TROUBLESHOOTING

CL03Y-02

PROBLEM SYMPTOMS TABLE

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.

Symptom	Suspect Area	See page
Clutch grabs/chatters	1. Engine mounting (Loosen)	-
	2. Clutch disc (Runout is excessive)	CL-15 CL-20
	3. Clutch disc (Oily)	CL-15 CL-20
	4. Clutch disc (Worn out)	CL-15 CL-20
	5. Clutch disc (Damaged torsion rubber)	CL-15 CL-20
	6. Clutch disc (Glazed)	CL-15 CL-20
	7. Diaphragm spring (Out of tip alignment)	CL-19 CL-25
Clutch pedal spongy	1. Clutch line (Air in line)	-
	2. Master cylinder cup (Damaged)	CL-5
	3. Release cylinder cup (Damaged)	CL-10
Clutch noisy	1. Release bearing (Worn, dirty or damaged)	CL-15 CL-20
	2. Pilot bearing (Worn or damaged)	CL-15 CL-20
	3. Input shaft bearing (Worn, dirty or damaged)	-
	4. Clutch disc torsion rubber (Damaged)	CL-15 CL-20

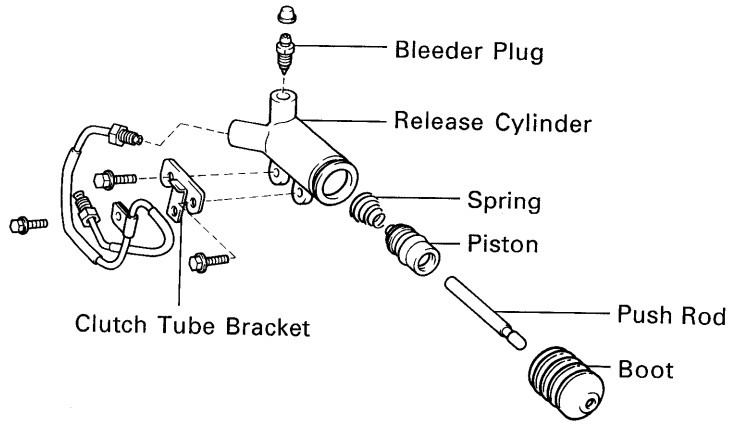
Clutch slips	1. Clutch pedal (Freeplay out of adjustment)	CL-3
	2. Clutch disc (Oily)	CL-15 CL-20
	3. Clutch disc (Worn out)	CL-15 CL-20
	4. Diaphragm spring (Damaged)	CL-15 CL-20
	5. Pressure plate (Distortion)	CL-15 CL-20
	6. Flywheel (Distortion)	-
Clutch does not disengage	1. Clutch pedal (Freeplay out of adjustment)	CL-3
	2. Clutch line (Air in line)	-
	3. Master cylinder cup (Damaged)	CL-5
	4. Release cylinder cup (Damaged)	CL-10
	5. Input shaft bearing (Worn, dirty or damaged)	-
	6. Pilot bearing (Worn or damaged)	CL-15 CL-20
	7. Clutch disc (Out of true)	CL-15 CL-20
	8. Clutch disc (Runout is excessive)	CL-15 CL-20
	9. Clutch disc (Lining broken)	CL-15 CL-20
	10. Clutch disc (Dirty or burred)	CL-15 CL-20
	11. Clutch disc (Oily)	CL-15 CL-20
	12. Clutch disc (Lack of spline grease)	CL-19 CL-25
	13. Diaphragm spring (Damaged)	CL-15 CL-20
	14. Diaphragm spring (Out of tip alignment)	CL-19 CL-25
	15. Pressure plate (Distortion)	CL-15 CL-20

CLUTCH RELEASE CYLINDER

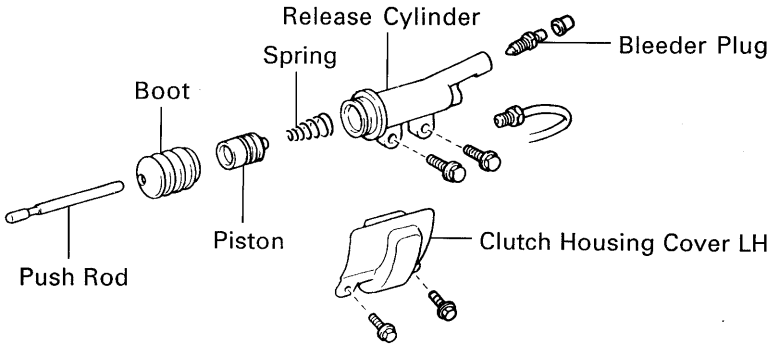
CL045-02

COMPONENTS

2JZ-GE:



2JZ-GTE:

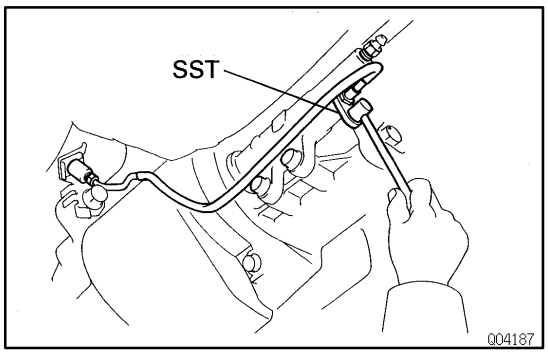


Q06259
Q06261

Z16902

CL0AB-01

REMOVAL



1. 2JZ - GTE:
REMOVE CLUTCH HOUSING COVER LH

Remove the 2 bolts.

Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

2. 2JZ - GTE:
DISCONNECT CLUTCH LINE

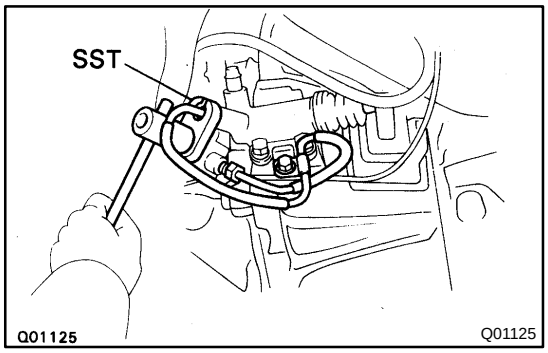
Using SST, disconnect the clutch line union. Use a container to catch the fluid.

SST 09023-00100

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

3. 2JZ - GTE:
REMOVE 2 BOLTS AND PULL OUT RELEASE CYLINDER

Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

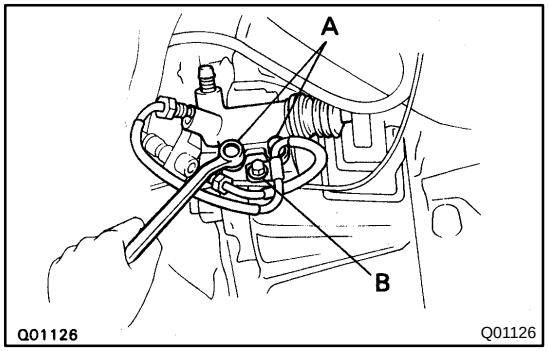


4. 2JZ - GE:
DISCONNECT CLUTCH LINE

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

SST 09023-00100

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



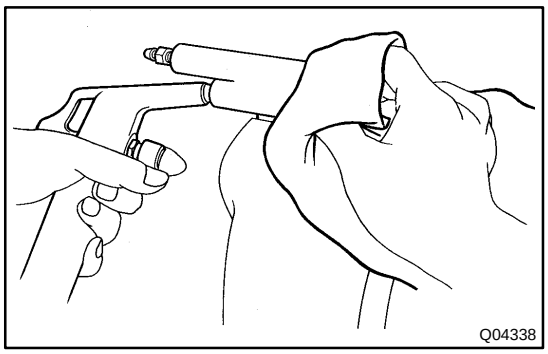
5. 2JZ - GE:
REMOVE RELEASE CYLINDER WITH 3 BOLTS

Torque:

Bolt A: 12 N·m (120 kgf·cm, 9 ft·lbf)

Bolt B: 4.9 N·m (50 kgf·cm, 43 in.·lbf)

CL047-01



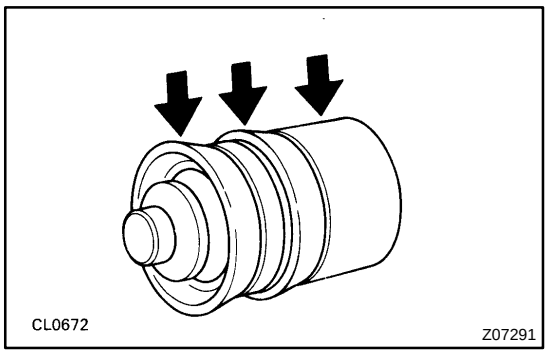
DISASSEMBLY

1. PULL OUT PUSH ROD WITH BOOT

2. REMOVE PISTON WITH SPRING

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

CL048-01



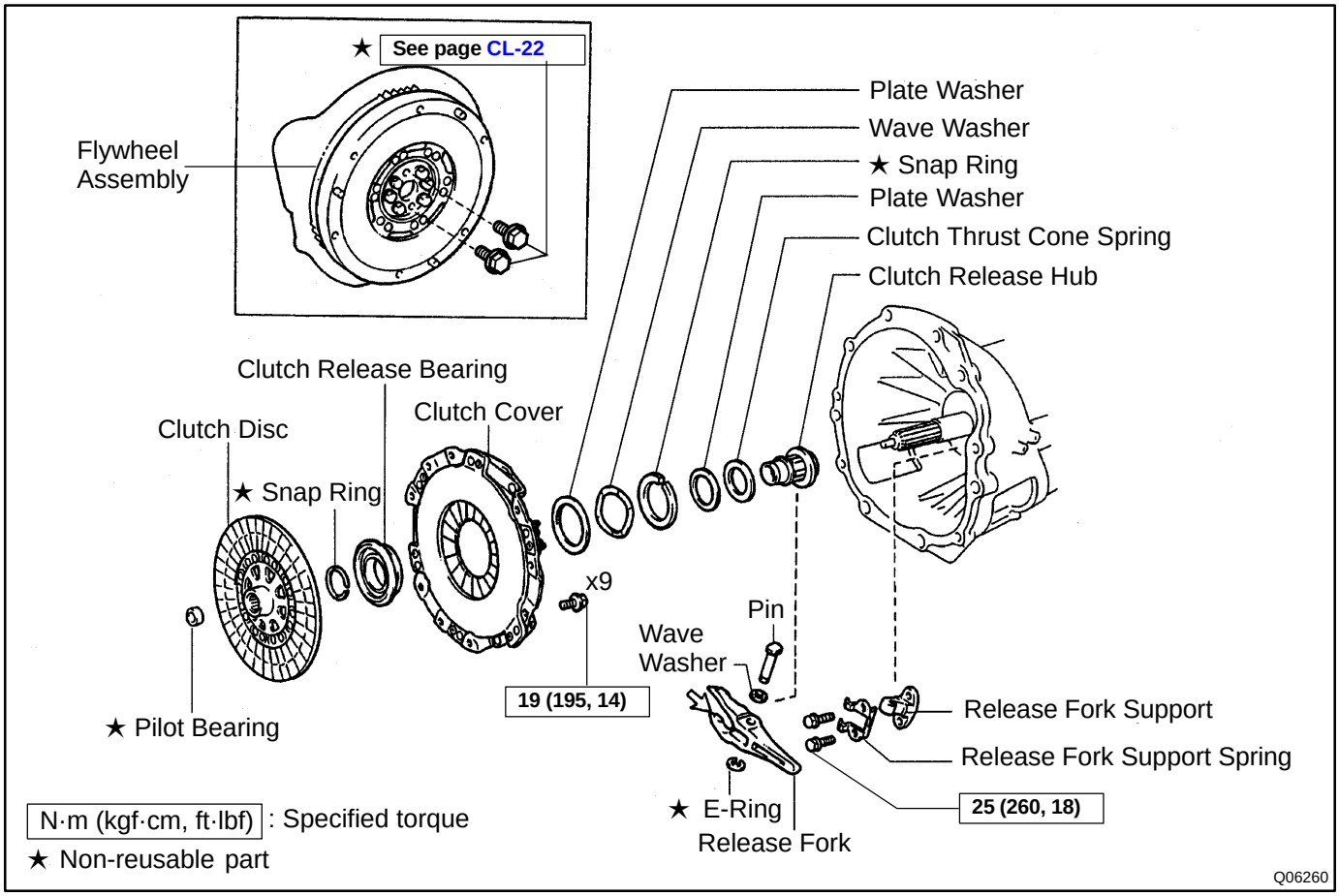
REASSEMBLY

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**

CLUTCH UNIT (2JZ-GTE)

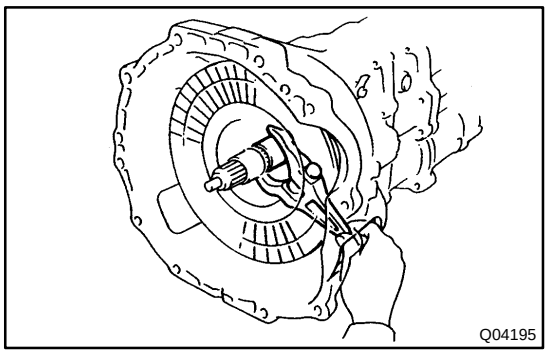
CL04A-03

COMPONENTS



CL04B-02

REMOVAL


Q04195

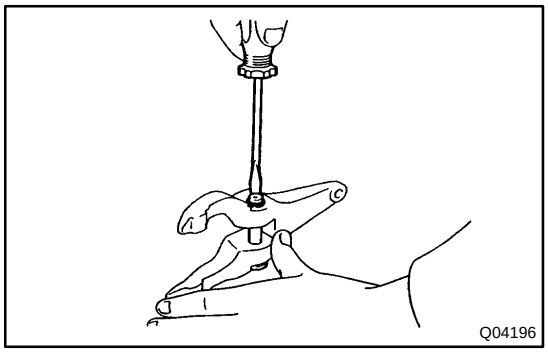
1. REMOVE TRANSMISSION FROM ENGINE
(See page MT-2)

HINT:

Do not drain the transmission oil.

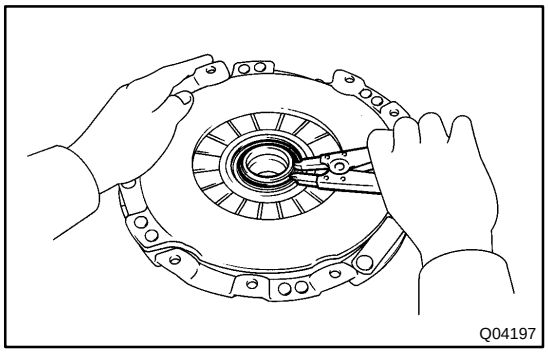
2. REMOVE RELEASE FORK ASSEMBLY

(a) Remove the release fork assembly from the left side of clutch housing service hole.


Q04196

(b) Remove the E-ring from the release fork.

(c) Remove the pin and wave washer from the release fork.


Q04197

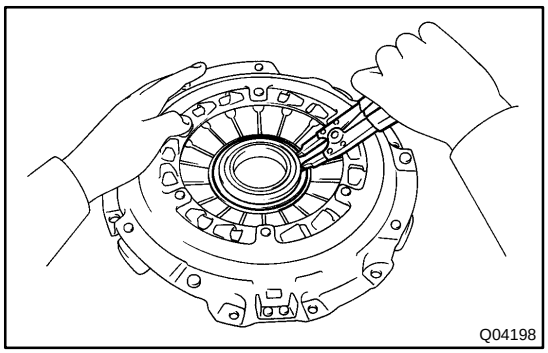
3. REMOVE CLUTCH DISC

4. REMOVE CLUTCH COVER ASSEMBLY

5. REMOVE CLUTCH RELEASE BEARING HUB

(a) Using a snap ring expander, remove the snap ring.

(b) Remove the release bearing hub, thrust cone spring and plate washer.


Q04198

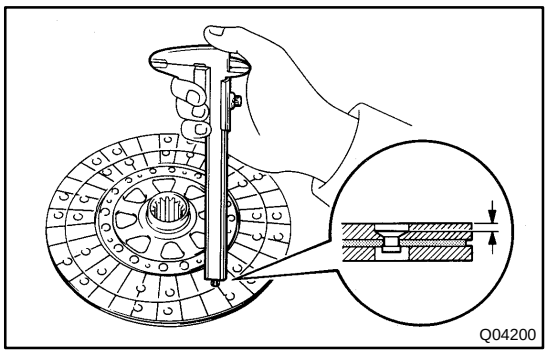
6. REMOVE CLUTCH RELEASE BEARING

(a) Using a snap ring expander, remove the snap ring.

(b) Remove the release bearing, wave washer and plate washer.

CL04C-02

INSPECTION

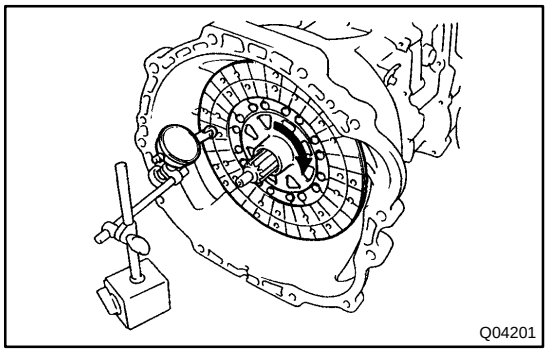


1. INSPECT CLUTCH DISC FOR WEAR OR DAMAGE

Using calipers, measure the rivet head depth.

Maximum rivet depth: 0.3 mm (0.012 in.)

If necessary, replace the clutch disc.

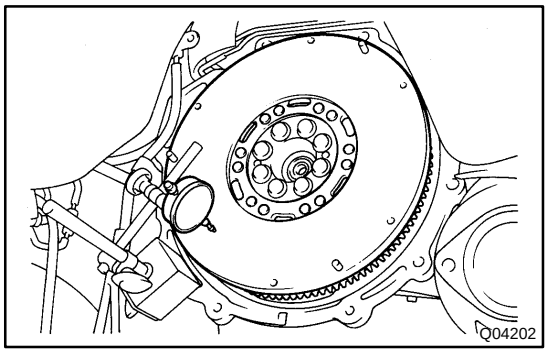


2. INSPECT CLUTCH DISC RUNOUT

Using a dial indicator, check the disc runout.

Maximum runout: 0.8 mm (0.031 in.)

If the runout is excessive, replace the clutch disc.

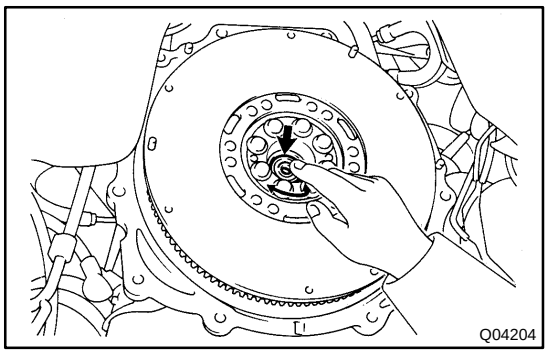


3. INSPECT FLYWHEEL RUNOUT

Using a dial indicator, check the flywheel runout.

Maximum runout: 0.1 mm (0.004 in.)

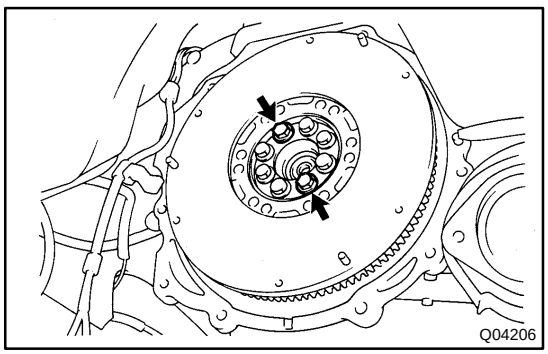
If the runout is excessive, replace the flywheel.



4. INSPECT PILOT BEARING

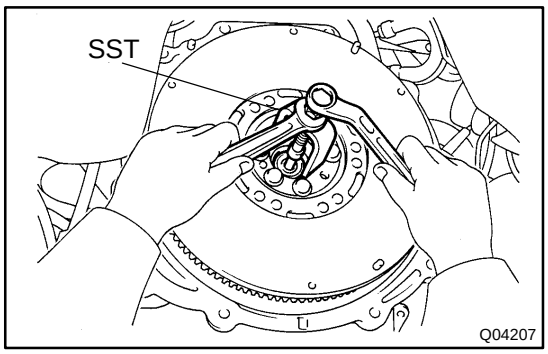
Turn the bearing by hand while applying force in the axial direction.

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

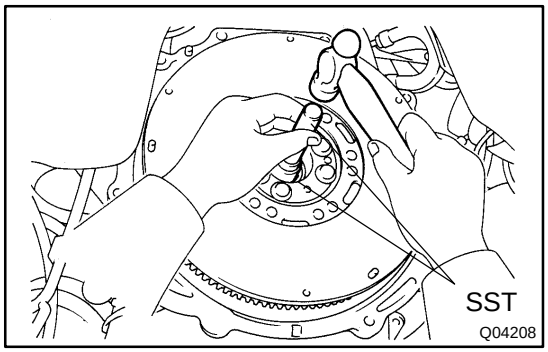


5. IF NECESSARY, REPLACE PILOT BEARING

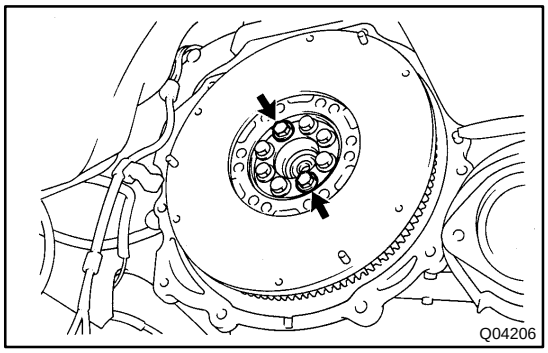
(a) Remove the 2 bolts at the diametrically opposite points.



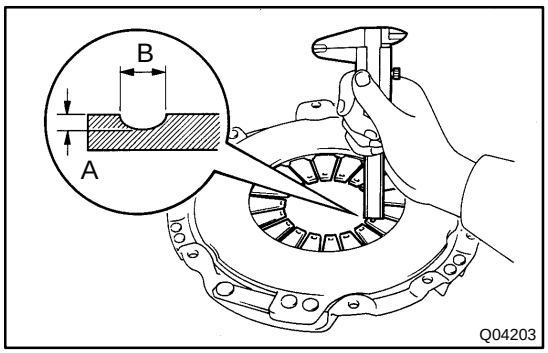
(b) Using SST, remove the pilot bearing.
SST 09303-3501 1



(c) Using SST and a hammer, drive in a new pilot bearing.
SST 09301-001 10



(d) Install 2 new bolts.
(e) First, torque the 2 bolts uniformly a little at a time.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)
(f) Then tighten the 2 bolts an additional 80 - 100°.

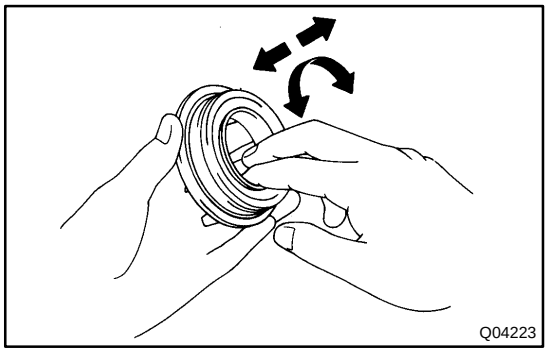


6. INSPECT DIAPHRAGM SPRING FOR WEAR

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

Maximum:
Depth A: 0.6 mm (0.024 in.)
Width B: 5.0 mm (0.197 in.)

If necessary, replace the clutch cover.



7. INSPECT RELEASE BEARING

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

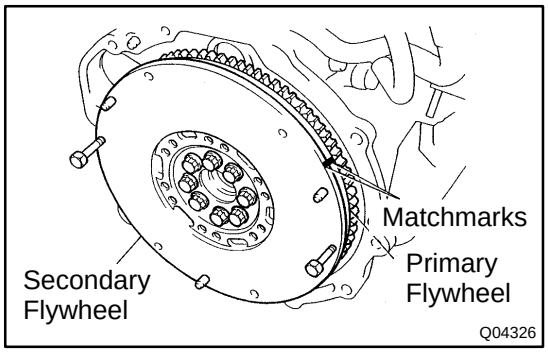
HINT:

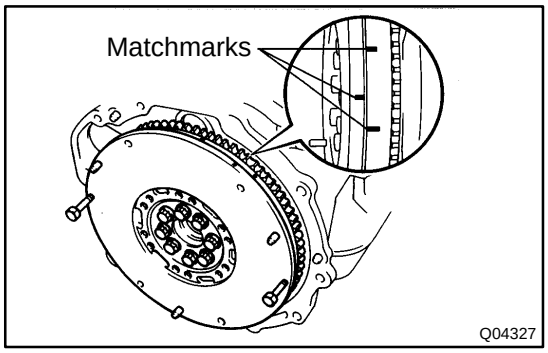
The bearing is permanently lubricated and requires no cleaning or lubrication.

If a problem is found, replace the bearing together with the hub.

8. INSPECT FLYWHEEL DAMPER FOR GREASE LEAKAGE

If grease has sprayed onto the clutch housing, replace the flywheel assembly.





9. INSPECT FLYWHEEL DAMPER ROTATIONAL FREEPLAY

(a) Install the 2 bolts to the secondary flywheel at diametrically opposite positions.

(b) Holding both the bolts, and turn the secondary flywheel clockwise until it stops.

(c) Put matchmarks on the primary and secondary flywheels at this position.

(d) Then rotate the primary flywheel counterclockwise by hand until it stops.

(e) Put matchmarks on the primary flywheel at this position.

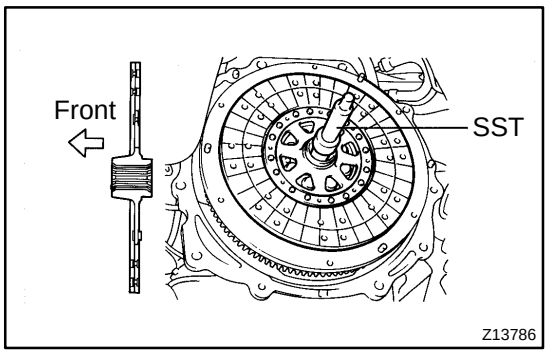
(f) Measure the circumferential length between the 2 matchmarks on the secondary flywheel.

Standard: 105 mm (4.134 in.)

(g) Repeat the previous steps (d) to (f) 4 times and if the measurement is greater than the maximum length replace the flywheel assembly (See page EM-88).

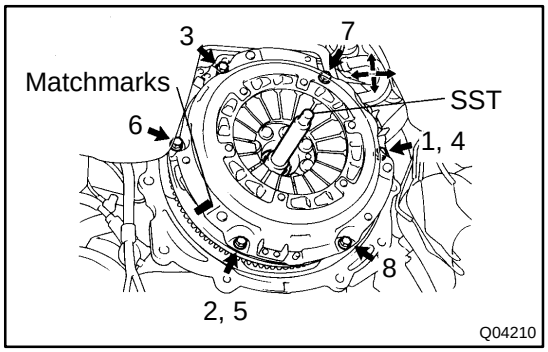
CL04D-01

INSTALLATION



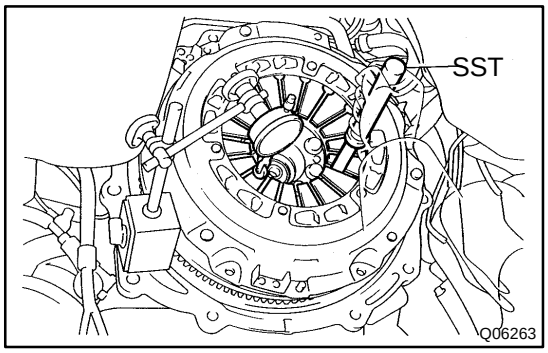
1. INSTALL CLUTCH DISC AND COVER ON FLYWHEEL

(a) Insert SST in the clutch disc, then set them and the cover in position.
SST 09301-001 10



(b) Align the matchmarks on the clutch cover and flywheel.
(c) Tighten the bolts evenly and gradually while pushing the SST. Make several passes around the cover until it is snug.
(d) Torque the 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.



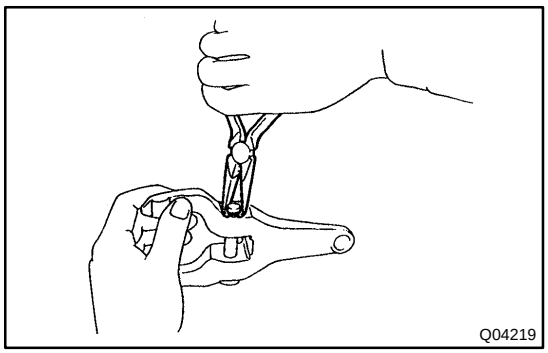
2. CHECK DIAPHRAGM SPRING TIP ALIGNMENT

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

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

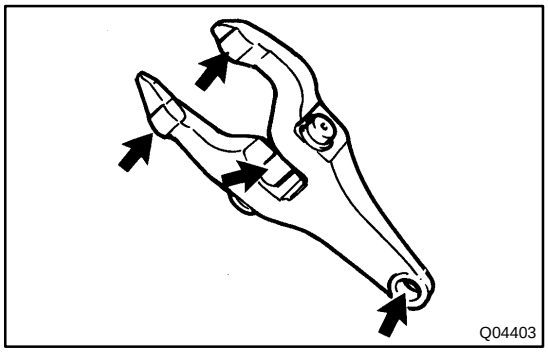
If the alignment is not as specified, use SST to adjust the diaphragm spring tip alignment.
SST 09333-00013

3. REMOVE CLUTCH COVER AND CLUTCH DISC



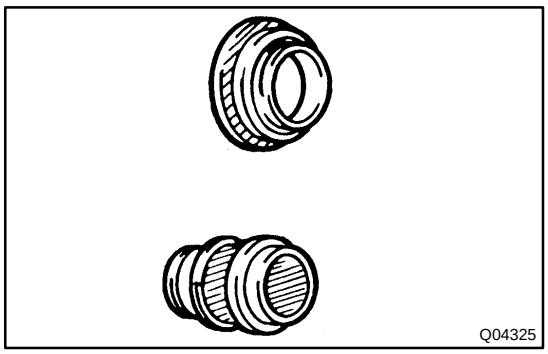
4. INSTALL CLUTCH RELEASE FORK

(a) Install the wave washer and pin to release fork.
(b) Install a new E-ring.

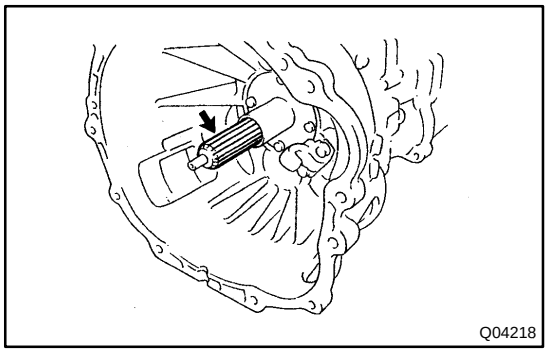


5. APPLY MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE (NLGI NO.2)

(a) Apply release hub grease to these parts:
- ★ Release fork and hub contact point
- ★ Release fork and push rod contact point
- ★ Release fork pivot point

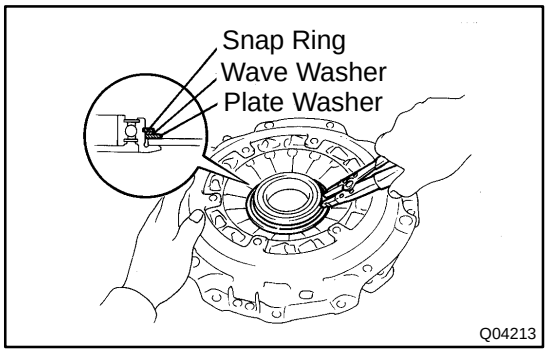


★ Release bearing hub inside groove
★ Release bearing front surface



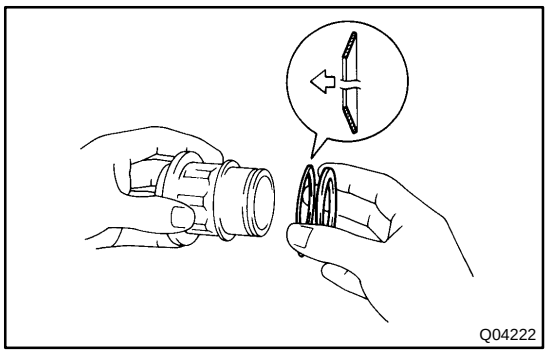
(b) Apply clutch spline grease.
★ Clutch disc spline

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



6. INSTALL CLUTCH RELEASE BEARING

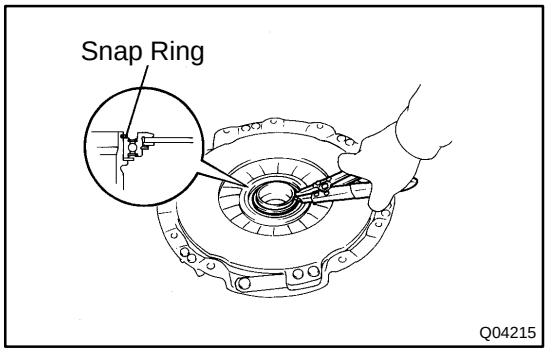
(a) Install the release bearing hub, wave washer and plate washer.
(b) Using a snap ring expander, install a new snap ring.



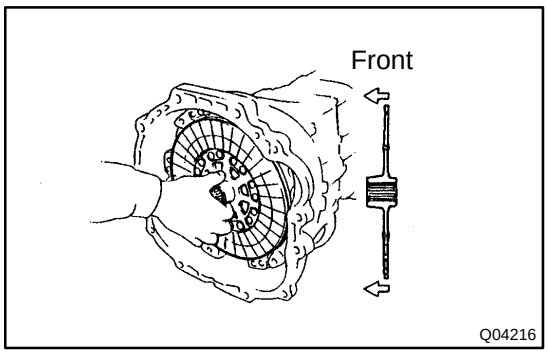
7. INSTALL CLUTCH RELEASE BEARING HUB

(a) Install the thrust cone washer and plate washer to release bearing hub.

NOTICE:
Install the thrust cone washer in the correct direction.



(b) Install the release bearing hub to release bearing.
(c) Using a snap ring expander, install a new snap ring.

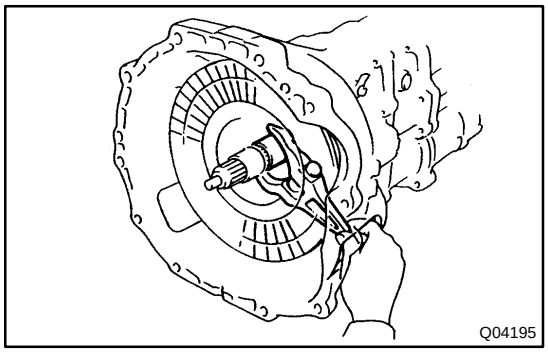


8. INSTALL CLUTCH COVER ASSEMBLY

9. INSTALL CLUTCH DISC

NOTICE:

Install the clutch disc in the correct direction.

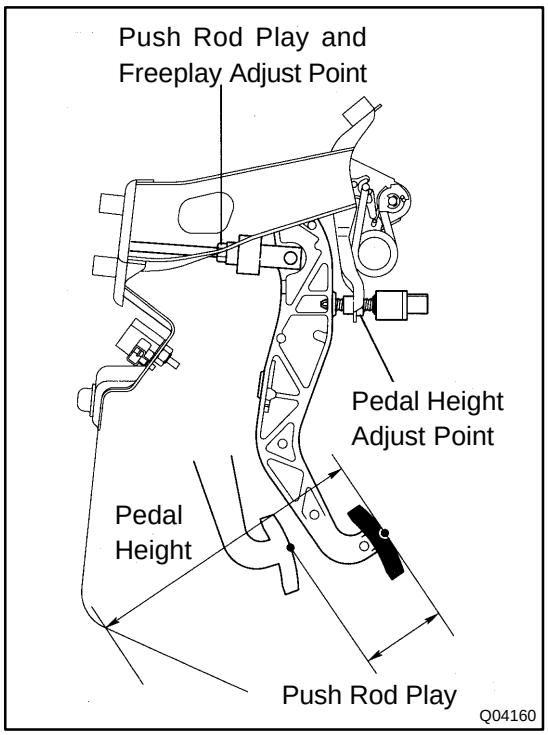


10. INSTALL RELEASE FORK ASSEMBLY

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

11. INSTALL TRANSMISSION TO ENGINE

(See page MT-2)



CLUTCH PEDAL

INSPECTION

CL03Z-01

1. CHECK PEDAL HEIGHT

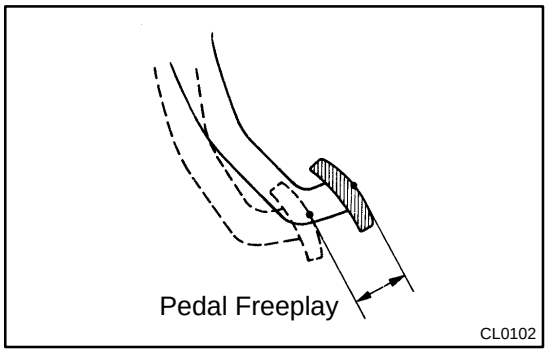
Pedal height from asphalt sheet:
146.2 - 156.2 mm (5.76 - 6.15 in.)

2. IF NECESSARY, ADJUST PEDAL HEIGHT

Loosen the lock nut and clutch switch until the height is correct. Tighten the lock nut.

HINT:

Before rotating the clutch switch for pedal height adjustment, disconnect the clutch switch connector.



3. CHECK PEDAL FREEPLAY AND PUSH ROD PLAY

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

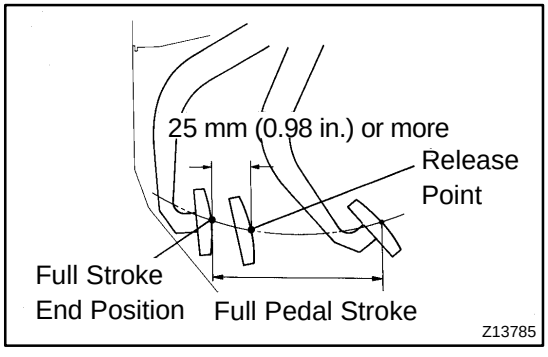
Pedal freeplay: 5.0 - 15.0 mm (0.197 - 0.591 in.)

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

(a) Loosen the lock nut and turn the push rod until the free-play and push rod play are correct.
(b) Tighten the lock nut.
(c) After adjusting the pedal freeplay, check the pedal height.



5. INSPECT FULL PEDAL STROKE

Full pedal stroke: 132.0 - 138.0 mm (5.20 - 5.43 in.)

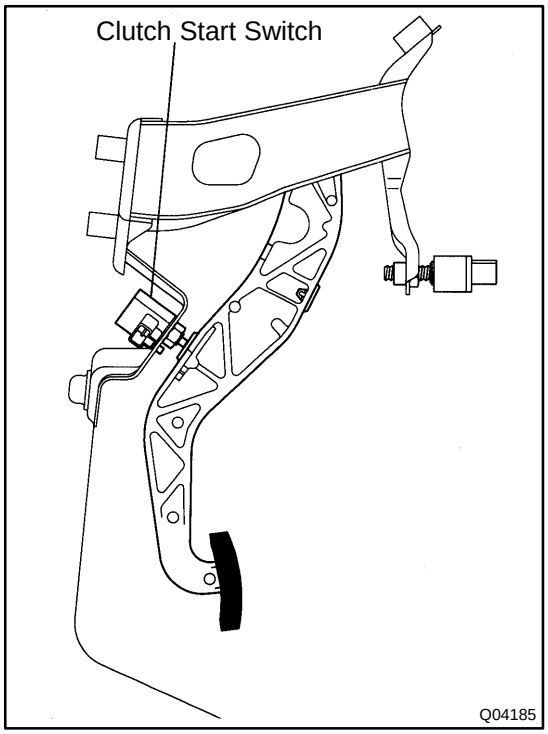
6. INSPECT CLUTCH RELEASE POINT

(a) Pull the parking brake lever and install wheel stopper.
(b) Start the engine and idle the engine.
(c) Without depressing the clutch pedal, slowly shift the shift lever into the reverse position until the gears contact.
(d) 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 is not as specified, do the following operation.

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

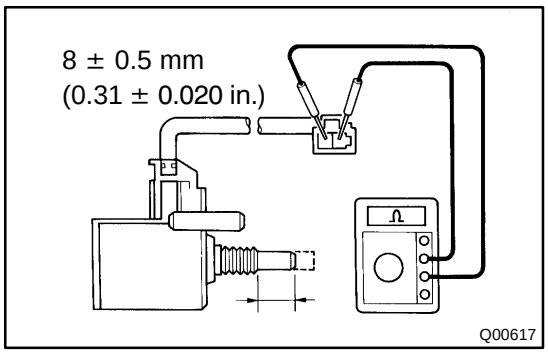


7. CHECK CLUTCH START SYSTEM

(a) Check that the engine does not start when the clutch pedal is released.

(b) Check that the engine starts when the clutch pedal is fully depressed.

If necessary, adjust or replace the clutch start switch.



8. INSPECT CONTINUITY OF CLUTCH START SWITCH

(a) Check that there is continuity between the terminals when the switch is ON (pushed).

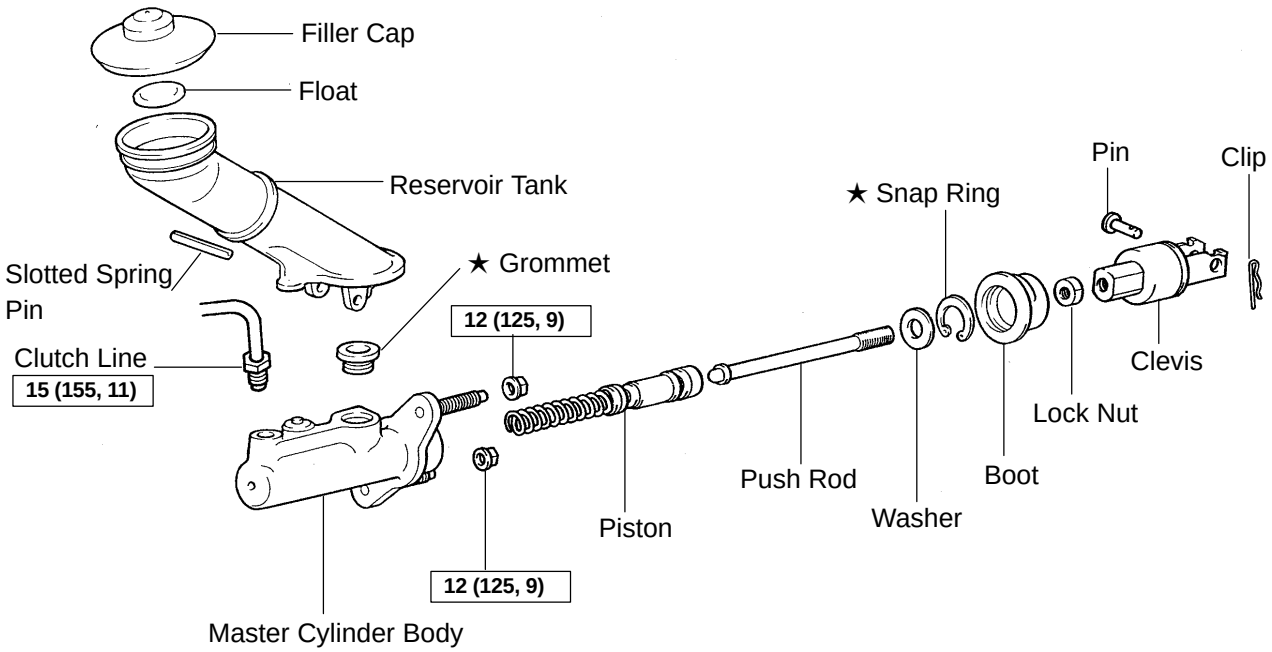
(b) Check that there is no continuity between the terminals when the switch is OFF (free).

If continuity is not as specified, replace the switch.

CLUTCH MASTER CYLINDER

COMPONENTS

CL040-01

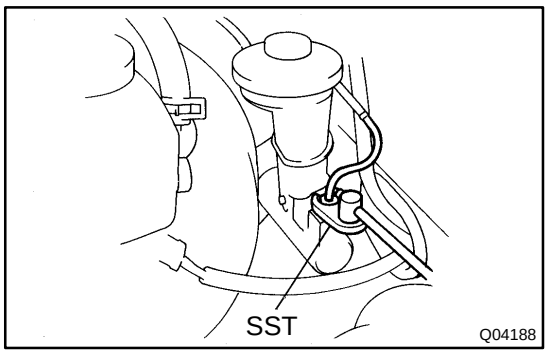


N·m (kgf·cm, ft·lbf) : Specified torque

★ Non-reusable part

Z16903

CL041-01



REMOVAL

1. DRAIN OUT FLUID WITH SYRINGE

2. DISCONNECT CLUTCH LINE UNION

Using SST, disconnect the union nut.

SST 09023-00100

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

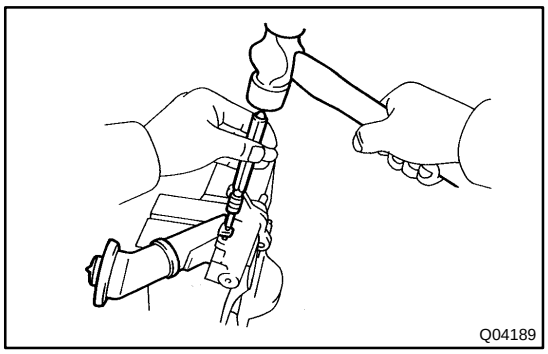
3. REMOVE CLIP AND PIN

4. REMOVE 2 MOUNTING NUTS AND PULL OUT MASTER CYLINDER

Torque: 12 N·m (125 kgf·cm, 9 ft·lbf)

CL042-01

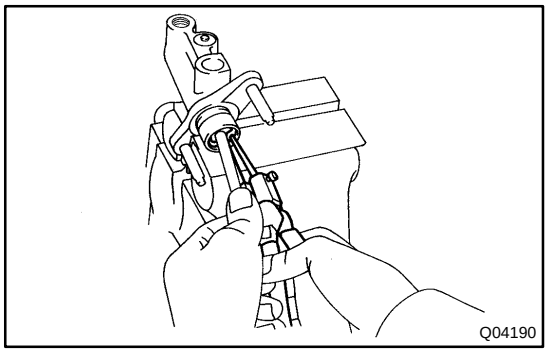
DISASSEMBLY



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

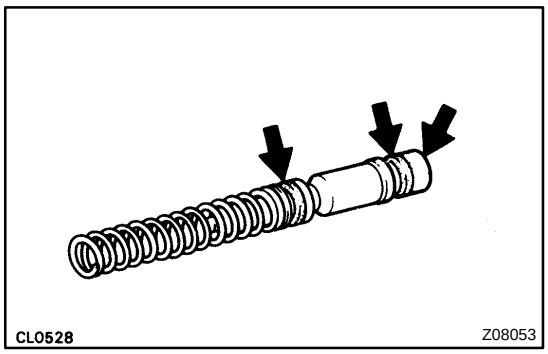
(a) Pull back the boot, and using snap ring pliers, remove the snap ring.

(b) Pull out the push rod.

3. REMOVE PISTON

CL044-01

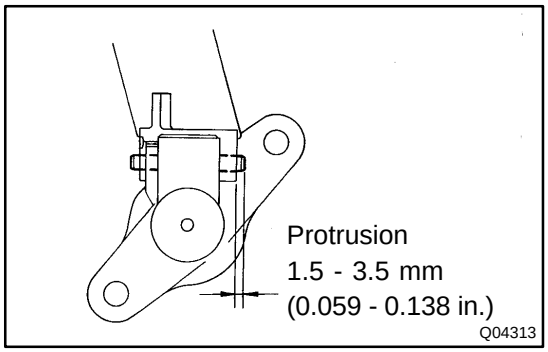
REASSEMBLY



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

2. INSERT PISTON INTO CYLINDER

3. INSTALL PUSH ROD ASSEMBLY WITH NEW SNAP RING



4. INSTALL RESERVOIR TANK

(a) Install the reservoir tank and a new grommet.

(b) Using a pin punch and hammer, drive in the slotted spring pin.

TROUBLESHOOTING

MT06M-02

PROBLEM SYMPTOMS TABLE

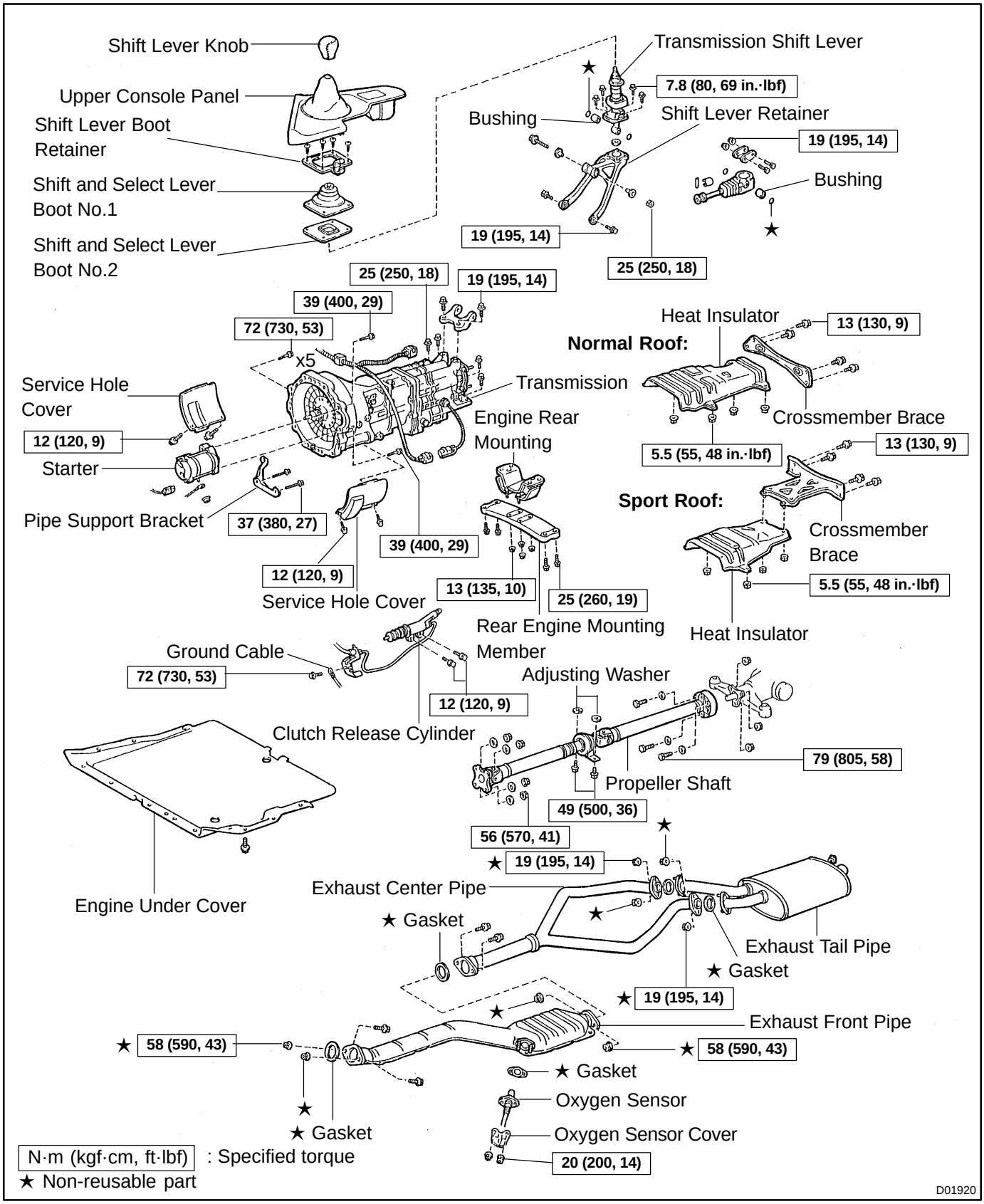
Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

Symptom	Suspect Area	See page
Noise	1. Flywheel damper	CL-17 CL-22
	2. Oil (Level low)	MT-3
	3. Oil (Wrong)	MT-3
	4. Gear (Worn or damaged)	-
	5. Bearing (Worn or damaged)	-
Oil leakage	1. Oil (Level too high)	MT-3
	2. Gasket (Damaged)	-
	3. Oil seal (Worn or damaged)	MT-7
	4. O-Ring (Worn or damaged)	MT-2 MT-7
Hard to shift or will not shift	1. Synchronizer ring (Worn or damaged)	-
	2. Shift key spring (Damaged)	-
Jumps out of gear	1. Locking ball spring (Damaged)	-
	2. Shift fork (Worn)	-
	3. Gear (Worn or damaged)	-
	4. Bearing (Worn or damaged)	-

MANUAL TRANSMISSION UNIT

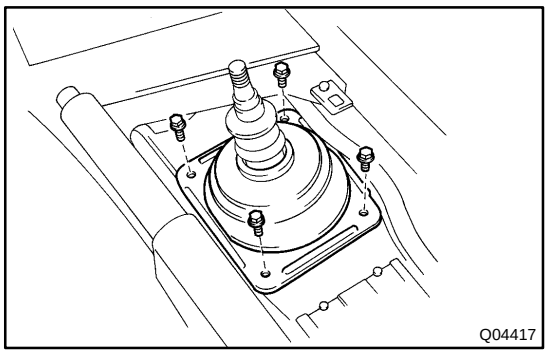
MT06N-01

COMPONENTS



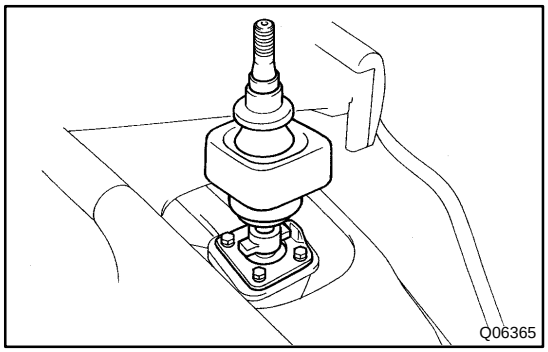
MT06O-01

REMOVAL



1. REMOVE UPPER CONSOLE PANEL, SHIFT LEVER BOOT RETAINER AND SHIFT AND SELECT LEVER BOOTS NO.1 AND NO.2

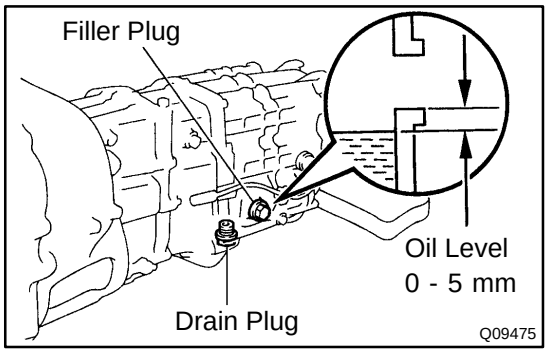
(a) Remove the shift lever knob.
(b) Using a screwdriver, pry out the upper console panel.
(c) Remove the 4 bolts and boot retainer.
(d) Remove the shift and select lever boots No.1 and No.2.



2. REMOVE 4 TRANSMISSION SHIFT LEVER SET BOLTS
Torque: 7.8 N·m (80 kgf·cm, 69 in.·lbf)

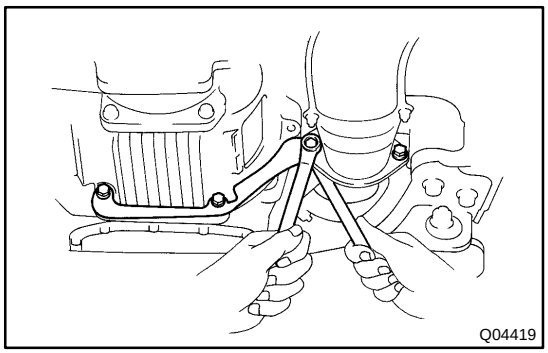
3. RAISE VEHICLE

NOTICE:
Make sure that the vehicle is securely supported.



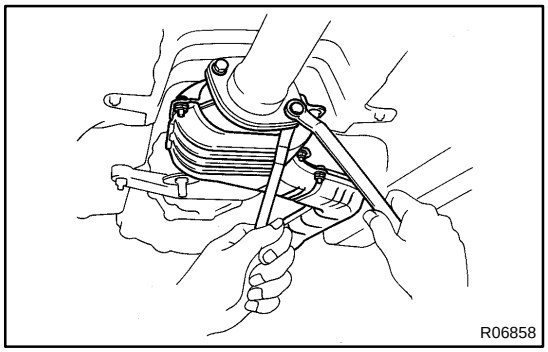
4. DRAIN TRANSMISSION OIL
Oil type: TOYOTA GEAR OIL V160 or ESSO ATF DEXRON®D-21065
Capacity: 1.8 liters (1.9 US qts, 1.6 Imp. qts)
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

5. REMOVE ENGINE UNDER COVER

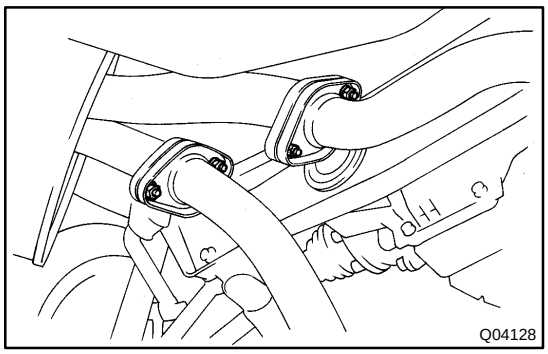


6. REMOVE EXHAUST FRONT PIPE AND PIPE SUPPORT BRACKET

(a) Remove the 2 nuts, cover, oxygen sensor and gasket.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)
(b) Remove the 2 bolts, nuts and gasket.
Torque: 58 N·m (590 kgf·cm, 43 ft·lbf)
(c) Remove the 2 bolts and pipe support bracket from the clutch housing.
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)



(d) Remove the 2 bolts, nuts and gasket.
Torque: 58 N·m (590 kgf·cm, 43 ft·lbf)
(e) Remove the exhaust front pipe.



7. REMOVE EXHAUST CENTER PIPE

(a) Remove the 4 nuts and 2 gaskets.
Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

(b) Disconnect the exhaust center pipe from the 2 rings.

(c) Remove the exhaust center pipe.

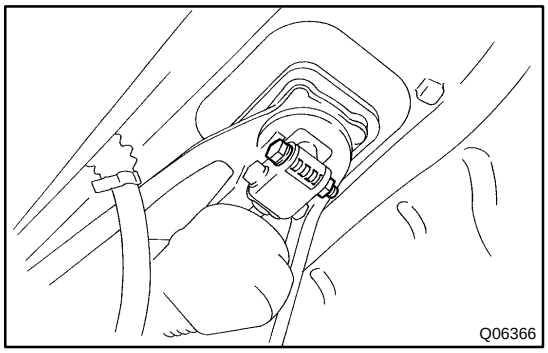
8. REMOVE HEAT INSULATOR

Remove the 4 nuts and heat insulator.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

9. REMOVE CROSSMEMBER BRACE

Remove the 4 bolts (Normal Roof) or 6 bolts (Sport Roof) and crossmember brace.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

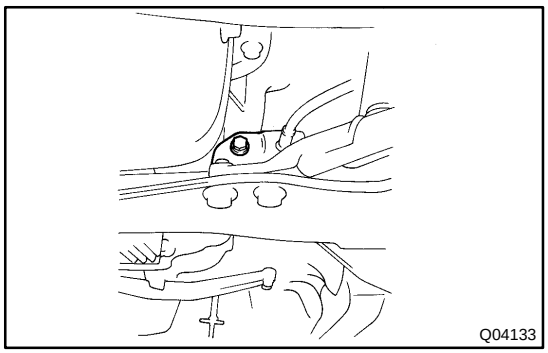
10. REMOVE PROPELLER SHAFT
(See page PR-2)



11. REMOVE TRANSMISSION SHIFT LEVER

(a) Remove the bolt and nut.

(b) Remove the transmission shift lever, inside the vehicle.
Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)



12. REMOVE CLUTCH RELEASE CYLINDER AND GROUND CABLE

(a) Remove the bolt, clamp and ground cable.
Torque: 72 N·m (730 kgf·cm, 53 ft·lbf)

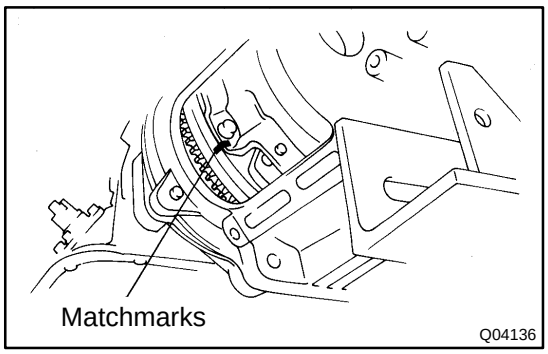
(b) Remove the 2 bolts and clutch release cylinder.
Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

13. DISCONNECT STARTER WIRE

(a) Remove the nut and disconnect the starter wire.

(b) Disconnect the starter wire connector.

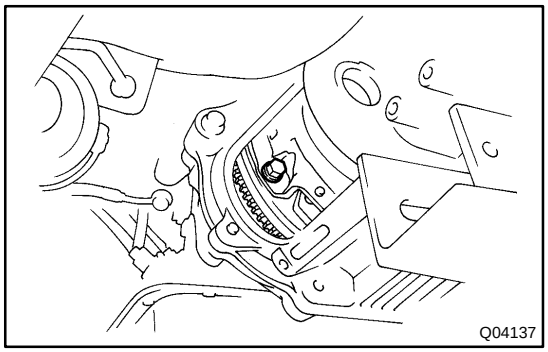
14. DISCONNECT VEHICLE SPEED SENSOR AND BACK-UP LIGHT SWITCH CONNECTORS



15. REMOVE CLUTCH COVER SET BOLT

(a) Remove the 2 bolts and service hole cover.
Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

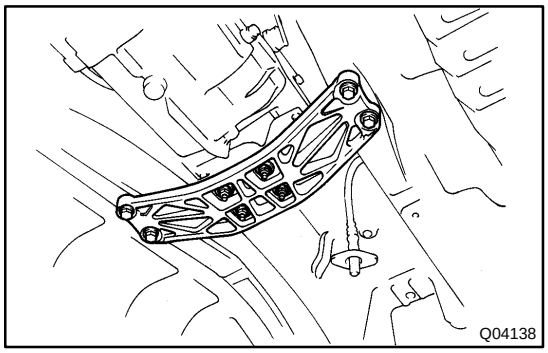
(b) Place matchmarks on the flywheel and clutch cover.



(c) Remove the 6 bolts.
Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

16. JACK UP TRANSMISSION SLIGHTLY

Using a transmission jack, support the transmission.

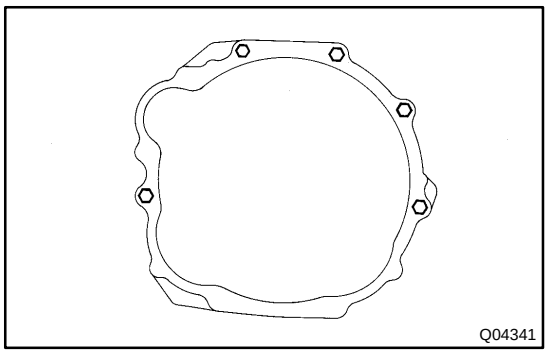


17. REMOVE REAR ENGINE MOUNTING MEMBER

Remove the 4 nuts, bolts and rear engine mounting member.
Torque:
Nut: 13 N·m (135 kgf·cm, 10 ft·lbf)
Bolt: 25 N·m (260 kgf·cm, 19 ft·lbf)

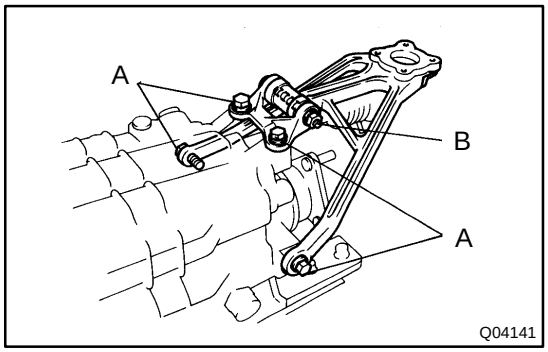
18. REMOVE STARTER

Lower the engine rear side and remove the 2 bolts and starter.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)



19. REMOVE TRANSMISSION

Remove the 5 transmission mounting bolts and transmission from the engine.
Torque: 72 N·m (730 kgf·cm, 53 ft·lbf)



20. REMOVE SHIFT LEVER RETAINER

Remove the 5 bolts, nut and shift lever retainer from the transmission.
Torque:
Bolt A: 19 N·m (195 kgf·cm, 14 ft·lbf)
Nut B: 25 N·m (250 kgf·cm, 18 ft·lbf)

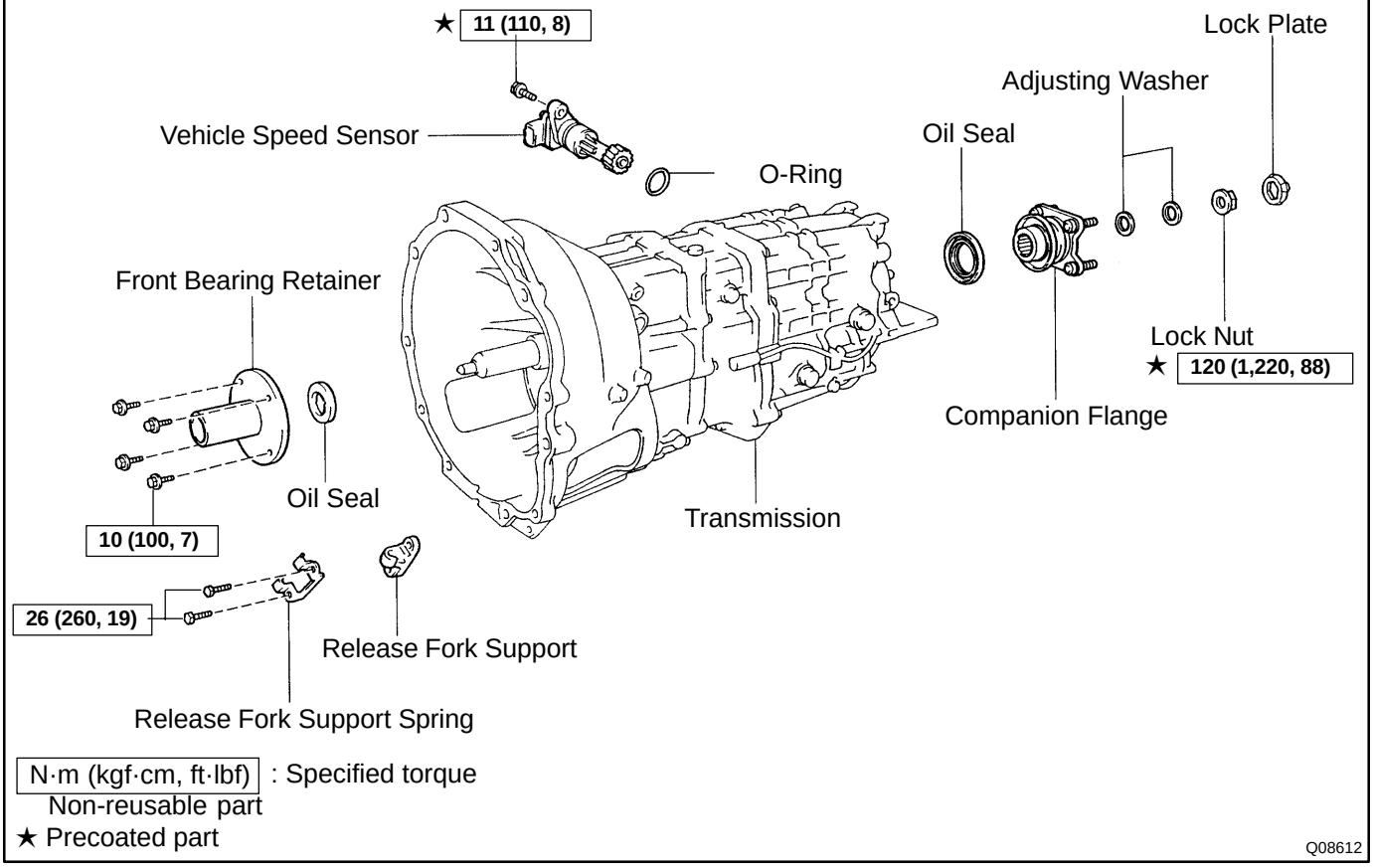
21. REMOVE ENGINE REAR MOUNTING

Remove the 4 bolts and engine rear mounting from the transmission.
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

OIL SEAL

COMPONENTS

MT06Q-01



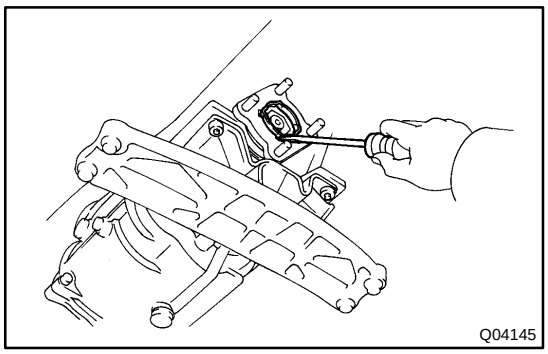
MT06R-02

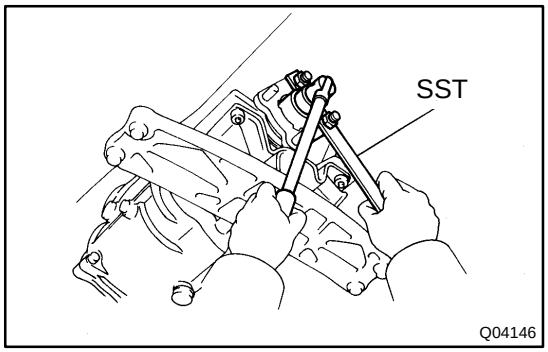
REPLACEMENT

1. REPLACE TRANSMISSION REAR OIL SEAL

(a) Remove the propeller shaft.
(See page PR-2)

(b) Using a screwdriver, remove the lock plate.

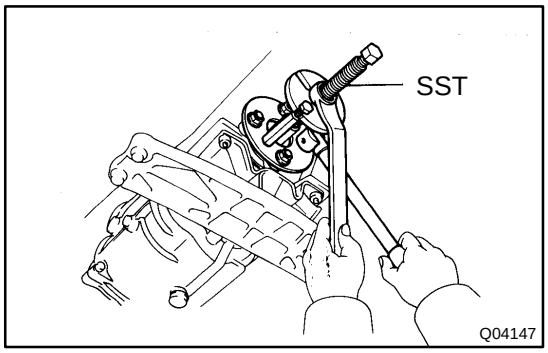

Q04145



Q04146

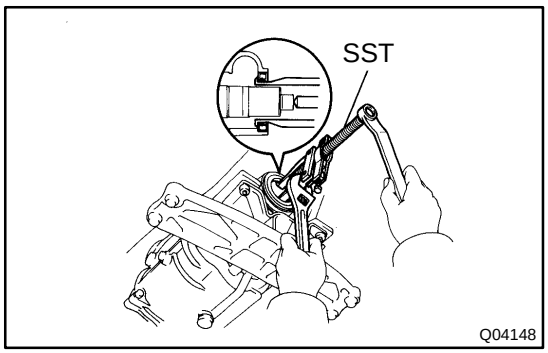
(c) Using SST to hold the flange, remove the lock nut.
SST 09330-00021

(d) Remove the 2 adjusting washers.



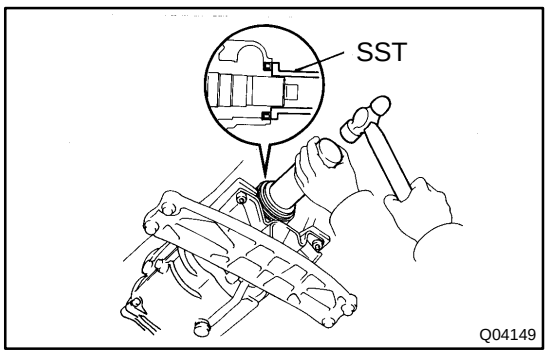
Q04147

(e) Using SST, remove the companion flange.
SST 09950- 30010 (09951- 03010, 09953- 03010, 09954-03010, 09955-03030, 09956-03030)



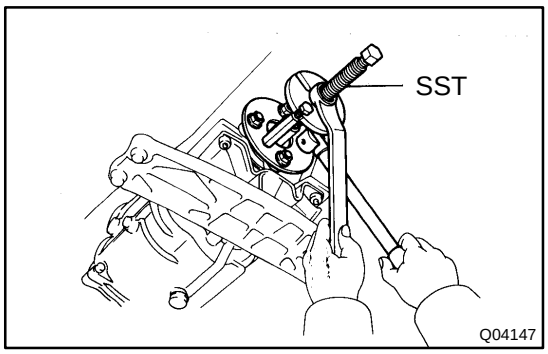
Q04148

(f) Using SST, remove the oil seal.
SST 09308-10010



Q04149

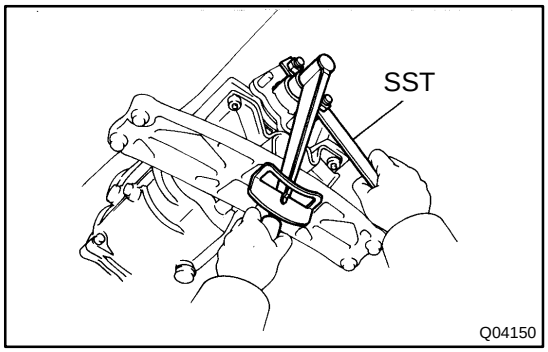
(g) Using SST and a hammer, install a new oil seal.
SST 09308-14010, 09309-14040



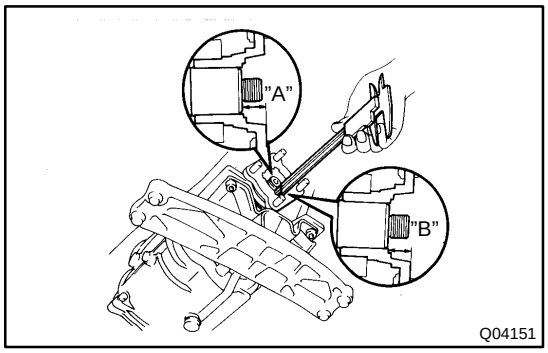
(h) Heat the companion flange in an oven.
Companion flange temperature:
80 - 90˚C (176 - 194˚F)

(i) Apply gear oil to the output shaft and install the companion flange.

(j) Using SST, install the companion flange to the output shaft.
SST 09950- 30010 (09951- 03010, 09953- 03010, 09954-03010, 09955-03030, 09956-03030)



(k) Using SST to hold the flange, temporary install and torque the lock nut.
SST 09330-00021
Torque: 190 N·m (1,940 kgf·cm, 140 ft·lbf)



(l) Remove the lock nut.

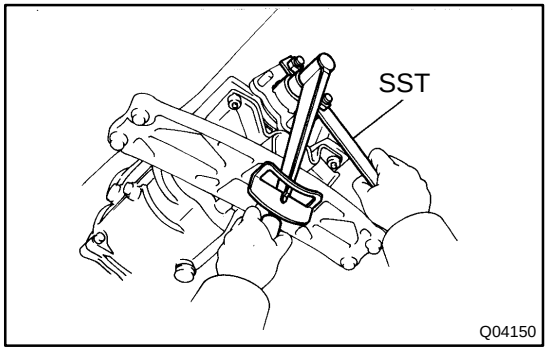
(m) Using a caliper gauge, measure dimension "A" and dimension "B".

(n) Calculate the required thickness of the adjusting shim.
Thickness:
(Dimension "A" - Dimension "B") - (0.05 ~ 0.14 mm, 0.0020 ~ 0.0055 in.)

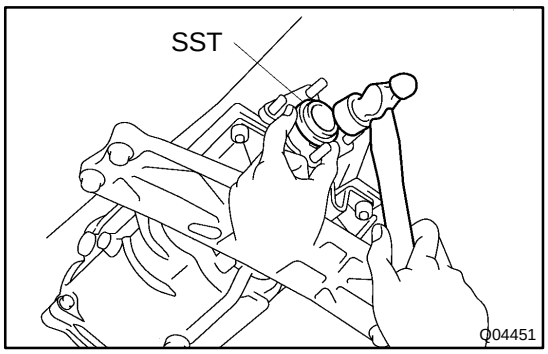
Adjusting shim thickness mm (in.)	Adjusting shim thickness mm (in.)
1.15 - 1.20 (0.0453 - 0.0472)	1.65 - 1.70 (0.0650 - 0.0669)
1.25 - 1.30 (0.0492 - 0.0512)	1.85 - 1.90 (0.0729 - 0.0748)
1.45 - 1.50 (0.0571 - 0.0591)	1.95 - 2.00 (0.0768 - 0.0787)

(o) Install the selected shims to the output shaft.

(p) Apply sealant to the nut threads.
Sealant:
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent



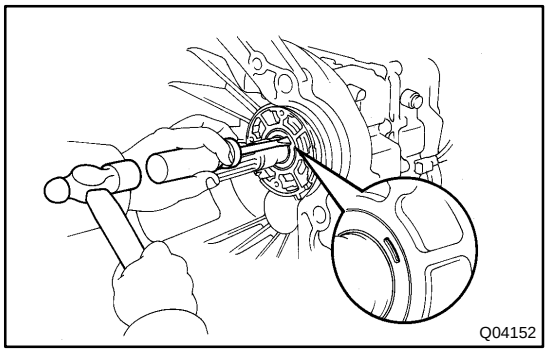
(q) Using SST to hold the flange, reinstall and torque the lock nut.
SST 09330-00021
Torque: 120 N·m (1,220 kgf·cm, 88 ft·lbf)



(r) Using SST and a hammer, install a new lock plate.
SST 09309-14010

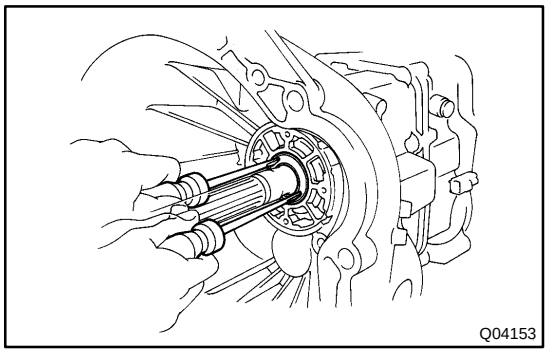
HINT:
If necessary, using a pin punch and hammer, and tap the lock plate.

(s) Install the propeller shaft.
(See page PR-2)

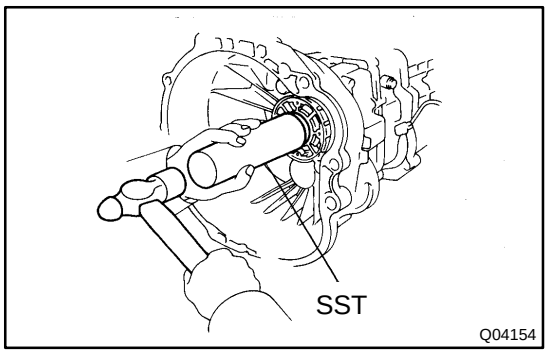


2. REPLACE TRANSMISSION FRONT OIL SEAL

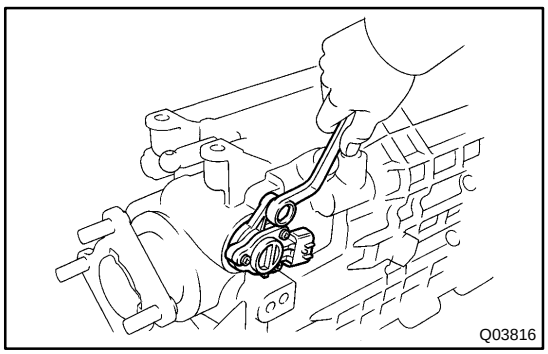
(a) Remove the transmission.
(See page MT-2)
(b) Remove the 2 bolts and release fork support.
(c) Remove the 4 bolts and front bearing retainer.
(d) Using a hammer, tap in the screwdriver to the oil seal.



(e) Pry out the oil seal.



(f) Using SST and a hammer, install a new oil seal.
SST 09308-14010, 09309-14040
(g) Install the transmission.
(See page MT-2)
(h) Install the front bearing retainer with the 4 bolts.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
(i) Install the release fork support with the 2 bolts.
Torque: 26 N·m (260 kgf·cm, 19 ft·lbf)



3. REPLACE VEHICLE SPEED SENSOR O-RING

(a) Remove the transmission.
(See page MT-2)
(b) Remove the set bolt and driven gear.
(c) Remove the O-ring from the driven gear.
(d) Install a new O-ring to the driven gear.
(e) Apply sealant to the bolt threads.
Sealant:
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

(f) Install the driven gear with the bolt.
Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)

TROUBLESHOOTING

PR02H-01

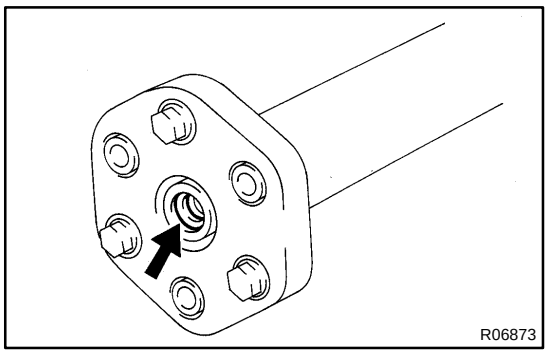
PROBLEM SYMPTOMS TABLE

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.

Symptom	Suspect Area	See page
Noise	1. Center support bearing (Worn)	PR-7
	2. Sleeve yoke spline (Worn)	-
	3. Spider bearing (Worn or stuck)	PR-7
Vibration	1. Transmission extension housing rear bushing (Runout)	-
	2. Sleeve yoke spline (Stuck)	-
	3. Propeller shaft (Runout)	PR-7
	4. Propeller shaft (Imbalance)	-

PR06W-01

INSTALLATION



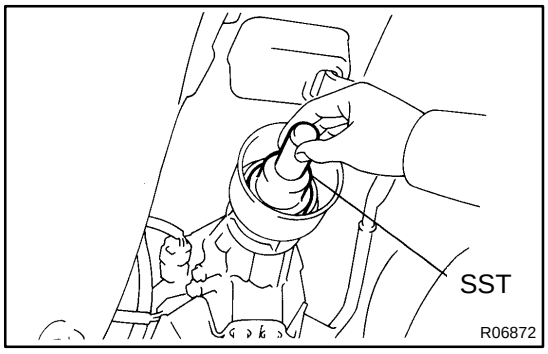
1. 2JZ-GE:

INSTALL PROPELLER SHAFT

(a) Apply grease to the flexible coupling centering bushings.

Grease:

Molybdenum disulfide lithium base, NLGI No.2.



(b) Remove the SST.

(c) Install the propeller shaft to the transmission.

(d) Insert the propeller shaft from the vehicle's rear and connect the transmission and differential.

NOTICE:

Support the center support bearing by hand so that the transmission and intermediate shaft, and propeller shaft and differential, remain in a straight line.

(e) Temporarily install the 2 center support bearing set bolts with the adjusting washers.

HINT:

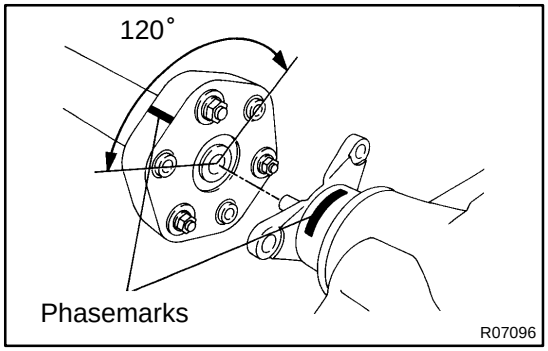
Use the adjusting washers which were removed.

(f) Align the matchmarks and install the propeller shaft on the differential with the 3 bolts, washers and nuts.

NOTICE:

Bolts should be inserted from the propeller shaft side.

Torque: 79 N·m (805 kgf·cm, 58 ft·lbf)



(g) If using a new propeller shaft.

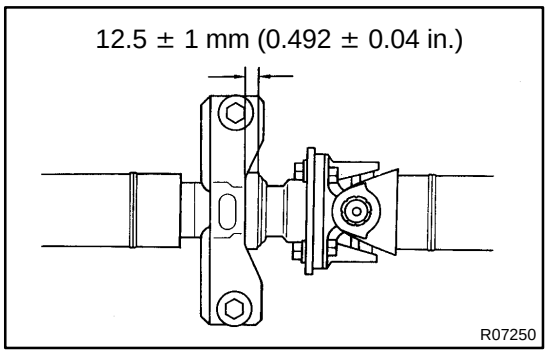
(1) w/ Phasemarks:

Install the propeller shaft phasemarks and differential phasemarks so the their respective alignment phasemarks match.

If the propeller shaft phasemarks and differential phasemarks do not align, install the propeller shaft and differential alignment phasemarks as close together as possible.

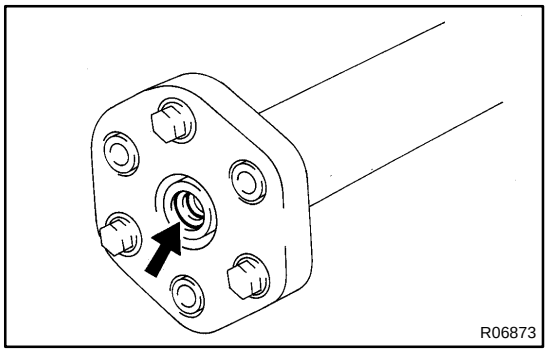
(2) w/o Phasemarks:

Install the propeller shaft.



(h) Torque the 2 center support bearing set bolts.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

HINT:
Adjust the center support bearing to keep the dimension, as shown with the vehicle in the unladen condition.
Under the same condition, check if the center line of the center support bearing is at right angles to the shaft axial direction.



2. 2JZ-GTE:
INSTALL PROPELLER SHAFT

(a) Apply grease to the flexible coupling centering bushings.
Grease:
Molybdenum disulfide lithium base, NLGI No.1 or No.2.

(b) Align the matchmarks on the flanges and connect the flanges with the 4 nuts and washers.

(c) Torque the 4 nuts.
Torque: 56 N·m (570 kgf·cm, 41 ft·lbf)

(d) Insert the propeller shaft from the vehicle's rear and connect the transmission and differential.

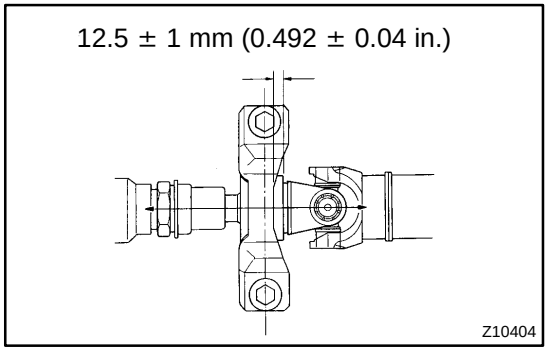
NOTICE:
Support the center support bearing by hand so that the transmission and intermediate shaft, and propeller shaft and differential, remain in a straight line.

(e) Temporarily install the 2 center support bearing set bolts with the adjusting washers.

HINT:
Use the adjusting washers which were removed.

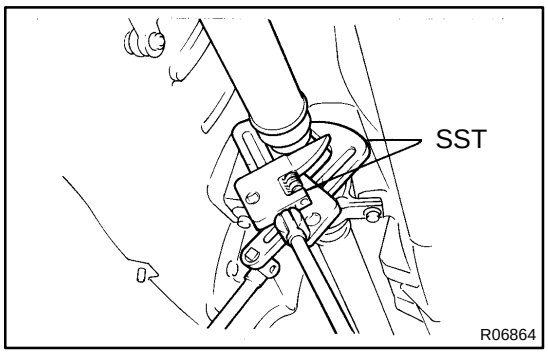
(f) Align the matchmarks and install the propeller shaft on the differential with the 3 bolts, washers and nuts.

NOTICE:
Bolts should be inserted from the propeller shaft side.
Torque: 79 N·m (805 kgf·cm, 58 ft·lbf)



(g) Torque the 2 center support bearing set bolts.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

HINT:
Adjust the center support bearing to keep the dimension, as shown with the vehicle in the unladen condition.
Under the same condition, check if the center line of the center support bearing is at right angles to the shaft axial direction.



(h) Using SST, torque the adjust nut.
SST 09922-10010
Torque: 50 N·m (515 kgf·cm, 37 ft·lbf)

HINT:
Use torque wrench with a fulcrum length of 34.5 cm (13.6 in.).

3. ADJUST PROPELLER SHAFT JOINT ANGEL (See page PR-14)

NOTICE:
The joint angle should be checked when the propeller shaft is removed and installed.

4. NORMAL ROOF:
INSTALL CENTER FLOOR CROSSMEMBER BRACE

Install the center floor crossmember brace and 4 bolts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

5. SPORT ROOF:
INSTALL CENTER FLOOR CROSSMEMBER BRACE

Install the center floor crossmember brace and 6 bolts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

6. INSTALL HEAT INSULATOR

Install the heat insulator and torque the 4 nuts.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

7. INSTALL EXHAUST PIPE (See page EM-94)

8. INSTALL OXYGEN SENSOR

Install the oxygen sensor with heat insulator and torque the 2 nuts.
Torque: 44 N·m (450 kgf·cm, 34 in.·lbf)

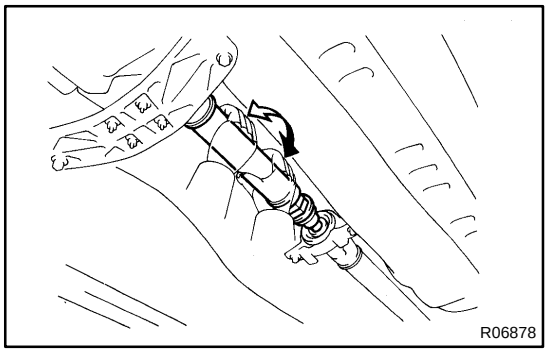
JOINT ANGLE

PR02N-02

ADJUSTMENT

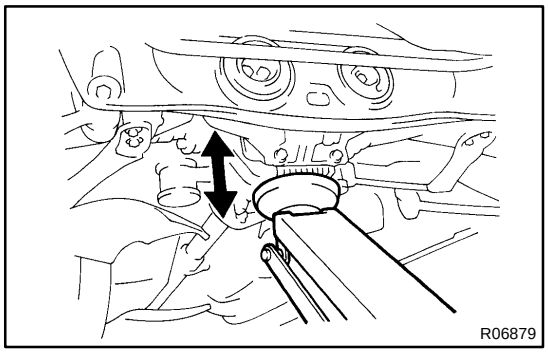
NOTICE:

When doing operations which involve the removal and installation of the propeller shaft, always check the joint. Make adjustments if necessary.

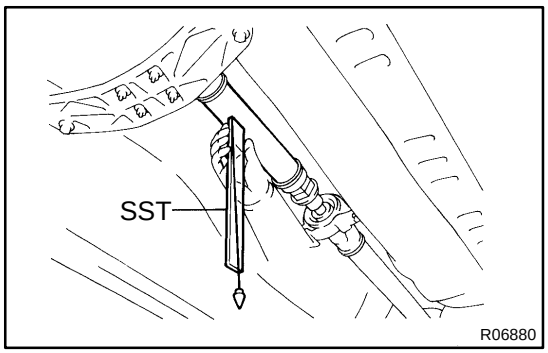


1. STABILIZE PROPELLER SHAFT AND DIFFERENTIAL

(a) Turn the propeller shaft several times by hand to stabilize the center support bearing and flexible couplings.



(b) Using a jack, raise and lower the differential to stabilize the differential mounting cushion.



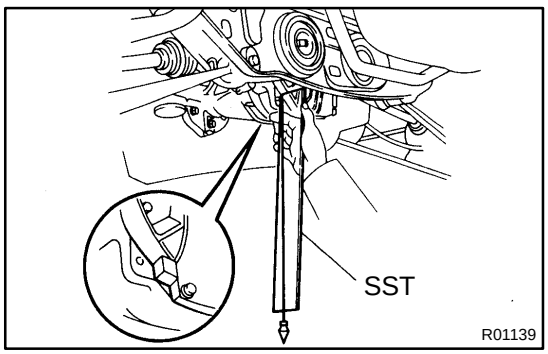
2. CHECK JOINT ANGLE OF NO.2 JOINT AND NO.3 JOINT

(a) Using SST, measure the installation angle of the intermediate shaft and propeller shaft.

SST 09370-50010

HINT:

The SST should be directly underneath the tube.



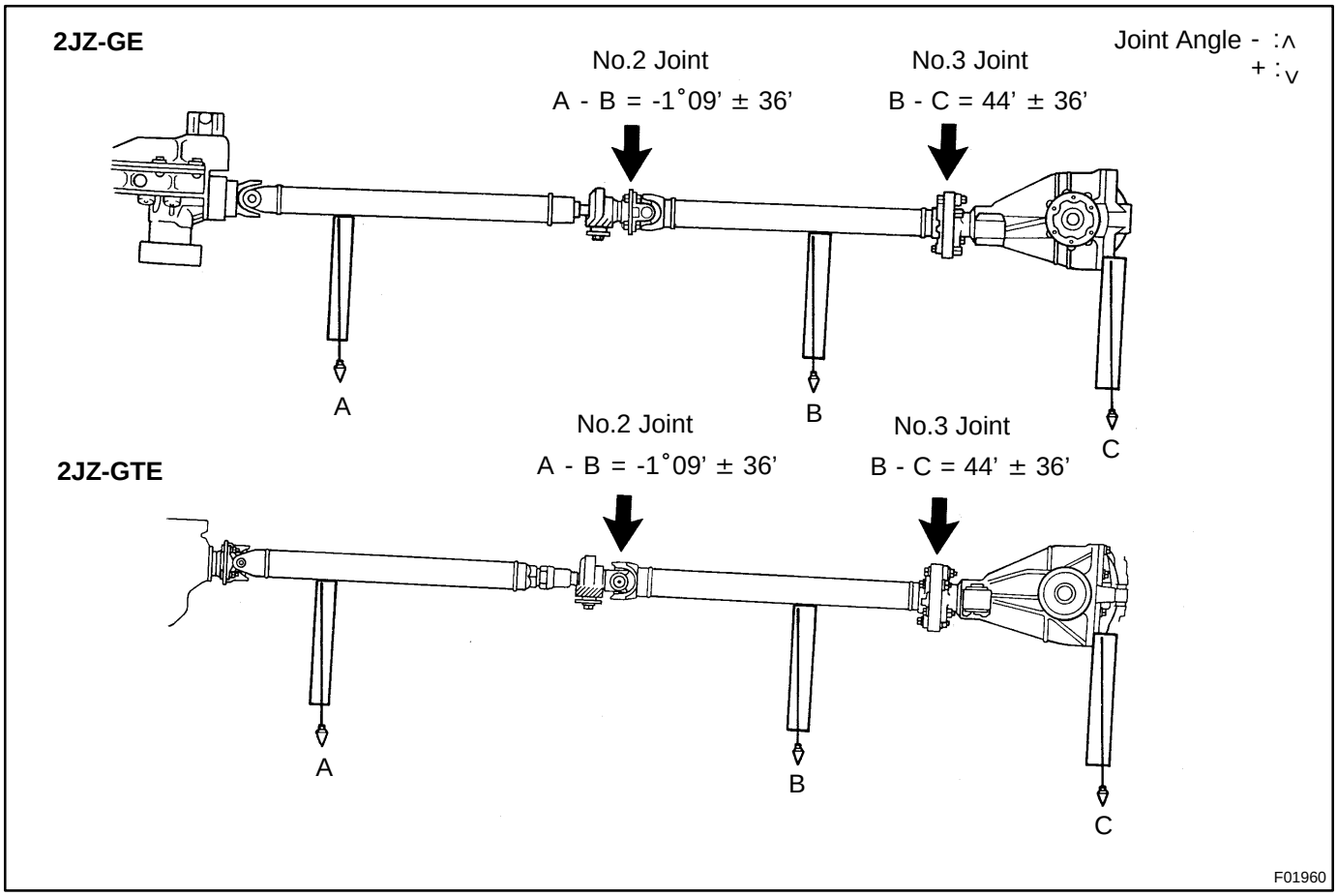
(b) Using the SST, measure the installation angle of the differential.

HINT:

Measure the installation angle by placing the SST in the position, as shown in the illustration.

(c) Calculate the No.2 joint angle.
No.2 joint angle:
A - B = -1˚09' ± 36'
A: Intermediate shaft installation angle
B: Propeller shaft installation angle

(d) Calculate the No.3 joint angle.
No.3 joint angle:
B - C = 44' ± 36'
B: Propeller shaft installation angle
C: Differential installation angle



If the measured angle is not within the specification, adjust it with the center support bearing adjusting washer and differential adjusting shim.

Center support bearing adjusting washer thickness

Thickness mm (in.)	Thickness mm (in.)
2.0 (0.079)	6.0 (0.236)
4.0 (0.157)	8.5 (0.335)

NOTICE:
- ★ **Left and right washers should be the same thickness.**
- ★ **2 washers should not be assembled together.**
- ★ **Some vehicles are not assembled with washers.**

Differential adjusting shim thickness

Thickness mm (in.)	Thickness mm (in.)
1.0 (0.039)	2.0 (0.079)
1.6 (0.063)	-

NOTICE:

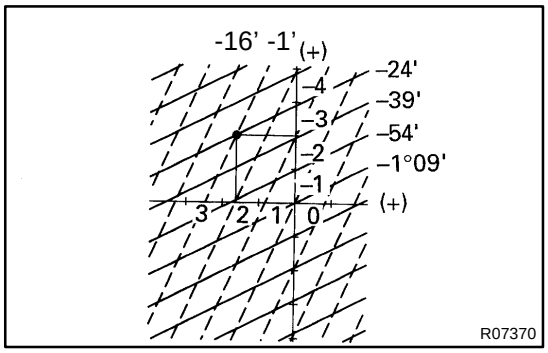
- ★ **Left and right washers should be the same thickness.**
- ★ **This shim is installed on top of the upper mount stopper and it used for adjustment.**

3. HOW TO READ THIS CHART

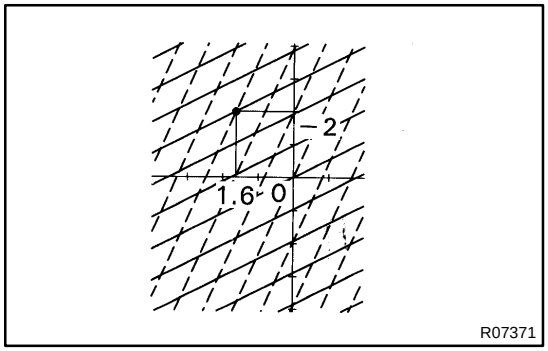
Take measurements, then calculate the No.2 and No.3 joint angle.

Make the calculated values on the chart and read the coordinates.

Replace the adjusting washer and shim in accordance with the coordinates read and adjust the joint angles.



Example
Measurements (Installation angle):
Intermediate shaft: 1˚50'
Propeller shaft: 2˚14'
Differential: 2˚15'
Joint angle:
No.2: 1˚50' - 2˚14' = -24'
No.3: 2˚14' - 2˚15' = -1'



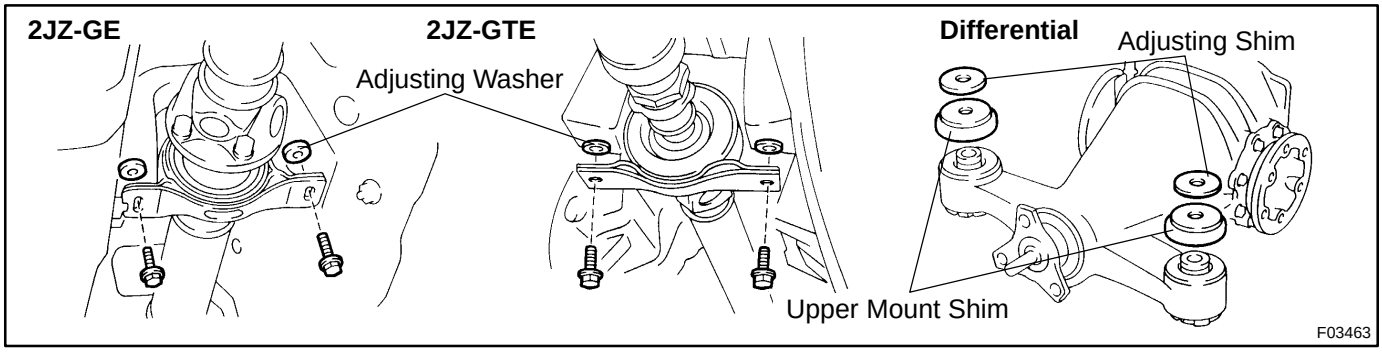
Adjustment:
Center support bearing
Standard parts: 4 mm - 2 mm = 2 mm
Use adjusting washers which are 2 mm (0.079 in.) thicker.
Differential
Use adjusting shims which are 1.6 mm (0.063 in.) thicker.

HINT:

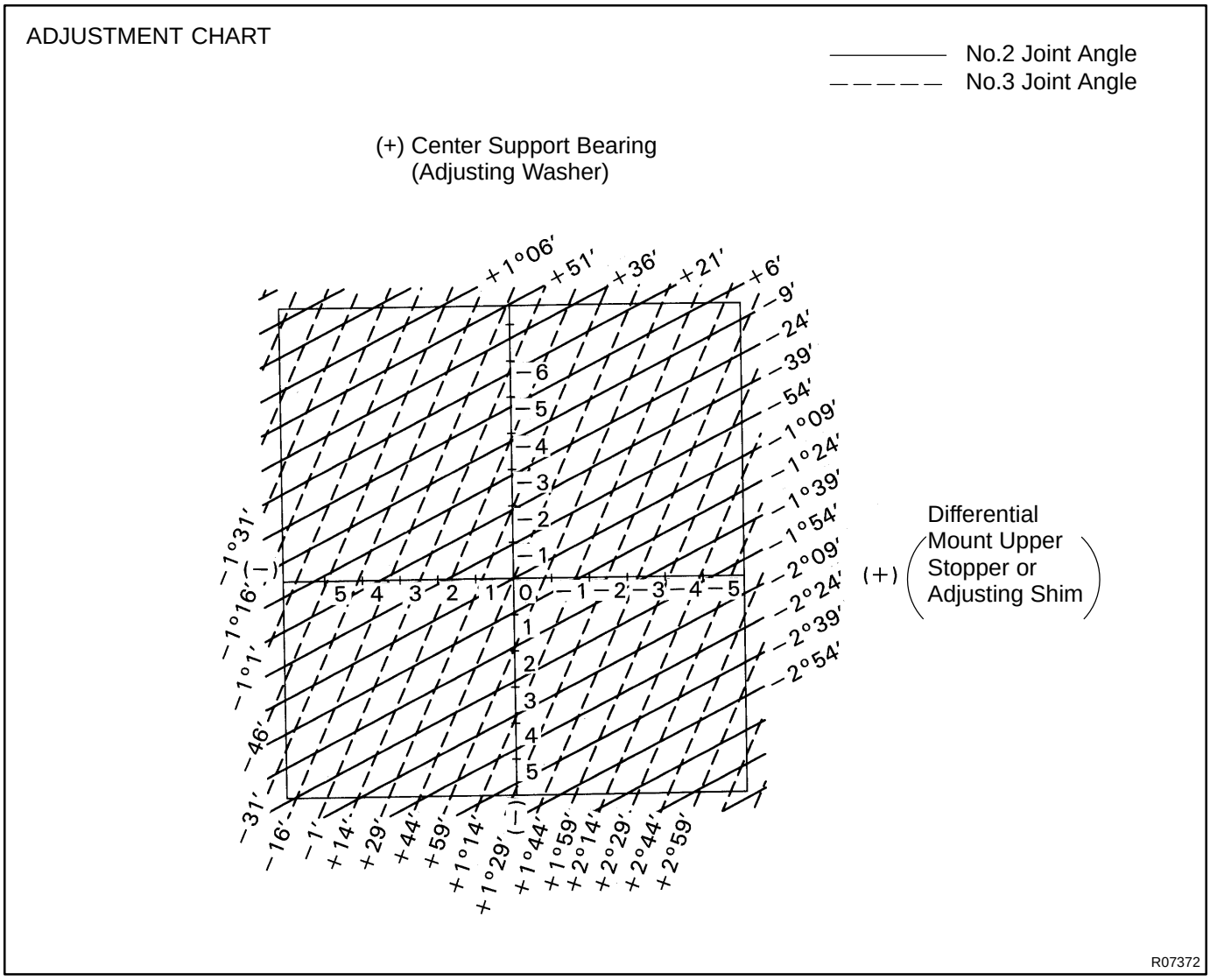
- ★ Maintain the same thickness for the adjusting washers and adjusting shims on both the left and right sides.
- ★ If a washer and shim of the exact thickness are not available, use the parts which are the nearest in thickness.

NOTICE:

Check the joint angle once again after making the adjustment.



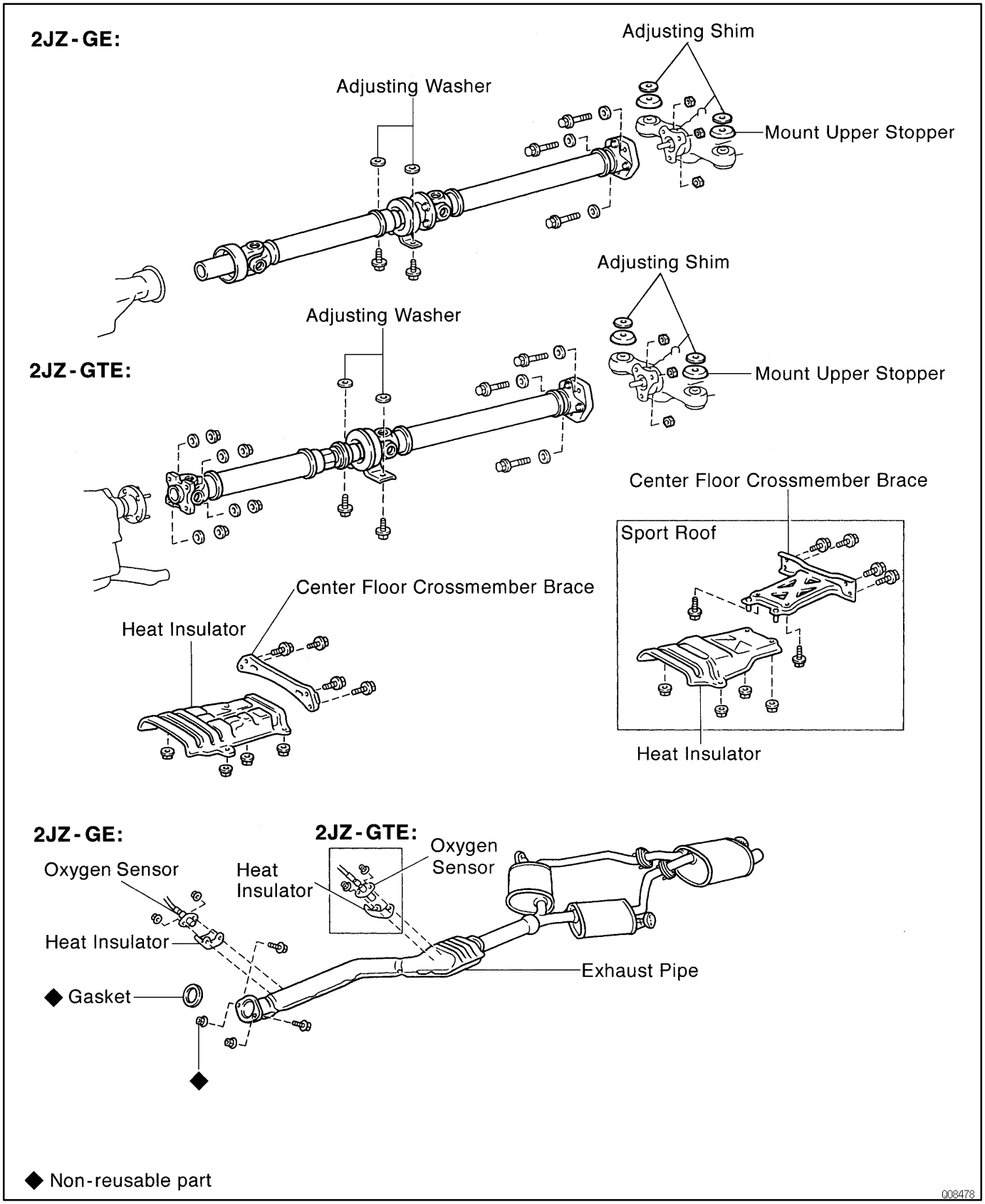
ADJUSTMENT CHART



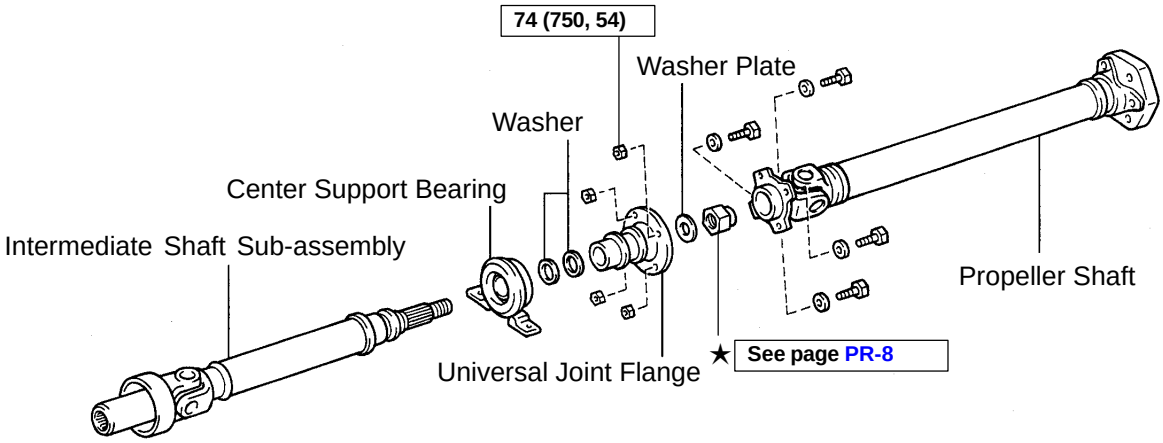
PROPELLER SHAFT ASSEMBLY

PR06U-01

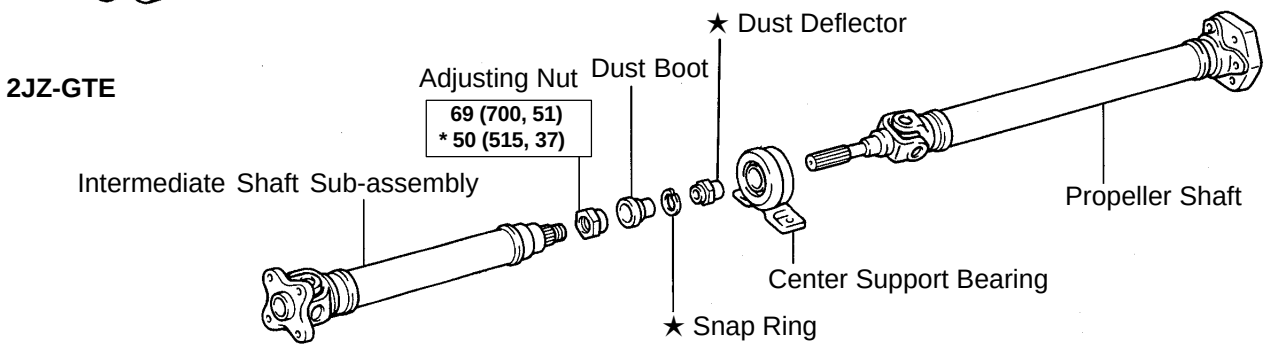
COMPONENTS



2JZ-GE



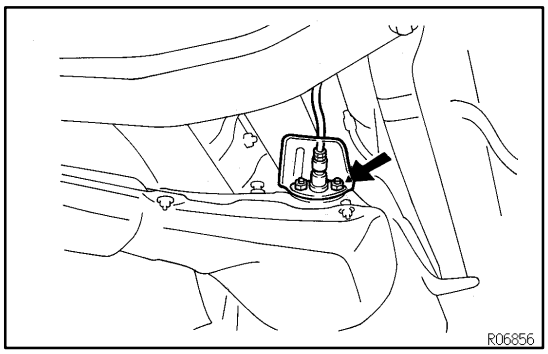
2JZ-GTE



N·m (kgf·cm, ft·lbf) : Specified torque
★ Non-reusable part
* For use with SST

Q09642

PR06V-01



REMOVAL

1. REMOVE OXYGEN SENSOR

(a) Remove the 2 bolts.

(b) Remove the oxygen sensor and heat insulator.

2. REMOVE EXHAUST PIPE (See page EM-94)

3. REMOVE HEAT INSULATOR

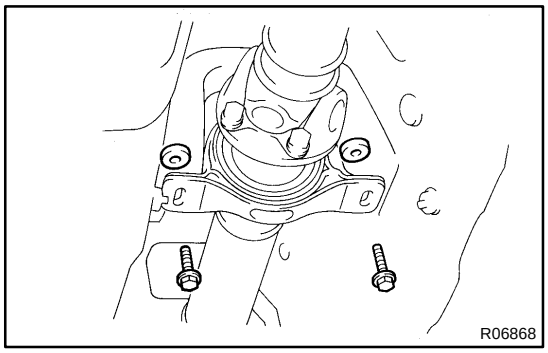
Remove the 4 nuts and heat insulator.

4. NORMAL ROOF:
REMOVE CENTER FLOOR CROSSMEMBER BRACE

Remove the 4 bolts and crossmember brace.

5. SPORT ROOF:
REMOVE CENTER FLOOR CROSSMEMBER BRACE

Remove the 6 bolts and crossmember brace.



6. 2JZ-GE:
REMOVE PROPELLER SHAFT

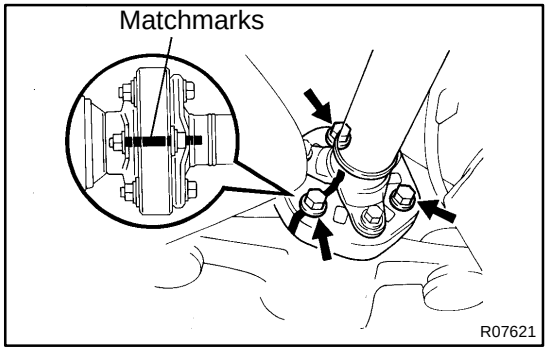
(a) Remove the 2 center support bearing set bolts and adjusting washers.

HINT:

Production vehicles are not equipped with adjusting washers.

NOTICE:

When removing the set bolts, support the center support bearing by hand so that the transmission and intermediate shaft, and propeller shaft and differential, remain in a straight line.

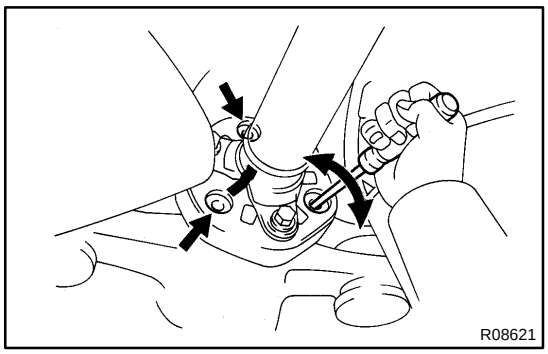


(b) Place matchmarks on the differential companion flange and flexible coupling.

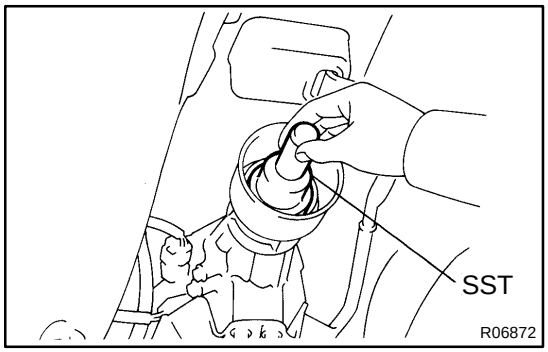
(c) Remove the 3 bolts inserted in the differential companion flange.

NOTICE:

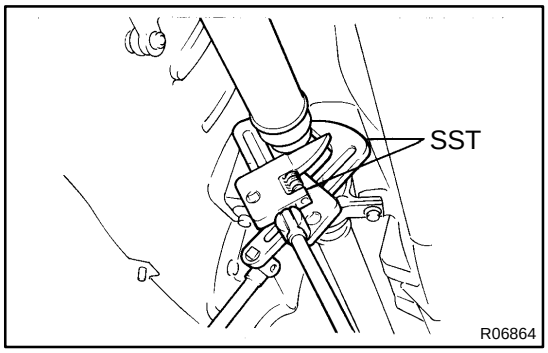
The bolts inserted in the propeller shaft companion flange should not be removed.



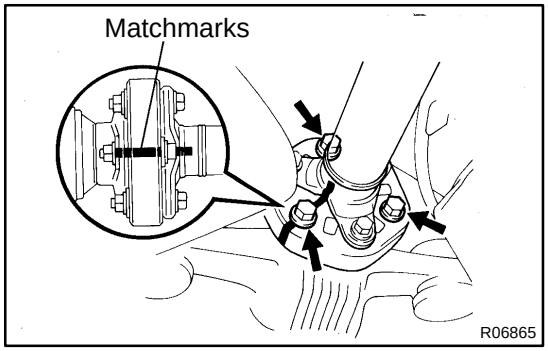
(d) Separate the flexible coupling from the differential side.
HINT:
If the flexible coupling cannot be easily separated by hand, insert a screwdriver into the bolt hole of the flexible coupling, as shown in the illustration, then pry the coupling out.
NOTICE:
Do not bring the screwdriver blade in direct contact with the flexible coupling's rubber portion.
(e) Pull the yoke from the transmission.



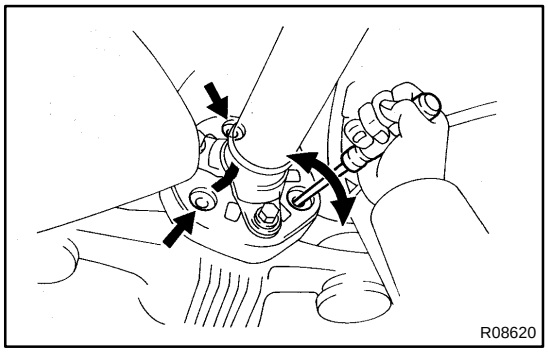
(f) M/T:
Install SST in the transmission to prevent oil leakage.
SST 09325-20010
(g) A/T:
Install SST in the transmission to prevent oil leakage.
SST 09325-40010



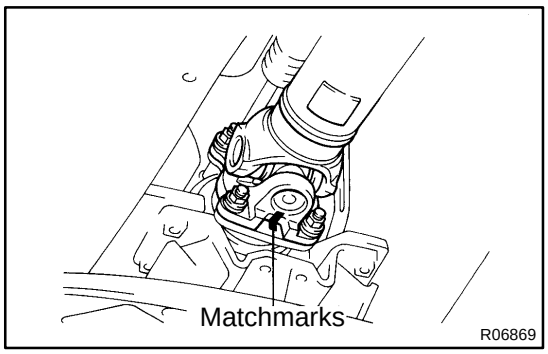
7. 2JZ-GTE:
REMOVE PROPELLER SHAFT
(a) Using SST, loosen the adjusting nut until it can be turned by hand.
SST 09922-10010
HINT:
Use 2 of the same type SST.



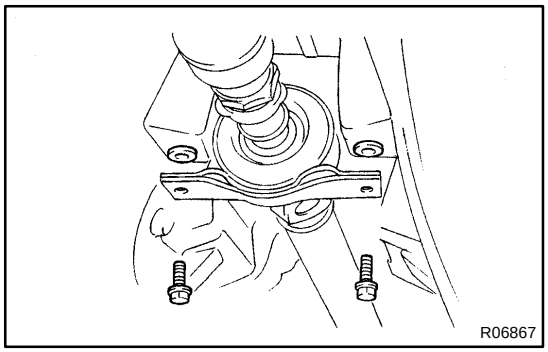
(b) Place matchmarks on the differential companion flange and flexible coupling.
(c) Remove the 3 bolts inserted in the differential companion flange.
NOTICE:
The bolts inserted in the propeller shaft companion flange should not be removed.



(d) Separate the flexible coupling from the differential side.
HINT:
If the flexible coupling cannot be easily separated by hand, insert a screwdriver into the bolt hole of the flexible coupling, as shown in the illustration, then pry the coupling out.
NOTICE:
Do not bring the screwdriver blade in direct contact with the flexible coupling's rubber portion.



(e) Place matchmarks on the transmission companion flange and propeller shaft flange.
(f) Remove the 4 washers and nuts.



(g) Remove the 2 center support bearing set bolts and adjusting washers.

HINT:
Some vehicles are not equipped with and adjusting washer.

NOTICE:
When removing the set bolts, support the center support bearing by hand so that the transmission and intermediate shaft, and propeller shaft and differential, remain in a straight line.

(h) Remove the propeller shaft from the transmission.
(i) Push the rear propeller shaft straight forward to compress the propeller shaft and pull out the propeller shaft from the centering pin of the differential.

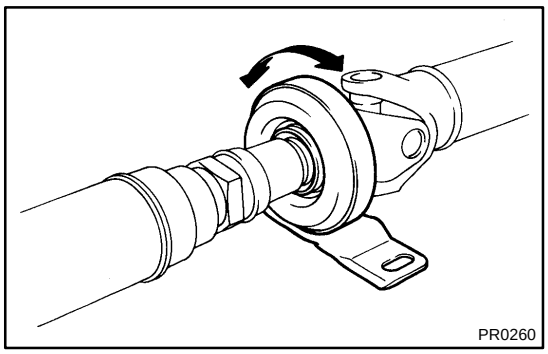
NOTICE:
Press the propeller shaft straight ahead to keep the transmission and intermediate shaft aligned straight.

(j) Pull the propeller shaft out toward the vehicle's rear.

NOTICE:
The intermediate shaft and propeller shaft should not be separated.

PR02K-01

INSPECTION

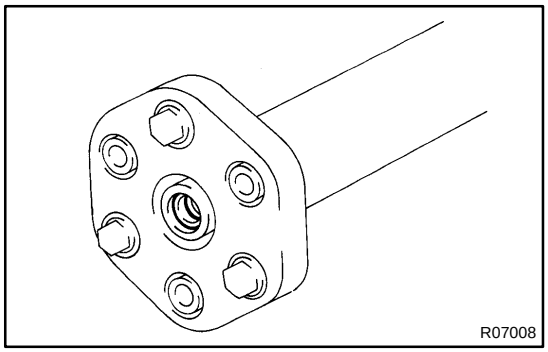


1. INSPECT CENTER SUPPORT BEARING

(a) Check if the bearing turns smoothly.

(b) Check for crack in or damage to the cushion.

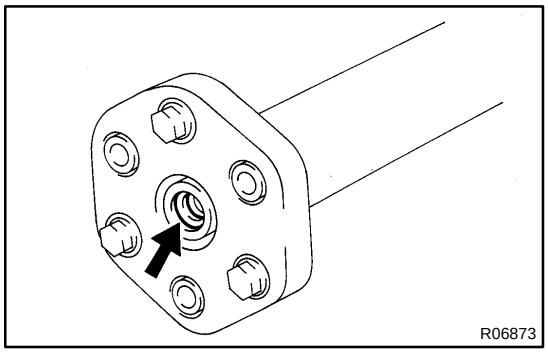
If the center support bearing is damaged, worn or does not turn smoothly, replace it.



2. INSPECT FLEXIBLE COUPLINGS

Check for cracks in or damage to rear flexible couplings.

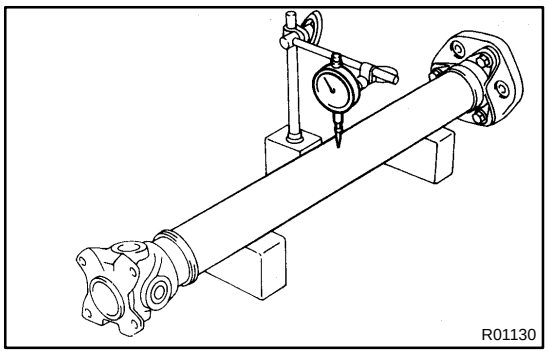
If the flexible coupling is damaged, replace the propeller shaft assembly.



3. INSPECT FLEXIBLE COUPLING CENTERING BEARING

Check for damage to the bushing.

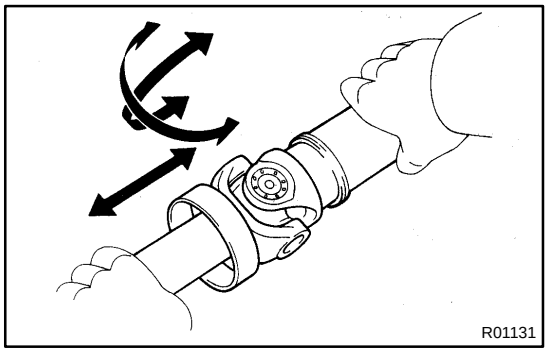
If the bushing is damaged, replace the propeller shaft assembly.



4. INSPECT RUNOUT OF INTERMEDIATE SHAFT AND PROPELLER SHAFT

Maximum runout: 0.8 mm (0.031 in.)

If the runout is greater than the maximum, replace the propeller shaft assembly.



5. INSPECT SPIDER BEARING

(a) Check if the spider bearing rotates smoothly.

(b) Check if there any play in the spider bearing.

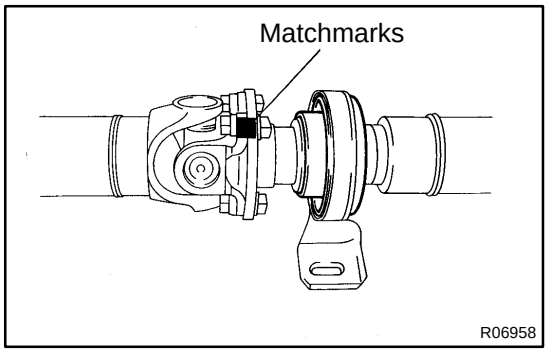
If necessary, replace the propeller shaft assembly.

PR02L-01

REPLACEMENT

NOTICE:

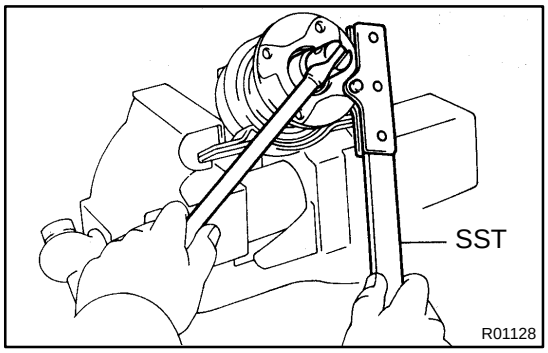
Be careful not to grip the propeller shaft tube too tightly in the vise as this will cause deformation.



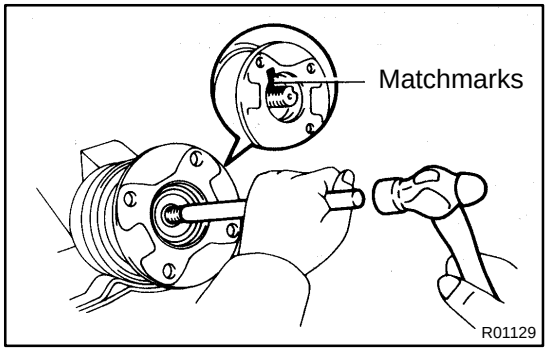
1. 2JZ-GE:
REPLACE CENTER SUPPORT BEARING

(a) Separate the propeller shaft and intermediate shaft.
  (1) Place matchmarks on the flanges.
  (2) Remove the 4 bolts, washers and nuts.

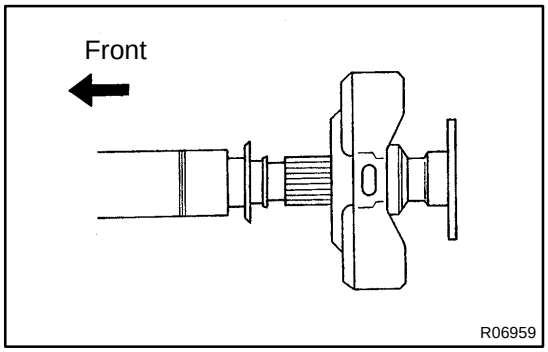
(b) Remove the center support bearing from intermediate shaft.
  (1) Using a chisel and hammer, loosen the staked part of the nut.



  (2) Using SST to hold the flange, remove the nut.
  SST 09930-00021
  (3) Remove the washer.



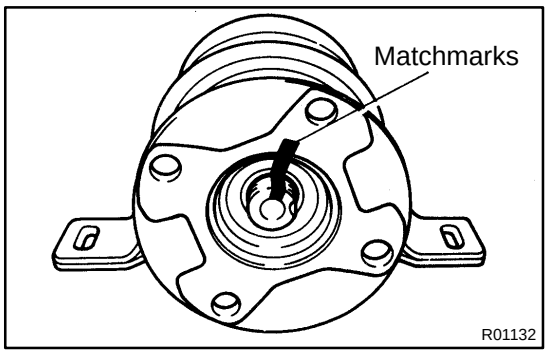
  (4) Place matchmarks on the flange and intermediate shaft.
  (5) Using a brass and hammer, remove the flange, 2 washers and center support bearing from the intermediate shaft.



(c) Install a new center support bearing on intermediate shaft.

HINT:
Install the center support bearing in the direction, as shown and install the 2 washers.

(d) Install the flange on intermediate shaft.
  (1) Coat the spline of the intermediate shaft with MP grease.

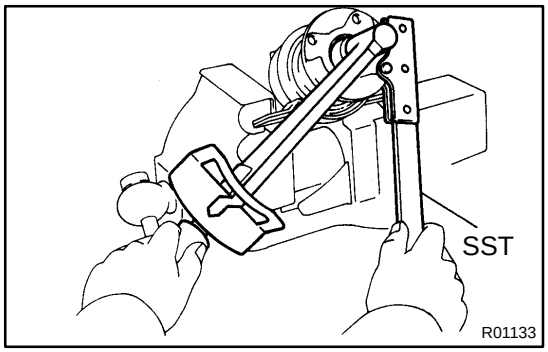


(2) Place the flange on the shaft and align the matchmarks.

HINT:

If replacing either the center flange or intermediate shaft, reassemble them so that the front yoke of the intermediate shaft and the rear yoke of the propeller shaft are facing in the same direction.

(3) Install the washer.



(4) Using SST to hold the flange, press the bearing into position by tightening down a new nut.

SST 09330-00021

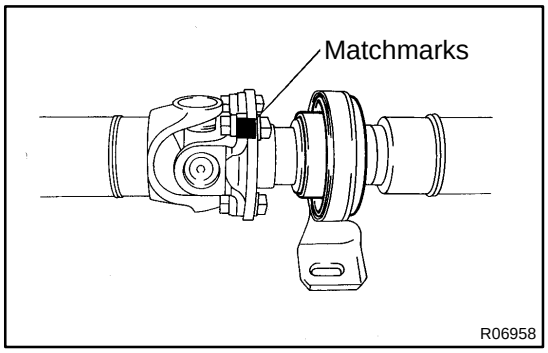
Torque: 181 N·m (1,850 kgf·cm, 134 ft·lbf)

(5) Loosen the nut.

(6) Torque the nut again.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

(7) Using a punch and hammer, stake the shaft.



(e) Install the propeller shaft.

(1) Align the matchmarks on the flanges and connect the flanges with 4 bolts, washers and nuts.

HINT:

If replacing either the center flange or intermediate shaft, reassemble them so that the front yoke of the intermediate shaft and the rear yoke of the propeller shaft are facing in the same direction.

(2) Torque the 4 bolts and nuts.

Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

2. 2JZ-GTE:

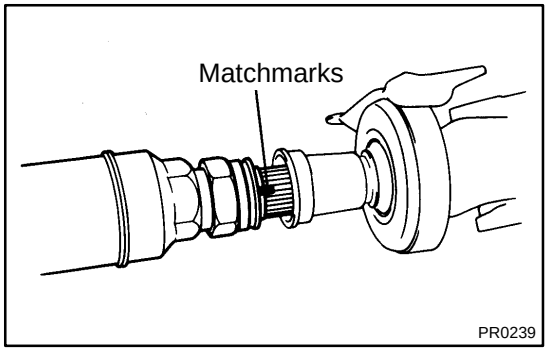
REPLACE CENTER SUPPORT BEARING

(a) Separate the intermediate shaft and propeller shaft.

(1) Place matchmarks on the intermediate shaft and propeller shaft.

(2) Separate the intermediate shaft and propeller shaft.

(3) Remove the dust boot from the propeller shaft.



HINT:

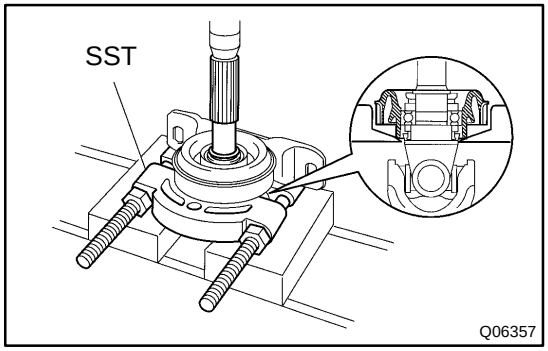
If the dust boot is reused, remove it after wrapping vinyl tape around the spline, so it will not be damage.

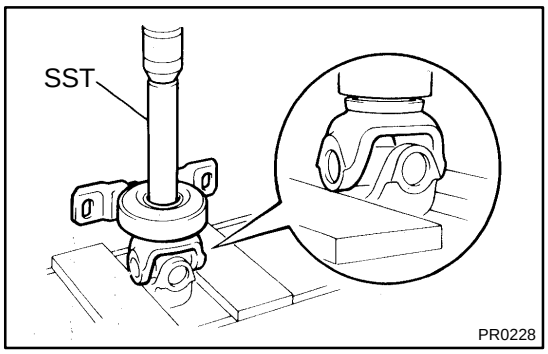
(b) Remove the center support bearing.

(1) Using a snap ring expander, remove the snap ring.

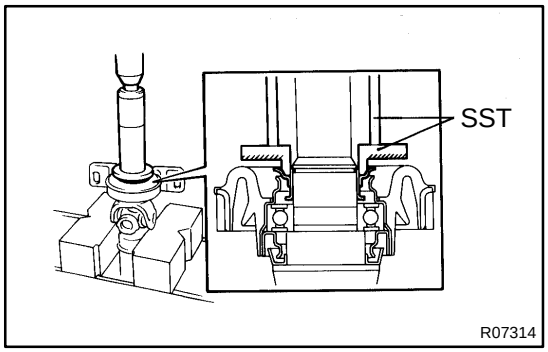
(2) Using SST, remove the center support bearing with dust deflector.

SST 09950-00020

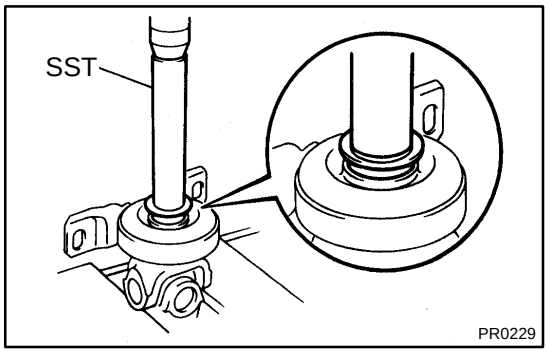




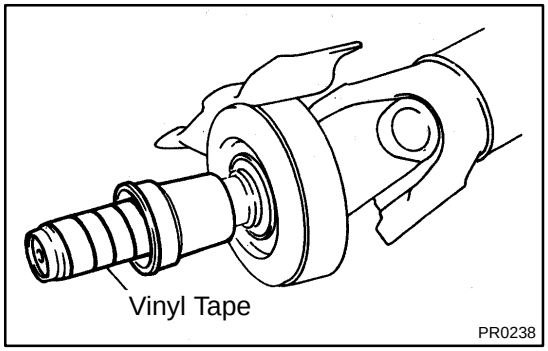
(c) Install a new center support bearing.
(1) Using SST and a press, install the center support bearing.
SST 09330-50010



(2) Using SST and a press, insert a new dust deflector until it almost touches the rubber of the center support bearing.
SST 09608-00071, 09608-06041



(3) Using SST and a press, install the dust deflector to the end.
SST 09330-50010
(4) Using a snap ring expander, install a new snap ring.



(d) Assemble the intermediate shaft and propeller shaft.
(1) Install the dust boot.

NOTICE:

Assemble after wrapping vinyl tape around the spline so it will not damage the boot.

(2) Apply grease to the spline.
Grease:
Molybdenum disulfide lithium base, NLGI No.2.
(3) Align the matchmarks and assemble the intermediate shaft and propeller shaft.
(4) Cover the adjusting nut with the dust boot.
(5) Tighten the adjusting nut fully by hand.