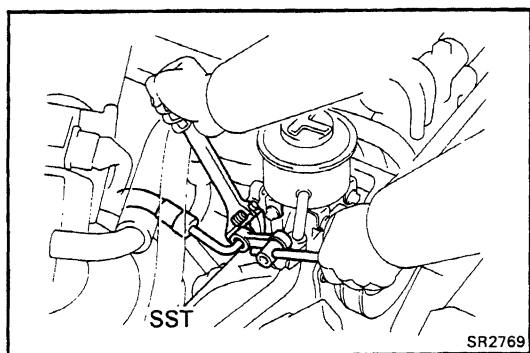
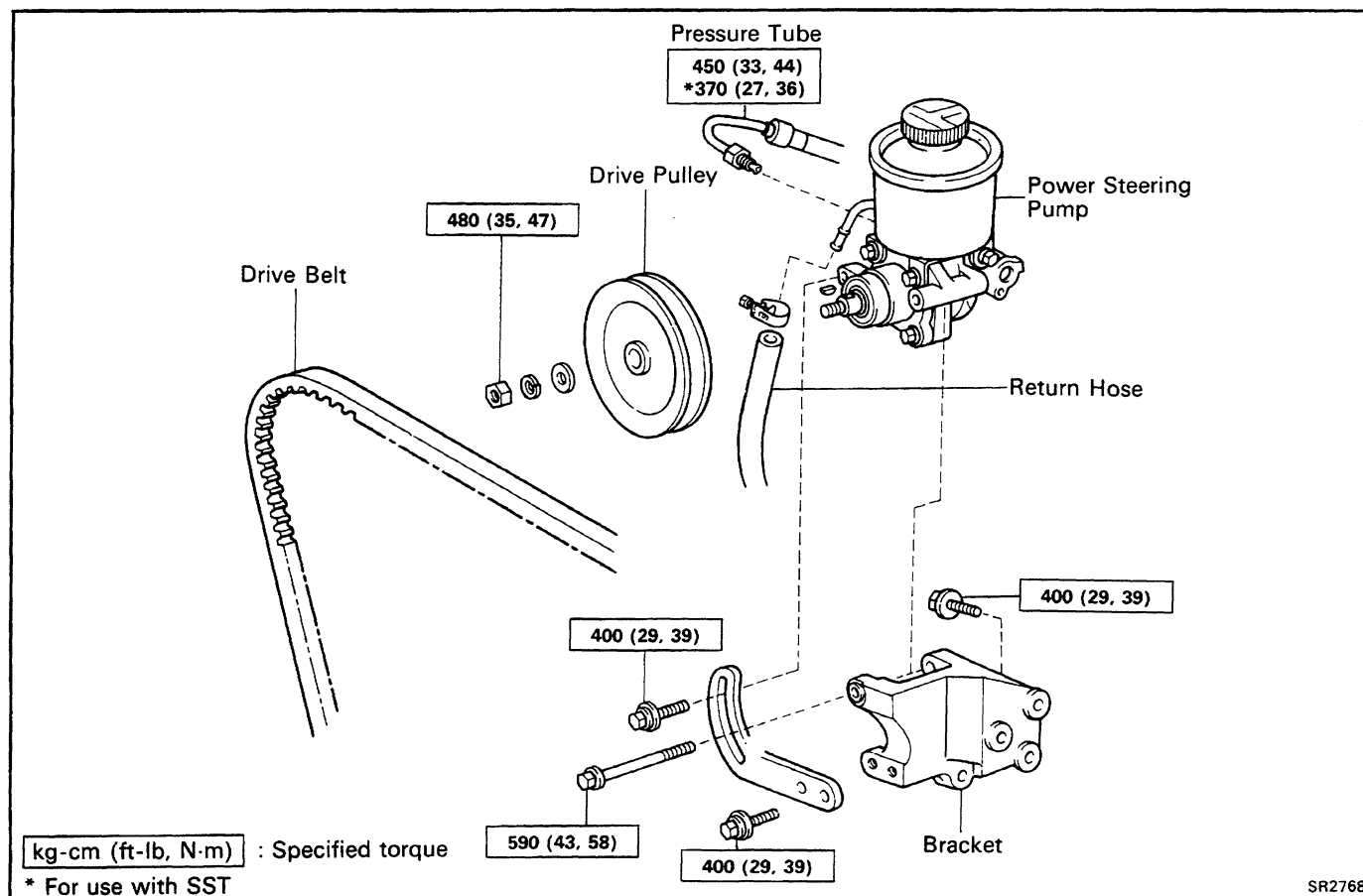


Power Steering Pump REMOVAL AND INSTALLATION OF POWER STEERING PUMP

Remove and install the parts as shown.



(MAIN POINT OF REMOVAL AND INSTALLATION)

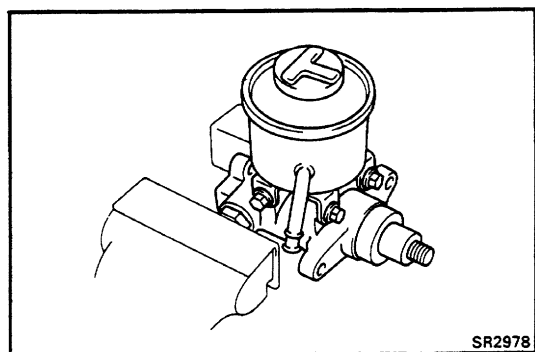
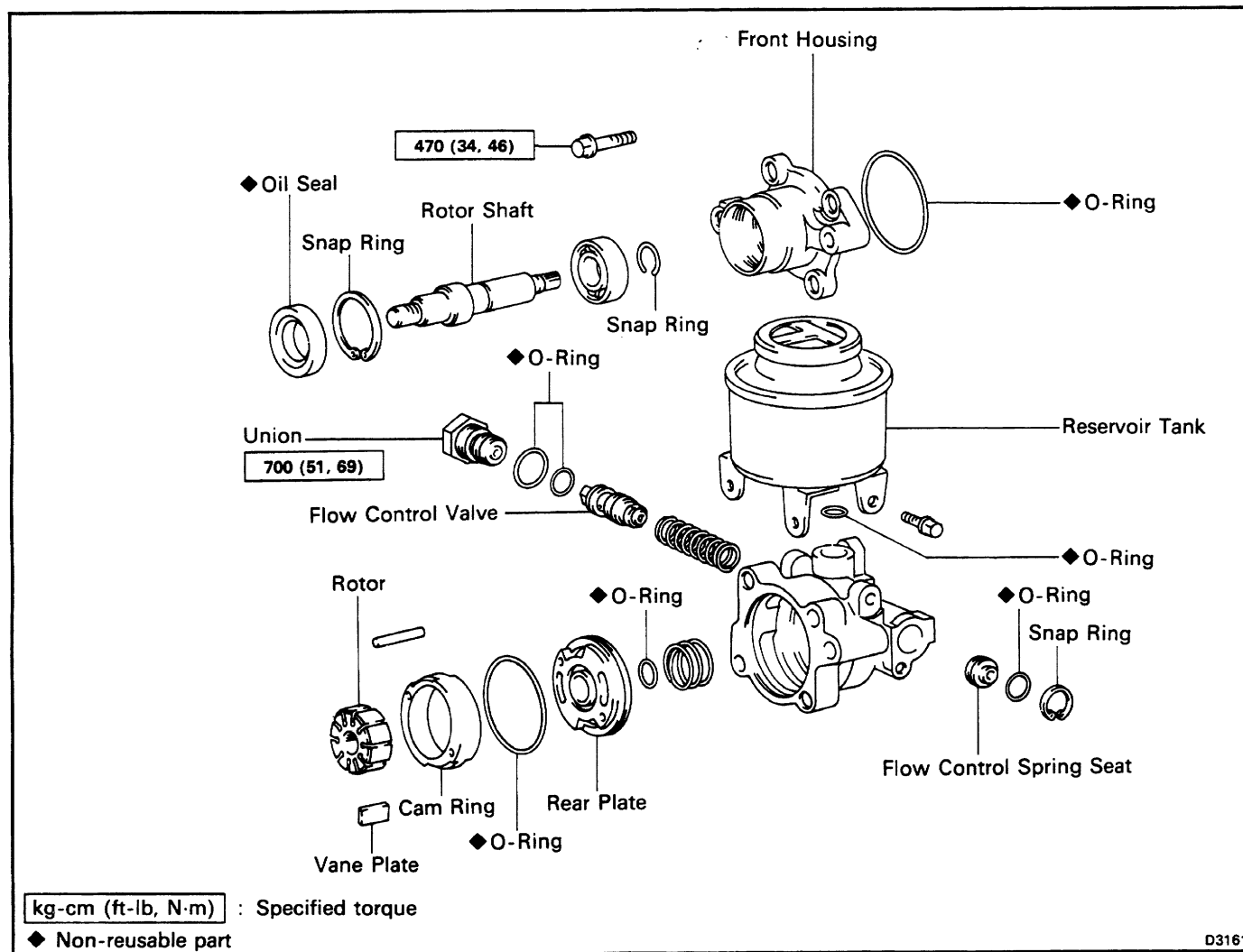
1. DISCONNECT PRESSURE TUBE

Using SST, disconnect the pressure tube.
SST 09631-22020

2. ADJUST DRIVE BELT TENSION AFTER INSTALLING PS PUMP

(See page [SR-21](#))

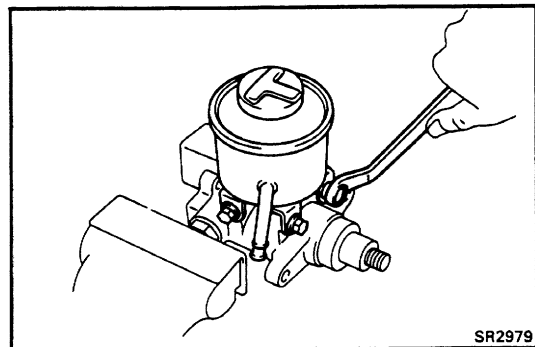
COMPONENTS



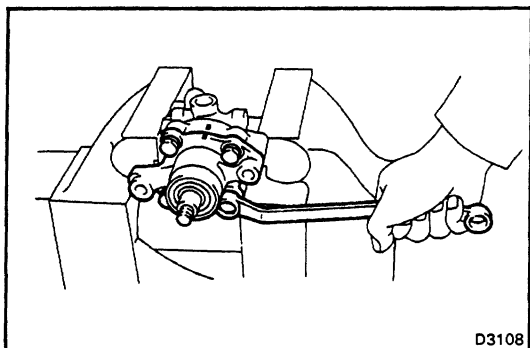
DISASSEMBLY OF POWER STEERING PUMP

1. CLAMP POWER STEERING PUMP IN VISE

NOTICE: Do not tighten the vise more than necessary.



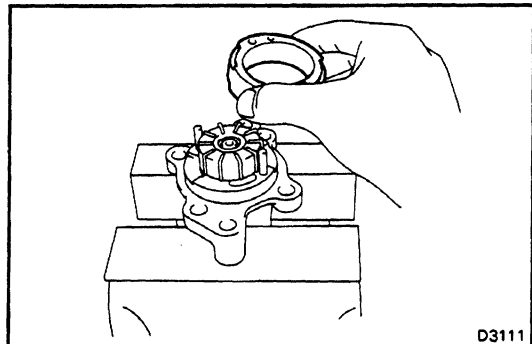
2. REMOVE RESERVOIR TANK AND O-RING



3. REMOVE FRONT HOUSING

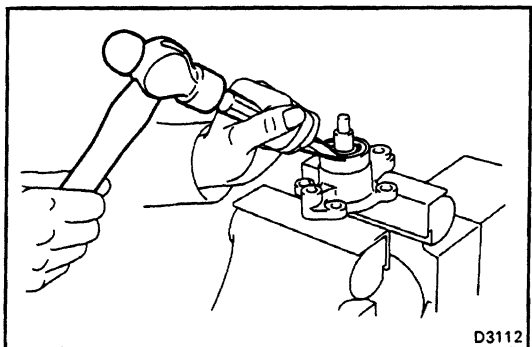
- (a) Place matchmarks on the front and rear housing.
- (b) Remove the four bolts and tap off the front housing with a plastic hammer.

NOTICE: Be careful that the vane plates, rotor and cam ring do not fall out.



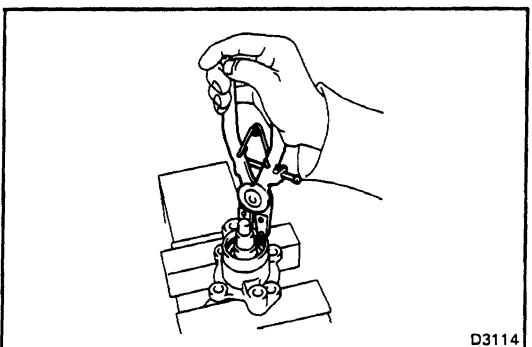
4. REMOVE CAM RING, ROTOR AND VANE PLATES _

NOTICE: Be careful not to scratch the cam ring, rotor or vane plates.

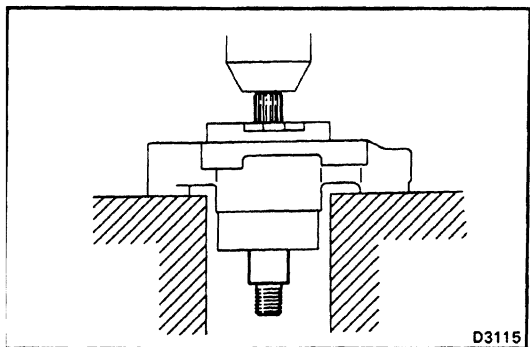


5. REMOVE ROTOR SHAFT

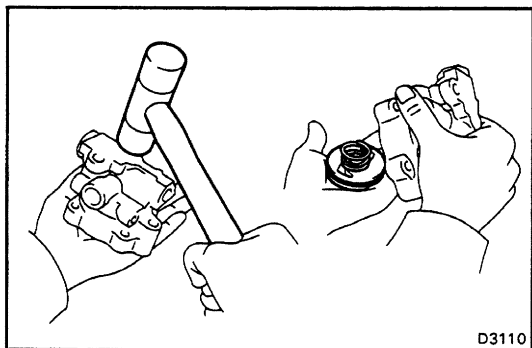
- (a) Clamp the front housing in a vise.
- NOTICE:** Do not tighten the vise more than necessary.
- (b) Using a chisel and hammer, pry off the oil seal.



- (c) Using snap ring pliers, remove the snap ring.



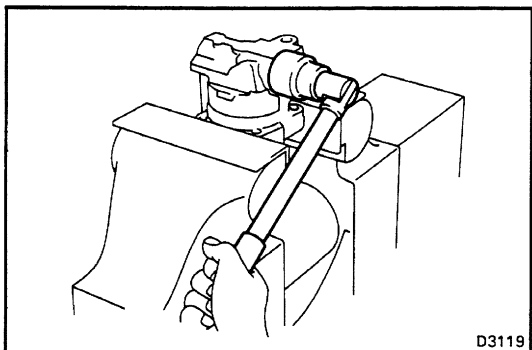
- (d) Using a press, remove the rotor shaft from the front housing.

**6. REMOVE REAR PLATE AND SPRING**

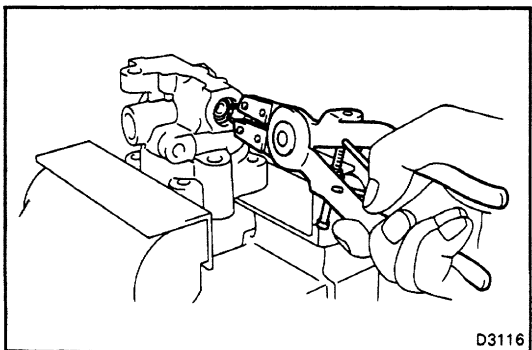
- (a) Using a plastic hammer, tap the bottom end of the rear housing and remove the rear plate and spring.

NOTICE: Avoid gripping the rear plate with pliers as this could damage it.

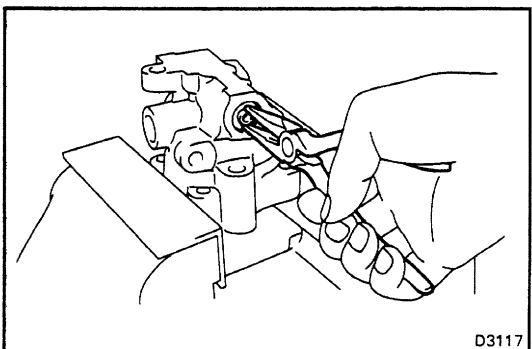
- (b) Remove the two O-rings from the front housing and rear plate.

**7. REMOVE PRESSURE PORT UNION****8. REMOVE FLOW CONTROL VALVE AND SPRING**

NOTICE: Use care not drop, scratch or nick this valve.

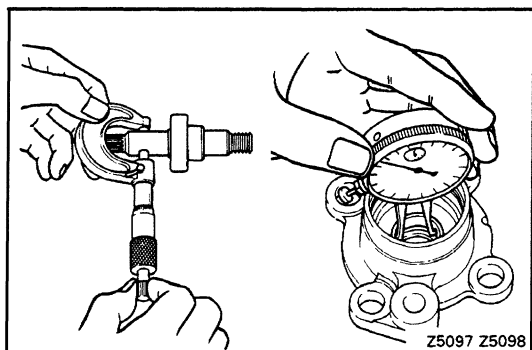
**9. REMOVE FLOW CONTROL SPRING SEAT**

- (a) Using snap ring pliers, remove the snap ring.



- (b) Using needle-pliers, remove the spring seat.

- (c) Remove the O-ring from the spring seat.



INSPECTION OF POWER STEERING PUMP

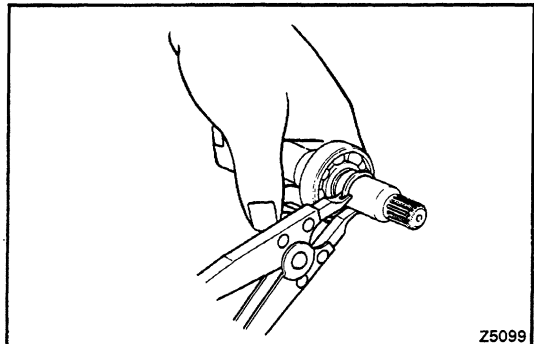
1. INSPECT BUSHING AND MEASURE BUSHING OIL CLEARANCE

- (a) Check bushing for wear or damage. The bushing cannot be replaced separately. If wear or damage is found, replace the entire housing.
- (b) Check the oil clearance between the bushing and rotor shaft.

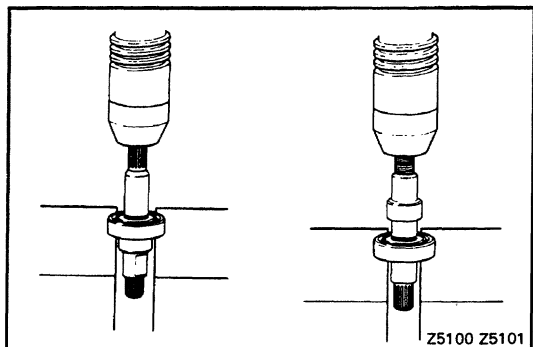
Maximum oil clearance: 0.03 mm (0.0012 in.)

2. IF NECESSARY, REPLACE ROTOR SHAFT BEARING

- (a) Using snap ring pliers, remove the snap ring.



- (b) Using a press, press out the bearing.
- (c) Using a press, press in the bearing.
- (d) Using snap ring pliers, install the snap ring.

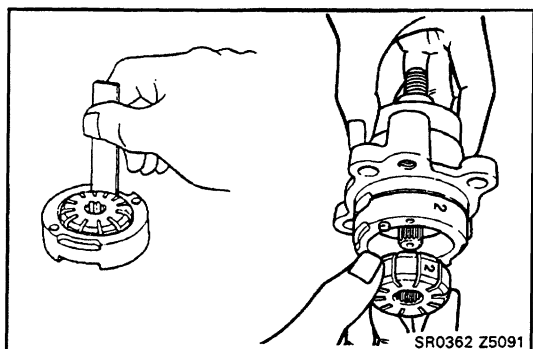


3. INSPECT ROTOR AND CAM RING

Measure the cam ring clearance.

Maximum clearance: 0.06 mm (0.0024 in.)

If the difference is excessive, replace the cam ring with one having the same letter as on the rotor.



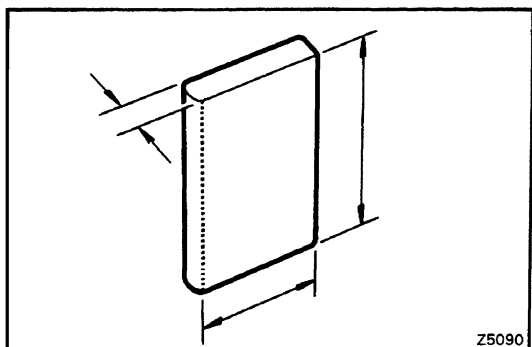
4. INSPECT AND MEASURE VANE PLATES

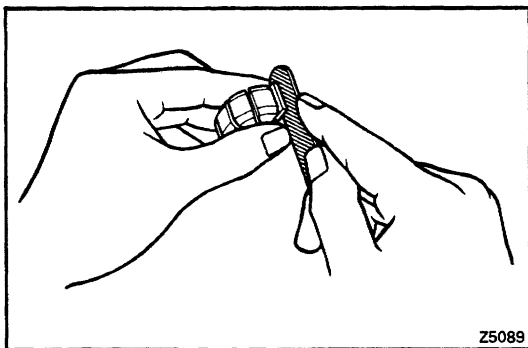
- (a) Check the vane plates for wear scratches.
- (b) Measure the length, height and width of the vane plates.

Minimum length: 14.97 mm (0.5894 in.)

Minimum height: 8.1 mm (0.3189 in.)

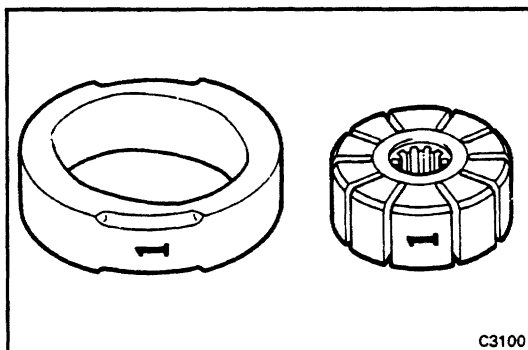
Minimum width: 1.77 mm (0.0697 in.)





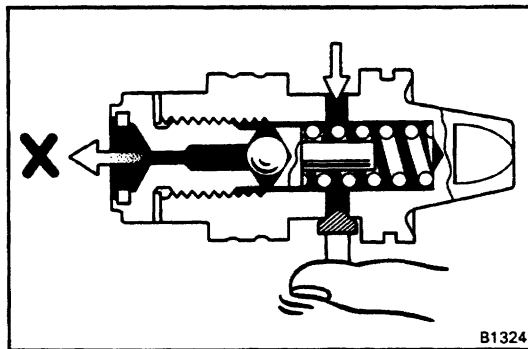
(c) Measure the clearance between the vane plate and rotor groove.

Maximum clearance: 0.03 mm (0.0012 in.)



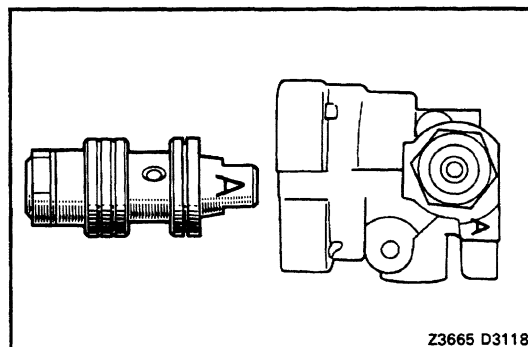
HINT: There are five vane lengths with the following rotor and cam ring marks.

Rotor and cam ring mark	Vane length mm (in.)
None	14.996 – 14.998 (0.5904 – 0.5905)
1	14.994 – 14.996 (0.5903 – 0.5904)
2	14.992 – 14.994 (0.5902 – 0.5903)
3	14.990 – 14.992 (0.59016 – 0.59024)
4	14.988 – 14.990 (0.5901 – 0.5902)

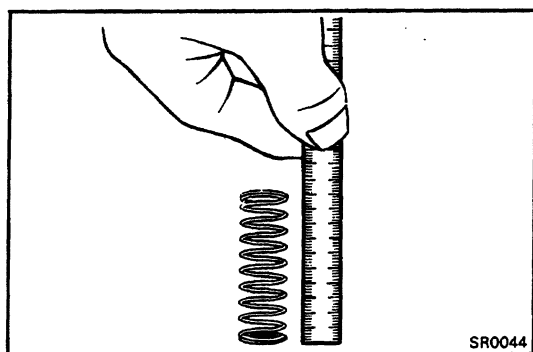


5. INSPECT FLOW CONTROL VALVE AND MEASURE SPRING

- Check the flow control valve for wear or damage.
- Apply fluid to the valve and check that it falls smoothly into the valve hole by its own weight.
- Check the flow control valve for weight.
 - Close one of the holes and apply compressed air [4 – 5 kg/cm² (57 – 71 psi, 392 – 490 kPa)] into the opposite side, and confirm that air does not come out from the end hole.
 - Confirm that air does not come out from the end hole.



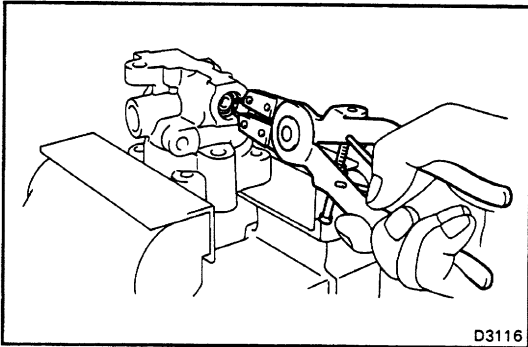
If necessary, replace the valve with one having the same letter as on the rear housing.



(d) Check that the spring is within specification.

Spring length: 47 – 50 mm 11.85 – 1.97 in)

If the spring is not within specification, replace it.

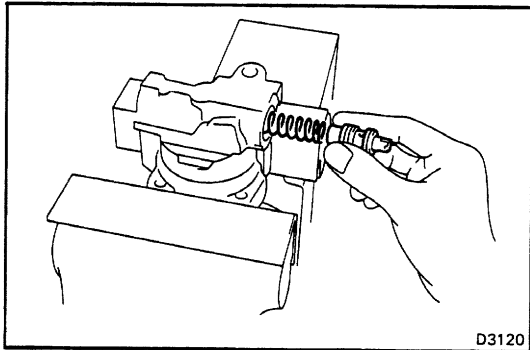


ASSEMBLY OF POWER STEERING PUMP

(See page [SR-26](#))

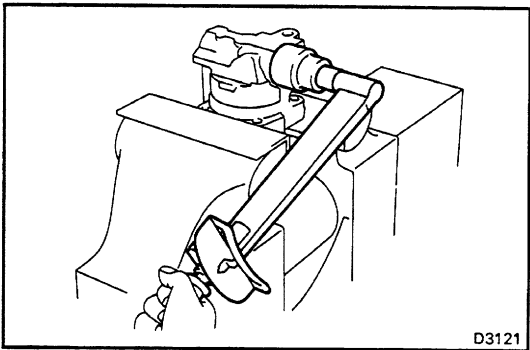
1. INSTALL FLOW CONTROL SPRING SEAT

- Install the O-ring to the spring seat.
- Push in the spring seat to the front housing.
- Using snap ring pliers, install the snap ring.



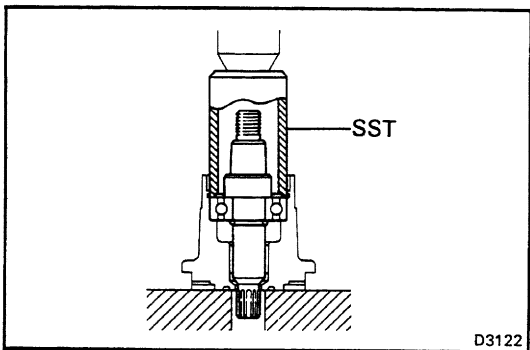
2. INSTALL SPRING AND FLOW CONTROL VALVE

Push in the spring and valve to the front housing.



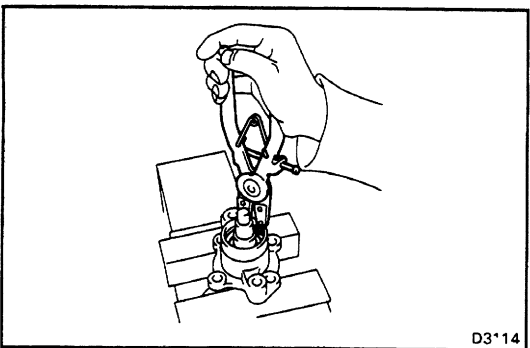
3. INSTALL PRESSURE PORT UNION

- Install the two O-rings to the pressure port union and the front housing.
- Install and torque the pressure port union.
Torque: 700 kg-cm (51 ft-lb, 69 N-m)

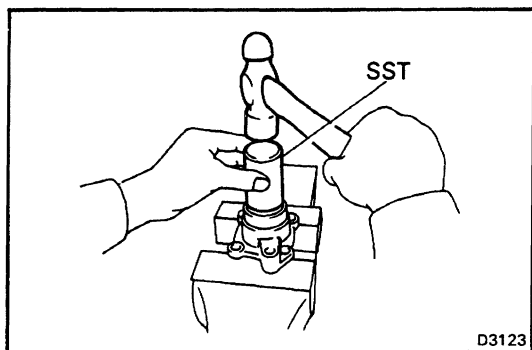


4. INSTALL ROTOR SHAFT TO FRONT HOUSING

- Using SST, press in the rotor shaft to the front housing.
SST 09632-36010

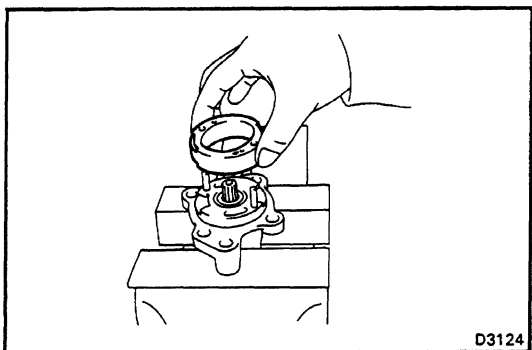


- Using snap ring pliers, install the snap ring.
- ### 5. INSTALL O-RING AND PIN TO FRONT HOUSING



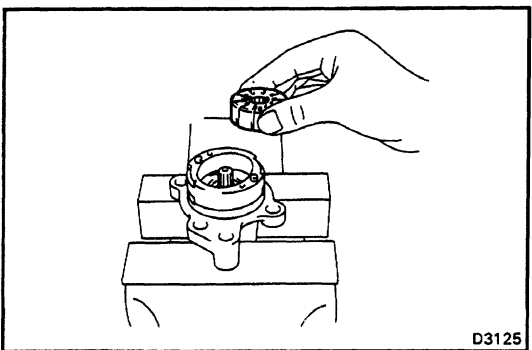
6. INSTALL OIL SEAL

- (a) Apply a light coat of MP grease to the oil seal lip.
- (b) Using SST and hammer, install the oil seal. .
SST 09632-36010



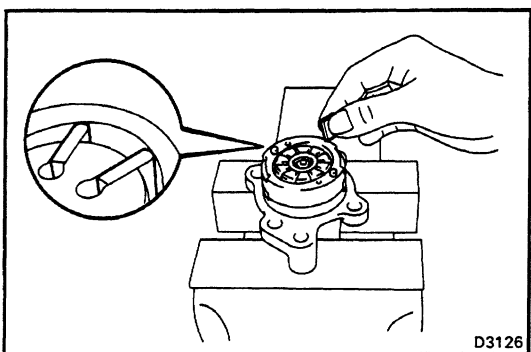
7. INSTALL CAM RING

- Align and install large hole of the cam ring to the pin.
- HINT: Be sure the letters inscribed on the cam ring facing upward.



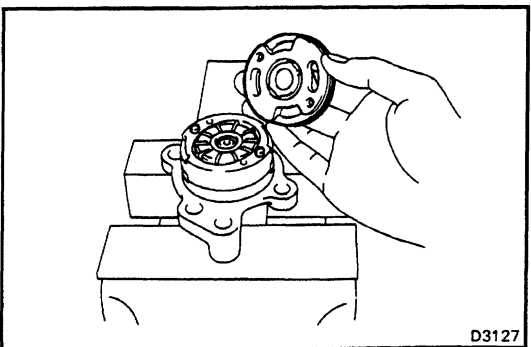
8. INSTALL ROTOR

- Install the rotor with the letters inscribed facing upward.



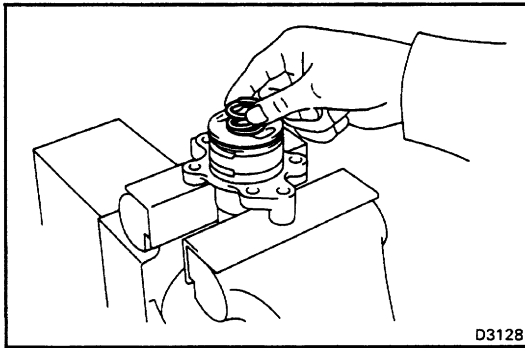
9. INSTALL VANE PLATES

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

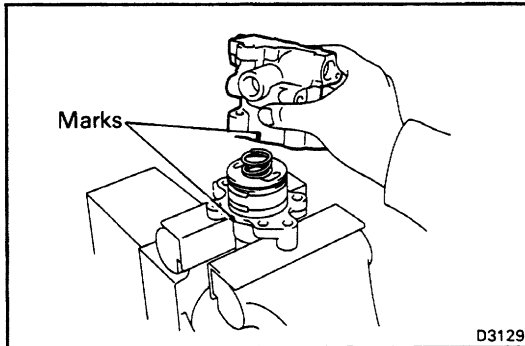


10. INSTALL REAR PLATE AND SPRING

- (a) Install the two O-rings to the rear plate.
- (b) Place the rear plate on the cam ring with pin holes aligned with the pins.

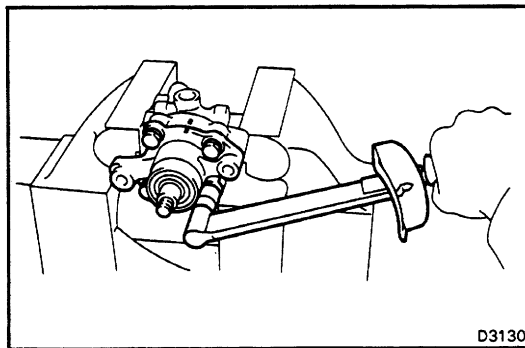


(c) Place the spring on the rear plate.



11. INSTALL REAR HOUSING

- (a) Align the matchmarks on the front and rear housing and assemble them.
- (b) Install the reservoir tank and O-ring.
- (c) Install and temporarily tighten front housing mount bolts.

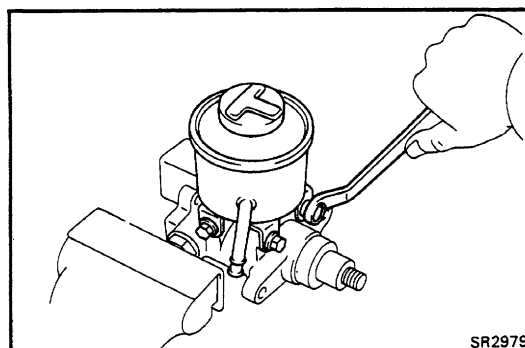


(d) Clamp the rear housing in a vise.

NOTICE: Do not tighten the vise too tightly.

(e) Tighten the four housing bolts uniformly and a little at a time.

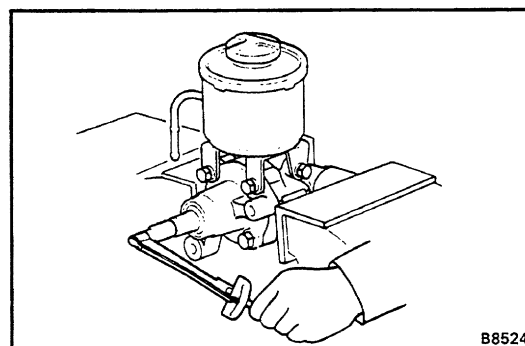
Torque: 470 kg-cm (34 ft-lb, 46 N-m)



12. INSTALL RESERVOIR TANK AND O-RING

- (a) Install reservoir tank with a new O-ring.
- (b) Install and torque the four bolts.

Torque: 130 kg-cm (9 ft-lb, 13 N-m)



13. CHECK ROTOR SHAFT ROTATION CONDITION

- (a) Check that the rotor shaft rotates smoothly with out abnormal noise.
- (b) Provisionally install the pulley nut and check the rotating torque.

**Rotating torque: 2.8 kg-cm or less
(2.4 in.-lb, 0.3 N-m)**