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# PROPELLER SHAFT

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

**PR**

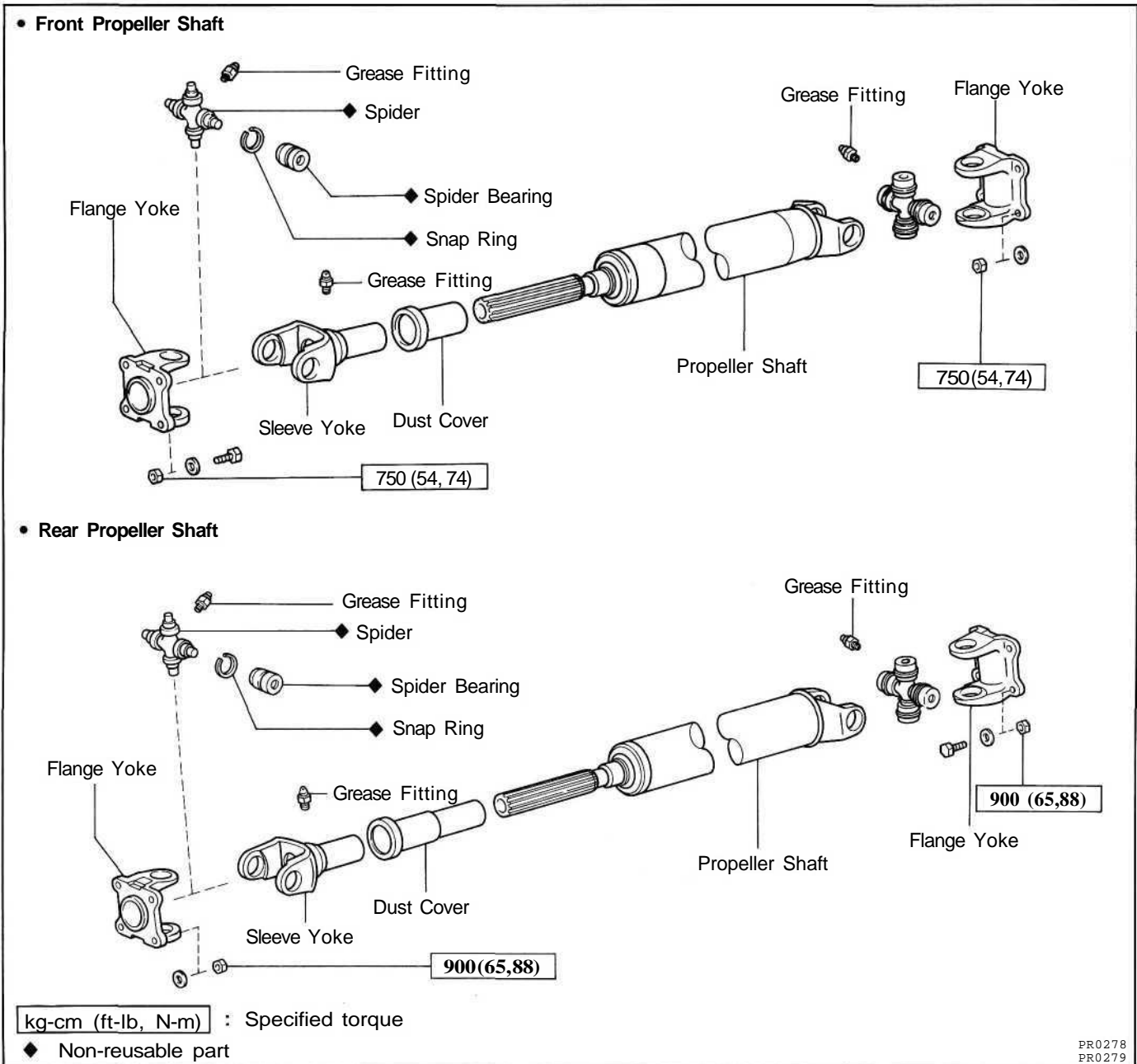
# PRECAUTIONS

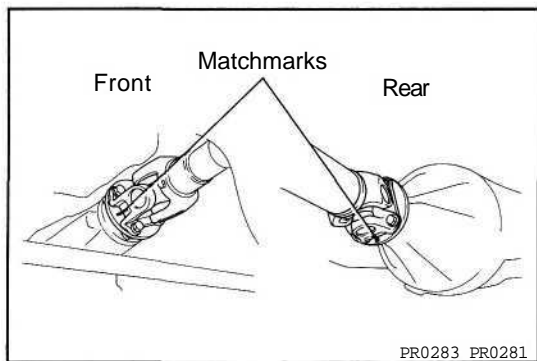
Be careful not to grip the propeller shaft tube too tightly in the vise as this will cause deformation.

# TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Noise	Sleeve yoke spline worn	Replace sleeve yoke	PR-4
	Spider bearing worn or stuck	Replace spider bearing	PR-4
Vibration	Propeller shaft runout	Replace propeller shaft	PR-3
	Propeller shaft imbalance	Balance propeller shaft	
	Sleeve yoke spline stuck	Replace sleeve yoke	PR-4

# PROPELLER SHAFT COMPONENTS

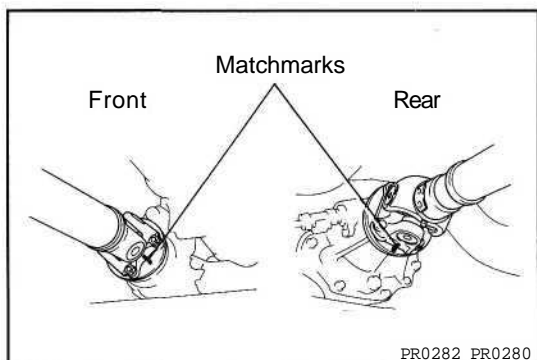




## REMOVAL OF FRONT AND REAR PROPELLER SHAFTS

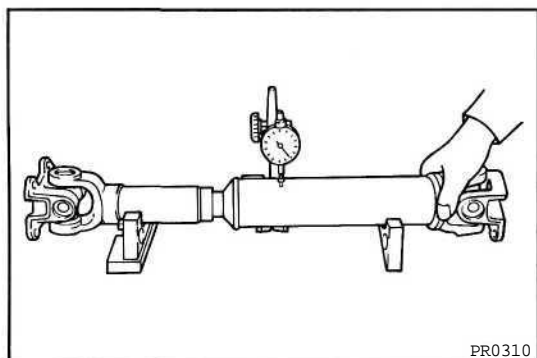
### 1. DISCONNECT PROPELLER SHAFT FLANGE FROM COMPANION FLANGE ON DIFFERENTIAL

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



### 2. DISCONNECT PROPELLER SHAFT FLANGE FROM COMPANION FLANGE ON TRANSFER

- (a) Put matchmarks on the flange.
- (b) Remove the four nuts.
- (c) Remove the propeller shaft.

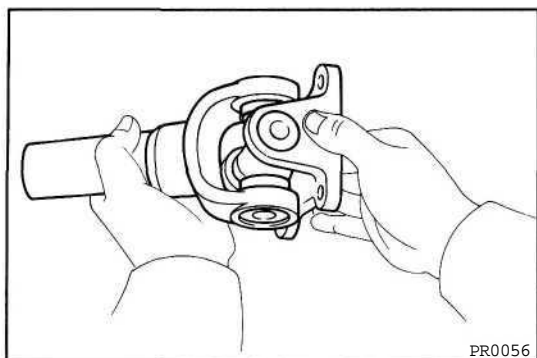


## INSPECTION OF PROPELLER SHAFT COMPONENTS

### 1. INSPECT FRONT AND REAR PROPELLER SHAFTS FOR DAMAGE OR RUNOUT

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

**Maximum runout: 0.8 mm (0.031 in.)**

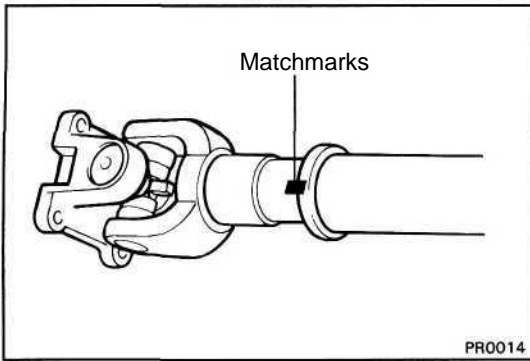


### 2. INSPECT SPIDER BEARINGS

- (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: Less than 0.05 mm (0.0020 in.)**

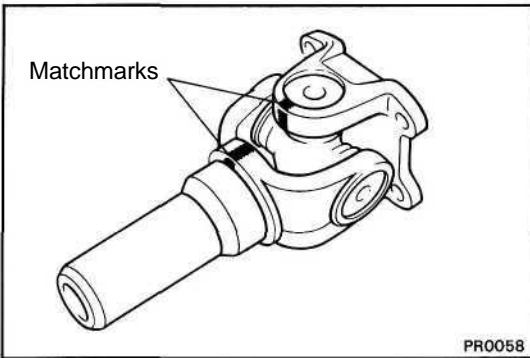
If necessary, replace the spider bearing.



## DISASSEMBLY OF PROPELLER SHAFT

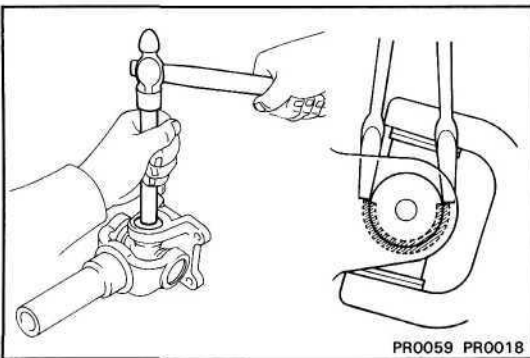
### 1. REMOVE SLEEVE YOKE FROM PROPELLER SHAFT

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

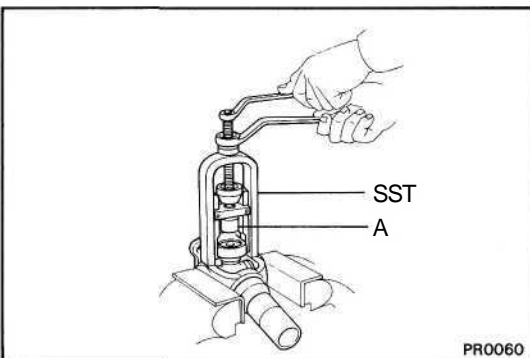


### 2. REMOVE SPIDER BEARING

- (a) Put matchmarks on the sleeve yoke and flange.

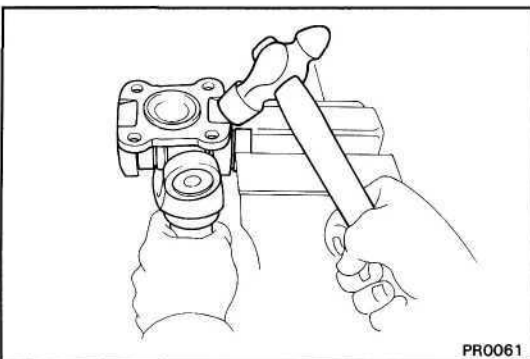


- (b) Slightly tap in the bearing outer races.
- (c) Using two screwdrivers, remove the four snap rings from the grooves.



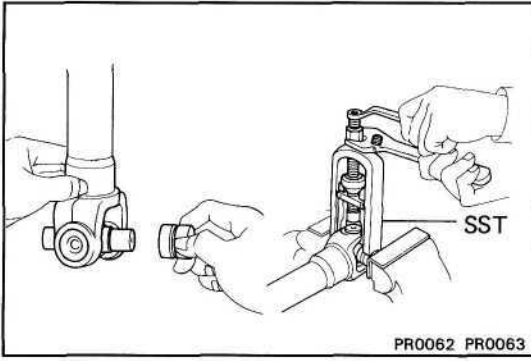
- (d) Using SST, push out the bearing from the flange.  
SST 09332-25010

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

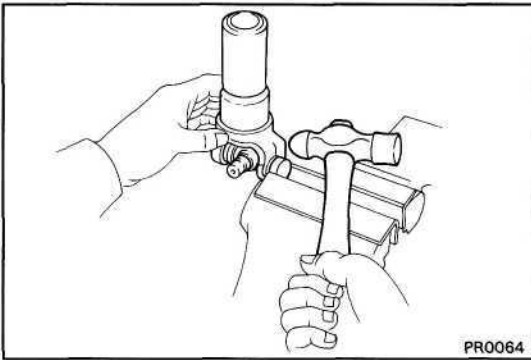


- (e) Clamp the bearing outer race in a vise and tap off the flange with a hammer.

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



- (f) Install the two removed bearing outer races to the spider.
- (g) Using SST, push out the bearing from the yoke.  
SST 09332-25010



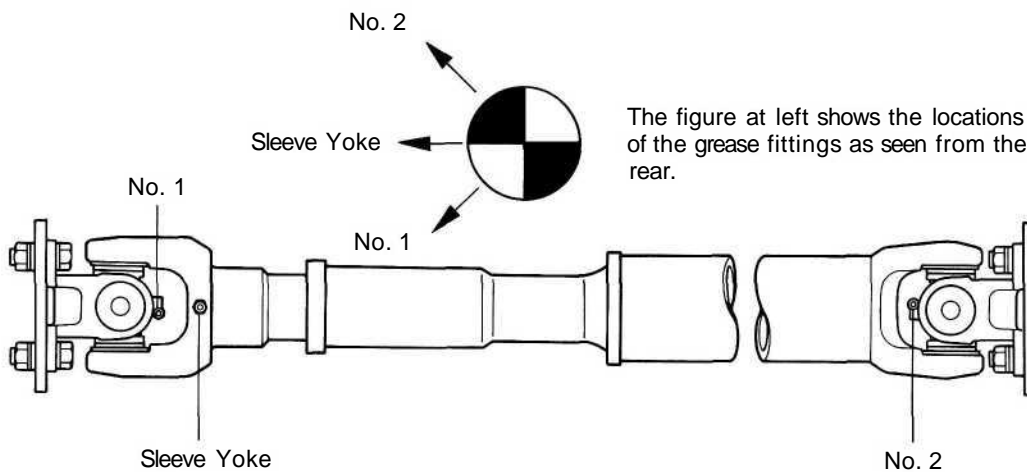
- (h) Clamp the outer bearing race in a vise and tap off the yoke with a hammer.
- HINT: Remove the bearing on the opposite side in the same procedure.

**ASSEMBLY OF PROPELLER SHAFT**

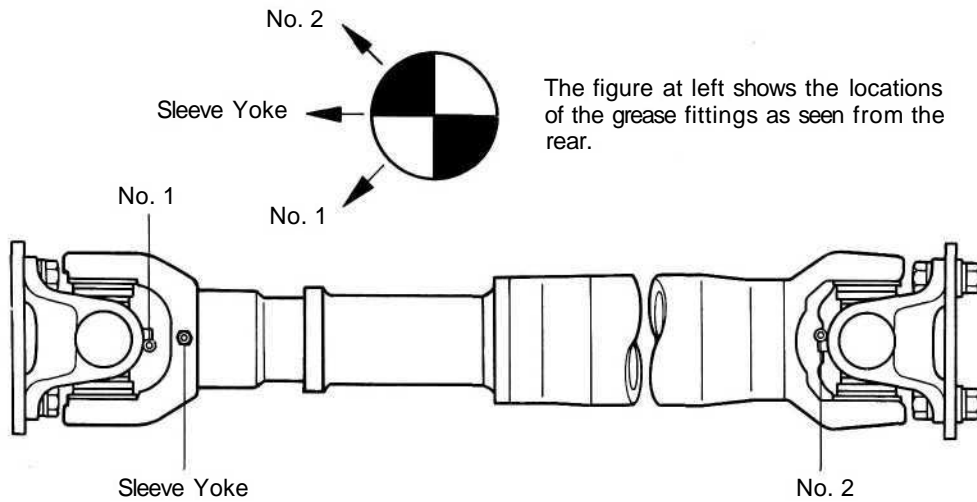
(See page PR-2)

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

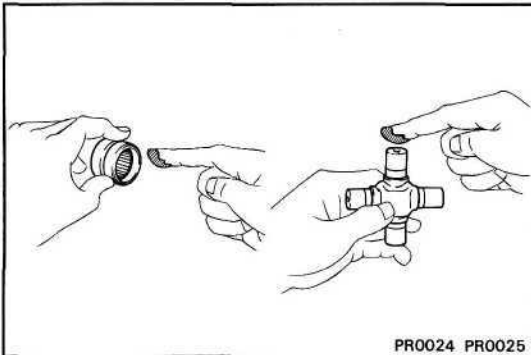
**SPIDER GREASE FITTING ASSEMBLY DIRECTION**  
Front Propeller Shaft



**SPIDER GREASE FITTING ASSEMBLY DIRECTION**  
Rear Propeller Shaft

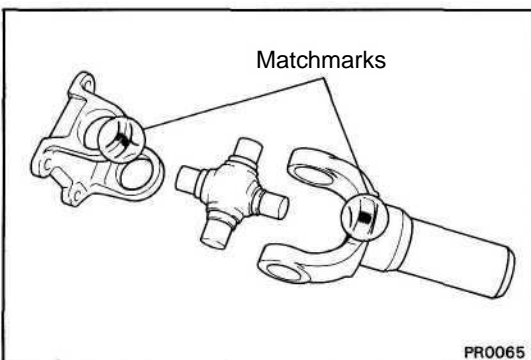


PR0285

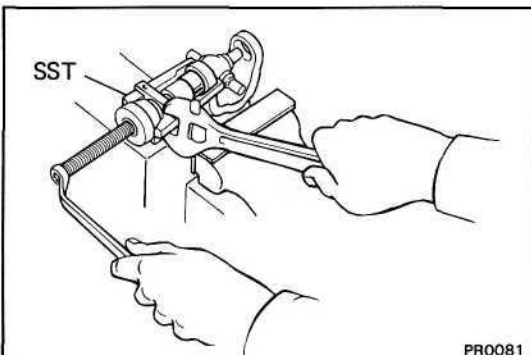


**1. INSTALL SPIDER BEARINGS**

- (a) Apply MP grease to the spider and bearings.  
HINT: Be careful not to apply too much grease.

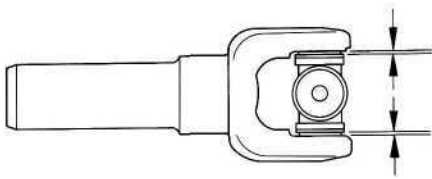


- (b) Align the matchmarks on the yoke and flange.

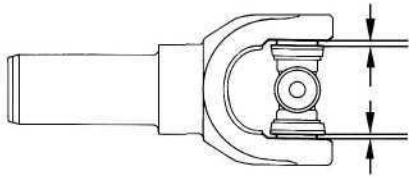


- (c) Fit the new spider into the yoke.  
(d) Using SST, install the new bearing on the spider.  
SST 09332-25010

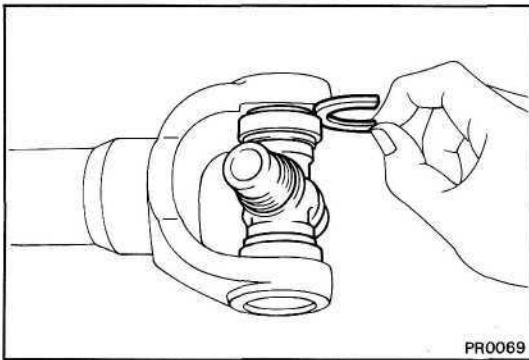
• Front Propeller Shaft



• Rear Propeller Shaft



PR0286  
PR0068



PR0069

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

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

HINT: Do not reuse the snap rings.

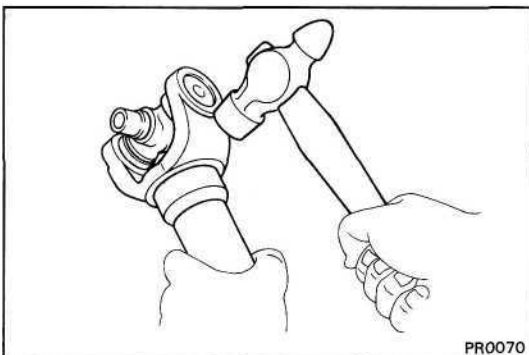
Thickness of snap ring

**Front Propeller Shaft**

Color	Mark	Thickness mm (in.)
—	1	2.100 - 2.150 (0.0827 - 0.0846)
—	2	2.150 - 2.200 (0.0846 - 0.0866)
—	3	2.200 - 2.250 (0.0866 - 0.0886)
Brown	—	2.250 - 2.300 (0.0886 - 0.0906)
Blue	—	2.300 - 2.350 (0.0906 - 0.0925)
—	6	2.350 - 2.400 (0.0925 - 0.0945)
—	7	2.400 - 2.450 (0.0945 - 0.0984)
—	8	2.450 - 2.500 (0.0965 - 0.0984)

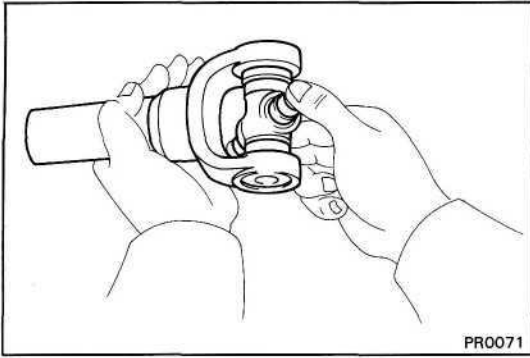
**Rear Propeller Shaft**

Thickness mm (in.)	Color
2.00 (0.0787)	—
2.03 (0.0799)	Brown
2.06 (0.0811)	Blue
2.09 (0.0823)	—



PR0070

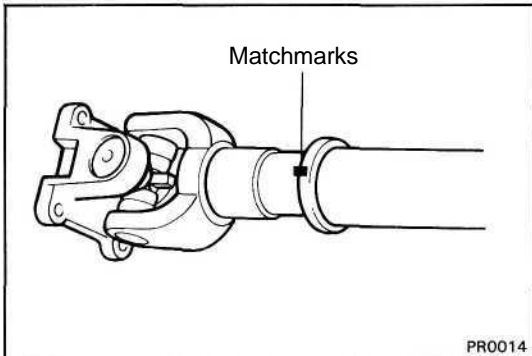
- (g) Using a hammer, tap the yoke until there is no clearance between the bearing outer race and snap ring.



- (h) Check that the spider bearing moves smoothly.
- (i) Check the spider bearing axial play.

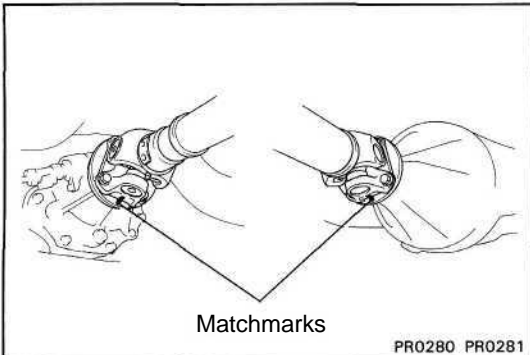
**Bearing axial play: Less than 0.05 mm (0.0020 in.)**

HINT: Install new spider bearings on the flange side in the procedure described above.



## 2. 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 and propeller shaft.
- (c) Install the propeller shaft into the sleeve yoke.



## INSTALLATION OF FRONT AND REAR PROPELLER SHAFTS

### 1. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE ON TRANSFER

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

#### Torque:

**Front Propeller Shaft**

**750 kg-cm (54 ft-lb, 74 N-m)**

**Rear Propeller Shaft**

**900 kg-cm (65 ft-lb, 88 N-m)**

HINT: When installing the washers, put them properly in place.

### 2. CONNECT PROPELLER SHAFT 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:

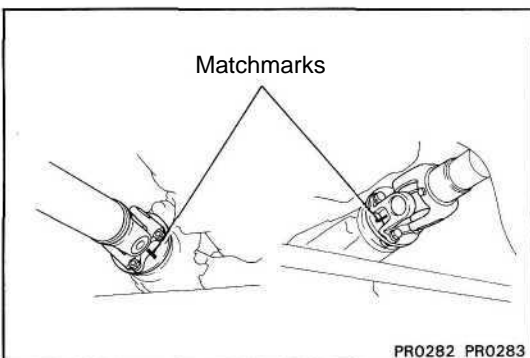
**Front Propeller Shaft**

**750 kg-cm (54 ft-lb, 74 N-m)**

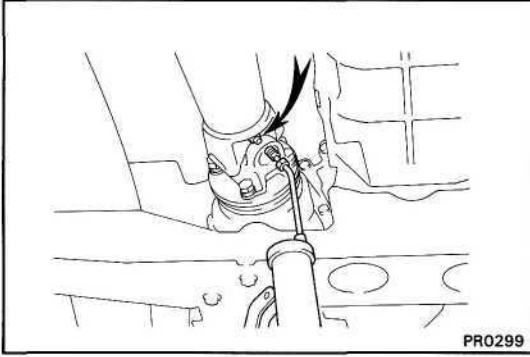
**Rear Propeller Shaft**

**900 kg-cm (65 ft-lb, 88 N-m)**

HINT: When installing the washers, put them properly in place.







3. APPLY MP GREASE TO GREASE FITTING

With a grease gun, pump the MP grease into each fitting until it begins to flow around the oil seal.