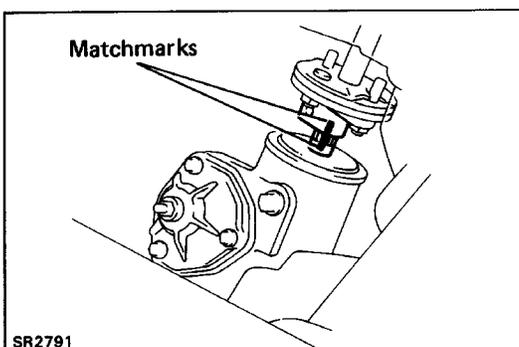
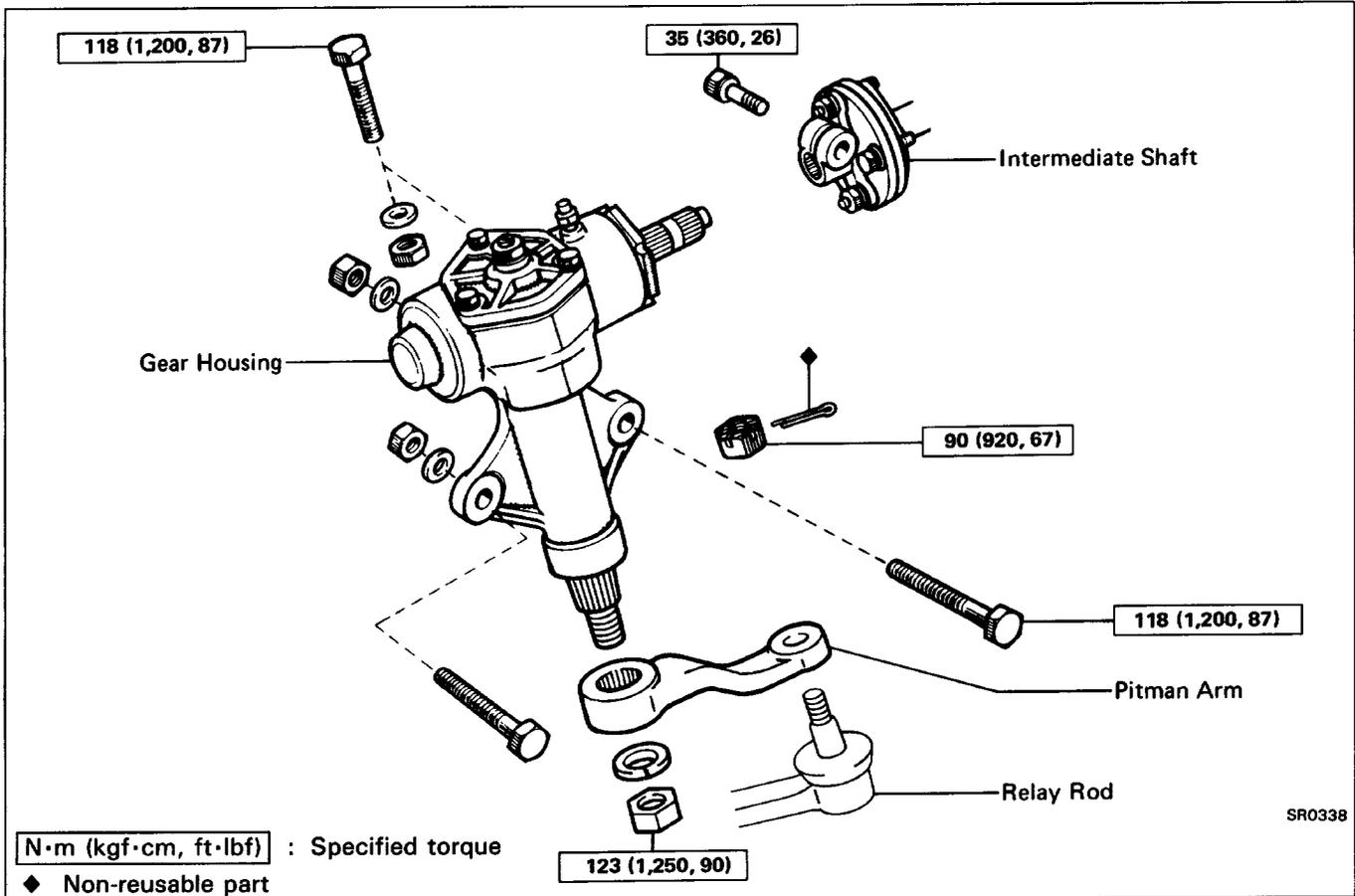


MANUAL GEAR HOUSING (2WD)

REMOVAL AND INSTALLATION OF MANUAL GEAR HOUSING

Remove and install the parts as shown.



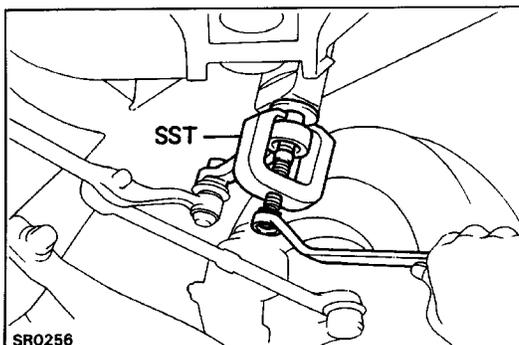
(MAIN POINTS OF REMOVAL AND INSTALLATION)

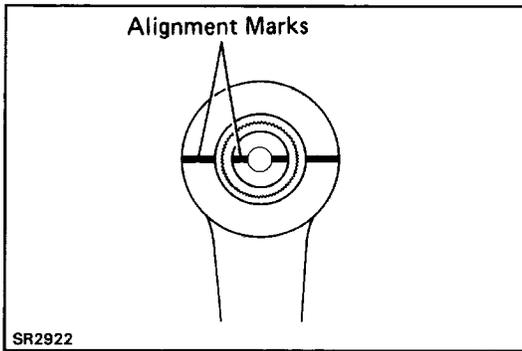
1. DISCONNECT UNIVERSAL JOINT

- Loosen the column side set bolt.
- Remove the gear side set bolt.
- Place matchmarks on the flexible coupling and worm shaft.
- Slide the shaft rearward to disconnect the shaft from the worm shaft.

2. DISCONNECT PITMAN ARM FROM GEAR HOUSING

- Loosen the pitman arm nut.
- Using SST, disconnect pitman arm from the gear housing.
SST 09610-55012



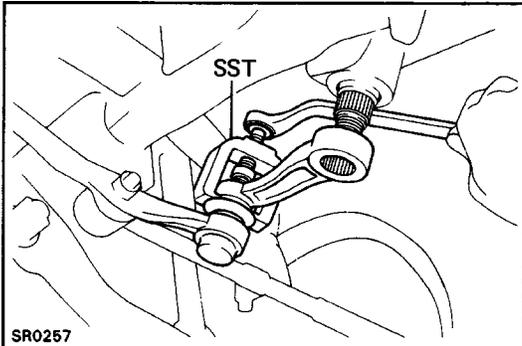


SR2922

3. CONNECT PITMAN ARM TO GEAR HOUSING

- (a) Align the alignment marks on the sector shaft and pitman arm and install the spring washer and arm.
- (b) Tighten the pitman arm nut.

Torque: 123 N·m (1,250 kgf·cm, 90 ft·lbf)



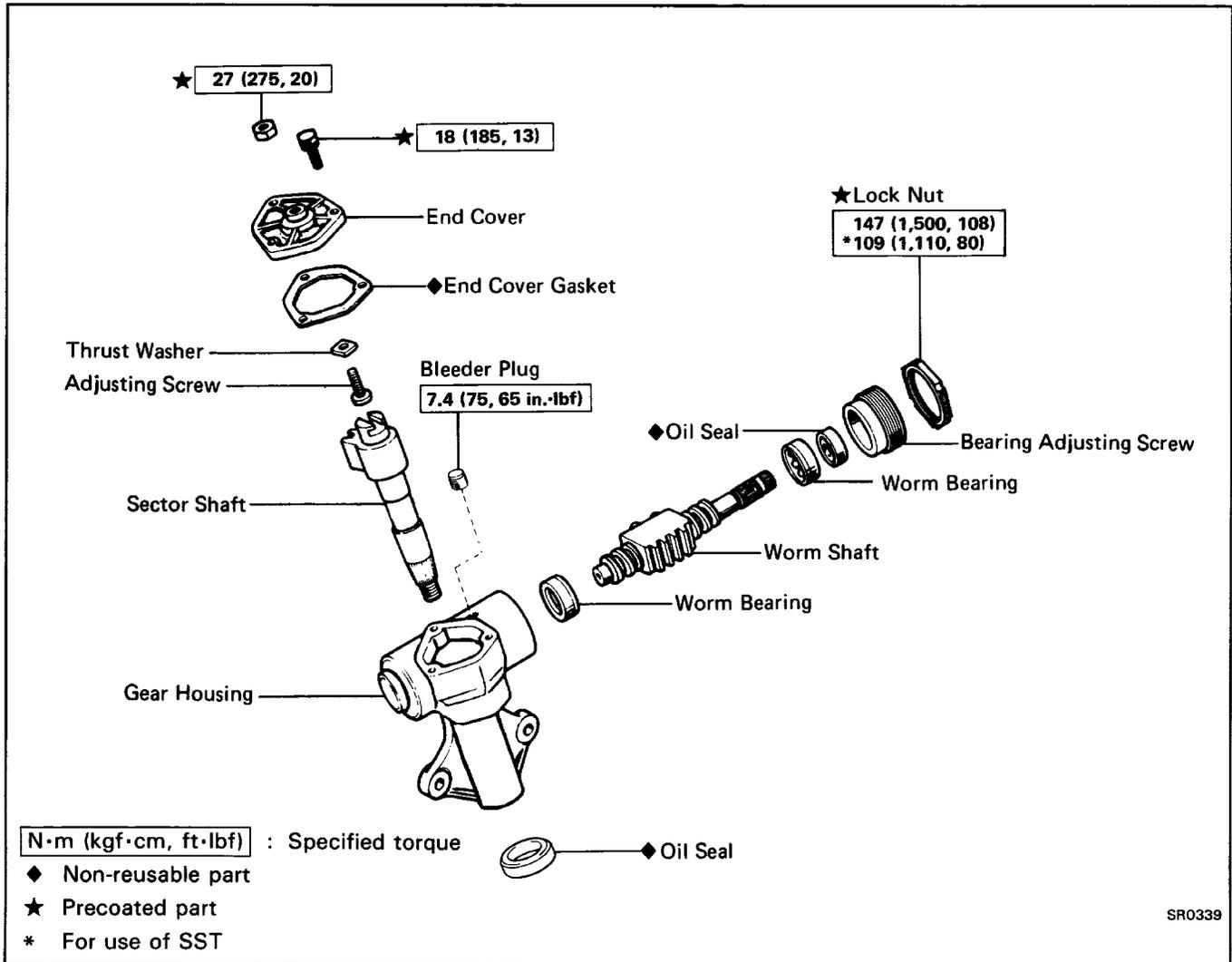
SR0257

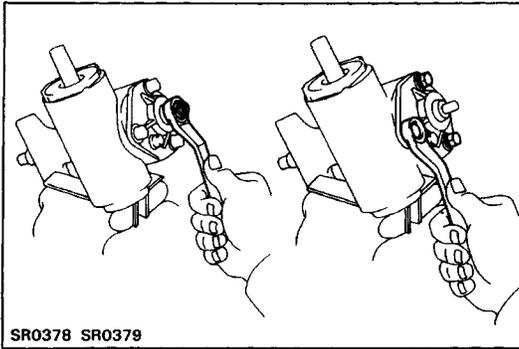
4. DISCONNECT PITMAN ARM FROM RELAY ROD

Using SST, disconnect the pitman arm from the relay rod.

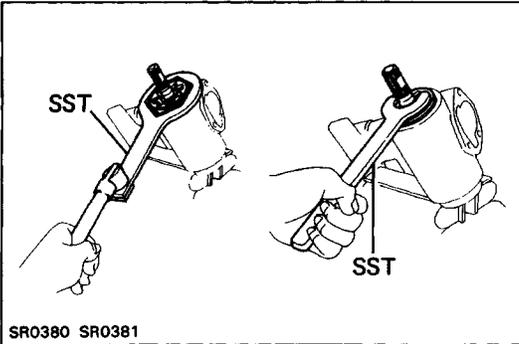
SST 09611-22012

COMPONENTS



**DISASSEMBLY OF MANUAL GEAR HOUSING****1. REMOVE BLEEDER PLUG AND DRAIN GEAR OIL****2. REMOVE END COVER AND SECTOR SHAFT**

- (a) Remove the adjusting screw lock nut and three bolts.
- (b) Remove the end cover by turning the adjusting screw clockwise with a screwdriver.
- (c) Pull out the sector shaft and adjusting screw from the gear housing.

**3. REMOVE LOCK NUT**

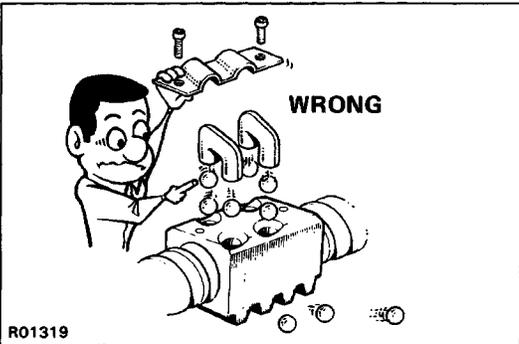
Using SST, remove the lock nut.

SST 09617-22020

4. REMOVE BEARING ADJUSTING SCREW

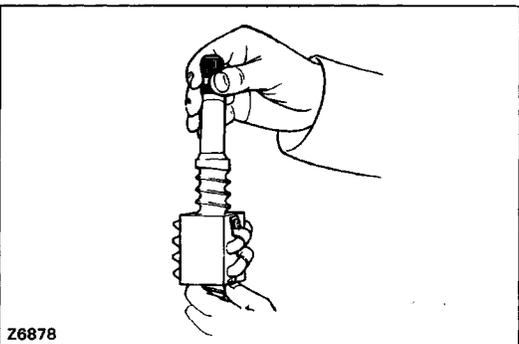
Using SST, remove the adjusting screw.

SST 09616-30011

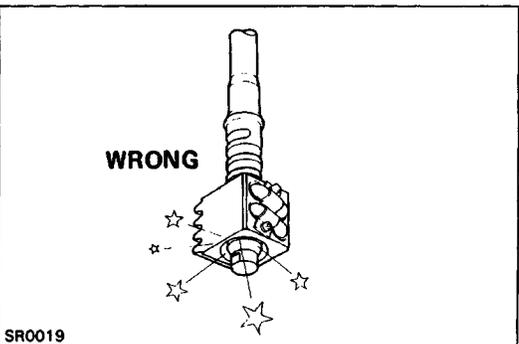
**5. REMOVE WORM SHAFT**

Pull the worm shaft out of the gear housing.

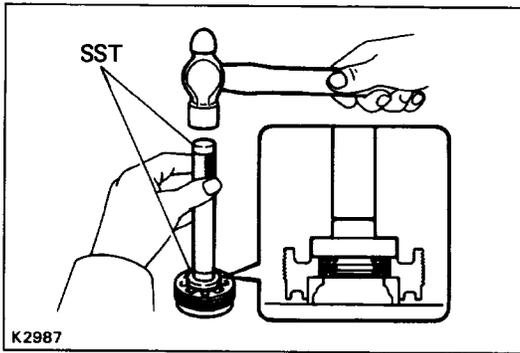
NOTICE: Do not disassemble the ball nut from the worm shaft.

**INSPECTION AND REPLACEMENT OF MANUAL GEAR HOUSING****1. INSPECT WORM AND BALL NUT**

- (a) Check the worm and ball nut for wear or damage.
 - (b) Check that the nut rotates smoothly down the shaft by its own weight.
- If a problem is found, repair or replace the worm.



NOTICE: Do not allow the ball nut to hit the end of the worm shaft.



2. INSPECT WORM BEARINGS AND OIL SEAL

Check for wear or damage.

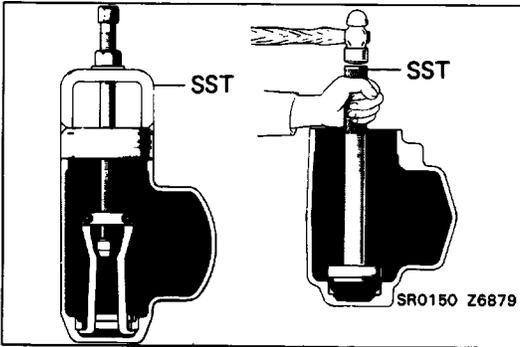
If a problem is found, replace the bearings, bearing races and oil seal.

3. IF NECESSARY, REPLACE OIL SEAL

(a) Remove the oil seal with a screwdriver.

(b) Using SST, install a new oil seal.

SST 09620-30010 (09627-30010, 09631-00020)



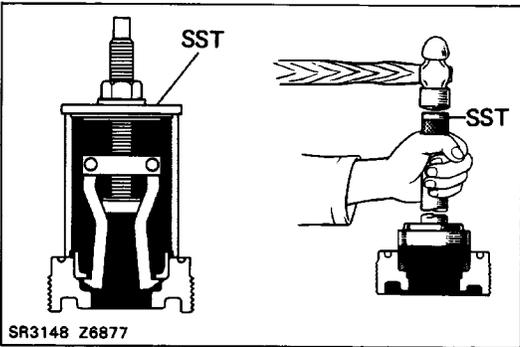
4. IF NECESSARY, REPLACE OUTER RACE IN GEAR HOUSING

(a) Using SST, remove the outer race from the housing.

SST 09612-65014 (09612-01030)

(b) Using SST, install a new outer race into the housing.

SST 09620-30010 (09626-30010, 09631-00020)



5. IF NECESSARY, REPLACE OUTER RACE 1N ADJUSTING NUT

(a) Remove the oil seal with a screwdriver.

(b) Using SST, remove the outer race from the nut.

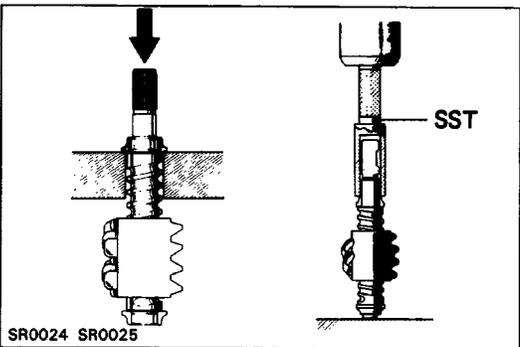
SST 09612-30012

(c) Using SST, install a new race into the nut.

SST 09620-30010 (09626-30010, 09631-00020)

(d) Using SST, install a new oil seal into the nut.

SST 09620-30010 (09627-30010, 09631-00020)

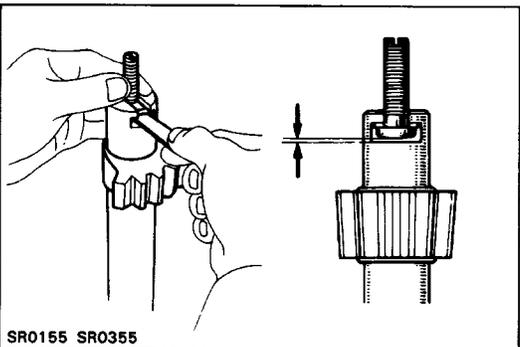


6. IF NECESSARY, REPLACE INNER RACE ON WORM SHAFT

(a) Using a press, remove the inner races from the shaft.

(b) Using SST, press new inner races onto the shaft.

SST 09620-30010 (09623-30010)



7. INSPECT SECTOR SHAFT

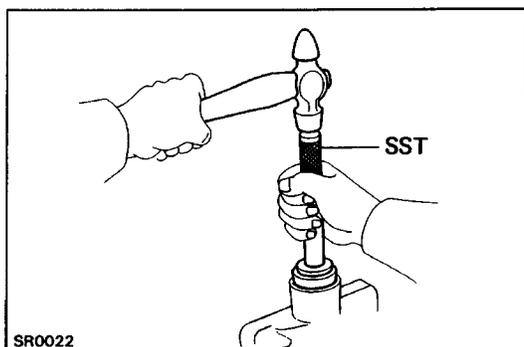
Measure shaft thrust clearance with a feeler gauge.

Maximum clearance: 0.05 mm (0.0020 in.) or less

If necessary, install a new thrust washer which will provide the minimum clearance between the sector shaft and the adjusting screw.

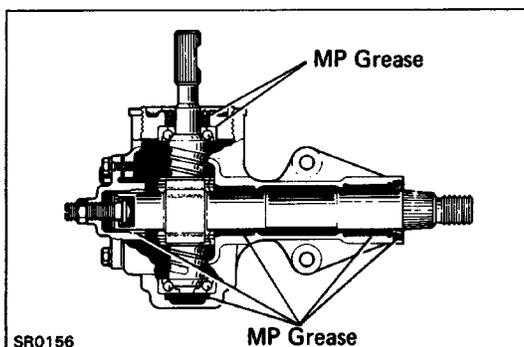
Thrust washer thickness

Thickness mm (in.)		Thickness mm (in.)	
1.95	(0.0768)	2.10	(0.0827)
2.00	(0.0787)	2.15	(0.0847)
2.05	(0.0807)		



8. IF NECESSARY, REPLACE OIL SEAL

- Remove the oil seal with a screwdriver from the gear housing.
- Using SST and a hammer, install a new oil seal.
SST 09630-00012 (09631-00020, 09631-00090)



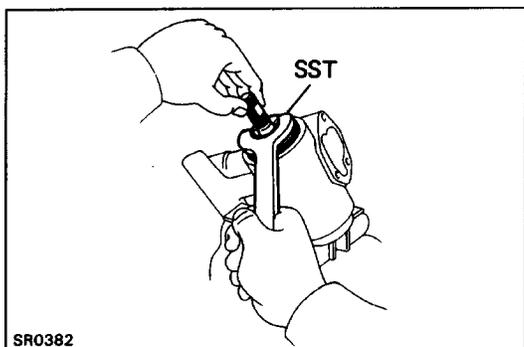
ASSEMBLY OF STEERING GEAR HOUSING

(See page SR-19)

1. APPLY MP GREASE TO BUSHING, NEEDLE ROLLER BEARING AND OIL SEALS

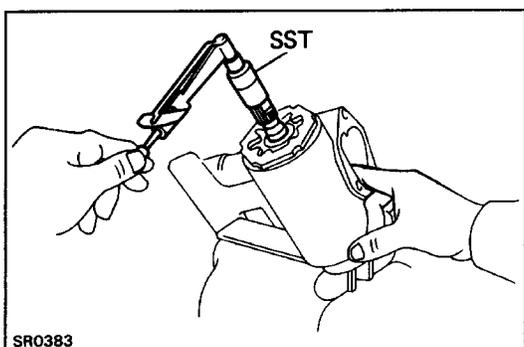
2. INSTALL WORM SHAFT INTO GEAR HOUSING

Place the worm bearings on the shaft and install the shaft into the housing.



3. INSTALL AND ADJUST BEARING ADJUSTING SCREW

- Using SST, gradually tighten the adjusting screw until it is snug.
SST 09616-30020

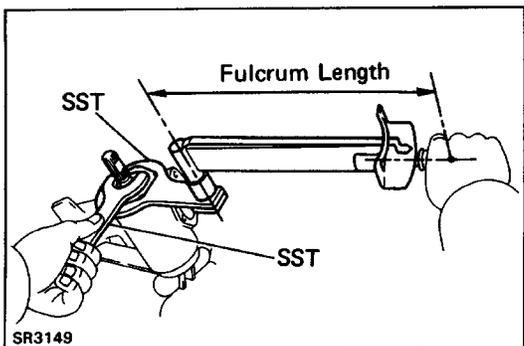


- Using a torque meter and SST, measure the bearing preload in both directions. Turn the adjusting screw until the preload is correct.

Preload (Starting): 0.3 – 0.5 N-m

(3 – 5 kgf-cm, 2.6 – 4.3 in.-lbf)

SST 09616-00010



- Apply sealant to the lock nut.

Sealant: Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

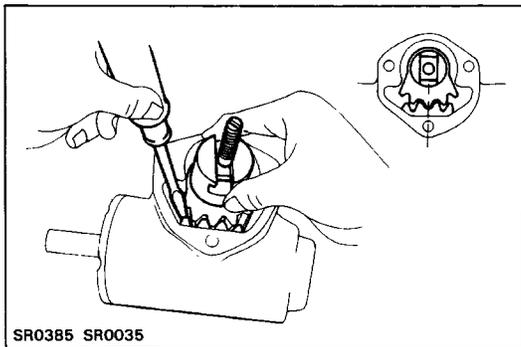
- Hold the adjusting screw in position with SST and tighten the lock nut with SST.

Torque: 147 N-m (1,500 kgf-cm, 108 ft-lbf)

SST 09616-30011 and 09617-22020

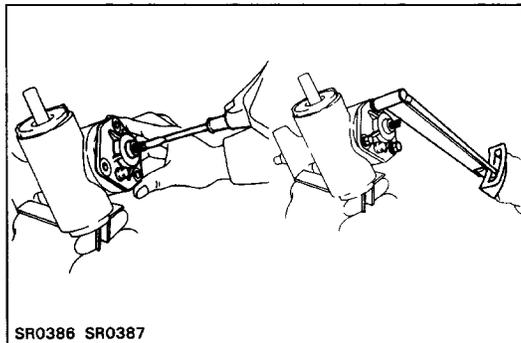
HINT:

- Check that the bearing preload is still correct.
- Use a torque wrench with a fulcrum length of 425 mm (16.73 in.).



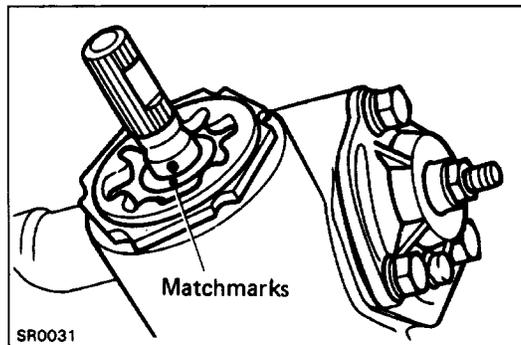
4. INSTALL SECTOR SHAFT

- Install the adjusting screw and thrust washer onto the sector shaft.
- Set the ball nut at the center of the worm shaft. Install the sector shaft into the gear housing so that the center teeth mesh together.



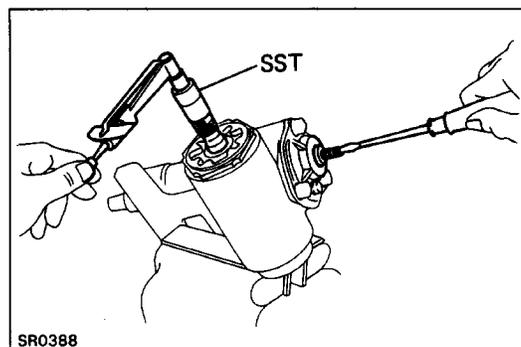
5. INSTALL END COVER

- Install the end cover over a new gasket.
- Using a screwdriver, loosen the adjusting screw as far as possible.
- Apply sealant to the bleeder plug side cover bolt.
Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
- Torque the three cover bolts.
Torque: 18 N-m (185 kgf-cm, 13 ft-lbf)



6. PLACE WORM SHAFT IN NEUTRAL POSITION

- Count the total shaft rotations and turn the shaft back half of that number.
- The worm shaft is now in neutral position.
- Place matchmarks on the worm shaft and housing to show neutral position.



7. ADJUST TOTAL PRELOAD

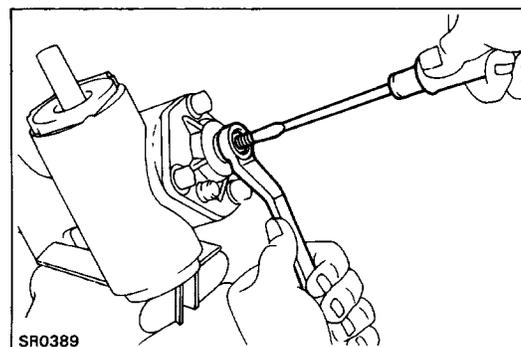
Using a torque meter and SST, turn the adjusting screw while measuring the preload until it is correct.

HINT: Be sure that the worm shaft is in neutral position.

Preload (Starting): 0.8 – 1.0 N-m

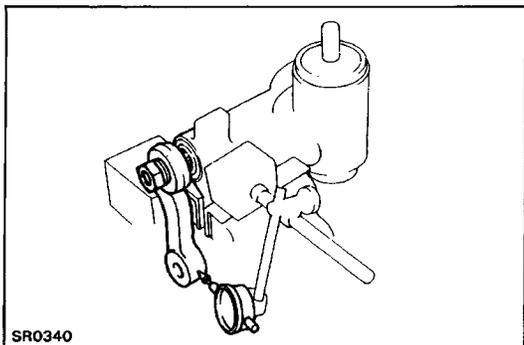
(8 – 10.5 kgf-cm, 6.9 – 9.1 in.-lbf)

SST 09616-00010



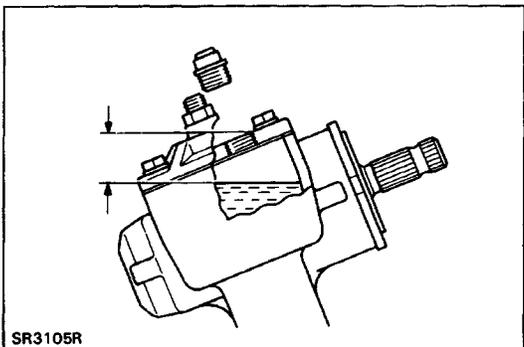
8. TIGHTEN ADJUSTING SCREW LOCK NUT

- Apply sealant to the lock nut.
Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
- Hold the screw with a screwdriver while tightening the lock nut.
- Torque the lock nut.
Torque: 27 N-m (275 kgf-cm, 20 ft-lbf)
HINT: Check that the preload is still correct.



9. MEASURE SECTOR SHAFT BACKLASH

Install a dial indicator. Check that the sector shaft has no backlash within 100 degrees of the left and right sides from neutral position.



10. REPLENISH WITH GEAR OIL

Oil type: API GL-4, SAE 90
Capacity: 380 - 400 cc (23.2 - 24.4 cu in.)
Oil level: (at installation)
18 - 28 mm (0-71 - 1.10 in.) from top

11. INSTALL BLEEDER PLUG

Torque: 7.4 N-m (75 kgf-cm, 65 in.-lbf)