

# Mazda RX-4·929 WORKSHOP MANUAL CHASSIS

**mazda**

1976

Mazda RX-4·929

WORKSHOP MANUAL  
CHASSIS

SUPPLEMENT

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1901011



1975

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.

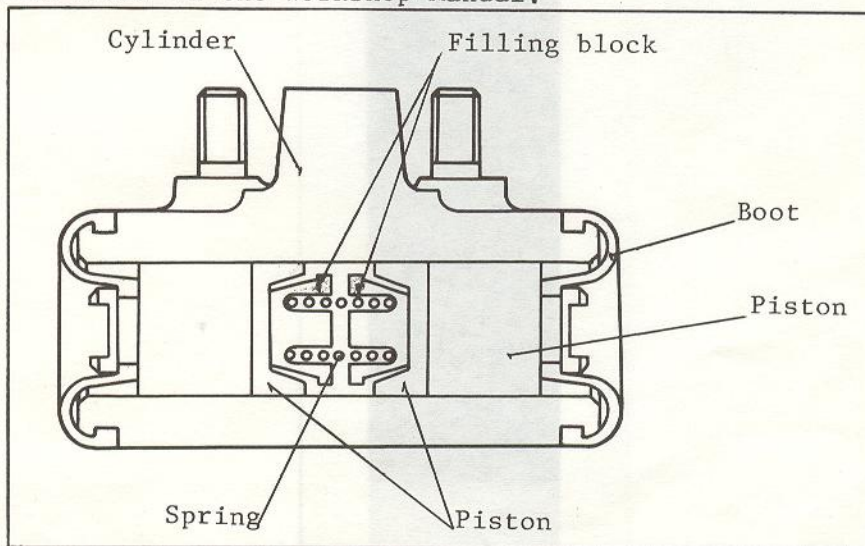


Fig. 1 Rear wheel cylinder

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.	

# Mazda RX-4·929 WORKSHOP MANUAL

## 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<sub>g</sub> (40 ~ 47 ft-lb) to 6.5 ~ 7.5 m-k<sub>g</sub> (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<sub>g</sub> (22 ~ 33 ft-lb) from 2.5 ~ 3.5 m-k<sub>g</sub> (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	

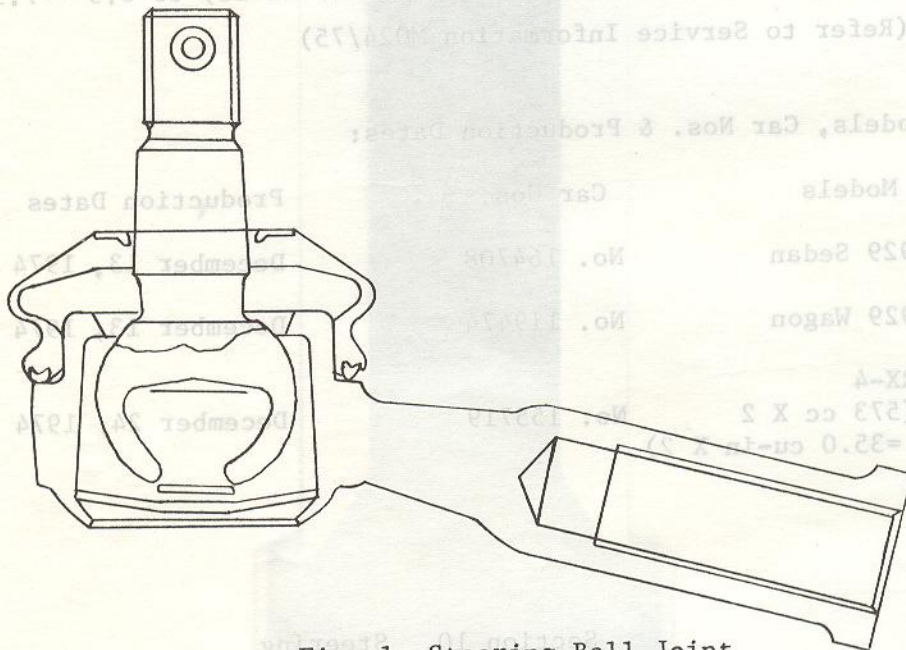


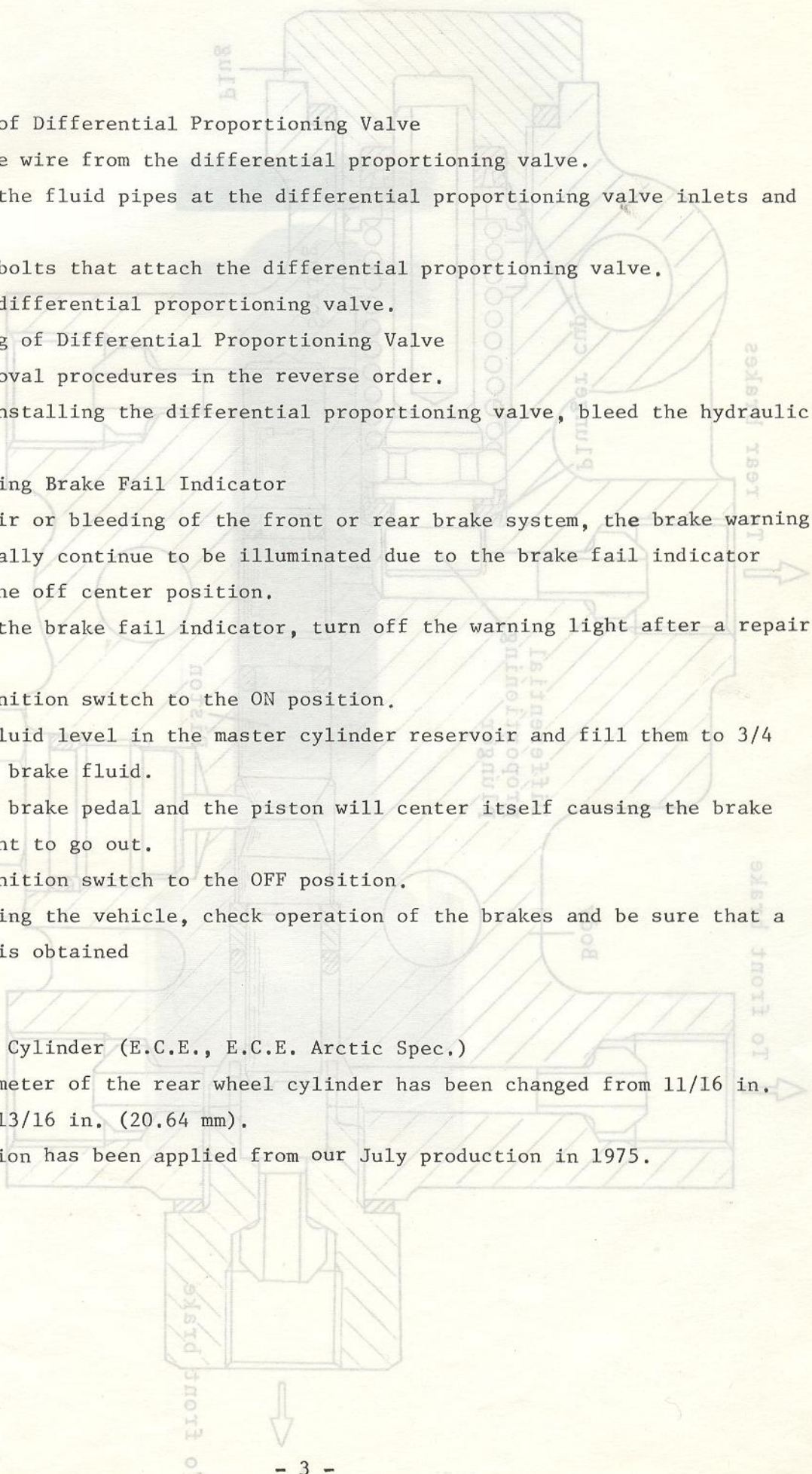
Fig. 1 Steering Ball Joint

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.

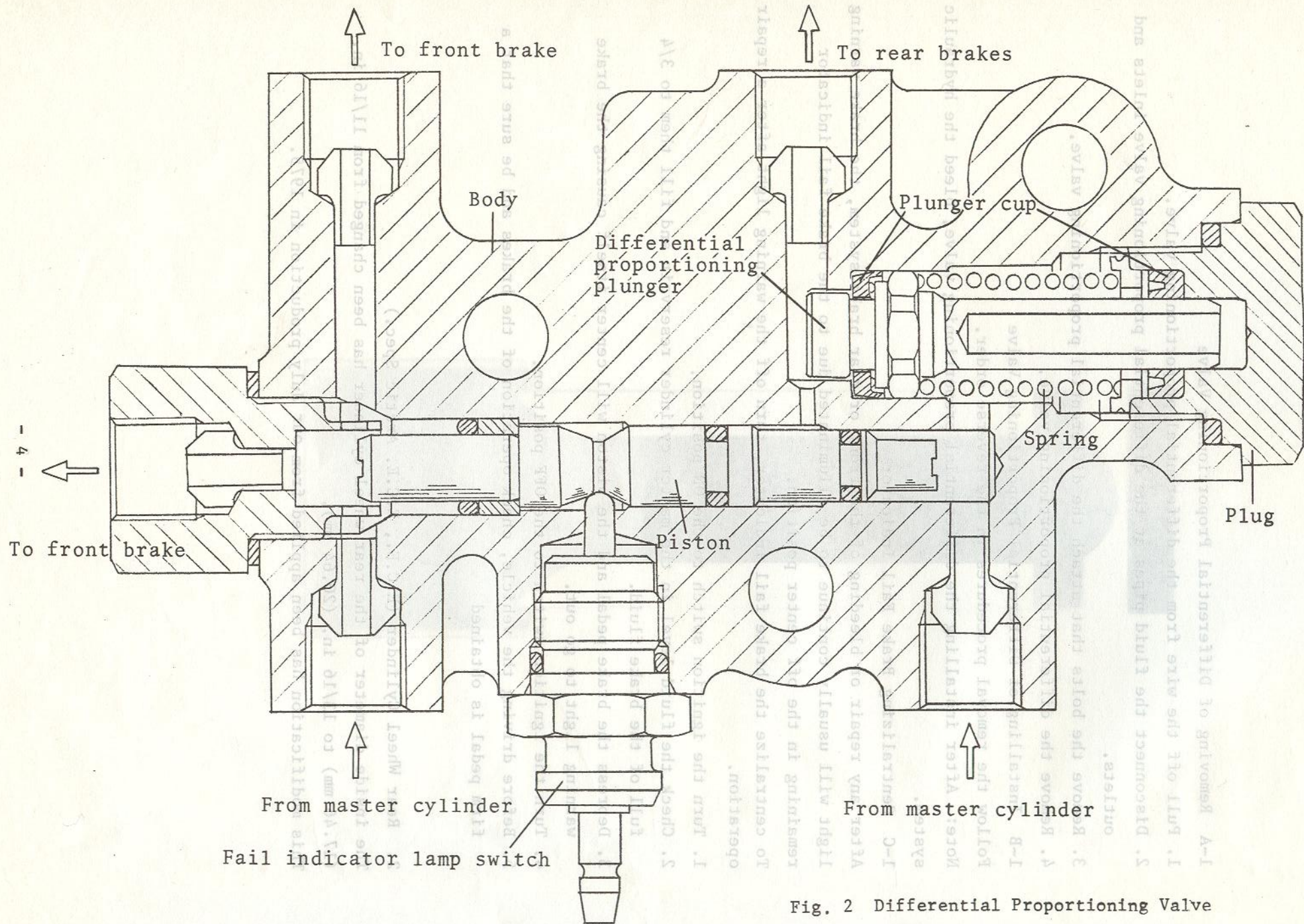


Fig. 2 Differential Proportioning Valve

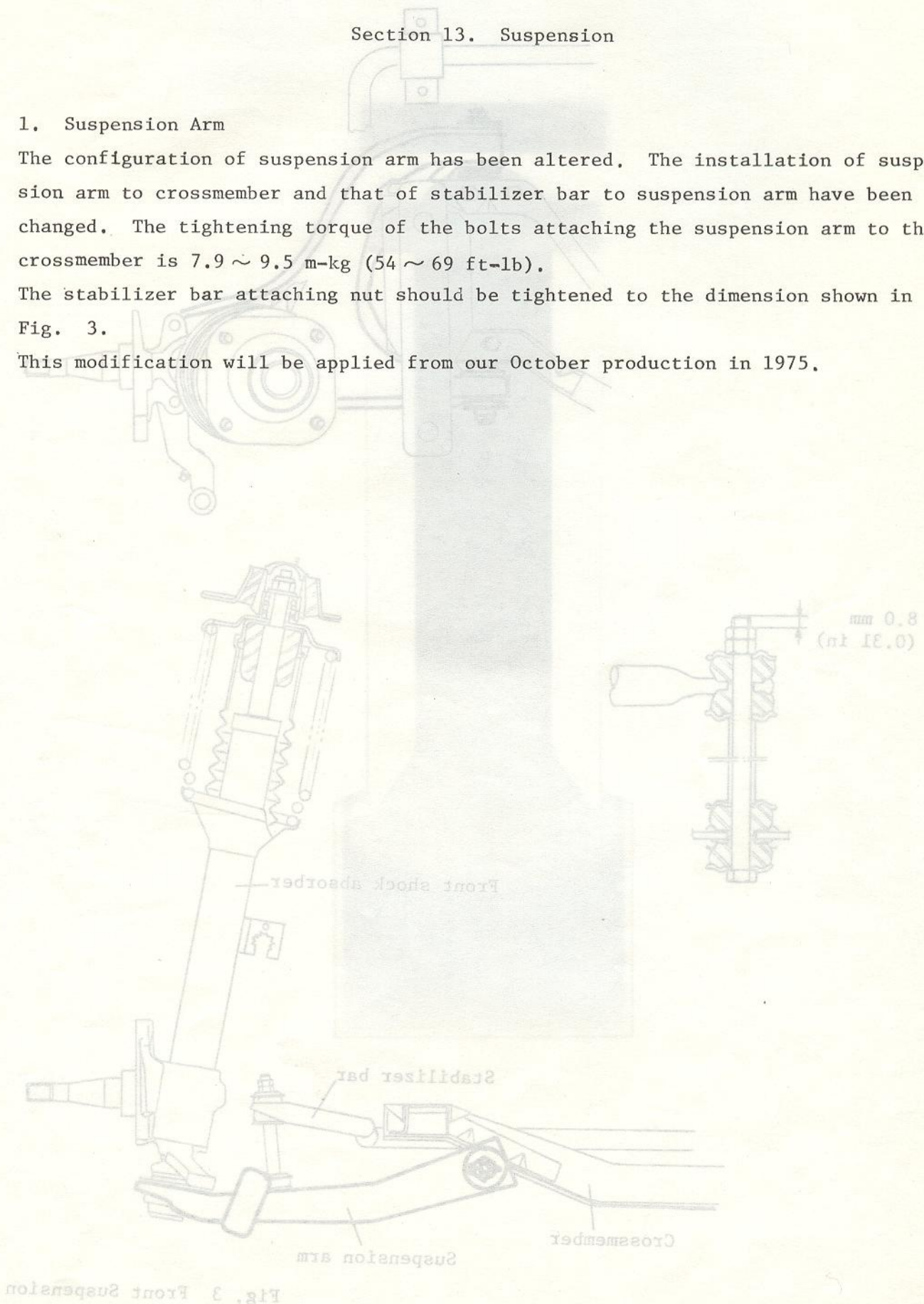
Section 13. Suspension

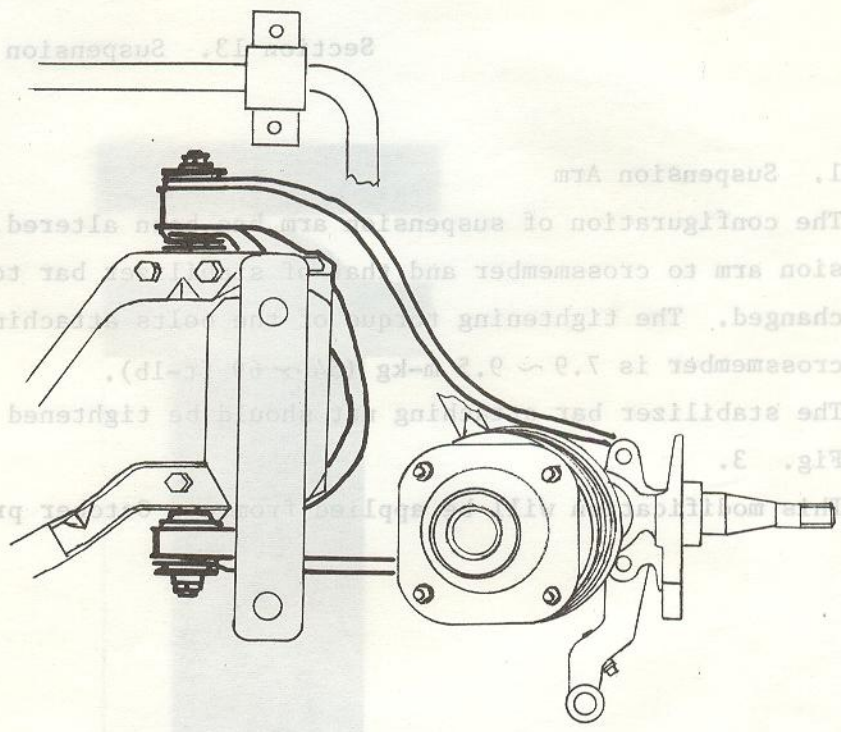
1. Suspension Arm

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<sub>g</sub> (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)

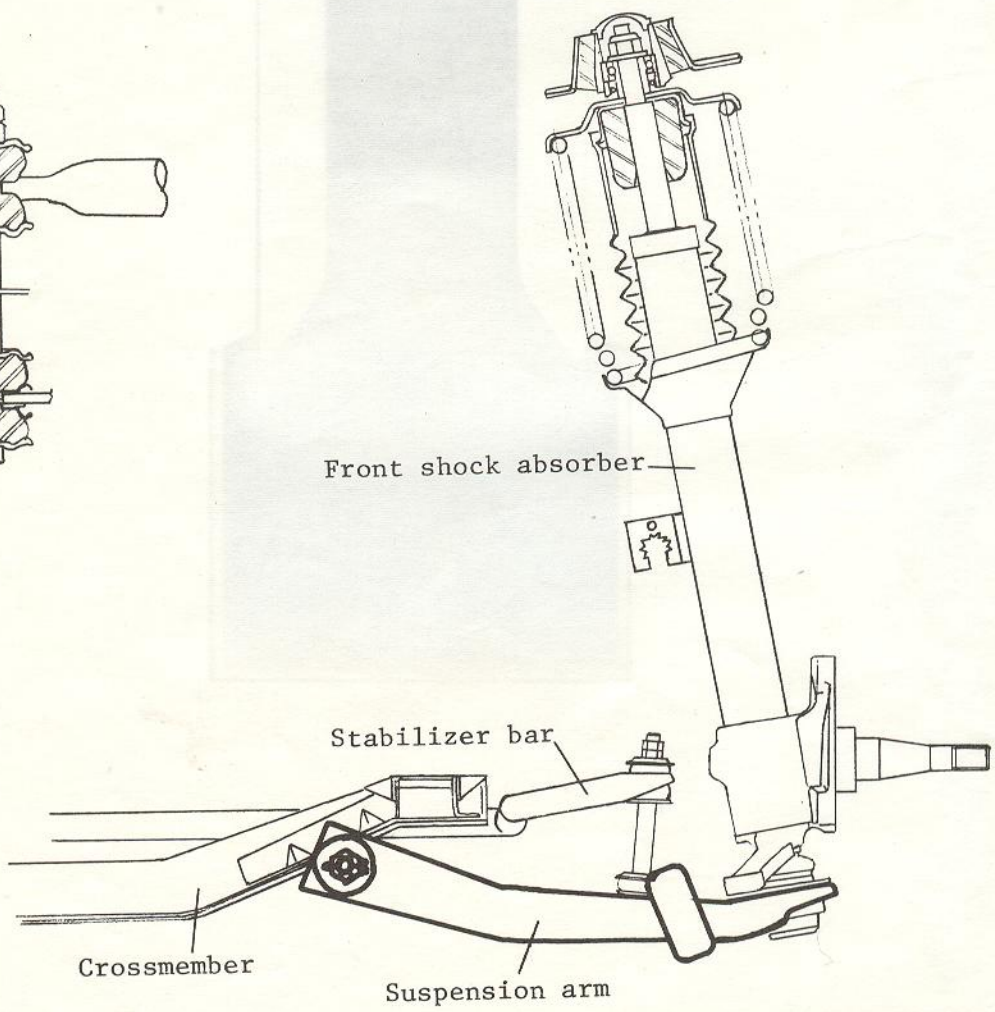
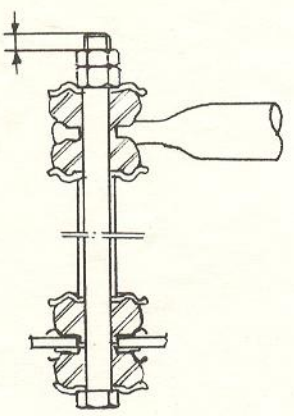


Fig. 3 Front Suspension

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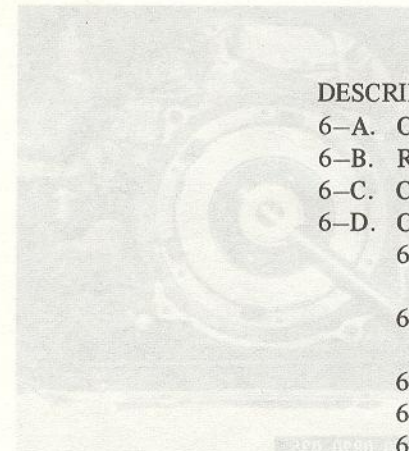
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# CLUTCH (RX-4)

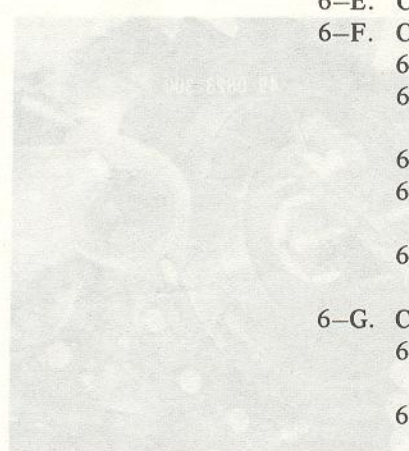
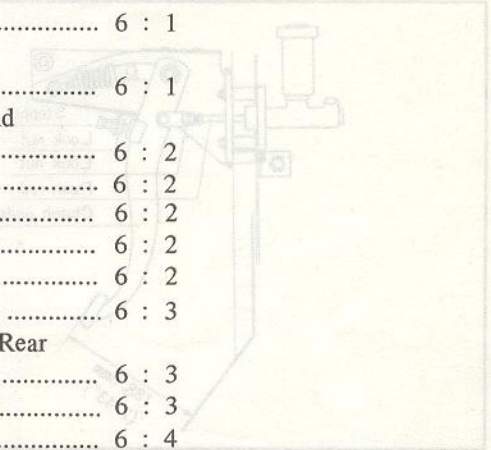
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**DESCRIPTION**  
The clutch is of the single dry disc type. The clutch assembly consists of the clutch disc assembly, clutch cover and pressure plate assembly and clutch release mechanism.  
The clutch operating mechanism is of the dash mounted type, 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 lock nut after adjustment is correct. Tighten the lock nut after adjustment.



**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 play adjusting nut 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.

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

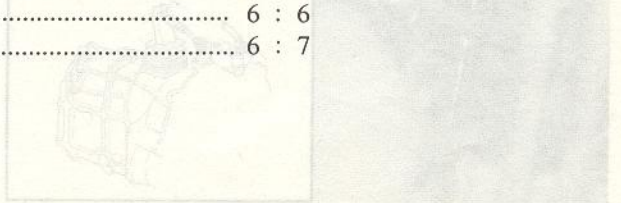


Fig. 6-3 Adjusting release fork free play

**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.

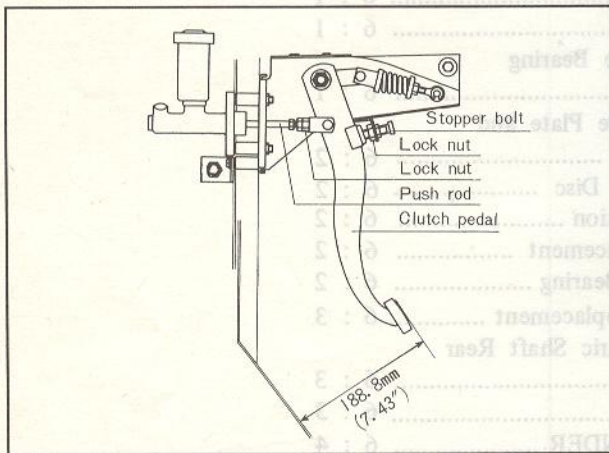


Fig. 6-1 Clutch pedal

**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.

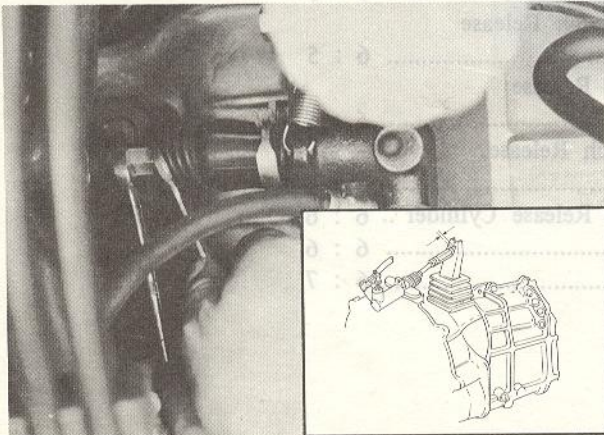


Fig. 6-2 Adjusting release fork free play

**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.

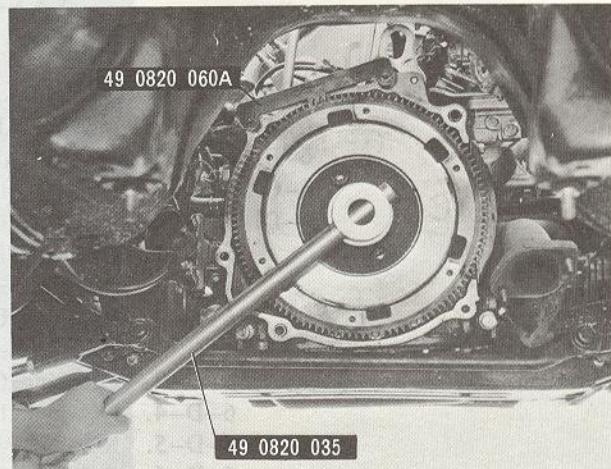


Fig. 6-3 Loosening flywheel nut

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

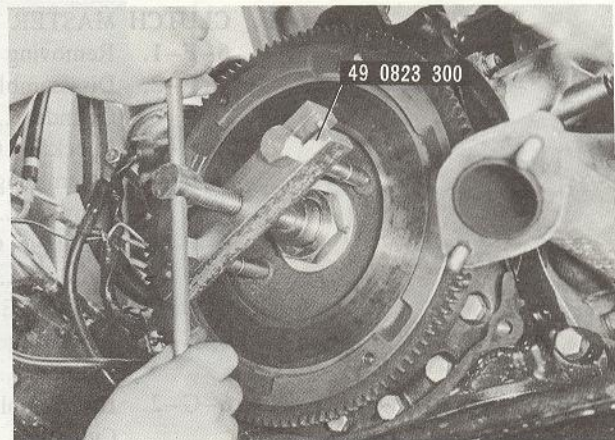


Fig. 6-4 Removing flywheel

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.

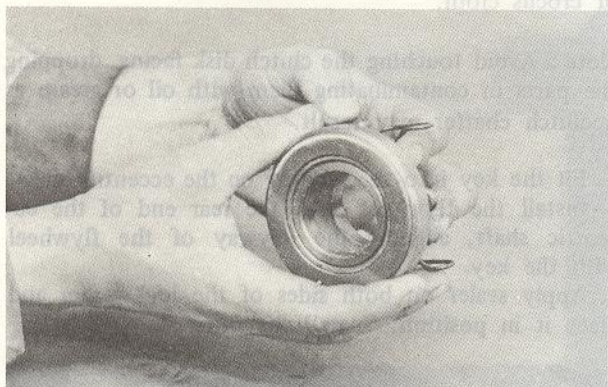


Fig. 6-5 Checking release bearing

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.

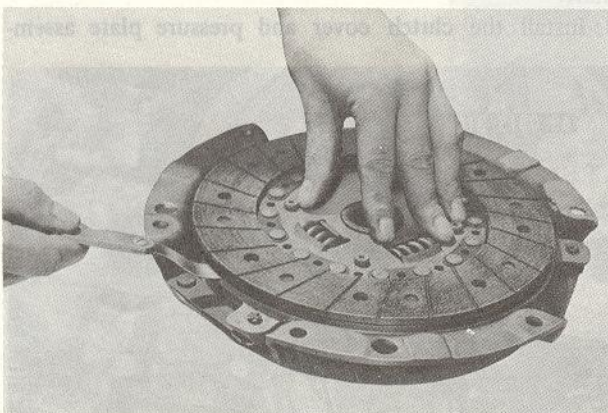


Fig. 6-6 Checking clutch disc for warpage

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.

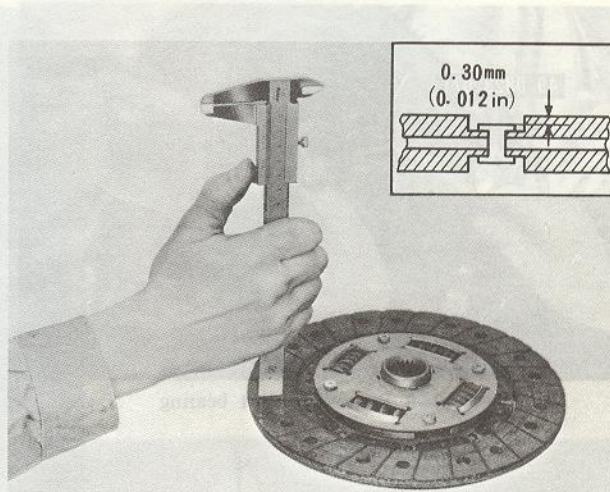


Fig. 6-7 Checking clutch disc for wear

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).

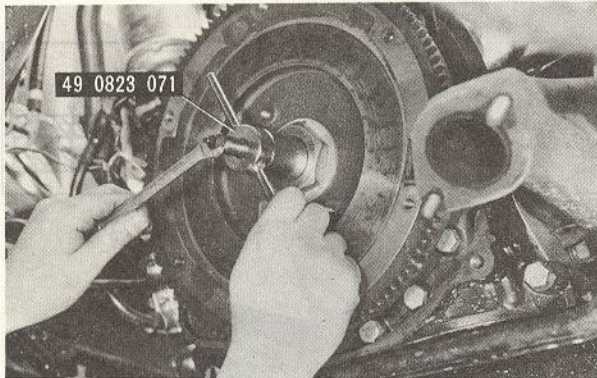


Fig. 6-8 Removing pilot bearing

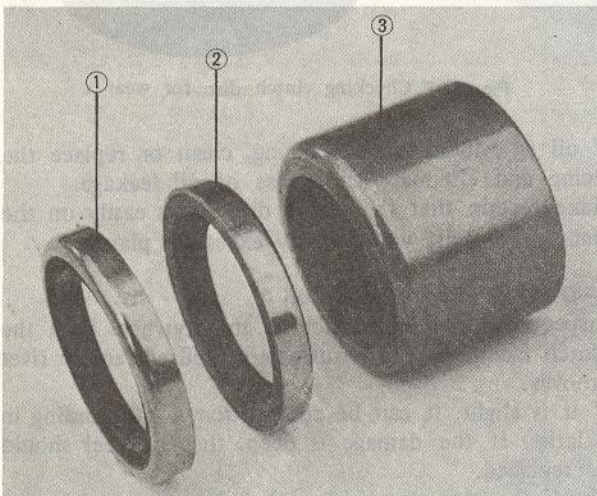


Fig. 6-9 Pilot bearing and seal  
1 & 2. Seal      3. Pilot bearing

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

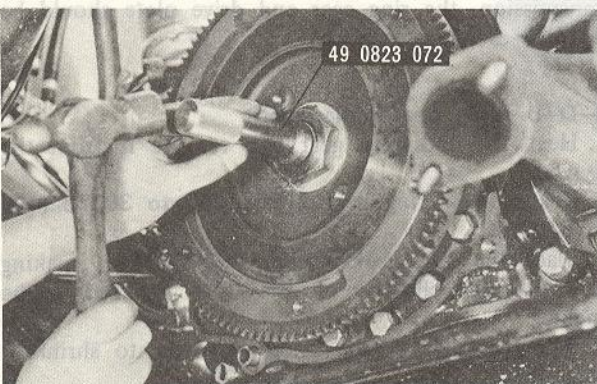


Fig. 6-10 Installing pilot bearing

#### 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.

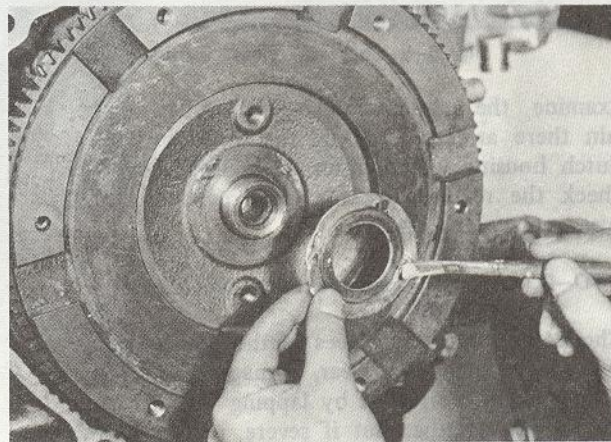


Fig. 6-11 Applying sealer to lockwasher

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.

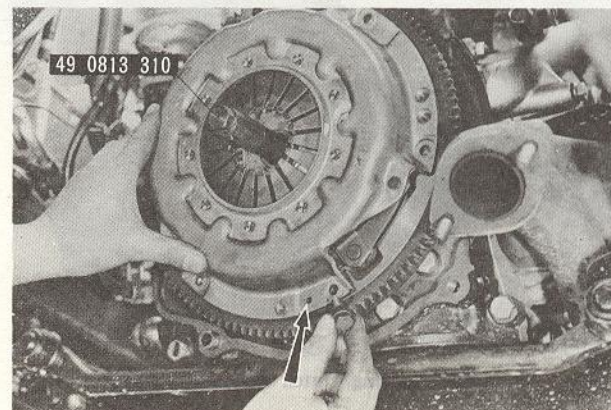
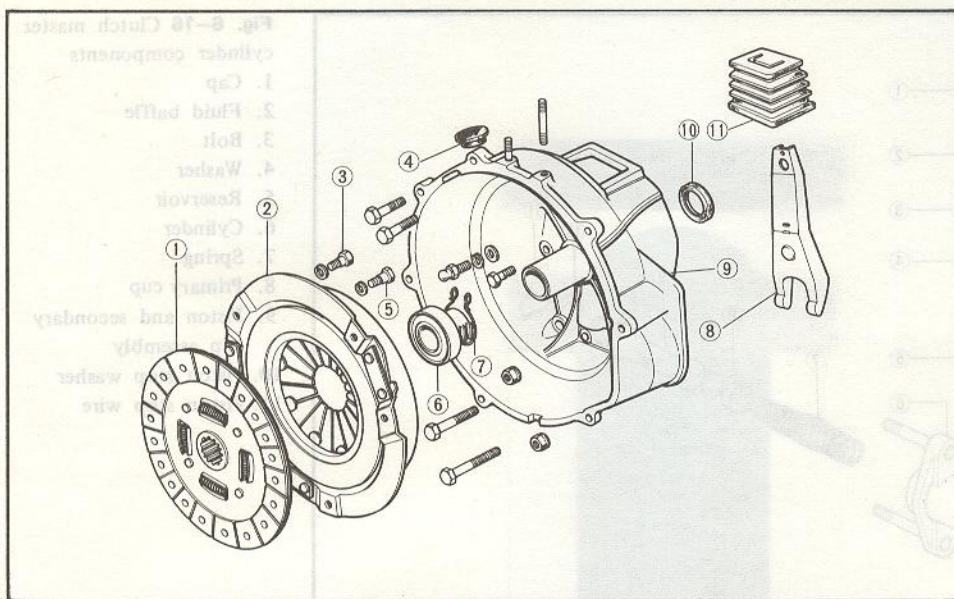


Fig. 6-12 Installing clutch cover assembly



**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.

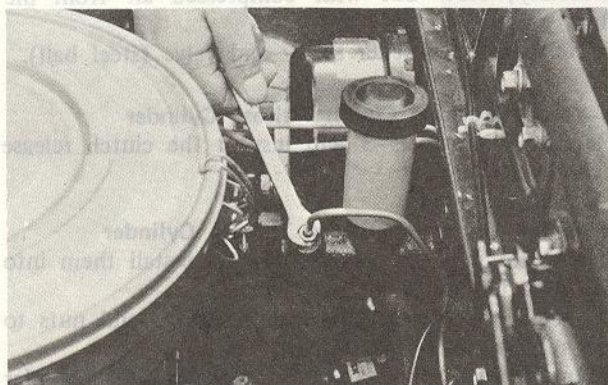
13. Install the transmission and propeller shaft. Care should be taken in order not to bend the clutch disc by allowing the transmission to hang.

## 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.

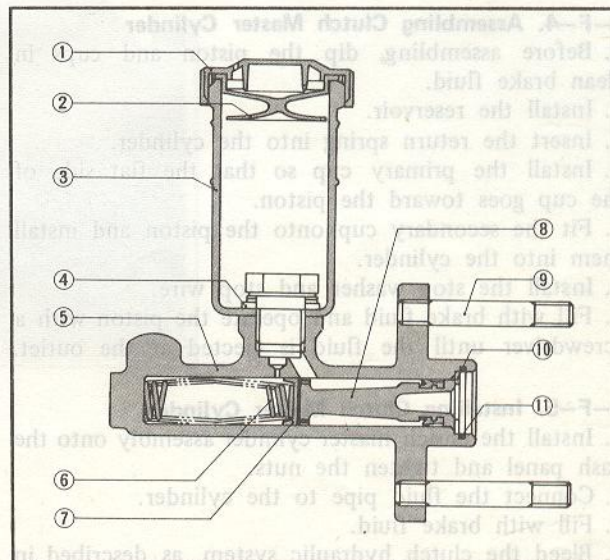
### 6-F-2. Disassembling Clutch Master Cylinder

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.

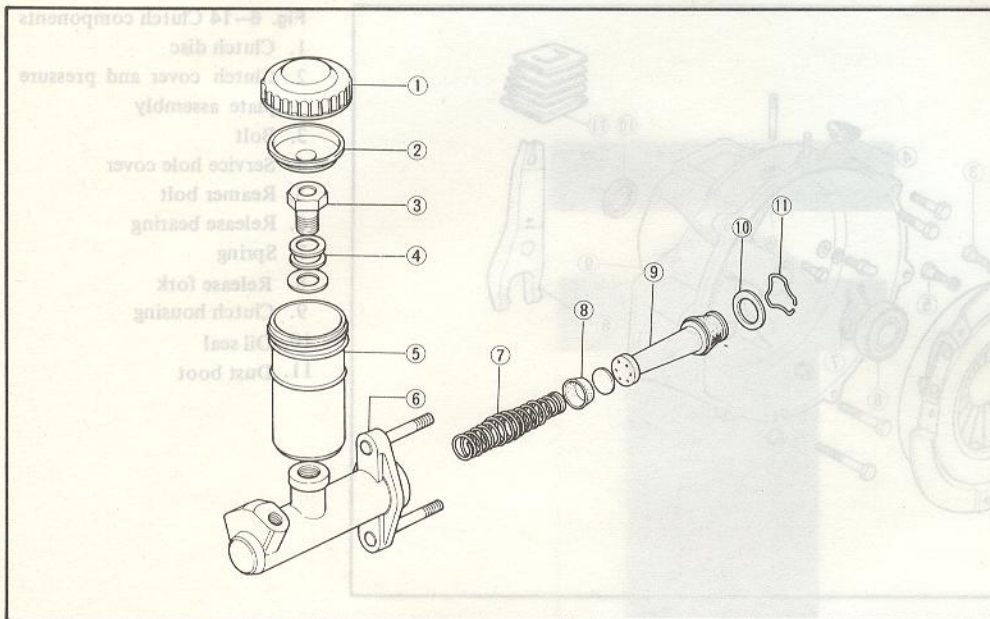
2. Remove the piston stop wire with a screwdriver and remove the stop washer.

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.

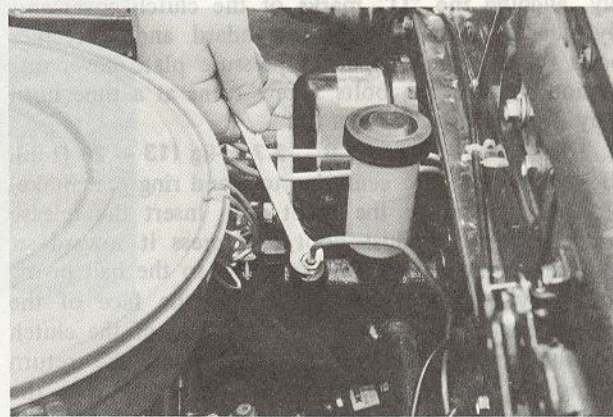
#### 6-F-5. Installing Clutch Master Cylinder

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

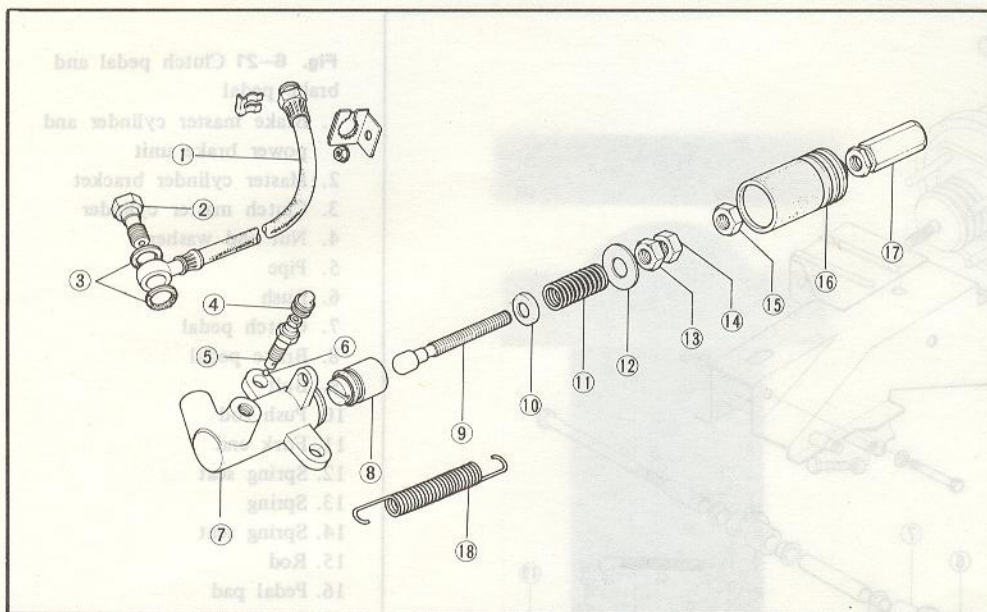
1. Clean the outside of the cylinder thoroughly.
2. Remove the dust boot from the cylinder.
3. Remove the release rod and spring assembly.
4. Remove the piston and cups from the cylinder. If necessary, blow out with compressed air from the fluid passage.
5. Remove the bleeder screw and valve (steel ball).

#### 6-G-3. Checking Clutch Release Cylinder

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

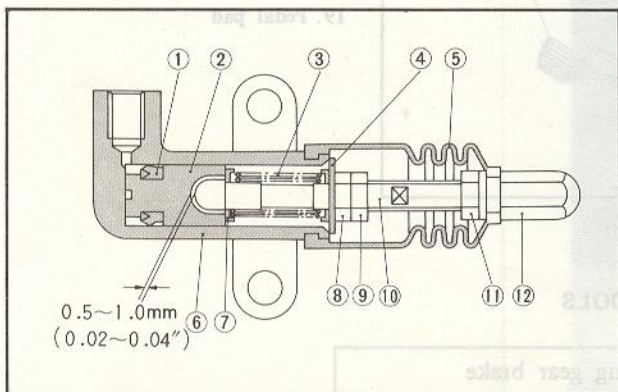
#### 6-G-4. Assembling Clutch Release Cylinder

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.

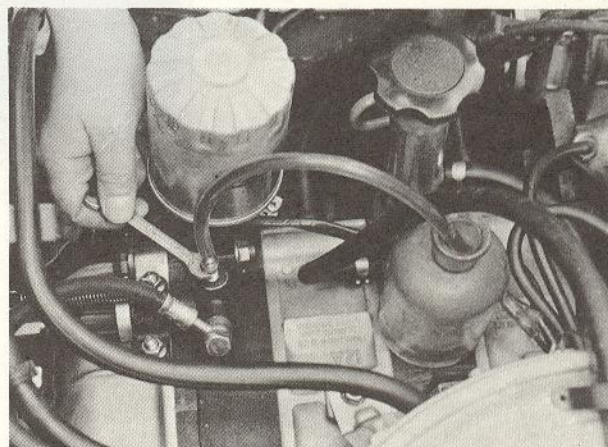
4. Adjust the free play of the release fork, as instructed in Par. 6-B.
5. Hook the return spring.

**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