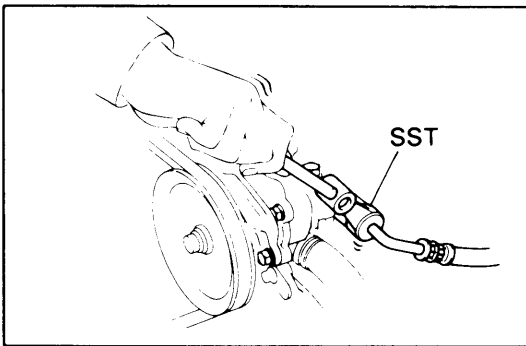
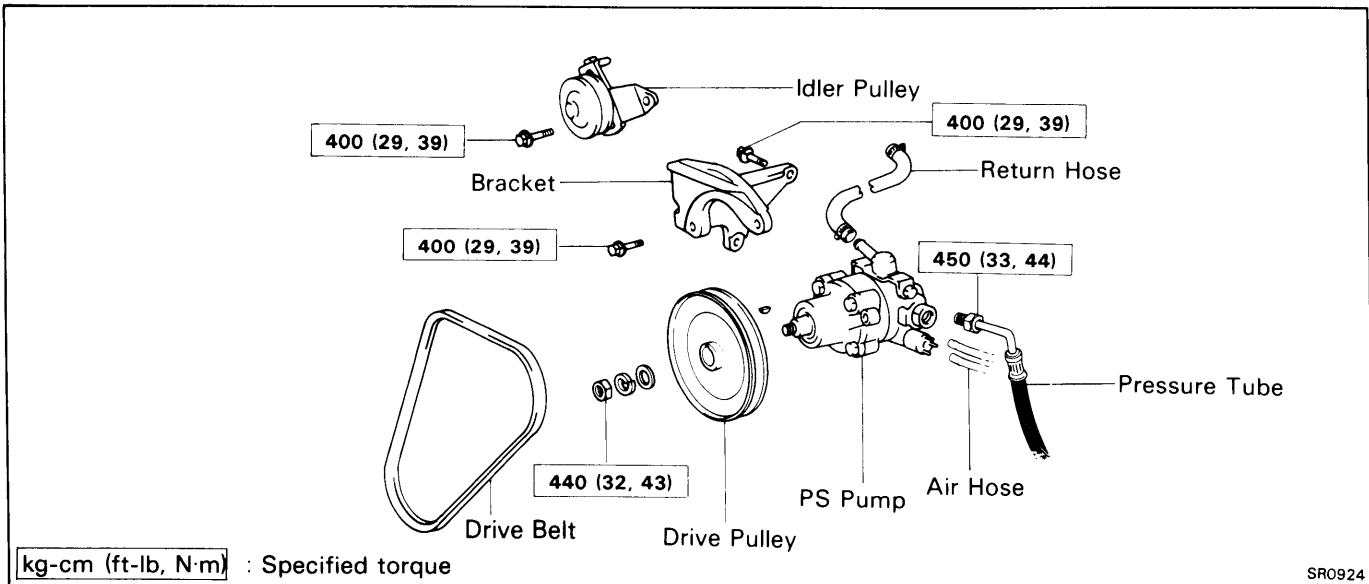


Power Steering Pump

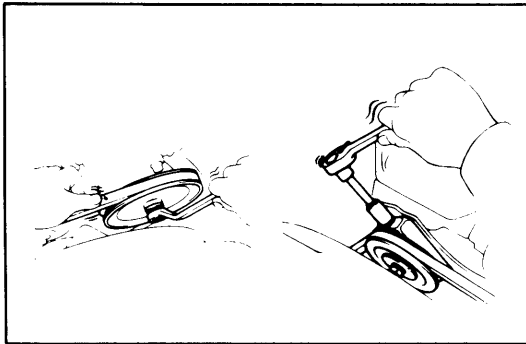
REMOVAL OF POWER STEERING PUMP



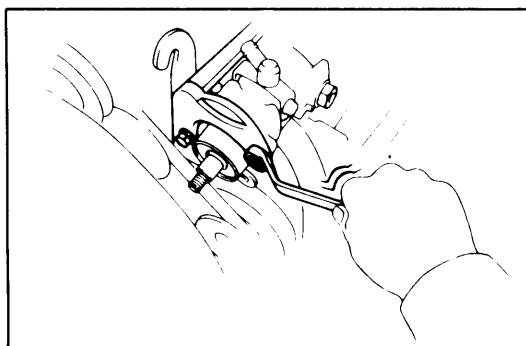
1. **DISCONNECT AIR HOSES FROM AIR CONTROL VALVE**
2. **DRAIN FLUID FROM RESERVOIR TANK**
3. **DISCONNECT RETURN HOSE FROM POWER STEERING PUMP**
4. **DISCONNECT PRESSURE TUBE FROM POWER STEERING PUMP**

Using SST, loosen and disconnect the pressure tube.

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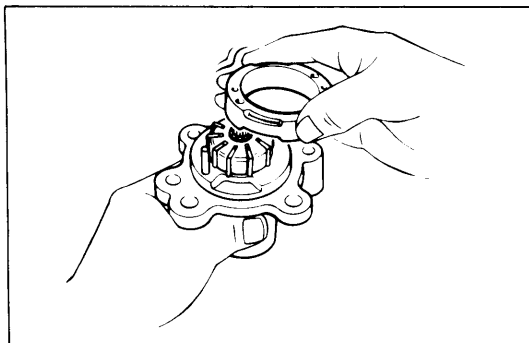
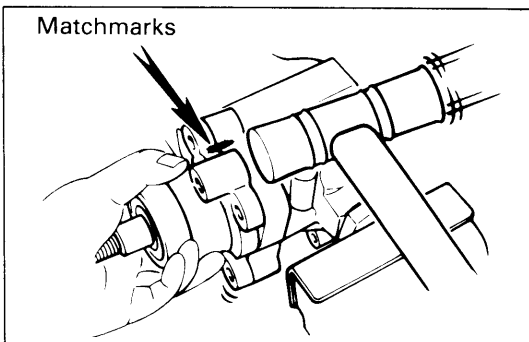
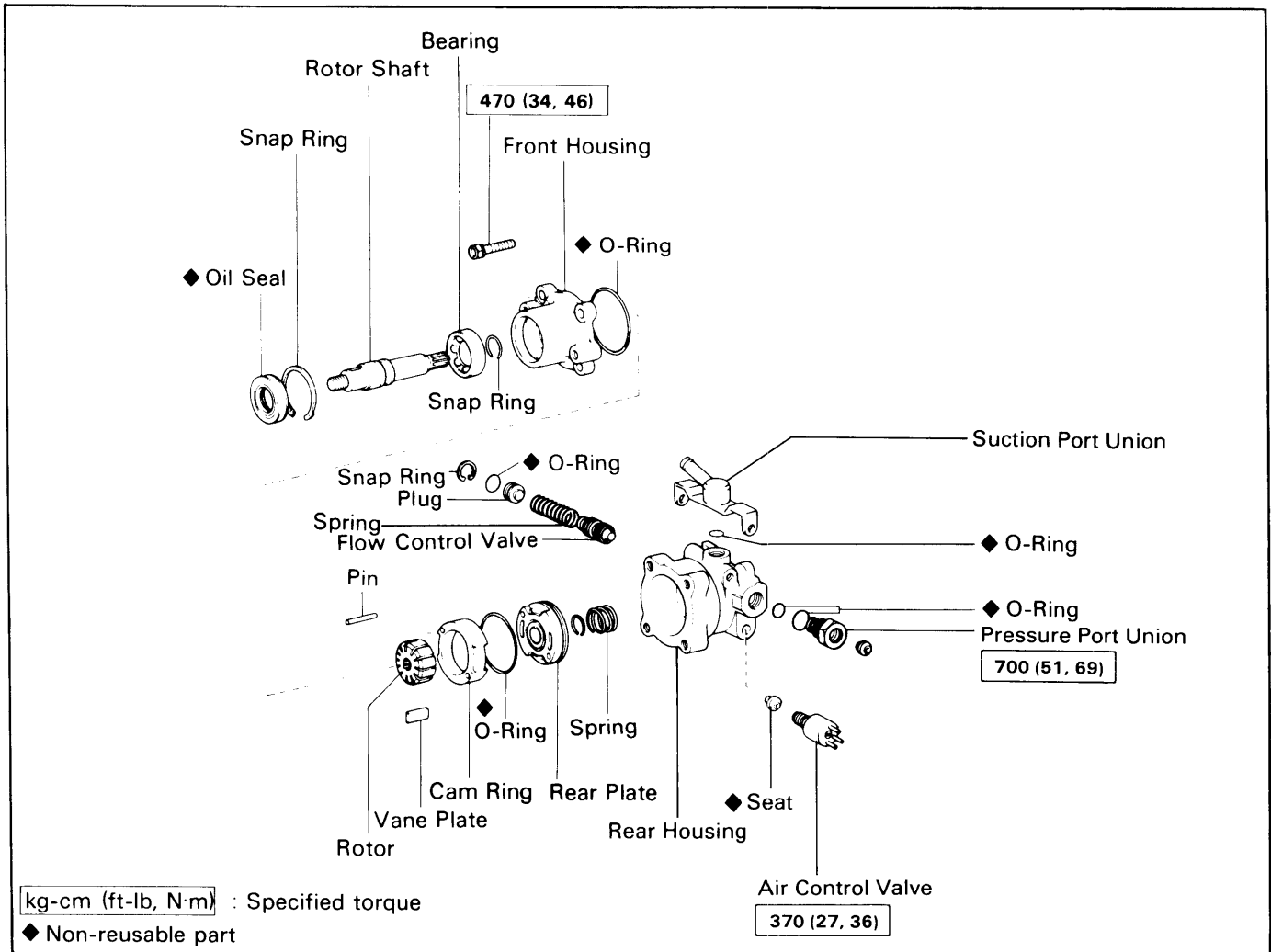
5. **REMOVE DRIVE BELT AND PULLEY**
 - (a) Push on the drive belt to hold the pulley in place and remove the pulley set nut.
 - (b) Loosen the drive belt adjust bolt.
 - (c) Remove the drive belt.
 - (d) Remove the pulley and woodruff key.



6. **REMOVE POWER STEERING PUMP**

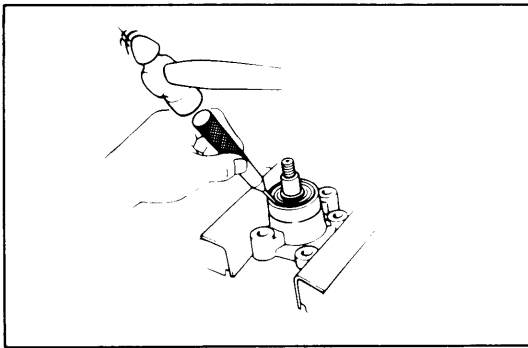
Remove the PS pump mount bolts, and remove the PS pump from the bracket.

COMPONENTS



DISASSEMBLY OF POWER STEERING PUMP

1. CLAMP POWER STEERING PUMP IN VISE
 CAUTION: Do not tighten the vise too tight.
2. REMOVE AIR CONTROL VALVE FROM REAR HOUSING
3. REMOVE UNION FROM REAR HOUSING
4. MARK FRONT AND REAR HOUSINGS TO INSURE CORRECT REASSEMBLY
5. REMOVE FRONT HOUSING
 - (a) Remove the four front housing bolts.
 - (b) Using a plastic hammer, tap off the front housing.
 CAUTION: Be careful that the vane plates, rotor and cam ring do not fall out.
6. REMOVE CAM RING, ROTOR AND VANE PLATES
 CAUTION: Be careful not to scratch the cam ring, rotor or vane plates.



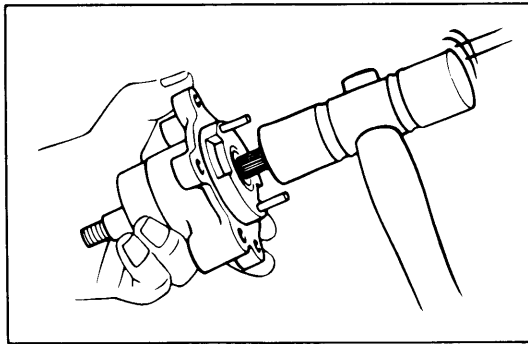
7. REMOVE ROTOR SHAFT

(a) Clamp the front housing in a vise.

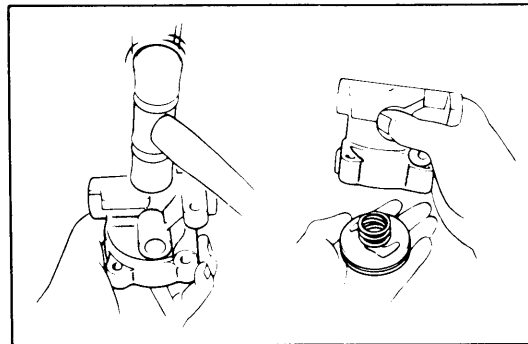
CAUTION: Do not tighten the vise too tight.

(b) Using a chisel and hammer, pry off the oil seal.

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



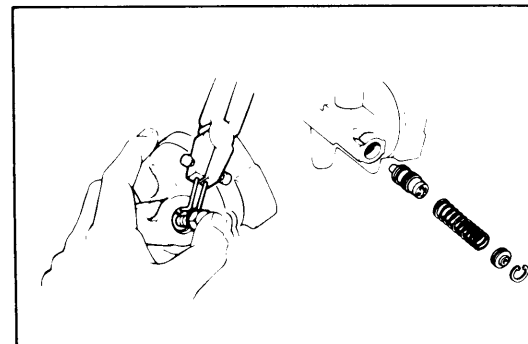
(d) Using a plastic hammer, lightly tap the rotor shaft out of the front housing.



8. REMOVE REAR PLATE AND SPRING

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

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



9. REMOVE FLOW CONTROL VALVE

(a) Temporarily install a bolt to the plug.

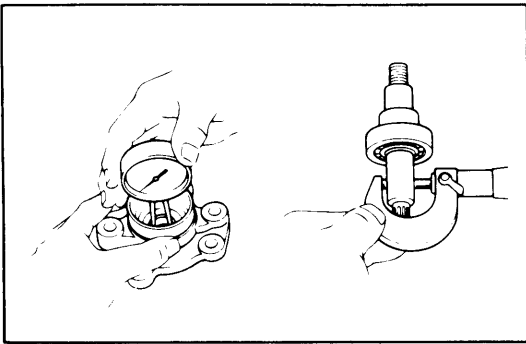
(b) Push the bolt and remove the snap ring with snap ring pliers.

(c) Pull out the bolt and remove the plug.

(d) Remove the spring and flow control valve by hand.

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

10. REMOVE PRESSURE PORT UNION

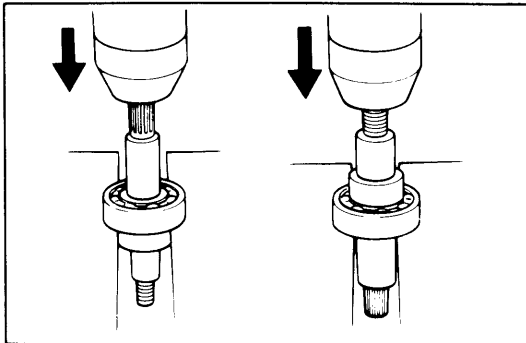


INSPECTION OF POWER STEERING PUMP

1. INSPECT BUSHING AND MEASURE BUSHING OIL CLEARANCE

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

Maximum oil clearance: 0.07 mm (0.0028 in.)



2. IF NECESSARY, REPLACE ROTOR SHAFT BEARING

- Using snap ring pliers, remove the snap ring.
- Using a press, press out the bearing.
- Using a press, press in the bearing.
- Using snap ring pliers, install the snap ring.

3. INSPECT AND MEASURE VANE PLATES

- Check the vane plates for wear or scratches.
- Measure the length, height and thickness of the vane plates.

Minimum length: 14.97 mm (0.5894 in.)

Minimum height: 7.8 mm (0.307 in.)

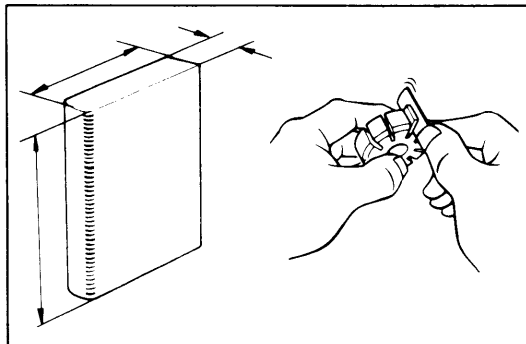
Minimum thickness: 1.7 mm (0.067 in.)

- Measure the clearance between the vane plate and rotor groove.

Maximum clearance: 0.06 mm (0.0024 in.)

NOTE: There are five vane lengths with the following rotor and cam ring numbers:

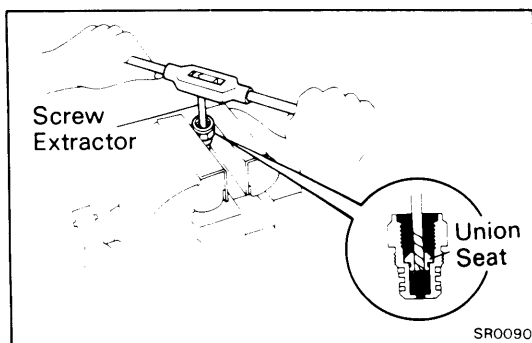
| Rotor and cam ring number | Vane length | mm (in.) |
|---------------------------|---------------|-------------------|
| None | 14.996–14.998 | (0.5904–0.5905) |
| 1 | 14.994–14.996 | (0.5903–0.5904) |
| 2 | 14.992–14.994 | (0.5902–0.5903) |
| 3 | 14.990–14.992 | (0.59016–0.59024) |
| 4 | 14.988–14.990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



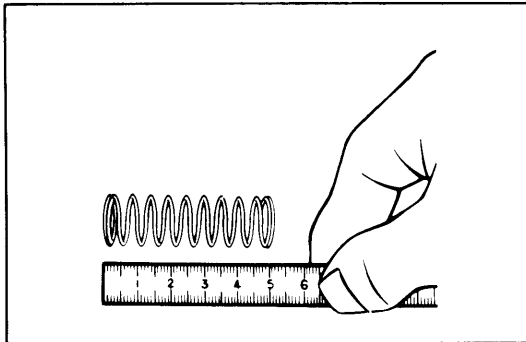
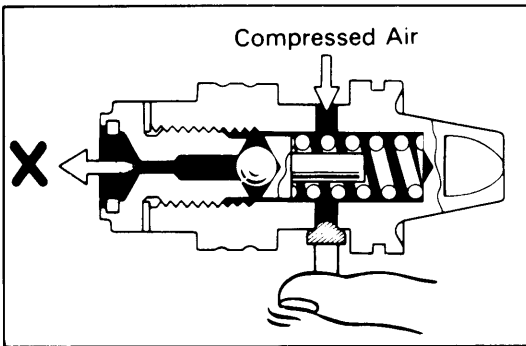
4. IF NECESSARY, REPLACE UNION SEAT

- Using a screw extractor, remove the union seat.
- Install a new union seat.

NOTE: Only floating type parts are available.



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5. INSPECT FLOW CONTROL VALVE AND MEASURE SPRING

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

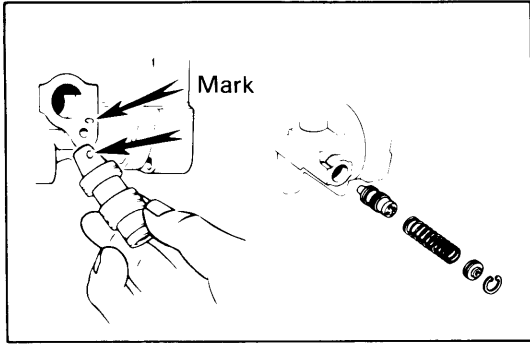
If necessary, replace the valve with one having the same letter as on the rear housing.

- (d) Check that the spring is within specification.

Standard length: 50.0 mm (1.969 in.)

Minimum length: 47.0 mm (1.850 in.)

If the spring is not within specification, replace it.



ASSEMBLY OF POWER STEERING PUMP

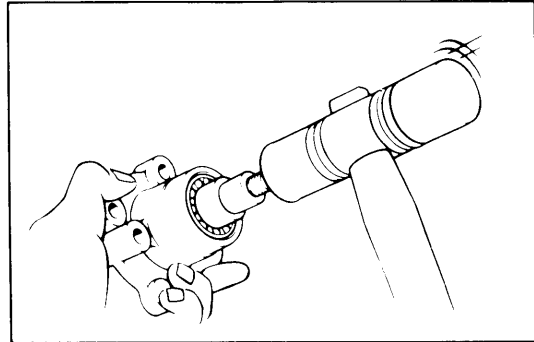
(See page SR-30)

1. INSTALL FLOW CONTROL VALVE

NOTE: Be sure the letter inscribed on the flow control valve matches the letter stamped on the rear of the pump body.

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

Install the flow control valve, spring, plug and snap ring.



2. INSTALL PRESSURE PORT UNION

Install and torque the union.

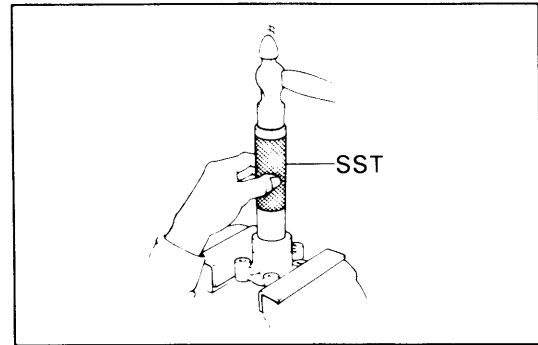
Torque: **700 kg-cm (51 ft-lb, 69 N·m)**

3. INSTALL ROTOR SHAFT TO FRONT HOUSING

Install the rotor shaft into the front housing by tapping it in with a plastic hammer.

4. INSTALL SNAP RING

Using snap ring pliers, install the snap ring to the front housing.

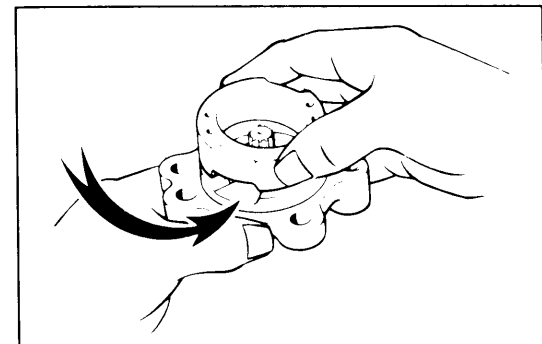


5. INSTALL OIL SEAL

(a) Apply a light coat of MP grease to a new oil seal lip.

(b) Using SST and a hammer, install the oil seal.

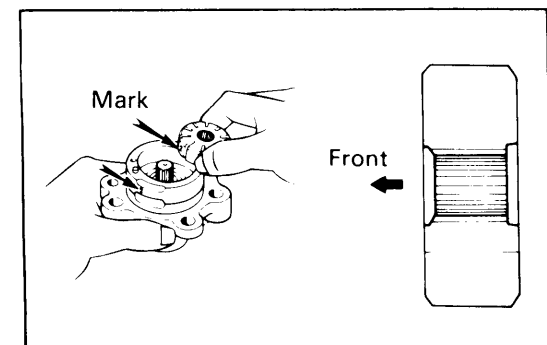
SST 09608-30012 (09608-04020)



6. INSTALL O-RING

7. INSTALL CAM RING

Align the fluid passages of the cam ring and front housing, and install the cam ring.



8. INSTALL ROTOR

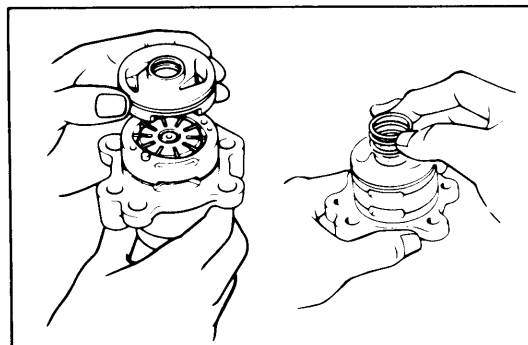
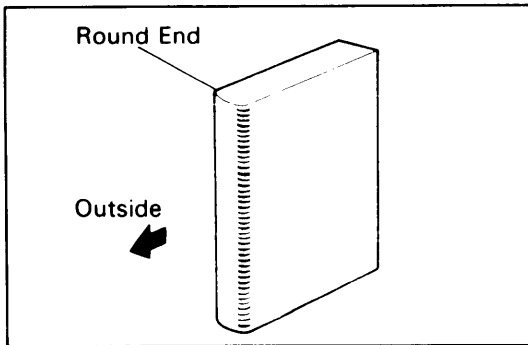
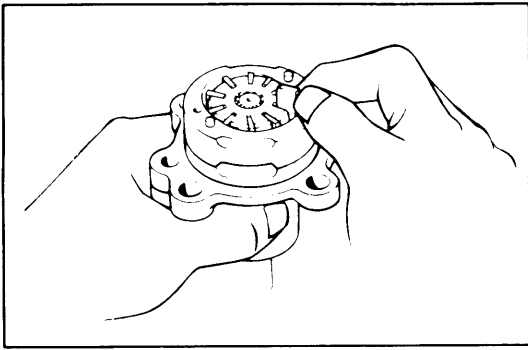
Install the rotor with the chamfered end facing toward the front.

NOTE: Be sure the letters inscribed on the cam ring and rotor match.

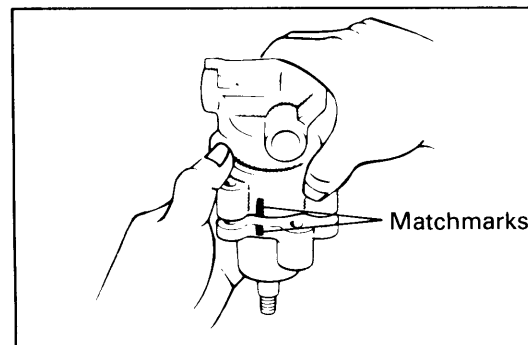
Inscribed mark: **1, 2, 3, 4 or None**

9. INSTALL VANE PLATES

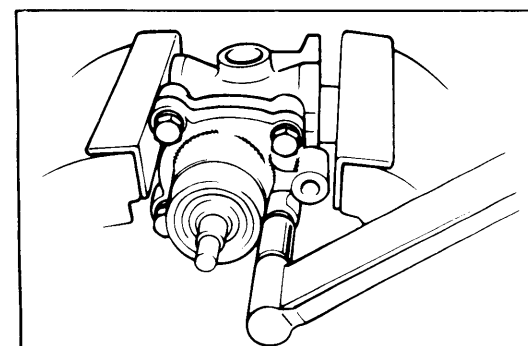
Install the vane plates with the round end facing outward.

**10. INSTALL REAR PLATE AND SPRING**

- (a) Align the fluid passages of the rear plate and cam ring, and install the rear plate with the spring.
- (b) 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) Tighten the front and rear housing mount bolts by hand.

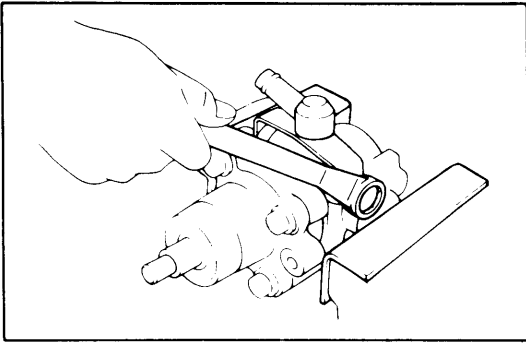
**12. TIGHTEN FOUR HOUSING BOLTS**

- (a) Clamp the rear housing in a vise.

CAUTION: Do not tight the vise too tight.

- (b) Tighten the four housing bolts evenly in 3 or 4 passes.

Torque: 470 kg-cm (34 ft-lb, 46 N·m)

**13. INSTALL UNION TO REAR HOUSING**

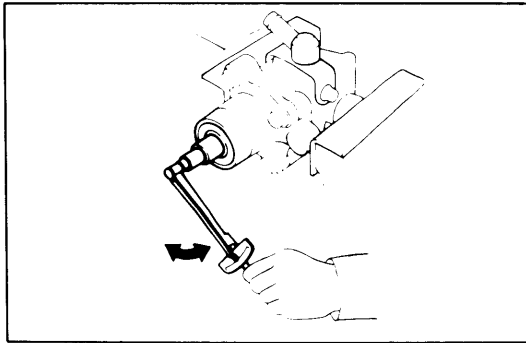
Insert and tighten the union.

Torque: 130 kg-cm (9 ft-lb, 13 N·m)

14. INSTALL AIR CONTROL VALVE TO REAR HOUSING

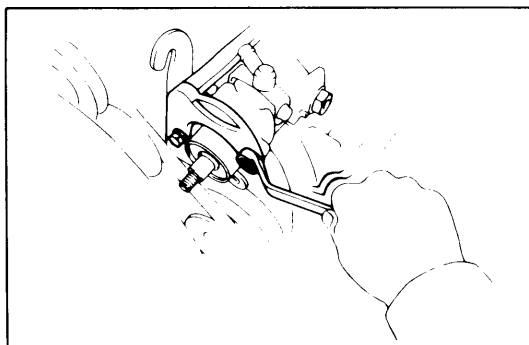
Install and tighten the air control valve.

Torque: 370 kg-cm (27 ft-lb, 36 N·m)

**15. CHECK ROTOR SHAFT ROTATION CONDITION**

- (a) Check that the rotor shaft rotates smoothly without abnormal noise.
- (b) Provisionally install the pulley nut and check the rotation torque.

**Rotation torque: Less than 2.8 kg-cm
(2.4 in.-lb, 0.3 N·m)**



INSTALLATION OF POWER STEERING PUMP

(See page SR-29)

1. INSTALL POWER STEERING PUMP

Place the PS pump in position and torque the mount bolts.

Torque: 400 kg-cm (29 ft-lb, 39 N·m)

2. INSTALL PULLEY AND DRIVE BELT

(a) Install the woodruff key, pulley and set nut.

(b) Install the drive belt.

(c) Turn the adjusting bolt until the belt tension is at specified value.

(d) Using a belt tension gauge, check the drive belt tension.

Belt tension gauge:

Nippondenso BTG-20 (95506-00020) or

Borroughs No. BT-33-73F

Drive belt tension: New belt 125 ± 25 lb

Used belt 80 ± 20 lb

If necessary, adjust the belt tension.

NOTE:

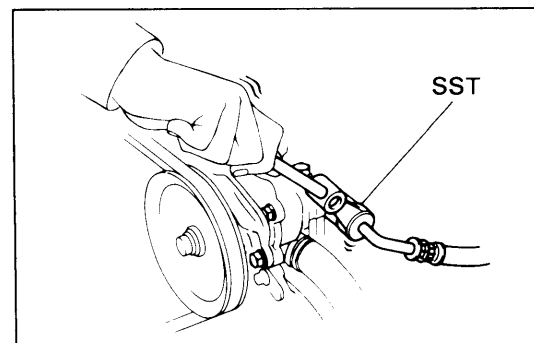
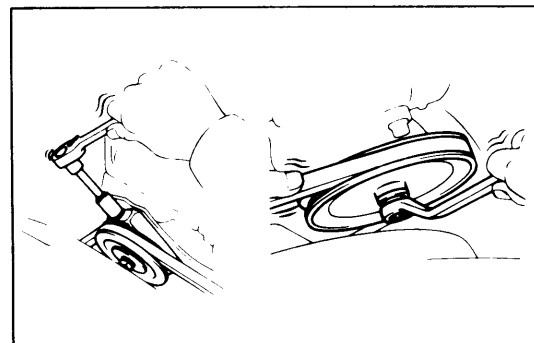
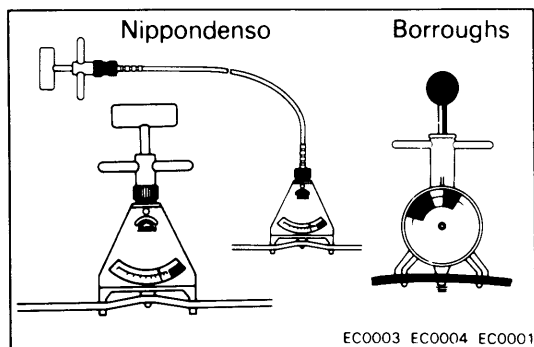
- "New belt" refers to a belt which has been used less than 5 minutes on a running engine.

- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.

(e) Tighten the idler pulley nut.

(f) Push down on the drive belt to hold the pulley in place and torque the pulley set nut.

Torque: 440 kg-cm (32 ft-lb, 43 N·m)



3. CONNECT PRESSURE TUBE TO POWER STEERING PUMP

Using SST, torque the flare nut.

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Torque: 450 kg-cm (33 ft-lb, 44 N·m)

4. CONNECT RETURN HOSE TO RESERVOIR TANK

5. CONNECT AIR HOSES TO AIR CONTROL VALVE

6. FILL RESERVOIR WITH FLUID

Fluid: ATF DEXRON® or DEXRON® II

7. BLEED POWER STEERING

8. CHECK FOR FLUID LEAKS

