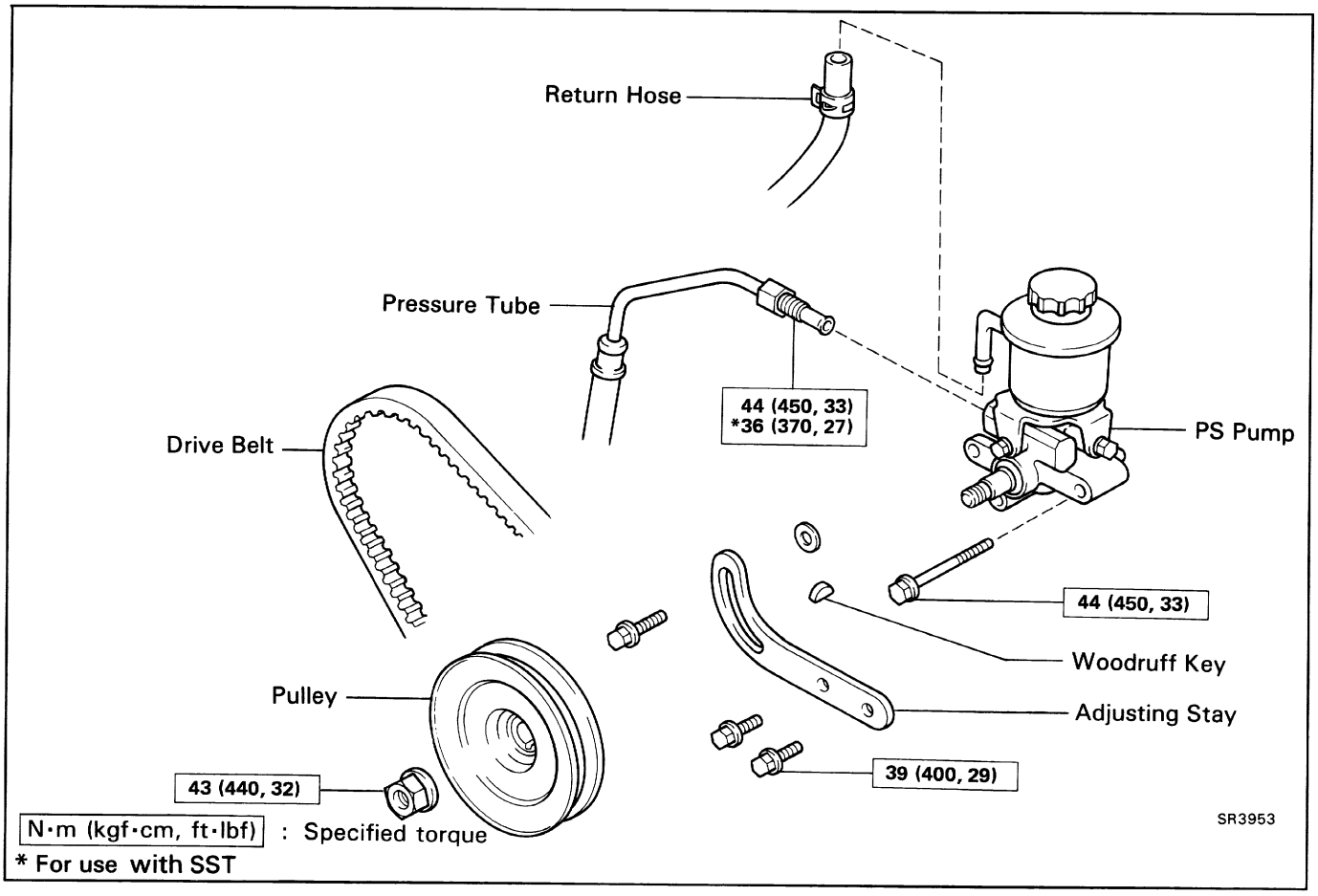
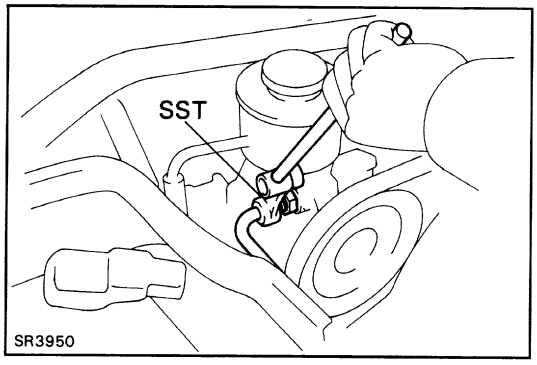
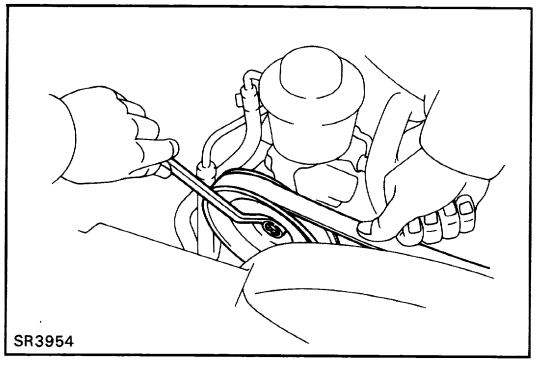
Power Steering Pump

REMOVAL AND INSTALLATION OF POWER STEERING PUMP

Remove and install the parts as shown.







(MAIN POINT OF REMOVAL AND INSTALLATION)

1. DISCONNECT AND CONNECT PRESSURE TUBE

Using SST, disconnect and connect the pressure tube from/to the PS pump.

SST 09631–22020

Torque: 36 N–m (370 kgf–cm, 27 ft–lbf)

HINT: Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).

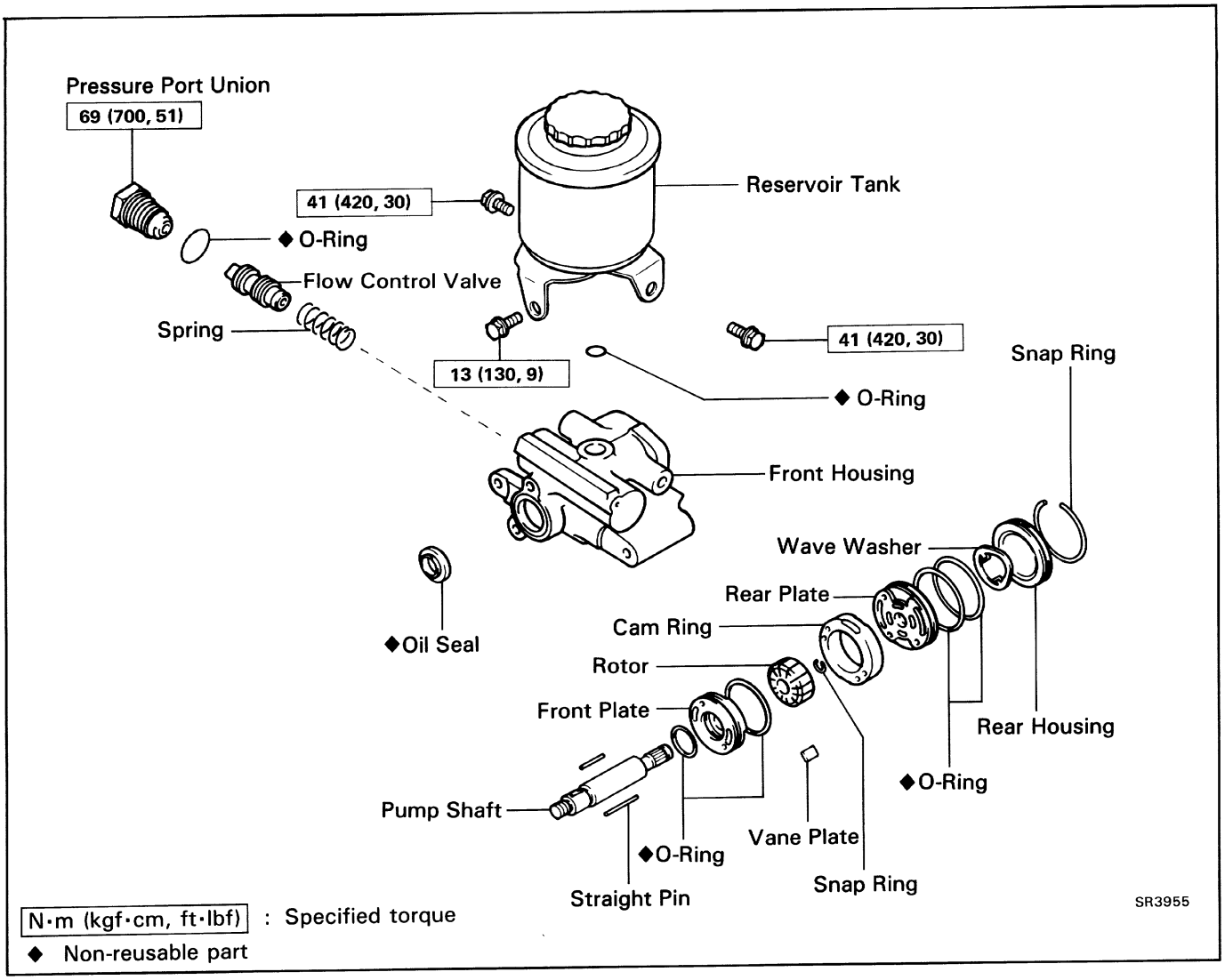
2. LOOSEN PULLEY NUT

Push on the drive belt with your hand to hold the pulley in place and loosen the pulley nut.

3. ADJUST DRIVE BELT TENSION AFTER INSTALLING PS PUMP

(See page SR–19)

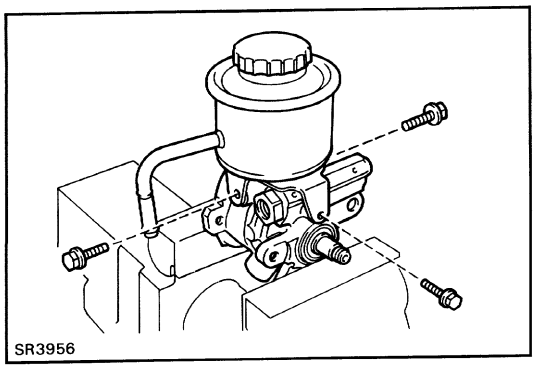
COMPONENTS



DISASSEMBLY OF POWER STEERING PUMP

1. CLAMP PS PUMP IN VISE

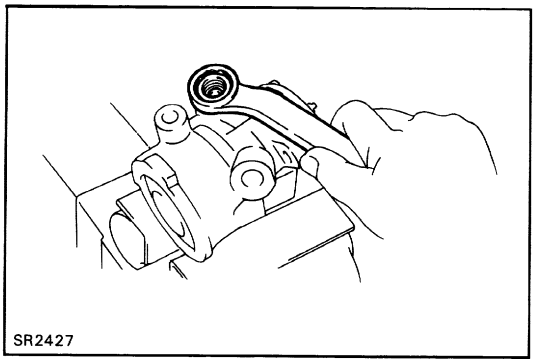
NOTICE: Do not tighten the vise too tight.



2. REMOVE RESERVOIR TANK

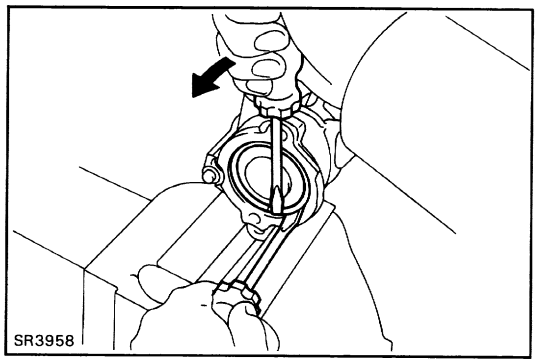
(a) Remove the three bolts and reservoir tank.

(b) Remove the O–ring from the reservoir tank.


SR2427

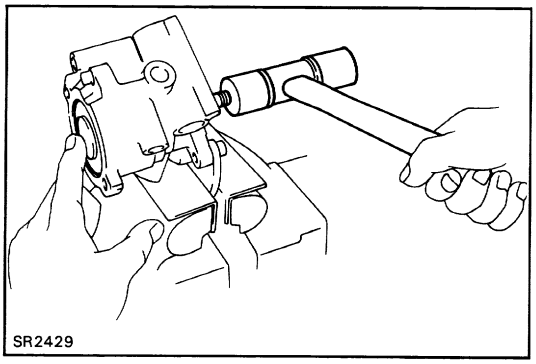
3. REMOVE PRESSURE PORT UNION AND FLOW CONTROL VALVE

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

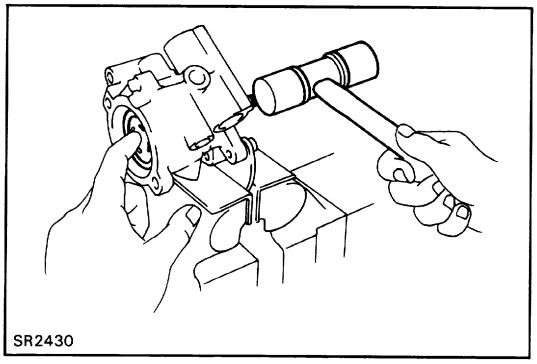

SR3958

4. REMOVE REAR HOUSING

(a) Using two screwdrivers, remove the snap ring.

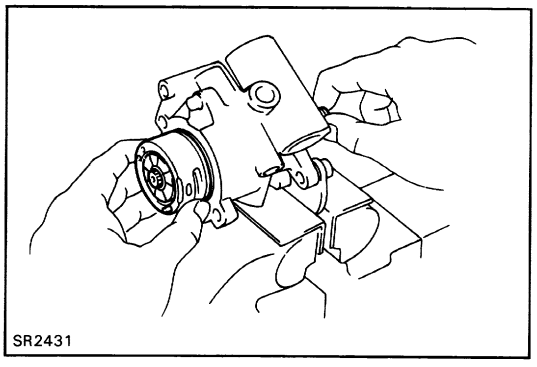

SR2429

(b) Using a plastic hammer, tap out the rear housing and wave washer.
(c) Remove the O–ring from the rear housing.


SR2430

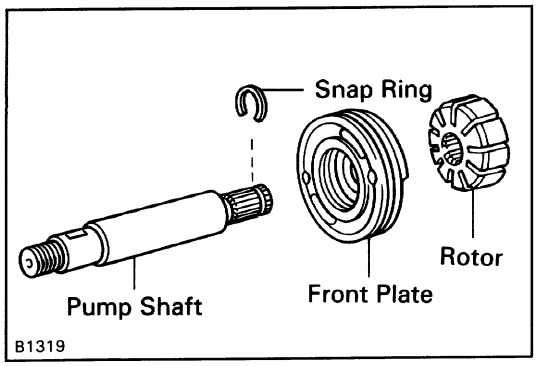
5. REMOVE REAR PLATE

(a) Using a plastic hammer, tap the shaft end and remove the rear plate.
(b) Remove the O–ring from the rear plate.


SR2431

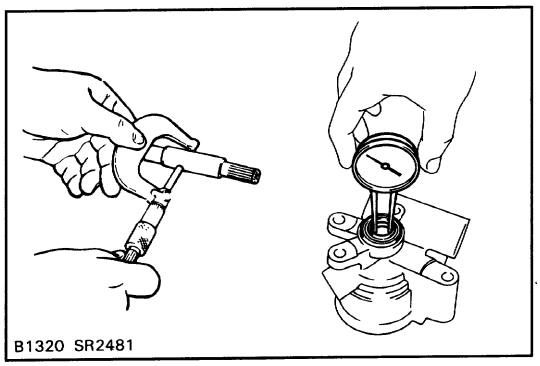
6. REMOVE PUMP SHAFT, CAM RING AND VANE PLATES

(a) Remove the pump shaft with the camring,vane plates from the front housing.
(b) Remove the cam ring and ten vane plates from the pump shaft.
(c) Remove the longer straight pin from the front housing.



7. REMOVE ROTOR AND FRONT PLATE

(a) Using a screwdriver, remove the snap ring.
(b) Remove the rotor and front plate from the pump shaft.
(c) Remove the two O–rings from the front plate.
(d) Remove the straight pin from the front plate.



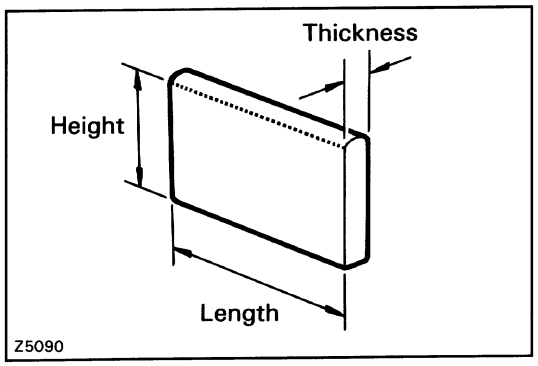
INSPECTION OF POWER STEERING PUMP

1. CHECK OIL CLEARANCE OF SHAFT AND BUSHING

Using a micrometer and calipers, check the oil clearance.

Standard clearance: 0.01 – 0.03 mm
(0.0004 – 0.0012 in.)
Maximum clearance: 0.07 mm (0.0028 in.)

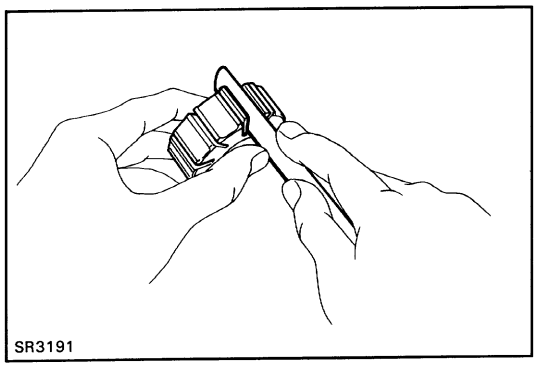
If more than maximum, replace the entire PS pump.



2. INSPECT ROTOR AND VANE PLATES

(a) Using a micrometer, measure the height, thickness and length of the vane plate.

Minimum height: 8.1 mm (0.319 in.)
Minimum thickness: 1.797 mm (0.0707 in.)
Minimum length: 14.988 mm (0.5901 in.)



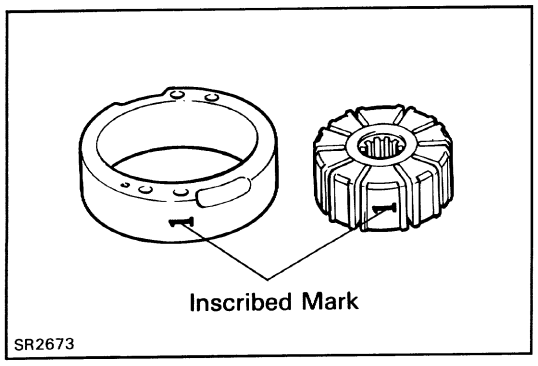
(b) Using a feeler gauge, measure the clearance between the rotor groove and vane plate.

Maximum clearance: 0.028 mm (0.0011 in.)

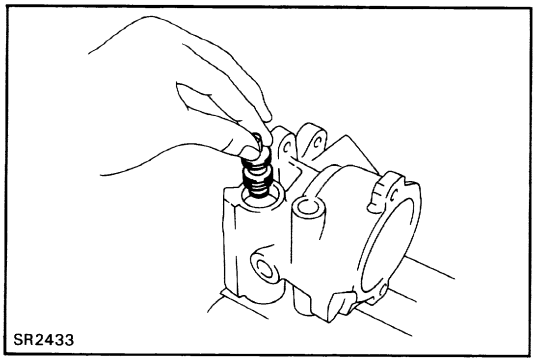
If more than maximum, replace the pump plate and/or rotor with one having the same mark stamped on the cam ring.

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

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

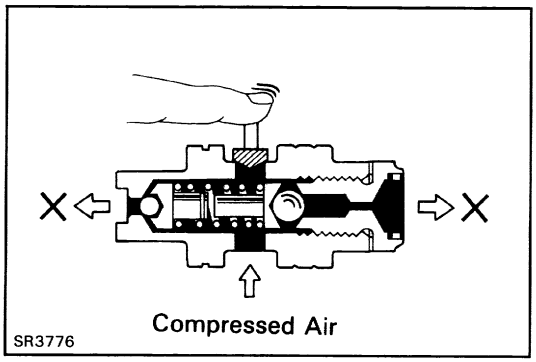


Rotor and cam ring mark	Vane length mm (in.)
None	14.996 – 14.998 (0.59039 – 0.59047)
1	14.994 – 14.996 (0.59032 – 0.59039)
2	14.992 – 14.994 (0.59024 – 0.59032)
3	14.990 – 14.992 (0.59016 – 0.59024)
4	14.988 – 14.990 (0.59008 – 0.59016)


SR2433

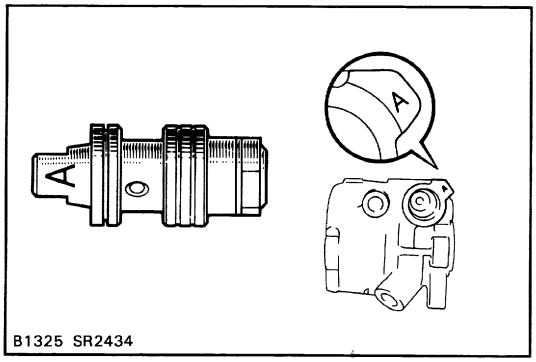
3. INSPECT FLOW CONTROL VALVE

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



SR3776

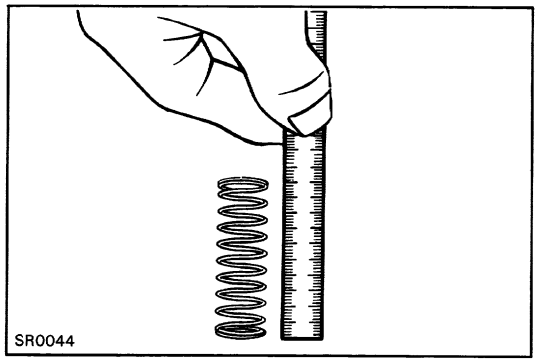
(b) Check the flow control valve for leakage.
Close one of the holes and apply compressed air [392 – 490 kPa (4 – 5 kgf/cm^2, 57 – 71 psi)] into the opposite side, and confirm that air does not come out from the end hole.



B1325 SR2434

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

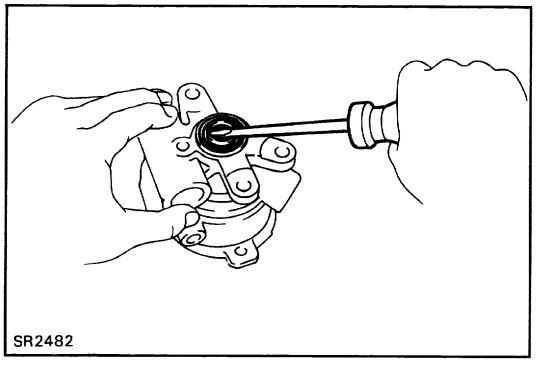

SR0044

4. INSPECT FLOW CONTROL SPRING

Using a scale, measure the free length of the spring.

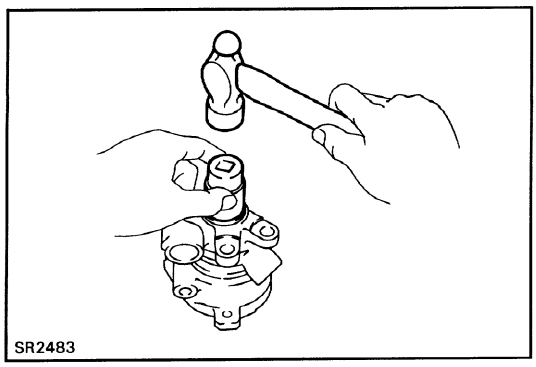
Spring length: 35 – 37 mm (1.38 – 1.46 in.)

If not within specification, replace the spring.


SR2482

5. IF NECESSARY, REPLACE OIL SEAL

(a) Using a screwdriver, pry out the oil seal.

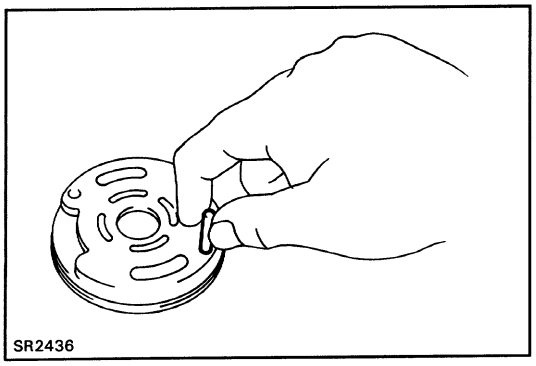

SR2483

(b) Using a socket wrench and hammer, drive in a new oil seal.

ASSEMBLY OF POWER STEERING PUMP

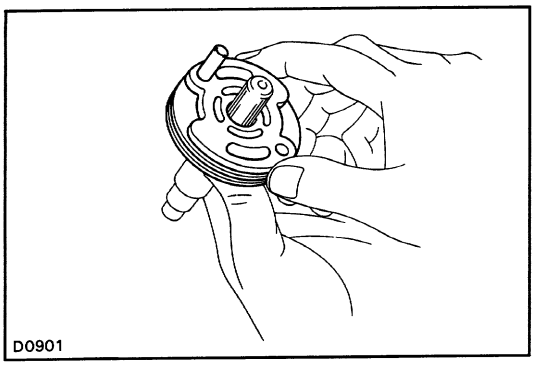
(See page SR–25)

1. COAT ALL SLIDING SURFACES WITH POWER STEERING FLUID BEFORE ASSEMBLY

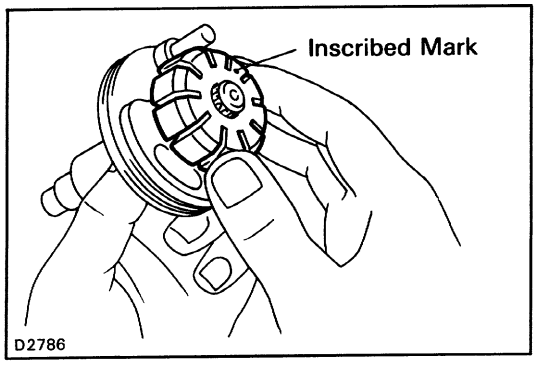

SR2436

2. INSTALL FRONT PLATE AND ROTOR TO PUMP SHAFT

(a) Install the shorter straight pin to the front plate.

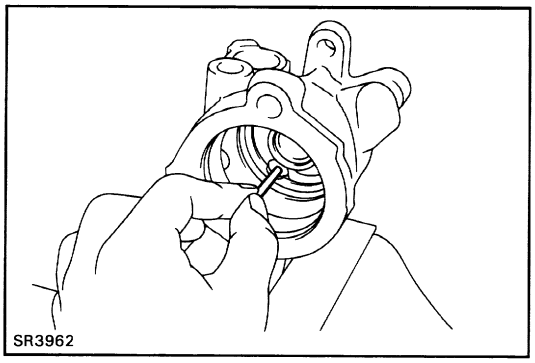

D0901

(b) Install two new O–rings to the front plate.
(c) Install the front plate to the pump shaft.



D2786

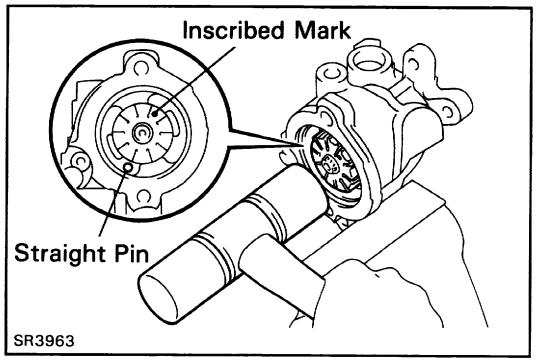
(d) Install the rotor to the pump shaft with the inscribed mark facing outward.
(e) Install the snap ring.



3. INSTALL PUMP SHAFT TO FRONT HOUSING

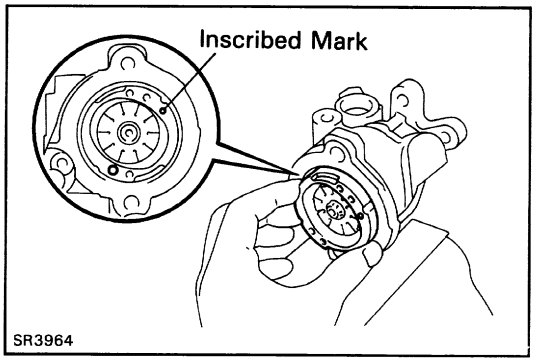
(a) Coat the oil seal lip with MP grease.

(b) Install the longer straight pin to the front housing.



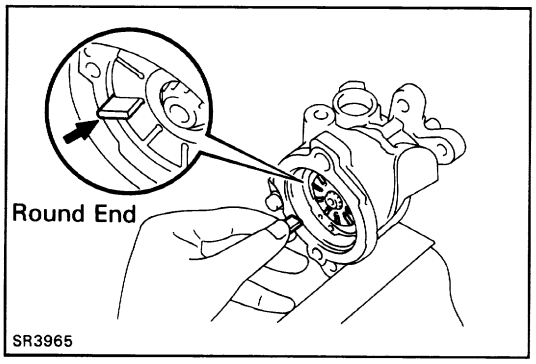
(c) Align the hole of the front plate and straight pin and tap in the pump shaft with a plastic hammer.

HINT: Be careful not to damage the oil seal and 0–rings.



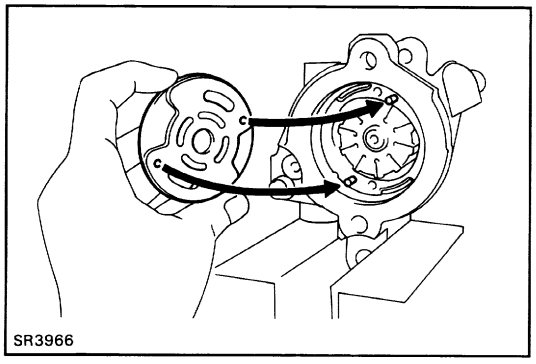
4. INSTALL CAM RING

Align the oval hole of the cam ring and longer straight pin, and install the cam ring with the inscribed mark facing outward.



5. INSTALL VANE PLATES

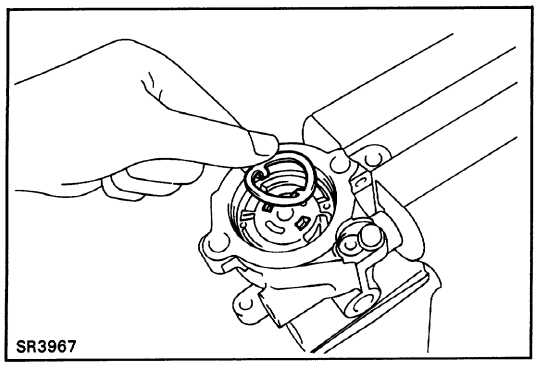
Install the ten vane plates with the round end facing outward.



6. INSTALL REAR PLATE

(a) Install a new O–ring to the rear plate.

(b) Align the holes of the rear plate with the pins, and install the plate.

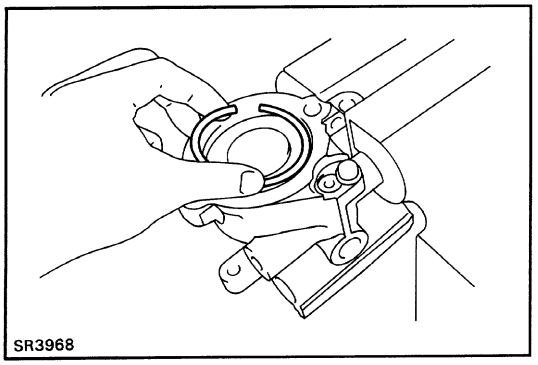

SR3967

7. INSTALL REAR HOUSING

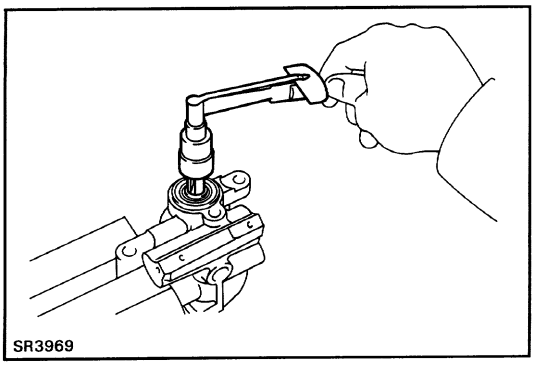
(a) Install the wave washer.

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

(c) Using a plastic hammer, tap in the rear housing.


SR3968

(d) Install the snap ring.


SR3969

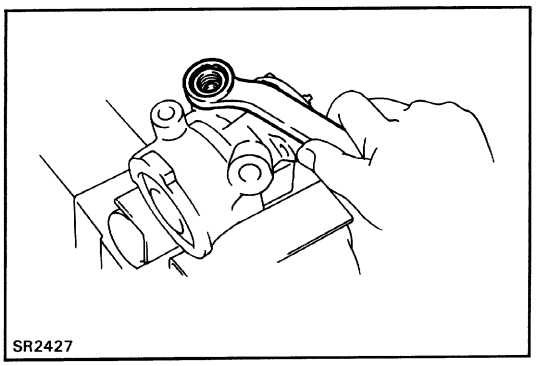
8. CHECK PUMP SHAFT PRELOAD

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

(b) Temporarily install the pulley nut and check the rotating torque.

Rotating torque:

0.3 N–m (2.8 kgf–cm, 2.4 in.–lbf) or less


SR2427

9. INSTALL SPRING, FLOW CONTROL VALVE AND PRESSURE PORT UNION

(a) Install the spring and the valve into the housing.

(b) Install a new O–ring in the groove of the pressure port union.

(c) Install and torque the pressure port union.

Torque: 69 N–m (700 kgf–cm, 51 ft–lbf)

10. INSTALL RESERVOIR TANK

(a) Install a new O–ring to the reservoir tank.

(b) Install the reservoir tank to the housing and torque the three bolts.

Torque: 12 mm bolt 13 N–m (130 kgf–cm, 9 ft–lbf)

14 mm bolt 41 N–m (420 kgf–cm, 30 ft–lbf)