

REMOVAL

NOTICE:

When installing, coat the parts indicated by arrows with power steering fluid or molybdenum disulfide lithium base grease (See page [PS-16](#)).

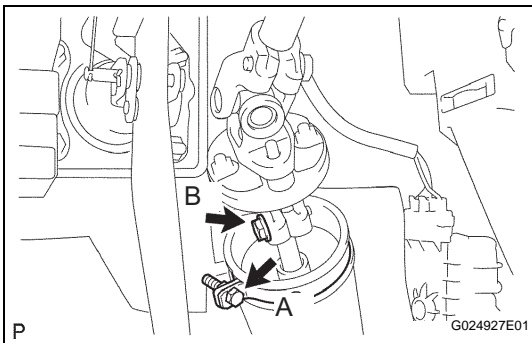
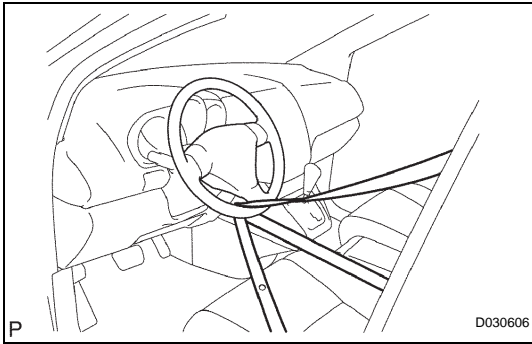
1. INSPECT CENTER FRONT WHEEL
2. SEPARATE STEERING INTERMEDIATE SHAFT SUB-ASSEMBLY

- (a) Fix the steering wheel with the seat belt in order to prevent rotation.

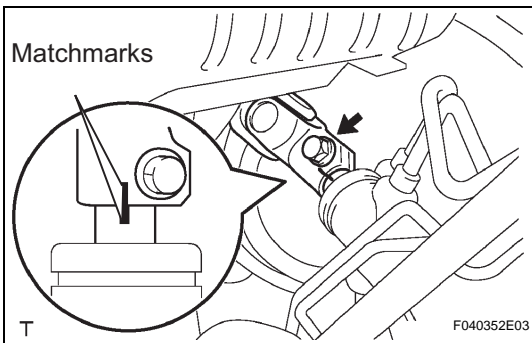
HINT:

This operation is useful to prevent damaging of the spiral cable.

PS

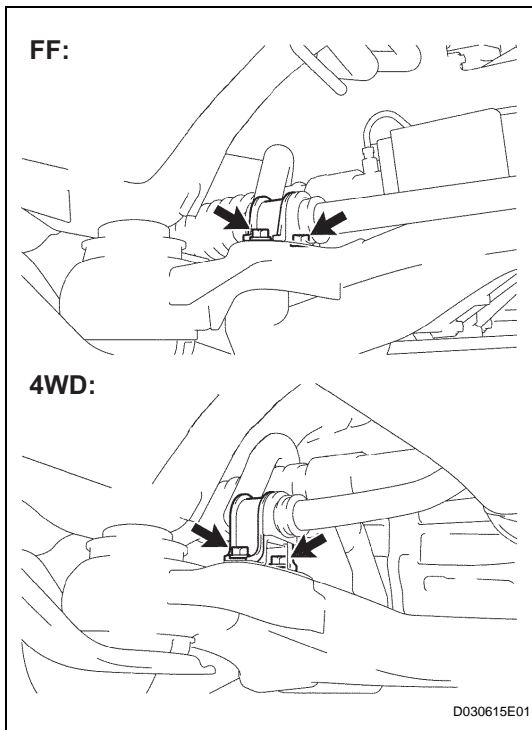


- (b) Loosen bolt A and remove the clamp from the steering column hole cover No. 1.
- (c) Separate the steering column hole cover No. 2 from the steering column hole cover No. 1.
- (d) Loosen bolt B.



- (e) Put matchmarks on the steering intermediate shaft sub-assembly and the steering link assembly.
- (f) Remove the bolt and disengage the steering intermediate shaft sub-assembly.

3. REMOVE FRONT WHEEL
4. SEPARATE TIE ROD ASSEMBLY LH
SST 09628-62011
5. SEPARATE TIE ROD ASSEMBLY RH
SST 09628-62011
HINT:
Perform the same procedure on the other side.
6. SEPARATE FRONT STABILIZER LINK ASSEMBLY LH
(See page [SP-27](#))
7. SEPARATE FRONT STABILIZER LINK ASSEMBLY
RH (See page [SP-27](#))
8. REMOVE EXHAUST PIPE ASSEMBLY FRONT (See
page [EX-5](#))

**9. REMOVE FRONT STABILIZER BRACKET NO.1 LH**

(a) FF:

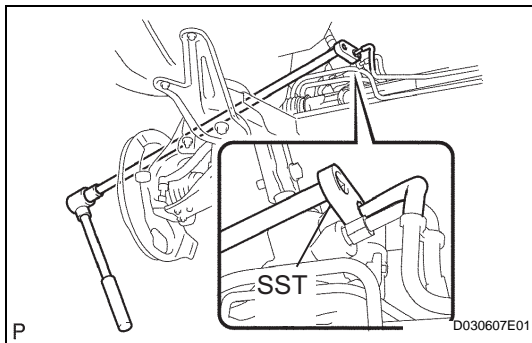
Remove the 2 bolts and the stabilizer bracket No. 1 LH.

(b) 4WD:

Remove the 2 bolts, the stabilizer bracket No. 1 LH and the stabilizer bracket No. 2.

10. REMOVE FRONT STABILIZER BRACKET NO.1 RH
HINT:

Perform the same procedure on the other side.

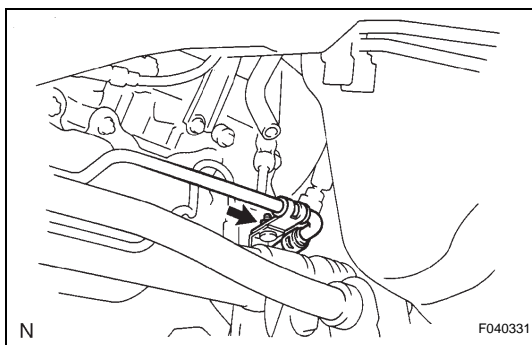
11. REMOVE HEIGHT CONTROL SENSOR SUB-ASSEMBLY FRONT LH (See page SC-124)**12. DISCONNECT RETURN TUBE ASSEMBLY**

(a) Remove the tube clamp from the pressure feed tube assembly.

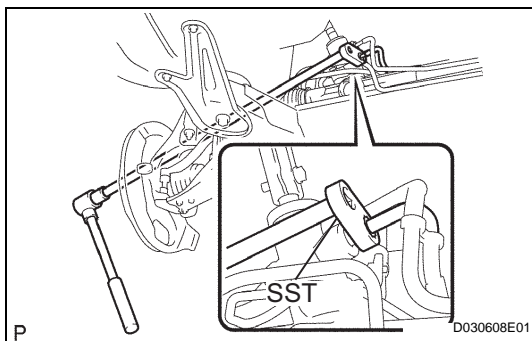
(b) Using SST, disconnect the return tube assembly from the steering link assembly.

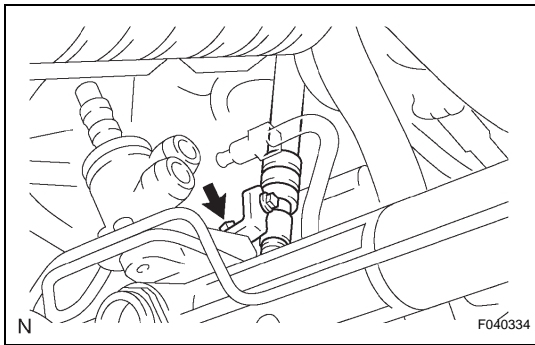
SST 09023-12701

(c) Remove the nut and the return tube clamp.

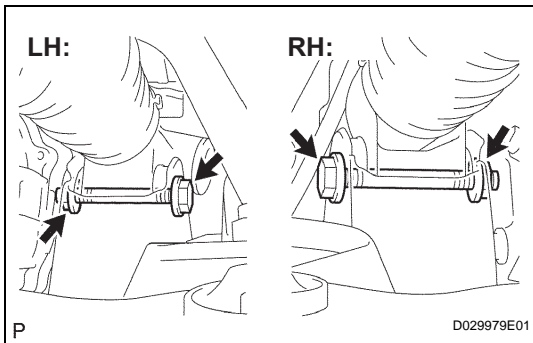
**13. DISCONNECT PRESSURE FEED TUBE ASSEMBLY**

(a) Using SST, disconnect the pressure feed tube assembly from the steering link assembly.

SST 09023-12701

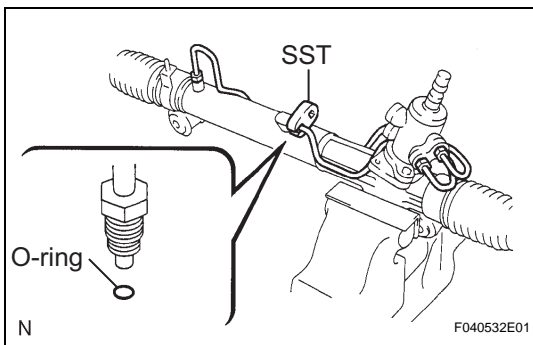


- (b) Remove the bolt and the pressure feed tube clamp.



14. REMOVE POWER STEERING LINK ASSEMBLY

- (a) Remove the 2 bolts, the nuts and the steering link assembly.



DISASSEMBLY

1. REMOVE STEERING LEFT TURN PRESSURE TUBE

- (a) Remove the tube clamp from the turn pressure tubes.
 (b) Using SST, disconnect the left turn pressure tube.
SST 09023-38201
 (c) Remove the 2 O-rings from the left turn pressure tube.

2. REMOVE STEERING RIGHT TURN PRESSURE TUBE **SST 09023-38201**

HINT:

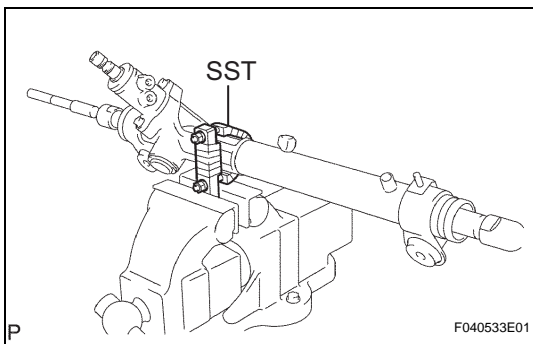
Perform the same procedure on the other side.

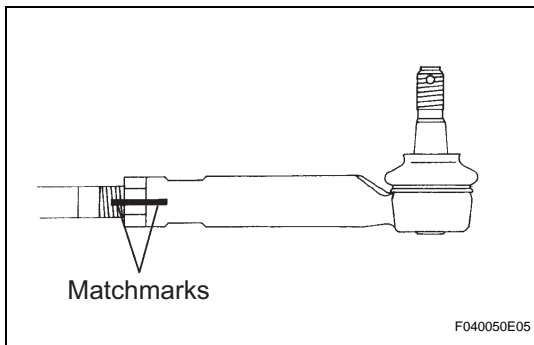
3. FIX POWER STEERING LINK ASSEMBLY

- (a) Using SST, secure the steering link assembly.
SST 09612-00012

HINT:

Wrap the SST with tape before use, in order to prevent damaging the steering link assembly.



**4. REMOVE TIE ROD ASSEMBLY LH**

- (a) Put matchmarks on the tie rod assembly LH and the rack end.
- (b) Loosen the lock nut and remove the tie rod assembly LH and the lock nut.

5. REMOVE TIE ROD ASSEMBLY RH

HINT:

Perform the same procedure on the other side.

6. REMOVE STEERING RACK BOOT CLIP

- (a) Remove the 2 boot clips.

7. REMOVE STEERING RACK BOOT NO.2 CLAMP

- (a) Using a pliers, remove the rack boot No. 2 clamp.

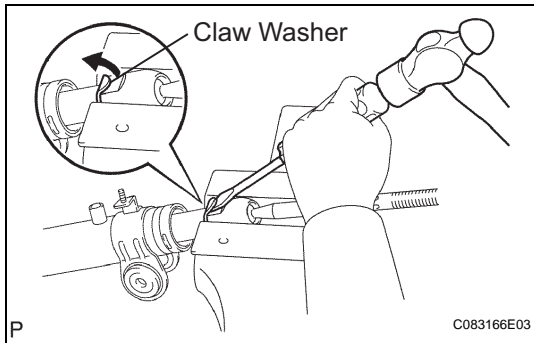
NOTICE:**Be careful not to damage the boot.****8. REMOVE STEERING RACK BOOT NO.1 CLAMP**

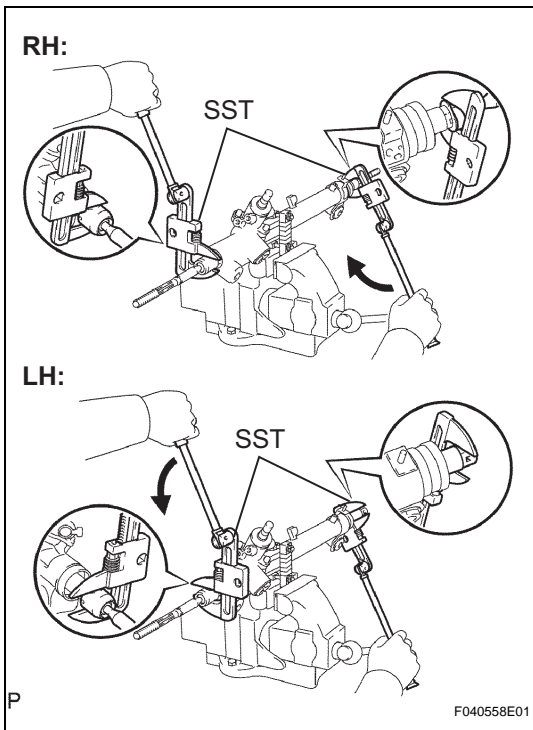
HINT:

Perform the same procedure on the other side.

NOTICE:**Be careful not to damage the boot.****9. REMOVE STEERING RACK BOOT NO. 2****10. REMOVE STEERING RACK BOOT NO. 1****11. REMOVE STEERING RACK END SUB-ASSEMBLY**

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

NOTICE:**Avoid any impact to the steering rack.**



- (b) Using SST, remove the rack end and the claw washer.

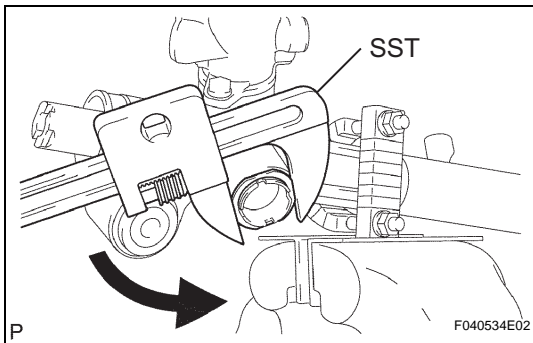
SST 09922-10010

NOTICE:

Use SST 09922-10010, following the direction shown in the illustration.

HINT:

- Mark the RH and LH rack ends.
- Perform the same procedure on the other side.



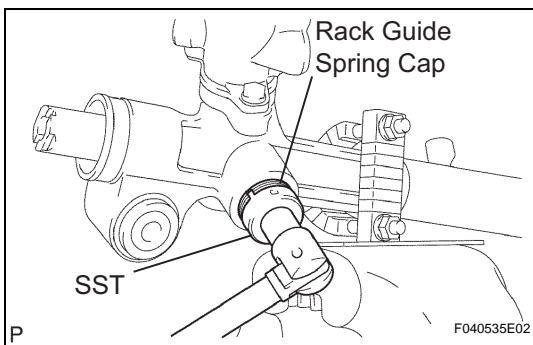
12. REMOVE RACK GUIDE

- (a) Using SST, remove the spring cap lock nut.

SST 09922-10010

NOTICE:

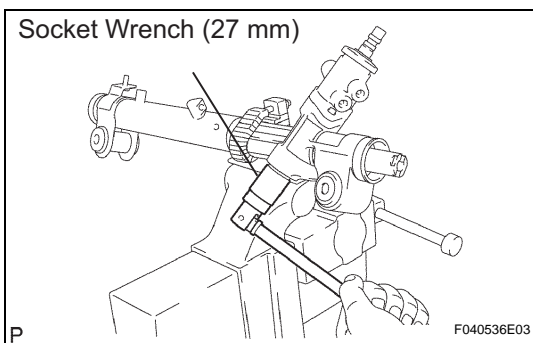
Use SST 09922-10010, following the direction shown in the illustration.



- (b) Using SST, remove the rack guide spring cap.

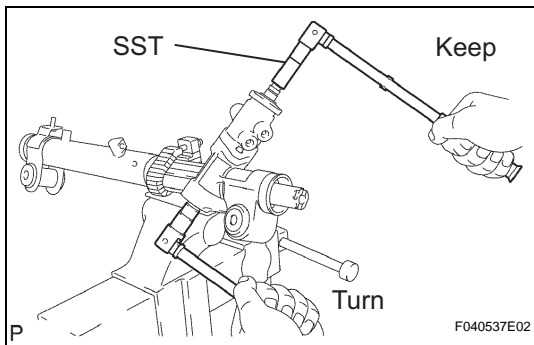
SST 09631-10021

Remove the compression spring and the rack guide.



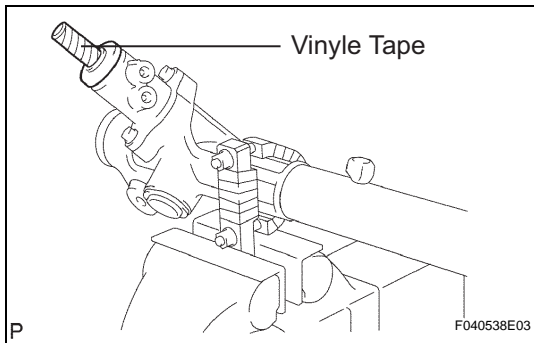
13. REMOVE POWER STEERING CONTROL VALVE

- (a) Using a socket wrench (27 mm), remove the rack housing cap.



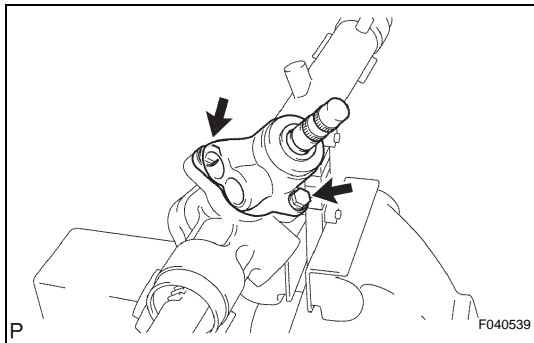
- (b) Using SST, keep the control valve shaft and remove the nut.

SST 09616-00011



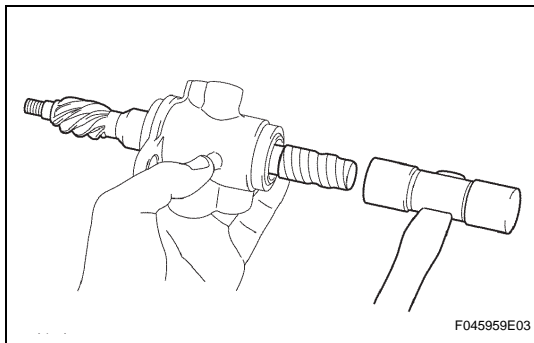
- (c) Wrap vinyl tape around the spline of the control valve in order to prevent damaging the oil seal.

- (d) Remove the dust cover from the control valve housing.



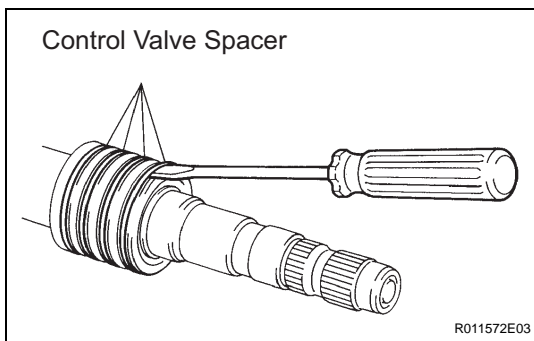
- (e) Remove the 2 bolts and the control valve housing with control valve.

- (f) Remove the gasket.



- (g) Using a plastic hammer, remove the control valve.

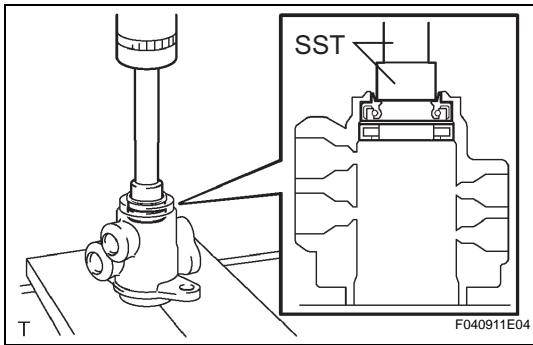
- (h) Remove the oil seal from the control valve.



- (i) Using a screwdriver, remove the 4 control valve spacers.

NOTICE:

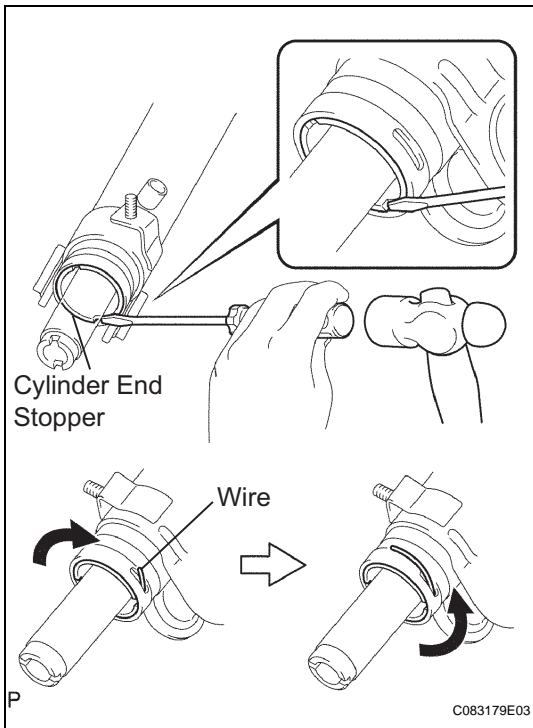
Be careful not to damage the spacer grooves.



14. REMOVE POWER STEERING CONTROL VALVE UPPER OIL SEAL

- (a) Using SST and a press, remove the control valve upper bearing and the upper oil seal from the control valve housing.

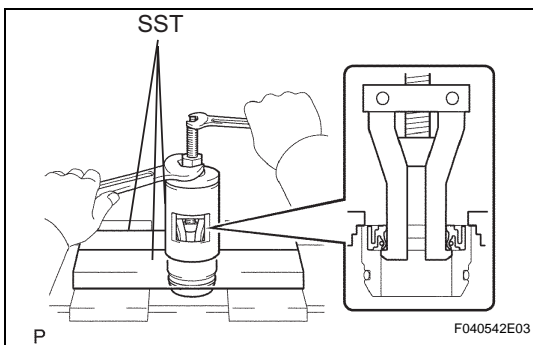
SST 09950-70010 (09951-07150), 09950-60010 (09951-00250)



15. REMOVE CYLINDER END STOPPER

- (a) Using a screwdriver and a hammer, turn the cylinder end stopper clockwise until the wire end is visible through the service hole.
- (b) Using a screwdriver and a hammer, turn the cylinder end stopper counterclockwise, and remove the wire and the cylinder end stopper.

16. REMOVE POWER STEERING RACK



17. REMOVE POWER STEERING RACK BUSH

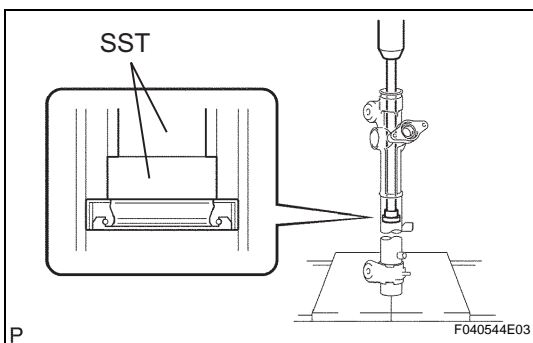
- (a) Remove the rack bush with the rack bush oil seal from the power steering rack.
- (b) Using SST, remove the rack bush oil seal from the rack bush.

SST 09527-21011, 09612-24014 (09613-22011)

NOTICE:

Be careful not to drop the rack bush.

- (c) Using a screwdriver, remove the O-ring from the rack bush.



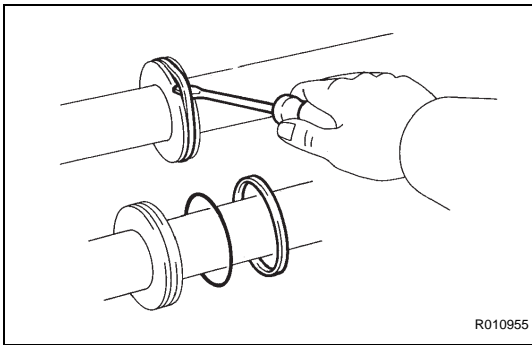
18. REMOVE POWER STEERING CYLINDER TUBE OIL SEAL

- (a) Using SST and a press, remove the cylinder tube oil seal.

SST 09950-70010 (09951-07360), 09950-60010 (09951-00290)

NOTICE:

Be careful not to damage the inside surface of the rack housing.

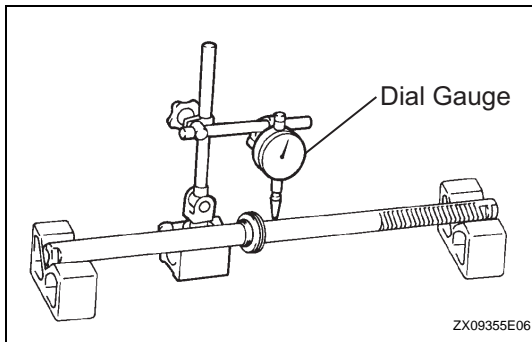
**19. REMOVE POWER PISTON OIL SEAL**

- (a) Using a screwdriver, remove the oil seal and the O-ring.

NOTICE:

Be careful not to damage the oil seal groove.

PS

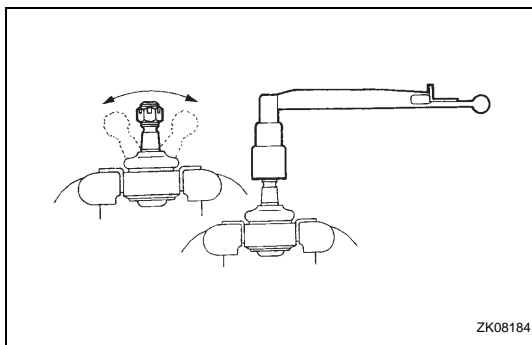
**INSPECTION****1. INSPECT POWER STEERING RACK**

- (a) Using a dial gauge, check for runout of the steering rack and teeth wear.

Maximum runout:

0.3 mm (0.0118 in.)

- (b) Check the rack surface for wear and damage.

**2. INSPECT TIE ROD ASSEMBLY LH**

- (a) Secure the tie rod assembly LH in a vise.
 (b) Install the nut to the stud bolt.
 (c) Flip the ball joint stud back and forth 5 times.
 (d) Using a torx wrench, turn the nut continuously at a rate of 2 to 4 seconds pre turn and take the torque reading on the 5th turn.

Torque: Turning torque

0.49 to 3.43 N*m (5.0 to 35.0 kgf*cm, 4.3 to 30.4 in.*lbf)

3. INSPECT TIE ROD ASSEMBLY RH**HINT:**

Perform the same procedure on the other side.

REASSEMBLY**1. INSTALL POWER PISTON OIL SEAL**

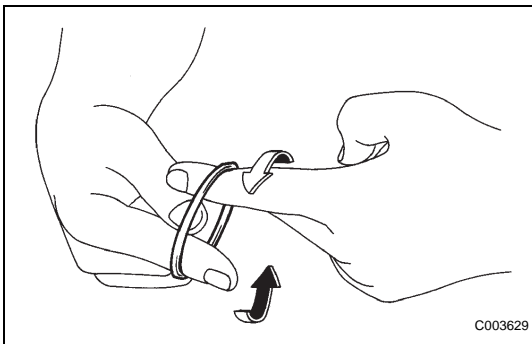
- (a) Coat a new O-ring with power steering fluid and install it to the steering rack.

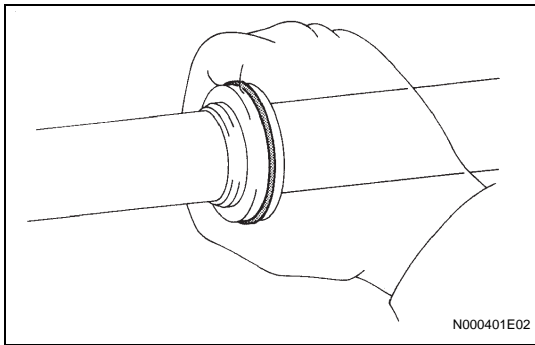
- (b) Expand the new oil seal with your fingers.

NOTICE:

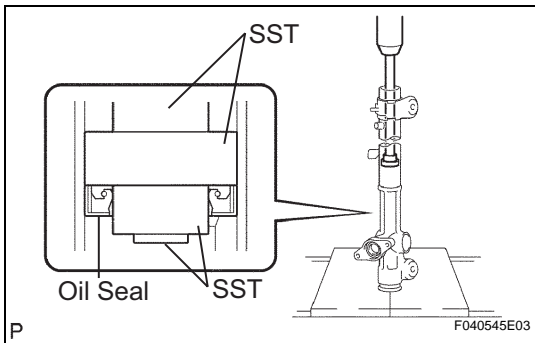
Be careful not to overly expand the oil seal.

- (c) Coat the oil seal with power steering fluid.



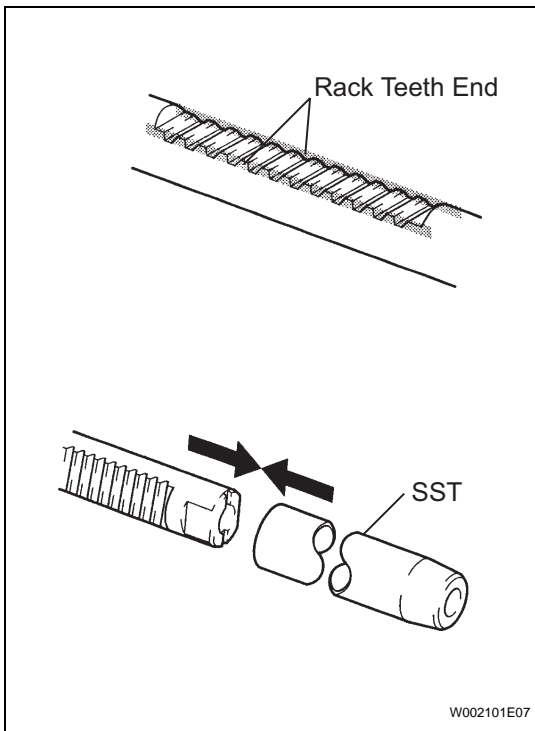


- (d) Install the oil seal to the steering rack, and adjust with your fingers.



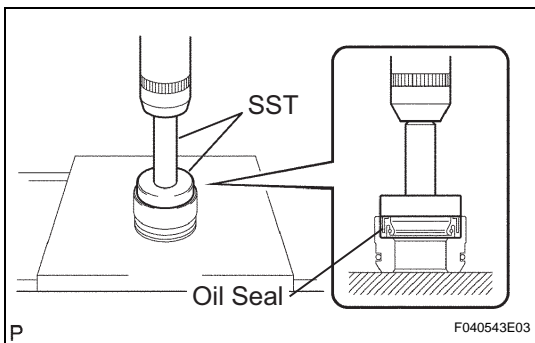
2. INSTALL POWER STEERING CYLINDER TUBE OIL SEAL

- (a) Coat a new oil seal lip with power steering fluid.
 (b) Using SST and a press, install the oil seal.
SST 09950-60010 (09951-00420, 09951-00250, 09952-06010), 09950-70010 (09951-07360)
NOTICE:
Make sure that the oil seal is installed correctly.



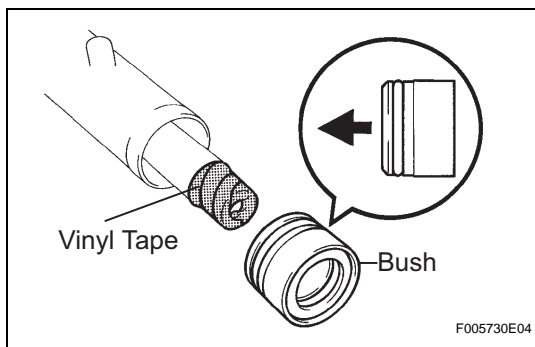
3. INSTALL POWER STEERING RACK

- (a) Apply grease to the rack teeth ends.
 (b) Affix SST to the steering rack.
SST 09631-33010
HINT:
 If necessary, scrape the burrs off the rack teeth ends and burnish.
 (c) Coat SST with power steering fluid.
 (d) Install the steering rack to the rack housing.
 (e) Remove SST.



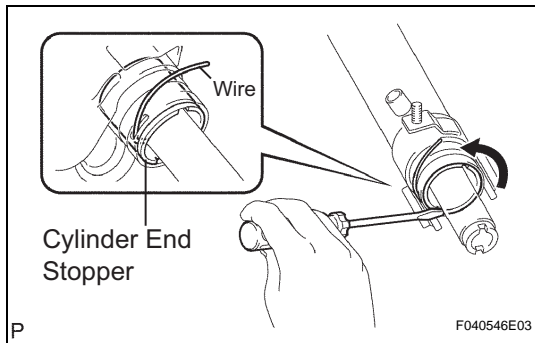
4. INSTALL POWER STEERING RACK BUSH

- (a) Coat a new rack bush oil seal lip with power steering fluid.
 (b) Using SST and a press, install the rack bush oil seal to the rack bush.
SST 09950-60010 (09951-00400), 09950-70010 (09951-07100)
NOTICE:
Make sure that the oil seal is installed correctly.
 (c) Coat a new O-ring with power steering fluid and install it to the rack bush.



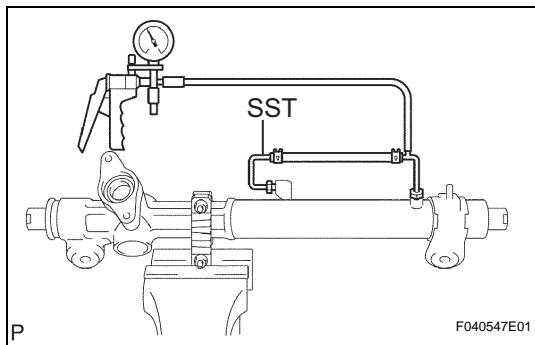
- (d) Coat rack bush oil seal lip with power steering fluid.
 - (e) Install the rack bush to the rack housing.
- HINT:**
Wrap vinyl tape around the end of the steering rack in order to prevent damaging the rack bush oil seal.

PS



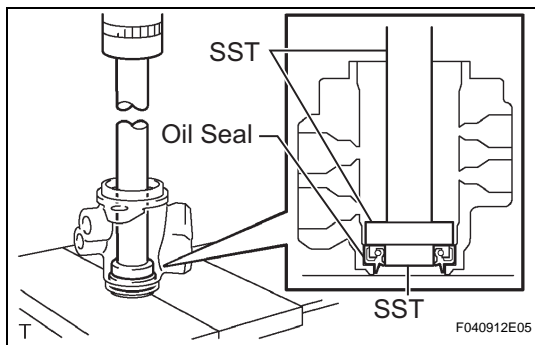
5. INSTALL CYLINDER END STOPPER

- (a) Align the installation hole for the wire of the cylinder end stopper with the slot of the rack housing.
- (b) Install a new wire into the cylinder end stopper.
- (c) Using a screwdriver, turn the cylinder end stopper counterclockwise by $450^\circ \pm 50^\circ$.



6. AIR TIGHTNESS TEST

- (a) Install SST to the rack housing.
SST 09631-12071 (09633-00010)
- (b) Apply a 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.



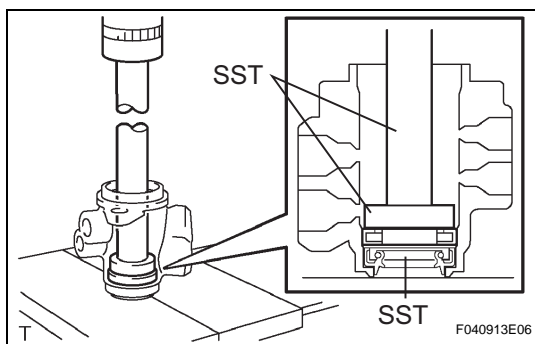
7. INSTALL POWER STEERING CONTROL VALVE UPPER OIL SEAL

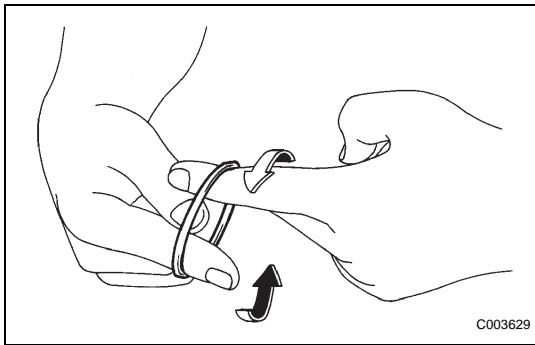
- (a) Coat the control valve upper bearing with grease, and a new control valve upper oil seal lip with power steering fluid.
- (b) Using SST and a press, install a new control valve upper oil seal.
SST 09950-70010 (09951-07150), 09950-60010 (09951-00180, 09952-06010, 09951-00320)

NOTICE:

Make sure that the oil seal is installed correctly.

- (c) Using SST and a press, install the control valve upper bearing.
SST 09950-70010 (09951-07150), 09950-60010 (09951-00180, 09952-06010, 09951-00340)





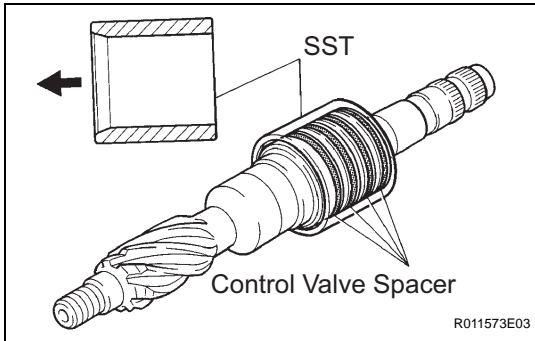
8. INSTALL POWER STEERING CONTROL VALVE

- (a) Expand 4 new valve spacers with your fingers.

NOTICE:

Be careful not to overly expand the valve spacers.

- (b) Coat the 4 valve spacers with power steering fluid.
 (c) Install the 4 valve spacers to the control valve, and adjust with your fingers.

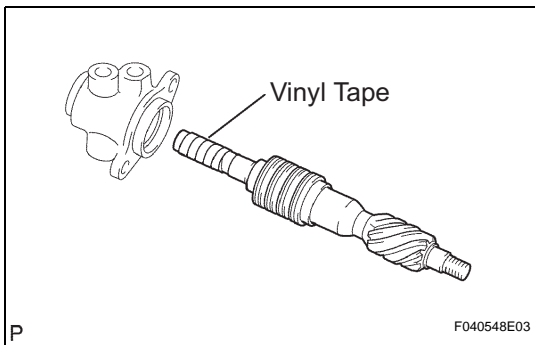


- (d) Carefully slide the tapered end of SST over the valve spacers until they fit to the control valve.

SST 09631-20081

NOTICE:

Be careful not to damage the valve spacers.



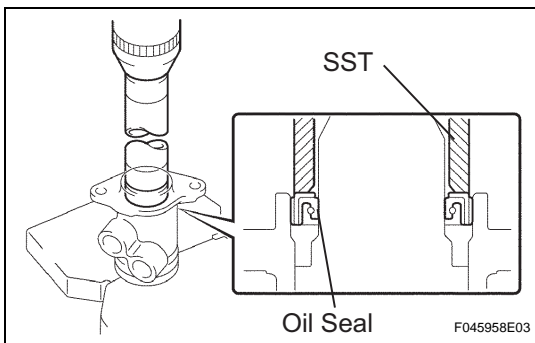
- (e) Coat the oil seal lip with power steering fluid.
 (f) Install the control valve into the valve housing.

NOTICE:

Be careful not to damage the valve spacer and oil seal lip.

HINT:

Wrap vinyl tape around the end of the steering rack in order to prevent damaging the oil seal.



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

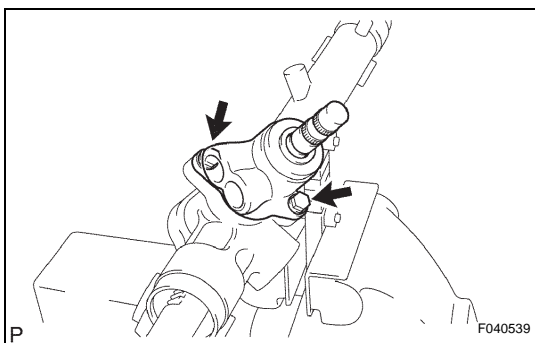
- (h) Using SST and a press, install the oil seal.

SST 09612-22011

NOTICE:

Make sure that the oil seal is installed correctly.

- (i) Apply grease to the needle roller bearing of the rack housing and the serrated part of the control valve.
 (j) Install a new gasket to the valve housing.

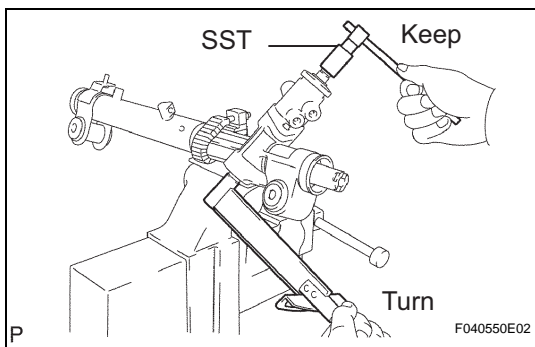


- (k) Install the control valve housing with control valve to the rack housing with the 2 bolts.

Torque: 21 N*m (214 kgf*cm, 15 ft.*lbf)

HINT:

Wrap vinyl tape around the lower spline of the control valve in order to prevent damaging the oil seal.



- (l) Using SST, keep the control valve from rotating and install a new lock nut.

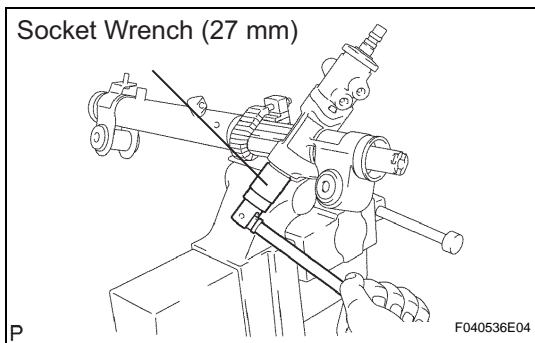
SST 09616-00011

Torque: 25 N*m (250 kgf*cm, 18 ft.*lbf)

- (m) Apply sealant to 2 or 3 threads of the rack housing cap.

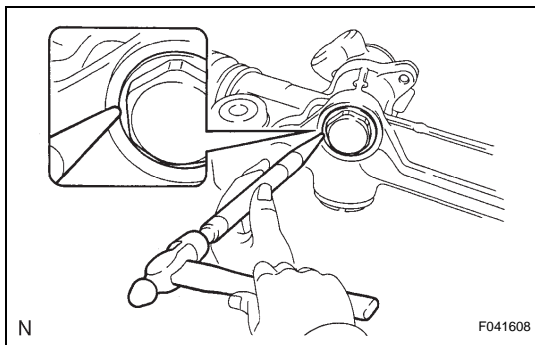
Sealant:

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



- (n) Using a socket wrench (27 mm), install the rack housing cap.

Torque: 59 N*m (597 kgf*cm, 43 ft.*lbf)



- (o) Using a punch and a hammer, stake the rack housing cap and the rack housing.

9. INSTALL RACK GUIDE

- (a) Apply grease to the compression spring and the contact surface of the rack guide.
 (b) Install the rack guide and the compression spring.
 (c) 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

- (d) Temporarily install the rack guide spring cap.

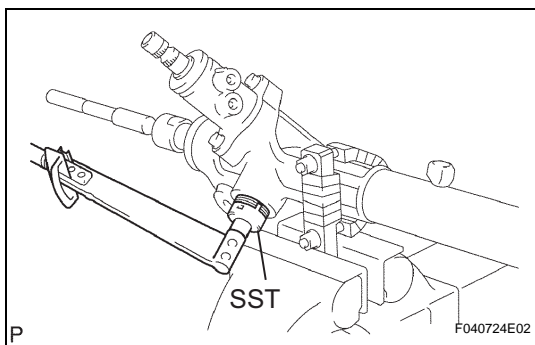
10. ADJUST TOTAL PRELOAD

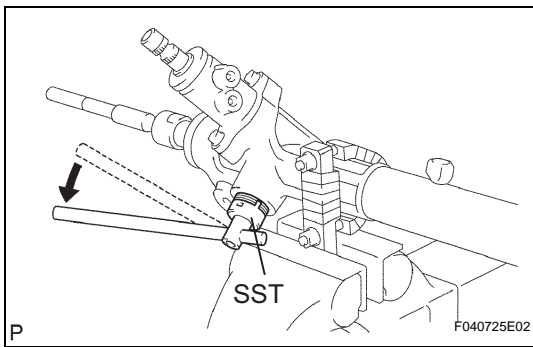
- (a) temporarily install the RH and LH rack ends sub-assembly, in order to prevent the oil seal damaging by the rack teeth.

- (b) Using SST, torque the rack guide spring cap.

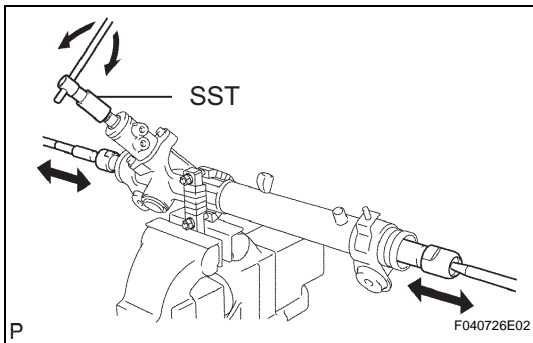
SST 09631-10021

Torque: 25 N*m (250 kgf*cm, 18 ft.*lbf)





- (c) Using SST, loosen the rack guide spring cap.
SST 09631-10021

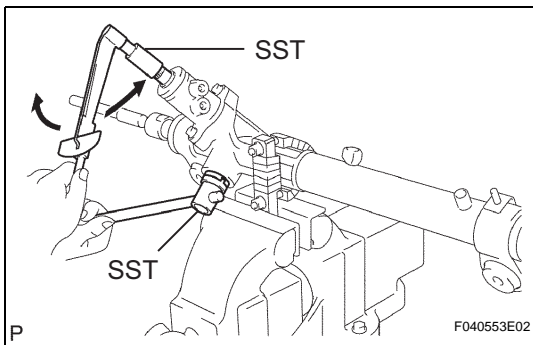


- (d) Using SST, turn the control valve to right and left 1 or 2 times.

SST 09616-00011

- (e) Using SST, loosen the rack guide spring cap until the compression spring stop functioning.

SST 09631-10021



- (f) Using SST and a torque wrench, tighten the rack guide spring cap until the preload falls within specifications.

SST 09616-00011, 09631-10021

Torque: Preload (turning)

1.2 to 1.5 N*m (12.2 to 15.3 kgf*cm, 10.6 to 13.3 in.*lbf)

- (g) Apply sealant to 2 or 3 threads of the rack guide spring cap lock nut.

Sealant:

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

- (h) Temporarily install the rack guide spring cap lock nut.

- (i) Using SST, hold the rack guide spring cap and using another SST, torque the spring cap lock nut.

SST 09616-00011, 09922-10010

Torque: 51 N*m (515 kgf*cm, 38 ft.*lbf)

NOTICE:

Use SST 09922-10010 following the direction shown in the illustration.

HINT:

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

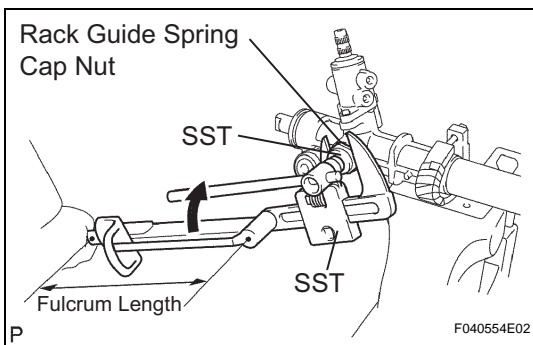
- (j) Precheck the total preload.

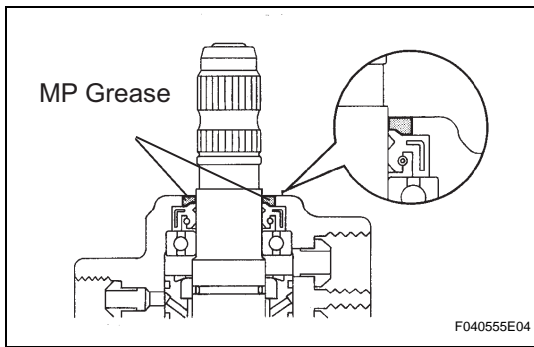
Torque: Preload (turning)

1.2 to 1.5 N*m (12.2 to 15.3 kgf*cm, 10.6 to 13.3 in.*lbf)

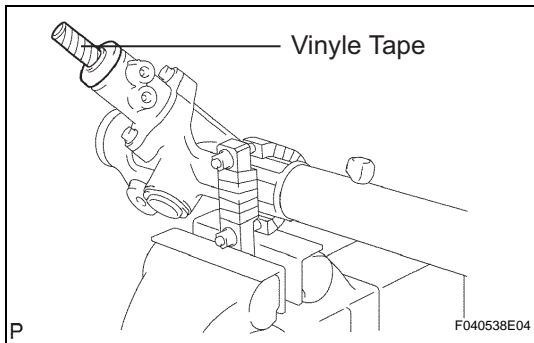
Torque: N*m (kgf*cm, in.*lbf)

- (k) Remove the RH and LH rack ends sub-assembly.

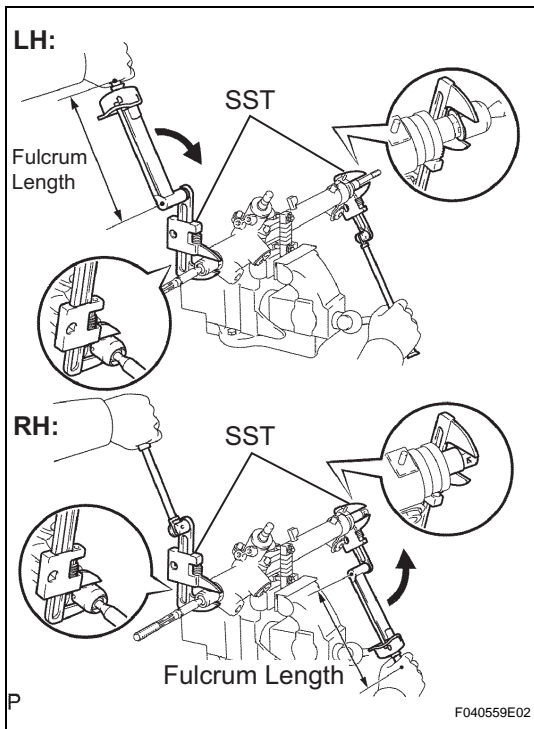




- (l) Apply MP grease around the control valve shaft, as shown in the illustration.

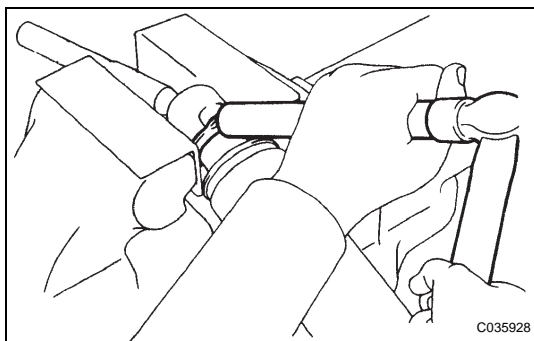


- (m) Wrap vinyl tape around the spline of the control valve.
 (n) Install the dust cover to the control valve housing.

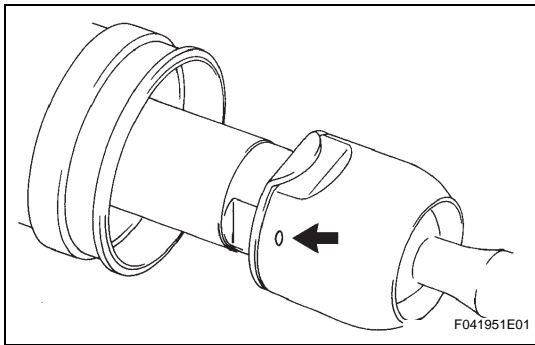


11. INSTALL STEERING RACK END SUB-ASSEMBLY

- (a) Install 2 new claw washers, and temporarily install the rack ends sub-assembly.
HINT:
 Align the claws of the claw washer with the steering rack grooves.
- (b) Using SST, install the 2 rack end sub-assembly.
SST 09922-10010
Torque: 50 N*m (505 kgf*cm, 37 ft.*lbf)
NOTICE:
 Use SST 09922-10010 following the direction shown in the illustration.
HINT:
- Using SST, hold the rack and install the rack end sub-assembly.
 - Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).



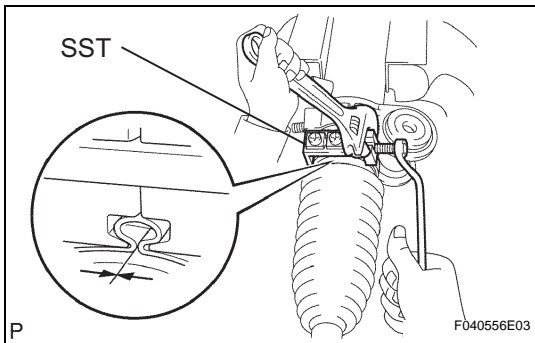
- (c) Using a brass bar and a hammer, stake the 2 claw washers.
NOTICE:
 Avoid any impact to the steering rack.

**12. INSPECT POWER STEERING RACK**

- (a) Ensure that the holes of rack ends are not clogged with grease.

HINT:

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

13. INSTALL STEERING RACK BOOT NO. 2**14. INSTALL STEERING RACK BOOT NO. 1****15. INSTALL STEERING RACK BOOT NO.2 CLAMP**

- (a) Using SST, tighten the rack boot No. 2 clamp, as shown in the illustration.

SST 09521-24010

Clearance:

3.0 mm (0.118 in.) or less

NOTICE:

Be careful not to damage the boot.

16. INSTALL STEERING RACK BOOT NO.1 CLAMP

SST 09521-24010

HINT:

Perform the same procedure on the other side.

17. INSTALL STEERING RACK BOOT CLIP

- (a) Using pliers, install the 2 boot clips.

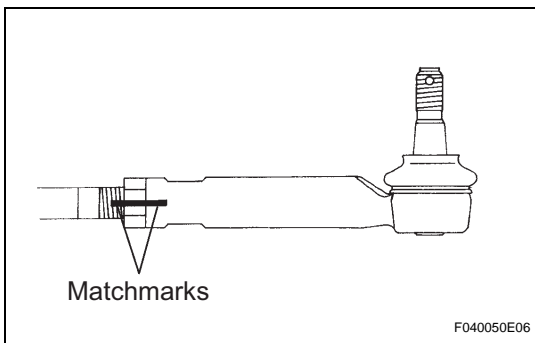
18. INSTALL TIE ROD ASSEMBLY LH

- (a) Screw the lock nut and tie rod assembly LH on the rack end until the matchmarks are aligned.

Torque: 74 N*m (750 kgf*cm, 54 ft.*lbf)

HINT:

After adjusting toe-in, torque the lock nut (See page [SP-2](#)).

**19. INSTALL TIE ROD ASSEMBLY RH**

HINT:

Perform the same procedure on the other side.

20. INSTALL STEERING LEFT TURN PRESSURE TUBE

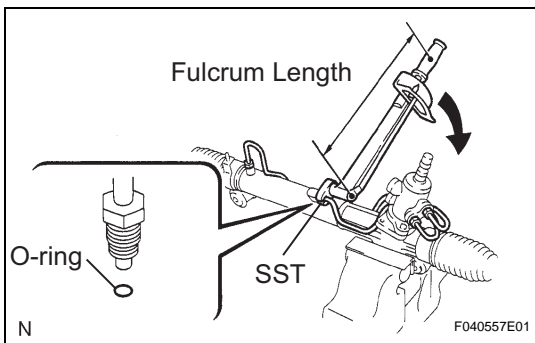
- (a) Coat 2 new O-rings with power steering fluid and install them to the left turn pressure tube.
- (b) Using SST, install the left turn pressure tube to the steering link assembly.

SST 09023-38201

Torque: 12 N*m (122 kgf*cm, 9 ft.*lbf)

HINT:

- Use a torque wrench with a fulcrum length of 250 mm (9.84 in.).
- This torque value is effective when SST is parallel to a torque wrench.

**21. INSTALL STEERING RIGHT TURN PRESSURE TUBE**

- (a) Perform the same procedure on the other side.

SST 09023-38201

- (b) Install the tube clamp to the turn pressure tubes.