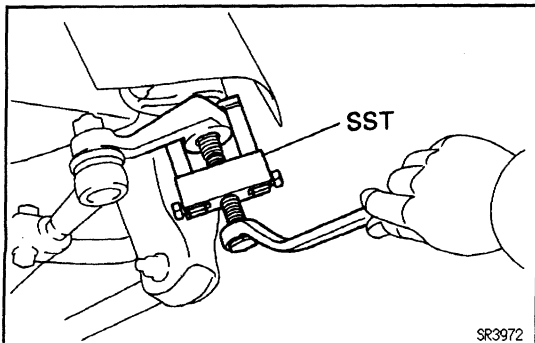
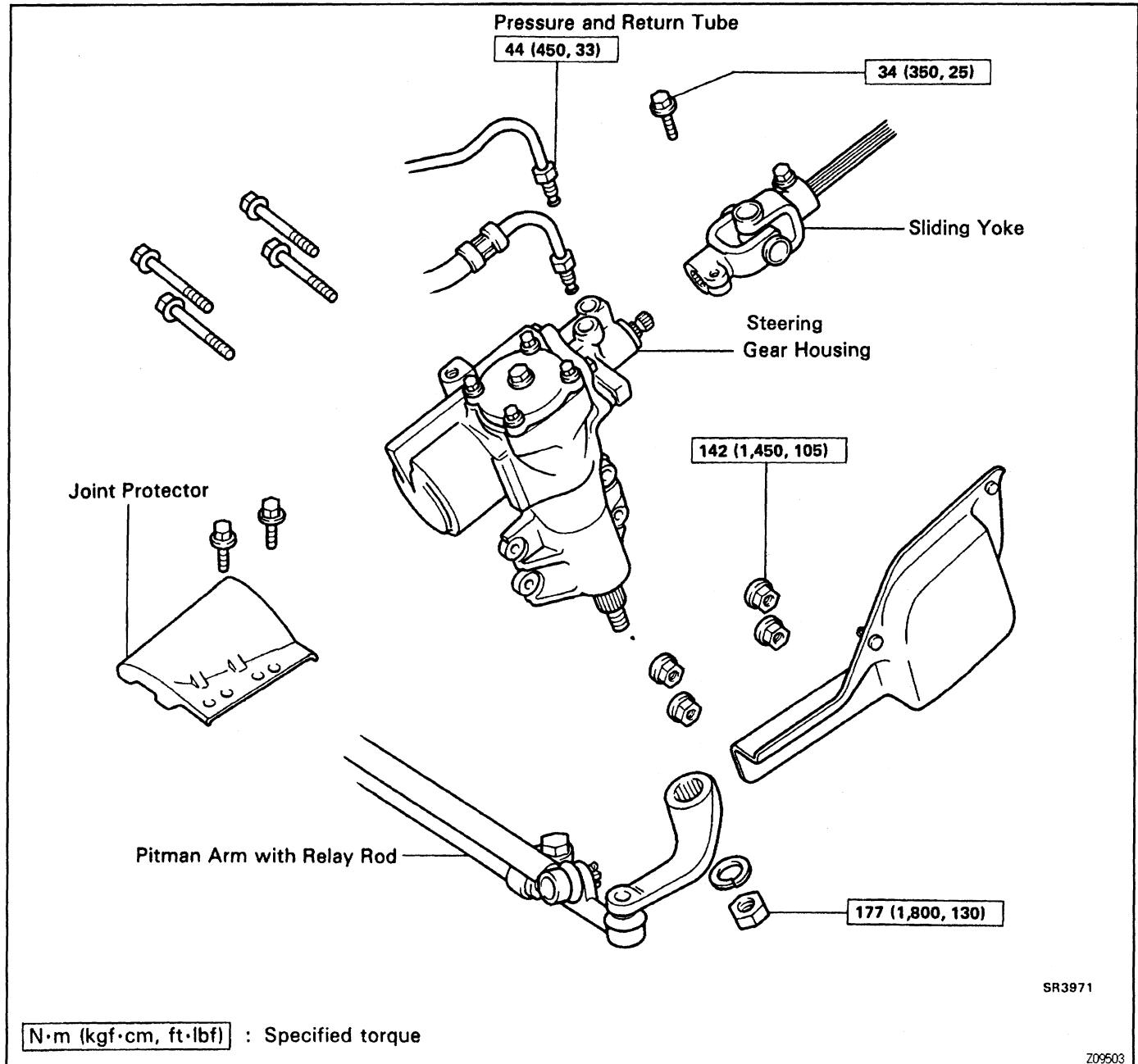


GEAR HOUSING

GEAR HOUSING REMOVAL AND INSTALLATION

SR00Q-02

Remove and install the parts, as shown.



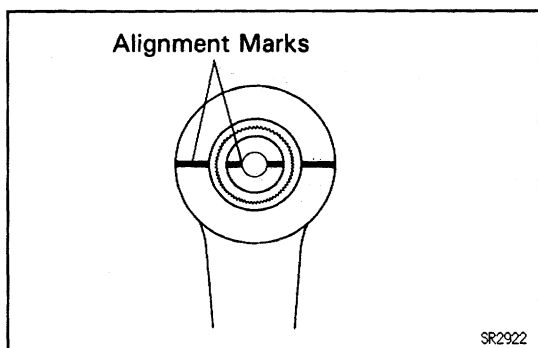
MAIN POINT REMOVAL AND INSTALLATION

1. DISCONNECT PITMAN ARM

- Remove the pitman arm nut.
- Using SST, disconnect the pitman arm from the cross shaft.

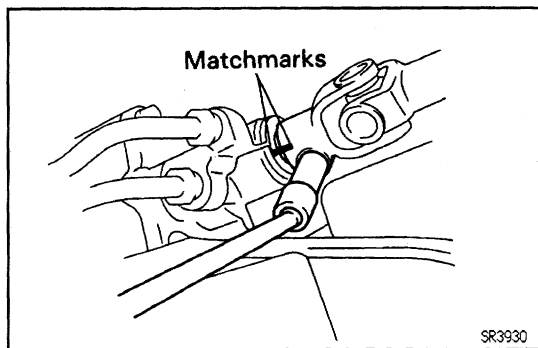
SST 09628-62011

- Remove the nut, spring washer and arm.



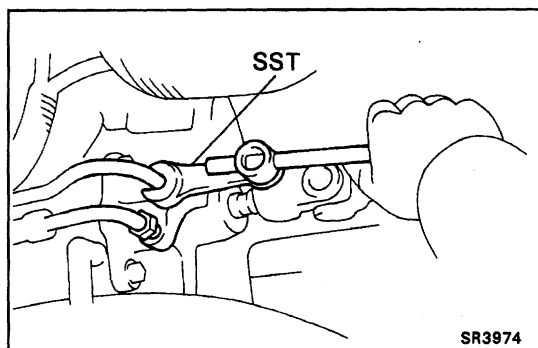
- (d) When connecting the pitman arm, align alignment marks on the pitman arm and cross shaft, and install the spring washer and nut.

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



2. DISCONNECT SLIDING YOKE FROM GEAR HOUSING

- (a) Place matchmarks on the worm shaft and universal joint.
- (b) Loosen the sliding yoke upper bolt.
- (c) Remove the sliding yoke lower bolt.
- (d) Slide the yoke backward to disconnect the yoke from the control valve shaft.

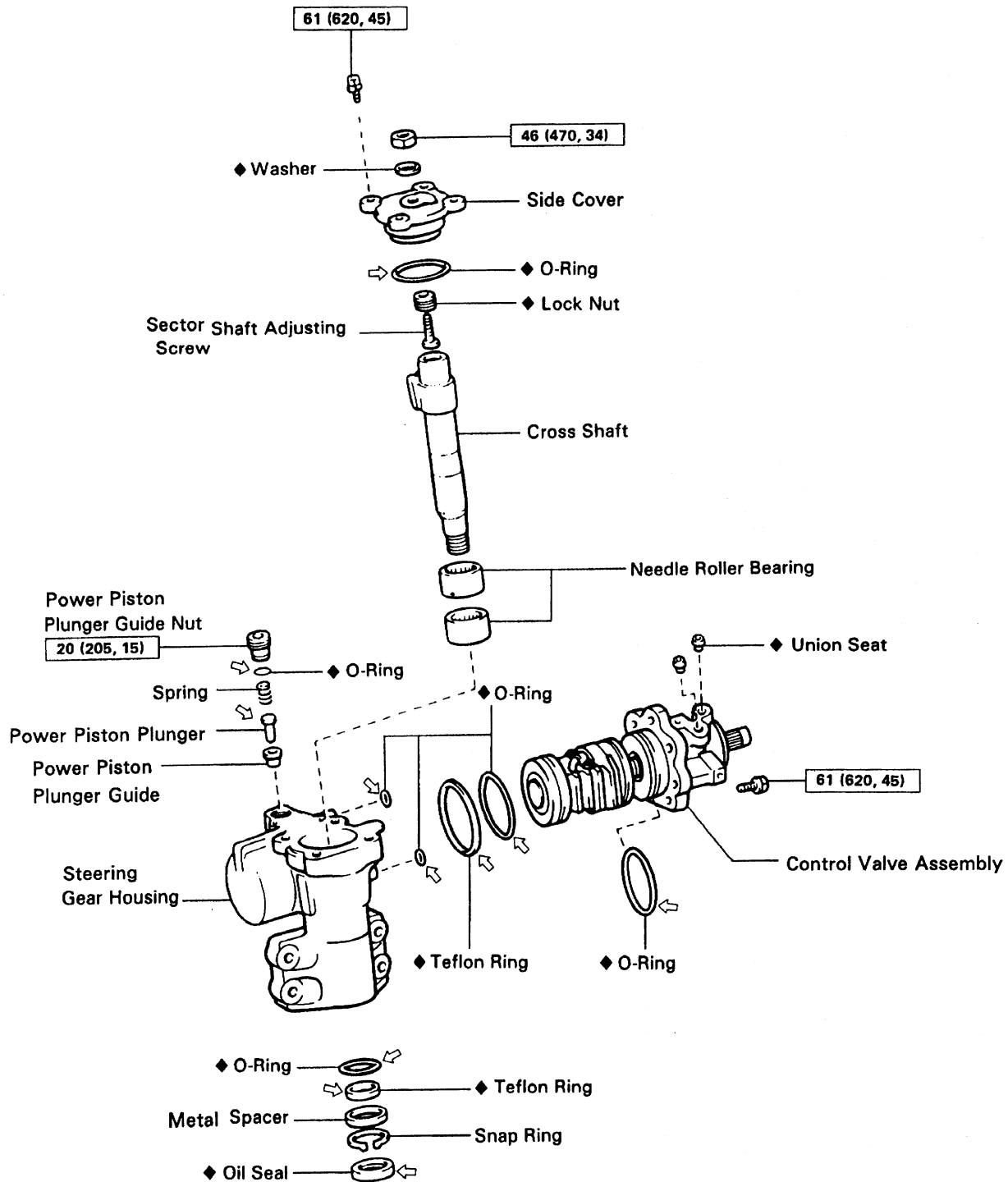


3. DISCONNECT PRESSURE AND RETURN TUBES

Using SST, disconnect the pressure and return tubes from the gear housing.

SST 09631 -22022

COMPONENTS



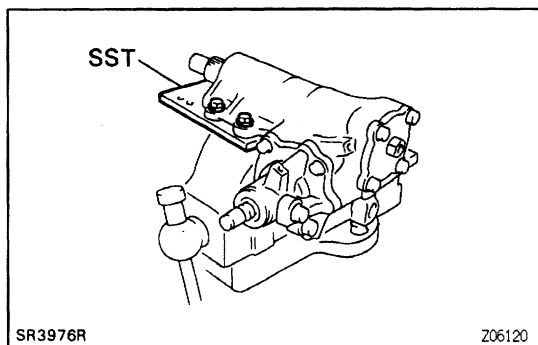
N·m (kgf·cm, ft·lbf) : Specified torque

◆ **Non-reusable part**

← **Apply Power Steering Fluid**

SR3975

Z09504

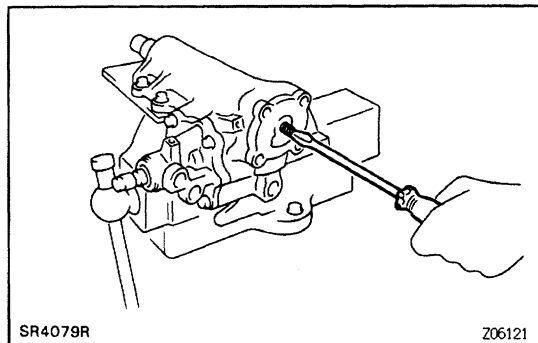


GEAR HOUSING DISASSEMBLY

1. MOUNT HOUSING ON STAND

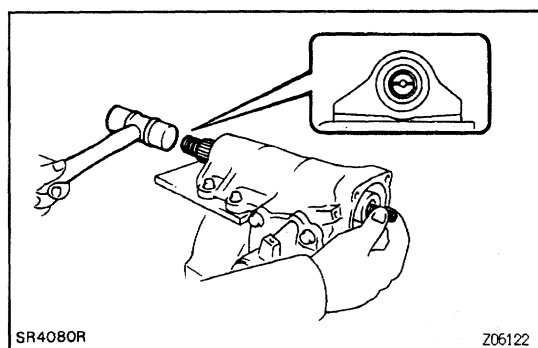
Mount the gear housing on SST and clamp SST in a vise.

SST 09630-00012 (09631-00140)



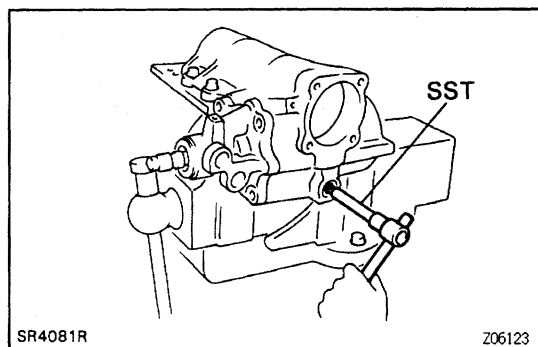
2. REMOVE END COVER

- Remove the adjusting screw lock nut.
- Remove the 4 bolts.
- Screw in the adjusting screw until the cover comes off.



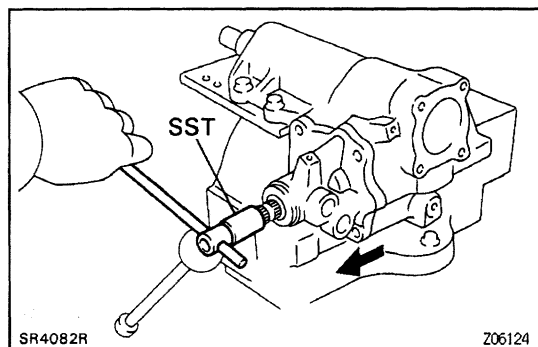
3. REMOVE CROSS SHAFT

Using a plastic hammer, tap on the cross shaft end and pull out the shaft.



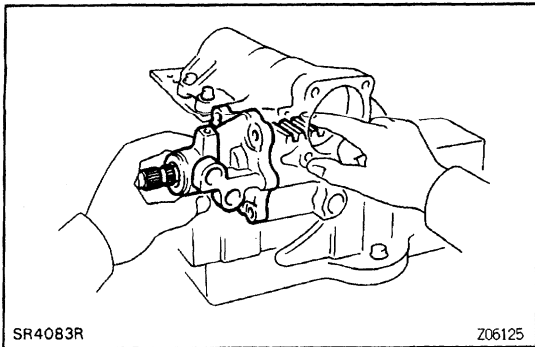
4. REMOVE PLUNGER GUIDE NUT

- Using SST, remove the plunger guide nut.
SST 09043-38100
- Remove the spring, plunger and plunger guide.
- Remove the O-ring.



5. REMOVE WORM GEAR VALVE BODY ASSEMBLY

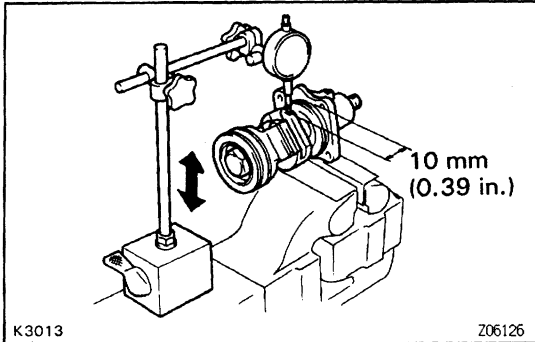
- Remove the 4 cap bolts from the housing.
- Using SST, turn the shaft clockwise to disconnect the worm gear valve body assembly from gear housing.
SST 09616-00010



- (c) Hold the power piston nut with your thumb so it cannot move, then withdraw the valve body and power piston assembly.

NOTICE: Ensure that the power piston nut does not come off the worm shaft.

- (d) Remove the O-ring.



GEAR HOUSING INSPECTION AND REPLACEMENT

SR0MH-01

1. CHECK BALL CLEARANCE

- (a) Mount the control valve housing in a vise.
 (b) Using a dial indicator, check the ball clearance. Move the worm gear up and down.

Maximum ball clearance:

0.15 mm (0.0059 in.)

If clearance is excessive, the control valve assembly must be replaced.

2. INSPECT CROSS SHAFT ADJUSTING SCREW THRUST CLEARANCE

- (a) Clamp the cross shaft in a vise.
NOTICE: Do not tighten the vise too tight.
 (b) Using a dial indicator, measure the thrust clearance.

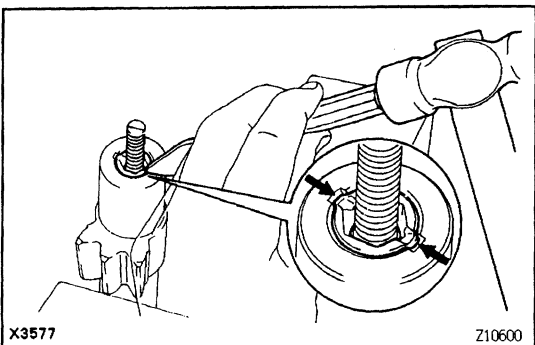
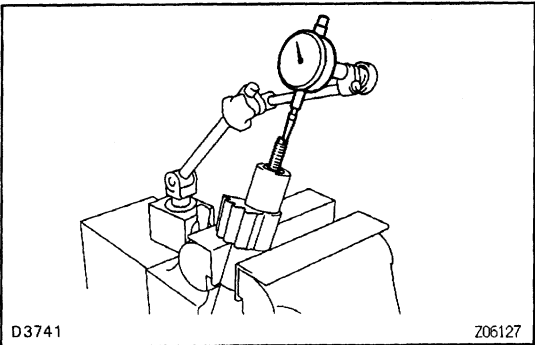
Thrust clearance:

0.03 - 0.05 mm (0.0012 - 0.0020 in.)

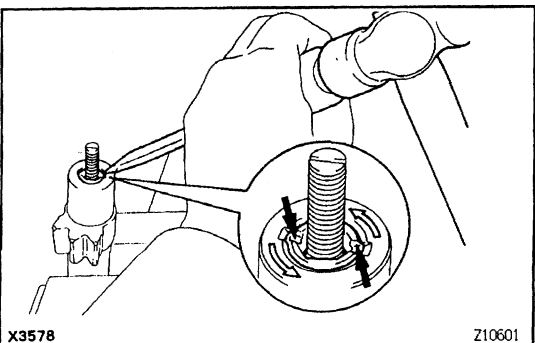
If thrust clearance is not correct, adjust the thrust clearance.

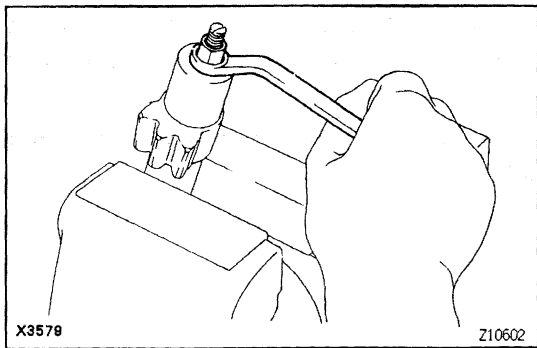
3. IF NECESSARY, ADJUST THRUST CLEARANCE

- (a) Using a chisel and hammer, unstake the lock nut.

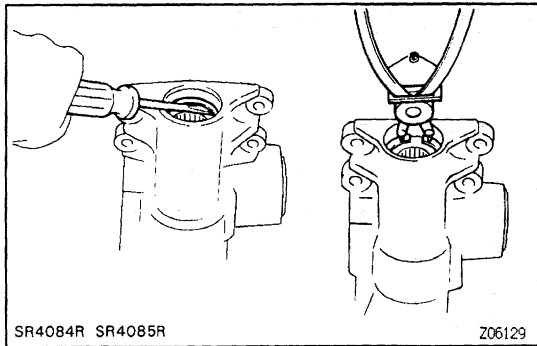


- (b) Using a screwdriver, remove the lock nut.



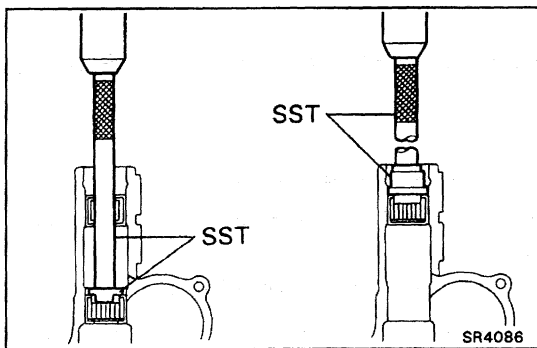


- (c) Using a screwdriver, adjust the adjusting screw for correct thrust clearance.
- (d) Using SST, tighten the lock nut.
SST 09630-00012 (09631 -00050)
- (e) Stake the lock nut.

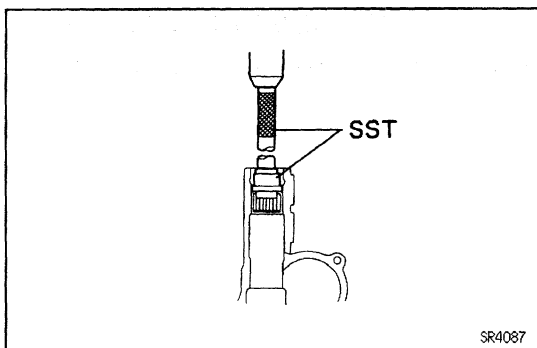


4. IF NECESSARY, REPLACE NEEDLE ROLLER BEARING

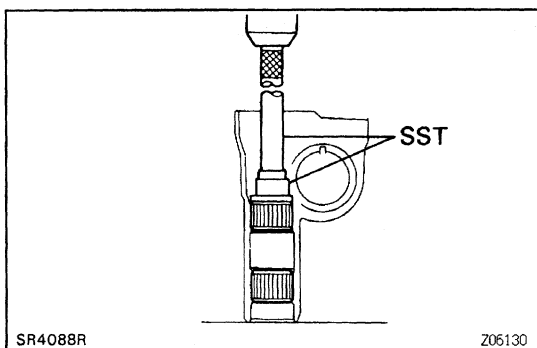
- (a) Using a screwdriver, pry out the oil seal.
- (b) Using snap ring pliers, remove the snap ring.
- (c) Remove the metal spacer, teflon ring and O-ring.



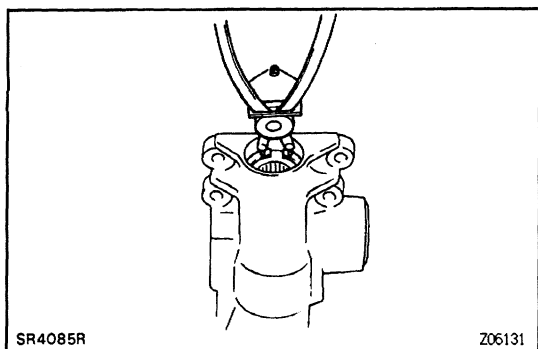
- (d) Using SST, press out the upper bearing.
SST 09630-00012 (09631 -00020, 09631 -00070)
- (e) Using SST, press out the lower bearing.
SST 09630-00012 (09631 -00020, 09631 -00090)



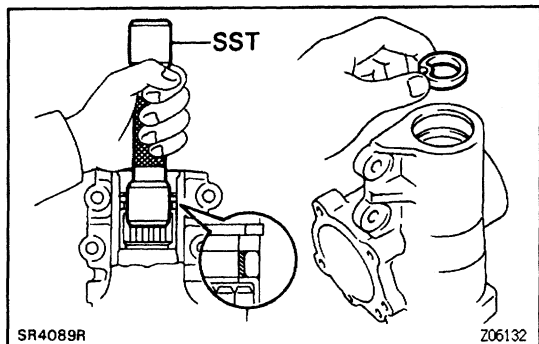
- (f) Using SST, press in a new lower bearing.
SST 09630-00012 (09631 -00020, 09631 -00090)
HINT: Install the lower bearing so that it is positioned 23.1 mm (0.909 in.) away from the housing inner end surface.



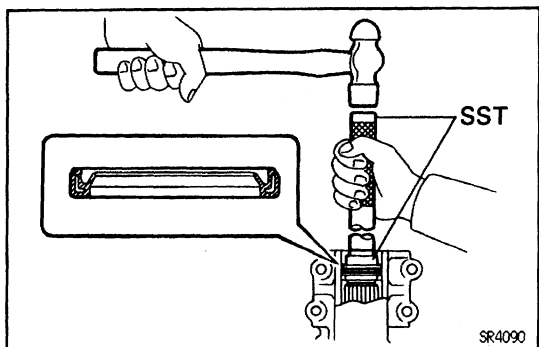
- (g) Using SST, press in a new upper bearing.
SST 09630-00012 (09631 -00020, 09631 -00090)
HINT: The bearing's top end should be installed so that it aligns with the housing end surface.
- (h) Install a new O-ring and metal spacer.



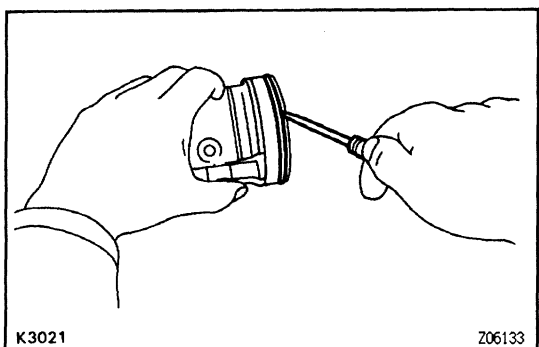
- (i) Using snap ring pliers, install a new snap ring.



- (j) Form a teflon ring into a heart shape and install it with hand.
- (k) Using SST, form the teflon ring.
- NOTICE: The teflon ring must be squeezed before inserting the cross shaft or damage will result.**
- SST 09630-00012 (09631 -00120)

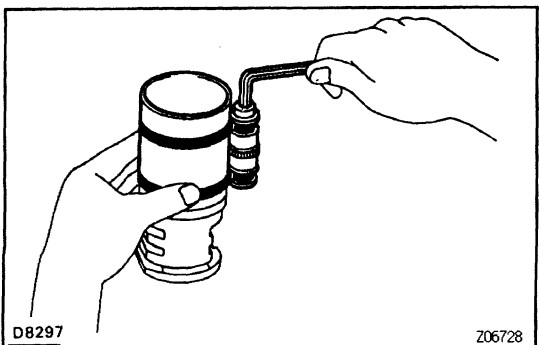


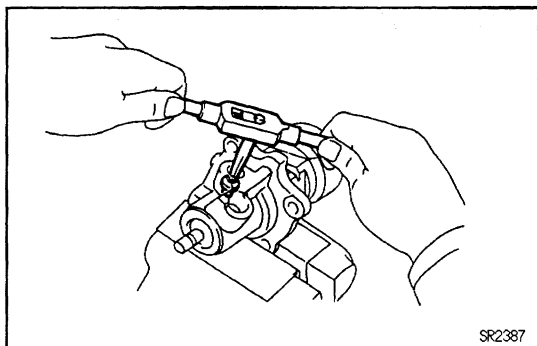
- (l) Using SST, drive a new oil seal into the gear housing.
- SST 09630-00012 (09631-00020, 09631-00090)



5. IF NECESSARY, REPLACE CONTROL VALVE TEFLON RING

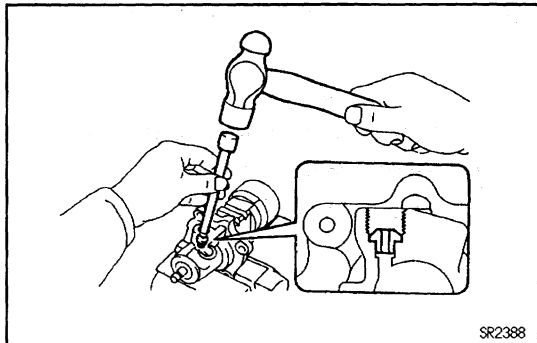
- (a) Using a screwdriver, remove the teflon ring and O-ring.
- NOTICE: Be careful not to damage the control valve.**
- (b) Coat a new O-ring with power steering fluid and install it.
- (c) Expand a new teflon ring with your fingers.
- NOTICE: Be careful not to over-expand the teflon ring.**
- (d) Install a new teflon ring.
- (e) Coat the teflon ring with power steering fluid and snug it down with piston ring compressor for 5 - 7 minutes.



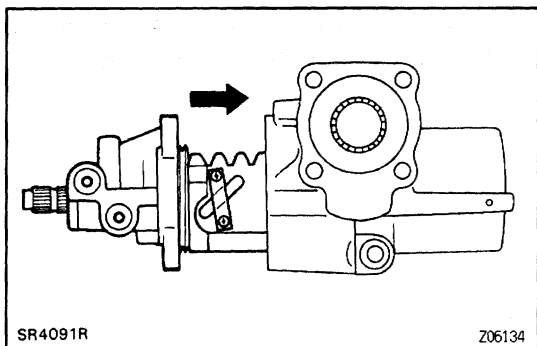


6. IF NECESSARY, REPLACE UNION SEAT

(a) Using a screw extractor, remove the union seat.



(b) Using a plastic hammer and extension bar, tap in a new union seat.



GEAR HOUSING ASSEMBLY

SR00U-02

1. INSTALL CONTROL VALVE ASSEMBLY

(a) Coat 3 new O-rings with power steering fluid and install them to the gear housing and control valve assembly.

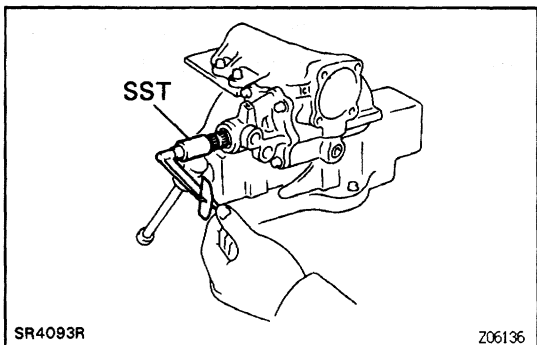
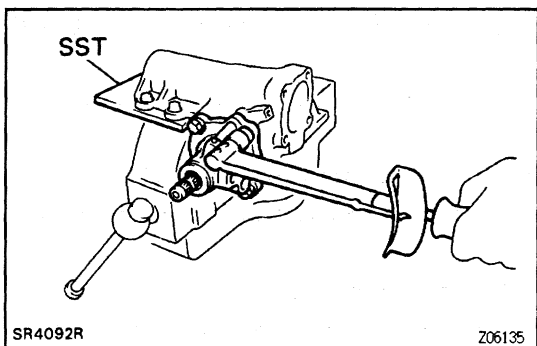
(b) Mount the gear housing on SST and clamp SST in vise.

(c) Install the control valve assembly to the gear housing.

NOTICE: Be careful not to damage the teflon ring.

(d) Install and torque the 4 bolts.

Torque: 61 N-m (620 kgf-cm, 45 ft-lbf)



(e) Using SST, check the worm gear preload.

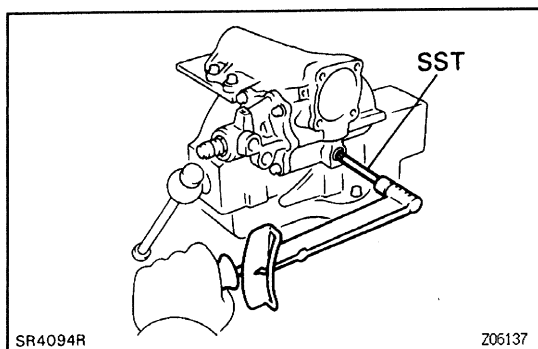
SST 09616 - 00010

Preload: (at starting)

0.3 - 0.5 N-m (3 - 5.5 kgf.ctr, 2.6 - 4.8 in..lbf)

HINT: Hold the power piston nut to prevent it from turning.

If preload is not correct, replace the control valve assembly.

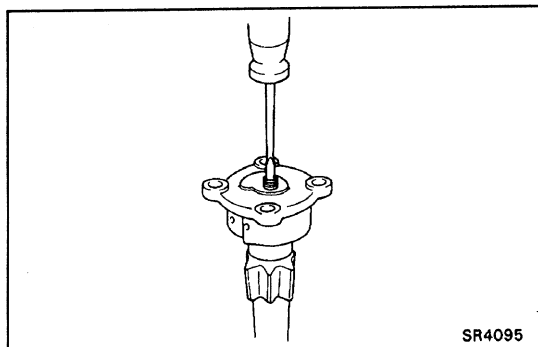


2. INSTALL POWER PISTON PLUNGER

- (a) Install the plunger guide, plunger and spring.
- (b) Coat a new O-ring with power steering fluid and install it to the plunger guide nut.
- (c) Using SST, install the guide nut.

SST 09043-38100

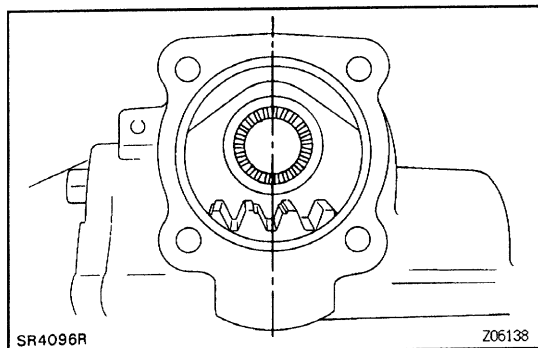
Torque: 20 N-m (205 kgf-cm, 15 ft-lbf)



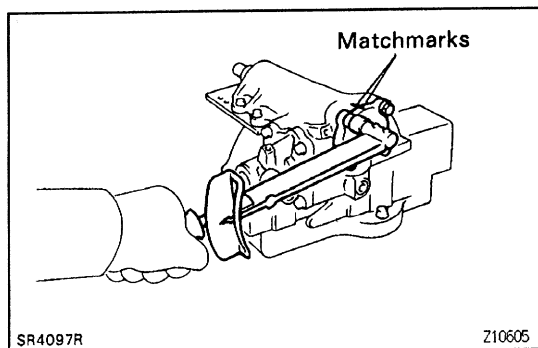
3. INSTALL CROSS SHAFT AND SIDE COVER

- (a) Coat a new O-ring with power steering fluid and install it to the side cover.
- (b) Using a screwdriver, install the cross shaft to the side cover.

NOTICE: Fully loosen the adjusting screw.

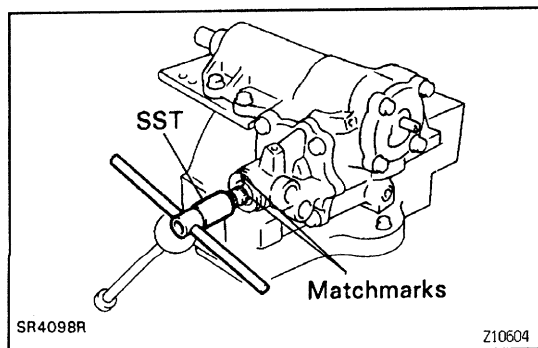


- (c) Set the worm gear at the center of the gear housing, as shown.
- (d) Install and push the cross shaft into the gear housing so that the center teeth mesh together.



- (e) Align matchmarks on the side cover and gear housing, and install the 4 bolts. Torque the bolts in a diagonal pattern.

Torque: 61 N-m (620 kgf-cm, 45 ft-lbf)

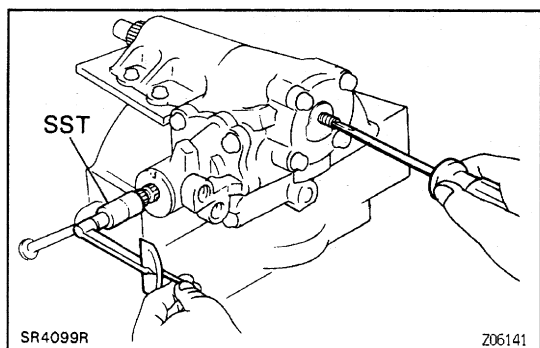


4. DETERMINE CENTER POSITION OF CONTROL VALVE

- (a) Using SST, turn the control valve shaft so it is at full lock in both directions and determine the exact center.

SST 09616-00010

- (b) Place matchmarks on the control shaft and housing to show neutral position.



5. ADJUST SECTOR SHAFT ADJUSTING SCREW

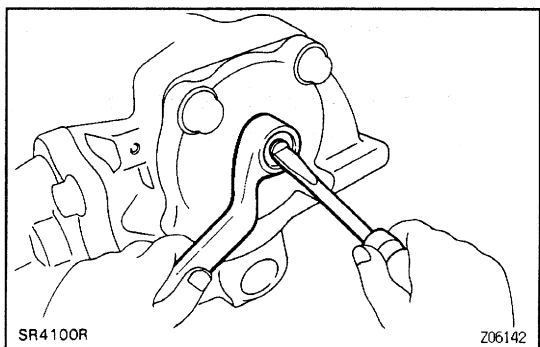
Using the SST with a torque meter, measure the starting torque from the neutral position. While doing this, also use the screwdriver to turn the adjusting screw counterclockwise until the starting torque reaches the right valve.

SST 09616 - 00010

Total preload: (at starting)

0.74 - 1.08 N-m (7.5 - 11 kgf-cm, 6.5 - 9.6 in..lbf)

NOTICE: make the adjustment by tightening the adjusting screw.



6. INSTALL ADJUSTING SCREW LOCK NUT

(a) Install a new washer.

(b) Using a screwdriver to hold the adjusting screw, install and torque the lock nut.

Torque: 46 N-m (470 kgf-cm, 34 ft-lbf)

(c) Recheck the total preload.

Total preload: (at starting):

0.74 - 1.08 N-m (7.5 - 11 kgf-cm, 6.5 - 9.6 in..lbf)