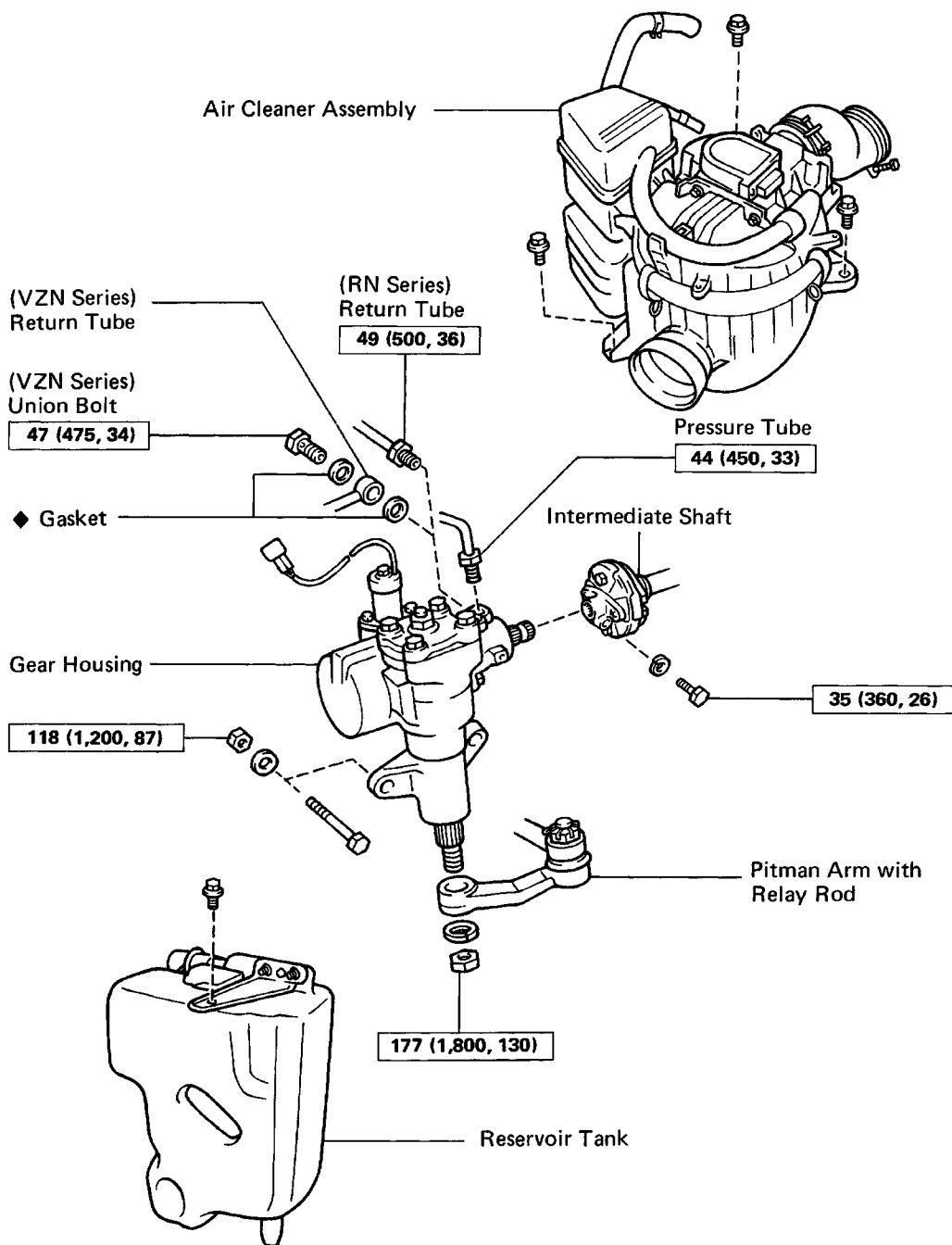
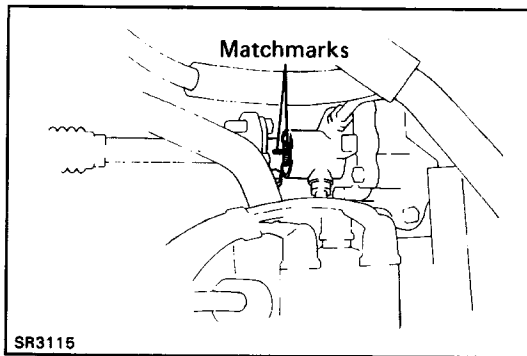


Gear Housing (2WD)

REMOVAL AND INSTALLATION OF GEAR HOUSING

Remove and install the parts as shown.

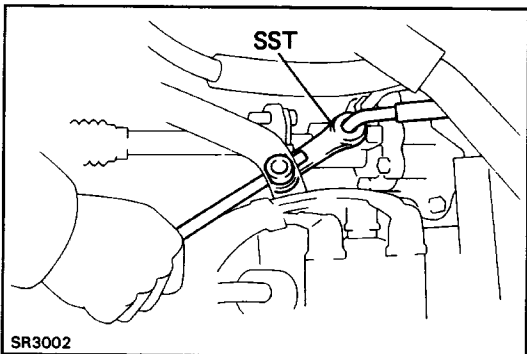




(MAIN POINTS OF REMOVAL AND INSTALLATION)

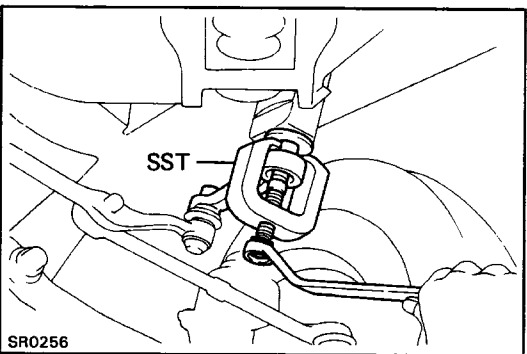
1. DISCONNECT UNIVERSAL JOINT

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



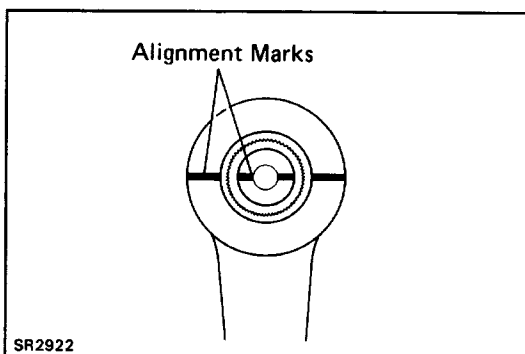
2. DISCONNECT PRESSURE AND RETURN TUBES FROM GEAR HOUSING

- Using SST, disconnect the pressure and return tubes from the gear housing.
SST 09631-22020



3. DISCONNECT AND CONNECT PITMAN ARM

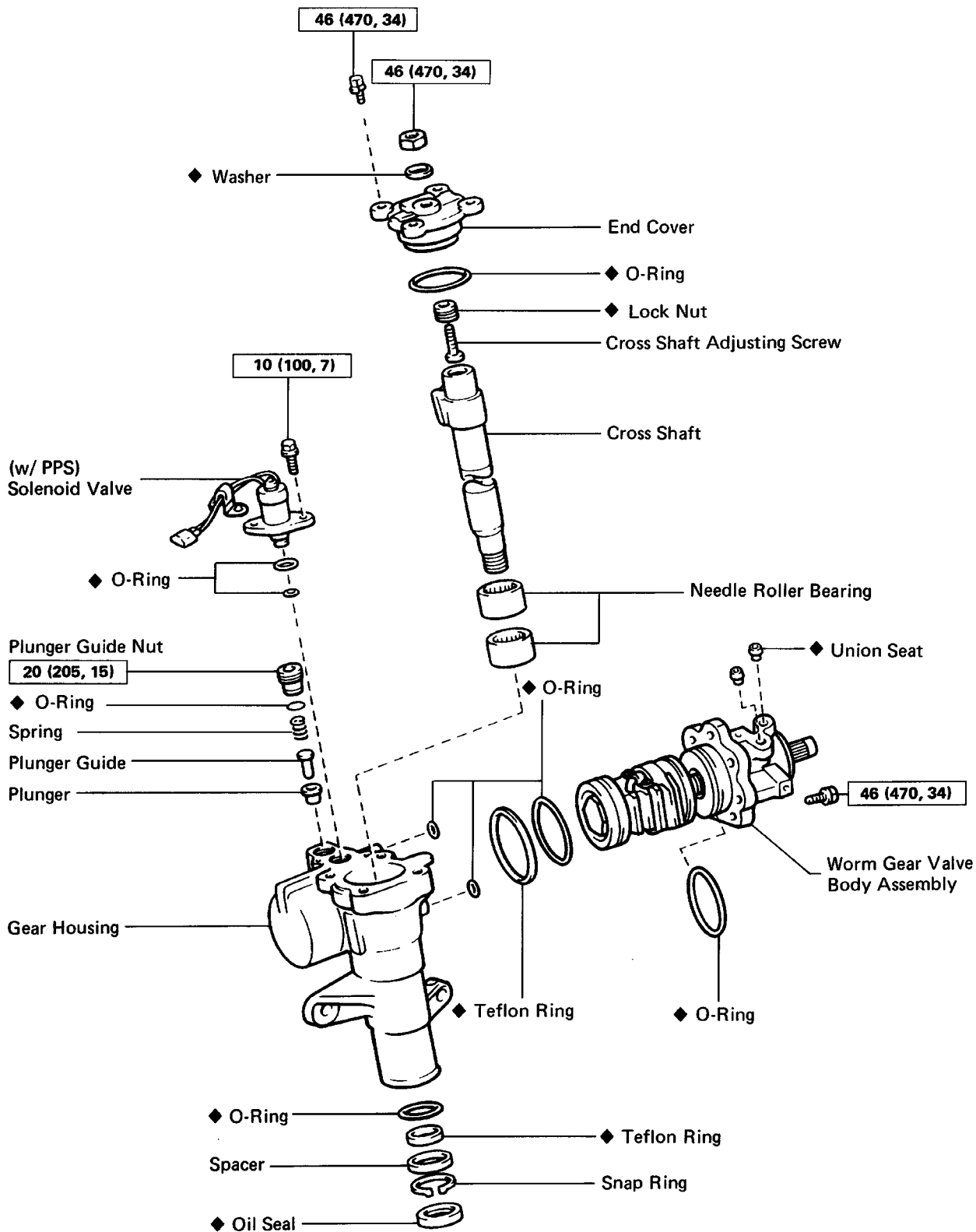
- (a) Using SST, disconnect the pitman arm from the gear housing.
SST 09610-55012



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

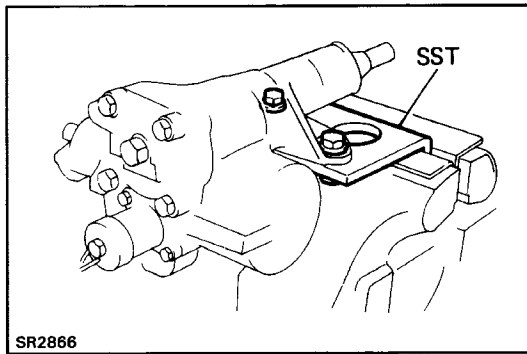
Torque: 177 N-m (1,800 kgf-cm, 130 ft-lbf)

COMPONENTS



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

◆ Non-reusable part



DISASSEMBLY OF GEAR HOUSING

(See page SR-67)

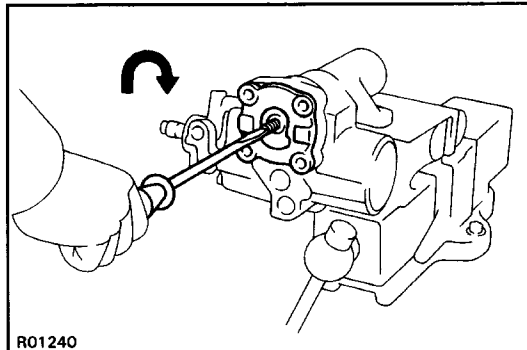
1. MOUNT HOUSING ON STAND

Mount the gear housing on SST and clamp SST in a vise.
SST 09630-00012 (09631-00140)

2. (w/PPS)

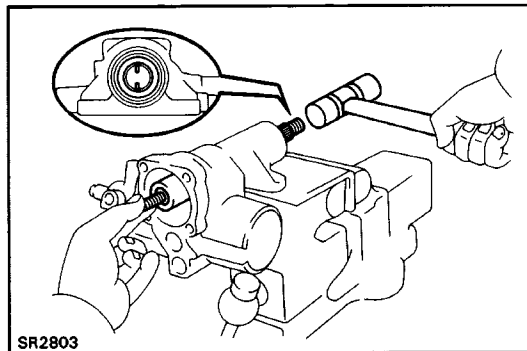
REMOVE SOLENOID VALVE

- Remove the two bolts and solenoid valve.
- Remove the O-rings.



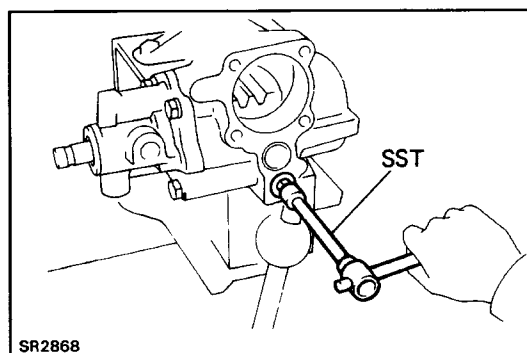
3. REMOVE END COVER

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



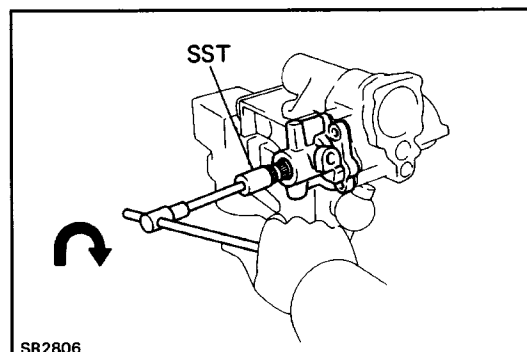
4. REMOVE CROSS SHAFT

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



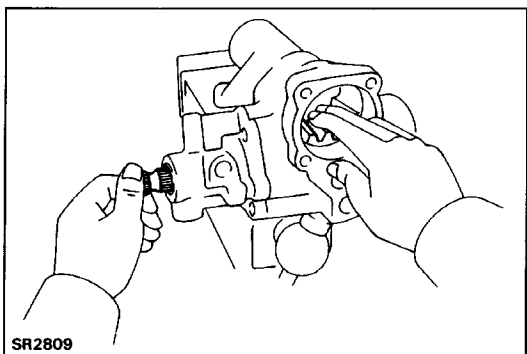
5. REMOVE PLUNGER GUIDE NUT

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

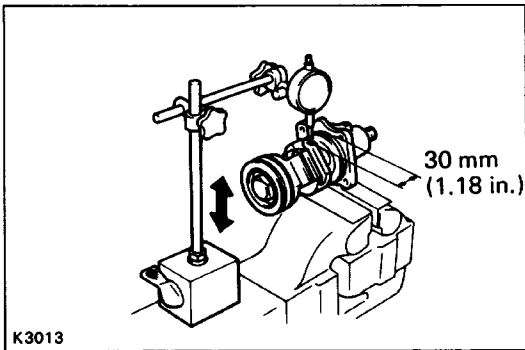


6. REMOVE WORM GEAR VALVE BODY ASSEMBLY

- Remove the four cap bolts from the housing.
- Using SST, turn the worm shaft clockwise with holding the power piston nut by your finger so it cannot move.
SST 09616-00010



- (c) Pull out 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.



INSPECTION AND REPLACEMENT OF GEAR HOUSING

1. CHECK BALL CLEARANCE

- (a) Mount the valve body 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 power control valve assembly must be replaced.

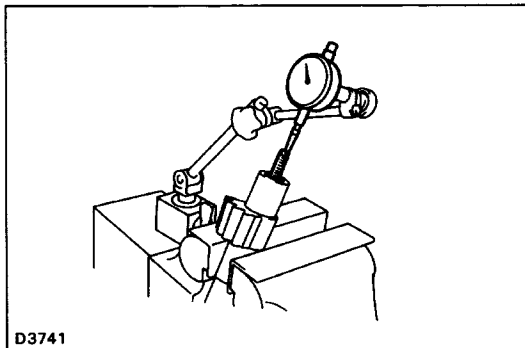
2. INSPECT CROSS SHAFT ADJUSTING SCREW THRUST CLEARANCE

- (a) Clamp the cross shaft in a vise.
- (b) Using a dial indicator, measure the thrust clearance.

Thrust clearance: 0.03 – 0.05 mm

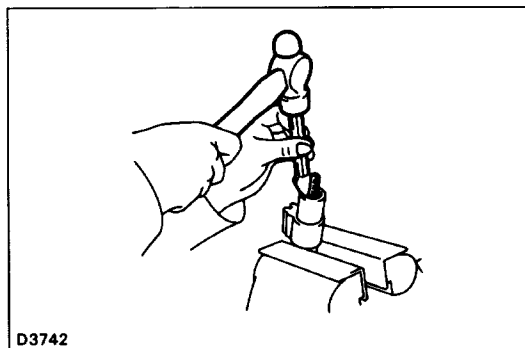
(0.0012 – 0.0020 in.)

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



3. IF NECESSARY, ADJUST THRUST CLEARANCE

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

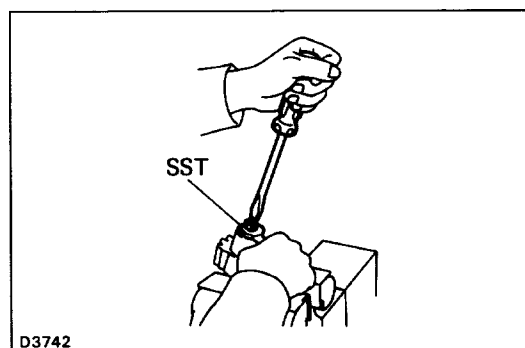


- (b) Using SST, remove the lock nut.

SST 09630-00012 (09631-00050)

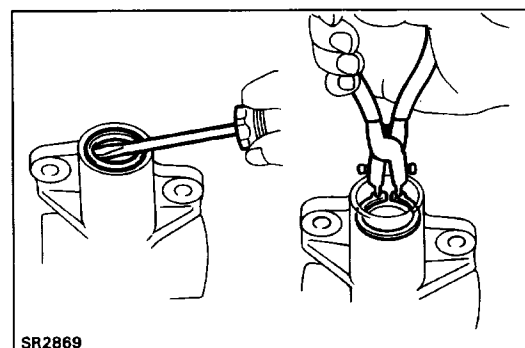
- (c) Adjust the adjusting screw for correct thrust clearance and tighten a new lock nut.

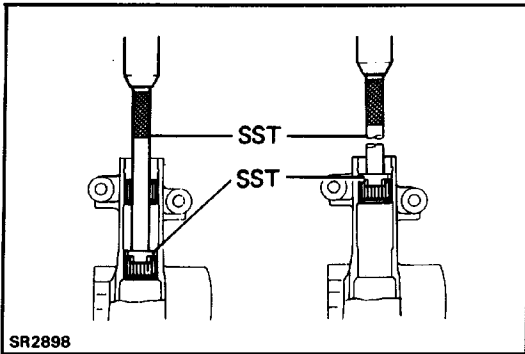
- (d) Stake the lock nut.



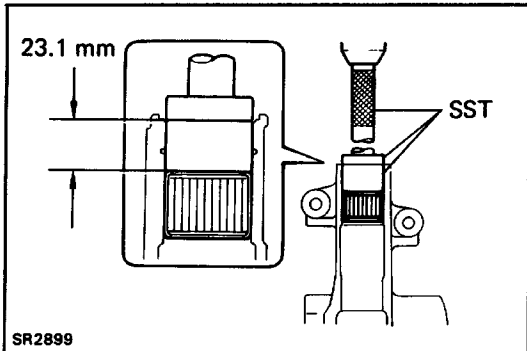
4. REPLACE NEEDLE ROLLER BEARINGS

- (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.



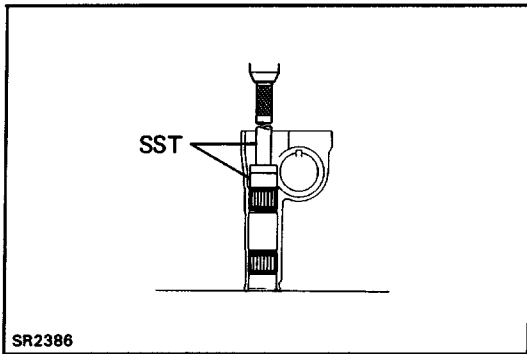


- (d) Using SST, press out the bearings.
SST 09630-00012 (09631-00020, 09631-00070)



- (e) Using SST, press in a new lower bearing.
SST 09630-00012 (09631-00020, 09631-00100, 09631-00170)

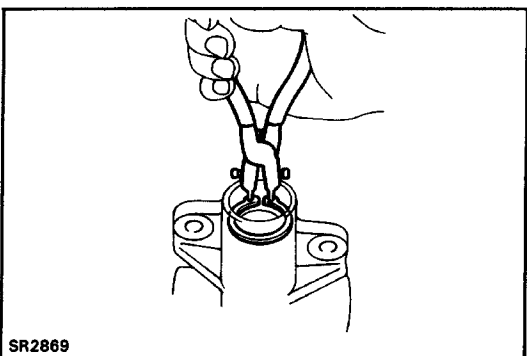
HINT: Install the lower bearing so that it is positioned 23.1 mm (0.909 in.) away from the housing inner end surface.



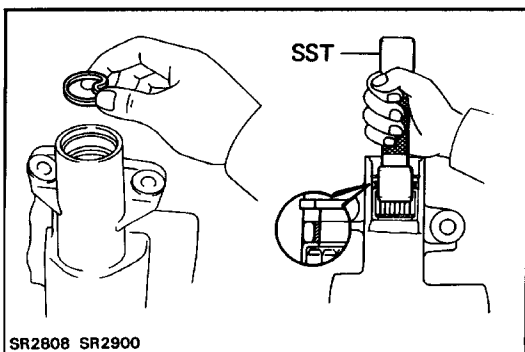
- (f) Using SST, press in a new upper bearing.
SST 09630-00012 (09631-00020, 09631-00170)

HINT: The bearing's top end should be installed so that it aligns with the housing end surface.

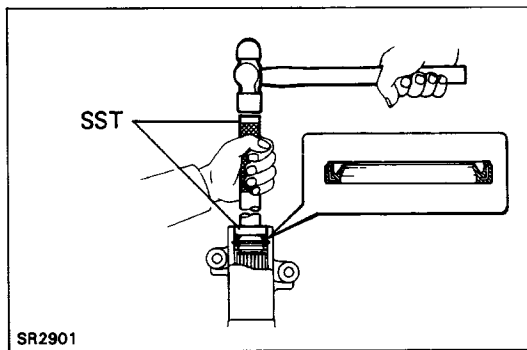
- (g) Install a new O-ring and metal spacer.



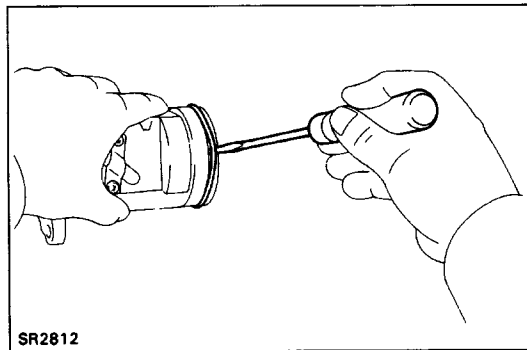
- (h) Using snap ring pliers, install the snap ring.



- (i) Form a new teflon ring into a heart shape and install it with hand.
(j) 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)

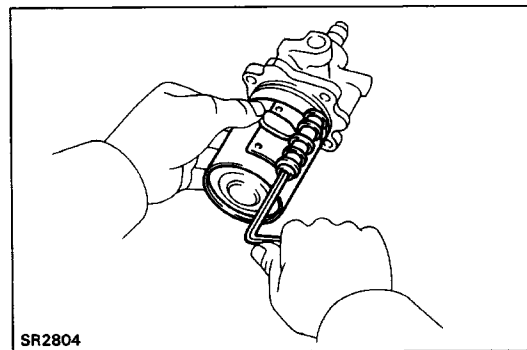


- (k) Using SST, drive a new oil seal into the gear housing.
SST 09630-00012 (09631-00020, 09631-00170)

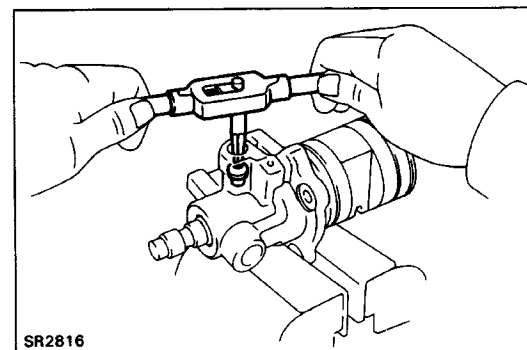


5. IF NECESSARY, REPLACE CONTROL VALVE TEFLON RING AND O-RING

- (a) Using a screwdriver, remove the teflon ring and O-ring.
NOTICE: Be careful not to damage the control valve.
(b) Install a new O-ring.
(c) Expand a new teflon ring with your fingers.
NOTICE: Be careful not to over-expand the teflon ring.
(d) Install the teflon ring.

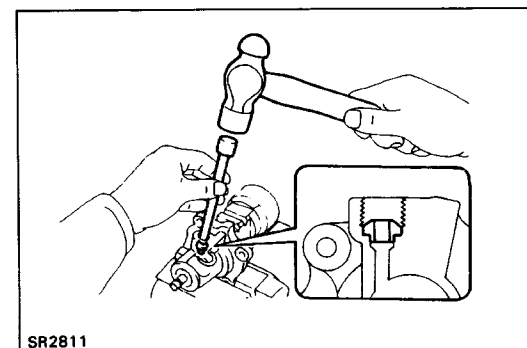


- (e) Coat the teflon ring with power steering fluid and snug it down with piston ring compressor for 5 - 7 minutes.



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.

ASSEMBLY OF GEAR HOUSING

(See page [SR-67](#))

1. INSTALL WORM GEAR VALVE BODY ASSEMBLY

- (a) Install the three O-rings to the gear housing and valve body.
- (b) Mount the gear housing on SST and clamp SST in vise.
- (c) Install and torque the four bolts.

SST 09630-00012 (09631-00140)

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

NOTICE: Be careful not to damage the teflon ring.

- (d) Using SST, check the worm gear preload.

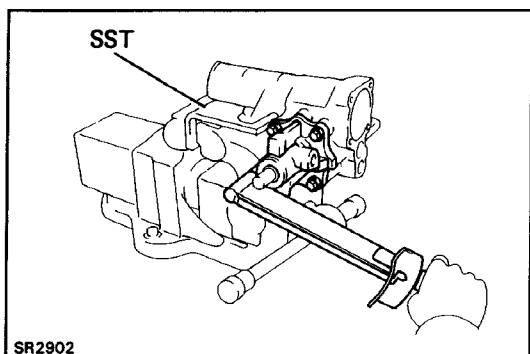
SST 09616-00010

Preload (Starting): 0.3 - 0.5 N-m

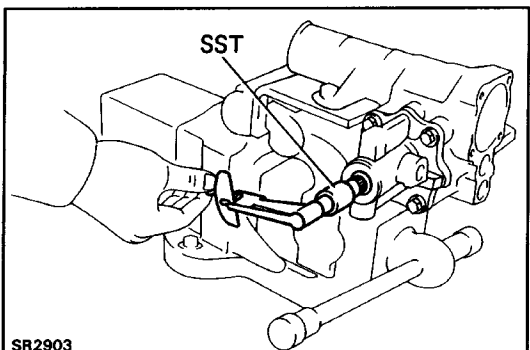
(3 - 5.5 kgf-cm, 2.6 - 4.8 in.-lbf)

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

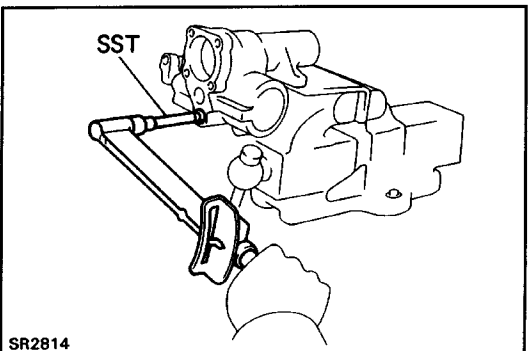
If preload is not correct, replace the worm gear assembly.



SR2902



SR2903



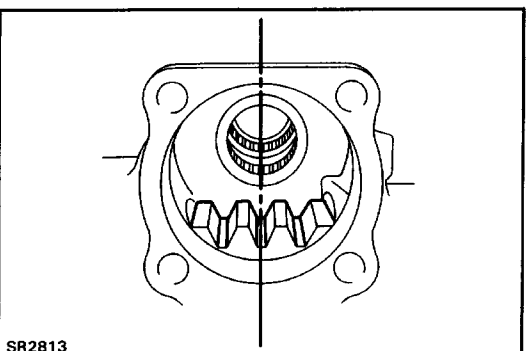
SR2814

2. INSTALL PLUNGER GUIDE NUT

- (a) Install the plunger, plunger guide and spring.
- (b) Install a new O-ring to the plunger guide nut and install the plunger guide nut with SST.

SST 09043-38100

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

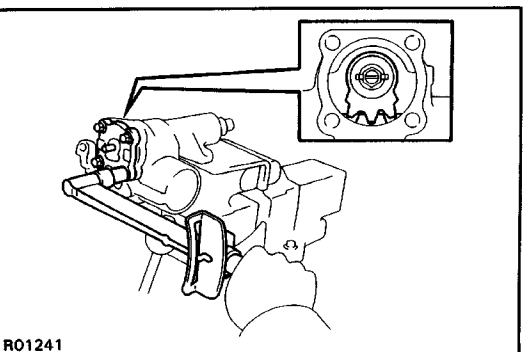


SR2813

3. INSTALL CROSS SHAFT AND END COVER

- (a) Install a new O-ring on the end cover.
- (b) Assemble the cross shaft to the end cover.
- (c) Set the worm gear at the center of the gear housing.

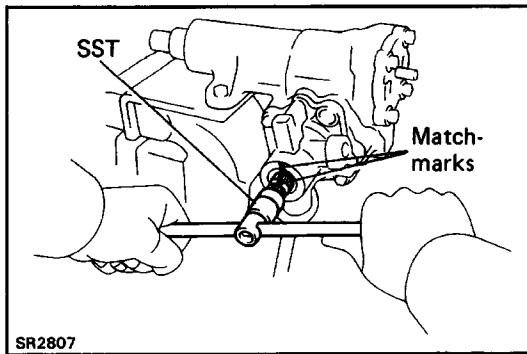
HINT: Fully loosen the adjusting screw.



R01241

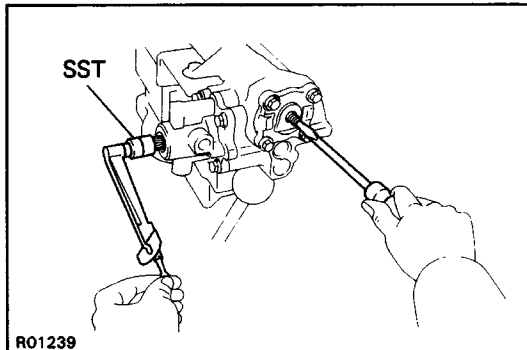
- (d) Install and push the cross shaft into the gear housing so that the center teeth mesh together.
- (e) Install the four bolts. Torque the bolts in a diagonal pattern.

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



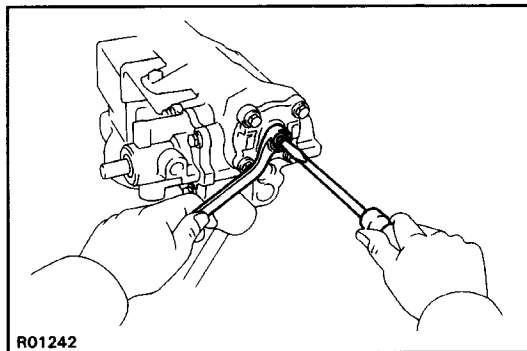
4. DETERMINE CENTER POSITION OF GEAR HOUSING

- (a) Using SST, turn the worm shaft so full lock in both directions and determine the exact center.
SST 09616-00010
- (b) Place matchmarks on the worm shaft and housing to show neutral position.



5. ADJUST CROSS SHAFT ADJUSTING SCREW

- (a) Install SST with a torque meter on the worm shaft.
SST 09616-00010
- (b) Turn the adjusting screw while measuring the pre-load until it should be increased 0.2 – 0.4 N-m (2 – 4 kgf-cm, 1.7 – 3.5 in.-lbf) more than the preload listed in step 1.



6. INSTALL NEW WASHER

7. INSTALL AND TIGHTEN LOCK NUT

Torque the lock nut while holding the adjusting screw.
Torque: 46 N-m (470 kgf-cm, 34 ft-lbf)

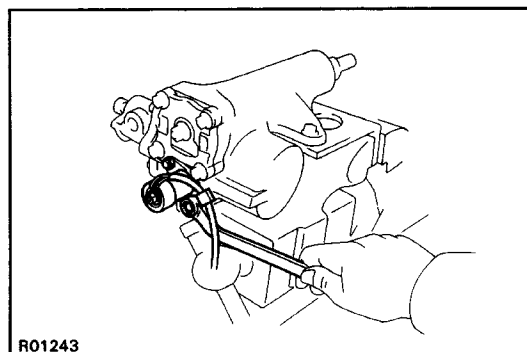
8. CHECK TOTAL PRELOAD

Using SST and a torque meter, check total preload.

SST 09616-00010

Total preload (Starting):

0.5 – 0.9 N-m (5 – 9.5 kgf-cm, 4.3 – 8.3 in.-lbf)



9. INSTALL SOLENOID VALVE (w/ PPS)

- (a) Install new O-rings to the solenoid valve.
- (b) Install the solenoid valve with the two bolts.