

PROPELLER SHAFT

	Page
PRECAUTIONS	PR-2
TROUBLESHOOTING	PR-2
PROPELLER SHAFT	PR-2

PR

PRECAUTIONS

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

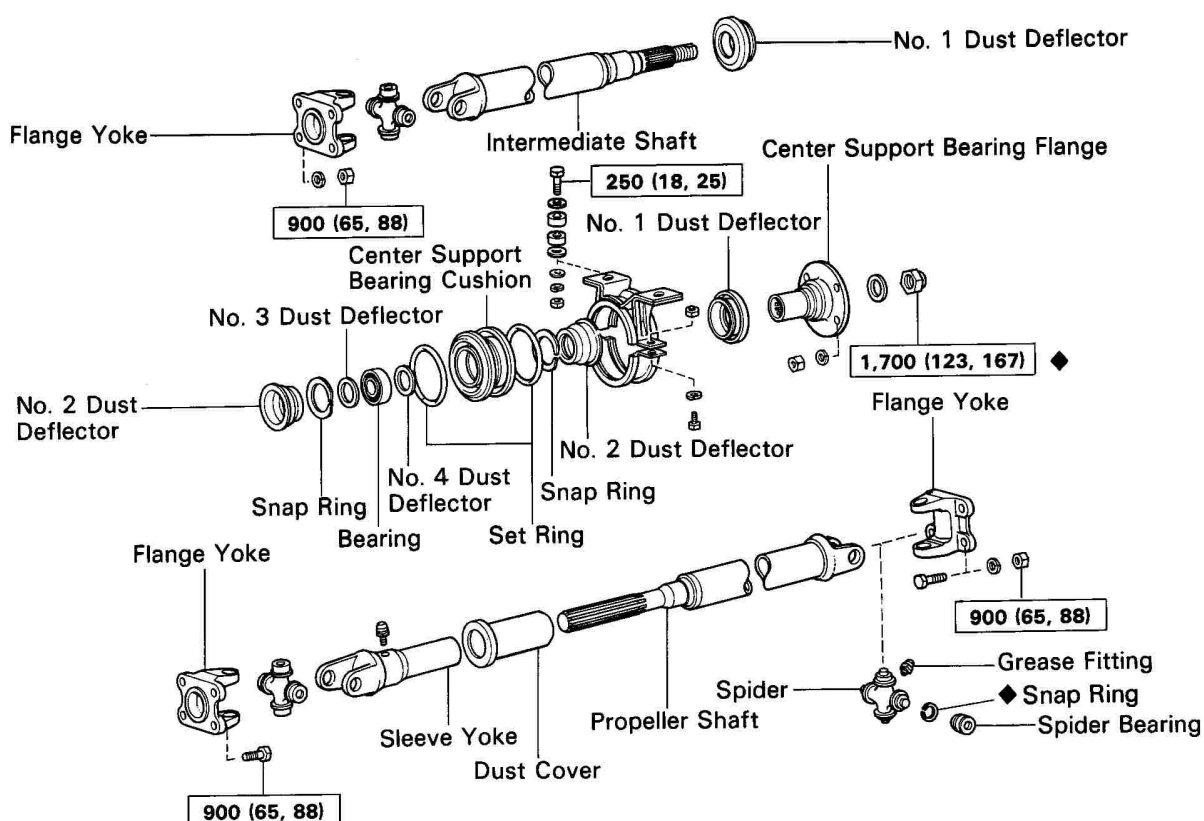
TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Noise	Sleeve yoke spline worn	Replace sleeve yoke	PR-5
	Center bearing worn	Replace center bearing	PR-9
	Spider bearing worn or stuck	Replace spider bearing	PR-5
Vibration	Propeller shaft runout	Replace propeller shaft	PR-2
	Propeller shaft imbalance	Balance propeller shaft	
	Sleeve yoke spline stuck	Replace sleeve yoke	PR-5

PROPELLER SHAFT

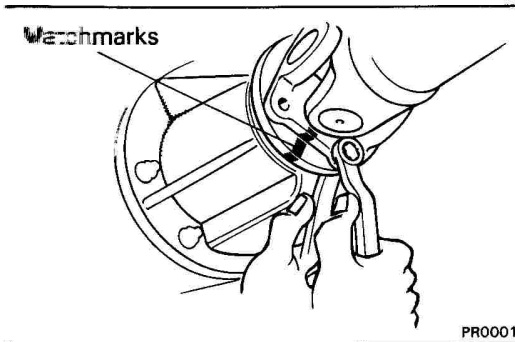
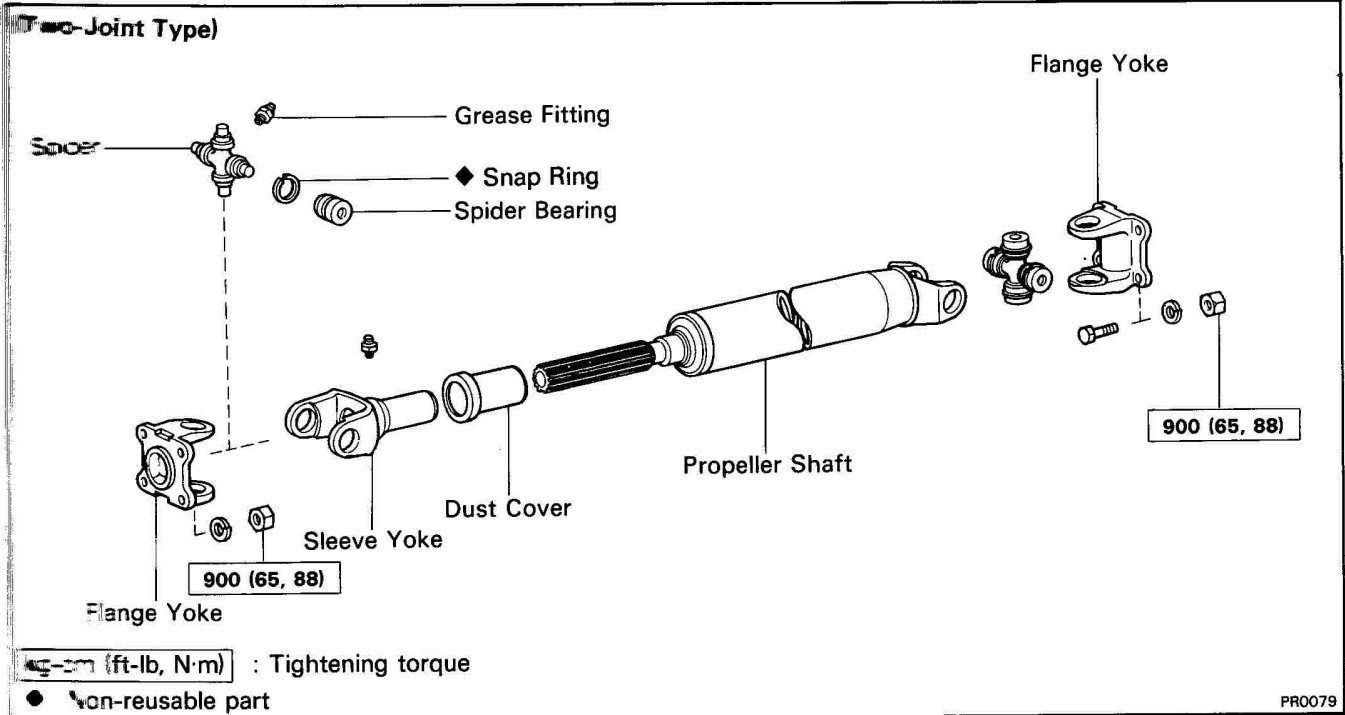
COMPONENTS

(Three-Joint Type)



kg-cm (ft-lb, N·m) : Tightening torque

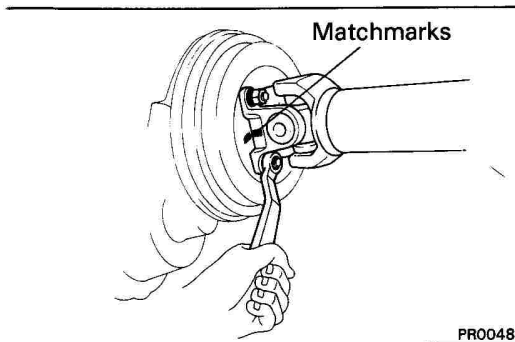
◆ : Non-reusable part



REMOVAL OF PROPELLER SHAFT

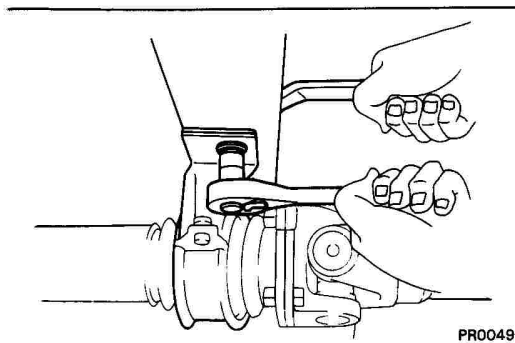
1. DISCONNECT PROPELLER SHAFT FLANGE FROM COMPANION FLANGE ON DIFFERENTIAL

- Put matchmarks on the flanges.
- Remove the four bolts and nuts.

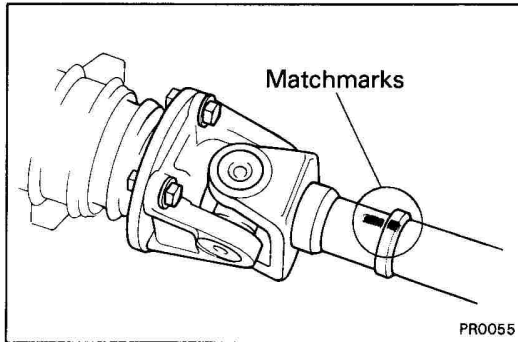


2. DISCONNECT PROPELLER SHAFT FLANGE FROM PARKING BRAKE DRUM

- Place matchmarks on the flange and parking brake drum.
- Remove the four nuts.



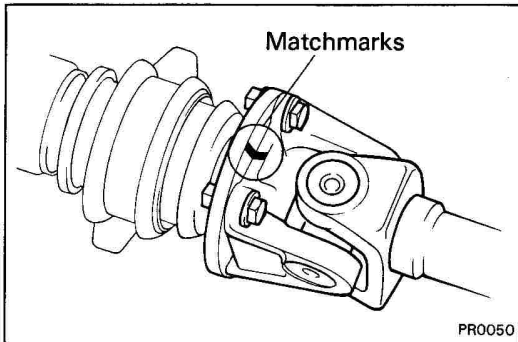
3. (Three-Joint type) REMOVE CENTER SUPPORT BEARING FROM FRAME CROSSMEMBER



DISASSEMBLY OF PROPELLER SHAFT (THREE-JOINT TYPE)

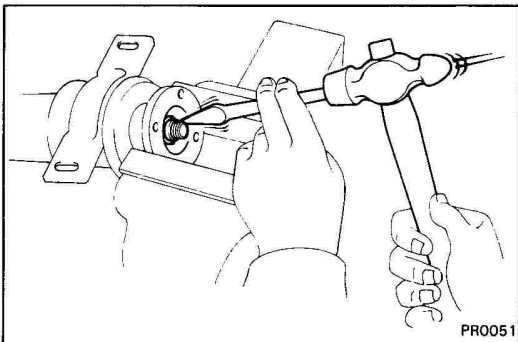
1. REMOVE SLEEVE YOKE FROM PROPELLER SHAFT

- (a) Place matchmarks on the sleeve yoke and shaft.
- (b) Pull out the sleeve yoke from the shaft.



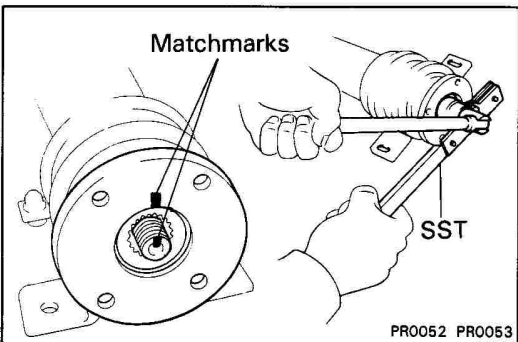
2. SEPARATE PROPELLER SHAFT AND INTERMEDIATE SHAFT

- (a) Put matchmarks on the flanges.
- (b) Remove the four bolts and nuts.



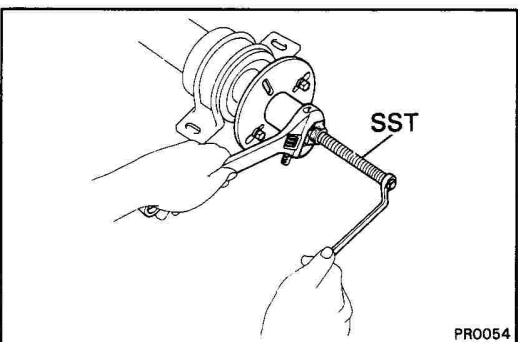
3. REMOVE CENTER SUPPORT BEARING FROM INTERMEDIATE SHAFT

- (a) Using a hammer and chisel, loosen the staked part of the nut.



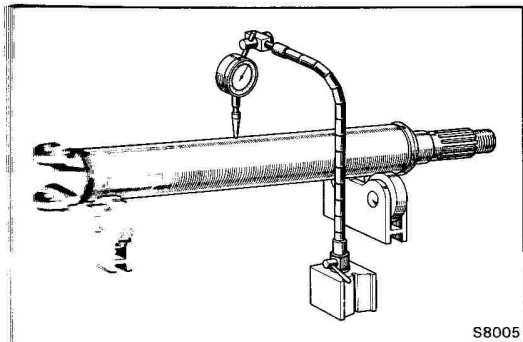
- (b) Using SST to hold the flange, remove the nut.
SST 09330-00020

- (c) Put matchmarks on the flange and shaft.



- (d) Using SST, remove the flange from the intermediate shaft.

SST 09557-22022

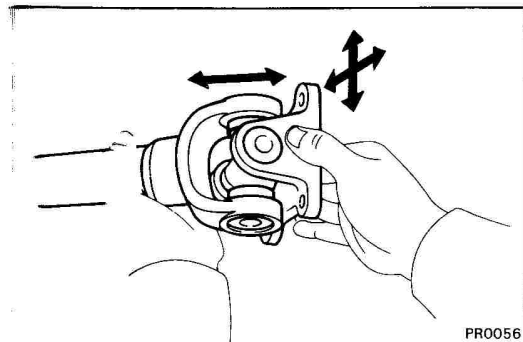


INSPECTION OF PROPELLER SHAFT COMPONENTS

1. INSPECT PROPELLER AND INTERMEDIATE SHAFTS FOR DAMAGE AND RUNOUT

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

Maximum runout: 0.8 mm (0.031 in.)

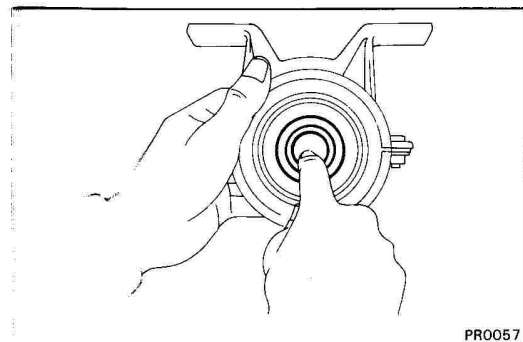


2. INSPECT SPIDER BEARINGS

- Inspect the spider bearings for wear or damage.
- Check the spider bearing axial play by turning the yoke while holding the shaft tightly.

Bearing axial play: Less than 0.05 mm (0.0020 in.)

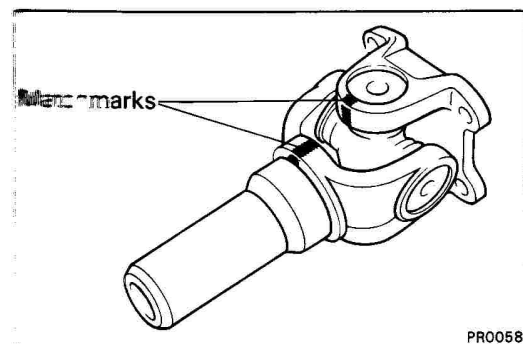
If necessary, replace the spider bearing.



3. (Three-Joint type) INSPECT CENTER SUPPORT BEARING FOR WEAR OR DAMAGE

Check that the bearing turns freely.

If the bearing is damaged, worn, or does not turn freely, replace it.



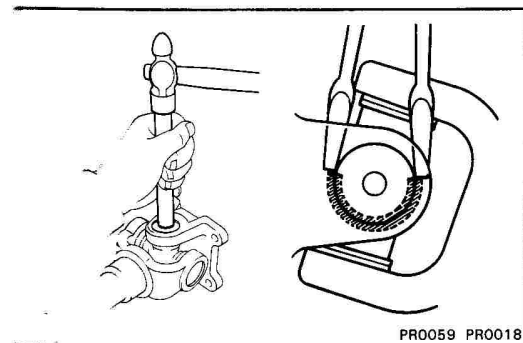
REPLACEMENT OF SPIDER BEARING

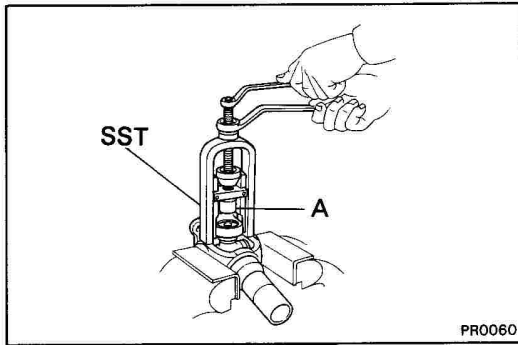
1. PUT MATCHMARKS ON SHAFT AND FLANGE YOKE OR SLEEVE YOKE

2. REMOVE GREASE FITTING

3. REMOVE SNAP RINGS

- Slightly tap in the bearing outer races.
- Using a screwdriver, remove the four snap rings from the grooves.



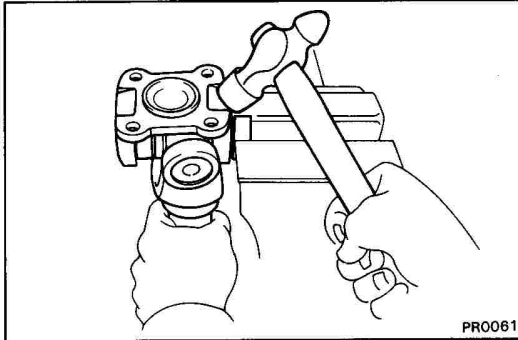


4. REMOVE SPIDER BEARINGS

- (a) Using SST, push out the bearing from the flange yoke.

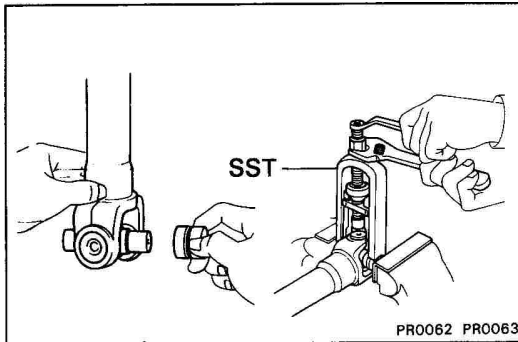
SST 09332-25010

NOTE: Sufficiently raise the part indicated by A so that it does not come into contact with the bearing.



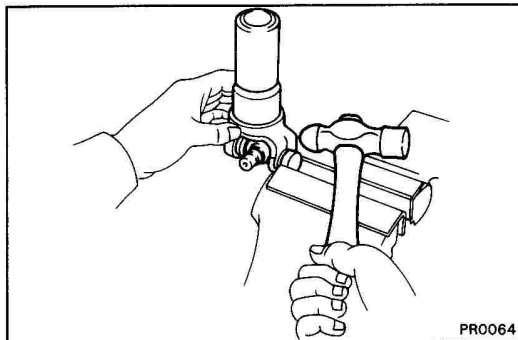
- (b) Clamp the outer bearing race in a vise and tap off the flange yoke.

NOTE: Remove the bearing on the opposite side by the same procedure.



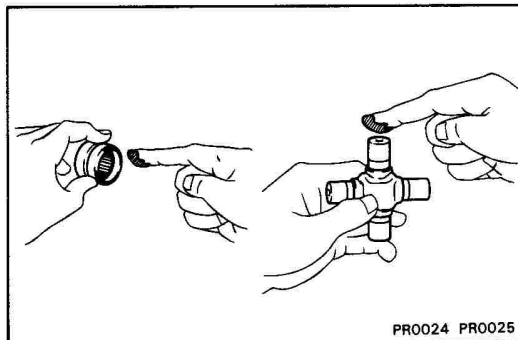
- (c) Using SST, assemble the extracted bearing outer race to the spider and push out the bearing from the sleeve yoke.

SST 09332-25010



- (d) Clamp the outer bearing race in a vise and tap off the sleeve yoke with a hammer.

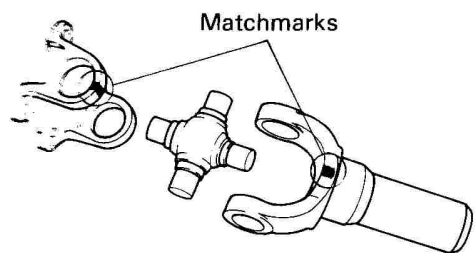
NOTE: Remove the bearing on the opposite side in the same procedure.



5. INSTALL SPIDER BEARINGS

- (a) Apply MP grease to the spider and bearings.

NOTE: Be careful not to apply too much grease.

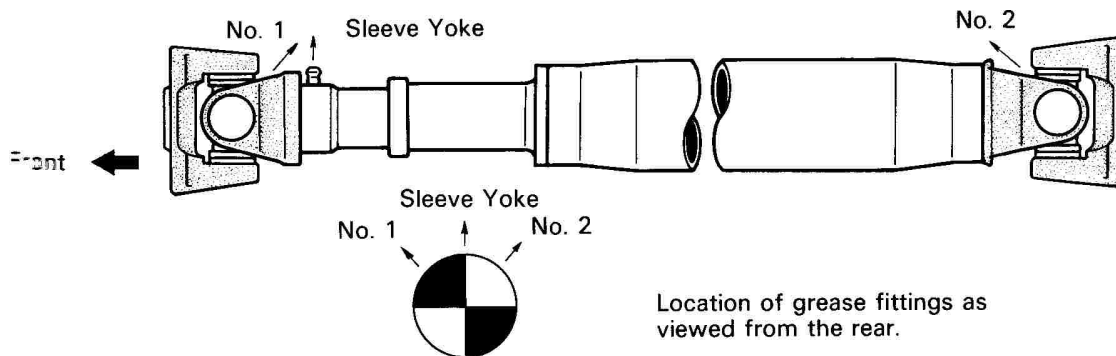


PR0065

- (b) Align the matchmarks on the flange yoke and sleeve yoke.

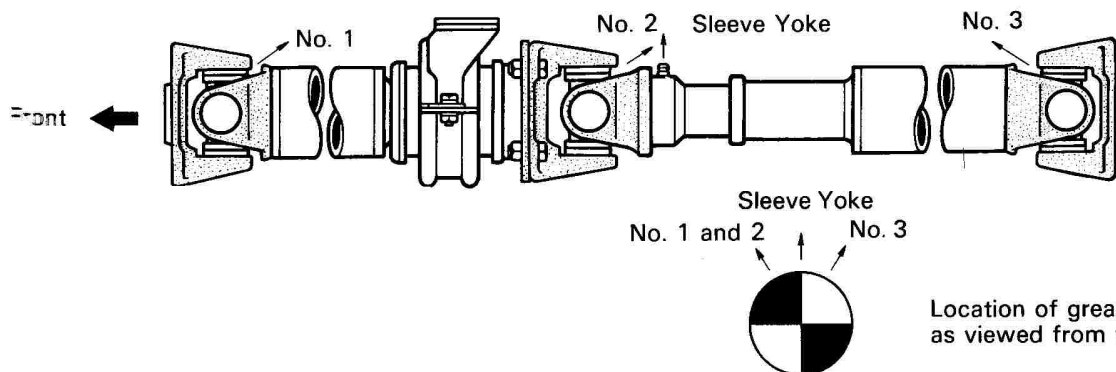
NOTE: When replacing the spider, be sure that the grease nipple assembly hole is facing in the direction shown in the figure.

Two-Joint Type)



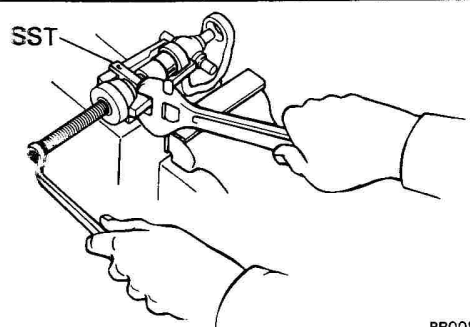
Location of grease fittings as viewed from the rear.

Three-Joint Type)



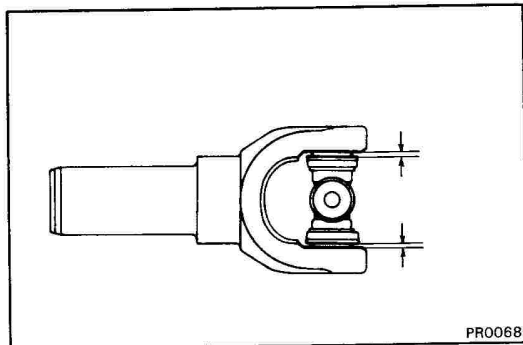
Location of grease fittings as viewed from the rear.

PR0066
PR0067

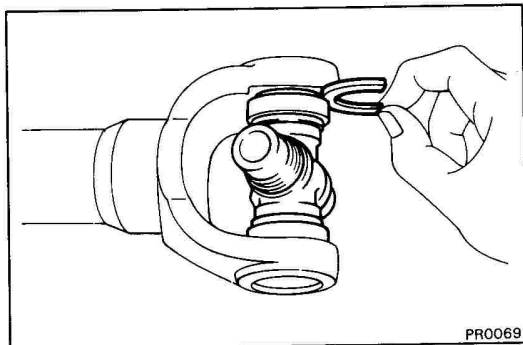


PR0081

- (c) Fit the new spider into the yoke.
(d) Using SST, install new bearings to the spider.
SST 09332-25010



- (e) Adjust both bearings so that the snap ring grooves are at maximum and equal widths.



6. INSTALL SNAP RINGS

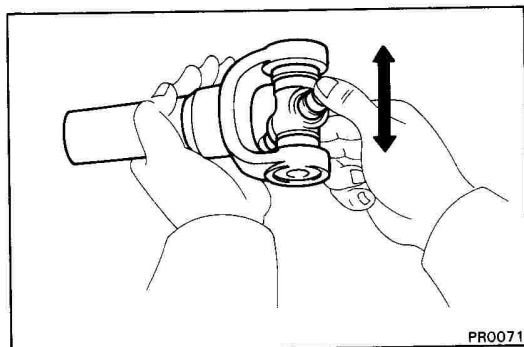
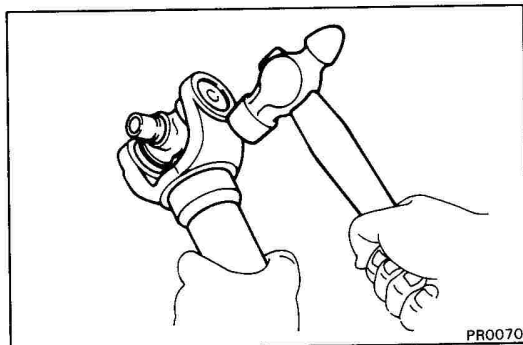
- (a) Install two snap rings of the same thickness, which will allow 0 – 0.05 mm (0 – 0.0020 in.) axial play.

NOTE: Do not reuse the snap rings.

Snap ring thickness

Thickness	mm (in.)	Color
1.985 – 2.015 (0.0781 – 0.0793)		Uncolored
2.015 – 2.045 (0.0793 – 0.0805)		Brown
2.045 – 2.075 (0.0805 – 0.0817)		Blue
2.075 – 2.105 (0.0817 – 0.0829)		Uncolored

- (b) Using a hammer, tap the yoke until the clearance between the bearing outer race and snap ring is zero.



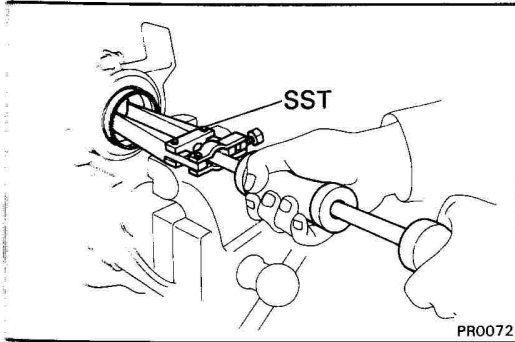
7. CHECK SPIDER BEARING

- (a) Check that the spider bearing moves smoothly.
(b) Check the spider bearing axial play.

Bearing axial play: Less than 0.05 mm (0.0020 in.)

NOTE: Install new spider bearings to the flange side in the procedure described above.

8. INSTALL GREASE FITTING

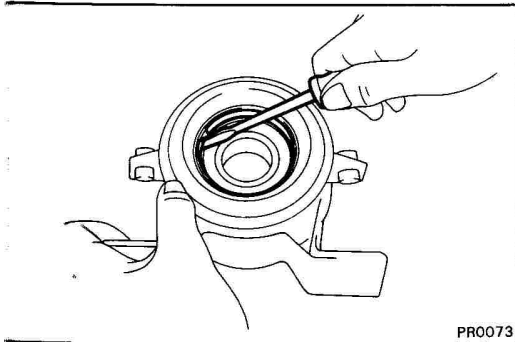


REPLACEMENT OF CENTER SUPPORT BEARINGS (THREE-JOINT TYPE)

1. REMOVE NO. 2 DUST DEFLECTORS

Using SST, remove the No. 2 dust deflector.
SST 09308-00010

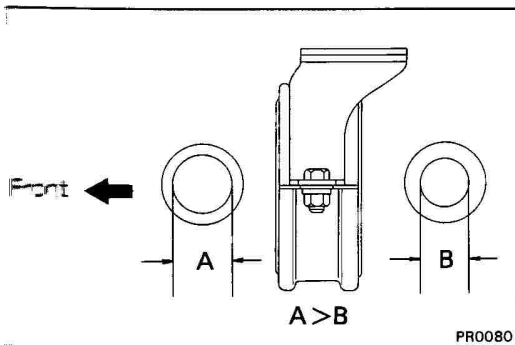
2. REMOVE NO. 3 AND NO. 4 DUST DEFLECTORS



3. REMOVE SNAP RINGS

Using a screwdriver, remove the two snap rings.

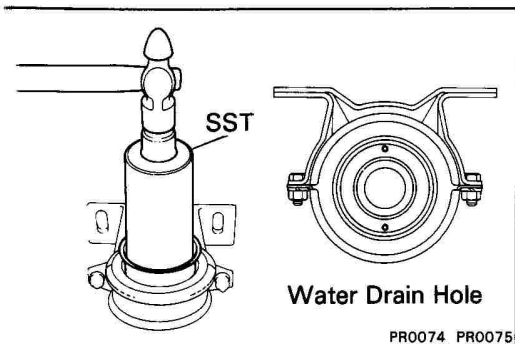
4. REMOVE BEARING



5. INSTALL BEARING AND SNAP RINGS

6. INSTALL NO. 3 AND NO. 4 DUST DEFLECTORS

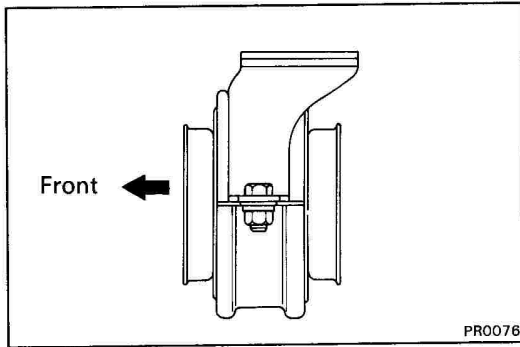
CAUTION: Be sure that the No. 3 and No. 4 dust deflectors are facing in the direction shown.



7. INSTALL NO. 2 DUST DEFLECTORS

Using SST, install the dust deflector.

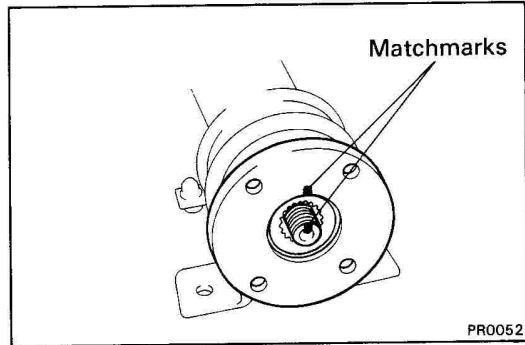
NOTE: Face the water drain hole toward the bottom.
SST 09226-10010



ASSEMBLY OF PROPELLER SHAFT (THREE-JOINT TYPE)

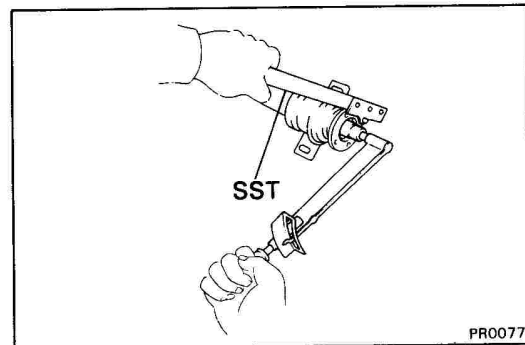
1. INSTALL CENTER SUPPORT BEARING ON INTERMEDIATE SHAFT

NOTE: Install the center support bearing in the direction shown.



2. INSTALL CENTER SUPPORT BEARING FLANGE ON INTERMEDIATE SHAFT

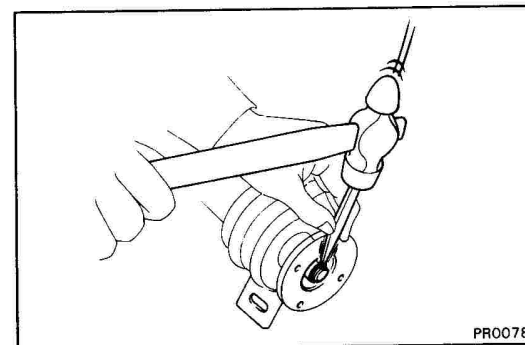
- Coat the splines of the intermediate shaft with MP grease.
- Place the flange on the shaft and align the matchmarks.



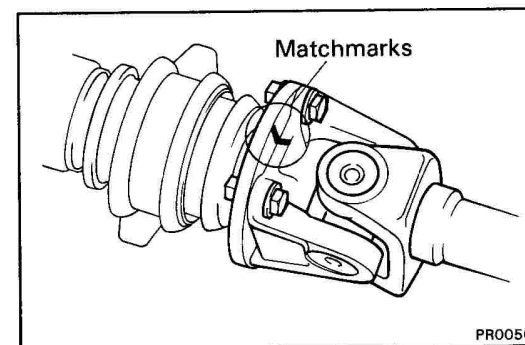
- Using SST to hold the flange, torque a new nut to press the bearing into position.

SST 09330-00020

Torque: 1,700 kg-cm (123 ft-lb, 167 N·m)



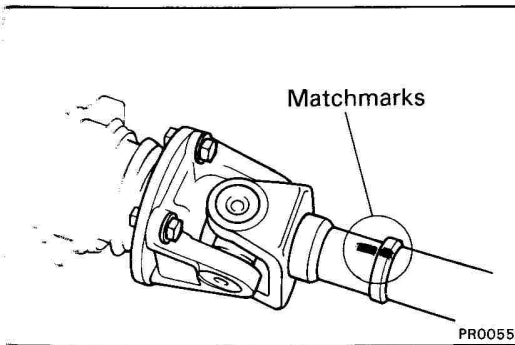
- Using a hammer and punch, stake the nut.



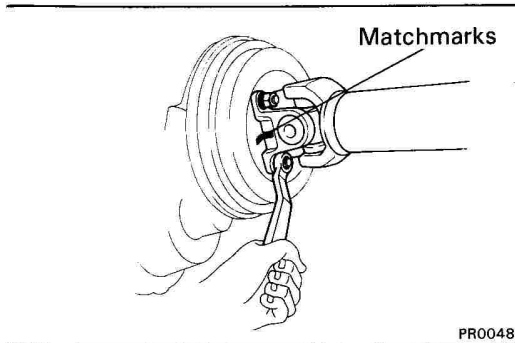
3. INSTALL FLANGE YOKE ON CENTER SUPPORT BEARING FLANGE

- Align the matchmarks on the flanges and connect the flanges with four bolts and nuts.
- Torque the bolts and nuts.

Torque: 900 kg-cm (65 ft-lb, 88 N·m)

**4. INSERT SLEEVE YOKE INTO PROPELLER SHAFT**

- (a) Apply MP grease to the propeller shaft spline and sleeve yoke sliding surface.
- (b) Align the matchmarks on the sleeve yoke and propeller shaft.
- (c) Insert the sleeve yoke into the propeller shaft.

**INSTALLATION OF PROPELLER SHAFT****1. CONNECT INTERMEDIATE SHAFT FLANGE TO PARKING BRAKE DRUM**

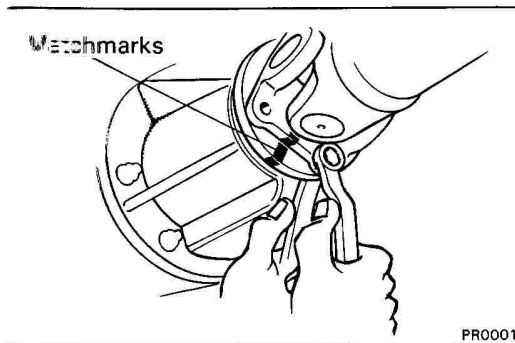
- (a) Align the matchmarks on the flange and parking brake with four nuts.
- (b) Torque the four nuts.

Torque: 900 kg-cm (65 ft-lb, 88 N·m)

2. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE ON DIFFERENTIAL

- (a) Align the matchmarks on the flanges and connect the flanges with four bolts and nuts.
- (b) Torque the bolts and nuts.

Torque: 900 kg-cm (65 ft-lb, 88 N·m)

**3. (Three-Joint type)
INSTALL CENTER SUPPORT BEARING TO MEMBER**

Torque the mounting bolts.

Torque: 250 kg-cm (18 ft-lb, 25 N·m)

