

TROUBLESHOOTING

PR029-01

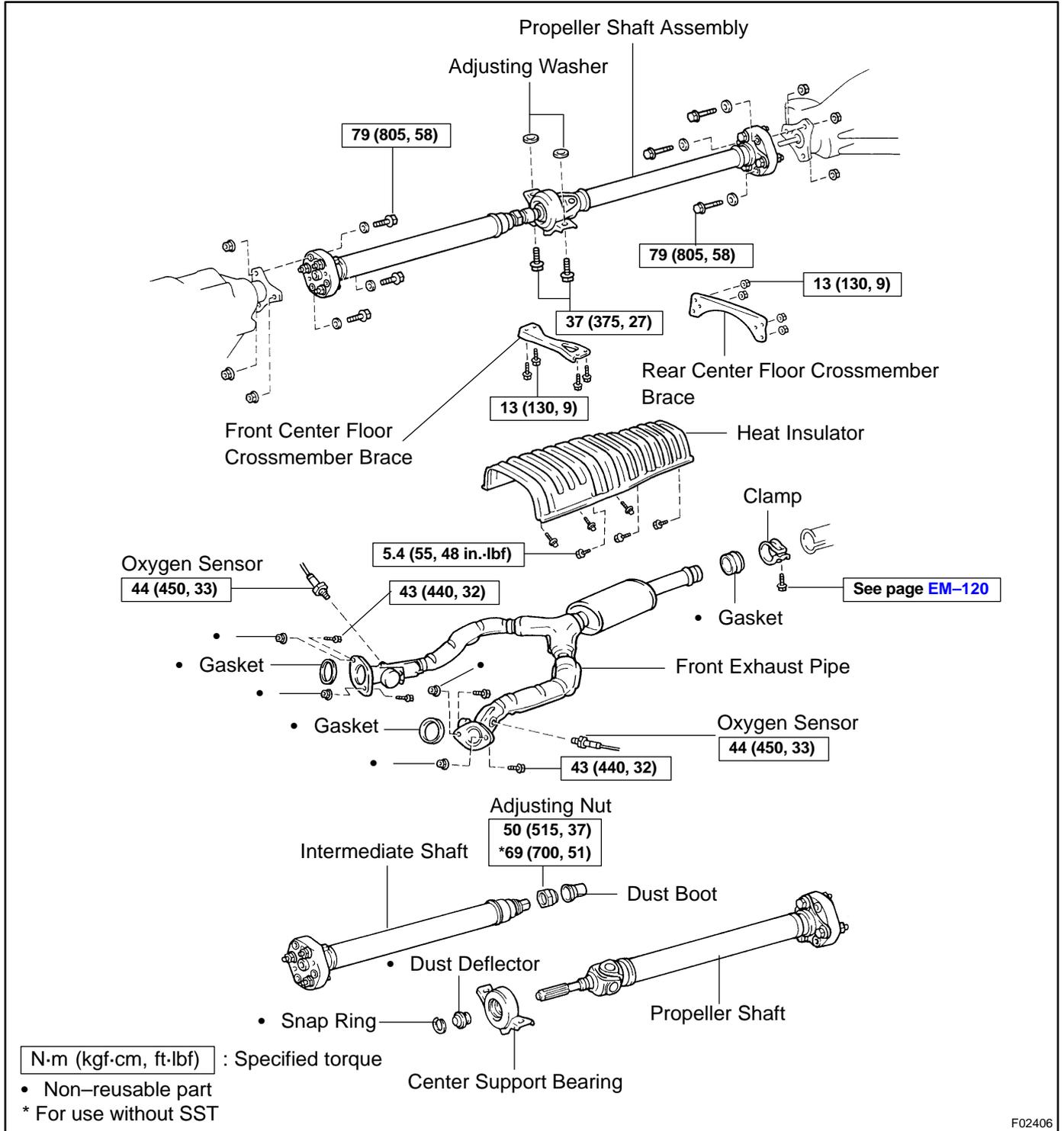
PROBLEM SYMPTOMS TABLE

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 bearing (Worn) 2. Sleeve yoke spline (Worn) 3. Spider bearing (Worn or stuck) 4. Flexible coupling (Worn) 	<p>PR-5</p> <p>–</p> <p>PR-6</p> <p>PR-5</p>
Vibration	<ol style="list-style-type: none"> 1. Transmission extension housing rear bushing (Worn) 2. Flexible coupling (Worn) 3. Sleeve yoke spline (Stuck) 4. Propeller shaft (Runout) 5. Propeller shaft (Imbalance) 	<p>–</p> <p>PR-5</p> <p>–</p> <p>PR-6</p> <p>–</p>

PROPELLER SHAFT ASSEMBLY COMPONENTS

PR02A-01



F02406

REMOVAL

1. REMOVE FRONT EXHAUST PIPE

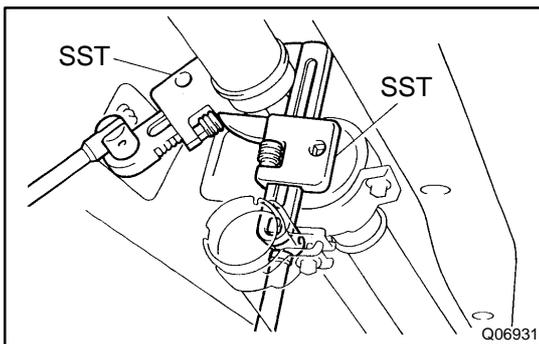
(See page [EM-119](#))

2. REMOVE HEAT INSULATOR

Remove the 6 bolts and heat insulator.

3. REMOVE CROSSMEMBER BRACES

- (a) Remove the 4 bolts and front center floor crossmember brace.
- (b) Remove the 4 nuts and rear center floor crossmember brace.



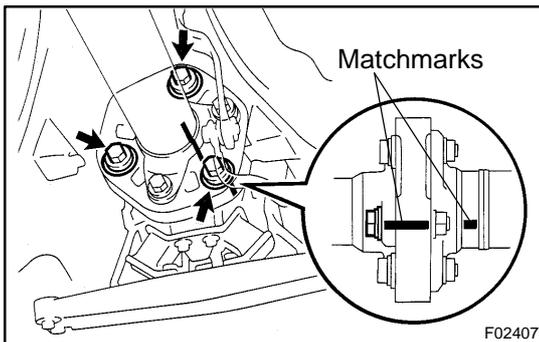
4. REMOVE PROPELLER SHAFT

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

SST 09922-10010

HINT:

Use 2 of the same type of SST.

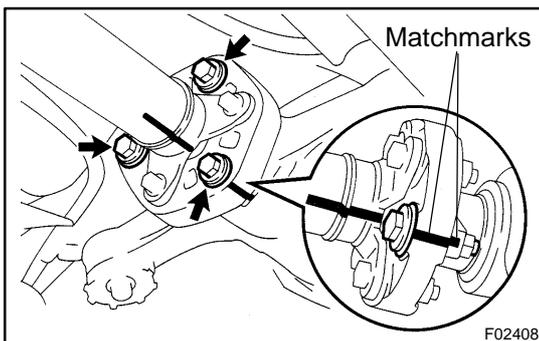


- (b) Place matchmarks on the transmission companion flange and flexible coupling.

- (c) Remove the 3 bolts installed from the transmission side.

NOTICE:

The bolts installed from the propeller shaft side should not be removed.

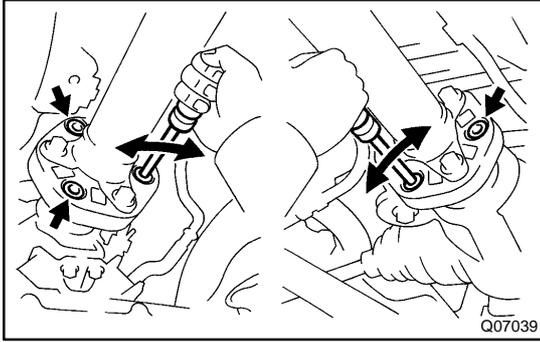


- (d) Place matchmarks on the differential companion flange and flexible coupling.

- (e) Remove the 3 bolts installed from the differential side.

NOTICE:

The bolts installed from the propeller shaft side should not be removed.



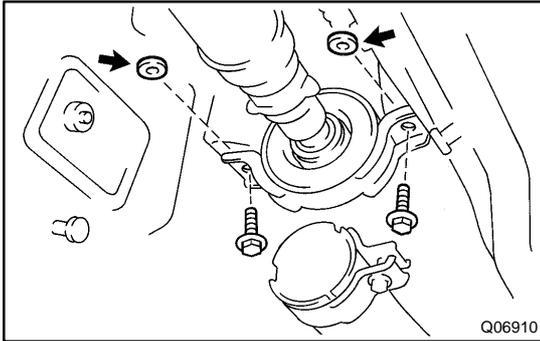
- (f) Separate the flexible couplings from the transmission and differential.

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.



- (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.

Maximum joint angle: 5°

- (h) 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.

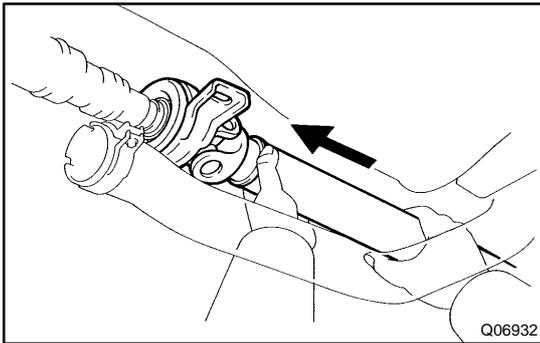
NOTICE:

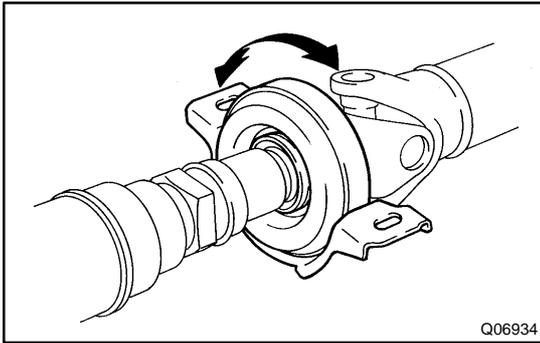
Press the propeller shaft straight ahead to keep the transmission and intermediate shaft aligned straight.

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

NOTICE:

The intermediate shaft and propeller shaft should not be separated.



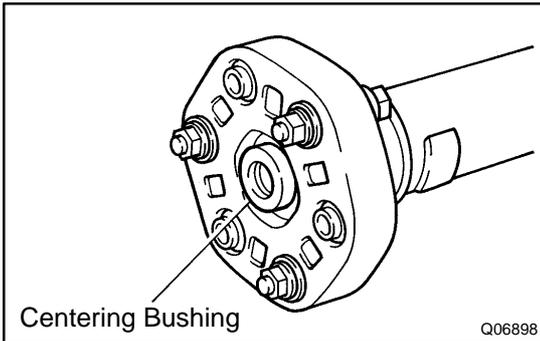


INSPECTION

1. INSPECT CENTER SUPPORT BEARING

- (a) Check for cracks in or damage to the cushion.
- (b) Check if the bearing turns smoothly.

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



2. INSPECT FLEXIBLE COUPLINGS

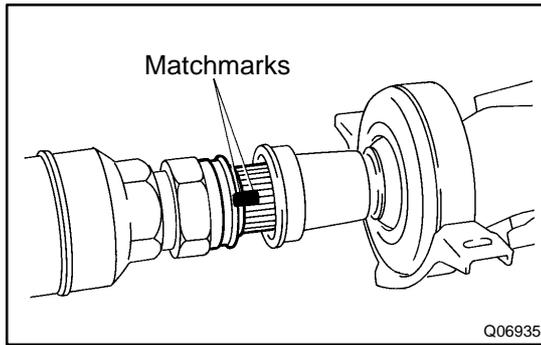
Check for cracks in or damage to the front and rear flexible couplings.

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

3. INSPECT FLEXIBLE COUPLING CENTERING BUSHING

Check for damage to the bushing.

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



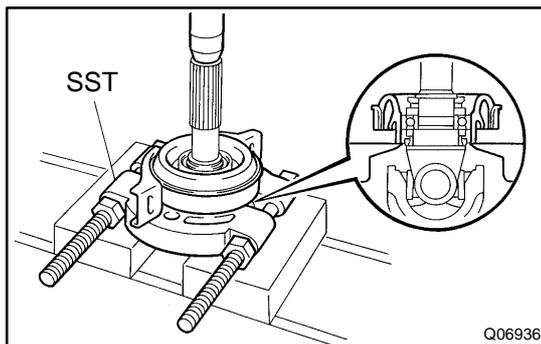
REPLACEMENT

1. SEPARATE INTERMEDIATE SHAFT AND PROPELLER SHAFT

- (a) Place matchmarks on the intermediate shaft and propeller shaft.
- (b) Separate the intermediate shaft and propeller shaft.
- (c) Remove the dust boot from the propeller shaft.

HINT:

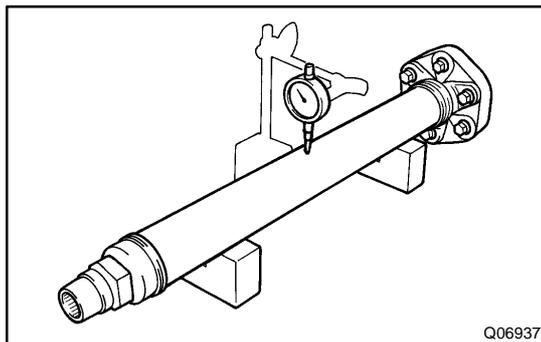
If the dust boot is reused, remove it after wrapping vinyl tape around the spline, so it will not be damaged.



2. REMOVE CENTER SUPPORT BEARING

- (a) Using a snap ring expander, remove the snap ring.
- (b) Using SST and a press, remove the center support bearing and dust deflector.

SST 09950-00020

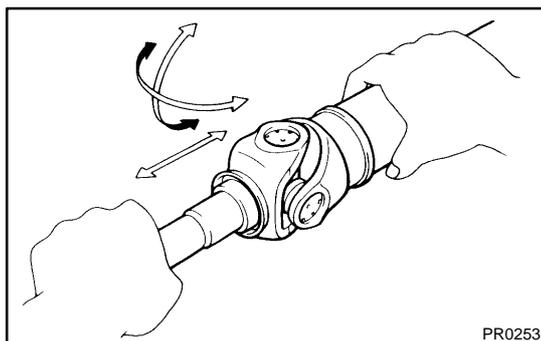


3. INSPECT INTERMEDIATE SHAFT AND PROPELLER SHAFT RUNOUT

Using a dial indicator, check the runout of the shafts.

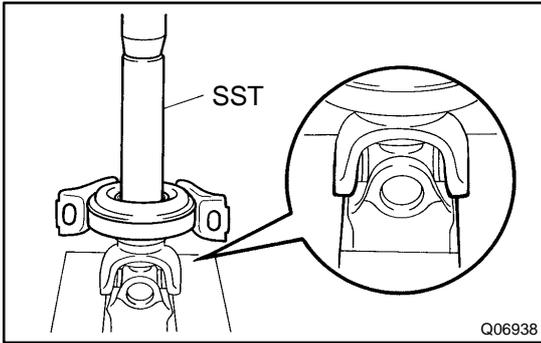
Maximum runout: 0.8 mm (0.031 in.)

If the runout exceeds the maximum, replace the propeller shaft assembly.



4. INSPECT SPIDER BEARING

- (a) Check if the spider bearing rotates smoothly.
 - (b) Check if there is any play in the spider bearing.
- If necessary, replace the propeller shaft.

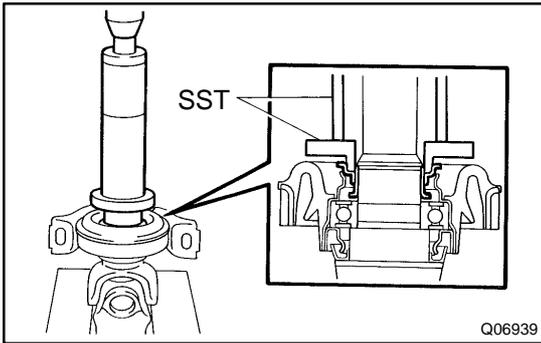


5. INSTALL CENTER SUPPORT BEARING

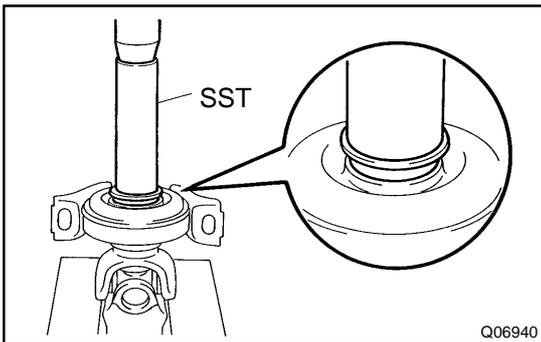
NOTICE:

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

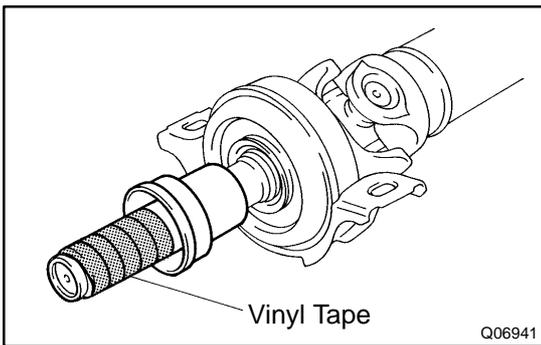
- (a) Using SST and a press, install the center support bearing.
SST 09330-50010



- (b) 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



- (c) Using SST and a press, install a new dust deflector.
SST 09330-50010
- (d) Using a snap ring expander, install a new snap ring.



6. ASSEMBLE INTERMEDIATE SHAFT AND PROPELLER SHAFT

- (a) Install the dust boot.

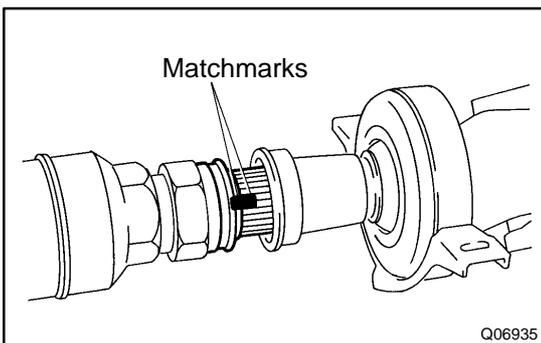
NOTICE:

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

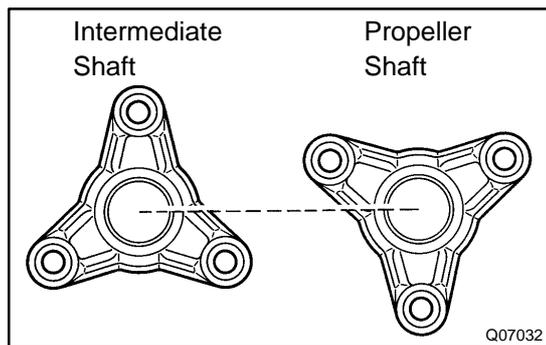
- (b) Apply grease to the spline.

Grease:

Molybdenum disulphide lithium base, NLGI No.2

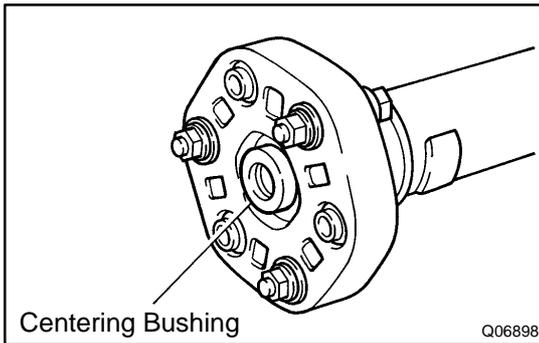


- (c) Align the matchmarks and assemble the intermediate shaft and propeller shaft.
- (d) Cover the adjusting nut with the dust boot.

**NOTICE:**

The directions of the intermediate shaft companion flange and the propeller shaft companion flange should differ by 180° .

- (e) Tighten the adjusting nut fully by hand.



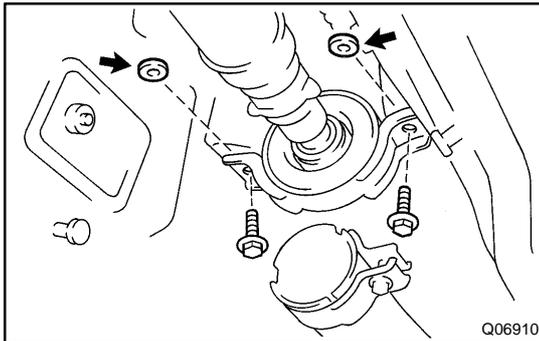
INSTALLATION

1. INSTALL PROPELLER SHAFT

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

Grease:

Molybdenum disulphide lithium base, NLGI No.2



- (b) Install the propeller shaft from the vehicle's rear and connect the transmission and differential.

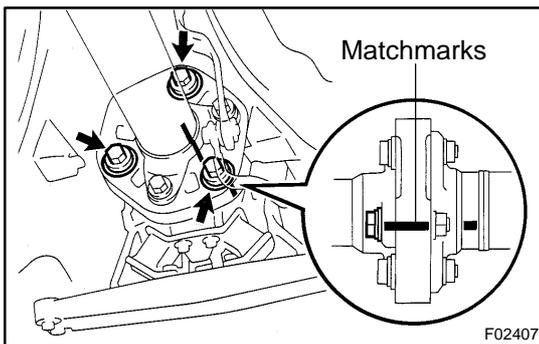
NOTICE:

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

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

HINT:

Use the adjusting washers which were removed.

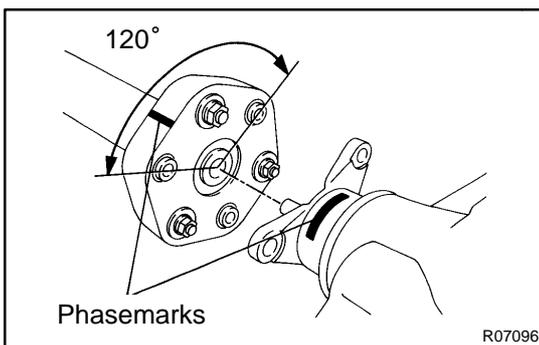


- (d) Align the matchmarks and connect the propeller shaft to the transmission/differential.

- (e) Install and torque the 3 bolts, washers and nuts.

NOTICE:

The bolts should be installed from the propeller shaft side.
Torque: 79 N·m (805 kgf·cm, 58 ft·lbf)



- (f) If using a new propeller shaft (w/ Phasemarks):
Install the propeller shaft phasemarks and differential/transmission phasemarks so that their respective alignment phasemarks match.

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

- (g) If using a new propeller shaft (w/o Phasemarks):
Install the propeller shaft.

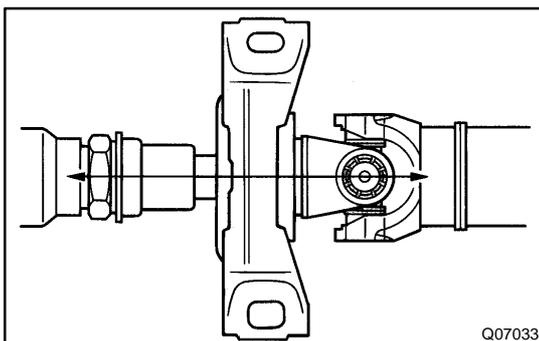
- (h) Torque the 2 center support bearing set bolts.

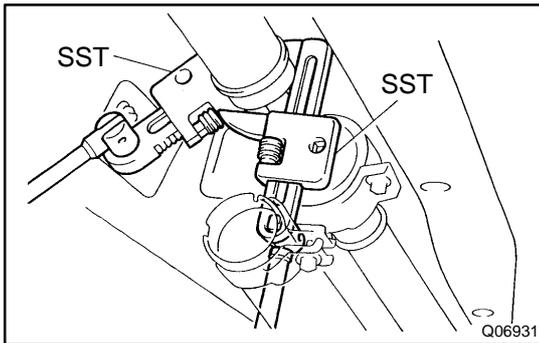
Torque: 37 N·m (375 kgf·cm, 27 ft·lbf)

HINT:

Adjust the center support bearing to keep the intervals 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, tighten the adjusting nut.
 SST 09922-10010
Torque: 50 N·m (515 kgf-cm, 37 ft-lbf)

HINT:

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

2. INSPECT JOINT ANGLE

(See page [PR-11](#))

NOTICE:

The joint angle should by all means be checked when the propeller shaft is removed and installed.

3. INSTALL CROSSMEMBER BRACES

- (a) Install the front center floor crossmember brace and torque the 4 bolts.

Torque: 13 N·m (130 kgf-cm, 9 ft-lbf)

- (b) Install the rear center floor crossmember brace and torque the 4 bolts.

Torque: 13 N·m (130 kgf-cm, 9 ft-lbf)

4. INSTALL HEAT INSULATOR

Install the heat insulator and torque the 6 bolts.

Torque: 5.4 N·m (55 kgf-cm, 48 in.-lbf)

5. INSTALL FRONT EXHAUST PIPE

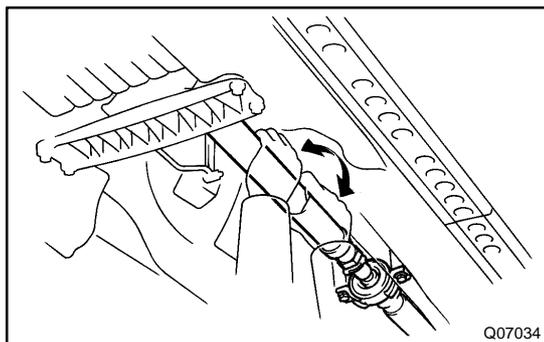
(See page [EM-119](#))

JOINT ANGLE INSPECTION

PR02F-01

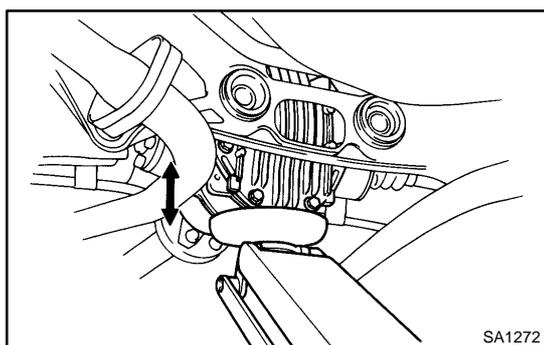
NOTICE:

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

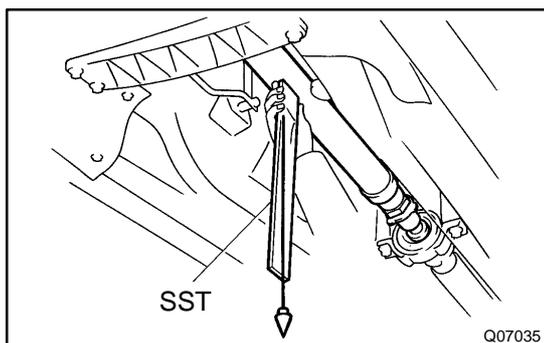


1. STABILIZE PROPELLER SHAFT AND DIFFERENTIAL

- (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.



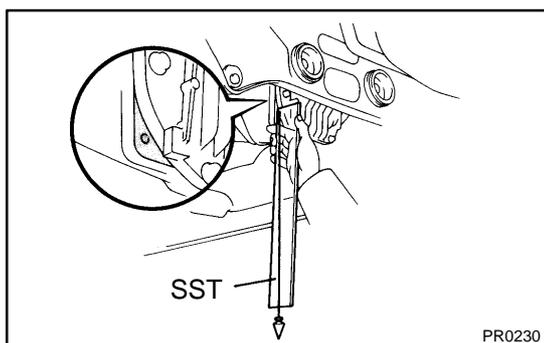
2. CHECK NO.2 AND NO.3 JOINT ANGLE

- (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.



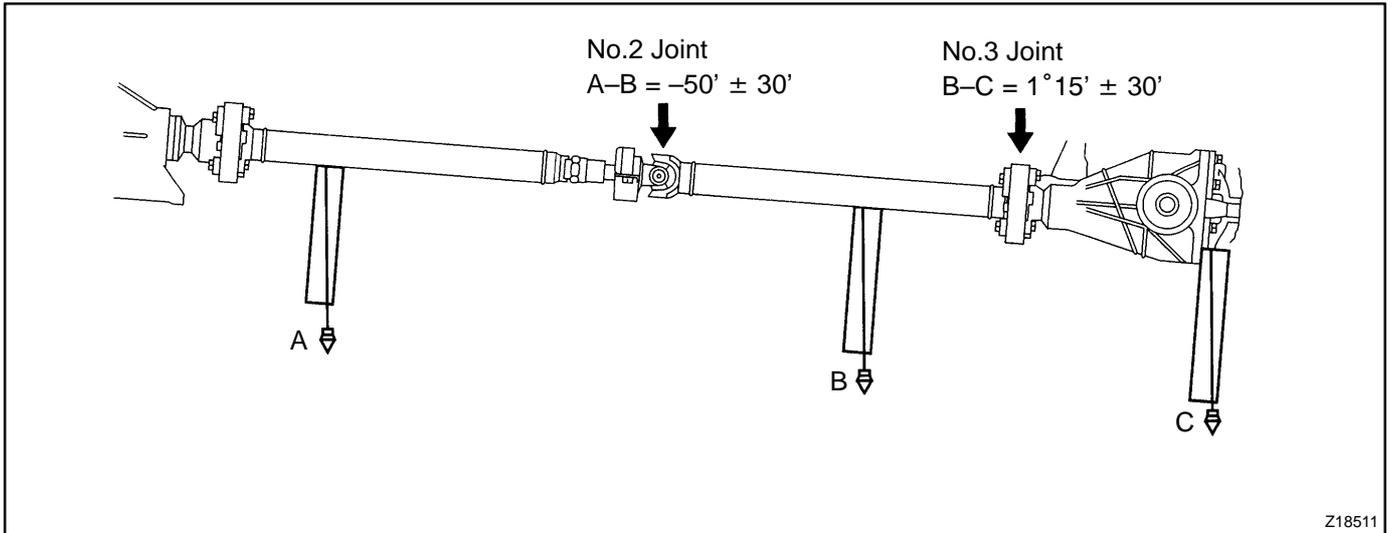
- (b) Using SST, measure the installation angle of the differential.

SST 09370-50010

HINT:

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

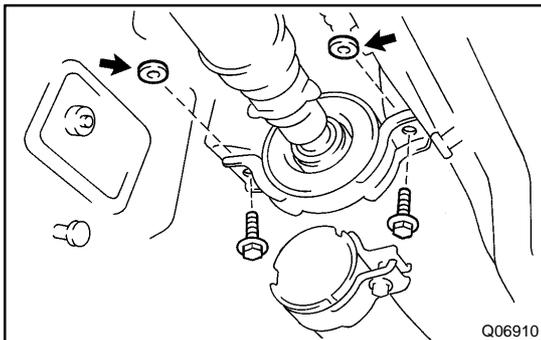
- (c) Calculate the No.2 joint angle.
No.2 joint angle:
A-B = -50' ± 30'
 A: Intermediate shaft installation angle
 B: Propeller shaft installation angle
- (d) Calculate the No.3 joint angle.
No.3 joint angle:
B-C = 1°15' ± 30'
 B: Propeller shaft installation angle
 C: Differential installation angle



If the measured angle is not within the specification, adjust the joint angle.

HINT:

Adjust joint angle using the adjustment chart, adjusting it with the center support bearing adjusting washer and differential shim.



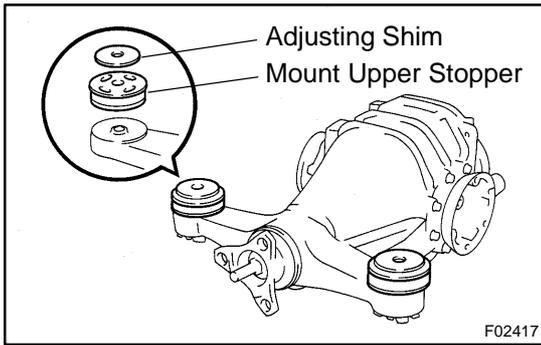
3. ADJUST NO.2 JOINT ANGLE

Select the proper center support bearing adjusting washer for adjustment.

Thickness mm (in.)	Thickness mm (in.)
1.0 (0.039)	4.5 (0.177)
2.0 (0.079)	6.5 (0.256)

HINT:

- Left and right washers should be the same thickness.
- 2 washers should not be assembled together.



4. ADJUST NO.3 JOINT ANGLE

Select the proper differential adjusting shim for adjustment.

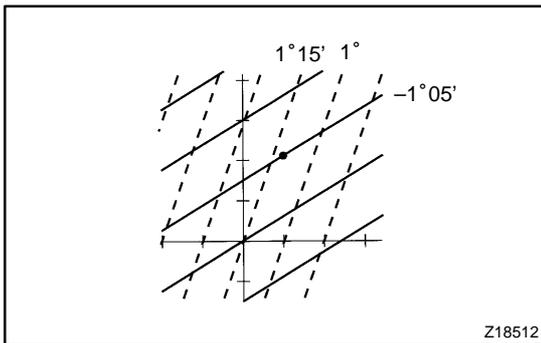
Thickness mm (in.)	Thickness mm (in.)
1.0 (0.039)	2.0 (0.079)
1.6 (0.063)	-

HINT:

- Left and right washers should be the same thickness.
- 2 washers should not be assembled together.
- This shim is installed on top of the mount stopper and is used for adjustment.

5. HOW TO READ ADJUSTMENT CHART

- Take measurements, then calculate the No.2 and No.3 joint angles.
- Mark 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: 2°00'

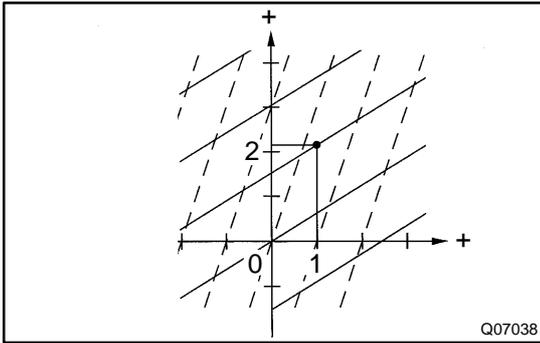
Propeller shaft: 3°05'

Differential: 1°54'

Joint angle:

No.2: $2^{\circ}00' - 3^{\circ}05' = -1^{\circ}05'$

No.3: $3^{\circ}05' - 1^{\circ}54' = 1^{\circ}11'$



Adjustment (Center support bearing):

Use an adjusting washer which is 2.0 mm (0.079 in.) thick-
er.

Adjustment (Differential):

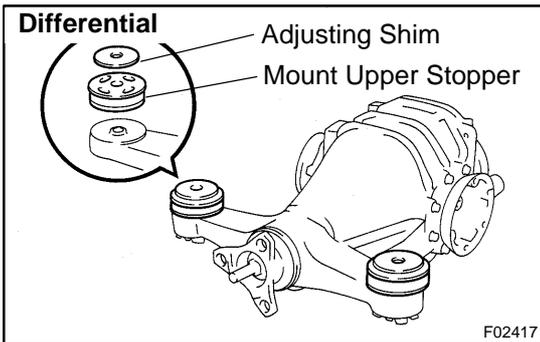
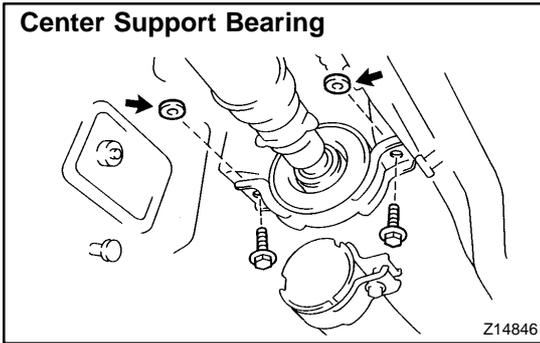
Use an adjusting shim which is 1.0 mm (0.039 in.) thicker.

HINT:

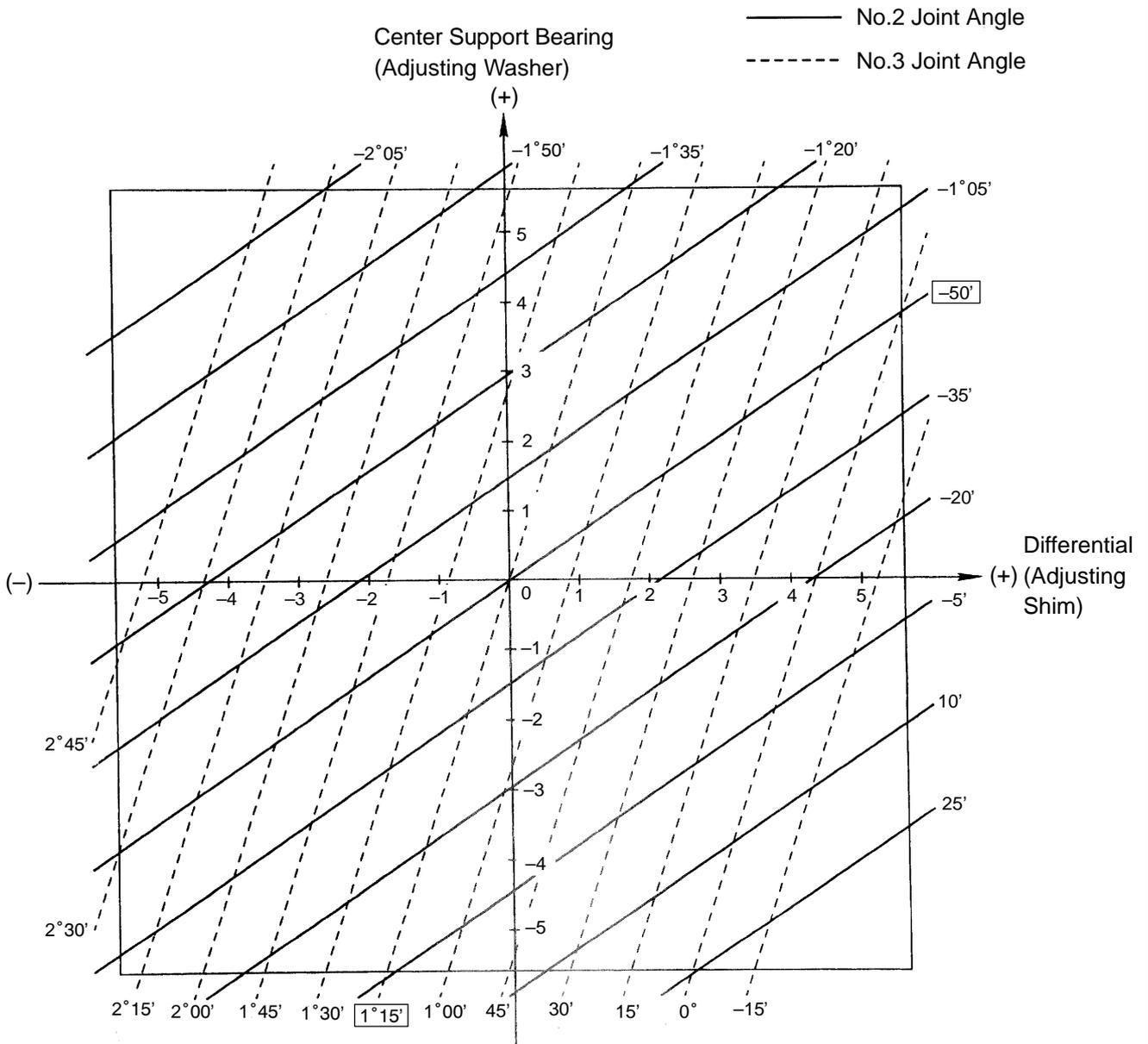
If a washer and shim of the exact thickness are not available,
use the parts which are nearest in thickness.

NOTICE:

**Check the joint angle once again after making the adjust-
ment.**



ADJUSTMENT CHART



Z18589