

PROPELLER SHAFT

PRECAUTION

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
	Center support bearing worn	Replace center support bearing	PR-4
	Spider bearing worn or stuck	Replace propeller shafts	PR-4
Vibration	Propeller and intermediate shafts runout	Replace shafts	PR-4
	Propeller shafts imbalance	Balance propeller shafts	
	Front flange runout	Replace front flange	PR-7
	Rear flange runout	Replace rear flange	PR-6
	Cross groove joint stuck or damaged	Replace cross groove joint	PR-8
	Transfer extension housing rear bushing worn		
	Sleeve yoke spline stuck		
		Replace sleeve yoke	PR-4

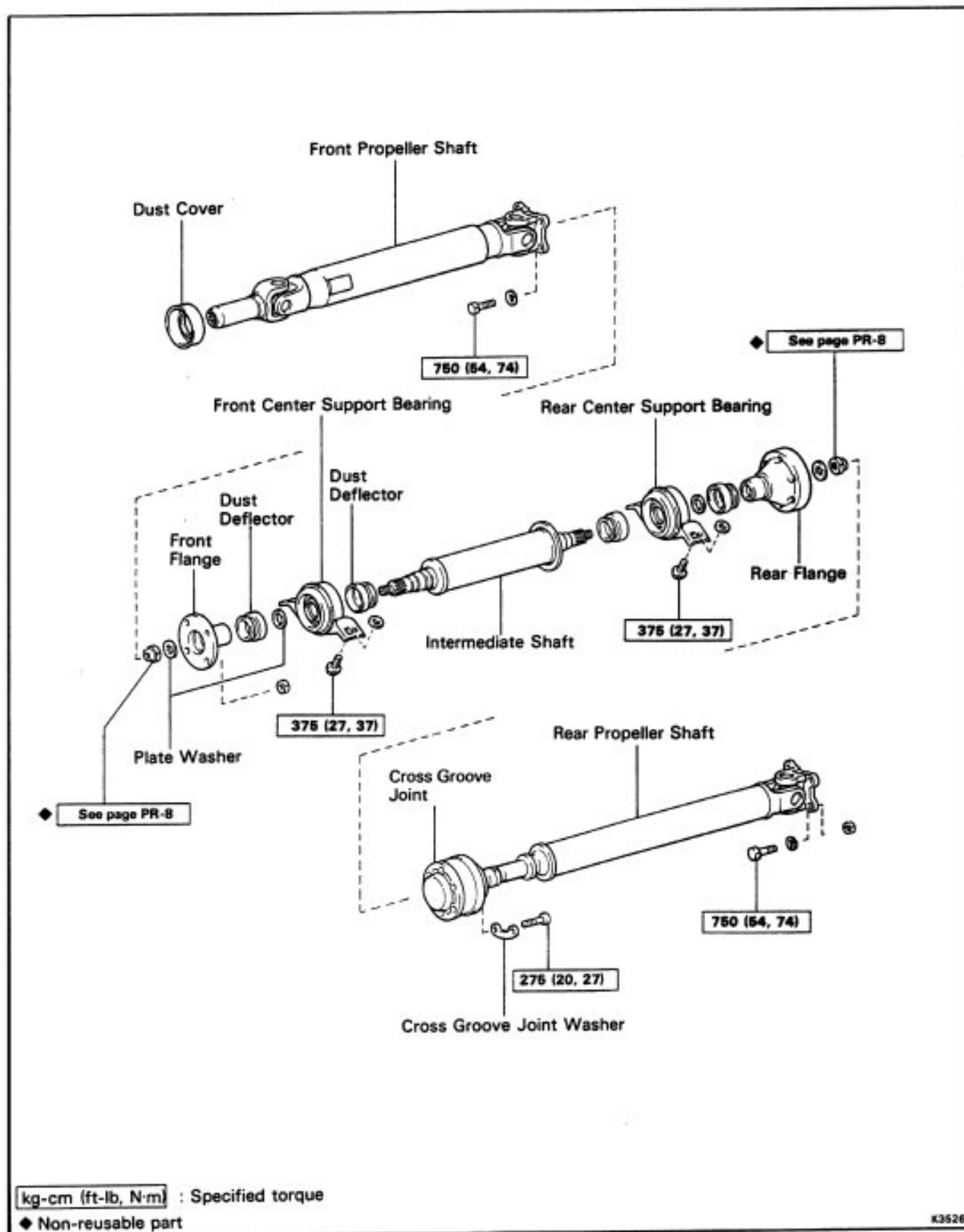
PRECAUTION

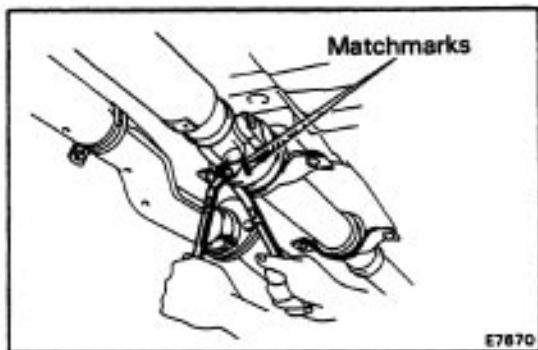
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PROPELLER SHAFT COMPONENTS

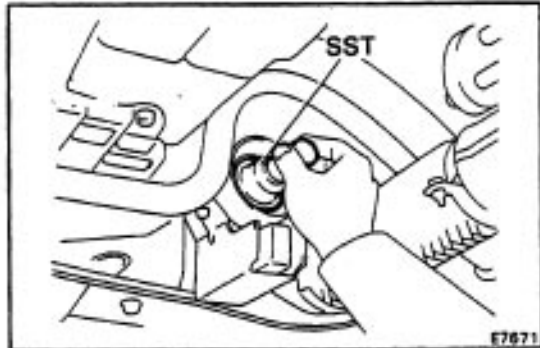




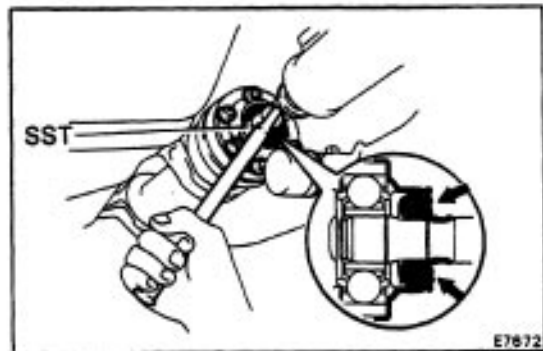
REMOVAL OF PROPELLER SHAFT

1. DISCONNECT FRONT PROPELLER SHAFT

- (a) Place the matchmarks on the both flanges.
- (b) Remove the four bolts, washers and nuts.



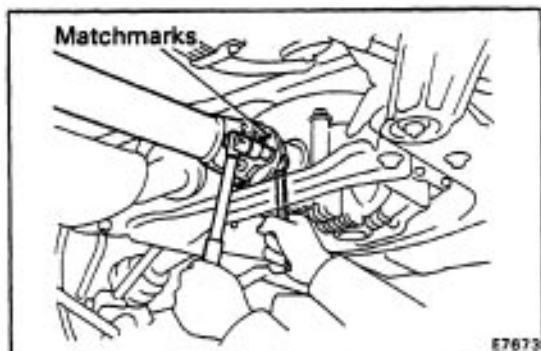
- (c) Pull the yoke from the transfer.
- (d) Insert SST in the transfer to prevent oil leakage.
SST 09325-20010



2. LOOSEN CROSS GROOVE JOINT SET BOLTS

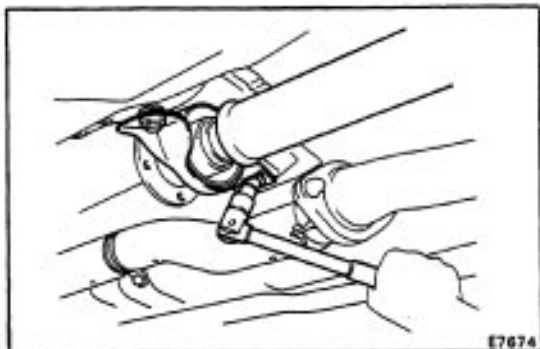
- (a) Depress the brake pedal and hold it.
- (b) Using a SST, loosen the cross groove joint set bolts
1 / 2 turn.
SST 09313-30021

HINT: Put a piece of cloth or an equivalent into the inside of the universal joint cover.

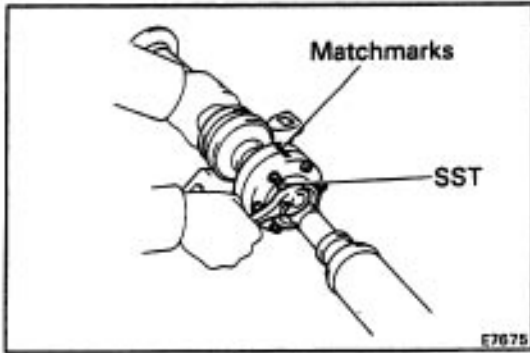


3. REMOVE INTERMEDIATE SHAFT AND REAR PROPELLER SHAFT

- (a) Place the matchmarks on the both flanges.
- (b) Remove the bolts, nuts and washers.



- (e) Remove the two bolts, front center support bearing and washers.
- (d) Remove rear center support bearing and washers.



4. SEPARATE INTERMEDIATE SHAFT AND REAR PROPELLER SHAFT

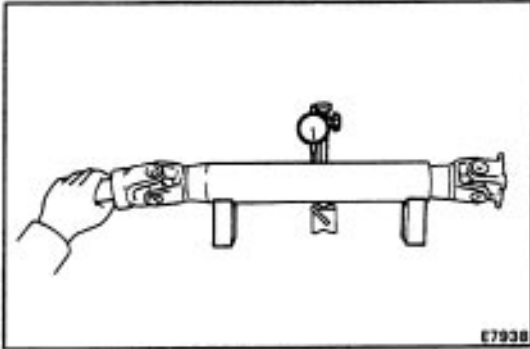
(a) Place the matchmarks on the joint and flange.

HINT: Do not place the matchmarks with a punch.

(b) Using SST, remove the six bolts and three washers.

Then separate intermediate shaft and rear propeller shaft.

SST 09313-30021

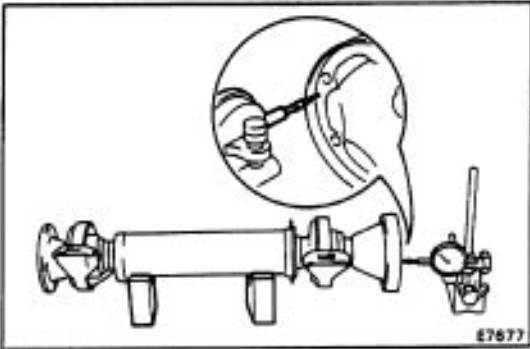


INSPECTION OF PROPELLER SHAFT

1. INSPECT PROPELLER AND INTERMEDIATE SHAFTS RUNOUT

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

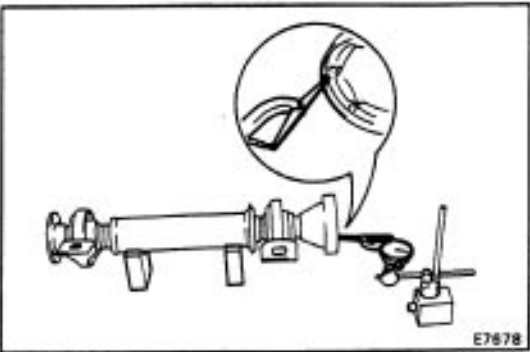
Maximum runout: 0.8 mm (0.031 in.)



2. INSPECT INTERMEDIATE SHAFT FLANGE RUNOUT

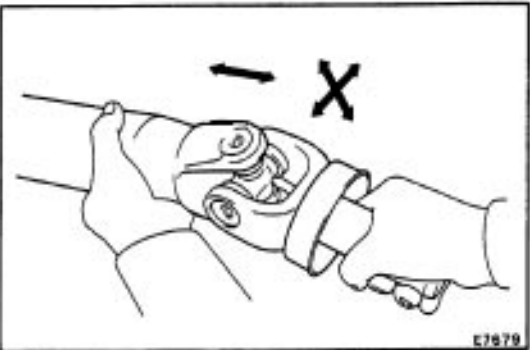
(a) Inspect the front side of intermediate shaft flange runout.

Maximum runout: 0.1 mm (0.004 in.)



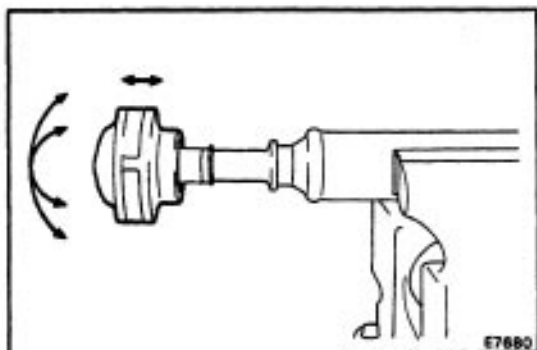
(b) Inspect the rear side of intermediate shaft flange runout in vertical direction.

Maximum runout: 0.1 mm (0.004 in.)



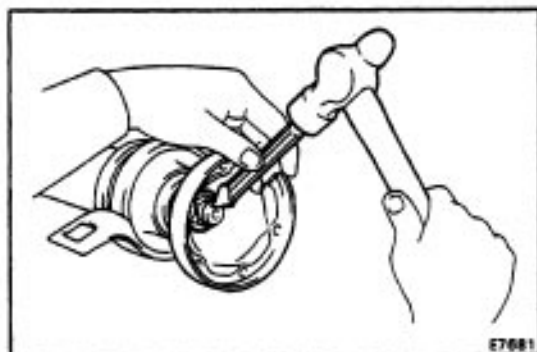
3. INSPECT SPIDER BEARINGS

Check the spider bearing axial play by turning the flange while holding the shaft tightly.



4. INSPECT CROSS GROOVE JOINT

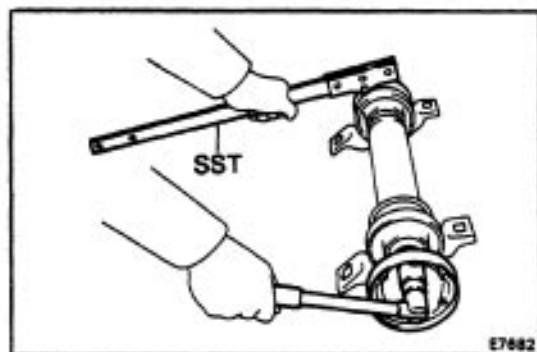
Check the joint smooth play by turning the joint in directions as shown. And check the crack or damage or grease leakage of boot. If problem is found, replace the joint.



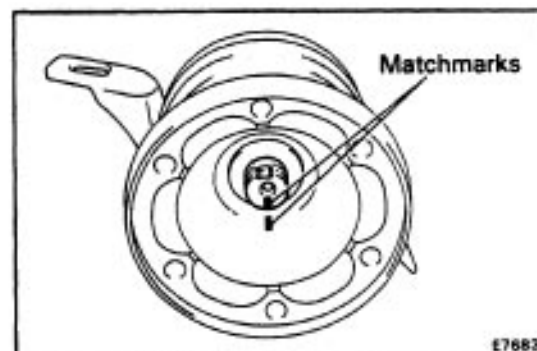
DISASSEMBLY OF PROPELLER SHAFT

1. REMOVE REAR CENTER SUPPORT BEARING

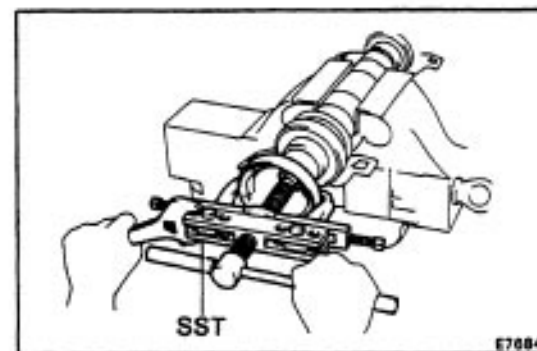
(a) Using a hammer and chisel, loosen the staked part of the nut.



(b) Using SST to hold the front flange, remove the nut and plate washer.
SST 09330-00021

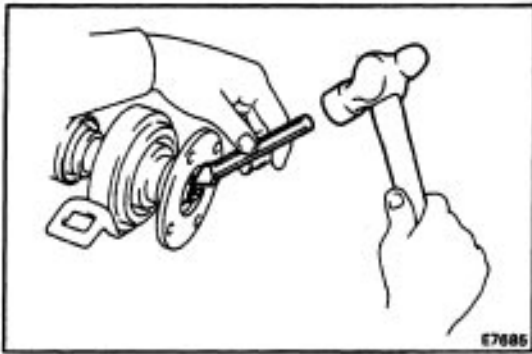


(c) Place the matchmarks on the rear flange and shaft.



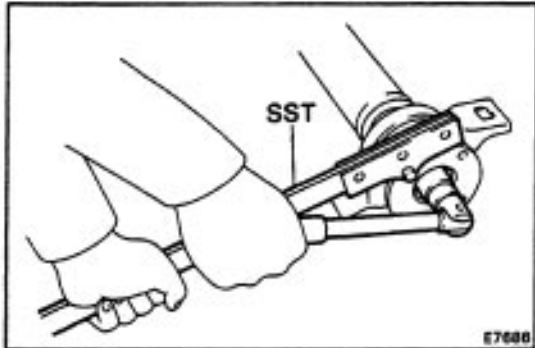
(d) Using SST, remove the rear flange.
SST 09950-20017

(e) Remove the rear center support bearing and plate washer.



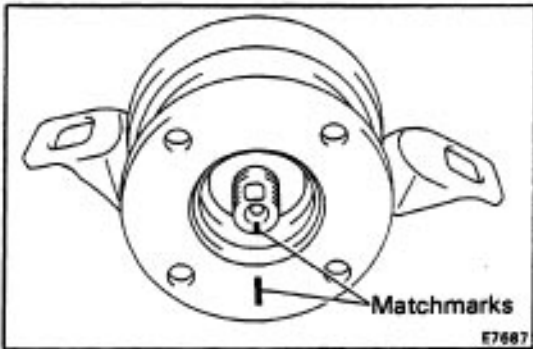
2. REMOVE FRONT CENTER SUPPORT BEARING

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

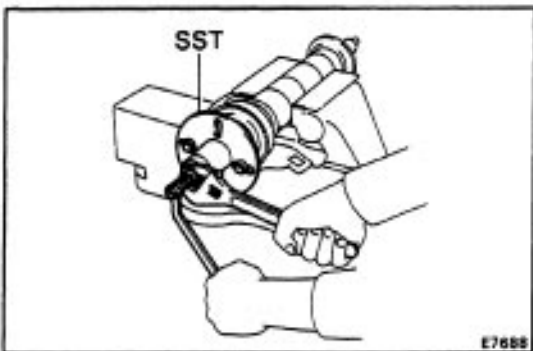


- (b) Using SST to hold the flange, remove the nut and plate washer.

SST 09330-00021



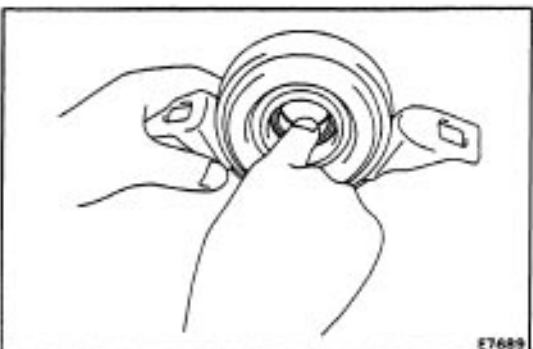
- (c) Place the matchmarks on the flange and the shaft.



- (d) Using SST, remove the flange.

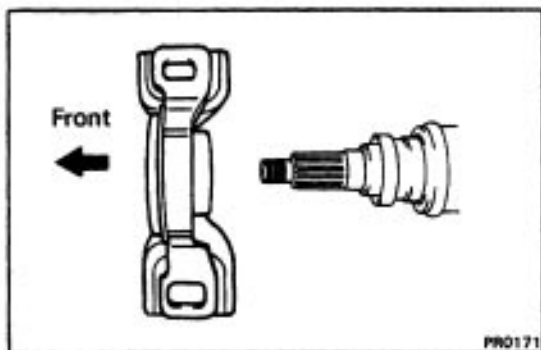
SST 09557-22022

- (e) Remove the front center support bearing and plate washer.



3. INSPECT CENTER SUPPORT BEARING

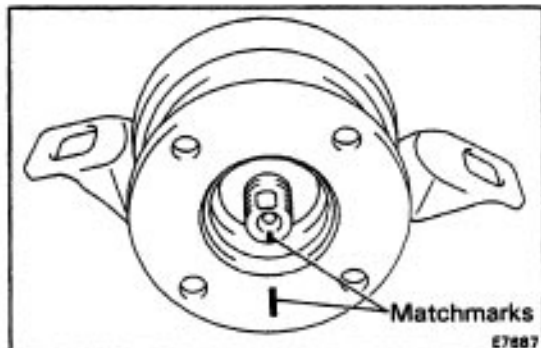
- (a) Turning the bearing by hand while applying force in the rotation direction. Check the bearing smooth play.
- (b) Check that there are no cracks and no damages about both seals.



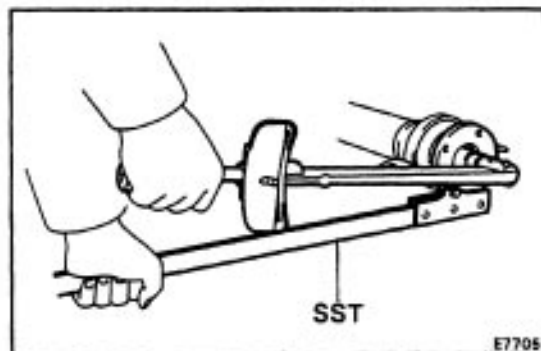
ASSEMBLY OF PROPELLER SHAFT

1. INSTALL FRONT CENTER SUPPORT BEARING

- (a) Set the front center support bearing on the intermediate shaft as shown.



- (b) Install the plate washer to the intermediate shaft.
 (c) Align the matchmarks on the flange and shaft and install the flange on the shaft.



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

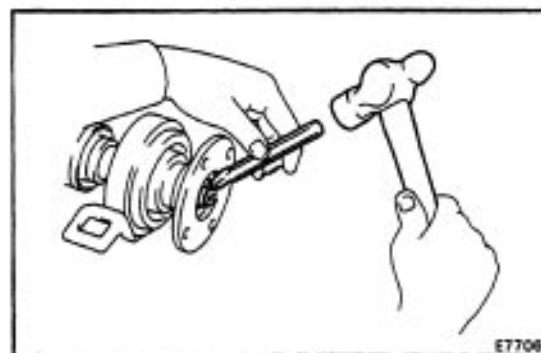
SST 09330-0002

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

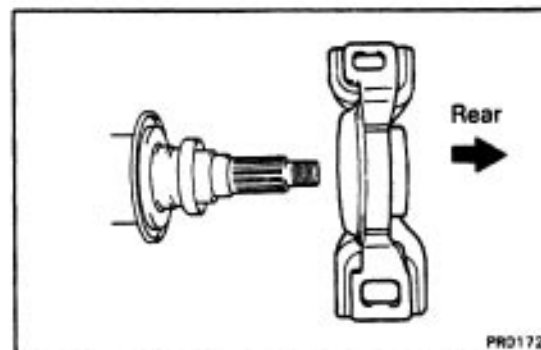
- (e) Loosen the nut.

- (f) Torque the nut again.

Torque: 700 kg-cm (51 ft-lb, 69 N-m)

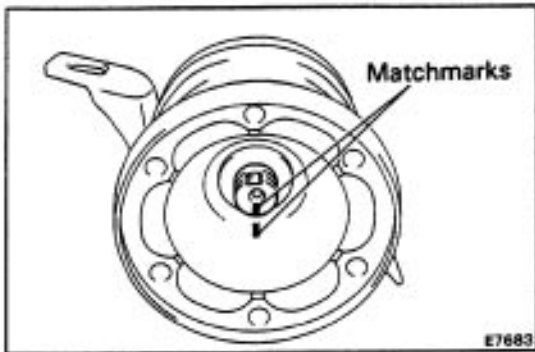


- (g) Using a hammer and chisel, stake the nut.

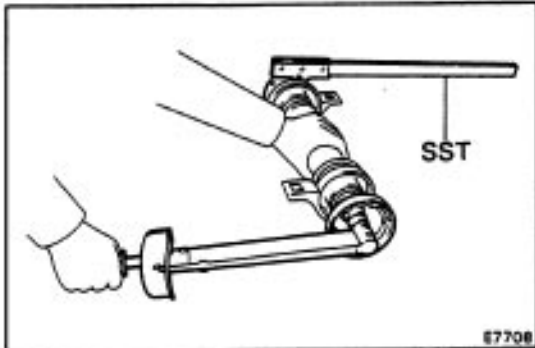


2. INSTALL REAR CENTER SUPPORT BEARING

- (a) Set the rear center support bearing on the intermediate shaft as shown.



- (b) Install the plate washer to the intermediate shaft.
- (c) Align the matchmarks on the flange and shaft and place the flange on the shaft.



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

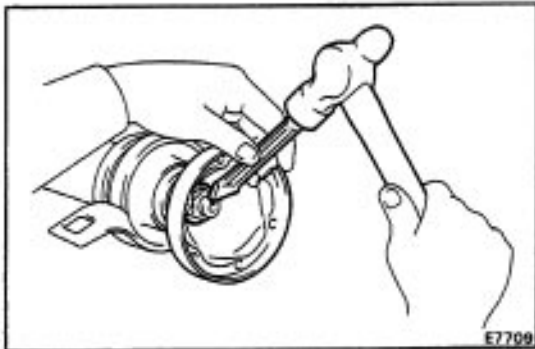
SST 09330-00021

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

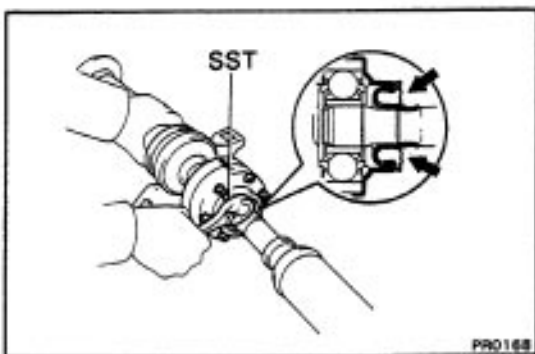
- (e) Loosen the nut.

- (f) Torque the nut again.

Torque: 700 kg-cm (51 ft-lb, 69 N-m)



- (g) Using a hammer and chisel, stake the nut.



3. INSPECT CROSS GROOVE JOINT

(See step 4 on page [PR-6](#))

4. CONNECT INTERMEDIATE SHAFT WITH REAR PROPELLER SHAFT

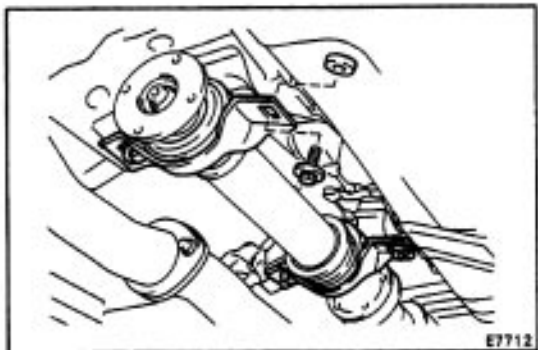
Using SST, tighten the six bolts and three washers temporarily.

SST 09313-30021

HINT: Put a piece of cloth or an equivalent into the inside of the universal joint cover.

INSTALLATION OF PROPELLER SHAFT

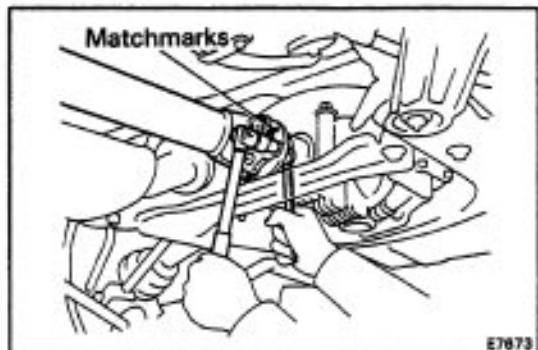
1. INSTALL CENTER SUPPORT BEARING TEMPORARILY



2. INSTALL REAR PROPELLER SHAFT

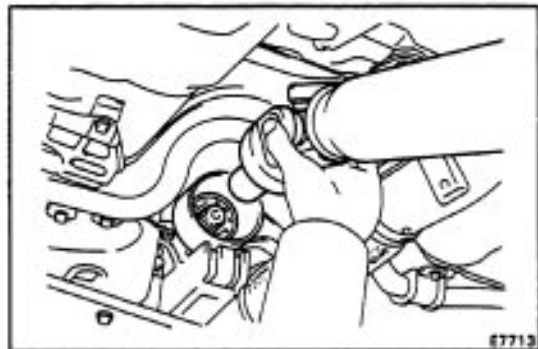
- (a) Align the matchmarks on the flanges and connect the shaft with the four bolts, washers and nuts.
- (b) Torque the bolts and nuts.

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



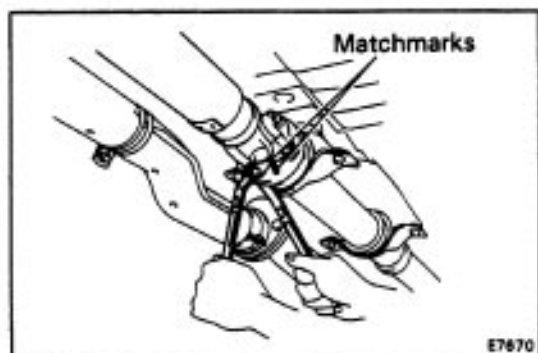
3. INSTALL FRONT PROPELLER SHAFT

- (a) Remove SST from the transfer.
SST 09325-20010
- (b) Insert the yoke into the transfer.



- (c) Align the matchmarks on the both flanges, then install the bolts, washers and nuts.

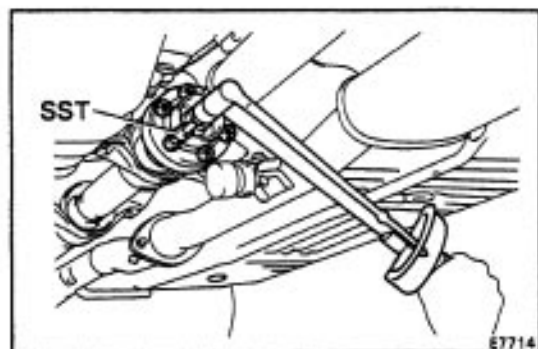
Torque: 750 kg-cm (54 ft-lb, 74 N-m)

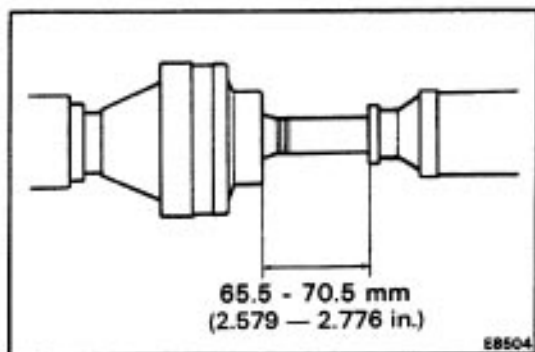


4. TIGHTEN CROSS GROOVE JOINT SET BOLTS

- (a) Depress the brake pedal and hold it.
- (b) Using SST, tighten the cross groove joint set bolts.
SST 09313-30021

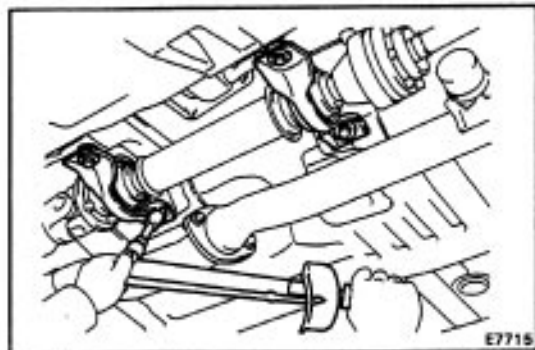
Torque: 275 kg-cm (20 ft-lb, 27 N-m)





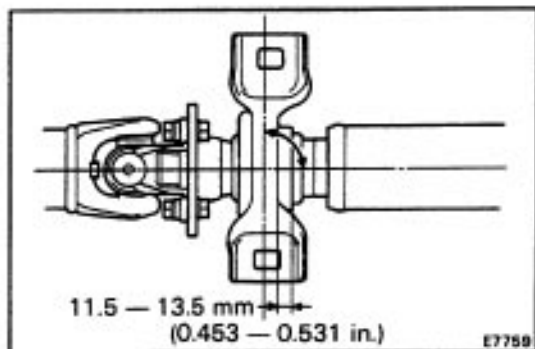
5. INSTALL CENTER SUPPORT BEARING

- (a) With a vehicle unladen condition, adjust the intervals between the rear side of boot cover and the shaft as shown in the illustration.



- (b) With the same condition, adjust the intervals between the rear side of center bearing housing and the rear side of cushion at 11.5 – 13.5 mm (0.453 in. – 0.531 in.) as shown in the illustration below, then torque the bolts.

Torque: 375 kg-cm (27 ft-lb, 37 N-m)



- (c) Check that the center line of the bracket is at right angles at the shaft axial direction.