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## CHAPTER 4. COOLING SYSTEM

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## REMOVAL

## 1. Drain:

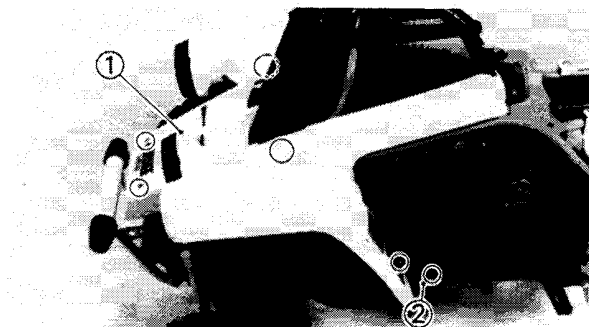
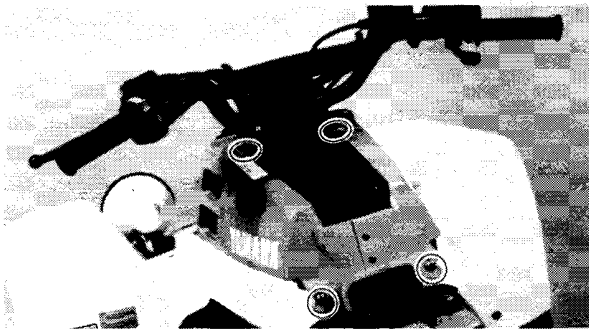
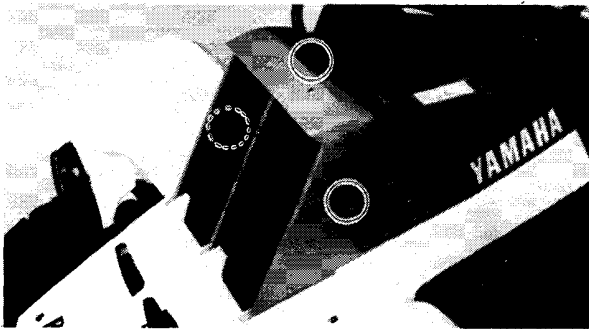
- Coolant

Refer to "CHAPTER 2 — COOLANT REPLACEMENT" section.

**WARNING:**

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap by the following procedure:

Remove the radiator cover by removing the screw. Place a thick rag, like a towel, over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.



## 2. Remove:

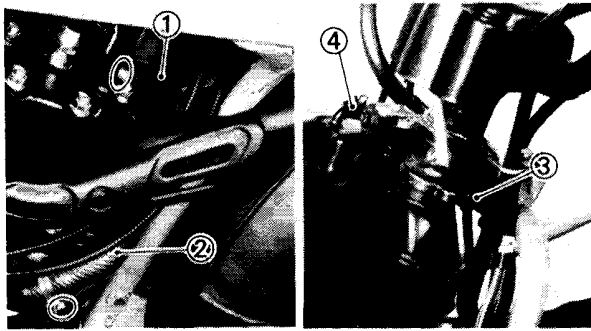
- Seat
- Radiator cover

## 3. Remove:

- Fuel tank cover

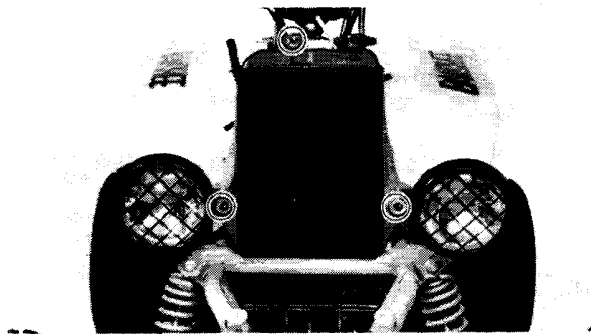
## 4. Remove:

- Front fender ①
- Front fender stay ②
- Fuel tank



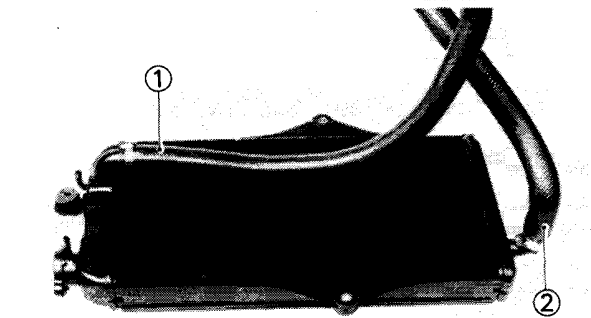
## 3. Disconnect:

- Radiator hoses ①, ②
- Breather hoses ③, ④



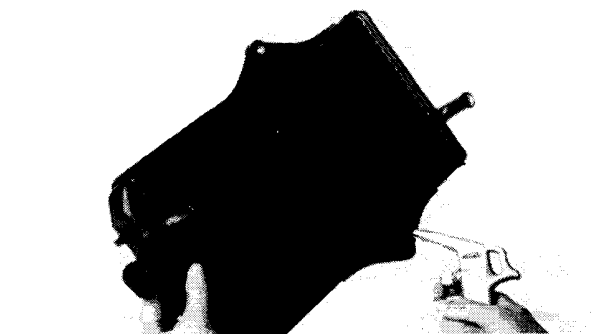
## 4. Remove:

- Radiator



## 5. Remove:

- Radiator hoses ①, ②



## INSPECTION

## 1. Inspect:

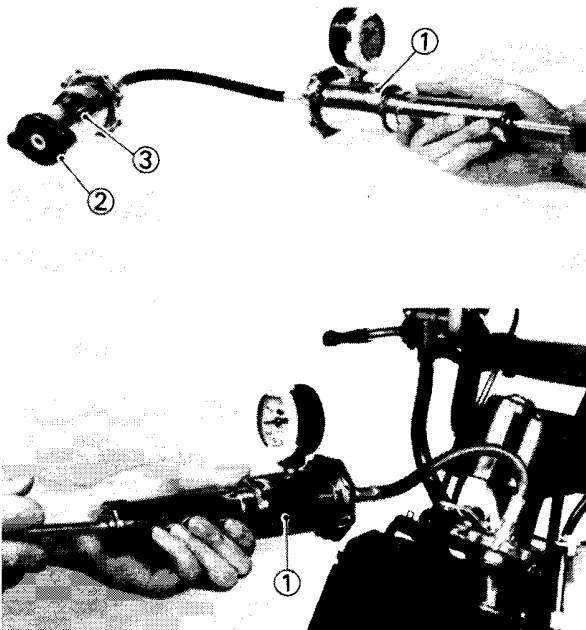
- Radiator core
  - Obstruction → Blow out with compressed air through rear of the radiator.
  - Flattened fin → Repair/replace.

## 2. Inspect:

- Inlet hose
  - Crack/Damage → Replace.
- Outlet hose
  - Crack/Damage → Replace.
- Joint hose
  - Crack/Damage → Replace.

## 3. Measure:

- Valve opening pressure
  - Valve opens at pressure below the specified valve or defective → Replace.



### Valve Opening Pressure:

93 ~ 123 kPa

(0.95 ~ 1.25 kg/cm<sup>2</sup>, 13.5 ~ 17.8 psi)

### Measurement steps:

- Attach the Cooling System Tester (1) (YU-24460-01) to the radiator cap (2).

### NOTE:

Use Adapter (3) (YU-33984).

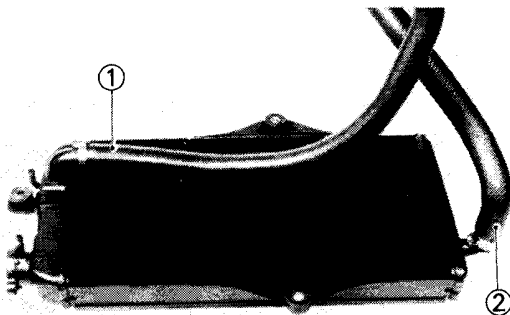
- Apply the specified pressure for 10 seconds, and make sure there is no pressure drop.

### 4. Inspect:

- Cooling system  
Decrease of pressure (leaks) → Repair as required.

### Inspection steps:

- Attach the Cooling System Tester (1) (YU-24460-01) to the radiator.
- Apply 98.1 kPa (1.0 kg/cm<sup>2</sup>, 14 lb/in<sup>2</sup>) pressure.
- Measure the indicated pressure with gauge.



## INSTALLATION

### 1. Connect:

- Radiator hoses (1), (2)

### NOTE:

- Connect the hose (1) with its white painted mark backward.
- Connect the hose (2) with its white painted mark upward.

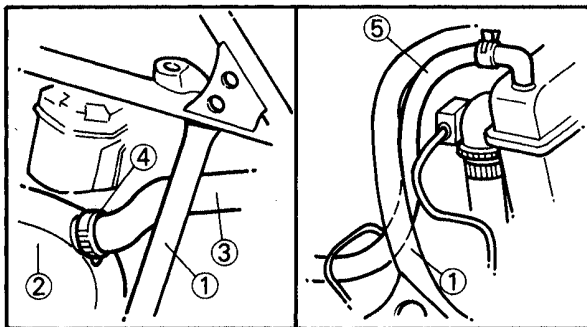
### 2. Install:

- Radiator

COOL



## WATER PUMP



### 3. Connect:

- Radiator hoses
- Breather hoses

### NOTE:

- Connect the radiator hose (3) with its white painted mark up ward.
- Pass the hoses as shown.

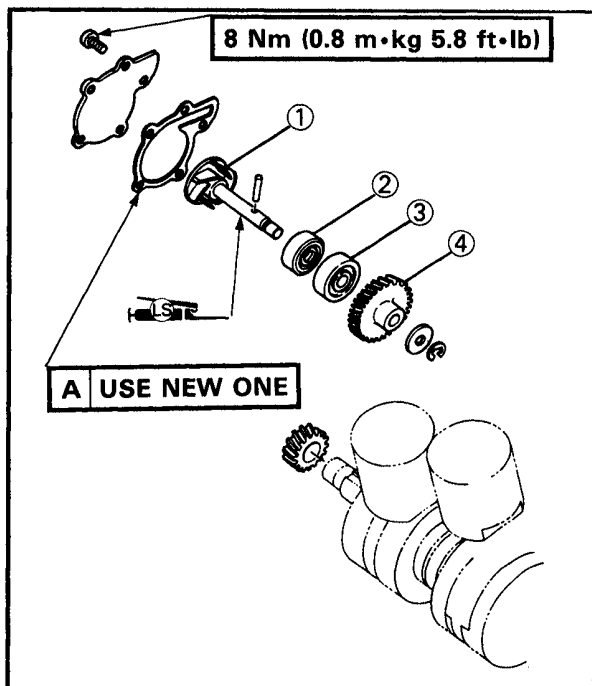
- ① Frame
- ② Crankcase cover (Right)
- ③ Radiator hose
- ④ Mark
- ⑤ Breather hose

### 4. Fill:

- Coolant  
Refer to "CHAPTER 2 — COOLANT REPLACEMENT" section.

### 5. Install:

- Front fender
- Fuel tank cover
- Radiator cover
- Seat



## WATER PUMP

### REMOVAL

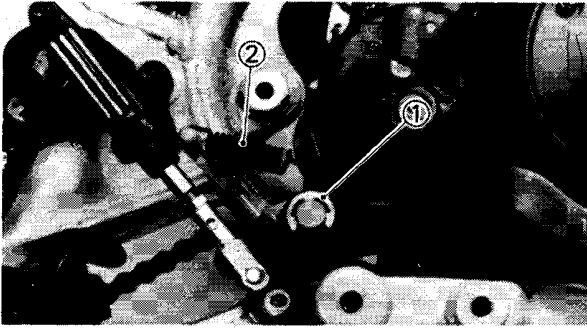
### NOTE:

It is necessary to disassemble the water pump, unless there is no abnormality such as excessive change in coolant temperature and/or level, discoloration of coolant, or milky transmission oil.

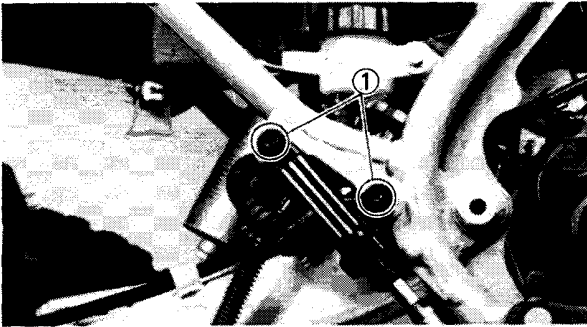
- ① Impeller shaft
- ② Oil seal
- ③ Bearing
- ④ Impeller shaft gear

## WATER PUMP

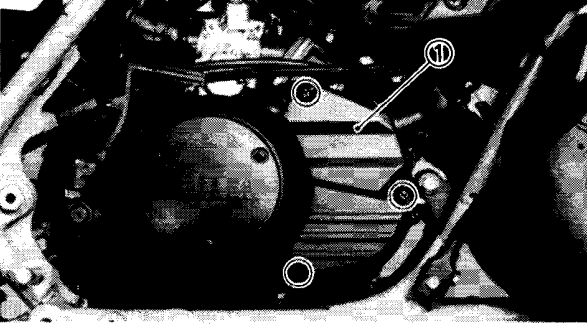
COOL



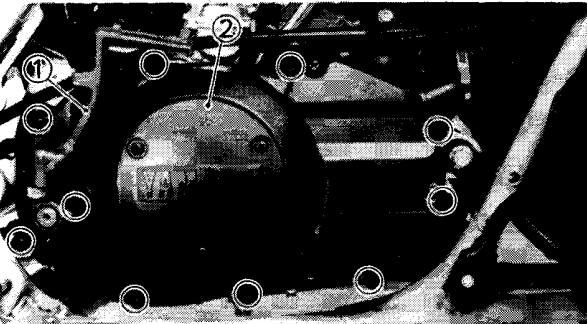
1. Drain:
  - Coolant (Completely)
  - Transmission oil
2. Remove:
  - Footrest (Right)
  - Circlip ①
  - Spring ②



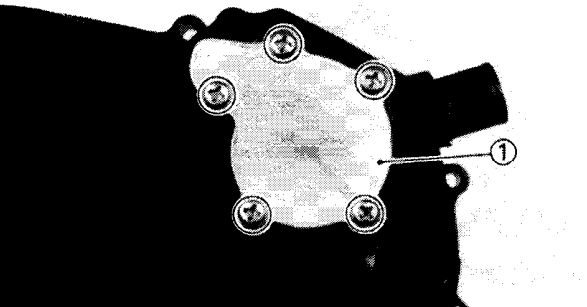
3. Remove:
  - Rear brake master cylinder



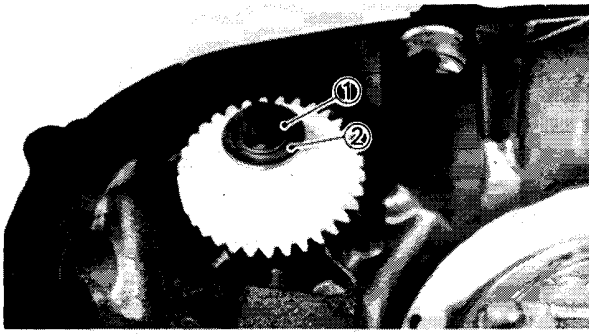
4. Remove:
  - Cover ①



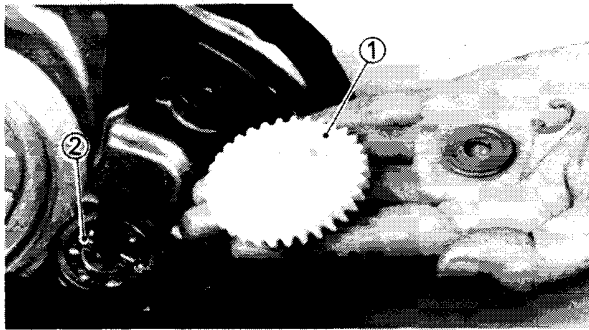
5. Remove:
  - Crankcase cover (Right) ②
  - Dowel pin



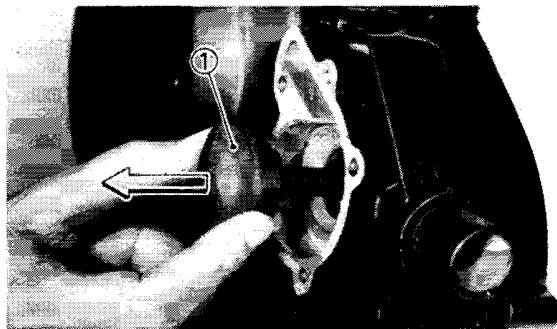
6. Remove:
  - Water pump cover ①



7. Remove:
- Circlip ①
  - Plain washer ②



8. Remove:
- Impeller shaft gear ①
  - Knock pin ②

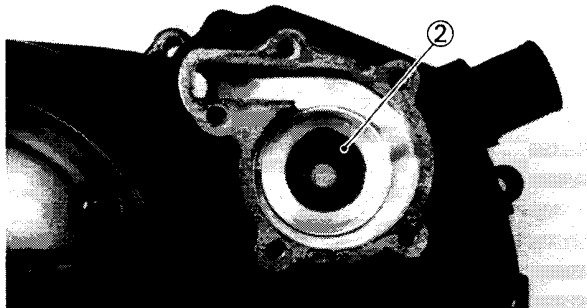
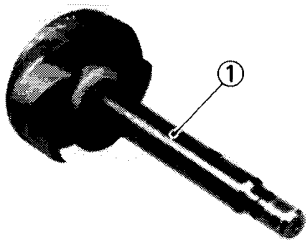


9. Pull out the impeller shaft assembly ①.  
10. Eliminate deposits from the impeller and water pump housing.

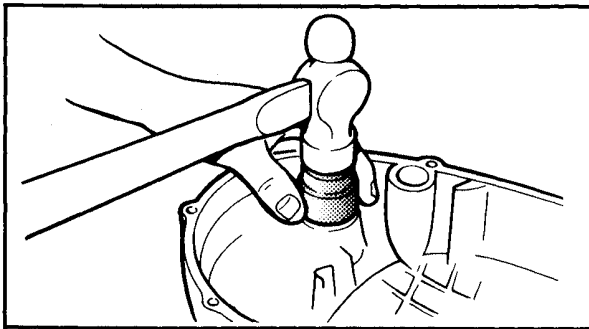
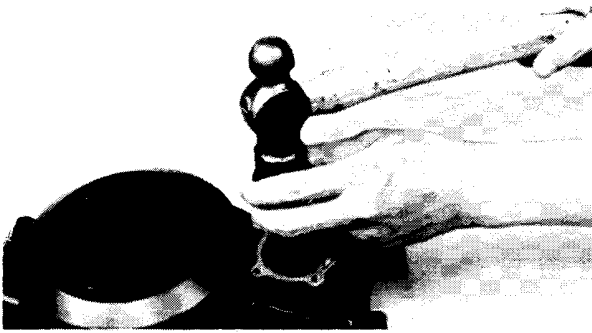
### INSPECTION

1. Inspect:
- Impeller ①  
Cracks/Wear/Damage → Replace.
  - Oil seal ②  
Wear/Damage → Replace.
  - Bearing  
Wear/Damage → Replace.

**NOTE:** \_\_\_\_\_  
Replace the oil seal and bearing as a set.  
\_\_\_\_\_







**Oil seal and bearing replacement steps:**

- Remove both bearing and oil seal from the case by tapping them toward the oil seal side.

**NOTE:** \_\_\_\_\_

Bearing(s) are most easily removed or installed if the cases are first heated in an oven to approximately 90 ~ 120°C (194 ~ 248°F). Bring the case up to proper temperature slowly. Do not use a hot plate or torch.

- Install bearing(s) with their manufacturer's marks or numbers facing outward.

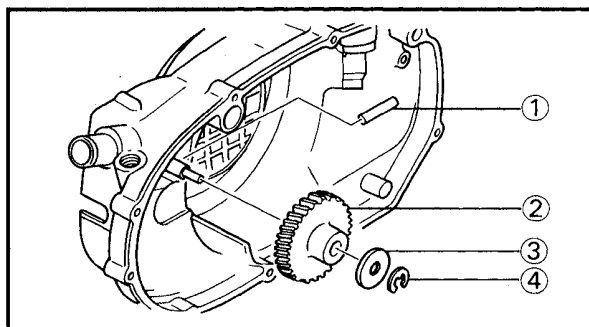
**NOTE:** \_\_\_\_\_

Install the oil seal, with the "WATER SIDE" mark is on the inside.

- When installing bearing(s) or oil seal(s), apply a light coating of lightweight lithium base grease to balls and seal lip(s).

**NOTE:** \_\_\_\_\_

Press-fit the oil seal and bearing until they contact the bottom.



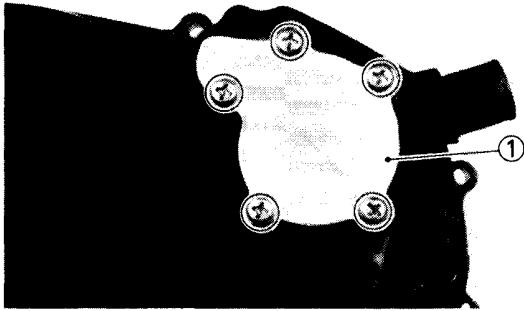
**INSTALLATION**

1. Apply:
  - Lightweight lithium base grease  
Apply a grease to oil seal and impeller shaft.
2. Install:
  - Impeller shaft ①  
Install the shaft while turning it.

**NOTE:** \_\_\_\_\_

Take care so that the oil seal lip is not damaged or the spring does not slip off its position.

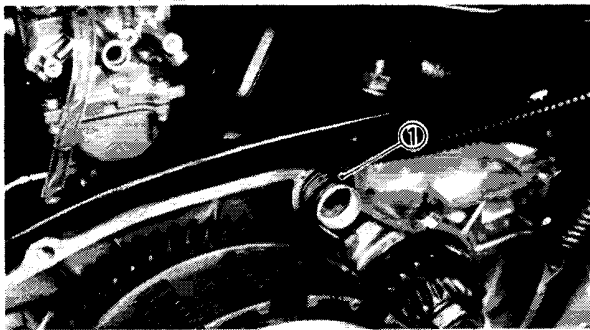
3. Install:
  - Knock pin ①
  - Impeller shaft gear ②
  - Plain washer ③
  - Circlip ④



4. Install:
- Water pump cover ①

**CAUTION:**

Always use a new gasket.



5. Tighten:
- Screws (Water pump cover)

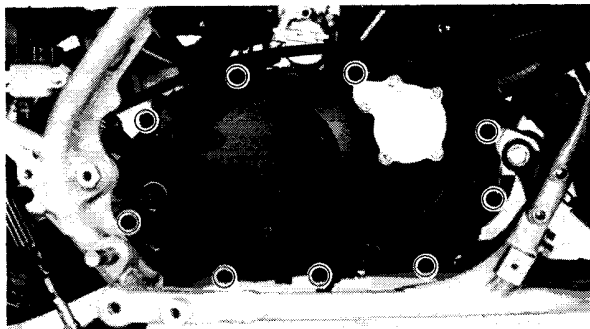


**Screws (Water Pump Cover):**  
8 Nm (0.8 m•kg, 5.8 ft•lb)

6. Install:
- Dowel pin
  - Crankcase cover (Right)

**NOTE:**

When installing the crankcase cover, grease the radiator joint O-ring ①.



7. Tighten:
- Screws (Crankcase cover)



**Screws (Crankcase cover):**  
7 Nm (0.7 m•kg, 5.1 ft•lb)

- ① Cable guide

8. Install:
- Kick crank

**NOTE:**

Install the kick crank so that it does not contact the case cover.

9. Tighten:
- Bolt (Kick crank)

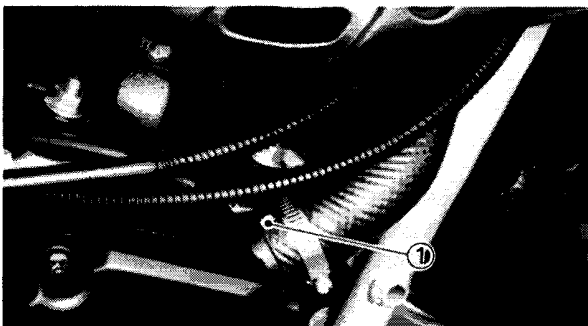


**Bolt (Kick Crank):**  
25 Nm (2.5 m•kg, 18 ft•lb)

10. Connect:
- Radiator hoses

**NOTE:**

Connect the hose with its white painted mark ① upward.



11. Fill:
- Coolant
  - Transmission oil



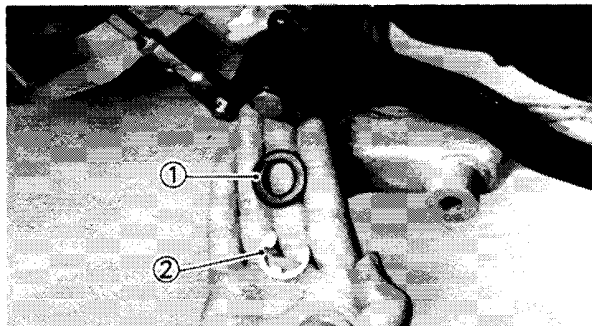
### CAUTION:

After warming up the engine, proceed as follows:

- Retighten the pump cover screws to specification.
- Check for coolant leakage, particularly leakage into the transmission case.

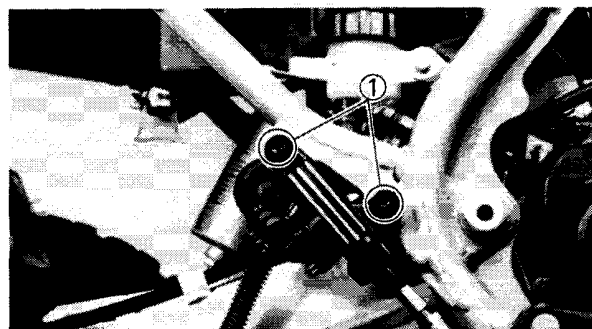
### 12. Inspect:

- Cooling system  
Decrease of pressure (leaks) → Repair as required.  
Refer to "RADIATOR-INSPECTION" section.



### 13. Install:

- Rear brake pedal
- Washer ①
- Circlip ②
- Cover



### 14. Install:

- Bolts ① (Rear brake master cylinder)



**Bolts (Rear Brake Master Cylinder):**

**20 Nm (2.0 m•kg, 14 ft•lb)**

