Clutch System

GENERAL

GENERAL E40B48BD8

SPECIFICATIONS

Item	Specifications
Clutch operating method	Hydraulic type
Clutch disc Type Facing diameter (Outside x Inside) mm (in.)	 Single dry with diaphragm. 215 x 145 (8.5 x 5.7)
Clutch cover assembly Type	 Diaphragm spring strap
Clutch release cylinder * I.D. mm (in.)	 20.64 (0.81)
Clutch master cylinder * I.D. mm (in.)	 15.57 (0.62)

* I.D. : Inside Diameter

SERVICE STANDARD

Item	Standard value
Clutch disc thickness [When free]	1.3L/1.5L/1.6L ; 8.5 ± 0.3, 1.1L ; 8.0 ± 0.3
Clutch pedal free play	6 ~ 13 (0.24 ~ 0.52)
Clutch pedal height	160.7 (6.4)
Clutch pedal stroke	140 (5.6)
Clutch release cylinder clearance to piston	0.15 mm (0.006 in.)
Clutch master cylinder clearance to piston	0.15 mm (0.006 in.)

Unit : mm (inch)

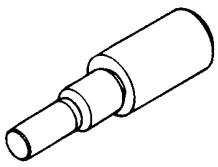
TIGHTENING TORQUE

Item	Nm	kg·cm	lb·ft
Clutch pedal to pedal support member	25 ~ 35	250 ~ 350	18 ~ 25
Clutch pedal support member to master cylinder	17 ~ 26	170 ~ 260	13 ~ 18
Clutch tube flare nut	13 ~ 17	130 ~ 170	9 ~ 13
Clutch tube bracket	4 ~ 6	40 ~ 60	3 ~ 4
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 nut	9 ~ 14	90 ~ 140	6 ~ 10
Ignition lock nut	8 ~ 10	80 ~ 100	6 ~ 7

LUBRICANTS E4FF47FF6

Items	Specified lubricants	Quantity
Contact surface of release bearing and fulcrum of clutch release fork	CASMOLY L9508	As required
Inner surface of clutch release bearing	CASMOLY L9508	As required
Inner surface of clutch release cylinder and outer circumference of piston and cup	Brake fluid DOT3 or DOT4	As required
Inner surface of clutch disc spline	CASMOLY L9508	As required
Inner surface of clutch master cylinder and outer circumference of piston assembly	Brake fluid DOT3 or DOT4	As required
Clutch master cylinder push rod, clevis pin and washer	Wheel bearing grease SAE J310a, NLGI No.2	As required
Clutch pedal shaft and bushings	SAE J310a, Chassis grease, NLGI-No.1	As required
Contact portion of release fork to release cylinder push rod	CASMOLY L9508	As required

SPECIAL TOOLS E4771A77C

Tool (Number and name)	Illustration	Use
09411-25000 Clutch disc guide	 EODA003A	Installation of the clutch disc

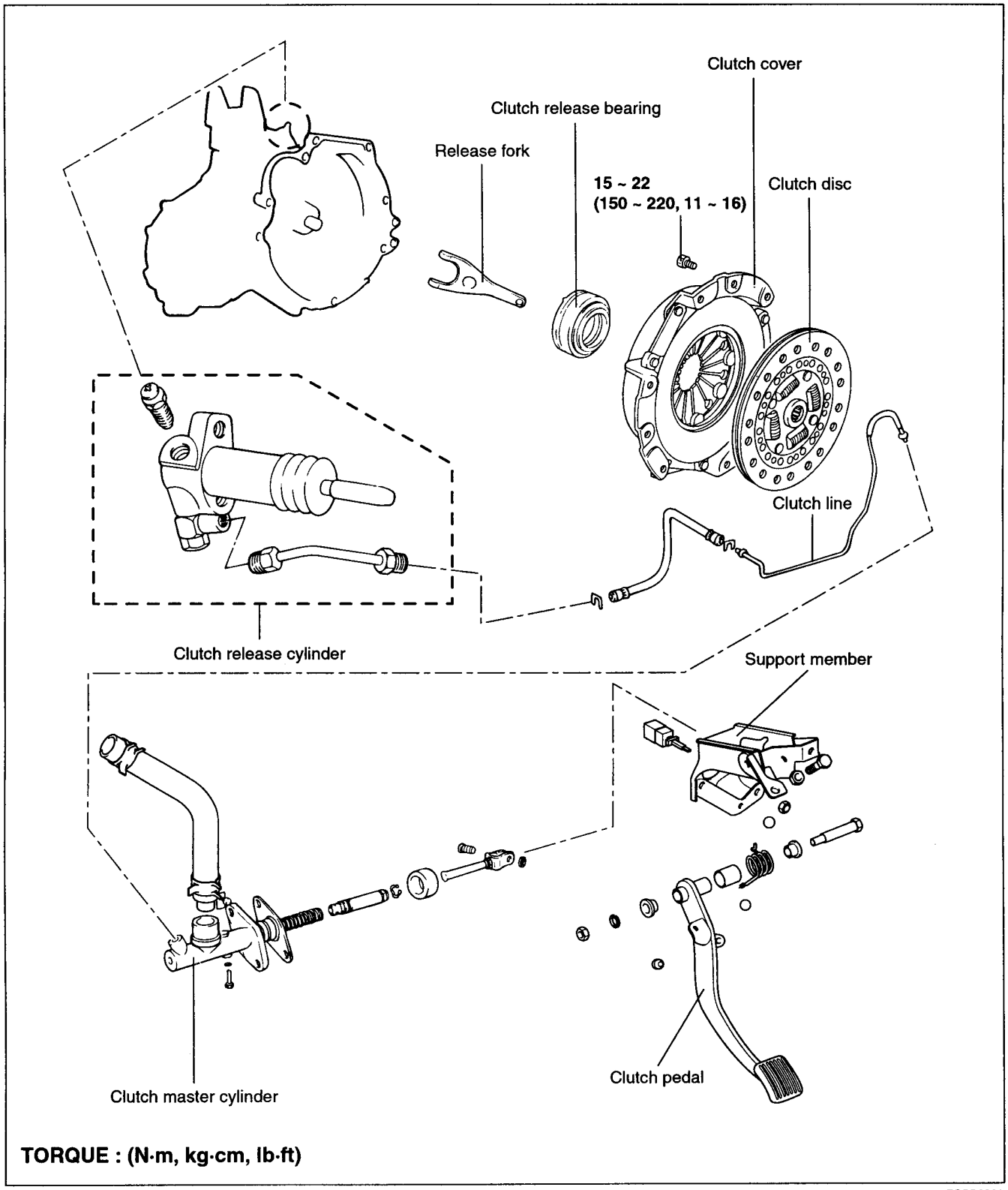
TROUBLESHOOTING E49C84062

Symptom		Probable cause	Remedy
Clutch slipping • Car will not respond to engine speed during acceleration • Insufficient vehicle speed • Lack of power during uphill driving		Insufficient clutch 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 trapping or clogging Unusual wear or corrosion of clutch disc spline Excessive vibration (distortion) of clutch disc	Adjust Repair or replace parts Replace 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	Insuffcient grease on the sliding surface of bearing sleeve	Repair
		Improperly installed clutch assembly or bearing	Repair
	A noise is heard when car is suddenly rolled with clutch partially engaged	Damaged pilot bushing	Replace
Difficult to depress clutch pedal		Insufficient lubrication of clutch pedal Insufficient lubrication of the clutch disc spline Insufficient lubrication of the clutch release lever shaft Insufficient lubrication of front bearing retainer	Repair Repair Repair Repair
Difficult to shift gear or cannot shift at all		Excessive clutch pedal free play excessive Clutch release cylinder faulty Clutch disc out of true, runout is excessive or lining broken Spline on input shaft or clutch disc dirty or burred Clutch pressure plate faulty	Adjust pedal free play Repair release cylinder Inspect clutch disc Repair as necessary Replace clutch cover
Clutch slips		Clutch pedal free play insufficient Clogged hydraulic system Clutch disc lining oily or worn out Pressure plate faulty Release fork binding	Adjust pedal free play Repair or replace parts Inspect clutch disc Replace clutch cover Inspect release fork
Clutch grabs/chatters		Clutch disc lining oily or worn out Pressure plate faulty Clutch diaphragm spring bent Worn or broken torsion spring Engine mounts loose	Inspect clutch disc Replace clutch cover Replace clutch cover Replace clutch disc Repair as necessary
Clutch noisy		Damaged clutch pedal bushing Loose part inside housing Release bearing worn or dirty Release fork or linkage sticks	Replace clutch pedal bushing Repair as necessary Replace release bearing Repair as necessary

CLUTCH SYSTEM

CLUTCH CONTROL E4AEE5D4A

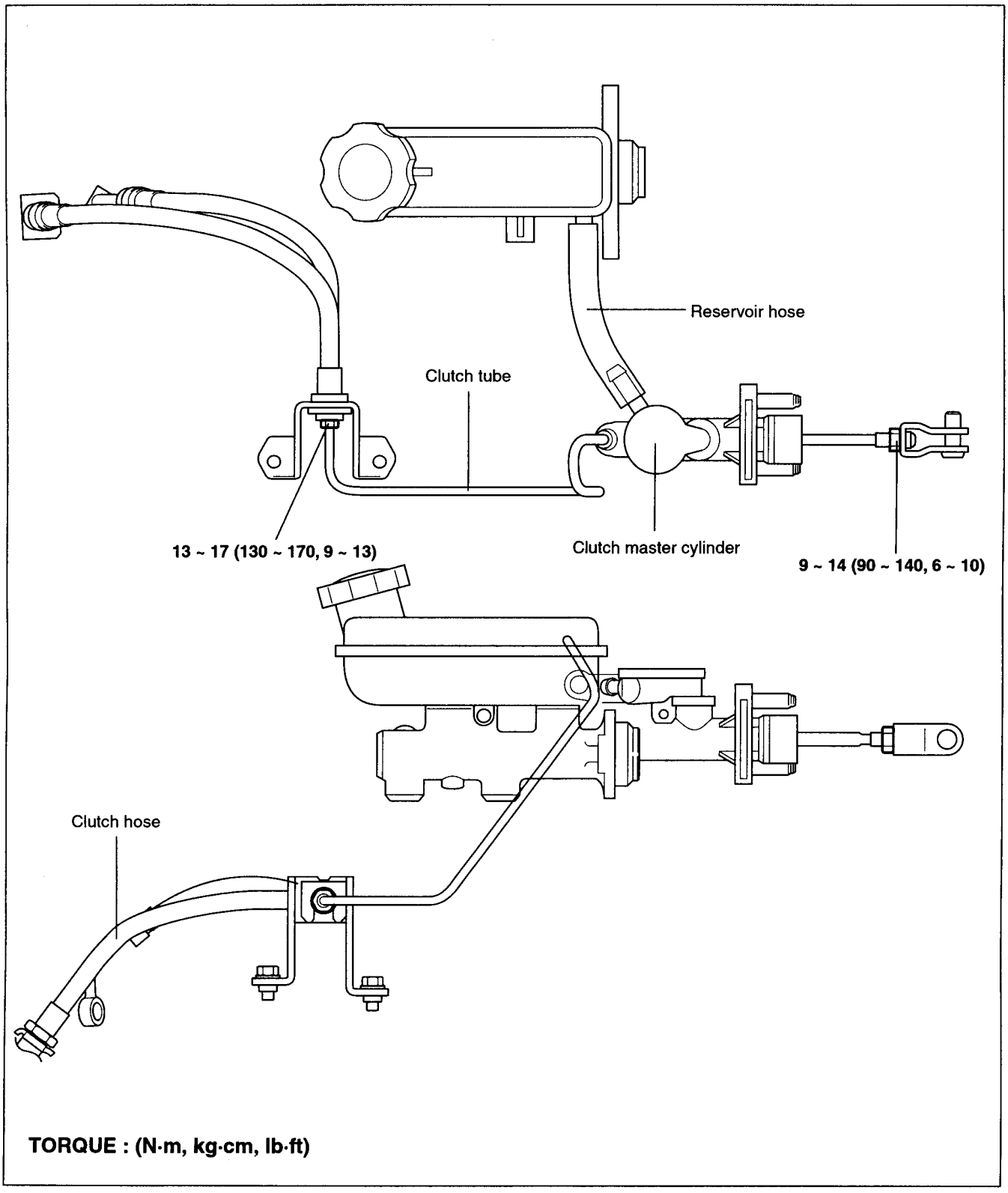
COMPONENTS (1)



TORQUE : (N·m, kg·cm, lb·ft)

EOPD026A

COMPONENTS (2)



EOPC026C

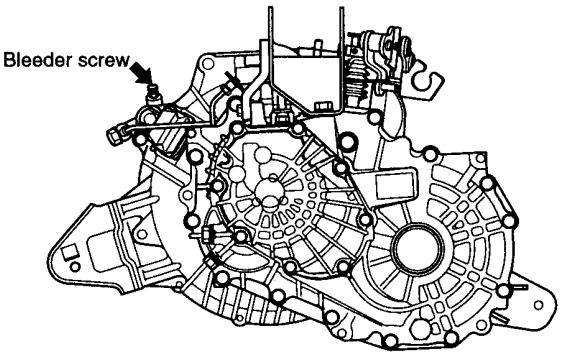
INSPECTION E4A039279

BLEEDING

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 (DOT 3 or DOT 4).

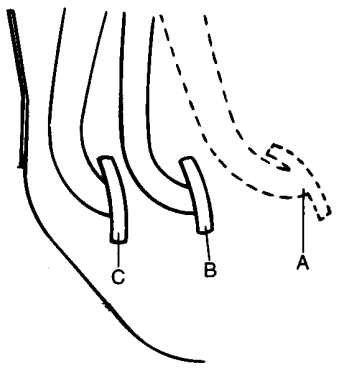


EOPC011B

1. Loosen the bleeder screw at 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***

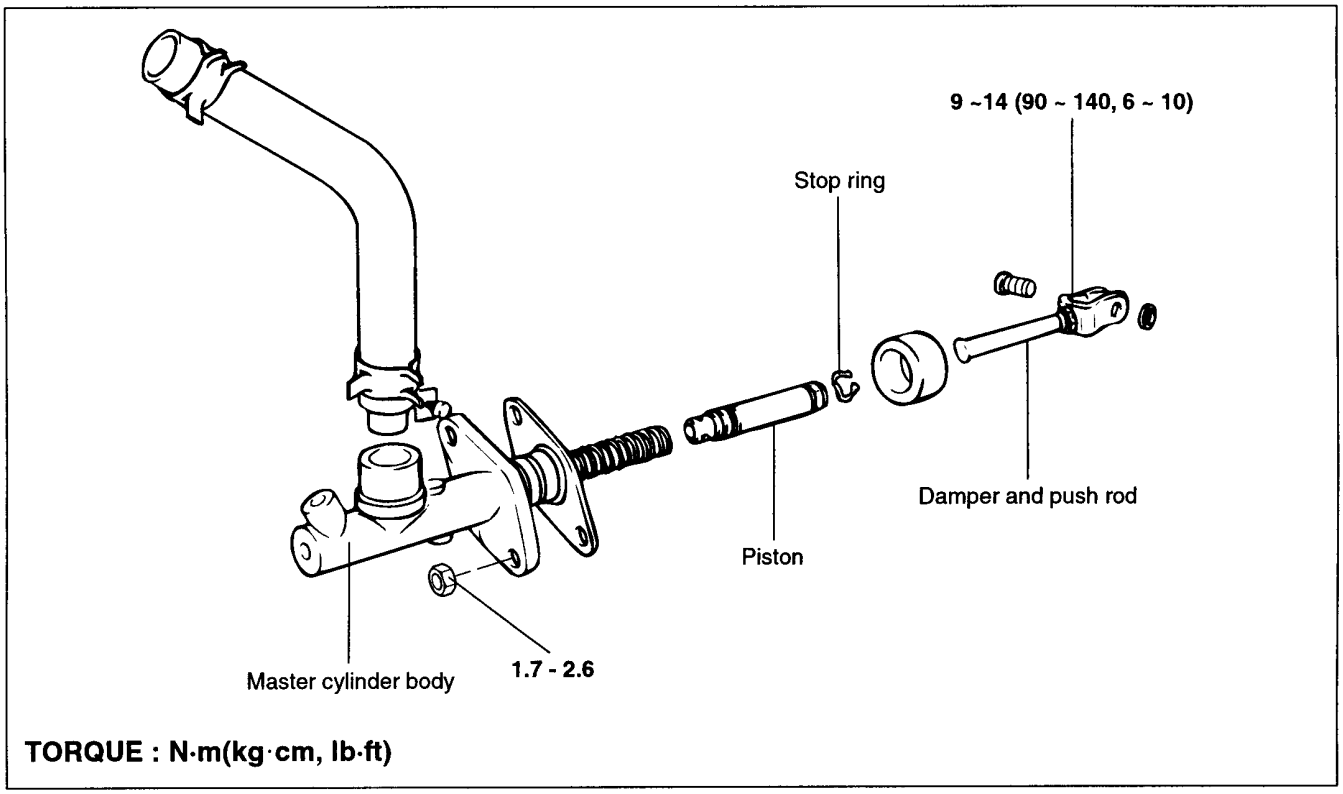
The rapidly-repeated operation of the clutch pedal in B-C range may cause the release cylinder's position to be forced out from the release cylinder body during air bleeding. Repress the clutch pedal after it returns to the "A" point completely.



EODA007C

CLUTCH MASTER CYLINDER

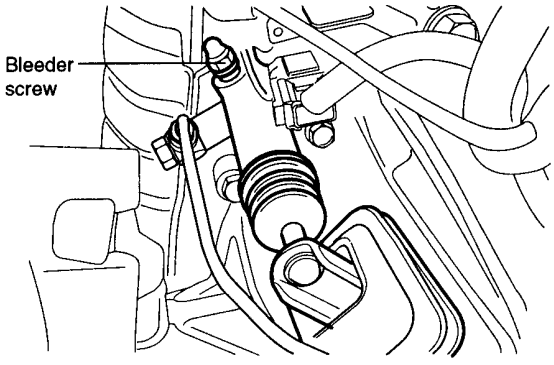
COMPONENTS E4A6A111



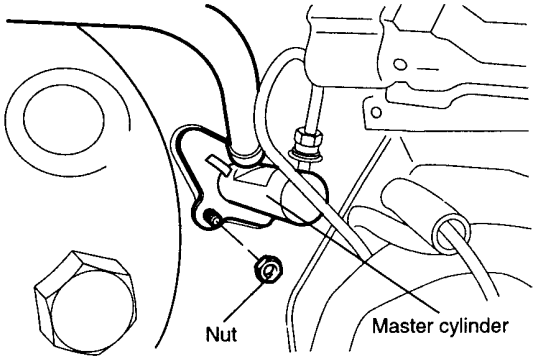
EOPC021F

REMOVAL E4B8F366B

1. Drain the clutch fluid through the bleeder screw.



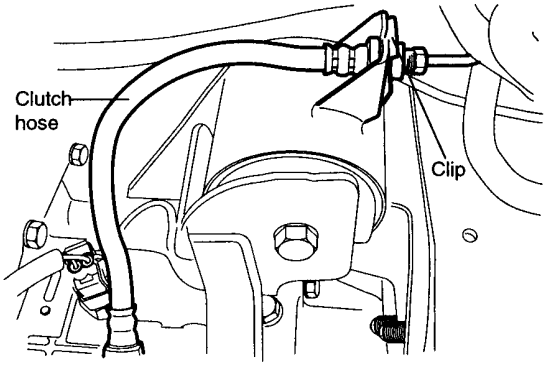
EOPC702B



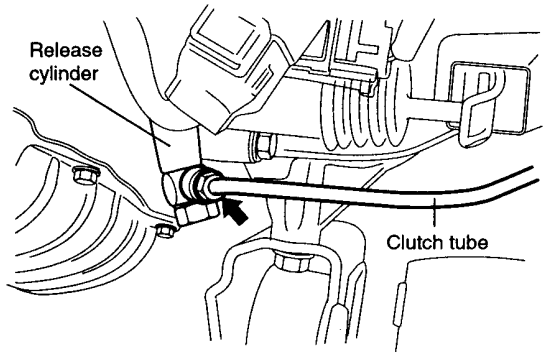
EOPC702A

2. Remove the master cylinder mounting nut.

3. Separate the clutch line.

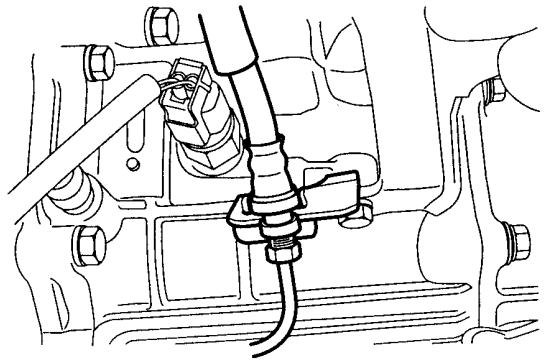


EOPC702C



EOPC673A

4. Remove the clutch line clip of the transaxle side.



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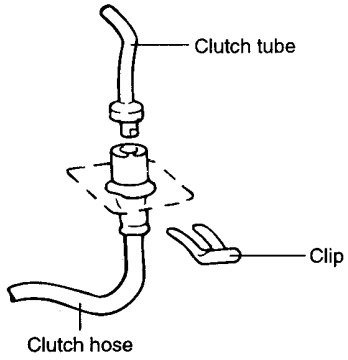


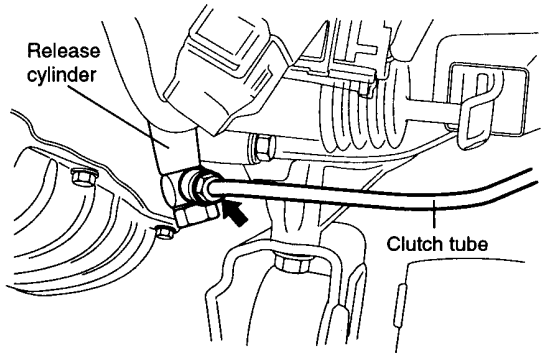
EOKB012D

INSPECTION E424957E7

Check the rust, pitting and scoring of the clutch hose and tube.

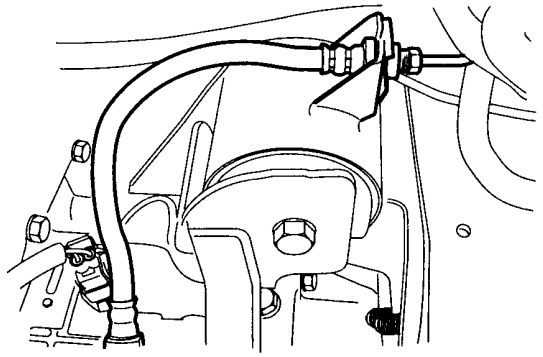
INSTALLATION E4D6D428A

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

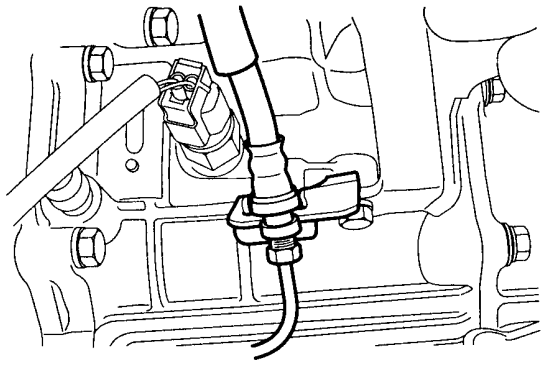


EOPC673A

2. Install the clutch line and the clip.

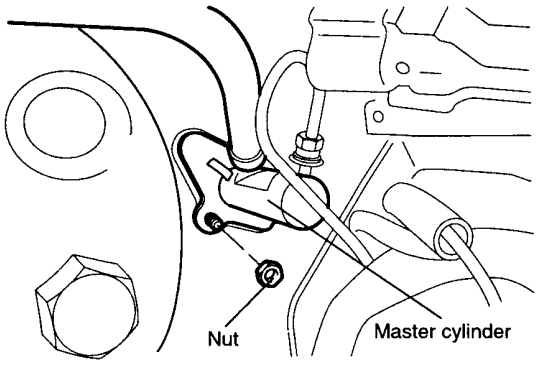


KMPC684B



KOPC672A

3. Install the clutch master cylinder.



EOPC702A

4. Install the push rod to the clutch pedal.
5. Bleed the system.

DISASSEMBLY E4620BA2C

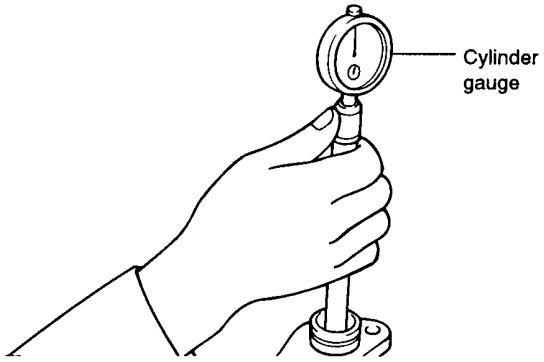
1. Remove the piston stop ring.
2. Pull out the push rod and piston assembly.

> **NOTE**
> *Be careful not to damage the master cylinder body and piston assembly.*

INSPECTION E04260FE99

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 obstructions.
5. Measure the clutch master cylinder inside diameter with a cylinder gauge, and the piston outside diameter with a micrometer.
6. If the clutch master cylinder-to-piston clearance exceeds the limit, replace the master cylinder and/or piston assembly.

Limit : 0.15 mm (0.006 in.)



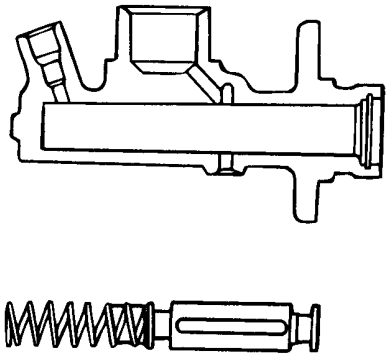
EODA014A

REASSEMBLY E4999868A

1. Apply the specified fluid to the inner surface of the cylinder body and to the outside of the piston assembly.

Specified fluid : BRAKE FLUID DOT 3 or DOT4

2. Install the piston assembly.
3. Install the piston stop ring.
4. Install the push rod assembly. (Refer to the components of the clutch master cylinder.)

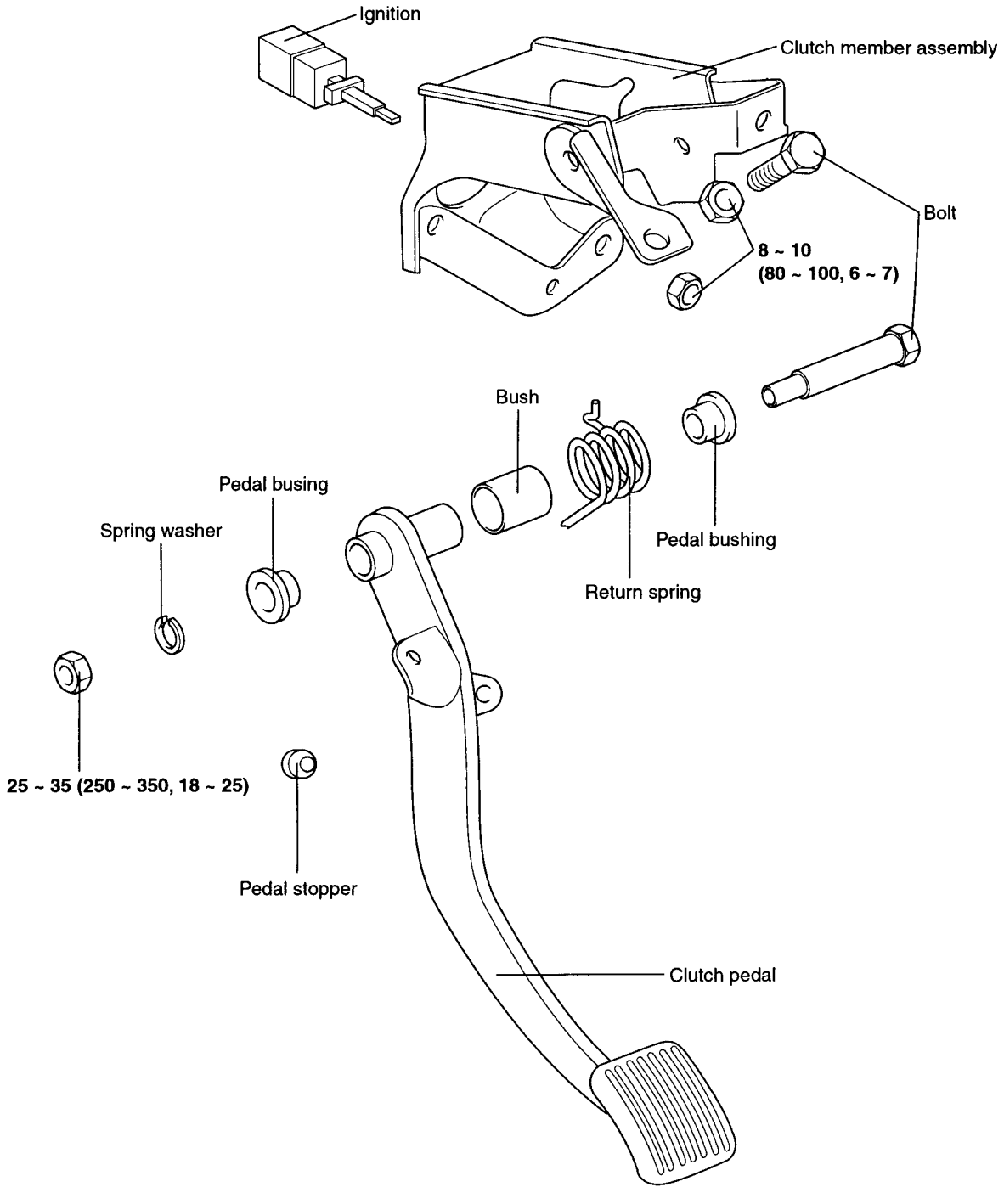


EODA014B

5. Install the clutch hose on the cylinder body.

CLUTCH PEDAL

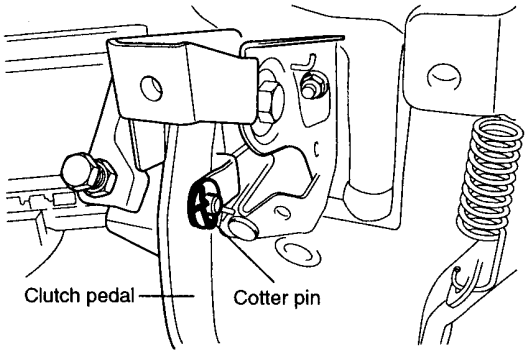
COMPONENTS E4C373C78



EOPC008E

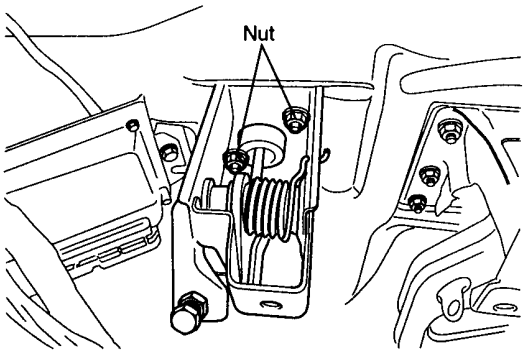
REMOVAL E4A7D5DBE

1. Remove the cotter pin, washer.



EOPC697A

2. Remove the clutch pedal mounting bolt.

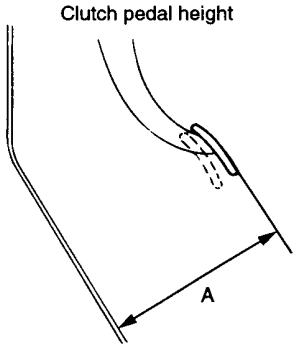


EOPC696A

INSPECTION E4C189710

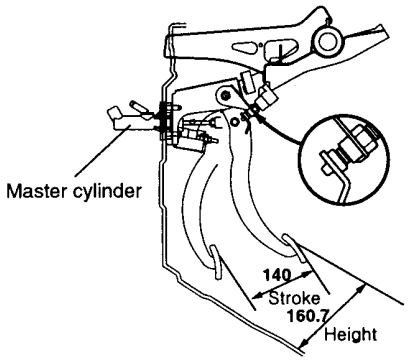
1. Check the clutch pedal shaft and bushing for wear.
2. Check the clutch pedal for bending or distortion.
3. Check the return spring for damage or deterioration.
4. Check the clutch pedal pad for damage or wear.
5. Measure the clutch pedal height (from the face of the pedal pad to the floorboard).

Standard value : (A) 160.7 mm (6.4 in.)



EOPC007A

6. If the clutch pedal height is not within the standard value range, adjust as follows :
   - Turn and adjust the bolt, then secure by tightening the lock nut.



EOPC008B

⚠ CAUTION

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

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

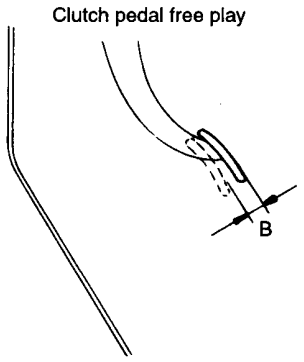
⚠ ***CAUTION***

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

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

Standard value : (B) 6-13 mm (0.24-0.52 in.)

8. If the clutch pedal free play do not meet with the standard values, it may be the result of either air in the hydraulic system or a faulty clutch master cylinder. Bleed the air or disassemble and inspect the master cylinder or clutch.



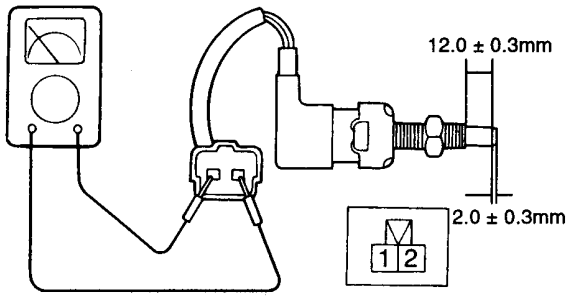
EONC007B

IGNITION LOCK SWITCH INSPECTION

Check for continuity between terminals.

Condition \ Terminal	1	2
Pushed	○	○
Free		

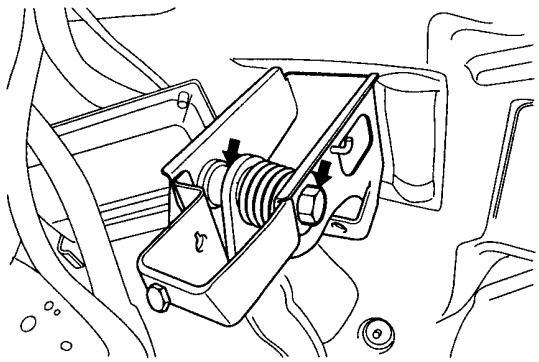
EODA009A



EONC010A

INSTALLATION E4995C3EF

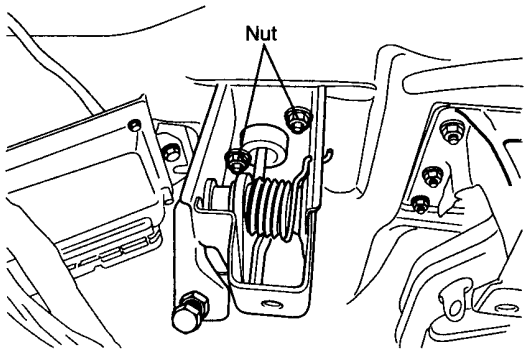
1. Apply the multi-purpose grease.



KOPC698A

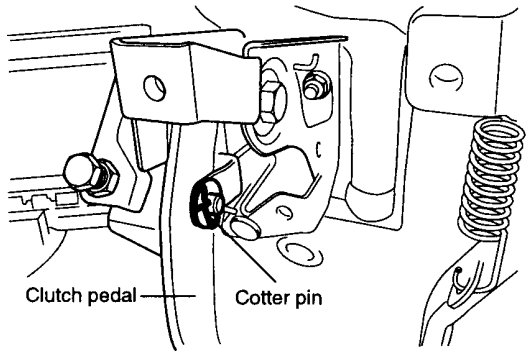
Specified lubricants :
SAE J310a, Chassis grease, NLGI-No.1

2. Install the nut.



EOPC696A

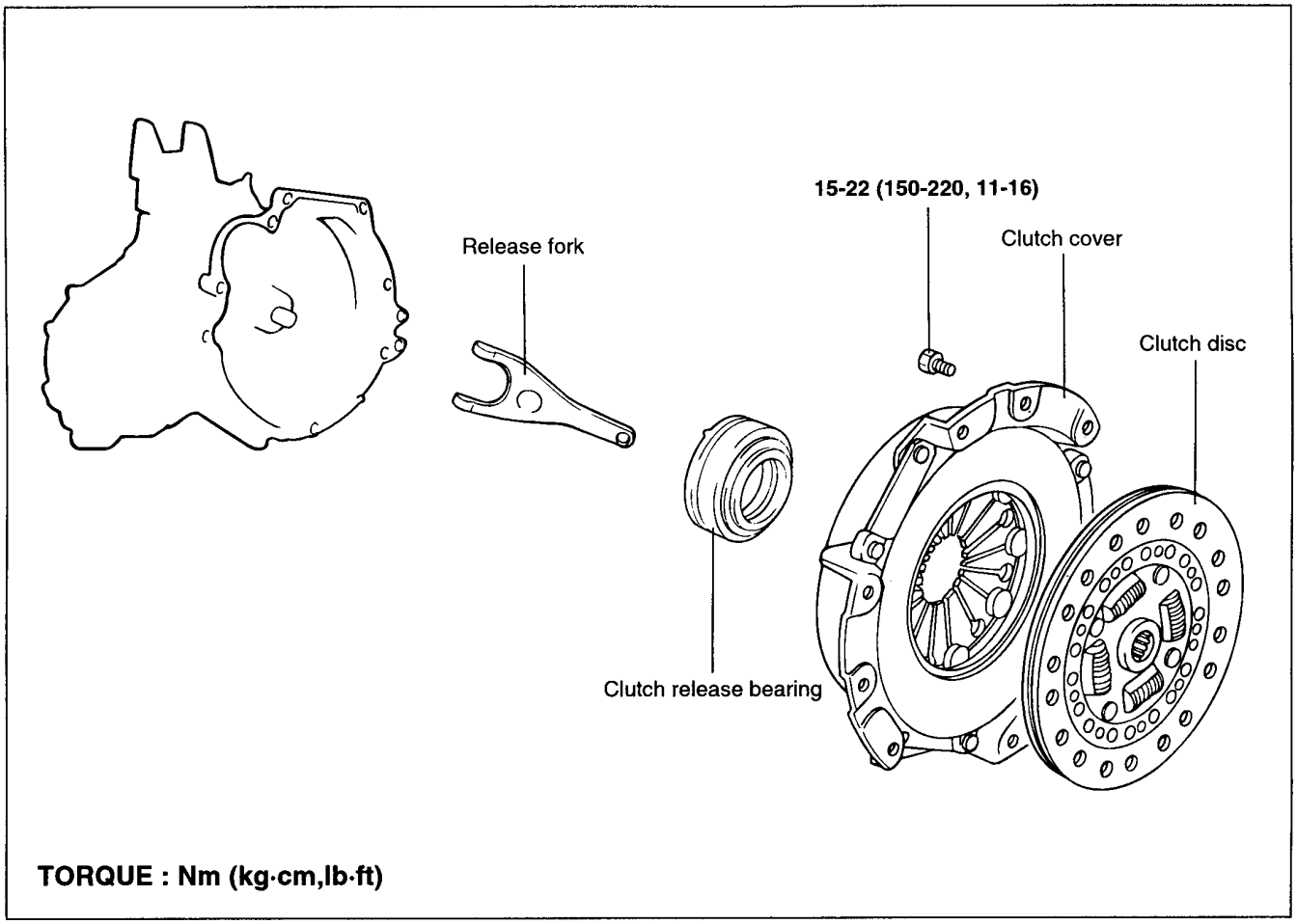
3. Install the cotter pin.



EOPC697A

CLUTCH COVER AND DISC

COMPONENTS E040E64B9

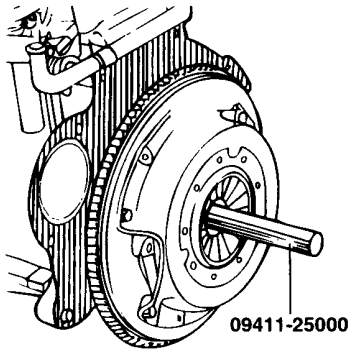


TORQUE : Nm (kg·cm,lb·ft)

EODA017A

REMOVAL E4085A9CA

1. Drain the clutch fluid and transaxle gear oil.
2. Remove the transaxle assembly. (Refer to the "TR" group)
3. Insert the special tool (09411-25000) in the clutch disc to prevent the disc from falling.



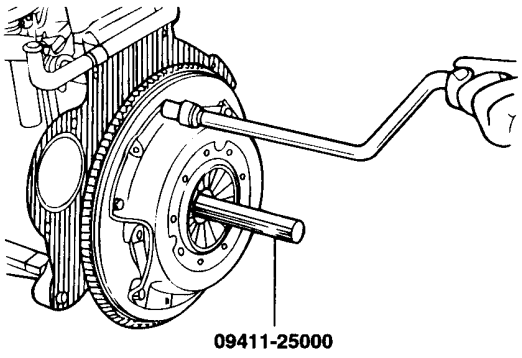
KOPC027B

4. Loosen the bolts that attach the clutch cover to the flywheel in a star pattern.

5. Loosen the bolts in succession, one or two turns at a time, to avoid bending the cover flange.

⚠ ***CAUTION***

DO NOT clean the clutch disc or release bearing with cleaning solvent.



EODA117B

INSPECTION E45E14379

CLUTCH COVER ASSEMBLY

1. Check the diaphragm spring end for wear and uneven height.

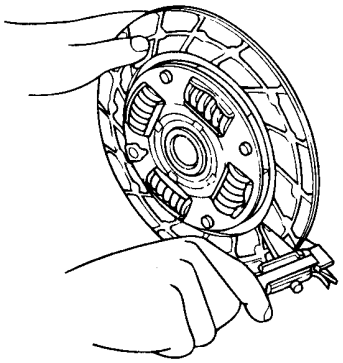
2. Check the pressure plate surface for wear, cracks and color change.

3. Check the rivets for looseness and replace the clutch cover assembly if necessary.

CLUTCH DISC

1. Check the clutch facing for loose rivets, uneven contact, deterioration due to seizure, adhesion of oil, or grease, and replace the clutch disc if defective.

2. Measure the thickness of the disc when free.



KOPC029C

3. Check for the torsion spring play and damage and if defective, replace the clutch disc.

4. Clean the splines on the input shaft and install the clutch disc.
If the disc does not slide smoothly or if play is excessive, replace the clutch disc and/or the input shaft.

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 contacting points for wear.

2. Replace the bearing if the release fork contacting points are worn abnormally.

CLUTCH RELEASE FORK

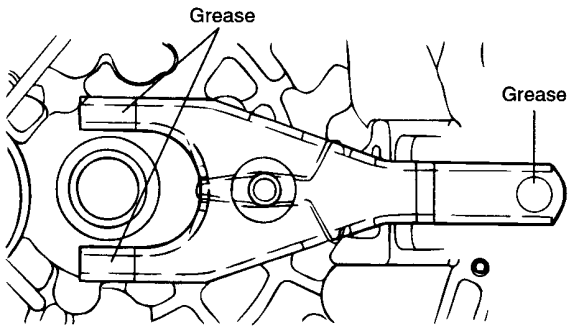
If there is abnormal wear at the point of contact with the bearing, replace the release fork assembly.

INSTALLATION E45FC4D9B

1. Apply multipurpose grease to the release bearing contact surfaces and the release cylinder contact surface of the clutch release fork assembly.

⚠ ***CAUTION***

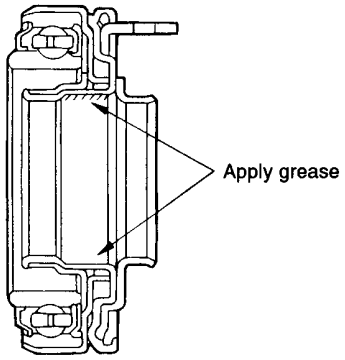
When installing the clutch, apply grease to each part, but be careful not to apply excessive grease. It can cause clutch slippage and judder.



EODA019B

2. Apply multipurpose grease into the groove of the release bearing.

Grease : CASMOLY L9508



EODA019A

3. Apply multipurpose grease to the clutch release lever fulcrum contact surface of the clutch release fork assembly.

Grease : CASMOLY L9508

4. Clean the surfaces of the flywheel and pressure plate thoroughly with fine sandpaper or crocus cloth, and make certain that all oil or grease has been removed.

5. Apply a small amount of multipurpose grease to the clutch disc splines and input shaft splines.

Grease : CASMOLY L9508

⚠ ***CAUTION***

Do not apply more grease than necessary. Too much grease could cause clutch slip or judder.

6. Using the special tool (09411-25000), install the clutch disc to the flywheel. When installing the clutch disc, be sure that the surface having the manufactures stamp is towards the pressure plate side.

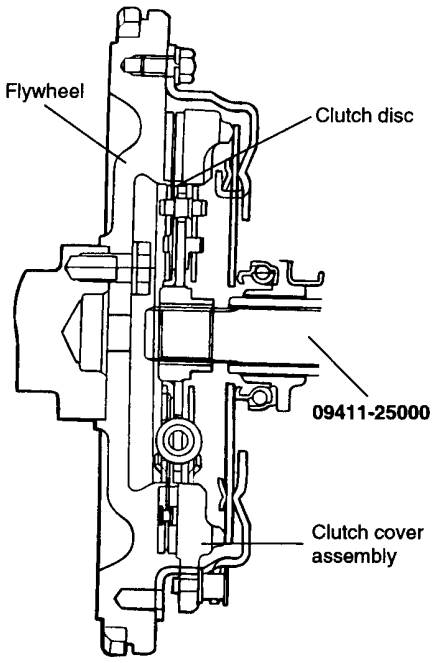
7. Install the the clutch cover assembly onto the flywheel and install the six (6) bolts through the clutch cover into the flywheel.

8. Diagonally tighten the bolts 15-22 Nm (150-220 kg·cm, 11-15 lb·ft).
   Tighten the bolts by one or two turns at a time, in succession, to avoid bending the cover flange.

9. Remove the special tool.

10. Install the transaxle. (Refer to the "TR" group.)

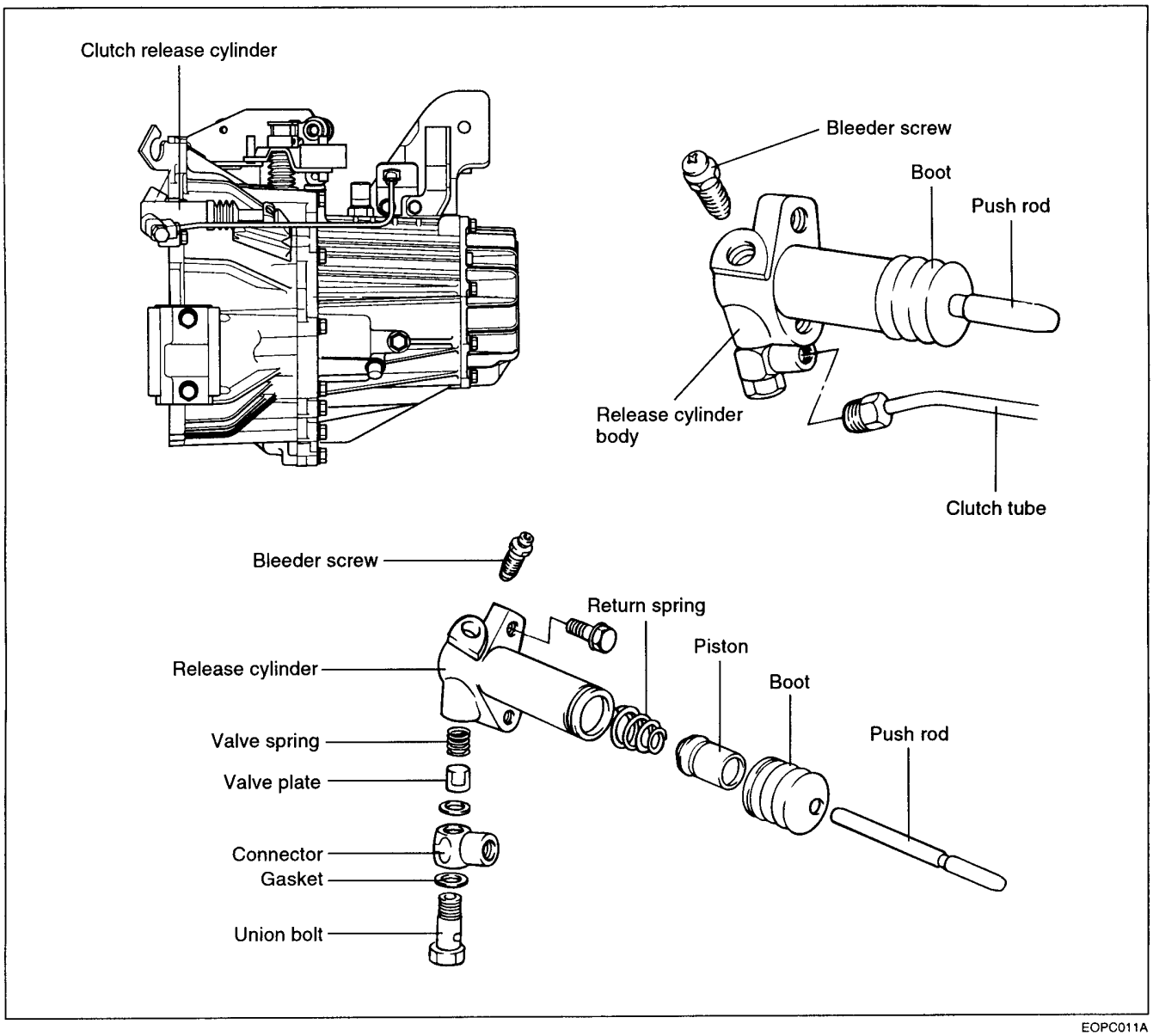
11. Adjust the clutch pedal free-play.



EODA120A

CLUTCH RELEASE CYLINDER

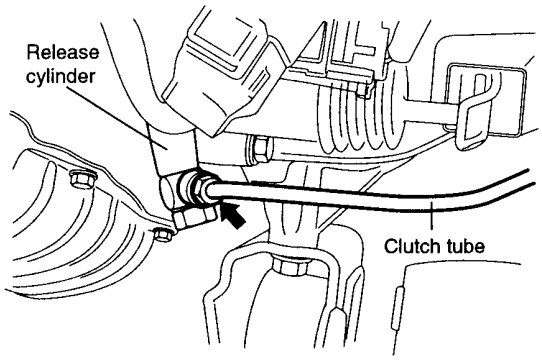
COMPONENTS E4D619595



EOPC011A

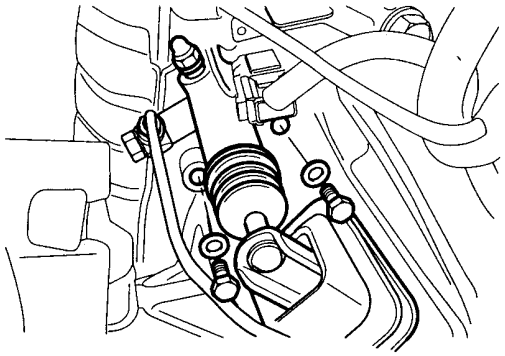
REMOVAL E4AEC487B

1. Disconnect the clutch tube.



EOPC673A

2. Remove the clutch release cylinder mounting bolt.



KMPC677A

INSPECTION E408C4233

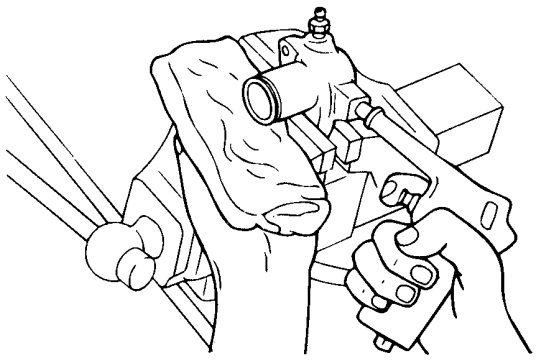
1. Check the clutch release cylinder for fluid leakage.
2. Check the clutch release cylinder boots for damage.

DISASSEMBLY E4A839D95

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 the release cylinder 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.***

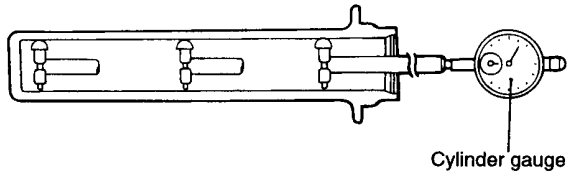


EODA016A

INSPECTION E4BC5B563

1. Check the release cylinder bore for rust and damage.
2. 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 : 0.15 mm (0.006 in.)



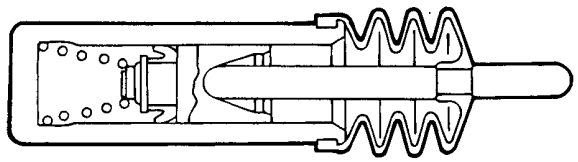
EODA016B

REASSEMBLY E4E63E7E4

1. Apply specified brake fluid to the release cylinder bore and the outer surface of the piston and piston cup, and push the piston cup assembly into the cylinder.

Use the specified fluid : Brake fluid DOT 3 or DOT 4

2. Install the valve plate, push rod and boot.

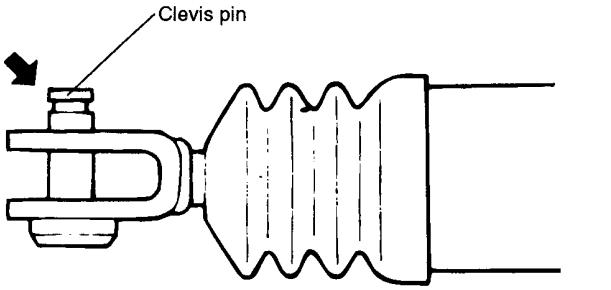


EODA016C

INSTALLATION E44B9F7E5

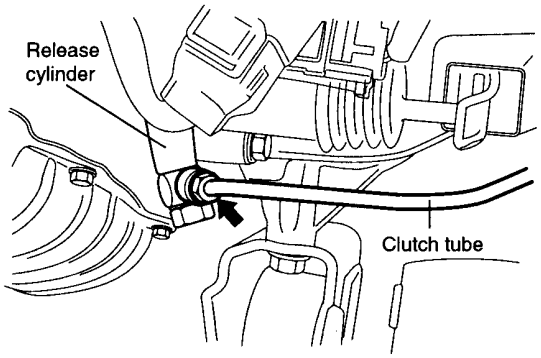
1. Coat the clevis pin with the specified grease.

Specified grease : CASMOLY L9508



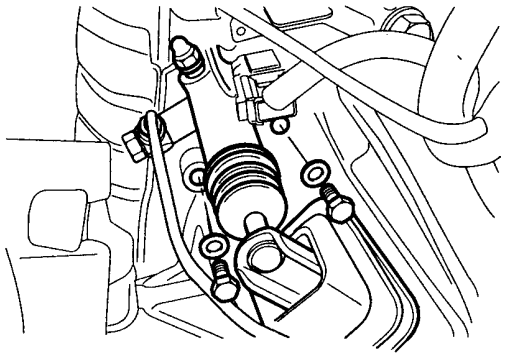
EOKB025A

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



EOPC673A

3. Install the clutch release cylinder mounting bolt.



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