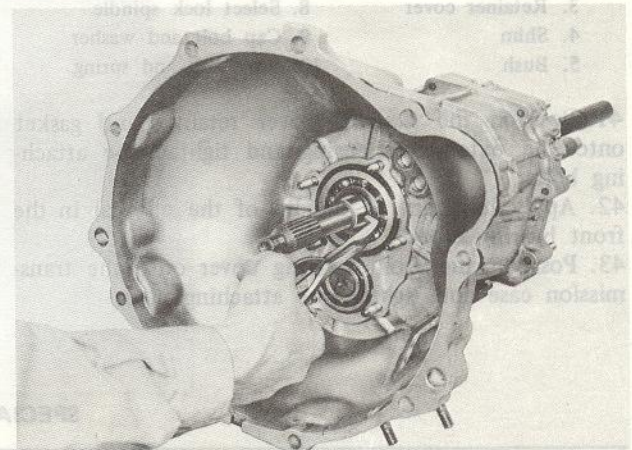
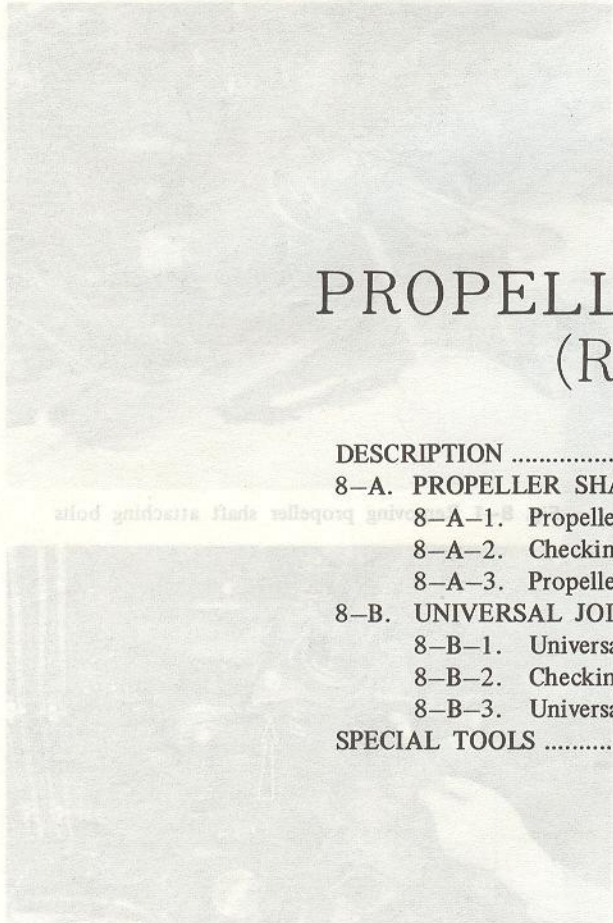


Fig. 7C-29 Securing bearing

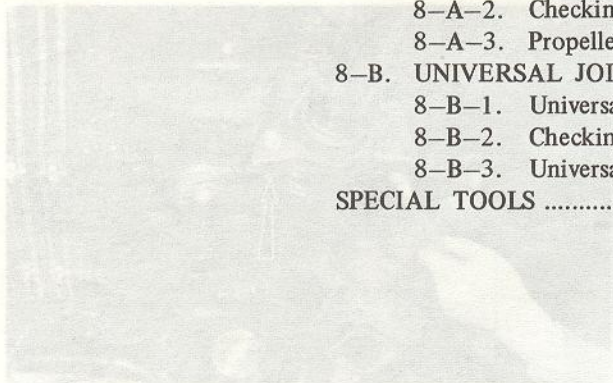
34. Install the speedometer driven gear assembly to the extension housing and fix them with the screw.
35. Insert the gearshift control lever through the holes from the front of the extension housing. Position the key in place and slide the gearshift lever end onto the gearshift control lever. Secure the gearshift lever end with the bolt.
36. Position the spring and friction piece in place and install the spring cap bolt to the extension housing.

PROPELLER SHAFT (RX-4)

DESCRIPTION	8 : 1
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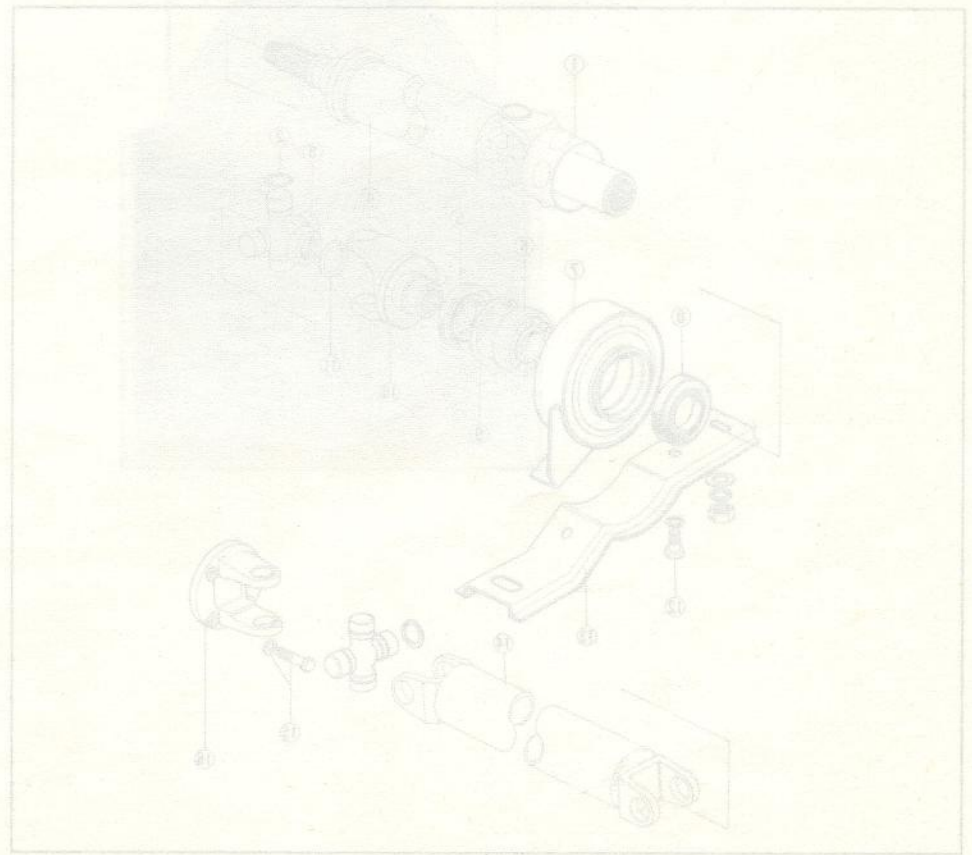
DESCRIPTION
The propeller shaft assembly consists of the tubular piece of steel center support bearing, universal joints and yokes. The rear end of the propeller shaft is attached to the companion flange of the rear axle through the universal joints and the front end is attached to the main shaft of the transmission by means of the splined slip yoke, which permits fore and aft movement of the propeller shaft whenever the rear axle moves up or down. The center of the propeller shaft is supported by a bearing attached to the under body. The universal joints are lubricated for life, so require lubricating.



8-A-1. Propeller Shaft Removal
1. Raise the rear end of the vehicle and support with stands.
2. Mark the companion flange of the rear axle and the propeller shaft so they can be reinstalled in their original position.
3. Remove the bolts that attach the propeller shaft to the companion flange of the rear axle.

8-A. PROPELLER SHAFT

- Fig. 8-3 Propeller shaft components
1. Slip yoke
 2. Snap ring
 3. Spider
 4. Front shaft
 5. Oil seal
 6. Center bearing
 7. Center bearing support
 8. Oil seal
 9. Snap ring
 10. Yoke
 11. Lock nut and washer
 12. Bolt
 13. Bracket
 14. Rear shaft
 15. Bolt and washer
 16. Yoke



DESCRIPTION

The propeller shaft assembly consists of the tubular piece of steel, center support bearing, universal joints and yokes. The rear end of the propeller shaft is attached to the companion flange of the rear axle through the universal joints and the front end is attached to the main shaft of the transmission by means of the splined slip yoke, which permits fore and aft movement of the propeller shaft whenever the rear axle moves up and down. The center of the propeller shaft is supported by the bearing attached to the under body. The universal joints are lubricated for life, so **do not** require lubricating.

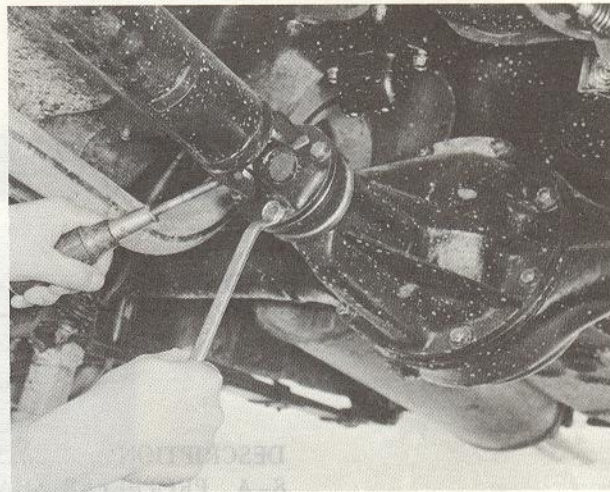


Fig. 8-1 Removing propeller shaft attaching bolts

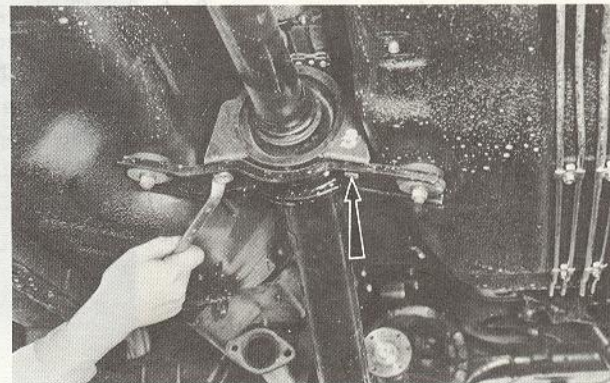


Fig. 8-2 Removing center bearing attaching bolts

8-A. PROPELLER SHAFT

8-A-1. Propeller Shaft Removal

1. Raise the rear end of the vehicle and support with stands.
2. Mark the companion flange of the rear axle and the propeller shaft so they can be reinstalled in their original position.
3. Remove the bolts that attach the propeller shaft to the companion flange of the rear axle.

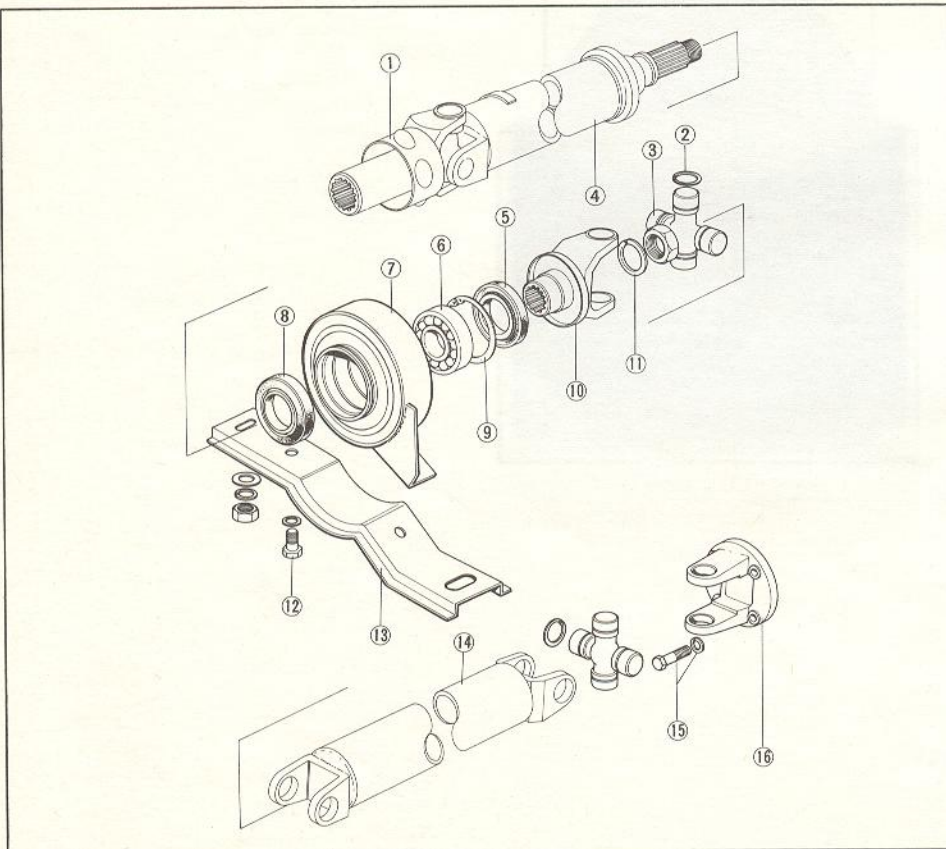


Fig. 8-3 Propeller shaft components

1. Slip yoke
2. Snap ring
3. Spider
4. Front shaft
5. Oil seal
6. Center bearing
7. Center bearing support
8. Oil seal
9. Snap ring
10. Yoke
11. Lock nut and washer
12. Bolt
13. Bracket
14. Rear shaft
15. Bolt and washer
16. Yoke

4. Remove the center bearing attaching bolts.
5. Lower the rear of the shaft and slide rearward.
6. Install the **transmission oil plug** (Part No. 49 0259 440) into the extension housing to prevent lubricant from running out of the housing.



Fig. 8-4 Transmission oil plug

7. Mark the mating parts of the yokes and propeller shafts.
8. Remove the universal joints, as described in Par. 8-B.



Fig. 8-5 Removing snap ring



Fig. 8-6 Removing bearing cup

9. Remove the nut attaching the yoke and bearing to the front propeller shaft. Remove the yoke and bearing support.

Note :

Do not remove the oil seals and bearing from the support unless they are defective.

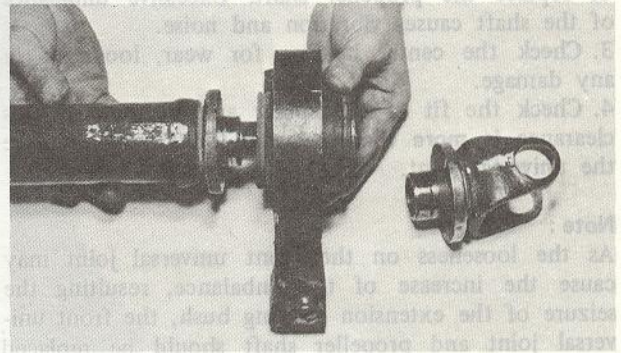


Fig. 8-7 Removing center bearing support

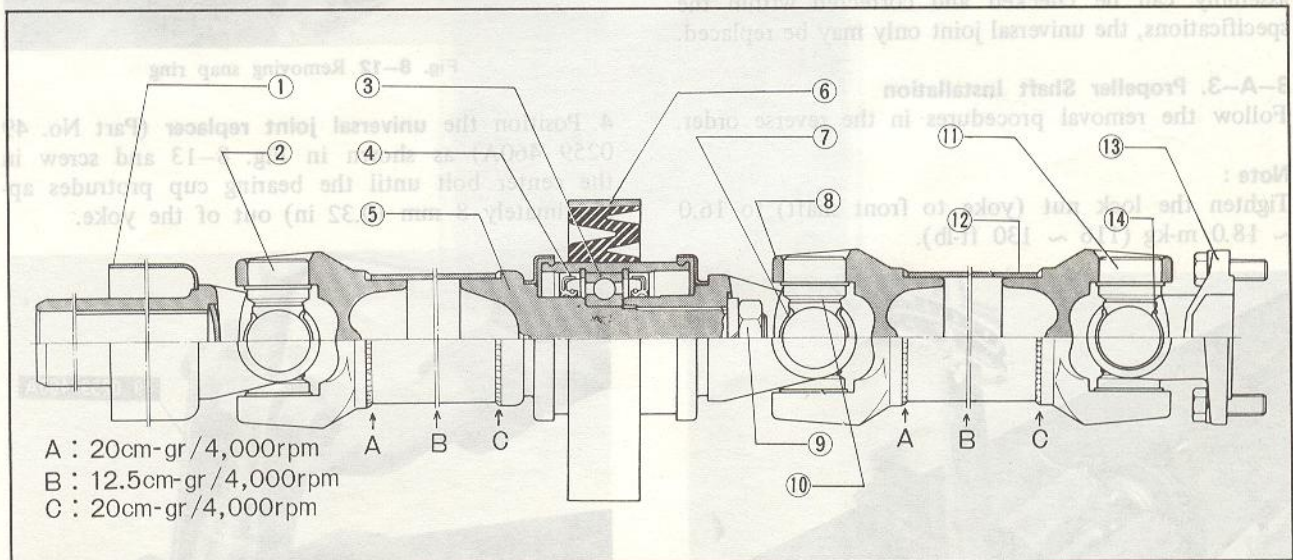


Fig. 8-8 Propeller shaft

- | | | | |
|--------------------------|---------------------------|----------------------------|---------------|
| 1. Slip yoke | 5. Front shaft | 9. Nut | 13. Yoke |
| 2. Front universal joint | 6. Center bearing support | 10. Center universal joint | 14. Snap ring |
| 3. Bearing | 7. Snap ring | 11. Rear universal joint | |
| 4. Oil seal | 8. Yoke | 12. Rear shaft | |

8-A-2. Checking Propeller Shaft

1. Using a dial indicator, check the run-out at each end and in middle of the shaft. The shaft run-out should not exceed **0.4 mm (0.0157 in)** at any one point.

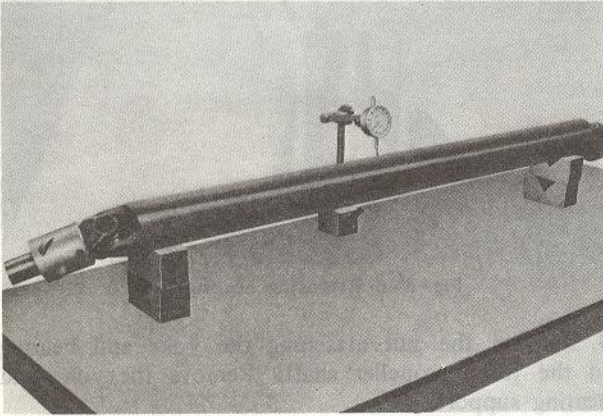


Fig. 8-9 Checking propeller shaft run-out

2. Check the shaft for dynamic unbalance. If it is not within specifications (See Fig. 8-8), correct or replace the propeller shaft. Excessive unbalance of the shaft causes vibration and noise.
3. Check the center bearing for wear, looseness or any damage.
4. Check the fit of the spider and bearing. If this clearance is **more than 0.2 mm (0.0079 in)**, replace the universal joint.

Note :

As the looseness on the front universal joint may cause the increase of the unbalance, resulting the seizure of the extension housing bush, the front universal joint and propeller shaft should be replaced as an assembly. But, if the unbalance of the shaft assembly can be checked and corrected within the specifications, the universal joint only may be replaced.

8-A-3. Propeller Shaft Installation

Follow the removal procedures in the reverse order.

Note :

Tighten the lock nut (yoke to front shaft) to **16.0 ~ 18.0 m·kg (116 ~ 130 ft·lb)**.

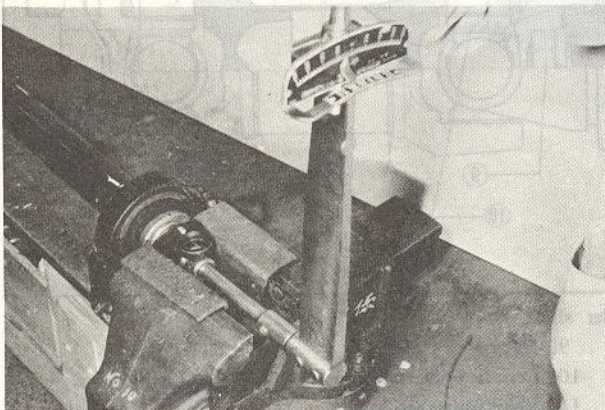


Fig. 8-10 Tightening lock nut

8-B. UNIVERSAL JOINT

8-B-1. Universal Joint Removal

1. Remove the propeller shaft from the vehicle as described in Par. 8-A-1 on page 8-1.
2. Mark both yoke and shaft so that the units may be reassembled in their original position in order to maintain the original balance.

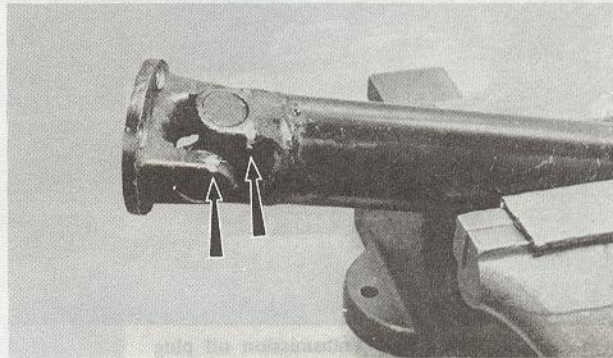


Fig. 8-11 Applying marks

3. Remove the snap rings that secure the bearings in the yoke.

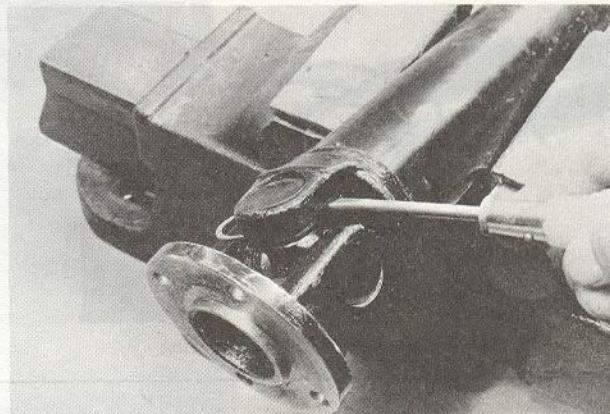


Fig. 8-12 Removing snap ring

4. Position the **universal joint replacer** (Part No. 49 0259 460A) as shown in Fig. 8-13 and screw in the center bolt until the bearing cup protrudes approximately **8 mm (0.32 in)** out of the yoke.



Fig. 8-13 Removing bearing cup

5. Loosen the center bolt and install the spacer between the yoke and the spider as shown in Fig. 8-14.

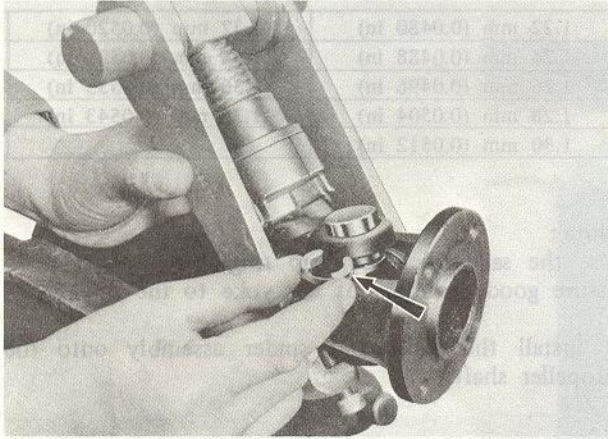


Fig. 8-14 Installing spacer

6. Screw in the center bolt until the bearing cup comes out of the yoke.
7. Remove the replacer and remove the bearing cup.
8. Remove the yoke and spider assembly as shown in Fig. 8-15.



Fig. 8-15 Removing yoke and spider assembly

9. Position the replacer on the yoke as shown in Fig. 8-16 and remove the bearing cup in the same manner.



Fig. 8-16 Removing bearing cup

10. Remove the spider from the yoke.

8-B-2. Checking Universal Joint

1. Check the spider journals for rust and wear.
2. Measure the diameter of the spider. If the wear of the spider exceeds **0.1 mm (0.0039 in)**, replace with a new one. The standard diameter is **14.72 mm (0.5795 in)**.

Note :

The spider and bearing cup are serviced as an assembly only.

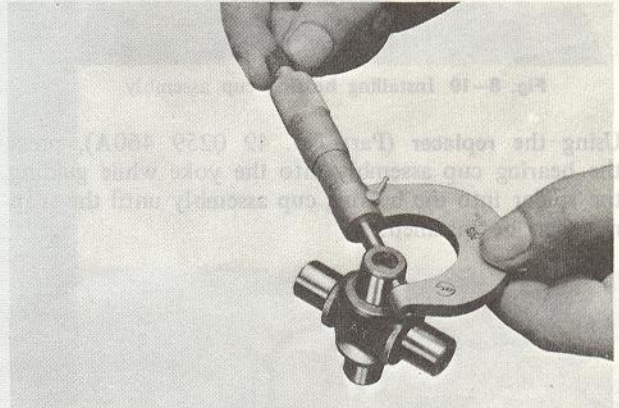


Fig. 8-17 Measuring spider diameter

3. Check the seal for weakness or damage.
4. Check the needle rollers and the bearing cup for wear or damage.

8-B-3. Universal Joint Installation

1. Pack the wall of the bearing cup with grease, then assemble the needle rollers into the bearing cup and assemble the seal onto the bearing cup.
2. Install the bearing cup assembly and the spider onto one end of the bearing cup bore on the yoke, then install the spider onto the yoke.

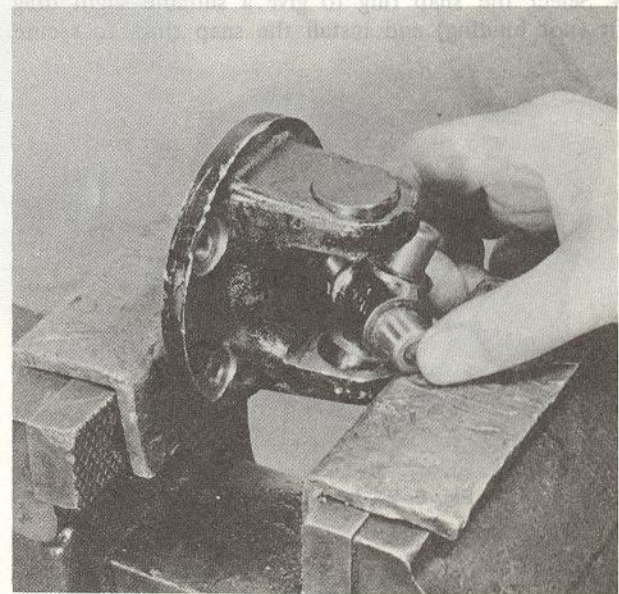


Fig. 8-18 Installing spider

3. Install the bearing cup assembly onto the other end of the bearing cup bore on the yoke.

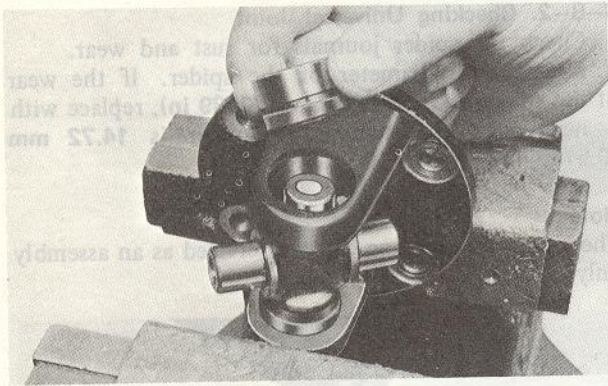


Fig. 8-19 Installing bearing cup assembly

Using the replacer (Part No. 49 0259 460A), press the bearing cup assembly into the yoke while guiding the spider into the bearing cup assembly until the snap ring can be installed.

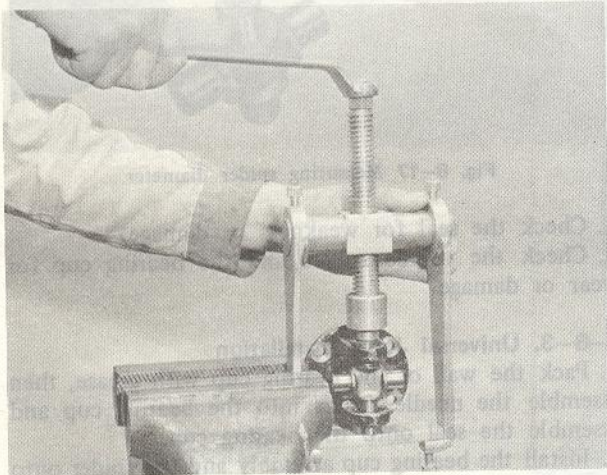


Fig. 8-20 Installing bearing cup

4. Select the snap ring to give a suitable slight drag fit (not binding) and install the snap rings to secure

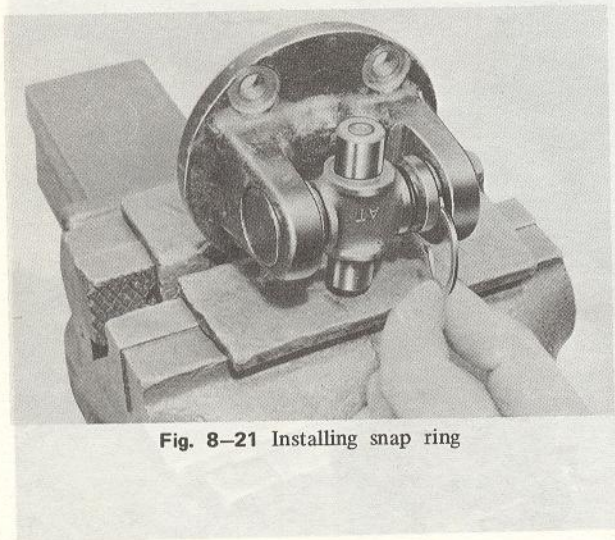


Fig. 8-21 Installing snap ring

the bearing cups in the yoke. The snap rings are available in the following thicknesses:

1.22 mm (0.0480 in)	1.32 mm (0.0520 in)
1.24 mm (0.0488 in)	1.34 mm (0.0528 in)
1.26 mm (0.0496 in)	1.36 mm (0.0535 in)
1.28 mm (0.0504 in)	1.38 mm (0.0543 in)
1.30 mm (0.0512 in)	

Note :

Use the same-thickness snap rings for both sides to assure good centering of the yoke to the spider.

5. Install the yoke and spider assembly onto the propeller shaft.

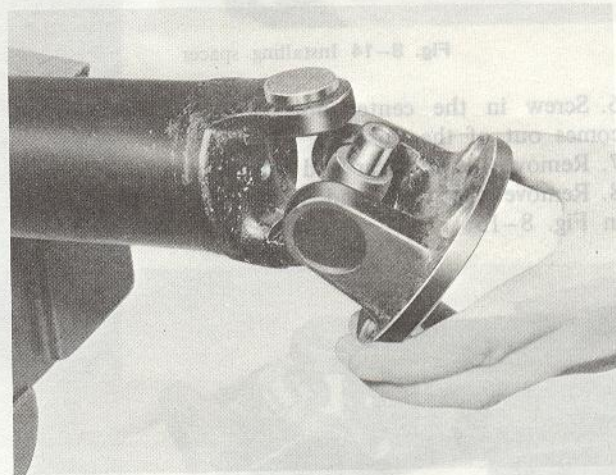


Fig. 8-22 Installing yoke and spider assembly

6. Install the bearing cup assembly and snap ring as instructed above.

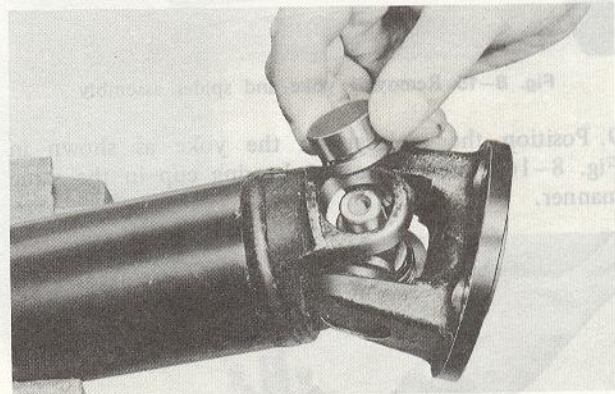


Fig. 8-23 Installing bearing cup

7. Install the propeller shaft, as described in Par. 8-A-3.

SPECIAL TOOLS

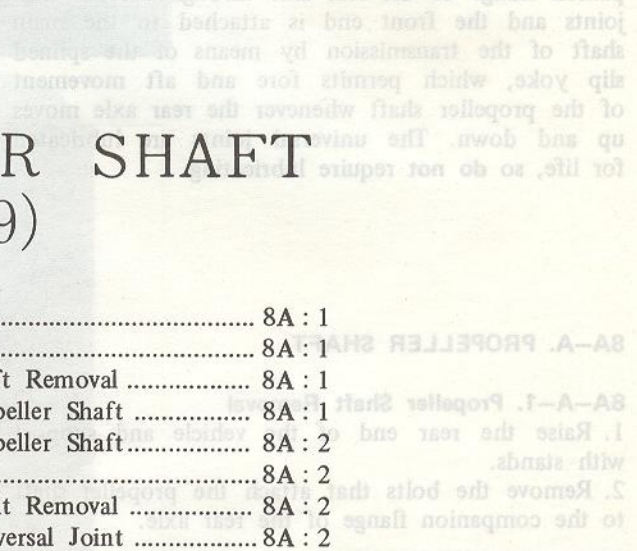
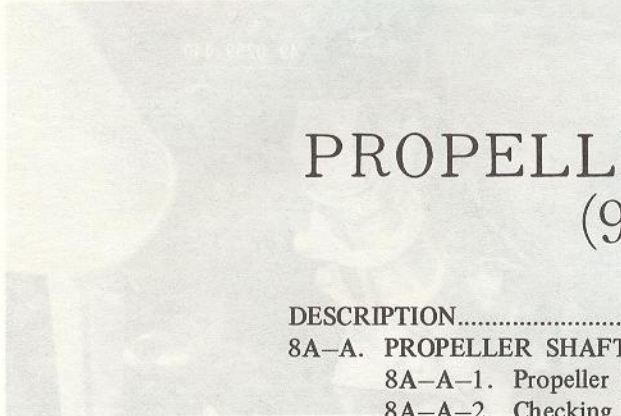
49 0259 440	Transmission oil plug	49 0259 460A	Universal joint replacer
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PROPELLER SHAFT (929)

DESCRIPTION.....	8A : 1
8A-A. PROPELLER SHAFT	8A : 1
8A-A-1. Propeller Shaft Removal	8A : 1
8A-A-2. Checking Propeller Shaft	8A : 1
8A-A-3. Installing Propeller Shaft	8A : 2
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SPECIAL TOOLS	8A : 3

3. Lower the rear of the shaft and slide rearward.
4. Install the main shaft holder (Part No. 49 0259 440) into the extension housing to prevent lubricant from running out of the housing.

DESCRIPTION
The propeller shaft assembly consists of the tubular piece of steel, universal joints and yokes. The rear end of the propeller shaft is attached to the companion flange of the rear axle through the universal joints and the front end is attached to the propeller shaft of the transmission by means of the slip yoke, which permits fore and aft movement of the propeller shaft whenever the rear axle moves up and down. The universal joints are designed for life, so do not require lubrication.



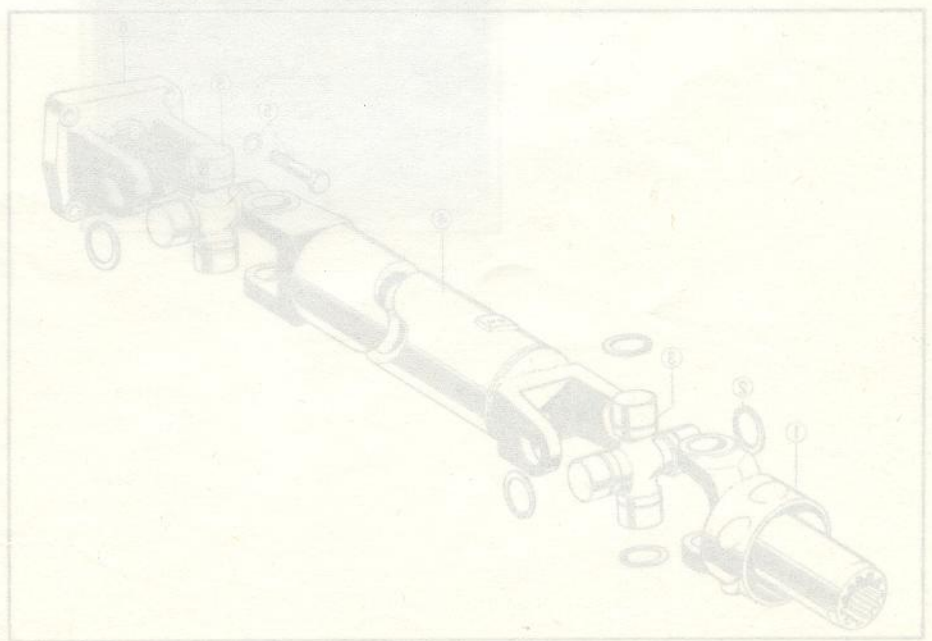
1. Raise the rear end of the vehicle on stands.
2. Remove the bolts that attach the propeller shaft to the companion flange of the rear axle.
3. Check the run-out of the shaft. The run-out of propeller shaft should not exceed 0.4 mm (0.016 in) at any point.

1. Raise the rear end of the vehicle on stands.
2. Remove the bolts that attach the propeller shaft to the companion flange of the rear axle.
3. Check the run-out of the shaft. The run-out of propeller shaft should not exceed 0.4 mm (0.016 in) at any point.



Fig. 8A-4 Propeller shaft components

1. Slip yoke
2. Snap ring
3. Spider and bearing cup assembly
4. Propeller shaft
5. Bolt and washer
6. Yoke



DESCRIPTION

The propeller shaft assembly consists of the tubular piece of steel, universal joints and yokes. The rear end of the propeller shaft is attached to the companion flange of the rear axle through the universal joints and the front end is attached to the main shaft of the transmission by means of the splined slip yoke, which permits fore and aft movement of the propeller shaft whenever the rear axle moves up and down. The universal joints are lubricated for life, so **do not** require lubricating.

8A-A. PROPELLER SHAFT

8A-A-1. Propeller Shaft Removal

1. Raise the rear end of the vehicle and support with stands.
2. Remove the bolts that attach the propeller shaft to the companion flange of the rear axle.

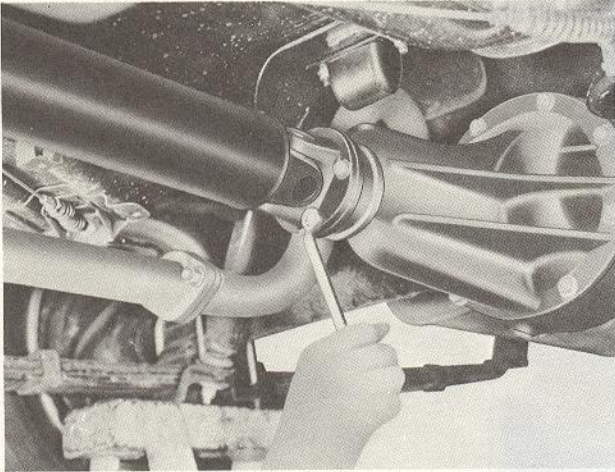


Fig. 8A-1 Removing propeller shaft attaching bolts

3. Lower the rear of the shaft and slide rearward.
4. Install the **main shaft holder** (Part No. 49 0259 440) into the extension housing to prevent lubricant from running out of the housing.

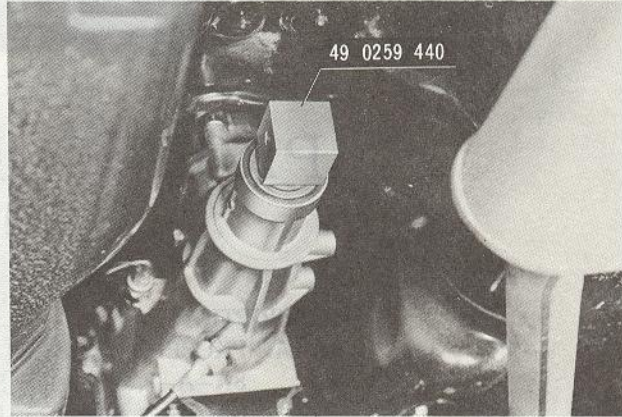


Fig. 8A-2 Main shaft holder

8A-A-2. Checking Propeller Shaft

1. Using a dial indicator, check the run-out at each end and in middle of the shaft. The run-out of propeller shaft should not exceed **0.4 mm (0.016 in)** at any one point.

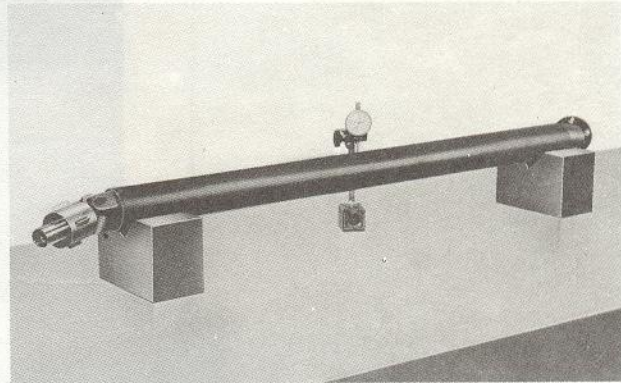


Fig. 8A-3 Checking propeller shaft run-out

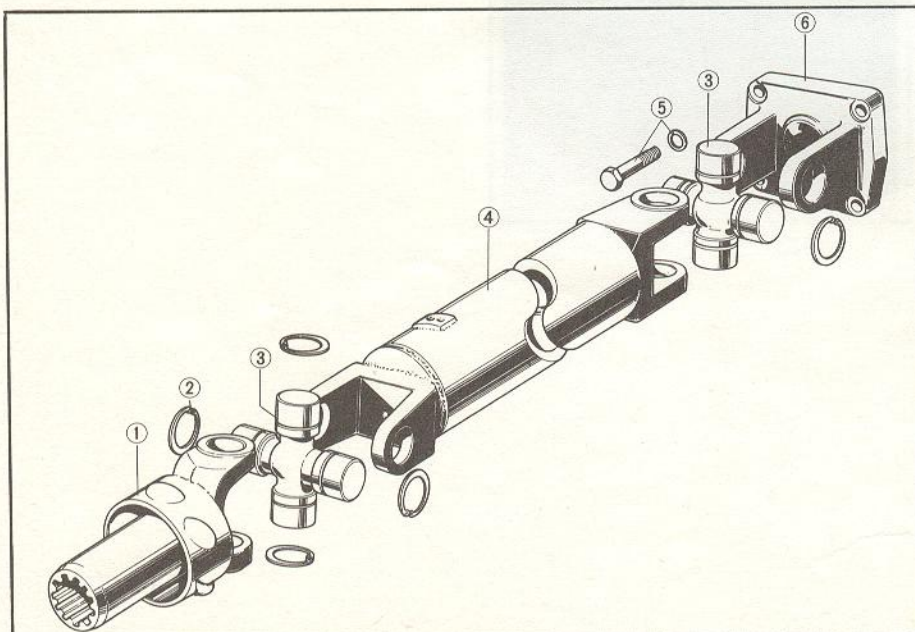


Fig. 8A-4 Propeller shaft components

1. Slip yoke
2. Snap ring
3. Spider and bearing cup assembly
4. Propeller shaft
5. Bolt and washer
6. Yoke

2. Check the shaft for dynamic unbalance. If it is more than **15 cm-g (0.21 in-oz)** at **4,000 rpm**, correct or replace it. Excessive unbalance of the shaft causes vibration and noise.

3. Check the fit of the spider and bearing. If this clearance is **more than 0.2 mm (0.0079 in)**, replace the universal joint.

Note :

As the looseness on the front universal joint may cause the increase of the unbalance, resulting the seizure of the extension housing bush, the front universal joint and propeller shaft should be replaced as an assembly. But, if the unbalance of the shaft assembly can be checked and corrected within the specifications, the universal joint only may be replaced.

8A-A-3. Installing Propeller Shaft

Follow the removal procedures in the reverse order.

8A-B. UNIVERSAL JOINT

8A-B-1. Universal Joint Removal

1. Remove the propeller shaft from the vehicle as described in **Par. 8A-A-1** on page 8A-1.

2. Mark both yoke and shaft so that the units may be reassembled in their original position in order to maintain the original balance.

3. Remove the snap rings that secure the bearings in the yoke.

4. Position the **universal joint replacer** (Part No. 49 0259 460A) as shown in Fig. 8A-5 and screw in the center bolt until the bearing cup protrudes approximately 8 mm (0.32 in) out of the yoke.



Fig. 8A-5 Removing bearing cup

5. Loosen the center bolt and install the spacer between the yoke and the spider as shown in Fig. 8A-6.

6. Screw in the center bolt until the bearing cup comes out of the yoke.

7. Remove the replacer and remove the bearing cup.

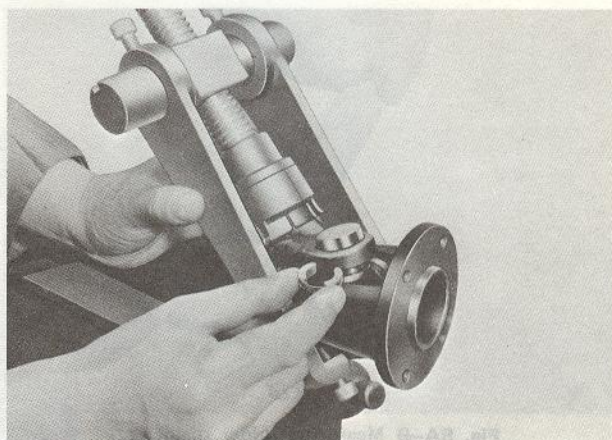


Fig. 8A-6 Installing spacer



Fig. 8A-7 Removing yoke and spider assembly

8. Remove the yoke and spider assembly as shown in Fig. 8A-7.

9. Position the replacer on the yoke as shown in Fig. 8A-8 and remove the bearing cup in the same manner.

10. Remove the spider from the yoke.



Fig. 8A-8 Removing bearing cup

8A-B-2. Checking Universal Joint

1. Check the spider journals for rust and wear.
2. Measure the diameter of the spider. If the wear of the spider exceeds **0.1 mm (0.004 in)**, replace with

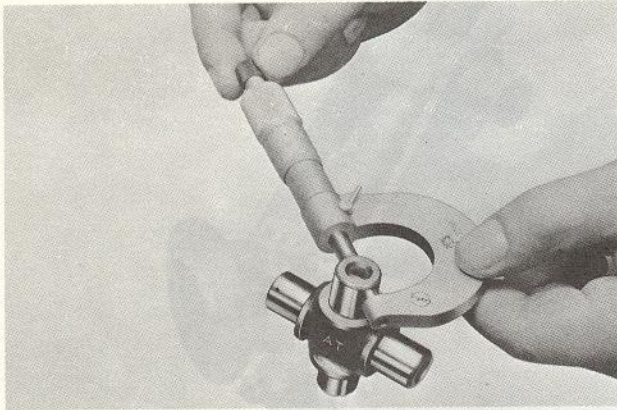


Fig. 8A-9 Measuring spider diameter

a new one. The standard diameter is **14.72 mm (0.5795 in)**.

Note :

The spider and bearing cup are serviced as an assembly only.

3. Check the seal for weakness or damage.
4. Check the needle rollers and the bearing cup for wear or damage.

8A-B-3. Universal Joint Installation

1. Pack the wall of the bearing cup with grease, then assemble the needle rollers into the bearing cup and assemble the seal onto the bearing cup.
2. Install the bearing cup assembly and the spider onto one end of the bearing cup bore on the yoke, then install the spider onto the yoke.
3. Install the bearing cup assembly onto the other end of the bearing cup bore on the yoke.

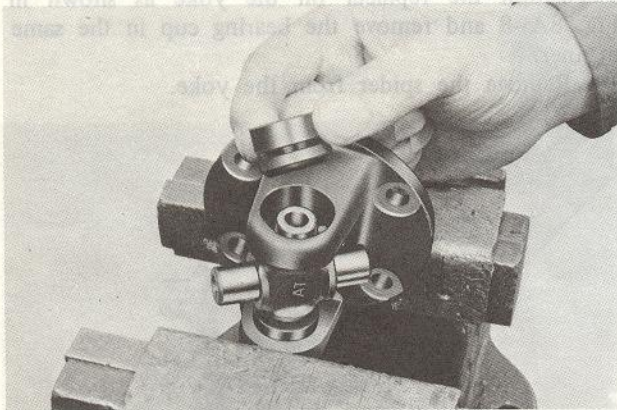


Fig. 8A-10 Installing bearing cup assembly

Using the **replacer** (Part No. 49 0259 460A), press the bearing cup assembly into the yoke while guiding the spider into the bearing cup assembly until the snap ring can be installed.

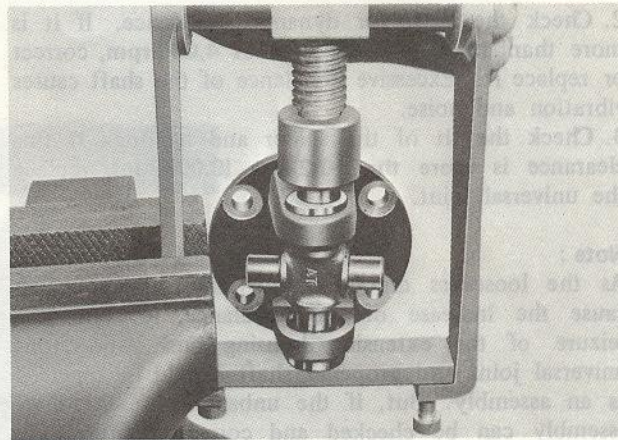


Fig. 8A-11 Installing bearing cup

4. Select the snap ring to obtain minimum play and install the same-thickness snap rings to secure the bearing cups in the yoke.

Note :

Use the same-thickness snap rings for both sides. Check the spider by moving it. If the spider is too tight, disassemble and detect the fault.

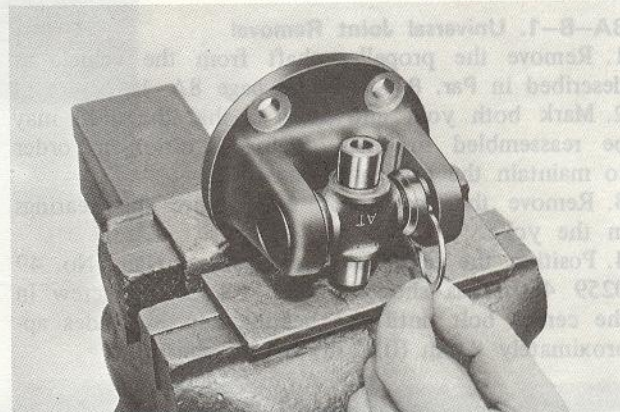


Fig. 8A-12 Installing snap ring

The snap rings are available in the following thicknesses :

1.22 mm (0.0480 in)	1.32 mm (0.0520 in)
1.24 mm (0.0488 in)	1.34 mm (0.0528 in)
1.26 mm (0.0496 in)	1.36 mm (0.0535 in)
1.28 mm (0.0504 in)	1.38 mm (0.0543 in)
1.30 mm (0.0512 in)	

5. Install the yoke and spider assembly onto the propeller shaft.
6. Install the bearing cup assembly and snap ring as instructed above.
7. Install the propeller shaft, as described in **Par. 8A-A-3** on Page 8A-2.

SPECIAL TOOLS

49 0259 440	Main shaft holder	49 0259 460A	Universal joint replacer
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REAR AXLE

DESCRIPTION	9 : 1
9-A. REAR AXLE SHAFT	9 : 1
9-A-1. Removing Rear Axle Shaft	9 : 1
9-A-2. Replacing Axle Shaft Bearing	9 : 1
9-A-3. Installing Rear Axle Shaft	9 : 2
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9-C. REAR AXLE DISASSEMBLY	9 : 3
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9-C-2. Disassembling Differential	9 : 4
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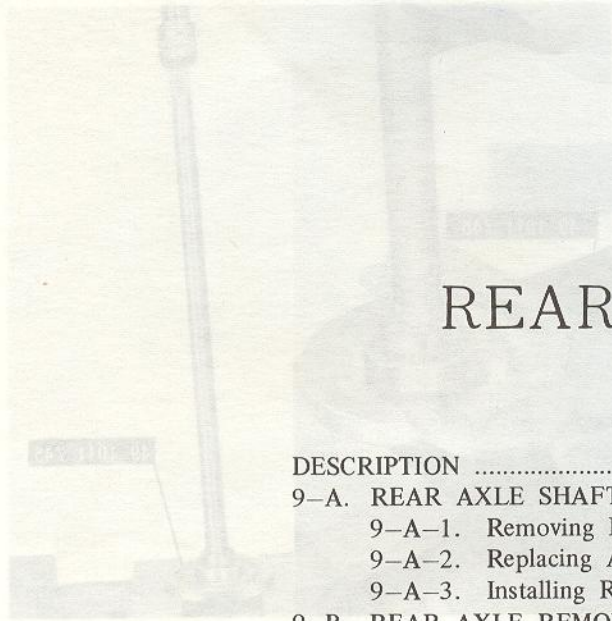


Fig. 9-4 Cutting bearing retaining collar

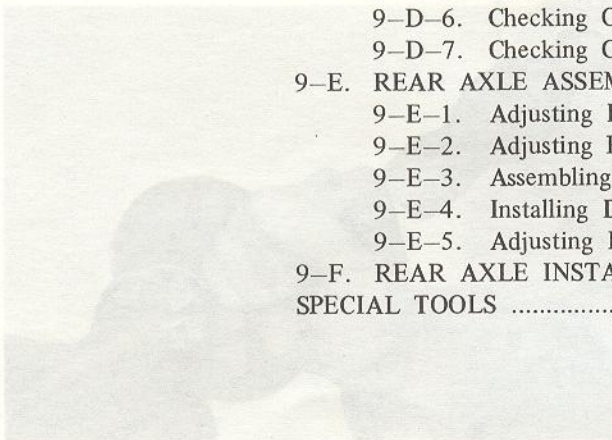


Fig. 9-3 Bearing replacer

DESCRIPTION
 MAZDA RX-4 and RX-5 are equipped with a semi-floating type rear axle with a hypoid ring gear and pinion set. The final reduction ratio is 3.900.

9-A. REAR AXLE SHAFT

9-A-1. Removing Rear Axle Shaft
 1. Raise the rear end of the vehicle and support it on jack stands.
 2. Remove the rear wheel and brake drum.
 3. Remove the brake shoe assembly as detailed in Part 11-F-1.

4. Remove the nuts holding the brake backing plate and bearing retainers to the axle housing.
 5. Remove the center cap from the axle housing if equipped.
 6. Extract the axle shaft using a bearing puller (49 0230 0233 630A and 49 0230 0233 630B).

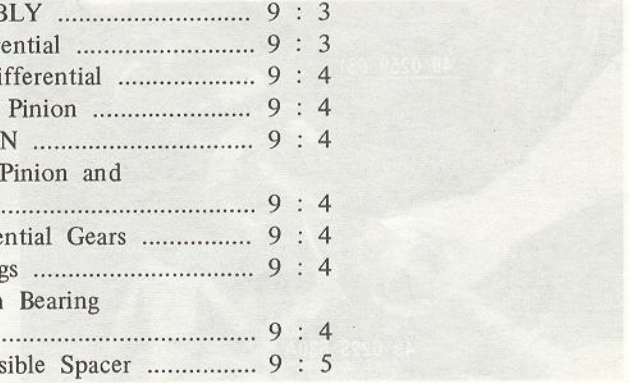


Fig. 9-1 Removing rear axle shaft

7. Remove the oil seal if necessary.
 9-A-2. Replacing Axle Shaft Bearing
 1. Remove the rear axle shaft as detailed in Part 9-A-1.
 2. Using the bearing replacer (49 1011 745) install the bearing on the axle shaft.

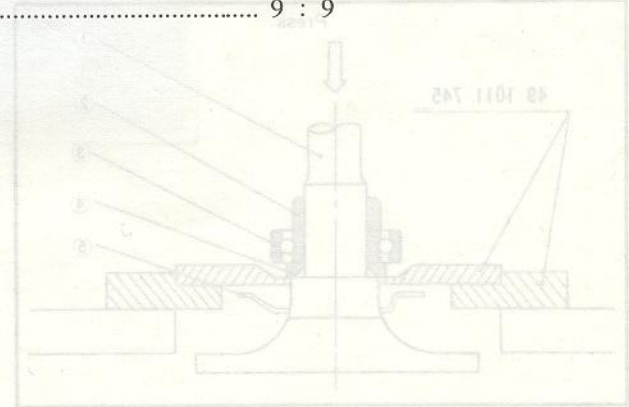


Fig. 9-2 Replacing axle shaft bearing

m-kg (12 ~ 17 ft-lb).
 5. Connect the propeller shaft following the markings closely to prevent any out of balance condition. Torque the bolts to 3.5 ~ 3.8 m-kg (25 ~ 27 ft-lb).

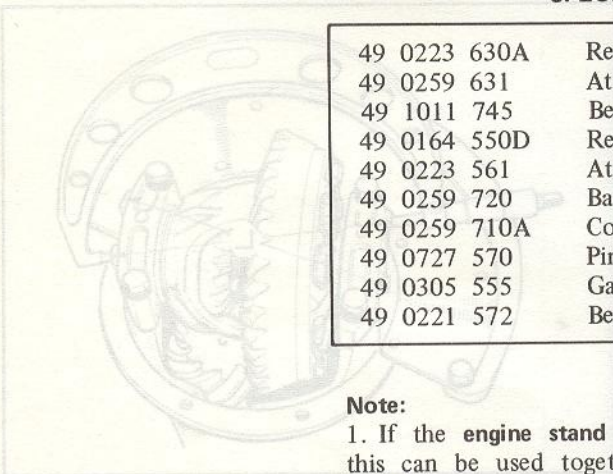
6. Install the axle shafts, drums and wheels.
 7. Fill the axle with the correct grade and quantity of lubricant.
 8. Lower the vehicle.

SPECIAL TOOLS

49 0223 630A	Rear axle shaft puller
49 0259 631	Attachment (for puller)
49 1011 745	Bearing remover set
49 0164 550D	Rear axle stand
49 0223 561	Attachment (for stand)
49 0259 720	Backlash adjusting spanner
49 0259 710A	Companion flange holding tool
49 0727 570	Pinion adjusting gauge
49 0305 555	Gauge block
49 0221 572	Bearing model

Note:

1. If the **engine stand** (49 0107 680A) is available, this can be used together with the **attachment** (49 0419 561) as a rear axle stand.
2. To adjust the pinion position, the **gauge** (49 0180 570) can also be used.



4. Tighten the bearing cap bolts to a torque of 3.2 ~ 4.7 m-kg (23 ~ 34 ft-lb).
 5. Install the adjuster lock plates on the bearing caps to prevent the adjusters from loosening.
 6. Check the tooth contact of the ring gear and pinion by applying a thin coat of red lead on both sides of about six or eight of ring gear teeth and rotating the ring gear a few times to and fro.
 If the pinion position and backlash have been correctly set, the contact pattern should be as shown in Fig. 9-33.

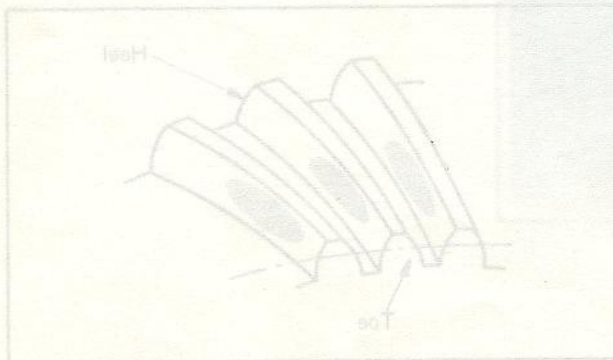


Fig. 9-33 Correct tooth contact

9-F. REAR AXLE INSTALLATION

1. Clean the sealing surface of the carrier and the housing. No gasket is required.
2. Apply oil resistant sealer to the surfaces.
3. Position the carrier to the housing.
4. Install the nuts and torque them to 1.6 ~ 2.3

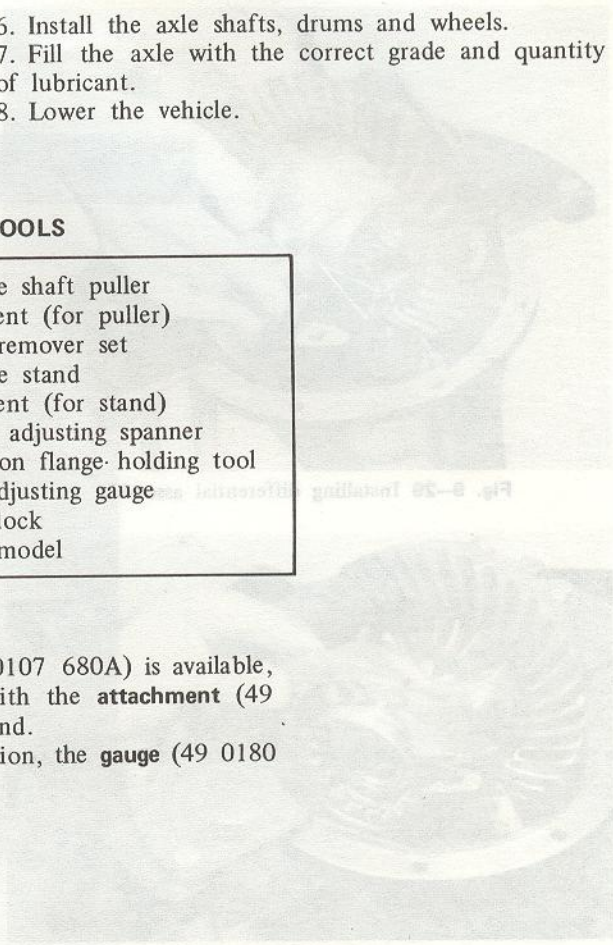


Fig. 9-30 Installing bearing cap

respective outer races and the end play is eliminated with some backlash existing between the ring gear and drive pinion.
 2. Slightly tighten one of the bearing cap bolts on each side and adjust the backlash, as mentioned in the following paragraph.

9-E-5. Adjusting Backlash

1. Secure a dial indicator to the carrier frame so that the feeler comes in contact at right angles with one of the ring gear teeth.
2. Check the backlash between the ring gear and drive pinion. With the spanner (49 0259 720) (and both

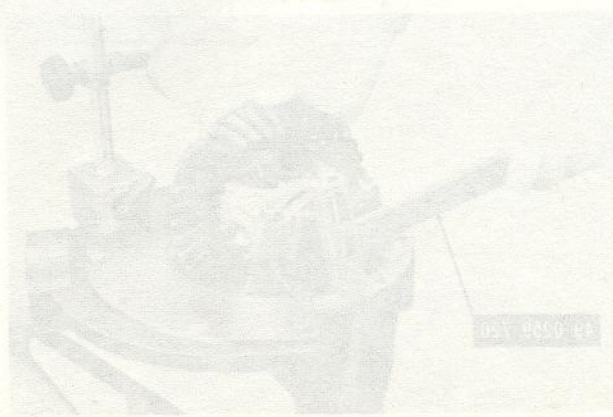


Fig. 9-31 Adjusting backlash

DESCRIPTION

MAZDA RX-4 and 929 are equipped with a semi-floating type rear axle with a hypoid ring gear and pinion set. The final reduction ratio is 3.900.

9-A. REAR AXLE SHAFT

9-A-1. Removing Rear Axle Shaft

1. Raise the rear end of the vehicle and support the rear axle housing with stands.
2. Remove the rear wheel and brake drum.
3. Remove the brake shoe assembly, as detailed in Par. 11-F-1.
4. Remove the nuts holding the brake backing plate and bearing retainer to the axle housing.
5. Remove the center cap adapter from the axle shaft flange, if equipped.
6. Extract the axle shaft assembly using the **puller** (49 0223 630A and 49 0259 631).



Fig. 9-1 Removing rear axle shaft

7. Remove the oil seal from the axle housing, if necessary.

9-A-2. Replacing Axle Shaft Bearing

1. Remove the rear axle shaft assembly as described in Par. 9-A-1.
2. Using the **bearing remover set** (49 1011 745),

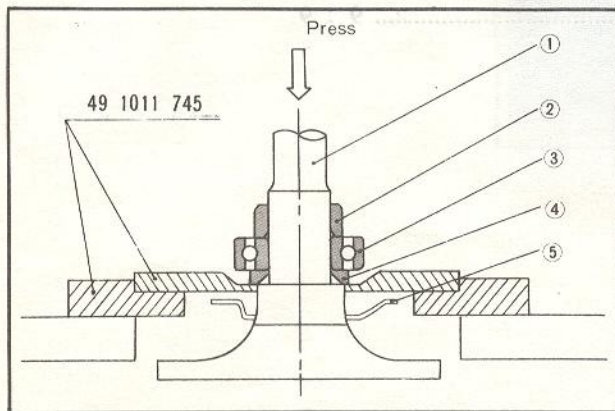


Fig. 9-2 Bearing replacer

- | | |
|--------------------|-------------|
| 1. Rear axle shaft | 4. Spacer |
| 2. Collar | 5. Retainer |
| 3. Bearing | |

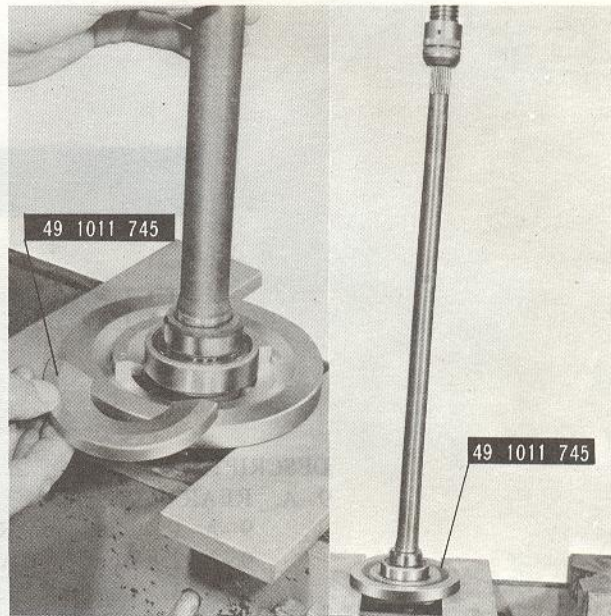


Fig. 9-3 Removing bearing and collar

support the spacer and press the axle shaft out of the collar and bearing, as shown in Fig. 9-2.

Note: In case the pressure necessary to press out the axle shaft exceeds 10 tons (22,000 lb) or if the bearing remover set is not available, grind off the part of bearing retaining collar and cut it with the use of a chisel, as shown in Fig. 9-4, taking care not to damage the axle shaft.



Fig. 9-4 Cutting bearing retaining collar

3. Remove the bearing retainer from the axle shaft.
4. Clean all parts and check the condition of the collar, spacer and axle shaft.
5. Install the bearing retainer and spacer onto the axle shaft.
6. Position the bearing on the axle shaft with the sealed side toward the axle shaft flange, and press it on until the spacer comes in contact with the shoulder of the shaft.
7. Press the bearing retaining collar onto the axle shaft using the **bearing replacer** (49 1011 745) until it is

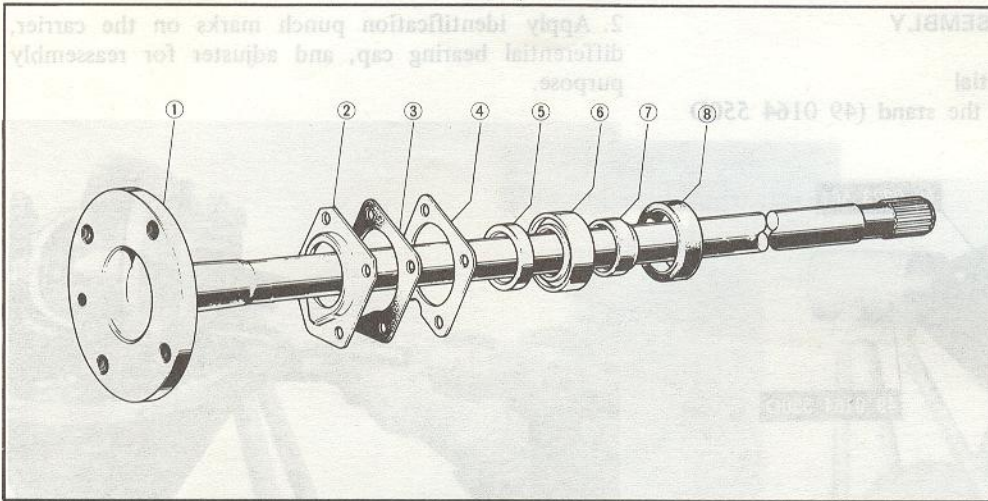


Fig. 9-7
Rear axle shaft

1. Rear axle shaft
2. Bearing retainer
3. Gasket
4. Shim
5. Spacer
6. Bearing
7. Bearing collar
8. Oil seal

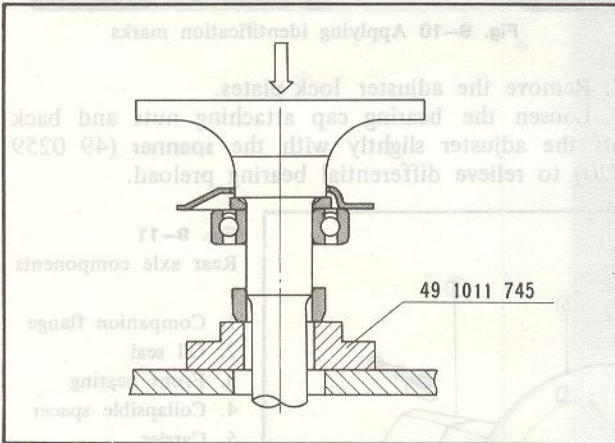


Fig. 9-5 Installing bearing retaining collar

firm contact with the bearing inner race.

Note: If the bearing retaining collar is press-fitted with less than 2.5 tons (5,500 lb), replace the collar with a new one.

9-A-3. Installing Rear Axle Shaft

1. Apply grease to the oil seal located in the axle housing.
2. Check the rear axle shaft end play as follows: Install the backing plate temporarily and measure the depth of the bearing seat in the axle housing, using a depth gauge as shown in Fig. 9-6.

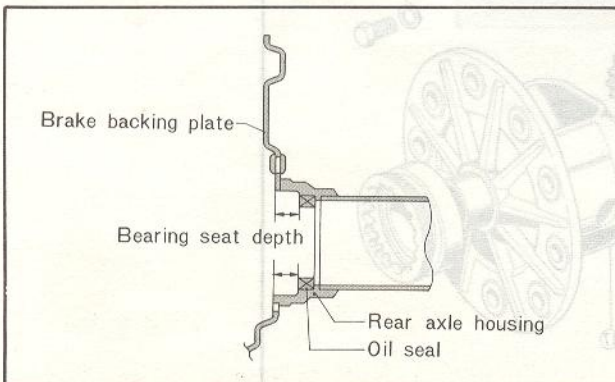


Fig. 9-6 Measuring depth of bearing seat

Then, measure the width of bearing outer race. The difference between the two measurements indicates the required thickness of the shims. The maximum permissible end play is 0.1 mm (0.004 in). Shims are available in thickness of 0.1 mm and 0.4 mm (0.004 in and 0.016 in).

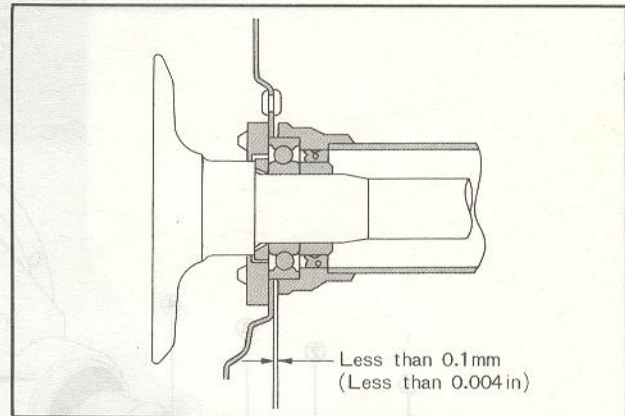


Fig. 9-8 End play

3. Remove the brake backing plate.
4. Apply a thin coat of sealer to both sides of the shims.
5. Install the rear axle shaft assembly, gasket and shims through the brake backing plate to the rear axle housing. Tighten the nuts.
6. Install the brake shoe assembly.
7. Install the brake drum and the wheel.

9-B. REAR AXLE REMOVAL

1. Jack up the vehicle until the rear wheels are clear of the ground.
2. Drain the oil by removing the drain plug. Reinstall the drain plug after all oil is out. (As the plug is magnetic, it should be cleaned.)
3. Remove the rear axle shafts, referring to Par. 9-A-1.
4. Mark the companion flange and propeller shaft for correct reassembly; then disconnect the propeller shaft.
5. Remove the nuts supporting the rear axle to the rear axle housing and remove the rear axle.

9-C. REAR AXLE DISASSEMBLY

9-C-1. Removing Differential

1. Mount the rear axle on the stand (49 0164 550D and 49 0223 561).

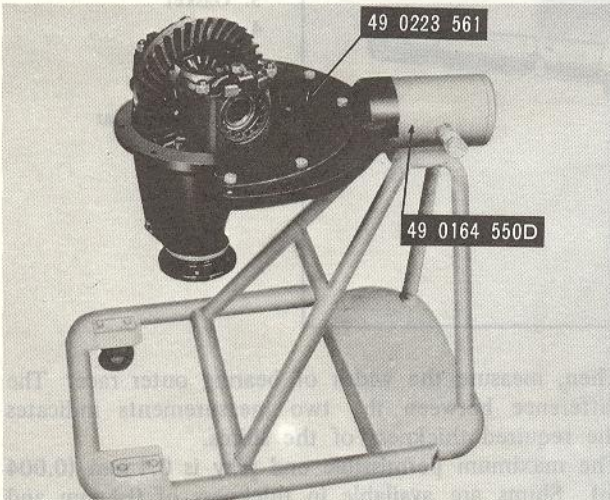


Fig. 9-9 Stand for rear axle

2. Apply identification punch marks on the carrier, differential bearing cap, and adjuster for reassembly purpose.

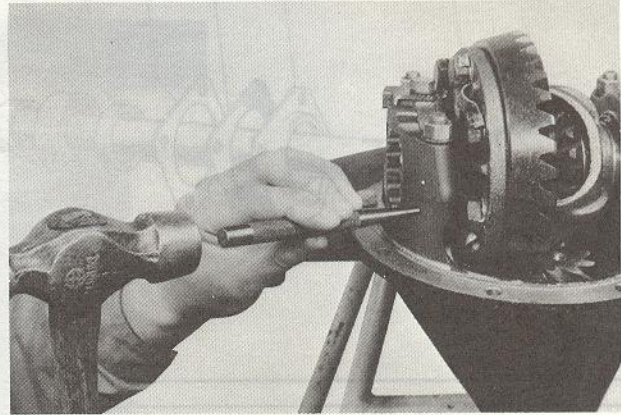


Fig. 9-10 Applying identification marks

3. Remove the adjuster lock plates.
4. Loosen the bearing cap attaching nuts and back off the adjuster slightly with the spanner (49 0259 720) to relieve differential bearing preload.

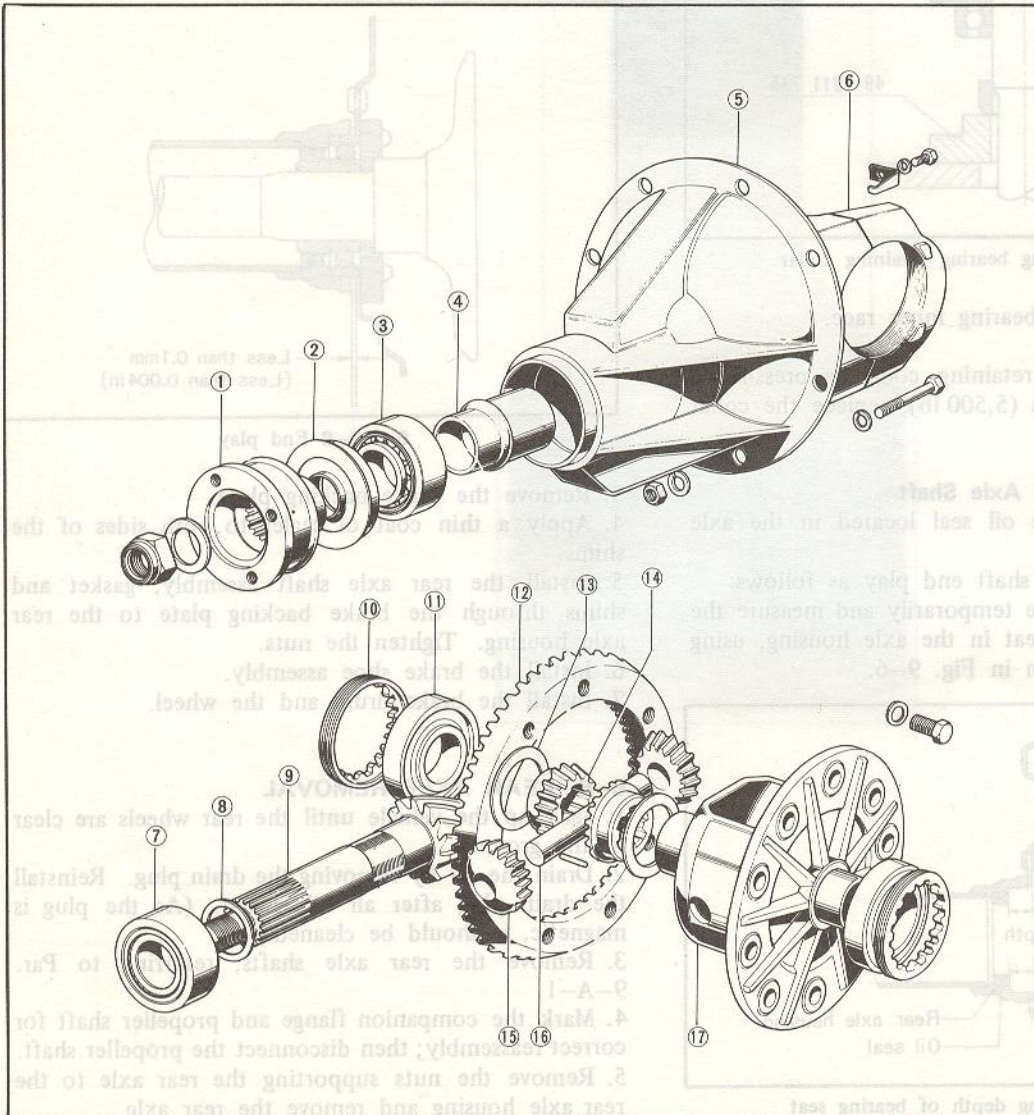


Fig. 9-11
Rear axle components

1. Companion flange
2. Oil seal
3. Front bearing
4. Collapsible spacer
5. Carrier
6. Bearing cap
7. Rear bearing
8. Spacer
9. Drive pinion
10. Adjusting screw
11. Differential bearing
12. Ring gear
13. Thrust washer
14. Side gear
15. Pinion gear
16. Pinion shaft
17. Gear case

5. Remove the differential assembly together with the bearing outer races. Make certain that each bearing outer race remains with its respective bearing.

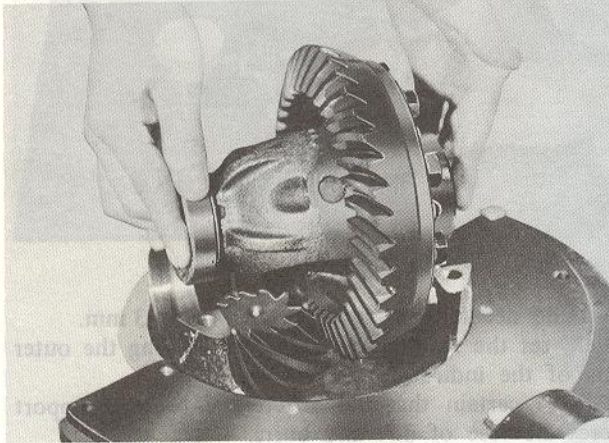


Fig. 9-12 Removing differential assembly

9-C-2. Disassembling Differential

1. If the bearing replacement is necessary, remove the bearings from the differential gear case with a suitable puller.
2. Remove the bolts and washers that attach the ring gear to the gear case. Remove the ring gear.

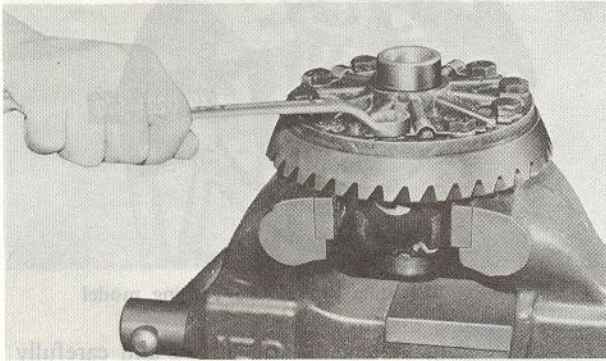


Fig. 9-13 Removing ring gear

3. From the back side of the ring gear flange, drive the pinion shaft lock pin out of the gear case with a suitable drift, as shown in Fig. 9-14.

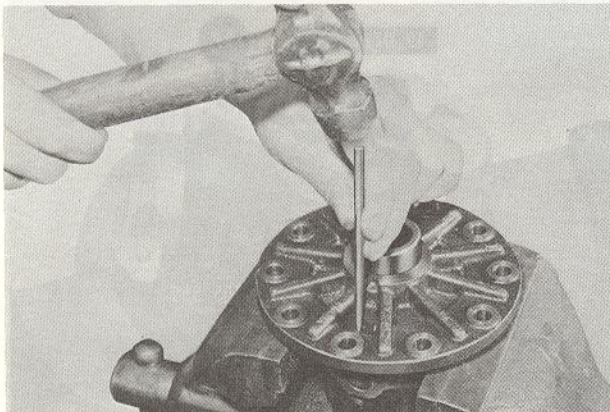


Fig. 9-14 Removing pinion shaft lock pin

4. Remove the pinion shaft.

5. Rotate the differential pinion gears 90 degrees and remove each pinion gear.
6. Remove the differential side gears and thrust washers.

9-C-3. Removing Drive Pinion

1. Hold the companion flange with the holder (49 0259 710A) and remove the drive pinion nut.

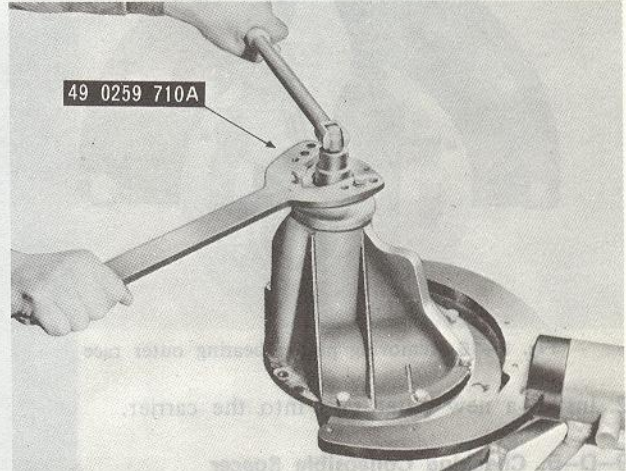


Fig. 9-15 Loosening pinion nut

2. Remove the companion flange.
3. Remove the drive pinion and rear bearing from the carrier. If necessary, tap the pinion out with a plastic hammer, while being careful to guide the pinion with hand to avoid damage.
4. Remove the oil seal and the front bearing.

9-D. REAR AXLE INSPECTION

9-D-1. Checking Drive Pinion and Ring Gear

Check the drive pinion for damaged or excessively worn teeth, damaged bearing journals and splines. Inspect the ring gear for worn or chipped teeth. If any of above conditions is found, replace both drive pinion and ring gear as they are available only in set.

9-D-2. Checking Differential Gears

Inspect the differential side gears and pinion gears for cracks, chipped teeth or any damage. Replace the side gears, pinion gears or thrust washers if necessary. Check the clearance between the pinion gear and shaft. If excessive clearance is found due to wear, replace with new parts.

Check the spline fit of the side gear and rear axle shaft. If excessive clearance is found, replace the side gear or rear axle shaft.

9-D-3. Checking Bearings

Inspect the differential bearings and pinion bearings for wear, flaking or any damage. If inspection reveals that either bearing cones or outer race are unfit for further service, replace the bearing.

9-D-4. Replacing Pinion Bearing Outer Race

If it becomes necessary to replace the pinion bearing

outer race(s), proceed as follows:

1. Remove the old outer race from the carrier by using a drift in slots provided for this purpose.

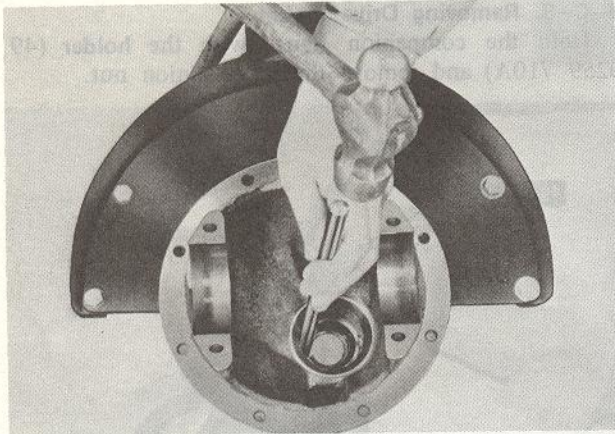


Fig. 9-16 Removing pinion bearing outer race

2. Install a new outer race into the carrier.

9-D-5. Checking Collapsible Spacer

Measure the length of the collapsible spacer with a micrometer. The standard length is 57 ± 0.15 mm (2.2441 ± 0.0059 in).

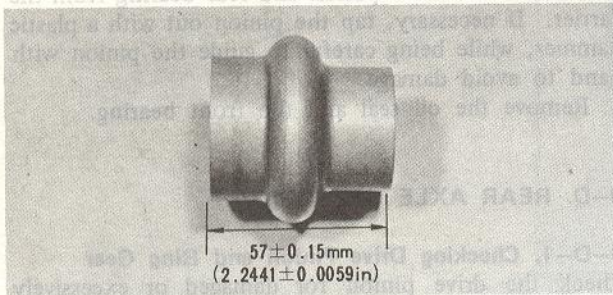


Fig. 9-17 Collapsible spacer

9-D-6. Checking Oil Seal

Check the oil seal for wear or damage. If there is any possibility of oil leakage, replace the oil seal.

9-D-7. Checking Companion Flange

Check the companion flange for cracks, worn splines, or rough oil seal contacting surface. Repair or replace the companion flange if necessary.

9-E. REAR AXLE ASSEMBLY

9-E-1. Adjusting Drive Pinion

The drive pinion should be correctly positioned in relation to the ring gear by the use of spacer which is placed between the drive pinion and the pinion rear bearing.

To adjust the drive pinion position, use the special gauge (49 0727 570 and 49 0305 555) and proceed as follows:

1. Install the dial indicator to the gauge body. Place the gauge body on the surface plate as shown in Fig. 9-18 and lock the dial indicator by the screw so



Fig. 9-18 ZERO setting

that the needle is pointing toward 1 to 3 mm. Then, set the reading to "Zero" by turning the outer ring of the indicator.

2. Make certain that the differential bearing support bores are free of dirt and burrs.

3. Install the pinion and bearing model (49 0221 572) together with a spacer into the carrier.



Fig. 9-19 Installing pinion and bearing model

4. Place the gauge block on the pinion and carefully place the gauge body adjusted in Step 1 on the gauge block so that the feeler of the indicator comes in contact with the lowest portion of the differential bearing support bore.

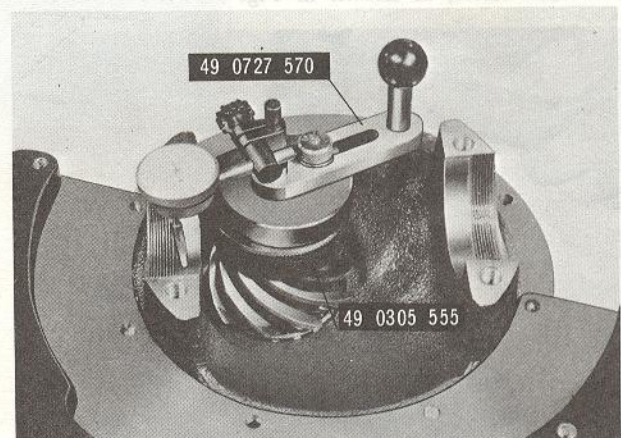


Fig. 9-20 Measuring pinion height

5. Record the number of hundredths dial indicator

moves in a "+" (plus) or "-" (minus) direction from zero. Remove the gauge body and dial indicator from the carrier and check zero setting on the surface plate to make sure this setting was not disturbed by handling.

6. In order to compensate for all of the machining variables, the pinion has a plus or minus reading recorded in hundredth millimeters on the rear face of the pinion.

(a) If the pinion is marked "+" (plus), subtract the amount specified on the pinion.

(b) If the pinion is marked "-" (minus), add the amount specified on the pinion.

7. Place the bearing model and the rear pinion bearing on the surface plate and compare their heights as shown in Fig. 9-21.

(a) If the bearing is higher than the model, subtract the amount equivalent to the difference.

(b) If the bearing is lower than the model, add the amount equivalent to the difference.

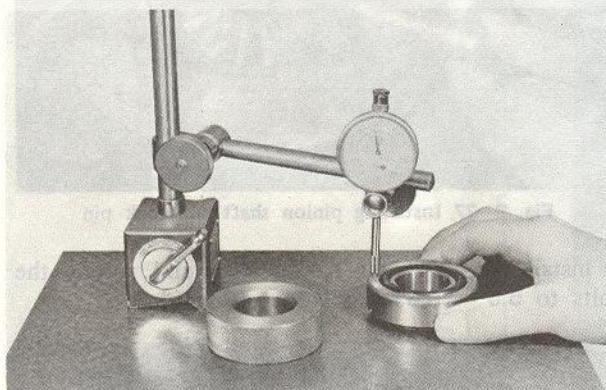


Fig. 9-21 Measuring bearing height

8. Finally select the correct pinion spacer to be used during pinion assembly by adding or subtracting the amount determined in Step 5, 6 and 7 from the thickness of the spacer used in Step 3.

The spacers are available in the following thickness:

Identification mark	Thickness
08	3.08 mm (0.1213 in)
11	3.11 mm (0.1224 in)
14	3.14 mm (0.1236 in)
17	3.17 mm (0.1248 in)
20	3.20 mm (0.1260 in)
23	3.23 mm (0.1271 in)
26	3.26 mm (0.1283 in)
29	3.29 mm (0.1295 in)
32	3.32 mm (0.1307 in)
35	3.35 mm (0.1319 in)
38	3.38 mm (0.1331 in)
41	3.41 mm (0.1343 in)
44	3.44 mm (0.1354 in)
47	3.47 mm (0.1366 in)

9. Position the correct spacer on the pinion and install the rear pinion bearing.

9-E-2. Adjusting Pinion Bearing Preload

1. Position the pinion assembly in the carrier and

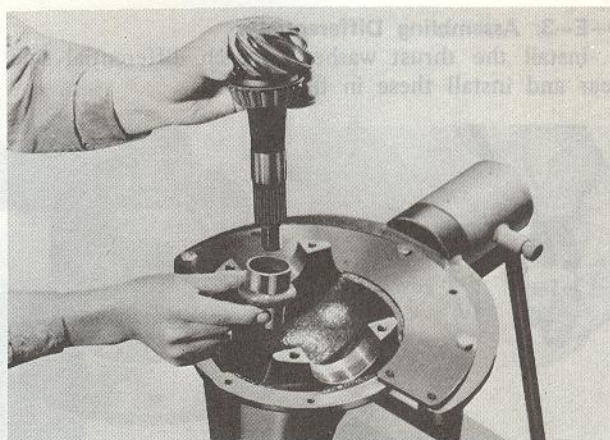


Fig. 9-22 Installing pinion and collapsible spacer

install the collapsible spacer as shown in Fig. 9-22.

2. Place the front pinion bearing in position on the pinion. Hold the pinion fully forward and drive the pinion bearing over the pinion until seated.

3. Apply gear lubricant to the lip of the pinion oil seal and install the pinion oil seal into the carrier.

4. Install the companion flange on the pinion by tapping with a soft hammer.

5. Install the pinion washer and nut. Before tightening the nut (When the pinion preload is Zero), check the drag by the oil seal by using a torque wrench.

6. Tighten the pinion nut to **13 m-kg (94 ft-lb)** and check the preload as shown in Fig. 9-23.



Fig. 9-23 Checking pinion bearing preload

Note: After preload has been checked, final tightening should be done very cautiously.

The pinion nut should be further tightened only a little at a time and preload should be checked after each slight amount of tightening. Exceeding preload specifications will compress the collapsible spacer too far and requires its replacement. The maximum tightening torque of the nut is 18 m-kg (130 ft-lb).

7. While observing the preceding caution, carefully set the preload drag at **9 to 14 cm-kg (7.8 to 12.2 in-lb)** plus the oil seal drag determined in Step 5.

Note: If the preload is measured by using a spring scale at the bolt hole of the companion flange, the reading should be 2.5 ~ 4.0 kg (5.6 ~ 9.6 lb).

9-E-3. Assembling Differential

1. Install the thrust washer on each differential side gear and install these in the gear case.

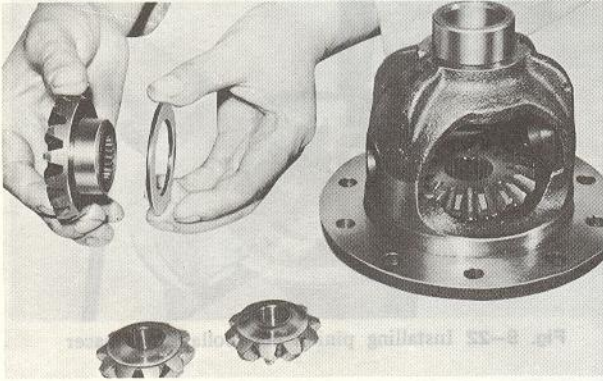


Fig. 9-24 Installing side gear and thrust washer

2. Through the openings of the gear case, insert each of two pinion gears exactly 180 degrees opposite each other.

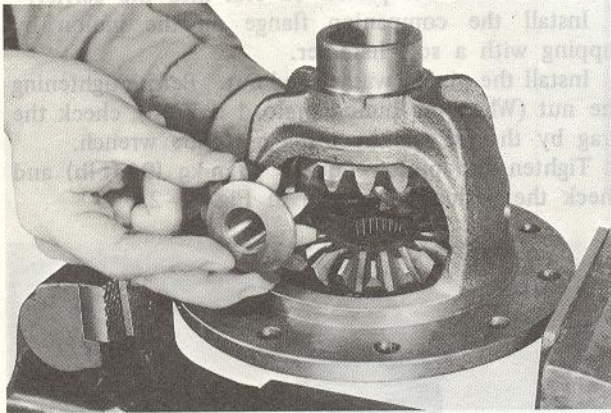


Fig. 9-25 Installing differential gears

3. Rotate the gears 90 degrees so that the pinion shaft holes of the case come into alignment with the holes in the pinion gears.

4. Insert the pinion shaft through the case and pinion gears.

5. Check the backlash of the side gear and pinion gear.

The backlash should be 0 to 0.1 mm (0 to 0.004 in).

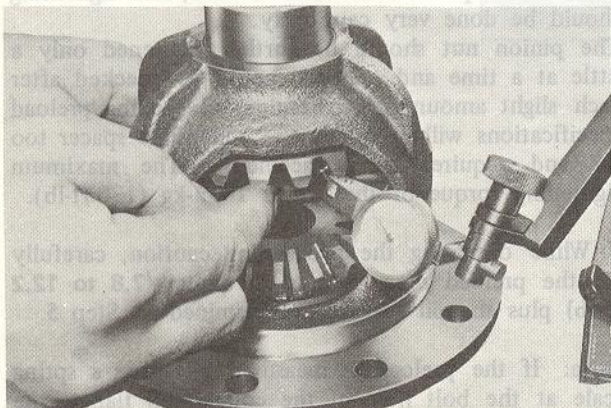


Fig. 9-26 Checking backlash of pinion and side gear

If it is more than 0.1 mm (0.004 in), adjustment can be made with the side gear thrust washers.

The following thrust washers are available:

Identification mark	Thickness
0	2.0 mm (0.0787 in)
1	2.1 mm (0.0827 in)
2	2.2 mm (0.0866 in)

6. Install the lock pin to secure the pinion shaft. Stake the lock pin into position with a punch to prevent it from working out.

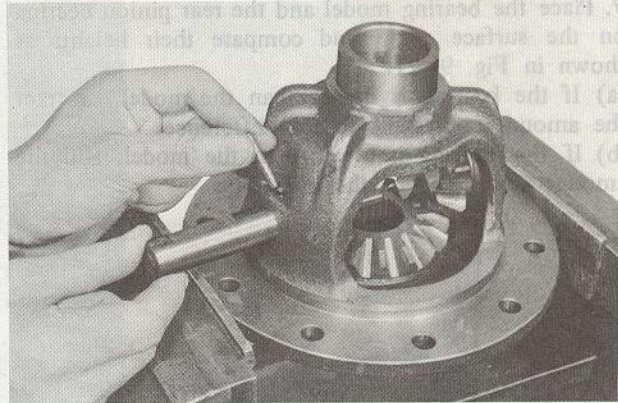


Fig. 9-27 Installing pinion shaft and lock pin

7. Install the ring gear to the case and torque the bolts to 5.5 ~ 6.5 m·kg (40 ~ 47 ft·lb).

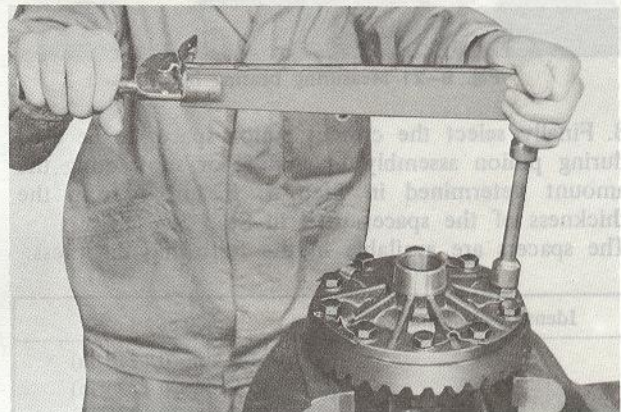


Fig. 9-28 Tightening ring gear bolts

8. Install each differential bearing to the gear case.

9. Install the differential bearing outer races to their respective bearings.

9-E-4. Installing Differential

1. Place the differential gear assembly in the carrier, making sure that the marks on the face of the pinion and ring gear tooth are in alignment.

2. Note the identification marks on the adjusters and install each to its respective side.

3. Install the differential bearing caps making sure that the identification marks on the caps correspond with those on the carrier and install the attaching bolts.

4. Turn the adjusters with the spanner (49 0259 720) until the bearings are properly positioned in their

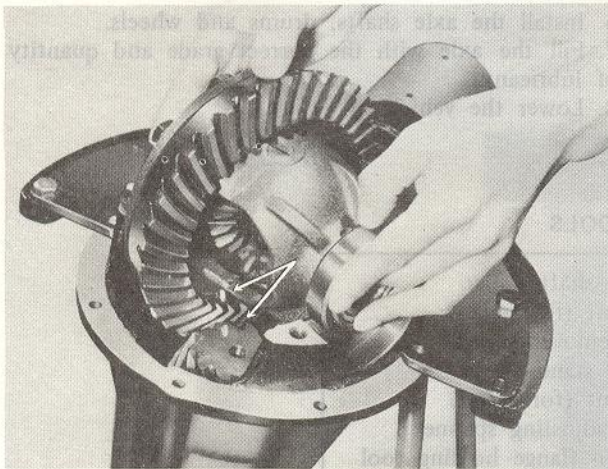


Fig. 9-29 Installing differential assembly

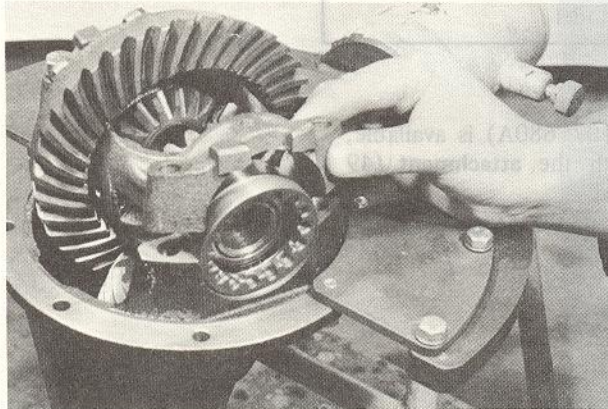


Fig. 9-30 Installing bearing cap

respective outer races and the end play is eliminated with some backlash existing between the ring gear and drive pinion.

5. Slightly tighten one of the bearing cap bolts on each side and adjust the backlash, as instructed in the following paragraph.

9-E-5. Adjusting Backlash

1. Secure a dial indicator to the carrier flange so that the feeler comes in contact at right angles with one of the ring gear teeth.

2. Check the backlash between the ring gear and drive pinion. With the spanner (49 0259 720), turn both

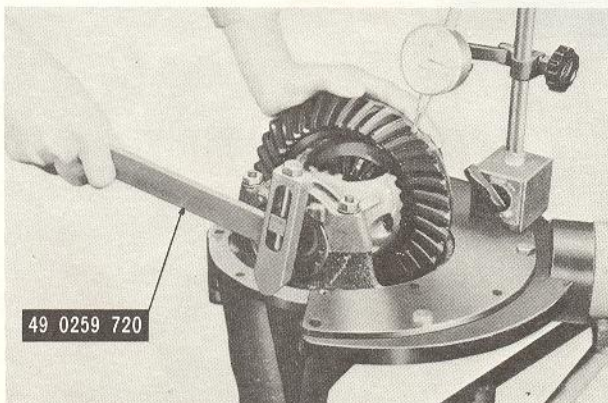


Fig. 9-31 Adjusting backlash

bearing adjusters equally until the backlash becomes 0.17 to 0.19 mm (0.0067 to 0.0075 in).

3. The preload on the differential bearings is obtained by tightening the adjusters. Tighten the adjusters until the distance between both pilot sections on the bearing caps becomes 185.428 ~ 185.5 mm (7.3004 ~ 7.3033 in), as shown in Fig. 9-32.

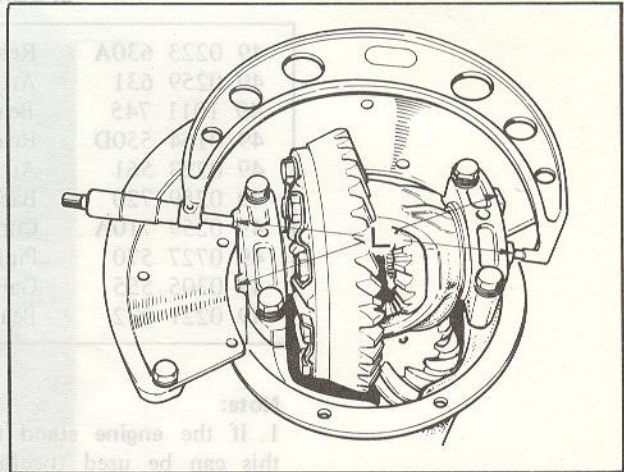


Fig. 9-32 Adjusting bearing preload (case spread)

Note: When adjusting the preload, care must be taken not to affect the backlash of the drive pinion and ring gear.

4. Tighten the bearing cap bolts to a torque of 3.2 ~ 4.7 m·kg (23 ~ 34 ft·lb).

5. Install the adjuster lock plates on the bearing caps to prevent the adjusters from loosening.

6. Check the tooth contact of the ring gear and pinion by applying a thin coat of red lead on both sides of about six or eight of ring gear teeth and rotating the ring gear few times to and fro.

If the pinion position and backlash have been correctly set, the contact pattern should be as shown in Fig. 9-33.

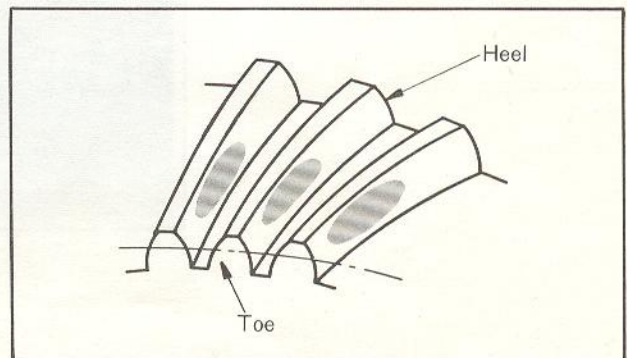


Fig. 9-33 Correct tooth contact

9-F. REAR AXLE INSTALLATION

1. Clean the sealing surface of the carrier and the housing. No gasket is required.

2. Apply oil resistant sealer to the surfaces.

3. Position the carrier to the housing.

4. Install the nuts and torque them to 1.6 ~ 2.3

STEERING

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10-A-2. Steering Wheel Removal	10 : 1
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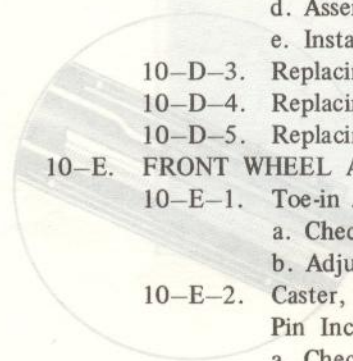
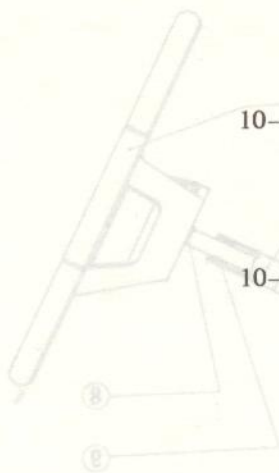


Fig. 10-1 Steering assembly
 1. Flexible coupling yoke
 2. Steering gear housing
 3. Set plate
 4. Gasket
 5. Idler arm
 6. Steering wheel
 7. Steering column shaft
 8. Retaining ring
 9. Bush

DESCRIPTION

The steering system consists of the steering gear, steering column, steering lock assembly, steering wheel and steering linkage. The steering lock assembly is installed at the upper portion of the steering column shaft and at the lower section is provided with a flexible coupling yoke utilizing a two-joint steering column shaft mechanism and also a collapsible type column shaft is utilized. The steering gear is of a recirculating ball nut type and the steering gear ratio varies from 18.0 : 1 to 20.0 : 1, according to the turning angle of the sector shaft. Therefore, this steering gear provides easy steering.

The steering linkage consists of the pitman arm, center link (pitman arm to idler arm), idler arm and bracket assembly, and tie-rods.

The steering linkage ball joints and idler arm are filled with lithium grease and are sealed completely which require no lubrication service.

The toe-in, camber and caster can be adjusted.

10-A. STEERING WHEEL

10-A-1. Checking Steering Wheel Play

The steering wheel play should be 5 ~ 20 mm (0.20 ~ 0.79 in). With the front wheels on the ground and in the straight ahead position, move the steering wheel in both directions without moving the front wheels.

If excessive play is found, the following points should be carefully checked.

1. Fit of the ball joints of the steering linkage
2. Looseness of the wheel bearings
3. Backlash between the sector gear and ball nut

10-A-2. Steering Wheel Removal

1. Pull the steering wheel pad toward the top of the wheel.
2. Punch the mating marks on the steering wheel hub and the column shaft.
3. Remove the steering wheel attaching nut and then

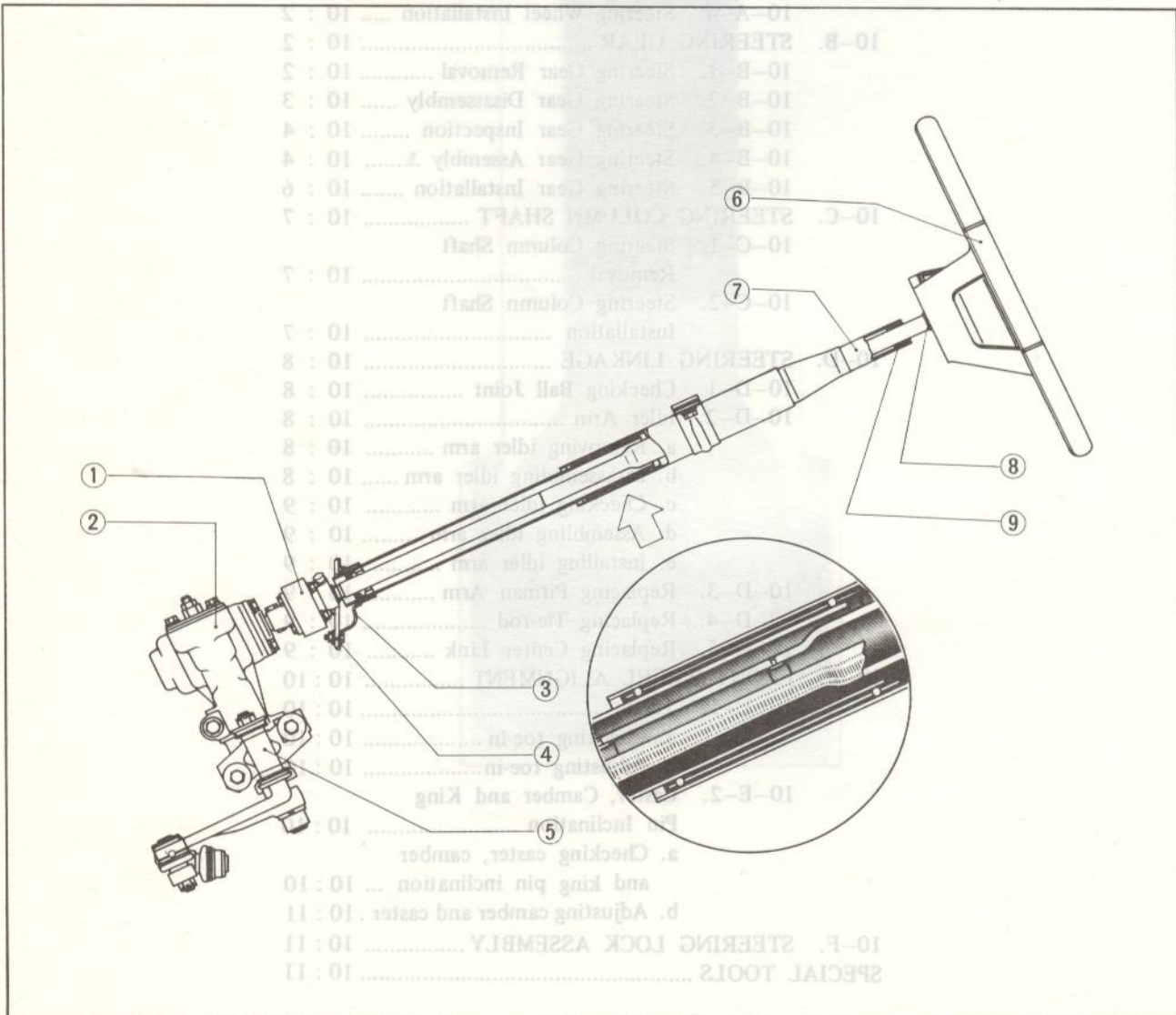


Fig. 10-1 Steering assembly

- | | | |
|---------------------------|-------------------|--------------------------|
| 1. Flexible coupling yoke | 4. Gasket | 7. Steering column shaft |
| 2. Steering gear housing | 5. Idler arm | 8. Retaining ring |
| 3. Set plate | 6. Steering wheel | 9. Bush |

remove the steering wheel assembly.

Note :

Do not use any hammer for removal and never pound on the column shaft.

4. Disconnect the wiring harness at the connector under the instrument panel.
5. Remove the retaining ring that secures the combination switch assembly and lift the switch assembly over the column shaft.

10-A-3. Steering Wheel Inspection

1. Cracks and damage of the steering wheel
2. Damage of the horn button contact plate, seat, washer, cushion and the spring
3. Cracks and damage of the horn button
4. Function of the combination switch assembly

10-A-4. Steering Wheel Installation

Follow the removal procedures in the reverse order.

10-B. STEERING GEAR

10-B-1. Steering Gear Removal

1. Raise the front end of the vehicle and support with stands.



Fig. 10-2 Disconnecting center link

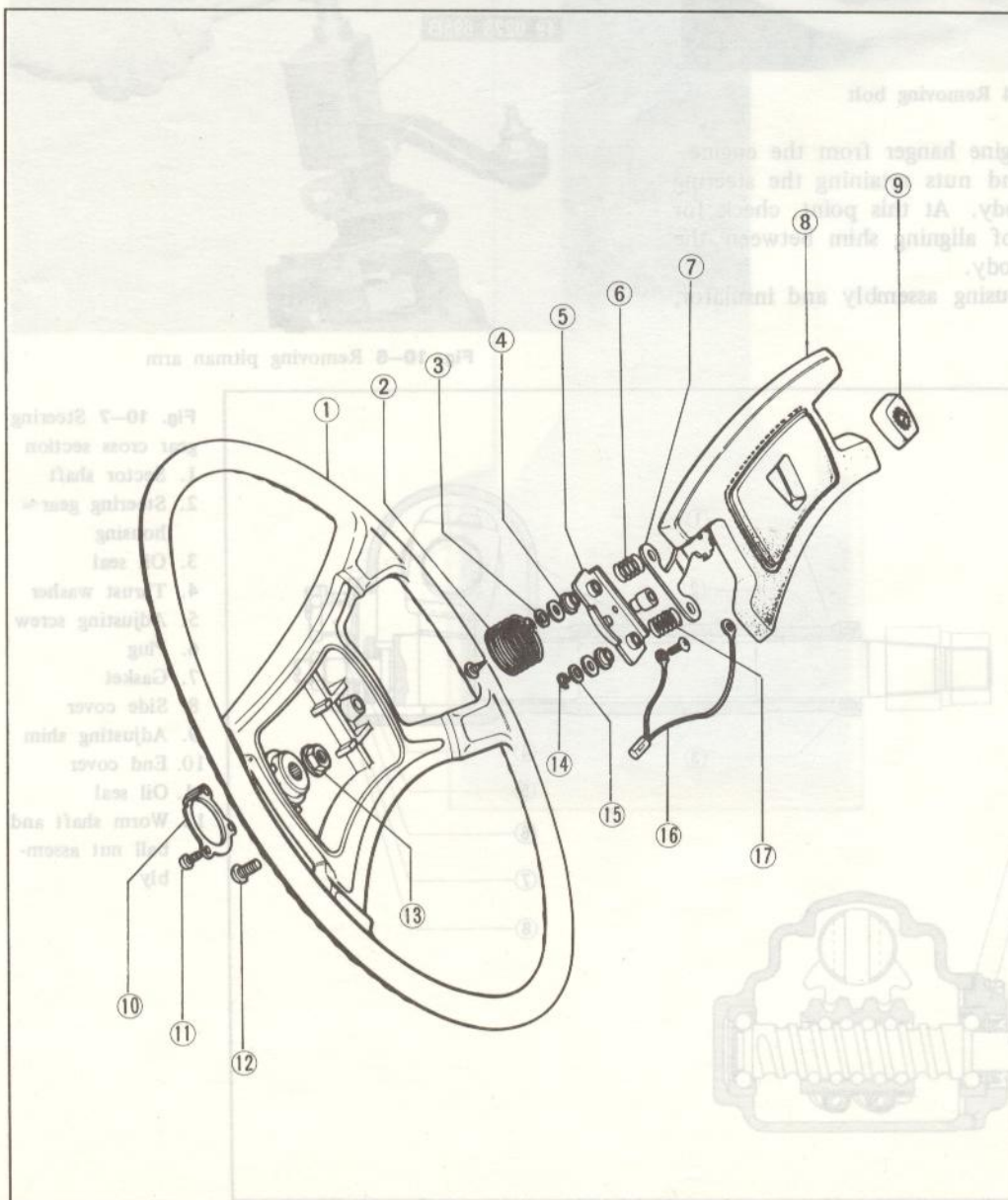


Fig. 10-3 Steering wheel components

1. Steering wheel
2. Spring
3. Washer
4. Bush
5. Plate
6. Spring
7. Earth plate
8. Horn cap
9. Emblem
10. Terminal
11. Bolt
12. Bolt
13. Nut
14. "E" ring
15. Washer
16. Cord
17. Rubber tube

2. Remove the cotter pin and castellated nut attaching the center link to the pitman arm.
3. Disconnect the center link from the pitman arm with the ball joint puller (Part No. 49 0118 850A).
4. Remove the screws attaching the insulator to the pitman arm and remove the insulator.
5. Remove the bolt securing the flexible coupling yoke to the worm shaft.

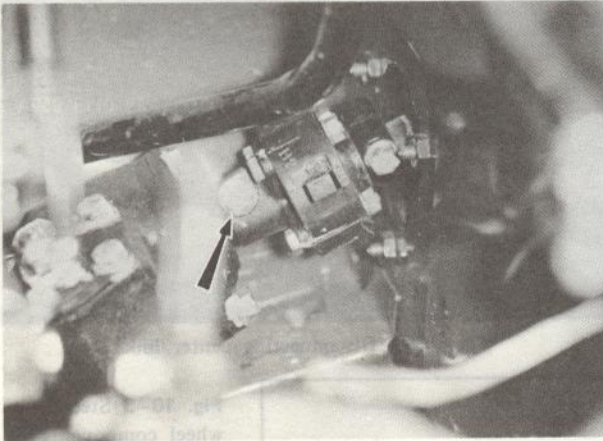


Fig. 10-4 Removing bolt

6. Remove the rear engine hanger from the engine.
7. Remove the bolts and nuts retaining the steering gear housing to the body. At this point, check for the possible presence of aligning shim between the gear housing and the body.
8. Remove the gear housing assembly and insulator, and lower the vehicle.

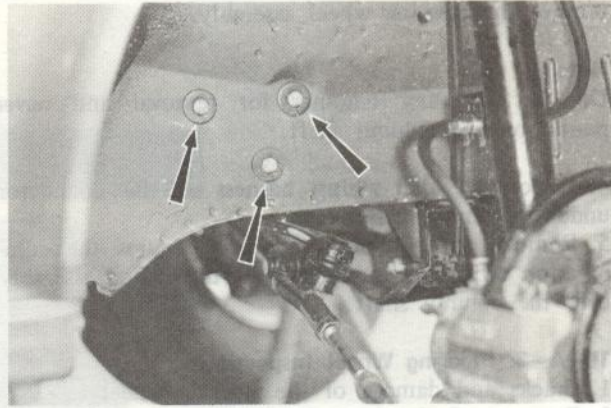


Fig. 10-5 Removing steering gear housing

10-B-2. Steering Gear Disassembly

1. Drain lubricant from the gear housing by removing



Fig. 10-6 Removing pitman arm

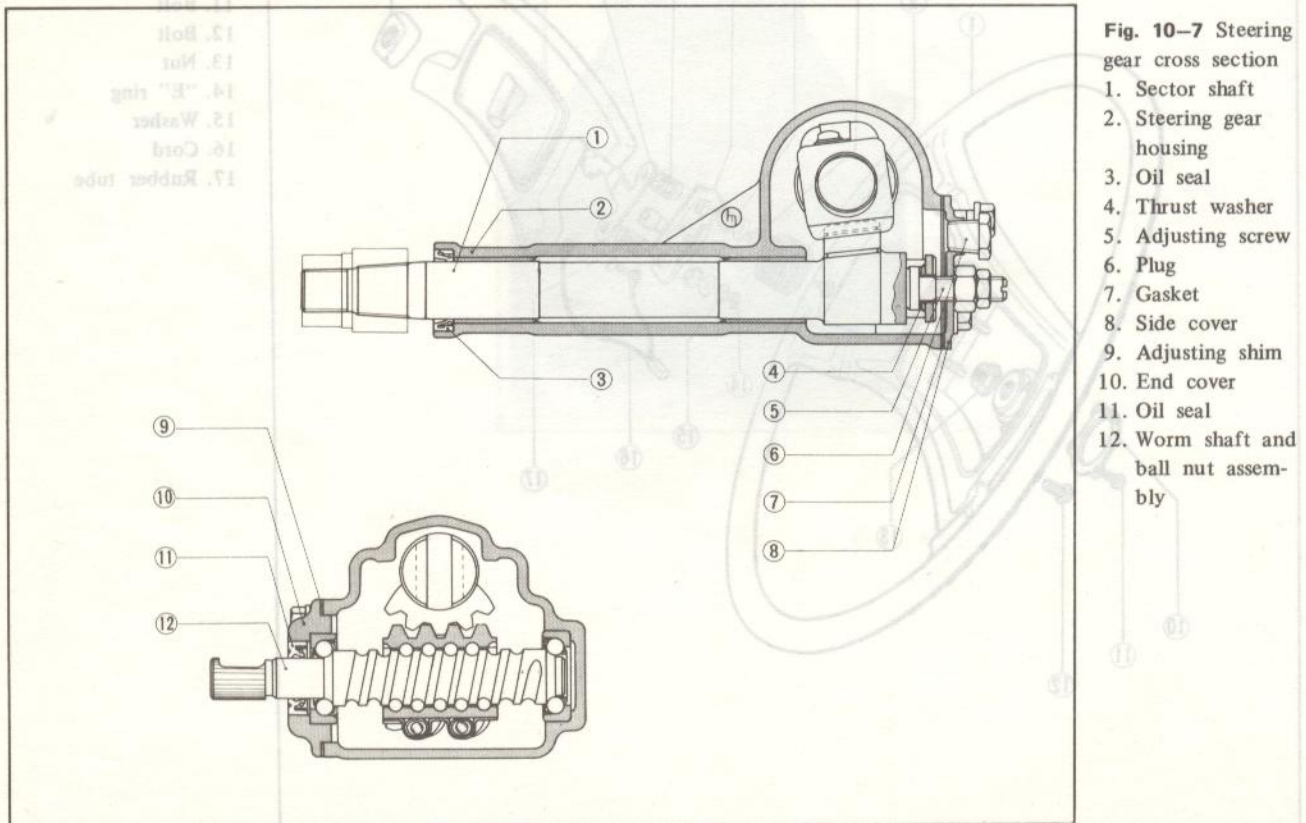


Fig. 10-7 Steering gear cross section

1. Sector shaft
2. Steering gear housing
3. Oil seal
4. Thrust washer
5. Adjusting screw
6. Plug
7. Gasket
8. Side cover
9. Adjusting shim
10. End cover
11. Oil seal
12. Worm shaft and ball nut assembly

- the plug.
- Remove the nut attaching the pitman arm and remove the pitman arm with the **pitman arm puller** (Part No. 49 0223 695B), as shown in Fig. 10-6.
 - Remove the bolts that attach the side cover to the gear housing and loosen the sector shaft adjusting screw lock nut, then remove the sector shaft side cover screwing in the sector shaft adjusting screw.
 - Remove the sector shaft adjusting screw and shim from the slot at the end of the sector shaft.
 - Remove the sector shaft from the gear housing.

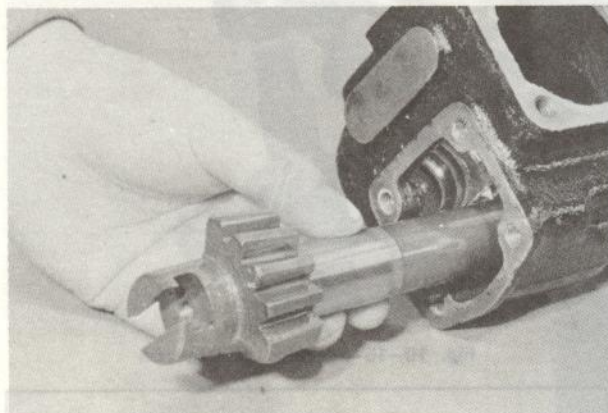


Fig. 10-8 Removing sector shaft

- Remove the bolts that attach the end cover to the gear housing and remove the end cover and shims.
- Remove the worm shaft and ball nut assembly from the gear housing.
- Remove the oil seal from the gear housing, if necessary.

10-B-3. Steering Gear Inspection

- Check the steering wheel for cracks or damage.
- Check the operation of the ball nut assembly on the worm shaft. If the ball nut does not travel smoothly and freely on the worm shaft, the ball nut and worm shaft assembly should be replaced.

Note :

The worm shaft and ball nut are serviced as an assembly only.

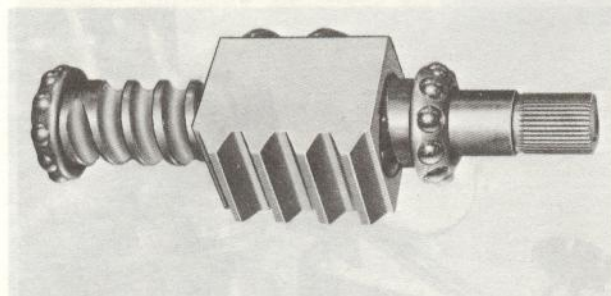


Fig. 10-9 Worm shaft and ball nut assembly

- Check the sector shaft for wear or damage at the gear surface.

- Check the oil seal for wear, flaw, or any damage. If there is any possibility of oil leakage, replace the oil seal.

10-B-4. Steering Gear Assembly

- Install the oil seal to the gear housing.
- Insert the worm shaft and ball nut assembly into the gear housing.
- Install the end cover and the bearing preload adjusting shims to the gear housing and tighten the end cover attaching bolts to **1.6 ~ 2.3 m-kg (12.0 ~ 17.0 ft-lb)**.

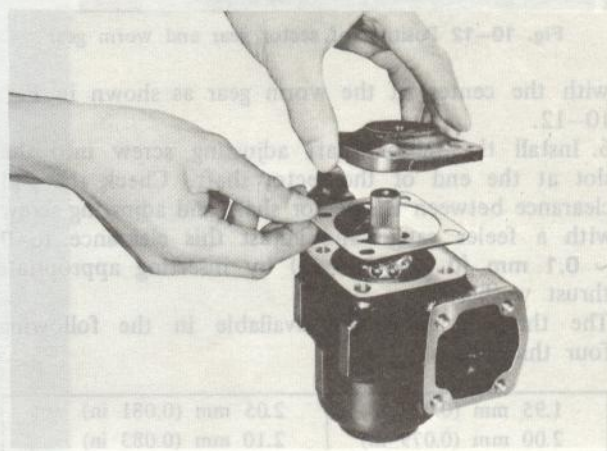


Fig. 10-10 Installing end cover and adjusting shim

- Adjust the bearing preload. To check the preload, attach the **preload checking tool** (Part No. 49 0180 510A) onto the worm shaft and connect a pull scale to the preload checking tool. Pull the scale gradually, and read the scale keeping the worm shaft rotating. If the reading is less than **0.1 kg (0.22 lb)**, reduce the shim, and add the shim if the preload is more than **0.4 kg (0.88 lb)**.

The following shims are available.

0.050 mm (0.002 in)	0.100 mm (0.004 in)
0.075 mm (0.003 in)	0.200 mm (0.008 in)

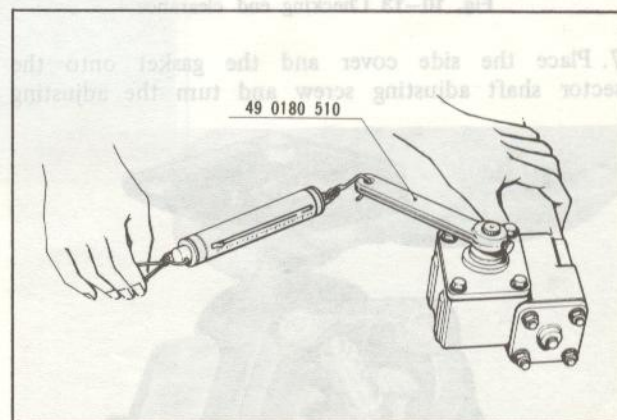


Fig. 10-11 Checking bearing preload

- Insert the sector shaft into the gear housing, being careful not to damage the oil seal, and ensuring that the center of the sector gear is in alignment

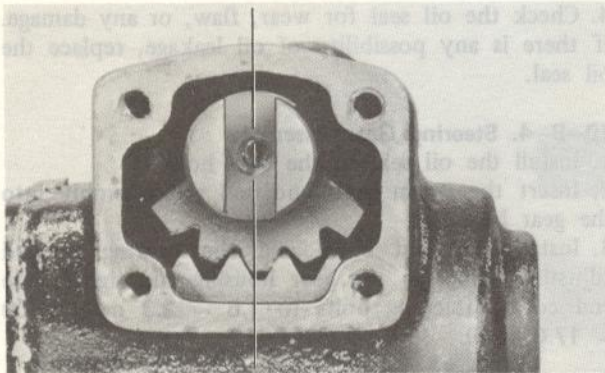


Fig. 10-12 Position of sector gear and worm gear

with the center of the worm gear as shown in Fig. 10-12.

6. Install the sector shaft adjusting screw into the slot at the end of the sector shaft. Check the end clearance between the sector shaft and adjusting screw with a feeler gauge and adjust this clearance to 0 ~ 0.1 mm (0 ~ 0.004 in) by inserting appropriate thrust washer.

The thrust washers are available in the following four thicknesses :

1.95 mm (0.077 in)	2.05 mm (0.081 in)
2.00 mm (0.079 in)	2.10 mm (0.083 in)

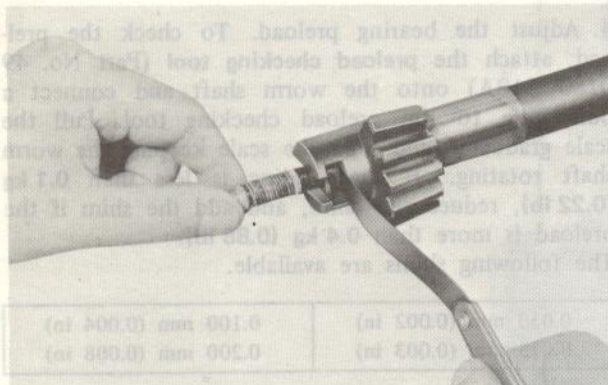


Fig. 10-13 Checking end clearance

7. Place the side cover and the gasket onto the sector shaft adjusting screw and turn the adjusting

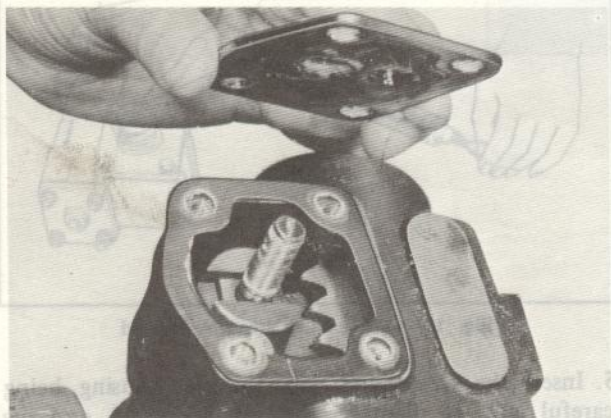


Fig. 10-14 Installing side cover

screw until the side cover is screwed into proper position. Install the side cover attaching bolts and tighten the bolts.

8. Install the pitman arm onto the sector shaft, aligning the identification marks of the pitman arm and sector shaft. Install the pitman arm attaching nut and tighten the nut to 15.0 ~ 18.0 m·kg (108.0 ~ 130.0 ft·lb).

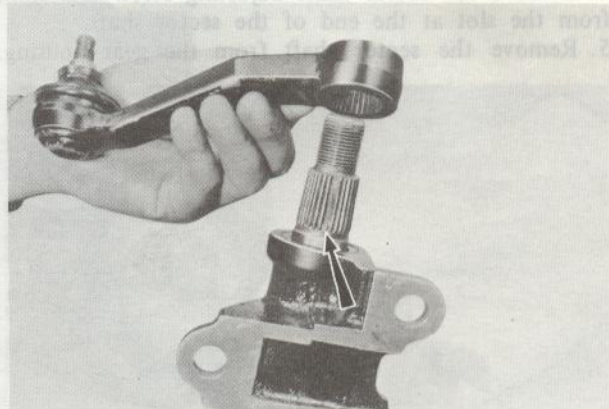


Fig. 10-15 Installing pitman arm

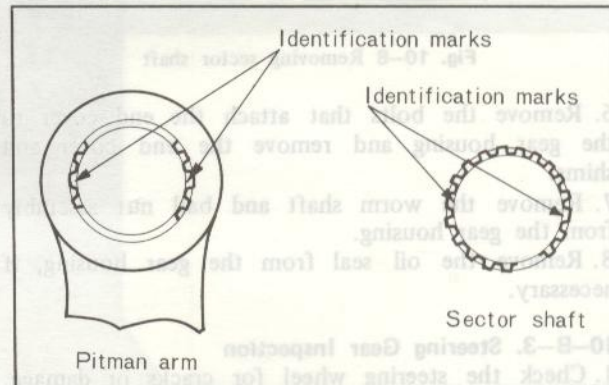


Fig. 10-16 Identification marks

9. Adjust the backlash between the worm gear and sector shaft gear. To adjust the backlash, position the sector shaft at the center of the worm gear, then, gradually screw in or out the sector shaft adjusting screw until the backlash is obtained 0 mm at the pitman arm end. Turn out the adjusting screw so as to give 30 degrees (1/2 of a turn). Tighten the adjusting screw lock nut, taking care not to

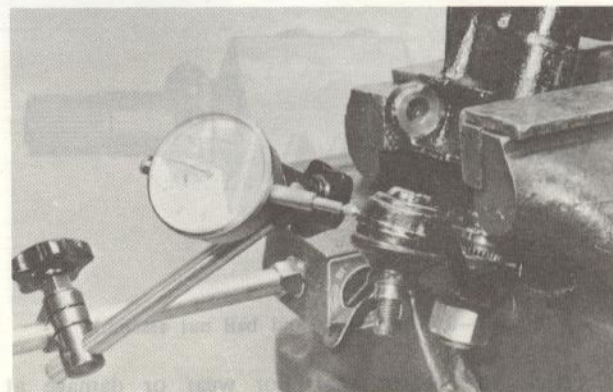


Fig. 10-17 Checking backlash

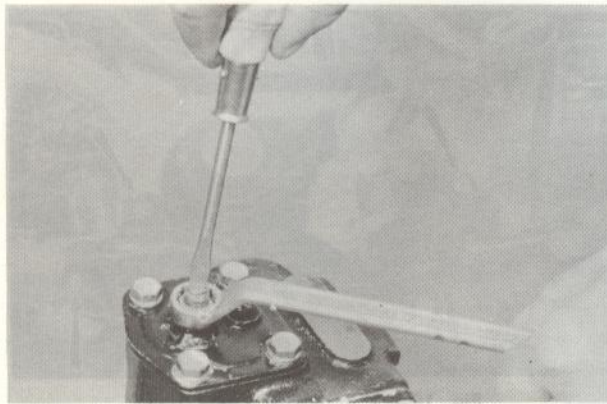


Fig. 10-18 Adjusting backlash

care not to disturb the backlash. Rotate the worm shaft and check to ensure that the sector shaft turns 40° smoothly to the right and left.

10. Check the worm shaft rotating torque. To check,

attach the checking tool (Part No. 49 0180 510A) onto the worm shaft and connect a pull scale to the checking tool. Pull the scale and check the worm shaft rotating torque. If the rotating torque is less than 0.9 kg (1.98 lb) or more than 1.5 kg (3.30 lb), readjust the bearing preload.

10-B-5. Steering Gear Installation

Follow the removal procedures in the reverse order.

Note :

- (a) Align the steering worm shaft cut portion with the flexible coupling yoke and install the steering gear housing to the body, and tighten the securing bolts and nuts.
- (b) Place the shim in original position to obtain proper shaft alignment.
- (c) Install the pitman arm to the sector shaft aligning the identification marks and secure with the nut. Tighten the nut to 15.0 ~ 18.0 m·kg (108.0 ~ 130.0 ft·lb).
- (d) Fill the gear housing with gear lubricant.

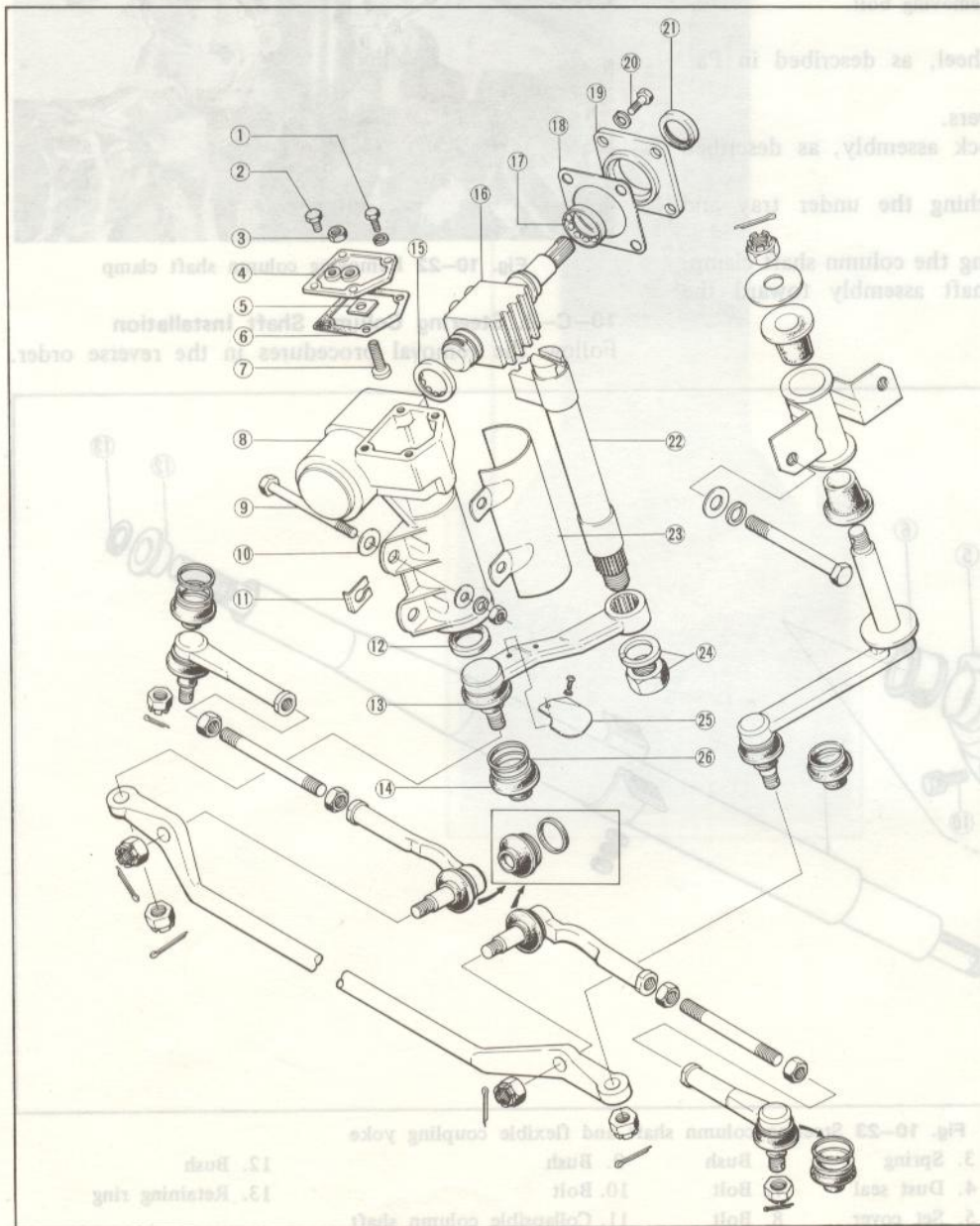


Fig. 10-19 Steering gear components

- 1. Bolt and washer
- 2. Bolt
- 3. Lock nut
- 4. Side cover
- 5. Thrust washer
- 6. Gasket
- 7. Adjusting screw
- 8. Steering gear housing
- 9. Bolt
- 10. Washer
- 11. Adjusting shim
- 12. Oil seal
- 13. Pitman arm
- 14. Ball joint dust seal
- 15. Bearing
- 16. Worm shaft and ball nut assembly
- 17. Bearing
- 18. Adjusting shim
- 19. End cover
- 20. Bolt and washer
- 21. Oil seal
- 22. Sector shaft
- 23. Insulator
- 24. Washer and nut
- 25. Insulator
- 26. Dust seal set ring

10-C. STEERING COLUMN SHAFT

10-C-1. Steering Column Shaft Removal

1. Remove the bolt and clamp securing the flexible coupling yoke to the column shaft.

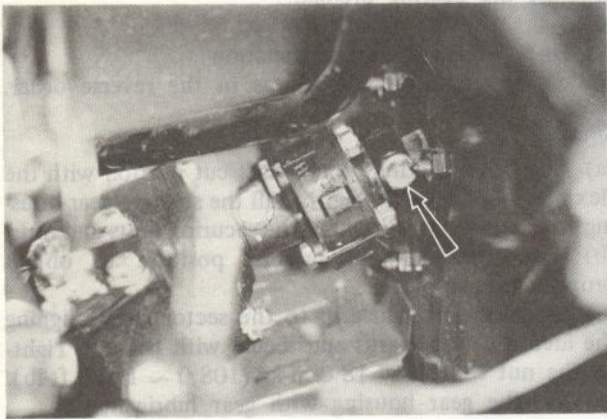


Fig. 10-20 Removing bolt

2. Remove the steering wheel, as described in Par. 10-A-2.
3. Remove the column covers.
4. Remove the steering lock assembly, as described in Par. 15-A-1.
5. Remove the bolts attaching the under tray and remove the under tray.
6. Remove the nuts attaching the column shaft clamp.
7. Remove the column shaft assembly toward the interior.

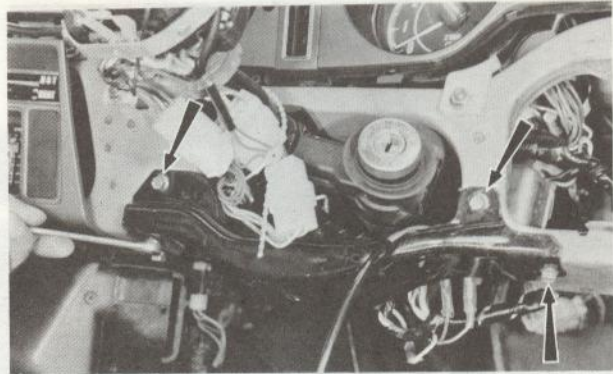


Fig. 10-21 Removing under tray

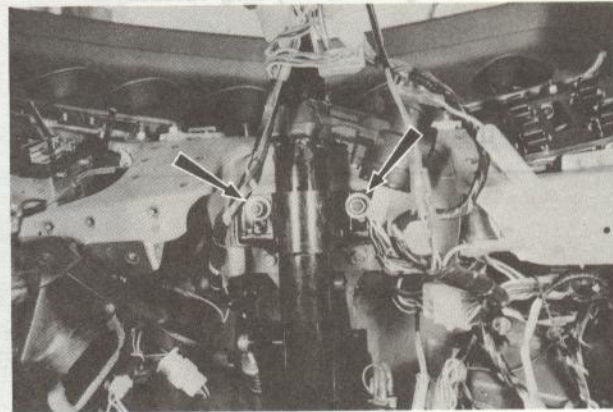


Fig. 10-22 Removing column shaft clamp

10-C-2. Steering Column Shaft Installation

Follow the removal procedures in the reverse order.

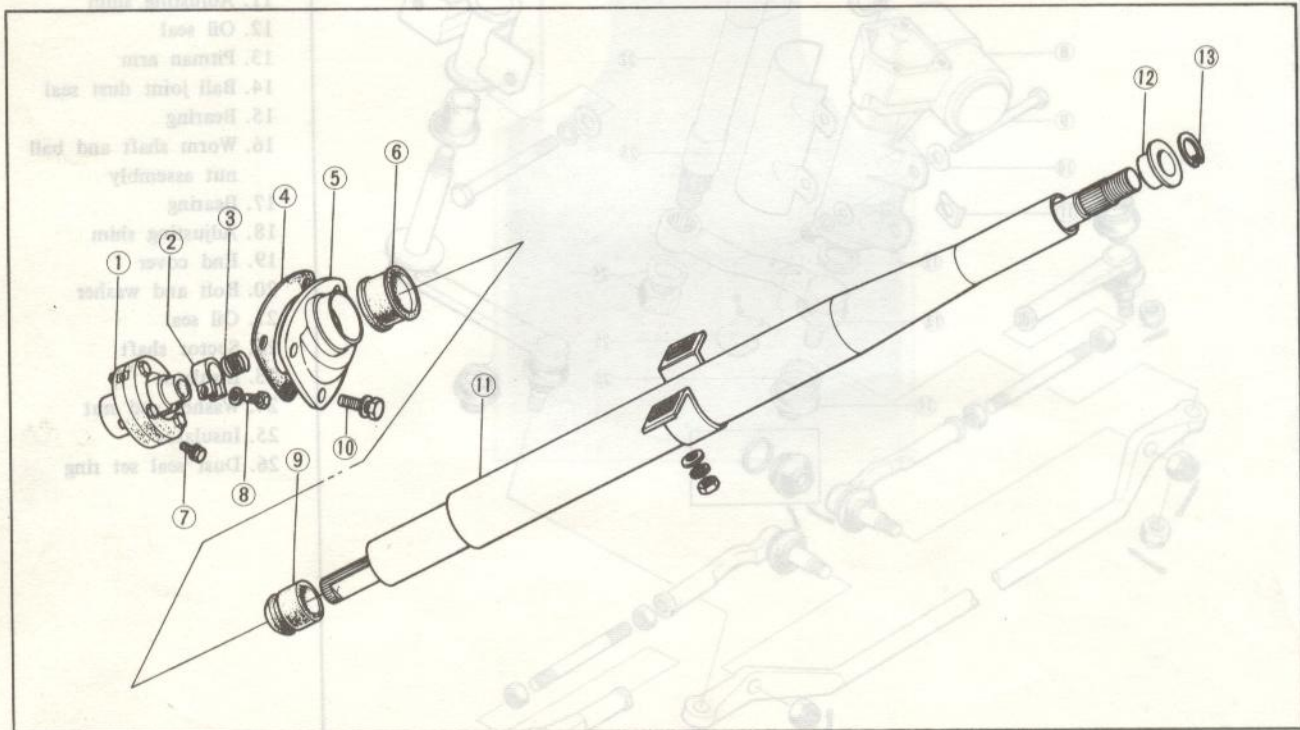


Fig. 10-23 Steering column shaft and flexible coupling yoke

- | | | | | |
|---------------------------|--------------|---------|------------------------------|--------------------|
| 1. Flexible coupling yoke | 3. Spring | 6. Bush | 9. Bush | 12. Bush |
| 2. Clamp | 4. Dust seal | 7. Bolt | 10. Bolt | 13. Retaining ring |
| | 5. Set cover | 8. Bolt | 11. Collapsible column shaft | |

10-D. STEERING LINKAGE

10-D-1. Checking Ball Joint

1. Check the dust seal for wear, flaw or any damage. If the dust seal is defective, this will allow entry of water and dust, resulting in ball joint wear. Replace the dust seal if necessary.
2. The end play of the ball stud is preadjusted at the factory to be from 0 ~ 0.25 mm (0 ~ 0.010 in). If it exceeds 1.0 mm (0.040 in), replace the ball joint in its assembled form.

10-D-2. Idler Arm

a. Removing idler arm

1. Raise the front end of the vehicle and support with stands.
2. Remove the cotter pin and nut attaching the center link at the idler arm.
3. Disconnect the center link from the idler arm with the ball joint puller (Part No. 49 0118 850C).
4. Remove the bolts attaching the idler arm and remove the idler arm.

b. Disassembling idler arm

1. Hold the idler arm in a vise, protecting with aluminum plates, remove the cotter pin and remove the bracket attaching nut.
2. Remove the washers, bushes and bracket.

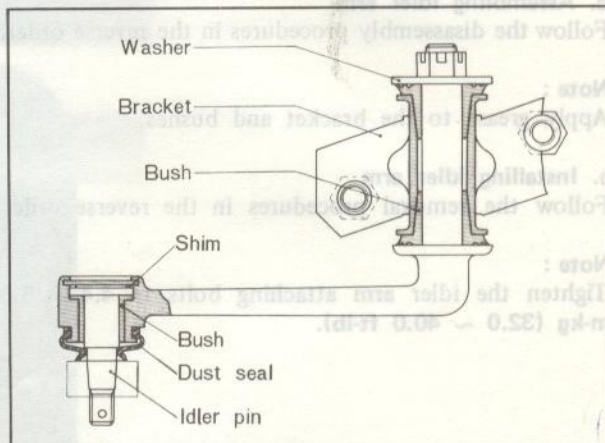


Fig. 10-24 Idler arm cross section

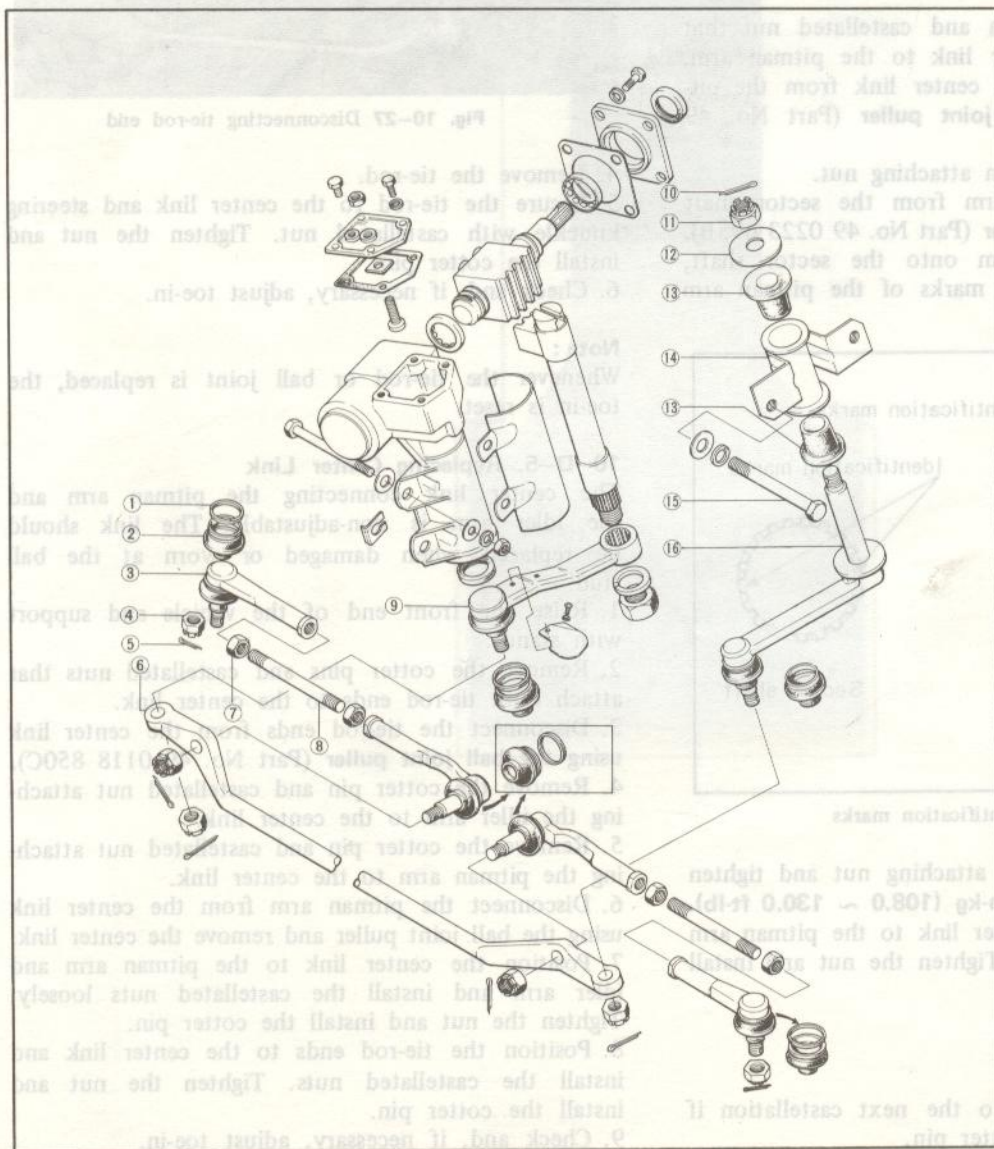


Fig. 10-25 Steering linkage components

1. Dust seal set ring
2. Ball joint dust seal
3. Tie-rod end socket
4. Castellated nut
5. Cotter pin
6. Center link
7. Lock nut
8. Tie-rod
9. Pitman arm
10. Cotter pin
11. Castellated nut
12. Washer
13. Bush
14. Idler arm bracket
15. Bolt
16. Idler arm spindle

c. Checking idler arm

1. Inspect the bush for wear or damage.
2. Check the end play of the ball stud. If necessary, replace the idler arm assembly.

d. Assembling idler arm

Follow the disassembly procedures in the reverse order.

Note :

Apply grease to the bracket and bushes.

e. Installing idler arm

Follow the removal procedures in the reverse order.

Note :

Tighten the idler arm attaching bolts to **4.4 ~ 5.5 m-kG (32.0 ~ 40.0 ft-lb)**.

10-D-3. Replacing Pitman Arm

1. Raise the front end of the vehicle and support with stands.
2. Remove the cotter pin and castellated nut that attach the steering center link to the pitman arm.
3. Disconnect the steering center link from the pitman arm with the **ball joint puller** (Part No. 49 0118 850C).
4. Remove the pitman arm attaching nut.
5. Remove the pitman arm from the sector shaft using the **pitman arm puller** (Part No. 49 0223 695B).
6. Install the pitman arm onto the sector shaft, aligning the identification marks of the pitman arm and sector shaft.

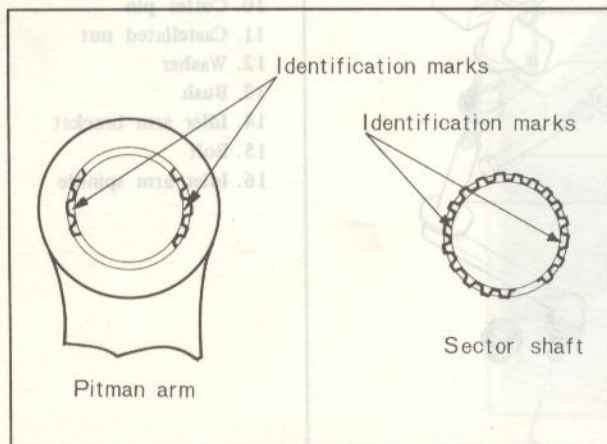


Fig. 10-26 Identification marks

7. Install the pitman arm attaching nut and tighten the nut to **15.0 ~ 18.0 m-kG (108.0 ~ 130.0 ft-lb)**.
8. Secure the steering center link to the pitman arm with the castellated nut. Tighten the nut and install the cotter pin.

Note :

Always tighten the nut to the next castellation if necessary to install the cotter pin.

10-D-4. Replacing Tie-rod

The tie-rod should be replaced, if it becomes worn or damaged. **Do not** attempt to straighten the tie-rod if damaged.

1. Raise the front end of the vehicle and support with stands.
2. Remove the cotter pins and castellated nuts that attach both tie-rod ends to the center link and steering knuckle.
3. Disconnect the tie-rod ends from the center link and steering knuckle with the **ball joint puller** (Part No. 49 0118 850C).



Fig. 10-27 Disconnecting tie-rod end

4. Remove the tie-rod.
5. Secure the tie-rod to the center link and steering knuckle with castellated nut. Tighten the nut and install the cotter pin.
6. Check and, if necessary, adjust toe-in.

Note :

Whenever the tie-rod or ball joint is replaced, the toe-in is reset.

10-D-5. Replacing Center Link

The center link connecting the pitman arm and the idler arm is non-adjustable. The link should be replaced when damaged or worn at the ball stud.

1. Raise the front end of the vehicle and support with stands.
2. Remove the cotter pins and castellated nuts that attach both tie-rod ends to the center link.
3. Disconnect the tie-rod ends from the center link using the **ball joint puller** (Part No. 49 0118 850C).
4. Remove the cotter pin and castellated nut attaching the idler arm to the center link.
5. Remove the cotter pin and castellated nut attaching the pitman arm to the center link.
6. Disconnect the pitman arm from the center link using the ball joint puller and remove the center link.
7. Position the center link to the pitman arm and idler arm and install the castellated nuts loosely. Tighten the nut and install the cotter pin.
8. Position the tie-rod ends to the center link and install the castellated nuts. Tighten the nut and install the cotter pin.
9. Check and, if necessary, adjust toe-in.

10-E. FRONT WHEEL ALIGNMENT

Front wheel alignment is most important if correct steering, and reasonable tire wear are to be obtained. Before attempting to check the wheel alignment, the following points should be investigated, and if necessary, corrected.

1. Tires for correct inflation
2. Unbalanced tires
3. Wobbling wheels
4. Front wheel bearing adjustment
5. Ball joints, and tie-rod end for looseness
6. Front coil springs for correct seating

When the above points are all in order, the vehicle should be stood on a perfectly level surface in the wheel alignment bay or stall.

10-E-1. Toe-in

a. Checking toe-in

1. Raise the front end of the vehicle until the wheels clear the ground.
2. Turning the wheel by hand, mark a line in the center of the wheel with a scribing block.
3. Lower the vehicle and place the front wheels in the straight-ahead position.
4. Measure the distances between the marked lines at the front and rear of the wheels with a suitable toe-in gauge. The difference between these two distances is the toe-in. The standard toe-in is $0 \sim 6 \text{ mm}$ ($0 \sim 0.24 \text{ in}$).

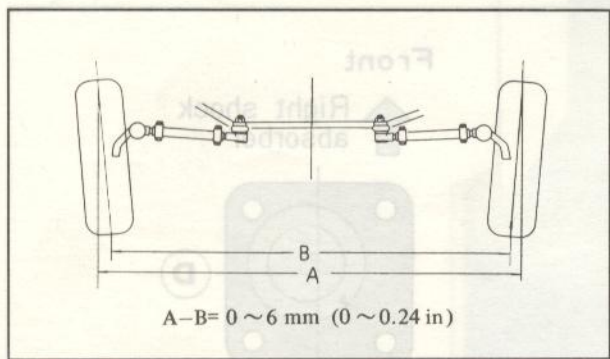


Fig. 10-28 Toe-in

b. Adjusting toe-in

If the toe-in is incorrect, proceed as follows :

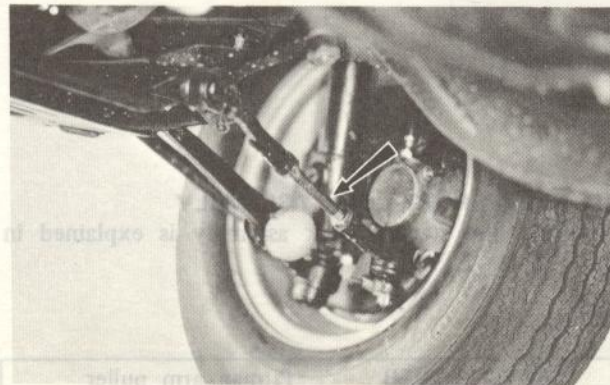


Fig. 10-29 Tie-rod

1. Loosen the tie-rod locking nuts at each end of the tie-rod.
2. Check that the tie-rod ends are in the same position on each rod, thus ensuring that the tie-rods are the same length.
3. Turn the both tie-rods an equal amount until the correct toe-in is obtained.

Note :

The tie-rod is threaded with right and left hand threads.

4. Tighten the tie-rod locking nuts and recheck the toe-in.

10-E-2. Caster, Camber and King Pin Inclination

a. Checking caster, camber and king pin inclination

There are several alignment machines available, and the instruction furnished by each manufacturer for the operation of the machine must be followed. Regardless of type of equipment used, it is essential that the vehicle is placed on absolutely level surface at all time, and before checking them, the front and rear of the vehicle is moved up and down several times to set the suspension to normal condition.

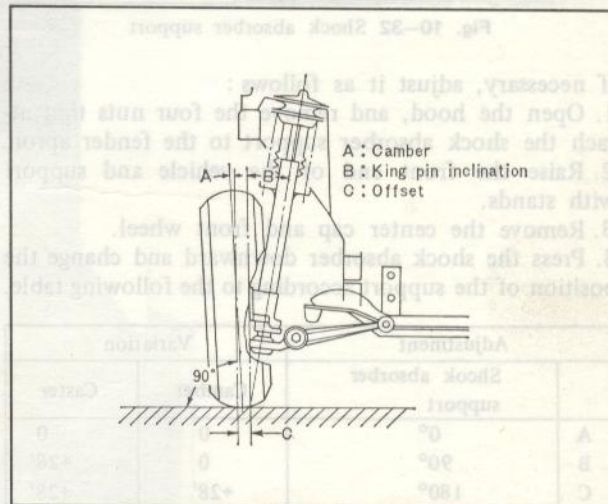


Fig. 10-30 Camber

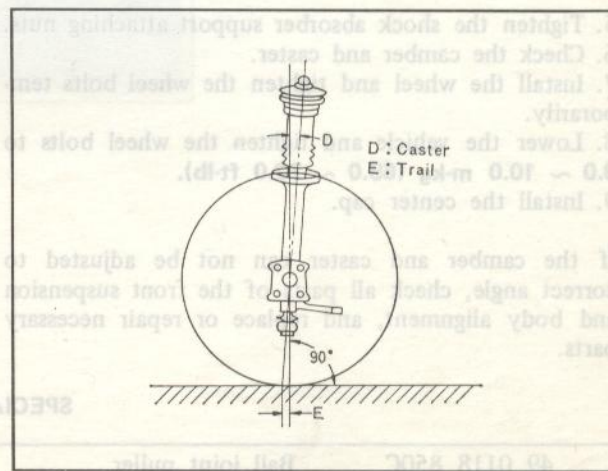


Fig. 10-31 Caster

Specified angles are shown in the following table.

Steering geometry	Sedan	Hard top
Camber	1°03'	1°03'
Caster	2°02'	2°02'
King pin inclination	9°42'	9°42'

b. Adjusting camber and caster

The camber and caster can be adjusted by changing the position of the shock absorber support. The shock absorber supports are installed at the manufacture so that the ▲ mark on the support is in position shown in Fig. 10-32.

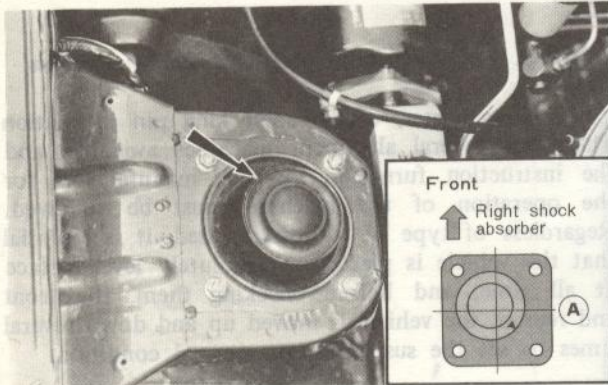


Fig. 10-32 Shock absorber support

If necessary, adjust it as follows :

1. Open the hood, and remove the four nuts that attach the shock absorber support to the fender apron.
2. Raise the front end of the vehicle and support with stands.
3. Remove the center cap and front wheel.
4. Press the shock absorber downward and change the position of the support according to the following table.

Adjustment	Shock absorber support	Variation	
		Camber	Caster
A	0°	0	0
B	90°	0	+28'
C	180°	+28'	+28'
D	-90°	+28'	0

5. Tighten the shock absorber support attaching nuts.
6. Check the camber and caster.
7. Install the wheel and tighten the wheel bolts temporarily.
8. Lower the vehicle and tighten the wheel bolts to 9.0 ~ 10.0 m·kg (65.0 ~ 72.0 ft·lb).
9. Install the center cap.

If the camber and caster can not be adjusted to correct angle, check all parts of the front suspension and body alignment, and replace or repair necessary parts.

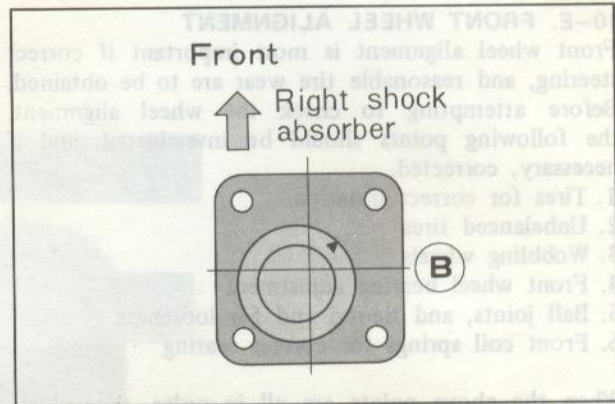


Fig. 10-33 Adjusting camber and caster

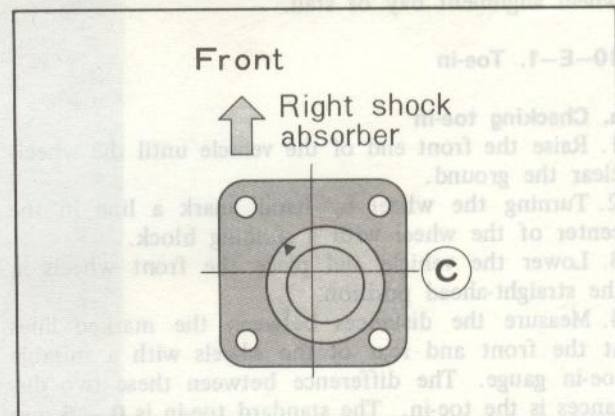


Fig. 10-34 Adjusting camber and caster

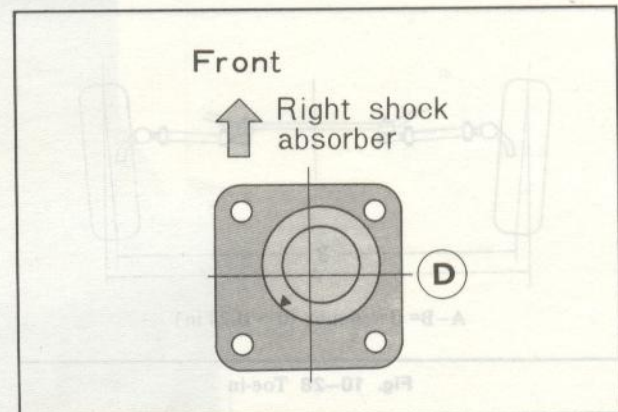


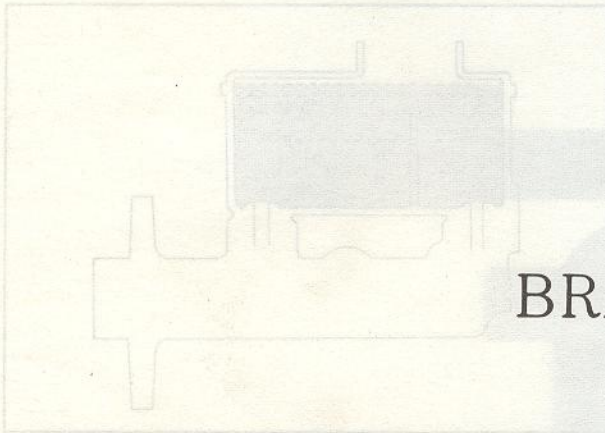
Fig. 10-35 Adjusting camber and caster

10-F. STEERING LOCK ASSEMBLY

Servicing the steering lock assembly is explained in Par. 15-A-1.

SPECIAL TOOLS

49 0118 850C	Ball joint puller	49 0223 695B	Pitman arm puller
49 0180 510A	Preload checking tool		



BRAKES

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SPECIAL TOOL	11 : 18		

Fig. 11-4 Bleeding rear brake

DESCRIPTION
The brakes consist of two systems, the foot brake and the parking brake. The front brakes are of a disc brake type. The rear brakes are of a drum type with leading and trailing shoes. The brake pedal is of a master type. The parking brake operates the brake shoes of the rear wheels through the wire linkage.

11-A. BRAKE ADJUSTMENT

11-A-1. Adjusting Brake Pedal
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11-F. REAR BRAKE

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11-G. PARKING BRAKE

11-G-1. Parking Brake Adjustment

11-H. BRAKE MASTER CYLINDER

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11-H-3. Checking Brake Master Cylinder
11-H-4. Assembling Brake Master Cylinder
11-H-5. Installing Brake Master Cylinder

SPECIAL TOOL

Note: Never allow the brake fluid to drop on any painted surface.

11-E. FRONT BRAKE

11-E-1. Disc Brake Shoe

a. Replacing disc brake shoe

The lining should be inspected whenever the wheels are removed for any reason. The shoe and lining assembly should be replaced, if the thickness of the shoe and lining assembly is **7.5 mm (0.295 in)** or less due to wear.

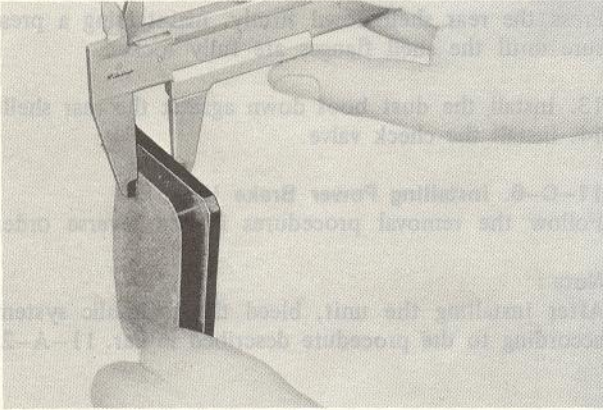


Fig. 11-32 Checking lining thickness

To replace the disc brake shoes, proceed as follows :

1. Raise the front end of the vehicle and support with stands.
2. Remove the front wheel.
3. Remove the hair pin retainers and pull out the stopper plates.

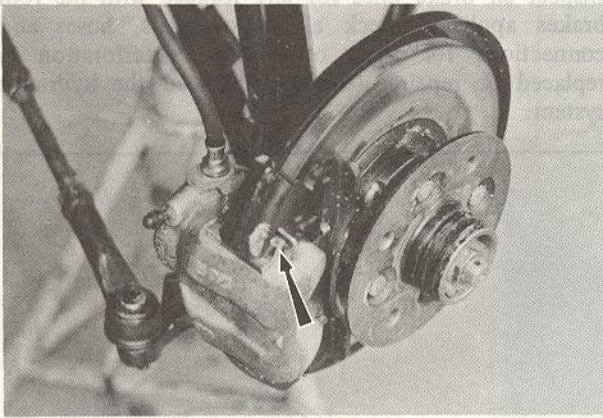


Fig. 11-33 Removing hair pin retainers

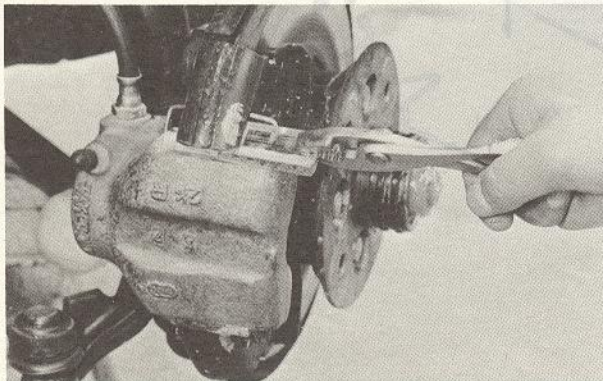


Fig. 11-34 Removing stopper plates

4. Remove the caliper and anti-rattle spring and pull out the brake shoes.

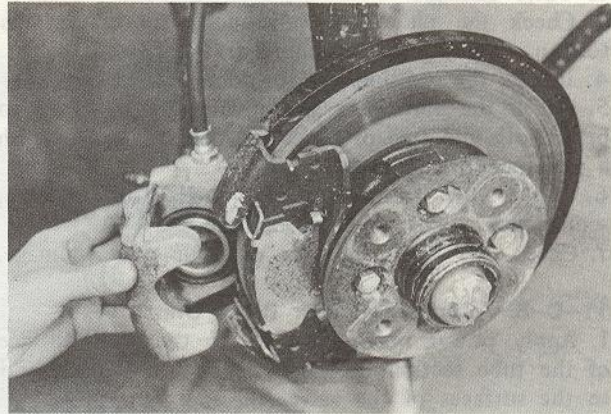


Fig. 11-35 Removing caliper

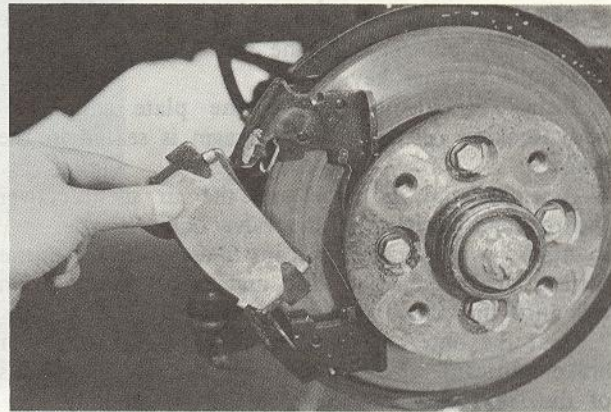


Fig. 11-36 Removing brake shoe

5. Remove the rubber cap from the bleeder screw, and connect a vinyl drain tube onto the bleeder screw. Submerge the other end of the vinyl tube into a suitable container.
6. Open the bleeder screw and press the piston into the cylinder with the **piston retracting tool** (Part No. 49 0221 600B).
7. Tighten the bleeder screw and remove the vinyl tube and retracting tool.

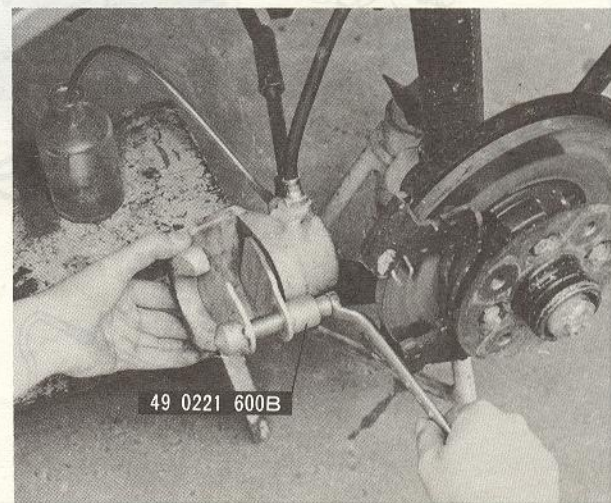


Fig. 11-37 Piston retracting tool

8. Install new brake shoes and shims on the caliper.

Note :

- (a) When the disc brake shoes are replaced, replace all shoes on both wheels at the same time.
- (b) Do not mix different types of linings when replacing.

9. Install the anti-rattle spring, caliper, stopper plates and hair pin retainers.

10. Install the front wheel and lower the vehicle.

11-E-2. Caliper

a. Removing caliper

1. Raise the front end of the vehicle and support with stands.
2. Remove the front wheel.
3. Remove the shoe and lining assembly as described in Par. 11-E-1.
4. Disconnect the brake fluid pipe from the caliper and plug the end of the fluid pipe to prevent entrance of dirt and loss of fluid.
5. Remove the caliper.

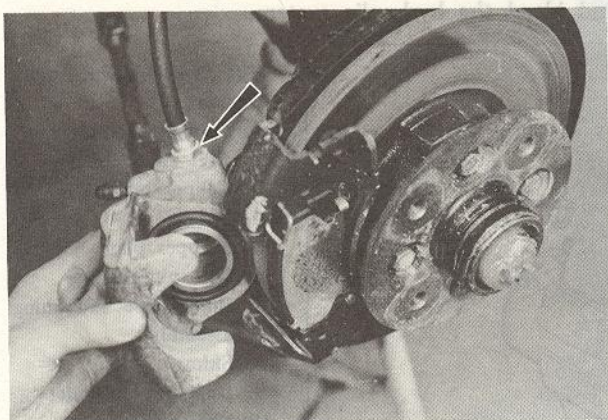


Fig. 11-38 Removing caliper

6. If necessary, remove the caliper bracket by removing the two bolts.

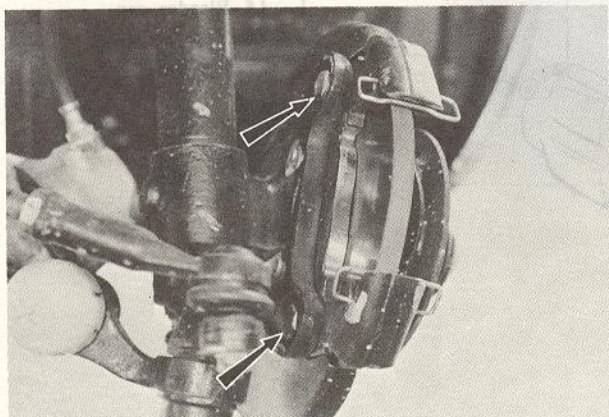


Fig. 11-39 Removing caliper bracket

b. Disassembling caliper

1. Clean outside of the caliper.
2. Place a hardwood in front of piston to prevent

damage to piston. Apply air pressure to the fluid port in the caliper to remove the piston. Remove the dust boot from the piston.

Note :

If the piston is seized and cannot be forced from the caliper, tap lightly around the piston while applying air pressure.

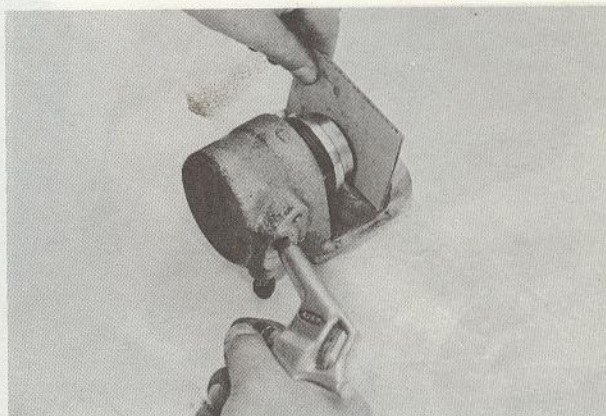


Fig. 11-40 Removing piston

3. Remove the retainer and dust boot from the caliper.
4. Remove the piston seal from the caliper bore.



Fig. 11-41 Removing piston seal

5. Remove the bleeder screw, if necessary.

c. Checking caliper

1. Clean the disassembled parts in clean brake fluid or alcohol and dry with compressed air.

Note :

Never use gasoline or kerosene.

2. Inspect the caliper bore and piston for scoring, scratches or rust. If any of these conditions are found, replace with a new piston or caliper. Minor damage can be eliminated by polishing with crocus cloth.
3. Discard the old piston seal and dust boot, and use new ones when reassembling.

d. Assembling caliper

1. Apply brake fluid to the piston seal and install

it into the groove of the caliper bore.

Note :

Be sure the piston seal does not become twisted and that it is seated fully in the groove.

2. Lubricate the piston and caliper bore.
3. Insert the piston into the caliper bore.



Fig. 11-42 Inserting piston

4. Install the dust boot by setting the flange squarely in the inner groove of the caliper bore. Install the dust boot retainer.



Fig. 11-43 Installing retainer

e. Installing caliper

Follow the removal procedures in the reverse order and bleed the hydraulic system.

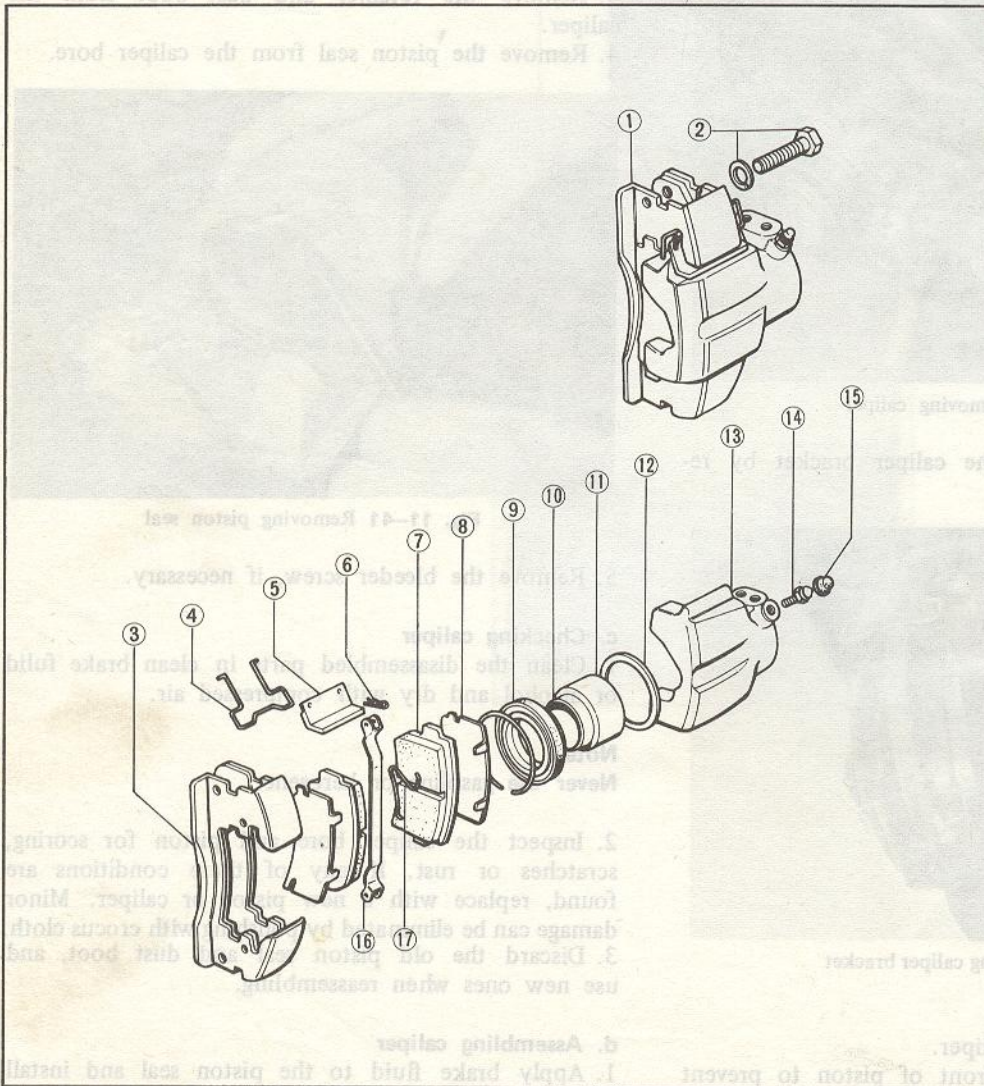


Fig. 11-44 Caliper components

1. Caliper assembly
2. Bolt and washer
3. Caliper bracket
4. Spring
5. Stopper plate
6. Hair pin retainer
7. Brake shoe and lining assembly
8. Shim
9. Dust boot retainer
10. Dust boot
11. Piston
12. Piston seal
13. Caliper body
14. Bleeder screw
15. Bleeder cap
16. Anti-rattle spring clip
17. Anti-rattle spring

11-E-3. Rotor (Brake Disc) and Front Wheel Hub Assembly

a. Checking rotor assembly

1. Inspect the friction surface of the rotor and recondition if it is scored, scratched or rusted.
2. Check the run-out of the rotor with a dial indicator.

Note :

Make sure that the wheel bearings are correctly adjusted, before checking the run-out of the rotor.

If the run-out is more than 0.10 mm (0.0039 in), reface the rotor. Do not reface any more than is necessary to clean up the rotor.

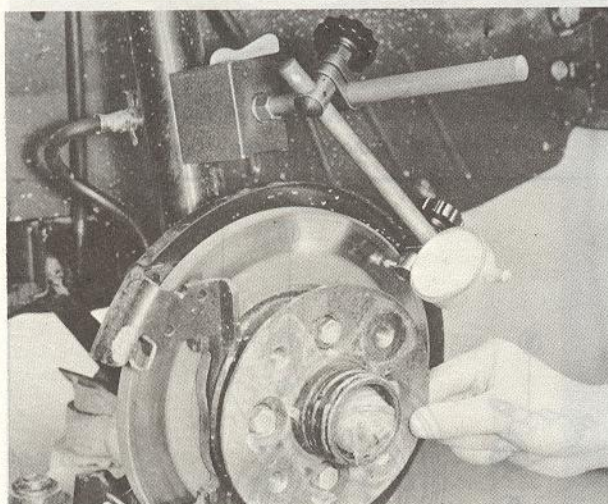


Fig. 11-45 Checking rotor run-out

3. Check the rotor for thickness. If the thickness of the rotor becomes less than 11 mm (0.433 in) from excessive refacing, the rotor should be replaced.

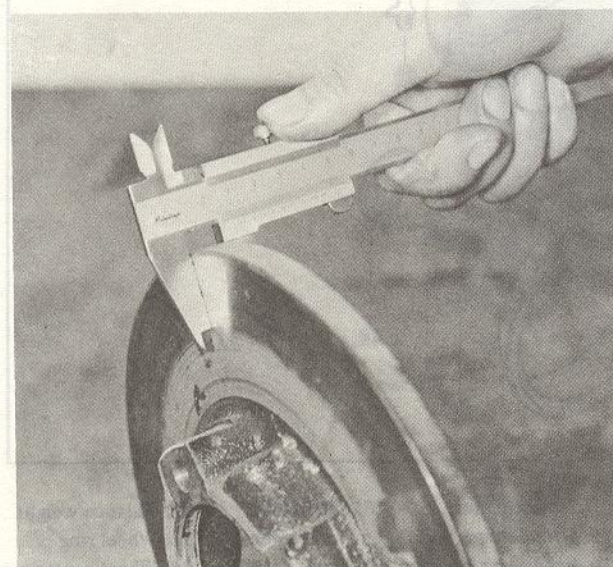


Fig. 11-46 Checking rotor thickness

b. Replacing rotor assembly

Replace the rotor and front wheel hub assembly, as described in Par. 12-C-1.

11-F. REAR BRAKE

11-F-1. Rear Brake Drum and Shoe

a. Removing rear brake drum and shoe

1. Raise the rear end of the vehicle and support with stands.
2. Remove the rear wheel.
3. Make sure that the parking brake is fully released.
4. Remove the bolts that attach the brake drum to the rear axle shaft flange and pull the drum off the axle shaft flange. If the drum will not come off, place the drum attaching bolts into the tapped holes on the drum. Then, tighten in evenly to force the drum away from the axle shaft flange.

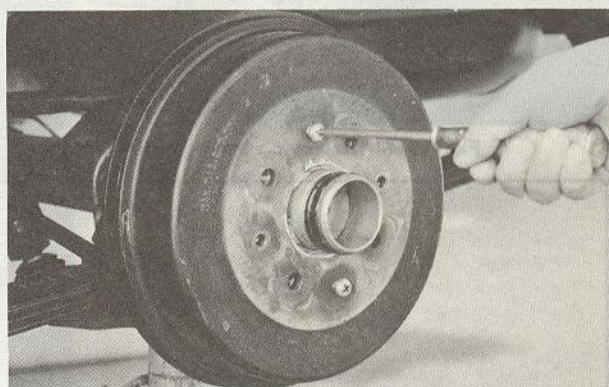


Fig. 11-47 Removing drum (1)

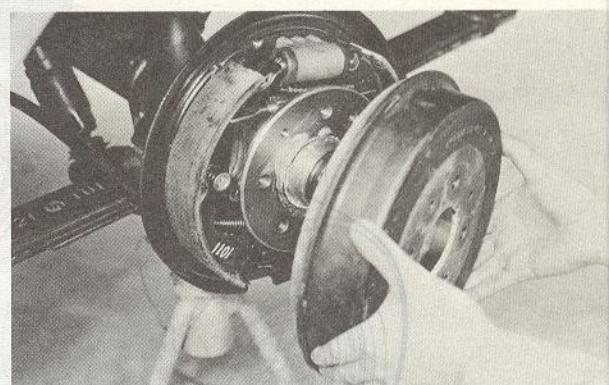


Fig. 11-48 Removing drum (2)

5. Remove the return spring located on the upper

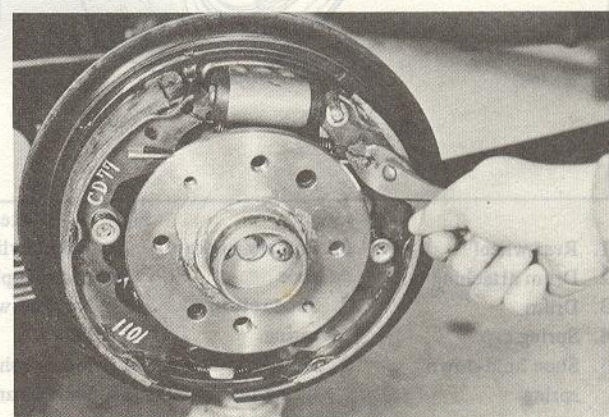


Fig. 11-49 Removing upper spring

side of the brake shoes using a suitable tool, then remove the return spring located on the lower side of the brake shoes.

6. Remove the shoe hold-down spring and spring cap from the brake shoe by removing the shoe hold-down

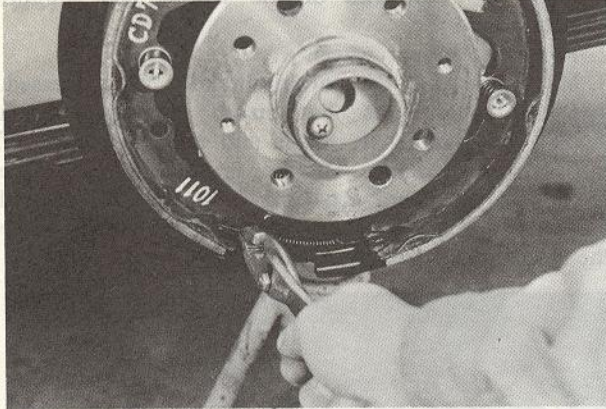


Fig. 11-50 Removing lower spring

spring pin with a plier.
7. Remove the primary brake shoe and the male and fe-male push rod assembly.

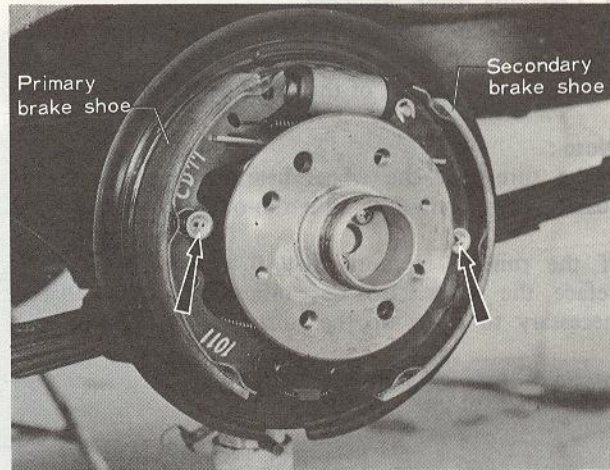


Fig. 11-51 Removing primary brake shoe

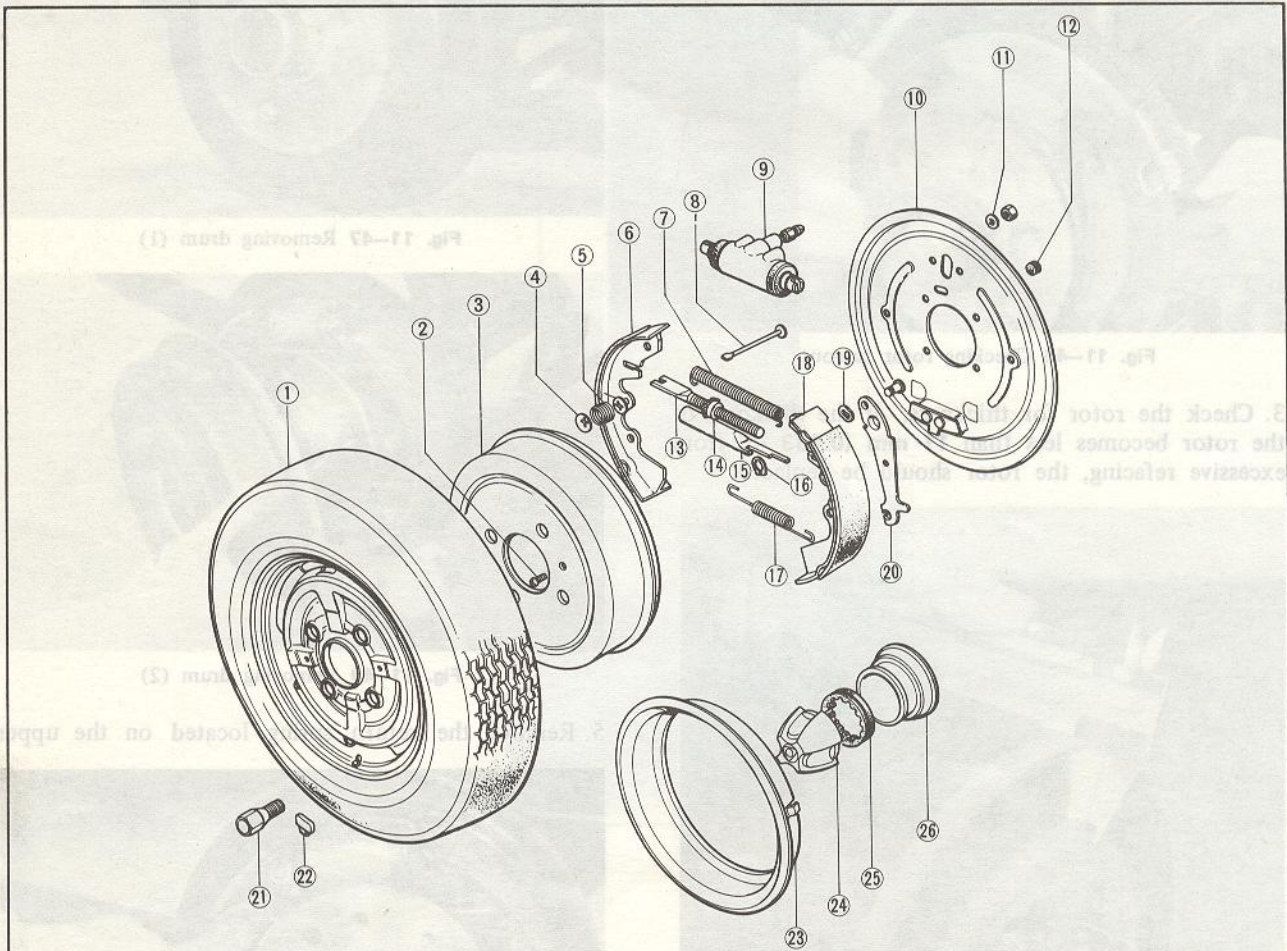


Fig. 11-52 Rear brake components

- | | | | | | |
|--------------------------|------------------------------|--------------------|---|-----------------------------------|------------------------------|
| 1. Rear wheel | 6. Primary brake shoe | 9. Wheel cylinder | adjusting nut | 18. Secondary brake shoe | 22. Balance weight |
| 2. Drum attaching bolt | 7. Shoe return spring | 10. Backing plate | 15. Female-push rod | 19. Wave washer | 23. Wheel ring |
| 3. Drum | 8. Shoe hold-down spring pin | 11. Nut and washer | 16. Secondary brake shoe retaining clip | 20. Parking brake operating lever | 24. Wheel center cap |
| 4. Spring cap | | 12. Plug | 17. Shoe return spring | 21. Wheel bolt | 25. Set rubber |
| 5. Shoe hold-down spring | | 13. Male-push rod | | | 26. Wheel center cap adaptor |
| | | 14. Shoe clearance | | | |

8. Disconnect the parking brake lever from the secondary brake shoe by removing the retaining clip. Remove the secondary brake shoe. **Do not** dirty the brake lining with oil.

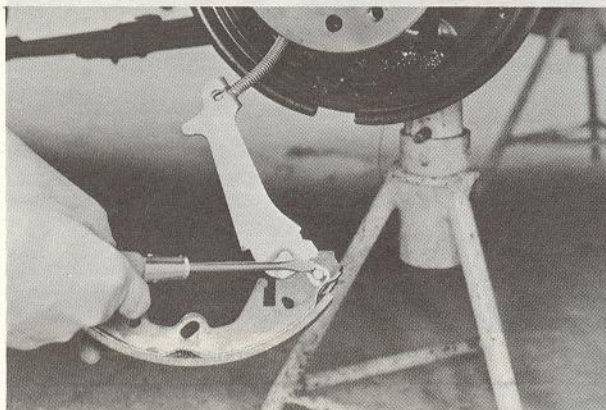


Fig. 11-53 Removing secondary brake shoe

b. Inspecting rear brake drum and shoe

1. Brush all dust from the backing plate and interior of the brake drum.
2. Inspect the springs for weakness.
3. Inspect the brake shoes for excessive lining wear or shoe damage. If the lining is excessively worn or if the shoes are damaged, they must be replaced. Replace any lining that had been contaminated with oil, grease or brake fluid.
4. Examine the lining contact pattern. To inspect, chalk the entire inner surface of the drum and slide the lining along the chalked surface. The lining should show a uniform contact across the entire width, extending from toe to heel. Shoes having sufficient lining but improper contact should be reground to obtain proper contact.



Fig. 11-54 Rear brake shoe

5. Inspect the brake drum and, if necessary, refinish. Minor scores on the brake drum can be removed with sandpaper. The drum that is excessively scored or shows an out of roundness over 0.15 mm should be turned down. Remove only enough stock to eliminate the scores and true up the drum. The refinished diameter must not exceed 229.6 mm (9.0395 in). The standard inner diameter of the drum is 228.6 mm (9.000 in). After the drum is turned

down, wipe the refinished surface with a cloth soaked in clean denatured alcohol. If one drum is turned down, the opposite drum on the same axle should also be cut down to the same size.

6. Check the condition of the brake shoes, return springs, hold-down springs and drum for signs of overheating. If the shoes and drums are head spotted, indicating a overheated condition, replace with new ones.

c. Installing rear brake drum and shoe

Follow the removal procedures in the reverse order.

Note :

Adjust the brake shoe clearance.

11-F-2. Wheel Cylinder

a. Removing wheel cylinder

1. Remove the rear brake shoes, as described in Par. 11-F-1.
2. Disconnect the brake fluid pipe from the wheel cylinder by removing the flare nut located on the rear side of the backing plate.
3. Remove the nuts that attach the wheel cylinder to the backing plate and remove the wheel cylinder.

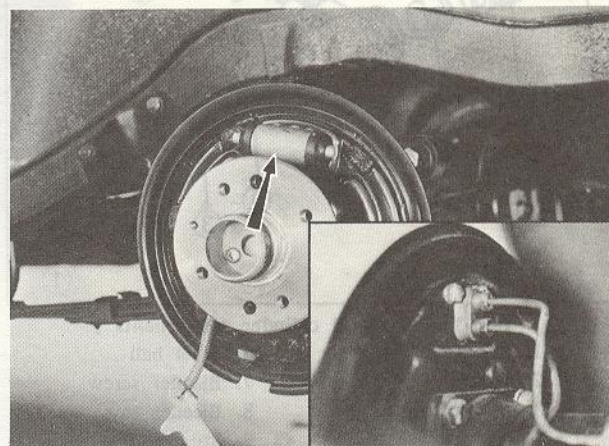


Fig. 11-55 Removing wheel cylinder

b. Disassembling wheel cylinder

1. Remove the boots from both ends of the wheel cylinder.
2. Remove the piston and piston cup assemblies and return spring.
3. Remove the bleeder screw and steel ball, if necessary.

c. Checking wheel cylinder

1. Wash all parts in clean alcohol or brake fluid. **Never use gasoline or kerosene.**
2. Examine the cylinder bore, and piston for wear, roughness, or score.
3. Check the clearance between the piston and the cylinder. If it is more than 0.15 mm (0.006 in), replace with new parts.
4. Check the piston cups for wear, softening, swelling, or any damage. If any of these conditions exists, replace the cups.

d. Assembling wheel cylinder

1. Apply clean brake fluid to the cylinder bore, pistons and piston cups.
2. Insert the steel ball into the bleeder hole and thread the bleeder screw into the bleeder hole.
3. Insert the return spring and, piston and piston cup assemblies into their respective position in the cylinder bore.

Note :

When installing the piston cups to the piston, face the lip side of the cups inward.

4. Place the boots over each end of the cylinder.

e. Installing wheel cylinder

Follow the removal procedures in the reverse order.

Note :

Bleed the hydraulic system and adjust the brake shoe clearance.

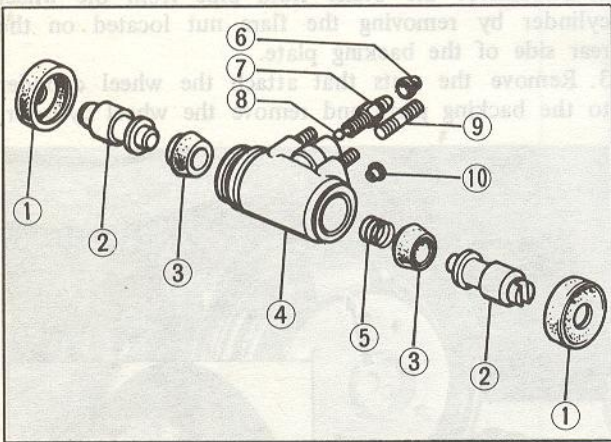


Fig. 11-56 Wheel cylinder components

- | | |
|---------------|------------------|
| 1. Boot | 6. Steel ball |
| 2. Piston | 7. Bleeder screw |
| 3. Piston cup | 8. Bleeder cap |
| 4. Cylinder | 9. Stud bolt |
| 5. Spring | 10. Tube seat |

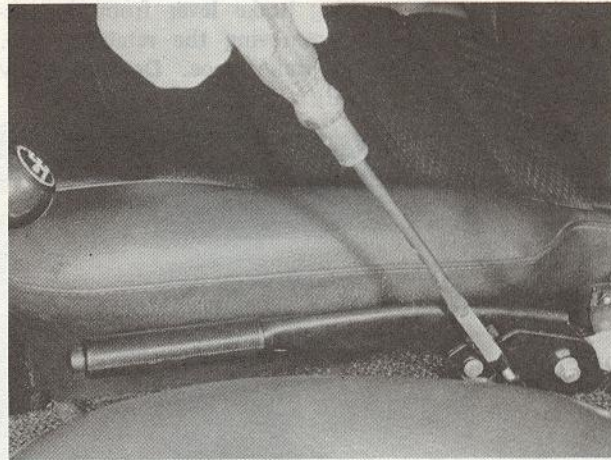


Fig. 11-57 Adjusting parking brake

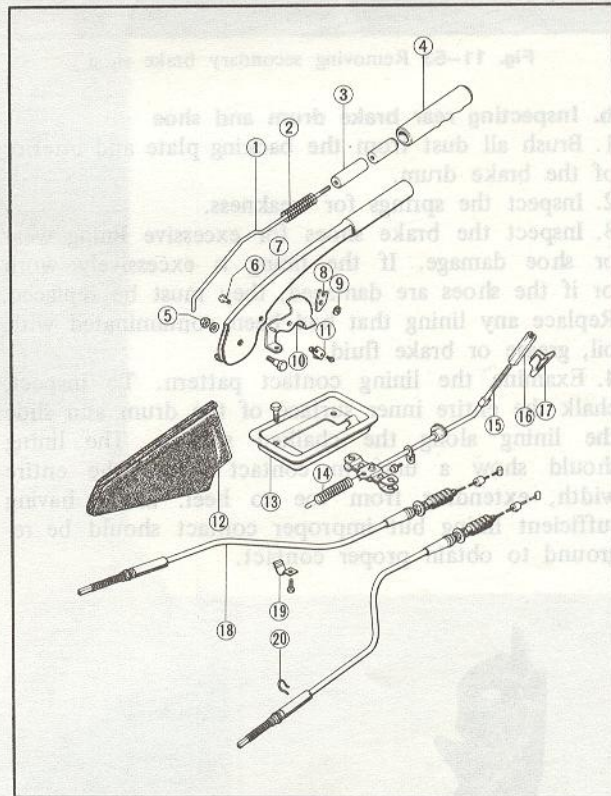


Fig. 11-58 Parking brake components

- | | |
|-------------------|-------------------------|
| 1. Release rod | 11. Parking lamp switch |
| 2. Spring | 12. Boot |
| 3. Spacer | 13. Plate |
| 4. Release button | 14. Spring |
| 5. Nut and washer | 15. Front cable |
| 6. Pin | 16. Adjusting nut |
| 7. Lever | 17. Clip |
| 8. Sector | 18. Rear cable |
| 9. Clip | 19. Cable clip |
| 10. Ratchet | 20. Clip |

11-G. PARKING BRAKE

11-G-1. Parking Brake Adjustment

To adjust, proceed as follows :

After adjusting the rear brake shoe clearance, adjust the parking brake lever adjusting screw so that the brake begins to apply when pulling the parking brake lever three to seven notches.

11-H. BRAKE MASTER CYLINDER

The brake master cylinder explained in this paragraph is used from Car No. 135230 for RX-4 and from the first production for 929.

11-H-1. Removing Brake Master Cylinder

1. Disconnect the fluid pipes (reservoir tank ~ master cylinder) at the brake master cylinder and plug the end of the pipes to prevent fluid leakage. (Left hand drive vehicles only)
2. Disconnect the fluid pipes at the brake master cylinder outlets.
3. Remove the nuts that attach the brake master cylinder to the power brake unit.
4. Remove the brake master cylinder assembly from the power brake unit.

Note: Never allow the brake fluid to drop on any painted surface.

11-H-2. Disassembling Brake Master Cylinder

1. Clean the outside of the master cylinder thoroughly and drain the brake fluid.
2. On the right hand drive vehicles, separate the reservoir from the cylinder by removing the connector bolts and washers.
3. Using snap ring pliers, remove the snap ring and remove the stop washer.
4. Remove the primary piston, cups, spacer and spring seat assembly and return spring from the cylinder.
5. Loosen the secondary piston stop bolt. Do not remove it.
6. Pushing in the secondary piston with a screwdriver, remove the stop bolt and insert the guide pin in its place. Then, gradually take out the screwdriver and remove the secondary piston and cups assembly and spring from the cylinder. (See Fig. 11-60.)
If necessary, blow out with compressed air from the outlet hole.

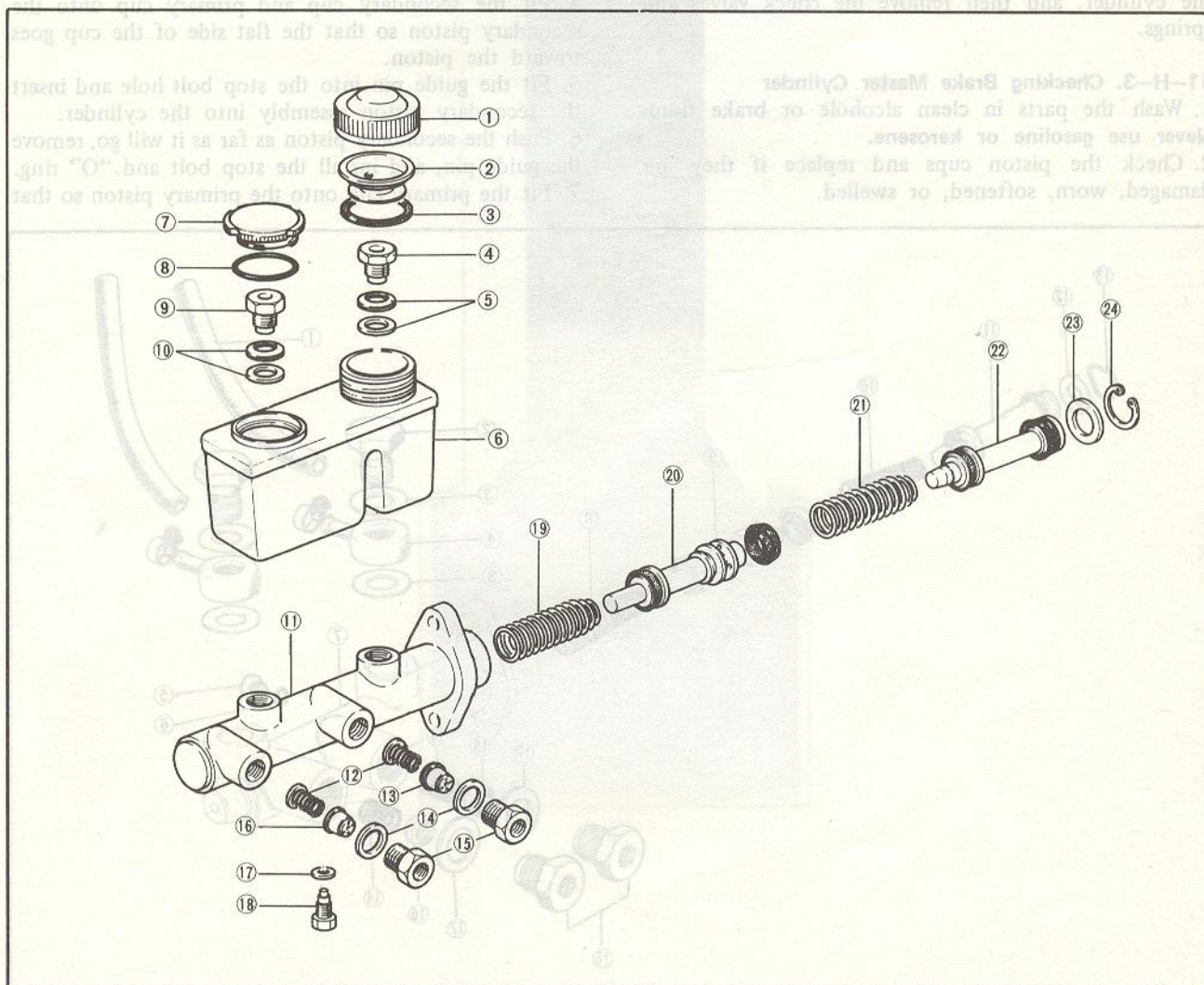


Fig. 11-59 Brake master cylinder components (Right hand drive vehicle)

- | | | | |
|-------------------|-------------------|--------------------|----------------------|
| 1. Filler cap | 7. Filler cap | 13. Check valve | 19. Return spring |
| 2. Fluid baffle | 8. Gasket | 14. Washer | 20. Secondary piston |
| 3. Gasket | 9. Connector bolt | 15. Outlet fitting | 21. Return spring |
| 4. Connector bolt | 10. Washer | 16. Outlet valve | 22. Primary piston |
| 5. Washer | 11. Cylinder | 17. "O" ring | 23. Washer |
| 6. Reservoir | 12. Spring | 18. Stop bolt | 24. Retaining ring |

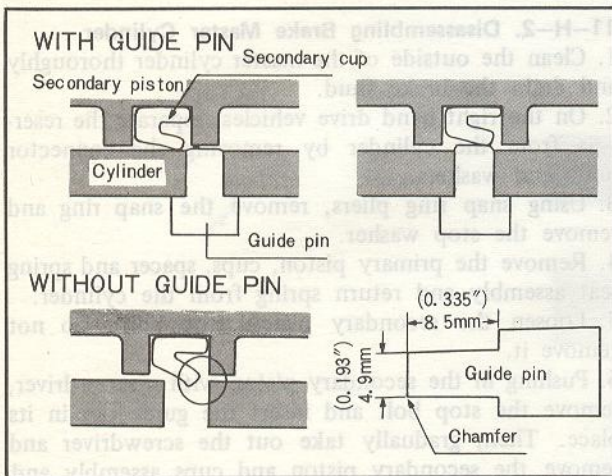


Fig. 11-60 Guide pin

7. Remove the fluid pipe fittings and gaskets from the cylinder, and then remove the check valves and springs.

11-H-3. Checking Brake Master Cylinder

1. Wash the parts in clean alcohol or brake fluid. **Never use gasoline or kerosene.**
2. Check the piston cups and replace if they are damaged, worn, softened, or swelled.

3. Examine the cylinder bore and pistons for wear, roughness or scoring.
4. Check the clearance of the cylinder bore and pistons. If it is **more than 0.15 mm (0.006 in)**, replace the cylinder or piston.
5. Ensure that the compensating ports on the cylinder are open.

11-H-4. Assembling Brake Master Cylinder

1. Dip the pistons and the cups in clean brake fluid.
2. Fit the check valve springs and check valves into the outlet holes. Install the pipe fittings and gaskets to the outlet holes. Tighten the fittings to **6.0 ~ 7.0 m-kG (43 ~ 51 ft-lb)**.

Note: Be sure to fit the valve which has a hole in the center of it to the front side outlet hole (disc brake).

3. Insert the return spring into the cylinder.
4. Fit the secondary cup and primary cup onto the secondary piston so that the flat side of the cup goes toward the piston.
5. Fit the guide pin into the stop bolt hole and insert the secondary piston assembly into the cylinder.
6. Push the secondary piston as far as it will go, remove the guide pin, and install the stop bolt and "O" ring.
7. Fit the primary cup onto the primary piston so that

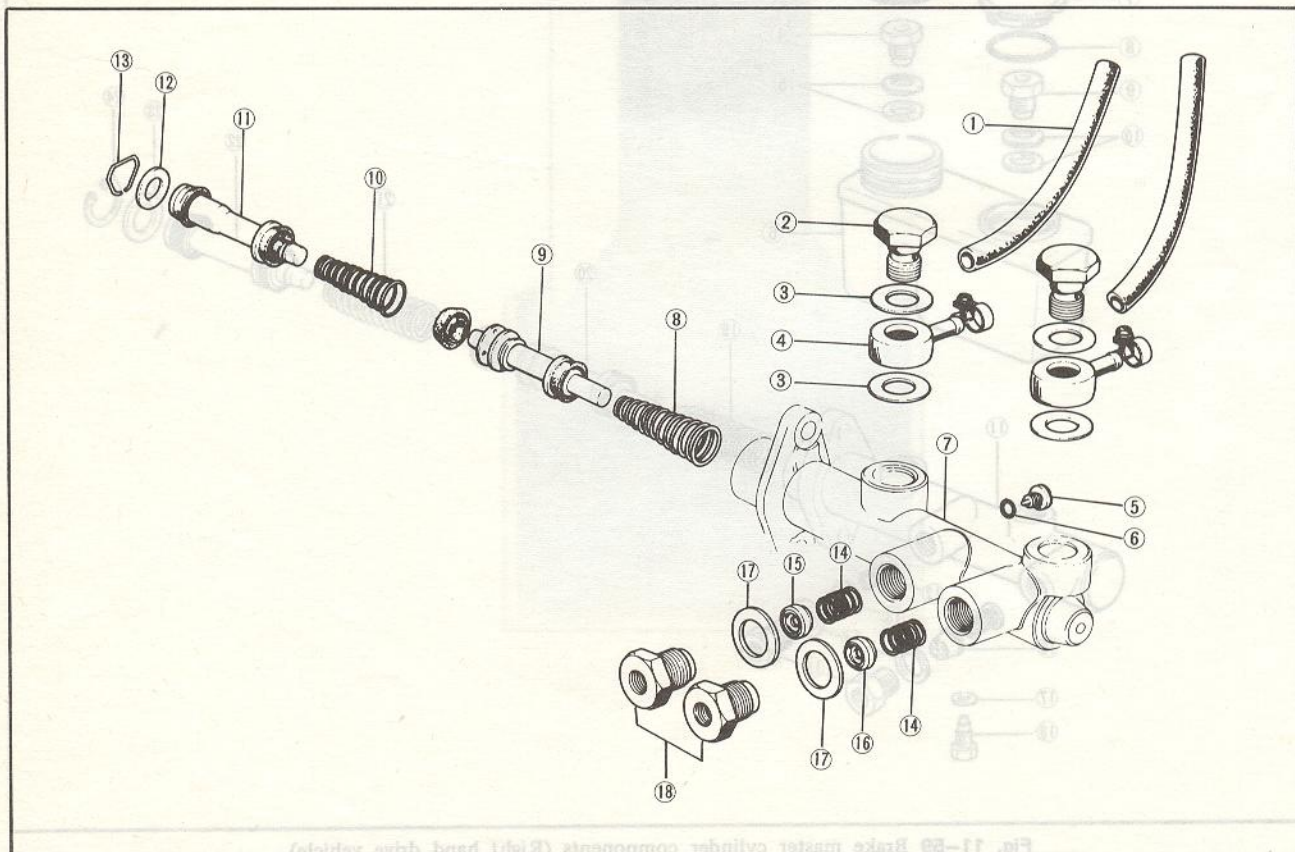


Fig. 11-61 Brake master cylinder components (Left hand drive vehicle)

- | | | | |
|-------------------|---------------------|--------------------|--------------------|
| 1. Fluid pipe | 6. "O" ring | 11. Primary piston | 16. Outlet valve |
| 2. Connector bolt | 7. Cylinder | 12. Washer | 17. Washer |
| 3. Washer | 8. Return spring | 13. Stop ring | 18. Outlet fitting |
| 4. Union | 9. Secondary piston | 14. Spring | |
| 5. Stopper bolt | 10. Return spring | 15. Check valve | |

the flat side of the cup goes toward the piston.

8. Fit the secondary cup onto the primary piston, with the edge side of the cup facing the secondary piston.

9. Insert the return spring and the primary piston assembly.

10. Install the stop washer and snap ring.

Note: Make sure that the piston cups do not cover the compensating ports.

11. On the right hand drive vehicles, install the reservoir to the cylinder body. Tighten the connector bolts.

11-H-5. Installing Brake Master Cylinder

To install the master cylinder, carry out the removing operation in the reverse order. After installing, bleed the brake system, referring to Par. 11-G, and check for proper brake operation.

SPECIAL TOOL

49 0221 600B

Piston retracting tool

DESCRIPTION

The brakes consist of two systems, the foot brake, and the parking brake. The front brakes are of a disc brake type.

The rear brakes are of a drum type with leading and trailing shoes. The brake pedal is of a pendant type.

The parking brake operates the brake shoes of the rear wheels through the wire linkage.

11-A. BRAKE ADJUSTMENT

11-A-1. Adjusting Brake Pedal

1. Disconnect the stop light switch wiring terminals.
2. Loosen the lock nut and adjust the pedal height to **188.8 mm (7.4 in)** between the pedal and the floor mat by turning the stop light switch and push rod. Next, tighten the lock nut.

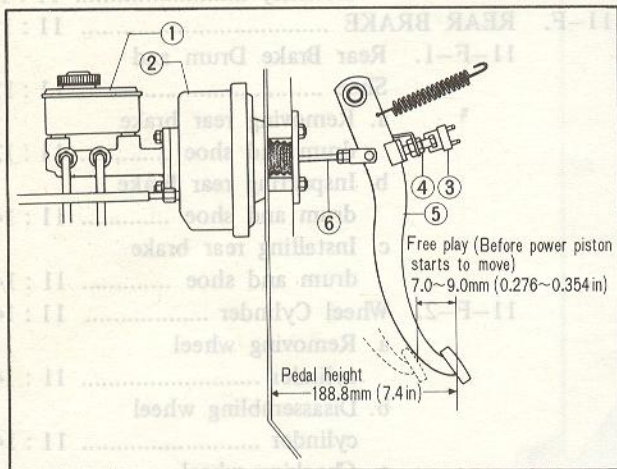


Fig. 11-1 Adjusting brake pedal

- | | |
|----------------------|----------------|
| 1. Master cylinder | 4. Lock nut |
| 2. Power brake unit | 5. Brake pedal |
| 3. Stop light switch | 6. Push rod |

11-A-2. Bleeding Hydraulic System

When any parts of the hydraulic system has been disconnected for repair or replacement, air may enter into the lines, and causes spongy pedal action.

This requires the bleeding of the hydraulic system after it has been properly connected to be sure that all air is expelled from the brake cylinders and lines. When bleeding the brake system, bleed one brake bleeder screw at a time, beginning at the bleeder screw with the longest hydraulic line first. **Never use brake fluid which has been drained from the hydraulic system.**

The bleeding procedures are as follows :

1. Keep the brake master cylinder reservoir filled with new brake fluid during bleeding operation.

Note :

Never allow the brake fluid to drop on any painted surface.

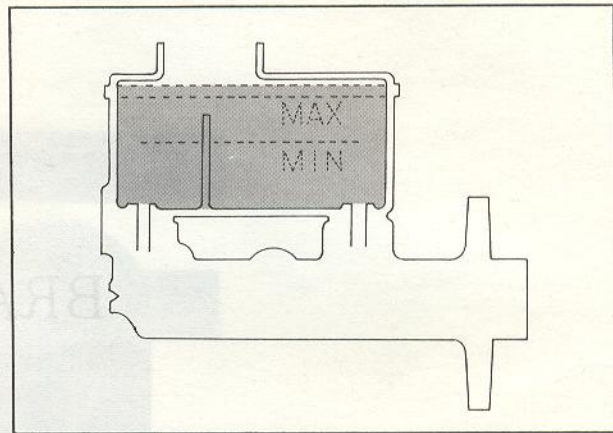


Fig. 11-2 Checking fluid level

2. Remove the rubber cap from the bleeder screw, and connect a vinyl drain tube onto the bleeder screw. Submerge the other end of the vinyl tube into a suitable container while bleeding the brake system.
3. Depress the brake pedal slowly several times to bleed the air, and with the brake pedal depressed, loosen the bleeder screw one-third to half of a turn, then close the bleeder screw before brake pedal is released.

Note :

Do not release the brake pedal until the bleeder screw is tightened as additional air may enter into the wheel cylinder.

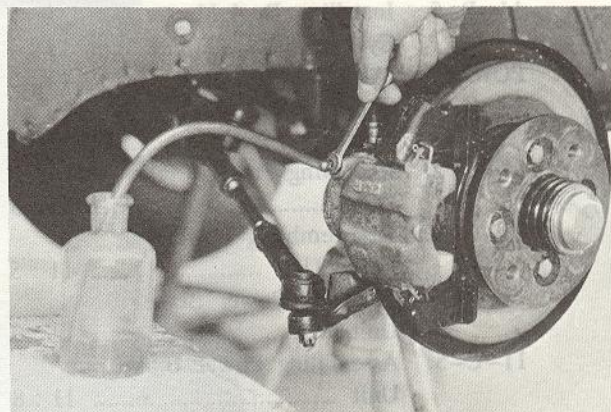


Fig. 11-3 Bleeding front brake

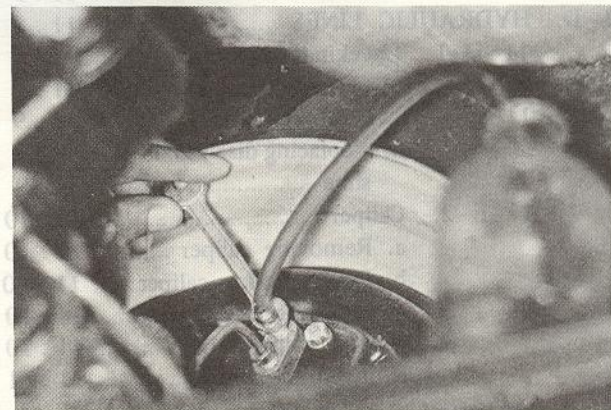


Fig. 11-4 Bleeding rear brake

4. Repeat this operation until the brake fluid flows into the container without any air bubbles.
5. After bleeding completely, tighten the bleeder screw, and install the rubber cap onto the bleeder screw.
6. Fill the reservoir with brake fluid.

11-A-3. Adjusting Rear Brake Shoe

To adjust the brake shoe, proceed as follows :

1. Jack the rear end of the vehicle, then support with stands.
2. Make sure that the parking brake is fully released.
3. Remove the shoe adjusting hole plug from the backing plate, and expand the brake shoe by turning the adjuster toward the arrow direction (←) marked on the backing plate until the wheel locks. At this time, pump the brake pedal several times to make sure that the shoes contact the drum on the entire surface. If the wheel turns after removing the foot from the brake pedal, turn the adjuster further until the wheel locks firmly.



Fig. 11-5 Removing plug

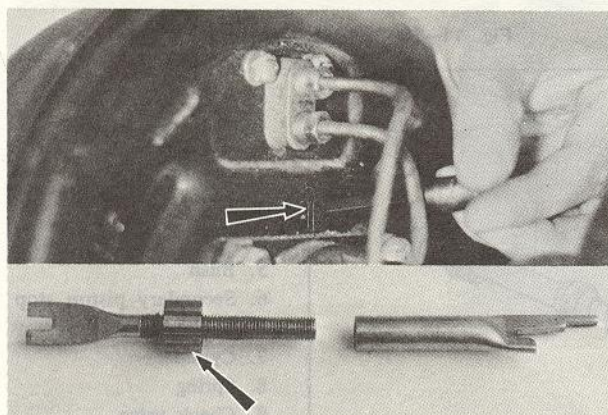


Fig. 11-6 Adjusting rear brake shoe

4. Back off the adjuster about 2 ~ 3 notches so that the drum rotates freely without any drag.
5. Check that the wheel rotates freely after pumping the brake pedal several times. Next, install the adjusting hole plug onto the backing plate.

Note :

If the wheel does not rotate freely, check and repair the drum, shoes or other necessary parts.

6. Perform the same adjustment on the other side shoes of the rear wheels. The adjustments must be equal at all shoes.

11-B. DUAL MASTER CYLINDER

11-B-1. Removing Dual Master Cylinder

1. Disconnect the fluid pipes at the master cylinder outlets.
2. Remove the nuts that attach the master cylinder to the power brake unit.
3. Remove the master cylinder.

Note :

Never allow the brake fluid to drop on any painted surface.

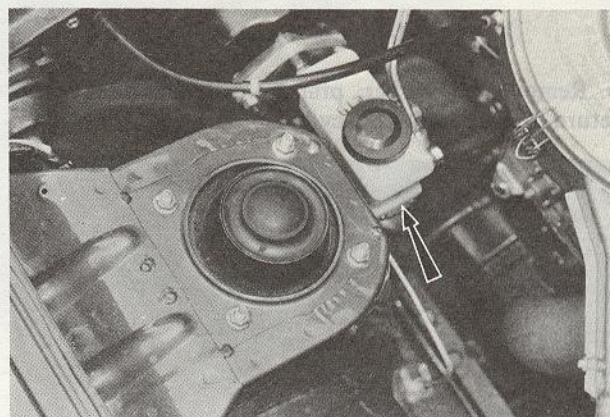


Fig. 11-7 Removing dual master cylinder

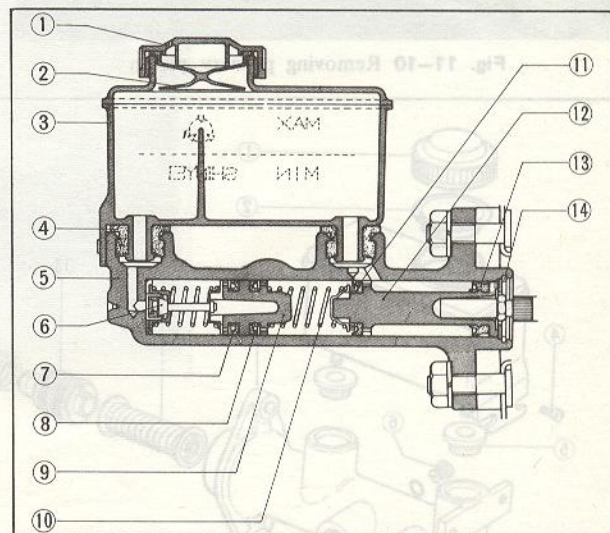


Fig. 11-8 Master cylinder cross section

- | | |
|------------------------------|-------------------------|
| 1. Reservoir cap | 8. Secondary piston cup |
| 2. Fluid baffle | 9. Secondary piston |
| 3. Reservoir | 10. Spring |
| 4. Bush | 11. Primary piston cup |
| 5. Cylinder | 12. Primary piston |
| 6. Valve and spring assembly | 13. Primary piston cup |
| 7. Secondary piston cup | 14. Snap ring |

11-B-2. Disassembling Dual Master Cylinder

1. Clean the outside of the master cylinder.
2. Pour out any brake fluid that remains in the cylinder. Discard the old brake fluid.
3. Remove the bolts attaching the reservoir and remove the reservoir from the cylinder.
4. Depress the primary piston assembly and remove the snap ring from the retaining groove at the rear of the cylinder bore.

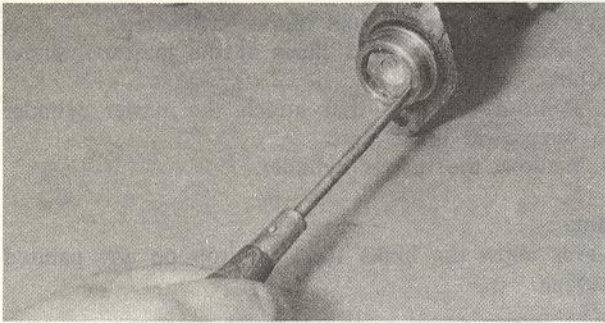


Fig. 11-9 Removing snap ring

5. Remove the washer, primary piston assembly and return spring from the cylinder bore.



Fig. 11-10 Removing primary piston

6. Depress the secondary piston assembly with a suitable rod and remove the secondary piston stop bolt from the outside of the cylinder, and insert a guide pin in its place.

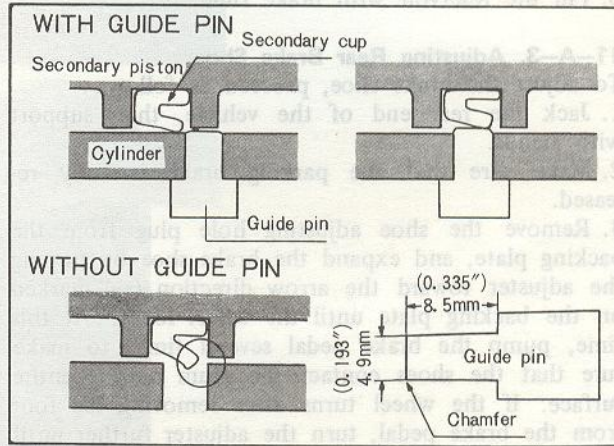


Fig. 11-11 Piston guide pin

7. Remove the secondary piston assembly and return

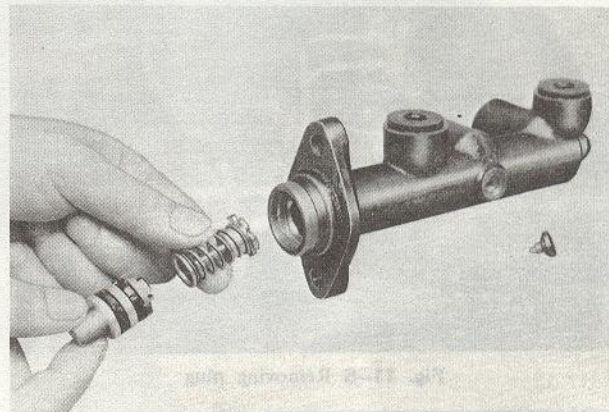


Fig. 11-12 Removing secondary piston

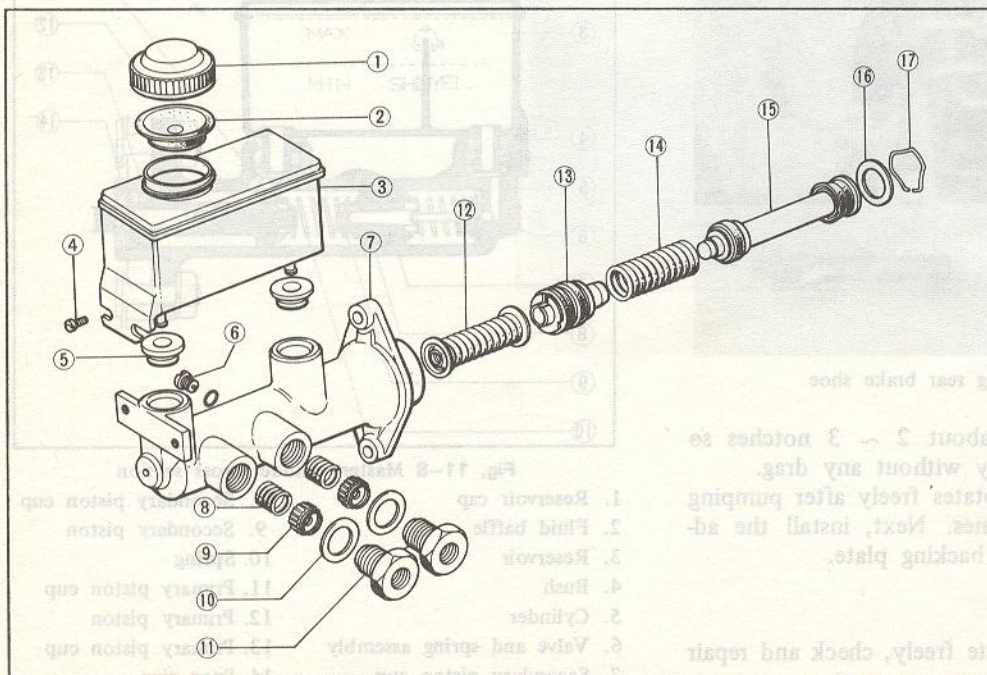


Fig. 11-13 Dual master cylinder components

1. Reservoir cap
2. Fluid baffle
3. Reservoir
4. Bolt
5. Bush
6. Secondary piston stop bolt and "O" ring
7. Cylinder
8. Spring
9. Check valve
10. Gasket
11. Joint bolt
12. Valve and spring assembly
13. Secondary piston
14. Spring
15. Primary piston
16. Stop washer
17. Snap ring

spring. If necessary, blow out with compressed air from the secondary brake system outlet.

8. Remove the joint bolts from the primary and secondary brake system outlets. Then, remove the check valves and return springs from the outlets.

11-B-3. Checking Dual Master Cylinder

1. Clean all parts in clean alcohol or brake fluid. **Never use gasoline or kerosene.**

2. Check the piston cups and replace if they are damaged, worn, softened, or swelled.

3. Examine the cylinder bore and piston for wear, roughness or scoring. Check the clearance between the cylinder bore and the piston. If it is more than **0.15 mm (0.006 in)**, replace the cylinder or piston.

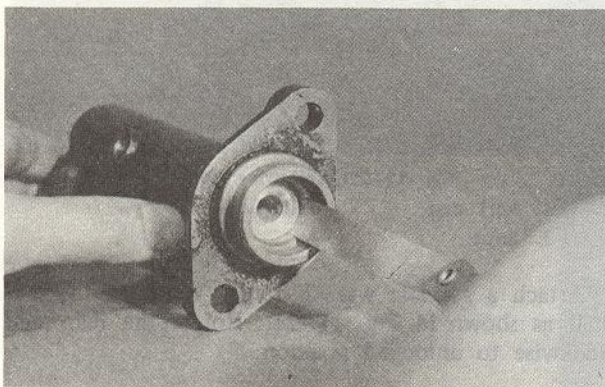


Fig. 11-14 Checking piston clearance

4. Check all recesses, openings and internal passages to be sure they are open and free of foreign matter. Use compressed air to blow out dirt and cleaning solvent.

5. Check the piston return spring for weakness.

11-B-4. Assembling Dual Master Cylinder

1. Dip all parts except the cylinder in clean brake fluid.

2. Insert the check valve springs into the outlets and place the check valves over the springs. Install the joint bolts and tighten them.

3. Insert the valve and secondary piston return spring assembly into the cylinder.

4. Fit the secondary piston guide pin into the secondary piston stop bolt hole and insert the secondary

piston into the cylinder. Depress the secondary piston with a suitable rod and remove the guide pin. Then, install the secondary piston stop bolt.

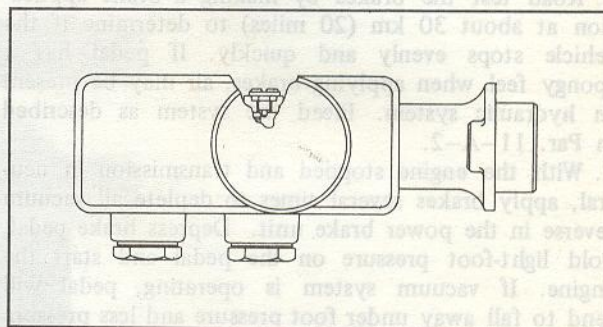


Fig. 11-17 Installing stop bolt

5. Insert the primary piston return spring and the primary piston assembly into the cylinder.

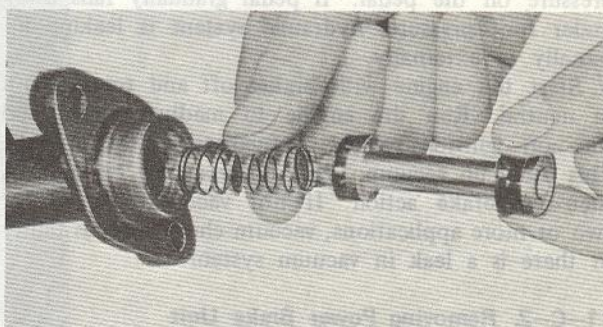


Fig. 11-18 Installing primary piston

6. Hold the primary piston down and install the snap ring into position in groove of the cylinder bore.

Note :

Make sure that the piston cups do not cover the compensating port.

7. Install the reservoir to the cylinder.

11-B-5. Installing Dual Master Cylinder

Follow the removal procedures in the reverse order.

Note :

Fill the reservoir and bleed the air at each bleeder screw.

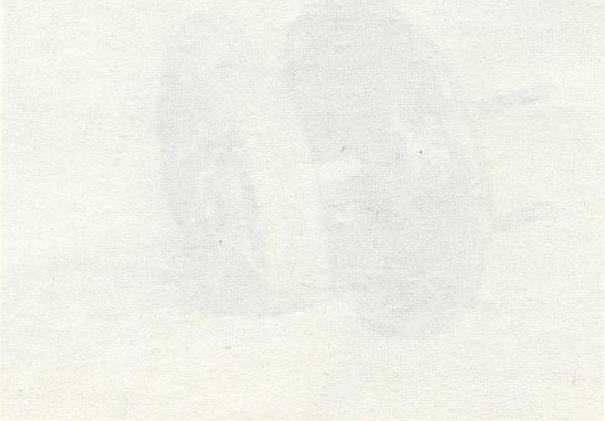


Fig. 11-22 Removing plate, and valve body assembly

Fig. 11-19 Removing cotter pin

4. Remove the nuts that attach the power brake unit to the dash panel.
5. Remove the power brake unit from the dash panel.

11-C-3. Disassembling Power Brake Unit
1. Remove the check valve from the power brake unit.
2. Place the power brake unit in a vice with push rod up. Clamp the unit firmly on the frame.

11-C. POWER BRAKE UNIT

11-C-1. Checking Power Brake Unit on Vehicle

1. Road test the brakes by making a brake application at about 30 km (20 miles) to determine if the vehicle stops evenly and quickly. If pedal has a spongy feel when applying brakes, air may be present in hydraulic system. Bleed the system as described in Par. 11-A-2.
2. With the engine stopped and transmission in neutral, apply brakes several times to deplete all vacuum reverse in the power brake unit. Depress brake pedal, hold light-foot pressure on the pedal and start the engine. If vacuum system is operating, pedal will tend to fall away under foot pressure and less pressure will be required to hold pedal in applied position. If no action is felt, vacuum system is not functioning.
3. Stop the engine. Again deplete all vacuum reverse in system. Depress the brake pedal and hold foot pressure on the pedal. If pedal gradually falls away under foot pressure, hydraulic system is leaking internally or externally.
4. Start the engine with brakes off and transmission in neutral. Run the engine to medium speed and turn off ignition switch. Immediately close throttle. This build up vacuum. Wait no less than 90 seconds, then try brake action. If not vacuum assisted for two or more applications, vacuum check valve is faulty or there is a leak in vacuum system.

11-C-2. Removing Power Brake Unit

1. Remove the brake master cylinder, as described in Par. 11-B-1.
2. Disconnect the vacuum hose at the power brake unit.
3. Disconnect the push rod from the brake pedal by removing the cotter pin at the fork end.

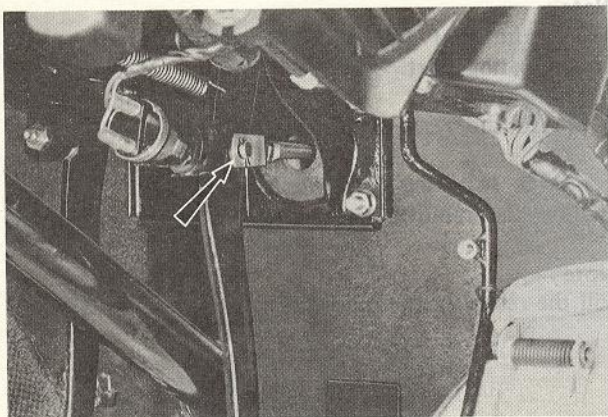


Fig. 11-19 Removing cotter pin

4. Remove the nuts that attach the power brake unit to the dash panel.
5. Remove the power brake unit from the dash panel.

11-C-3. Disassembling Power Brake Unit

1. Remove the check valve from the power brake unit.
2. Place the power brake unit in a vice with push rod up. Clamp the unit firmly on the flange.

3. Scribe a mark on the bottom center of the front and rear shells to facilitate reassembly.
4. Remove the fork end, lock nut and dust boot.

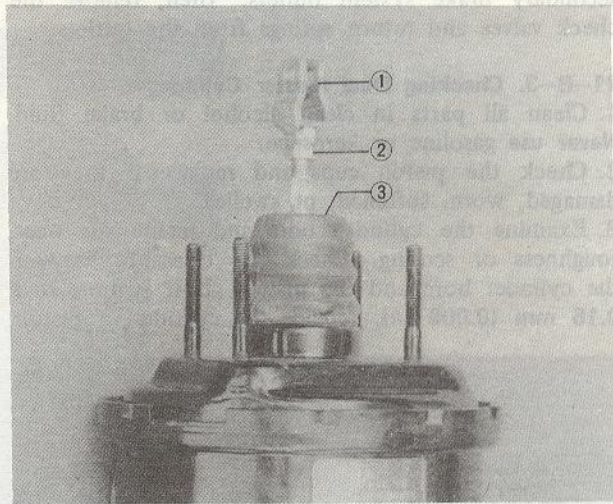


Fig. 11-20 Removing boot

- | | |
|-------------|-------------|
| 1. Fork end | 2. Lock nut |
| 3. Boot | |

5. Attach a suitable wrench to the studs of the rear shell as shown in Fig. 11-21. Rotate the rear shell clockwise to unlocked position.

Note :

Loosen the rear shell carefully as it is spring-loaded.

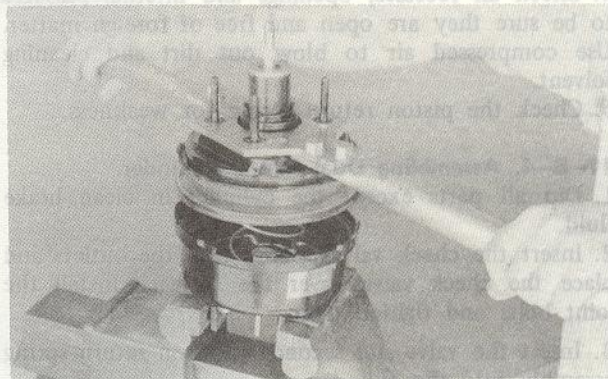


Fig. 11-21 Removing rear shell

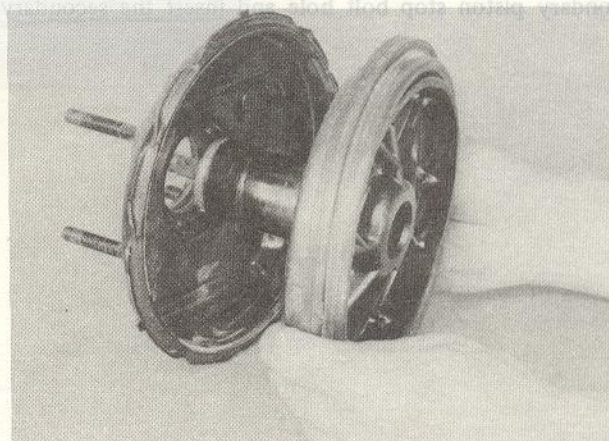


Fig. 11-22 Removing plate, and valve body assembly

6. Lift the rear shell and plate and valve body, valve rod and plunger assembly from the unit. Then, remove the return spring.
7. Remove the plate, valve body, valve rod and plunger assembly from the rear shell.

Note :

Do not remove the rear seal from the rear shell unless seal is defective and the new seal is available. To remove the rear seal, support the rear shell and drive out the rear seal with a punch or a screwdriver.

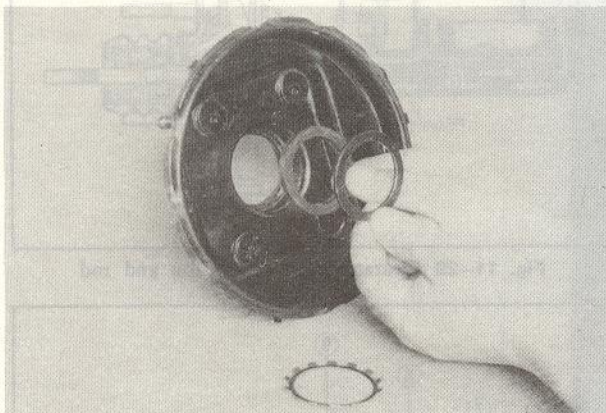


Fig. 11-23 Removing rear seal

8. Remove the diaphragm from the plate and valve body.

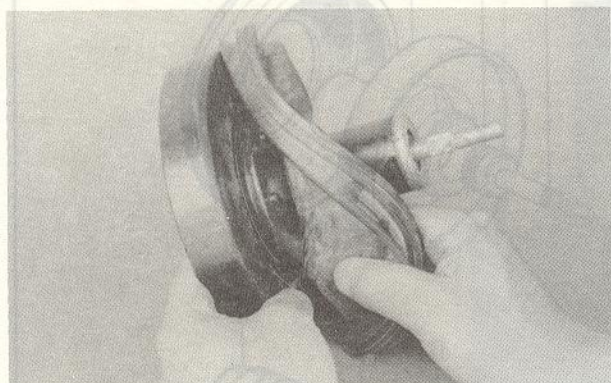


Fig. 11-24 Removing diaphragm

9. Remove the air silencer with the air filter from the plate and valve body, being careful not to chip plastic.

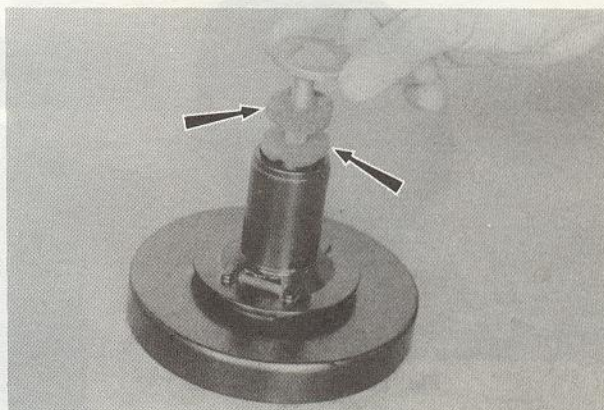


Fig. 11-25 Removing air filter

10. Press in on the valve rod to remove the valve retainer key. Remove the valve rod and plunger assembly.

Note :

The valve rod and plunger are serviced as an assembly only.

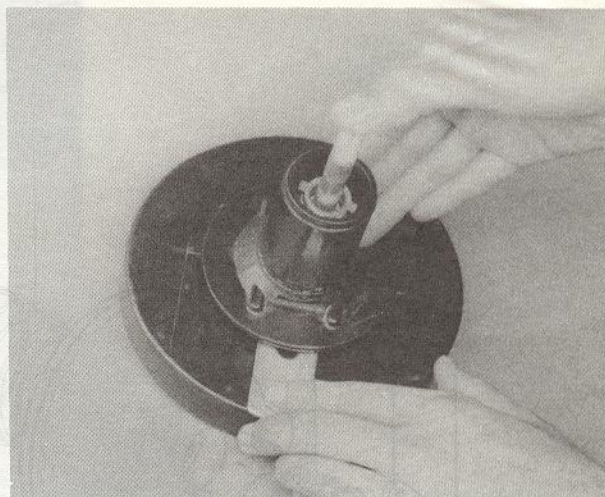


Fig. 11-26 Removing retainer key

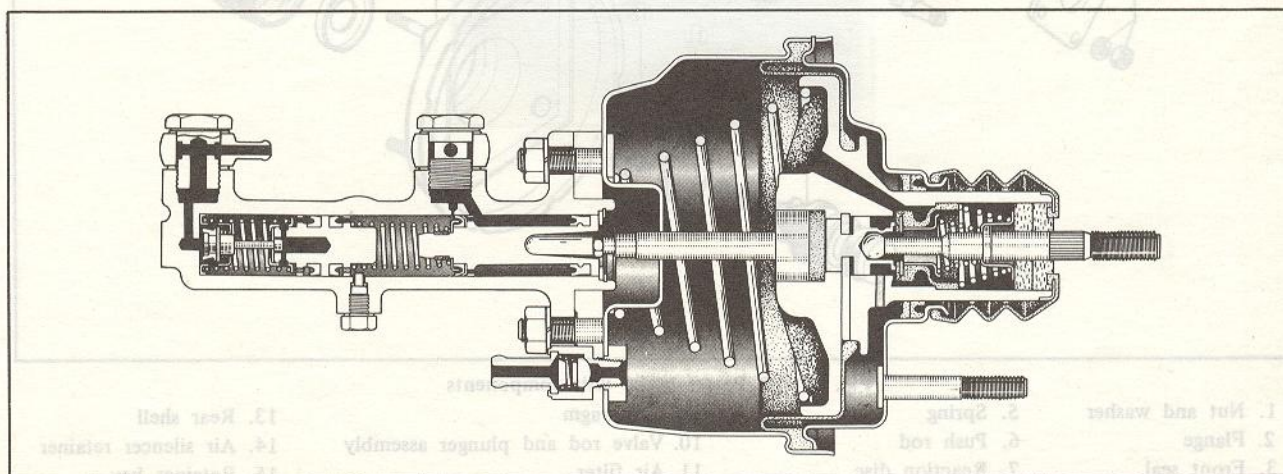


Fig. 11-27 Power brake unit cross section

11. Press the reaction disc out of the valve body.

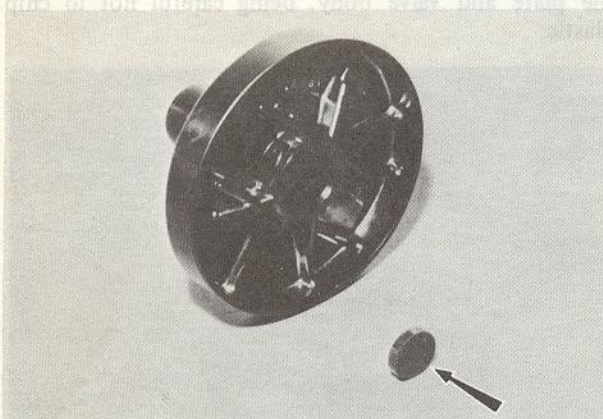


Fig. 11-28 Reaction disc

12. Remove the push rod.
13. Remove the front seal from the front shell if necessary.

11-C-4. Checking Power Brake Unit

1. Check the clearance between primary piston and the push rod of the master cylinder and if necessary, adjust the push rod so that the correct clearance is obtained. The standard clearance is 0.1 ~ 0.5 mm (0.004 ~ 0.020 in).

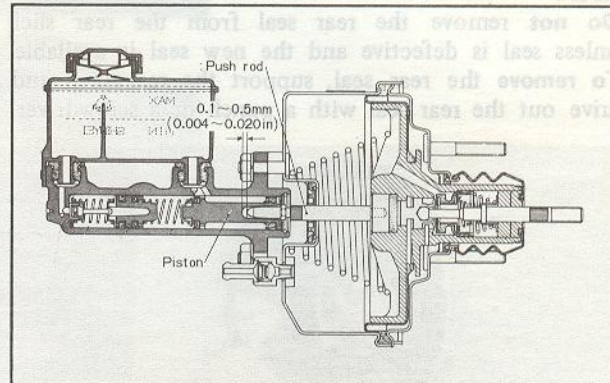


Fig. 11-29 Clearance between piston and rod

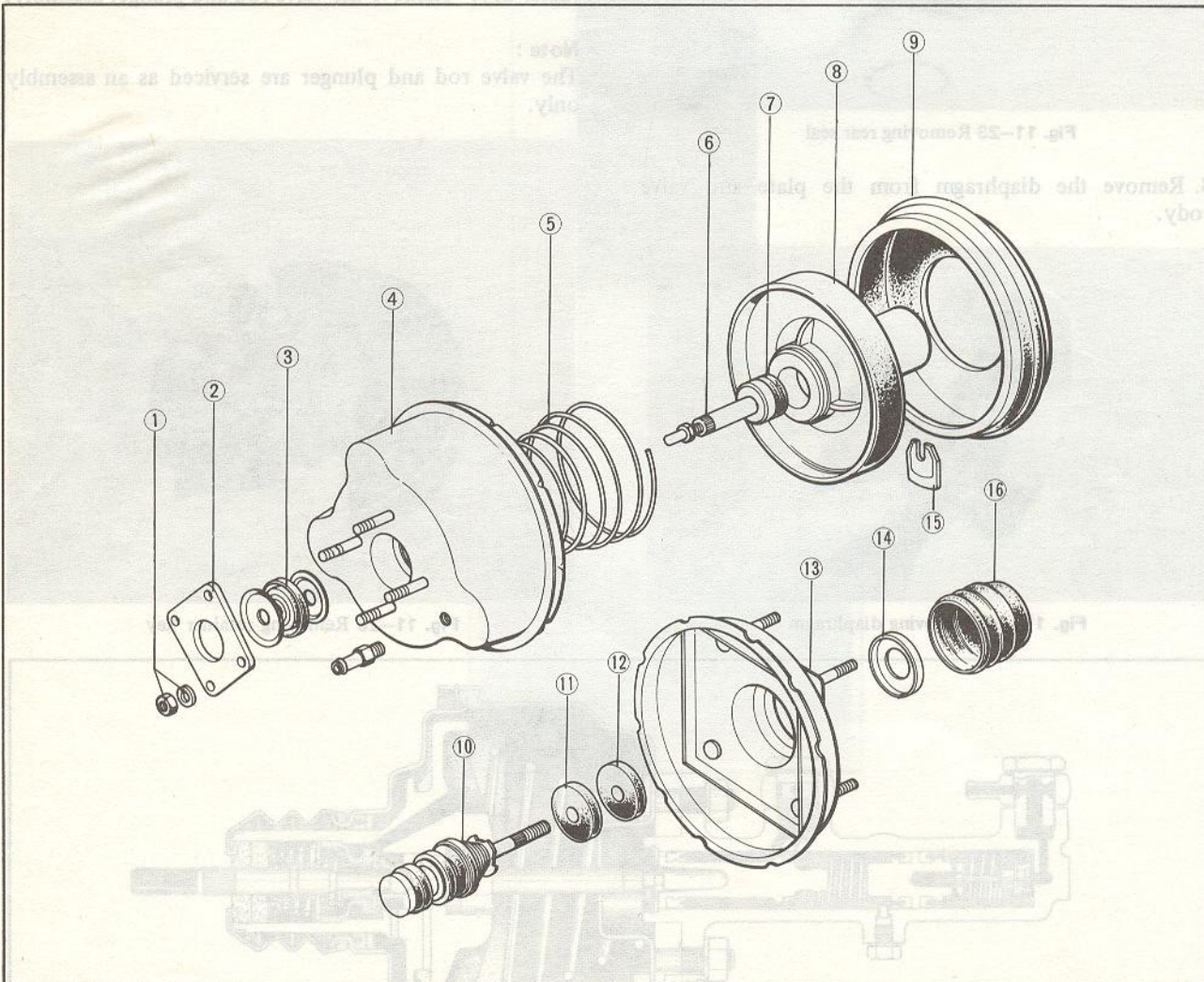


Fig. 11-30 Power brake unit components

- | | | |
|-------------------|-------------------------|------------------------------------|
| 1. Nut and washer | 5. Spring | 9. Diaphragm |
| 2. Flange | 6. Push rod | 10. Valve rod and plunger assembly |
| 3. Front seal | 7. Reaction disc | 11. Air filter |
| 4. Front shell | 8. Plate and valve body | 12. Air silencer |
| | | 13. Rear shell |
| | | 14. Air silencer retainer |
| | | 15. Retainer key |
| | | 16. Boot |

2. Inspect all rubber parts. Wipe free of fluid and carefully inspect each rubber part for cuts, nicks or other damage.
3. Check the plate and valve body for cracks, distortion, chipping and damaged seats.
4. Inspect the reaction disc for deterioration of rubber.
5. Check the valve rod and plunger for all seats to be smooth and free of nicks and dents. Replace with a new one if defective.
6. Inspect the front and rear shells for scratches, scores, pits, dents or other damage.
7. Check the diaphragm for cuts, or other damage.

11-C-5. Assembling Power Brake Unit

1. Apply power brake lubricant to the inner surface of the tube section of the plate and valve body and to the surfaces of the valve rod and plunger.
2. Insert the valve rod and plunger assembly into the tube section of the plate and valve body.
3. Press down on the valve rod and align the groove in the valve plunger with the slot of the valve body. Insert the retainer key.
4. Install the diaphragm on the plate and valve body making certain the diaphragm is seated in the groove.
5. Assemble the air filter and the air silencer over the rod and position in the valve body.
6. Apply power brake lubricant liberally to the entire surface of the reaction disc and install the reaction disc into the plate and valve body.
7. Coat the outer bead of the diaphragm with power brake lubricant where it bears against the outer rims of the front and rear shells to aid in assembly.
8. Apply power brake lubricant to the seal in the rear shell and carefully guide tube end of the plate and valve body, through the seal in the rear shell.

9. Install the plate and valve body into the front shell.

10. Install the push rod through the front of the plate and valve body.

11. Install the return spring.

12. Install the rear shell assembly by using the wrench to rotate the rear shell counter-clockwise until scribe marks align.

Note :

Press the rear shell down firmly, maintaining a pressure until the shell flanges are fully locked.

13. Install the dust boot down against the rear shell.

14. Install the check valve.

11-C-6. Installing Power Brake Unit

Follow the removal procedures in the reverse order.

Note :

After installing the unit, bleed the hydraulic system according to the procedure described in Par. 11-A-2.

11-D. HYDRAULIC LINES

11-D-1. Checking Brake Lines

Inspect all brake lines for any leakage with the foot brakes applied. Check all brake pipes, hoses and connections for signs of chafing, deterioration or replaced or repaired, always air bleed the hydraulic system.

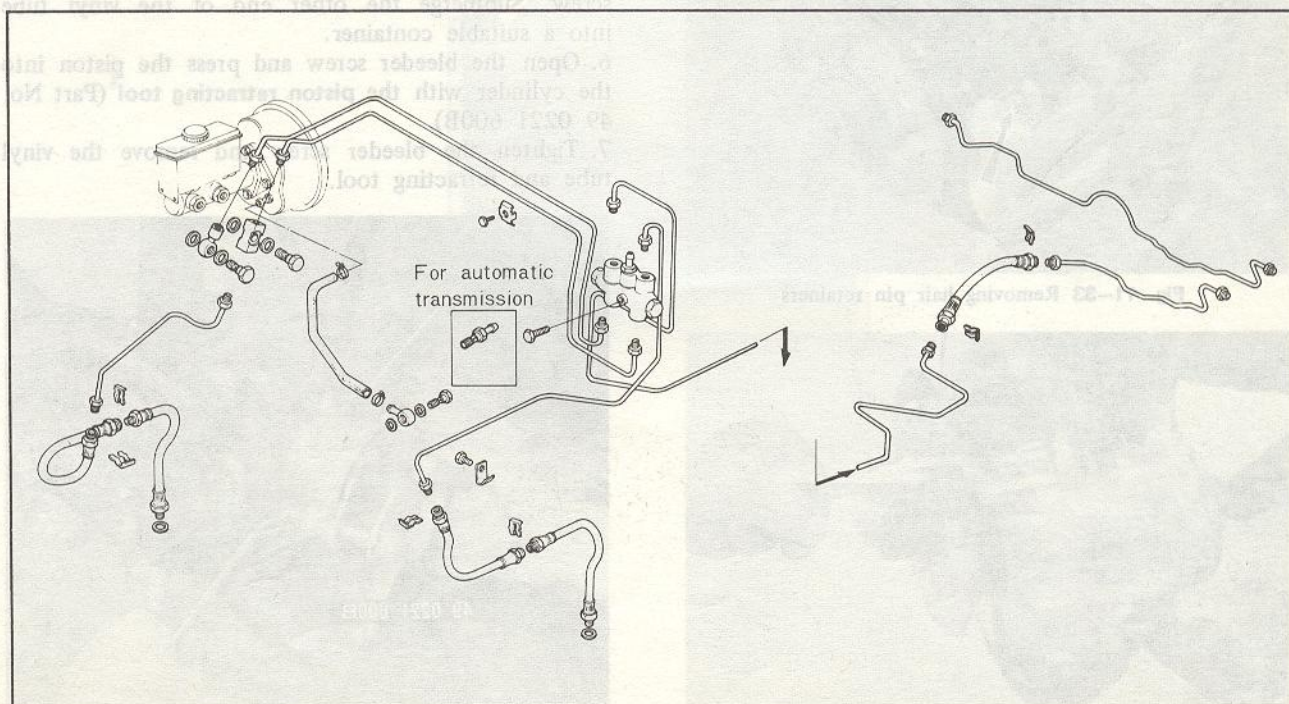
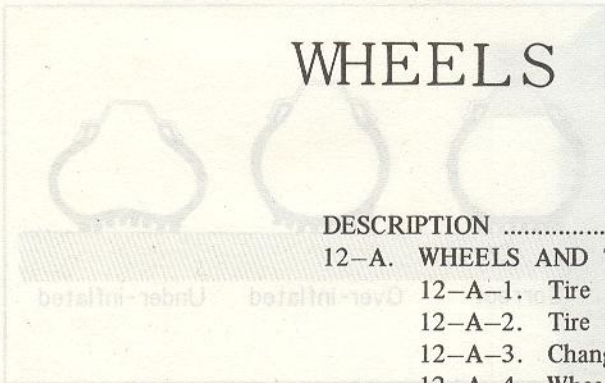
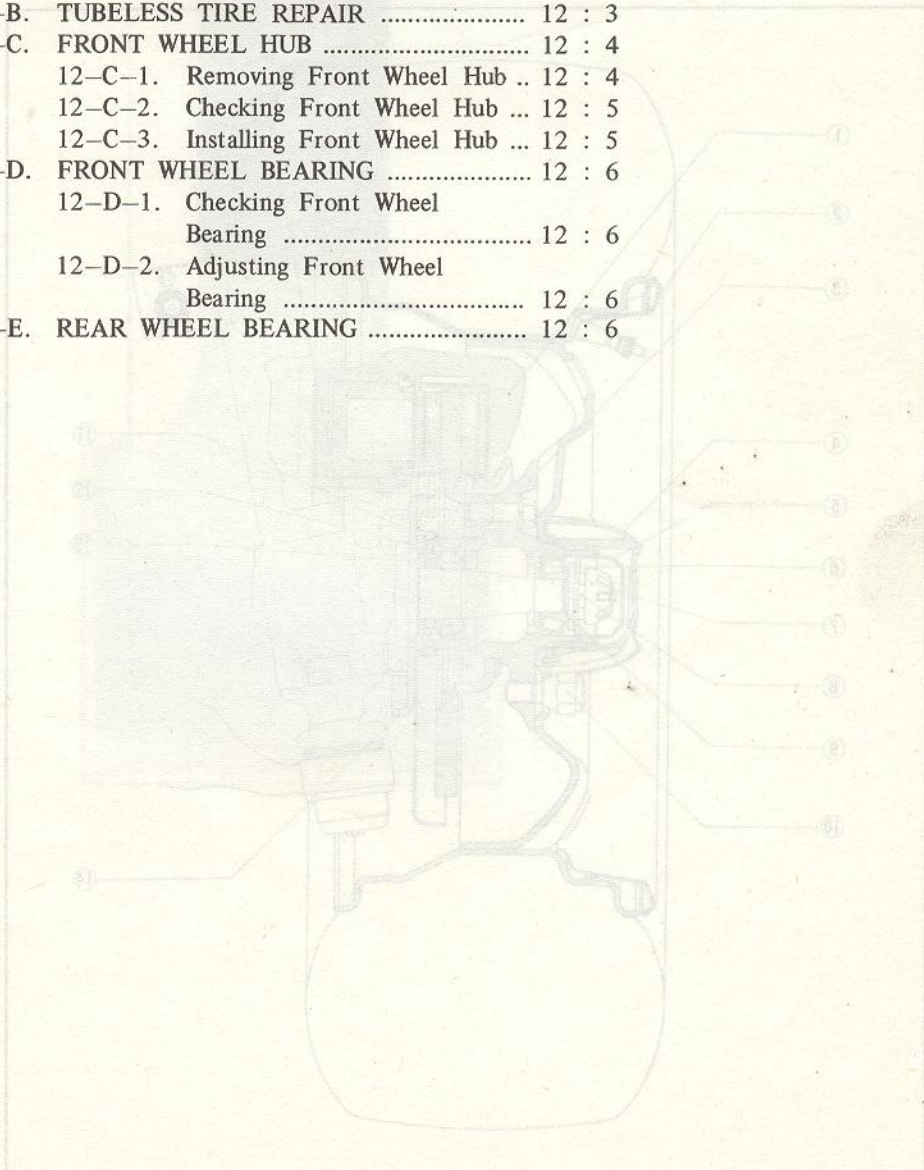


Fig. 11-31 Hydraulic lines

WHEELS AND TIRES



DESCRIPTION	12 : 1
12-A. WHEELS AND TIRES	12 : 1
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1. Caliper
2. Wheel ring
3. Hub
4. Center cap
5. Grease cap
6. Hub outer bearing
7. Nut lock
8. Bearing preload adjusting nut
9. Flat washer
10. Wheel bolt
11. Hub inner bearing
12. Grease seal
13. Spacer
14. Mounting adaptor

12-A. WHEELS AND TIRES
12-A-1. Tire Inflation
Maintenance of correct

DESCRIPTION

Each front wheel is bolted to its respective front hub and rotor assembly. Two opposed tapered roller bearings are installed in each hub. A grease seal is installed at inner end of the hub to prevent grease from leaking on the rotor. The entire assembly is retained to steering knuckle spindle by the adjusting nut, nut lock and cotter pin.

The rear wheel is bolted to the rear axle shaft flange. The rear wheel bearing is pressed onto axle shaft just inside the shaft flange and entire assembly is retained to the rear axle housing by the bearing retainer which is attached to the housing flange.

12-A. WHEELS AND TIRES

12-A-1. Tire Inflation

Maintenance of correct inflation pressure is one of

the most important elements of tire care.

Excessive inflation pressure will cause :

1. Hard rides
2. Damage to tire carcass
3. Poor traction
4. Premature tread wear in center of tire

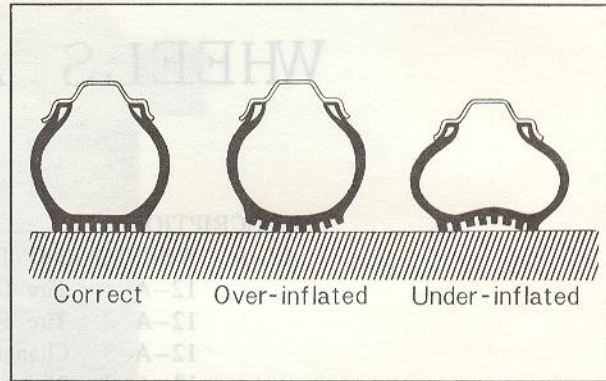


Fig. 12-1 Tire deformation and pressure

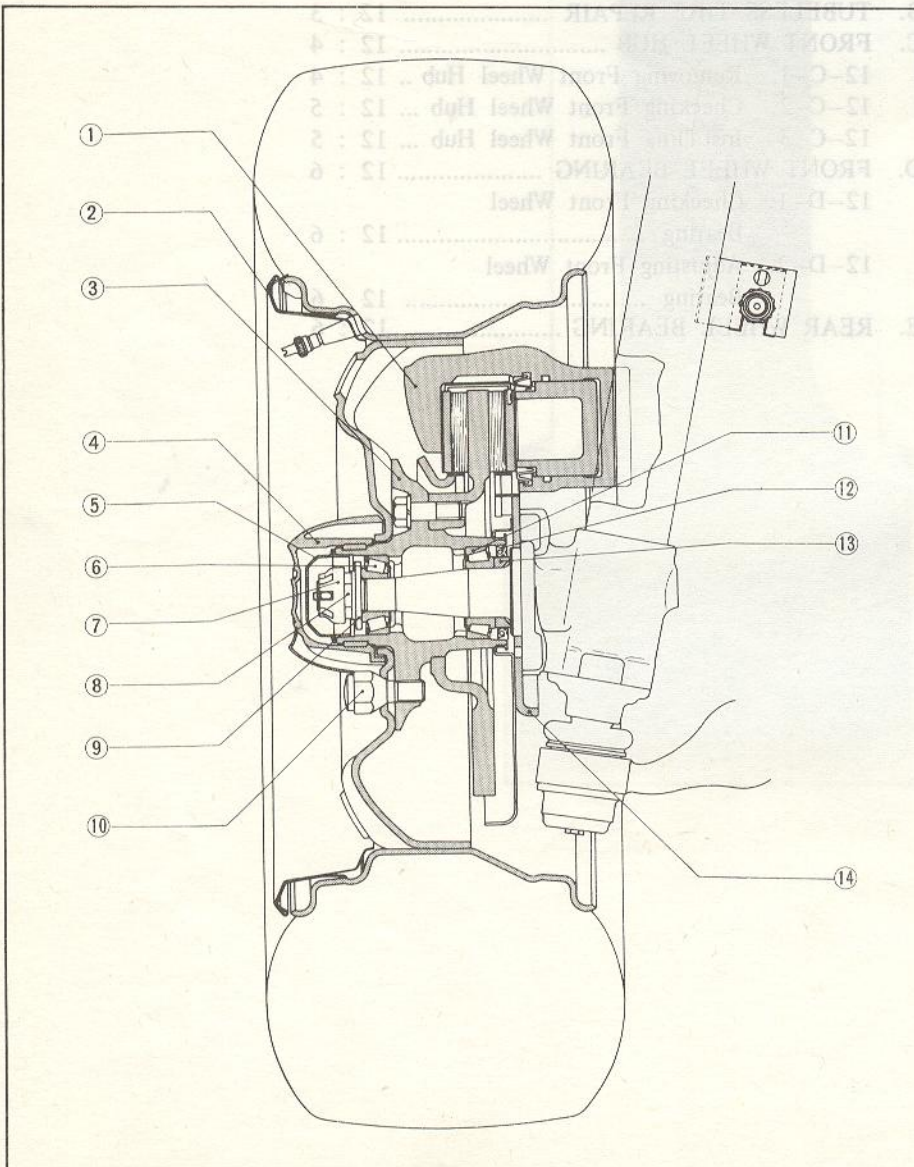


Fig. 12-2 Front wheel cross section

1. Caliper
2. Wheel ring
3. Hub
4. Center cap
5. Grease cap
6. Hub outer bearing
7. Nut lock
8. Bearing preload adjusting nut
9. Flat washer
10. Wheel bolt
11. Hub inner bearing
12. Grease seal
13. Spacer
14. Mounting adaptor

Low inflation pressure will cause :

1. Hard steering
2. Rapid and uneven wear on the edges of tire tread
3. Increased cord fatigue or broken tire cords
4. High tire temperature
5. Blows out

Check the inflation pressure with a reliable gauge when the tires are cold. The standard pressures are as follows :

	Less than 100 km/h (60 miles/h)	More than 100 km/h (60 miles/h)
Front	1.7 kg/cm ² (24 lb/in ²)	2.0 kg/cm ² (28 lb/in ²)
Rear	1.7 kg/cm ² (24 lb/in ²)	2.0 kg/cm ² (28 lb/in ²)

After checking or inflating the pressure, place the valve cap back on and tighten by hand. It helps to maintain the air pressure in the tires in case of any valve leak and keeps dust and water out of the valve.

12-A-2. Tire Rotation (Replacement)

If the tires are utilized by installing at the same locations, these will create wear pattern characteristic to the locations, therefore, it is recommended to alter the installing location by rotating the tires periodically at every 6,000 kilometers or 4,000 miles, to wear the tires evenly. In this case, the rotation of the tires must be performed including the spare tire.

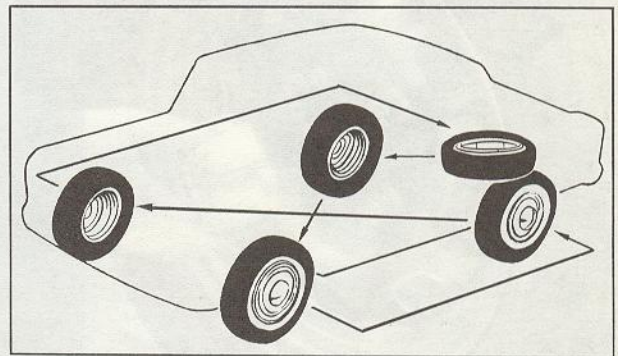


Fig. 12-3 Tire rotation

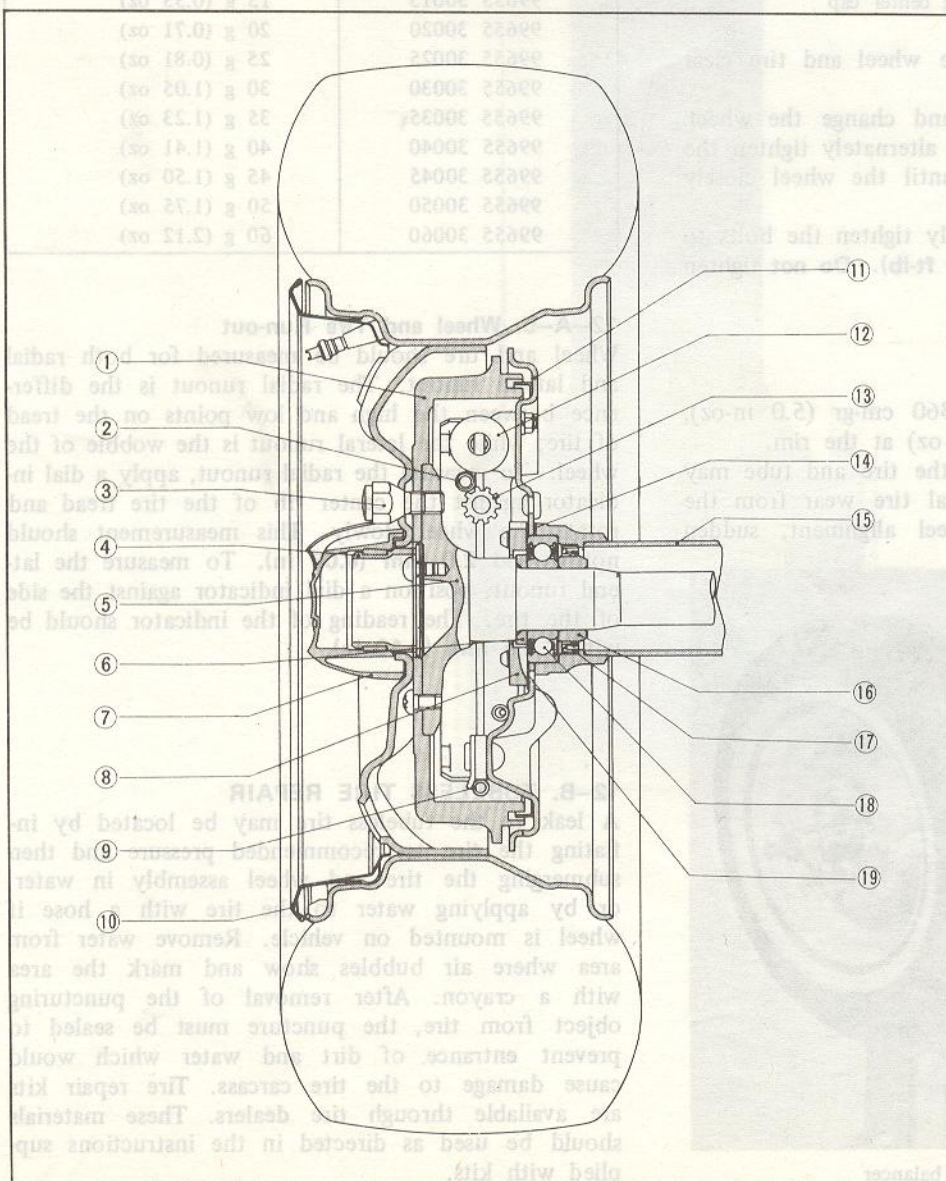


Fig. 12-4 Rear wheel cross section

1. Brake drum
2. Brake shoe return spring
3. Wheel bolt
4. Center cap adaptor
5. Rear axle shaft
6. Spacer
7. Center cap
8. Bearing retainer
9. Brake shoe return spring
10. Wheel ring
11. Backing plate
12. Wheel cylinder
13. Brake shoe adjusting nut and push rod assembly
14. Adjusting shim
15. Rear axle housing
16. Bearing collar
17. Oil seal
18. Bearing
19. Gasket

12-A-3. Changing Wheels

1. Remove the center cap and loosen the wheel bolts. **Do not** loosen the wheel bolts at one time.

Note :

The wheel bolts are loosened by turning these in the counter-clockwise direction.



Fig. 12-5 Removing center cap

2. Raise the vehicle until the wheel and tire clear the ground.
3. Remove the wheel bolts and change the wheel.
4. Install the wheel bolts and alternately tighten the diametrically opposite bolts until the wheel closely touches the rear axle flange.
5. Lower the vehicle and firmly tighten the bolts to **9.0 ~ 10.0 m-kG (65.0 ~ 72.0 ft-lb)**. **Do not** tighten the wheel bolts at one time.
6. Refit the center cap.

12-A-4. Wheel Balance

The allowable unbalance is 360 cm-gr (5.0 in-oz), which is less than 20 gr (0.7 oz) at the rim.

The wheel balance including the tire and tube may be destroyed by the abnormal tire wear from the improper adjustment of wheel alignment, sudden

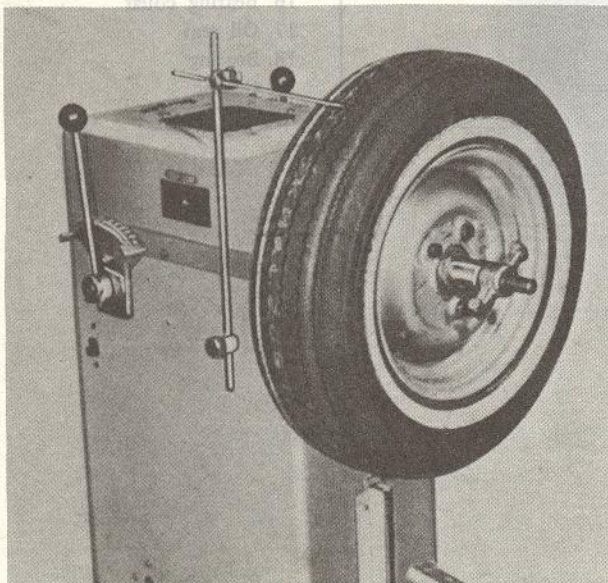


Fig. 12-6 Wheel balancer

brake application, side skidding, incorrect tire inflation, and/or from the repair of the tire or tube. Therefore, whenever the wheel becomes unsteady, or replaced after repair, always inspect the static balance and the dynamic balance of the wheel.

To perform the balance correction, the following methods can be considered.

1. Correction by removing the wheel from the car.
 2. Correction without removing the wheel from the car.
- Both methods can be recommended utilizing the respective wheel balancer to correct the balance precisely both for static balance and dynamic balance. Balancing weight must be estimated, and the installing positions must be determined by referring to the instruction manuals furnished with each of the balancers.

Balancing weight

Part No.	Weight
99655 30010	10 g (0.35 oz)
99655 30015	15 g (0.53 oz)
99655 30020	20 g (0.71 oz)
99655 30025	25 g (0.81 oz)
99655 30030	30 g (1.05 oz)
99655 30035	35 g (1.23 oz)
99655 30040	40 g (1.41 oz)
99655 30045	45 g (1.50 oz)
99655 30050	50 g (1.75 oz)
99655 30060	60 g (2.12 oz)

12-A-5. Wheel and Tire Run-out

Wheel and tire should be measured for both radial and lateral runout. The radial runout is the difference between the high and low points on the tread of tire; while the lateral runout is the wobble of the wheel. To measure the radial runout, apply a dial indicator against the center rib of the tire tread and rotate the wheel slowly. This measurement should not exceed **2.0 mm (0.08 in)**. To measure the lateral runout, position a dial indicator against the side of the tire. The reading of the indicator should be within **2.5 mm (0.10 in)**.

12-B. TUBELESS TIRE REPAIR

A leak in the tubeless tire may be located by inflating the tire to recommended pressure and then submerging the tire and wheel assembly in water, or by applying water to the tire with a hose if wheel is mounted on vehicle. Remove water from area where air bubbles show and mark the area with a crayon. After removal of the puncturing object from tire, the puncture must be sealed to prevent entrance of dirt and water which would cause damage to the tire carcass. Tire repair kits are available through tire dealers. These materials should be used as directed in the instructions supplied with kits.

12-C. FRONT WHEEL HUB

12-C-1. Removing Front Wheel Hub

1. Raise the vehicle with a jack until the front wheels clear the ground.
2. Remove the center cap and remove the wheel.
3. Remove the bolts that attach the caliper and bracket assembly and remove the caliper and bracket assembly.
4. Remove the grease cap from the hub. Remove the cotter pin, nut lock, adjusting nut and flat washer from the spindle.

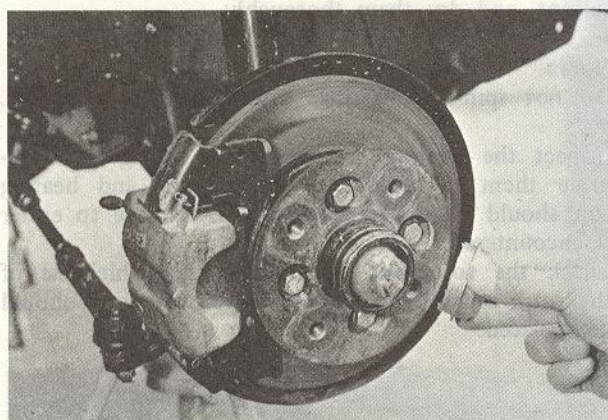


Fig. 12-7 Removing grease cap

5. Pull the hub and rotor assembly off the spindle.
6. Remove the outer bearing from the hub.

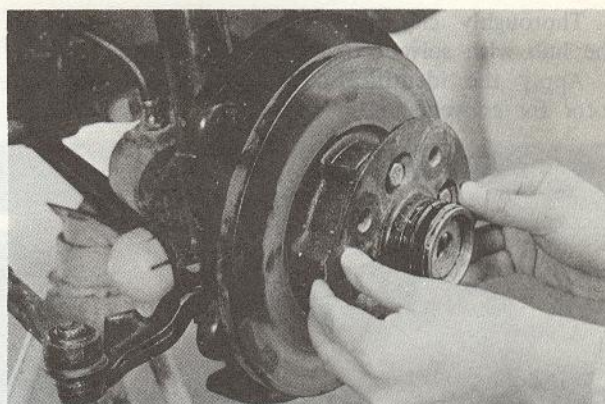


Fig. 12-8 Removing hub and rotor assembly



Fig. 12-9 Removing outer bearing

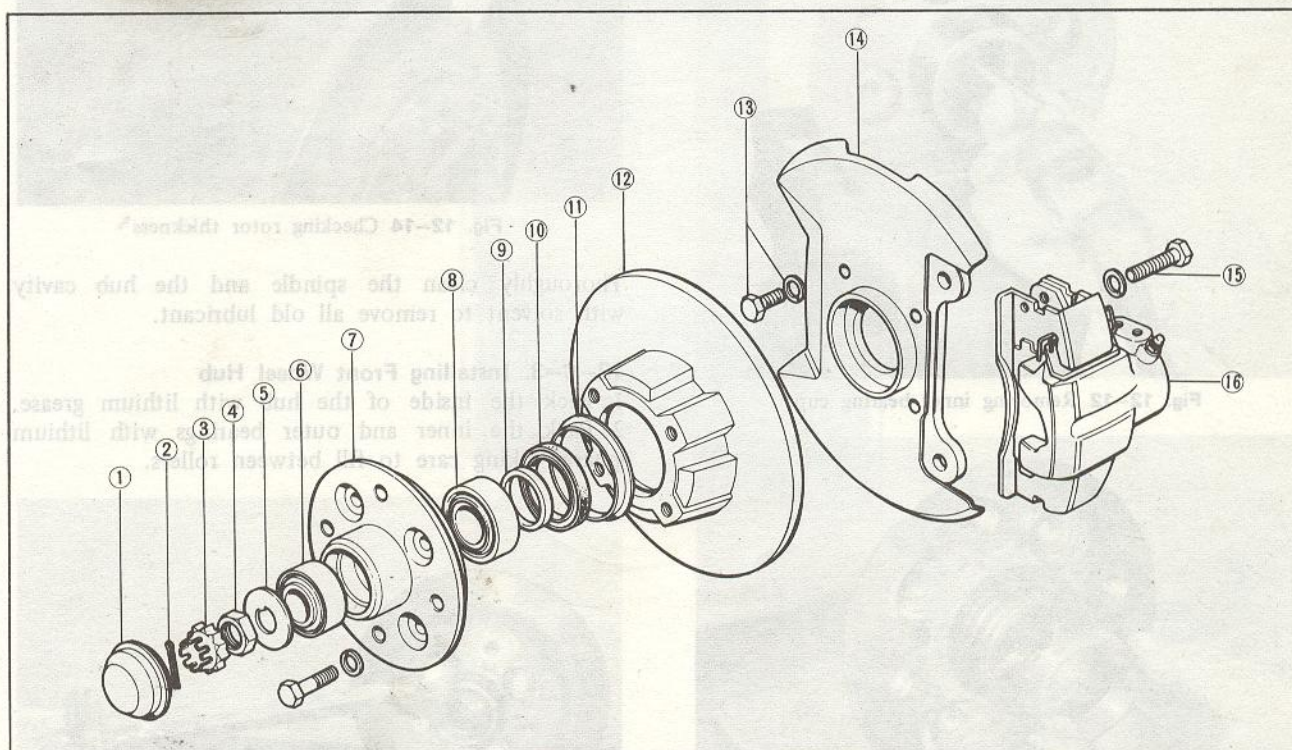


Fig. 12-10 Front wheel hub components

- | | | | |
|------------------|------------------|-----------------|------------------------------|
| 1. Grease cap | 5. Flat washer | 9. Spacer | 13. Bolt and washer |
| 2. Cotter pin | 6. Outer bearing | 10. Grease seal | 14. Caliper mounting adaptor |
| 3. Nut lock | 7. Hub | 11. Dust ring | 15. Bolt and washer |
| 4. Adjusting nut | 8. Inner bearing | 12. Rotor | 16. Caliper |

7. Thoroughly clean the spindle and the inside of the hub with solvent to remove all old grease.
8. Apply the identification marks on the hub and rotor for convenience in reassembly.

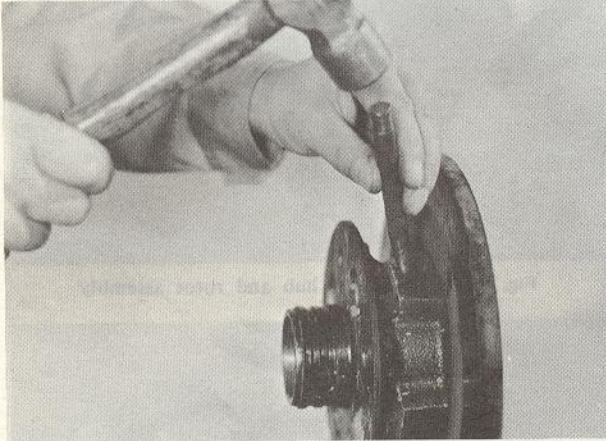


Fig. 12-11 Applying identification marks

9. Remove the bolts that attach the hub to the rotor. Remove the hub from the rotor.
10. Drive out the grease seal and remove the spacer and inner bearing from the hub.
11. Clean the lubricant off the outer and inner bear-

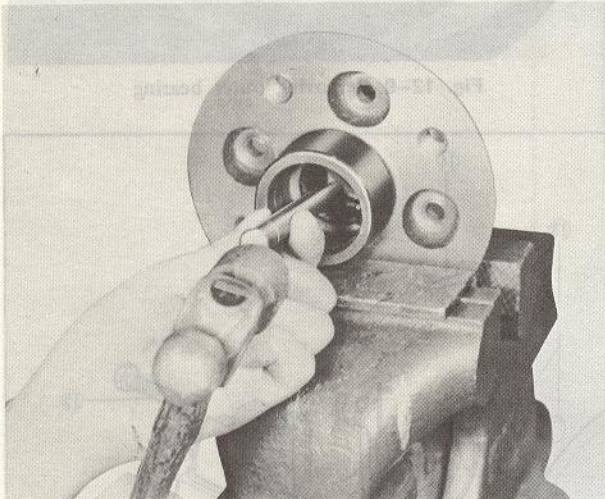


Fig. 12-12 Removing inner bearing cup

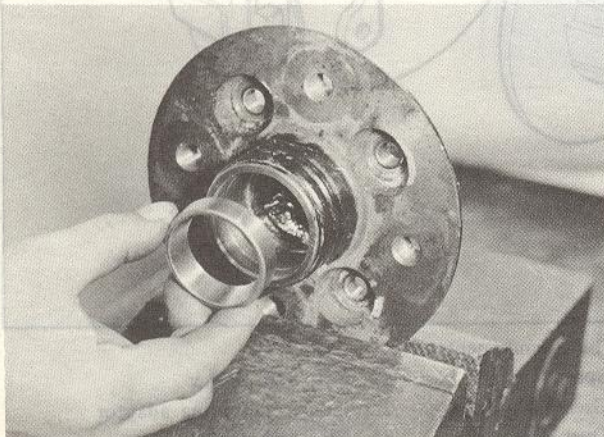


Fig. 12-13 Installing outer bearing cup

ing cups with solvent and inspect the bearing cups for scratches, pits, excessive wear, and other damage.

If necessary, replace the cup as follows:

- 1) Remove the outer and inner bearing cups from the hub using a suitable brass rod.
- 2) Install the inner and outer bearing cups into the hub using a suitable tool. Be sure to seat the cups properly in the hub.

12-C-2. Checking Front Wheel Hub

Thoroughly clean the inner and outer bearings with solvent, and dry them thoroughly.

Note:

Do not spin the bearings dry with compressed air.

Inspect the bearing for wear and damage, and replace them if necessary. The bearing and bearing cup should be replaced as a set if damage to either is encountered.

Check the rotor for thickness. If the thickness of the rotor is less than **11 mm (0.433 in)**, rotor should be replaced.

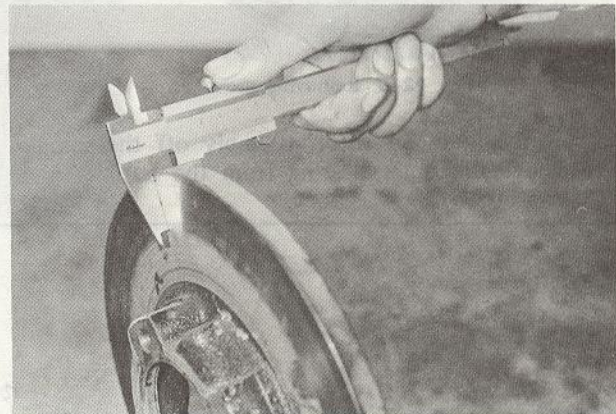


Fig. 12-14 Checking rotor thickness

Thoroughly clean the spindle and the hub cavity with solvent to remove all old lubricant.

12-C-3. Installing Front Wheel Hub

1. Pack the inside of the hub with lithium grease.
2. Pack the inner and outer bearings with lithium grease, taking care to fill between rollers.

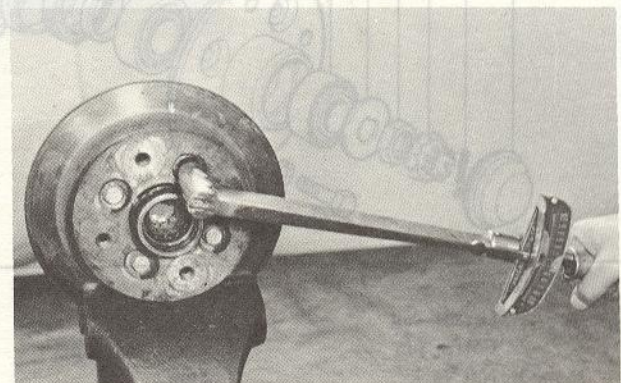


Fig. 12-15 Tightening hub attaching bolts

3. Place the inner bearing in the inner bearing cup.
4. Install the spacer and grease seal into the hub.
5. Install the hub to the rotor. Install the attaching bolts and tighten the bolts to **5.0 m-kg (36.2 ft-lb)**.
6. Install the hub and rotor assembly on the spindle.
7. Install the outer bearing, flat washer and adjusting nut.
8. Adjust the wheel bearing preload as described in Par 12-D-2 on page 12 : 6 and install the nut lock and a new cotter pin. Pack the grease cap with lithium grease and install the grease cap.

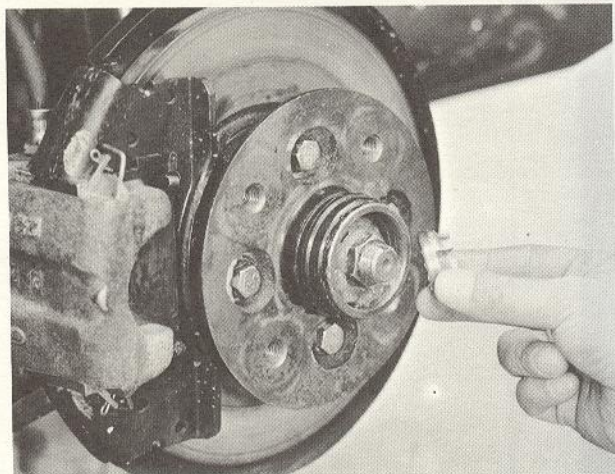


Fig. 12-16 Installing nut lock

9. Install the caliper to the mounting adaptor and tighten the attaching bolts.
10. Position the wheel on the hub. Install the wheel bolts and tighten them alternately in order to draw the wheel evenly against the hub.
11. Install the center cap.
12. Pump the brake pedal several times to obtain normal brake lining to rotor clearance and restore normal brake pedal travel.

12-D. FRONT WHEEL BEARING

12-D-1. Checking Front Wheel Bearing

To check the front wheel bearings, raise the front of vehicle and support with stands. Grip the tire and shake it sideways. If considerable play is noticed, this is an indication that the bearings are worn or scarred.

12-D-2. Adjusting Front Wheel Bearing

The front wheel bearings should be adjusted if the wheel is loose on the spindle or if the wheel does not rotate freely.

Adjusting procedures are as follows :

1. Raise the vehicle with a jack until the wheel clears ground.
2. Remove the center cap and remove the wheel.
3. Remove the grease cap from the hub.

4. Wipe the excess grease from the end of the spindle, and remove the cotter pin and nut lock.
5. Loosen the bearing adjusting nut three turns. Then, rock the hub and rotor assembly in and out several times to push the shoes away from the rotor.
6. While rotating the hub and rotor assembly, tighten the adjusting nut to seat the bearings.
7. Back the adjusting nut off about one-six of a turn.

Note :

The bearing preload should be **0.4 ~ 1.0 kg (0.88 ~ 2.2 lb)** when the hub and rotor assembly is pulled using a pull scale to read the preload.

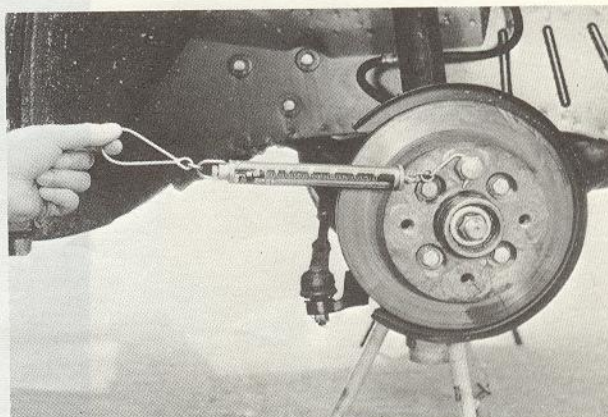


Fig. 12-17 Checking wheel bearing preload

8. Locate the nut lock on the adjusting nut so that the castellations on the lock are aligned with the cotter pin hole in the spindle.
9. Install a new cotter pin and bend the ends of the cotter pin.
10. Check the wheel rotation. If the wheel rotates properly, install the grease cap. If the wheel still rotates roughly or noisily, clean or replace the bearings and cups as required.
11. Install the grease cap.
12. Install the wheel and tighten the wheel bolts to **9.0 ~ 10.0 m-kg (65.0 ~ 72.0 ft-lb)**.
13. Install the center cap.
14. Pump the brake pedal several times to obtain normal brake lining to rotor clearance and restore normal brake pedal travel.

12-E. REAR WHEEL BEARING

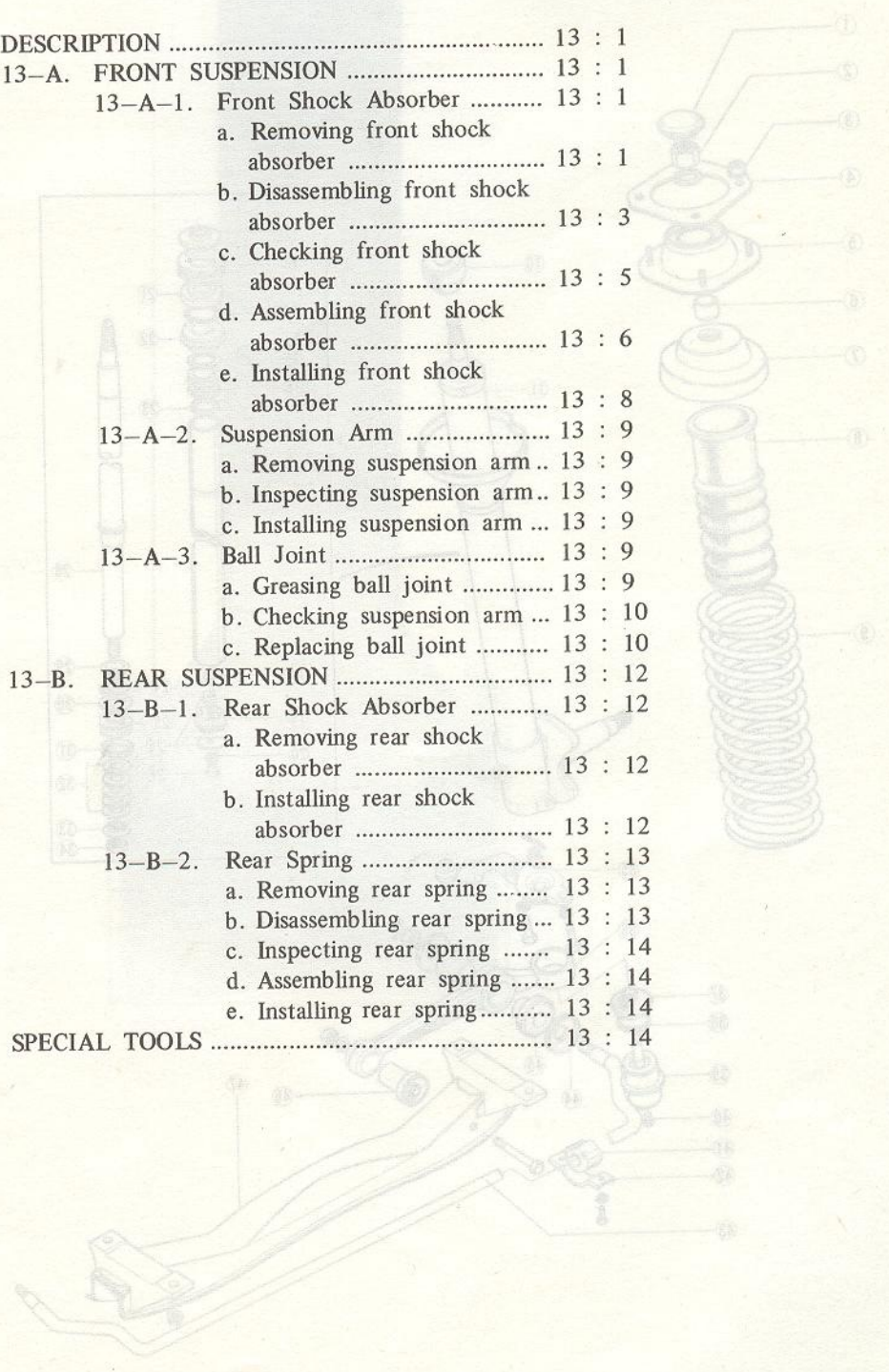
Servicing the rear wheel bearing is explained in Par. 9-A on page 9 : 1.

SUSPENSION

DESCRIPTION
 The front suspension consists mainly of the vertical shock absorbers integrally made with each steering knuckle, suspension arms and stabilizer bar. This front suspension does not require lubrication, except the lower ball joints which are provided with grease fittings when required. The rear suspension consists mainly of leaf springs and gas sealed type shock absorbers. The front shock absorbers should not be replaced with a highly compressed gas type shock absorber as assembly to be defective, replace it as assembly.

- Fig. 13-1 Front suspension components
1. Cap
 2. Nut
 3. Nut
 4. Road clearance adjusting pins
 5. Shock absorber support
 6. Spacer
 7. Spring seat
 8. Dust boot
 9. Coil spring
 10. Damper stopper
 11. Front shock absorber
 12. Dust cover
 13. Cap nut and seal assembly
 14. "O" ring
 15. Back-up ring
 16. Stopper guide
 17. Pressure tube
 18. Bolt
 19. Base valve cap
 20. Valve seat
 21. Oil seal
 22. Pinion rod guide
 23. Stopper
 24. Check valve spring
 25. Piston
 26. Relief valve
 27. Nut
 28. Pinion rod
 29. Washer
 30. Check valve
 31. Piston ring
 32. Relief valve
 33. Washer
 34. Nut
 35. Knuckle arm
 36. Suspension arm
 37. Dust seal
 38. Set ring
 39. Ball joint
 40. Plug
 41. Bush
 42. Stabilizer bar bracket
 43. Stabilizer bar
 44. Washer
 45. Bush
 46. Bush
 47. Cross member

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13-A-2. Suspension Arm

a. Removing suspension arm

1. Raise the front end of the vehicle and support with stands.
2. Remove the front wheel.
3. Disconnect the tie-rod from the knuckle arm by removing the cotter pin and nut and using the puller (Part No. 49 0118 850C).

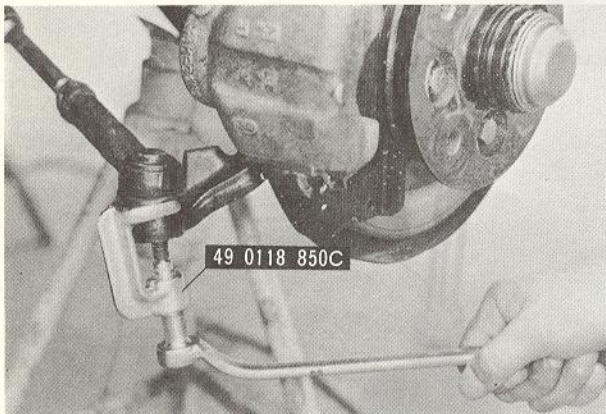


Fig. 13-42 Disconnecting tie-rod

4. Remove the bolts attaching the knuckle arm to the lower end of the front shock absorber.

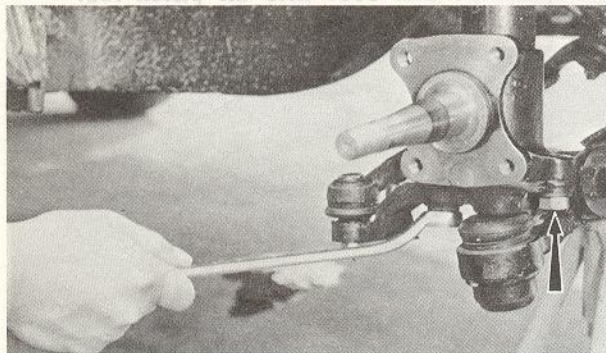


Fig. 13-43 Removing bolts

5. Remove the cotter pin, nut, washer and rubber bush holding the stabilizer bar to the suspension arm and disconnect the stabilizer bar from the suspension arm.
6. Remove the nut and bolt attaching the suspension



Fig. 13-44 Removing suspension arm and knuckle arm

arm to the cross member. Remove the suspension arm and knuckle arm.

7. Hold the suspension arm in a vise. Check the suspension arm, knuckle arm and ball joint as instructed in Par. 13-A-2 (step b) and in Par. 13-A-3 (step b).
8. If necessary, remove the cotter pin and nut and disconnect the knuckle arm from the suspension arm with the puller.



Fig. 13-45 Disconnecting knuckle arm

b. Inspecting suspension arm

1. Inspect the suspension arm and knuckle arm for any crack or damage.
2. Check the rubber bushes for weakness, wear or damage. If necessary, replace with new ones.

c. Installing suspension arm

Follow the removal procedures in the reverse order.

13-A-3. Ball Joint

a. Greasing ball joint

The ball joints of the suspension arm are designed to be maintenance-free for **48,000 km (32,000 miles)**. Therefore, no greasing is necessary during this period. When greasing becomes necessary on the ball joint, proceed as follows:

1. Remove the set ring from the groove on the dust seal and turn the dust seal inside out.
2. Remove the plug and fit a grease nipple in its stead.

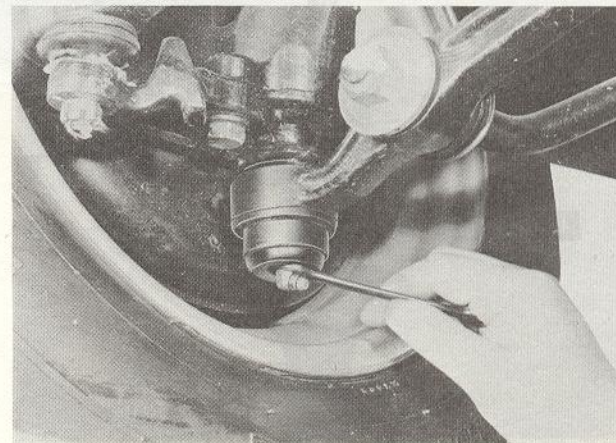


Fig. 13-46 Installing grease nipple

3. Remove all of the used grease in the socket and the dust seal by gradually supplying new **Molybdenum Disulphide Grease** through the nipple.
4. When the used grease is thoroughly removed, fit the dust seal to the groove on the socket and secure it in place with the set ring.
5. Add new grease until the dust seal begins to balloon. Then, depress the dust seal with the fingers so that about half of the grease remains in the dust seal.

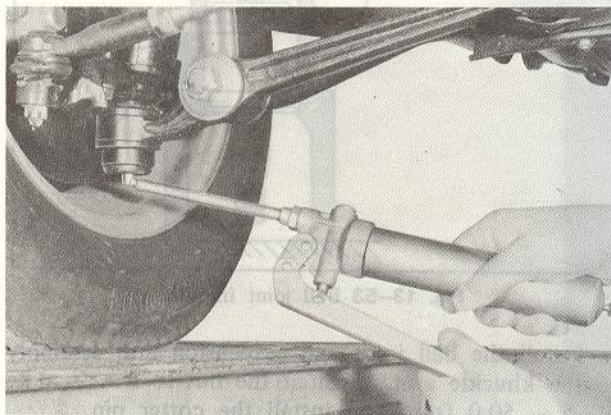


Fig. 13-47 Supplying new grease

6. Wipe off excess grease around the ball joint.
7. Remove the grease nipple and fit the plug.

b. Checking ball joint

1. Check the dust seal for wear, flaw or any damage. If the dust seal is defective, this will allow entry of water and dirt, resulting in ball joint wear.
2. Check the revolving torque of the ball stud. To check, hook the pull scale in the hole of the knuckle arm for connecting the tie-rod and pull the scale until the knuckle arm starts to turn. The reading of the scale should be 8 ~ 14 kg (17.6 ~ 30.8 lb). If it is less than 8 kg (17.6 lb), replace the ball joint in its assembled form.

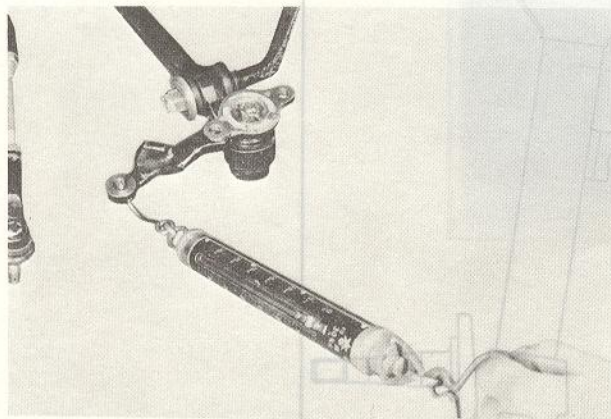


Fig. 13-48 Checking revolving torque

c. Replacing ball joint

1. Remove the suspension arm from the vehicle and disconnect the suspension arm from the knuckle arm with the suitable puller as described in Par. 13-A-2. (step b).

2. Remove the set ring and dust seal from the ball joint.
3. Press the ball joint out of the suspension arm with the **ball joint remover** (Part No. 49 0370 860).

Note :

Before pressing out the ball joint, clean the ball joint and suspension arm so as not to damage the mounting bore of the suspension arm.

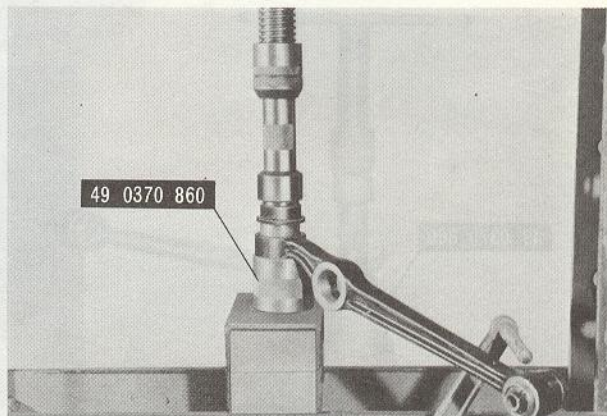


Fig. 13-49 Removing ball joint

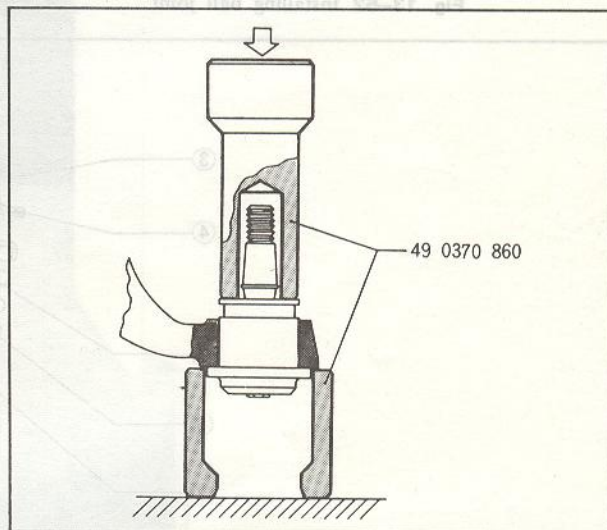


Fig. 13-50 Ball joint remover

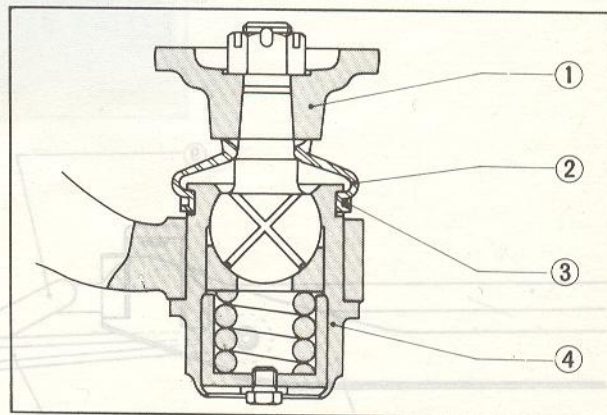


Fig. 13-51 Ball joint cross section

- | | |
|----------------|---------------|
| 1. Knuckle arm | 3. Set ring |
| 2. Dust seal | 4. Ball joint |

4. Clean the mounting bore of the suspension arm and apply kerosene.
5. Press fit the ball joint to the suspension arm with the ball joint installer (Part No. 49 0370 860).

Note :

If the pressure to press in the ball joint is less than 1,500 kg (3,300 lb), the suspension arm should be replaced.

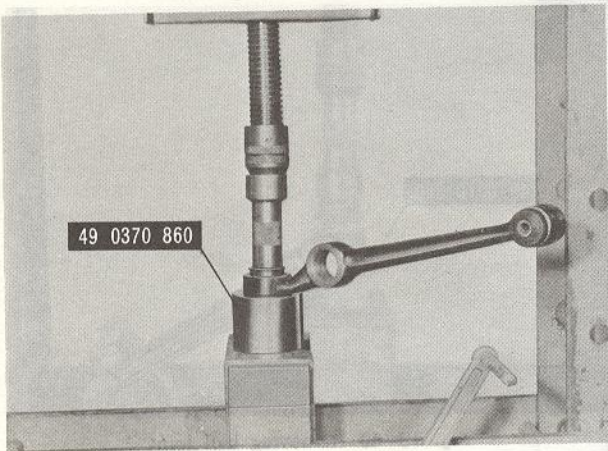


Fig. 13-52 Installing ball joint

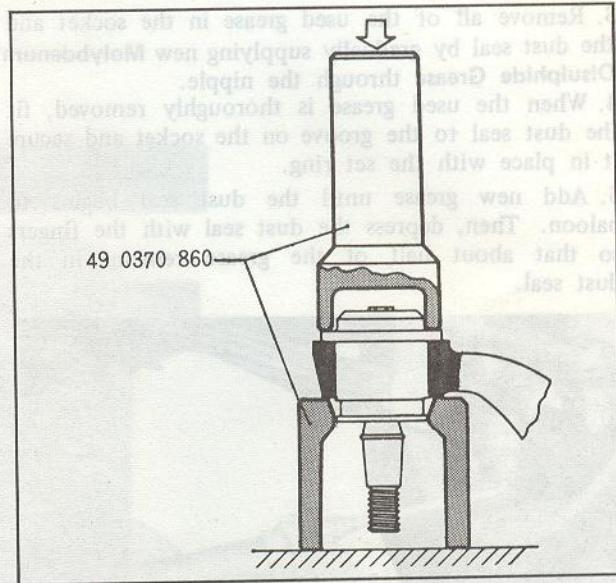


Fig. 13-53 Ball joint installer

6. Install the ball joint and suspension arm assembly to the khuckle arm. Tighten the nut to 6 ~ 7 m·kg (43.0 ~ 50.0 ft·lb) and install the cotter pin.
7. Install the suspension arm assembly.

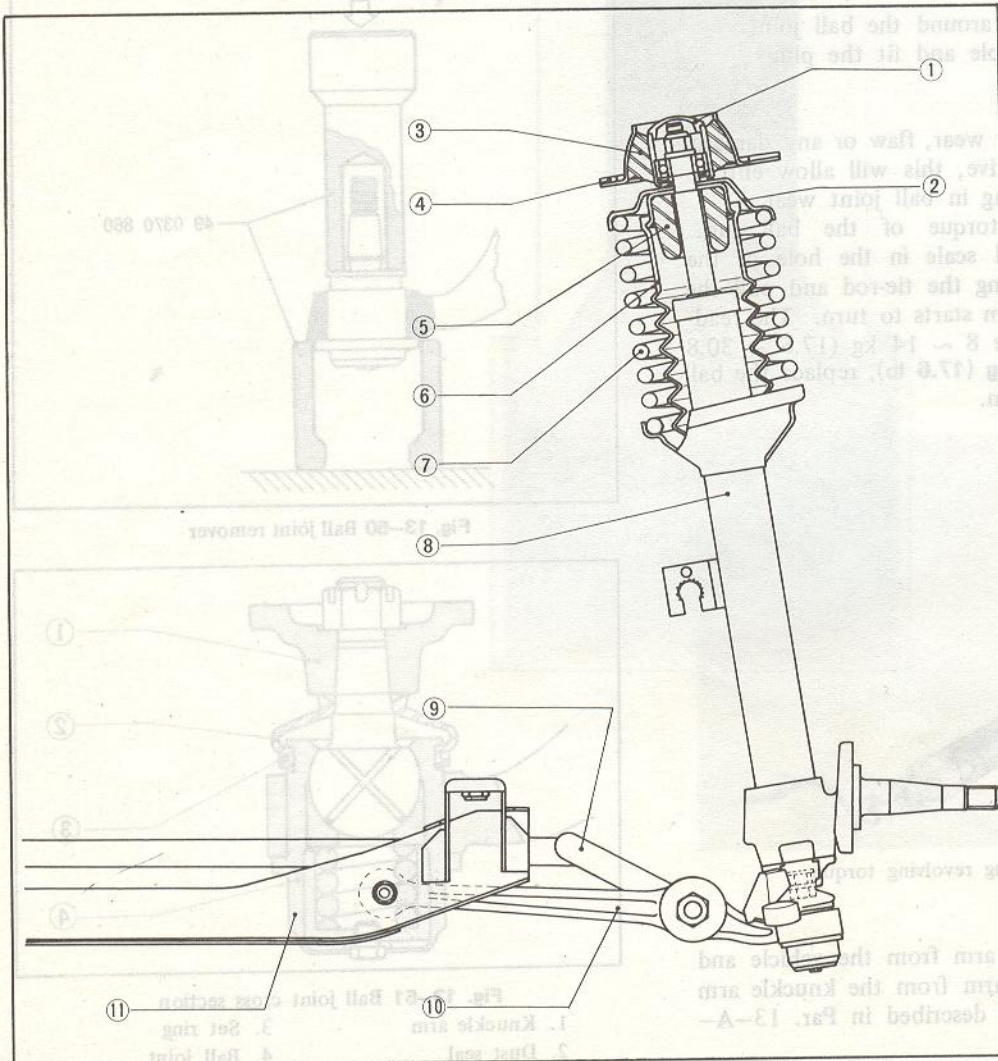


Fig. 13-54 Front suspension

1. Cap
2. Spring seat
3. Shock absorber support
4. Road clearance adjusting plate
5. Damper stopper
6. Dust boot
7. Coil spring
8. Front shock absorber
9. Stabilizer bar
10. Suspension arm
11. Cross member

13-B. REAR SUSPENSION

13-B-1. Rear Shock Absorber

a. Removing rear shock absorber

1. Remove the rear seat, as described in Par. 14-H-1.
2. Remove the nuts, washers and rubber bushes from upper ends of the shock absorber.
3. Remove nuts attaching the lower end of the shock

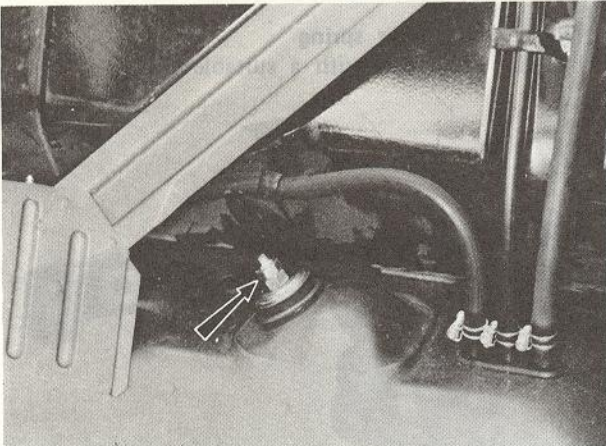


Fig. 13-55 Removing nuts

absorber to the rear axle housing, and remove the shock absorber.

b. Installing rear shock absorber

Follow the removal procedures in the reverse order.

Note :

Tighten the rear shock absorber nuts to the dimension shown in Fig. 13-56.

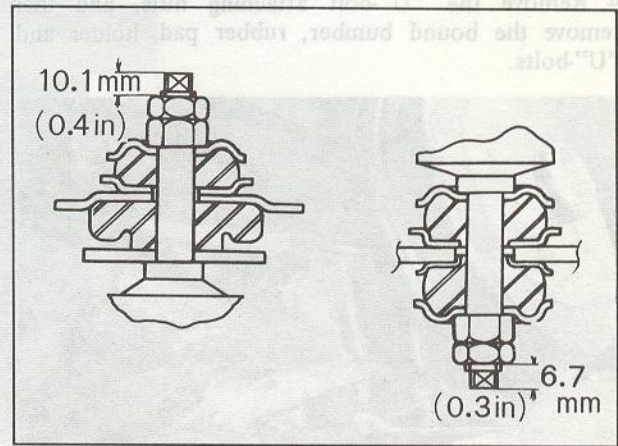


Fig. 13-56 Tightening nuts

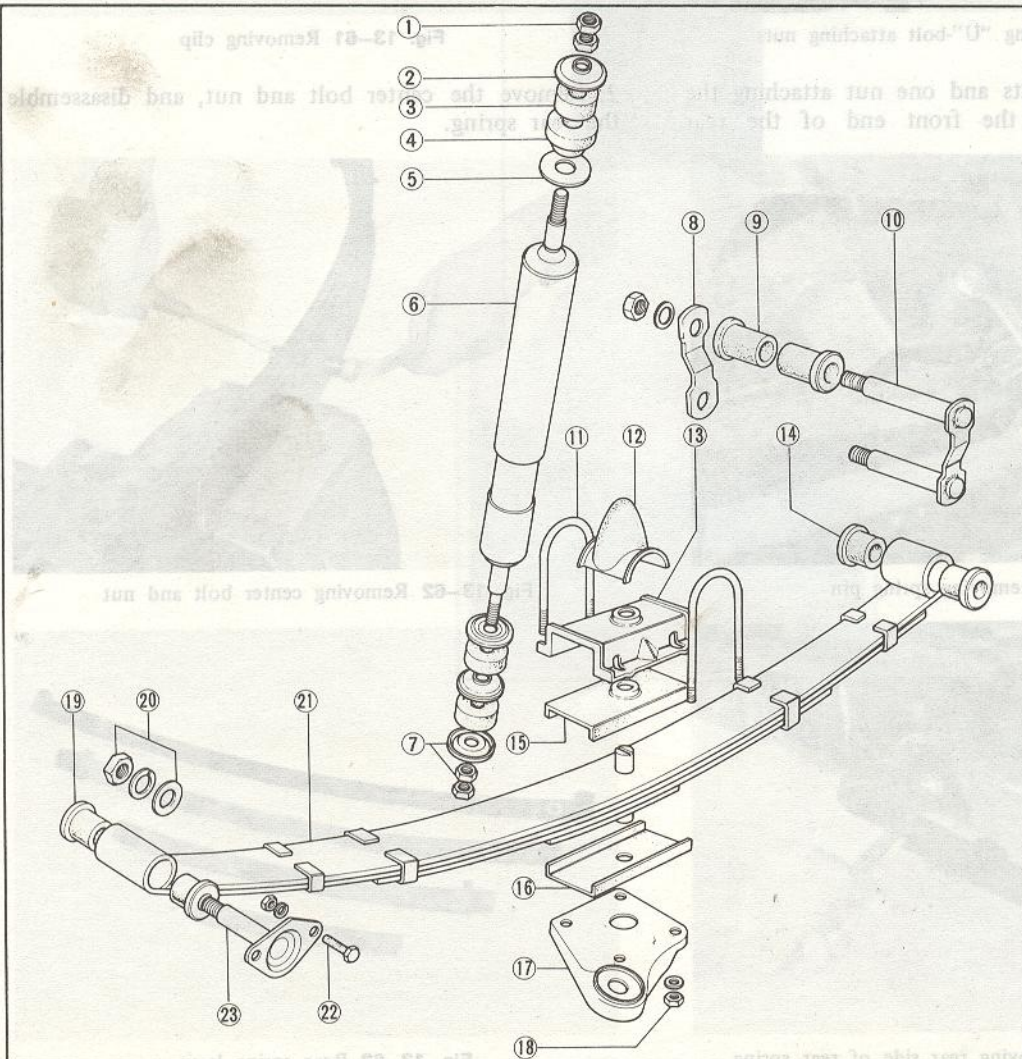


Fig. 13-57 Rear suspension components

1. Nut
2. Washer
3. Bush
4. Bush
5. Washer
6. Rear shock absorber
7. Nut and washer
8. Shackle plate
9. Bush
10. Shackle
11. "U"-bolt
12. Bound bumper
13. Holder
14. Bush
15. Rubber pad
16. Rubber pad
17. Spring clamp
18. Nut and washer
19. Bush
20. Nut and washer
21. Rear spring
22. Bolt and nut
23. Spring pin

13-B-2. Rear Spring

a. Removing rear spring

1. Raise the rear end of the vehicle and support the body (rear side frame).
2. Remove the rear wheel and support the rear axle housing with stands.
3. Disconnect the lower end of the rear shock absorber from the spring clamp by removing the nuts.
4. Remove the "U"-bolt attaching nuts, and then remove the bound bumper, rubber pad, holder and "U"-bolts.

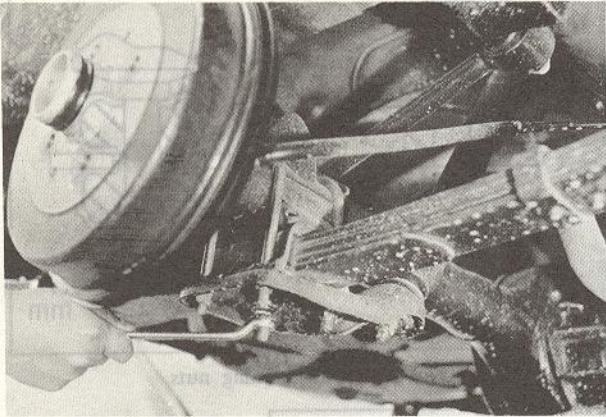


Fig. 13-58 Removing "U"-bolt attaching nuts

5. Remove the two bolts and one nut attaching the spring pin located at the front end of the rear

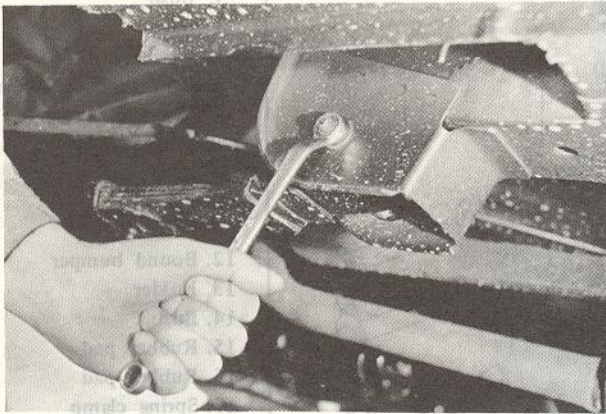


Fig. 13-59 Removing spring pin

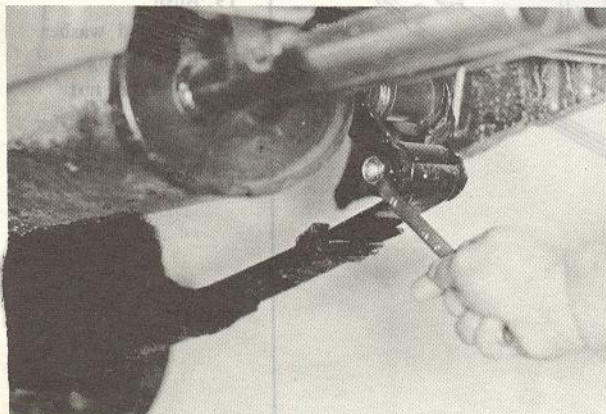


Fig. 13-60 Removing rear side of rear spring

6. Remove the shackle nuts, shackle plate and shackle and remove the rear end of the rear spring from the vehicle.

7. Remove the bushes from the rear end of the rear spring.
8. Remove the bushes from the front end of the rear spring.

b. Disassembling rear spring

1. Pry the four clips with a suitable tool.

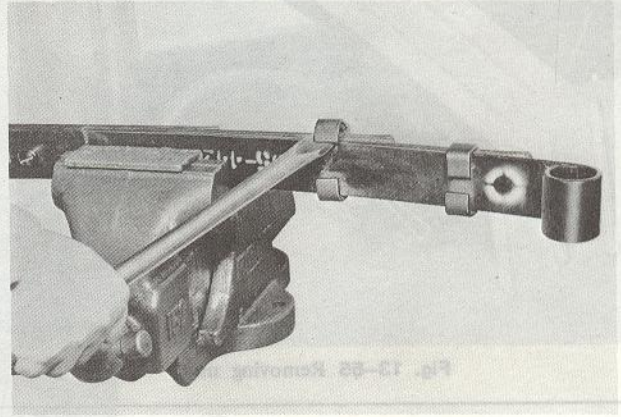


Fig. 13-61 Removing clip

2. Remove the center bolt and nut, and disassemble the rear spring.

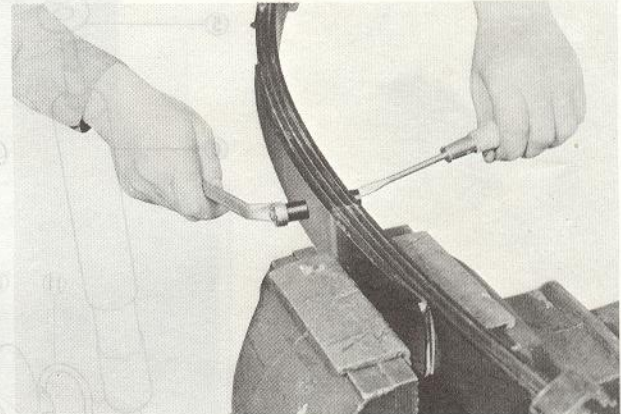


Fig. 13-62 Removing center bolt and nut

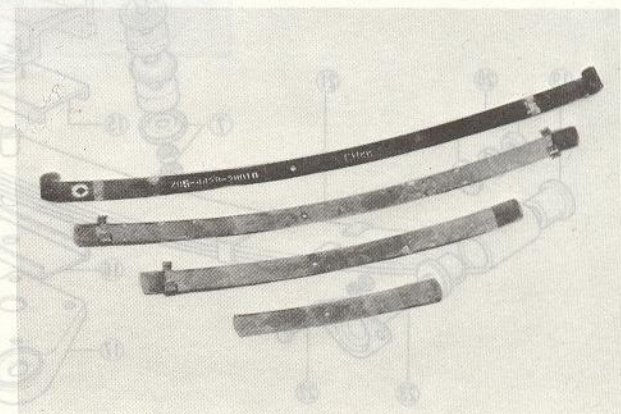


Fig. 13-63 Rear spring leaves

Note :

According to the size of camber, the rear springs are classified into the three categories of -, 0, and +. They are marked on the main leaf. Since difference in camber between the right and left springs results in a difference in road clearance causing inclination of the vehicle, those with the same mark should be installed on both sides.

c. Inspecting rear spring

1. Check the bush and spring rubber pad for wear or weakness.
2. Check the rear springs for breakage, cracks or weak leaves.
3. Check the shackle, and "U"-bolt for wear or any damage.
4. Check the leaves, inter leaves, center bolt and clips for defects.

d. Assembling rear spring

Follow the disassembly procedures in the reverse order.

Note :

- (a) Bend the clips until the leaves and inter leaves are firmly contacted.
- (b) After tightening the center bolt and nut, punch the nut to prevent loosening of the bolt.

e. Installing rear spring

Follow the removal procedures in the reverse order.

Note :

- (a) Tighten the "U"-bolt attaching nuts to 3.8 ~ 4.6 m-kg (27.0 ~ 33.0 ft-lb).
- (b) Install the shackle plate so that the chamfer on the hole of shackle plate is faced to the bush. The pressed mark on the shackle plate should be faced outward, as shown in Fig. 13-64.

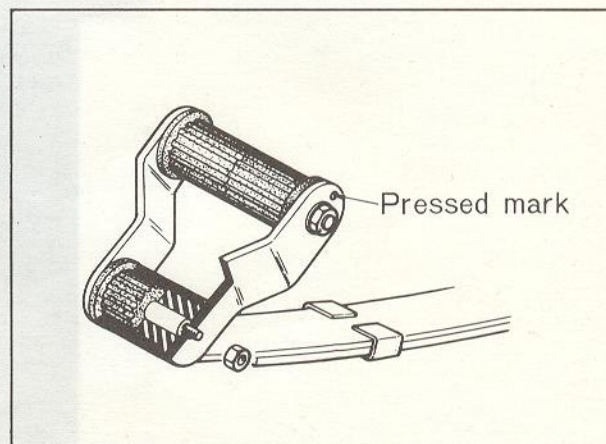


Fig. 13-64 Installing shackle plate

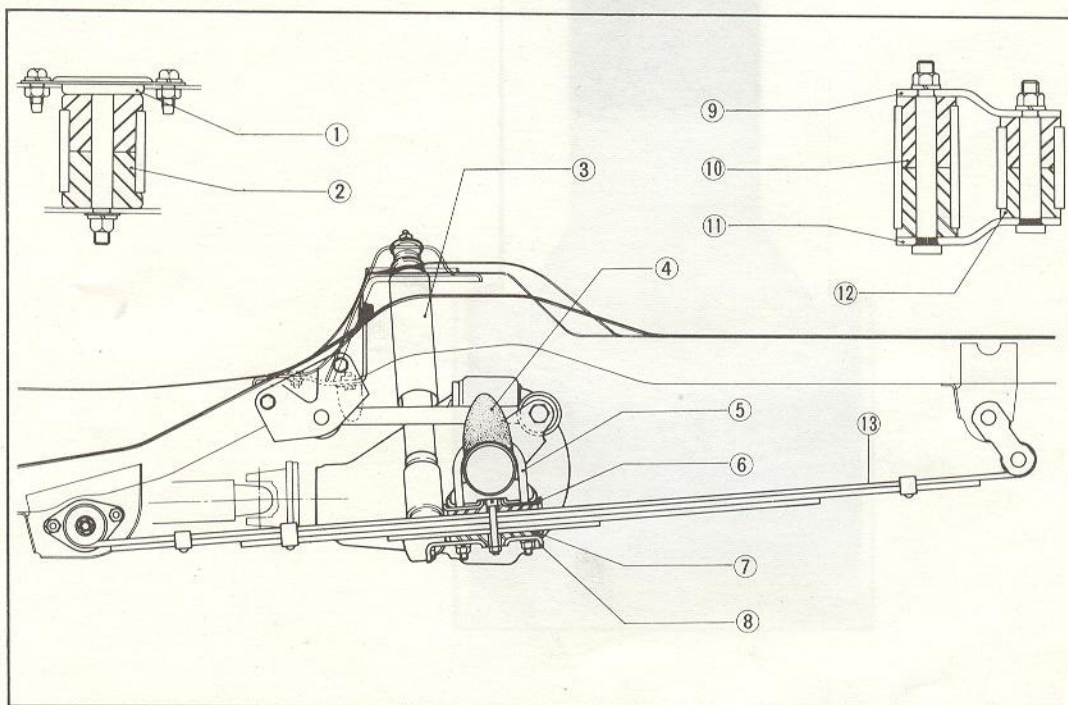


Fig. 13-65 Rear suspension

1. Spring pin
2. Bush
3. Rear shock absorber
4. Bound bumper
5. "U"-bolt
6. Rubber pad holder
7. Rubber pad
8. Spring clamp
9. Shackle plate
10. Shackle
11. Bush
12. Bush
13. Rear spring

SPECIAL TOOLS

49 0370 860	Ball joint remover and installer	49 0259 700A	Cap nut wrench
49 0223 640A	Spring compressor	49 0259 702	Cap nut wrench
49 0370 641	Screw (For spring compressor)	49 0370 590	Cap nut oil seal guide
49 0223 641	Screw (For spring compressor)	49 0118 850C	Ball joint puller

DESCRIPTION

The front suspension consists mainly of the vertical shock absorbers integrally made with each steering knuckle, suspension arms and stabilizer bar. This front suspension **does not require lubrication, except the lower ball joints** which are provided with plugs to attaching the grease fittings when required.

The rear suspension consists mainly of leaf springs and gas sealed type shock absorbers. The gas sealed type shock absorbers **should not be disassembled** as it contains a highly compressed gas. If it is found to be defective, replace it as assembly.

13-A. FRONT SUSPENSION

13-A-1. Front Shock Absorber

a. Removing front shock absorber

1. Open the hood and remove the four nuts that attach the shock absorber support to the fender apron.
2. Raise the front end of the vehicle and support with stands.
3. Disconnect the fluid pipe and plug the end of the fluid pipe to prevent entrance of the dirt and loss of the fluid.

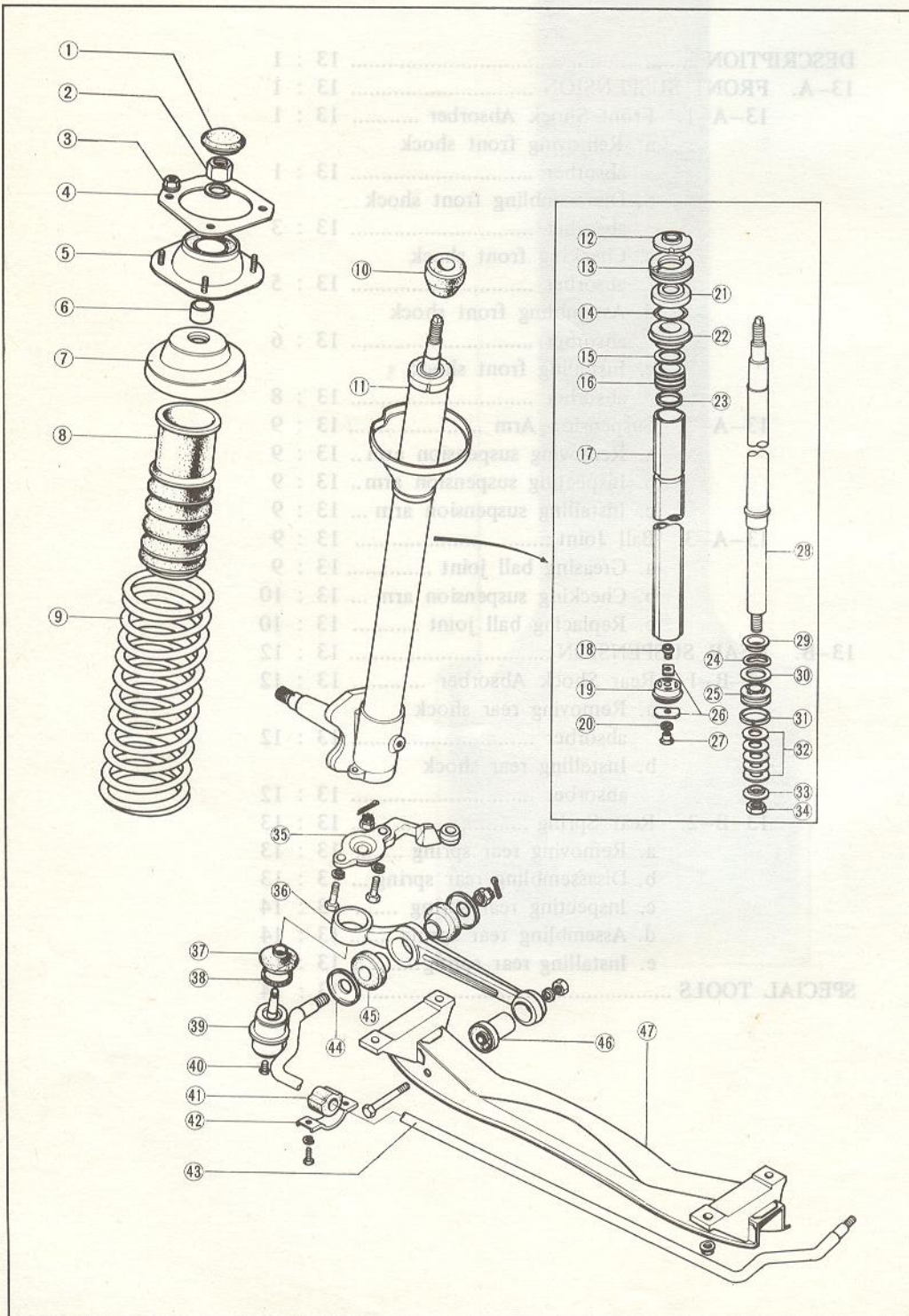


Fig. 13-1 Front suspension components

1. Cap
2. Nut
3. Nut
4. Road clearance adjusting plate
5. Shock absorber support
6. Spacer
7. Spring seat
8. Dust boot
9. Coil spring
10. Damper stopper
11. Front shock absorber
12. Dust cover
13. Cap nut and seal assembly
14. "O" ring
15. Back-up ring
16. Stopper guide
17. Pressure tube
18. Bolt
19. Base valve casing
20. Valve seat
21. Oil seal
22. Piston rod guide
23. Stopper
24. Check valve spring
25. Piston
26. Relief valve
27. Nut
28. Piston rod
29. Washer
30. Check valve
31. Piston ring
32. Relief valve
33. Washer
34. Nut
35. Knuckle arm
36. Suspension arm
37. Dust seal
38. Set ring
39. Ball joint
40. Plug
41. Bush
42. Stabilizer bar bracket
43. Stabilizer bar
44. Washer
45. Bush
46. Bush
47. Cross member

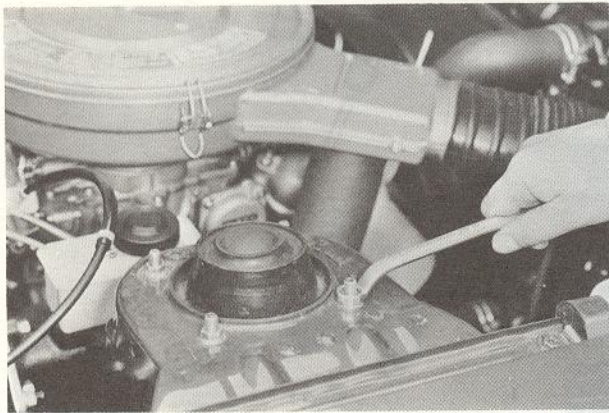


Fig. 13-2 Removing nuts

4. Remove the bolts attaching the caliper and pull the caliper off the rotor.
5. Remove the hub grease cap, cotter pin, nut lock and bearing adjusting nut from the steering knuckle spindle. Pull the hub and rotor assembly off the steering knuckle spindle.



Fig. 13-3 Removing hub and rotor assembly

6. Remove the two bolts that attach the lower end of the shock absorber onto the steering knuckle arm.

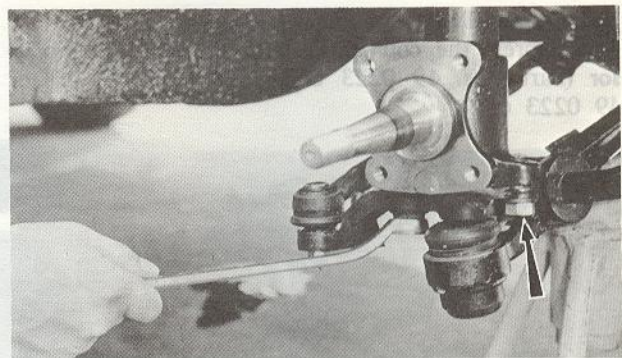


Fig. 13-4 Removing bolts

7. Lower the suspension arm and remove the shock absorber.

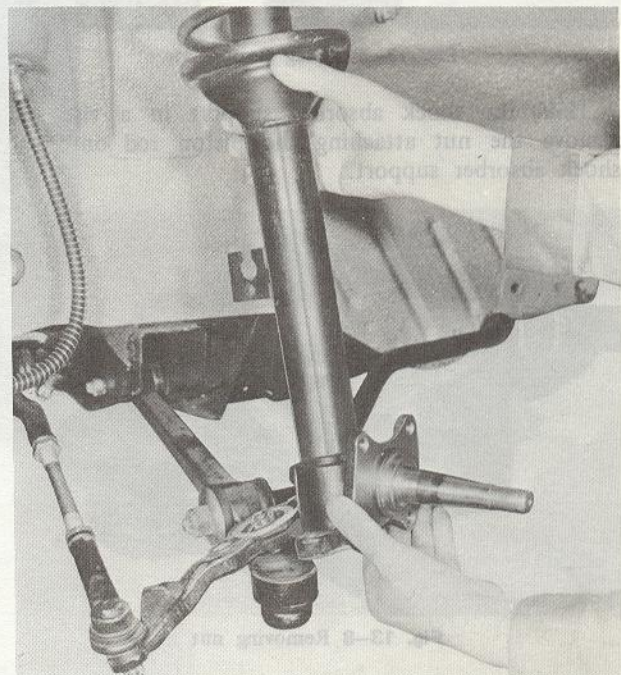


Fig. 13-5 Removing front shock absorber

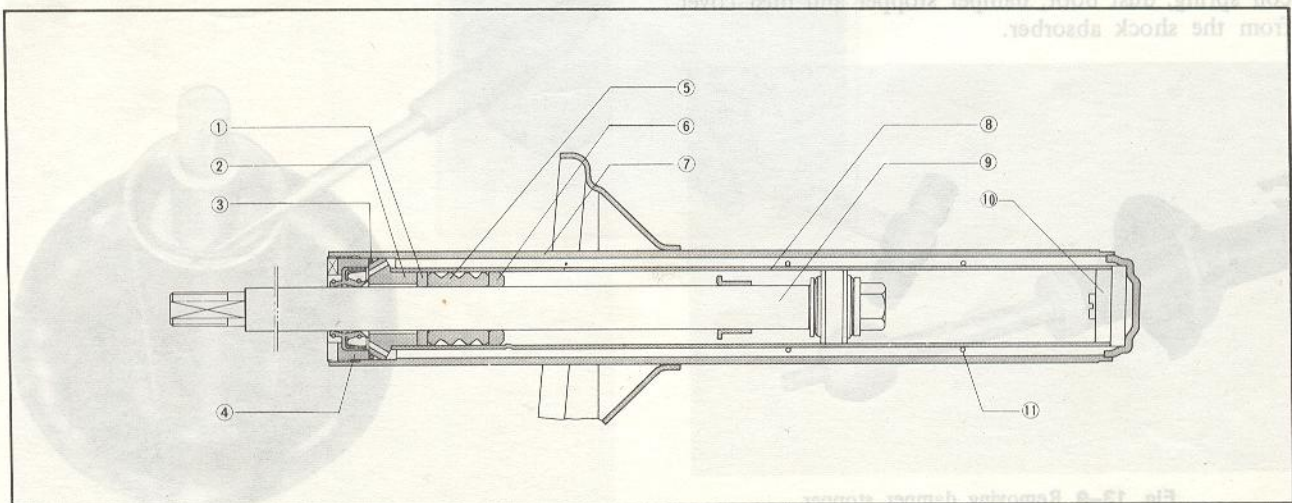


Fig. 13-6 Front shock absorber cross section

- | | | | |
|---------------------|------------------------------|--------------------|-------------------|
| 1. Back-up ring | 4. Cap nut and seal assembly | 7. Reservoir tube | 10. Base valve |
| 2. Piston rod guide | 5. Stopper | 8. Pressure tube | 11. Oil stop ring |
| 3. "O" ring | 6. Stopper guide | 9. Piston rod seal | |

b. Disassembling front shock absorber

1. Compress the coil spring with the **spring compressor** (Part Nos. 49 0223 640A and 49 0370 641 or 49 0223 641).

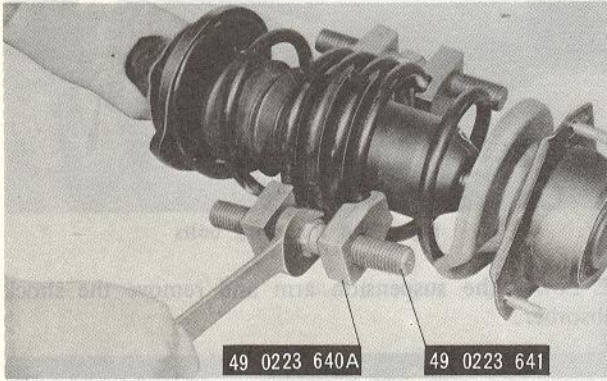


Fig. 13-7 Spring compressor

2. Hold the shock absorber support in a vise and remove the nut attaching the piston rod onto the shock absorber support.

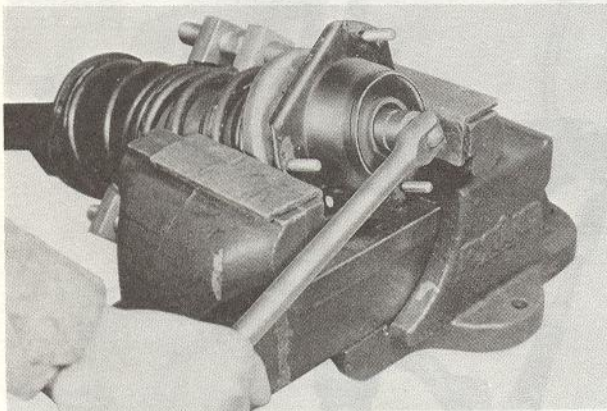


Fig. 13-8 Removing nut

3. Remove the shock absorber support, spring seat, coil spring, dust boot, damper stopper and dust cover from the shock absorber.

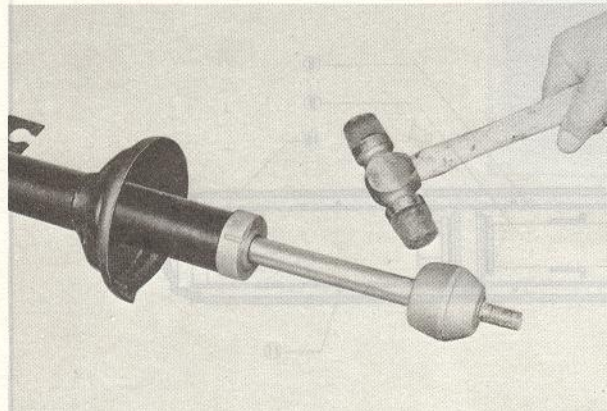


Fig. 13-9 Removing damper stopper

4. Hold the reservoir tube in a vise equipped with soft jaws.

5. Remove the cap nut and seal assembly from the

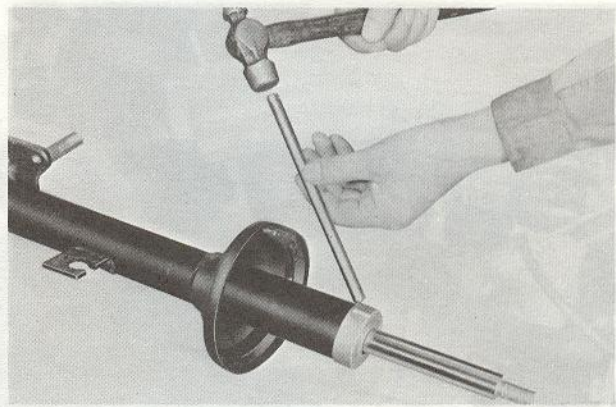


Fig. 13-10 Removing dust cover

reservoir tube with the **cap nut wrench** (Part No. 49 0259 700A).



Fig. 13-11 Removing cap nut and seal assembly

6. Remove the "O" ring installed on the piston rod guide with a suitable tool.

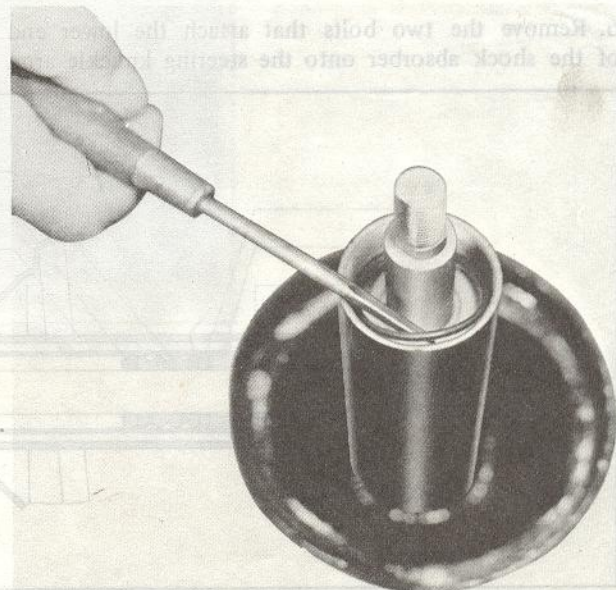


Fig. 13-12 Removing "O" ring

7. Pull out the piston rod and pressure tube assembly from the reservoir tube.

8. Remove the piston rod guide, back-up ring, stopper and stopper guide from the piston rod.

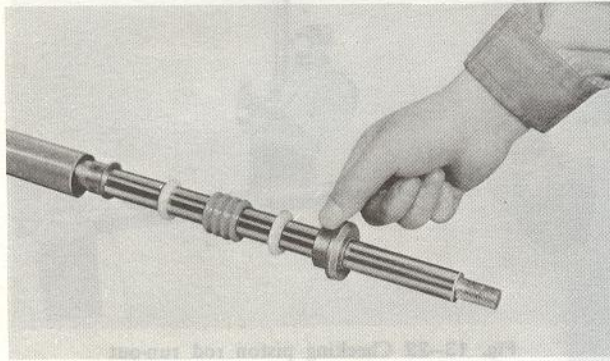


Fig. 13-13 Removing piston rod guide

9. Remove the base valve assembly from the pressure tube.

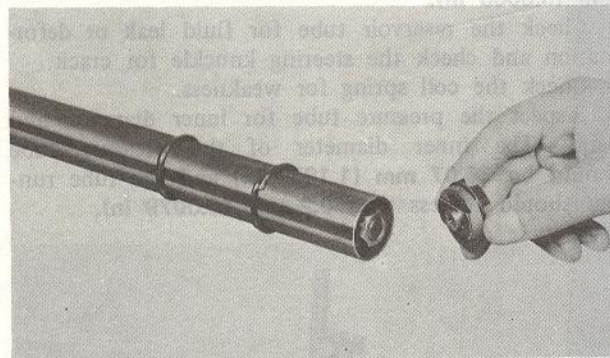


Fig. 13-14 Removing base valve assembly

Then, remove the bolt and nut of the base valve assembly, and remove the valve seat, relief valves, base valve casing and relief valves.



Fig. 13-15 Disassembling base valve assembly

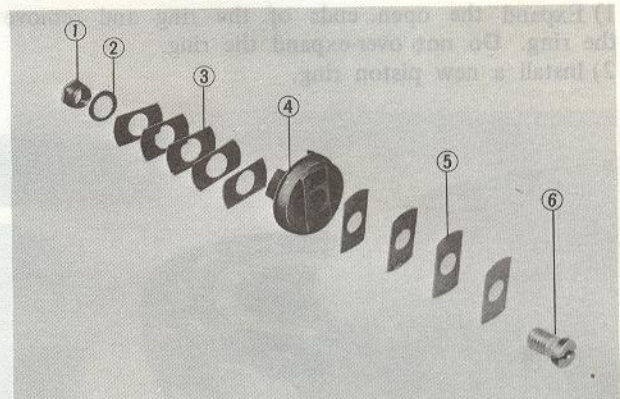


Fig. 13-16 Base valve assembly

- | | |
|-----------------|----------------------|
| 1. Nut | 4. Base valve casing |
| 2. Valve seat | 5. Relief valve |
| 3. Relief valve | 6. Bolt |

10. Remove the piston rod from the pressure tube.

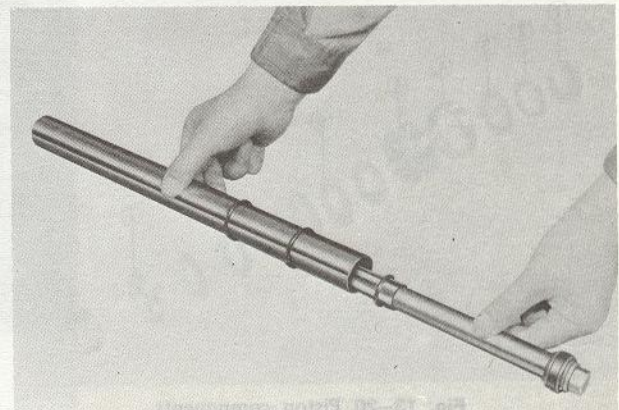


Fig. 13-17 Removing piston rod

11. Hold the upper end of the piston rod in a vice, being careful to protect it with aluminum plates and remove the piston attaching nut. Remove the washer, relief valves, piston, check valves, check valve springs and washer from the piston rod in that order. Then, remove the piston ring from the piston.



Fig. 13-18 Removing piston nut

To replace the piston ring from the piston, proceed as follows :

- 1) Expand the open ends of the ring and remove the ring. **Do not over-expand the ring.**
- 2) Install a new piston ring.

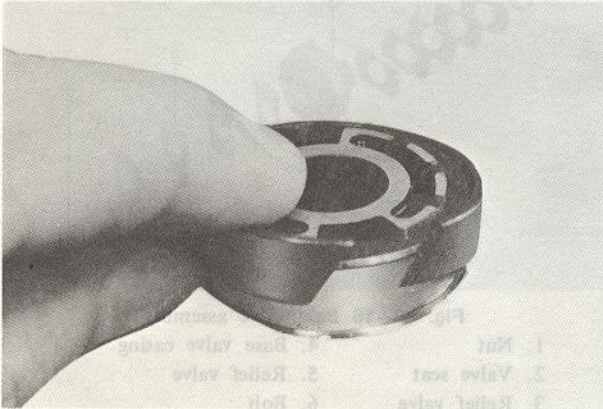


Fig. 13-19 Removing piston ring

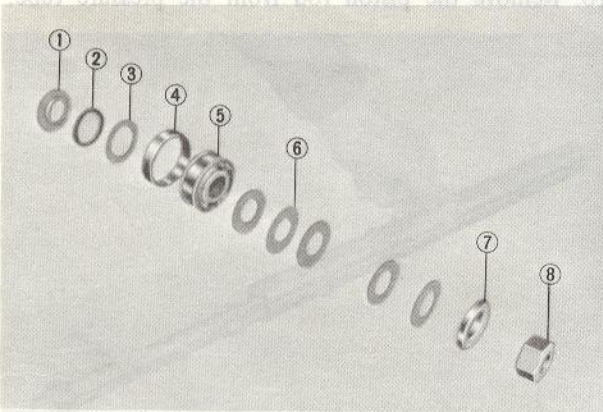


Fig. 13-20 Piston components

- | | |
|-----------------------|-----------------|
| 1. Washer | 5. Piston |
| 2. Check valve spring | 6. Relief valve |
| 3. Check valve | 7. Washer |
| 4. Piston ring | 8. Nut |

c. Checking front shock absorber

1. Check the piston rod for wear, scores and bend. The piston rod diameter should be more than **19.94 mm (0.7851 in)** and the piston rod run-out should be less than **0.15 mm (0.0059 in)**.

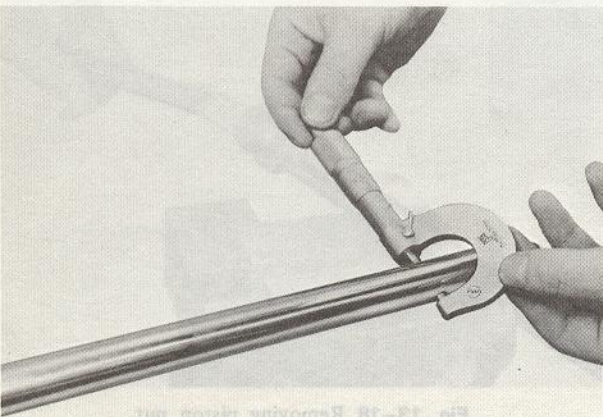


Fig. 13-21 Measuring piston rod diameter

2. Check the contacting surface of the piston with

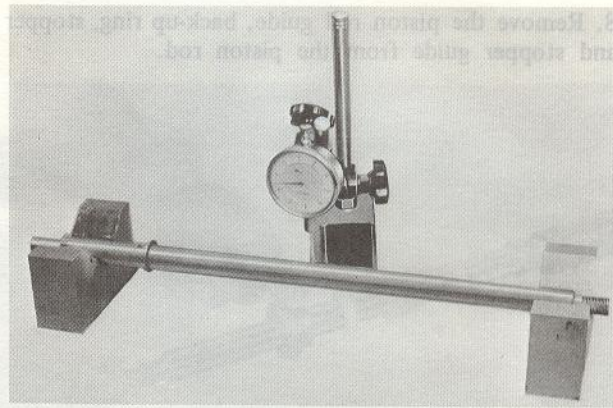


Fig. 13-22 Checking piston rod run-out

- the check valve and relief valve for wear or damage.
3. Check the relief valve and check valve for wear, damages and flatness. The flatness is less than **0.02 mm (0.0008 in)**.
4. Check the reservoir tube for fluid leak or deformation and check the steering knuckle for crack.
5. Check the coil spring for weakness.
6. Inspect the pressure tube for inner diameter and bend. The inner diameter of the pressure tube should be **30.07 mm (1.1839 in)** and the tube run-out should be less than **0.2 mm (0.0079 in)**.

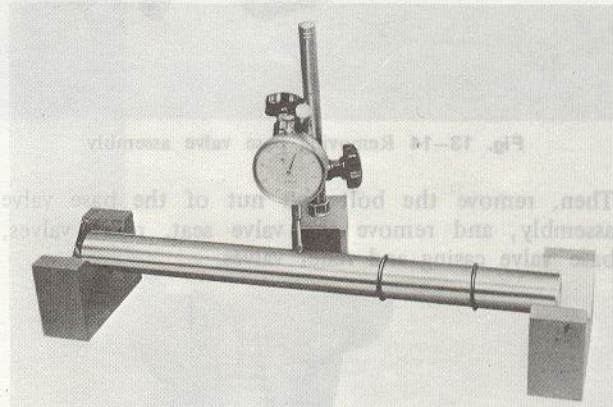


Fig. 13-23 Checking pressure tube run-out

7. Check the cap nut for damaged thread and check the oil seal lip in the cap nut for wear or other damages.



Fig. 13-24 Checking cap nut and seal assembly

8. Check the piston rod guide for wear or damage.

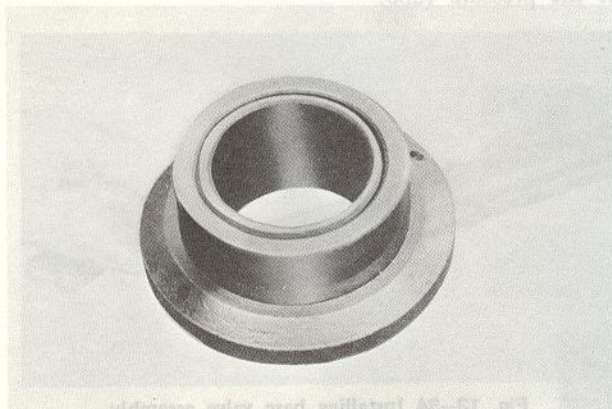


Fig. 13-25 Checking piston rod guide

9. Check the base valve casing and relief valve for wear, damage or flatness. The flatness should be 0.02 mm (0.0008 in).

d. Assembling front shock absorber

1. Place the top end of the piston rod in a vise, being careful to protect it with aluminum plates, and install the washer, check valve spring, check valve, piston, five relief valves and washer.

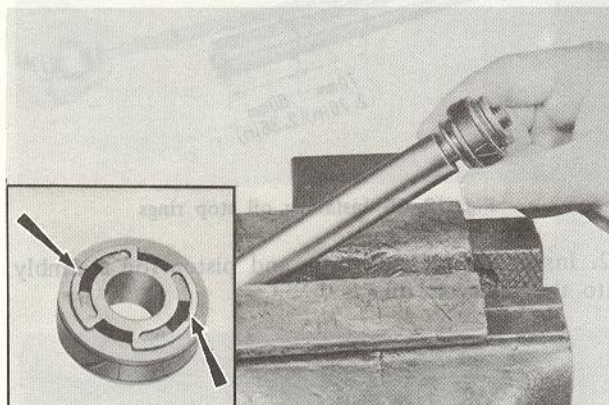


Fig. 13-26 Installing piston

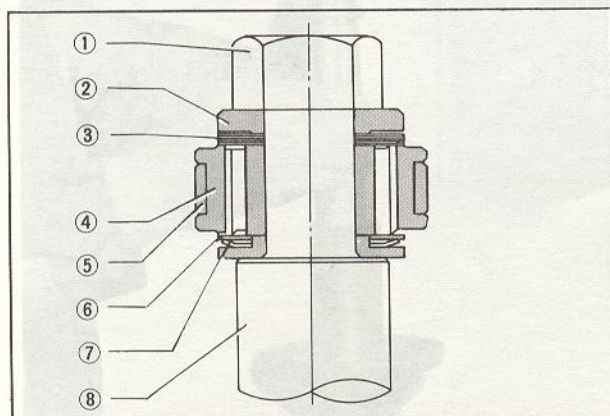


Fig. 13-27 Piston cross section

- | | |
|-----------------|-----------------------|
| 1. Piston nut | 5. Piston ring |
| 2. Washer | 6. Check valve |
| 3. Relief valve | 7. Check valve spring |
| 4. Piston | 8. Piston rod |

Note :

The piston should be installed so that the constant orifice side goes toward the upper end of the piston rod.

2. Tighten the piston nut to 1.35 ~ 1.65 m-k_g (9.0 ~ 13.0 ft-lb), ensuring that the check valve and check valve spring are properly positioned.



Fig. 13-28 Tightening piston nut

3. Punch two portions of the threads between the piston nut and the piston rod with a punch to prevent loosening of the piston nut.

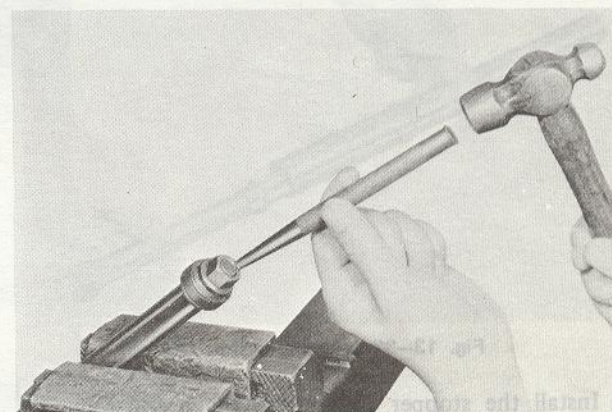


Fig. 13-29 Punching threads

4. Fit the four relief valves onto the base valve bolt

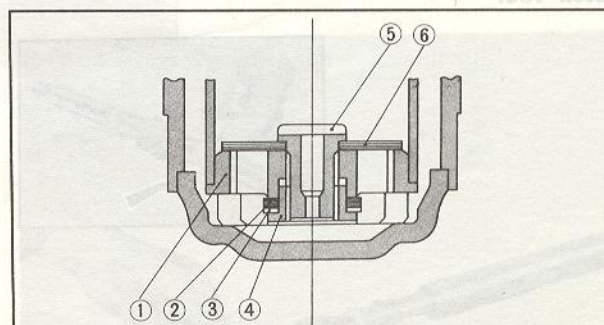


Fig. 13-30 Base valve cross section

- | | |
|-----------------|-----------------|
| 1. Casing | 4. Nut |
| 2. Relief valve | 5. Bolt |
| 3. Valve seat | 6. Relief valve |

and install it into the base valve casing.
 5. Fit the five relief valves, valve seat and nut to the base valve casing and tighten the nut to **0.15 m-kg (1.0 ft-lb)**.
 6. After tightening the nut, punch the center of the bolt with a punch.

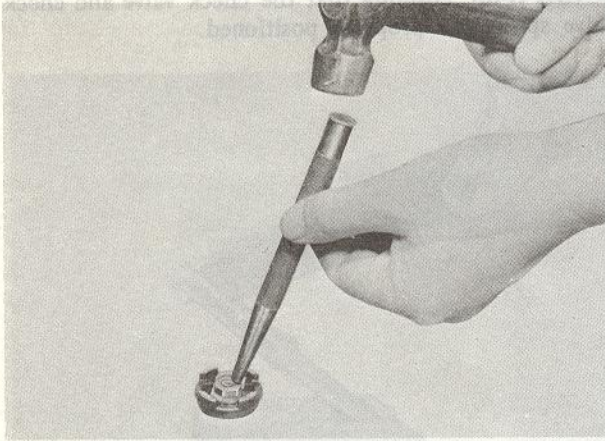


Fig. 13-31 Punching bolt

7. Insert the piston rod into the pressure tube from the bottom side.

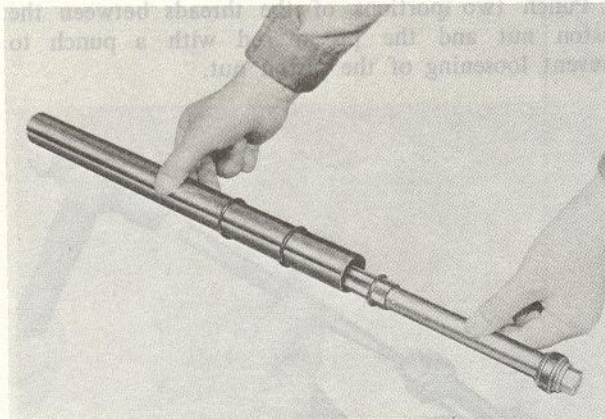


Fig. 13-32 Inserting piston rod

8. Install the stopper guide onto the piston rod with the grooves of the stopper guide toward the base valve.
 9. Install the stopper and back-up ring onto the piston rod.

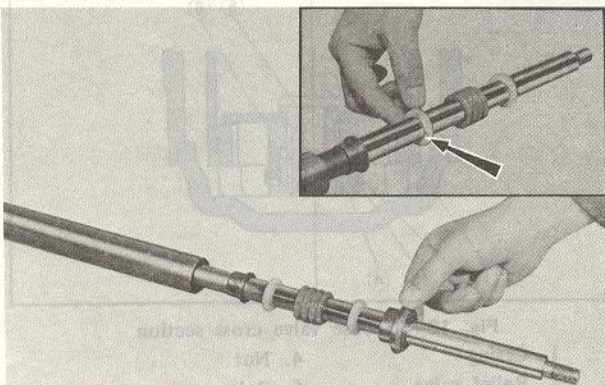


Fig. 13-33 Installing stopper guide

10. Install the base valve assembly into the bottom of the pressure tube.

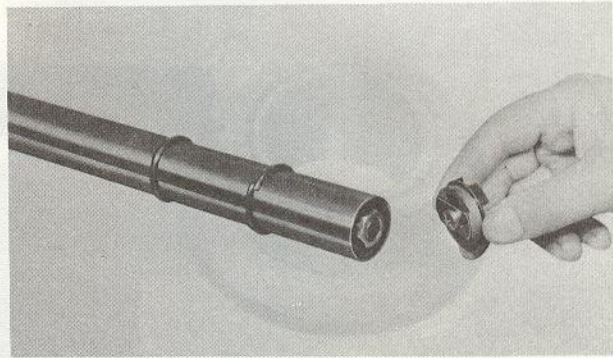


Fig. 13-34 Installing base valve assembly

11. Install the two oil stop rings onto the bottom side of the pressure tube as shown in Fig. 13-35.

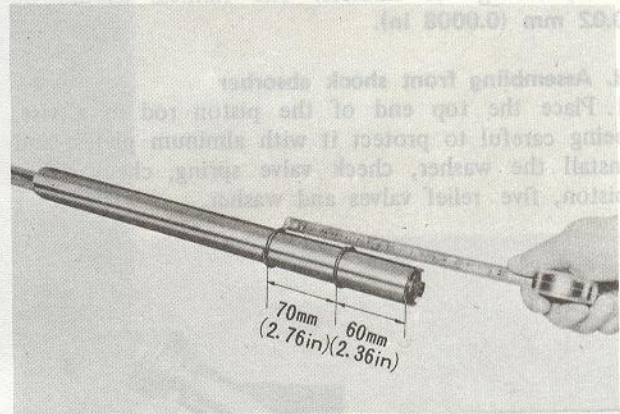


Fig. 13-35 Installing oil stop rings

12. Insert the pressure tube and piston rod assembly into the reservoir tube.

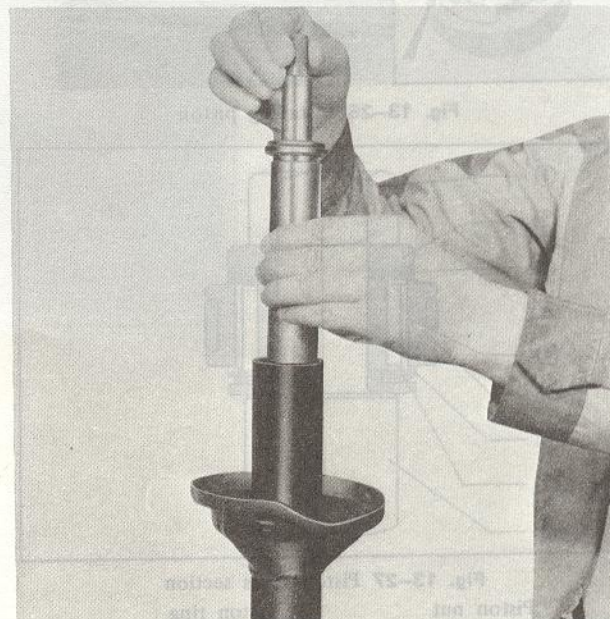


Fig. 13-36 Installing pressure tube and rod assembly

13. Fill the reservoir tube with shock absorber fluid.

The capacity of reservoir tube should be exactly 270 cc (16.5 cu-in).

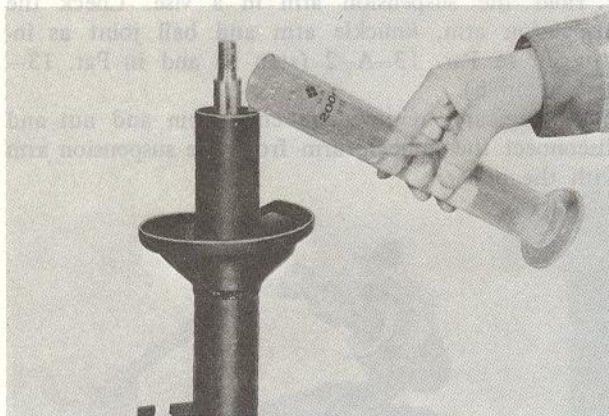


Fig. 13-37 Filling with fluid

14. Install the rod guide into the pressure tube and install a new "O" ring between the rod guide and reservoir tube.

15. Apply a light coating of grease to the lip of the cap nut oil seal and install the oil seal guide (Part



Fig. 13-38 Inserting cap nut and seal assembly



Fig. 13-39 Tightening cap nut temporarily

No. 49 0370 590) onto the top end of the piston rod, then insert the cap nut slowly onto the piston rod. 16. Tighten the cap nut temporarily, ensuring that the piston rod is extended to its maximum length, with the cap nut wrench (Part No. 49 0259 702). 17. Fully lower the piston rod and tighten the cap nut to 5.0 ~ 6.0 m-kg (36.0 ~ 43.0 ft-lb) with the cap nut wrench (Part No. 49 0259 700A). Then, install the dust cover.



Fig. 13-40 Tightening cap nut

18. Install the damper stopper onto the piston rod. 19. Install the dust boot onto the piston rod.

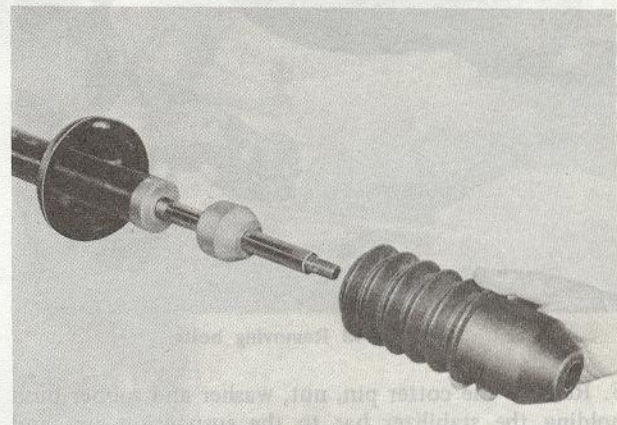


Fig. 13-41 Installing dust boot

20. Install the coil spring onto the reservoir tube. 21. Install the spring seat, washer, spacer, and shock absorber support in that order. 22. Tighten the support nut.

e. Installing front shock absorber

Follow the removal procedures in the reverse order.

Note :

When replacing the coil spring, adjust the road clearance by combining the coil spring and adjusting plate to equal road clearance both on the right and left.

BODY

DESCRIPTION	14 : 1	14-J-4. Inner Handle, Door Latch and	
14-A. HOOD	14 : 1	Outer Handle	14 : 16
14-A-1. Removing Hood	14 : 1	a. Removing inner handle	14 : 16
14-A-2. Installing Hood	14 : 2	b. Installing inner handle	14 : 16
14-A-3. Adjusting Hood	14 : 2	c. Removing door latch	14 : 16
14-A-4. Adjusting Hood Latch	14 : 2	d. Installing door latch	14 : 16
14-B. LUGGAGE COMPARTMENT DOOR	14 : 2	e. Removing outer handle	14 : 17
14-B-1. Removing Luggage Door	14 : 2	f. Installing outer handle	14 : 17
14-B-2. Installing Luggage Door	14 : 2	14-J-5. Front Door Glass Regulator	
14-B-3. Adjusting Luggage Door	14 : 2	Adjustment	14 : 17
14-B-4. Adjusting Luggage Door Latch	14 : 3	a. Horizontal adjustment of the	
14-C. FRONT BUMPER	14 : 3	window	14 : 17
14-C-1. Removing Front Bumper	14 : 3	b. The fore and aft adjustment	
14-C-2. Installing Front Bumper	14 : 4	of the window	14 : 17
14-D. REAR BUMPER	14 : 4	c. Vertical adjustment of the	
14-D-1. Removing Rear Bumper	14 : 4	window	14 : 17
14-D-2. Installing Rear Bumper	14 : 4	d. The in and out adjustment of	
14-E. WINDSHIELD GLASS	14 : 5	the window	14 : 17
14-E-1. Removing Windshield Glass	14 : 5	e. Final check	14 : 17
14-E-2. Installing Windshield Glass	14 : 6	14-K. REAR DOOR	14 : 18
14-F. REAR WINDOW GLASS	14 : 8	14-K-1. Stationary Glass	14 : 18
14-F-1. Removing and Installing Rear		a. Removing stationary glass	14 : 18
Window Glass	14 : 8	b. Installing stationary glass	14 : 19
14-F-2. Heatable Window Inspection	14 : 9	14-K-2. Rear Door Window Regulator	
14-F-3. Heatable Window Repair	14 : 9	and Glass	14 : 19
14-G. FRONT SEAT	14 : 9	a. Removing rear door window	
14-G-1. Front Seat Replacement	14 : 9	regulator and glass	14 : 19
14-G-2. Seat Adjuster Inspection	14 : 10	b. Installing rear door window	
14-G-3. Reclining Knuckle Replacement	14 : 10	regulator and glass	14 : 20
14-H. REAR SEAT	14 : 10	14-L. QUARTER WINDOW (HARD TOP)	14 : 21
14-H-1. Removing Rear Seat	14 : 10	14-L-1. Removing the quarter window and	
14-H-2. Installing Rear Seat	14 : 10	the quarter trim	14 : 21
14-I. DOOR	14 : 11	14-L-2. Installing the quarter window and	
14-I-1. Door Adjustment	14 : 11	the quarter trim	14 : 21
a. Adjusting door latch striker	14 : 11	14-L-3. Removing the quarter window glass	14 : 21
b. Adjusting door alignment	14 : 11	14-L-4. Installing the quarter window glass	14 : 21
14-I-2. Door Hinge Replacement	14 : 11	14-L-5. Removing regulator	14 : 21
14-I-3. Door Weatherstrip Replacement	14 : 11	14-L-6. Installing the regulator	14 : 21
14-I-4. Door Weatherstrip (Hard Top)	14 : 12	14-M. QUARTER WINDOW ADJUSTMENT	14 : 22
14-J. FRONT DOOR	14 : 12	14-M-1. Horizontal Adjustment of the	
14-J-1. Door Window Regulator and Glass	14 : 12	Window Glass	14 : 22
a. Removing door window regulator		14-M-2. Vertical Adjustment of the Window	
and glass	14 : 12	Glass	14 : 22
b. Checking door window regulator	14 : 13	14-M-3. The Fore and Aft Adjustment of	
c. Installing door window regulator		the Window	14 : 22
and glass	14 : 13	14-M-4. The In and Out Adjustment	14 : 22
14-J-2. Door Latch, Lock Cylinder and Outer		14-N. TOP CEILING	14 : 24
Handle	14 : 14	14-N-1. Removing Top Ceiling	14 : 24
a. Removing door latch, lock		14-N-2. Installing Top Ceiling	14 : 25
cylinder and outer handle	14 : 14	14-O. STRIPE	14 : 27
b. Installing door latch, lock		14-O-1. Sticking the Stripe	14 : 27
cylinder and outer handle	14 : 14	14-P. INSTRUMENT PANEL	14 : 27
14-J-3. Door Window Regulator and Glass	14 : 16	14-P-1. Removing Instrument Panel	
a. Removing door window regulator		Assembly	14 : 27
and glass (Hard top)	14 : 16	14-P-2. Installing Instrument Panel	
b. Checking door window		Assembly	14 : 29
regulator	14 : 16	14-Q. FRONT FENDER	14 : 31
c. Installing door window regulator		14-Q-1. Removing Front Fender Panel	14 : 31
and glass	14 : 16	14-Q-2. Installing Front Fender Panel	14 : 31

3. The directions and positions each spacer to be bonded are shown in Fig. 14-37.

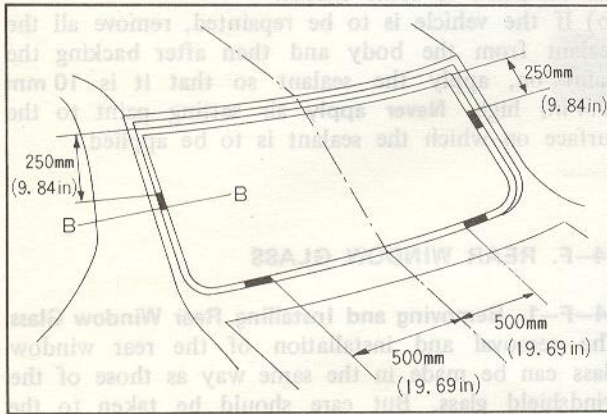


Fig. 14-37 Position of spacers

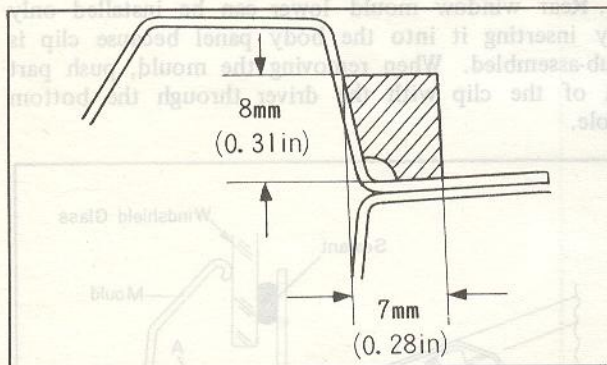


Fig. 14-38 B-B section of Fig. 14-37

14-F-2. Heatable Window Inspection

1. Turned on the heater switch.
2. Ground the negative terminal of the voltmeter on the body and touch the positive terminal on the center of each filament to measure the voltage. Normal filament registers approximately 6 volts at the center. A high voltage on the order of 12 volts shows that breakage is on the negative side from the center (grounded side) and a voltage close to 0 volt shown that breakage is on the positive side.
3. Move the positive terminal to the side where breakage is known to exist, and you will note sudden change in voltage at a portion. That portion is where the filament is broken.

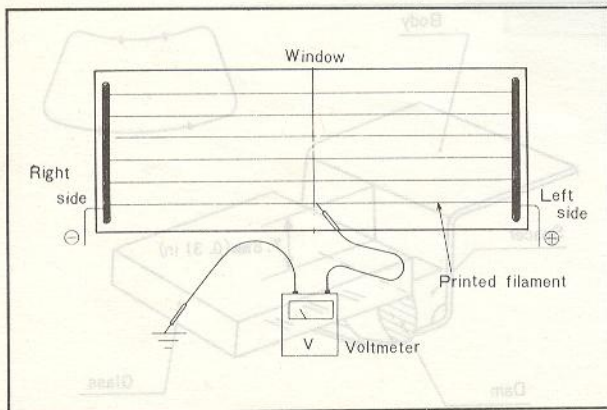


Fig. 14-39 Inspecting heatable window

14-F-3. Heatable Window Repair

1. Clean the broken portion with solvent.
2. By using a small brush or a drawing pen, apply the **conductive silver paint** (Part No. 2835 77 6000), i.e. Dupont No. 4817 to the broken section.
3. Completely dry the painted section by leaving it intact for 24 hours in the case of 20°C (68°F) (for 30 minutes when the painted section is heated up to 60°C (140°F) with a dryer).

Note :

- (a) **Never turn** on the heater before the paint has completely dried.
- (b) **Do not** use any alkaline chemical cleanser to clean the section thus repaired.
- (c) The life of Dupont No. 4817, conductive silver paint, is one year and must be kept at a dry place having a temperature of less than 20°C (68°F)

14-G. FRONT SEAT

14-G-1. Front Seat Replacement

1. Remove the front seat by removing the two attaching bolts and two attaching nuts.
2. To install, reverse the removal procedures.



Fig. 14-40 Removing bolts

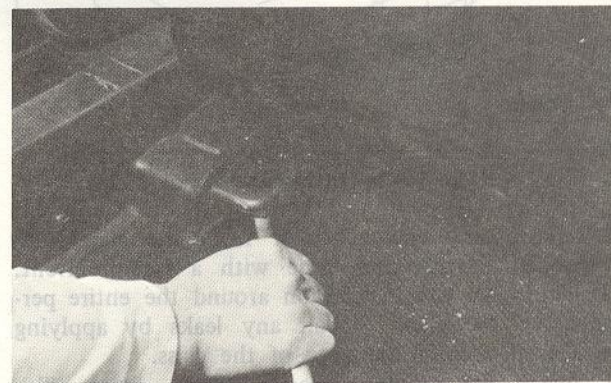


Fig. 14-41 Removing nuts

14-G-2. Seat Adjuster Inspection

1. Inspect the seat adjuster for smooth operation by moving the seat back and forth. If necessary, apply grease to the seat adjuster.
2. Inspect the seat adjusting lever for wear. If defective, repair or replace it.

14-G-3. Reclining Knuckle Replacement

To replace the reclining knuckle, use the tool (Part No. 49 0259 855).



Fig. 14-42 Removing reclining knuckle

14-H. REAR SEAT

14-H-1. Removing Rear Seat

1. Remove the two bolts attaching the seat cushion and remove the seat cushion.

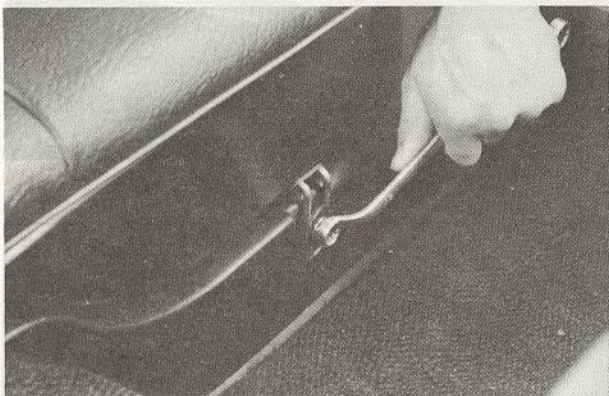


Fig. 14-43 Removing seat cushion

2. Remove the rear seat back attaching bolts.



Fig. 14-44 Removing attaching bolts

3. Raise the seat to full up position and pull it in the B direction.

14-H-2. Installing Rear Seat

1. Tighten temporarily the rear seat back to tire housing.
2. Push the rear seat back attaching fastener in P direction and press it down into the catch of the body as shown in Fig. 14-46.

Note :

Make sure that the seat is inserted by pulling the upper end of the seat back.



Fig. 14-45 Installing seat back

3. Further tighten the bolt which has been tightened temporarily.
4. Place the seat cushion and tighten the two bolts attaching the seat cushion.

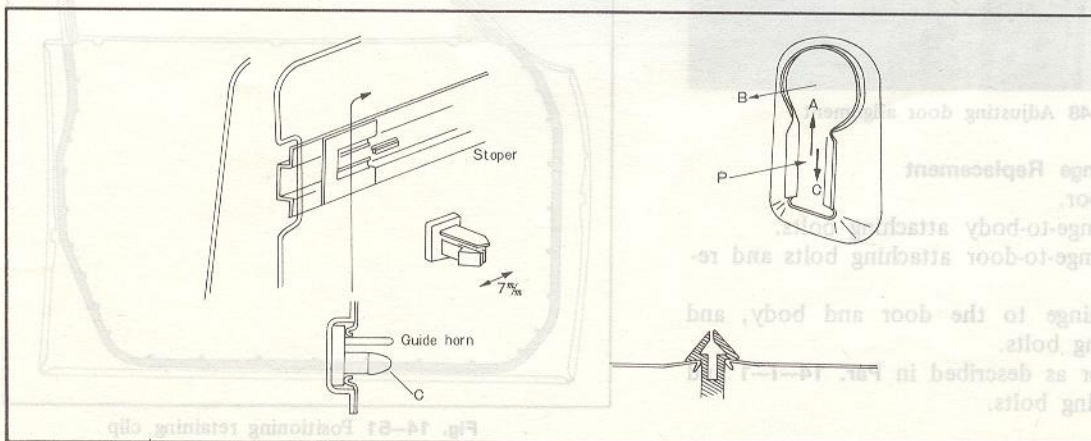


Fig. 14-46 Rear seat back

14-I. DOOR

14-I-1. Door Adjustment

a. Adjusting door latch striker

The striker can be adjusted laterally and vertically as well as fore and aft. The striker should not be adjusted to correct door sag.

1. Loosen the striker attaching screws and move the striker as required.
2. Tighten the attaching screws and check the door fit.

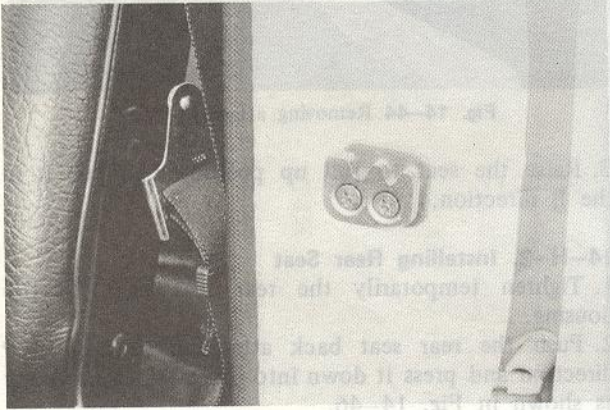


Fig. 14-47 Adjusting striker

b. Adjusting door alignment

The door hinges provide sufficient adjustment latitude to correct most door misalignment conditions. Do not cover up a poor door alignment with the door latch striker adjustment.

1. Loosen the hinge attaching bolts and move the hinge as required.
2. Tighten the attaching bolts and check the door fit.

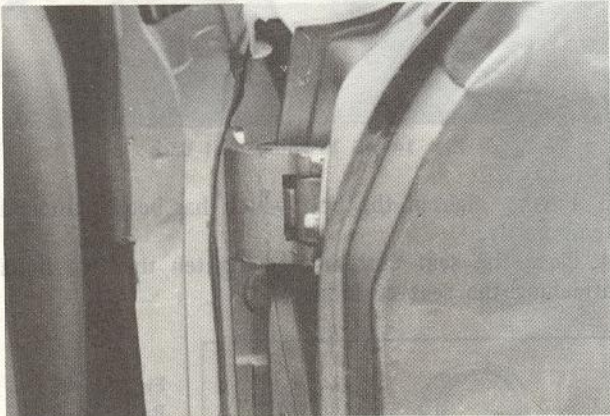


Fig. 14-48 Adjusting door alignment

14-I-2. Door Hinge Replacement

1. Support the door.
2. Remove the hinge-to-body attaching bolts.
3. Remove the hinge-to-door attaching bolts and remove the hinge.
4. Position the hinge to the door and body, and install the attaching bolts.
5. Adjust the door as described in Par. 14-I-1 and tighten the attaching bolts.

14-I-3. Door Weatherstrip Replacement

1. Pull the weatherstrip from the retaining clips, and remove the weatherstrip without damaging the rubber if the weatherstrip is to be used again.

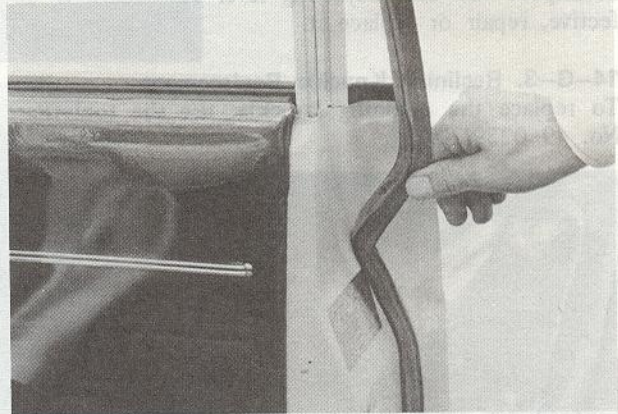


Fig. 14-49 Removing weatherstrip

2. Remove the weatherstrip retaining clips from the door.

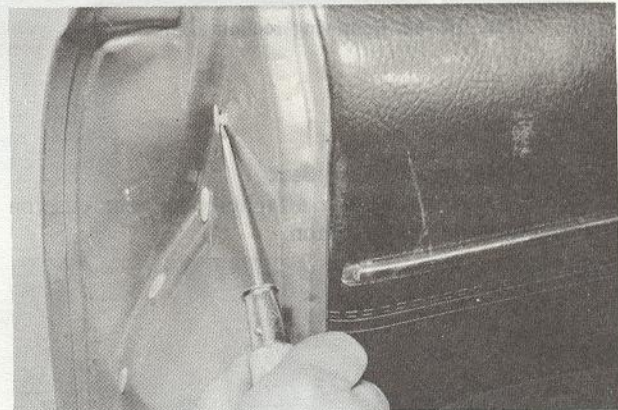


Fig. 14-50 Removing retaining clip

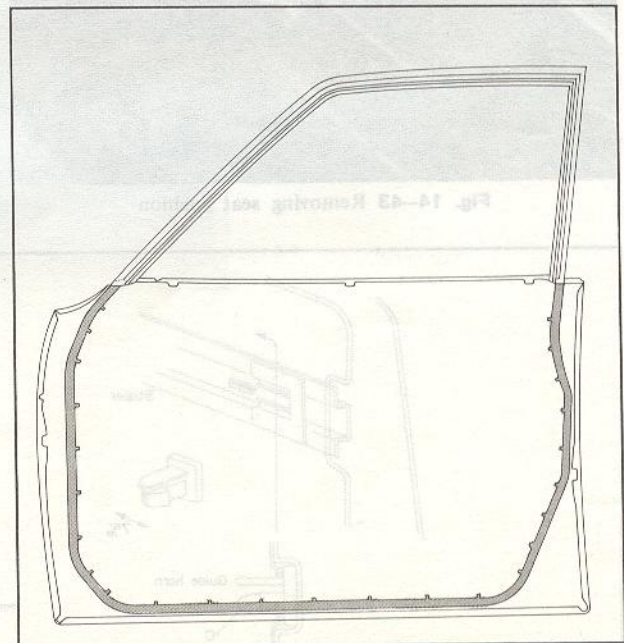


Fig. 14-51 Positioning retaining clip

3. Inspect the weatherstrip for crack, deformation and damage. If defective, replace it.
4. Fit the retaining clips to the weatherstrip with a plier.

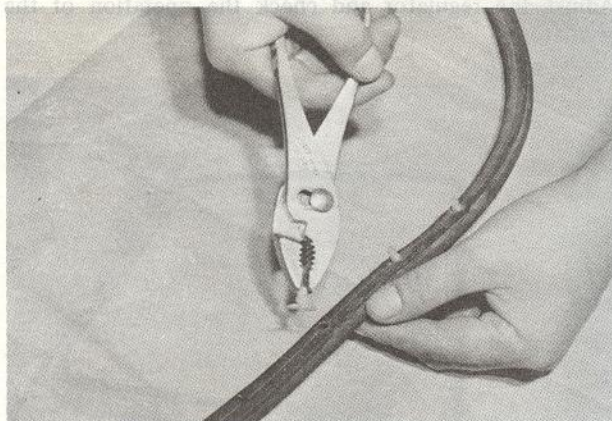


Fig. 14-52 Fitting retaining clip

5. Position the weatherstrip to the door and fit the retaining clips into place.

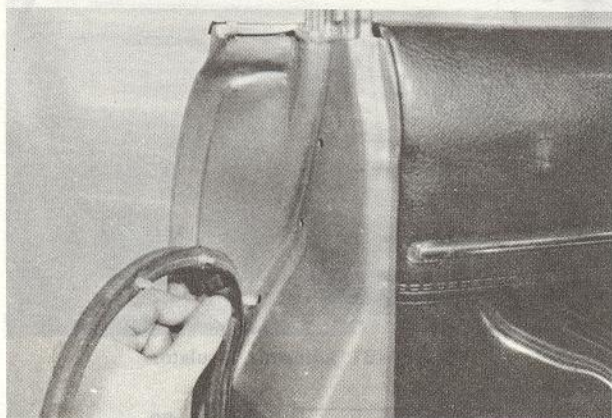


Fig. 14-53 Installing weatherstrip

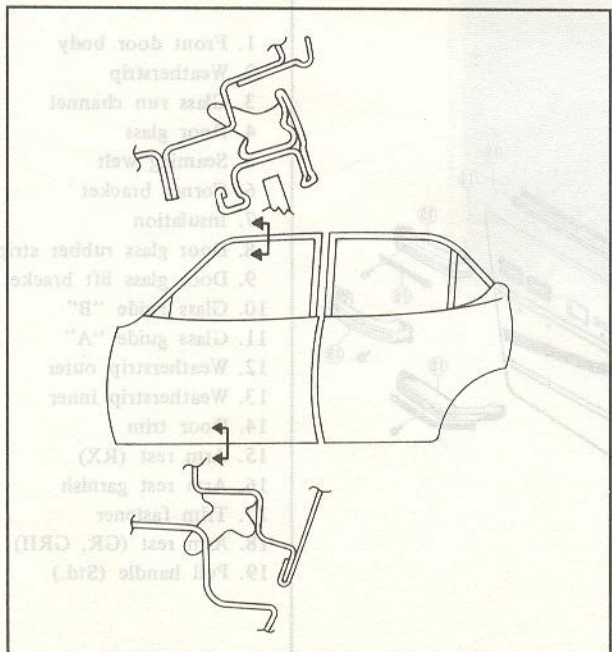


Fig. 14-54 Weatherstrip cross section

14-I-4. Door Weatherstrip (Hard Top)



Fig. 14-55 Removing weatherstrip edge

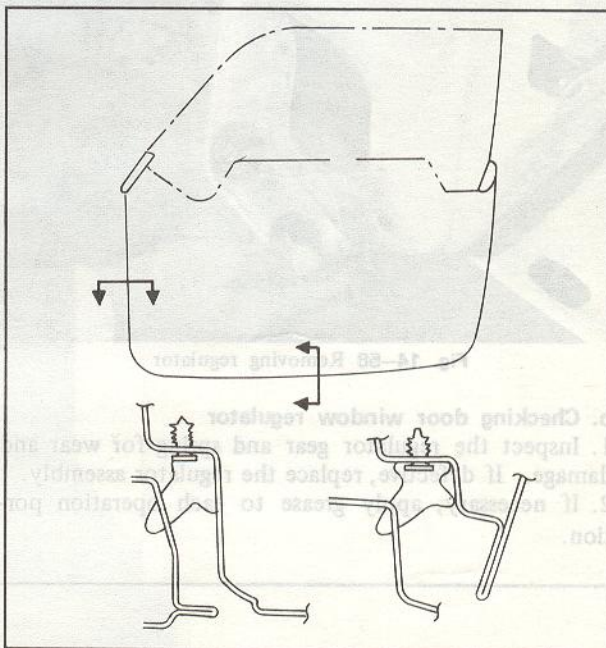


Fig. 14-56 Weatherstrip cross section

14-J. FRONT DOOR (Sedan)

14-J-1. Door Window Regulator and Glass

a. Removing door window regulator and glass

1. Remove the regulator handle by removing the attaching screw.
2. Remove the door latch knob.
3. Remove the arm rest by removing the attaching screws.
4. Remove the inner handle cover by removing the attaching screw.
5. Remove the trim panel and watershield.
6. Remove the regulator attaching bolts, and lower the regulator to disconnect the regulator roller from the glass channel, then remove the regulator assembly.
7. Remove the glass.

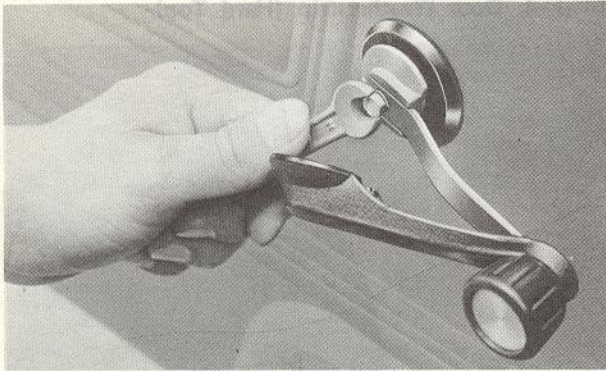


Fig. 14-57 Removing regulator handle

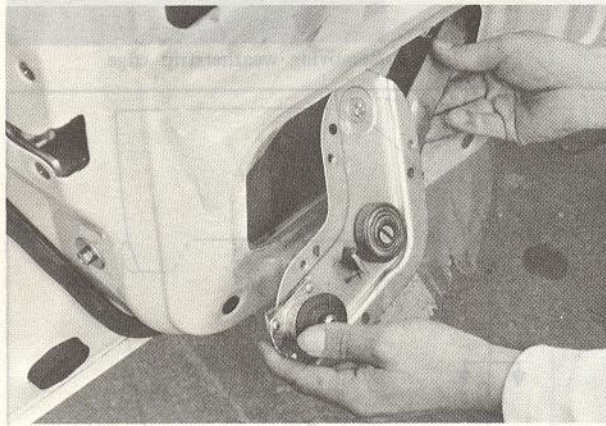


Fig. 14-58 Removing regulator

b. Checking door window regulator

1. Inspect the regulator gear and spring for wear and damage. If defective, replace the regulator assembly.
2. If necessary, apply grease to each operation portion.

c. Installing door window regulator and glass
Follow the removal procedures in the reverse order.

Note :

Adjust the regulator and check the operation of the regulator.

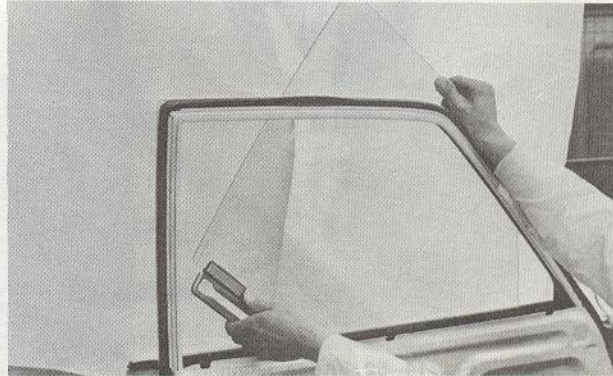


Fig. 14-60 Removing glass

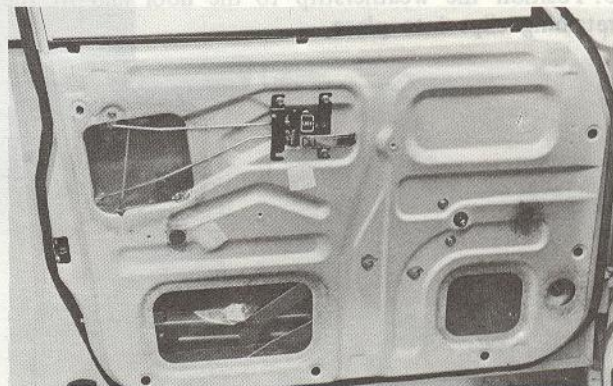


Fig. 14-61 Adjusting regulator

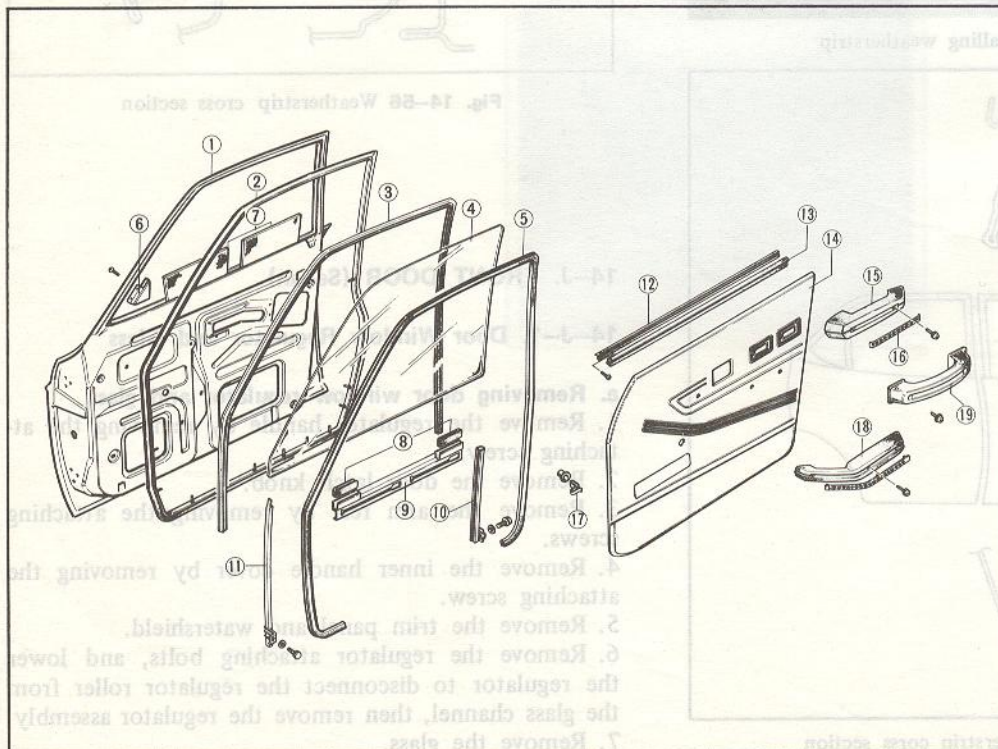


Fig. 14-59
Front door (Sedan)

1. Front door body
2. Weatherstrip
3. Glass run channel
4. Door glass
5. Seaming welt
6. Corner bracket
7. Insulation
8. Door glass rubber strip
9. Door glass lift bracket
10. Glass guide "B"
11. Glass guide "A"
12. Weatherstrip outer
13. Weatherstrip inner
14. Door trim
15. Arm rest (RX)
16. Arm rest garnish
17. Trim fastener
18. Arm rest (GR, GRII)
19. Pull handle (Std.)

14-J-2. Door Latch, Lock Cylinder and Outer Handle

a. Removing door latch, lock cylinder and outer handle

1. Remove the regulator handle, arm rest, etc.
2. Remove the trim panel and watershield.

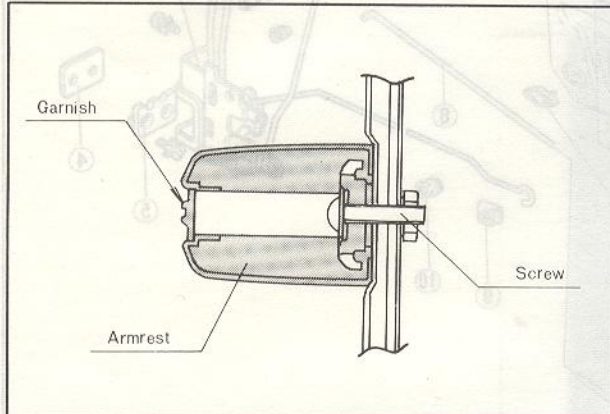


Fig. 14-62 Removing arm rest

3. Remove the bolts attaching the inner handle and remove the inner handle.



Fig. 14-63 Removing inner handle

4. Raise the glass fully and disconnect the remote control rod from the lock cylinder.
5. Remove the door latch attaching screw and remove the door latch.

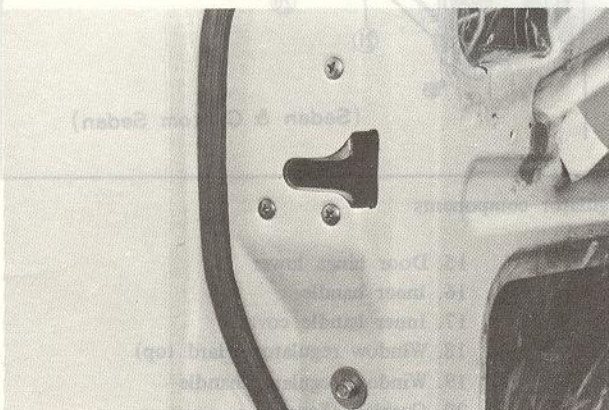


Fig. 14-64 Removing door latch attaching screws

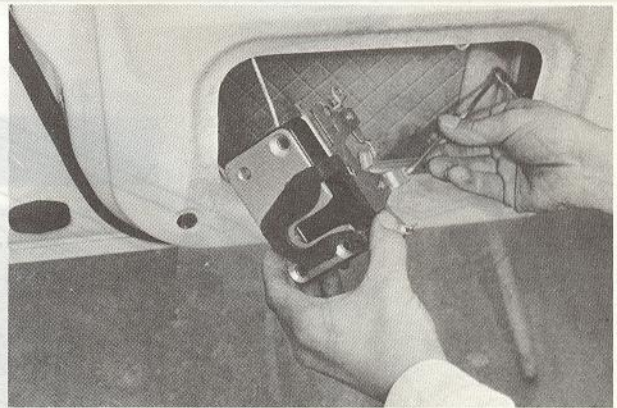


Fig. 14-65 Removing door latch

6. Remove the outer handle by removing the attaching bolts.

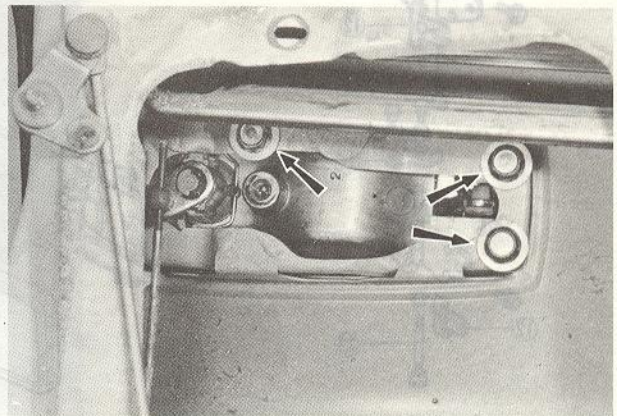


Fig. 14-66 Removing outer handle attaching bolts

7. Remove the retainer that secure the lock cylinder to the outer handle and remove the lock cylinder.

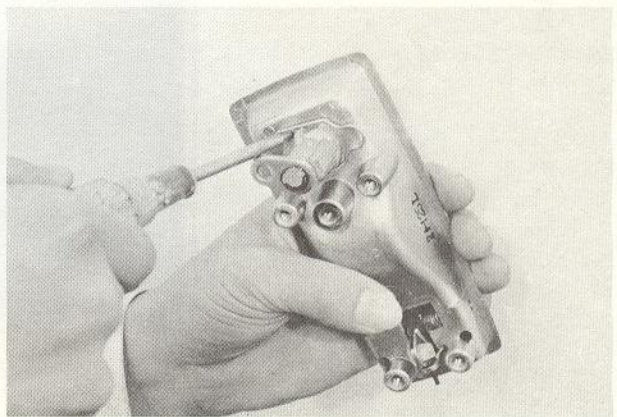


Fig. 14-67 Removing retainer

b. Installing door latch, lock cylinder and outer handle

Follow the removal procedures in the reverse order.

1. Door cushion
2. Door screen
3. Hinge pin
4. Door hinge lower shim
5. Rack
6. Base plate
7. Door hinge upper
8. Rod holder
9. Pad
10. Door lock
11. Door body
12. Check lever

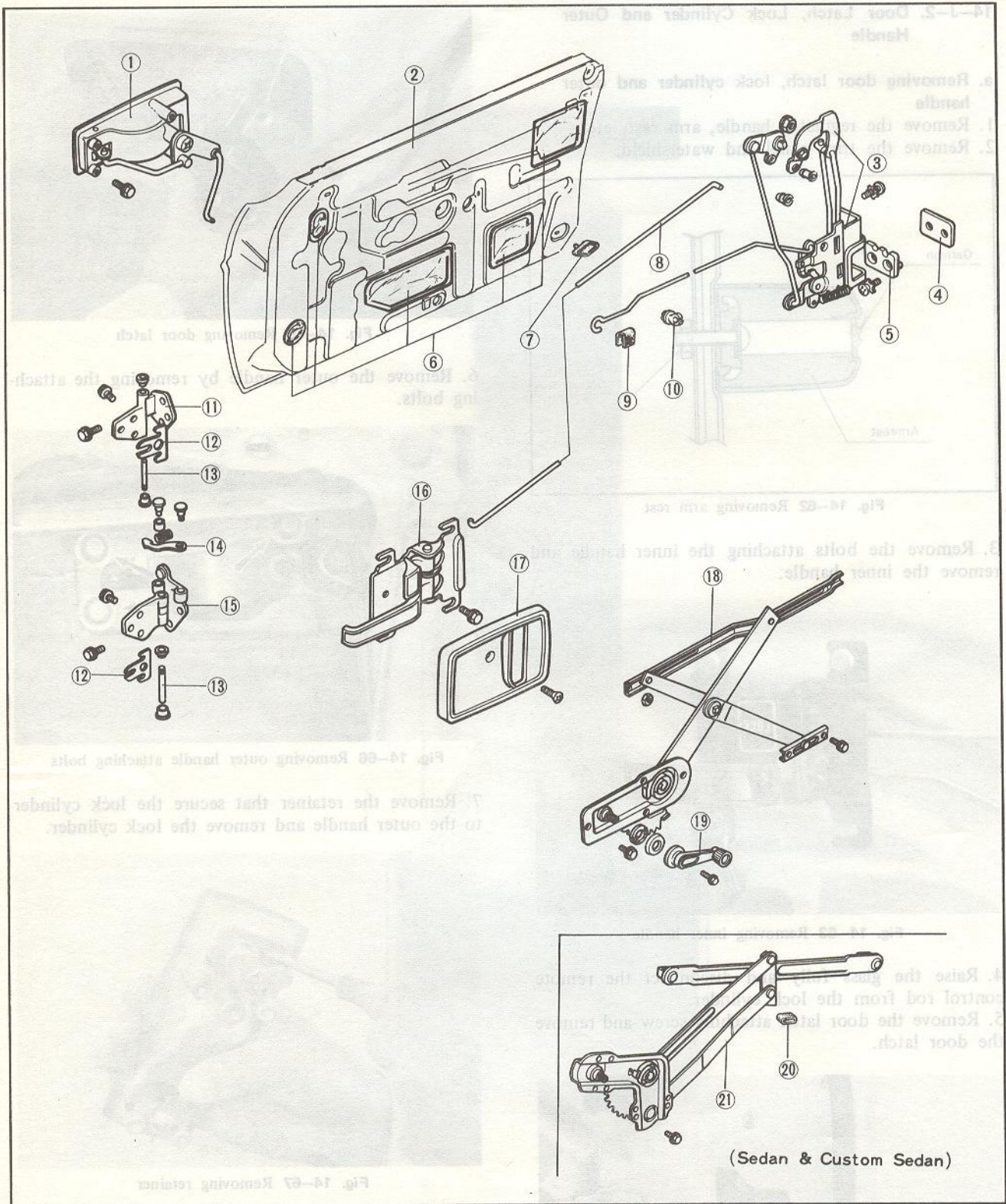


Fig. 14-68 Front door regulator components

- | | | |
|-----------------|---------------------------|---------------------------------|
| 1. Outer handle | 8. Inner handle rod | 15. Door hinge lower |
| 2. Door body | 9. Pad | 16. Inner handle |
| 3. Door lock | 10. Rod holder | 17. Inner handle cover |
| 4. Base plate | 11. Door hinge upper | 18. Window regulator (Hard top) |
| 5. Rack | 12. Door hinge lower shim | 19. Window regulator handle |
| 6. Door screen | 13. Hinge pin | 20. Cushion (Sedan) |
| 7. Door cushion | 14. Check lever | 21. Window regulator (Sedan) |

14-J-3. Door Window Regulator and Glass**a. Removing door window regulator and glass (Hard top)**

1. Remove the regulator handle.
2. Remove the inner handle cover.
3. Remove the garnish and arm rest.
4. Fully open the window glass.
5. Remove the belt line mould.
6. Remove the door screen.
7. Remove the nuts.
8. Remove the window glass assembly from the regulator and take it upward.
9. Remove the nut and take out the regulator from the service hole.

b. Checking door window regulator

1. Inspect the regulator gear and spring for wear and damage. If defective, replace the regulator assembly.
2. If necessary, apply grease to each operation portion.

c. Installing door window regulator and glass

Follow the removal procedures in the reverse order.

Note :

Adjust the regulator and check the operation of the regulator.

14-J-4. Inner Handle, Door Latch and Outer Handle**a. Removing inner handle**

1. Remove the door trim.
2. Remove the door screen.
3. Remove the bolt joint.
4. Remove the rod from rod holder and remove the inner handle.

b. Installing inner handle

Follow the removal procedures in the reverse order.

Note :

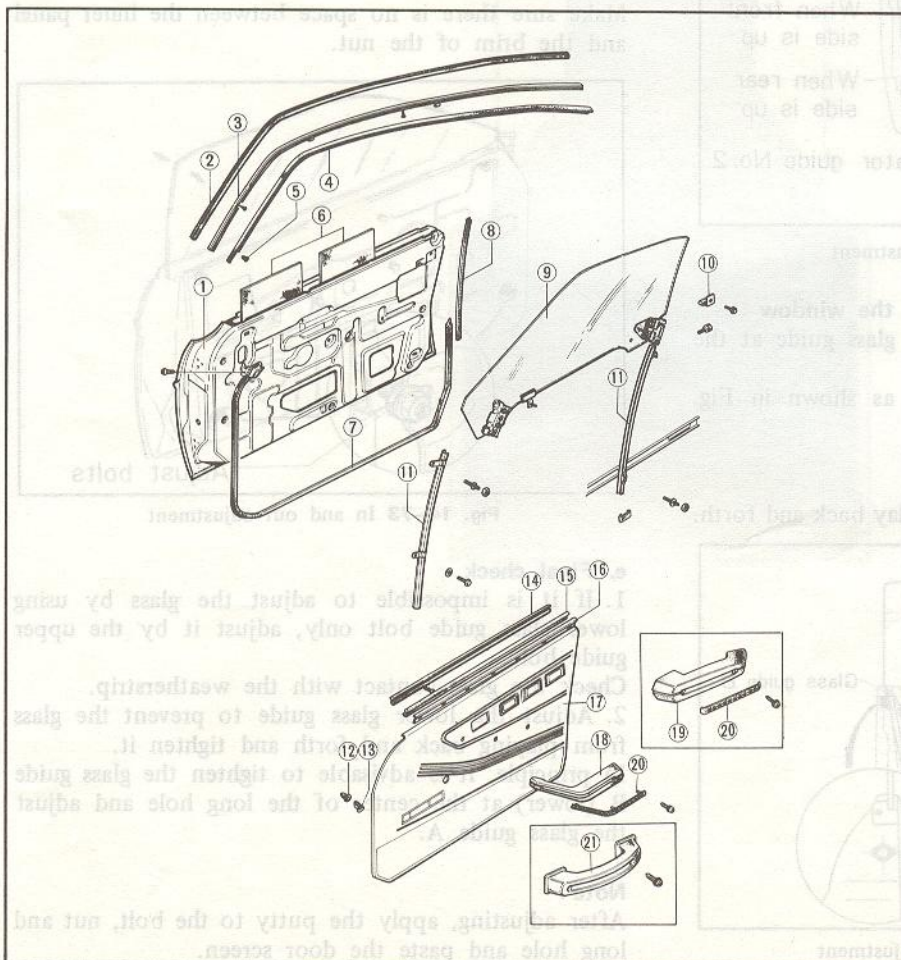
Adjust the inner handle and inner lock lever with bolt and nut in order to prevent the free play of them.

c. Removing door latch

1. Remove the door window glass. (Refer to 14-J-3)
2. Remove the inner handle.
3. Incline forward the glass guide by removing the bolts and loosening the nuts.
4. Take out the door latch from the service hole by removing the nuts, joints, bolts and screens.

d. Installing door latch

Follow the removal procedures in the reverse order.

**Fig. 14-69**

Front door glass

1. Door body
2. Seaming welt (Roof side)
3. Weatherstrip retainer
4. Weatherstrip roof side
5. Weatherstrip fastener
6. Insulation
7. Door body weatherstrip
8. Seaming welt (Door body rear)
9. Door glass
10. Glass stopper
11. Glass guide
12. Fastener cap
13. Trim fastener
14. Outer weatherstrip
15. Weatherstrip
16. Mould
17. Door trim
18. Arm rest (GS, GSII)
19. Arm rest (SX)
20. Arm rest garnish
21. Pull handle

e. Removing outer handle

1. Remove the door window glass. (Refer to 14-J-3)
2. Remove the joint and bolt.
3. Remove the bolt and take out the outer handle.

f. Installing outer handle

Follow the removal procedures in the reverse order after adjusting the joint not to play.

Note :

When removing or installing the door lock, nylon bush and joint should be changed.

14-J-5. Front Door Glass Regulator Adjustment

a. Horizontal adjustment of the window

1. Raise the window to full up position.
2. Make the horizontal adjustment of the glass by moving regulator guide No. 2 up and down and tighten it.
3. Make sure that the regulator guide No. 2 is parallel with the standard line.
4. Make sure that the glass moves smoothly.

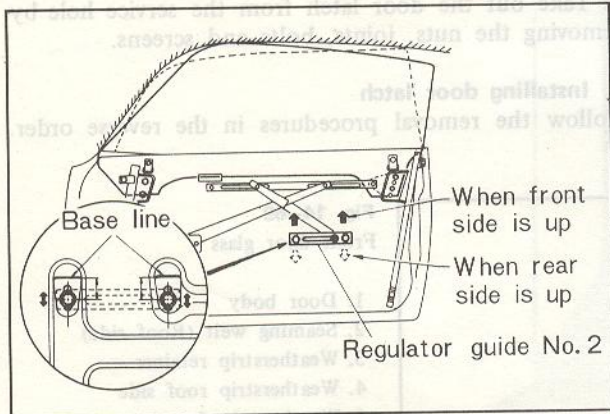


Fig. 14-70 Horizontal adjustment

b. The fore and aft adjustment of the window

1. Tighten the upper bolt of the glass guide at the center of the long hole.
2. Push rearwards the glass guide as shown in Fig. 14-71 the upper bolt.

Note :

Make sure that the glass does not play back and forth.

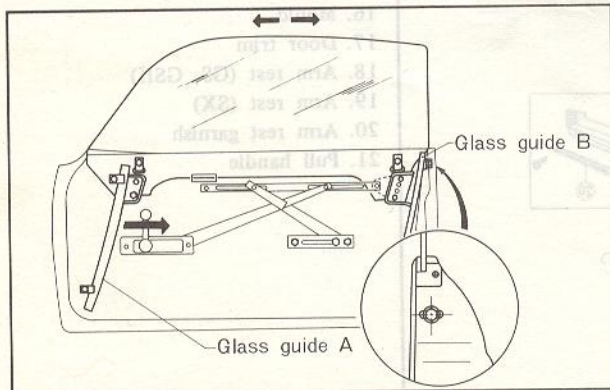


Fig. 14-71 Fore and aft adjustment

c. Vertical adjustment of the window

With the window glass raised to full up position, adjust the bolt up stoppers (Front and Rear) and tighten it.

Note :

Make sure that the regulator touches both up stoppers.

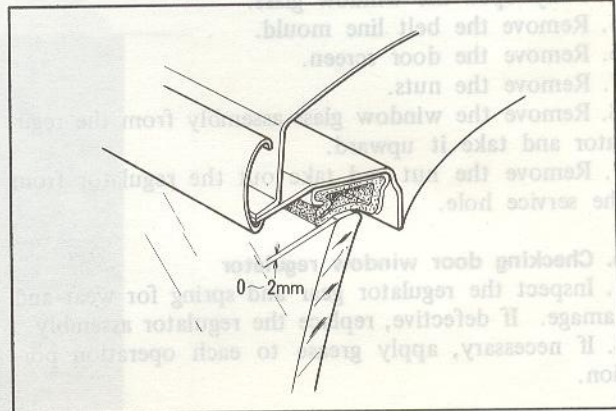


Fig. 14-72 Vertical adjustment

d. The in and out adjustment of the window

With the window raised adjust the glass guide lower adjusting bolt so that the glass circumference touches cab side weatherstrip evenly.

Note :

Make sure there is no space between the inner panel and the brim of the nut.

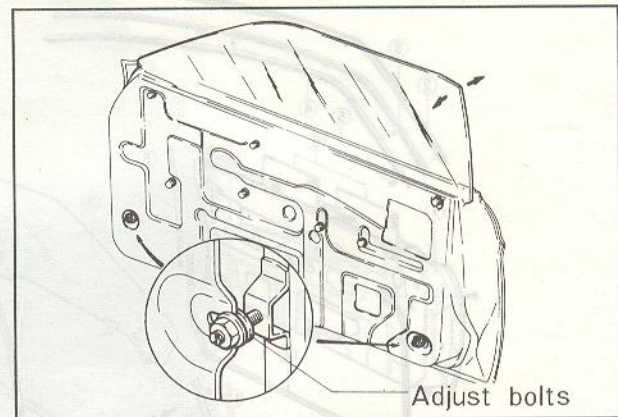


Fig. 14-73 In and out adjustment

e. Final check

1. If it is impossible to adjust the glass by using lower glass guide bolt only, adjust it by the upper guide bolt. Check the glass contact with the weatherstrip.
2. Adjust the lower glass guide to prevent the glass from playing back and forth and tighten it. In principle, it is advisable to tighten the glass guide B (lower) at the center of the long hole and adjust the glass guide A.

Note :

After adjusting, apply the putty to the bolt, nut and long hole and paste the door screen.

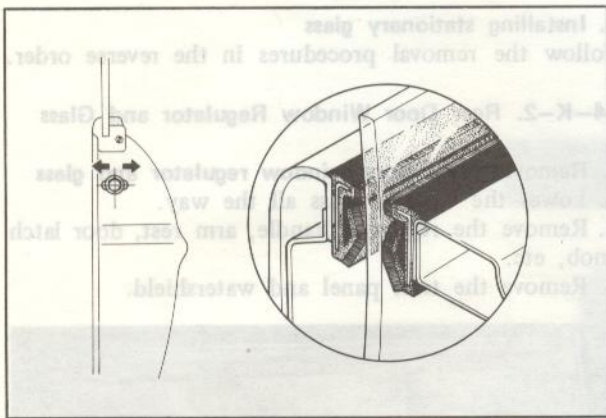


Fig. 14-74 Adjusting bolt

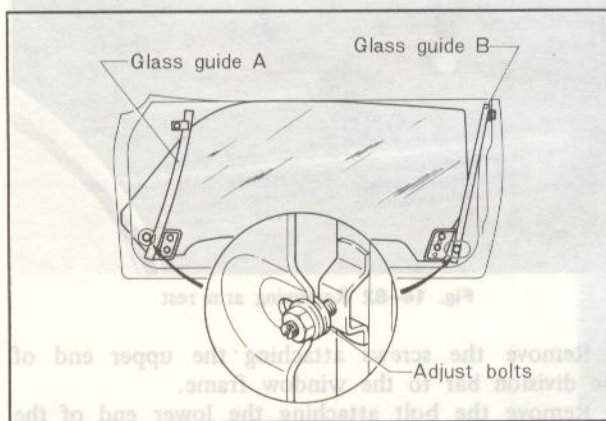


Fig. 14-75 Adjusting bolts

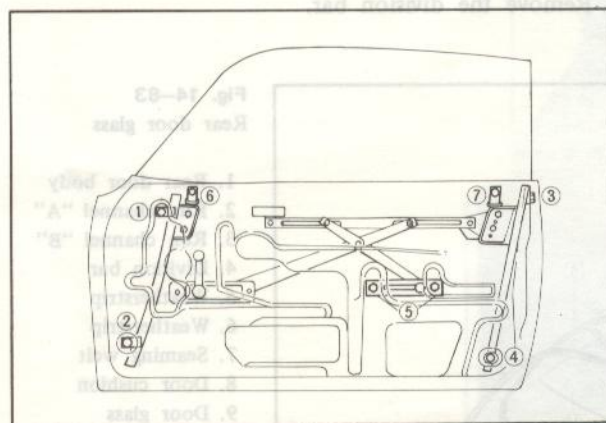


Fig. 14-76 Adjusting position

Horizontal adjustment	5
Fore and aft adjustment	1, 2, 4
Vertical adjustment	6, 7
In and out adjustment	2, 4, 3

14-K. REAR DOOR

14-K-1. Stationary Glass

a. Removing stationary glass

1. Lower the window glass all the way.
2. Remove the trim panel and watershield.

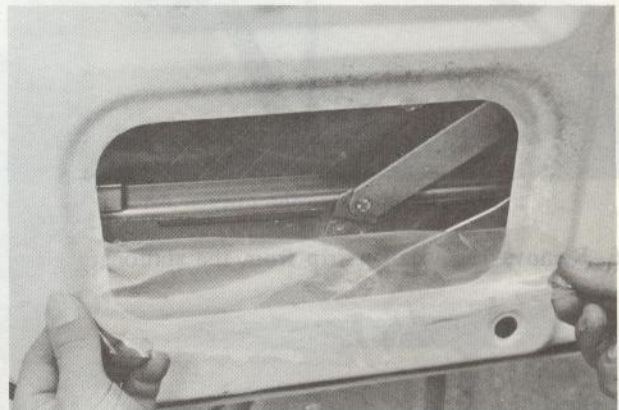


Fig. 14-77 Removing watershield

3. Remove the screws attaching the upper end of the division bar to the window frame.

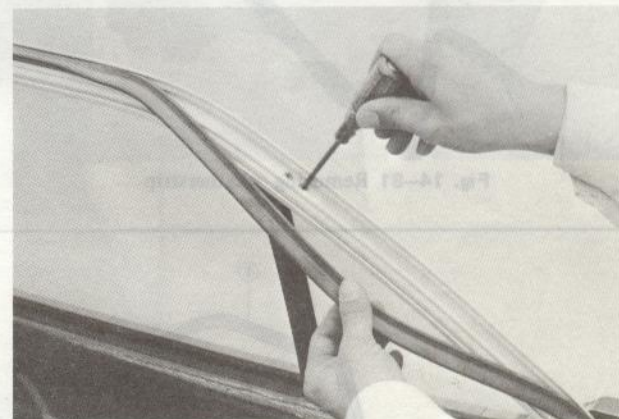


Fig. 14-78 Removing upper end attaching screws

4. Remove the bolt attaching the lower end of the division bar to the door panel.
5. Pull the division bar off the stationary glass and remove the stationary glass.



Fig. 14-79 Removing lower end attaching bolts

DESCRIPTION

The body is designed to give an unitary construction with the body and chassis frame unified for light, rigid and durable construction. This section explains service procedures of the hood, luggage compartment, bumper, door, seat, top ceiling, windshield.

14-A. HOOD

14-A-1. Removing Hood

1. Open the hood and support the hood in the open position. Mark the hood hinge locations on the hood.
2. Remove the hood support from the hood.

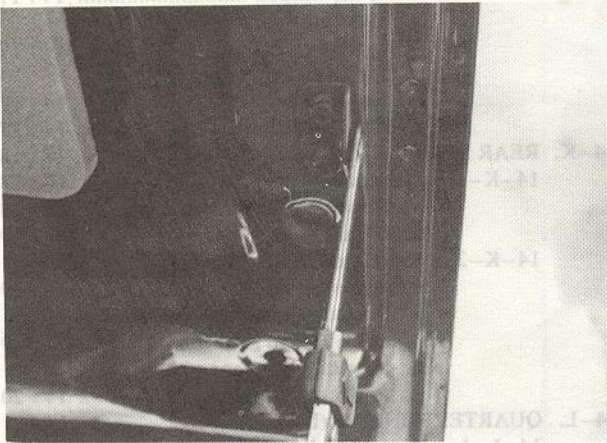


Fig. 14-1 Removing hood support

3. Remove two nuts attaching each hinge to the hood taking care not to let the hood slip when the nuts are removed.



Fig. 14-2 Removing hinge attaching bolts

4. Remove the hood from the vehicle.

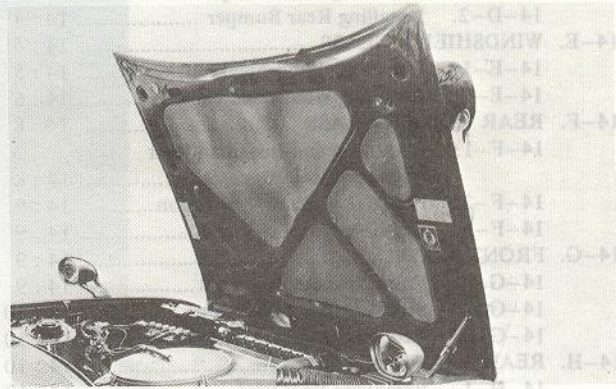


Fig. 14-3 Removing hood

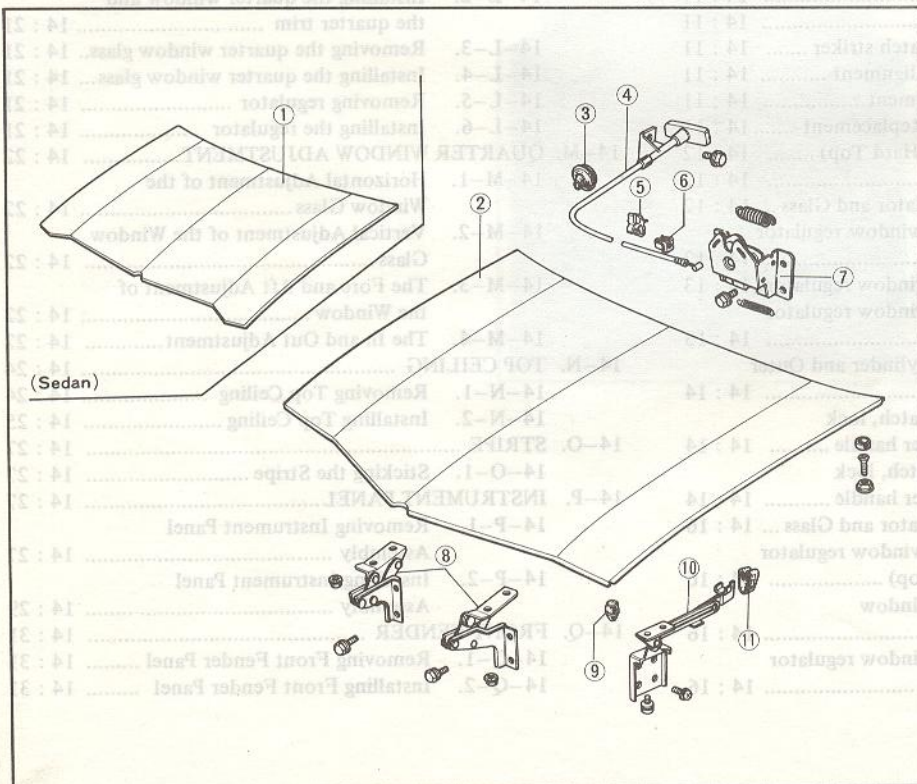


Fig. 14-4 Hood components

1. Hood (Bonnet) Sedan
2. Hood (Bonnet) Hardtop
3. Release wire grommet
4. Release wire
5. Release wire clip
6. Release wire clamp
7. Hood latch (Bonnet lock)
8. Hood hinge
9. Cushion rubber
10. Hood support (Bonnet stay)
11. Hood support cushion rubber

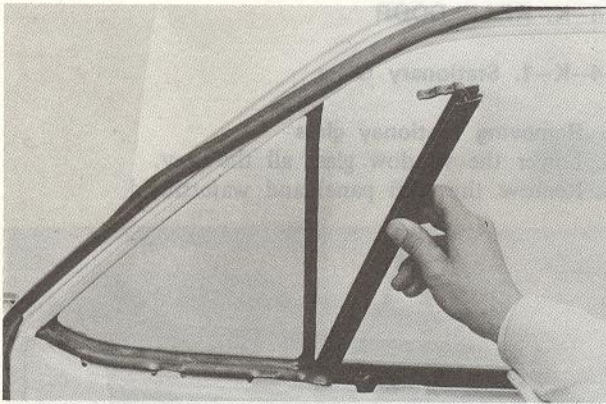


Fig. 14-80 Removing division bar

6. Remove the weatherstrip from the stationary glass.

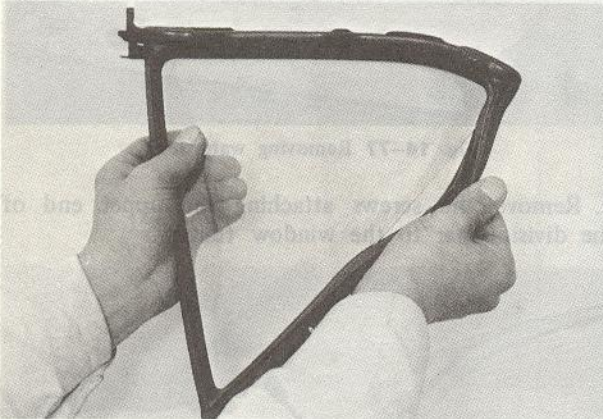


Fig. 14-81 Removing weatherstrip

b. Installing stationary glass

Follow the removal procedures in the reverse order.

14-K-2. Rear Door Window Regulator and Glass

a. Removing rear door window regulator and glass

1. Lower the window glass all the way.
2. Remove the regulator handle, arm rest, door latch knob, etc.
3. Remove the trim panel and watershield.



Fig. 14-82 Removing arm rest

4. Remove the screws attaching the upper end of the division bar to the window frame.
5. Remove the bolt attaching the lower end of the division bar to the door panel.
6. Remove the division bar.

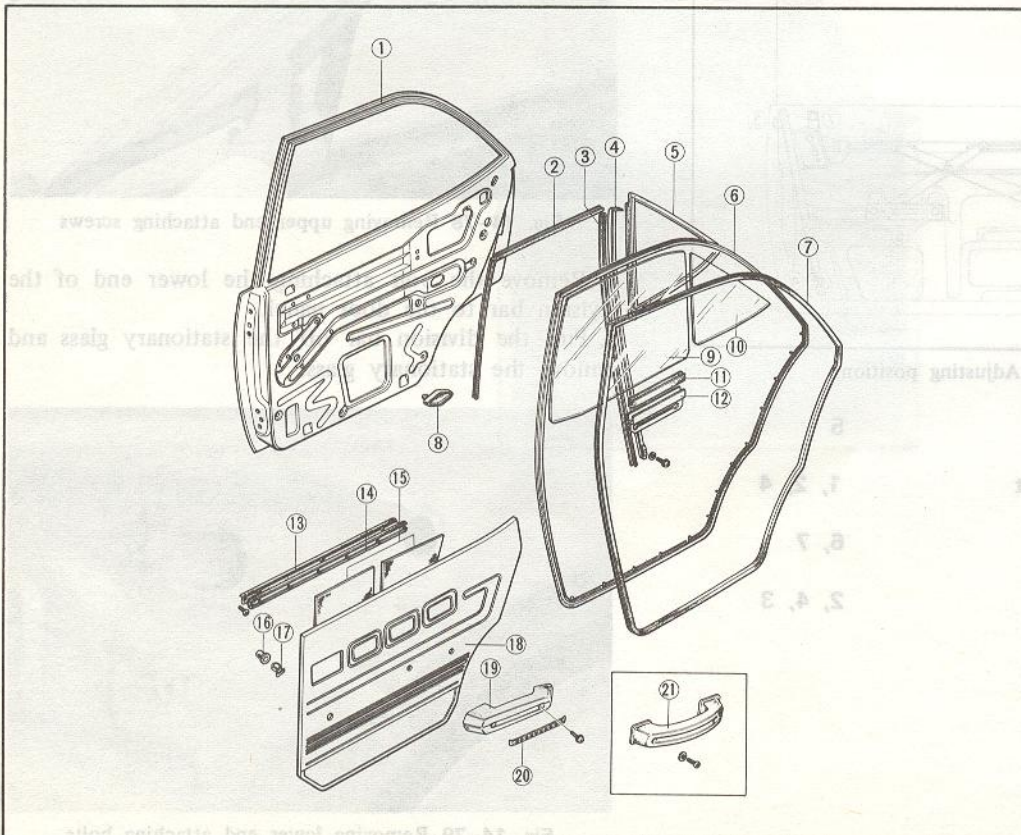


Fig. 14-83
Rear door glass

1. Rear door body
2. Run channel "A"
3. Run channel "B"
4. Division bar
5. Weatherstrip
6. Weatherstrip
7. Seaming welt
8. Door cushion
9. Door glass
10. Window glass
11. Rubber strip
12. Lift bracket
13. Weatherstrip (outer)
14. Weatherstrip (inner)
15. Insulation
16. Fastener cap
17. Fastener trim
18. Door trim
19. Arm rest
20. Arm rest garnish
21. Pull handle (Std.)

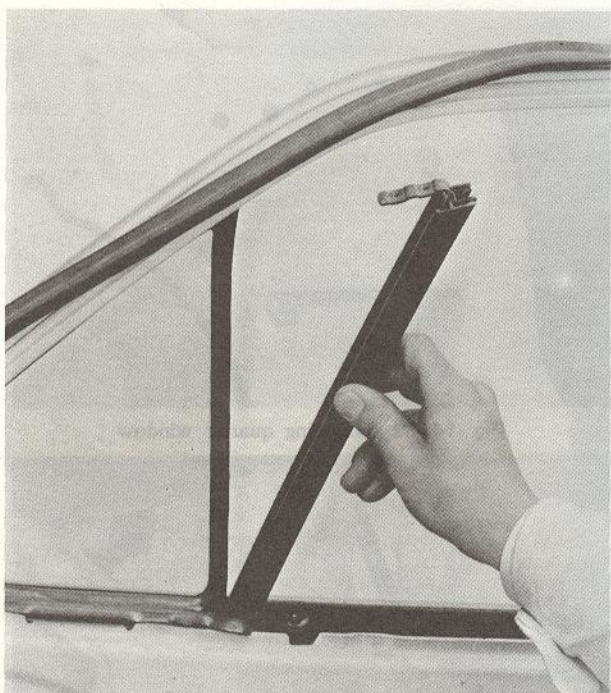


Fig. 14-84 Removing division bar

7. Remove the regulator attaching bolts and disconnect the regulator roller from the glass channel, then remove the regulator assembly.
8. Remove the glass.

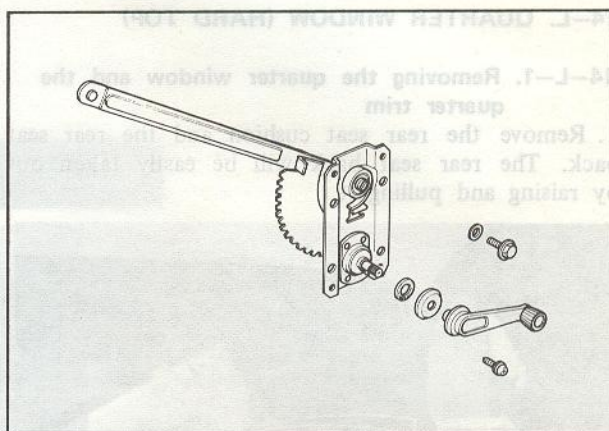


Fig. 14-85 Removing regulator

- b. Installing rear door window regulator and glass
- Follow the removal procedures in the reverse order.

Note :

Adjust the regulator and check the operation of the regulator.

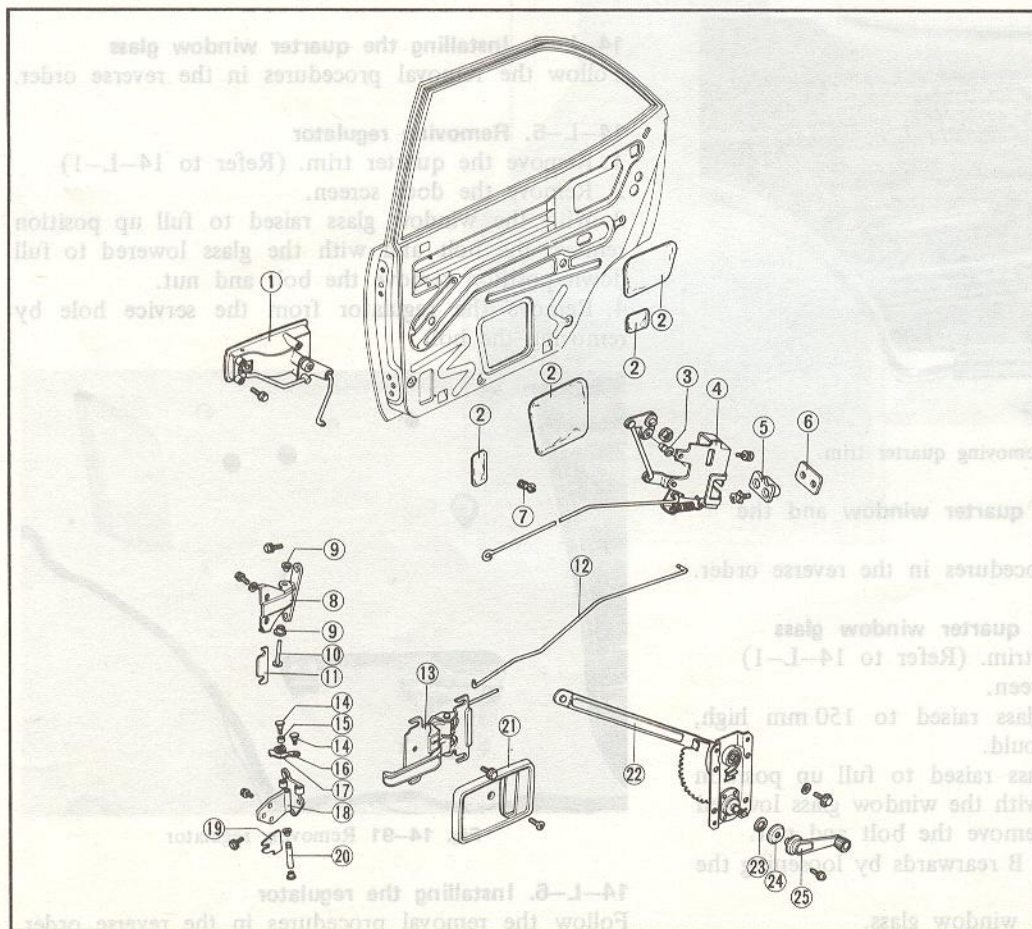


Fig. 14-86 Rear door regulator components

1. Outer handle
2. Screen
3. Bush
4. Door lock
5. Rack
6. Base plate
7. Rod holder
8. Hinge
9. Bush
10. Hinge pin
11. Shim
12. Rod
13. Inner handle
14. Pin
15. Roller
16. Check spring
17. Check lever
18. Hinge
19. Shim
20. Hinge pin
21. Inner handle cover
22. Regulator
23. Gasket
24. Escutcheon
25. Regulator handle

14-L. QUARTER WINDOW (HARD TOP)

14-L-1. Removing the quarter window and the quarter trim

1. Remove the rear seat cushion and the rear seat back. The rear seat back will be easily taken out by raising and pulling it.

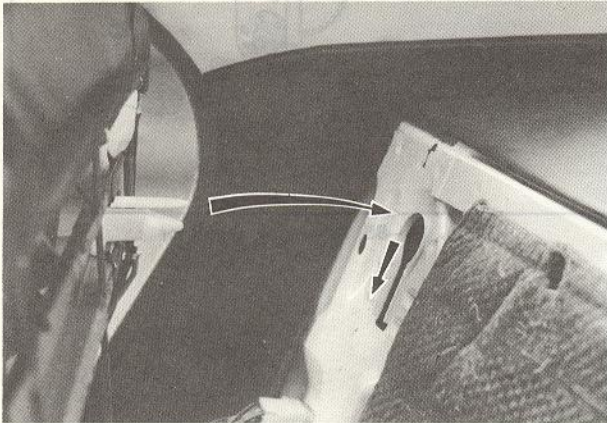


Fig. 14-87 Removing rear seat back

2. Remove the regulator handle.
3. Remove the garnish and arm rest.
4. Remove the belt holder.
5. Remove the cap and screw.
6. Remove the corner cover.
7. Remove the scarf plate by removing the bolt.
8. Remove the quarter trim.

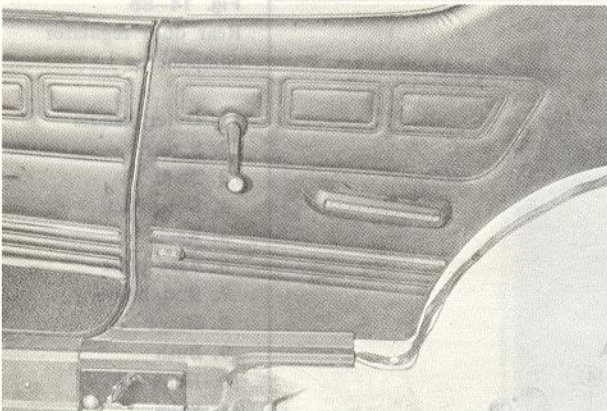


Fig. 14-88 Removing quarter trim

14-L-2. Installing the quarter window and the quarter trim.

Follow the removal procedures in the reverse order.

14-L-3. Removing the quarter window glass

1. Remove the quarter trim. (Refer to 14-L-1)
2. Remove the door screen.
3. With the window glass raised to 150 mm high, remove the belt line mould.
4. With the window glass raised to full up position remove the bolt. And with the window glass lowered to full down position remove the bolt and nut.
5. Move the glass guide B rearwards by loosening the bolt.
6. Take out the quarter window glass.

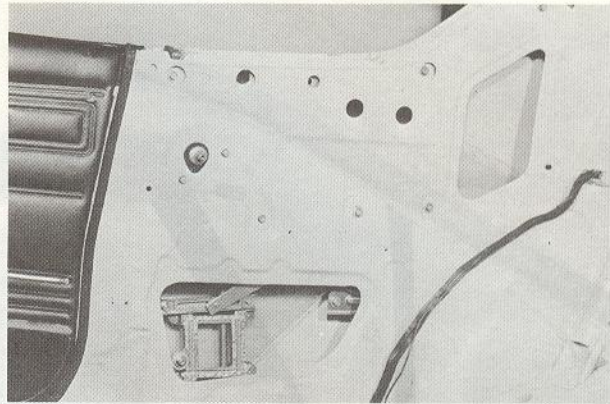


Fig. 14-89 Removing quarter window



Fig. 14-90 Removing quarter window glass

14-L-4. Installing the quarter window glass

Follow the removal procedures in the reverse order.

14-L-5. Removing regulator

1. Remove the quarter trim. (Refer to 14-L-1)
2. Remove the door screen.
3. With the window glass raised to full up position remove the bolt and with the glass lowered to full down position remove the bolt and nut.
4. Remove the regulator from the service hole by removing the bolt.

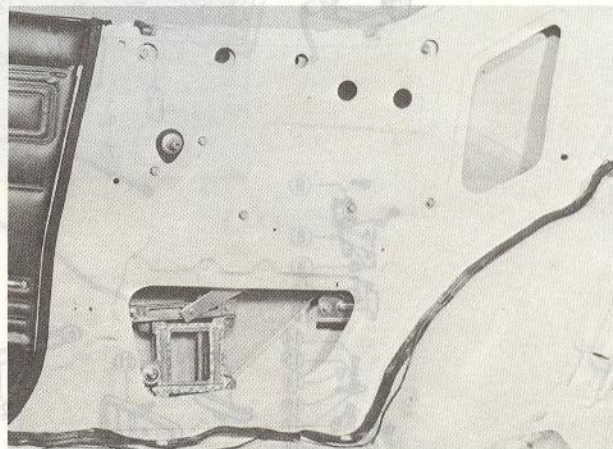


Fig. 14-91 Removing regulator

14-L-6. Installing the regulator

Follow the removal procedures in the reverse order.

14-M. QUARTER WINDOW ADJUSTMENT

14-M-1. Horizontal Adjustment of the Window Glass

1. Raise the window glass to full up position.
2. Adjust the window glass so that the glass touches cab side weatherstrip evenly by moving the regulator guide No. 2 up and down. And tighten the regulator guide.
3. Move the regulator guide parallel with the standard line, and adjust the position of the glass.
4. Vertical adjustment.

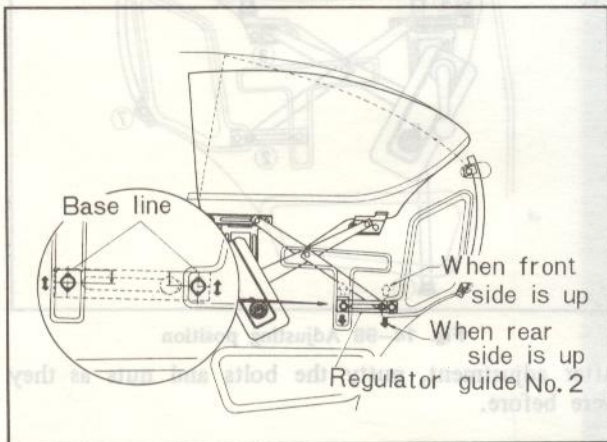


Fig. 14-92 Horizontal adjustment

14-M-2. Vertical Adjustment of the Window Glass

Adjust the up stopper with the window glass raised to the full up position so that the height of the quarter window glass is the same as that of the front door glass.

Note :
Make sure that the regulator touches both stoppers. (Front and Rear)

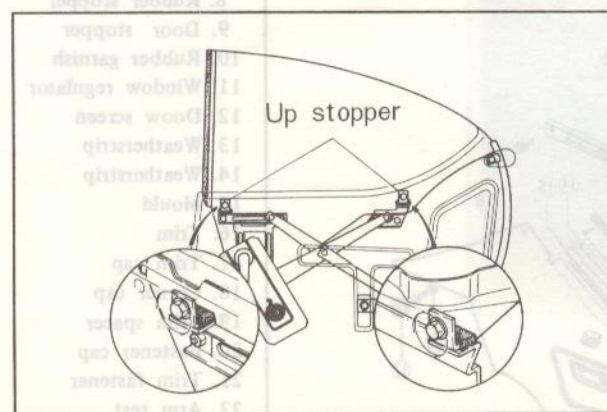


Fig. 14-93 Vertical adjustment

14-M-3. The Fore and Aft Adjustment of the Window

Move the glass back and forth so that the glass accords with the front door glass and tighten the regulator guide No. 4.

Note :
After making sure that the glass touches the weather-

strip evenly tighten the regulator guide No. 4.

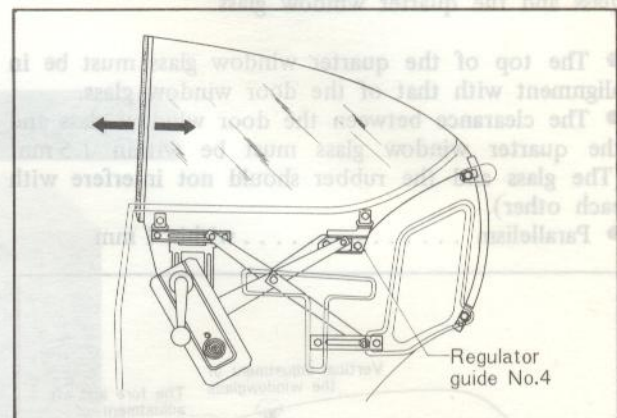


Fig. 14-94 Fore and aft adjustment

14-M-4. The In and Out Adjustment

1. Tighten the upper bolt of glass guide. With the glass raised to full up position, adjust the lower glass guide so that the glass circumference touches cab side weatherstrip evenly.

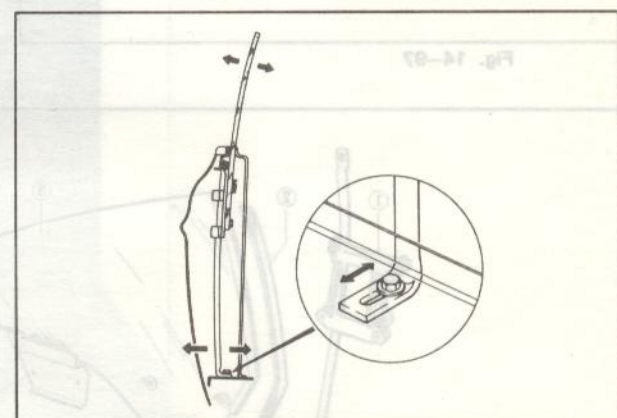


Fig. 14-95 In and out adjustment

2. Tighten the upper part of the glass guide. After lowering the glass, tighten the lower part.

Note :
Install the glass guide so that it touches the glass lightly as shown in Fig. 14-96 in order to prevent the weatherstrip from tearing off or biting when moving the glass up and down.

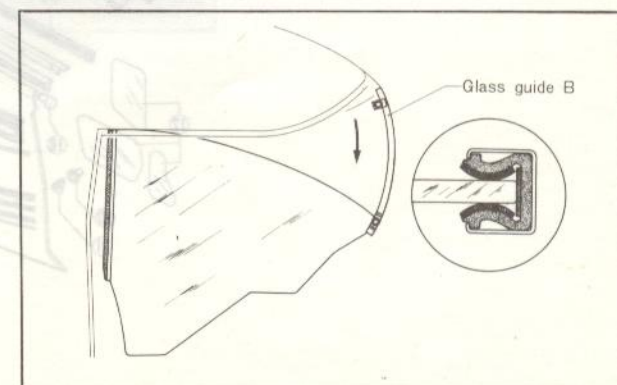


Fig. 14-96 Installing glass guide B

3. Check the relative position of the door window glass and the quarter window glass.

- The top of the quarter window glass must be in alignment with that of the door window glass.
- The clearance between the door window glass and the quarter window glass must be within 1.5 mm (The glass and the rubber should not interfere with each other).
- Parallelism within 1 mm

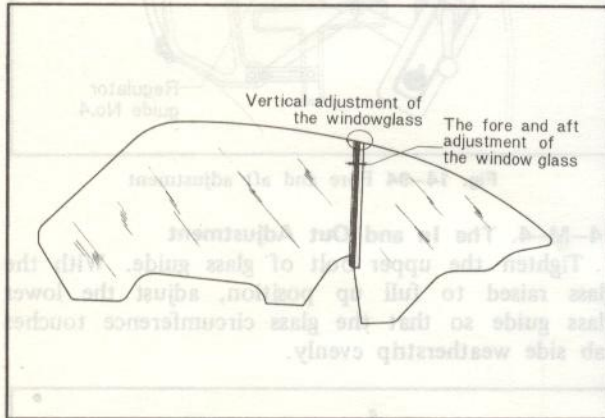


Fig. 14-97

- The horizontal adjustment 2
- The vertical adjustment 4, 5
- The fore and aft adjustment 3, 6, 7
- The in and out adjustment 1

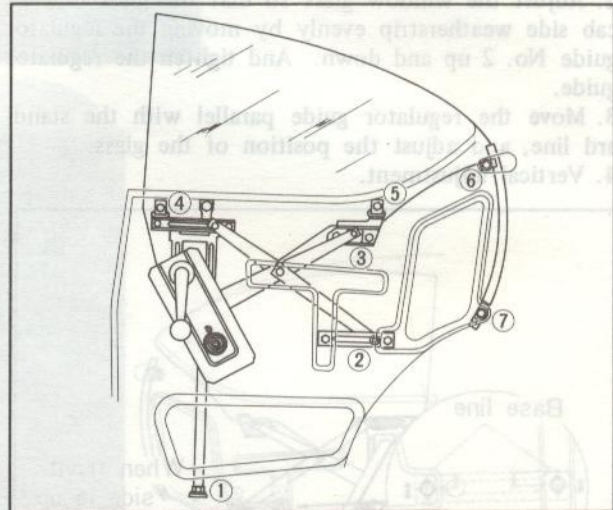


Fig. 14-98 Adjusting position

After adjustment, putty the bolts and nuts as they were before.

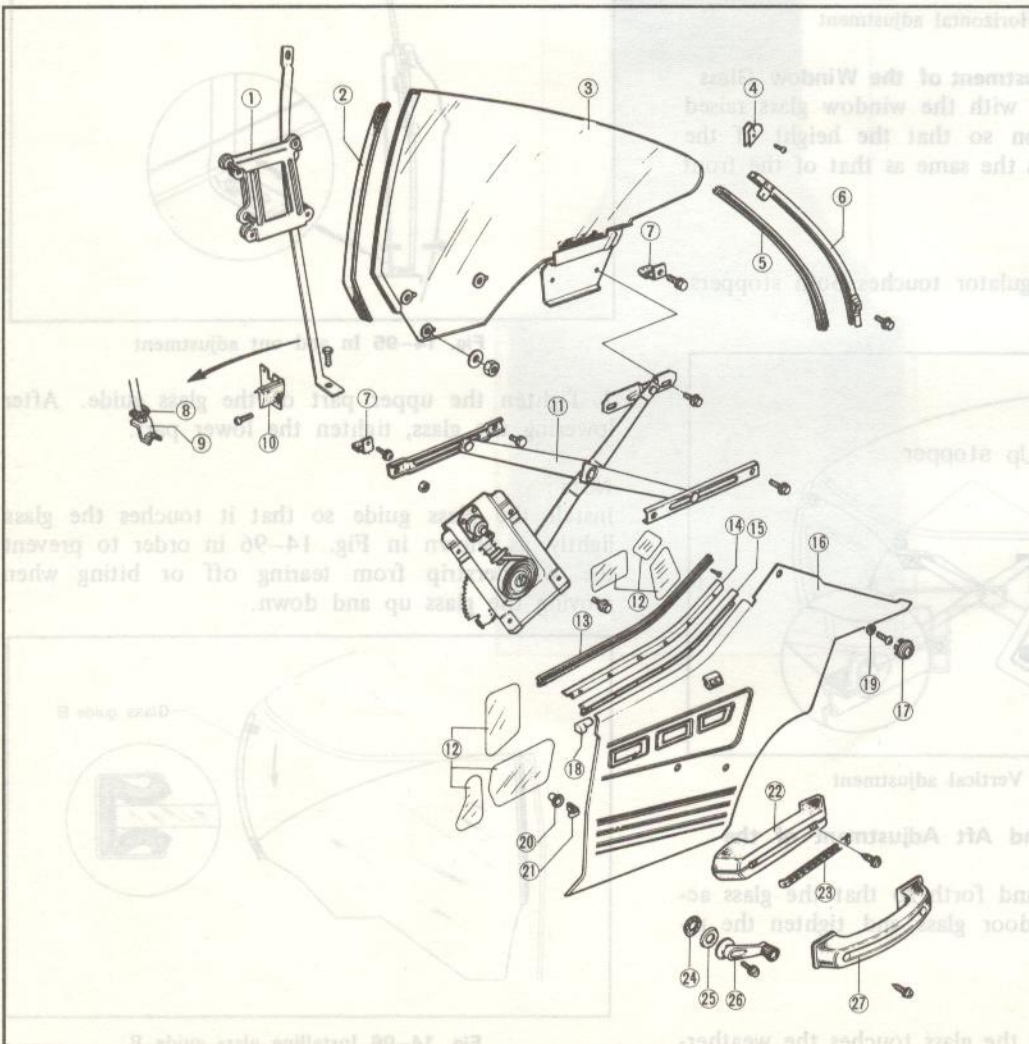


Fig. 14-99

Rear side window (Hard top)

1. Glass guide
2. Weatherstrip
3. Window glass
4. Corner cover
5. Glass run channel
6. Glass guide
7. Glass stopper
8. Rubber stopper
9. Door stopper
10. Rubber garnish
11. Window regulator
12. Door screen
13. Weatherstrip
14. Weatherstrip
15. Mould
16. Trim
17. Trim cap
18. Corner cap
19. Trim spacer
20. Fastener cap
21. Trim fastener
22. Arm rest
23. Garnish
24. Seal rubber
25. Escutcheon
26. Regulator handl
27. Pull handle (Std.)

14-N. TOP CEILING

14-N-1. Removing Top Ceiling

1. Remove the sun visors, interior mirror, interior lamps, assist straps, etc.

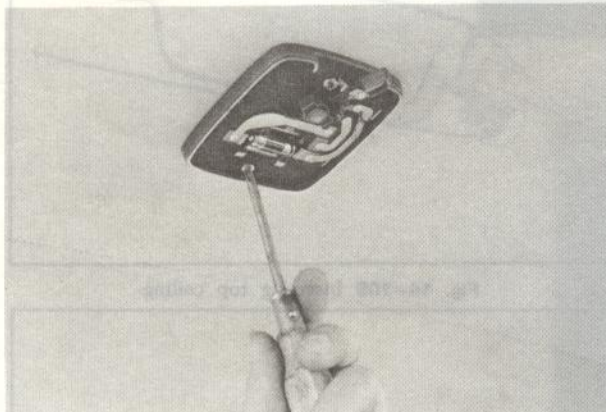


Fig. 14-100 Removing interior lamp

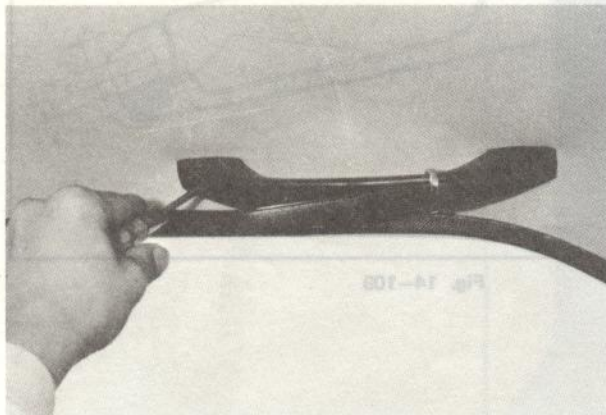


Fig. 14-101 Removing assist strap

2. Remove the front pillar trims and rear package tray trim panel.

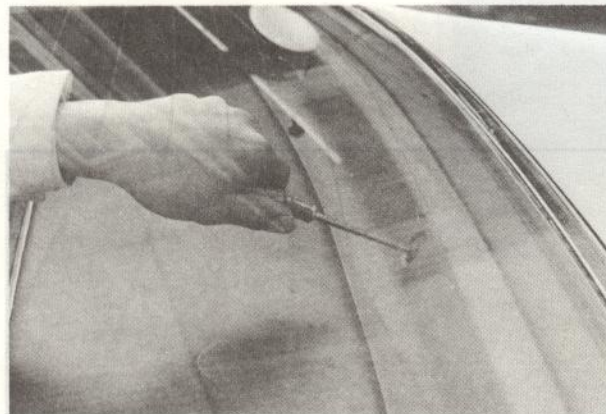


Fig. 14-102 Removing package trim panel

3. Strip off the seaming welts from the body flange and tear the cemented surface of the top ceiling from the outside of the flange.
 4. Remove the polyethylene plates of the top ceiling from the inserting points of the body.
 5. Remove the listing wires and top ceiling.



Fig. 14-103 Removing pillar trim

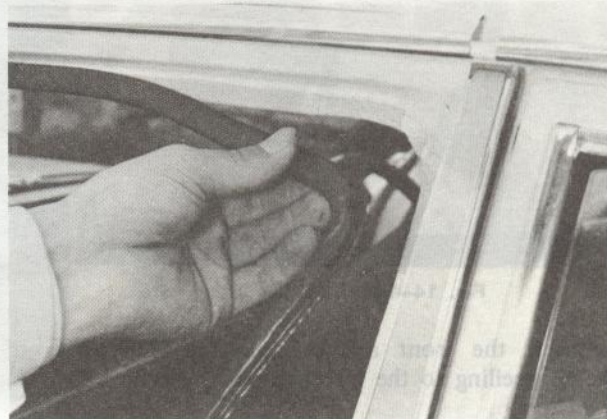


Fig. 14-104 Removing seaming welt



Fig. 14-105 Tearing of ceiling cemented surface

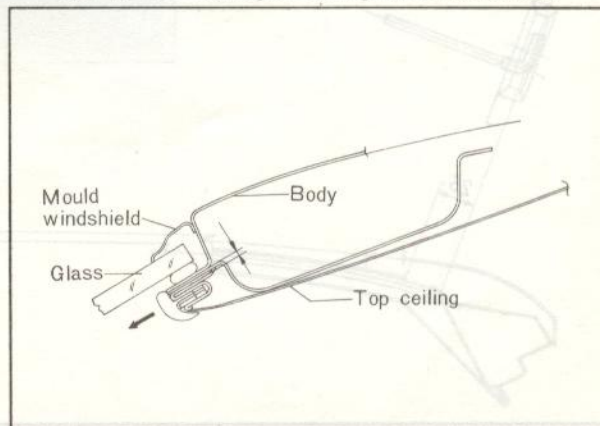


Fig. 14-106

14-N-2. Installing Top Ceiling

1. Affix the head linings (top insulations) onto the body ceiling with adhesive cement.
 2. Heat up the top ceiling to a temperature of 30°C to 50°C (86°F to 122°F).
 3. Insert both ends of the listing wires to their proper positions in successive order beginning from the rear as shown in Fig. 14-110.
- When doing so, be careful that the wires do not swing down.

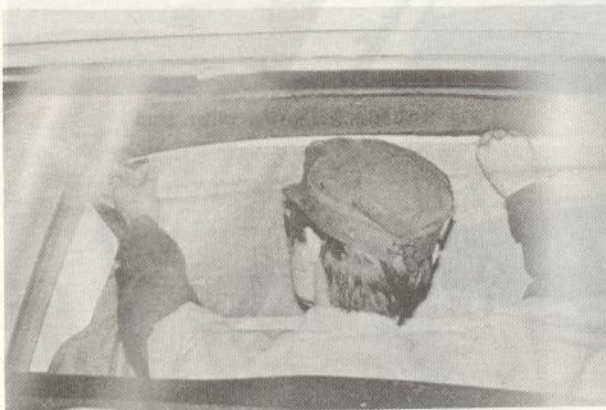


Fig. 14-107 Installing listing wire

4. Insert the front and rear polyethylene plates of the top ceiling to the inserting point of the body.

Note :

When inserting the top ceiling, if the guide made of plastic plate is used, you can insert it without touching the weaving point.

5. Apply neoprene adhesive cement to the outside of the body flange.
6. After one or two minutes, pull the top ceiling from both side to avoid any slackening and glue both side onto the body flange.
7. After the top ceiling is properly attached to the body flange, clip the off all protruding edges.
8. Install the seaming welts, rear view mirror, sun visors, interior lamps, assist handles, front pillar trims, rear package tray trim, etc.

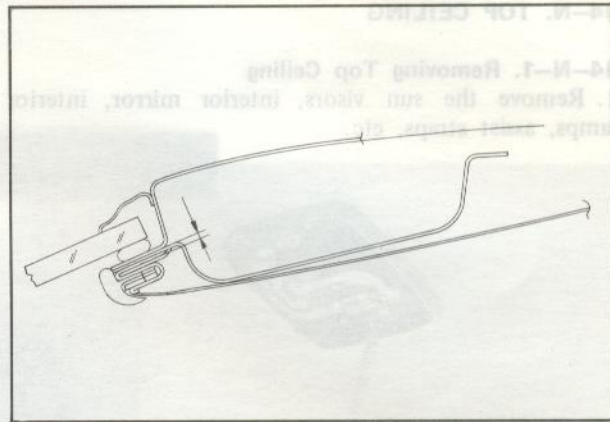


Fig. 14-108 Inserting top ceiling

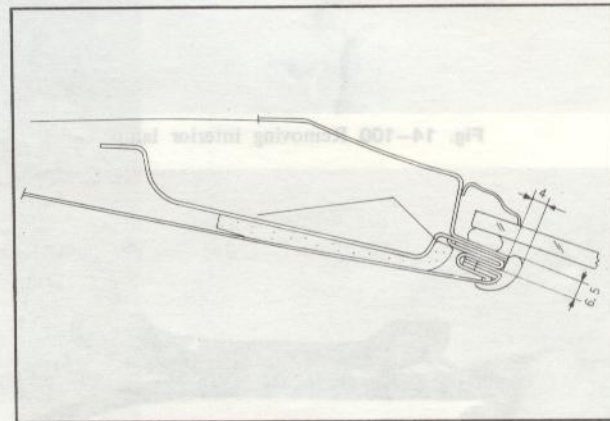


Fig. 14-109

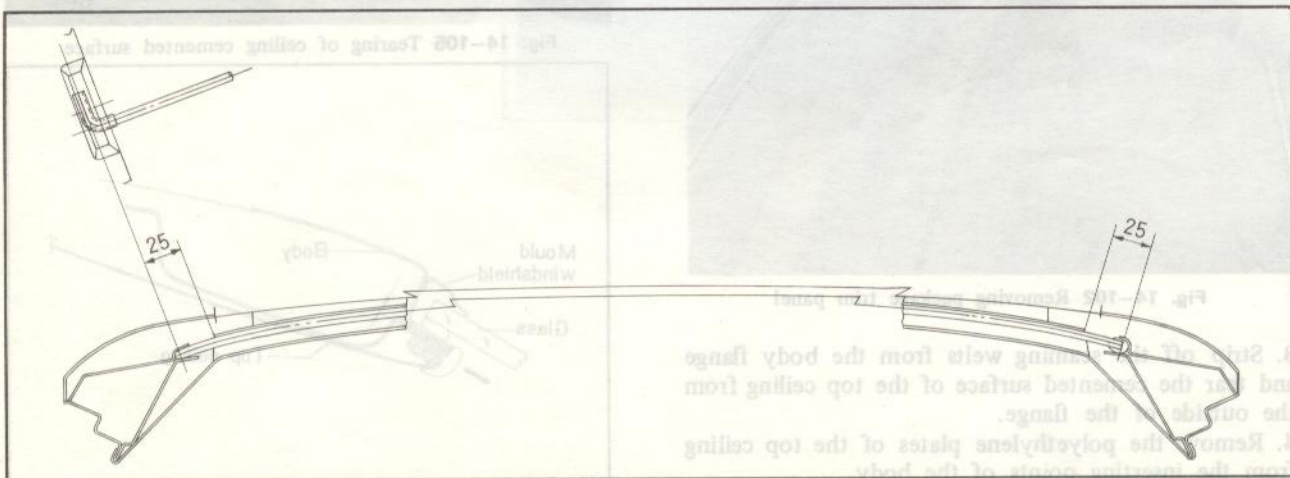


Fig. 14-110 Listing wire

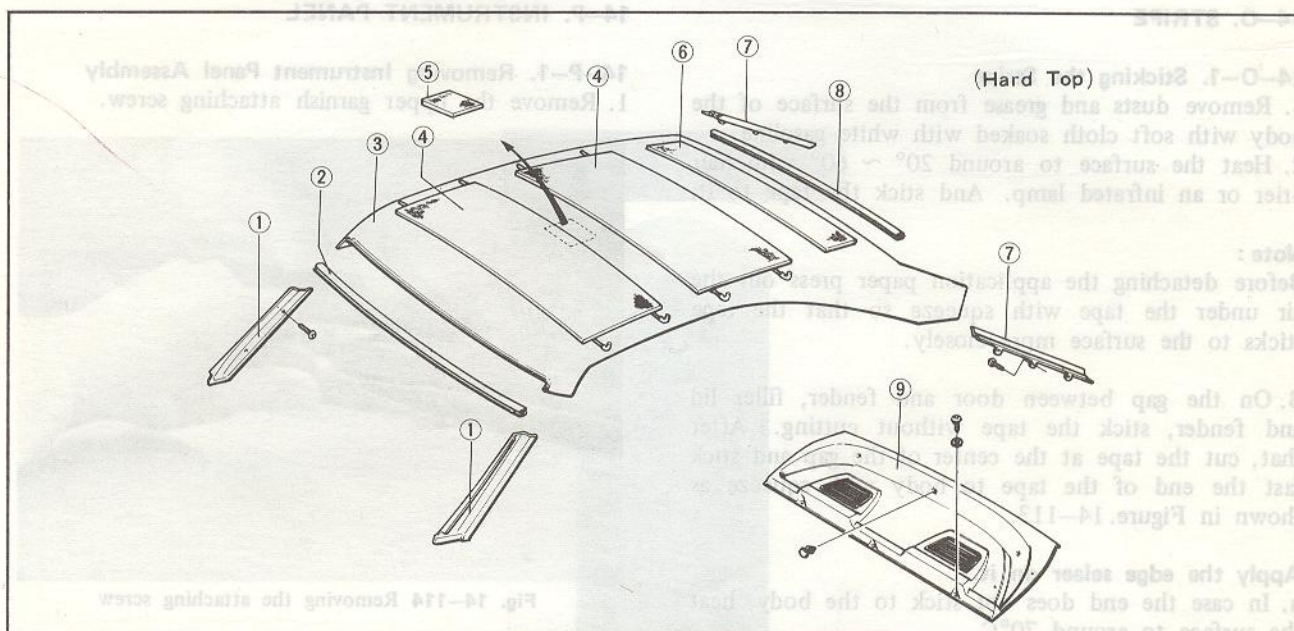


Fig. 14-111 Top ceiling (Hard top)

- | | | |
|-----------------------------|---------------------|----------------------------|
| 1. Front pillar trim | 4. Head lining | 7. Rear fixing plate |
| 2. Front polyethylene plate | 5. Wire cushion | 8. Rear polyethylene plate |
| 3. Top ceiling | 6. Rear head lining | 9. Rear package tray trim |

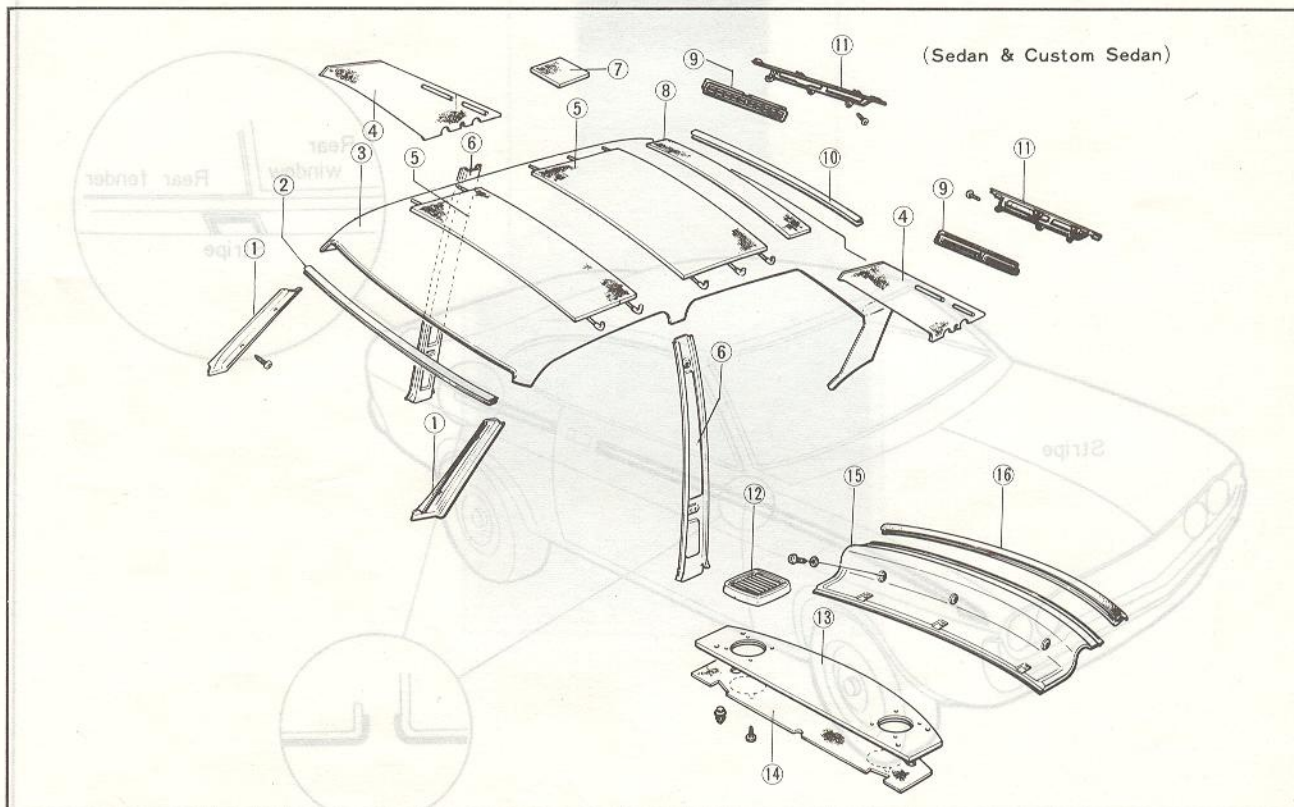


Fig. 14-112 Top ceiling (Sedan)

- | | | | |
|-----------------------------|-----------------------|-----------------------------|----------------------------|
| 1. Front pillar trim | 5. Head lining | 9. Air grille | 13. Rear package tray trim |
| 2. Front polyethylene plate | 6. Center pillar trim | 10. Rear polyethylene plate | 14. Insulator |
| 3. Top ceiling | 7. Wire cushion | 11. Rear fixing plate | 15. Rear package trim back |
| 4. Rear pillar pad | 8. Rear head lining | 12. Speaker grille | 16. Back trim brim |

14-O. STRIPE

14-O-1. Sticking the Stripe

1. Remove dusts and grease from the surface of the body with soft cloth soaked with white gasoline.
2. Heat the surface to around 20° ~ 60° with hair drier or an infrared lamp. And stick the tape to it.

Note :

Before detaching the application paper press out the air under the tape with squeeze so that the tape sticks to the surface more closely.

3. On the gap between door and fender, filler lid and fender, stick the tape without cutting. After that, cut the tape at the center of the gap and stick fast the end of the tape to body with squeeze as shown in Figure.14-113.

Apply the edge selaer on it.

- a. In case the end does not stick to the body, heat the surface to around 70°C.
- b. In case the air remains under the stripe, prick a hole with a pin and let the air go out.

14-P. INSTRUMENT PANEL

14-P-1. Removing Instrument Panel Assembly

1. Remove the upper garnish attaching screw.

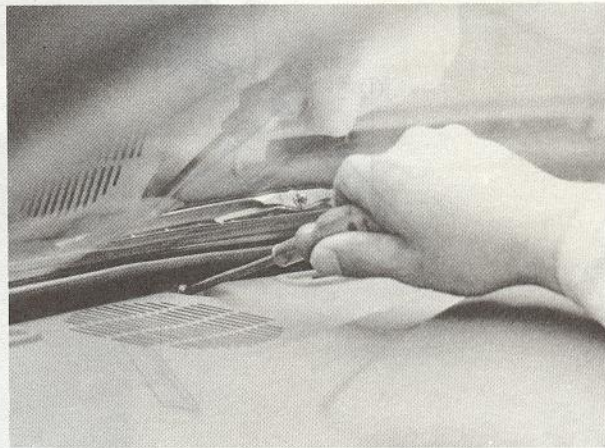


Fig. 14-114 Removing the attaching screw

2. Remove the glove box attaching screws and fasteners and remove the glove box.

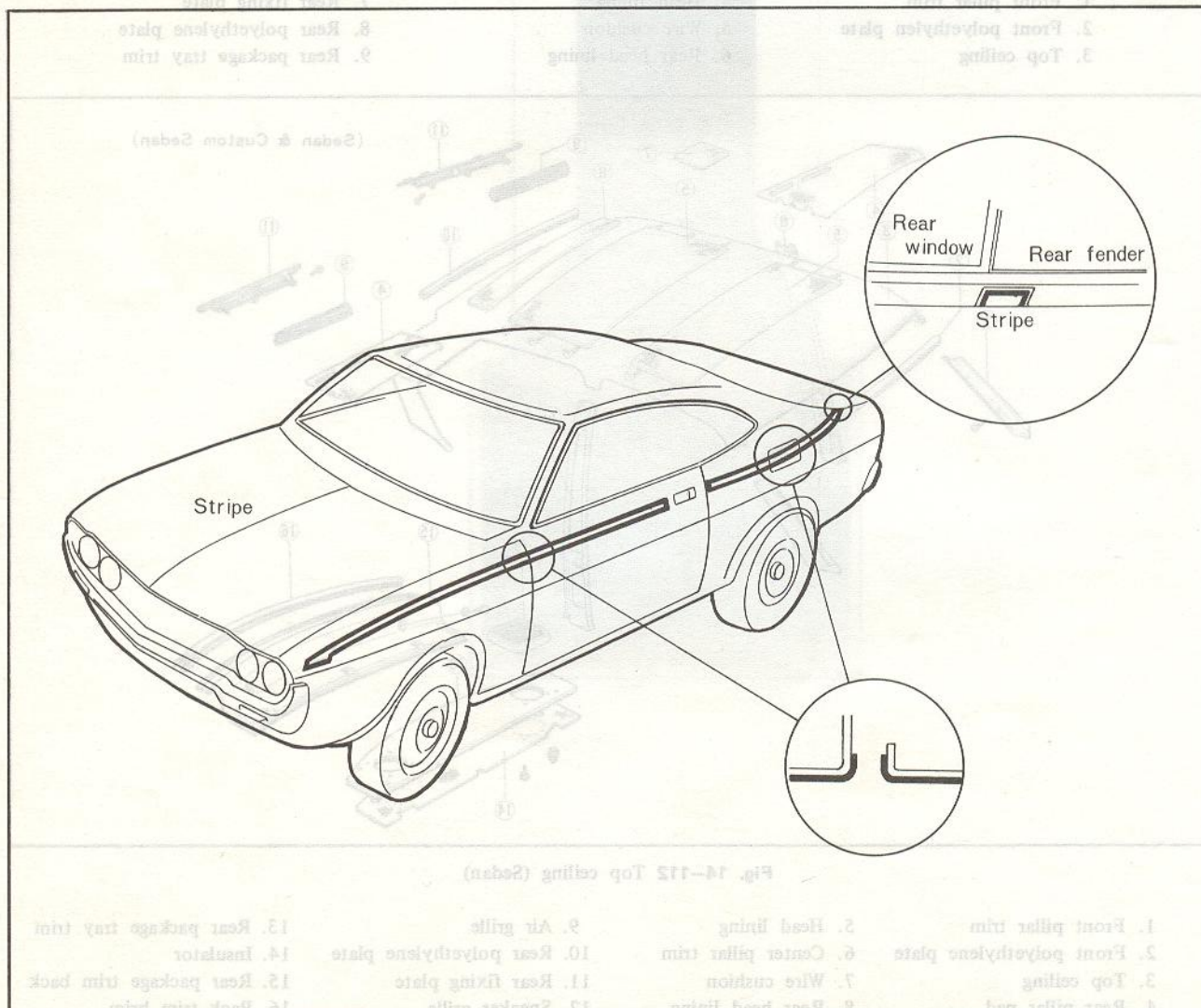


Fig. 14-113 Stripe

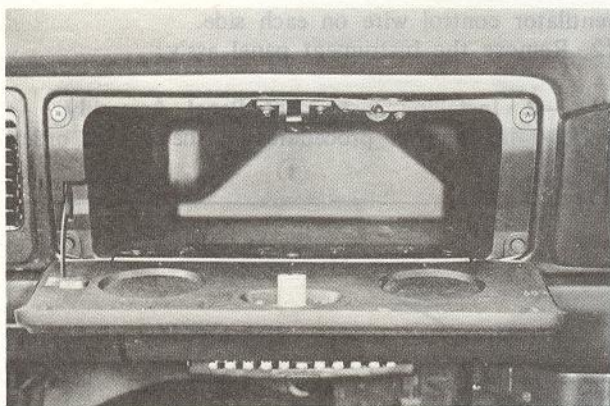


Fig. 14-115 Removing the glove box

3. Remove the two instrument panel attaching bolts through the glove box hole.

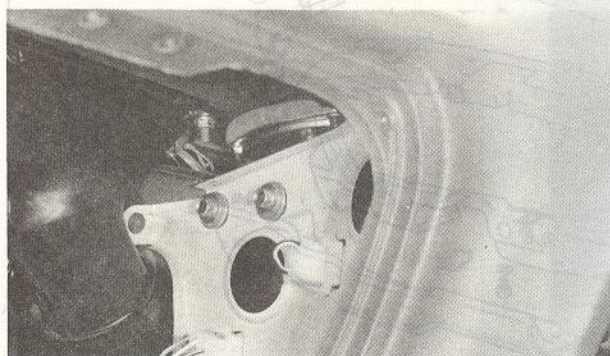


Fig. 14-116 Removing instrument panel attaching bolts

4. Remove the garnish or side ventilator on the standard type instrument panel on each side of the instrument panel.



Fig. 14-117 Removing garnish



Fig. 14-118 Removing side ventilator

5. Remove the instrument panel attaching bolt on each side of the instrument panel.



Fig. 14-119 Removing attaching bolt

6. Remove the two instrument panel attaching nuts on each side of the instrument panel lower.

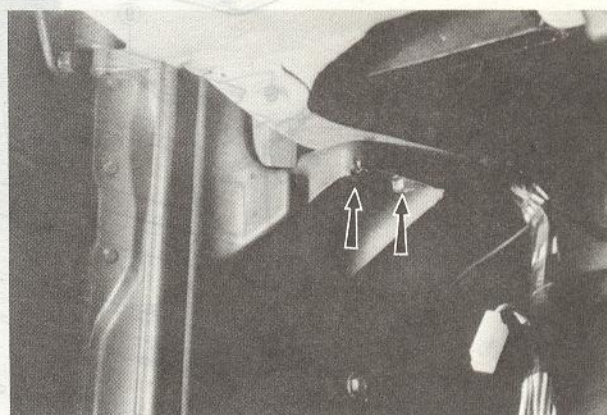


Fig. 14-120 Removing attaching nuts

7. Remove the steering wheel and column cover as described in Par. 15-C-2.

8. Remove the crush pad-lower right or remove the instrument panel junction attaching bolts on the cockpit type.

Remove the junction on the cockpit type.

9. Remove the steering shaft bracket attaching nuts and remove the two instrument panel attaching bolts, or remove the center console as described in Par. 15-E-1 on the cockpit type.

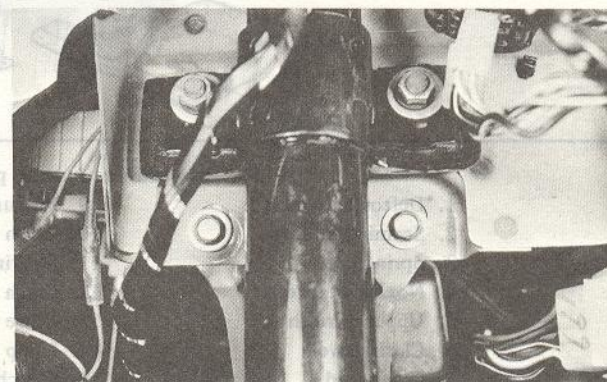


Fig. 14-121 Removing attaching nuts & bolts

14-A-2. Installing Hood

Follow the removal procedures in the reverse order and adjust the hood by applying the procedures explained in the following paragraph.

14-A-3. Adjusting Hood

The hood is provided with to-and-fro, up-and-down and side-to-side adjustments.

To make the to-and-fro and side-to-side adjustments, loosen the hood attaching bolts and move the hood to the proper position, then tighten the attaching bolts.

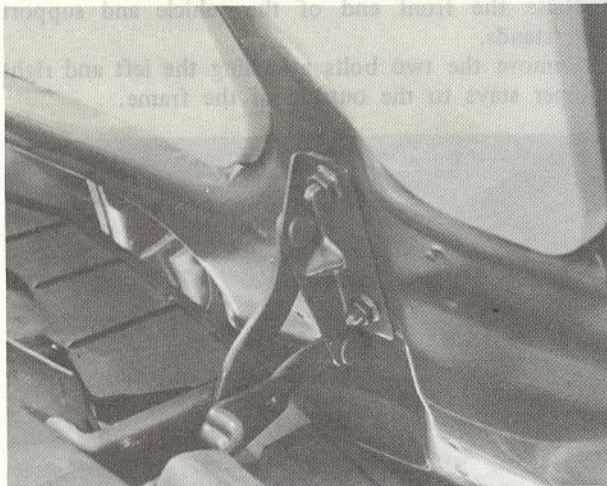


Fig. 14-5 To-and-fro adjustment

To make the up-and-down adjustment at the rear edge of the hood, loosen the hood stop bolts and move the hood to proper position, then tighten the attaching bolts.

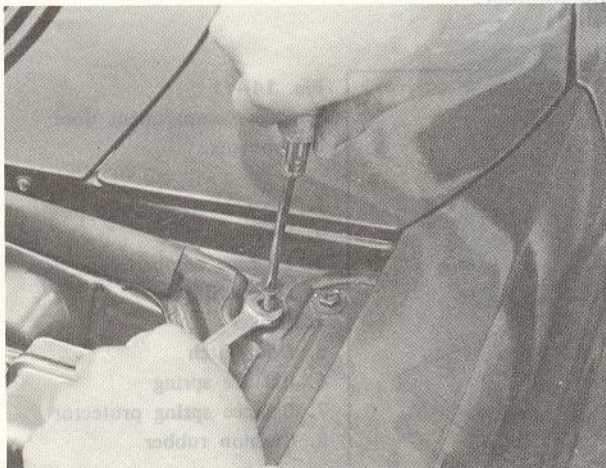


Fig. 14-16 Up-and-down adjustment

14-A-4. Adjusting Hood Latch

1. Make certain that it is properly aligned.
2. Loosen the hood latch attaching bolts. Then the move as required to align with the latch.
3. Loosen the attaching bolts on the hood latch, and adjust the position of the hood. The proper height of the hood is when it adjust flushes with the fender.

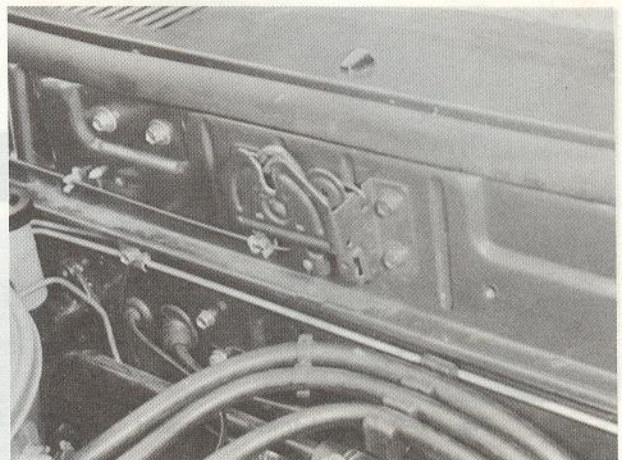


Fig. 14-7 Adjusting hood latch

14-B. LUGGAGE COMPARTMENT DOOR**14-B-1. Removing Luggage Compartment Door**

1. Open the luggage compartment door and support the door in the luggage compartment.
2. Remove the two bolts attaching the hinge to the luggage compartment door.
3. Remove the luggage compartment door from the vehicle.



Fig. 14-8 Removing compartment door

14-B-2. Installing Luggage Compartment Door

Follow the removal procedures in the reverse order and adjust the luggage compartment door by applying procedures explained in the following paragraph.

14-B-3. Adjusting Luggage Compartment Door

- To make the to-and-fro or side-to-side adjustment, loosen the luggage compartment door attaching bolts, and move the door as required.
- To make the up-and-down adjustment, loosen the hinge-to-hinge support attaching bolts and raise or lower the hinge as required.

10. Disconnect the choke cable from the carburetor, speedometer cable from the instrument and three heater control wires from the heater.

11. Pull the instrument panel ass'y rearward by about 20 cm (6 in), then disconnect the whole of the electrical leads from the instrument panel ass'y and

ventilator control wire on each side.

12. Remove the instrument panel ass'y.

14-P-2. Installing Instrument Panel Assembly

Follow the removal procedures in the reverse order.

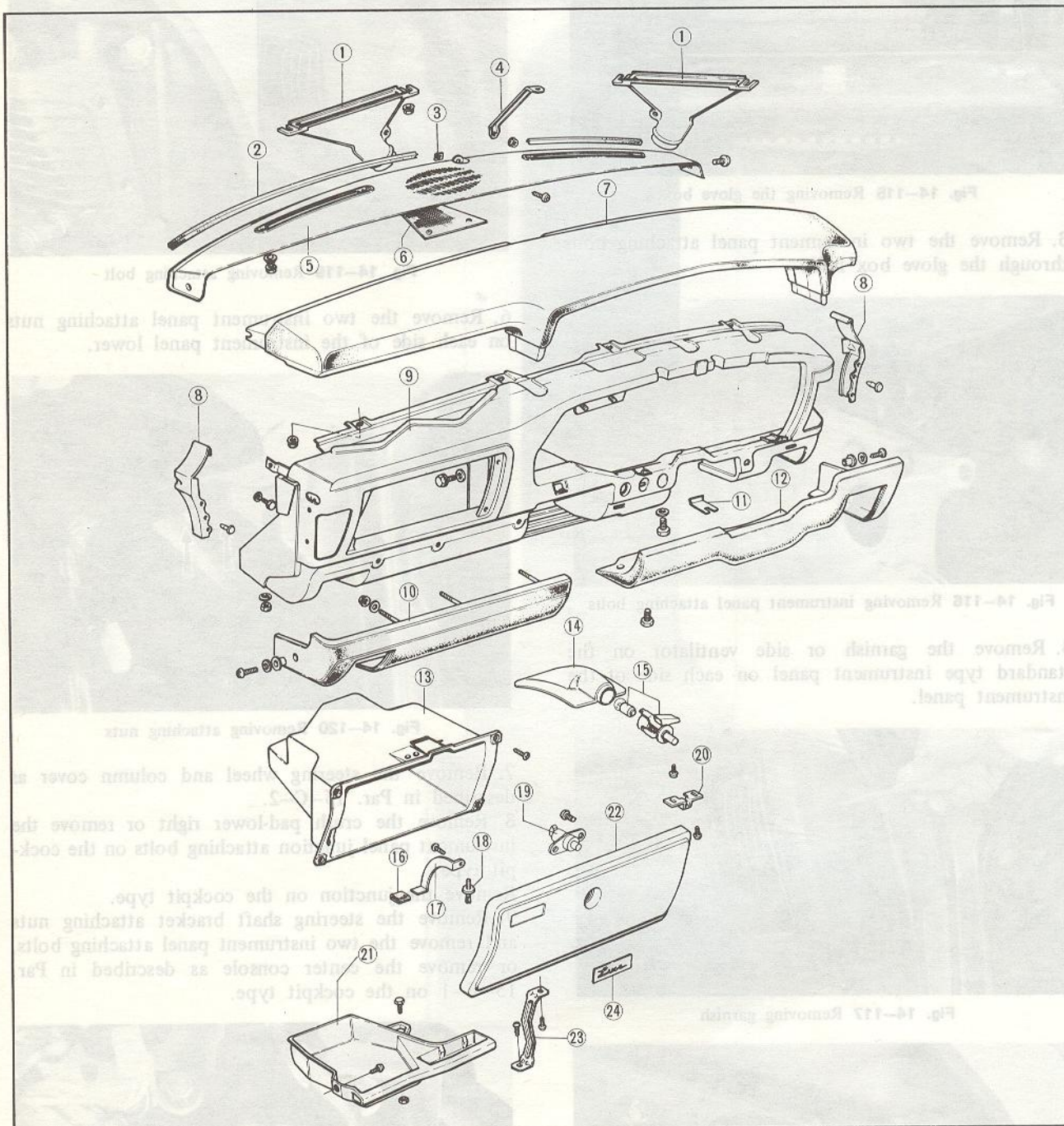


Fig. 14-122 Instrument panel component (standard type)

- | | | |
|---------------------|---------------------------|--------------------------|
| 1. Defroster nozzle | 9. Instrument panel frame | 17. Stopper |
| 2. Seaming rubber | 10. Crush pad lower (L) | 18. Glove lid fastener |
| 3. Spring nut | 11. Steering adjust shim | 19. Lock |
| 4. Nozzle bracket | 12. Crush pad lower (R) | 20. Striker |
| 5. Upper garnish | 13. Glove tray | 21. Parcel shelf |
| 6. Cloth cover | 14. Lamp cover | 22. Glove lid |
| 7. Crush pad | 15. Switch & lamp | 23. Parcel shelf bracket |
| 8. Cover | 16. Stopper rubber | 24. Ornament |

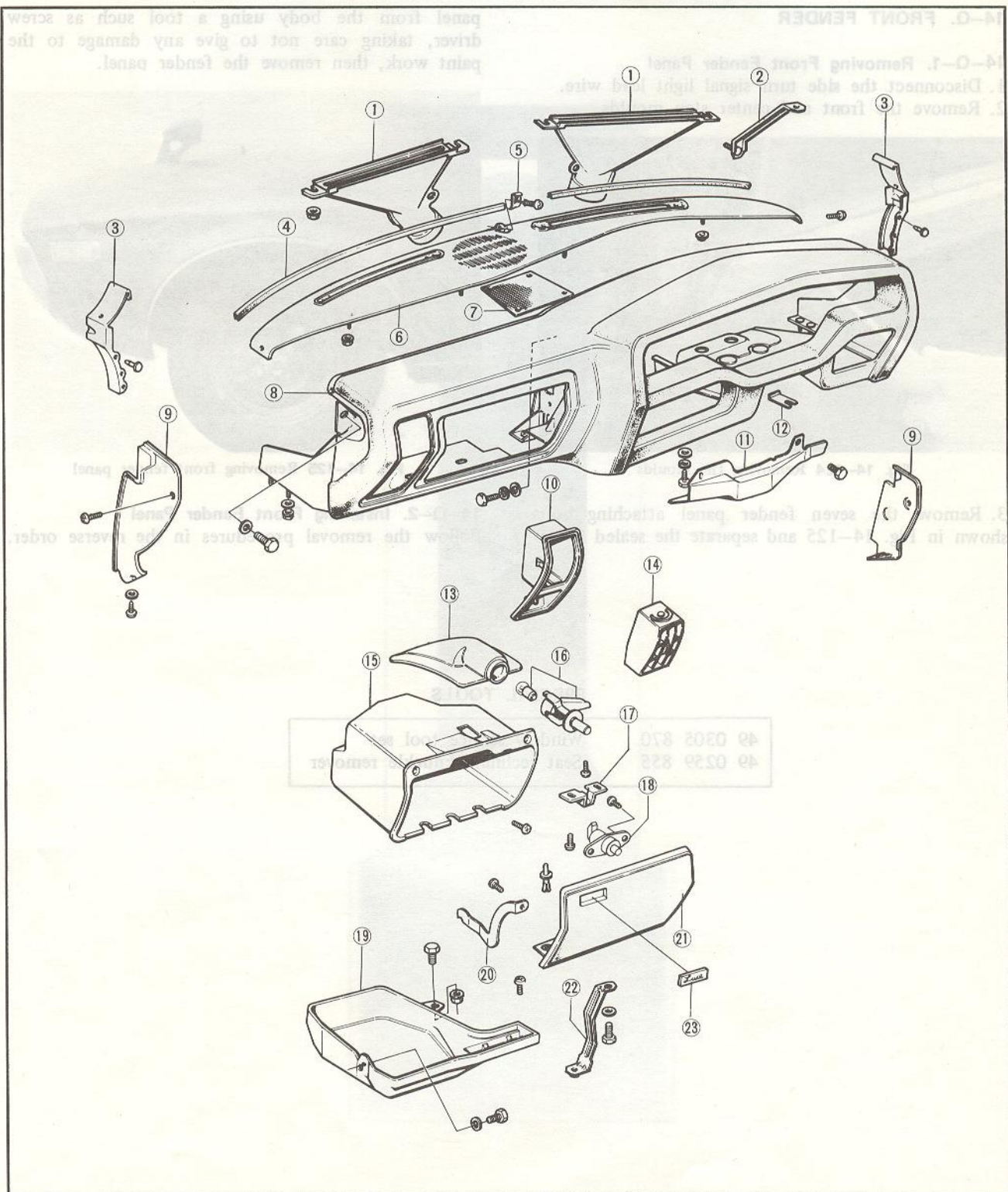


Fig. 14-123 Instrument panel component (cockpit type)

- | | | |
|-----------------------------|-------------------------------|------------------|
| 1. Defroster nozzle | 9. Garnish | 17. Striker |
| 2. Defroster nozzle bracket | 10. Decoration panel | 18. Lock |
| 3. Cover | 11. Junction instrument frame | 19. Parcel shelf |
| 4. Seaming rubber | 12. Steering adjust shim | 20. Stopper |
| 5. Garnish spring rubber | 13. Lamp cover | 21. Lid |
| 6. Upper garnish | 14. Louver | 22. Parcel shelf |
| 7. Cloth cover | 15. Glove tray | 23. Ornament |
| 8. Crush pad | 16. Switch & lamp | |

14-Q. FRONT FENDER

14-Q-1. Removing Front Fender Panel

1. Disconnect the side turn signal light lead wire.
2. Remove the front and center step moulds.

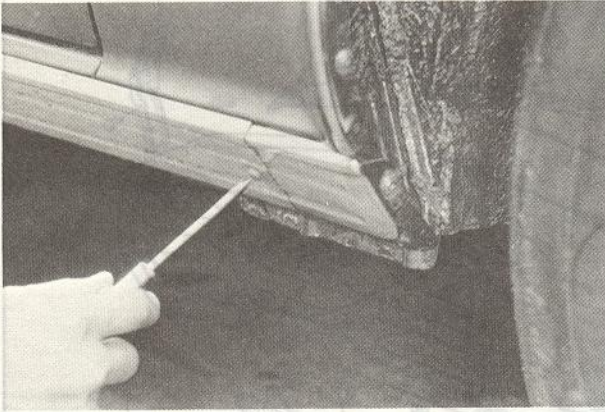


Fig. 14-124 Removing the moulds

3. Remove the seven fender panel attaching bolts shown in Fig. 14-125 and separate the sealed fender

panel from the body using a tool such as screw driver, taking care not to give any damage to the paint work, then remove the fender panel.

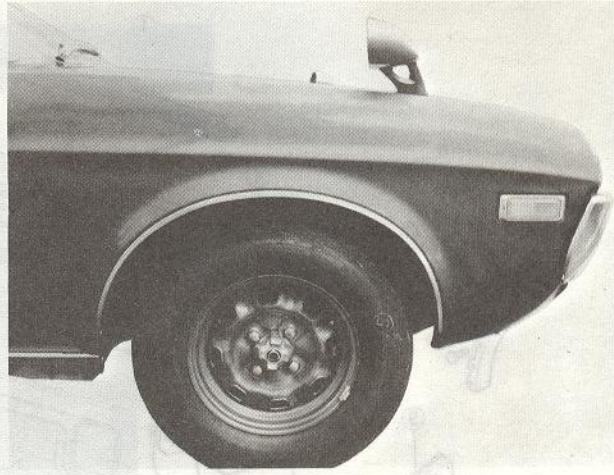


Fig. 14-125 Removing front fender panel

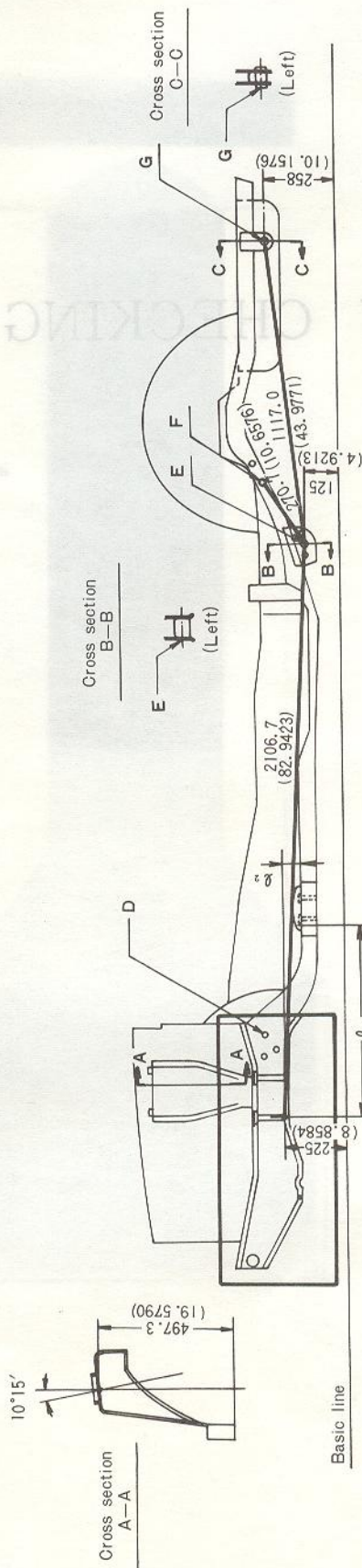
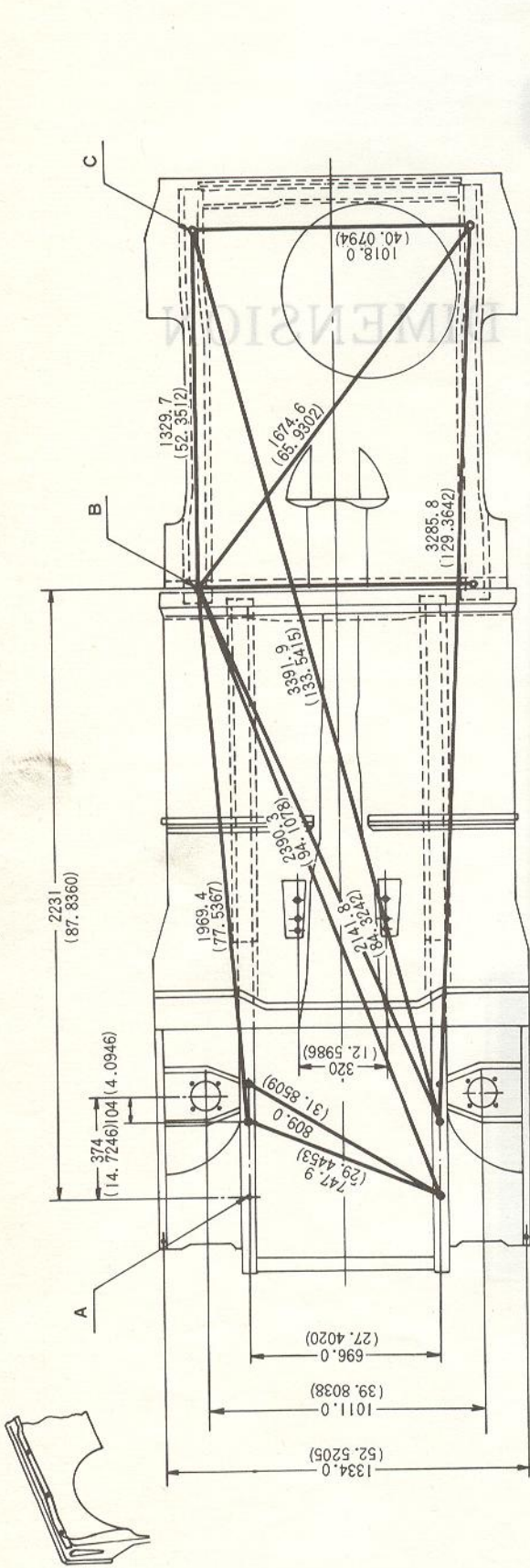
14-Q-2. Installing Front Fender Panel

Follow the removal procedures in the reverse order.

SPECIAL TOOLS

49 0305 870	Window service tool set
49 0259 855	Seat reclining knuckle remover

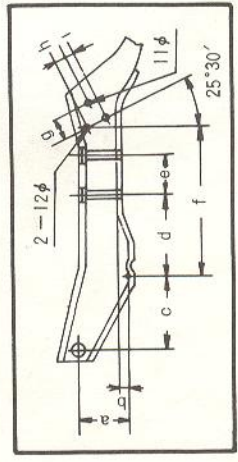
- Fig. 14-123 Instrument panel component (cockpit type)
- | | | |
|------------------|-------------------------------|-----------------------------|
| 17. Striker | 9. Garnish | 1. Defroster nozzle |
| 18. Lock | 10. Decoration panel | 2. Defroster nozzle bracket |
| 19. Parcel shelf | 11. Junction instrument frame | 3. Cover |
| 20. Stopper | 12. Steering adjust shim | 4. Seaming rubber |
| 21. Lid | 13. Lamp cover | 5. Garnish spring rubber |
| 22. Parcel shelf | 14. Lower | 6. Upper garnish |
| 23. Ornament | 15. Glove tray | 7. Cloth cover |
| | 16. Switch & lamp | 8. Crush pad |



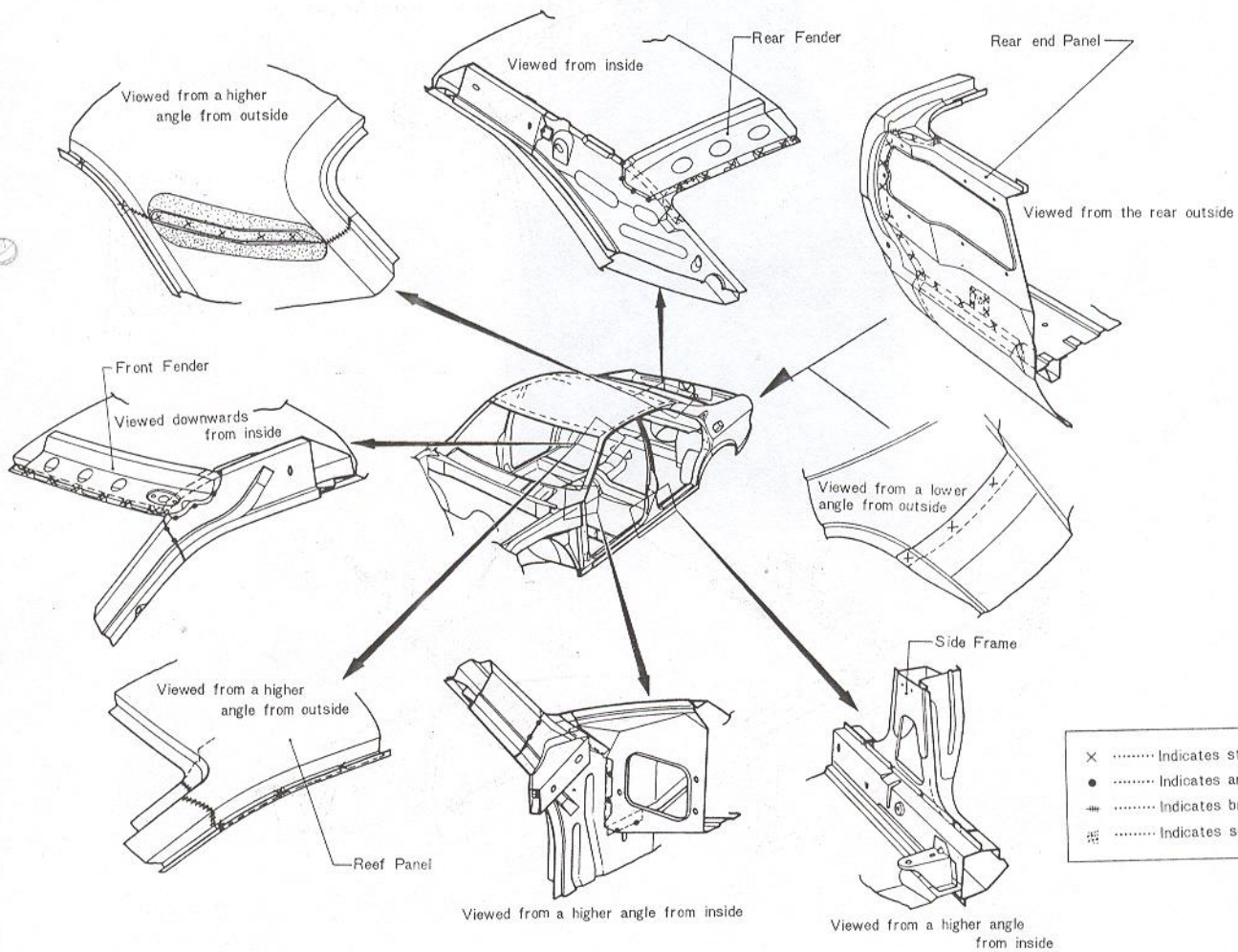
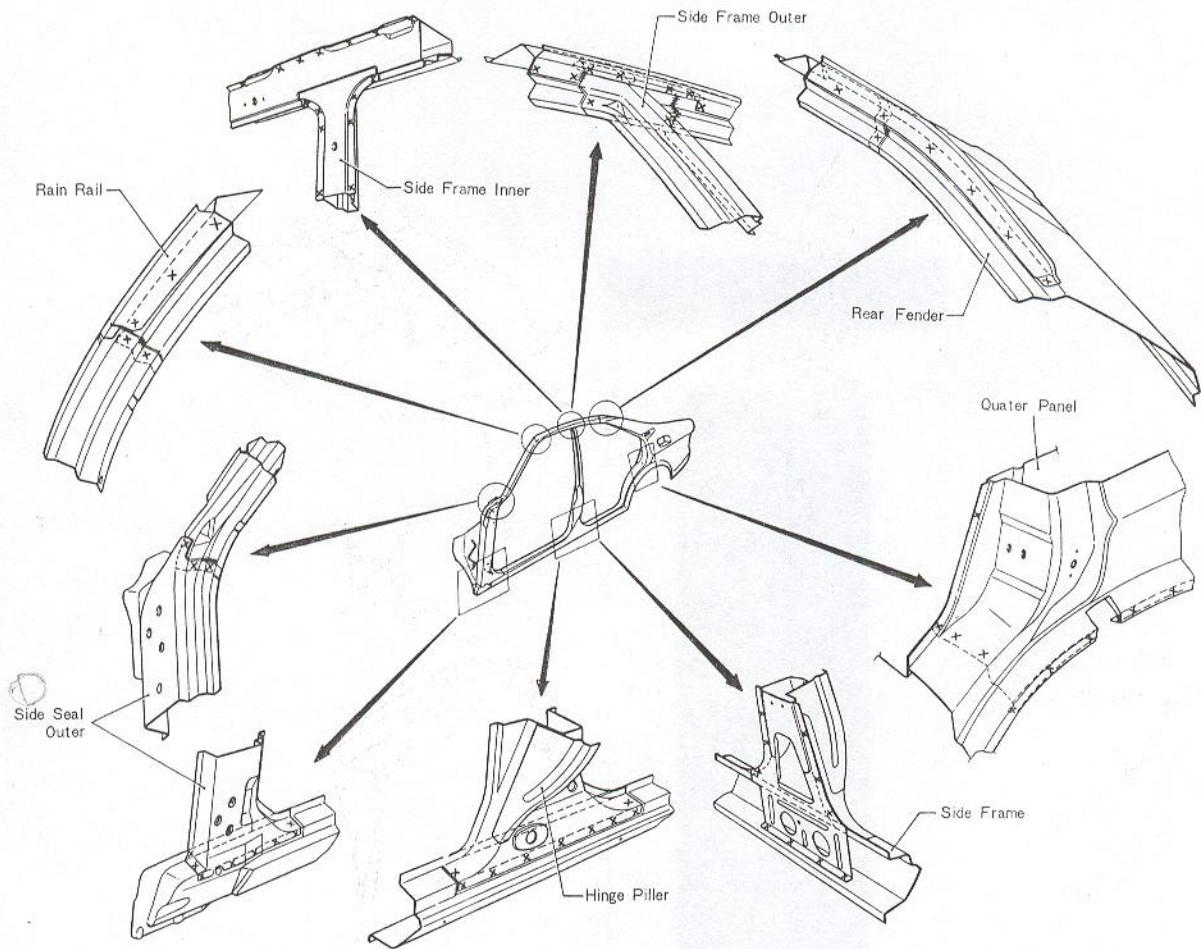
	ϕ_1	ϕ_2
4 Speed	707	44
5 Speed	741.7	48.3
Automatic	707	44

- A. Front frame basic hole
- B. Rear frame basic hole
- C. Cross member No.4 basic hole
- D. Steering gear fixing hole
- E. Leaf spring front hanger
- F. Torque rod fixing hole
- G. Leaf spring shackle pin hole

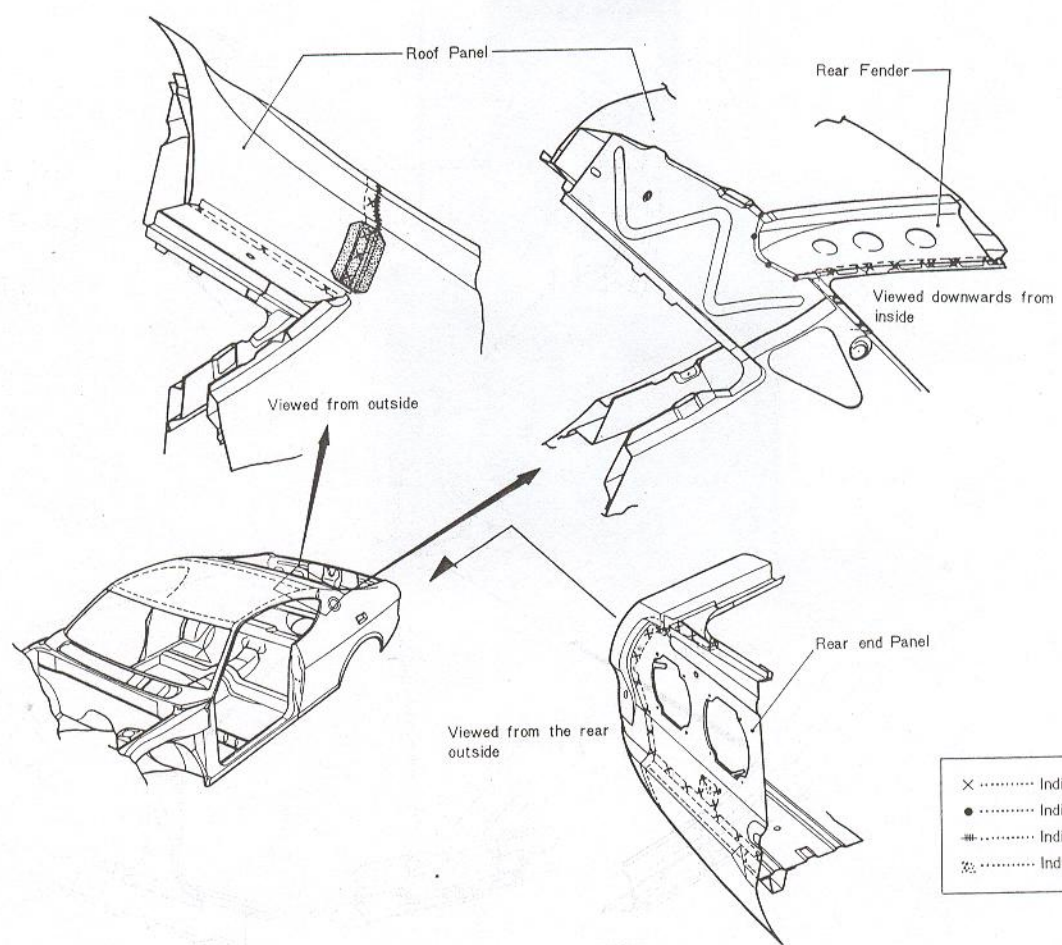
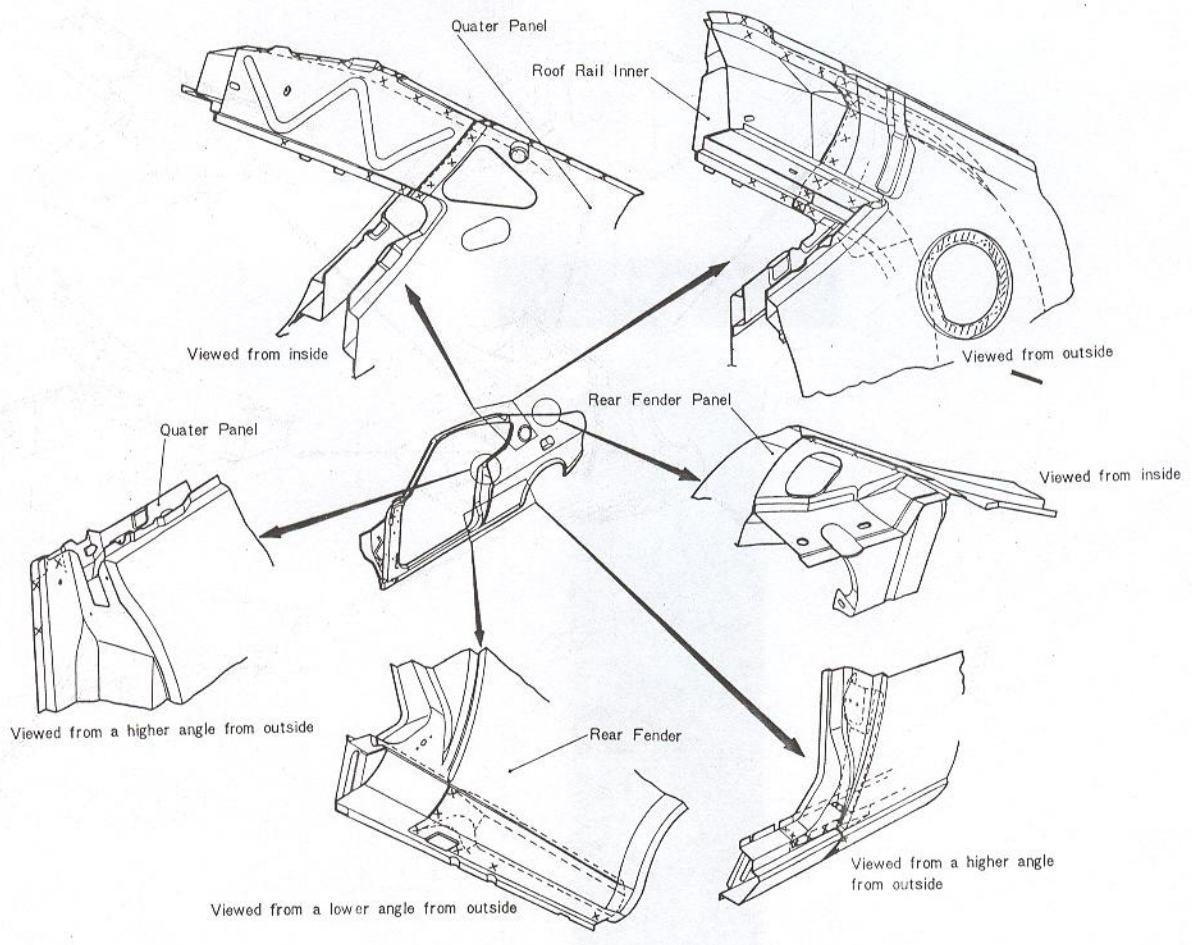
- a: 165.5 (6.5159)
- b: 45 (1.7717)
- c: 244 (9.6065)
- d: 270 (10.6301)
- e: 140 (5.5119)
- f: 493 (19.4098)
- g: 75 (2.9528)
- h: 35 (1.3780)
- i: 25 (0.9843)



() Shows inch



- × Indicates stot welding spot
- Indicates are spot welding
- # Indicates brazing
- ⊞ Indicates soldering



- × Indicates spot welding
- Indicates are spot welding
- # Indicates brazing
- ⊞ Indicates soldering

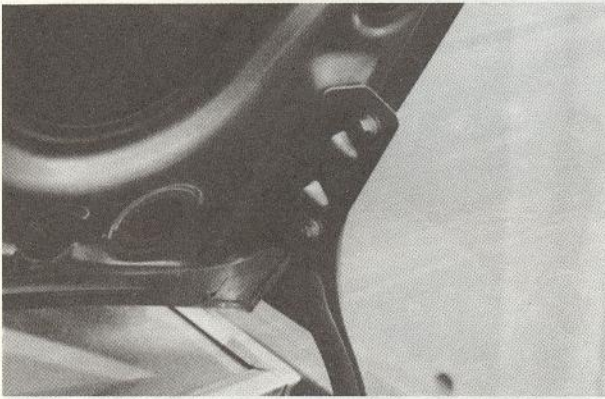


Fig. 14-9 Up-and-down adjustment

14-B-4. Adjusting Luggage Compartment Door Latch

To adjust the door latch, loosen the door latch striker attaching bolts, and move the striker as required, then tighten the attaching bolts.

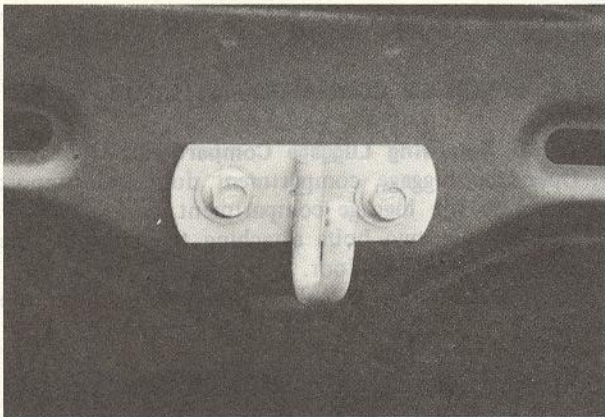


Fig. 14-10 Adjusting door latch

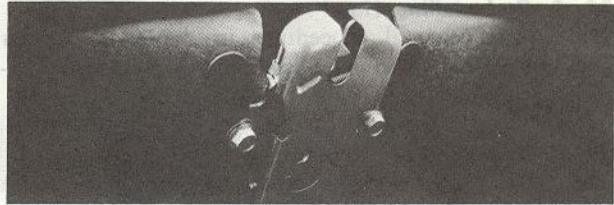


Fig. 14-12 Adjusting striker

14-C. FRONT BUMPER

14-C-1. Removing Front Bumper

1. Raise the front end of the vehicle and support with stands.
2. Remove the two bolts attaching the left and right bumper stays to the outside of the frame.

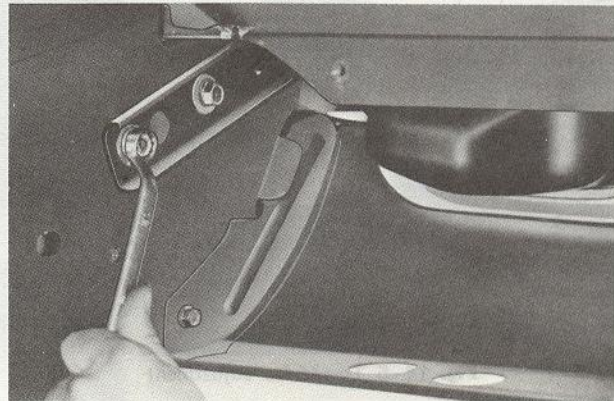


Fig. 14-13 Removing bumper stay attaching bolts

3. Remove the two bolts attaching the left and right bumper ends to the inside of the frame and remove the bumper.

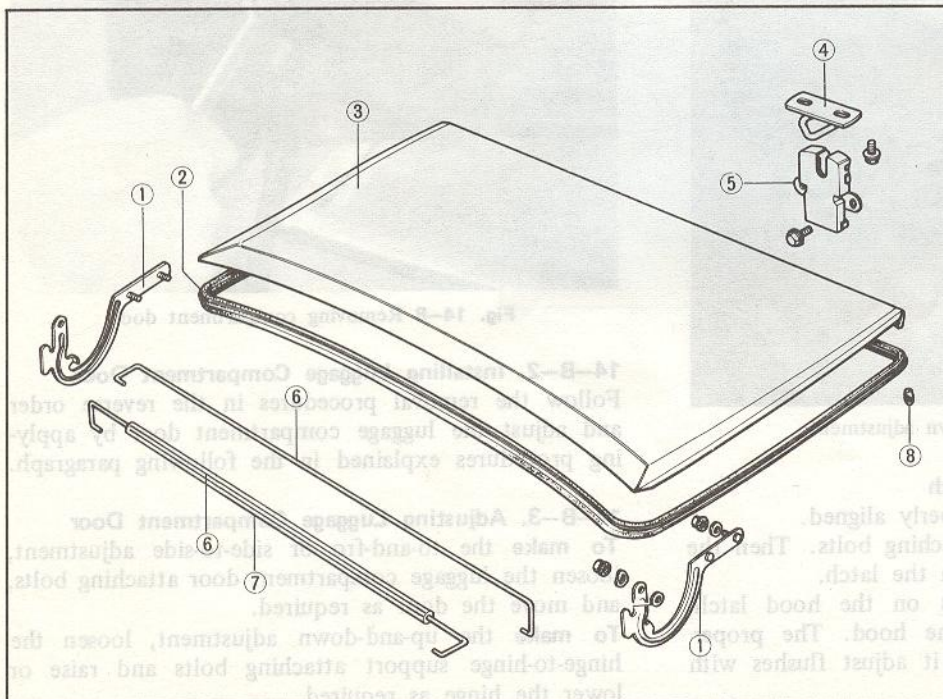


Fig. 14-11

Luggage compartment door components

1. Door hinge
2. Weatherstrip
3. Luggage compartment door (Trunk lid)
4. Striker
5. Door latch
6. Balance spring
7. Balance spring protector
8. Cushion rubber

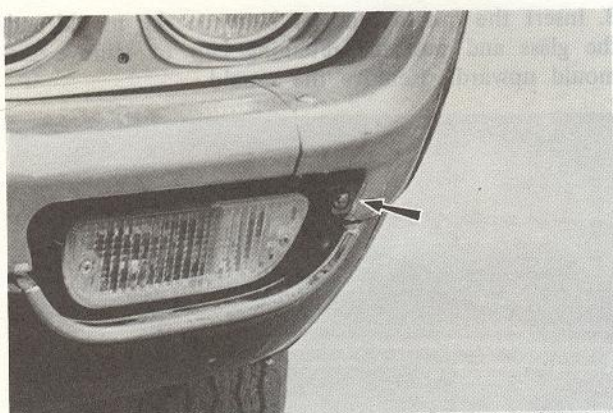


Fig. 14-14 Removing bumper end attaching bolt

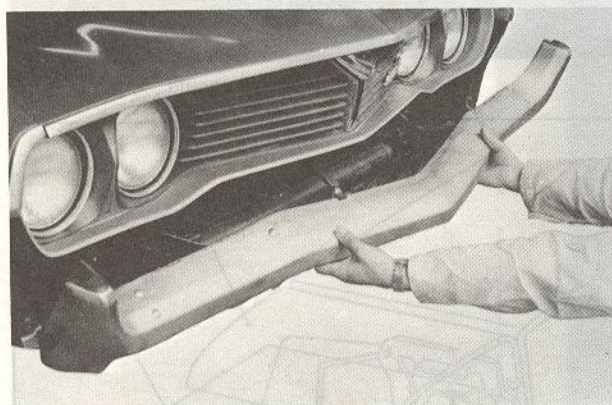


Fig. 14-15 Removing front bumper

4. Remove the bolts attaching each bumper stay to the bumper and remove the stays.

14-C-2. Installing Front Bumper

Follow the removal procedures in the reverse order and align the bumper for good fit and appearance.

14-D. REAR BUMPER

14-D-1. Removing Rear Bumper

1. Open the luggage compartment door.
2. Remove the two bolts attaching the left and right bumper ends.
3. Remove the nuts attaching the left and right bumper stays and remove the rear bumper.



Fig. 14-16 Removing rear bumper

14-D-2. Installing Rear Bumper

Follow the removal procedures in the reverse order and align the bumper for good fit and appearance.

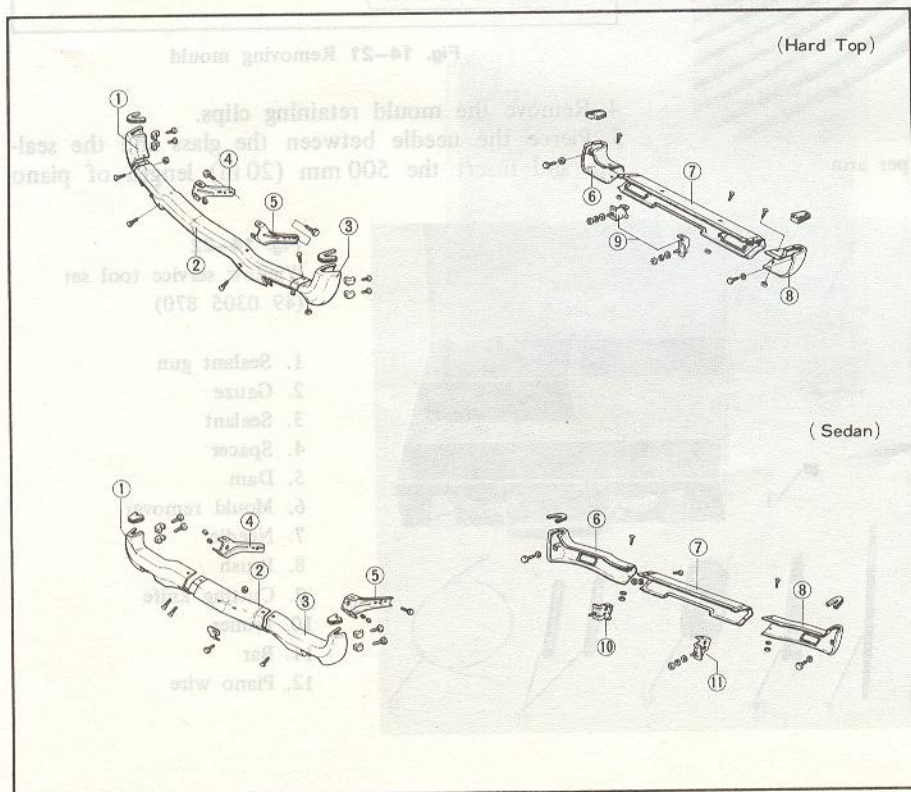


Fig. 14-17

Front bumper and rear bumper (Hard Top & Sedan)

1. Front bumper (Right)
2. Front bumper (Center)
3. Front bumper (Left)
4. Front bumper stay (Right)
5. Front bumper stay (Left)
6. Rear bumper (Right)
7. Rear bumper (Center)
8. Rear bumper (Left)
9. Rear bumper stay (Hard Top)
10. Rear bumper stay (Right)
11. Rear bumper stay (Left)

14-E. WINDSHIELD GLASS

14-E-1. Removing Windshield Glass

To replace the windshield glass, use the **window service tool set** (Part No. 49 0305 870) shown in Fig. 14-22.

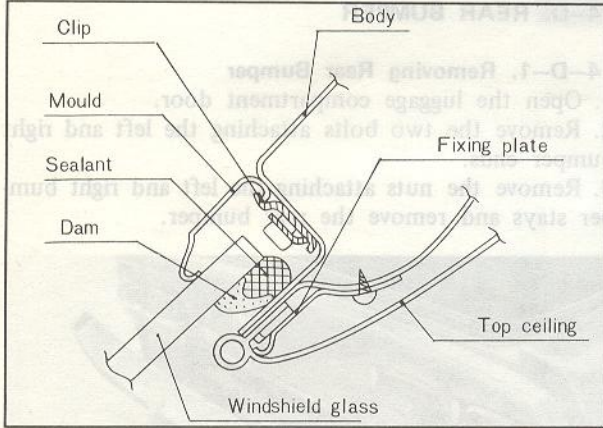


Fig. 14-18 Windshield cross section

1. Remove the interior mirror and also right and left front pillar trims from the interior of the vehicle.
2. Remove the windshield wiper arms and blades.

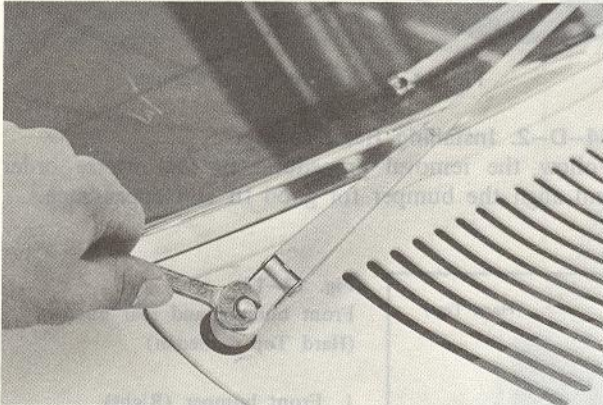


Fig. 14-19 Removing wiper arm

3. Insert the mould remover between the mould and the glass and pull the retaining clip to remove the mould upward. Remove the mould.

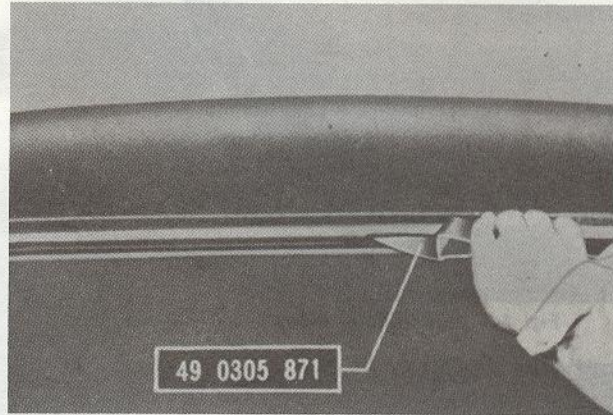


Fig. 14-20 Removing mould

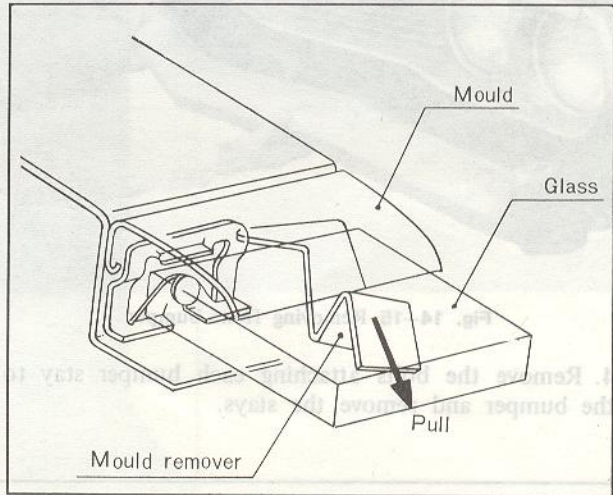


Fig. 14-21 Removing mould

4. Remove the mould retaining clips.
5. Pierce the needle between the glass and the sealant and insert the 500 mm (20 in) length of piano



Fig. 14-22 Window service tool set (49 0305 870)

1. Sealant gun
2. Gauze
3. Sealant
4. Spacer
5. Dam
6. Mould remover
7. Needle
8. Brush
9. Cutting knife
10. Primer
11. Bar
12. Piano wire

wire into the pierced hole. Wrap each end of the wire around the bars.

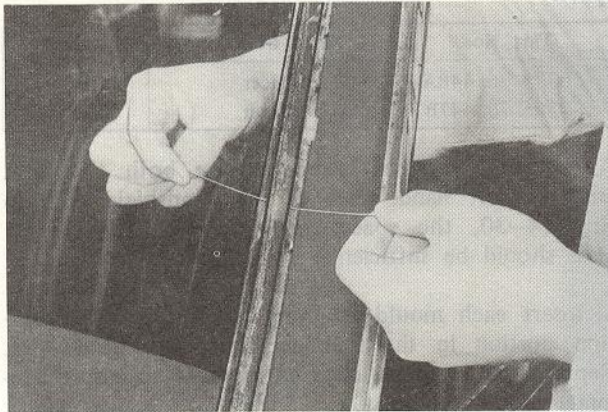


Fig. 14-23 Piercing piano wire

6. With the aid of an assistant, cut the sealant all the way around the glass with a sawing motion and remove the glass.

Note :

(a) When cutting the sealant with the piano wire, cut it along the border between the window glass and the sealant.

(b) The piano wire is liable to snap if only a certain section is constantly used and becomes hot. Therefore, when cutting the sealant ensure that the piano wire is kept cool (it should be cooled slowly) or the section of the wire being used is constantly rotated.



Fig. 14-24 Cutting sealant

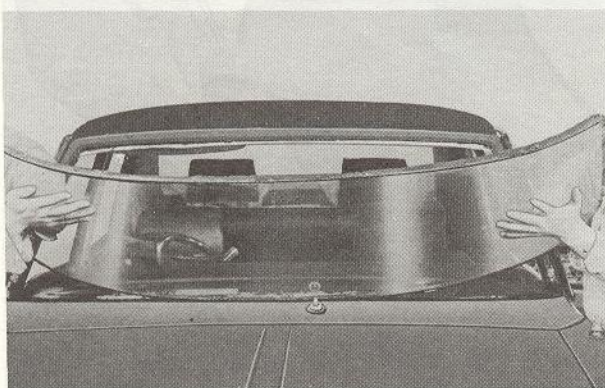


Fig. 14-25 Removing glass

14-E-2. Installing Windshield Glass

1. Using the cutting knife, cut the sealant off smoothly so that 1 to 2 mm (0.04 to 0.08 in) of the sealant remains along the glass opening flange.



Fig. 14-26 Cutting sealant

If the thickness of the sealant left along the glass opening flange is too small, first, clean with a solvent. Then, apply primer with the brush and leave it to dry for 20 to 30 minutes. Then, apply sealant until a thickness of 1 to 2 mm (0.04 to 0.08 in) is obtained.

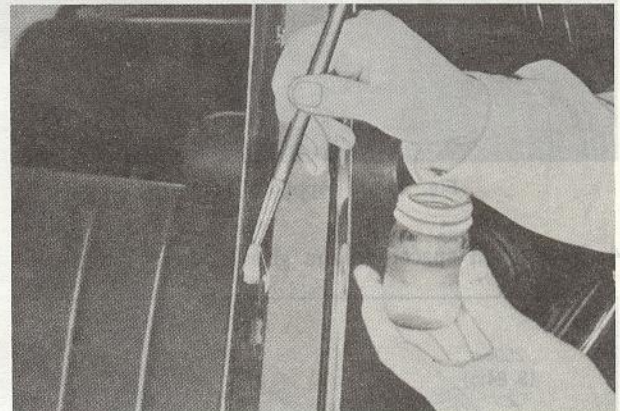


Fig. 14-27 Applying primer

2. Clean the glass thoroughly and bond the dam with bonding agent parallel to the edge of the glass at a position 7 mm (0.028 in) away from it. Bond the dam in the direction shown in Fig. 14-28.

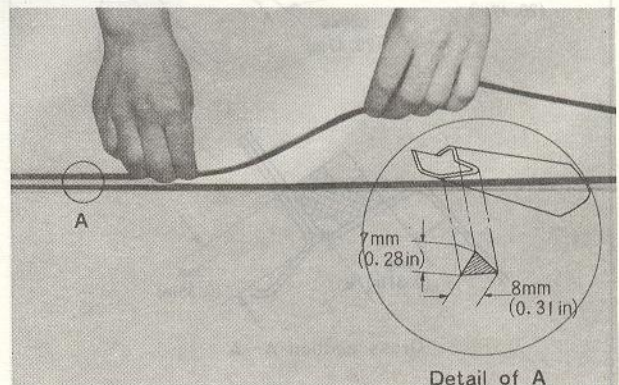


Fig. 14-28 Bonding dam

Note :

Securely bond the dam so that it is straight and will not come apart.

3. Apply primer around the entire perimeter of the glass in the area that will contact the sealant. Clean the glass opening flange and apply primer to the entire perimeter of the sealant on the glass opening flange. Allow the primer to dry **30 minutes** before installation of glass.

Note :

- (a) Apply as thin the sealant coating as possible to the glass.
- (b) **Do not** allow any dust, water, oil, etc. to get on the coating surface and also **do not** touch the coating surface with hand.



Fig. 14-29 Applying primer

4. Bond each spacer to the glass opening flange with

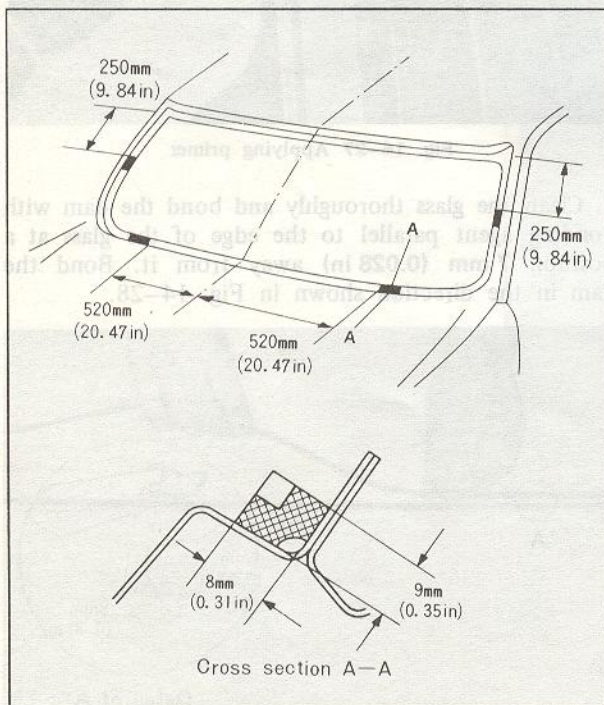


Fig. 14-30 Position spacers

bonding agent. Fig. 14-30 shows the directions and positions of each spacer. There are two kinds of spacer.

Part Nos.	Name of Part	Color
0305 70 448A	Spacer	Gray
0305 70 447B	Spacer	Black

Although the spacer is bonded on both the right and the left hand sides of the windshield glass in Fig. 14-30, the spacer on only one side of the glass should be sufficient.

5. Insert each mould retaining clip to the clip insertion portion in the manner shown in Fig. 14-31. Replace the retaining clips as required to insure adequate mould retention.

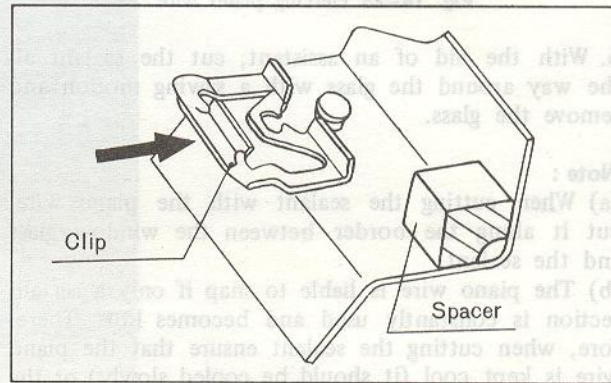


Fig. 14-31 Installing mould retaining clip

6. After the primer is dry, apply the sealant so that it is **8 mm (0.31 in)** high along the entire perimeter of the glass with the sealant gun fitted with the sealant cartridge. If the sealant comes apart from the painted surface on the body side, use the remainder of the sealant for rectification.

Note :

- (a) Shape the nozzle of the sealant cartridge with the cutting knife as shown in Fig. 14-32. Then, break the film of the sealant with a piece of wire and it is ready for application.
- (b) If the application is unsatisfactory, rectify it with a wooden spatula.

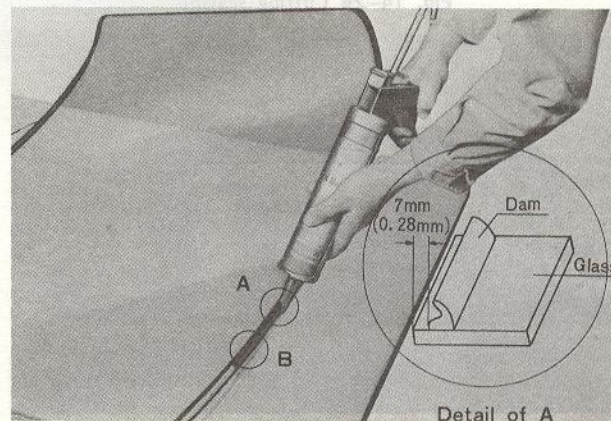


Fig. 14-32 Applying sealant

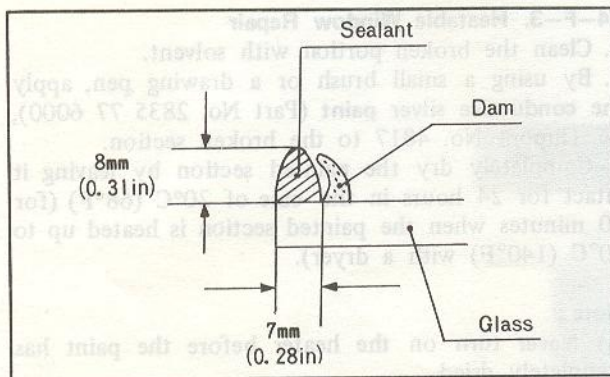


Fig. 14-33 Detail B Fig. 14-32

(c) If any seal adheres to your hand, it should be removed immediately.

7. Place the glass in the opening flange, locating the best position for equal sealant contact.

8. Firmly press the glass against the sealant with hand pressure. Then, inspect the appearance of the sealant through the glass. A dull spot indicates an area where the sealant does not contact glass surface. Additional hand pressure will seal most areas. When installing the glass, 5.8 mm (0.23 in) clearance should exist between the body and the glass. Check the clearance at the four positions shown in Fig. 14-33.

Note :

If possible, do not apply any force to the glass until the sealant has hardened. Time required for the seal to harden after it is applied.

Summer (20°C or 68°F)	5 hours
Winter (5°C or 41°F)	24 hours

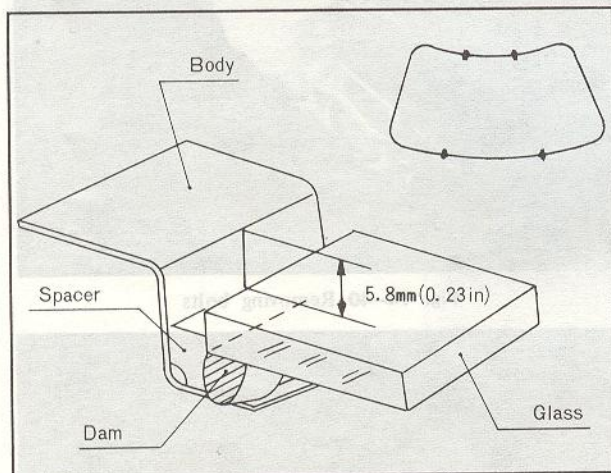


Fig. 14-34 Adjusting clearance

9. Remove any excess primer from the glass with a wooden spatula and wipe with a clean solvent.
10. Water test the installation around the entire perimeter of the glass. Repair any leaks by applying the sealant around the edge of the glass.

11. Install the moulds, interior mirror, front pillar trims, windshield wiper arms, etc.

Note :

(a) Keep the door windows open until the sealant has hardened to some extent.

(b) If the vehicle is to be repainted, remove all the sealant from the body and then after backing the paint on, apply the sealant so that it is 10 mm (0.4 in) high. Never apply air setting paint to the surface on which the sealant is to be applied.

14-F. REAR WINDOW GLASS

14-F-1. Removing and Installing Rear Window Glass

The removal and installation of the rear window glass can be made in the same way as those of the windshield glass. But care should be taken to the following points :

1. Rear window mould lower can be installed only by inserting it into the body panel because clip is sub-assembled. When removing the mould, push part A of the clip with the driver through the bottom hole.

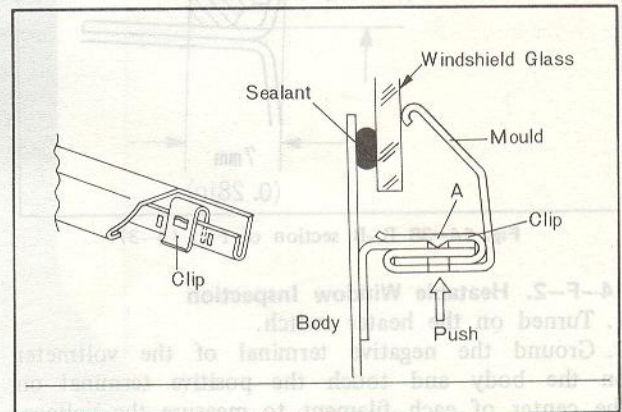


Fig. 14-35 Rear window mould lower

2. In the case of a vehicle equipped with a heatable window, perform the works of disconnection and connection of the relevant wiring.

3. When installing the glass, 7.8 mm (0.31 in) clearance should exist between the body and the glass. Check the clearance at the four portions shown in Fig. 14-36.

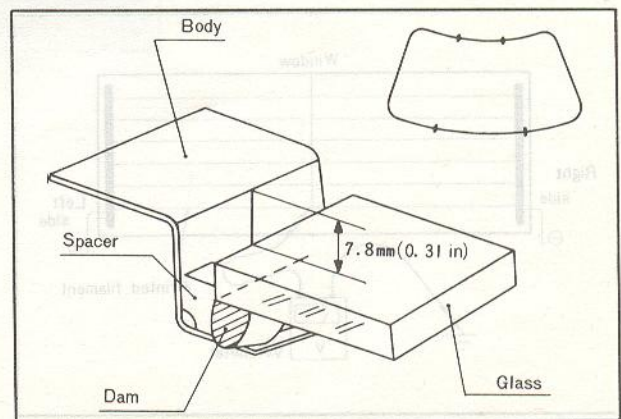
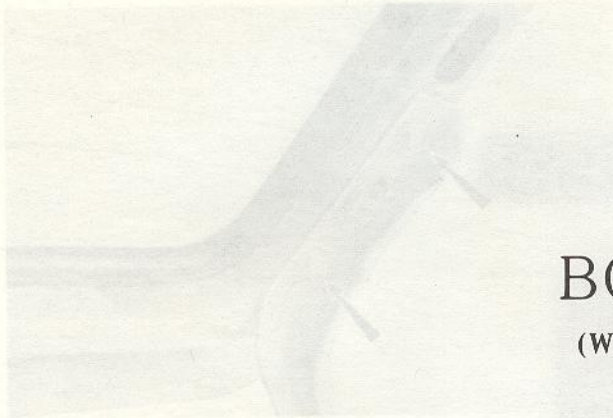


Fig. 14-36 Adjusting clearance

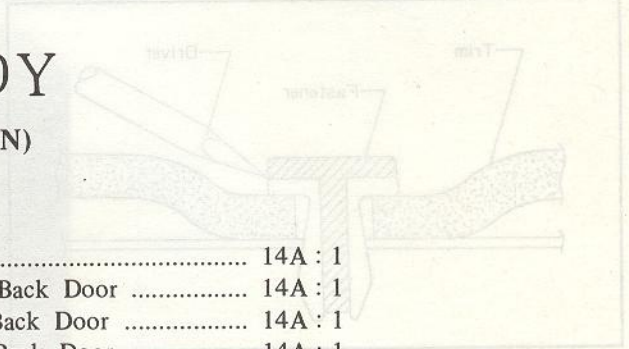
BODY

(WAGON)

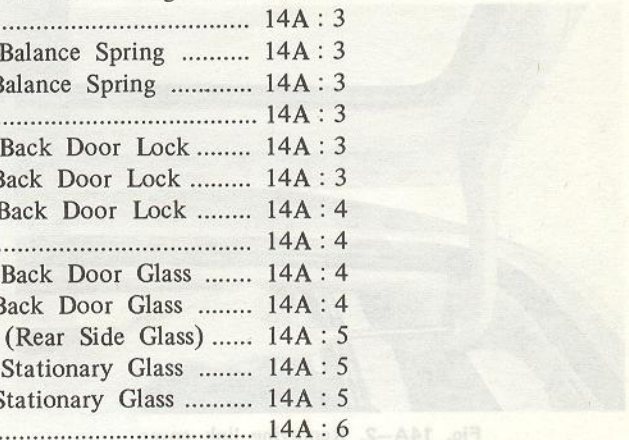
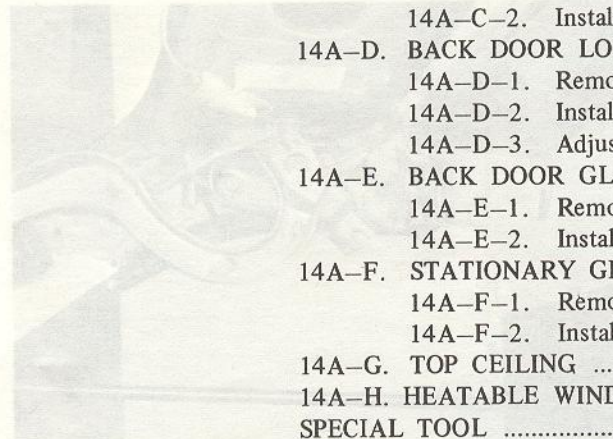
14A-A. BACK DOOR	14A : 1
14A-A-1. Removing Back Door	14A : 1
14A-A-2. Installing Back Door	14A : 1
14A-A-3. Adjusting Back Door	14A : 1
14A-B. BACK DOOR HINGE	14A : 2
14A-B-1. Removing Back Door Hinge	14A : 2
14A-B-2. Installing Back Door Hinge	14A : 3
14A-C. BALANCE SPRING	14A : 3
14A-C-1. Removing Balance Spring	14A : 3
14A-C-2. Installing Balance Spring	14A : 3
14A-D. BACK DOOR LOCK	14A : 3
14A-D-1. Removing Back Door Lock	14A : 3
14A-D-2. Installing Back Door Lock	14A : 3
14A-D-3. Adjusting Back Door Lock	14A : 4
14A-E. BACK DOOR GLASS	14A : 4
14A-E-1. Removing Back Door Glass	14A : 4
14A-E-2. Installing Back Door Glass	14A : 4
14A-F. STATIONARY GLASS (Rear Side Glass)	14A : 5
14A-F-1. Removing Stationary Glass	14A : 5
14A-F-2. Installing Stationary Glass	14A : 5
14A-G. TOP CEILING	14A : 6
14A-H. HEATABLE WINDOW	14A : 6
SPECIAL TOOL	14A : 6



14A-A-1. Removing Back Door
1. Open the back door.
2. Remove the trim fasteners with the driver as shown in Fig. 14A-1, and remove the back door.



14A-B-1. Removing Back Door Hinge
3. Remove the hinge as shown in Fig. 14A-1.



14A-E-1. Removing Back Door Glass
4. Disconnect the wiring harness from the side of the back door as shown in Fig. 14A-3.

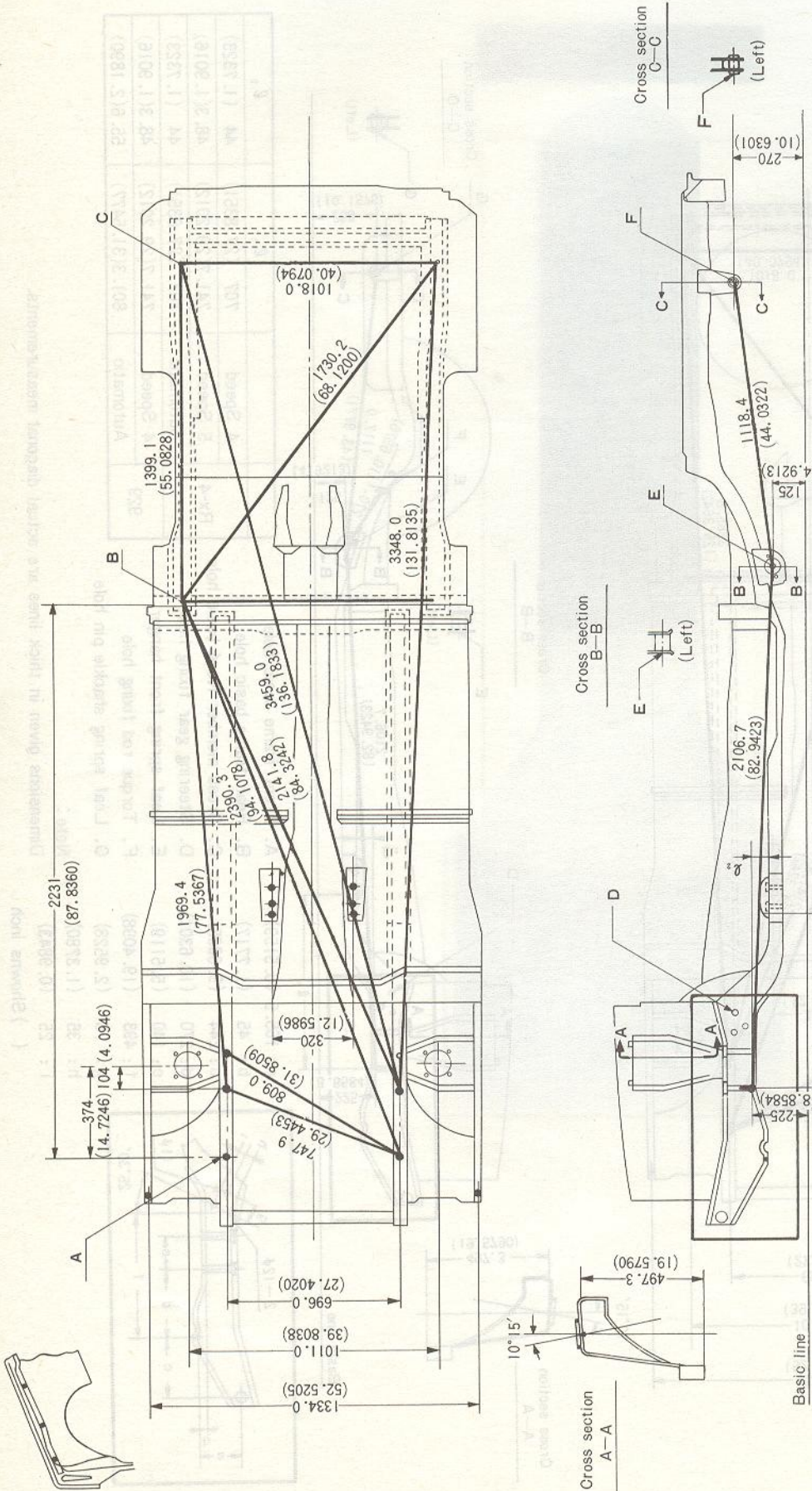


14A-B-2. Adjusting Back Door Hinge
2. To adjust the back door for up-and-down position, loosen the back door hinge arm tightening bolts on the back door side. When the up-and-down adjustment is made, the striker also should be adjusted by using the shims.



14A-D-1. Removing Back Door Lock
2. Remove the back door and hinge arm tightening bolts, and remove the back door.

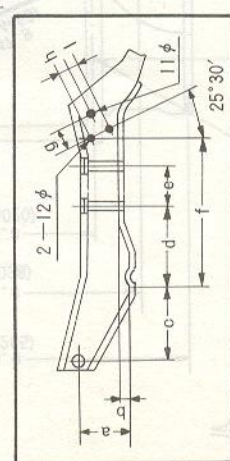
BODY CHECKING DIMENSION WAGON



	l_1	l_2
4 Speed	741.7(29.2012)	48.3(1.9016)
Automatic	801.3(31.5477)	55.6(2.1890)

- A. Front frame basic hole
- B. Rear frame basic hole
- C. Cross member No. 4 basic hole
- D. Steering gear fixing hole
- E. Leaf spring front hanger
- F. Leaf spring shackle pin hole

- a : 165.5 (6.5159)
- b : 45 (1.7717)
- c : 244 (9.6065)
- d : 270 (10.6301)
- e : 140 (5.5119)
- f : 493 (19.4098)
- g : 75 (2.9528)
- h : 35 (1.3780)
- i : 25 (0.9843)



Note:
Dimensions given in thick lines are actual diagonal measurements.

() Shows inch

14A-A. BACK DOOR

14A-A-1. Removing Back Door

1. Open the back door.
2. Remove the trim fasteners with the driver as shown in Fig. 14A-1, and remove the back door trim.

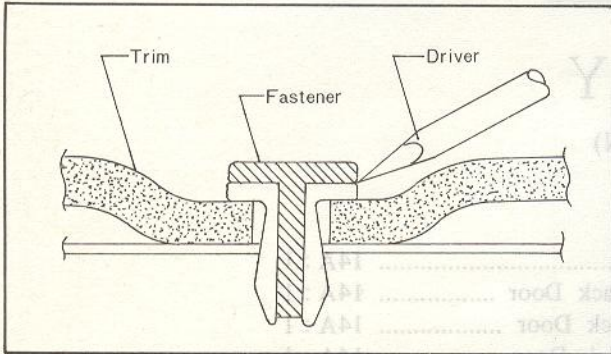


Fig. 14A-1 Removing trim fastener

3. Remove the hinge arm link covers.

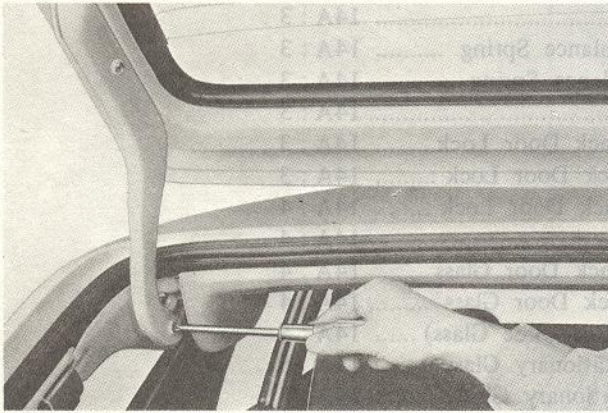


Fig. 14A-2. Removing link cover

4. Disconnect the wiring connectors for the rear combination light, licence plate light and heatable window (if equipped). Pull out the wiring harness from the hole (A) of the back door as shown in Fig. 14A-3.

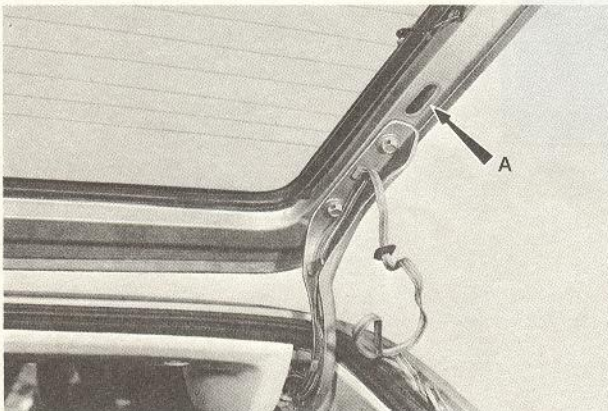


Fig. 14A-3 Disconnecting wiring connector

5. Remove the back door and hinge arm tightening bolts, and remove the back door.

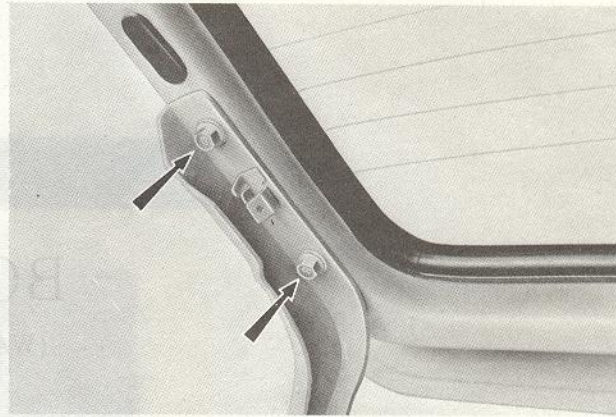


Fig. 14A-4 Removing back door

14A-A-2. Installing Back Door

Follow the removal procedures in the reverse order.

14A-A-3. Adjusting Back Door

1. To adjust the back door for **to-and-fro** position, loosen the back door hinge bracket attaching bolts on the body side and the dovetail attaching screws on the door side.

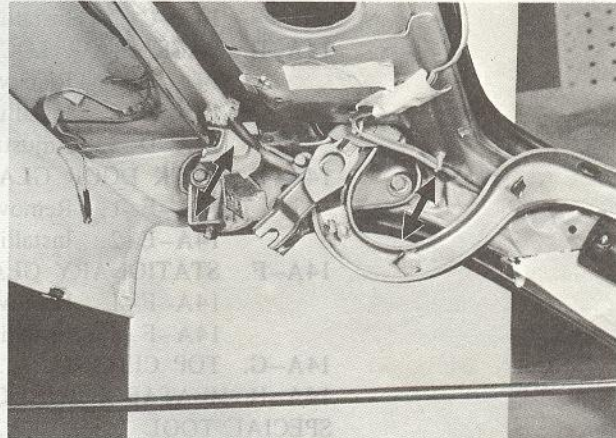


Fig. 14A-5 Adjusting to-and-fro

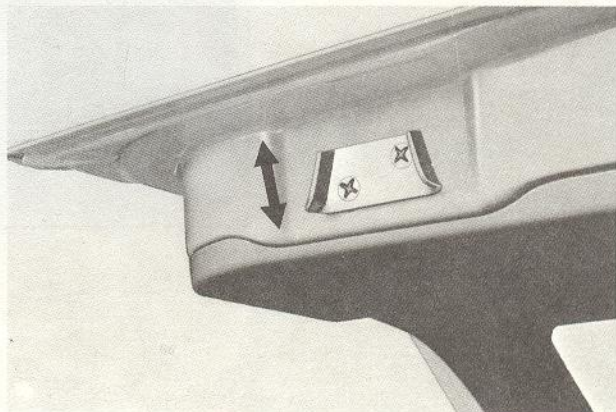


Fig. 14A-6 Adjusting dovetail

2. To adjust the back door for **up-and-down** position, loosen the back door hinge arm tightening bolts on the back door side.

When the up-and-down adjustment is made, the striker also should be adjusted by using the shims.

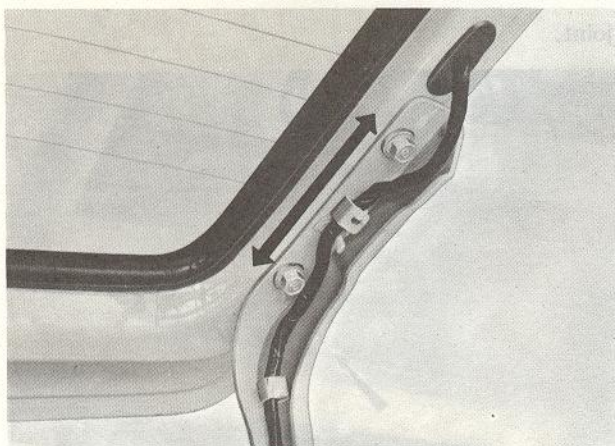


Fig. 14A-7 Adjusting up-and-down

3. Adjust the back door for closing, by moving the back door lock striker as shown in Fig. 14A-8, or inserting the shims of proper thickness between the striker and the body.

The adjusting shims are of 1.0 mm (0.039 in) and 2.0 mm (0.079 in) in thickness.

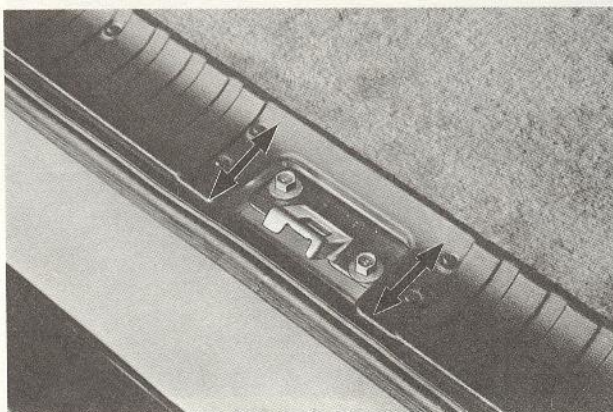


Fig. 14A-8 Adjusting striker

4. The back door can be shifted from side to side by moving the upper wedge to fore-and-aft.

Note:

Care should be taken not to distort the back door or mar the surrounding body.

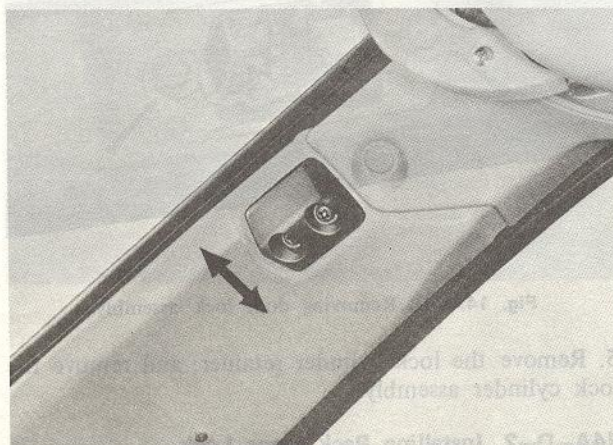


Fig. 14A-9 Adjusting side to side

14A-B. BACK DOOR HINGE

14A-B-1. Removing Back Door Hinge

1. Remove the back door as described in Par. 14A-A-1.
2. Remove the hinge cover fasteners and disconnect the wiring connectors. Then remove the hinge cover.

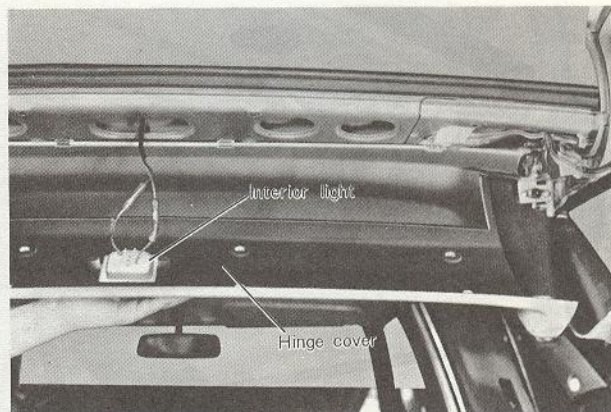


Fig. 14A-10 Removing hinge cover

3. Remove the wiring harness from the right side hinge arm link.
4. Remove the top ceiling from the top ceiling clips.
5. Disconnect the wiring to the interior light switch at the right side hinge.
6. Loosen but do not remove the hinge attaching bolts to ease removing the balance springs.

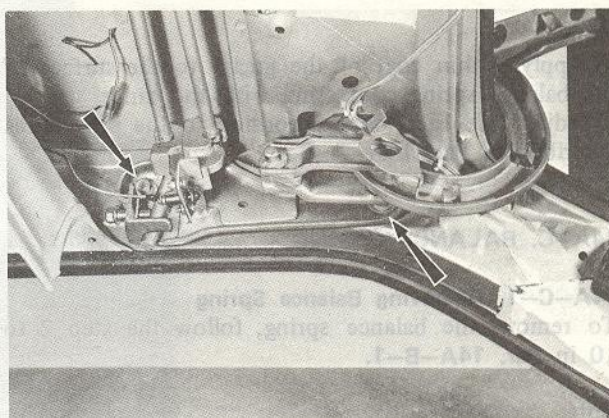


Fig. 14A-11 Loosening hinge attaching bolts

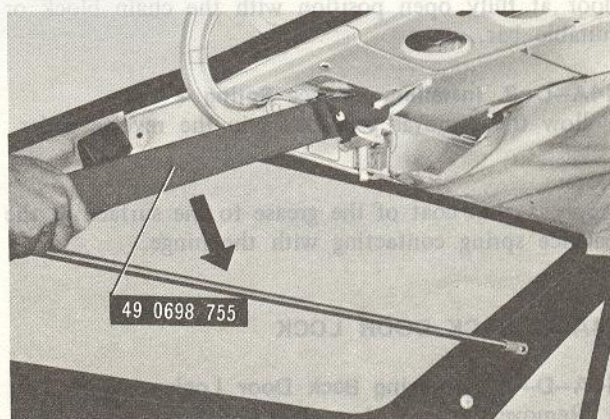


Fig. 14A-12 Installing torsion bar arm

14A

7. Install the **torsion bar arm** (49 0698 755) to the left side balance spring as shown in Fig. 14A-12.
8. Push the torsion bar arm downward and disconnect the balance spring from the hinge arm link.
9. Position the hinge arm link upward.
Depress and pull the torsion bar arm and remove the balance spring from the hinge bracket.

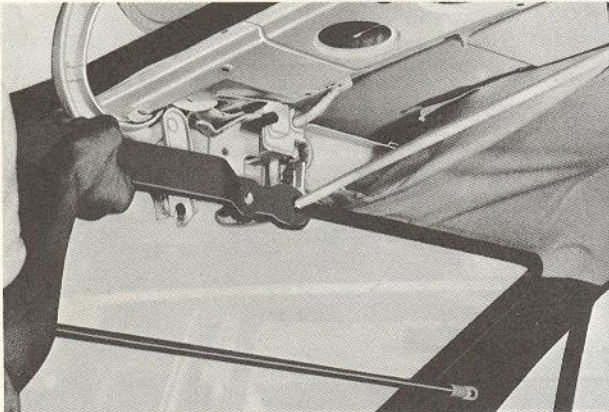


Fig. 14A-13 Removing balance spring

10. Remove the right side balance spring in the same manner as the left side balance spring.
11. Remove the both hinge attaching bolts and remove the hinge brackets.

14A-B-2. Installing Back Door Hinge

Follow the removal procedures in the reverse order.

Note:

- a) Apply a thin coat of the grease to the surface of the balance spring contacting with the hinge.
- b) Adjust the back door according to the procedures described in Par. 14A-A-3.

14A-C. BALANCE SPRING

14A-C-1. Removing Balance Spring

To remove the balance spring, follow the step 2 to 10 in Par. 14A-B-1.

Note:

Before removing the balance spring, support the back door at fully open position with the chain block or suitable bar.

14A-C-2. Installing Balance Spring

Follow the removal procedures in the reverse order.

Note:

Apply a thin coat of the grease to the surface of the balance spring contacting with the hinge.

14A-D. BACK DOOR LOCK

14A-D-1. Removing Back Door Lock

1. Remove the back door trim board and watershield.
2. Disconnect the back door lock control link at the

joint.

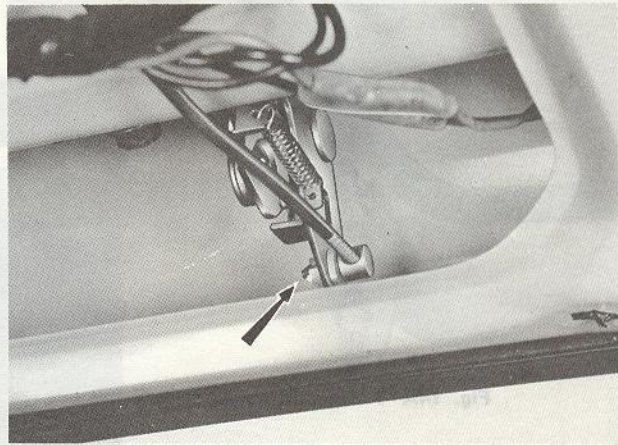


Fig. 14A-14 Disconnecting door lock control link

3. Remove the two back door lock control attaching nuts and remove the back door lock control assembly.

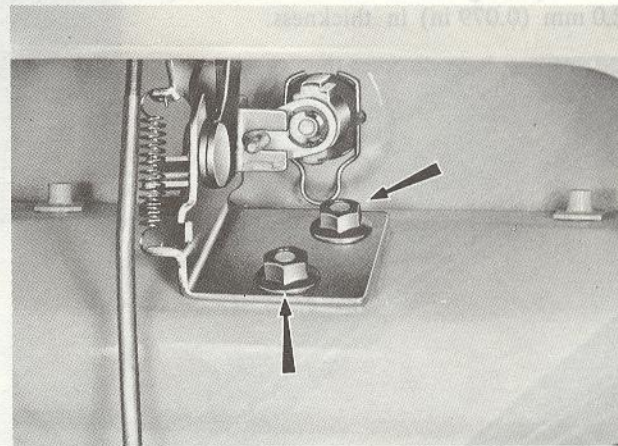


Fig. 14A-15 Removing door lock control assembly

4. Remove the two back door lock attaching bolts, and remove the back door lock assembly.

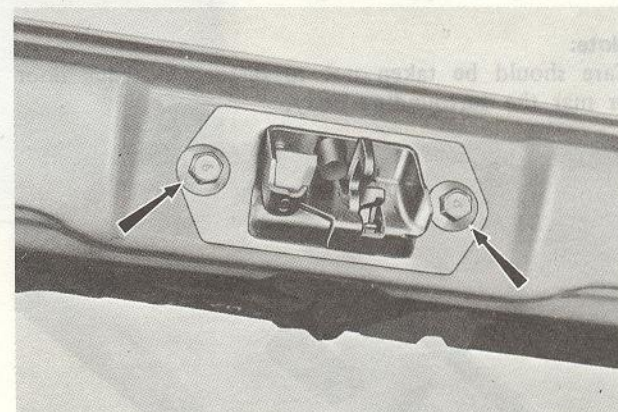


Fig. 14A-16 Removing door lock assembly

5. Remove the lock cylinder retainer, and remove the lock cylinder assembly.

14A-D-2. Installing Back Door Lock

Follow the removal procedures in the reverse order.

14A-D-3. Adjusting Back Door Lock

1. To adjust the back door lock, loosen the back door lock control assembly attaching screws and move the lock control assembly so as to give the specified clearance between the outer handle and push lever. The specified clearance should be **1.0 mm (0.04 in)**. Tighten the screws attaching the back door lock control assembly and apply lubricant to the assembly.

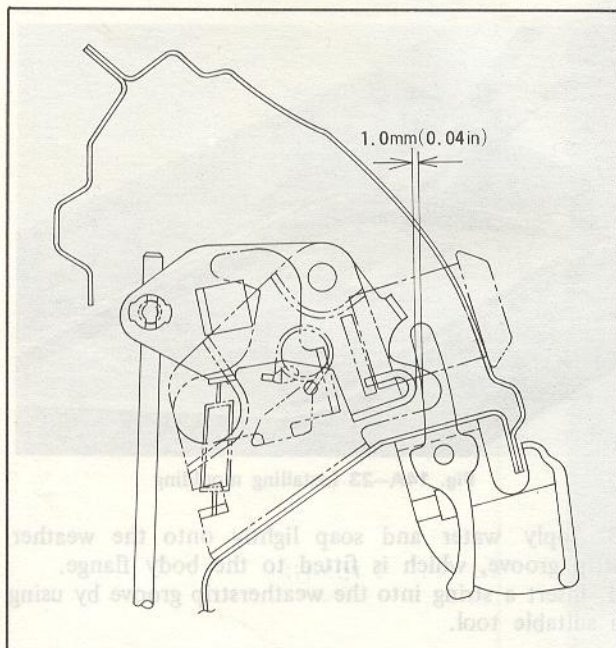


Fig. 14A-17 Adjusting door lock control assembly

2. To adjust the back door lock striker, refer to the step 3 Par. 14A-A-3.

14A-E. BACK DOOR GLASS**14A-E-1. Removing Back Door Glass**

1. Remove the back door trim board and disconnect the heatable window wirings from the wiring harness.
2. Tear the weatherstrip cemented surface from the body with a wooden spatula.
3. Drive out the inner lip of the weatherstrip with a suitable tool from the inside of the vehicle while pushing the back door glass outwards.

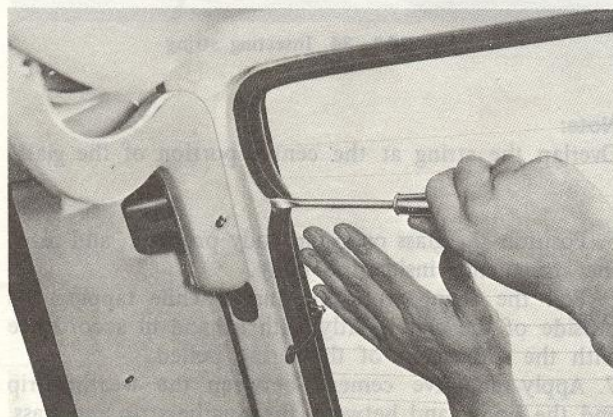


Fig. 14A-18 Drive out weatherstrip

4. Remove the back door glass together with the weatherstrip.

5. Remove the moulding and glass from the weatherstrip.

Note:

When removing the heatable window, be careful not to damage the filament surface.

14A-E-2. Installing Back Door Glass

Before installing the back door glass, clean off the old adhesive cement around the glass and body thoroughly.

1. Install the weatherstrip onto the back door glass and align the corners of the weatherstrip and glass.

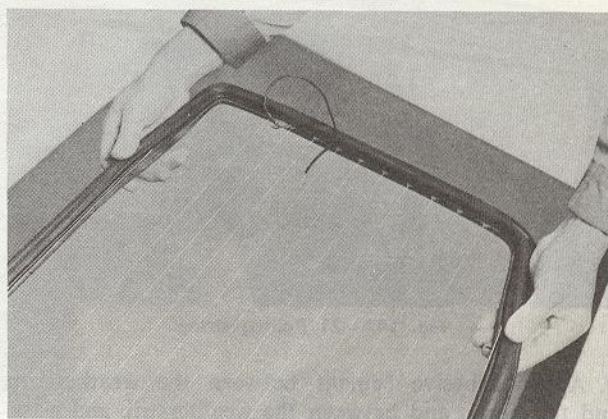


Fig. 14A-19 Installing weatherstrip

2. Fit a string of 4 mm (0.16 in) in diameter into the mould fitting groove of the weatherstrip with a suitable tool.

3. Apply water and soap lightly onto the weatherstrip groove.

4. Connect the right, left, upper and lower mouldings with four joints. Push the moulding against the groove of the weatherstrip and pull the string to fit the moulding.

5. Apply water and soap lightly onto the weatherstrip groove, which is fitted to the body flange.

6. Insert a string into the weatherstrip groove by using a suitable tool.

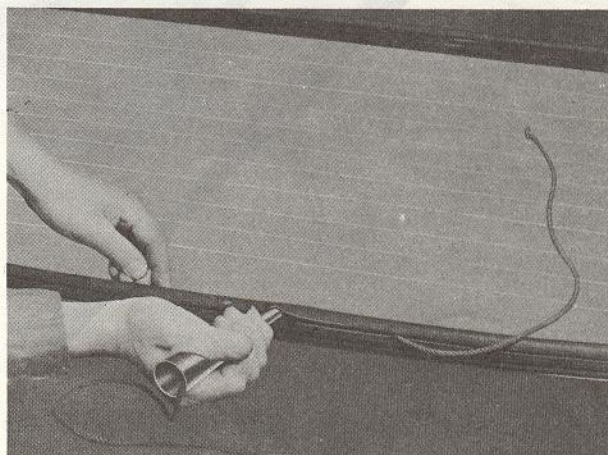


Fig. 14A-20 Inserting string

Note:
Overlap the string at the center portion of the glass.
7. Position the glass onto the body properly, and place the string ends inside the body. To facilitate the procedure, apply water and soap lightly onto the body flange.
8. Pull the string from the inside while tapping the outside of the glass lightly with a hand in accordance with the movement of the string pulled.



Fig. 14A-21 Pulling string

9. Apply adhesive cement between the weatherstrip and the body, and between the weatherstrip and glass. To facilitate cleaning after applying the cement, attach a suitable tape onto the glass and body.
10. Clean off the excessive adhesive cement together with the tape.

14A-F. STATIONARY GLASS (Rear Side Glass)

14A-F-1. Removing Stationary Glass

1. Drive out the inner lip of the weatherstrip with a suitable tool from the inside of the vehicle while pushing the stationary glass.

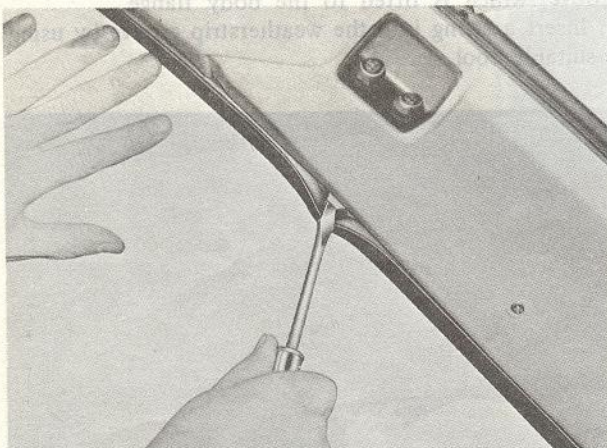


Fig. 14A-22 Drive out weatherstrip

2. Remove the stationary glass together with the weatherstrip.
3. Remove the mould and glass from the weatherstrip.

14A-F-2. Installing Stationary Glass

Before installing the stationary glass, clean off the old adhesive cement around the glass and body thoroughly.

1. Install the weatherstrip onto the stationary glass.
2. Install the moulding onto the weatherstrip using a string.

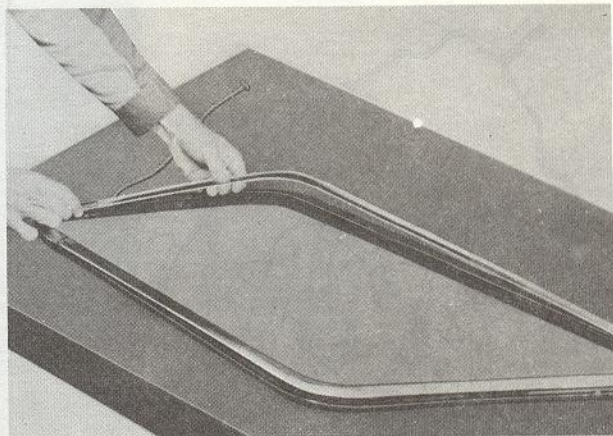


Fig. 14A-23 Installing moulding

3. Apply water and soap lightly onto the weatherstrip groove, which is fitted to the body flange.
4. Insert a string into the weatherstrip groove by using a suitable tool.

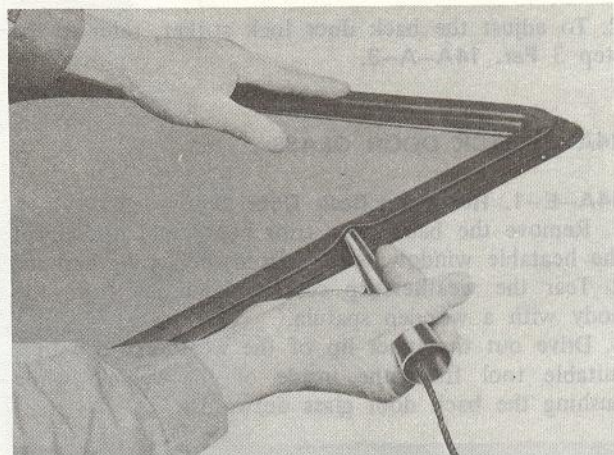


Fig. 14A-24 Inserting string

Note:

Overlap the string at the center portion of the glass.

5. Position the glass onto the body properly, and place the string ends inside the body.
6. Pull the string from the inside while tapping the outside of the glass lightly with a hand in accordance with the movement of the string pulled.
7. Apply adhesive cement between the weatherstrip and the body, and between the weatherstrip and glass.
8. Clean off the excessive adhesive cement.

14A-G. TOP CEILING

To remove and install the top ceiling, refer to Par. 14-N.

SPECIAL TOOL

49 0698 755

Torsion bar arm

14A-H. HEATABLE WINDOW

Servicing the heatable window is explained in Par. 15-I.

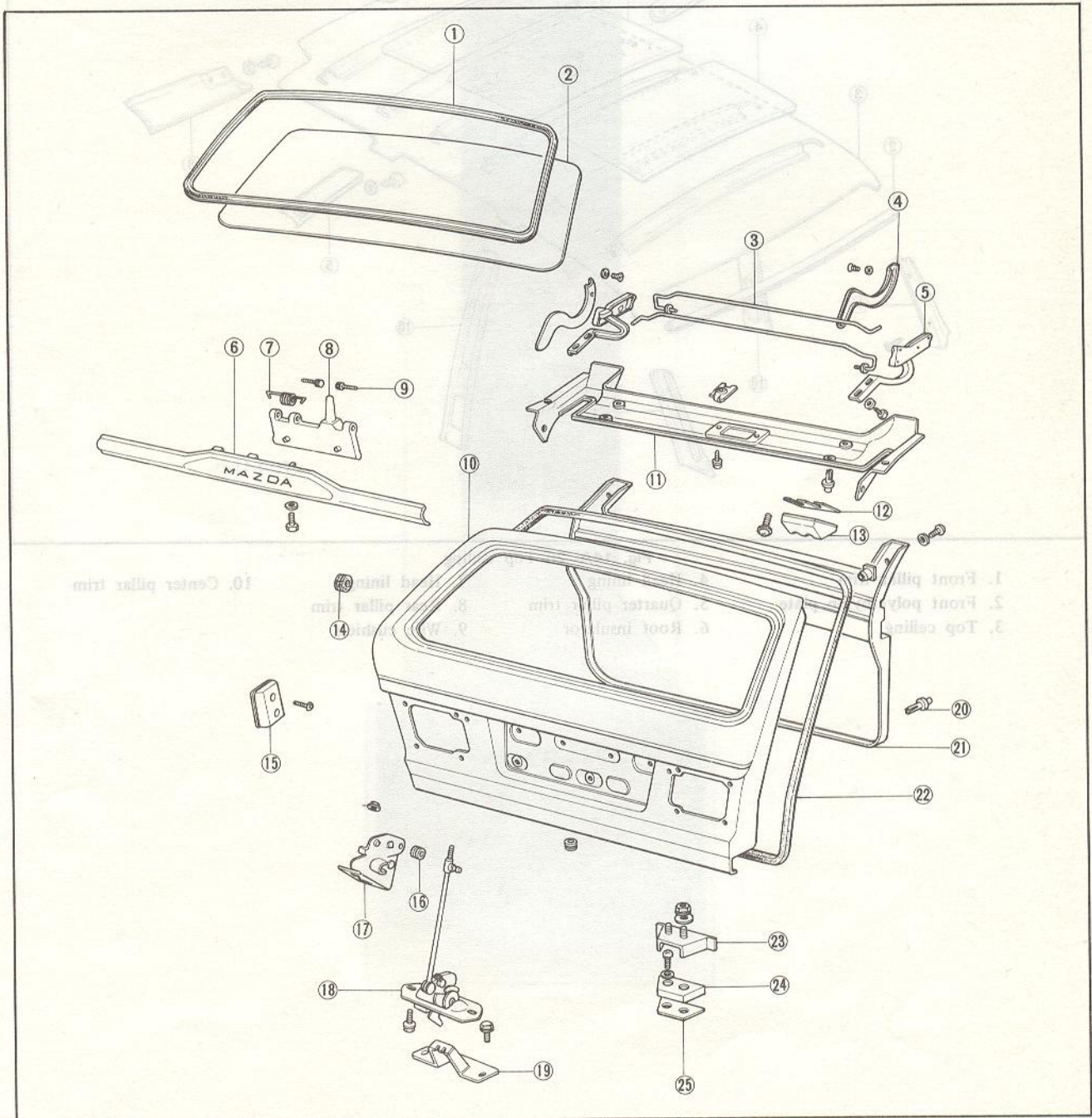


Fig. 14A-25 Back door components

- | | | | |
|----------------------|--------------------|--------------------------------|------------------|
| 1. Weatherstrip | 8. Lever | 15. Side wedge | 22. Weatherstrip |
| 2. Back window glass | 9. Pin | 16. Bush | 23. Dovetail |
| 3. Balance spring | 10. Back door body | 17. Door lock control assembly | 24. Wedge |
| 4. Hinge arm cover | 11. Hinge cover | 18. Door lock assembly | 25. Shim |
| 5. Hinge | 12. Shim | 19. Striker | |
| 6. Outer handle | 13. Upper wedge | 20. Fastener | |
| 7. Spring | 14. Protector | 21. Back door trim | |

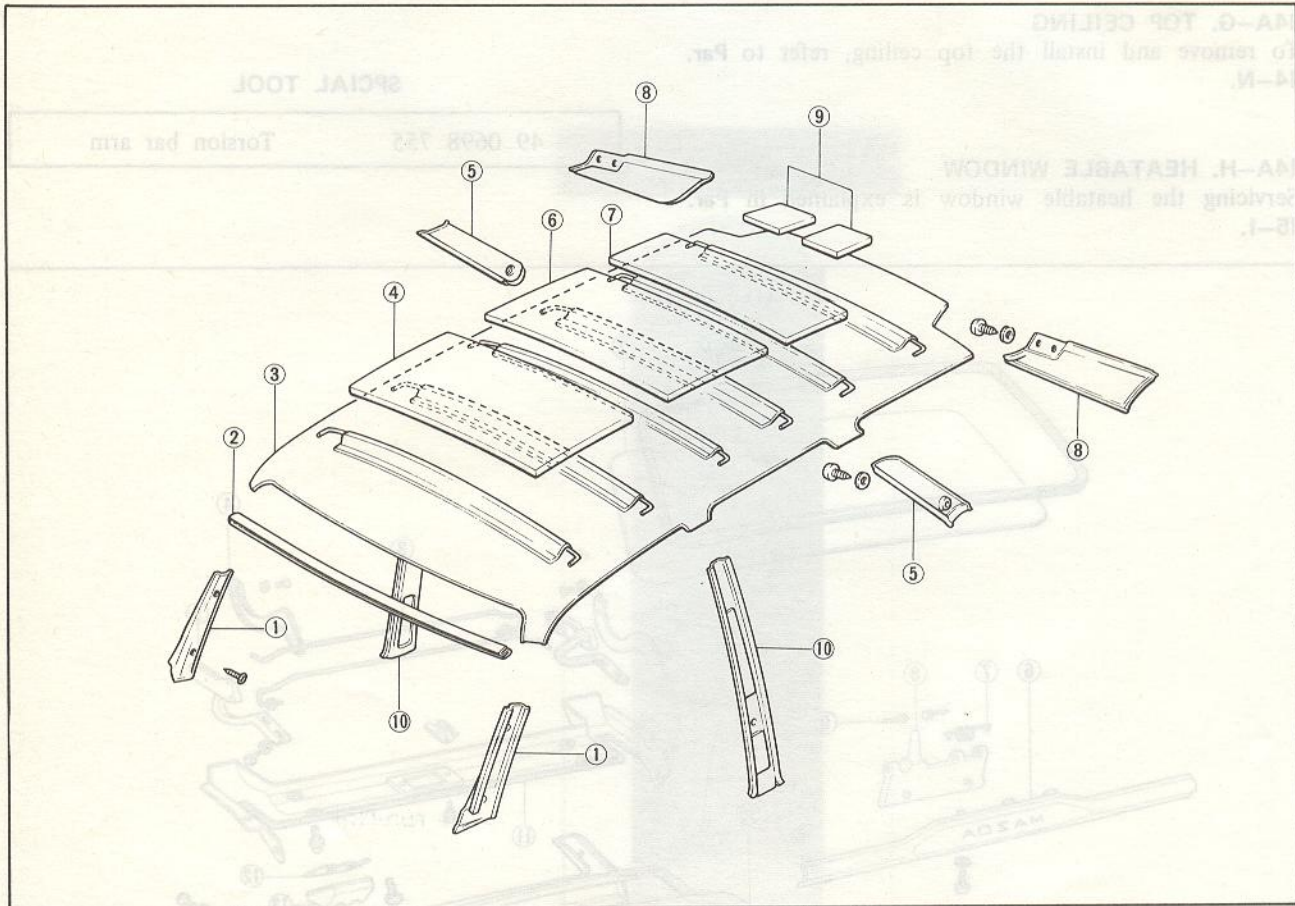


Fig. 14A-26 Top ceiling

- | | | | |
|----------------------------|------------------------|---------------------|------------------------|
| 1. Front pillar trim | 4. Head lining | 7. Head lining | 10. Center pillar trim |
| 2. Front polyethylen plate | 5. Quarter pillar trim | 8. Rear pillar trim | |
| 3. Top ceiling | 6. Roof insulator | 9. Wire cushion | |

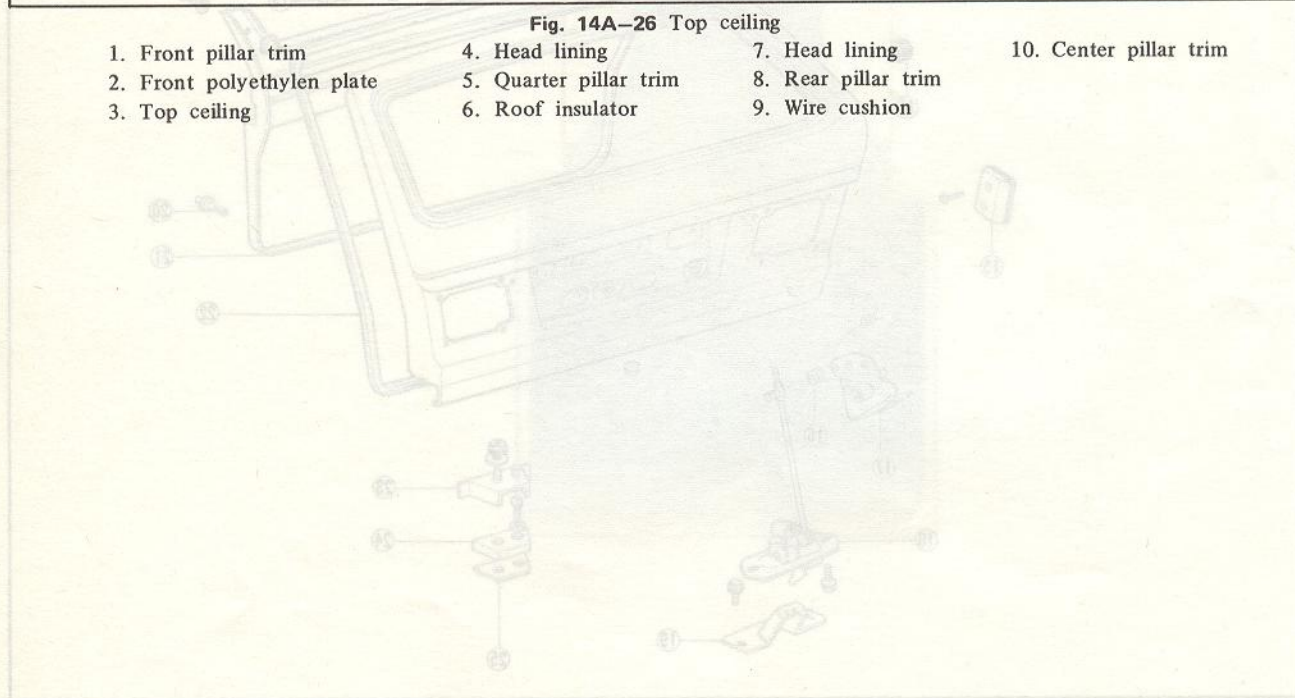
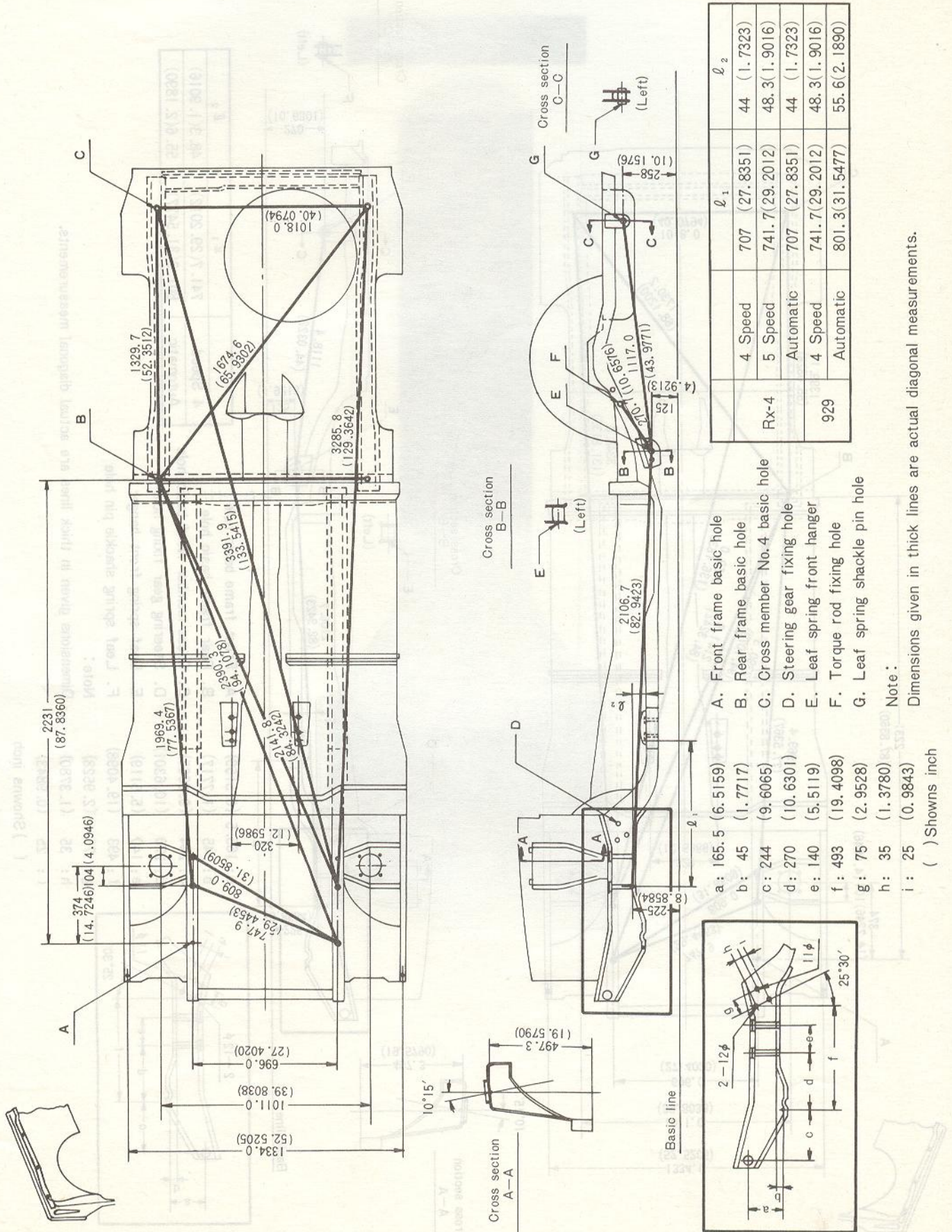


Fig. 14A-28 Back door components

- | | | | |
|------------------|--------------------------------|--------------------|----------------------|
| 23. Weatherstrip | 15. Side wedges | 8. Lever | 1. Weatherstrip |
| 23. Dovetail | 16. Bush | 9. Pin | 2. Back window glass |
| 24. Wedge | 17. Door lock control assembly | 10. Back door body | 3. Balance spring |
| 22. Shim | 18. Door lock assembly | 11. Hinge cover | 4. Hinge arm cover |
| | 19. Striker | 12. Shim | 5. Hinge |
| | 20. Fastener | 13. Upper wedge | 6. Outer handle |
| | 21. Back door trim | 14. Protector | 7. Spring |

BODY CHECKING DIMENSION SEDAN & HARDTOP



ELECTRICAL SYSTEM (BODY)

<p>15-A. HEAD LIGHT 15 : 1</p> <p>15-A-1. Removing Head Light 15 : 1</p> <p>15-A-2. Installing Head Light 15 : 1</p> <p>15-B. BULBS & LENS 15 : 1</p> <p>15-B-1. Replacing Bulbs 15 : 1</p> <p style="padding-left: 20px;">a. Front turn signal light 15 : 1</p> <p style="padding-left: 20px;">b. Side marker light 15 : 2</p> <p style="padding-left: 20px;">c. Rear combination light ... 15 : 2</p> <p style="padding-left: 20px;">d. Reverse light 15 : 3</p> <p style="padding-left: 20px;">e. Interior light 15 : 3</p> <p style="padding-left: 20px;">f. Step light 15 : 3</p> <p style="padding-left: 20px;">g. Bulbs on combination meter..... 15 : 3</p> <p>15-B-2. Replacing Rear Combination Light Lens 15 : 6</p> <p>15-B-3. Removing Reverse Light Body 15 : 7</p> <p>15-B-4. Bulb Capacity 15 : 7</p> <p>15-C. COMBINATION SWITCH 15 : 7</p> <p>15-C-1. Checking Combination Switch 15 : 7</p> <p>15-C-2. Removing Combination Switch 15 : 7</p> <p style="padding-left: 20px;">a. Standard type 15 : 7</p> <p style="padding-left: 20px;">b. Cockpit type 15 : 8</p> <p>15-C-3. Installing Combination Switch 15 : 8</p> <p>15-D. IGNITION SWITCH & STEERING LOCK 15 : 8</p> <p>15-D-1. Removing Ignition Switch Contact Housing 15 : 8</p> <p>15-D-2. Checking Ignition Switch Contact Housing 15 : 8</p> <p>15-D-3. Installing Ignition Switch Contact Housing 15 : 8</p> <p>15-D-4. Removing Key Cylinder 15 : 9</p>	<p>15-D-5. Replacing Steering Lock 15 : 9</p> <p>15-E. RADIO & STEREO DECK 15 : 9</p> <p>15-E-1. Removing Radio 15 : 9</p> <p style="padding-left: 20px;">a. Standard type instrument panel 15 : 9</p> <p style="padding-left: 20px;">b. Cockpit type instrument panel 15 : 9</p> <p>15-E-2. Removing Stereo Deck 15 : 10</p> <p>15-F. WIPER & HORN 15 : 10</p> <p>15-F-1. Removing Wiper Motor 15 : 10</p> <p>15-F-2. Checking Wiper Motor 15 : 11</p> <p>15-F-3. Installing Wiper Motor 15 : 11</p> <p>15-F-4. Removing Horn 15 : 12</p> <p>15-F-5. Adjusting Horn 15 : 12</p> <p>15-F-6. Installing Horn 15 : 12</p> <p>15-G. CENTRAL CONTROL BOX 15 : 12</p> <p>15-G-1. Checking Control Box 15 : 12</p> <p style="padding-left: 20px;">a. Wiper relay 15 : 12</p> <p style="padding-left: 20px;">b. Horn relay 15 : 13</p> <p style="padding-left: 20px;">c. Turn signal and hazard flasher relay 15 : 13</p> <p>15-G-2. Removing Central Control Box 15 : 14</p> <p>15-G-3. Installing Control Box 15 : 14</p> <p>15-H. STOP LIGHT CHECKER RELAY 15 : 14</p> <p>15-H-1. Checking Stop Light Checker Relay 15 : 14</p> <p>15-H-2. Removing Stop Light Checker Relay 15 : 15</p> <p>15-H-3. Installing Stop Light Checker Relay 15 : 15</p> <p>15-I. HEATABLE WINDOW 15 : 15</p> <p>15-I-1. Checking Heatable Window . 15 : 15</p> <p>15-I-2. Repairing Printed Filament .. 15 : 15</p>
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15-D-5. Replacing Steering Lock

1. Refer to the Par. 15-C-2 and remove the combination switch.
2. Loosen the screws and bolts attaching the lower crush pad and remove the crush pad.
3. Loosen the two nuts attaching the column shaft bracket to dash panel and remove the bracket.
4. Move the column shaft approximately 3 cm (1 in) from the dash board.
5. Make a groove on the head of the bolts attaching the steering lock body to the column shaft by using a saw so that the screw driver can be used to loosen the screws.

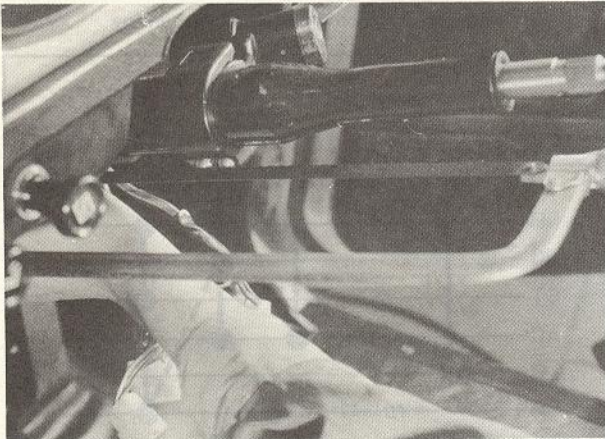


Fig. 15-40 Making groove

6. Loosen the steering lock attaching bolts and remove the steering lock.

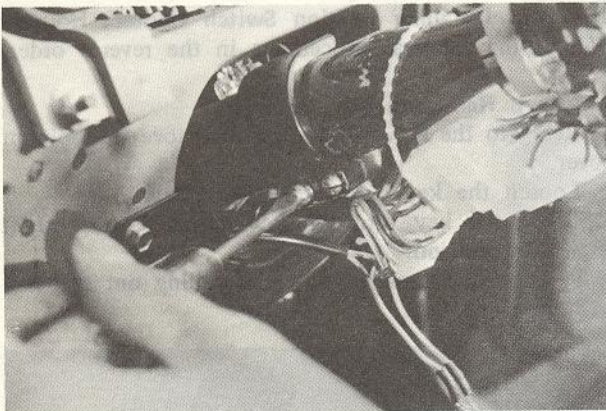


Fig. 15-41 Loosening bolt

7. Position a new steering lock to the column shaft and tighten the bolts until the head of bolts snaps-off.

15-E. RADIO & STEREO DECK

15-E-1. Removing Radio

a. Standard type instrument panel

1. Refer to the Par. 15-B-1-g-1) and remove the combination meter.
2. Loosen the two screws and remove the air grille.

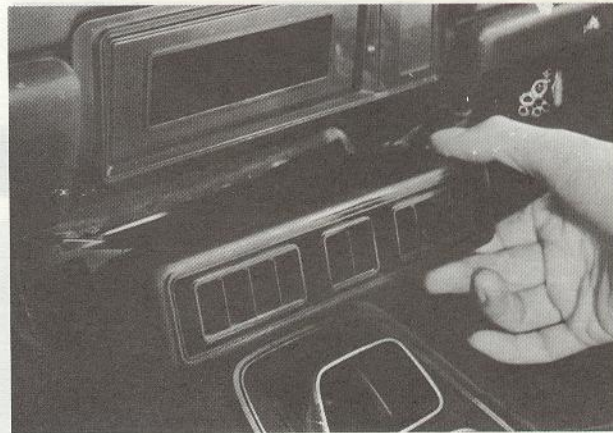


Fig. 15-42 Removing air grille

3. Loosen the screws attaching the center panel and remove the center panel.



Fig. 15-43 Removing center panel

4. Loosen the bolt attaching the radio bracket from the hole of the center panel.
5. Pull the radio out and disconnect the wiring.

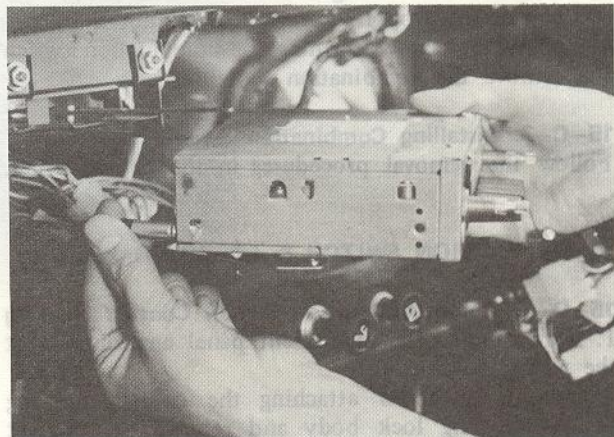


Fig. 15-44 Removing radio

b. Corkpit type instrument panel

1. Pull the console pad upward and remove the console pad. Please note that the attaching clips give a little resistance when pulling the console pad out.
2. Loosen the screws attaching the air grille and remove the air grille.

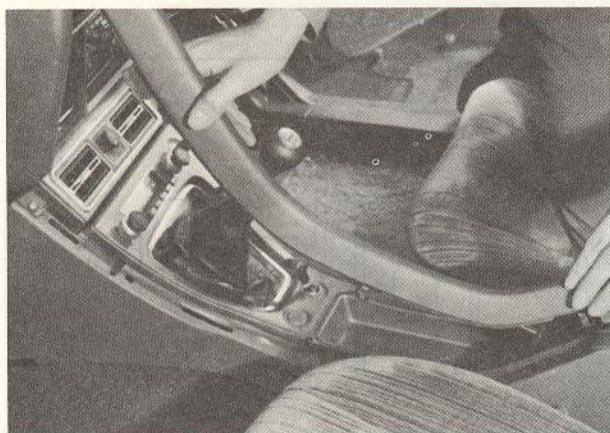


Fig. 15-45 Removing console pad



Fig. 15-46 Removing air grille

3. Loosen the center console attaching screws and move the console rearward.
 4. Pull off the radio control knobs and loosen the radio attaching nuts.
 5. Move the radio out and disconnect the wiring.

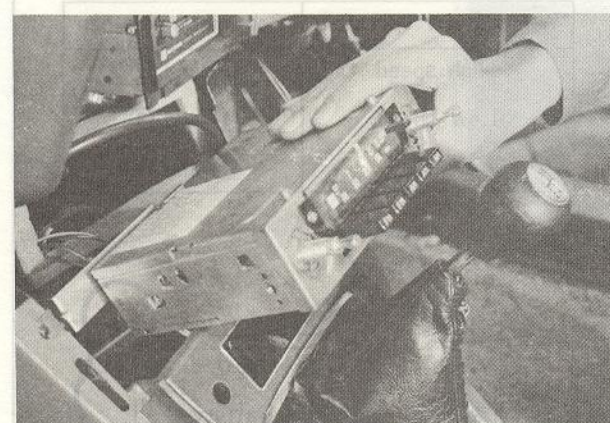


Fig. 15-47 Removing radio

15-E-2. Removing Stereo Deck

1. Refer to the step 1 to 4 in the Par. 15-B-1-g-2) and remove the column cover.
 2. Pull the console pad upward and remove the console pad. Please note that the attaching clips give a little resistance when pulling the console pad out.
 3. Remove the heater control knobs by pulling the knobs.



Fig. 15-48 Removing control knob

4. Loosen the screws attaching the center panel and remove the center panel.

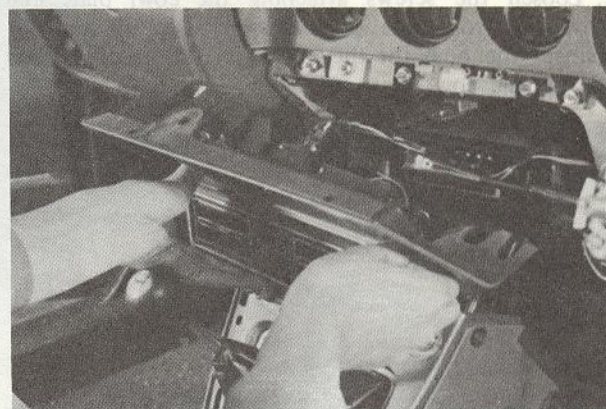


Fig. 15-49 Removing center panel

5. Loosen the deck attaching nuts and pull the deck out from the dash board.
 6. Disconnect the wiring and remove the stereo deck.



Fig. 15-50 Removing stereo deck

15-E-3. Installing Stereo Deck

Follow the removal procedures in the reverse order.

15-F. WIPER & HORN

15-F-1. Removing Wiper Motor

1. Loosen the wiper arm attaching screw and remove the wiper arms.

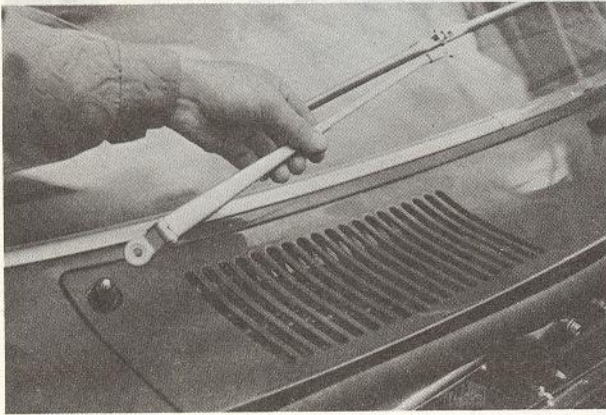


Fig. 15-51 Removing wiper arm

2. Loosen the screws attaching the cowl plate and move the front side of the cowl plate up and disconnect the hose for the washer at the nozzle. Then remove the cowl plate.

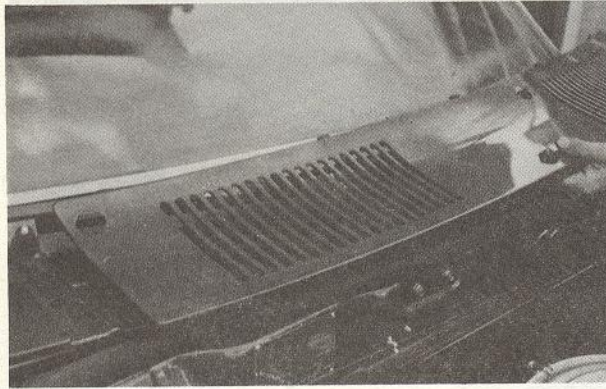


Fig. 15-52 Removing cowl plate

3. Disconnect the wiring at the wiper motor.
4. Loosen bolts attaching the wiper motor and remove the wiper motor.

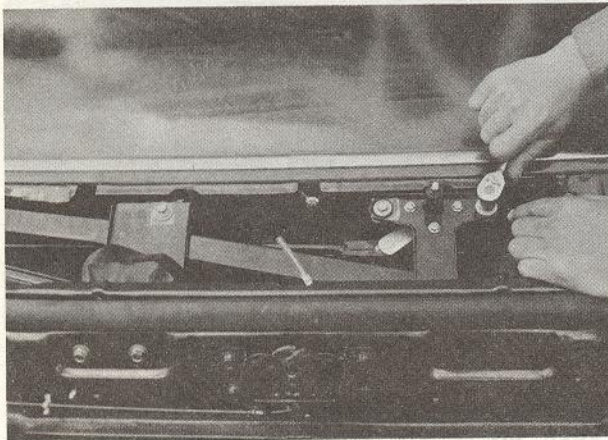


Fig. 15-53 Motor attaching bolts

15-F-2. Checking Wiper Motor

1. Use a 12 volt test light and test for power at the blue wire of the main wiring harness connector

with ignition switch ON.

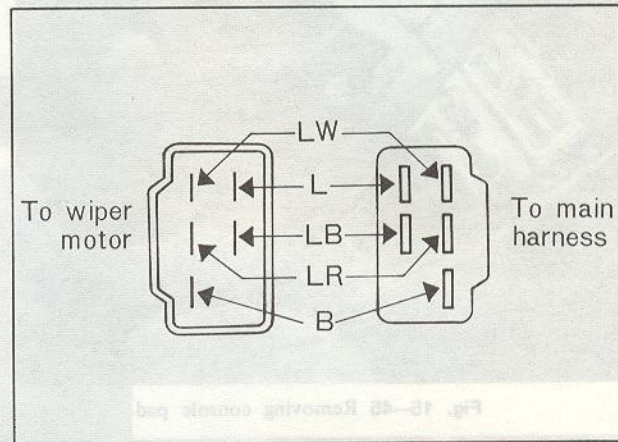


Fig. 15-54 Wiper motor connector

If no power is present, trace the blue wire back to the fuse and repair as necessary.

2. Using a jumper wire, connect 12 volts to the blue wire of the motor connector. Then, ground the wires as outlined below and observe the results.

a. With the blue-white wire grounded, the wipers should operate at low speed.

b. With the blue-red wire grounded, the wipers should operate at high speed. Stop the wiper blades in an up position so that Step 3 can be performed.

3. With the wiper blades stopped in an up position and with the jumper wire still connected to the blue wire as in Step 2, connect another jumper wire between the blue-black and the blue-white wires. The wipers should move to the park position and stop.

4. If the motor does not operate, check the ground before replacing it.

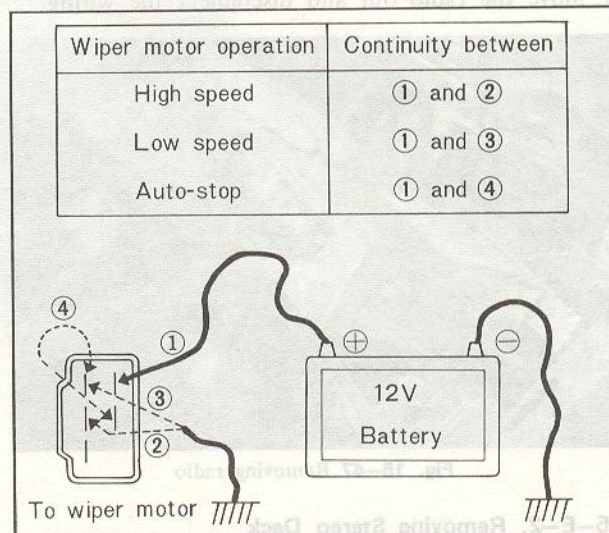


Fig. 15-55 Checking wiper motor

15-F-3. Installing Wiper Motor

To install the wiper motor, reverse the procedure of Par. 15-F-2, noting the following point.

1. Tighten the bolts attaching the wiper motor assembly in numerical order as shown in Fig. 15-54.

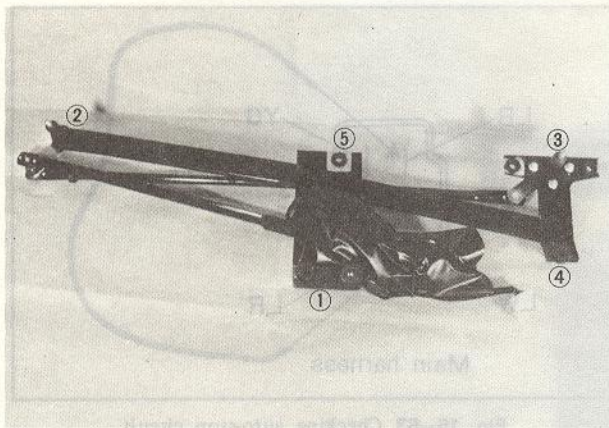


Fig. 15-56 Tightening order

15-F-4. Removing Horn

1. Loosen the screws attaching the front grille and remove the front grille.

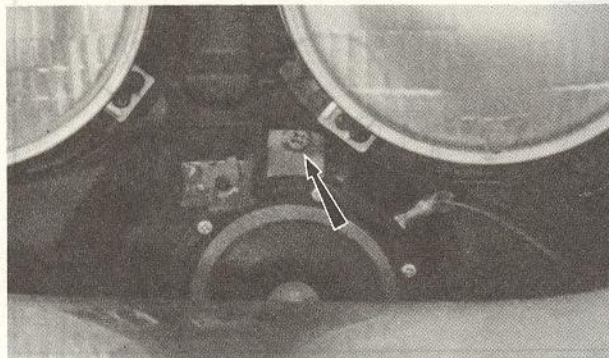


Fig. 15-57 Horn attaching bolt

15-F-5. Adjusting Horn

1. Refer to the Par. 15-F-4 and remove the horn.
 2. Connect the ammeter and volt-meter as shown in Fig. 15-58. Turn the adjusting screw until the current draw is 1.5 ~ 2.5 amperes at 12 volts.

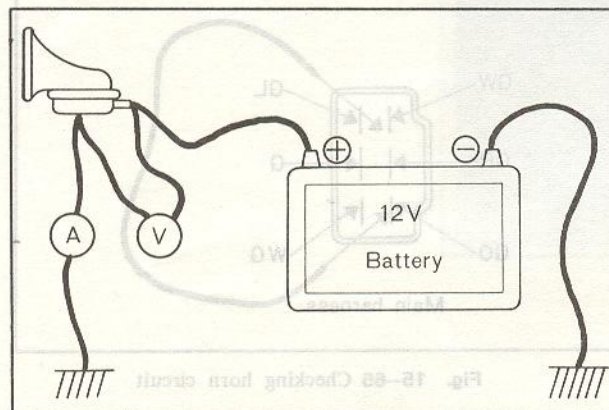


Fig. 15-58 Adjusting horn

3. Tighten the lock nut and apply locking agent on the lock nut.

Note :

Do not stuff rags or other materials in the horn protector to muffle the sound while adjusting, as

this changes the vibration frequency and would give a false current setting. When adjusting a set of horns, each horn should be connected and adjusted separately, then checked for tone by operating as a pair.

15-F-6. Installing Horn

Follow the removal procedures in the reverse order.

15-G. CENTRAL CONTROL BOX

The wiper relay, flasher & hazard warning unit and horn relay are all placed collectively in this central control box.

The multi-grade relay (Parts No. 0866 67 719) can be used as a substitute for any relay of central control box. So in case any one of the relays of central control box becomes defective, please replace it for multi-grade relay.

Testing the relay unit itself would be so time consuming and would require so many jumper wires and test light hookups as to be impractical for service. The quickest and least complicated method is to check all the wiring circuits connected to the relay and make the necessary repairs or replacements. If turn signal or hazard flashers still do not work properly, check the harness connections to the relay. If the connections are O.K. and the flashers still do not work properly, replace the relay.

15-G-1. Checking Control Box

a. Wiper relay

1. Connect a jumper wire from the blue-red wire of the main wiring harness connector to ground with the ignition switch ON. The wipers should operate at high speed.

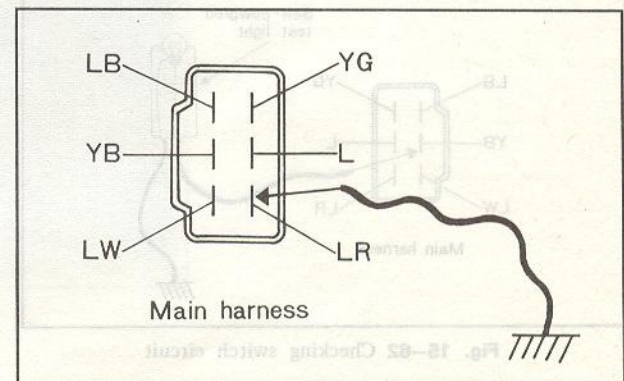


Fig. 15-59 Checking high speed circuit

2. Connect a 12 volt test light between the blue wire and ground, the test light bulb should glow.
 3. Connect a self-powered test light (or ohm-meter) between the yellow-green wire and ground. The bulb should glow when the wiper switch is in the High and Low positions.
 4. Connect a jumper wire between the blue-white wire and ground. The wipers should operate at low

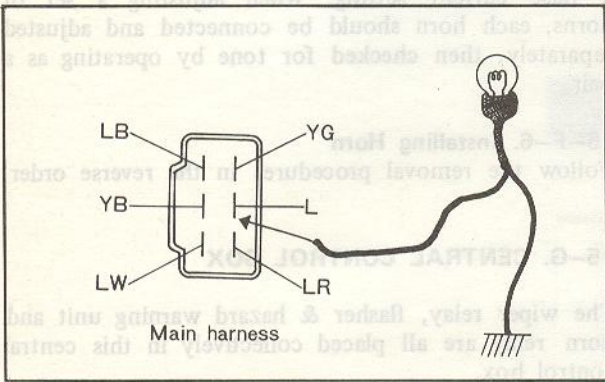


Fig. 15-60 Checking power source and switch

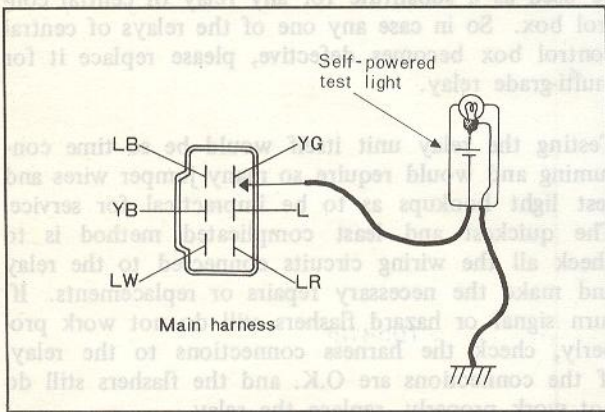


Fig. 15-61 Checking high speed circuit

5. Connect a self-powered test light (or ohm-meter) between the yellow-black wire and ground. The bulb should glow only when the wiper switch is in the High position.

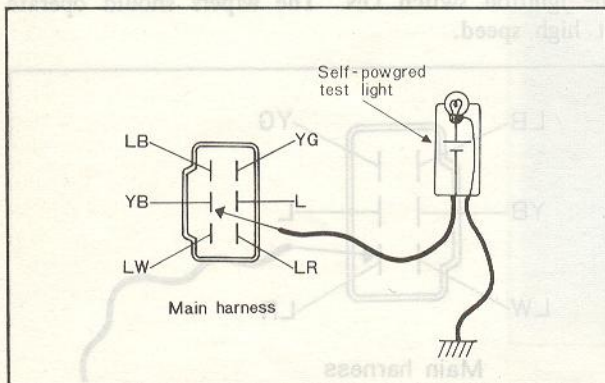


Fig. 15-62 Checking switch circuit

6. Connect a jumper wire between the blue-black wire and the blue-white wire. The wipers should return to the park position. (Fig. 15-63)

If the above tests prove satisfactory, check the central control box for ground before replacing the relay.

b. Horn relay

1. Connect a 12 volt test light between the green-white wire of the main wiring harness connector

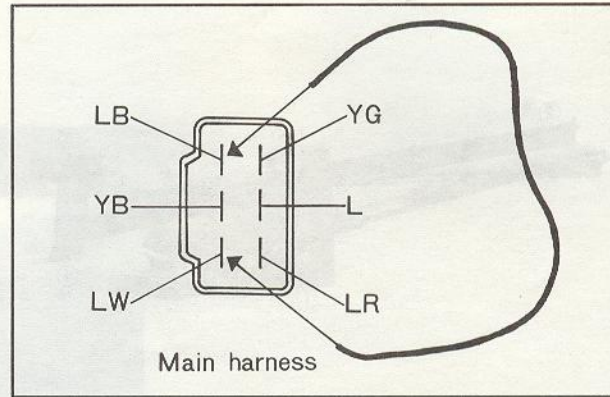


Fig. 15-63 Checking auto-stop circuit

and ground, the test light bulb should glow. If no power is present, trace the green-white wire back to the fuse and repair as necessary.

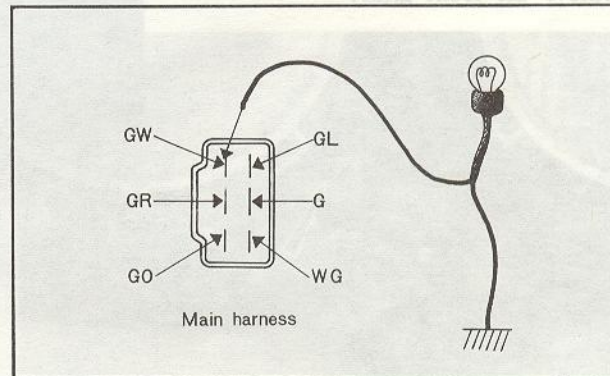


Fig. 15-64 Checking power source circuit

2. Connect a jumper wire from the green-white wire of the main wiring harness connector to the green-orange wire of the connector. The horns should operate.

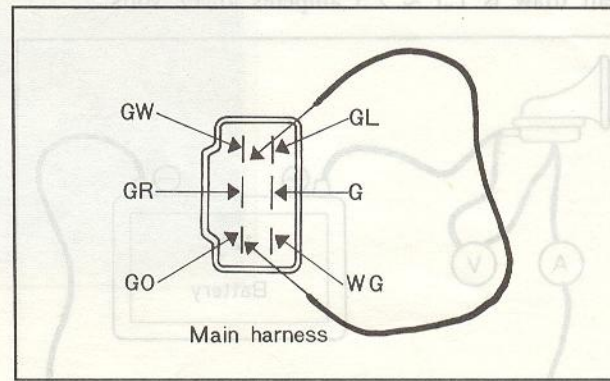


Fig. 15-65 Checking horn circuit

3. Connect a self-powered test light (or ohm-meter) between the green wire and ground. The bulb should glow when the horn button is in pushed on. (Fig. 15-66)

c. Turn signal and hazard flasher relay

1. Connect the 12 volt test light between the green-blue wire of the main wiring harness connector and ground with the ignition switch on, and the test light

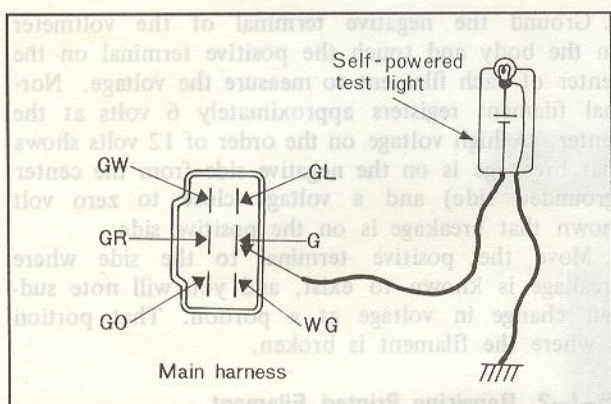


Fig. 15-66 Checking switch circuit

should glow. The test light should off when the hazard warning switch is ON. If the above operations are not carried out properly, trace the green-blue wire to the combination switch and repair as necessary.

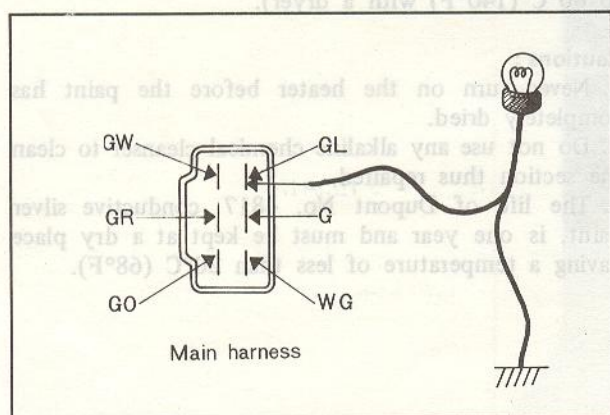


Fig. 15-67 Checking turn signal circuit

2. Connect the 12 volt test light between the white-green wire of the main wiring connector and ground with the hazard warning switch ON, and the test light should glow. If no power is present, trace the white-green wire to the combination switch and repair as necessary.

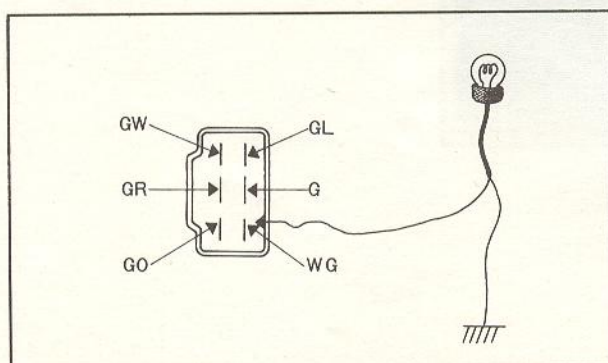


Fig. 15-68 Checking hazard warning circuit

3. Connect a 12 volt power source to the green-red wire. With the turn signal switch ON, the lights should come on. With the hazard switch ON, the hazard warning lights should come on. If it does

not, check for a loose connection or broken wire in the circuit or a burned out bulb.

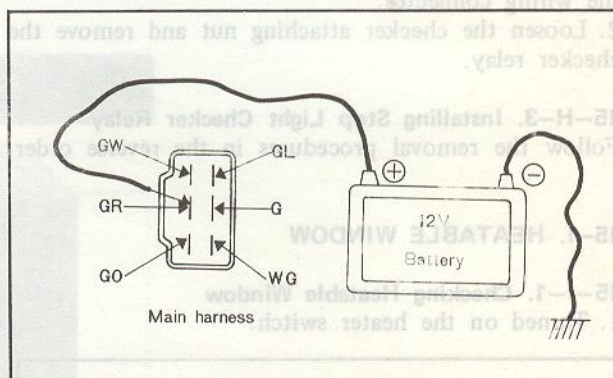


Fig. 15-69 Checking power source circuit

If these systems worked properly, all of the wires used in these circuit would be O.K. and not have to be tested. Check the elements of the central control box by exchange with the new relay or unit.

15-G-2. Removing Central Control Box

1. Reach under the instrument panel and disconnect the wiring connectors.
2. Loosen the nuts attaching the central control box and remove the box.

15-G-3. Installing Central Control Box

Follow the removal procedures in the reverse order.

15-H. STOP LIGHT CHECKER RELAY

15-H-1. Checking Stop Light Checker Relay

1. Disconnect the stop light connector in the trunk compartment.
2. Check to see whether buzzer actuates when brake pedal is depressed. If the buzzer actuates, the relay is satisfactory. If the buzzer does not actuate, disconnect the wiring connector from the relay prongs.
3. Connect the B terminal of relay to power source (from fuse box) with lead line, and check whether buzzer will actuate. If the buzzer actuates, the stop switch is defective or wiring of stop switch is faulty. If buzzer does not actuate, remove and replace checker relay.

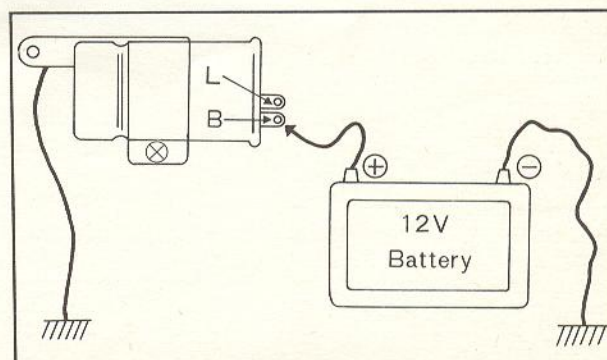


Fig. 15-70 Checking checker relay

15-H-2. Removing Stop Light Checker Relay

1. Reach under the instrument panel and disconnect the wiring connector.
2. Loosen the checker attaching nut and remove the checker relay.

15-H-3. Installing Stop Light Checker Relay

Follow the removal procedures in the reverse order.

15-I. HEATABLE WINDOW

15-I-1. Checking Heatable Window

1. Turned on the heater switch.

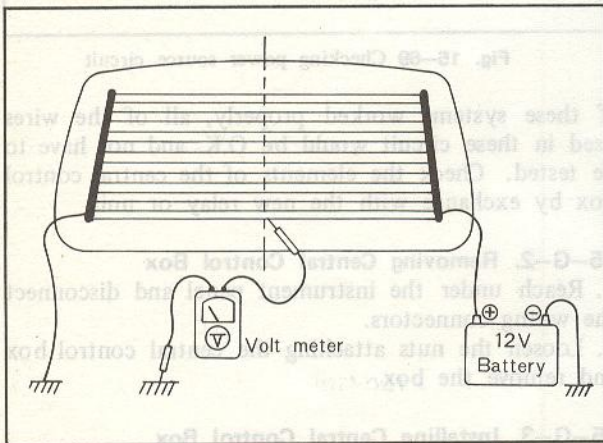


Fig. 15-71 Checking heatable window

2. Ground the negative terminal of the voltmeter on the body and touch the positive terminal on the center of each filament to measure the voltage. Normal filament registers approximately 6 volts at the center. A high voltage on the order of 12 volts shows that breakage is on the negative side from the center (grounded side) and a voltage close to zero volt shown that breakage is on the positive side.
3. Move the positive terminal to the side where breakage is known to exist, and you will note sudden change in voltage at a portion. That portion is where the filament is broken.

15-I-2. Repairing Printed Filament

1. Clean the broken portion with solvent.
2. By using a small brush or a drawing pen, apply conductive silver paint (Parts No. 2835 77 6000), i.e., Dupont No. 4817 to the broken section.
3. Completely dry the painted section by leaving it intact for 24 hours in the case of 20°C (68°F) (for 30 minutes when the painted section is heated up to 60°C (140°F) with a dryer).

Cautions :

1. Never turn on the heater before the paint has completely dried.
2. Do not use any alkaline chemical cleanser to clean the section thus repaired.
3. The life of Dupont No. 4817, conductive silver paint, is one year and must be kept at a dry place having a temperature of less than 20°C (68°F).

15-H. STOP LIGHT CHECKER RELAY

15-H-1. Checking Stop Light Checker Relay

1. Disconnect the stop light connector in the trunk compartment.
2. Check to see whether buzzer actuates when brake pedal is depressed. If the buzzer actuates, the relay is satisfactory.
3. If the buzzer does not actuate, disconnect the wiring connector from the relay prongs.
4. Connect the B terminal of relay to power source (from fuse box) with lead line, and check whether buzzer will actuate. If the buzzer actuates, the stop switch is defective or wiring of stop switch is faulty. If buzzer does not actuate, remove and replace checker relay.

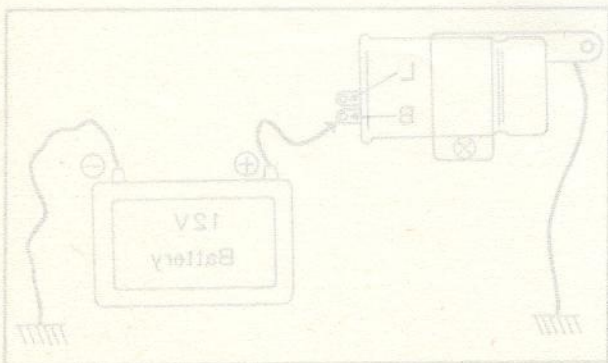


Fig. 15-70 Checking checker relay

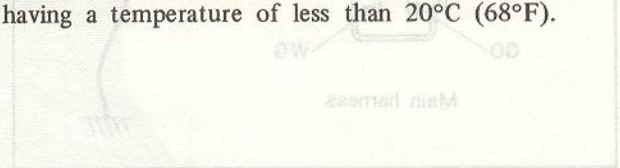


Fig. 15-87 Checking turn signal circuit

3. Connect the 12 volt test light between the white-green wire of the main wiring connector and ground with the hazard warning switch ON and the test light should glow. If no power is present, trace the white-green wire to the combination switch and repair as necessary.

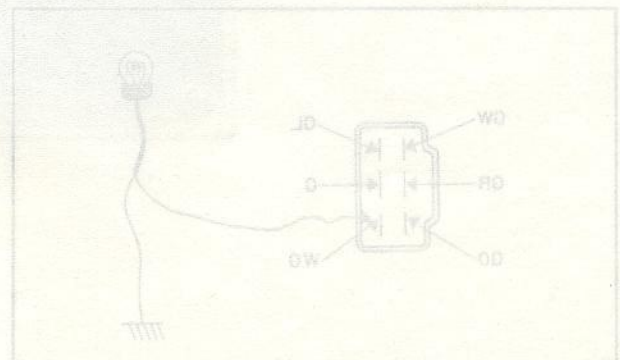


Fig. 15-88 Checking hazard warning circuit

3. Connect a 12 volt power source to the green-red wire. With the turn signal ON, the lights should come on. With the hazard switch ON, the hazard warning lights should come on. If it does

15-A. HEAD LIGHT

15-A-1. Removing Head Light

1. Remove the front grille by loosening the attaching screws.

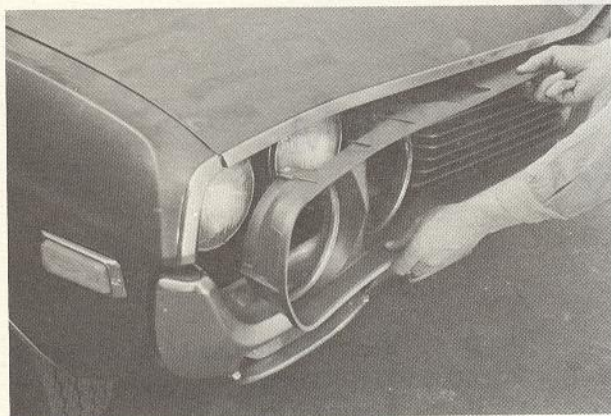


Fig. 15-1 Removing front grille

2. Loosen but do not remove the three screws that hold the bulb retaining ring to the adjusting plate. Rotate the retaining ring clockwise until it is free enough of the screws to be removed.

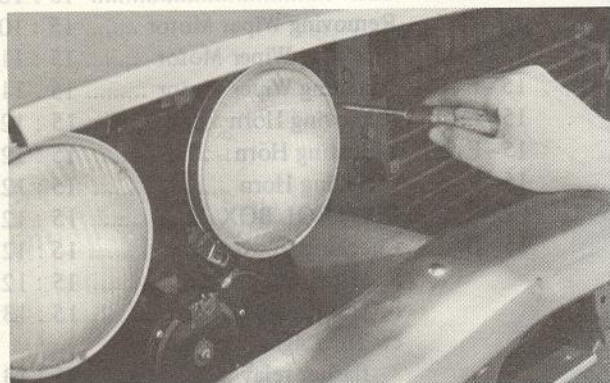


Fig. 15-2 Loosening screws

3. Remove the bulb forward with both hands.
4. Disconnect the wiring connector from the bulb prongs.

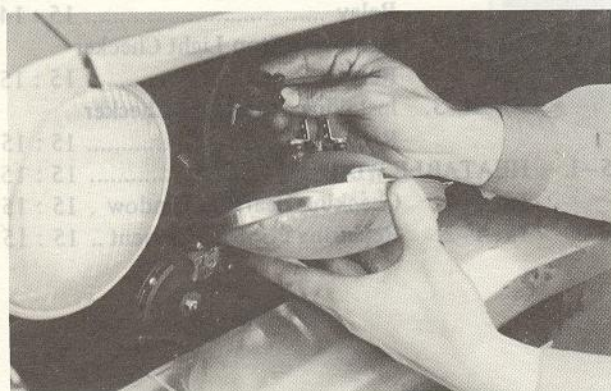


Fig. 15-3 Removing bulb

15-A-2. Installing Head Light

1. Connect the wiring connector onto the bulb prongs.

Be sure the plug is fully seated.

2. Position the bulb in the adjusting plate facing the TOP mark of the bulb towards upward. Seat the bulb glass tabs in the positioning slots in the adjusting plate.



Fig. 15-4 Installing bulb

3. Position the retaining ring over the bulb with the slots over the three retaining ring screws.

4. Rotate the retaining ring counter-clockwise so that the narrow portion of each slot is seated under each retaining ring screw.

5. Tighten the retaining ring screws and then install the front grille.

15-A-3. Adjusting Head Light

Before adjusting the headlights, make sure that the tires are inflated uniformly to recommended pressure and the vehicle is on the level ground without load. Adjust the headlight to meet the regulation of each country.

To adjust the headlight, turn the three spring loaded screws of the sealed beam unit until the headlights are properly aimed.



Fig. 15-5 Adjusting aiming

15-B. BULBS & LENS

15-B-1. Replacing Bulbs

a. Front turn signal light

1. Loosen the two screws attaching the front turn signal light lens to the bracket and remove the lens.



Fig. 15-6 Loosening screw

2. Push the bulb into the socket, twist counter-clockwise to free the prongs and pull bulb from the socket.

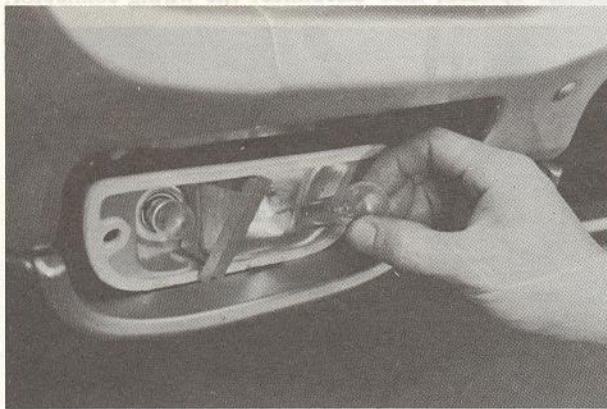


Fig. 15-7 Removing bulb

3. Insert new bulb into the socket, press down, turn clockwise until prongs are in place and release.
4. Position the lens and secure with the screws.
5. Check the operation of the light.

b. Side marker light

1. Remove the two lens retaining screws and remove the lens.

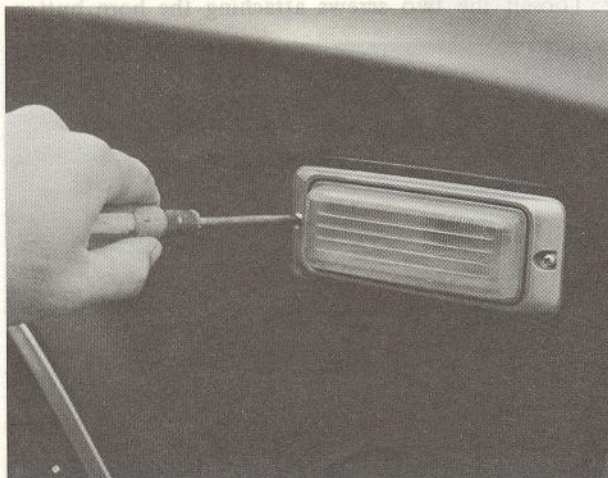


Fig. 15-8 Loosening screw

2. Turn the socket counter-clockwise and remove the socket.



Fig. 15-9 Removing socket

3. Then pull the bulb out.
4. To install, follow the removal procedures in the reverse order.

c. Rear combination light

1) Sedan

1. Turn the socket counter-clockwise and remove the socket.



Fig. 15-10 Removing socket

2. Push the bulb into the socket, twist counter-clockwise to free the prongs and pull the bulb from the socket.
3. Insert the new bulb into the socket, press down, turn clockwise until prongs are in place and release.
4. Position the socket onto the cover and turn it clockwise.

2) Hard Top

1. Loosen the screw attaching the rear cover and remove the rear cover.
2. Push the bulb into the socket, twist counter-clockwise to free the prongs and pull bulb from the socket.
3. Insert new bulb into the socket, press down, turn clockwise until prongs are in place and release.
4. Position the rear cover and secure with the screw.

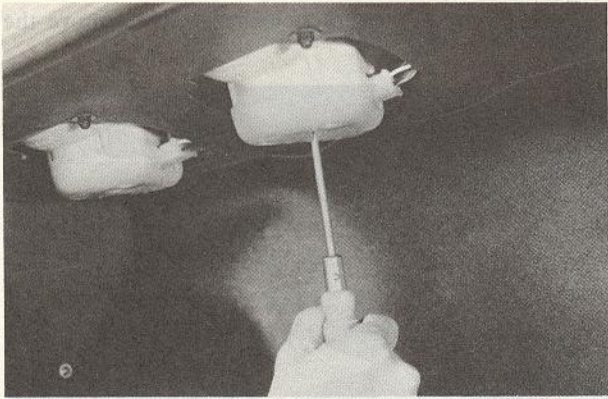


Fig. 15-11 Removing rear cover

d. Reverse light

1. Loosen the two screws attaching the lens to the glove and remove the lens.
2. Push the bulb into the socket, twist it counter-clockwise to free the prongs and pull the bulb out from the socket.

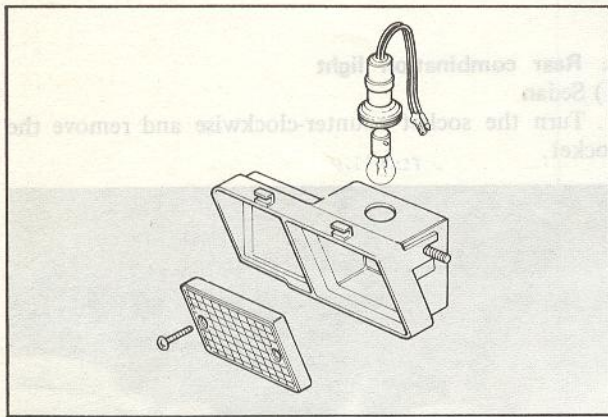


Fig. 15-12 Removing reverse light

e. Interior light

1. Insert screwdriver blade in slot between interior light housing and lens as shown in Fig. 15-13.
2. Carefully move screwdriver handle upwards and remove the lens.
3. Pull the bulb out of the sockets.

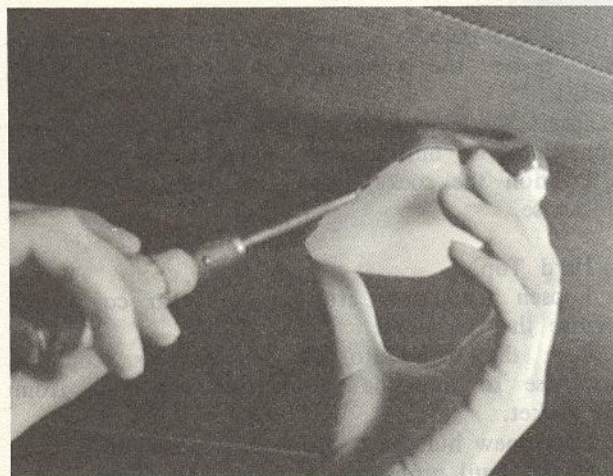


Fig. 15-13 Removing lens

f. Step light

1. Loosen the screws attaching the tray to the console and remove the tray.

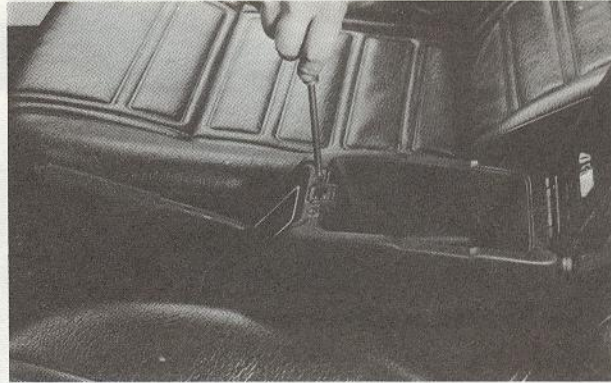


Fig. 15-14 Removing tray

2. Loosen the console attaching screws and move the console upward, then disconnect the wiring connector.



Fig. 15-15 Removing console

3. Pull the socket out from the console and replace the bulb.

g. Bulbs on combination meter

- 1) Standard type
 1. Disconnect the battery ground cable from the battery and move out of the way.
 2. Loosen the two screws attaching the horn button.

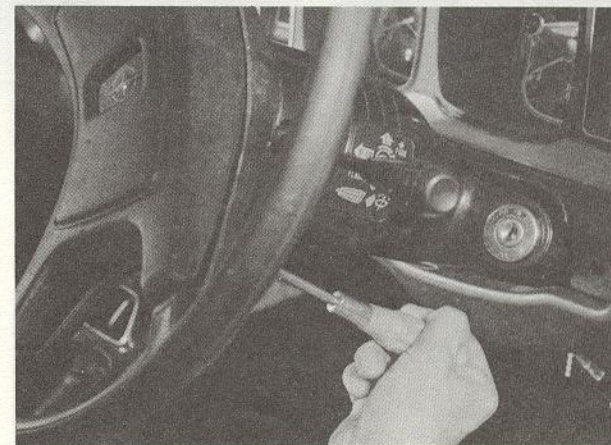


Fig. 15-16 Loosening screws

3. Move the horn button upward and disconnect the wiring.



Fig. 15-17 Removing horn button

4. Loosen the steering wheel attaching nut and remove the steering wheel.

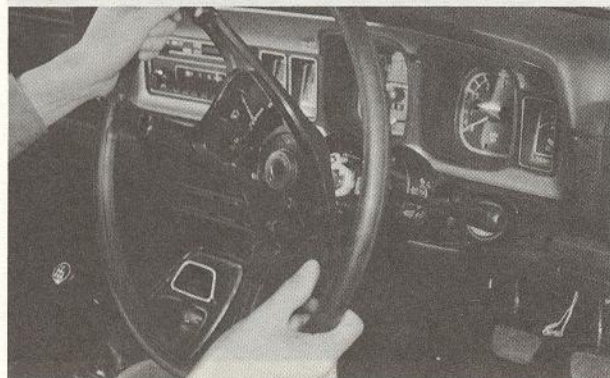


Fig. 15-18 Removing steering wheel

5. Remove the heater control knobs and radio control knobs by pulling the knob.

6. Loosen the radio attaching nuts.



Fig. 15-19 Loosening nuts

7. Reach under the instrument panel and disconnect the speedometer cable by pressing on the flat surface of the plastic connector and pulling the cable away from the head.

8. Remove the three instrument panel attaching screws.

9. Remove the two retaining screws at the top of the panel and pull the panel top away from the dashboard to expose the instrument panel.

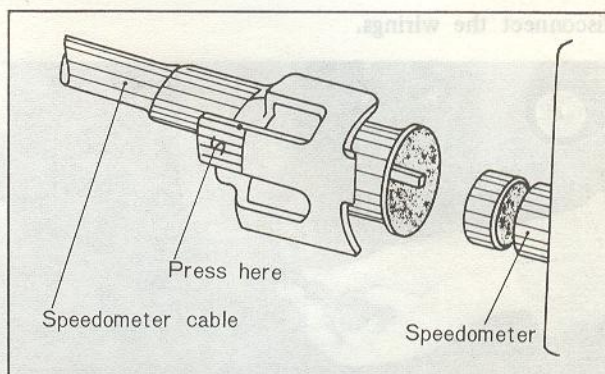


Fig. 15-20 Disconnecting speedometer cable

10. Disconnect the wiring connectors and remove the instrument panel.

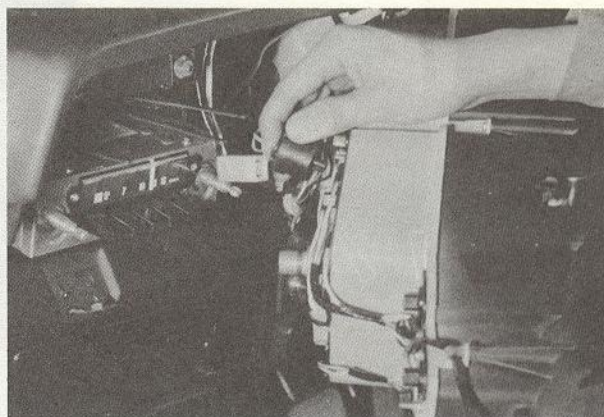


Fig. 15-21 Disconnecting connector

11. Fig. 15-31 identify the bulb in the instrument panel. To remove the bulb, turn it counter clockwise until released, and then lift it out.

2) Cockpit type

1. Pull the center cap out from the steering wheel.

2. Loosen the steering wheel attaching nut and remove the steering wheel.

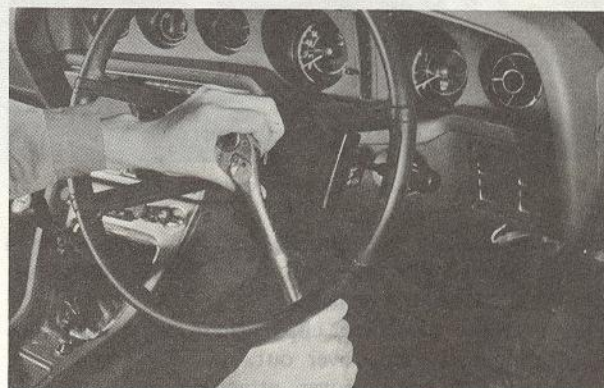


Fig. 15-22 Removing steering wheel

3. Loosen the nut attaching the ventilator knob and move the knob away from the panel.

4. Loosen the screws attaching the column cover and remove the column cover.

5. Loosen the screw attaching the resistor screws and

disconnect the wirings.



Fig. 15-23 Removing ventilator knob

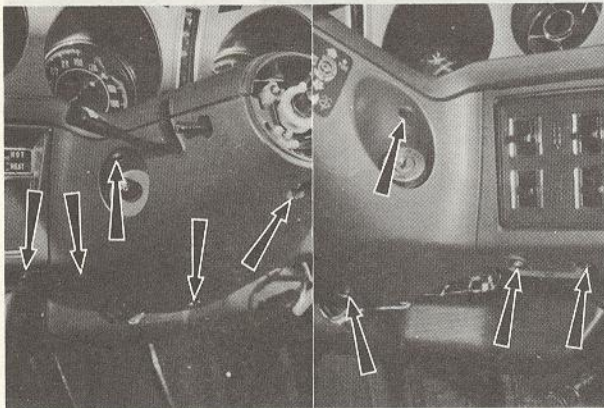


Fig. 15-24 Column cover attaching screw



Fig. 15-25 Removing column cover

6. Loosen but do not remove the two screws shown in the Fig. 15-26 and pull the column cover out from the instrument panel. Note that the attaching clips give a little resistance when pulling column cover out.
7. Loosen the meter cover attaching nuts and pull the cover out from the combination meter.
8. Disconnect the wiring connectors.
9. Reach under the instrument panel and disconnect the speedometer cable by pressing on the flat surface of the plastic connector and pulling the cable away from the head.
10. Loosen nuts attaching the combination meter

and pull the meter top away from the dashboard to expose the instrument panel.



Fig. 15-26 Loosening screws

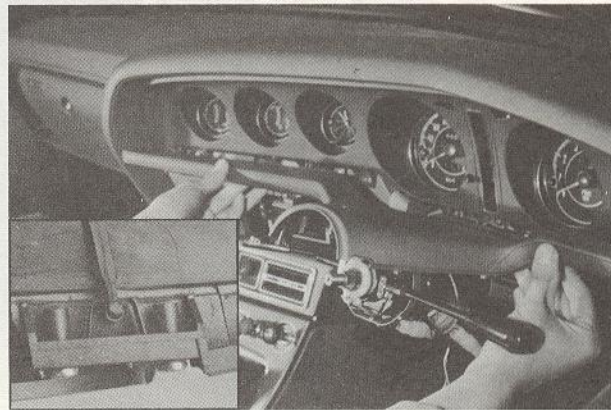


Fig. 15-27 Removing column cover upper

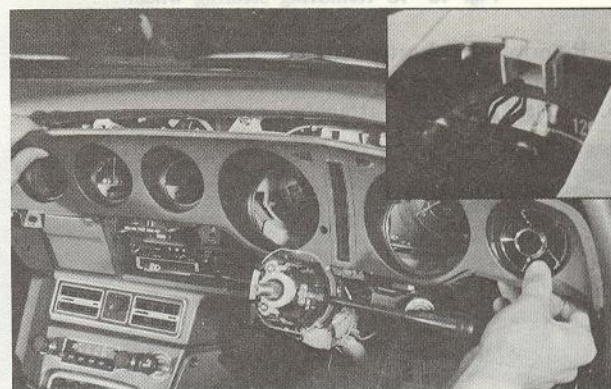


Fig. 15-28 Removing meter cover



Fig. 15-29 Wiring connectors

11. Disconnect the wiring connector and remove the combination meter.



Fig. 15-30 Removing combination meter

15-B-2. Replacing Rear Combination Light Lens

1. Loosen the two nuts attaching the rear end trim.

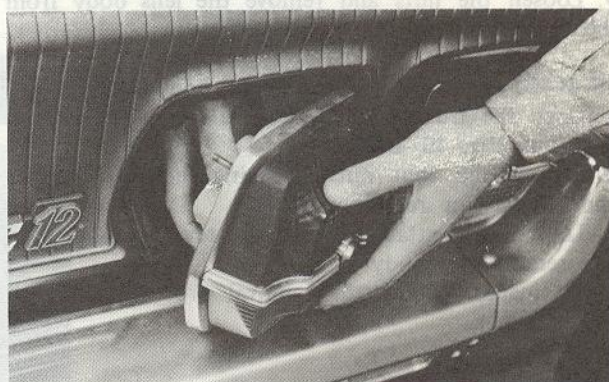


Fig. 15-32 Removing combination light lens

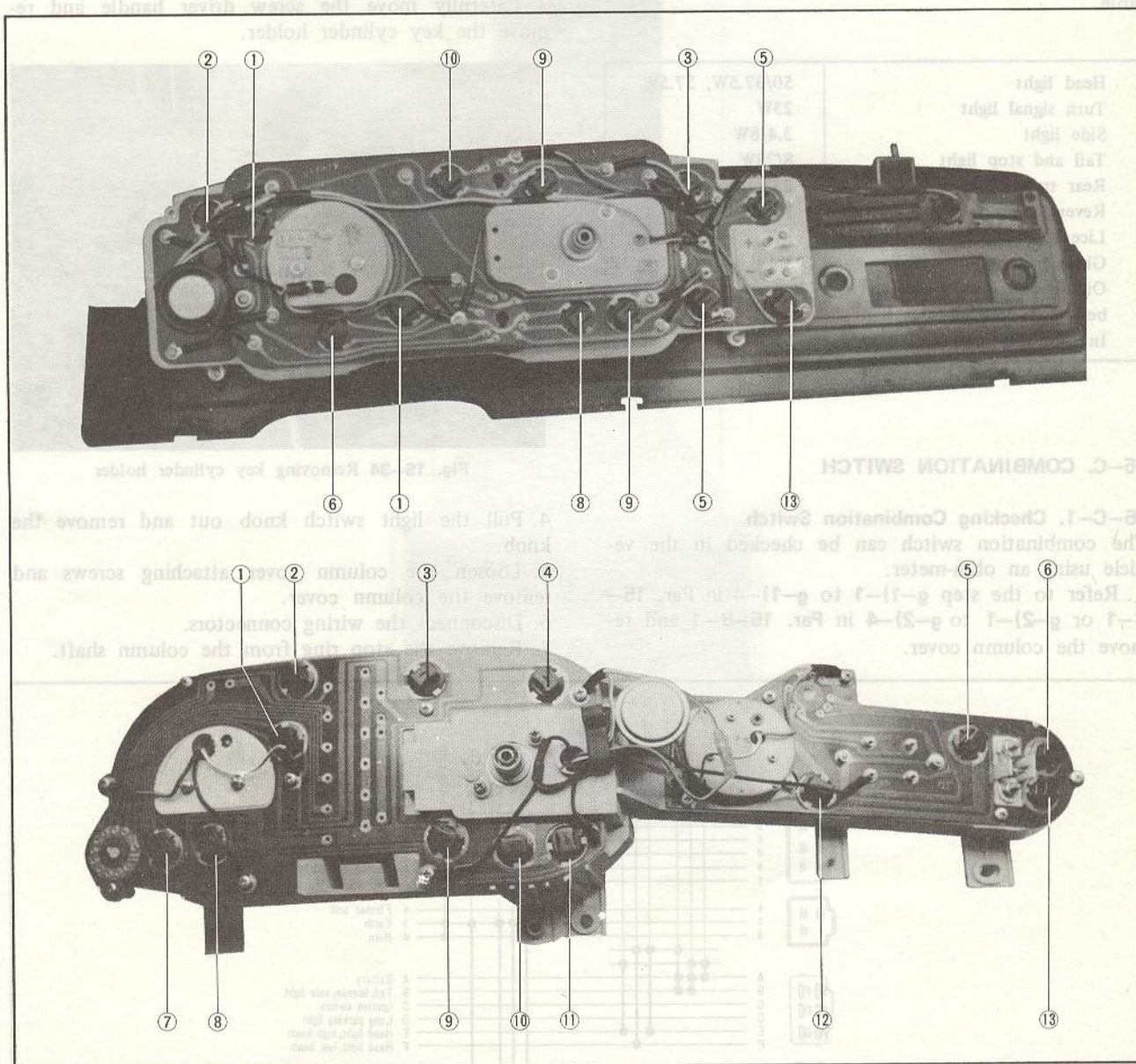


Fig. 15-31 Combination meter

- | | | | |
|-------------------------------|------------------------------|--------------------------------|-----------------------|
| 1. Illumination (Tachometer) | 5. Illumination (Gauge) | 9. Illumination (Speedometer) | 13. Generator warning |
| 2. Turn signal (Right) | 6. Oil pressure warning | 10. High beam | |
| 3. Turn signal (Left) | 7. Illumination (Tachometer) | 11. Illumination (Speedometer) | |
| 4. Illumination (Speedometer) | 8. Brake & parking | 12. Illumination (Clock) | |

2. Pull the set plugs out from the trim and remove the trim.
3. Loosen the nuts and remove the lens body from the rear end panel.

15-B-3. Removing Reverse Light Body

1. Open the trunk lid and remove the rear end trim following Par. 15-B-2.
2. Loosen the four nuts attaching the rear bumper and remove the rear bumper.
3. Loosen the attaching nuts of reverse light body and remove the body.
4. To install, follow the removal procedures in the reverse order.

15-B-4. Bulb Capacity

When replacing the bulb, conform to the following table.

Head light	50/37.5W, 37.5W
Turn signal light	23W
Side light	3.4/8W
Tail and stop light	8/23W
Rear turn signal light	23W
Reverse light	8W
License light	8W
Glove box and step light	3.4W
Oil pressure, fuel level, seat belt, and door warning light	3.4W
Interior light and spot light	5W

15-C. COMBINATION SWITCH

15-C-1. Checking Combination Switch

The combination switch can be checked in the vehicle using an ohm-meter.

1. Refer to the step g-1)-1 to g-1)-4 in Par. 15-B-1 or g-2)-1 to g-2)-4 in Par. 15-B-1 and remove the column cover.

2. Disconnect the connectors from the main wiring harness at the combination switch.

Fig. 15-33 shows the connection of each terminal of the combination switch.

Check the connection of each terminal by using an ohm-meter.

If at any one or more points the meter pointer either does not move or has only a slight movement (high resistance), the entire combination switch assembly must be replaced.

15-C-2. Removing Combination Switch

a. Standard type

1. Refer to the step 1 to 4 in Par. 15-B-1-g-1) and remove the steering wheel.
2. Insert the screw driver blade in slot between column cover and key cylinder holder.
3. Carefully move the screw driver handle and remove the key cylinder holder.



Fig. 15-34 Removing key cylinder holder

4. Pull the light switch knob out and remove the knob.
5. Loosen the column cover attaching screws and remove the column cover.
6. Disconnect the wiring connectors.
7. Remove the stop ring from the column shaft.

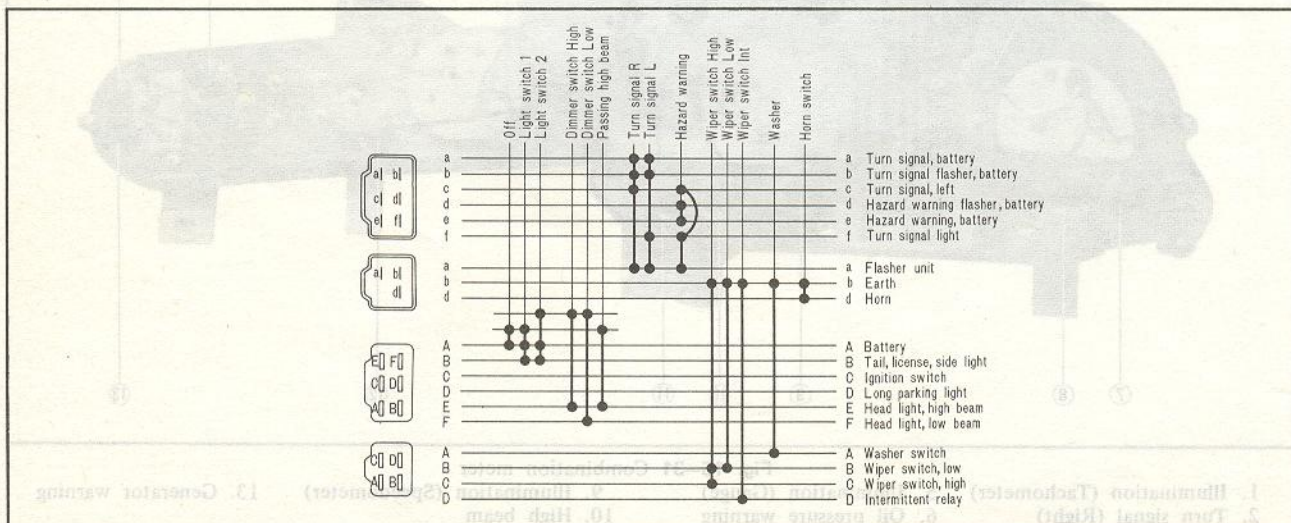


Fig. 15-33 Combination switch connection

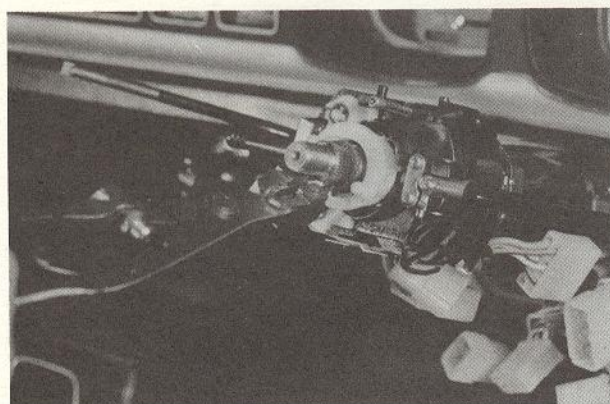


Fig. 15-35 Removing stop ring

8. Loosen the screw attaching the combination switch and remove the combination switch.

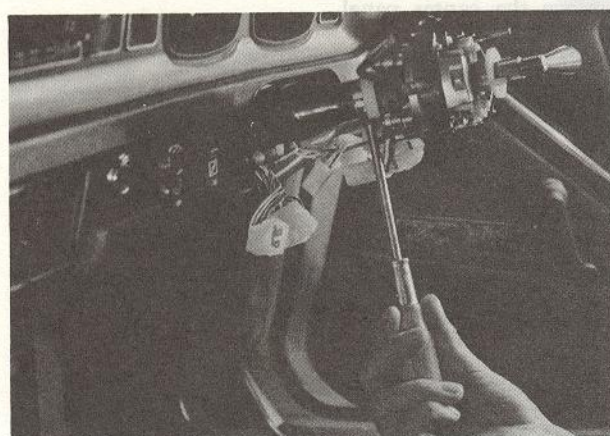


Fig. 15-36 Removing combination switch

b. Cockpit type

1. Refer to the step 1 to 5 in Par. 15-B-1-g-2) and remove the column cover.
2. Disconnect the wiring connectors.
3. Remove the stop ring from the column shaft.
4. Loosen the screw attaching the combination switch and remove the combination switch.

15-C-3. Installing Combination Switch

Follow the removal procedures in the reverse order.

15-D. IGNITION SWITCH & STEERING LOCK

15-D-1. Removing Ignition Switch Contact Housing

1. Reach under the instrument panel and disconnect the wiring connector.
2. Loosen the screw attaching the contact housing to the steering lock body and remove the contact housing.

15-D-2. Checking Ignition Switch Contact Housing

The contact housing can be checked by using an ohm-meter. Fig. 15-38 shows the connection of each terminal of the contact housing. Check the connection of each terminal by using an ohm-meter.

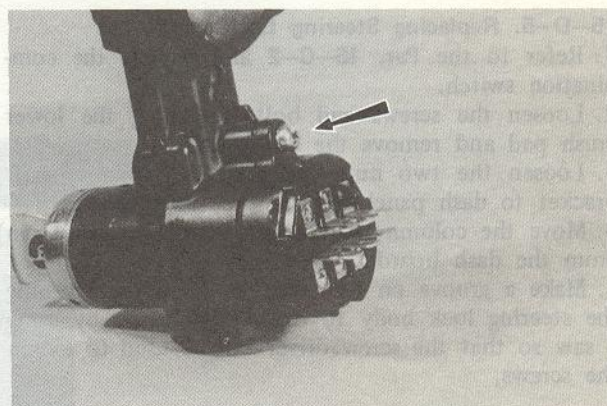


Fig. 15-37 Removing contact housing

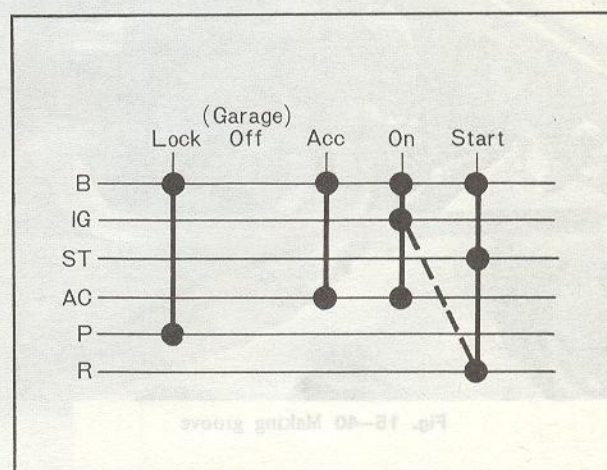


Fig. 15-38 Contact housing connection

15-D-3. Installing Ignition Switch Contact Housing

Follow the removal procedures in the reverse order.

15-D-4. Removing Key Cylinder

1. Refer to the Par. 15-B-1 and remove the column cover.
2. Loosen the key cylinder setting screw.
3. Insert the key into the key cylinder and turn it to "ON" position.
4. Push in the lock button and pulling out the key with key cylinder.

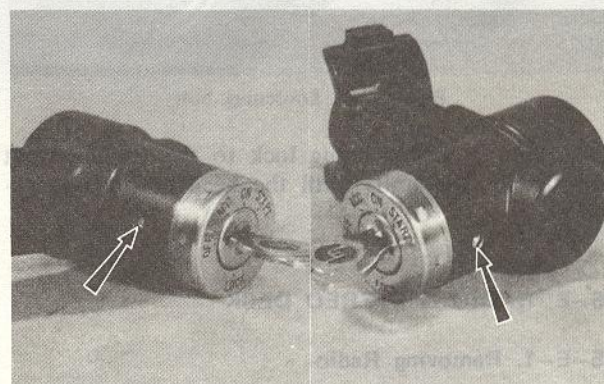


Fig. 15-39 Lock button and set screw

To install, follow the removal procedures in the reverse order.

CLUTCH		Clearance between shift fork and reverse idle gear Wear limit Clearance between shift rod gate and control lever Wear limit Synchronizer ring Clearance between synchronizer ring and side of gear when fitted New Wear limit Lubricant Above -18°C (0°F) Below -18°C (0°F) Oil capacity 4-speed 5-speed	0.5 mm (0.020 in) 0.8 mm (0.031 in) 1.5 mm (0.059 in) 0.8 mm (0.031 in) EP. SAE90 EP. SAE80 1.7 liters (1.8 U.S. quarts) (1.5 Imp. quarts) 2.2 liters (2.3 U.S. quarts) (1.9 Imp. quarts)
Type	Single dry plate, diaphragm spring		
Pressure plate			
Inner diameter	147 mm (5.787 in)		
Outer diameter	217 mm (8.543 in)		
Permissible lateral run-out	0.05 mm (0.0020 in)		
Clutch disc			
Facing			
Inner diameter	150 mm (5.906 in)		
Outer diameter	215 mm (8.465 in)		
Thickness (Single plate)	3.5 mm (0.138 in)		
Lateral run-out of clutch disc			
Limit	1.0 mm (0.039 in)		
Clutch release mechanism	Hydraulic		
Release fork free play	3.0 ~ 4.0 mm (0.12 ~ 0.16 in)		
Clutch pedal free travel (Before push rod contacts with piston)	0.5 ~ 3.0 mm (0.02 ~ 0.12 in)		
Master cylinder bore	15.87 mm (5/8 in)		
Clearance of piston and master cylinder bore			
New	0.032 ~ 0.102 mm (0.0013 ~ 0.0040 in)		
Wear limit	0.15 mm (0.006 in)		
Release cylinder bore	17.46 mm (11/16 in)		
Clearance of piston and release cylinder bore			
New	0.032 ~ 0.102 mm (0.0013 ~ 0.0040 in)		
Wear limit	0.15 mm (0.006 in)		
MANUAL TRANSMISSION		AUTOMATIC TRANSMISSION	
Gear ratio — 4-speed		Model	JATCO 3N71B
First	3.683	Gear ratio	
Second	2.263	First	2.458
Third	1.397	Second	1.458
Fourth	1.000	Third	1.000
Reverse	3.692	Reverse	2.181
Gear ratio — 5-speed		Torque converter	
First	3.683	Type	Symmetrical 3-element 1-stage 2-phase torque converter coupling
Second	2.263	Stall torque ratio	2.0 : 1
Third	1.397	Fluid type	M2C33F
Fourth	1.000	Fluid capacity	6.2 liters (6.6 U.S. quarts) (5.5 Imp. quarts)
Fifth	0.862	Oil pump	
Reverse	3.692	Side play of inner gear and outer gear	
Main shaft		New	0.02 ~ 0.04 mm (0.001 ~ 0.002 in)
Permissible run-out of main shaft	0.03 mm (0.0012 in)	Limit	0.08 mm (0.003 in)
Clearance between main shaft and gear bush		Clearance between outer gear and crest	
Wear limit	0.15 mm (0.006 in)	New	0.14 ~ 0.21 mm (0.006 ~ 0.008 in)
Reverse idle gear		Limit	0.25 mm (0.010 in)
Clearance between reverse idle gear bush and shaft		Clearance between outer gear and housing	
Wear limit	0.15 mm (0.006 in)	New	0.05 ~ 0.20 mm (0.002 ~ 0.008 in)
Shift fork and rod		Limit	0.25 mm (0.010 in)
Clearance between shift fork and clutch sleeve		Side clearance between oil seal ring and groove on oil pump cover	0.04 ~ 0.16 mm (0.002 ~ 0.006 in)
Wear limit	0.5 mm (0.020 in)		

Front clutch	
Number of drive plates or driven plates	3
Thickness of drive plate	1.6 mm (0.063 in)
Total clearance measured between retaining plate and stopper	1.0 ~ 1.5 mm (0.039 ~ 0.059 in)
End play of front clutch drum	0.5 ~ 0.8 mm (0.020 ~ 0.031 in)
Governor	
Type	38
Drive plate run-out	
New	Less than 0.3 mm (0.012 in)
Limit	0.5 mm (0.020 in)
Rear clutch	
Number of drive plates or driven plates	4
Thickness of drive plate	1.6 mm (0.063 in)
Total clearance measured between retaining plate and stopper	1.0 ~ 1.5 mm (0.039 ~ 0.059 in)
Low and reverse brake	
Number of friction plates or steel plates	4
Thickness of friction plate	2.0 mm (0.079 in)
Total clearance measured between retaining plate and stopper	0.8 ~ 1.05 mm (0.031 ~ 0.041 in)
Gear assembly	
Total end play	0.25 ~ 0.50 mm (0.010 ~ 0.020 in)
Planetary gear side play	
New	0.2 ~ 0.7 mm (0.008 ~ 0.028 in)
Limit	0.8 mm (0.031 in)
Engine stall speed	
In break-in period	2200 ~ 2450 rpm
After break-in period	2250 ~ 2500 rpm

Shift speed

Throttle condition (Manifold vacuum)		
Kickdown (0 ~ 50 mm-Hg) (0 ~ 1.97 in-Hg)	D ₁ → D ₂	57 ~ 77 km/h (35 ~ 48 mph)
	D ₂ → D ₃	100 ~ 128 km/h (62 ~ 80 mph)
	D ₃ → D ₂	85 ~ 109 km/h (53 ~ 68 mph)
	D ₂ → D ₁	38 ~ 56 km/h (24 ~ 35 mph)
Half throttle (200 mm-Hg) (7.87 in-Hg)	D ₁ → D ₂	14 ~ 31 km/h (9 ~ 19 mph)
	D ₂ → D ₃	30 ~ 66 km/h (19 ~ 41 mph)
Full and minimum throttle	I ₂ → I ₁	44 ~ 57 km/h (27 ~ 35 mph)

Line pressure

Manual range	Engine idling condition	Engine stall condition
R	4.0 ~ 7.0 kg/cm ² (57 ~ 100 lb/in ²)	15.5 ~ 19.0 kg/cm ² (220 ~ 270 lb/in ²)
D	3.0 ~ 4.0 kg/cm ² (43 ~ 57 lb/in ²)	9.5 ~ 11.0 kg/cm ² (135 ~ 156 lb/in ²)
2	8.0 ~ 12.0 kg/cm ² (114 ~ 170 lb/in ²)	10.0 ~ 12.0 kg/cm ² (142 ~ 171 lb/in ²)
1	3.0 ~ 4.0 kg/cm ² (43 ~ 57 lb/in ²)	9.5 ~ 11.0 kg/cm ² (135 ~ 156 lb/in ²)

Governor pressure

Driving speed		Output shaft speed	Governor pressure	
km/h	mph	rpm	kg/cm ²	lb/in ²
30		950 ~ 1065	0.8 ~ 1.3	11 ~ 18
55		1785 ~ 1900	1.5 ~ 2.2	21 ~ 31
85		2765 ~ 2910	2.7 ~ 3.6	38 ~ 51
	20	1030 ~ 1130	0.8 ~ 1.3	11 ~ 18
	35	1830 ~ 1960	1.5 ~ 2.2	21 ~ 31
	55	2900 ~ 3050	3.0 ~ 3.9	43 ~ 55

PROPELLER SHAFT

Max. permissible run-out	0.4 mm (0.016 in)
Max. permissible unbalance at 4000 rpm	
At front	20 cm-gr (0.28 in-oz)
At center	12.5 cm-gr (0.17 in-oz)
At rear	20 cm-gr (0.28 in-oz)
Universal joint	
Spider diameter	
New	14.72 ^{-0.010} _{-0.025} mm
	(0.5795 ^{-0.0004} _{-0.0010} in)
War limit	14.595 mm (0.5746 in)

REAR AXLE

Type	Semi-floating, hypoid gears
Reduction ratio	3.900
Number of gear teeth	39 : 10
Backlash of ring gear and pinion	0.17 ~ 0.19 mm (0.0067 ~ 0.0075 in)
Max. allowable variation of backlash	0.07 mm (0.0028 in)
Pinion bearing preload (Without pinion oil seal)	9 ~ 14 cm-kg (7.8 ~ 12.2 in-lb)
Backlash of side gear and pinion gear	0 ~ 0.10 mm (0 ~ 0.004 in)
Rear wheel bearing end play	0 ~ 0.10 mm (0 ~ 0.004 in)

<p>Lubricant Above -18 C (0°F) Below -18 C (0°F) Oil capacity</p>	<p>HP. SAE90 HP. SAE80 1.2 liters (1.3 U.S. quarts) (1.1 Imp. quarts)</p>	<p>Front disc brake Brake disc outer diameter Thickness of brake disc New Limit Max. allowable lateral run-out of brake disc Thickness of lining and shoe New Limit Wheel cylinder bore Rear drum brake Type Drum diameter New Max. permissible diameter Thickness of lining New Wear limit Wheel cylinder bore Clearance between piston and bore New Wear limit Parking brake Type Operates at</p>	<p>230 mm (9.055 in) 12 mm (0.4724 in) 11 mm (0.4331 in) 0.1 mm (0.0039 in) 14 mm (0.551 in) 7 mm (0.276 in) 53.97 mm (2.1248 in) Leading-and-trailing shoes 228.6 mm (9.000 in) 229.6 mm (9.0395 in) 5.5 mm (0.217 in) 1.0 mm (0.039 in) 17.56 mm (11/16 in) 0.032 ~ 0.102 mm (0.0013 ~ 0.0040 in) 0.15 mm (0.006 in) Mechanical Rear wheels</p>
<p>STEERING</p>			
<p>Type Reduction ratio Maximum wheel angle on full lock wheel on inside of curve Wheel on outside of curve Free play of steering wheel (Turning direction) New Limit Backlash between rack and sector gear Worm bearing preload Without sector shaft and column bush With sector shaft and column bush Clearance between sector shaft and bush New Wear limit End clearance of sector shaft Lubricant End play of center link and tie rod ball studs New Wear limit Steering geometry King pin inclination Camber Maximum permissible difference in camber between sides Camber offset Caster Maximum permissible difference in caster between sides Caster trail Toe-in</p>	<p>Recirculating ball nut 18 ~ 20 : 1 39° 34' 30° 35' 5 ~ 20 mm (0.2 ~ 0.8 in) 30 mm (1.2 in) 0 mm 1 ~ 4 cm-kg (0.9 ~ 3.5 in-lb) 9 ~ 15 cm-kg (7.8 ~ 13.0 in-lb) 0.007 ~ 0.049 mm (0.0003 ~ 0.0019 in) 0.20 mm (0.008 in) 0 ~ 0.1 mm (0 ~ 0.004 in) EP. SAE90 0 ~ 0.25 mm (0 ~ 0.010 in) 1.0 mm (0.039 in) 9° 42' 1° 03' ± 30' 30' 46.5 mm (1.83 in) 2° 02' ± 45' 40' 9.7 mm (0.38 in) 0 ~ 6 mm (0 ~ 0.24 in)</p>	<p>WHEELS AND TIRES</p>	
<p>BRAKES</p>		<p>Wheel disc Tire Inflation pressure Less than 100 km/h (60 mph) More than 100 km/h (60 mph)</p>	<p>5½J x 13 WDC 175 SR 13 175 HR 13 195/70 SR 13 195/70 HR 13 1.7 kg/cm² (24 psi) 2.0 kg/cm² (28 psi)</p>
<p>Brake pedal free travel (Before power brake piston operates) Master cylinder Type Bore Clearance between piston and bore New Wear limit</p>	<p>7 ~ 9 mm (0.28 ~ 0.35 in) Dual (Tandem) 22.22 mm (7/8 in) 0.040 ~ 0.125 mm (0.0016 ~ 0.0049 in) 0.15 mm (0.006 in)</p>	<p>FRONT SUSPENSION — SEDAN</p>	
		<p>Type Coil spring Spring constant Wire diameter Coil diameter Free length Fitting length Fitting load</p>	<p>Strut, coil spring 1.81 kg/mm (101 lb/in) 11.8 mm (0.46 in) — 381 mm (15.00 in) 203 mm (7.99 in) 299 ~ 323 kg (659 ~ 712 lb)</p>
		<p>FRONT SUSPENSION — HARDTOP</p>	
		<p>Type</p>	<p>Strut, coil spring</p>

Coil spring Spring constant Wire diameter Coil diameter Free length Fitting length Fitting load		2.01 kg/mm (113 lb/in) 11.5 mm (0.45 in) — 362 mm (14.25 in) 203 mm (7.99 in) 295 ~ 319 kg (650 ~ 703 lb)		DIMENSIONS — SEDAN	
REAR SUSPENSION — SEDAN		Overall length Overall width Overall height Wheelbase Tread Front Rear Minimum road clearance Minimum turning radius		4,240 mm (167 in) 1,660 mm (65 in) 1,410 mm (56 in) 2,510 mm (99 in) 1,380 mm (54 in) 1,370 mm (54 in) 175 mm (7 in) 5 m (16 ft 5 in)	
REAR SUSPENSION — SEDAN Type Leaf spring Spring constant Number of leaves Length Width Thickness		Leaf spring 2.1 kg/mm (118 lb/in) 4 1150 mm (45.28 in) 50 mm (1.97 in) 6 mm (0.24 in)		DIMENSIONS — HARDTOP	
REAR SUSPENSION — HARDTOP		Overall length Overall width Overall height Wheelbase Tread Front Rear Minimum road clearance Minimum turning radius		4,320 mm (170 in) 1,665 mm (66 in) 1,380 mm (54 in) 2,510 mm (99 in) 1,380 mm (54 in) 1,370 mm (54 in) 175 mm (7 in) 5 m (16 ft 5 in)	
REAR SUSPENSION — HARDTOP Type Leaf spring Spring constant Number of leaves Length Width Thickness No. 1 & No. 4 No. 2 & No. 3		Leaf spring 2.3 kg/mm (129 lb/in) 4 1150 mm (45.28 in) 50 mm (1.97 in) 6 mm (0.24 in) 7 mm (0.28 in)		TIGHTENING TORQUE	
		m-kg		ft-lb	
CLUTCH Flywheel bolt Clutch cover		40.0 ~ 50.0 18 ~ 2.7		289 ~ 362 13 ~ 20	
MANUAL TRANSMISSION Main shaft lock nut Shift lock spring caps Plug for interlock pin hole Control lever to control rod Shift fork set bolts Reverse lock spring cap Under cover to case Reverse lamp switch		20.0 ~ 28.0 4.0 ~ 5.5 1.0 ~ 1.5 2.8 ~ 3.4 0.9 ~ 1.3 4.0 ~ 5.5 0.6 ~ 0.9 2.5 ~ 3.5		145 ~ 203 29 ~ 40 7 ~ 11 20 ~ 25 7 ~ 9 29 ~ 40 4 ~ 7 18 ~ 25	
AUTOMATIC TRANSMISSION Drive plate to crankshaft Drive plate to torque converter Converter housing to engine Converter housing to transmission case Extension housing to transmission case Oil pan		14.0 ~ 16.0 4.0 ~ 5.0 4.0 ~ 5.0 4.5 ~ 5.5 2.0 ~ 2.5 0.5 ~ 0.7		101 ~ 116 29 ~ 36 29 ~ 36 33 ~ 40 14 ~ 18 3.6 ~ 5.1	
		m-kg		ft-lb	
		1.2 ~ 1.5 3.0 ~ 4.0 0.5 ~ 0.7 1.3 ~ 1.8 0.55 ~ 0.75 0.25 ~ 0.35 0.25 ~ 0.35 0.5 ~ 0.7 0.25 ~ 0.35 0.5 ~ 0.7 0.6 ~ 0.8 0.5 ~ 0.7 3.0 ~ 4.0 2.4 ~ 3.6 0.5 ~ 1.0 0.8 ~ 1.1 1.2 ~ 1.8		9 ~ 11 22 ~ 29 3.6 ~ 5.1 9 ~ 13 4.0 ~ 5.4 1.8 ~ 2.5 1.8 ~ 2.5 3.6 ~ 5.1 1.8 ~ 2.5 3.6 ~ 5.1 4.3 ~ 5.8 3.6 ~ 5.1 22 ~ 29 17 ~ 26 3.6 ~ 7.2 5.8 ~ 8.0 9 ~ 13	

	m-kg	ft-lb		m-kg	ft-lb
PROPELLER SHAFT			Suspension arm to cross member	4.0 ~ 5.5	29 ~ 40
Yoke to rear axle companion flange	3.5 ~ 3.8	25 ~ 27	Knuckle arm to shock absorber	6.4 ~ 9.5	46 ~ 69
Yoke to front propeller shaft	16.0 ~ 18.0	116 ~ 130	Suspension arm ball joint to knuckle arm	6.0 ~ 7.0	43 ~ 51
Center bearing support	2.0 ~ 2.9	14 ~ 21	Mounting block to body	2.3 ~ 3.0	17 ~ 22
REAR AXLE			Front shock absorber		
Ring gear	5.5 ~ 6.5	40 ~ 47	Piston rod to mounting block	6.5 ~ 8.2	47 ~ 59
Differential side bearing caps	3.2 ~ 4.7	23 ~ 34	Seal cap nut	5.0 ~ 6.0	36 ~ 43
Companion flange to pinion	10.0 ~ 20.0	72 ~ 145	Piston rod nut	1.5	10
Rear axle to housing	1.6 ~ 2.3	12 ~ 17	Base valve nut	0.15	1.0
STEERING			Cross member	4.4 ~ 6.2	31 ~ 45
Steering wheel	3.0 ~ 4.0	22 ~ 29	REAR SUSPENSION		
Steering gear housing to frame	4.4 ~ 5.5	32 ~ 40	Torque rod to body	10.0 ~ 12.0	72 ~ 87
Pitman arm to sector shaft	15.0 ~ 18.0	108 ~ 130	Torque rod to rear axle housing	10.0 ~ 12.0	72 ~ 87
Idler arm bracket to frame	4.4 ~ 5.5	32 ~ 40	Spring pin	3.2 ~ 4.7	23 ~ 34
Idler arm to bracket	4.4 ~ 5.5	32 ~ 40	Shackle pin	3.2 ~ 4.7	23 ~ 34
Idler arm to center link	2.5 ~ 3.5	18 ~ 25	"U" bolts	3.8 ~ 4.6	27 ~ 33
Pitman arm to center link	2.5 ~ 3.5	18 ~ 25	UNLESS OTHERWISE SPECIFIED		
Tie-rod to center link	2.5 ~ 3.5	18 ~ 25	6T		
Tie-rod to knuckle arm	2.5 ~ 3.5	18 ~ 25	6 mm bolt/nut	0.7 ~ 1.0	5 ~ 7
Tie-rod lock nut	7.0 ~ 8.0	51 ~ 58	8 mm bolt/nut	1.6 ~ 2.3	12 ~ 17
WHEELS			10 mm bolt/nut	3.2 ~ 4.7	23 ~ 34
Wheel bolts	9.0 ~ 10.0	65 ~ 72	12 mm bolt/nut	5.6 ~ 8.2	41 ~ 59
FRONT SUSPENSION			14 mm bolt/nut	7.7 ~ 10.5	56 ~ 76
Stabilizer support	3.8 ~ 4.7	27 ~ 34	8T		
Stabilizer bar to suspension arm	8.1 ~ 9.8	59 ~ 71	6 mm bolt/nut	0.8 ~ 1.2	6 ~ 9
			8 mm bolt/nut	1.8 ~ 2.7	13 ~ 20
			10 mm bolt/nut	3.7 ~ 5.5	27 ~ 40
			12 mm bolt/nut	6.4 ~ 9.5	46 ~ 69
			14 mm bolt/nut	10.4 ~ 14.0	75 ~ 101

Oil pan	0.2 ~ 0.7	3.6 ~ 2.1	Oil pan	0.2 ~ 0.7	3.6 ~ 2.1
Extension housing to transmission case	2.0 ~ 2.2	14 ~ 18	Extension housing to transmission case	2.0 ~ 2.2	14 ~ 18
Converter housing to engine	4.2 ~ 5.2	33 ~ 40	Converter housing to engine	4.2 ~ 5.2	33 ~ 40
Converter housing to converter	4.0 ~ 5.0	29 ~ 36	Converter housing to converter	4.0 ~ 5.0	29 ~ 36
Drive plate to torque converter	4.0 ~ 5.0	29 ~ 36	Drive plate to torque converter	4.0 ~ 5.0	29 ~ 36
Drive plate to crankshaft	14.0 ~ 16.0	101 ~ 116	Drive plate to crankshaft	14.0 ~ 16.0	101 ~ 116
MISSION			MISSION		
Reverse lamp switch	2.2 ~ 3.2	18 ~ 23	Reverse lamp switch	2.2 ~ 3.2	18 ~ 23
Under cover to case	0.8 ~ 0.9	4 ~ 7	Under cover to case	0.8 ~ 0.9	4 ~ 7
Reverse lock spring cap	4.0 ~ 5.2	29 ~ 40	Reverse lock spring cap	4.0 ~ 5.2	29 ~ 40
Shift fork set bolts	0.9 ~ 1.9	7 ~ 9	Shift fork set bolts	0.9 ~ 1.9	7 ~ 9
rod			rod		
Control lever to control	2.8 ~ 3.4	20 ~ 25	Control lever to control	2.8 ~ 3.4	20 ~ 25
Plug for interlock pin hole	1.0 ~ 1.2	7 ~ 11	Plug for interlock pin hole	1.0 ~ 1.2	7 ~ 11
Shift lock spring caps	4.0 ~ 5.2	29 ~ 40	Shift lock spring caps	4.0 ~ 5.2	29 ~ 40
Main shaft lock nut	20.0 ~ 28.0	145 ~ 208	Main shaft lock nut	20.0 ~ 28.0	145 ~ 208
MANUAL TRANSMISSION			MANUAL TRANSMISSION		
Clutch cover	18 ~ 27	13 ~ 20	Clutch cover	18 ~ 27	13 ~ 20
Flywheel bolt	40.0 ~ 50.0	289 ~ 362	Flywheel bolt	40.0 ~ 50.0	289 ~ 362

TRANSMISSION				mm	inch
Type	3N 71B		Free play of steering wheel (Turning direction) New Limit	5 ~ 20 30	0.2 ~ 0.8 1.2
Gear ratio			Backlash between rack and sector gear	0 ~ 0.1	0 ~ 0.004
First	2.458		Worm bearing preload		
Second	1.458		Without sector shaft and column bush	1 ~ 4	0.9 ~ 3.5
Third	1.000		With sector shaft and column bush	9 ~ 15	7.8 ~ 13.0
Reverse	2.182		End clearance of adjusting screw and sector shaft	0 ~ 0.1	0 ~ 0.004
PROPELLER SHAFT			Lubricant	SAE 90	
Length	1253	49.331	End play of ball studs of center link and tie rods		
Outer diameter	50.8	2.000	New	0.25	0.010
Permissible run-out	0.4	0.016	Wear limit	1.0	0.040
Permissible unbalance at 4,000 rpm			Steering geometry		
At front	20 gr-cm	0.28 in-oz	King pin inclination	9° 42' ± 30'	
At center	12.5 gr-cm	0.17 in-oz	Camber	1° 03' ± 30'	
At rear	20 gr-cm	0.28 in-oz	Max. permissible difference in camber between sides	30'	
Spine-fit of propeller shaft (Turning direction)			Camber offset	46.5	1.8
Wear limit	0.3	0.012	Caster	2° 02' ± 45'	
Universal joint			Max. permissible difference in caster between sides	40'	
Spider diameter			Caster trail	9.7	0.38
New	14.72 - 0.010 - 0.025	0.5795 - 0.0004 - 0.0010	Toe-in	0 ~ 6	0 ~ 0.24
Wear limit	0.20	0.008			
REAR AXLE			BRAKES		
Type	Semi-floating hypoid gears		Brake pedal free travel	7.0 ~ 9.0	0.28 ~ 0.35
Reduction ratio	3.900		Master cylinder		
Number of gear teeth	39/10		Type	Dual (Tandem)	
Backlash of ring gear and pinion	0.17 ~ 0.19 ± 0.07	0.0067 ~ 0.0075 ± 0.003	Bore	22.22	7/8
Mounting distance (Distance between rear end of pinion and center of ring gear)	90 ± 0.025	3.5434 ± 0.0010	Clearance between piston and bore		
Pinion bearing preload (Without pinion oil seal)	9 ~ 14 kg	7.8 ~ 12.2	New	0.040 ~ 0.125	0.0016 ~ 0.0049
Backlash of side gear and pinion gear	Less than 0.10	Less than 0.004	Wear limit	0.15	0.006
Rear wheel bearing end play	0 ~ 0.1	0 ~ 0.004	Front disk brake		
Lubricant			Brake disk outer diameter	230	9.055
Above - 18°C (0°F)	HP SAE 90		Thickness of brake disk		
Below - 18°C (0°F)	HP SAE 80		New	12	0.4724
Oil capacity	1.2 liters	2.5 US. pints, 2.1 Imp. pints	Limit	11	0.4331
			Max. allowable lateral run-put of brake disk	0.10	0.0039
			Lining material	F50	
			Thickness of lining and Shoe	14 ± 0.25	0.5511 ± 0.00 0.0098
			Wheel cylinder bore	53.97	2.1248
STEERING			Rear drum brake		
Type	Recirculating ball nut		Type	Drum, leading and trailing	
Reduction ratio	18 ~ 20 : 1		Drum diameter		
Max. wheel angle on full lock			New	228.6	9.000
Wheel on inside of curve	39° 34'		Regrinding limit	1.0	0.0394
Wheel on outside of curve	30° 35'		Thickness of lining		
Minimum turning radius	4.9 m	16' 07"	New	5.5 + 0.25 - 0.05	0.22 + 0.0098 - 0.0019

		mm	inch	FRONT SUSPENSION	
Wheel cylinder bore		17.46	11/16	Type Strut coil spring	mm inch
Clearance between piston and bore					
New		17.401 ~ 17.428	0.6851 ~ 0.6862	Coil spring	
Wear limit		0.15	0.006	Spring constant	1.81 kg/mm 101 lb/in
Parking brake :				Wire diameter	11.8 0.46
Type		Mechanical		Coil diameter	128.8 ⁺¹ ₋₂ 5.07 ^{+0.04} _{-0.08}
Operates at		Rear wheels		Free length	381 15
				Fitting length	203 7.99
				Fitting load :	
				1 dot	299 ~ 307 kg 659 ~ 677 lb
				2 dots	307 ~ 315 kg 677 ~ 694 lb
				3 dots	315 ~ 323 kg 694 ~ 712 lb
WHEELS AND TIRES				REAR SUSPENSION	
Wheel disk :				Type	Leaf spring
Front		5½J x 13 WDC		Leaf spring	
Rear		5½J x 13 WDC		Spring constant	2.1 ± 0.21 kg/mm 118 ± 11.8 lb/in
Tire :				Number of leaves	4
Front		175 SR 13		Length	1150 ± 4 45.28 ± 0.16
		175 HR 13		Width	50 1.97
Rear		195/70 SR 13		Thickness	
		195/70 HR 13		Shock absorber	Gas sealed
Tube :				WEIGHTS AND DIMENSIONS	
Front		195/70 SR 13		Overall length	4240 167"
		175 SR 13		Overall width	1660 65"
Rear		195/70 HR 13		Overall height	1410 56"
		175 HR 13		Wheel base	2510 99"
Inflation pressure :				Tread :	
Front More than 100 km/h (60 miles)		2.0 kg/cm ²	28 lb/in ²	Front	1380 54"
Less than 100 km/h (60 miles)		1.7 kg/cm ²	24 lb/in ²	Rear	1370 54"
Rear More than 100km/h (60 miles)		2.0 kg/cm ²	28 lb/in ²	Minimum road clearance	175 7"
Less than 100km/h (60 miles)		1.7 kg/cm ²	24 lb/in ²	Minimum turning clearance	4.9 m 16' 08"

Torque converter :

Type Symmetrical 3-element 1-stage 2-phase torque converter coupling
 Stall torque ratio 2.0 : 1

Transmission

Type Three-speed forward and one-speed reverse with planetary gear train
 Control elements Multi-disc clutch 2
 Band brake 1
 Multi-disc brake 1
 One-way clutch 1

Gear shift positions

"P" (Parking range) The transmission is placed in neutral. The output shaft is fixed. The engine can be started.
 "R" (Reverse range) Backward running
 "N" (Neutral range) The transmission is in neutral. The engine can be started.
 "D" (Drive range) Up or downshift automatically to and from 1st, 2nd, and Top speed
 "2" (Second range) Fixed at 2nd speed
 "1" (Low range) Fixed at low speed or downshift from 2nd speed
 Speed selecting control Floor shift

Hydraulic control system : Controlled by detecting the negative pressure of intake manifold and the revolution speed of output shaft.

Lubrication system :	Forced lubrication by an oil pump
Cooling system :	Water-cooled by a circulation type auxiliary cooler (located at the radiator)
Kick-down switch :	Beginning of operation in between 7/8 ~ 15/16 of full throttle
Engine idling speed :	
Engine idling speed	700 rpm
Required range	“D”

Note : The engine idling speed for the vehicle with air conditioner should be adjusted 50 rpm higher than those mentioned above.

Engine stall speed :	
Before braking in	2,200 ~ 2,450 rpm
After breaking in	2,250 ~ 2,500 rpm

Shift speed :

km/h (mile/h)

Throttle condition (Manifold vacuum)	Gear shift	RX-4 (Luce rotary)
Kick-down (0 ~ 100 mm-Hg)	D1 → D2	57 ~ 77 (35 ~ 48)
	D2 → D3	100 ~ 128 (62 ~ 80)
	D3 → D2	85 ~ 109 (53 ~ 68)
	D2 → D1	38 ~ 56 (23 ~ 35)
Half throttle (190 ~ 210 mm-Hg)	D1 → D2	14 ~ 31 (8 ~ 19)
	D2 → D3	30 ~ 66 (19 ~ 41)
Full & Minimum throttle	1 2 → 1 1	44 ~ 57 (27 ~ 36)

Oil Pump :

Type	Internally intermeshing involute gear pump
Number of pump	1
Oil	Automatic transmission fluid “DEXRON TYPE”
Capacity	5.5 liter (11.6 U.S. pints, 9.7 Imp. pints, 5.8 U.S. quarts) About 4.0 liters (8.5 U.S. pints, 7.0 Imp. pints, 4.2 U.S. quarts)

Side play of inner gear or outer gear	0.02 ~ 0.04 mm (0.001 ~ 0.002 in)
Limit of side play	0.08 mm (0.003 in)
Clearance between outer gear and crest	0.14 ~ 0.21 mm (0.006 ~ 0.008 in)
Limit of above clearance	0.25 mm (0.010 in)
Clearance between outer gear and housing	0.05 ~ 0.20 mm (0.002 ~ 0.008 in)
Limit of above clearance	0.25 mm (0.010 in)
Side clearance between oil seal ring and groove on the oil pump cover and the oil distributor	0.04 ~ 0.16 mm (0.002 ~ 0.006 in)

Front clutch :

Number of drive plate or driven plate	3
Thickness of drive plate	1.60 mm (0.063 in)
Total clearance measured between retaining plate and stopper	1.00 ~ 1.50 mm (0.039 ~ 0.059 in)
Retaining plate available to adjust the above clearance	10.6 mm (0.417 in), 10.8 mm (0.425 in), 11.0 mm (0.433 in), 11.2 mm (0.441 in), 11.4 mm (0.449 in), 11.6 mm (0.457 in)
End play of front clutch drum	0.50 ~ 0.80 mm (0.020 ~ 0.032 in)
Front clutch thrust washer available to adjust above play	1.5 mm (0.059 in), 1.7 mm (0.067 in), 1.9 mm (0.075 in), 2.1 mm (0.083 in), 2.3 mm (0.091 in), 2.5 mm (0.098 in) 2.7 mm (0.106 in)

Line pressure :

kg/cm² (lb/in²)

Manual range	Engine idling condition	Engine stall condition
"R"	4.0 ~ 7.0 (57 ~ 100)	15.5 ~ 19.0 (220 ~ 270)
"D"	3.0 ~ 4.0 (43 ~ 57)	9.5 ~ 11.0 (135 ~ 156)
"2"	8.0 ~ 12.0 (114 ~ 170)	10.0 ~ 12.0 (142 ~ 170)
"1"	3.0 ~ 4.0 (43 ~ 57)	9.5 ~ 11.0 (135 ~ 156)

Governor pressure :

Model	Driving speed		Out-put shaft speed rpm	Standard governor pressure	
	km/h	mile/h		kg/cm ²	lb/in ²
RX-4 (Luce rotary)	30		950 ~ 1,065	0.8 ~ 1.3	11 ~ 18
	55		1,785 ~ 1,900	1.5 ~ 2.2	21 ~ 31
	85		2,765 ~ 2,910	2.7 ~ 3.6	38 ~ 51
		20	1,030 ~ 1,130	0.8 ~ 1.3	11 ~ 18
		35	1,830 ~ 1,960	1.5 ~ 2.2	21 ~ 31
		55	2,900 ~ 3,050	3.0 ~ 3.9	43 ~ 55

Governor :

- Type 38
- Drive plate runout Less than 0.30 mm (0.012 in)
- Limit of above runout 0.50 mm (0.020 in)

Rear clutch :

- Number of drive plate or driven plate 4
- Thickness of drive plate 1.60 mm (0.063 in)
- Total clearance measured between retaining plate and stopper 1.00 ~ 1.50 mm (0.039 ~ 0.059 in)

Low & reverse brake :

- Number of friction plate or steel plate 4
- Thickness of friction plate 2.00 mm (0.079 in)
- Total clearance measured between retaining plate and stopper 0.80 ~ 1.05 mm (0.032 ~ 0.042 in)
- Retaining plate available to adjust above clearance 11.8 mm (0.465 in), 12.0 mm (0.472 in), 12.2 mm (0.480 in), 12.4 mm (0.488 in), 12.6 mm (0.496 in), 12.8 mm (0.504 in)

Gear assembly :

- Total end play 0.25 ~ 0.50 mm (0.010 ~ 0.020 in)
- Bearing race available to adjust above play 1.2 mm (0.047 in), 1.4 mm (0.055 in), 1.6 mm (0.063 in), 1.8 mm (0.071 in), 2.0 mm (0.079 in), 2.2 mm (0.087 in)
- Planetary gear side play 0.20 ~ 0.70 mm (0.008 ~ 0.027 in)
- Limit of above play 0.80 mm (0.032 in)

Tightening torque :

Item	m-kg	ft-lb
Drive plate to crankshaft	14.0 ~ 16.0	100.0 ~ 115.0
Drive plate to torque converter	4.0 ~ 5.0	29.0 ~ 36.0
Converter housing to engine	4.0 ~ 5.0	29.0 ~ 36.0
Converter housing to transmission case	4.5 ~ 5.5	32.0 ~ 40.0
Extension housing to transmission case	2.0 ~ 2.5	15.0 ~ 18.0
Oil pan to transmission case	0.5 ~ 0.7	2.9 ~ 5.0
Piston stem (when adjusting band brake)	1.2 ~ 1.5	8.6 ~ 11.0
Piston stem lock nut	1.5 ~ 4.0	11.0 ~ 29.0
Servo piston retainer to transmission case	0.5 ~ 0.7	2.9 ~ 5.0

Item	m-kg	ft-lb
One-way clutch inner race to transmission case	1.5 ~ 2.0	11.0 ~ 15.0
Control valve body to transmission case	0.55 ~ 0.75	4.0 ~ 5.4
Lower valve body to upper valve body	0.25 ~ 0.35	1.8 ~ 2.5
Side plate to control valve body	0.25 ~ 0.35	1.8 ~ 2.5
Reamer bolt and nut of control valve body	0.35 ~ 0.45	2.5 ~ 3.2
Oil strainer to lower valve body	0.25 ~ 0.35	1.8 ~ 2.5
Governor valve body to oil distributor	0.5 ~ 0.7	2.9 ~ 5.0
Oil pump cover to oil pump housing	0.6 ~ 0.8	4.3 ~ 5.8
Manual shaft lock nut	4.5 ~ 6.5	32.0 ~ 47.0
Oil cooler pipe set bolt to transmission	5.0 ~ 7.0	36.0 ~ 50.0
Oil pressure test plug	1.4 ~ 2.1	10.0 ~ 15.0
Actuator for parking rod to extension housing	0.8 ~ 1.1	5.8 ~ 8.0

* When adjusting the band brake, tighten the piston stem to a torque of 1.2 ~ 1.5 m-kg (8.6 ~ 11.0 ft-lb), then loosen it by two turns.

Item	m-kg	ft-lb
Servo piston retainer to transmission case	0.2 ~ 0.7	1.5 ~ 5.0
Piston stem lock nut	1.2 ~ 4.0	11.0 ~ 29.0
Piston stem (when adjusting band brake)	1.2 ~ 1.2	8.6 ~ 11.0
Oil pan to transmission case	0.2 ~ 0.7	1.5 ~ 5.0
Extension housing to transmission case	2.0 ~ 2.2	14.0 ~ 16.0
Converter housing to transmission case	4.2 ~ 5.2	30.0 ~ 40.0
Converter housing to engine	4.0 ~ 5.0	29.0 ~ 36.0
Drive plate to torque converter	4.0 ~ 5.0	29.0 ~ 36.0
Drive plate to crankshaft	14.0 ~ 16.0	100.0 ~ 115.0

Tightening torque :

Limit of above ply 0.80 mm (0.031 in)

Planetary gear side ply 0.20 ~ 0.70 mm (0.008 ~ 0.027 in)

Bearing race available to adjust above ply 1.2 mm (0.047 in), 1.4 mm (0.055 in), 1.6 mm (0.063 in), 1.8 mm (0.071 in), 2.0 mm (0.079 in), 2.2 mm (0.087 in)

Total end ply 0.22 ~ 0.50 mm (0.010 ~ 0.020 in)

Gear assembly :

Retaining plate available to adjust above clearance 12.1 mm (0.488 in), 12.6 mm (0.496 in), 12.8 mm (0.504 in), 13.1 mm (0.516 in), 13.3 mm (0.524 in), 13.5 mm (0.531 in), 13.7 mm (0.541 in), 13.9 mm (0.549 in), 14.1 mm (0.557 in), 14.3 mm (0.565 in), 14.5 mm (0.573 in), 14.7 mm (0.581 in), 14.9 mm (0.589 in), 15.1 mm (0.597 in), 15.3 mm (0.605 in), 15.5 mm (0.613 in), 15.7 mm (0.621 in), 15.9 mm (0.629 in), 16.1 mm (0.637 in), 16.3 mm (0.645 in), 16.5 mm (0.653 in), 16.7 mm (0.661 in), 16.9 mm (0.669 in), 17.1 mm (0.677 in), 17.3 mm (0.685 in), 17.5 mm (0.693 in), 17.7 mm (0.701 in), 17.9 mm (0.709 in), 18.1 mm (0.717 in), 18.3 mm (0.725 in), 18.5 mm (0.733 in), 18.7 mm (0.741 in), 18.9 mm (0.749 in), 19.1 mm (0.757 in), 19.3 mm (0.765 in), 19.5 mm (0.773 in), 19.7 mm (0.781 in), 19.9 mm (0.789 in), 20.1 mm (0.797 in), 20.3 mm (0.805 in), 20.5 mm (0.813 in), 20.7 mm (0.821 in), 20.9 mm (0.829 in), 21.1 mm (0.837 in), 21.3 mm (0.845 in), 21.5 mm (0.853 in), 21.7 mm (0.861 in), 21.9 mm (0.869 in), 22.1 mm (0.877 in), 22.3 mm (0.885 in), 22.5 mm (0.893 in), 22.7 mm (0.901 in), 22.9 mm (0.909 in), 23.1 mm (0.917 in), 23.3 mm (0.925 in), 23.5 mm (0.933 in), 23.7 mm (0.941 in), 23.9 mm (0.949 in), 24.1 mm (0.957 in), 24.3 mm (0.965 in), 24.5 mm (0.973 in), 24.7 mm (0.981 in), 24.9 mm (0.989 in), 25.1 mm (0.997 in), 25.3 mm (1.005 in), 25.5 mm (1.013 in), 25.7 mm (1.021 in), 25.9 mm (1.029 in), 26.1 mm (1.037 in), 26.3 mm (1.045 in), 26.5 mm (1.053 in), 26.7 mm (1.061 in), 26.9 mm (1.069 in), 27.1 mm (1.077 in), 27.3 mm (1.085 in), 27.5 mm (1.093 in), 27.7 mm (1.101 in), 27.9 mm (1.109 in), 28.1 mm (1.117 in), 28.3 mm (1.125 in), 28.5 mm (1.133 in), 28.7 mm (1.141 in), 28.9 mm (1.149 in), 29.1 mm (1.157 in), 29.3 mm (1.165 in), 29.5 mm (1.173 in), 29.7 mm (1.181 in), 29.9 mm (1.189 in), 30.1 mm (1.197 in), 30.3 mm (1.205 in), 30.5 mm (1.213 in), 30.7 mm (1.221 in), 30.9 mm (1.229 in), 31.1 mm (1.237 in), 31.3 mm (1.245 in), 31.5 mm (1.253 in), 31.7 mm (1.261 in), 31.9 mm (1.269 in), 32.1 mm (1.277 in), 32.3 mm (1.285 in), 32.5 mm (1.293 in), 32.7 mm (1.301 in), 32.9 mm (1.309 in), 33.1 mm (1.317 in), 33.3 mm (1.325 in), 33.5 mm (1.333 in), 33.7 mm (1.341 in), 33.9 mm (1.349 in), 34.1 mm (1.357 in), 34.3 mm (1.365 in), 34.5 mm (1.373 in), 34.7 mm (1.381 in), 34.9 mm (1.389 in), 35.1 mm (1.397 in), 35.3 mm (1.405 in), 35.5 mm (1.413 in), 35.7 mm (1.421 in), 35.9 mm (1.429 in), 36.1 mm (1.437 in), 36.3 mm (1.445 in), 36.5 mm (1.453 in), 36.7 mm (1.461 in), 36.9 mm (1.469 in), 37.1 mm (1.477 in), 37.3 mm (1.485 in), 37.5 mm (1.493 in), 37.7 mm (1.501 in), 37.9 mm (1.509 in), 38.1 mm (1.517 in), 38.3 mm (1.525 in), 38.5 mm (1.533 in), 38.7 mm (1.541 in), 38.9 mm (1.549 in), 39.1 mm (1.557 in), 39.3 mm (1.565 in), 39.5 mm (1.573 in), 39.7 mm (1.581 in), 39.9 mm (1.589 in), 40.1 mm (1.597 in), 40.3 mm (1.605 in), 40.5 mm (1.613 in), 40.7 mm (1.621 in), 40.9 mm (1.629 in), 41.1 mm (1.637 in), 41.3 mm (1.645 in), 41.5 mm (1.653 in), 41.7 mm (1.661 in), 41.9 mm (1.669 in), 42.1 mm (1.677 in), 42.3 mm (1.685 in), 42.5 mm (1.693 in), 42.7 mm (1.701 in), 42.9 mm (1.709 in), 43.1 mm (1.717 in), 43.3 mm (1.725 in), 43.5 mm (1.733 in), 43.7 mm (1.741 in), 43.9 mm (1.749 in), 44.1 mm (1.757 in), 44.3 mm (1.765 in), 44.5 mm (1.773 in), 44.7 mm (1.781 in), 44.9 mm (1.789 in), 45.1 mm (1.797 in), 45.3 mm (1.805 in), 45.5 mm (1.813 in), 45.7 mm (1.821 in), 45.9 mm (1.829 in), 46.1 mm (1.837 in), 46.3 mm (1.845 in), 46.5 mm (1.853 in), 46.7 mm (1.861 in), 46.9 mm (1.869 in), 47.1 mm (1.877 in), 47.3 mm (1.885 in), 47.5 mm (1.893 in), 47.7 mm (1.901 in), 47.9 mm (1.909 in), 48.1 mm (1.917 in), 48.3 mm (1.925 in), 48.5 mm (1.933 in), 48.7 mm (1.941 in), 48.9 mm (1.949 in), 49.1 mm (1.957 in), 49.3 mm (1.965 in), 49.5 mm (1.973 in), 49.7 mm (1.981 in), 49.9 mm (1.989 in), 50.1 mm (1.997 in), 50.3 mm (2.005 in), 50.5 mm (2.013 in), 50.7 mm (2.021 in), 50.9 mm (2.029 in), 51.1 mm (2.037 in), 51.3 mm (2.045 in), 51.5 mm (2.053 in), 51.7 mm (2.061 in), 51.9 mm (2.069 in), 52.1 mm (2.077 in), 52.3 mm (2.085 in), 52.5 mm (2.093 in), 52.7 mm (2.101 in), 52.9 mm (2.109 in), 53.1 mm (2.117 in), 53.3 mm (2.125 in), 53.5 mm (2.133 in), 53.7 mm (2.141 in), 53.9 mm (2.149 in), 54.1 mm (2.157 in), 54.3 mm (2.165 in), 54.5 mm (2.173 in), 54.7 mm (2.181 in), 54.9 mm (2.189 in), 55.1 mm (2.197 in), 55.3 mm (2.205 in), 55.5 mm (2.213 in), 55.7 mm (2.221 in), 55.9 mm (2.229 in), 56.1 mm (2.237 in), 56.3 mm (2.245 in), 56.5 mm (2.253 in), 56.7 mm (2.261 in), 56.9 mm (2.269 in), 57.1 mm (2.277 in), 57.3 mm (2.285 in), 57.5 mm (2.293 in), 57.7 mm (2.301 in), 57.9 mm (2.309 in), 58.1 mm (2.317 in), 58.3 mm (2.325 in), 58.5 mm (2.333 in), 58.7 mm (2.341 in), 58.9 mm (2.349 in), 59.1 mm (2.357 in), 59.3 mm (2.365 in), 59.5 mm (2.373 in), 59.7 mm (2.381 in), 59.9 mm (2.389 in), 60.1 mm (2.397 in), 60.3 mm (2.405 in), 60.5 mm (2.413 in), 60.7 mm (2.421 in), 60.9 mm (2.429 in), 61.1 mm (2.437 in), 61.3 mm (2.445 in), 61.5 mm (2.453 in), 61.7 mm (2.461 in), 61.9 mm (2.469 in), 62.1 mm (2.477 in), 62.3 mm (2.485 in), 62.5 mm (2.493 in), 62.7 mm (2.501 in), 62.9 mm (2.509 in), 63.1 mm (2.517 in), 63.3 mm (2.525 in), 63.5 mm (2.533 in), 63.7 mm (2.541 in), 63.9 mm (2.549 in), 64.1 mm (2.557 in), 64.3 mm (2.565 in), 64.5 mm (2.573 in), 64.7 mm (2.581 in), 64.9 mm (2.589 in), 65.1 mm (2.597 in), 65.3 mm (2.605 in), 65.5 mm (2.613 in), 65.7 mm (2.621 in), 65.9 mm (2.629 in), 66.1 mm (2.637 in), 66.3 mm (2.645 in), 66.5 mm (2.653 in), 66.7 mm (2.661 in), 66.9 mm (2.669 in), 67.1 mm (2.677 in), 67.3 mm (2.685 in), 67.5 mm (2.693 in), 67.7 mm (2.701 in), 67.9 mm (2.709 in), 68.1 mm (2.717 in), 68.3 mm (2.725 in), 68.5 mm (2.733 in), 68.7 mm (2.741 in), 68.9 mm (2.749 in), 69.1 mm (2.757 in), 69.3 mm (2.765 in), 69.5 mm (2.773 in), 69.7 mm (2.781 in), 69.9 mm (2.789 in), 70.1 mm (2.797 in), 70.3 mm (2.805 in), 70.5 mm (2.813 in), 70.7 mm (2.821 in), 70.9 mm (2.829 in), 71.1 mm (2.837 in), 71.3 mm (2.845 in), 71.5 mm (2.853 in), 71.7 mm (2.861 in), 71.9 mm (2.869 in), 72.1 mm (2.877 in), 72.3 mm (2.885 in), 72.5 mm (2.893 in), 72.7 mm (2.901 in), 72.9 mm (2.909 in), 73.1 mm (2.917 in), 73.3 mm (2.925 in), 73.5 mm (2.933 in), 73.7 mm (2.941 in), 73.9 mm (2.949 in), 74.1 mm (2.957 in), 74.3 mm (2.965 in), 74.5 mm (2.973 in), 74.7 mm (2.981 in), 74.9 mm (2.989 in), 75.1 mm (2.997 in), 75.3 mm (3.005 in), 75.5 mm (3.013 in), 75.7 mm (3.021 in), 75.9 mm (3.029 in), 76.1 mm (3.037 in), 76.3 mm (3.045 in), 76.5 mm (3.053 in), 76.7 mm (3.061 in), 76.9 mm (3.069 in), 77.1 mm (3.077 in), 77.3 mm (3.085 in), 77.5 mm (3.093 in), 77.7 mm (3.101 in), 77.9 mm (3.109 in), 78.1 mm (3.117 in), 78.3 mm (3.125 in), 78.5 mm (3.133 in), 78.7 mm (3.141 in), 78.9 mm (3.149 in), 79.1 mm (3.157 in), 79.3 mm (3.165 in), 79.5 mm (3.173 in), 79.7 mm (3.181 in), 79.9 mm (3.189 in), 80.1 mm (3.197 in), 80.3 mm (3.205 in), 80.5 mm (3.213 in), 80.7 mm (3.221 in), 80.9 mm (3.229 in), 81.1 mm (3.237 in), 81.3 mm (3.245 in), 81.5 mm (3.253 in), 81.7 mm (3.261 in), 81.9 mm (3.269 in), 82.1 mm (3.277 in), 82.3 mm (3.285 in), 82.5 mm (3.293 in), 82.7 mm (3.301 in), 82.9 mm (3.309 in), 83.1 mm (3.317 in), 83.3 mm (3.325 in), 83.5 mm (3.333 in), 83.7 mm (3.341 in), 83.9 mm (3.349 in), 84.1 mm (3.357 in), 84.3 mm (3.365 in), 84.5 mm (3.373 in), 84.7 mm (3.381 in), 84.9 mm (3.389 in), 85.1 mm (3.397 in), 85.3 mm (3.405 in), 85.5 mm (3.413 in), 85.7 mm (3.421 in), 85.9 mm (3.429 in), 86.1 mm (3.437 in), 86.3 mm (3.445 in), 86.5 mm (3.453 in), 86.7 mm (3.461 in), 86.9 mm (3.469 in), 87.1 mm (3.477 in), 87.3 mm (3.485 in), 87.5 mm (3.493 in), 87.7 mm (3.501 in), 87.9 mm (3.509 in), 88.1 mm (3.517 in), 88.3 mm (3.525 in), 88.5 mm (3.533 in), 88.7 mm (3.541 in), 88.9 mm (3.549 in), 89.1 mm (3.557 in), 89.3 mm (3.565 in), 89.5 mm (3.573 in), 89.7 mm (3.581 in), 89.9 mm (3.589 in), 90.1 mm (3.597 in), 90.3 mm (3.605 in), 90.5 mm (3.613 in), 90.7 mm (3.621 in), 90.9 mm (3.629 in), 91.1 mm (3.637 in), 91.3 mm (3.645 in), 91.5 mm (3.653 in), 91.7 mm (3.661 in), 91.9 mm (3.669 in), 92.1 mm (3.677 in), 92.3 mm (3.685 in), 92.5 mm (3.693 in), 92.7 mm (3.701 in), 92.9 mm (3.709 in), 93.1 mm (3.717 in), 93.3 mm (3.725 in), 93.5 mm (3.733 in), 93.7 mm (3.741 in), 93.9 mm (3.749 in), 94.1 mm (3.757 in), 94.3 mm (3.765 in), 94.5 mm (3.773 in), 94.7 mm (3.781 in), 94.9 mm (3.789 in), 95.1 mm (3.797 in), 95.3 mm (3.805 in), 95.5 mm (3.813 in), 95.7 mm (3.821 in), 95.9 mm (3.829 in), 96.1 mm (3.837 in), 96.3 mm (3.845 in), 96.5 mm (3.853 in), 96.7 mm (3.861 in), 96.9 mm (3.869 in), 97.1 mm (3.877 in), 97.3 mm (3.885 in), 97.5 mm (3.893 in), 97.7 mm (3.901 in), 97.9 mm (3.909 in), 98.1 mm (3.917 in), 98.3 mm (3.925 in), 98.5 mm (3.933 in), 98.7 mm (3.941 in), 98.9 mm (3.949 in), 99.1 mm (3.957 in), 99.3 mm (3.965 in), 99.5 mm (3.973 in), 99.7 mm (3.981 in), 99.9 mm (3.989 in), 100.1 mm (3.997 in), 100.3 mm (4.005 in), 100.5 mm (4.013 in), 100.7 mm (4.021 in), 100.9 mm (4.029 in), 101.1 mm (4.037 in), 101.3 mm (4.045 in), 101.5 mm (4.053 in), 101.7 mm (4.061 in), 101.9 mm (4.069 in), 102.1 mm (4.077 in), 102.3 mm (4.085 in), 102.5 mm (4.093 in), 102.7 mm (4.101 in), 102.9 mm (4.109 in), 103.1 mm (4.117 in), 103.3 mm (4.125 in), 103.5 mm (4.133 in), 103.7 mm (4.141 in), 103.9 mm (4.149 in), 104.1 mm (4.157 in), 104.3 mm (4.165 in), 104.5 mm (4.173 in), 104.7 mm (4.181 in), 104.9 mm (4.189 in), 105.1 mm (4.197 in), 105.3 mm (4.205 in), 105.5 mm (4.213 in), 105.7 mm (4.221 in), 105.9 mm (4.229 in), 106.1 mm (4.237 in), 106.3 mm (4.245 in), 106.5 mm (4.253 in), 106.7 mm (4.261 in), 106.9 mm (4.269 in), 107.1 mm (4.277 in), 107.3 mm (4.285 in), 107.5 mm (4.293 in), 107.7 mm (4.301 in), 107.9 mm (4.309 in), 108.1 mm (4.317 in), 108.3 mm (4.325 in), 108.5 mm (4.333 in), 108.7 mm (4.341 in), 108.9 mm (4.349 in), 109.1 mm (4.357 in), 109.3 mm (4.365 in), 109.5 mm (4.373 in), 109.7 mm (4.381 in), 109.9 mm (4.389 in), 110.1 mm (4.397 in), 110.3 mm (4.405 in), 110.5 mm (4.413 in), 110.7 mm (4.421 in), 110.9 mm (4.429 in), 111.1 mm (4.437 in), 111.3 mm (4.445 in), 111.5 mm (4.453 in), 111.7 mm (4.461 in), 111.9 mm (4.469 in), 112.1 mm (4.477 in), 112.3 mm (4.485 in), 112.5 mm (4.493 in), 112.7 mm (4.501 in), 112.9 mm (4.509 in), 113.1 mm (4.517 in), 113.3 mm (4.525 in), 113.5 mm (4.533 in), 113.7 mm (4.541 in), 113.9 mm (4.549 in), 114.1 mm (4.557 in), 114.3 mm (4.565 in), 114.5 mm (4.573 in), 114.7 mm (4.581 in), 114.9 mm (4.589 in), 115.1 mm (4.597 in), 115.3 mm (4.605 in), 115.5 mm (4.613 in), 115.7 mm (4.621 in), 115.9 mm (4.629 in), 116.1 mm (4.637 in), 116.3 mm (4.645 in), 116.5 mm (4.653 in), 116.7 mm (4.661 in), 116.9 mm (4.669 in), 117.1 mm (4.677 in), 117.3 mm (4.685 in), 117.5 mm (4.693 in), 117.7 mm (4.701 in), 117.9 mm (4.709 in), 118.1 mm (4.717 in), 118.3 mm (4.725 in), 118.5 mm (4.733 in), 118.7 mm (4.741 in), 118.9 mm (4.749 in), 119.1 mm (4.757 in), 119.3 mm (4.765 in), 119.5 mm (4.773 in), 119.7 mm (4.781 in), 119.9 mm (4.789 in), 120.1 mm (4.797 in), 120.3 mm (4.805 in), 120.5 mm (4.813 in), 120.7 mm (4.821 in), 120.9 mm (4.829 in), 121.1 mm (4.837 in), 121.3 mm (4.845 in), 121.5 mm (4.853 in), 121.7 mm (4.861 in), 121.9 mm (4.869 in), 122.1 mm (4.877 in), 122.3 mm (4.885 in), 122.5 mm (4.893 in), 122.7 mm (4.901 in), 122.9 mm (4.909 in), 123.1 mm (4.917 in), 123.3 mm (4.925 in), 123.5 mm (4.933 in), 123.7 mm (4.941 in), 123.9 mm (4.949 in), 124.1 mm (4.957 in), 124.3 mm (4.965 in), 124.5 mm (4.973 in), 124.7 mm (4.981 in), 124.9 mm (4.989 in), 125.1 mm (4.997 in), 125.3 mm (5.005 in), 125.5 mm (5.013 in), 125.7 mm (5.021 in), 125.9 mm (5.029 in), 126.1 mm (5.037 in), 126.3 mm (5.045 in), 126.5 mm (5.053 in), 126.7 mm (5.061 in), 126.9 mm (5.069 in), 127.1 mm (5.077 in), 127.3 mm (5.085 in), 127.5 mm (5.093 in), 127.7 mm (5.101 in), 127.9 mm (5.109 in), 128.1 mm (5.117 in), 128.3 mm (5.125 in), 128.5 mm (5.133 in), 128.7 mm (5.141 in), 128.9 mm (5.149 in), 129.1 mm (5.157 in), 129.3 mm (5.165 in), 129.5 mm (5.173 in), 129.7 mm (5.181 in), 129.9 mm (5.189 in), 130.1 mm (5.197 in), 130.3 mm (5.205 in), 130.5 mm (5.213 in), 130.7 mm (5.221 in), 130.9 mm (5.229 in), 131.1 mm (5.237 in), 131.3 mm (5.245 in), 131.5 mm (5.253 in), 131.7 mm (5.261 in), 131.9 mm (5.269 in), 132.1 mm (5.277 in), 132.3 mm (5.285 in), 132.5 mm (5.293 in), 132.7 mm (5.301 in), 132.9 mm (5.309 in), 133.1 mm (5.317 in), 133.3 mm (5.325 in), 133.5 mm (5.333 in), 133.7 mm (5.341 in), 133.9 mm (5.349 in), 134.1 mm (5.357 in), 134.3 mm (5.365 in), 134.5 mm (5.373 in), 134.7 mm (5.381 in), 134.9 mm (5.389 in), 135.1 mm (5.397 in), 135.3 mm (5.405 in), 135.5 mm (5.413 in), 135.7 mm (5.421 in), 135.9 mm (5.429 in), 136.1 mm (5.437 in), 136.3 mm (5.445 in), 136.5 mm (5.453 in), 136.7 mm (5.461 in), 136.9 mm (5.469 in), 137.1 mm (5.477 in), 137.3 mm (5.485 in), 137.5 mm (5.493 in), 137.7 mm (5.501 in), 137.9 mm (5.509 in), 138.1 mm (5.517 in), 138.3 mm (5.525 in), 138.5 mm (5.533 in), 138.7 mm (5.541 in), 138.9 mm (5.549 in), 139.1 mm (5.557 in), 139.3 mm (5.565 in), 139.5 mm (5.573 in), 139.7 mm (5.581 in), 139.9 mm (5.589 in), 140.1 mm (5.597 in), 140.3 mm (5.605 in), 140.5 mm (5.613 in), 140.7 mm (5.621 in), 140.9 mm (5.629 in), 141.1 mm (5.637 in), 141.3 mm (5.645 in), 141.5 mm (5.653 in), 141.7 mm (5.661 in), 141.9 mm (5.669 in), 142.1 mm (5.677 in), 142.3 mm (5.685 in), 142.5 mm (5.693 in), 142.7 mm (5.701 in), 142.9 mm (5.709 in), 143.1 mm (5.717 in), 143.3 mm (5.725 in), 143.5 mm (5.733 in), 143.7 mm (5.741 in), 143.9 mm (5.749 in), 144.1 mm (5.757 in), 144.3 mm (5.765 in), 144.5 mm (5.773 in), 144.7 mm (5.781 in), 144.9 mm (5.789 in), 145.1 mm (5.797 in), 145.3 mm (5.805 in), 145.5 mm (5.813 in), 145.7 mm (5.821 in), 145.9 mm (5.829 in), 146.1 mm (5.837 in), 146.3 mm (5.845 in), 146.5 mm (5.853 in), 146.7 mm (5.861 in), 146.9 mm (5.869 in), 147.1 mm (5.877 in), 147.3 mm (5.885 in), 147.5 mm (5.893 in), 147.7 mm (5.901 in), 147.9 mm (5.909 in), 148.1 mm (5.917 in), 148.3 mm (5.925 in), 148.5 mm (5.933 in), 148.7 mm (5.941 in), 148.9 mm (5.949 in), 149.1 mm (5.957 in), 149.3 mm (5.965 in), 149.5 mm (5.973 in), 149.7 mm (5.981 in), 149.9 mm (5.989 in), 150.1 mm (5.997 in), 150.3 mm (6.005 in), 150.5 mm (6.013 in), 150.7 mm (6.021 in), 150.9 mm (6.029 in), 151.1 mm (6.037 in), 151.3 mm (6.045 in), 151.5 mm (6.053 in), 151.7 mm (6.061 in), 151.9 mm (6.069 in), 152.1 mm (6.077 in), 152.3 mm (6.085 in), 152.5 mm (6.093 in), 152.7 mm (6.101 in), 152.9 mm (6.109 in), 153.1 mm (6.117 in), 153.3 mm (6.125 in), 153.5 mm (6.133 in), 153.7 mm (6.141 in), 153.9 mm (6.149 in), 154.1 mm (6.157 in), 154.3 mm (6.165 in), 154.5 mm (6.173 in), 154.7 mm (6.181 in), 154.9 mm (6.189 in), 155.1 mm (6.197 in), 155.3 mm (6.205 in), 155.5 mm (6.213 in), 155.7 mm (6.221 in), 155.9 mm (6.229 in), 156.1 mm (6.237 in), 156.3 mm (6.245 in), 156.5 mm (6.253 in), 156.7 mm (6.261 in), 156.9 mm (6.269 in), 157.1 mm (6.277 in), 157.3 mm (6.285 in), 157.5 mm (6.293 in), 157.7 mm (6.301 in), 157.9 mm (6.309 in), 158.1 mm (6.317 in), 158.3 mm (6.325 in), 158.5 mm (6.333 in), 158.7 mm (6.341 in), 158.9 mm (6.349 in), 159.1 mm (6.357 in), 159.3 mm (6.365 in), 159.5 mm (6.373 in), 159.7 mm (6.381 in), 159.9 mm (6.389 in), 160.1 mm (6.397 in), 160.3 mm (6.405 in), 160.5 mm (6.413 in), 160.7 mm (6.421 in), 160.9 mm (6.429 in), 161.1 mm (6.437 in), 161.3 mm (6.445 in), 161.5 mm (6.453 in), 161.7 mm (6.461 in), 161.9 mm (6.469 in), 162.1 mm (6.477 in), 162

Lubrication system : Forced lubrication by an oil pump

Cooling system : Water-cooled by a circulation type auxiliary cooler (located at the radiator).

Kick-down switch : Beginning of operation in between 7/8 ~ 15/16 of full throttle

Engine idling speed :
 Engine idling speed 650 ~ 750 rpm
 Required range "D"

Engine stall speed :
 Before breaking in 1,800 ~ 2,050 rpm
 After breaking in 1,850 ~ 2,100 rpm

Shift speed : km/h (mile/h)

Throttle condition (Manifold vacuum)	Gear shift	km/h (mile/h)
Kick-down (0 ~ 100 mm-Hg)	D ₁ → D ₂	49 ~ 69 (32 ~ 45)
	D ₂ → D ₃	88 ~ 115 (57 ~ 73)
	D ₃ → D ₂	79 ~ 100 (49 ~ 62)
Half throttle (190 ~ 210 mm-Hg)	D ₂ → D ₁	35 ~ 51 (21 ~ 32)
	D ₁ → D ₂	12 ~ 28 (8 ~ 18)
Full & Minimum throttle	D ₂ → D ₃	26 ~ 61 (17 ~ 38)
	I ₂ → I ₁	40 ~ 53 (25 ~ 33)

Oil Pump :
 Type Internally intermeshing involute gear pump
 Number of pump 1
 Oil Automatic transmission fluid "DEXRON TYPE"
 Capacity 6.2 liter (13 U.S. pints, 11 Imp. pints, 6.5 U.S. quarts)
 About 4.0 liters (8.5 U.S. pints, 7.0 Imp. pints, 4.2 U.S. quarts) in torque converter

Side play of inner gear or outer gear 0.02 ~ 0.04 mm (0.001 ~ 0.002 in)
 Limit of side play 0.08 mm (0.003 in)
 Clearance between outer gear and crest 0.14 ~ 0.21 mm (0.006 ~ 0.008 in)
 Limit of above clearance 0.25 mm (0.010 in)
 Clearance between outer gear and housing 0.05 ~ 0.20 mm (0.002 ~ 0.008 in)
 Limit of above clearance 0.25 mm (0.010 in)
 Side clearance between oil seal ring and groove on the oil pump cover and the oil distributor 0.04 ~ 0.16 mm (0.002 ~ 0.006 in)

Front clutch :
 Number of drive plate or driven plate 3
 Thickness of drive plate 1.60 mm (0.063 in)
 Total clearance measured between retaining plate and stopper 1.00 ~ 1.50 mm (0.039 ~ 0.059 in)
 Retaining plate available to adjust the above clearance 10.6 mm (0.417 in), 10.8 mm (0.425 in), 11.0 mm (0.433 in), 11.2 mm (0.441 in), 11.4 mm (0.449 in), 11.6 mm (0.457 in)
 End play of front clutch drum 0.50 ~ 0.80 mm (0.020 ~ 0.032 in)
 Front clutch thrust washer available to adjust above play 1.5 mm (0.059 in), 1.7 mm (0.067 in), 1.9 mm (0.075 in), 2.1 mm (0.083 in), 2.3 mm (0.091 in), 2.5 mm (0.098 in), 2.7 mm (0.106 in)

Line pressure :

kg/cm² (lb/in²)

Manual range	Engine idling condition	Engine stall condition
"R"	4.0 ~ 7.0 (57 ~ 100)	15.5 ~ 19.0 (220 ~ 270)
"D"	3.0 ~ 4.0 (43 ~ 57)	9.5 ~ 11.0 (135 ~ 156)
"2"	8.0 ~ 12.0 (114 ~ 170)	10.0 ~ 12.0 (142 ~ 170)
"1"	3.0 ~ 4.0 (43 ~ 57)	9.5 ~ 11.0 (135 ~ 156)

Governor pressure :

Model	Driving speed		Out-put shaft speed rpm	Standard governor pressure	
	km/h	mile/h		kg/cm ²	lb/in ²
929	30		950 ~ 1,065	0.8 ~ 1.3	11 ~ 18
	55		1,785 ~ 1,900	1.6 ~ 2.3	23 ~ 33
	85		2,765 ~ 2,910	3.1 ~ 4.1	44 ~ 58
929		20	1,030 ~ 1,130	0.8 ~ 1.3	11 ~ 18
		35	1,830 ~ 1,960	1.7 ~ 2.4	24 ~ 34
		55	2,900 ~ 3,050	3.3 ~ 4.3	47 ~ 61

Governor :

Governor type 35

Drive plate :

Drive plate run-out Less than 0.30 mm (0.012 in)

Limit of above run-out 0.50 mm (0.020 in)

Rear clutch :

Number of drive plate or driven plate 4

Thickness of drive plate 1.60 mm (0.063 in)

Total clearance measured between retaining plate and stopper 0.80 ~ 1.50 mm (0.031 ~ 0.059 in)

Low & reverse brake :

Number of friction plate or steel plate 4

Thickness of friction plate 2.00 mm (0.079 in)

Total clearance measured between retaining plate and stopper 0.80 ~ 1.05 mm (0.031 ~ 0.042 in)

Retaining plate available to adjust above clearance .. 11.8 mm (0.465 in), 12.0 mm (0.472 in), 12.2 mm (0.480 in), 12.4 mm (0.488 in), 12.6 mm (0.496 in), 12.8 mm (0.504 in)

Gear assembly :

Total end play 0.25 ~ 0.50 mm (0.010 ~ 0.020 in)

Bearing race available to adjust above play 1.2 mm (0.047 in), 1.4 mm (0.055 in), 1.6 mm (0.063 in), 1.8 mm (0.071 in), 2.0 mm (0.079 in), 2.2 mm (0.087 in)

Planetary gear side play 0.20 ~ 0.70 mm (0.008 ~ 0.027 in)

Limit of above play 0.80 mm (0.032 in)

PROPELLER SHAFT

Length :		Spline-fit of propeller shaft	
Manual transmission	1,186 mm (46.69 in)	Wear limit	0.30 mm (0.012 in)
Automatic transmission	1,086 mm (42.76 in)	Universal joint :	
Outer diameter		Spider diameter	
Manual transmission	75 mm (2.95 in)	New	14.72 - 0.010 mm
Automatic transmission	65 mm (2.38 in)		- 0.025 mm
Permissible run-out	0.4 mm (0.016 in)		(0.5795 - 0.0004 in)
Permissible unbalance at 4,000 rpm	15 gr-cm (0.21 in-oz)	Wear limit	0.10 mm (0.004 in)

REAR AXLE					
Type	Semi-floating, hypoid gears	Camber	1°02' ± 30'		
Reduction ratio	3.900	Maximum permissible difference in camber between sides	30'		
Number of gear teeth	39 : 10	Caster	2°03' ± 45'		
Backlash of ring gear and pinion	0.17 ~ 0.19 mm (0.0067 ~ 0.0075 in)	Maximum permissible difference in caster between sides	40'		
Mounting distance	90 ± 0.025 mm (3.5434 ± 0.0010 in)	Caster trail	9.7 mm (0.38 in)		
Pinion bearing preload (Without pinion oil seal)	9 ~ 14 cm-kg (7.8 ~ 12.2 in-lb)	Toe-in	0 ~ 6 mm (0 ~ 0.24 in)		
Backlash of side gear and pinion gear	0 ~ 0.10 mm (0 ~ 0.004 in)	BRAKES			
Rear wheel bearing end play	0 ~ 0.10 mm (0 ~ 0.004 in)	Brake pedal height	172 mm (6.77 in)		
Lubricant :		Brake pedal free travel	7 ~ 9 mm (0.28 ~ 0.35 in)		
Above -18°C (0°F)	SAE. HP90	Master cylinder :			
Below -18°C (0°F)	SAE. HP80	Type	Dual (Tandem)		
Oil capacity	1.4 liters (3.0 U.S. Pints) (2.5 Imp. Pints)	Bore	22.22 mm (7/8 in)		
STEERING		Clearance between piston and bore			
Type	Recirculating ball nut	New	0.040 ~ 0.125 mm (0.0016 ~ 0.0049 in)		
Reduction ratio	18 ~ 20 : 1	Wear limit	0.15 mm (0.006 in)		
Maximum wheel angle on full lock		Front disc brake :			
Wheel on inside of curve	41°15'	Brake disc outer diameter	230 mm (9.055 in)		
Wheel on outside of curve	30°30'	Thickness of brake disc			
Free play of steering wheel (Turning direction)		New	12 mm (0.472 in)		
New	5 ~ 20 mm (0.2 ~ 0.8 in)	Limit	11 mm (0.433 in)		
Limit	30 mm (1.2 in)	Max. allowable lateral run-out of brake disc	0.075 mm (0.0031 in)		
Backlash between rack and sector gear	0 mm	Lining material	Resin molded (F50)		
Worm bearing preload	1 ~ 4 cm-kg (0.9 ~ 3.5 in-lb)	Thickness of lining and shoe			
Clearance between sector shaft and bush		New	14 mm (0.551 in)		
New	0.007 ~ 0.049 mm (0.0003 ~ 0.0019 in)	Limit	7 mm (0.276 in)		
Wear limit	0.20 mm (0.008 in)	Wheel cylinder bore	53.97 mm (2.1248 in)		
End clearance of sector shaft	0 ~ 0.1 mm (0 ~ 0.004 in)	Rear brake :			
Lubricant	SAE. 90	Type	Drum, leading and trailing shoes		
End play of center link and tie rod ball studs		Drum diameter			
New	0.25 mm (0.010 in)	New	228.6 mm (9.0 in)		
Wear limit	1.0 mm (0.039 in)	Regrinding limit	1.0 mm (0.039 in)		
Steering geometry :		Lining material	Resin molded (CD77)		
King pin inclination	9°11' ± 30'	Thickness of lining			
		New	5.5 mm (0.217 in)		
		Wear limit	1.0 mm (0.039 in)		
		Wheel cylinder bore	17.56 mm (11/16 in)		
		Clearance between piston and bore			
		New	0.032 ~ 0.102 mm (0.0013 ~ 0.0040 in)		
		Wear limit	0.15 mm (0.006 in)		
		Parking brake :			
		Type	Mechanical		
		Operates at	Rear wheels		
WHEELS AND TIRES					
Description	Type	Tire size	Wheel disc size	Tire inflation	
				Less than 100 km/h (60 mph)	More than 100 km/h (60 mph)
Australian spec.	Hard T.	175 SR 13 195/70 SR 13	5½J × 13 WDC 5½J × 13 WDC	(24 psi)	(28 psi)
	Sedan	175 SR 13	5 J × 13 WDC		

Description	Type	Tire size	Wheel disc size	Tire inflation	
				Less than 100 km/h (60 mph)	More than 100 km/h (60 mph)
R.H.D. General spec. L.H.D. General spec. ECE Spec. (Include : British spec.)	Hard T. Sedan	175 SR 13 175 HR 13 195/70 SR 13 195/70 HR 13 175 SR 13 6.45-13-4PR	5½J x 13 WDC 5J x 13 WDC	17 kg/cm ² (24 psi)	2.0 kg/cm ² (28 psi)
Abbreviations : Hard T. Hard top Psi Pound square inch					
FRONT SUSPENSION					
		ECE spec. Hard top, sedan General spec. Sedan		General spec. Hard top Except ECE spec. Hard top	
Type Coil spring : Spring constant Wire diameter Coil diameter Free length Fitting length Fitting load 1 dot 2 dots 3 dots Shock absorber		Strut, coil spring 1.81 ± 0.13 kg/mm (101 ± 7 lb/in) 11.80 mm (0.46 in) 117 mm (4.61 in) 381 mm (15.00 in) 203 mm (7.99 in) 299 ~ 307 kg (659 ~ 677 lb) 307 ~ 315 kg (677 ~ 694 lb) 315 ~ 323 kg (694 ~ 712 lb) Hydraulic double action		Strut, coil spring 2.01 ± 0.14 kg/mm (112 ± 7 lb/in) 11.50 mm (0.45 in) 107.5 mm (4.23 in) 362 mm (15.24 in) 203 mm (7.99 in) 295 ~ 303 kg (650 ~ 668 lb) 303 ~ 311 kg (668 ~ 686 lb) 311 ~ 319 kg (686 ~ 703 lb) Hydraulic double action	
REAR SUSPENSION					
		ECE spec. Hard top, sedan General spec. Sedan		General spec. Hard top Except ECE spec. Hard top	
Type Leaf spring : Spring constant Number of leaves Length Shock absorber		Semi-elliptic leaf spring 2.0 ± 0.2 kg/mm (112 ± 11.2 lb/in) 4 1150 ± 4 mm (45.28 ± 0.16 in) Hydraulic double action		Semi-elliptic leaf spring 2.3 ± 0.23 kg/mm (129 ± 12.9 lb/in) 4 1150 ± 4 mm (45.28 ± 0.16 in) Hydraulic double action	
WEIGHTS AND DIMENSIONS					
		Sedan		Hard top	
Overall length		4,240 mm (167 in)		4,320 mm (170 in)	
Overall width		1,660 mm (65 in)		1,665 mm (66 in)	
Overall height		1,410 mm (56 in)		1,380 mm (54 in)	
Wheelbase		2,510 mm (99 in)		2,510 mm (99 in)	
Tread :					
Front		1,380 mm (54 in)		1,380 mm (54 in)	
Rear		1,370 mm (54 in)		1,370 mm (54 in)	
Minimum road clearance		175 mm (7 in)		175 mm (7 in)	
Minimum turning radius		5 m (16 ft)		5 m (16 ft)	
Seating capacity		5		5	

TIGHTENING TORQUE					
	m-kg	ft-lb		m-kg	ft-lb
CLUTCH			Vacuum pipe to inlet manifold	1.2 ~ 1.8	8.7 ~ 13.0
Flywheel bolt	11.5 ~ 16.3	112.1~118.2			
Clutch cover	1.8 ~ 2.7	13 ~ 20	PROPELLER SHAFT		
Clutch housing to T/mission	3.8 ~ 6.4	27 ~ 46	Yoke to rear axle companion flange	3.5 ~ 3.8	25 ~ 27
MANUAL TRANSMISSION			REAR AXLE		
Main shaft lock nut	16 ~ 24	115 ~ 173	Ring gear	5.5 ~ 6.5	40 ~ 47
Shift lock spring caps	1.0 ~ 1.5	7 ~ 11	Differential side bearing caps	3.2 ~ 4.7	23 ~ 34
Plug for interlock pin hole	1.0 ~ 1.5	7 ~ 11	Companion flange	10 ~ 20	72 ~ 145
Control lever end reamer bolt	2.8 ~ 3.4	20 ~ 25	Rear axle to housing	1.6 ~ 2.3	12 ~ 17
Shift fork set bolts	0.9 ~ 1.3	7 ~ 9	STEERING		
Reverse lamp switch	2.5 ~ 3.5	18 ~ 25	Steering gear housing	4.4 ~ 5.5	32 ~ 36
AUTOMATIC TRANSMISSION			Steering wheel	3.0 ~ 4.0	22 ~ 29
Drive plate to crankshaft	14.0 ~ 16.0	100.0~115.0	Pitman arm to sector shaft	15.0 ~ 18.0	108 ~ 130
Drive plate to torque converter	4.0 ~ 5.0	29.0~ 36.0	Idler arm bracket	4.4 ~ 5.5	32 ~ 36
Converter housing to engine	4.0 ~ 5.0	29.0~ 36.0	Idler arm to center link	2.5 ~ 3.5	18 ~ 25
Converter housing to transmission case	3.2 ~ 4.7	23.0~ 34.0	Ball studs of tie-rod and center link	2.5 ~ 3.5	18 ~ 25
Extension housing to transmission case	2.0 ~ 2.5	15.0~ 18.0	Tie-rod lock nut	7.0 ~ 8.0	51 ~ 58
Oil pan to transmission case	0.5 ~ 0.7	3.6 ~ 5.1	WHEELS		
☆ Piston stem (when adjusting band brake)	1.2 ~ 1.5	8.6 ~ 11.0	Wheel bolts	9.0 ~ 10.0	65 ~ 72
Piston stem lock nut	3.0 ~ 4.0	22.0~ 29.0	FRONT SUSPENSION		
Servo piston retainer to transmission case	0.5 ~ 0.7	3.6 ~ 5.1	Stabilizer support	3.8 ~ 4.7	27 ~ 34
One-way clutch inner race to transmission case	1.3 ~ 1.8	9.4 ~ 13.0	Stabilizer bar to suspension arm	8.1 ~ 9.8	59 ~ 71
Control valve body to transmission case	0.55 ~ 0.75	4.0 ~ 5.4	Suspension arm to cross member	4.0 ~ 5.5	29 ~ 36
Lower valve body to upper valve body	0.25 ~ 0.35	1.8 ~ 2.5	Knuckle arm to shock absorber	6.4 ~ 9.5	46 ~ 69
Side plate to control valve body	0.25 ~ 0.35	1.8 ~ 2.5	Suspension arm ball joint to knuckle arm	6.0 ~ 7.0	43 ~ 51
Reamer bolt and nut of control valve body	0.50 ~ 0.70	3.6 ~ 5.1	Mounting block to body	2.3 ~ 3.0	17 ~ 22
Oil strainer to lower valve body	0.25 ~ 0.35	1.8 ~ 2.5	Front shock absorber		
Governor valve body to oil distributor	0.5 ~ 0.7	3.6 ~ 5.1	Piston rod to mounting block	6.5 ~ 8.2	47 ~ 59
Oil pump cover to oil pump housing	0.6 ~ 0.8	4.3 ~ 5.8	Seal cap nut	5.0 ~ 6.0	36 ~ 43
Inhibitor switch to transmission case	0.5 ~ 0.7	3.6 ~ 5.1	Piston rod nut	1.5	10
Manual shaft lock nut	3.0 ~ 4.2	21.7 ~ 30.4	Base valve nut	0.15	1.0
Oil cooler pipe set bolt to transmission case	5.0 ~ 7.0	36.0 ~ 50.0	Cross member	4.4 ~ 6.2	31 ~ 45
Oil pressure test plug	1.0 ~ 1.5	7.2 ~ 10.9	REAR SUSPENSION		
Actuator for parking rod to extension housing	0.8 ~ 1.1	5.8 ~ 8.0	Torque rod to body	10.0 ~ 12.0	72 ~ 87
			Torque rod to rear axle housing	10.0 ~ 12.0	72 ~ 87
			Spring pin	3.2 ~ 4.7	23 ~ 34
			Shackle pin	3.2 ~ 4.7	23 ~ 34
			"U" bolts	3.8 ~ 4.6	27 ~ 33

