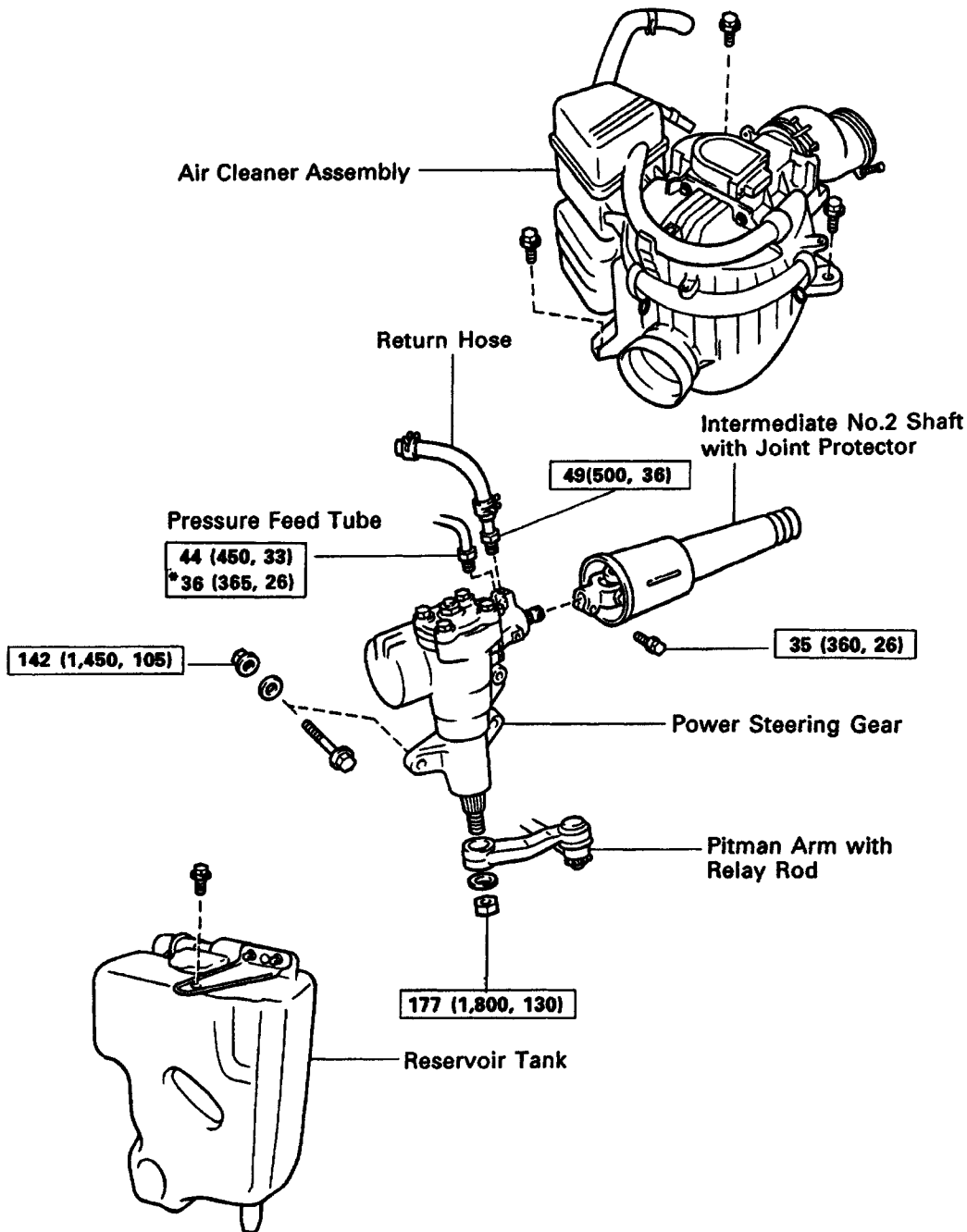


POWER STEERING GEAR

POWER STEERING GEAR REMOVAL AND INSTALLATION

Remove and install the parts, as shown.



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

* For use with SST

R07784

Z14370

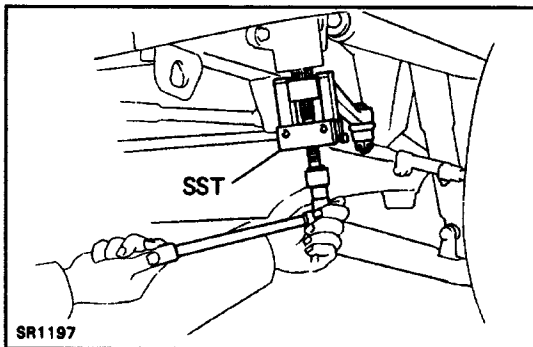
MAIN POINT OF REMOVAL AND INSTALLATION

1. REMOVE OIL RESERVOIR
2. REMOVE AIR CLEANER ASSEMBLY
3. DISCONNECT INTERMEDIATE NO.2 SHAFT
(See page [SR-7](#))

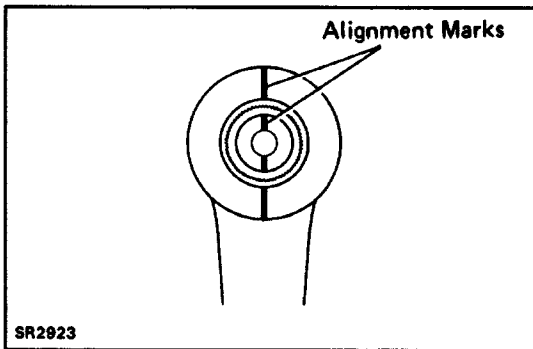
4. DISCONNECT AND CONNECT PITMAN ARM

- (a) Using SST, disconnect the pitman arm from the cross shaft.

SST 09628-62011



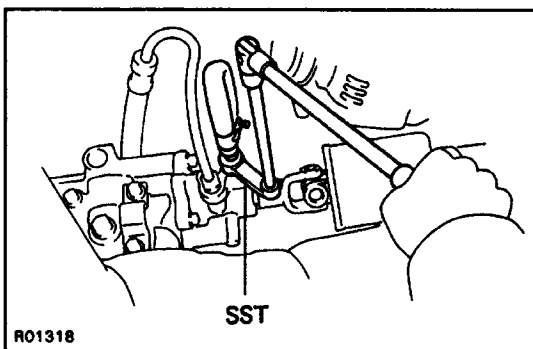
- (b) Align the alignment marks on the cross shaft and pitman arm and connect the pitman arm.



5. DISCONNECT PRESSURE FEED TUBE

- Using SST, disconnect the pressure feed tube from the gear assembly.

SST 09631 – 22020



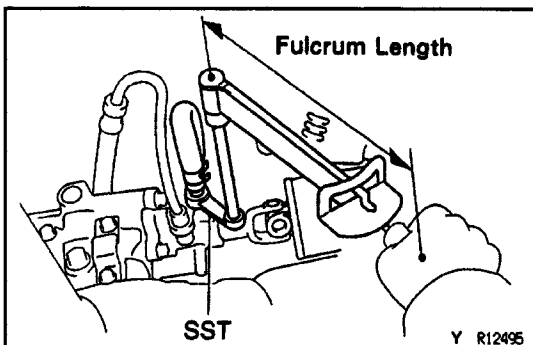
6. CONNECT PRESSURE FEED TUBE

- Using SST, connect the pressure feed tube.

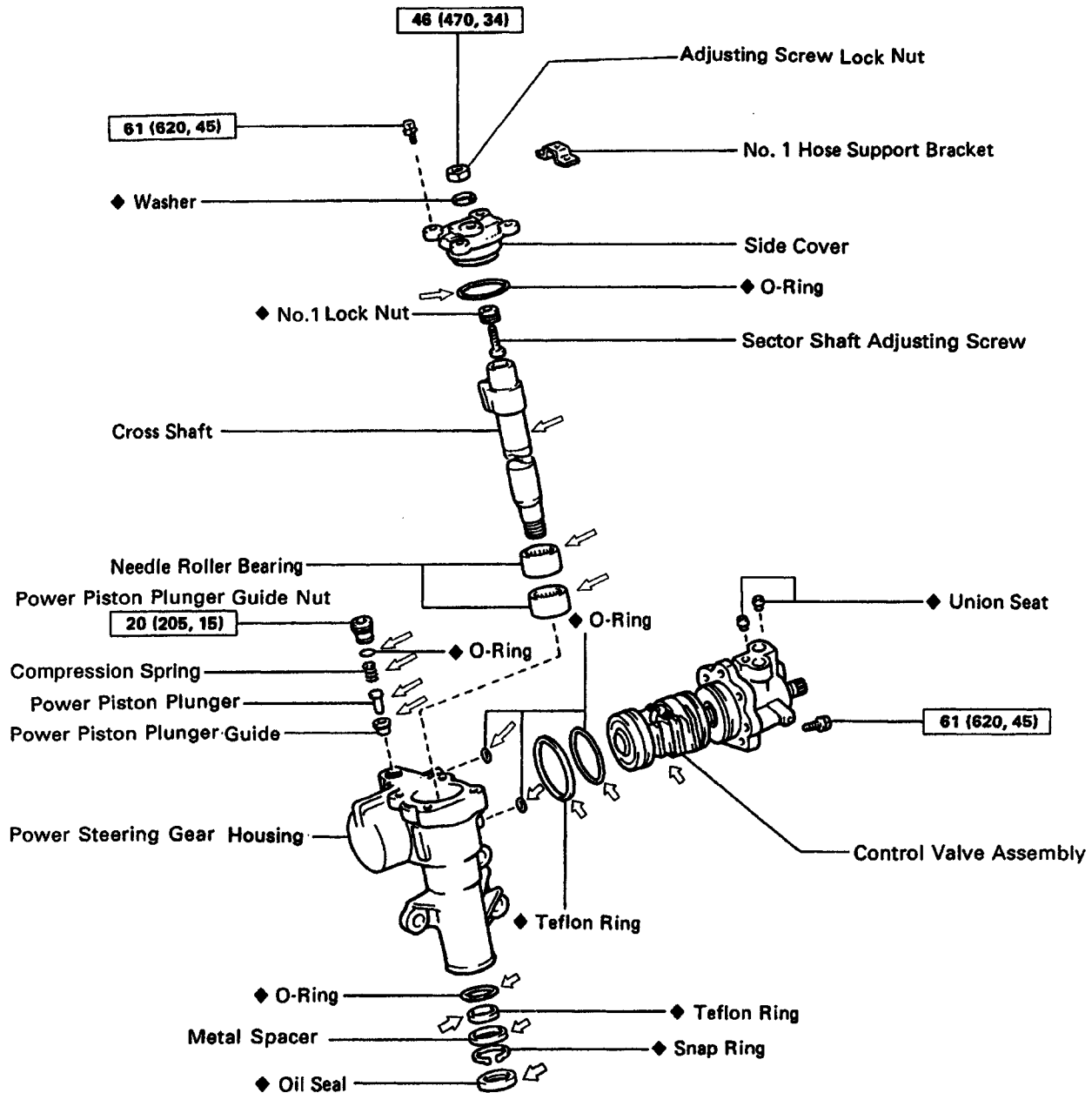
SST 09631- 22020

Torque: 36 N-m (365 kgf-cm, 26 ft-lbf)

HINT: Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).



COMPONENTS

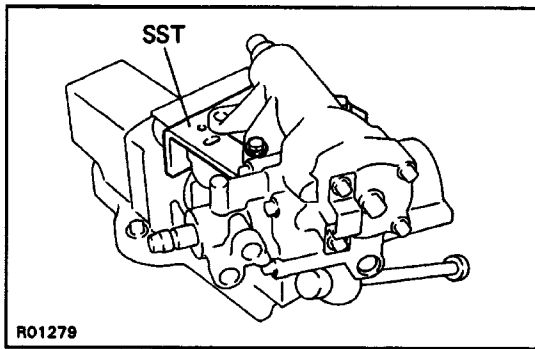


N·m (kgf·cm, ft·lbf) : Specified torque

- ◆ Non-reusable part
- ⇨ Power steering fluid

R01233

Z14450

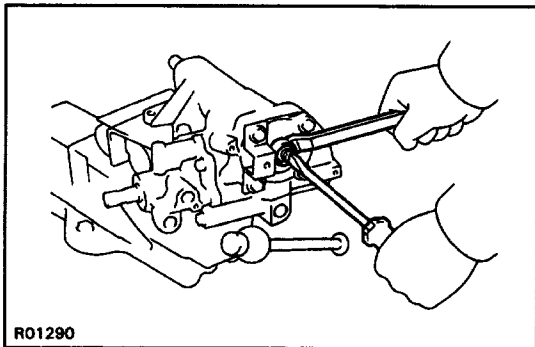


POWER STEERING GEAR DISASSEMBLY

NOTICE: When using a vise, do not overtighten it.

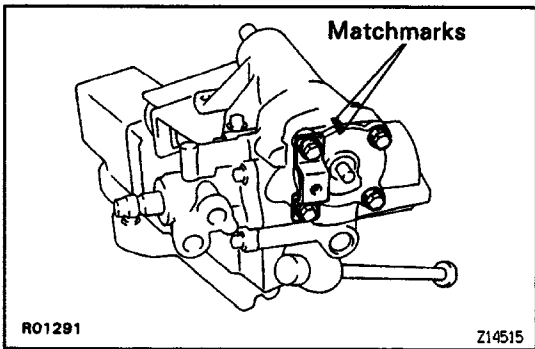
1. SECURE PS GEAR HOUSING IN VISE

Secure the gear housing on SST and clamp SST in a vise.
SST 09630-00013 (09631 -00141)



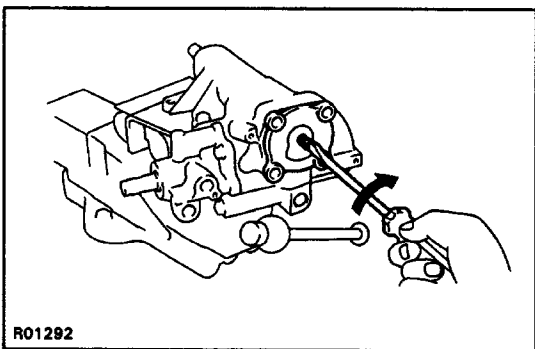
2. REMOVE SIDE COVER

(a) Place a screwdriver to the adjusting screw lock nut so that it does not rotate and remove the adjusting screw lock nut.

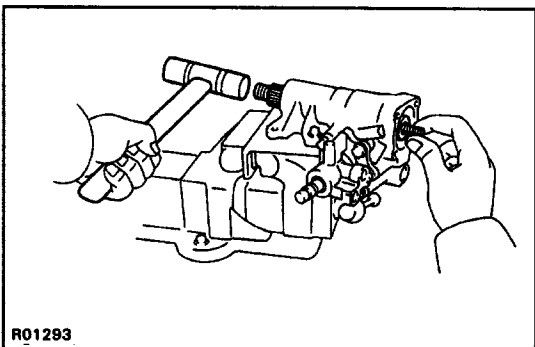


(b) Place matchmarks on the side cover and gear housing.

(c) Remove the 4 bolts and No.1 hose support bracket.

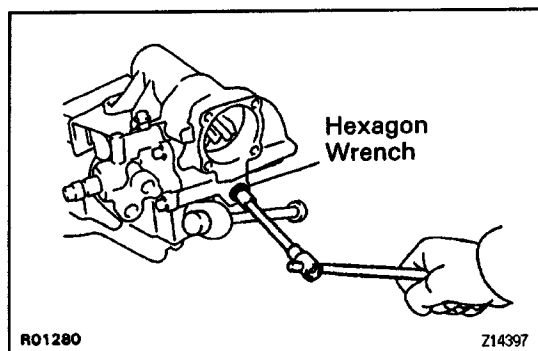


(d) Screw in the adjusting screw until the cover comes off.



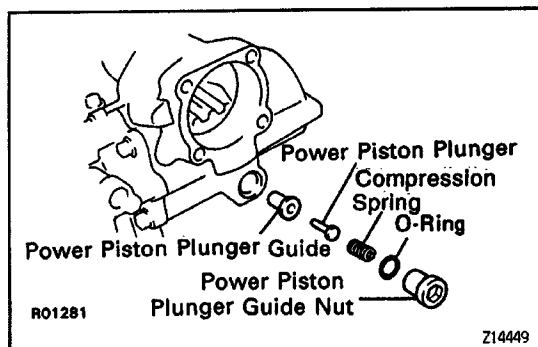
3. REMOVE CROSS SHAFT

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

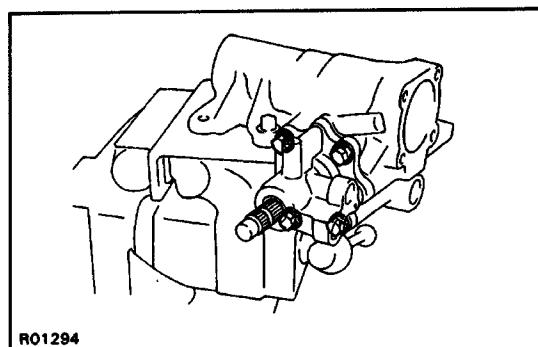


4. REMOVE POWER PISTON PLUNGER GUIDE NUT, COMPRESSION SPRING, POWER PISTON PLUNGER AND POWER PISTON PLUNGER GUIDE

(a) Using a hexagon wrench (11.0mm), remove the plunger guide nut.

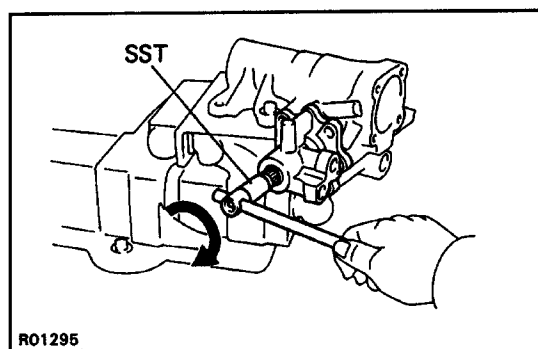


(b) Remove the spring, plunger and plunger guide.
(c) Remove the O-ring.



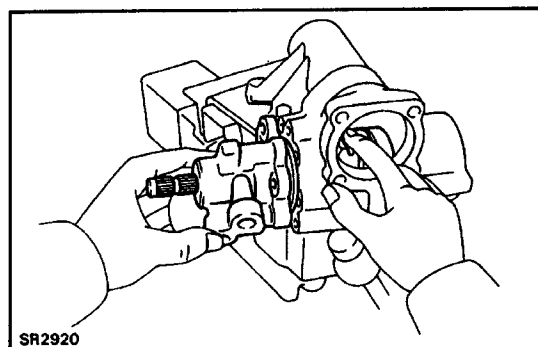
5. REMOVE CONTROL VALVE ASSEMBLY

(a) Remove the 4 bolts.



(b) Using SST, turn the control valve clockwise with holding the power piston nut by your finger so it cannot move.

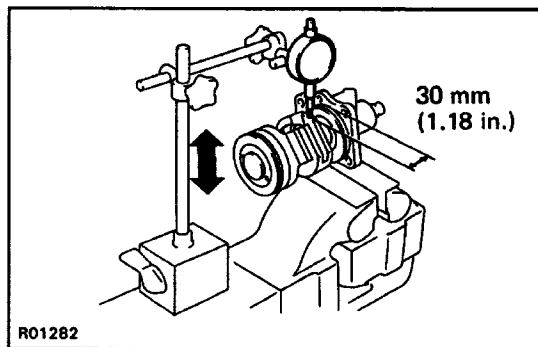
SST 09616-00010



(c) Pull out the control valve assembly.

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

(d) Remove the 2 O-rings.



POWER STEERING GEAR INSPECTION AND REPLACEMENT

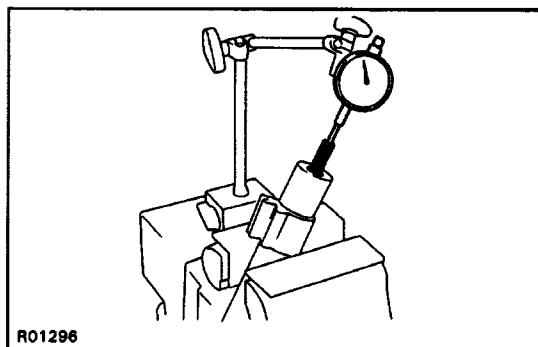
NOTICE: When using a vise, do not overtighten it.

1. INSPECT BALL CLEARANCE

Using a dial indicator, check the ball clearance. Move the worm gear up and down.

Maximum ball clearance:

0.15 mm (0.0059 in.)

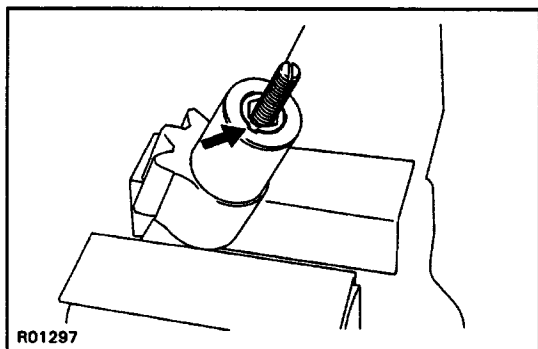


2. INSPECT CROSS SHAFT ADJUSTING SCREW THRUST CLEARANCE

Using a dial indicator, measure the thrust clearance.

Thrust clearance:

0.03 – 0.05 mm (0.0012 – 0.0020 in.)



3. IF NECESSARY, ADJUST THRUST CLEARANCE

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

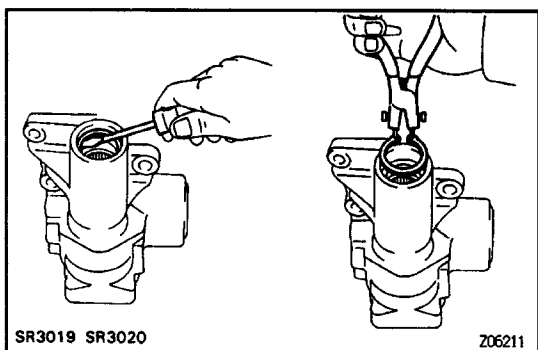
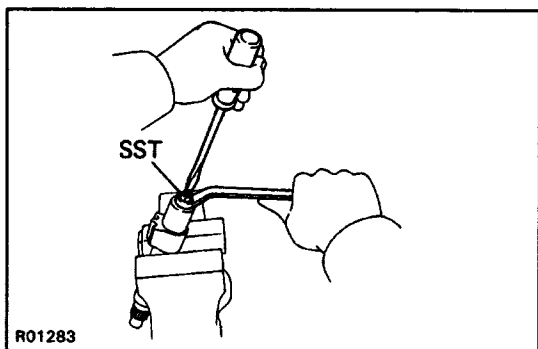
(b) Using SST, remove the lock nut.

SST 09630-00013 (09631-00050)

(c) Using a screwdriver, adjust the adjusting screw for correct thrust clearance.

(d) Tighten a new lock nut.

(e) Stake the lock nut.

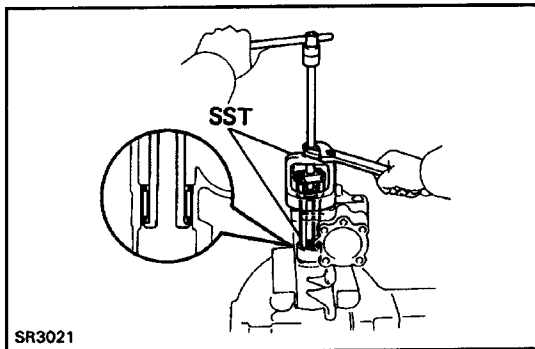


4. IF NECESSARY, REPLACE NEEDLE ROLLER BEARINGS

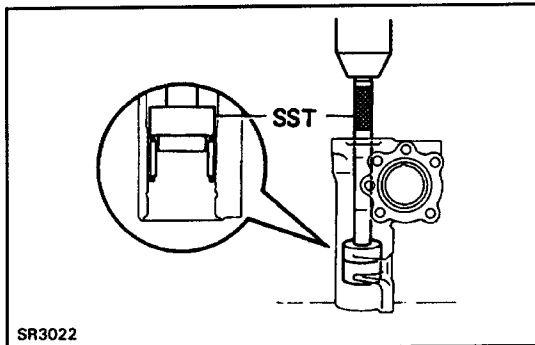
(a) Using a screwdriver, pry out the oil seal.

(b) Using snap ring pliers, remove the snap ring.

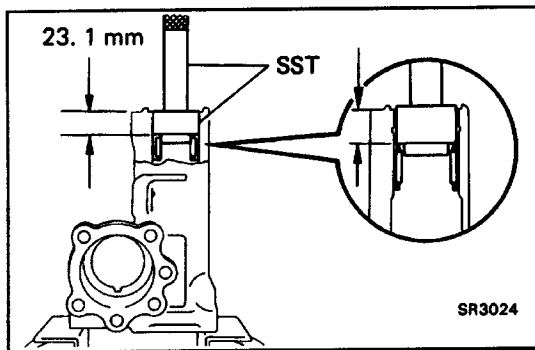
(c) Remove the metal spacer, teflon ring and O-ring.



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



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

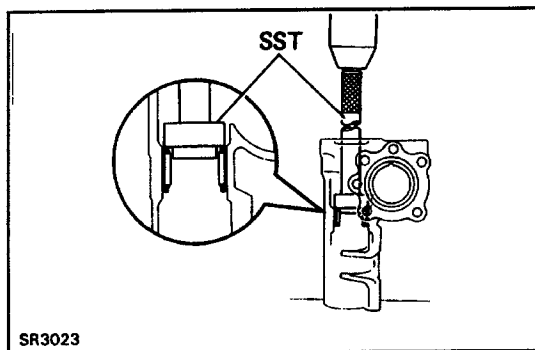


(f) Coat a new bearing with power steering fluid.

(g) Using SST, press in the bearing.

SST 09630-00013 (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.



(h) Coat a new bearing with power steering fluid.

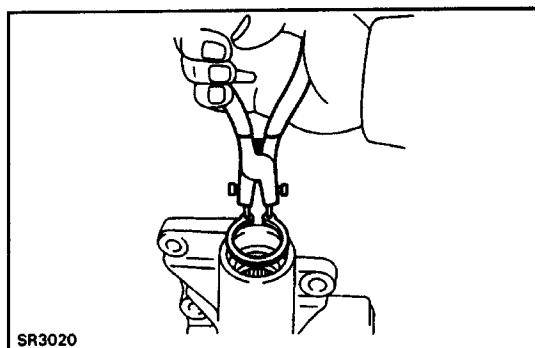
(i) Using SST, press in the bearing.

SST 09630-00013 (09631-00020, 09631-00090)

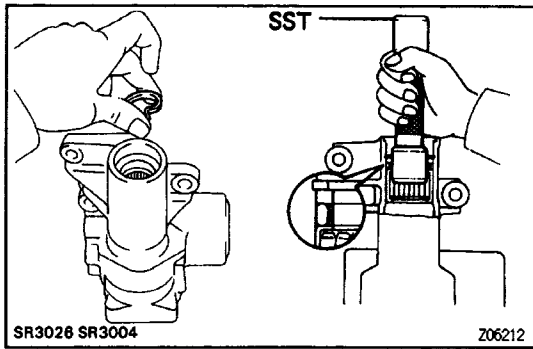
HINT: The bearing's top end should be installed so that it aligns with the housing end surface.

(j) Coat a new O-ring and metal spacer with power steering fluid.

(k) Install the O-ring and metal spacer.



(l) Using snap ring pliers, install a new snap ring.

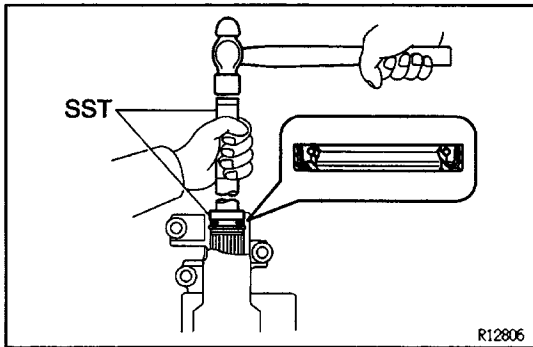


(m) Form a new teflon ring into a heart shape and install it by hand.

(n) Using SST, form the teflon ring.

NOTICE: The teflon ring must be squeezed before inserting the cross shaft or damage will result.

SST 09630-00013 (09631-00120)

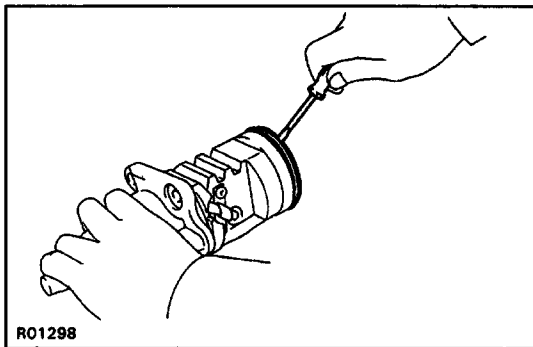


(o) Coat a new oil seal lip with power steering fluid.

(p) Using SST, drive the oil seal into the gear housing.

SST 09630-00013 (09631-00020, 09631-00090)

NOTICE: Make sure you install the oil seal facing the correct direction.



5. IF NECESSARY, REPLACE 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.

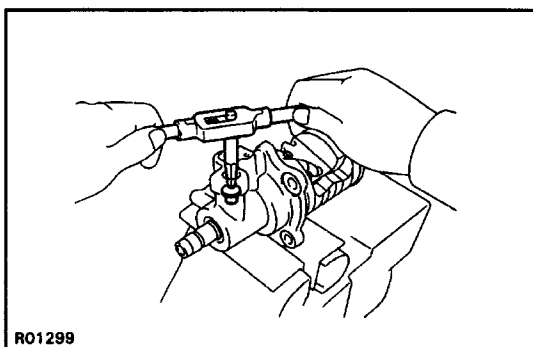
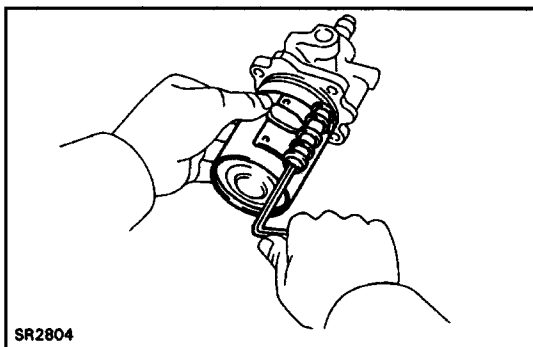
(b) Coat a new O-ring with power steering fluid and install it.

(c) Expand a new teflon ring with your fingers.

NOTICE: Be careful not to over-expand the teflon ring.

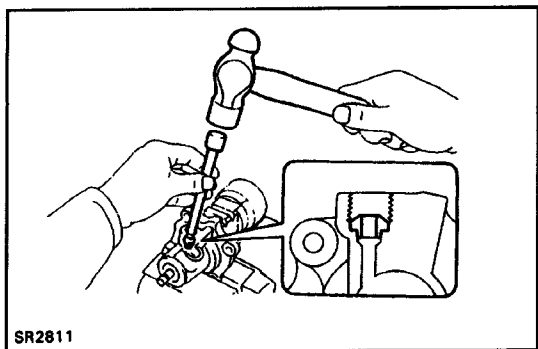
(d) Install the teflon ring.

(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 SEATS

(a) Using a screw extractor, remove the 2 union seats.



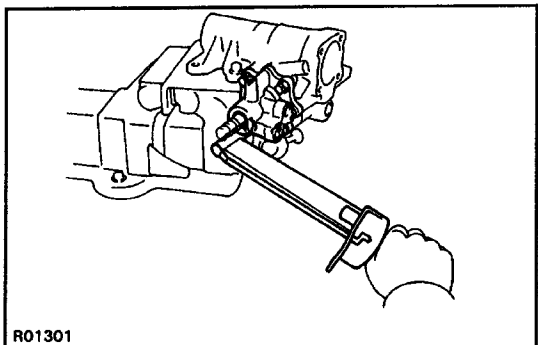
- (b) Using a hammer and extension bar, tap in a new union seat.

POWER STEERING GEAR ASSEMBLY

NOTICE: When using a vise, do not overtighten it.

1. INSTALL CONTROL VALVE ASSEMBLY

- (a) Coat a new 2 O-rings with power steering fluid.
 (b) Install the 2 O-rings to the valve assembly.



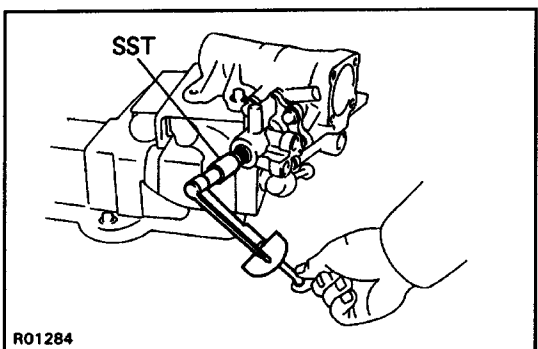
- (c) Secure the gear housing on SST and clamp SST in vise.

SST 09630-00013 (09631-00141)

- (d) Torque the 4 bolts.

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

NOTICE: Be careful not to damage the teflon ring.



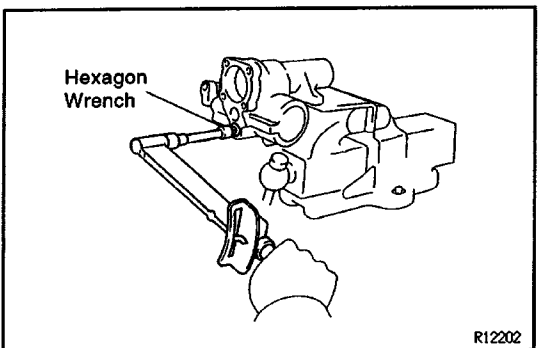
- (e) Using SST, check the control valve assembly rotating.
 SST 09616 - 00010

Rotating torque:

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.

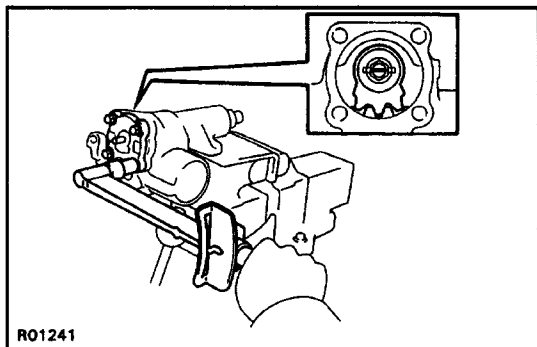
If rotating torque is not correct, replace the control valve assembly.



2. INSTALL POWER PISTON PLUNGER GUIDE, POWER PISTON PLUNGER, COMPRESSION SPRING AND POWER PISTON PLUNGER GUIDE NUT

- (a) Install the plunger, plunger guide and spring.
 (b) Coat a new O-ring with power steering fluid.
 (c) Install the O-ring to the plunger guide nut and install the plunger guide nut with a hexagon wrench (10 mm).

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



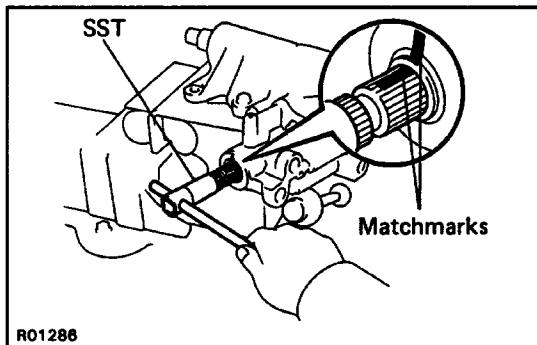
3. INSTALL CROSS SHAFT AND SIDE COVER

- Coat a new O-ring with power steering fluid.
 - Install the O-ring on the side cover.
 - Assemble the cross shaft to the side cover.
- HINT: Fully loosen the adjusting screw.
- Set the worm gear at the center of the gear housing.
 - Install and push the cross shaft into the gear housing so that the center teeth mesh together.
 - Torque the 4 bolts in a diagonal pattern.

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

4. DETERMINE CENTER POSITION OF PS GEAR HOUSING

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



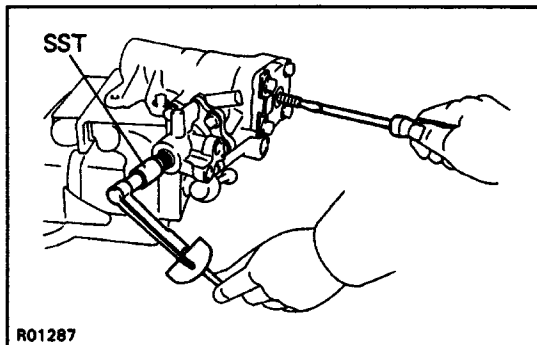
5. ADJUST CROSS SHAFT ADJUSTING SCREW

- Install SST with a torque wrench on the worm shaft.
- SST 09616-00010
- Turn the adjusting screw until the preload is within specification.

Preload (Turning):

0.2 – 0.4 N-m (2 – 4 kgf-cm, 1.7 – 3.5 in.-lbf)

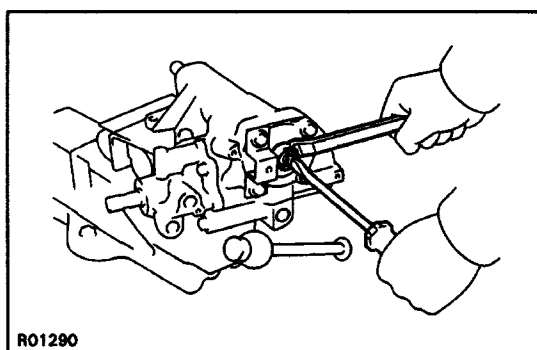
6. INSTALL NEW WASHER



7. INSTALL LOCK NUT

Torque the lock nut while holding the adjusting screw.

Torque: 48 N-m (470 kgf-cm, 34 ft-lbf)



8. CHECK TOTAL PRELOAD

Using SST and a torque wrench, check total preload.

SST 09616-00010

Total preload (Turning):

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

