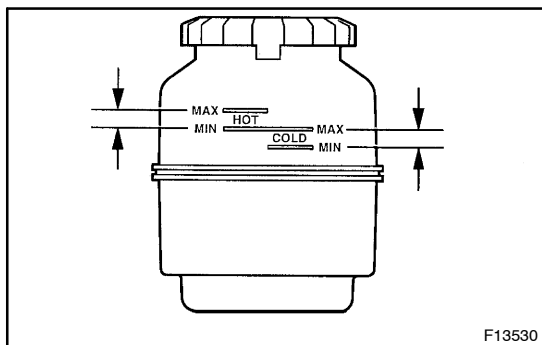


STEERING SYSTEM

SR0DE-04

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 LEXUS GS430/GS300 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 deployed 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.



POWER STEERING FLUID (3UZ-FE) INSPECTION

SR0DH-04

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

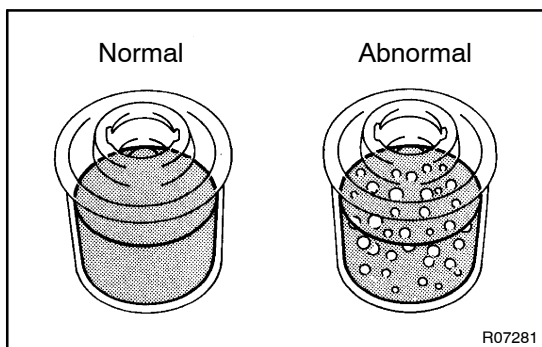
HINT:

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.

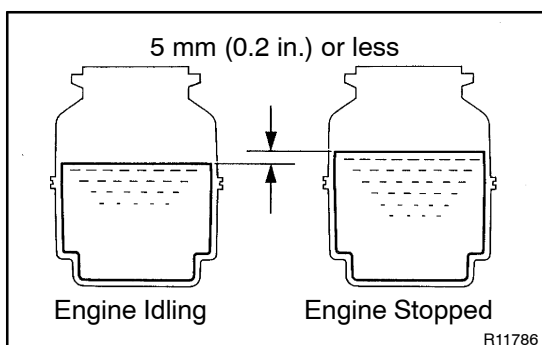
- Start the engine and run it at idle.
- Turn the steering wheel from lock to lock several times to boost fluid temperature.

Fluid temperature: 80°C (176°F)



- Check for foaming or emulsification.

If there is foaming or emulsification, bleed power steering system (See Pub. No. RM588E on page SR-3).



- 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 Pub. No. RM588E on page SR-3).

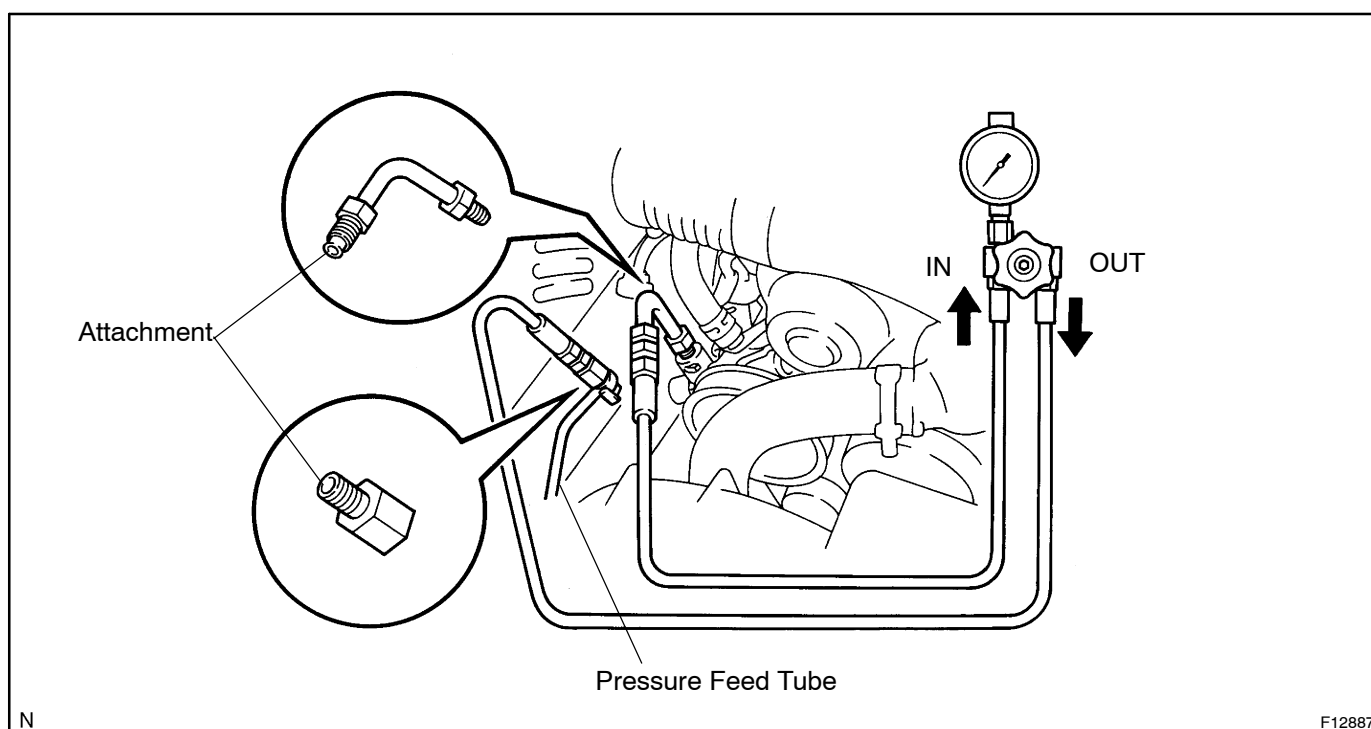
- Check the fluid level.

2. CHECK STEERING FLUID PRESSURE

- (a) Remove the air cleaner inlet.
- (b) Remove the air cleaner assembly with air cleaner hose (See page SR-17).
- (c) Disconnect the pressure feed tube from the PS vane pump (See page SR-17).
- (d) Connect the SST, as shown below.
SST 09640-10010 (09641-01010, 09641-01030, 09641-01060)

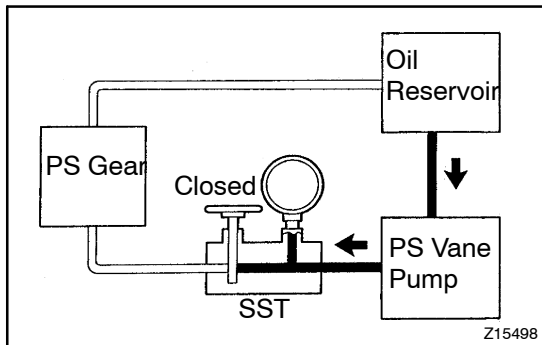
NOTICE:

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



- (e) Bleed the power steering system (See Pub. No. RM588E on page SR-3).
- (f) Start the engine and run it at idle.
- (g) Turn the steering wheel from lock to lock several times to boost fluid temperature.

Fluid temperature: 80 °C (176 °F)



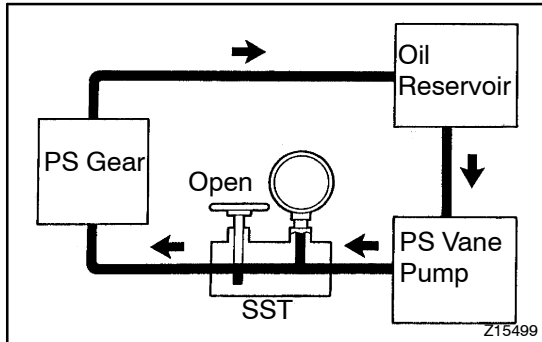
- (h) With the engine idling, close the valve of the SST and observe the reading on the SST.

Minimum fluid pressure:

8,336 kPa (85 kgf/cm², 1,209 psi)

NOTICE:

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



- (i) With the engine idling, open the valve fully.

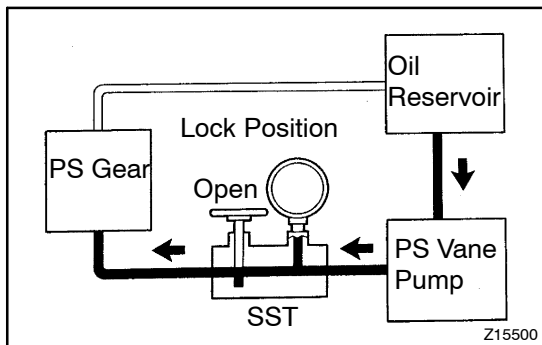
- (j) Measure the fluid pressure at engine speeds of 1,000 rpm and 3,000 rpm.

Difference fluid pressure:

490 kPa (5 kgf/cm², 71 psi) or less

NOTICE:

Do not turn the steering wheel.



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

Minimum fluid pressure:

8,336 kPa (85 kgf/cm², 1,209 psi)

NOTICE:

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

- (l) Disconnect the SST.

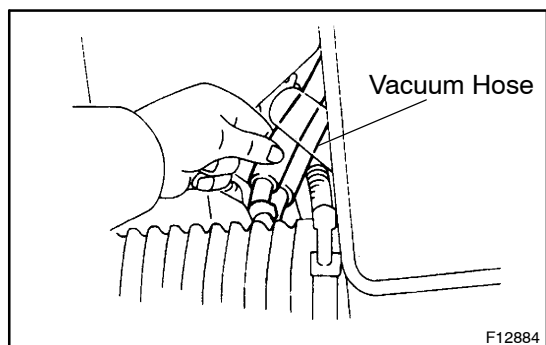
SST 09640-10010 (09641-01010, 09641-01030, 09641-01060)

- (m) Connect the pressure feed tube (See page SR-28).

- (n) Install the air cleaner assembly with air cleaner hose (See page SR-28).

- (o) Install the air cleaner inlet.

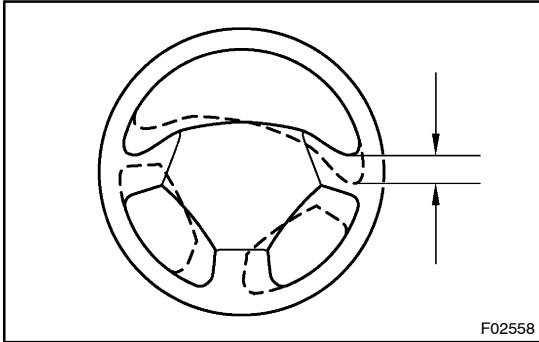
- (p) Bleed the power steering system (See Pub. No. RM588E on page SR-3).



AIR CONTROL VALVE (3UZ-FE) INSPECTION

SR0DI-04

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



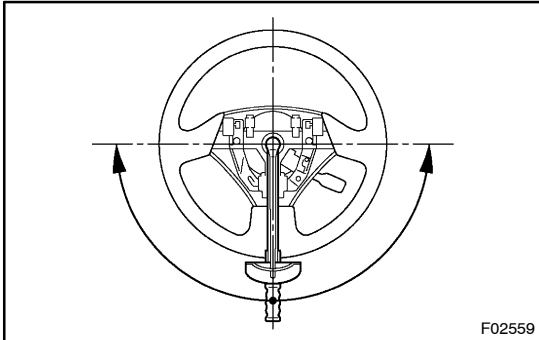
STEERING WHEEL (3UZ-FE) INSPECTION

1. CHECK STEERING WHEEL FREEPLAY

With the vehicle stopped and tires pointed straight ahead, rock the steering wheel gently back and forth with light finger pressure.

Freeplay should not exceed the maximum.

Maximum freeplay: 30 mm (1.18 in.)



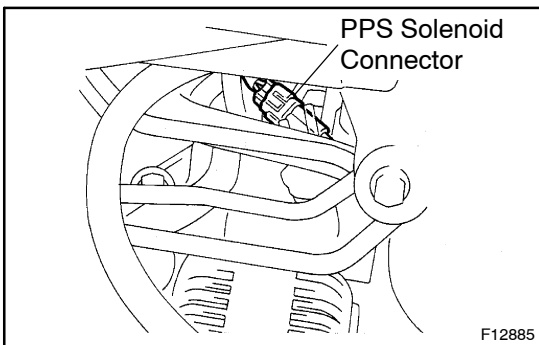
2. CHECK STEERING EFFORT

- Center the steering wheel.
- Remove the steering wheel pad (See page SR-9).
- Start the engine and run it at idle.
- Measure the steering effort in both directions.

Reference: 7 N·m (70 kgf·cm, 61 in·lbf)

HINT:

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



- Disconnect the PPS solenoid connector.
- Measure the steering effort in both directions and check that the steering effort exceeds the reference value in (d), and that the power assist is operating. If steering effort is not heavier than (d), check the solenoid.

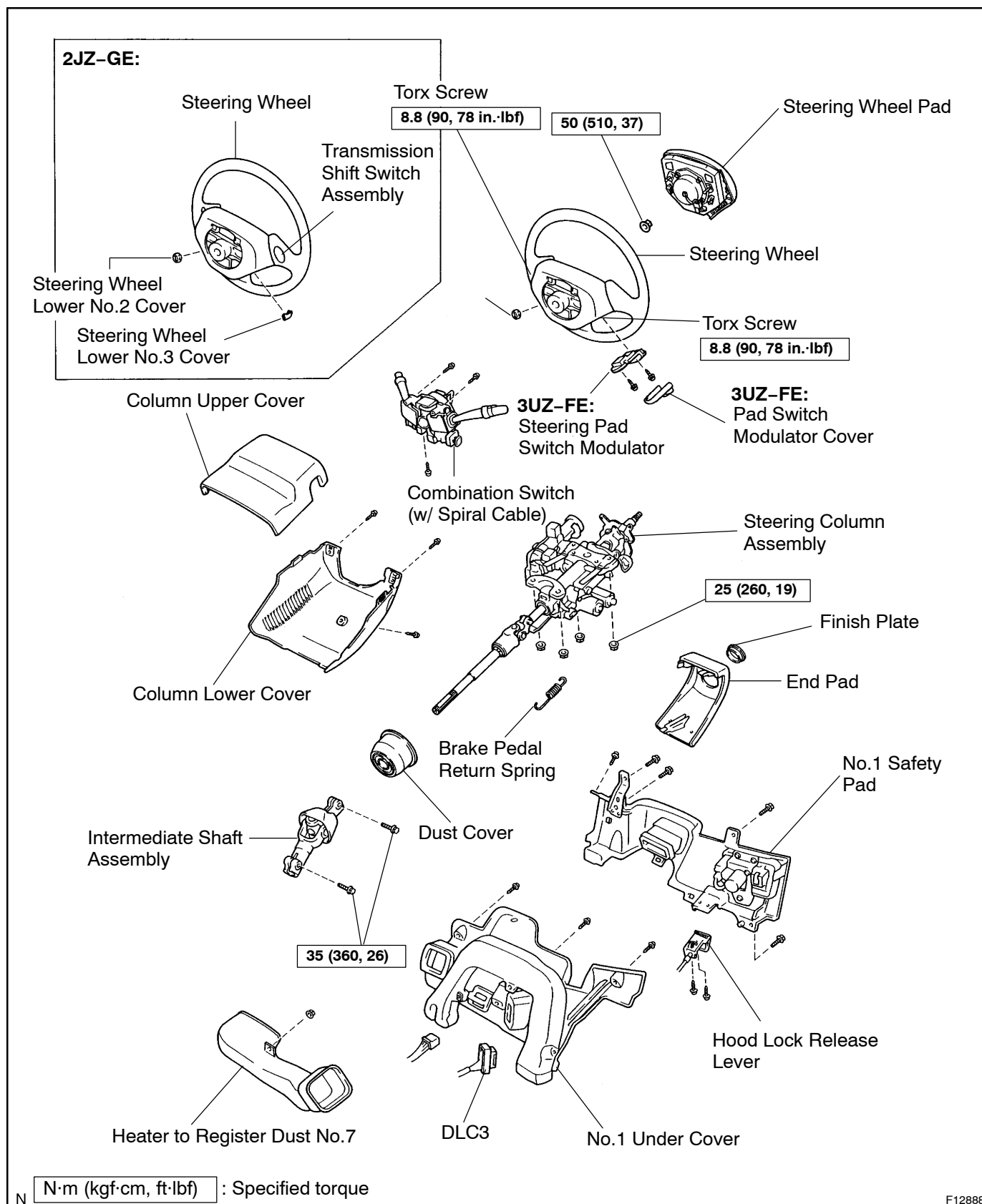
HINT:

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

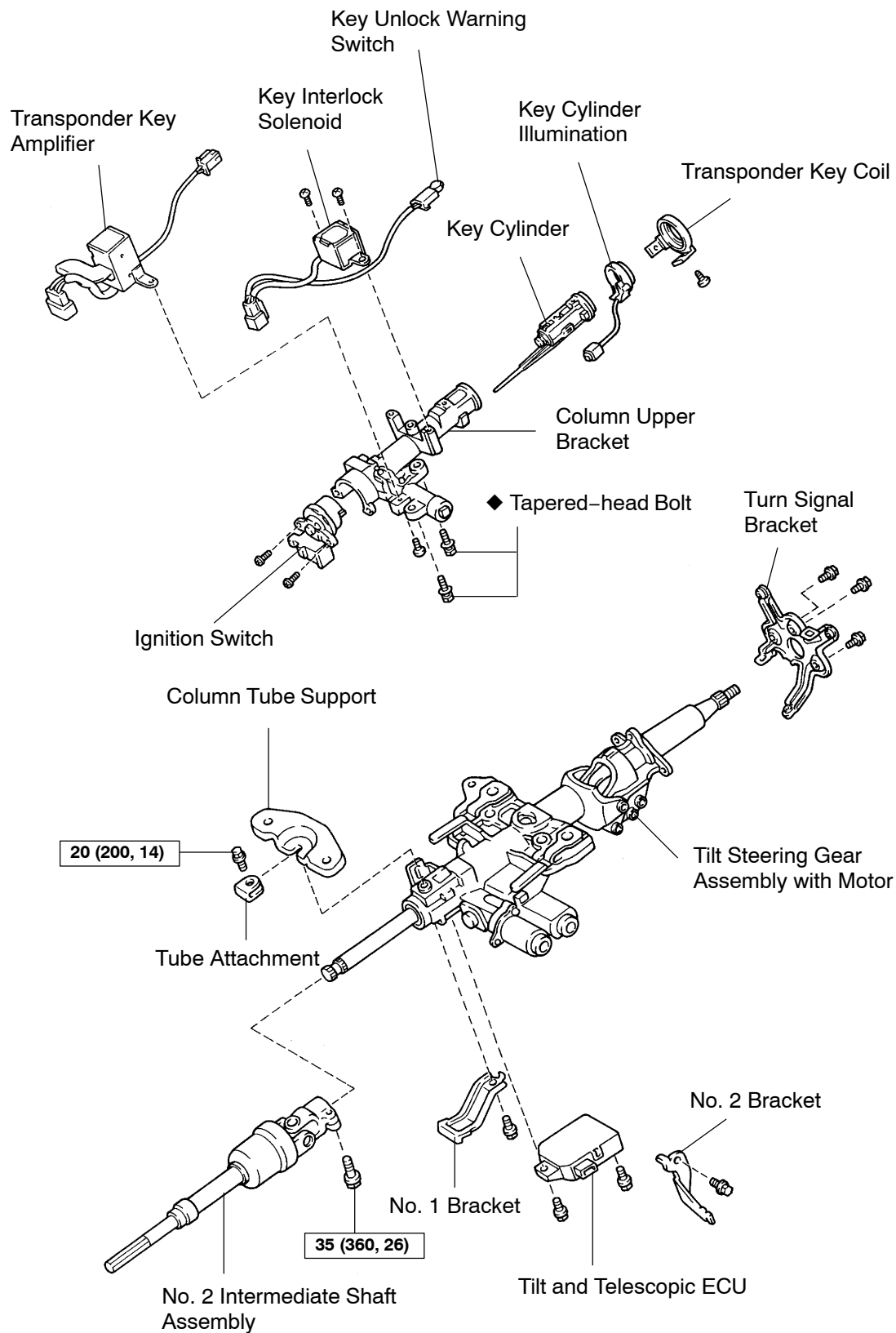
- Connect the connector.
- Torque the steering wheel set nut.
- Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)**
- Install the steering wheel pad (See page SR-13).

POWER TILT AND POWER TELESCOPIC STEERING COLUMN COMPONENTS

SR00K-05



F12888



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

◆ Non-reusable part

N

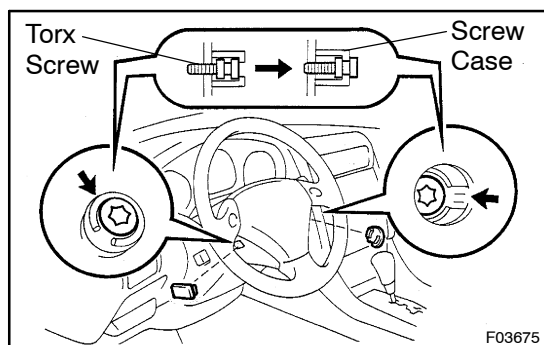
F13541

REMOVAL

1. REMOVE STEERING WHEEL PAD

NOTICE:

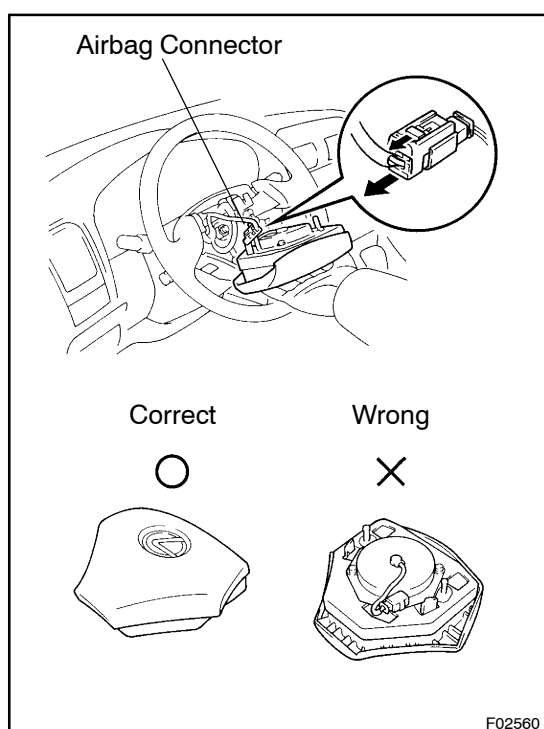
If the airbag connector is disconnected with the ignition switch at ON or ACC, DTCs will be recorded.



- Place the front wheels facing straight ahead.
- Remove the steering wheel lower No. 2 and No. 3 covers.
- Using a torx socket wrench, loosen the 2 torx screws.

HINT:

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



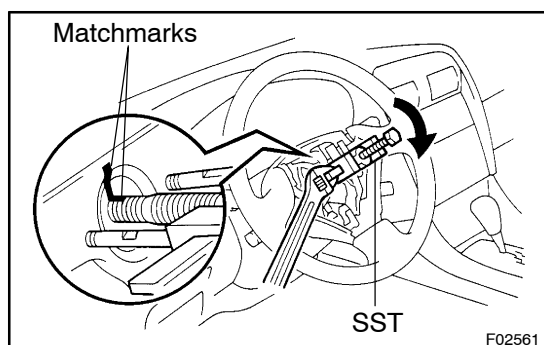
- Pull the wheel pad from the steering wheel and disconnect the airbag connector.

CAUTION:

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

NOTICE:

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



2. REMOVE STEERING WHEEL

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

3. REMOVE UPPER AND LOWER COLUMN COVERS

Remove the 3 screws, column upper and lower covers.

4. REMOVE COMBINATION SWITCH WITH SPIRAL CABLE

- (a) Disconnect the 4 connectors.
- (b) Disconnect the airbag connector.
- (c) Remove the 3 screws and combination switch with spiral cable.

5. REMOVE SPIRAL CABLE (See Pub. No. RM588E on page BE-34)**NOTICE:**

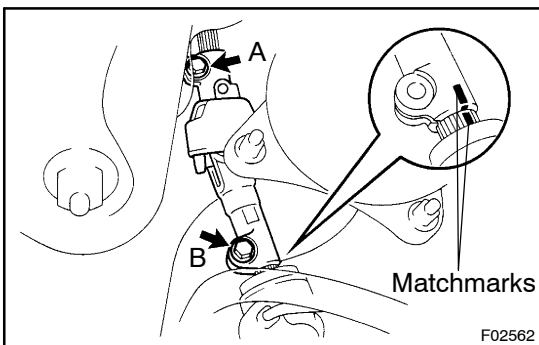
Do not disassemble the spiral cable or apply oil to it.

6. REMOVE NO. 1 UNDER COVER

- (a) Remove the 3 screws.
- (b) Disconnect the DLC3.
- (c) Disconnect the connectors and remove the No. 1 under cover.

7. REMOVE FINISH PLATE AND END PAD**8. REMOVE NO. 1 SAFETY PAD**

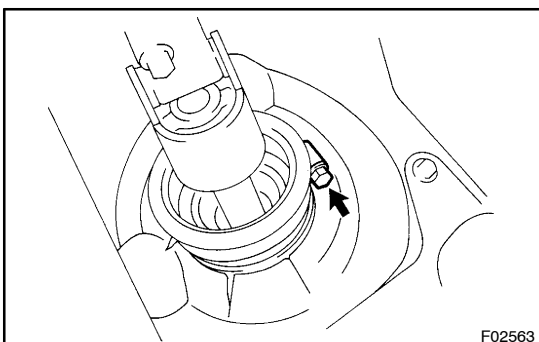
- (a) Remove the 2 screws and disconnect the hood lock release lever from the No. 1 Safety pad.
- (b) Remove 4 pad set bolts, screw and No. 1 safety pad.

9. REMOVE HEATER TO REGISTER DUCT NO. 7**10. DISCONNECT INTERMEDIATE SHAFT ASSEMBLY**

- (a) Place matchmarks on the intermediate shaft and control valve shaft.
- (b) Loosen the bolt "A" and remove the bolt "B" and disconnect the intermediate shaft assembly.

11. REMOVE STEERING COLUMN ASSEMBLY

- (a) Disconnect the connectors.
- (b) Remove the brake pedal return spring.



- (c) Loosen the hole cover clamp.
- (d) Remove the 4 column assembly set nuts and steering column assembly.

12. REMOVE INTERMEDIATE SHAFT ASSEMBLY

Remove the bolt "A" and intermediate shaft assembly.

13. REMOVE DUST COVER**14. 3UZ-FE:****REMOVE STEERING PAD SWITCH MODULATOR**

Remove the pad switch modulator cover, 3 screws and steering pad switch modulator.

DISASSEMBLY

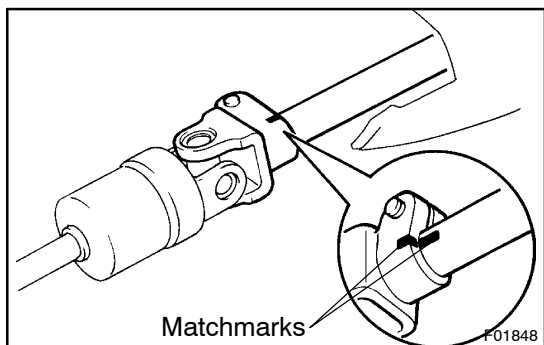
NOTICE:

When using a vise, do not overtighten it.

1. REMOVE TRANSPONDER KEY COIL

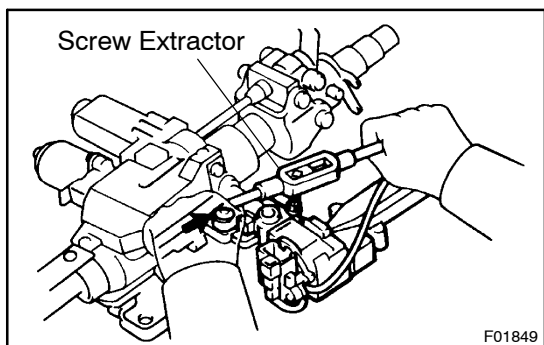
Remove the screw and transponder key coil.

2. REMOVE KEY CYLINDER LAMP ILLUMINATION



3. REMOVE NO. 2 INTERMEDIATE SHAFT ASSEMBLY

- Place matchmarks on the No. 2 shaft and main shaft.
- Remove the bolt and No. 2 intermediate shaft assembly.



4. REMOVE COLUMN UPPER BRACKET

- Using a centering punch, mark the center of the 2 tapered-head bolts.
- Using a 4 – 5 mm (0.16 – 0.20 in.) drill, drill into the 2 bolts.
- Using a screw extractor, remove the 2 bolts and column upper bracket.

5. REMOVE COLUMN TUBE SUPPORT

- Remove the bolt and column tube support.
- Remove the column tube support with tube attachment.
- Remove the tube attachment from the column tube support.

6. REMOVE TURN SIGNAL BRACKET

Remove the 3 bolts and turn signal bracket.

7. REMOVE NO. 1 BRACKET

Remove the bolt and No. 1 bracket.

8. REMOVE NO. 2 BRACKET

Remove the bolt and No. 2 bracket.

9. REMOVE TILT AND TELESCOPIC ECU

Remove the 2 bolts and tilt and telescopic ECU.

REASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. INSTALL TILT AND TELESCOPIC ECU

Install the tilt and telescopic ECU with the 2 bolts.

2. INSTALL NO. 2 BRACKET

Install the No. 2 bracket with the bolt.

3. INSTALL NO. 1 BRACKET

Install the No. 1 bracket with the bolt.

4. INSTALL TURN SIGNAL BRACKET

Install the turn signal bracket with the 3 bolts.

5. INSTALL COLUMN TUBE SUPPORT

NOTICE:

If the attachment or support is deformed, replace it with a new one.

(a) Install the tube attachment to the column tube support.

(b) Install the column tube support with the bolt.

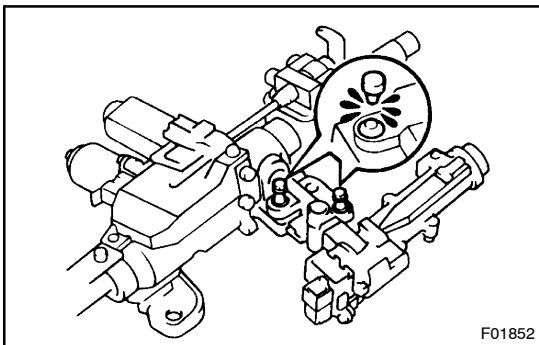
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

NOTICE:

Make sure that the column tube support is installed facing in the correct direction (See page SR-7)

NOTICE:

- Tighten the bolt while holding the support to prevent it turning too.
- Be sure to tighten the bolt with the specified torque.



6. INSTALL COLUMN UPPER BRACKET

(a) Install the column upper bracket with the 2 new tapered-head bolts.

(b) Tighten the 2 tapered-head bolts until the bolt heads break off.

7. INSTALL NO. 2 INTERMEDIATE SHAFT ASSEMBLY

(a) Align the matchmarks on the No. 2 shaft and main shaft.

(b) Install the bolt.

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

8. INSTALL KEY CYLINDER LAMP ILLUMINATION

9. INSTALL TRANSPONDER KEY COIL

Install the transponder key coil with the screw.

INSTALLATION

1. 3UZ-FE:

INSTALL STEERING PAD SWITCH MODULATOR

- (a) Install the steering pad switch modulator with the 3 screws.
- (b) Install the pad switch modulator cover.

2. INSTALL DUST COVER

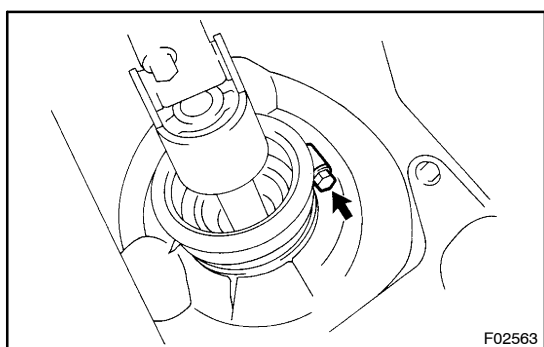
3. INSTALL INTERMEDIATE SHAFT ASSEMBLY

Temporarily install the intermediate shaft assembly with the bolt "A".

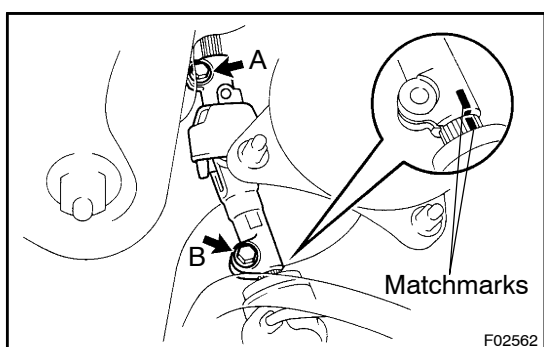
4. INSTALL STEERING COLUMN ASSEMBLY

- (a) Install the steering column assembly with the 4 column assembly set nuts.

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



- (b) Tighten the hole cover clamp.
- (c) Install the brake pedal return spring.
- (d) Connect the connectors.



5. CONNECT INTERMEDIATE SHAFT ASSEMBLY

- (a) Align the matchmarks on the intermediate shaft assembly and control valve shaft.

- (b) Install the bolt "B" and torque the bolt "A".

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

6. INSTALL HEATER TO REGISTER DUCT NO. 7

7. INSTALL NO. 1 SAFETY PAD

- (a) Install the No. 1 safety pad with the 4 pad set bolts and screw.

- (b) Connect the hood lock release lever with the 2 screws.

8. INSTALL FINISH PLATE AND END PAD

9. INSTALL NO. 1 UNDER COVER

- (a) Connect the connectors.
- (b) Connect the DLC3.
- (c) Install the No. 1 under cover with the 3 screws.

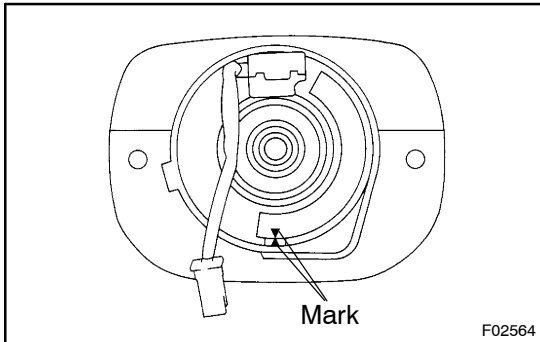
10. INSTALL SPIRAL CABLE (See Pub. No. RM588E on page BE-34)

11. INSTALL COMBINATION SWITCH WITH SPIRAL CABLE

- (a) Install the combination switch with spiral cable with the 3 screws.
- (b) Connect the airbag connector.
- (c) Connect the 4 connectors.

12. INSTALL UPPER AND LOWER COLUMN COVERS

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

**13. CENTER SPIRAL CABLE**

- (a) Check that the front wheels are facing straight ahead.
- (b) Turn the spiral cable counterclockwise by hand until it becomes harder to turn.
- (c) Then rotate the spiral cable clockwise about 3 turns to align the mark.

HINT:

The spiral cable will rotate about 3 turns to either left or right of the center.

14. INSTALL STEERING WHEEL

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

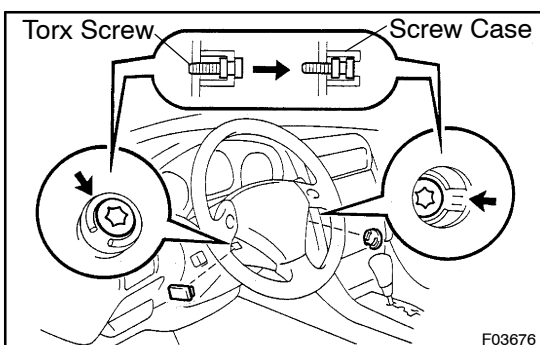
- (b) Install the wheel set nut.

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

- (c) Connect the connector.

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

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



- (a) Connect the airbag connector.
- (b) Install the steering wheel pad after confirming that the circumference groove of the torx screw is caught on the screw case.

- (c) Using a torx socket wrench, torque the 2 screws.

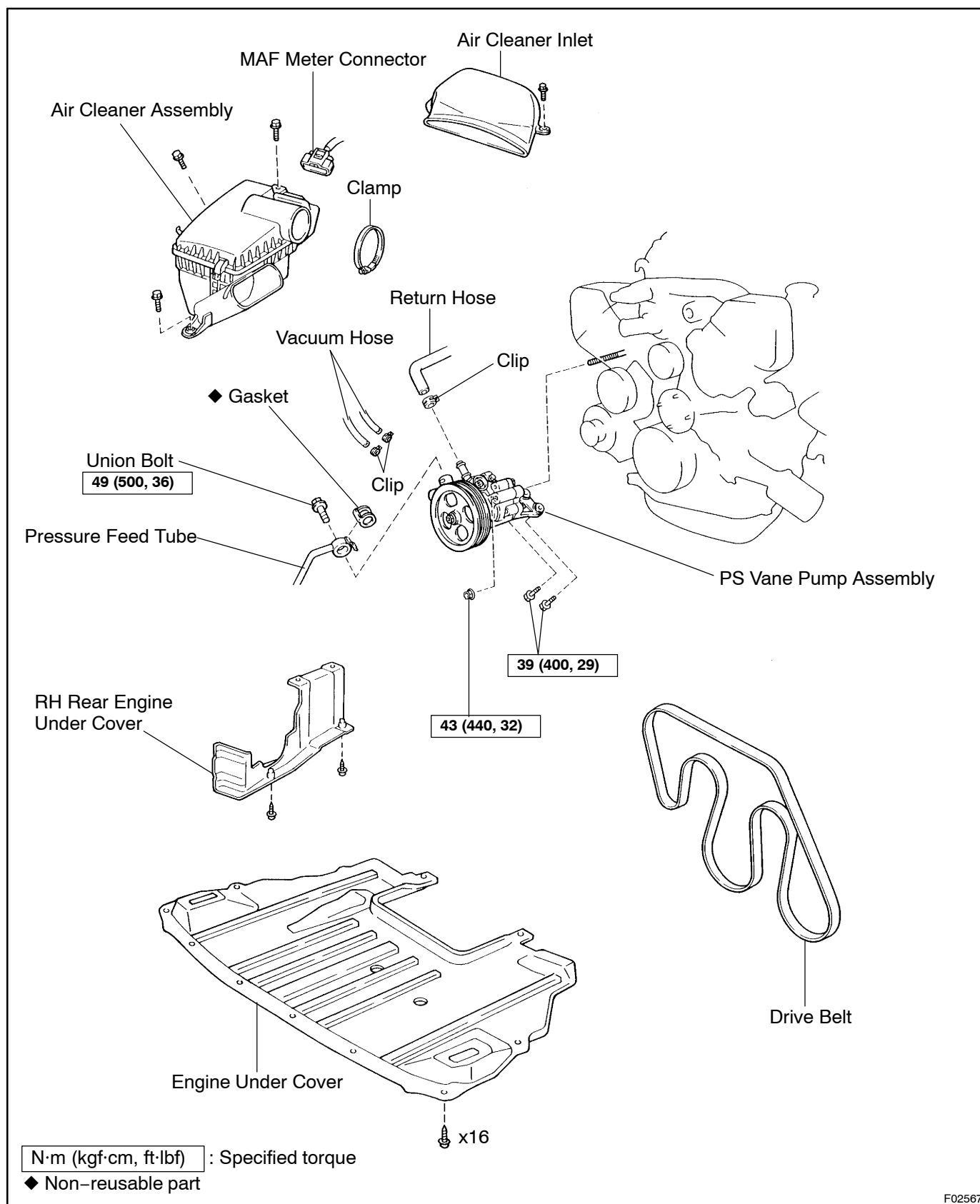
Torque: 8.8 N·m (90 kgf·cm, 78 in·lbf)

- (d) Install the steering wheel lower No.2 and No.3 covers.

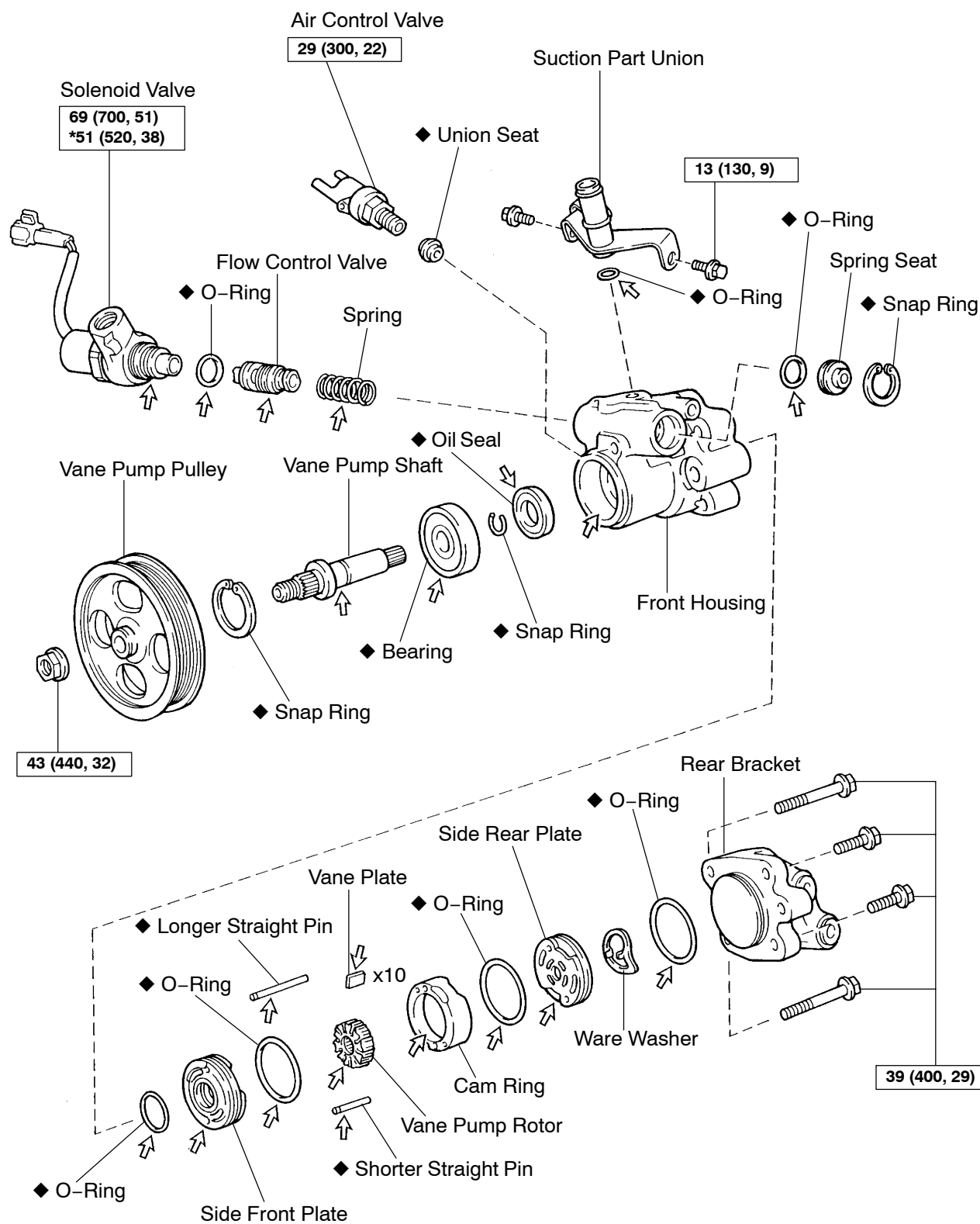
16. CHECK STEERING WHEEL CENTER POINT

POWER STEERING VANE PUMP (3UZ-FE) COMPONENTS

SR1CG-01



F02567



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

◆ Non-reusable part

↔ Power steering fluid

* For use with SST

F02568

REMOVAL

1. REMOVE ENGINE UNDER COVER

Remove the 16 bolts and engine under cover.

2. REMOVE RH REAR ENGINE UNDER COVER

Remove the 2 bolts and RH rear engine under cover.

3. REMOVE AIR CLEANER INLET

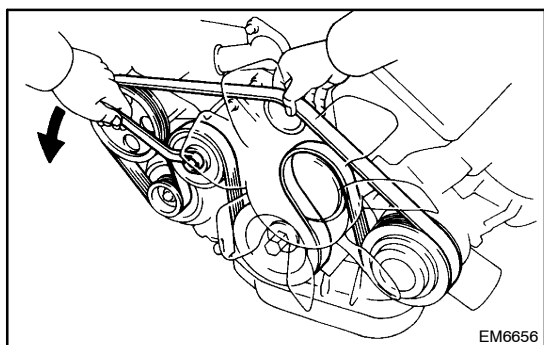
Remove the bolt and air cleaner inlet.

4. REMOVE AIR CLEANER ASSEMBLY WITH AIR CLEANER HOSE

(a) Disconnect the MAF meter connector.

(b) Remove the clamp.

(c) Remove the 3 bolts and air cleaner assembly with air cleaner hose.



5. REMOVE DRIVE BELT

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

6. DISCONNECT 2 VACUUM HOSES

Remove the 2 clips and disconnect the 2 vacuum hoses.

7. DISCONNECT RETURN HOSE

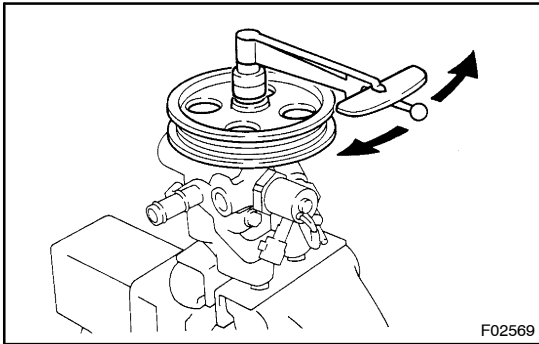
Remove the clip and disconnect the return hose.

8. REMOVE PRESSURE FEED TUBE

Remove the union bolt, gasket and pressure feed tube.

9. REMOVE PS VANE PUMP ASSEMBLY

Remove the 2 bolts, nut and PS vane pump assembly.



DISASSEMBLY

NOTICE:

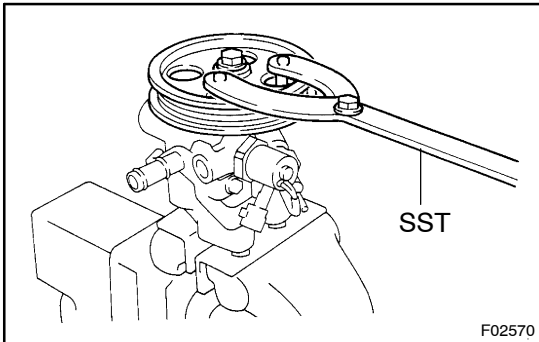
When using a vise, do not overtighten it.

1. MEASURE PS VANE PUMP ROTATION TORQUE

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

Rotating torque:

0.25 N·m (2.5 kgf·cm, 2.2 in.·lbf) or less



2. REMOVE VANE PUMP PULLEY

Using SST to stop the pulley rotating, remove the pulley set nut.

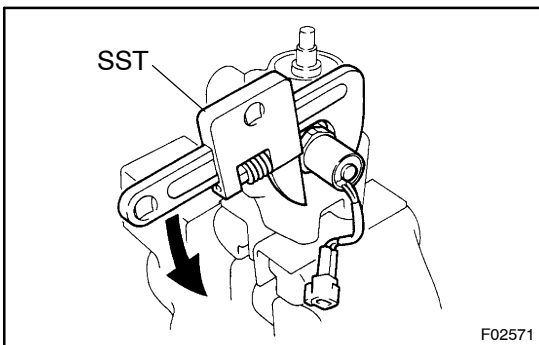
SST 09960-10010 (09962-01000, 09963-01000)

3. REMOVE AIR CONTROL VALVE

Remove the air control valve and union seat.

4. REMOVE SUCTION PORT UNION

- Remove the 2 bolts and suction port union.
- Remove the O-ring from the suction port union.



5. REMOVE SOLENOID VALVE

- Using SST, remove the solenoid valve.

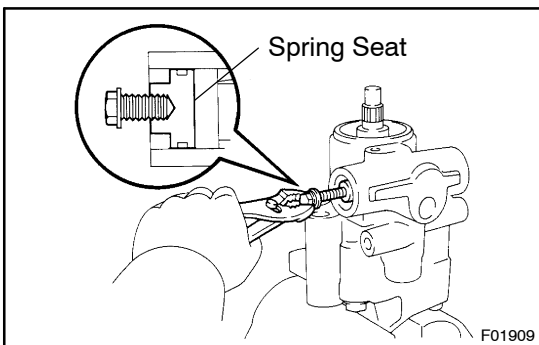
SST 09922-10010

NOTICE:

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

- Remove the O-ring from the solenoid valve.

6. REMOVE FLOW CONTROL VALVE AND SPRING



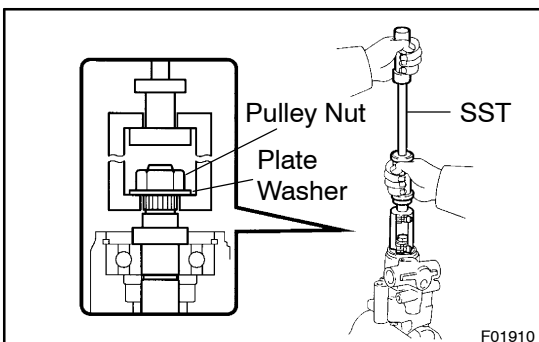
7. REMOVE SPRING SEAT

- Using snap ring pliers, remove the snap ring from the front housing.
- Temporarily install a bolt to the spring seat and pull it out together with the spring seat.

HINT:

Use a bolt with diameter 6 mm (0.24 in.) and pitch 1.0 mm (0.039 in.).

- Remove the O-ring from the spring seat.



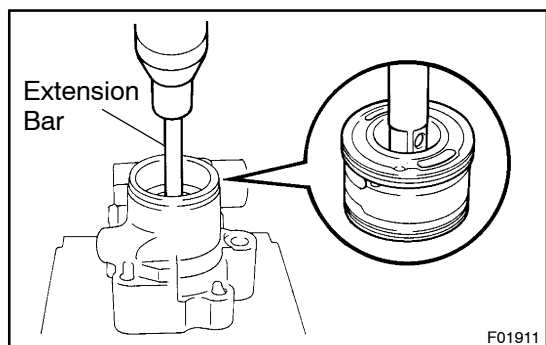
8. REMOVE VANE PUMP SHAFT WITH BEARING

- Using snap ring pliers, remove the snap ring from the front housing.
- Temporarily install a appropriate plate washer and the pulley set nut to the vane pump shaft.
- Using SST, pull out the vane pump shaft with the bearing.

SST 09910-00015 (09911-00011, 09912-00010)

9. REMOVE REAR BRACKET

- Remove the 4 bolts and rear bracket.
- Remove the O-ring from the rear bracket.

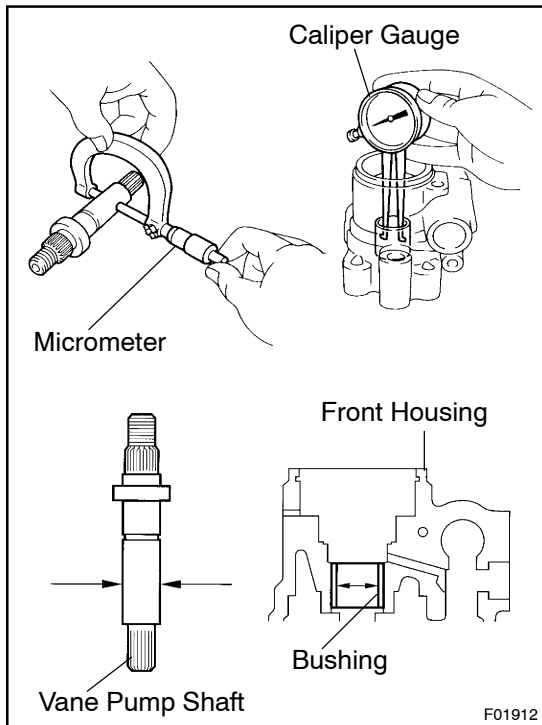
**10. REMOVE WAVE WASHER****11. REMOVE SIDE FRONT PLATE, CAM RING, VANE PUMP ROTOR, VANE PLATES AND SIDE REAR PLATE**

- (a) Using an extension bar and press, press out the side front plate, cam ring, vane pump rotor, vane plates and side rear plate as an assembly.
- (b) Remove the O-ring from the side rear plate.
- (c) Remove the cam ring, vane pump rotor and the 10 vane plates.

NOTICE:

Take care not to drop the vane plate.

- (d) Remove the shorter straight pin from the side front plate.
- (e) Remove the 2 O-rings from the side front plate.
- (f) Using pliers, remove the longer straight pin from the front housing.



INSPECTION

NOTICE:

When using a vise, do not overtighten it.

1. MEASURE OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND BUSHING

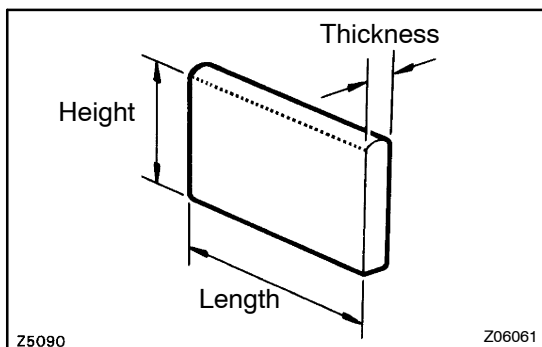
Using a micrometer and caliper gauge, measure the oil clearance.

Standard clearance:

0.03 – 0.045 mm (0.0012 – 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.



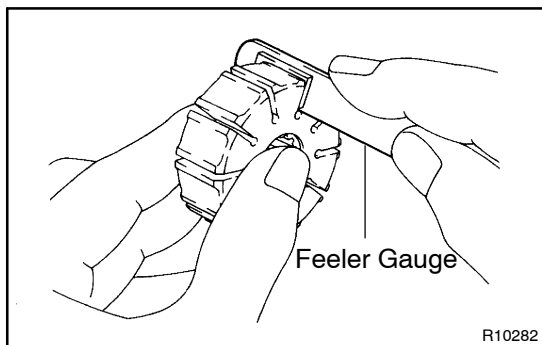
2. INSPECT VANE PUMP ROTOR AND VANE PLATES

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

Minimum height: 8.1 mm (0.319 in.)

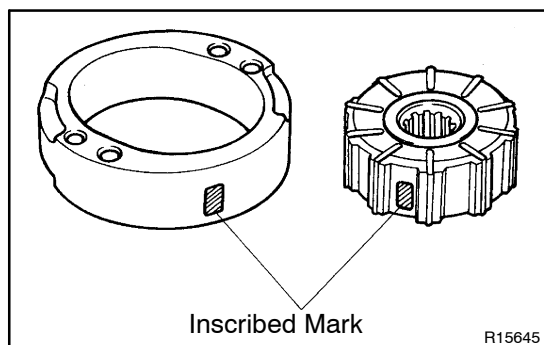
Minimum thickness: 1.797 mm (0.0707 in.)

Minimum length: 14.988 mm (0.5901 in.)



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

Maximum clearance: 0.028 mm (0.0011 in.)



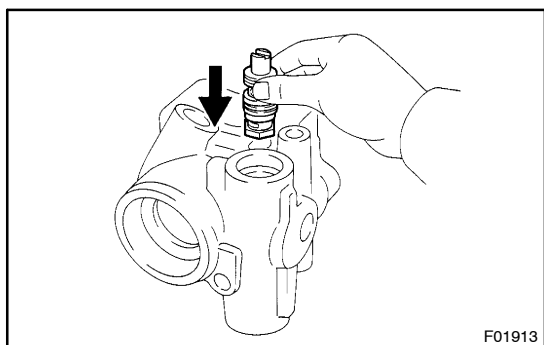
If it is more than the maximum, replace the vane plate and/or vane pump rotor with the one having the same mark stamped on the cam ring.

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

HINT:

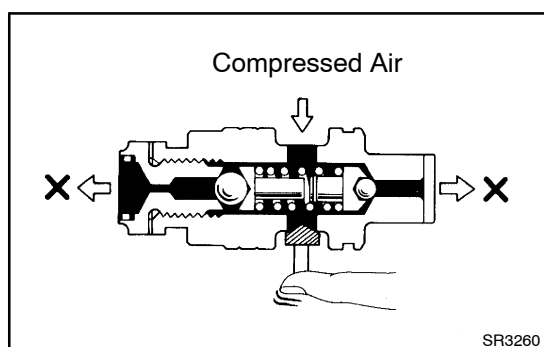
There are 5 vane lengths with the following rotor and cam ring marks:

Vane pump rotor and cam ring mark	Vane plate part number	Vane plate length mm (in.)
None	44345-12010	14.996 – 14.998 (0.59039 – 0.59047)
1	44345-12020	14.994 – 14.996 (0.59032 – 0.59039)
2	44345-12030	14.992 – 14.994 (0.59024 – 0.59032)
3	44345-12040	14.990 – 14.992 (0.59016 – 0.59024)
4	44345-12050	14.988 – 14.990 (0.59008 – 0.59016)

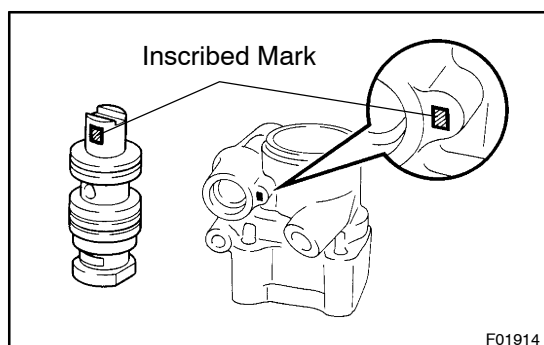


3. INSPECT FLOW CONTROL VALVE

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

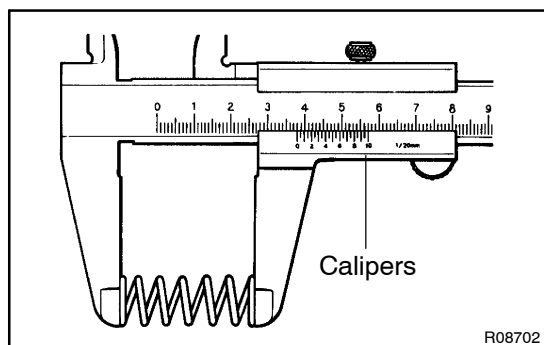


- (b) Check the flow control valve for leakage. Close one of the holes and apply 392 – 490 kPa (4 – 5 kgf/cm², 57 – 71 psi) of compressed air into the opposite side hole, and confirm that air does not come out from the end holes.



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

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

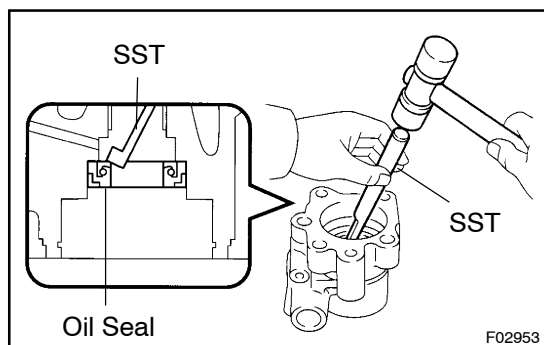


4. INSPECT SPRING

Using calipers, measure the free length of the spring.

Minimum free length: 36.0 mm (1.42 in.)

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



REPLACEMENT

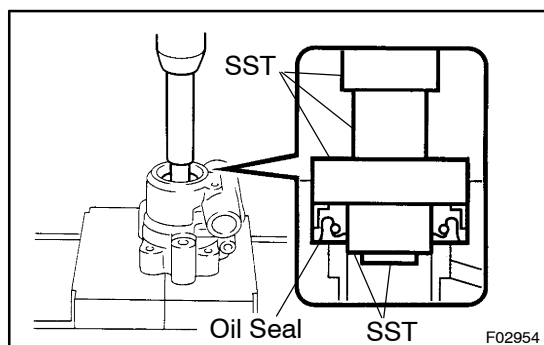
1. IF NECESSARY, REPLACE OIL SEAL

- (a) Using SST, tap out the oil seal.

SST 09631-10030

NOTICE:

Be careful not to damage the front housing.



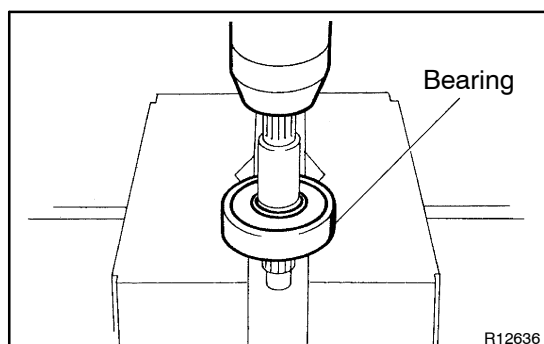
- (b) Coat a new oil seal lip with power steering fluid.

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

SST 09950-60010 (09951-00180, 09951-00300,
09952-06010), 09950-70010 (09951-07100)

NOTICE:

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



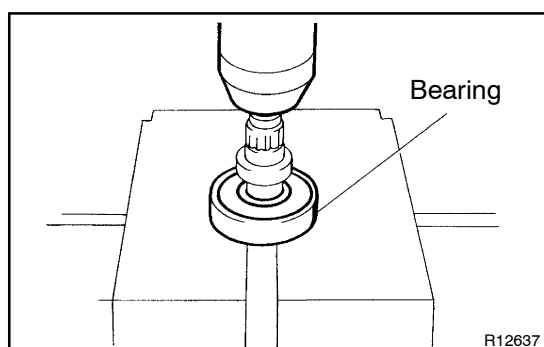
2. IF NECESSARY, REPLACE BEARING

- (a) Using a snap ring expander, remove the snap ring from the vane pump shaft.

NOTICE:

Be careful not to damage the vane pump shaft.

- (b) Using a press, press out the bearing.



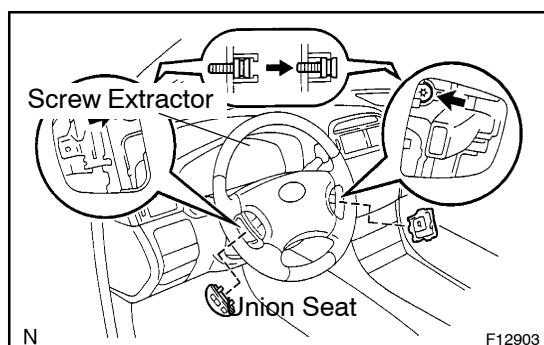
- (c) Coat a new bearing with power steering fluid.

- (d) Using a press, press in the bearing.

- (e) Using a snap ring expander, install a new snap ring.

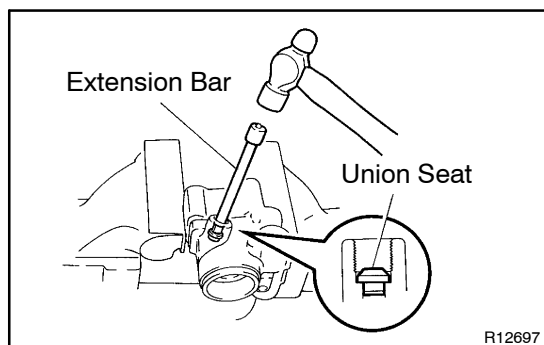
NOTICE:

Be careful not to damage the vane pump shaft.



3. IF NECESSARY, REPLACE UNION SEAT

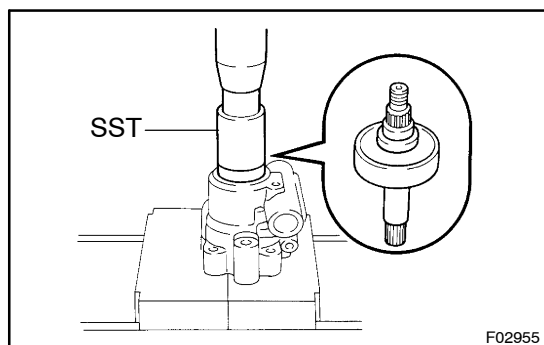
- (a) Using a screw extractor, remove the union seat.



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

NOTICE:

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



REASSEMBLY

NOTICE:

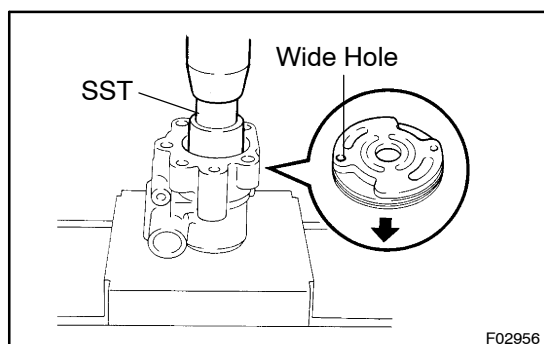
When using a vise, do not overtighten it.

1. COAT PARTS INDICATED BY ARROWS WITH POWER STEERING FLUID (See page SR-15)
2. INSTALL VANE PUMP SHAFT WITH BEARING
 - (a) Using SST, press in the vane pump shaft with the bearing. SST 09238-47012
 - (b) Using snap ring pliers, install a new snap ring to the front housing.
3. INSTALL SIDE FRONT PLATE
 - (a) Install a new longer straight pin to the front housing.

NOTICE:

Be careful not to damage the pin.

- (b) Coat 2 new O-rings with power steering fluid and install them to the plate.



- (c) Using SST, press in the side front plate. SST 09238-47012

NOTICE:

- Make sure that the side front plate is installed facing in the correct direction.
- Be careful not to damage the O-ring.

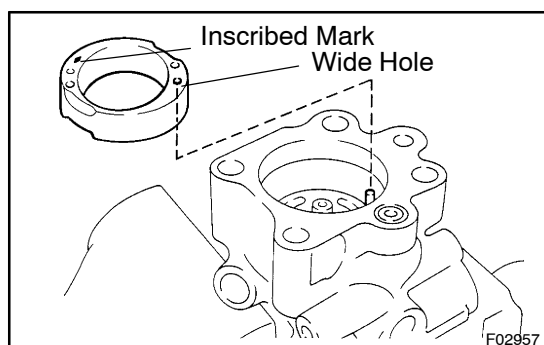
HINT:

Align the wide hole of the plate and longer straight pin.

- (d) Install a new shorter straight pin to the front side plate.

NOTICE:

Be careful not to damage the pin.

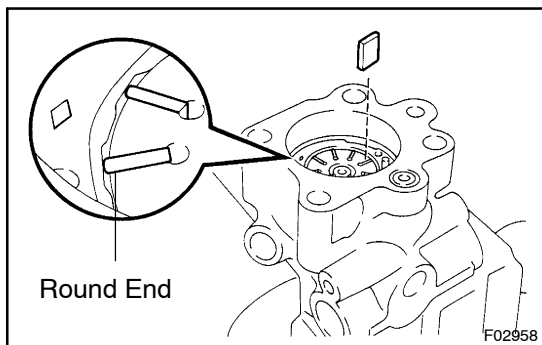


4. INSTALL CAM RING

Align the wide hole of the cam ring and longer straight pin, and install the cam ring with the inscribed mark facing outward.

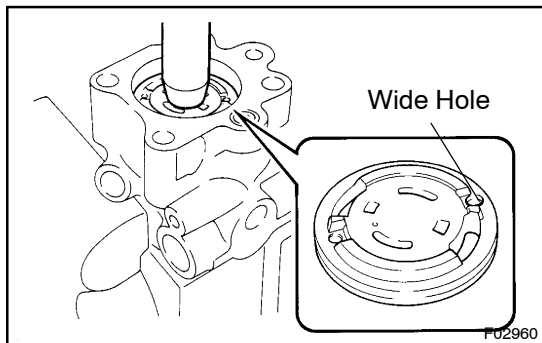
5. INSTALL VANE PUMP ROTOR

Install the vane pump rotor with the inscribed mark facing outward.



6. INSTALL VANE PLATES

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



7. INSTALL SIDE REAR PLATE

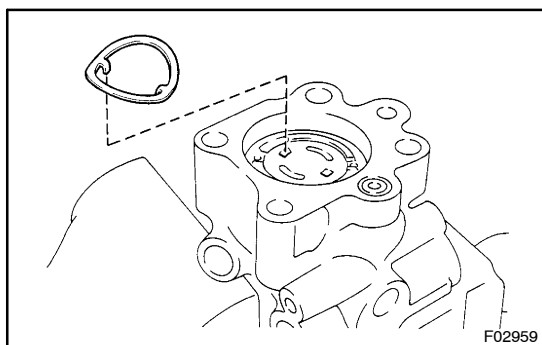
- Coat a new O-ring with power steering fluid and install it to the side rear plate.
- Using a press, press in the side rear plate.

NOTICE:

Be careful not to damage the O-ring.

HINT:

Align the wide hole of the side rear plate and longer straight pin.



8. INSTALL WAVE WASHER

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

9. INSTALL REAR BRACKET

- Coat a new O-ring with power steering fluid and install it to the rear bracket.
- Install the rear bracket to the front housing with the 4 bolts.

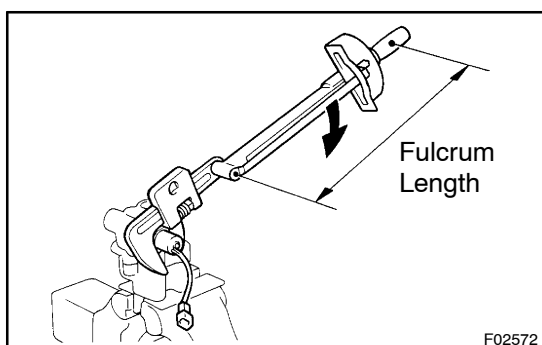
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

10. INSTALL SPRING SEAT

- Coat a new O-ring with power steering fluid and install it to the spring seat.
- Install the spring seat with the bolt hole facing outward.
- Using snap ring pliers, install a new snap ring.

11. INSTALL SPRING AND FLOW CONTROL VALVE

- Install the spring.
- Install the flow control valve facing the correct direction (See [page SR-15](#)).



12. INSTALL SOLENOID VALVE

- Install a new O-ring with power steering fluid and install it to the solenoid valve.
- Using SST, install the solenoid valve.

SST 09922-10010

Torque: 51 N·m (520 kgf·cm, 38 ft·lbf)

NOTICE:

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

HINT:

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

13. INSTALL SUCTION PORT UNION

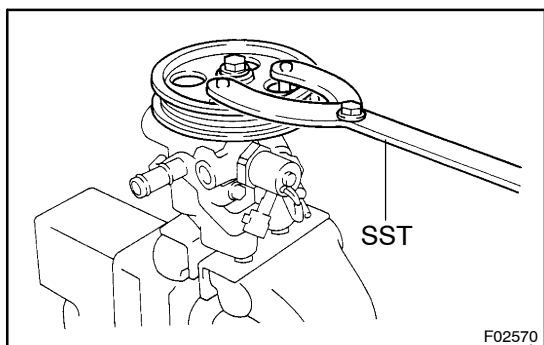
- (a) Coat a new O-ring with power steering fluid and install it to the suction port union.
- (b) Install the suction port union to the vane pump assembly with the 2 bolts.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

14. INSTALL AIR CONTROL VALVE

Install a new union seat and air control valve.

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

**15. INSTALL VANE PUMP PULLEY**

Using SST to stop the vane pump pulley rotating, torque the pulley set nut.

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

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

16. MEASURE PS VANE PUMP ROTATING TORQUE

(See [page SR-18](#))

INSTALLATION

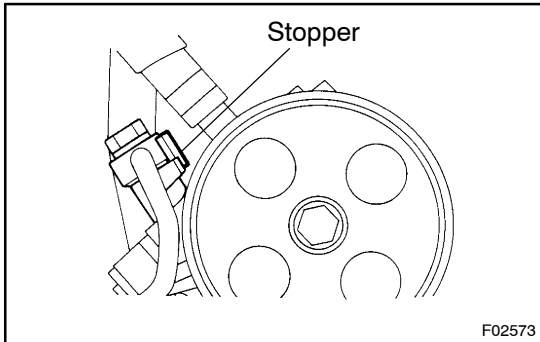
1. INSTALL PS VANE PUMP ASSEMBLY

- (a) Install the PS vane pump assembly with the nut.

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

- (b) Install the 2 bolts.

Torque: 39 N·m (400 kgf·cm, 29ft·lbf)



2. INSTALL PRESSURE FEED TUBE

Install the pressure feed tube and a new gasket with the union bolt.

HINT:

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

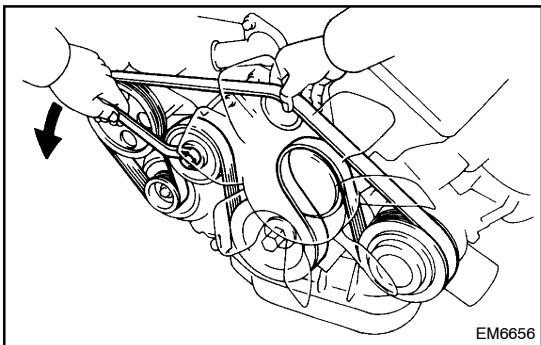
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

3. CONNECT RETURN HOSE

Connect the return hose with the clip.

4. CONNECT 2 VACUUM HOSES

Connect the 2 vacuum hoses with the 2 clips.



5. INSTALL DRIVE BELT

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

6. INSTALL AIR CLEANER ASSEMBLY WITH AIR CLEANER HOSE

- (a) Install the air cleaner assembly with air cleaner hose with the 3 bolts.

- (b) Install the clamp.

- (c) Connect the MAF meter connector.

7. INSTALL AIR CLEANER INLET

Install the air cleaner inlet with the bolt.

8. INSTALL RH REAR ENGINE UNDER COVER

Install the RH rear engine under cover with the 2 bolts.

9. INSTALL ENGINE UNDER COVER

Install the engine under cover with the 16 bolts.

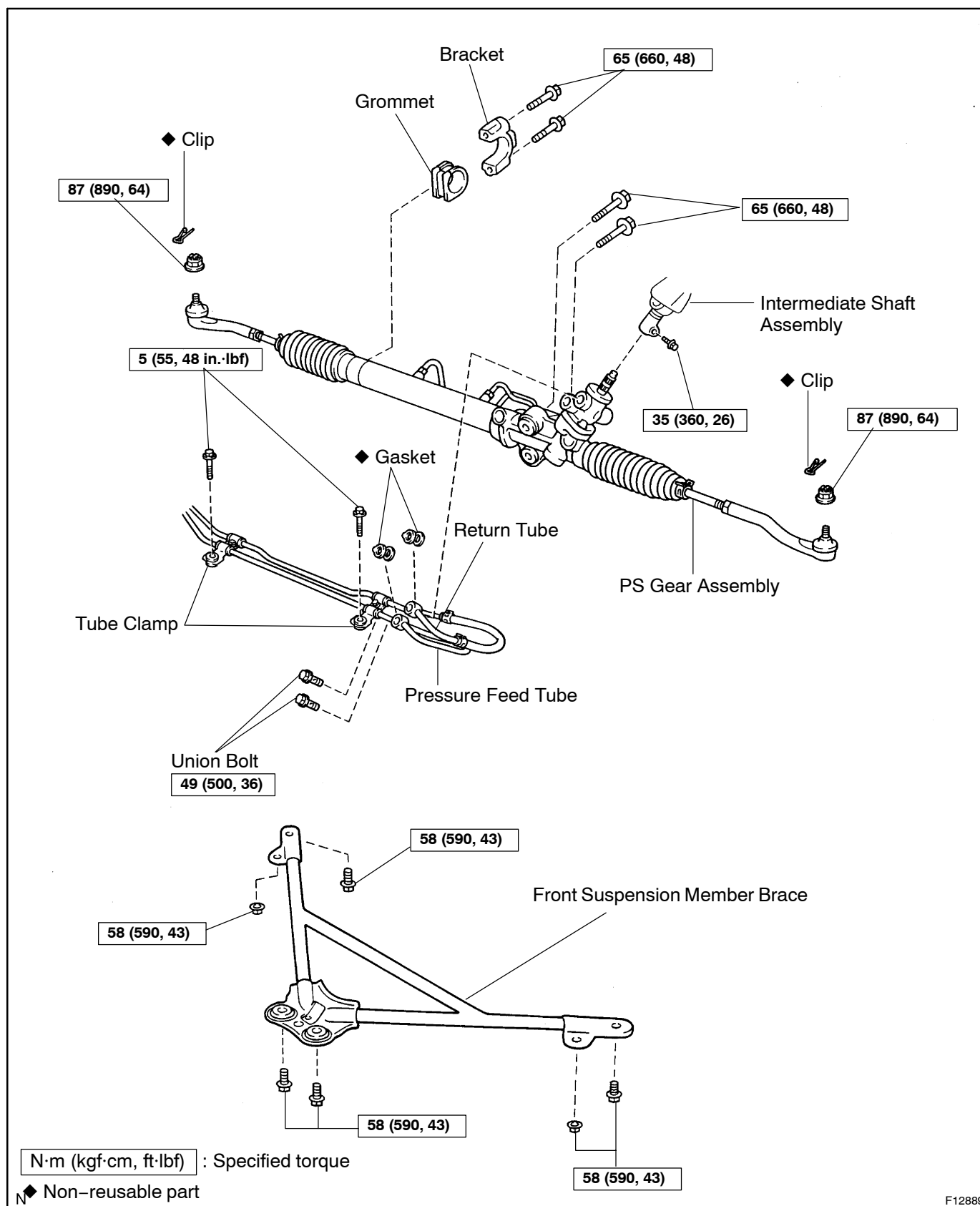
10. BLEED POWER STEERING SYSTEM

(See Pub. No. RM588E on page SR-3)

POWER STEERING GEAR (3UZ-FE)

COMPONENTS

SR1CN-01



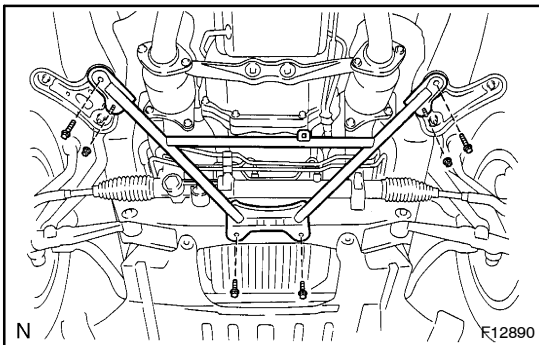
F12889

REMOVAL

NOTICE:

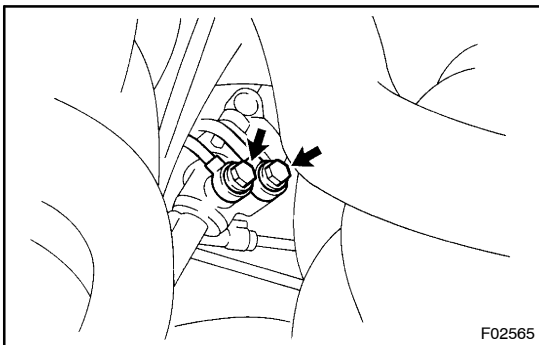
Remove the steering wheel assembly before the steering gear removal, because there is possibility of breaking of the spiral cable.

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD
2. □ REMOVE STEERING WHEEL PAD (See page SR-9)
3. □ REMOVE STEERING WHEEL (See page SR-9)
4. DISCONNECT RH AND LH TIE ROD ENDS
(See Pub. No. RM588E on page SA-9)
5. DISCONNECT INTERMEDIATE SHAFT ASSEMBLY
(See page SR-9)



6. REMOVE FRONT SUSPENSION MEMBER BRACE

Remove the 8 bolts and front suspension member brace.



7. DISCONNECT PRESSURE FEED AND RETURN TUBES

- (a) Pressure feed tube:
Remove the union bolt and gasket.
- (b) Return tube:
Remove the union bolt and 2 gaskets.

8. DISCONNECT 2 TUBE CLAMPS

Remove the bolt and 2 tube clamps.

9. REMOVE PS GEAR ASSEMBLY

- (a) Disconnect the connector.
- (b) Remove the 4 gear assembly set bolts and PS gear assembly.

10. REMOVE BRACKET AND GROMMET

INSTALLATION

1. INSTALL GROMMET AND BRACKET

2. INSTALL PS GEAR ASSEMBLY

- (a) Install the PS gear assembly with the 4 gear assembly set bolts.

Torque: 65 N·m (660 kgf·cm, 48 ft·lbf)

- (b) Connect the connector.

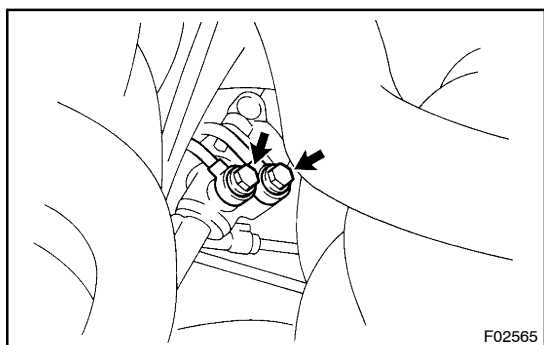
3. CONNECT 2 TUBE CLAMPS

Connect the 2 tube clamps with the bolt.

Torque: 5 N·m (55 kgf·cm, 48 in·lbf)

4. CONNECT INTERMEDIATE SHAFT ASSEMBLY

(See [page SR-19](#))



F02565

5. CONNECT PRESSURE FEED AND RETURN TUBES

- (a) Pressure feed tube:

Connect the pressure feed tube and a new gasket with the bolt.

Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

- (b) Return tube:

Connect the return tube and a new gasket with the bolt.

Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

6. CONNECT RH AND LH TIE ROD ENDS

(See Pub. No. RM588E on page SA-9)

7. INSTALL FRONT SUSPENSION MEMBER BRACE

Install the front suspension member brace with the 6 bolts.

Torque: 58 N·m (590 kgf·cm, 43 ft·lbf)

8. POSITION FRONT WHEELS FACING STRAIGHT AHEAD

HINT:

Do it with the front of the vehicle jacked up.

9. □ CENTER SPIRAL CABLE (See [page SR-19](#))

10. INSTALL STEERING WHEEL

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

- (b) Temporarily tighten the wheel set nut.

- (c) Connect the connector.

11. BLEED POWER STEERING SYSTEM

(See Pub. No. RM588E on page SR-3)

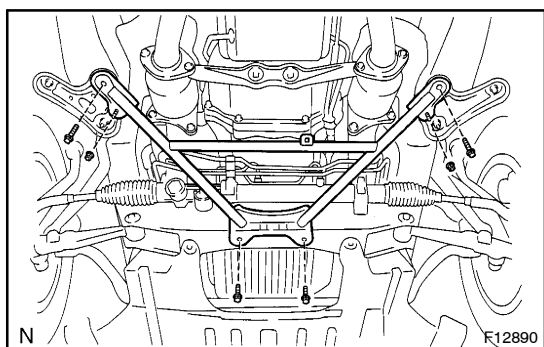
12. CHECK STEERING WHEEL CENTER POINT

13. TORQUE STEERING WHEEL SET NUT

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

14. INSTALL STEERING WHEEL PAD

(See [page SR-19](#))

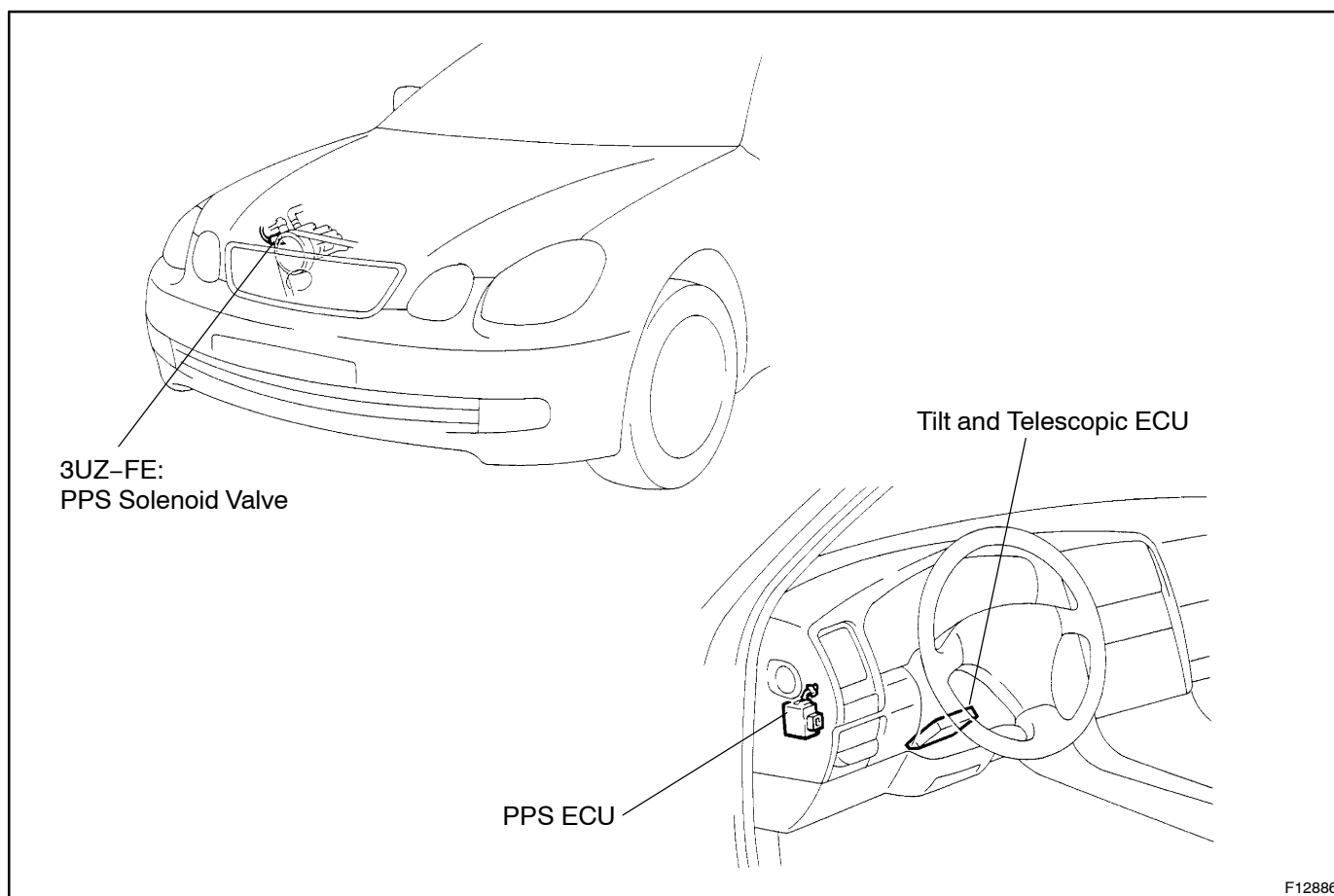


F12890

15. CHECK FRONT WHEEL ALIGNMENT
(See [page SA-4](#))

PROGRESSIVE POWER STEERING (PPS) (3UZ-FE) LOCATION

SR0E8-04



F12886