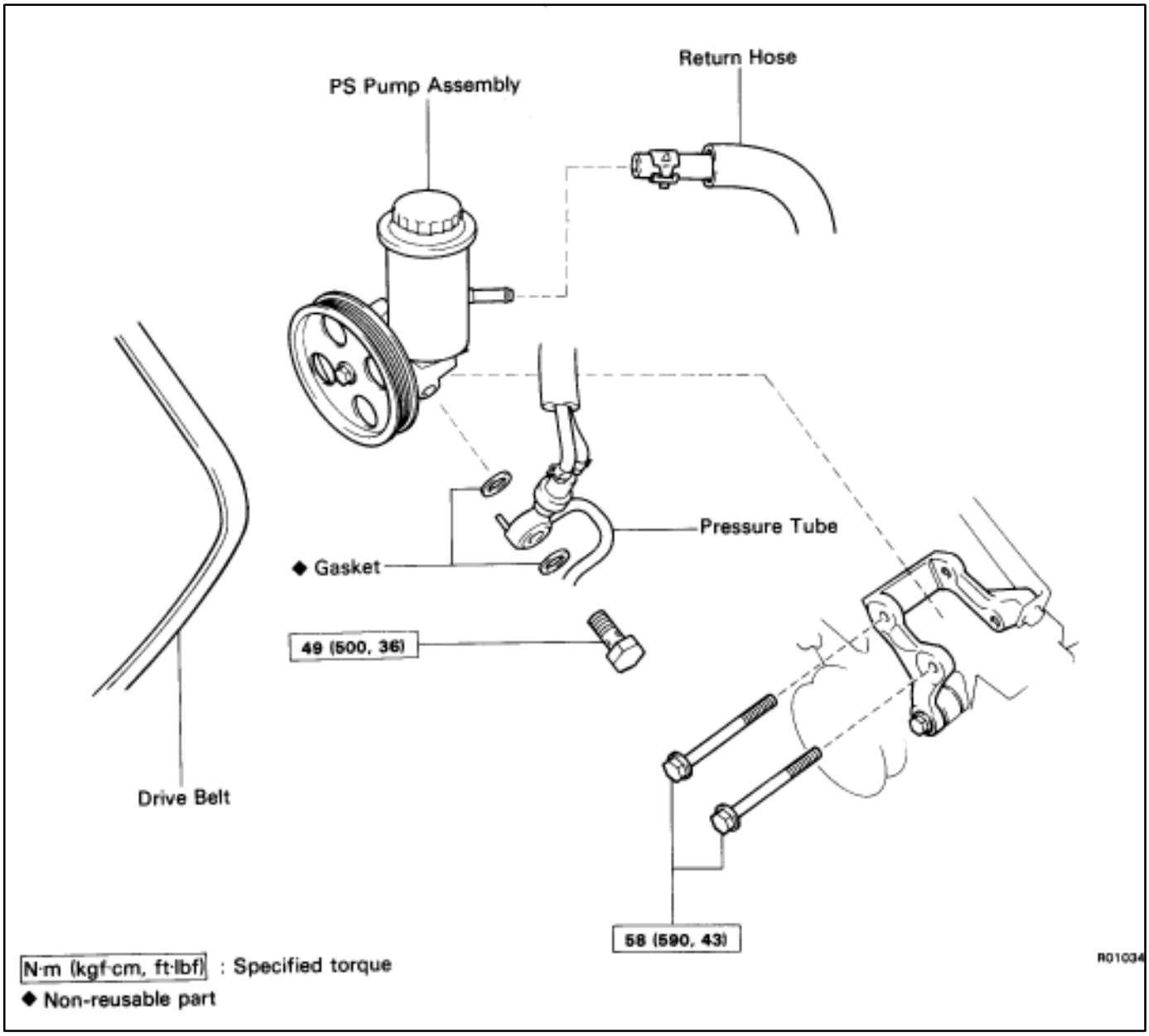
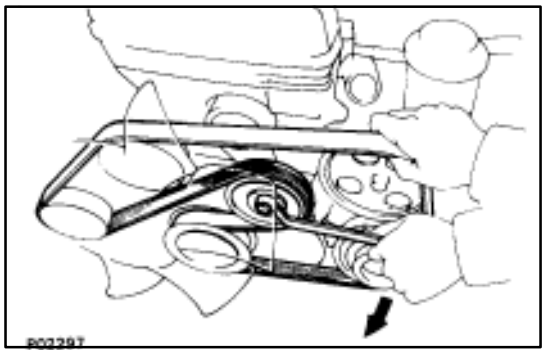
Power Steering Pump

REMOVAL AND INSTALLATION OF POWER STEERING PUMP

Remove and install the parts as shown.

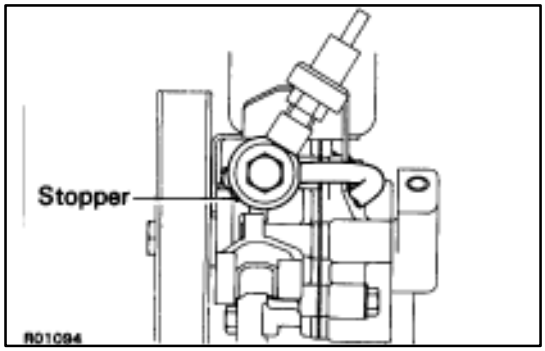




(MAIN POINTS OF REMOVAL AND INSTALLATION)

1. REMOVE DRIVE BELT

Loosen the drive belt tension by turning the drive belt tensioner clockwise, and remove the drive belt.



2. CONNECT PRESSURE TUBE

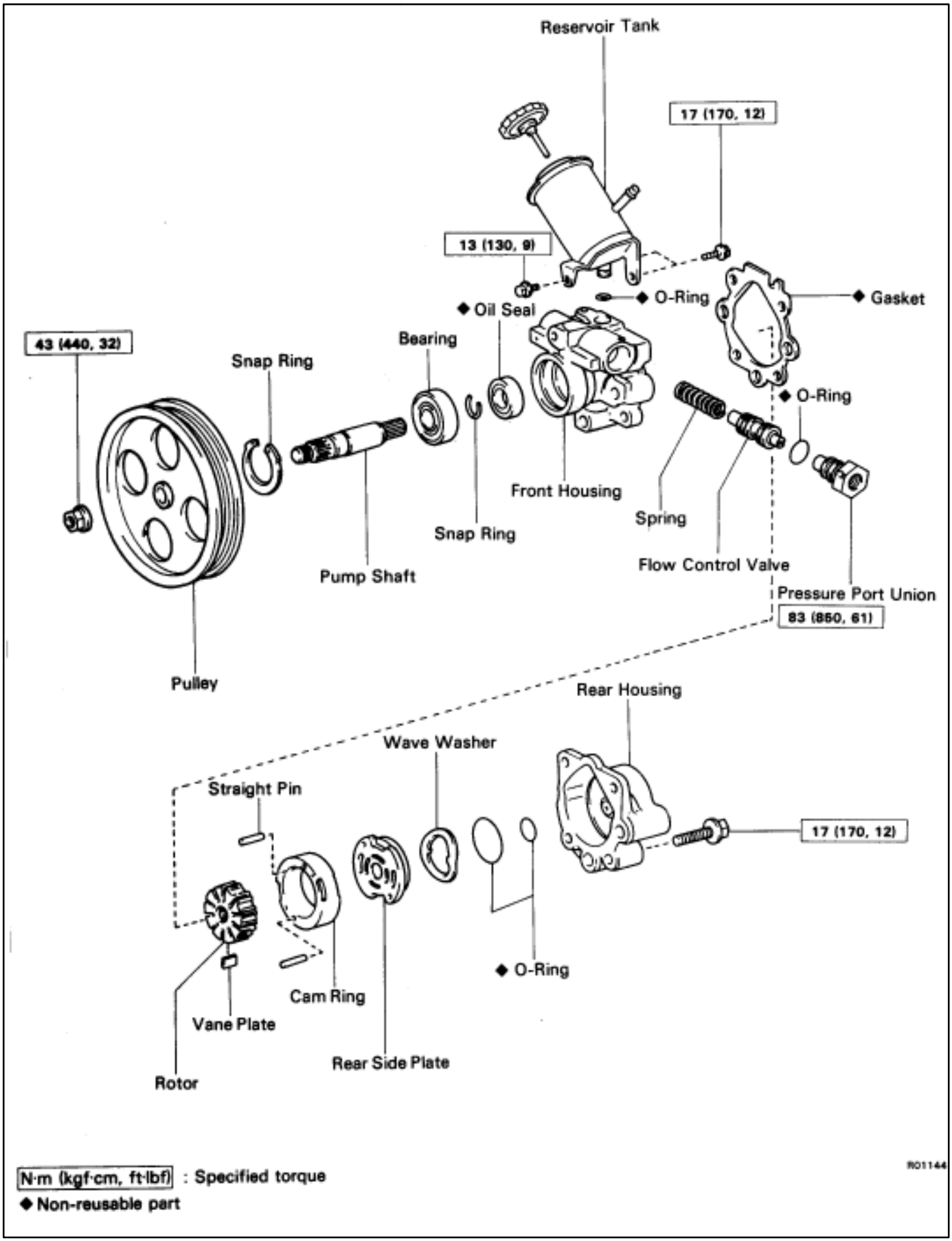
Make sure the stopper is touching the pump housing as shown, then torque the union bolt.

Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

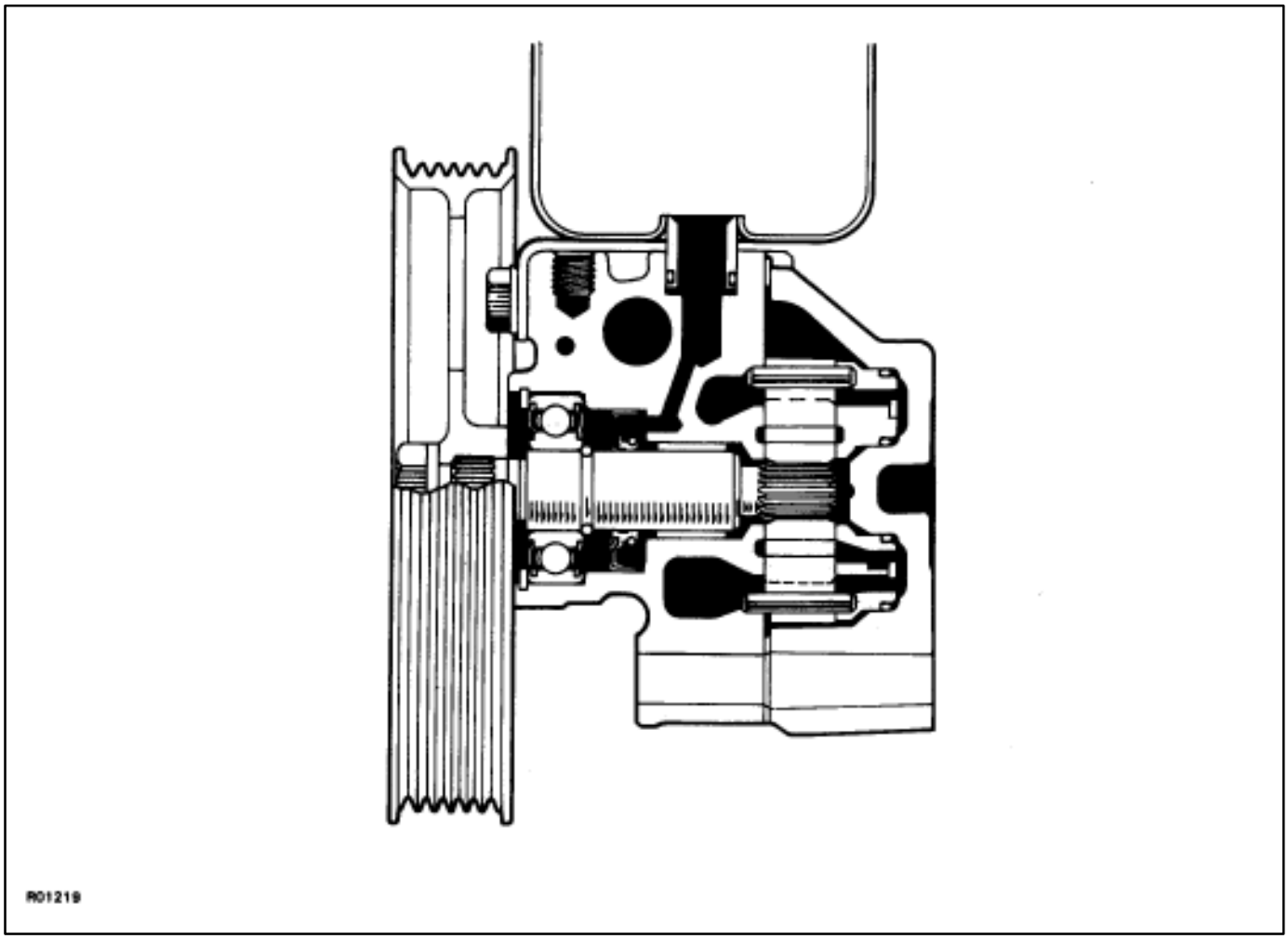
3. BLEED POWER STEERING SYSTEM

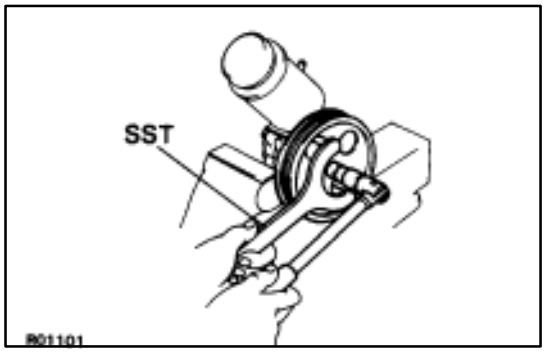
(See page SR–95)

COMPONENTS


Reservoir Tank
17 (170, 12)
13 (130, 9)
◆ O-Ring
◆ Gasket
◆ Oil Seal
43 (440, 32)
Snap Ring
Bearing
◆ O-Ring
Front Housing
Spring
Snap Ring
Flow Control Valve
Pump Shaft
Pressure Port Union
83 (850, 61)
Pulley
Rear Housing
Wave Washer
Straight Pin
17 (170, 12)
◆ O-Ring
Cam Ring
Vane Plate
Rear Side Plate
Rotor
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
R01144

SECTIONAL VIEW





DISASSEMBLY OF POWER STEERING PUMP

1. MOUNT POWER STEERING PUMP IN VISE

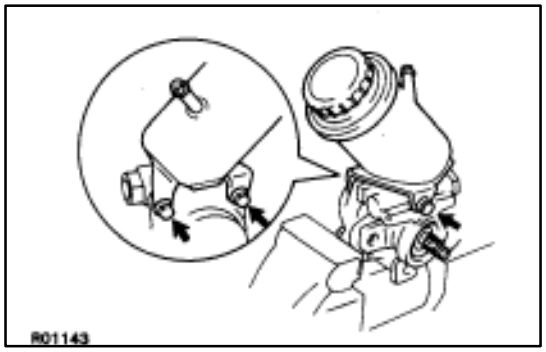
NOTICE: Do not tighten the vise too tight.

2. REMOVE PUMP PULLEY

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

SST 09278–54012

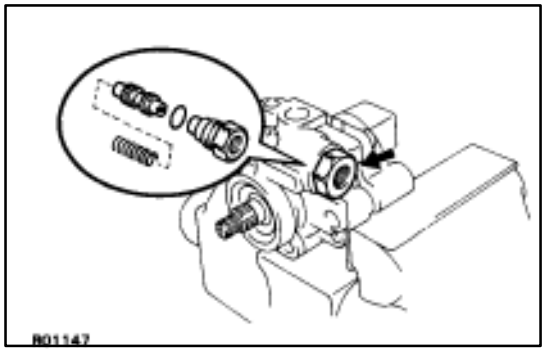
(b) Remove the pulley.



3. REMOVE RESERVOIR TANK

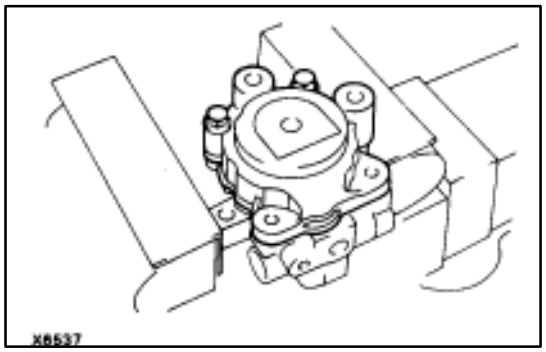
(a) Remove the three bolts and reservoir tank.

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



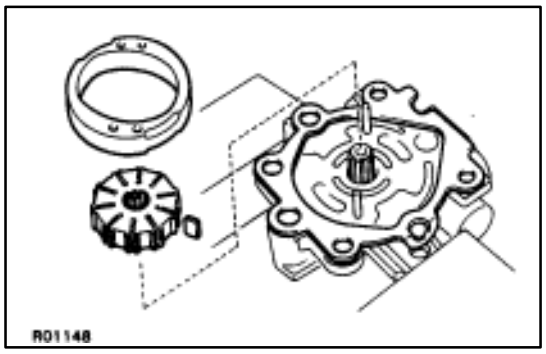
4. REMOVE PRESSURE PORT UNION, FLOW CONTROL VALVE AND SPRING

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



5. REMOVE REAR HOUSING

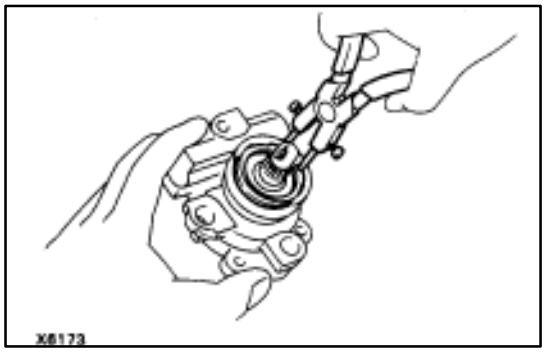
Remove the two bolts and rear housing.



6. REMOVE CAM RING, ROTOR AND VANE PLATES

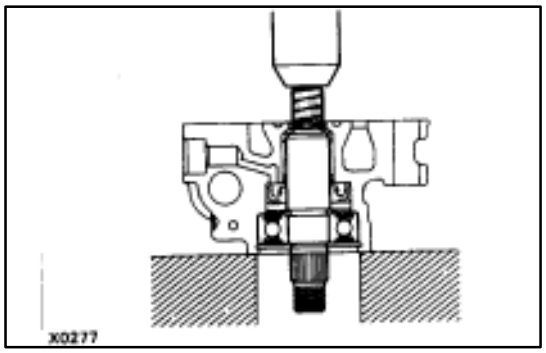
7. REMOVE STRAIGHT PINS

8. REMOVE GASKET

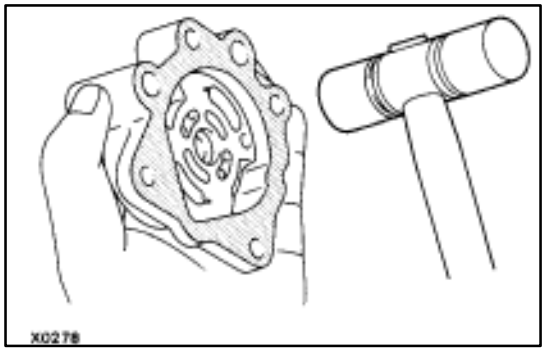


9. REMOVE VANE PUMP SHAFT WITH BEARING

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



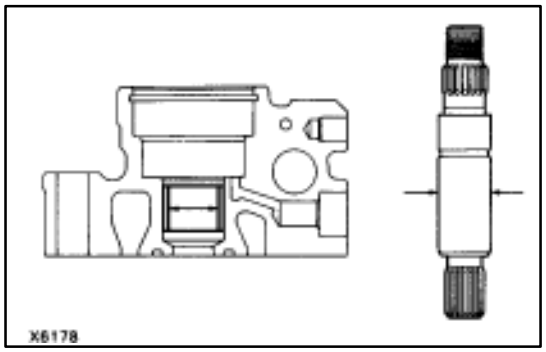
(b) Using a press, press out the shaft with the bearing.



10. REMOVE REAR SIDE PLATE

(a) Using a plastic hammer, tap out the side plate and wave washer.

(b) Remove the two O–rings.



INSPECTION OF POWER STEERING PUMP

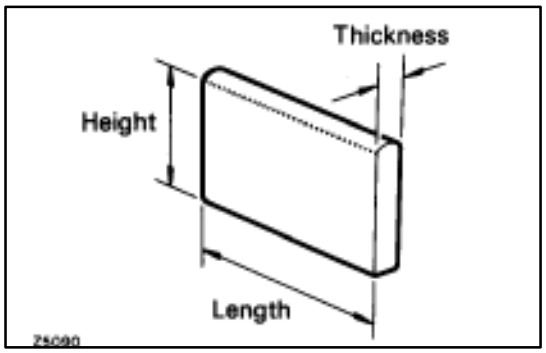
1. MEASURE OIL CLEARANCE OF SHAFT AND BUSHING

Using a micrometer and calipers, 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 more than maximum, replace the entire power steering pump.



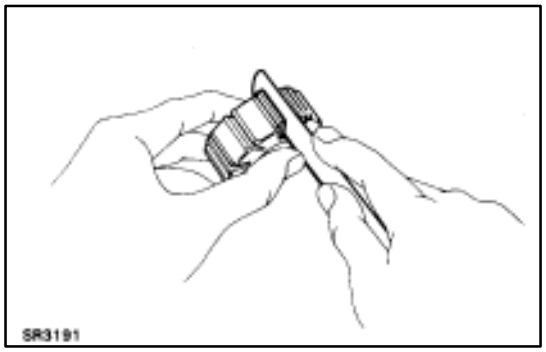
2. INSPECT ROTOR AND VANE PLATES

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

Minimum height: 8.5 mm (0.335 in.)

Minimum thickness: 1.37 mm (0.0539 in.)

Minimum length: 14.97 mm (0.5894 in.)



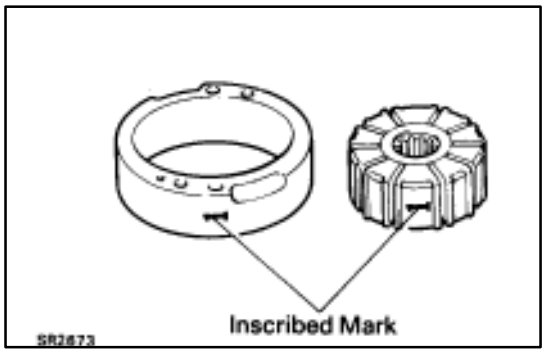
(b) Using a feeler gauge, measure the clearance between the rotor groove and vane plate.

Maximum clearance: 0.04 mm (0.0016 in.)

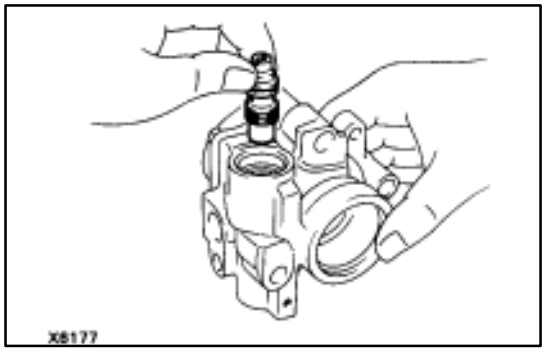
If more than maximum, replace the vane plate and/or rotor with one having the same mark stamped on the cam ring.

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

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

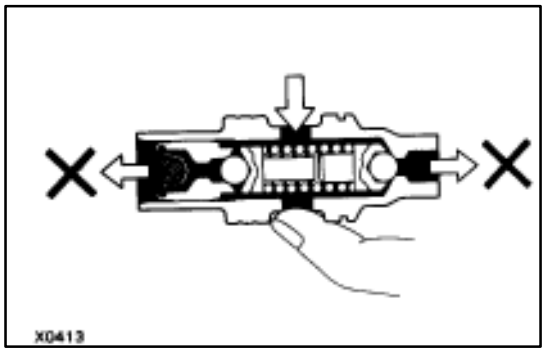


Rotor and cam ring number	Vane length mm (in.)
None	14.999 – 15.001 (0.59051 – 0.59059)
1	14.997 – 14.999 (0.59043 – 0.59051)
2	14.995 – 14.997 (0.59035 – 0.59043)
3	14.993 – 14.995 (0.59027 – 0.59035)
4	14.991 – 14.993 (0.59020 – 0.59027)

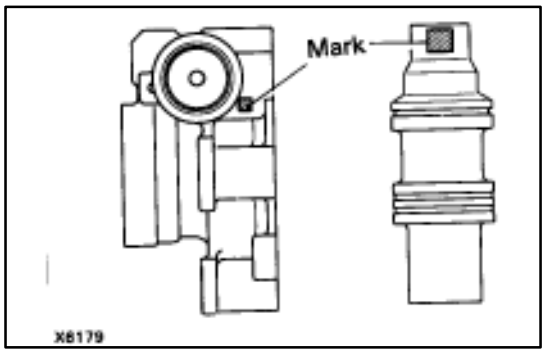


3. INSPECT FLOW CONTROL VALVE

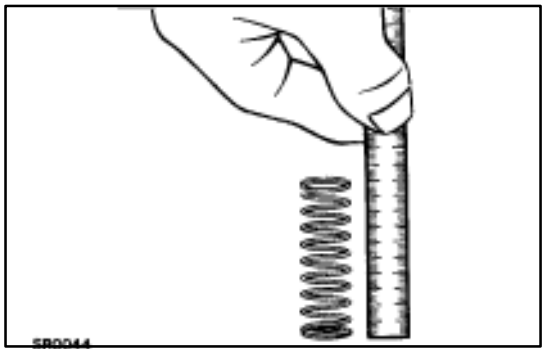
(a) Coat the valve with power steering fluid and check that it falls smoothly into the valve hole by its own weight.



(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 holes.

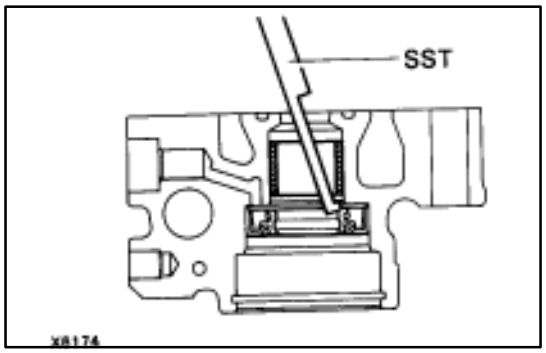


If necessary, replace the valve with one having the same letter as inscribed on the front housing.
Inscribed mark: A, B, C, D, E or F



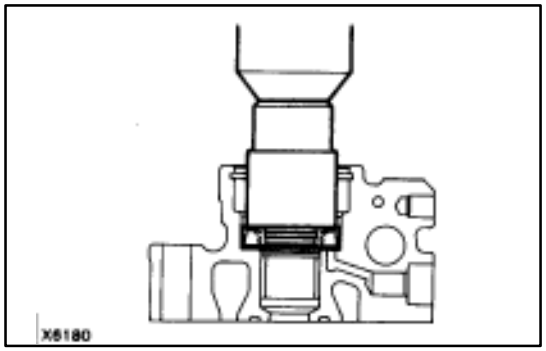
4. INSPECT FLOW CONTROL SPRING

Using a scale, measure the free length of the spring.
Minimum spring length: 33 mm (1.30 in.)
If not within specification, replace the spring.

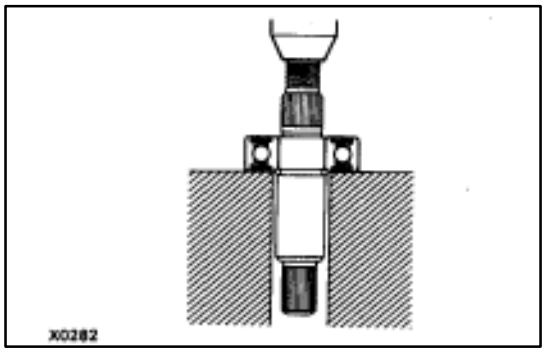


5. IF NECESSARY, REPLACE OIL SEAL

(a) Using SST, tap out the oil seal.
SST 09631–10030

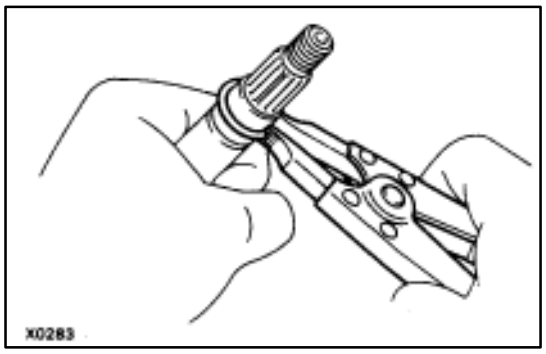


(b) Using a 24 mm socket wrench, press in a new oil seal.
(c) Coat the oil seal lip with power steering fluid.

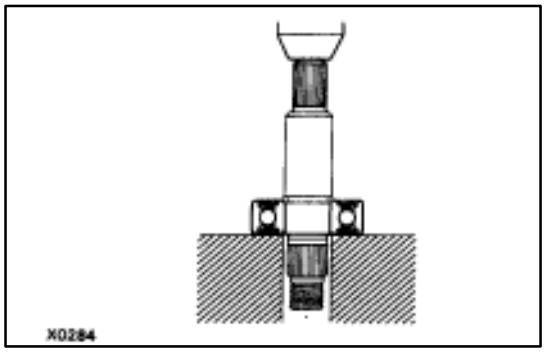


6. IF NECESSARY, REPLACE BEARING

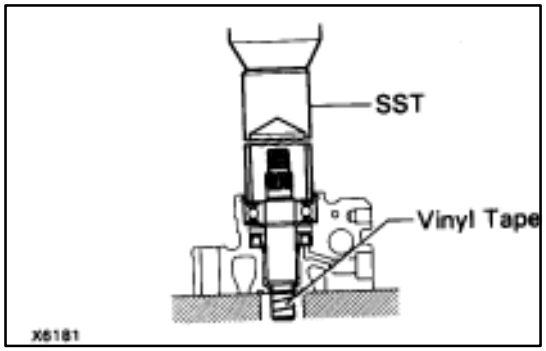
(a) Using a press, press out the bearing.



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



(d) Using a press, press in a new bearing.



ASSEMBLY OF POWER STEERING PUMP

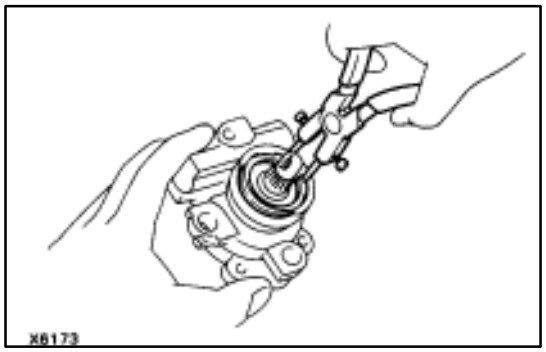
(See page SR–101)

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

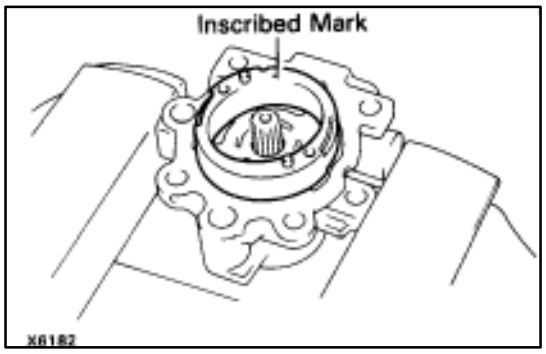
2. INSTALL VANE PUMP SHAFT WITH BEARING

(a) Using SST and a press, press in the shaft.

SST 09608–30012 (09608–04030)



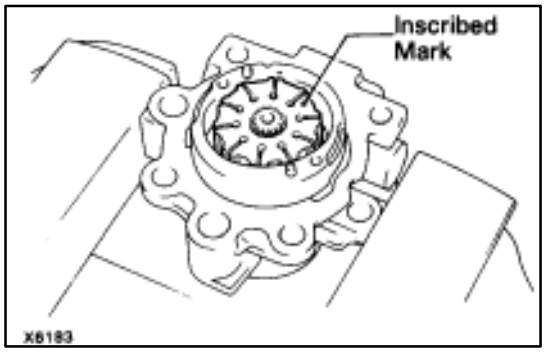
(b) Using snap ring pliers, install the snap ring.



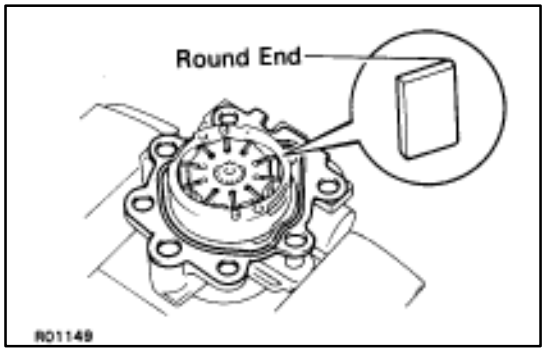
3. INSTALL CAM RING, ROTOR, VANE PLATES AND REAR SIDE PLATE

(a) Using a plastic hammer, drive in the two straight pins to the front housing.

(b) Align the holes of the cam ring and straight pins, and insert the cam ring with the inscribed mark facing outward.

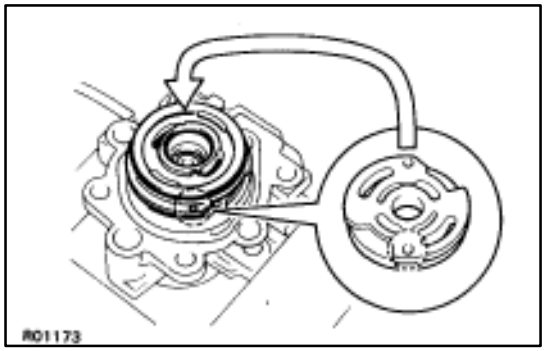


(c) Install the rotor to the shaft with the inscribed mark on the rotor facing outward.

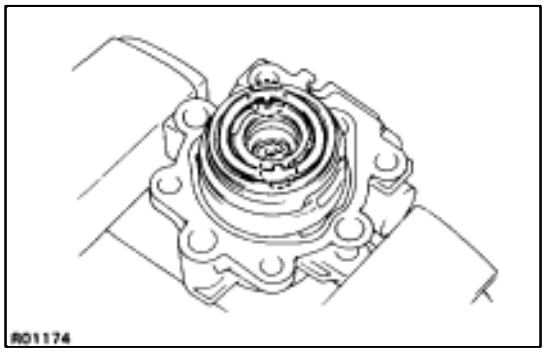


(d) Install the ten vane plates with the round end facing outward.

(e) Install a new gasket.

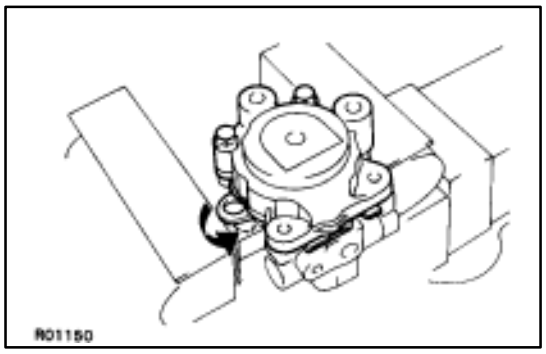


(f) Coat new O–rings with power steering fluid and install them on the rear side plate.
(g) Align the holes of the rear side plate and straight pins, and install the side plate.



4. INSTALL WAVE WASHER

Install the wave washer so that its protrusions fit into the slots in the rear side plate.

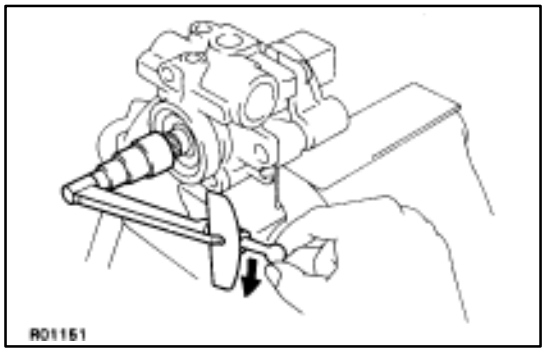


5. INSTALL REAR HOUSING

(a) Install the rear housing and tighten the two bolts.

Torque: 17 N·m (170 kgf·cm, 12 ft·lbf)

(b) Fold down in the direction of the front housing that part of the gasket indicated in the illustration.

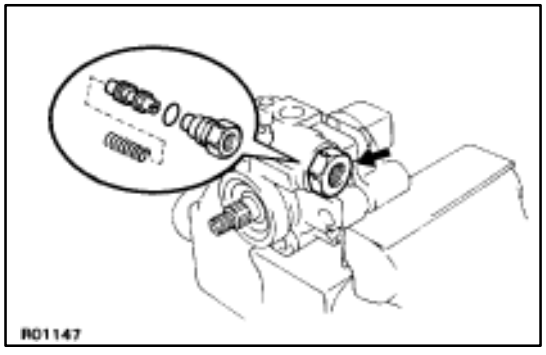


6. MEASURE PUMP SHAFT PRELOAD

(a) Check that the shaft rotates smoothly without abnormal noise.
(b) Temporarily install the pulley nut and check the rotating torque.

Rotating torque:

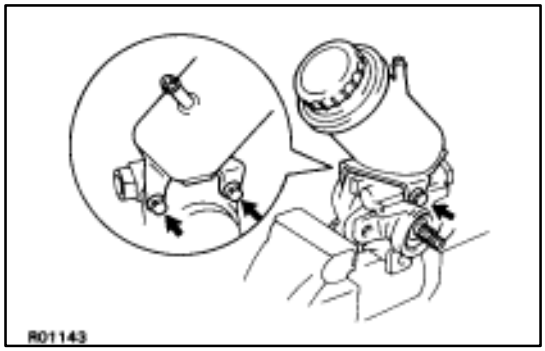
0.2 N·m (2.5 kgf·cm, 2.2 in.·lbf) or less



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

(a) Coat a new O–ring with power steering fluid and install it to the pressure port union.
(b) Install spring and valve to the housing.
(c) Install and torque the pressure port union.

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



8. INSTALL RESERVOIR TANK

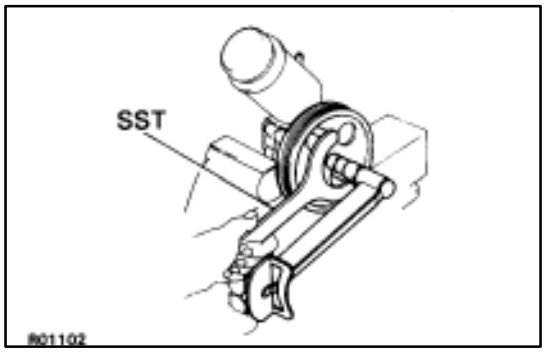
(a) Coat a new O–ring with power steering fluid and install it to the reservoir tank.

(b) Install the reservoir tank with the three bolts.

Torque:

Front side bolt 13 N·m (130 kgf·cm, 9 ft·lbf)

Rear side bolts 17 N·m (170 kgf·cm, 12 ft·lbf)



9. INSTALL PUMP PULLEY

(a) Install the pulley and nut to the shaft.

(b) Using SST, torque the set nut.

SST 09278–54012

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