

Clutch System

GENERAL	CH -2
CLUTCH SYSTEM	CH -6



GENERAL

EOJA0010

SPECIFICATIONS

Clutch operating method	Hydraulic type
Clutch disc	
Type	Single, dry with diaphragm.
Facing diameter (Outside x Inside) mm (in.)	225 x 155 (8.9 x 5.9)
Clutch cover assembly	
Type	Diaphragm spring strap
Setting load N (lb)	4500-4900 (1009-1097)
Clutch release cylinder	
I.D.mm (in.)	20.64 (0.809)
Clutch master cylinder	
I.D.mm (in.)	15.87(0.62)

SERVICE STANDARD

EOJA0020

Standard value	
Clutch disc thickness [When free]	8.3-8.9 mm (0.326-0.350 in.)
Clutch pedal height	218.9 mm (8.597 in.)
Clutch pedal free play	6-13 mm (0.24-0.51 in.)
Clutch pedal stroke	140 mm (5.50 in.)
Limit	
Clutch disc rivet inset	0.3 mm (0.012 in.)
Diaphragm spring end height difference	0.5 mm (0.02 in.)
Clutch release cylinder clearance to piston	0.15 mm (0.006 in.)
Clutch master cylinder clearance to piston	0.15 mm (0.006 in.)

TIGHTENING TORQUE

EOJA0030

Item	Nm	kg·cm	lb·ft
Clutch pedal to pedal support member (clutch pedal bracket)	8 - 10	80 - 100	6 - 7
Clutch master cylinder mounting bolt	8 - 10	80 - 100	6 - 7
Clutch tube flare nut	13 - 17	130 - 170	9 - 12
Clutch release cylinder mounting bolt	15 - 22	150 - 220	11 - 16
Clutch release cylinder union bolt	20 - 25	200 - 250	14 - 18
Clutch cover assembly	15 - 22	150 - 220	11 - 16
Clutch master cylinder push rod lock nut	9 - 14	90 - 140	6 - 11
Clutch master cylinder reservoir	8 - 10	80 - 100	6 - 7
Ignition lock switch	8 - 10	80 - 100	6 - 7
Clutch member	8 - 12	80 - 120	6 - 9

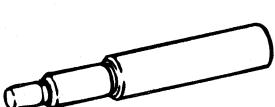
LUBRICANTS

EOA90040

Items	Specified lubricants	Quantity
Contact surface of release bearing and fulcrum of clutch release fork	CASMOLY L 9508	As required
Inner surface of clutch release bearing	CASMOLY L 9508	As required
Inner surface of clutch release cylinder and outer circumference of piston and cup	Brake fluid DOT3	As required
Inner surface of clutch disc spline	CASMOLY L 9508	As required
Inner surface of clutch master cylinder and outer circumference of piston assembly	Brake fluid DOT 3	As required
Clutch master cylinder push rod, clevis pin and washer	Wheel bearing grease SAE J310, NLGI No.2	As required
Clutch pedal shaft and bushings	Chassis grease SAE J310, NLGI No.1	As required
Contact portion of release fork to release cylinder push rod	CASMOLY L9508	As required
Input shaft spline	CASMOLY L 9508	As required

SPECIAL TOOLS

EOA90050

Tool (Number and name)	Illustration	Use
09411-11000 Clutch disc guide		Installation of the clutch disc

EOA9005A

TROUBLESHOOTING

EOA90060

Trouble symptom	Probable cause	Remedy	
Clutch slipping <ul style="list-style-type: none"> • Car will not respond to engine speed during acceleration • Insufficient car speed • Lack of power driving uphill 	Insufficient pedal free play Clogged hydraulic system Excessive wear of clutch disc facing Hardened clutch disc facing, or oil on surface Damaged pressure plate or flywheel Weak or broken pressure spring	Adjust Correct or replace parts Replace Replace Replace Replace	
Difficult gear shifting (gear noise during shifting)	Excessive pedal free play Hydraulic system fluid leaks, air trapped or lines clogged Unusual wear or corrosion of the clutch disc spring Excessive vibration (distortion) of the clutch disc	Adjust Repair or replace parts Replace Replace	
Clutch noisy	When the clutch is not used	Insufficient play of the clutch pedal Excessive wear of the clutch disc facing	Adjust Replace
	A noise is heard after the clutch is disengaged	Unusual wear and/or damage of the release bearing	Replace
	A noise is heard when the clutch is disengaged	Insufficient grease on the sliding surface of the bearing sleeve Improperly installed the clutch assembly or bearing	Repair Repair
	A noise is heard when the car suddenly jump starts with the clutch partially engaged	Damaged pilot bushing	Replace
Hard pedal effort		Insufficient lubrication of the clutch pedal Insufficient lubrication of the spline part of clutch disc Insufficient lubrication of the clutch release lever shaft Insufficient lubrication of the front bearing retainer	Repair Repair Repair Repair
Hard to shift or will not shift		Excessive clutch pedal free play Faulty clutch release cylinder Clutch disc out of place, runout is excessive or lining broken Dirty spline on input shaft or the clutch disc Faulty clutch pressure plate	Adjust the pedal free play Repair the release cylinder Inspect the clutch disc Repair as necessary Replace the clutch cover

Trouble symptom	Probable cause	Remedy
Clutch slips	Insufficient clutch pedal free play Clogged hydraulic system Clutch disc lining oily or worn out Faulty pressure plate Binding release fork	Adjust the pedal free play Repair or replace parts Inspect the clutch disc Replace the clutch cover Inspect the release fork
Clutch grabs/chatters	Clutch disc lining oily or worn out Faulty pressure plate Bent clutch diaphragm spring Worn or broken torsion spring Loose engine mounts	Inspect the clutch disc Replace the clutch cover Replace the clutch cover Replace the clutch disc Repair as necessary
Noisy clutch	Damaged the clutch pedal bushing Loose part inside housing Worn or dirty release bearing Sticking release fork or linkage	Replace the clutch pedal bushing Repair as necessary Replace the release bearing Repair as necessary

CLUTCH SYSTEM

SERVICE ADJUSTMENT

PROCEDURE

EOJA0070

CLUTCH PEDAL INSPECTION AND ADJUSTMENT

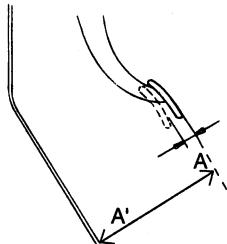
1. Measure the clutch pedal height (From the face of the pedal pad to the floorboard) and the clutch pedal clevis pin play (measured at the face of the pedal pad).

Standard value :

(A) 1-3 mm (0.04-0.11 in.)

(A') 218.9 mm

Clutch pedal clevis pin play (A) and Pedal height (A')



EOA9007A

2. If the clutch pedal clevis pin free-play is not within the standard value range, adjust as follows :

- a. Turn and adjust the bolt, then secure it by tightening the lock nut.

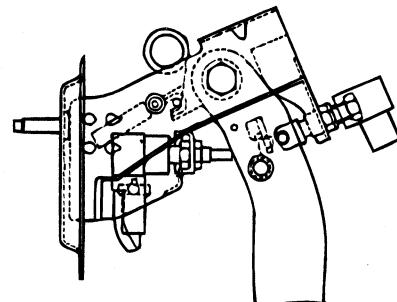
NOTE

After the adjustment, tighten the bolt until it reaches the pedal stopper, and then tighten the lock nut.

- b. Turn the push rod to coincide with the standard value and then secure the push rod with the lock nut.

CAUTION

When adjusting the clutch pedal height or the clutch pedal clevis pin play, be careful not to push the push rod toward the master cylinder.



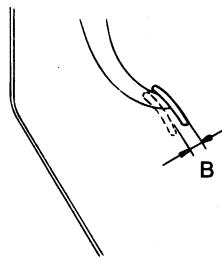
EOA9030A

3. After completing the adjustments, check that the clutch pedal free play (measured at the face of the pedal pad) falls within the standard value ranges.

Standard value : 6-13 mm (0.2-0.5 in.)

4. If the clutch pedal free play and the distance between the clutch pedal and the floor board when the clutch is disengaged do not meet the standard values, the cause may be either air in the hydraulic system or a faulty master cylinder clutch. Bleed the system or disassemble and inspect the master cylinder or clutch.

Clutch pedal free play



EOA9007C

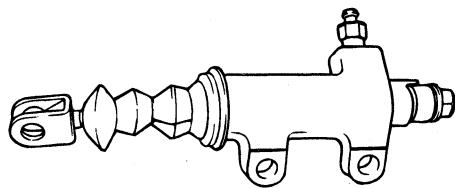
BLEEDING EOA90080

Bleed the system whenever the clutch tube, the clutch hose, and/or the clutch master cylinder have been removed, or if the clutch pedal is spongy.

CAUTION

Use the specified fluid. Avoid mixing different brands of fluid.

Specified fluid : SAE J1703 (DOT3)



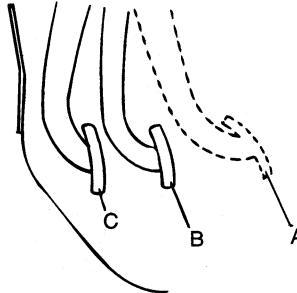
EOA9008A

1. Loosen the bleeder screw on the clutch release cylinder.

2. Pump the clutch pedal slowly until all air is expelled.
3. Hold the clutch pedal down until the bleeder is retightened.
4. Refill the clutch master cylinder with the specified fluid.

CAUTION

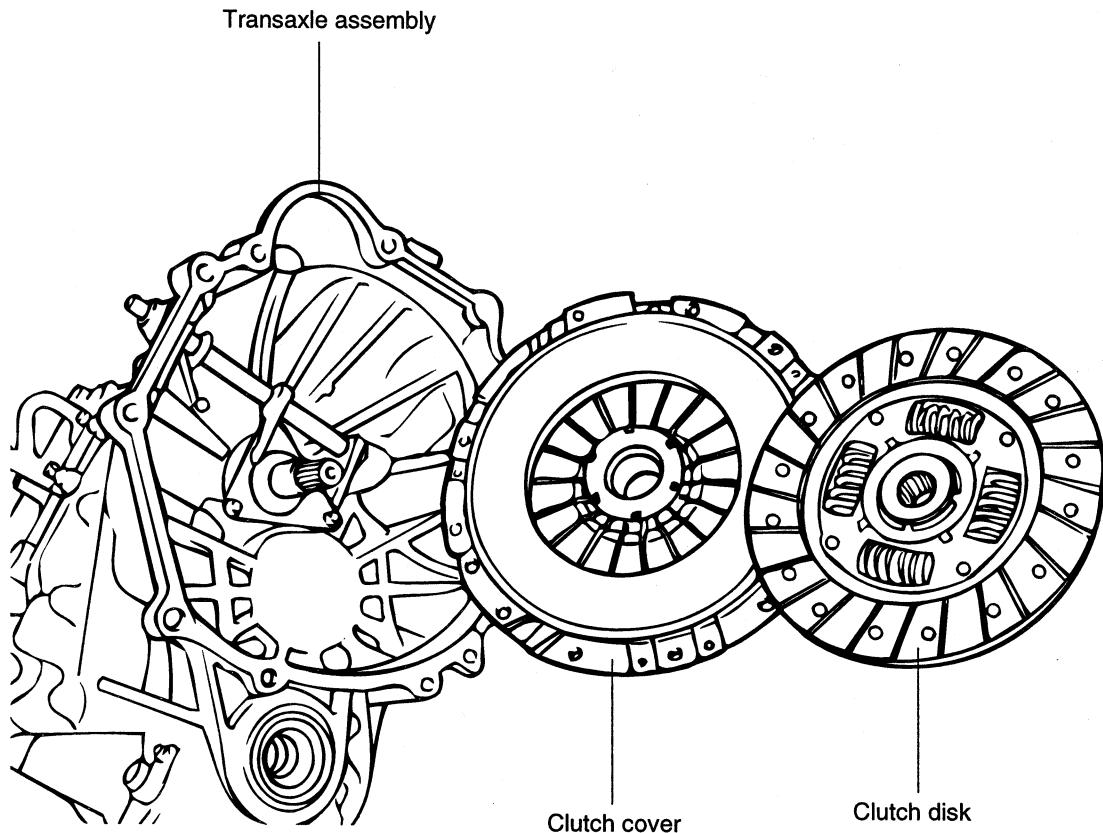
The rapidly-repeated operation of the clutch pedal in B-C range may disrupt the release cylinder's position. During the bleeding operation, press the clutch pedal to the floor after it returns to the "A" point.



EOA9008B

CLUTCH COVER AND DISC

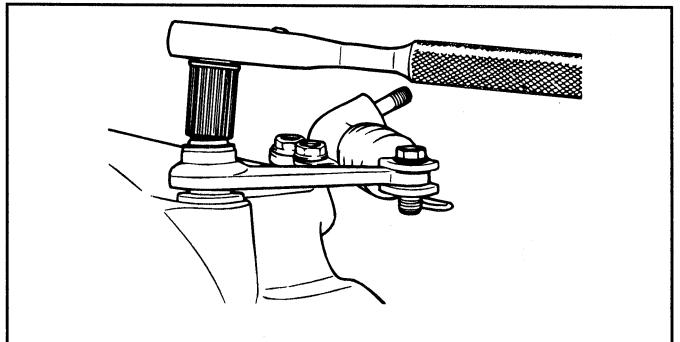
COMPONENTS EOA90270



EOA9027A

REMOVAL EOA90280

1. To remove the transaxle assembly, first remove the air cleaner joint, then the mounting bracket, and wiring etc.
2. Remove the clutch release lever.
 1. Loosen the release lever nut and washer.
 2. Remove the clevis pin and snap ring from the release cylinder.
 3. Remove the release lever.



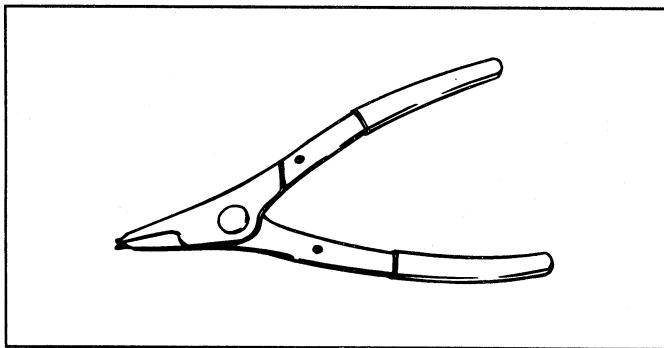
EOA9028B

3. Loosen the bolts attached to the release cylinder and remove the release cylinder.
4. Remove the transaxle assembly, after removing each bolt which connects the transaxle assembly and engine.

NOTE

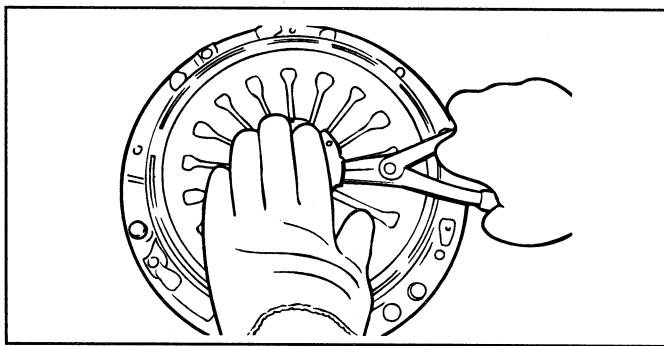
It is impossible to remove the transaxle assembly without performing this step because the clutch cover assembly, release bearing and release fork are held together.

5. If the clutch cover is attached to the flywheel, remove the release bearing using snap-ring pliers.



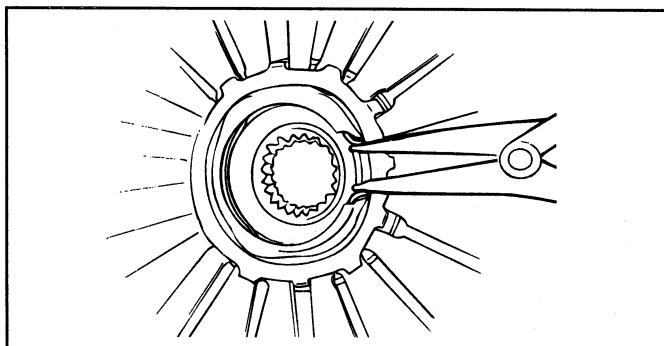
EMA9025B

- 1) Rotate the release bearing in an easy direction in order to examine the snap ring.
- 2) Insert the pliers under the wave washer as shown in the illustration and place it in the center of the snap ring.
- 3) Spread the snap ring by pushing down on the bearing as shown in the illustration.



EOA9028C

4) The snap ring expanded state is shown in the figure.



EOA9028D

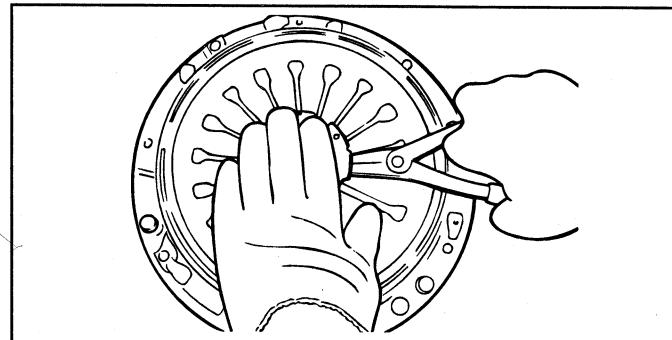
5) With In the snap ring expanded, pull out the release bearing and remove it.

6. Insert the special tool (09411-11000) in the clutch disc to prevent the disc from shifting.
7. Loosen the bolts which attach the clutch cover to the flywheel in a star pattern. Loosen the bolts in succession, one or two turns at a time, to avoid bending the cover.

NOTE

Do not clean the clutch disc or the release bearing with cleaning solvent.

8. Remove the release fork shaft and bushing.



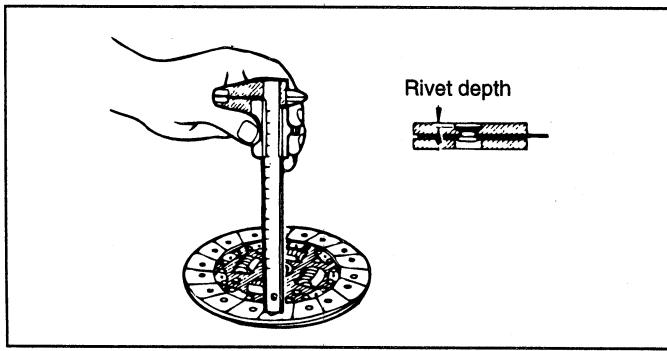
EOA9028E

INSPECTION EOA90290

CLUTCH COVER ASSEMBLY

1. Clean the dust from the clutch housing using a vacuum or cloth, Do not use compressed air. Check for oil leakage from the engine rear bearing oil seal and transaxle front oil seal. If leaky, repair them.
2. The friction surface of the pressure plate must be uniform over the entire disc surface. If any part shows excessive wear, the pressure plate is installed badly.
3. Check the friction surface of the flywheel for color change, partial damage, small cracks, and wear.
4. Don't touch the clutch disc with contaminated hands or gloves. Replace the clutch disc if the facing is stained with oil or grease. Measure the rivet depth. Replace the clutch disc if the rivet depth is less than 3 mm.

Limit : 0.3 mm (0.012 in.)



EOA9029B

5. Check the hub spline and torsion spring of the clutch disc for excessive wear.
6. Clean the friction surface of the pressure plate with cleaning solvent.
7. Measure the flatness of the pressure plate with a square. If it exceeds 0.5 mm, replace it. Check the pressure plate surface of wear, cracks, and color change.
8. Check that the three-dowel on the flywheel is installed completely.

CLUTCH RELEASE BEARING

CAUTION

The release bearing is packed with grease. Do not use cleaning solvent or oil on it.

1. Check the bearing for seizure, damage or abnormal noise. Also check the diaphragm spring contact points for wear.
2. Replace the bearing if the release fork contacting points are worn out.

CLUTCH RELEASE FORK

If there is abnormal wear at the point of contact with the bearing, replace the release fork.

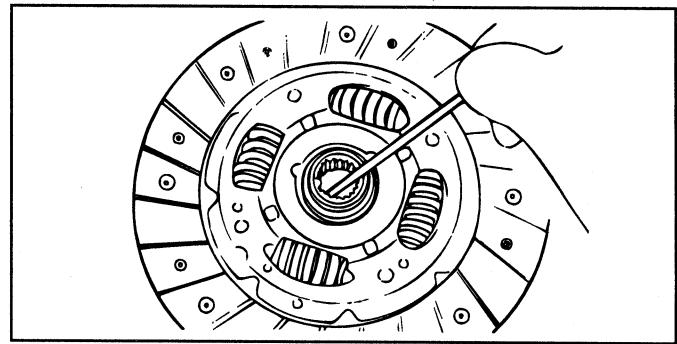
INSTALLATION EOA9030

1. Apply multipurpose grease to the spline of the disc.

Grease : CASMOLY L 9508

CAUTION

When installing the clutch, apply grease to each part, but be careful not to apply excessive grease. It can cause clutch slippage and judder.



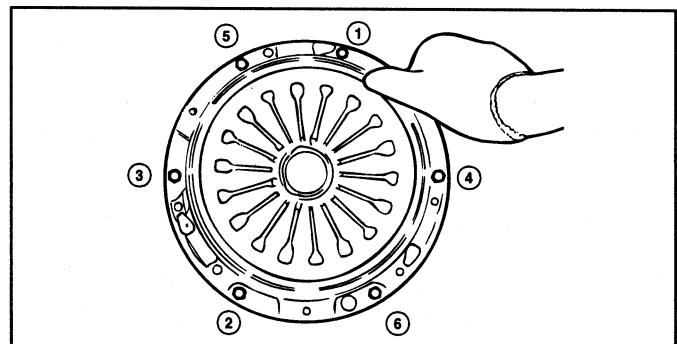
EOA9030F

2. Install the clutch disc assembly to the flywheel using the special tool (09411-11000).
3. Install the clutch cover assembly to the flywheel and temporarily tighten the bolts one or two steps at a time in a star pattern.

Tightening torque

Clutch cover bolt :

15-22 Nm (150-220 kg·cm, 11-16 lb·ft)

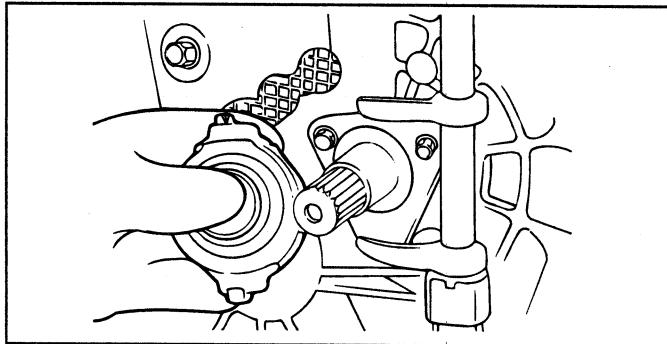


EOA9030B

4. Align the bearing to the release fork and then install it to the sleeve of the housing.

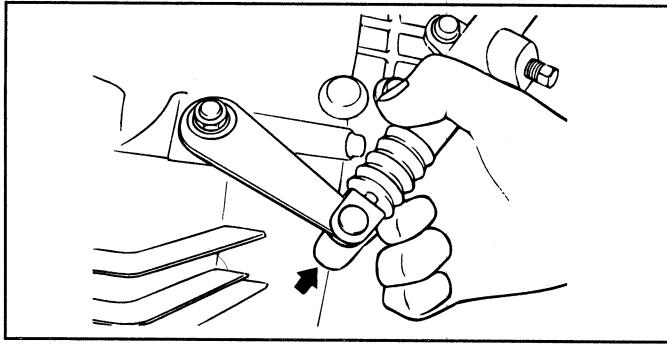
CAUTION

Apply multipurpose grease (CASMOLY L9508) to the bearing sleeve and contact point of the release fork.



EOA9030C

5. Install the release lever to the release fork.



EOA9030D

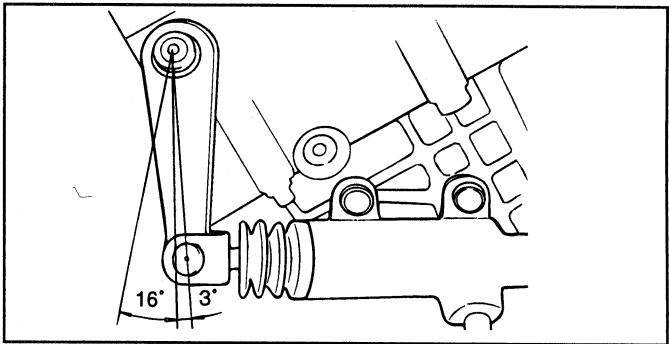
6. Install the transaxle assembly to the engine.

CAUTION

If the transaxle assembly is installed to the engine without performing this step, the release bearing can be separated, as the release fork rotates freely.

7. After finishing step 6, push the release lever to the arrow mark. If there is a click sound, the release bearing and clutch cover are aligned correctly. If the Assembly does not snap into place, start with step 1 again.

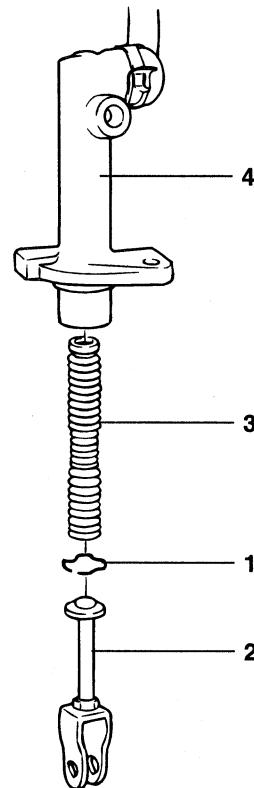
Release lever operating range is 3° or less. If the range is over 3° , the release bearing and clutch cover are not aligned correctly. Push the release lever to the arrow mark one more time.



EOA9030E

CLUTCH MASTER CYLINDER

COMPONENTS EOJA0140

*** Disassembly steps**

1. Piston stopper ring
2. Push rod
3. Piston assembly
4. Clutch master cylinder

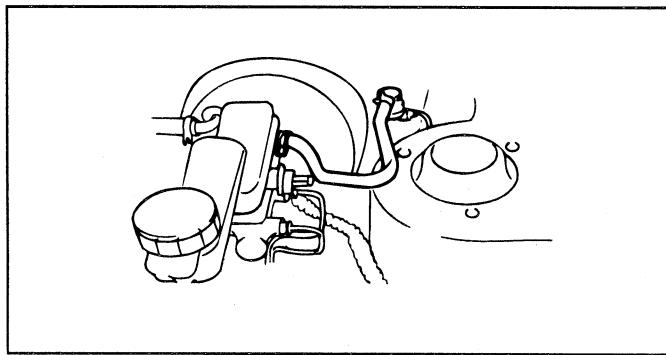
NOTE

Reverse the disassembly procedures to reassemble.

H7CL0100

REMOVAL EOHA0150

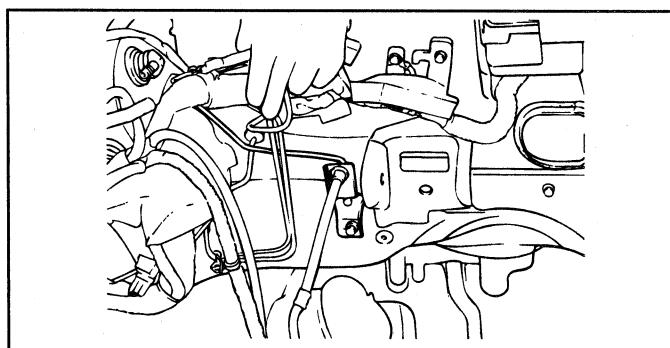
1. Drain the clutch fluid through the bleed plug.
2. Remove the clevis pin, split pin (cotter pin), and washer.
3. Disconnect the clutch line (master cylinder side).
4. Remove the master cylinder mounting bolt.



EOHA010A

5. Remove the clutch line clips.

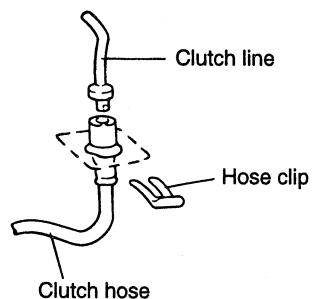
6. Hold the nut on the clutch line and loosen the flare nut on the clutch tube.



EOA9014B

7. Remove the clip from the clutch hose to remove the clutch hose from bracket.

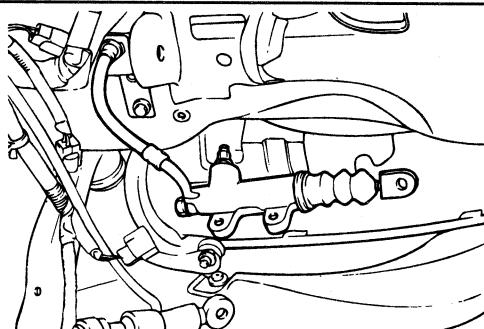
8. Remove the clutch line.



EOA9014C

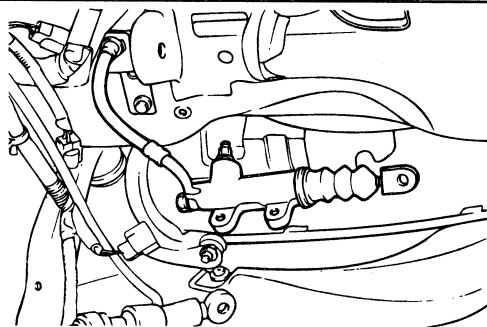
REASSEMBLY EOJA0170

1. Connect the clutch line (release cylinder side).



EOA9014D

9. Disconnect the clutch line (release cylinder side).



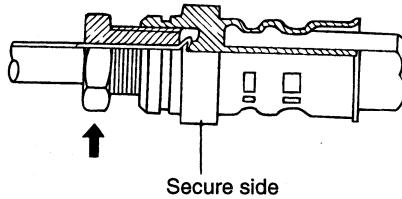
EOA9014D

INSPECTION

EOHA0160

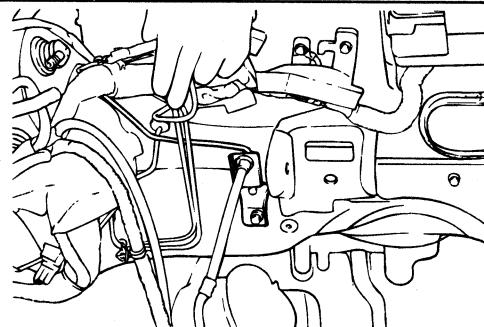
Check the clutch hose or line for cracks or clogging.

2. Temporarily tighten the flare nut by hand, then tighten it to the specified torque, being careful that the clutch hose does not become twisted.



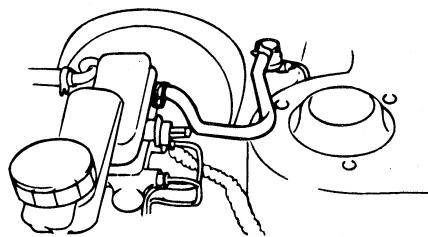
EOA9017A

3. Install the clutch line and clips.



EOA9014B

4. Install the master cylinder.

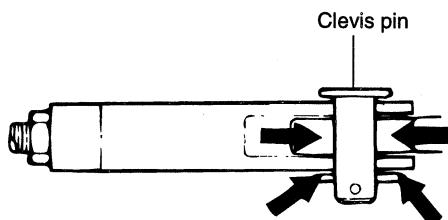


EOHA010A

5. Apply the specified grease to the clevis pin and washer.

Wheel bearing grease : SAE J310a, NLGI NO.2

6. Install the push rod to the clutch pedal.
7. Pour clutch fluid into the clutch master cylinder.
8. Bleed the clutch system.

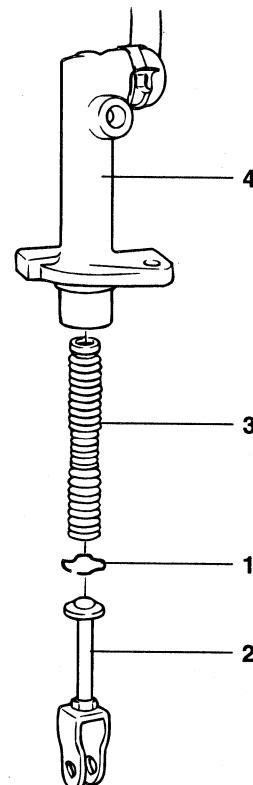


EOJA017A

CLUTCH MASTER CYLINDER

EOJA0180

COMPONENTS



* Disassembly steps

1. Piston stopper ring
2. Push rod
3. Piston assembly
4. Clutch master cylinder

NOTE

Reverse the disassembly procedures to reassemble.

H7CL0100

DISASSEMBLY

EOJA0190

1. Remove the piston stop ring.
2. Pull out the push rod and piston assembly.
3. Remove the reservoir band, reservoir cap, and reservoir.

NOTE

1. Use care not to damage the master cylinder body and piston assembly.
2. Do not disassemble the piston assembly itself (item 3).

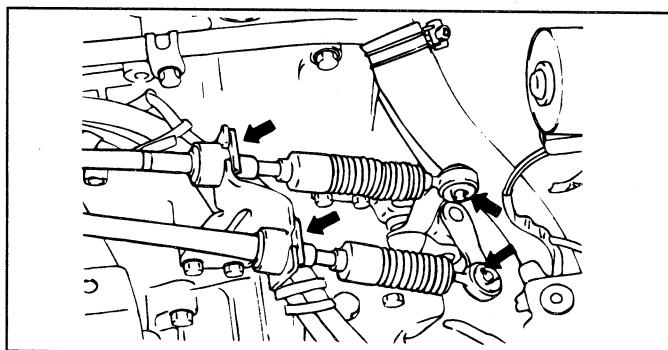
INSPECTION

EOA90200

1. Check the inside of the cylinder body for rust, pitting or scoring.
2. Check the piston cup for wear or distortion.
3. Check the piston for rust, pitting or scoring.
4. Check the clutch tube line for clogged.
5. Measure the master cylinder inside diameter and the piston outside diameter with a cylinder gauge micrometer.

NOTE

Measure the inside diameter of the master cylinder at three places (bottom, middle, and top) in a perpendicular direction.



EOA9019B

6. If the master cylinder-to-piston clearance exceeds the limit, replace the master cylinder and/or piston assembly.

Limit : 0.15 mm (0.006 in.)

REASSEMBLY

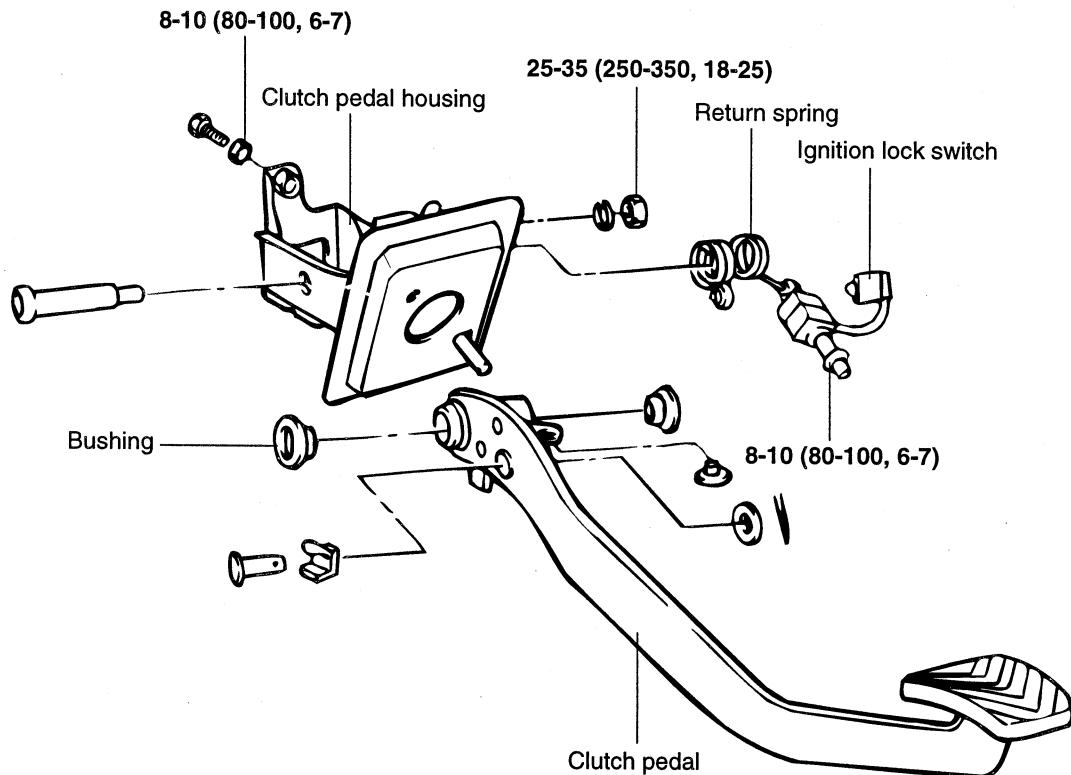
EOJA0210

1. Apply brake fluid to the inner surface of the master cylinder body and to the entire periphery of the piston assembly.
2. Install the piston assembly.

Specified fluid : Brake fluid DOT 3

CLUTCH PEDAL

COMPONENTS EOAJ0090

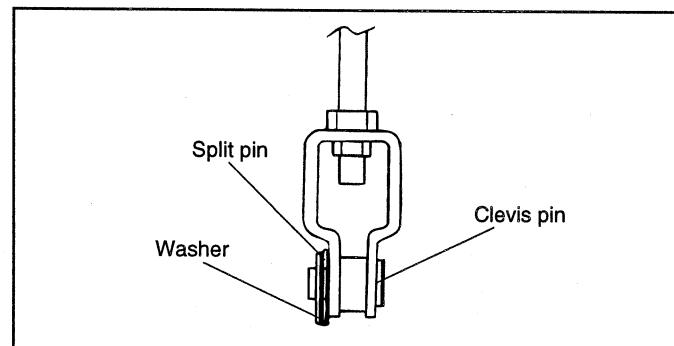


TORQUE : N.m (kg.cm, lb.ft)

EOAJ009A

DISASSEMBLY EOAJ0100

1. Disassemble the cotter pin, washer, and clevis pin.
2. Remove the clutch pedal mounting bolt.



H6CH004B

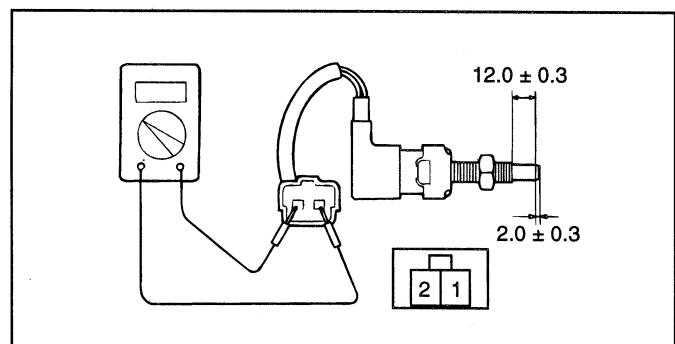
INSPECTION

EOA90110

1. Check the pedal shaft and bushing for wear.
2. Check the clutch pedal for bending or torsion.
3. Check the return spring for damage or deterioration.
4. Check the pedal pad for damage or wear.

IGNITION LOCK SWITCH INSPECTION

Remove the ignition lock switch and check for continuity between the terminals. If the continuity is not as specified, replace the switch.



EOA9012A

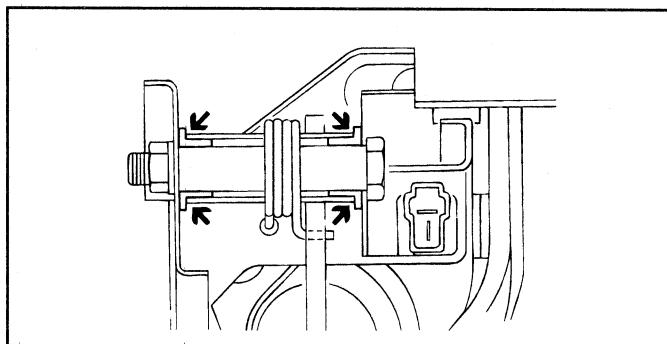
REASSEMBLY

EOJA0130

1. Apply the specified grease to the clutch pedal and bushings.

Chassis grease : SAE J310a, NLGI No.1

2. Install the clutch pedal mounting bolt.



EODA009B

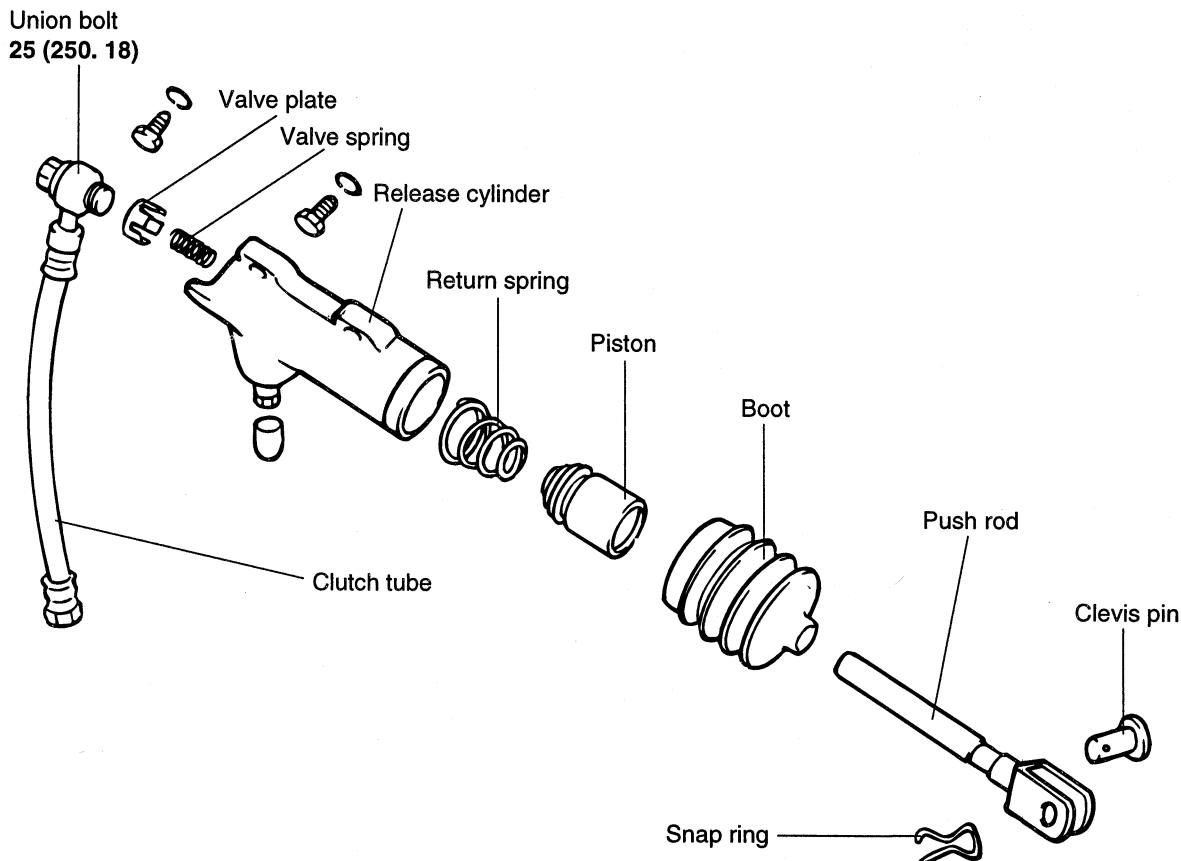
3. Apply the specified grease to the clevis pin and washer.

Wheel bearing grease : SAE J310, NLGI No.2

4. Install the push rod to the clutch pedal.
5. Adjust the clutch pedal clevis pin play.

CLUTCH RELEASE CYLINDER

COMPONENTS EOA90220



TORQUE : N.m (kg.cm, lb.ft)

EOA9022A

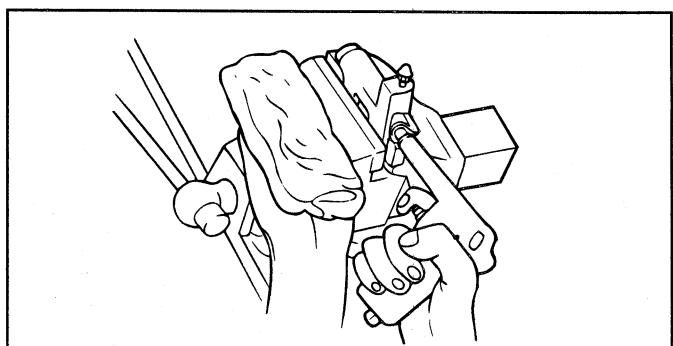
REMOVAL EOA90230

1. Remove the clutch hose, valve plate, spring, push rod, and boot.
2. Remove any dirt from the piston bore opening of the release cylinder.
3. Remove the piston from the release cylinder using compressed air.

CAUTION

1. Use rags to prevent the piston from popping out and causing injury.

2. Apply compressed air slowly. Keep the fluid from splashing in your eyes or on your skin.



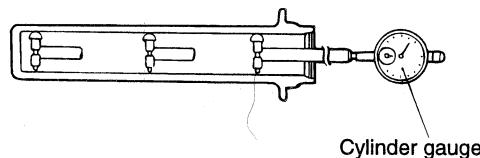
EOA9023A

INSPECTION EOA90240

1. Check the clutch release cylinder for fluid leakage.
2. Check the clutch release cylinder boots for damage.
3. Check the release cylinder bore for rust and damage.
4. Measure the release cylinder bore at three locations (bottom, middle, and top) with a cylinder gauge and replace the release cylinder assembly if the bore-to-piston clearance exceeds the limit.

Limit :

Clearance to piston .. 0.15 mm (0.006 in.)

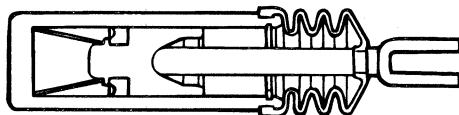


EOA9024A

REASSEMBLY EOA90250

1. Apply specified brake fluid to the release cylinder bore and the outer surface of the piston and piston cup. Push the piston cup assembly in to the cylinder.

Use the specified fluid : Brake fluid DOT 3



EOA9025A

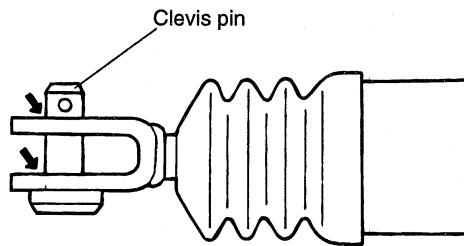
2. Install the clutch hose, valve plate, spring, push rod, and boot.

INSTALLATION EOA90260

1. Coat the clevis pin with the specified grease. Align the hose at the end of the release cylinder push rod with that of the clutch release fork shaft, and insert the clevis pin into the holes.

Specified grease : CASMOLY L9508

2. Install the clutch release cylinder and the clutch tube.



EOA9026A