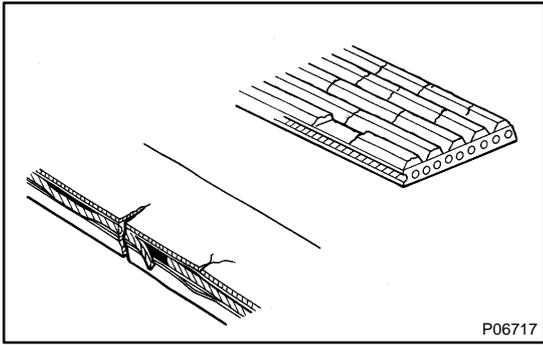


AIR CONTROL VALVE INSPECTION

SR0LZ-06

1. **TURN AIR CONDITIONING SWITCH OFF**
2. **CHECK IDLE-UP**
 - (a) Start the engine and run it at idle.
 - (b) Fully turn the steering wheel.
 - (c) Check that the engine rotations decrease when the vacuum hose of the air control valve is pinched.
 - (d) Check that the engine rotations increase when the hose is released.



DRIVE BELT INSPECTION

SR0LW-04

INSPECT DRIVE BELT

Visually check the 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 belt are considered acceptable. If the belt has chunks missing from the ribs, it should be replaced.

POWER STEERING FLUID BLEEDING

SR0LX-04

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 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 wheel to left or right full lock position and keep it there for 2-3 seconds, then turn the wheel to the opposite full lock position and keep it there for 2-3 seconds.

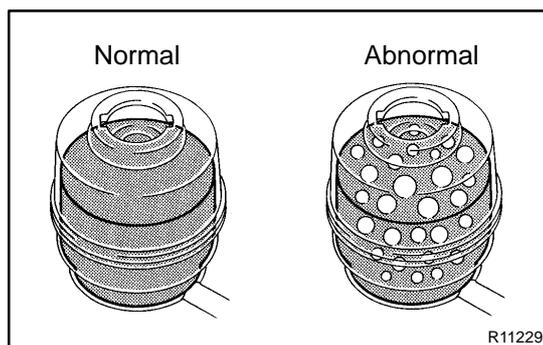
(b) Repeat (a) several times.

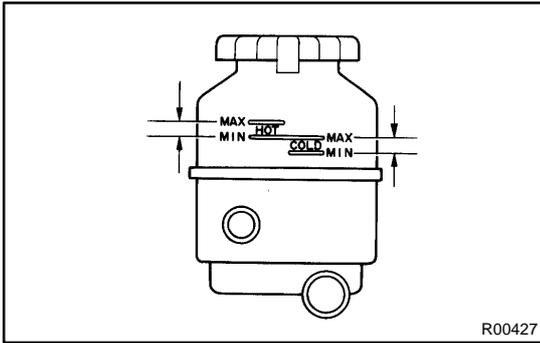
7. **STOP ENGINE**

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](#))





R00427

INSPECTION

1. CHECK FLUID LEVEL

- (a) Keep the vehicle level.
- (b) With the engine stopped, check the fluid level in the oil reservoir.

If necessary, add fluid.

Fluid: ATF DEXRON® II or III

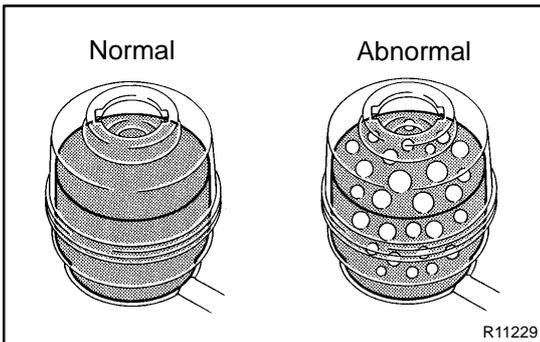
HINT:

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.

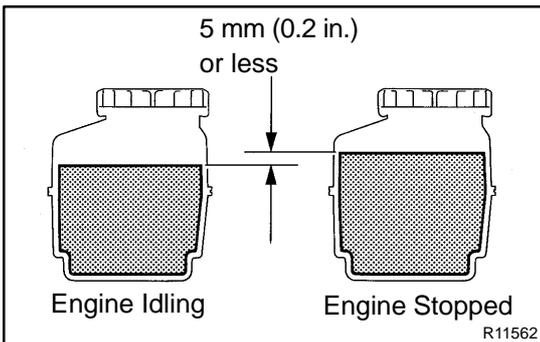
- (c) Start the engine and run it at idle.
- (d) Turn the steering wheel from lock to lock several times to boost fluid temperature.

Fluid temperature: 80°C (176°F)



R11229

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



R11562

- (f) With the engine idling, measure the fluid level in the oil reservoir.
- (g) Stop the engine.
- (h) 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](#)).

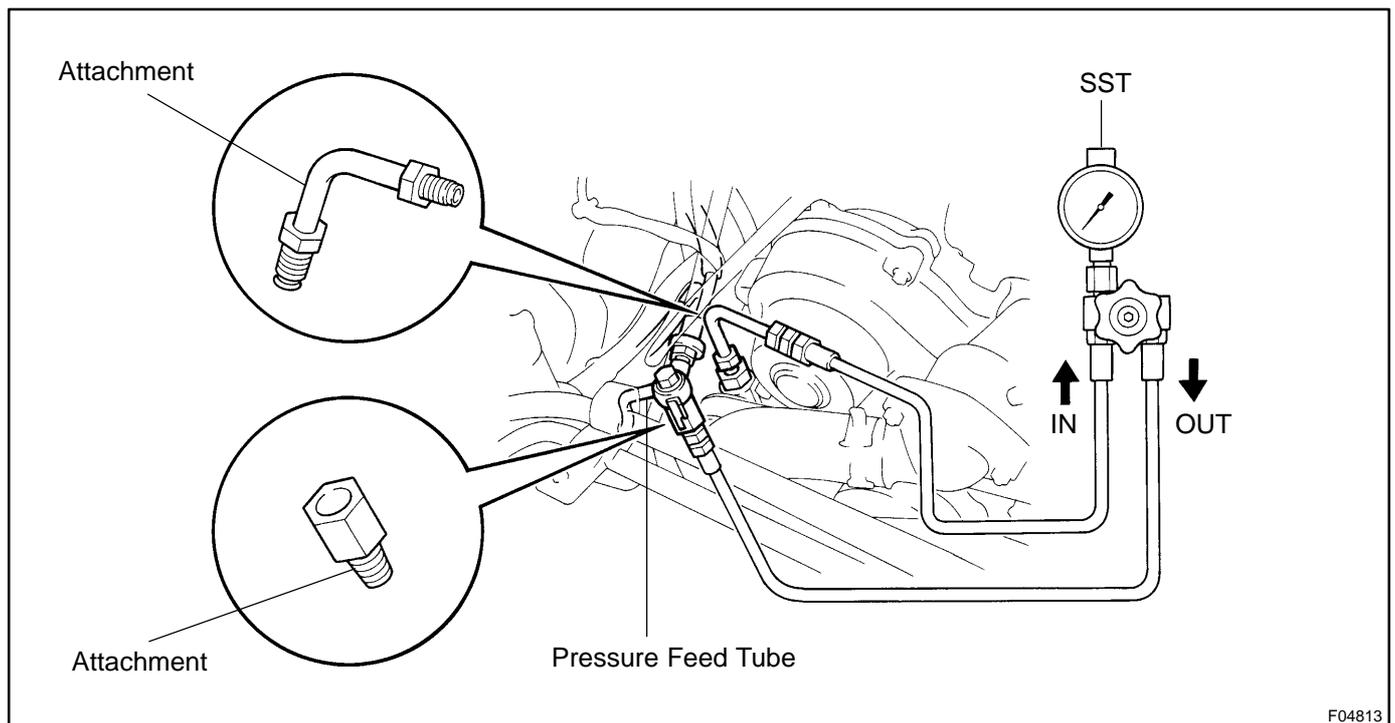
- (i) Check the fluid level.

2. CHECK STEERING FLUID PRESSURE

- (a) Remove the air cleaner assembly with air cleaner hose (See page [SR-40](#)).
- (b) Disconnect the pressure feed tube from the PS vane pump (See page [SR-40](#)).
- (c) Connect SST, as shown below.
SST 09640-10010 (09641-01010, 09641-01030, 09641-01060)

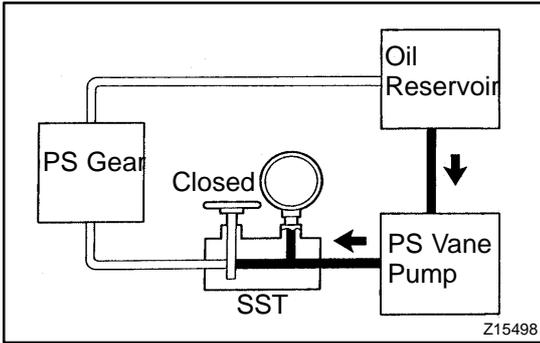
NOTICE:

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



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

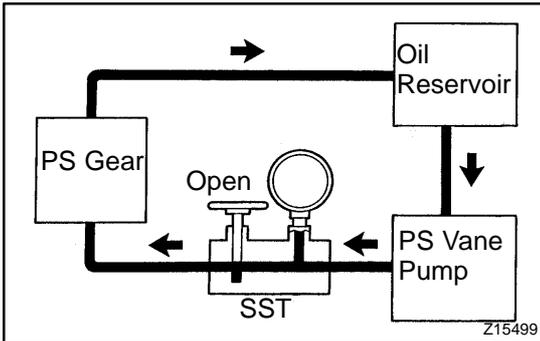
Fluid temperature: 80 °C (176 °F)



- (g) With the engine idling, close the valve of the SST and observe the reading on the SST.
Minimum fluid pressure:
10,000 kPa (102 kgf/cm², 1,451 psi)

NOTICE:

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

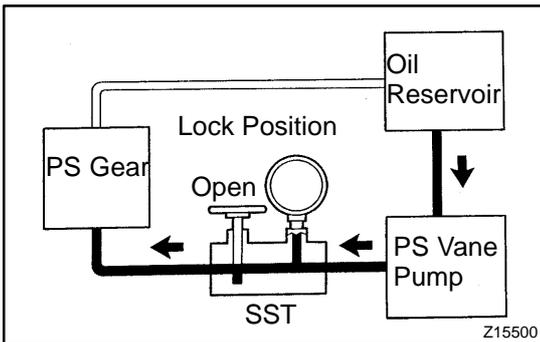


- (h) With the engine idling, open the valve fully.
 (i) Measure the fluid pressure at engine speeds of 1,000 rpm and 3,000 rpm.

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

NOTICE:

Do not turn the steering wheel.



- (j) With the engine idling and valve fully opened, turn the steering wheel to full lock.
Minimum fluid pressure:
10,000 kPa (102 kgf/cm², 1,451 psi)

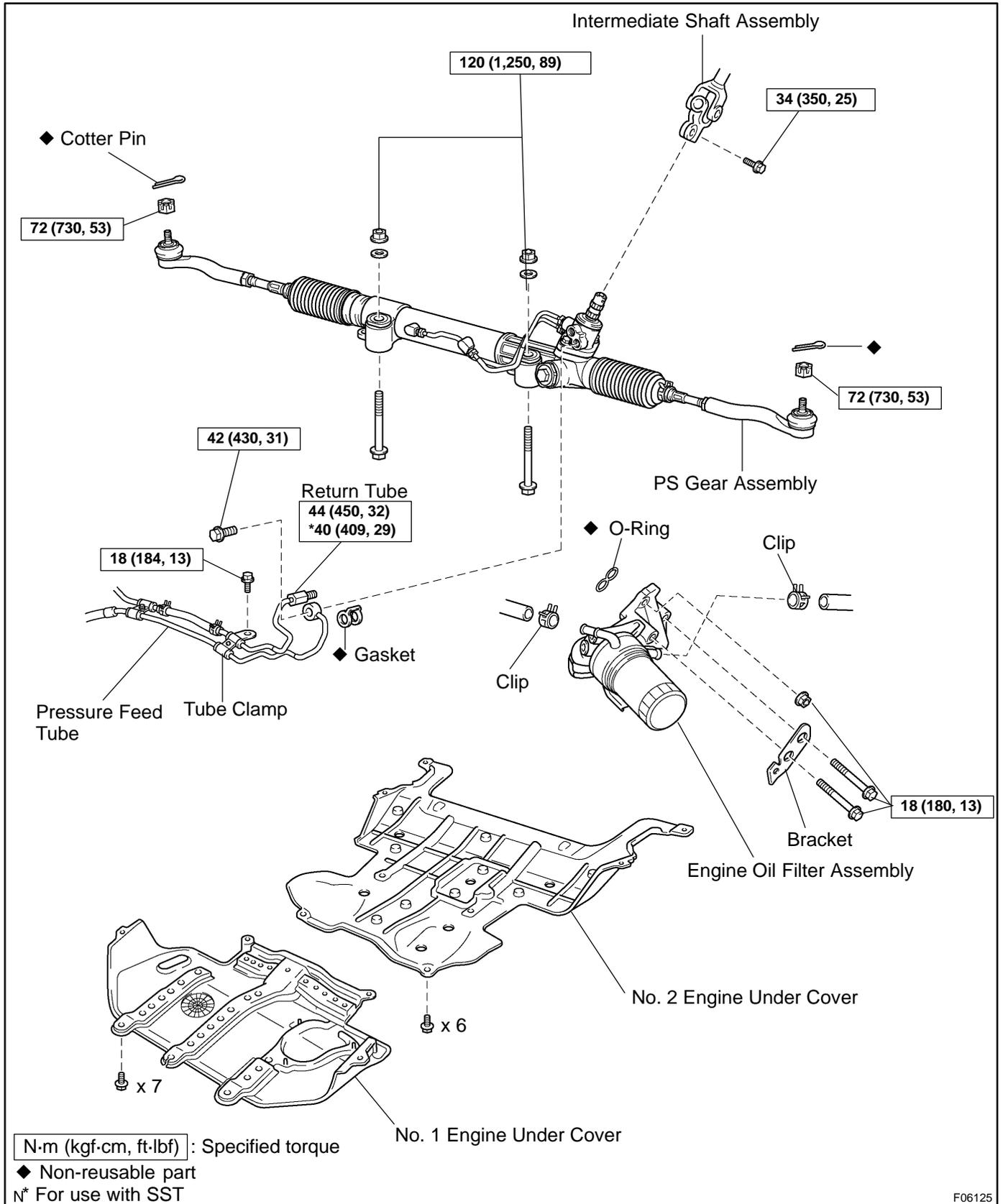
NOTICE:

- ★ Do not maintain lock position for more than 10 seconds.
- ★ Do not let the fluid temperature become too high.

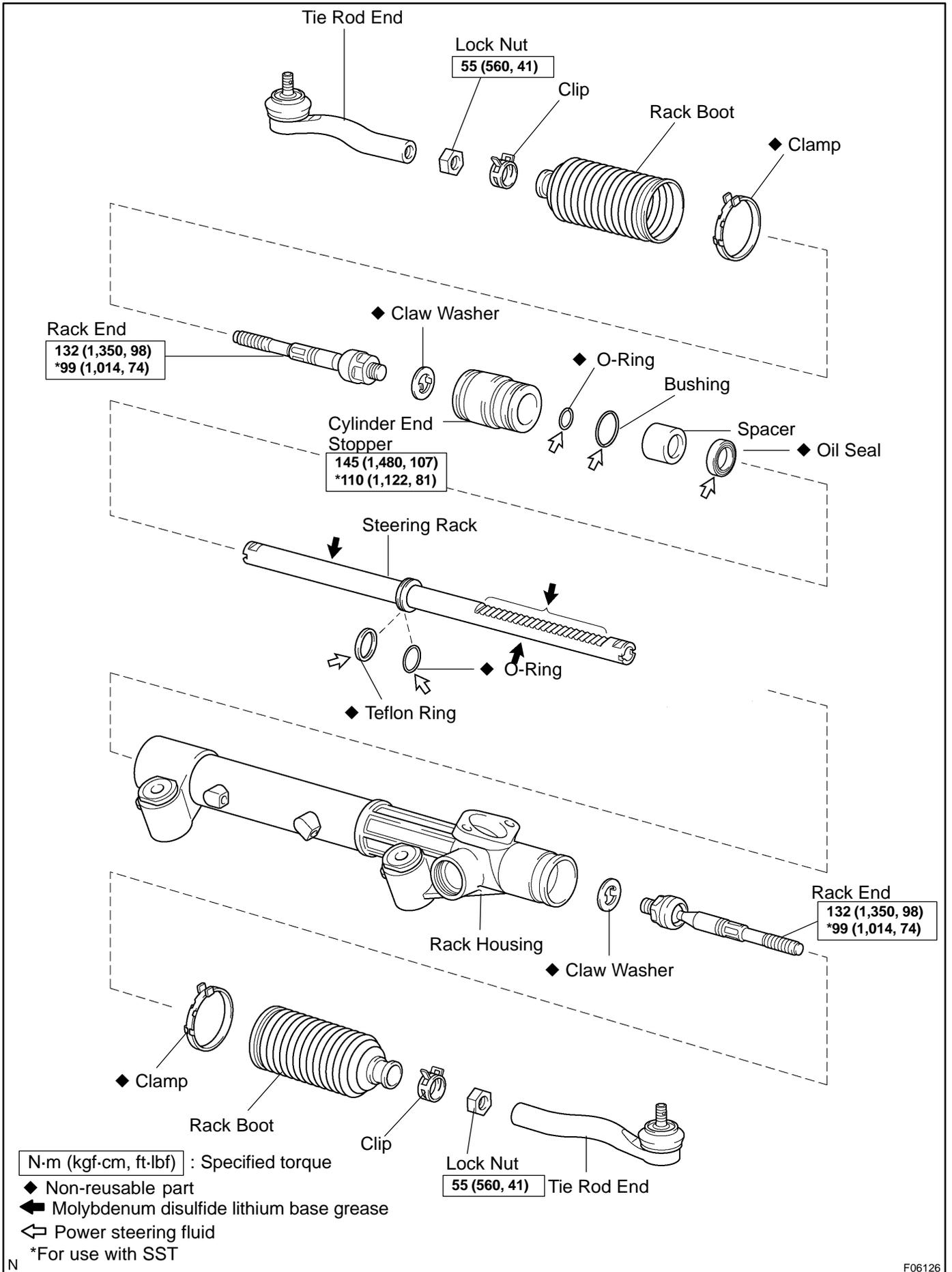
- (k) Disconnect the SST.
 SST 09640-10010 (09641-01010, 09641-01030, 09641-01060)
 (l) Connect the pressure feed tube (See page [SR-47](#)).
 (m) Install the air cleaner assembly with air cleaner hose (See page [SR-47](#)).
 (n) Bleed the power steering system (See page [SR-4](#)).

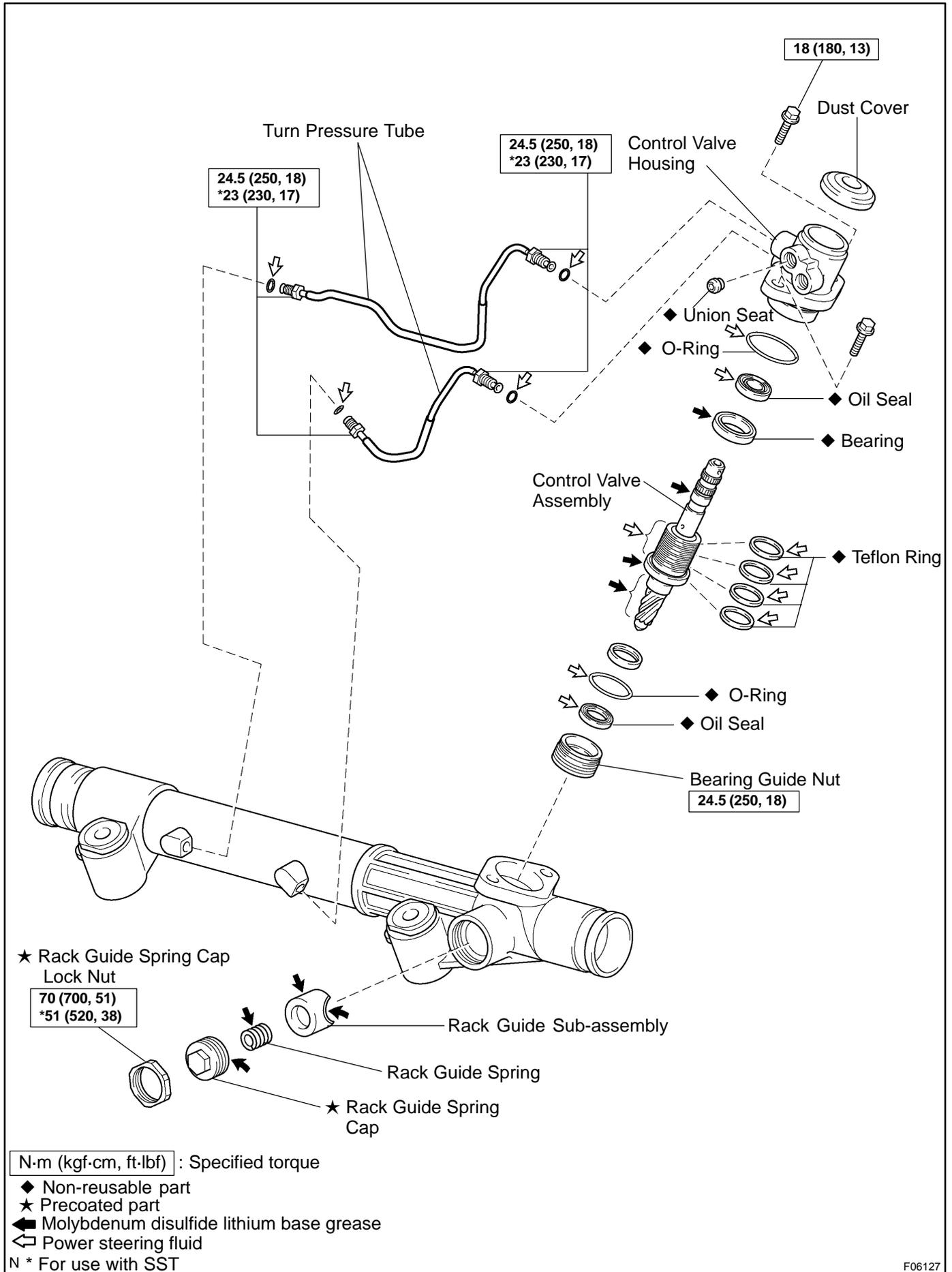
POWER STEERING GEAR COMPONENTS

SR0MJ-06

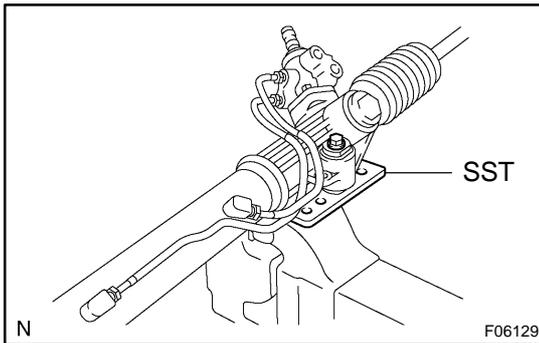


F06125





F06127



DISASSEMBLY

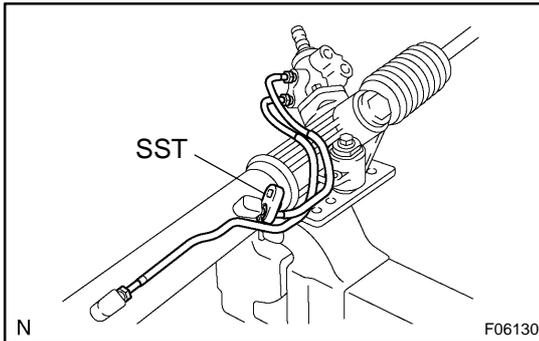
NOTICE:

When using a vise, do not overtighten it.

1. SECURE PS GEAR ASSEMBLY IN VISE

Using SST, secure the gear assembly in a vise, as shown in the illustration.

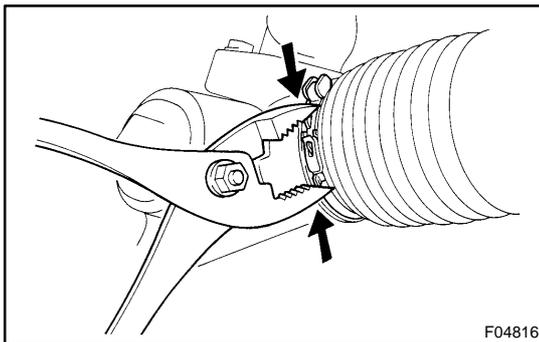
SST 09630-00014 (09631-00142)



2. REMOVE 2 TURN PRESSURE TUBES

Using SST, remove the tube.

SST 09023-38200



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

(a) Using pliers, loosen the clamp, as shown in the illustration.

NOTICE:

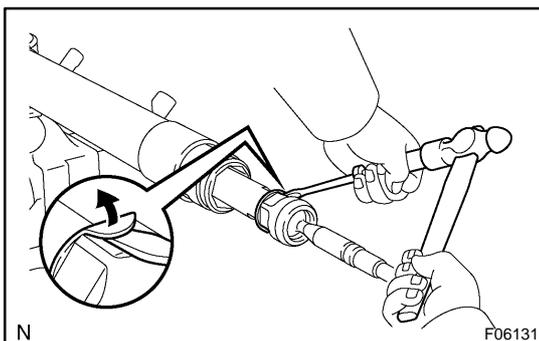
Be careful not to damage the boot.

(b) Remove the clip, rack boot and clamp.

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

HINT:

Mark the RH and LH rack boots.

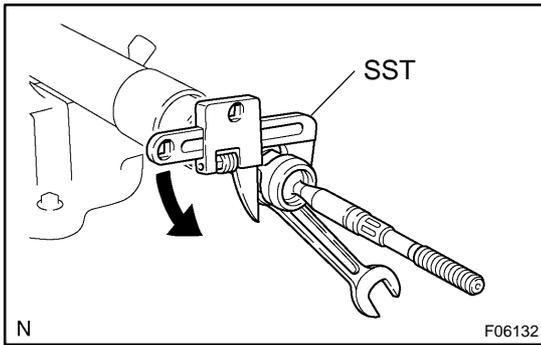


4. REMOVE RH AND LH RACK ENDS AND CLAW WASHERS

(a) Using a screwdriver and hammer, stake back the washer.

NOTICE:

Avoid and impact to the steering rack.



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

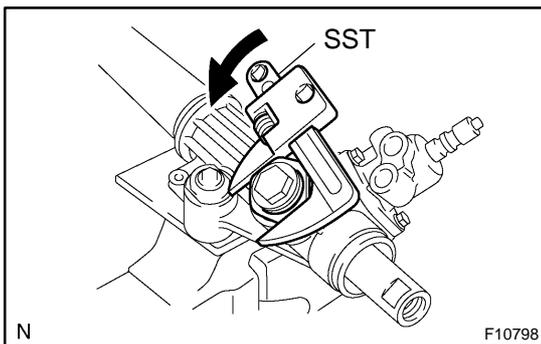
NOTICE:

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.



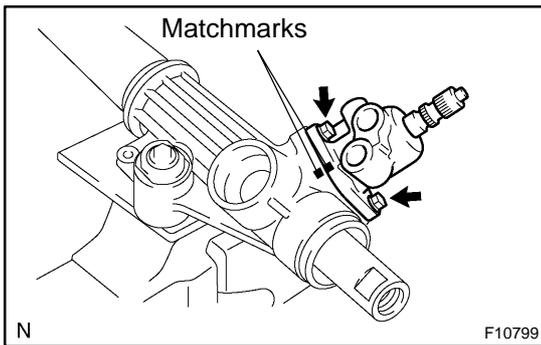
5. REMOVE RACK GUIDE SPRING CAP LOCK NUT

Using SST, remove the nut.
SST 09922-10010

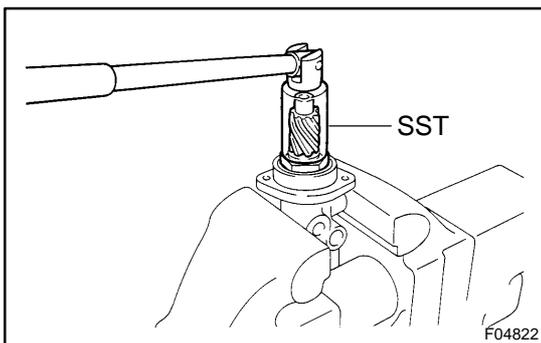
NOTICE:

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

- 6. REMOVE RACK GUIDE SPRING CAP**
- 7. REMOVE RACK GUIDE SPRING AND RACK GUIDE SUB-ASSEMBLY**
- 8. REMOVE DUST COVER**
- 9. REMOVE CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY**

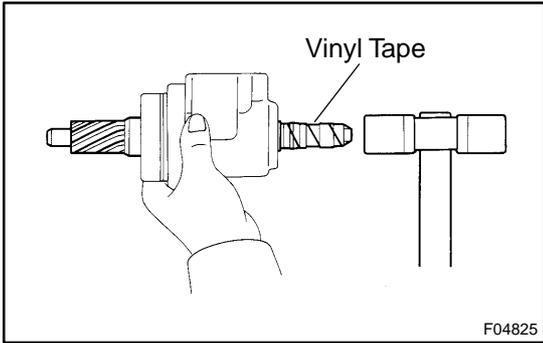


- (a) Place matchmarks on the valve housing and rack housing.
- (b) Remove the 2 bolts.
- (c) Pull out the control valve assembly with the valve housing.
- (d) Remove the O-ring from the valve housing.



10. REMOVE CONTROL VALVE ASSEMBLY

- (a) Using SST, loosen the bearing guide nut.
SST 09631-20060



- (b) Wind vinyl tape to the control valve shaft.
- (c) Using a plastic hammer, tap out the valve assembly with the nut from the control valve housing.

NOTICE:

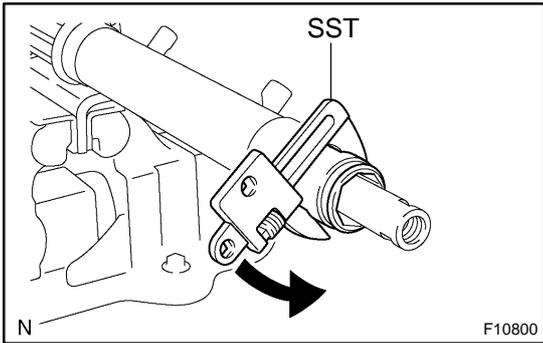
Be careful not to damage the oil seal lip.

- (d) Remove the nut from the valve assembly.

NOTICE:

Be careful not the damage the oil seal lip.

- (e) Remove the O-ring from the nut.



11. REMOVE CYLINDER END STOPPER AND SPACER

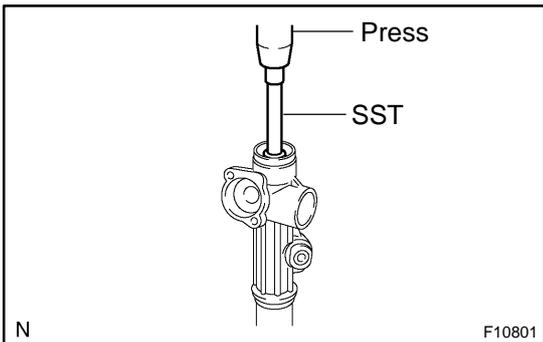
- (a) Using SST, remove the stopper.

SST 09922-10010

NOTICE:

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

- (b) Remove the O-ring from the stopper.



12. REMOVE STEERING RACK AND OIL SEAL

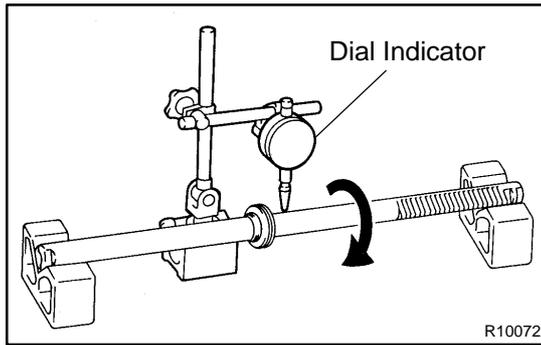
- (a) Using SST, press out the rack and oil seal.

NOTICE:

Take care not to drop the rack.

SST 09950-70010 (09951-07200)

- (b) Remove the oil seal from the rack.



INSPECTION

1. INSPECT STEERING RACK

- (a) Using a dial indicator, check the 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.

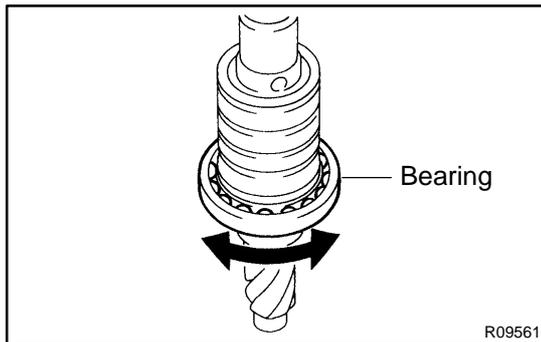


2. INSPECT BEARING

- (a) Check the needle roller bearing of the rack housing for pit-marks or damage.

If faulty, replace the rack housing,

- (b) Coat the inside of the bearing with molybdenum disulfide lithium base grease.

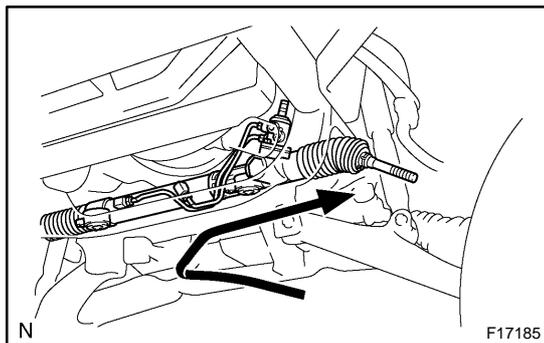


3. INSPECT BEARING

- (a) Check the bearing rotation condition and check for abnormal noise.

If the bearing is worn or damaged, replace the control valve assembly.

- (b) Coat the bearing with molybdenum disulfide lithium base grease.



INSTALLATION

1. INSTALL PS GEAR ASSEMBLY

Torque the 2 new gear assembly set bolts, nuts and washers.

Torque: 120 N·m (1,250 kgf·cm, 89 ft·lbf)

HINT:

Slide the gear assembly to the right side, slide the gear assembly to the left side and position it.

2. 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.

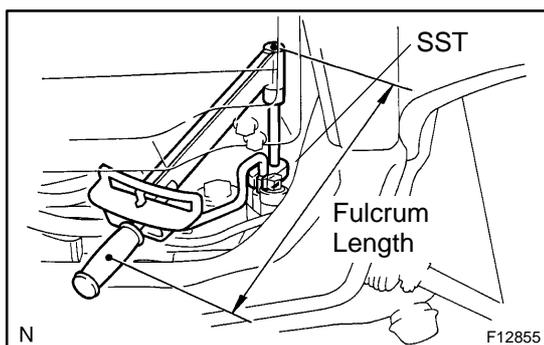
(b) After adjusting toe-in, torque the nut (See page [SA-6](#)).

Torque: 55 N·m (560 kgf·cm, 41 ft·lbf)

3. CONNECT TUBE CLAMP

Torque the bolt.

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



4. CONNECT RETURN TUBE

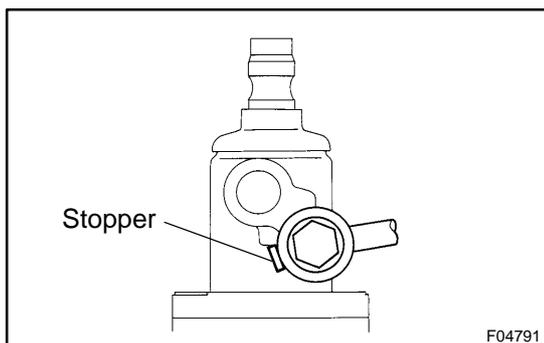
Using SST, connect the tube.

SST 09023-38400

Torque: 50 N·m (510 kgf·cm, 37 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 PRESSURE FEED TUBE

Torque the union bolt with a new gasket.

HINT:

Make sure the stopper of the pressure feed tube touches the PS gear assembly as shown in the illustration, then torque the bolt.

Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)

6. CONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY (See page [SR-24](#))

7. INSTALL ENGINE OIL FILTER ASSEMBLY

(a) Install a new O-ring.

(b) Torque the 2 bolts and nut with the bracket.

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

(c) Connect the 2 clips and hoses.

8. CONNECT RH AND LH TIE ROD ENDS (See page [SA-20](#))

9. INSTALL NO. 2 ENGINE UNDER COVER

Tighten the 6 bolts.

10. INSTALL NO. 1 ENGINE UNDER COVER

Tighten the 7 bolts.

11. POSITION FRONT WHEELS FACING STRAIGHT AHEAD

HINT:

Do it with the front of the vehicle jacked up.

12. CENTER SPIRAL CABLE (See page [SR-24](#))**13. INSTALL STEERING WHEEL**

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

14. BLEED POWER STEERING SYSTEM (See page [SR-4](#))**15. CHECK STEERING WHEEL CENTER POINT****16. TORQUE STEERING WHEEL SET NUT**

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

17. INSTALL STEERING WHEEL PAD (See page [SR-24](#))**18. CHECK FRONT WHEEL ALIGNMENT (See page [SA-6](#))****19. PERFORM ZERO POINT CALIBRATION OF YAW RATE AND DECELERATION SENSORS (See page [DI-505](#))**

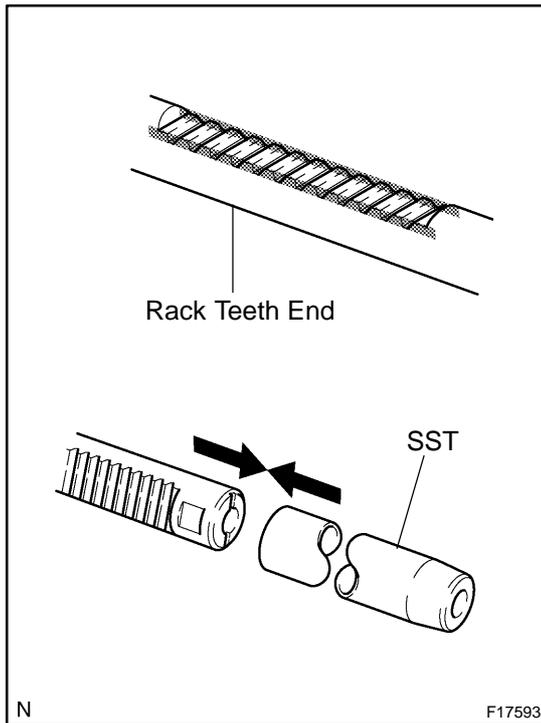
REASSEMBLY

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-48](#))



2. **INSTALL STEERING RACK**

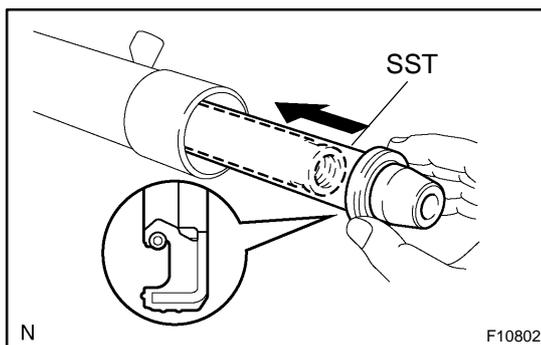
- (a) Install SST to the rack.

SST 09631-00350

HINT:

If necessary, scrape the burrs off the rack teeth end and bur-nish.

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



3. **INSTALL OIL SEAL**

- (a) Install SST to the steering rack opposite end.

SST 09631-00350

- (b) Coat SST with power steering fluid.
- (c) Coat a new oil seal lip with power steering fluid.
- (d) Install the oil seal by pushing it onto the SST without tilt-ing.

NOTICE:

Make sure to install the oil seal facing the correct direction.

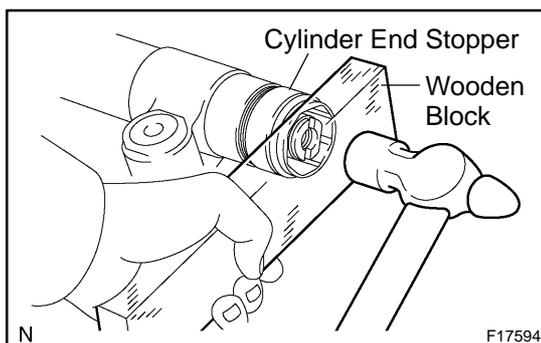
- (e) Remove the SST.

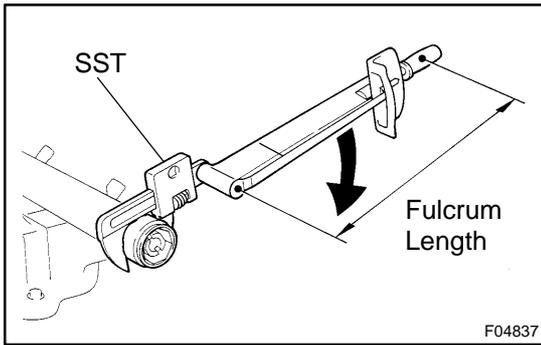
4. **INSTALL SPACER AND CYLINDER END STOPPER**

- (a) Install the spacer.
- (b) Coat a new O-ring with power steering fluid, and install it to the stopper.
- (c) Using a wooden block and hammer, drive in the stopper until it is tightly installed.

NOTICE:

Be careful not to damage the O-ring.





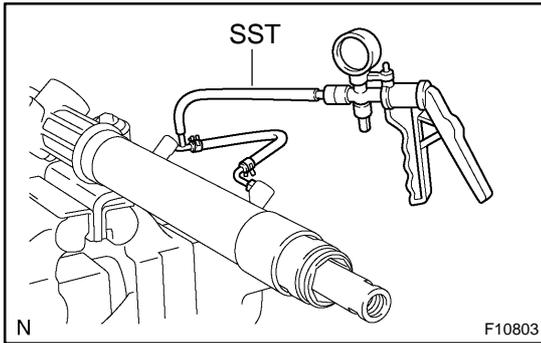
- (d) Using SST, torque the stopper.
SST 09922-10010
Torque: 110 N·m (1,122 kgf·cm, 81 ft·lbf)

NOTICE:

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

HINT:

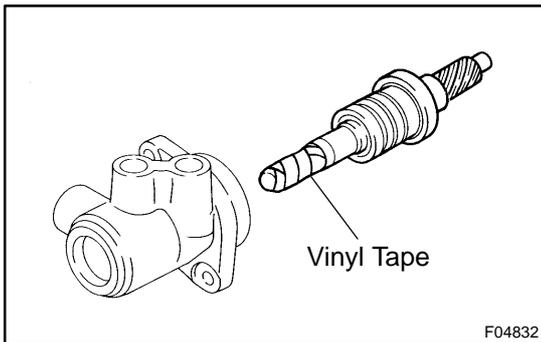
Use a torque wrench with a fulcrum length of 380 mm (14.97 in.).



5. AIR TIGHTNESS TEST

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

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

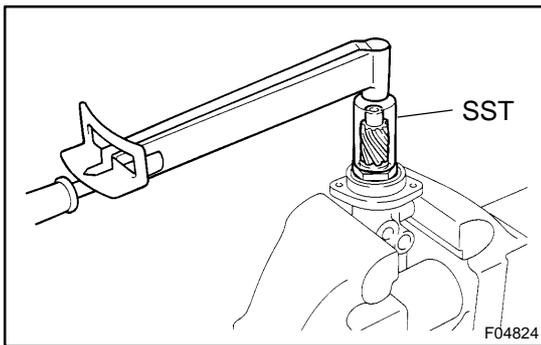


6. INSTALL CONTROL VALVE ASSEMBLY

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

NOTICE:

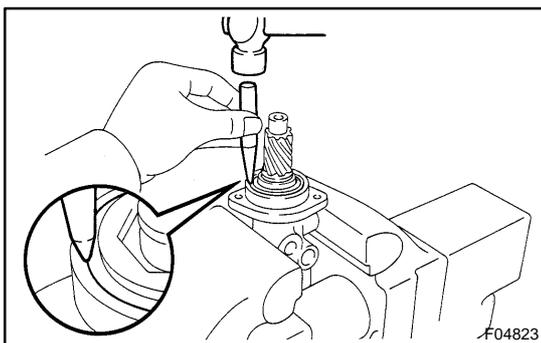
Be careful not to damage the teflon rings and oil seal lip.



- (d) Coat a new O-ring with power steering fluid, and install it to the bearing guide nut.
- (e) Using SST, torque the nut.
SST 09631-20060
Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)

NOTICE:

Be careful not to damage the oil seal lip.



- (f) Using a punch, stake the nut.

7. INSTALL CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY

- Coat a new O-ring with power steering fluid, and install it to the valve housing.
- Align the matchmarks on the valve housing and rack housing, and install the valve housing with the valve assembly to the rack housing.
- Torque the 2 bolts.

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

8. INSTALL DUST COVER

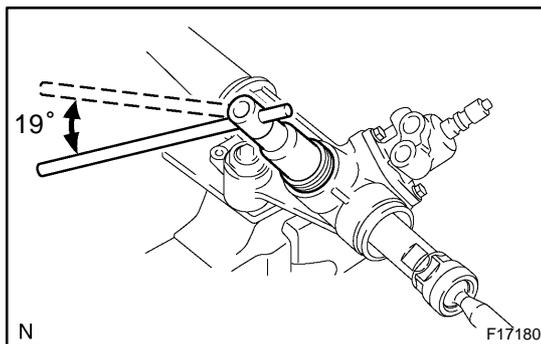
9. INSTALL RACK GUIDE SUB-ASSEMBLY, RACK GUIDE SPRING AND RACK GUIDE SPRING CAP

- Apply sealant to 2 or 3 threads of the cap.

Sealant:

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

- Temporarily install the cap.



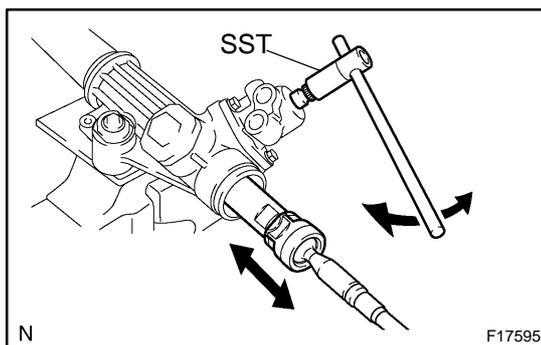
10. ADJUST TOTAL PRELOAD

- To prevent the steering rack teeth from damaging the oil seal lip, temporarily install the RH and LH rack ends.

- Torque the rack guide spring cap.

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

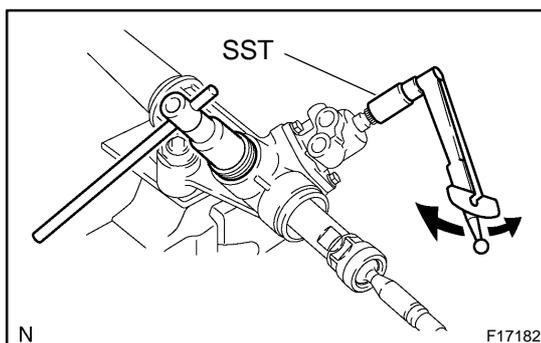
- Return the cap 19°.



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

SST 09616-0001 1

- Loosen the cap until the rack guide spring is not functioning.



- Using SST and a torque wrench, tighten the cap until the preload is within specification.

SST 09616-0001 1

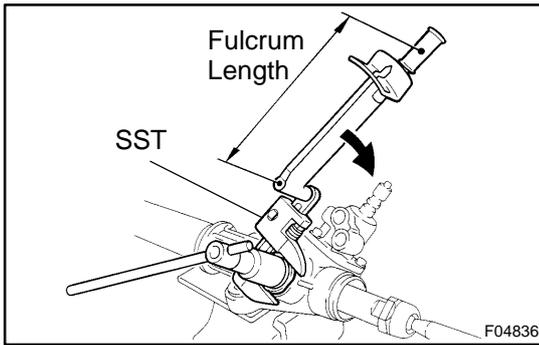
Preload (turning):

Center Area

1.8 - 2.2 N·m (18.4 - 22.4 kgf·cm, 16.0 - 19.5 in.-lbf)

End Area

1.3 - 1.7 N·m (13.3 - 17.3 kgf·cm, 11.5 - 15.0 in.-lbf)

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

- (a) Apply sealant to 2 or 3 threads of the nut.

Sealant:

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

- (b) Holding the rack guide spring cap rotating, and using SST, torque the nut.

SST 09922-10010

Torque: 52 N·m (520 kgf·cm, 38 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 (14.97 in.).

- (c) Recheck the total preload.

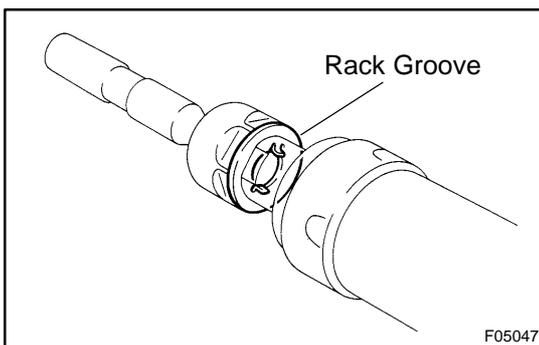
Preload (turning):**Center Area**

1.8 - 2.2 N·m (18.4 - 22.4 kgf·cm, 16.0 - 19.5 in.-lbf)

End Area

1.3 - 1.7 N·m (13.3 - 17.3 kgf·cm, 11.5 - 15.0 in.-lbf)

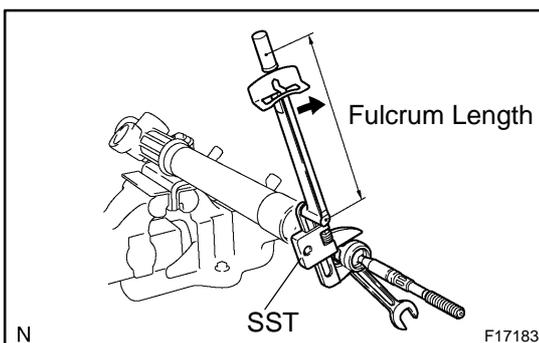
- (d) Remove the RH and LH rack ends.

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

- (a) Install a new washer, and temporarily tighten the rack end.

HINT:

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



- (b) Using a spanner to hold the steering rack steady, and using SST, torque the rack end.

SST 09922-10010

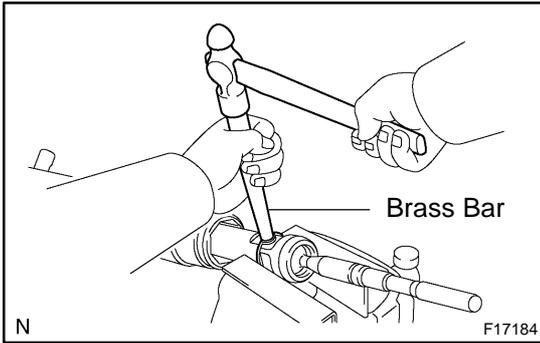
Torque: 99 N·m (1,014 kgf·cm, 74 ft·lbf)

NOTICE:

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

HINT:

Use a torque wrench with a fulcrum length of 380 mm (13.58 in.).

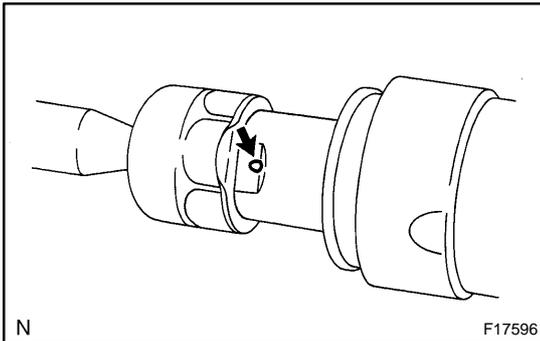


(c) Using a brass bar and hammer, stake the washer.

NOTICE:

Avoid any impact to the rack.

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

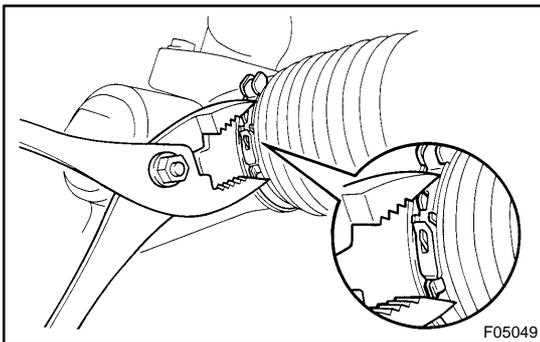


13. INSTALL RH AND LH RACK BOOTS, CLAMPS AND CLIPS

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

HINT:

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



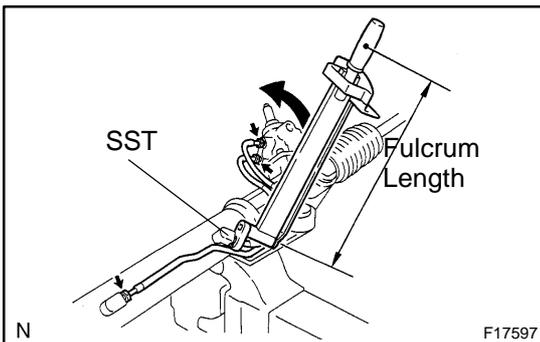
(b) Install the boot.

NOTICE:

Be careful not to damage or twist the boot.

(c) Using pliers tighten a new clamp, as shown in the illustration.

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



14. INSTALL 2 TURN PRESSURE TUBES

Using SST, install the tube.

SST 09023-38200

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.

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-14](#))
3. REMOVE STEERING WHEEL (See page [SR-14](#))
4. REMOVE NO. 1 ENGINE UNDER COVER

Remove the 7 bolts.

5. REMOVE NO. 2 ENGINE UNDER COVER

Remove the 6 bolts.

6. DISCONNECT RH AND LH TIE ROD ENDS
(See page [SA-20](#))

7. REMOVE ENGINE OIL FILTER ASSEMBLY

- (a) Disconnect the 2 clips and hoses.
- (b) Remove the 2 bolts and nut with the bracket.
- (c) Remove the O-ring.

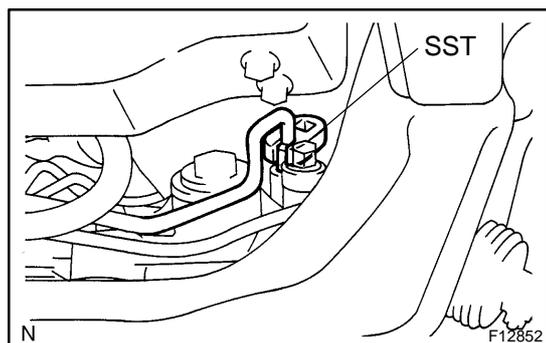
8. DISCONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY (See page [SR-14](#))

HINT:

Turn the steering wheel fully to the right side.

9. DISCONNECT PRESSURE FEED TUBE

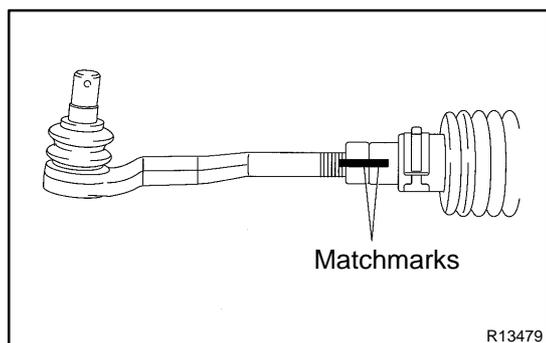
Remove the union bolt, gasket and disconnect the pressure feed tube.



10. DISCONNECT RETURN TUBE

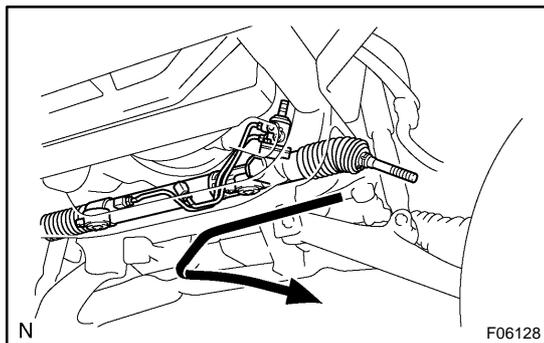
Using SST, disconnect the tube.

SST 09023-38400



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

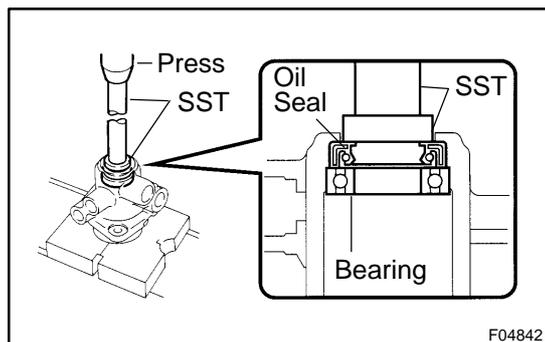
- (a) Place matchmarks on the tie rod end and rack end.
- (b) Loosen the lock nut, and remove the tie rod end and lock nut.
- (c) Employ the same manner described above to the other side.

**12. REMOVE PS GEAR ASSEMBLY**

Remove the 2 gear assembly set bolts, nuts and washers.

HINT:

Slide the gear assembly to the right side, pull out the left side of the gear assembly from the member.

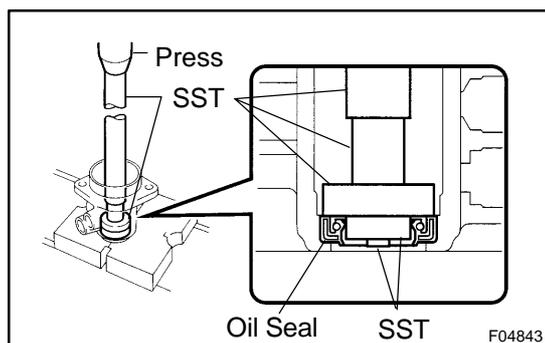


REPLACEMENT

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 (09951-00260),
09950-70010 (09951-07150)



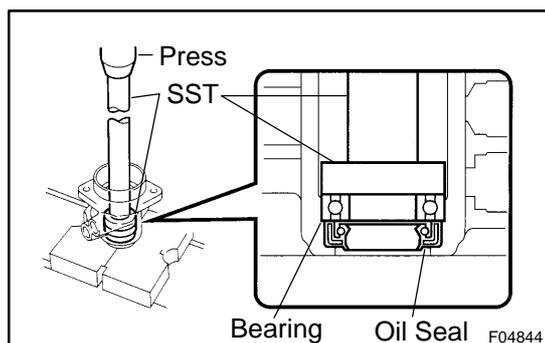
- (b) Coat a new oil seal lip with power steering fluid.

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

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

NOTICE:

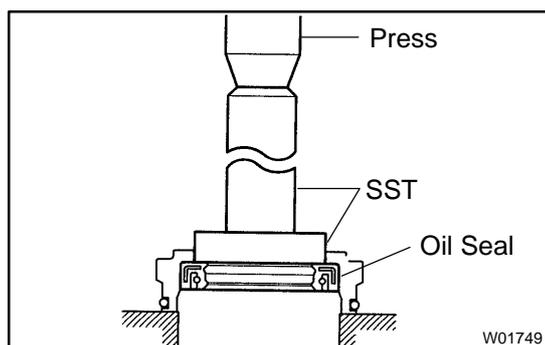
Make sure to install the oil seal facing in the correct direction.



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

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

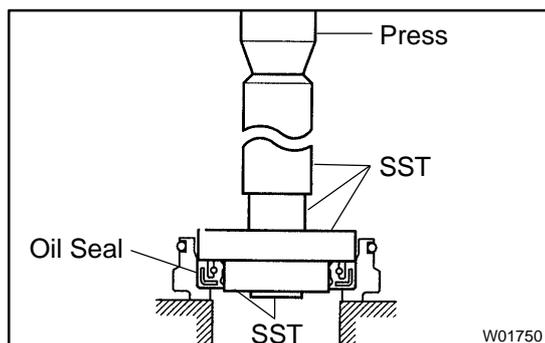
SST 09950-60010 (09951-00330),
09950-70010 (09951-07150)



2. IF NECESSARY, REPLACE OIL SEAL

- (a) Using SST, press out the oil seal from the bearing guide nut.

SST 09950-60010 (09951-00320),
09950-70010 (09951-07100)



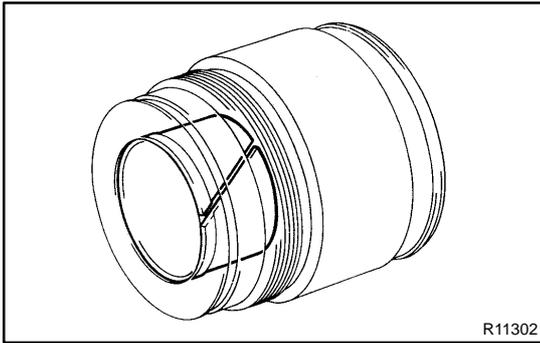
- (b) Coat a new oil seal lip with power steering fluid.

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

SST 09950-60010 (09951-00280, 09951-00360,
09952-06010), 09950-70010 (09951-07100)

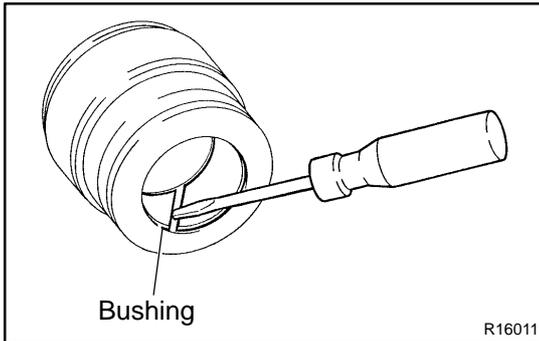
NOTICE:

Make sure to install the oil seal facing in the correct direction.



3. INSPECT BUSHING

- (a) Check the inside of the bushing of the cylinder end stopper for cracks. If faulty, replace the bushing.
- (b) Apply molybdenum disulfide lithium base grease to the inside of the bushing.



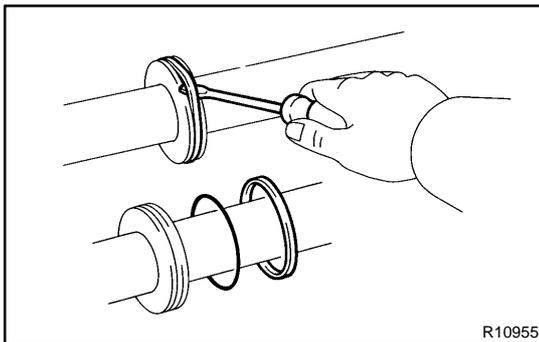
4. IF NECESSARY, REPLACE BUSHING

- (a) Using a screwdriver, remove the bushing from the cylinder end stopper.

NOTICE:

Be careful not to damage the cylinder end stopper.

- (b) Coat the inside of a new bushing with molybdenum disulfide lithium base grease.
- (c) Install the bushing.



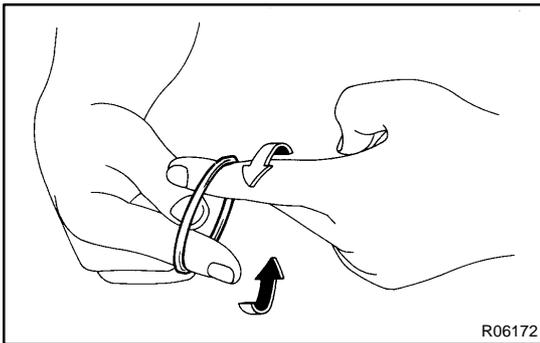
5. IF NECESSARY, REPLACE TEFLON RING AND O-RING

- (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 ring.

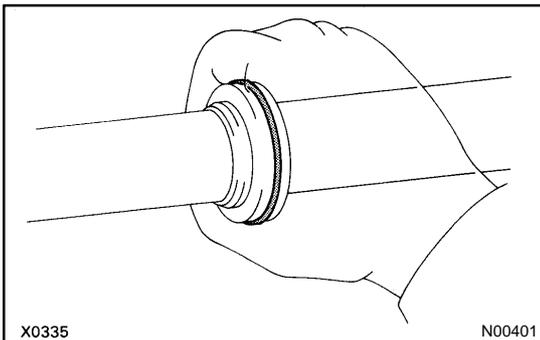
- (b) Coat a new O-ring with power steering fluid and install it.



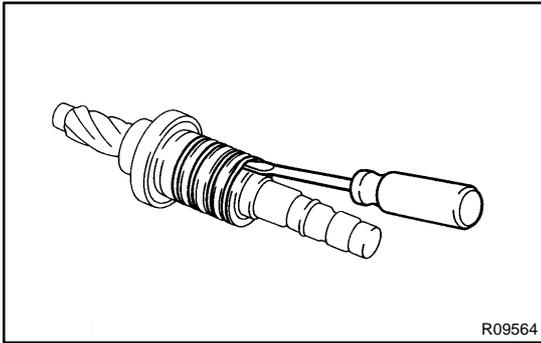
- (c) Expand a new teflon ring with your fingers.

NOTICE:

Be careful not to overexpand the ring.



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



6. IF NECESSARY, REPLACE TEFLON RINGS

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

NOTICE:

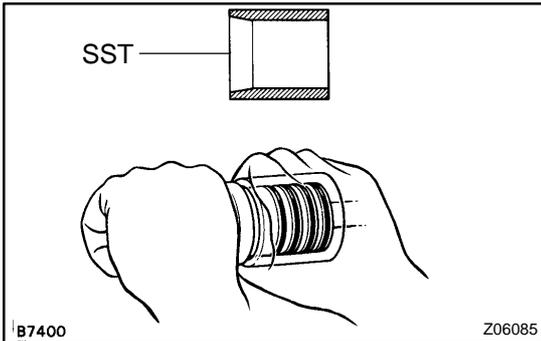
Be careful not to damage the grooves for the ring.

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

NOTICE:

Be careful not to overexpand the ring.

- (c) Coat the rings with power steering fluid.



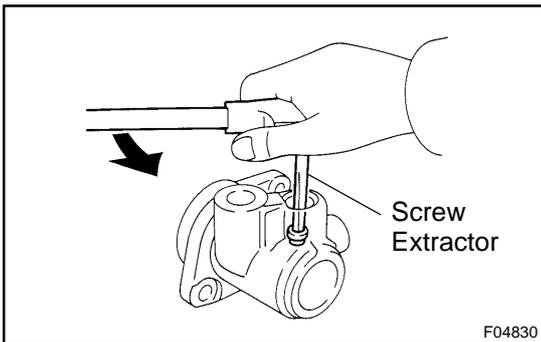
- (d) Install the rings to the control valve assembly, and settle them down with your fingers.

- (e) Carefully slide the tapered end of SST over the rings until the ring fits to the steering rack.

SST 09631-20081

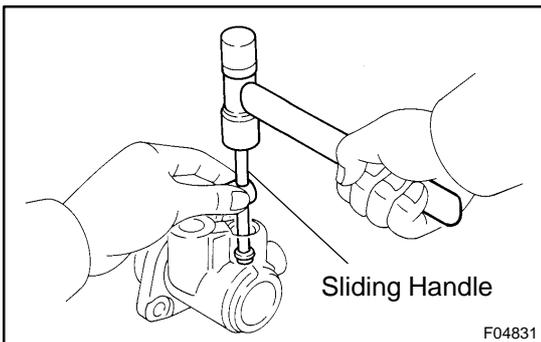
NOTICE:

Be careful not to damage the rings.



7. IF NECESSARY, REPLACE UNION SEAT

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



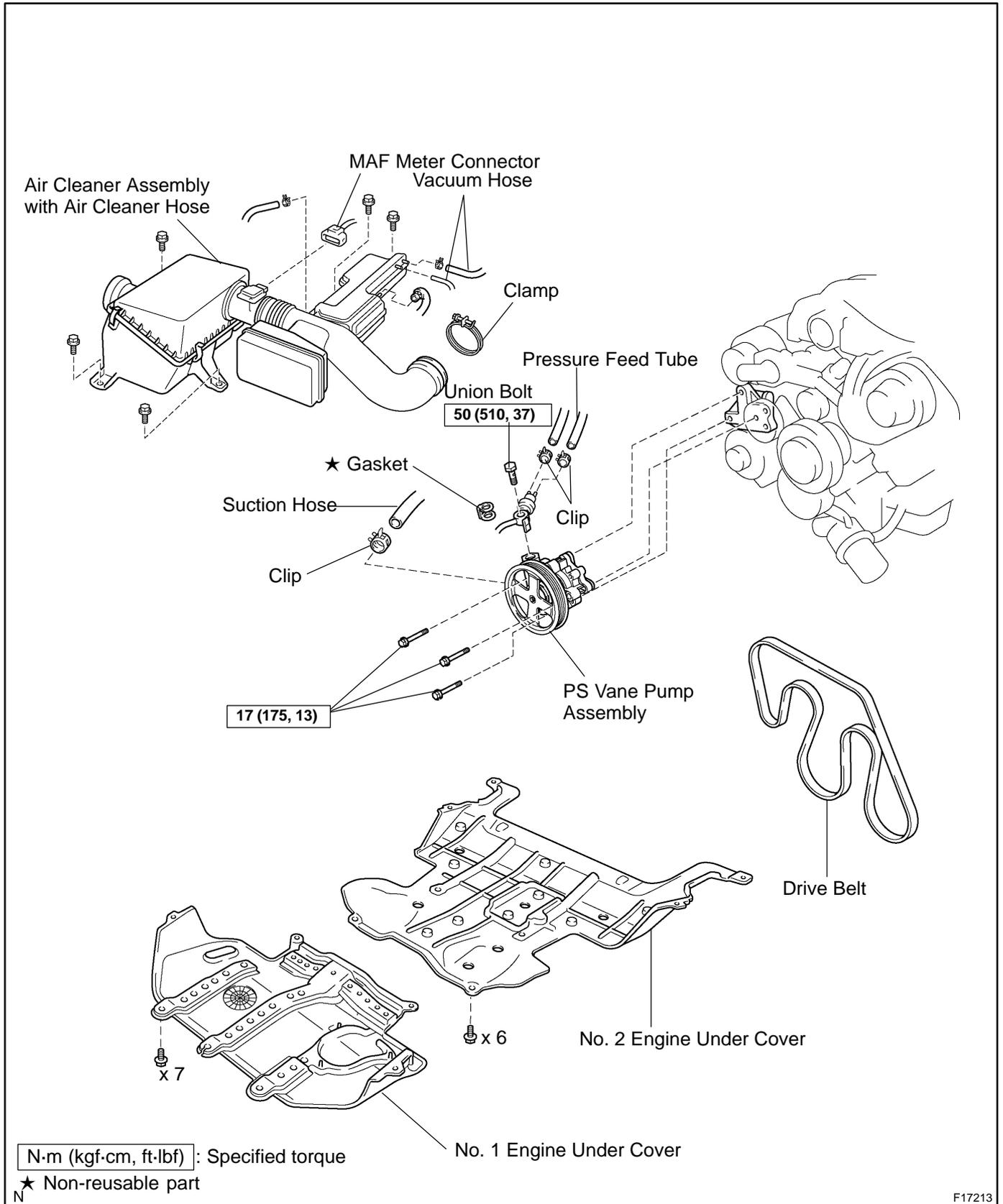
- (b) Using plastic hammer and sliding handle, lightly tap in a new union seat.

NOTICE:

Before installing the union seat, remove dust sticking to the control valve housing.

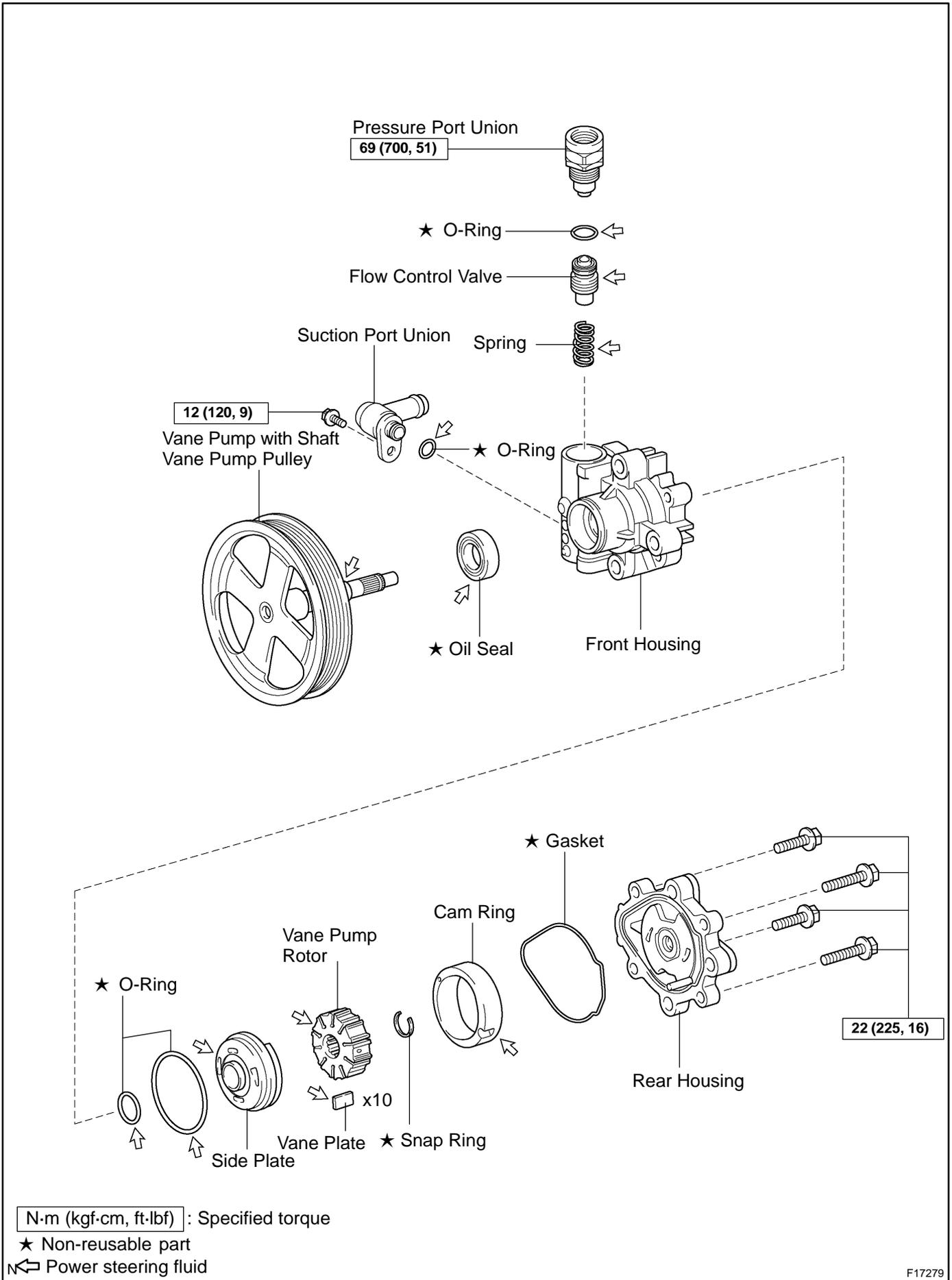
POWER STEERING VANE PUMP COMPONENTS

SR0MD-11

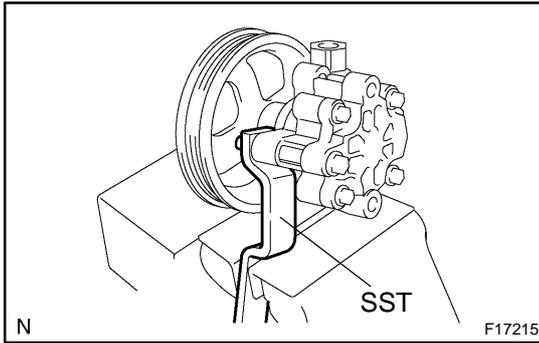


F17213

STEERING - POWER STEERING VANE PUMP



F17279

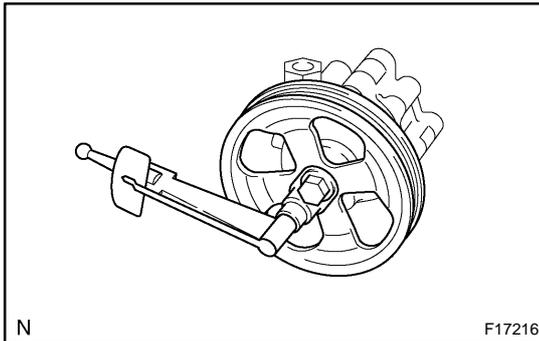


DISASSEMBLY

1. FIX VANE PUMP ASSEMBLY

Using SST, hold the vane assembly in a vise.

SST 09630-00014 (09631-00132)



2. MEASURE PS VANE PUMP ROTATING TORQUE

(a) Check that the pump rotates smoothly without abnormal noise.

(b) Temporarily install the bolt to the shaft.

(c) 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

3. REMOVE SUCTION PORT UNION

(a) Remove the bolt.

(b) Remove the O-ring from the union.

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

Remove the O-ring from the union.

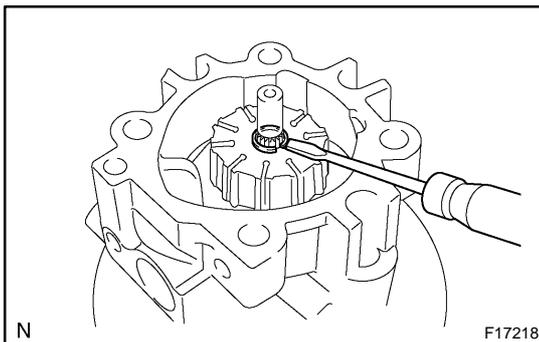
5. REMOVE REAR HOUSING

(a) Loosen the 4 bolts.

(b) Remove the vane pump assembly from the SST.

(c) Remove the 4 bolts and rear housing.

(d) Remove the gasket from the housing.



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

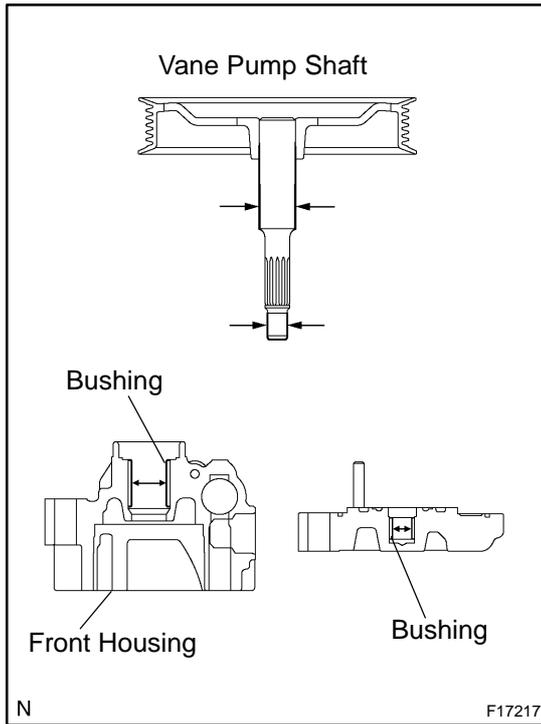
Using a screwdriver, remove the snap ring from the vane pump shaft.

NOTICE:

Be careful not to drop the plate.

7. REMOVE SIDE PLATE

8. REMOVE VANE PUMP SHAFT WITH PUMP PULLEY



INSPECTION

1. CHECK OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND BUSHING OF FRONT HOUSING AND REAR HOUSING

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

Standard clearance:

Front housing and shaft

0.020 - 0.077 mm (0.00079 - 0.00303 in.)

Rear housing and shaft

0.020 - 0.077 mm (0.00079 - 0.00303 in.)

Maximum clearance:

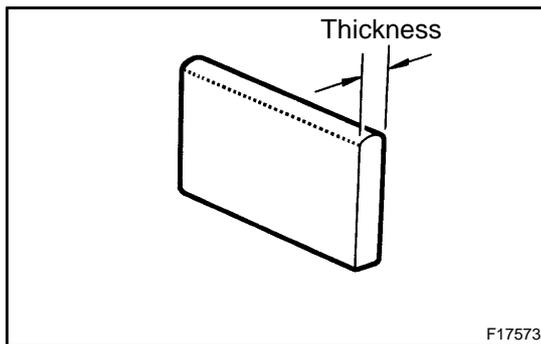
Front housing and shaft

0.070 mm (0.00276 in.)

Rear housing and shaft

0.080 mm (0.00315 in.)

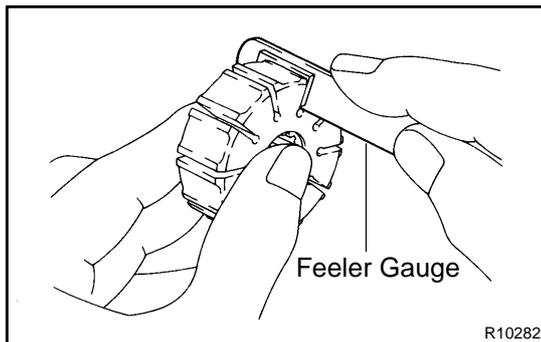
If it is more than the maximum, replace a new vane pump assembly.



2. INSPECT VANE PUMP ROTOR AND VANE PLATES

(a) Using a micrometer, measure the height, thickness and length of the 10 plates.

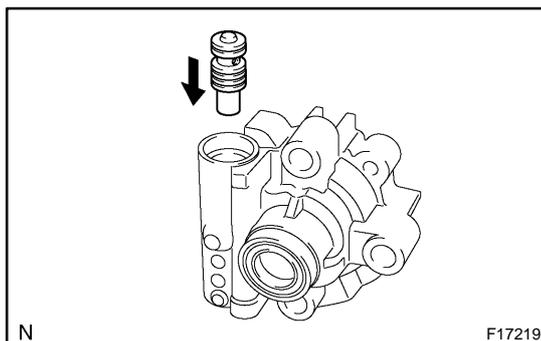
Minimum thickness: 1.405 mm (0.05531 in.)



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

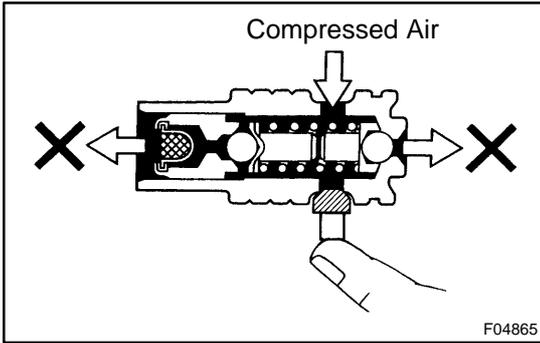
Maximum clearance: 0.03 mm (0.0012 in.)

If it is more than the maximum, replace a new vane pump assembly.

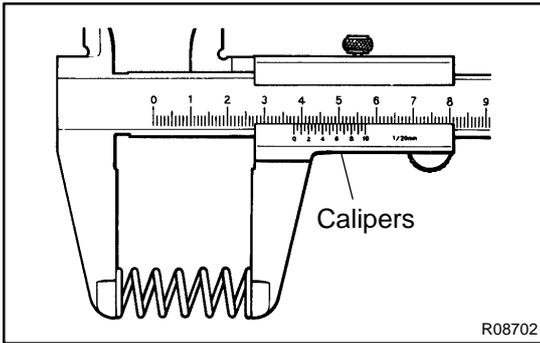


3. INSPECT FLOW CONTROL VALVE

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



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



4. INSPECT SPRING

Using calipers, measure the free length of the spring.

Minimum free length: 31.3 mm (1.2323 in.)

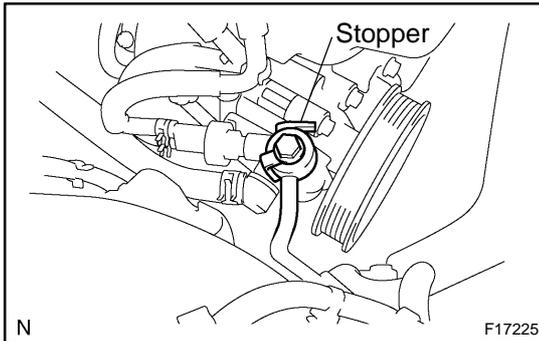
If it is not within the specification, replace a new vane pump assembly.

INSTALLATION

1. INSTALL PS VANE PUMP ASSEMBLY

Torque the 3 bolts.

Torque: 17 N·m (175 kgf·cm, 13 ft·lbf)



2. INSTALL PRESSURE FEED TUBE

Install new gaskets on each side of the tube and torque the union bolt.

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

HINT:

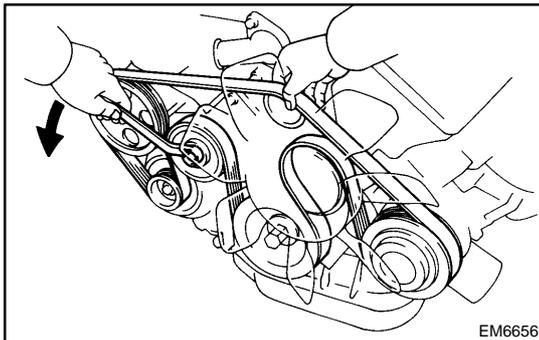
Make sure that the stopper of the tube touches the PS vane pump body as shown in the illustration, then torque the bolt.

3. CONNECT RETURN HOSE

Install the clip.

4. CONNECT 2 VACUUM HOSES

Install the 2 clips.



5. INSTALL DRIVE BELT

Loosen the drive belt tension by turning the drive belt tensioner counterclockwise, and install the belt.

6. INSTALL AIR CLEANER ASSEMBLY WITH AIR CLEANER HOSE

- (a) Tighten the 3 bolts.
- (b) Tighten the clamp.
- (c) Connect the hose.
- (d) Connect the MAF meter connector.

7. INSTALL NO. 2 ENGINE UNDER COVER

Tighten the 8 bolts.

8. INSTALL NO. 1 ENGINE UNDER COVER

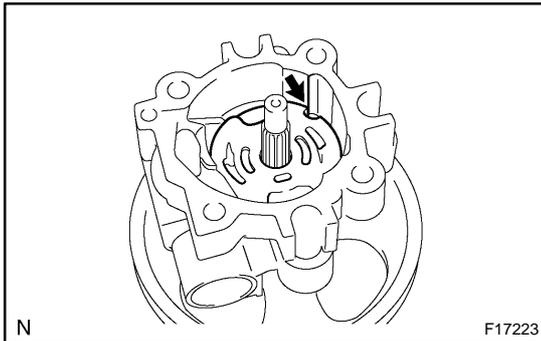
Tighten the 6 bolts.

9. BLEED POWER STEERING SYSTEM

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

REASSEMBLY

1. COAT WITH POWER STEERING FLUID (See page [SR-38](#))
2. INSTALL VANE PUMP SHAFT

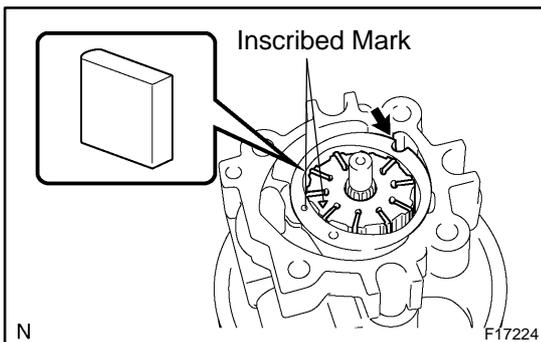


3. INSTALL SIDE PLATE

- (a) Install a new O-ring to the front housing.
- (b) Install a new O-ring to side plate.
- (c) Install the side plate as shown in the illustrating.

HINT:

Align the hole of the side plate with the hole of the front housing.



4. INSTALL CAM RING

Install the ring with the inscribed mark facing outward.

HINT:

Align the hole of the cam ring with the hole of the front housing.

5. INSTALL VANE PUMP ROTOR

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

6. INSTALL 10 VANE PLATES

- (a) Install the plates with the round end facing outward.

7. INSTALL REAR HOUSING

- (a) Coat new gasket with power steering fluid and install it to the housing.
- (b) Temporarily install the 4 bolts.
- (c) Using SST, hold the vane pump assembly in a vise.
- (d) Torque the 4 bolts.

Torque: 22 N·m (225 kgf-cm, 16 ft-lbf)

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

- (a) Install the valve facing the correct direction (See page [SR-38](#)).
- (b) Coat a new O-ring with power steering fluid and install it to the union.
- (c) Torque the union.

Torque: 69 N·m (700 kgf-cm, 51 ft-lbf)

9. INSTALL SUCTION PORT UNION

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

Torque: 12 N·m (120 kgf-cm, 9 ft-lbf)

10. MEASURE PS VANE PUMP ROTATING TORQUE
(See page [SR-41](#))

REMOVAL

1. REMOVE NO. 1 ENGINE UNDER COVER

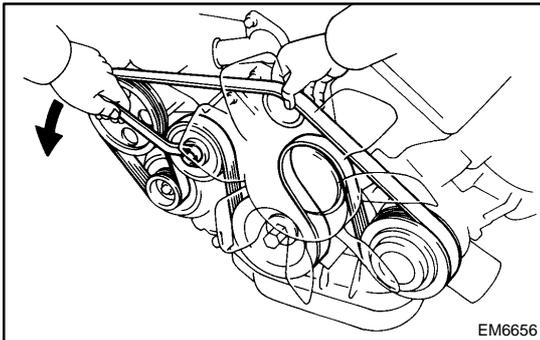
Remove the 6 bolts.

2. REMOVE NO. 2 ENGINE UNDER COVER

Remove the 8 bolts.

3. REMOVE AIR CLEANER ASSEMBLY WITH AIR CLEANER HOSE

- (a) Disconnect the MAF meter connector.
- (b) Disconnect the hoses.
- (c) Loosen the clamp.
- (d) Remove the 3 bolts.



4. REMOVE DRIVE BELT

Loosen the drive belt tension by turning the drive belt tensioner counterclockwise, and remove the drive belt.

5. DISCONNECT 2 VACUUM HOSES

Remove the 2 clips.

6. DISCONNECT RETURN HOSE

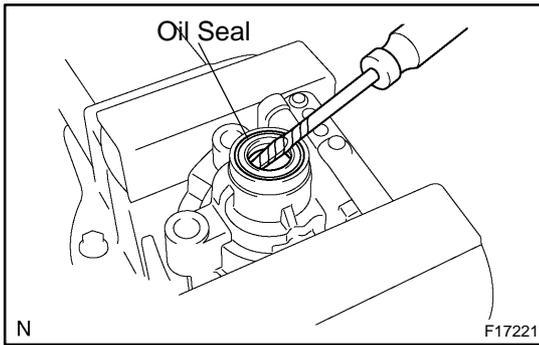
Remove the clip.

7. REMOVE PRESSURE FEED TUBE

Remove the union bolt and 2 gaskets.

8. REMOVE PS VANE PUMP ASSEMBLY

Remove the 3 bolts.



REPLACEMENT

NOTICE:

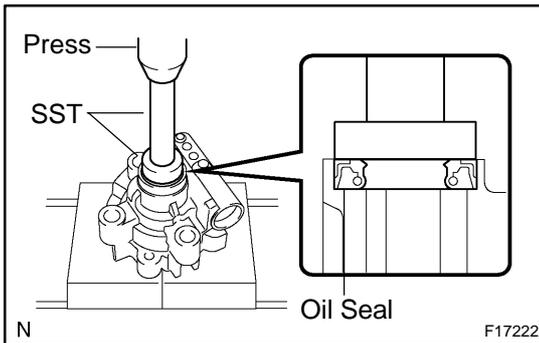
When using a vise, do not overtighten it.

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.

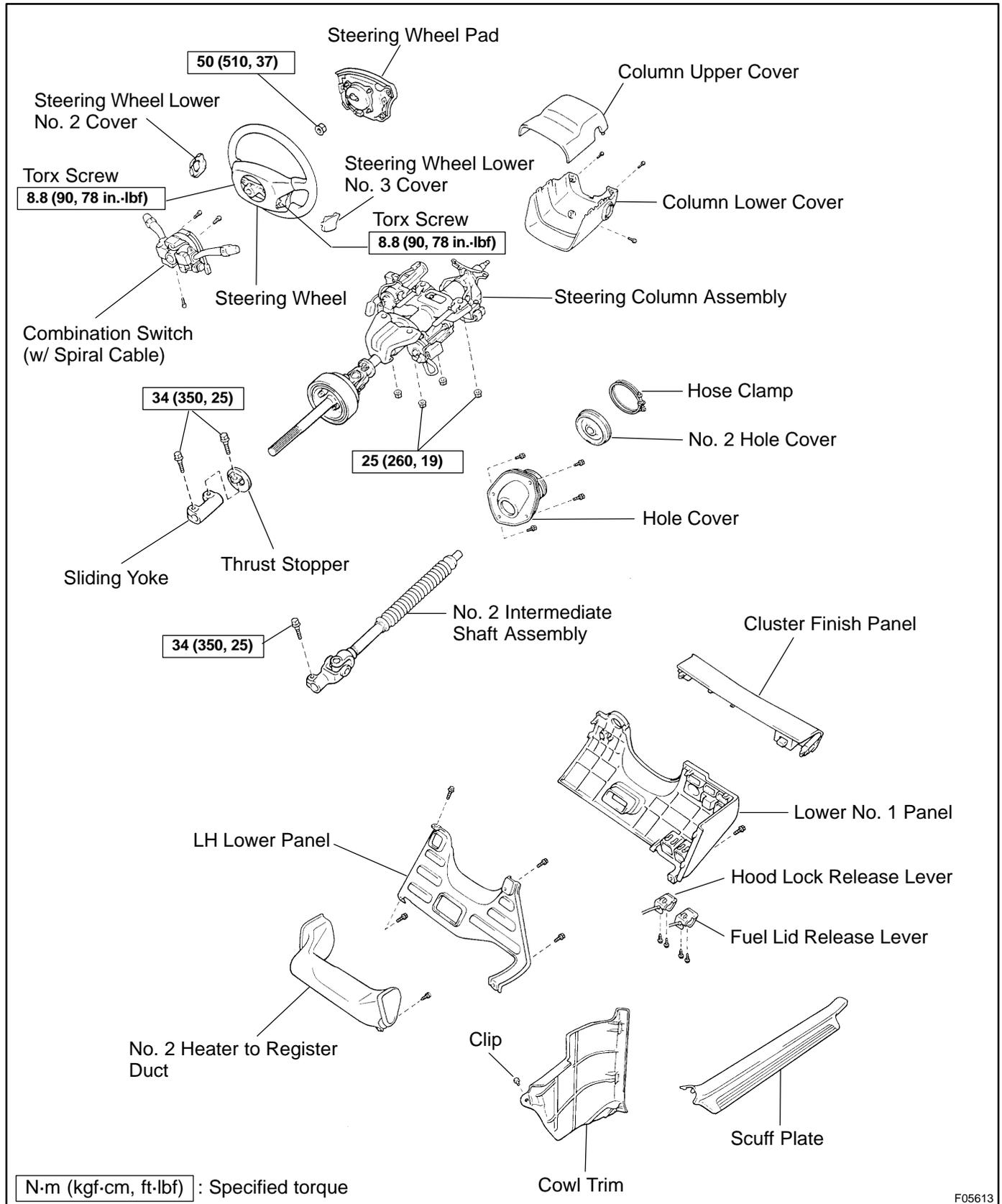
SST 09950-60010 (09951-00280),
09950-70010 (09951-07100)

NOTICE:

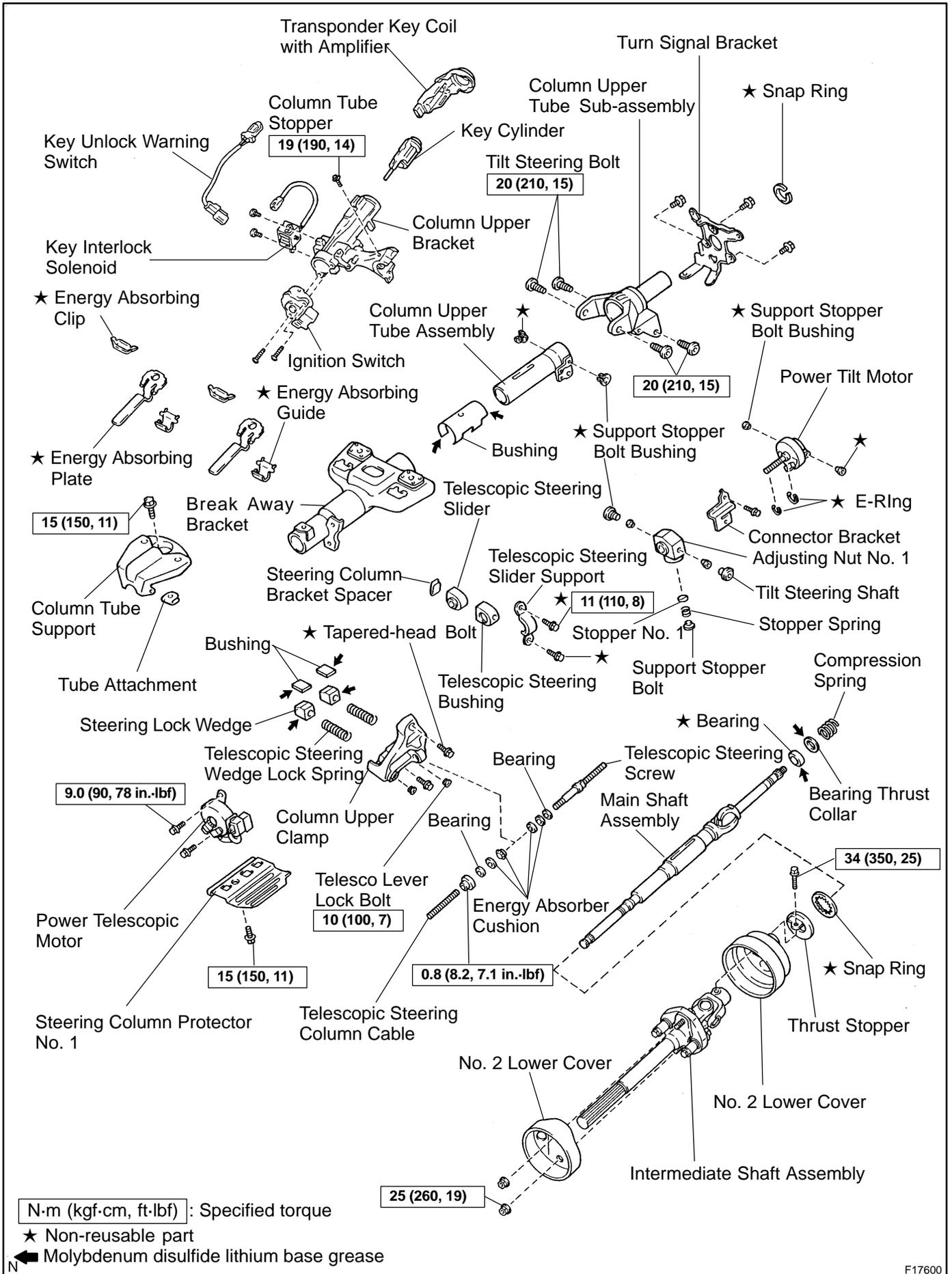
Make sure to install the oil seal facing the correct direction.

POWER TILT AND POWER TELESCOPIC STEERING COLUMN COMPONENTS

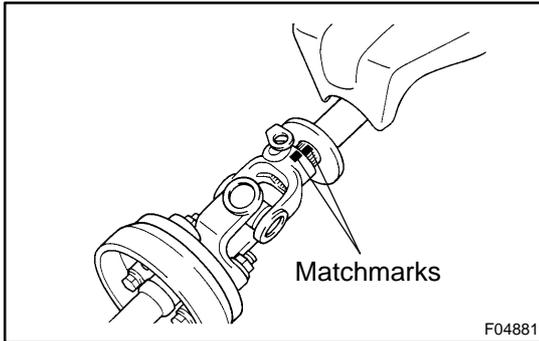
SR0M7-04



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F17600



DISASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. REMOVE NO. 2 LOWER COVER

Remove the 2 nuts and lower side No. 2 lower cover.

2. REMOVE INTERMEDIATE SHAFT ASSEMBLY

(a) Place matchmarks on the intermediate shaft assembly and main shaft assembly.

(b) Remove the bolt and intermediate shaft assembly with the upper side No. 2 lower cover.

(c) Remove the thrust stopper from the main shaft assembly.

3. REMOVE TRANSPONDER KEY AMPLIFIER

(a) Widen the claw hung on the upper bracket by approx. 1.0 mm (0.039 in.) using a screwdriver.

(b) Pull the transponder key amplifier toward the rear of the vehicle with the claw open.

NOTICE:

Take care not to use excessive force to prevent the case from being damaged.

4. REMOVE CONNECTOR BRACKET

Remove the bolt and connector bracket.

5. REMOVE STEERING COLUMN PROTECTOR NO. 1

Remove the bolt and steering column protector No. 1.

6. REMOVE TURN SIGNAL BRACKET

Remove the 3 bolts and turn signal bracket.

7. REMOVE POWER TILT MOTOR

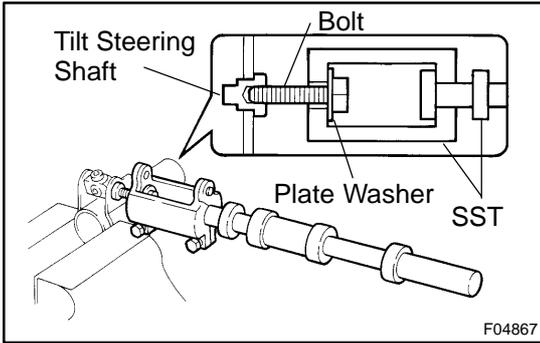
(a) Using a hexagon wrench, remove the support stopper bolt.

(b) Remove the stopper spring and stopper No. 1.

(c) Using a hexagon wrench, remove the 2 tilt steering bolts and power tilt motor.

(d) Using a screwdriver, remove the 2 E-rings.

(e) Remove the 2 support stopper bolt bushings from the power tilt motor.



8. REMOVE ADJUSTING NUT NO. 1

- (a) Set SST, a plate washer (36 mm outer diameter) and bolt (6 mm normal diameter, 1.0 mm pitch, 50 mm length), as shown.

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

Reference:

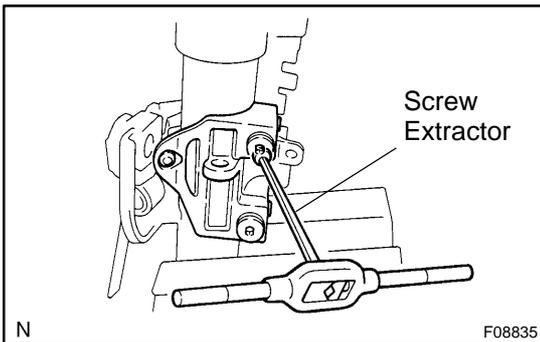
Plate washer 90201-10201

Bolt 91111-51050

- (b) Remove the 2 tilt steering shafts by using the sliding hammer on SST.
- (c) Remove the adjusting nut No. 1.
- (d) Remove the 2 support stopper bolt bushings from the adjusting nut No. 1.

9. REMOVE POWER TELESCOPIC MOTOR

- (a) Remove the 2 bolts and power telescopic motor.
- (b) Remove the telescopic steering column cable.

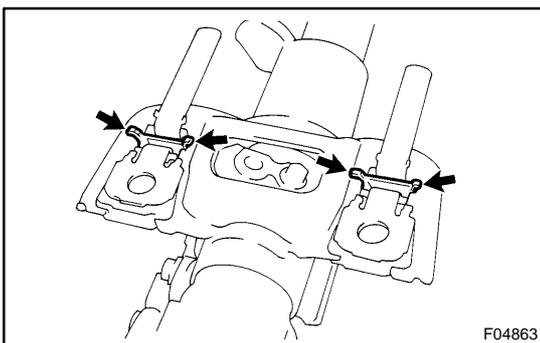


10. REMOVE COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP

- (a) Remove the column tube stopper.
- (b) Using a centering punch, mark the center of the 2 tapered-head bolts.
- (c) Using a 3 - 4 mm (0.12 - 0.16 in.) drill, drill into the 2 bolts.
- (d) Using a screw extractor, remove the 2 bolts, column upper bracket and column upper clamp.
- (e) Using a hexagon wrench, remove the 2 telescopic lever lock bolts.
- (f) Remove the 2 telescopic steering wedge lock springs, 2 steering lock wedges and column upper bracket and column upper clamp.

11. REMOVE COLUMN TUBE SUPPORT

- (a) Remove the bolt.
- (b) Remove the column tube support with tube attachment.
- (c) Remove the tube attachment from the column tube support.



12. REMOVE 2 ENERGY ABSORBING PLATES

- (a) Using pliers, remove the 2 energy absorbing clips.
- (b) Remove the 2 energy absorbing plates and 2 energy absorbing guides.

13. REMOVE TELESCOPIC STEERING SLIDER SUPPORT

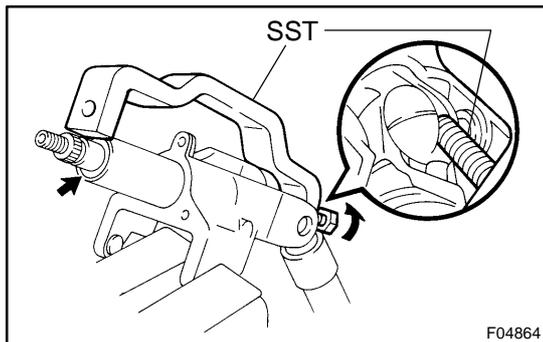
Remove the 2 bolts and telescopic steering slider support.

14. REMOVE TELESCOPIC STEERING BUSHING**15. REMOVE TELESCOPIC STEERING SLIDER****16. REMOVE STEERING COLUMN BRACKET SPACER****17. REMOVE TELESCOPIC STEERING SCREW**

Remove the nut, 4 energy absorber cushions, 2 bearings and telescopic steering screw.

18. REMOVE COLUMN UPPER TUBE SUB-ASSEMBLY WITH MAIN SHAFT ASSEMBLY

- (a) Using a screwdriver, remove the lower side snap ring from the main shaft assembly.
- (b) Using a hexagon wrench, remove the 2 tilt steering bolts and column upper tube sub-assembly with the main shaft assembly.
- (c) Remove the column upper tube assembly from the break away bracket.
- (d) Remove the 2 support stopper bolt bushings from the column upper tube assembly.
- (e) Remove the 3 bushings from the break away bracket.

**19. REMOVE MAIN SHAFT ASSEMBLY**

- (a) Using SST, compress the compression spring.
SST 09950-4001 1 (09958-04011)

NOTICE:

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

- (b) Using a snap ring expander, remove the upper side snap ring.
- (c) Remove the main shaft assembly from the column upper tube sub-assembly.
- (d) Remove the compression spring and bearing thrust collar from the main shaft assembly.

INSPECTION

(See page [SR-20](#))

INSTALLATION

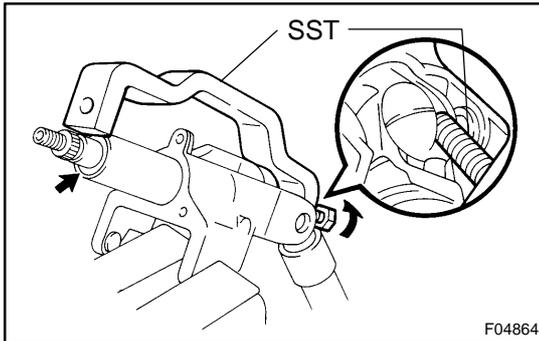
(See page [SR-24](#))

REASSEMBLY

NOTICE:

When using a vise, do not over tighten it.

1. **COAT WITH PARTS INDICATED BY ARROWS MOLYBDENUM DISULFIDE LITHIUM BASE GREASE (See page SR-27)**



2. INSTALL MAIN SHAFT ASSEMBLY

- (a) Install the bearing thrust collar and compression spring to the shaft.
- (b) Install the shaft assembly to the column upper tube sub-assembly.
- (c) Using SST, compress the compression spring.
SST 09950-4001 1 (09958-04011)

NOTICE:

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

- (d) Using a snap ring expander, install a new snap ring to the shaft.

3. INSTALL COLUMN UPPER TUBE SUB-ASSEMBLY WITH MAIN SHAFT ASSEMBLY

- (a) Install the 3 bushings to the break away bracket.
- (b) Install 2 new support stopper bolt bushings to the column tube assembly.
- (c) Install the column upper tube assembly to the break away bracket.
- (d) Install the column upper tube sub-assembly with the main shaft assembly to the break away bracket.
- (e) Using a hexagon wrench, install the 2 tilt steering bolts.
Torque: 20 N·m (210 kgf·cm, 15 ft·lbf)
- (f) Install a new snap ring.

4. INSTALL TELESCOPIC STEERING SCREW

- (a) Install the 4 energy absorber cushions, 2 bearings and telescopic steering screw.
- (b) Install the nut.
Torque: 0.8 N·m (8.2 kgf·cm, 7.1 in.-lbf)
- (c) Using a punch, stake the nut.

5. INSTALL STEERING COLUMN BRACKET SPACER

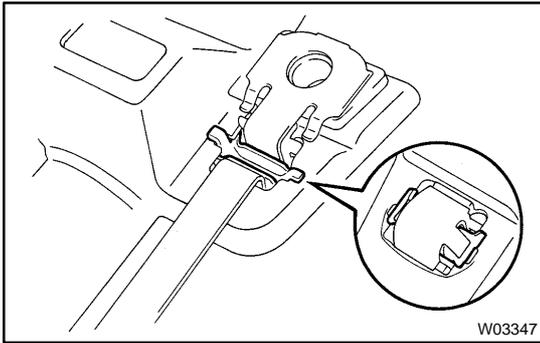
6. INSTALL TELESCOPIC STEERING SLIDER

7. INSTALL TELESCOPIC STEERING BUSHING

8. INSTALL TELESCOPIC STEERING SLIDER SUPPORT

Install the telescopic steering slider support with the 2 bolts.

Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)



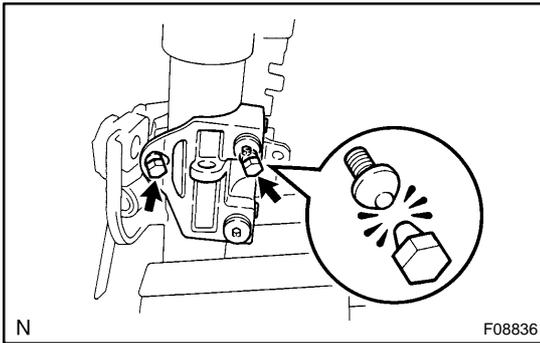
9. INSTALL 2 ENERGY ABSORBING GUIDES, PLATES AND CLIPS

- (a) Install the 2 new energy absorbing guides and 2 new absorbing plates.
- (b) Install the 2 new energy absorbing clips.

10. INSTALL COLUMN TUBE SUPPORT

- (a) Install the tube attachment to the column tube support.
- (b) Install the column tube support with the bolt.

Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)



11. INSTALL COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP

- (a) Install the 2 telescopic steering wedge lock springs, 2 steering lock wedges and column upper bracket and column upper clamp.
- (b) Using a hexagon wrench, install the 2 telescopic lever lock bolts.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

- (c) Install and tighten the 2 new tapered-head bolts until the bolt heads break off.

- (d) Install the column tube stopper.

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

12. INSTALL POWER TELESCOPIC MOTOR

- (a) Install the telescopic steering column cable.
- (b) Install the power telescopic motor with the 2 bolts.

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

13. INSTALL ADJUSTING NUT NO. 1

- (a) Install 2 new support stopper bolt bushings to the adjusting nut No. 1.

- (b) Install the adjusting nut No. 1 to the column upper tube.

- (c) Install the 2 tilt steering shafts.

14. INSTALL POWER TILT MOTOR

- (a) Install 2 new support stopper bolt bushings to the power tilt motor.

- (b) Install 2 new E-rings.

- (c) Using a hexagon wrench, install the power tilt motor and 2 tilt steering bolts.

Torque: 20 N·m (210 kgf·cm, 15 ft·lbf)

- (d) Install the stopper No. 1 and stopper spring.

- (e) Using a hexagon wrench, install the support stopper bolt.

15. INSTALL TURN SIGNAL BRACKET

Install the turn signal bracket with the 3 bolts.

16. INSTALL STEERING COLUMN PROTECTOR NO. 1

Install the steering column protector No. 1 with the bolt.

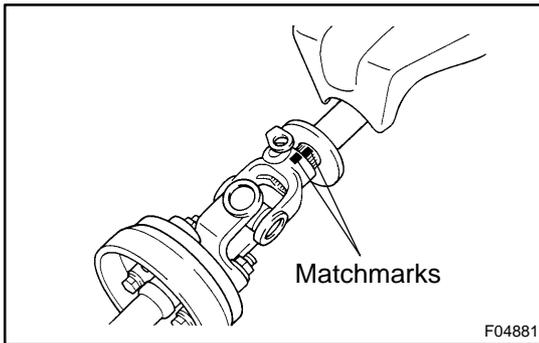
Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)

17. INSTALL CONNECTOR BRACKET

Install the connector bracket with the bolt.

18. INSTALL TRANSPONDER KEY AMPLIFIER ASSEMBLY

19. INSTALL NO. 2 LOWER COVER

**20. INSTALL INTERMEDIATE SHAFT ASSEMBLY**

- (a) Install the thrust stopper and upper side No. 2 lower cover.
- (b) Align the matchmarks on the intermediate shaft assembly and main shaft assembly.
- (c) Install the bolt.

Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

21. INSTALL NO. 2 LOWER COVER

Install the No. 2 lower cover with the 2 nuts.

Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)

REMOVAL

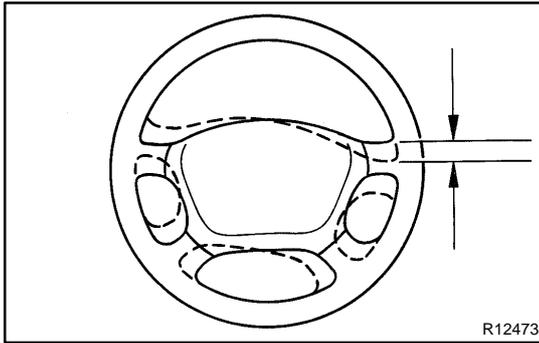
(See page [SR-14](#))

STEERING SYSTEM

SR0LU-03

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 LAND CRUISER 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.



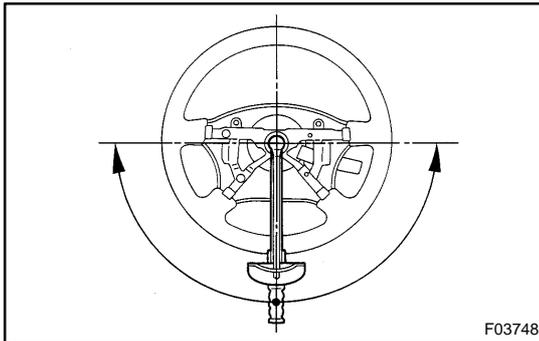
STEERING WHEEL INSPECTION

SR0M0-06

1. CHECK STEERING WHEEL FREEPLAY

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

Maximum freeplay: 40 mm (1.58 in.)



2. CHECK STEERING EFFORT

- (a) Center the steering wheel.
- (b) Remove the steering wheel pad (See page [SR-14](#)).
- (c) Start the engine and run it at idle.
- (d) Measure the steering effort in both directions.

Steering effort (Reference):

4.9 N·m (50 kgf·cm, 43 in.-lbf)

HINT:

Be sure to consider the tire type, pressure and contact surface before making your diagnosis.

- (e) Torque the steering wheel set nut.

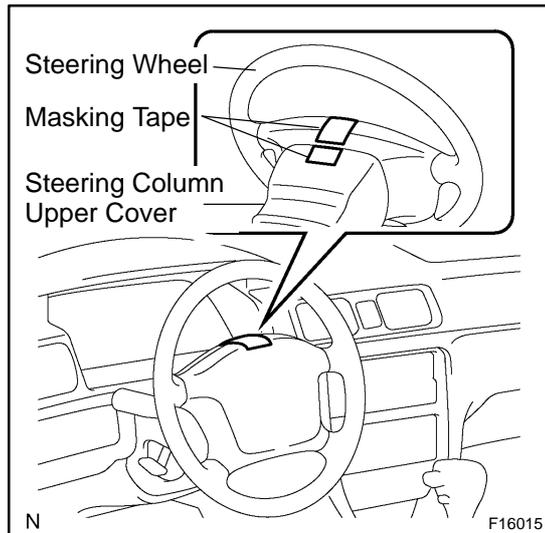
Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)

- (f) Install the steering wheel pad (See page [SR-24](#)).

REPAIR PROCEDURES

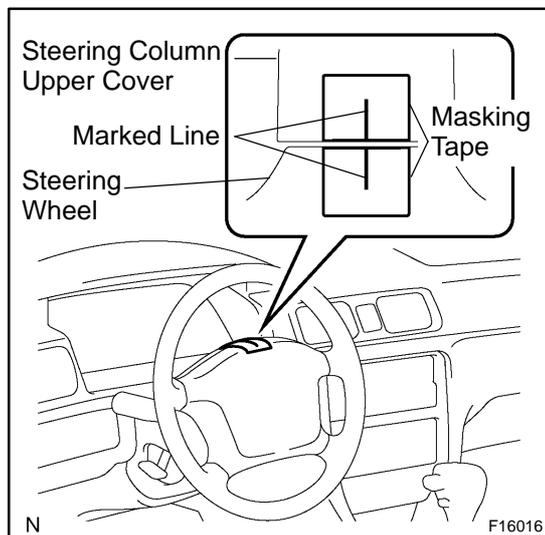
HINT:

This is the repair procedure for steering off center.

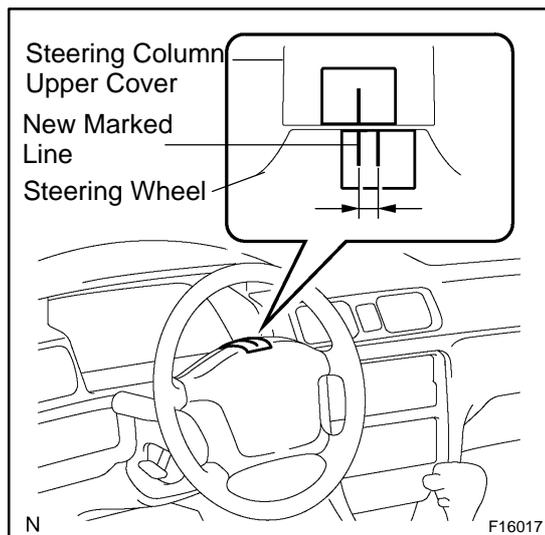


1. INSPECT STEERING WHEEL OFF CENTER

- (a) Apply masking tape on the top center of the steering wheel and steering column upper cover.



- (b) Drive the vehicle in a straight line for 100 meters at a constant speed of 35 mph (56 km/h), and hold the steering wheel to maintain the course.
- (c) Draw a line on the masking tape as shown in the illustration.



(d) Turn the steering wheel to its straight position.

HINT:

Refer to the upper surface of the steering wheel, steering spoke and SRS airbag line for the straight position.

(e) Draw a new line on the masking tape of the steering wheel as shown in the illustration.

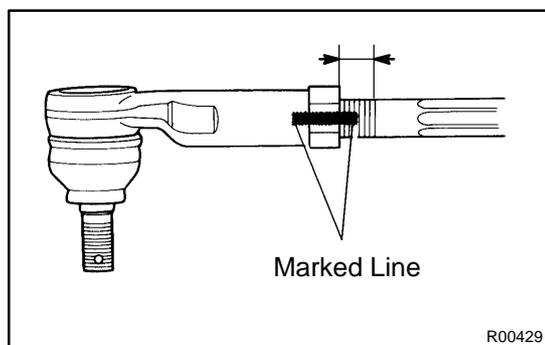
(f) Measure the distance between the 2 lines on the masking tape of the steering wheel.

(g) Convert the measured distance to steering angle.

Measured distance 1 mm (0.04 in.) = Steering angle approximately 1 deg.

HINT:

Make a note of the steering angle.



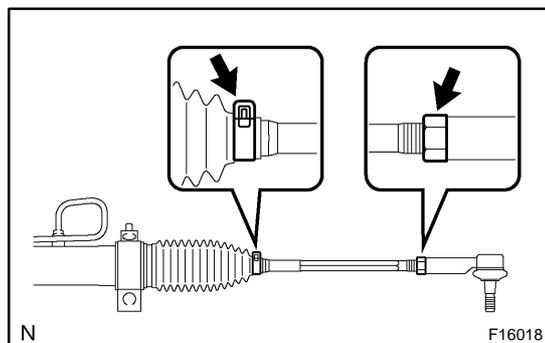
2. ADJUST STEERING ANGLE

(a) Draw a line on the RH and LH tie rod and rack ends where it can easily be seen.

(b) Using a paper gauge, measure the distance from RH and LH tie rod ends to the rack end screws.

HINT:

- ★ Measure the RH side and LH side.
- ★ Make a note of the measured values.



(c) Remove the RH and LH boot clips from the rack boots.

(d) Loosen the RH and LH lock nuts.

(e) Turn the RH and LH rack end by the same amount (but in different directions) according to the steering angle.

1 turn 360 deg. of rack end (1.5 mm (0.059 in.) horizontal movement) = 12 deg. of steering angle

(f) Tighten the RH and LH lock nuts.

Torque: 55 N·m (560 kgf·cm, 41 ft·lbf)

NOTICE:

Make sure that the difference in length between RH and LH tie rod ends and rack end screws are within 1.5 mm (0.059 in.).

(g) Install the RH and LH boot clips.

(h) Perform the zero point calibration of yaw rate and deceleration sensors (See page [DI-505](#)).

TROUBLESHOOTING

SRQLV-03

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 the order shown. If necessary, repair or replace these parts.

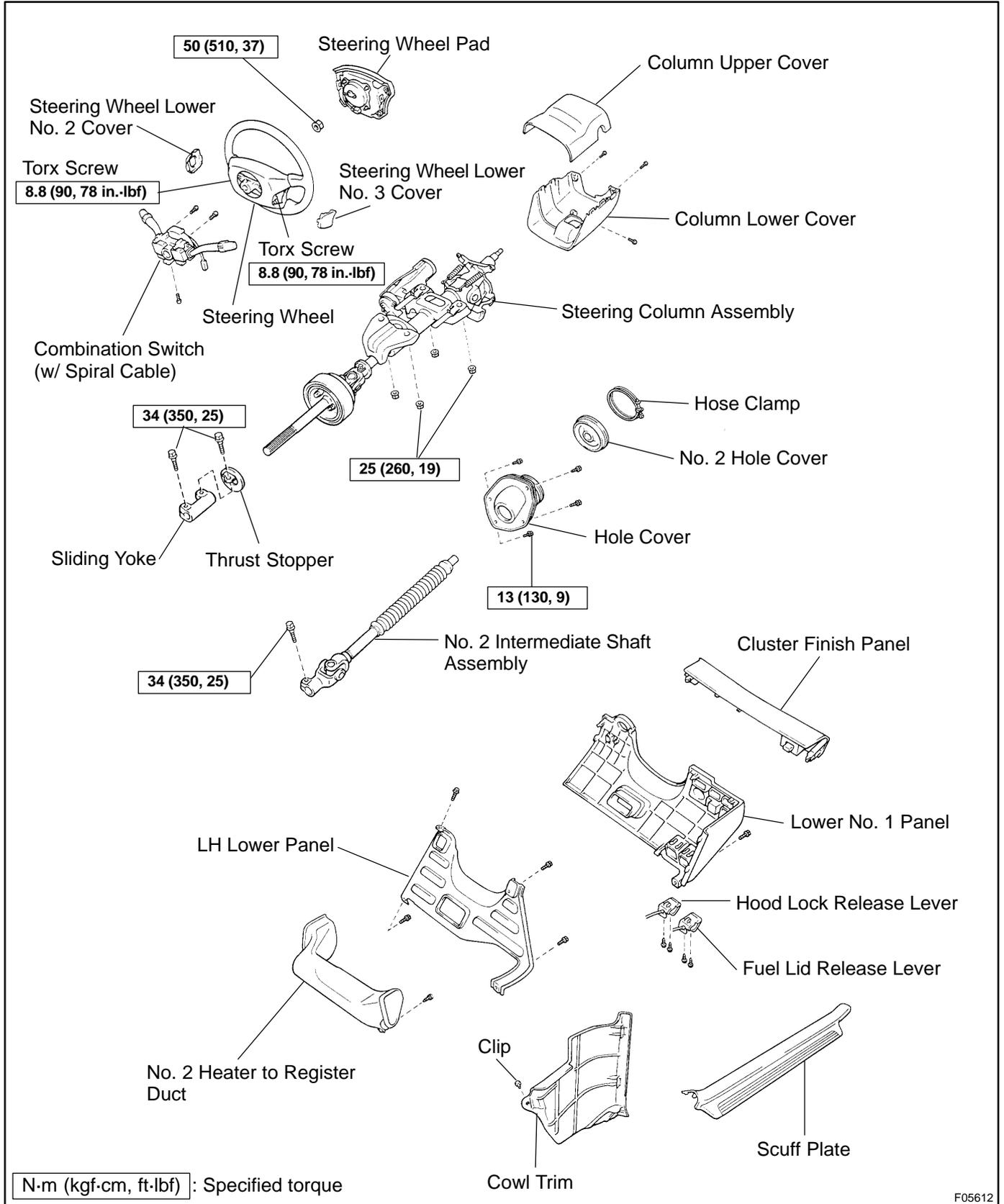
Symptom	Suspect Area	See page
Hard steering	3. Tires (Improperly inflated) 4. Power steering fluid level (Low) 5. Drive belt (Loose) 6. Front wheel alignment (Incorrect) 7. Steering system joints (Worn) 8. Suspension arm ball joints (Worn) 9. Steering column (Binding) 10. Power steering gear	SA-4 SR-5 - SA-6 - SA-71 SA-76 - SR-48
Poor return	1. Tires (Improperly inflated) 2. Front wheel alignment (Incorrect) 3. Steering column (Binding) 4. Power steering gear	SA-4 SA-6 - SR-48
Excessive play	1. Steering system joints (Worn) 2. Suspension arm ball joints (Worn) 3. Intermediate shaft, Universal joint, Sliding yoke (Worn) 4. Front wheel bearing (Worn) 5. Power steering gear	- SA-71 SA-76 - SA-11 SR-48
Abnormal noise	1. Power steering fluid level (Low) 2. Steering system joints (Worn) 3. Power steering gear	SR-5 - SR-48

HINT:

When the problem occurs on the power tilt and telescopic steering system, refer to the DI section (See page [DI-656](#)).

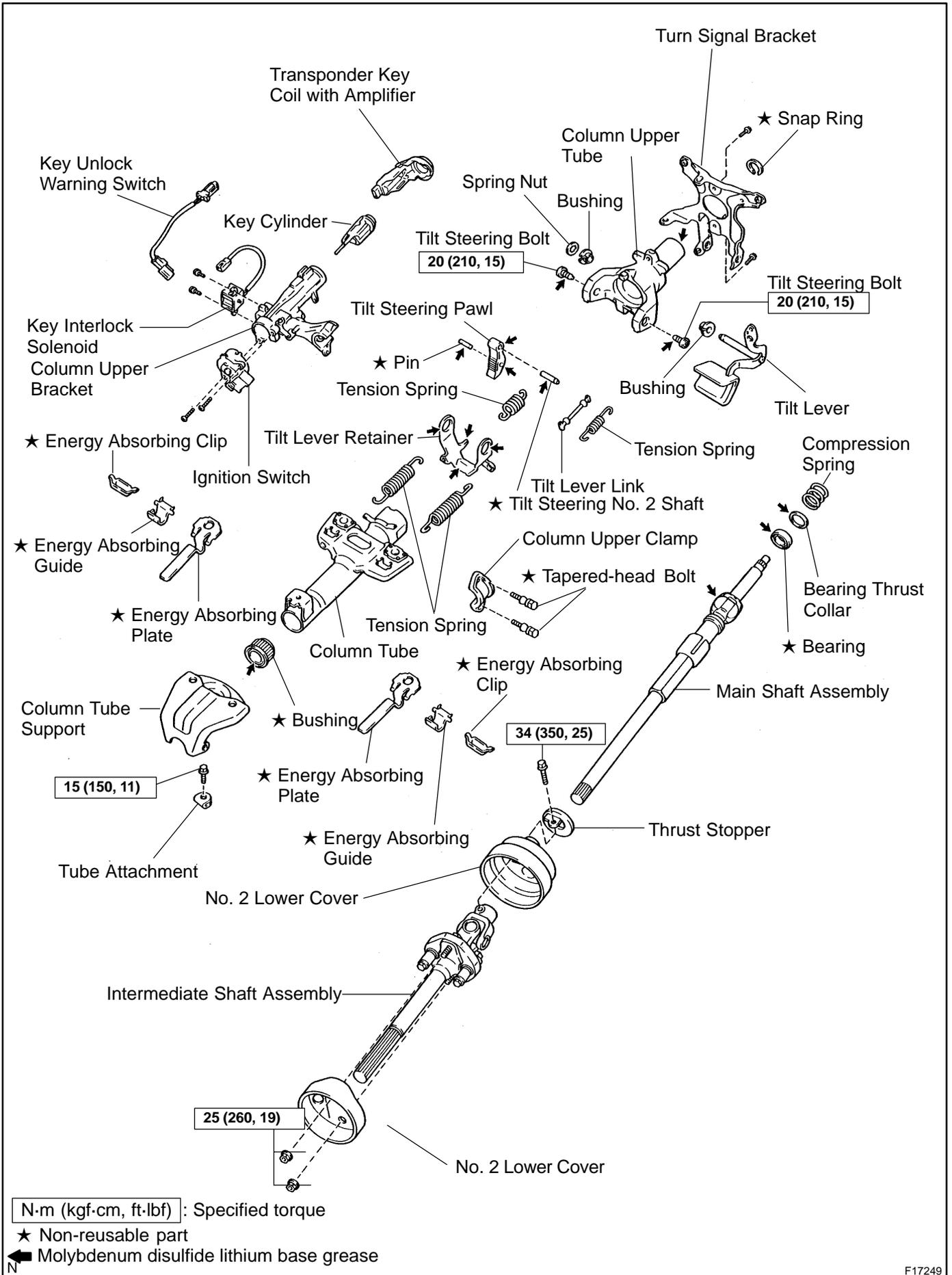
TILT STEERING COLUMN COMPONENTS

SR0M1-04

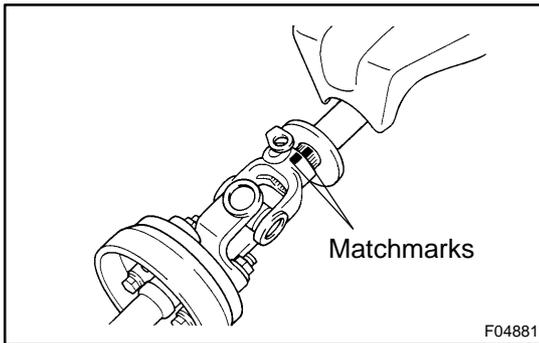


F05612

STEERING - TILT STEERING COLUMN



F17249



DISASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. REMOVE NO. 2 LOWER COVER

Remove the 2 nuts and lower side No. 2 lower cover.

2. REMOVE INTERMEDIATE SHAFT ASSEMBLY

(a) Place matchmarks on the intermediate shaft assembly and main shaft assembly.

(b) Remove the bolt and intermediate shaft assembly with the upper side No. 2 lower cover.

(c) Remove the thrust stopper from the main shaft assembly.

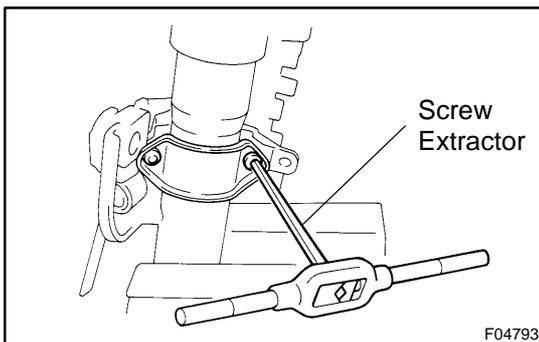
3. REMOVE TRANSPONDER KEY AMPLIFIER

(a) Widen the claw hung on the upper bracket by approx. 1.0 mm (0.039 in.) using a screwdriver.

(b) Pull the transponder key amplifier toward the rear of the vehicle with the claw open.

NOTICE:

Take care not to use excessive force to prevent the case from being damage.



4. REMOVE COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP

(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.

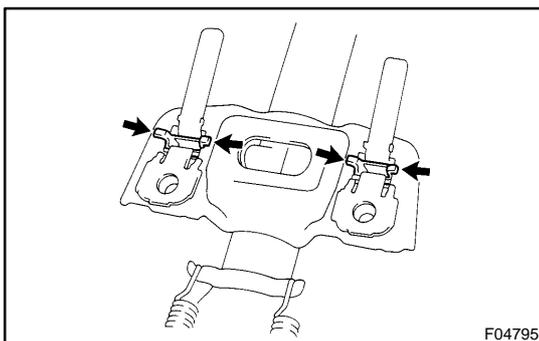
(c) Using a screw extractor, remove the 2 bolts, column upper bracket and column upper clamp.

5. REMOVE COLUMN TUBE SUPPORT

(a) Remove the bolt.

(b) Remove the column tube support with tube attachment.

(c) Remove the tube attachment from the column tube support.



6. REMOVE 2 ENERGY ABSORBING PLATES

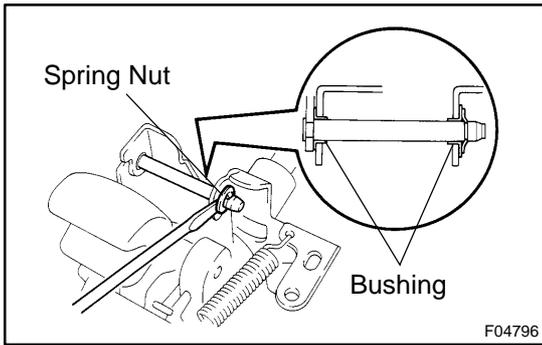
(a) Using pliers, remove the 2 energy absorbing clips.

(b) Remove the 2 energy absorbing plates and 2 energy absorbing guides.

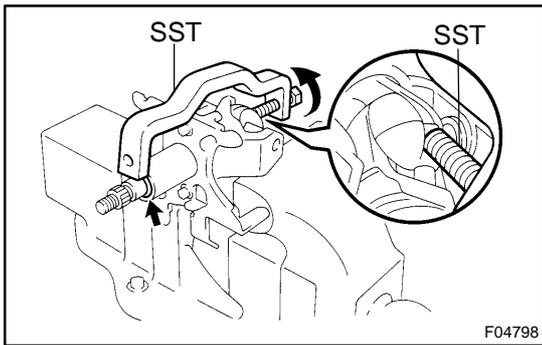
7. REMOVE 4 TENSION SPRINGS

HINT:

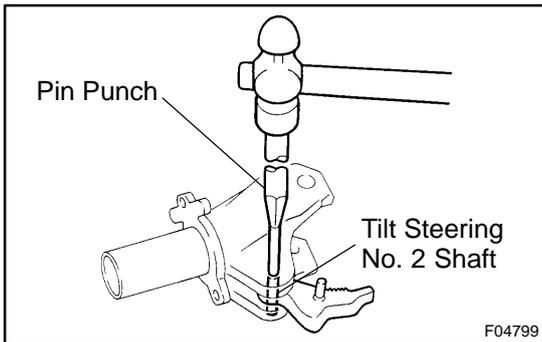
Remove the springs with the tilt function at maximum tilt up.



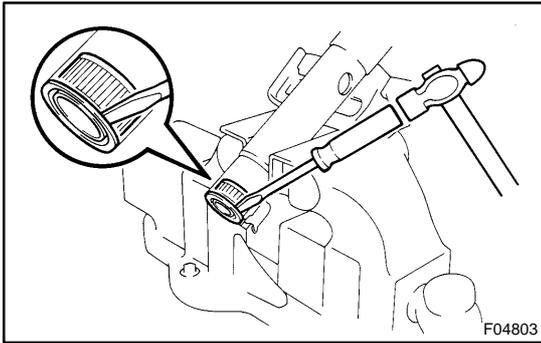
- 8. REMOVE TILT LEVER**
 - (a) Using a screwdriver, remove the spring nut.
 - (b) Remove the tilt lever.
 - (c) Remove the 2 bushings from the column upper tube.
- 9. REMOVE TILT LEVER LINK**
- 10. REMOVE COLUMN UPPER TUBE WITH MAIN SHAFT ASSEMBLY**
 - (a) Using a hexagon wrench, remove the 2 tilt steering bolts.
 - (b) Remove the upper tube with the main shaft assembly from the column tube.
- 11. REMOVE TILT LEVER RETAINER**



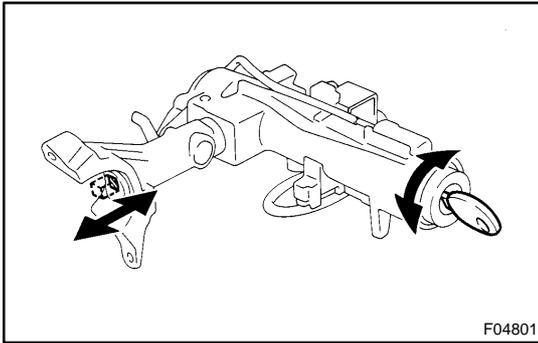
- 12. REMOVE MAIN SHAFT ASSEMBLY**
 - (a) Using SST, compress the compression spring.
SST 09950-4001 1 (09958-04011)
- NOTICE:**
Do not bend the universal joint of the shaft more than 20°.
- (b) Using a snap ring expander, remove the snap ring from the shaft.
- (c) Remove the shaft assembly from the column upper tube.
- (d) Remove the compression spring and bearing thrust collar from the shaft.
- 13. REMOVE TURN SIGNAL BRACKET**
Remove the 2 bolts and turn signal bracket.



- 14. REMOVE TILT STEERING PAWL**
 - (a) Using a pin punch and hammer, tap out the tilt steering No. 2 shaft.
 - (b) Remove the pawl from the column upper tube.
 - (c) Remove the pin from the pawl.

**15. REMOVE BUSHING**

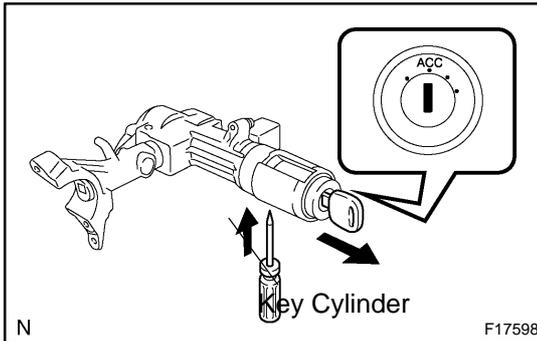
Using a screwdriver, tap out the bushing.



INSPECTION

1. INSPECT STEERING LOCK OPERATION

Check that the steering lock mechanism operates properly.



2. IF NECESSARY, REPLACE KEY CYLINDER

- (a) Place the ignition key at the ACC position.
- (b) Using a screwdriver, push down the stop pin of the cylinder, and pull out the key cylinder.
- (c) Install a new cylinder.

HINT:

Make sure the key is at the ACC position.

3. INSPECT IGNITION SWITCH (See page [BE-29](#))

4. IF NECESSARY, REPLACE IGNITION SWITCH

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

5. INSPECT KEY UNLOCK WARNING SWITCH (See page [BE-29](#))

6. IF NECESSARY, REPLACE KEY UNLOCK WARNING SWITCH

- (a) Slide out the key unlock warning switch.
- (b) Slide in a new key unlock warning switch.

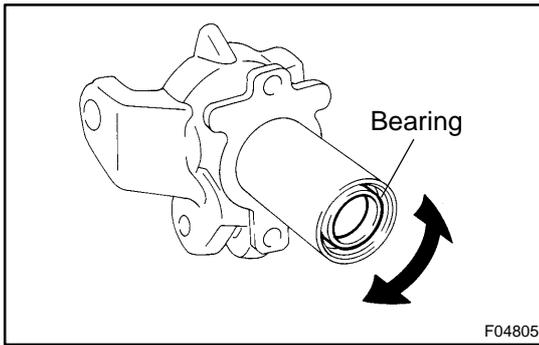
7. INSPECT KEY INTERLOCK SOLENOID (See page [AT-14](#))

8. IF NECESSARY, REPLACE KEY INTERLOCK SOLENOID

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

9. INSPECT TRANSPONDER KEY COIL (See page [BE-196](#))

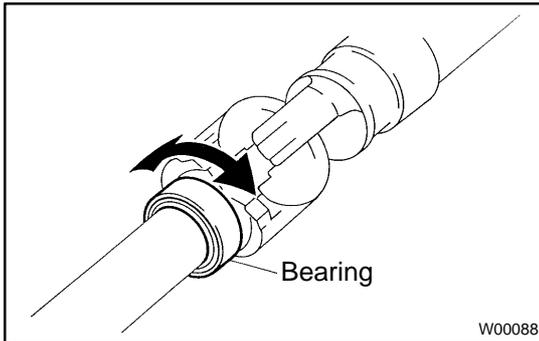
10. IF NECESSARY, REPLACE TRANSPONDER KEY AMPLIFIER

**11. INSPECT UPPER BEARING**

- (a) Check the bearing rotation condition and check for abnormal noise.

If the bearing is worn or damaged, replace the column upper tube.

- (b) Coat the bearing with molybdenum disulfide lithium base grease.

**12. INSPECT LOWER BEARING**

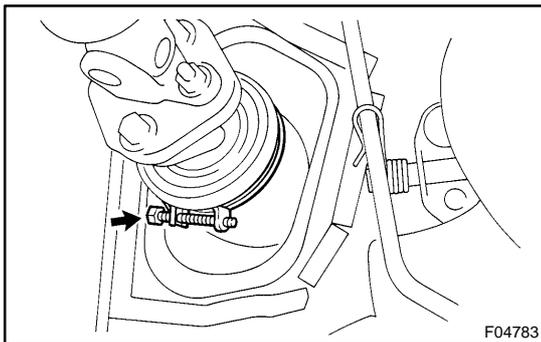
- (a) Check the bearing rotation condition of the main shaft assembly and check for abnormal noise.

If necessary, replace bearing.

- (b) Coat the bearing with molybdenum disulfide lithium base grease.

INSTALLATION

1. **INSTALL NO. 2 HOLE COVER**
2. **INSTALL HOSE CLAMP**
3. **INSTALL SLIDING YOKE**
 - (a) Install the thrust stopper and sliding yoke to the steering column assembly.
 - (b) Install and temporarily tighten the bolt A.
4. **INSTALL STEERING COLUMN ASSEMBLY**
 - (a) Install the steering column assembly with the 4 nuts.
Torque: 25 N·m (260 kgf-cm, 19 ft-lbf)



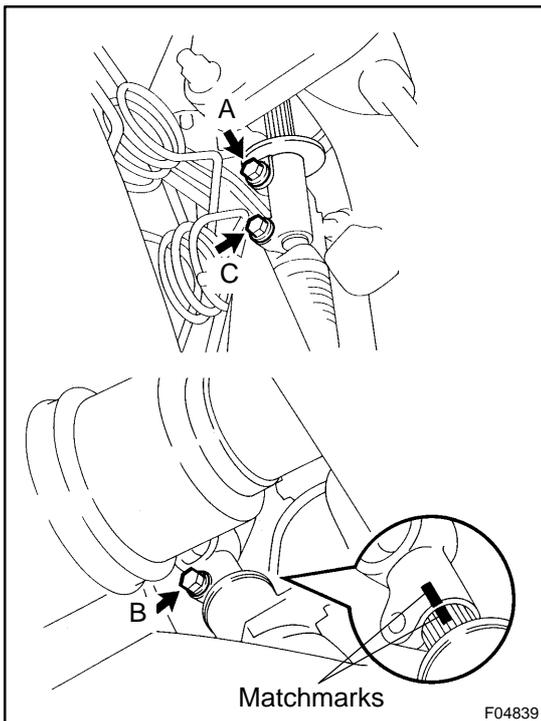
- (b) Tighten the hose clamp.
- (c) Connect the connectors.

5. **INSTALL HOLE COVER**

Install the hole cover with the 4 bolts.

Torque: 13 N·m (130 kgf-cm, 9 ft-lbf)

6. **INSTALL NO. 2 INTERMEDIATE SHAFT ASSEMBLY TO STEERING COLUMN ASSEMBLY**



7. **CONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY**

- (a) Align the matchmarks on the No. 2 intermediate shaft and control valve shaft.

- (b) Install the bolt C.

Torque: 34 N·m (350 kgf-cm, 25 ft-lbf)

- (c) Install the bolt B.

Torque: 34 N·m (350 kgf-cm, 25 ft-lbf)

- (d) Torque the bolt A.

Torque: 34 N·m (350 kgf-cm, 25 ft-lbf)

8. **INSTALL NO. 2 HEATER TO REGISTER DUCT**

Install the No. 2 heater to register duct with the screw.

9. **INSTALL LH LOWER PANEL**

Install the LH lower panel with the 4 bolts.

10. **INSTALL LOWER NO. 1 PANEL**

- (a) Install the lower No. 1 panel with the screw.

- (b) Connect the hood lock release lever and fuel lid release lever with the 4 screws.

11. **INSTALL CLUSTER FINISH PANEL**

Install the cluster finish panel and connector.

12. INSTALL COWL TRIM

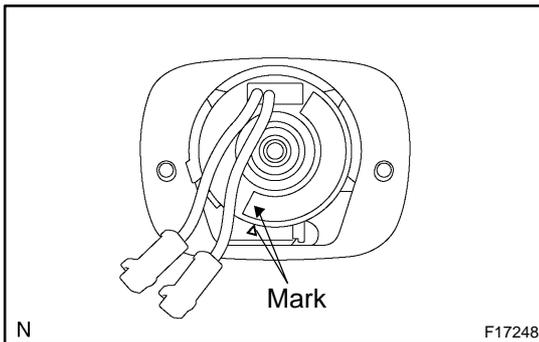
Install the cowl trim with the clip.

13. INSTALL SCUFF PLATE**14. INSTALL SPIRAL CABLE (See page BE-31)****15. INSTALL COMBINATION SWITCH WITH SPIRAL CABLE**

- (a) Install the combination switch with the 3 screws.
- (b) Connect the airbag connector.
- (c) Tilt steering column:
Connect the 3 connectors.
- (d) w/ Power tilt and power telescopic steering column:
Connect the 5 connectors.

16. INSTALL UPPER AND LOWER COLUMN COVERS

Install the upper and lower column covers with the 3 screws.

**17. CENTER SPIRAL CABLE**

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

HINT:

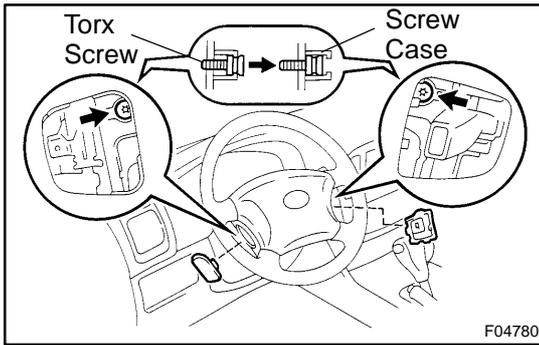
The cable will rotate about 2.5 turns to either left or right of the center.

18. INSTALL STEERING WHEEL

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

19. 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 in 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.**



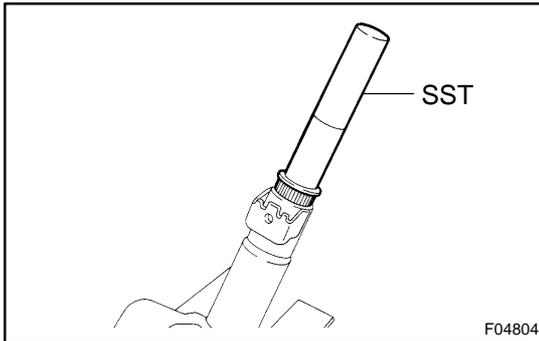
- (a) Connect the connector.
 - (b) Connect the airbag connector.
 - (c) Install the pad after confirming that the circumference groove of the torx screw is caught on the screws case.
 - (d) Using a torx socket wrench, torque the 2 screws.
Torque: 8.8 N·m (90 kgf·cm, 78 in.-lbf)
 - (e) Install the steering wheel lower No. 2 and No. 3 covers.
- 20. CHECK STEERING WHEEL CENTER POINT**

REASSEMBLY

NOTICE:

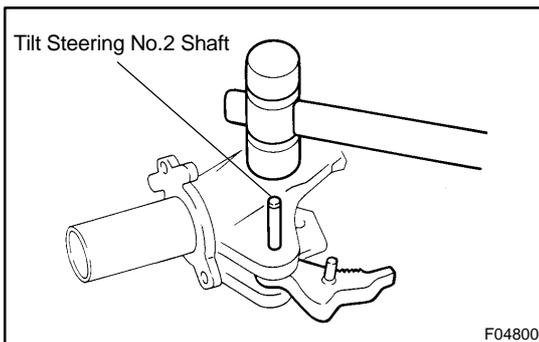
When using a vise, do not overtighten it.

1. COAT PARTS INDICATED BY ARROWS WITH MOLYBDENUM DISULFIDE LITHIUM BASE GREASE (See page [SR-12](#))



2. **INSTALL BUSHING**

- (a) Coat a new bushing with molybdenum disulfide lithium base grease.
- (b) Using SST and a hammer, tap in the bushing.
SST 09612-2201 1



3. **INSTALL TILT STEERING PAWL**

- (a) Install a new pin to the pawl.
- (b) Install the pawl to the column upper tube.
- (c) Using a plastic hammer, tap in a new tilt steering No. 2 shaft.

NOTICE:

Tap the shaft completely into the steering column upper tube.

4. **INSTALL TURN SIGNAL BRACKET**

Install the turn signal bracket with the 2 bolts.

5. **INSTALL MAIN SHAFT ASSEMBLY**

- (a) Install the bearing thrust collar and compression spring to the shaft.
- (b) Install the shaft assembly to the column upper tube.
- (c) Using SST, compress the compression spring.
SST 09950-4001 1 (09958-04011)

NOTICE:

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

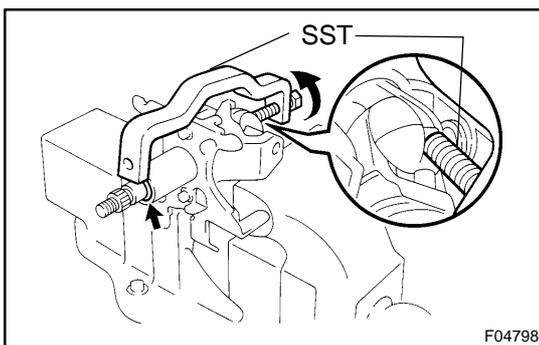
- (d) Using a snap ring expander, install a new snap ring to the shaft.

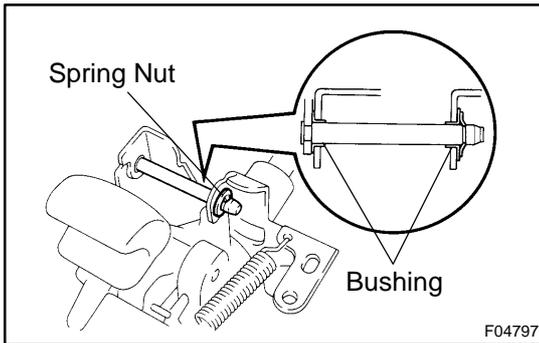
6. **INSTALL TILT LEVER RETAINER**

7. **INSTALL COLUMN UPPER TUBE WITH MAIN SHAFT ASSEMBLY**

- (a) Install the column upper tube with the main shaft to the column tube.
- (b) Using a hexagon wrench, torque the 2 tilt steering bolts.
Torque: 20 N·m (210 kgf·cm, 15 ft·lbf)
- (c) Check that the upper tube turns smoothly.

8. **INSTALL TILT LEVER LINK**



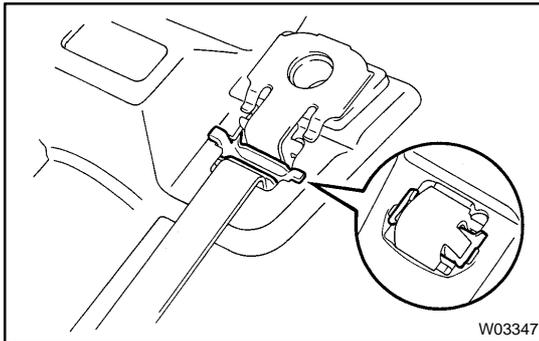
**9. INSTALL TILT LEVER**

- (a) Install the 2 bushings and tilt lever to the column upper tube, as shown in the illustration.
- (b) Install a new spring nut to the lever.

10. INSTALL 4 TENSION SPRINGS

HINT:

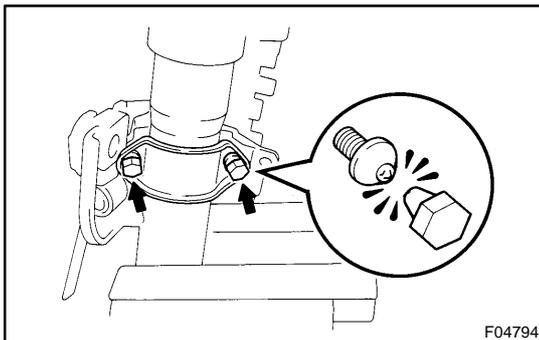
Install the springs with the tilt function at maximum tilt up.

**11. INSTALL 2 ENERGY ABSORBING PLATES**

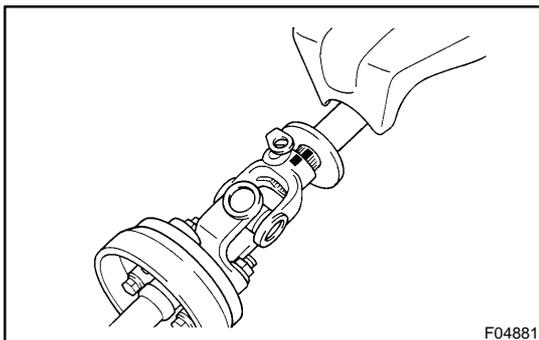
- (a) Install the 2 new energy absorbing guides and 2 new absorbing plates.
- (b) Install the 2 new energy absorbing clips.

12. INSTALL COLUMN TUBE SUPPORT

Install the tube attachment with the bolt to the column tube support.

Torque: 15 N·m (150 kgf-cm, 11 ft-lbf)**13. INSTALL COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP**

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

14. INSTALL TRANSPONDER KEY AMPLIFIER ASSEMBLY**15. INSTALL INTERMEDIATE SHAFT ASSEMBLY**

- (a) Install the thrust stopper and upper side No. 2 lower cover.
- (b) Align the matchmarks on the intermediate shaft assembly and main shaft assembly.
- (c) Install the bolt.

Torque: 34 N·m (350 kgf-cm, 25 ft-lbf)**16. INSTALL NO. 2 LOWER COVER**

Install the No. 2 lower cover with the 2 nuts.

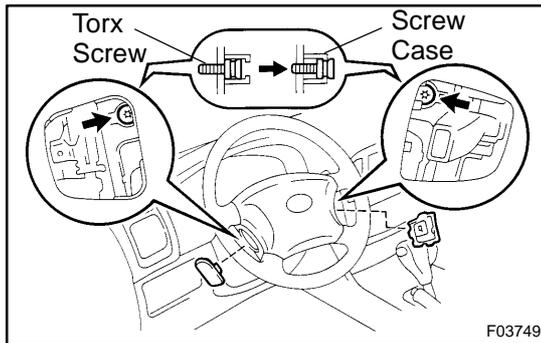
Torque: 25 N·m (260 kgf-cm, 19 ft-lbf)

REMOVAL

1. REMOVE STEERING WHEEL PAD

NOTICE:

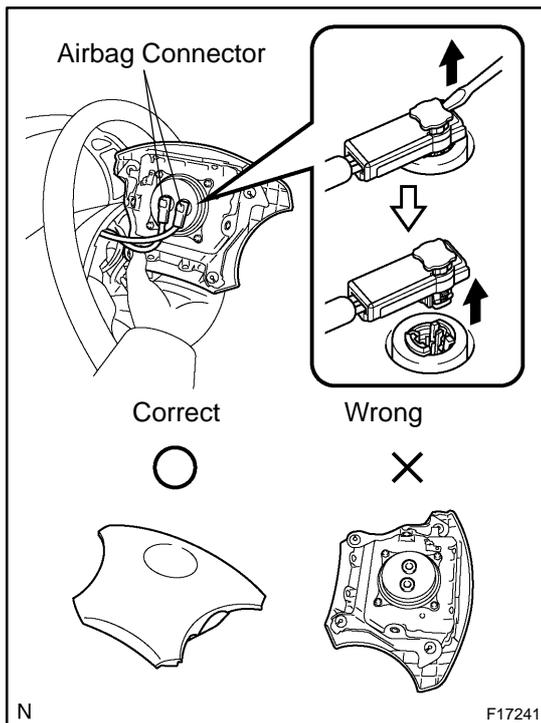
If the airbag connector is disconnected with the ignition switch at ON or ACC, DTCs will be recorded.



- Place the front wheels facing straight ahead.
- Remove the steering wheel lower No. 2 and No. 3 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.



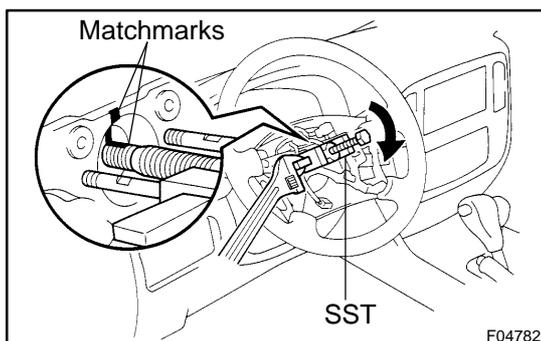
- Pull the pad out from the steering wheel and disconnect the 2 airbag connectors.
- Disconnect the connector.

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 wheel.

SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)

3. REMOVE UPPER AND LOWER COLUMN COVERS

Remove the 3 screws, upper and lower column covers.

4. REMOVE COMBINATION SWITCH WITH SPIRAL CABLE

- (a) Tilt steering column:
Disconnect the 3 connectors.
- (b) w/ Power tilt and power telescopic steering column:
Disconnect the 5 connectors.
- (c) Disconnect the airbag connector.
- (d) Remove the 3 screws and combination switch.

5. REMOVE SPIRAL CABLE (See page BE-31)**NOTICE:**

Do not disassembly the cable or apply oil to it.

6. REMOVE SCUFF PLATE**7. REMOVE COWL TRIM**

Remove the clip and cowl trim.

8. REMOVE CLUSTER FINISH PANEL

Remove the connector and cluster finish panel.

9. REMOVE LOWER NO. 1 PANEL

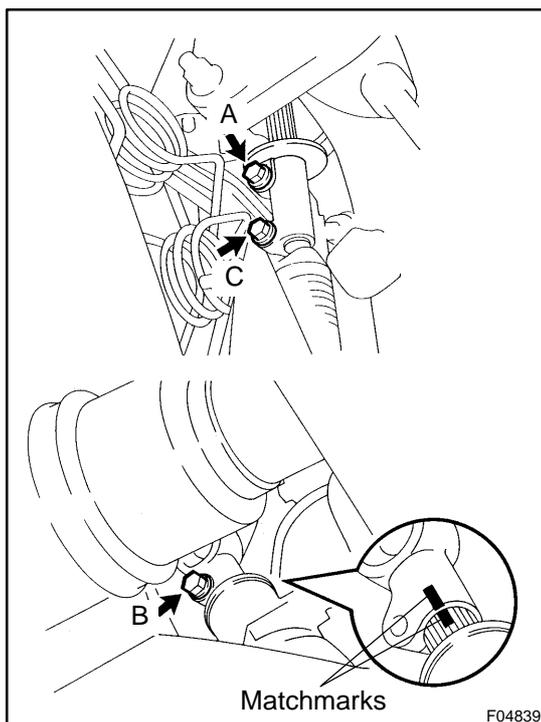
- (a) Remove the 2 screws and disconnect the hood lock release lever from the panel.
- (b) Remove the 2 screws and disconnect the fuel lid release lever from the panel.
- (c) Remove pad set screw and lower No. 1 panel.

10. REMOVE LH LOWER PANEL

Remove the 4 bolts and LH lower panel.

11. REMOVE NO. 2 HEATER TO REGISTER DUCT

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

**12. DISCONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY**

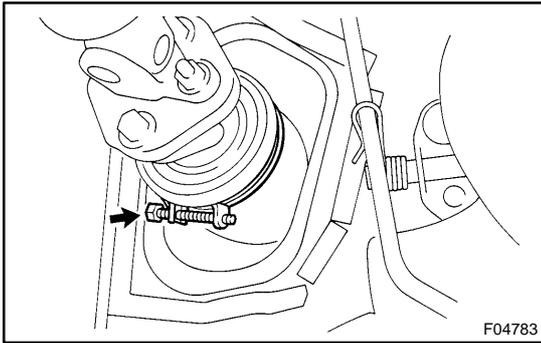
- (a) Place matchmarks on the No. 2 intermediate shaft and control valve shaft.
- (b) Loosen the bolt A.
- (c) Remove the bolt B and the bolt C, disconnect the No. 2 intermediate shaft from the control valve shaft and sliding yoke.

13. REMOVE NO. 2 INTERMEDIATE SHAFT ASSEMBLY**14. REMOVE HOLE COVER**

Remove the 4 bolts and hole cover.

15. REMOVE STEERING COLUMN ASSEMBLY

- (a) Disconnect the connectors.



- (b) Loosen the hose clamp.
 - (c) Remove the 4 nuts and steering column assembly.
- 16. REMOVE SLIDING YOKE**
- (a) Remove the bolt A and sliding yoke.
 - (b) Remove the thrust stopper from the intermediate shaft assembly.
- 17. REMOVE HOSE CLAMP**
- 18. REMOVE NO. 2 HOLE COVER**