CLUTCH

CONTENTS

GENERAL SPECIFICATIONS

Clutch operating method	Hydraulic type
Inside diameter of clutch master cylinder mm (in.)	15.87 (.62)
Clutch disc	
Type	Single dry disc type
Facing diameter (outside x inside) mm (in.)	225 X 150 (8.86 X 5.91)
Number of torsion springs	4
Spline inside diameter mm (in.)	23.16-23.21 (.912-.914)
Clutch cover assembly	
Type	Diaphragm spring, strap rivet type
Setting load N (lbs.)	3,432 (772)
Mounting bolt circle diameter mm (in.)	264 (10.39)
Clutch release bearing	
Type	Angular contact, self-centering type
Free travel mm (in.)	1.6 (.06)
Clutch release cylinder	
Cylinder bore diameter mm (in.)	19.05 (.75)

SERVICE SPECIFICATIONS

mm (in.)

Standard value	
Clutch pedal height	186-191 (7.3-7.5)
Clutch pedal free play	5-10 (.2-.4)
Clearance between clutch pedal and floorboard when pedal is depressed	35 (1.4) or more
Service limit	
Clutch disc	
Rivet sink	0.3 (.012)

TORQUE SPECIFICATIONS

Nm (ft.lbs.)

Clutch to flywheel	15-21 (11-15)
Flywheel to crankshaft	128-137 (94-101)
Release cylinder to transmission case	30-41 (22-30)
Transmission to engine	43-53 (32-39)
Fulcrum	30-41 (22-30)
Clutch pedal to pedal bracket	25-35 (18-25)
Eye bolt	20-25 (15-18)
Clutch tube flare nut	13-17 (10-12)
Clutch master cylinder to firewall	7-9 (5-7)
Clutch pedal bracket	8-12 (6-9)
Push rod lock nut	8-12 (6-9)

LUBRICANTS

	Specified lubricants	Quantity
Fluid	Brake fluid DOT 3	As required
Grease for clutch pedal shaft, bushings, and return spring	Multipurpose grease SAEJ310a, NLGI grade #3	As required

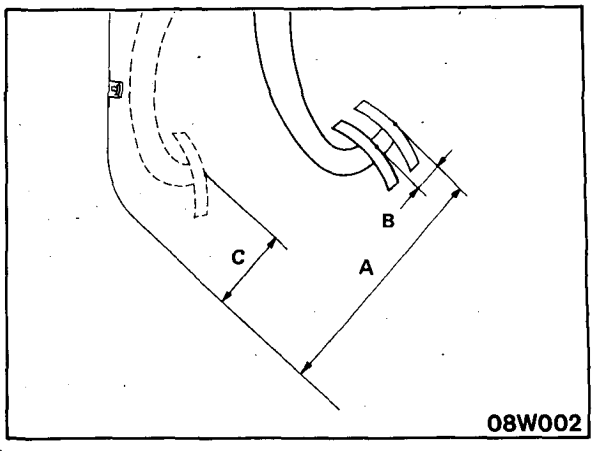
TROUBLESHOOTING

Symptom	Probable cause	Remedy
Clutch slips	Insufficient clutch pedal free play	Adjust
	Oil or grease on clutch facing Clutch facing worn Pressure spring deteriorated	Replace
	Pressure plate or flywheel runout Hydraulic system failure	Repair or replace
Clutch drags or does not release	Excessive clutch pedal free play	Adjust
	Interference between pedal and floor panel	Correct
	Pilot bearing worn or broken Clutch disc warped Pressure plate, disc or throwout bearing damaged	Replace
	Hydraulic system failure	Repair or replace
Clutch chatters	Facing hardened Facing stained with oil or grease Weak or broken disc damper springs Improper facing contact or disc runout Pressure plate or flywheel warped	Replace
	Loose engine mounting	Repair or replace
Clutch noises	Release bearing broken, worn or poorly lubricated Pilot bearing worn Disc hub loose Disc plate cracked Torsion springs deteriorated or broken	Replace
Clutch operation erratic or rough	Facing stained with grease or oil Facing worn or rivet loose Torsion spring deteriorated or broken	Replace
	Insufficient lubricant on clutch pedal pivot	Lubricate

CLUTCH PEDAL INSPECTION AND ADJUSTMENT

1. Measure the clutch pedal height and free play.

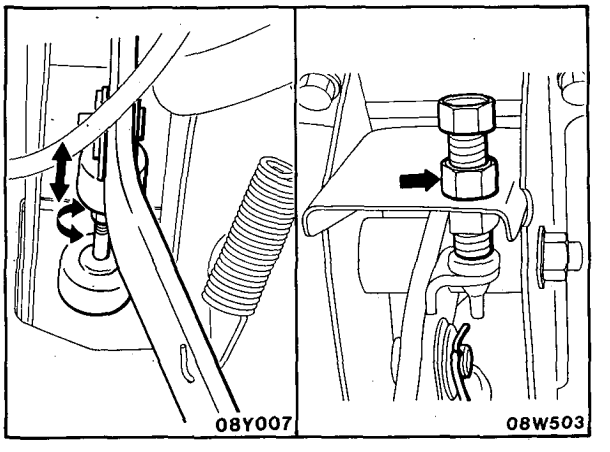
Clutch pedal height A	186-191 mm (7.3-7.5 in.)
Clutch pedal free play B	5-10 mm (.2-.4 in.)



NOTE
The clutch pedal is so made that no adjustment of free play is possible.

2. If the clutch pedal height and free play are not within the standard value, adjust as follows:
   (1) Turn the pedal stopper bolt back to a position where it does not contact the pedal arm. (08W503)
   (2) Loosen the push rod lock nut and adjust the pedal height to the standard value by turning the push rod. (08Y007)
   (3) Turn the pedal stopper bolt until it comes into contact with the pedal arm, and then tighten the lock nut.
3. After making the adjustment, depress the clutch pedal several times and check the clutch pedal to floorboard clearance is within the standard value range when the clutch is disengaged.

Pedal to floorboard clearance C when pedal is depressed	35 mm (1.4 in.) or more



4. If the clutch pedal to floorboard clearance is less than the standard value, air mixture in hydraulic system or defective clutch assembly is suspected.
   Bleed the hydraulic system or repair the clutch assembly.

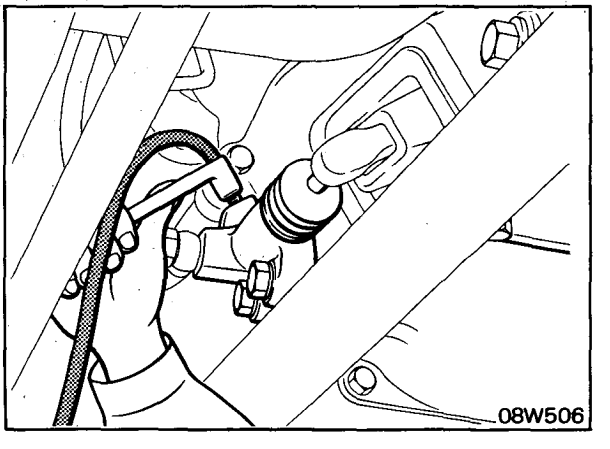
BLEEDING

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.

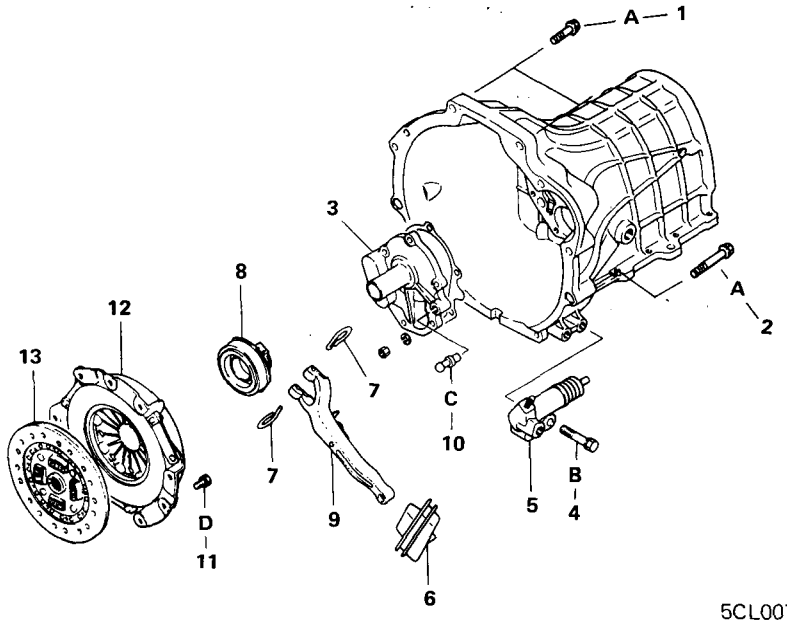
1. Loosen the bleeder screw at the clutch release cylinder.
2. Push clutch pedal down slowly until all air is expelled.
3. Hold clutch pedal down until bleeder screw is retightened.
4. Refill clutch master cylinder with recommended brake fluid.

Caution
Use the recommended brake fluid. Avoid using a mixture of the recommended fluid and other fluid.

Recommended brake fluid	DOT 3



COMPONENTS

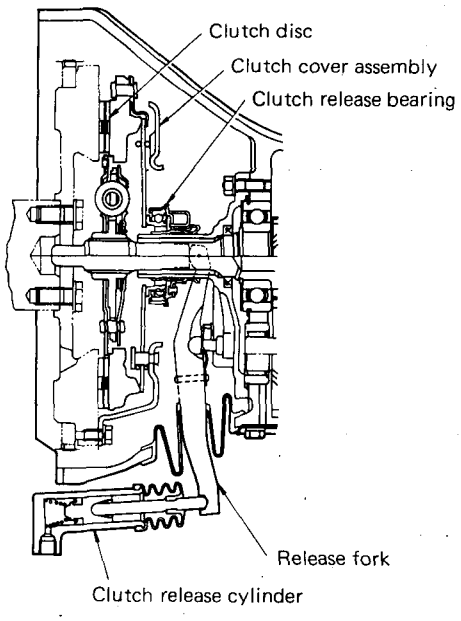


5CL007

1. Flange bolt – M10x40 (2)
2. Flange bolt – M10x65 (2)
3. Transmission assembly
4. Bolt – M10x30 (2)
5. Clutch release cylinder
6. Release fork boot
7. Return clip (2)
8. Clutch release bearing
9. Release fork
10. Fulcrum
11. Bolt (6)
12. Clutch cover assembly
13. Clutch disc

NOTE
Numbers show order of disassembly.
For reassembly, reverse order of disassembly.

	Nm	ft.lbs.
A	43-53	32-39
B	30-41	22-30
C	30-41	22-30
D	15-21	11-15

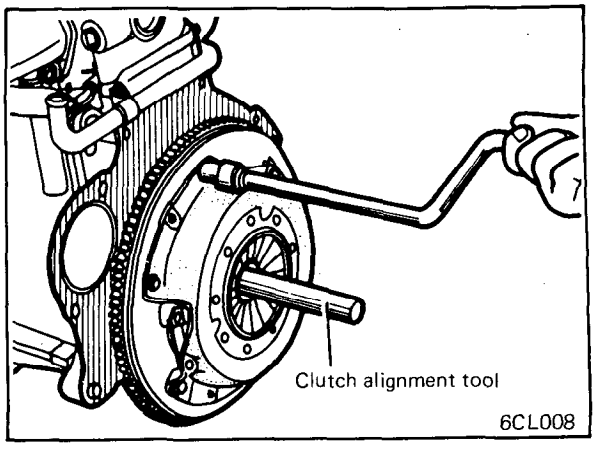


6CL012

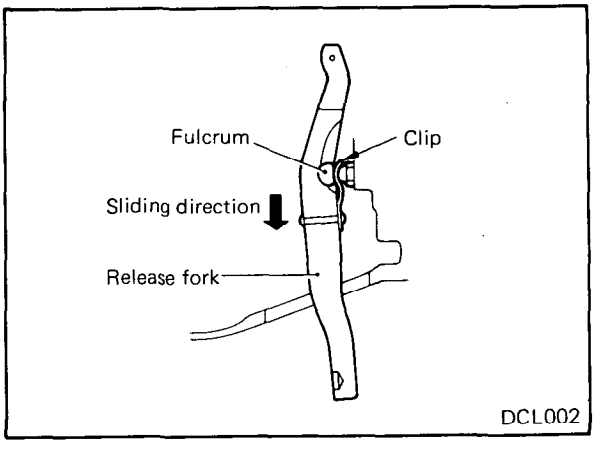
REMOVAL

1. Insert a universal clutch alignment tool, or the main drive gear of transmission in center spline to prevent dropping of clutch disc.
2. Loosen bolts that hold clutch cover assembly diagonally one by one and remove clutch cover assembly.

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



3. Slide release fork in direction indicated by arrow to disengage fulcrum from clip. Attempting to remove release fork by sliding it in other direction will result in damage to clip.

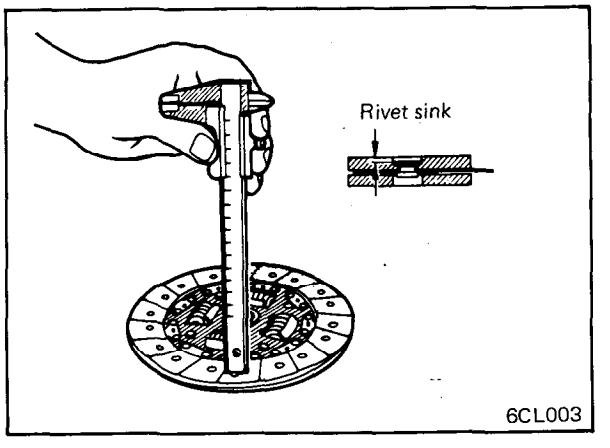


INSPECTION

Clutch Disc

Check facing for wear. Replace excessively worn facing. Wear is measured from facing surface to rivet head. (6CL003)

Clutch disc (rivet sink) [Service limit]	0.3 mm (.012 in.)



Clutch Cover Assembly

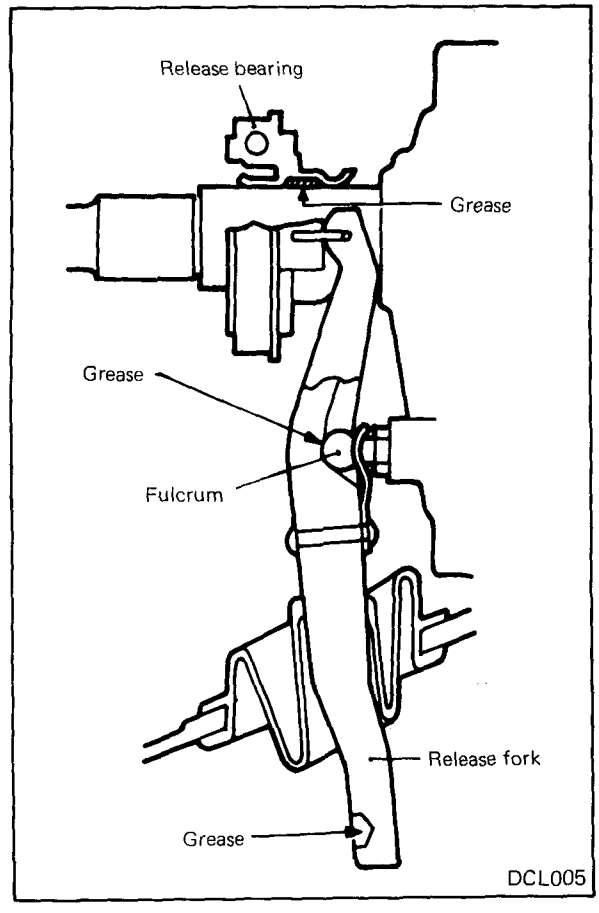
Inspect diaphragm spring for excessive wear of fingers and looseness of strap rivets, and inspect pressure plate for scoring. Replace if damage is evident.

Release Bearing and Release Fork

1. Check the release bearing for rough rotation or abnormal noise. Check the diaphragm spring contacting portions for abnormal wear.
2. Check the bearing and fulcrum contacting portions of the release fork for abnormal wear.

INSTALLATION

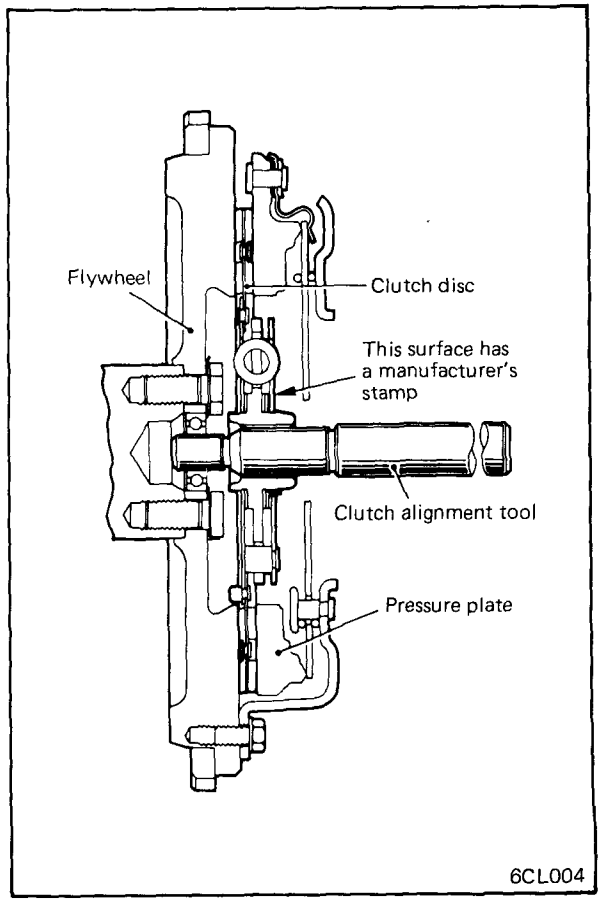
1. Pack the release fork fulcrum hole and release cylinder push rod hole with grease. (DCL005)
2. Pack grease into groove on release bearing I.D.
3. If there is oil or grease on clutch facing or pressure plate, thoroughly wipe away with a dry shop towel.
4. Lightly grease clutch disc spline and main drive gear spline of transmission.



5. Using a universal clutch alignment tool, or the main drive gear of transmission, install clutch disc and clutch cover assembly onto flywheel. (6CL004)
6. When installing clutch disc, be sure that surface having manufacturer's stamped mark is on pressure plate side.

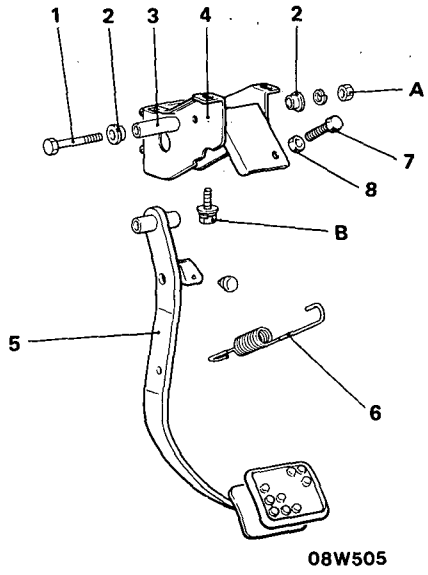
Caution

When installing transmission, do not shake it or install in such a manner that main drive gear is stressed unduly. Make sure that main drive gear enters clutch disc squarely.



COMPONENTS

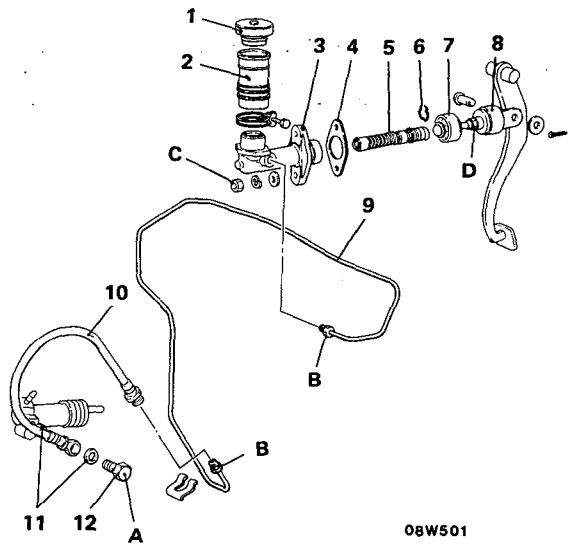
Clutch Pedal



1. Pedal shaft
2. Bushing
3. Spacer
4. Clutch pedal bracket
5. Clutch pedal
6. Return spring
7. Stopper bolt
8. Lock nut

	Nm	ft.lbs.
A	25-35	18-25
B	8-12	6-9

Clutch Master Cylinder and Tube

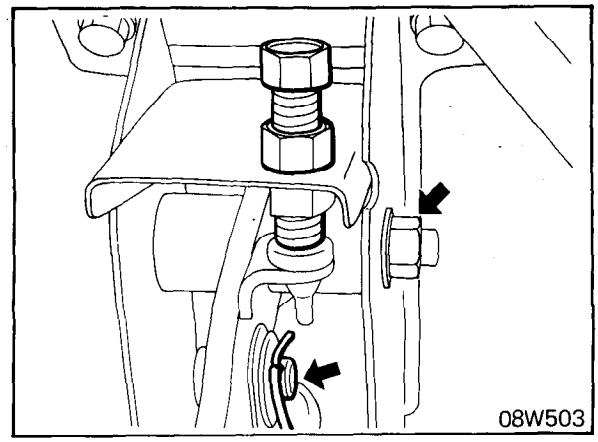


1. Reservoir cap
2. Reservoir
3. Clutch master cylinder
4. Sealer
5. Piston assembly
6. Piston stop ring
7. Piston boot
8. Damper and push rod assembly
9. Clutch tube
10. Clutch hose
11. Gasket
12. Eye bolt

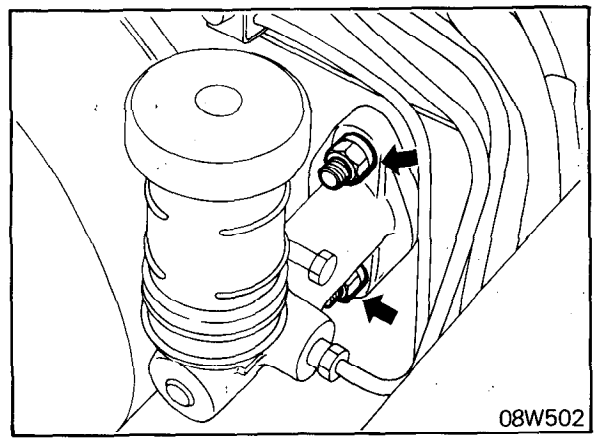
	Nm	ft.lbs.
A	20-25	15-18
B	13-17	10-12
C	7-9	5-7
D	8-12	6-9

REMOVAL

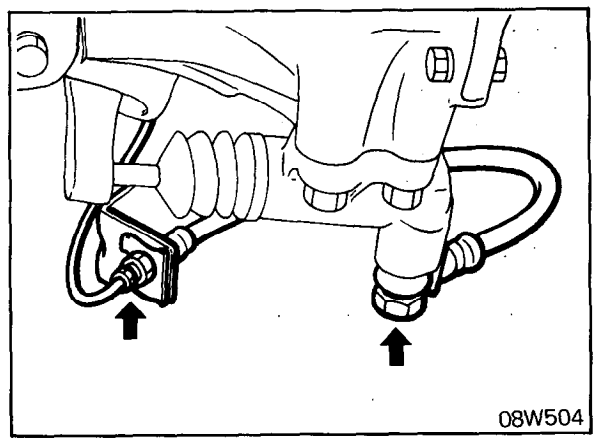
1. Loosen the bleeder screw of the release cylinder and drain the brake fluid.
2. Disconnect the push rod from the clutch pedal. (08W503)
3. Remove the clutch pedal from the pedal bracket.



4. Disconnect the clutch tube from the master cylinder.
5. Remove the master cylinder. (08W502)



6. Disconnect the clutch hose from the clutch tube and release cylinder. (08W504)
7. Remove the clutch tube.



INSPECTION

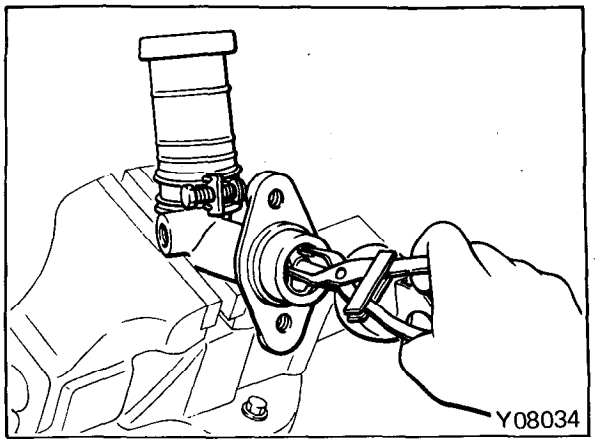
1. Check sealer for damage.
2. Check master cylinder or clutch hose for fluid leakage.
3. Check clutch hose and tube for cracks or clogging.
4. Check pedal shaft bushings for wear.
5. Check pedal arm for bending and twisting.
6. Check return spring for weakening.

MASTER CYLINDER OVERHAUL

Disassembly

1. Remove the piston stop ring. (Y08034)
2. Remove the piston assembly.

Caution
Use care not to damage the master cylinder body and piston assembly.
Do not disassemble the piston assembly.



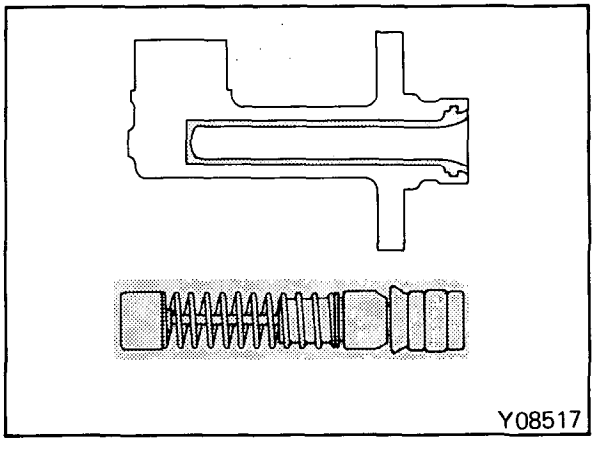
Inspection

1. Check inside cylinder body for rust or scoring.
2. Check piston cup for wear or deformation.
3. Check piston for rust or scoring.
4. Check clutch tube inside connecting section for clogging.

Reassembly

Apply specified brake fluid to the inner surface of the cylinder and to the entire periphery of the piston assembly. (Y08517)

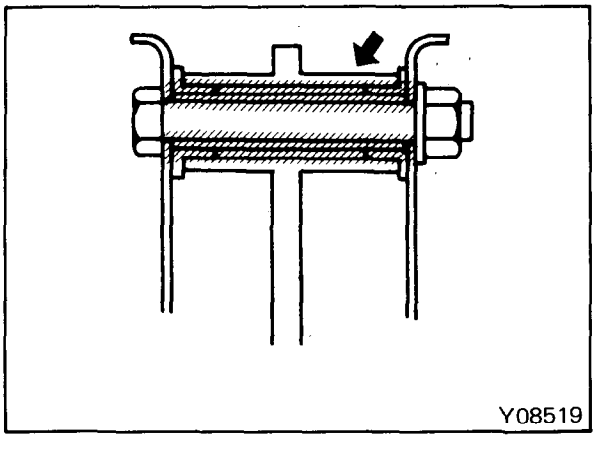
Recommemded brake fluid ..... DOT 3



INSTALLATION

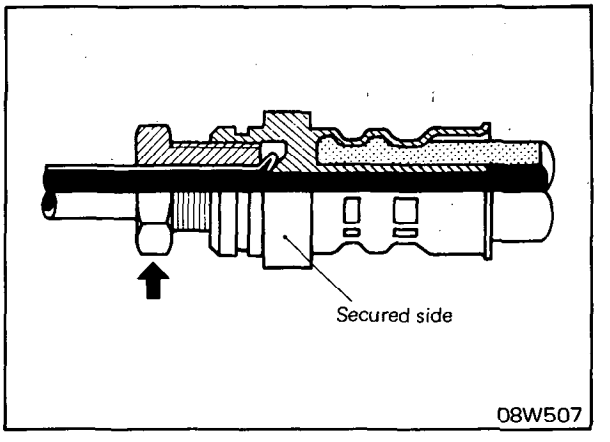
1. After tightening the clutch tube flare nut and eye bolt, check to be sure there is no leakage of the clutch fluid.
2. Apply specified multipurpose grease to the pedal shaft and bushings. (Y08519)

Recommended multipurpose grease .....
SAEJ310a, NLGI grade #3

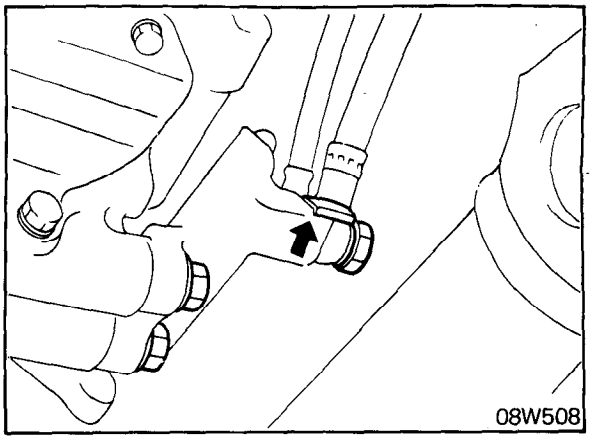


3. Temporarily tighten the flare nut by hand, and then tighten it to the specified torque, being careful that the clutch hose does not become twisted. (08W507)

Clutch tube flare nut tightening torque .....
13-17 Nm (10-12 ft.lbs.)



4. Connect the clutch hose to the release cylinder at the stepped portion shown in the illustration. (08W508)
5. Torque all parts to specifications during assembly.
6. Bleed the air from the system. (Refer to p. 6-4.)
7. Adjust the clutch pedal height. (Refer to p. 6-4.)



CLUTCH RELEASE CYLINDER

Removal and Disassembly

1. Remove eye bolt and gaskets and disconnect clutch hose from clutch release cylinder.
2. Remove two bolts securing the clutch release cylinder and clutch housing and remove clutch release cylinder assembly.
3. Remove the boot and push rod and take out piston and spring.

Inspection

1. Check inside cylinder body for rust or scoring.
2. Check piston cup for wear or deformation.
3. Check piston for rust or scoring.

Reassembly and Installation

1. Insert spring into release cylinder.
2. Apply brake fluid to outer surface of piston, piston cup and cylinder bore. (DCL006)
3. Install the piston and piston cup into the release cylinder.
4. Install push rod and boot.
5. Install release cylinder to clutch housing and tighten two bolts to specified torque.
6. Connect clutch hose to release cylinder and tighten eye bolt.
7. Bleed the air from the system. (Refer to p. 6-4)