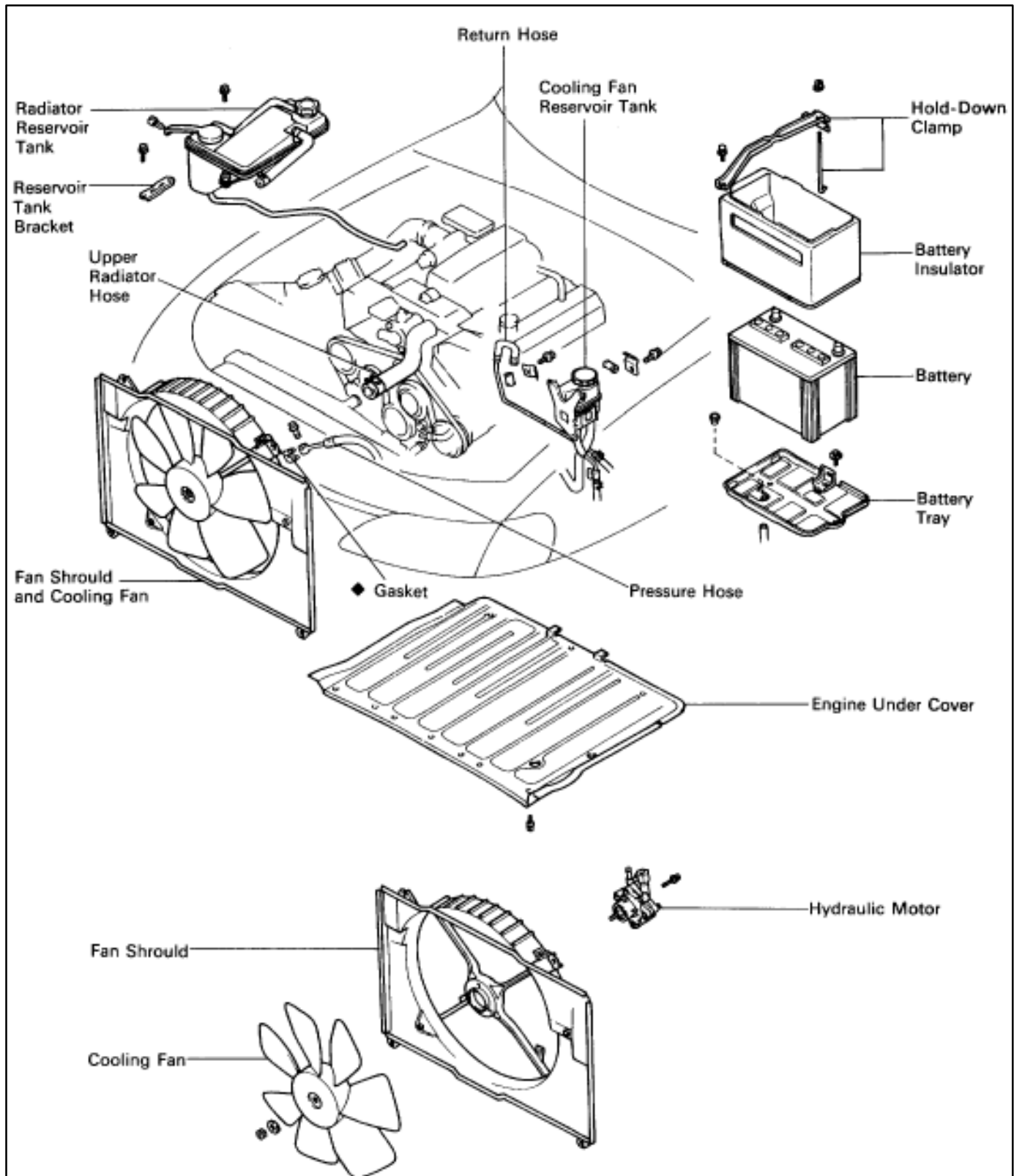
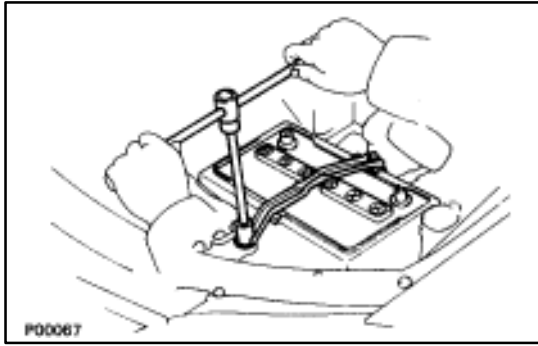


Hydraulic Motor COMPONENTS FOR REMOVAL AND INSTALLATION



◆ Non-reusable part



REMOVAL OF HYDRAULIC MOTOR

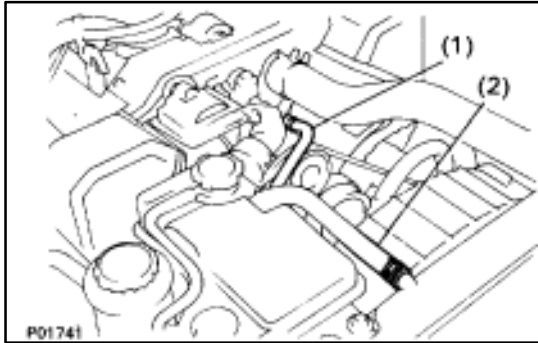
(See Components on page [CO-47](#))

1. REMOVE BATTERY

CAUTION: Work must be started after approx. 20 seconds or longer from the time the ignition switch is turned to the "LOCK" position and the negative (–) terminal cable is disconnected from the battery.

2. REMOVE ENGINE UNDER COVERS

3. DRAIN ENGINE COOLANT (See page [CO-6](#))



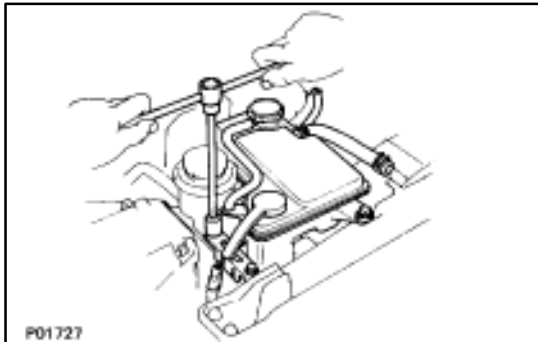
4. REMOVE RADIATOR RESERVOIR TANK

(a) Disconnect the coolant level sensor connector.

(b) Disconnect the following hoses:

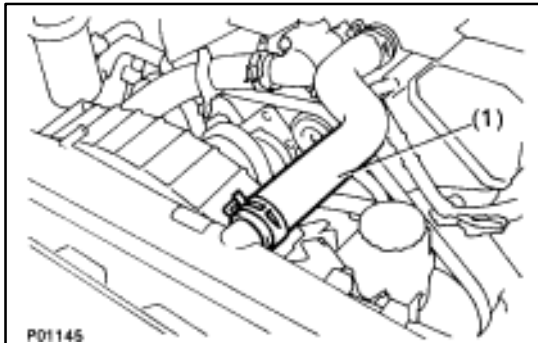
(1) Reservoir hose from water inlet housing

(2) Reservoir hose from radiator



(c) Remove the two bolts and reservoir tank bracket.

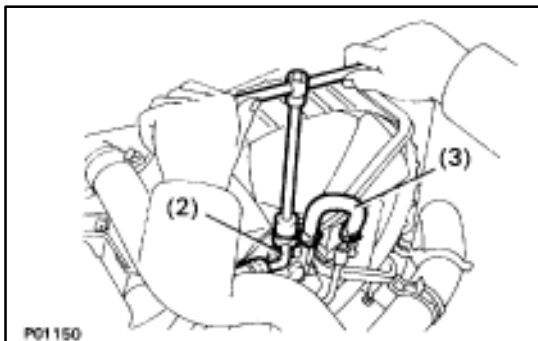
(d) Disconnect the reservoir tank from the reservoir tank bracket, and remove the reservoir tank.



5. DISCONNECT HOSES

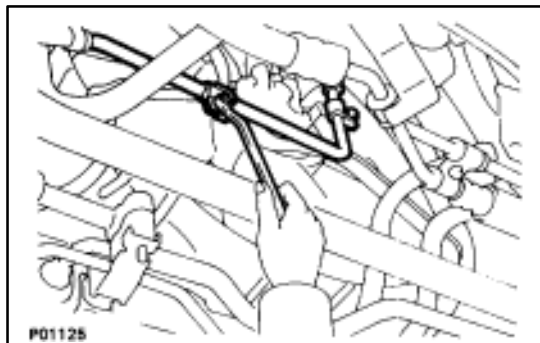
Disconnect the following hoses:

(1) Upper radiator hose from radiator



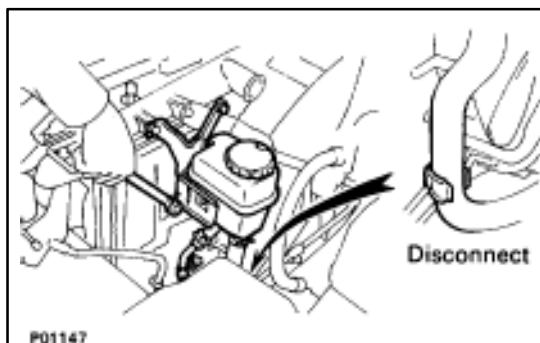
(2) Pressure hose from hydraulic motor

(3) Return hose from hydraulic motor



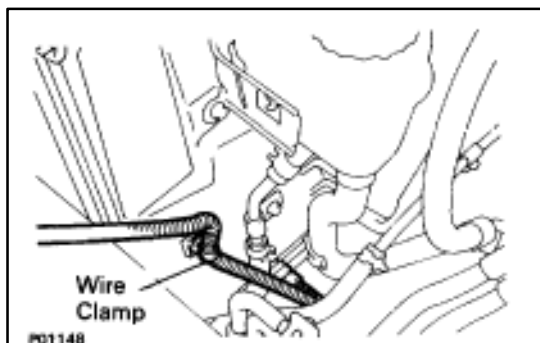
6. DISCONNECT COOLING FAN INLET PIPE FROM FAN SHROULD

Remove the two bolts, brackets and bushings, and disconnect the inlet pipe.



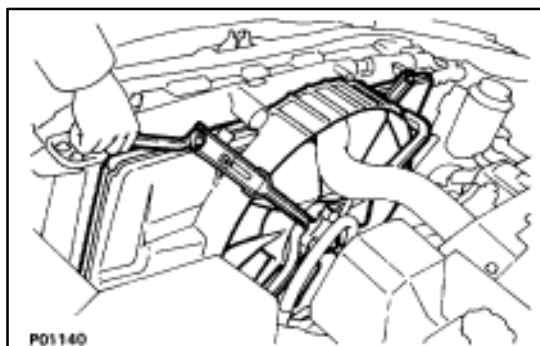
7. DISCONNECT COOLING FAN RESERVOIR TANK FROM FAN SHROULD

- Disconnect the suction hose from the clamp on the fan shroud.
- Remove the four bolts, and disconnect the reservoir tank.

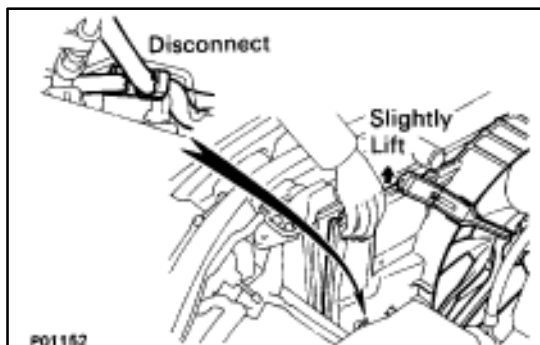


8. REMOVE RADIATOR FAN SHROULD

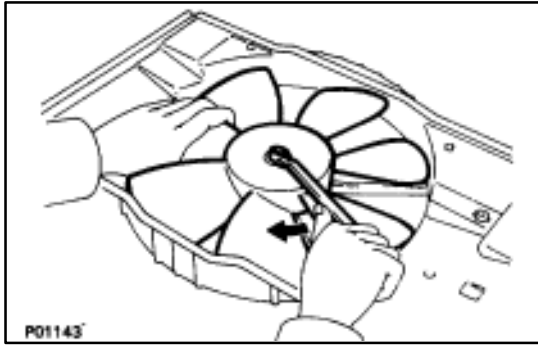
- Disconnect the wire clamp (for temperature sensor) from the radiator fan shroud.



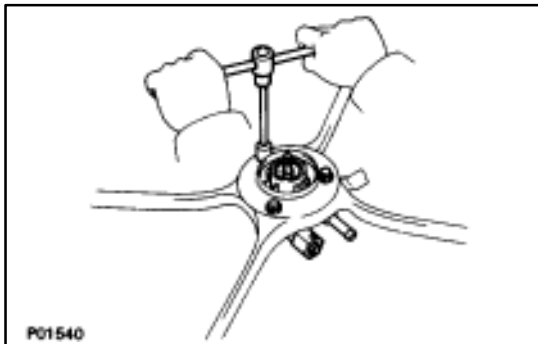
- Remove the four bolts, and disconnect the fan shroud from the radiator.



- Slightly lift the fan shroud, and disconnect the two oil cooler hoses (for cooling fan) from the hose clamp on the fan shroud.
- Remove the fan shroud.

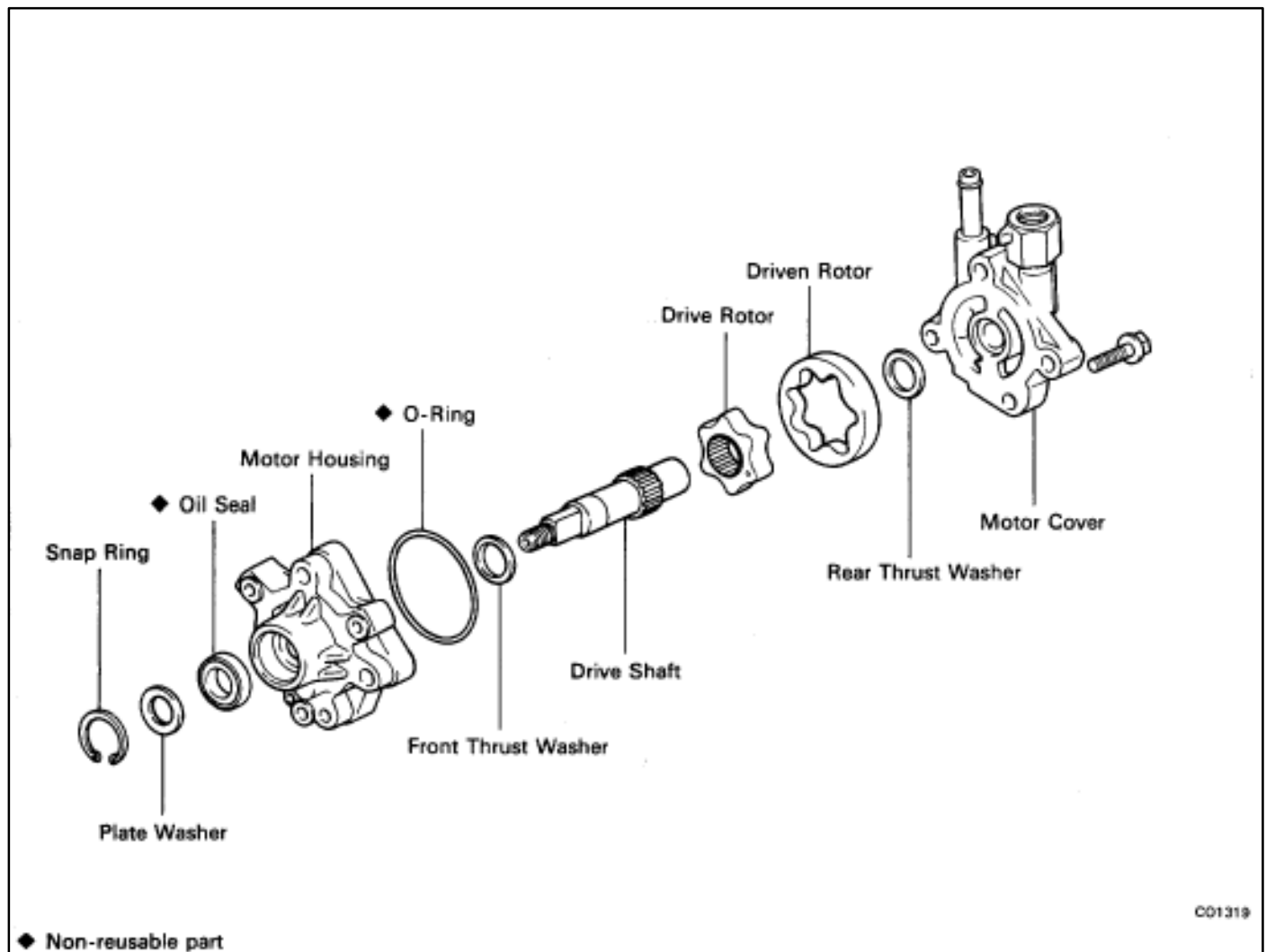


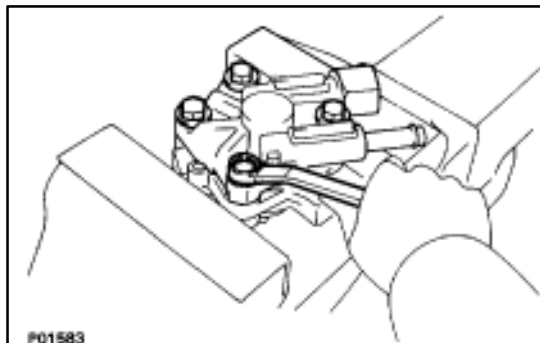
- 9. REMOVE COOLING FAN FROM HYDRAULIC MOTOR**
Loosen the pulley nut clockwise, and remove the nut, plate washer and fan.



- 10. REMOVE HYDRAULIC MOTOR FROM FAN SHROULD**
Remove the three bolts and hydraulic motor.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY





DISASSEMBLY OF HYDRAULIC MOTOR

(See Components on page [CO-50](#))

1. MOUNT MOTOR HOUSING

Slightly mount the motor housing in a vise.

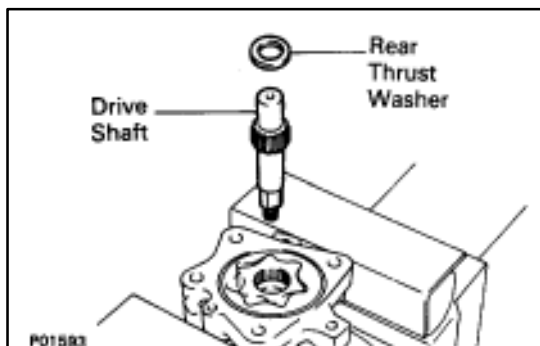
NOTICE: Be careful not to damage the motor housing.

2. REMOVE MOTOR COVER

(a) Remove the four bolts and motor cover.

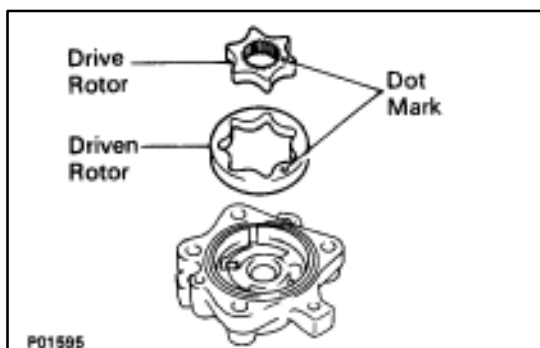
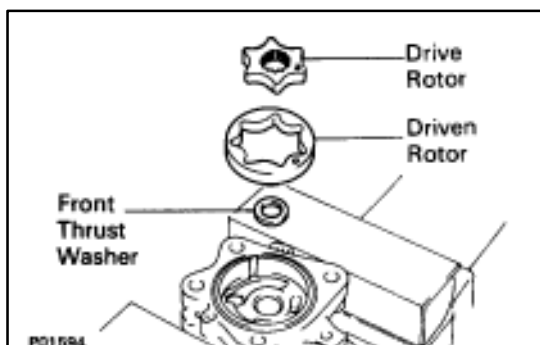
(b) Remove the O-ring from the motor housing.

3. REMOVE REAR THRUST WASHER AND DRIVE SHAFT



4. REMOVE DRIVE AND DRIVEN ROTORS

5. REMOVE FRONT THRUST WASHER



INSPECTION OF HYDRAULIC MOTOR

1. INSPECT DRIVE AND DRIVEN ROTORS

(a) Install the drive and driven rotor to the motor housing with the dot mark facing upward.

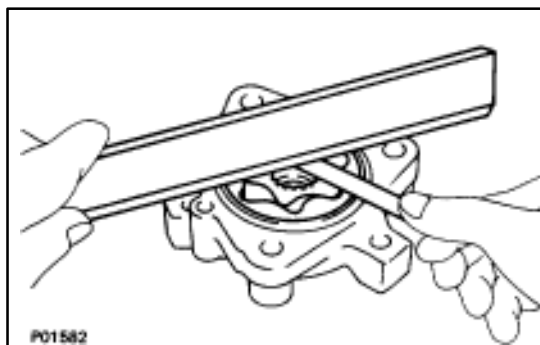
(b) Using a feeler gauge and precision straight edge, measure the side clearance between the rotor and precision straight edge.

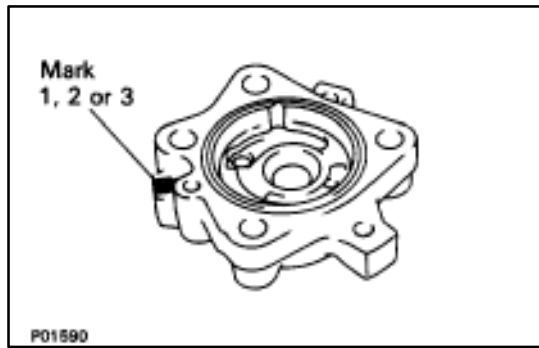
Standard side clearance: 0.01–0.04 mm

(0.0004–0.0016 in.)

Maximum side clearance: 0.05 mm (0.0020 in.)

If the clearance is greater than maximum, replace the rotors as a set. If necessary, replace the motor assembly.





HINT: When replacing the rotors, select the rotor set according to the imprinted mark on the motor housing.

Imprinted mark on housing	Rotor set
1	16906-50010
2	16906-50020
3	16906-50030

2. INSPECT OIL CLEARANCE OF DRIVE SHAFT

- (a) Using a caliper gauge, measure the shaft hole inside diameter of the housing and cover.

Shaft hole inside diameter: 14.000–14.011 mm
(0.5512–0.5516 in.)

- (b) Using a micrometer, measure the drive shaft diameter.

Shaft diameter: 13.973–13.984 mm
(0.5501–0.5506 in.)

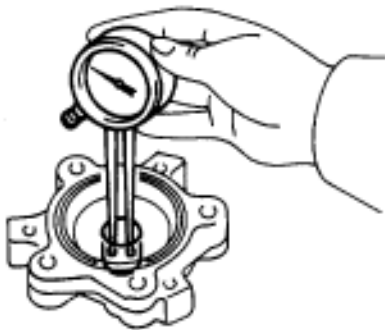
- (c) Subtract the drive shaft diameter measurement from the shaft hole diameter measurement.

Standard clearance: 0.016–0.038 mm
(0.0006–0.0015 in.)

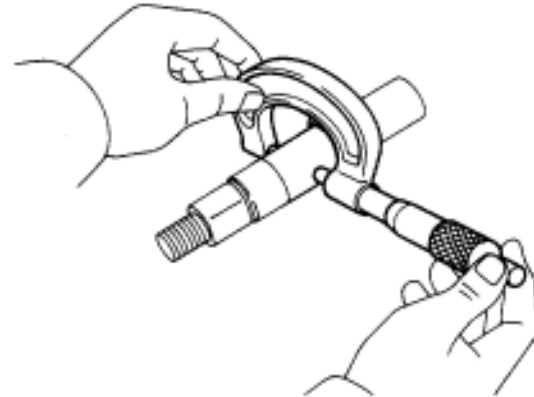
Maximum clearance: 0.04 mm (0.0016 in.)

If the clearance is greater than maximum, replace the shaft.
If necessary, replace the motor assembly.

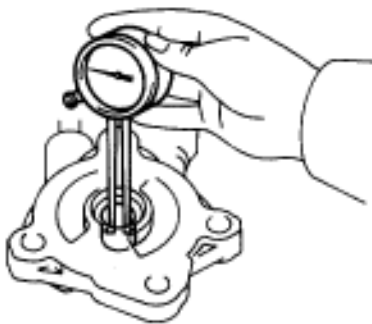
Housing Side



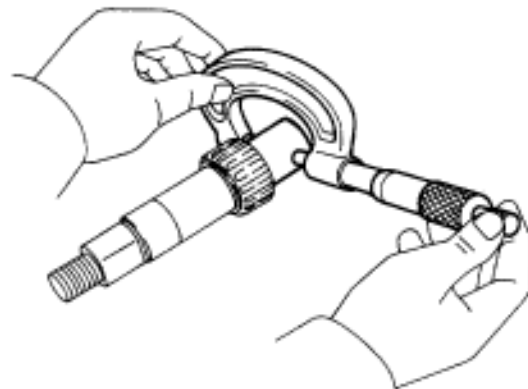
CO1317 CO1298



Cover Side



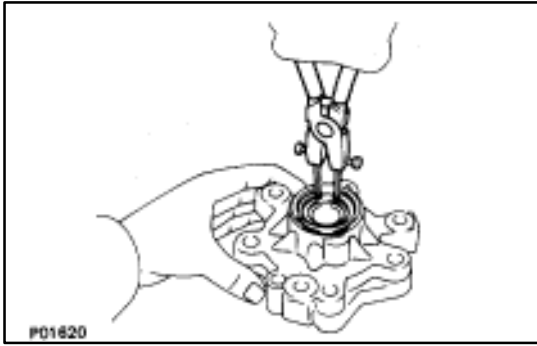
CO1318 CO1300



REPLACEMENT OF OIL SEAL

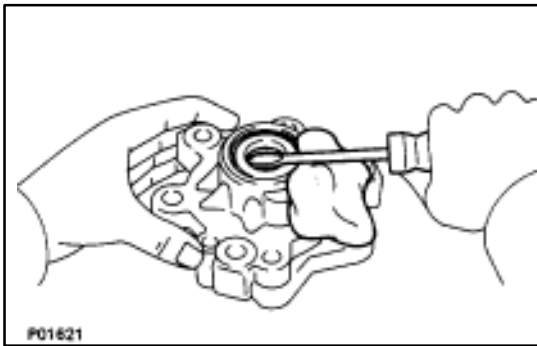
1. REMOVE OIL SEAL

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



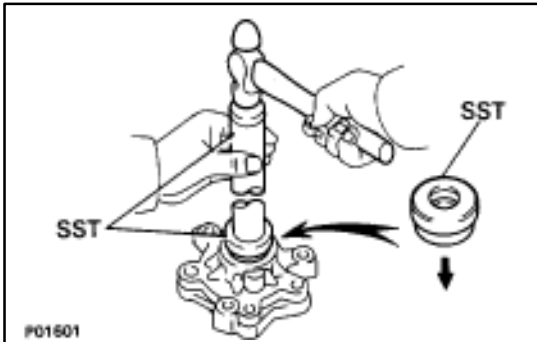
- (b) Using a screwdriver, pry out the oil seal.

NOTICE: Be careful not to damage the housing.

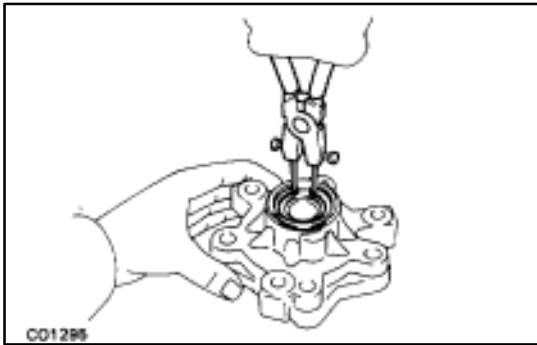


2. INSTALL OIL SEAL

- (a) Using SST and a hammer, tap in a new oil seal to a depth of 4.5–5.5 mm (0.177–0.217 in.) from the housing edge.



- (b) Using snap ring pliers, install the plate washer and snap ring.
- (c) Apply fluid to the oil seal lip.

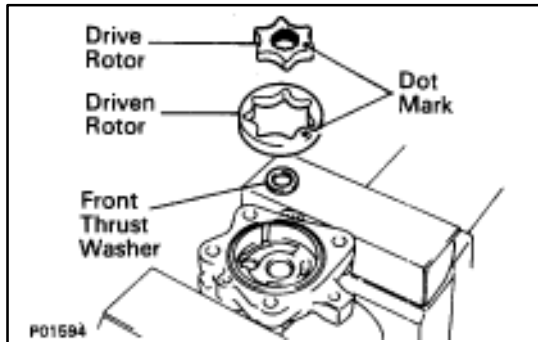


ASSEMBLY OF HYDRAULIC MOTOR

(See Components on page [CO-50](#))

HINT:

- Thoroughly clean all parts to be assembled.
- Before installing the parts, apply new fluid to all sliding and rotating surfaces.



1. MOUNT MOTOR HOUSING

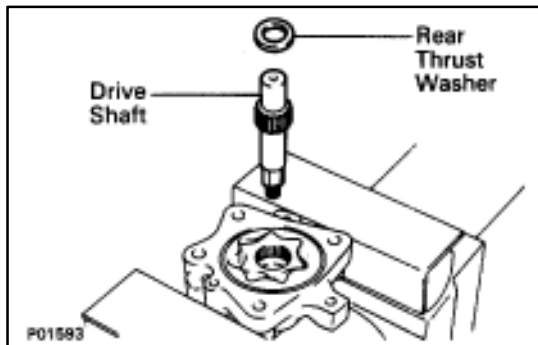
Slightly mount the motor housing in a vise.

NOTICE: Be careful not to damage the motor housing.

2. INSTALL FRONT THRUST WASHER

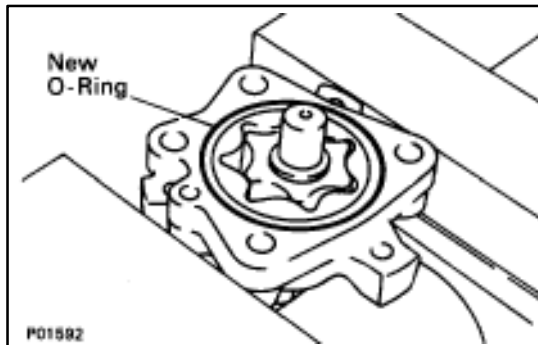
3. INSTALL DRIVEN AND DRIVE ROTORS

Install the drive and driven rotors with the dot mark facing upward.



4. INSTALL DRIVE SHAFT

5. INSTALL REAR THRUST WASHER

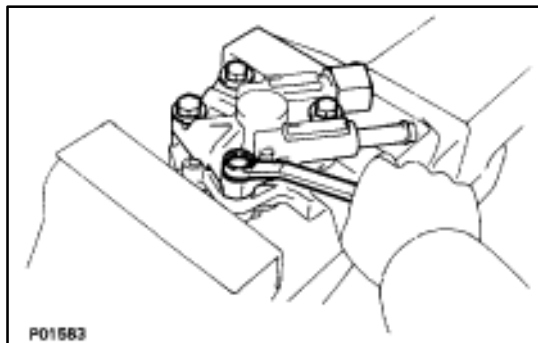


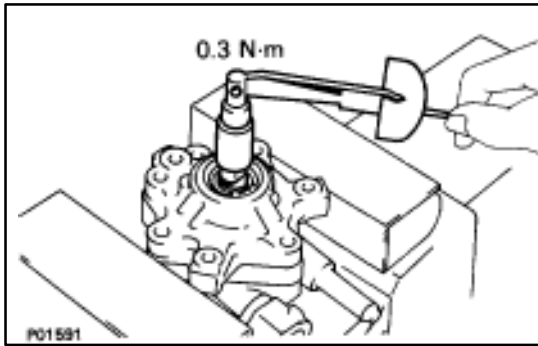
6. INSTALL MOTOR COVER

(a) Install a new O-ring to the motor housing groove.

(b) Install the motor cover with the four bolts.

Torque: 28 N·m (290 kgf·cm, 21 ft·lbf)



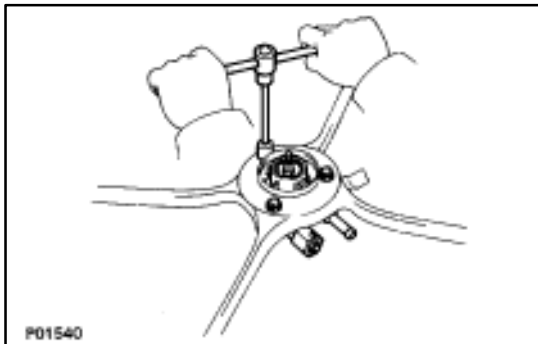


7. INSTALL DRIVE SHAFT PRELOAD

- Check that the drive shaft rotates smoothly without abnormal noise.
- Temporarily install the pulley nut, and check the rotating torque.

Rotating torque:

0.3 N·m (3.0 kgf·cm, 2.6 in.-lbf)



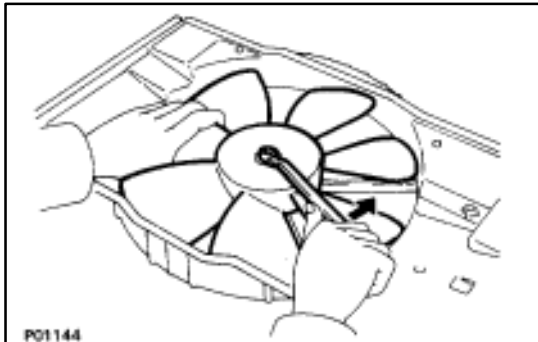
INSTALLATION OF HYDRAULIC MOTOR

(See Components on page [CO-47](#))

1. INSTALL HYDRAULIC MOTOR TO FAN SHROULD

Install the hydraulic motor with the three bolts.

Torque: 4.9 N·m (50 kgf·cm, 43 in.-lbf)

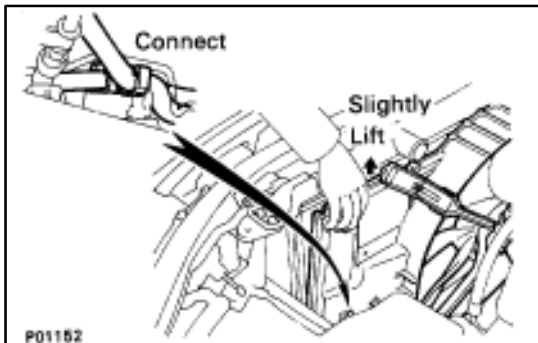


2. INSTALL COOLING FAN TO HYDRAULIC MOTOR

Install the fan with the plate washer bolt.

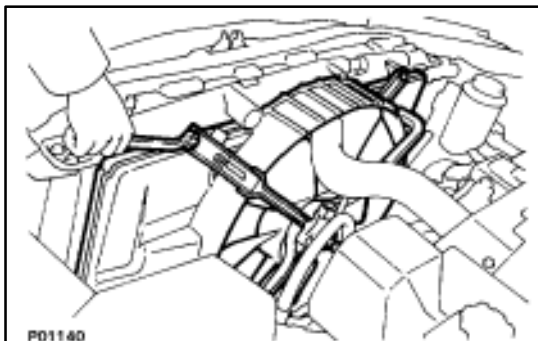
Tighten the nut by turning it counterclockwise.

Torque: 15 N·m (150 kgf·cm, 11 ft.-lbf)



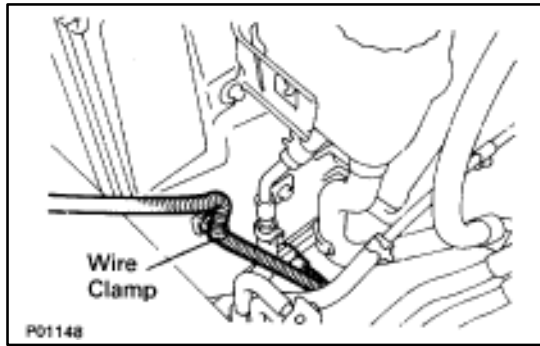
3. INSTALL RADIATOR FAN SHROULD

- Place the fan shroud on the radiator.
- Slightly lift the fan shroud, and connect the two oil cooler hoses (for cooling fan) to the hose clamp on the fan shroud.

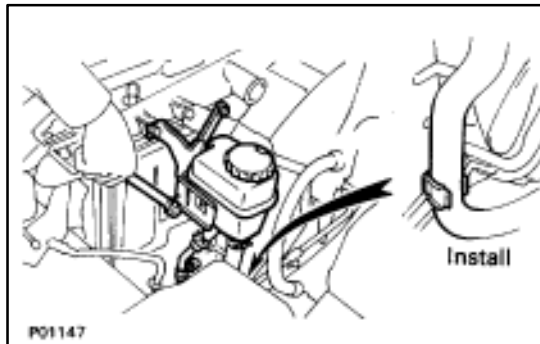


- Install the fan shroud with the four bolts.

Torque: 4.9 N·m (50 kgf·cm, 43 in.-lbf)



(d) Install the wire clamp to the fan shroud.

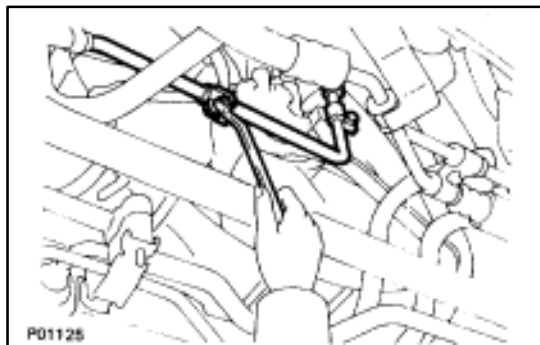


4. INSTALL COOLING FAN RESERVOIR TANK TO FAN SHROULD

(a) Install the reservoir tank with the four bolts.

Torque: 4.9 N·m (50 kgf·cm, 43 in·lbf)

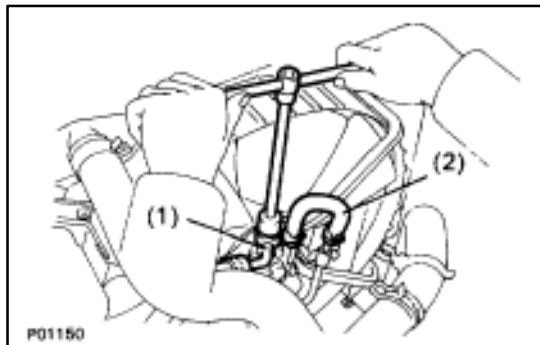
(b) Install the suction hose to the clamp on the fan shroud.



5. INSTALL COOLING FAN INLET PIPE TO FAN SHROULD

Install the inlet pipe with the two bushings, brackets and bolts.

Torque: 4.9 N·m (50 kgf·cm, 43 in·lbf)



6. CONNECT HOSES

Connect the following hoses:

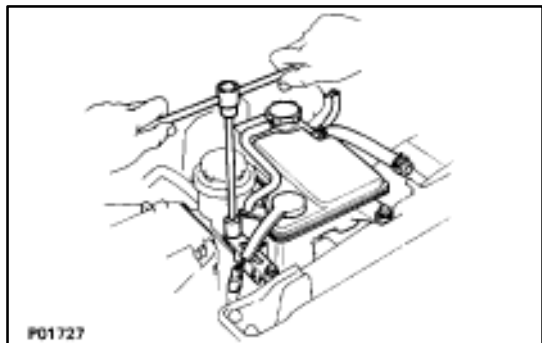
(1) Pressure hose to hydraulic motor Connect the pressure hose with a new gasket and union bolt.

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

(2) Return hose to hydraulic motor.



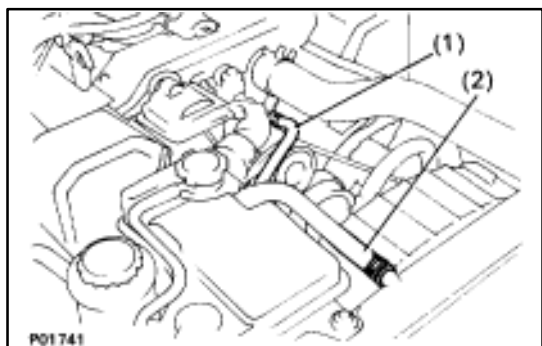
(3) Upper radiator hose to radiator.



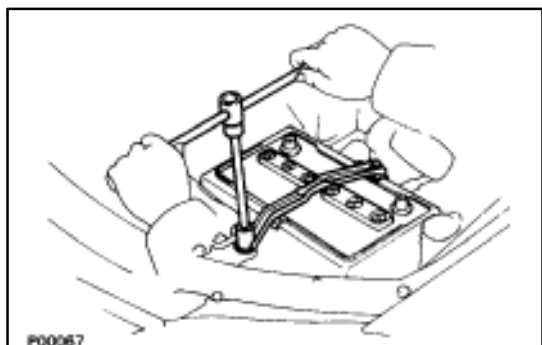
7. INSTALL RADIATOR RESERVOIR TANK

- (a) Install the reservoir tank to the reservoir tank bracket.
- (b) Install the reservoir tank bracket with two bolts.

Torque: 4.9 N·m (50 kgf·cm, 43 in·lbf)



- (c) Connect the following hoses:
 - (1) Reservoir hose to water inlet housing
 - (2) Reservoir hose to radiator
- (d) Connect the coolant level sensor connector.



8. INSTALL BATTERY

9. FILL ENGINE WITH COOLANT (See page [CO-7](#))

10. FILL COOLING FAN RESERVOIR TANK WITH FLUID (See pages [CO-23](#) and 24)

11. START ENGINE AND CHECK FOR LEAKS

12. INSTALL ENGINE UNDER COVER