CLUTCH

Adjustment 1–2

Clutch Pedal 1–3

Clutch Release Cylinder 1–4

Clutch Master Cylinder 1–5

Clutch Unit 1–7

OUTLINE

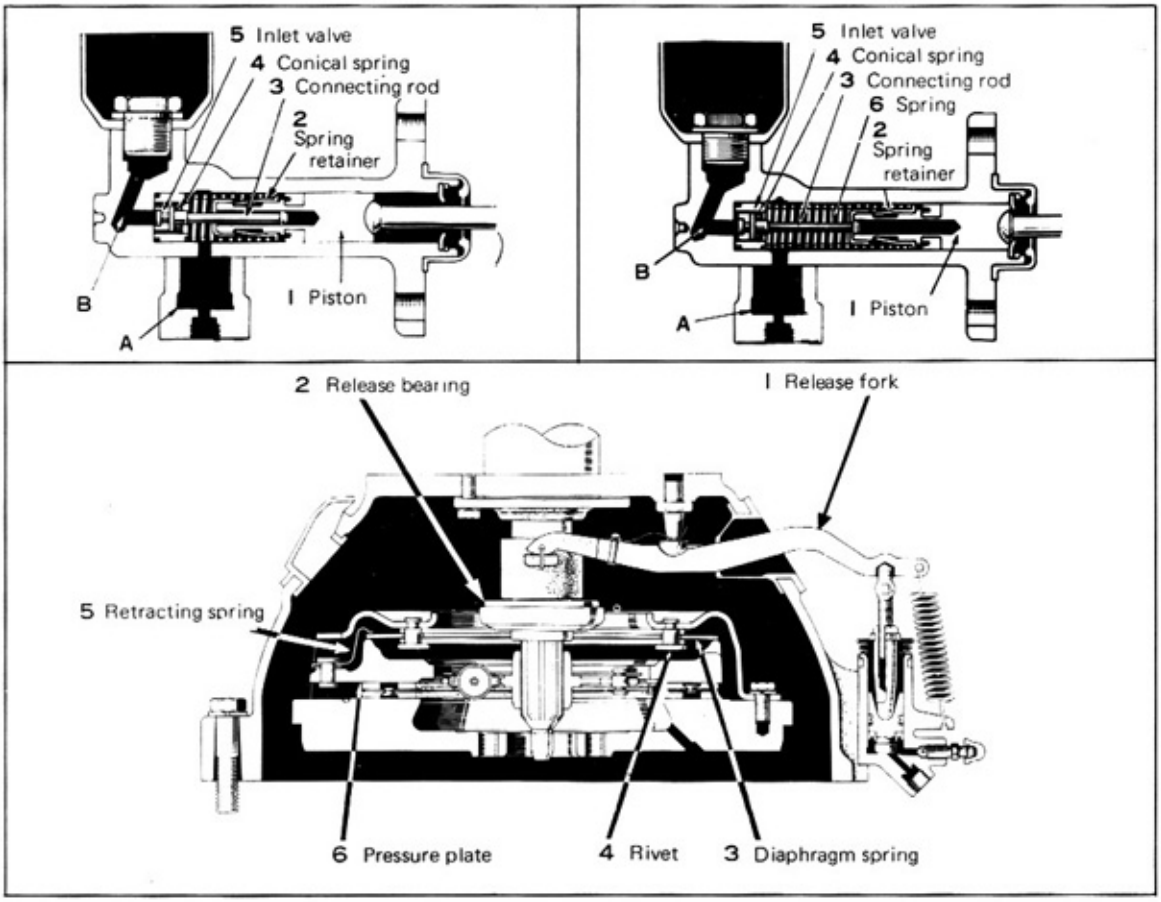


Fig. 1-1 Clutch System

SPECIFICATION

Vehicle model	TA12Y, RA20L	Others
Clutch type Diaphragm type Installed load	Diaphragm, Dry single plate Diaphragm chordal strap drive 365 kg (803 lb)	
Clutch disc size : outer dia x immer dia. x thicness mm (in)	8 inches 200 ϕ x 140 ϕ x 3.5 (7.87 x 5.51 x 0.14)	7.5 inches 190 ϕ x 132 ϕ x 3.5 (7.48 x 5.20 x 0.14)
Material Master cylinder type Master cylinder inner dia. Master cylinder piston stroke Release cylinder inner dia.	S209 Portiess type 15.87 mm (0.625") 30 mm (1.181") 19.5 mm (0.750")	
Spline dia.	28.8 mm (1.134")	23.8 mm (0.937")

CLUTCH ADJUSTMENT

Clutch Pedal

1. Adjust the clutch pedal to the specified height by turning the pedal stopper bolt (3) installed on the pedal bracket.
   Pedal height : 161 mm
2. A small amount of play is required between the master cylinder push rod and the master cylinder piston.
   Play 1.0 ~ 3.0 mm (0.04 ~ 0.12") (At pedal top)
   Master cylinder push rod (1) and push rod clevis (2) serve as adjuster.
   To adjust, loosen the locknut and turn the push rod.
3. To provide the specified clearance between the radial ball bearing (for clutch release) and diaphragm spring, turn the release cylinder push rod No. 1 until the play at release fork tip is at the prescribed value.
   Fork tip play 2.0 ~ 3.5 mm (0.079" ~ 0.138")
4. After making the above adjustments, the clutch pedal should be within the following values.
   Clutch pedal play 25 ~ 45 mm (1" ~ 1-3/4")

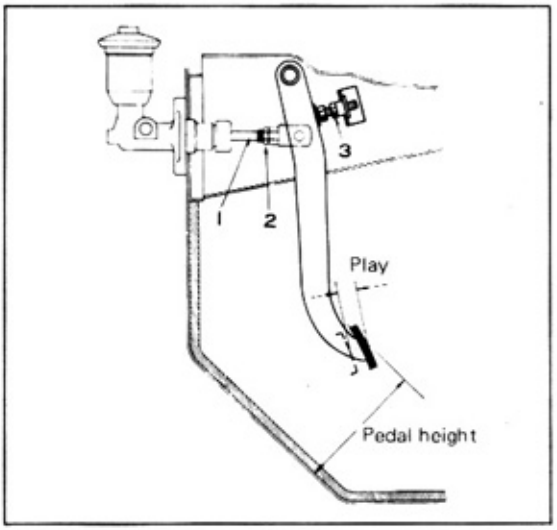


Fig. 1-2 Pedal Adjustment

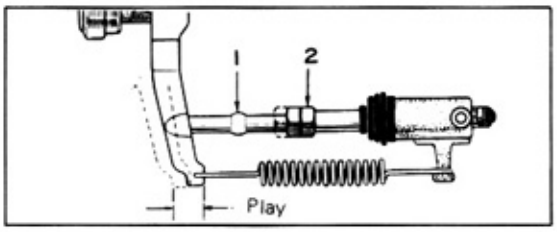


Fig. 1-3 Release fork tip (end) play

SYSTEM BLEEDING

Caution :

1. **The brake fluid in the master cylinder reservoir must be kept full during the entire bleeding operation.**
2. **Do not allow the brake fluid to get on the car painted surface.**

1. Jack up the vehicle and support it on stands, and fill the master cylinder reservoir full with brake fluid.
2. Remove the bleeder plug cap (1) and loosen the bleeder plug (2). Close the discharge hole with finger and depress the pedal several times.
3. With the pedal in depressed state, release the finger and allow the air to vent out.
4. Repeat the above operations until pressure is felt on finger and then tighten the bleeder plug.
5. Connect a vinyl tube to the bleeder plug and have available a container to receive the bled fluid.
   Note : Have the container half-filled with brake fluid.
6. Depress the clutch pedal, loosen the bleeder plug and allow the fluid to bleed out. Then tighten the bleeder plug and release the clutch pedal.
7. Keep repeating the above operation until air bubbles can no longer be seen in the vinyl tube.
8. After the air bubbles stop coming out, tighten the bleeder plug while holding the clutch pedal depressed, and replace the cap.
   Note :
   1. After completing the system bleeding, apply hydraulic pressure in the clutch line and check for fluid leakage.
   2. Fill the master cylinder reservoir to the specified level.

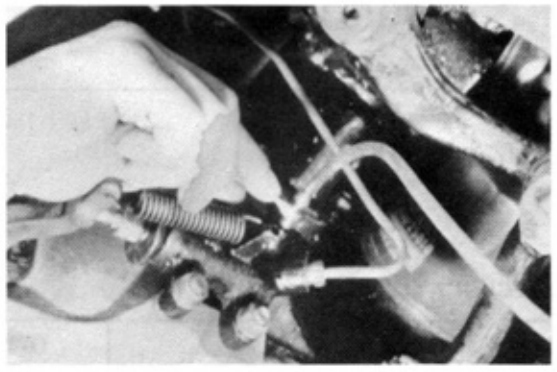


Fig. 1-4 Air Bleeding

CLUTCH AND BRAKE PEDALS

COMPONENT PARTS

1. Pin
2. Bushing
3. Coller
4. Cusion
5. Spring
6. Pedal
7. Pad

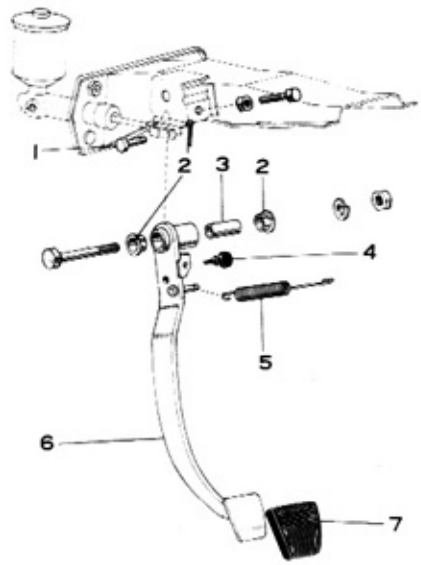


Fig. 1-5 Clutch pedal

REMOVAL

1. Unhook the tension springs (5).
2. Pull out the cotter pin (4) and pin (2) that attach the pedals to the clutch and brake master cylinder push rods.
3. Remove the nuts (5) from the pedal mounting bolts and pull out the bolts toward the clutch pedal side, and take out the pedals.

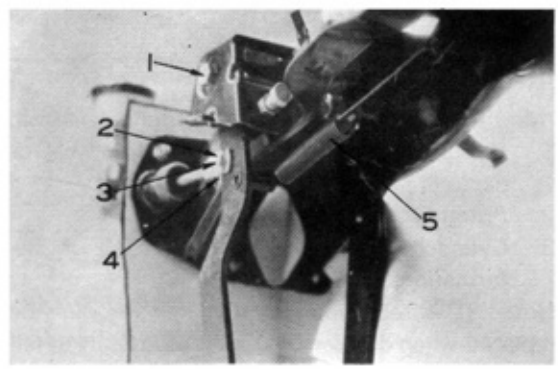


Fig. 1-6 Removing Clutch Pedal

IMSPECTION

Inspect the following parts and repair or replace if found defective.

1. Bushing for wear, deformation, or damage.
2. Collars for wear or damage.
3. Pedals for twisting, bending, or wear in collar insertion part.
4. Cushions (rubber) for damage or wear.

INSTALLATION

Install by following the removal procedures in reverse order.

Note : Apply Castle MP Grease when installing the bushings.

Pedal mounting bolt tightening torque 350 ~ 450 kg-cm (25 ~ 33 ft-lbs)

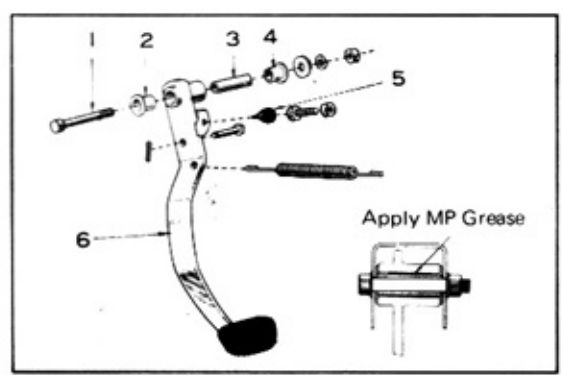


Fig. 1-7 Installing Clutch Pedal

ADJUSTMENT

Refer to P1-4 Clutch Pedal Adjustment

CLUTCH RELEASE CYLINDER

COMPONENT PARTS

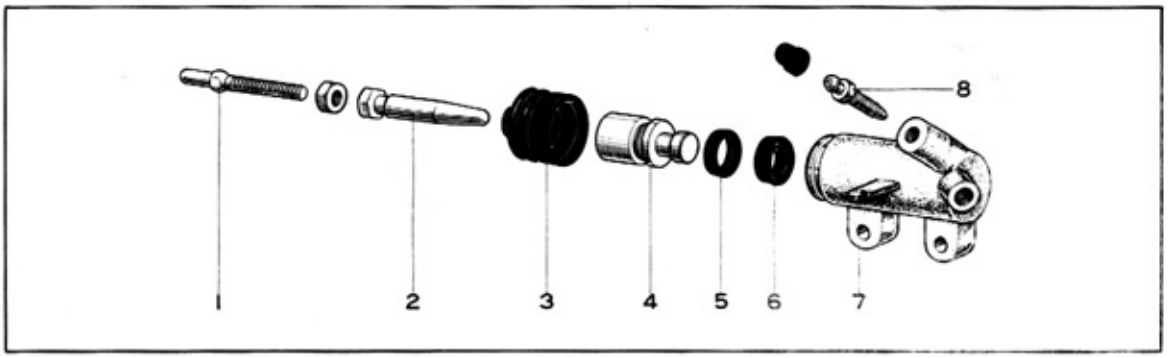


Fig. 1-8 Clutch Release Cylinder

REMOVAL

1. Disconnect the pipe, and remove spring (4).
2. Loosen nut (2), screw and remove the rod (1) from the release fork.
3. Remove the release cylinder.

Note : Before removing the release cylinder, loosen (4) and tighten (5).

DISASSEMBLY

Refer to Fig. 8-10 and disassemble in the order (1) to (8).

INSPECTION & REPAIRS

Inspect the parts and replace any found defective.

1. Release cylinder bore for eccentric wear or damage.
2. Piston for damage or wear.
3. Cylinder cup for wear, damage, or deformation.

Note : It is recommended that cylinder cups be replaced when disassembled, as it is difficult to tell whether they are in proper working condition, and rubber parts tend to age with use.

ASSEMBLY

Caution

1. Before installing the cylinder cups, soak them in clean brake fluid, or coat them with Castle rubber grease.
2. Wash all assembly parts in clean brake fluid.

1. Install the cylinder cups to the piston and insert them in the release cylinder.
2. Install the cylinder boot and then the push rod.
3. Install the bleeder plug to the release cylinder and place on the cap.

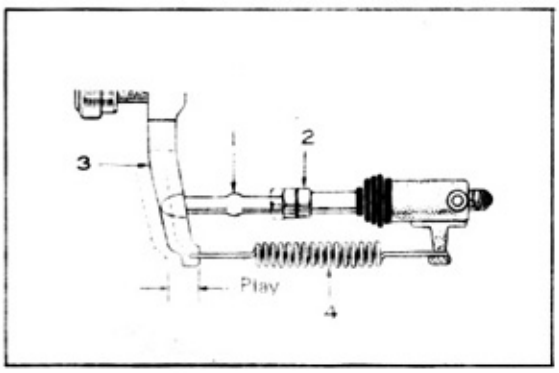


Fig. 1-9 Removing Release Cylinder

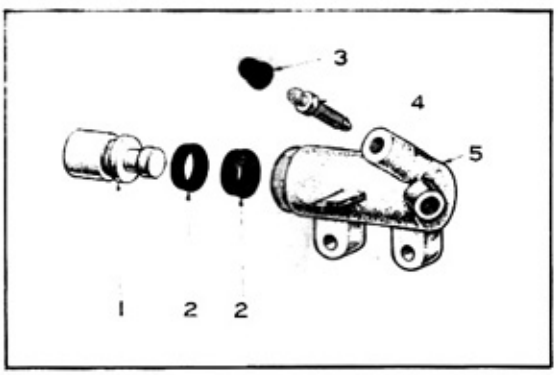


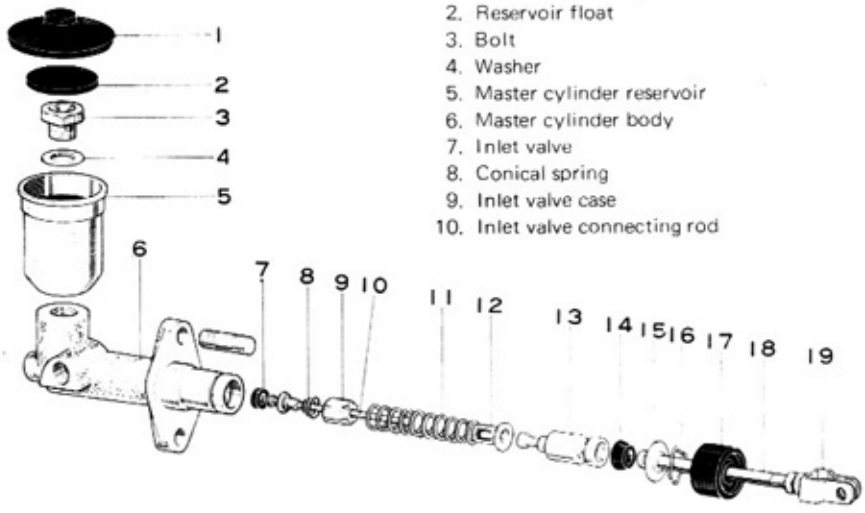
Fig. 1-10 Inspection

INSTALLATION

1. Fit on the push rod end to the clutch release fork depression, and place the release cylinder assembly at the designated location.
2. Secure the release cylinder with nuts over washers, and hook on the tension spring.
3. Connect the clutch pipe to the release cylinder.
4. Refer to Adjustment.

CLUTCH MASTER CYLINDER

COMPONENT PARTS



1. Reservoir filler cap
2. Reservoir float
3. Bolt
4. Washer
5. Master cylinder reservoir
6. Master cylinder body
7. Inlet valve
8. Conical spring
9. Inlet valve case
10. Inlet valve connecting rod
11. Compression spring
12. Spring retainer
13. Piston
14. Cylinder cup
15. Piston stop plate
16. Hole snap ring
17. Boot
18. Master push rod
19. Push rod clevis

Fig. 1-11 Master Cylinder

REMOVAL

Caution

Care must be taken not to spill the brake fluid on the vehicle painted surface when removing the clutch master cylinder.

Remove the body mounting nuts and take out the master cylinder.

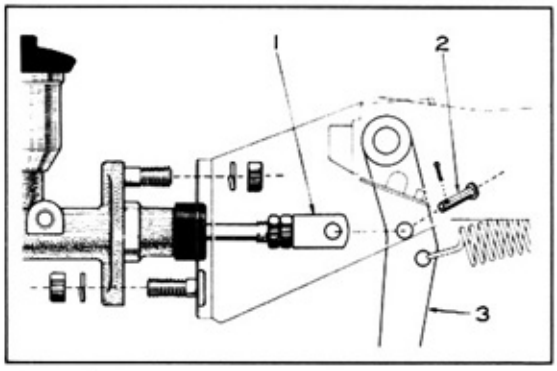


Fig. 1-12 Removing Master Cylinder

DISASSEMBLY

Caution

Disassemble by holding in vise but take care not to damage the reservoir mounting face. Also take care not to damage any of the disassembled parts.

1. Remove the master cylinder reservoir, snap ring and push rod.
2. Remove the master cylinder cap and snap ring, and take out the piston, cup, and other parts.

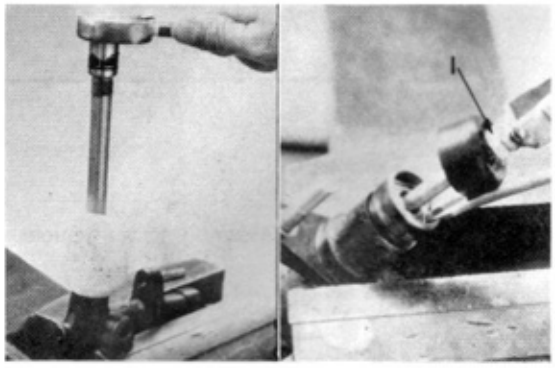


Fig. 1-13 Disassembling Master Cylinder

3. Disassemble the piston.
   Pry up the retainer (4) and disconnect the retainer (4) from the piston (5).

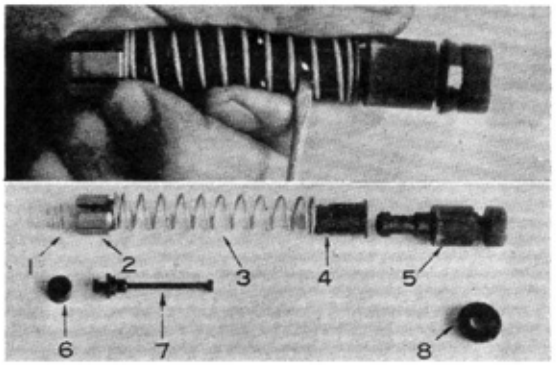


Fig. 1-14 Disassembling Piston

INSPECTION

Inspect the parts and replace any found defective. (Refer to Fig. 1-15)

1. Master cylinder for eccentric wear or damage in bore.
2. Piston for eccentricity, wear, or damage.
3. Compression spring for weakening.
4. Reservoir for damage.
5. Reservoir cap for clogging in vent hole or damage.

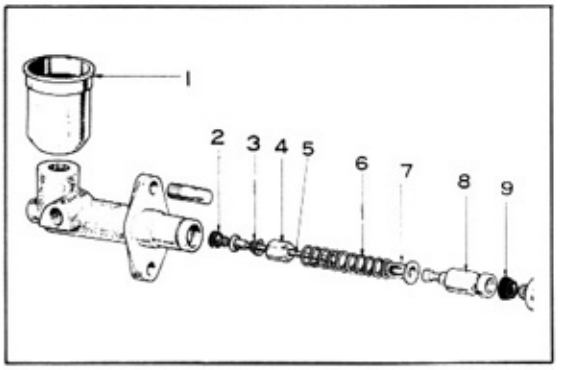


Fig. 1-15 Inspection

REASSEMBLY

Caution

1. Before installing the cylinder cups, soak them in clean brake fluid, or coat them with Castle rubber grease.
2. Wash all assembly parts in clean brake fluid.

1. Assemble the piston as Fig. 1-16
2. Assemble the piston assembly, push rod and reservoir onto the master cylinder.
   Reservoir tightening torque : 2 ~ 3 m-kg (14 ~ 22 ft-lb)

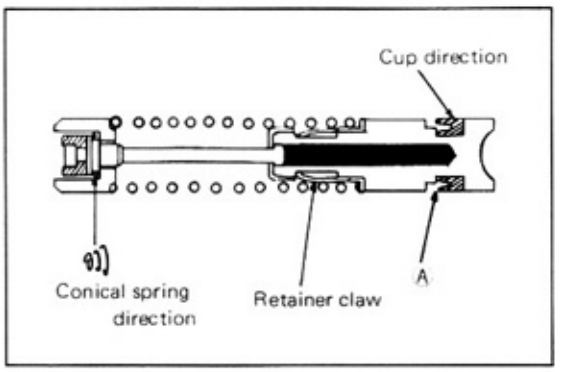


Fig. 1-16 Assembling Piston

INSTALLATION

Install the master cylinder assembly to the vehicle.

Note :

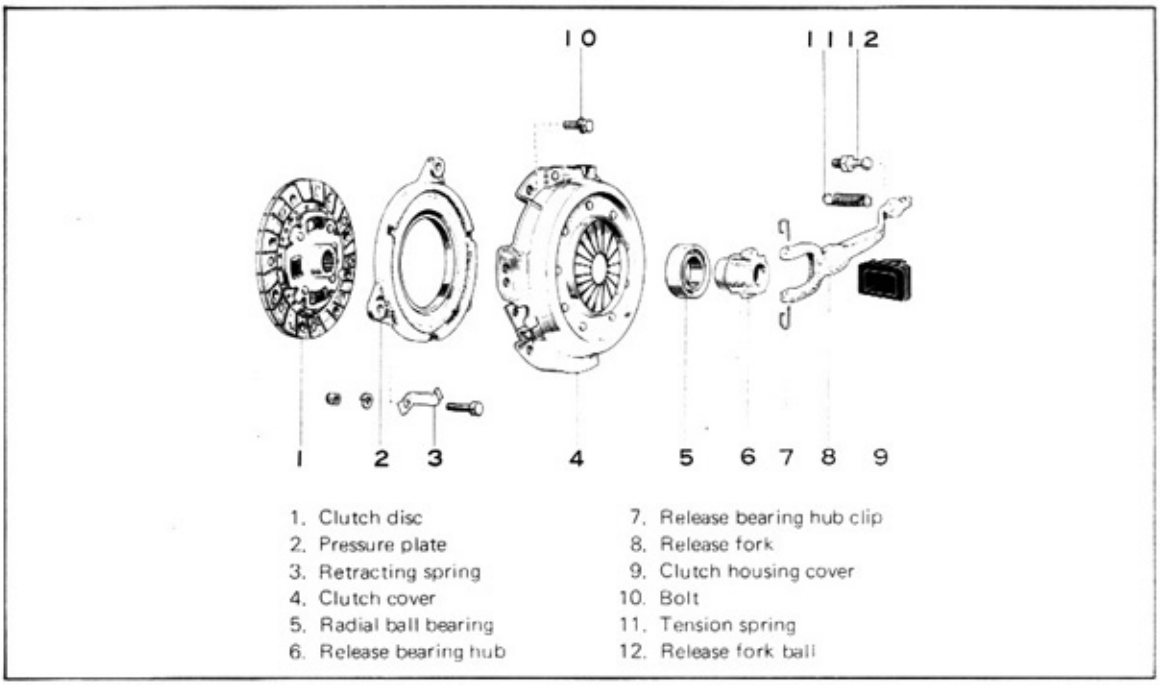
1. Do not forget to install the master cylinder boot. (Have the hole facing downward)
2. Bleed the system to eliminate the air.

Tightening Torque

	m-kg (ft-lb)
Master cylinder to Dash panel	1.5 ~ 2.2 (11 ~ 16)
Clutch pedal Securing nut	5 ~ 8 (36 ~ 58)

CLUTCH UNIT

COMPONENT PARTS



1. Clutch disc
2. Pressure plate
3. Retracting spring
4. Clutch cover
5. Radial ball bearing
6. Release bearing hub
7. Release bearing hub clip
8. Release fork
9. Clutch housing cover
10. Bolt
11. Tension spring
12. Release fork ball

Fig. 1-17 Clutch Assembly

REMOVAL

1. Refer to the chapter on transmission removal and remove the transmission.
2. Remove the clutch cover assembly and disc.
   Note : Take care not to allow grease or oil to get on clutch disc lining faces or on the pressure plate and flywheel surfaces that contact the disc.

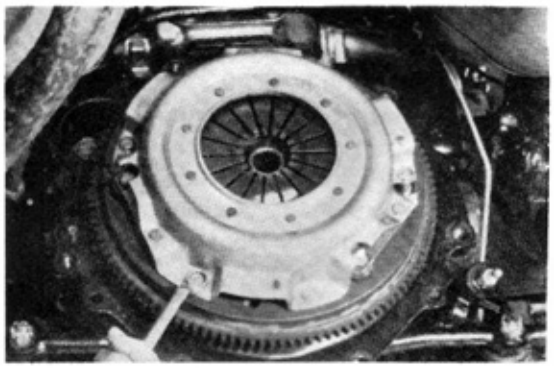


Fig. 1-18 Clutch Inspection

MEASUREMENT OF INSTALLATION LOAD

1. Using clutch pressure tester (1), check the installation load of clutch cover assembly (2) before disassembly. If found below the specified limit, replace the diaphragm spring or the coil spring.
   Note : For operation of tester, refer to tester instruction manual.
   Installation Load
   Limit : 263.5 kg (581.0 lbs)
   Normal : 285 ~ 335 kg (628 ~ 739 lbs)

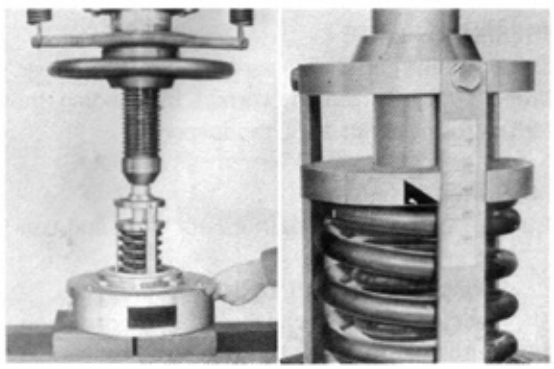


Fig. 1-19 Measurement of Installation Load

DISASSEMBLY

Caution

The clutch has been balanced as an assembly so that in order to prevent disturbing the balance as much as possible when reassembled, care should be taken to provide the parts with match marks so as to ensure reassembly of the parts to the same relative positions.

1. Place match marks on the clutch cover and pressure plate.
2. Separate the clutch cover from pressure plate.
   (1) With center punch, locate drill hole accurately in center of rivet heads.
   (2) Using a 10 mm drill (13/64" drill), drill out the rivet heads.
   (3) Punch out the rivets and separate the clutch cover from pressure plate.

   Note : Make the separation at the pressure plate side rivets.

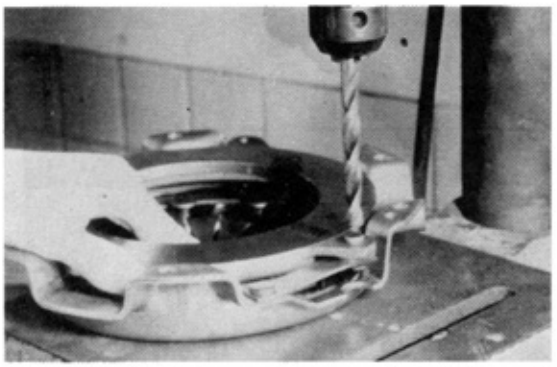


Fig. 1-20 Clutch Cover Disassembly

INSPECTION & REPAIRS

Inspect the parts and repair or replace any part found defective.

CLUTCH DISC

1. Check facing (1) for wear, damage, presence of grease or oil, and glazing.
   Rivet head depth limit : 0.3 mm (0.012")
2. Torsion rubber (2) for damage or deterioration.
3. Splined part (3) for damage or wear.
   Excessive looseness and sliding action when fitted on transmission input shaft splines.
4. Clutch disc for warping.
   Deflection limit 0.5 mm (0.02")

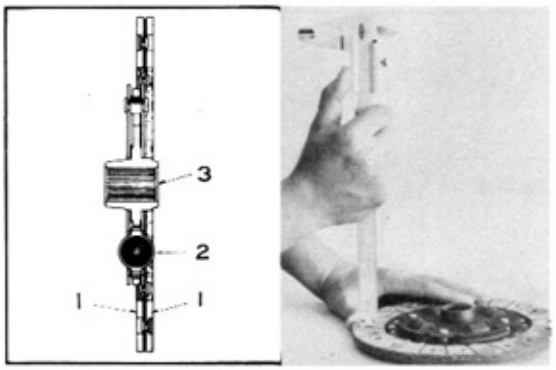


Fig. 1-21 Clutch Disc Inspection

CLUTCH COVER

For warpage, cracks, distortion, or wear.

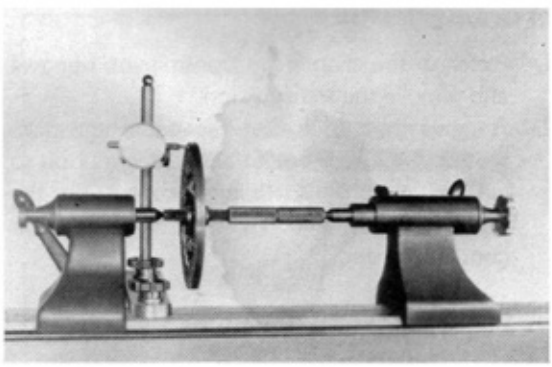


Fig. 1-22 Clutch Disc Inspection

PRESSURE PLATE

Check friction end sliding part for burning or wear.

Note : If lightly scored, correct by sanding the surface (using about #180 sandpaper).

DIAPHRAGM SPRING

1. Bearing contacting surface for wear and contacting state.
2. Spring for deformation, damage, or cracks.
3. Pivot ring for wear, damage, or deformation.
4. Retracting spring and clutch strap for wear or deformation.

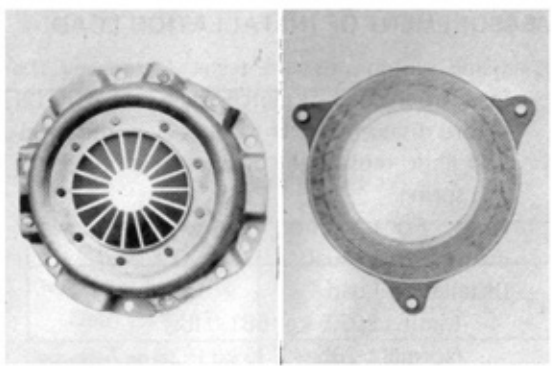


Fig. 1-23 Clutch Cover Inspection

RADIAL BALL BEARING

Caution

Do not wash the bearing as it is of the sealed-grease type.

1. Pressure lever and diaphragm spring contacting surfaces for wear or damage.
2. Press the bearing in fore-and-aft direction and check if it revolves smoothly. If defective, replace by using a press or vise.
   Note : When replacing with a vise, be sure to use a pipe sleeve or cloth so as to prevent damaging the bearing contacting surface with pressure levers or diaphragm spring.

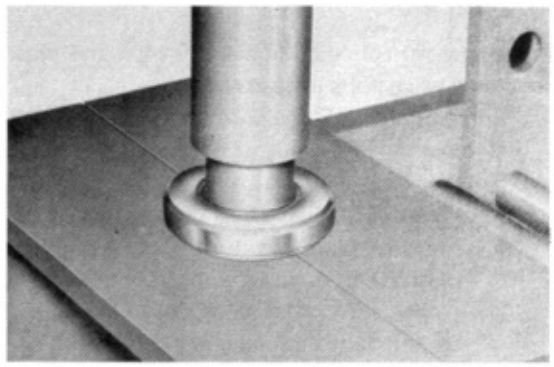


Fig. 1-24 Removing Bearing

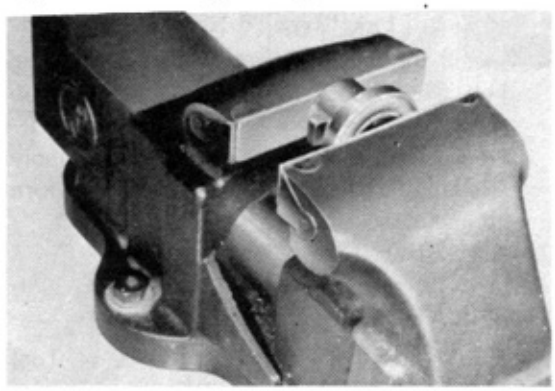


Fig. 1-25 Installing Bearing

BEARING (FOR INPUT SHAFT FRONT END)

1. With the bearing installed on the crankshaft, inspect the bearing for abnormal wear, sticking, and abnormal noise.
   Replace if found defective.
2. Bearing replacement
   (1) Using Input Shaft Front Bearing Puller [09303–35010], remove the bearing from the crankshaft.
   (2) Coat the bearing with Castle MP grease and using Input Shaft Front Bearing Replacer [09304–12011], drive the bearing into crankshaft.

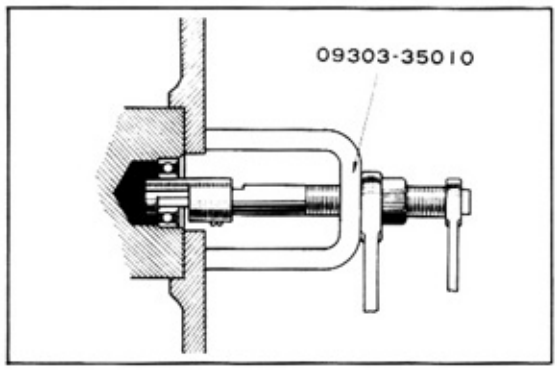


Fig. 1-26 Removing Bearing

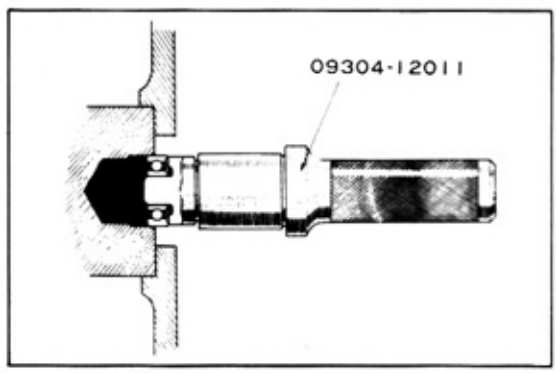


Fig. 1-27 Installing Bearing

ASSEMBLY

Install the retracting springs and install the pressure plate using bolts instead rivets.

Bolt torque : 150 ~ 220 kg-cm (10.9 ~ 15.9 ft-lbs)

Notes :

1. When installing the clutch cover to pressure plate, be sure that the marks placed before disassembly are matched.
2. Apply a thin coating of Castle MP grease to the clutch sliding parts (1) and (2) before assembling.

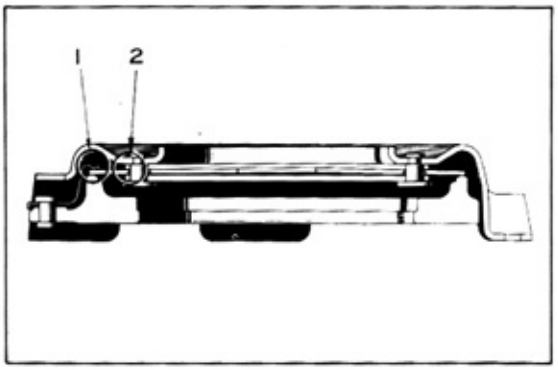


Fig. 1-28 Applying MP Grease

CLUTCH RELEASE FORK

1. Install the release fork and then the bearing hub and couple the parts with two hub springs.

   Note : Before installing bearing hub, apply Castle MP grease to hub inside and fork contacting surface.
2. Check the fork operation.

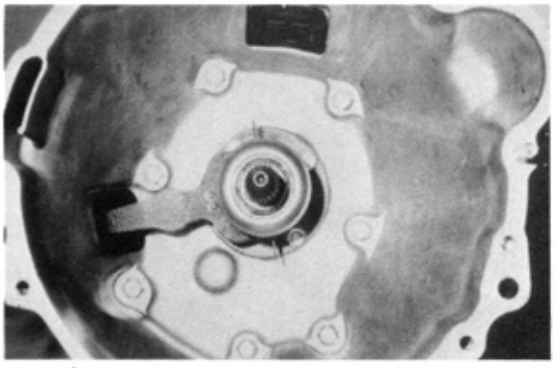


Fig. 1-29 Release Fork Assembly

INSTALLATION

1. Insert the Clutch Guide Tool [09301–20020]-for 3-spped transmission or [09301 -36010] for 4-speed Transmission through the clutch disc and clutch cover assembly. Insert the end of clutch disc and clutch cover assembly. Insert the end of clutch guide tool into the input shaft front bearing and install the clutch unit to the flywheel.

   Tightening torque

   100 ~ 160 kg-cm (7.2 ~ 11.6 ft-lbs)
   (for 3-speed transmission)

   150 ~ 220 kg-cm (10.8 ~ 15.9 ft-lb)
   (for 4-speed Transmission)

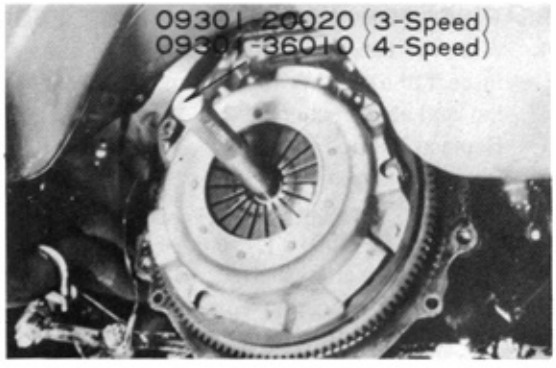


Fig. 1-30 Clutch Assembly

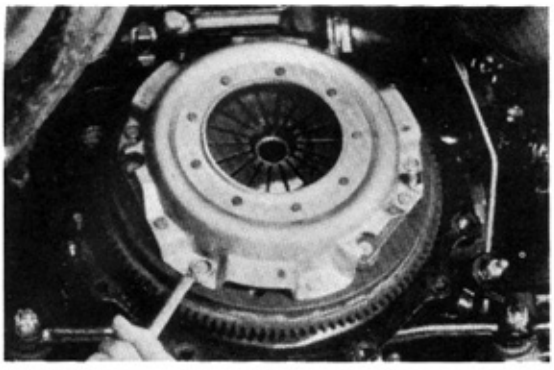


Fig. 1-31 Clutch Assembly