

STEERING SYSTEM

SR08F-10

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 CELICA is equipped with an 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.

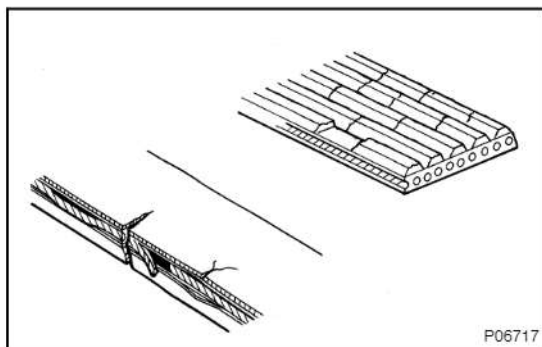
TROUBLESHOOTING

PROBLEM SYMPTOMS TABLE

SR08G-10

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	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-3 SR-5 SR-3 SA-5 – SA-49 – SR-24 SR-35
Poor return	1. Tires (Improperly inflated) 2. Front wheel alignment (Incorrect) 3. Steering column (Binding) 4. Power steering gear	SA-3 SA-5 – SR-35
Excessive play	1. Steering system joints (Worn) 2. Suspension arm ball joints (Worn) 3. Intermediate shaft, Sliding yoke (Worn) 4. Front wheel bearing (Worn) 5. Power steering gear	– SA-49 – SA-13 SR-35
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-24 SR-35



DRIVE BELT INSPECTION

SR08H-08

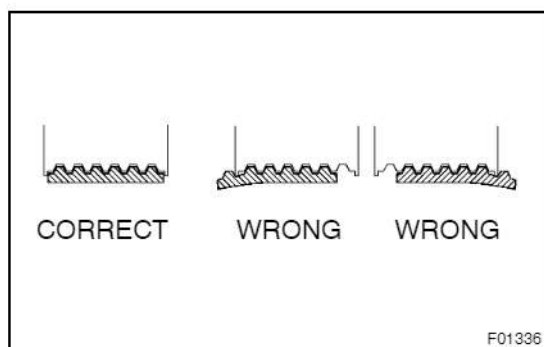
INSPECT DRIVE BELT

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 belt are considered acceptable. If the missing chunks from the ribs are found on the drive belt, it should be replaced.



- After installing a drive belt, check that it fits properly in the ribbed grooves.
- Check with your hand to confirm that the drive belt has not slipped out of the groove on the bottom of the pulley.

POWER STEERING FLUID BLEEDING

SR08-09

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.

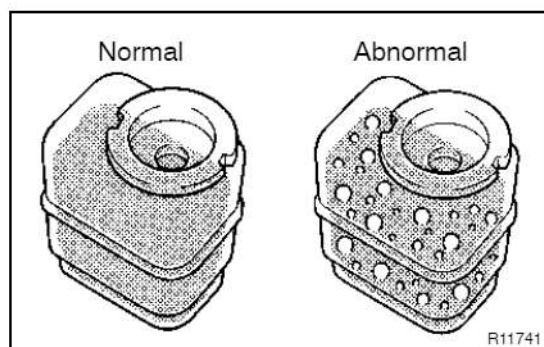
- (b) Repeat (a) several times.

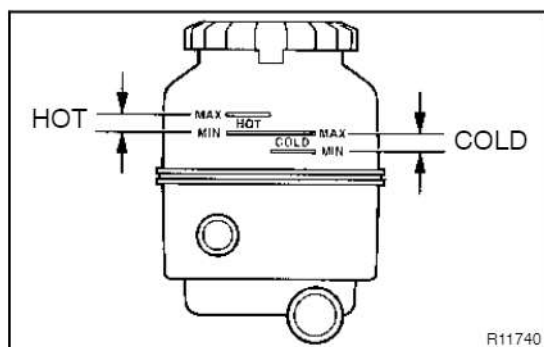
7. **STOP ENGINE**

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.

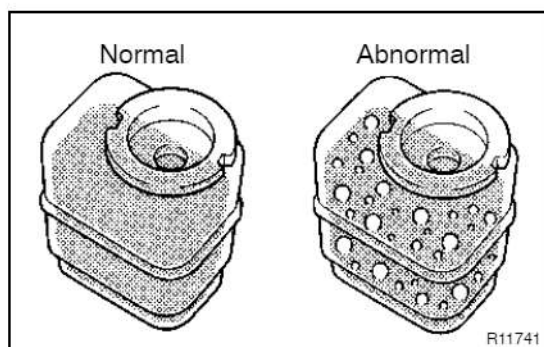
Fluid: ATF DEXRON® II or III

HINT:

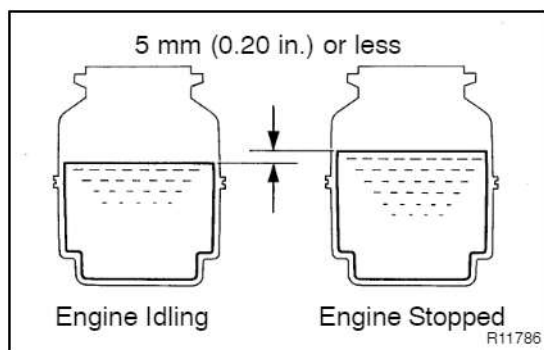
Check that the fluid level is within the HOT LEVEL range on the reservoir. If the fluid is cold, check that it is within the COLD LEVEL range.

- 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).

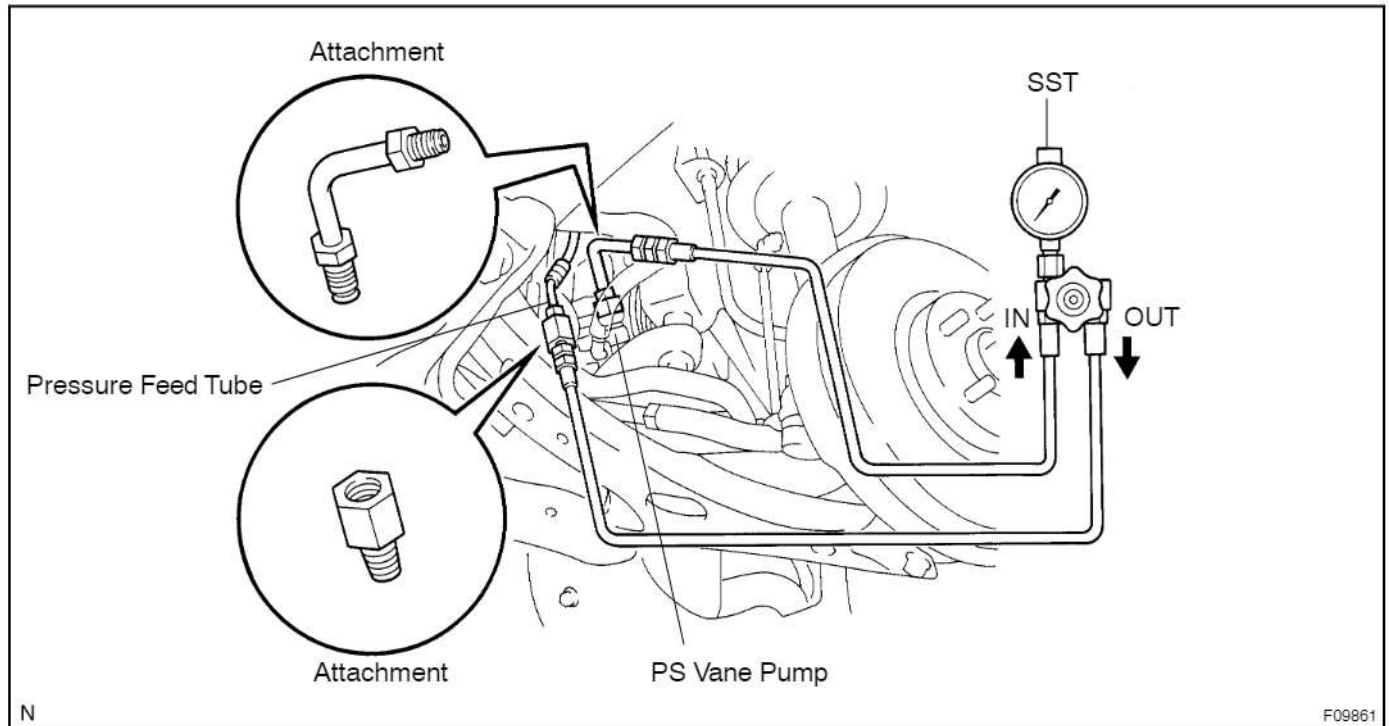
- Check the fluid level.

2. CHECK STEERING FLUID PRESSURE

- (a) Disconnect the pressure feed tube from the PS vane pump (See page SR-26).
- (b) Connect SST, as shown in the illustration below.
SST 09640-10010 (09641-01010, 09641-01030, 09641-01060)

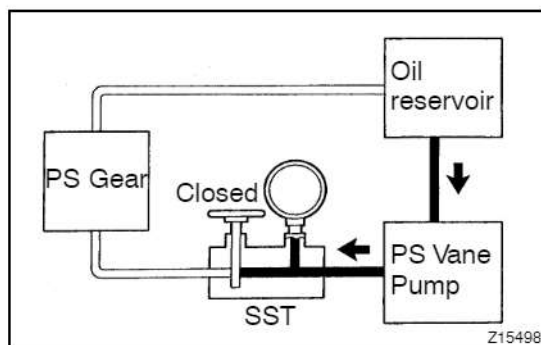
NOTICE:

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)

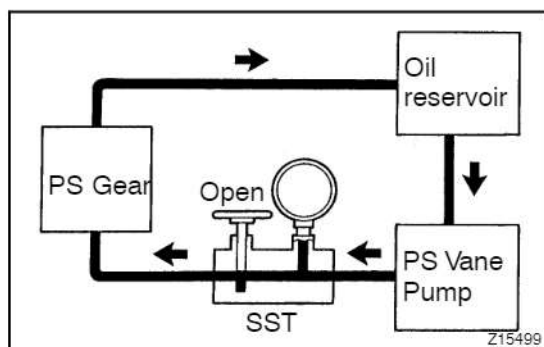


- (f) With the engine idling, close the valve of the SST and observe the reading on the SST.

Minimum fluid pressure:
7,355 kPa (75 kgf/cm², 1,067 psi)

NOTICE:

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

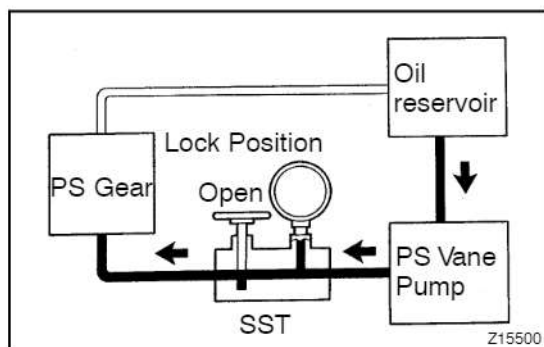


- (g) With the engine idling, open the valve fully.
 (h) Measure the fluid pressure at engine speeds of 1,000 rpm and 3,000 rpm.

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

NOTICE:

Do not turn the steering wheel.

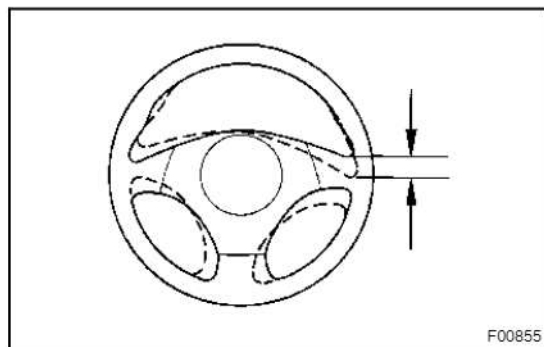


- (i) With the engine idling and valve fully opened, turn the steering wheel to full lock.

Minimum fluid pressure:
7,355 kPa (75 kgf/cm², 1,067 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 to the PS vane pump (See page SR-34).
- (l) Bleed the power steering system (See page SR-4).



F00855

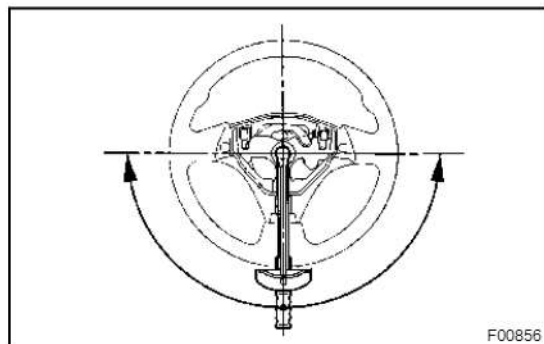
STEERING WHEEL INSPECTION

SR08K-15

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: 30 mm (1.18 in.)



F00856

2. CHECK STEERING EFFORT

- (a) Center the steering wheel.
- (b) Remove the steering wheel pad (See page SR-13).
- (c) Start the engine and run it at idle.
- (d) Measure the steering effort in both directions.

Steering effort (Reference):

6.5 N·m (65 kgf·cm, 58 in·lbf)

HINT:

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

- (e) Install the steering wheel set nut.

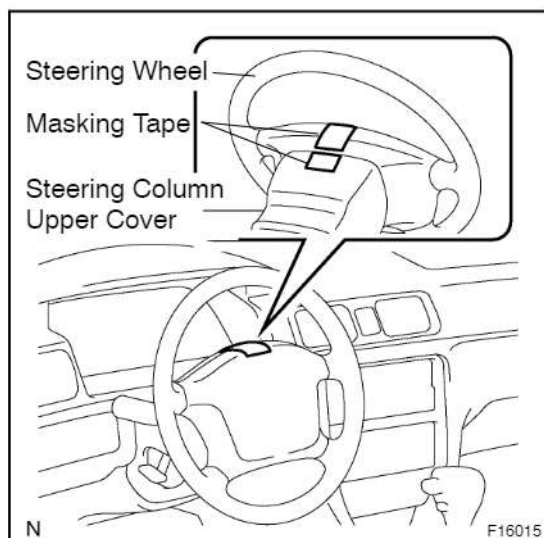
Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)

- (f) Install the steering wheel pad (See page SR-21).

REPAIR PROCEDURES

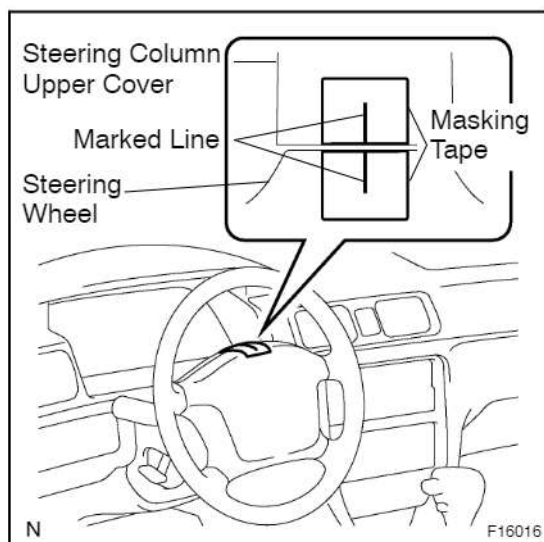
HINT:

This is the repair procedure for steering off center.

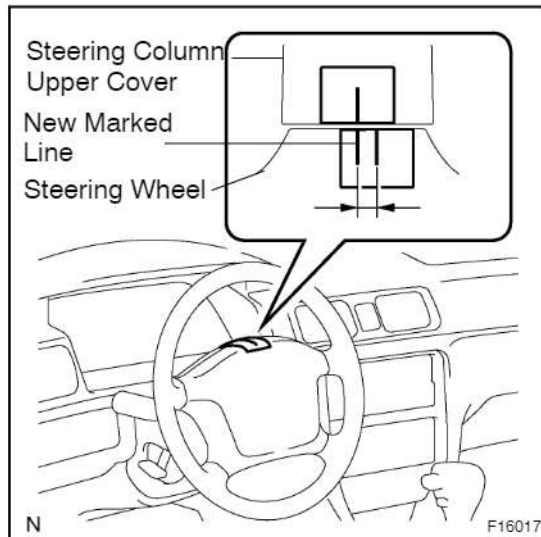


1. INSPECT STEERING WHEEL OFF CENTER

- (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:

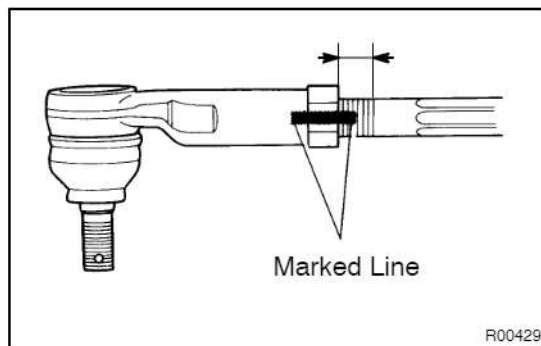
Refer to the upper surface of the steering wheel, steering spoke and SRS airbag line for the straight position.

- (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.

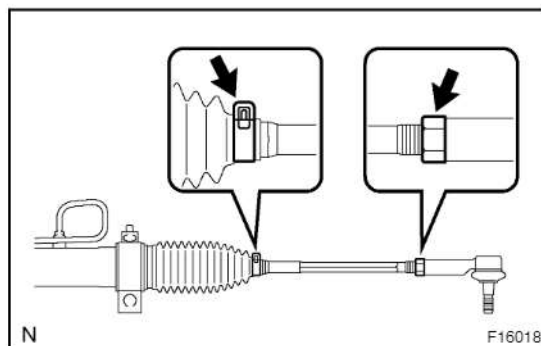


2. ADJUST STEERING ANGLE

- (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: 74 N·m (750 kgf·cm, 54 ft·lbf)

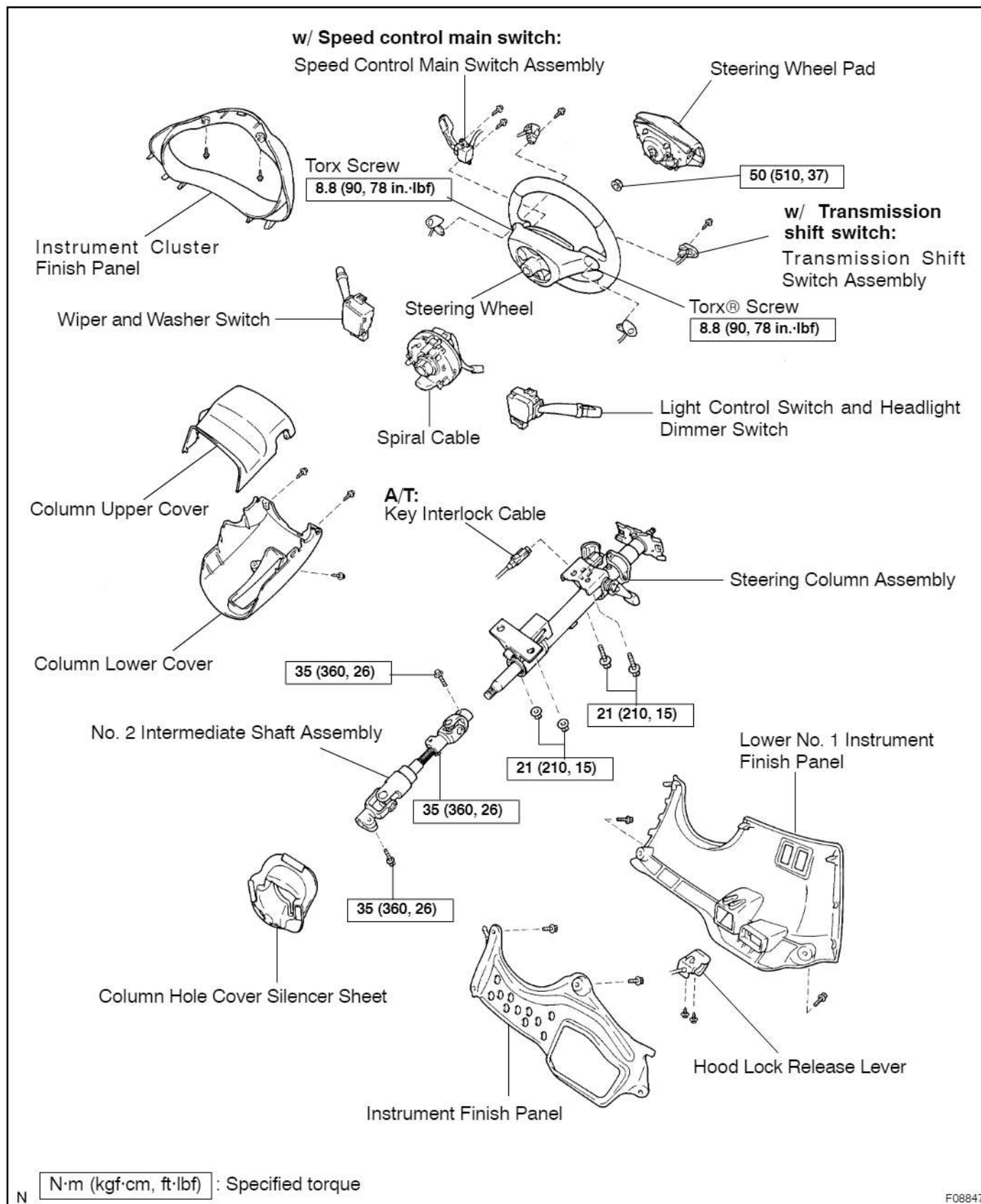
NOTICE:

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.).

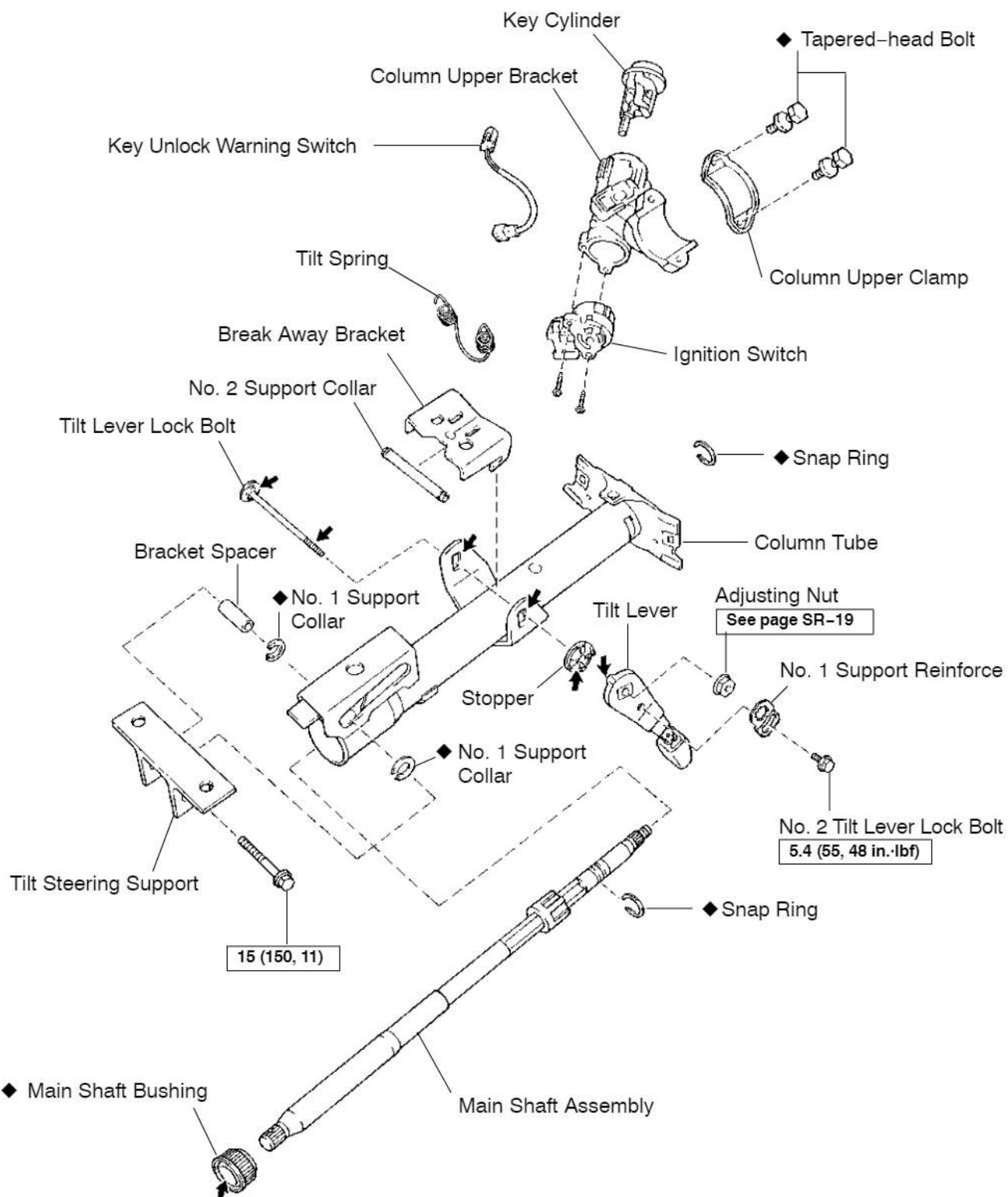
- (g) Install the RH and LH boot clips.

TILT STEERING COLUMN COMPONENTS

SR0YK-10



F08847



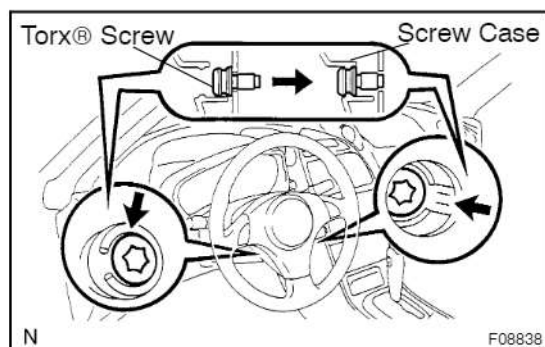
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

← Molybdenum disulfide lithium base grease

N

F09905



REMOVAL

1. REMOVE STEERING WHEEL PAD

NOTICE:

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

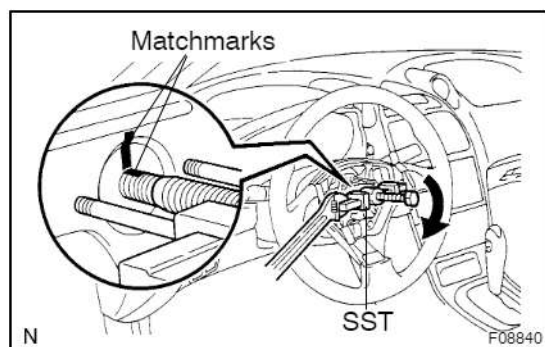
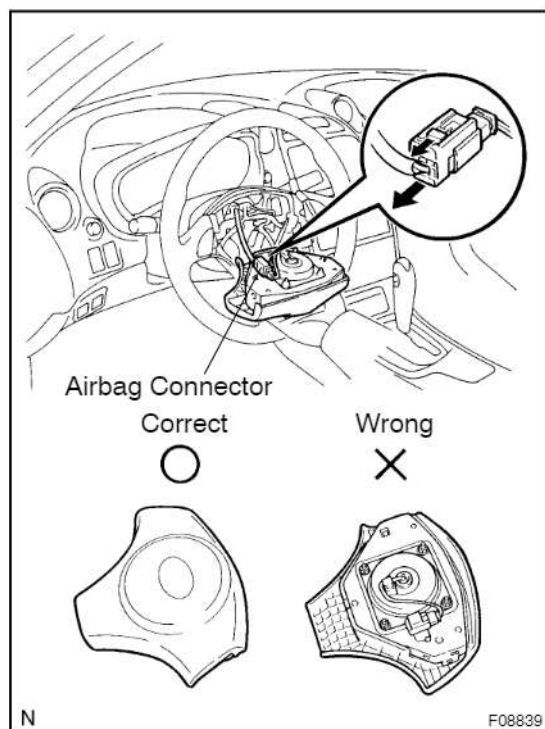
- Place the front wheels facing straight ahead.
- Using a torx® socket wrench, loosen the 2 torx® screws until the groove along the screw circumference catches on the screw case.
- Pull out the wheel pad from the steering wheel and disconnect the airbag connector.

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

3. REMOVE LOWER NO. 1 INSTRUMENT FINISH PANEL

- Remove the 2 screws and disconnect the hood lock release lever.
- Remove the 2 bolts and lower No. 1 instrument finish panel.
- Disconnect the connector.

4. REMOVE INSTRUMENT FINISH PANEL

Remove the 2 bolts and instrument finish panel.

5. REMOVE INSTRUMENT CLUSTER FINISH PANEL

Remove the 2 screws and instrument cluster finish panel.

6. REMOVE COLUMN UPPER AND LOWER COVERS

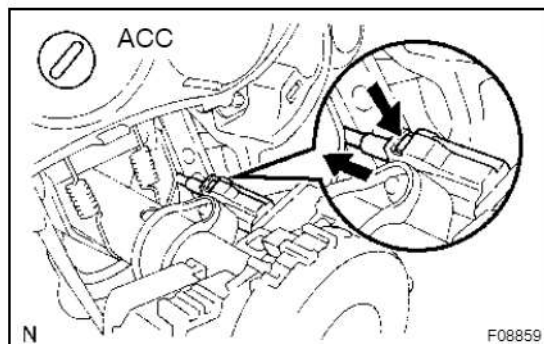
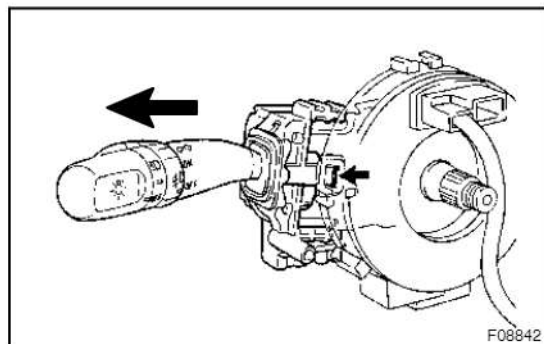
Remove the 3 screws, column upper and lower covers.

7. REMOVE SPIRAL CABLE, LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH AND WIPER AND WASHER SWITCH

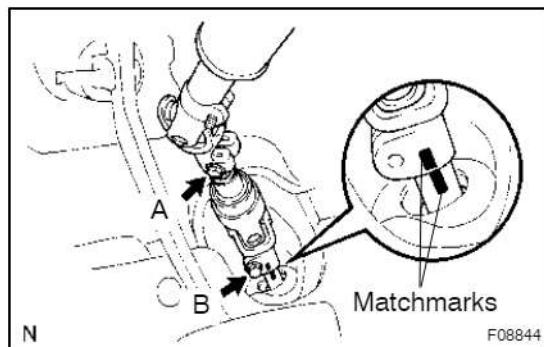
- (a) Disconnect the 3 connectors from the spiral cable, light control switch and headlight dimmer switch and wiper and washer switch.
- (b) Disconnect the airbag connector from the spiral cable.
- (c) Push the claw and pull out the light control switch and headlight dimmer switch.
- (d) Employ the same manner described above to the wiper and washer switch.
- (e) Remove the spiral cable.

NOTICE:

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

**8. A/T:****REMOVE KEY INTERLOCK CABLE**

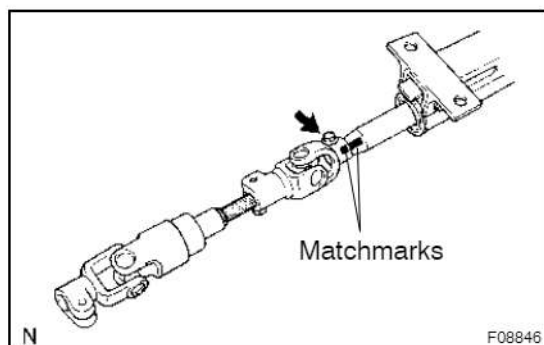
With the key in ACC, push the claw and pull out the key interlock cable.

9. REMOVE COLUMN HOLE COVER SILENCER SHEET**10. DISCONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY**

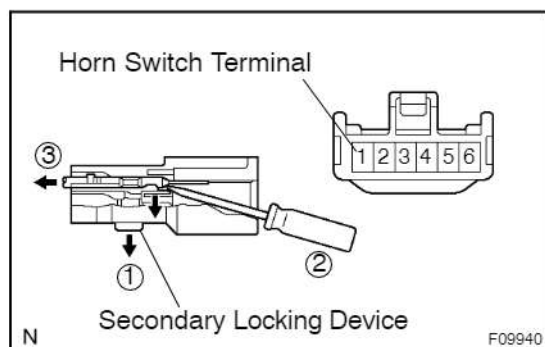
- (a) Place matchmarks on the No. 2 intermediate shaft assembly and intermediate extension.
- (b) Loosen the bolt A and remove the bolt B, then disconnect the No. 2 intermediate shaft assembly.

11. REMOVE STEERING COLUMN ASSEMBLY

- (a) Disconnect the connectors.
- (b) Remove the 2 bolts, nuts and steering column assembly.

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

- (a) Place matchmarks on the No. 2 intermediate shaft assembly and main shaft assembly.
- (b) Remove the bolt and No. 2 intermediate shaft assembly.

**13. w/ Transmission shift switch:****REMOVE TRANSMISSION SHIFT SWITCH ASSEMBLY FROM STEERING WHEEL**

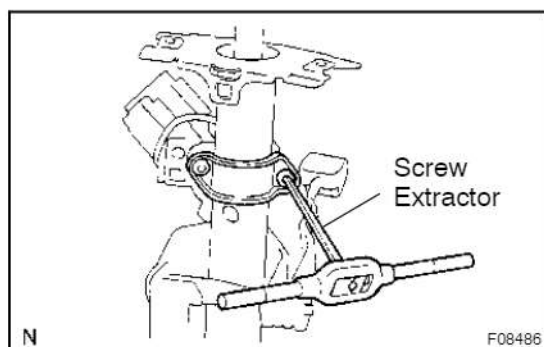
- (a) Remove the 2 screws.
- (b) Disengage the secondary locking device of the connector.
- (c) Release the locking lug of the terminal 1 (horn switch terminal), and pull the terminal out of the rear.
- (d) Remove the transmission shift switch assembly.

14. w/ Speed control main switch:**REMOVE SPEED CONTROL MAIN SWITCH ASSEMBLY FROM STEERING WHEEL**

- (a) Remove the 2 screws.
- (b) Disengage the secondary locking device of the connector.
- (c) Release the locking lug of the terminal 1 (horn switch terminal), and pull the terminal out of the rear.
- (d) Remove the speed control main switch assembly.

15. w/ Transmission shift switch and speed control main switch:**REMOVE TRANSMISSION SHIFT SWITCH ASSEMBLY AND SPEED CONTROL MAIN SWITCH ASSEMBLY FROM STEERING WHEEL**

- (a) Remove the 2 screws from the transmission shift switch assembly.
- (b) Remove the 2 screws from the speed control main switch assembly.
- (c) Disengage the secondary locking device of the connector.
- (d) Release the locking lug of the terminal 1 (horn switch terminal), and pull the terminal out of the rear.
- (e) Remove the transmission shift switch assembly and speed control main switch assembly.



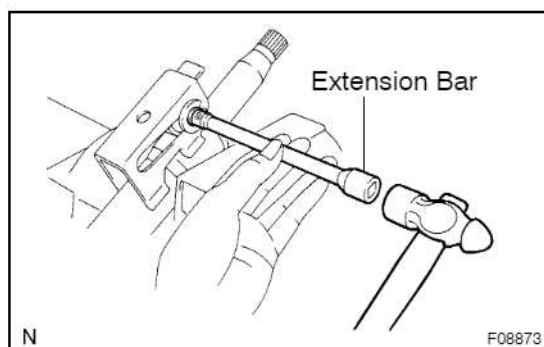
DISASSEMBLY

1. 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.

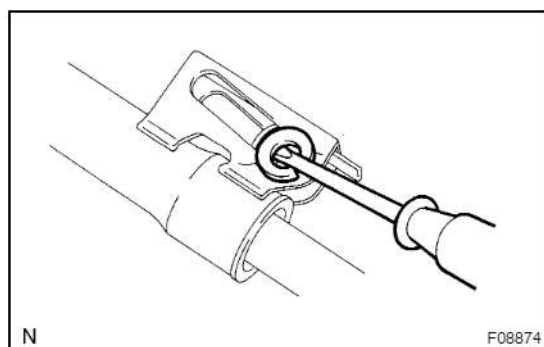
2. REMOVE TILT STEERING SUPPORT

Remove the bolt and tilt steering support.



3. REMOVE BRACKET SPACER AND 2 NO. 1 SUPPORT COLLARS

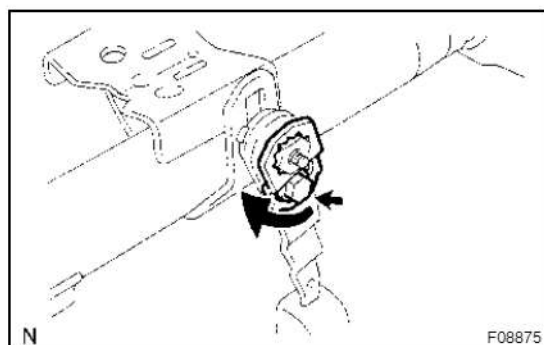
- (a) Using an extension bar and a hammer, tap out the bracket spacer.



- (b) Using a screwdriver, remove the 2 No. 1 support collars.

4. REMOVE TILT LEVER AND BREAK AWAY BRACKET

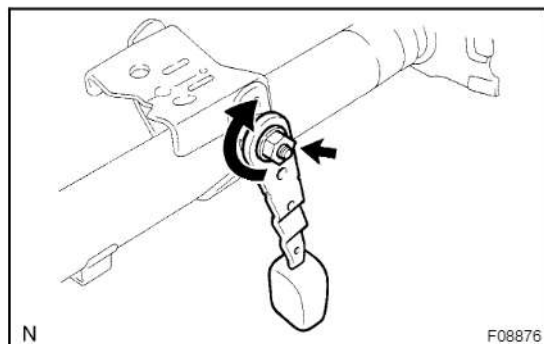
- (a) Remove the tilt spring.



- (b) Remove the No. 2 tilt lever lock bolt and No. 1 support reinforce.

HINT:

This bolt is left-handed one.

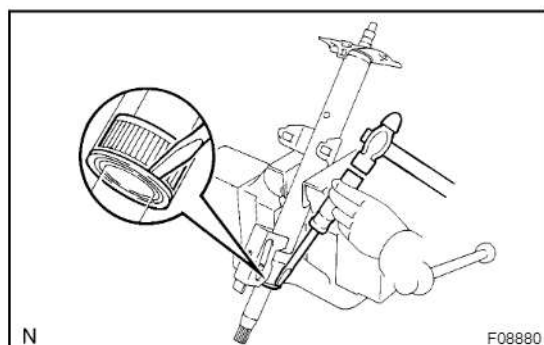


- (c) Remove the adjusting nut, tilt lever, stopper, tilt lever lock bolt and break away bracket.

HINT:

This nut is left-handed one.

- (d) Remove the No. 2 support collar from the break away bracket.

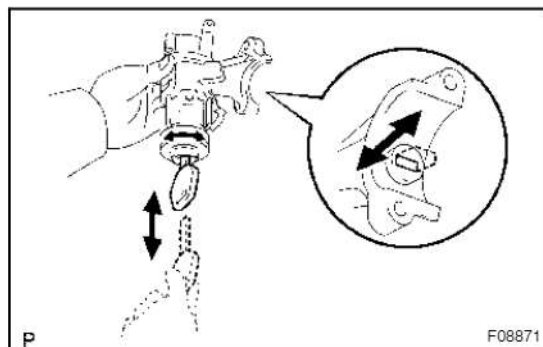


5. REMOVE MAIN SHAFT BUSHING

Using a screwdriver and hammer, tap out the main shaft bushing.

6. REMOVE MAIN SHAFT ASSEMBLY

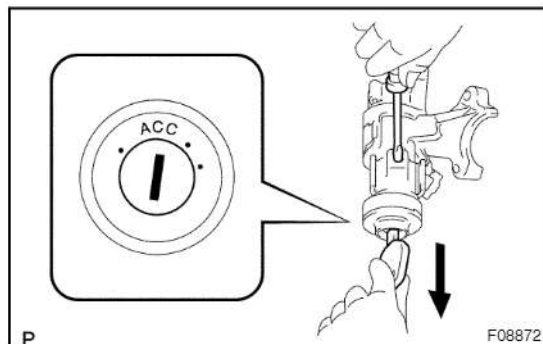
- (a) Using a snap ring expander, remove the snap ring on the upper side.
- (b) Remove the main shaft assembly.
- (c) Using a snap ring expander, remove the snap ring on the lower side.



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 cylinder.
- Install a new cylinder.

HINT:

Make sure the key is at the ACC position.

3. INSPECT IGNITION SWITCH (See page BE-15)

4. IF NECESSARY, REPLACE IGNITION SWITCH

- Remove the 2 screws and ignition switch from the column upper bracket.
- Install a new ignition switch with the 2 screws.

5. INSPECT KEY UNLOCK WARNING SWITCH (See page BE-15)

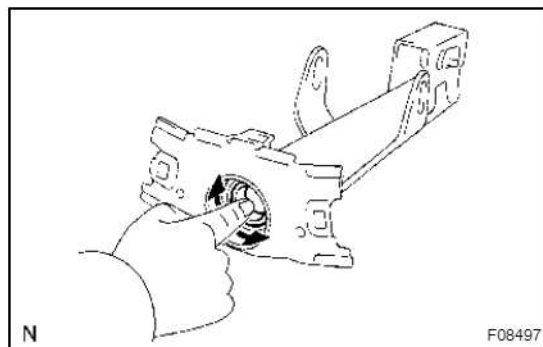
6. IF NECESSARY, REPLACE KEY UNLOCK WARNING SWITCH

- 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 BEARING

Check the bearing rotation condition and check for abnormal noise.

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

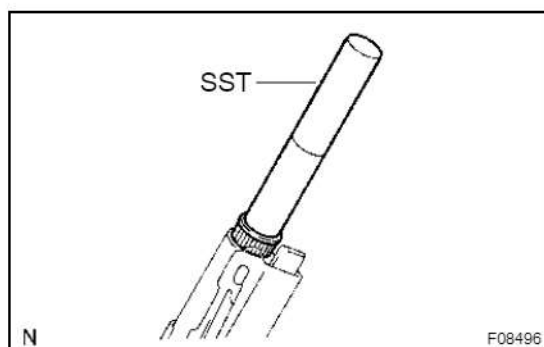


REASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. **COAT PARTS INDICATED BY ARROWS WITH MOLYBDENUM DISULFIDE LITHIUM BASE GREASE**
(See page SR-11)
2. **INSTALL MAIN SHAFT ASSEMBLY**
 - (a) Using a snap ring expander, install a new snap ring on the lower side.
 - (b) Install the main shaft assembly.
 - (c) Using a snap ring expander, install a new snap ring on the upper side.



3. INSTALL MAIN SHAFT BUSHING

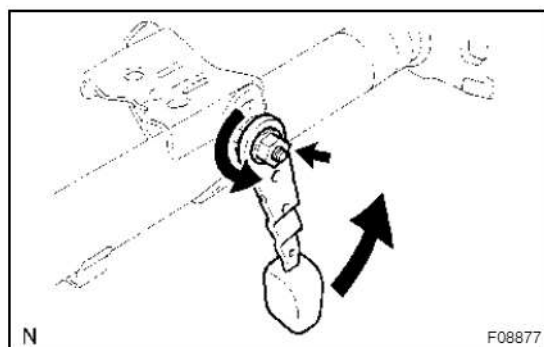
- (a) Coat a new bushing with molybdenum disulfide lithium base grease.
- (b) Using SST and a hammer, tap in the main shaft bushing.
SST 09608-04031

4. INSTALL BREAK AWAY BRACKET AND TILT LEVER

- (a) Install the No. 2 support collar to the break away bracket.
- (b) Install the break away bracket, tilt lever lock bolt, stopper and tilt lever.

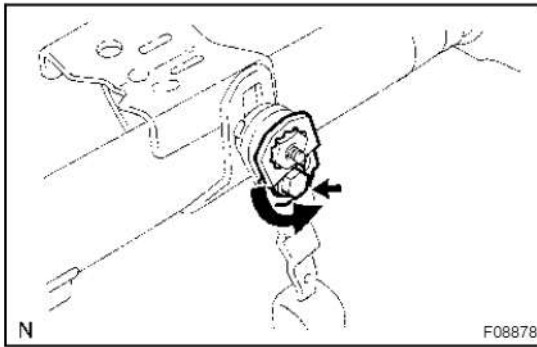
HINT:

Align the holes in the column tube with the projections of the tilt lever lock bolt and stopper.



- (c) Install the adjusting nut by rotating it counterclockwise in the specified torque so that the locking load (load applied to when a knob is operated) of the tilt lever will be 38 – 82 N (3.9 – 8.4 kgf, 8.5 – 18.4 lbf).

Torque: 9 N·m – 14 N·m (90 kgf·cm – 145 kgf·cm, 80 in·lbf – 10 ft·lbf)

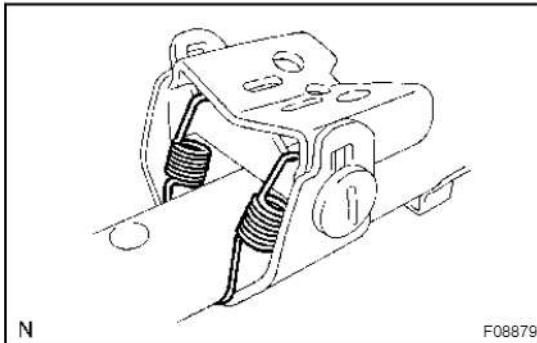


- (d) Install the No. 1 support reinforce with the No. 2 tilt lever lock bolt by turning it counterclockwise.

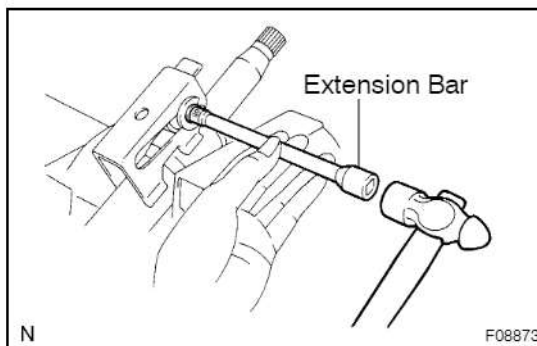
Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)

HINT:

Align the No. 1 support reinforce with the nut to eliminate looseness by turning the No. 1 support reinforce counterclockwise a little, then torque the No. 2 tilt lever lock bolt.



- (e) Install the tilt spring.



5. INSTALL 2 NO. 1 SUPPORT COLLARS AND BRACKET SPACER

- (a) Install 2 new No. 1 support collars.

HINT:

Install the white support collar to the RH side, black support collar to the LH side.

- (b) Using an extension bar and a hammer, drive in the bracket spacer.

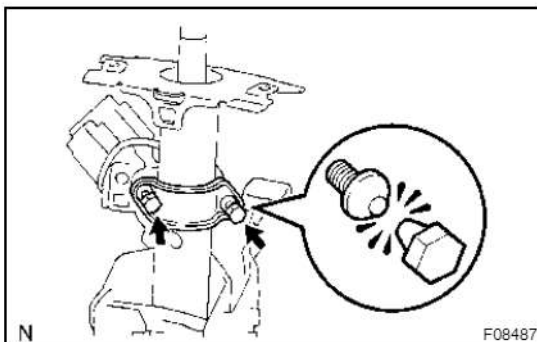
6. INSTALL TILT STEERING SUPPORT

Install the tilt steering support with the bolt.

Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)

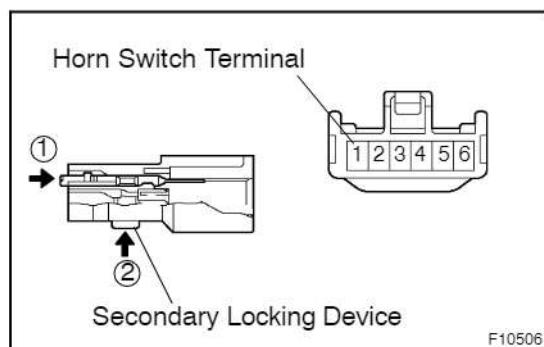
NOTICE:

Make sure that the tilt steering support is installed facing in the correct direction.



7. 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 tapered-head bolts until the bolt heads break off.



INSTALLATION

1. w/ Transmission shift switch: INSTALL TRANSMISSION SHIFT SWITCH ASSEMBLY TO STEERING WHEEL

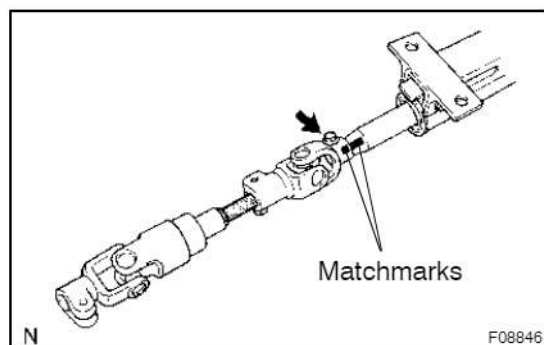
- Install the transmission shift switch assembly.
- Push the terminal 1 (horn switch terminal) into the connector.
- Engage the secondary locking device of the connector.
- Install the 2 screws.

2. w/ Speed control main switch: INSTALL SPEED CONTROL MAIN SWITCH AS- SEMBLY TO STEERING WHEEL

- Install the speed control main switch assembly.
- Push the terminal 1 (horn switch terminal) into the connector.
- Engage the secondary locking device of the connector.
- Install the 2 screws.

3. w/ Transmission shift switch and speed control main switch: INSTALL TRANSMISSION SHIFT SWITCH ASSEMBLY AND SPEED CONTROL MAIN SWITCH ASSEMBLY TO STEERING WHEEL

- Install the transmission shift switch assembly and speed control main switch assembly.
- Push the terminal 1 (horn switch terminal) into the connector.
- Engage the secondary locking device of the connector.
- Install the 2 screws to the transmission shift switch assembly.
- Install the 2 screws to the speed control main switch assembly.

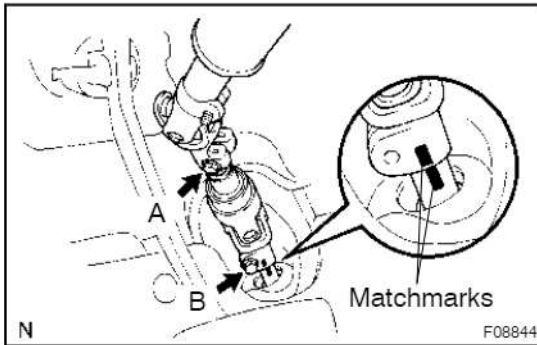


4. INSTALL NO. 2 INTERMEDIATE SHAFT ASSEMBLY

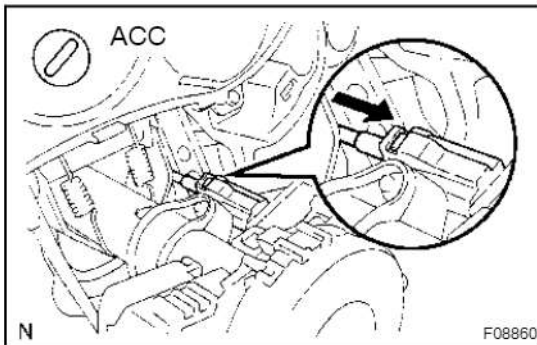
- Align the matchmarks on the No. 2 intermediate shaft assembly and main shaft assembly.
- Install the No. 2 intermediate shaft assembly with the bolt.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)

5. INSTALL STEERING COLUMN ASSEMBLY

- Install the steering column assembly with the 2 bolts and nuts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)
- Connect the connectors.

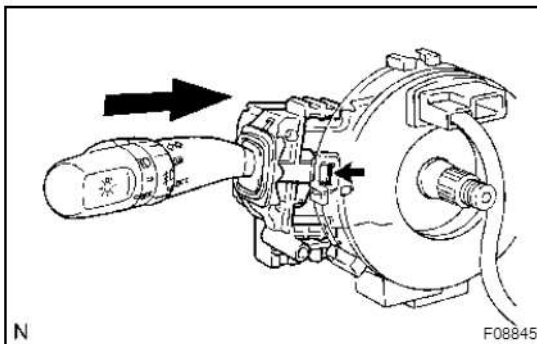


- 6. CONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY**
 - (a) Align the matchmarks on the No. 2 intermediate shaft assembly and intermediate extension.
 - (b) Install the bolt B.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)
 - (c) Torque the bolt A.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)
- 7. INSTALL COLUMN HOLE COVER SILENCER SHEET**



- 8. A/T: INSTALL KEY INTERLOCK CABLE**

With the key in ACC, push into the key interlock cable and install it.



- 9. INSTALL LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH, WIPER AND WASHER SWITCH AND SPIRAL CABLE**
 - (a) Install the spiral cable.
 - (b) Push into the light control switch and headlight dimmer switch until the claw is latched.
 - (c) Employ the same manner described above to the wiper and washer switch.
 - (d) Connect the airbag connector to the spiral cable.
 - (e) Connect the 3 connectors to the spiral cable, light control switch and headlight dimmer switch and wiper and washer switch.

10. INSTALL COLUMN UPPER AND LOWER COVERS

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

11. INSTALL INSTRUMENT CLUSTER FINISH PANEL

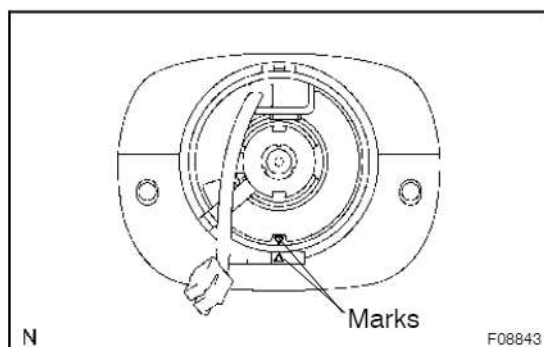
Install the instrument cluster finish panel with the 2 screws.

12. INSTALL INSTRUMENT FINISH PANEL

Install the instrument finish panel with the 2 bolts.

13. INSTALL LOWER NO. 1 INSTRUMENT FINISH PANEL

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



14. 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.
- (c) Then rotate the cable clockwise about 2.5 turns to align the marks.

HINT:

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

15. INSTALL STEERING WHEEL

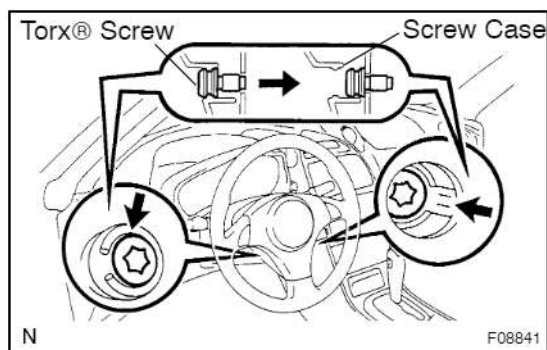
- (a) Align the matchmarks on the steering wheel and main shaft assembly.
- (b) Install the steering wheel set nut.
Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)
- (c) Connect the connector.

16. 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 with 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 that they are not pinched between other parts.**

- (a) Connect the airbag connector.



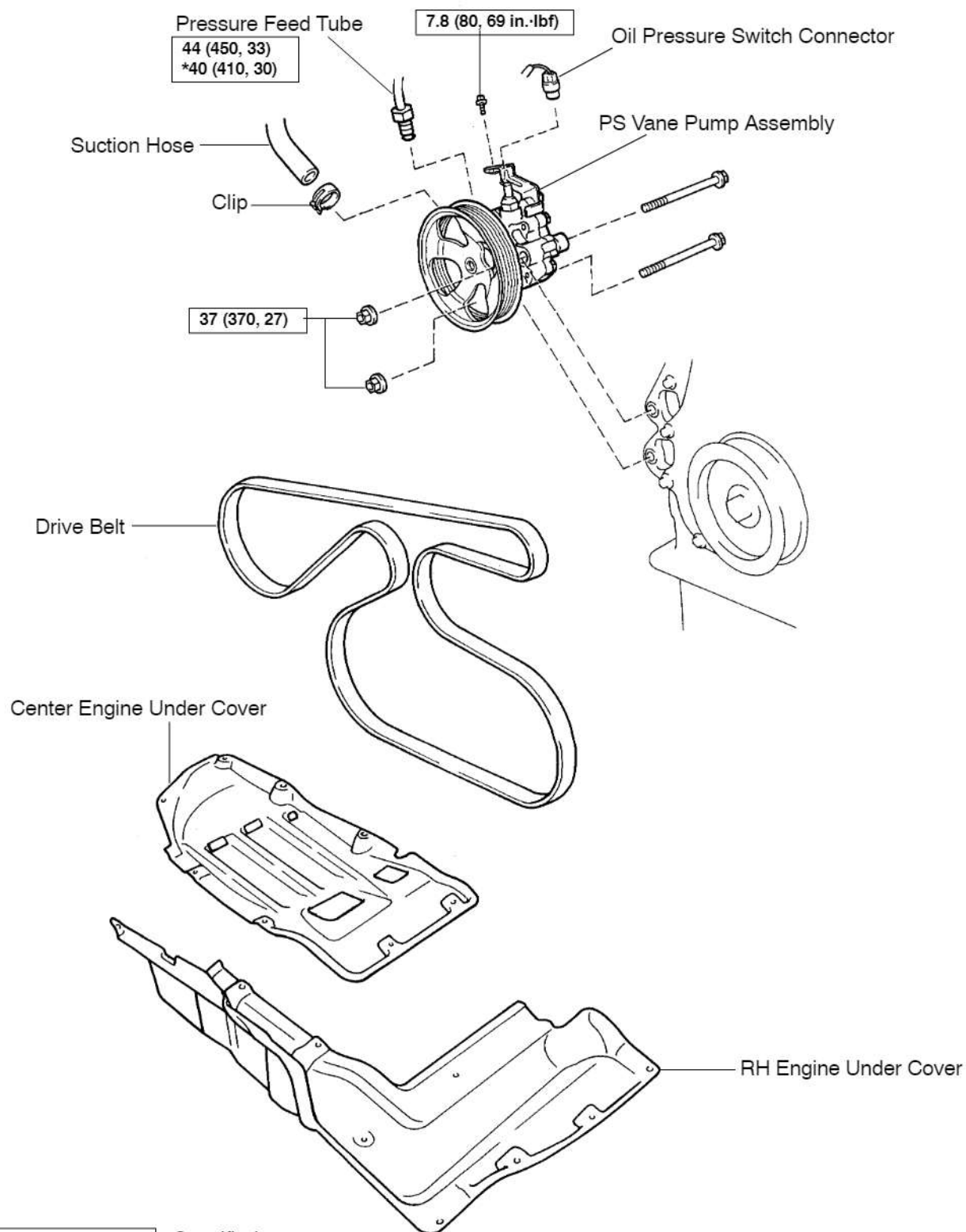
- (b) Install the steering wheel pad after confirming that the circumference groove of the torx® screws is caught on the screw case.
- (c) Using a torx® socket wrench, torque the 2 screws.

Torque: 8.8 N·m (90 kgf·cm, 78 in·lbf)

17. CHECK STEERING WHEEL CENTER POINT

POWER STEERING VANE PUMP COMPONENTS

SR0Y0-08

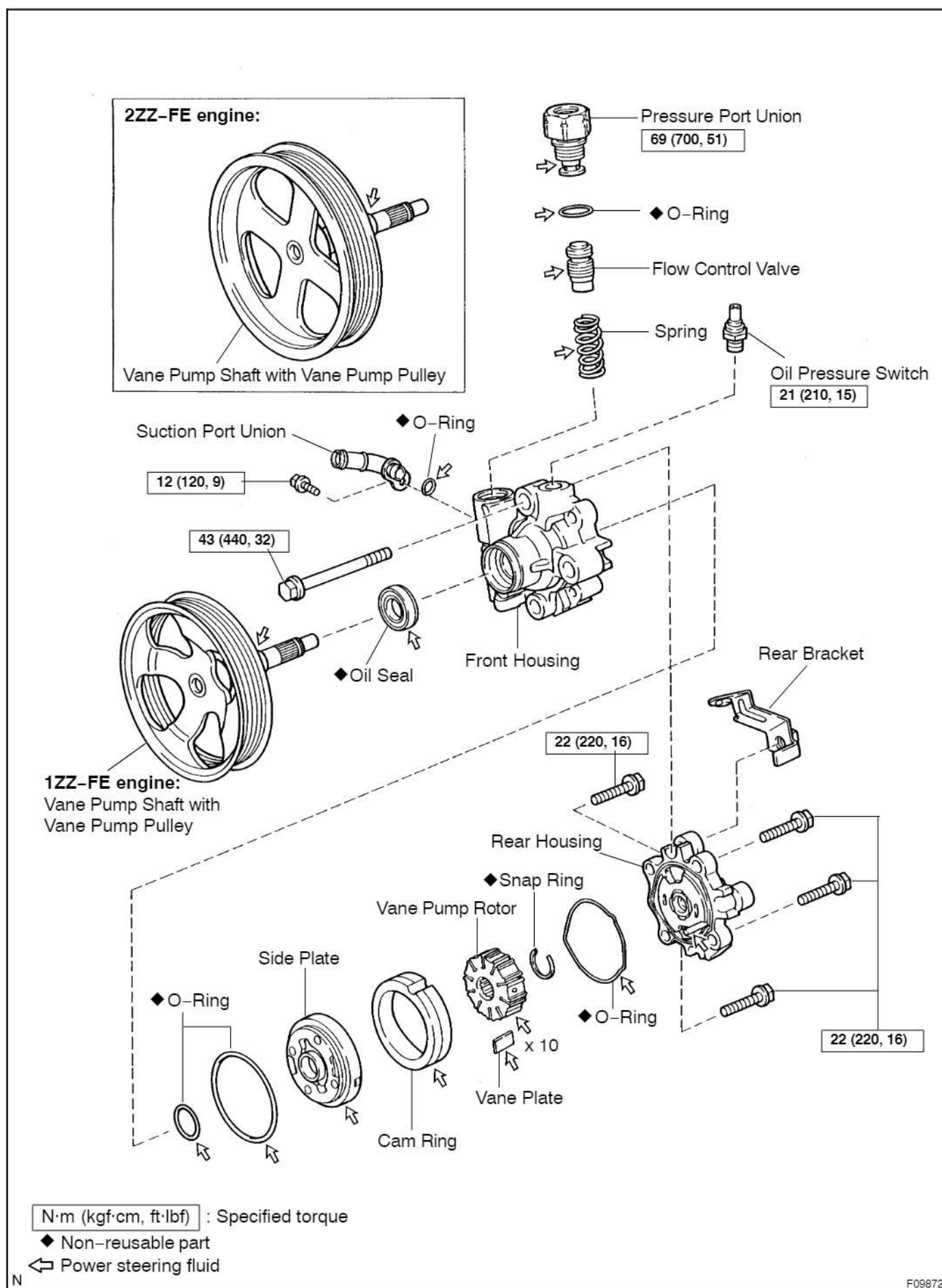


N·m (kgf·cm, ft·lbf) : Specified torque

* For use with SST

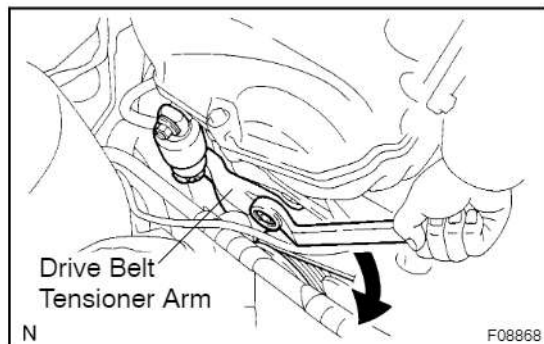
N

F08867



REMOVAL

1. REMOVE RH AND CENTER ENGINE UNDER COVERS



2. REMOVE DRIVE BELT

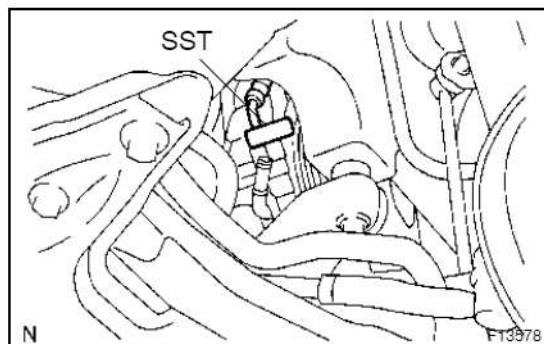
Loosen the drive belt tension by turning the drive belt tensioner arm clockwise, and remove the drive belt.

3. DISCONNECT SUCTION HOSE

Remove the clip and disconnect the suction hose.

NOTICE:

Take care not to spill fluid on the drive belt.



4. DISCONNECT PRESSURE FEED TUBE

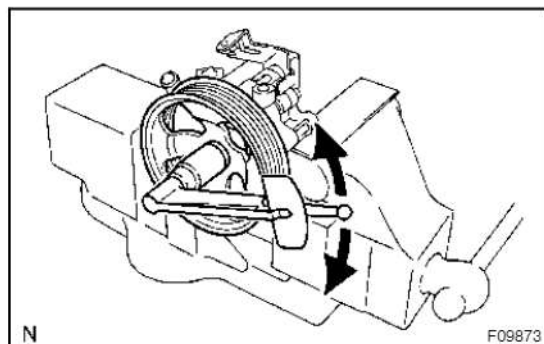
(a) Using SST, disconnect the pressure feed tube.
SST 09023-38401

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

5. DISCONNECT OIL PRESSURE SWITCH CONNECTOR

6. REMOVE PS VANE PUMP ASSEMBLY

Remove the 2 pump assembly set bolts, nuts and PS vane pump assembly.



DISASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. MEASURE PS VANE PUMP ROTATING TORQUE

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

Rotating torque:

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

2. REMOVE SUCTION PORT UNION

- (a) Remove the bolt and suction port union.
- (b) Remove the O-ring from the suction port union.

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

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

4. REMOVE OIL PRESSURE SWITCH

NOTICE:

Be careful not to drop the oil pressure switch.

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

5. REMOVE REAR HOUSING

- (a) Remove the bolt and rear bracket.
- (b) Remove the 4 bolts and rear housing.
- (c) Remove the O-ring from the rear housing.

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

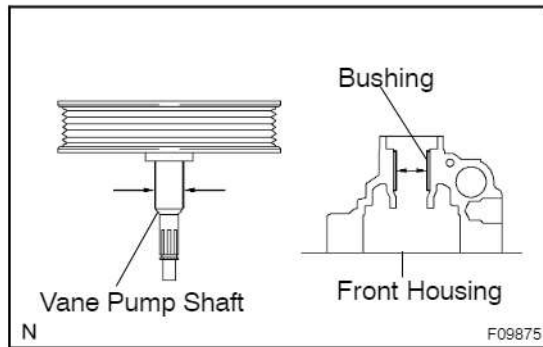
- (a) Remove the cam ring and 10 vane plates.

NOTICE:

Take care not to drop the vane plate.

- (b) Using a screwdriver, remove the snap ring, vane pump rotor and side plate.
- (c) Remove the 2 O-rings from the side plate.

7. REMOVE VANE PUMP SHAFT WITH VANE PUMP PULLEY



INSPECTION

1. MEASURE OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND BUSHING

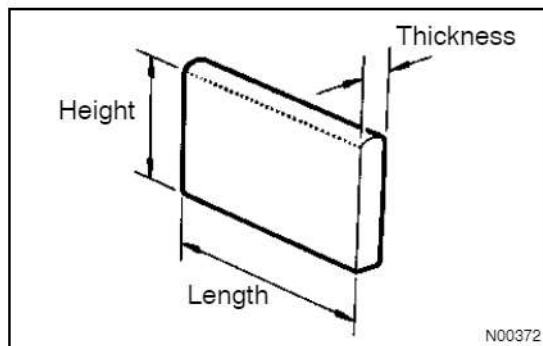
Using a micrometer and a caliper gauge, measure the oil clearance.

Standard clearance:

0.021 – 0.043 mm (0.0008 – 0.0017 in.)

Maximum clearance: 0.07 mm (0.0028 in.)

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



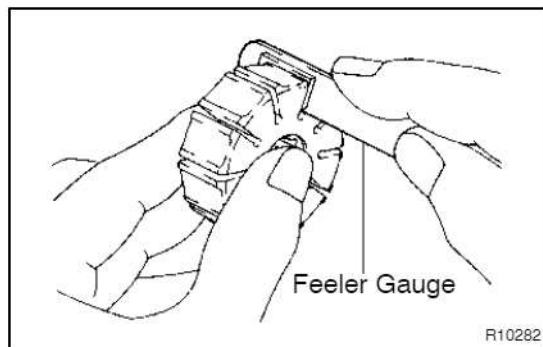
2. INSPECT VANE PUMP ROTOR AND VANE PLATES

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

Minimum height: 7.6 mm (0.299 in.)

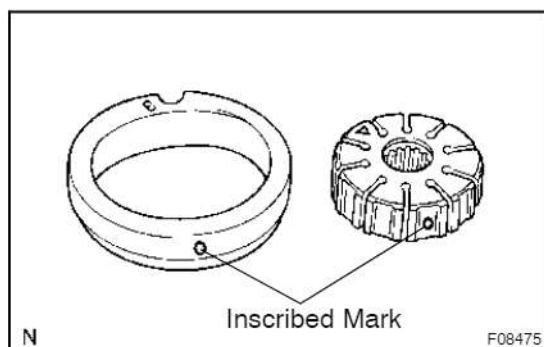
Minimum thickness: 1.405 mm (0.0553 in.)

Minimum length: 11.993 mm (0.4722 in.)



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

Maximum clearance: 0.03 mm (0.0012 in.)



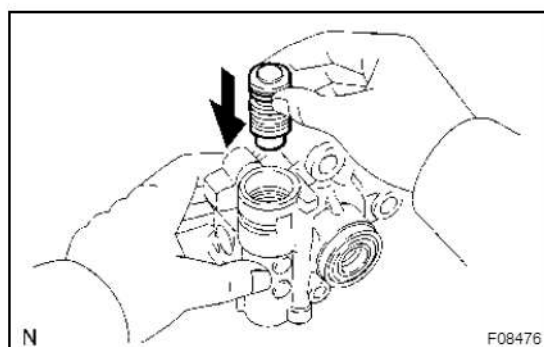
If it is more than the maximum, replace the vane plate and/or vane pump rotor with the one having the same mark stamped on the cam ring.

Inscribed mark: 0, 1, 2, 3, or 4

HINT:

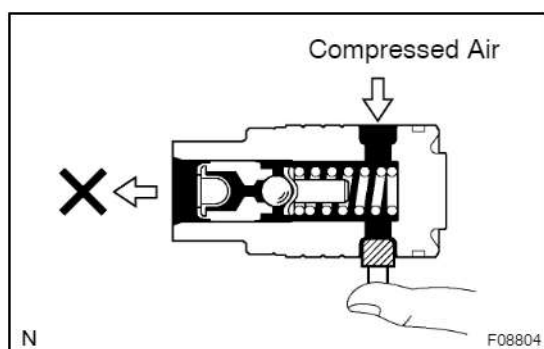
There are 5 vane plate lengths corresponding to the following vane pump rotor and cam ring marks:

Vane pump rotor and cam ring mark	Vane plate part number	Vane plate length mm (in.)
0	44345 - 32100	12.001 - 12.003 (0.47248 - 0.47256)
1	44345 - 32110	11.999 - 12.001 (0.47240 - 0.47248)
2	44345 - 32120	11.997 - 11.999 (0.47232 - 0.47240)
3	44345 - 32130	11.995 - 11.997 (0.47224 - 0.47232)
4	44345 - 32140	11.993 - 11.995 (0.47216 - 0.47224)

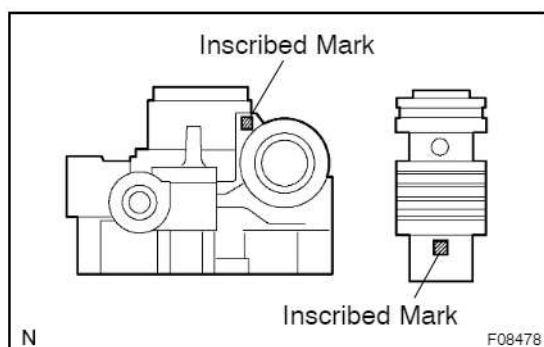


3. INSPECT FLOW CONTROL VALVE

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

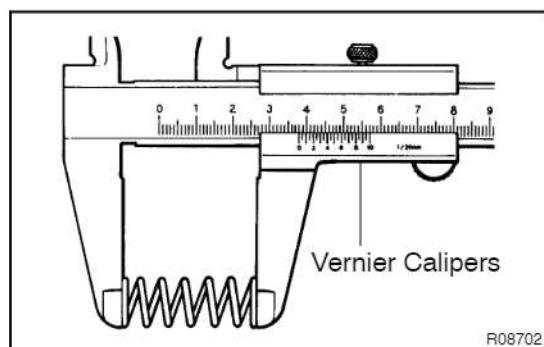


- (b) Check the flow control valve for leakage. Close one of the holes and apply compressed air of 392 - 490 kPa (4 - 5 kgf/cm², 57 - 71 psi) into the opposite side hole, and confirm that air does not come out from the end hole.



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

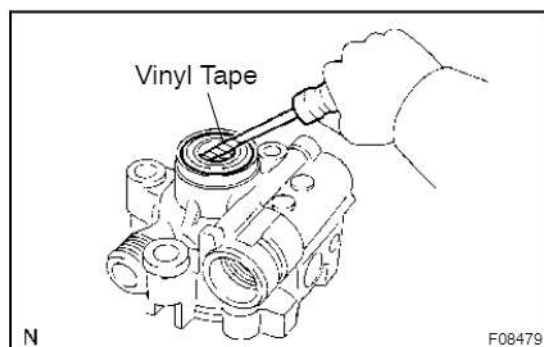


4. INSPECT SPRING

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

Minimum free length: 35.8 mm (1.409 in.)

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



REPLACEMENT

NOTICE:

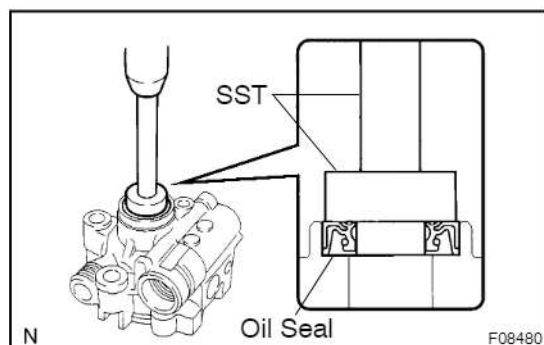
When using a vise, do not overtighten it.

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 bushing of 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:

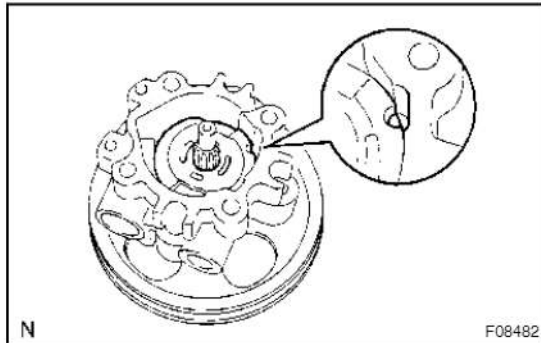
Make sure that the oil seal is installed facing in the correct direction.

REASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. COAT PARTS INDICATED BY ARROWS WITH POWER STEERING FLUID (See page SR-24)
2. INSTALL VANE PUMP SHAFT WITH VANE PUMP PULLEY

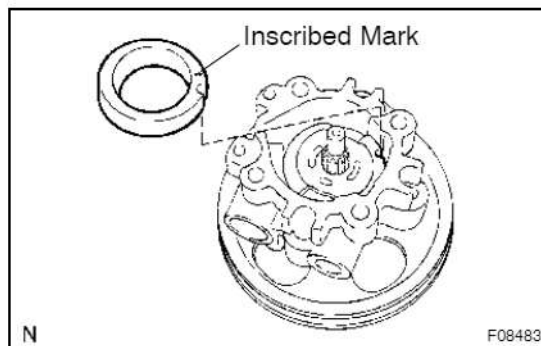


3. INSTALL SIDE PLATE

- (a) Coat 2 new O-rings with power steering fluid, and install them to the side plate.
- (b) Align the dent of the side plate with the dent of the front housing, and install the side plate.

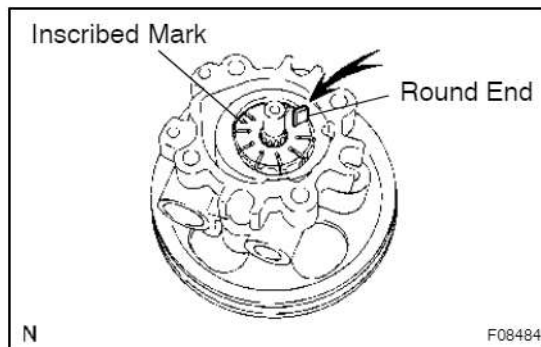
NOTICE:

Make sure that the side plate is installed facing in the correct direction.



4. INSTALL CAM RING

Align the dent of the cam ring with the dent of the side plate, 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 REAR HOUSING

- (a) Coat a new O-ring with power steering fluid, and install it to the rear housing.
- (b) Align the straight pin of the rear housing with the dents of the cam ring, side plate and front housing, and install the rear housing with the 4 bolts.

Torque: 22 N·m (220 kgf·cm, 16 ft·lbf)

- (c) Install the rear bracket with the bolt.

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

8. INSTALL OIL PRESSURE SWITCH

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

9. 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-24).
- (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: 69 N·m (700 kgf·cm, 51 ft·lbf)

10. 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 the bolt.

Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

**11. MEASURE PS VANE PUMP ROTATING TORQUE
(See page SR-27)**

INSTALLATION

1. INSTALL PS VANE PUMP ASSEMBLY

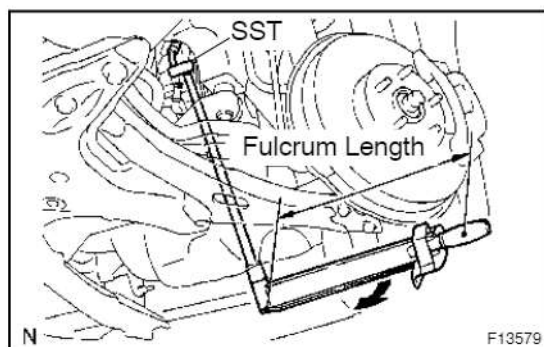
Install the PS vane pump assembly with the 2 pump assembly set bolts and nuts.

Torque: 37 N·m (370 kgf·cm, 27 ft·lbf)

2. CONNECT OIL PRESSURE SWITCH CONNECTOR

NOTICE:

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



3. CONNECT PRESSURE FEED TUBE

- (a) Connect the pressure feed tube clamp with the bolt.

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

- (b) Using SST, connect the pressure feed tube.

SST 09023-38401

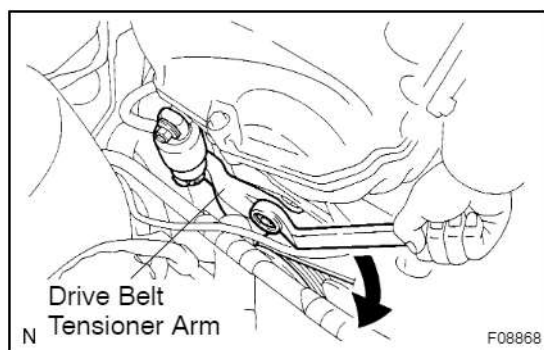
Torque: 40 N·m (410 kgf·cm, 30 ft·lbf)

HINT:

- Use a torque wrench with a fulcrum length of 345 mm (11.81 in).
- This torque value is effective in case that SST is parallel to a torque wrench.

4. CONNECT SUCTION HOSE

Connect the suction hose with the clip.



5. INSTALL DRIVE BELT

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

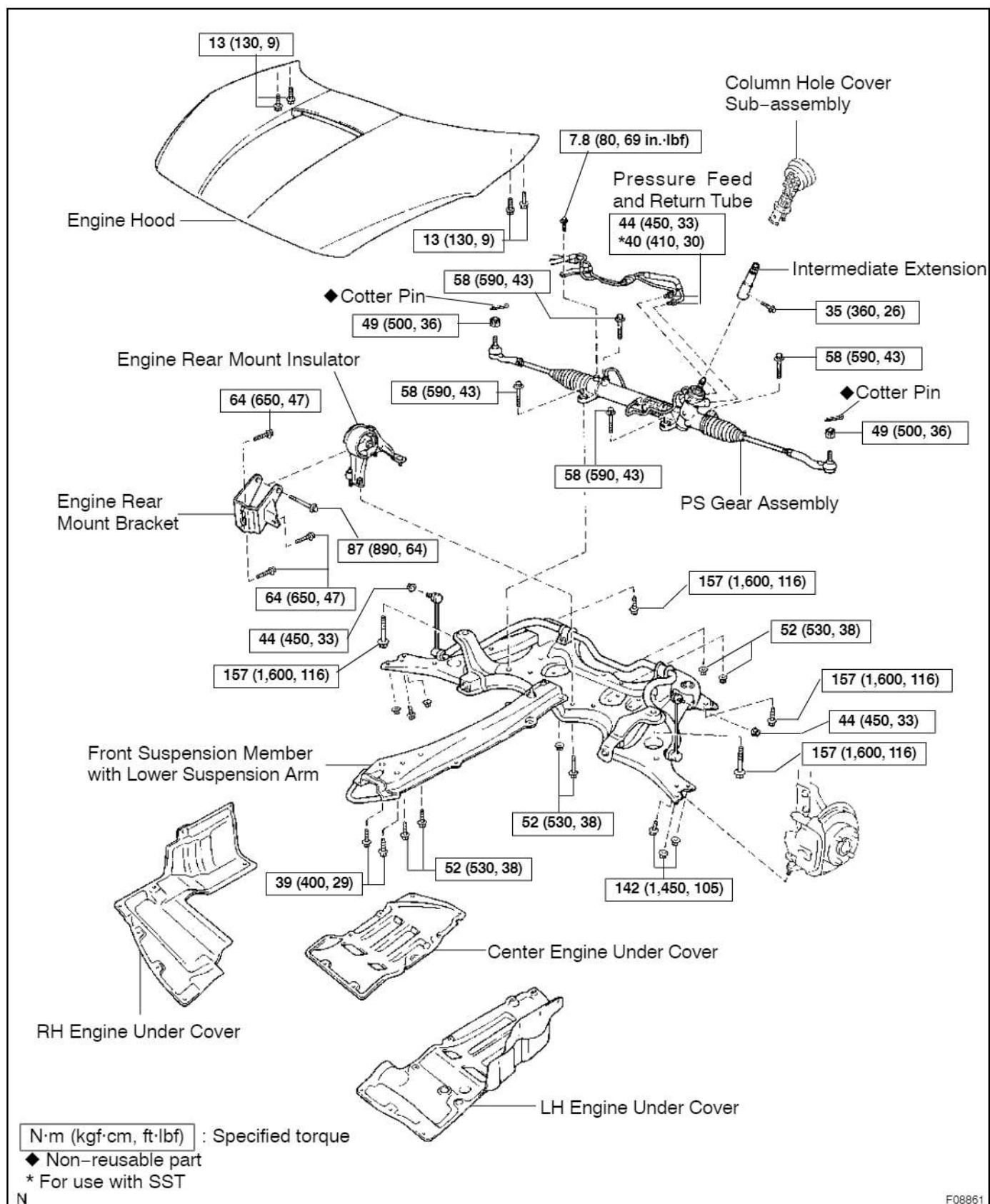
6. INSTALL RH AND CENTER ENGINE UNDER COVERS

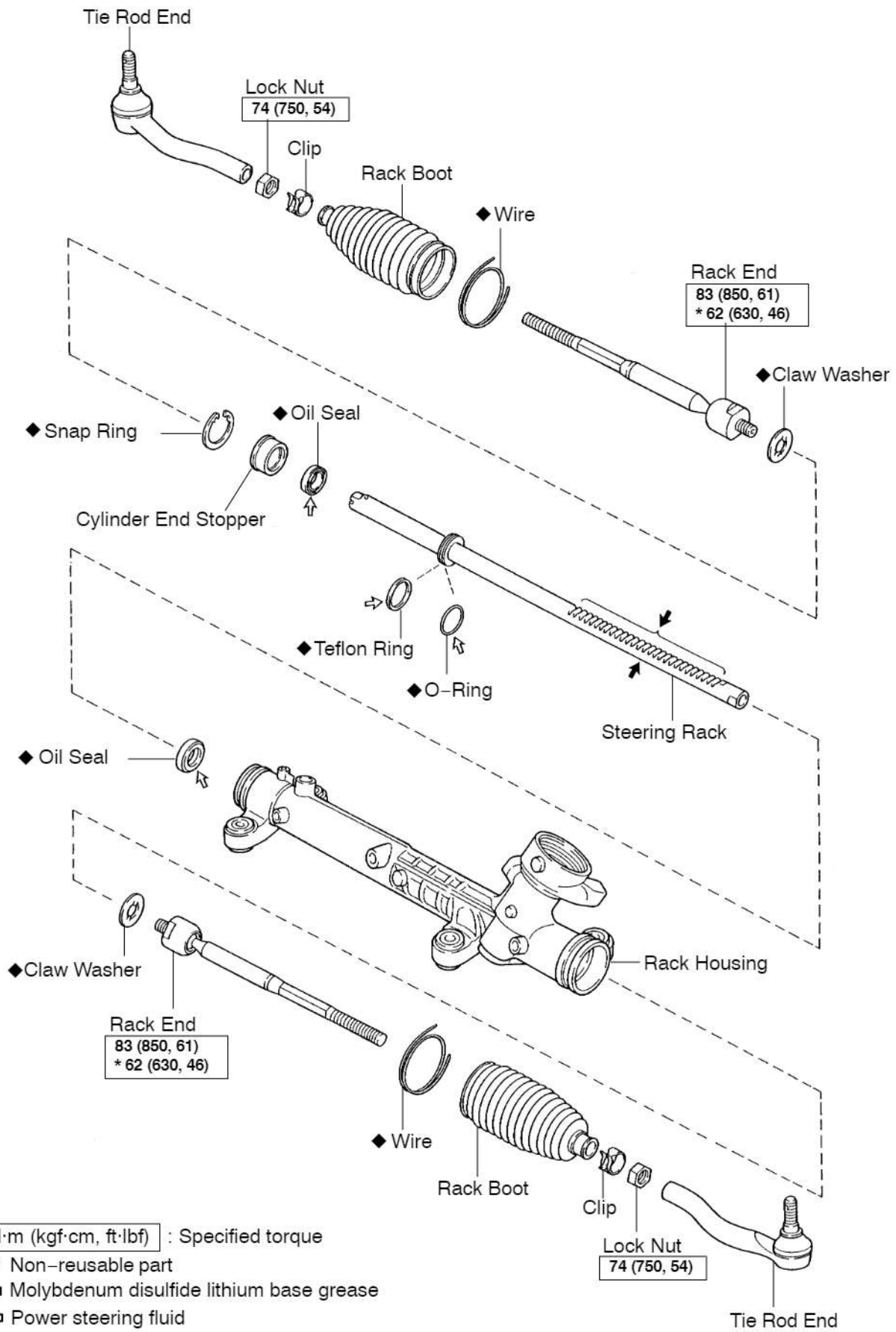
7. BLEED POWER STEERING SYSTEM

(See page SR-4)

POWER STEERING GEAR COMPONENTS

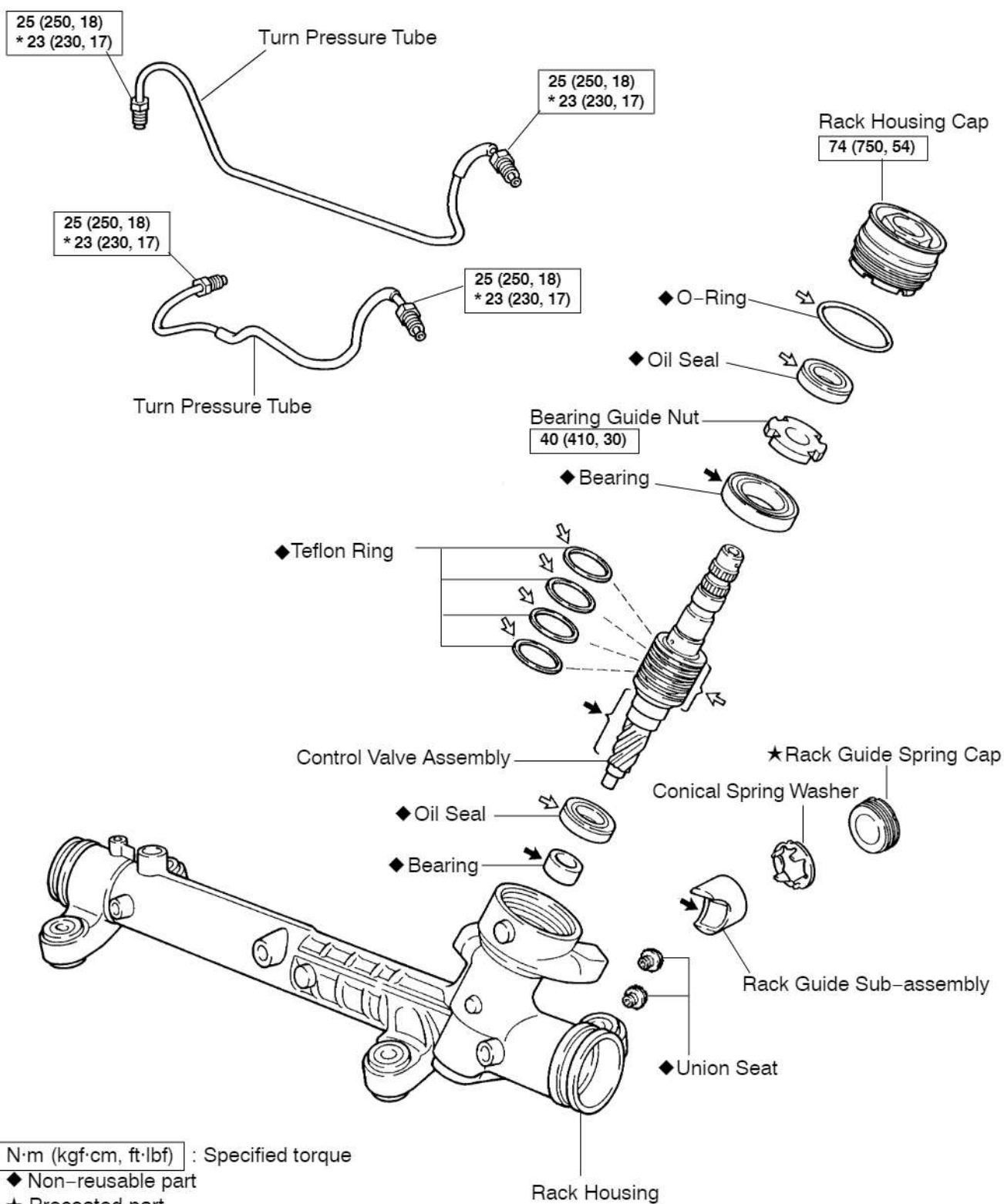
SR0YX-04





N

F09877



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

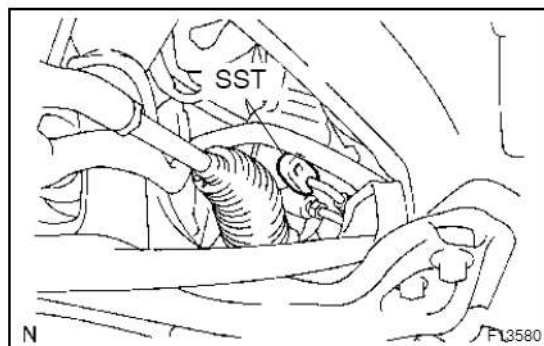
F10504

REMOVAL

NOTICE:

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

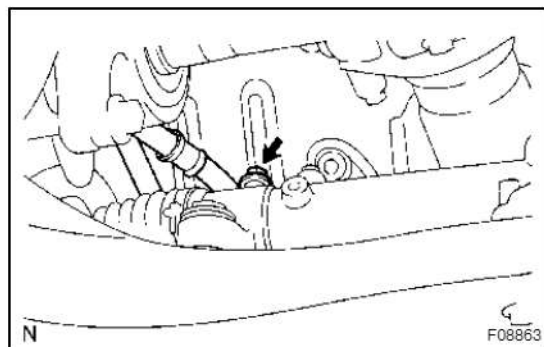
1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD
2. REMOVE STEERING WHEEL PAD (See page SR-13)
3. REMOVE STEERING WHEEL (See page SR-13)
4. REMOVE RH, CENTER AND LH ENGINE UNDER COVERS
5. DISCONNECT RH AND LH TIE ROD ENDS (See page SA-13)
6. DISCONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY (See page SR-13)



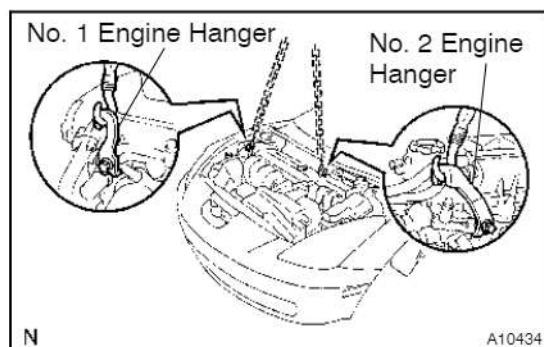
7. DISCONNECT PRESSURE FEED AND RETURN TUBES

Using SST, disconnect the pressure feed and return tubes.

SST 09023-38401



8. DISCONNECT TUBE CLAMP
Remove the bolt and disconnect the tube clamp.
9. DISCONNECT COLUMN HOLE COVER SUB-ASSEMBLY
10. REMOVE ENGINE HOOD (See page BO-9)



11. ATTACH ENGINE SLING DEVICE TO ENGINE HANGERS

- (a) Remove the 4 bolts and No. 2 cylinder head cover.
- (b) Disconnect the PCV hoses from the cylinder head cover.
- (c) Install the No. 1 and No. 2 engine hangers in the correct direction.

1ZZ-FE Engine:

Part No.:

No. 1 engine hanger: 12281-22021

No. 2 engine hanger: 12281-15040 or 12281-15050

Bolt: 91512-B1016

Torque: 38 N·m (388 kgf·cm, 28 ft·lbf)

2ZZ-FE Engine:

Part No.:

No. 1 engine hanger: 12281-88600

No. 2 engine hanger: 12282-88600

Bolt: 91512-61020

Torque: 38 N·m (388 kgf·cm, 28 ft·lbf)

- (d) Attach the engine sling device to the engine hangers.

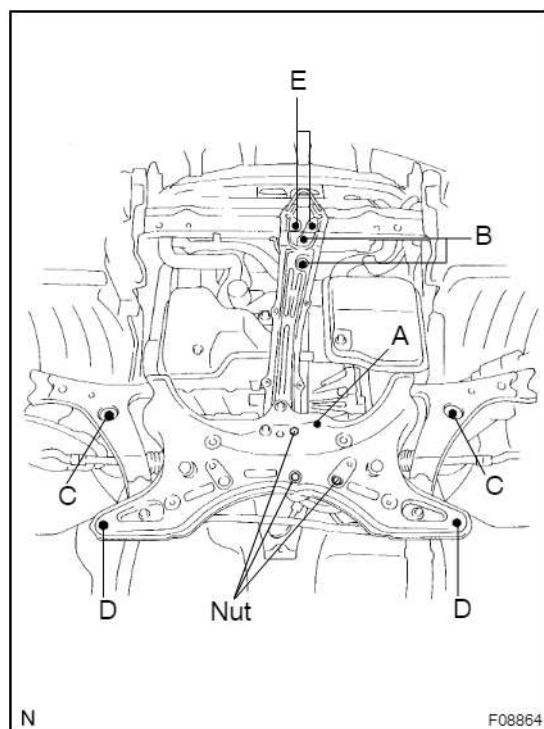
CAUTION:

Do not attempt to hang the engine by hooking the chain to any other part.

12. DISCONNECT LOWER BALL JOINT FROM LOWER SUSPENSION ARM (See page SA-43)

13. DISCONNECT STABILIZER BAR

- (a) Remove the nut and disconnect the stabilizer bar.
- (b) Employ the same manner described above to the other side.



14. DISCONNECT ENGINE REAR MOUNT INSULATOR AND FRONT SUSPENSION MEMBER

Remove the bolt (bolt A) and 3 nuts, and disconnect the engine rear mount insulator and front suspension member.

15. DISCONNECT ENGINE FRONT MOUNT INSULATOR AND FRONT SUSPENSION MEMBER

Remove the 2 bolts (bolt B) and disconnect the engine front mount insulator and front suspension member.

16. SUPPORT FRONT SUSPENSION MEMBER WITH LOWER SUSPENSION ARM

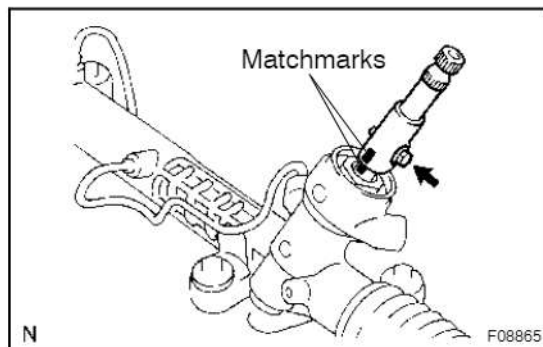
Using a transmission jack, support the front suspension member with lower suspension arm.

17. REMOVE FRONT SUSPENSION MEMBER WITH LOWER SUSPENSION ARM AND PS GEAR ASSEMBLY

Remove the 6 bolts (bolt C, D and E) and front suspension member with lower suspension arm and PS gear assembly.

18. REMOVE PS GEAR ASSEMBLY

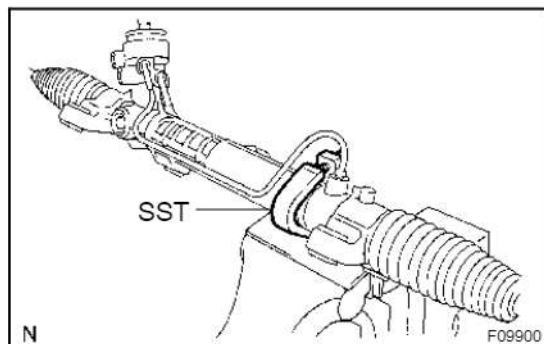
- (a) Remove the 4 bolts and PS gear assembly from the front suspension member.



- (b) Place matchmarks on the intermediate extension and control valve shaft.
- (c) Remove the bolt and intermediate extension.

19. REMOVE ENGINE REAR MOUNT INSULATOR AND ENGINE REAR MOUNT BRACKET

- (a) Remove the through bolt and engine rear mount insulator.
- (b) Remove the 3 bolts and engine rear mount bracket.



DISASSEMBLY

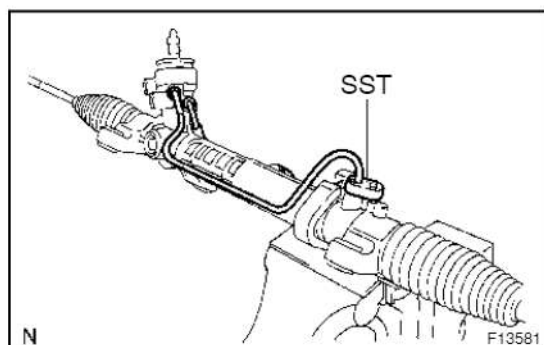
NOTICE:

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.

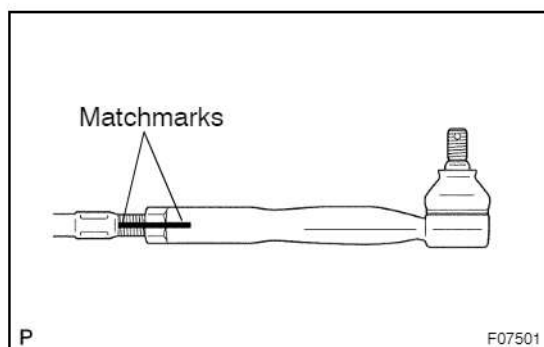
SST 09612-00012



2. REMOVE 2 TURN PRESSURE TUBES

Using SST, remove the 2 turn pressure tubes.

SST 09023-38201



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

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

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

- Using needle nose pliers, loosen the wire.
- Remove the clip, wire and rack boot.

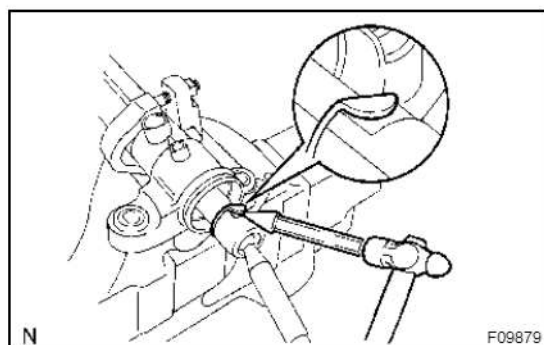
NOTICE:

Be careful not to damage the boot.

HINT:

Mark the RH and LH rack boots.

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

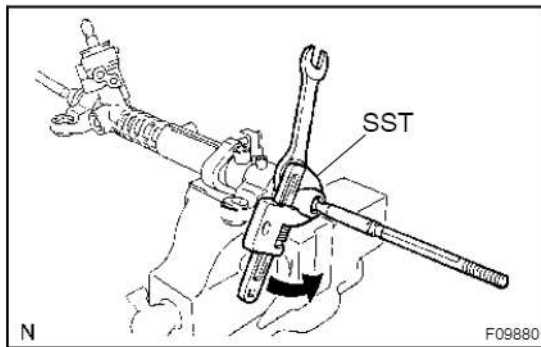


5. REMOVE RH AND LH RACK ENDS AND CLAW WASHERS

- Using a chisel and a hammer, unstake the washer.

NOTICE:

Avoid any impact on the steering rack.



- (b) Using a spanner, 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.

HINT:

Mark the RH and LH rack ends.

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

6. REMOVE RACK GUIDE SPRING CAP, CONICAL SPRING WASHER AND RACK GUIDE SUB-ASSEMBLY

7. REMOVE RACK HOUSING CAP

- (a) Remove the rack housing cap.
(b) Remove the O-ring from the rack housing cap.

8. REMOVE CONTROL VALVE ASSEMBLY

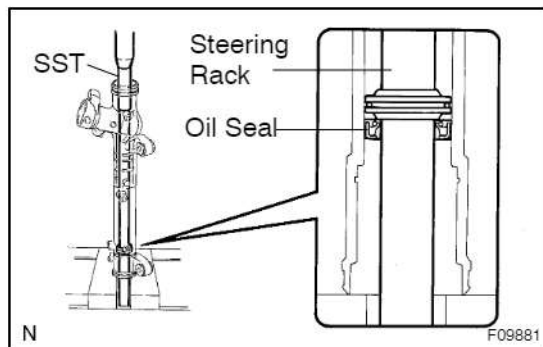
Pull out the control valve assembly.

NOTICE:

Be careful not to damage the oil seal lip.

9. REMOVE CYLINDER END STOPPER

- (a) Using snap ring pliers, remove the snap ring.
(b) Pull out the cylinder end stopper.



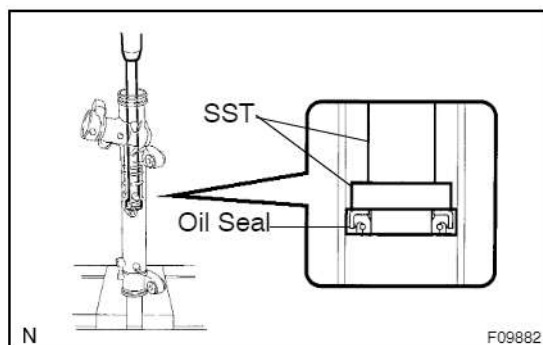
10. REMOVE STEERING RACK AND OIL SEAL

Using SST, press out the steering rack and oil seal.

SST 09950-70010 (09951-07200)

NOTICE:

Take care not to drop the steering rack.



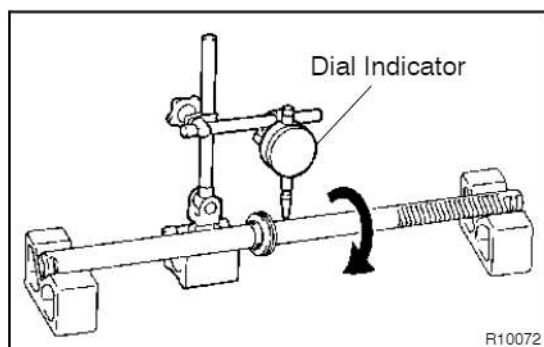
11. REMOVE OIL SEAL

Using SST, press out the oil seal.

SST 09950-60010 (09951-00280),
09950-70010 (09951-07360)

NOTICE:

Do not damage the rack housing.



INSPECTION

NOTICE:

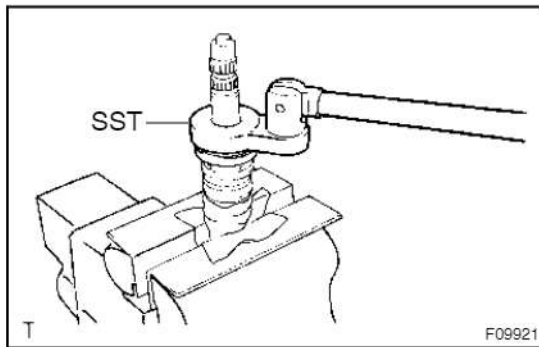
When using a vise, do not overtighten it.

INSPECT STEERING RACK

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

Maximum runout: 0.1 mm (0.004 in.)

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



REPLACEMENT

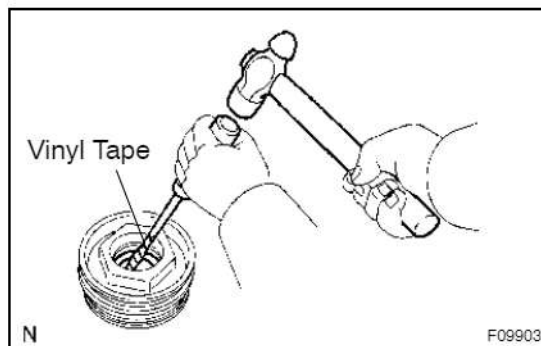
NOTICE:

When using a vise, do not overtighten it.

1. IF NECESSARY, REPLACE BEARING

- Using SST, remove the bearing guide nut and bearing.
SST 09617-35020
- Coat a new bearing with molybdenum disulfide lithium base grease.
- Install the bearing and using SST, install the bearing guide nut.
SST 09617-35020

Torque: 40 N·m (410 kgf·cm, 30 ft·lbf)

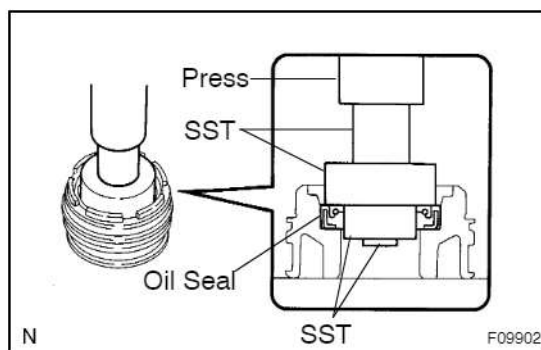


2. IF NECESSARY, REPLACE OIL SEAL

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

NOTICE:

Be careful not to damage the rack housing cap.



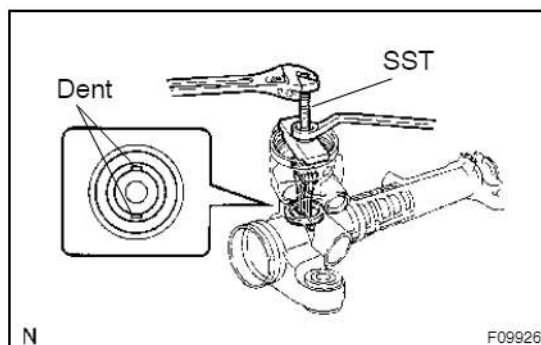
- Coat a new oil seal lip with power steering fluid.

- Using SST, press in the oil seal.

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

NOTICE:

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



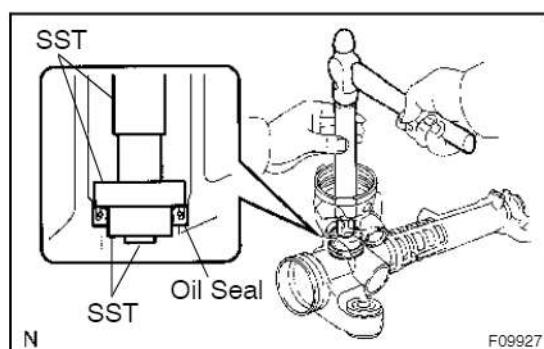
3. IF NECESSARY, REPLACE OIL SEAL

- Using SST, remove the oil seal.
SST 09612-20010

NOTICE:

Be careful not to damage the rack housing.

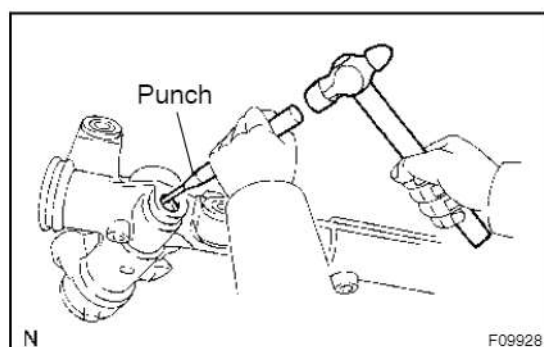
- Coat a new oil seal lip with power steering fluid.



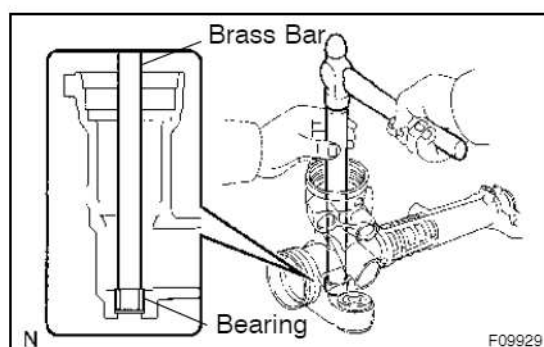
- (c) Using SST and a hammer, tap in the oil seal.
 SST 09950-60010 (09951-00240, 09951-00350, 09952-06010), 09950-70010 (09951-07150)

NOTICE:

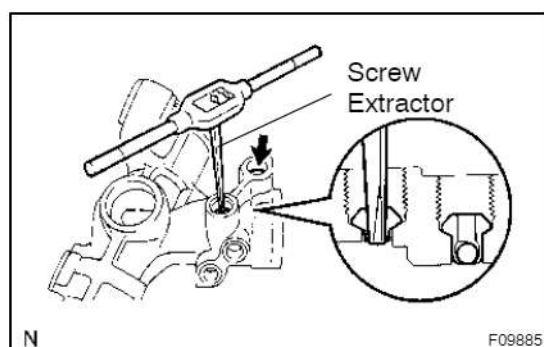
Make sure that the oil seal is installed facing in the correct direction.

**4. IF NECESSARY, REPLACE BEARING**

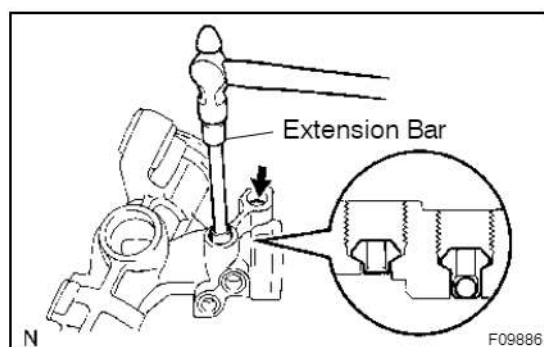
- (a) Using a punch and a hammer, tap out the bearing.
 (b) Coat a new bearing with molybdenum disulfide lithium base grease.



- (c) Using a brass bar and a hammer, tap in the bearing.

**5. IF NECESSARY, REPLACE 2 UNION SEATS**

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

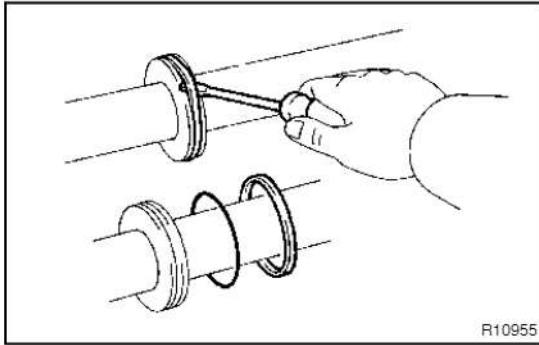


- (b) Using a hammer and an extension bar, lightly tap in a new union seat.

NOTICE:

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

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



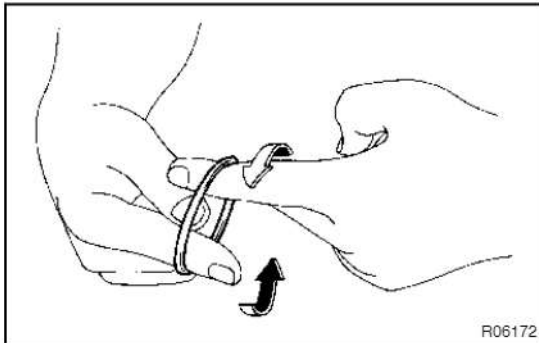
6. IF NECESSARY, REPLACE TEFLON RING AND O-RING

- (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.

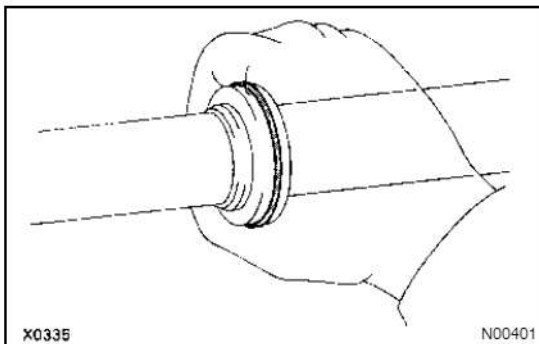
- (b) Coat a new O-ring with power steering fluid and install it to the steering rack.



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

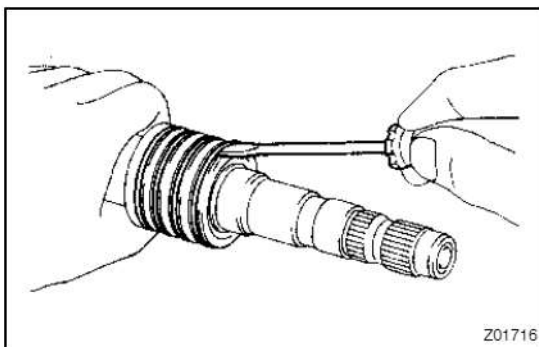
NOTICE:

Be careful not to overexpand the teflon 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.



7. 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 rings.

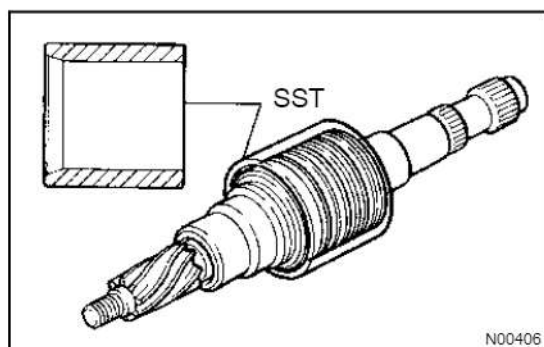
- (b) Expand 4 new teflon rings with your fingers.

NOTICE:

Be careful not to overexpand the teflon ring.

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

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



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

NOTICE:

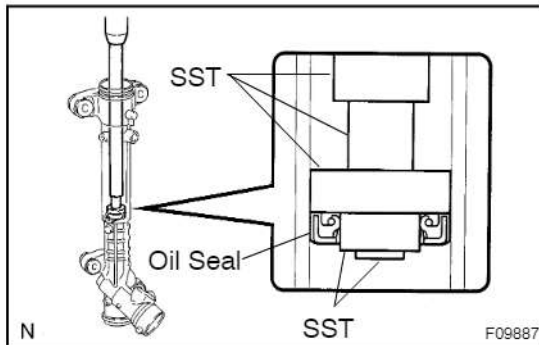
Be careful not to damage the teflon rings.

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-35)



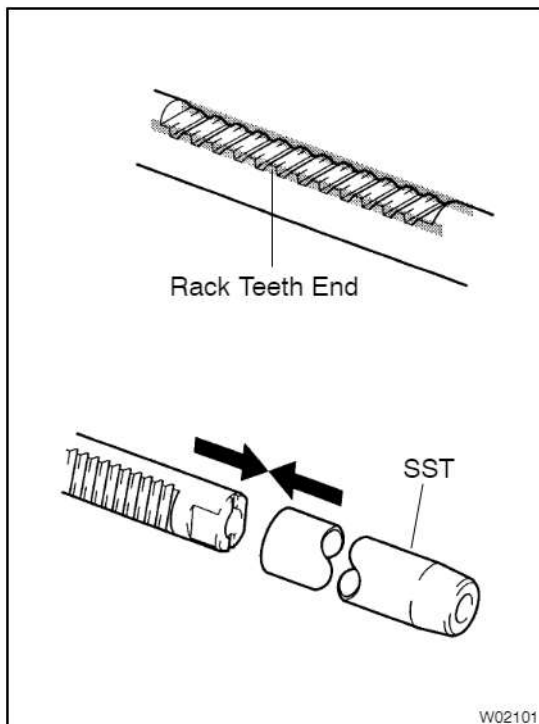
2. INSTALL OIL SEAL

- (a) Coat a new oil seal lip with power steering fluid.
- (b) Install the oil seal to SST, and press them into the rack housing.

SST 09950-60010 (09951-00240, 09951-00400, 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.



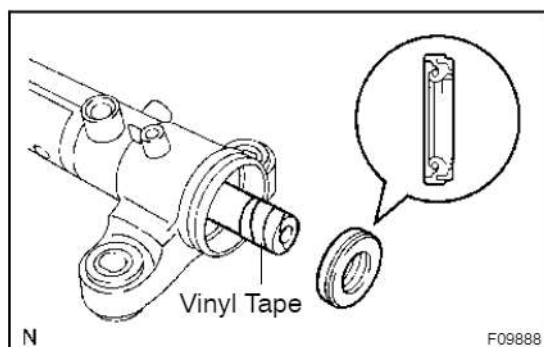
3. INSTALL STEERING RACK

- (a) Install SST to the rack.
SST 09631-20051

HINT:

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

- (b) Coat SST with power steering fluid.
- (c) Install the steering rack into the rack housing.
- (d) Remove the SST.
SST 09631-20051

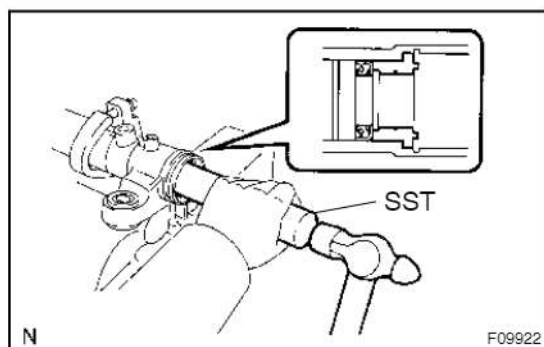


4. INSTALL OIL SEAL

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

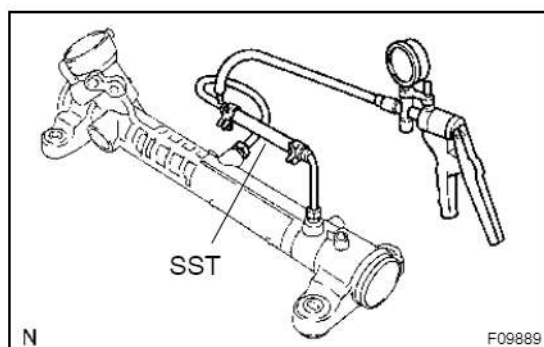
NOTICE:

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



5. INSTALL CYLINDER END STOPPER

- Using SST and a hammer, drive in the cylinder end stopper.
SST 09612-22011
- Using snap ring pliers, install a new snap ring to the rack housing.



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

7. INSTALL CONTROL VALVE ASSEMBLY

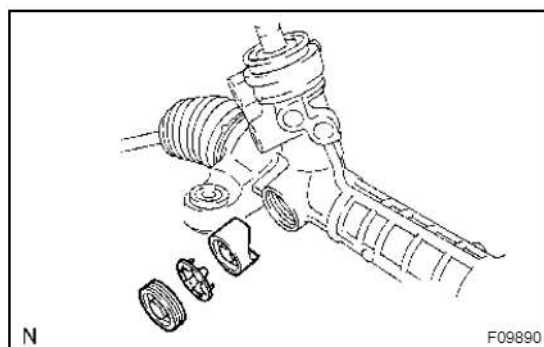
NOTICE:

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

8. INSTALL RACK HOUSING CAP

- Coat a new O-ring with power steering fluid, and install it to the rack housing cap.
- Install the rack housing cap.

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



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

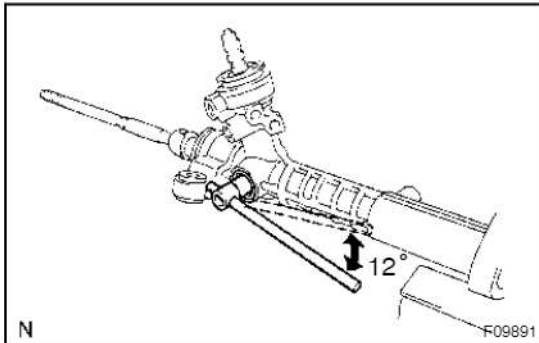
- Install the rack guide sub-assembly and conical spring washer.

- (b) 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**

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



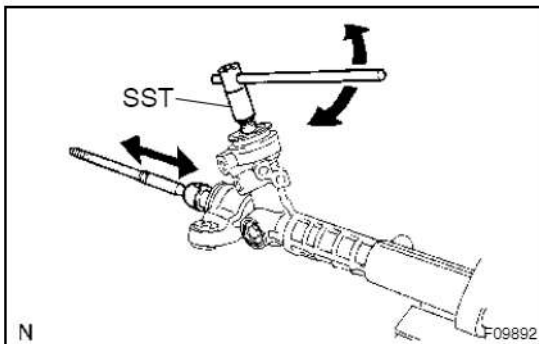
10. ADJUST TOTAL PRELOAD

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

- (b) Torque the rack guide spring cap.

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

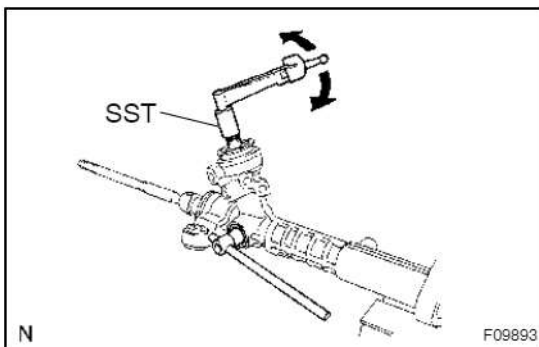
- (c) Return the rack guide spring cap 12°.



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

SST 09616-00011

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

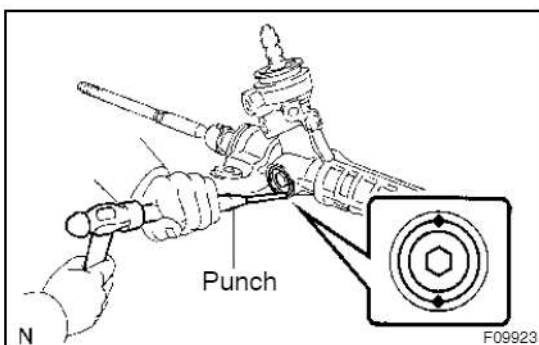


- (f) Using SST and torque wrench, tighten the rack guide spring cap until the preload is within the specification.

SST 09616-00011

Preload (turning):

0.9 - 1.3 N·m (9 - 13 kgf·cm, 8.0 - 11.5 in·lbf)



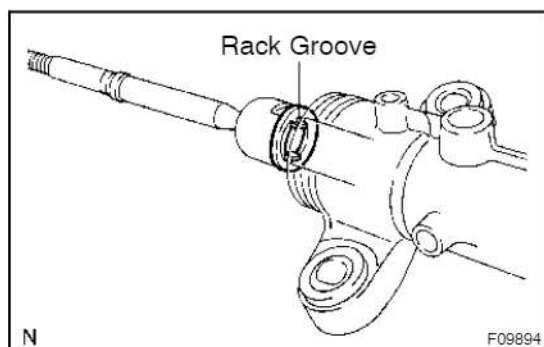
- (g) Using a punch and a hammer, stake 2 parts in opposing positions on the rack guide spring cap.

- (h) Recheck the total preload.

Preload (turning):

0.9 - 1.3 N·m (9 - 13 kgf·cm, 8.0 - 11.5 in·lbf)

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

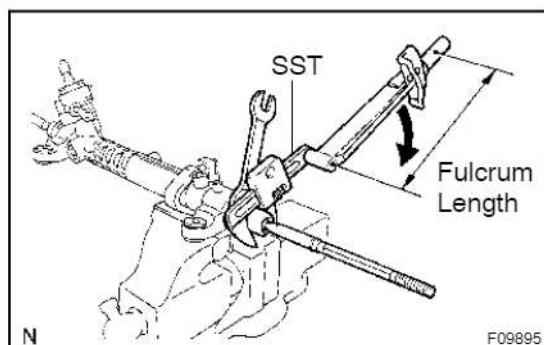


11. INSTALL RH AND LH CLAW WASHERS AND RACK ENDS

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

HINT:

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



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

SST 09922-10010

Torque: 62 N·m (630 kgf·cm, 46 ft·lbf)

NOTICE:

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

HINT:

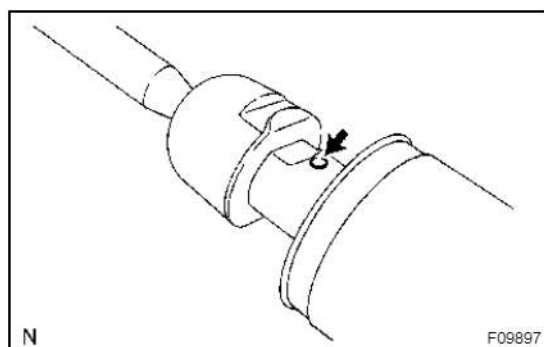
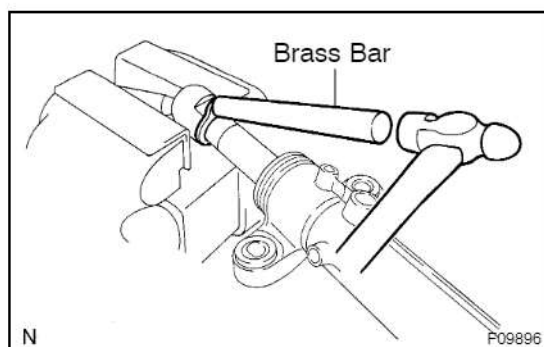
Use a torque wrench with a fulcrum length of 380 mm (14.96 in.).

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

NOTICE:

Avoid any impact on the steering rack.

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



12. INSTALL RH AND LH RACK BOOTS, WIRES AND CLIPS

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

HINT:

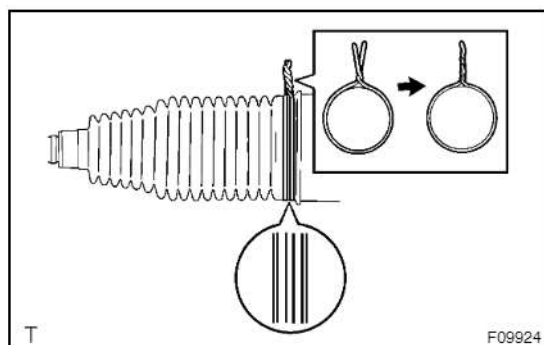
If the hole is clogged, the pressure inside the boot will change after it is assembled and the steering wheel is turned.

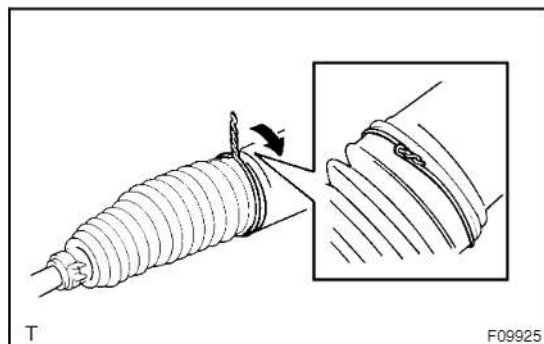
- (b) Install the boot, clip and a new wire.

NOTICE:

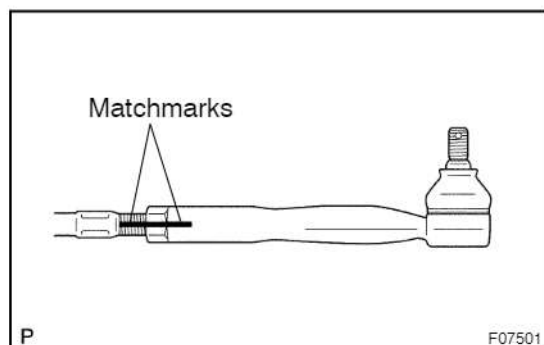
Be careful not to damage or twist the boot.

- (c) After winding and tightening the wire around the circumference of the boot twice, twist it several times, and install it.





- (d) As shown in the illustration, bend the wire to the circular direction to prevent damage to the boot.
- (e) Employ the same manner described above to the other side.

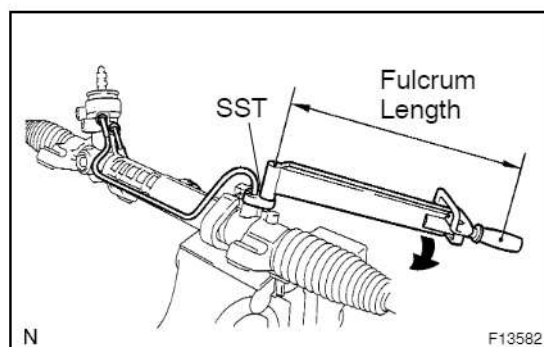


13. INSTALL RH AND LH TIE ROD ENDS AND LOCK NUTS

- (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-5).

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

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



14. INSTALL 2 TURN PRESSURE TUBES

Using SST, install the 2 turn pressure tubes.

SST 09023-38201

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

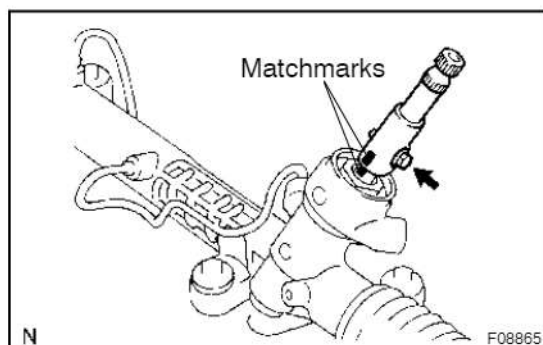
HINT:

- 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.

INSTALLATION

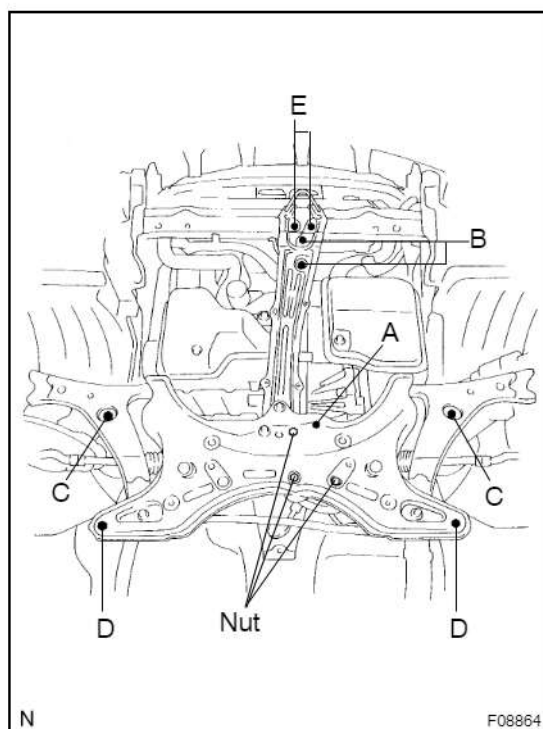
1. INSTALL ENGINE REAR MOUNT INSULATOR AND ENGINE REAR MOUNT BRACKET

- (a) Install the engine rear mount bracket with the 3 bolts.
Torque: 64 N·m (650 kgf·cm, 47 ft·lbf)
- (b) Install the engine rear mount insulator with the through bolt.
Torque: 87 N·m (890 kgf·cm, 64 ft·lbf)



2. INSTALL PS GEAR ASSEMBLY

- (a) Align the matchmarks on the intermediate extension and control valve shaft.
- (b) Install the bolt.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)
- (c) Install the PS gear assembly with the 4 bolts to the front suspension member.
Torque: 58 N·m (590 kgf·cm, 43 ft·lbf)



3. INSTALL FRONT SUSPENSION MEMBER WITH LOWER SUSPENSION ARM AND PS GEAR ASSEMBLY

Install the front suspension member with lower suspension arm and PS gear assembly with the 6 bolts (bolt C, D and E).

Torque:

Bolt C: 157 N·m (1,600 kgf·cm, 116 ft·lbf)

Bolt D: 157 N·m (1,600 kgf·cm, 116 ft·lbf)

Bolt E: 39 N·m (400 kgf·cm, 29 ft·lbf)

4. CONNECT ENGINE FRONT MOUNT INSULATOR AND FRONT SUSPENSION MEMBER

Connect the engine front mount insulator and front suspension member with the 2 bolts (bolt B).

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

5. CONNECT ENGINE REAR MOUNT INSULATOR AND FRONT SUSPENSION MEMBER

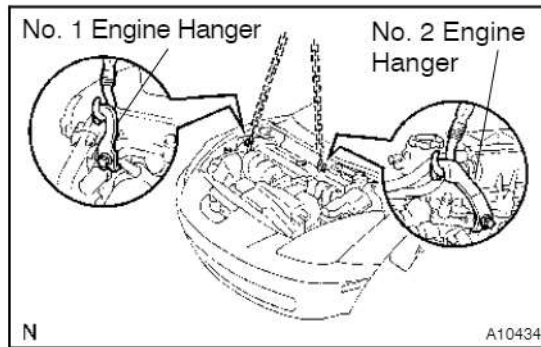
Connect the engine rear mount insulator and front suspension member with the bolt (bolt A) and 3 nuts.

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

6. CONNECT STABILIZER BAR

- (a) Connect the stabilizer bar with the nut.
Torque: 44 N·m (450 kgf·cm, 33 ft·lbf)
- (b) Employ the same manner described above to the other side.

7. CONNECT LOWER BALL JOINT TO LOWER SUSPENSION ARM (See page SA-46)

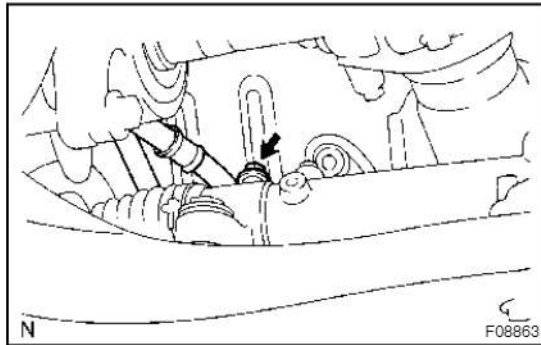


8. DISENGAGE ENGINE SLING DEVICE FROM ENGINE HANGERS

- Disengage the engine sling device from the engine hangers.
- Remove the No. 1 and No. 2 engine hangers.
- Connect the PCV hoses to the cylinder head cover.
- Install the No. 2 cylinder head cover with the 4 bolts.

9. INSTALL ENGINE HOOD (See page BO-9)

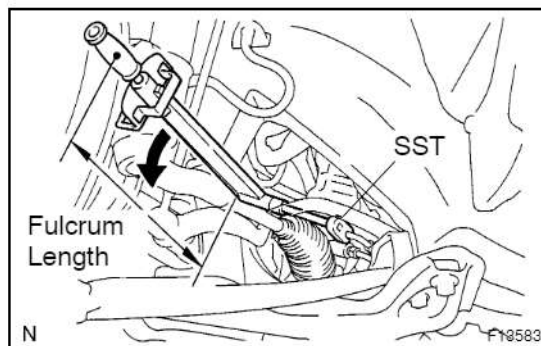
10. CONNECT COLUMN HOLE COVER SUB-ASSEMBLY



11. CONNECT TUBE CLAMP

Connect the tube clamp with the bolt.

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



12. CONNECT PRESSURE FEED AND RETURN TUBES

Using SST, connect the pressure feed and return tubes.

SST 09023-38400

Torque: 40 N·m (410 kgf·cm, 30 ft·lbf)

HINT:

- Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.

13. CONNECT NO. 2 INTERMEDIATE SHAFT ASSEMBLY (See page SR-21)

14. CONNECT RH AND LH TIE ROD ENDS (See page SA-17)

15. INSTALL RH, CENTER AND LH ENGINE UNDER COVERS

16. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

HINT:

Do it with the front of the vehicle jacked up.

17. CENTER SPIRAL CABLE (See page SR-21)

18. INSTALL STEERING WHEEL

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

19. BLEED POWER STEERING SYSTEM (See page SR-4)

- 20. CHECK STEERING WHEEL CENTER POINT
- 21. TORQUE STEERING WHEEL SET NUT
Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)
- 22. INSTALL STEERING WHEEL PAD (See page SR-21)
- 23. CHECK FRONT WHEEL ALIGNMENT
(See page SA-5)