510B0–01

OVERHAUL

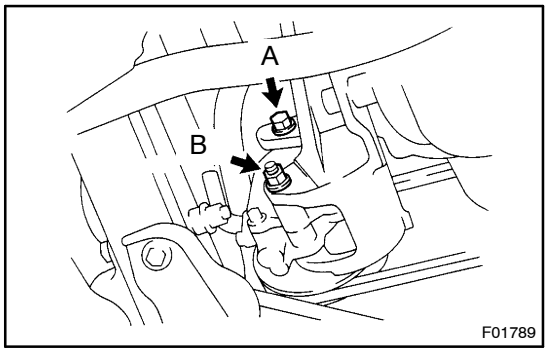
1. REMOVE ENGINE UNDER COVER ASSY REAR

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

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

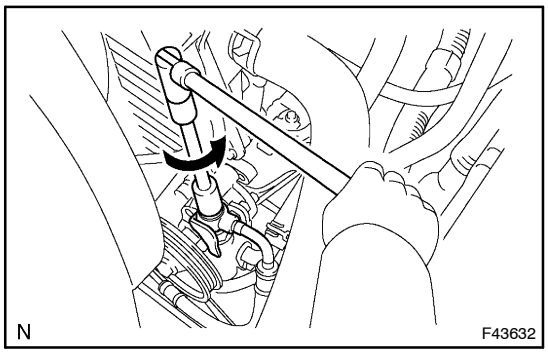
(a) Remove the 4 bolts and engine under cover sub–assy No.1.

3. DRAIN POWER STEERING FLUID



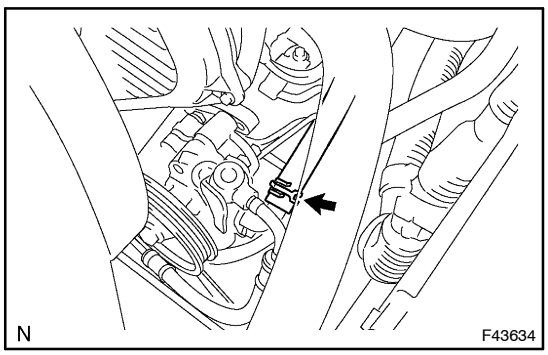
4. REMOVE VANE PUMP V BELT

(a) Loosen the bolt A and the nut B.



5. SEPARATE PRESSURE FEED TUBE ASSY

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

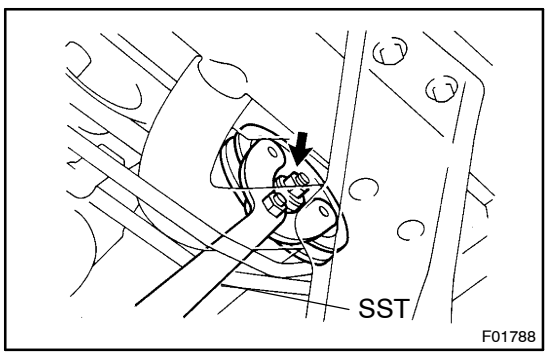


6. SEPARATE OIL RESERVOIR TO PUMP HOSE NO.1

(a) Remove the clip and disconnect the hose.

NOTICE:

Take care not to spill fluid on the drive belt.



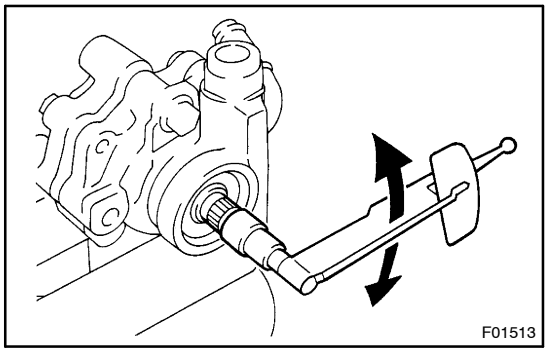
7. REMOVE VANE PUMP PULLEY

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

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

8. REMOVE VANE PUMP ASSY

(a) Remove the 2 vane pump set bolts and nut.



9. MEASURE VANE PUMP ROTATION TORQUE

NOTICE:

When using a vise, do not overtighten it.

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

(b) Temporarily install the vane pump pulley set nut.

(c) Using a torque wrench, check the pump ratating torque.

Rotating torque:

0.27 N·m (2.8 kgf·cm, 2.4 in.·lbf) or less

10. REMOVE POWER STEERING SUCTION PORT UNION

(a) Remove the bolt.

(b) Remove the O–ring from the union.

11. REMOVE PRESSURE PORT UNION

(a) Remove the pressure port union, flow control valve and spring.

(b) Remove the O–ring from the union.

12. REMOVE VANE PUMP HOUSING REAR

(a) Remove the 4 bolts.

HINT:

If the wave washer and side plate are stuck to the rear housing, lightly tap the rear housing with a plastic hammer, and remove the wave washer and side plate.

(b) Remove the 2 O–rings from the housing.

13. REMOVE SIDE PLATE AND WAVE WASHER

NOTICE:

Be careful not to damage the plate.

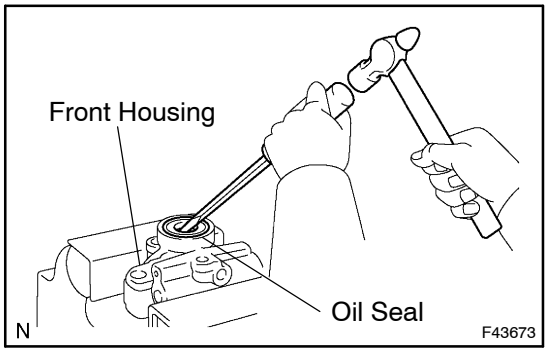
14. REMOVE VANE PUMP CAM RING

15. REMOVE VANE PUMP ROTOR

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

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

16. REMOVE VANE PUMP SHAFT



17. REMOVE VANE PUMP HOUSING OIL SEAL

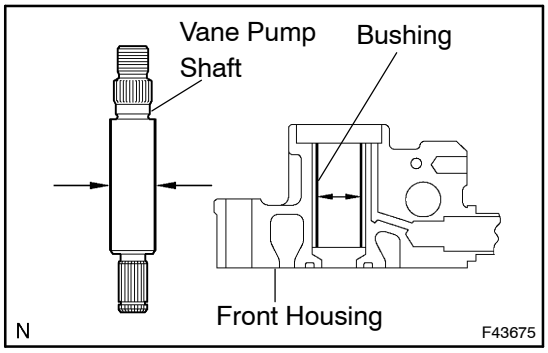
(a) Using a screwdriver and a hammer, remove the oil seal from the front housing.

NOTICE:

Be careful not to damage the front housing.

18. REMOVE STRAIGHT PIN

(a) Remove the 2 pins from the front housing.

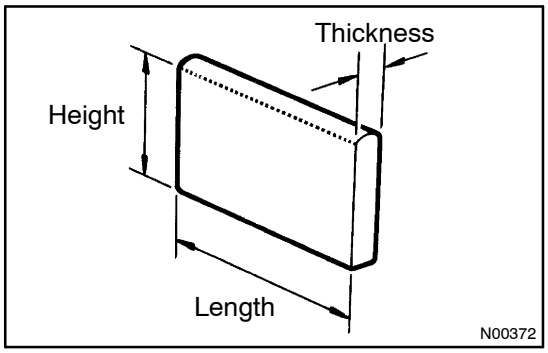


19. INSPECT OIL CLEARANCE

(a) Using a micrometer and 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.)

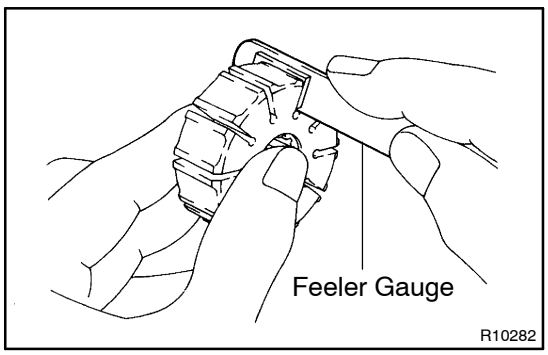
If it is more than the maximum, replace the vane pump shaft or vane pump assy.



20. INSPECT VANE PUMP ROTOR AND VANE PUMP PLATES

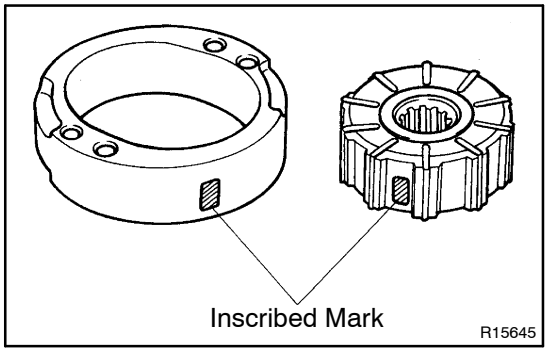
(a) Using a micrometer, measure the height, thickness and length of the 10 plates.

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.)



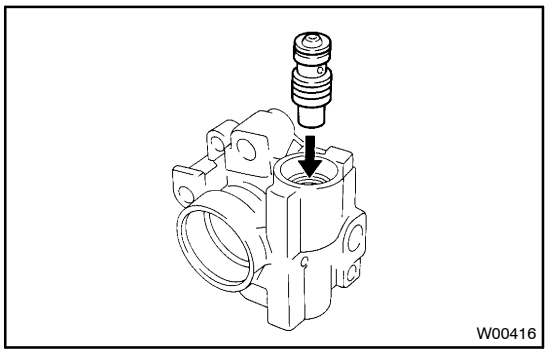
If it is more than the maximum, replace the plate and/or rotor with one having the same mark stamped on the cam ring.

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

HINT:

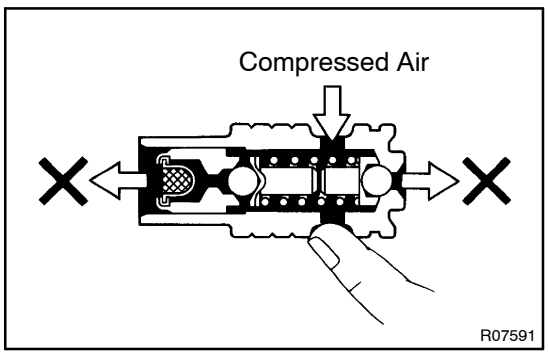
There are 5 vane plate lengths with the following rotor and cam ring marks:

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)

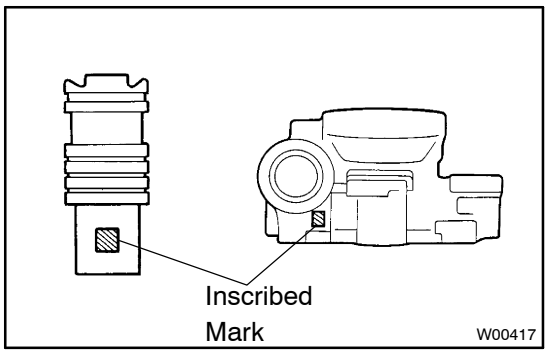


21. INSPECT FLOW CONTROL VALVE

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

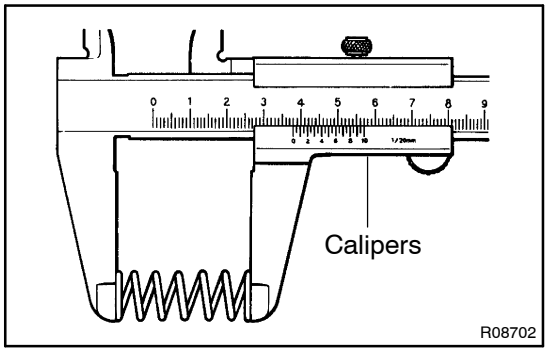


(b) Close one of the holes and apply compressed air 392 – 490 kPa (4 – 5 kgf/cm^2, 57 – 71 psi) into the opposite side, and confirm that air does not come out from the wnd holes.



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



22. INSPECT FLOW CONTROL VALVE COMPRESSION SPRING

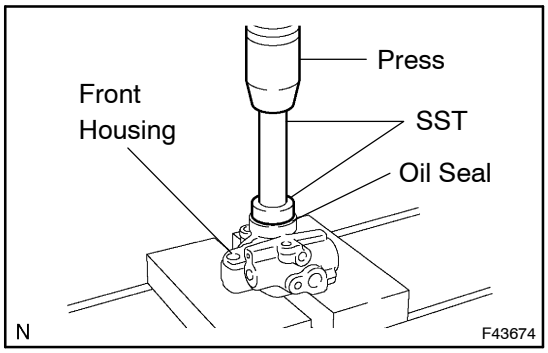
(a) Using Caliers, measure the free length of the spring.
Minimum free length: 32.1 mm (1.264 in.)

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

23. 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.



24. INSTALL VANE PUMP HOUSING OIL SEAL

(a) Coat a new oil seal lip with power steering fluid.
(b) Using SST, press in the oil seal.
SST 09950–60010 (09951–00400), 09950–70010 (09951–07100)

NOTICE:

Be careful not to damage the shaft.

(c) Coat a new bearing with power steering fluid.
(d) Press in the bearing to the shaft.

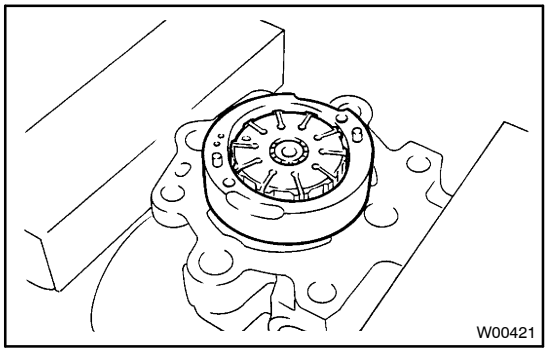
25. INSTALL VANE PUMP SHAFT

26. INSTALL STRAIGHT PIN

(a) Using a plastic hammer, tap in 2 new pins to the front housing.

NOTICE:

Be careful not to damage the pins.



27. INSTALL VANE PUMP CAM RING

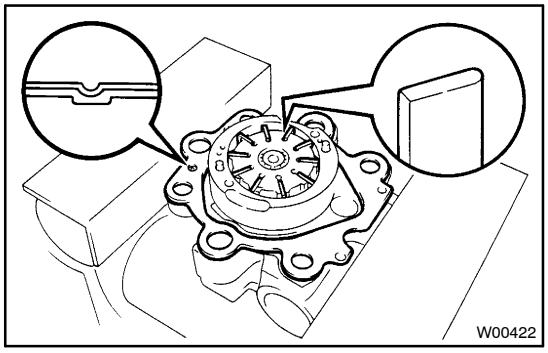
(a) Install the cam ring with the inscribed mark facing outward.

HINT:

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

28. INSTALL VANE PUMP ROTOR

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



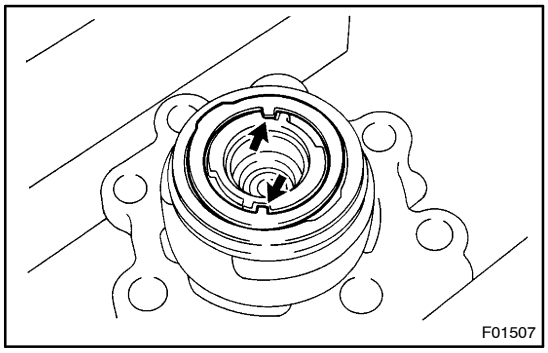
29. INSTALL VANE PUMP SIDE PLATE REAR

(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.



30. INSTALL VANE PUMP HOUSING REAR

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

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

(c) Torque the 4 bolts.

Torque: 24 N·m (240 kgf·cm, 17 ft·lbf)

31. INSTALL PRESSURE PORT UNION

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

(b) Torque the union.

Torque: 83 N·m (850 kgf·cm, 61 ft·lbf)

32. INSTALL POWER STEERING SUCTION PORT UNION

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

(b) Install the suction poat union with a bolt.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

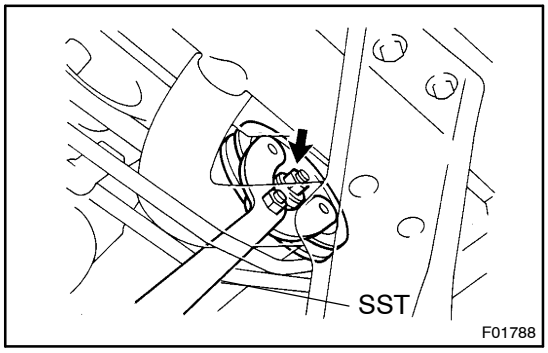
33. MEASURE VANE PUMP ROTATION TORQUE

34. INSTALL VANE PUMP ASSY

(a) Install the vane pump with tha 2 bolts and nut.

HINT:

Temporarily tighten the 2 bolts and nut.

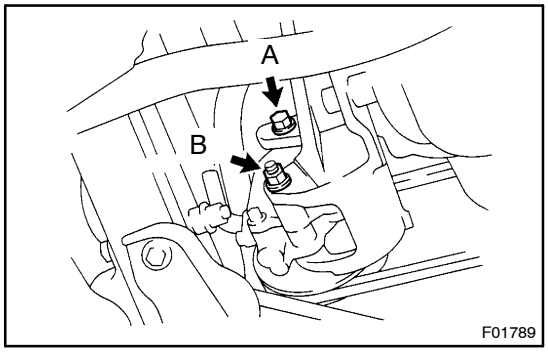


35. INSTALL VANE PUMP PULLEY

(a) Using SST to stop the pulley rotating, torque the pulley set nut.

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

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



36. INSTALL VANE PUMP V BELT

(a) Adjust the drive belt tension (See page 51–3).

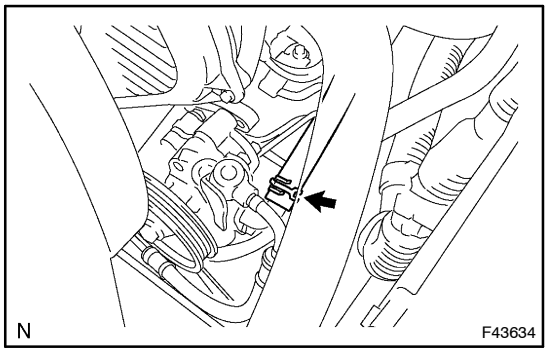
(b) Torque the bolt A and the nut B.

Bolt A:

Torque: 48 N·m (490 kgf·cm, 35 ft·lbf)

Bolt B:

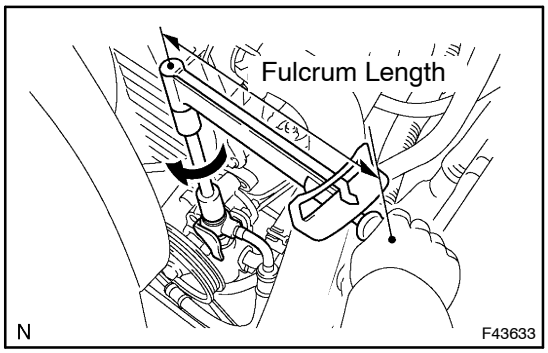
Torque: 64 N·m (650 kgf·cm, 47 ft·lbf)



37. CONNECT OIL RESERVOIR TO PUMP HOSE NO.1

(a) Connect the hose.

(b) Instal the clip.



38. 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)

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.

41. ADD POWER STEERING FLUID

42. BLEED POWER STEERING FLUID (See page 51–3)

43. INSPECT FLUID LEAK (See page 51–3)