



CHAPTER 4. COOLING SYSTEM

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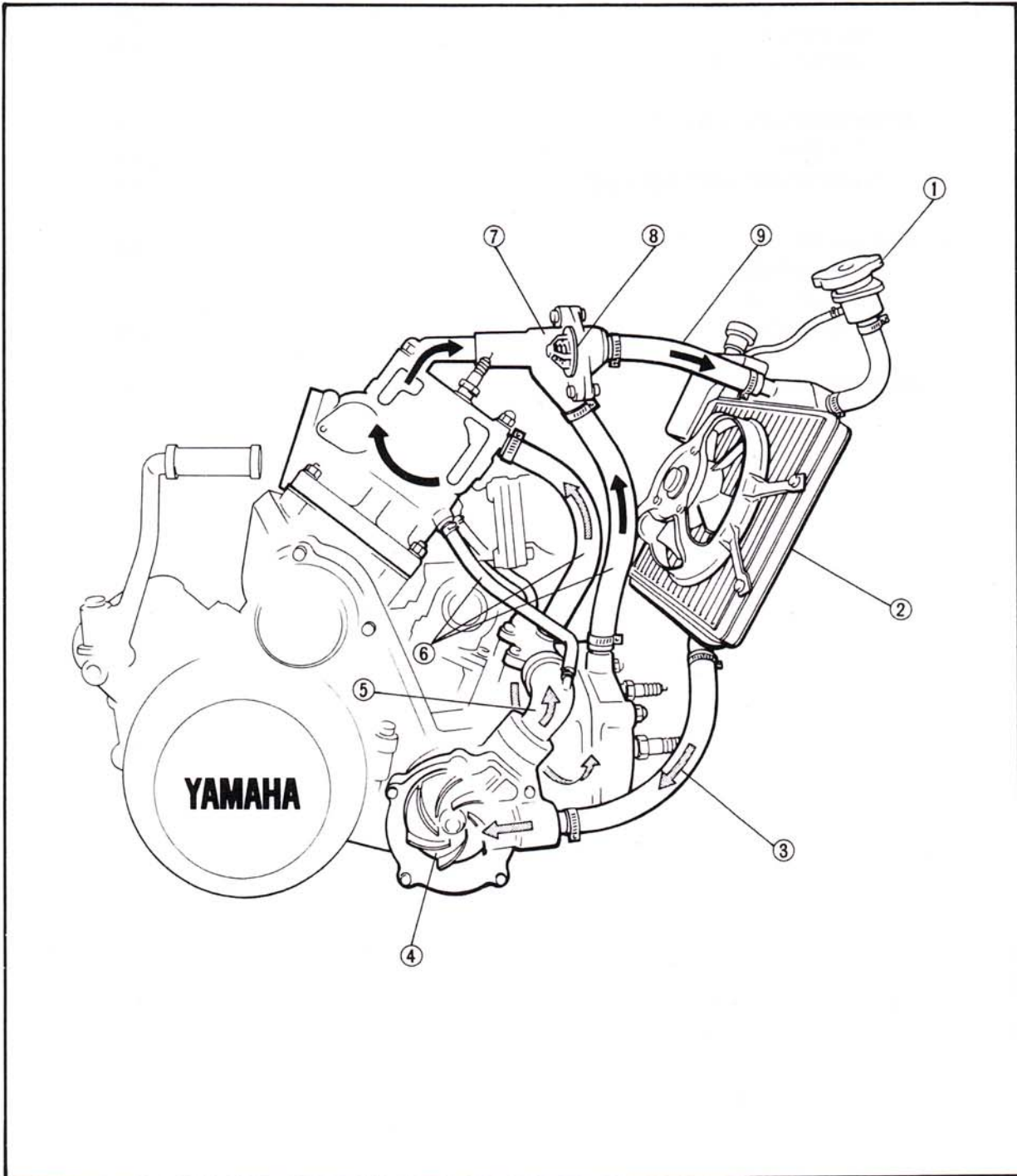
COOLANT FLOW

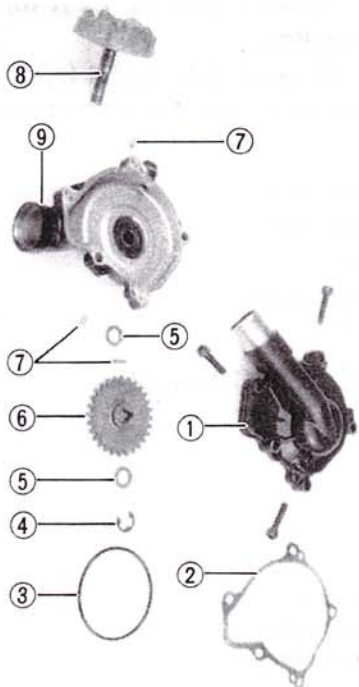
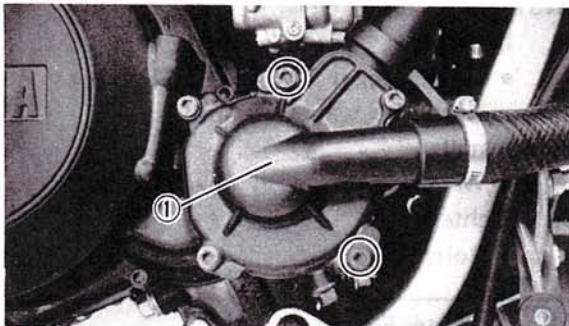
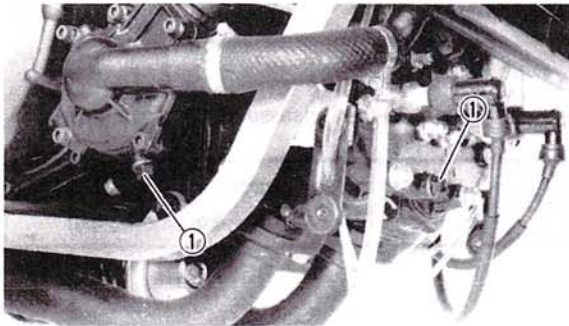
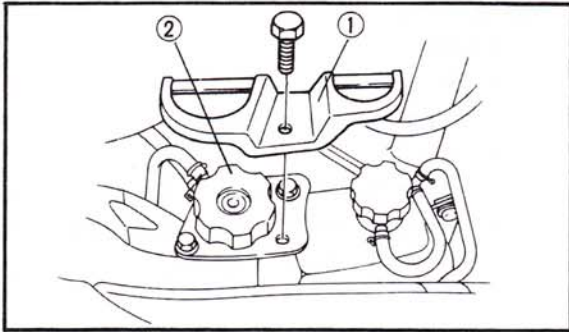
COOLING SYSTEM

COOLANT FLOW

- | | |
|-----------------|-----------------------|
| 1. Radiator cap | 6. Bypass hose |
| 2. Radiator | 7. Thermostat housing |
| 3. Outlet hose | 8. Thermostatic valve |
| 4. Water pump | 9. Inlet hose |
| 5. Water jacket | |

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COOLANT REPLACEMENT

WARNING:

Do not remove the radiator cap when the engine and radiator are hot.

1. Remove:
 - Cap retainer ①
 - Radiator cap ②
 - Lower cowling
2. Place an open container under the engine.
3. Remove:
 - Drain bolts ①
 Drain the coolant.

WATER PUMP

DISASSEMBLY

NOTE:

- Be sure to drain the coolant before disassembly of the cooling system components.
- Refer to Engine Disassembly for water pump disassembly.

① Water pump

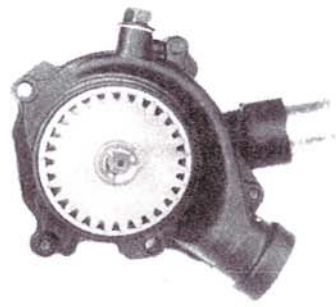
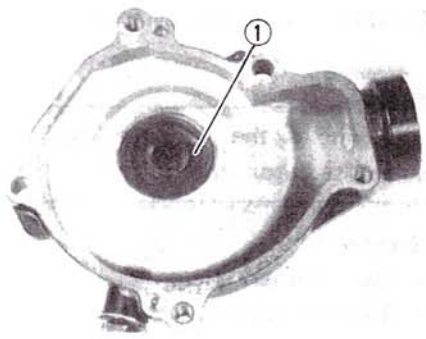
1. Remove:
 - Water pump cover ①
 - Gasket ②
 - O-ring ③
 - Circlip ④
 - Washer ⑤
 - Driven gear ⑥
 - Dowel pins ⑦
 - Impeller shaft ⑧
2. Eliminate deposits from the impeller and water pump housing.

⑨ Water pump housing

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THERMOSTATIC VALVE



INSPECTION

- Inspect:
 - Oil seal ①
Wear/Damage → Replace.
 - Impeller
Cracks/Wear/Damage → Replace.
 - O-rings (Housing and water jacket)
Wear/Damage → Replace.

ASSEMBLY

- Assembly:
 - Water pump
Reverse the disassembly procedures.

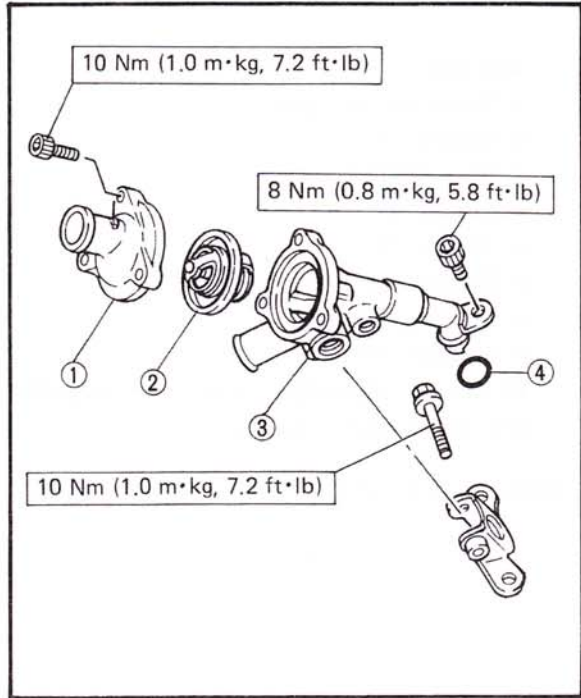
	Water Pump Cover:
	10 Nm (1.0 m·kg, 7.2 ft·lb)

INSTALLATION

- Install:
 - Water jacket (With new O-ring)
(into the water pump)
- Install:
 - Water pump (With new O-ring)
- Tighten:
 - Bolts

	Water Pump:
	10 Nm (1.0 m·kg, 7.2 ft·lb)
	Drain Bolt:
	16 Nm (1.6 m·kg, 11 ft·lb)

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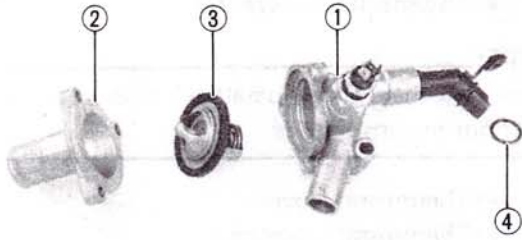


- Connect:
 - Outlet hose
 - Bypass hose
- Tighten:
 - Clamp screw

THERMOSTATIC VALVE

- ① Thermostat cover
- ② Thermostatic valve
- ③ Thermostat housing
- ④ O-ring

THERMOSTATIC VALVE



REMOVAL

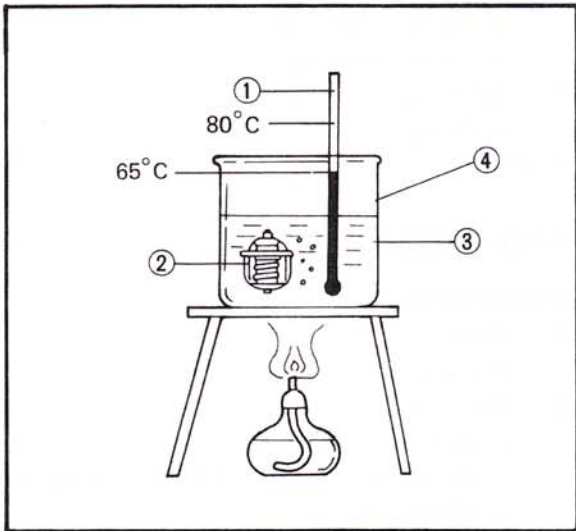
1. Drain:
 - Coolant
2. Remove:
 - Thermostat housing ①
 - Thermostat cover ②
 - Thermostatic valve ③
 - O-ring ④

Refer to CHAPTER 3 "ENGINE REMOVAL".

INSPECTION AND ASSEMBLY

1. Check:
 - Thermostatic valve

Out of specification → Replace.



Inspection steps:

- Suspend thermostatic valve in a vessel of water.
 - Place reliable thermometer in water.
 - Heat water slowly.
 - Observe thermometer.
- While stirring water continually.

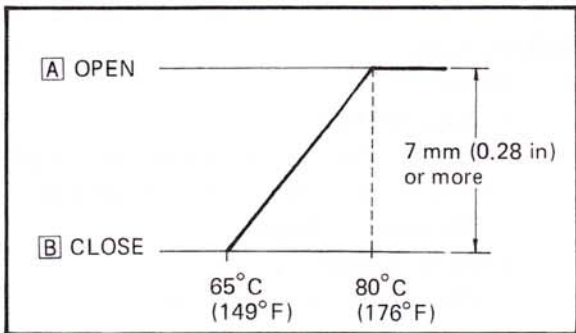


Thermostatic Valve:

Opening Temperature:
65°C (149°F)

Full Open Temperature/Lift:
80°C (176°F)/7 mm (0.28 in)
or more

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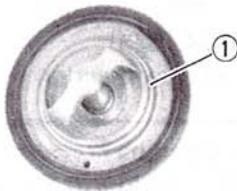
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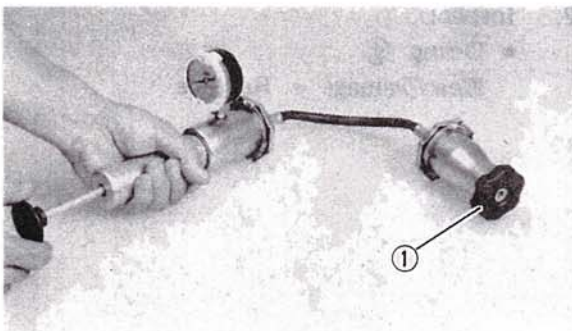
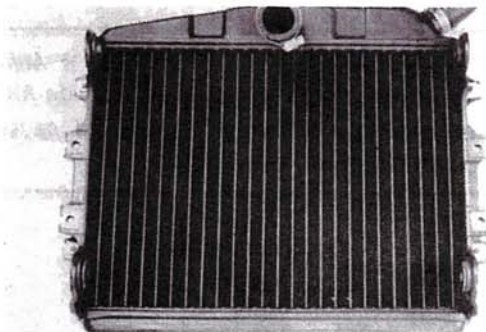
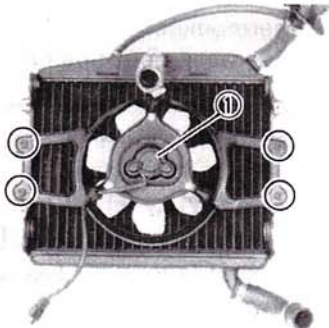
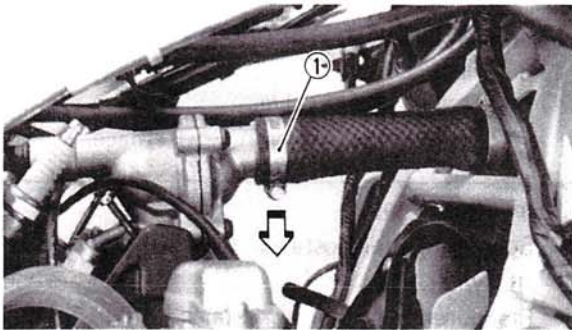
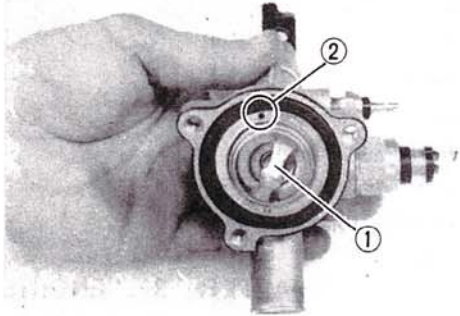
Thermostat is sealed and its setting is specialized work. If its accuracy is in doubt, always replace it. A faulty unit could cause serious overheating or overcooling.

- ① Thermometer
- ② Thermostatic valve
- ③ Water
- ④ Vessel

2. Inspect:
 - O-ring ①

Wear/Damage → Replace.



COOL**RADIATOR**

3. Install:
 - Thermostatic valve ①

NOTE:

Line up the valve breather hole ② with the housing projection.

- Thermostat cover
- Thermostat housing

4. Connect:
 - Hoses
 5. Install:
 - Air filter box
 - Air ducts
 - Center cowlings
 - Lower cowling
 6. Add:
 - Coolant
- ① Clamp

RADIATOR**DISASSEMBLY**

1. Drain:
 - Coolant
2. Remove:
 - Radiator assembly
Refer to CHAPTER 3 "ENGINE REMOVAL".
 - Fan motor assembly ①

INSPECTION

1. Inspect:
 - Radiator fins
Obstruction → Blow out with compressed air through rear of radiator.
Flattened → Repair.
 - Coolant hoses
Cracks/Damage → Replace.
2. Measure:
 - Valve opening pressure (Radiator cap ①)
Use the Cooling System Tester (90890-01325).
Out of specification → Replace.

Valve Opening Pressure:

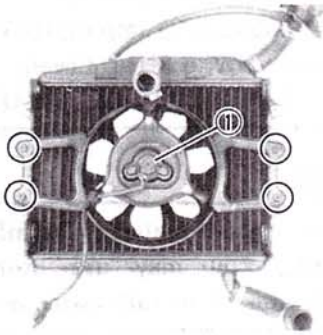
78 ~ 98 kPa (0.8 ~ 1.0 kg/cm²,
11.4 ~ 14.2 lb/in²)

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RADIATOR



3. Check:
 - Valve (Radiator cap)
Weak spring/Defective seating →
Replace radiator cap.



ASSEMBLY

1. Install:
 - Fan motor assembly ①
2. Tighten:
 - Bolts



Fan Motor:
7 Nm (0.7 m·kg, 5.1 ft·lb)

3. Install:
 - Radiator assembly
4. Tighten:
 - Bolts



Radiator:
7 Nm (0.7 m·kg, 5.1 ft·lb)

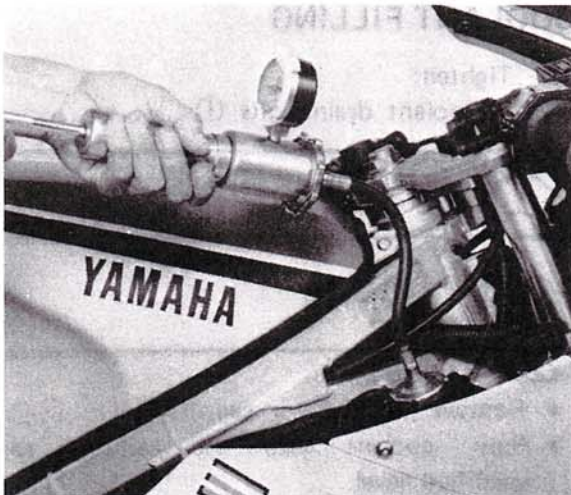
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5. Install:
 - Air filter box
 - Air ducts
 - Center cowlings
 - Lower cowlings
(Refer to disassembly procedure.)
6. Add:
 - Coolant
7. Check:
 - Cooling system

Inspection steps:

- Connect the Cooling System Tester (90890-01325).
- Apply 1.0 kg/cm² (14 lb/in²) pressure.
- Measure pressure with gauge.

Decrease of pressure (leaks) → Repair as required.



**Coolant:**

High-Quality Ethylene Glycol
Anti-Freeze Containing Anti-
Corrosion Inhibitors for Aluminum
Engines.

Collant and Soft Water Mix Ratio:
50%/50%

Total Amount:

1.95 L (1.72 Imp qt, 2.06 US qt)

Reservoir Tank Capacity:

0.35 L (0.31 Imp qt, 0.37 US qt)

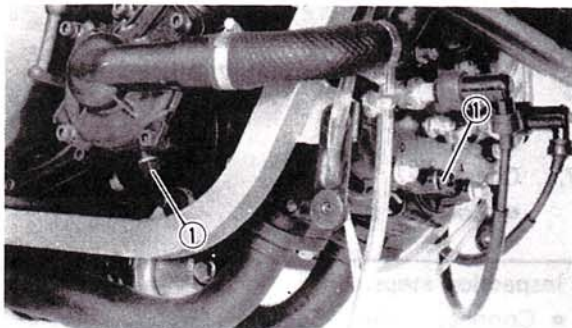
From LOW to FULL Level:

0.25 L (0.2 Imp qt, 0.3 US qt)

CAUTION:

Hard water or salt water is harmful to the engine parts. You may use boiled water or distilled water if no soft water is available.

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**COOLANT FILLING**

1. Tighten:
 - Coolant drain bolts ①

**Drain Bolt:**

16 Nm (1.6 m·kg, 11 ft·lb)

2. Fill:
 - Radiator

Coolant filling steps:

- Remove the radiator cap.
- Pour coolant into the radiator to specified level.
- Start the engine (Coolant level decreases).
- Add coolant while the engine is running.
- Stop the engine when coolant level stabilizes.

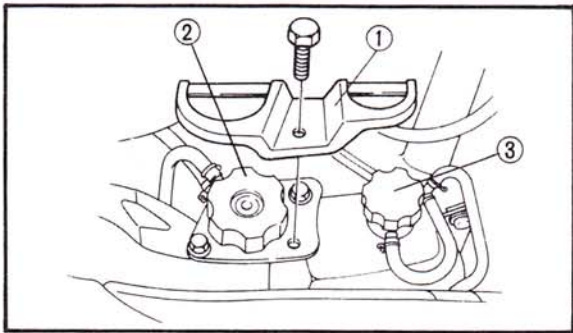
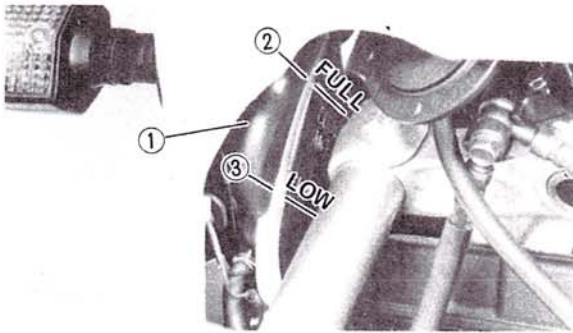
COOLANT FILLING



- Add coolant again to specified level.
- Install the radiator cap.

CAUTION:

Always check coolant level, and check for coolant leakage before starting the engine.



3. Fill:
 - Reservoir tank ①Add coolant until liquid reaches "FULL" level mark.

- ② "FULL" level
- ③ "LOW" level

4. Install:
 - Radiator cap ②
 - Reservoir tank cap ③
 - Cap retainer ①

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