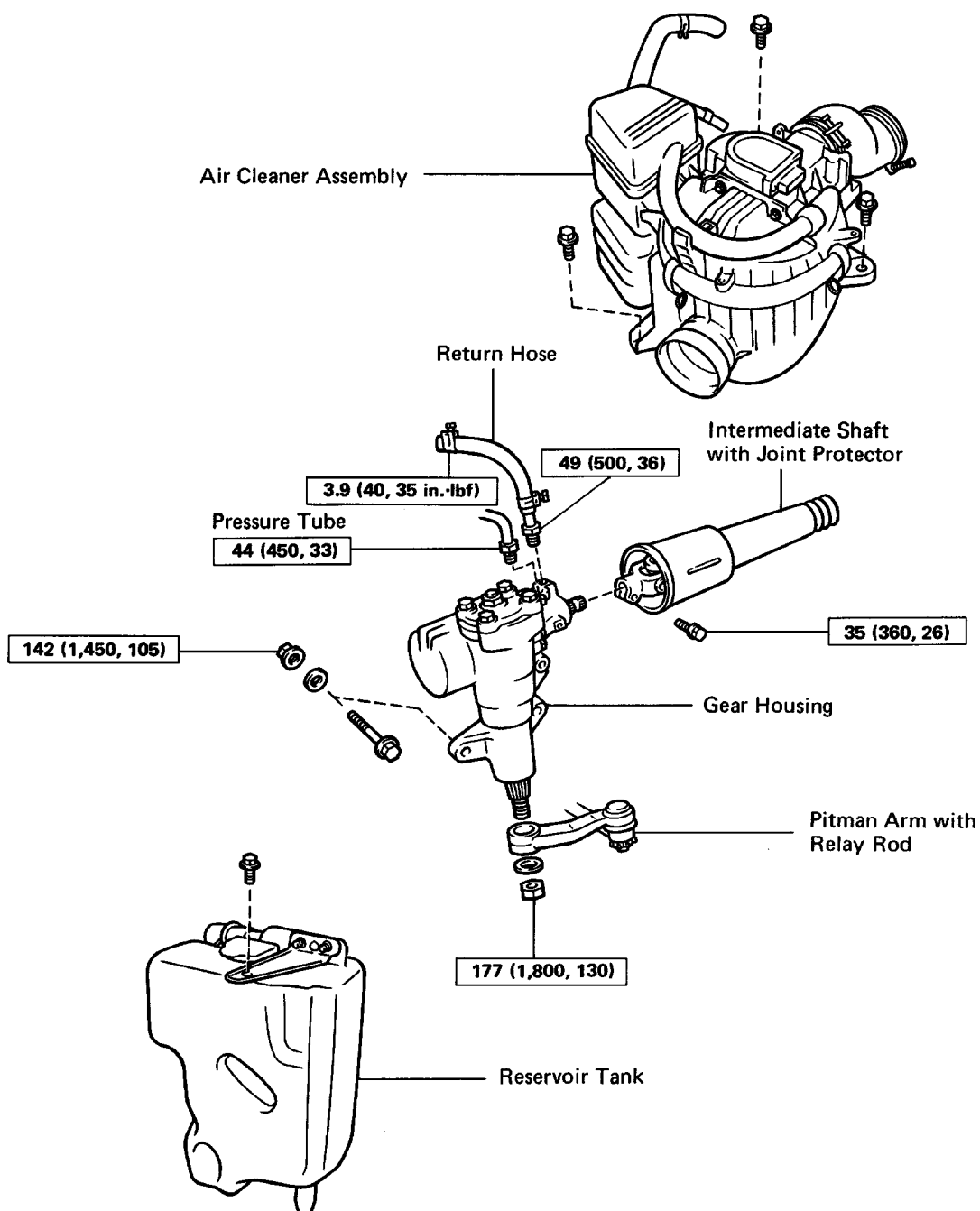


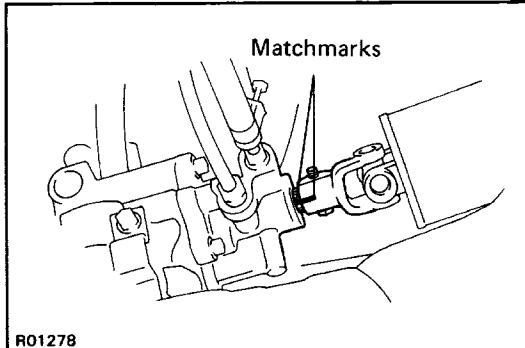
Gear Housing (4WD)

REMOVAL AND INSTALLATION OF GEAR HOUSING

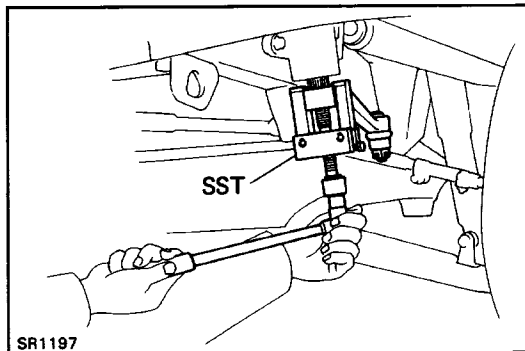
Remove and install the parts as shown.



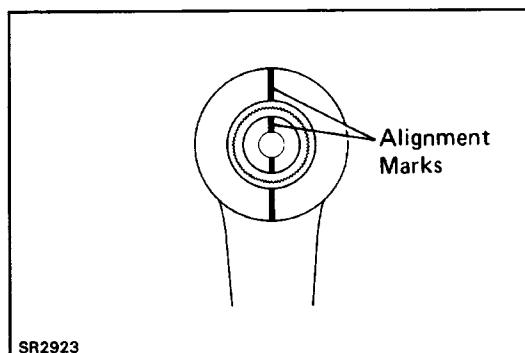
N·m (kgf·cm, ft·lbf) : Specified torque

(MAIN POINT OF REMOVAL AND INSTALLATION)**1. REMOVE RESERVOIR TANK****2. REMOVE AIR CLEANER ASSEMBLY****3. DISCONNECT UNIVERSAL JOINT**

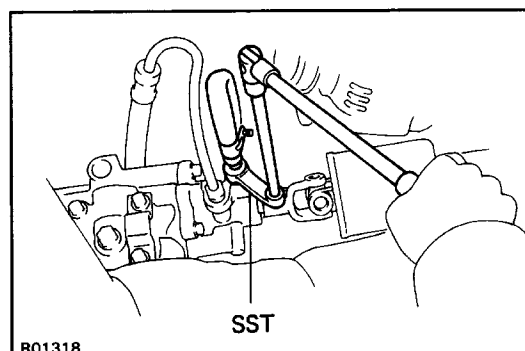
- (a) Loosen the column side set bolt.
- (b) Remove the gear side set bolt.
- (c) Place matchmarks on the universal joint and worm shaft.
- (d) Slide the shaft rearward to disconnect the shaft from the worm shaft.

**4. DISCONNECT AND CONNECT PITMAN ARM**

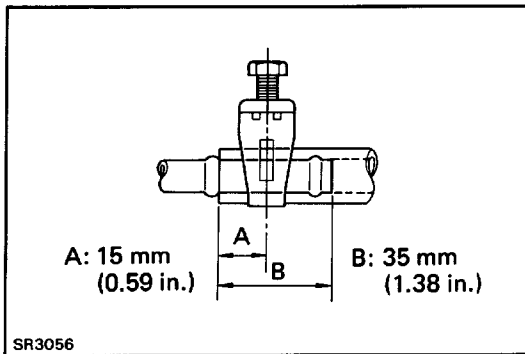
- (a) Remove the pitman arm set nut.
- (b) Using SST, disconnect the pitman arm from the gear housing.
SST 09628-62011



- (c) When connecting, align the alignment marks on the sector shaft and pitman arm and install it.

**5. DISCONNECT PRESSURE TUBE FROM GEAR HOUSING**

- Using SST, disconnect the pressure tube from the gear housing.
SST 09631-22020

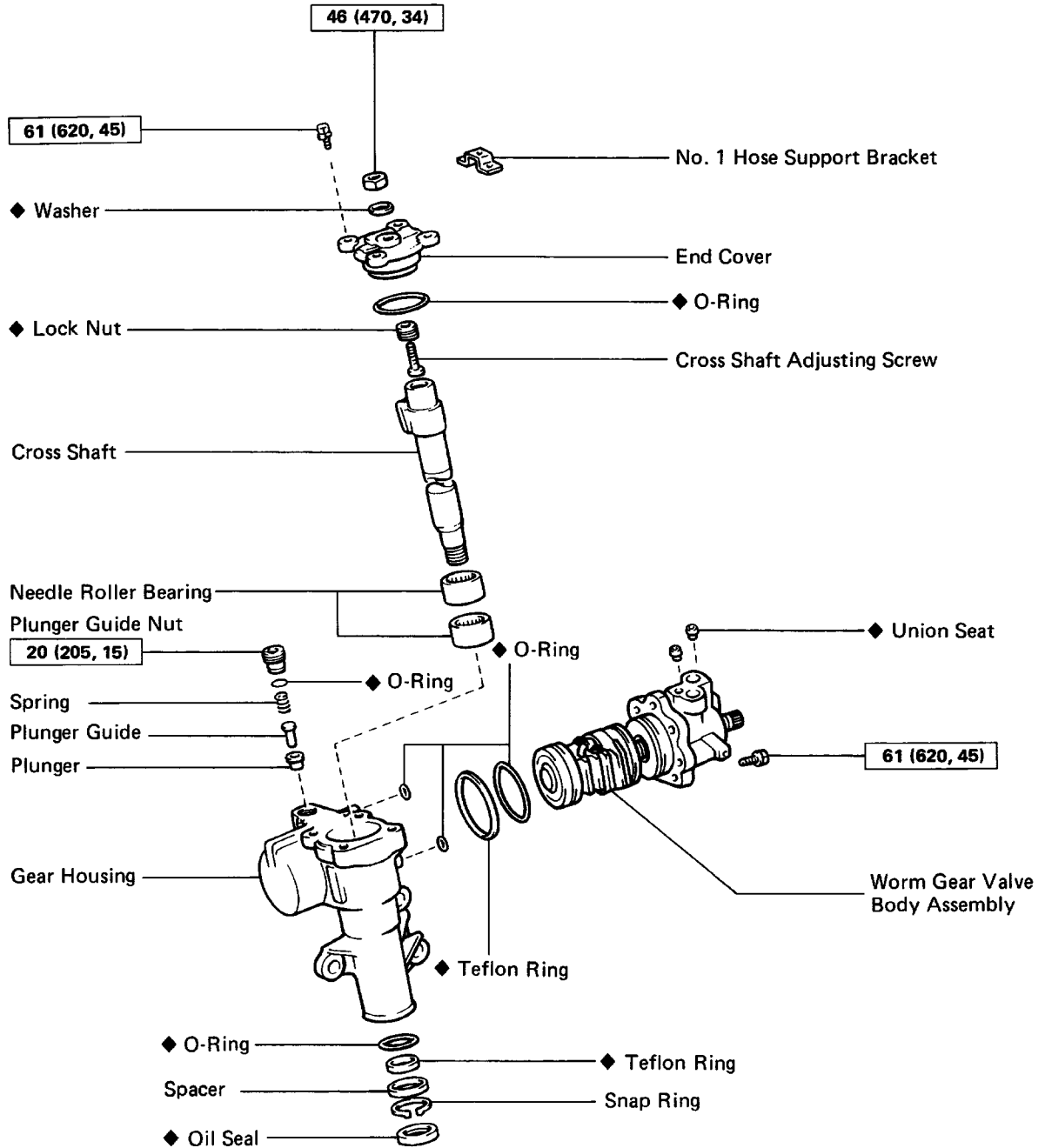


6. DISCONNECT AND CONNECT RETURN HOSE

- Using a screwdriver, loosen the clamp and disconnect the return hose.
- When connecting, check that hose and tube connections are as shown and tighten the screw.

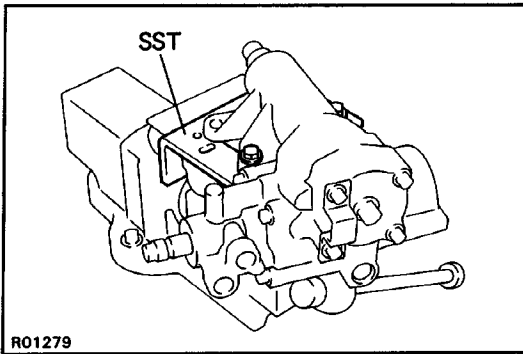
NOTICE: At installation, be sure that the clamp does not touch the other parts.

COMPONENTS



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

◆ Non-reusable part

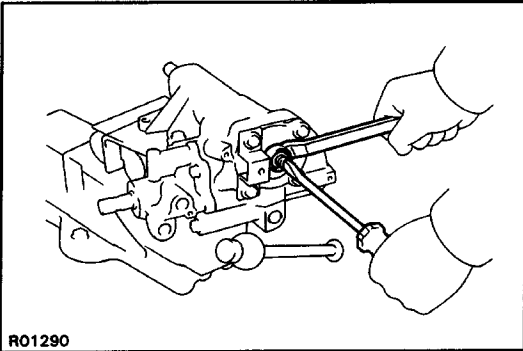


DISASSEMBLY OF GEAR HOUSING

(See page [SR-76](#))

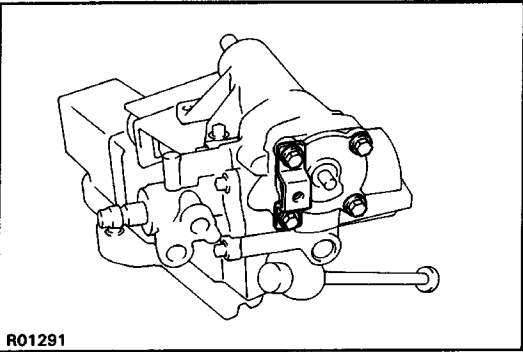
1. MOUNT HOUSING ON STAND

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

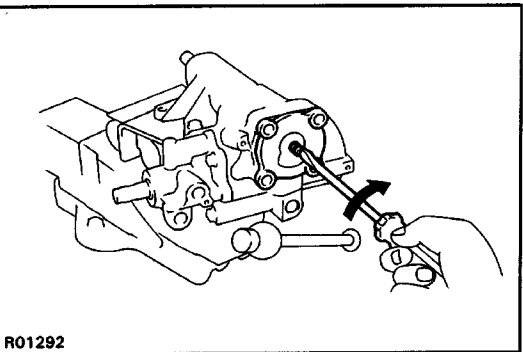


2. REMOVE END COVER

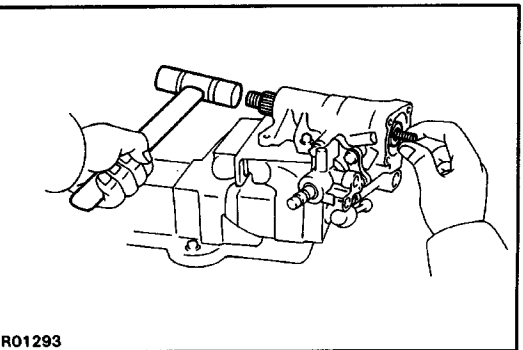
(a) Remove the adjusting screw lock nut.



(b) Remove the four bolts and No. 1 hose support bracket.

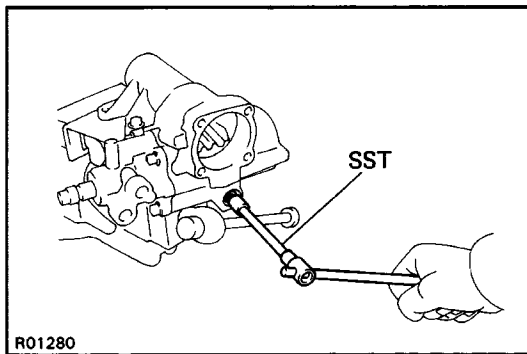


(c) Screw in the adjusting screw until the cover comes off.



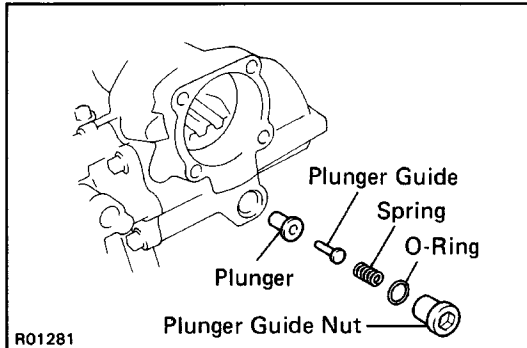
3. REMOVE CROSS SHAFT

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

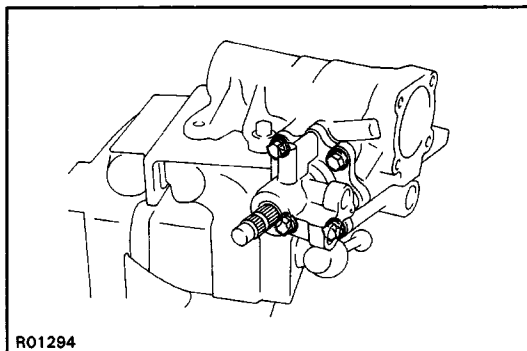


4. REMOVE PLUNGER GUIDE NUT

- (a) Using SST, remove the plunger guide nut.
SST 09043-38100

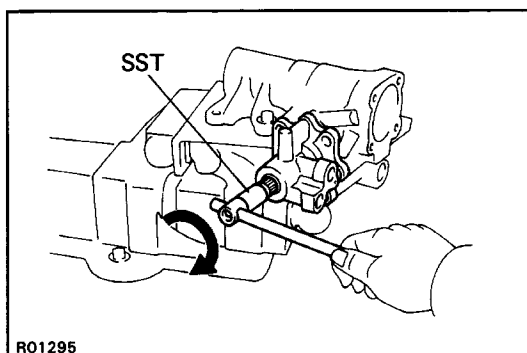


- (b) Remove the spring, plunger and plunger guide nut.
(e) Remove the O-ring.

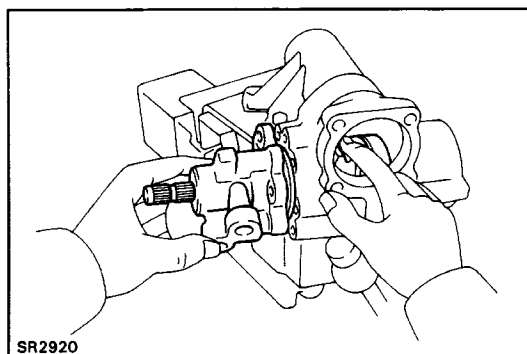


5. REMOVE WORM GEAR VALVE BODY ASSEMBLY

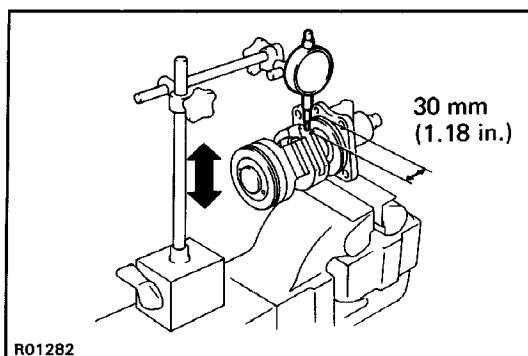
- (a) Remove the four cap bolts from the housing.



- (b) Using SST, turn the shaft clockwise to disconnect the worm gear valve body assembly from the gear housing.
SST 09616-00010



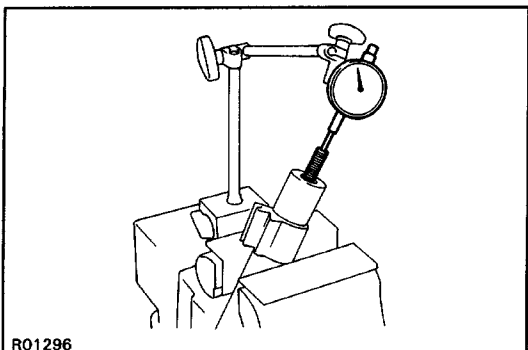
- (c) Hold the power piston nut with your thumb so it cannot move, then withdraw the valve body and power piston assembly.
NOTICE: Ensure that the power piston nut does not come off the worm shaft.
(d) Remove the O-ring.



INSPECTION AND REPLACEMENT OF GEAR HOUSING

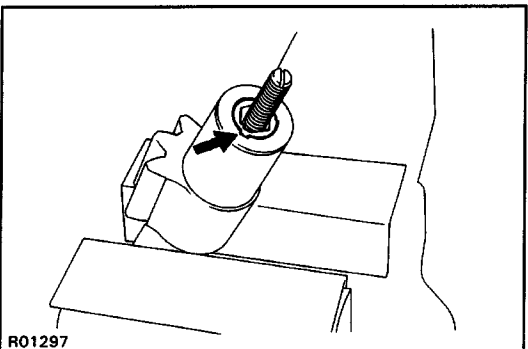
1. CHECK BALL CLEARANCE

- (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.



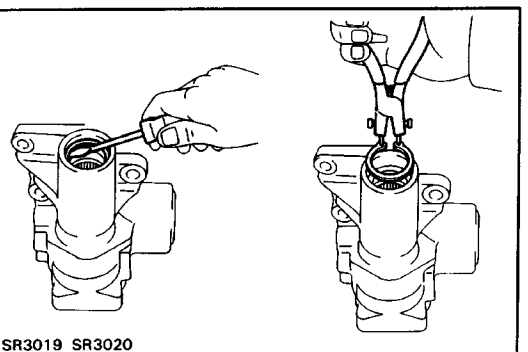
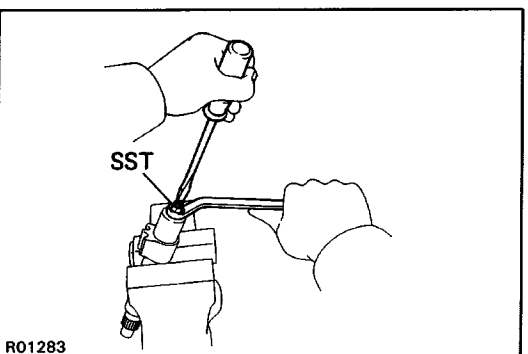
2. INSPECT CROSS SHAFT ADJUSTING SCREW THRUST CLEARANCE

- (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.



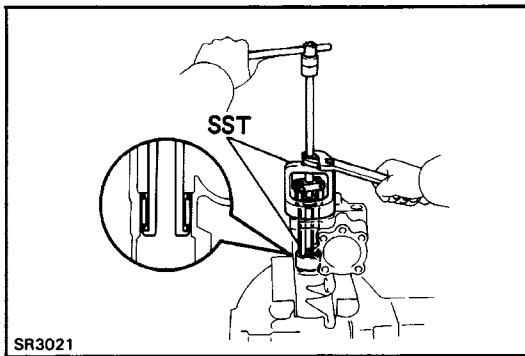
3. IF NECESSARY, ADJUST THRUST CLEARANCE

- (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.

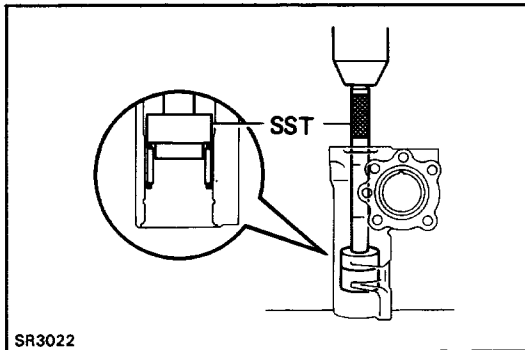


4. IF NECESSARY, REPLACE NEEDLE ROLLER BEARINGS

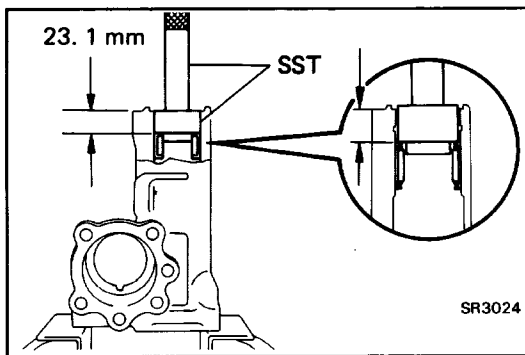
- (a) Using a screwdriver, pry out the oil seal.
- (b) Using snap ring pliers, remove the snap ring.
- (c) Remove the metal spacer, teflon ring and O-ring.



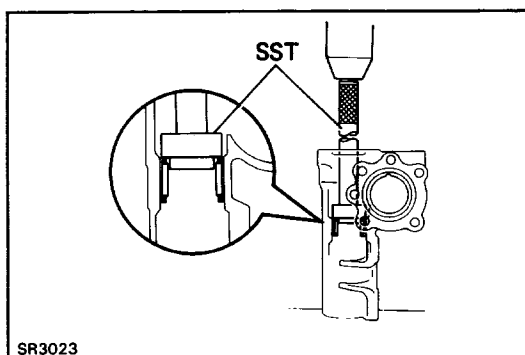
- (d) Using SST, remove the upper bearing.
SST 09612-65014 (09612-01030)



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



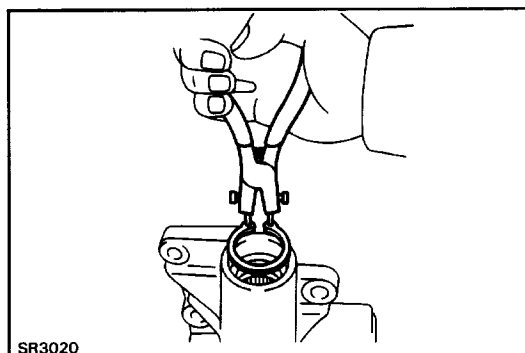
- (f) Using SST, press in a new lower bearing.
SST 09630-00012 (09631-00020, 09631-00090)
HINT: Install the lower bearing so that it is positioned 23.1 mm (0.909 in.) away from the housing inner end surface.



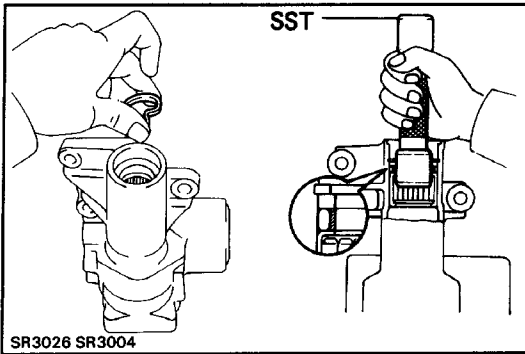
- (g) Using SST, press in a new upper bearing.
SST 09630-00012 (09631-00020, 09631-00090)

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

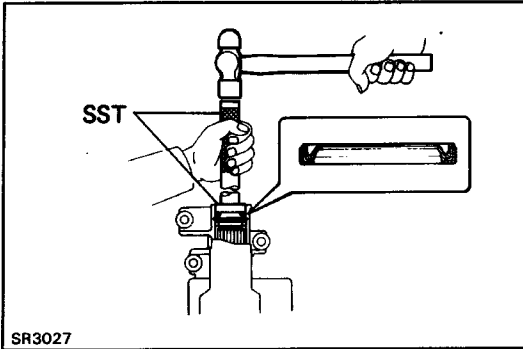
- (h) Install a new O-ring and metal spacer.



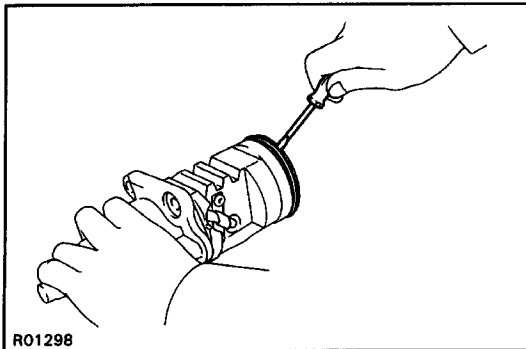
- (i) Using snap ring pliers, install the snap ring.



- (j) Form a new 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)

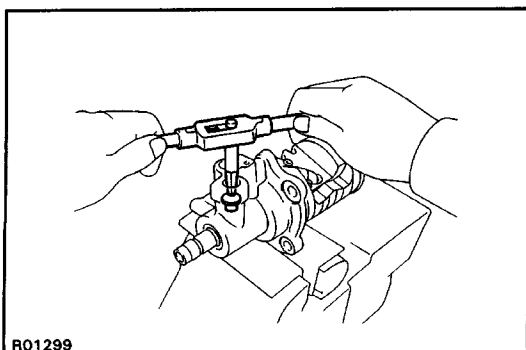
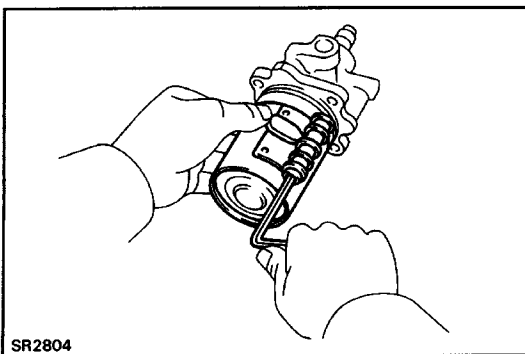


- (l) Using SST, drive a new oil seal into the gear housing.
SST 09630-00012 (09631-00020, 09631-00090)



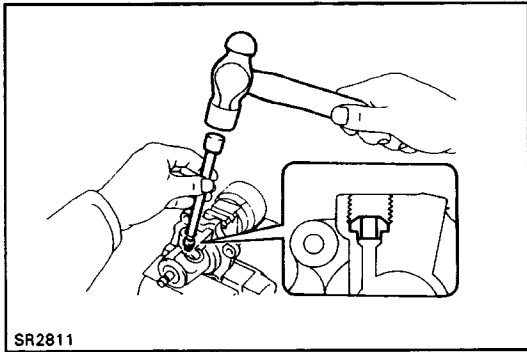
5. IF NECESSARY, REPLACE CONTROL VALVE TEFLON RING AND O-RING

- (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.

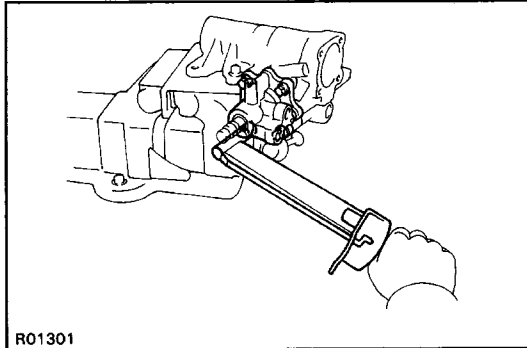


6. IF NECESSARY, REPLACE UNION SEAT

- (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

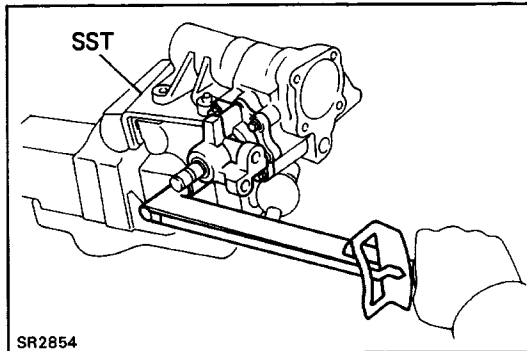
(See page [SR-76](#))

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.

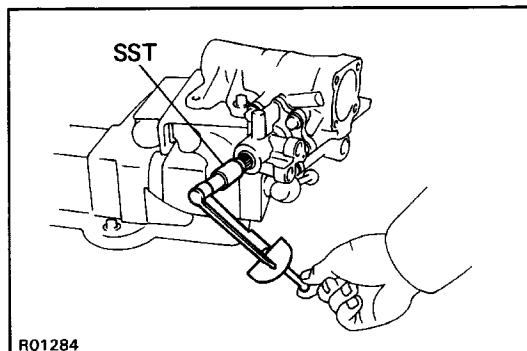
SST 09630-00012 (09631-00140)



- (c) Install and torque the four bolts.

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

NOTICE: Be careful not to damage the teflon ring.



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

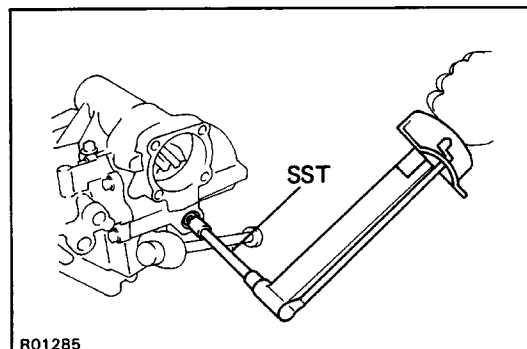
SST 09616-00010

Preload (Starting): 0.3 - 0.5 N-m

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

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

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



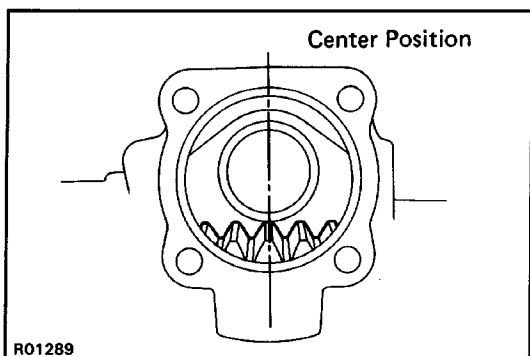
2. INSTALL PLUNGER GUIDE NUT

- (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.

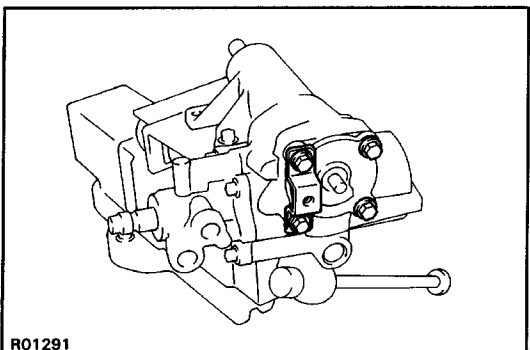
SST 09043-38100

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



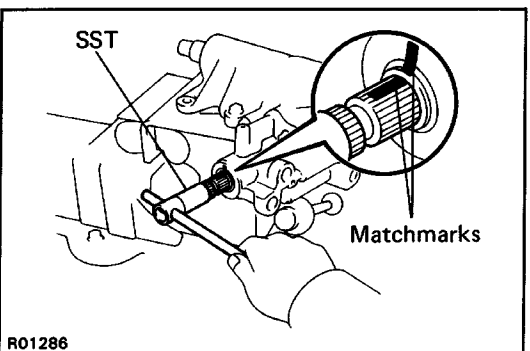
3. INSTALL CROSS SHAFT AND END COVER

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



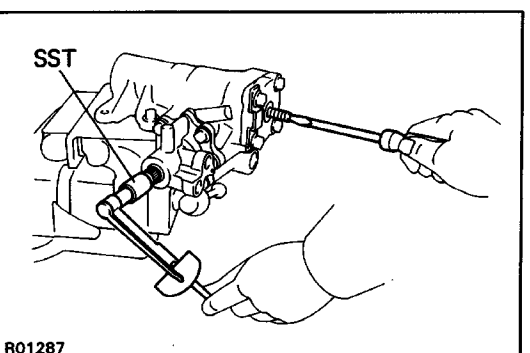
- (d) Install and push the cross shaft into the gear housing so that the center teeth mesh together.
- (e) Install the four cap bolts. Torque the bolts in a diagonal pattern.

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



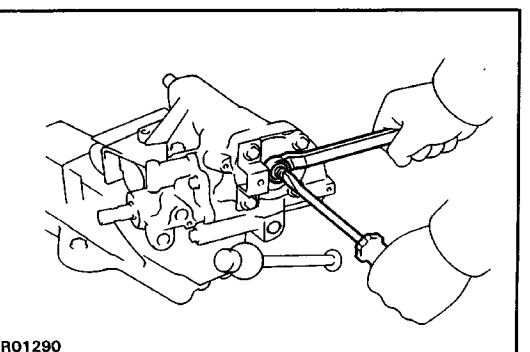
4. DETERMINE CENTER POSITION OF GEAR HOUSING

- (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

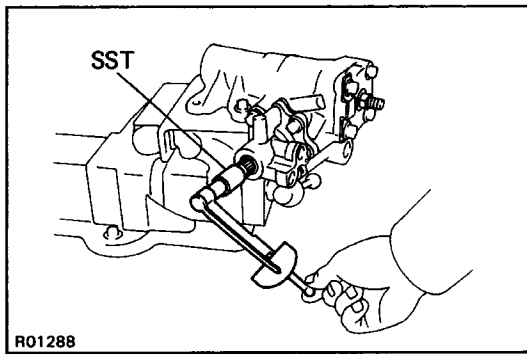
- (a) Install SST with a torque meter on the worm shaft.
 - SST 09616-00010
- (b) Turn the adjusting screw while measuring the preload until it should be increased 0.2 - 0.4 N-m (2 - 4 kgf-cm, 1.7 - 3.5 in.-lbf) more than the preload listed in step 1.



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 with 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)