

DRIVE BELT INSPECTION

SR0ED-03

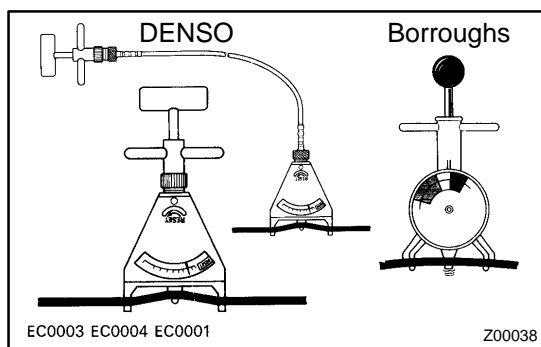
INSPECT DRIVE BELT

- (a) Visually check the drive belt for excessive wear, frayed cords, etc.

If any defect has been found, replace the drive belt.

HINT:

Cracks on the rib side of a drive belt are considered acceptable. If the missing chunks from the ribs are found on the drive belt, it should be replaced.



- (b) Using a belt tension gauge, measure the belt tension.

Belt tension gauge:

DENSO BTG-20 (95506-00020)

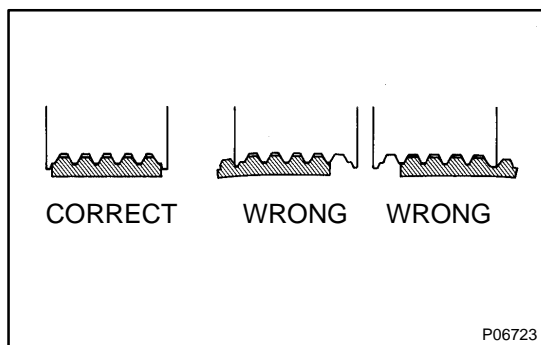
Borroughs No. BT-33-73F

Drive belt tension:

New belt: 120 - 185 lbf

Used belt: 95 - 135 lbf

If the belt tension is not as specified, adjust it.



HINT:

- ★ "New belt" refers to a belt which has been used less than 5 minutes on a running engine.
- ★ "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.
- ★ After installing a belt, check that it fits properly in the ribbed grooves.
- ★ Check with your hand to confirm that the belt has not slipped out of the groove on the bottom of the pulley.
- ★ After installing a new belt, run the engine for about 5 minutes and recheck the belt tension.

POWER STEERING FLUID BLEEDING

SR0EE-03

1. **CHECK FLUID LEVEL** (See page [SR-5](#))
2. **JACK UP FRONT OF VEHICLE AND SUPPORT IT WITH STANDS**

3. **TURN STEERING WHEEL**

With the engine stopped, turn the steering wheel slowly from lock to lock several times.

4. **LOWER VEHICLE**

5. **START ENGINE**

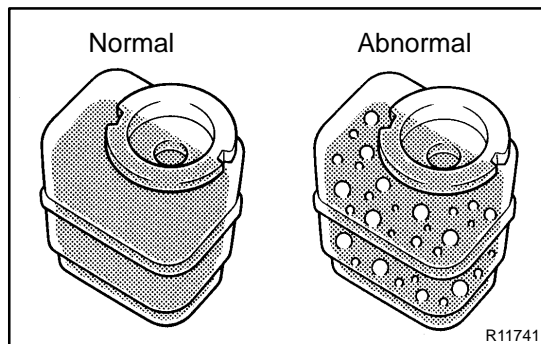
Run the engine at idle for a few minutes.

6. **TURN STEERING WHEEL**

- (a) With the engine idling, turn the steering wheel to left or right full lock position and keep it there for 2-3 seconds, then turn the steering wheel to the opposite full lock position and keep it there for 2-3 seconds.

- (b) Repeat (a) several times.

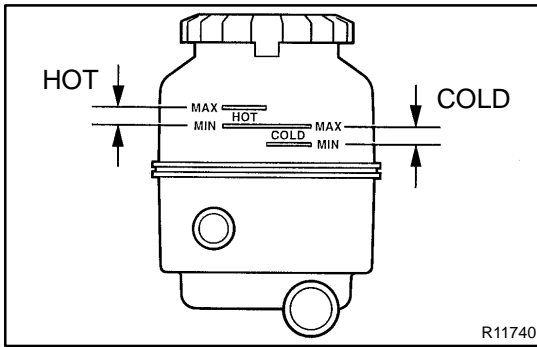
7. **STOP ENGINE**



8. **CHECK FOR FOAMING OR EMULSIFICATION**

If the system has to be bled twice specifically because of foaming or emulsification, check for fluid leaks in the system.

9. **CHECK FLUID LEVEL** (See page [SR-5](#))



INSPECTION

1. CHECK FLUID LEVEL

- Keep the vehicle level.
- With the engine stopped, check the fluid level in the oil reservoir.

If necessary, add fluid.

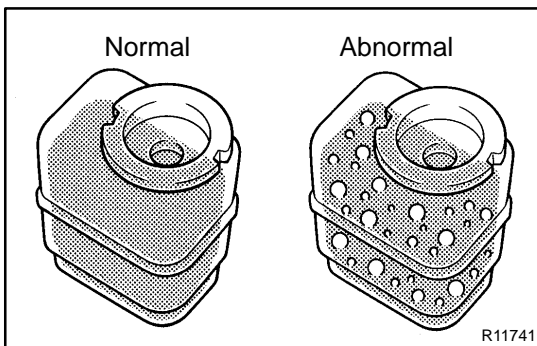
Fluid: ATF DEXRON® II or III

HINT:

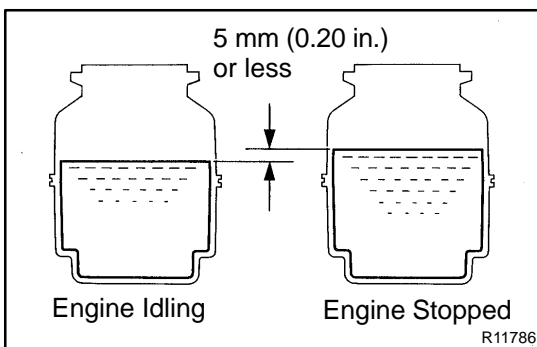
Check that the fluid level is within the HOT LEVEL range on the reservoir. If the fluid is cold, check that it is within the COLD LEVEL range.

- Start the engine and run it at idle.
- Turn the steering wheel from lock to lock several times to boost fluid temperature.

Fluid temperature: 80°C (176°F)



- Check for foaming or emulsification. If there is foaming or emulsification, bleed power steering system (See page [SR-4](#)).



- With the engine idling, measure the fluid level in the oil reservoir.
- Stop the engine.
- Wait a few minutes and remeasure the fluid level in the oil reservoir.

Maximum fluid level rise: 5 mm (0.20 in.)

If a problem is found, bleed power steering system (See page [SR-4](#)).

- Check the fluid level.

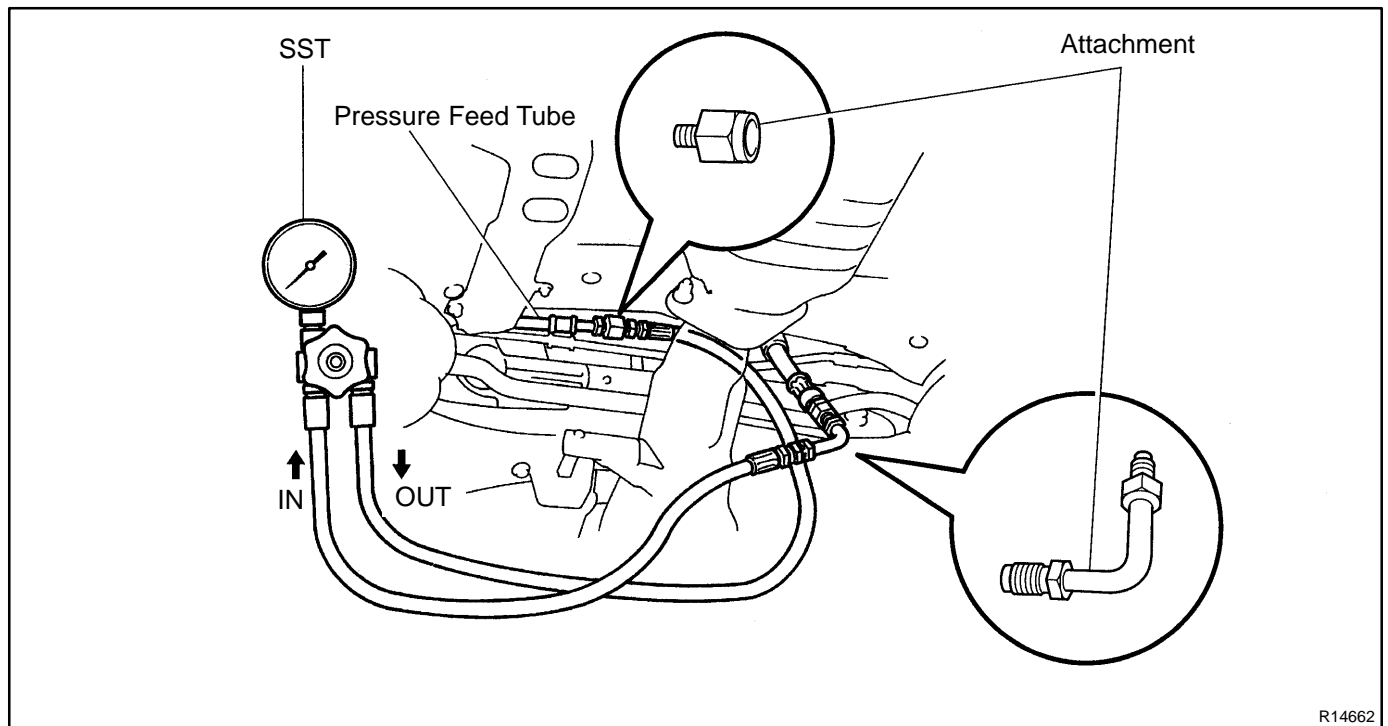
2. CHECK STEERING FLUID PRESSURE

- (a) Disconnect the pressure feed tube (See page [SR-27](#)).
- (b) Connect SST to pressure feed tubes, as shown in the illustration below.

SST 09640- 10010 (09641- 01010, 09641- 01030, 09641-01060)

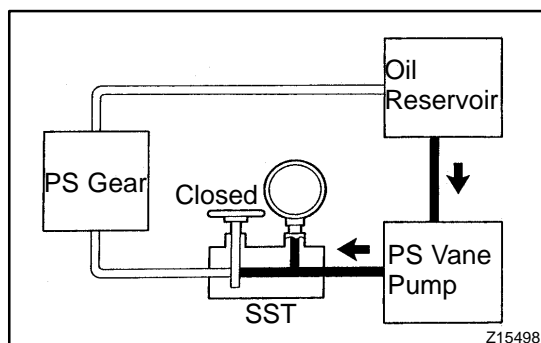
NOTICE:

Check that the valve of the SST is in the open position.



- (c) Bleed the power steering system (See page [SR-4](#)).
- (d) Start the engine and run it at idle.
- (e) Turn the steering wheel from lock to lock several times to boost fluid temperature.

Fluid temperature: 80 °C (176 °F)



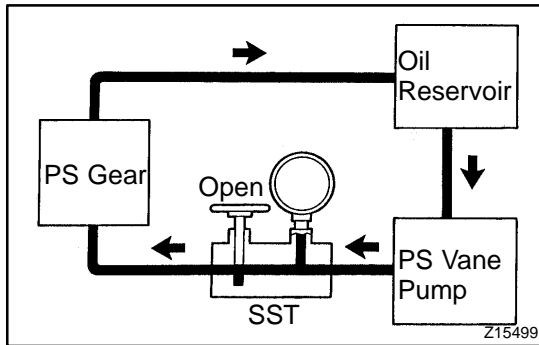
- (f) With the engine idling, close the valve of the SST and observe the reading on the SST.

Minimum fluid pressure:

7,845 kPa (80 kgf/cm², 1,138 psi)

NOTICE:

- ★ Do not keep the valve closed for more than 10 seconds.
- ★ Do not let the fluid temperature become too high.

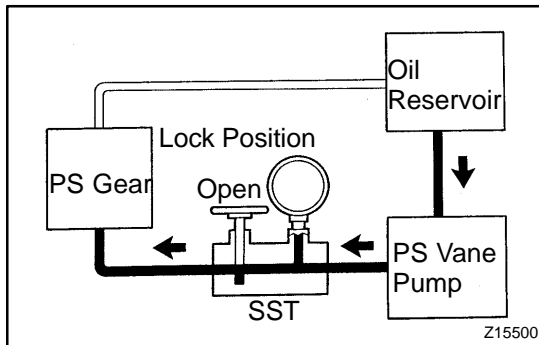


- (g) With the engine idling, open the valve fully.
- (h) Measure the fluid pressure at engine speeds of 1,000 rpm and 3,000 rpm.

Difference fluid pressure:
490 kPa (5 kgf/cm², 71 psi) or less

NOTICE:

Do not turn the steering wheel.



- (i) With the engine idling and valve fully opened, turn the steering wheel to full lock.

Minimum fluid pressure:
7,845 kPa (80 kgf/cm², 1,138 psi)

NOTICE:

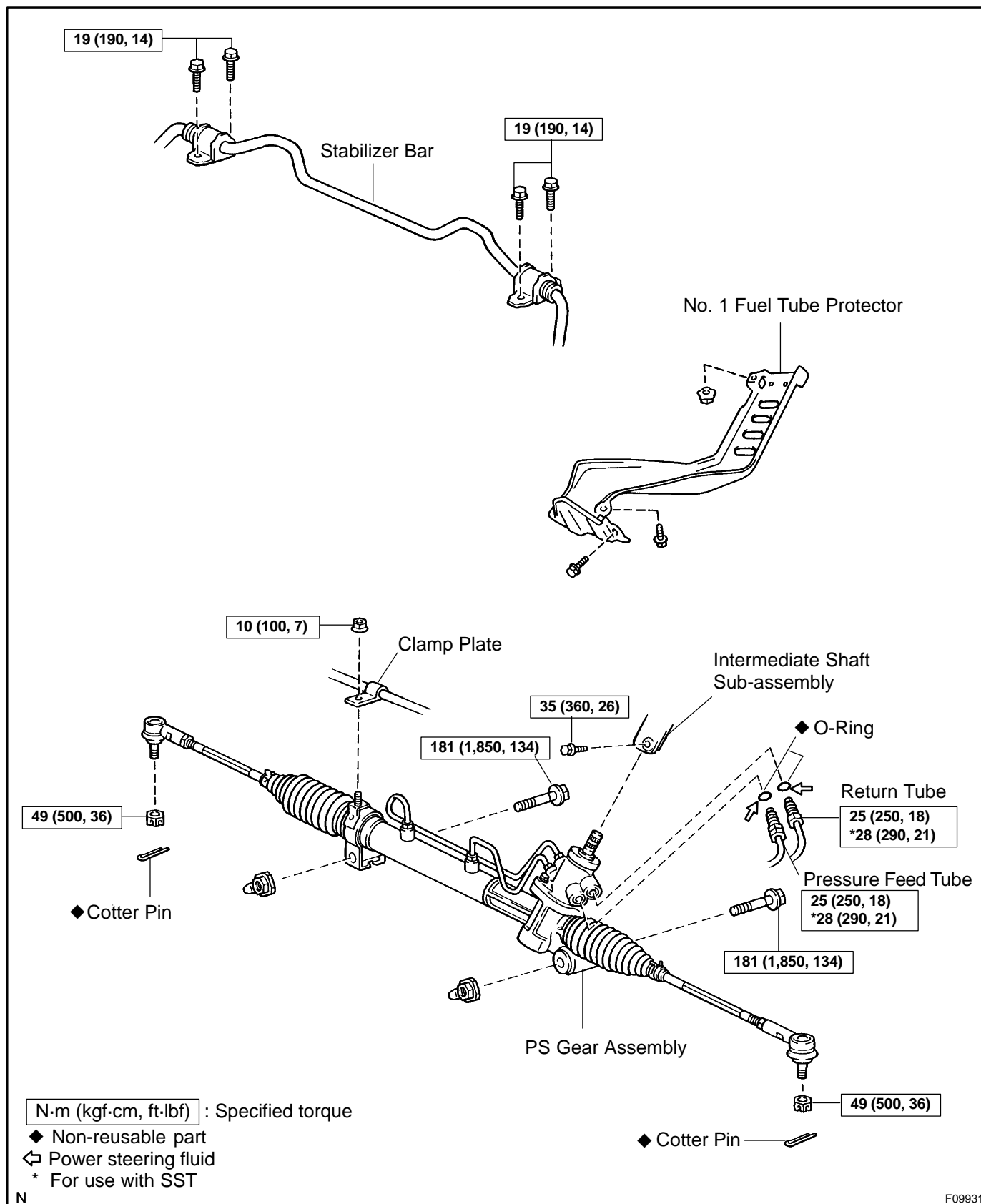
★ **Do not maintain lock position for more than 10 seconds.**

★ **Do not let the fluid temperature become too high.**

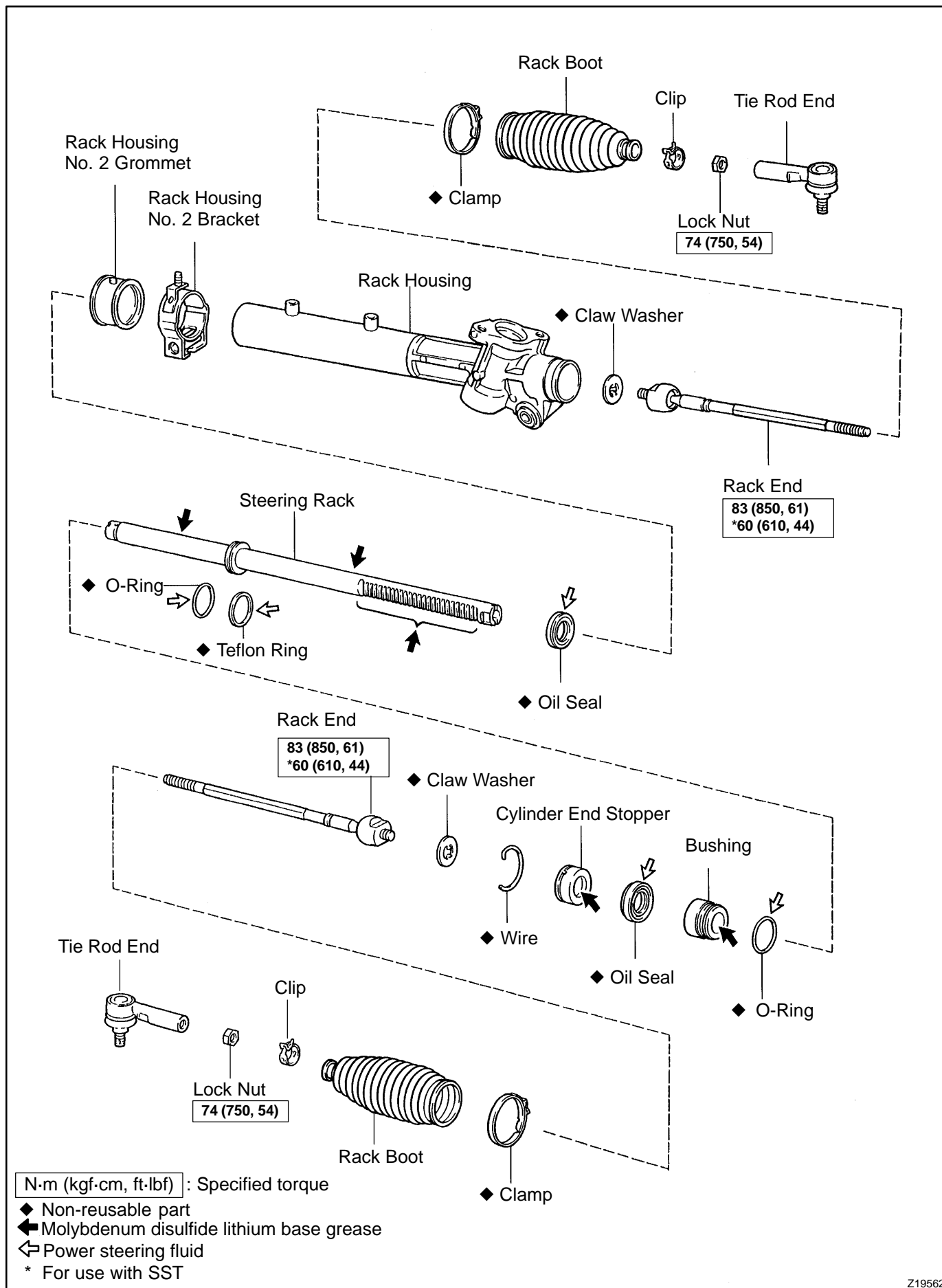
- (j) Disconnect the SST.
 SST 09640- 10010 (09641- 01010, 09641- 01030, 09641-01060)
- (k) Connect the pressure feed tube (See page [SR-35](#)).
- (l) Bleed the power steering system (See page [SR-4](#)).

POWER STEERING GEAR COMPONENTS

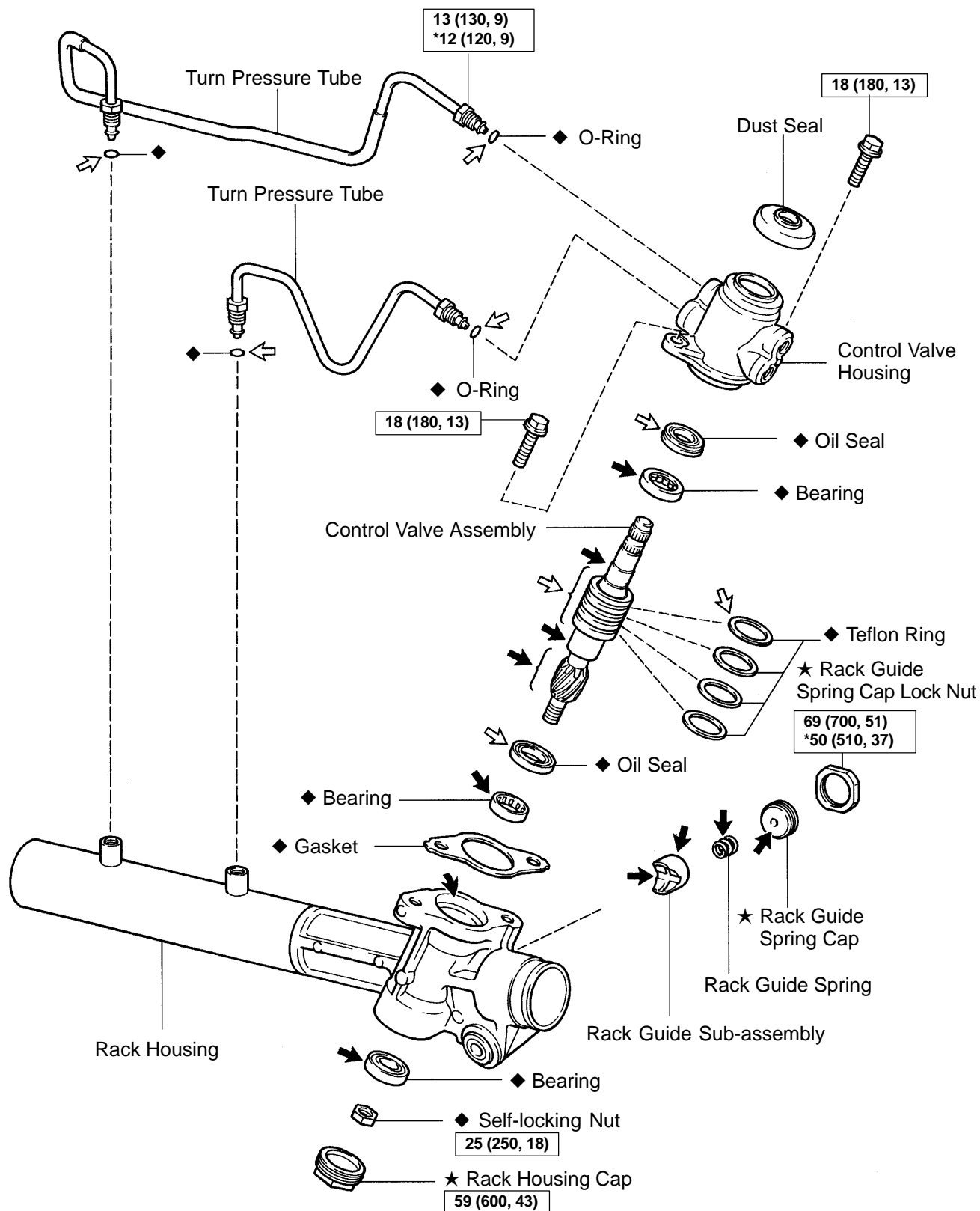
SR0ET-05



F09931



Z19562



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

◆ Non-reusable part

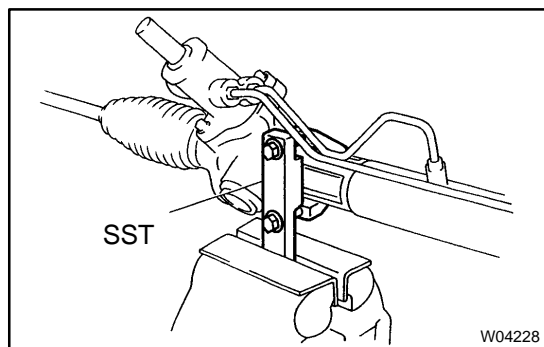
★ Precoated part

◀ Molybdenum disulfide lithium base grease

↺ Power steering fluid

* For use with SST

F09751



DISASSEMBLY

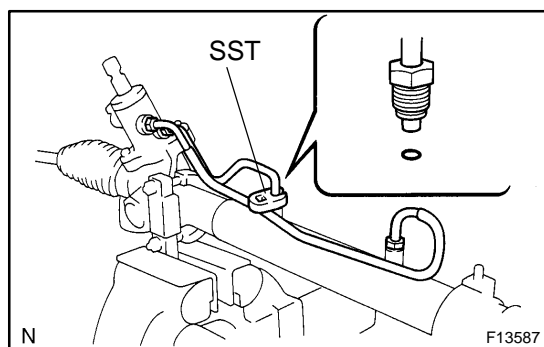
NOTICE:

When using a vise, do not overtighten it.

1. SECURE PS GEAR ASSEMBLY IN VISE

Using SST, secure the PS gear assembly in a vise.

SST 09612-00012

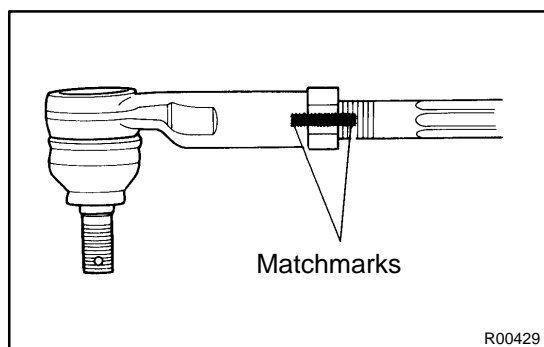


2. REMOVE 2 TURN PRESSURE TUBES

(a) Using SST, remove the 2 turn pressure tubes.

SST 09023-38200

(b) Remove the 4 O-rings from the 2 turn pressure tubes.

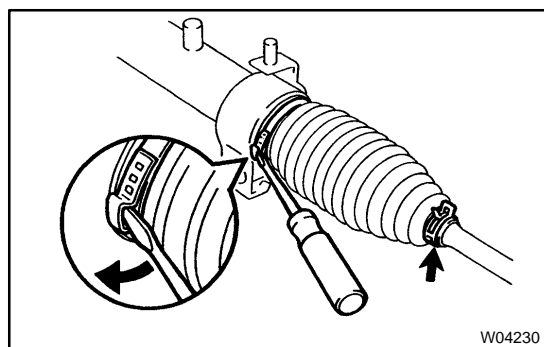


3. REMOVE RH AND LH TIE ROD ENDS AND LOCK NUTS

(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.



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

(a) Using a screwdriver, loosen the clamp.

NOTICE:

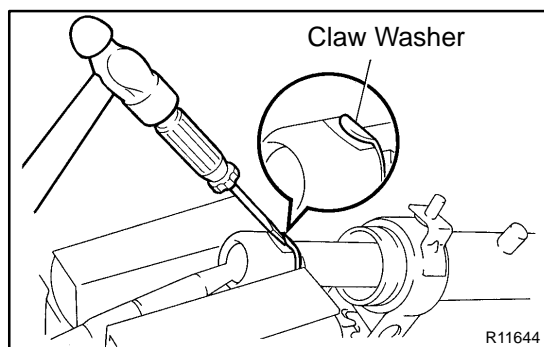
Be careful not to damage the rack boot.

(b) Remove the clip and rack boot.

(c) Employ the same manner described above to the other side.

HINT:

Mark the RH and LH rack boot.

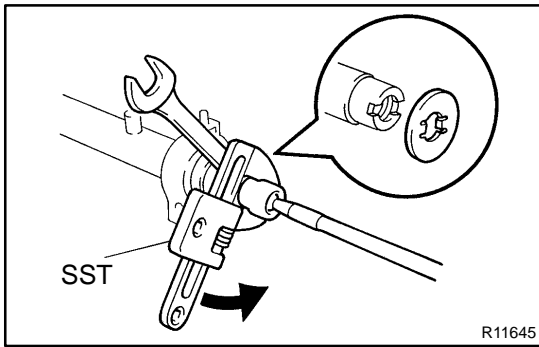


5. REMOVE RH AND LH RACK ENDS AND CLAW WASHERS

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

NOTICE:

Avoid any impact on the steering rack.



- (b) Using a spanner (24 mm) hold the steering rack steadily and using SST, remove the rack end.
SST 09922-10010

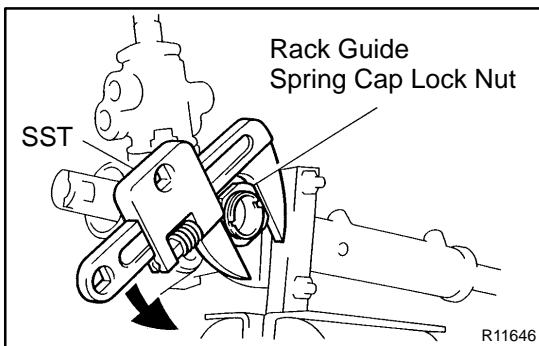
NOTICE:

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

- (c) Remove the claw washer.
(d) Employ the same manner described above to the other side.

HINT:

Mark the RH and LH rack ends.

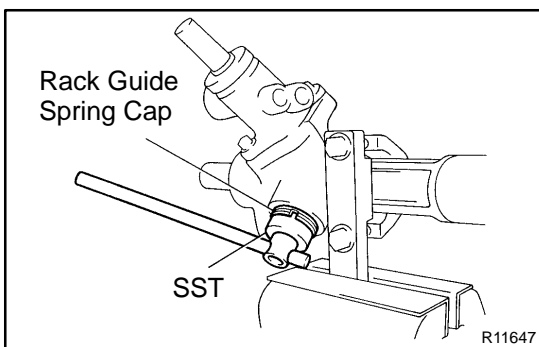
**6. REMOVE RACK GUIDE SPRING CAP LOCK NUT**

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

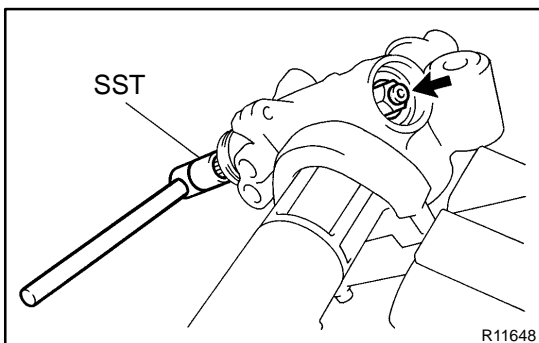
SST 09922-10010

NOTICE:

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

**7. REMOVE RACK GUIDE SPRING CAP, RACK GUIDE SPRING, RACK GUIDE SUB-ASSEMBLY**

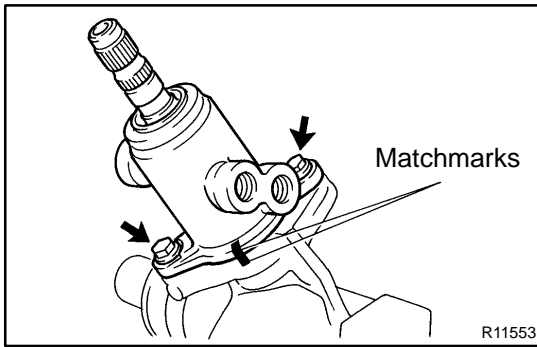
- (a) Using SST, remove the rack guide spring cap.
SST 09631-10021
(b) Remove the rack guide spring and rack guide sub-assembly.

8. REMOVE RACK HOUSING CAP**9. REMOVE SELF-LOCKING NUT**

Using SST, stop the control valve shaft rotating and remove the self-locking nut.

SST 09616-0001 1

10. REMOVE DUST SEAL

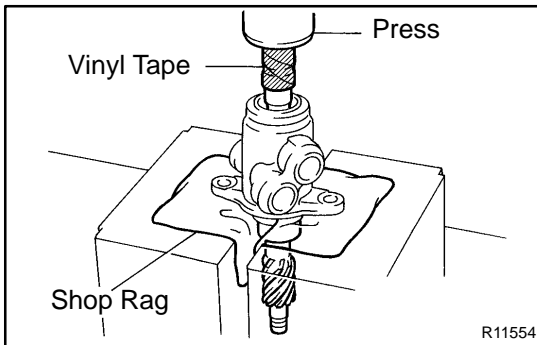


11. REMOVE CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY

- (a) Place matchmarks on the control valve housing and rack housing.
- (b) Remove the 2 bolts and control valve housing.
- (c) Remove the gasket from the rack housing.

12. REMOVE CONTROL VALVE ASSEMBLY

- (a) To prevent oil seal lip damage, wind vinyl tape on the serrated part of the control valve shaft.



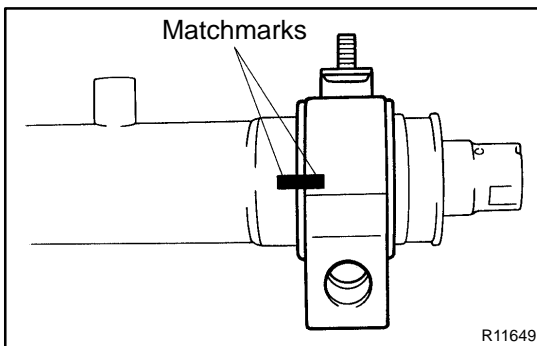
- (b) Press out the control valve assembly with the oil seal.

NOTICE:

- ★ Place a shop rag between the valve housing and the blocks.
- ★ Be careful not to drop the valve assembly.
- ★ Be careful not to damage the oil seal lip.

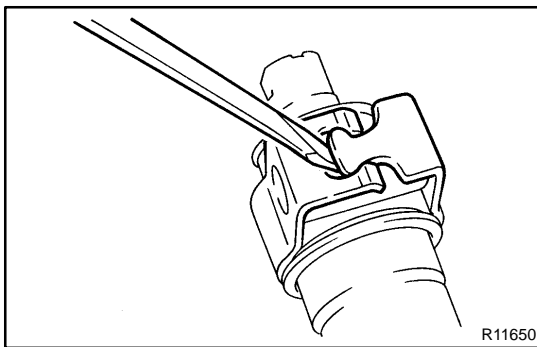
13. REMOVE OIL SEAL

Remove the oil seal from the control valve assembly.

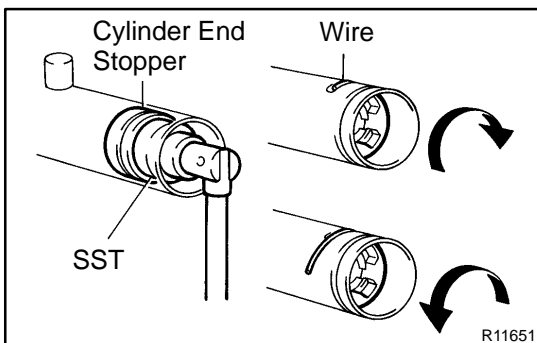


14. REMOVE RACK HOUSING NO. 2 BRACKET AND RACK HOUSING NO. 2 GROMMET

- (a) Place matchmarks on the rack housing No. 2 bracket and rack housing.

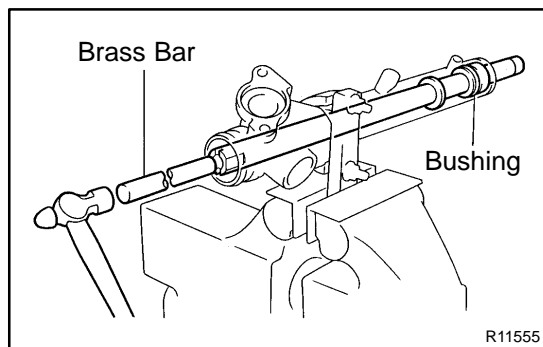


- (b) Using a screwdriver, pry the clamp of the rack housing No. 2 bracket and remove the rack housing No. 2 bracket.
- (c) Remove the rack housing No. 2 grommet from the rack housing No. 2 bracket.

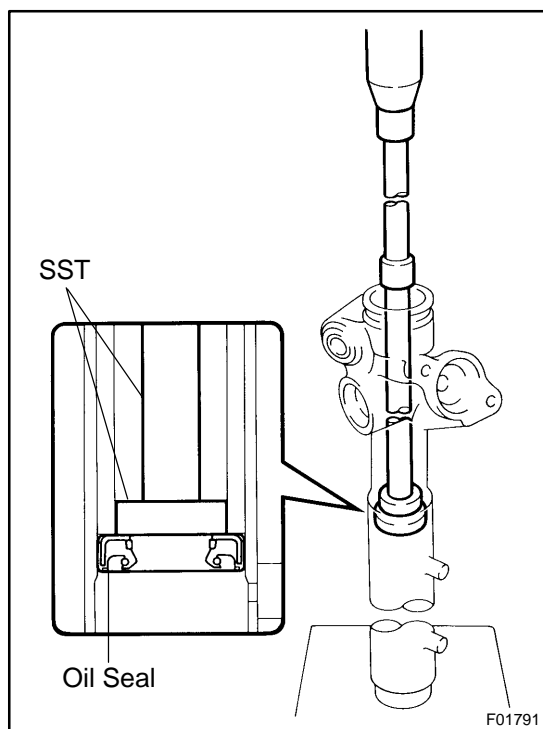


15. REMOVE CYLINDER END STOPPER

- (a) Using SST, turn the cylinder end stopper clockwise until the wire end is visible through the service hole.
SST 09631-10021
- (b) Using SST, turn the cylinder end stopper counterclockwise, and remove the wire and cylinder end stopper.
SST 09631-10021

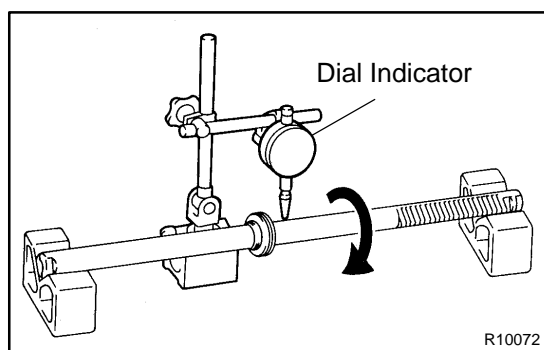
**16. REMOVE STEERING RACK AND BUSHING**

- (a) Using a brass bar and hammer, tap out the steering rack with the bushing.
- (b) Remove the bushing from the steering rack.
- (c) Remove the O-ring from the bushing.

**17. REMOVE OIL SEAL**

Using SST, press out the oil seal.

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



INSPECTION

NOTICE:

When using a vise, do not overtighten it.

INSPECT STEERING RACK

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

Maximum runout: 0.3 mm (0.012 in.)

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

INSTALLATION

1. INSTALL PS GEAR ASSEMBLY

- (a) Install the PS gear assembly from the LH of the vehicle.

NOTICE:

Do not damage the turn pressure tubes.

- (b) Install the 2 gear assembly set bolts and nuts.

Torque: 181 N·m (1,850 kgf-cm, 134 ft-lbf)

HINT:

Lift up the stabilizer bar and install the bolts.

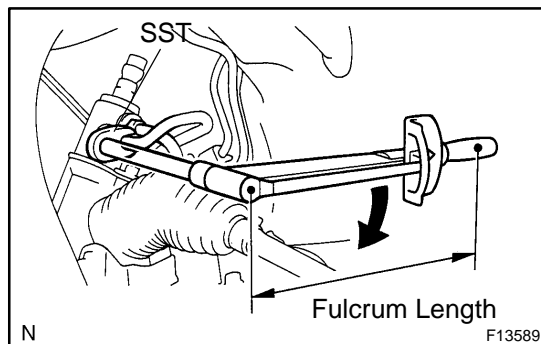
2. INSTALL NO. 1 FUEL TUBE PROTECTOR

Install the No. 1 fuel tube protector with 2 bolts and nut.

3. CONNECT STABILIZER BAR

Connect the stabilizer bar with the 4 bolts.

Torque: 19 N·m (190 kgf-cm, 14 ft-lbf)



4. CONNECT PRESSURE FEED AND RETURN TUBES

- (a) Coat 2 new O-rings with power steering fluid and install them to the pressure feed and return tubes.

- (b) Using SST, connect the pressure feed and return tubes.
SST 09023-38400

Torque: 28 N·m (290 kgf-cm, 21 ft-lbf)

HINT:

- ★ Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
- ★ This torque value is effective in case that SST is parallel to a torque wrench.

5. CONNECT CLAMP PLATE

Connect the clamp plate with nut.

Torque: 10 N·m (100 kgf-cm, 7 ft-lbf)

6. CONNECT INTERMEDIATE SHAFT SUB-ASSEMBLY (See page [SR-22](#))

7. CONNECT RH AND LH TIE ROD ENDS (See page [SA-13](#))

8. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

HINT:

Do it with the front of the vehicle jacked up.

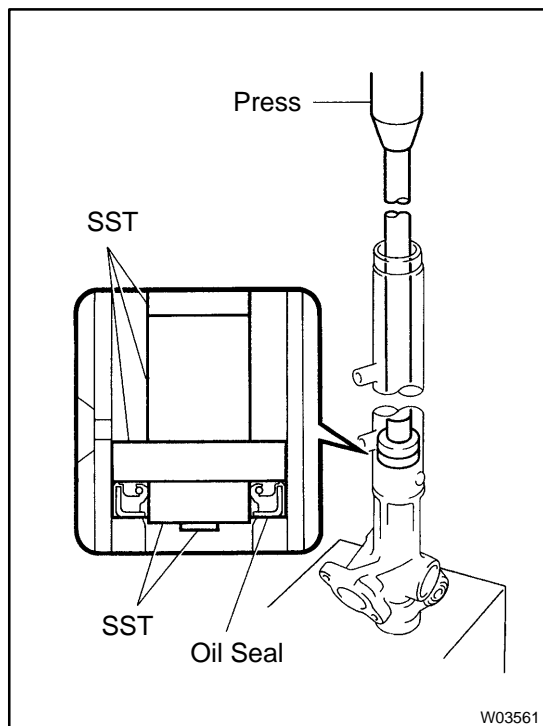
9. CENTER SPIRAL CABLE (See page [SR-22](#))

10. INSTALL STEERING WHEEL

- (a) Align the matchmarks on the steering wheel and steering column main shaft.
- (b) Temporarily tighten the steering wheel set nut.
- (c) Connect the connector.

11. BLEED POWER STEERING SYSTEM (See page [SR-4](#))

12. CHECK STEERING WHEEL CENTER POINT
13. TORQUE STEERING WHEEL SET NUT
Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)
14. INSTALL STEERING WHEEL PAD (See page [SR-22](#))
15. CHECK FRONT WHEEL ALIGNMENT
(See page [SA-4](#))
16. w/ VSC:
PERFORM STEERING ANGLE SENSOR ZERO POINT
CALIBRATION (See page [DI-252](#))



REASSEMBLY

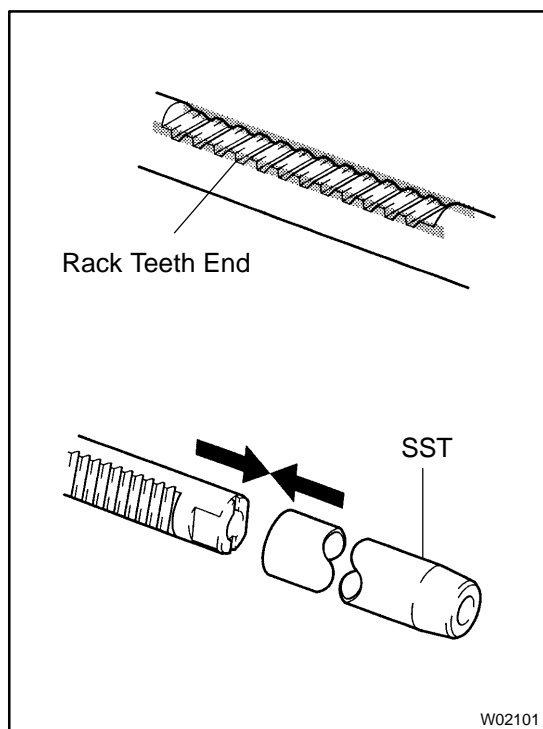
NOTICE:

When using a vise, do not overtighten it.

1. **COAT PARTS INDICATED BY ARROWS WITH POWER STEERING FLUID OR MOLYBDENUM DISULFIDE LITHIUM BASE GREASE (See page SR-37)**
2. **INSTALL OIL SEAL**
 - (a) Coat a new oil seal lip with power steering fluid.
 - (b) Using SST, press in the oil seal.
SST 09950-60010 (09951-00240, 09951-00430, 09952-06010), 09950-70010 (09951-07360)

NOTICE:

- ★ **Make sure that the oil seal is installed facing in the correct direction.**
- ★ **Take care that the oil seal does not get reversed as you install it.**



3. INSTALL STEERING RACK

- (a) Install SST to the steering rack.
SST 09631-33010

HINT:

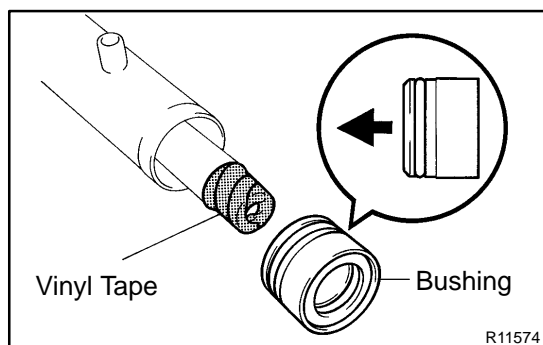
If necessary, scrape the burrs off the steering rack teeth end and burnish.

- (b) Coat the SST with power steering fluid.
- (c) Install the steering rack into the rack housing.

NOTICE:

Be careful not to damage the oil seal lip.

- (d) Remove SST.
SST 09631-33010

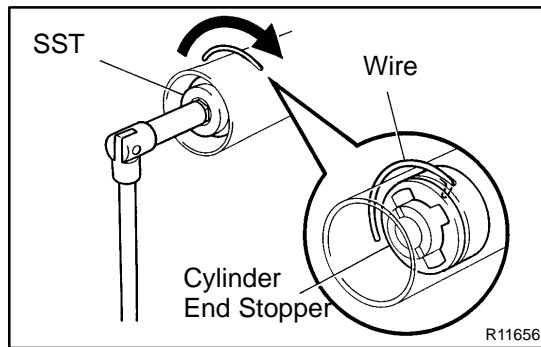


4. INSTALL BUSHING

- (a) Coat a new O-ring with power steering fluid and install it to the bushing.
- (b) To prevent oil seal lip damage, wind vinyl tape on the steering rack end, and apply power steering fluid.
- (c) Install the bushing.

NOTICE:

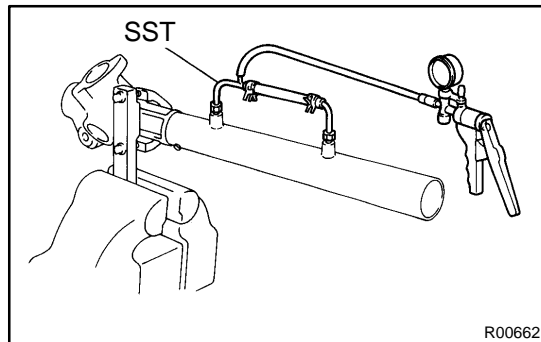
- ★ **Make sure that the bushing is installed facing in the correct direction.**
- ★ **Be careful not to damage the oil seal lip.**



5. INSTALL CYLINDER END STOPPER

- Align the installation hole for the wire of the cylinder end stopper with the slot of the rack housing.
- Install a new wire into the cylinder end stopper.
- Using SST, turn the cylinder end stopper clockwise $450 \pm 50^\circ$.

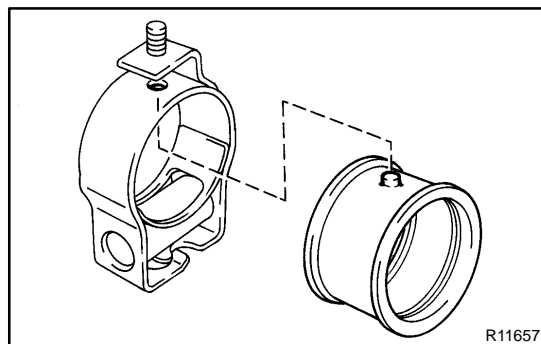
SST 09631-10021



6. AIR TIGHTNESS TEST

- Install SST to the rack housing.
SST 09631-12071
- Apply 53 kPa (400 mmHg, 15.75 in.Hg) of vacuum for about 30 seconds.
- Check that there is no change in the vacuum.

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



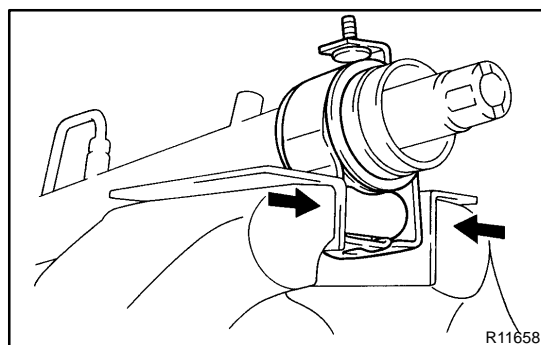
7. INSTALL RACK HOUSING NO. 2 BRACKET AND RACK HOUSING NO. 2 GROMMET

- Install the rack housing No. 2 grommet to the rack housing No. 2 bracket.

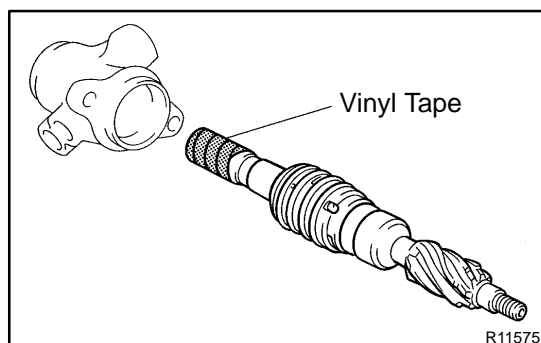
HINT:

Align the projection of the rack housing No. 2 grommet with the hole of the rack housing No. 2 bracket.

- Align the matchmarks on the rack housing No. 2 bracket and rack housing.



- Place the rack housing No. 2 bracket in a vise and install the vise to fasten the clamp.

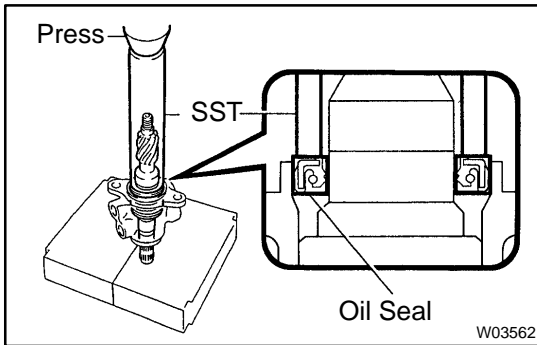


8. INSTALL CONTROL VALVE ASSEMBLY

- To prevent oil seal lip damage, wind vinyl tape on the serrated part of the control valve shaft.
- Coat the teflon rings with power steering fluid.
- Install the control valve assembly into the control valve housing.

NOTICE:

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



9. INSTALL OIL SEAL

- Coat a new oil seal lip with power steering fluid.
- Using SST, press in the oil seal.
SST 09612-2201 1

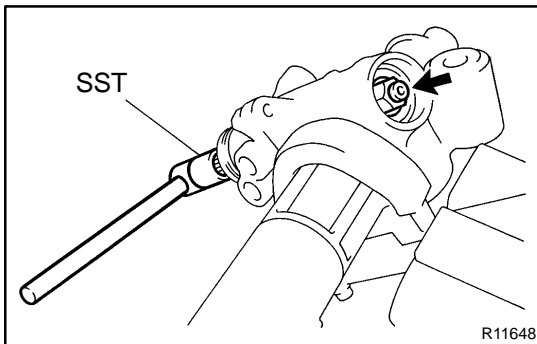
NOTICE:

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

10. INSTALL CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY

- Place a new gasket on the rack housing.
- Align the matchmarks on the control valve housing and rack housing.
- Install the 2 bolts.

Torque: 18 N·m (180 kgf-cm, 13 ft-lbf)



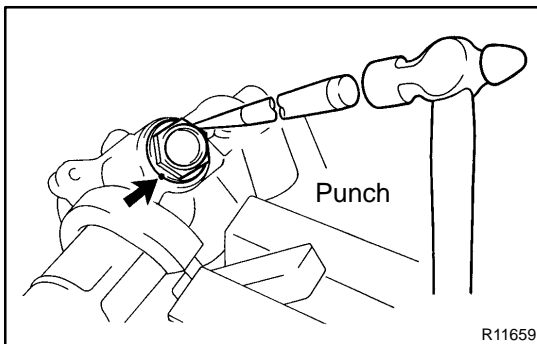
11. INSTALL SELF-LOCKING NUT

Using SST, stop the control valve shaft rotating and install a new self-locking nut.

SST 09616-0001 1

Torque: 25 N·m (250 kgf-cm, 18 ft-lbf)

12. INSTALL DUST SEAL



13. INSTALL RACK HOUSING CAP

- Apply sealant to 2 or 3 threads of the rack housing cap.
Sealant:

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

- Install the rack housing cap.
Torque: 59 N·m (600 kgf-cm, 43 ft-lbf)
- Using a punch and hammer, stake the 2 parts of the rack housing cap.

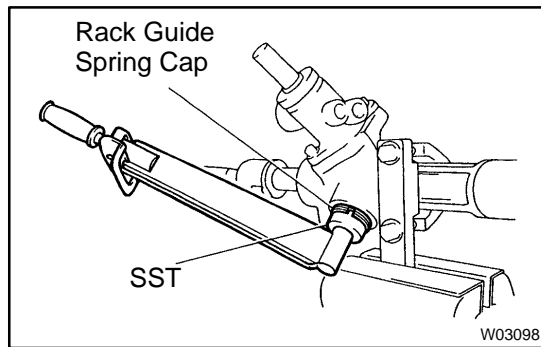
14. INSTALL RACK GUIDE SUB-ASSEMBLY, RACK GUIDE SPRING AND RACK GUIDE SPRING CAP

- Install the rack guide sub-assembly and rack guide spring.
- Apply sealant to 2 or 3 threads of the rack guide spring cap.

Sealant:

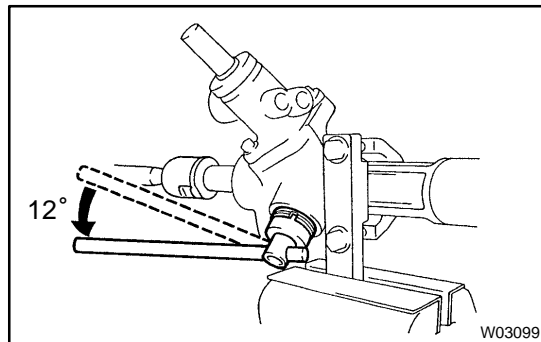
Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

- Temporarily install the rack guide spring cap.

**15. ADJUST TOTAL PRELOAD**

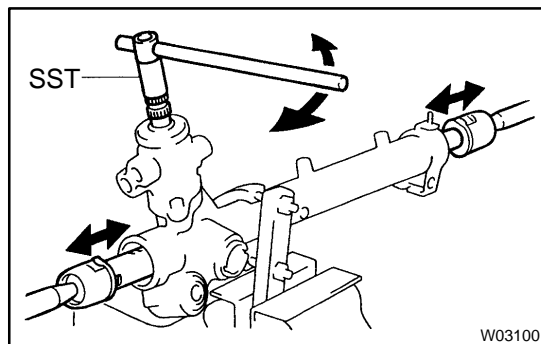
- (a) To prevent the steering rack teeth from damaging the oil seal lip, temporarily install the RH and LH rack ends.
- (b) Using SST, torque the rack guide spring cap.

SST 09631-10021

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

- (c) Using SST, return the rack guide spring cap 12°.

SST 09631-10021

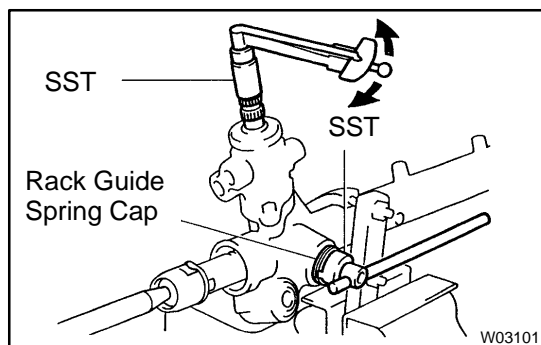


- (d) Using SST, turn the control valve shaft right and left 1 or 2 times.

SST 09616-0001 1

- (e) Using SST, loosen the rack guide spring cap until the rack guide spring is not functioning.

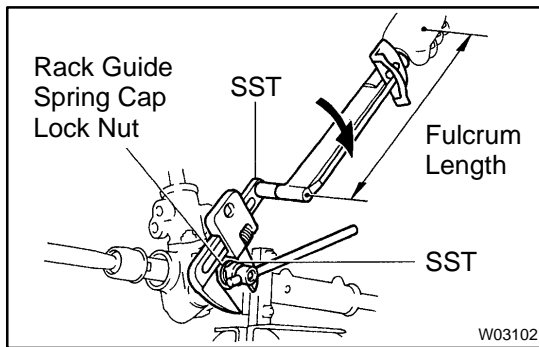
SST 09631-10021



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

SST 09616-0001 1, 09631-10021

Preload (turning):**0.8 - 1.4 N·m (8 - 14 kgf·cm, 6.9 - 12.2 in.-lbf)**

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

- (a) 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

- (b) Temporarily install the rack guide spring cap lock nut.
 (c) Using SST, hold the rack guide spring cap and using another SST torque the rack guide spring cap lock nut.
 SST 09631-10021, 09922-10010

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

NOTICE:

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

HINT:

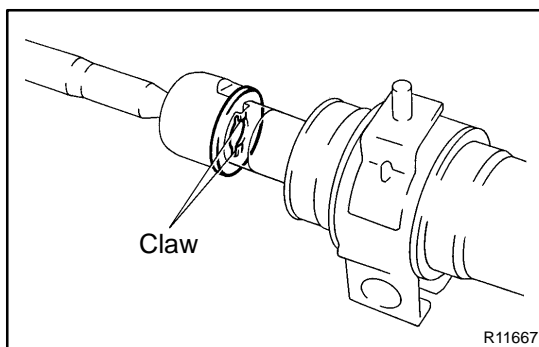
Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

- (d) Recheck the total preload.

Preload (turning):

0.8 - 1.4 N·m (8 - 14 kgf·cm, 6.9 - 12.2 in.-lbf)

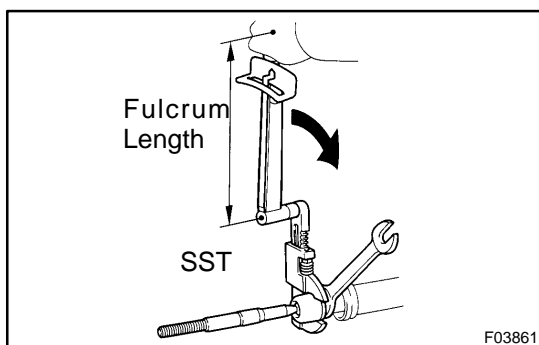
- (e) Remove the RH and LH rack ends.

**17. INSTALL RH AND LH CLAW WASHERS AND RACK ENDS**

- (a) Install a new claw washer, and temporarily install the rack ends.

HINT:

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



- (b) Using a spanner (24 mm), hold the steering rack steadily and using SST, torque the rack end.
 SST 09922-10010

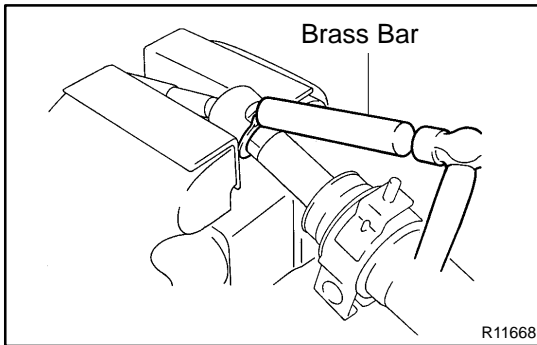
Torque: 60 N·m (610 kgf·cm, 44 ft·lbf)

NOTICE:

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

HINT:

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

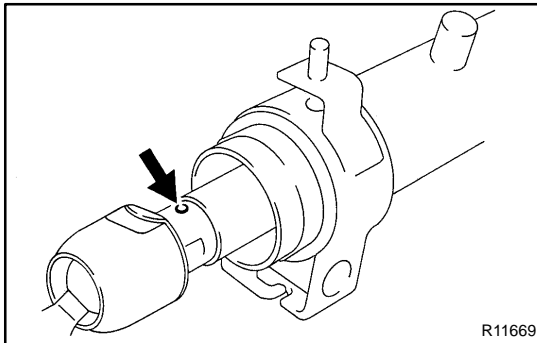


- (c) Using a brass bar and hammer, stake the claw washer.

NOTICE:

Avoid any impact on the steering rack.

- (d) Employ the same manner described above to the other side.

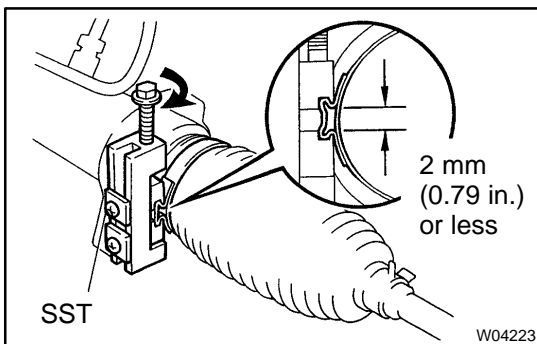


18. INSTALL RH AND LH RACK BOOTS, CLAMPS AND CLIPS

- (a) Ensure that the steering rack hole is not clogged with grease.

HINT:

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

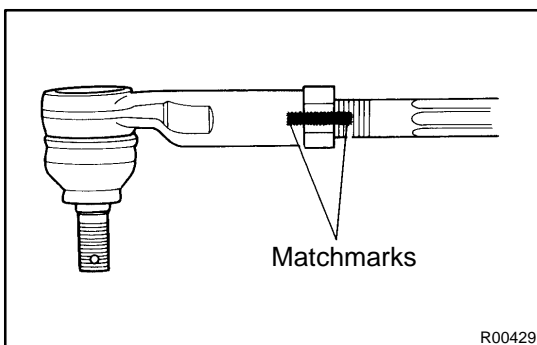


- (b) Install the rack boot, clip and a new clamp.

NOTICE:

Be careful not to damage or twist the rack boot.

- (c) Using SST, tighten the clamp as shown in the illustration.
SST 09521-24010
- (d) Employ the same manner described above to the other side.



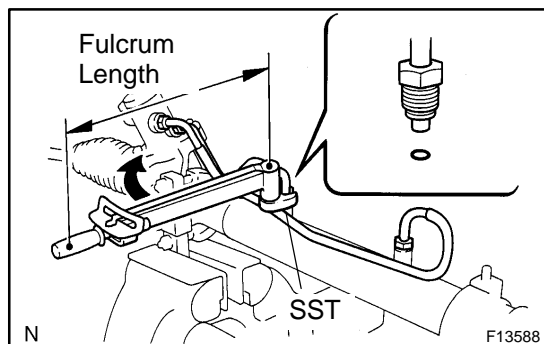
19. INSTALL RH AND LH TIE ROD ENDS AND LOCK NUTS

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

- (b) After adjusting toe-in, torque the lock nut (See page [SA-4](#)).

Torque: 74 N·m (750 kgf-cm, 54 ft-lbf)

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

**20. INSTALL 2 TURN PRESSURE TUBES**

- (a) Coat 4 new O-rings with power steering fluid and install them to the 2 turn pressure tubes.
- (b) Using SST, install the 2 turn pressure tubes.

SST 09023-38200

Torque: 12 N·m (120 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 in case that SST is parallel to a torque wrench.

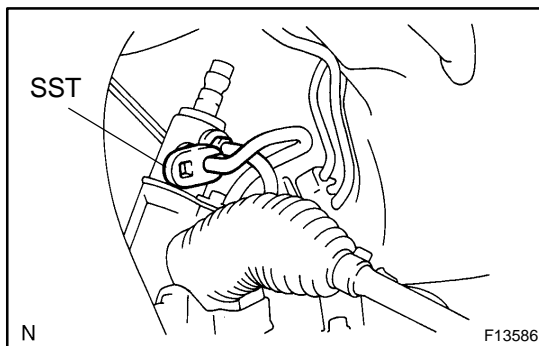
REMOVAL

NOTICE:

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 page [SR-12](#))
3. REMOVE STEERING WHEEL (See page [SR-12](#))
4. DISCONNECT RH AND LH TIE ROD ENDS (See page [SA-9](#))
5. DISCONNECT INTERMEDIATE SHAFT SUB- ASSEMBLY (See page [SR-12](#))
6. DISCONNECT CLAMP PLATE

Remove the nut and clamp plate.



7. DISCONNECT PRESSURE FEED AND RETURN TUBES

- (a) Using SST, disconnect the pressure feed and return tubes.

SST 09023-38400

- (b) Remove the 2 O-rings from the pressure feed and return tubes.

8. DISCONNECT STABILIZER BAR

Remove the 4 bolts and disconnect the stabilizer bar.

HINT:

Do not remove the stabilizer bar.

9. REMOVE NO. 1 FUEL TUBE PROTECTOR

Remove the 2 bolts, nut and No. 1 fuel tube protector.

10. REMOVE PS GEAR ASSEMBLY

- (a) Remove the 2 PS gear assembly set bolts and nuts.

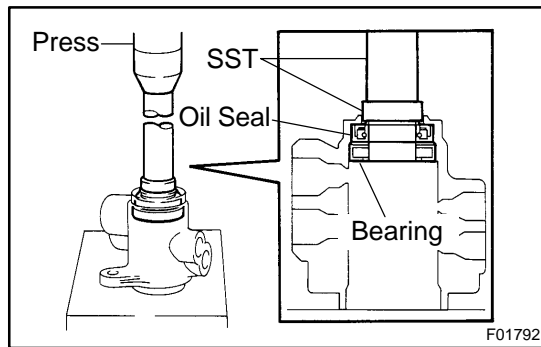
HINT:

Lift up the stabilizer bar and remove the bolts.

- (b) Remove the PS gear assembly from the LH of the vehicle.

NOTICE:

Do not damage the turn pressure tubes.



REPLACEMENT

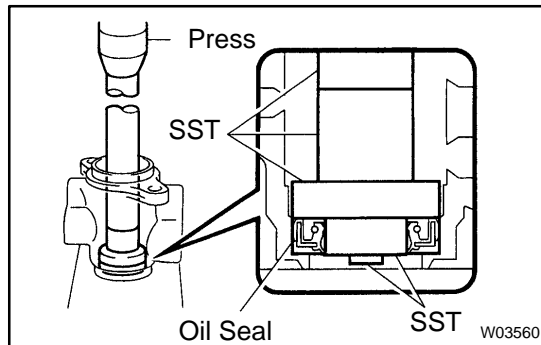
NOTICE:

When using a vise, do not over tighten it.

1. IF NECESSARY, REPLACE OIL SEAL AND BEARING

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

SST 09950-60010 (09951-00250),
09950-70010 (09951-07200)



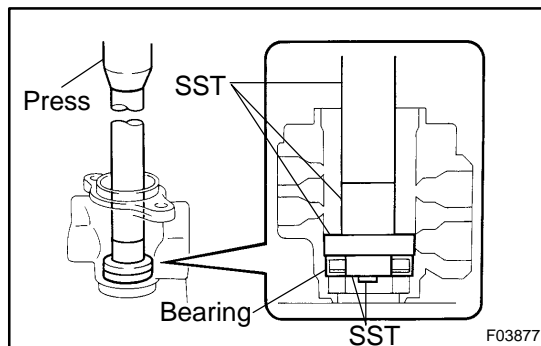
- (b) Coat a new oil seal lip with power steering fluid.

- (c) Using SST, press in the oil seal.

SST 09950-60010 (09951-00180, 09951-00320,
09952-06010), 09950-70010 (09951-07200)

NOTICE:

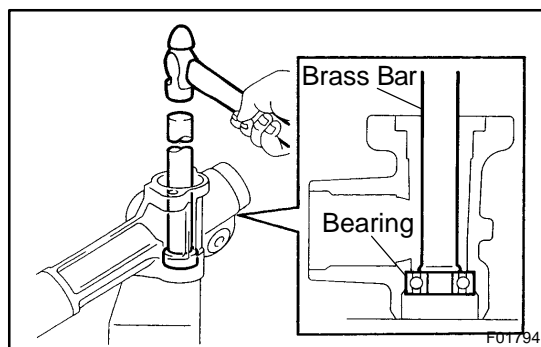
Make sure that the oil seal is installed facing in the correct direction.



- (d) Coat a new bearing with molybdenum disulfide lithium base grease.

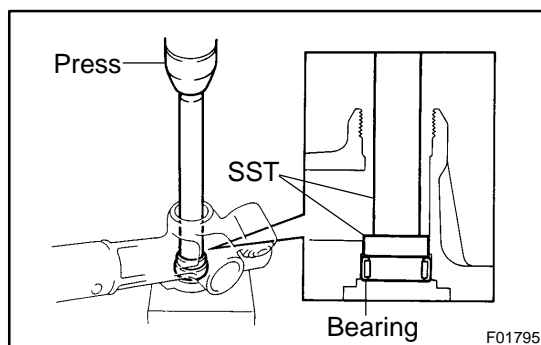
- (e) Using SST, press in the bearing.

SST 09950-60010 (09951-00180, 09951-00340,
09952-06010), 09950-70010 (09951-07200)



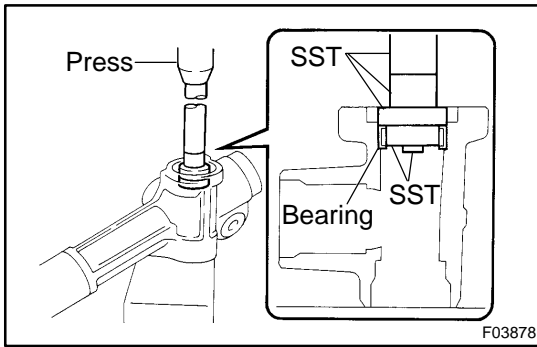
2. IF NECESSARY, REPLACE 2 BEARINGS

- (a) Using a brass bar and hammer, tap out the bearing from the rack housing.

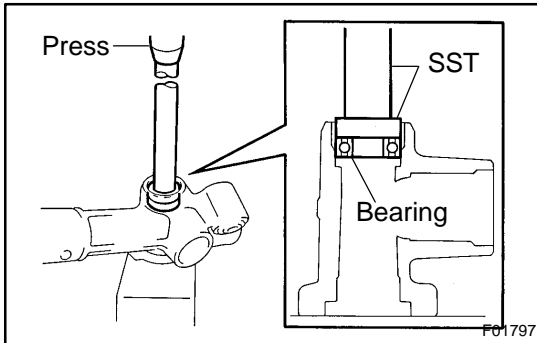


- (b) Using SST, press out the bearing from the rack housing.

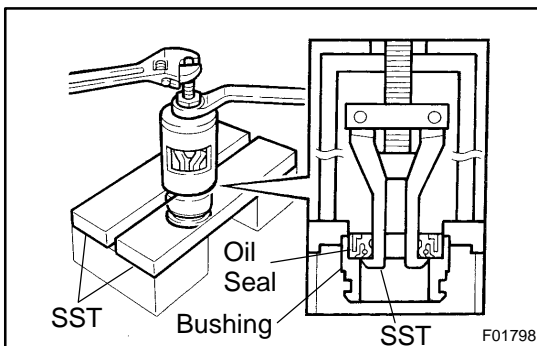
SST 09950-60010 (09951-00260),
09950-70010 (09951-07200)



- (c) Coat a new bearing with molybdenum disulfide lithium base grease.
- (d) Using SST, press in the bearing.
SST 09950-60010 (09951-00250, 09951-00310, 09952-06010), 09950-70010 (09951-07200)



- (e) Coat a new bearing with molybdenum disulfide lithium base grease.
- (f) Using SST, press in the bearing.
SST 09950-60010 (09951-00320), 09950-70010 (09951-07200)

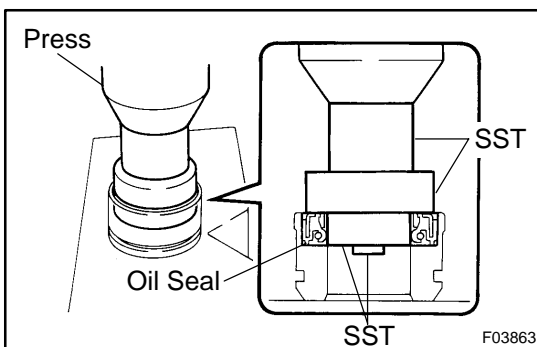


3. IF NECESSARY, REPLACE OIL SEAL

- (a) Using SST, remove the oil seal from the bushing.
SST 09527-2001 1, 09612-24014 (09613-22011)

NOTICE:

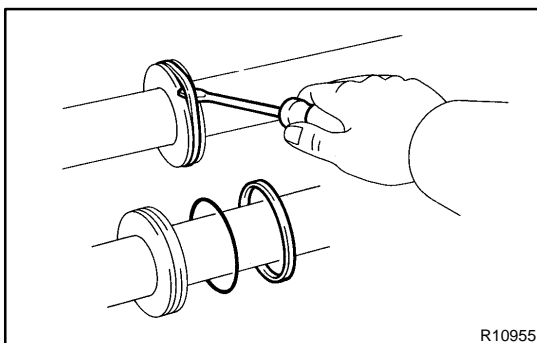
Be careful not to damage the bushing.



- (b) Coat a new oil seal lip with power steering fluid.
- (c) Using SST, press in the oil seal.
SST 09950-60010 (09951-00240, 09951-00400, 09952-06010)

NOTICE:

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



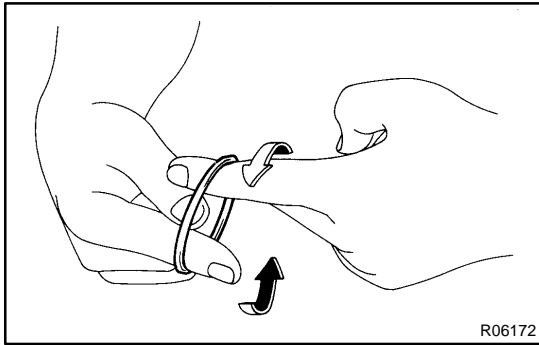
4. IF NECESSARY, REPLACE TEFLON RING AND O-RING

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

NOTICE:

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

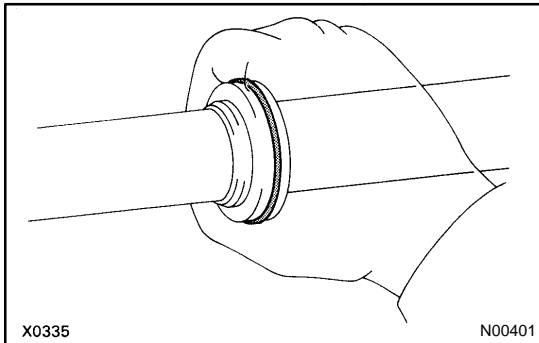
- (b) Coat a new O-ring with power steering fluid and install it.



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

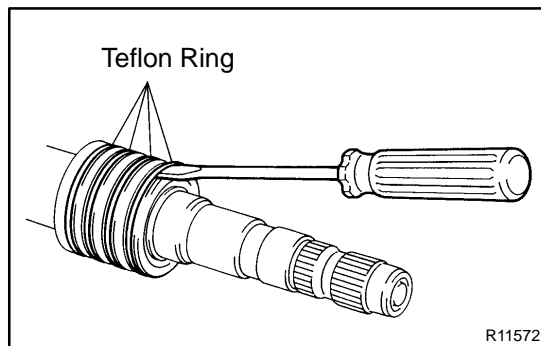
NOTICE:

Be careful not to over expand the ring.



(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.



5. IF NECESSARY, REPLACE 4 TEFLON RINGS

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

NOTICE:

Be careful not to damage the grooves for the teflon ring.

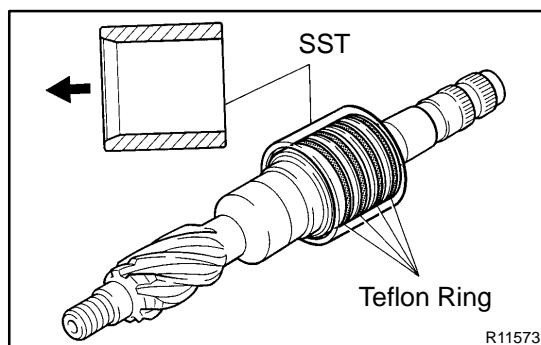
(b) Expand 4 new teflon rings with your fingers.

NOTICE:

Be careful not to over expand 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.



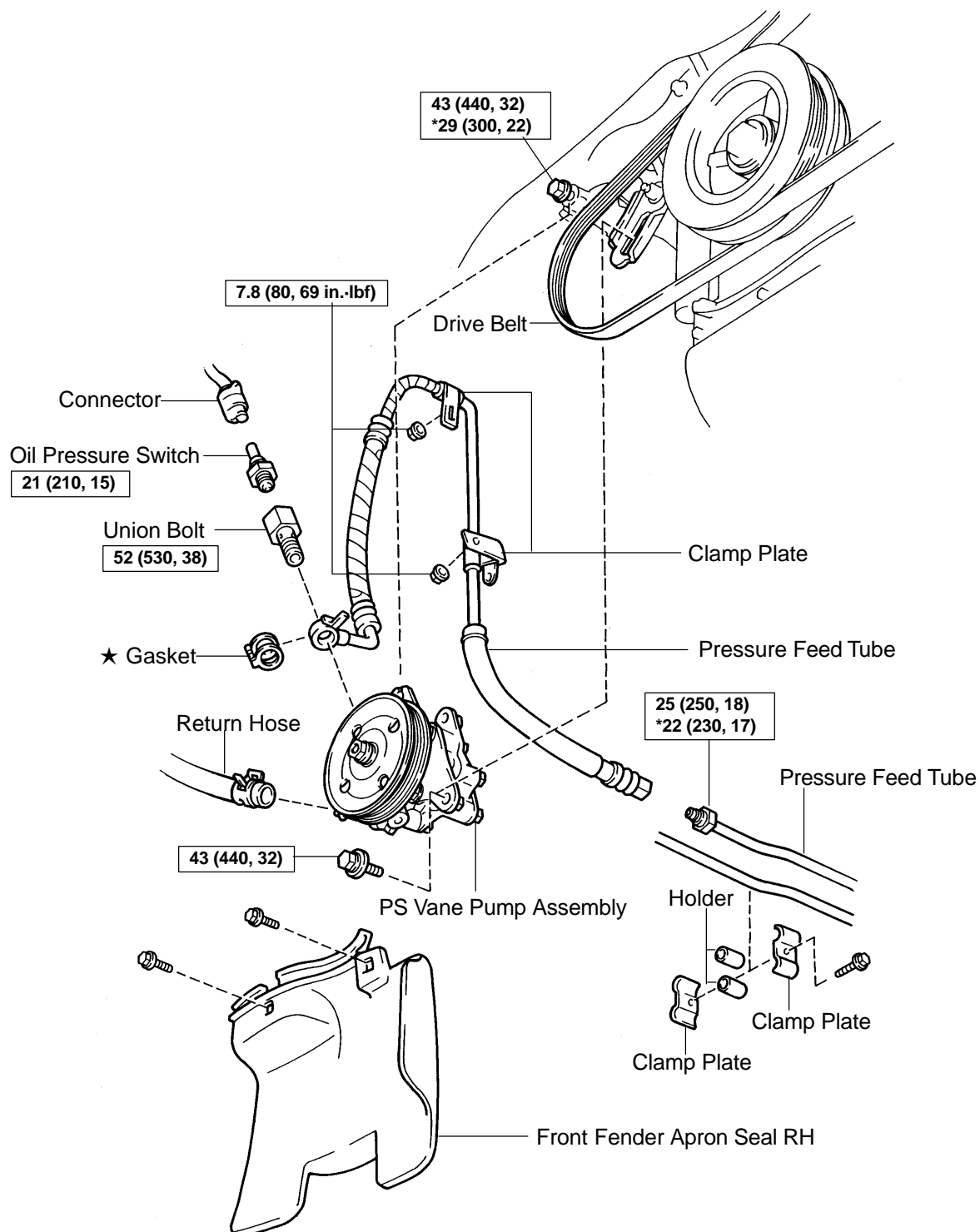
(e) Carefully slide the tapered end of SST over the teflon rings until the teflon rings fit to the control valve assembly.
SST 09631-20081

NOTICE:

Be careful not to damage the teflon rings.

POWER STEERING VANE PUMP COMPONENTS

SR0EN-06

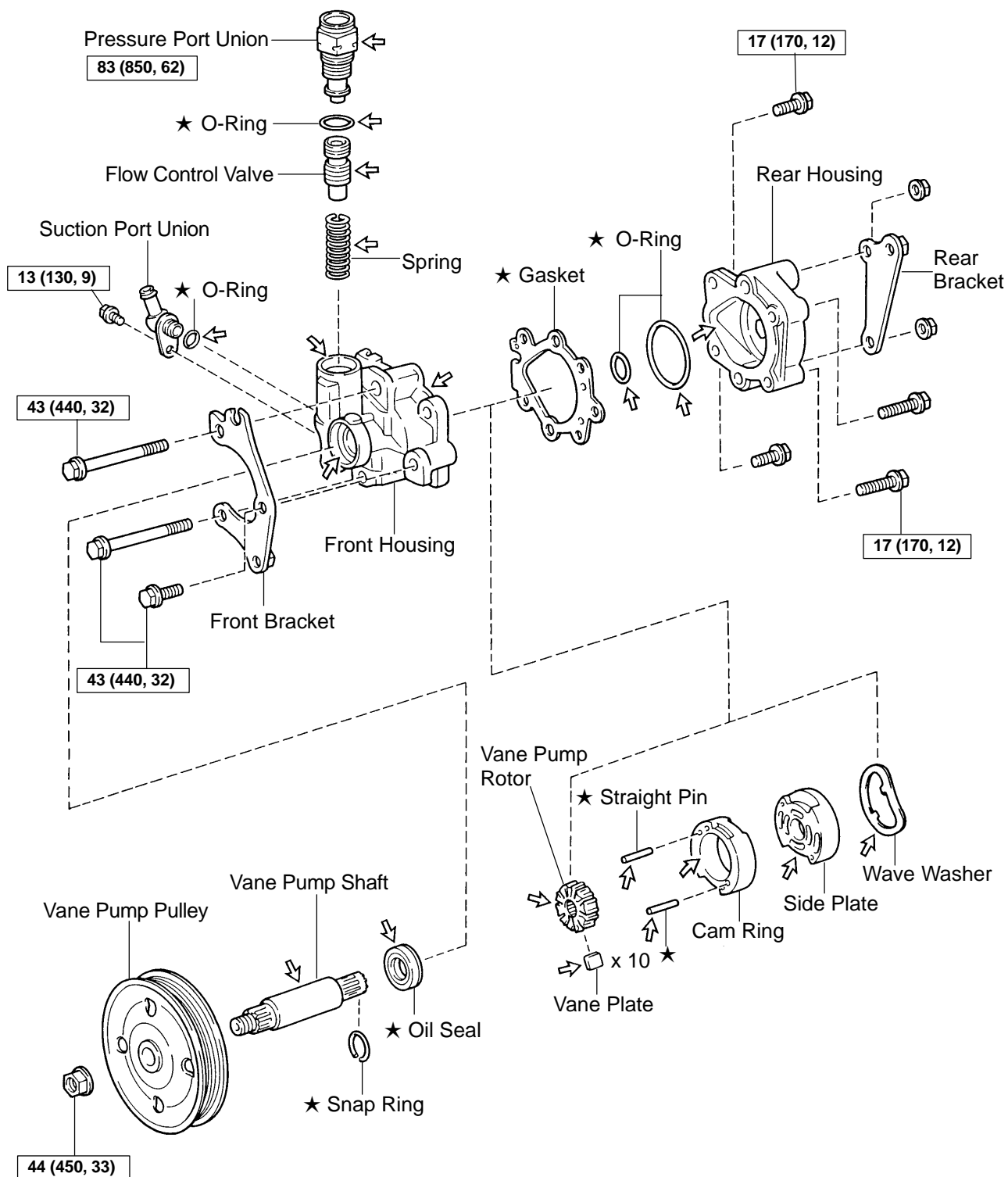


N·m (kgf·cm, ft·lbf) : Specified torque

★ Non-reusable part

N * For use with SST

F08851

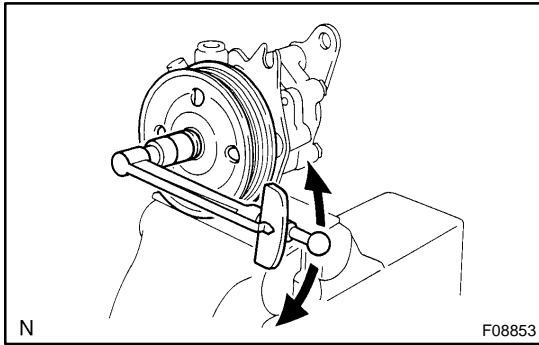


N·m (kgf·cm, ft·lbf) : Specified torque

★ Non-reusable part

⇄ Power steering fluid

F08852



DISASSEMBLY

NOTICE:

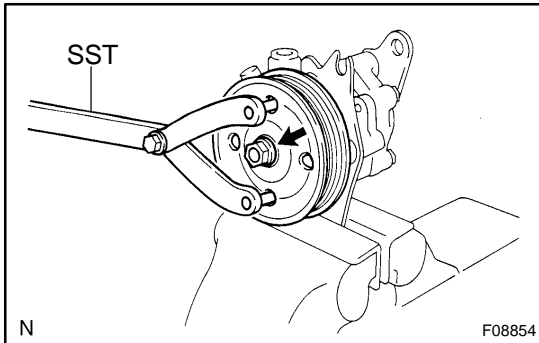
When using a vise, do not overtighten it.

1. MEASURE PS VANE PUMP ROTATING TORQUE

- Check that the pump rotates smoothly without abnormal noise.
- Using a torque wrench, check the pump rotating torque.

Rotating torque:

0.3 N·m (2.8 kgf·cm, 2.4 in.-lbf) or less



2. REMOVE VANE PUMP PULLEY

- Using SST, stop the pulley rotating and loosen the nut.
- Remove the nut and vane pump pulley from the vane pump shaft.

SST 09960-10010 (09962-01000, 09963-01000)

3. REMOVE FRONT AND REAR BRACKETS

Remove the 3 bolts, 2 nuts, front and rear brackets.

4. REMOVE SUCTION PORT UNION

- Remove the bolt and suction port union.
- Remove the O-ring from the suction port union.

5. REMOVE PRESSURE PORT UNION, FLOW CONTROL VALVE AND SPRING

- Remove the pressure port union, flow control valve and spring.
- Remove the O-ring from the pressure port union.

6. REMOVE REAR HOUSING

- Remove the 4 bolts and rear housing.
- Remove the 2 O-rings from the rear housing.

7. REMOVE WAVE WASHER

8. REMOVE SIDE PLATE

9. REMOVE GASKET

10. REMOVE CAM RING, 10 VANE PLATES AND VANE PUMP ROTOR

- Remove the cam ring and 10 vane plates.

NOTICE:

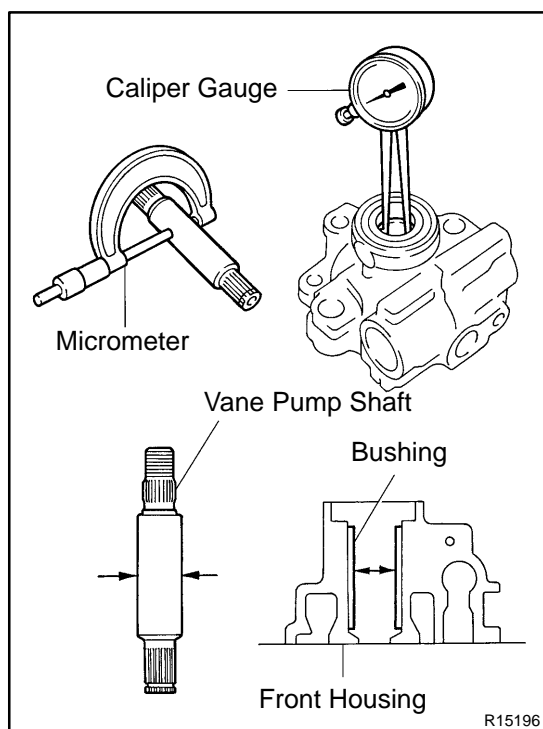
Take care not to drop the plate.

- Using a screwdriver, remove the snap ring and vane pump rotor from the vane pump shaft.

11. REMOVE VANE PUMP SHAFT

12. REMOVE 2 STRAIGHT PINS

Remove the 2 straight pins from the front housing.



INSPECTION

NOTICE:

When using a vise, do not overtighten it.

1. MEASURE OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND BUSHING

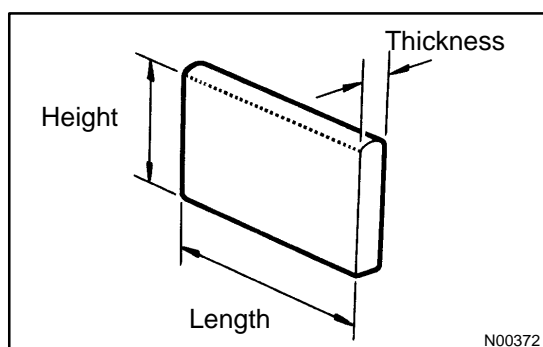
Using a micrometer and caliper gauge, measure the oil clearance.

Standard clearance:

0.03 - 0.05 mm (0.0012 - 0.0020 in.)

Maximum clearance: 0.07 mm (0.0028 in.)

If it is more than the maximum, replace the front housing and vane pump shaft.



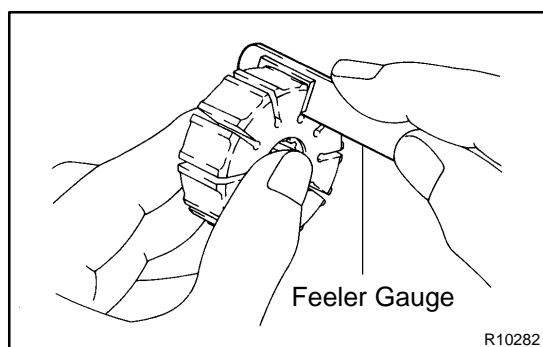
2. INSPECT VANE PUMP ROTOR AND VANE PLATES

(a) Using a micrometer, measure the height, thickness and length of the vane plates.

Minimum height: 8.6 mm (0.339 in.)

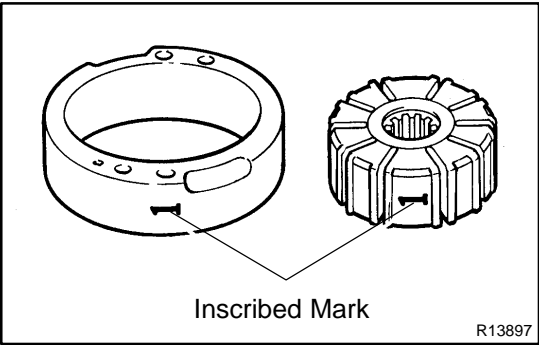
Minimum thickness: 1.397 mm (0.0550 in.)

Minimum length: 14.991 mm (0.5902 in.)



(b) Using a feeler gauge, measure the clearance between the vane pump rotor groove and vane plate.

Maximum clearance: 0.035 mm (0.0014 in.)



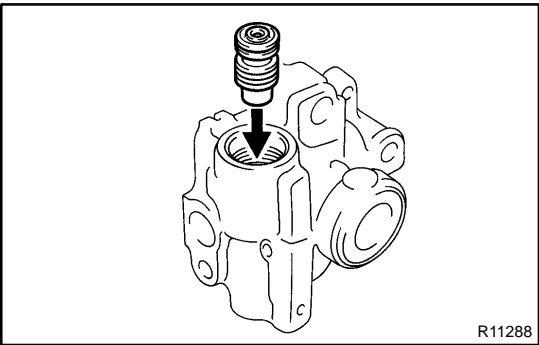
If it is more than the maximum, replace the vane plate and/or vane pump rotor with the one having the same mark stamped on the cam ring.

Inscribed mark: 1, 2, 3, 4 or None

HINT:

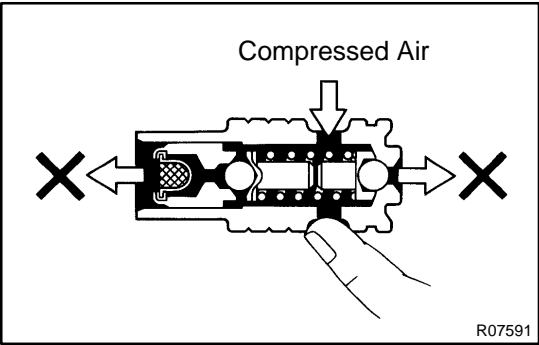
There are 5 vane plate lengths with the following vane pump rotor and cam ring marks:

Vane pump rotor and cam ring mark	Vane plate part number	Vane plate length mm (in.)
None	44345-26010	14.999-15.001 (0.59051-0.59059)
1	44345-26020	14.997-14.999 (0.59043-0.59051)
2	44345-26030	14.995-14.997 (0.59035-0.59043)
3	44345-26040	14.993-14.995 (0.59027-0.59035)
4	44345-26050	14.991-14.993 (0.59020-0.59027)

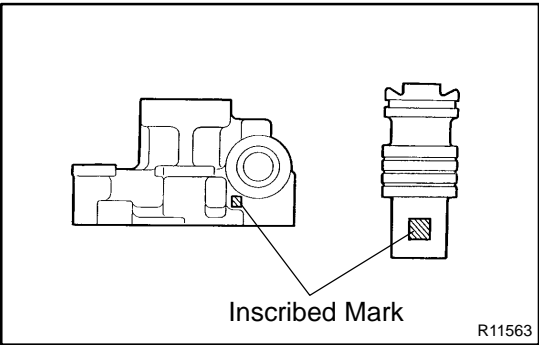


3. INSPECT FLOW CONTROL VALVE

(a) Coat the flow control valve with power steering fluid and check that it falls smoothly into the flow control valve hole by its own weight.

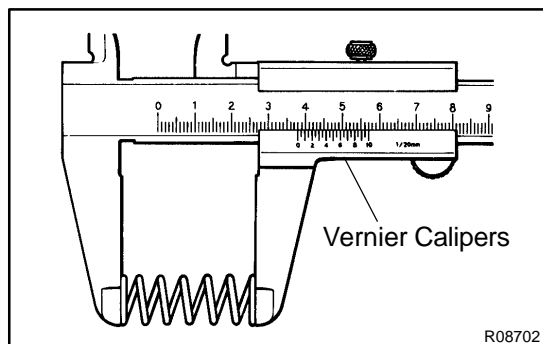


(b) Check the flow control valve for leakage. Close one of the holes and apply 392 - 490 kPa (4 - 5 kgf/cm², 57 - 71 psi) of compressed air into the opposite side hole, and confirm that air does not come out from the end holes.



If necessary, replace the flow control valve with the one having the same letter as inscribed on the front housing.

Inscribed Mark: A, B, C, D, E or F

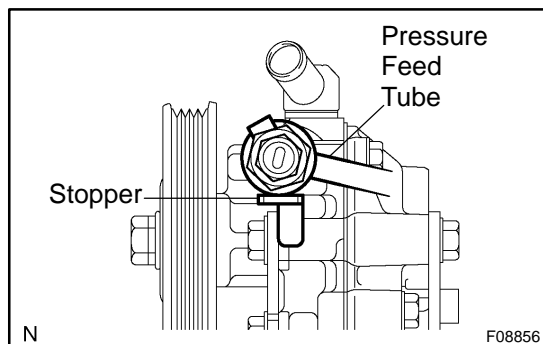


4. INSPECT SPRING

Using vernier calipers, measure the free length of the spring.

Minimum free length: 32.3 mm (1.272 in.)

If it is not within the specification, replace the spring.



INSTALLATION

1. INSTALL PRESSURE FEED TUBE

Install the pressure feed tube and gasket to the PS vane pump assembly with union bolt.

HINT:

Make sure the stopper of the pressure feed tube touches the front bracket as shown in the illustration, then install the union bolt.

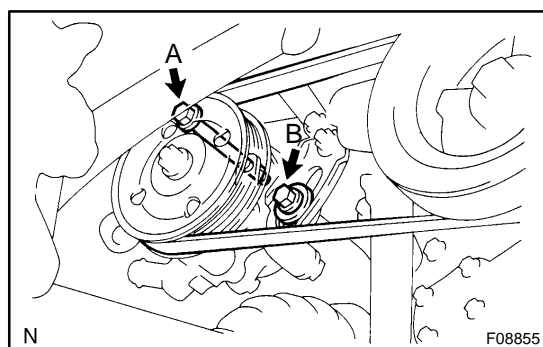
Torque: 52 N·m (530 kgf-cm, 38 ft-lbf)

2. INSTALL OIL PRESSURE SWITCH

Torque: 21 N·m (210 kgf-cm, 15 ft-lbf)

NOTICE:

Be careful to prevent oil seal from being attached to the connector.

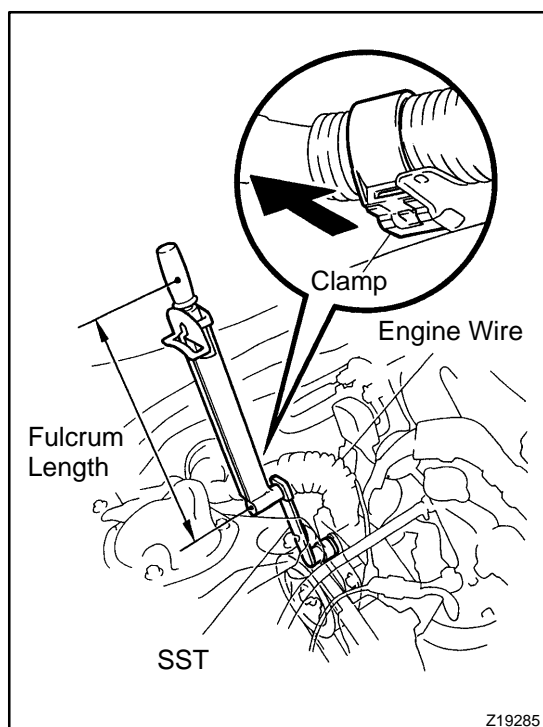


3. INSTALL PS VANE PUMP ASSEMBLY WITH PRESS-ER FEED TUBE

Temporarily install the PS vane pump assembly with 2 (A and B) bolts.

4. INSTALL DRIVE BELT

(a) Adjust drive belt tension (See page [SR-3](#)).



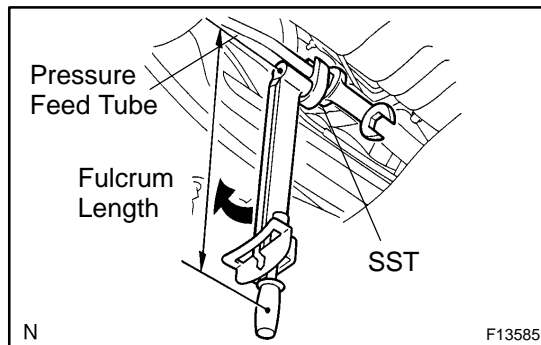
(b) Using SST, torque the bolt A.

SST 09249-63010

Torque: 29 N·m (300 kgf-cm, 22 ft-lbf)

HINT:

- ★ Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
 - ★ Disconnect the clamp with engine wire.
- (c) Torque the bolt B.
- Torque: 43 N·m (440 kgf-cm, 32 ft-lbf)**
- (d) Connect the connector to the oil pressure switch.

**5. CONNECT PRESSURE FEED TUBE**

- (a) Using a spanner, hold the pressure feed tube steadily and using SST, connect the pressure feed tube.

SST 09023-12700

Torque: 23 N·m (230 kgf-cm, 17 ft-lbf)

HINT:

- ★ Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
 - ★ This torque value is effective in case that SST is parallel to a torque wrench.
- (b) Install the 2 holders and 2 clamp plates to the pressure feed tube with bolt.
- (c) Install the 2 clamp plate with 2 nuts.

Torque: 7.8 N·m (80 kgf-cm, 69 in.-lbf)

6. CONNECT RETURN HOSE

Connect the return hose with the clip.

7. INSTALL FRONT FENDER APRON SEAL RH

Install the front fender apron seal RH with 2 bolts.

8. BLEED POWER STEERING SYSTEM

(See page [SR-4](#))

REASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. COAT PARTS INDICATED BY ARROWS WITH POWER STEERING FLUID (See page [SR-25](#))

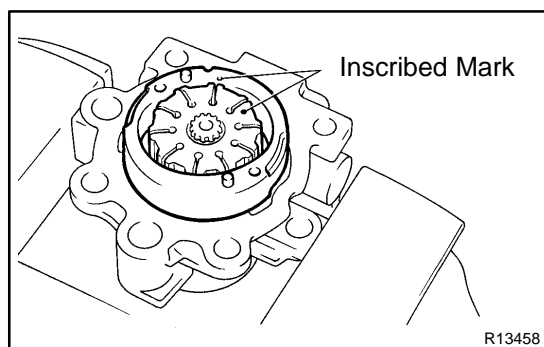
2. INSTALL 2 STRAIGHT PINS

Using a plastic hammer, tap in 2 new straight pins.

NOTICE:

Be careful not to damage the straight pins.

3. INSTALL VANE PUMP SHAFT

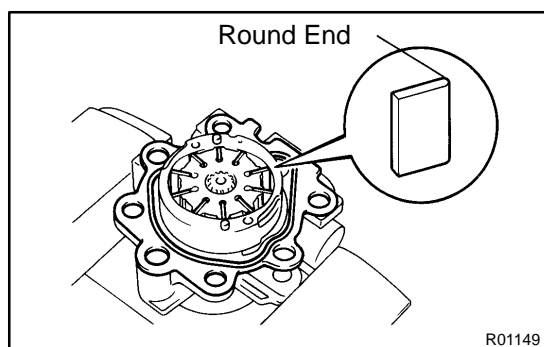


4. INSTALL CAM RING

Align the holes of the cam ring and 2 straight pins, and install the cam ring with the inscribed mark facing outward.

5. INSTALL VANE PUMP ROTOR

- (a) Install the vane pump rotor with the inscribed mark facing outward.
- (b) Install a new snap ring to the vane pump shaft.



6. INSTALL 10 VANE PLATES

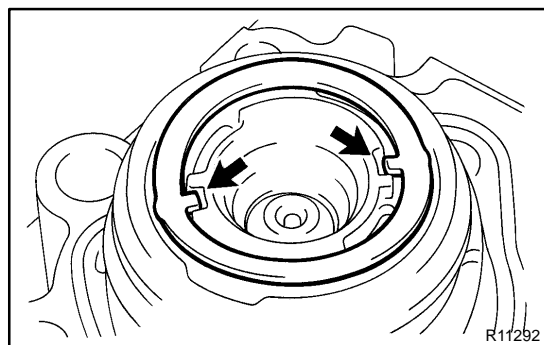
Install the 10 vane plates with the round end facing outward.

7. INSTALL GASKET

Install a new gasket.

8. INSTALL SIDE PLATE

Align the holes of the side plate and 2 straight pins, and install the side plate.



9. INSTALL WAVE WASHER

Install the wave washer so that its protrusions fit into the slots in the side plate.

10. INSTALL REAR HOUSING

- (a) Coat 2 new O-rings with power steering fluid and install them to the rear housing.
- (b) Install the rear housing with 4 bolts.

Torque: 17 N·m (170 kgf-cm, 12 ft-lbf)

11. INSTALL SPRING, FLOW CONTROL VALVE AND PRESSURE PORT UNION

- (a) Install the spring.
- (b) Install the flow control valve facing in the correct direction (See page [SR-25](#)).
- (c) Coat a new O-ring with power steering fluid and install it to the pressure port union.
- (d) Install the pressure port union.

Torque: 83 N·m (850 kgf-cm, 62 ft-lbf)

12. INSTALL SUCTION PORT UNION

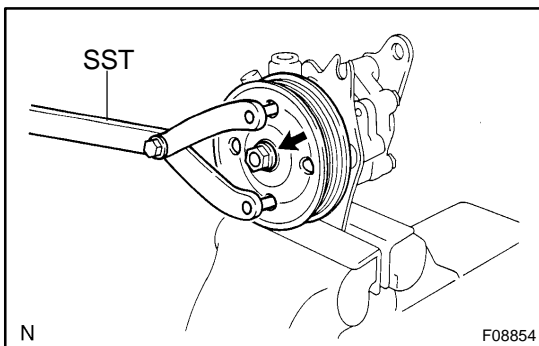
- (a) Coat a new O-ring with power steering fluid and install it to the suction port union.
- (b) Install the suction port union with bolt.

Torque: 13 N·m (130 kgf-cm, 9 ft-lbf)

13. INSTALL FRONT AND REAR BRACKETS

Install the front and rear brackets with 3 bolts and 2 nuts.

Torque: 43 N·m (440 kgf-cm, 32 ft-lbf)

**14. INSTALL VANE PUMP PULLEY**

- (a) Install the vane pump pulley and nut to the vane pump shaft.
- (b) Using SST, stop the pulley rotating and torque the nut.
SST 09960-10010 (09962-01000, 09963-01000)

Torque: 44 N·m (450 kgf-cm, 33 ft-lbf)

15. MEASURE PS VANE PUMP ROTATING TORQUE

(See page [SR-28](#))

REMOVAL

1. REMOVE FRONT FENDER APRON SEAL RH

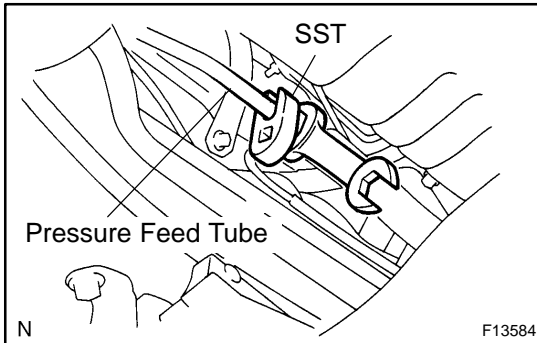
Remove the 2 bolts and front fender apron seal RH.

2. DISCONNECT RETURN HOSE

Remove the clip and disconnect the return hose.

NOTICE:

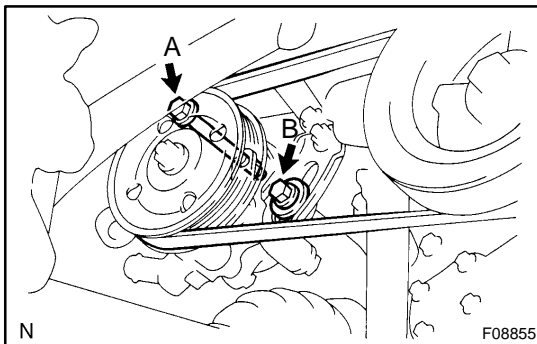
Take care not to spill fluid on the drive belt.



3. DISCONNECT PRESSURE FEED TUBE

- Remove the 2 clamp plate set nuts.
- Remove the bolt, 2 clamp plates and 2 holders from the pressure feed tube.
- Using a spanner, hold the pressure feed tube steadily and using SST, disconnect the pressure feed tube.

SST 09023-12700



4. REMOVE DRIVE BELT

Loosen the 2 (A and B) bolts and drive belt.

5. REMOVE PS VANE PUMP ASSEMBLY WITH PRESSURE FEED TUBE

- Disconnect the connector from the oil pressure switch.
- Loosen the bolt A sufficiently so that pump assembly can be removed.

HINT:

Bolt A cannot be removed.

- Remove the bolt B and PS vane pump assembly.

6. REMOVE OIL PRESSURE SWITCH

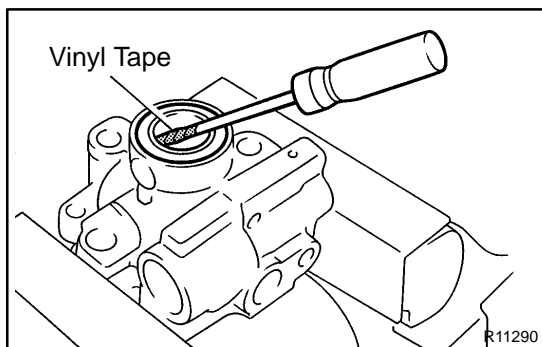
NOTICE:

Be careful not to drop the switch.

If the switch is dropped or strongly damaged, replace it with a new one.

7. REMOVE PRESSURE FEED TUBE

- Remove the oil pressure switch from the union bolt.
- Remove the union bolt, gasket and pressure feed tube.



REPLACEMENT

NOTICE:

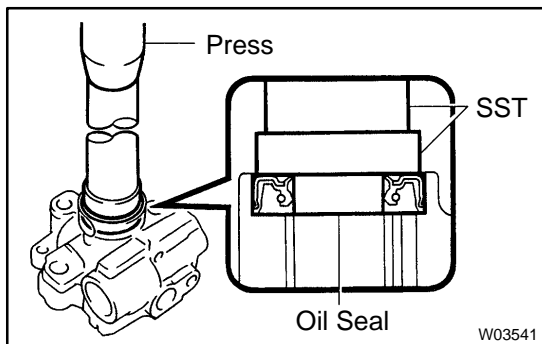
When using a vise, do not overtighten it.

IF NECESSARY, REPLACE OIL SEAL

- (a) Using a screwdriver with vinyl tape wound around its tip, remove the oil seal.

NOTICE:

Be careful not to damage the front housing.



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

- (c) Using SST, press in the oil seal.

SST 09950-60010 (09951-00330),
09950-70010 (09951-07100)

NOTICE:

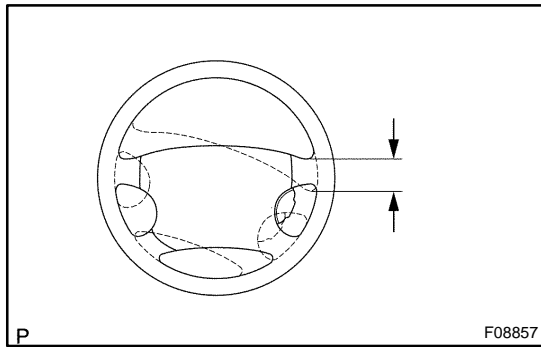
Make sure that the oil seal is installed facing in the correct direction.

STEERING SYSTEM

SR0EB-02

PRECAUTION

- ★ Care must be taken to replace parts properly because they could affect the performance of the steering system and result in a driving hazard.
- ★ The AVALON is equipped with SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operation in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notices in the RS section.



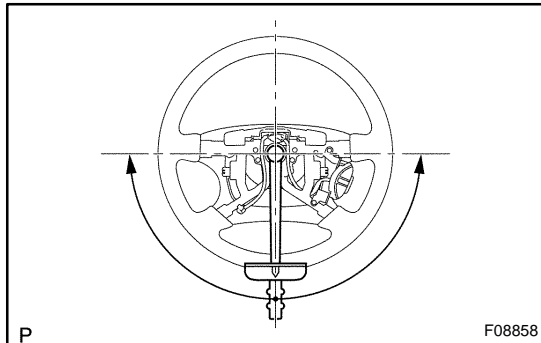
STEERING WHEEL INSPECTION

SR0EG-05

1. CHECK STEERING WHEEL FREEPLAY

- Stop the vehicle and face the tires straight ahead.
- Rock the steering wheel gently up and down with a finger lightly, check the steering wheel freeplay.

Maximum freeplay: 30 mm (1.18 in.)



2. CHECK STEERING EFFORT

- Center the steering wheel.
- Remove the steering wheel pad (See page [SR-12](#)).
- Start the engine and run it at idle.
- Measure the steering effort in both directions.

Steering effort (Reference)

5.9 N·m (60 kgf·cm, 52 in.-lbf)

HINT:

Take the tire type, pressure and contact surface into consideration before making your diagnosis.

- Torque the steering wheel set nut.

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

- Install the steering wheel pad (See page [SR-22](#)).

TROUBLESHOOTING

SR0EC-02

PROBLEM SYMPTOMS TABLE

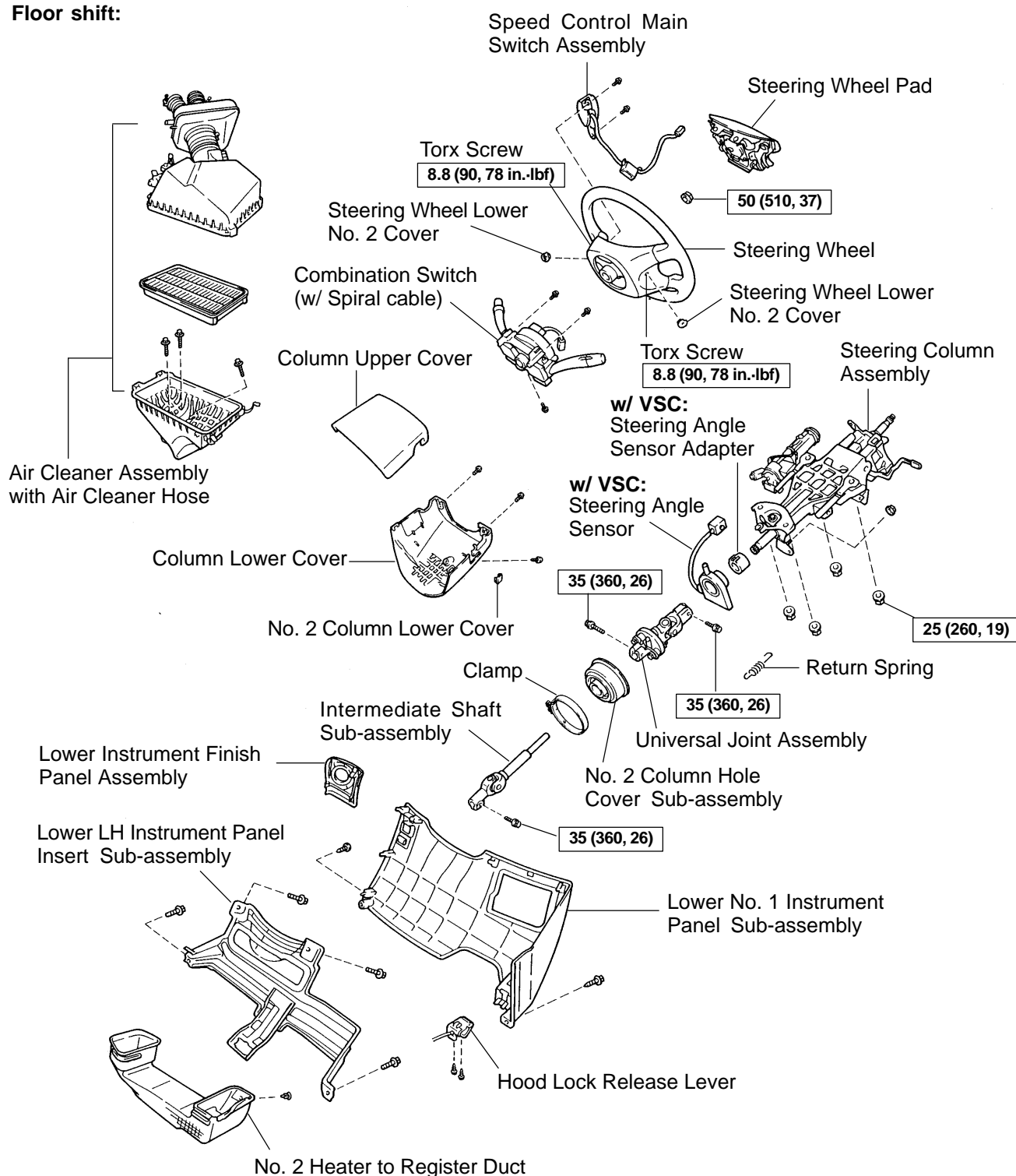
Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, repair or replace these parts.

Symptom	Suspect Area	See page
Hard steering	1. Tires (Improperly inflated) 2. Power steering fluid level (Low) 3. Drive belt (Loose) 4. Front wheel alignment (Incorrect) 5. Steering system joints (Worn) 6. Suspension arm ball joints (Worn) 7. Steering column (Binding) 8. Power steering vane pump 9. Power steering gear	SA-2 SR-5 SR-3 SA-4 - SA-38 - SR-25 SR-37
Poor return	1. Tires (Improperly inflated) 2. Front wheel alignment (Incorrect) 3. Steering column (Binding) 4. Power steering gear	SA-2 SA-4 - SR-37
Excessive play	1. Steering system joints (Worn) 2. Suspension arm ball joints (Worn) 3. Universal joint, Intermediate shaft, Sliding yoke (Worn) 4. Front wheel bearing (Worn) 5. Power steering gear	- SA-38 - SA-9 SR-37
Abnormal noise	1. Power steering fluid level (Low) 2. Steering system joints (Worn) 3. Power steering vane pump 4. Power steering gear	SR-5 - SR-25 SR-37

TILT STEERING COLUMN COMPONENTS

SR0EH-06

Floor shift:

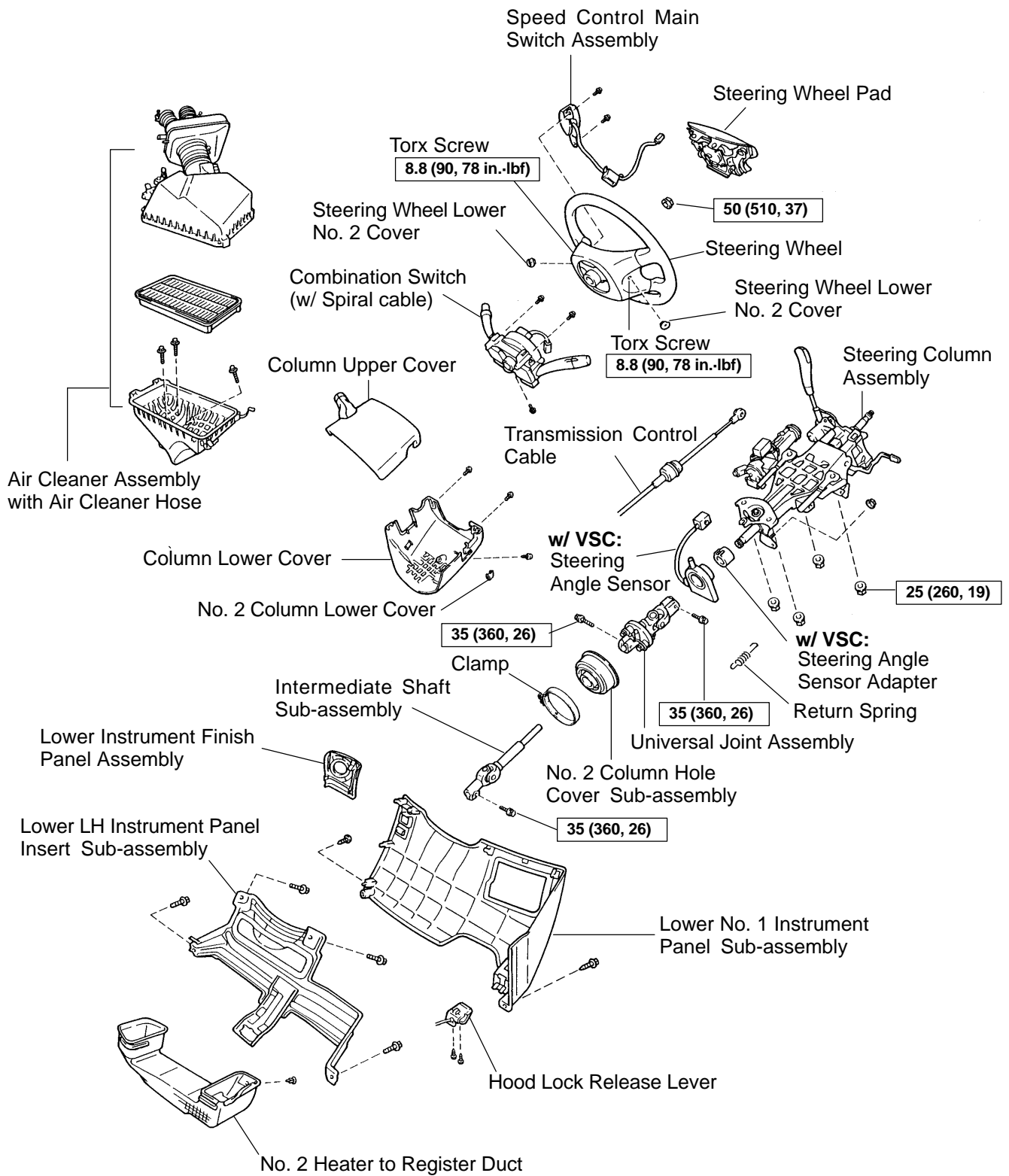


N·m (kgf-cm, ft-lbf) : Specified torque

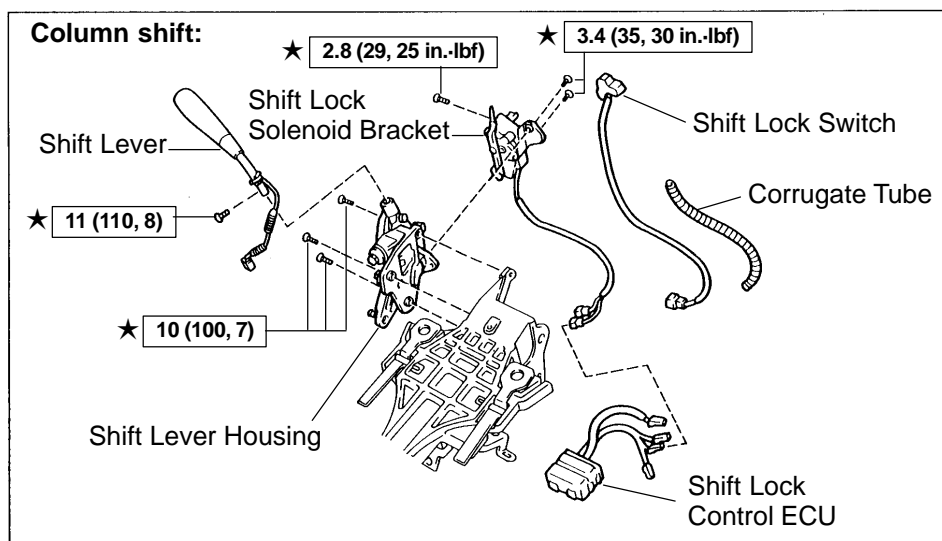
N

F08837

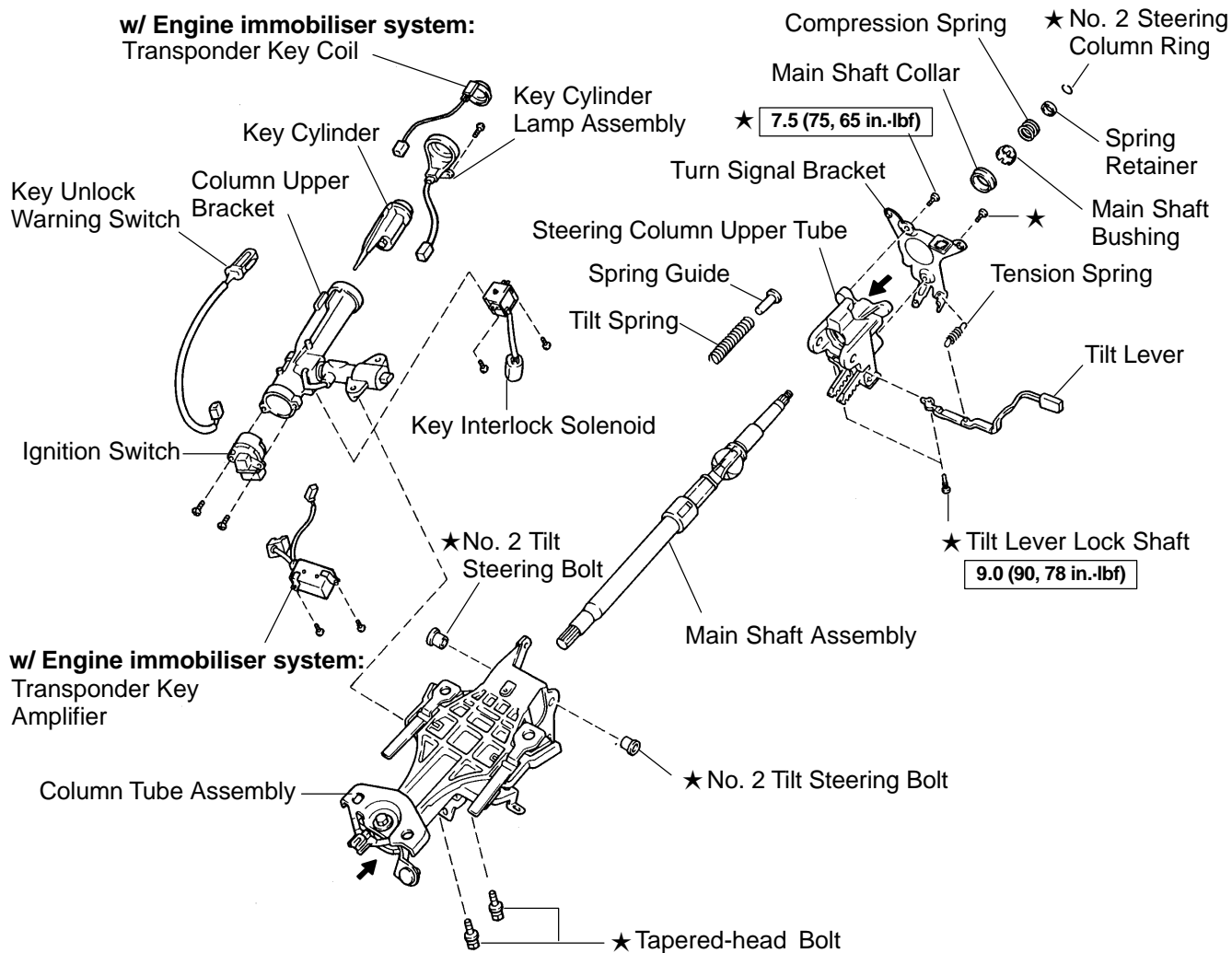
Column shift:



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



w/ Engine immobiliser system:



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

★ Non-reusable part

◀ Molybdenum disulfide lithium base grease

N

F09909

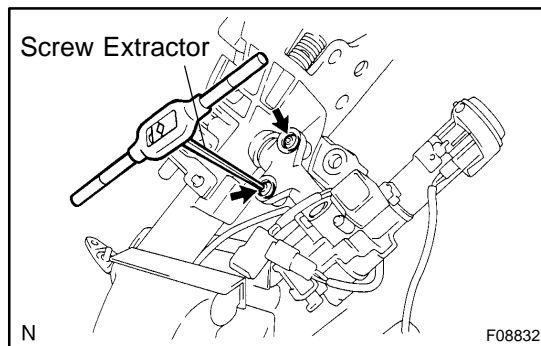
DISASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

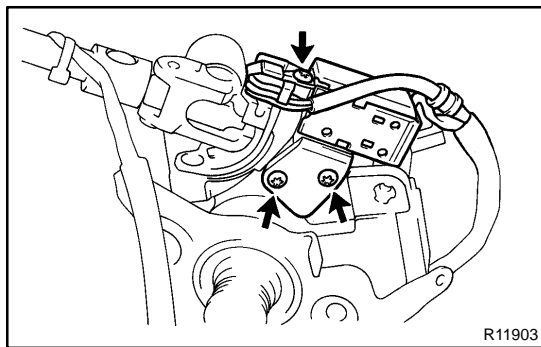
1. w/ Engine immobiliser system:
REMOVE TRANSPONDER KEY COIL
2. **REMOVE KEY CYLINDER LAMP ASSEMBLY**
Remove the screw and key cylinder lamp assembly.
3. **Column shift:**
REMOVE SHIFT LOCK CONTROL ECU

Disconnect the 3 connectors and remove the shift lock control ECU.



4. **REMOVE COLUMN UPPER BRACKET**

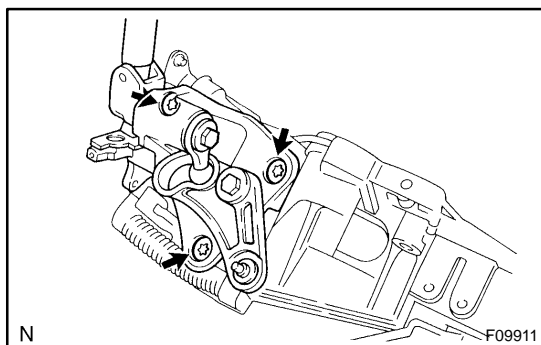
- (a) Using a centering punch, mark the center of the 2 tapered-head bolts.
- (b) Using a 3 - 4 mm (0.12 - 0.16 in.) drill, drill into the 2 bolts.
- (c) Using a screw extractor, remove the 2 bolts and column upper bracket.



5. **Column shift:**

REMOVE SHIFT LEVER HOUSING

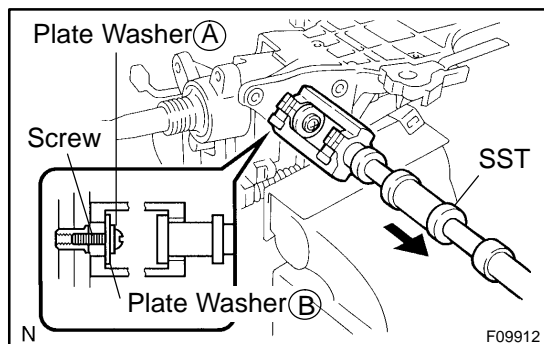
- (a) Remove the torx screw and shift lock switch.
- (b) Remove the 2 torx screws and shift lock solenoid bracket.
- (c) Remove the torx screw and shift lever.



- (d) Remove the 3 torx screws and shift lever housing.

6. **REMOVE TURN SIGNAL BRACKET**

- (a) Remove the tension spring.
- (b) Remove the 2 torx screws and turn signal bracket.



7. REMOVE STEERING COLUMN UPPER TUBE WITH MAIN SHAFT ASSEMBLY

- (a) Set SST, plate washer (18 and 36 mm outer diameter) and screw (4.0 mm diameter, 0.7 mm pitch, 15.0 mm length), as shown in the illustration. And then remove the 2 No. 2 tilt steering bolts.

SST 09910-00015 (09911-0001 1, 09912-00010)

Reference:

Plate washer A (18 mm): 90562-04012

Plate washer B (36 mm): 90201-10201

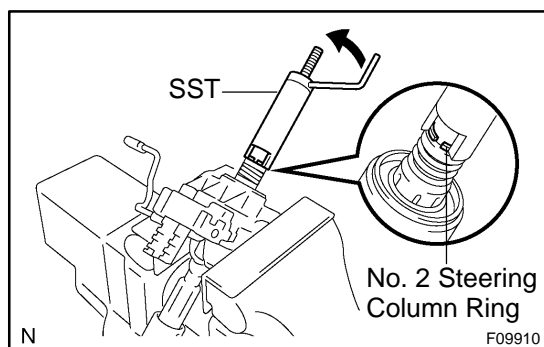
Screw: 90154-40015

- (b) Remove the column upper tube with the main shaft assembly from the column tube assembly.

NOTICE:

Do not bend the universal joint of the main shaft assembly more than 20°.

- (c) Remove tilt spring and spring guide.



8. REMOVE MAIN SHAFT ASSEMBLY

- (a) Install SST to the main shaft assembly, as shown in the illustration.

SST 09612-07010

- (b) Using SST, compress the compression spring.

NOTICE:

Do not bend the universal joint of the main shaft assembly more than 20°.

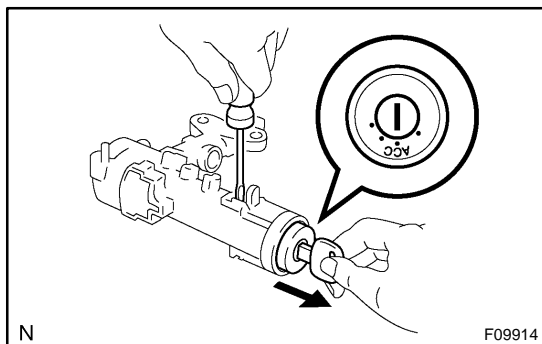
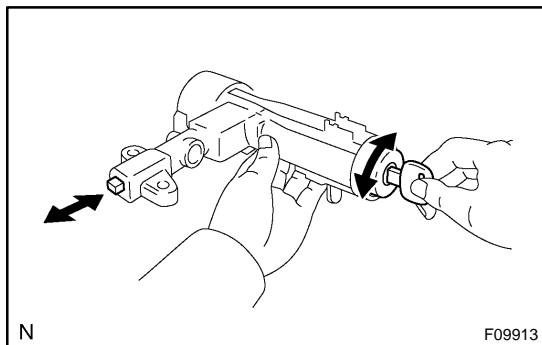
HINT:

Hold the main shaft assembly with your hand so that it does not rotate.

- (c) Using a screwdriver, remove the No. 2 steering column ring.
- (d) Remove the spring retainer, compression spring, main shaft bushing and main shaft collar.

9. REMOVE TILT LEVER

Remove the tilt lever lock shaft and tilt lever.



INSPECTION

1. INSPECT STEERING LOCK OPERATION

Check that the steering lock mechanism operates properly.

2. IF NECESSARY, REPLACE KEY CYLINDER

- Place the ignition key at the ACC position.
- Push down the stop pin with a screwdriver, and pull out the key cylinder.
- Install a new key cylinder.

HINT:

Make sure the ignition key is at the ACC position.

3. INSPECT IGNITION SWITCH (See page BE-16)

4. IF NECESSARY, REPLACE IGNITION SWITCH

- Remove the 2 screws and ignition switch.
- Install a new ignition switch with the 2 screws.

5. INSPECT KEY UNLOCK WARNING SWITCH (See page BE-16)

6. IF NECESSARY, REPLACE KEY UNLOCK WARNING SWITCH

- Slide the key unlock warning switch out of the column upper bracket.
- Slide a new key unlock warning switch in the column upper bracket.

7. INSPECT KEY INTERLOCK SOLENOID (See page AX-16 and AX-18)

8. IF NECESSARY, REPLACE KEY INTERLOCK SOLENOID

- Remove the 2 screws and key interlock solenoid.
- Install a new key interlock solenoid with the 2 screws.

9. Column shift:

INSPECT SHIFT LOCK SOLENOID, SHIFT LOCK SWITCH AND SHIFT LOCK CONTROL ECU (See page AX-18)

10. Column shift:

IF NECESSARY, REPLACE SHIFT LOCK SOLENOID, SHIFT LOCK SWITCH AND SHIFT LOCK CONTROL ECU

11. w/ Engine immobiliser system:

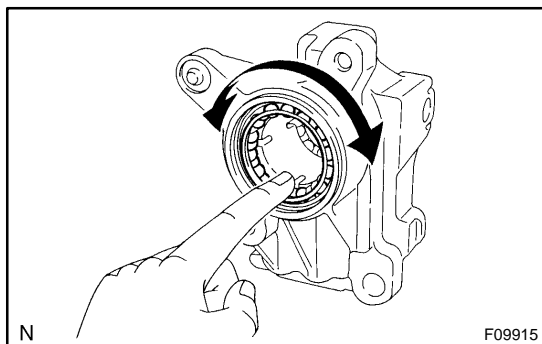
INSPECT TRANSPONDER KEY COIL (See page BE-181)

12. w/ Engine immobiliser system:

IF NECESSARY, REPLACE TRANSPONDER KEY COIL

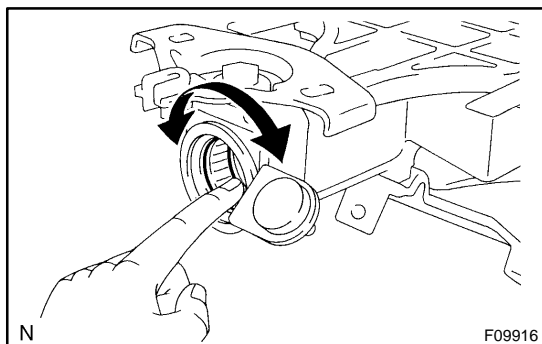
13. w/ Engine immobiliser system:**IF NECESSARY, REPLACE TRANSPONDER KEY AMPLIFIER**

- (a) Remove the 2 screws and transponder key amplifier.
- (b) Install a new transponder key amplifier with the 2 screws.

**14. INSPECT BEARING**

Check the bearing rotation condition and check for abnormal noise.

If faulty, replace the steering column upper tube sub-assembly.

**15. INSPECT BUSHING**

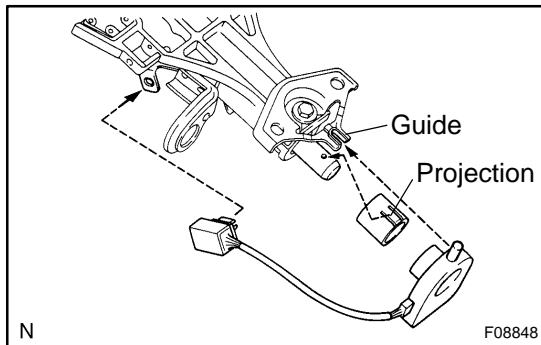
Check the bushing rotation condition and check for abnormal noise.

If faulty, replace the steering column assembly.

INSTALLATION

1. INSTALL SPEED CONTROL MAIN SWITCH ASSEMBLY TO STEERING WHEEL

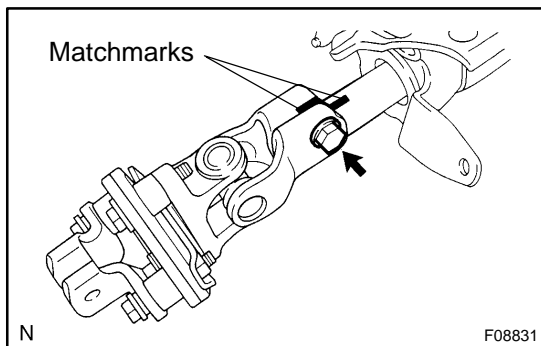
Install the speed control main switch assembly with the 2 screws to the steering wheel.



2. w/ VSC:

INSTALL STEERING ANGLE SENSOR ADAPTER AND STEERING ANGLE SENSOR

- Fit a projection of the steering angle sensor adapter into a hole in the steering column shaft.
- Set a projection of the steering angle sensor in the guide of the steering column and fix the steering angle sensor.



3. INSTALL UNIVERSAL JOINT ASSEMBLY

- Align the matchmarks on the universal joint assembly and main shaft assembly.
- Install the bolt.

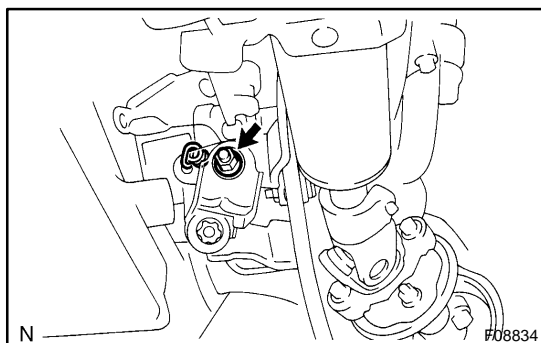
Torque: 35 N·m (360 kgf-cm, 26 ft-lbf)

4. INSTALL NO. 2 COLUMN HOLE COVER SUB-ASSEMBLY AND INTERMEDIATE SHAFT SUB-ASSEMBLY

- Install the No. 2 column hole cover sub-assembly.
- Temporarily install the intermediate shaft sub-assembly with the bolt A.

5. INSTALL STEERING COLUMN ASSEMBLY

- Install the steering column assembly with the 4 nuts.
Torque: 25 N·m (260 kgf-cm, 19 ft-lbf)
- Connect the connectors.

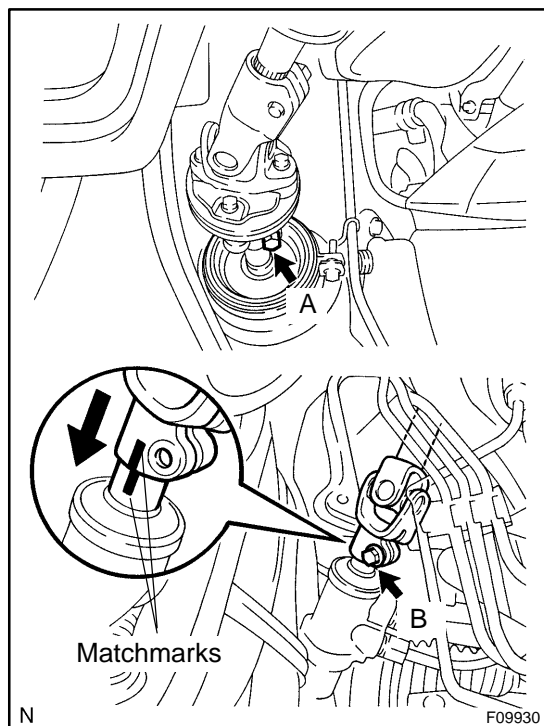


- Install the nut and return spring.

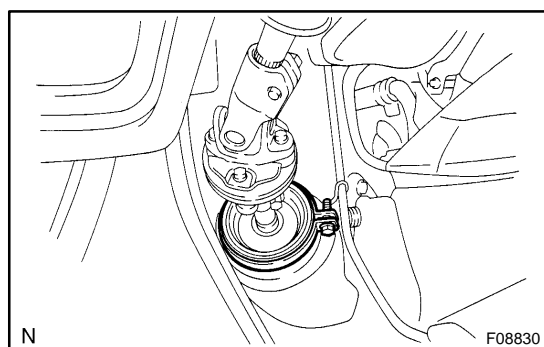
6. Column shift:

CONNECT TRANSMISSION CONTROL CABLE

- Connect the transmission control cable to the cable bracket of the column tube.
- Connect the transmission control cable to the shift lever housing.



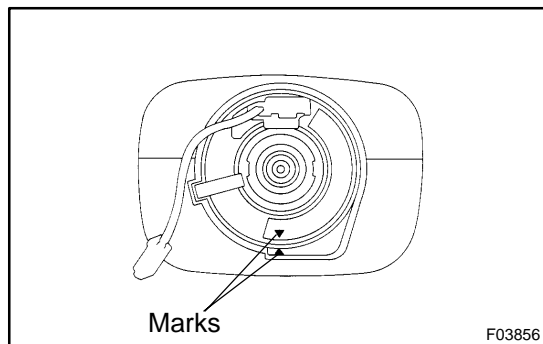
- 7. CONNECT INTERMEDIATE SHAFT SUB-ASSEMBLY**
- Align the matchmarks on the intermediate shaft sub-assembly and control valve shaft.
 - Install the bolt B.
Torque: 35 N·m (360 kgf-cm, 26 ft-lbf)
 - Torque the bolt A.
Torque: 35 N·m (360 kgf-cm, 26 ft-lbf)



- Connect the No. 2 column hole cover sub-assembly and tighten the clamp.
- 8. INSTALL AIR CLEANER ASSEMBLY WITH AIR CLEANER HOSE**
- Install the air cleaner assembly with air cleaner hose with the 3 bolts.
 - Connect the connectors.
 - Tighten the hose clamps.
- 9. INSTALL LOWER INSTRUMENT FINISH PANEL ASSEMBLY**
- 10. INSTALL SPIRAL CABLE (See page BE-18)**
- 11. INSTALL COMBINATION SWITCH WITH SPIRAL CABLE**
- Install the combination switch with spiral cable with the 3 screws.
 - Connect the airbag connector.
 - Connect the connectors.
- 12. INSTALL NO. 2 COLUMN LOWER COVER, COLUMN UPPER AND LOWER COVERS**
- Install the column upper and lower covers with the 3 screws.
 - Install the No. 2 column lower cover.
- 13. INSTALL NO. 2 HEATER TO REGISTER DUCT**
Install the No. 2 heater to register duct with the clip.
- 14. INSTALL LOWER LH INSTRUMENT PANEL INSERT SUB-ASSEMBLY**
- Install the lower LH instrument panel insert sub-assembly with the 4 bolts.
 - Connect the connectors.

15. INSTALL LOWER NO. 1 INSTRUMENT PANEL SUB-ASSEMBLY

- (a) Connect the connectors and install the lower No. 1 instrument panel sub-assembly.
- (b) Install the 2 screws.
- (c) Connect the hood lock release lever with the 2 screws.

**16. CENTER SPIRAL CABLE**

- (a) Check that the front wheels are facing straight ahead.
- (b) Turn the spiral cable counterclockwise by hand until it becomes harder to turn.
- (c) Then rotate the spiral cable clockwise about 2.5 turns to align the marks.

HINT:

The spiral cable will rotate about 2.5 turns to either left or right of the center.

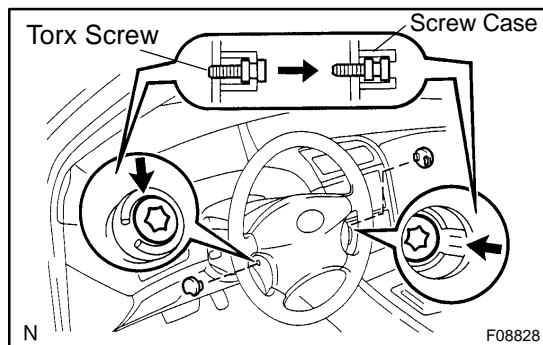
17. INSTALL STEERING WHEEL

- (a) Align the matchmarks on the steering wheel and main shaft assembly.
- (b) Install the steering wheel set nut.
Torque: 50 N·m (510 kgf-cm, 37 ft-lbf)
- (c) Connect the connector.

18. INSTALL STEERING WHEEL PAD**NOTICE:**

- ★ **Never use airbag parts from another vehicle. When replacing parts, replace with new ones.**
- ★ **Make sure the wheel pad is installed to the specified torque.**
- ★ **If the wheel pad has been dropped, or there are cracks, dents or other defects on the case or connector, replace the wheel pad with a new one.**
- ★ **When installing the wheel pad, take care that the wirings do not interfere with other parts and are not pinched between other parts.**

- (a) Connect the airbag connector.



- (b) Install the steering wheel pad after confirming that the circumference groove of the torx screws is caught on the screw case.
- (c) Using a torx socket wrench, install the 2 screws.
Torque: 8.8 N·m (90 kgf-cm, 78 in.-lbf)
- (d) Install the 2 steering wheel lower No. 2 covers.

19. CHECK STEERING WHEEL CENTER POINT**20. w/ VSC:**

PERFORM STEERING ANGLE SENSOR ZERO POINT CALIBRATION (See page [DI-252](#))

REASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. **COAT PARTS INDICATED BY ARROWS WITH MOLYBDENUM DISULFIDE LITHIUM BASE GREASE**
(See page SR-9)

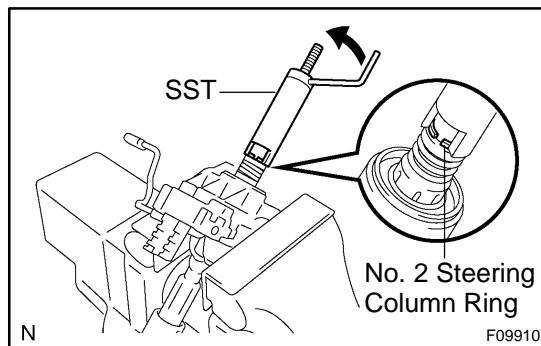
2. **INSTALL TILT LEVER**

Install the tilt lever with a new tilt lever lock shaft.

Torque: 9.0 N·m (90 kgf·cm, 78 in.-lbf)

3. **INSTALL MAIN SHAFT ASSEMBLY**

- (a) Install the main shaft collar, main shaft bushing, compression spring and spring retainer.
- (b) Install a new No. 2 steering column ring to the main shaft assembly.



- (c) Install SST to the main shaft assembly, as shown in the illustration.

SST 09612-07010

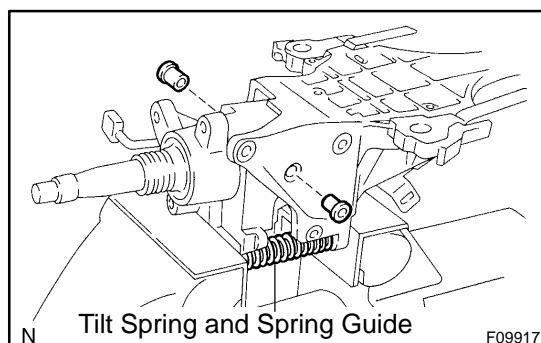
- (d) Using SST, push down the No. 2 steering column ring until it fits into the shaft groove and install the main shaft assembly.

NOTICE:

Do not bend the universal joint of the shaft assembly more than 20°.

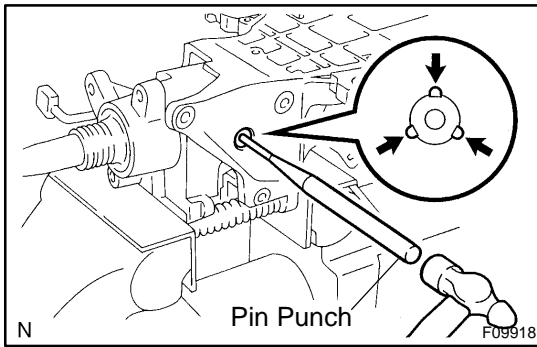
HINT:

Hold the main shaft assembly with your hand so that it does not rotate.

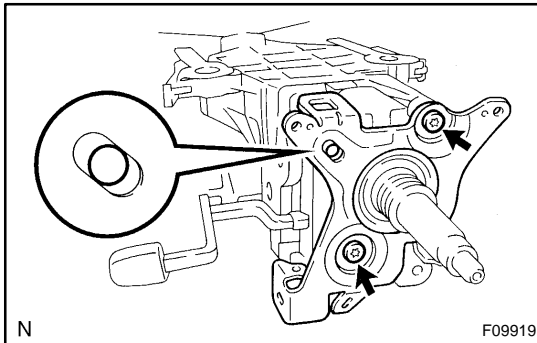


4. **INSTALL STEERING COLUMN UPPER TUBE WITH MAIN SHAFT ASSEMBLY**

- (a) Install the steering column upper tube with the main shaft assembly into the column tube assembly.
- (b) Install the tilt spring and spring guide.
- (c) Using a vise to hold the steering column upper tube.
- (d) Temporarily install 2 new No. 2 tilt steering bolts.



- (e) Using a punch and a hammer, tap in the No. 2 tilt steering bolt.
- (f) Using a pin punch, stake on 3 places evenly around the hole as shown in the illustration.



5. INSTALL TURN SIGNAL BRACKET

- (a) Install the turn signal bracket with 2 new torx screws.
Torque: 7.5 N·m (75 kgf·cm, 65 in.-lbf)

HINT:

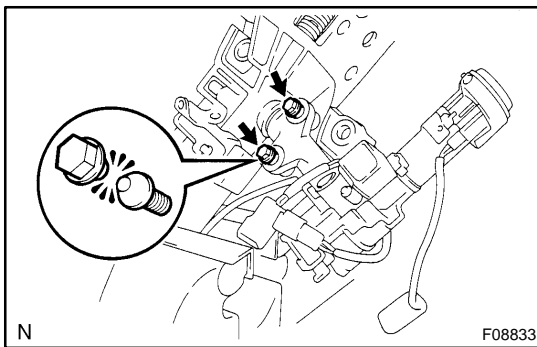
Set the hole of the turn signal bracket and projection of steering column upper tube.

- (b) Install the tension spring.

6. Column shift:

INSTALL SHIFT LEVER HOUSING

- (a) Install the shift lever housing with 3 new torx screws.
Torque: 10 N·m (100 kgf·cm, 7 ft-lbf)
- (b) Install the shift lever with a new torx screw.
Torque: 11 N·m (110 kgf·cm, 8 ft-lbf)
- (c) Install the shift lock solenoid bracket with 2 new torx screws.
Torque: 3.4 N·m (35 kgf·cm, 30 in.-lbf)
- (d) Install the shift lock switch with a new torx screw.
Torque: 2.8 N·m (29 kgf·cm, 25 in.-lbf)



7. INSTALL COLUMN UPPER BRACKET

- (a) Install the column upper bracket with 2 new tapered-head bolts.
- (b) Tighten the tapered-head bolts until the bolt heads break off.

8. Column shift:

INSTALL SHIFT LOCK CONTROL ECU

Install the shift lock control ECU and connect the 3 connectors.

9. INSTALL KEY CYLINDER LAMP ASSEMBLY

Install the key cylinder lamp assembly with screw.

10. w/ Engine immobiliser system:

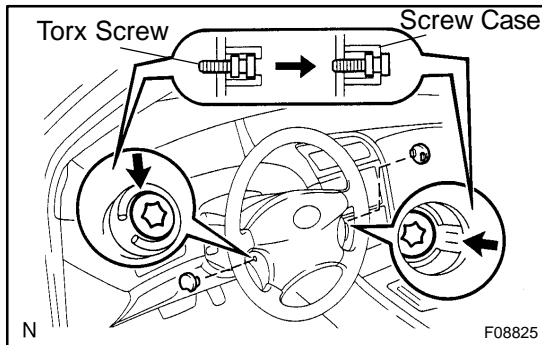
INSTALL TRANSPONDER KEY COIL

REMOVAL

1. REMOVE STEERING WHEEL PAD

NOTICE:

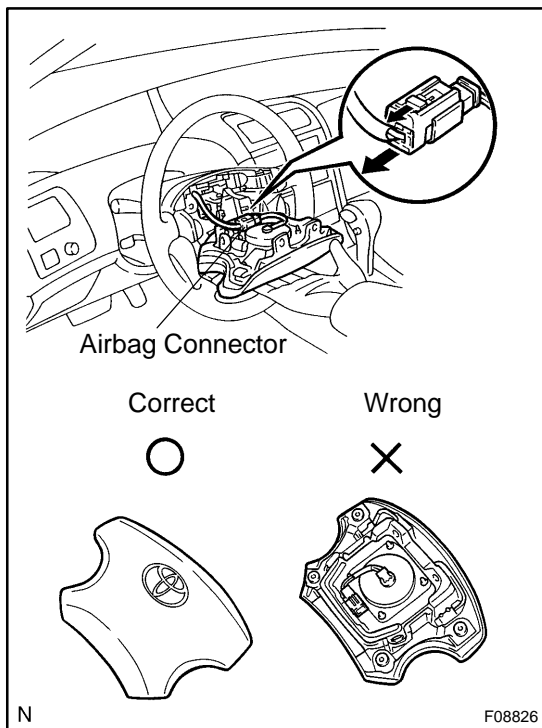
If the airbag connector is disconnected with the ignition switch at ON or ACC, DTCs will be recorded.



- Place the front wheels facing straight ahead.
- Remove the 2 steering wheel lower No. 2 covers.
- Using a torx socket wrench, loosen the 2 torx screws.

HINT:

Loosen the 2 screws until the groove along the screw circumference catches on the screw case.



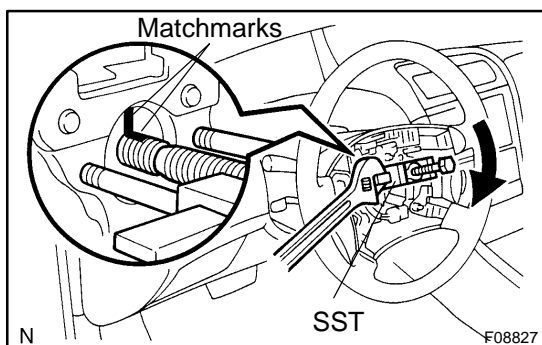
- Pull out the wheel pad from the steering wheel and disconnect the airbag connector.

CAUTION:

- ★ When storing the wheel pad, keep the upper surface of the pad facing upward.
- ★ Never disassemble the wheel pad.

NOTICE:

When removing the wheel pad, take care not to pull the airbag wire harness.



2. REMOVE STEERING WHEEL

- Disconnect the connector.
- Remove the steering wheel set nut.
- Place matchmarks on the steering wheel and main shaft assembly.
- Using SST, remove the steering wheel.
SST 09950-50012 (09951-05010, 09952-05010, 09953-05020, 09954-05020)

3. REMOVE LOWER NO. 1 INSTRUMENT PANEL SUB-ASSEMBLY

- (a) Remove the 2 screws and disconnect the hood lock release lever.
- (b) Remove the 2 screws.
- (c) Disconnect the connectors and remove the lower No. 1 instrument panel sub-assembly.

4. REMOVE LOWER LH INSTRUMENT PANEL INSERT SUB-ASSEMBLY

- (a) Disconnect the connectors.
- (b) Remove the 4 bolts and lower LH instrument panel insert sub-assembly.

5. REMOVE NO. 2 HEATER TO REGISTER DUCT

Remove the clip and No. 2 heater to register duct.

6. REMOVE NO. 2 COLUMN LOWER COVER, COLUMN UPPER AND LOWER COVERS

- (a) Remove the No. 2 column lower cover.
- (b) Remove the 3 screws, column upper and lower covers.

7. REMOVE COMBINATION SWITCH WITH SPIRAL CABLE

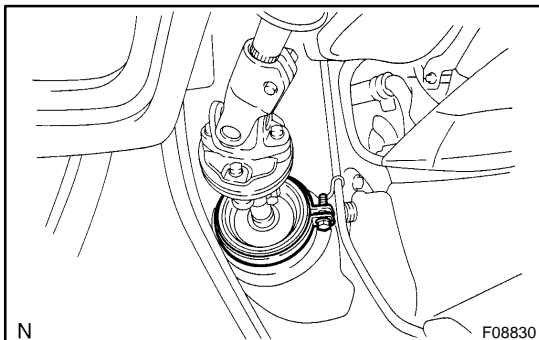
- (a) Disconnect the connectors.
- (b) Disconnect the airbag connector.
- (c) Remove the 3 screws and combination switch with spiral cable.

8. REMOVE SPIRAL CABLE (See page [BE-18](#))**NOTICE:**

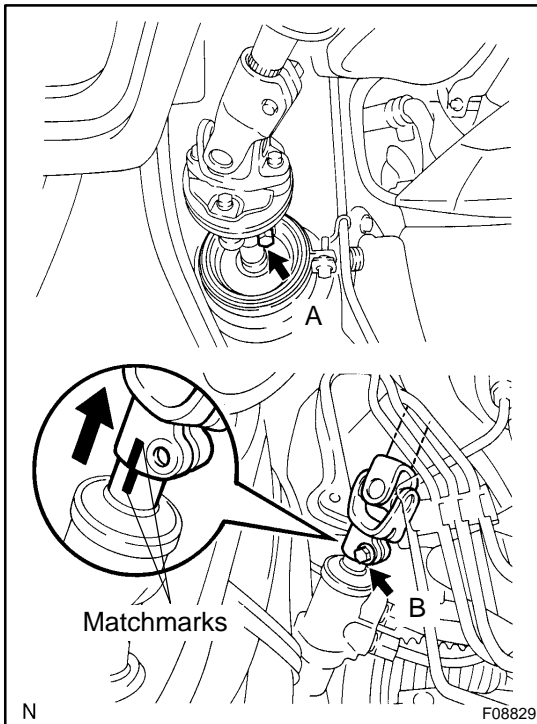
Do not disassemble the spiral cable or apply oil to it.

9. REMOVE LOWER INSTRUMENT FINISH PANEL ASSEMBLY**10. REMOVE AIR CLEANER ASSEMBLY WITH AIR CLEANER HOSE**

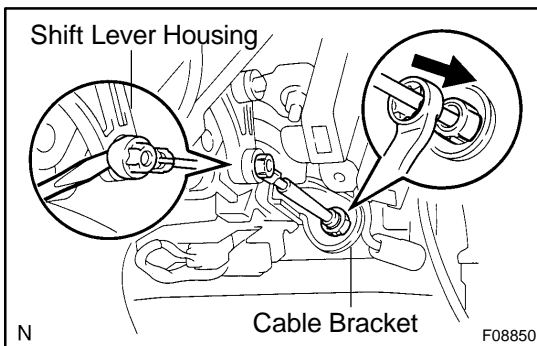
- (a) Loosen the hose clamps.
- (b) Disconnect the connectors.
- (c) Remove the 3 bolts and air cleaner assembly with air cleaner hose.

**11. DISCONNECT INTERMEDIATE SHAFT SUB-ASSEMBLY**

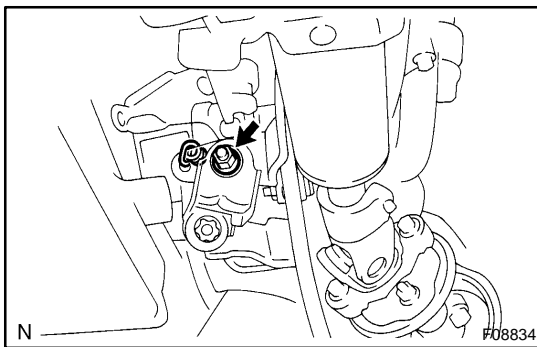
- (a) Loosen the clamp and disconnect the No. 2 column hole cover sub-assembly.



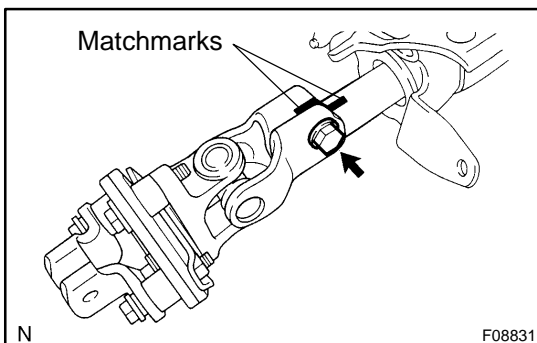
- (b) Place matchmarks on the intermediate shaft sub-assembly and control valve shaft.
- (c) Loosen the bolt A and remove the bolt B, then disconnect the intermediate shaft sub-assembly.



- 12. Column shift:**
DISCONNECT TRANSMISSION CONTROL CABLE
- (a) Using a screwdriver, disconnect the transmission control cable from the shift lever housing.
 - (b) Using an offset wrench (23mm), disconnect the transmission control cable from the cable bracket of the column tube.



- 13. REMOVE STEERING COLUMN ASSEMBLY**
- (a) Remove the nut and return spring.
 - (b) Disconnect the connectors.
 - (c) Remove the 4 nuts and steering column assembly.
- 14. REMOVE INTERMEDIATE SHAFT SUB-ASSEMBLY AND NO. 2 COLUMN HOLE COVER SUB-ASSEMBLY**
- (a) Remove the bolt A and remove the intermediate shaft sub-assembly.
 - (b) Remove the No. 2 column hole cover sub-assembly.



- 15. REMOVE UNIVERSAL JOINT ASSEMBLY**
- (a) Place matchmarks on the universal joint assembly and main shaft assembly.
 - (b) Remove the bolt and universal joint assembly.
- 16. w/ VSC:**
REMOVE STEERING ANGLE SENSOR AND STEERING ANGLE SENSOR ADAPTER

17. REMOVE SPEED CONTROL MAIN SWITCH ASSEMBLY FROM STEERING WHEEL

Remove the 2 screws and speed control main switch assembly from the steering wheel.