

Clutch System

GENERAL CH ·

CLUTCH SYSTEM CH ·



GENERAL

EOHA0010

SPECIFICATIONS

Clutch operating method	Hydraulic type
Clutch disc	
Type	Single dry with diaphragm.
Facing diameter (Outside x Inside)mm (in.)	225 x 150 (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.)	19.05 (0.747)
Clutch master cylinder	
I.D.mm (in.)	15.87(0.62)

SERVICE STANDARD

EOHA0020

Standard value	
Clutch disc thickness [When free]	8.3-8.9 mm (0.326-0.350 in.)
Clutch pedal height	185.4 mm
Clutch pedal free play	6-13 mm (0.24-0.51 in.)
Clutch pedal stroke	150 mm (5.90 in.)
Limit	
Clutch disc rivet sink	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

EOA90030

Item	Nm	kg.cm	lb.ft
Clutch pedal to pedal support member (clutch pedal bracket)	25-35	250-350	18-25
Clutch master cylinder mounting bolt	8-12	80-120	6-9
Clutch tube flare nut	12-16	120-160	9-12
Clutch release cylinder mounting bolt	15-22	150-220	11-16
Clutch release cylinder union bolt	25	250	18
Clutch cover assembly	15-22	150-220	11-16
Clutch master cylinder push rod lock nut	10-15	80-100	7-11
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

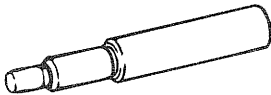
LUBRICANTS

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

EOHA0050

Tool (Number and name)	Illustration	Use
09411-11000 Clutch disc guide	 EOA9005A	Installation of the clutch disc

TROUBLESHOOTING

EOA90060

Trouble symptom		Probable cause	Remedy
Clutch slipping • Car will not respond to engine speed during acceleration • Insufficient car speed • Lack of power during uphill driving		Insufficient pedal free play	Adjust
		Clogged hydraulic system	Correct or replace parts
		Excessive wear of clutch disc facing	Replace
		Hardened clutch disc facing, or oil on surface	Replace
		Damaged pressure plate or flywheel	Replace
		Weak or broken pressure spring	Replace
Difficult gear shifting (gear noise during shifting)		Excessive pedal free play	Adjust
		Hydraulic system fluid leaks, air trapping or clogging	Repair or replace parts
		Unusual wear or corrosion of clutch disc spring	Replace
		Excessive vibration (distortion) of clutch disc	Replace
Clutch noisy	When clutch is not used	Insufficient play of clutch pedal	Adjust
		Excessive wear of clutch disc facing	Replace
	A noise is heard after clutch is disengaged	Unusual wear and/or damage of release bearing	Replace
	A noise is heard when clutch is disengaged	Insufficient grease on the sliding surface of bearing sleeve	Repair
		Improperly installed clutch assembly or bearing	Repair
	A noise is heard when car suddenly jump starts with clutch partially engaged	Damaged pilot bushing	Replace
Hard pedal effort		Insufficient lubrication of clutch pedal	Repair
		Insufficient lubrication of spline part of clutch disc	Repair
		Insufficient lubrication of clutch release lever shaft	Repair
		Insufficient lubrication of front bearing retainer	Repair
Hard to shift or will not shift		Clutch pedal free play excessive	Adjust pedal free play
		Clutch release cylinder faulty	Repair release cylinder
		Clutch disc out of place, runout is excessive or lining broken	Inspect clutch disc
		Spline on input shaft or clutch disc dirty	Repair as necessary
		Clutch pressure plate faulty	Replace clutch cover
Clutch slips		Clutch pedal free play insufficient	Adjust pedal free play
		Clogged hydraulic system	Repair or replace parts
		Clutch disc lining oily or worn out	Inspect clutch disc
		Pressure plate faulty	Replace clutch cover
		Release fork binding	Inspect release fork

Trouble symptom	Probable cause	Remedy
Clutch grabs/chatters	Clutch disc lining oily or worn out	Inspect clutch disc
	Pressure plate faulty	Replace clutch cover
	Clutch diaphragm spring bent	Replace clutch cover
	Worn or broken torsion spring	Replace clutch disc
	Engine mounts loose	Repair as necessary
Clutch noisy	Damaged clutch pedal bushing	Replace clutch pedal bushing
	Loose part inside housing	Repair as necessary
	Release bearing worn or dirty	Replace release bearing
	Release fork or linkage sticks	Repair as necessary

CLUTCH SYSTEM

SERVICE ADJUSTMENT PROCEDURE

EOHA0070

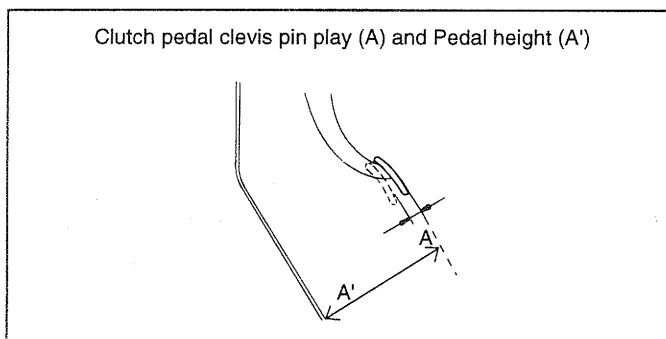
CLUTCH PEDAL INSPECTION AND ADJUSTMENT

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') 185.4 mm



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 by tightening the lock nut.

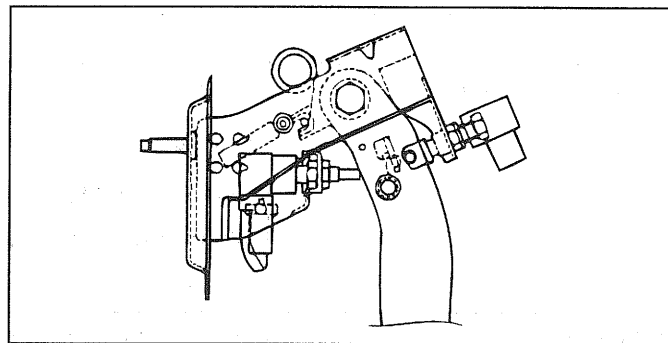
NOTE

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.



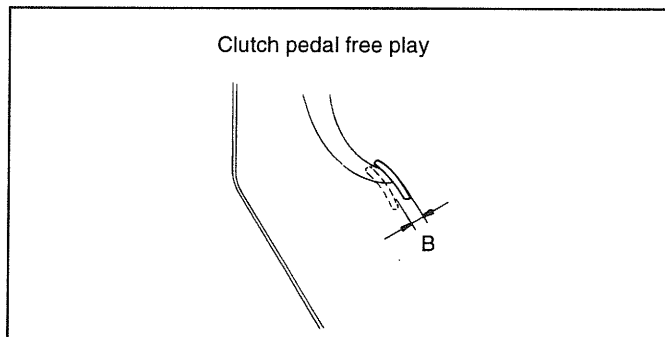
EOA9030A

3. After completing the adjustments, check that the clutch pedal free play (measured at the face of the pedal pad) 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 with the standard values, it may be the result of either air in the hydraulic system or a faulty master cylinder clutch. Take the air out or disassemble and inspect the master cylinder or clutch.



EOA9007C

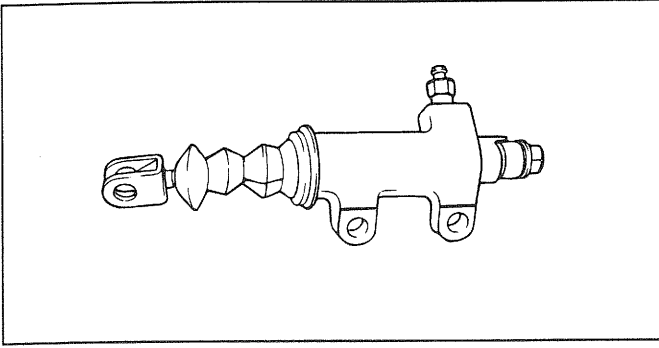
BLEEDING

EOA90080

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

CAUTION

Use the specified fluid. Avoid mixing different brands of fluid. Specified fluid : SAE J1703 (DOT3).

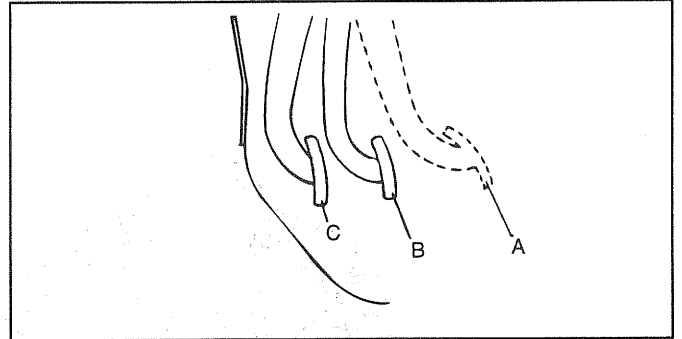


EOA9008A

1. Loosen the bleeder screw on the clutch release cylinder.
2. Push the clutch pedal down slowly until all is expelled.
3. Hold the clutch pedal down until the bleeder is retightened.
4. Refill the clutch master cylinder with the specified fluid.

CAUTION

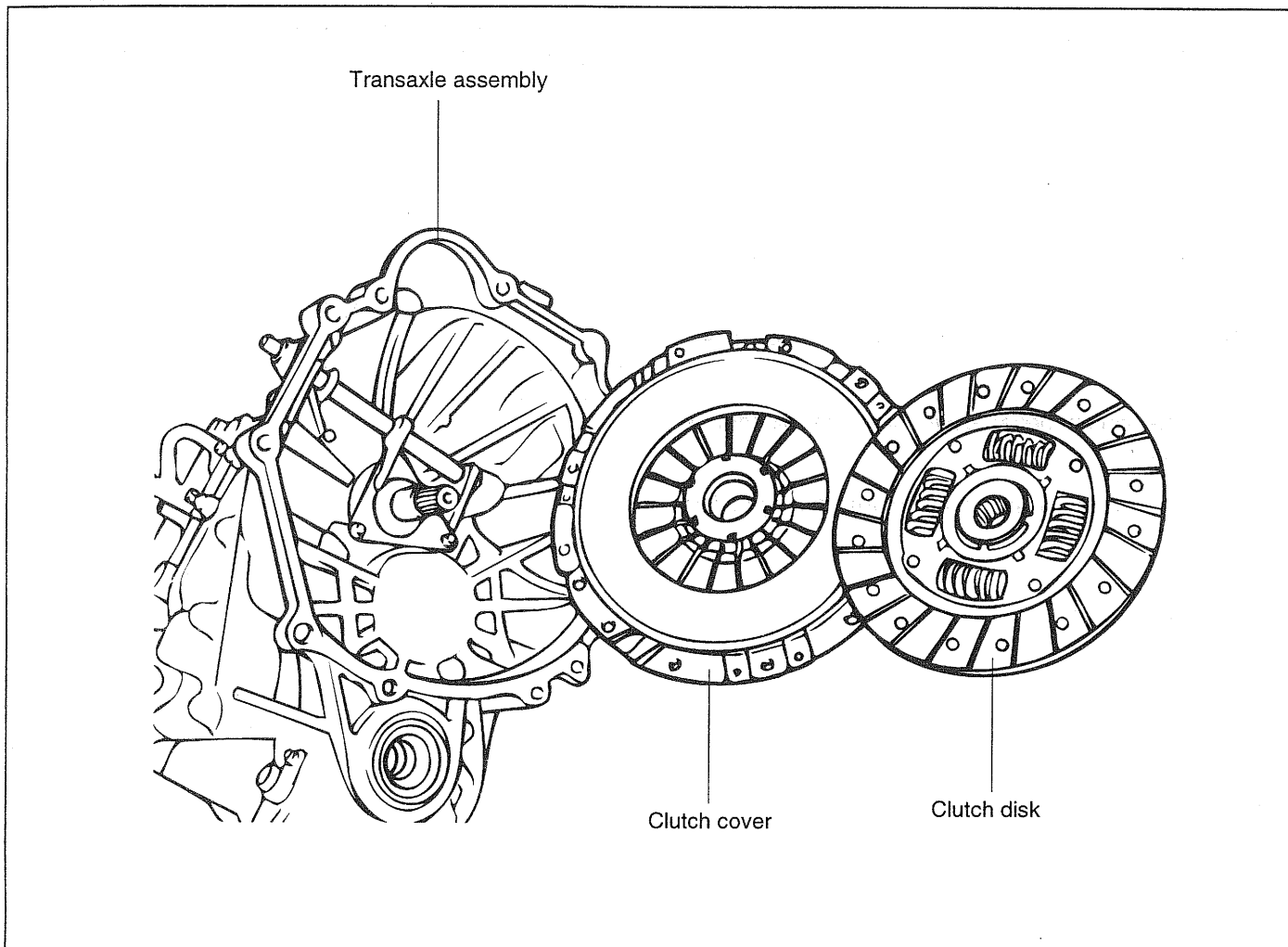
The rapidly-repeated operation of the clutch pedal in B-C range may cause the release cylinder's position to be forced out from the release cylinder body during the air bleeding, repress the clutch pedal after it returns to the "A" point completely.



EOA9008B

CLUTCH COVER AND DISC

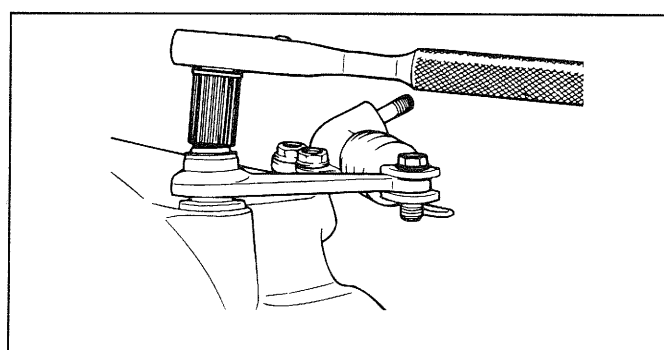
COMPONENTS EOA90270



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 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.



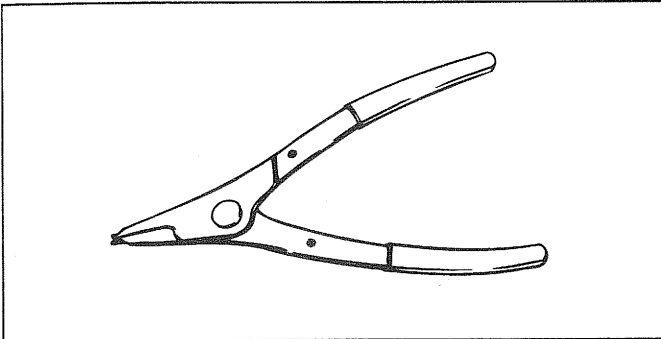
EOA9028B

3. Loosen the bolts attached to the release cylinder and remove the release cylinder.

NOTE

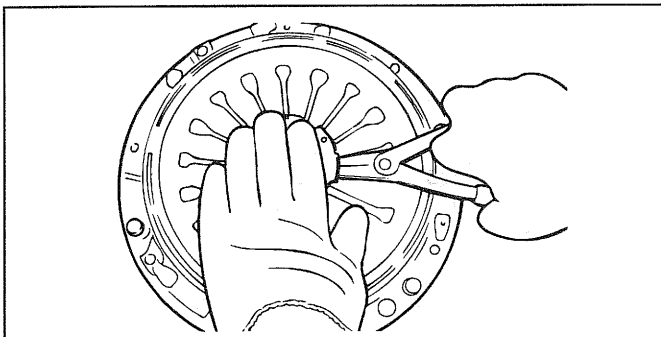
It is impossible to remove transaxle assembly without doing this step. Because, clutch cover, release bearing and release fork are combined together.

4. Remove the transaxle assembly, after removing each bolt which connect the transaxle assembly and engine.
5. If the clutch cover is attached to the flywheel, remove the release bearing using appropriate tool as shown.



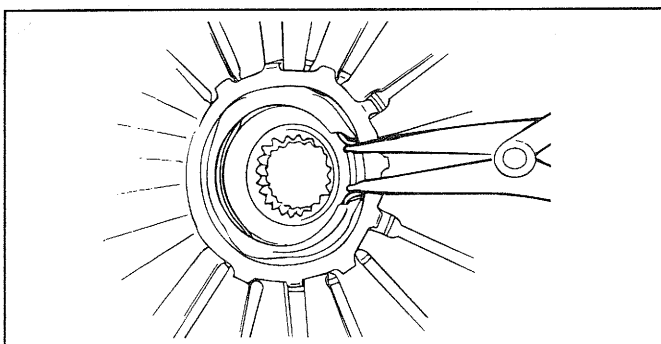
EOA9025B

1. Rotate the release bearing in an easy direction in order to examine the snap ring.
2. Insert the tool under the wave washer as shown in the illustration and place in the center of snap ring.
3. Widen the space of snap ring by pushing the bearing as shown in the illustration.



EOA9028C

4. The snap ring-widen state is as shown in the figure.



EOA9028D

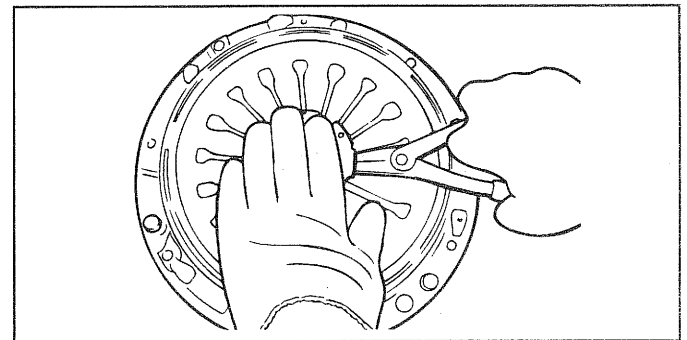
5. In the snap ring-widen state, pull out the release bearing and remove it.

6. Insert the special tool (09411-11000) in the clutch disc to prevent the disc from falling.
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 flange.

NOTE

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

8. Remove the release fork shaft and bushing.



EOA9028E

INSPECTION

EOA90290

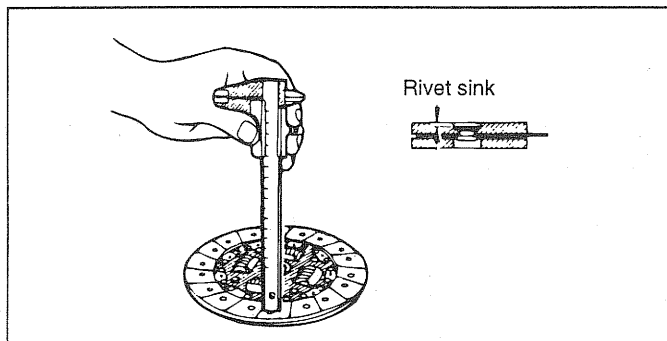
CLUTCH COVER ASSEMBLY

1. Clean the dust on the clutch housing using the vacuum brush or dry floor cloth and do not use the compressed air. Check the oil leakage in engine rear bearing oil seal and transaxle front oil seal. If leaky, repair them.
2. The friction surface of pressure plate must be equalized to entire disc surface. If any part is excessive wear at the point of contact, the pressure plate is installed badly.
3. Check the friction surface of flywheel for color change, partial damage, small crack, and wear.
4. Don't touch the clutch disc with the contaminated hands or gloves. Replace the clutch disc, if the facing is stained with oil or grease. Measure the rivet sink and replace the clutch disc, if it is less than 3 mm.

Limit0.3 mm (0.012 in.)

5. Check the hub spline and torsion spring of clutch disc for excessive wear.
6. Clean the friction surface of pressure plate with cleaning solvent.

7. Measure the flat of 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.



EOA9029B

CLUTCH RELEASE BEARING

CAUTION

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

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 abnormally.

CLUTCH RELEASE FORK

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

INSTALLATION

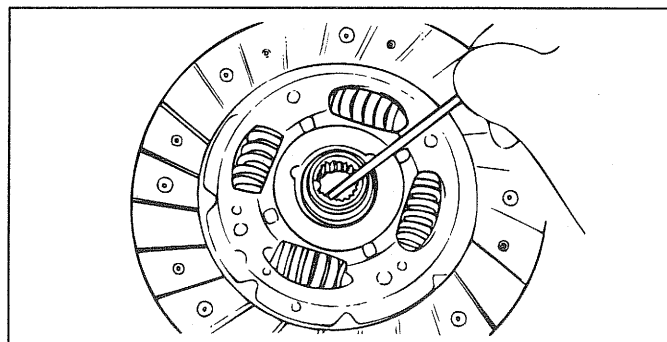
EOA90300

1. Apply multipurpose grease to the spline of 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.



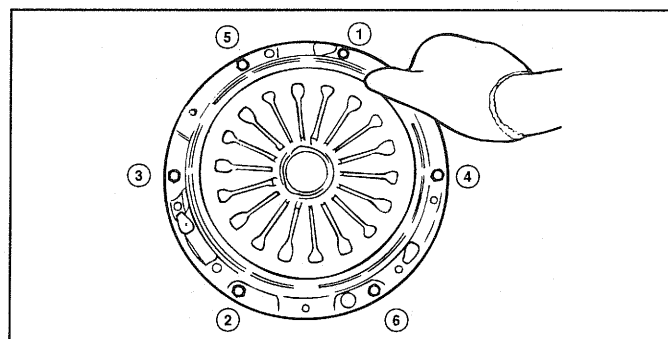
EOA9030F

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)

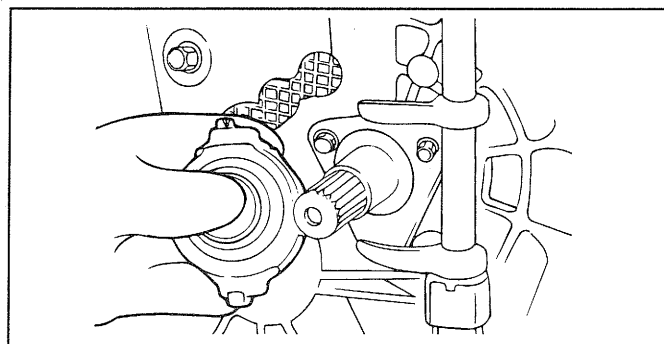


EOA9030B

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

CAUTION

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

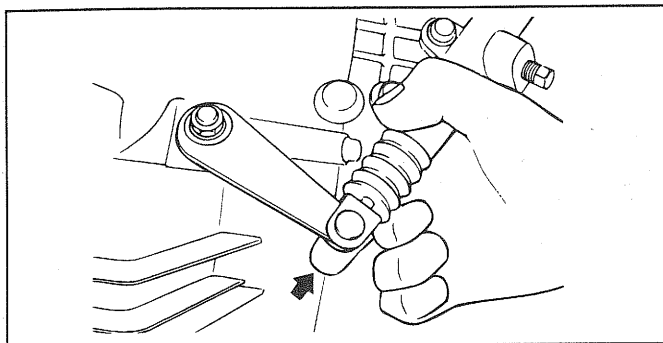


EOA9030C

5. Install the release lever to the release fork.

CAUTION

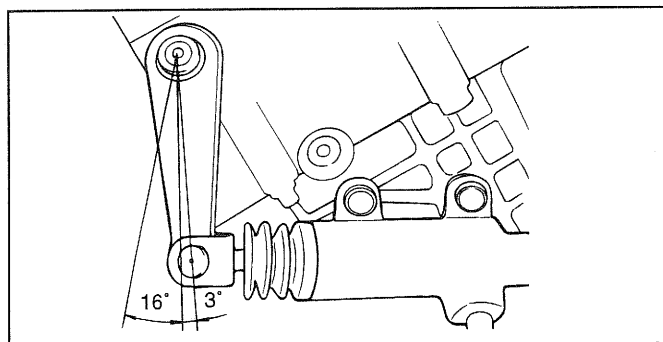
If the transaxle assembly is installed to engine without performing this step, release bearing can be separated as the release fork rotates freely.



EOA9030D

6. Install the transaxle assembly to the engine.
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.

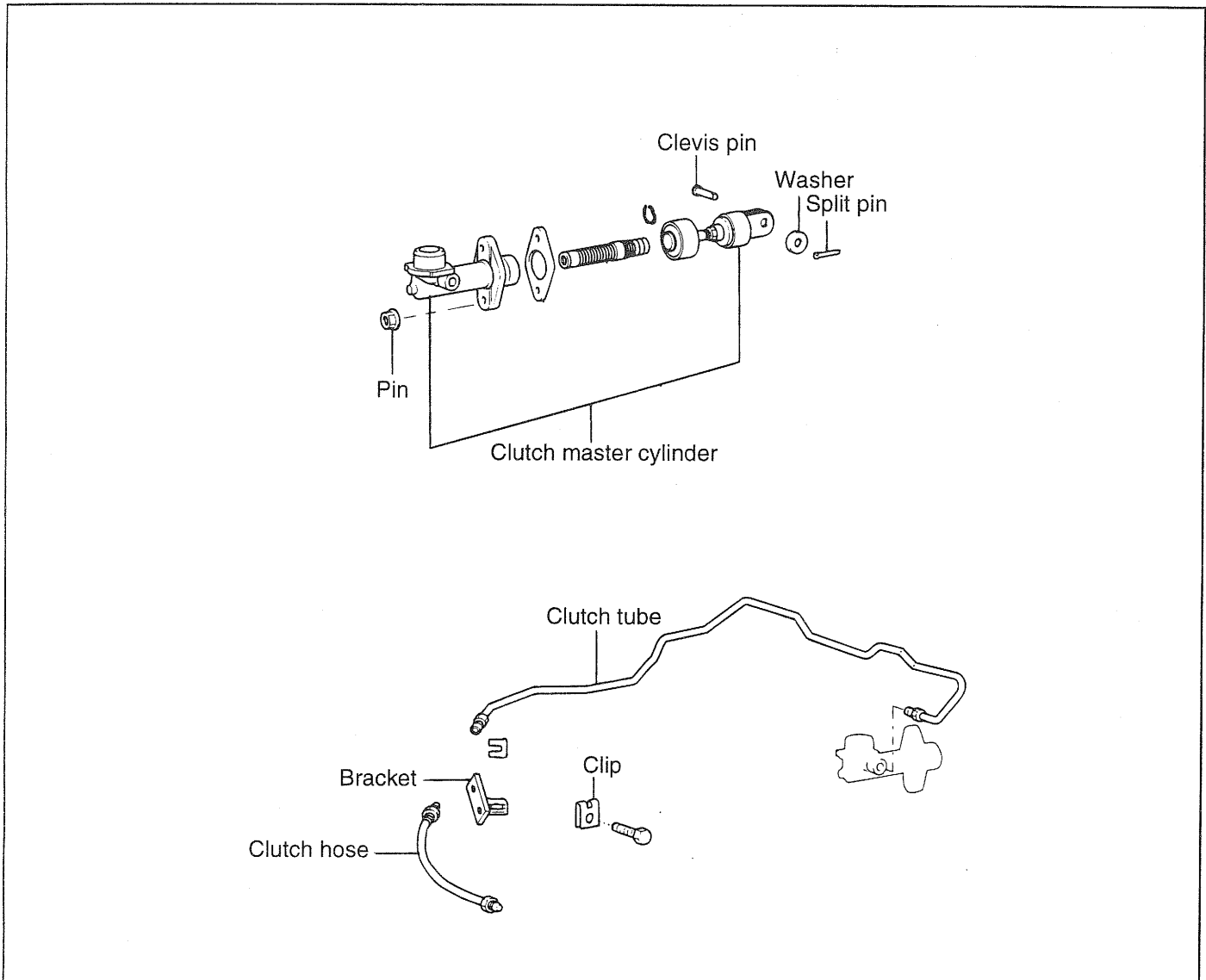
Release lever operating range : 3° or less. If the range is over 3° it is a symptom that the release bearing and clutch cover are not aligned correctly. Push the release lever to the arrow mark one more time.



EOA9030E

CLUTCH MASTER CYLINDER

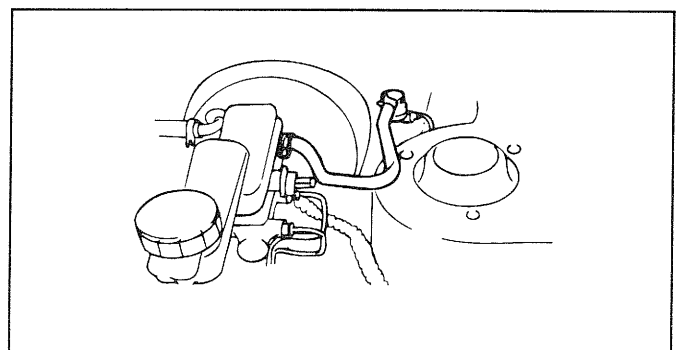
COMPONENTS EOA90140



EOA9028A

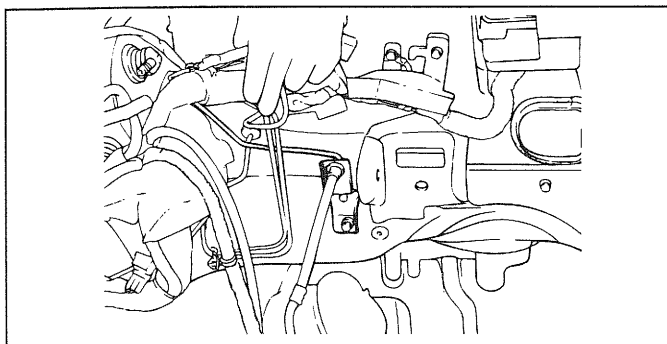
DISASSEMBLY EOA0150

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



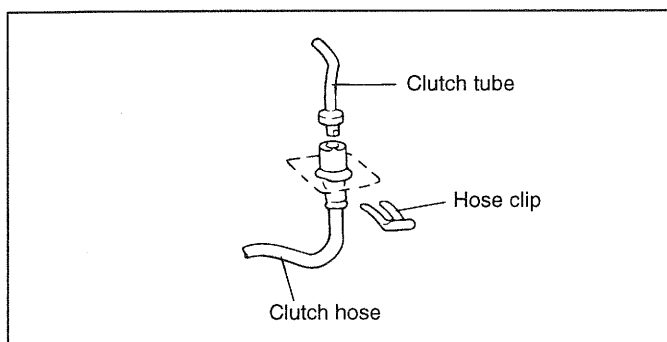
EOA010A

5. Remove the clutch line clips.
6. Hold the nut on the clutch hose and loosen the flare nut on the clutch tube.



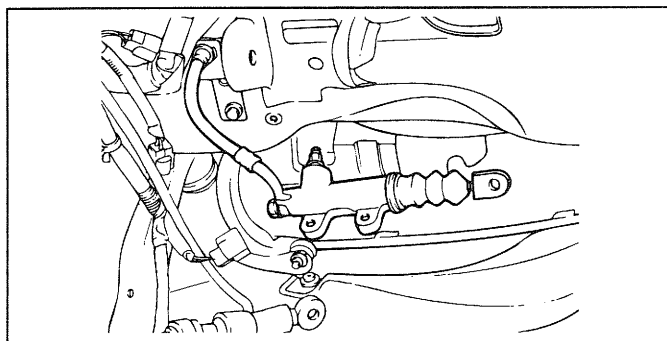
EOA9014B

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



EOA9014C

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



EOA9014D

INSPECTION

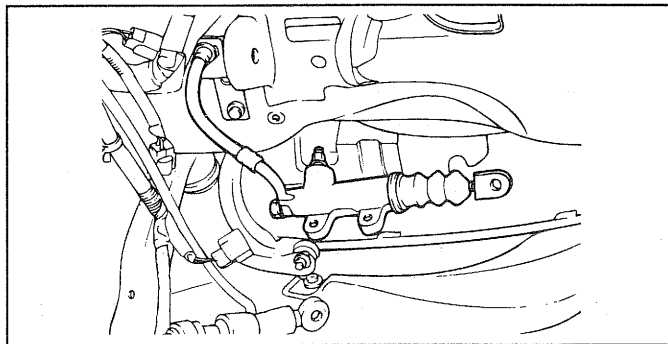
EOA90160

Check the clutch hose or tube for cracks or clogging.

REASSEMBLY

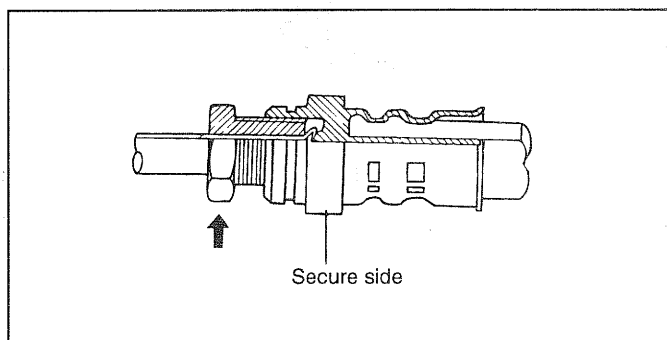
EOHA0170

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



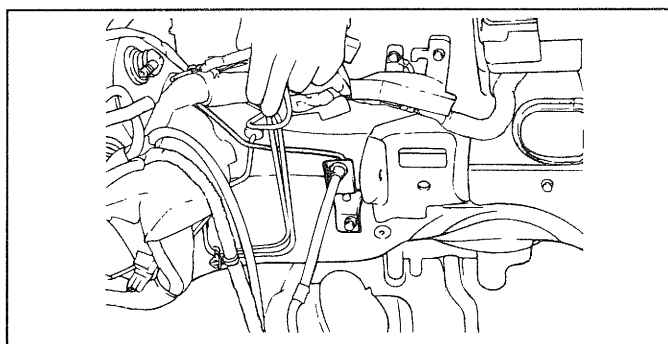
EOA9017A

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.



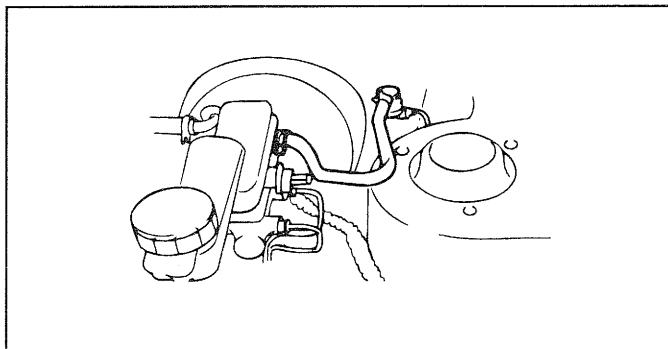
EOA9017A

3. Install the clutch tube and clips.



EOA9014B

4. Install the master cylinder.



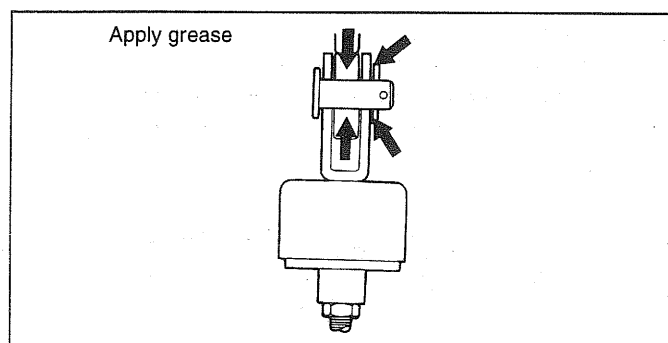
EOHA010A

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

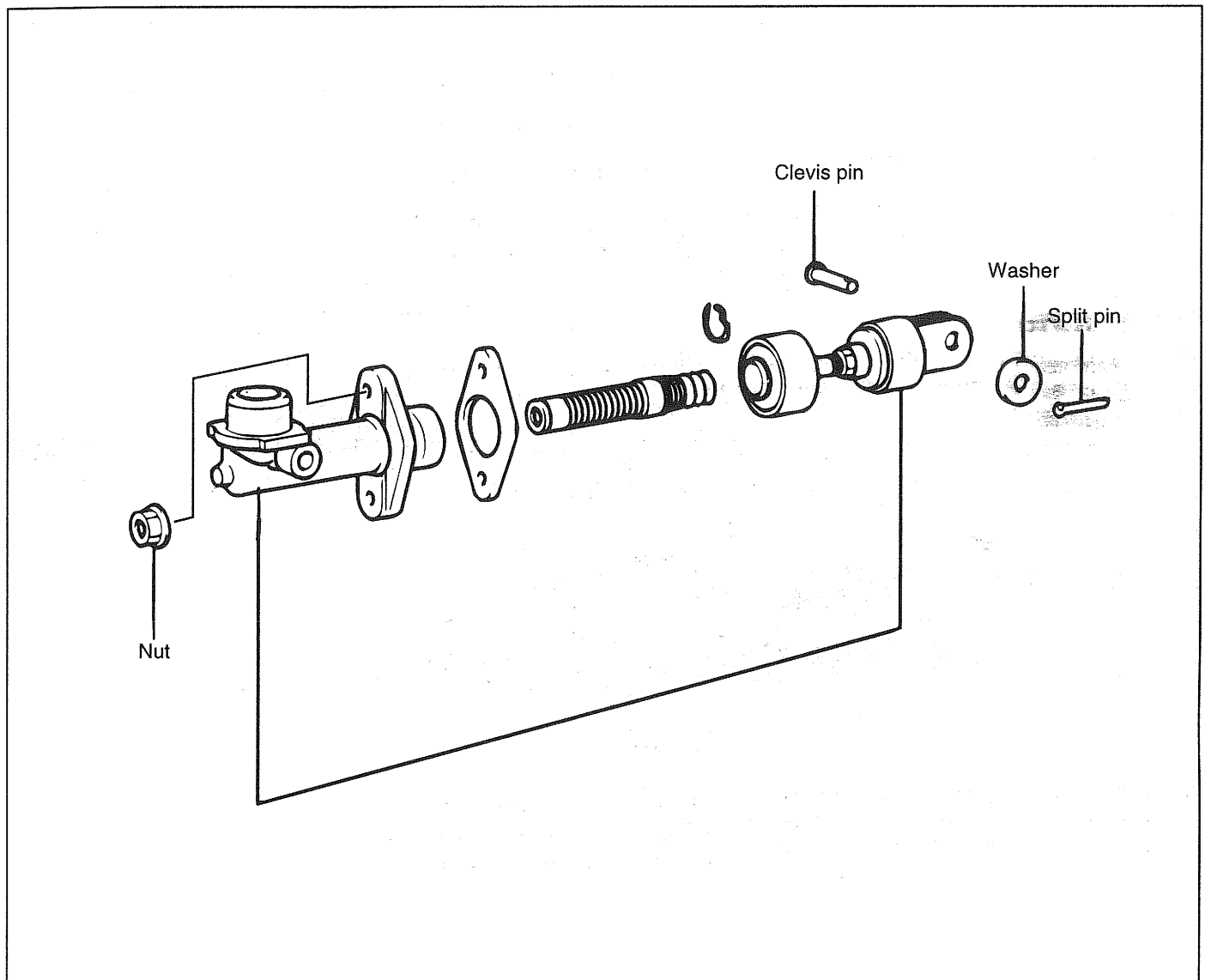
Wheel bearing grease

..... SAE J310a, NLGI NO.2

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



EOA9013B

CLUTCH MASTER CYLINDER EOHA0180**COMPONENTS**

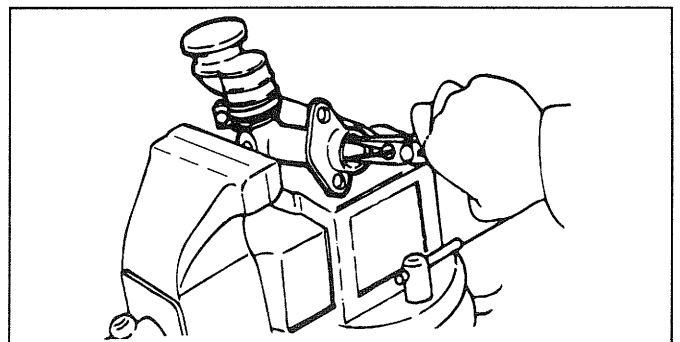
EOHA018A

DISASSEMBLY EOAG0190

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.



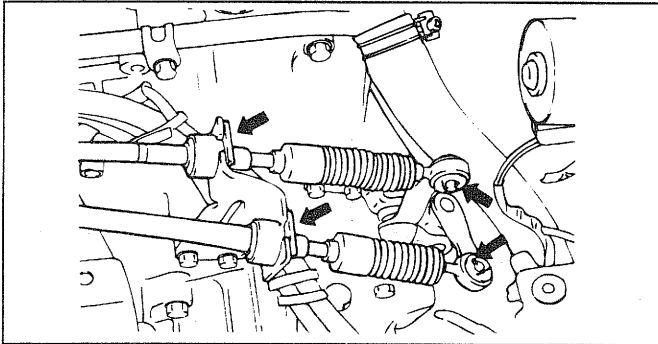
EOAG019A

INSPECTION EOA0200

1. Check inside of 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.



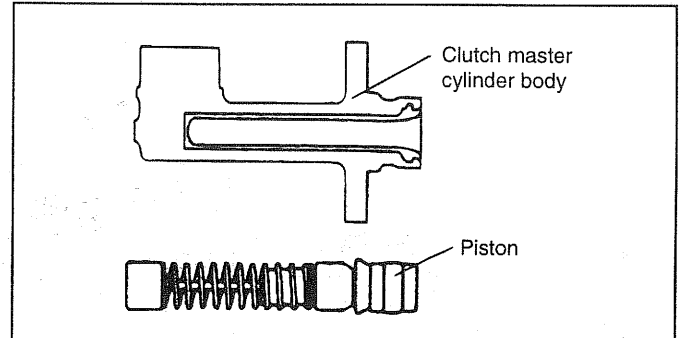
EOA9019B

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 EOA90210

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

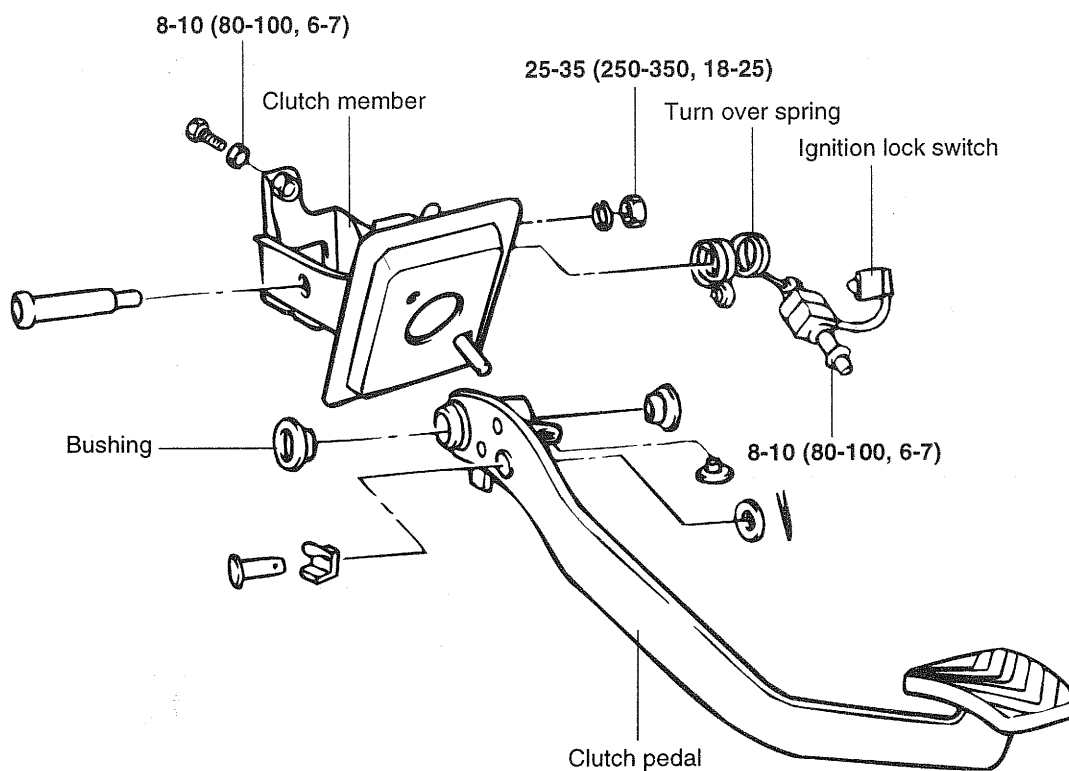
Specified fluid Brake fluid DOT 3



EOA9019C

CLUTCH PEDAL

COMPONENTS EOA90090

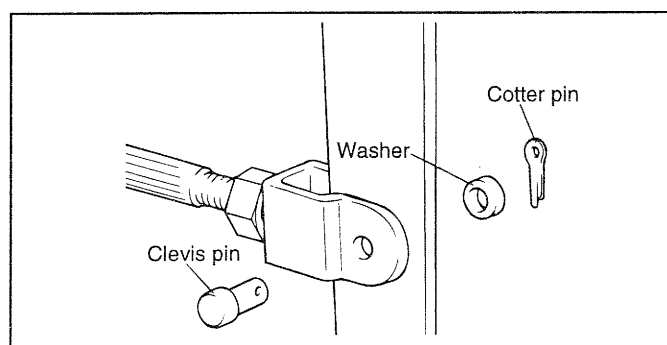


TORQUE : N.m (kg.cm, lb.ft)

EOA9009A

DISASSEMBLY EOA90100

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



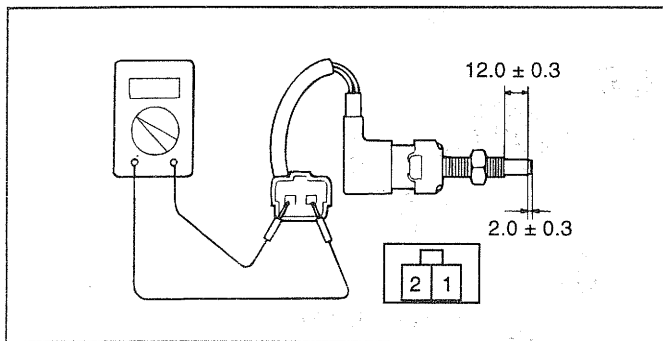
EOA9010A

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 SWICH INSPECTION

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



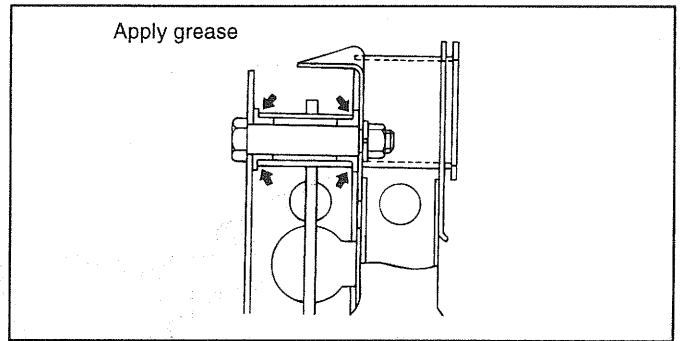
EOA9012A

REASSEMBLY EOA90130

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

Chassis greaseSAE J310a, NLGI No.1

2. Install the clutch pedal mounting bolt.



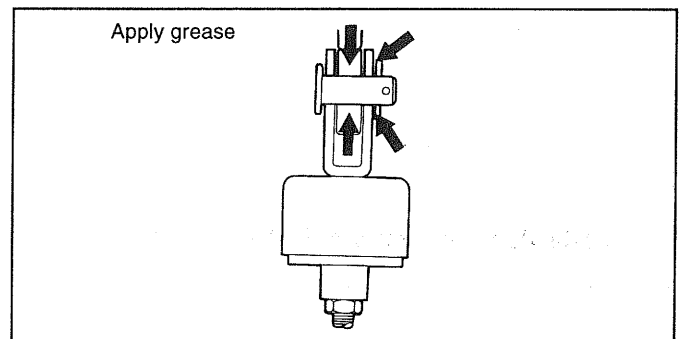
EOA9013A

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

Wheel bearing grease

.....SAE J310, NLGI No.2

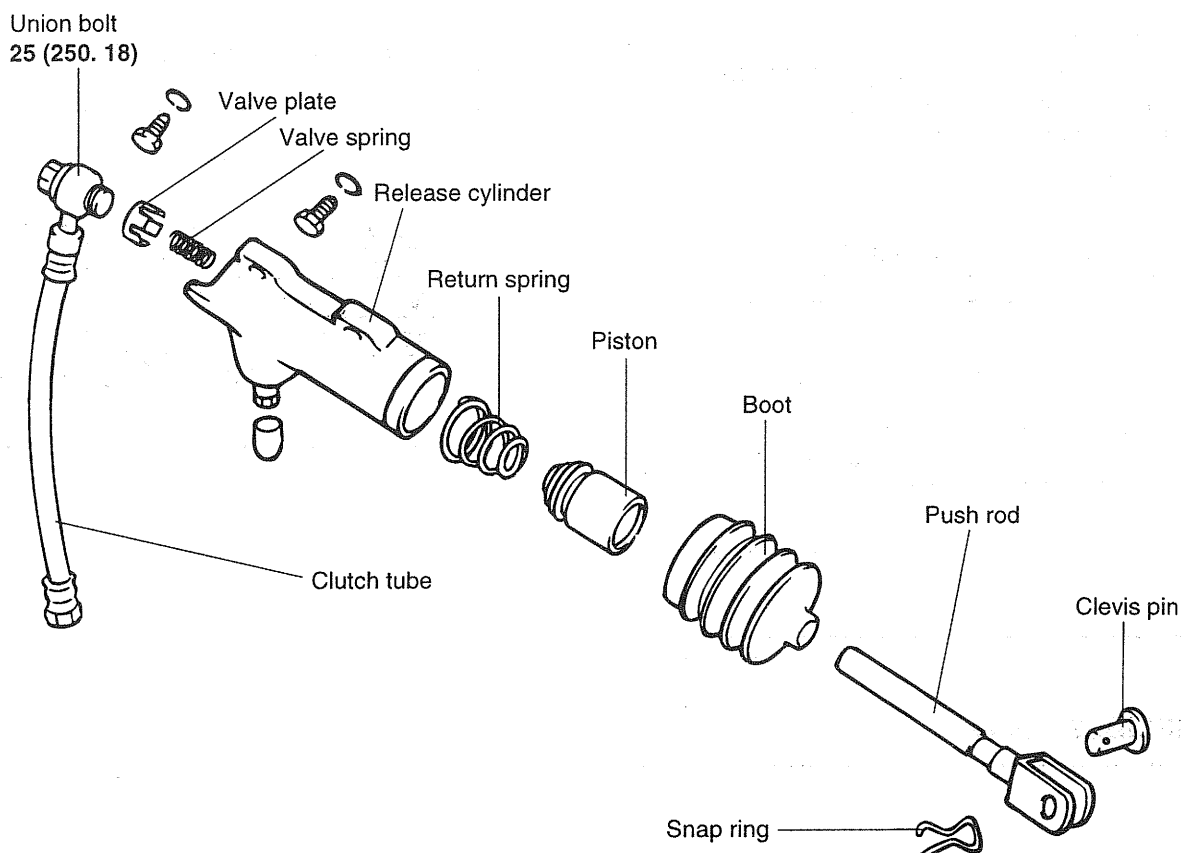
4. Install the push rod to the clutch pedal.
5. Adjust the clutch pedal clevis pin play.



EOA9013B

CLUTCH RELEASE CYLINDER

COMPONENTS EOA90220



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

EOA9022A

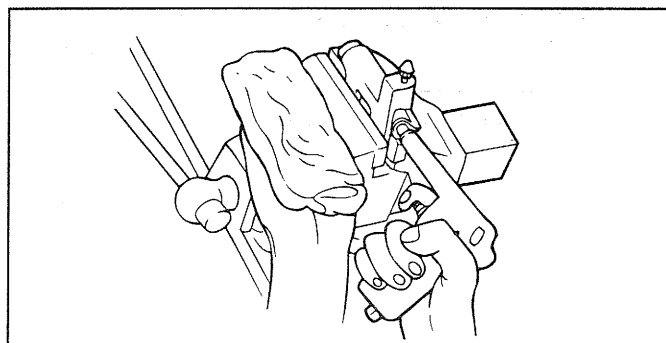
REMOVAL EOA90230

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. Cover with rags to prevent the piston from popping out and causing injury.

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



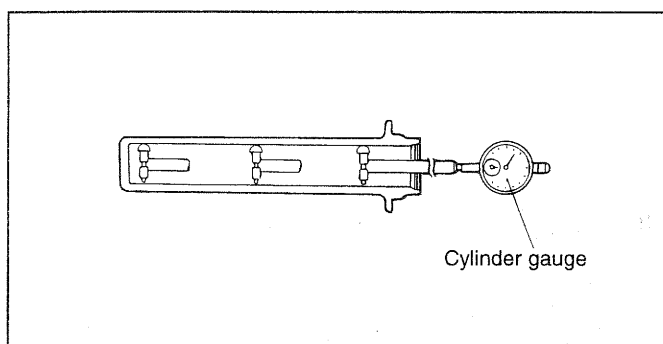
EOA9023A

INSPECTION EOA90240

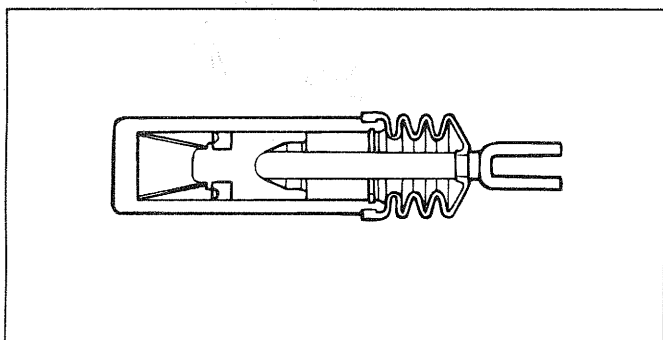
1. Check the clutch release cylinder for fluid leakage.
2. Check the clutch release cylinder boots for damage.
3. Check the release cylinder bore for rust and damage.
4. Measure the release cylinder bore at three locations (bottom, middle, and top) with a cylinder gauge and replace the release cylinder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

Limit :

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



EOA9024A

REASSEMBLY EOA90250

EOA9025A

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

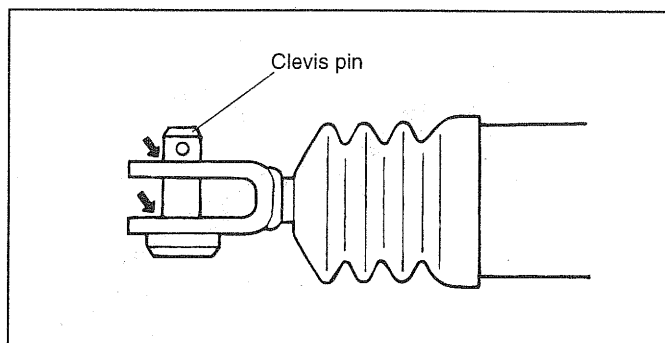
2. Install the clutch hose, valve plate, spring, push rod, and boot.

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