



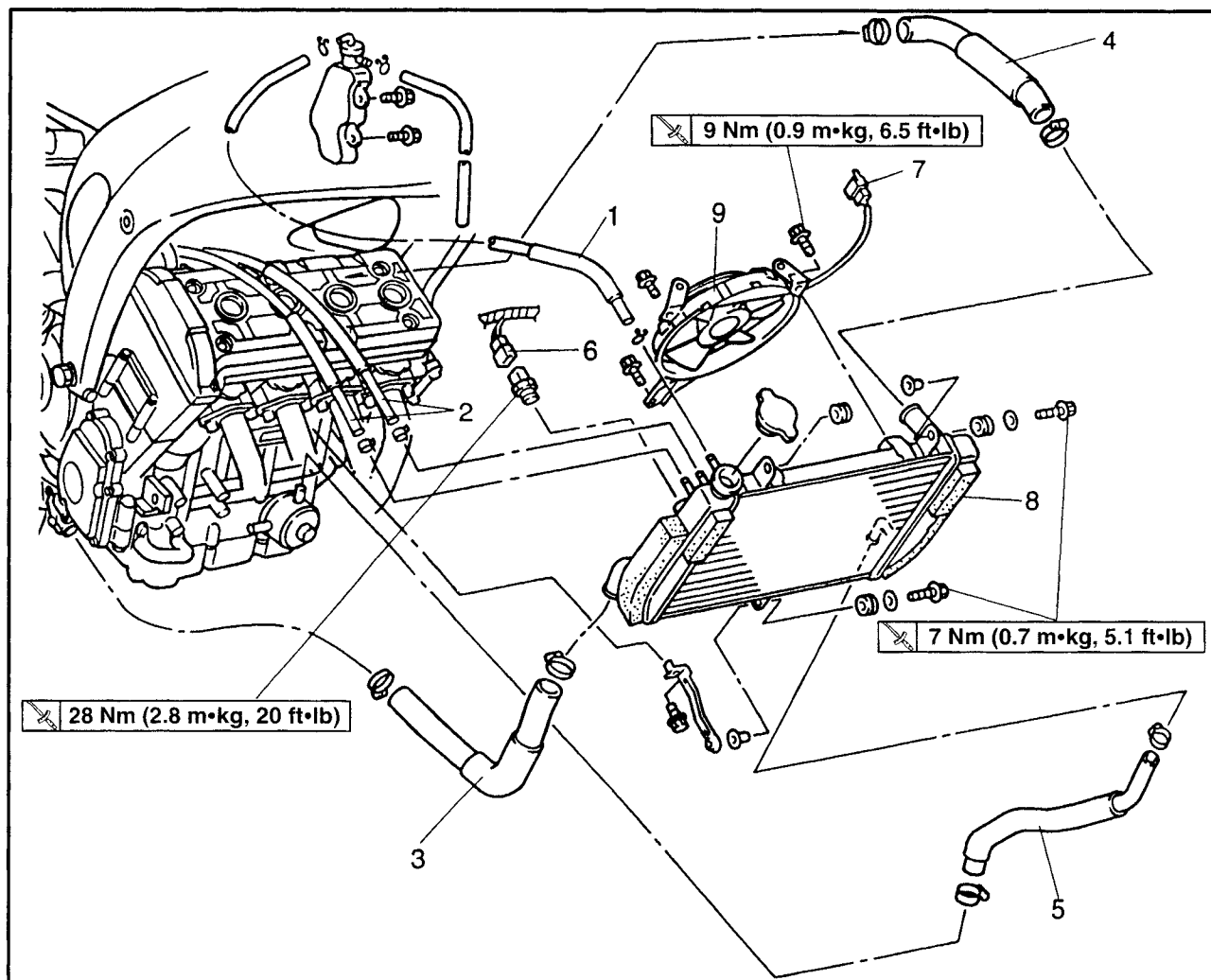
CHAPTER 5. COOLING SYSTEM

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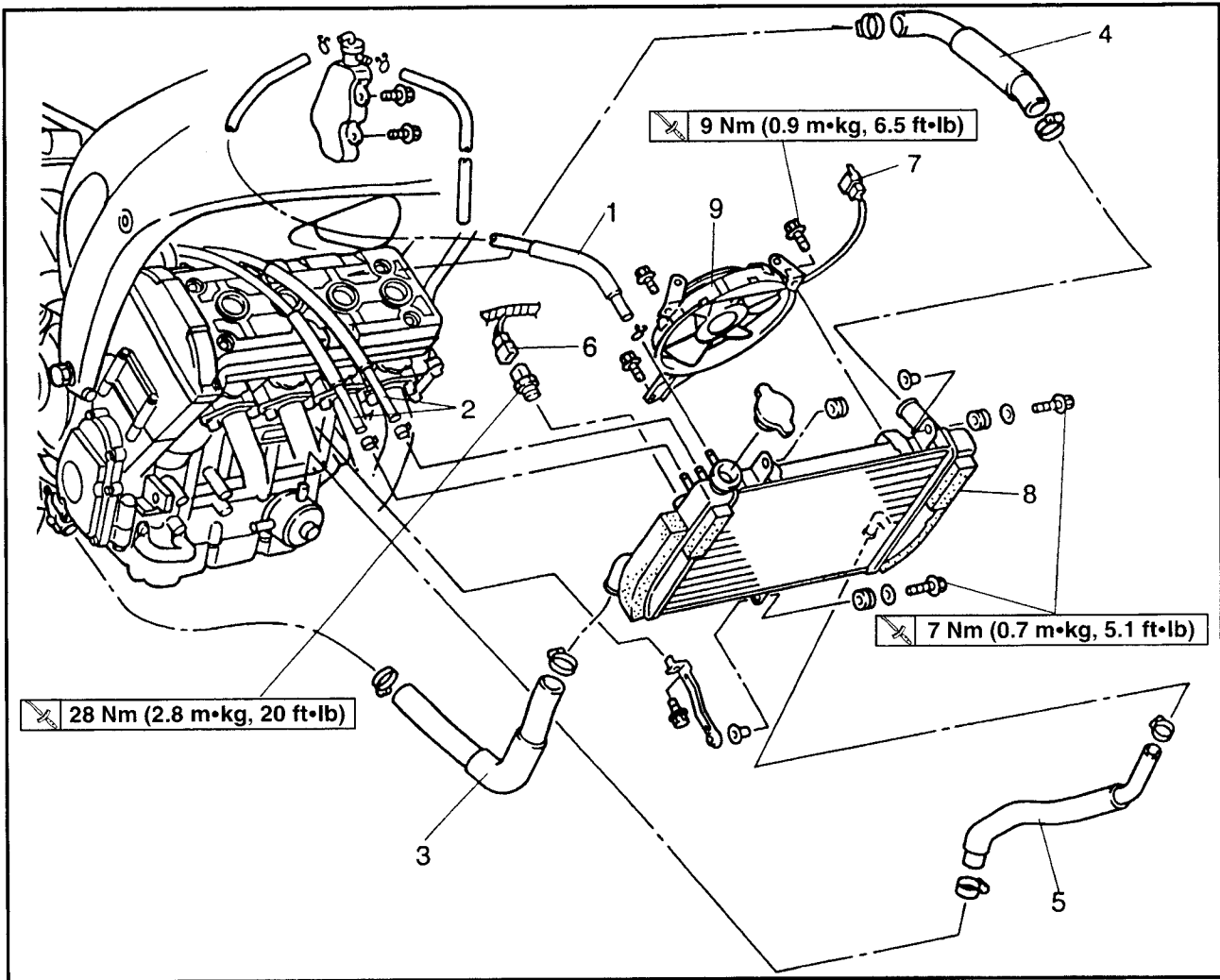


COOLING SYSTEM

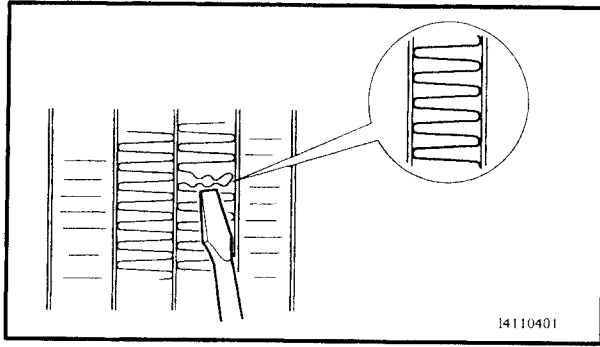
RADIATOR



Order	Job/Part	Q'ty	Remarks
	Removeing the radiator		
	Rider seat and fuel tank		Remove the parts in the order listed. Refer to "SEATS" and "FUEL TANK" in chapter 3.
	Air filter case and heat protector plate		Refer to "AIRFILTER CASE AND IGNITION COILS" in chapter 3.
	Bottom cowlings and side cowlings		Refer to "COWLINGS" in chapter 3.
	Coolant		Drain.
1	Coolant reserver hose	1	
2	Breather hose	2	
3	Radiator outlet hose	1	Disconnect.



Order	Job/Part	Q'ty	Remarks
4	Radiator inlet hose	1	Disconnect.
5	Oil cooler outlet hose	1	
6	Thermo switch coupler	1	Disconnect.
7	Radiator fan motor coupler	1	Disconnect.
8	Radiator	1	
9	Radiator fan	1	
			For installation reverse the removal procedure.



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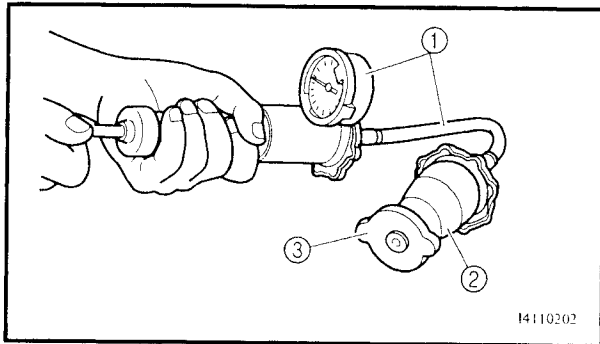
CHECKING THE RADIATOR

1. Check:
 - radiator fins
Obstruction → Clean.
Apply compressed air to the rear of the radiator.
Damage → Repair or replace.

NOTE:

Straighten any flattened fins with a thin, flat-head screwdriver.

2. Check:
- radiator hoses
Cracks/damage → Replace.



3. Measure:
- radiator cap opening pressure
- Below the specified pressure → Replace the radiator cap.



Radiator cap opening pressure

**110 ~ 140 kPa
(1.1 ~ 1.4 kg/cm²,
16.0 ~ 20.3 psi)**

- a. Install the radiator cap tester ① and adapter ② onto the radiator cap ③.



Radiator cap tester

90890-01325, YU-24460-01

Adapter

90890-01352, YU-33984

- b. Apply the specified pressure for ten seconds and make sure that there is no drop in pressure.

4. Check:
- radiator fan
- Damage → Replace.
- Malfunction → Check and repair.
- Refer to “COOLING SYSTEM” in chapter 8.



EAS00456

INSTALLING THE RADIATOR**1. Fill:**

- cooling system
(with the specified amount of the recommended coolant)

Refer to "CHANGING THE COOLANT" in chapter 3.

2. Check:

- cooling system
Leaks → Repair or replace any faulty part.

3. Measure:

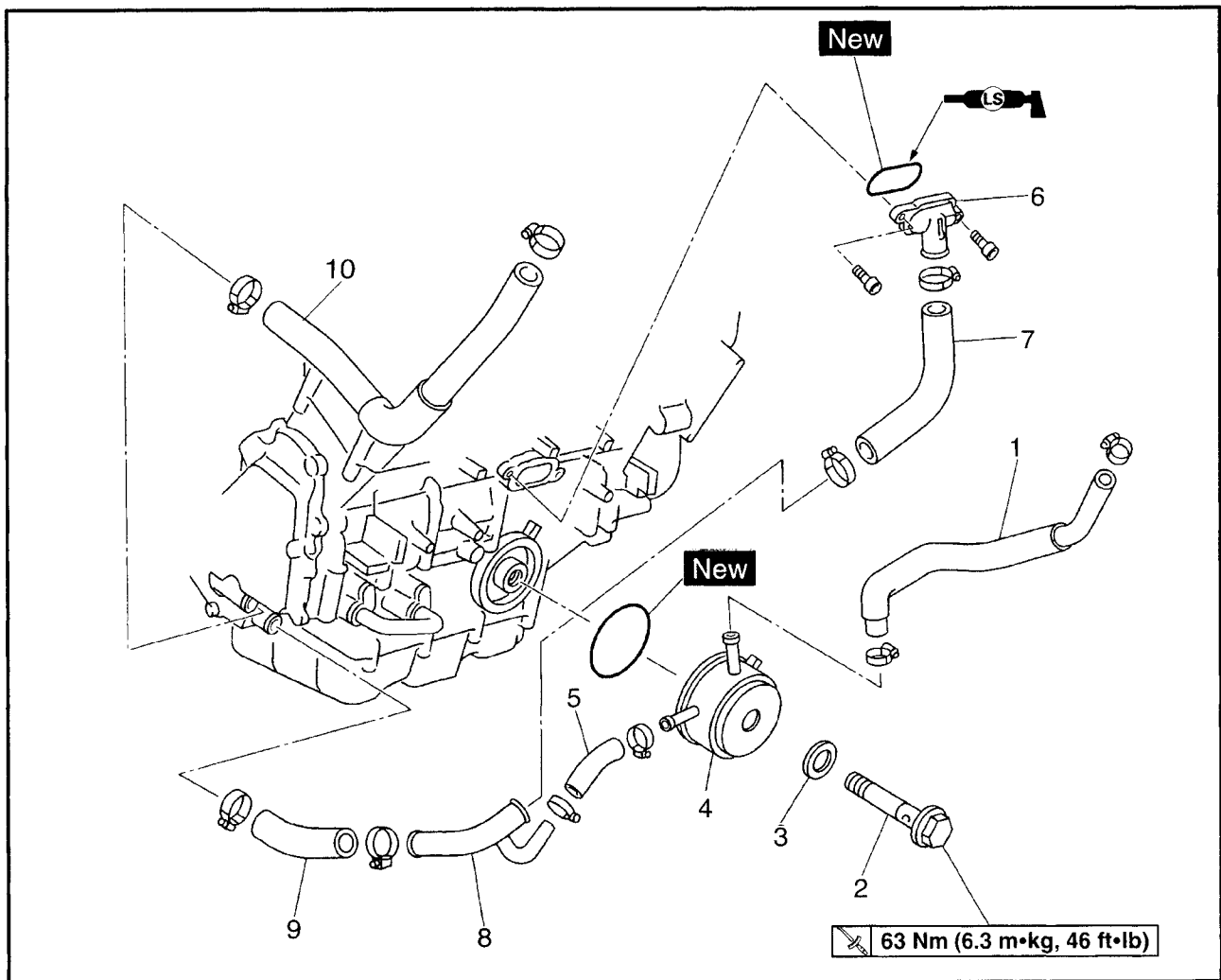
- radiator cap opening pressure
Below the specified pressure → Replace the radiator cap.

Refer to "CHECKING THE RADIATOR".

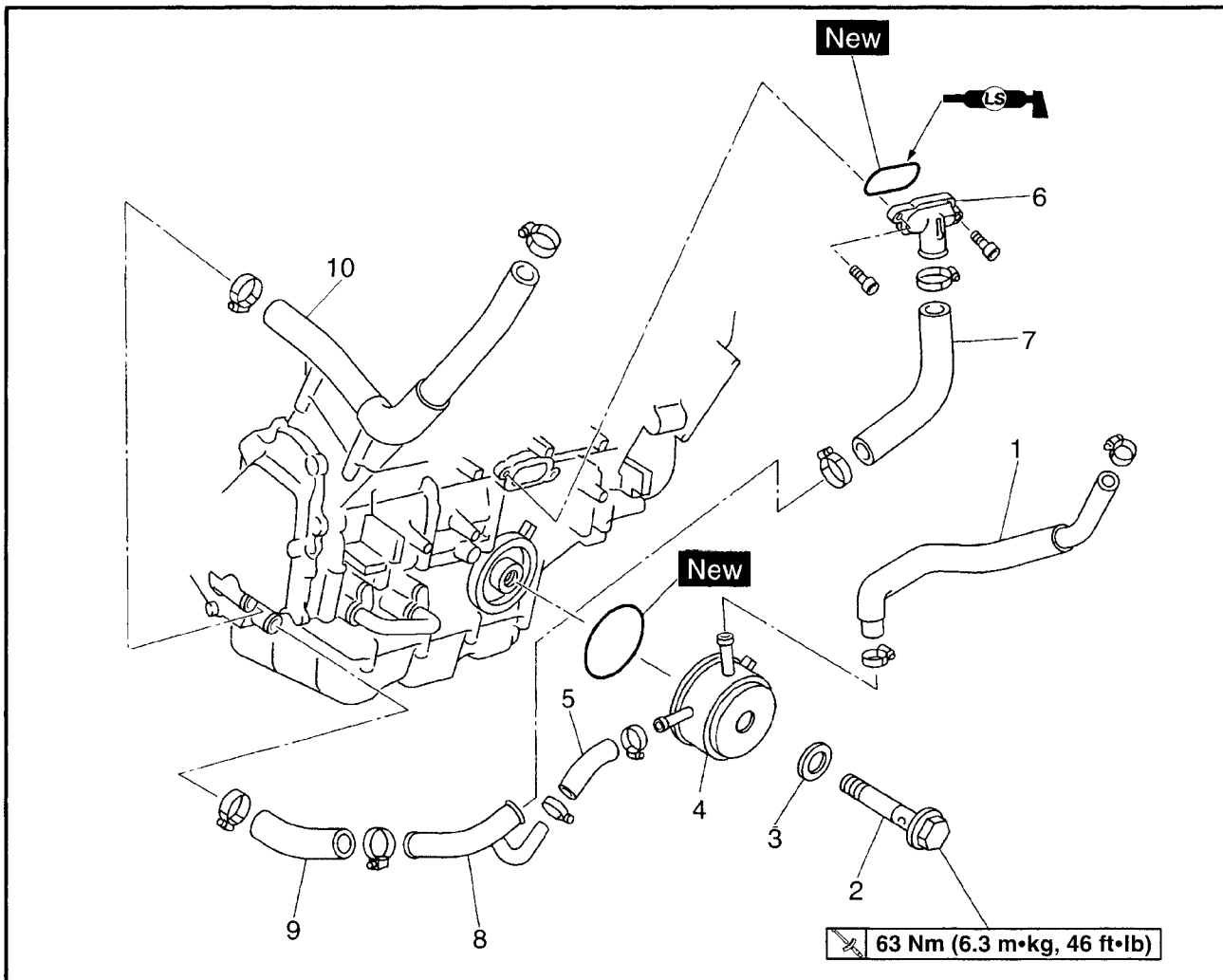


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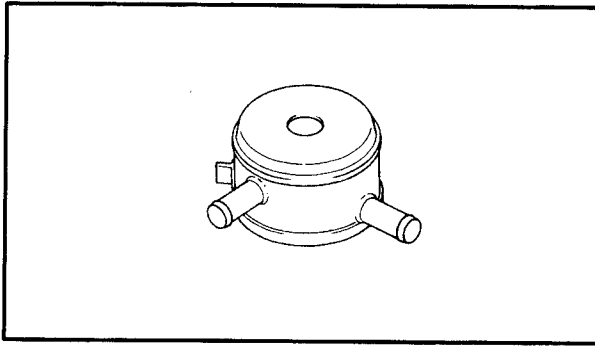
OIL COOLER



Order	Job/Part	Q'ty	Remarks
	Removing the oil cooler		
	Radiator assembly		Remove the parts in the order listed.
	Exhaust pipe assembly		Refer to "RADIATOR".
	Engine oil		Refer to "ENGINE" in chapter 4.
			Drain.
			Refer to "CHANGING THE ENGINE OIL" in chapter 3.
1	Oil cooler outlet hose	1	Refer to "INSTALLING THE OIL COOLER".
2	Bolt	1	
3	Washer	1	
4	Oil cooler	1	



Order	Job/Part	Q'ty	Remarks
5	Oil cooler inlet hose	1	
6	Water jacket joint	1	
7	Water jacket joint hose	1	
8	Water pump outlet pipe	1	
9	Water pump outlet hose	1	
10	Water pump inlet hose	1	
			For installation, reverse the removal procedure.



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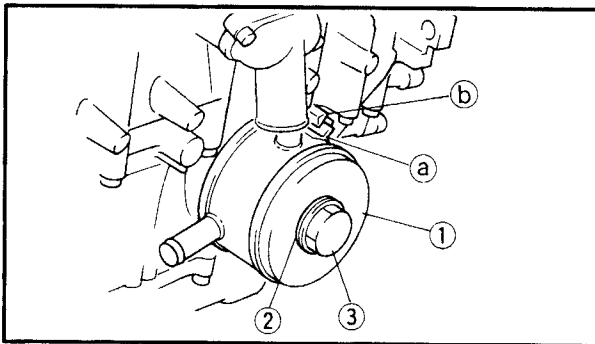
CHECKING THE OIL COOLER

1. Check:
 - oil cooler
Cracks/damage → Replace.
2. Check:
 - oil cooler inlet hose
 - oil cooler outlet hose
Cracks/damage/wear → Replace.
3. Check:
 - water jacket joint
 - water jacket joint inlet hose
 - water pump outlet hose
Cracks/damage → Replace.

EBS00459

INSTALLING THE OIL COOLER

1. Clean:
 - mating surfaces of the oil cooler and the crankcase
(with a cloth dampened with lacquer thinner)



2. Install:

- O-ring **New**
- oil cooler ①
- washer ② **New**
- bolt ③

63 Nm (6.3 m•kg, 46 ft•lb)
NOTE:

- Before installing the oil cooler, lubricate the oil cooler bolt and O-ring with a thin coat of engine oil.
- Make sure that the O-ring is positioned properly.
- Align the projection (a) on the oil cooler with the slot (b) in the crankcase.

3. Bend the lock washer tab along a flat side of the bolt.

**4. Fill:**

- cooling system

(with the specified amount of the recommended coolant)

Refer to "CHANGING THE COOLANT" in chapter 3.

- crankcase

(with the specified amount of the recommended engine oil)

Refer to "CHANGING THE ENGINE OIL" in chapter 3.

5. Check:

- cooling system

Leaks → Repair or replace any faulty part.

6. Measure:

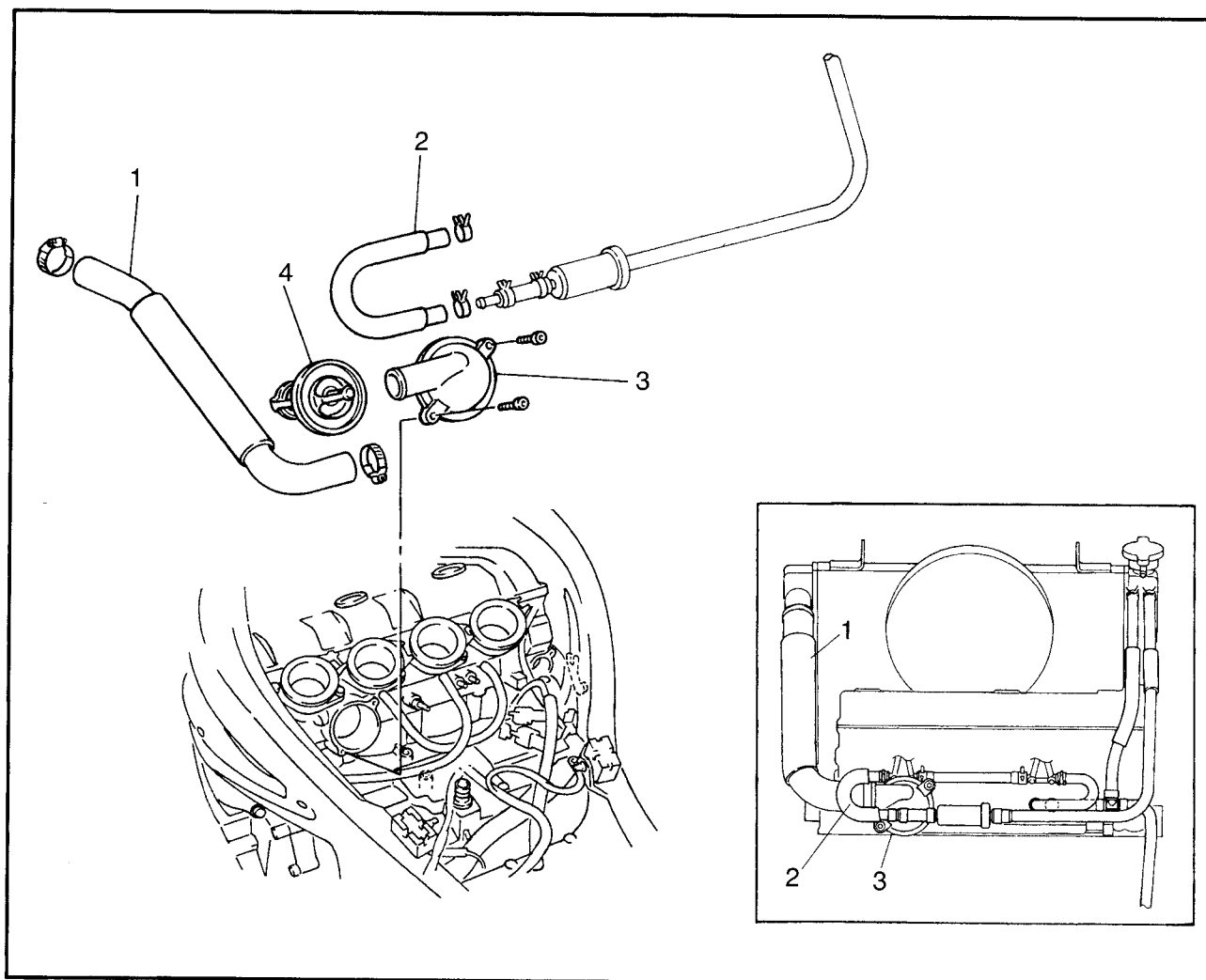
- radiator cap opening pressure

Below the specified pressure → Replace the radiator cap.

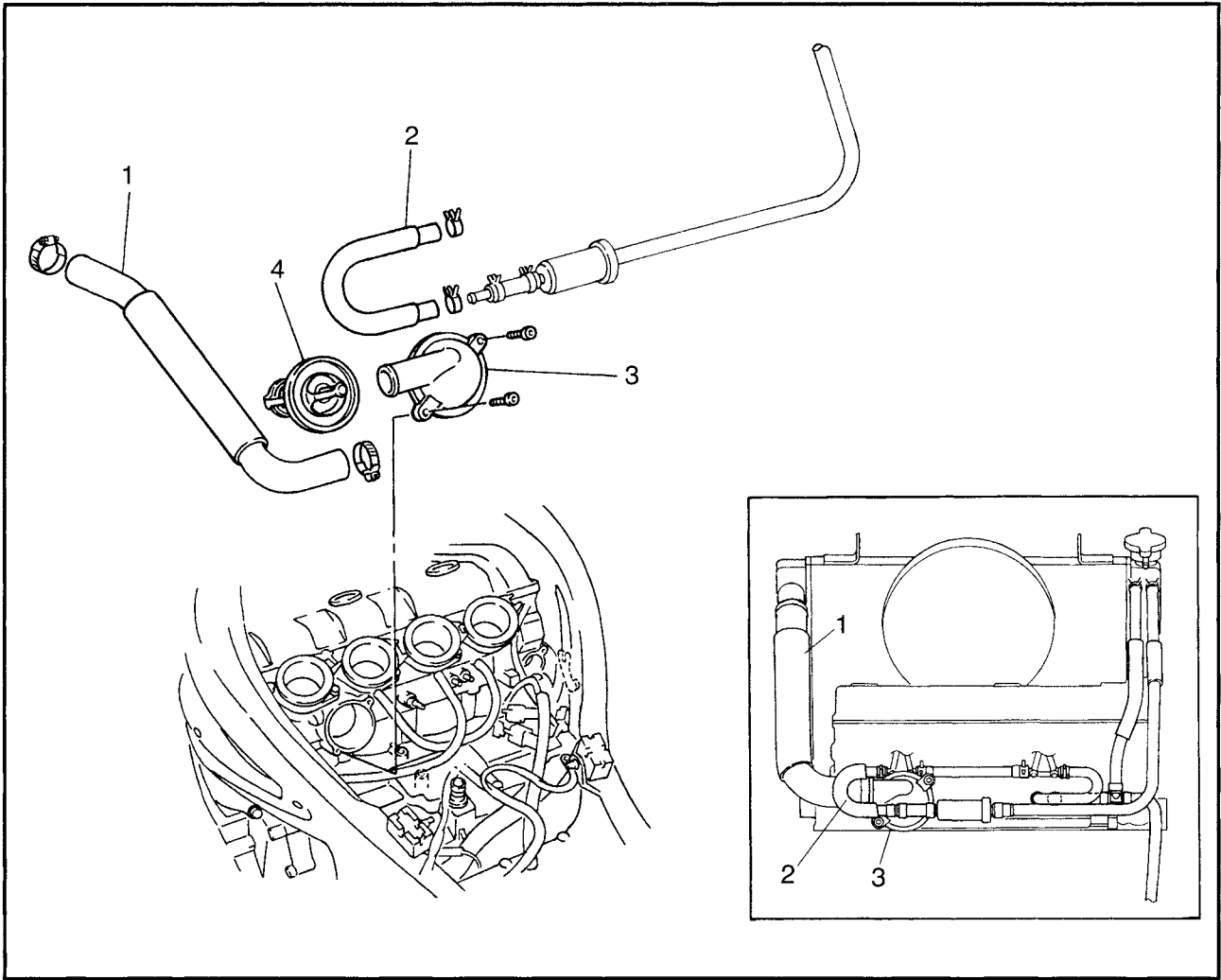
Refer to "CHECKING THE RADIATOR".



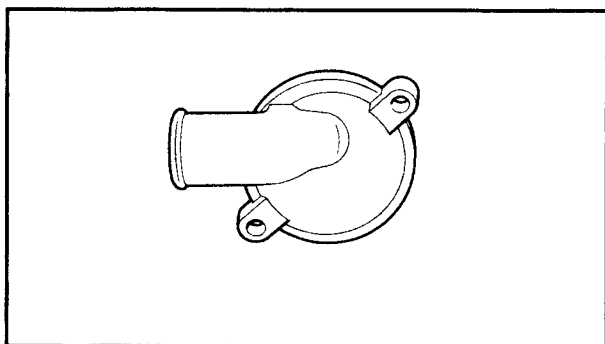
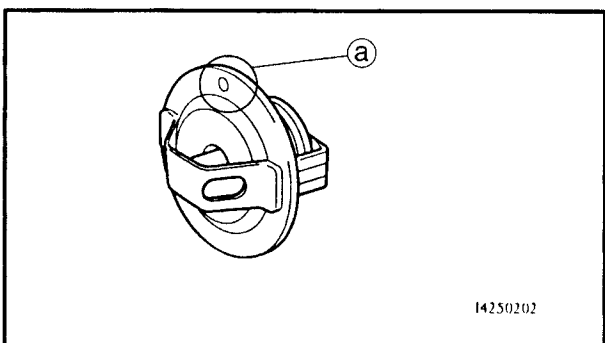
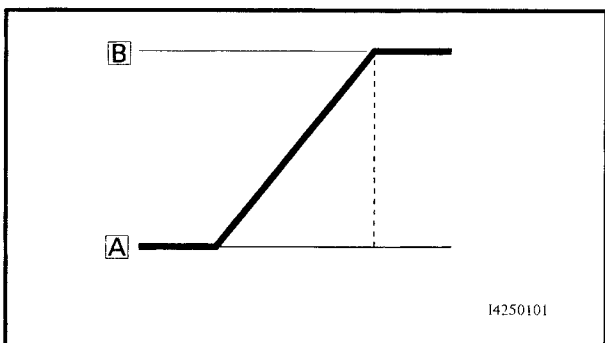
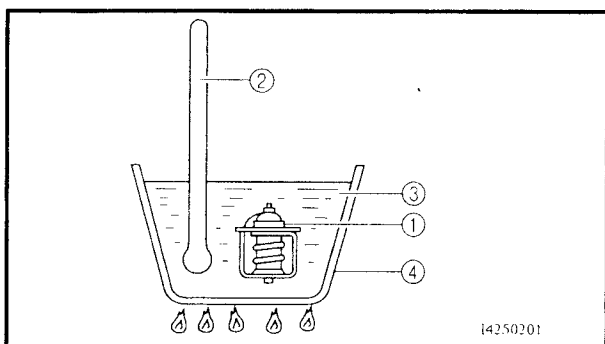
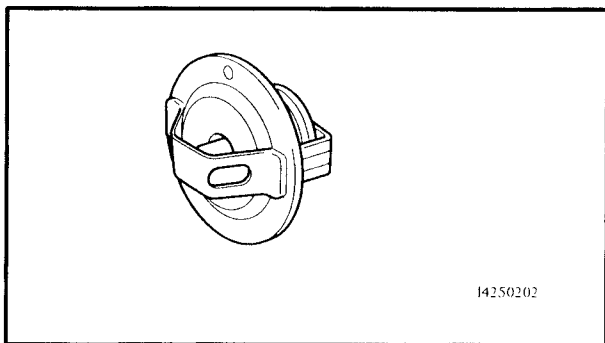
THERMOSTAT



Order	Job/Part	Q'ty	Remarks
	Removing the thermostat Rider seat and fuel tank Coolant Air filter case Carburetor assembly		Remove the parts in the order listed. Refer to "SEAT" and "FUEL TANK" in chapter 3. Drain. Refer to "CHANGING THE COOLANT" in chapter 3. Refer to "AIRFILTER CASE AND IGNITION COILS" in chapter 3. Refer to "CARBURETORS" in chapter 6.



Order	Job/Part	Q'ty	Remarks
1	Radiator inlet hose	1	Refer to "INSTALLING THE THERMOSTAT" For installation, reverses the removal procedure.
2	Carburator outlet hose	1	
3	Thermostat cover	1	
4	Thermostat	1	



EAS00462

CHECKING THE THERMOSTAT

1. Check:
- thermostat ①
- Does not open at $71 \sim 84^{\circ}\text{C}$ ($160 \sim 183^{\circ}\text{F}$)
(without California) → Replace.
- Does not open at $82 \sim 95^{\circ}\text{C}$ ($178 \sim 203^{\circ}\text{F}$)
(California) → Replace.

- Suspend the thermostat in a container filled with water.
- Slowly heat the water.
- Place a thermometer in the water.
- While stirring the water, observe the thermostat and thermometer's indicated temperature.

- ① Thermostat
 ② Thermometer
 ③ Water
 ④ Container
 A Fully closed
 B Fully opens

NOTE:

If the accuracy of the thermostat is in doubt, replace it. A faulty thermostat could cause serious overheating or overcooling.

2. Check:
- thermostat housing cover
 - thermostat housing
- Cracks/damage → Replace.

EB00467


INSTALLING THE THERMOSTAT

1. Install:
 - thermostat

NOTE:

Install the thermostat with its breather hole (a) facing up.

2. Install
- thermostat cover

 10 Nm (1.0 m•kg, 7.2 ft•lb)

NOTE:

Before installing the thermostat cover to the cylinder head, lubricate the O-ring with a thin coat of lithium soap base grease.



3. Fill:

- cooling system

(with the specified amount of the recommended coolant)

Refer to "CHANGING THE COOLANT" in chapter 3.

4. Check:

- cooling system

Leaks → Repair or replace any faulty part.

5. Measure:

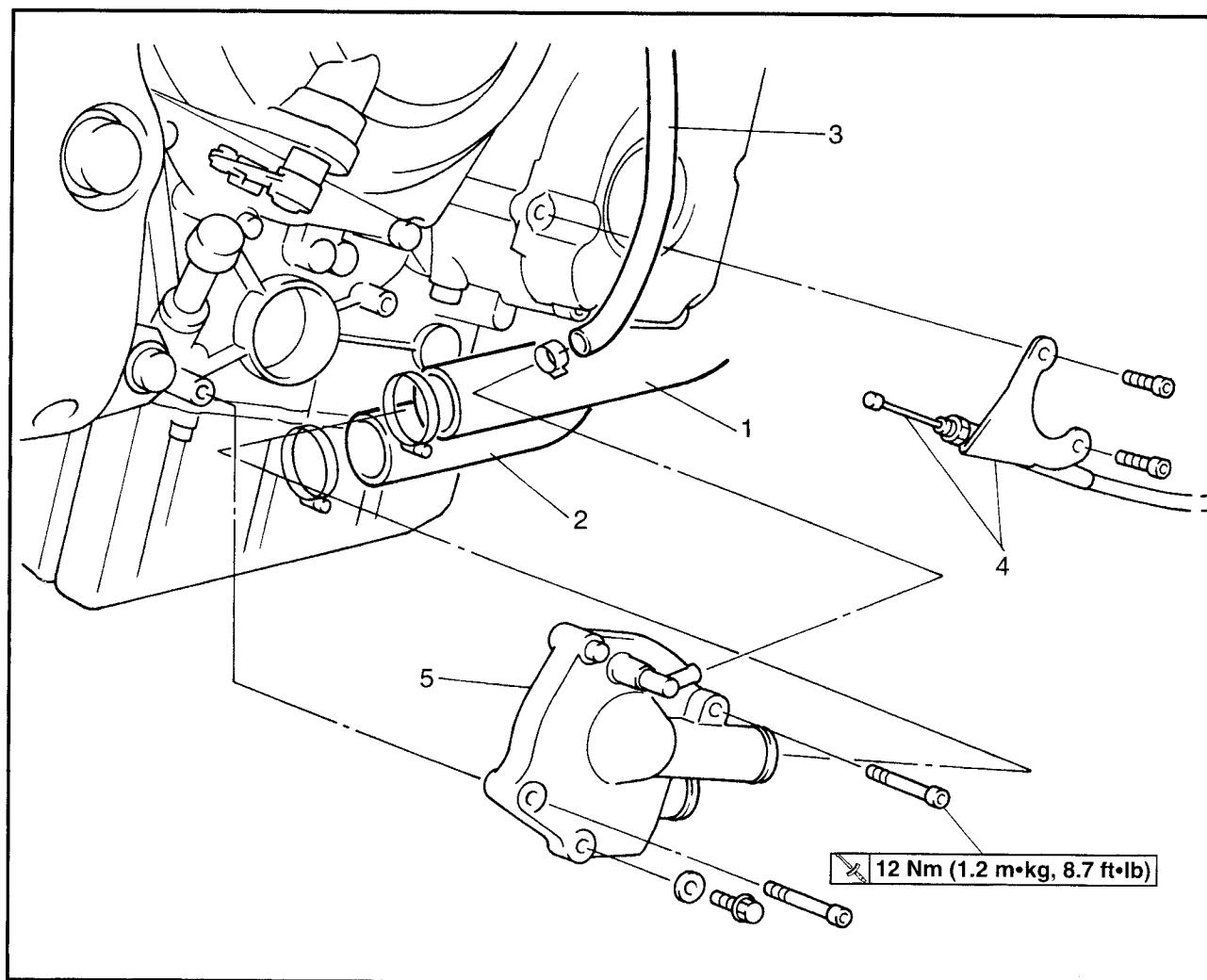
- radiator cap opening pressure

Below the specified pressure → Replace the radiator cap.

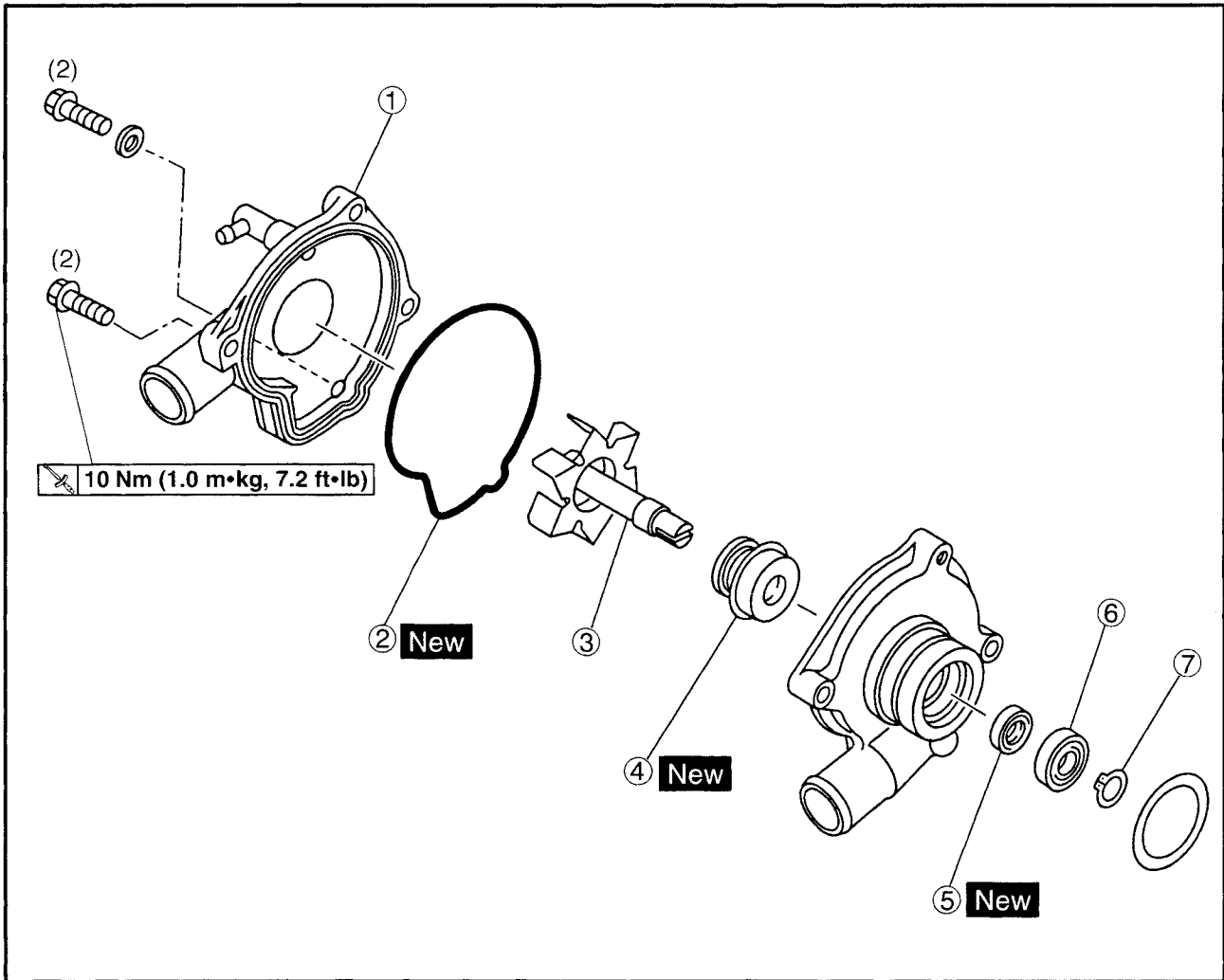
Refer to "CHECKING THE RADIATOR".



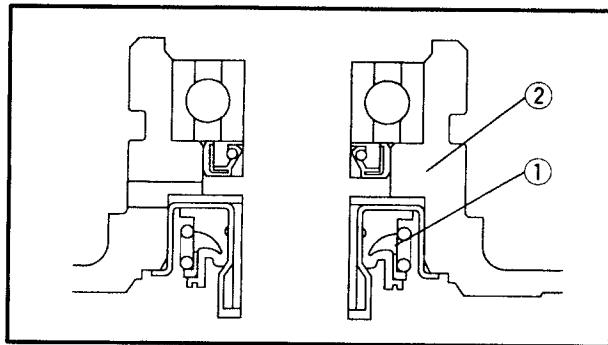
WATER PUMP



Order	Job/Part	Q'ty	Remarks
	Removing the water pump assembly Coolant		Remove the parts in the order listed. Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Water pump inlet hose	1	
2	Water pump outlet hose	1	
3	Water pump hose	1	
4	Clutch wire and holder	1	
5	Water pump	1	
			For installation, reverse the removal procedure.



Order	Job/Part	Q'ty	Remarks
	Disassembling the water pump assembly		Disassemble the parts in the order listed.
①	Water pump cover	1	Refer to "DISASSEMBLING/ ASSEMBLING THE WATER PUMP".
②	O-ring	1	
③	Impeller shaft (along with the impeller)	1	
④	Water pump seal	1	
⑤	Oil seal	1	
⑥	Bearing	1	
⑦	Circlip	1	
			For assembly, reverse the disassembly procedure.



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DISASSEMBLING THE WATER PUMP

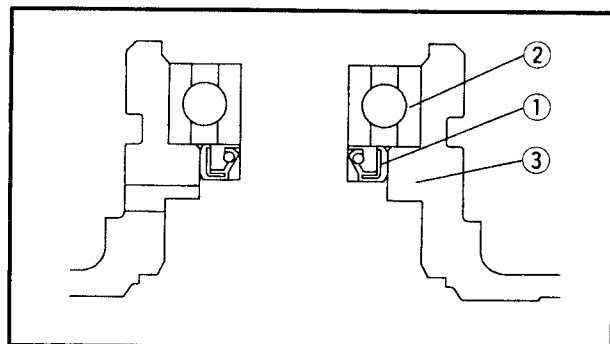
1. Remove:

- water pump seal ①

NOTE:

Tap out the water pump seal from the inside of the water pump housing.

② Water pump housing



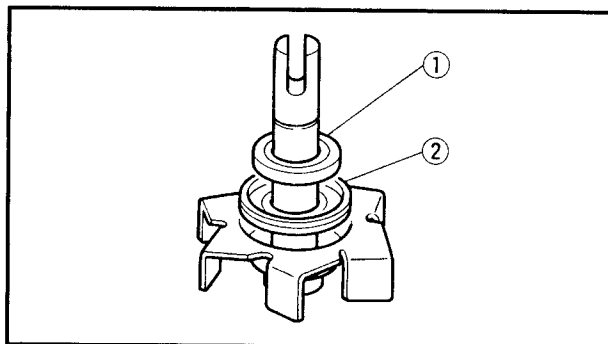
2. Remove:

- oil seal ①
- circlip
- bearing ②

NOTE:

Tap out the bearing and oil seal from the outside of the water pump housing.

③ Water pump housing

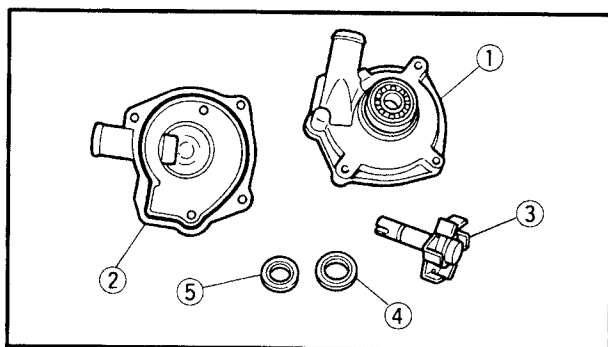


3. Remove:

- rubber damper holder ①
- rubber damper ②
(from the impeller, with a thin, flat-head screwdriver)

NOTE:

Do not scratch the impeller shaft.



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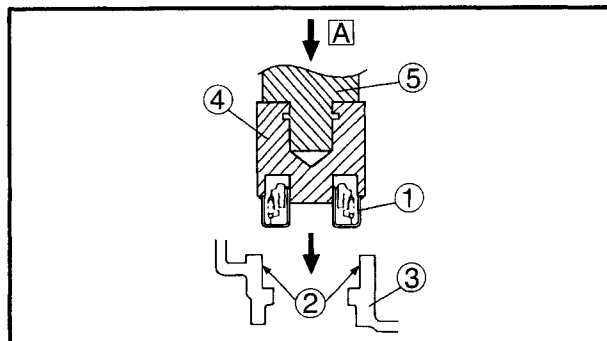
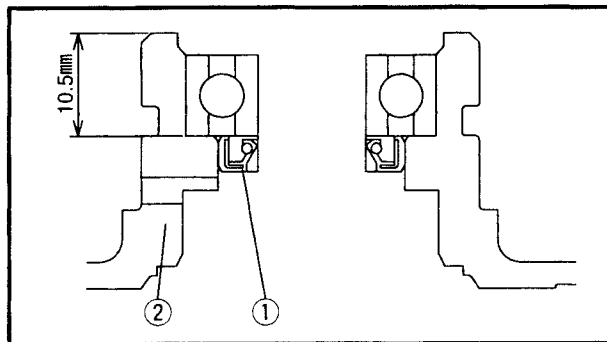
CHECKING THE WATER PUMP

1. Check:

- water pump housing cover ①
 - water pump housing ②
 - impeller ③
 - rubber damper ④
 - rubber damper holder ⑤
- Cracks/damage/wear → Replace.

2. Check:

- water pump seal
 - oil seal
- Cracks/damage/wear → Replace.
- bearing
- Rough movement → Replace.



EAS00475

ASSEMBLING THE WATER PUMP**1. Install:**

- bearing
- oil seal ① **New**
- (into the water pump housing ②)

NOTE:

- Before installing the oil seal, apply tap water or coolant onto its outer surface.
- Install the oil seal with a socket that matches its outside diameter.

2. Install:

- water pump seal ① **New**

CAUTION:

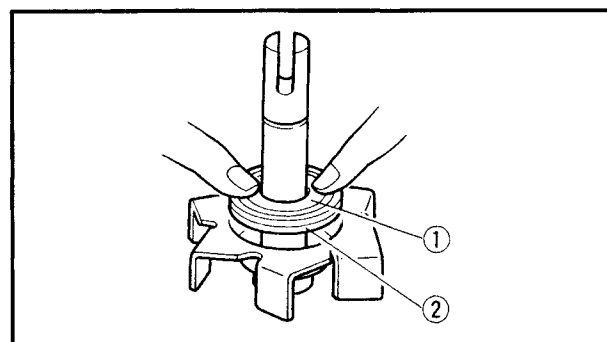
Never lubricate the water pump seal surface with oil or grease.

NOTE:

- Install the water pump seal with the special tools.
- Before installing the water pump seal, apply Yamaha bond No.1215 ② to the water pump housing ③.

**Mechanical seal installer****90890-04078, YM-33221 ④****Middle driven shaft bearing driver****90890-04058, YM-04058-1 ⑤****Yamaha bond No. 1215****90890-85505, ACC-1100-15-01**

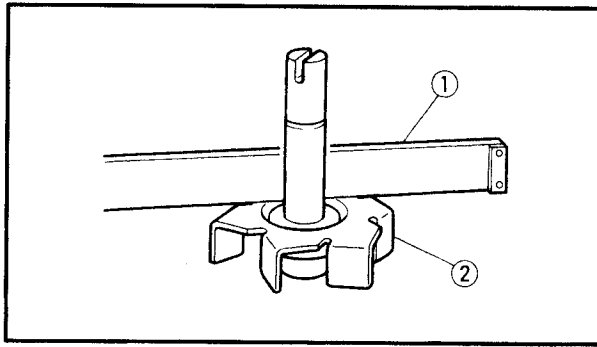
A Push down.

**3. Install:**

- rubber damper ① **New**
- rubber damper holder ② **New**

NOTE:

Before installing the rubber damper, apply tap water or coolant onto its outer surface.



4. Measure:

- impeller shaft tilt

Out of specification → Repeat steps (3) and (4).

CAUTION:

Make sure that the rubber damper and rubber damper holder are flush with the impeller.



Max. impeller shaft tilt
0.15 mm (0.006 in)

① Straightedge

② Impeller