510B2–01

OVERHAUL

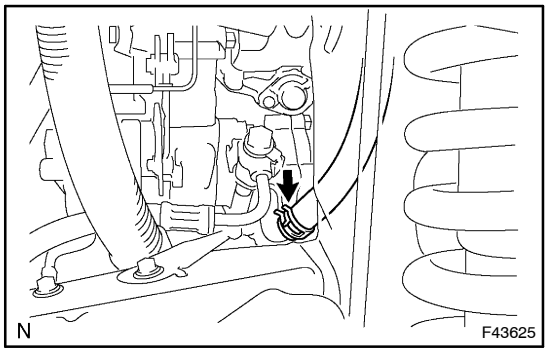
1. REMOVE ENGINE UNDER COVER ASSY REAR

(a) Remove the 6 bolts and engine under cover assy rear.

2. REMOVE ENGINE UNDER COVER SUB–ASSY NO.1

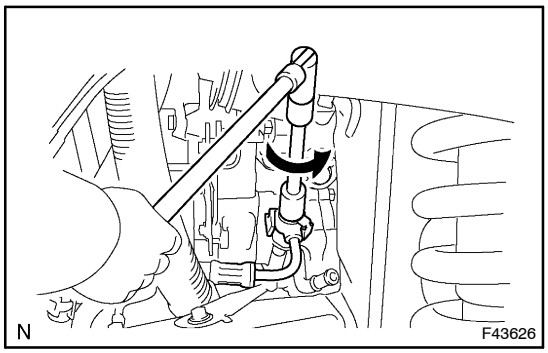
(a) Remove the 4 bolts and engine under cover sub–assy No.1.

3. DRAIN POWER STEERING FLUID



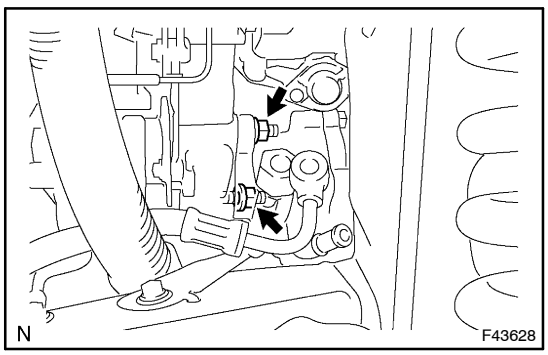
4. SEPARATE OIL RESERVOIR TO PUMP HOSE NO.1

(a) Loosen the clamp, disconnect the reservoir to pump hose No.1.



5. SEPARATE PRESSURE FEED TUBE ASSY

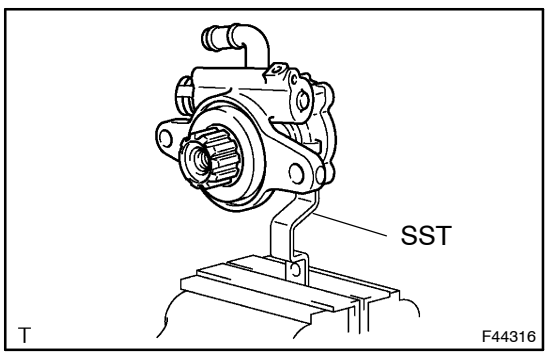
(a) Remove the union bolt and a gasket, disconnect the pressure feed tube.



6. REMOVE VANE PUMP ASSY

(a) Remove the 2 nuts and vane pump assy.

(b) Remove the O–ring.



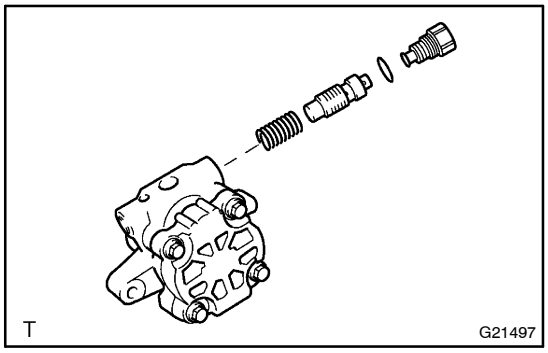
7. FIX VANE PUMP ASSY

(a) Using SST, secure the vane pump assy in a vise.
SST 09630–00014 (09631–00132)

8. REMOVE POWER STEERING SUCTION PORT UNION

(a) Remove the 2 bolts and suction port union.

(b) Remove the O–ring from the suction port union.



9. REMOVE FLOW CONTROL VALVE

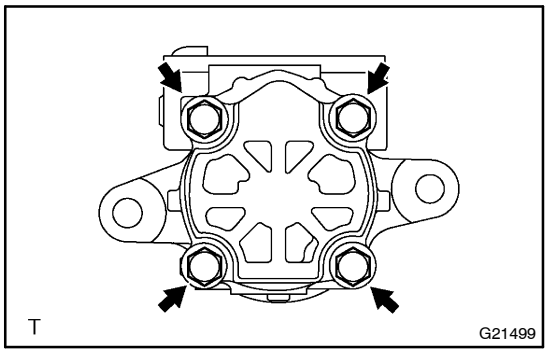
(a) Using socket wrench (27 mm), remove the pressure port union from the front housing.

(b) Using a screwdriver, remove a O–ring from the pressure port union.

(c) Remove the flow control valve from the front housing.

(d) Remove the compression spring from the vane pump housing front.

SST 09011–12271



10. REMOVE VANE PUMP HOUSING REAR

(a) Remove the 4 bolts and rear housing.

(b) Remove the O–ring from the rear housing.

11. REMOVE VANE PUMP ROTOR

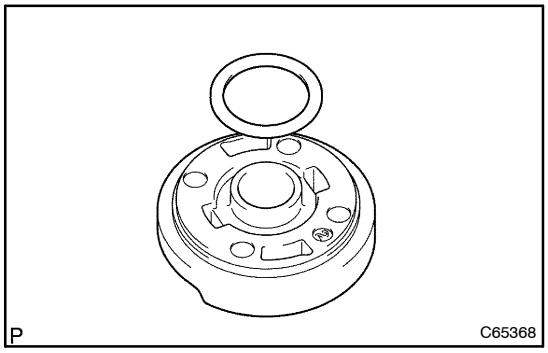
(a) Remove the 10 vane plates from the vane pump rotor.

NOTICE:

Be careful not to drop the vane plate.

(b) Remove the vane pump rotor from the front housing.

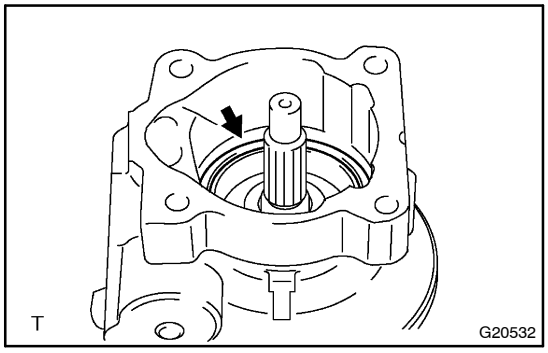
12. REMOVE VANE PUMP CAM RING



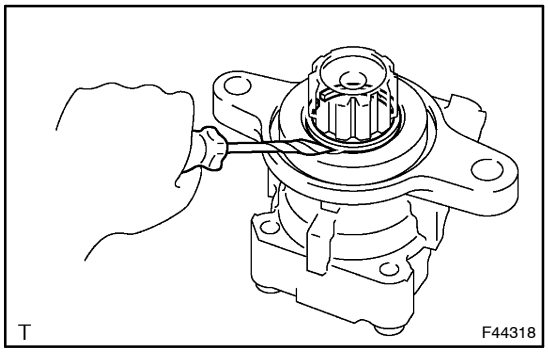
13. REMOVE VANE PUMP SIDE PLATE FRONT

(a) Remove the side plate from the front housing.

(b) Remove the O–ring from the side plate.

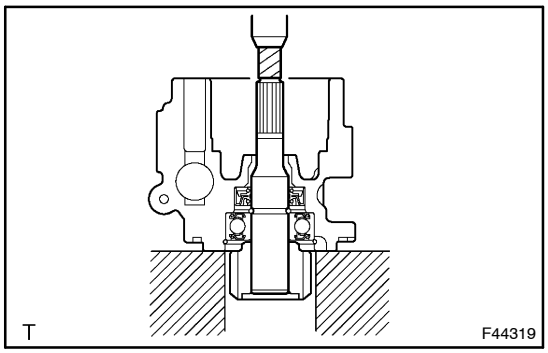


(c) Remove the O–ring from the front housing.

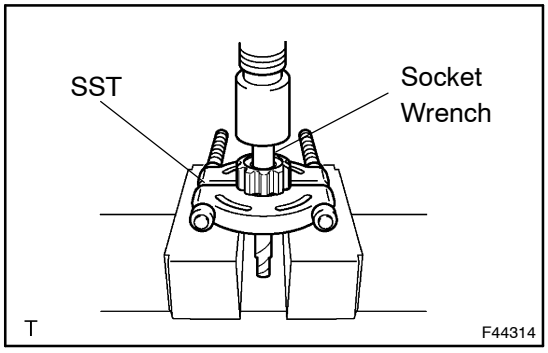


14. REMOVE VANE PUMP GEAR

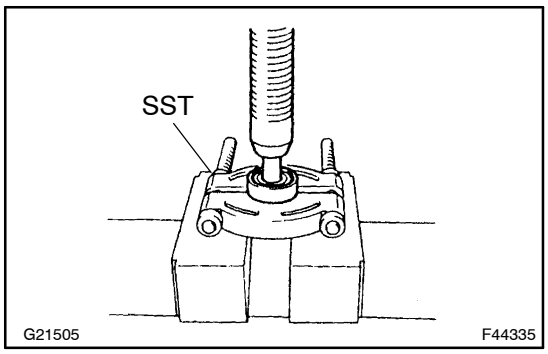
(a) Using a screwdriver, remove the snap ring.



(b) Using a press, remove the vane pump shaft, vane pump shaft bearing with vane pump gear.

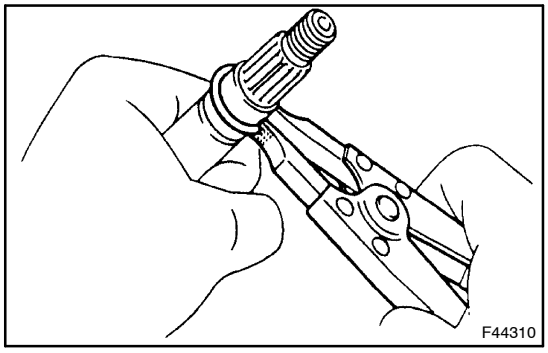


(c) Place the socket wrench (12 mm) on the vane pump shaft.
(d) Using the SST and a press, remove thr vane pump shaft.
SST 09950–00020

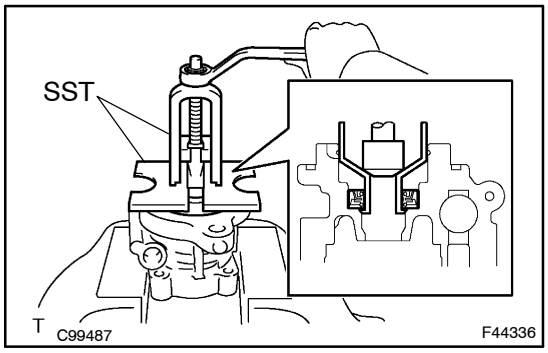


15. REMOVE VANE PUMP SHAFT BEARING

(a) Using SST and a press, remove the bearing.
SST 09950–00020

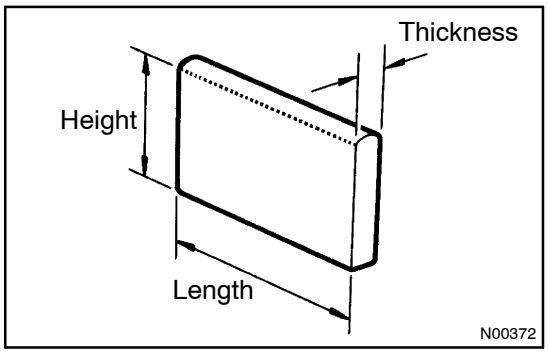


(b) Using a snap ring expander, remove the snap ring.



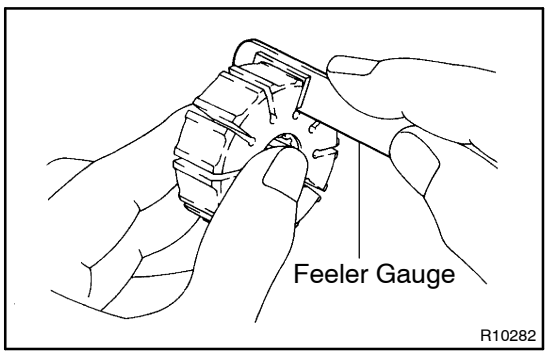
16. REMOVE VANE PUMP HOUSING OIL SEAL

(a) Using SST, remove the oil seal.
SST 09319–60020, 09506–35010

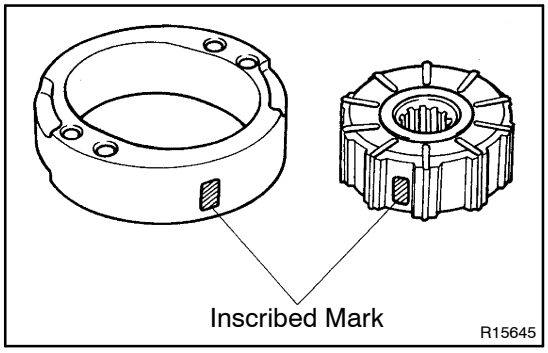


17. INSPECT VANE PUMP ROTOR AND VANE PUMP PLATES

(a) Using a micrometer, measure the height, thickness and length of the plate.
Minimum height: 7.6 mm (0.299 in.)
Minimum thickness: 1.405 mm (0.0553 in.)
Minimum length: 11.993 mm (0.4722 in.)



(b) Using a feeler gauge, measure the clearance between the rotor groove and plate.
Maximum clearance: 0.025 mm (0.0010 in.)



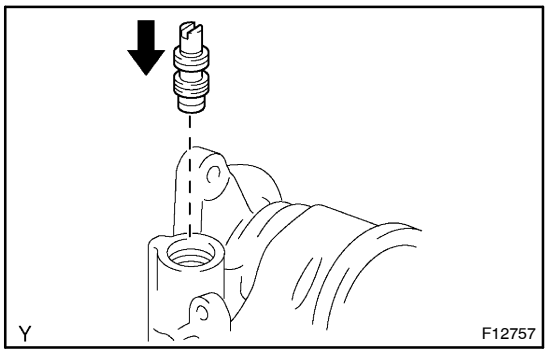
If it is more than the maximum, replace the plate and/or rotor with one having the same mark stamped on the cam ring.

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

HINT:

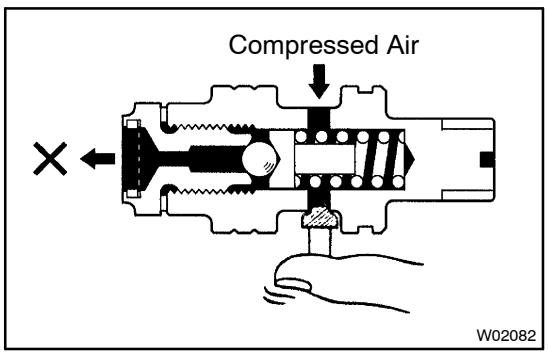
There are 5 vane plate lengths with the following rotor and cam ring marks:

Rotor and cam ring mark	Vane plate part number	Vane plate length mm (in.)
None	44345–32100	12.001–12.003 (0.47248–0.47256)
1	44345–32110	11.999–12.000 (0.47240–0.47244)
2	44345–32120	11.997–11.998 (0.47232–0.47236)
3	44345–32130	11.995–11.996 (0.47224–0.47229)
4	44345–32140	11.993–11.994 (0.47216–0.47220)

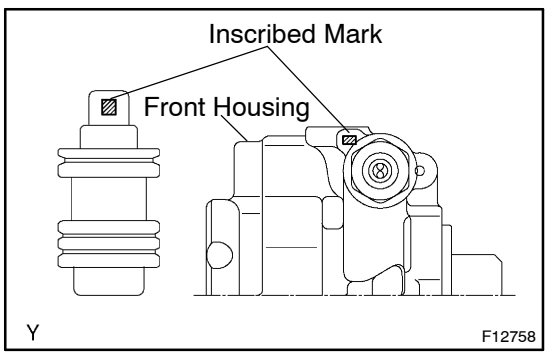


18. INSPECT FLOW CONTROL VALVE

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

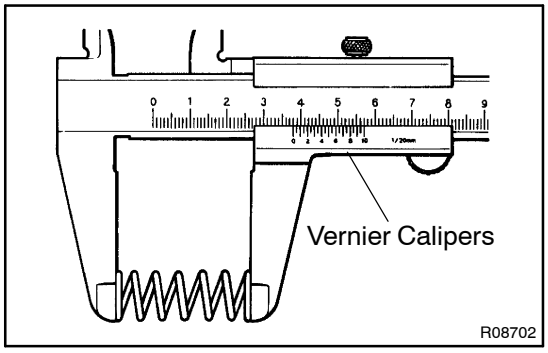


(b) Check the flow control valve for leakage.
Close one of the holes and apply compressed air 392 – 490 kPa (4 – 5 kgf/cm^2, 57 – 71 psi) into the opposite side, and confirm that air does not come out from the end hole.



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

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



19. INSPECT FLOW CONTROL VALVE COMPRESSION SPRING

(a) Using vernier calipers, measure the free length of the spring.

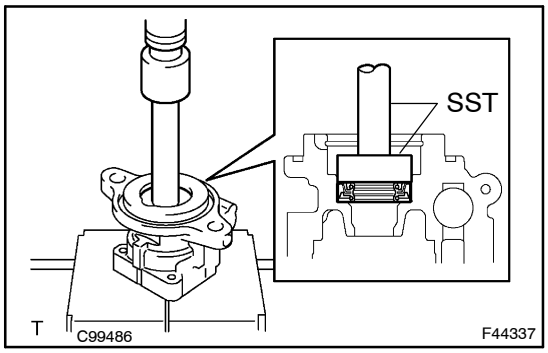
Minimum free length: 29.2 mm (1.150 in.)

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

20. INSPECT PRESSURE PORT UNION

HINT:

When the union sheet inside the pressure port union is damaged seriously and there is a possibility of fluid leakage, replace the vane pump with a new one.



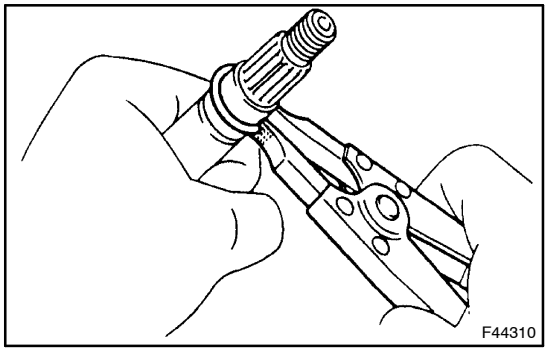
21. INSTALL VANE PUMP HOUSING OIL SEAL

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

NOTICE:

- **Make sure to install the oil seal facing the correct direction.**
- **Be careful not to damage the oil seal.**

SST 09950–60010 (09951–00400), 09950–70010 (09951–07150)

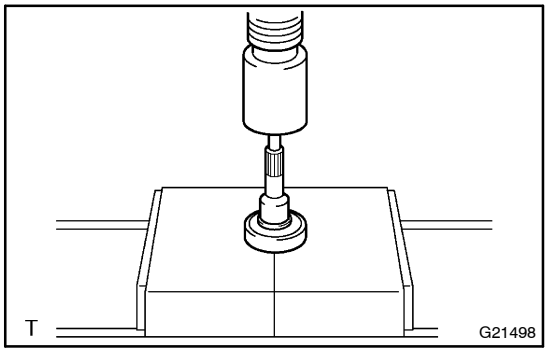


22. INSTALL VANE PUMP SHAFT BEARING

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

NOTICE:

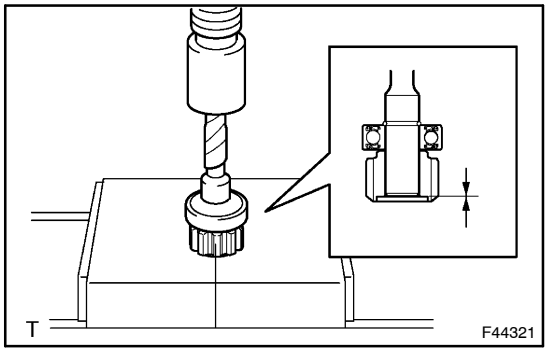
Do not damage the shaft.



(b) Using a press, install the bearing to the shaft.

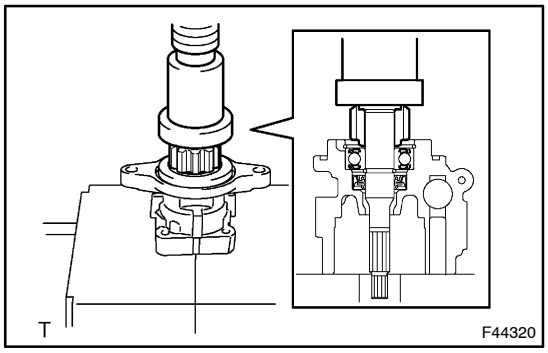
NOTICE:

- **Make sure to install the shaft facing the correct direction.**
- **Do not damage the bearing.**



23. INSTALL VANE PUMP SHAFT W/BEARING

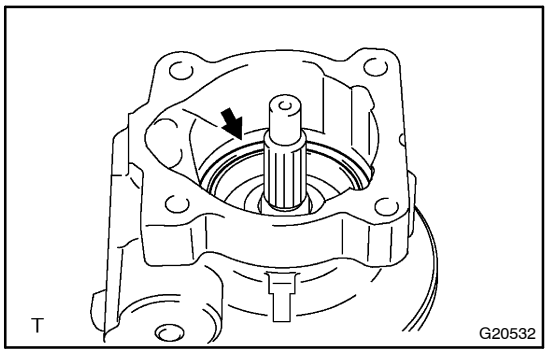
(a) Using a press, install the shaft with bearing to the vane pump gear.



24. INSTALL VANE PUMP GEAR

(a) Using SST and a press, install the vane pump gear to the shaft.

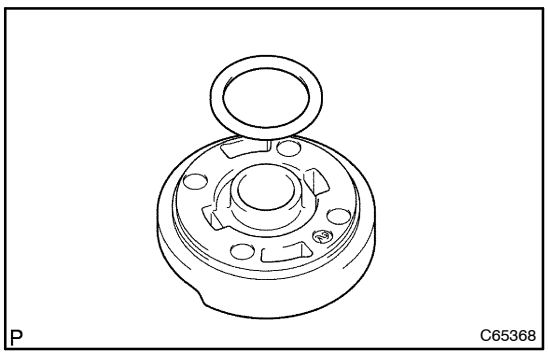
SST 09950–60010 (09951–00420), 09950–70010 (09951–07150)



25. INSTALL VANE PUMP SIDE PLATE FRONT

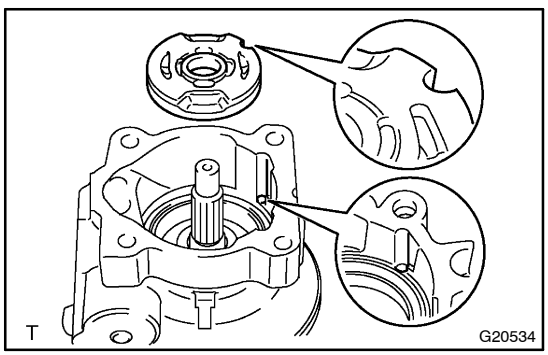
(a) Coat a new O–ring with power steering fluid.

(b) Install a O–ring to the front housing.



(c) Coat a new O–ring with power steering fluid.

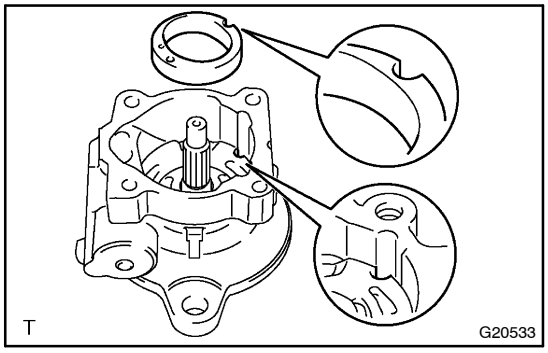
(d) Install a O–ring to the side plate front.



(e) Install the vane pump side plate front to the vane pump housing front alining the semicircle shaped cut of the both parts.

NOTICE:

Be sure to install in the correct position.

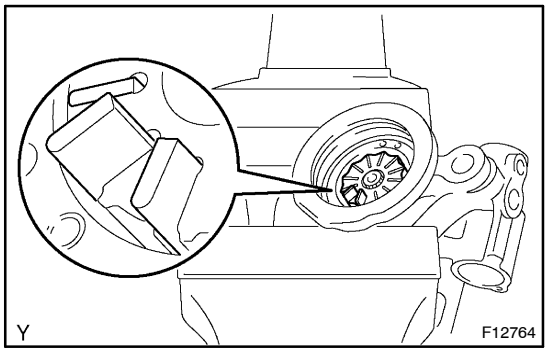


26. INSTALL VANE PUMP CAM RING

(a) With the engraved mark facing upward, install the vane pump cam ring to the vane pump housing front alining the semicircle shaped cut of both parts.

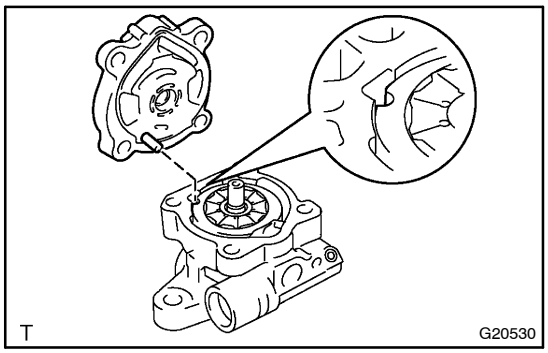
NOTICE:

Be sure to install in the correct position and direction.



27. INSTALL VANE PUMP ROTOR

(a) Install the 10 vane pump plates with the round end facing outward.

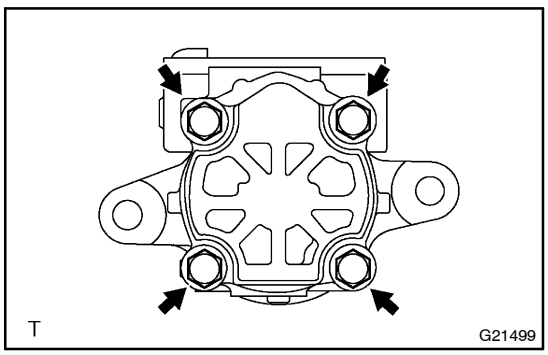


28. INSTALL VANE PUMP HOUSING REAR

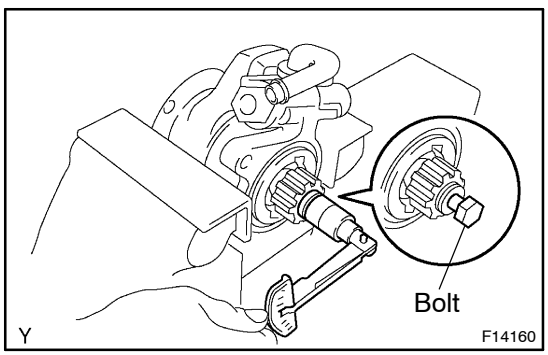
(a) Install the vane pump housing rear to the vane pump housing front alining the straight pin into the pin hole of the vane pump cam ring.

NOTICE:

Make sure that the O–ring is not out of position before installing the vane pump housing rear.



(b) Install the rear housing with the 4 bolts.
Torque: 22 N·m (224 kgf·cm, 16 ft·lbf)

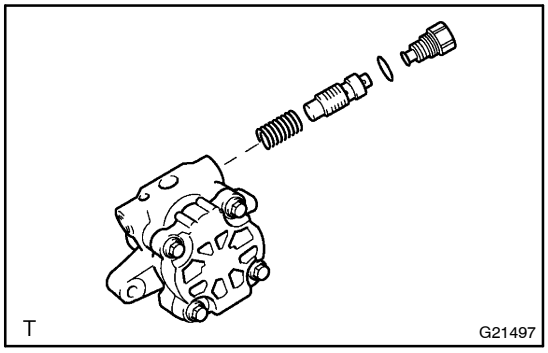


29. INSPECT PRELOAD

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

(b) Temporarily install a bolt to the vane pump shaft.

(c) Using a bolt, check the PS vane pump rotating torque.
Bolt part number: 91111–51035
Rotating torque:
0.27 N·m (2.8 kgf·cm, 2.4 in.·lbf) or less

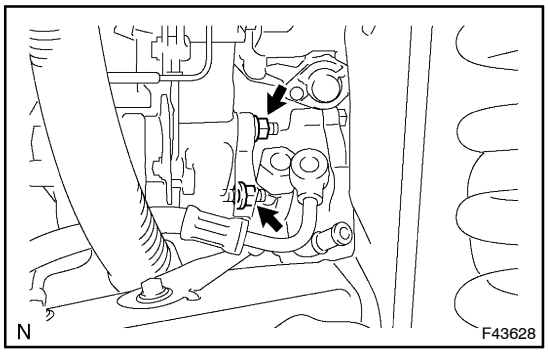


30. INSTALL FLOW CONTROL VALVE

(a) Install the spring.
(b) Install the flow control valve facing in the correct direction.
(c) Coat a new O–ring with power steering fluid and install it to suction poat union.
(d) Install the pressure poat union.
Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)
SST 09011–12271

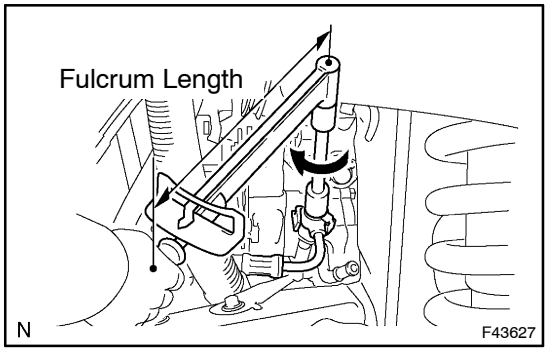
31. INSTALL POWER STEERING SUCTION PORT UNION

(a) Coat a new O–ring with power steering fluid and install it to the suction poat union
(b) Install the suction poat union with th e2 bolts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)



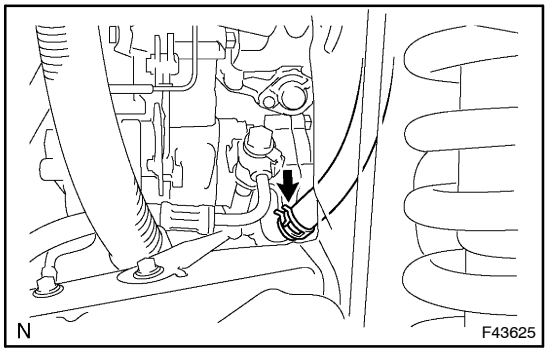
32. INSTALL VANE PUMP ASSY

(a) Coat a new O–ring with power steering fluid and install it to the vane pump assy.
(b) Install the vane pump assy with the 2 nuts.
Torque: 39 N·m (400 kgf·cm, 30 ft·lbf)



33. CONNECT PRESSURE FEED TUBE ASSY

(a) Connect the pressure feed tube with a new gasket and a union bolt.
Torque: 51 N·m (520 kgf·cm, 38 ft·lbf)



34. CONNECT OIL RESERVOIR TO PUMP HOSE NO.1

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

35. ADD POWER STEERING FLUID
36. BLEED POWER STEERING FLUID (See page 51–3)
37. CHECK POWER STEERING FULUID LEVEL IN RESERVER (See page 51–3)
38. INSPECT FLUID LEAK

39. INSTALL ENGINE UNDER COVER SUB–ASSY NO.1

(a) Install the engine under cover sub–assy No.1 with the 4 bolts.

40. INSTALL ENGINE UNDER COVER ASSY REAR

(a) Install the engine under cover assy rear with the 6 bolts.