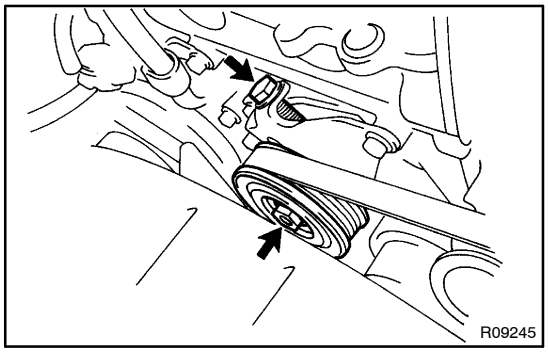
510AY–01

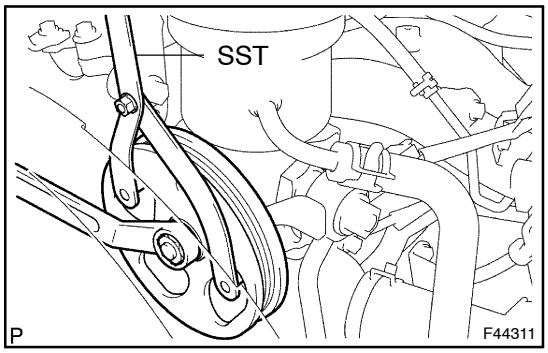
OVERHAUL

1. DRAIN POWER STEERING FLUID



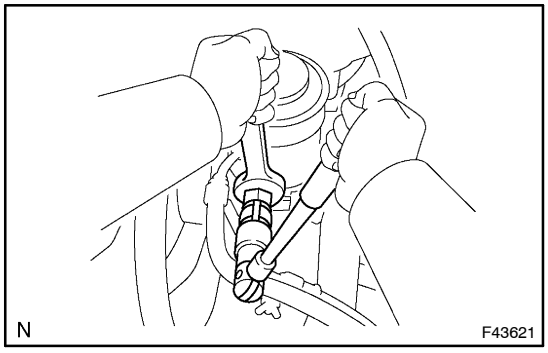
2. REMOVE FAN AND GENERATOR V BELT

(a) Loosen the power steering idle pulley set nut.
(b) Loosen the belt adjusting bolt.



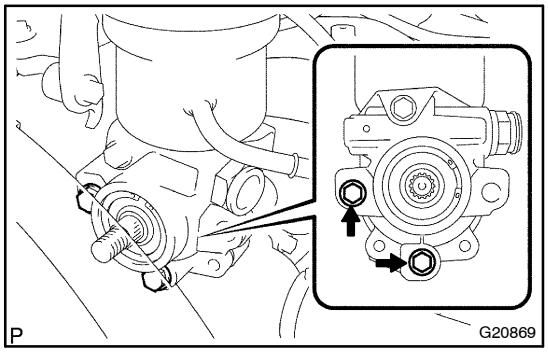
3. REMOVE VANE PUMP PULLEY

(a) Using SST, remove the vane pump pulley.
SST 09960–10010 (09962–01000, 09963–01000)



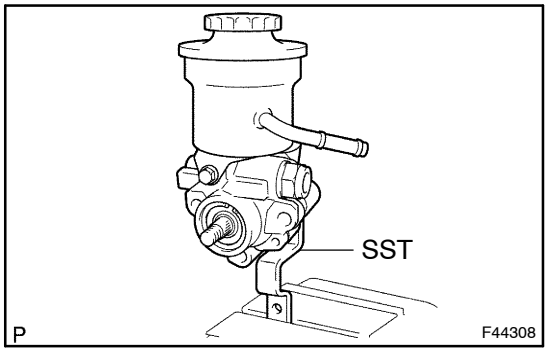
4. DISCONNECT PRESSURE FEED TUBE ASSY

(a) Disconnect the oil pressure switch connector.
(b) Remove the clip and disconnect the return hose.



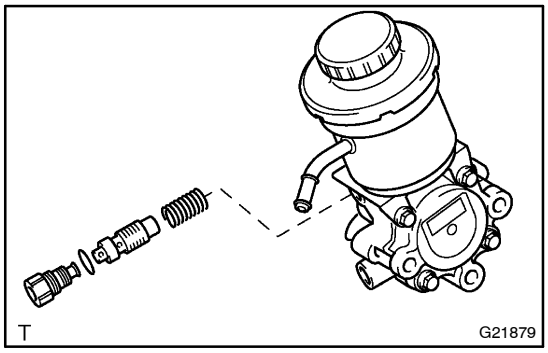
5. REMOVE VANE PUMP ASSY

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



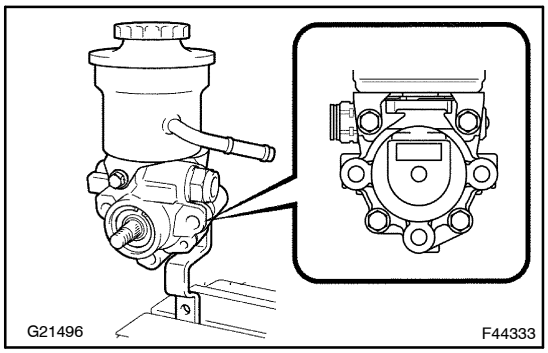
6. FIX VANE PUMP ASSY

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



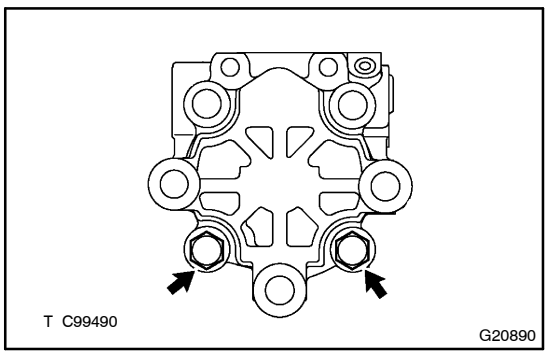
7. REMOVE FLOW CONTROL VALVE

(a) Remove the pressure port union ,flow control valve and spring.
(b) Remove the O–ring from the pressure port union.
SST 09011–12271



8. REMOVE VANE PUMP OIL RESERVOIR SUB–ASSY

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



9. REMOVE VANE PUMP HOUSING REAR

(a) Remove the 2 bolts and rear housing.
(b) Remove the 2 O–rings from the housing.

10. REMOVE VANE PUMP SIDE PLATE REAR

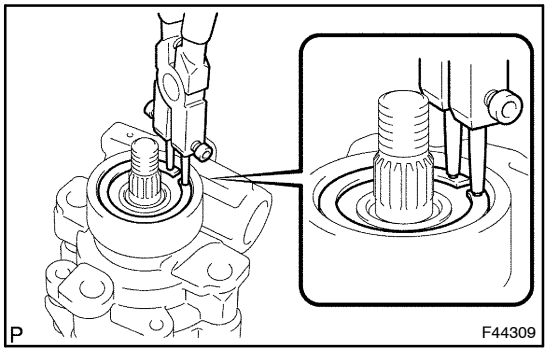
(a) Using a screwdriver, remove the snap ring from the vane pump shaft.

NOTICE:

Be careful not to drop the plate.

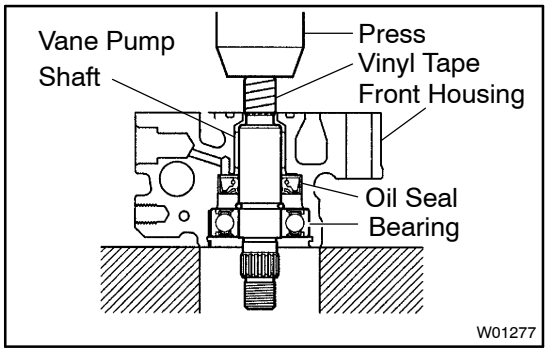
11. REMOVE VANE PUMP ROTOR

12. REMOVE VANE PUMP CAM RING



13. REMOVE VANE PUMP SHAFT W/BEARING

(a) Using snap ring pliers, remove the snap ring from the front housing.

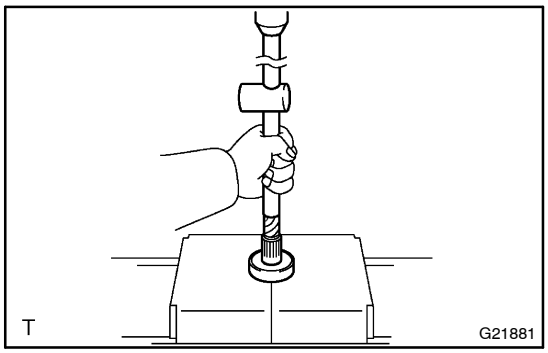


(b) Wind vinyl tape on the serrated part of the vane pump shaft.

(c) Press out the shaft with the bearing.

NOTICE:

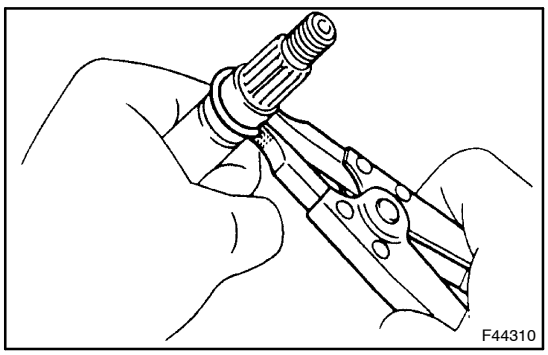
Be careful not to damage the oil seal lip.



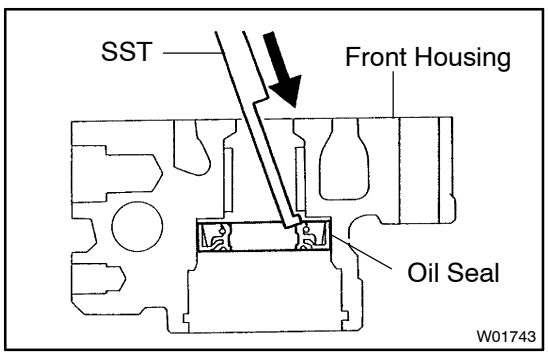
14. REMOVE VANE PUMP SHAFT BEARING

(a) Wind vinyl tape on the serrated part of the vane pump shaft

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



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



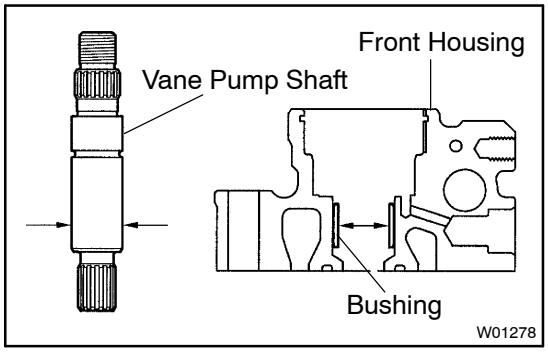
15. REMOVE VANE PUMP HOUSING OIL SEAL

(a) Using SST and a hammer, remove the oil seal from the front housing.

SST 09631–10030

NOTICE:

Do not damage the front housing (inner side).

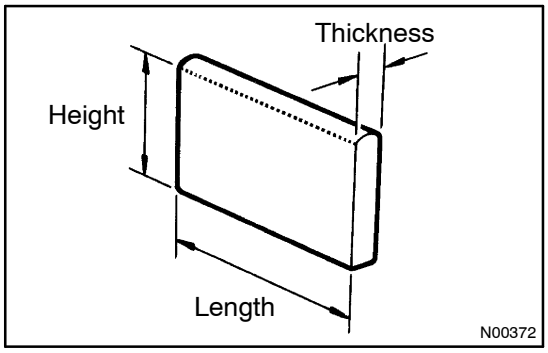


16. INSPECT VANE PUMP SHAFT AND BUSH IN HOUSING FRONT

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

Standard clearance:
0.03 – 0.05 mm (0.0012 – 0.0020 in.)
Maximum clearance: 0.07 mm (0.0028 in.)

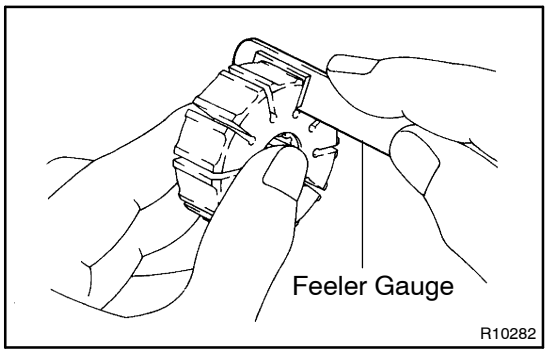
If it is more than the maximum, replace the vane pump shaft or vane pump assy.



17. INSPECT VANE PUMP ROTOR AND VANE PUMP PLATES

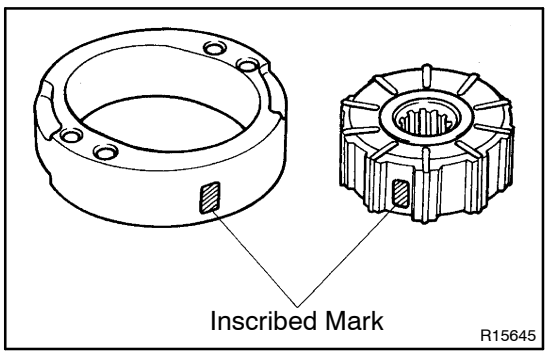
(a) Using a micrometer, measure the height, thickness and length of the 10 plates.

Minimum height: 8.6 mm (0.339 in.)
Minimum thickness: 1.397 mm (0.0550 in.)
Minimum length: 14.991 mm (0.5902 in.)



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

Maximum clearance: 0.033 mm (0.0013 in.)



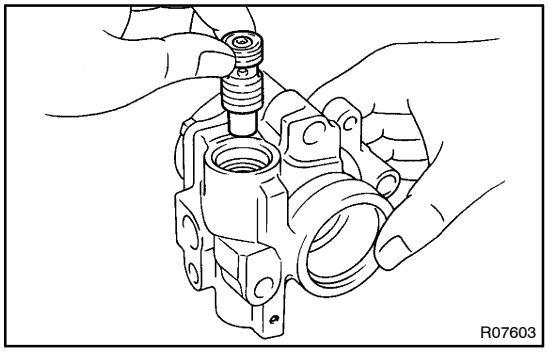
If it is more than the maximum, replace the plate and/or rotor with one having the same mark stamped on the cam ring.

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

HINT:

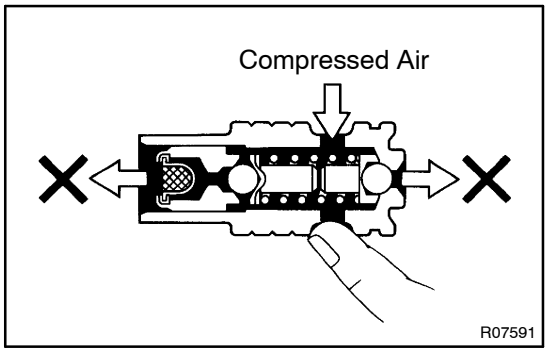
There are 5 vane plate lengths with the following rotor and cam ring marks:

Rotor and cam ring mark	Vane plate part number	Vane plate length mm (in.)
None	44345–26010	14.999–15.001 (0.59051–0.59059)
1	44345–26020	14.997–14.999 (0.59043–0.59051)
2	44345–26030	14.995–14.997 (0.59035–0.59043)
3	44345–26040	14.993–14.995 (0.59027–0.59035)
4	44345–26050	14.991–14.993 (0.59020–0.59027)

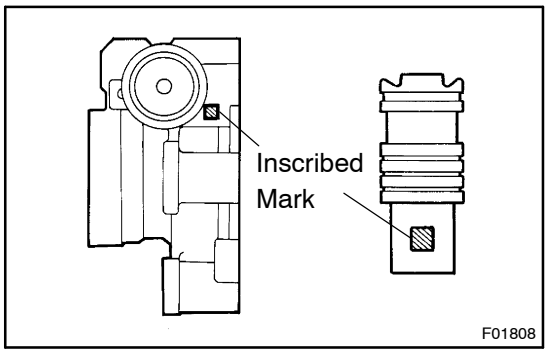


18. INSPECT FLOW CONTROL VALVE

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

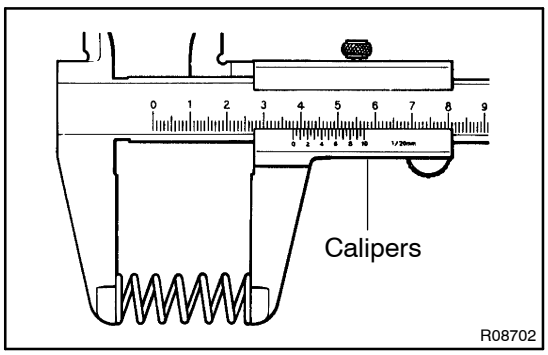


(b) Close one of the holes and apply compressed air 392 – 490 kPa (4 – 5 kgf/cm^2, 57 – 71 psi) into the opposite side, and confirm that air does not come out from the wnd holes.



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 Caliers, measure the free length of the spring.

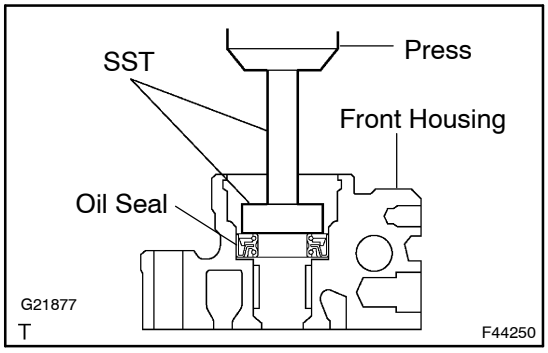
Minimum free length: 32.1 mm (1.264 in.)

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

20. INSPECT PRESSURE PORT UNION

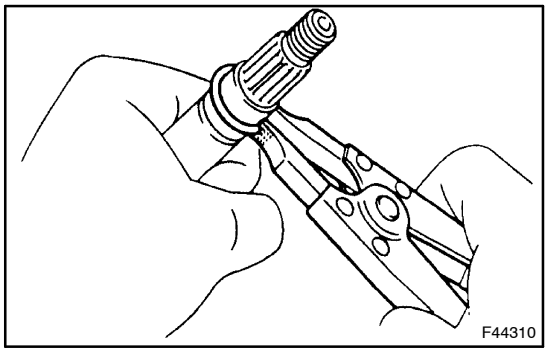
HINT:

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.



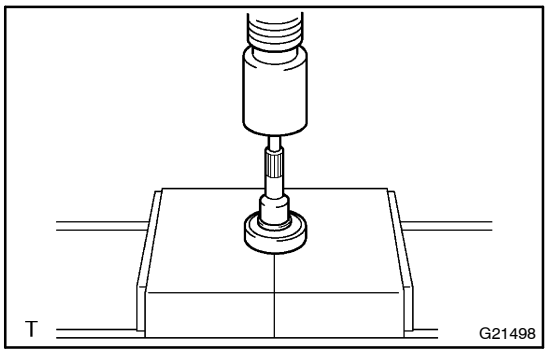
21. INSTALL VANE PUMP HOUSING OIL SEAL

(a) Using SST and a press, install a new oil seal to the front housing.
SST 09950–60010 (09951–00320), 09950–70010 (09951–07150)

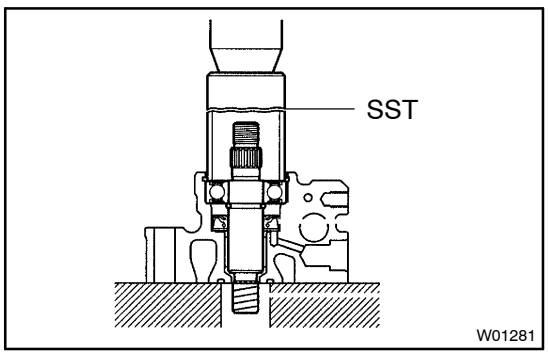


22. INSTALL VANE PUMP SHAFT BEARING

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



(b) Using g press, install the vane pump shaft bearing to the vane pump shaft.

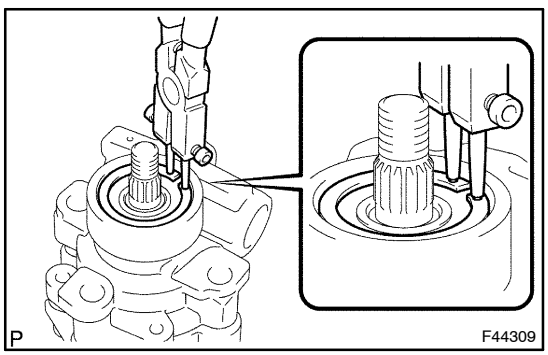


23. INSTALL VANE PUMP SHAFT W/BEARING

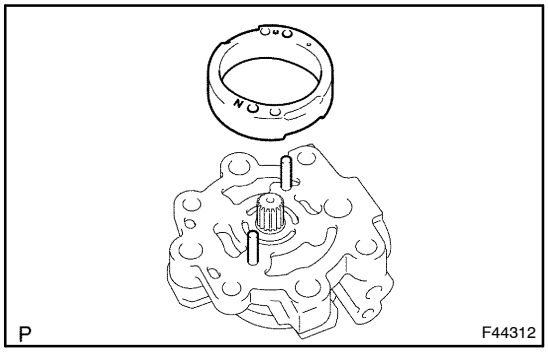
(a) Wind vinyl tape on the serrated part of the vane pump shaft.

(b) Using SST, press in the shaft with the bearing.
SST 09632–36010

NOTICE:
Be careful not to damage the oil seal.



(c) Using snap ring pliers, install a new snap ring to the front housing.

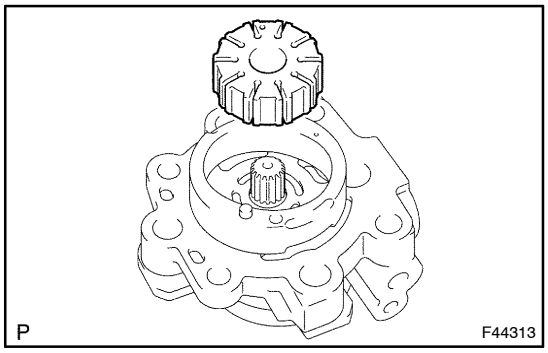


24. INSTALL VANE PUMP CAM RING

(a) Install the cam ring with the inscribed mark facing outward.

HINT:

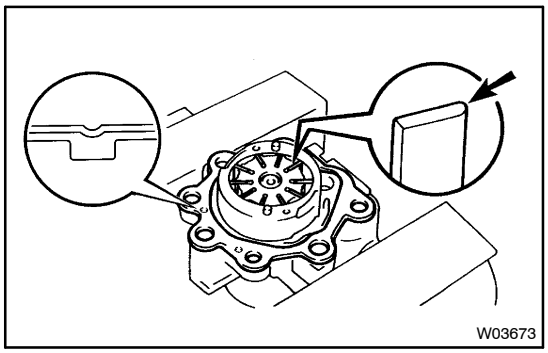
Align the holes of the cam ring with the straight pins.



25. INSTALL VANE PUMP ROTOR

(a) Install the vane pump rotor with the inscribed mark facing outward.

(b) Install a new snap ring to the vane pump shaft.



26. INSTALL VANE PUMP SIDE PLATE REAR

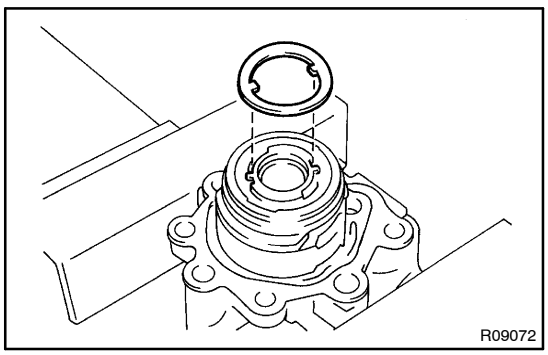
(a) Install the 10 plates with the round end facing outward.

(b) Install a new gasket on the front housing.

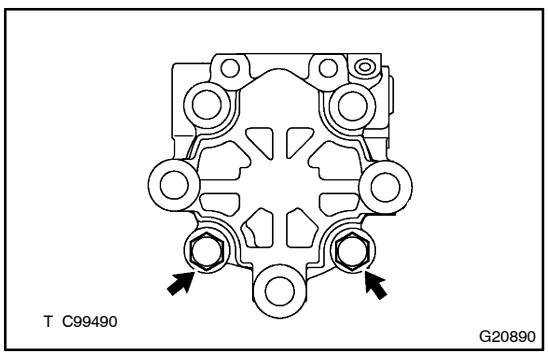
NOTICE:

Be careful the direction of the gasket.

(c) Align the holes of the side plate and 2 straight pins.



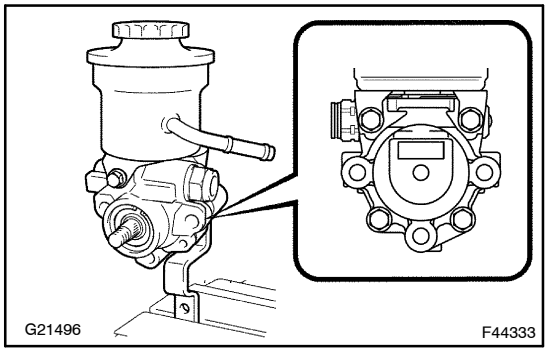
(d) Install the wave washer so that its into the slots in the side plate.



27. INSTALL VANE PUMP HOUSING REAR

(a) Coat 2 new O–rings with power steering fluid and install them to the rear housing.

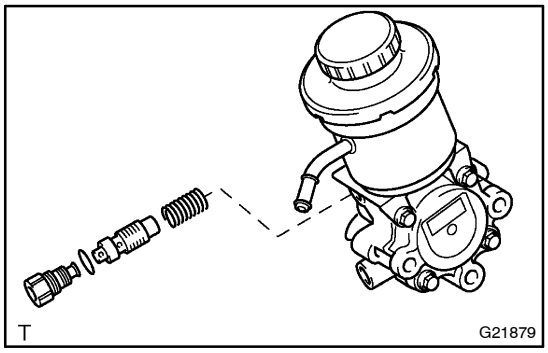
(b) Temporally install the 2 bolts.



28. INSTALL VANE PUMP OIL RESERVOIR SUB–ASSY

(a) Coat a new O–ring with power steering fluid and install it to the oil reservoir.

(b) Install the oil reservoir with the 3 bolts.
Torque:
Front side bolt: 13 N·m (130 kgf·cm, 9 ft·lbf)
Rear side bolts: 24 N·m (240 kgf·cm, 17 ft·lbf)

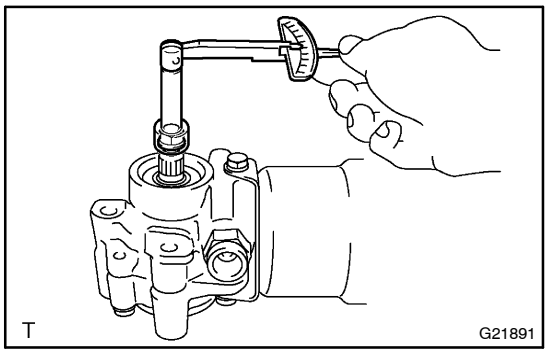


29. INSTALL FLOW CONTROL VALVE

(a) Install the flow control valve facing the correct direction.

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

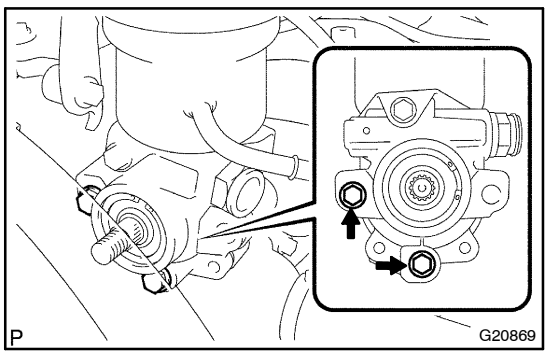
(c) Torque the union.
Torque: 83 N·m (850 kgf·cm, 61 ft·lbf)
SST 09011–12271



30. INSPECT PRELOAD

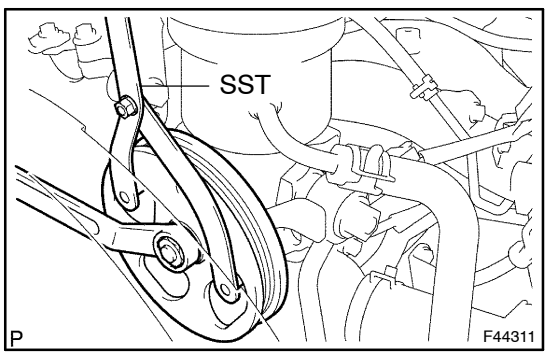
(a) Check that the vane pump rotates smoothly without abnormal noise.

(b) Using a torque wrench, check the pump rotating torque.
Rotating torque:
0.27 N·m (2.8 kgf·cm, 2.4 in.·lbf) or less



31. INSTALL VANE PUMP ASSY

(a) Install the vane pump assy with the 2 bolts.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

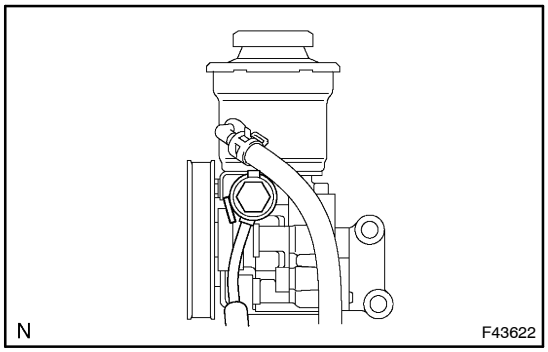


32. INSTALL VANE PUMP PULLEY

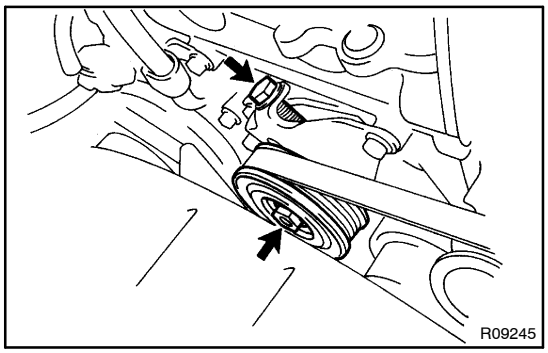
(a) Using SST, install the vane pump pulley.
SST 09960–10010 (09962–01000, 09963–01000)
Torque: 44 N·m (449 kgf·cm, 32 ft·lbf)

33. CONNECT PRESSURE FEED TUBE ASSY

(a) Install the union bolt with a new gasket.
Torque: 51 N·m (520 kgf·cm, 38 ft·lbf)



HINT:
Make sure the stopper of the tube is touching the power steering pump body as shown, then torque the union bolt.



34. INSTALL FAN AND GENERATOR V BELT

(a) Tightning the belt adjusting bolt and adjust drive belt tension.

(b) Torque the power steering idle pulley set nut.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

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