

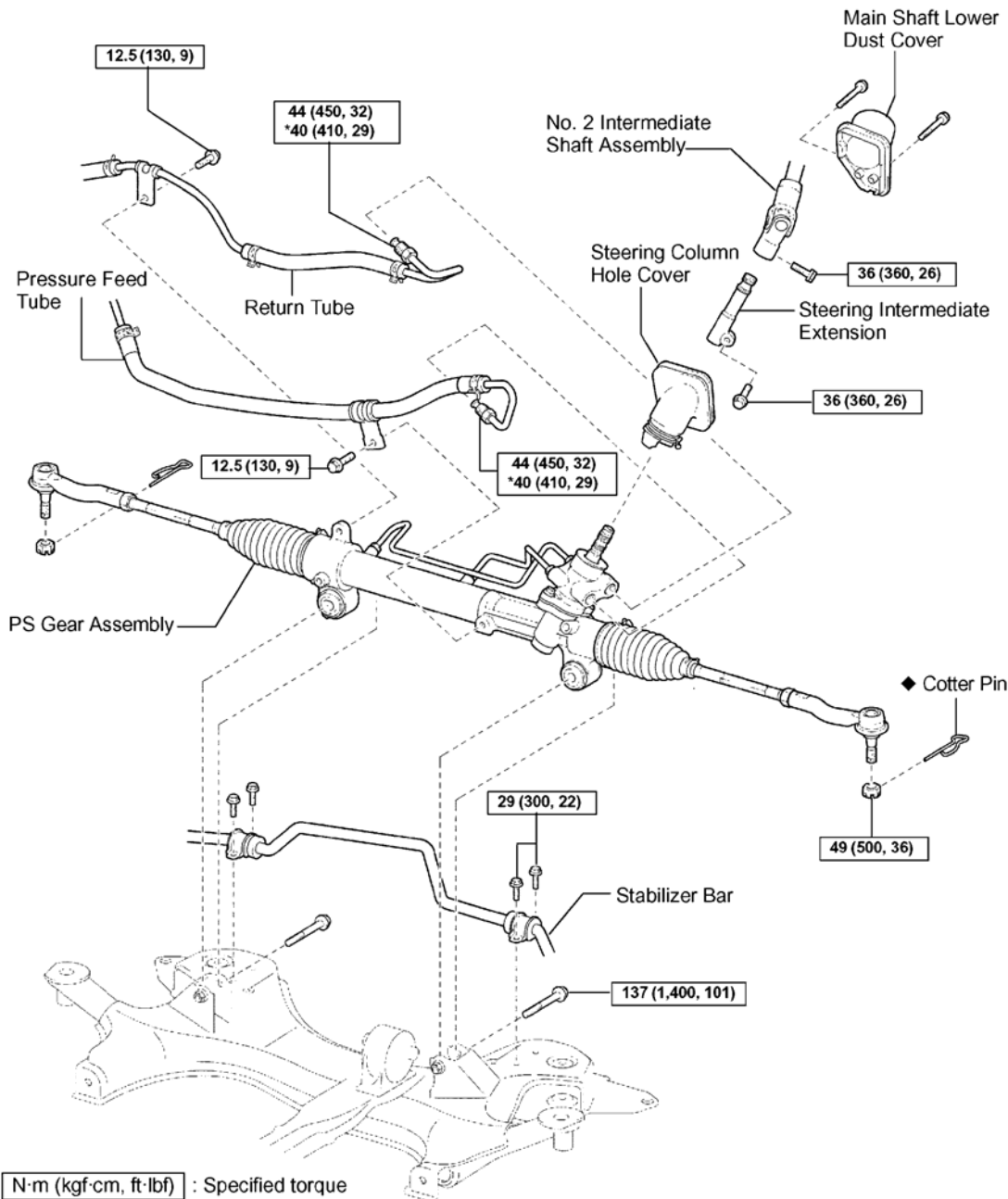
2004 Toyota RAV4

2004 STEERING Power Steering Gear - RAV4

2004 STEERING

Power Steering Gear - RAV4

COMPONENTS

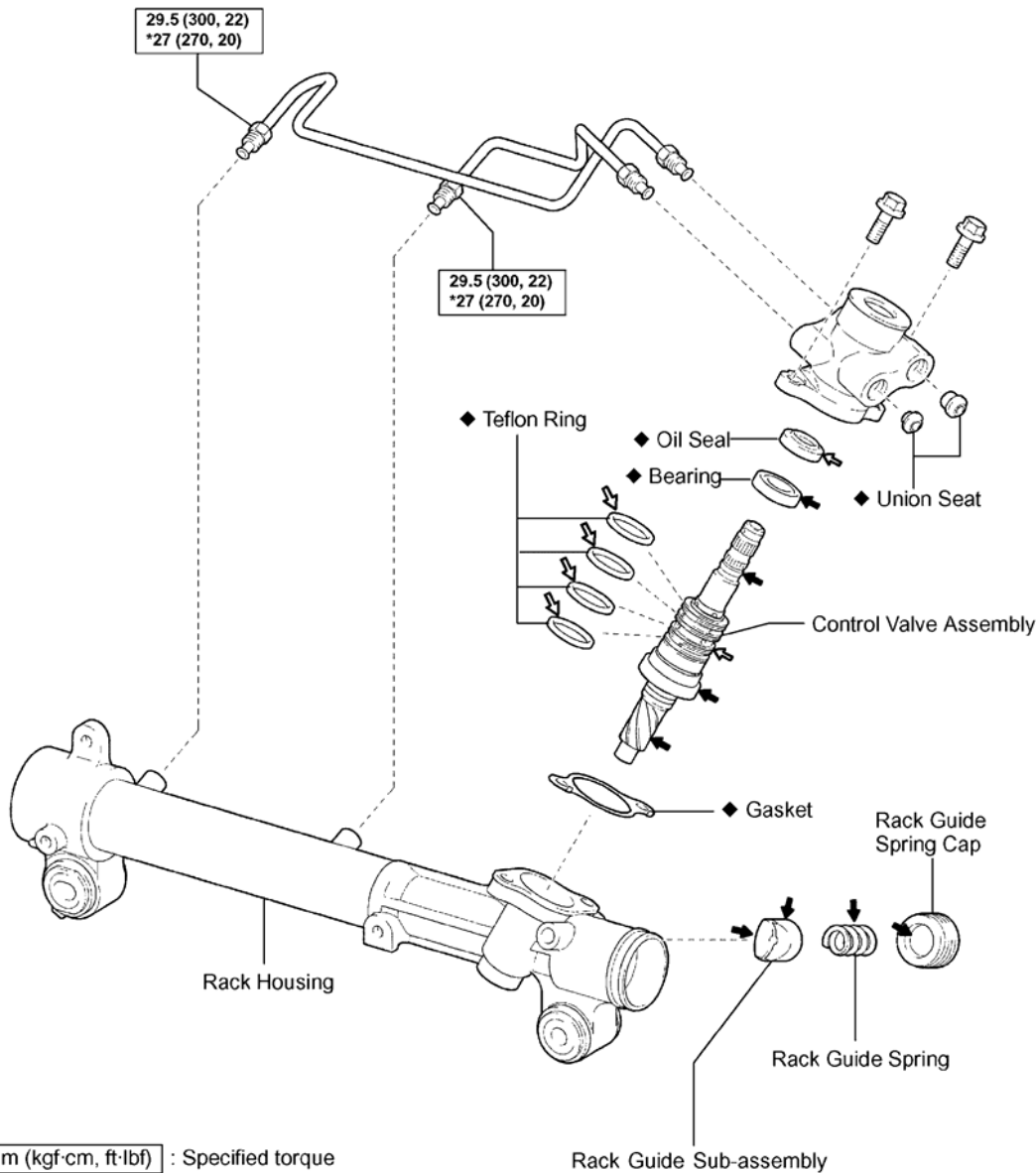


2004 Toyota RAV4

2004 STEERING Power Steering Gear - RAV4

Fig. 1: Identifying Power Steering Gear Components (1 Of 3)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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

◆ Non-reusable part

P Molybdenum disulfide lithium base grease

⇐ Power steering fluid

* For use with SST

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Fig. 2: Identifying Power Steering Gear Components (2 Of 3)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2004 STEERING Power Steering Gear - RAV4

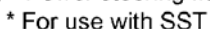


Fig. 3: Identifying Power Steering Gear Components (3 Of 3)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

NOTE: Remove the steering wheel assembly before the steering gear removal, because there is possibility of breaking of the spiral cable.

1. **PLACE FRONT WHEELS FACING STRAIGHT AHEAD**
2. **REMOVE STEERING WHEEL PAD (See REMOVAL)**
3. **REMOVE STEERING WHEEL (See REMOVAL)**
4. **DISCONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY (See REMOVAL)**
5. **DISCONNECT STEERING COLUMN HOLE COVER**
 - a. Loosen the clamp of the steering column hole cover.
 - b. Disconnect the steering column hole cover from the dash panel.
6. **DISCONNECT RH AND LH TIE ROD ENDS (See REMOVAL)**
7. **DISCONNECT STABILIZER BAR**

Remove the 4 bolts and disconnect the stabilizer bar.

HINT:

Do not remove the stabilizer bar.

8. **DISCONNECT PRESSURE FEED AND RETURN TUBES**
 - a. Using SST, disconnect the pressure feed and return tubes from the P/S gear.

SST 09023-12700
 - b. Remove the 2 bolts and disconnect the pressure feed and return tube from the P/S gear.

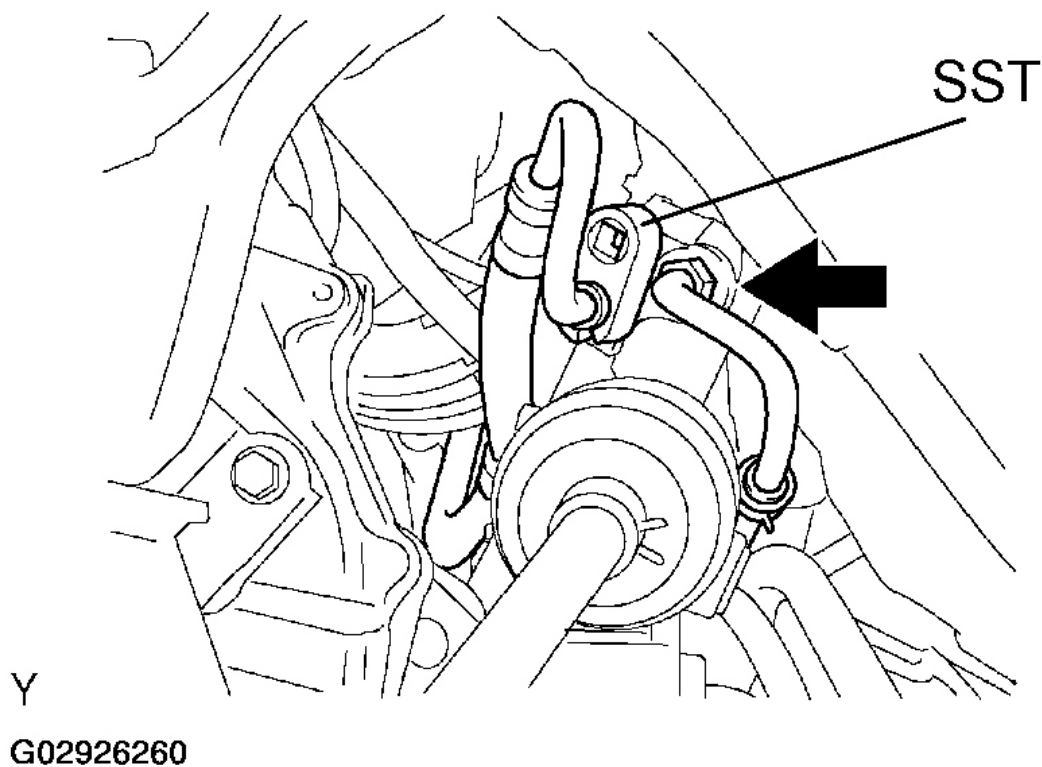


Fig. 4: Disconnecting Pressure Feed And Return Tubes Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. REMOVE P/S GEAR ASSEMBLY

- a. Remove the 2 P/S gear assembly mounting bolts.
- b. Remove the steering column hole cover and clamp.
- c. Place matchmarks on the steering intermediate extension and control valve shaft.
- d. Remove bolt and steering intermediate extension.
- e. Remove the P/S gear assembly.

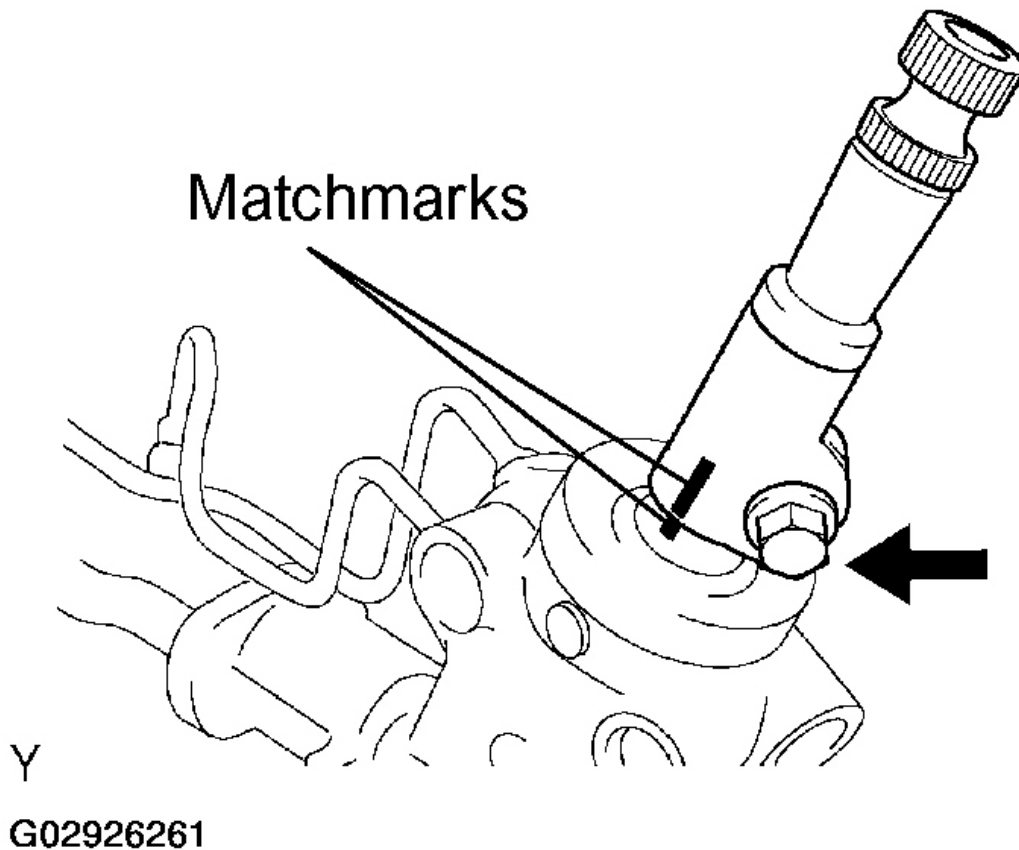


Fig. 5: Removing P/S Gear Assembly

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Do not damage the turn pressure tubes.

DISASSEMBLY

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

1. REMOVE TURN PRESSURE TUBES

Using SST, remove the 2 turn pressure tubes. SST 09023-38200

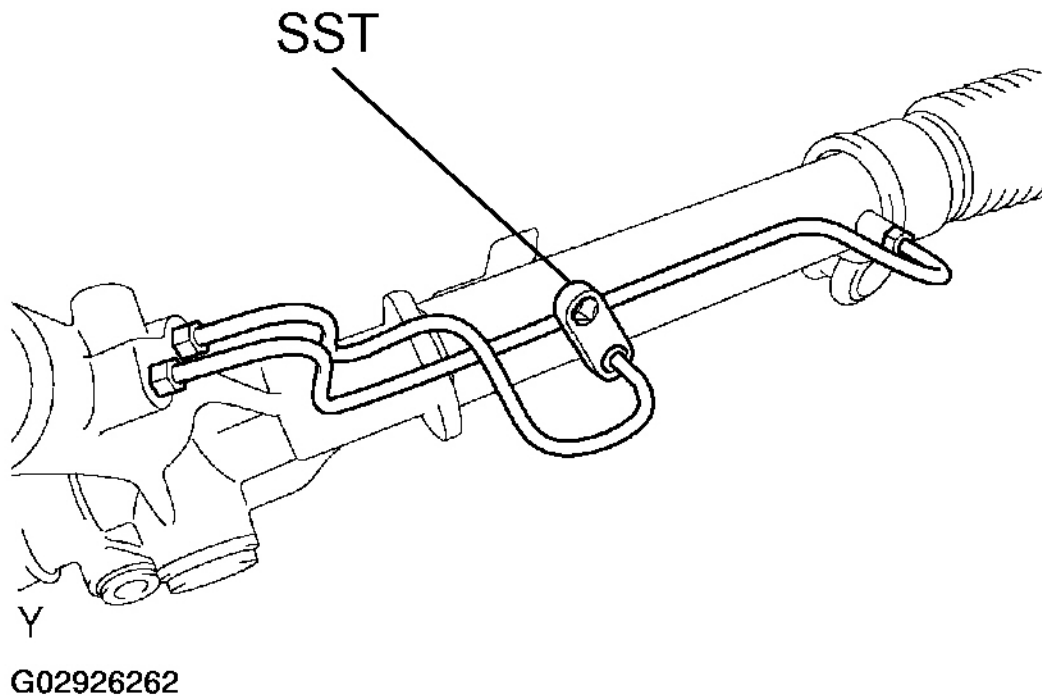


Fig. 6: Removing Turn Pressure Tube Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. SECURE P/S GEAR ASSEMBLY IN VISE

Using SST, secure the P/S gear assembly in a vise. SST 09612-00012

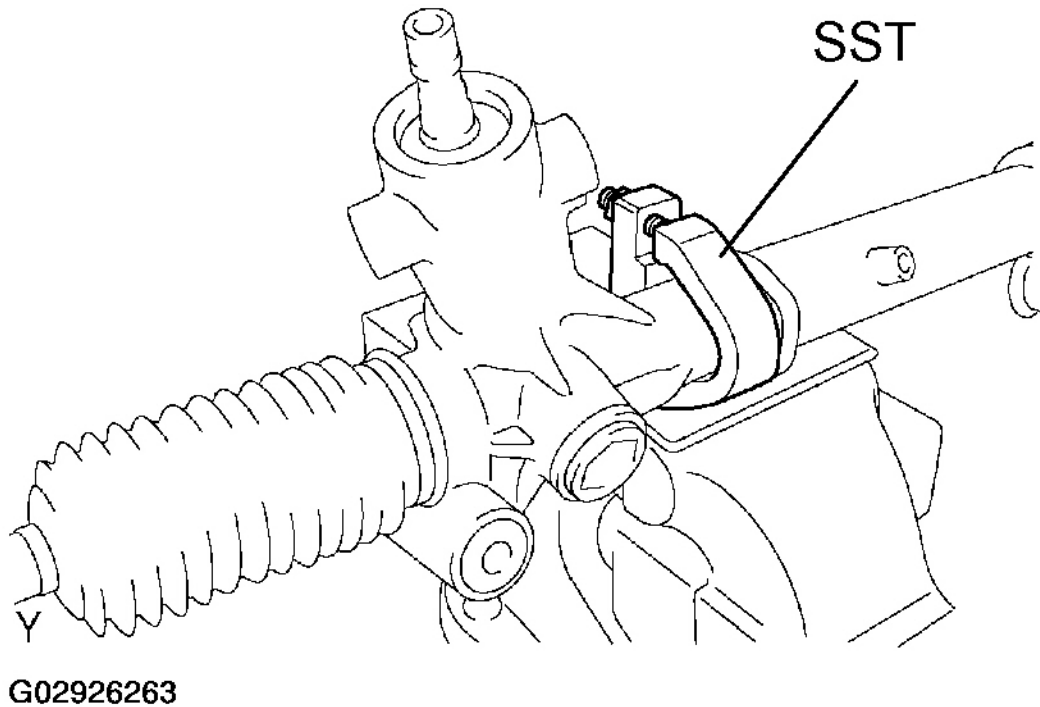


Fig. 7: Securing P/S Gear Assembly In Vise Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. REMOVE RH AND LH TIE ROD ENDS AND LOCK NUTS

- a. Place matchmarks on the tie rod end and rack end.
- b. Loosen the lock nut, and remove the tie rod end and lock nut.
- c. Employ the same manner described above to the other side.

HINT:

Mark the RH and LH tie rod ends and lock nuts.

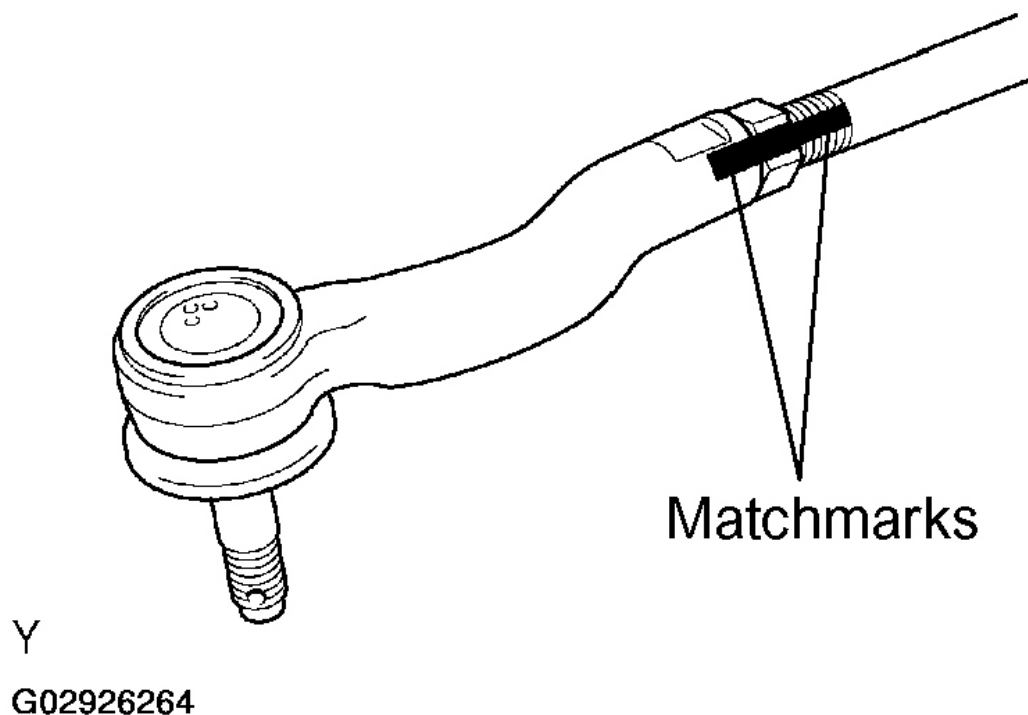


Fig. 8: Marking RH & LH Tie Rod Ends & Lock Nuts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. REMOVE RH AND LH CLIPS, CLAMPS AND RACK BOOTS

- a. Loosen the clamp screw.
- b. Remove the clip, clamp and rack boot.

NOTE: Be careful not to damage the boot.

- c. Employ the same manner described above to the other side.

HINT:

Mark the RH and LH rack boots.

5. REMOVE RH AND LH RACK ENDS AND CLAW WASHERS

- a. Using a screwdriver and a hammer, unstake the claw washer.

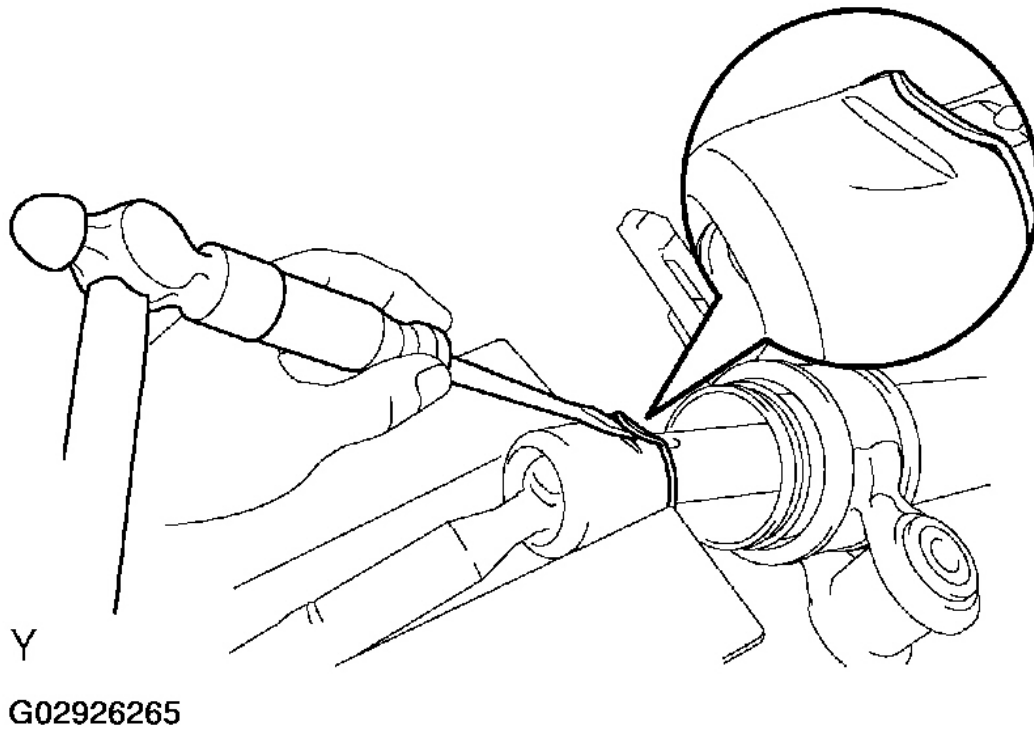


Fig. 9: Unstaking Claw Washer

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: **Avoid any impact on the steering rack.**

- b. Using SST and spanner (22 mm), remove the power steering rack and claw washer.

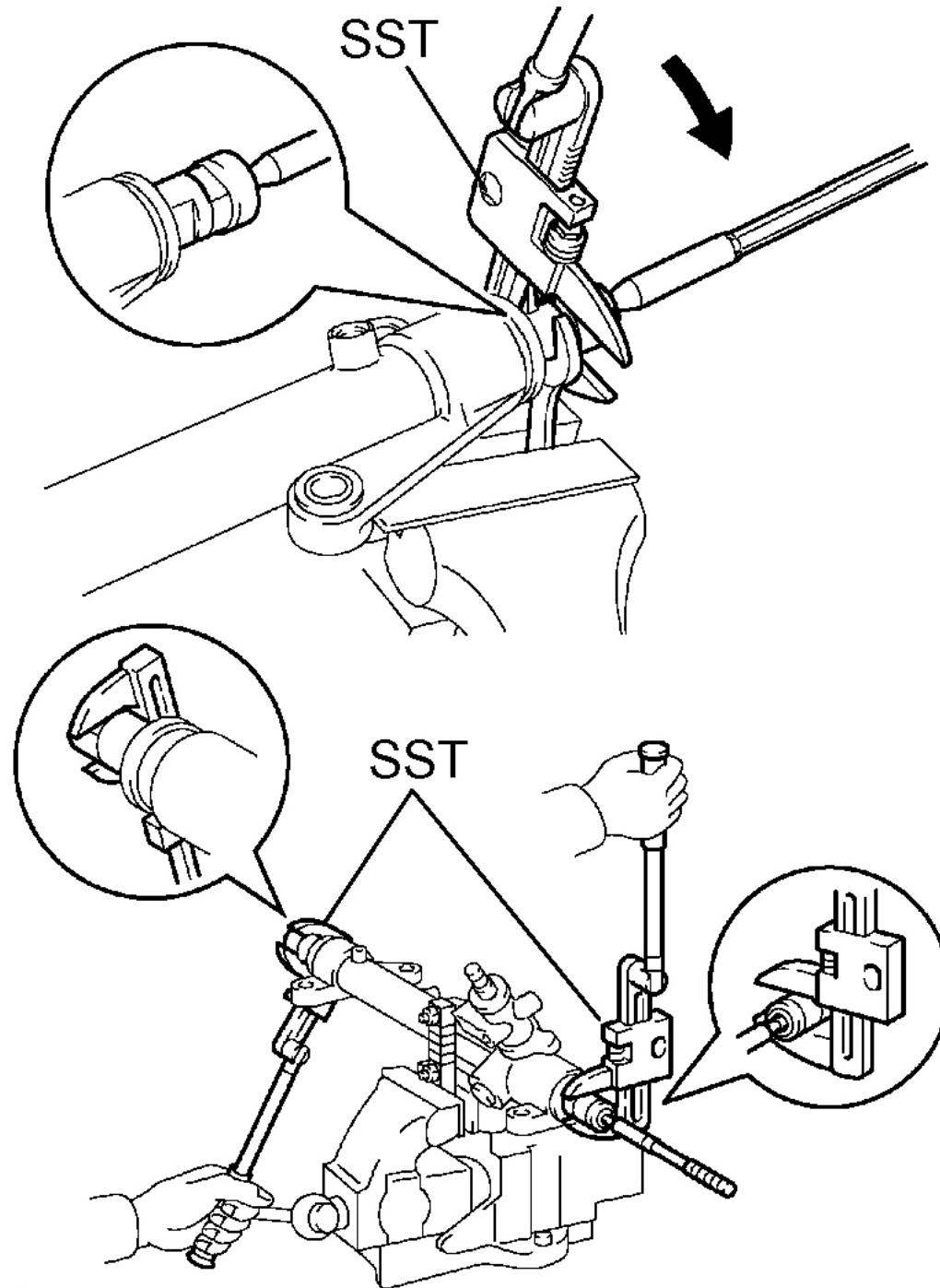
SST 09922-10010

HINT:

Using spanner, hold the steering rack to remove the rack end and claw washer.

2004 Toyota RAV4

2004 STEERING Power Steering Gear - RAV4



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Fig. 10: Removing Power Steering Rack And Claw Washer Using SST & Spanner
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Use SST 09922-10010 in the direction shown in Fig. 10 .

HINT:

Mark the RH and LH rack ends.

- c. Using 2 SST, remove the other rack end.

HINT:

Using SST, hold the power steering rack to remove the rack end and claw washer.

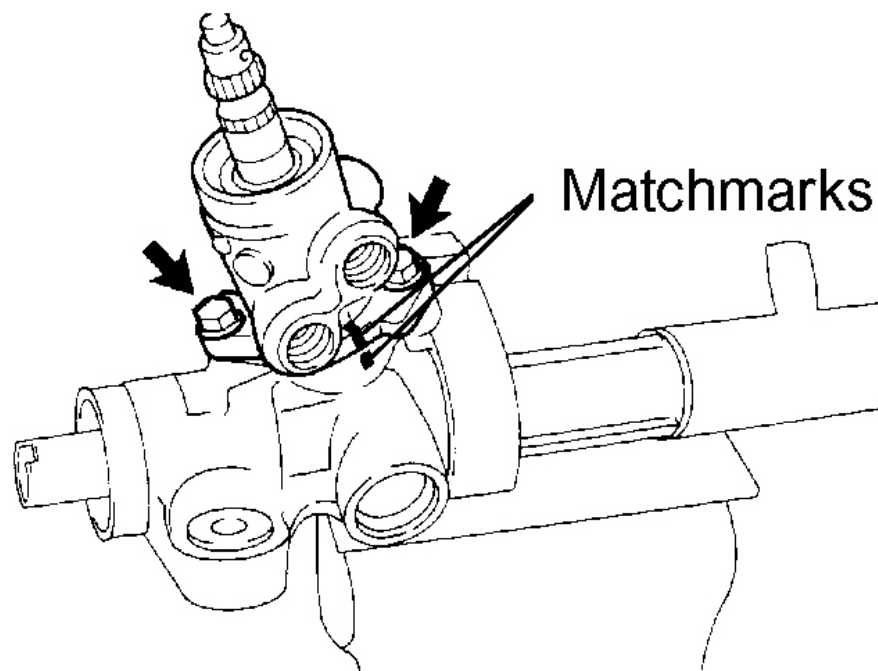
6. REMOVE RACK GUIDE

- a. Using a straight hexagon wrench 24, remove the rack guide spring cap.
- b. Remove the rack guide spring and rack guide.

7. REMOVE CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY

- a. Place matchmarks on the control valve housing and rack housing.
- b. Remove the 2 bolts.
- c. Pull out the control valve housing with control assembly.
- d. Remove the gasket

SST 09616-00011



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Fig. 11: Placing Matchmarks And Removing Control Valve And Rack Housing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. REMOVE CONTROL VALVE ASSEMBLY, UPPER OIL SEAL AND UPPER BEARING

- a. Wind vinyl tape on the control valve shaft.
- b. Press out the control valve assembly.

SST 09613-12010

NOTE:

- Be careful not to damage the oil seal lip.
 - Place a shop rag between the valve housing and the blocks.
 - Be careful not to drop the valve assembly.
- c. Remove the oil seal and bearing from the control valve assembly.

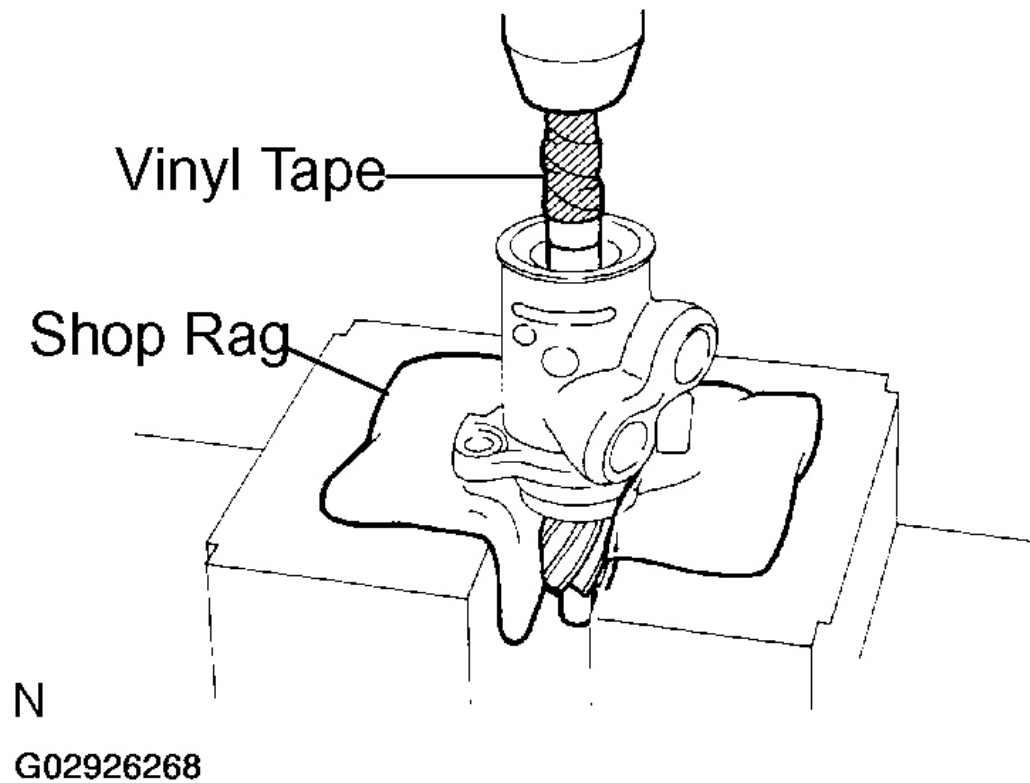


Fig. 12: Removing Control Valve Assembly, Upper Oil Seal And Upper Bearing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. REMOVE CYLINDER END STOPPER

- a. Place rack housing in vise.

NOTE: Hold the arrow part in Fig. 13 in a vice.

- b. Using SST, remove the cylinder end stopper from the rack housing.

SST 09631-20120

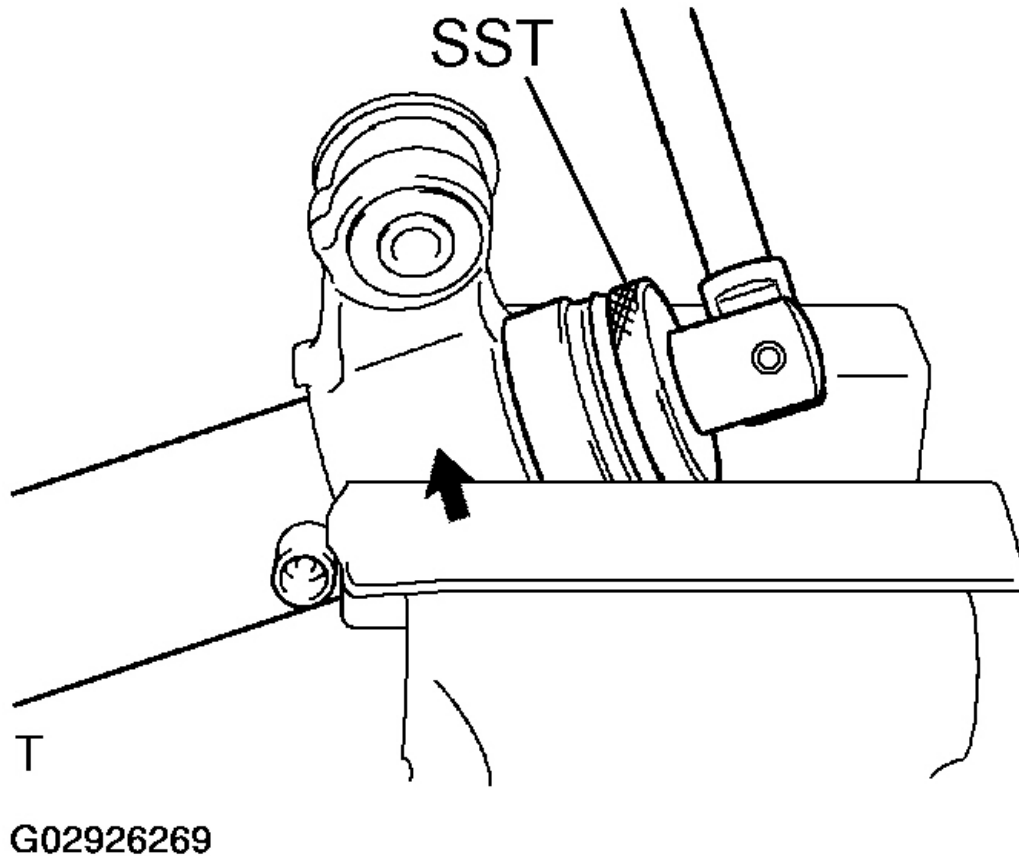


Fig. 13: Removing Cylinder End Stopper From Rack Housing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using a screwdriver, remove the O-ring from the cylinder end stopper.

NOTE: Do not damage the cylinder end stopper.

- d. Using a screwdriver, remove the rack guide bush from the cylinder end stopper.

NOTE: Do not damage the cylinder end stopper.

10. REMOVE POWER STEERING RACK

- a. Using a service bolt and press, remove the steering rack from the steering rack housing.

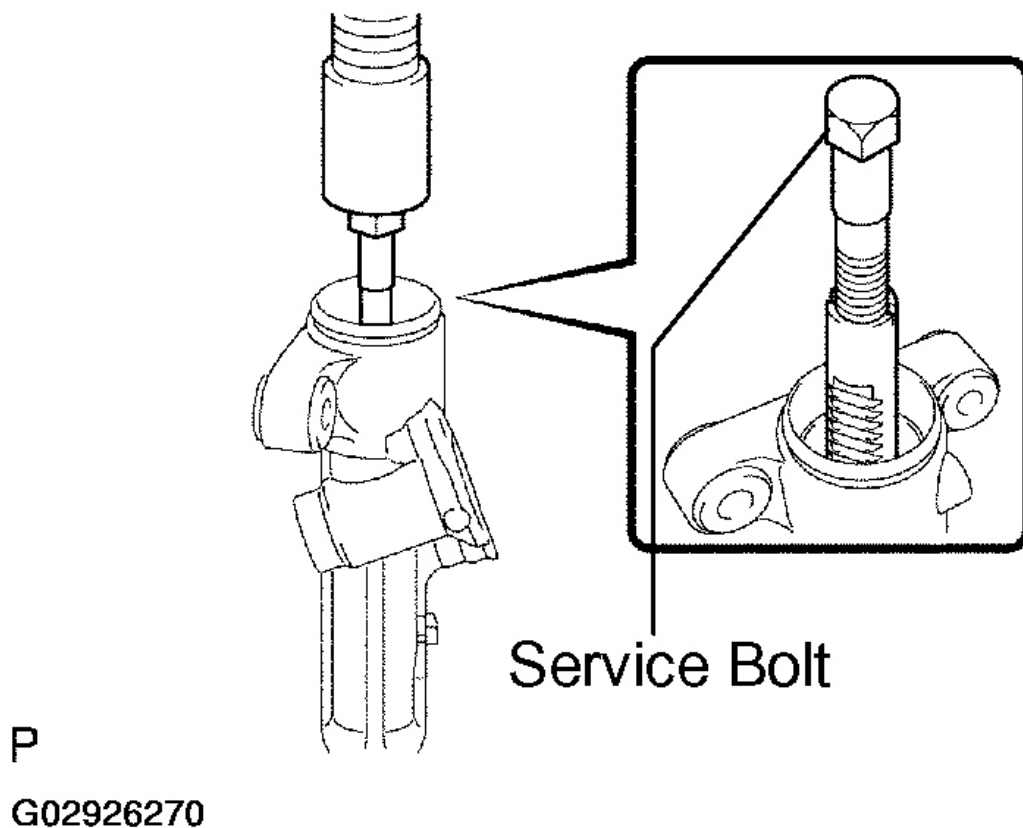


Fig. 14: Removing Steering Rack From Steering Rack Housing Using Service Bolt & Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Recommended service bolt:

RECOMMENDED SERVICE BOLT IDENTIFICATION

Thread diameter	14 mm (0.55 in.)
Thread pitch	1.5 mm (0.059 in.)

- b. Using a screwdriver, remove the power piston oil seal and power piston O-ring from the steering rack.

NOTE: Do not damage the steering rack ring groove.

- c. Remove the cylinder end stopper oil seal from the steering rack.

11. REMOVE POWER STEERING CYLINDER TUBE OIL SEAL

- a. Using needle nose pliers, remove the bush from the rack housing.

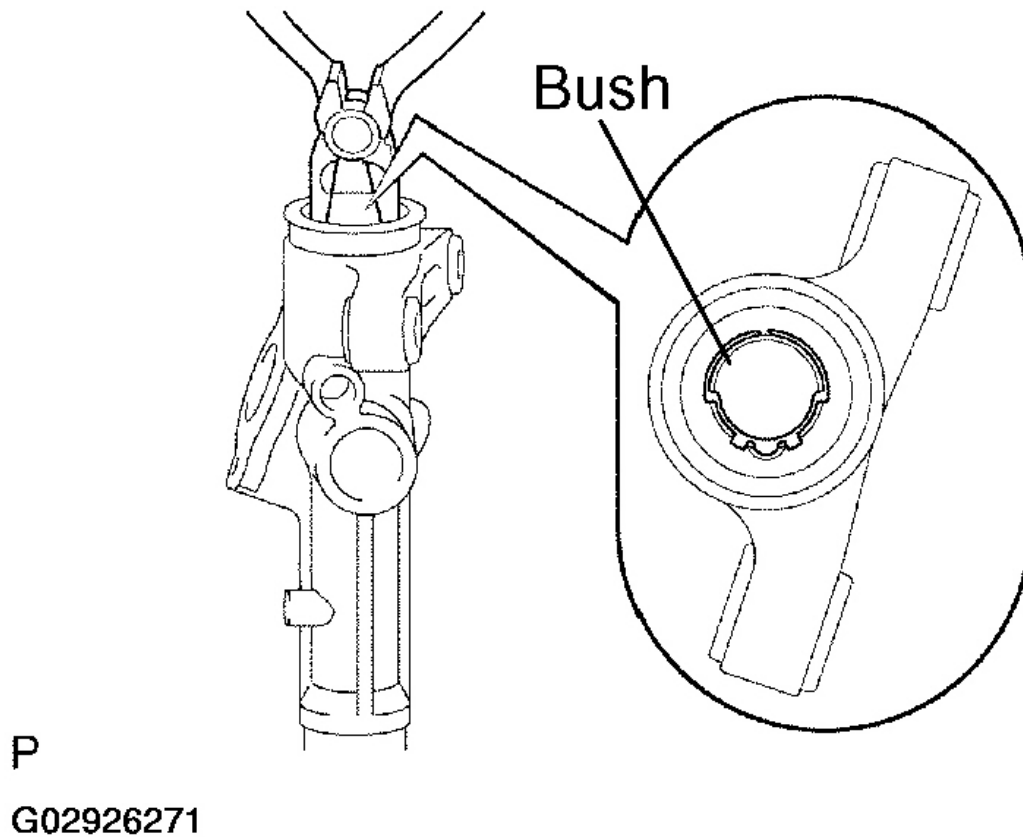


Fig. 15: Removing Bush From Rack Housing

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install SST (09612-07130) on SST (09612-07210). SST 09612-70100 (09612-07130, 09612-07210)

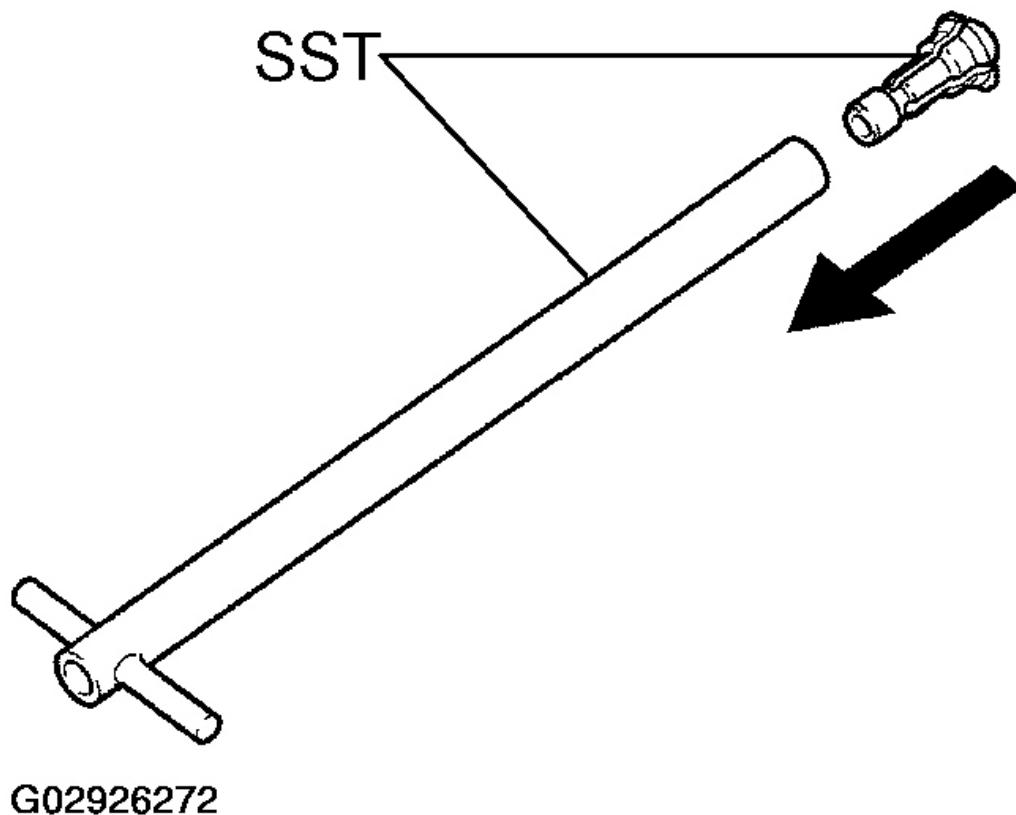


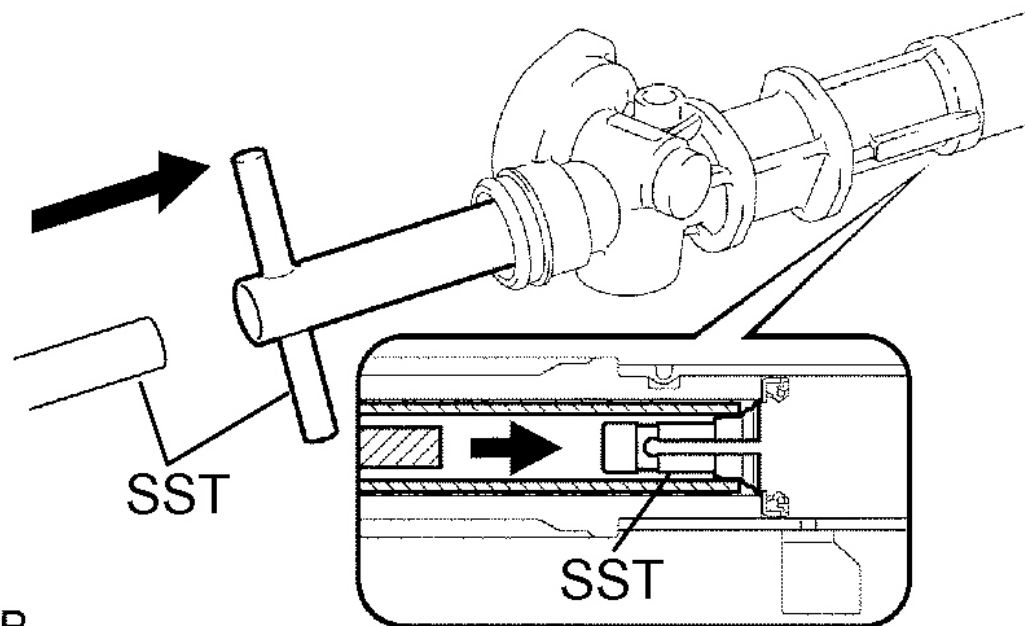
Fig. 16: Installing SST

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- Before using them, apply a small dab of grease to the inside wall of SST (09612-07210, 09612-07130).
 - To prevent the inside of the housing from being damaged securely install SST (09612-07130) on SST (09612-07210).
- c. Diagonally insert SST (09612-07210) into the housing until it contacts with the oil seal, and then, further insert the SST (09612-07210) until the tip of SST (09612-07220) contacts with SST (09612-07130).

SST 09612-70100 (09612-07130, 09612-07210, 09612-07220)



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Fig. 17: Inserting SST Into Housing

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Do not damage the inside of the housing.

- d. Secure SST (09612-07220), and pull SST (09612-07210) to place SST (09612-07130) in the housing.

SST 09612-70100 (09612-07130, 09612-07210, 09612-07220)

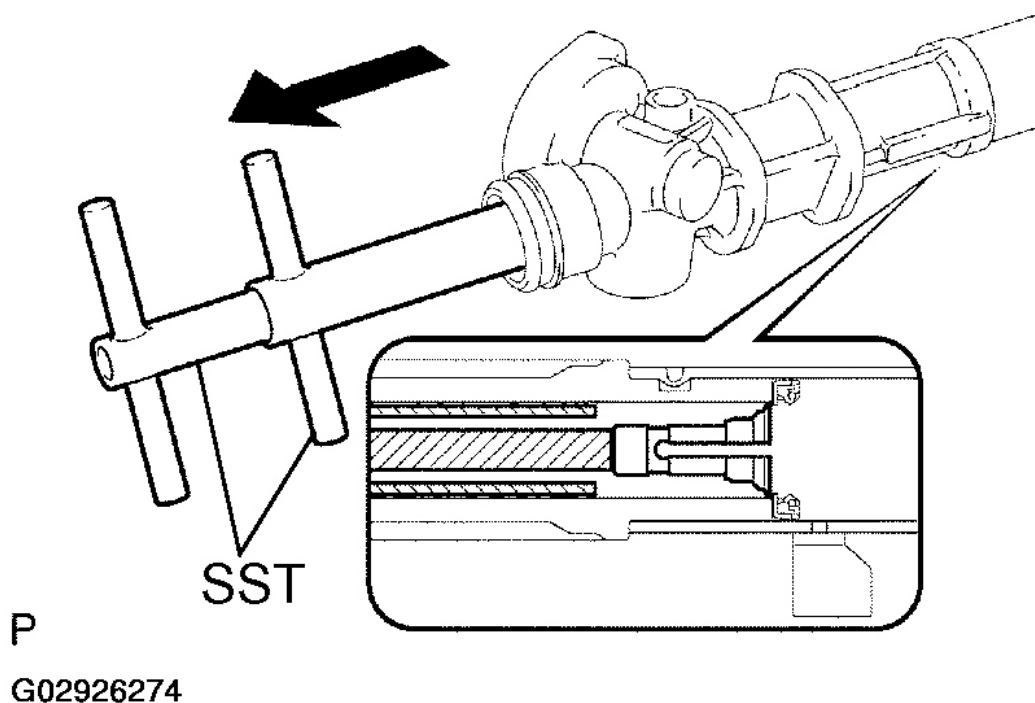


Fig. 18: Securing SST (09612-07220), Pulling SST (09612-07210) To Place SST (09612-07130) In Housing

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Place SST on the chamfering position between the oil seal and rack housing.

- e. Remove the SST (09612-07210, 09612-07220). SST 09612-07100 (09612-07210, 09612-07220)
- f. After installing SST (09612-07240) on SST (09612-07210), insert the tip of SST (09612-07230) in the service hole of SST (09612-07130).

SST 09612-70100 (09612-07130, 09612-07230, 09612-07240)

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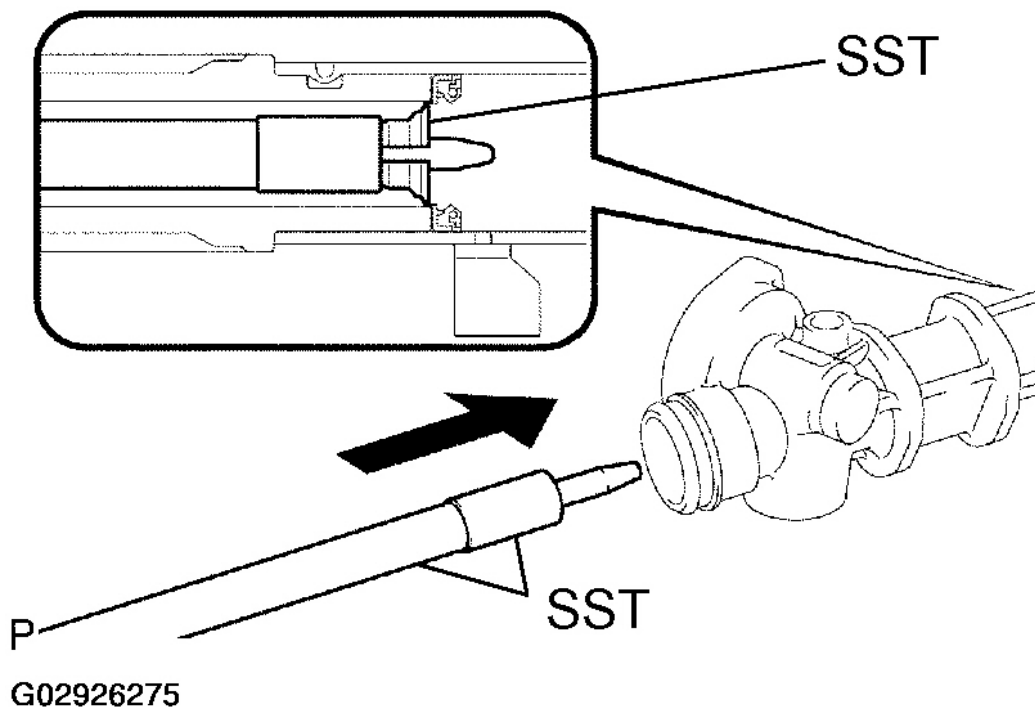


Fig. 19: Inserting Tip Of SST (09612-07230) In Service Hole Of SST (09612-07130)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- Before using them, apply a small dab of grease to the tip of SST (09612-07130).
- To prevent SST (09612-07130) from being damaged, be sure to install SST (09612-07240).
- Do not damage the inside of the rack housing.

g. Install SST (09951-07100) on SST (09612-07230) and remove the oil seal using a press.

SST 09612-70100 (09612-07130, 09612-07230, 09612-07240), 09950-70010 (09951-07100)

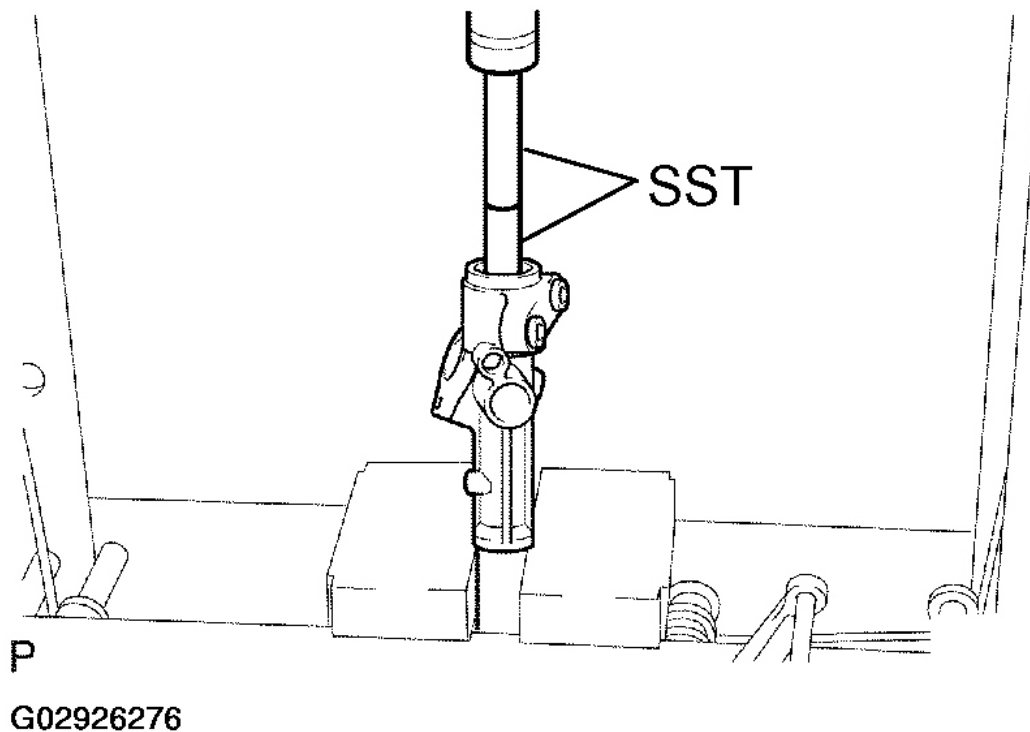


Fig. 20: Installing SST (09951-07100) On SST (09612-07230) And Removing Oil Seal
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Do not damage the rack housing.

HINT:

Replace SST (09951-07100) with SST that is different in length in the set, if necessary.

INSPECTION

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

1. INSPECT STEERING RACK

- Using a dial indicator, check the rack for runout, teeth wear and damage.

Maximum runout: 0.15 mm (0.006 in.)

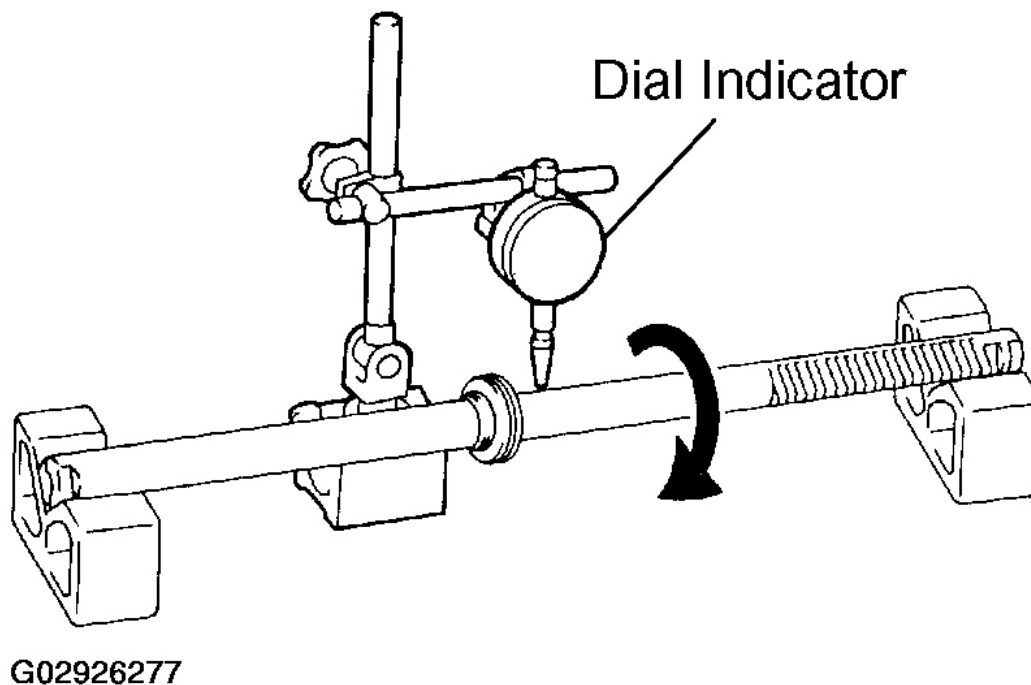


Fig. 21: Inspecting Steering Rack For Runout, Teeth Wear And Damage Using Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the back surface for wear and damage.

If necessary, replace the steering rack.

REPLACEMENT

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

1. IF NECESSARY, REPLACE OIL SEAL AND BEARING

- a. Using SST, press out the bearing and oil seal from the control valve housing.

SST 09950-60010 (09951-00250), 09950-70010 (09951-07100)

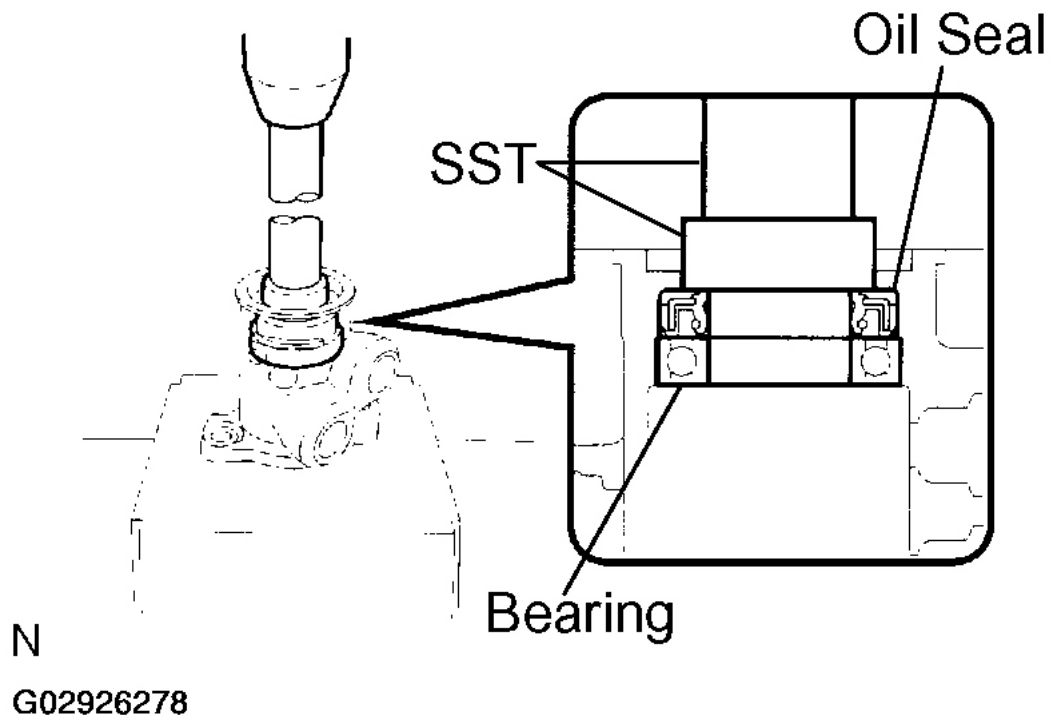


Fig. 22: Pressing Out Bearing And Oil Seal From Control Valve Housing Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Coat a new oil seal lip with power steering fluid.
- c. Using SST, press in the oil seal.

SST 09950-60010 (09951-00180, 09951-00330, 09952-06010), 09950-70010 (09951-07150)

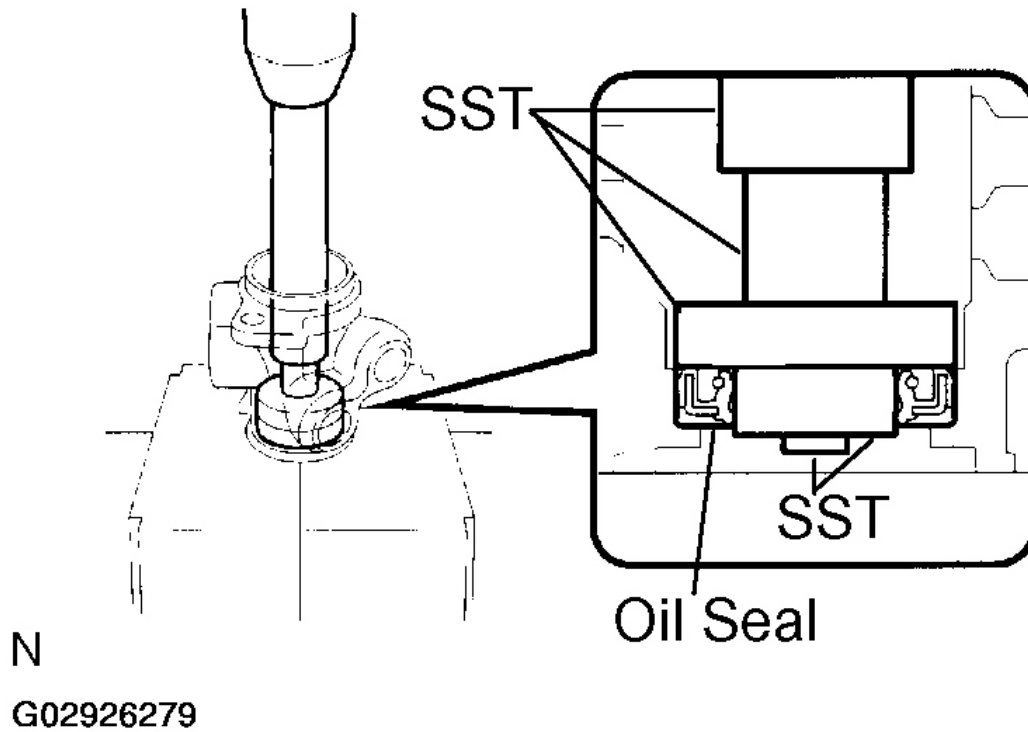


Fig. 23: Pressing In Oil Seal Using SST

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Make sure that the oil seal is installed facing in the correct direction.

- d. Coat a new bearing with molybdenum disulfide lithium base grease.
- e. Using SST, press in the bearing.

SST 09950-60100 (09951-00350), 09950-70010 (09951-07150)

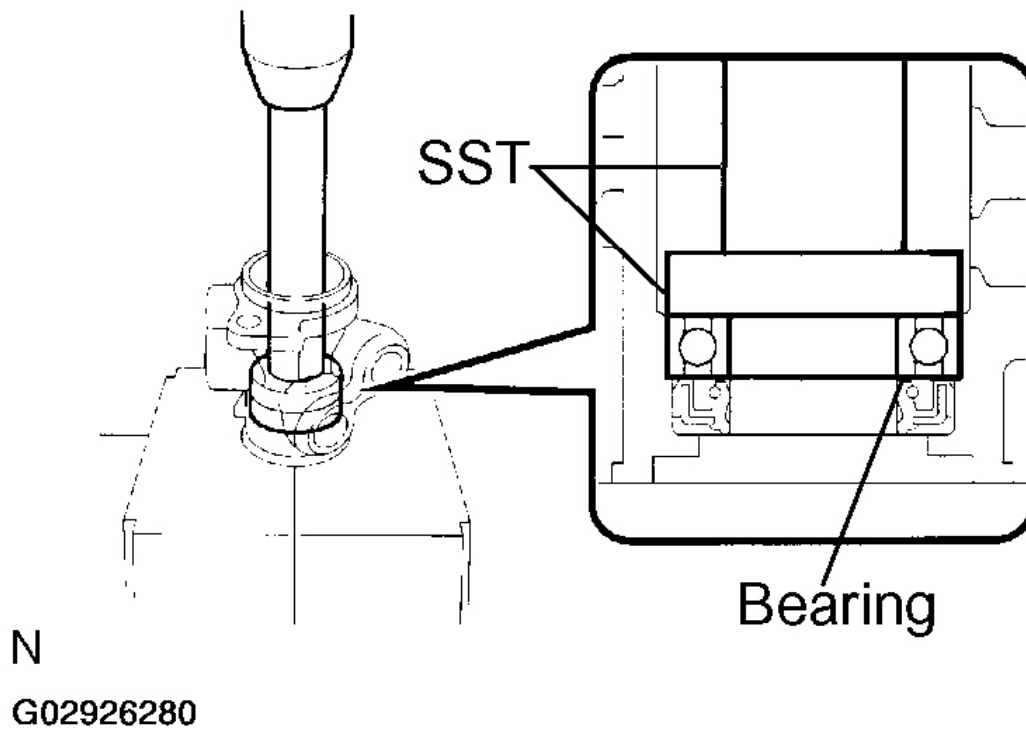
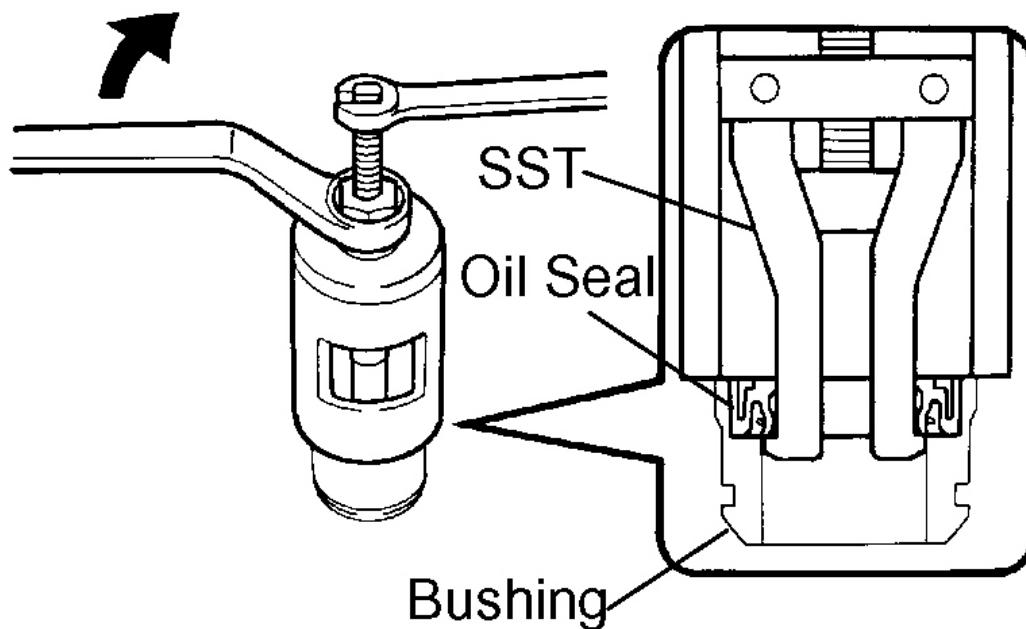


Fig. 24: Pressing In Bearing Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. IF NECESSARY, REPLACE OIL SEAL

- a. Using SST, remove the oil seal from the bushing.

SST 09612-24014 (09613-22011)



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Fig. 25: Removing Oil Seal From Bushing Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Be careful not to damage the bushing.

HINT:

As shown in **Fig. 25** , from the opposite side of SST confirm that its claws are firmly caught on the oil seal.

- b. Coat a new oil seal lip with power steering fluid.
- c. Using SST, press in the oil seal.

SST 09950-60010 (09951-00210, 09951-00340, 09952-06010), 09950-70010 (09951-07100)

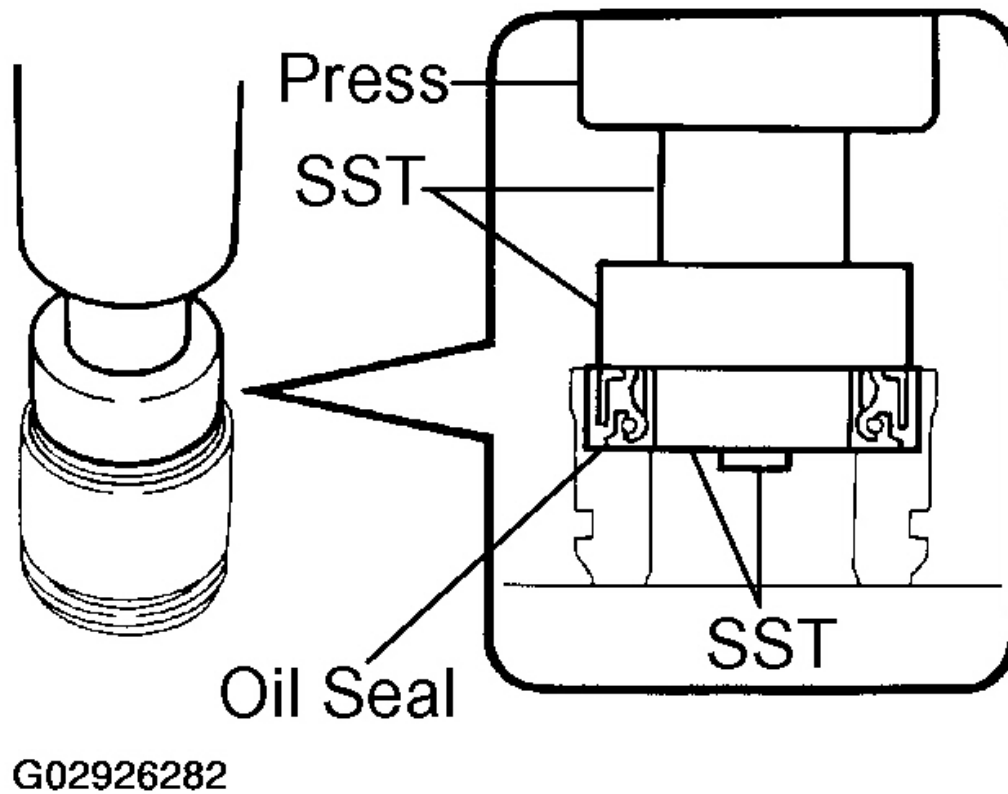


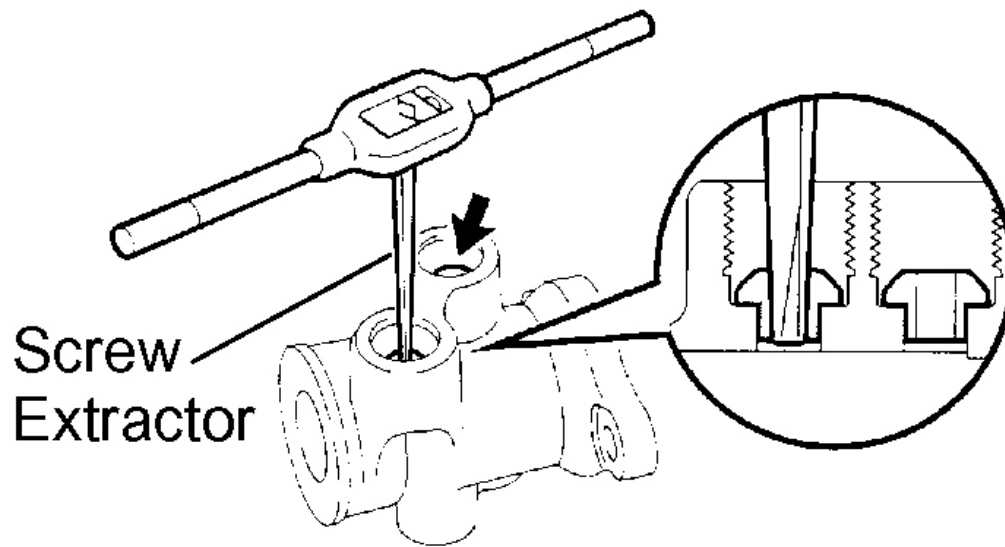
Fig. 26: Pressing In Oil Seal Using SST

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Make sure that the oil seal is installed facing in the correct direction.

3. IF NECESSARY, REPLACE 2 UNION SEATS

- a. Using a screw extractor, remove the union seat from the control valve housing.



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Fig. 27: Removing Union Seat From Control Valve Housing Using Screw Extractor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using a plastic hammer and an extension bar, lightly tap in a new union seat.
- c. Employ the same manner described above to the other side.

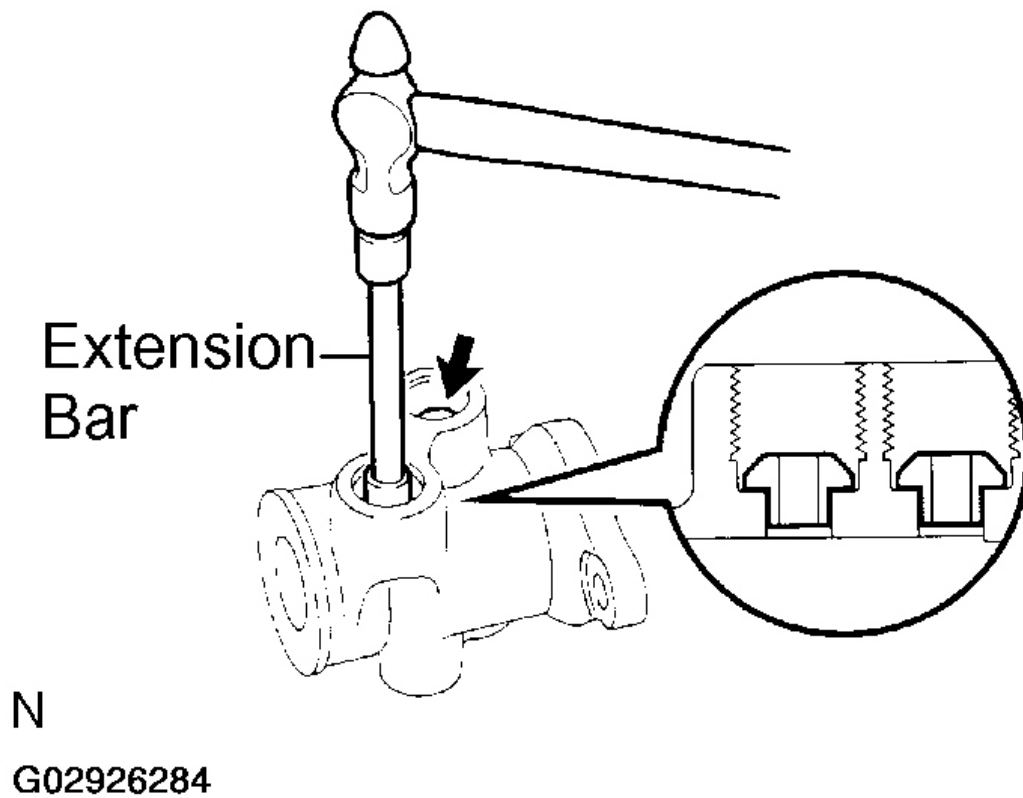
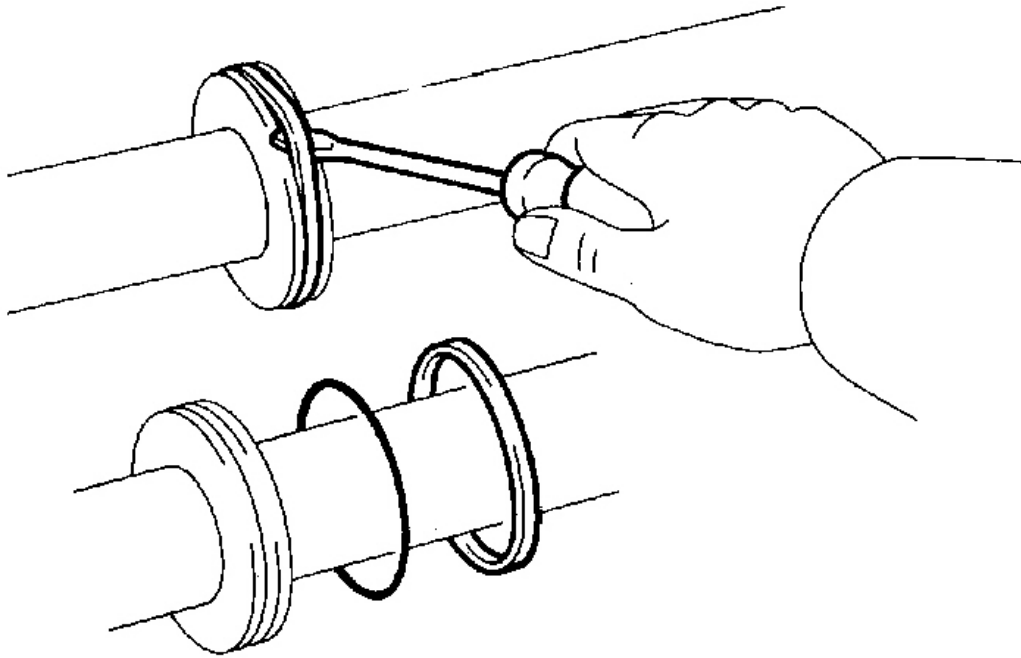


Fig. 28: Tapping In New Union Seat Using Plastic Hammer & Extension Bar
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

- a. Using a screwdriver, remove the teflon ring and O-ring from the steering rack.



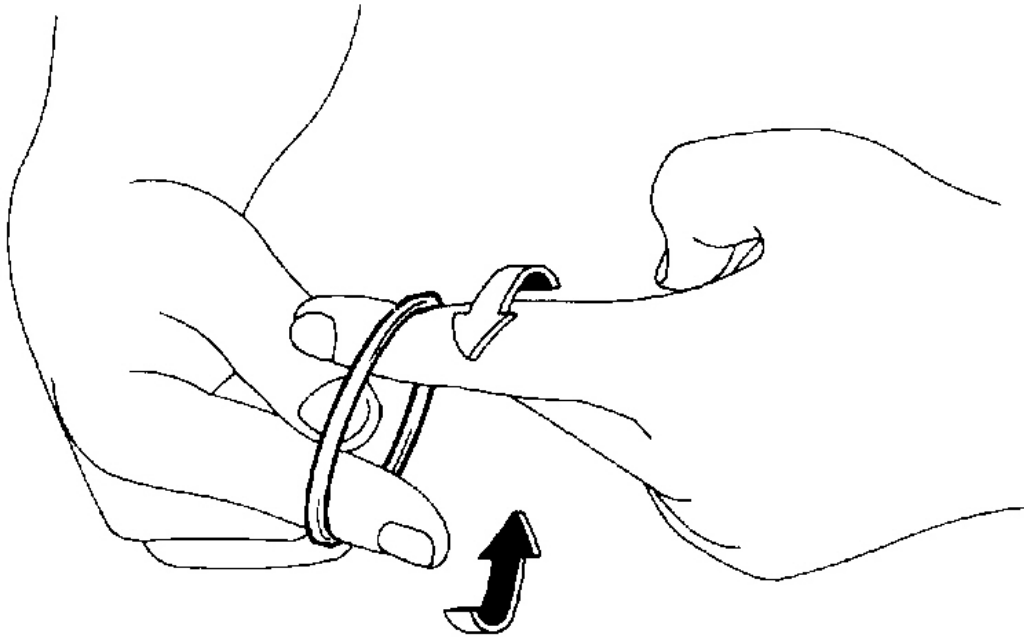
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Fig. 29: Removing Teflon Ring And O-Ring From Steering Rack
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Be careful not to damage the groove for the teflon ring.

- b. Coat a new O-ring with power steering fluid and install it to the steering rack.
- c. Expand a new teflon ring with your fingers.

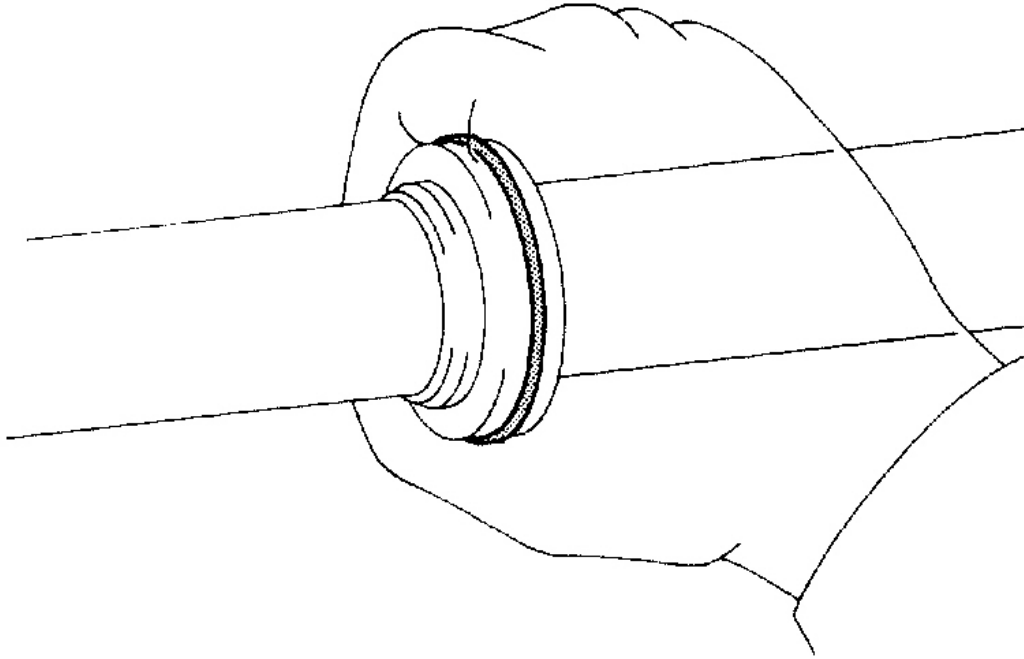
NOTE: Be careful not to overexpand the Teflon ring.



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Fig. 30: Expanding New Teflon Ring With Fingers
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Coat the teflon ring with power steering fluid.
- e. Install the teflon ring to the steering rack and settle it down with your fingers.

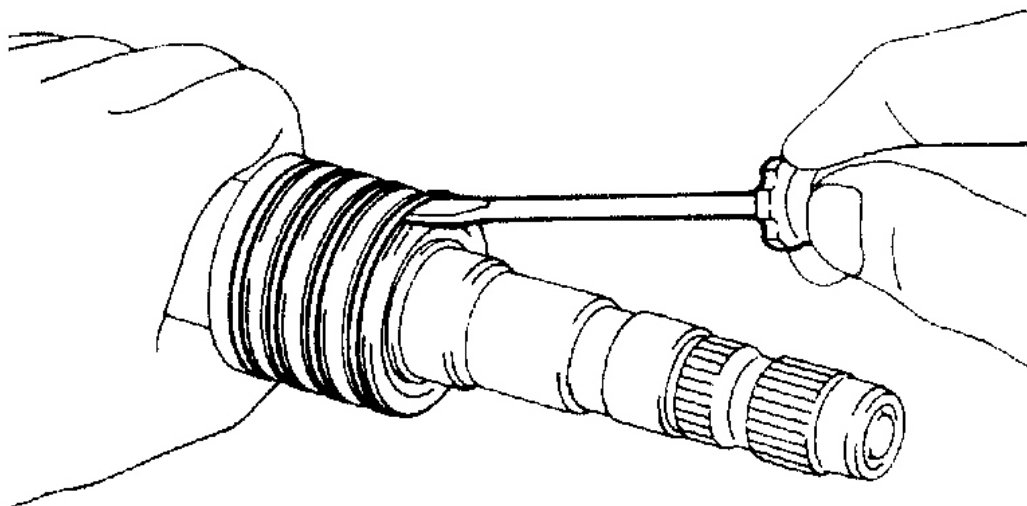


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Fig. 31: Installing Teflon Ring To Steering Rack And Settle It Down With Fingers
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. IF NECESSARY, REPLACE 4 TEFLON RINGS

- a. Using a screwdriver, remove the 4 teflon rings from the control valve assembly.



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Fig. 32: Removing Teflon Rings From Control Valve Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Tape the screwdriver tip before use.

NOTE: Be careful not to damage the grooves for the teflon rings.

- b. Expand 4 new teflon rings with your fingers.

NOTE: Be careful not to overexpand the teflon ring.

- c. Coat the teflon rings with power steering fluid.
- d. Install the teflon rings to the control valve assembly and settle them down with your fingers.
- e. Carefully slide the tapered end of SST over the teflon rings until they fit to the control valve assembly.

SST 09631-20081

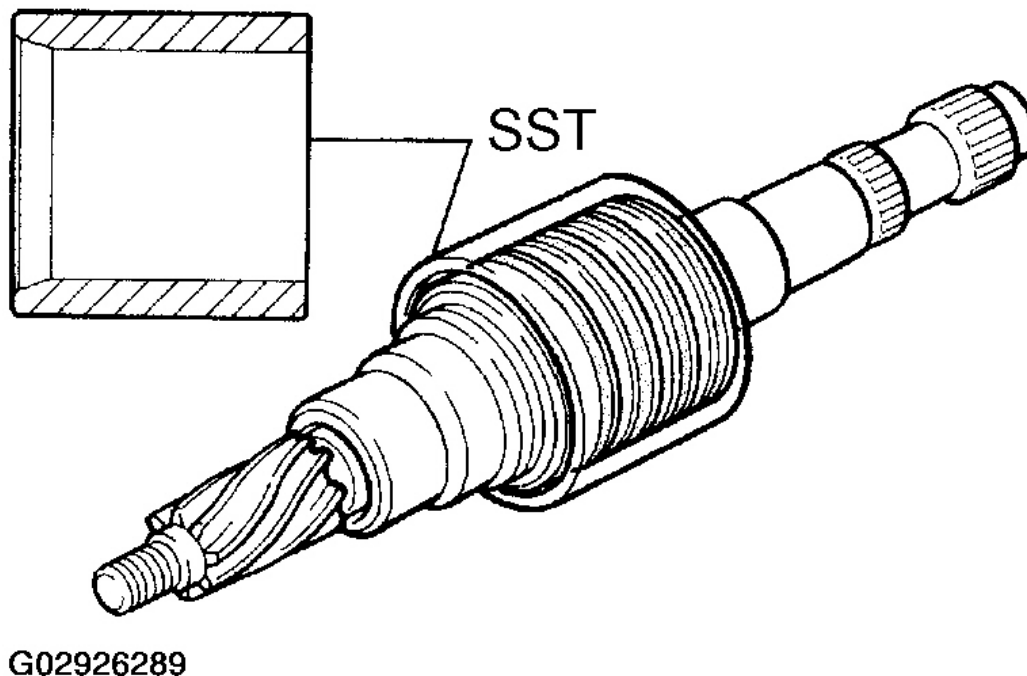


Fig. 33: Sliding Tapered End Of SST Over Teflon Rings
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Be careful not to damage the teflon rings.

REASSEMBLY

1. INSTALL POWER STEERING CYLINDER TUBE OIL SEAL

- Apply power steering fluid to a new oil seal, and install the oil seal on the rack housing at an angle.

NOTE: Install the oil seal in the correct direction.

HINT:

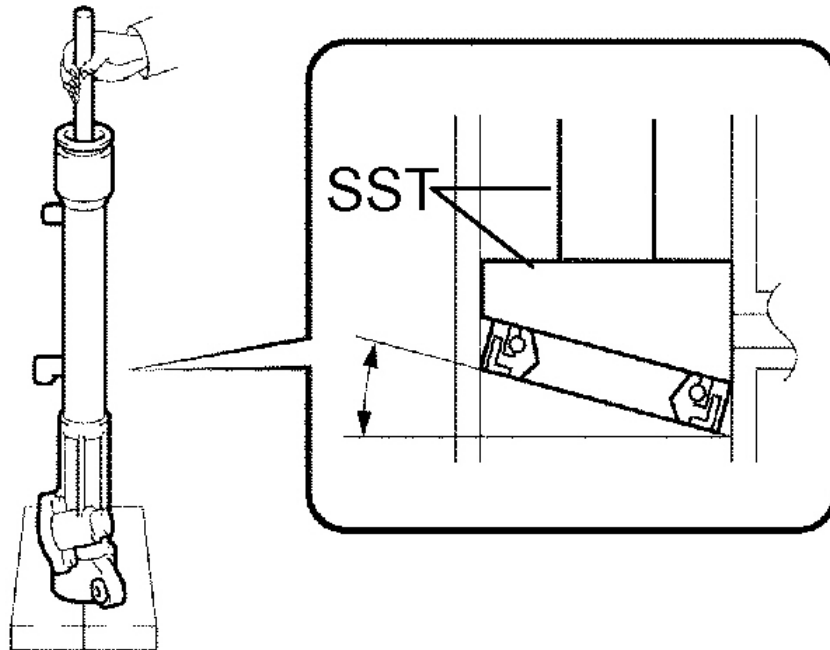
Install the oil seal so that the port faces downward with approx. 15 degrees.

- Using SST, push in the oil seal by hand until it passes through the 2 ports.

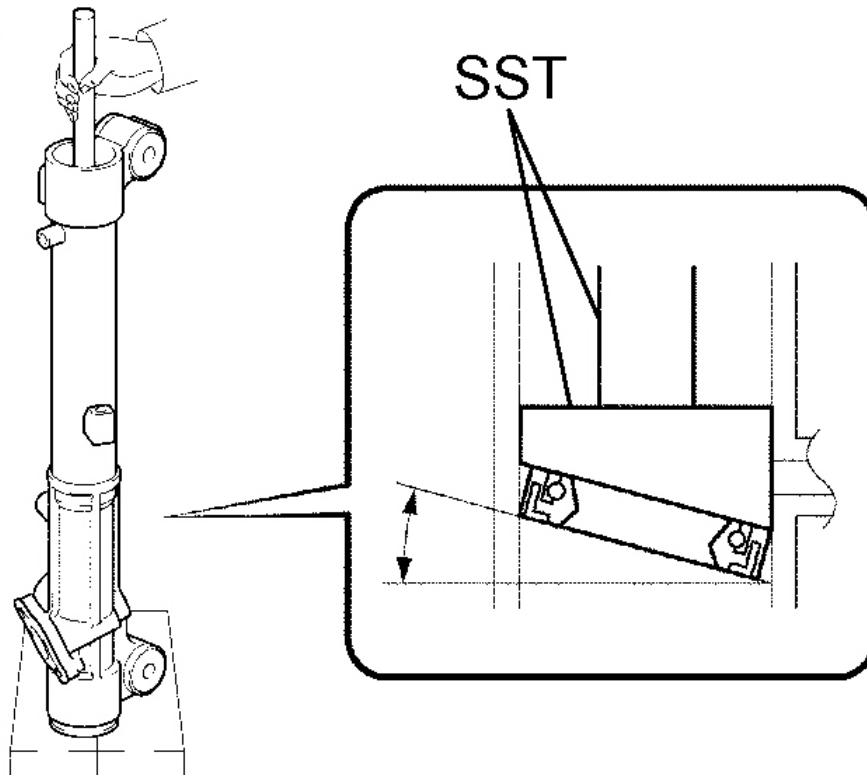
SST 09631-00180, 09950-70010 (09951-07360)

NOTE: Do not turn SST when inserting the oil seal.

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4WD



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2004 Toyota RAV4

2004 STEERING Power Steering Gear - RAV4

Fig. 34: Installing Power Steering Cylinder Tube Oil Seal

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

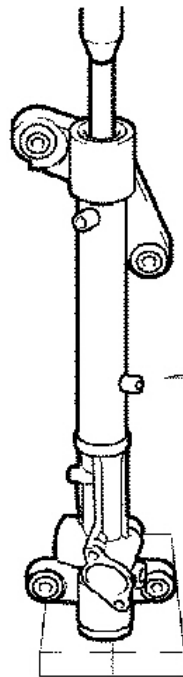
- c. After the oil seal has passed through the ports, push in the oil seal by hand until it becomes level, using SST.

SST 09950-60010 (09951-00490), 09950-70010 (09951-07360)

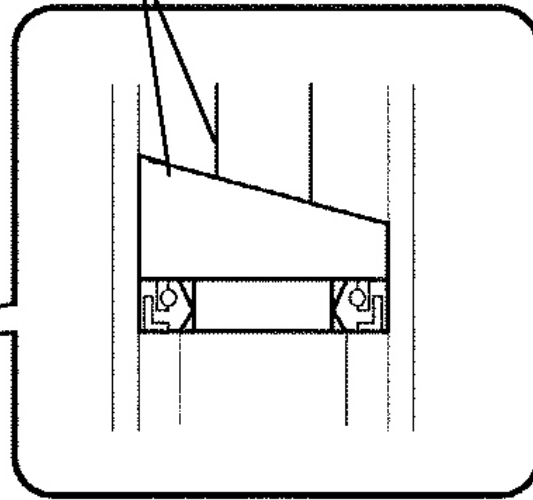
2004 Toyota RAV4

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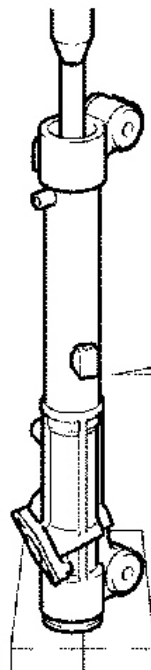
2WD



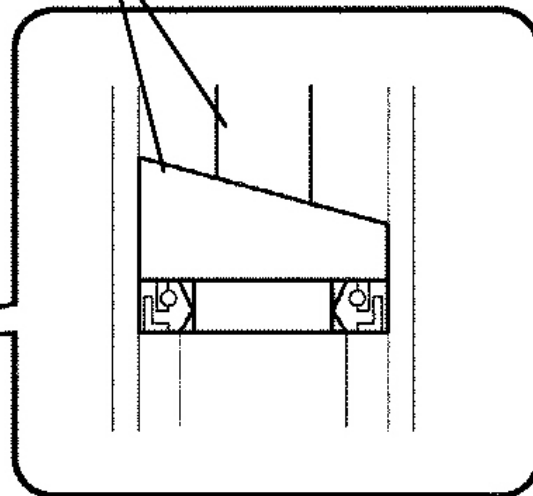
SST



4WD



SST



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Fig. 35: Pushing Oil Seal By Hand Until It Becomes Level

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: When SST is set, do not damage the inside surface of the rack housing.

- d. After the oil seal has become level, using SST and press, install the oil seal.

SST 09950-60010 (09951-00490), 09950-70010 (09951-07360)

- e. Coat new oil seal lip with power steering fluid.
f. Using needle nose pliers, install the bush to the rack housing.

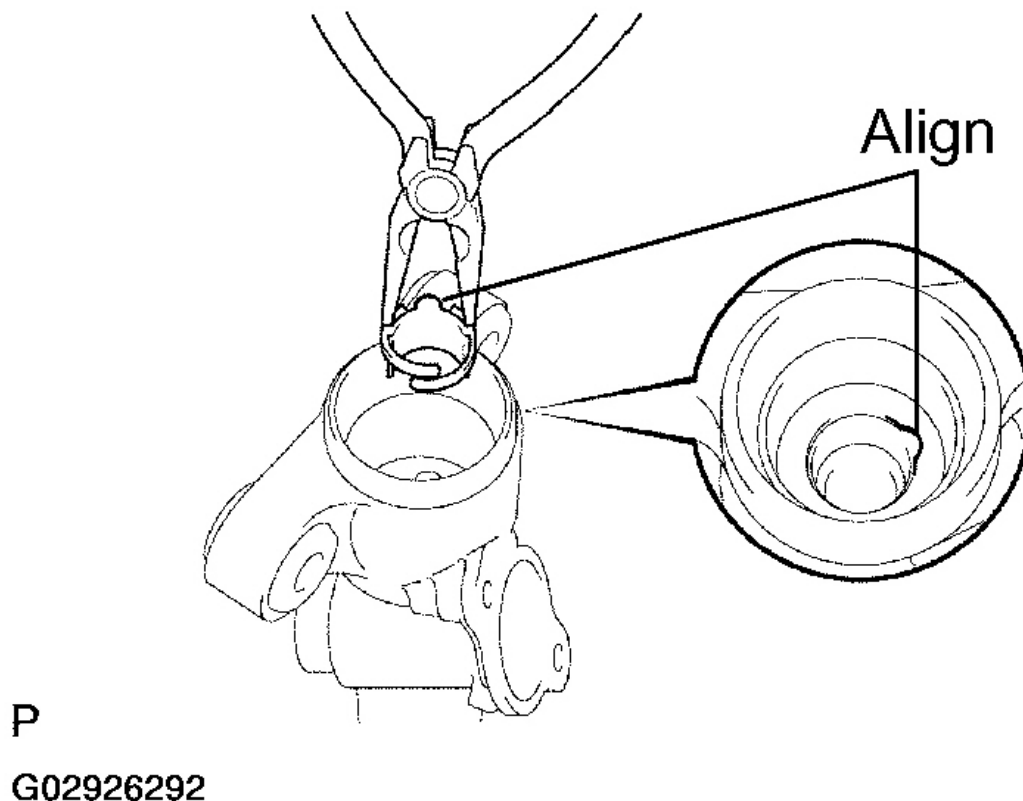


Fig. 36: Installing Bush To Rack Housing

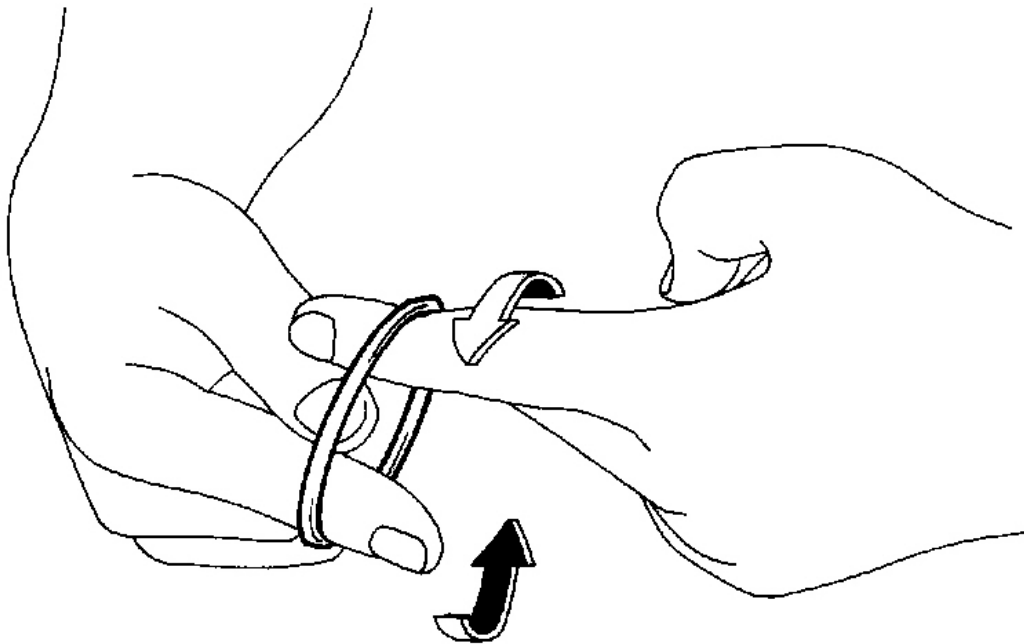
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. INSTALL POWER STEERING RACK

- a. Coat a new power piston O-ring with power steering fluid and install it to the steering rack.

- b. Coat a new power piston oil seal with power steering fluid.
- c. Expand the power piston oil seal with your fingers.

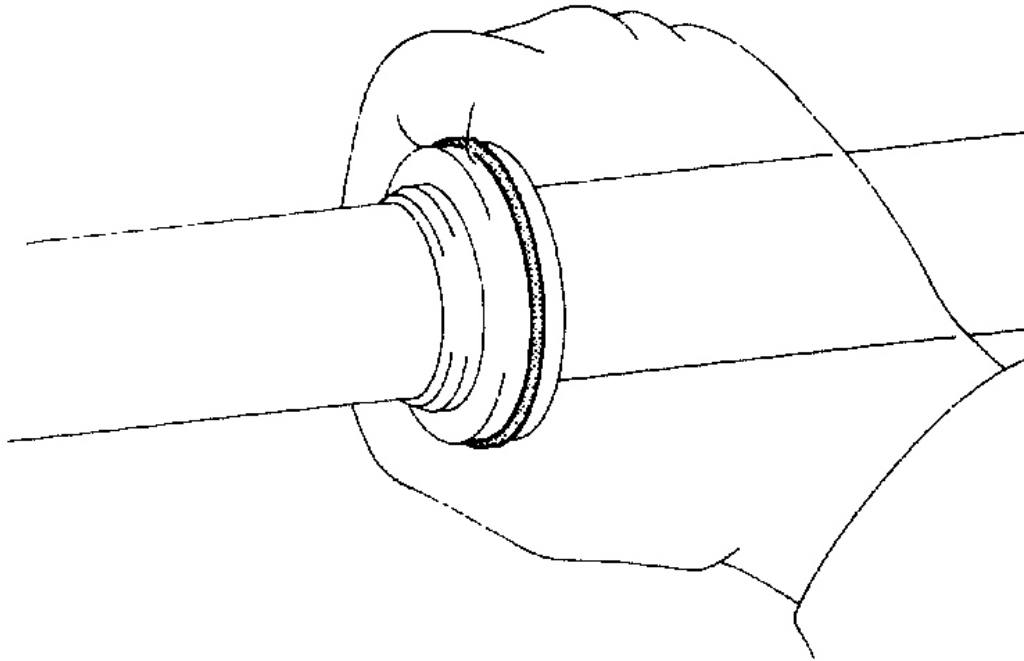
NOTE: Be careful not to over expand the power piston oil seal.



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Fig. 37: Expanding Power Piston Oil Seal With Fingers
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Install the power piston oil seal to the steering rack, and settle it down with your fingers.



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Fig. 38: Installing Power Piston Oil Seal To Steering Rack
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

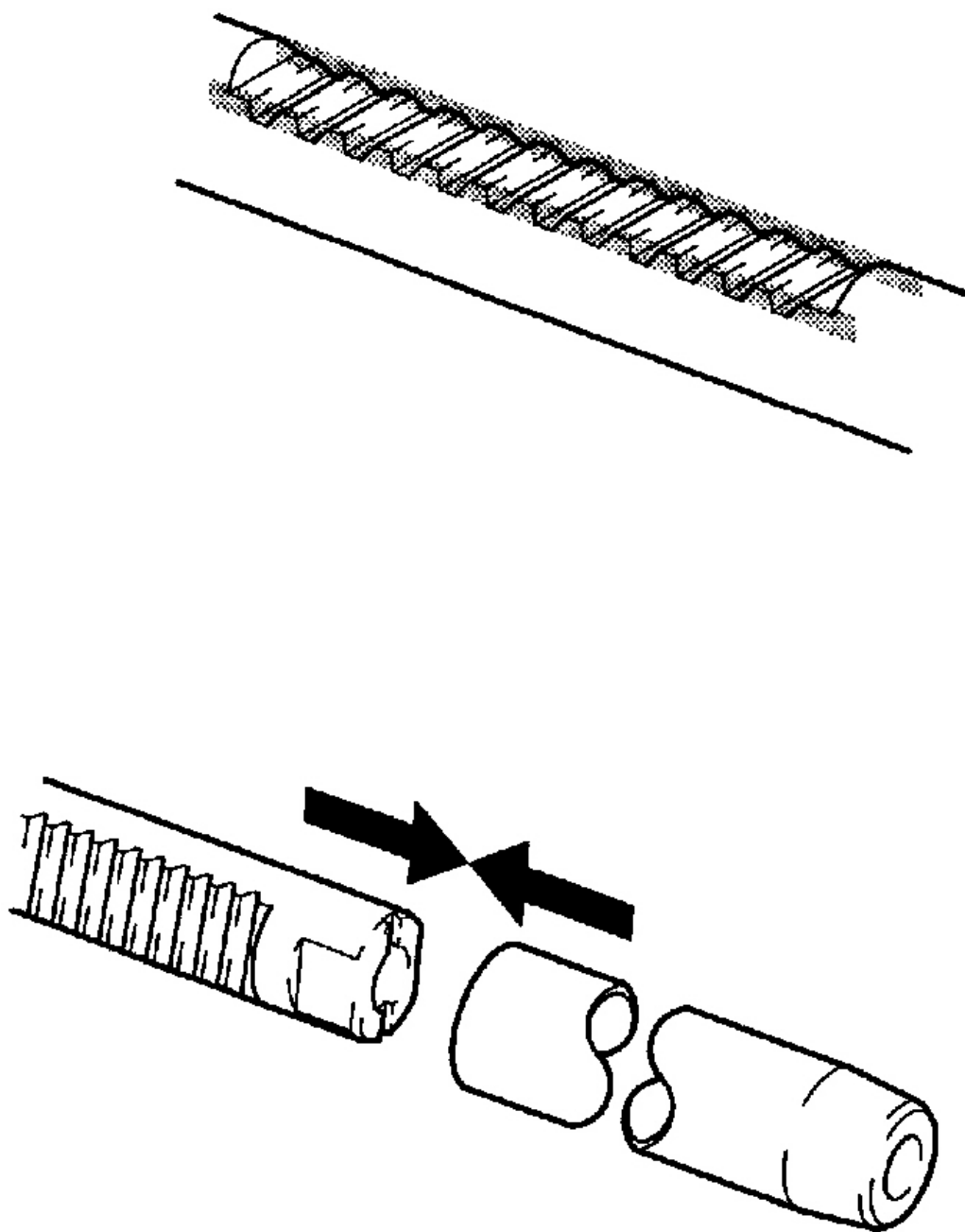
- e. Install SST to the steering rack.

SST 09631-20102

HINT:

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

- f. Coat the SST with power steering fluid.
- g. Install the steering rack into the rack housing.



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Fig. 39: Installing Steering Rack Into Rack Housing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- h. Remove the SST.

SST 09631-20102

3. INSTALL CYLINDER END STOPPER

- a. To prevent oil seal lip damage, wind vinyl tape on the steering rack end, and apply power steering fluid.
- b. Coat a new cylinder end stopper oil seal lip with power steering fluid.
- c. Install the cylinder end stopper oil seal by pushing it into the rack housing without tilting.

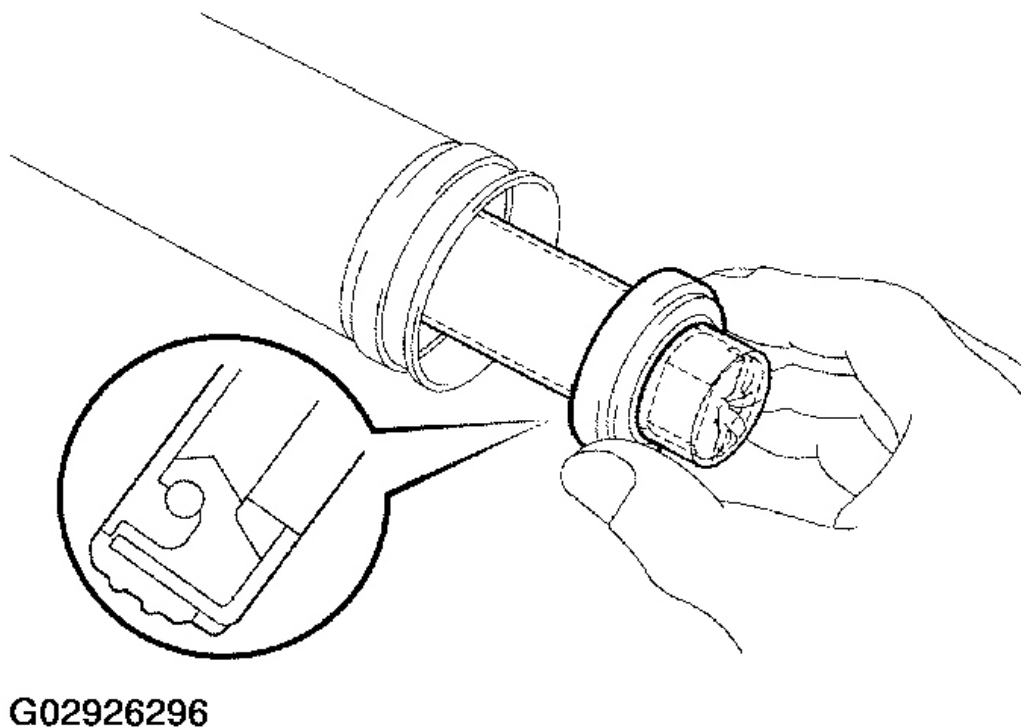


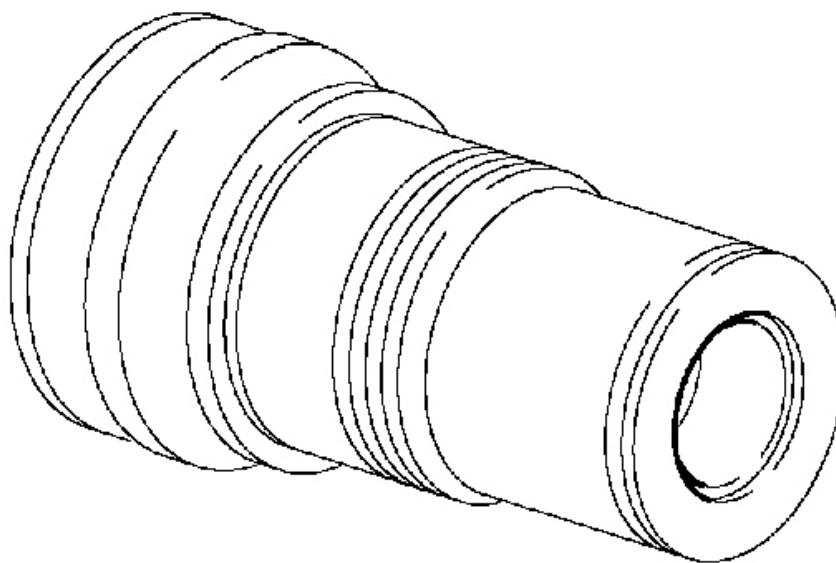
Fig. 40: Installing Cylinder End Stopper Oil Seal
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- Make sure that the oil seal is installed facing in the correct direction.
- Be careful not to damage the oil seal lip.

- d. Coat a new O-ring with power steering fluid.

- e. Install the O-ring to the cylinder end stopper.
- f. Install a new rack guide bush to the cylinder end stopper.
- g. Apply molybdenum disulfide lithium base grease to the inside of the bush.



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Fig. 41: Applying Grease To Inside Of Bush
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- h. Place rack housing in vise.

NOTE: Hold the arrow part in Fig. 42 in a vise.

- i. Using SST, install the cylinder end stopper to rack housing.

SST 09631-20120

Torque: 60 N.m (612 kgf.cm, 44 ft.lbf)

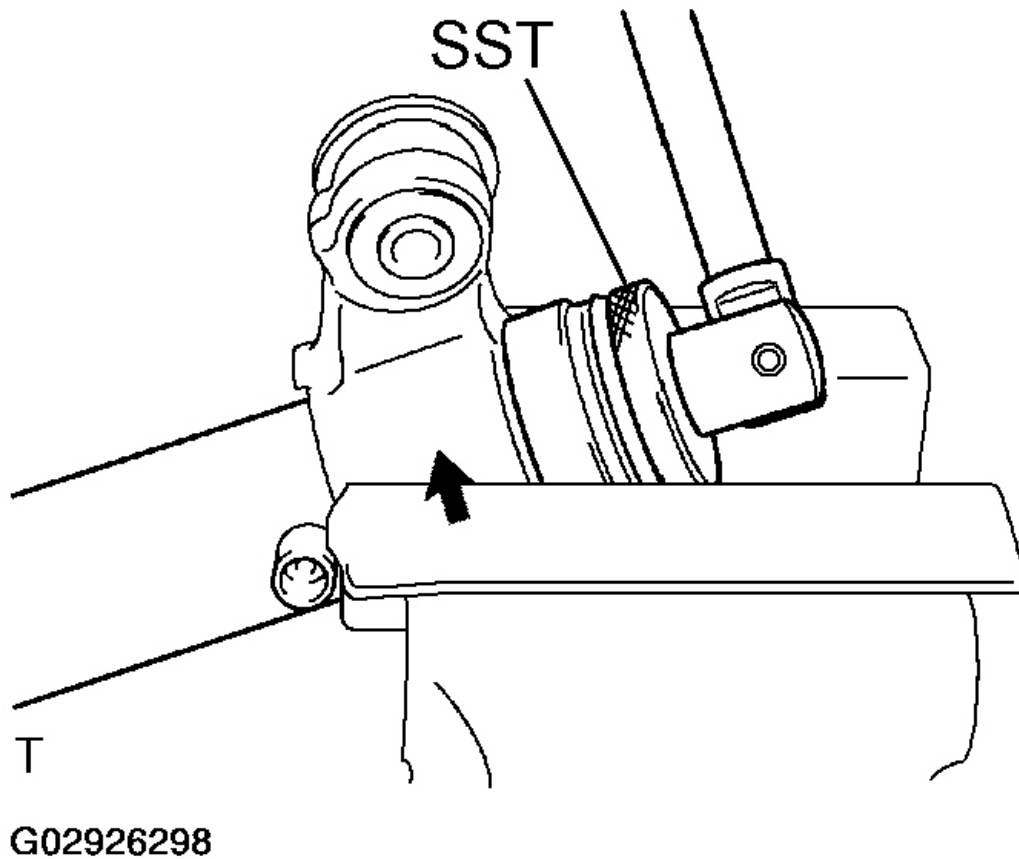


Fig. 42: Installing Cylinder End Stopper To Rack Housing Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. INSPECT RACK & PINION POWER STEERING GEAR ASSEMBLY

- a. Install SST to the rack housing.

SST 09631-12071 (09633-00010)

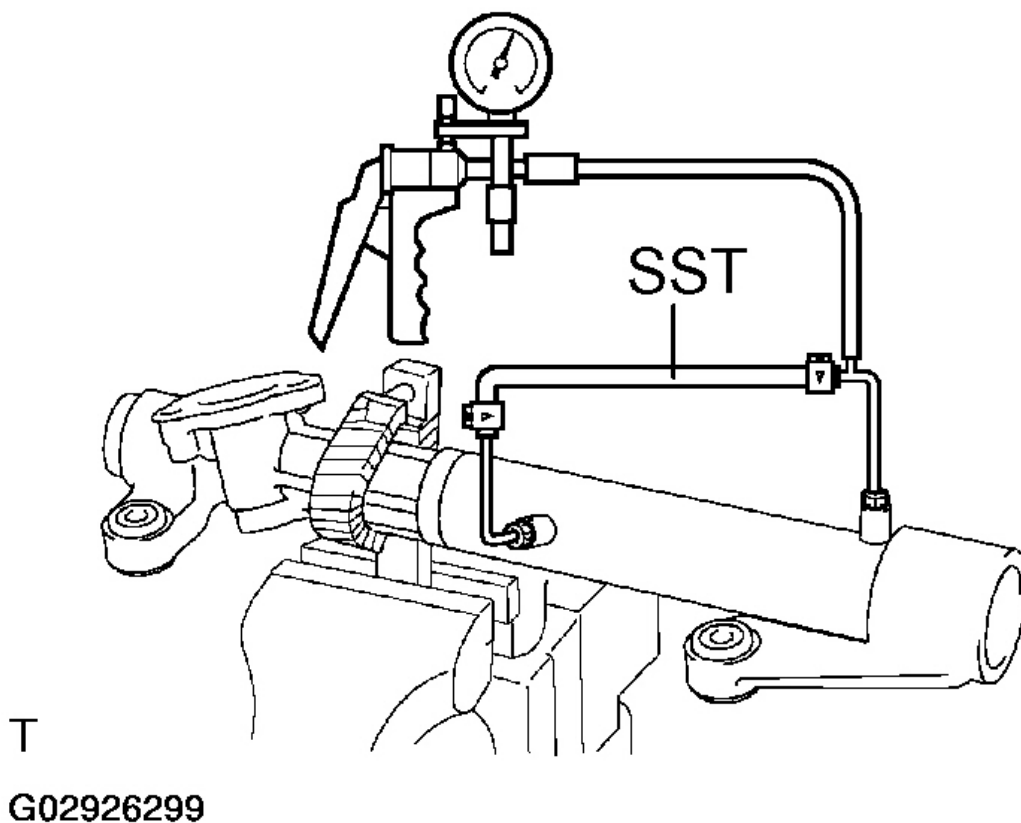


Fig. 43: Installing SST To Rack Housing
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Apply vacuum of 53 kPa (400 mmHg, 15.75 in. Hg) for about 30 seconds.
- c. Check that there is no change in the vacuum.

If there is a change in the vacuum, check the installation of the oil seals.

5. INSTALL CONTROL VALVE ASSEMBLY

- a. Coat the teflon rings and oil seal lip with power steering fluid.
- b. Coat the bearing with molybdenum disulfide lithium base grease.
- c. To prevent oil seal lip damage, wind vinyl tape on the serrated part of the control valve shaft.
- d. Using SST, press the control valve assembly into the control valve housing.

SST 09612-22011

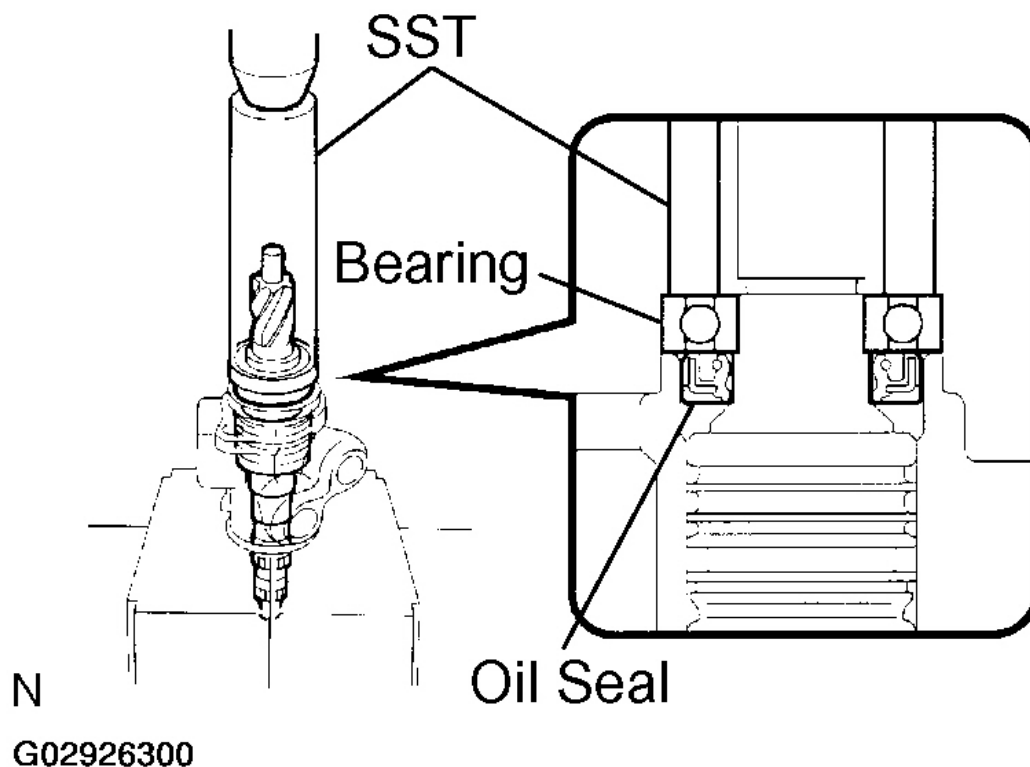


Fig. 44: Installing Control Valve Assembly Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Be careful not to damage the teflon rings and oil seal lips.

6. INSTALL CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY

- Install a new gasket.
- Align the matchmarks on the control valve housing and rack housing.
- Push into the control valve housing with control valve assembly.
- Install the 2 bolts.

Torque: 18 N.m (185 kgf.cm, 13 ft.lbf)

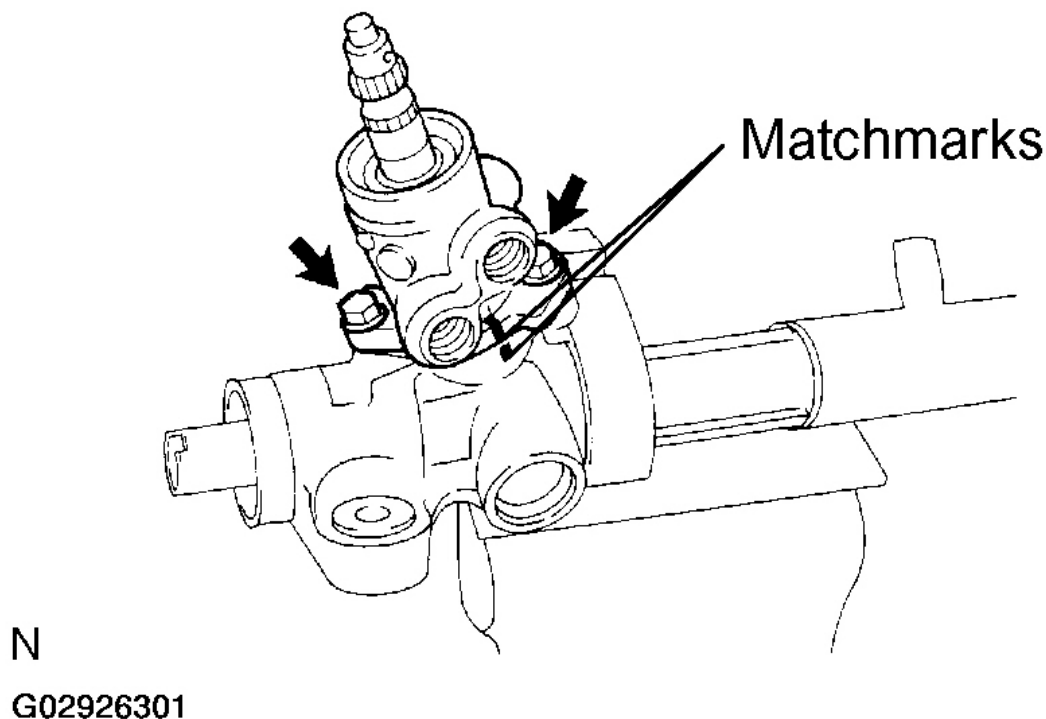


Fig. 45: Aligning Matchmarks On Control Valve Housing And Rack Housing, Installing Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. INSTALL RACK GUIDE SUB-ASSEMBLY

- Apply molybdenum lithium base grease to the contact surface of the power steering rack and of the rack guide.
- Install the rack guide and compression spring to the rack housing.
- Apply sealant to 2 or 3 threads of the rack guide spring cap.

Sealant:

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

- Temporarily install the rack guide spring cap.

8. ADJUST TOTAL PRELOAD

- To prevent the steering rack teeth from damaging the oil seal lip, temporarily install the RH and LH rack ends.
- Using a hexagon wrench (24 mm), torque the rack guide spring cap.

Torque: 83 N.m (851 kgf.cm, 62 ft.lbf)

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- c. Using a hexagon wrench (19 mm), return the rack guide spring cap 12°
- d. Using SST, turn the control valve shaft right and left 1 or 2 times.
- e. Using a hexagon wrench (19 mm), loosen the rack guide spring cap until the rack guide spring is not functioning.
- f. Using SST, a torque wrench hexagon wrench (19 mm), tighten the rack guide spring cap until the preload is within the specification.

SST 09616-00010

Preload (turning):

1.0 to 1.6 N.m (10 to 17 kgf.cm, 9 to 15 in.lbf)

9. INSTALL STEERING RACK END SUB-ASSEMBLY

- a. Install 2 new claw washers, and temporally install the rack ends.

HINT:

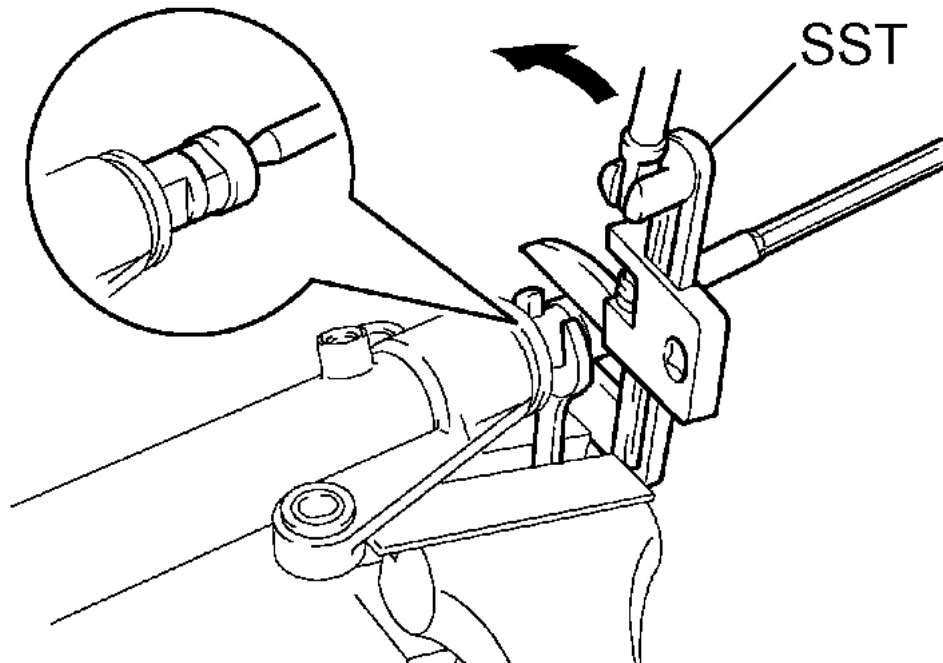
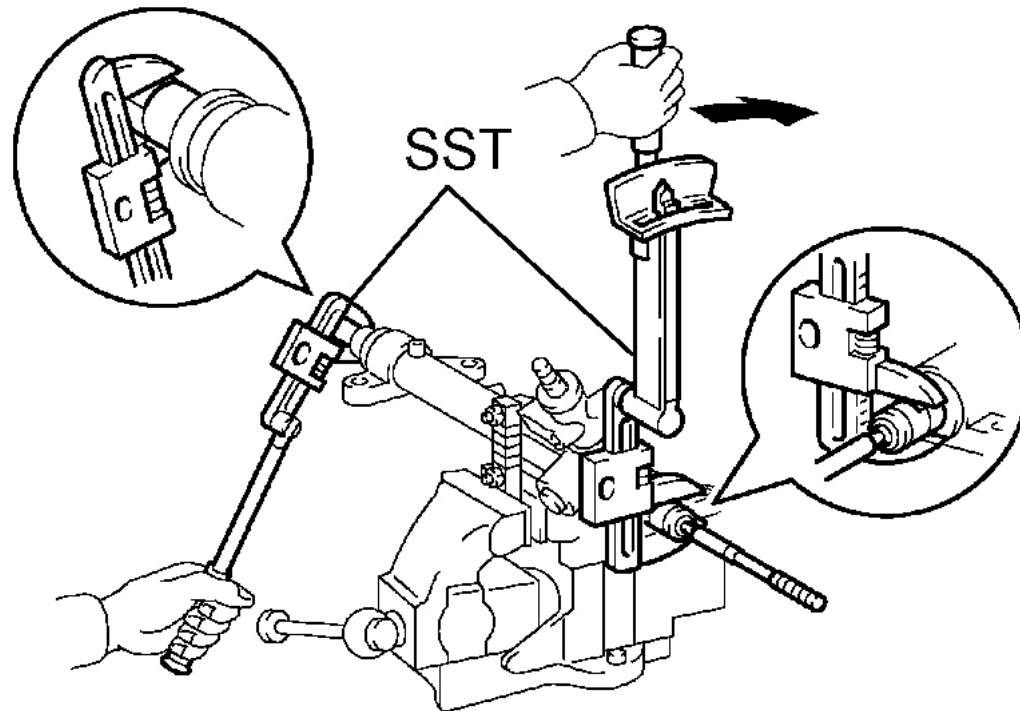
Align the claws of the claw washer with the steering rack grooves.

- b. Apply MP grease to the rack end ball joint.
- c. Using 2 SST, install the rack end sub-assy (RH side).

SST 09922-10010

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2004 Toyota RAV4

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Fig. 46: Installing Steering Rack End Sub Assembly Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 72 N.m (736 kgf.cm, 53 ft.lbf)

NOTE: Use SST 09922-10010 in the direction shown in Fig. 46 .

HINT:

- Using SST, hold the rack and install the rack end sub-assy.
 - Use a torque wrench with a fulcrum length of 425 mm (16.73 in.).
- d. Using SST and a spanner (22 mm), tighten the rack end (LH side).

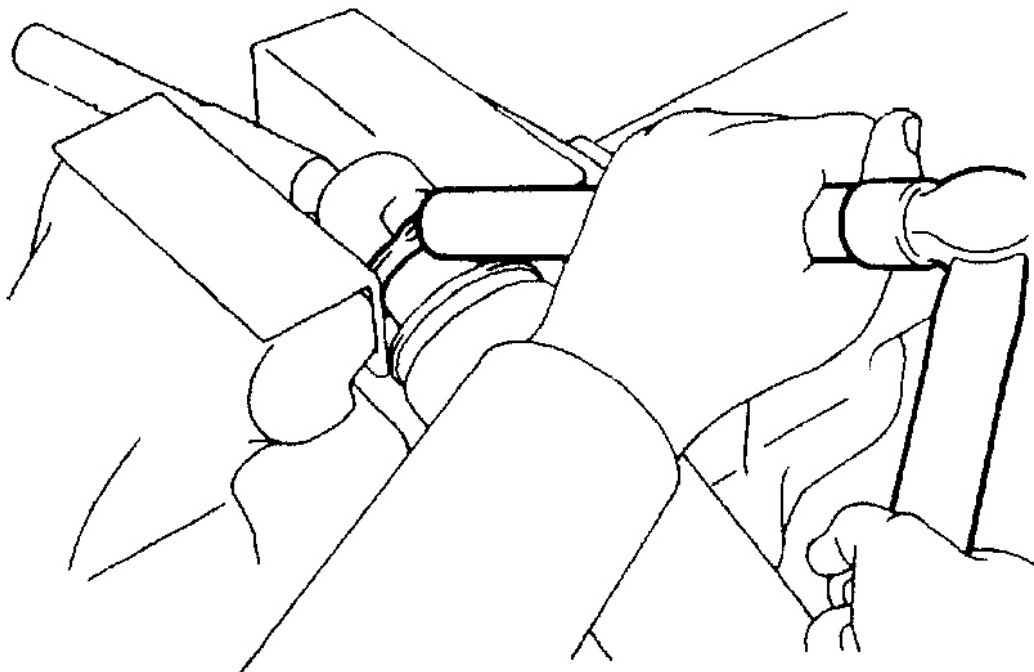
Torque: 72 N.m (736 kgf.cm, 53 ft.lbf)

NOTE: Use SST 09922-10010 in the direction shown in Fig. 46 .

HINT:

- Using SST, hold the rack and install the rack end.
 - Use a torque wrench with a fulcrum length of 425 mm (16.73 in.).
- e. Using a brass bar and a hammer, stake the 2 claw washers.

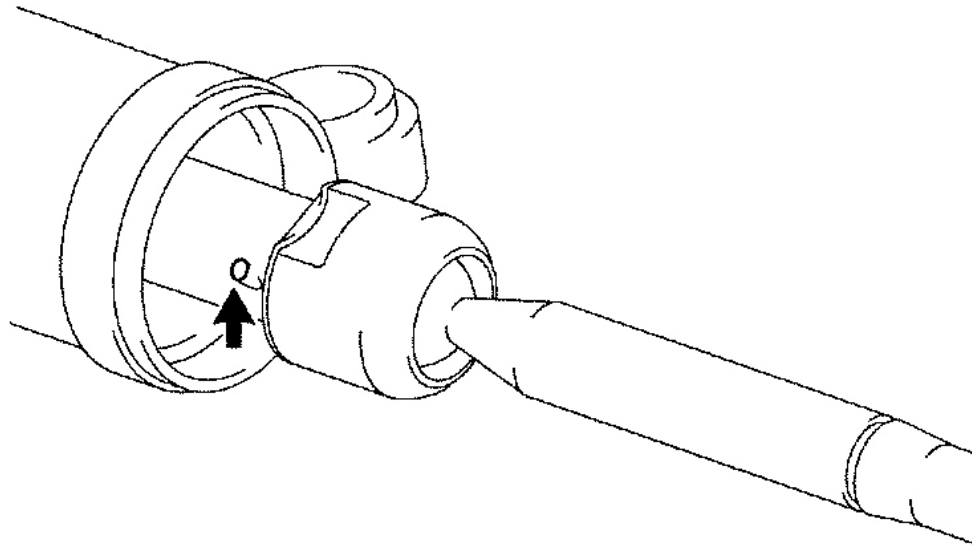
NOTE: Avoid any impact to the steering rack.



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Fig. 47: Staking Claw Washers Using Brass Bar And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- f. Ensure that the steering rack hole is not clogged with grease.



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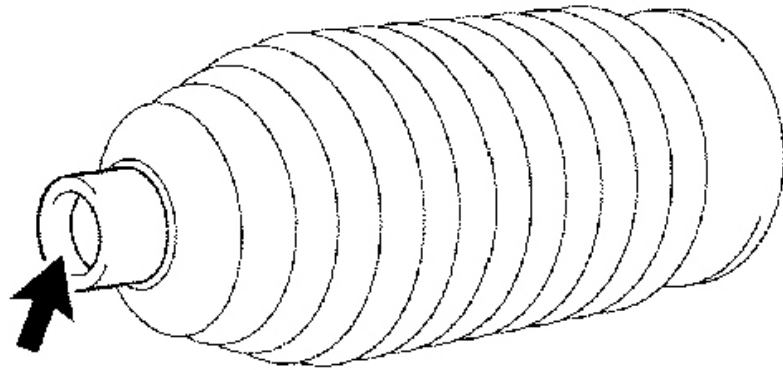
Fig. 48: Ensuring Steering Rack Hole Is Not Clogged With Grease
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

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

10. INSTALL STEERING RACK BOOT NO. 2

- a. Apply silicon grease to the inside small caliber of steering rack boots No. 2



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Fig. 49: Identifying Steering Rack Boot

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install the steering rack boots No. 2 to the groove on the rack housing.

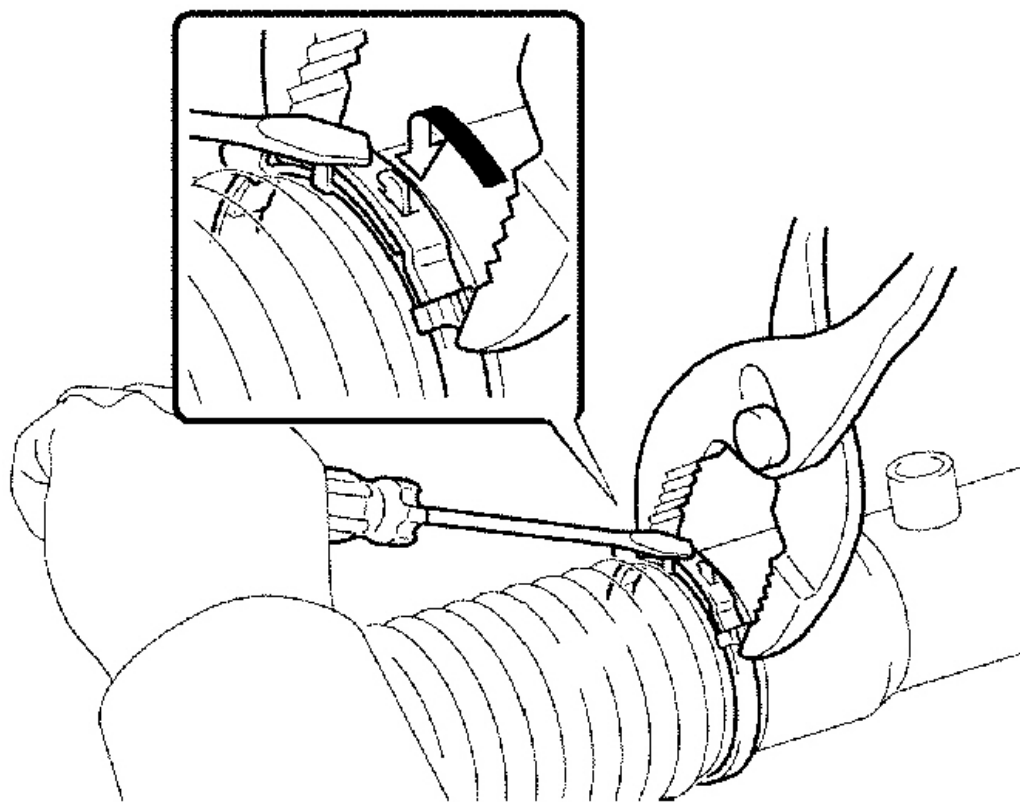
11. INSTALL STEERING RACK BOOT NO. 1

HINT:

Install the rack boot No. 1 by the same procedures with rack boot No. 2.

12. INSTALL STEERING RACK BOOT NO. 2 CLAMP

- a. Using pliers and a screwdriver, install a new rack boot No. 2 clamp.



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Fig. 50: Installing New Steering Rack Boot No. 2 Clamp
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Be careful not to damage or twist the rack boot.

13. INSTALL STEERING RACK BOOT NO. 1 CLAMP

HINT:

Install the rack boot No. 1 clamp by the same procedures with rack boot No. 2 clamp.

14. INSTALL STEERING RACK BOOT CLIP

- a. Using pliers, install the 2 boot clips.
- b. Using SST, turn the control valve, and check that the rack boots expand and contract smoothly.

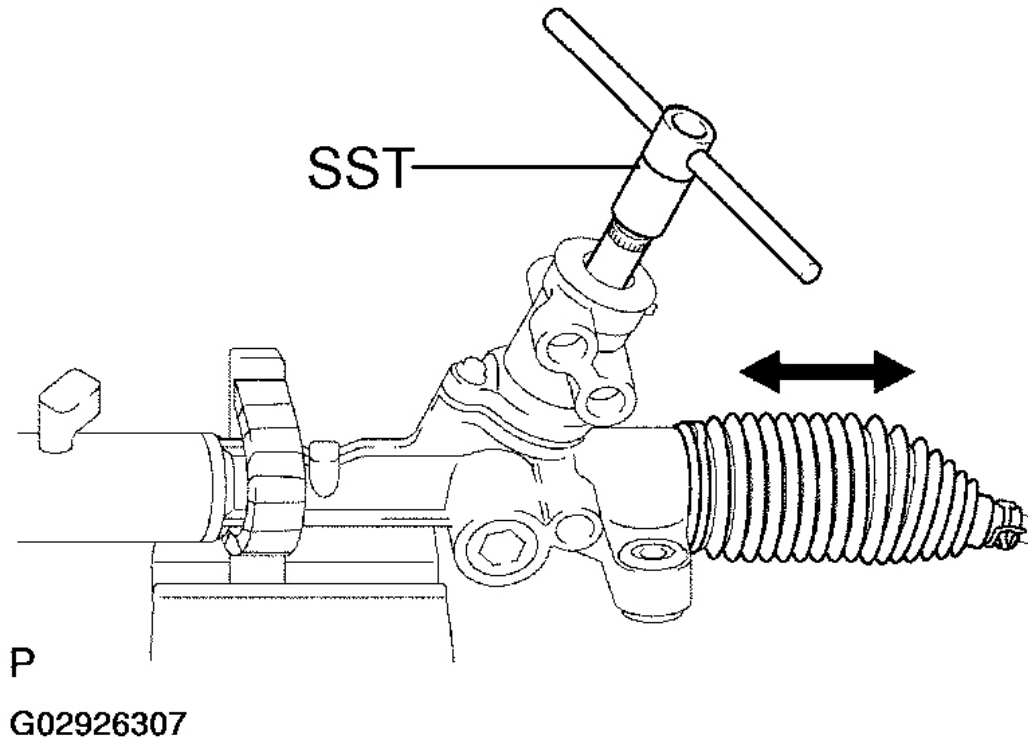
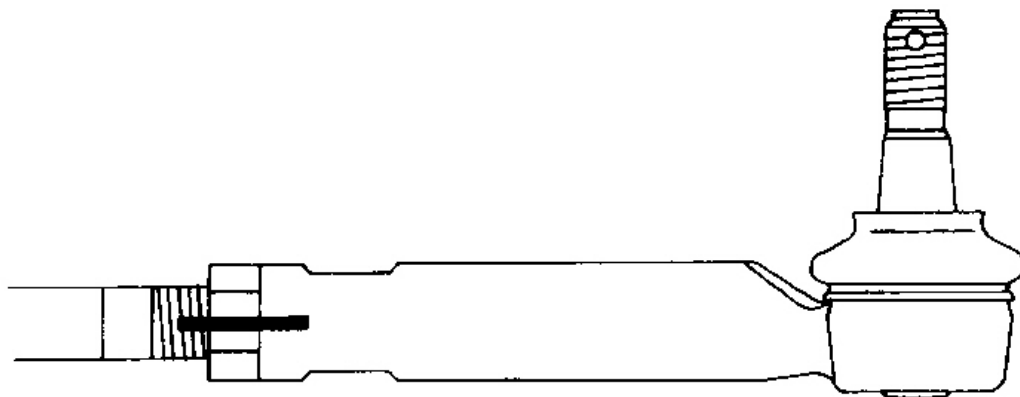


Fig. 51: Checking Expanding And Contracting Of Rack Boots
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

15. INSTALL TIE ROD END SUB-ASSEMBLY LH

- a. Screw the lock nut and tie rod end sub-assy LH onto the rack end until the matchmarks are aligned.



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Fig. 52: Installing Tie Rod End Sub-Assembly LH
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

After adjusting toe-in, torque the lock nut.

16. INSTALL TIE ROD END SUB-ASSEMBLY RH

HINT:

Install the RH side by the same procedures with LH side.

INSTALLATION

1. INSTALL P/S GEAR ASSEMBLY

- Place the P/S gear assembly in installation position.

NOTE: Do not damage the turn pressure tubes.

- Align the matchmarks on the steering intermediate extension and control valve shaft.
- Install the bolt.

Torque: 35 N.m (380 kgf.cm, 26 ft.lbf)

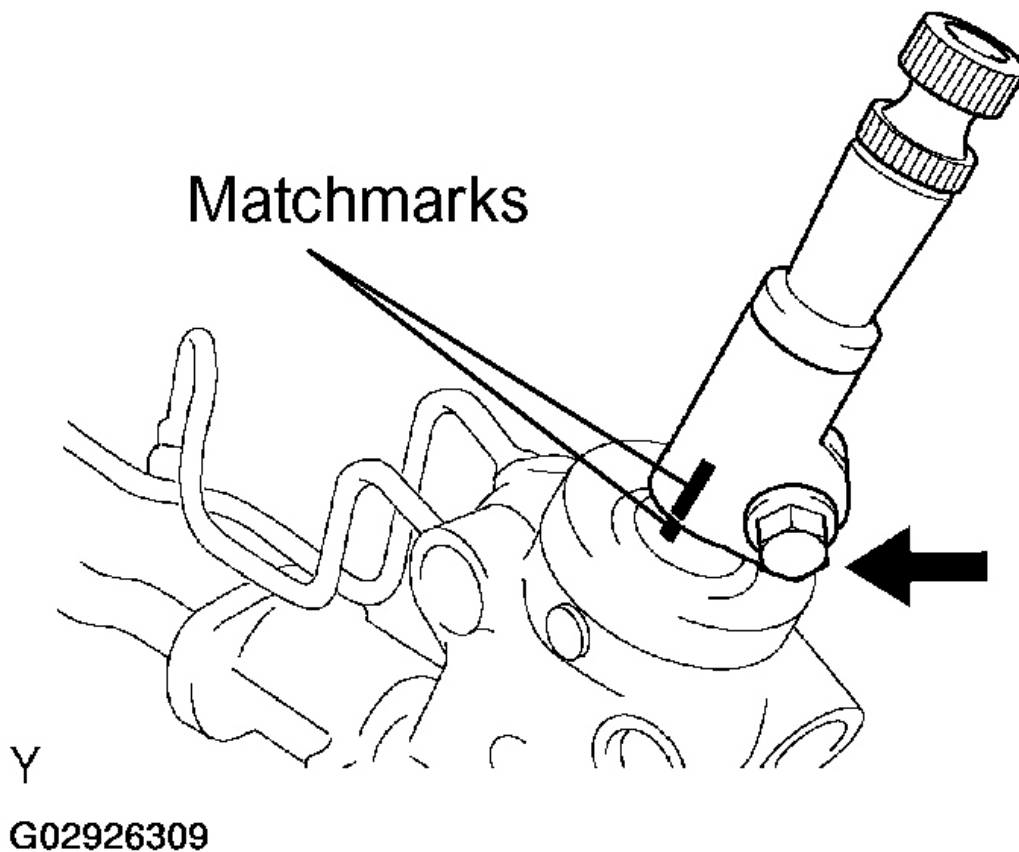


Fig. 53: Aligning Matchmarks On Steering Intermediate Extension And Control Valve Shaft, Installing Bolt

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Place the steering column hole cover clamp and cover on the control valve shaft.
- e. Install the P/S gear assembly with the 2 bolts.

Torque: 137 N.m (1,400 kgf.cm, 101 ft.lbf)

2. CONNECT PRESSURE FEED AND RETURN TUBES

- a. Connect the pressure feed and return tubes to the P/S gear with the 2 bolts.

Torque: 12.5 N.m (130 kgf.cm, 9 ft.lbf)

- b. Using SST, connect the pressure feed and return tubes.

SST 09023-12700

Torque: 40 N.m (410 kgf.cm, 29 ft.lbf)

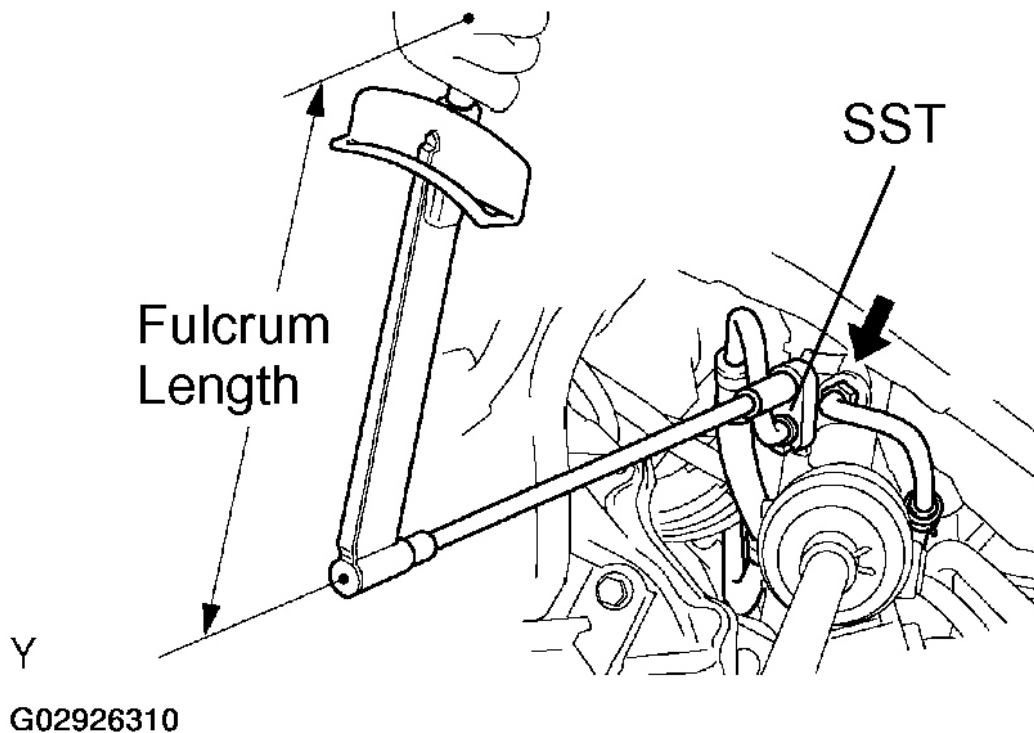


Fig. 54: Connecting Pressure Feed And Return Tubes Using SST
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

3. CONNECT STABILIZER BAR

Connect the stabilizer bar with the 4 bolts.

Torque: 29 N.m (380 kgf.cm, 22 ft.lbf)

4. CONNECT RH AND LH TIE ROD ENDS (See INSTALLATION)

5. CONNECT STEERING COLUMN HOLE COVER

- Connect the steering column hole cover to the dash panel.
- Tighten the clamp of the steering column hole cover.

6. CONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY (See INSTALLATION)

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7. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

HINT:

Do it with the front of the vehicle jacked up.

8. CENTER SPIRAL CABLE (See INSTALLATION)

9. INSTALL STEERING WHEEL

- a. Align the matchmarks on the steering wheel and steering column main shaft.
- b. Temporarily tighten the steering wheel set nut.

10. BLEED POWER STEERING SYSTEM (See BLEEDING)

11. CHECK STEERING WHEEL CENTER POINT

12. TORQUE STEERING WHEEL SET NUT

Torque: 50 N.m (510 kgf.cm, 37 ft.lbf)

13. INSTALL STEERING WHEEL PAD (See INSTALLATION)

14. CHECK FRONT WHEEL ALIGNMENT (See INSPECTION)