

Clutch System

GENERAL	CH - 2
CLUTCH SYSTEM	CH - 6

GENERAL

SPECIFICATIONS

EOMB0010

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 6.1) : 2.5 TCI 240 x 155 (9.4 x 6.1) : 2.9 TCI 240 x 155 (9.4 x 6.1) : 3.5 V6
Clutch cover assembly	
Type	Diaphragm spring strap
Setting load N (lb)	5500-6100 (1232-1366) : 2.5 TCI More than 7250 (1624) : 2.9 TCI, 3.5 V6
Clutch release cylinder	
I.D.mm (in.)	19.05 (0.74)
Clutch master cylinder	
I.D.mm (in.)	15.87(0.62)

SERVICE STANDARD

EOMB0020

ITEM	Standard value
Clutch disc thickness [When free]	8.3 ± 0.3 mm (0.326 ± 0.0118 in.) : 2.5 TCI 8.0 ± 0.3 mm (0.314 ± 0.0118 in.) : 2.9 TCI, 3.5 V6
Clutch pedal height	202 mm (7.95 in.)
Clutch pedal free play	6-13 mm (0.24-0.51 in.)
Clutch pedal stroke	155 mm (6.10 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.)

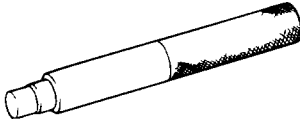
TIGHTENING TORQUE EOMB0030

Item	Nm	kg·cm	lb·ft
Clutch pedal bracket	18 - 25	180 - 250	13 - 18
Clutch master cylinder mounting bolt	7 - 9	70 - 90	5 - 6
Clutch tube flare nut	13 - 17	130 - 170	9 - 12
Clutch release cylinder mounting bolt	30 - 42	300 - 420	21 - 30
Clutch release cylinder union bolt	20 - 25	200 - 250	14 - 18
Clutch cover assembly	15 - 22	150 - 220	11 - 16
Clutch master cylinder reservoir	8 - 10	80 - 100	6 - 7
Ignition lock switch	5 - 7	50 - 70	4 - 5
Clutch pedal to pedal bracket	25 - 35	250 - 350	18 - 25

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 L9508	As required

SPECIAL TOOLS EOMB0050

Tool (Number and name)	Illustration	Use
09411-43000 Clutch disc guide	 D1143000	Installation of the clutch disc

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 pedal free play	Adjust
		Clogged hydraulic system	Correct or replace parts
		Excessive wear of clutch disc facing	Replace
	<ul style="list-style-type: none"> Insufficient car speed 	Hardened clutch disc facing, or oil on surface	Replace
		Damaged pressure plate or flywheel	Replace
	<ul style="list-style-type: none"> Lack of power driving uphill 	Weak or broken pressure spring	Replace
Difficult gear shifting (gear noise during shifting)		Excessive pedal free play	Adjust
		Hydraulic system fluid leaks, air trapped or lines clogged	Repair or replace parts
		Unusual wear or corrosion of the clutch disc spring	Replace
		Excessive vibration (distortion) of the clutch disc	Replace
Clutch noisy	When the clutch is not used	Insufficient play of the clutch pedal	Adjust
		Excessive wear of the clutch disc facing	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	Repair
		Improperly installed the clutch assembly or bearing	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	Repair
		Insufficient lubrication of the spline part of clutch disc	Repair
		Insufficient lubrication of the clutch release lever shaft	Repair
		Insufficient lubrication of the front bearing retainer	Repair
Hard to shift or will not shift		Excessive clutch pedal free play	Adjust the pedal free play
		Faulty clutch release cylinder	Repair the release cylinder
		Clutch disc out of place, runout is excessive or lining broken	Inspect the clutch disc
		Dirty spline on input shaft or the clutch disc	Repair as necessary
		Faulty clutch pressure plate	Replace the clutch cover
Clutch slips		Insufficient clutch pedal free play	Adjust the pedal free play
		Clogged hydraulic system	Repair or replace parts
		Clutch disc lining oily or worn out	Inspect the clutch disc
		Faulty pressure plate	Replace the clutch cover
		Binding release fork	Inspect the release fork

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

CLUTCH SYSTEM

SERVICE ADJUSTMENT

PROCEDURE EOMB0070

CLUTCH PEDAL INSPECTION AND ADJUSTMENT

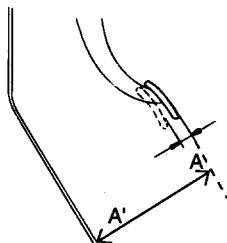
1. Measure the clutch pedal height (From the face of the pedal pad to the floorboard) and the clutch pedal free-play (measured at the face of the pedal pad).

Standard value :

(A) 6-13 mm (0.24-0.51 in.)

(A') 202 mm

Clutch pedal free-play (A) and Pedal height (A')



EOMB007A

2. If the clutch pedal 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.

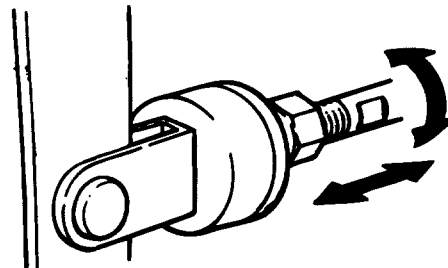
NOTE

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.



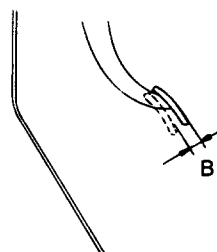
KOMB007B

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

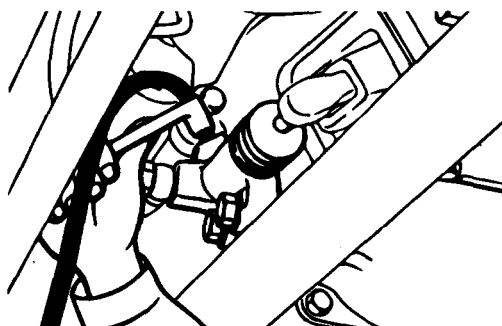
BLEEDING EOMB0080

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 or DOT4)

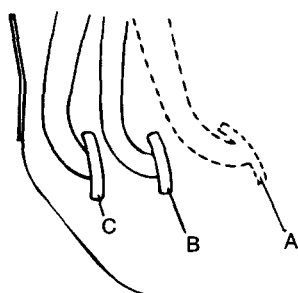


KOMB008A

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

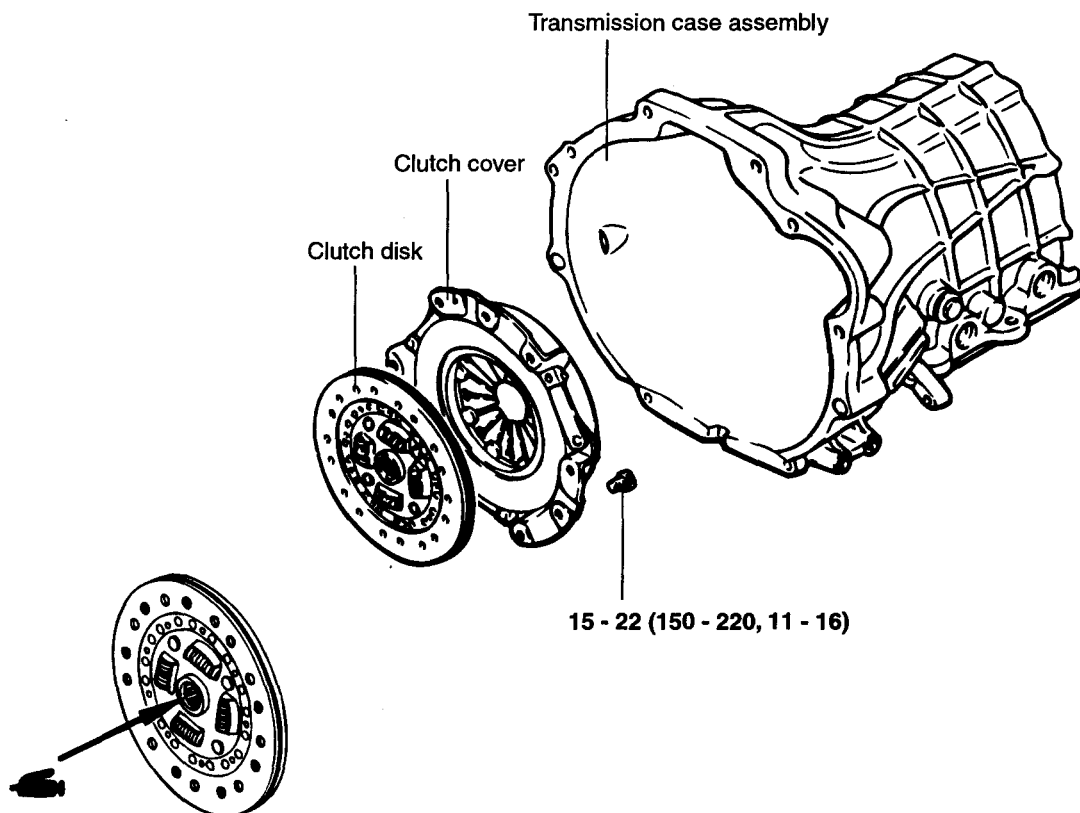
The rapidly-repeated operation of the clutch pedal in B-C range may disrupt the release cylinder's position. During the bleeding operation, press the clutch pedal to the floor after it returns to the "A" point.



EOA9008B

CLUTCH COVER AND DISC

COMPONENTS EOMB0270



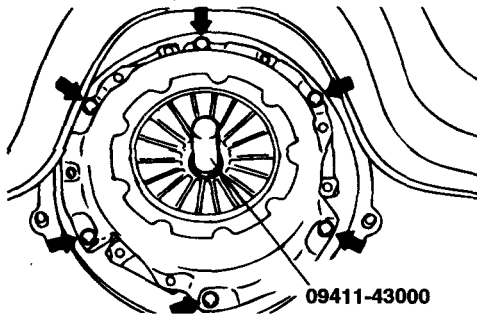
TORQUE : N·m (kg·cm, lb·ft)

REMOVAL EOMB0280

1. Insert the special tool (09411-43000) in the clutch disc to prevent the disc from shifting.
2. 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.

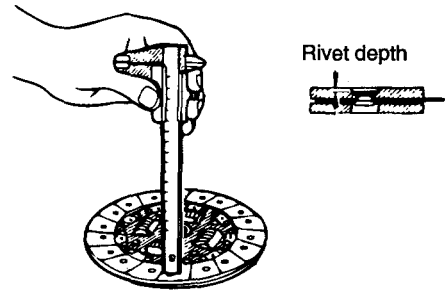


KOMB028A

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.

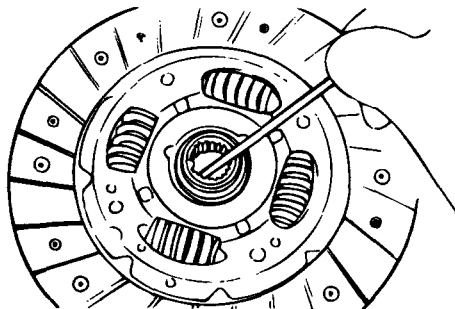
INSTALLATION

EOMB0300

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.



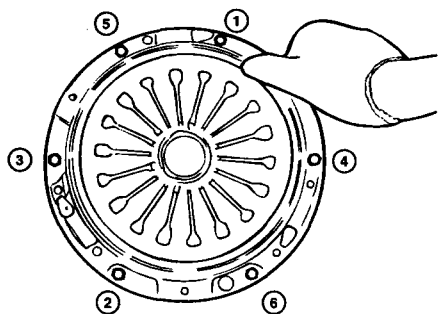
EOA9030F

2. Install the clutch disc assembly to the flywheel using the special tool (09411-43000).
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 :

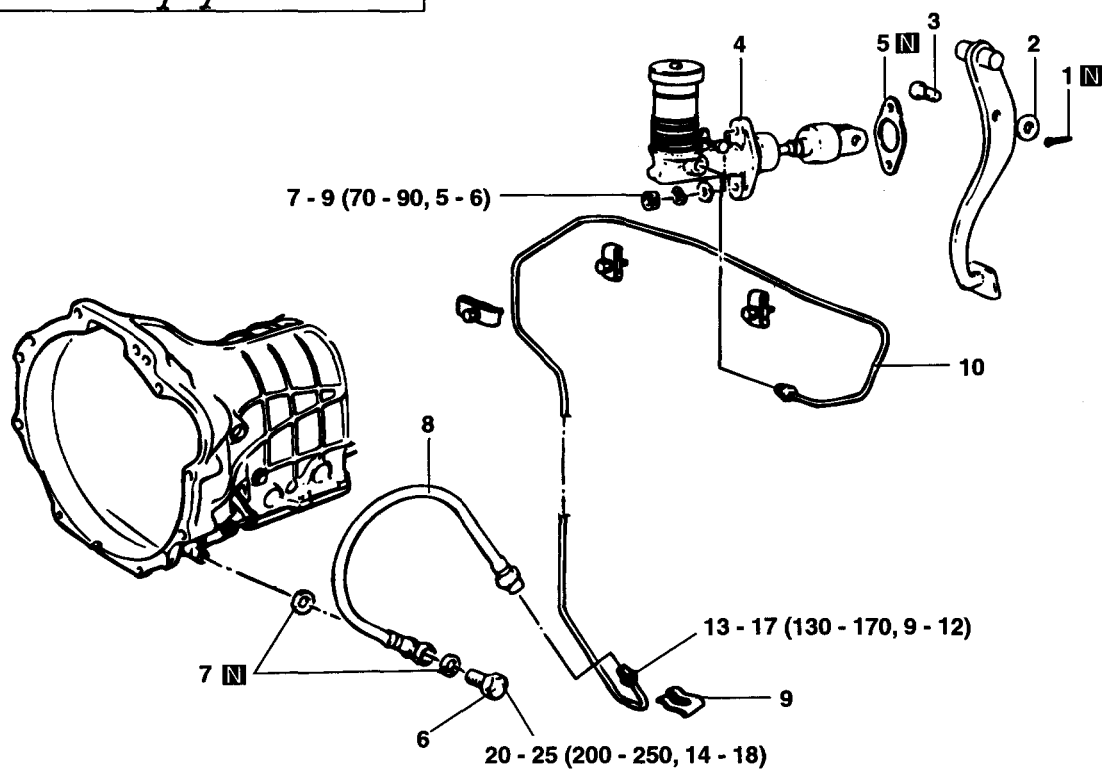
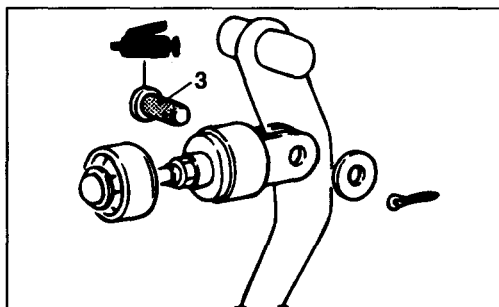
15-22 Nm (150-220 kg-cm, 11-16 lb-ft)



EOA9030B

CLUTCH MASTER CYLINDER

COMPONENTS EOMB0130

**[Removal procedure]**

- | | |
|---------------------------|-----------------|
| 1. Cotter pin | 6. Eye bolt |
| 2. Washer | 7. Gasket |
| 3. Clevis pin | 8. Clutch hose |
| 4. Clutch master cylinder | 9. Hose clip |
| 5. Sealer | 10. Clutch tube |

TORQUE : N·m (kg·cm, lb·ft)

REMOVAL EOMB0140

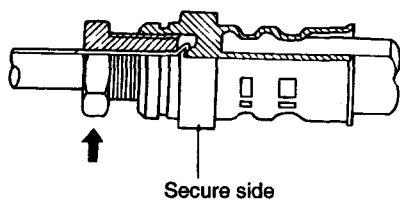
Refer to the removal procedure on the "COMPONENTS".

INSPECTION EOA90160

Check the clutch hose or line for cracks or clogging.

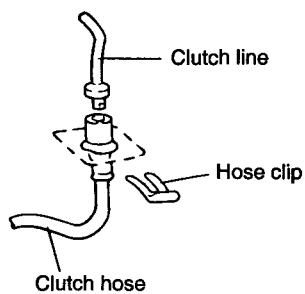
REASSEMBLY EOMB0160

1. Connect the clutch tube (clutch hose side).
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.



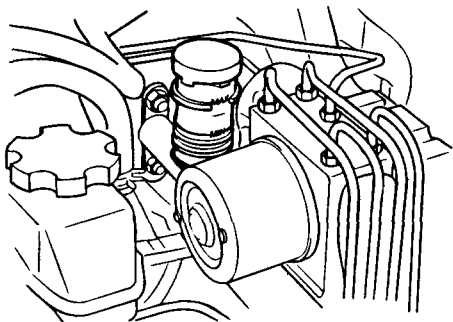
EOA9017A

3. Install the clutch line and clips.



EOA9014C

4. Install the master cylinder.

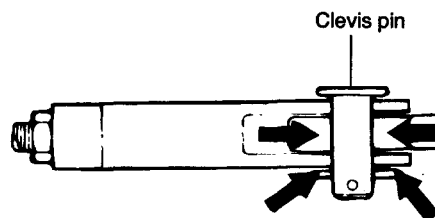


KOMB016D

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

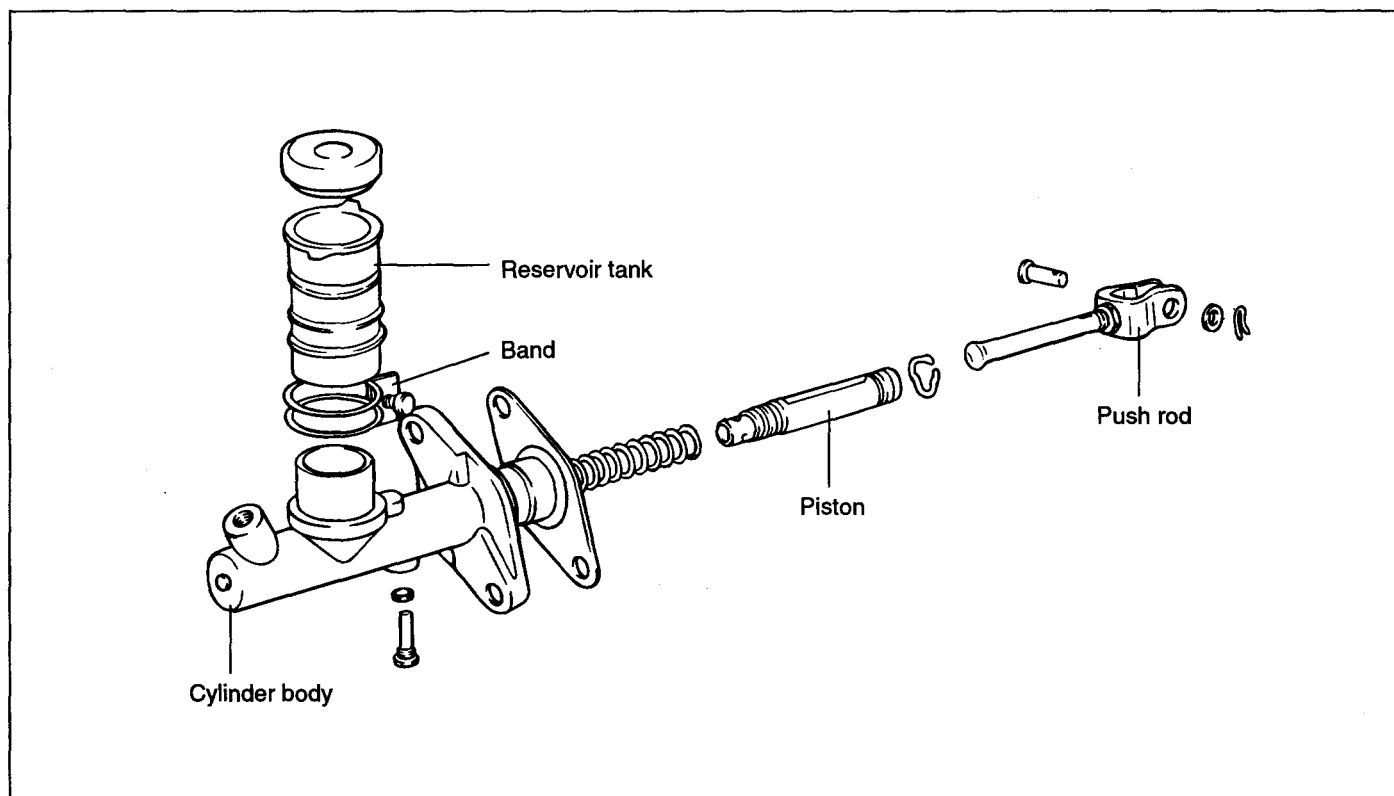
Wheel bearing grease : SAE J310a, NLGI NO.2

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



EOJA017A

COMPONENTS EOMB0170



EOMB017A

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**

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

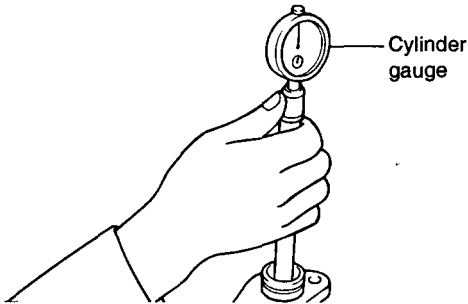
INSPECTION

EOMB0190

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.



EODA014A

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

EOMB0200

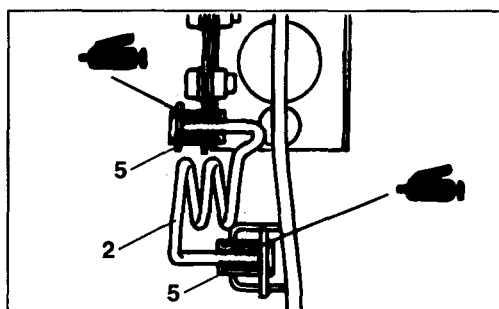
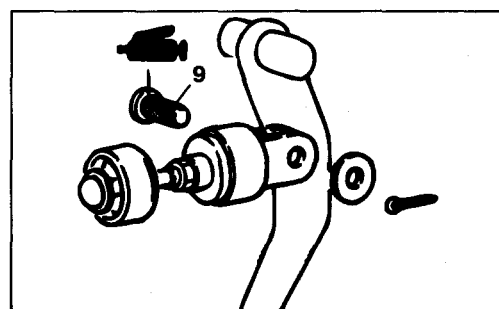
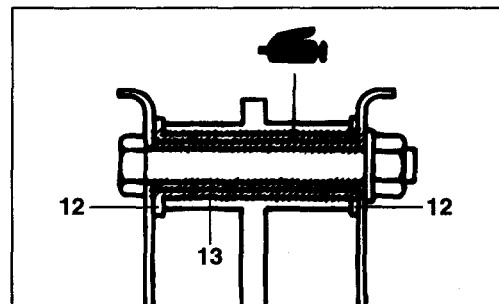
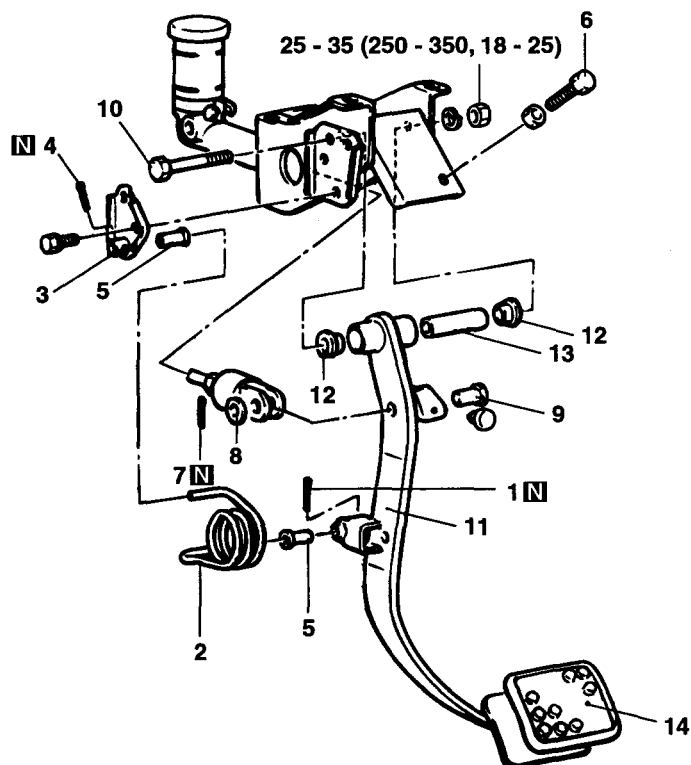
1. Apply brake fluid to the inner surface of the master cylinder body and to the entire periphery of the piston assembly.
2. Install the piston assembly.

Specified fluid : Brake fluid DOT 3 or DOT 4

3. Install the push rod.
4. Install the reservoir on the master cylinder body.

CLUTCH PEDAL

COMPONENTS EOMB0090



[Removal procedure]

- | | |
|------------------|------------------|
| 1. Cotter pin | 8. Washer |
| 2. Return spring | 9. Clevis pin |
| 3. Bracket | 10. Bolt |
| 4. Cotter pin | 11. Clutch pedal |
| 5. Bushing | 12. Bushing |
| 6. Stopper bolt | 13. Spacer |
| 7. Cotter pin | 14. Pedal pad |

NOTE

(1) : Non-reusable parts

TORQUE : N·m (kg·cm, lb·ft)

REMOVAL EOMB0100

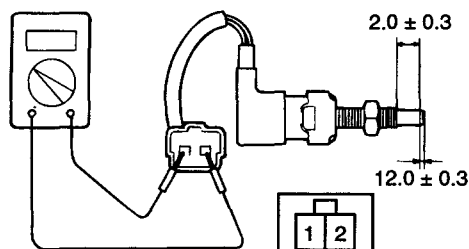
Refer to the removal procedure on the "COMPONENTS".

INSPECTION EOMB0110

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.



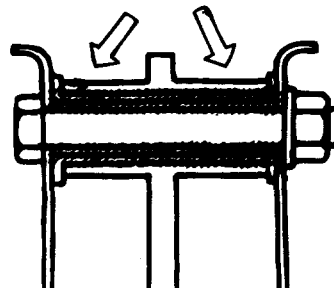
KOMB011A

INSTALLATION EOMB0120

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.



KOMB012A

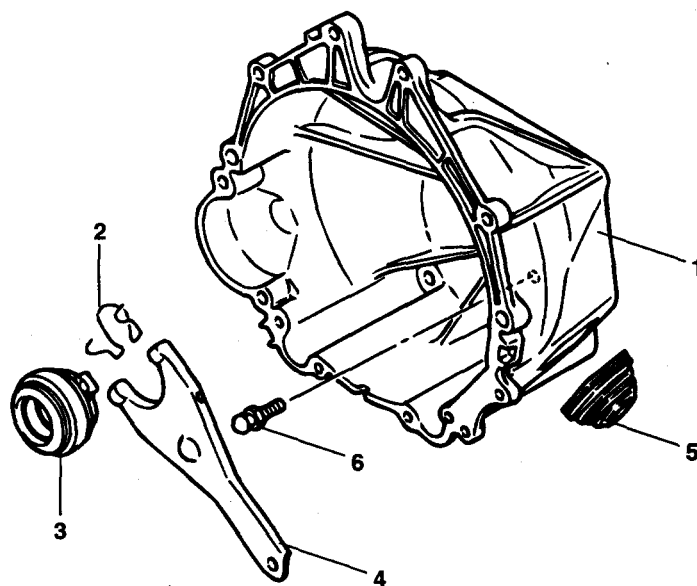
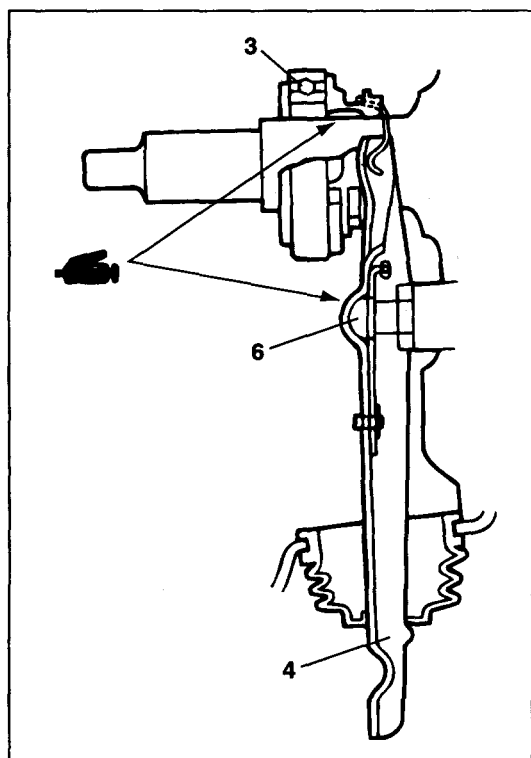
3. Apply the specified grease to the clevis pin and washer.

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 BEARING

COMPONENTS EOMB0310

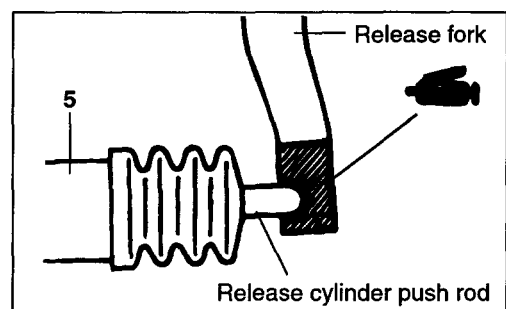
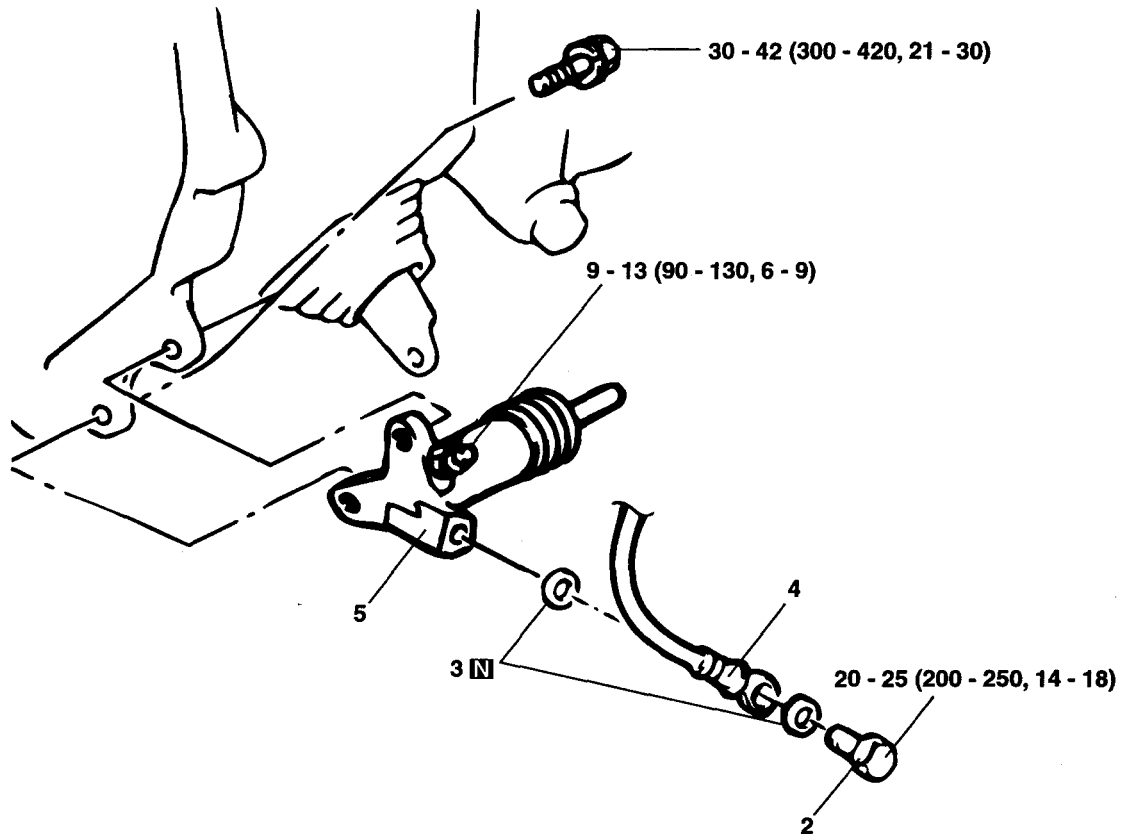


[Removal procedure]

1. Transmission case
2. Return spring
3. Clutch release bearing
4. Clutch release fork
5. Clutch release fork boot
6. Fulcrum

CLUTCH RELEASE CYLINDER

COMPONENTS EOMB0210

**[Removal procedure]**

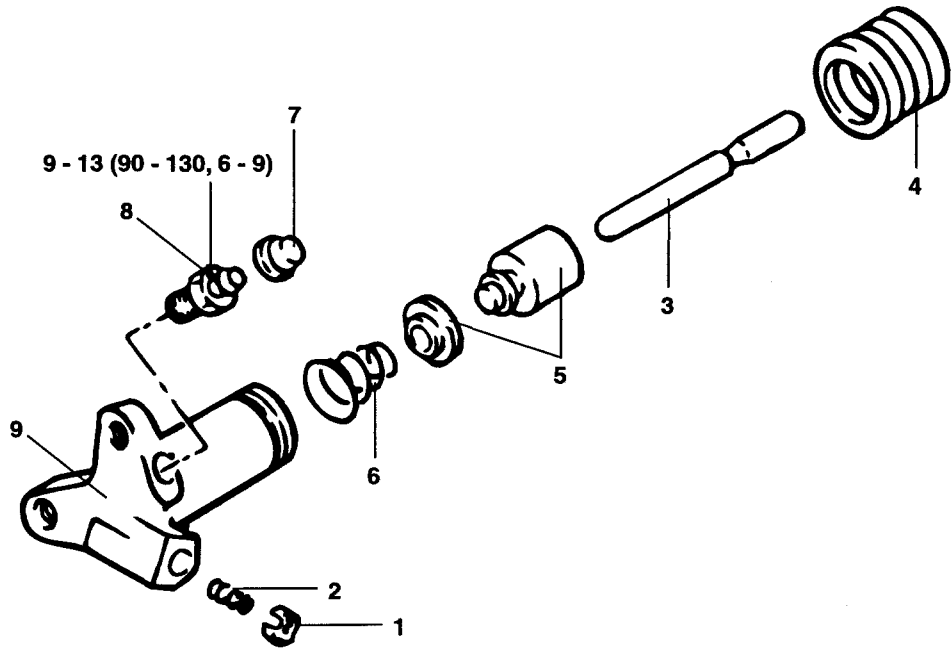
1. Bleeder plug
2. Eye bolt
3. Gasket
4. Clutch hose
5. Clutch release cylinder

TORQUE : N·m (kg·cm, lb·ft)

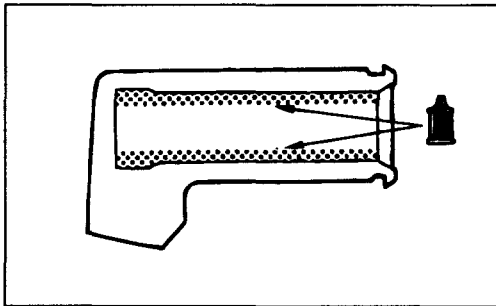
NOTE : N Non-reusable part

COMPONENTS

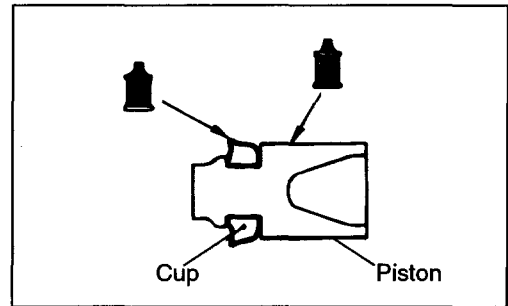
EOMB0220



Brake Fluid DOT3



Brake Fluid DOT3

**[Removal Procedure]**

- | | |
|-----------------|---------------------|
| 1. Valve plate | 6. Cup |
| 2. Spring | 7. Spring |
| 3. Push rod | 8. Bleeder plug |
| 4. Boot | 9. Release cylinder |
| 5. Piston & Cup | |

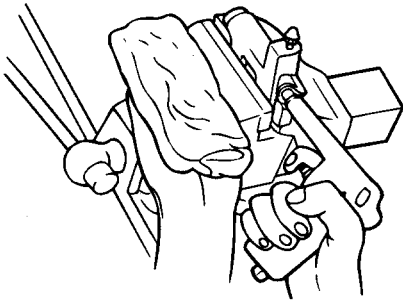
TORQUE : N·m (kg·cm, lb·ft)

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

- *Use rags to prevent the piston from popping out and causing injury.*
- *Apply compressed air slowly. Keep the fluid from splashing in your eyes or on your skin.*

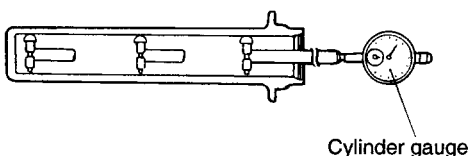


EOA9023A

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.)

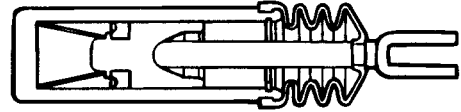


EOA9024A

REASSEMBLY EOMB0250

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 DOT3 or DOT4



EOA9025A

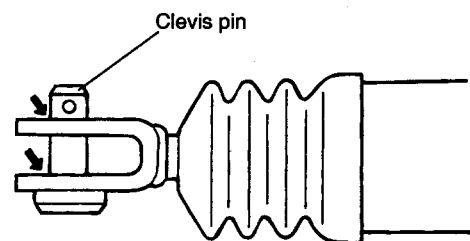
2. Install the clutch hose, valve plate, spring, push rod, and boot.

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