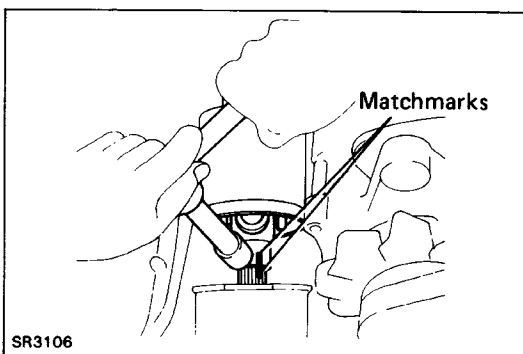
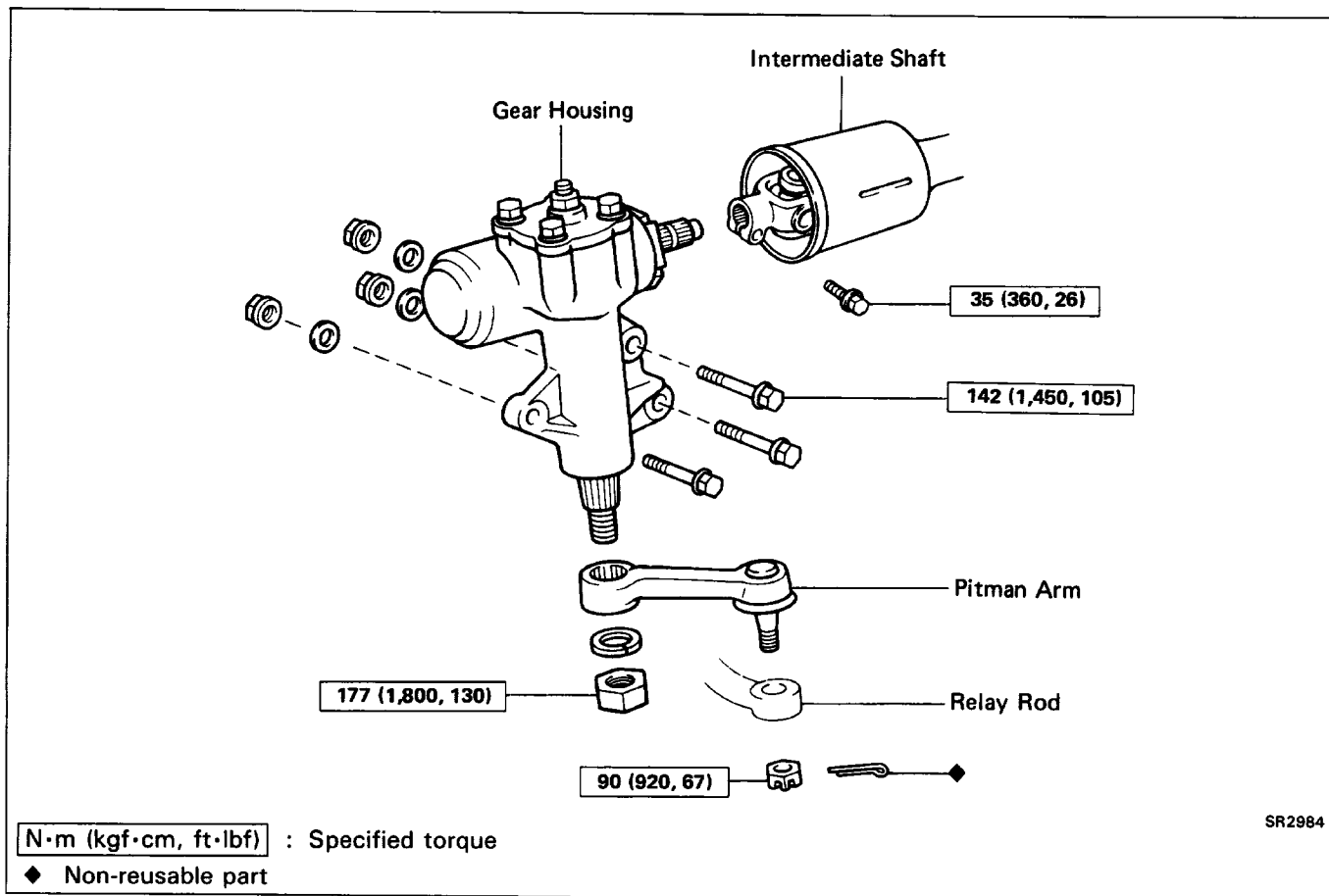


MANUAL GEAR HOUSING (4WD)

REMOVAL AND INSTALLATION OF MANUAL GEAR HOUSING

Remove and install the parts as shown.



(MAIN POINTS OF REMOVAL AND INSTALLATION)

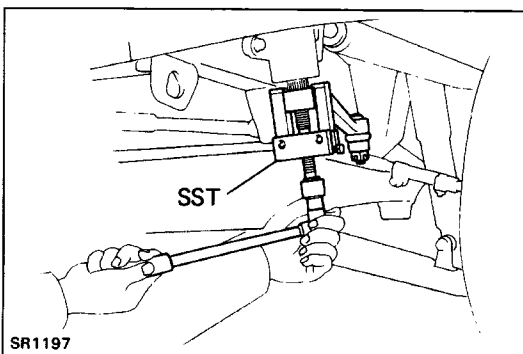
1. DISCONNECT UNIVERSAL JOINT

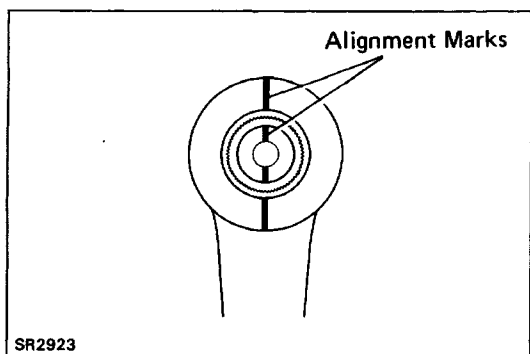
- (a) Loosen the column side set bolt.
- (b) Remove the gear side set bolt.
- (e) Place matchmarks on the universal joint and worm shaft.
- (d) Slide the shaft rearward to disconnect the shaft from the worm shaft.

2. DISCONNECT PITMAN ARM FROM GEAR HOUSING

- (a) Loosen the pitman arm set nut.
- (b) Using SST, disconnect the pitman arm from the gear housing.

SST 09628-62011



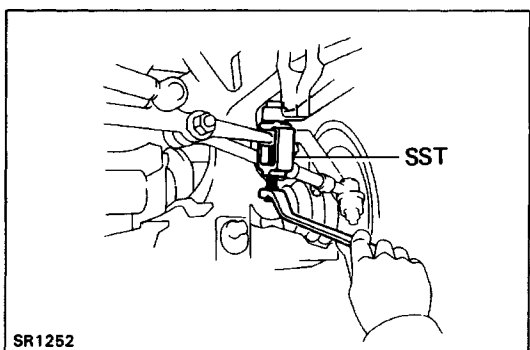


SR2923

3. CONNECT PITMAN ARM TO GEAR HOUSING

Align alignment marks on the pitman arm and the sector shaft, and install the spring washer and nut.

Torque: 177 N·m (1,800 kgf·cm, 130 ft·lbf)



SR1252

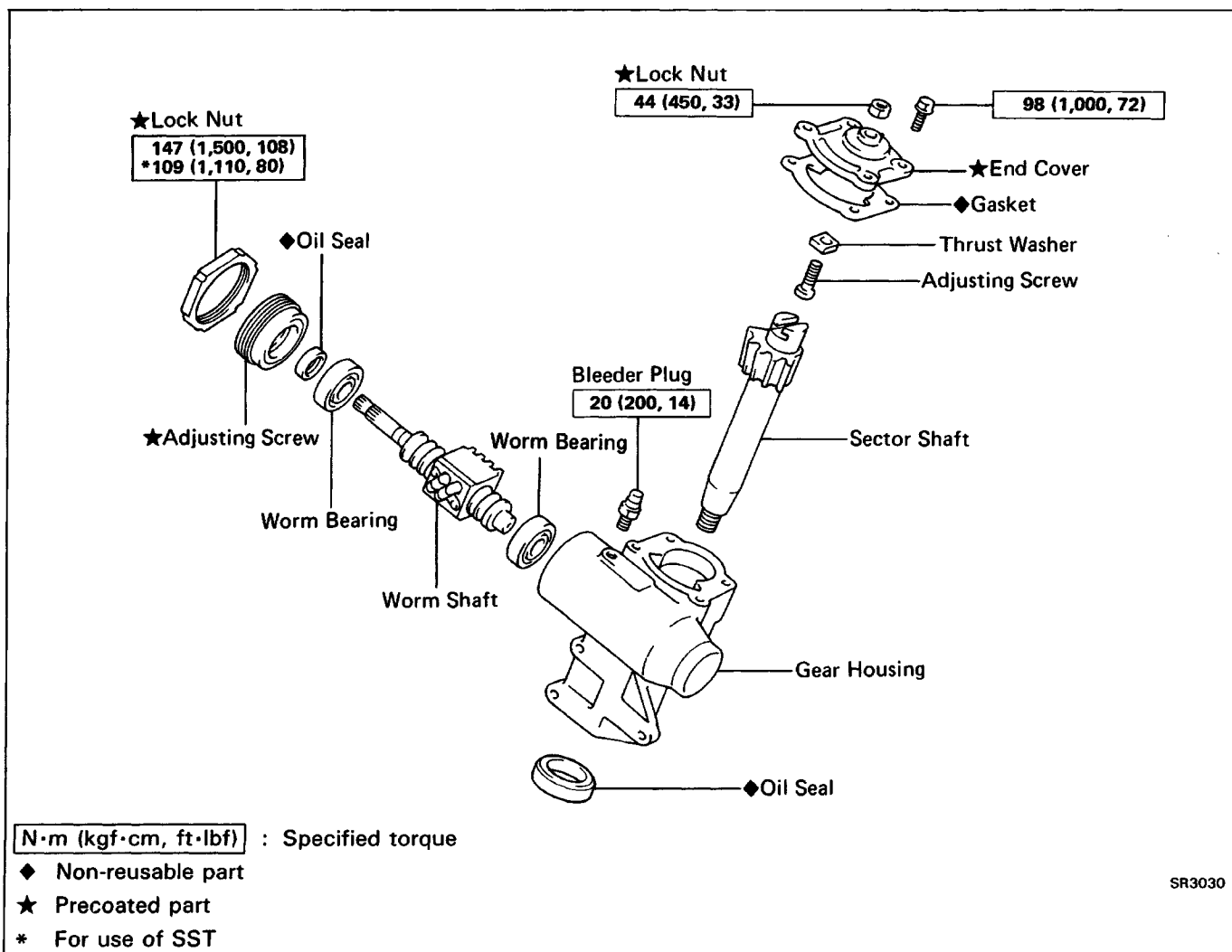
4. DISCONNECT PITMAN ARM FROM RELAY ROD

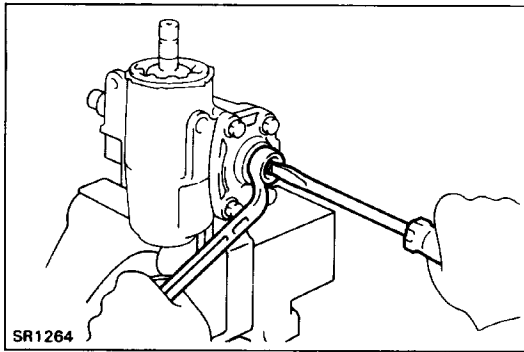
(a) Remove the cotter pin and set nut.

(b) Using SST, disconnect the pitman arm from the relay rod.

SST 09611-22012

COMPONENTS



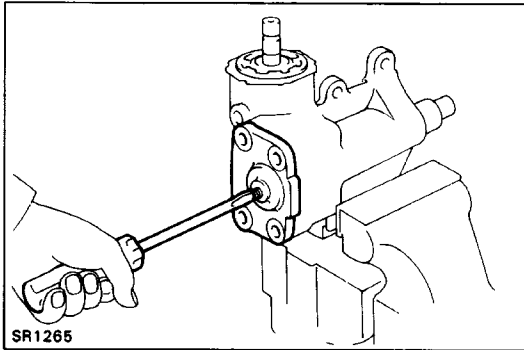


DISASSEMBLY OF MANUAL GEAR HOUSING

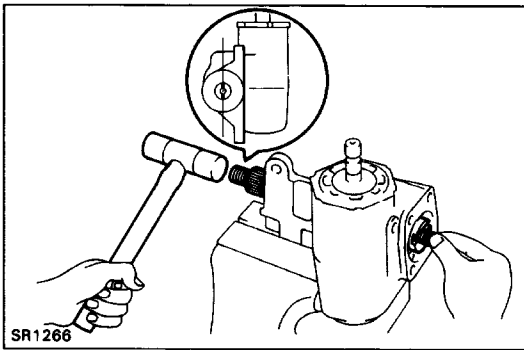
1. REMOVE BLEEDER PLUG AND DRAIN GEAR OIL

2. REMOVE END COVER

(a) Remove the adjusting screw lock nut and four bolts.



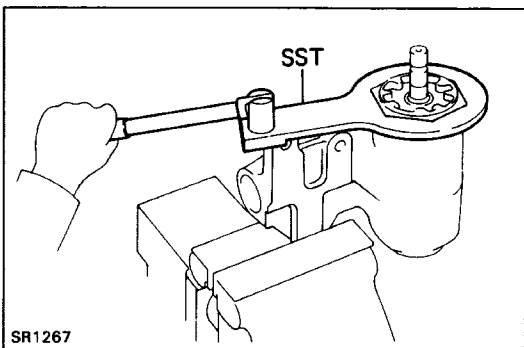
(b) Remove the end cover by turning the adjusting screw clockwise.



3. REMOVE SECTOR SHAFT

(a) Using a plastic hammer, tap out the sector shaft.

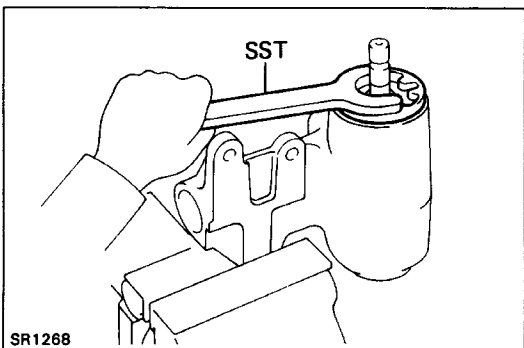
(b) Remove the sector shaft.



4. REMOVE WORM BEARING ADJUSTING SCREW LOCK NUT

Using SST, remove the lock nut.

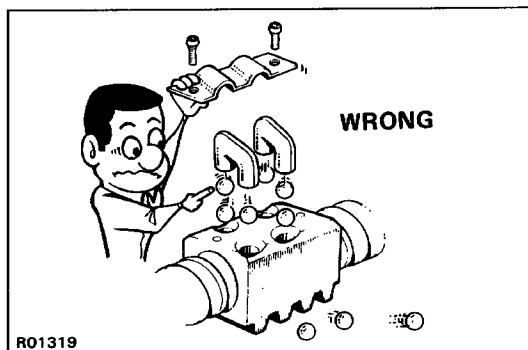
SST 09617-60010



5. REMOVE WORM BEARING ADJUSTING SCREW

Using SST, remove the adjusting screw.

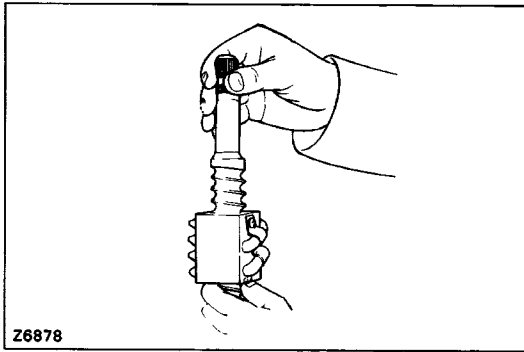
SST 09616-22010



6. REMOVE WORM SHAFT

Pull the worm shaft out of the gear housing.

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



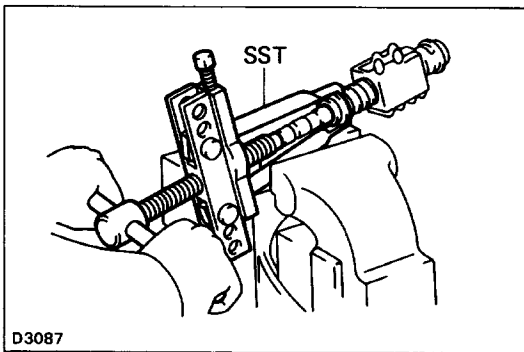
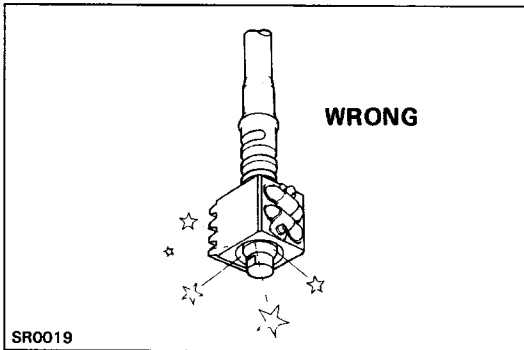
INSPECTION AND REPLACEMENT OF MANUAL GEAR HOUSING

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.

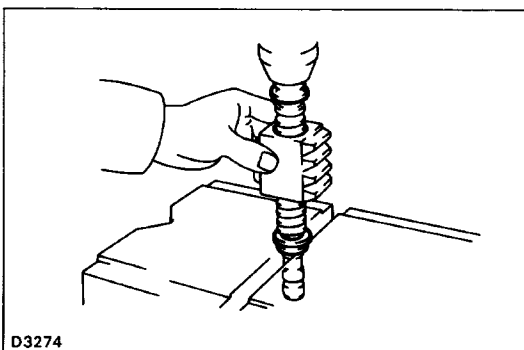
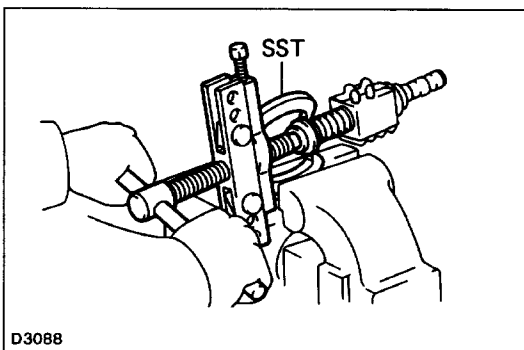
NOTICE: Do not allow the ball nut to hit the end of the worm shaft.



2. IF NECESSARY, REPLACE WORM BEARING INNER RACE

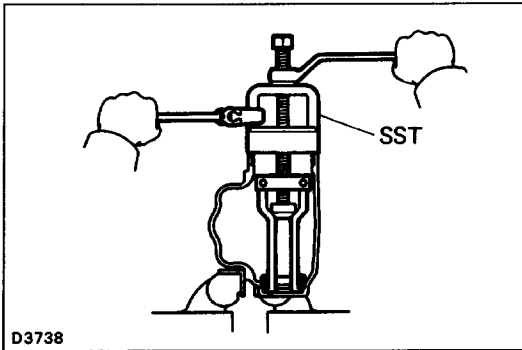
- (a) Using SST, remove the both side bearing inner races.

SST 09950-20017

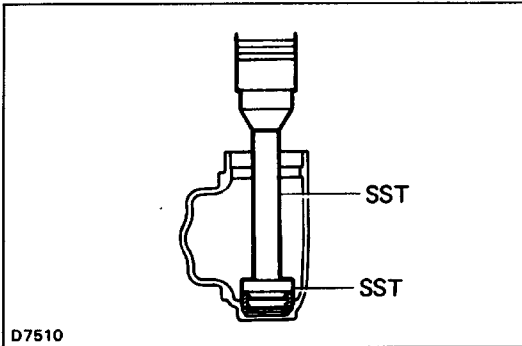


- (b) Using a press, install new bearing inner races.

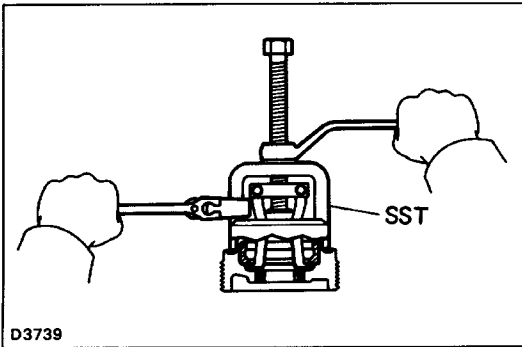
NOTICE: Be careful not to damage the ball nut while holding it with hand.



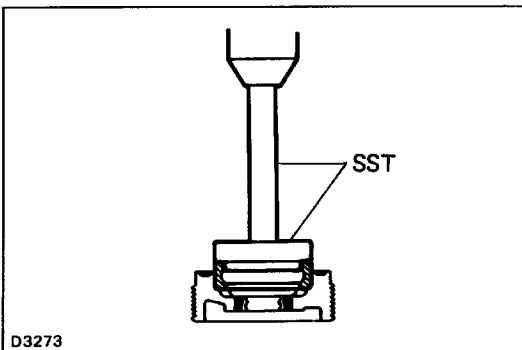
- (c) Using SST, remove the outer race from the gear housing.
SST 09612-65014 (09612-01030)



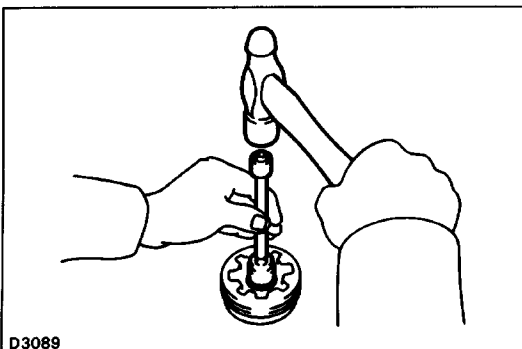
- (d) Using SST, press in a new outer race into the gear housing.
SST 09550-10012 (09552-10010, 09559-10010)



- (e) Using SST, remove the outer race from the adjusting screw.
SST 09612-65014 (09612-01040)

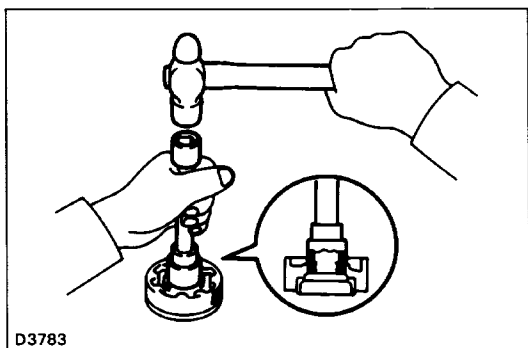


- (f) Using SST, press in a new outer race into the adjusting screw.
SST 09550-10012 (09552-10010, 09559-10010)



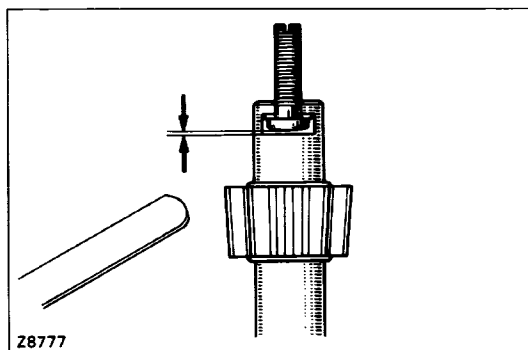
3. IF NECESSARY, REPLACE ADJUSTING SCREW OIL SEAL

- (a) Using a socket wrench, drive out the oil seal.



D3783

(b) Using a socket wrench, drive in a new oil seal.



Z877

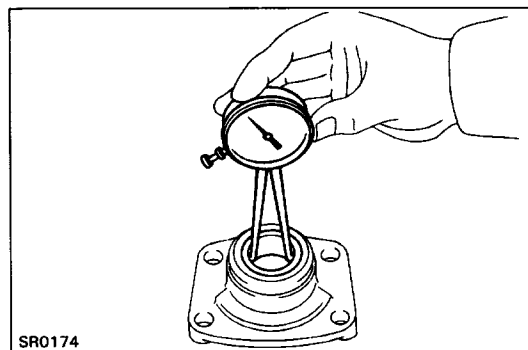
4. MEASURE SECTOR SHAFT THRUST CLEARANCE

Using a feeler gauge, measure the shaft thrust clearance.

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

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

Thrust washer thickness mm (in.)			
1.95	(0.0768)	2.05	(0.0807)
2.00	(0.0787)		



SR0174

5. INSPECT SECTOR SHAFT END COVER

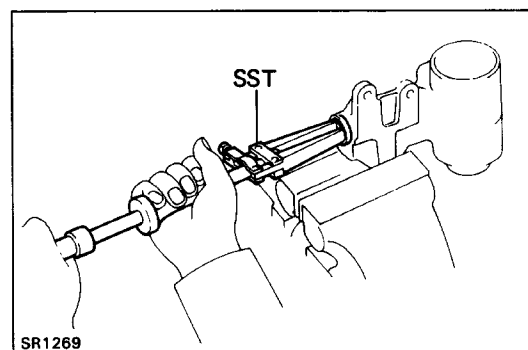
(a) Check for damage.

(b) Check the bushing for wear or damage.

(c) Measure the bushing inside diameter.

Maximum inside diameter: 36.07 mm (1.4201 in.)

If necessary, replace the end cover.

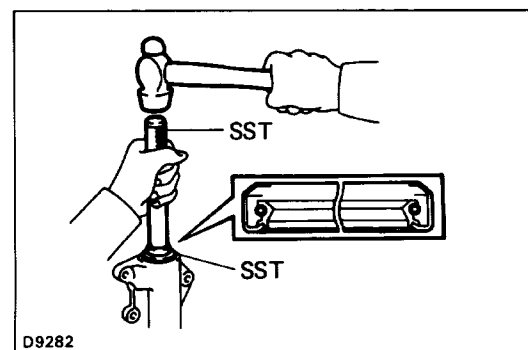


SR1269

6. IF NECESSARY, REPLACE GEAR HOUSING OIL SEAL

(a) Using SST, remove the oil seal.

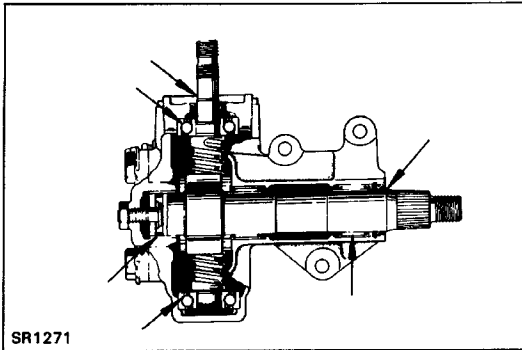
SST 09308-00010



D9282

(b) Using SST, drive in a new oil seal.

SST 09550-10012 (09552-10010, 09558-10010)



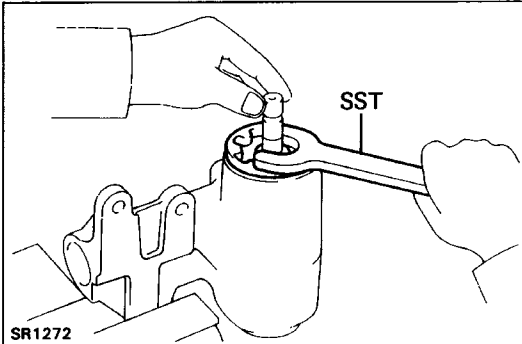
ASSEMBLY OF MANUAL GEAR HOUSING

(See page SR-27)

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

2. INSTALL WORM SHAFT INTO GEAR HOUSING

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



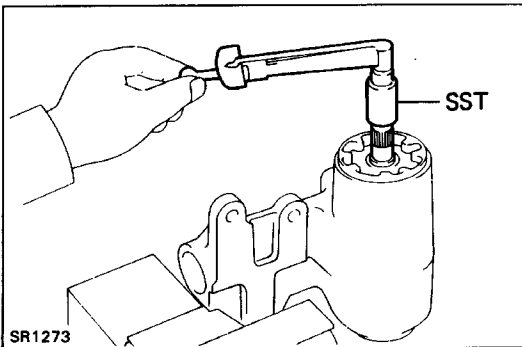
3. INSTALL AND ADJUST BEARING ADJUSTING SCREW

(a) Apply sealant to the adjusting screw.

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

(b) Using SST, gradually tighten the adjusting screw until it is snug.

SST 09616-22010



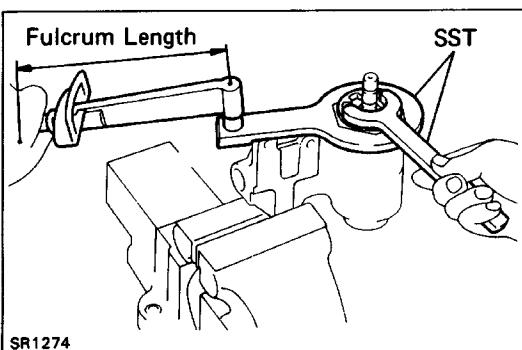
(c) Using a torque meter and SST, measure the bearing preload in both directions. Turn the adjusting screw until the preload is correct.

Preload (Starting):

0.3 – 0.5 N-m

(3.5 – 5.0 kgf-cm, 3.0 – 4.3 in.-lbf)

SST 09616-00010



(d) Apply sealant to the lock nut.

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

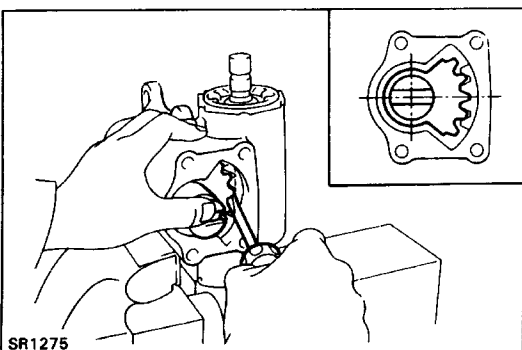
(e) Hold the adjusting screw in position with SST and tighten the lock nut with SST.

Torque: 109 N-m (1,110 kgf-cm, 80 ft-lbf)

SST 09616-22010, 09617-60010

HINT:

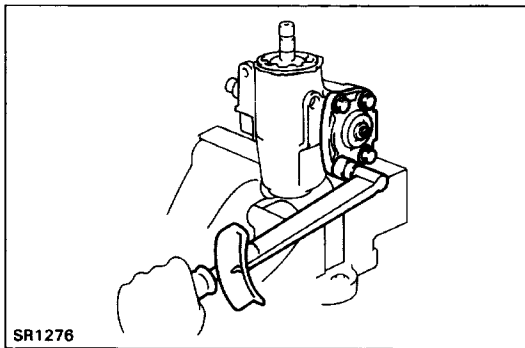
- Check that the bearing preload is still correct.
- Use a torque wrench with a fulcrum length of 425 mm (16.73 in.).



4. INSTALL SECTOR SHAFT

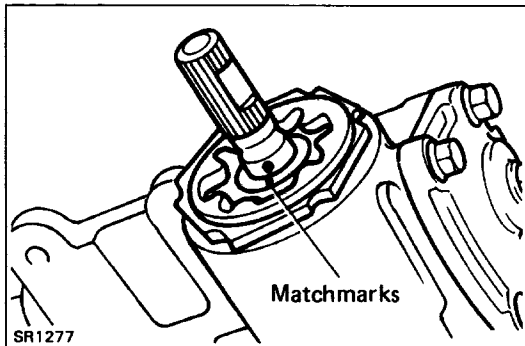
(a) Install the adjusting screw and thrust washer onto the sector shaft.

(b) 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.



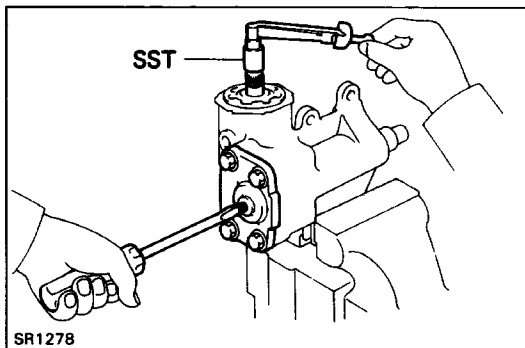
5. INSTALL END COVER

- Apply sealant to new gasket and end cover.
Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
- Install the end cover over the gasket.
- Loosen the adjusting screw as far as possible.
- Torque the four cover bolts.
Torque: 98 N-m (1,000 kgf-cm, 72 ft-lbf)



6. PLACE WORM SHAFT IN NEUTRAL POSITION

- Count the total shaft rotation 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

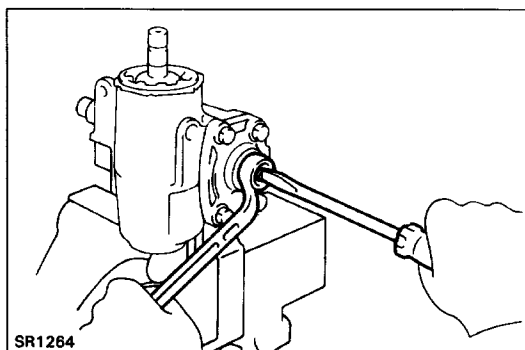
Using a torque meter and SST, turn the adjusting screw while measuring the preload until the preload is correct.
HINT: Be sure that the worm shaft is in neutral position.

Preload (Starting):

0.8 – 1.1 N-m

(8.0 – 11.0 kgf-cm, 6.9 – 9.5 in. AM)

SST 09616-00010

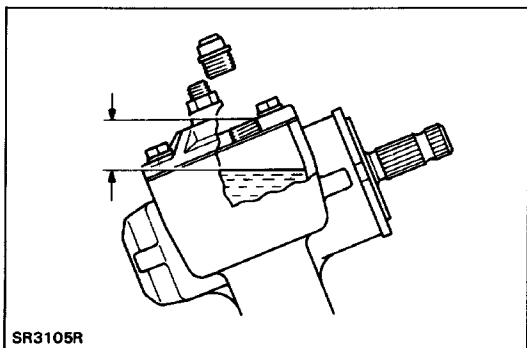


8. TIGHTEN ADJUSTING SCREW LOCK NUT

- 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: 44 N-m (450 kgf-cm, 33 ft-lbf)
HINT: Check that the preload is still correct.

9. MEASURE SECTOR SHAFT BACKLASH

- Align the alignment marks on the sector shaft with the pitman arm.
- Check that the sector shaft has no backlash within 100 degrees of the left and right side from neutral position.

**10. REPLENISH WITH GEAR OIL**

Oil type: API GL-4, SAE 90

Capacity: 400 cc (24.4 cu in.)

Oil level: (at installation)

14 – 17 mm (0.55 – 0.67 in.) from top

11. INSTALL BLEEDER PLUG

Torque: 20 N-m (200 kgf-cm, 14 ft-lbf)