

CLUTCH

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PREPARATION**SST(SPECIAL SERVICE TOOLS)**

PP048-01

	09023-00100 Union Nut Wrench 10 mm	Clutch line
	09301-00110 Clutch Guide Tool	
	09303-35011 Input Shaft Front Bearing Puller	
	09304-30012 Input Shaft Front Bearing Replacer	
	09333-00013 Clutch Diaphragm Spring Aligner	
	09922-10010 Variable Open Wrench	

RECOMMENDED TOOLS

PP048-01

	09031-00030 Pin Punch .	Reservoir tank
	09905-00013 Snap Ring Pliers .	

EQUIPMENT

PP048-01

Calipers	
Torque wrench	
Dial indicator with magnetic base	

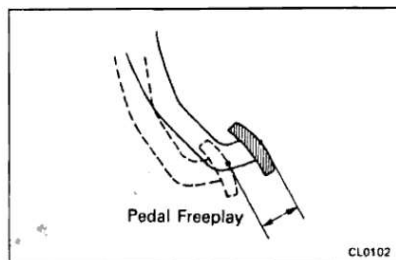
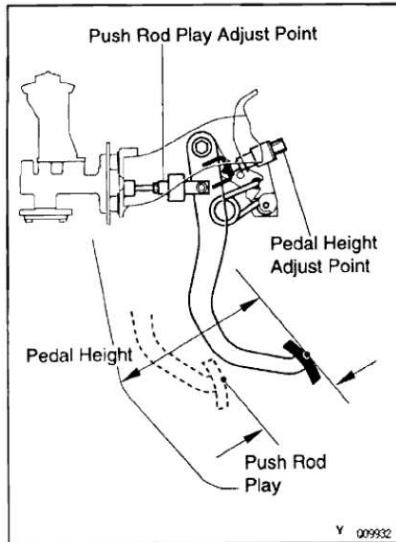
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TROUBLESHOOTING

Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

See Page	Parts Name	Trouble
CL-4	Clutch pedal (Freeplay out of adjustment)	1
—	Clutch line (Air in line)	2
CL-5	Master cylinder cup (Damaged)	3
CL-7	Release cylinder cup (Damaged)	4
—	Engine mounting (Loosen)	1
CL-9	Release bearing (Worn, dirty or damaged)	1
CL-9	Input shaft bearing (Worn or damaged)	2
CL-9	Clutch disc (Out of true)	5
CL-9	Clutch disc (Runout is excessive)	6
CL-9	Clutch disc (Lining broken)	6
CL-9	Clutch disc (Dirty or burred)	6
CL-9	Clutch disc (Oily)	6
CL-9	Clutch disc (Worn out)	2
CL-9	Clutch disc torsion rubber (Damaged)	2
CL-9	Clutch disc (Glazed)	2
CL-9	Clutch disc (Lack of spline grease)	6
CL-9	Diaphragm spring (Damaged)	7
CL-11	Diaphragm spring (Out of tip alignment)	2
—	Pressure plate (Distortion)	4
—	Flywheel (Distortion)	5
Clutch grabs/chatters		
Clutch pedal spongy		1
Clutch noisy		1
Clutch slips		1
Clutch does not disengage		1

MM513



CLUTCH PEDAL CLUTCH PEDAL CHECK AND ADJUSTMENT

CLNEW-01

1. CHECK THAT PEDAL HEIGHT IS CORRECT

Pedal height from floor panel:

RHD: 212.6–222.6 mm (8.370–8.764 in.)

LHD: 215.8–225.8 mm (8.495–8.889 in.)

2. IF NECESSARY, ADJUST PEDAL HEIGHT

Loosen the lock nut and turn the stopper bolt until the height is correct. Tighten the lock nut.

3. CHECK THAT PEDAL FREEPLAY AND PUSH ROD PLAY ARE CORRECT

Push in on the pedal until the beginning of clutch resistance is felt.

Pedal freeplay: 5.0–15.0 mm (0.197–0.591 in.)

Gently push on the pedal until the resistance begins to increase a little.

Push rod play at pedal top:

1.0–5.0 mm (0.039–0.197 in.)

4. IF NECESSARY, ADJUST PEDAL FREEPLAY AND PUSH ROD PLAY

- Loosen the lock nut and turn the push rod until the freeplay and push rod play are correct.
- Tighten the lock nut.
- After adjusting the pedal freeplay, check the pedal height.
- Connect the air duct and install the lower finish panel.

5. CHECK CLUTCH RELEASE POINT

- Pull the parking brake lever and install wheel stopper.
- Start the engine and idle the engine.
- Without depressing the clutch pedal, slowly shift the shift lever into reverse position until the gears contact.
- Gradually depress the clutch pedal and measure the stroke distance from the point the gear noise stops (release point) up to the full stroke end position.

Standard distance:

25 mm (0.98 in.) or more

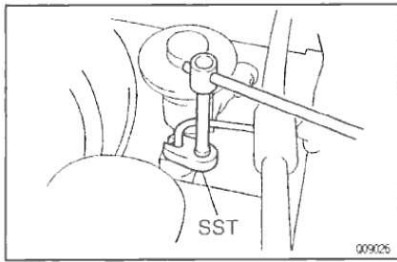
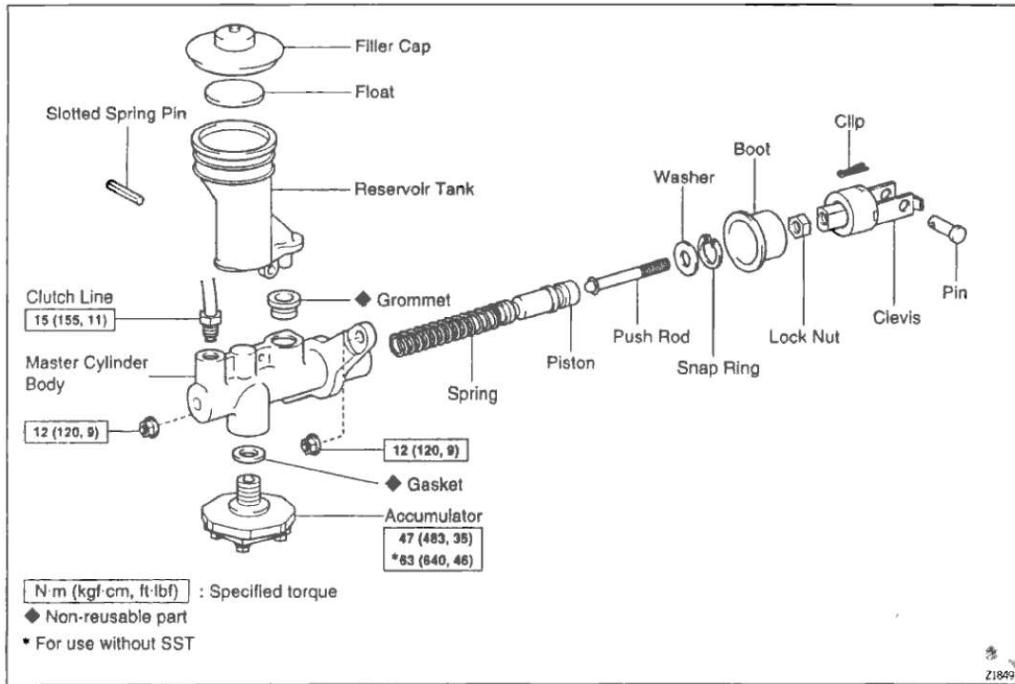
(From pedal stroke end position to release point)

If the distance not as specified, perform the following operation.

- Check pedal height.
- Check push rod play and pedal freeplay.
- Bleed the clutch line.
- Check the clutch cover and disc.

CLUTCH MASTER CYLINDER COMPONENTS

CL008-02

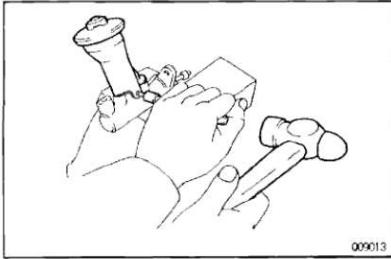


MASTER CYLINDER REMOVAL

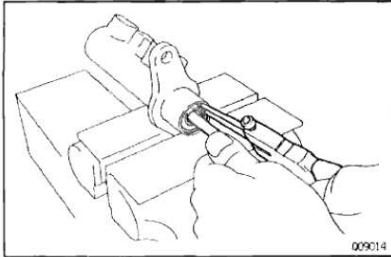
1. **DRAW OUT FLUID WITH SYRINGE**
2. **DISCONNECT CLUTCH LINE**
Using SST, disconnect the line. Use a container to catch the fluid.
SST 09023-00100
Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)
3. **REMOVE CLIP AND CLEVIS PIN**
4. **REMOVE 2 MOUNTING NUTS AND PULL OUT MASTER CYLINDER**
Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

MASTER CYLINDER DISSASSEMBLY**1. REMOVE RESERVOIR TANK**

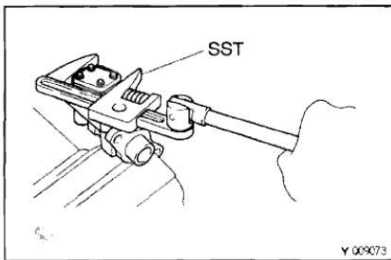
- (a) Using a pin punch and hammer, drive out the slotted spring pin.
- (b) Remove the reservoir tank and grommet.

**2. REMOVE PUSH ROD**

Pull back the boot, and using snap ring pliers, remove the snap ring.

3. REMOVE PISTON**4. REMOVE ACCUMULATOR**

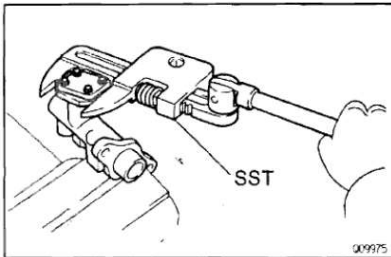
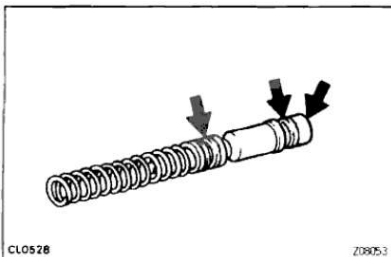
- (a) Using SST, remove the accumulator. SST 09922-10010
- (b) Remove the gasket.

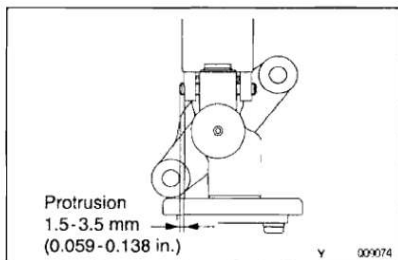
**MASTER CYLINDER ASSEMBLY****1. INSTALL ACCUMULATOR**

- (a) Install a new gasket.
- (b) Using SST, install and torque the accumulator. SST 09922-10010

Torque: 47 N·m (483 kgf·cm, 35 ft·lbf)

HINT: Use a torque wrench with a fulcrum length of 345 mm (13.6 in.).

**2. COAT PARTS WITH LITHIUM SOAP BASE GLYCOL GREASE, AS SHOWN****3. INSERT PISTON INTO CYLINDER****4. INSTALL PUSH ROD ASSEMBLY WITH SNAP RING**

**5. INSTALL RESERVOIR TANK**

- Install the reservoir tank and a new grommet.
- Using a pin punch and hammer, drive in the slotted spring pin.

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MASTER CYLINDER INSTALLATION

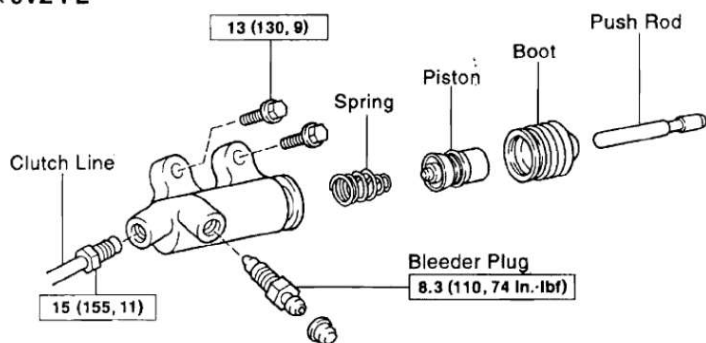
CL06T-02

Installation is in the reverse order of removal.

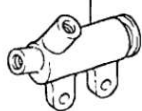
HINT: After installation, bleed system and adjust clutch pedal. (See page CL-4)

CLUTCH RELEASE CYLINDER COMPONENTS

CL06C-16

R150 T/M × 5VZ-FE**R150 T/M × 1KZ-T,
1KZ-TE****G52 T/M × 3L**

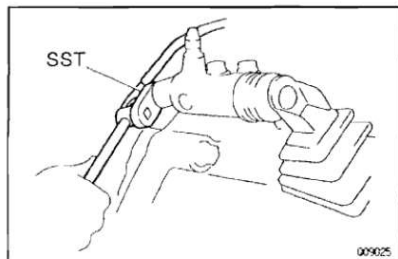
Release Cylinder Body

**W56 T/M × 3RZ-F,
3RZ-FE**

N·m (kgf·cm, ft·lbf) : Specified torque

009980

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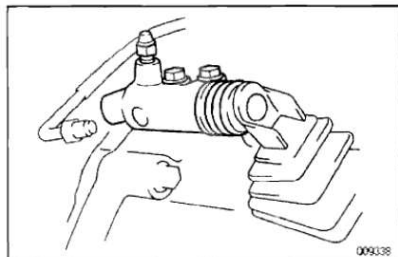
RELEASE CYLINDER REMOVAL

1. DISCONNECT CLUTCH LINE

Using SST, disconnect the line. Use a container to catch the fluid.

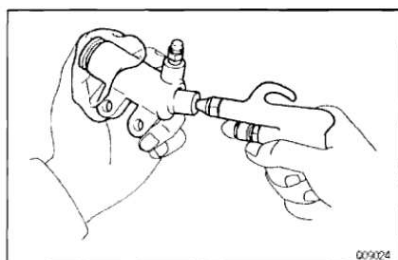
SST 09023-00100

Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)



2. REMOVE 2 BOLTS AND PULL OUT RELEASE CYLINDER

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

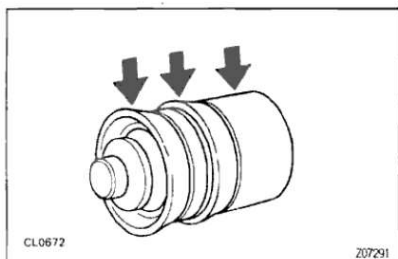


RELEASE CYLINDER DISASSEMBLY

1. PULL OUT BOOT WITH PUSH ROD

2. REMOVE PISTON

Using compressed air, remove the piston with the spring from the cylinder.



RELEASE CYLINDER ASSEMBLY

1. COAT PISTON WITH LITHIUM SOAP BASE GLYCOL GREASE, AS SHOWN

2. INSTALL PISTON WITH SPRING INTO CYLINDER

3. INSTALL BOOT WITH PUSH ROD TO CYLINDER

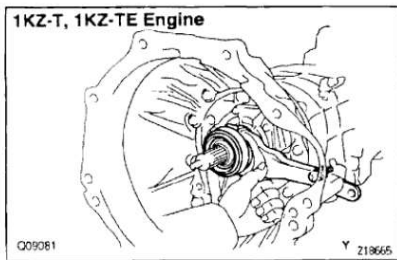
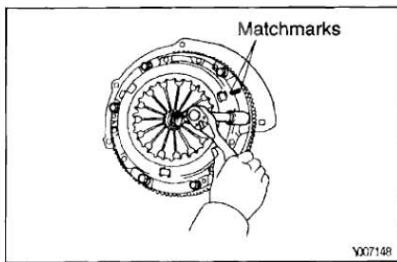
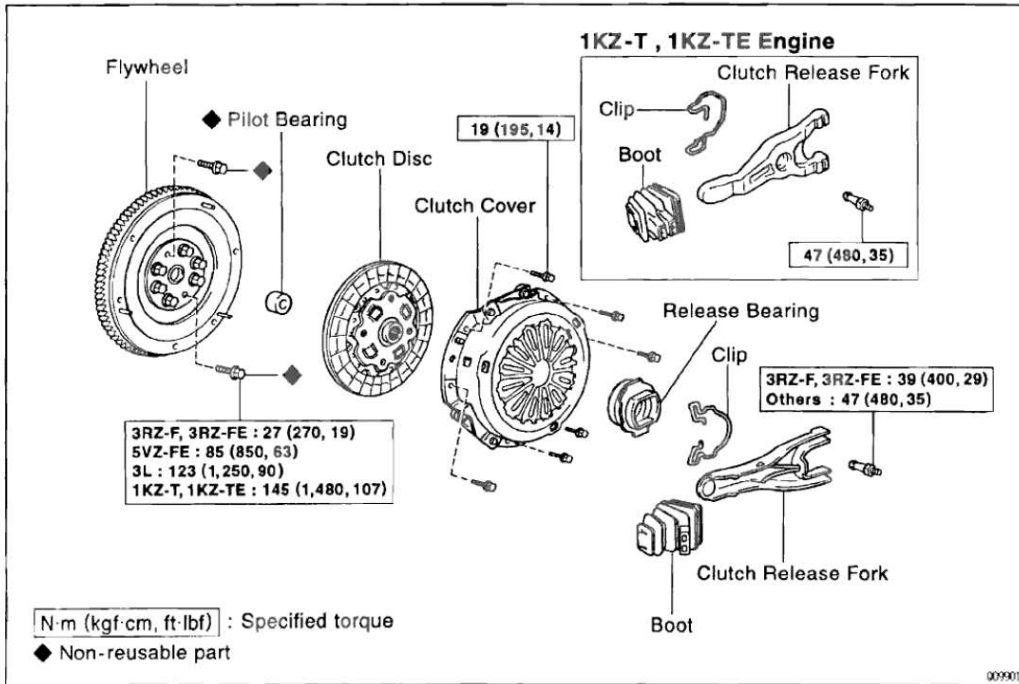
RELEASE CYLINDER INSTALLATION

Installation is in the reverse order of removal.

HINT: After installation, bleed clutch system.

CLUTCH UNIT COMPONENTS

CLOCK-18



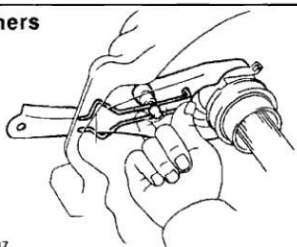
CLUTCH UNIT REMOVAL

CLOCK-01

1. **REMOVE TRANSMISSION FROM ENGINE**
 R150 x 5VZ-FE: See page MT-10
 R150 x 1KZ-T, 1KZ-TE: See page MT-5
 G52 : See page MT-5
 W56 : See page MT-6
2. **REMOVE CLUTCH COVER AND DISC**
 - (a) Place matchmarks on the flywheel and clutch cover.
 - (b) Loosen each set bolt one turn at a time until spring tension is released.
 - (c) Remove the set bolts, and pull off the clutch cover with the clutch disc.

NOTICE: Do not drop the clutch disc.
3. **REMOVE BOOT, RELEASE BEARING AND FORK FROM TRANSMISSION**
 Remove the boot and release bearing together with the fork and then separate them.

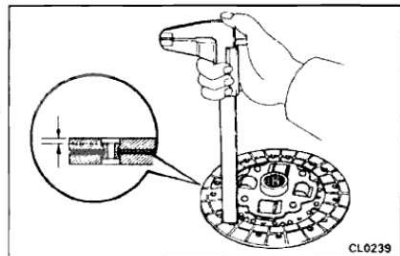
Others



Q06637

Z19663

CL



CL0239

CLUTCH PARTS INSPECTION

CL02X-06

1. INSPECT CLUTCH DISC FOR WEAR OR DAMAGE

Using calipers, measure the rivet head depth.

Minimum rivet depth: 0.3 mm (0.012 in.)

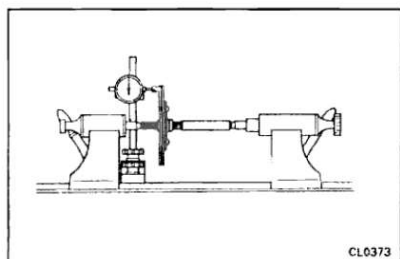
If it is not as specified, replace the clutch disc.

2. INSPECT CLUTCH DISC RUNOUT

Using a dial indicator, check the disc runout.

Maximum runout: 0.8 mm (0.031 in.)

If it is not as specified, replace the clutch disc.



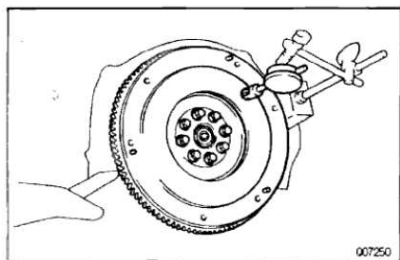
CL0373

3. INSPECT FLYWHEEL RUNOUT

Using a dial indicator, check the flywheel runout.

Maximum runout: 0.1 mm (0.004 in.)

If it is not as specified, replace the clutch disc.

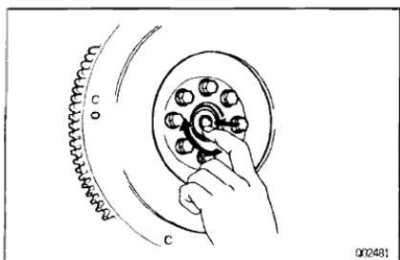


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4. INSPECT PILOT BEARING

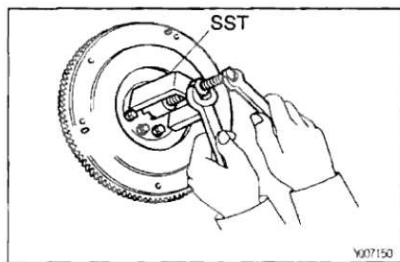
Turn the bearing by hand while applying force in the rotation direction.

If the bearing sticks or has much resistance, replace the pilot bearing.

HINT: The bearing is permanently lubricated and requires no clearing or lubrication.

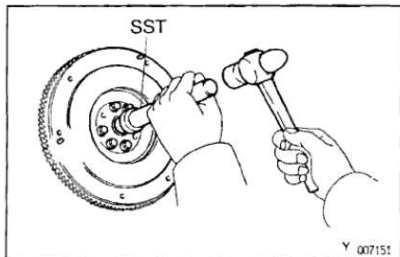
000491

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**5. IF NECESSARY, REPLACE PILOT BEARING**

- (a) Remove the 2 bolts at diametrically opposite points.
- (b) Using SST, remove the pilot bearing.
SST 09303–35011

CL



- (c) Using SST and a hammer, install a new pilot bearing.
SST 09304–30012

HINT: After assembling the pilot bearing to the hub, install sure that it rotates smoothly.

- (d) Install 2 new bolts.

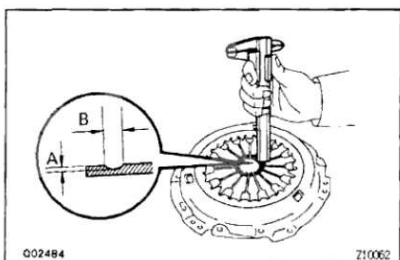
Torque:

3RZ–F, 3RZ–FE: 27 N·m (270 kgf·cm, 19 ft·lbf)

5VZ–FE: 85 N·m (850 kgf·cm, 63 ft·lbf)

3L: 123 N·m (1,250 kgf·cm, 90 ft·lbf)

1KZ–T, 1KZ–TE: 145 N·m (1,480 kgf·cm, 107 ft·lbf)

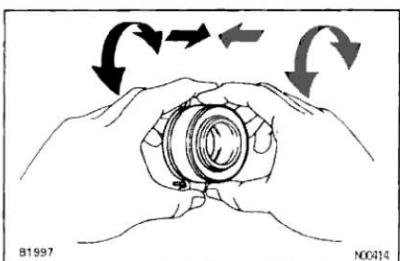
**6. INSPECT DIAPHRAGM SPRING FOR WEAR**

Using calipers, measure the diaphragm spring for depth and width of wear.

Maximum depth: A: 0.6 mm (0.024 in.)

Maximum width: B: 5.0 mm (0.197 in.)

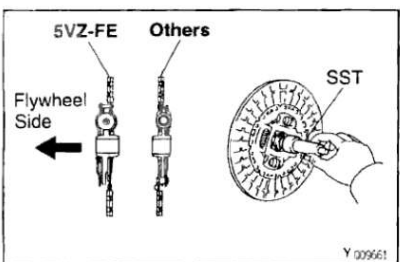
If it is not as specified, replace the clutch cover.

**7. INSPECT RELEASE BEARING**

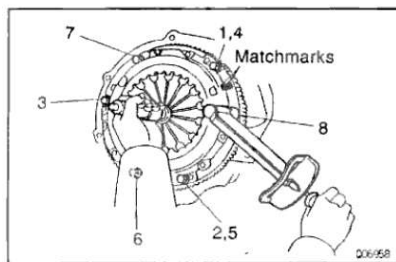
Turn the bearing by hand while applying force in the axial direction.

HINT: The bearing is permanently lubricated and requires no cleaning or lubrication.

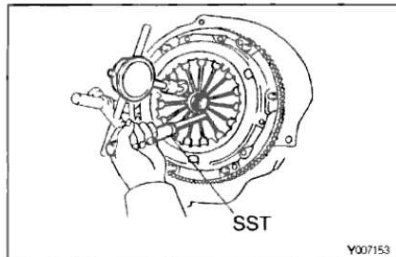
If necessary, replace the release bearing.

**CLUTCH UNIT INSTALLATION****1. INSTALL CLUTCH DISC AND CLUTCH COVER ON FLYWHEEL**

- (a) Insert SST in the clutch disc, and then set them.
SST 09301–00110



- (b) Align the matchmarks on the clutch cover and flywheel.
- (c) Torque the 6 bolts on the clutch cover in the order shown.
Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)
HINT: Temporarily tighten the No.1 and No.2 bolts.



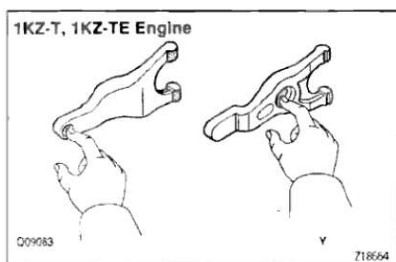
2. CHECK DIAPHRAGM SPRING TIP ALIGNMENT

Using a dial indicator with roller instrument, check the diaphragm spring tip alignment.

Maximum non-alignment: 0.5 mm (0.020 in.)

If the alignment is not as specified, with SST, adjust the diaphragm spring tip alignment.

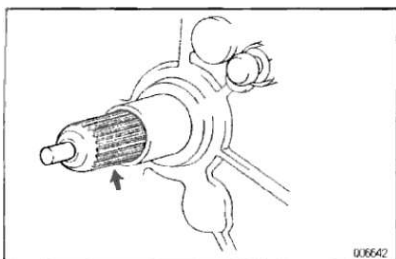
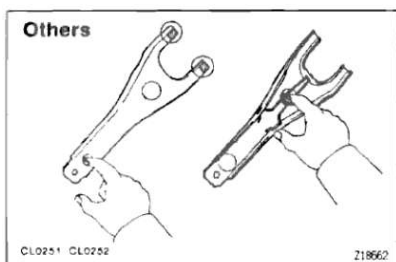
SST 09333-00013



3. APPLY MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE (NLGI NO.2)

- (a) Apply release hub grease to the these parts.

- Release fork and hub contact point
- Release fork and push rod contact point
- Release fork pivot point



- (b) Apply clutch spline grease.

- Clutch disc spline

HINT: Recommended grease part number 08887-01706 (100 g).

4. INSTALL BOOT, RELEASE BEARING AND FORK TO TRANSMISSION

Install the boot and bearing to the release fork, and then install them to the transmission.transmission.

- 5. INSTALL TRANSMISSION TO ENGINE**
R150 x 5VZ—FE: See page MT—10
R150 x 1KZ—T, 1KZ—TE: See page MT—5
G52 : See page MT—5
W56 : See page MT—6

CL

SERVICE SPECIFICATIONS

SERVICE DATA

88037-02

Pedal height from floor panel	RHD	212.6–222.6 mm (8.370–8.764 in.)
	LHD	215.8–225.8 mm (8.495–8.889 in.)
Pedal freeplay		5.0–15.0 mm (0.197–0.591 in.)
Push rod play at pedal top		1.0–5.0 mm (0.039–0.197 in.)
Clutch release point from pedal full stroke end position		25 mm (0.98 in.) or more
Slotted spring pin protrusion		1.5–3.5 mm (0.059–0.138 in.)
Disc rivet head depth	Min.	0.3 mm (0.012 in.)
Disc runout	Max.	0.8 mm (0.031 in.)
Flywheel runout	Max.	0.1 mm (0.004 in.)
Diaphragm spring finger wear	Max. depth	0.6 mm (0.024 in.)
Diaphragm spring finger wear	Max. width	5.0 mm (0.197 in.)
Diaphragm spring tip non-alignment	Max.	0.5 mm (0.020 in.)

TORQUE SPECIFICATIONS

88038-02

Part tightened	N·m	kgf·cm	ft·lbf
Clutch line union	15	155	11
Master cylinder installation nut	12	120	9
Bleeder plug	11	110	8
Release cylinder installation bolt	13	130	9
Clutch cover x Flywheel	19	195	14
Release fork support	47	480	35
Flywheel set bolt	3RZ—F, 3RZ—FE	27	270
	5VZ—FE	85	850
	3L	123	1,250
	1KZ—T, 1KZ—TE	145	1,480
			107

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