
STEERING

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STEERING SYSTEM

SR0L4-06

PRECAUTION

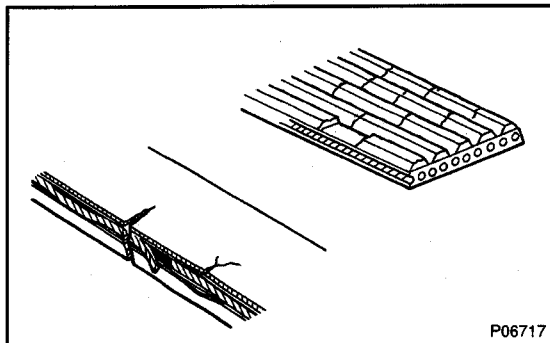
- Care must be taken to replace parts properly because they could affect the performance of the steering system and result in a driving hazard.
- The YARIS VERSO/ECHO VERSO is equipped with SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out 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.

TROUBLESHOOTING

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	1. Tires (Improperly inflated) 2. Power steering fluid level (Low) 3. Drive belt (Loose) 4. Front wheel alignment (Incorrect) 5. Steering system joints (Worn) 6. Suspension arm ball joints (Worn) 7. Steering column (Binding) 8. Power steering vane pump 9. Power steering gear	SA-2 SR-6 SR-3 SA-4 – SA-33 – SR-23 SR-47
Poor return	1. Tires (Improperly inflated) 2. Front wheel alignment (Incorrect) 3. Steering column (Binding) 4. Power steering gear	SA-2 SA-4 – SR-47
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-33 – SA-9 SR-47
Abnormal noise	1. Power steering fluid level (Low) 2. Steering system joints (Worn) 3. Power steering vane pump 4. Power steering gear	SR-6 – SR-23 SR-47



DRIVE BELT INSPECTION

SR00Z-05

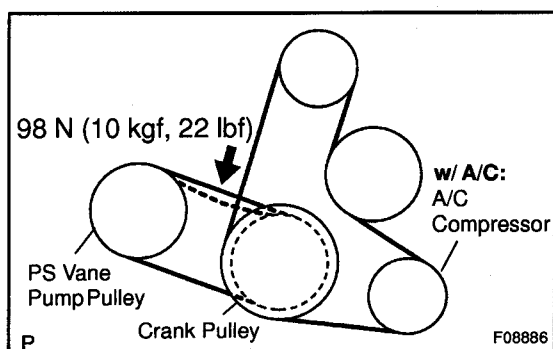
INSPECT DRIVE BELT

- (a) 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 missing chunks from the ribs are found on the belt, it should be replaced.



- (b) Measure the drive belt deflection.

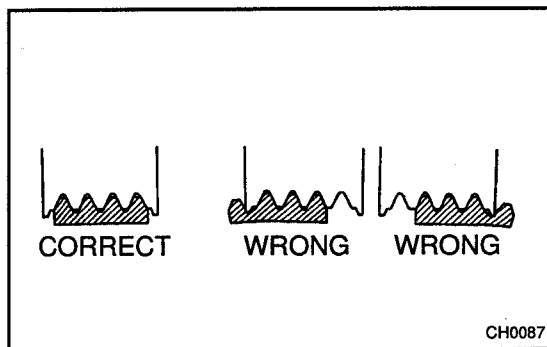
Drive belt tension: at 98 N (10 kgf, 22 lbf)

New belt: 8 – 10 mm (0.315 – 0.394 in.)

Used belt: 11 – 13 mm (0.433 – 0.512 in.)

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

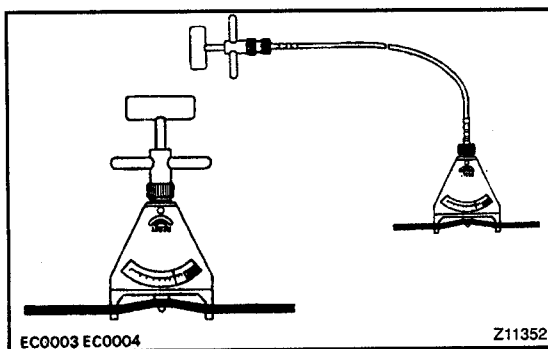
SR



HINT:

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

SR



Reference:

Using a belt tension gauge, measure the drive belt tension.

Drive belt tension:

New belt: 440 – 540 N (45 – 55 kgf)

Used belt: 240 – 340 N (25 – 35 kgf)

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

POWER STEERING FLUID BLEEDING

SR05P-09

1. **CHECK FLUID LEVEL** (See page SR-6)
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.

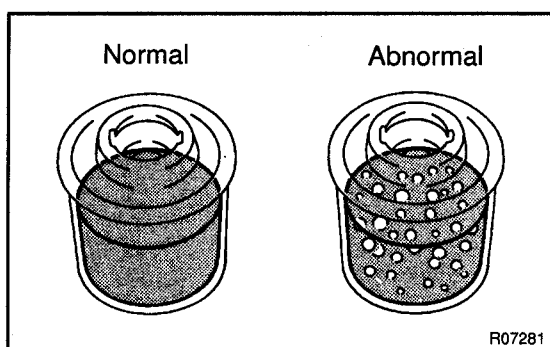
- (b) Repeat (a) several times.

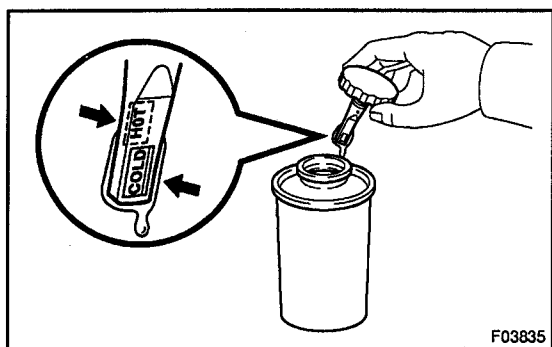
7. **STOP ENGINE**

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-6)

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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

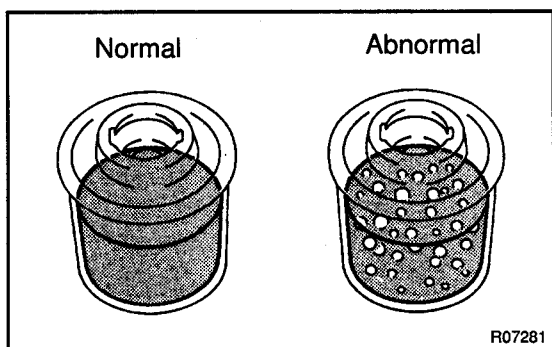
HINT:

Check that the fluid level is within the HOT LEVEL range on the reservoir cap dipstick. 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.

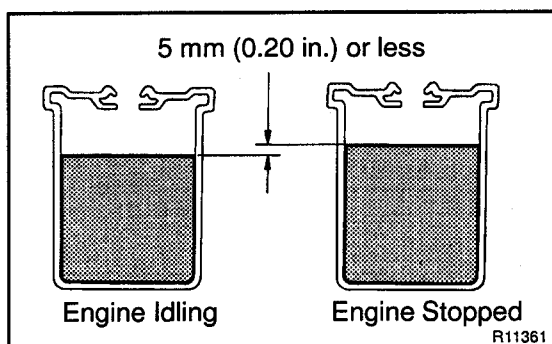
Fluid temperature: 80°C (176°F)

SR



- Check for foaming or emulsification.

If there is foaming or emulsification, bleed power steering system (See page SR-5).



- 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-5).

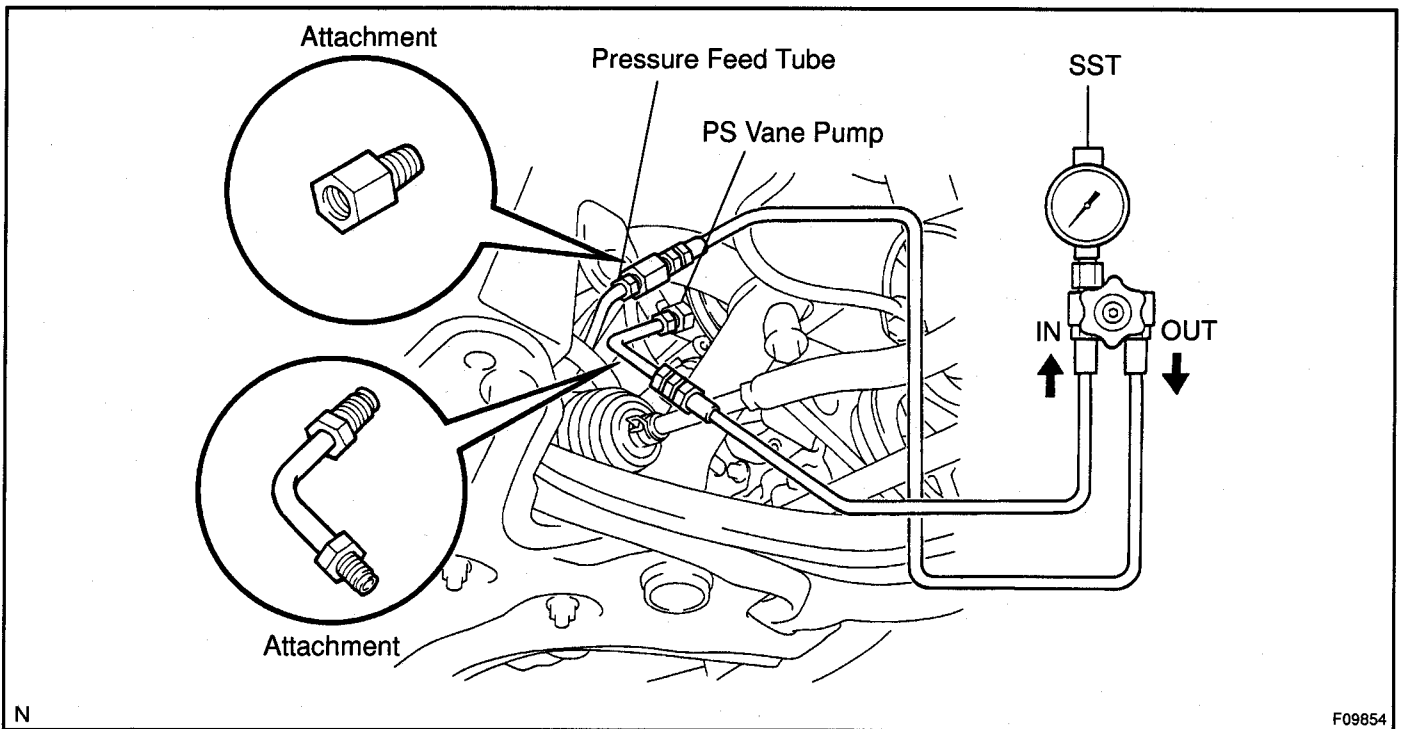
- Check the fluid level.

2. CHECK STEERING FLUID PRESSURE

- (a) Disconnect the pressure feed tube from the PS vane pump (See page SR-25).
- (b) Connect SST, as shown in the illustration below.
SST 09640-10010 (09641-01010, 09641-01030, 09641-01060)

NOTICE:

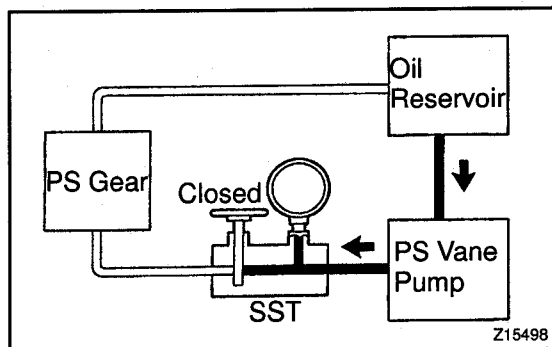
Check that the valve of the SST is in the open position.



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- (c) Bleed the power steering system (See page SR-5).
- (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)



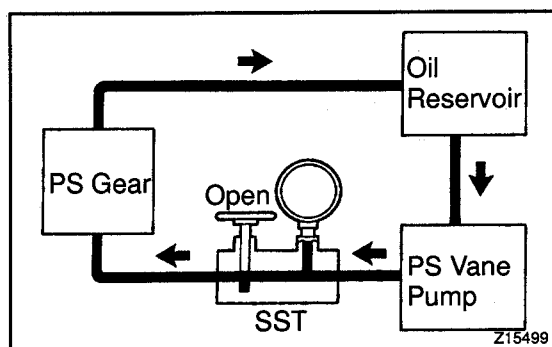
- (f) With the engine idling, close the valve of the SST and observe the reading on the SST.

Minimum fluid pressure:

5,900 kPa (60 kgf/cm², 852 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.

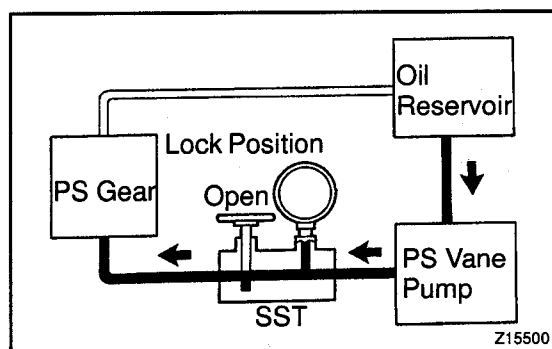
Difference fluid pressure:

490 kPa (5 kgf/cm², 71 psi) or less

NOTICE:

Do not turn the steering wheel.

SR



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

Minimum fluid pressure:

5,900 kPa (60 kgf/cm², 852 psi)

NOTICE:

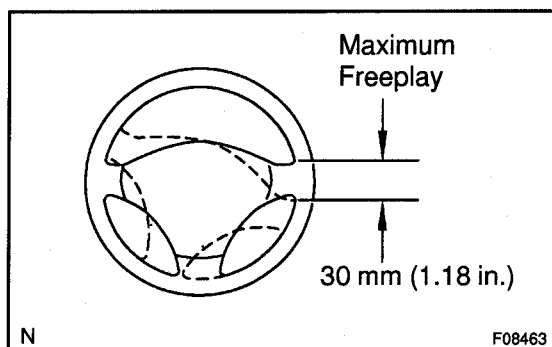
- Do not maintain lock position for more than 10 seconds.
- Do not let the fluid temperature become too high.

- (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-33).

- (l) Bleed the power steering system (See page SR-5).



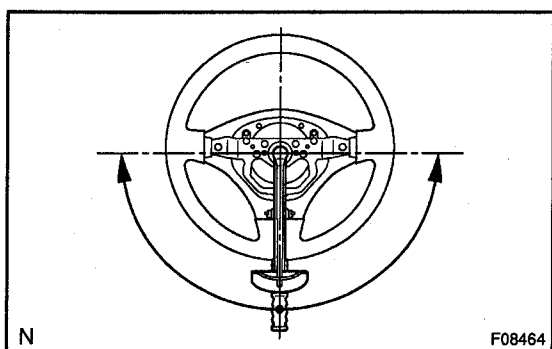
STEERING WHEEL INSPECTION

SR05R-09

1. CHECK STEERING WHEEL FREEPLAY

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

Maximum freeplay: 30 mm (1.18 in.)



2. CHECK STEERING EFFORT

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

Steering effort (Reference):

Manual steering: 28 N·m (285 kgf·cm, 21 ft·lbf)

Power steering: 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.

- Torque the steering wheel set nut.
- Install the steering wheel pad (See page SR-20).

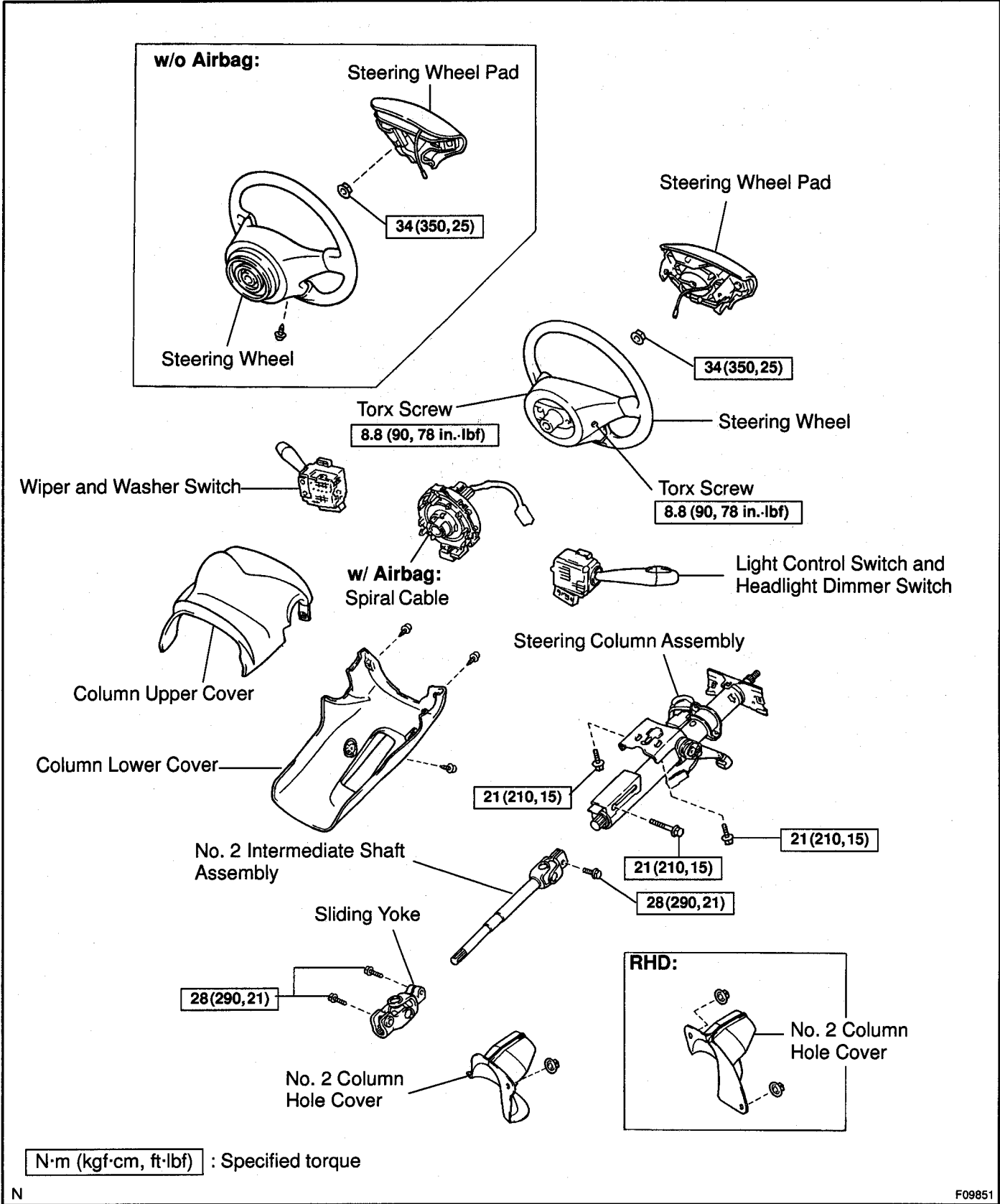
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

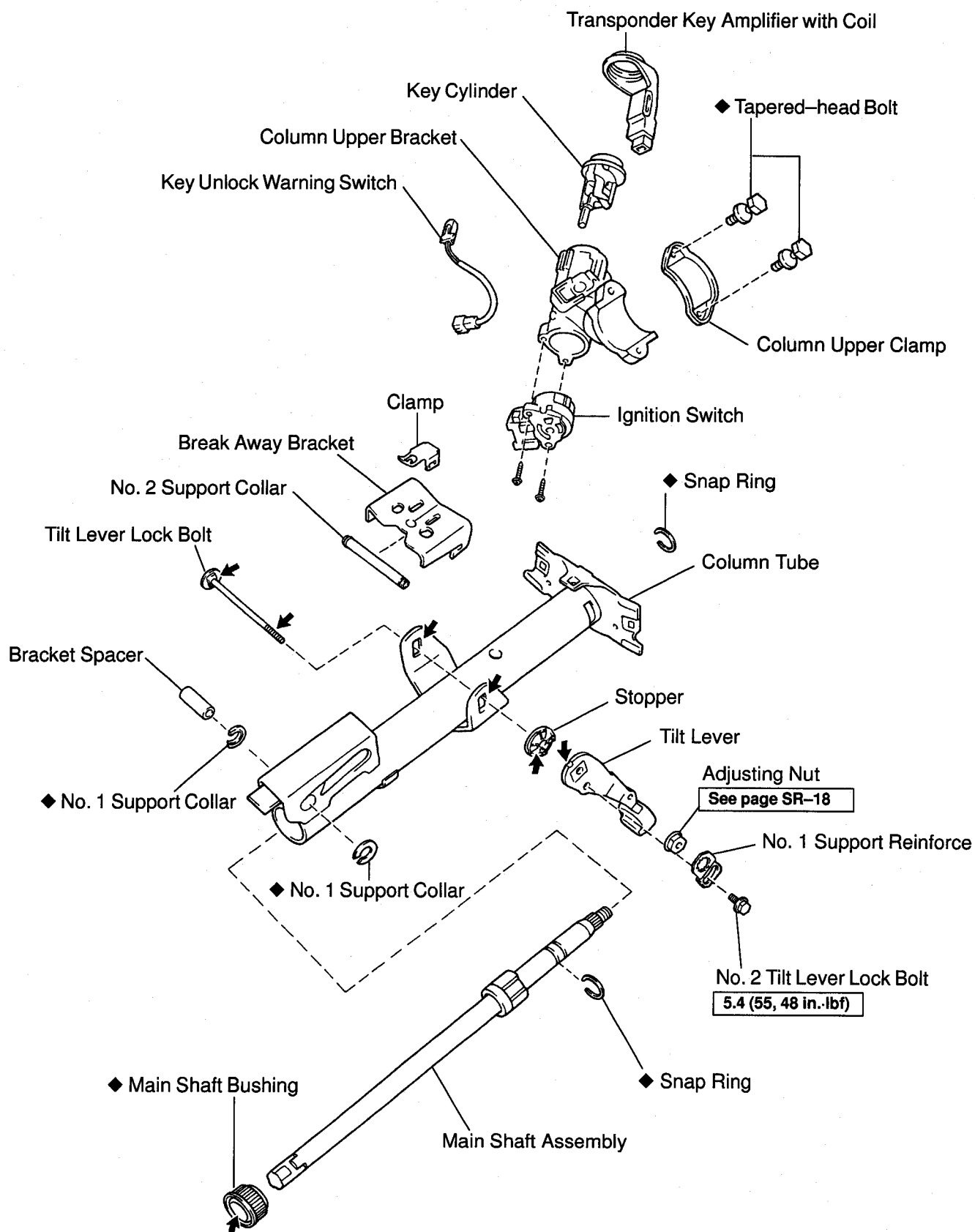
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TILT STEERING COLUMN COMPONENTS

SR0VK-02

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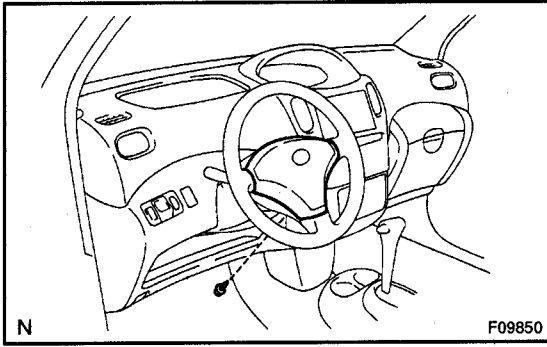


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

◀ Molybdenum disulfide lithium base grease

N

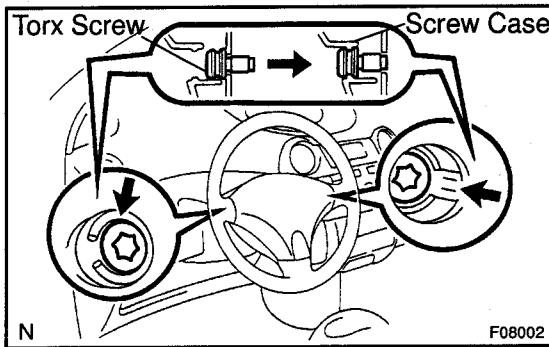


REMOVAL

1. w/o Airbag

REMOVE STEERING WHEEL PAD

- Remove the screw.
- Disconnect the terminal and remove the steering wheel pad.



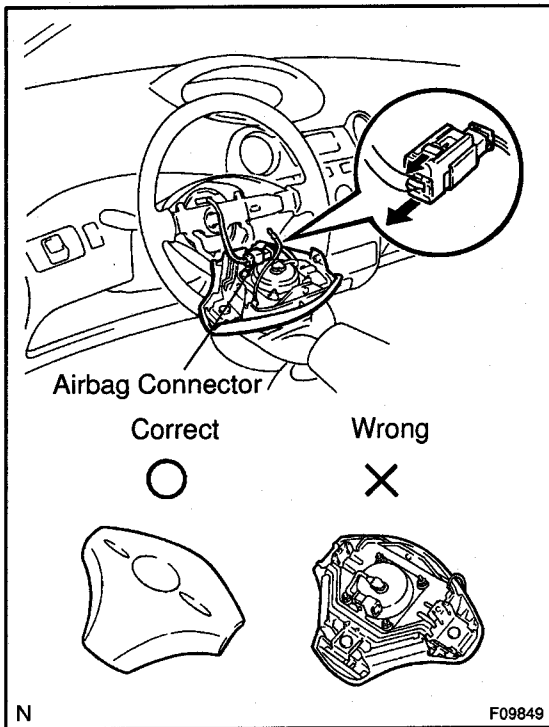
2. w/ Airbag:

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.



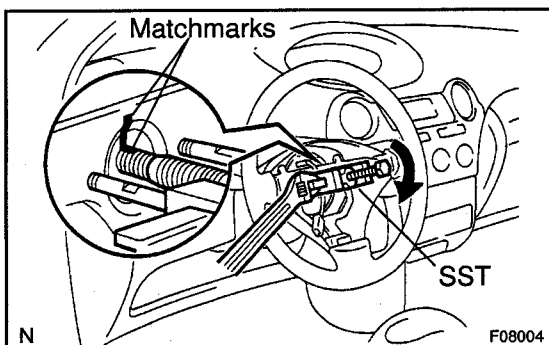
- Pull out the wheel pad from the steering wheel and disconnect the airbag connector.
- Except sports type steering wheel:
Disconnect the connector.

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.



3. REMOVE STEERING WHEEL

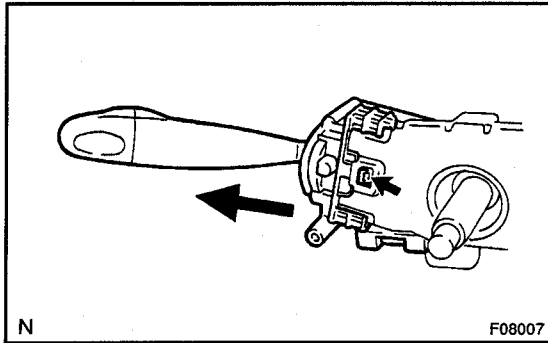
- Sports type steering wheel:
Disconnect the connector.
- Remove the steering wheel set nut.
- Place matchmarks on the steering wheel and main shaft assembly.
- Using SST, remove the steering wheel.
SST 09950-50012 (09951-05010, 09952-05010, 09953-05020, 09954-05020)

4. REMOVE COLUMN LOWER COVER

Remove the 3 screws and column lower cover.

5. w/o Airbag:**REMOVE LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH, WIPER AND WASHER SWITCH AND COLUMN UPPER COVER**

- (a) Disconnect the 2 connectors from the light control switch and headlight dimmer switch and wiper and washer switch.



- (b) Push the claw and pull out the light control switch and headlight dimmer switch.

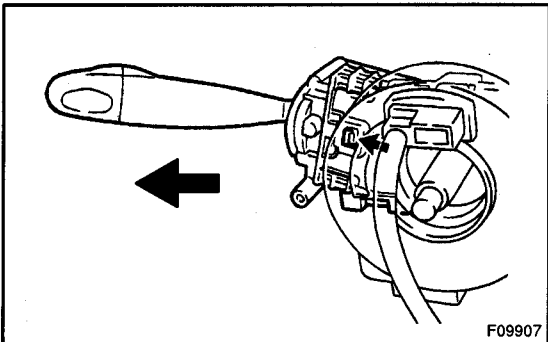
- (c) Employ the same manner described above to the wiper and washer switch.

- (d) Remove the column upper cover.

6. w/ Airbag:**REMOVE SPIRAL CABLE, LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH, WIPER AND WASHER SWITCH AND COLUMN UPPER COVER**

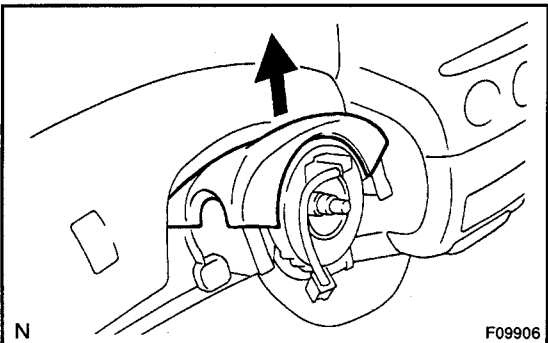
- (a) Disconnect the 3 connectors from the spiral cable, light control switch and headlight dimmer switch and wiper and washer switch.

- (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) Slide the column upper cover and remove the spiral cable.

NOTICE:

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

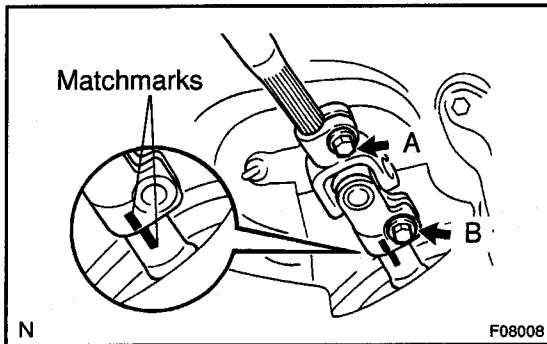
- (f) Remove the column upper cover.

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

(See page AX-15)

8. REMOVE NO. 2 COLUMN HOLE COVER

- LHD:
Remove the clip and No. 2 column hole cover.
- RHD:
Remove the 2 clips and No. 2 column hole cover.

**9. DISCONNECT SLIDING YOKE**

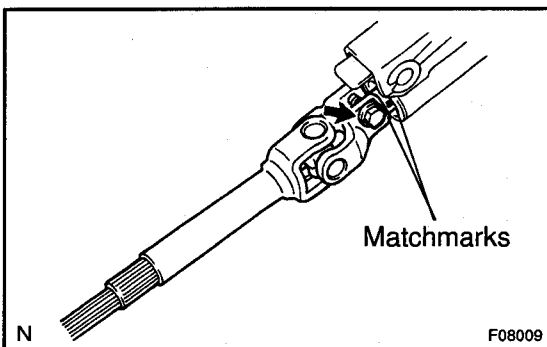
- (a) Place matchmarks on the sliding yoke and No. 3 intermediate shaft assembly.
- (b) Loosen the bolt A and remove the bolt B, then disconnect the sliding yoke.

10. REMOVE STEERING COLUMN ASSEMBLY

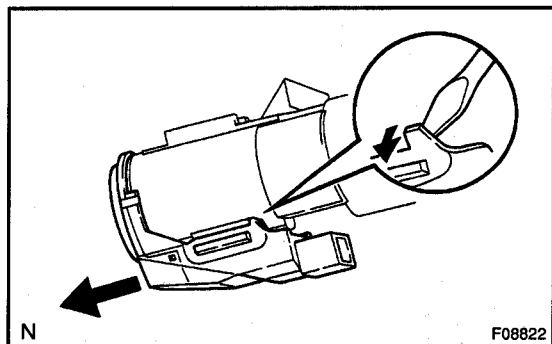
- (a) Disconnect the connectors.
- (b) Remove the lower mount bolt, 2 upper mount bolts and steering column assembly.

11. REMOVE SLIDING YOKE

Remove the bolt A and sliding yoke.

**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.



DISASSEMBLY

NOTICE:

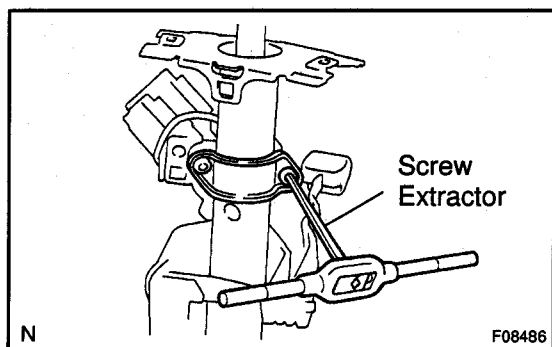
When using a vise, do not overtighten it.

1. REMOVE TRANSPONDER KEY AMPLIFIER WITH COIL

- Widen the claw hung on the upper bracket by approx. 1.0 mm (0.039 in.) using a screwdriver.
- Pull the transponder key amplifier toward the rear of the vehicle with the claw open.

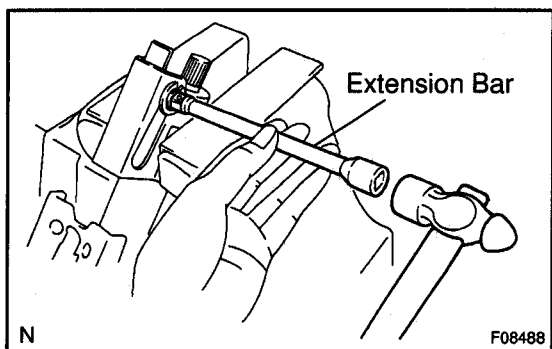
NOTICE:

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



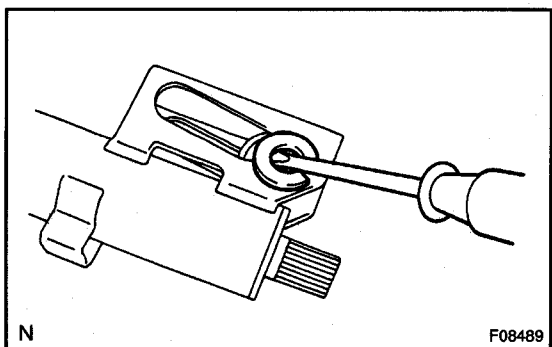
2. REMOVE COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP

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

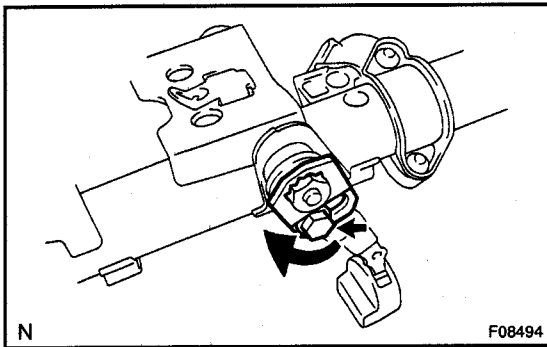


3. REMOVE BRACKET SPACER AND 2 NO. 1 SUPPORT COLLARS

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



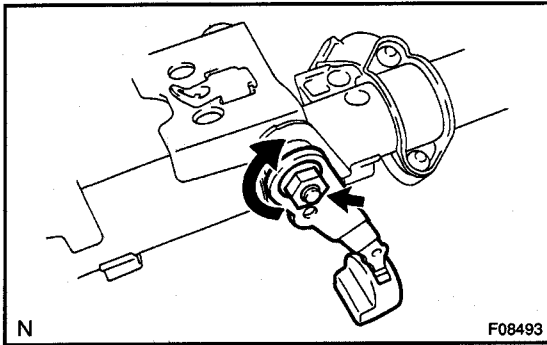
- Using a screwdriver, remove the 2 No. 1 support collars.

**4. REMOVE TILT LEVER AND BREAK AWAY BRACKET**

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

HINT:

This bolt is left-handed one.

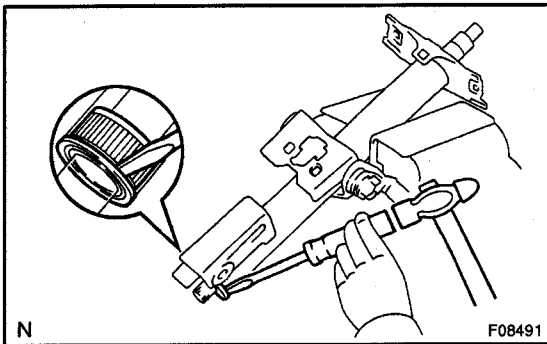


- (b) Remove the adjusting nut, tilt lever, stopper, tilt lever lock bolt and break away bracket.

HINT:

This nut is left-handed one.

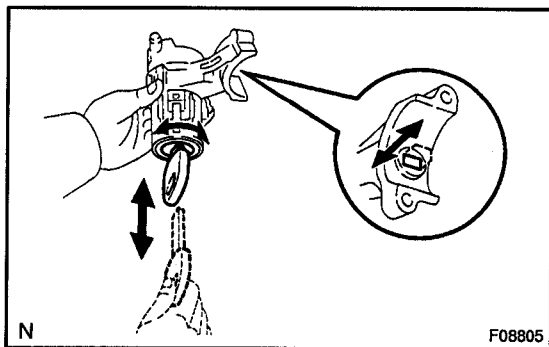
- (c) Remove the clamp and No. 2 support collar from the break away bracket.

**5. REMOVE MAIN SHAFT BUSHING**

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

6. REMOVE MAIN SHAFT ASSEMBLY

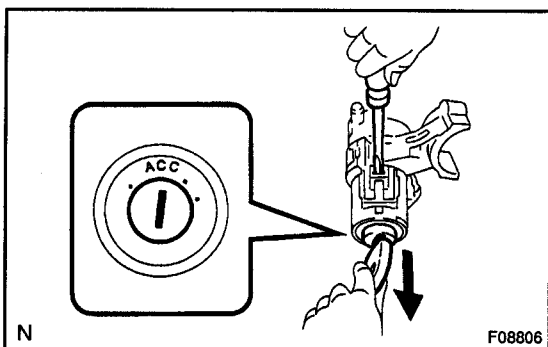
- (a) Using a snap ring expander, remove the snap ring on the upper side.
- (b) Remove the main shaft assembly.
- (c) Using a snap ring expander, remove the snap ring on the lower side.



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-16)

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.

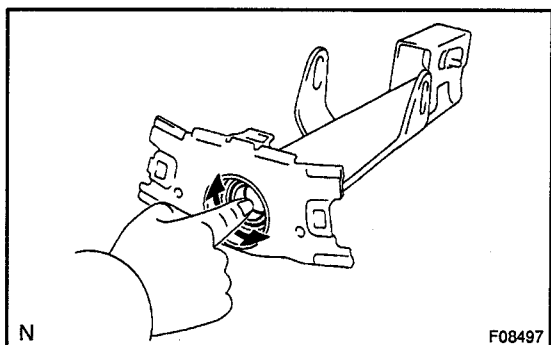
5. INSPECT KEY UNLOCK WARNING SWITCH (See page BE-16)

6. IF NECESSARY, REPLACE KEY UNLOCK WARNING SWITCH

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

7. INSPECT TRANSPONDER KEY AMPLIFIER WITH COIL (See page DI-249)

8. IF NECESSARY, REPLACE TRANSPONDER KEY AMPLIFIER WITH COIL



9. INSPECT BEARING

Check the bearing rotation condition and check for abnormal noise.

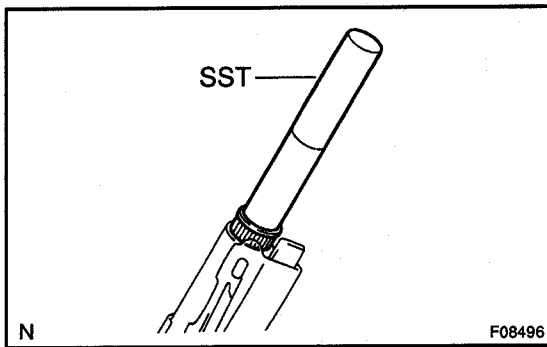
If the bearing is worn or damaged, replace the column tube.

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-10)
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**

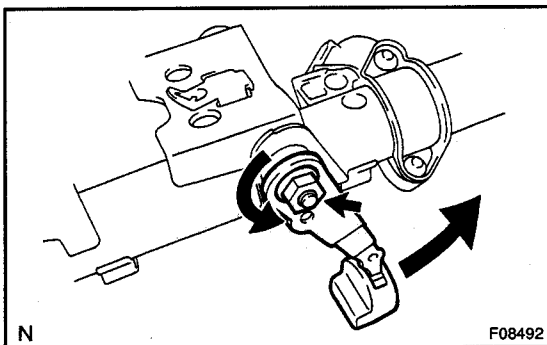
- (a) Coat a new bushing with molybdenum disulfide lithium base grease.
- (b) Using SST and a hammer, tap in the main shaft bushing.
SST 09612-22011

4. **INSTALL BREAK AWAY BRACKET AND TILT LEVER**

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

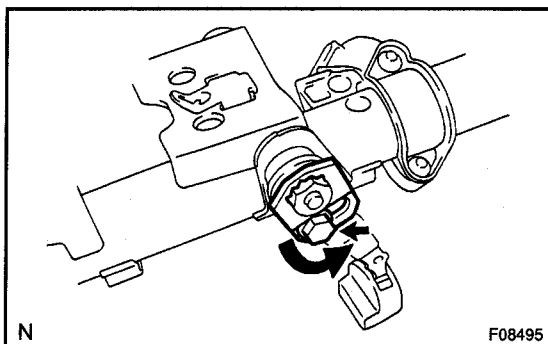
HINT:

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 43 – 91 N (4.4 – 9.3 kgf, 9.7 – 20.5 lbf).

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

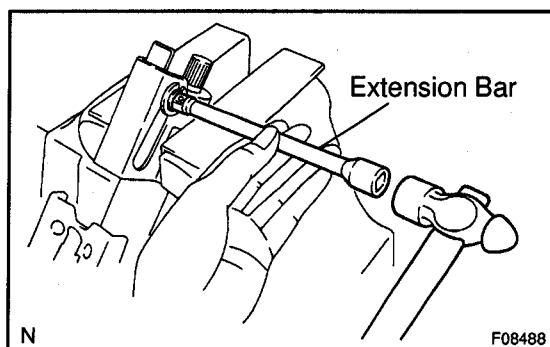


- (d) Install the No. 1 support reinforce with the No. 2 tilt lever lock bolt by turning it counterclockwise.

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

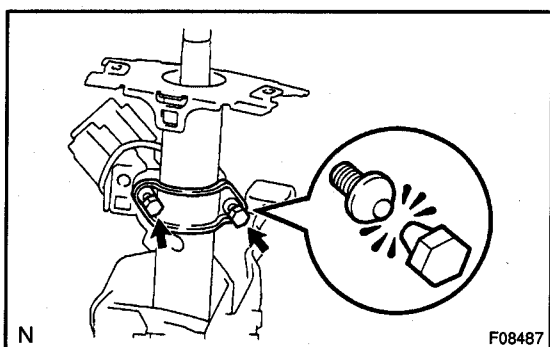
HINT:

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.



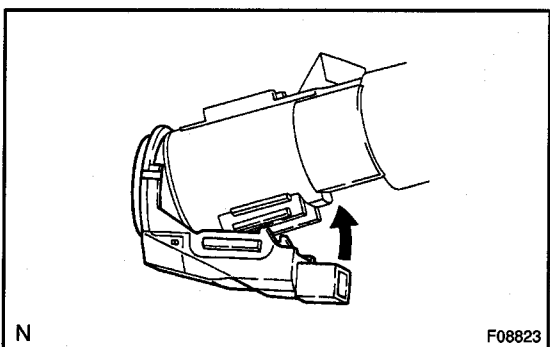
5. INSTALL 2 NO. 1 SUPPORT COLLARS AND BRACKET SPACER

- (a) Install 2 new No. 1 support collars.
 (b) Using an extension bar and a hammer, drive in the bracket spacer.



6. 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.

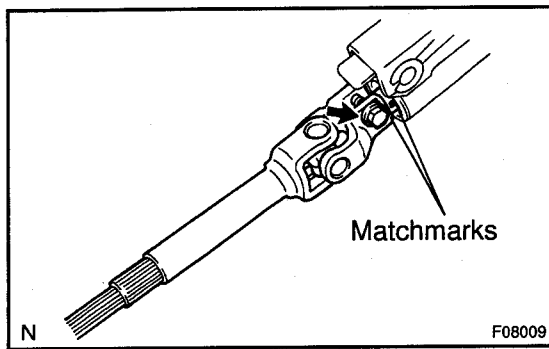


7. INSTALL TRANSPONDER KEY AMPLIFIER WITH COIL

- (a) Align the transponder key amplifier with the installation position of the upper bracket with the amplifier inclined.
 (b) Push the transponder key amplifier up and connect it to the upper bracket.

NOTICE:

Take care not to push the amplifier up with excessive force to prevent it from being damaged.



INSTALLATION

1. INSTALL NO. 2 INTERMEDIATE SHAFT ASSEMBLY

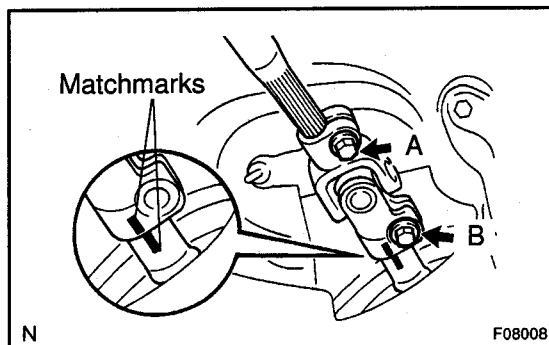
- Align the matchmarks on the No. 2 intermediate shaft assembly and main shaft assembly.
- Install the No. 2 intermediate shaft assembly with the bolt.
Torque: 28 N·m (290 kgf·cm, 21 ft·lbf)

2. INSTALL SLIDING YOKE

Temporarily install the sliding yoke to the No. 2 intermediate shaft assembly with the bolt A.

3. INSTALL STEERING COLUMN ASSEMBLY

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



4. CONNECT SLIDING YOKE

- Align the matchmarks on the sliding yoke and No. 3 intermediate shaft assembly.
- Install the bolt B.
Torque: 28 N·m (290 kgf·cm, 21 ft·lbf)
- Torque the bolt A.
Torque: 28 N·m (290 kgf·cm, 21 ft·lbf)

5. INSTALL NO. 2 COLUMN HOLE COVER

- LHD:
Install the No. 2 column hole cover with the clip.
- RHD:
Install the No. 2 column hole cover with the 2 clips.

6. A/T:

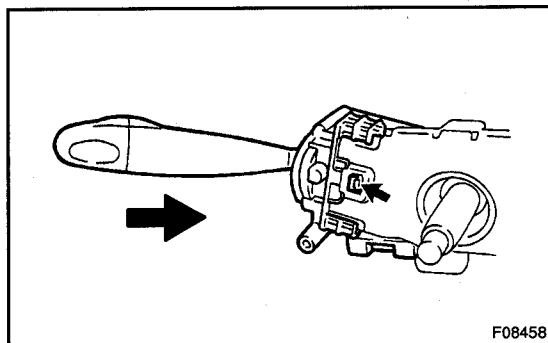
INSTALL KEY INTERLOCK CABLE

(See page AX-21)

7. w/o Airbag:

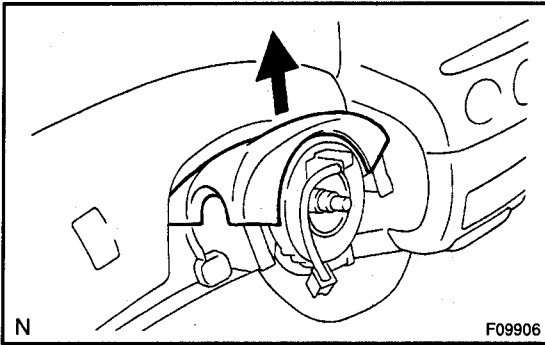
INSTALL COLUMN UPPER COVER, LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH AND WIPER AND WASHER SWITCH

- Install the column upper cover.
- Push into the light control switch and headlight dimmer switch until the claw is latched.
- Employ the same manner described above to the wiper and washer switch.
- Connect the 2 connectors to the light control switch and headlight dimmer switch and wiper and washer switch.

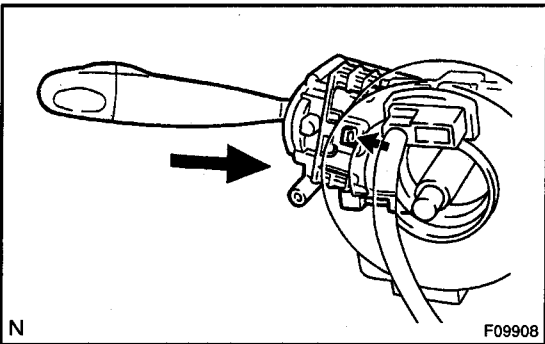


8. **w/ Airbag:**
INSTALL COLUMN UPPER COVER, LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH, WIPER AND WASHER SWITCH AND SPIRAL CABLE

(a) Install the column upper cover.



(b) Slide the column upper cover and install the spiral cable.



(c) Push into the light control switch and headlight dimmer switch until the claw is latched.

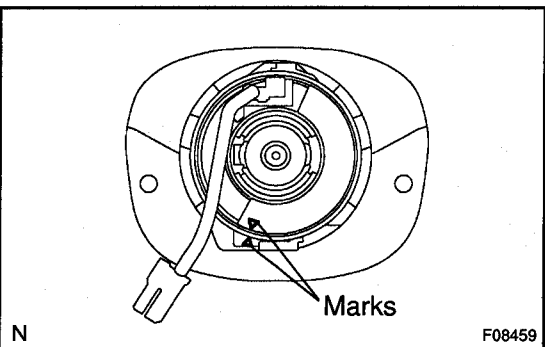
(d) Employ the same manner described above to the wiper and washer switch.

(e) Connect the airbag connector to the spiral cable.

(f) Connect the 3 connectors to the spiral cable, light control switch and headlight dimmer switch and wiper and washer switch.

9. **INSTALL COLUMN LOWER COVER**

Install the column lower cover with the 3 screws.



10. **w/ Airbag:**

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.

11. **INSTALL STEERING WHEEL**

(a) Align the matchmarks on the steering wheel and main shaft assembly.

(b) Install the steering wheel set nut.

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

(c) Sports type steering wheel:

Connect the connector.

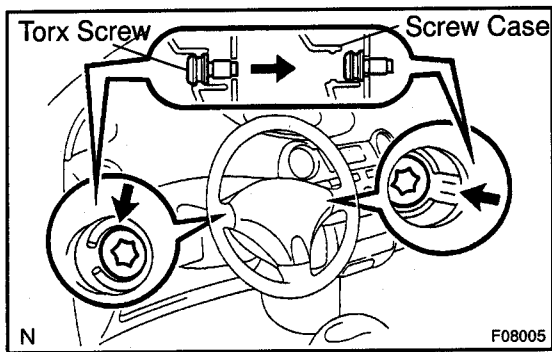
12. w/o Airbag:**INSTALL STEERING WHEEL PAD**

- (a) Connect the terminal and install the steering wheel pad.
- (b) Install the screw.

13. w/ Airbag:**INSTALL STEERING WHEEL PAD****NOTICE:**

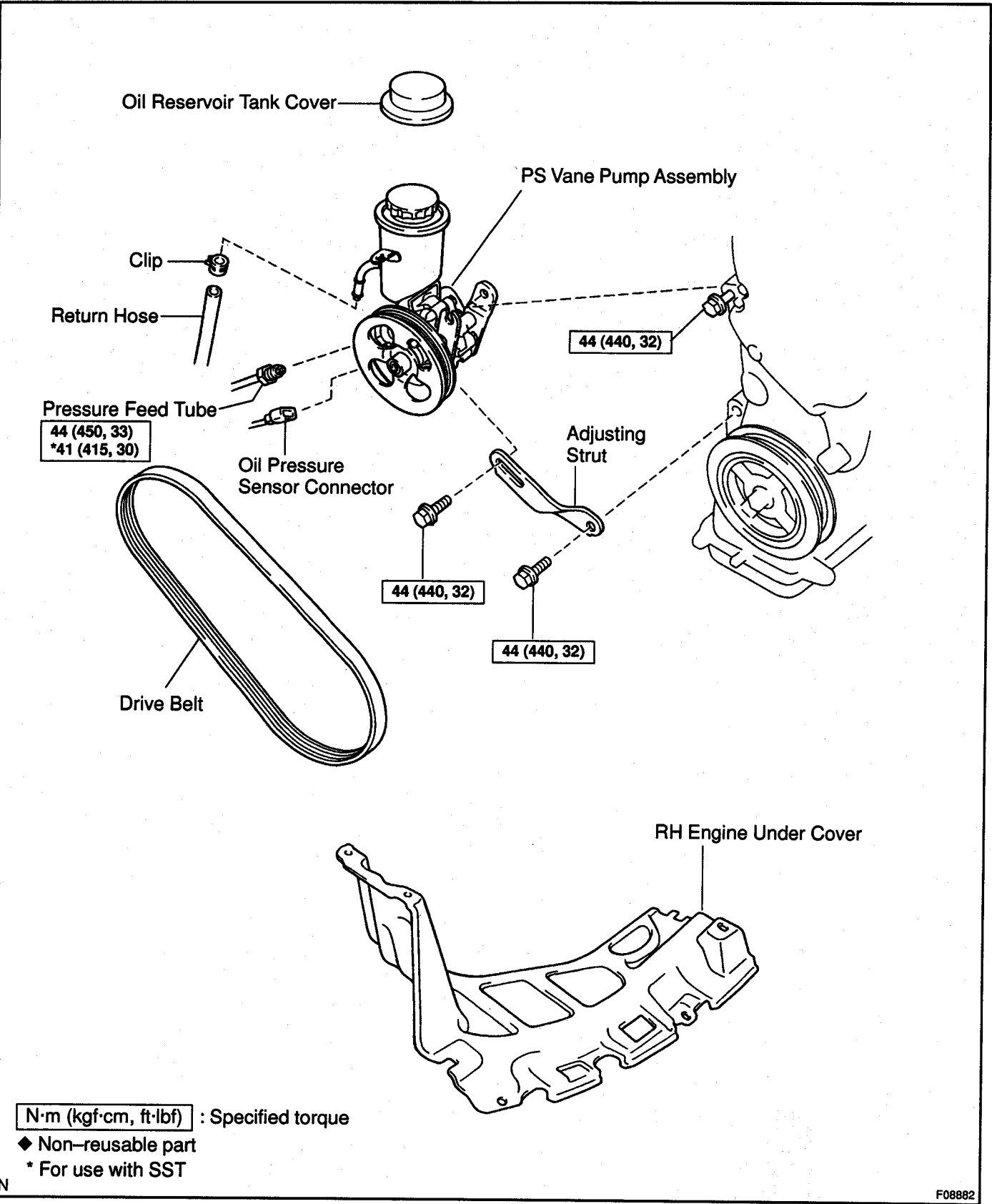
- Never use airbag parts from another vehicle. When replacing parts, replace with new ones.
 - Make sure the wheel pad is installed with the specified torque.
 - If the wheel pad has been dropped, or there are cracks, dents or other defects in the case or connector, replace the wheel pad with a new one.
 - 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) Except sports type steering wheel:
Connect the connector.
 - (b) Connect the airbag connector.
 - (c) Install the steering wheel pad after confirming that the circumference groove of the torx screws is caught on the screw case.
 - (d) Using a torx socket wrench, torque the 2 screws.

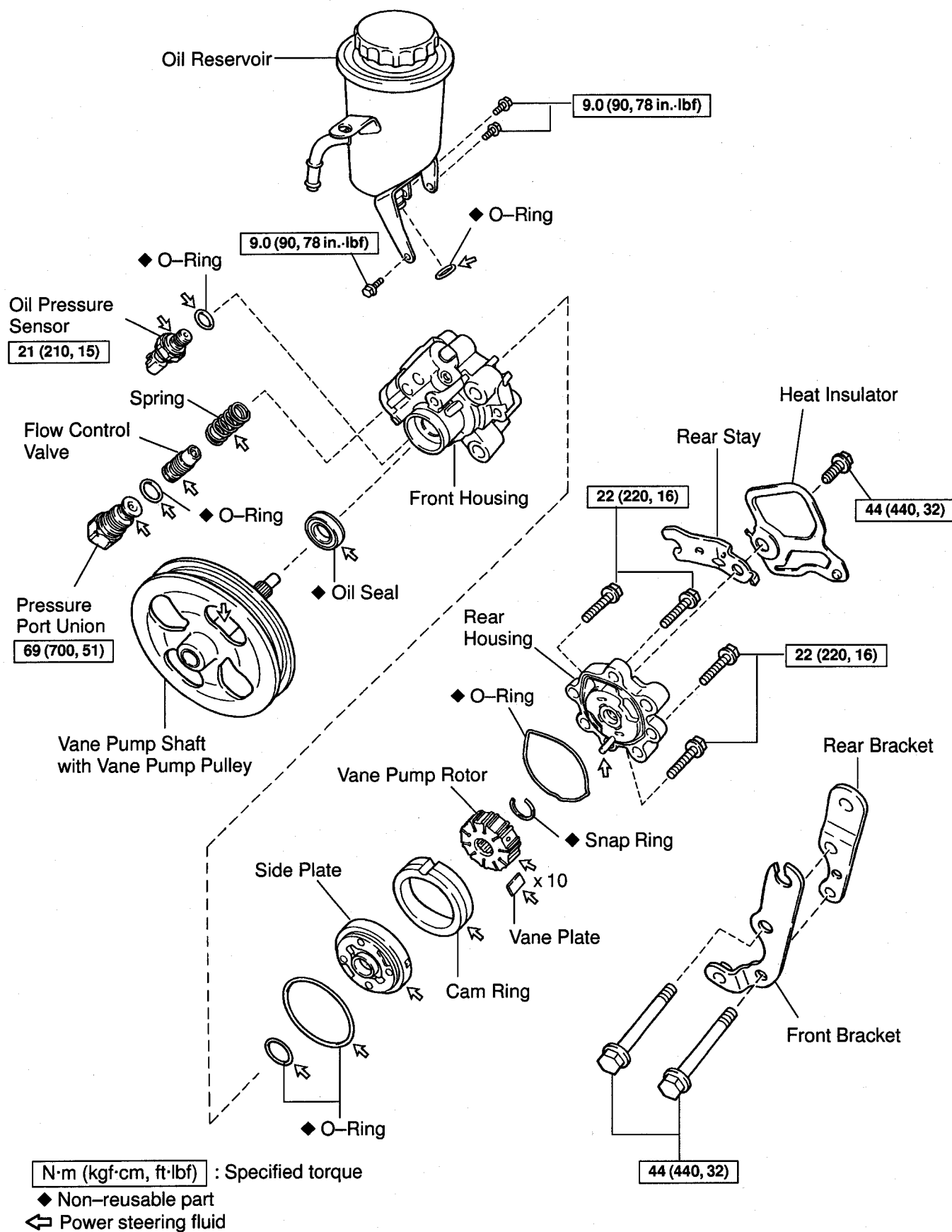
Torque: 8.8 N·m (90 kgf·cm, 78 in.-lbf)

14. CHECK STEERING WHEEL CENTER POINT

POWER STEERING VANE PUMP
COMPONENTS

SR0VQ-02





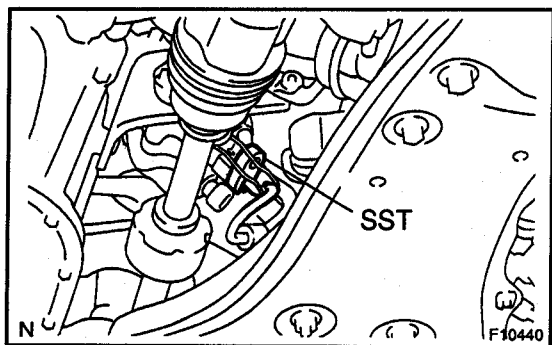
REMOVAL

1. REMOVE RH ENGINE UNDER COVER
2. REMOVE OIL RESERVOIR TANK COVER
3. DISCONNECT RETURN HOSE

Remove the clip, and disconnect the return hose.

NOTICE:

Take care not to spill fluid on the drive belt.

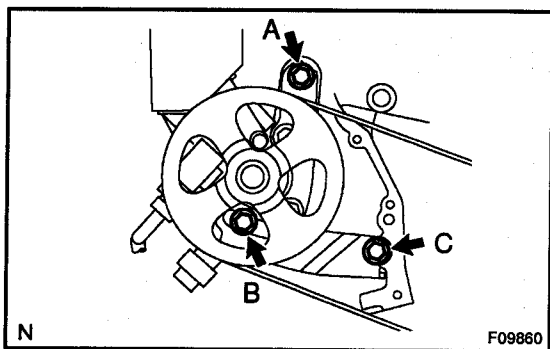


4. DISCONNECT PRESSURE FEED TUBE

Using SST, disconnect the pressure feed tube.

SST 09023-12700

5. DISCONNECT OIL PRESSURE SENSOR CONNECTOR



6. REMOVE DRIVE BELT

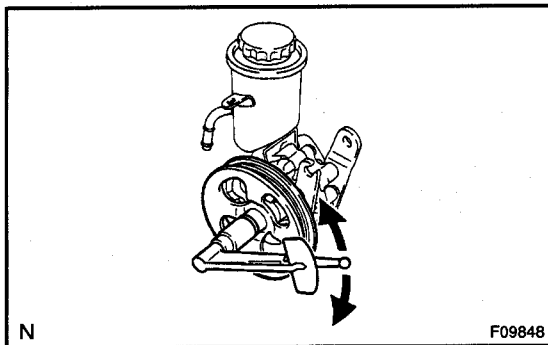
Loosen the bolt A and B, and remove the drive belt.

7. REMOVE PS VANE PUMP ASSEMBLY

- (a) Remove the bolt B, bolt C and adjusting strut.
- (b) Loosen the bolt A sufficiently so that PS vane pump assembly can be removed.

HINT:

Bolt A cannot be removed.



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 OIL RESERVOIR

- (a) Remove the 3 bolts and oil reservoir.
- (b) Remove the O-ring from the oil reservoir.

3. REMOVE HEAT INSULATOR AND REAR STAY

Remove the bolt, heat insulator and rear stay.

4. REMOVE FRONT AND REAR BRACKETS

Remove the 2 bolts, front and rear brackets.

5. 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.

6. REMOVE OIL PRESSURE SENSOR

- (a) Remove the oil pressure sensor.
- (b) Remove the O-ring from the oil pressure sensor.

7. REMOVE REAR HOUSING

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

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

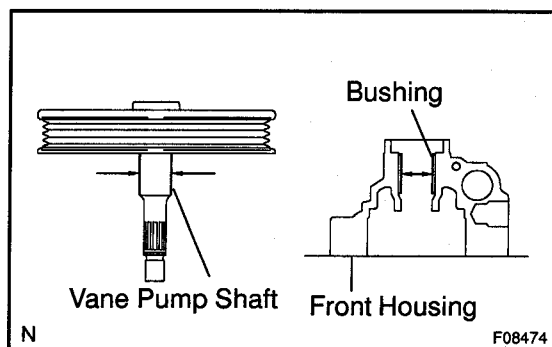
- (a) Remove the cam ring and 10 vane plates.

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.

9. REMOVE VANE PUMP SHAFT WITH VANE PUMP PULLEY



INSPECTION

1. MEASURE OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND BUSHING

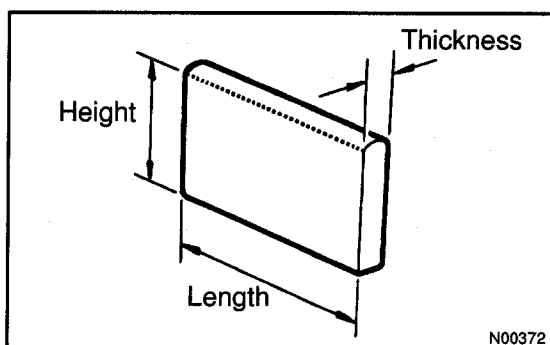
Using a micrometer and a caliper gauge, measure the oil clearance.

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.



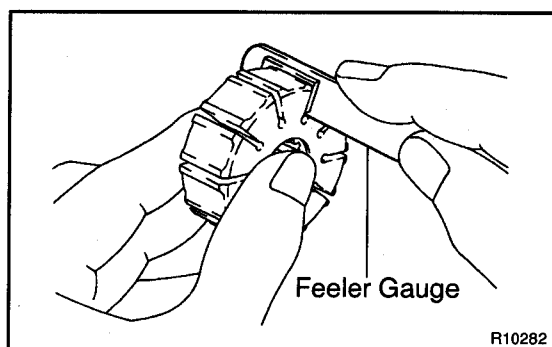
2. INSPECT VANE PUMP ROTOR AND VANE PLATES

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

Minimum height: 7.6 mm (0.299 in.)

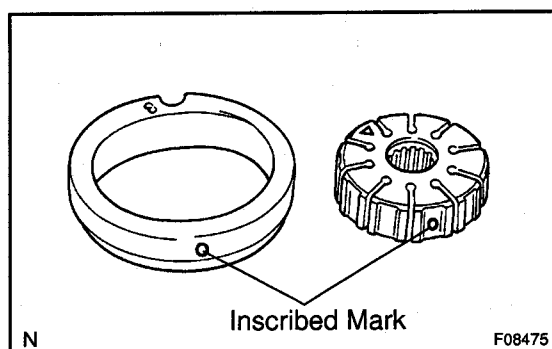
Minimum thickness: 1.405 mm (0.0553 in.)

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.)



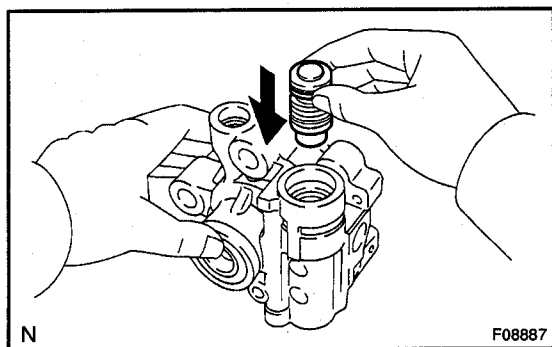
If it is more than the maximum, replace the vane plate and/or vane pump rotor with the one having the same mark stamped on the cam ring.

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

HINT:

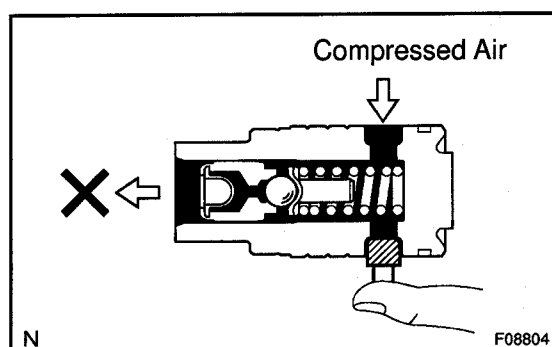
There are 5 vane plate lengths corresponding to the following vane pump rotor and cam ring marks:

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)

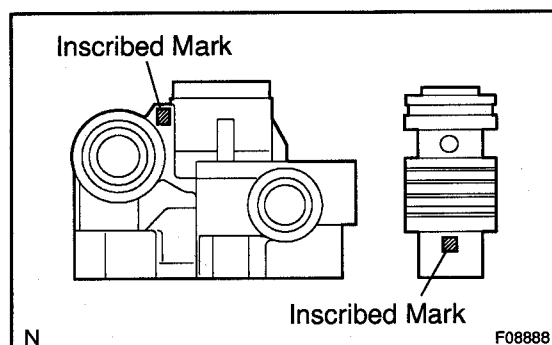


3. INSPECT FLOW CONTROL VALVE

- (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.

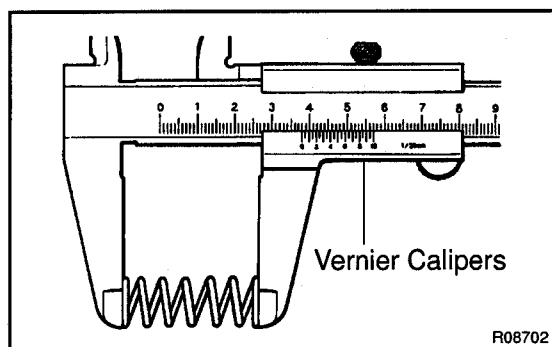


- (b) Check the flow control valve for leakage. Close one of the holes and apply compressed air of 392 – 490 kPa (4 – 5 kgf/cm², 57 – 71 psi) into the opposite side hole, and confirm that air does not come out from the end hole.



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

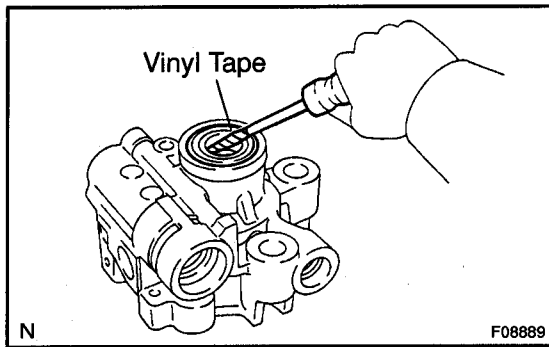


4. INSPECT SPRING

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:

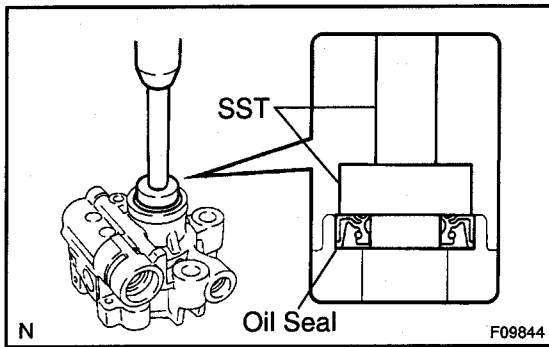
When using a vise, do not overtighten it.

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:

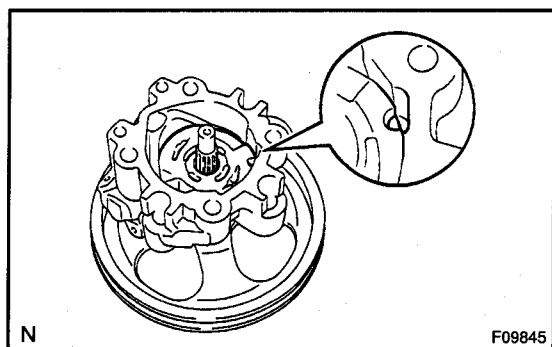
Make sure that the oil seal is installed facing in the correct direction.

REASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. COAT PARTS INDICATED BY ARROWS WITH POWER STEERING FLUID (See page SR-23)
2. INSTALL VANE PUMP SHAFT WITH VANE PUMP PULLEY

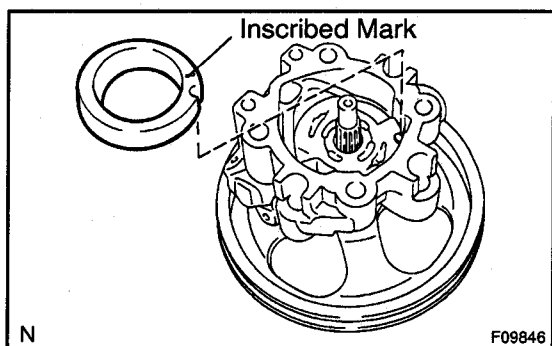


3. INSTALL SIDE PLATE

- (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.

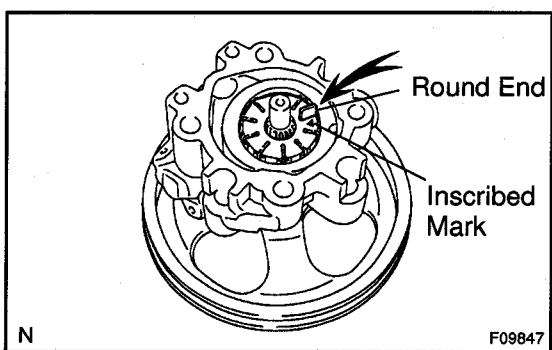
NOTICE:

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)

8. INSTALL OIL PRESSURE SENSOR

- (a) Coat a new O-ring with power steering fluid, and install it to the oil pressure sensor.
- (b) Install the oil pressure sensor.

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

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

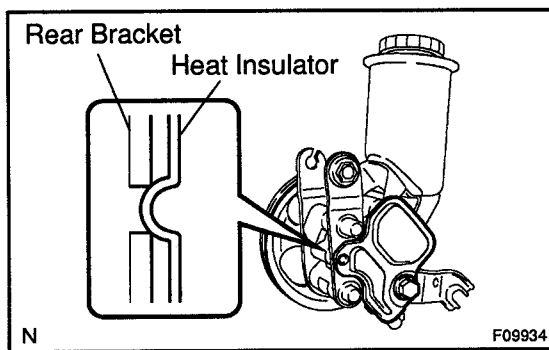
- (a) Install the spring.
- (b) Install the flow control valve facing in the correct direction (See page SR-23).
- (c) Coat a new O-ring with power steering fluid, and install it to the pressure port union.
- (d) Install the pressure port union.

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

10. INSTALL FRONT AND REAR BRACKETS

Install the front and rear brackets with the 2 bolts.

Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)

**11. INSTALL HEAT INSULATOR AND REAR STAY**

Install the heat insulator and rear stay with the bolt.

Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)

NOTICE:

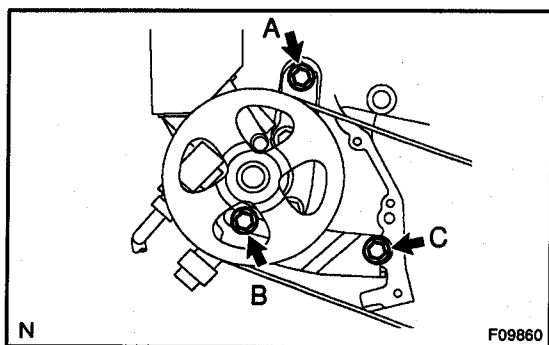
Install the heat insulator, pressing its projection into a hole in the rear bracket, as shown in the illustration.

12. INSTALL OIL RESERVOIR

- (a) Coat a new O-ring with power steering fluid, and install it to the oil reservoir.
- (b) Install the oil reservoir with the 3 bolts.

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

13. MEASURE PS VANE PUMP ROTATING TORQUE (See page SR-26)



INSTALLATION

1. INSTALL PS VANE PUMP ASSEMBLY

- Temporarily install the PS vane pump assembly with the bolt A.
- Install the adjusting strut with the bolt C.
Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)
- Temporarily install the bolt B.

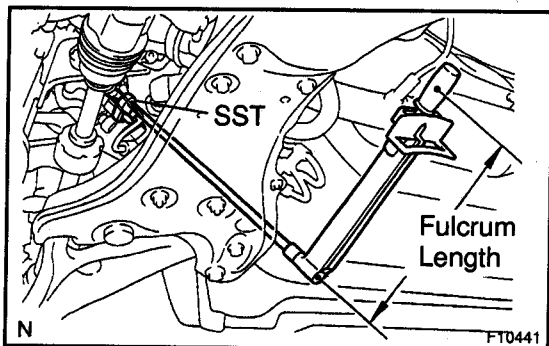
2. INSTALL DRIVE BELT

- Install the drive belt and adjust the drive belt tension (See page SR-3).
- Torque the bolt A.
Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)
- Torque the bolt B.
Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)

3. CONNECT OIL PRESSURE SENSOR CONNECTOR

NOTICE:

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



4. CONNECT PRESSURE FEED TUBE

Using SST, connect the pressure feed tube.

SST 09023-12700

Torque: 41 N·m (415 kgf·cm, 30 ft·lbf)

NOTICE:

Check that the pressure feed tube is properly installed to the rear stay.

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.

5. CONNECT RETURN HOSE

Connect the return hose with the clip.

6. INSTALL RH ENGINE UNDER COVER

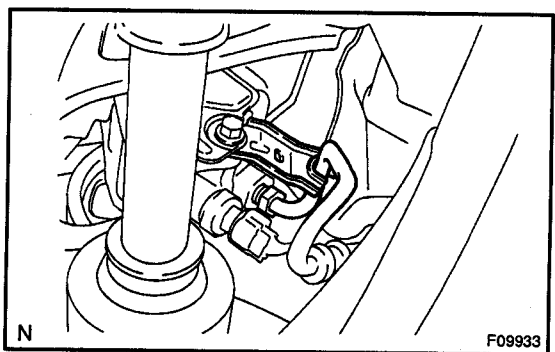
7. BLEED POWER STEERING SYSTEM

(See page SR-5)

8. INSTALL OIL RESERVOIR TANK COVER

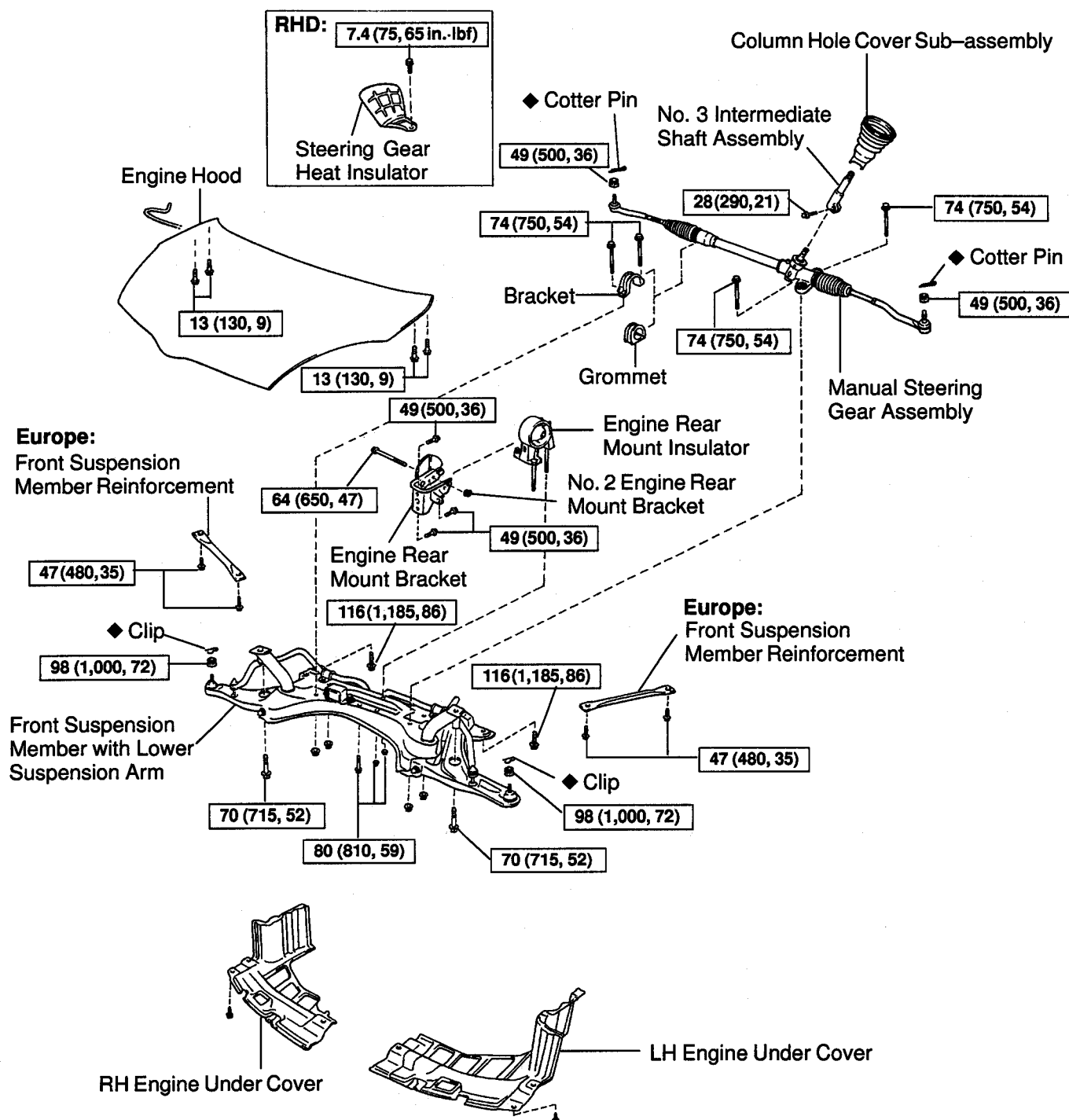
NOTICE:

Push the oil reservoir tank cover completely.



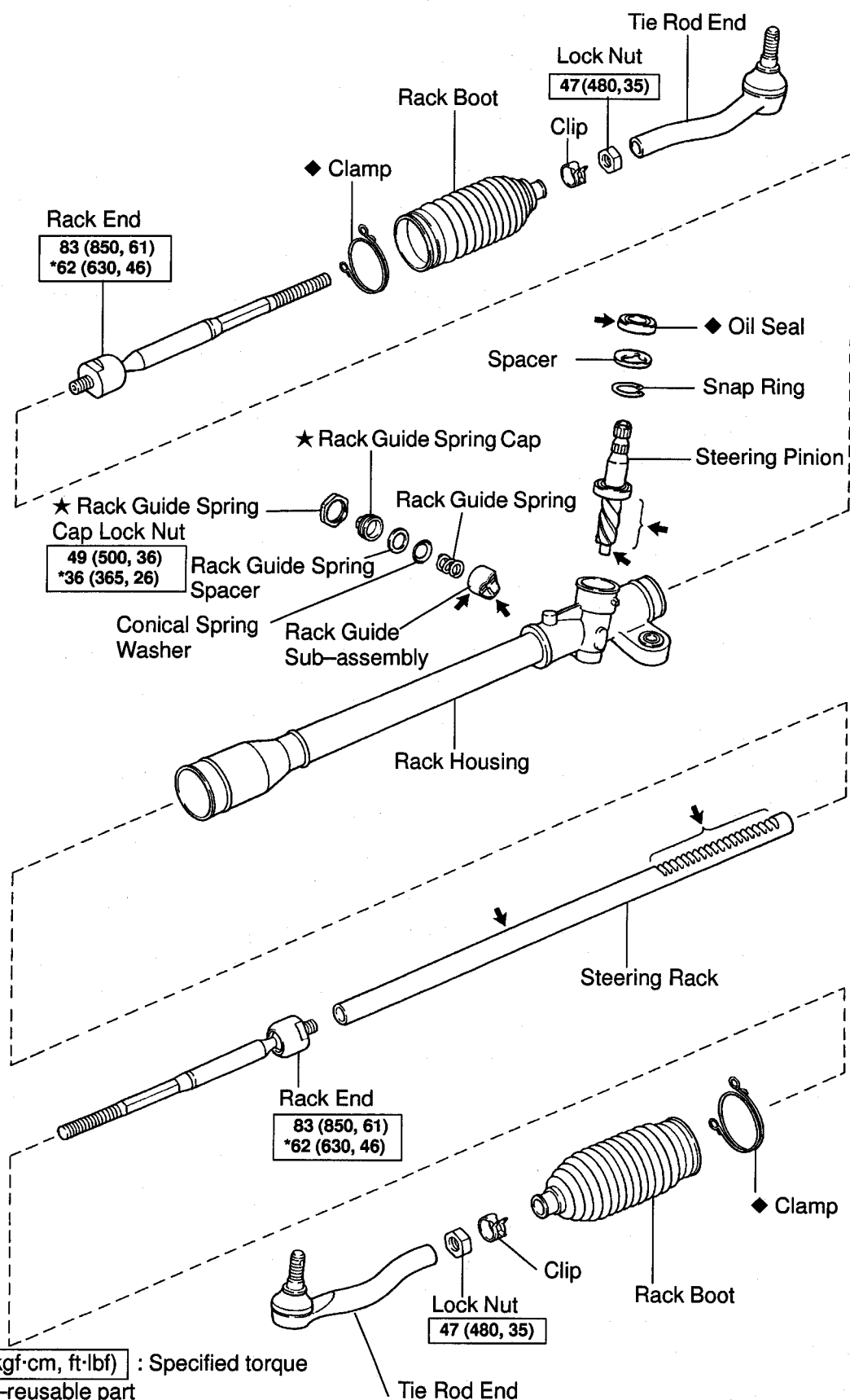
MANUAL STEERING GEAR COMPONENTS

SR0VX-02



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

◆ Non-reusable part



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

◆ Non-reusable part

★ Precoated part

◀ Molybdenum disulfide lithium base grease

* For use with SST

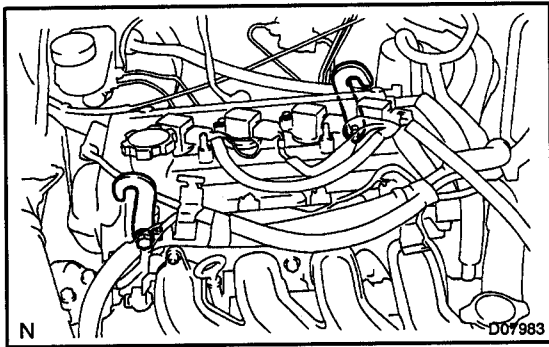
REMOVAL

NOTICE:

w/ Airbag:

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. w/ Airbag:
REMOVE STEERING WHEEL PAD (See page SR-12)
3. w/ Airbag:
REMOVE STEERING WHEEL (See page SR-12)
4. REMOVE RH AND LH ENGINE UNDER COVERS
5. DISCONNECT RH AND LH TIE ROD ENDS
(See page SA-9)
6. REMOVE NO. 2 COLUMN HOLE COVER
(See page SR-12)
7. DISCONNECT SLIDING YOKE (See page SR-12)
8. REMOVE ENGINE HOOD (See page BO-10)



9. ATTACH ENGINE SLING DEVICE TO ENGINE HANGERS

- (a) Install the 2 No. 1 engine hangers with the bolt in the correct direction.

Parts No.:

No. 1 engine hanger: 12281-21010

Bolt: 91511-60818

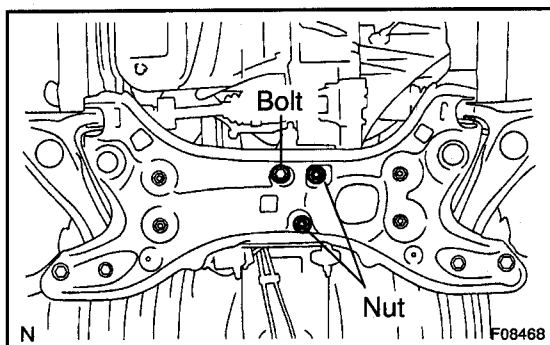
Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)

- (b) Attach the engine chain hoist to the engine hangers.

CAUTION:

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

10. DISCONNECT LOWER SUSPENSION ARM FROM STEERING KNUCKLE (See page SA-32)
11. Europe:
REMOVE RH AND LH FRONT SUSPENSION MEMBER REINFORCEMENT
 - (a) Remove the 2 bolts and front suspension member reinforcement.
 - (b) Employ the same manner described above to the other side.

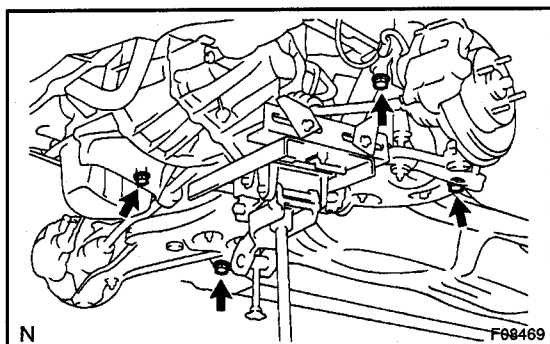


12. DISCONNECT ENGINE REAR MOUNT INSULATOR AND FRONT SUSPENSION MEMBER

Remove the bolt and 2 nuts, and disconnect the engine rear mount insulator and front suspension member.

13. SUPPORT FRONT SUSPENSION MEMBER WITH LOWER SUSPENSION ARM

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

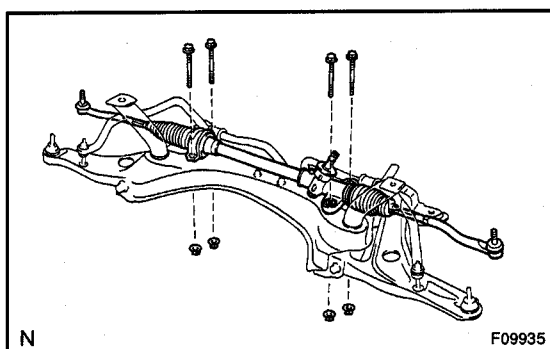


14. REMOVE FRONT SUSPENSION MEMBER WITH LOWER SUSPENSION ARM AND MANUAL STEERING GEAR ASSEMBLY

- Disconnect the column hole cover sub-assembly.
- Remove the 4 bolts and front suspension member with lower suspension arm and manual steering gear assembly.

15. REMOVE MANUAL STEERING GEAR ASSEMBLY

- RHD:
Remove the bolt and steering gear heat insulator.
- Remove the column hole cover sub-assembly.

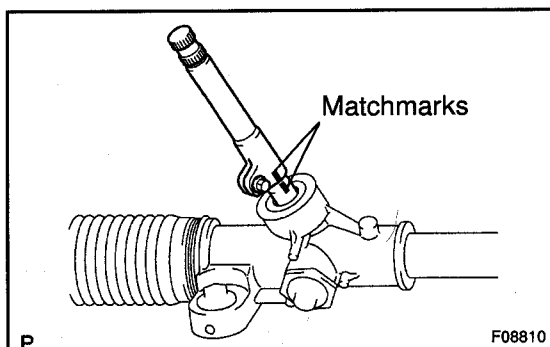


- Remove the 4 bolts, nuts and manual steering gear assembly from the front suspension member.

NOTICE:

Because the nut has its own stopper, do not turn the nut and torque the bolt with the nut fixed.

- Remove the bracket and grommet from the manual steering gear assembly.

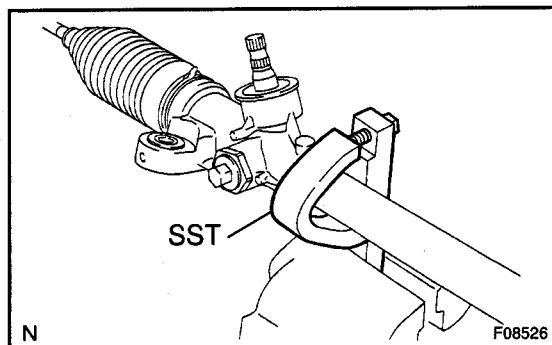


- Place matchmarks on the No. 3 intermediate shaft assembly and steering pinion.

- Remove the bolt and No. 3 intermediate shaft assembly.

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

- Remove the through bolt, No. 2 engine rear mount bracket and engine rear mount insulator.
- Remove the 3 bolts and engine rear mount bracket.



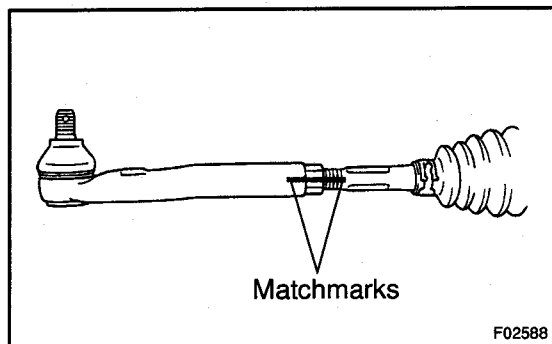
DISASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

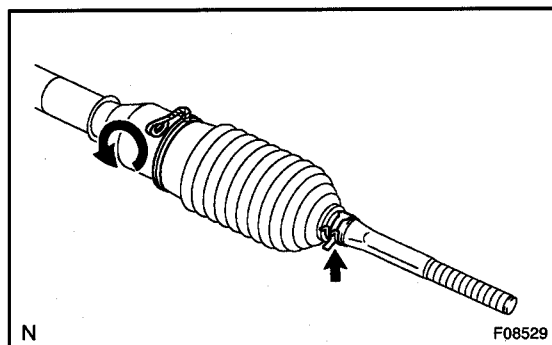
1. SECURE MANUAL STEERING GEAR ASSEMBLY IN VISE

Using SST, secure the manual steering gear assembly in a vise.
SST 09612-00012



2. 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.



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

- Using pliers, loosen the clamp.
- Remove the clip, clamp and rack boot.

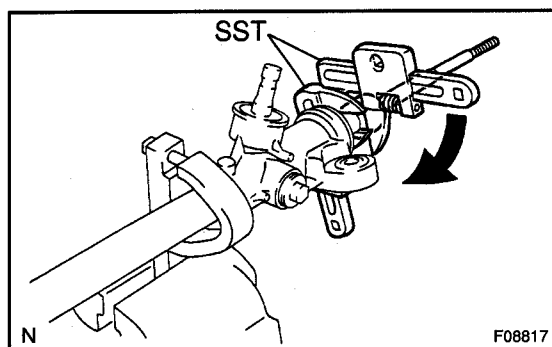
NOTICE:

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.



4. REMOVE RH AND LH RACK ENDS

- Using SST, hold the steering rack steadily and using another SST, remove the rack end.

SST 09922-10010

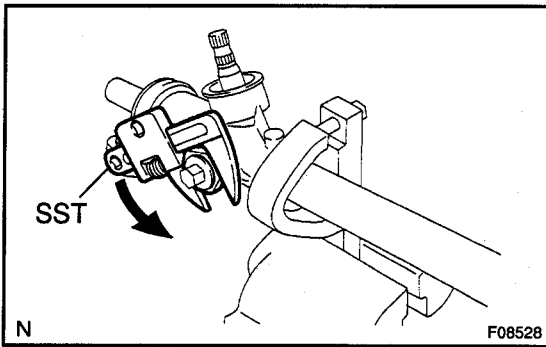
NOTICE:

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

HINT:

Mark the RH and LH rack ends.

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

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

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

SST 09922-10010

NOTICE:

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

6. REMOVE RACK GUIDE SPRING CAP, RACK GUIDE SPRING SPACER, CONICAL SPRING WASHER, RACK GUIDE SPRING AND RACK GUIDE SUB-ASSEMBLY**7. REMOVE OIL SEAL, SPACER AND STEERING PINION**

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

NOTICE:

Be careful not to damage the rack housing.

- (b) Remove the spacer.

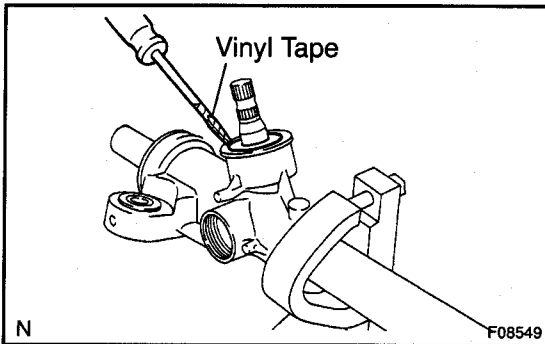
- (c) Using snap ring pliers, remove the snap ring and pull out the steering pinion.

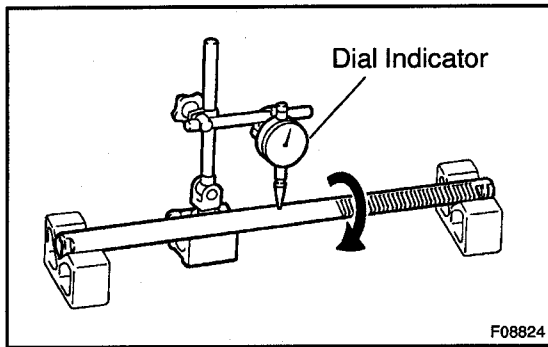
NOTICE:

Be careful not to damage the serrations.

8. REMOVE STEERING RACK**NOTICE:**

To avoid damaging the bushing, remove the rack from the steering pinion housing side of the rack housing without revolving it.





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: 0.15 mm (0.0059 in.)

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

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-34)
2. INSTALL STEERING RACK

NOTICE:

To avoid damaging the bushing, install the rack from the steering pinion side of the rack housing without revolving it.

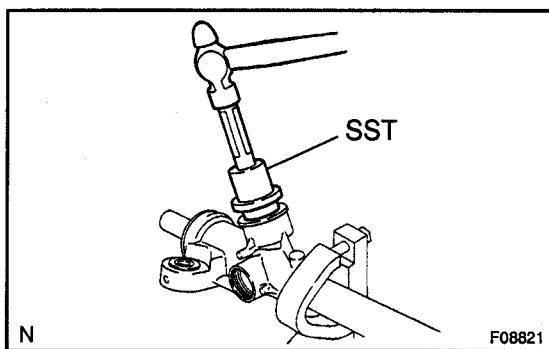
3. INSTALL STEERING PINION, SPACER AND OIL SEAL

- (a) Set the notched side of the steering rack so that the pinion can be positioned inside.
- (b) Push in the steering pinion, and using snap ring pliers, install the snap ring.

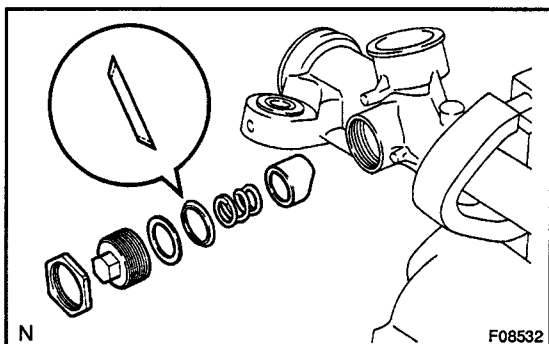
NOTICE:

Be careful not to damage the serrations.

- (c) Install the spacer.
- (d) Coat a new oil seal lip with molybdenum disulfide lithium base grease.



- (e) Using SST and a hammer, tap in the oil seal.
SST 09517-12010

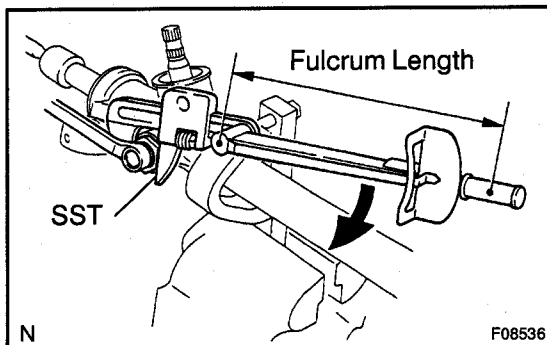
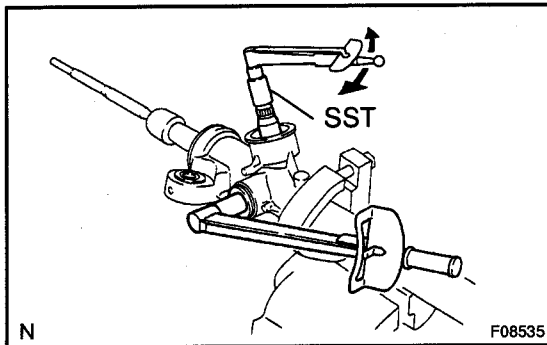
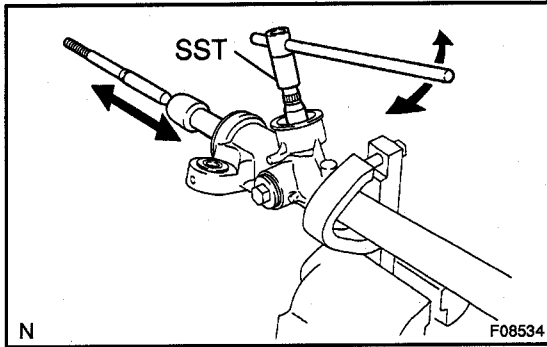


4. INSTALL RACK GUIDE SUB-ASSEMBLY, RACK GUIDE SPRING, CONICAL SPRING WASHER, RACK GUIDE SPRING SPACER AND RACK GUIDE SPRING CAP

- (a) Install the rack guide sub-assembly, rack guide spring, conical spring washer and rack guide spring spacer.

NOTICE:

Make sure that the conical spring washer is installed facing in the correct direction.



- (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.

5. ADJUST TOTAL PRELOAD

- (a) Temporarily install the RH and LH rack ends.

- (b) Torque the rack guide spring cap.

Torque: 6.9 N·m (70 kgf·cm, 61 in.-lbf)

- (c) Using SST, turn the pinion shaft right and left 1 or 2 times.
SST 09612-24014 (09616-10010)

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

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

SST 09612-24014 (09616-10010)

Preload (turning):

0.6 – 1.5 N·m (6 – 15 kgf·cm, 5.2 – 13.0 in.-lbf)

6. INSTALL RACK GUIDE SPRING CAP LOCK NUT

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

Sealant:

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

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

SST 09922-10010

Torque: 36 N·m (365 kgf·cm, 26 ft.-lbf)

NOTICE:

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

HINT:

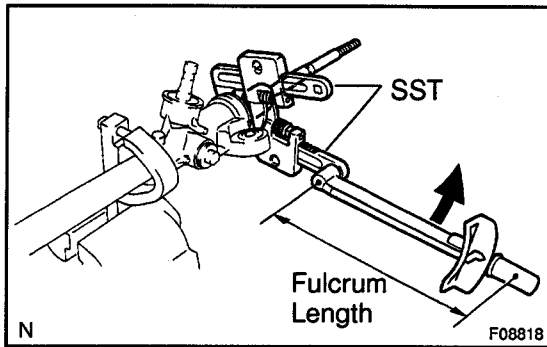
Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

- (c) Recheck the total preload.

Preload (turning):

0.6 – 1.5 N·m (6 – 15 kgf·cm, 5.2 – 13.0 in.-lbf)

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



7. INSTALL RH AND LH RACK ENDS

- (a) Using SST, hold the steering rack steadily and using another SST, install 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.).

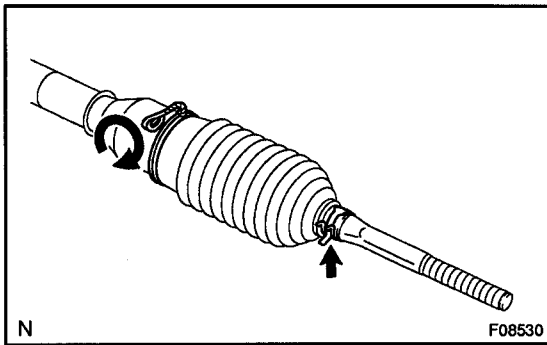
- (b) Employ the same manner described above to the other side.

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

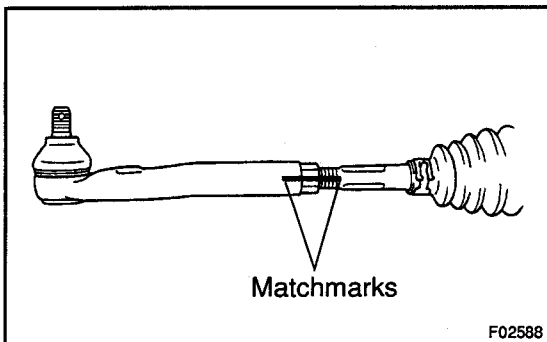
- (a) Install the rack boot, clip and a new clamp.

NOTICE:

Be careful not to damage or twist the boot.



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



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

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

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

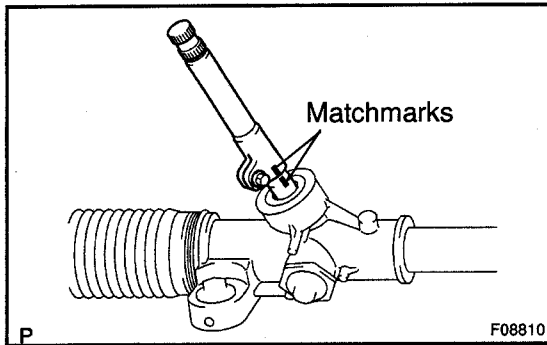
Torque: 47 N·m (480 kgf·cm, 35 ft·lbf)

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

INSTALLATION

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

- (a) Install the engine rear mount bracket with the 3 bolts.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)
- (b) Install the engine rear mount insulator with the through bolt and No. 2 engine rear mount bracket.
Torque: 64 N·m (650 kgf·cm, 47 ft·lbf)

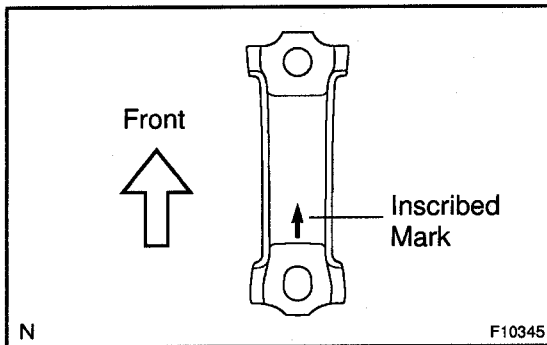


2. INSTALL MANUAL STEERING GEAR ASSEMBLY

- (a) Align the matchmarks on the No. 3 intermediate shaft assembly and steering pinion.
- (b) Install the No. 3 intermediate shaft assembly with the bolt.
Torque: 28 N·m (290 kgf·cm, 21 ft·lbf)
- (c) Install the grommet and bracket to the manual steering gear assembly.

HINT:

Install the bracket with the inscribed mark facing to the front of the vehicle.



- (d) Install the manual steering gear assembly with the 4 bolts and nuts to the front suspension member.
Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

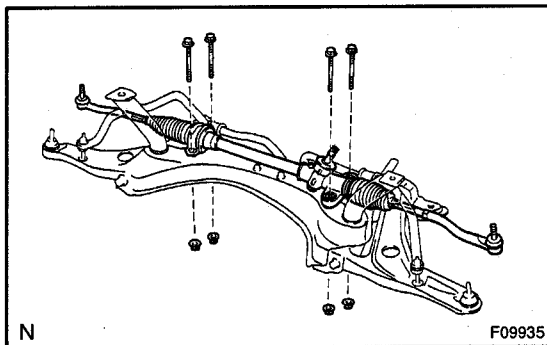
NOTICE:

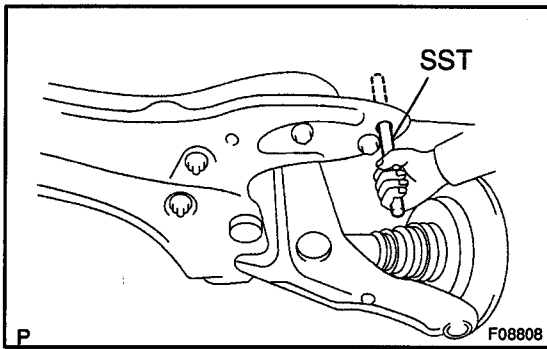
Because the nut has its own stopper, do not turn the nut and torque the bolt with the nut fixed.

- (e) Install the column hole cover sub-assembly.
- (f) RHD:
Install the steering gear heat insulator with the bolt.
Torque: 7.4 N·m (75 kgf·cm, 65 in·lbf)

HINT:

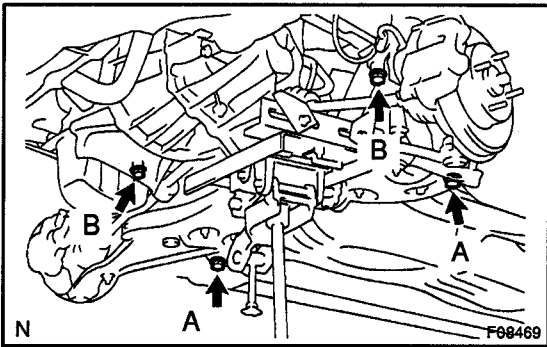
When assembling the steering gear heat insulator, set a projection of the column hole cover sub-assembly to the interlocking part of the steering gear heat insulator.





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

- (a) Using SST, align the holes of the front suspension member and body.
SST 09670-00010
- (b) Employ the same manner described above to the other side.



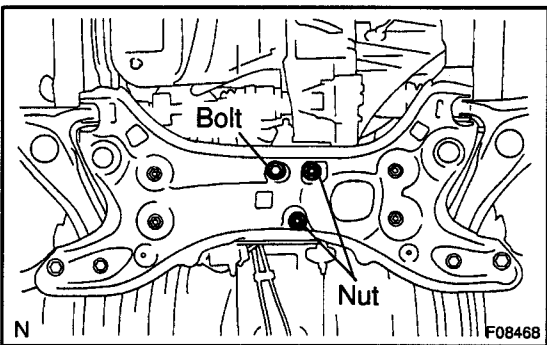
- (c) Install the front suspension member with lower suspension arm and manual steering gear assembly with the 4 bolts.

Torque:

Bolt A: 116 N·m (1,185 kgf·cm, 86 ft·lbf)

Bolt B: 70 N·m (715 kgf·cm, 52 ft·lbf)

- (d) Connect the column hole cover sub-assembly.



4. CONNECT ENGINE REAR MOUNT INSULATOR AND FRONT SUSPENSION MEMBER

Connect the engine rear mount insulator and front suspension member with the bolt and 2 nuts.

Torque: 80 N·m (810 kgf·cm, 59 ft·lbf)

5. Europe:

INSTALL RH AND LH FRONT SUSPENSION MEMBER REINFORCEMENT

- (a) Install the front suspension member reinforcement with the 2 bolts.

Torque: 47 N·m (480 kgf·cm, 35 ft·lbf)

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

6. CONNECT LOWER SUSPENSION ARM TO STEERING KNUCKLE (See page SA-34)

7. DISENGAGE ENGINE SLING DEVICE FROM ENGINE HANGERS

- (a) Disengage the engine chain hoist from the engine hangers.
- (b) Remove the 2 No. 1 engine hangers.

8. INSTALL ENGINE HOOD (See page BO-10)

9. CONNECT SLIDING YOKE (See page SR-20)

10. INSTALL NO. 2 COLUMN HOLE COVER (See page SR-20)

11. CONNECT RH AND LH TIE ROD ENDS (See page SA-13)

12. INSTALL RH AND LH ENGINE UNDER COVERS

13. PLACE FRONT WHEELS FACING STRAIGHT AHEAD**HINT:**

Do it with the front of the vehicle jacked up.

14. w/ Airbag:**CENTER SPIRAL CABLE (See page SR-20)****15. w/ Airbag:****INSTALL STEERING WHEEL**

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

16. w/ Airbag:**CHECK STEERING WHEEL CENTER POINT****17. w/ Airbag:****TORQUE STEERING WHEEL SET NUT**

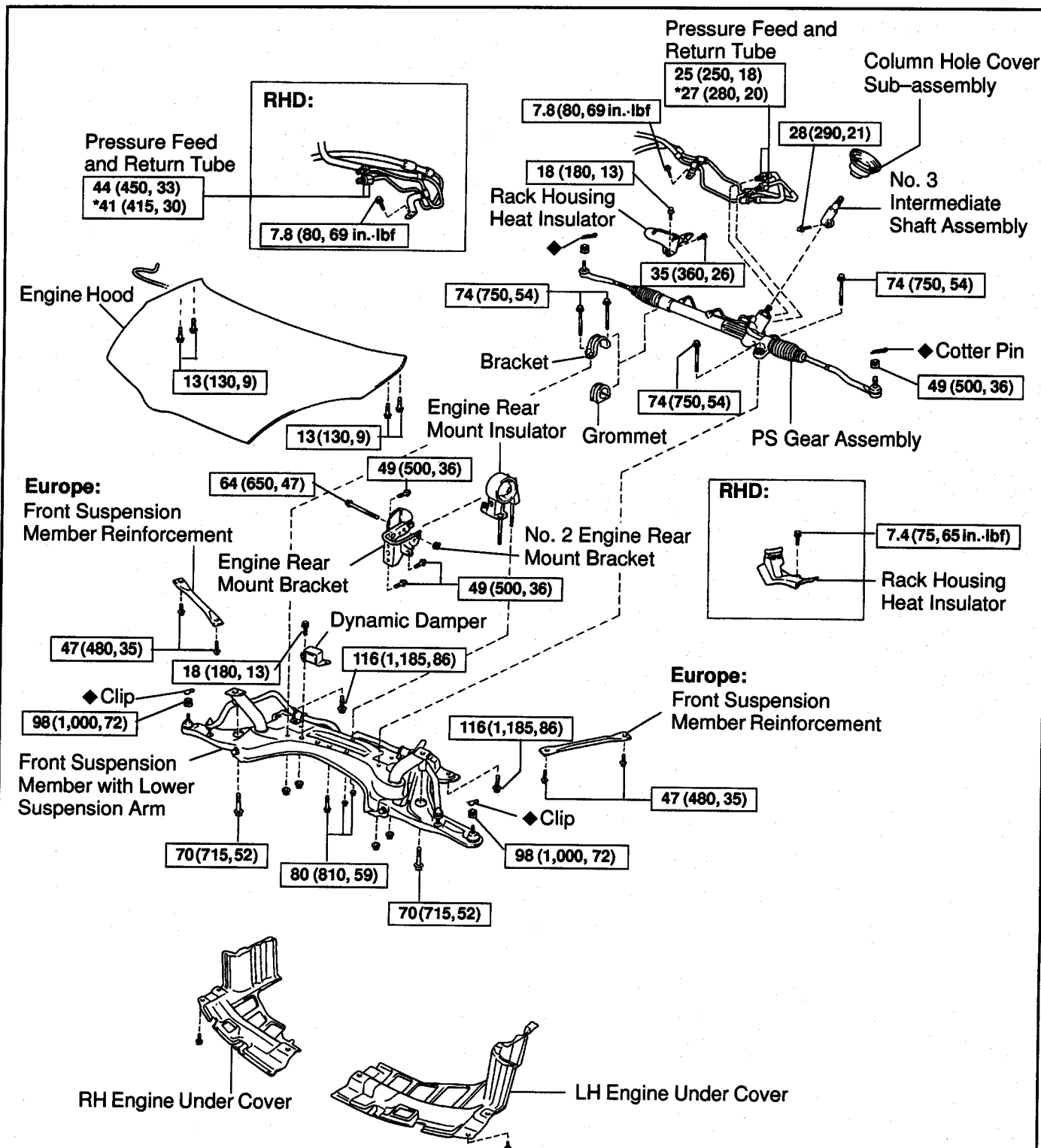
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

18. w/ Airbag:**INSTALL STEERING WHEEL PAD (See page SR-20)****19. CHECK FRONT WHEEL ALIGNMENT**

(See page SA-4)

POWER STEERING GEAR COMPONENTS

SR0W3-02



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

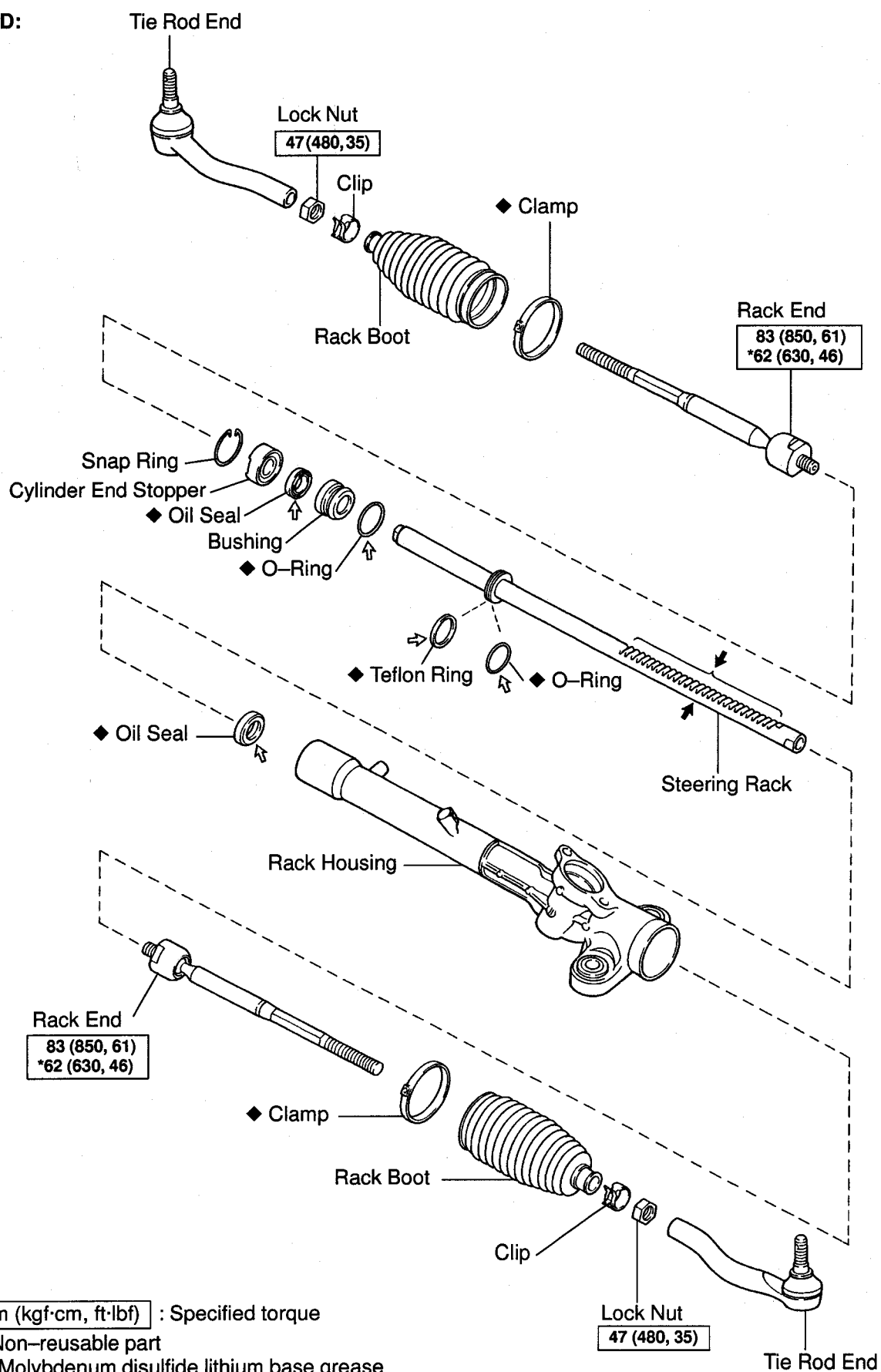
◆ Non-reusable part

* For use with SST

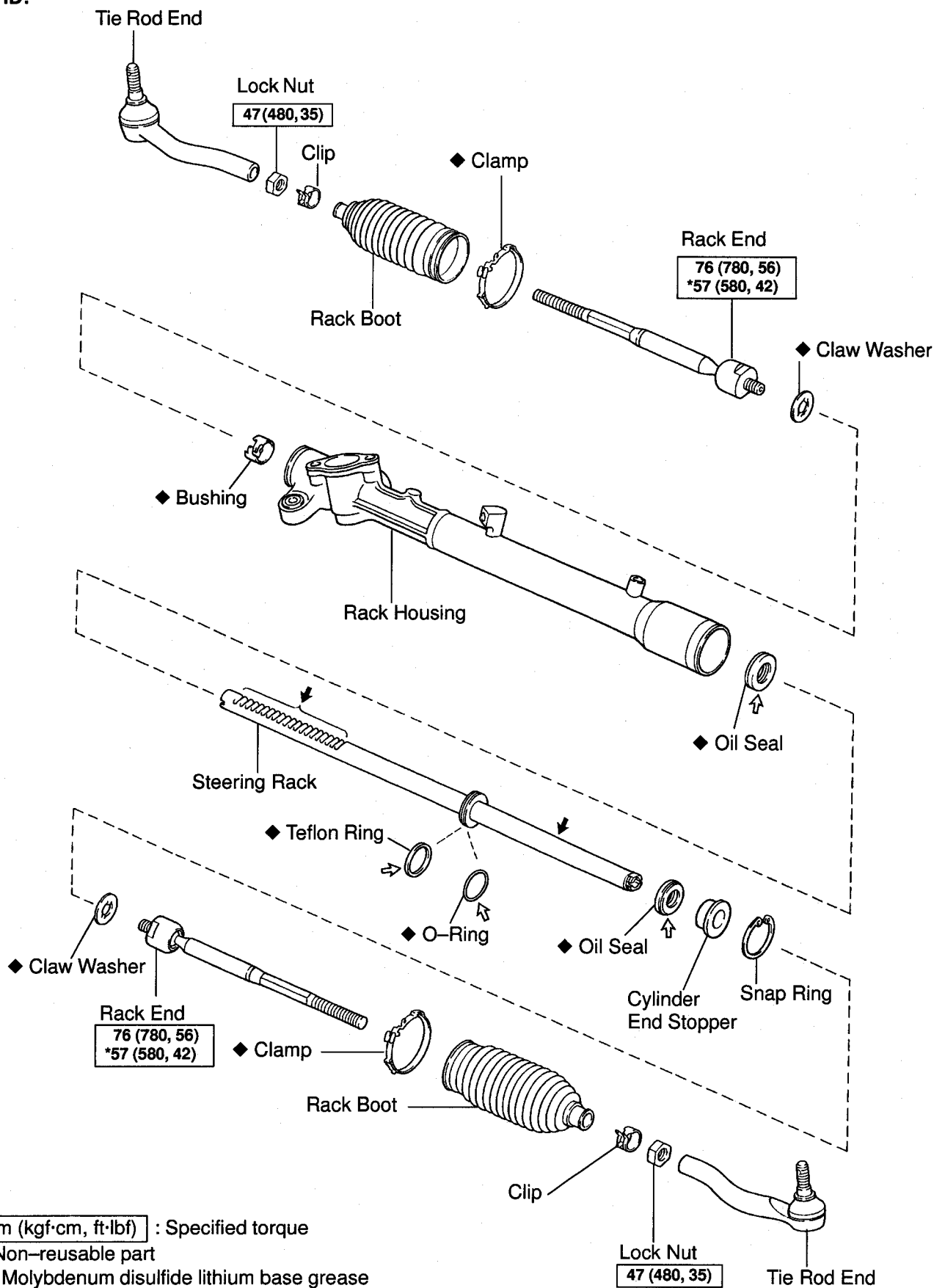
N

F08883

LHD:



RHD:



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

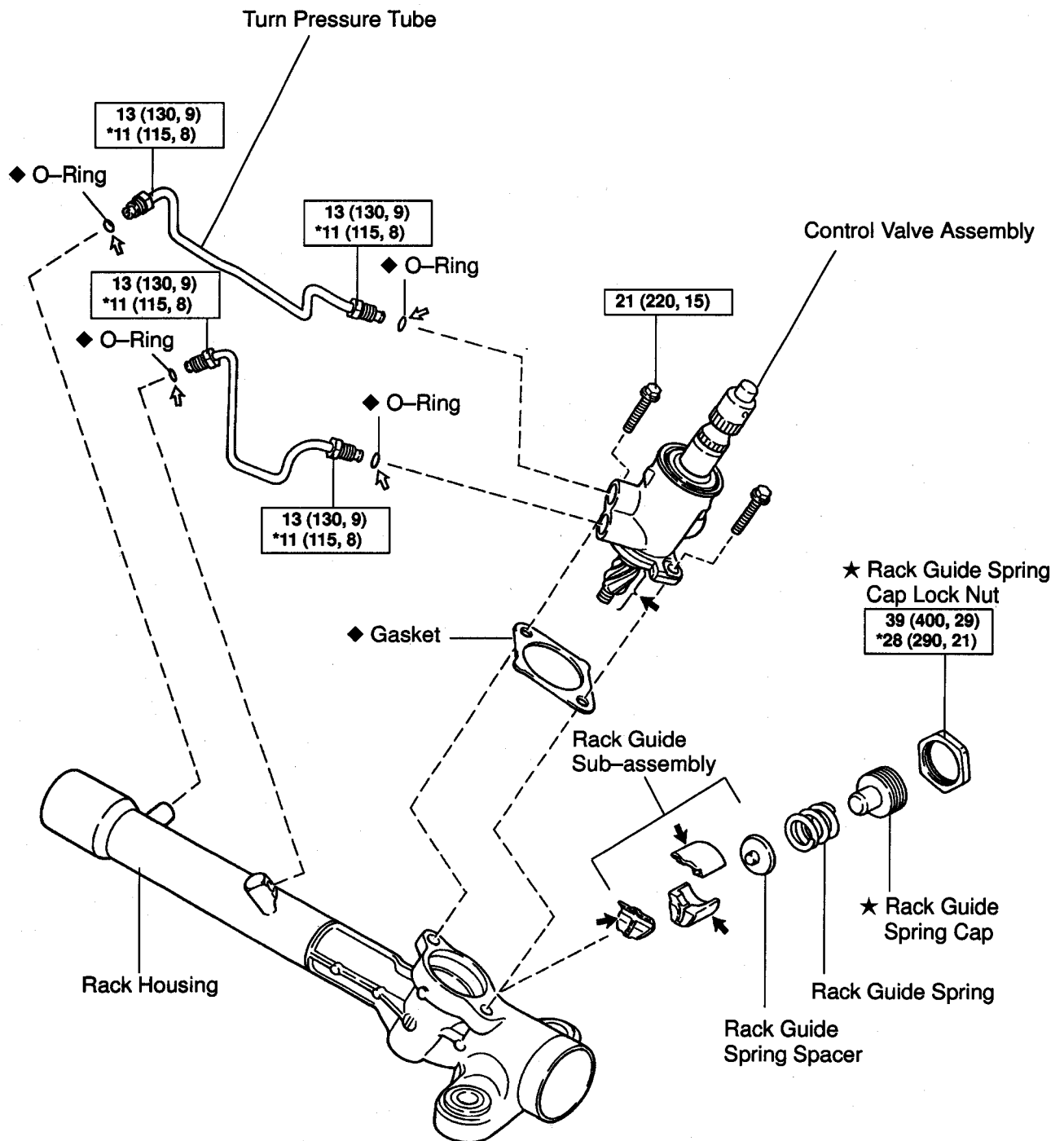
◆ Non-reusable part

◀ Molybdenum disulfide lithium base grease

↗ Power steering fluid

N * For use with SST

LHD:



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

◆ Non-reusable part

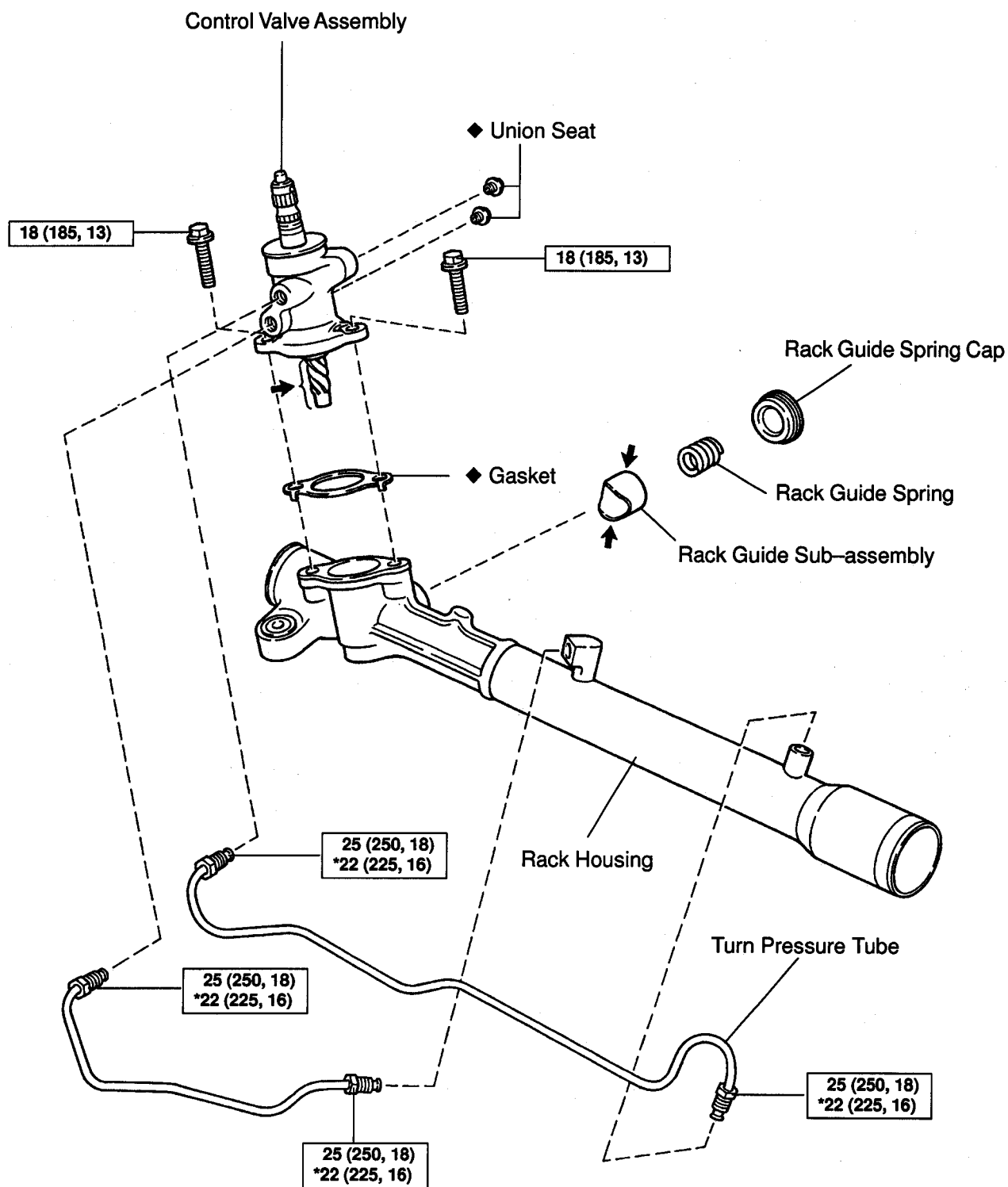
★ Precoated part

◀ Molybdenum disulfide lithium base grease

↶ Power steering fluid

N * For use with SST

RHD:



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

◆ Non-reusable part

◀ Molybdenum disulfide lithium base grease

↺ Power steering fluid

* For use with SST

N

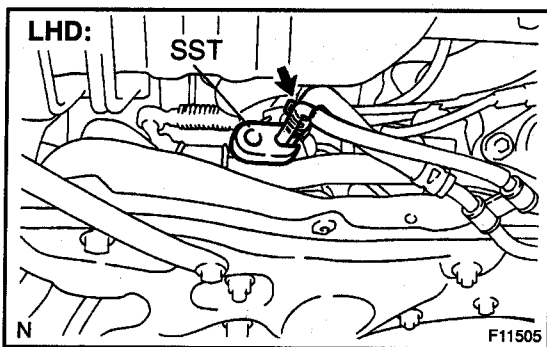
REMOVAL

NOTICE:

w/ Airbag:

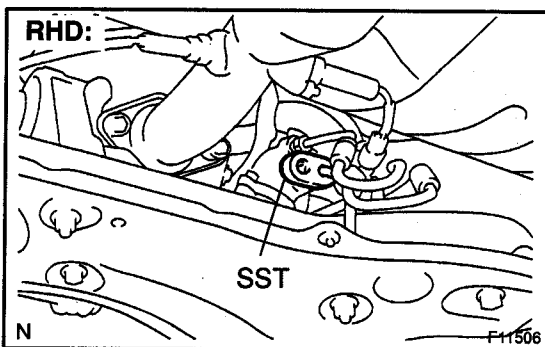
Remove the steering wheel assembly before the steering gear removal, because there is possibility of breaking of the spiral cable.

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD
2. w/ Airbag:
REMOVE STEERING WHEEL PAD (See page SR-12)
3. w/ Airbag:
REMOVE STEERING WHEEL (See page SR-12)
4. REMOVE RH AND LH ENGINE UNDER COVERS
5. DISCONNECT RH AND LH TIE ROD ENDS
(See page SA-9)
6. REMOVE NO. 2 COLUMN HOLE COVER
(See page SR-12)
7. DISCONNECT SLIDING YOKE (See page SR-12)

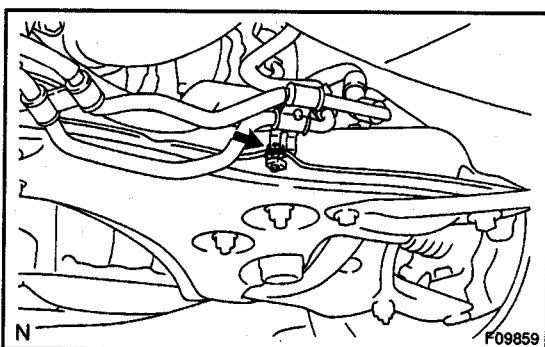


8. DISCONNECT PRESSURE FEED AND RETURN TUBES

- (a) Disconnect the column hole cover sub-assembly.
- (b) LHD:
Remove the clip and disconnect the return hose.
- (c) LHD:
Using SST, disconnect the pressure feed and return tubes.
SST 09023-12900



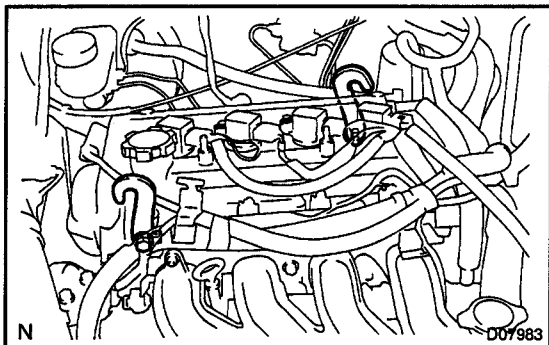
- (d) RHD:
Using SST, disconnect the pressure feed and return tubes.
SST 09023-12700



9. DISCONNECT TUBE CLAMP

Remove the bolt and disconnect the tube clamp.

10. REMOVE ENGINE HOOD (See page BO-10)



11. ATTACH ENGINE SLING DEVICE TO ENGINE HANGERS

- (a) Install the 2 No. 1 engine hangers with the bolt in the correct direction.

Parts No.:

No. 1 engine hanger: 12281-21010

Bolt: 91511-60818

Torque: 20 N·m (204 kgf-cm, 15 ft-lbf)

- (b) Attach the engine chain hoist to the engine hangers.

CAUTION:

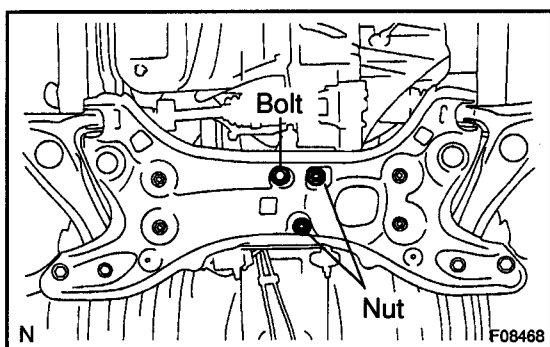
Do not attempt to hang the engine by hooking the chain to any other part.

12. DISCONNECT LOWER SUSPENSION ARM FROM STEERING KNUCKLE (See page SA-32)

13. Europe:

REMOVE RH AND LH FRONT SUSPENSION MEMBER REINFORCEMENT

- (a) Remove the 2 bolts and front suspension member reinforcement.
- (b) Employ the same manner described above to the other side.

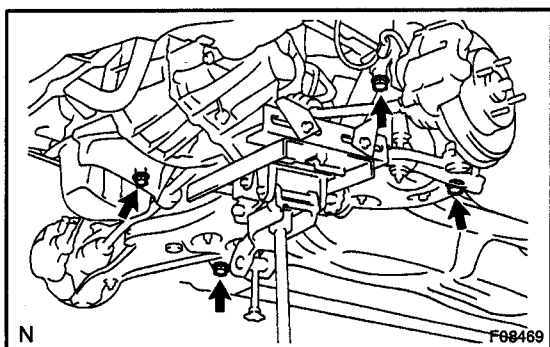


14. DISCONNECT ENGINE REAR MOUNT INSULATOR AND FRONT SUSPENSION MEMBER

Remove the bolt and 2 nuts, and disconnect the engine rear mount insulator and front suspension member.

15. SUPPORT FRONT SUSPENSION MEMBER WITH LOWER SUSPENSION ARM

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

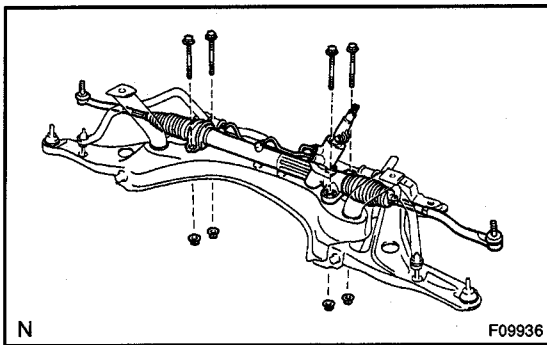


16. REMOVE FRONT SUSPENSION MEMBER WITH LOWER SUSPENSION ARM AND PS GEAR ASSEMBLY

Remove the 4 bolts and front suspension member with lower suspension arm and PS gear assembly.

17. REMOVE PS GEAR ASSEMBLY

- (a) RHD:
Remove the bolt and rack housing heat insulator.
- (b) LHD:
Remove the stabilizer bar (See page SA-36).
- (c) LHD:
Remove the bolt of the rack housing heat insulator.
- (d) LHD:
Remove the 2 bolts, rack housing heat insulator and dynamic damper.
- (e) Remove the column hole cover sub-assembly.

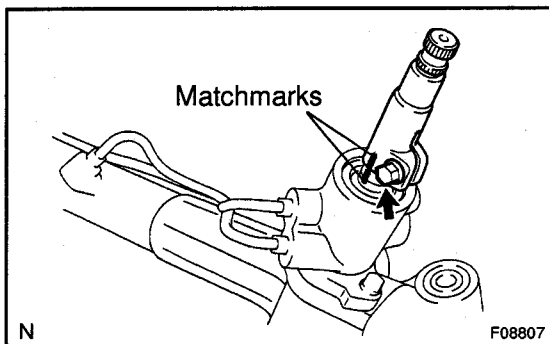


- (f) Remove the 4 bolts, nuts and PS gear assembly from the front suspension member.

NOTICE:

Because the nut has its own stopper, do not turn the nut and torque the bolt with the nut fixed.

- (g) Remove the bracket and grommet from the PS gear assembly.

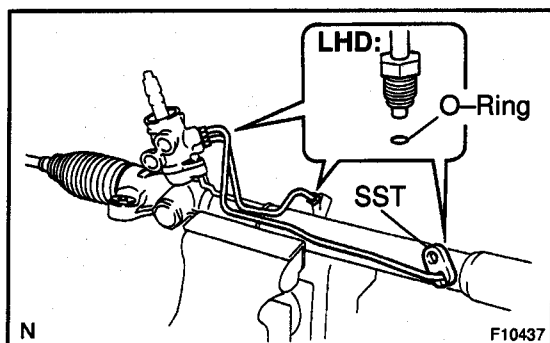


- (h) Place matchmarks on the No. 3 intermediate shaft assembly and control valve shaft.

- (i) Remove the bolt and No. 3 intermediate shaft assembly.

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

- (a) Remove the through bolt, No. 2 engine rear mount bracket and engine rear mount insulator.
- (b) Remove the 3 bolts and engine rear mount bracket.



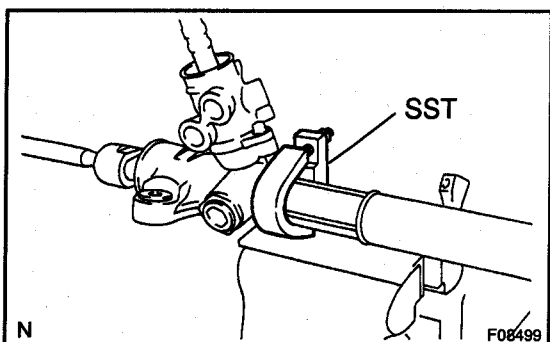
DISASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. REMOVE 2 TURN PRESSURE TUBES

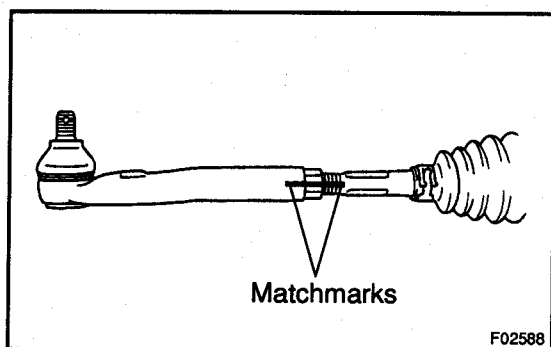
- (a) Using SST, remove the 2 turn pressure tubes.
SST 09023-38200
- (b) LHD:
Remove the 4 O-rings from 2 turn pressure tubes.



2. SECURE PS GEAR ASSEMBLY IN VISE

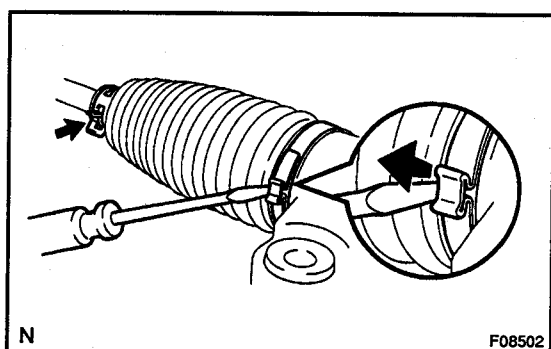
Using SST, secure the PS gear assembly in a vise.

SST 09612-00012



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

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



4. LHD:

REMOVE RH AND LH CLIPS, CLAMPS AND RACK BOOTS

- (a) Using a screwdriver, loosen the clamp.
- (b) Remove the clip, clamp and rack boot.

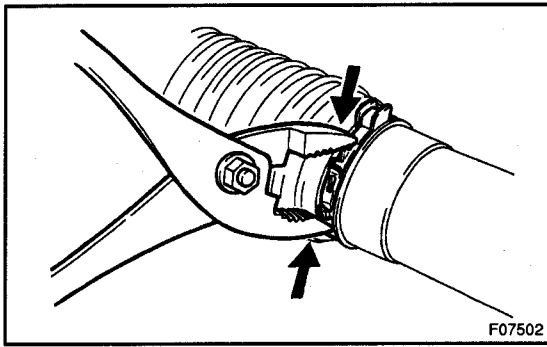
NOTICE:

Be careful not to damage the boot.

HINT:

Mark the RH and LH rack boots.

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



**5. RHD:
REMOVE RH AND LH CLIPS, CLAMPS AND RACK
BOOTS**

- (a) Using pliers, loosen the clamp.
- (b) Remove the clip, clamp and rack boot.

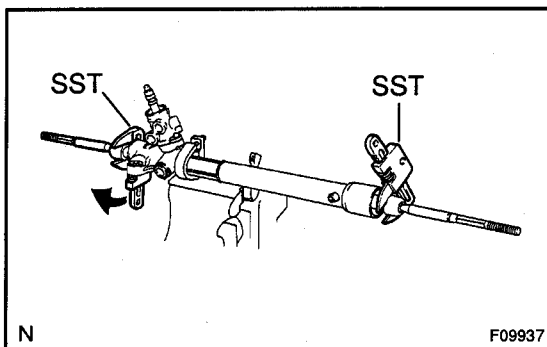
NOTICE:

Be careful not to damage the boot.

HINT:

Mark the RH and LH rack boots.

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



**6. LHD:
REMOVE RH AND LH RACK ENDS**

- (a) Using SST, hold the RH rack end steadily and using another SST, remove the LH 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.

- (b) Using SST, hold the steering rack LH side steadily and using another SST, remove the RH rack end.

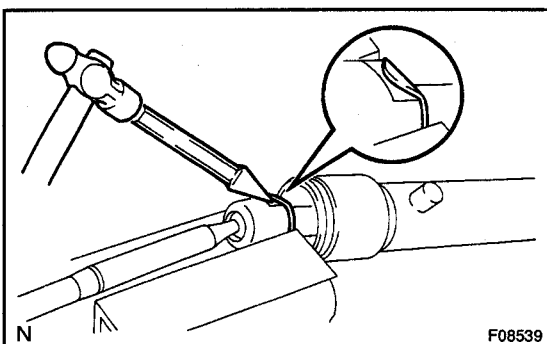
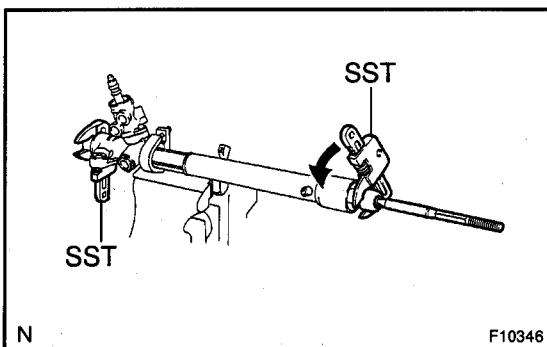
SST 09922-10010

NOTICE:

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

HINT:

Mark the RH and LH rack ends.

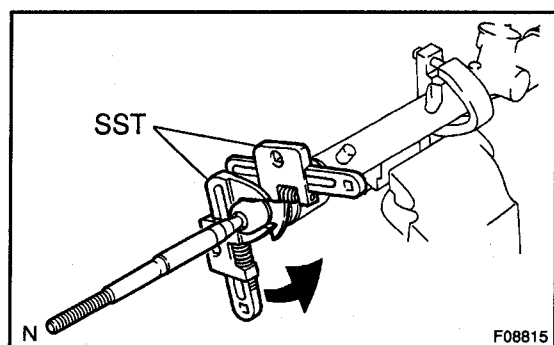


**7. RHD:
REMOVE RH AND LH RACK ENDS AND CLAW WASH-
ERS**

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

NOTICE:

Avoid any impact on the steering rack.



- (b) Using SST, hold the steering rack steadily and using another SST, remove the rack end.
SST 09922-10010

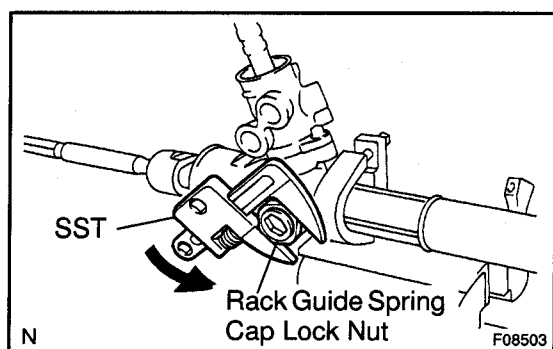
NOTICE:

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.

**8. LHD:****REMOVE RACK GUIDE SPRING CAP LOCK NUT**

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

SST 09922-10010

NOTICE:

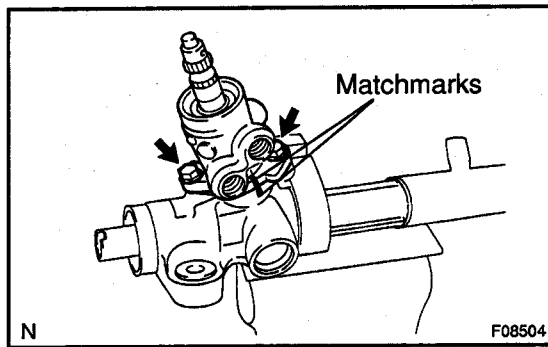
Use SST 09922-10010 in the direction shown in the illustration.

9. LHD:**REMOVE RACK GUIDE SPRING CAP, RACK GUIDE SPRING, RACK GUIDE SPRING SPACER AND RACK GUIDE SUB-ASSEMBLY**

- (a) Using a hexagon wrench (19 mm), remove the rack guide spring cap.
(b) Remove the rack guide spring, rack guide spring spacer and rack guide sub-assembly.

10. RHD:**REMOVE RACK GUIDE SPRING CAP, RACK GUIDE SPRING AND RACK GUIDE SUB-ASSEMBLY**

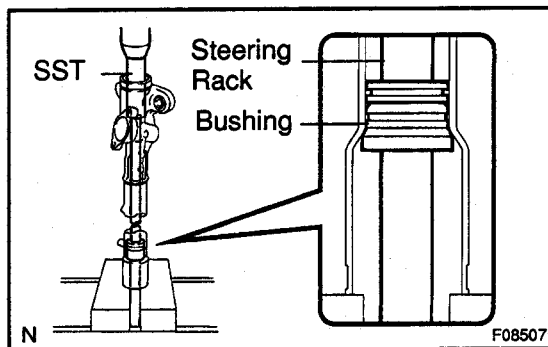
- (a) Using a hexagon wrench (21 mm), remove the rack guide spring cap.
(b) Remove the rack guide spring and rack guide sub-assembly.

**11. REMOVE CONTROL VALVE ASSEMBLY**

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

12. REMOVE CYLINDER END STOPPER

- (a) LHD:
Using needle nose pliers, remove the snap ring.
- (b) RHD:
Using snap ring pliers, remove the snap ring.
- (c) Pull out the cylinder end stopper.

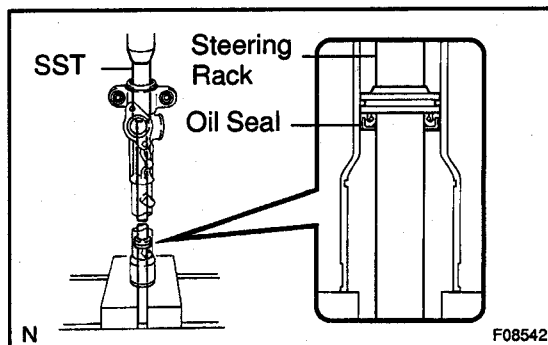
**13. LHD:****REMOVE STEERING RACK WITH BUSHING**

- (a) Using SST, press out the steering rack with the bushing.
SST 09950-70010 (09951-07200)

NOTICE:

Take care not to drop the steering rack.

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

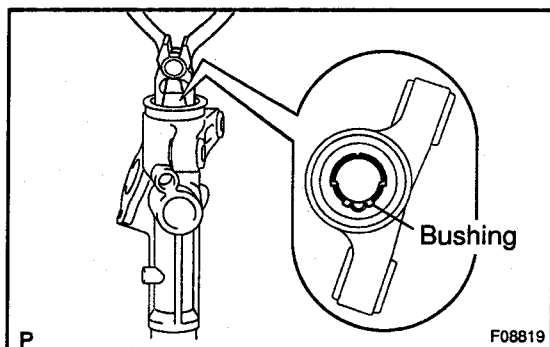
**14. RHD:****REMOVE STEERING RACK AND OIL SEAL**

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

SST 09950-70010 (09951-07200)

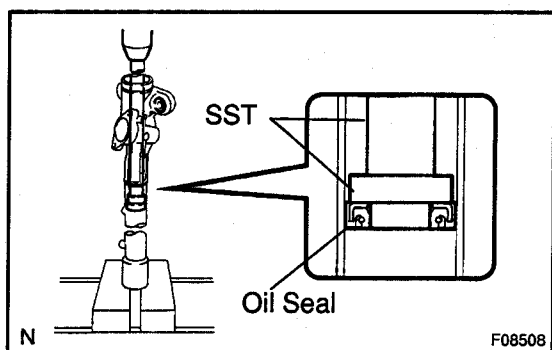
NOTICE:

Take care not to drop the steering rack.



**15. RHD:
REMOVE BUSHING**

Using needle nose pliers, remove the bushing.



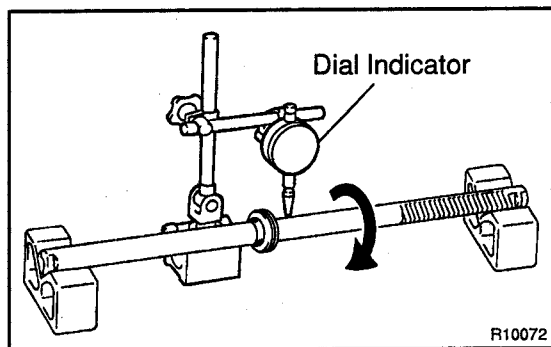
16. REMOVE OIL SEAL

Using SST, press out the oil seal.

SST 09950-60010 (09951-00240),
09950-70010 (09951-07360)

NOTICE:

Do not damage the rack housing.



INSPECTION

NOTICE:

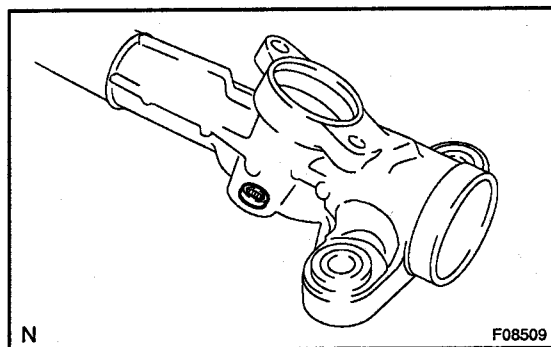
When using a vise, do not overtighten it.

1. 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.)

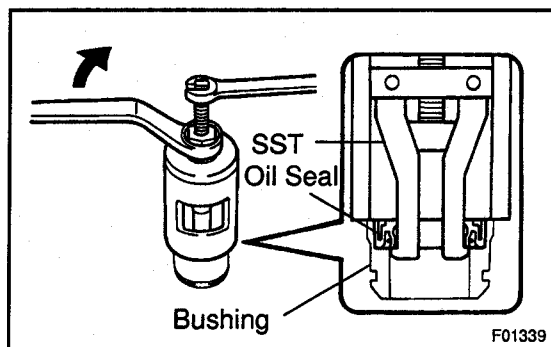
- (b) Check the back surface for wear and damage.



2. INSPECT BEARING

- (a) Check the needle roller bearing for pitmarks or damage. If faulty, replace the rack housing.

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



REPLACEMENT

NOTICE:

When using a vise, do not overtighten it.

1. LHD:

IF NECESSARY, REPLACE OIL SEAL

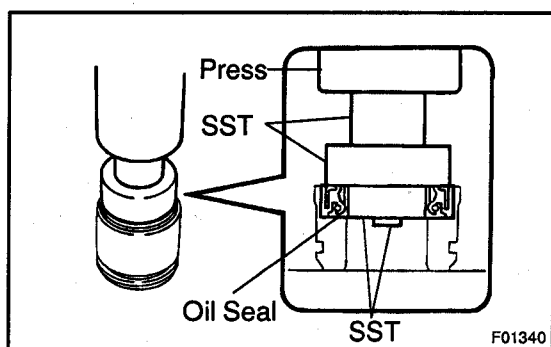
- (a) Using SST, remove the oil seal from the bushing.
SST 09612-24014 (09613-22011)

NOTICE:

Be careful not to damage the bushing.

HINT:

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



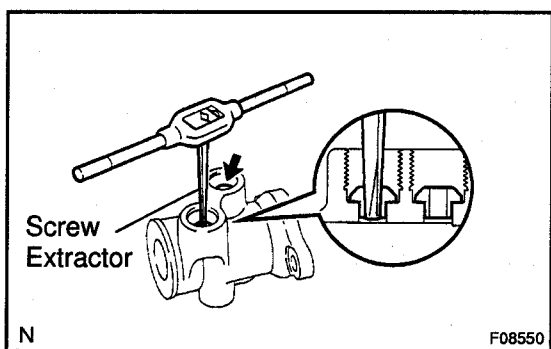
- (b) Coat a new oil seal lip with power steering fluid.

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

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

NOTICE:

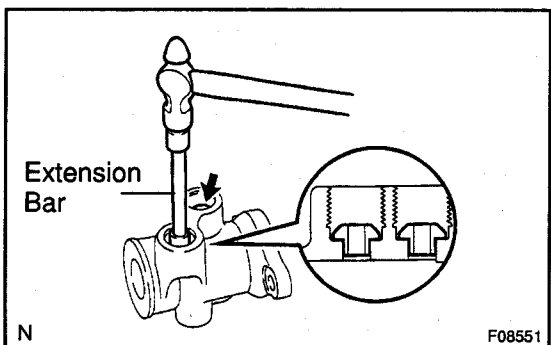
Make sure that the oil seal is installed facing in the correct direction.



2. RHD:

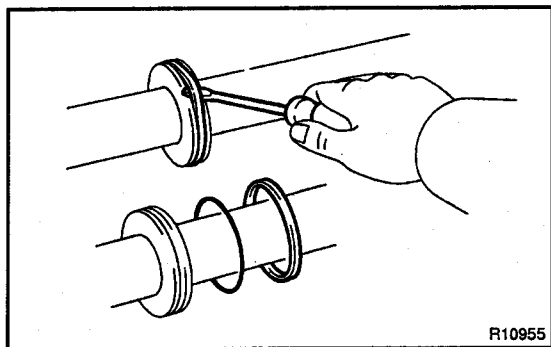
IF NECESSARY, REPLACE 2 UNION SEATS

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



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

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



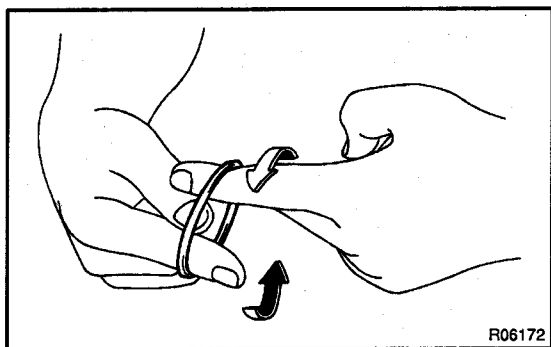
3. IF NECESSARY, REPLACE TEFLON RING AND O-RING

- (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.

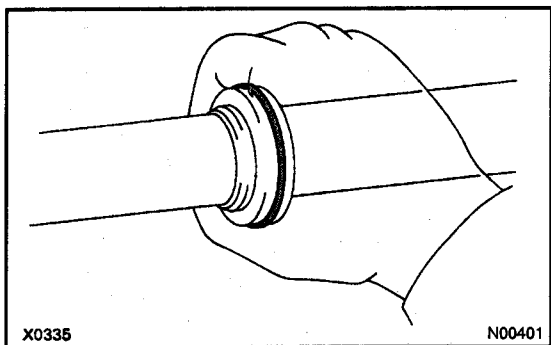
- (b) Coat a new O-ring with power steering fluid and install it to the steering rack.



- (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.

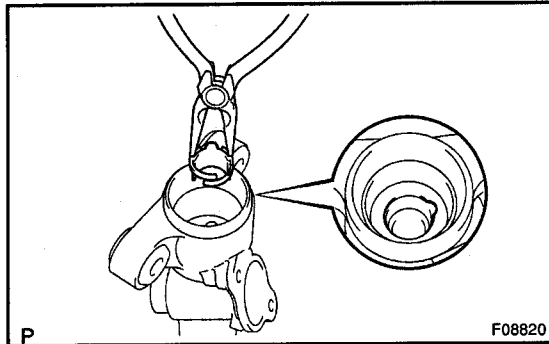
MEMO

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-47)**

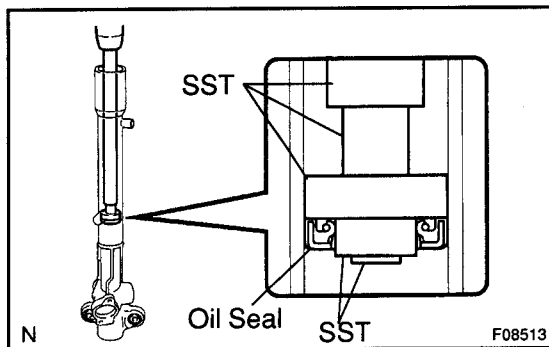


2. **RHD:
INSTALL BUSHING**

Using needle nose pliers, install a new bushing.

3. **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 (09951-00210, 09951-00370,
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.

4. **INSTALL STEERING RACK**

- (a) Install SST to the rack.

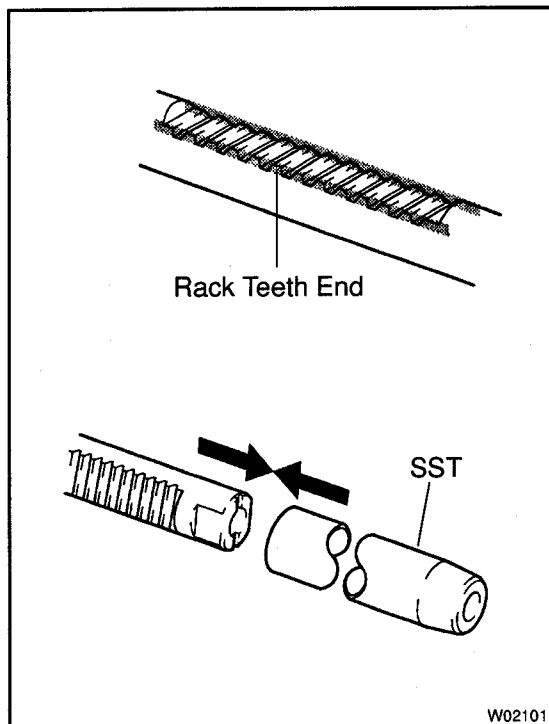
SST 09631-10041

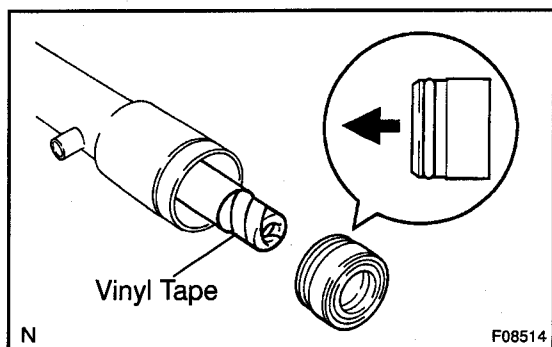
HINT:

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 09631-10041



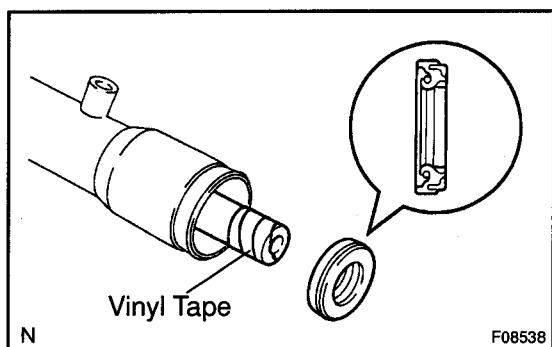


5. LHD: INSTALL BUSHING

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

NOTICE:

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



6. RHD: INSTALL OIL SEAL

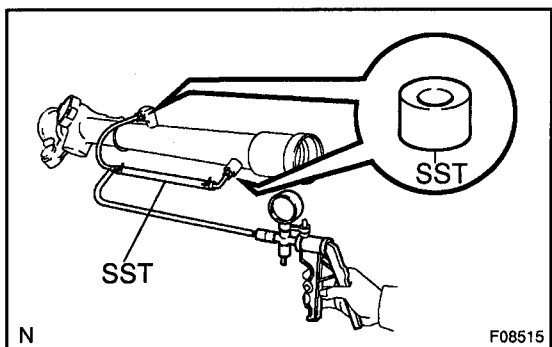
- (a) Coat a new oil seal lip with power steering fluid.
- (b) To prevent oil seal lip damage, wind vinyl tape on the steering rack end, and apply power steering fluid.
- (c) Install the oil seal by pushing it into the rack housing without tilting.

NOTICE:

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

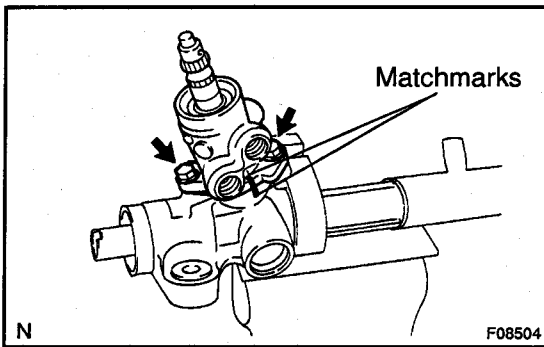
7. INSTALL CYLINDER END STOPPER

- (a) Push into the cylinder end stopper.
- (b) LHD:
Using needle nose pliers, install the snap ring.
- (c) RHD:
Using snap ring pliers, install the snap ring.

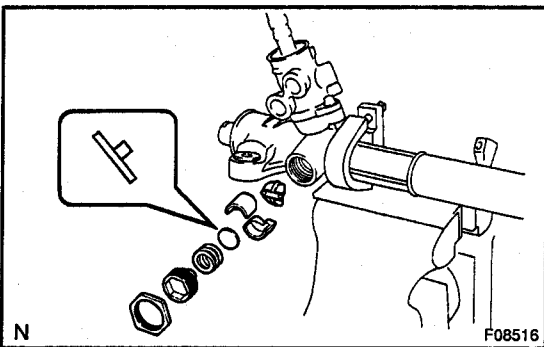


8. AIR TIGHTNESS TEST

- (a) Install SST to the rack housing.
SST 09631-12071 (09633-00010)
- (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 a change in the vacuum, check the installation of the oil seals.

**9. INSTALL CONTROL VALVE ASSEMBLY**

- (a) Install a new gasket.
- (b) Align the matchmarks on the control valve housing and rack housing.
- (c) Push into the control valve assembly.
- (d) Install the 2 bolts.

Torque:**LHD: 21 N·m (220 kgf·cm, 15 ft·lbf)****RHD: 18 N·m (185 kgf·cm, 13 ft·lbf)****10. LHD:****INSTALL RACK GUIDE SUB-ASSEMBLY, RACK GUIDE SPRING SPACER, RACK GUIDE SPRING AND RACK GUIDE SPRING CAP**

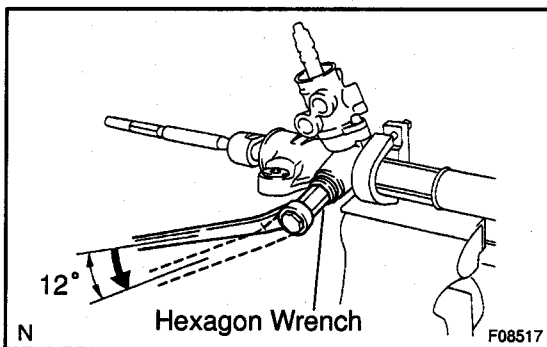
- (a) Install the rack guide sub-assembly, rack guide spring spacer and rack guide spring.

NOTICE:**Make sure that the rack guide spring spacer is installed facing in the correct direction.**

- (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**

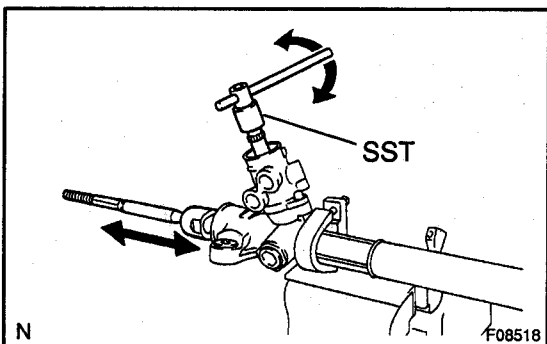
- (c) Temporarily install the rack guide spring cap.

**11. LHD:****ADJUST TOTAL PRELOAD**

- (a) To prevent the steering rack teeth from damaging the oil seal lip, temporarily install the RH and LH rack ends.
- (b) Using a hexagon wrench (19 mm), torque the rack guide spring cap.

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

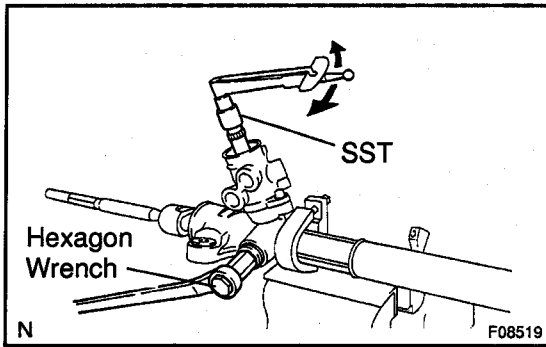
- (c) Using a hexagon wrench (19 mm), return the rack guide spring cap 12°.



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

SST 09616-00010

- (e) Using a hexagon wrench (19 mm), loosen the rack guide spring cap until the rack guide spring is not functioning.

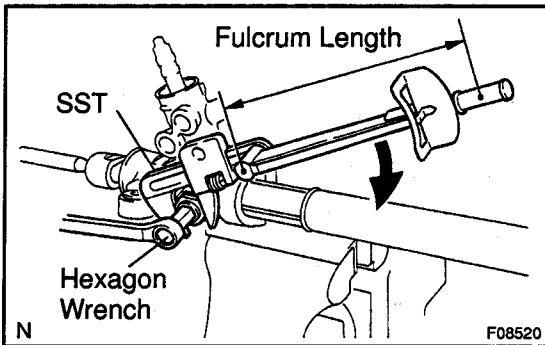


- (f) Using SST, a torque wrench and hexagon wrench (19 mm), tighten the rack guide spring cap until the preload is within the specification.

SST 09616-00010

Preload (turning):

1.2 – 1.4 N·m (12 – 14 kgf·cm, 10.4 – 12.2 in.-lbf)



12. LHD:

INSTALL RACK GUIDE SPRING CAP LOCK NUT

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

Sealant:

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

- (b) Temporarily install the rack guide spring cap lock nut.
(c) Using a hexagon wrench (19 mm), hold the rack guide spring cap and using SST, torque the rack guide spring cap lock nut.

SST 09922-10010

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

NOTICE:

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

HINT:

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

- (d) Recheck the total preload.

Preload (turning):

1.2 – 1.4 N·m (12 – 14 kgf·cm, 10.4 – 12.2 in.-lbf)

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

13. RHD:

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

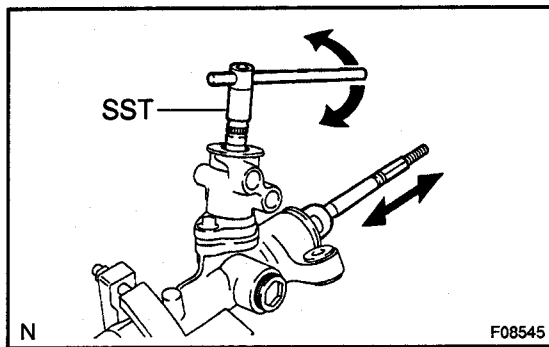
- (a) Install the rack guide sub-assembly and rack guide spring.
(b) Temporarily install the rack guide spring cap.

14. RHD:

CHECK TOTAL PRELOAD

- (a) To prevent the steering rack teeth from damaging the oil seal lip, temporarily install the RH and LH rack ends.
(b) Using a hexagon wrench (21 mm), torque the rack guide spring cap.

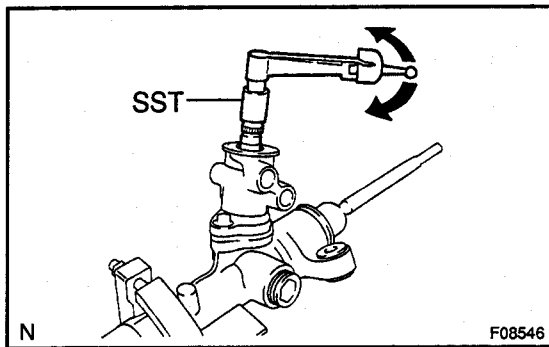
Torque: 74 N·m (750 kgf·cm, 54 ft.-lbf)



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

SST 09616-00010

- (d) Using a hexagon wrench (21 mm), loosen the rack guide spring cap until the rack guide spring is not functioning.



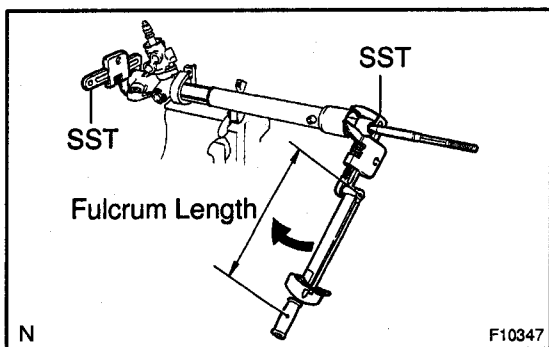
- (e) Using SST and a torque wrench, check the preload.

SST 09616-00010

Preload (turning):

0.8 – 1.5 N·m (8 – 15 kgf·cm, 6.9 – 13.0 in.-lbf)

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



15. LHD:

INSTALL RH AND LH RACK ENDS

- (a) Temporarily install the RH rack end.
 (b) Using SST, hold the steering rack LH side steadily and using another SST, torque the RH rack end.

SST 09922-10010

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

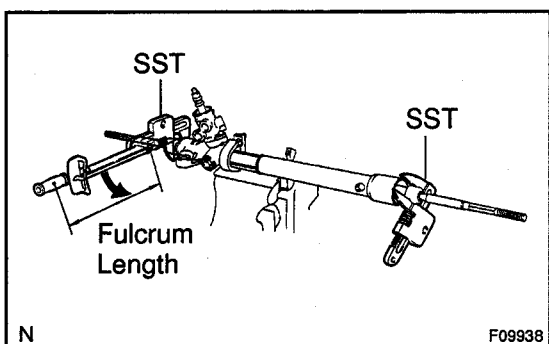
NOTICE:

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) Temporarily install the LH rack end.



- (d) Using SST, hold the RH rack end steadily and using another SST, torque the LH rack end.

SST 09922-10010

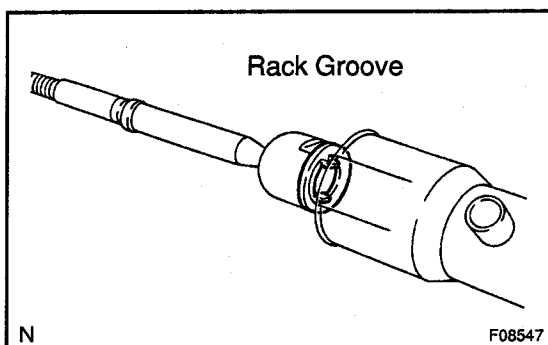
Torque: 62 N·m (630 kgf·cm, 46 ft-lbf)

NOTICE:

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

HINT:

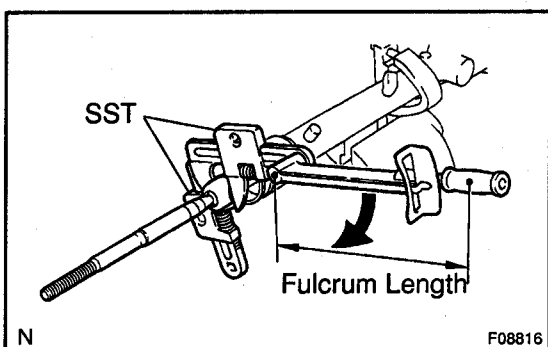
Use a torque wrench with a fulcrum length of 380 mm (14.96 in.).

**16. RHD:****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 SST, hold the steering rack steadily and using another SST, torque the rack end.

SST 09922-10010

Torque: 57 N·m (580 kgf·cm, 42 ft·lbf)

NOTICE:

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

HINT:

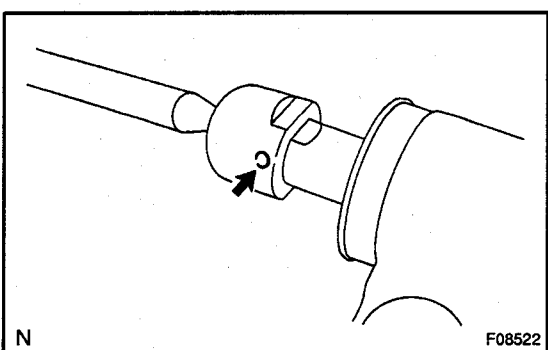
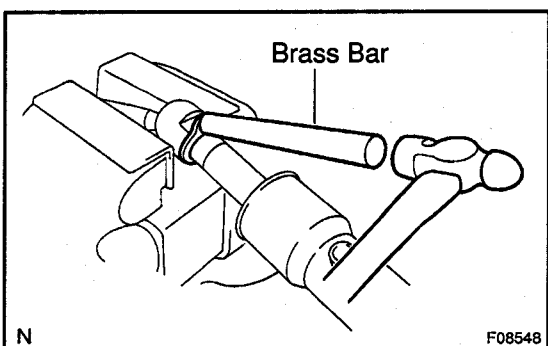
Use a torque wrench with a fulcrum length of 380 mm (14.96 in.).

- (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.

**17. LHD:****INSTALL RH AND LH RACK BOOTS, CLAMPS AND CLIPS**

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

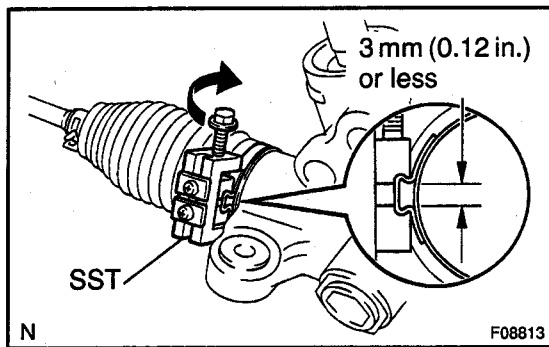
HINT:

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

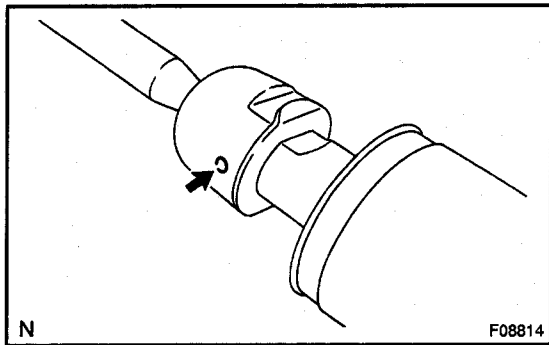
- (b) Install the boot, clip and a new clamp.

NOTICE:

Be careful not to damage or twist the boot.



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

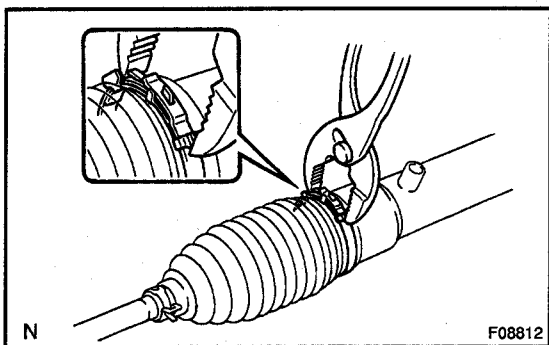


**18. RHD:
INSTALL RH AND LH RACK BOOTS, CLAMPS AND CLIPS**

- (a) Ensure that the steering rack end 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.

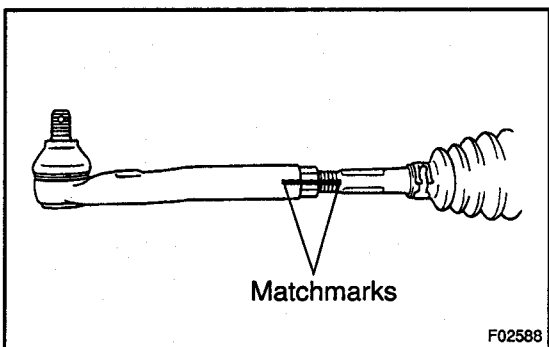


- (b) Install the boot, clip and a new clamp.

NOTICE:

Be careful not to damage or twist the boot.

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

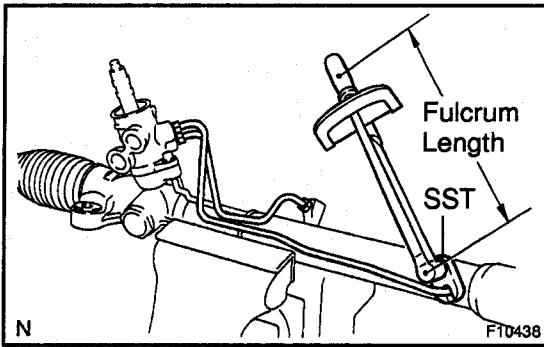


19. INSTALL RH AND LH TIE ROD ENDS AND LOCK NUTS

- (a) Screw the lock nut and tie rod end onto the rack end until the matchmarks are aligned.
- (b) After adjusting toe-in, torque the nut (See page SA-4).

Torque: 47 N·m (480 kgf·cm, 35 ft·lbf)

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

**20. INSTALL 2 TURN PRESSURE TUBES****(a) LHD:**

Coat 4 new O-rings with power steering fluid and install them to 2 turn pressure tubes.

(b) Using SST, install the 2 turn pressure tubes.

SST 09023-38200

Torque:

LHD: 11 N·m (115kgf·cm, 8 ft·lbf)

RHD: 22 N·m (225 kgf·cm, 16 ft·lbf)

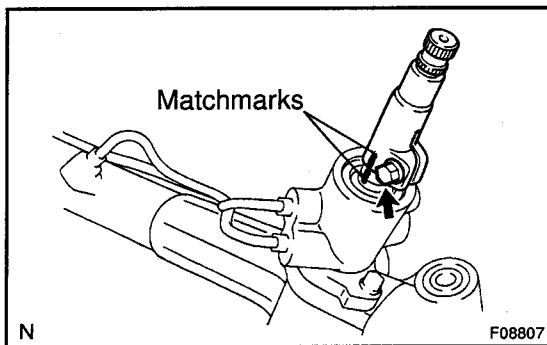
HINT:

- **LHD:**
Use a torque wrench with a fulcrum length of 250 mm (9.84 in.).
- **RHD:**
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

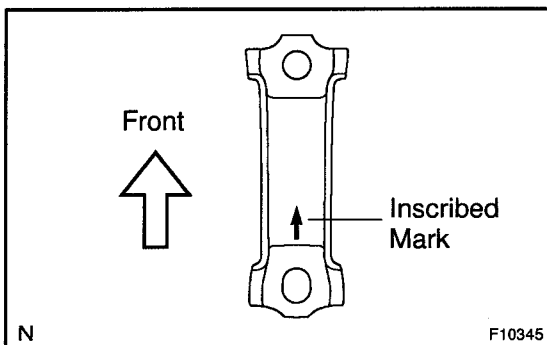
1. INSTALL ENGINE REAR MOUNT INSULATOR AND ENGINE REAR MOUNT BRACKET

- (a) Install the engine rear mount bracket with the 3 bolts.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)
- (b) Install the engine rear mount insulator with the through bolt and No. 2 engine rear mount bracket.
Torque: 64 N·m (650 kgf·cm, 47 ft·lbf)



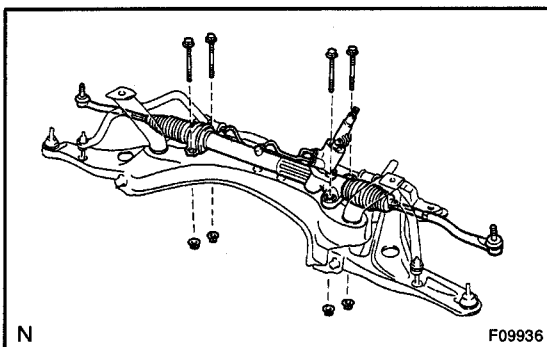
2. INSTALL PS GEAR ASSEMBLY

- (a) Align the matchmarks on the No. 3 intermediate shaft assembly and control valve shaft.
- (b) Install the No. 3 intermediate shaft assembly with the bolt.
Torque: 28 N·m (290 kgf·cm, 21 ft·lbf)
- (c) Install the grommet and bracket to the PS gear assembly.



HINT:

Install the bracket with the inscribed mark facing to the front of the vehicle.



- (d) Install the PS gear assembly with the 4 bolts and nuts to the front suspension member.
Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

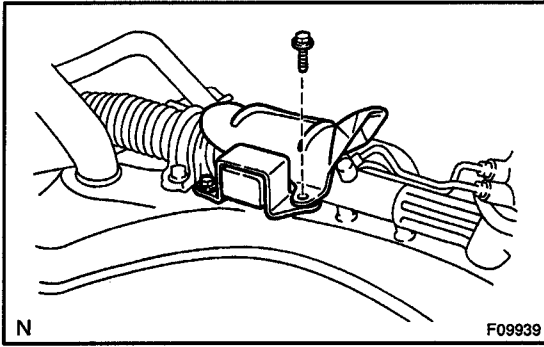
NOTICE:

Because the nut has its own stopper, do not turn the nut and torque the bolt with the nut fixed.

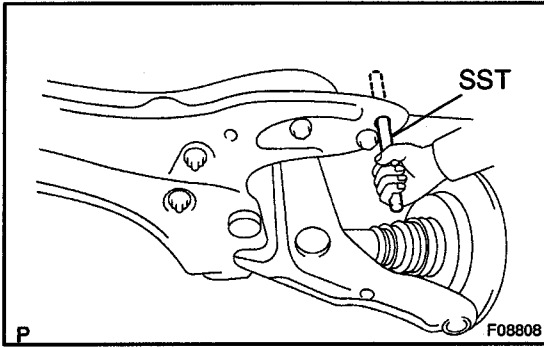
- (e) Install the column hole cover sub-assembly.
- (f) RHD:
Install the rack housing heat insulator with the bolt.
Torque: 7.4 N·m (75 kgf·cm, 65 in.-lbf)

HINT:

When assembling the steering gear heat insulator, set a projection of the column hole cover sub-assembly to the interlocking part of the steering gear heat insulator.

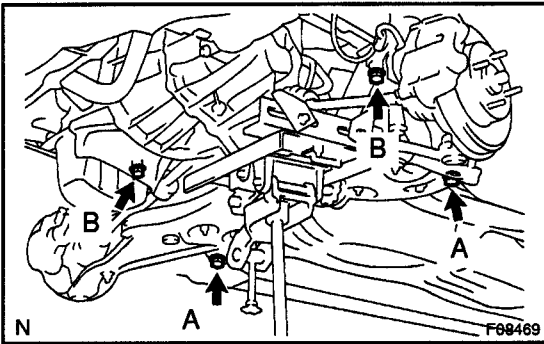


- (g) LHD:
Install the dynamic damper and rack housing heat insulator with the 2 bolts as shown in the illustration.
Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)
- (h) LHD:
Install the bolt of the rack housing heat insulator.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)
- (i) LHD:
Install the stabilizer bar (See page SA-38).

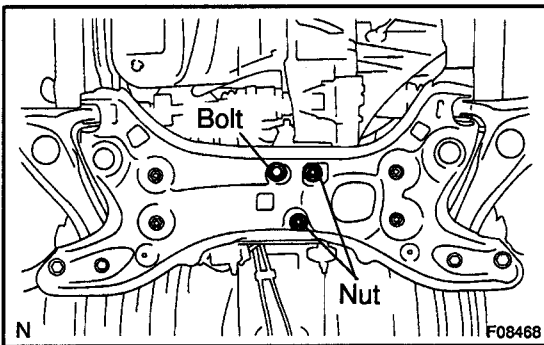


3. INSTALL FRONT SUSPENSION MEMBER WITH LOWER SUSPENSION ARM AND PS GEAR ASSEMBLY

- (a) Using SST, align the holes of the front suspension member and body.
SST 09670-00010
- (b) Employ the same manner described above to the other side.



- (c) Install the front suspension member with lower suspension arm and PS gear assembly with the 4 bolts.
Torque:
Bolt A: 116 N·m (1,185 kgf·cm, 86 ft·lbf)
Bolt B: 70 N·m (715 kgf·cm, 52 ft·lbf)



4. CONNECT ENGINE REAR MOUNT INSULATOR AND FRONT SUSPENSION MEMBER

Connect the engine rear mount insulator and front suspension member with the bolt and 2 nuts.

Torque: 80 N·m (810 kgf·cm, 59 ft·lbf)

5. Europe:

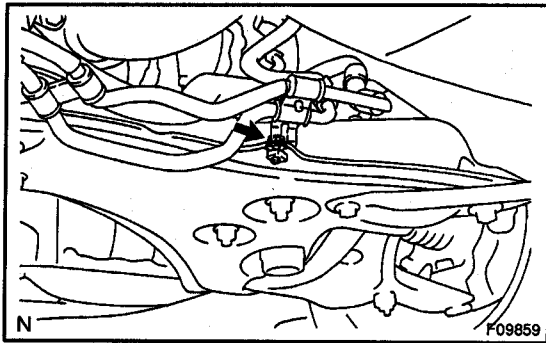
INSTALL RH AND LH FRONT SUSPENSION MEMBER REINFORCEMENT

- (a) Install the front suspension member reinforcement with the 2 bolts.
Torque: 47 N·m (480 kgf·cm, 35 ft·lbf)
- (b) Employ the same manner described above to the other side.
6. **CONNECT LOWER SUSPENSION ARM TO STEERING KNUCKLE (See page SA-34)**

7. DISENGAGE ENGINE SLING DEVICE FROM ENGINE HANGERS

- (a) Disengage the engine chain hoist from the engine hangers.
- (b) Remove the 2 No. 1 engine hangers.

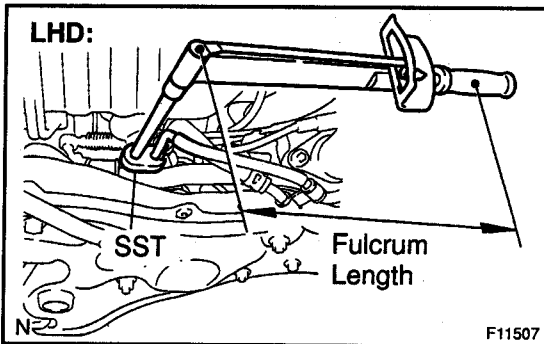
8. INSTALL ENGINE HOOD (See page BO-10)



9. CONNECT TUBE CLAMP

- (a) Temporarily connect the pressure feed and return tubes.
- (b) Connect the tube clamp with the bolt.

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



10. CONNECT PRESSURE FEED AND RETURN TUBES

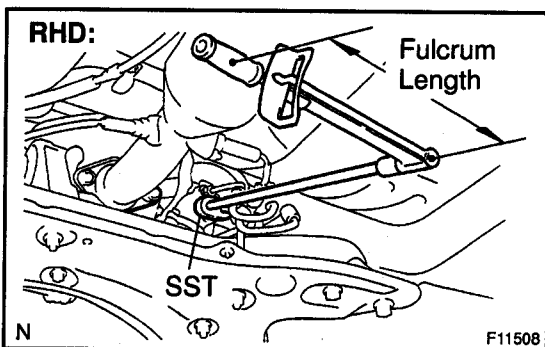
- (a) LHD:
Using SST, connect the pressure feed and return tubes.
SST 09023-12900

Torque: 27 N·m (280 kgf·cm, 20 ft.-lbf)

HINT:

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

- (b) LHD:
Connect the return hose with the clip.



- (c) RHD:
Using SST, connect the pressure feed and return tubes.
SST 09023-12700

Torque: 41 N·m (415 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.

- (d) Connect the column hole cover sub-assembly.
- 11. **CONNECT SLIDING YOKE (See page SR-20)**
- 12. **INSTALL NO. 2 COLUMN HOLE COVER**
(See page SR-20)
- 13. **CONNECT RH AND LH TIE ROD ENDS**
(See page SA-13)
- 14. **INSTALL RH AND LH ENGINE UNDER COVERS**
- 15. **PLACE FRONT WHEELS FACING STRAIGHT AHEAD**

HINT:

Do it with the front of the vehicle jacked up.

- 16. **w/ Airbag:**
CENTER SPIRAL CABLE (See page SR-20)
- 17. **w/ Airbag:**
INSTALL STEERING WHEEL
 - (a) Align the matchmarks on the steering wheel and steering column main shaft.
 - (b) Temporarily tighten the steering wheel set nut.
- 18. **BLEED POWER STEERING SYSTEM**
(See page SR-5)
- 19. **w/ Airbag:**
CHECK STEERING WHEEL CENTER POINT
- 20. **w/ Airbag:**
TORQUE STEERING WHEEL SET NUT
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)
- 21. **w/ Airbag:**
INSTALL STEERING WHEEL PAD (See page SR-20)
- 22. **CHECK FRONT WHEEL ALIGNMENT**
(See page SA-4)

