General Information

SPECIFICATIONS

Clutch operating method	Hydraulic type
Clutch disc	
Type	Single, dry with diaphragm.
Facing diameter (Outside x Inside) mm (in.)	254 x 165 (10 x 6.5) : A2.5 240 x 155 (9.4 x 6.1) : S2.4D, ∑3.5
Clutch cover assembly	
Type	Diaphragm spring strap
Setting load N (lb)	7000 min. (1570) : A2.5, ∑3.5 More than 5200 (1166) : S2.4D
Clutch release cylinder	
I.D.mm (in.)	19.05 (0.74)
Clutch master cylinder	
I.D.mm (in.)	15.87(0.62)

SERVICE STANDARD

ITEM	Standard value
Clutch disc thickness	9.6 ± 0.3 mm (0.378 ± 0.0118 in.) : A2.5 8.0 ± 0.3 mm (0.314 ± 0.0118 in.) : S2.4D, ∑3.5 [When free] 10.3 ± 0.3 mm (0.406 ± 0.0118 in.) : A2.5
Clutch pedal height	8.7 ± 0.3 mm (0.34 ± 0.0118 in.) : S2.4D, ∑3.5
Clutch pedal free play	163.8 mm (6.45 in.)
Clutch pedal stroke	7.3-13.9 mm (0.28-0.55 in.) 150 mm (5.90 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

Item	Nm	kg·cm	lb·ft
Clutch pedal bracket	19 - 26	190 - 260	14 - 19
Clutch master cylinder mounting bolt	1.8 - 2.7	180 - 270	13 - 18
Clutch tube flare nut	13 - 22	130 - 220	9 - 16
Clutch release cylinder mounting bolt	19 - 26	190 - 260	14 - 19
Clutch release cylinder union bolt	20 - 25	200 - 250	14 - 18
Clutch cover assembly	15 - 22	150 - 220	11 - 16
Ignition lock switch	5 - 7	50 - 70	4 - 5
Clutch pedal to pedal bracket	25 - 35	250 - 350	18 - 25
Clutch damper bracket nut	13 - 22	130 - 220	9 - 16

LUBRICANTS

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 SERVICE TOOLS

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

TROUBLESHOOTING

Trouble symptom		Probable cause	Remedy
Clutch slipping • Car will not respond to engine speed during acceleration • Insufficient car speed • Lack of power driving uphill		Insufficient pedal free play	Adjust
		Clogged hydraulic system	Correct or replace parts
		Excessive wear of clutch disc facing	Replace
		Hydraulic system fluid leaks, air trapped or lines clogged	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 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

Trouble symptom	Probable cause	Remedy
Clutch slips	Insufficient clutch pedal free play	Adjust teh 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
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 disc
	Worn or broken torsion spring	Repair as necessary
	Loose engine mounts	Repair as necessary
Noisy clutch	Damaged the clutch pedal bushing	Repalce the clutch pedal bu-shing
	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

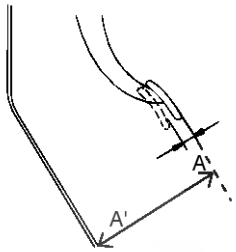
SERVICE ADJUSTMENT PROCEDURE

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) 7.3 -13.9 mm (0.29 - 0.55 in)
(A') 163.8 mm (6.45 in)

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



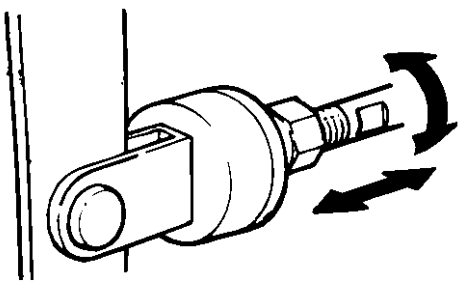
LOAC070A

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..

   NOTICE
   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.



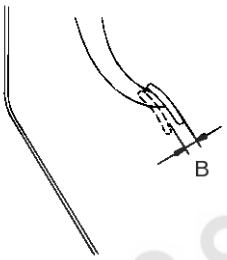
LOAC070B

3. After completing the adjustments, check that the clutch pedal free play (measured atthe 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

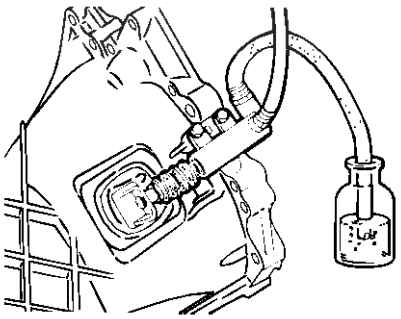


LOAC070C

BLEEDING

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

Specified fluid : SAE J1703 (DOT3 or DOT4)

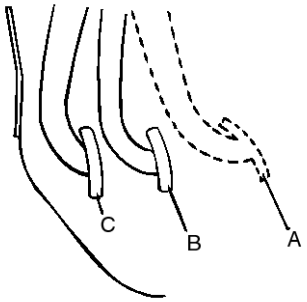


LOAC070D

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

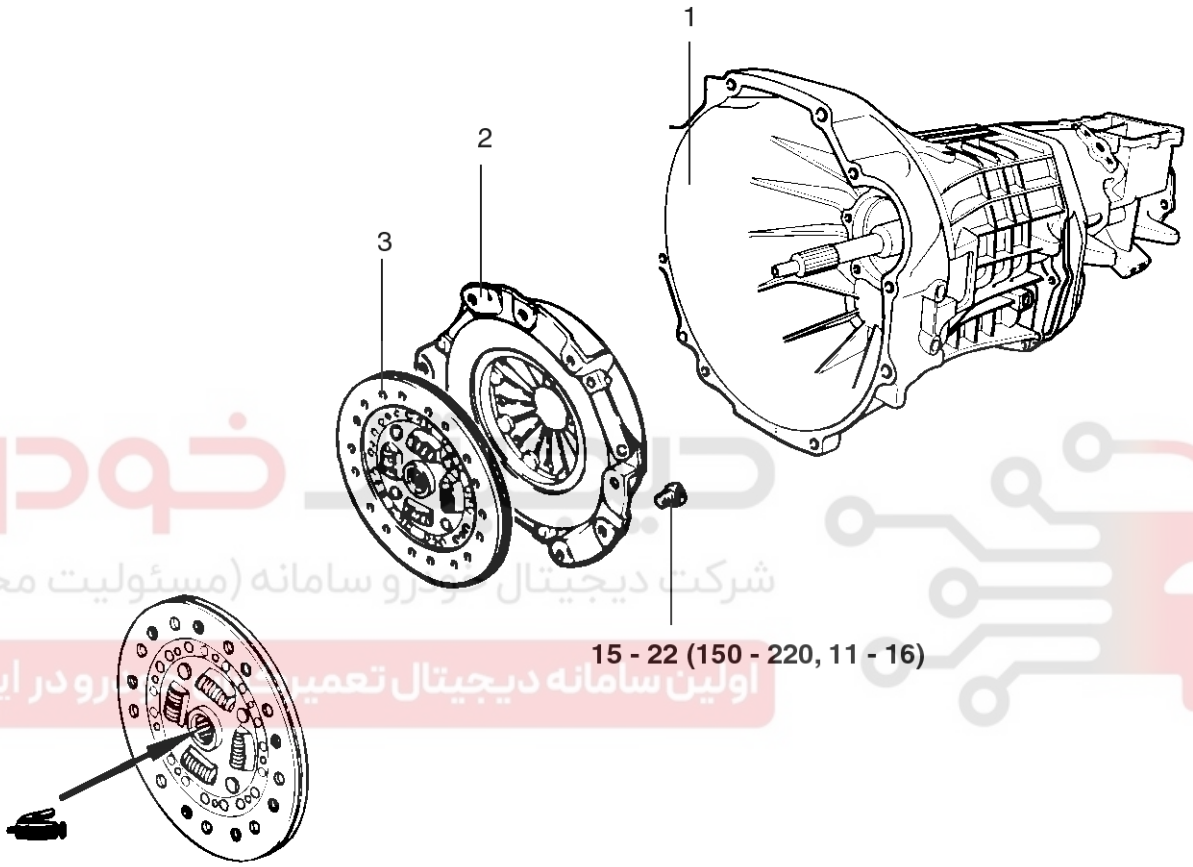
The rapidly-repeated operation of the clutch pedal in B-C range may disrupt the release cylinder's position. During the bleeding operation, press the clutch pedal to the floor after it returns to the "A" point.



LOAC070E

Clutch Cover And Disc

COMPONENTS



TORQUE : N·m (kg·cm, lb·ft)

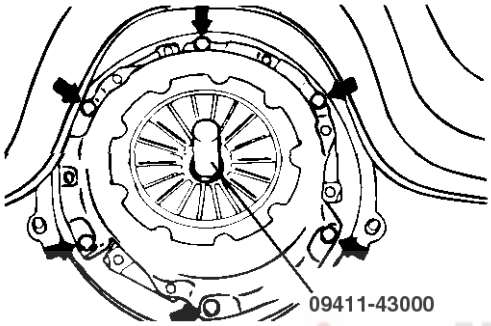
1. Transmission case assembly
2. Clutch cover
3. Clutch disc

REMOVAL

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.

NOTICE

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



LOAC090A

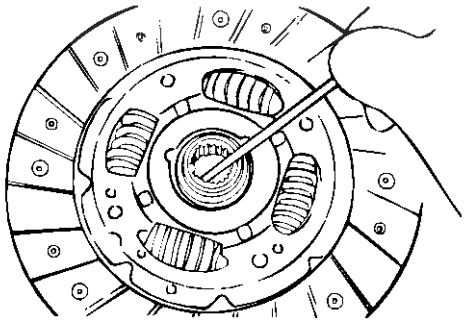
INSTALLATION

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.

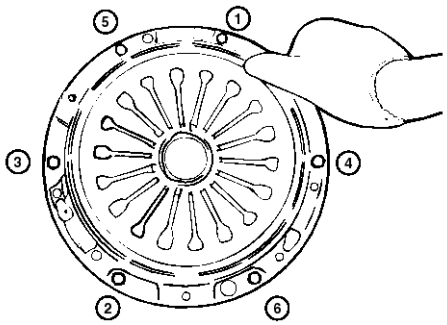


LOAC110A

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.

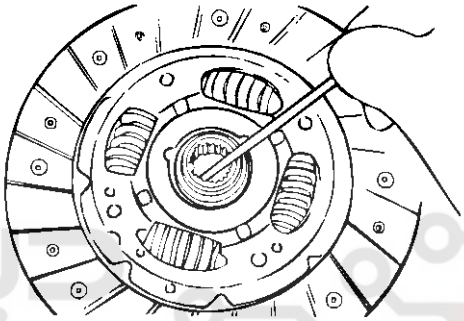
Tightening torque
Clutch cover bolt :
15-22 Nm (150-220 kg·cm, 11-16 lb·ft)

LOAC080A



LOAC110B

4. Remove guide washer (stockage plate) when install SAT cover and disc assembly on the flywheel (only for ∑3.5 engine).



LOAC110A

INSPECTION

CLUTCH COVER&DISC 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. Check the friction surface of the flywheel for color change, partial damage, small cracks, and wear.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 0.3 mm.

Limit : 0.3 mm (0.012 in.)

LOAC100A

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

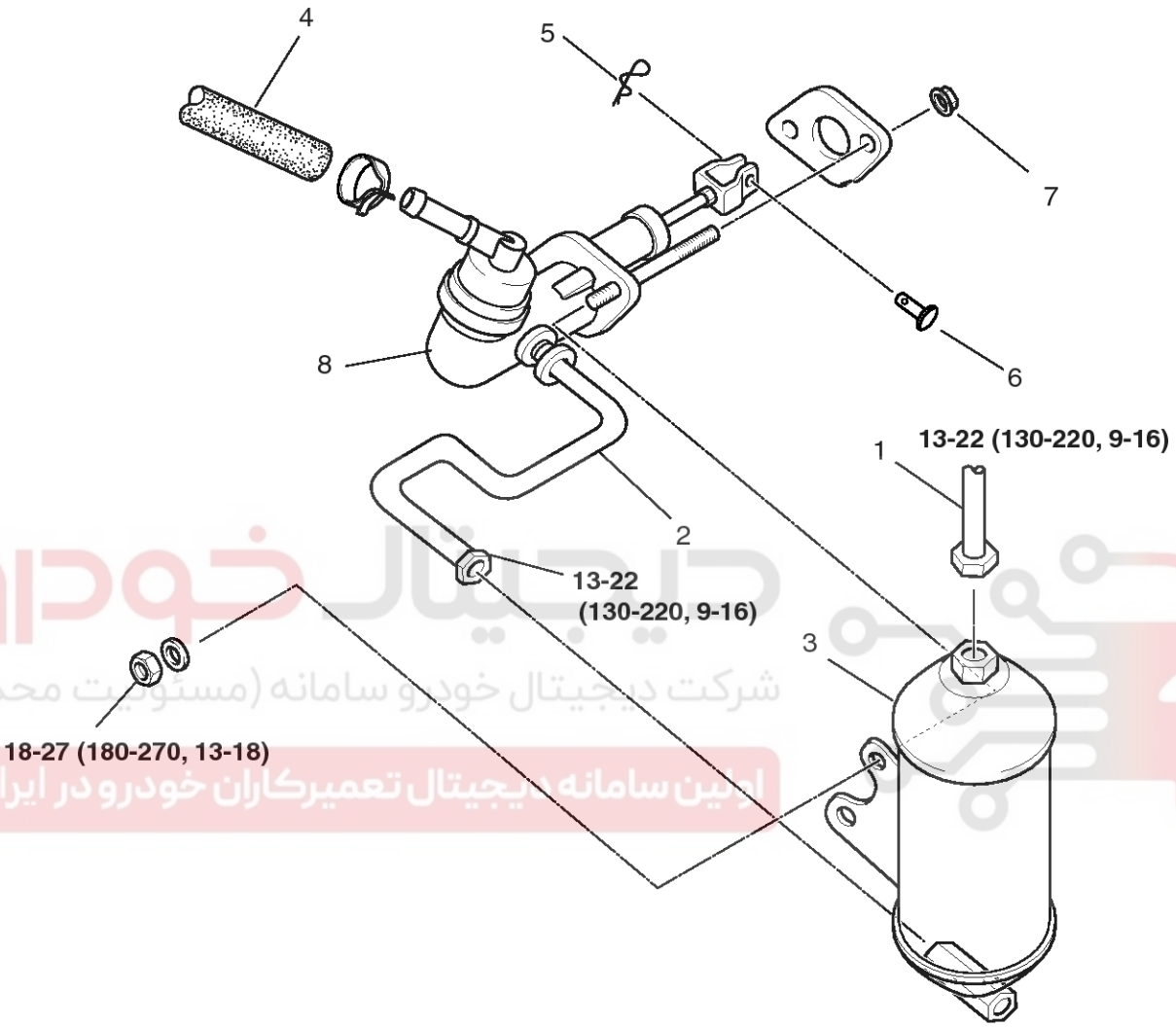
The release bearing is packed with grease. Do not use cleaning solvent or oil on it.

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

Clutch Master Cylinder

COMPONENTS



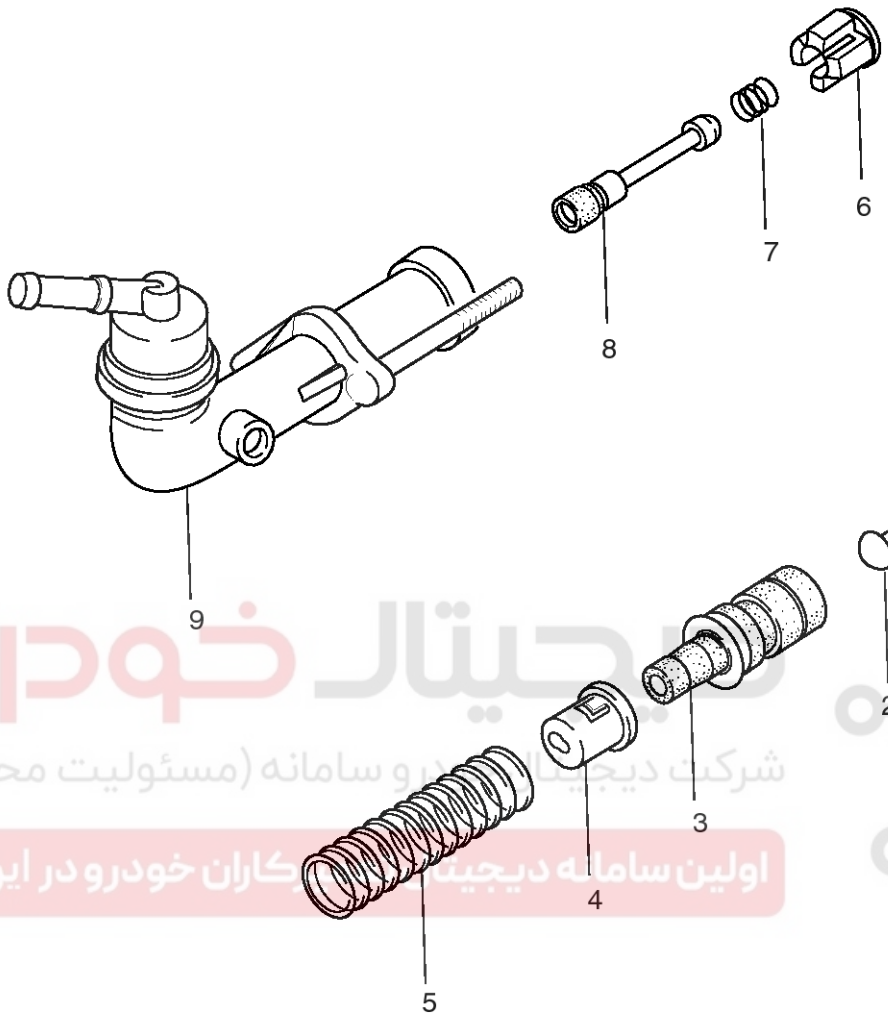
TORQUE : N·m (kg·cm, lb·ft)

[Removal procedure]

1. Clutch Tube
2. Damper Tube
3. Damper (Only A2.5 ENG.)
4. Reserver Hose
5. Snap pin
6. Joint pin
7. Nut
8. Master cylinder

LOAC120A

COMPONENTS



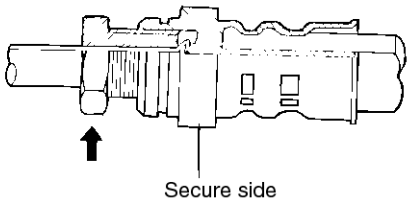
< Disassembly procedure>

1. Snap ring (replace)
2. Push rod
3. Piston
4. Piston stopper (replace)
5. Spring
6. Valve stopper
7. Spring
8. Valve assembly
9. Body

LOAC160A

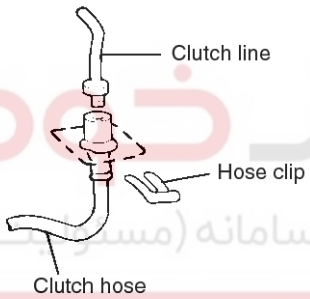
REMOVAL
INSTALLATION

1. Connect the clutch pipe (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.



LOAC150A

3. Install the clutch line and clips.



LOAC150B

4. Install damper on the master cylinder.
5. Install the master cylinder.
6. Apply the specified grease to the clevis pin and washer.

Wheel bearing grease : SAE J310a, NLGI NO.2

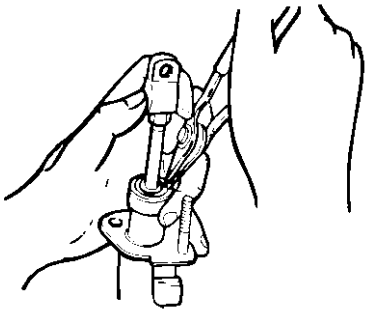
7. Install the push rod to the clutch pedal.
8. Pour clutch fluid into the clutch master cylinder.
9. Bleed the clutch system.

DISASSEMBLY

NOTICE

Do not damage push rod contact surface of piston.

1. Press push rod down and remove internal snap ring with snap ring pliers.
2. Remove push rod, piston assembly, piston stopper, spring, valve stopper, spring and valve assembly.

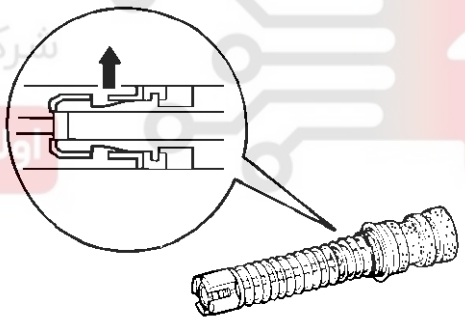


LOAC170A

CAUTION

Hold piston assembly to prevent it from flying apart.

3. Release returning tabs of piston stopper with a suitable tool.



LOAC170B

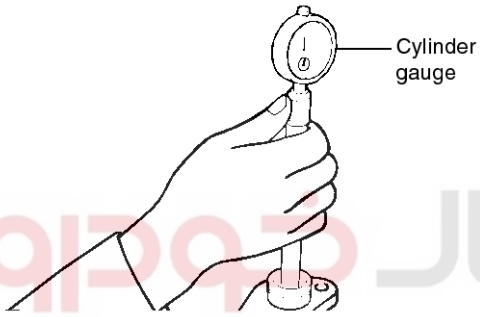
INSPECTION

INSPECTION

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.

NOTICE

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



LOAC180A

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

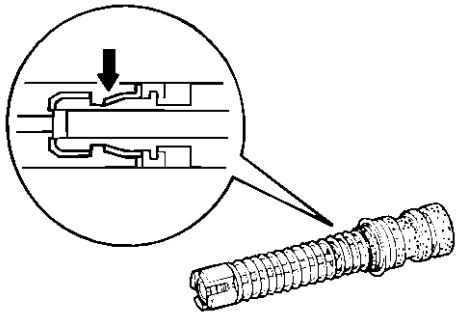
Limit : 0.15 mm (0.006 in.)

REASSEMBLY

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

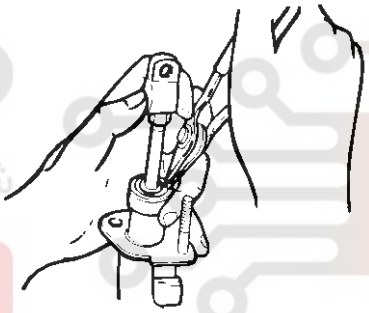
Specified fluid : Brake fluid DOT 3 or DOT4

2. Depress retaining tabs.



LOAC190A

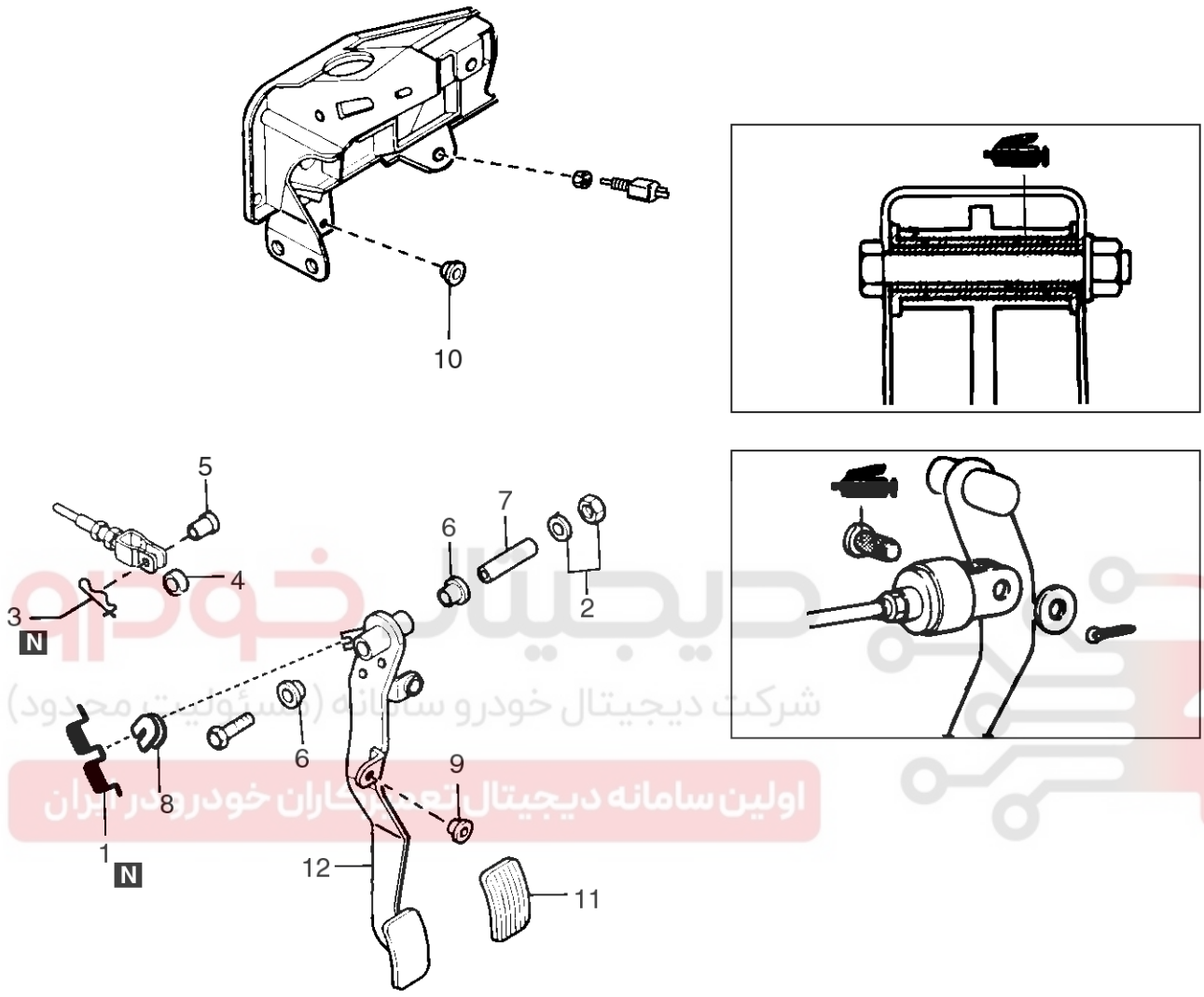
3. Install valve assembly to master cylinder body.
4. Install snap ring while pushing in push rod.



LOAC170A

Clutch Pedal

COMPONENTS



[Removal procedure]

1. Clutch spring
2. Nut and washer
3. Cotter pin
4. Washer
5. Clevis pin
6. Bushing
7. Spacer
8. Spring cover
9. Bushing
10. Rubber stopper
11. Clutch pedal pad
12. Clutch pedal

NOTE
(1) : N Non-reusable parts

LOAC200A

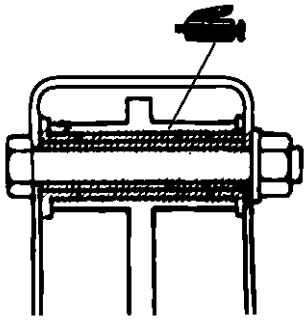
REMOVAL

INSTALLATION

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.



LOAC230A

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

Wheel bearing grease : SAE J310, NLGI No.2

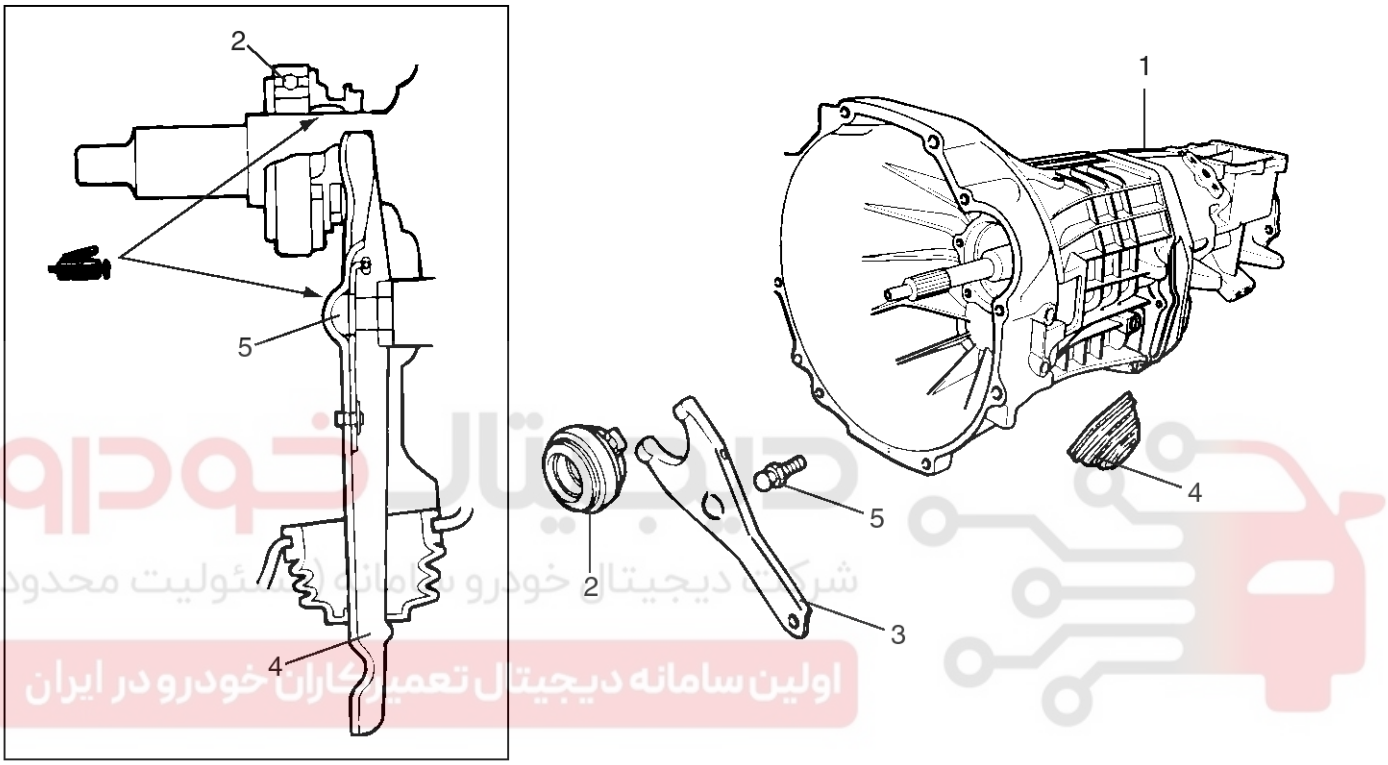
4. Install the push rod to the clutch pedal.
5. Adjust the clutch pedal clevis pin play.

INSPECTION

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

Clutch Release Bearing

COMPONENTS



[Removal procedure]

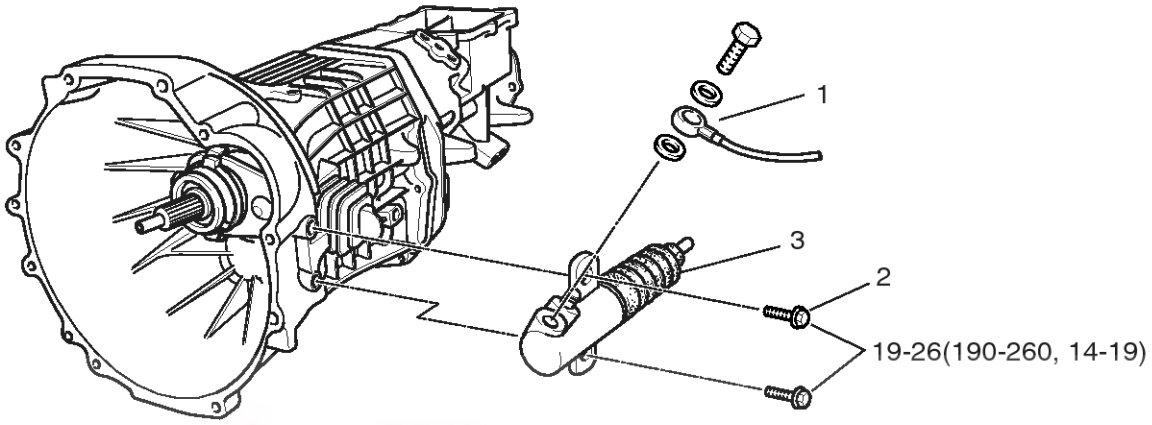
1. Transmission case
2. Clutch release bearing
3. Clutch release fork
4. Clutch release fork boot
5. Fulcrum

LOAC240A

Clutch Release Cylinder

COMPONENTS

< A 2.5 ENG. >



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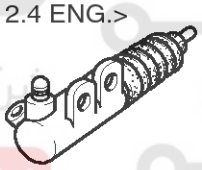
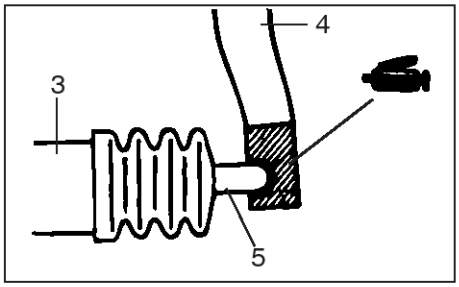




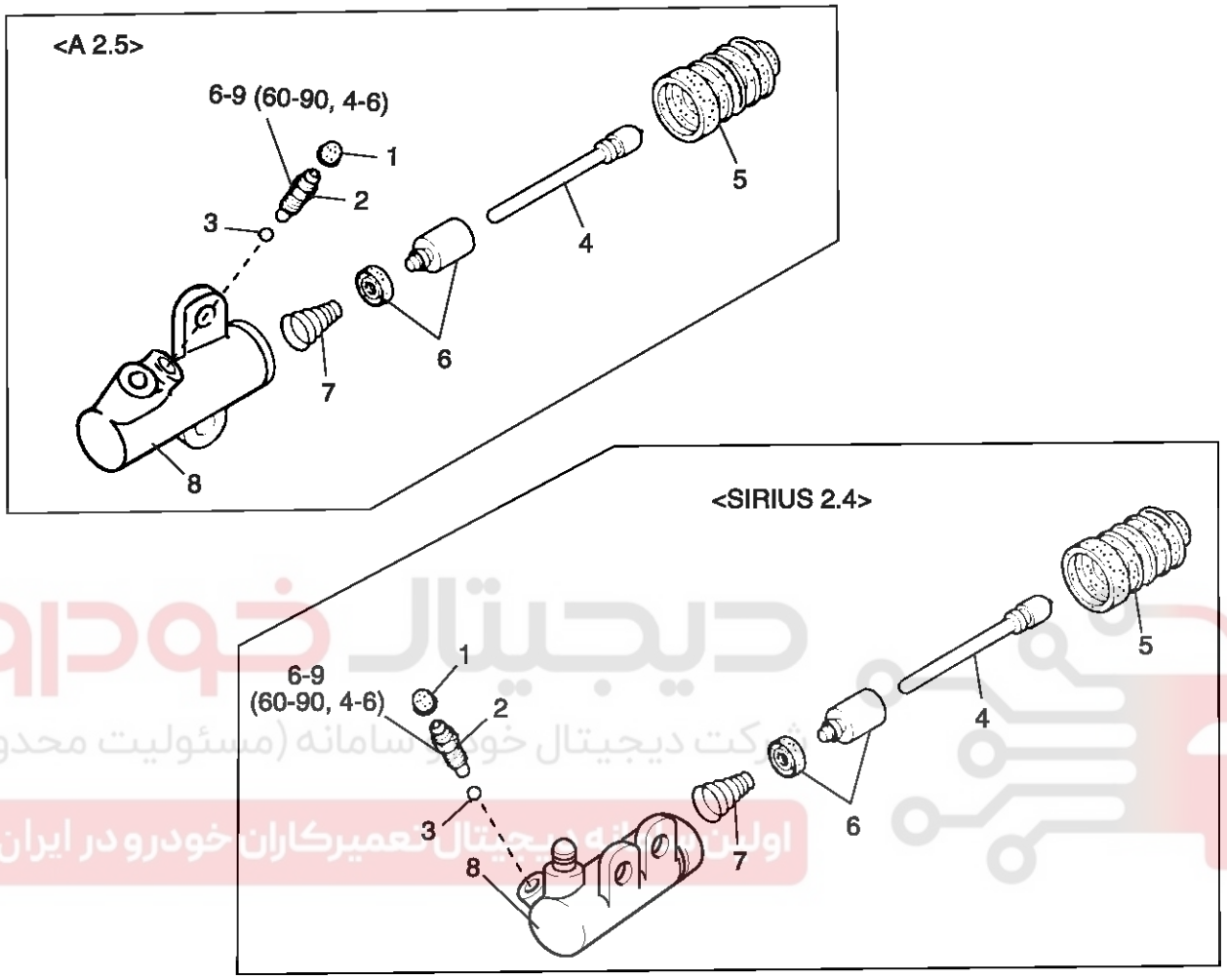
TORQUE : N·m (kg·cm, lb·ft)

[Removal procedure]

1. Oil pipe
2. Clutch release cylinder bolt
3. Clutch release cylinder
4. Release fork
5. Release cylinder push rod

LOAC250A

COMPONENTS



TORQUE : N·m (kg·cm, lb·ft)

[Removal Procedure]

1. Bleeder screw cap
2. Bleeder screw
3. Steel ball
4. Push rod
5. Boot
6. Piston and cup
7. Spring
8. Clutch release cylinder

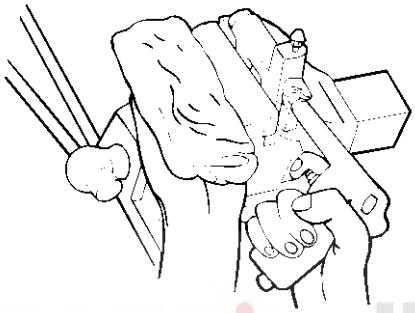
LOAC250B

REMOVAL

1. Remove the clutch hose, 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.**



LOAC260A

INSTALLATION

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.

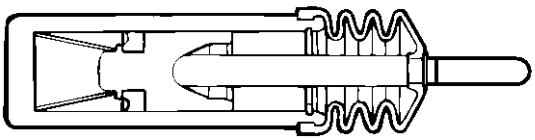
Specified grease : CASMOLY L9508

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

REASSEMBLY

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



LOAC280A

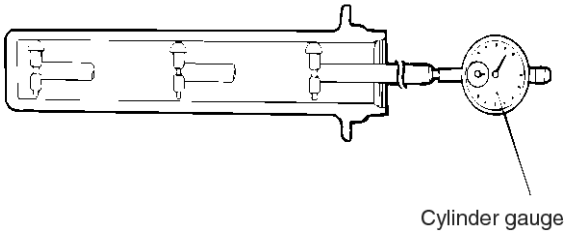
2. Install the clutch hose, spring, push rod, and boot.

INSPECTION

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 pistion : 0.15 mm (0.006 in.)



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