

STEERING

REFER TO 1988 CELICA REPAIR MANUAL (Pub. No. RM071U)

NOTE: The following pages contain only the points which differ from the above listed manual.

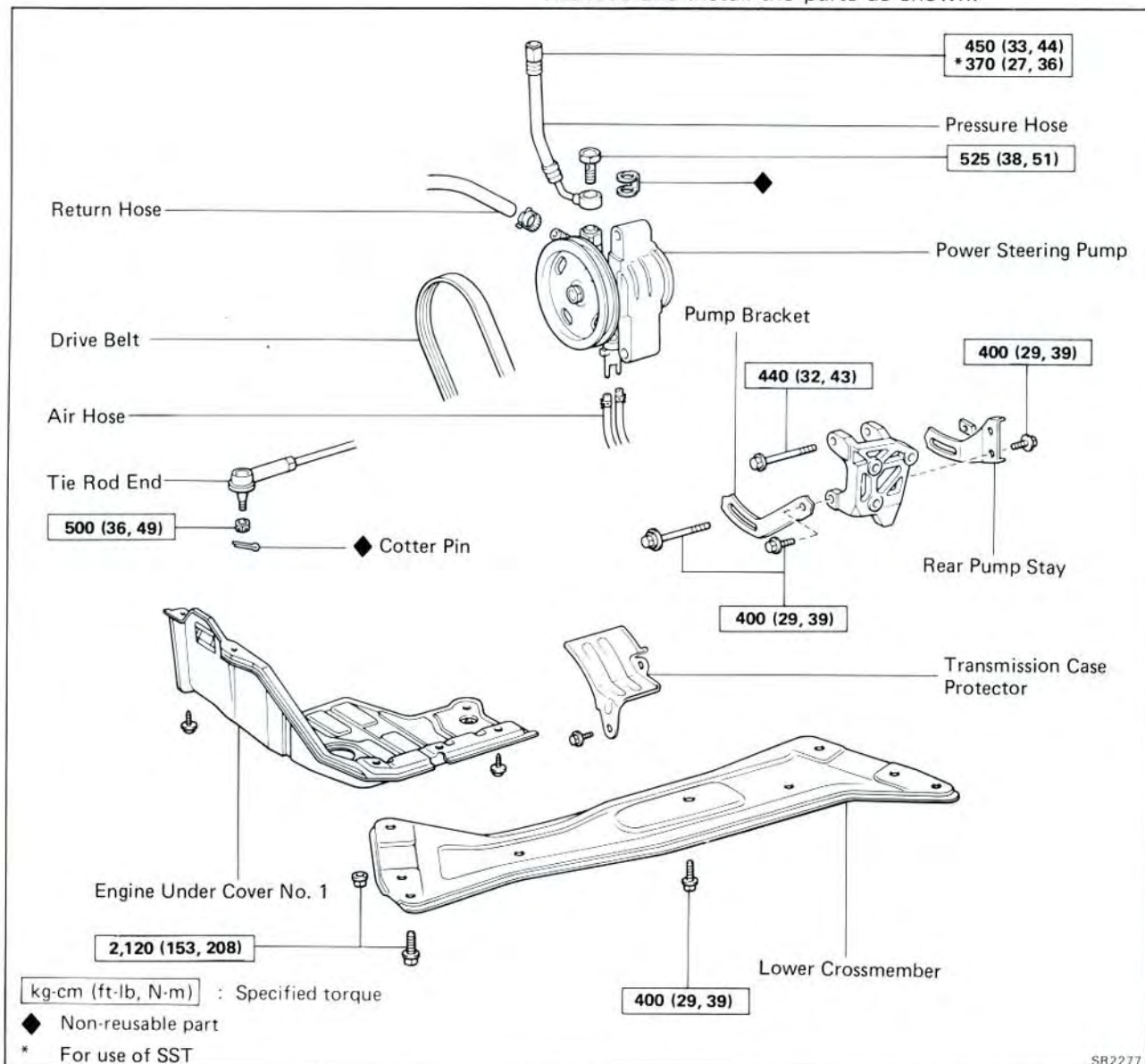
	Page
POWER STEERING	SR-2
Power Steering Pump	SR-2
Gear Housing	SR-4

POWER STEERING

Power Steering Pump

REMOVAL AND INSTALLATION OF POWER STEERING PUMP

Remove and install the parts as shown.

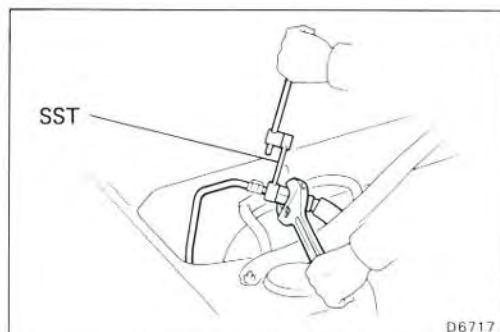


SR2277

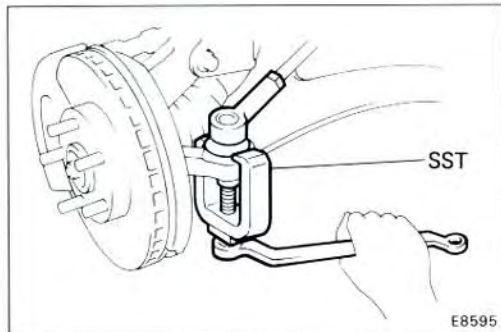
(MAIN POINT OF REMOVAL AND INSTALLATION)

1. DISCONNECT AND CONNECT PRESSURE LINE

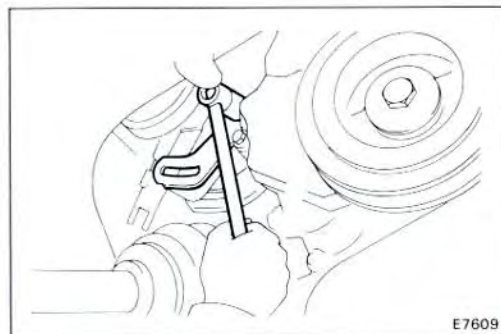
Using SST, disconnect and connect the pressure line.
SST 09631-22020



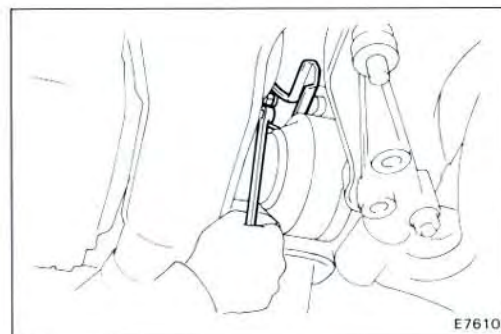
D6717

**2. DISCONNECT TIE ROD END RH**

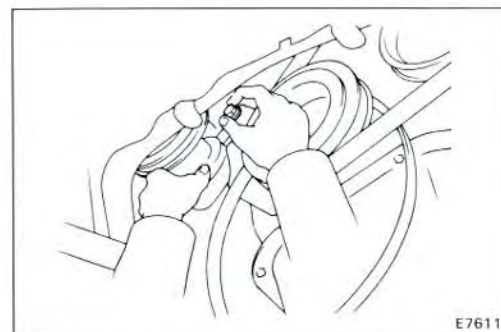
- (a) Remove the cotter pin and nut.
 - (b) Using SST, disconnect the tie rod end RH.
- SST 09611-22012

**3. REMOVE PUMP BRACKET**

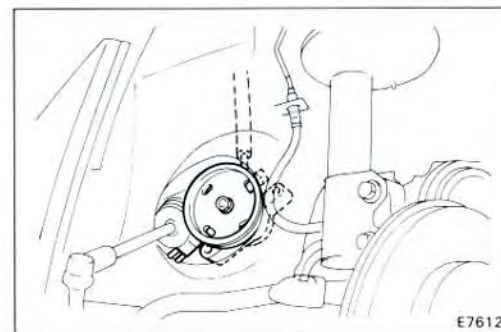
- (a) Remove the adjusting bolt.
- (b) Remove the bolt and bracket.

**4. REMOVE REAR PUMP STAY**

Remove the two bolts and stay.

**5. REMOVE PS PUMP WITH PRESSURE TUBE**

- (a) Remove the through bolt.



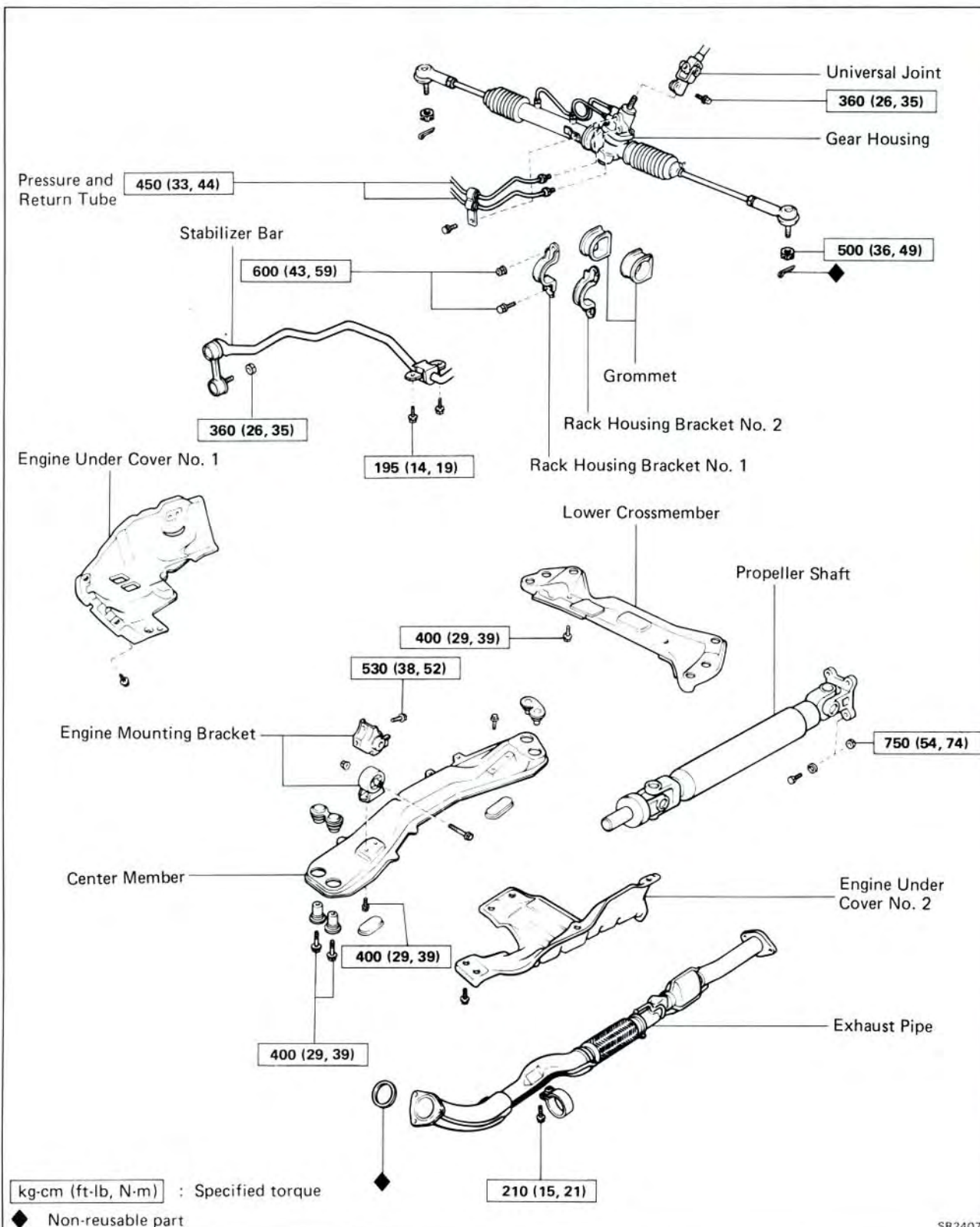
- (b) Remove the PS pump from the tie rod end hole.

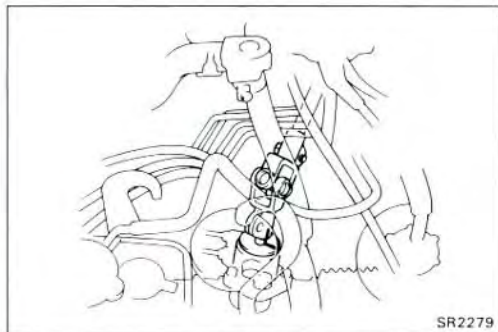
6. AFTER INSTALLING PS PUMP CHECK TOE-IN
(See page FA-3)

Gear Housing

REMOVAL AND INSTALLATION OF STEERING GEAR HOUSING

Remove and install the parts as shown.

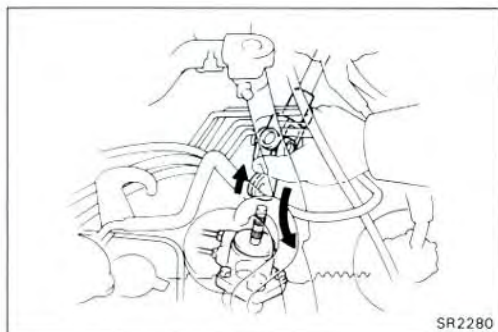




SR2279

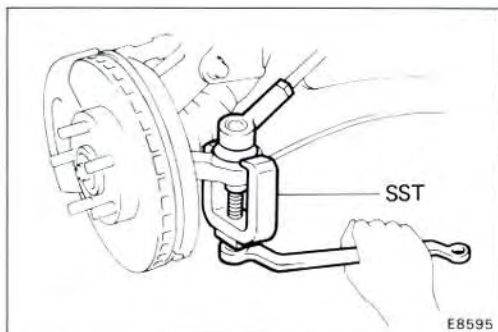
(MAIN POINT OF REMOVAL AND INSTALLATION)**1. REMOVE UNIVERSAL JOINT**

- (a) Place matchmarks on the universal joint and control valve shaft.
- (b) Remove the two bolts.



SR2280

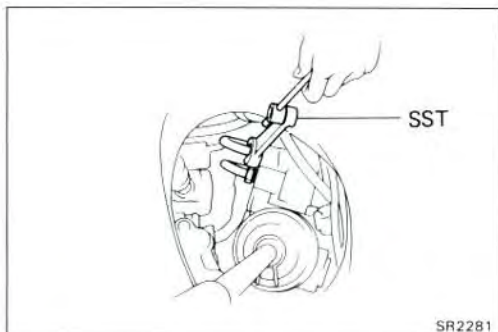
- (c) First pull the universal joint from the gear housing.
- (d) Then pull it out from the main shaft.



E8595

2. DISCONNECT TIE ROD ENDS

- (a) Remove the cotter pin and nut.
 - (b) Using SST, disconnect the tie rod end.
- SST 09611-22012



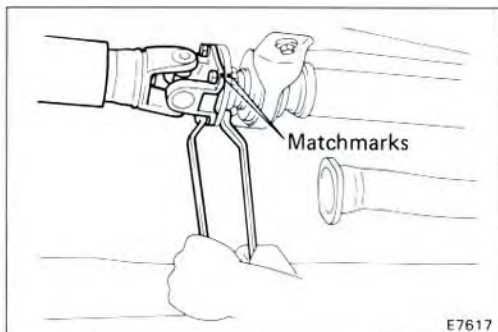
SR2281

3. DISCONNECT AND CONNECT PRESSURE AND RETURN LINE

Using SST, disconnect and connect the pressure and return line.

SST 09631-22020

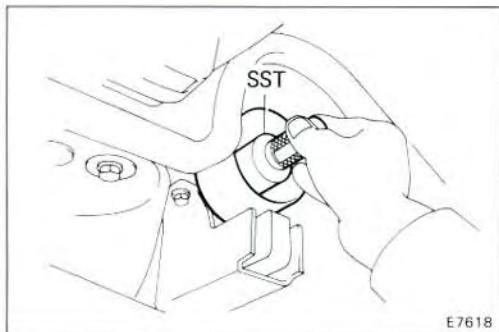
Torque: 450 kg-cm (33 ft-lb, 44 N·m)



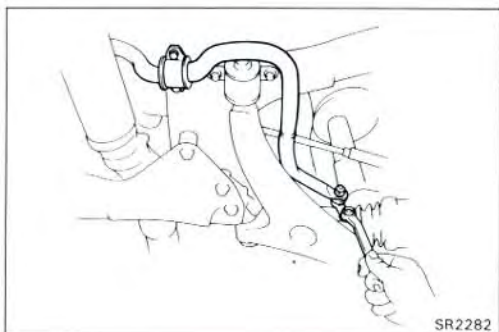
E7617

4. REMOVE PROPELLER SHAFT

- (a) Place matchmarks to the propeller shaft flange and intermediate shaft flange.
- (b) Remove the four bolts and nuts.

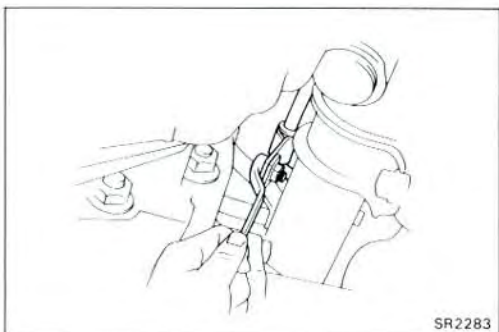


- (c) Pull out the propeller shaft and insert SST.
SST 09325-20010



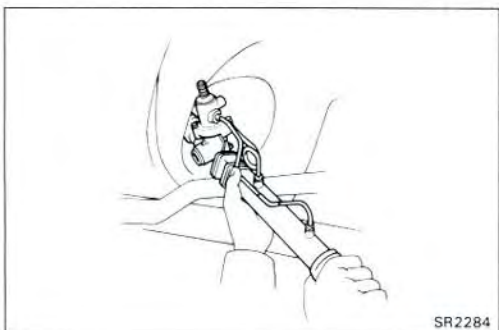
5. DISCONNECT STABILIZER BAR RH

- (a) Remove the stabilizer bar bracket RH.
(b) Disconnect the stabilizer link from the lower arm.



6. REMOVE GEAR HOUSING

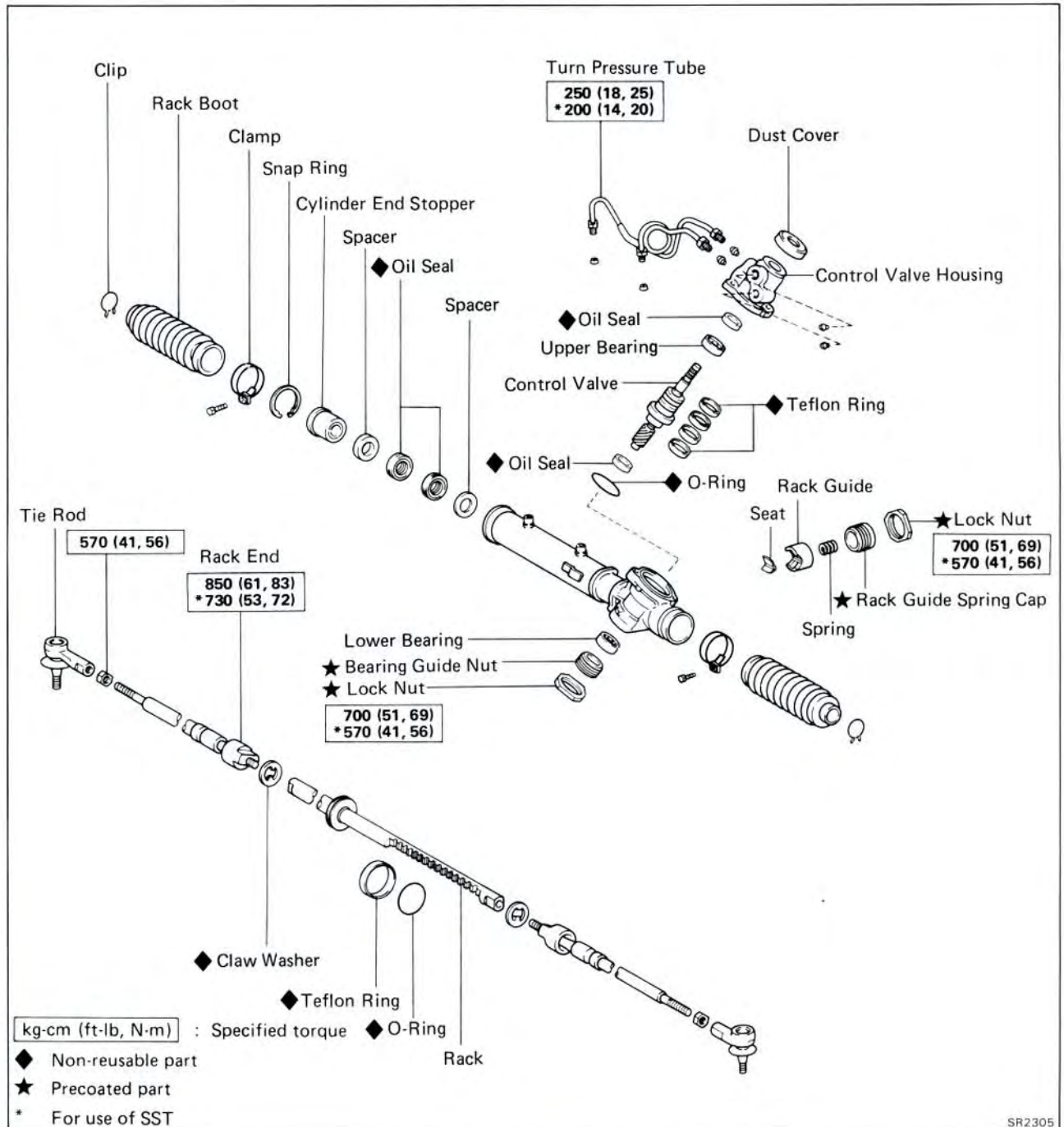
- (a) Remove the two bolts, two nuts and the two bracket.
(b) Remove the PS tube clamp bolt.
(c) Move the gear housing to the right side.



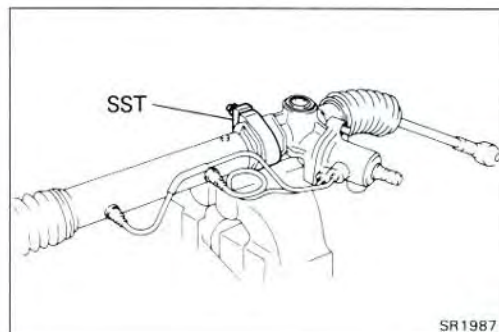
- (d) Remove the gear housing.

7. AFTER INSTALLING GEAR HOUSING CHECK TOE-IN (See page FA-3)

COMPONENTS



SR2305

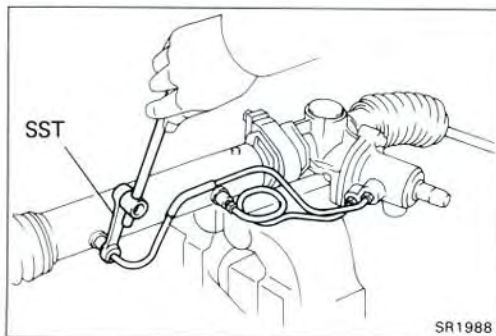


SR1987

DISASSEMBLY OF GEAR HOUSING

1. CLAMP GEAR HOUSING IN VISE

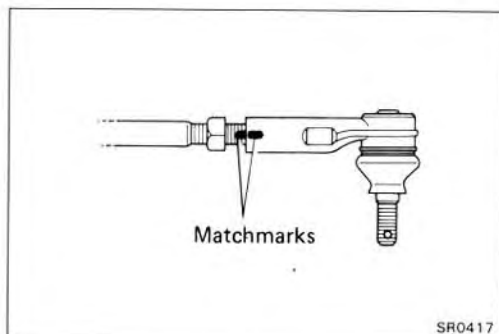
NOTE: Using SST, secure the steering gear in a vise.
SST 09612-00012



2. REMOVE RIGHT AND LEFT TURN PRESSURE TUBES

Using SST, remove the pressure tubes.

SST 09633-00020



3. REMOVE TIE ROD

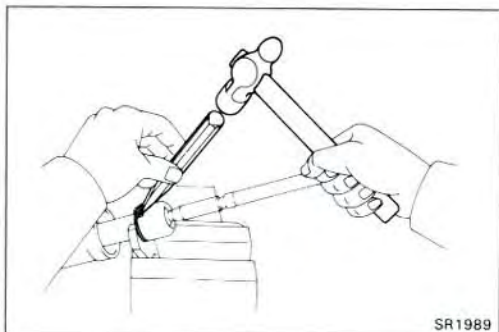
(a) Loosen the lock nut and place matchmarks on the tie rod and rack end.

(b) Remove the tie rod and lock nut.

4. REMOVE RACK BOOTS

(a) Remove the clips and clamps.

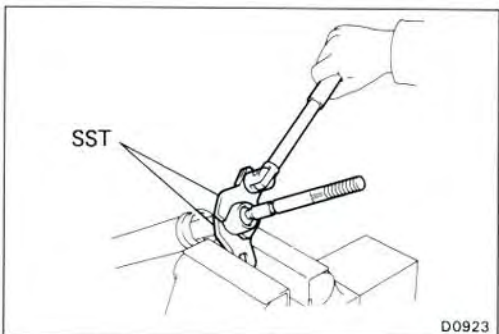
(b) Remove the rack boots.



5. REMOVE RACK ENDS AND CLAW WASHERS

(a) Unstake the claw washer.

CAUTION: Avoid any impact to the rack.



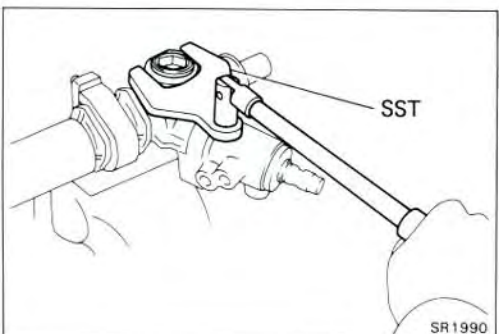
(b) Using SST, remove the rack ends.

SST 09612-10093 (09628-10020)

09612-24013 (09617-24010)

(c) Mark the left and right rack ends accordingly.

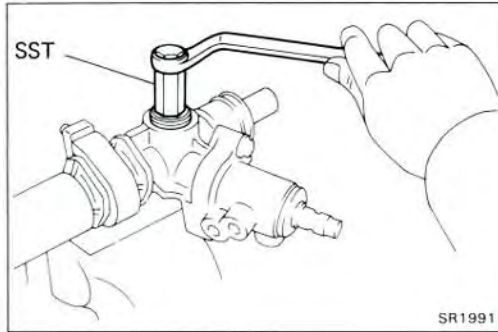
(d) Remove the claw washer.



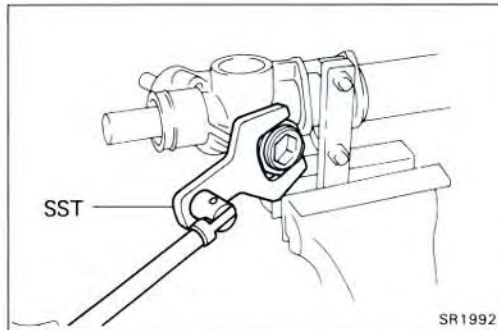
6. REMOVE RACK GUIDE SPRING CAP LOCK NUT

Using SST, remove the rack guide spring cap lock nut.

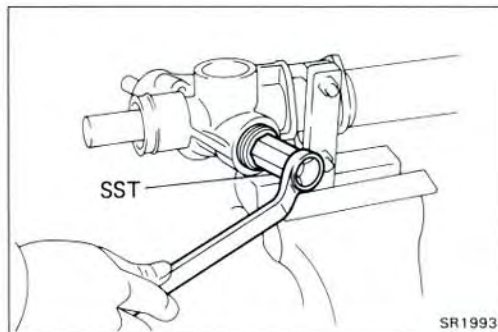
SST 09612-24013 (09617-24020)

**7. REMOVE RACK GUIDE SPRING CAP**

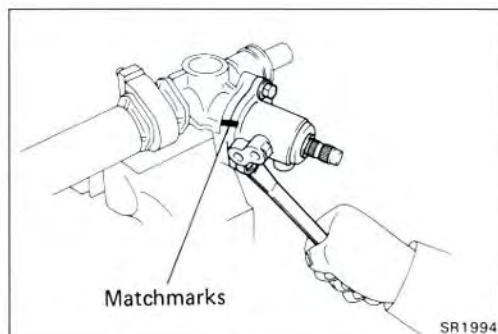
Using SST, remove the rack guide spring cap.
SST 09612-24013 (09612-10022)

8. REMOVE RACK GUIDE SPRING, RACK GUIDE AND SEAT**9. REMOVE BEARING GUIDE LOCK NUT**

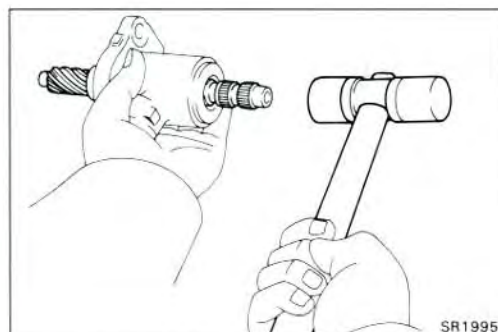
Using SST, remove the lock nut.
SST 09612-24013 (09617-24020)

**10. REMOVE BEARING GUIDE NUT**

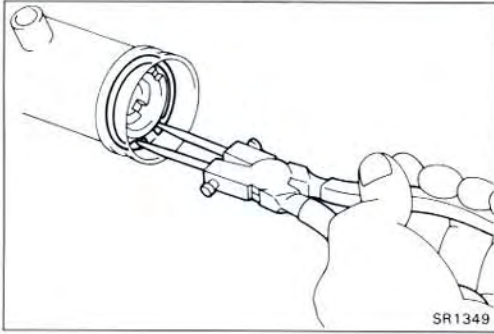
Using SST, remove the bearing guide nut.
SST 09612-24013 (09612-10022)

11. REMOVE DUST COVER**12. REMOVE CONTROL VALVE HOUSING**

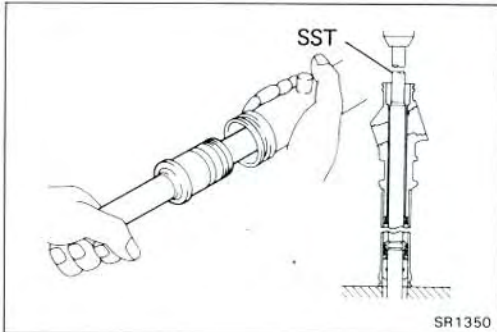
- (a) Place matchmarks on the valve housing and rack housing.
- (b) Remove the two bolts.
- (c) Pull out the valve with the valve housing.
- (d) Remove the O-ring from the rack housing.

13. REMOVE LOWER BEARING**14. REMOVE CONTROL VALVE FROM HOUSING**

Tap out the control valve.

**15. REMOVE CYLINDER END STOPPER, SPACER, OIL SEAL AND RACK**

- (a) Using snap ring pliers, remove the snap ring.

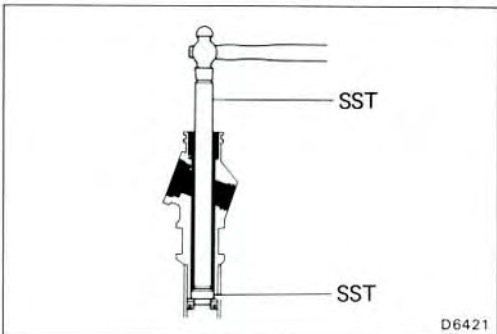


- (b) Using SST, press the cylinder end stopper until the end stopper is slightly touch to the press block.

SST 09612-24013 (09612-10061)

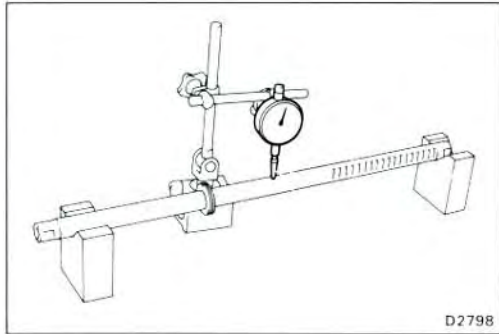
- (c) Pull out the rack with the cylinder end stopper, spacer and oil seal.

NOTE: If necessary, slightly tap the rack end with a brass bar and hammer.

**16. REMOVE CYLINDER HOUSING OIL SEAL AND SPACER**

Using SST, drive out the spacer and oil seal.

SST 09631-12020, 09631-20031

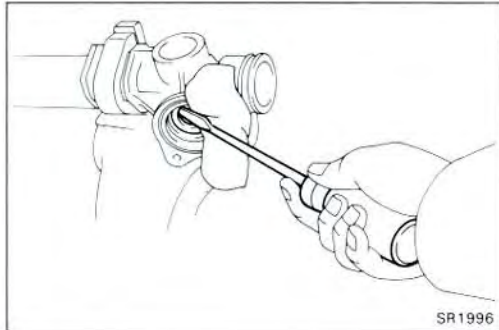


INSPECTION AND REPAIR OF GEAR HOUSING COMPONENTS

1. INSPECT RACK

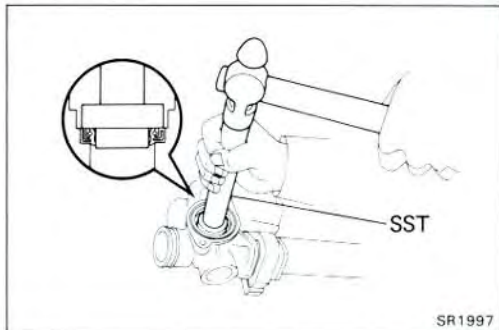
- (a) Check the rack for runout and for tooth wear or damage.
 - (b) Check the back surface for wear or damage.
- If faulty, replace it.

Maximum runout: 0.3 mm (0.012 in.)



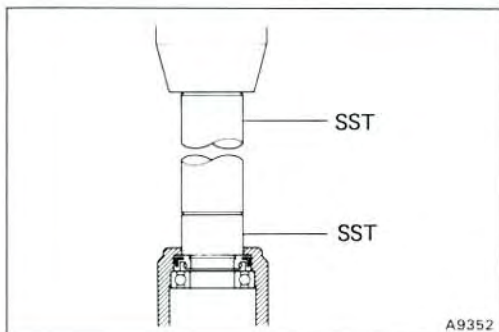
2. IF NECESSARY, REPLACE RACK HOUSING OIL SEAL

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



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

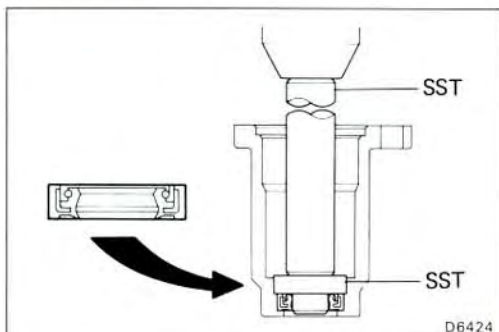
SST 09620-30010 (09624-30010, 09631-00020)



3. IF NECESSARY, REPLACE CONTROL VALVE HOUSING OIL SEAL

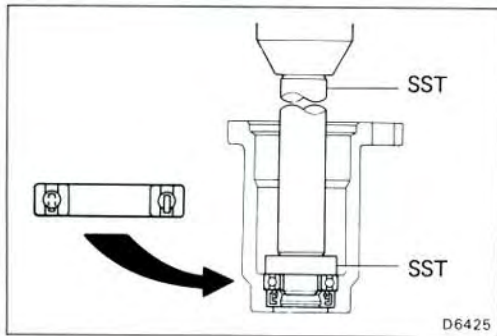
- (a) Using SST, press out the oil seal with bearing.

SST 09630-24013 (09620-24010), 09631-12020



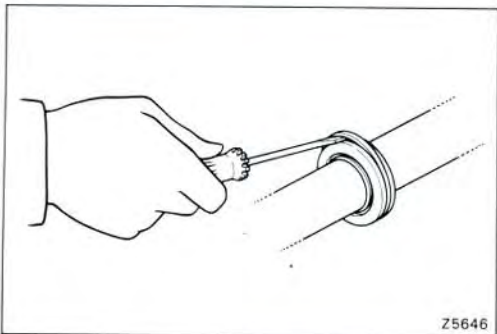
- (b) Using SST, press in a new oil seal.

SST 09630-24013 (09620-24020), 09631-12020



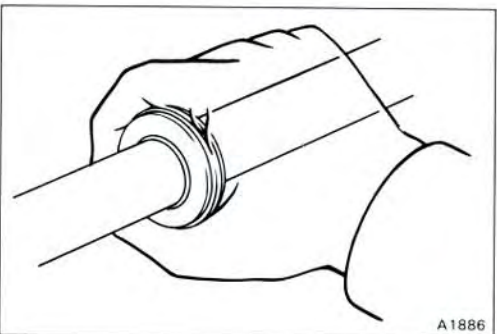
(c) Using SST, press in a new bearing.

SST 09630-24013 (09620-24030), 09631-12020

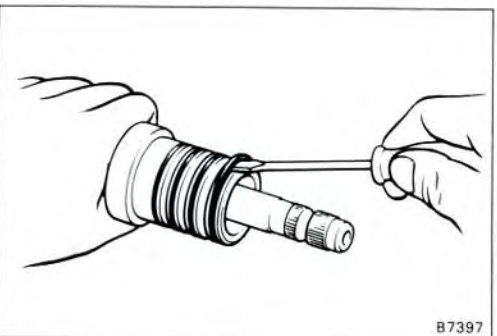


4. IF NECESSARY, REPLACE TEFLON RING AND O-RING

(a) Remove the teflon ring and O-ring.



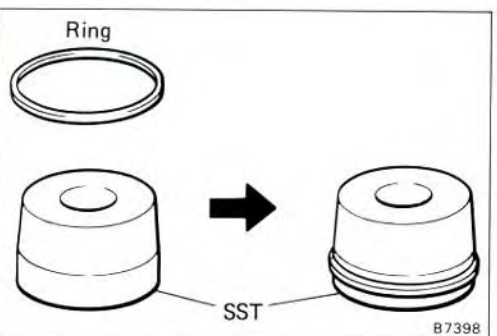
(b) Coat the teflon ring with power steering fluid and snug it down with your fingers.



5. IF NECESSARY, REPLACE CONTROL VALVE TEFLON RING

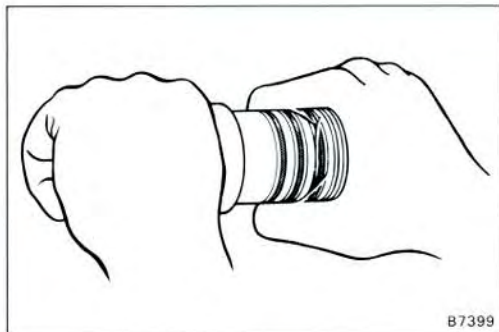
(a) Using a screwdriver, remove the teflon ring.

CAUTION: Be careful not to damage the control valve.

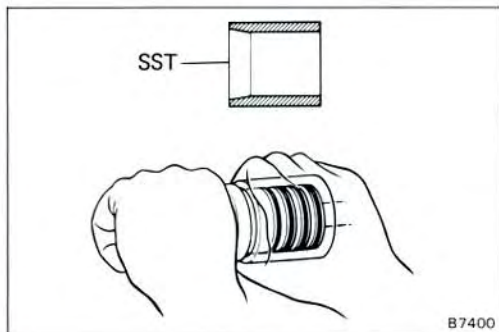


(b) Install a new teflon ring to SST and expand it.

SST 09631-20070



- (c) Install the expanded teflon rings to the control valve and snug it down with your fingers.



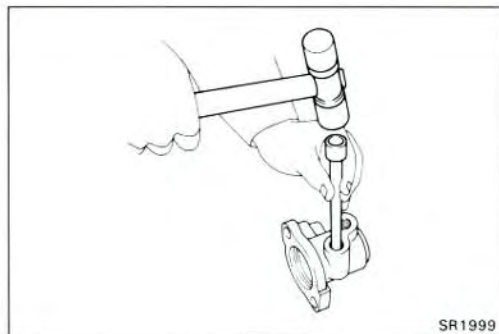
- (d) Coat the teflon ring with power steering fluid, and carefully slide the tapered end of SST over the teflon ring to seat the ring.

SST 09631-20081



6. IF NECESSARY, REPLACE UNION SEAT

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

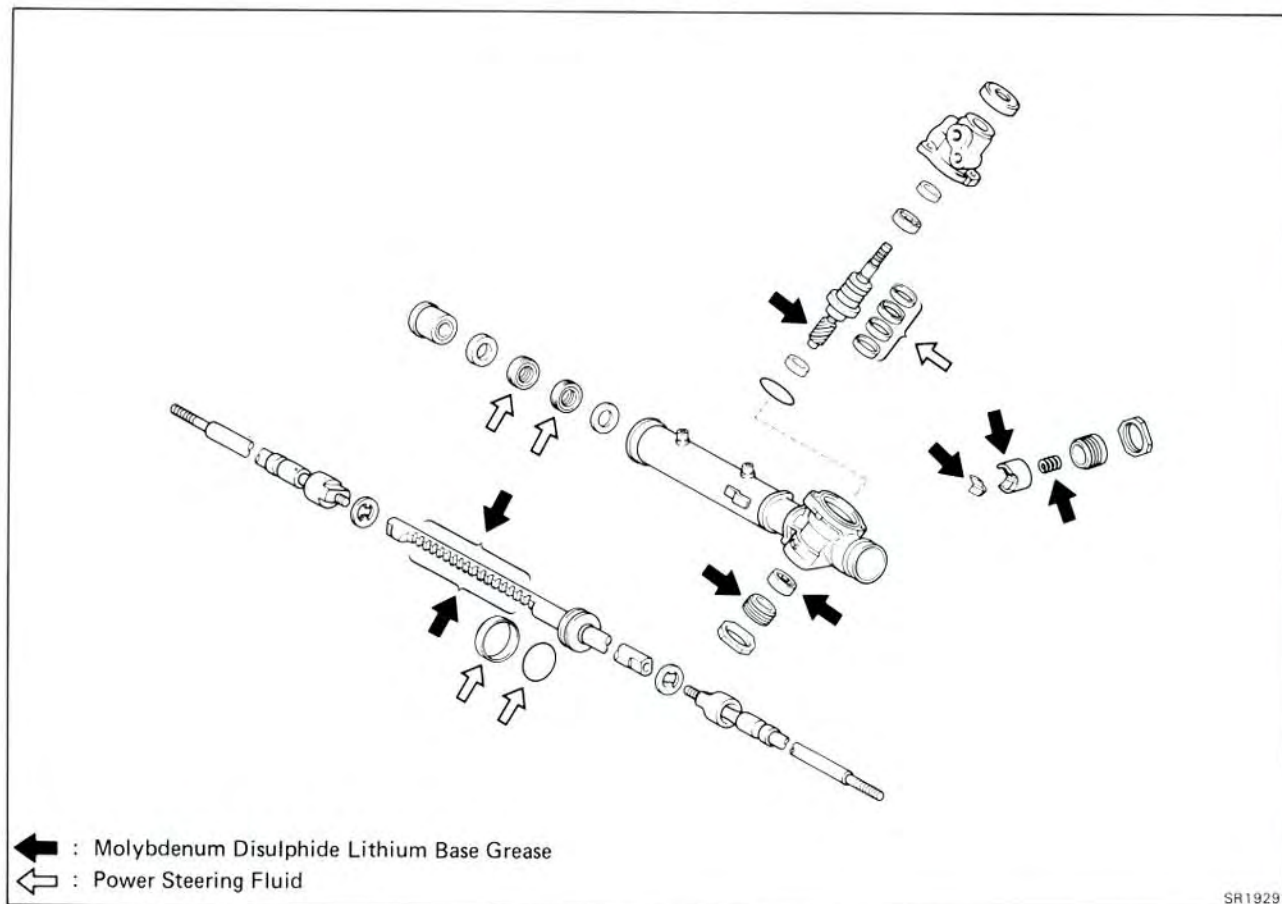


- (b) Using a plastic hammer and extension bar, tap in a new union seat.

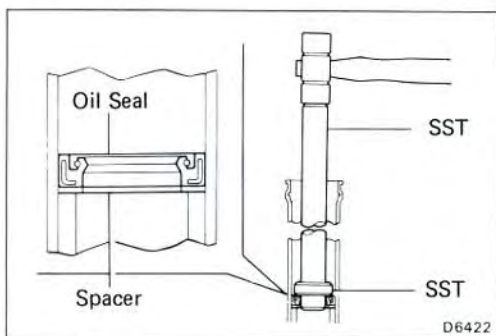
ASSEMBLY OF GEAR HOUSING

(See page SR-7)

1. COAT POWER STEERING FLUID OR GREASE ON FOLLOWING PARTS:



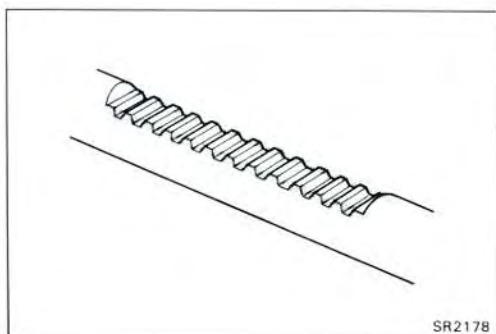
SR1929



2. INSTALL CYLINDER HOUSING OIL SEAL AND SPACER

Install a new oil seal and spacer to SST, and drive in it with a plastic hammer.

SST 09631-12020, 09631-32010

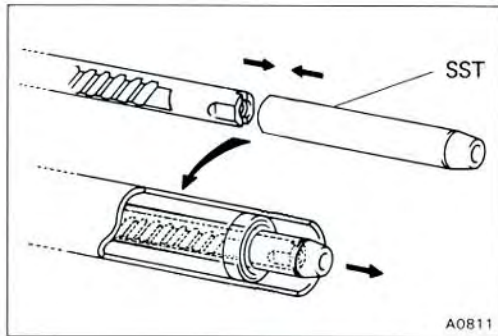


3. INSTALL RACK

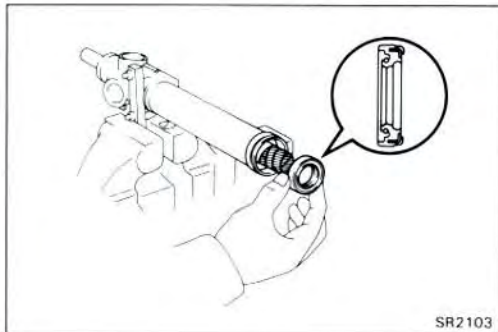
(a) Install SST to the rack.

NOTE: If necessary, scrape the burrs off the rack teeth end and burnish.

SST 09631-20051

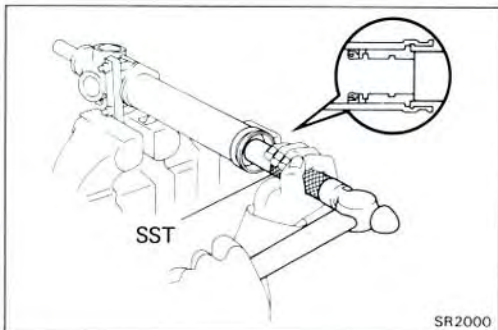


- (b) Coat SST with power steering fluid.
- (c) Insert the rack into the cylinder.
- (d) Remove SST.

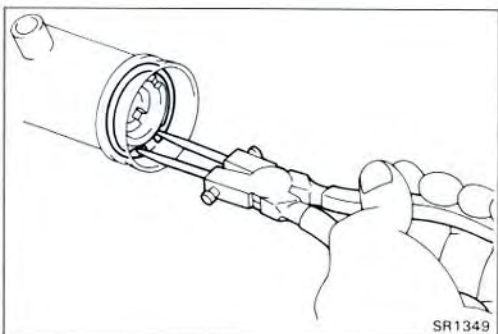


4. INSTALL CYLINDER END STOPPER, OIL SEAL AND SPACER

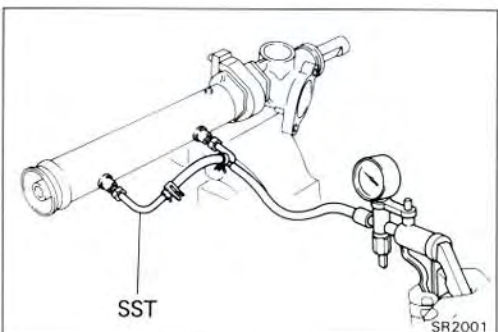
- (a) To prevent oil seal lip damage, wind vinyl tape on the steering rack end, and apply power steering fluid.
- (b) Install the oil seal by pushing into the cylinder in the direction shown in drawing, without tilting.



- (c) Install the spacer and cylinder end stopper.
- (d) Using SST, drive in the cylinder end stopper.
SST 09612-22011

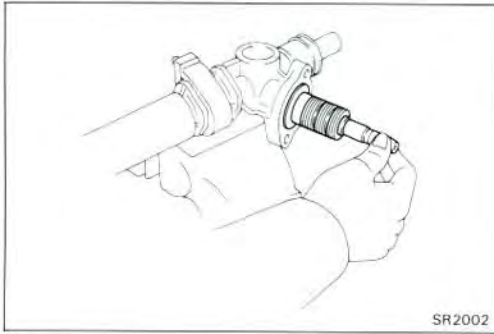


- (e) Using snap ring pliers, install the snap ring.



5. AIR TIGHTNESS TEST

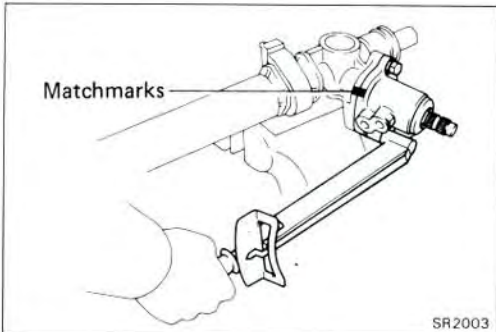
- (a) Install SST to the union of the cylinder housing.
SST 09631-12070
- (b) Apply 400 mmHg (15.75 in.Hg, 53.3 kPa) of vacuum for about 30 seconds.
- (c) Check that there is no change in the vacuum.



SR2002

6. INSTALL CONTROL VALVE

- (a) Coat the teflon ring with power steering fluid.
- (b) Push the control valve into the housing.

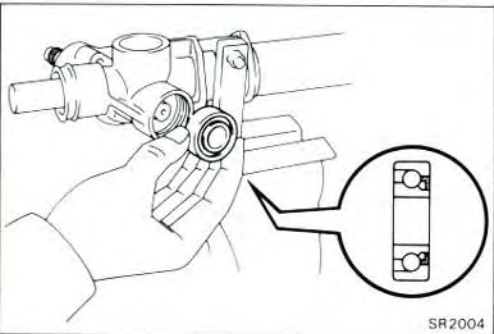


SR2003

7. INSTALL CONTROL VALVE HOUSING

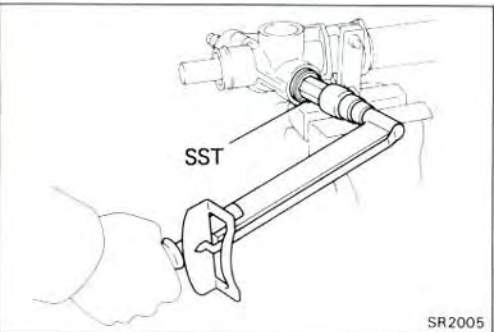
- (a) Align the marks on the valve housing and rack housing.
- (b) Torque the two bolts.

Torque: 315 kg-cm (23 ft-lb, 31 N·m)



SR2004

8. INSTALL CONTROL VALVE LOWER BEARING



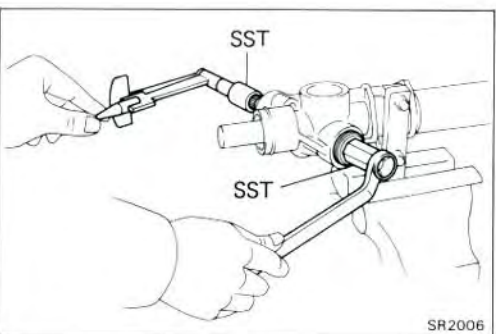
SR2005

9. INSTALL BEARING GUIDE NUT

- (a) Apply liquid sealer to 2 or 3 threads of the bolt end.
Sealant: Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

- (b) Using SST, torque the bearing guide nut.
SST 09612-24013 (09612-10022)

Torque: 150 kg-cm (11 ft-lb, 15 N·m)

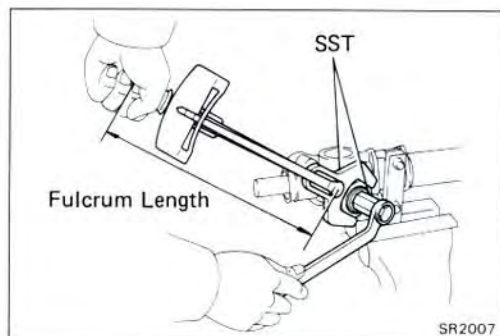


SR2006

- (c) Using SST and torque meter, loosen the bearing guide nut until the preload is within specification.

SST 09612-24013 (09612-10022), 09616-00010

Preload (turning): 4.5 — 6.5 kg-cm
(3.9 — 5.6 in.-lb, 0.4 — 0.6 N·m)

**10. INSTALL BEARING GUIDE LOCK NUT**

(a) Apply liquid sealer to 2 or 3 threads of the lock nut.

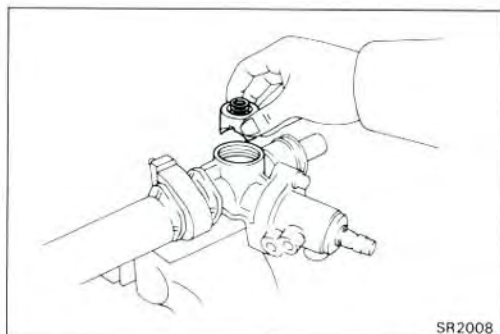
Sealant: Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

(b) Using SST, install and torque the lock nut.

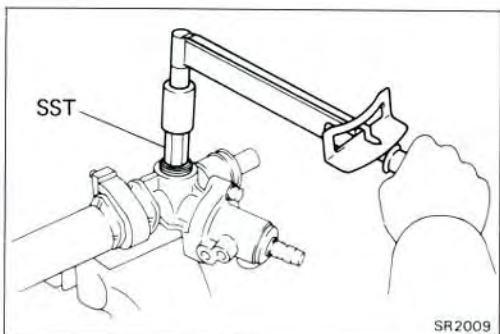
SST 09612-24013 (09612-10022, 09617-24020)

Torque: 570 kg-cm (41 ft-lb, 56 N·m)

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

**11. INSTALL RACK GUIDE SEAT, RACK GUIDE AND RACK GUIDE SPRING**

Install the rack guide with the seat and spring.

**12. ADJUST TOTAL PRELOAD**

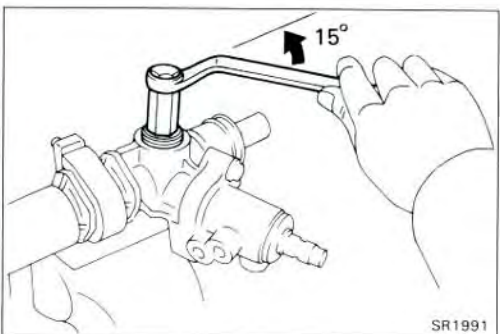
(a) Apply liquid sealer to 2 or 3 threads of the spring cap.

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

(b) Using SST, install and torque the spring cap.

SST 09612-24013 (09612-10022)

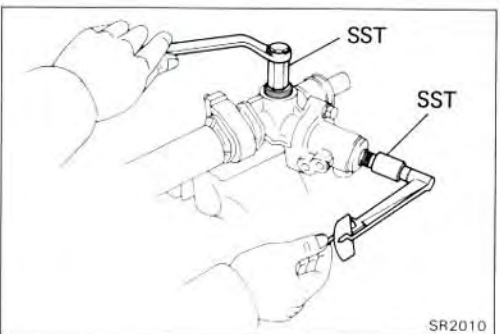
Torque: 250 kg-cm (18 ft-lb, 25 N·m)



(c) Using SST, return the rack guide spring cap 15°.

(d) Turn the control valve shaft right and left one or two times.

(e) Loosen the spring cap until the rack guide compression spring is not functioning.

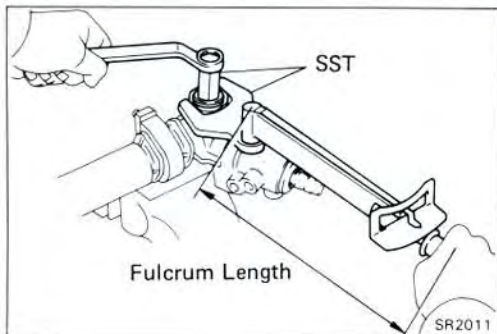


(f) Using SST and a torque meter, tighten the rack guide spring cap until the preload is within specification.

SST 09612-24013 (09612-10022), 09616-00010

Preload (turning): 9 — 12 kg-cm

(7.8 — 10.4 in.-lb, 0.9 — 1.2 N·m)

**13. INSTALL RACK GUIDE SPRING CAP LOCK NUT**

- (a) Apply liquid sealer to 2 or 3 threads of the lock nut.

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

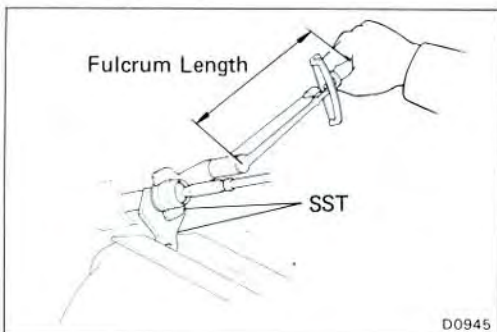
- (b) Using SST, install and torque the lock nut.

SST 09612-24013 (09612-10022, 09617-24020)

Torque: 570 kg-cm (41 ft-lb, 56 N·m)

NOTE: Use a torque wrench with a fulcrum length of 340 mm (13.39 in.).

- (c) Recheck the total preload.

**14. INSTALL DUST COVER****15. INSTALL CLAW WASHER AND RACK END**

- (a) Install a new claw washer.

- (b) Using SST, install and torque the rack end.

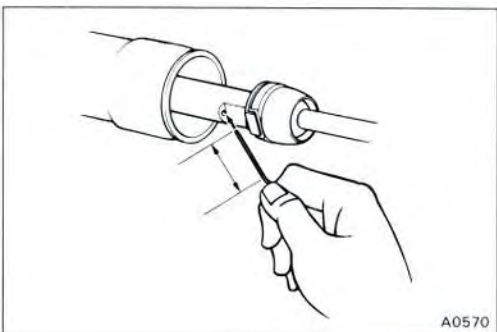
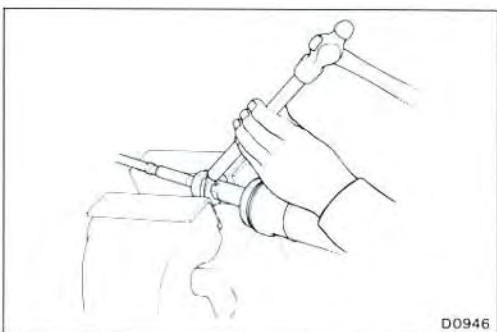
SST 09612-10093 (09628-10020)

09612-24013 (09617-24010)

Torque: 730 kg-cm (53 ft-lb, 72 N·m)

NOTE: Use a torque wrench with a fulcrum length of 340 mm (13.39 in.).

- (c) Using a brass bar and hammer, stake the claw washer.

**16. INSTALL RACK BOOTS, CLAMPS AND CLIPS**

- (a) Insure that the tube hole is not clogged with grease.

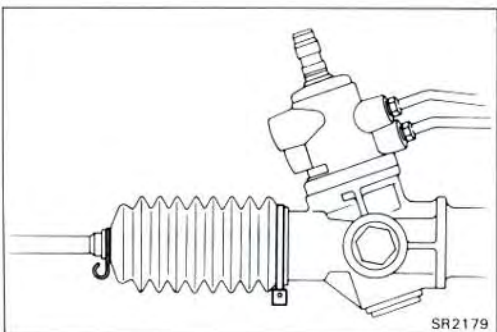
NOTE: If the tube hole is clogged, the pressure inside the boot will change after it is assembled and the steering wheel turned.

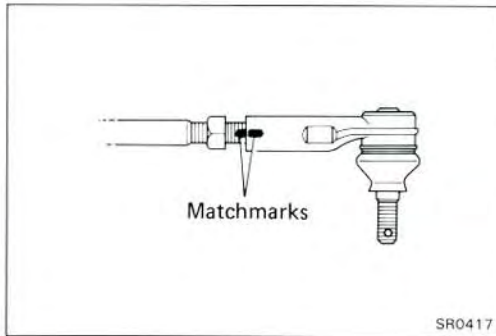
- (b) Install the boots.

NOTE: Be careful not to damage or twist the boots.

- (c) Install the clamps.

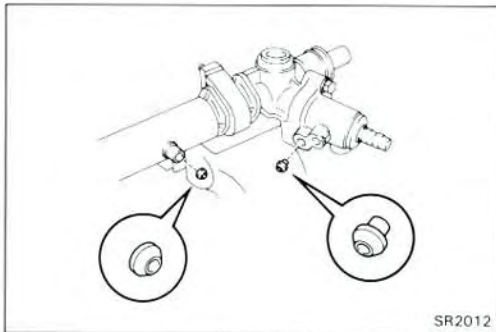
- (d) Install the clips with the ends facing outward.



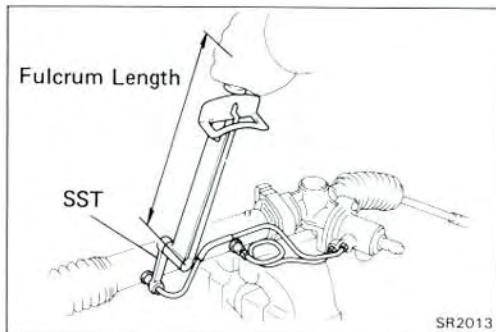
**17. INSTALL TIE RODS**

- (a) Screw the lock nuts and tie rods onto the rack ends until the matchmarks are aligned.
- (b) After adjusting toe-in, torque the lock nut.

Torque: 570 kg-cm(41 ft-lb, 56 N·m)

**18. INSTALL RIGHT AND LEFT TURN PRESSURE TUBES**

- (a) Install new union seats as shown.



- (b) Using SST, install and torque the tubes.

SST 09633-00020

Torque: 200 kg-cm (14 ft-lb, 20 N·m)

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