

TROUBLESHOOTING

PR02H-01

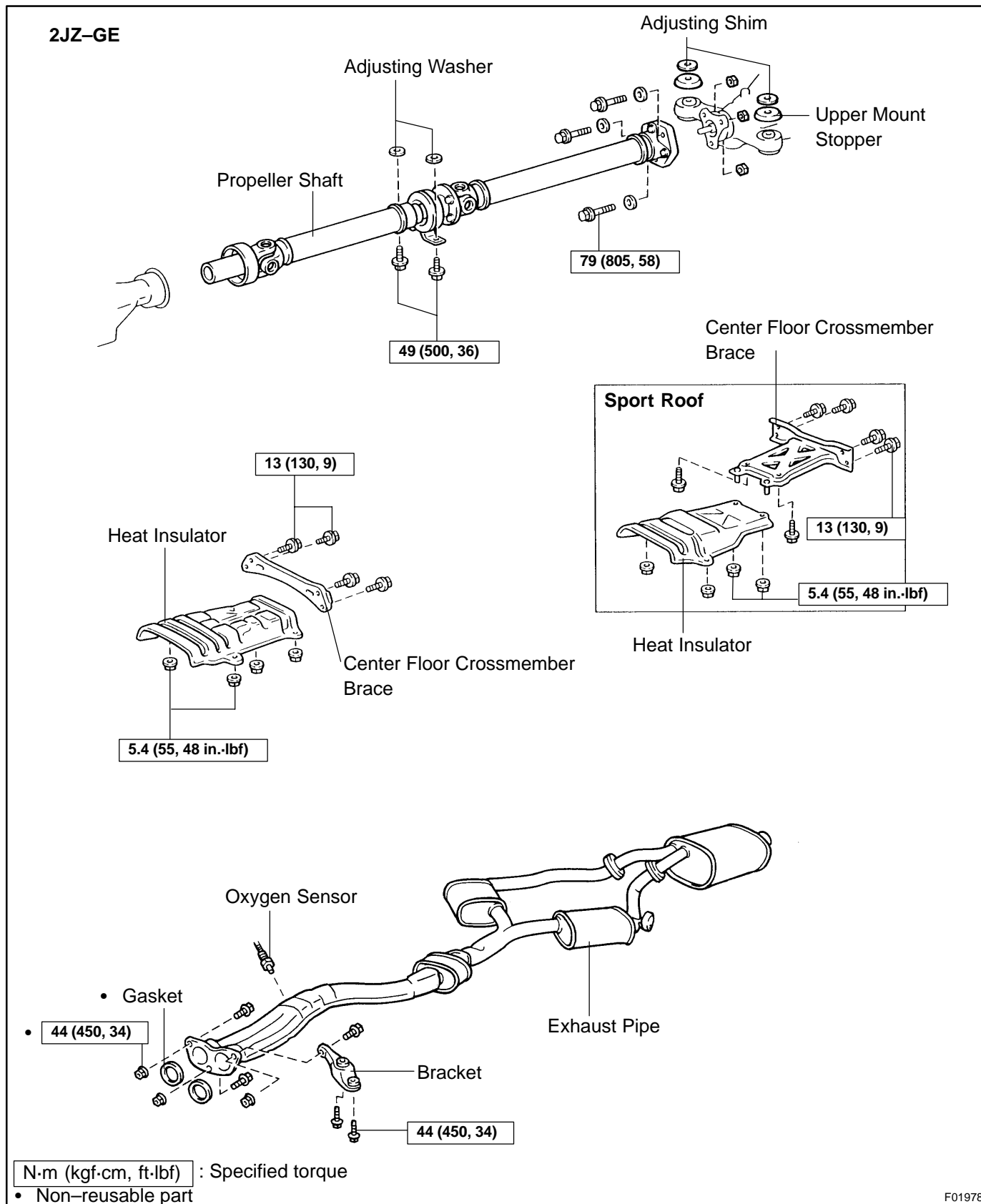
PROBLEM SYMPTOMS TABLE

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	<ol style="list-style-type: none"> 1. Center support bearing (Worn) 2. Sleeve yoke spline (Worn) 3. Spider bearing (Worn or stuck) 	<p>PR-8</p> <p>–</p> <p>PR-8</p>
Vibration	<ol style="list-style-type: none"> 1. Transmission extension housing rear bushing (Runout) 2. Sleeve yoke spline (Stuck) 3. Propeller shaft (Runout) 4. Propeller shaft (Imbalance) 	<p>–</p> <p>–</p> <p>PR-8</p> <p>–</p>

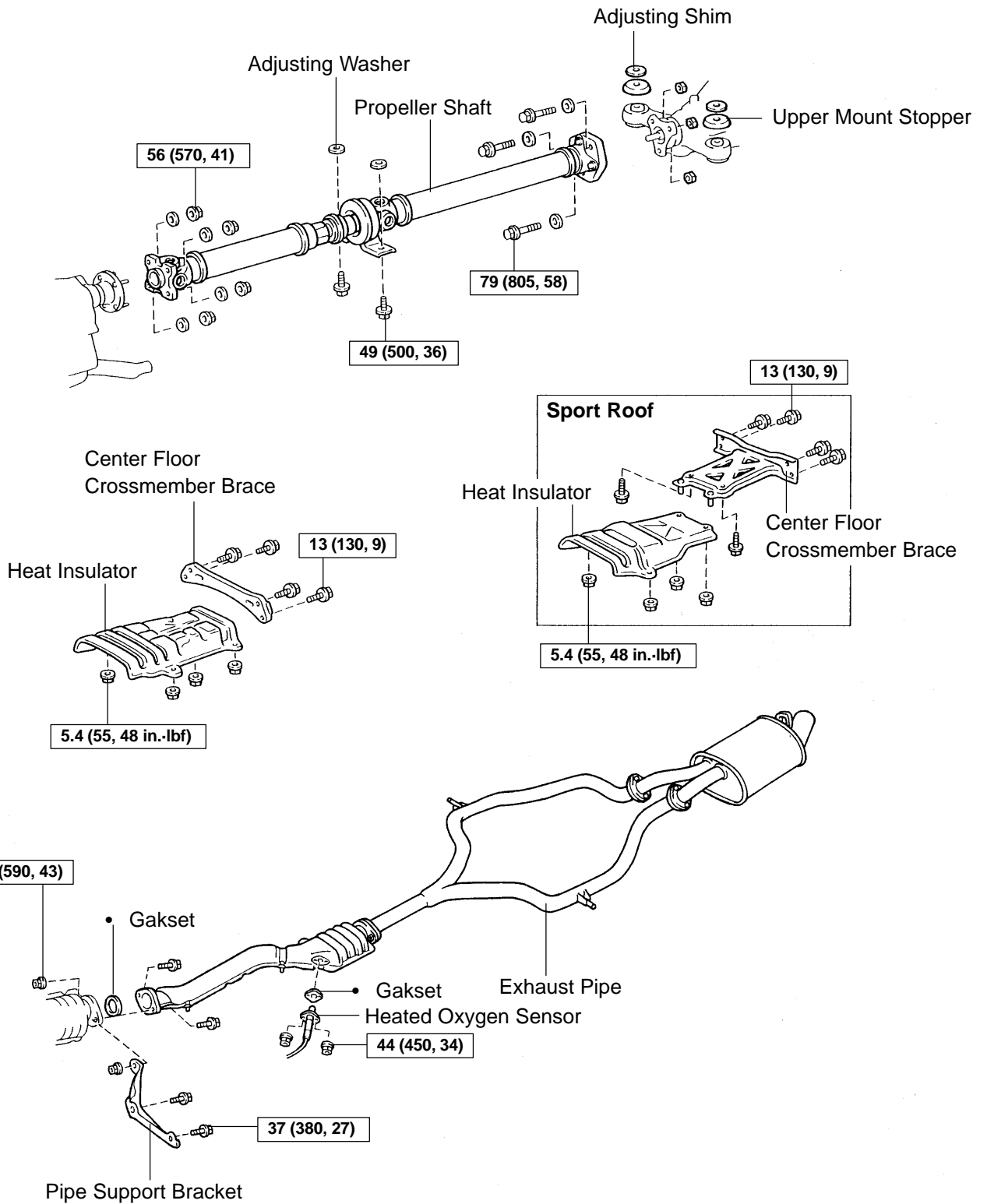
PROPELLER SHAFT ASSEMBLY COMPONENTS

PR02I-01



PROPELLER SHAFT - PROPELLER SHAFT ASSEMBLY

2JZ-GTE

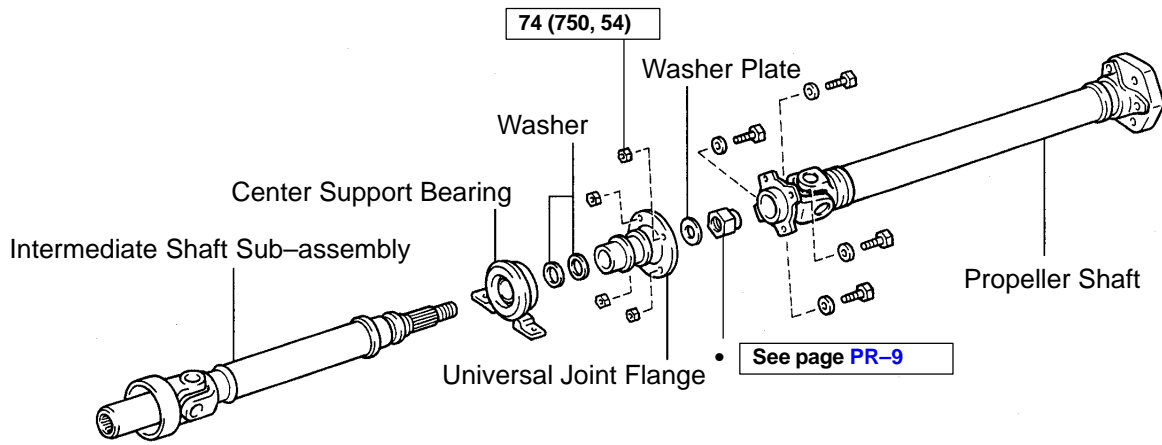


N·m (kgf·cm, ft·lbf) : Specified torque

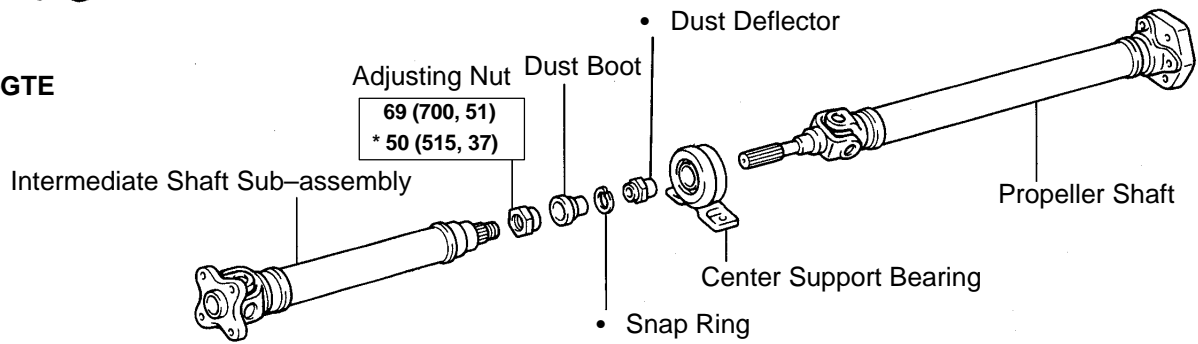
• Non-reusable part

F01979

2JZ-GE



2JZ-GTE



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

- Non-reusable part
- * For use with SST

REMOVAL

1. REMOVE EXHAUST PIPE (See page EM-89)

2. REMOVE HEAT INSULATOR

Remove the 4 nuts and heat insulator.

3. NORMAL ROOF:

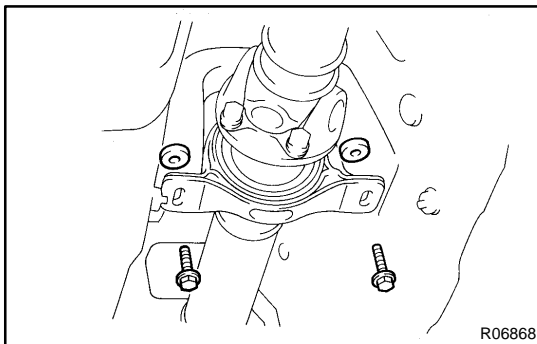
REMOVE CENTER FLOOR CROSSMEMBER BRACE

Remove the 4 bolts and crossmember brace.

4. SPORT ROOF:

REMOVE CENTER FLOOR CROSSMEMBER BRACE

Remove the 6 bolts and crossmember brace.



5. 2JZ-GE:

REMOVE PROPELLER SHAFT

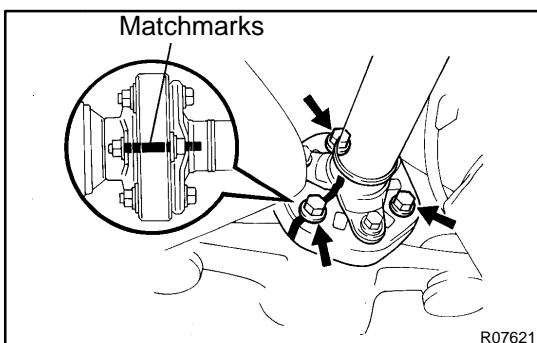
- (a) Remove the 2 center support bearing set bolts and adjusting washers.

HINT:

Production vehicles are not equipped with adjusting washers.

NOTICE:

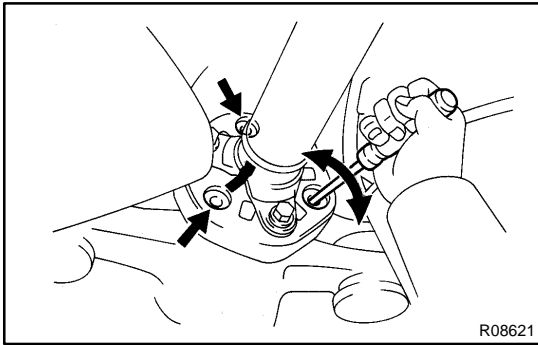
When removing the set bolts, support the center support bearing by hand so that the transmission and intermediate shaft, and propeller shaft and differential, remain in a straight line.



- (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.



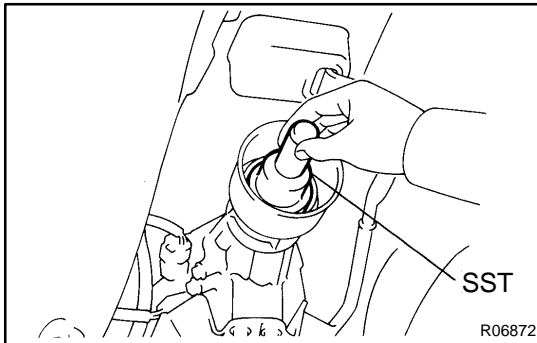
- (d) Separate the flexible coupling from the differential side.
HINT:

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.

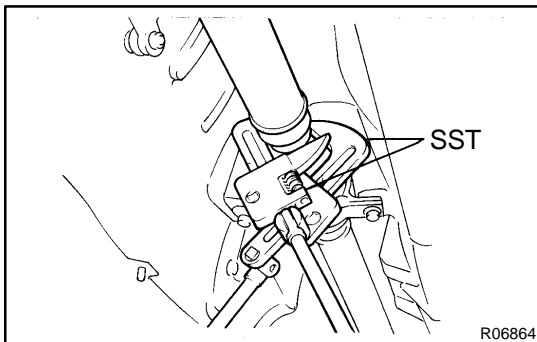
NOTICE:

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

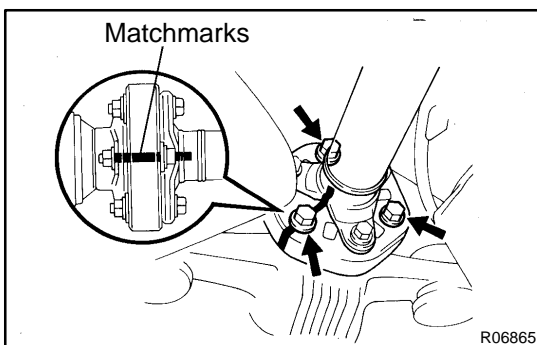


**6. 2JZ-GTE:
REMOVE PROPELLER SHAFT**

- (a) Using SST, loosen the adjusting nut until it can be turned by hand.
SST 09922-10010

HINT:

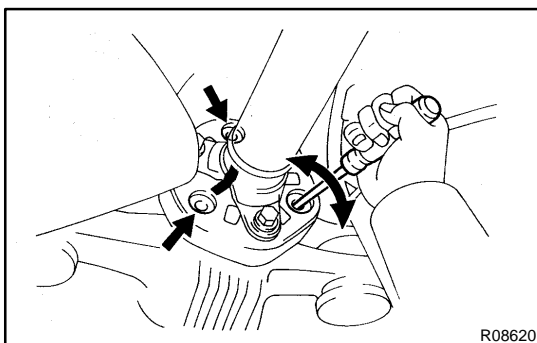
Use 2 of the same type SST.



- (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.



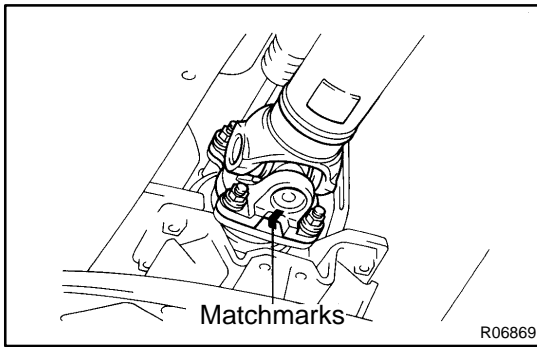
- (d) Separate the flexible coupling from the differential side.
HINT:

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.

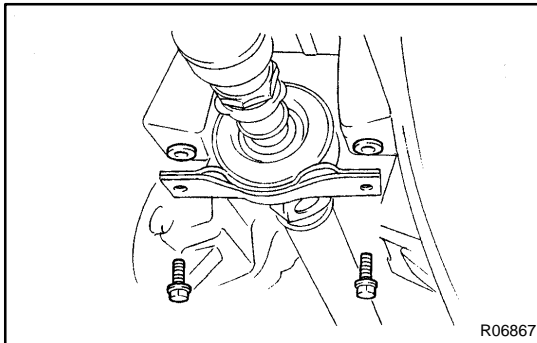
NOTICE:

Do not bring the screwdriver blade in direct contact with the flexible coupling's rubber portion.

PROPELLER SHAFT – PROPELLER SHAFT ASSEMBLY



- (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 an 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.

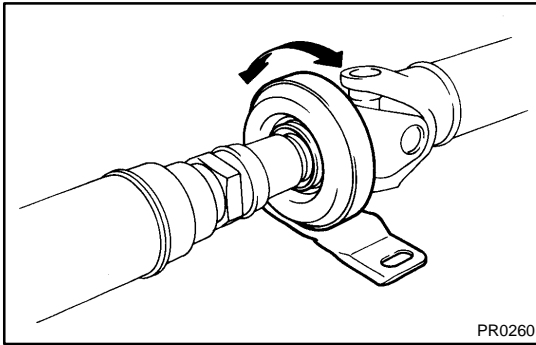
NOTICE:

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.



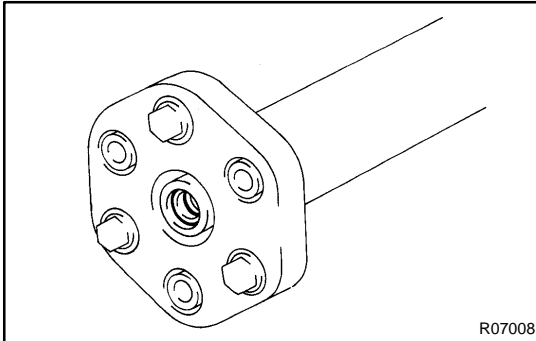
PR0260

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.

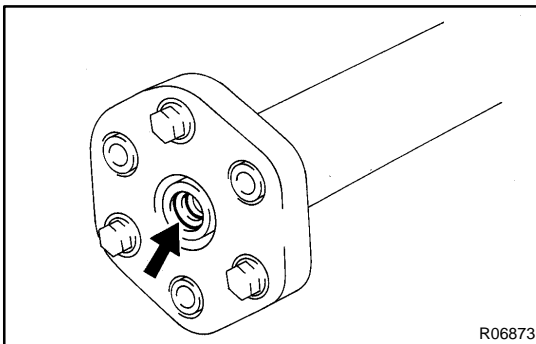


R07008

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.

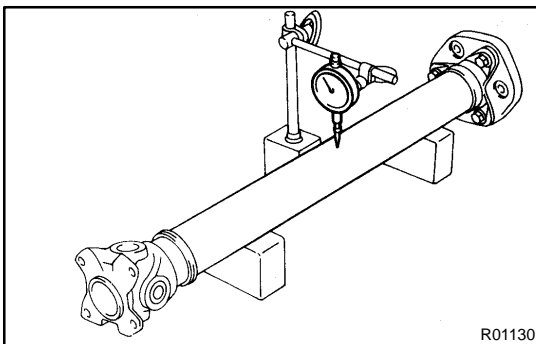


R06873

3. INSPECT FLEXIBLE COUPLING CENTERING BEARING

Check for damage to the bushing.

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

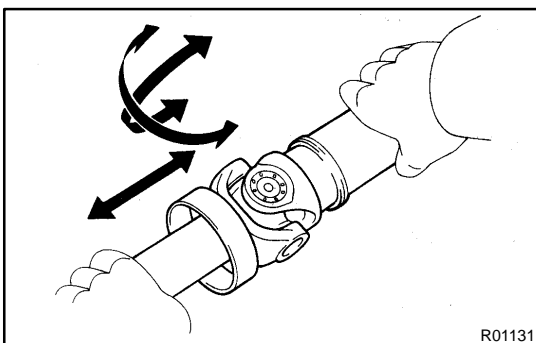


R01130

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.



R01131

5. INSPECT SPIDER BEARING

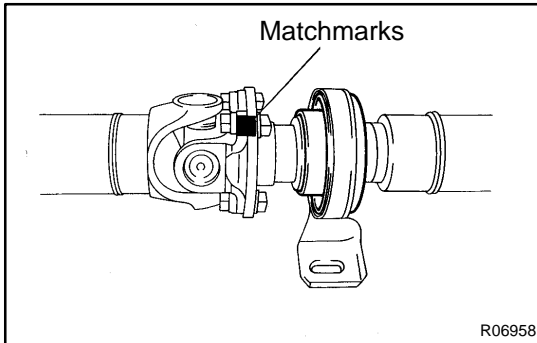
- (a) Check if the spider bearing rotates smoothly.
- (b) Check if there any play in the spider bearing.

If necessary, replace the propeller shaft assembly.

REPLACEMENT

NOTICE:

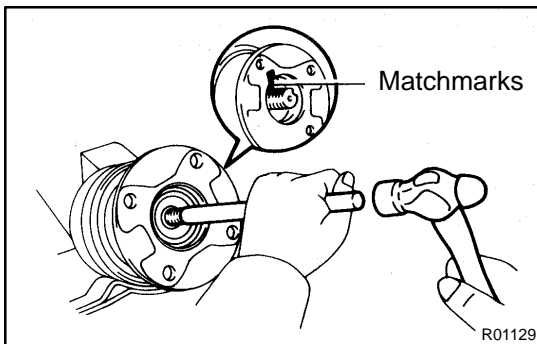
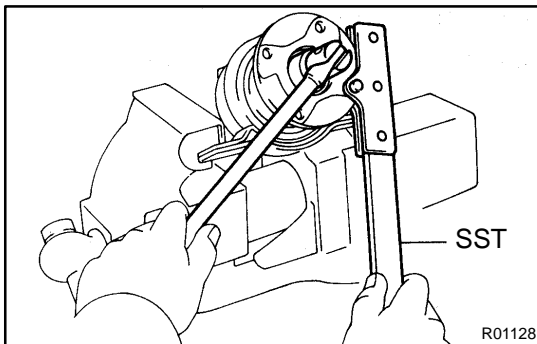
Be careful not to grip the propeller shaft tube too tightly in the vise as this will cause deformation.



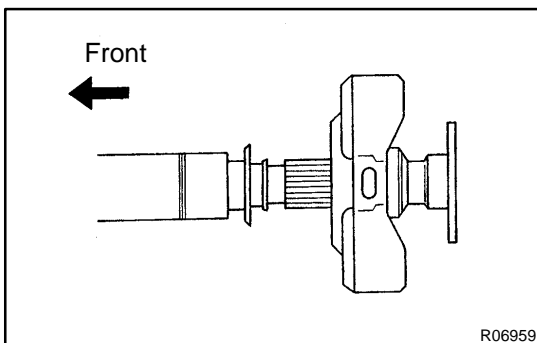
1. 2JZ-GE:

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.

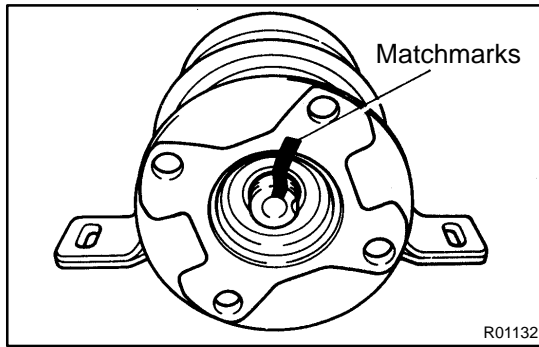


- (c) Install a new center support bearing on intermediate shaft.

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.

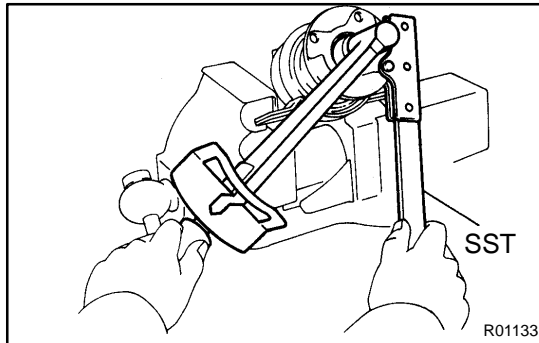


- (2) Place the flange on the shaft and align the matchmarks.

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.

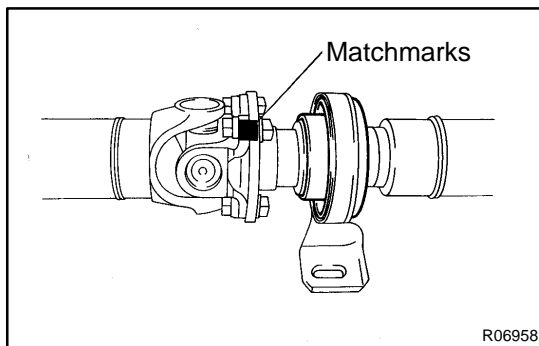
SST 09330-00021

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.

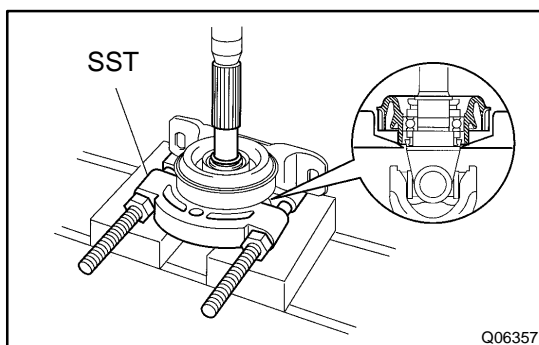
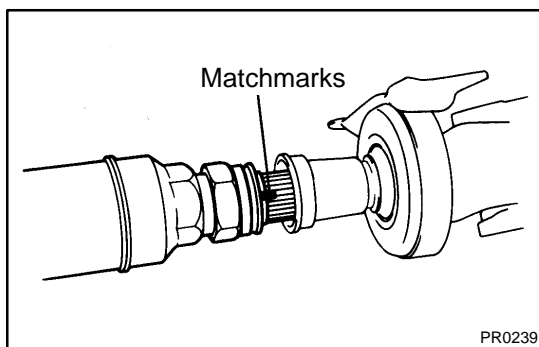
HINT:

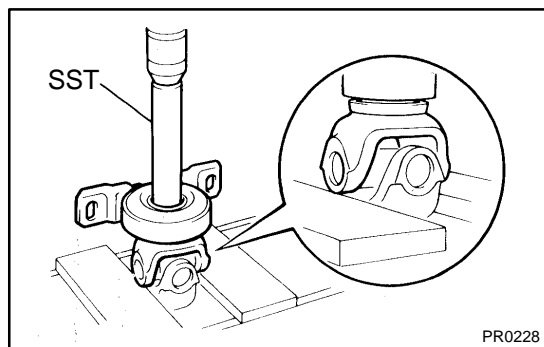
If the dust boot is reused, remove it after wrapping vinyl tape around the spline, so it will not be damaged.

- (b) Remove the center support bearing.

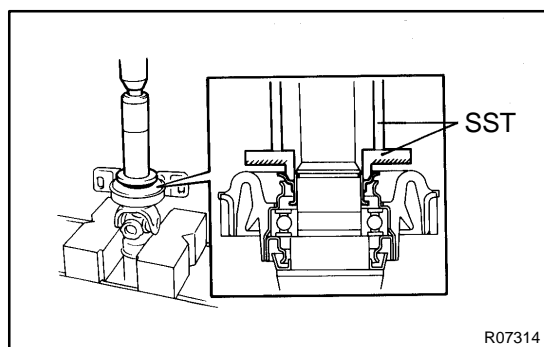
- (1) Using a snap ring expander, remove the snap ring.
- (2) Using SST, remove the center support bearing with dust deflector.

SST 09950-00020

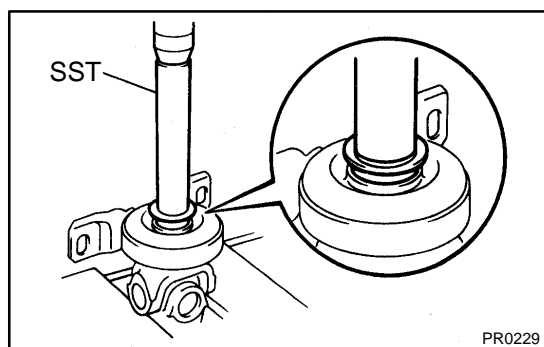




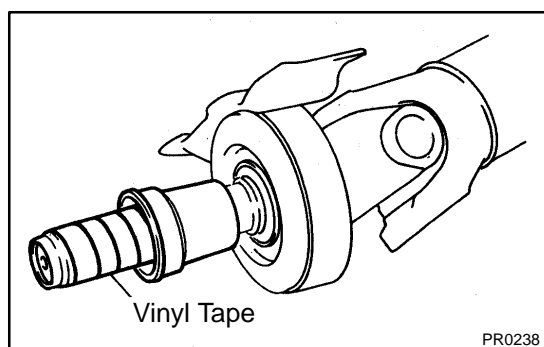
- (c) Install a new center support bearing.
- (1) Using SST and a press, install the center support bearing.
- SST 09330-50010



- (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:

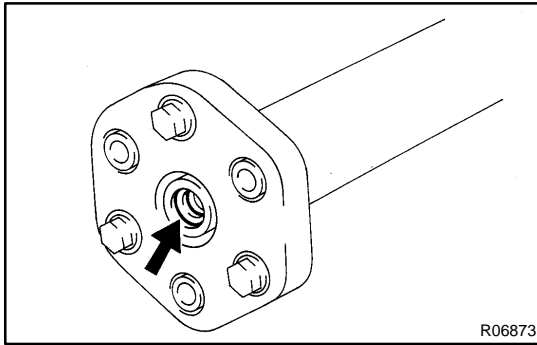
Assemble after wrapping vinyl tape around the spline so it will not damage the boot.

- (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.



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:

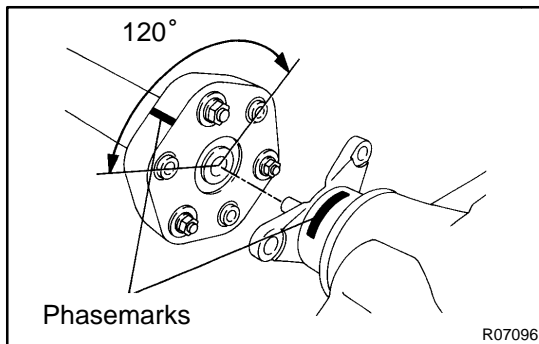
Use the adjusting washers which were removed.

- (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.

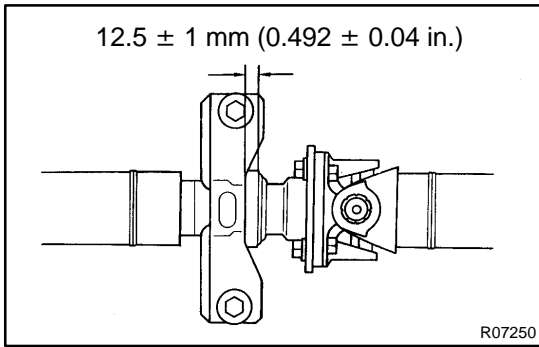
- (1) w/ Phasemarks:

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.



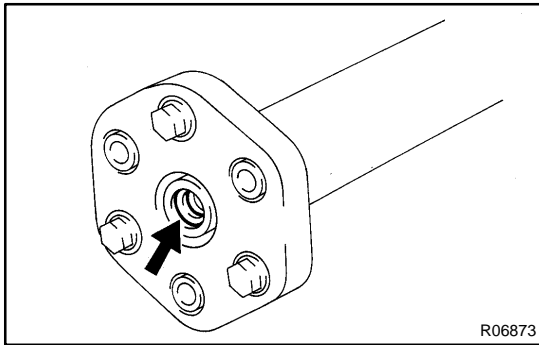
(h) Torque the 2 center support bearing set bolts.

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:

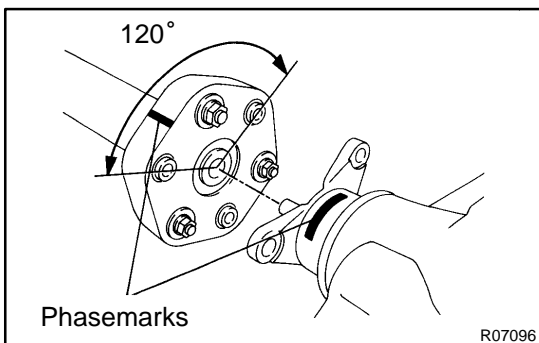
Use the adjusting washers which were removed.

(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)



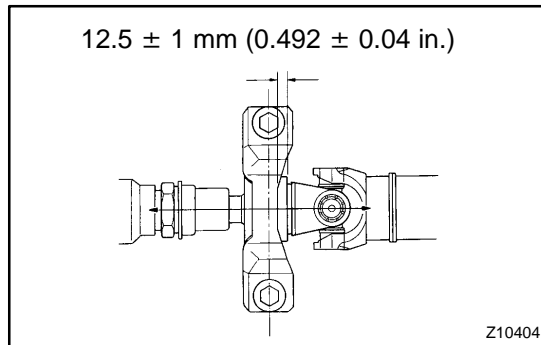
(g) If using a new propeller shaft.

(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.

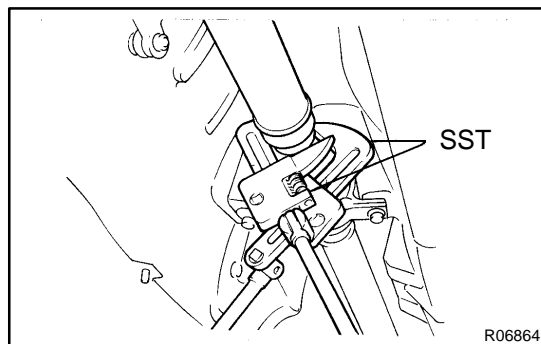
- (2) w/o Phasemarks:
Install the propeller shaft.
Torque: 79 N·m (805 kgf·cm, 58 ft·lbf)



- (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.



- (i) 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-15)**

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)

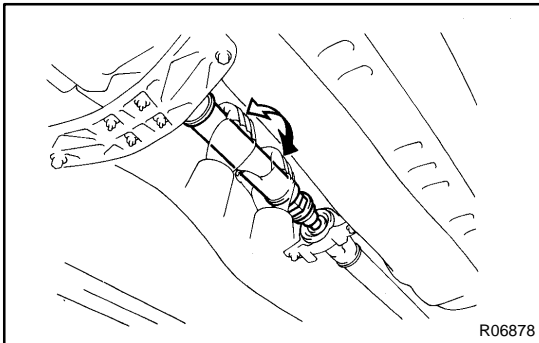
7. INSTALL EXHAUST PIPE (See page EM-89)

JOINT ANGLE ADJUSTMENT

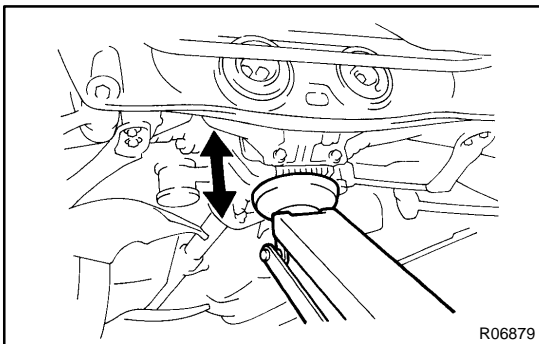
PR02N-01

NOTICE:

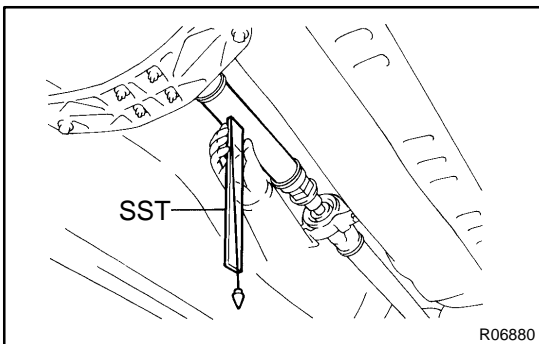
When doing operations which involve the removal and installation of the propeller shaft, always check the joint. Make adjustments if necessary.



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.

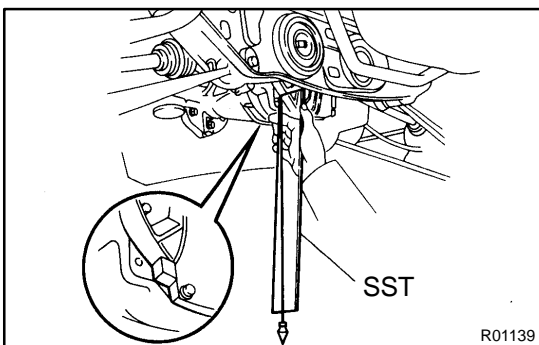


2. **CHECK JOINT ANGLE OF NO.2 JOINT AND NO.3 JOINT**

- (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.

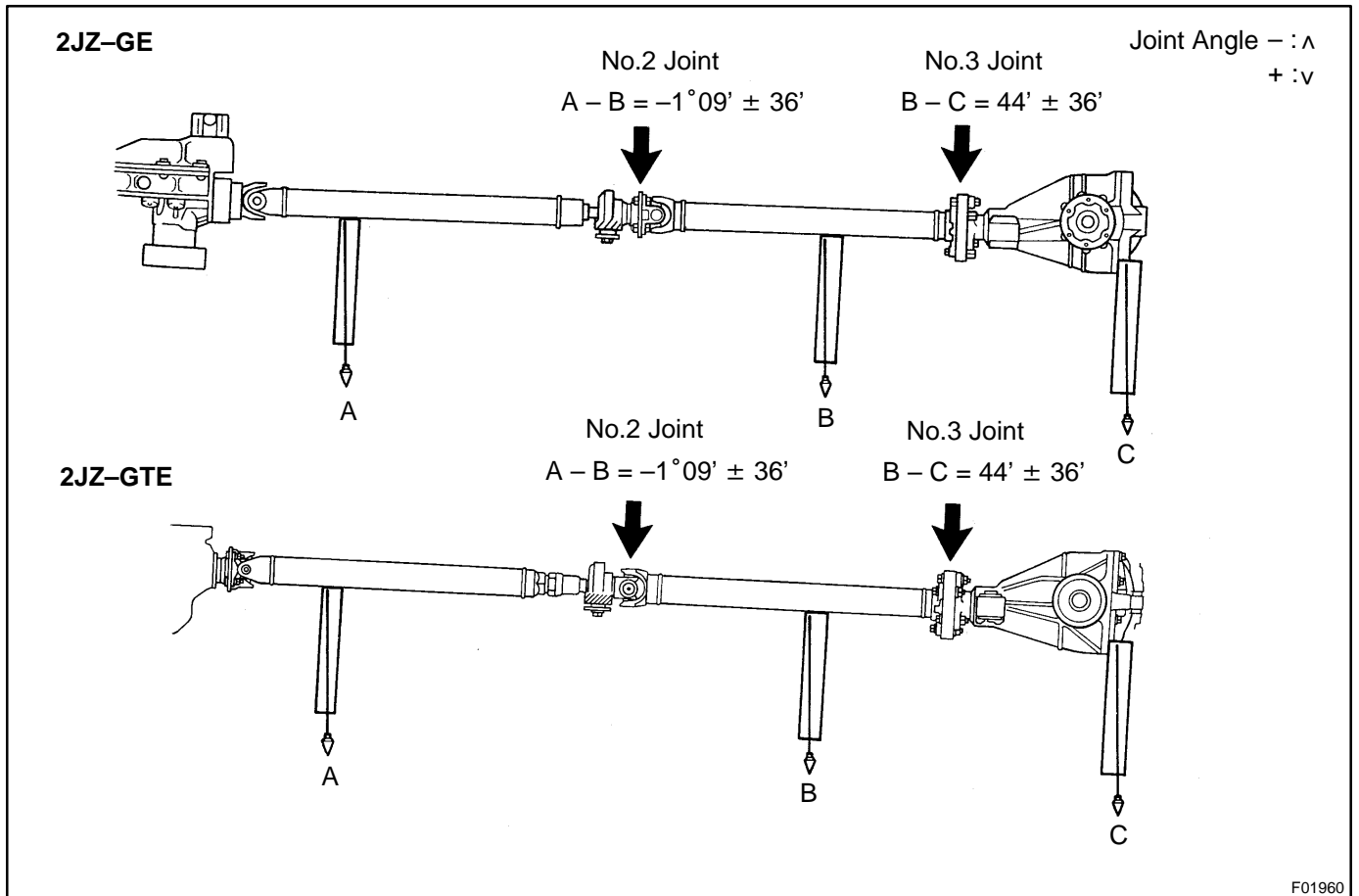


- (b) Using the SST, measure the installation angle of the differential.

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:
 $A - B = -1^{\circ}09' \pm 36'$
A: Intermediate shaft installation angle
B: Propeller shaft installation angle
- (d) Calculate the No.3 joint angle.
No.3 joint angle:
 $B - C = 44' \pm 36'$
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)		8.0 (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:

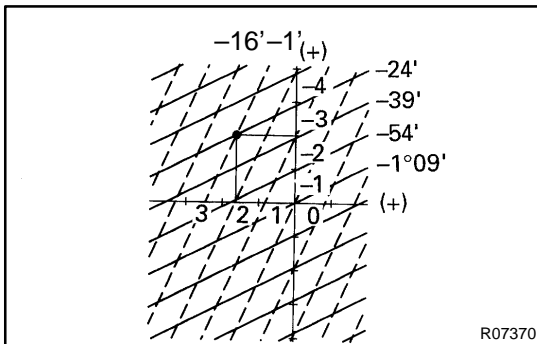
- Left and right washers should be the same thickness.
- This shim is installed on top of the upper mount stopper and it used for adjustment.

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'

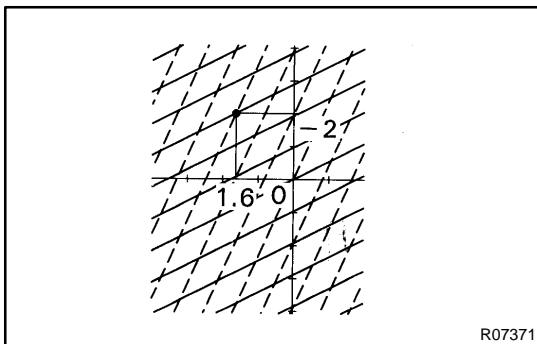
Propeller shaft: 2° 14'

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.

