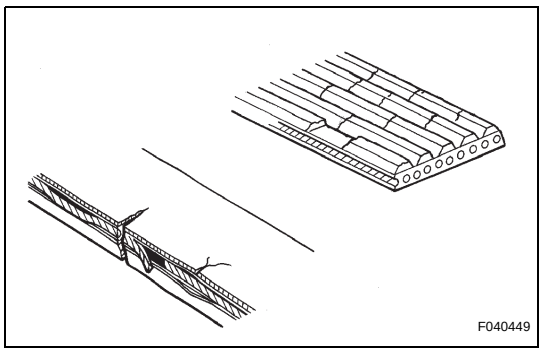
PROBLEM SYMPTOMS TABLE

HINT:
Use the table below to help determine the cause of the problem. The numbers indicate likely causes of the problem in descending order. Check each part in order. Repair or replace parts as necessary.

Symptom	Suspected area	See page
Hard steering	1. Tires (Improperly inflated)	TW-4
	2. Power steering fluid level (Low)	PS-4
	3. Drive belt (Loose) for 2AZ-FE:	EM-5
	4. Drive belt (Loose) for 3MZ-FE:	EM-1
	5. Front wheel alignment (Incorrect)	SP-9
	6. Steering system joints (Worn)	-
	7. Suspension arm ball joints (Worn)	SP-25
	8. Steering column (Binding)	-
	9. Power steering vane pump for 2AZ-FE:	PS-10
	10. Power steering vane pump for 3MZ-FE:	PS-18
	11. Power steering gear	PS-33
Poor return	1. Tires (Improperly inflated)	TW-4
	2. Front wheel alignment (Incorrect)	SP-9
	3. Steering column (Binding)	-
	4. Power steering gear	PS-33
Excessive free play	1. Steering system joints (Worn)	-
	2. Suspension arm ball joints (Worn)	SP-25
	3. Intermediate shaft, Sliding yoke (Worn)	SR-9
	4. Front wheel bearing (Worn)	AH-1
	5. Power steering gear	PS-33
Abnormal noise	1. Power steering fluid level (Low)	PS-4
	2. Drive belt (Loose) for 2AZ-FE:	EM-5
	3. Drive belt (Loose) for 3MZ-FE:	EM-1
	4. Steering system joints (Worn)	-
	5. Power steering vane pump for 2AZ-FE:	PS-10
	6. Power steering vane pump for 3MZ-FE:	PS-18
	7. Power steering gear	PS-33



ON-VEHICLE INSPECTION

1. INSPECT DRIVE BELT

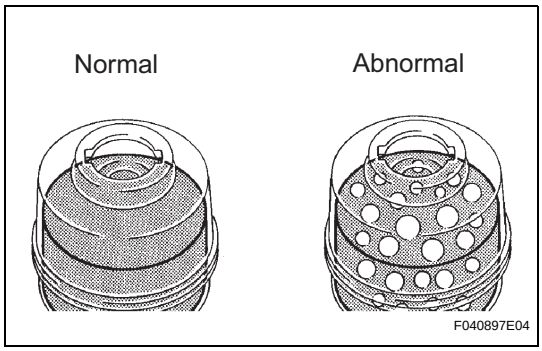
(a) Visually check the belt for excessive wear, frayed cords, etc. If any defect is found, replace the drive belt.
HINT:
Cracks on the rib side of a belt are considered acceptable. Replace the belt if there are any missing ribs.

2. BLEED POWER STEERING SYSTEM

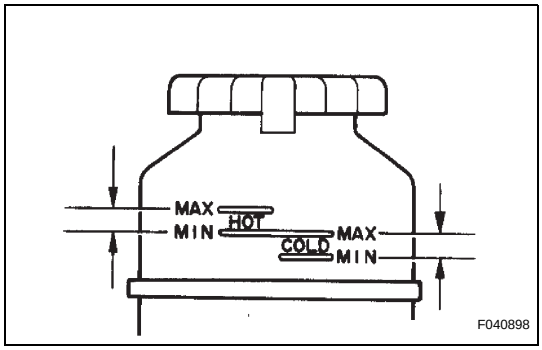
(a) Check the fluid level.
(b) Jack up the front of the vehicle and support it with stands.

PS

(c) Turn the steering wheel.
  (1) With the engine stopped, turn the wheel slowly from lock to lock several times.
(d) Lower the vehicle.
(e) Start the engine.
  (1) Run the engine at idle for a few minutes.
(f) Turn the steering wheel.
  (1) With the engine idling, turn the wheel to the left or right full lock position and keep it there for 2 to 3 seconds, then turn the wheel to the opposite full lock position and keep it there for 2 to 3 seconds. (Procedure A)
  (2) Repeat (A) several times.
(g) Stop the engine.

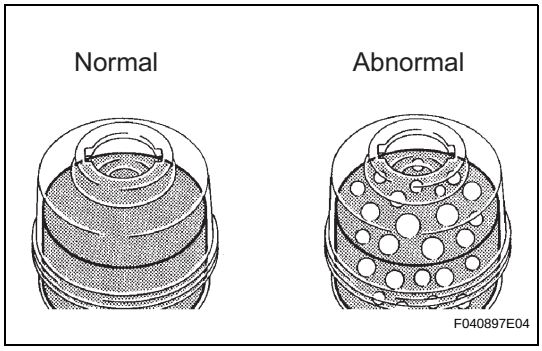


(h) Check for foaming or emulsification. Especially, if the system has to be bled twice because of foaming or emulsification, check for fluid leaks in the system.
(i) Check the fluid level.

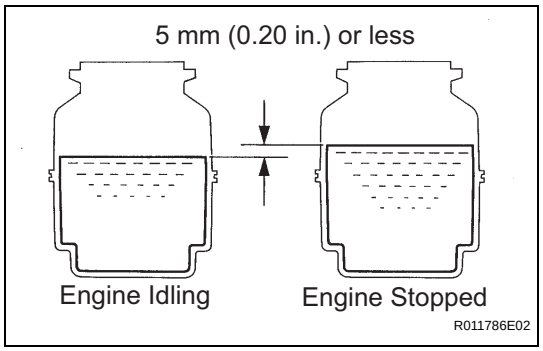


3. CHECK POWER STEERING FLUID LEVEL

(a) Keep the vehicle horizontal.
(b) With the engine stopped, check the fluid level in the oil reservoir. If necessary, add fluid.
  Fluid:
  ATF DEXRON II or III
  HINT:
  When hot, check that the fluid level is within the HOT LEVEL range on the oil reservoir. If the fluid is cold, check that it is within the COLD LEVEL range.
(c) Start the engine and run at idle.
(d) Turn the steering wheel from lock to lock several times to raise fluid temperature.
  Fluid temperature:
  75 to 80°C (167 to 176°F)



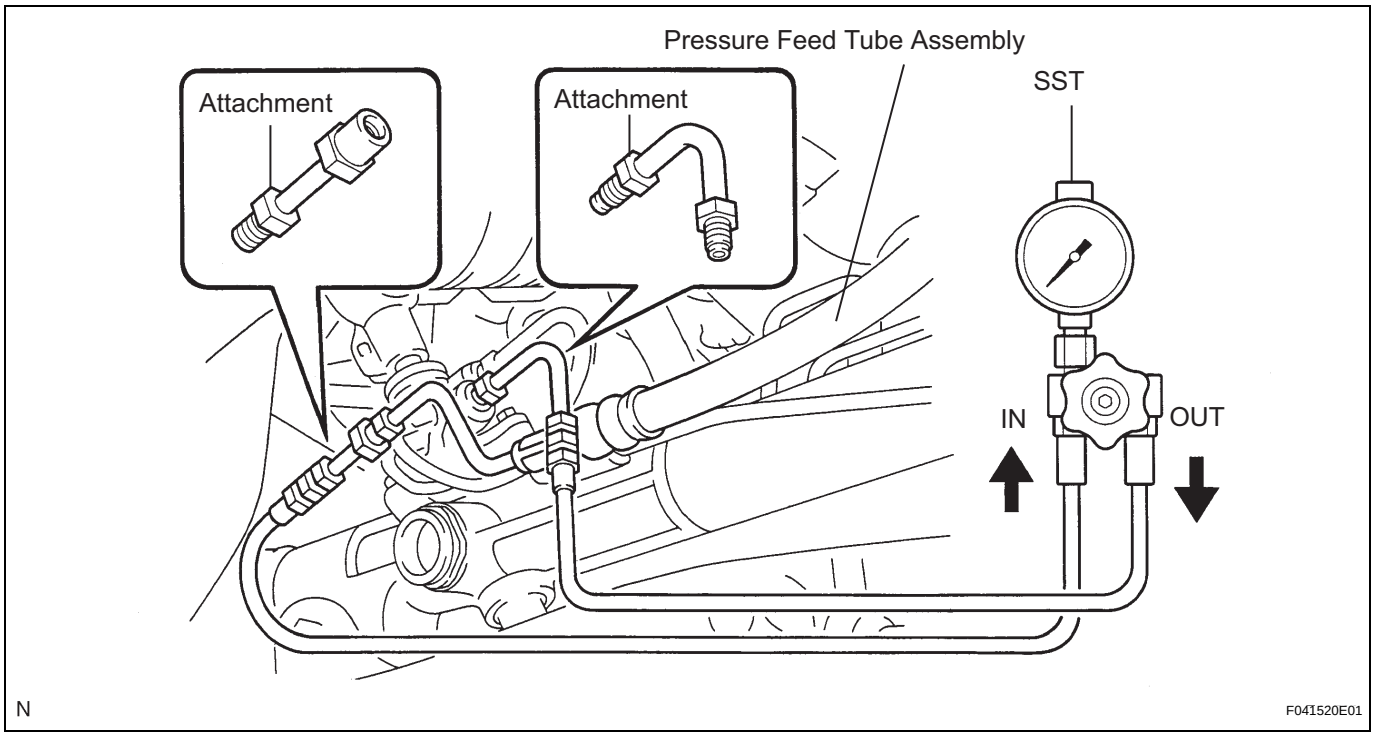
(e) Check for foaming or emulsification. If foaming or emulsification is identified, bleed the power steering system.



(f) With the engine idling, measure the fluid level in the oil reservoir.
(g) Stop the engine.
(h) Wait a few minutes and remeasure the fluid level in the oil reservoir.
Maximum fluid level rise:
About 5 mm (0.20 in.)
If a problem is found, bleed the power steering system.
(i) Check the fluid level.

4. CHECK STEERING FLUID PRESSURE

(a) Disconnect the pressure feed tube assembly (See page PS-28).
(b) Connect SST, as shown in the illustration on the next page.

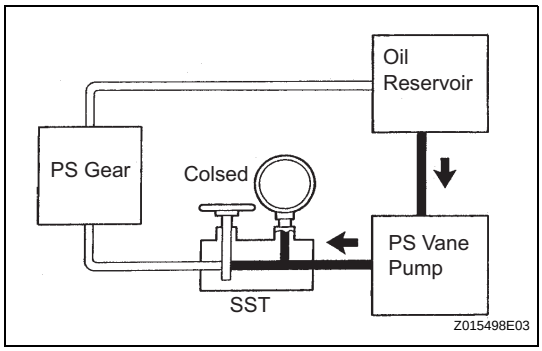


SST 09640-10010 (09641-01010, 09641-01020, 09641-01030)

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

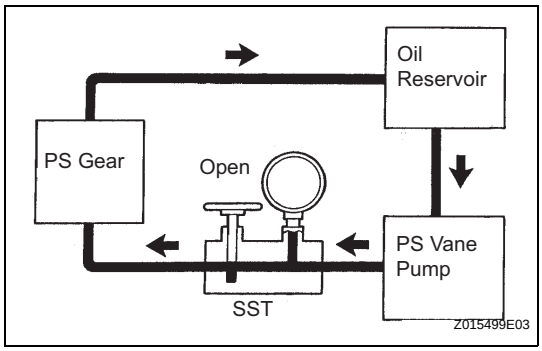
(c) Bleed the power steering system.
(d) Start the engine and run at idle.
(e) Turn the steering wheel from lock to lock several times to raise fluid temperature.
Fluid temperature:
75 to 80°C (167 to 176°F)

PS



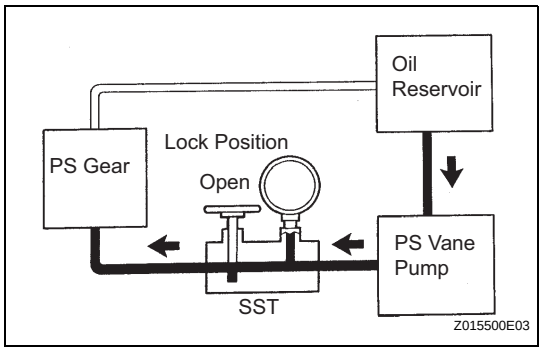
(f) With the engine idling, close the valve of the SST and observe the reading on the SST.
Fluid pressure:
7,800 to 8,300 kPa (80 to 85 kgf/cm^2, 1,131 to 1,204 psi)
NOTICE:
- **Do not keep the valve closed for more than 10 seconds.**
- **Do not allow the fluid temperature to become too high.**

If not within the specified range, check for fluid leaks and replace parts as necessary.

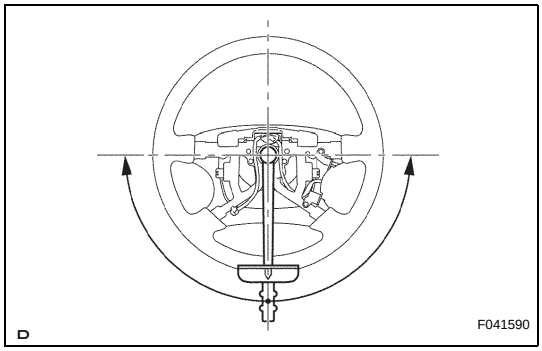


(g) With the engine idling, fully open the valve.
(h) Measure the fluid pressure at engine speeds of 1,000 rpm and 3,000 rpm.
Difference in fluid pressure:
490 kPa (5 kgf/cm^2 , 71 psi) or less
NOTICE:
Do not turn the steering wheel.
If not within the specified range, check for fluid leaks and replace parts as necessary.

PS



(i) With the engine idling and the valve fully opened, turn the steering wheel to the left or right full lock position.
(j) If not within the specified range, check for fluid leaks and replace parts as necessary.
(k) Disconnect the SST.
SST 09640-10010 (09641-01010, 09641-01020, 09641-01030)
(l) Connect the pressure feed tube assembly (See page PS-42).
(m) Bleed the power steering system.



5. CHECK STEERING EFFORT
(a) Center the steering wheel.
(b) Remove the horn button assembly (See page RS-262).
(c) Start the engine and run at idle.
(d) Measure the steering effort in both directions.
Torque: Steering effort (Reference)
6.0 N*m (61 kgf*cm, 53 in.*lbf)
HINT:
Check tire type, pressure and road surface before making your diagnosis.
If not within the specified range, check the power steering system (See page PS-2).
(e) Tighten the steering wheel set nut.
Torque: 50 N*m (510 kgf*cm, 37 in.*lbf)
(f) Install the horn button assembly (See page RS-263).

POWER STEERING SYSTEM

PRECAUTION

1. HANDLING PRECAUTIONS FOR STEERING SYSTEM

(a) Care must be taken when replacing parts. Incorrect replacement could affect the performance of the steering system and result in hazardous driving.

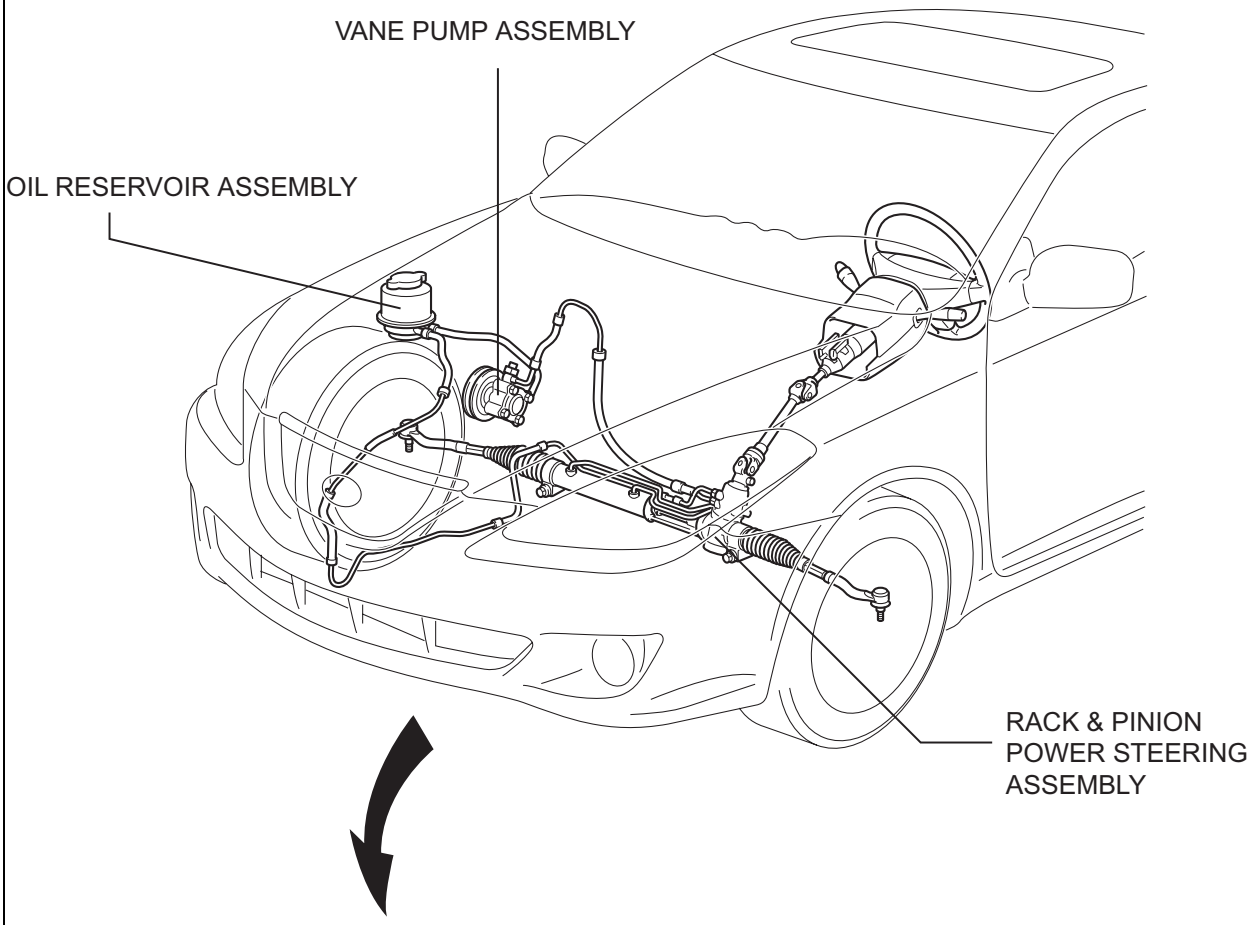
2. HANDLING PRECAUTIONS FOR SRS AIRBAG SYSTEM

(a) The vehicle is equipped with SRS (Supplemental Restraint System), such as airbags. If service operation is not carried out properly, in a step by step fashion, sudden deployment of the airbags may result in serious injury. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notice for the supplemental restraint system (See page RS-1).

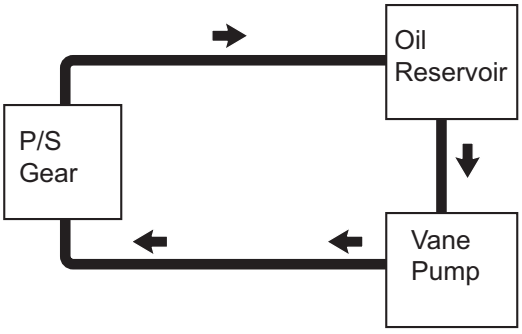
SYSTEM DESCRIPTION

A rack and pinion type steering gear and engine revolution sensing type power steering are used on all models.

COMPONENTS:



POWER STEERING FLUID FLOWCHART:



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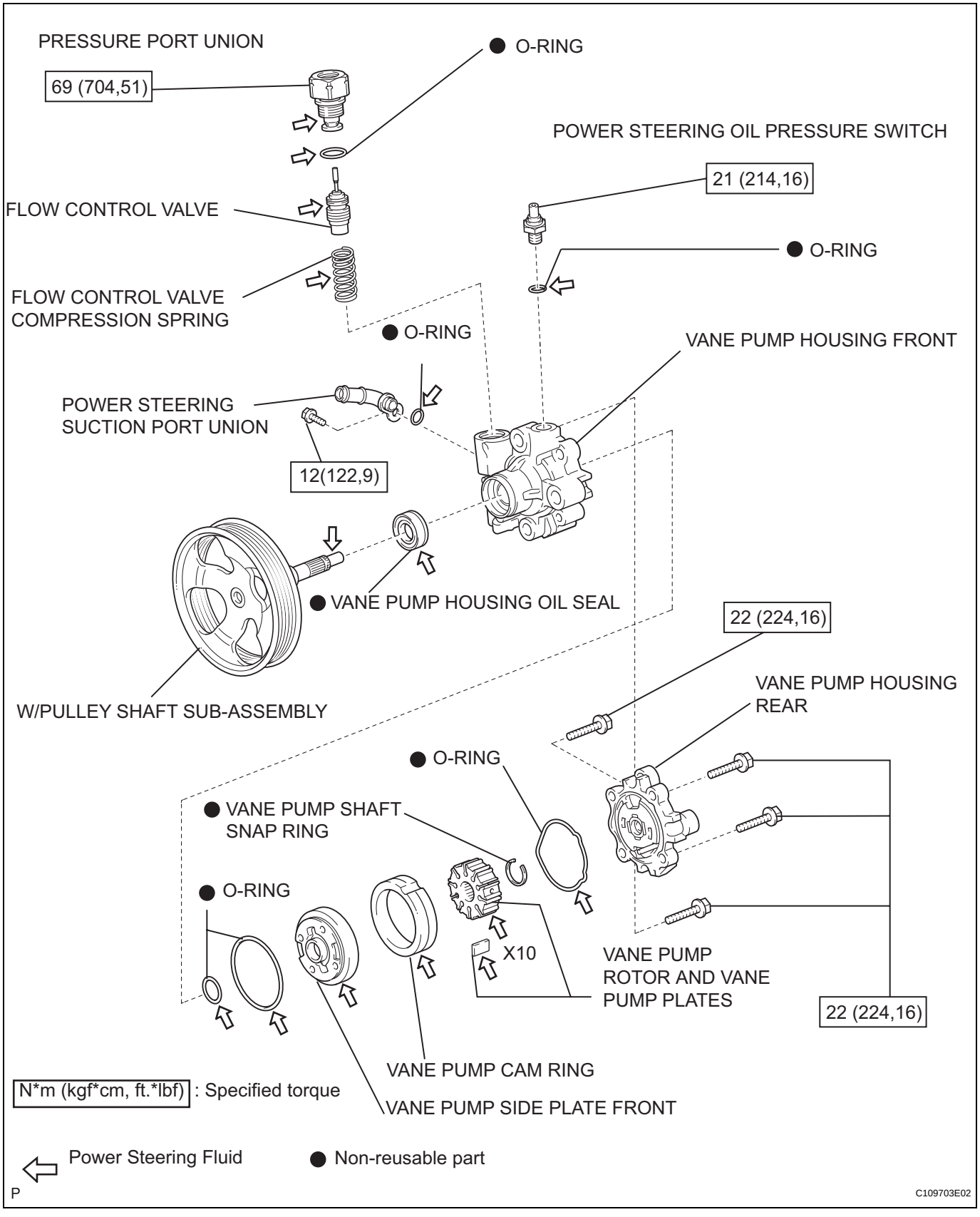
PS

2AZ-FE VANE PUMP

COMPONENTS



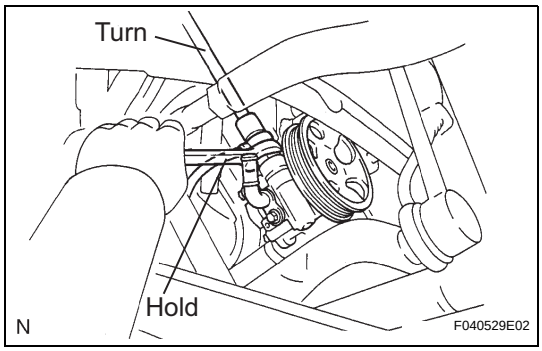
PS

REMOVAL

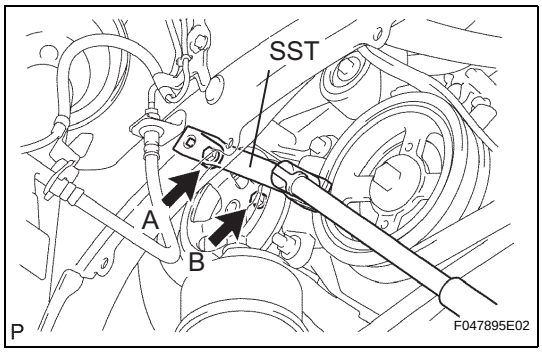
NOTICE:

- **Do not overtighten when using a vise.**
- **When installing, coat the parts indicated by arrows with power steering fluid (See page PS-7).**

1. **REMOVE FRONT WHEEL RH**
2. **DRAIN POWER STEERING FLUID**
3. **REMOVE FRONT FENDER APRON SEAL RH**
4. **REMOVE FAN AND GENERATOR V BELT (See page EM-5)**
5. **DISCONNECT OIL RESERVOIR TO PUMP HOSE NO.1**
   (a) Remove the clip and disconnect the oil reservoir to pump hose No.1.
   NOTICE:
   Take care not to spill fluid on the V belt.
6. **DISCONNECT PRESSURE FEED TUBE ASSEMBLY**
   (a) Using a wrench (27 mm) to hold the pressure port union, remove the union bolt and the gasket.

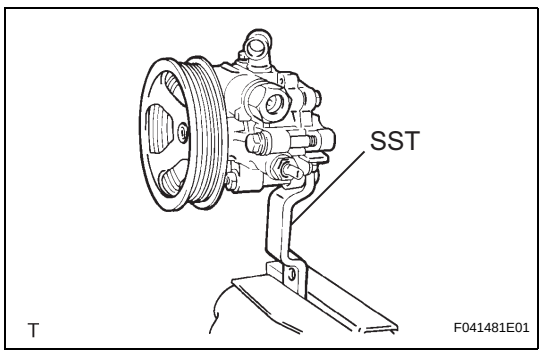


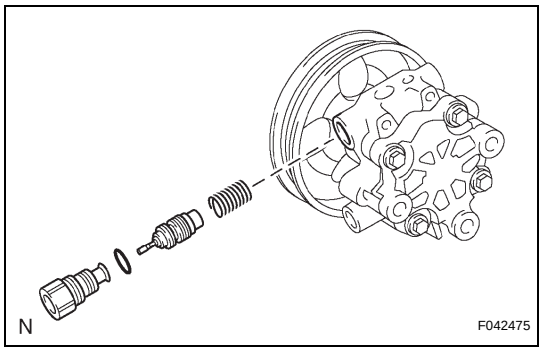
7. **REMOVE VANE PUMP ASSEMBLY**
   (a) Disconnect the connector from the oil pressure switch.
   (b) Using SST and a deep socket wrench (14 mm), loosen bolt A.
   SST 09249-63010
   HINT:
   Do not remove bolt A.
   (c) Remove bolt B and the vane pump assembly.



DISASSEMBLY

1. **FIX VANE PUMP ASSEMBLY**
   (a) Using SST, hold the vane pump assembly in a vise.
   SST 09630-00014 (09631-00132)
2. **REMOVE POWER STEERING SUCTION PORT UNION**
   (a) Remove the bolt and the suction port union.
   (b) Remove the O-ring from the suction port union.



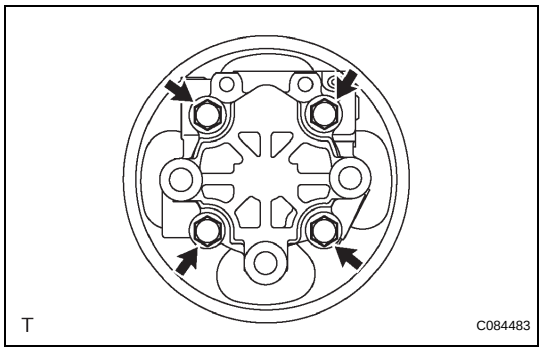


3. REMOVE FLOW CONTROL VALVE

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

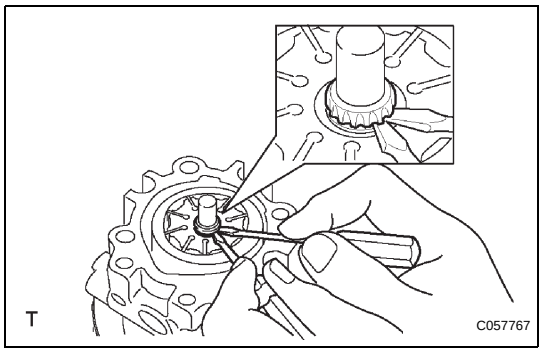
4. REMOVE POWER STEERING OIL PRESSURE SWITCH

(a) Using a screwdriver, remove the O-ring from the power steering oil pressure switch.
NOTICE:
If the oil pressure switch is dropped or damaged, replace it with a new one.



5. REMOVE VANE PUMP HOUSING REAR

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



6. REMOVE W/PULLEY SHAFT SUB-ASSEMBLY

(a) Using 2 screwdrivers, remove the snap ring from the w/ pulley shaft sub-assembly.
(b) Remove the w/ pulley shaft sub-assembly.

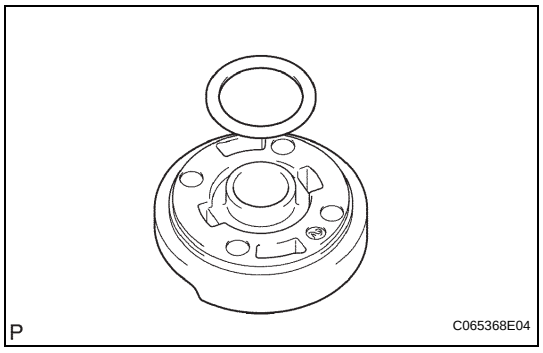
7. REMOVE VANE PUMP ROTOR

(a) Remove the 10 vane pump plates.
(b) Remove the vane pump rotor.

8. REMOVE VANE PUMP CAM RING

9. REMOVE VANE PUMP SIDE PLATE FRONT

(a) Remove the side plate front from the housing front.
(b) Remove the O-ring from the side plate front.



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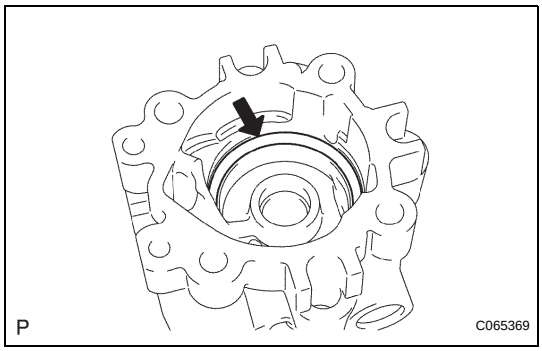
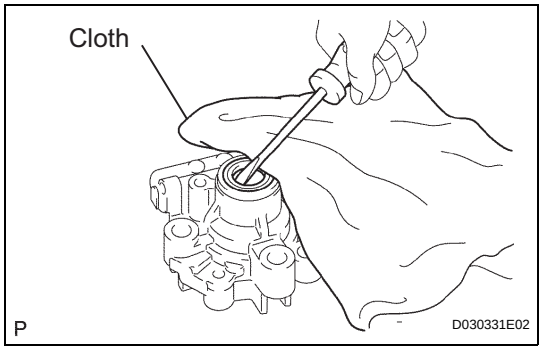


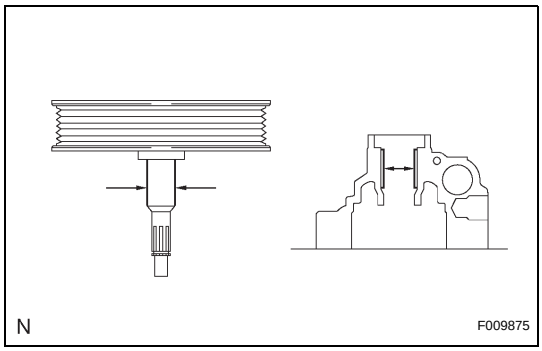
(c) Remove the O-ring from the housing front.



10. REMOVE VANE PUMP HOUSING OIL SEAL

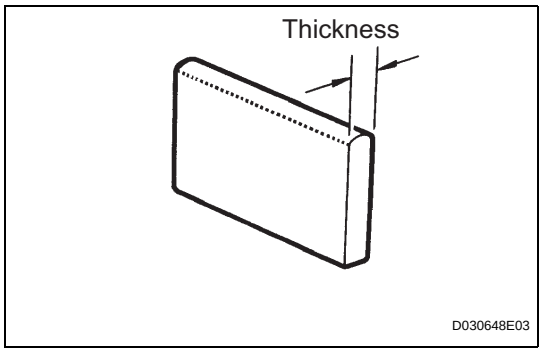
(a) Using a screwdriver, remove the housing oil seal.
NOTICE:
Be careful not to damage the housing front.

INSPECTION



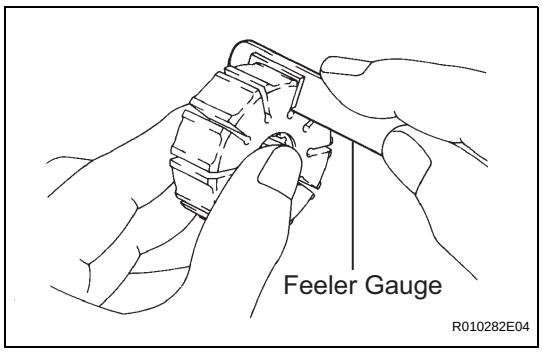
1. INSPECT VANE PUMP SHAFT AND BUSH IN HOUSING FRONT

(a) Using a micrometer and a caliper gauge, measure the oil clearance.
Maximum clearance:
0.07 mm (0.0028 in.)
If clearance exceeds maximum, replace the vane pump assembly.



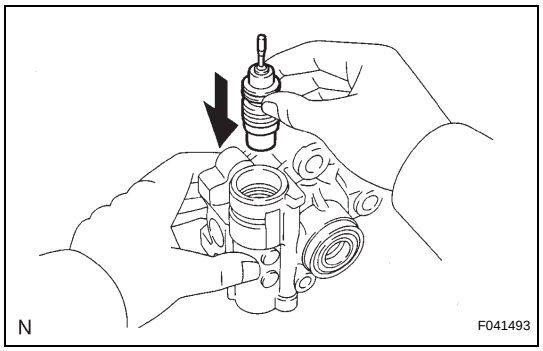
2. INSPECT VANE PUMP ROTOR AND VANE PUMP PLATES

(a) Using a micrometer, measure the thickness of the vane pump plates.
Standard thickness:
1.405 to 1.411 mm (0.05531 to 0.05555 in.)



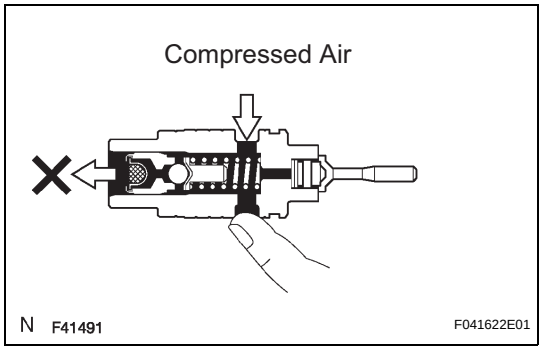
(b) Using a feeler gauge, measure the clearance between a side face of the vane pump rotor groove and the vane plates.
Maximum clearance:
0.03 mm (0.0012 in.)
If clearance exceeds maximum, replace the vane pump assembly.

PS

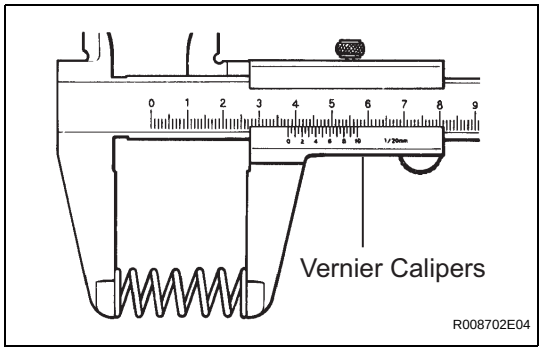


3. INSPECT FLOW CONTROL VALVE

(a) Coat the flow control valve with power steering fluid and check that it falls smoothly into the flow control valve hole under its own weight.
If it lacks smoothness, replace the vane pump assembly.



(b) Check the flow control valve for leakage. Close one of the holes and apply compressed air, 392 to 490 kPa (4 to 5 kgf/cm ^{2}, 57 to 71 psi), into the opposite side hole, and confirm that air does not come out from the end hole.
If air leaks, replace the vane pump assembly.

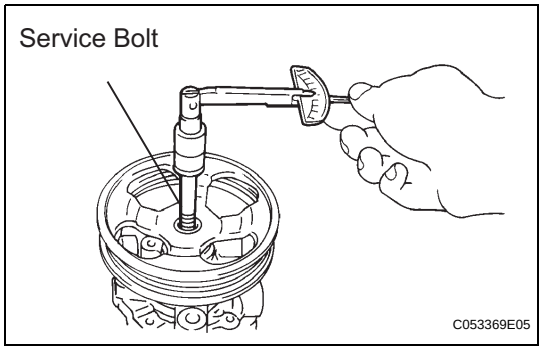


4. INSPECT FLOW CONTROL VALVE COMPRESSION SPRING

(a) Using vernier calipers, measure the free length of the compression spring.
Minimum free length:
36.9 mm (1.453 in.)
If less than minimum, replace the vane pump assembly.

5. INSPECT PRESSURE PORT UNION

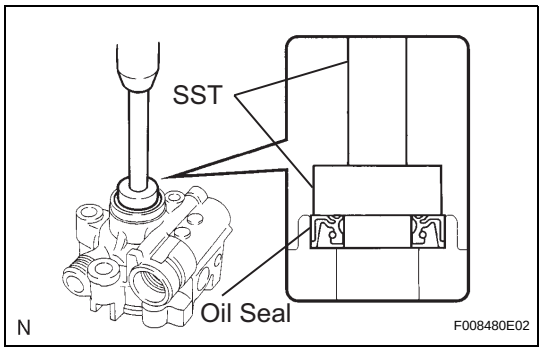
If the union seat in the pressure port union is severely damaged, it may cause fluid leakage. In that case, replace the vane pump assembly.



6. INSPECT PRELOAD

(a) Check that the pump rotates smoothly without abnormal noise.
(b) Temporarily install the service bolt.
Recommended service bolt:
Thread diameter: 10 mm (0.39 in.)
Thread pitch: 1.25 mm (0.0492 in.)
Bolt length: 50 mm (1.97 in.)
(c) Using a torque wrench, check the pulley rotating torque.
Torque: 0.27 N*m (2.8 kgf*cm, 2.4 ft.*lbf) or less
If rotating torque is not as specified, check the housing oil seal.

PS



REASSEMBLY

1. INSTALL VANE PUMP HOUSING OIL SEAL

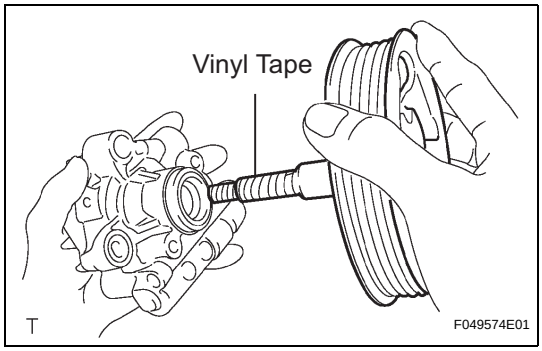
(a) Coat a new housing oil seal lip with power steering fluid.

(b) Using SST and a press, install a new housing oil seal.

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

NOTICE:

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



2. INSTALL W/PULLEY SHAFT SUB-ASSEMBLY

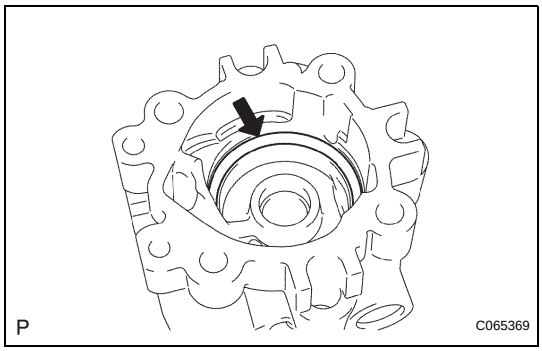
(a) Coat the bushing surface of the housing front with power steering fluid.

(b) Gradually insert the w/ pulley shaft sub-assembly.

NOTICE:

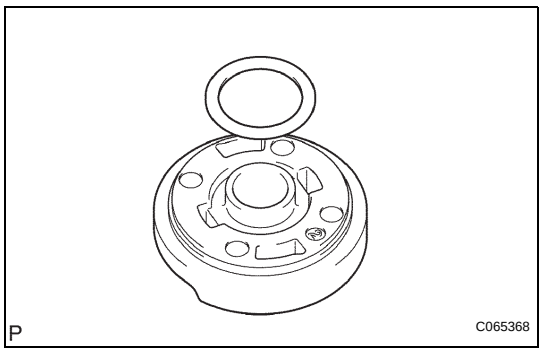
- **Do not damage the housing oil seal lip in the housing front.**
- **After inserting the w/ pulley shaft sub-assembly, check that the oil seal lip faces in the correct direction.**

PS

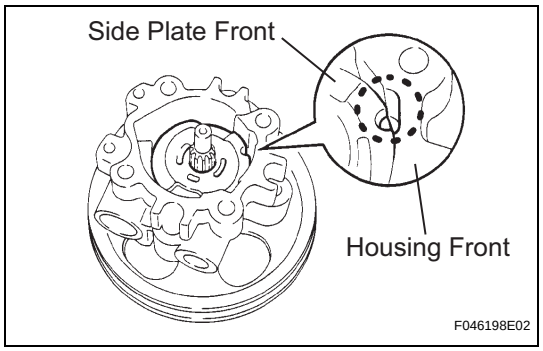


3. INSTALL VANE PUMP SIDE PLATE FRONT

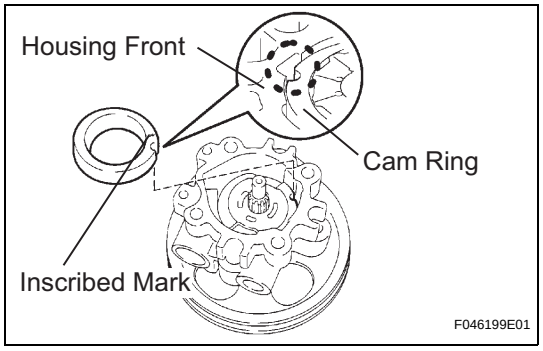
(a) Coat a new O-ring with power steering fluid and install it into the housing front.



(b) Coat a new O-ring with power steering fluid and install it onto the side plate front.

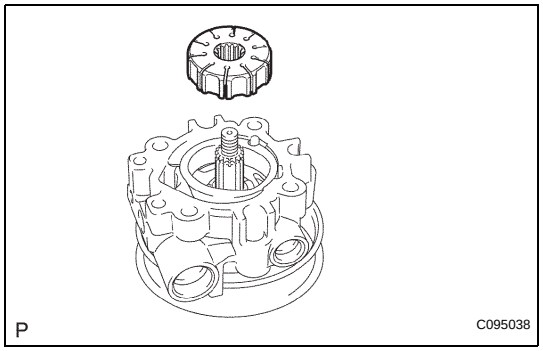


(c) Align the dent of the side plate front with that of the housing front, and install the side plate front.



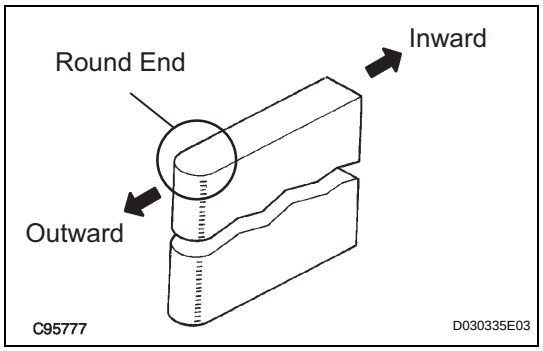
4. INSTALL VANE PUMP CAM RING

(a) Align the dent of the cam ring with that of the side plate front, and install the cam ring with the inscribed mark facing upward.
NOTICE:
Make sure that the cam ring is installed in the correct direction.

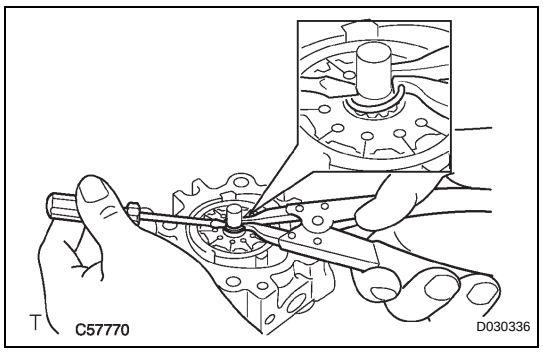


5. INSTALL VANE PUMP ROTOR

(a) Install the vane pump rotor.
HINT:
Vane pump rotor has no specific direction.



(b) Coat all 10 vane pump plates with power steering fluid.
(c) Install the vane pump plates with the round end facing outward.



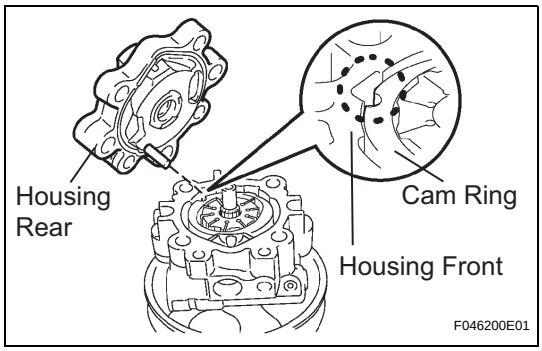
6. INSTALL VANE PUMP SHAFT SNAP RING

(a) Using a screwdriver and a snap ring expander, install a new snap ring to the w/ pulley shaft sub-assembly.

7. INSTALL VANE PUMP HOUSING REAR

(a) Coat a new O-ring with power steering fluid and install it onto the housing rear.

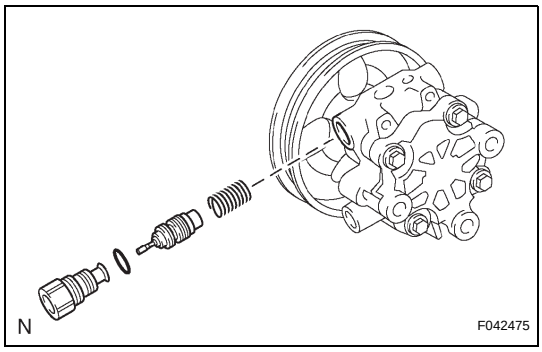
PS



(b) Align the straight pin of the housing rear with the dents of the cam ring, side plate front and the housing front, and install the housing rear with the 4 bolts.
Torque: 22 N*m (224 kgf*cm, 16 ft.*lbf)

8. INSTALL POWER STEERING OIL PRESSURE SWITCH

(a) Coat a new O-ring with power steering fluid and install it to the oil pressure switch.
(b) Install the oil pressure switch onto the vane pump assembly.
Torque: 21 N*m (214 kgf*cm, 16 ft.*lbf)



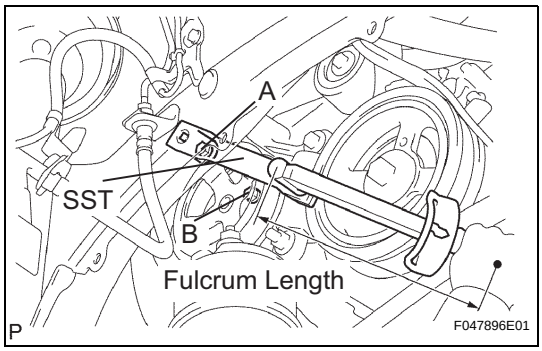
9. INSTALL FLOW CONTROL VALVE

(a) Coat the compression spring and the flow control valve with power steering fluid.
(b) Install the compression spring and the flow control valve.
(c) Coat a new O-ring with power steering fluid and install it onto the pressure port union.
(d) Install the pressure port union.
Torque: 69 N*m (704 kgf*cm, 51 ft.*lbf)

10. INSTALL POWER STEERING SUCTION PORT UNION

(a) Coat a new O-ring with power steering fluid, and install it to the suction port union.
(b) Install the suction port union with the bolt.
Torque: 12 N*m (122 kgf*cm, 9 ft.*lbf)

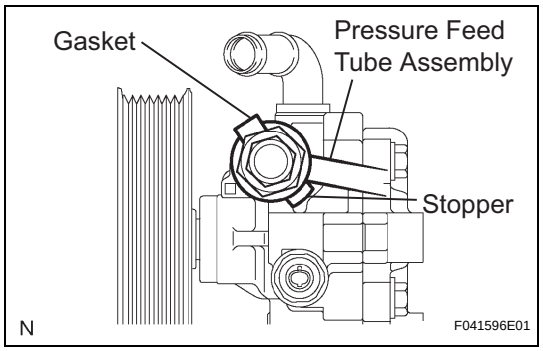
PS



INSTALLATION

1. INSTALL VANE PUMP ASSEMBLY

(a) Temporarily tighten bolt A to the vane pump assembly.
(b) Install the vane pump assembly with bolt B.
Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)
(c) Using SST and a deep socket wrench (14 mm), tighten bolt A.
SST 09249-63010
Torque: 26 N*m (264 kgf*cm, 19 ft.*lbf)
NOTICE:
Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).
HINT:
This torque value is effective when SST is parallel to the torque wrench.
(d) Connect the connector to the oil pressure switch.



2. CONNECT PRESSURE FEED TUBE ASSEMBLY

(a) Install the pressure feed tube assembly and a new gasket to the vane pump assembly with the union bolt.
HINT:
Make sure the stopper of the pressure feed tube assembly touches the housing front as shown in the illustration.

(b) Using a wrench (27 mm) to hold the pressure port union, torque the union bolt.
Torque: 52 N*m (525 kgf*cm, 38 ft.*lbf)

3. CONNECT OIL RESERVOIR TO PUMP HOSE NO.1

(a) Connect the oil reservoir to pump hose No.1 with the clip.
NOTICE:
Take care not to spill fluid on the V belt.

4. INSTALL FAN AND GENERATOR V BELT (See page EM-5)

5. INSTALL FRONT FENDER APRON SEAL RH

6. INSTALL FRONT WHEEL
Torque: 103 N*m (1,050 kgf*cm, 76 ft.*lbf)

7. BLEED POWER STEERING FLUID (See page PS-3)

8. CHECK FOR FLUID LEAKS

DISASSEMBLY

1. REMOVE POWER STEERING SUCTION PORT UNION
(a) Remove the bolt and the suction port union.
(b) Remove the O-ring from the suction port union.

2. REMOVE FLOW CONTROL VALVE
(a) Remove the pressure port union.
(b) Remove the O-ring from the pressure port union.
(c) Remove the flow control valve and the compression spring.

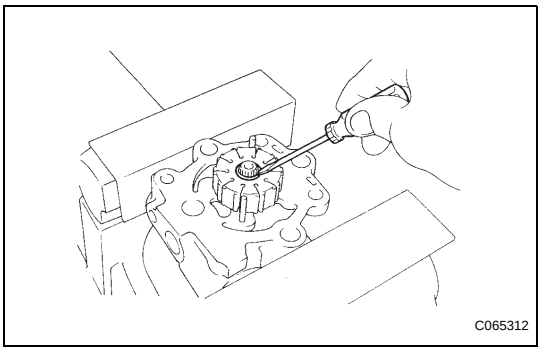
3. REMOVE VANE PUMP BRACKET REAR
(a) Remove the 2 bolts, nuts, and the bracket rear from the vane pump assembly.

4. REMOVE VANE PUMP HOUSING REAR
(a) Remove the 4 bolts and the housing rear from the housing front.
(b) Remove the gasket.
(c) Remove the 2 O-rings from the housing rear.

5. REMOVE VANE PUMP SIDE PLATE REAR
(a) Remove the wave washer from the side plate rear.
(b) Remove the side plate rear.

PS

6. REMOVE VANE PUMP CAM RING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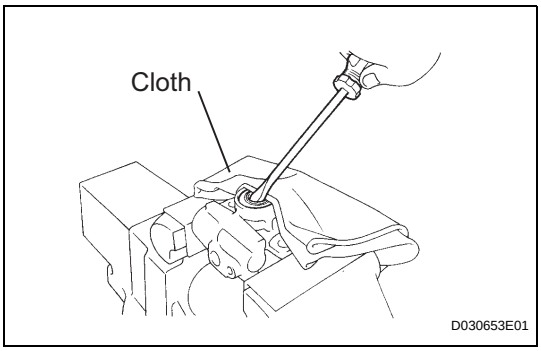
7. REMOVE VANE PUMP SHAFT SNAP RING
(a) Using a screwdriver, remove the snap ring from the w/pulley shaft sub-assembly.

8. REMOVE VANE PUMP ROTOR
(a) Remove the 10 vane pump plates from the vane pump rotor.
(b) Remove the vane pump rotor.

9. REMOVE W/PULLEY SHAFT SUB-ASSEMBLY

10. REMOVE PUMP BRACKET FRONT
(a) Remove the bolt and the bracket front from the housing front.



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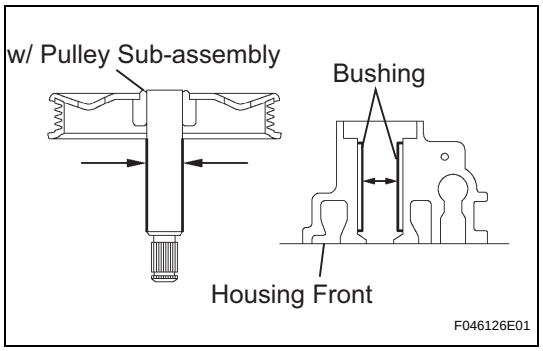
11. REMOVE VANE PUMP HOUSING OIL SEAL
(a) Using a screwdriver, remove the housing oil seal from the hosing front.
NOTICE:
Be careful not to damage the bushing of the housing front.

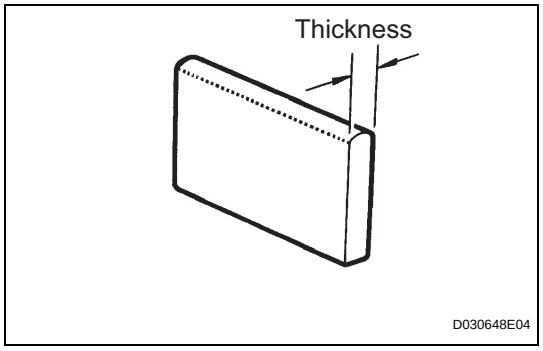


INSPECTION

1. INSPECT VANE PUMP SHAFT AND BUSH IN HOUSING FRONT

(a) Using a micrometer and a caliper gauge, measure the oil clearance.
Maximum clearance:
0.07 mm (0.0028 in.)
If clearance exceeds maximum, replace the vane pump assembly.

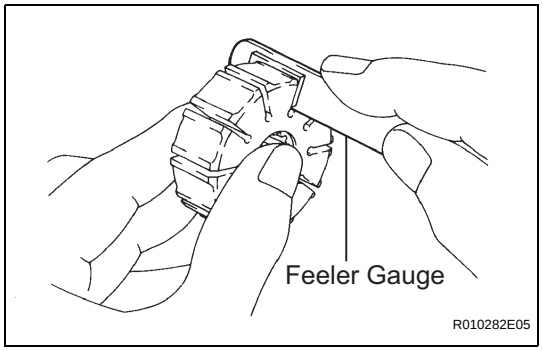
(b) Check that there is no severe damage or wear on the bushing of the housing front and the w/ pulley shaft sub-assembly.
If necessary, replace the vane pump assembly.



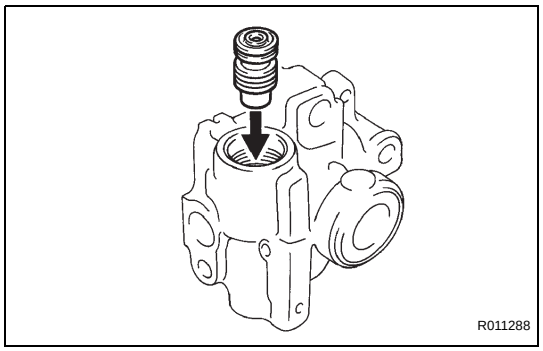
2. INSPECT VANE PUMP ROTOR AND VANE PUMP PLATES

(a) Using a micrometer, measure the thickness of the vane pump plates.
Standard thickness:
1.397 to 1.403 mm (0.0550 to 0.0552 in.)

PS

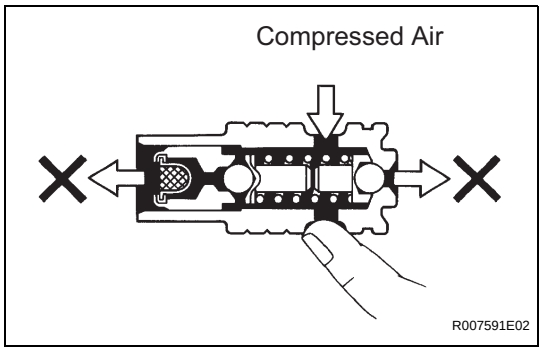


(b) Using a feeler gauge, measure the clearance between the vane pump rotor groove and the vane pump plate.
Maximum clearance:
0.03 mm (0.0012 in.)
If clearance exceeds maximum, replace the vane pump assembly.

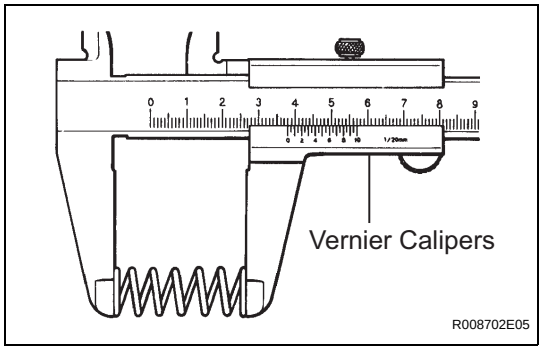


3. INSPECT FLOW CONTROL VALVE

(a) Coat the flow control valve with power steering fluid and check that it falls smoothly into the flow control valve hole under its own weight.
If it lacks smoothness, replace the vane pump assembly.



(b) Check the flow control valve for leakage. Close one of the holes and apply compressed air, 392 to 490 kPa (4 to 5 kgf/cm ^{2}, 57 to 71 psi), into the opposite side hole, and confirm that air does not come out from the end holes.
If air leaks, replace the vane pump assembly.



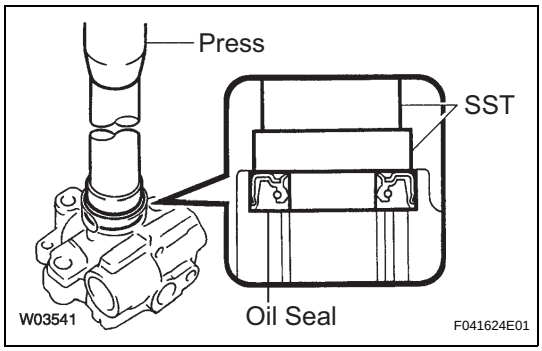
4. INSPECT FLOW CONTROL VALVE COMPRESSION SPRING

(a) Using vernier calipers, measure the free length of the compression spring.
Minimum free length:
32.24 mm (1.2693 in.)
If less than minimum, replace the vane pump assembly.

5. INSPECT PRESSURE PORT UNION

If the union seat in the pressure port union is severely damaged, it may cause fluid leakage. In that case, replace the vane pump assembly.

PS



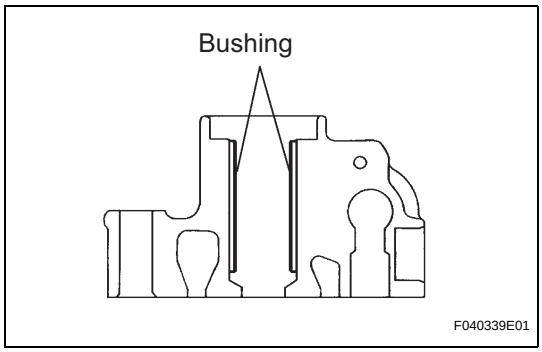
REASSEMBLY

1. INSTALL VANE PUMP HOUSING OIL SEAL

(a) Coat a new housing oil seal lip with power steering fluid.
(b) Using SST and a press, install the housing oil seal.
SST 09950-60010 (09951-00330), 09950-70010 (09951-07100)
NOTICE:
Make sure that the housing oil seal is installed in the correct direction.

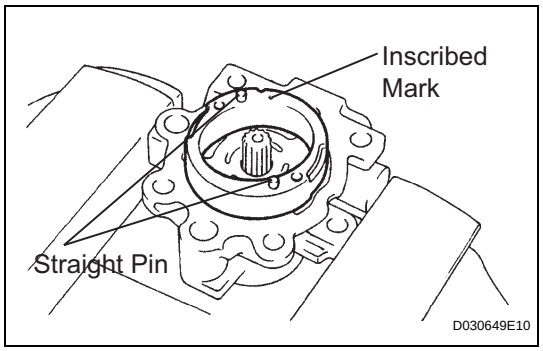
2. INSTALL PUMP BRACKET FRONT

(a) Install the bracket front with the bolt.
Torque: 44 N*m (449 kgf*cm, 32 ft.*lbf)



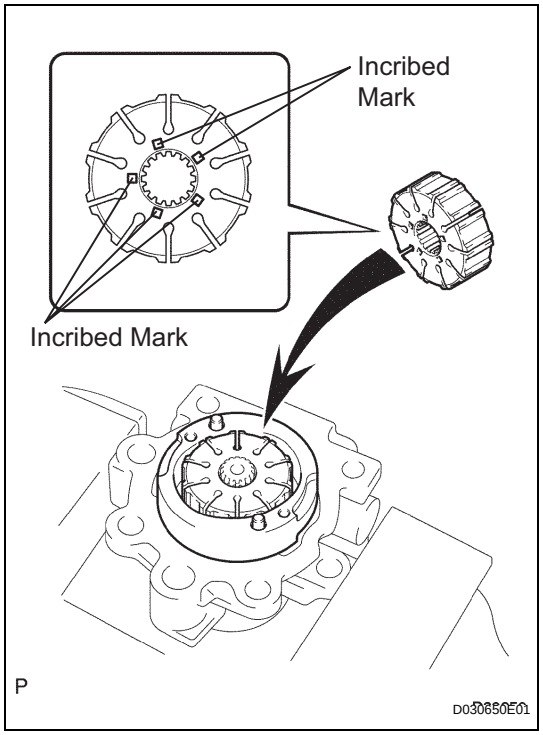
3. INSTALL W/PULLEY SHAFT SUB-ASSEMBLY

(a) Coat the bushing surface of the housing front with power steering fluid.
(b) Gradually insert the w/ pulley shaft sub-assembly.
NOTICE:
- **Do not damage the housing oil seal lip in the housing front.**
- **After inserting the w/ pulley shaft sub-assembly, check that the oil seal lip faces in the correct direction.**



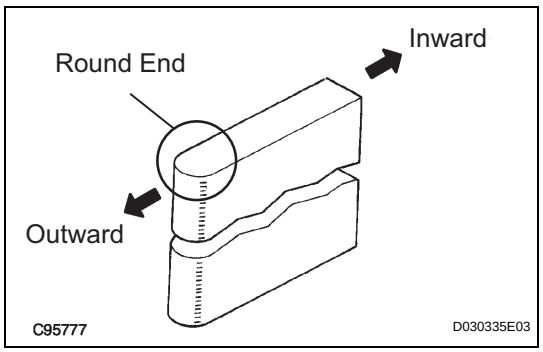
4. INSTALL VANE PUMP CAM RING

(a) Align the holes of the vane pump cam ring with the 2 straight pins of the housing front, and install the vane pump cam ring with the inscribed mark facing upward.



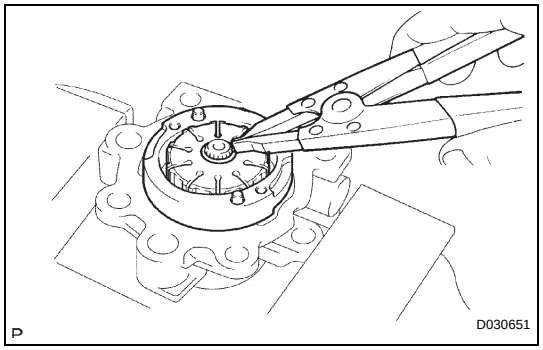
5. INSTALL VANE PUMP ROTOR

(a) Install the vane pump rotor with the inscribed mark facing downward.
NOTICE:
Make sure that the vane pump rotor is installed in the correct direction.



(b) Coat all 10 vane pump plates with power steering fluid.

(c) Install the vane pump plates with the round end facing outward.
NOTICE:
Make sure that the vane pump plates are installed in the correct direction.



6. INSTALL VANE PUMP SHAFT SNAP RING

(a) Using a snap ring expander, install a new snap ring onto the w/ pulley shaft sub-assembly.

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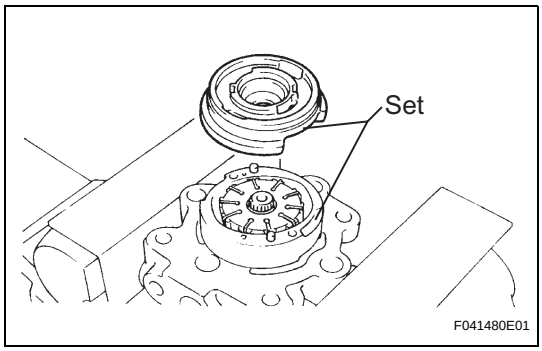
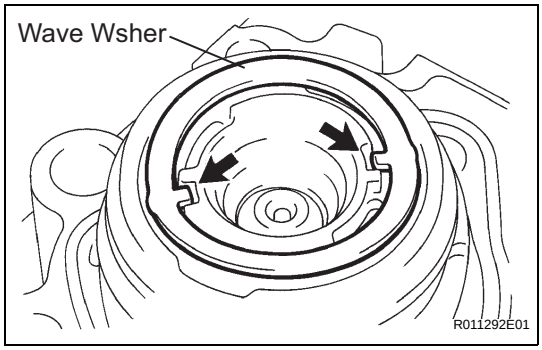


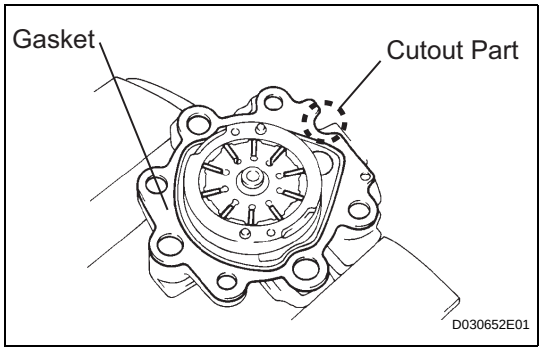
7. INSTALL VANE PUMP SIDE PLATE

(a) Align the groove of the vane pump cam ring with that of the side plate rear to install.



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

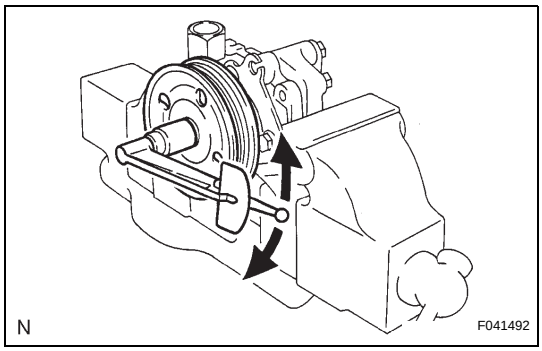
(c) Coat 2 new O-rings with power steering fluid and install them onto the side plate rear.



8. INSTALL VANE PUMP HOUSING REAR

(a) Install a new gasket to the housing front.
NOTICE:
Make sure that the gasket is installed with the cutout in the correct position.

(b) Install the housing rear with 4 bolts.
Torque: 24 N*m (254 kgf*cm, 18 ft.*lbf)



9. MEASURE VANE PUMP ROTATING TORQUE

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

(b) Temporarily install the service bolt.
Recommended service bolt:
Thread diameter: 10 mm (0.39 in.)
Thread pitch: 1.25 mm (0.0492 in.)
Bolt length: 50 mm (1.97 in.)

(c) Using a torque wrench, check the vane pump rotating torque.
Torque: Rotating torque:
0.27 N*m (2.8 kgf*cm, 2.4 in.*lbf) or less
If rotating torque is not as specified, check the housing oil seal.

10. INSTALL VANE PUMP BRACKET REAR

(a) Install the bracket rear with the 2 bolts and 2 nuts.
Torque: 44 N*m (449 kgf*cm, 32 ft.*lbf)

11. INSTALL FLOW CONTROL VALVE

(a) Coat the compression spring with power steering fluid and install it to the housing front.

(b) Coat the flow control valve with power steering fluid.

(c) Install the flow control valve to the housing front.
NOTICE:
Make sure that the flow control valve is installed in the correct direction.

(d) Coat a new O-ring with power steering fluid and install it to the pressure port union.

(e) Install the pressure port union to the housing front.
Torque: 83 N*m (846 kgf*cm, 61 ft.*lbf)

12. INSTALL POWER STEERING SUCTION PORT UNION

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

(b) Install the suction port union with the bolt to the housing front.
Torque: 13 N*m (133 kgf*cm, 10 ft.*lbf)

INSTALLATION

1. INSTALL VANE PUMP ASSEMBLY

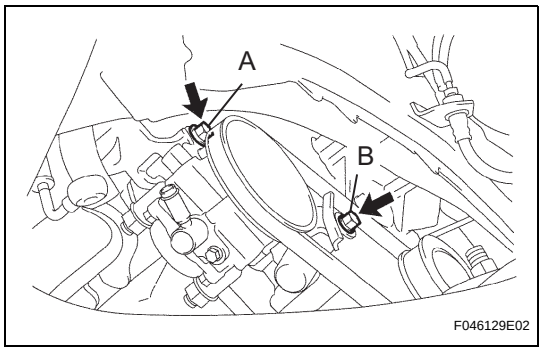
(a) Temporarily install the vane pump assembly with the 2 bolts.

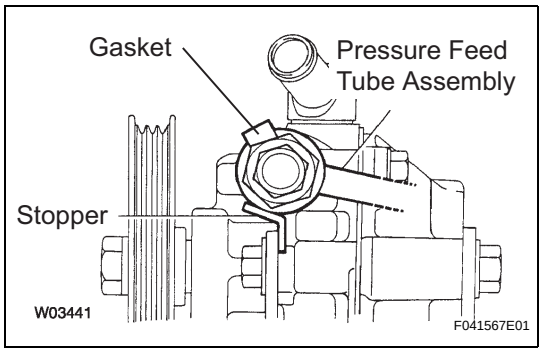
2. INSTALL VANE PUMP V BELT

(a) Install the V belt (See page EM-6).

(b) Adjust the V belt tension (See pageEM-1).

(c) Torque bolt A and bolt B
Torque: 43 N*m (440 kgf*cm, 32 ft.*lbf)





3. CONNECT PRESSURE FEED TUBE ASSEMBLY

(a) Using a wrench (24 mm) to keep the pressure port union, connect the pressure feed tube assembly with the union bolt and a new gasket.
Torque: 52 N*m (525 kgf*cm, 38 ft.*lbf)
NOTICE:
Make sure that the stopper of the pressure feed tube assembly touches the bracket front as shown in the illustration, then tighten the union bolt.

4. INSTALL POWER STEERING OIL PRESSURE SWITCH

(a) Install the oil pressure switch to the union bolt.
Torque: 21 N*m (214 kgf*cm, 15 ft.*lbf)
NOTICE:
Be careful to keep oil away from the connector.

(b) Connect the connector.

5. CONNECT OIL RESERVOIR TO PUMP HOSE NO.1

(a) Connect the oil reservoir to pump hose No.1.

(b) Install the clip.

6. INSTALL FRONT WHEEL RH
Torque: 103 N*m (1,050 kgf*cm, 76 ft.*lbf)

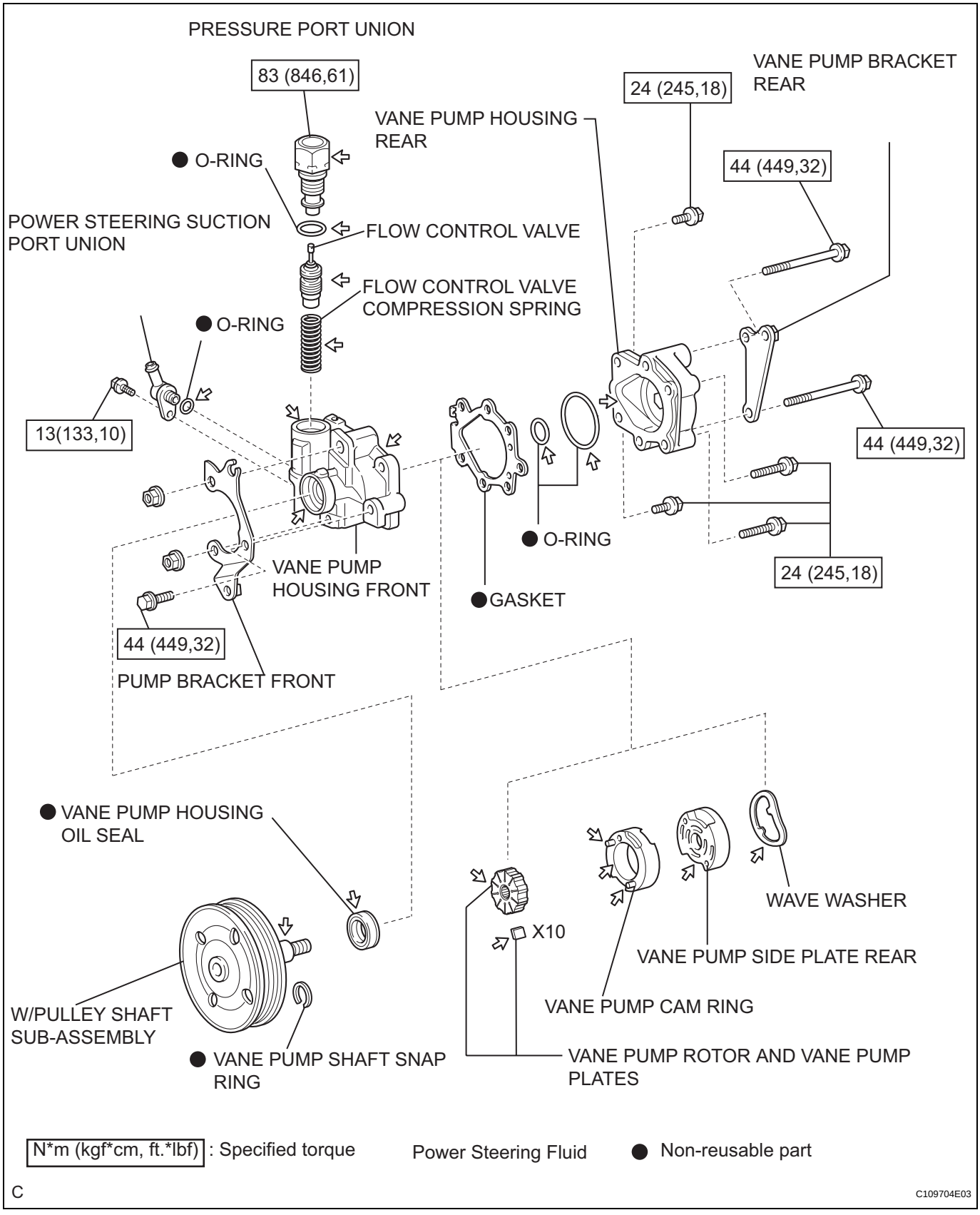
7. BLEED POWER STEERING FLUID (See page PS-3)

8. CHECK FOR FLUID LEAKS

PS

3MZ-FE VANE PUMP

COMPONENTS



REMOVAL

NOTICE:

- **Do not overtighten when using a vise.**
- **When installing, coat the parts indicated by arrows with power steering fluid**
  (See page PS-16).

1. REMOVE FRONT WHEEL RH

2. DRAIN POWER STEERING FLUID

3. DISCONNECT OIL RESERVOIR TO PUMP HOSE NO.1

(a) Remove the clip and disconnect the oil reservoir to pump hose No.1.
NOTICE:
Take care not to spill fluid on the V belt.

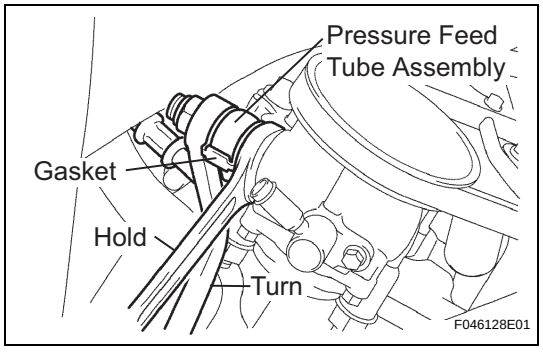
4. REMOVE POWER STEERING OIL PRESSURE SWITCH

(a) Disconnect the connector.
(b) Remove the oil pressure switch from the union bolt.
NOTICE:
If the oil pressure switch is dropped or damaged, replace it with a new one.

PS

5. DISCONNECT PRESSURE FEED TUBE ASSEMBLY

(a) Using a wrench (24 mm) to keep the pressure port union, remove the union bolt and the gasket.
(b) Disconnect the pressure feed tube assembly.

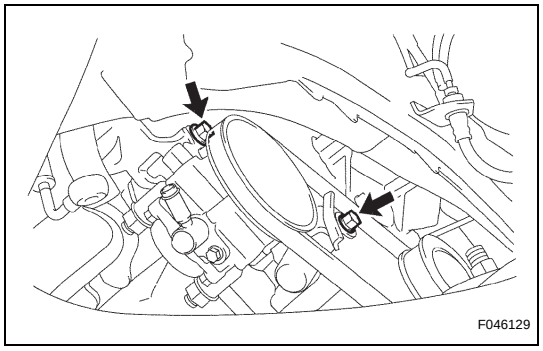


6. REMOVE VANE PUMP V BELT

(a) Loosen the 2 bolts and remove the vane pump V belt.

7. REMOVE VANE PUMP ASSEMBLY

(a) Remove the 2 bolts and the vane pump assembly.



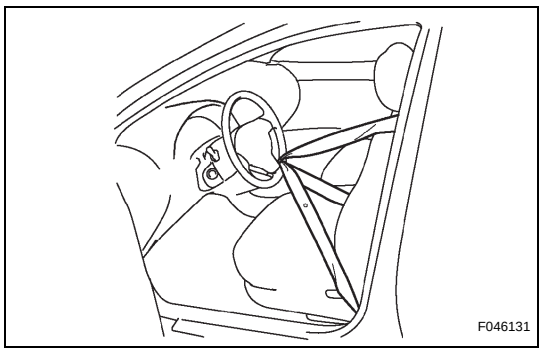
REMOVAL

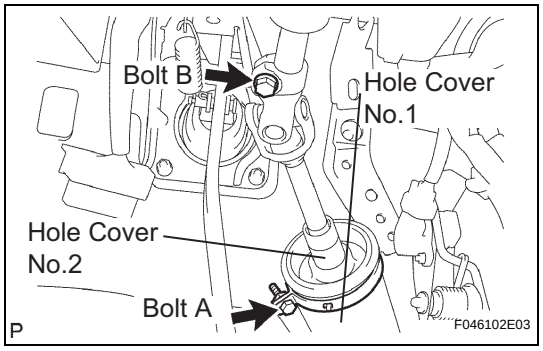
NOTICE:
When installing, coat the parts indicated by arrows with power steering fluid, MP grease, silicon grease or molybdenum disulfide lithium base grease (See page).

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

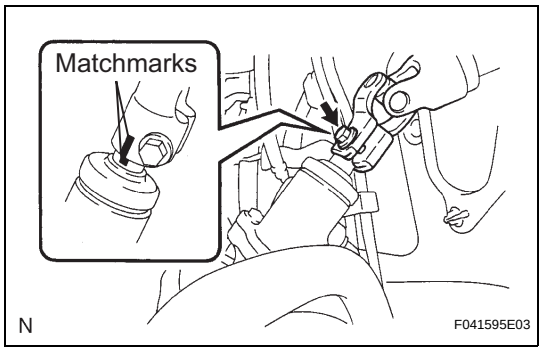
2. SEPARATE STEERING INTERMEDIATE SHAFT ASSEMBLY

(a) Fix the steering wheel with the seat belt in order to prevent rotation.
HINT:
This operation is useful to prevent damage to the spiral cable.





(b) Loosen bolt A and remove the clamp from the hole cover No.1.
(c) Separate the hole cover No.2 from the hole cover No.1.
(d) Loosen bolt B.



(e) Put matchmarks on the steering intermediate shaft assembly and the power steering gear assembly.
(f) Remove the bolt and disengage the intermediate shaft assembly.

3. REMOVE FRONT WHEEL

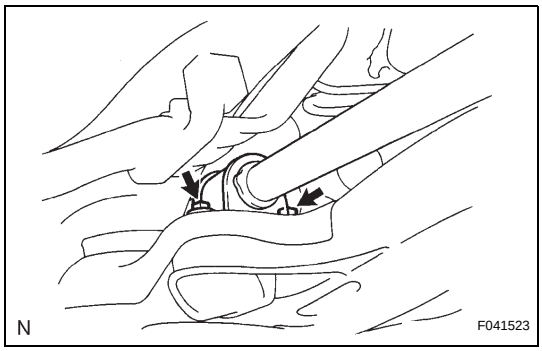
4. SEPARATE TIE ROD ASSEMBLY LH (See page DS-5)

5. SEPARATE TIE ROD ASSEMBLY RH
SST 09628-62011
HINT:
Perform the same procedure as for the LH.

6. SEPARATE FRONT STABILIZER LINK ASSEMBLY LH
HINT:
Separate the upper side of the stabilizer link assembly.
HINT:
See page DS-4

7. SEPARATE FRONT STABILIZER LINK ASSEMBLY RH
HINT:
- Perform the same procedure as for the LH.
- Separate the upper side of the stabilizer link assembly.

PS



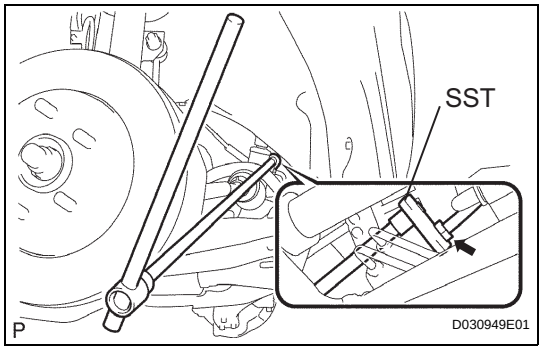
8. REMOVE FRONT STABILIZER BRACKET NO.1 LH

(a) Remove the 2 bolts, the stabilizer bracket No.1 LH and the stabilizer bar bush No.1.

9. REMOVE FRONT STABILIZER BRACKET NO.1 RH

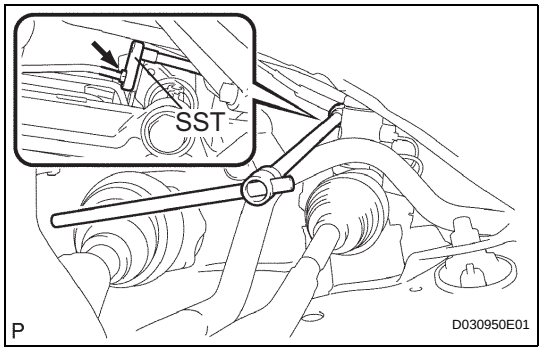
HINT:

Perform the same procedure as for the LH.

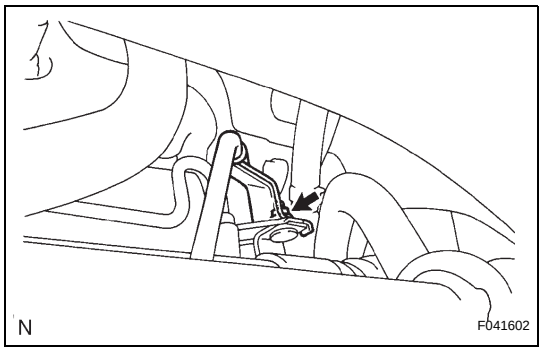


10. DISCONNECT PRESSURE FEED TUBE ASSEMBLY

(a) Using SST, disconnect the return tube assembly from the power steering gear assembly.
SST 09023-12701

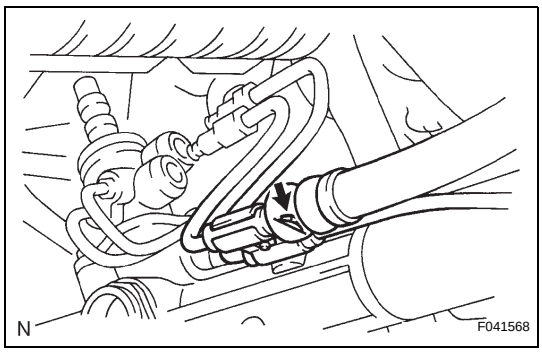


(b) Using SST, disconnect the pressure feed tube assembly from the power steering gear assembly.
SST 09023-12701



(c) 2AZ-FE:
Remove the nut and separate the tube clamp.

(d) 3MZ-FE:
Remove the nut and separate the tube clamp and the heat insulator.

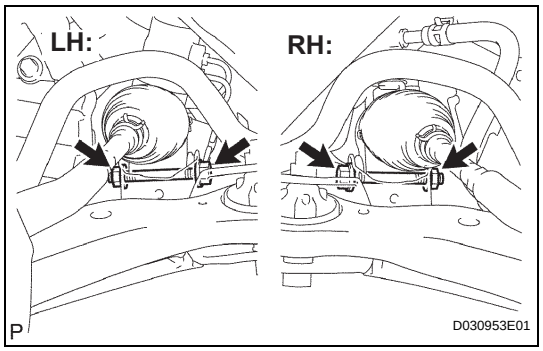


(e) Remove the bolt and separate the tube clamp.

11. REMOVE POWER STEERING RACK HOUSING HEAT INSULATOR

NOTICE:

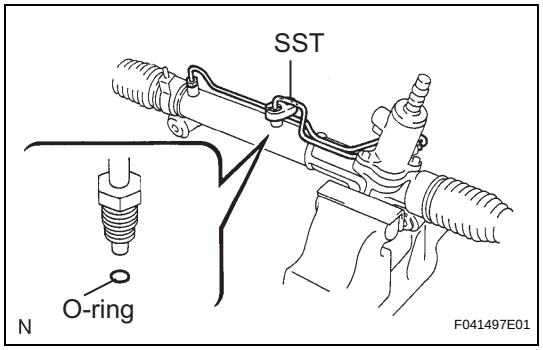
Be careful not to damage the heat insulator.



12. REMOVE RACK AND PINION POWER STEERING GEAR ASSEMBLY

(a) Remove the 2 bolts, nuts and the power steering gear assembly.

DISASSEMBLY

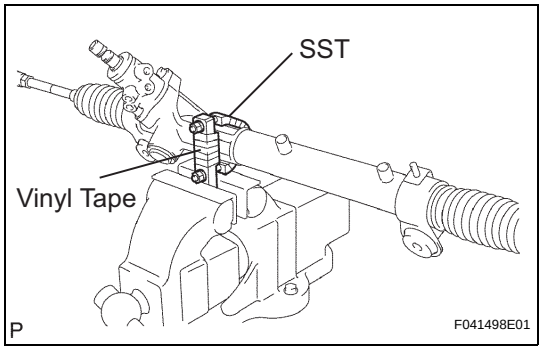


1. REMOVE STEERING LEFT TURN PRESSURE TUBE

(a) Using SST, disconnect the left turn pressure tube.
SST 09023-38201

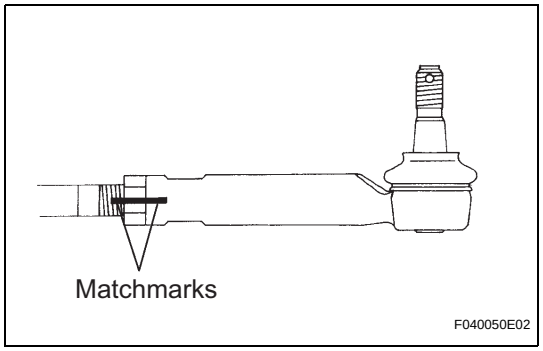
(b) Remove the 2 O-rings from the left turn pressure tube.

2. REMOVE STEERING RIGHT TURN PRESSURE TUBE
SST 09023-38201
HINT:
Perform the same procedure as for the another side.



3. FIX RACK AND PINION POWER STEERING GEAR ASSEMBLY

(a) Using SST, secure the power steering gear assembly.
SST 09612-00012
HINT:
Wrap the SST with tape before use, in order to prevent damaging the power steering gear assembly.



4. REMOVE TIE ROD ASSEMBLY LH

(a) Put matchmarks on the tie rod assembly LH and the rack end.

(b) Loosen the lock nut and remove the tie rod assembly LH and the lock nut.

5. REMOVE TIE ROD ASSEMBLY RH
HINT:
Perform the same procedure as for the LH.

6. REMOVE STEERING RACK BOOT CLIP

(a) Remove the 2 boot clips.

7. REMOVE STEERING RACK BOOT NO.2 CLAMP

(a) Using pliers, remove the rack boot No.2 clamp.
NOTICE:
Be careful not to damage the boot.

8. REMOVE STEERING RACK BOOT NO.1 CLAMP
HINT:
Perform the same procedure as for the No.2 clamp.
NOTICE:
Be careful not to damage the boot.

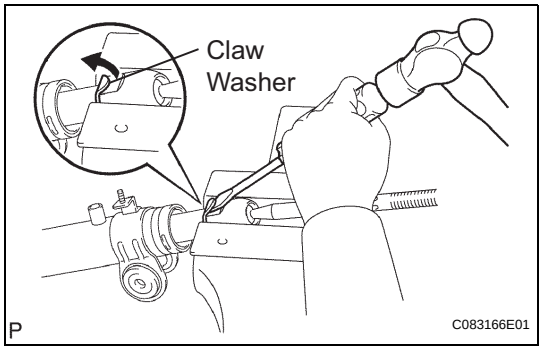
PS

9. REMOVE STEERING RACK BOOT NO.2

10. REMOVE STEERING RACK BOOT NO.1

11. REMOVE STEERING RACK END SUB-ASSEMBLY

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



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NOTICE:

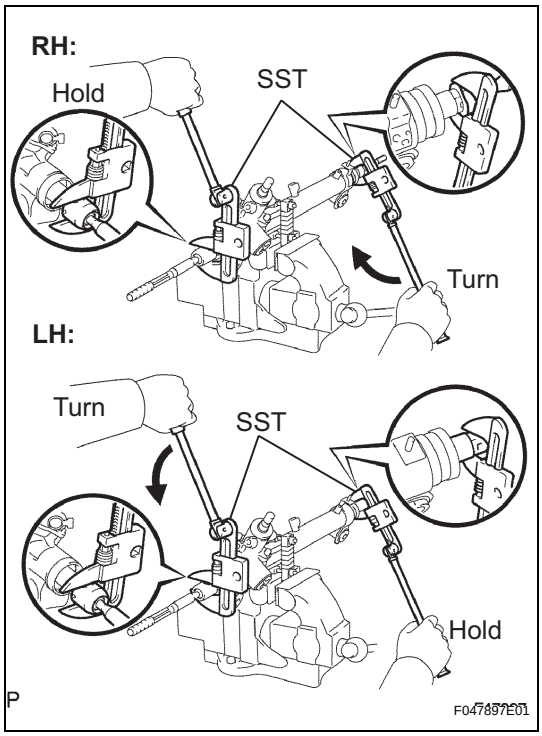
Avoid any impact to the power steering rack.

(b) Using SST, remove the steering rack end sub-assembly and the claw washer.

SST 09922-10010

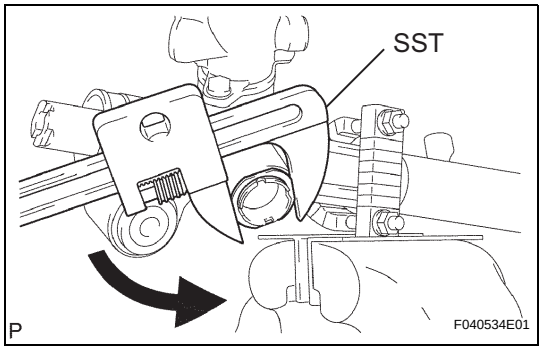
NOTICE:

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



12. REMOVE RACK GUIDE

(a) Using SST, remove the spring cap lock nut.

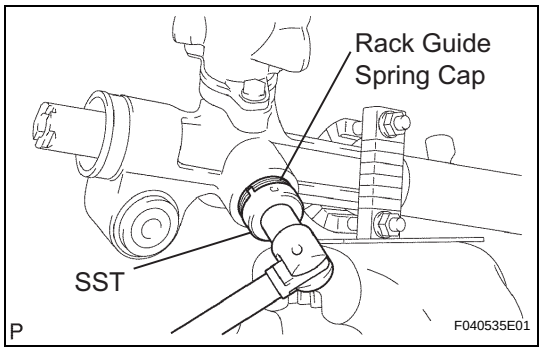


SST 09922-10010

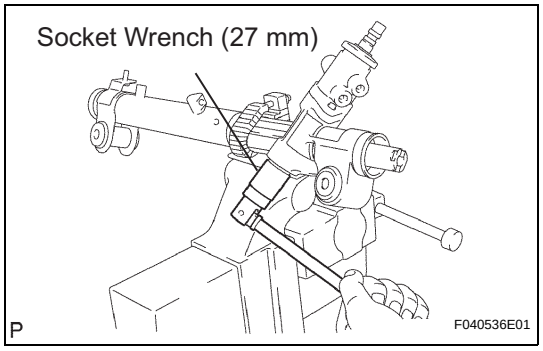
NOTICE:

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

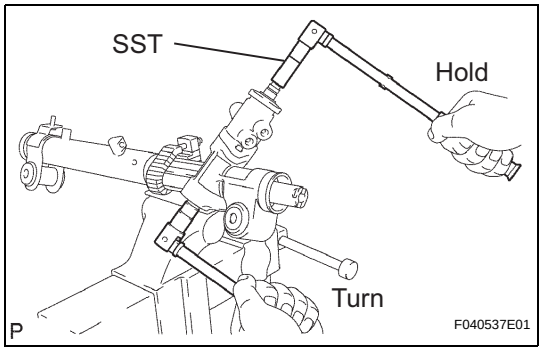
PS



(b) Using SST, remove the rack guide spring cap.
SST 09631-10021
(c) Remove the compression spring and the rack guide.

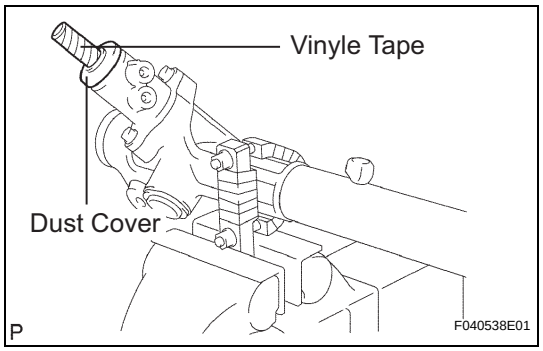


13. REMOVE POWER STEERING CONTROL VALVE
(a) Using a socket wrench (27 mm), remove the rack housing cap.

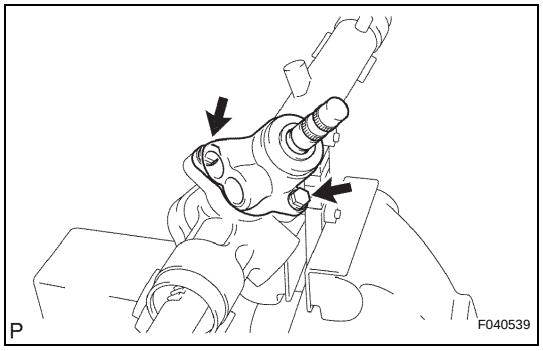


(b) Using SST, hold the control valve shaft and remove the nut.
SST 09616-00011

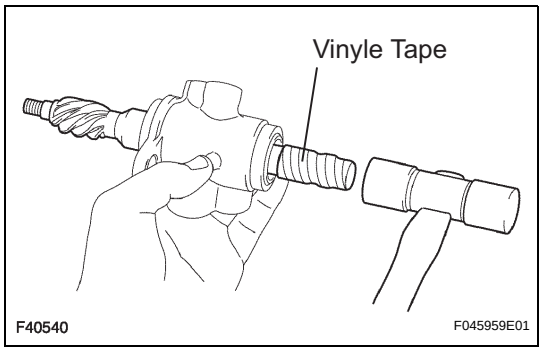
PS



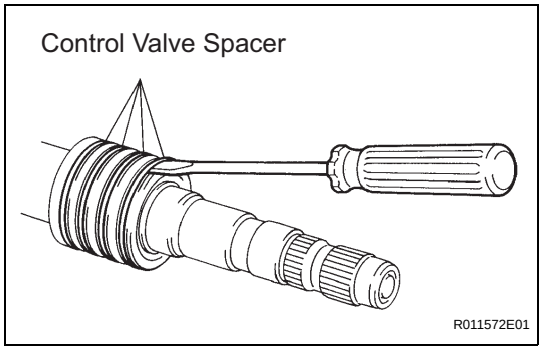
(c) Wrap vinyl tape around the spline of the control valve in order to prevent damaging the oil seal.
(d) Remove the dust cover from the control valve housing.



(e) Remove the 2 bolts and the control valve housing together with the control valve.
(f) Remove the gasket.

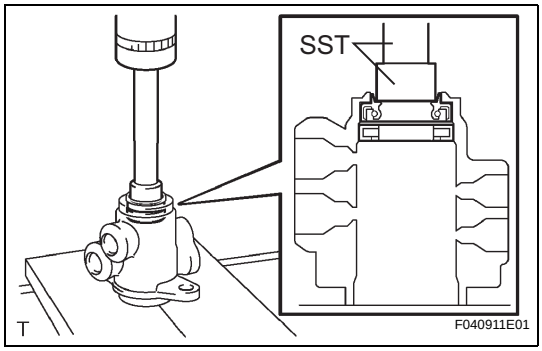


(g) Using a plastic hammer, remove the control valve.
(h) Remove the oil seal from the control valve.



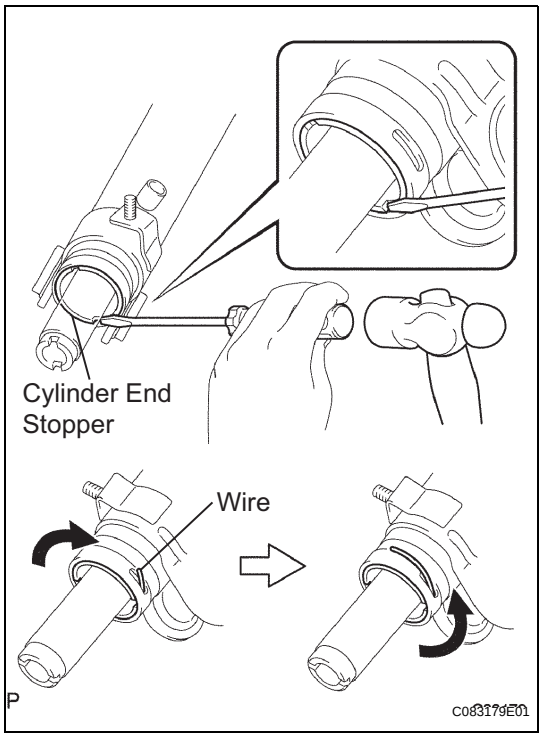
(i) Using a screwdriver, remove the 4 control valve spacers.
NOTICE:
Be careful not to damage the spacer grooves.

PS



14. REMOVE POWER STEERING CONTROL VALVE UPPER OIL SEAL

(a) Using SST and a press, remove the control valve upper bearing and the upper oil seal from the control valve housing.
SST 09950-70010 (09951-07150), 09950-60010 (09951-00250)

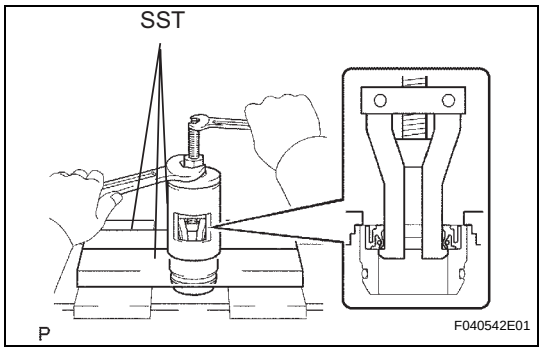


15. REMOVE CYLINDER END STOPPER

(a) Using a screwdriver and a hammer, turn the cylinder end stopper clockwise until the wire end is visible through the service hole.
(b) Using a screwdriver and a hammer, turn the cylinder end stopper counterclockwise, and remove the wire and the cylinder end stopper.

16. REMOVE POWER STEERING RACK

(a) Remove the steering rack from the rack housing.



17. REMOVE POWER STEERING RACK BUSH

(a) Remove the rack bush with the rack bush oil seal from the steering rack.

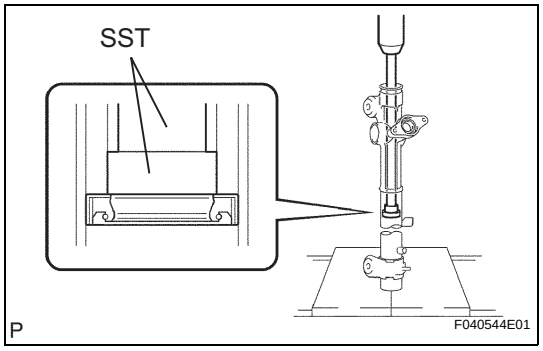
(b) Using SST, remove the rack bush oil seal from the rack bush.

SST 09527-21011, 09612-24014 (09613-22011)

NOTICE:

Be careful not to drop the rack bush.

(c) Using a screwdriver, remove the O-ring from the rack bush.



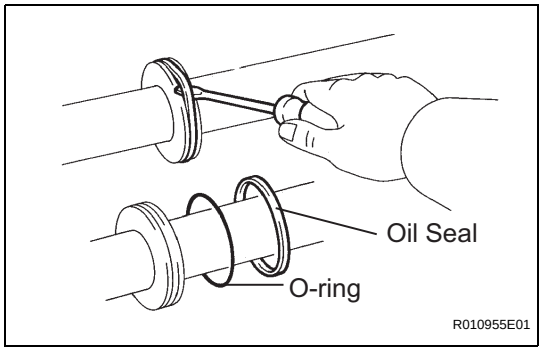
18. REMOVE POWER STEERING CYLINDER TUBE OIL SEAL

(a) Using SST and a press, remove the cylinder tube oil seal.

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

NOTICE:

Be careful not to damage the inside surface of the rack housing.



19. REMOVE POWER PISTON OIL SEAL

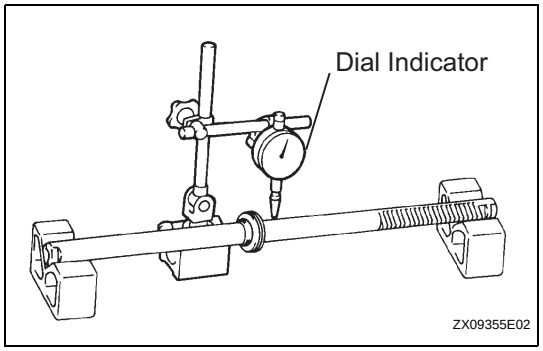
(a) Using a screwdriver, remove the oil seal and the O-ring.

NOTICE:

Be careful not to damage the oil seal groove.

PS

INSPECTION



1. INSPECT POWER STEERING RACK

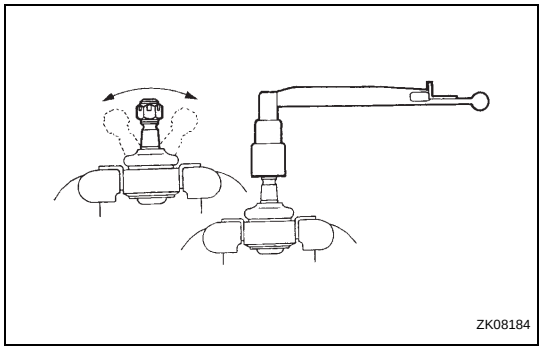
(a) Using a dial indicator, check for runout of the steering rack and teeth wear.

Maximum runout:

0.3 mm (0.0118 in.)

If runout exceeds maximum, replace the power steering gear assembly.

(b) Check the rack surface for wear and damage.
If necessary, replace the power steering gear assembly.



2. INSPECT TIE ROD ASSEMBLY LH

(a) Secure the tie rod assembly LH in a vise.

(b) Install the nut to the stud bolt.

(c) Flip the ball joint back and forth 5 times or more.

(d) Using a torx wrench, turn the nut continuously at a rate of 3 to 5 seconds per turn and take the torque reading on the 5th turn.

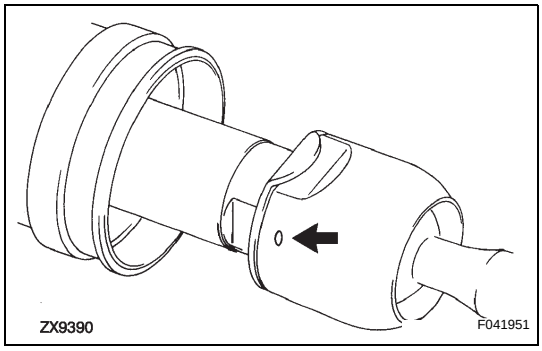
Turning torque:

0.98 to 3.92 N*m (10.0 to 40.0 kgf*cm, 8.7 to 34.7 ft.*lbf)

If turning torque is not as specified, replace the tie rod assembly LH.

3. INSPECT TIE ROD ASSEMBLY RH

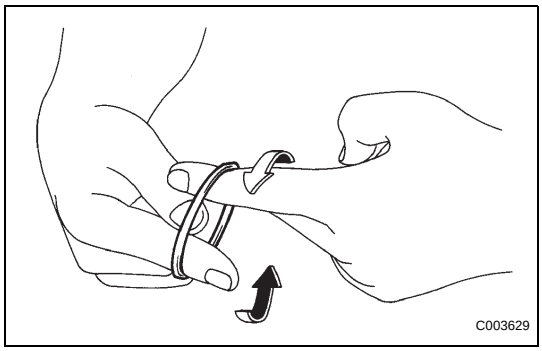
HINT:
Perform the same procedure as for the LH.



4. INSPECT POWER STEERING RACK

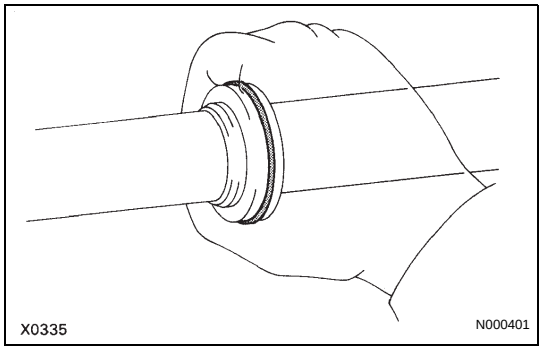
(a) Ensure that the holes of the steering rack en ds are not clogged with grease.
HINT:
If the hole is clogged, the pressure inside the boot will change after it is assembled and the steering wheel is turned.

REASSEMBLY

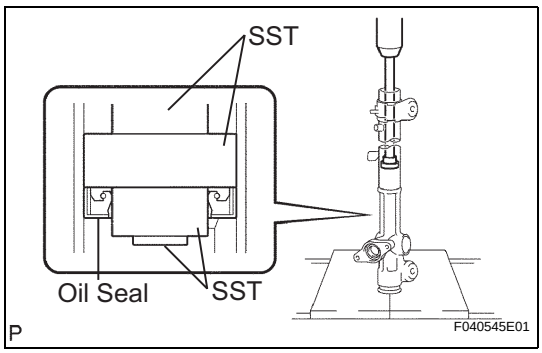


1. INSTALL POWER PISTON OIL SEAL

(a) Coat a new O-ring with power steering fluid and install it to the steering rack.
(b) Expand a new oil seal with your fingers.
NOTICE:
Be careful not to overly expand the oil seal.
(c) Coat the oil seal with power steering fluid.

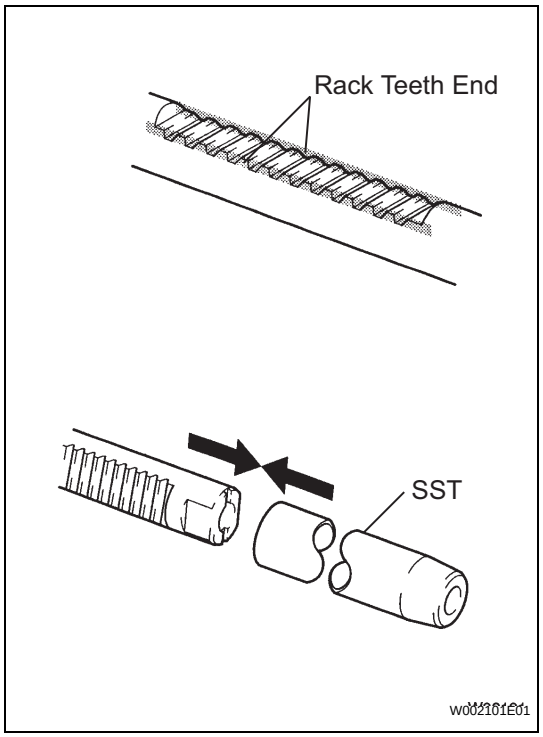


(d) Install the oil seal to the steering rack, and adjust with your fingers.



2. INSTALL POWER STEERING CYLINDER TUBE OIL SEAL

(a) Coat a new cylinder tube oil seal lip with power steering fluid.
(b) Using SST and a press, install the cylinder tube oil seal.
SST 09950-60010 (09951-00420, 09951-00250, 09952-06010), 09950-70010 (09951-07360)
NOTICE:
Make sure that the oil seal is installed in the correct direction.



3. INSTALL POWER STEERING RACK

(a) Apply grease to the rack teeth ends.

(b) Affix SST to the steering rack.

SST 09631-33010

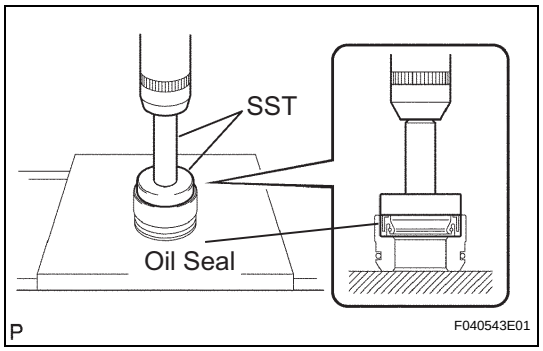
HINT:

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

(c) Coat SST and the power piston oil seal with power steering fluid.

(d) Install the steering rack to the rack housing.

(e) Remove SST.



4. INSTALL POWER STEERING RACK BUSH

(a) Coat a new rack bush oil seal lip with power steering fluid.

(b) Using SST and a press, install the rack bush oil seal to the rack bush.

SST 09950-60010 (09951-00400), 09950-70010 (09951-07100)

NOTICE:

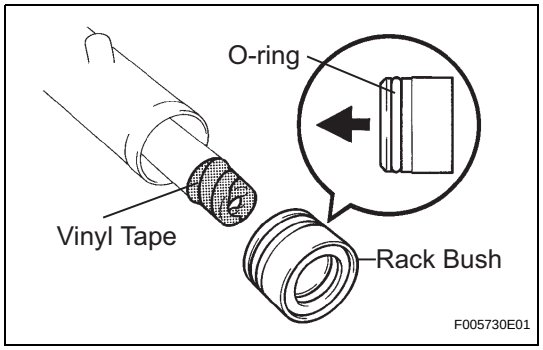
Make sure that the oil seal is installed correctly.

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

(d) Install the rack bush to the rack housing.

HINT:

Wrap vinyl tape around the end of the steering rack in order to prevent damaging the rack bush oil seal.

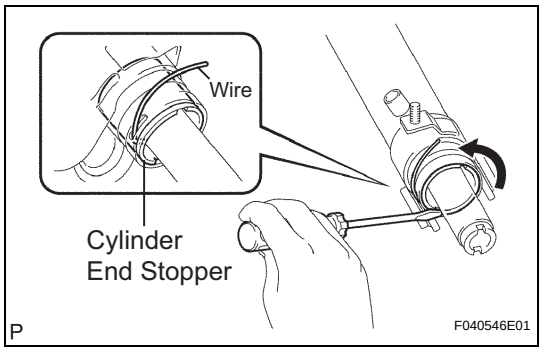


5. INSTALL CYLINDER END STOPPER

(a) Align the installation hole for the wire of the cylinder end stopper with the slot of the rack housing.

(b) Install a new wire into the cylinder end stopper.

(c) Using a screwdriver, turn the cylinder end stopper counterclockwise by 450 + - 50°.



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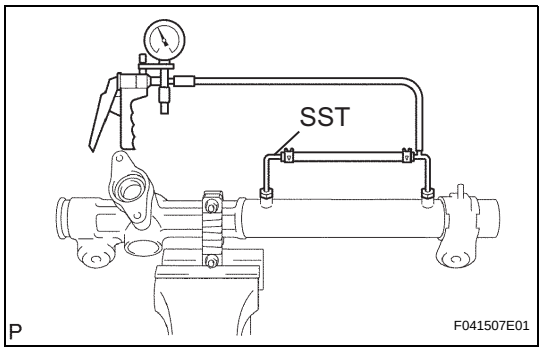


6. AIR TIGHTNESS TEST

(a) Install SST to the rack housing.
SST 09631-12071 (09633-00010)

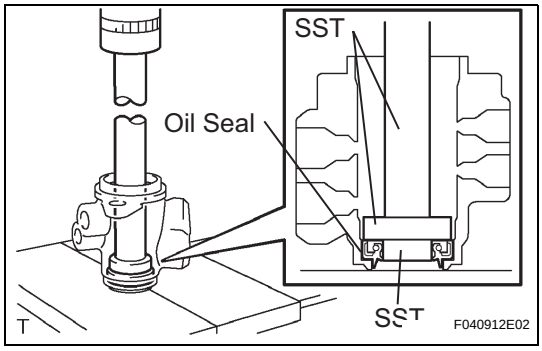
(b) Apply a vacuum of 53 kPa (398 mmHg, 15.65 in.Hg) for approximately 30 seconds.

(c) Check that there is no change in the vacuum pressure.
If there is a change in the vacuum pressure, check the installation of the oil seals.

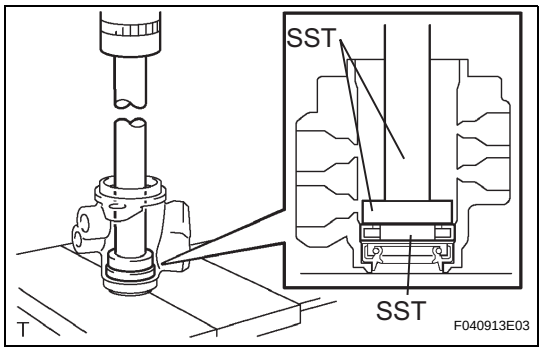
7. REMOVE POWER STEERING CONTROL VALVE UPPER OIL SEAL

(a) Coat the control valve upper bearing with grease.

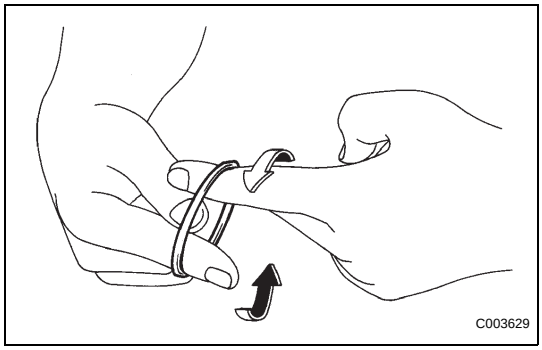
(b) Coat a new control valve upper oil seal lip with power steering fluid.



(c) Using SST and a press, install a new control valve upper oil seal.
SST 09950-70010 (09951-07150), 09950-60010 (09951-00180, 09952-06010, 09951-00320)
NOTICE:
Make sure that the oil seal is installed in the correct direction.



(d) Using SST and press, install the control valve upper bearing.
SST 09950-70010 (09951-07150), 09950-60010 (09951-00180, 09952-06010, 09951-00340)



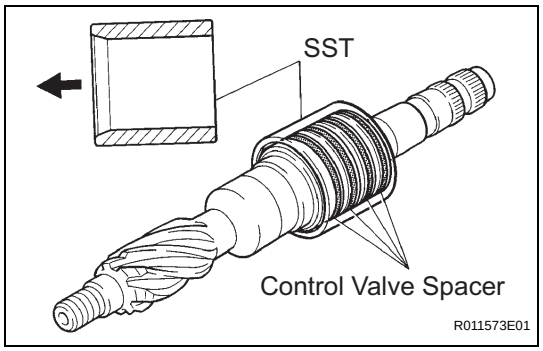
8. INSTALL POWER STEERING CONTROL VALVE

(a) Expand 4 new valve spacers with your fingers.
NOTICE:
Be careful not to overly expand the valve spacers.

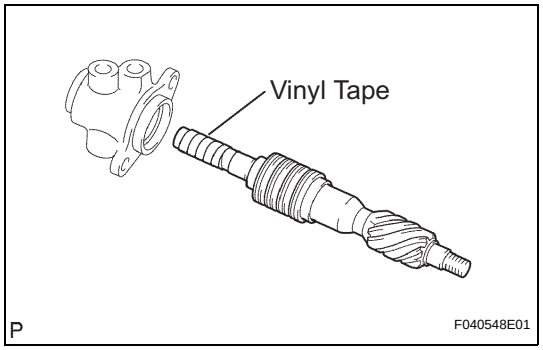
(b) Coat the 4 valve spacers with power steering fluid.

(c) Install the 4 valve spacers to the control valve, and adjust with your fingers.

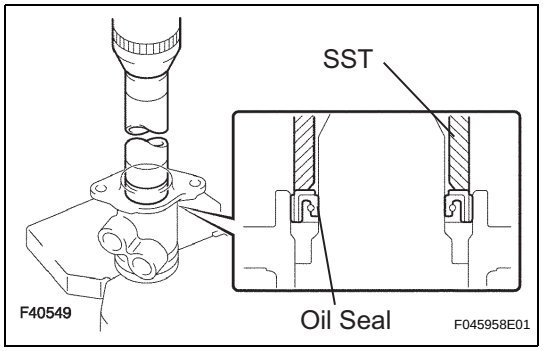
PS



(d) Carefully slide the tapered end of SST over the valve spacers until they fit to the control valve.
SST 09631-20081
NOTICE:
Be careful not to damage the valve spacers.

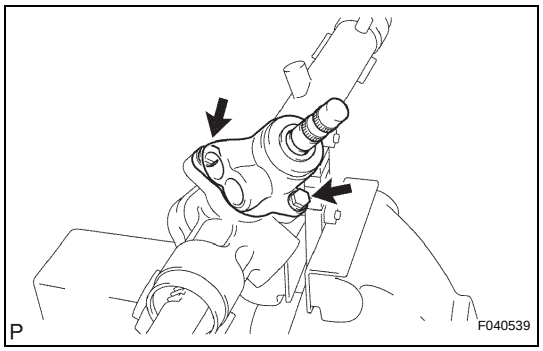


(e) Install the control valve into the valve housing.
NOTICE:
Be careful not to damage the valve spacers and the oil seal lip.
HINT:
Wrap vinyl tape around the serrated part of the control valve in order to prevent damaging the oil seal.

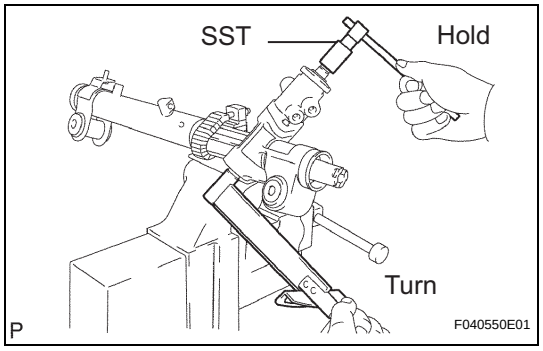


(f) Coat a new oil seal lip with power steering fluid.
(g) Using SST and a press, install the oil seal.
SST 09612-22011
NOTICE:
Make sure that the oil seal is installed in the correct direction.
(h) Apply grease to the needle roller bearing of the rack housing and the serrated part of the control valve.
(i) Install a new gasket to the control valve housing.

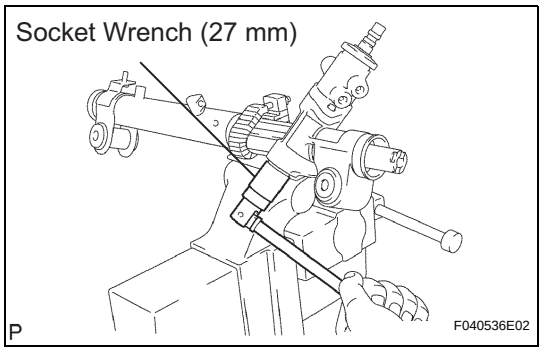
PS



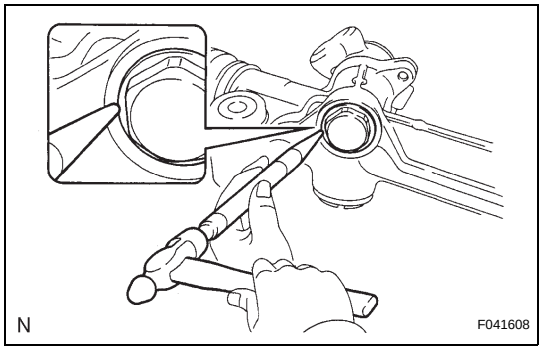
(j) Install the control valve housing together with the control valve to the rack housing with the 2 bolts.
Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)



(k) Using SST, hold the control valve from rotating and install a new lock nut.
SST 09616-00011
Torque: 25 N*m (250 kgf*cm, 18 ft.*lbf)
(l) Apply sealant to 2 or 3 threads of the rack housing cap.
Sealant:
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent



(m) Using a socket wrench (27 mm), install the rack housing cap.
Torque: 59 N*m (597 kgf*cm, 43 ft.*lbf)

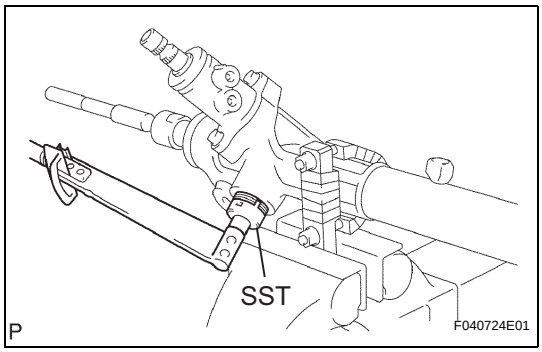


(n) Using a punch and a hammer, stake the rack housing cap and the rack housing.

9. INSTALL RACK GUIDE

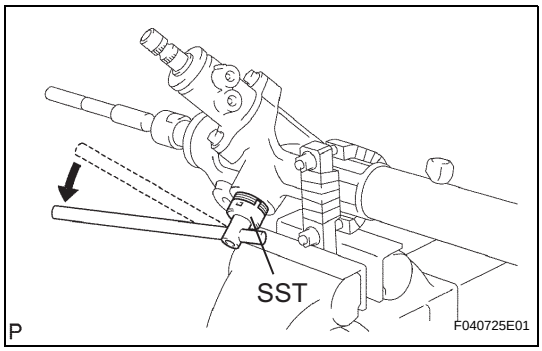
(a) Apply grease to the contact surface of the rack guide.
(b) Install the rack guide and the compression spring.
(c) Apply sealant to 2 or 3 threads of the rack guide spring cap.
Sealant:
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
(d) Temporarily install the rack guide spring cap.

PS

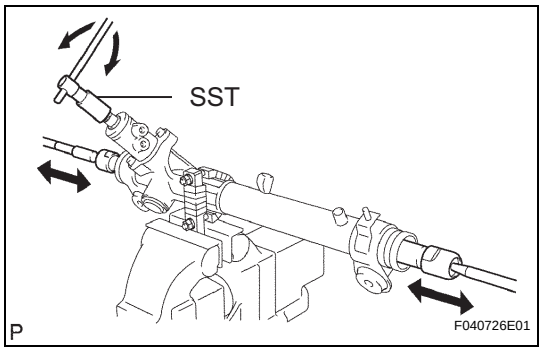


10. ADJUST TOTAL PRELOAD

(a) Temporarily install the RH and the LH rack end sub-assembly, in order to prevent the oil seal from being damaged by the rack teeth.
(b) Using SST, torque the rack guide spring cap.
SST 09631-10021
Torque: 25 N*m (250 kgf*cm, 18 ft.*lbf)

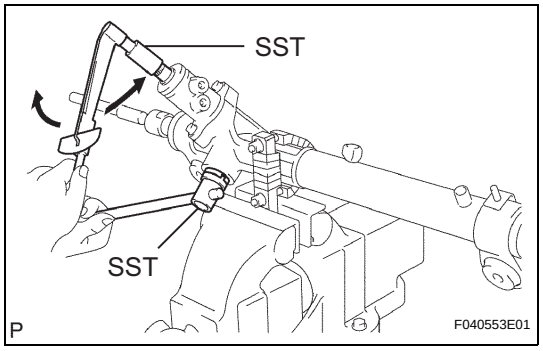


(c) Using SST, loosen the rack guide spring cap.
SST 09631-10021



(d) Using SST, turn the control valve to right and left 1 or 2 times.
SST 09616-00011

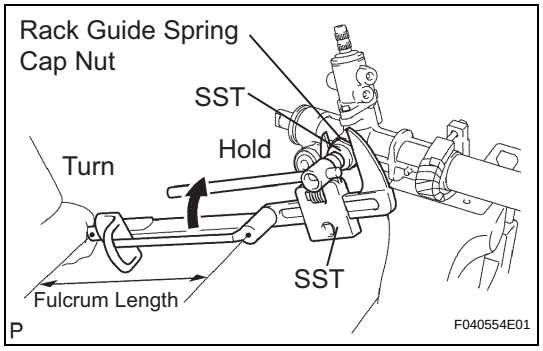
(e) Using SST, loosen the rack guide spring cap until the compression spring stops functioning.
SST 09631-10021



(f) Using SST and a torque wrench, tighten the rack guide spring cap until the preload falls within specifications.
SST 09631-10021, 09616-00011
Preload (turning):
1.2 to 1.5 N*m (12.2 to 15.3 kgf*cm, 10.6 to 13.3 ft.*lbf)

(g) 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

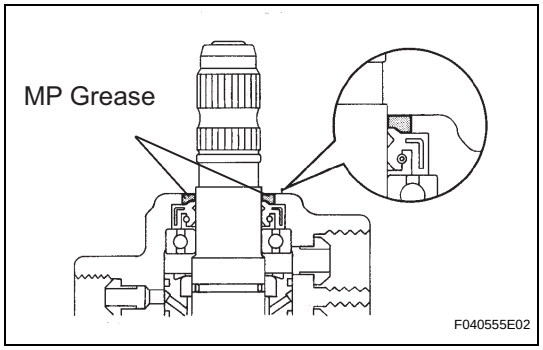
(h) Temporarily install the rack guide spring cap lock nut.



(i) Using SST, hold the rack guide spring cap and using another SST, torque the spring cap lock nut.
SST 09616-00011, 09922-10010
Torque: 51 N*m (520 kgf*cm, 38 ft.*lbf)
NOTICE:
- **Use SST 09922-10010 following the direction shown in the illustration.**
- **Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).**

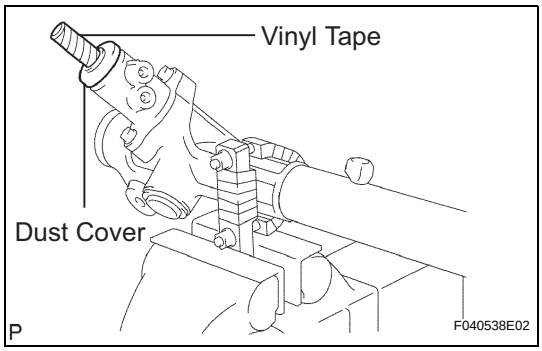
(j) Recheck the total preload.
Preload (turning):
1.2 to 1.5 N*m (12.2 to 15.3 kgf*cm, 10.6 to 13.3 ft.*lbf)

(k) Remove the RH and the LH rack end sub-assembly.

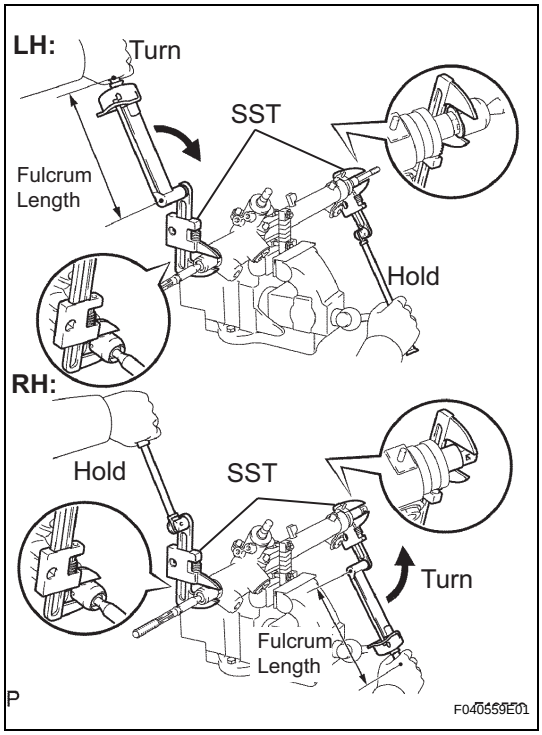


(l) Apply MP grease around the control valve shaft, as shown in the illustration.

PS



(m) Wrap vinyl tape around the spline of the control valve.
(n) Install the dust cover to the control valve housing.

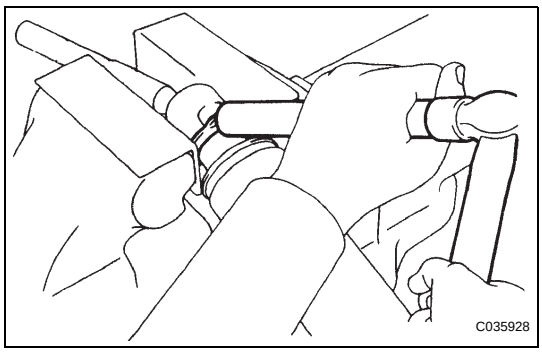


11. INSTALL STEERING RACK END SUB-ASSEMBLY

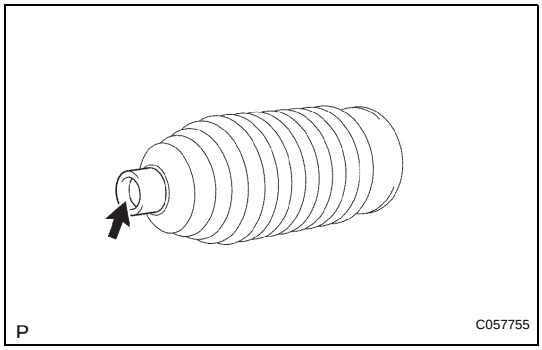
(a) Install 2 new claw washers, and temporarily install the LH and the RH steering rack end sub-assembly.
HINT:
Align the claws of the claw washer with the steering rack grooves.

(b) Using SST, install the 2 steering rack ends sub-assembly.
SST 09922-10010
Torque: 60 N*m (615 kgf*cm, 45 ft.*lbf)
NOTICE:
- **Use SST 09922-10010 following the direction shown in the illustration.**
- **Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).**

HINT:
Using SST, hold the rack and install the steering rack end sub-assembly.



(c) Using a brass bar and a hammer, stake the 2 claw washers.
NOTICE:
Avoid any impact to the steering rack.



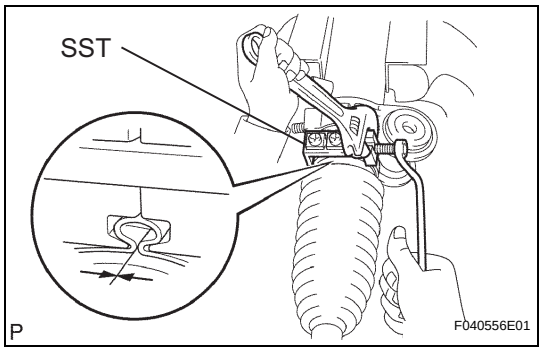
12. INSTALL STEERING RACK BOOT NO.2

(a) Apply silicon grease to the inside of the small opening of the rack boot No.2.
(b) Install the rack boot No.2 to the groove on the rack housing.
NOTICE:
Be careful not to damage or twist the boot.

13. INSTALL STEERING RACK BOOT NO.1

HINT:
Perform the same procedure as for the rack boot No.2.

PS



14. INSTALL STEERING RACK BOOT NO.2 CLAMP

(a) Using SST, tighten the rack boot No.2 clamp, as shown in the illustration.

SST 09521-24010

Clearance:

3.0 mm (0.118 in.) or less

NOTICE:

Be careful not to damage the boot.

15. INSTALL STEERING RACK BOOT NO.1 CLAMP

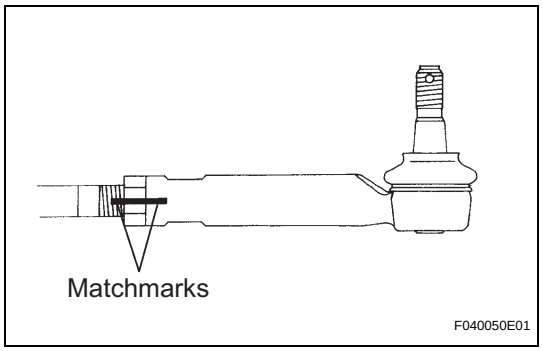
SST 09521-24010

HINT:

Perform the same procedure as for the No.2 clamp.

16. INSTALL STEERING RACK BOOT CLIP

(a) Using pliers, install the 2 boot clips.



17. INSTALL TIE ROD ASSEMBLY LH

(a) Screw the lock nut and the tie rod assembly LH on the rack end until the matchmarks are aligned.

HINT:

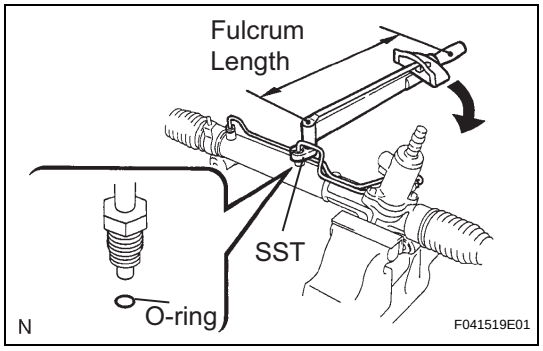
After adjusting toe-in, torque the lock nut (See page SP-10).

18. INSTALL TIE ROD ASSEMBLY RH

HINT:

Perform the same procedure as for the LH.

PS



19. INSTALL STEERING LEFT TURN PRESSURE TUBE

(a) Coat 2 new O-rings with power steering fluid and install them to the left turn pressure tube.

(b) Using SST, install the left turn pressure tube to the power steering gear assembly.

SST 09023-38201

Torque: 11 N*m (113 kgf*cm, 8 ft.*lbf)

NOTICE:

Use a torque wrench with a fulcrum length of 250 mm (9.84 in.).

HINT:

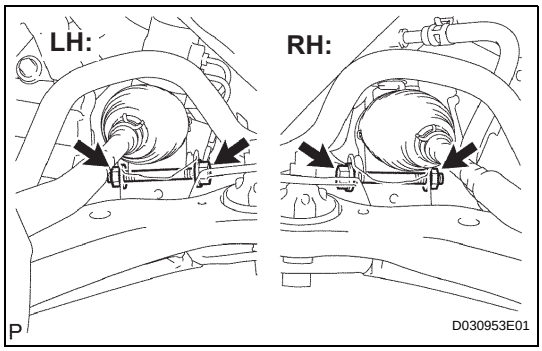
This torque value is effective when SST is parallel to the torque wrench.

20. INSTALL STEERING RIGHT TURN PRESSURE TUBE

SST 09023-38201

HINT:

Perform the same procedure as for the left turn pressure tube.

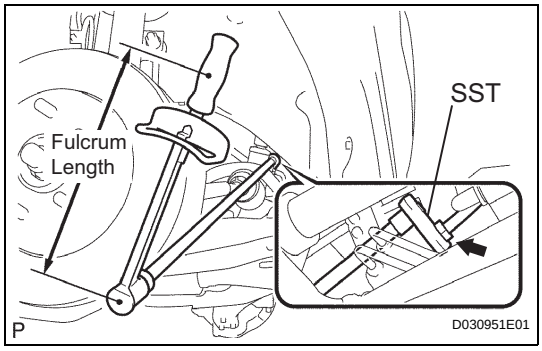


INSTALLATION

1. INSTALL RACK AND PINION POWER STEERING GEAR ASSEMBLY

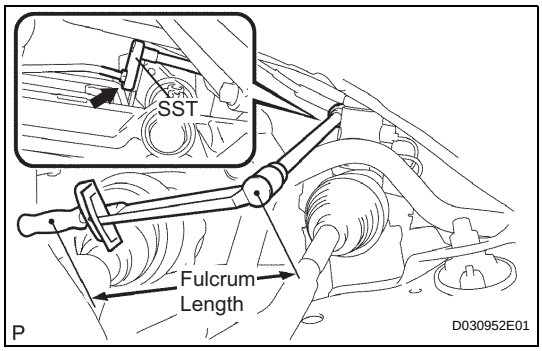
(a) Install the power steering gear assembly with the 2 bolts and nuts.
Torque: 70 N*m (714 kgf*cm, 52 ft.*lbf)

2. INSTALL POWER STEERING RACK HOUSING HEAT INSULATOR

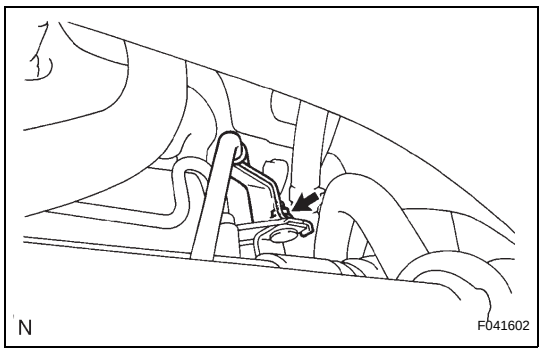


3. CONNECT PRESSURE FEED TUBE ASSEMBLY

(a) Using SST, connect the pressure feed tube assembly to the power steering gear assembly.
SST 09023-12701
Torque: 22 N*m (227 kgf*cm, 16 ft.*lbf)
NOTICE:
Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
HINT:
This torque value is effective when SST is parallel to the torque wrench.

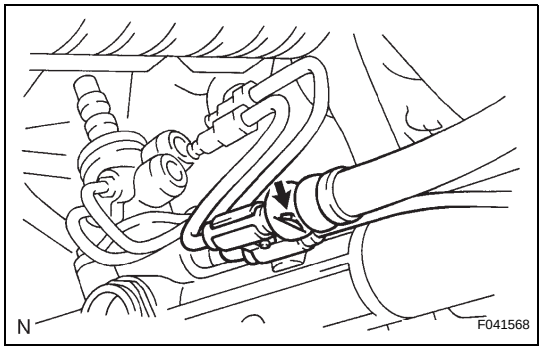


(b) Using SST, connect the return tube assembly to the power steering gear assembly.
SST 09023-12701
Torque: 22 N*m (227 kgf*cm, 16 ft.*lbf)
NOTICE:
Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
HINT:
This torque value is effective when SST is parallel to the torque wrench.



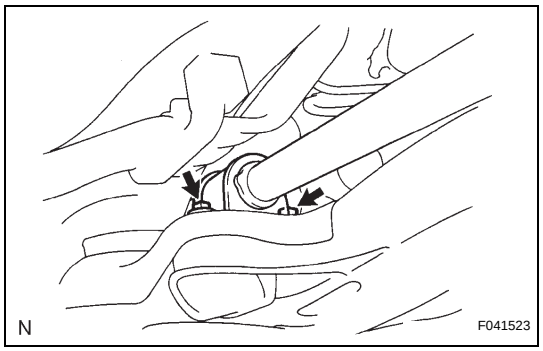
(c) 2AZ-FE:
Install the tube clamp with the nut.
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

(d) 3MZ-FE:
Install the tube clamp and the heat insulator with the nut.
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)



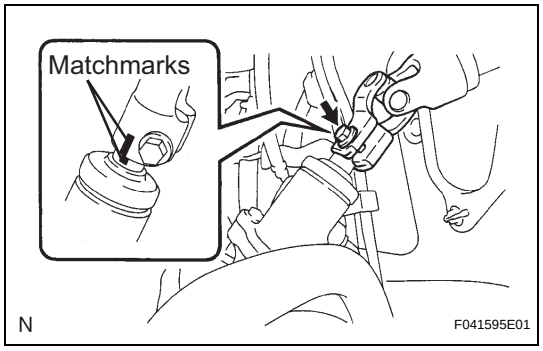
(e) Install the tube clamp with the bolt.
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

PS

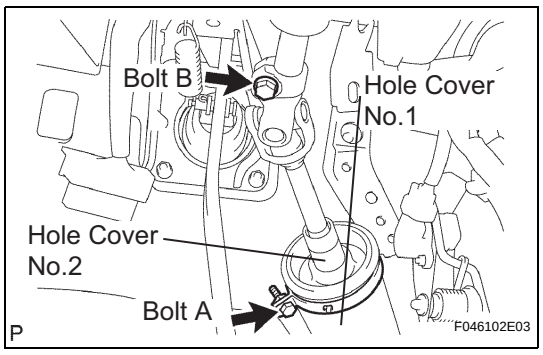


4. **INSTALL FRONT STABILIZER BRACKET NO.1 LH**
   (a) Install the stabilizer bar bush No.1 to the stabilizer bar.
   (b) Install the front stabilizer bracket No.1 LH with the 2 bolts.
   Torque: 19 N*m (194 kgf*cm, 14 ft.*lbf)
5. **INSTALL FRONT STABILIZER BRACKET NO.1 RH**
   HINT:
   Perform the same procedure as for the LH.
6. **INSTALL FRONT STABILIZER LINK ASSEMBLY LH (See page DS-16)**
7. **INSTALL FRONT STABILIZER LINK ASSEMBLY RH**
   HINT:
   Perform the same procedure as for the LH.
8. **INSTALL TIE ROD ASSEMBLY LH**
   (a) Install the tie rod assembly LH. (See page DS-15)
9. **INSTALL TIE ROD ASSEMBLY RH**
   HINT:
   Perform the same procedure as for the LH.
10. **INSTALL FRONT WHEEL**
    Torque: 103 N*m (1,050 kgf*cm, 76 in.*lbf)

PS



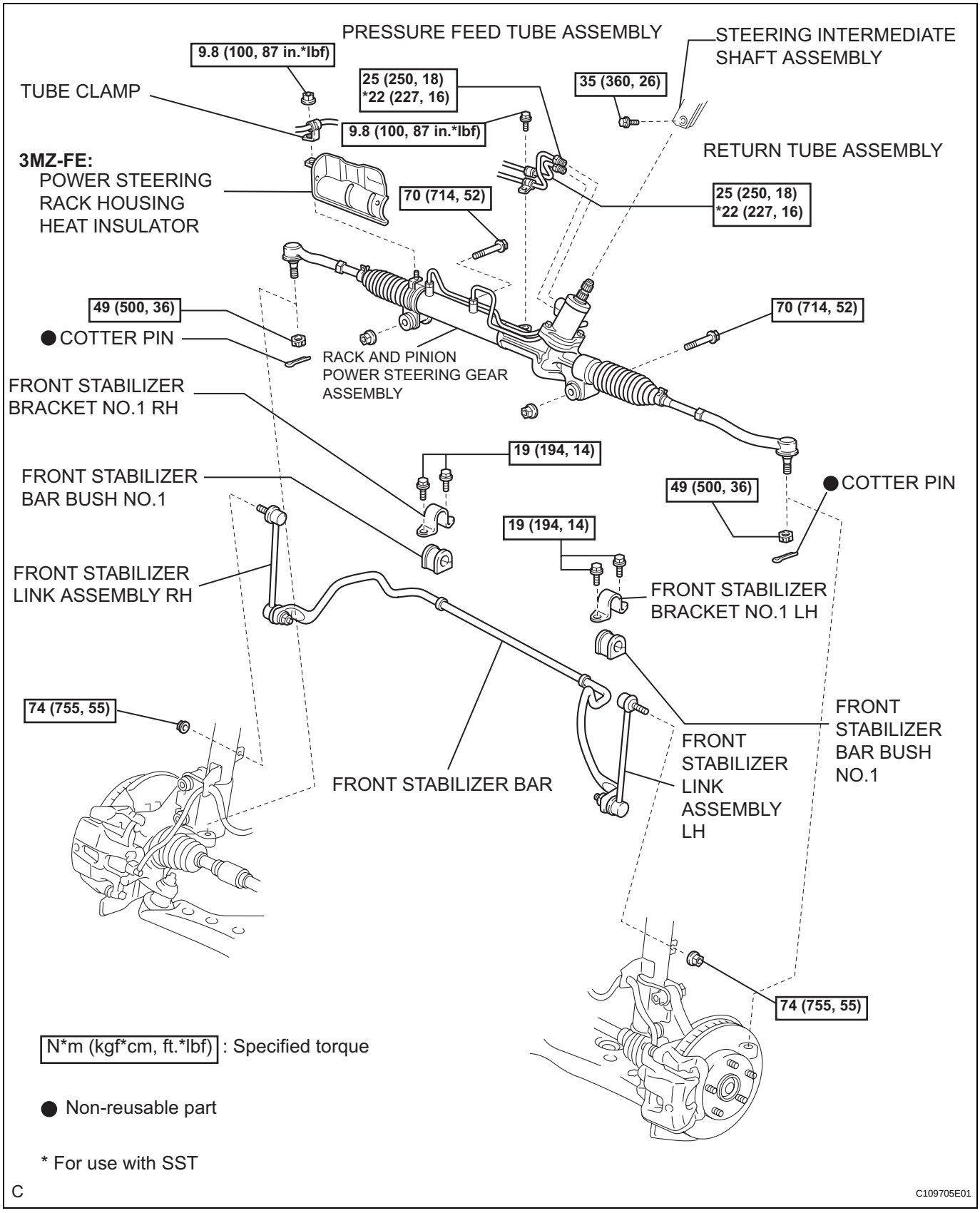
11. **INSTALL STEERING INTERMEDIATE SHAFT ASSEMBLY**
    (a) Align the matchmarks on the intermediate shaft assembly and the power steering gear assembly.
    (b) Install the bolt.
    Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)

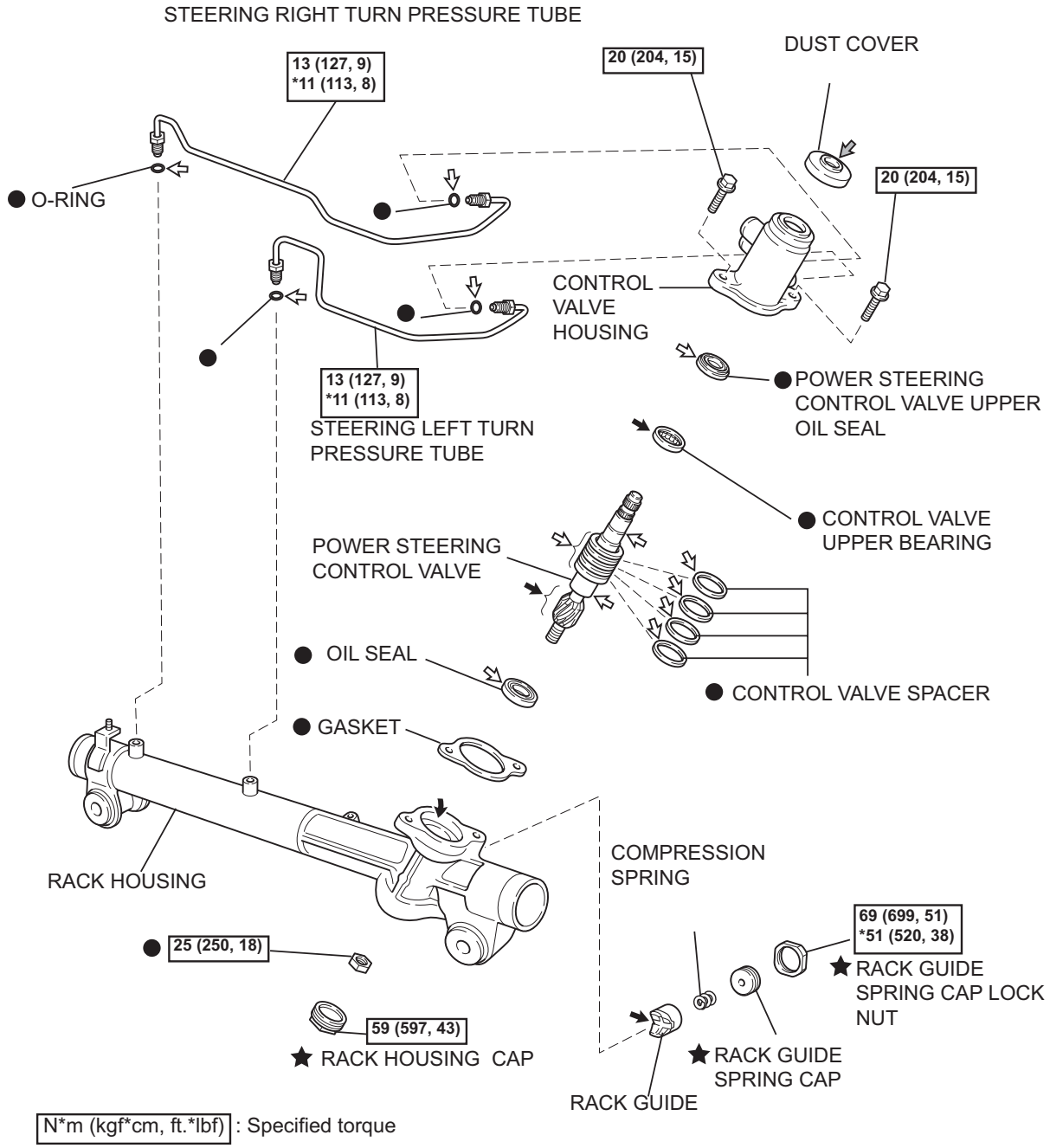


    (c) Tighten bolt B.
    Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)
    (d) Install the hole cover No.2 to the hole cover No.1.
    (e) Install the clamp to the hole cover No.1 and tighten bolt A.
12. **BLEED POWER STEERING FLUID**
    (a) Bleed the power steering fluid. (See page PS-3)
13. **CHECK FOR FLUID LEAKS**
14. **INSPECT AND ADJUST FRONT WHEEL ALIGNMENT**
15. **INSPECT STEERING WHEEL CENTER POINT**
16. **PERFORM STEERING ANGLE SENSOR ZERO POINT CALIBRATION**
    (a) Perform steering angle sensor zero point calibration. (See page BC-76)

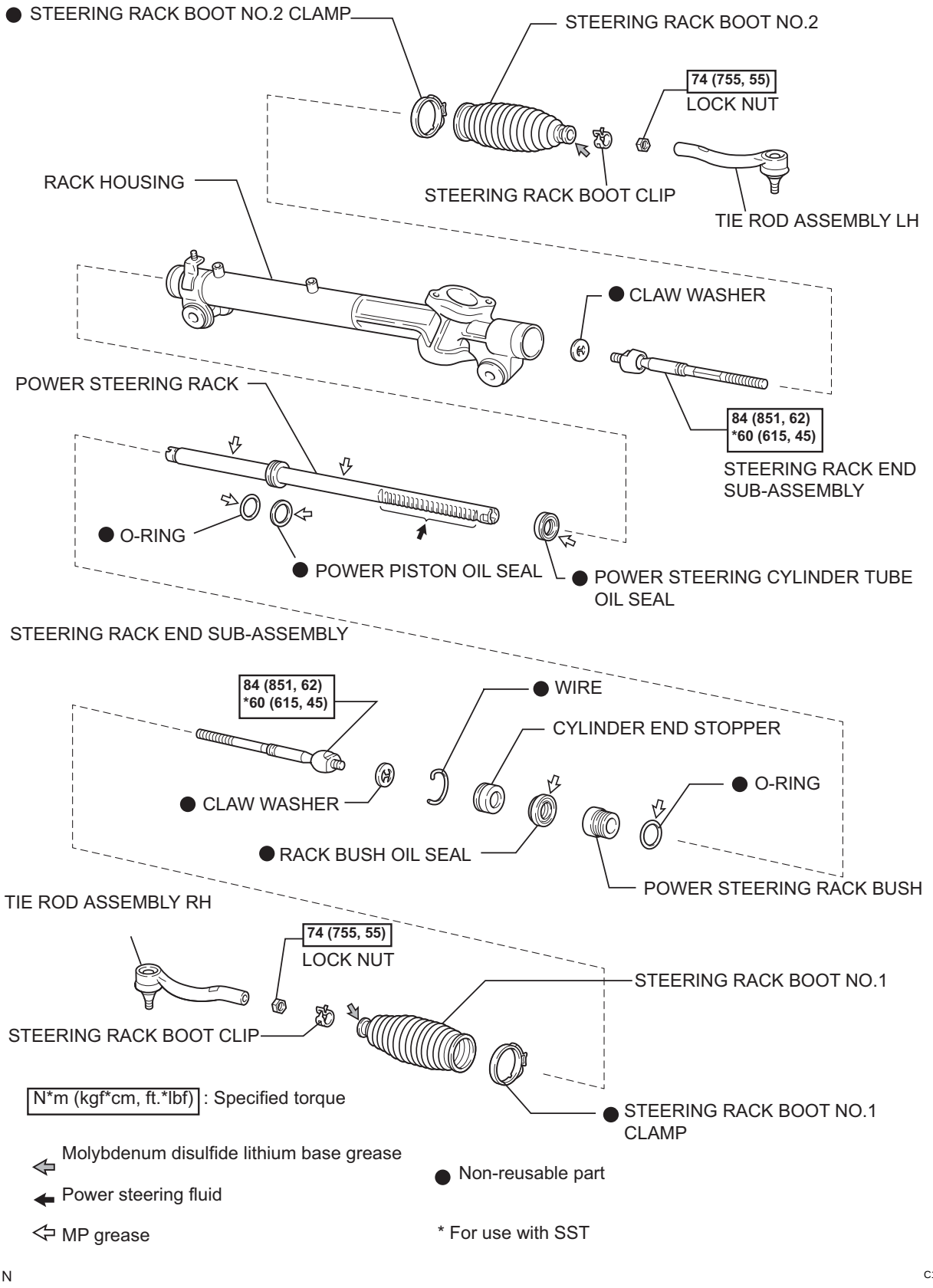
RACK AND PINION POWER STEERING GEAR

COMPONENTS




STEERING RIGHT TURN PRESSURE TUBE
13 (127, 9)
*11 (113, 8)
20 (204, 15)
DUST COVER
20 (204, 15)
O-RING
CONTROL VALVE HOUSING
13 (127, 9)
*11 (113, 8)
STEERING LEFT TURN PRESSURE TUBE
POWER STEERING CONTROL VALVE UPPER OIL SEAL
CONTROL VALVE UPPER BEARING
POWER STEERING CONTROL VALVE
OIL SEAL
CONTROL VALVE SPACER
GASKET
RACK HOUSING
COMPRESSION SPRING
25 (250, 18)
69 (699, 51)
*51 (520, 38)
RACK GUIDE SPRING CAP LOCK NUT
59 (597, 43)
RACK HOUSING CAP
RACK GUIDE SPRING CAP
RACK GUIDE
N*m (kgf*cm, ft.*lbf) : Specified torque
Molybdenum disulfide lithium base grease
Power steering fluid
MP grease
Non-reusable part
Precoated part
* For use with SST
N
C109706E01

PS


● STEERING RACK BOOT NO.2 CLAMP
STEERING RACK BOOT NO.2
74 (755, 55)
LOCK NUT
RACK HOUSING
STEERING RACK BOOT CLIP
TIE ROD ASSEMBLY LH
● CLAW WASHER
POWER STEERING RACK
84 (851, 62)
*60 (615, 45)
STEERING RACK END
SUB-ASSEMBLY
● O-RING
● POWER PISTON OIL SEAL
● POWER STEERING CYLINDER TUBE
OIL SEAL
STEERING RACK END SUB-ASSEMBLY
84 (851, 62)
*60 (615, 45)
● WIRE
CYLINDER END STOPPER
● CLAW WASHER
● O-RING
● RACK BUSH OIL SEAL
POWER STEERING RACK BUSH
TIE ROD ASSEMBLY RH
74 (755, 55)
LOCK NUT
STEERING RACK BOOT NO.1
STEERING RACK BOOT CLIP
N*m (kgf*cm, ft.*lbf) : Specified torque
● STEERING RACK BOOT NO.1
CLAMP
Molybdenum disulfide lithium base grease
Power steering fluid
MP grease
● Non-reusable part
* For use with SST
N
C109707E01