

PROPELLER SHAFT

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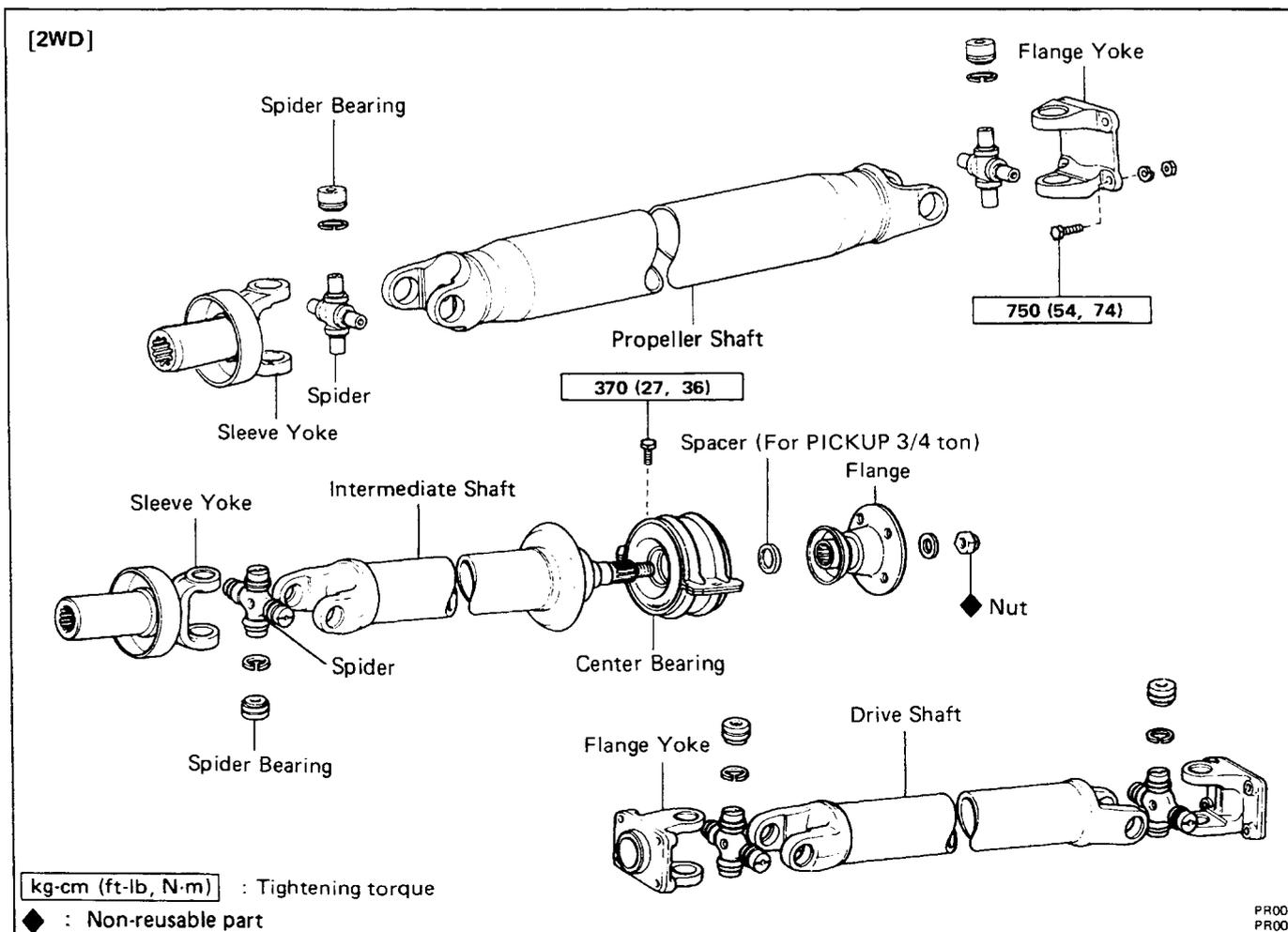
PRECAUTIONS

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

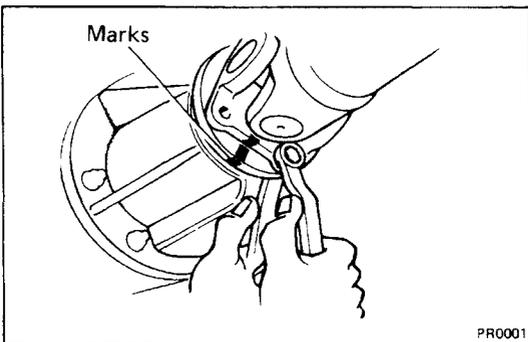
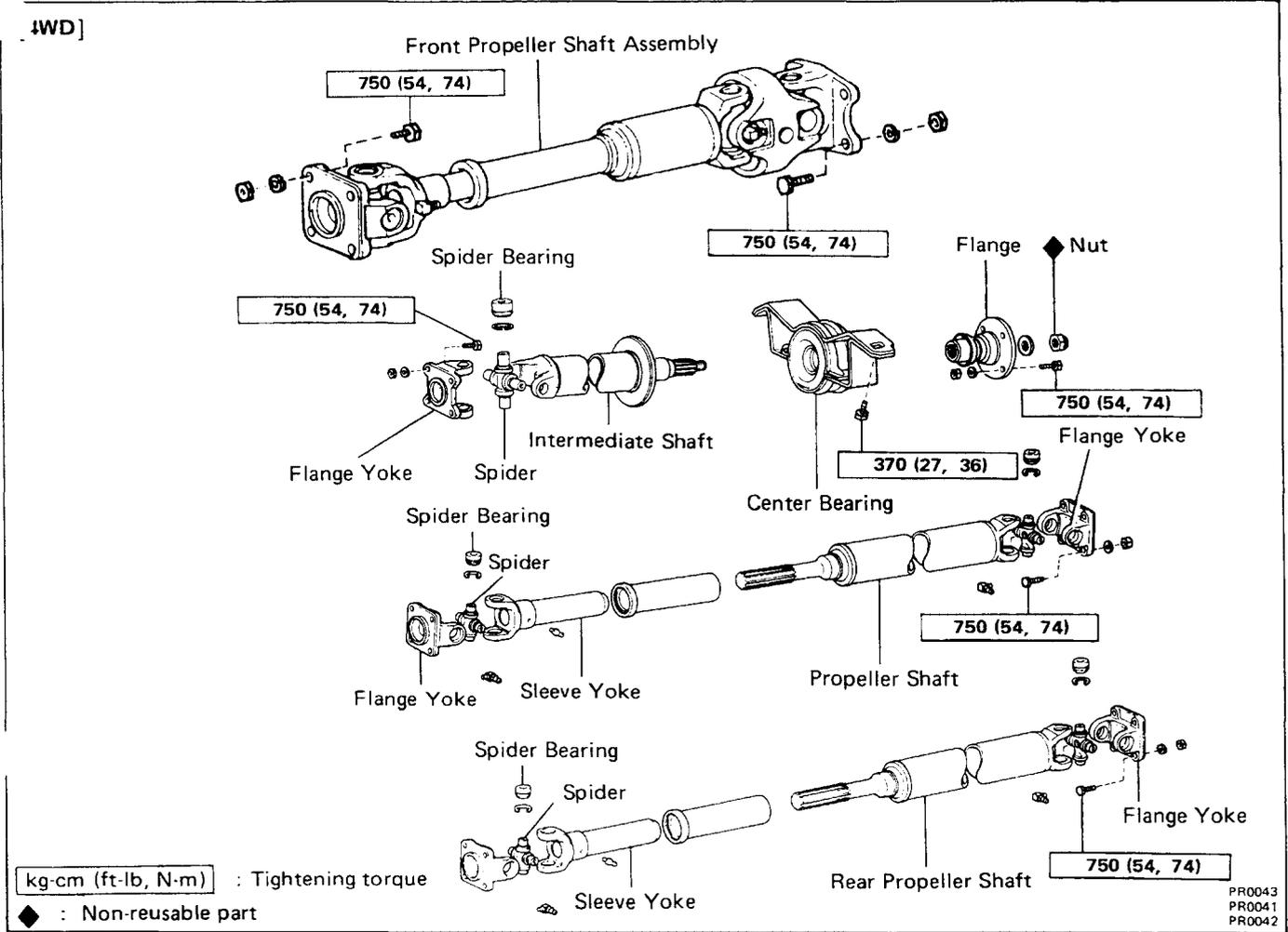
TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Noise	Sleeve yoke spline worn	Replace sleeve yoke	PR-5,7
	Center bearing worn	Replace center bearing	PR-5
	Spider bearing worn or stuck	Replace spider bearing	PR-7
Vibration	Propeller shaft runout	Replace propeller shaft	PR-3
	Propeller shaft unbalance	Balance propeller shaft	
	Transmission extension housing rear bushing worn	Replace bushing	MT-3
	Sleeve yoke spline stuck	Replace sleeve yoke	PR-5, 7

PROPELLER SHAFT COMPONENTS



COMPONENTS (Cont'd)

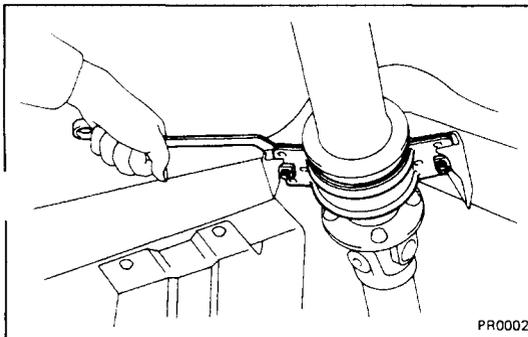


REMOVAL OF PROPELLER SHAFT

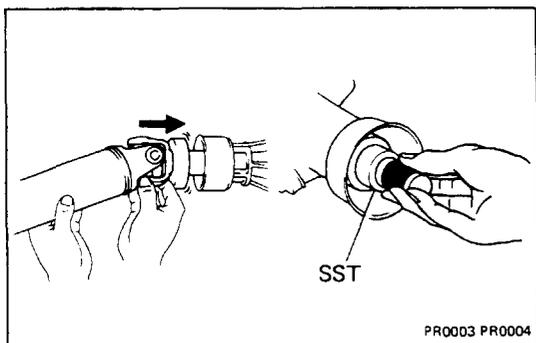
(2WD)

1. DISCONNECT PROPELLER SHAFT FLANGE FROM COMPANION FLANGE ON DIFFERENTIAL

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

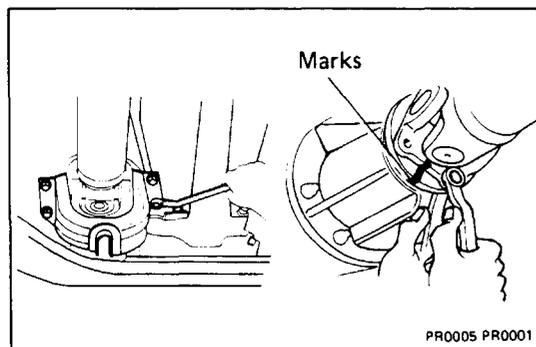


2. REMOVE CENTER SUPPORT BEARING FROM FRAME CROSSMEMBER (THREE-JOINT TYPE)



3. REMOVE PROPELLER SHAFT FROM TRANSMISSION

- (a) Pull the yoke from the transmission.
- (b) Insert SST in the transmission to prevent oil leakage.
SST 09325-20010

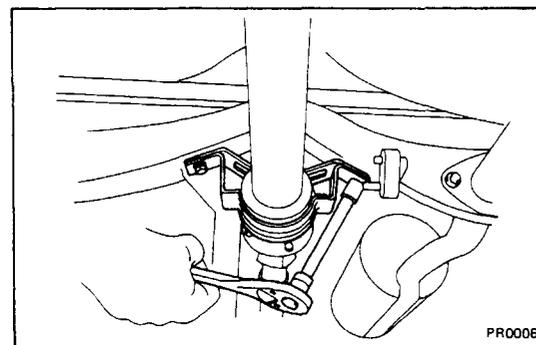


(4WD)

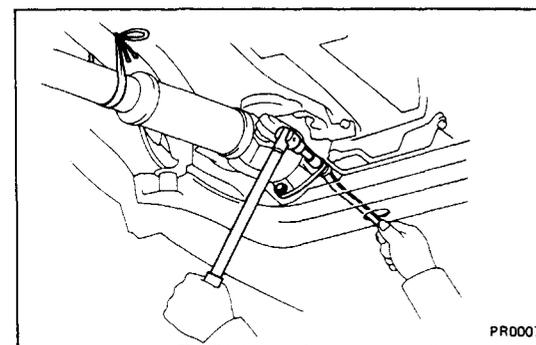
1. REMOVE FRONT PROPELLER SHAFT NO.2 DUST COVER

2. DISCONNECT PROPELLER SHAFT FLANGE FROM COMPANION FLANGE ON DIFFERENTIAL

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

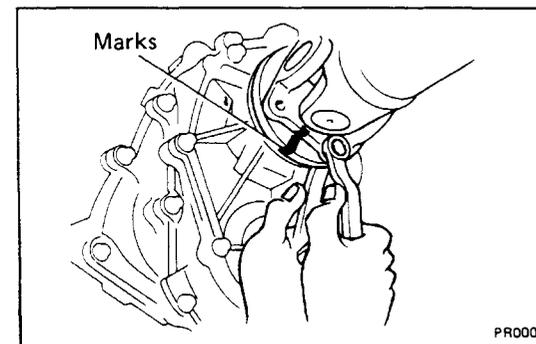


3. REMOVE CENTER SUPPORT BEARING FROM FRAME CROSSMEMBER (THREE-JOINT TYPE)



4.-1 FRONT PROPELLER SHAFT

- (a) Suspend the front side of the propeller shaft to the exhaust pipe.
- (b) Put alignment marks on the flange.
- (c) Remove the four bolts and nuts.



4.-2 REAR PROPELLER SHAFT

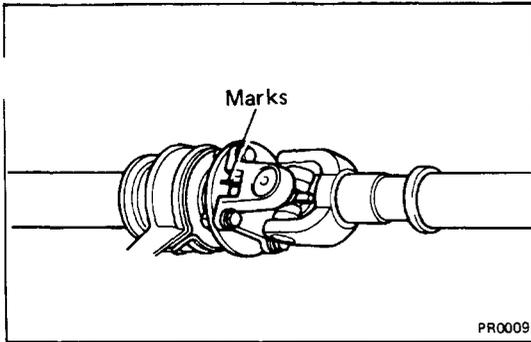
DISCONNECT PROPELLER SHAFT FLANGE FROM COMPANION FLANGE ON TRANSFER

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

DISASSEMBLY OF PROPELLER SHAFT

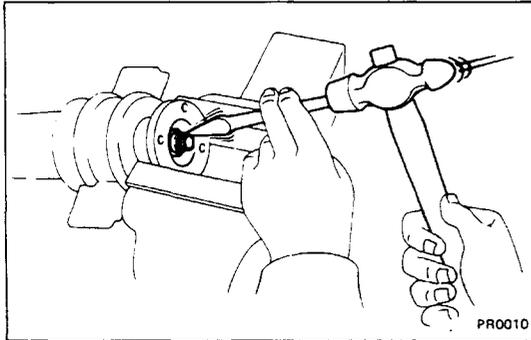
1. SEPARATE PROPELLER SHAFT AND INTERMEDIATE SHAFT

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

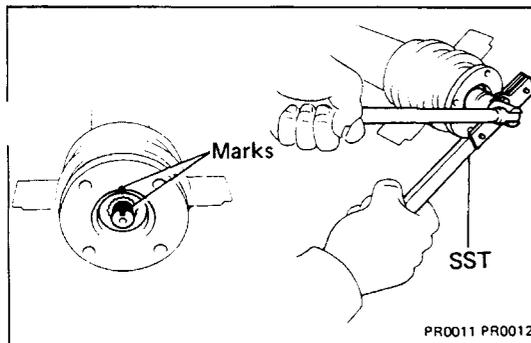


2. REMOVE CENTER SUPPORT BEARING FROM INTERMEDIATE SHAFT

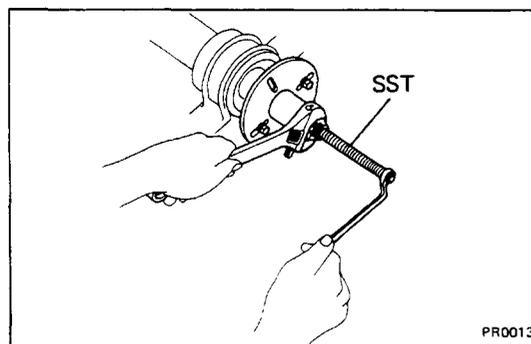
- (a) Using a hammer and chisel, loosen the staked part of the nut.



- (b) Using SST to hold the flange, remove the nut.
SST 09330-00020
- (c) Put alignment marks on the flange and shaft.

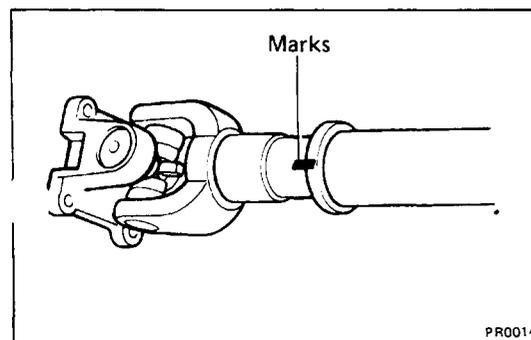


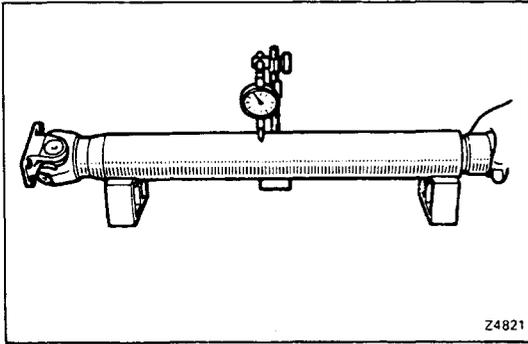
- (d) Using SST, remove the flange from the intermediate shaft.
SST 09557-22022



3. REMOVE SLEEVE YOKE FROM PROPELLER SHAFT (4WD)

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





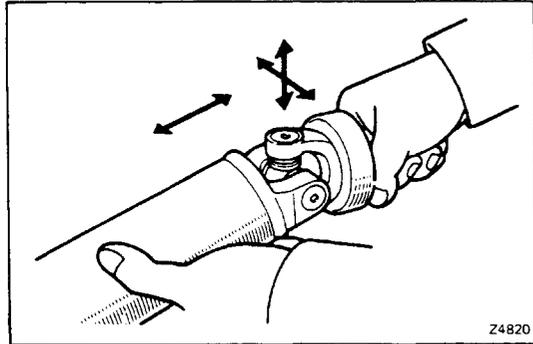
Z4821

INSPECTION OF PROPELLER SHAFT COMPONENTS

1. INSPECT PROPELLER AND INTERMEDIATE SHAFTS FOR DAMAGE OR RUNOUT

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

Maximum runout: 0.8 mm (0.031 in.)



Z4820

2. INSPECT SPIDER BEARINGS

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

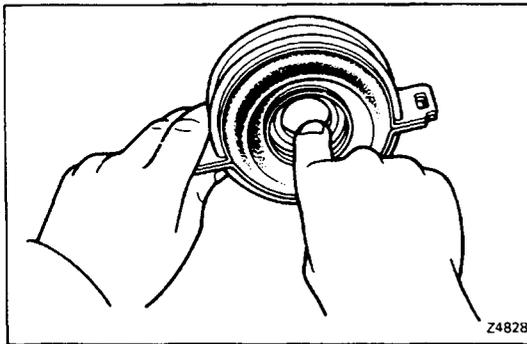
Bearing axial play:

2-Joint type Less than 0.05 mm (0.0020 in.)

If necessary, replace the spider bearing.

3-Joint type Less than 0.05 mm (0.0020 in.)

If necessary, replace the propeller shaft.

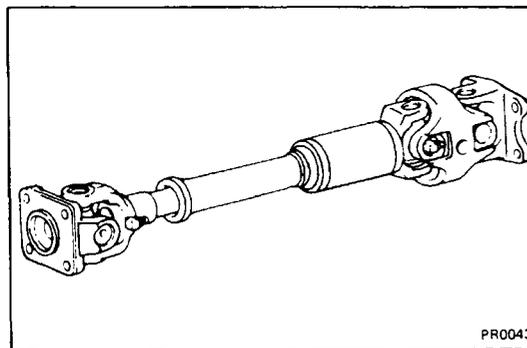


Z4828

3. INSPECT CENTER SUPPORT BEARING FOR WEAR OR DAMAGE

Check that the bearing turns freely.

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



PR0043

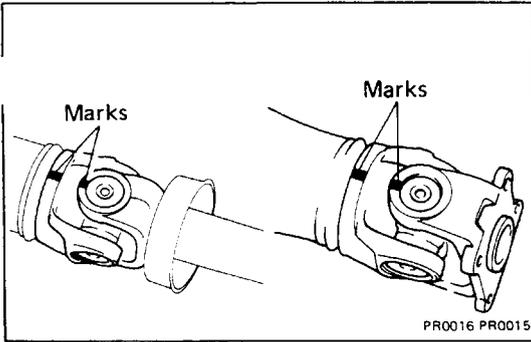
4. INSPECT FRONT PROPELLER SHAFT

- (a) Inspect the shaft for wear or damage.
- (b) Inspect the double cardan joint for wear or damage.

NOTE: If any problem is found, replace the front propeller shaft assembly.

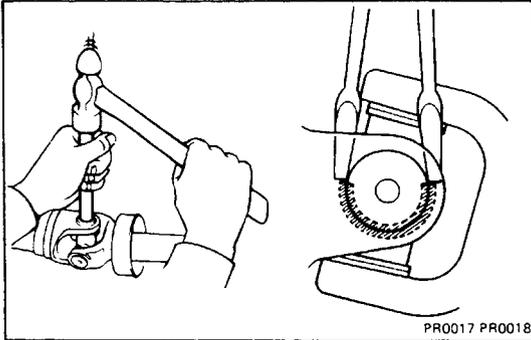
REPLACEMENT OF SPIDER BEARING

1. PLACE ALIGNMENT MARKS ON SHAFT AND FLANGE OR YOKE



2. REMOVE SNAP RINGS

- (a) Slightly tap in the bearing outer races.
- (b) Using two screwdrivers, remove the four snap rings from the grooves.

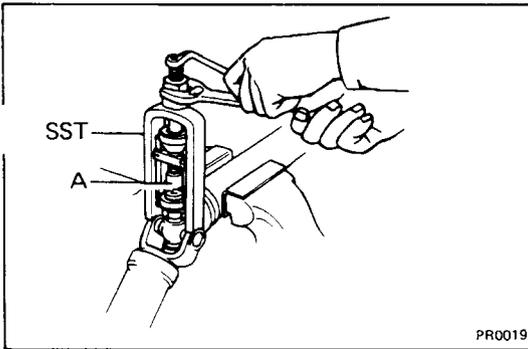


3. REMOVE SPIDER BEARINGS

- (a) Using SST, push out the bearing from the propeller shaft.

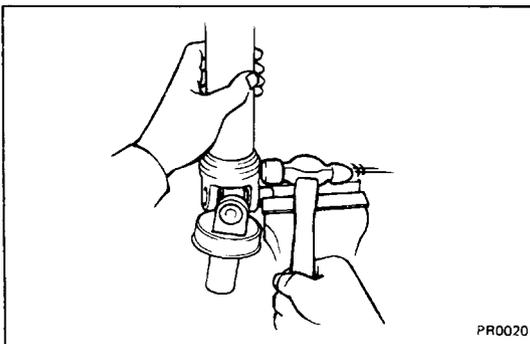
SST 09332-25010

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



- (b) Clamp the bearing outer race in a vise and tap off the propeller shaft with a hammer.

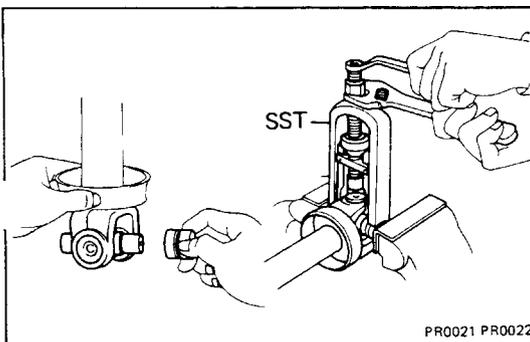
NOTE: Remove the bearing on the opposite side in the same procedure.

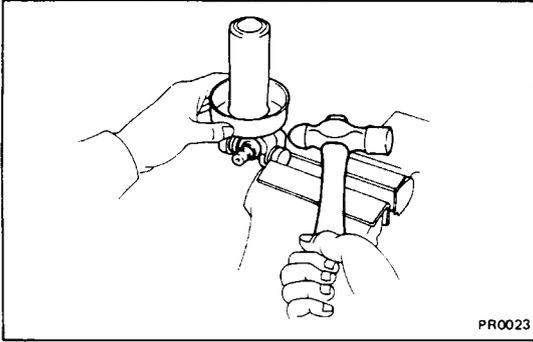


- (c) Install the two removed bearing outer races to the spider.

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

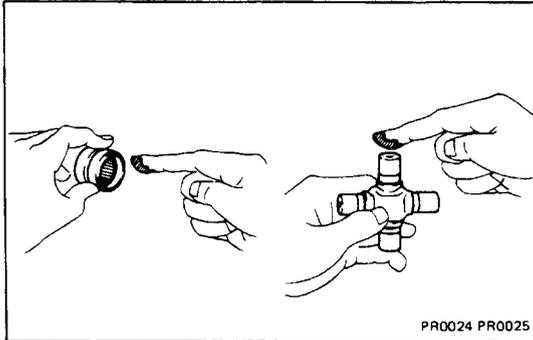
SST 09332-25010





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

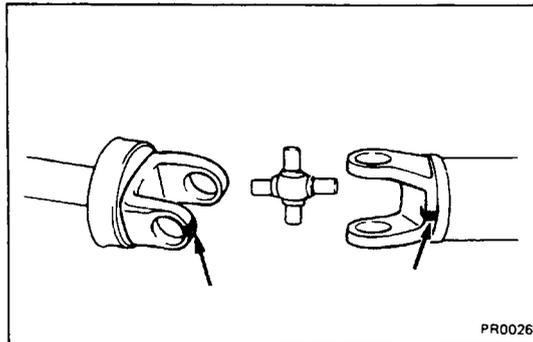
NOTE: Remove the bearing on the opposite side in the same procedure.



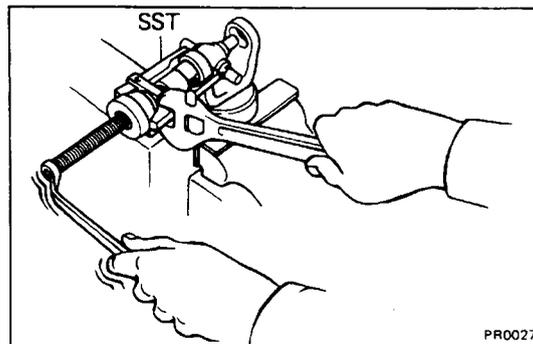
4. INSTALL SPIDER BEARINGS

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

NOTE: Be careful not to apply too much grease.



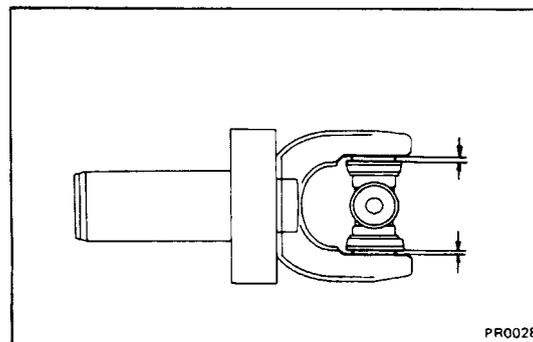
(b) Align the marks on the yoke and shaft.



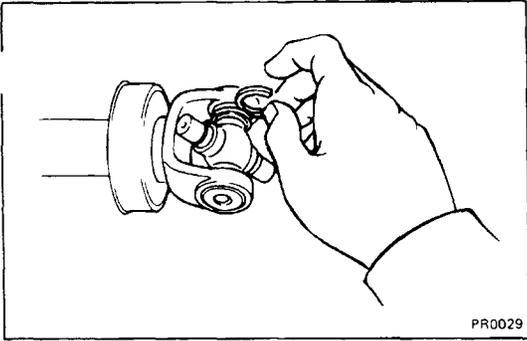
(c) Fit the new spider into the yoke.

(d) Using SST, install the new bearings on the spider.

SST 09332-25010



(e) Using SST, adjust both bearings so that the snap ring grooves are at maximum and equal widths.



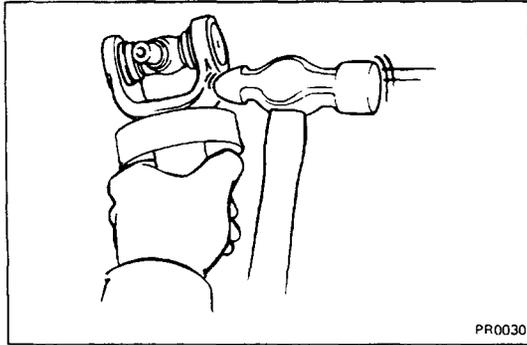
5. INSTALL SNAP RINGS

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

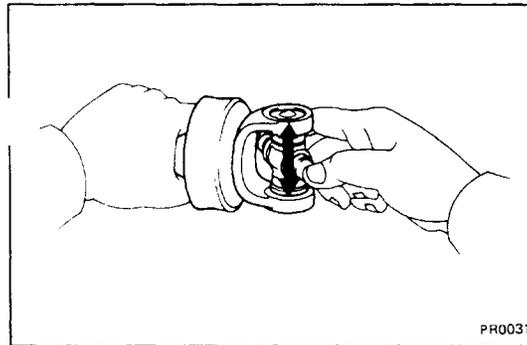
NOTE: Do not reuse the snap rings.

Thickness of snap ring

	Color	Thickness	mm (in.)
RN50L-KRA	—	2.375 – 2.425	(0.0935 – 0.0955)
	Brown	2.425 – 2.475	(0.0955 – 0.0974)
Ex. RN50L-KRA	Blue	2.475 – 2.525	(0.0974 – 0.0994)
	—	1.475 – 1.525	(0.0581 – 0.0600)
	Brown	1.525 – 1.575	(0.0600 – 0.0620)
	Blue	1.575 – 1.625	(0.0620 – 0.0640)



(b) Using a hammer, tap the yoke until there is no clearance between the bearing outer race and snap ring.



6. CHECK SPIDER BEARING

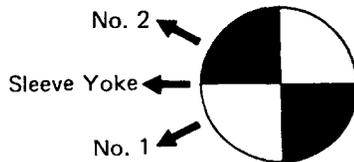
- (a) Check that the spider bearing moves smoothly.
- (b) Check the spider bearing axial play.

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

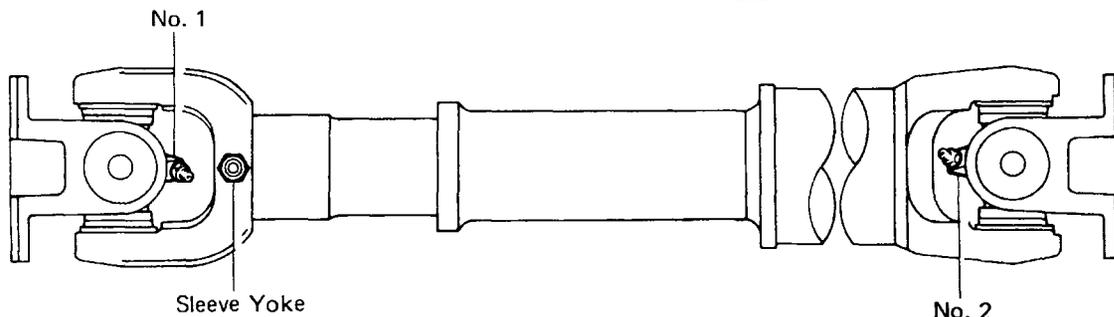
NOTE: Install new spider bearings on the shaft side in the procedure described above.

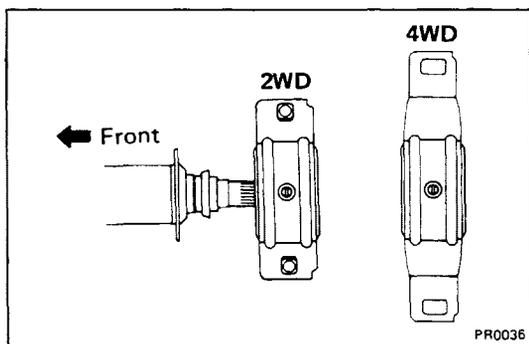
NOTE: When replacing the rear propeller shaft spider on 4WD vehicles, be sure that the grease fitting assembly hole is facing in the direction shown in the figure.

SPIDER GREASE FITTING ASSEMBLY DIRECTION FOR 4WD REAR PROPELLER SHAFT



The figure at left shows the locations of the grease fittings as seen from the rear.

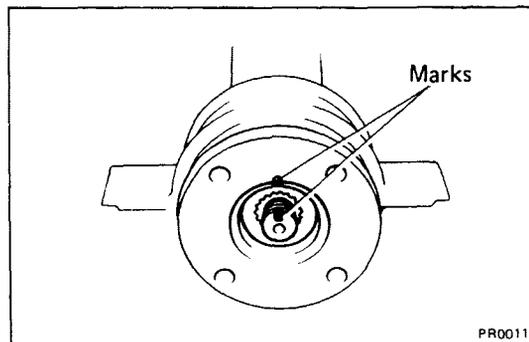




ASSEMBLY OF PROPELLER SHAFT

1. INSTALL CENTER SUPPORT BEARING ON INTERMEDIATE SHAFT

NOTE: Install the center support bearing with the cutout toward the rear.

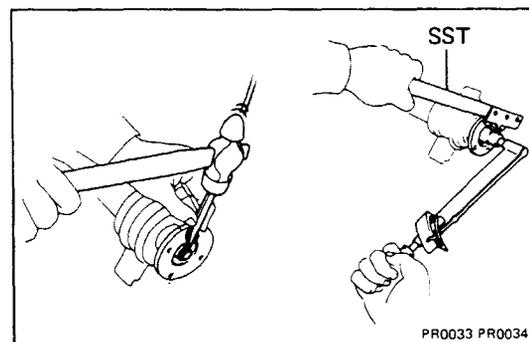


2. INSTALL FLANGE ON INTERMEDIATE SHAFT

(a) Coat the splines of the intermediate shaft with MP grease.

(b) Place the flange on the shaft and align the marks.

NOTE: 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.



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

SST 09330-00020

Torque: 1,850 kg-cm (134 ft-lb, 181 N·m)

(d) Loosen the nut.

(e) Torque the nut again.

Torque: 700 kg-cm (51 ft-lb, 69 N·m)

(f) Using a hammer and punch, stake the nut.

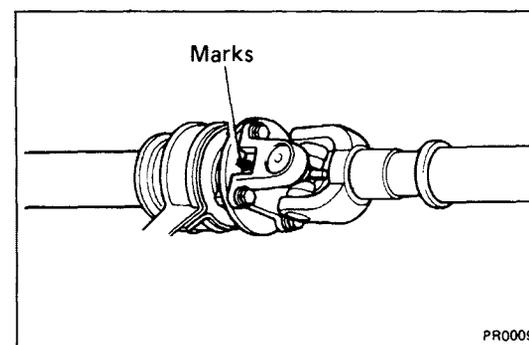
3. INSTALL PROPELLER SHAFT

(a) Align the marks on the flanges and connect the flanges with four bolts and nuts.

NOTE: 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.

(b) Torque the bolts and nuts.

Torque: 750 kg-cm (54 ft-lb, 74 N·m)

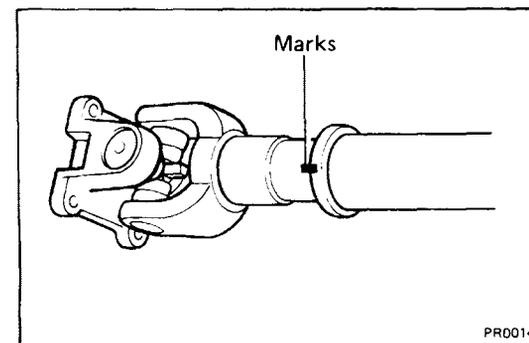


4. INSERT SLEEVE YOKE INTO PROPELLER SHAFT (4WD)

(a) Apply MP grease to the propeller shaft spline and sleeve yoke sliding surface.

(b) Align the marks on the sleeve yoke and propeller shaft.

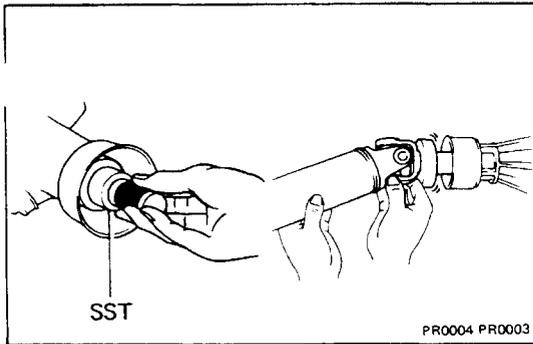
(c) Insert the sleeve yoke into the propeller shaft.



INSTALLATION OF PROPELLER SHAFT (2WD)

1. INSERT YOKE IN TRANSMISSION

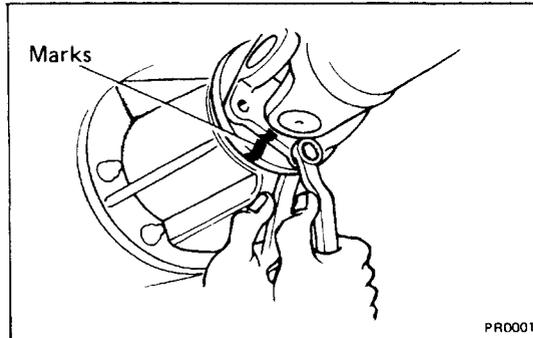
- (a) Remove SST.
- SST 09325-20010
- (b) Push the yoke in to the transmission.



2. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE ON DIFFERENTIAL

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

Torque: 750 kg-cm (54 ft-lb, 74 N·m)

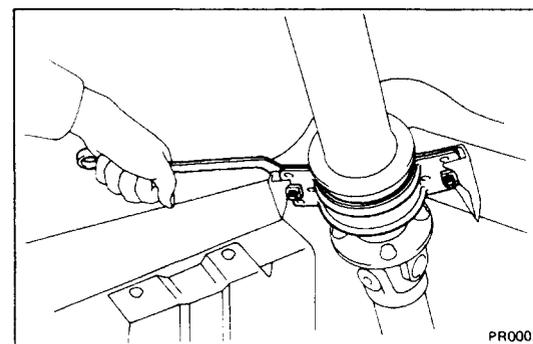
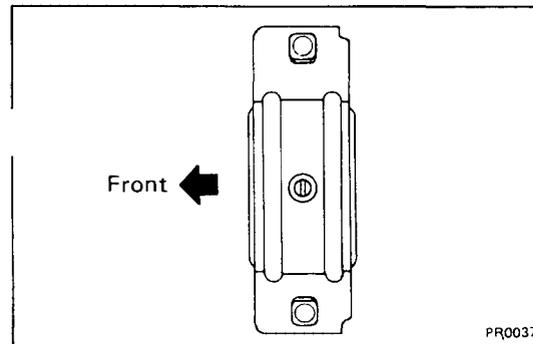


3. INSTALL CENTER SUPPORT BEARING TO FRAME CROSSMEMBER (THREE-JOINT TYPE)

- (a) Install the center support bearing to the frame crossmember with two mount bolts finger tight.
- (b) Check that the bearing bracket is at right angle to the propeller shaft. Adjust the bracket if necessary.
- (c) Check that the center line of the center bearing is set to the center line of the bracket when the vehicle is in a no-load condition. Adjust the bracket if necessary.

- (d) Torque the mount bolts.

Torque: 370 kg-cm (27 ft-lb, 36 N·m)

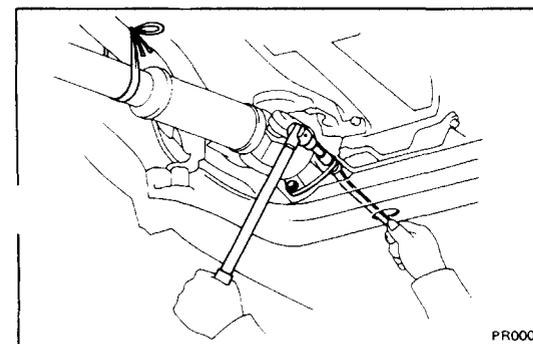


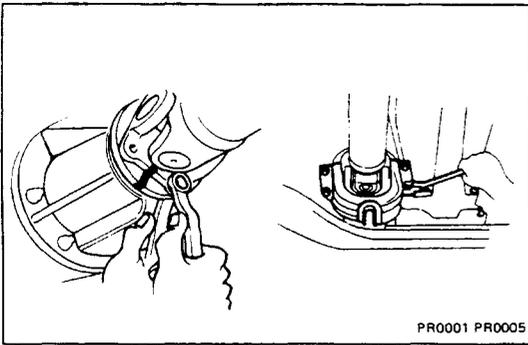
(4WD)

1. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE ON TRANSFER

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

Torque: 750 kg-cm (54 ft-lb, 74 N·m)



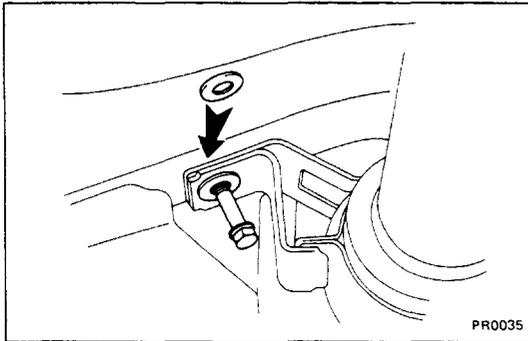


2. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE ON DIFFERENTIAL

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

Torque: 750 kg-cm (54 ft-lb, 74 N·m)

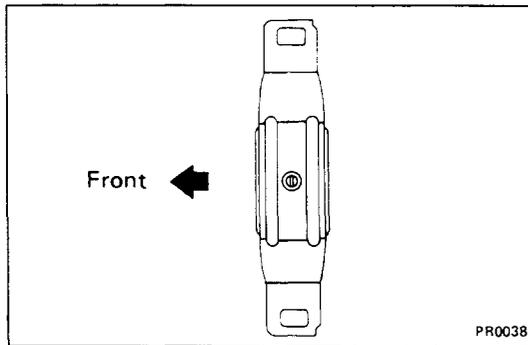
3. INSTALL FRONT PROPELLER SHAFT NO.2 DUST COVER



4. INSTALL CENTER SUPPORT BEARING TO FRAME CROSSMEMBER (THREE-JOINT TYPE)

- (a) Place a height spacer between the frame crossmember and center support bearing, and install the two mount bolts finger tight.

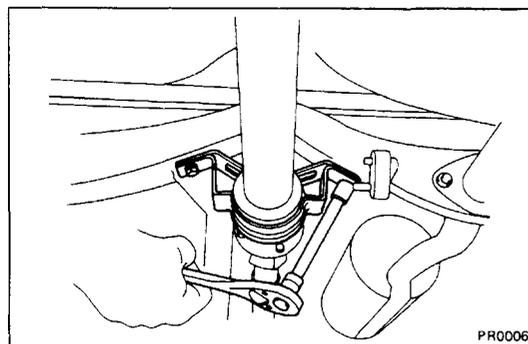
NOTE: Some vehicles do not have a spacer. In this case, it is not necessary to insert one.



- (b) Check that the bearing bracket is at right angle to the propeller shaft. If necessary, adjust the bracket.

- (c) Check that the center line of the center bearing is set to the center line of the bracket when the vehicle is in a no-load condition.

If necessary, adjust the bracket.



- (d) Torque the mount bolts.

Torque: 370 kg-cm (27 ft-lb, 36 N·m)