

CLUTCH

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GENERAL INFORMATION

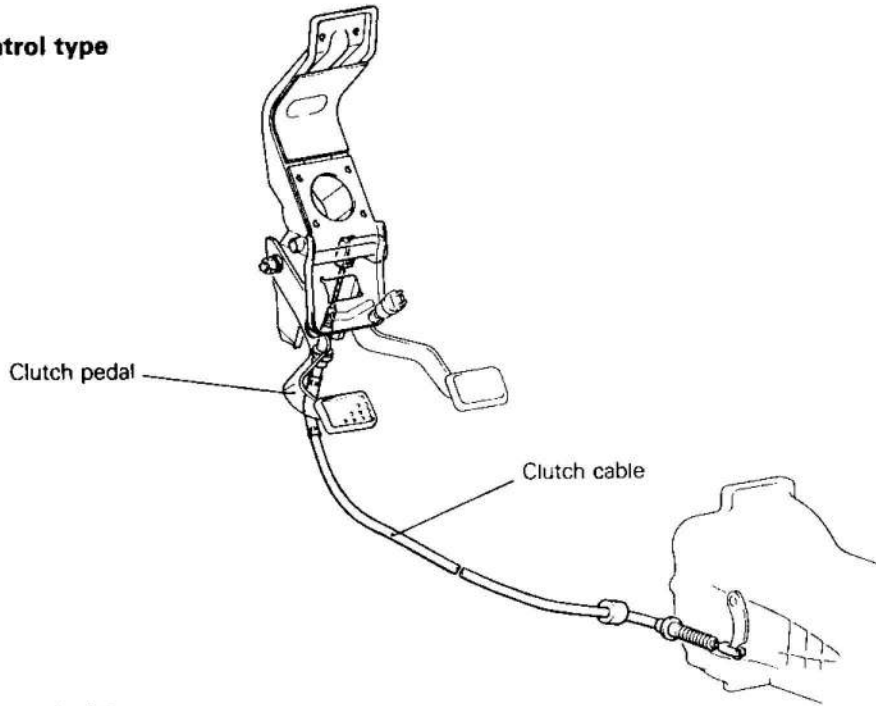
E21BAAD

The clutch is the dry single-plate diaphragm type. The hydraulic-control type or the cable-control type is used. The clutch control system is composed of the clutch pedal, clutch master cylinder, clutch tube, release cylinder, clutch cable, etc. The clutch pedal is the suspended type.

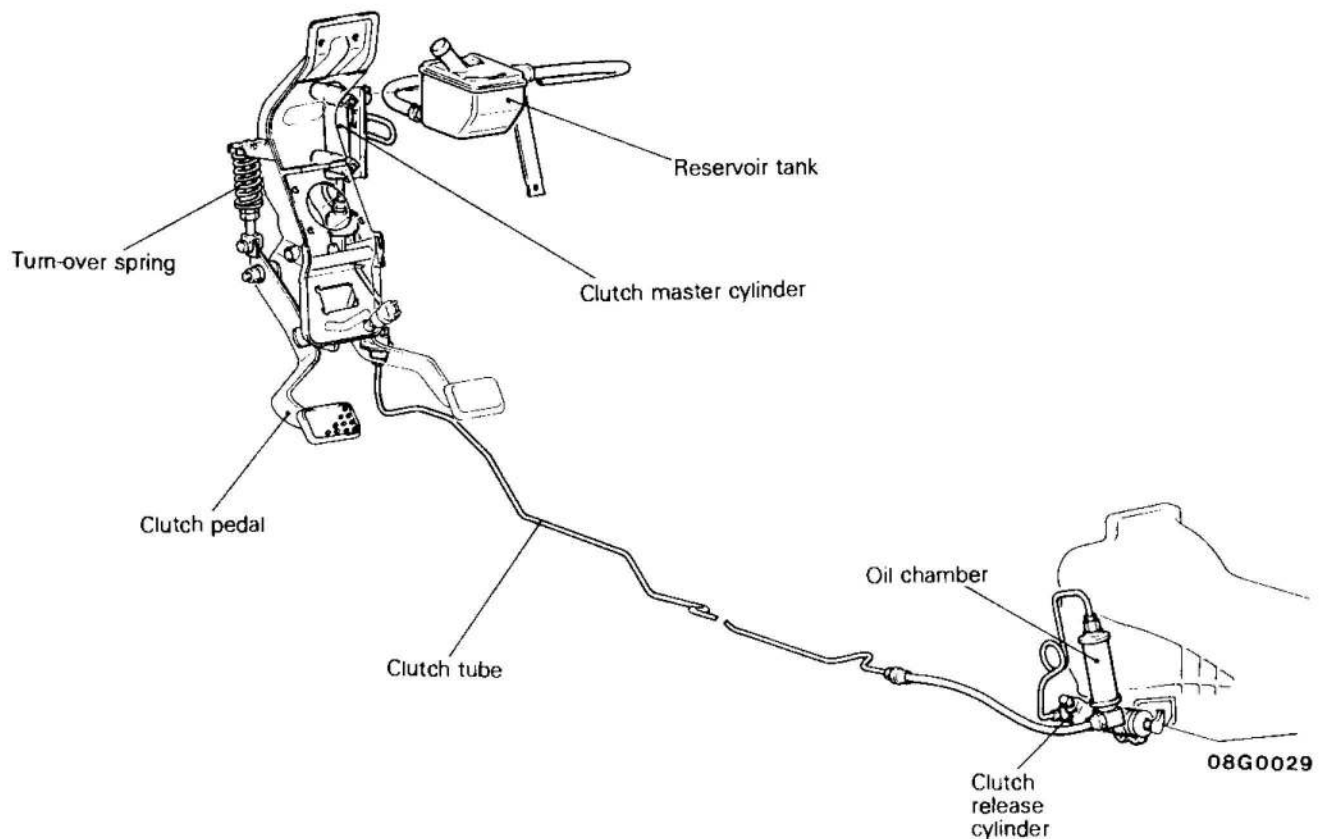
The hydraulic clutch employs a turn-over spring to reduce pedal pressure.

The oil chamber provided in diesel-powered vehicles reduces clutch pedal vibration.

Cable control type



Hydraulic control type



SPECIFICATIONS**GENERAL SPECIFICATIONS**

E21CA--

Items	Petrol-powered vehicles (Excluding G64B Engine mounted vehicles)	Petrol-powered vehicles (G64B Engine mounted vehicles) Diesel-powered vehicles
Clutch operating method	Cable type	Hydraulic type
Inside diameter of clutch master cylinder mm (in.)	—	15.87 (0.62)
Inside diameter of clutch release cylinder mm (in.)	—	19.05 (0.75)
Clutch disc Type	Dry single-plate diaphragm type	Dry single-plate diaphragm type
Clutch cover Type	Diaphragm spring type	Diaphragm spring type

SERVICE SPECIFICATIONS

E21CB--

Items	Cable type	Hydraulic type
Standard value		
Clutch pedal height mm (in.)		
L.H. drive vehicles	196–202 (7.7–8.0)	196–202 (7.7–8.0)
R.H. drive vehicles	202–208 (8.0–8.2)	202–208 (8.0–8.2)
Clutch pedal free play mm (in.)	20–35 (0.8–1.4)	8–15 (0.31–0.59)
Clutch pedal backlash (clevis pin play) mm (in.)	—	0–3 (0–0.12)
Distance between clutch pedal and floorboard when clutch is disengaged mm (in.)	90 (3.5) or more	90 (3.5) or more
Turnover spring set height mm (in.)		
Petrol-powered vehicles	—	32.5 (1.28)
Diesel-powered vehicles	—	30.0 (1.18)
Limit		
Clearance between clutch master cylinder and piston mm (in.)	—	0.15 (0.006)
Clutch disc facing rivet sink mm (in.)	0.3 (0.0012)	0.3 (0.012)

NOTE

Clutch pedal free play of hydraulic type clutch includes both pedal play and clevis pin play.

TORQUE SPECIFICATIONS

E21CC--

Items	Nm	kgm	ft.lbs.
Clutch shaft nut	19-28	1.9-2.8	14-21
Clutch master cylinder mounting bolt	9-14	0.9-1.4	7-10
Clutch tube flare nut	15-20	1.5-2.0	11-14
Spring assist rod locking nut	9-14	0.9-1.4	7-10
Clutch release cylinder mounting bolt	30-42	3.0-4.2	22-30
Eye bolt	20-25	2.0-2.5	14-18
Clutch release cylinder bleeder screw	7-9	0.7-0.9	5-7
Clutch cover attaching bolt	15-22	1.5-2.2	11-16
Oil chamber mounting bolt	15-22	1.5-2.2	11-16

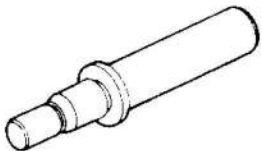
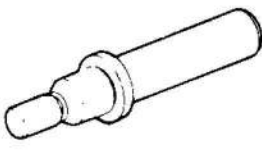
LUBRICANTS

E21CD--

Items	Specified lubricants	Quantity
Fluid	Brake fluid DOT3 or DOT4	As required
Clutch pedal, clutch shaft and bushing Cable sliding portion of clutch lever Clutch master cylinder push rod, clevis pin and washer	Chassis grease SAE J310, NLGI No.0	
Contact portion of release fork to release cylinder push rod	Wheel bearing grease SAE J310, NLGI No.2	
Clutch disc spline	MITSUBISHI GENUINE Grease Part No.0101011 or equivalent	

SPECIAL TOOLS

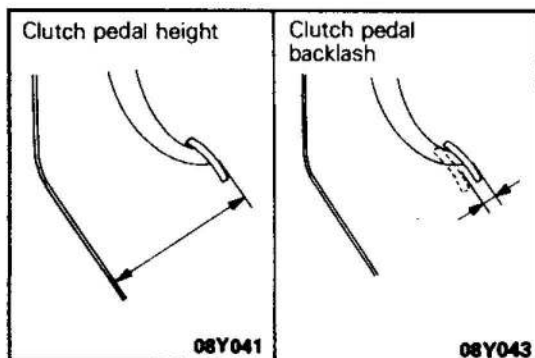
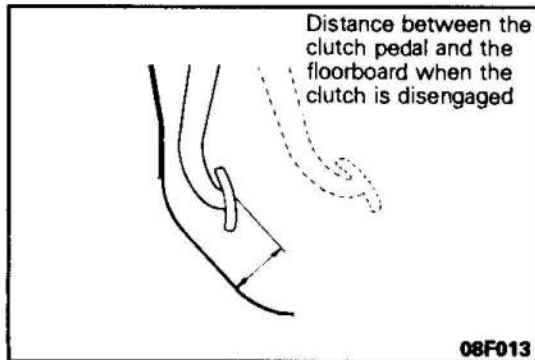
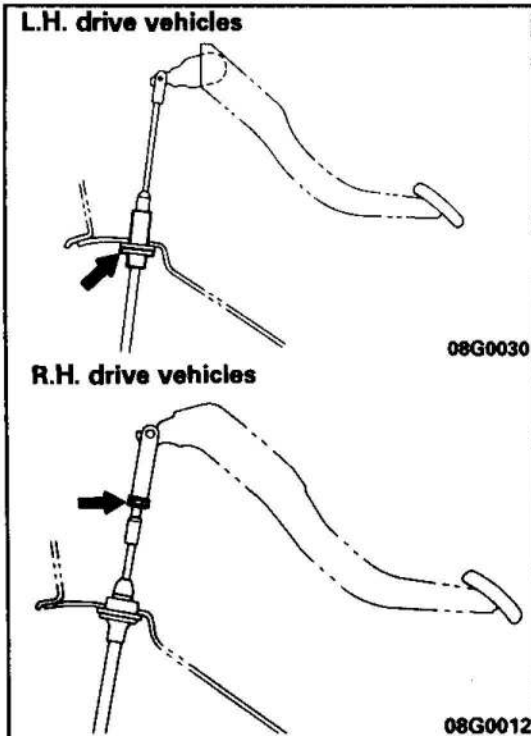
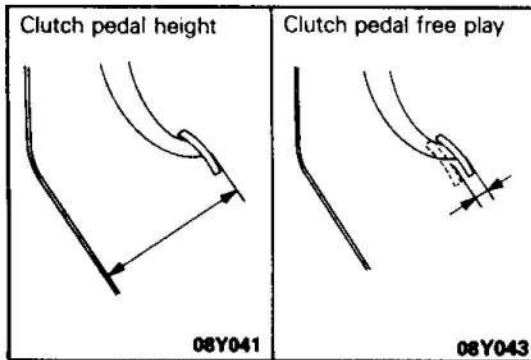
E21DA--

Tool (Number and name)	Use	Tool (Number and name)	Use
MD998126 Clutch disc guide	Centering of clutch disc (vehicles with 4G33 or 4G32 engine)	MD998127 Clutch disc guide	Centering of clutch disc (except vehicles with 4G33 or 4G32 engine)
			

TROUBLESHOOTING

E21EAAE

Symptom		Probable cause	Remedy	Reference page
Clutch slipping <ul style="list-style-type: none"> • Vehicle will not respond to engine speed during acceleration • Insufficient vehicle speed • Lack of power during uphill driving 		Insufficient pedal free play	Adjust	21-6, 7
		Excessive wear of clutch disc facing	Replace	21-16
		Hardened clutch disc facing, or oil on surface	Replace	21-16
		Damaged pressure plate or flywheel	Replace	-
		Weak or broken pressure spring	Replace	-
Difficult gear shifting (gear noise during shifting)		Excessive clutch pedal free play	Adjust	21-6, 7
		Bad clutch fluid, or air mixed in (hydraulic type)	Repair	21-7
		Unusual wear on corrosion of clutch disc spline	Replace	21-16
		Excessive vibration (distortion) of clutch disc	Replace	21-16
Clutch noisy	When clutch is not used	Insufficient play of clutch pedal	Adjust	21-6, 7
		Excessive wear of clutch disc facing	Replace	21-16
	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 release bearing	Repair	-
A noise is heard when vehicle is suddenly rolled with clutch partially engaged	Damaged pilot bearing	Replace	-	
Hard pedal effort		Insufficient lubrication of clutch shaft	Repair	21-8, 10
		Improperly routed or stuck clutch cable (cable type)	Repair or replace	21-8
		Insufficient lubrication of clutch disc spline	Replace	-
		Insufficient lubrication of clutch release lever shaft	Repair	-



SERVICE ADJUSTMENT PROCEDURES ^{E21FBAC}

CLUTCH PEDAL INSPECTION AND ADJUSTMENT (CABLE TYPE)

- (1) Measure the clutch pedal height and the clutch pedal free play.

CLUTCH PEDAL HEIGHT

Standard value:

L.H. drive vehicles 196–202 mm (7.7–8.0 in.)

R.H. drive vehicles 202–208 mm (8.0–8.2 in.)

CLUTCH PEDAL FREE PLAY

Standard value: 20–35 mm (0.8–1.4 in.)

NOTE

Clutch pedal height is non-adjustable. If the height is outside the standard value check for deformed pedal bracket, etc. and replace parts as required.

- (2) If the clutch pedal play is outside the standard value, adjust by turning the adjusting nut on the clutch cable.

- (3) Push the clutch pedal down several times and check the clearance between the pedal and toe-board conforms to the standard value with the clutch out.

Standard value: 90 mm (3.5 in.) or more

- (4) If the clearance between the clutch pedal and toe-board is less than the standard value, the clutch may be faulty. Overhaul clutch.

(HYDRAULIC TYPE) ^{E21FAAF}

- (1) Measure the clutch pedal height and the clutch pedal backlash.

CLUTCH PEDAL HEIGHT

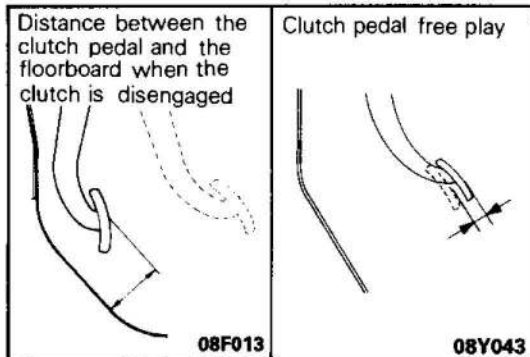
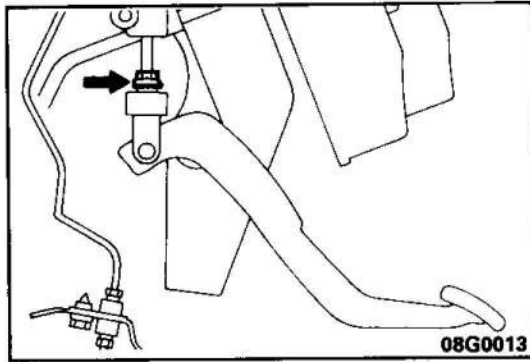
Standard value:

L.H. drive vehicles 196–202 mm (7.7–8.0 in.)

R.H. drive vehicles 202–208 mm (8.0–8.2 in.)

CLUTCH PEDAL BACKLASH

Standard value: 0–3 mm (0–0.12 in.)



NOTE

Clutch pedal height is non-adjustable. If the height is outside the standard value check for deformed pedal bracket, etc. and replace parts as required.

- (2) If clutch pedal backlash exceeds the standard value, adjust backlash with the lock nut on the master cylinder side of the push rod.

Caution

Adjust so that, with the pedal in contact with the stopper rubber piece, the clearance between the piston and the push rod of the master cylinder becomes 0 ± 0.3 mm (0 ± 0.012 in.) (corresponding to $\pm 90^\circ$ rotation of the push rod).

- (3) Adjust the set height of the turnover spring to the standard value. (Refer to P.21-12.)
- (4) Confirm that the clutch pedal free play and the clearance to the toe board when the clutch is disengaged, conform to the standard values.

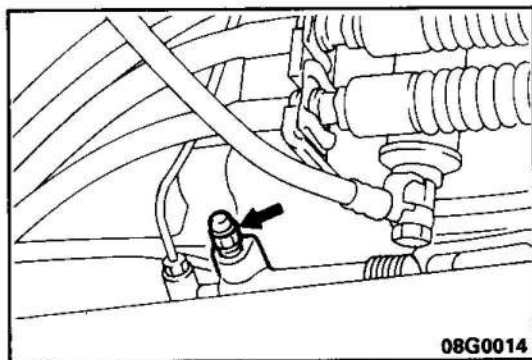
CLUTCH PEDAL FREE PLAY (INCLUDING CLEVIS PIN PLAY)

Standard value: 8–15 mm (0.31–0.59 in.)

DISTANCE BETWEEN THE CLUTCH PEDAL AND THE FLOORBOARD WHEN THE CLUTCH IS DISENGAGED

Standard value: 90 mm (3.5 in.) or more

- (5) If the clutch pedal play exceeds the standard value, adjust the play with the double nut on the push rod on the master cylinder side.



BLEEDING

E21FEAB

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 brake fluid. Avoid using a mixture of the specified fluid and other fluid.

Specified brake fluid: Brake fluid DOT3 or DOT4

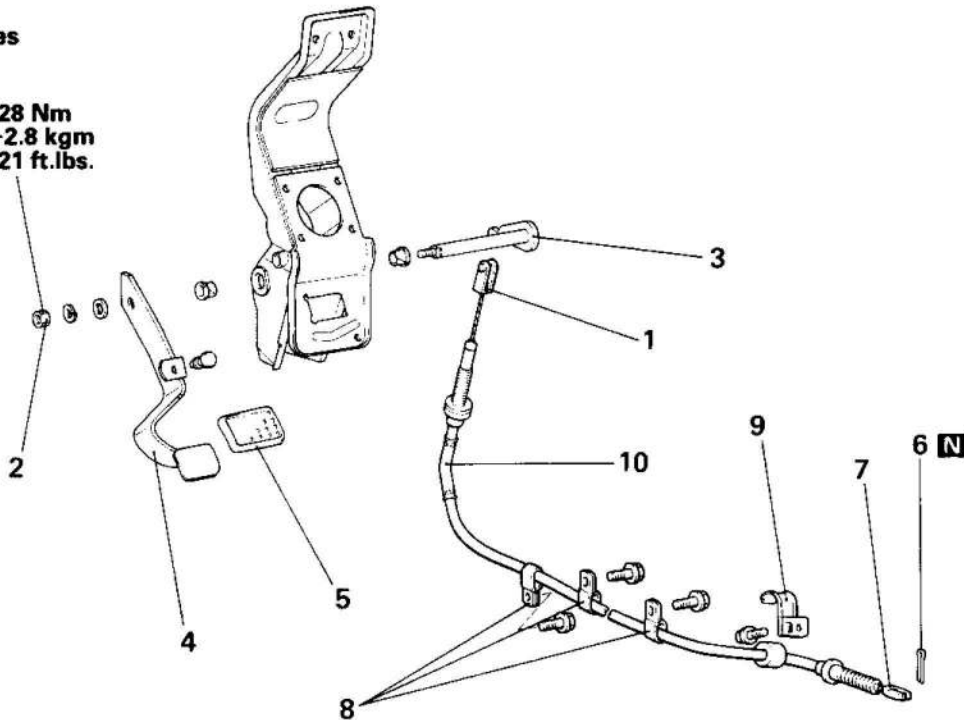
CLUTCH CONTROL (CABLE TYPE)

E21JA--

REMOVAL AND INSTALLATION

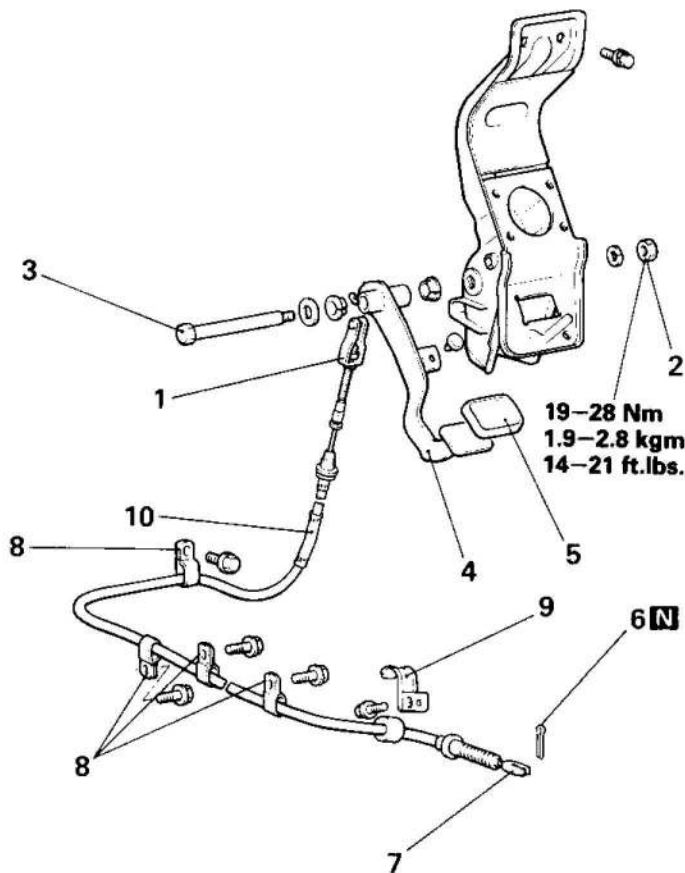
L.H. drive vehicles

19-28 Nm
1.9-2.8 kgm
14-21 ft.lbs.



08G0025

R.H. drive vehicles



Removal steps

1. Clutch cable connection (interior side)
2. Nut
- ◆◆ 3. Clutch shaft
- ◆◆ 4. Clutch pedal
5. Pedal pad
6. Split pin
7. Clutch cable connection (transmission side)
8. Clamp
9. Clamp (4WD)
10. Clutch cable

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Points of Installation".
- (3) **N** : Non-reusable parts

08G0024

INSPECTION

E21JCAC

- Check the pedal shaft bushing for wear.
- Check the pedal shaft for bend.
- Check the pedal arm for bend or torsion.
- Check the cable insulator for damage.
- Check the outer cable for damage.
- Check the cable end for damage or wear.
- Check the pedal pad for damage or wear.

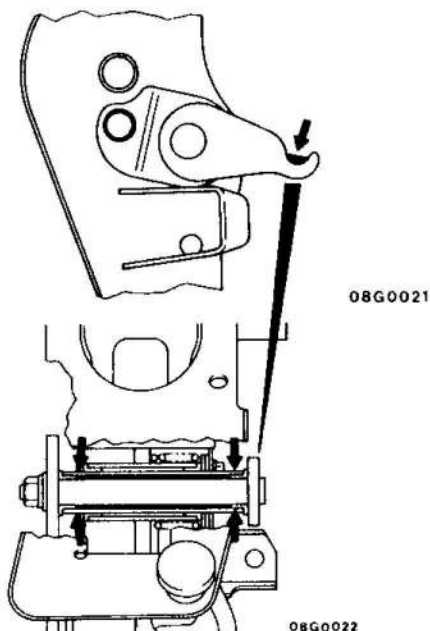
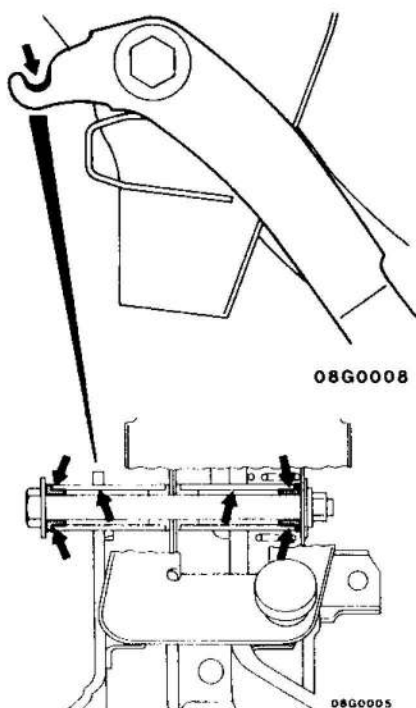
SERVICE POINTS OF INSTALLATION

E21JDAF

4. INSTALLATION OF CLUTCH PEDAL/3. CLUTCH SHAFT

Apply specified grease to the sliding surface of the clutch pedal to the clutch shaft and where the clutch cable connects.

Specified grease: Chassis grease SAE J310, NLGI No.0

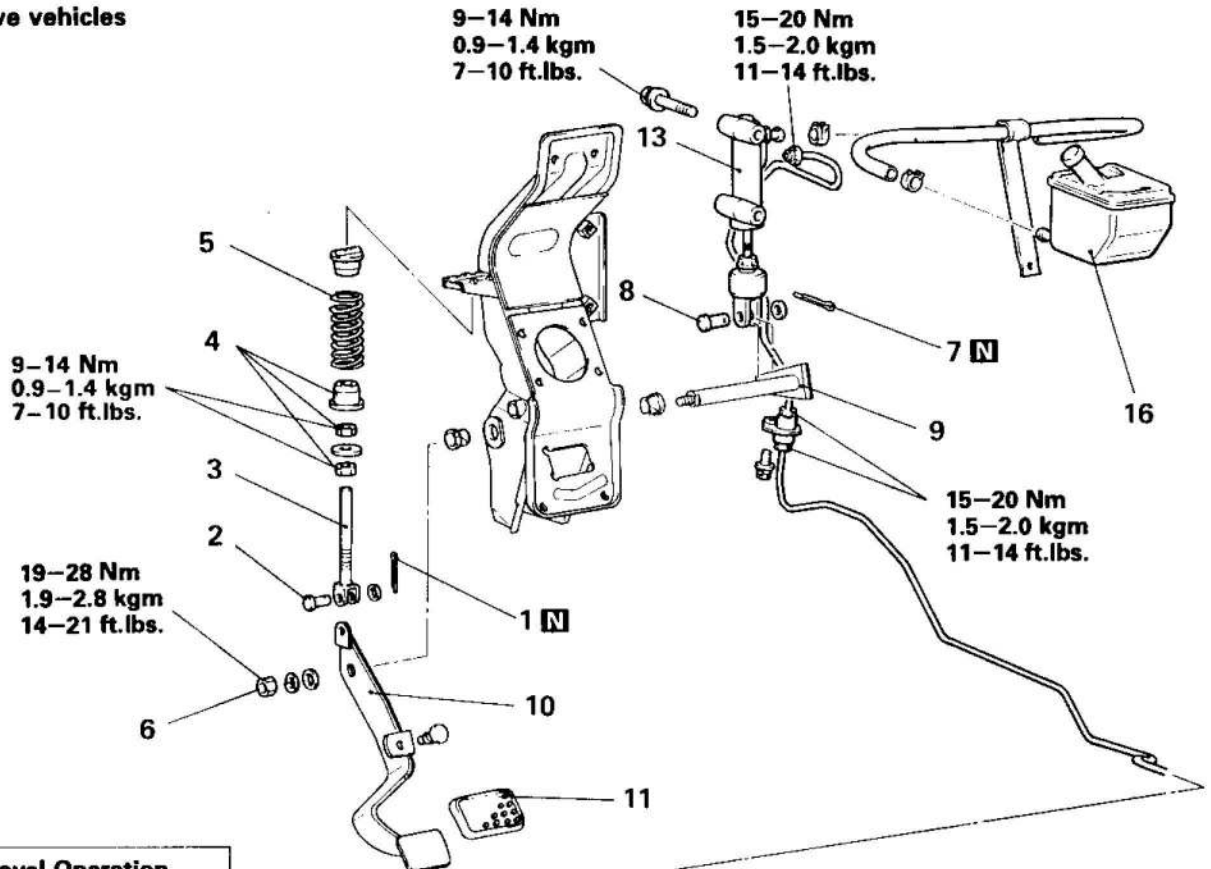
L.H. drive vehicles**R.H. drive vehicles**

CLUTCH CONTROL (HYDRAULIC TYPE)

REMOVAL AND INSTALLATION

E21JA--

L.H. drive vehicles

**Pre-removal Operation**

- Drainage of clutch fluid

Post-installation Operation

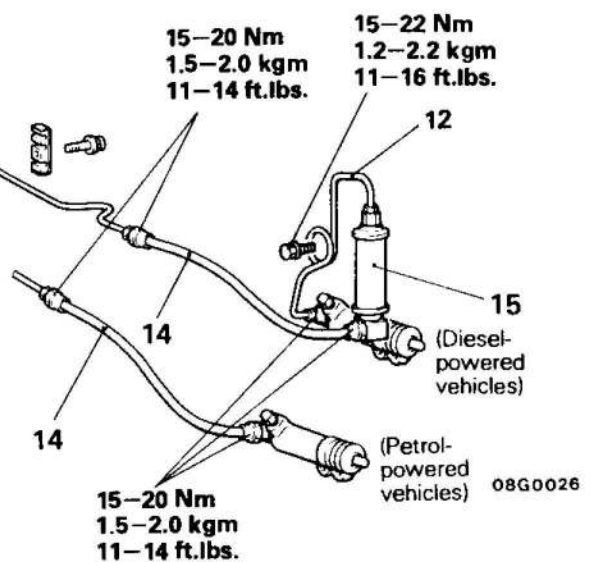
- Filling of clutch fluid
- Air bleeding (Refer to P.21-7)

Removal steps

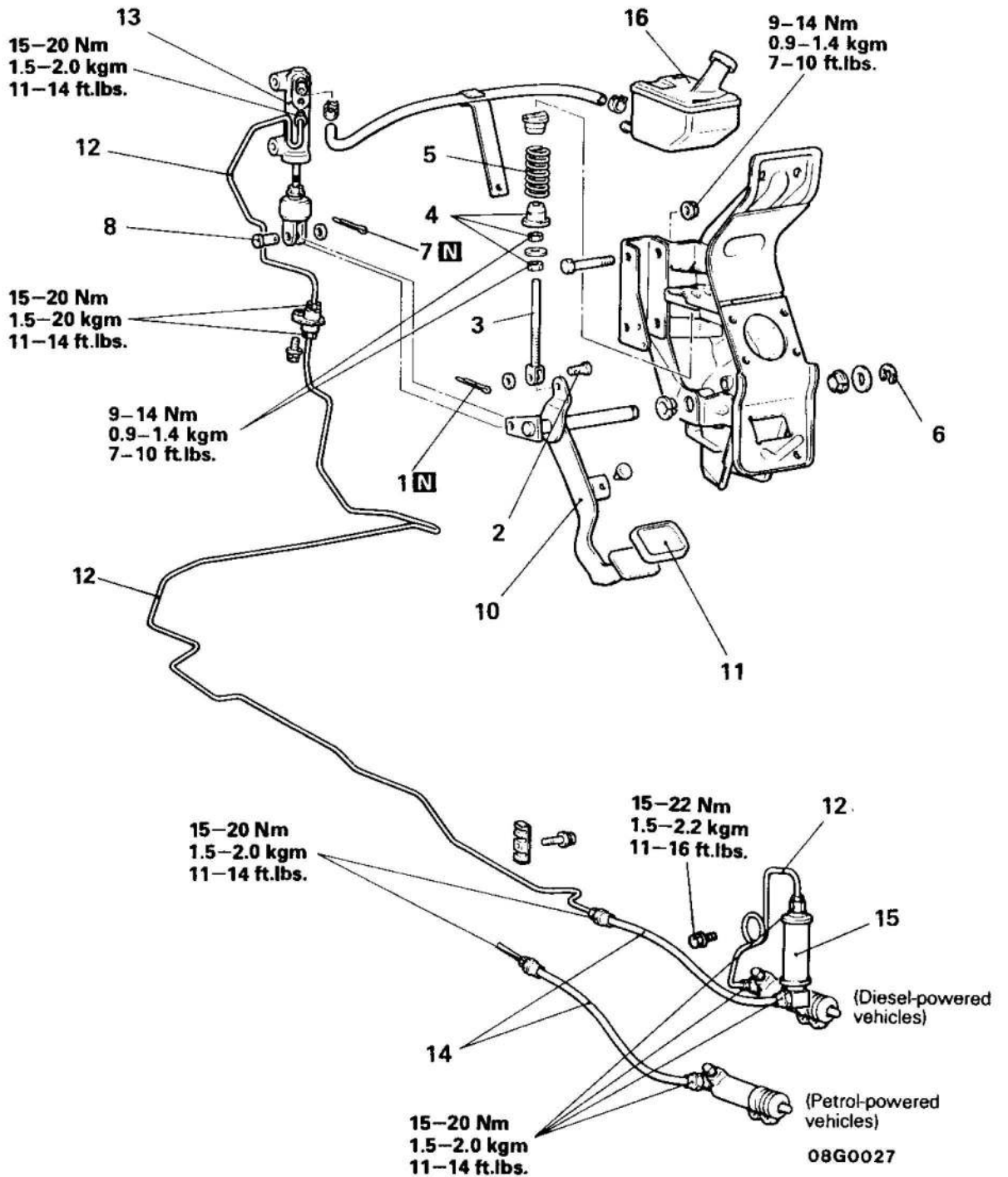
- ◆◆ 1. Split pin
- ◆◆ 2. Clevis pin
- ◆◆ 3. Spring assist rod
- ◆◆ 4. Locking nut and spring seat
- ◆◆ 5. Turnover spring
- ◆◆ 6. Nut (L.H. drive vehicles)
- ◆◆ 6. Snap ring (R.H. drive vehicles)
- ◆◆ 7. Split pin
- ◆◆ 8. Clevis pin
- ◆◆ 9. Clutch shaft (L.H. drive vehicles)
- ◆◆ 10. Clutch pedal
- ◆◆ 11. Pedal pad
- ◆◆ 12. Clutch tube
- ◆◆ 13. Clutch master cylinder
- ◆◆ 14. Clutch hose
- ◆◆ 15. Oil chamber (diesel-powered vehicles)
- ◆◆ 16. Reservoir tank

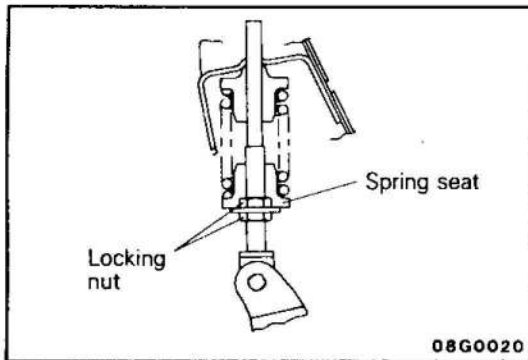
NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Points of Removal".
- (3) ◆◆ : Refer to "Service Points of Installation".
- (4) 1 : Non-reusable parts



R.H. drive vehicles



**SERVICE POINTS OF REMOVAL**

E21JBAA

1. REMOVAL OF SPLIT PIN

Loosen locking nut and spring sheet before removing the split pin to reduce the turnover spring force. Remove split pin.

16. REMOVAL OF RESERVOIR TANK

Refer to GROUP 35 SERVICE BRAKE—Master cylinder.

INSPECTION

E21JCBA

- Check the pedal shaft bushing for wear.
- Check the pedal shaft for bend.
- Check the pedal arm for bend or torsion.
- Check the clutch tube and reservoir hose for cracks or clogging.
- Check the turnover spring for deterioration.
- Check the pedal pad for damage or wear.

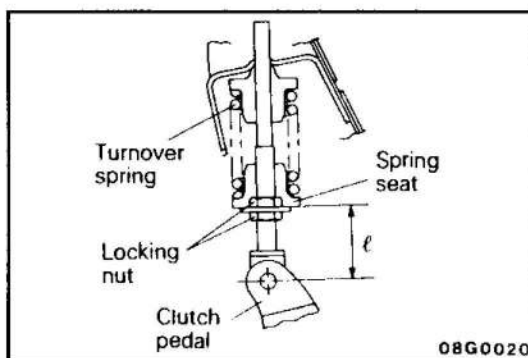
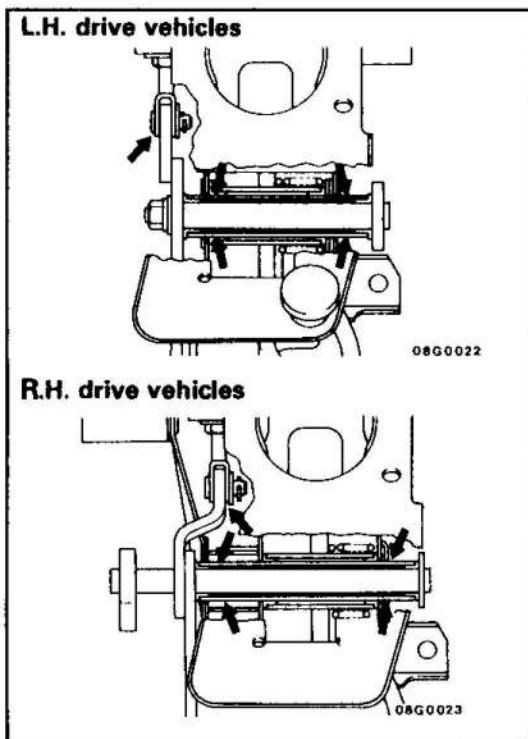
SERVICE POINTS OF INSTALLATION

E21JDBA

10. INSTALLATION OF CLUTCH PEDAL/9. CLUTCH SHAFT (L.H. drive vehicles)

Apply specified grease to all connecting and sliding parts before assembly.

Specified grease: Chassis grease SAE J310, NLGI No.0

**4. ATTACHING LOCKING NUT AND SPRING SHEET/3. SPRING ASSIST ROD**

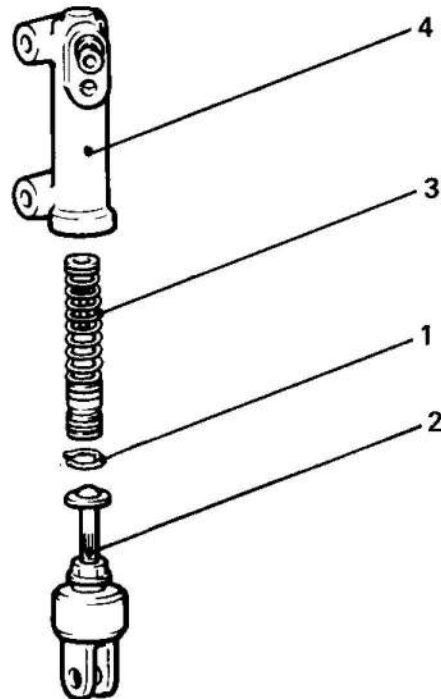
Release clutch pedal (to bring the clutch pedal into contact with the stopper), and adjust the distance (ℓ) between the clevis pin center and the spring sheet to the standard value by the locking nut and spring sheet.

Standard value:

Petrol-powered vehicles: 32.5 mm (1.28 in.)

Diesel-powered vehicles: 30.0 mm (1.18 in.)

CLUTCH MASTER CYLINDER DISASSEMBLY AND REASSEMBLY



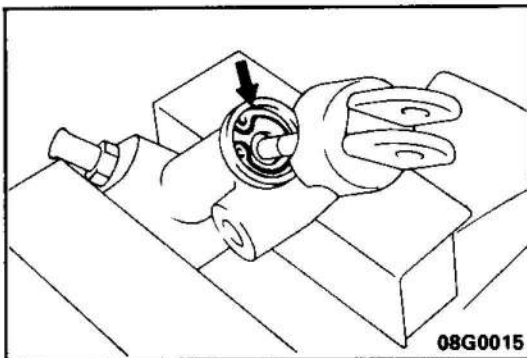
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Disassembly steps

- ◆◆ 1. Piston stopper ring
- ◆◆ 2. Push rod
- ◆◆◆◆ 3. Piston assembly
- ◆◆◆◆ 4. Clutch master cylinder

NOTE

- (1) Reverse the disassembly procedures to reassemble.
- (2) ◆◆ : Refer to "Service Points of Disassembly".
- (3) ◆◆◆◆ : Refer to "Service Points of Reassembly".



08G0015

SERVICE POINTS OF DISASSEMBLY

E21SFAB

1. REMOVAL OF PISTON STOPPER RING

Remove the piston stopper ring.

3. REMOVAL OF PISTON ASSEMBLY

Pull out the piston assembly.

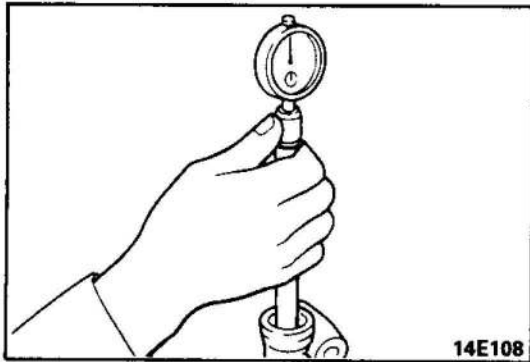
Caution

- 1. Do not damage the master cylinder body and piston assembly.
- 2. Do not disassembly piston assembly.

INSPECTION

E21SGAC

- Check the inside cylinder body for rust or scars.
- Check the piston cup for wear or deformation.
- Check the piston for rust or scars.
- Check the clutch tube connection part for clogging.



14E108

CHECKING CLEARANCE BETWEEN MASTER CYLINDER INNER DIAMETER AND PISTON OUTER DIAMETER

- (1) Measure the master cylinder inside diameter and the piston outside diameter with a cylinder gauge and a micrometer.

Limit: 0.15 mm (0.06 in.)

NOTE

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

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

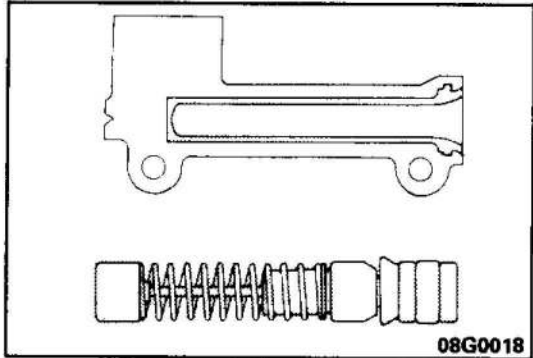
SERVICE POINTS OF REASSEMBLY

3. INSTALLATION OF PISTON ASSEMBLY

E21SHAD

Apply specified clutch fluid to the inner surface of the cylinder and to the entire periphery of the piston assembly.

Specified clutch fluid: Brake fluid DOT3 or DOT4



08G0018

CLUTCH RELEASE CYLINDER REMOVAL AND INSTALLATION

E21MA—

Pre-removal Operation

- Drainage of clutch fluid

Post-installation Operation

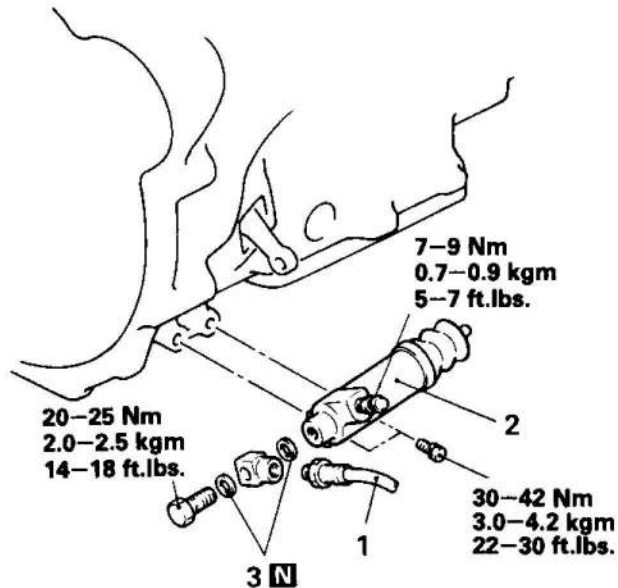
- Filling of clutch fluid
- Air bleeding (Refer to P.21-7.)

Removal steps

- ◆◆ ◆◆ 1. Clutch tube or hose
- ◆◆ 2. Release cylinder
3. Gasket

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Points of Removal".
- (3) ◆◆ : Refer to "Service Points of Installation".
- (4) **N** : Non-reusable parts



08G0011

SERVICE POINTS OF REMOVAL

E21MBAD

1. REMOVAL OF CLUTCH TUBE OR HOSE

Before removing the clutch tube, discharge the clutch fluid at the bleeder screw of the release cylinder.

INSPECTION

E21MCAA

- Check the clutch release cylinder for fluid leakage.
- Check the clutch release cylinder boot for damage.

SERVICE POINTS OF INSTALLATION

E21MDAC

2. INSTALLATION OF RELEASE CYLINDER

Apply a coating of the specified grease to the contact parts of the release fork and release cylinder push rod.

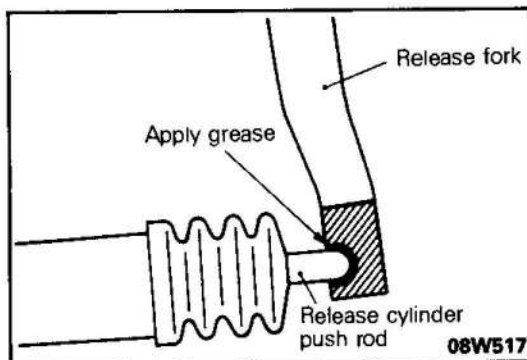
Specified grease: Wheel bearing grease SAE J310, NLGI No.2

1. INSTALLATION OF CLUTCH TUBE OR HOSE

- (1) Fill reservoir tank with specified fluid after attaching clutch tube.

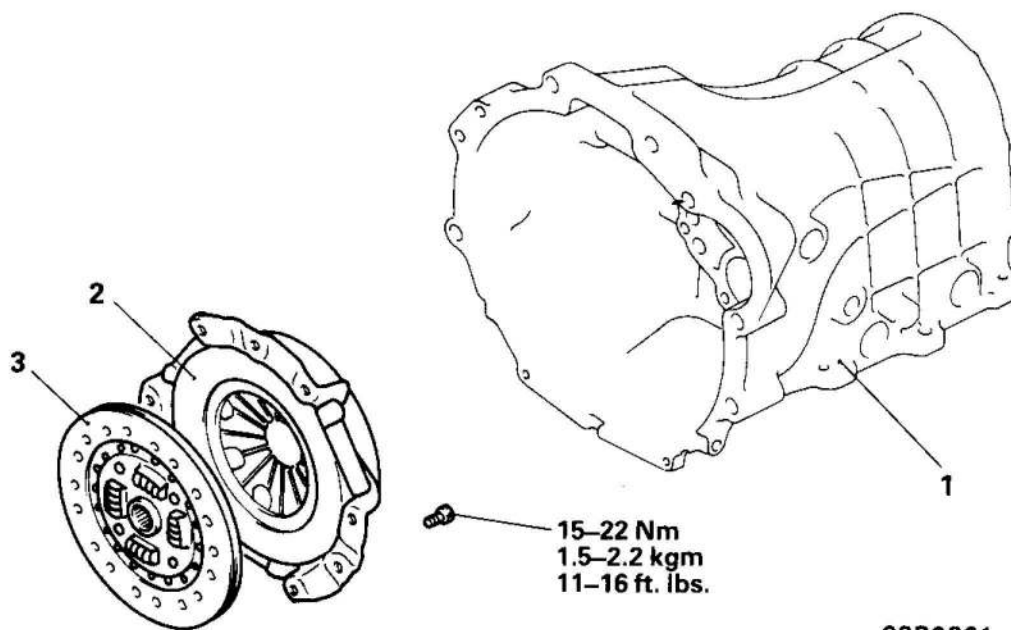
Specified clutch fluid: Brake fluid DOT3 or DOT4

- (2) Purge air and check for leaks. (Refer to P.21-7).



CLUTCH DISC

E21GA--

REMOVAL AND INSTALLATION

08B0001

Removal steps

- ◆◆ 1. Transmission assembly, transmission and transfer assembly
- ◆◆ ◆◆ 2. Clutch cover
- ◆◆ ◆◆ 3. Clutch disc

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Points of Removal".
- (3) ◆◆ ◆◆ : Refer to "Service Points of Installation".

SERVICE POINTS OF REMOVAL

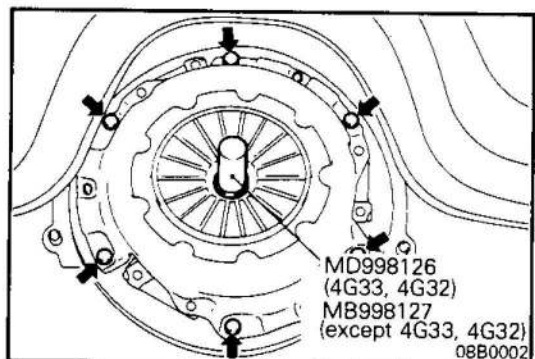
E21GBAB

1. REMOVAL OF TRANSMISSION ASSEMBLY, TRANSMISSION AND TRANSFER ASSEMBLY

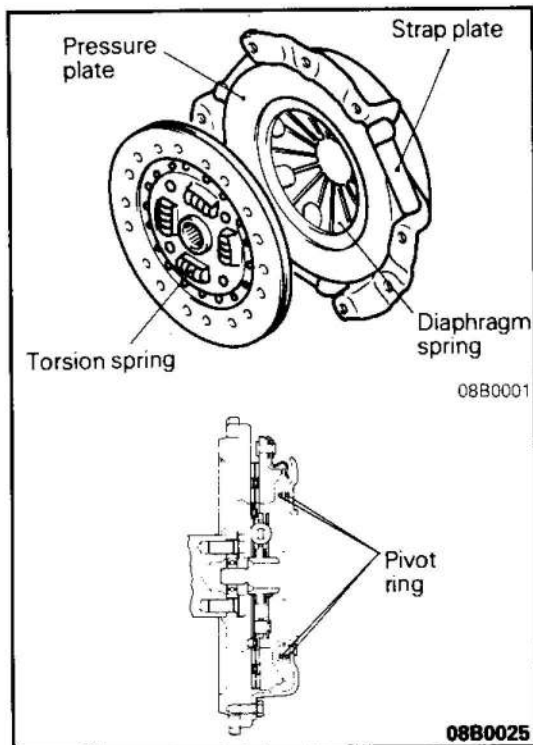
Refer to GROUP 22 MANUAL TRANSMISSION—Transmission Assembly, Transmission and Transfer Assembly.

2. REMOVAL OF CLUTCH COVER

- (1) Insert the Special Tool in the fly-wheel pilot bearing hole to keep disc from falling off.
- (2) Loosen clutch cover tightening bolt gradually in a criss-cross fashion.
- (3) Remove clutch cover. Then pull out the Special Tool and remove clutch disc.



E21GCAA

**INSPECTION****CLUTCH COVER**

- Check the diaphragm spring tip for wear.
- Check strap plate rivet for looseness.
- Check the pressure plate surface for damage.
- Check pivot ring for wear.

NOTE

To check for pivot ring wear, shake clutch cover. If noise is produced, pivot ring is worn.

CLUTCH DISC

- Check facing for loose rivets, uneven contact, deterioration due to seizure, and presence of oil or grease.
- Check torsion spring and friction washer for looseness, fatigue and damage.

CLUTCH DISC FACING WEAR MEASUREMENT

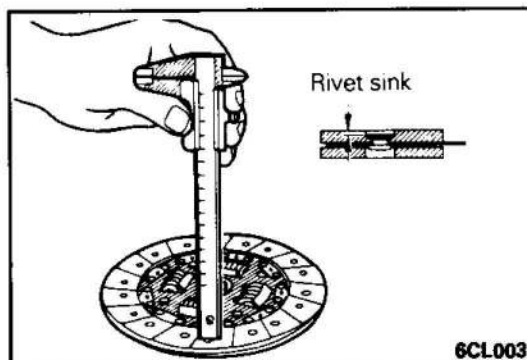
- (1) Use caliper gauge to measure the dimension from the facing surface to the rivet head.

Limit: 0.3 mm (0.012 in.)

- (2) If the measured value is below the limit, replace clutch disc.

NOTE

If facing is excessively worn, check flywheel and clutch cover pressure plate for wear.

**SERVICE POINTS OF INSTALLATION**

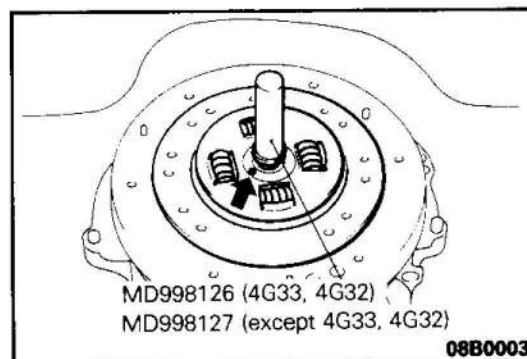
E21GDAB

3. INSTALLATION OF CLUTCH DISC

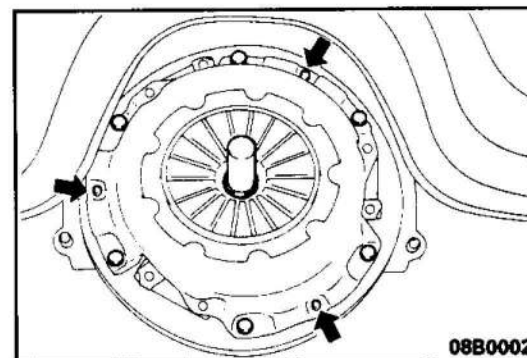
- (1) Apply specified grease to clutch disc spline.

Specified grease: MITSUBISHI GENUINE Grease Part No.0101011 or equivalent

- (2) Use the special Tool to set clutch disc to flywheel.
- (3) When installing clutch disc, be sure that surface having manufacturers stamped mark (indicated by an arrow in the illustration) is on pressure plate side.

**2. INSTALLATION OF CLUTCH COVER**

Install clutch cover with dowel pin hole in alignment with dowel pin in flywheel and tighten bolts gradually in a criss-cross fashion.



NOTES