COOLING SYSTEM

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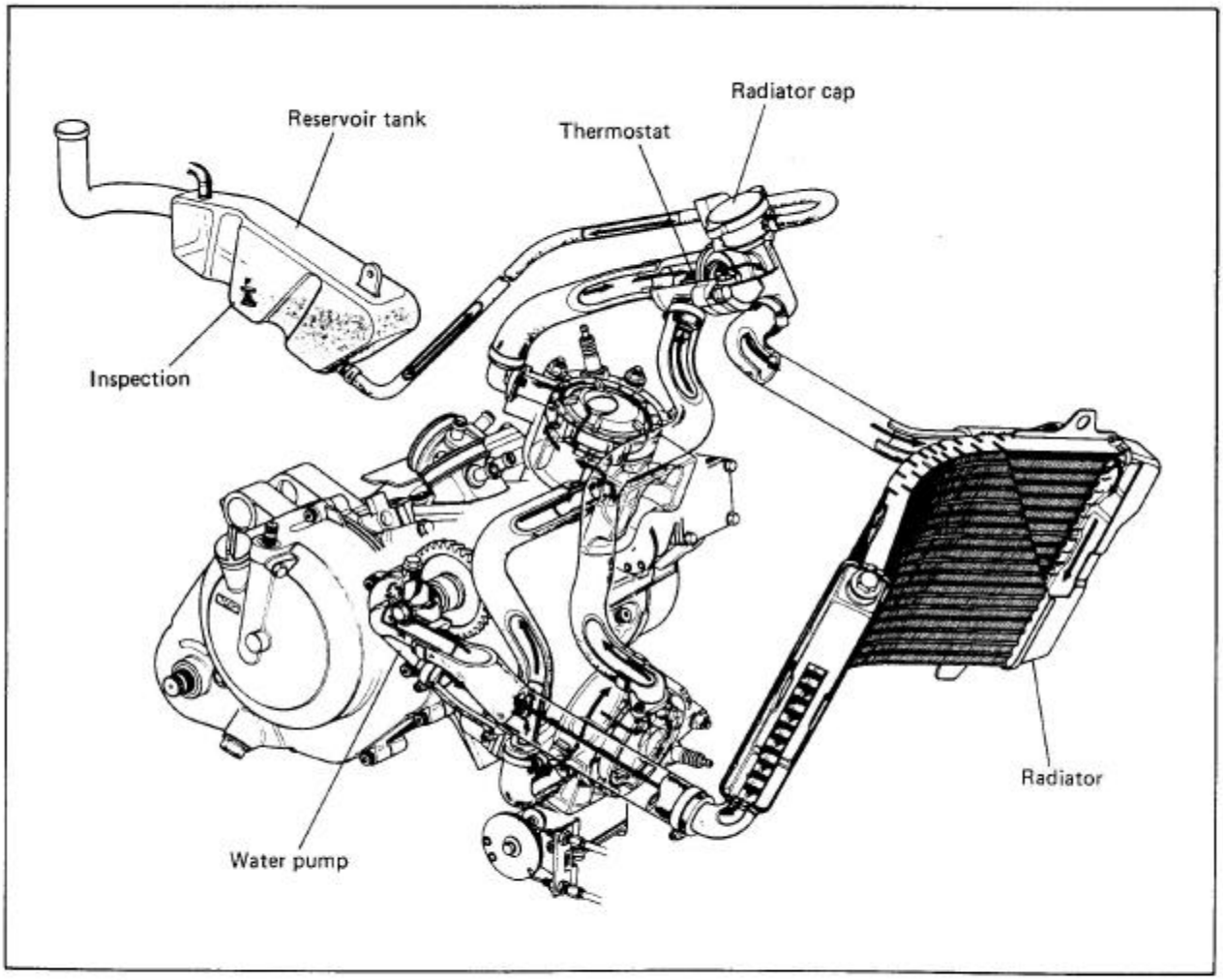
DESCRIPTION

The engine is cooled by coolant set in forced recirculation through jackets formed in the cylinder and head, and through the radiator. For the water pump, a high-capacity centrifugal pump is used. For the radiator, a tube-and-fin type aluminum in material, and is characterized by lightness in weight and good heat dissipation.

The thermostat is of wax pellet type, complete with a valve as the means of temperature-dependent control over the flow of water through the radiator. The valve is actuated by the temperature-sensitive wax contained in the pellet.

Referring to the following illustration, the thermostat is in closed condition, so that water recirculates through the route comprising pump, engine, by-pass holes of the thermostat and radiator in the regulated condition.

As the coolant temperature rises to 50°C and the thermostat valve unseats, the normal water flow is established. At about 65°C of rising coolant temperature, the thermostat becomes completely open and the most of heat is released to the atmosphere through the radiator core.



COOLING SOLUTION

At the time of manufacture, the cooling system is filled with a 50 : 50 solution of distilled water and anti-freeze/summer coolant. This 50 : 50 mixture will provide excellent heat protection, and will protect the cooling system from freezing at temperatures above –31°C.

If the motorcycle is to be exposed to temperatures below –31°C, this mixing ratio should be increased up to 55% or 60% according to the Fig. 2.

NOTE:

The characteristics of different anti-freezes vary. Read the label to know the protection you will have.

CAUTION:

Do not put in more than 60% anti-freeze or less than 50%. Do not mix different brands of anti-freeze.

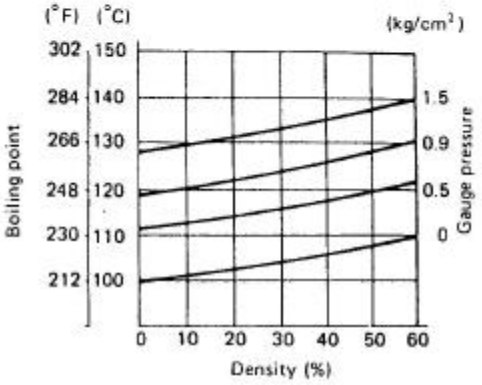


Fig. 1 Coolant density-boiling point curve.

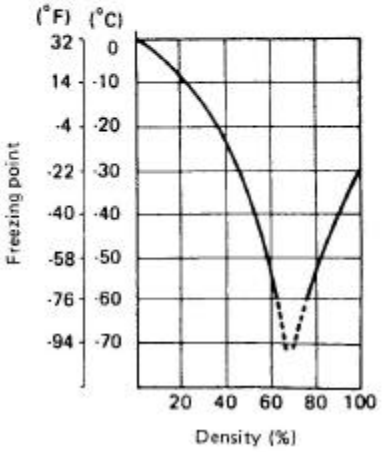


Fig. 2 Coolant density-freezing point curve.

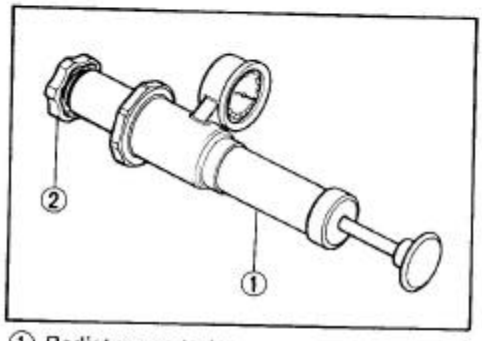
REMOVAL

- Remove the fairing. (Refer to page 7-1.)
- Drain the cooling solution by removing drain plug. (Refer to page 3-1.)
- Disconnect water hoses. (Refer to page 3-4.)
- Remove the radiator.

INSPECTION

Before removing the radiator and draining coolant, inspect the following two items.

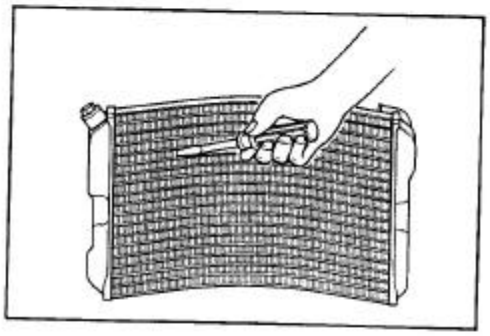
1. Test the cooling system for tightness by using the radiator tester as follows:
   Remove the radiator cap, and connect the tester to the filler. Give a pressure of about 100 kPa (1.0 kg/cm²) and see if the system holds this pressure for 10 seconds. If the pressure should fall during this 10 second-interval, it means that there is a leaking point in the system; in such a case, inspect the entire system and replace the leaking component or part.
2. Test the radiator cap for relieving pressure by using the radiator tester in the following manner: Fit the cap to the tester, as shown, and build up pressure slowly by operating the tester. Make sure that the pressure build-up stops at 110 ± 10 kPa (1.1 ± 0.1 kg/cm²) and that, with the tester held standstill, the cap is capable of that pressure for at least 10 seconds. Replace the cap if it is found not to satisfy either of these two requirements.



① Radiator cap tester
② Radiator cap

Radiator cap valve release pressure: 110 ± 10 kPa (1.1 ± 0.1 kg/cm²)

3. Road dirt or trashes stuck to the fins must be removed. Use of compressed air is recommended for this cleaning. Fins bent down or dented can be repaired by straightening them with the blade of a small screwdriver.
4. Any water hose found in cracked condition or flattened must be replaced.



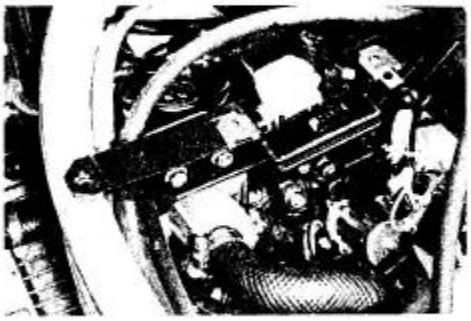
INSTALLATION

The radiator is reinstalled in the reverse order of the removal procedure. After installing the radiator, be sure to add cooling water: refer to page 2-8 for refilling information.

THERMOSTAT

REMOVAL

- Remove the seat and fuel tank. (Refer to page 2-4.)
- Drain the coolant.
- Remove the water hose and thermostat cover ①.

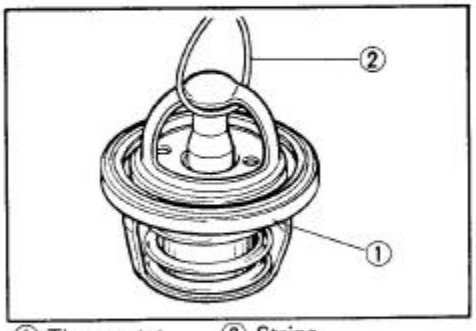


INSPECTION

Inspect the thermostat pellet for signs of cracking.

Test the thermostat at the bench for control action, in the following manner:

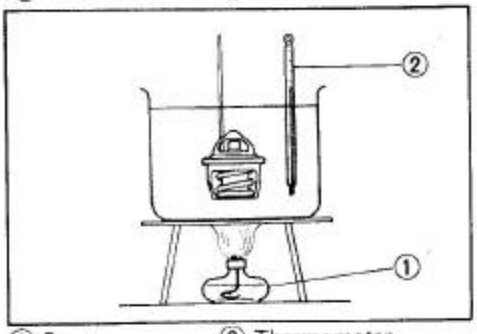
- Pass a string between flange, as shown in the figure.
- Immerse the thermostat in the water contained in the jar, as shown in the figure. Note that the immersed thermostat is in suspension. Heat the water by placing the jar on a stove and observe the rising temperature on the thermometer.
- Read the thermometer just when the thermostat drops to the bottom of the jar. This reading, which is the temperature level at which the thermostat valve begins to open, should be anywhere between 48° and 52°C.



① Thermostat ② String

Thermostat valve opening temperature: 50 ± 2°C

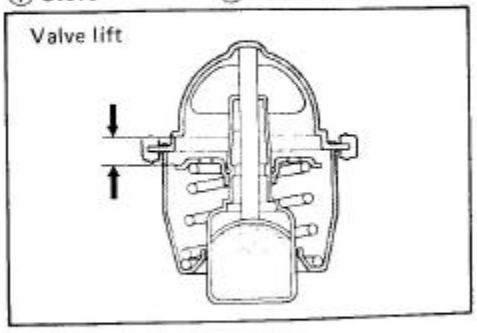
- Keep on heating the water to raise its temperature to and beyond 65°C.
- Just when the water reaches 65°C, the thermostat valve should have lifted by at least 7.0 mm.



① Stove ② Thermometer

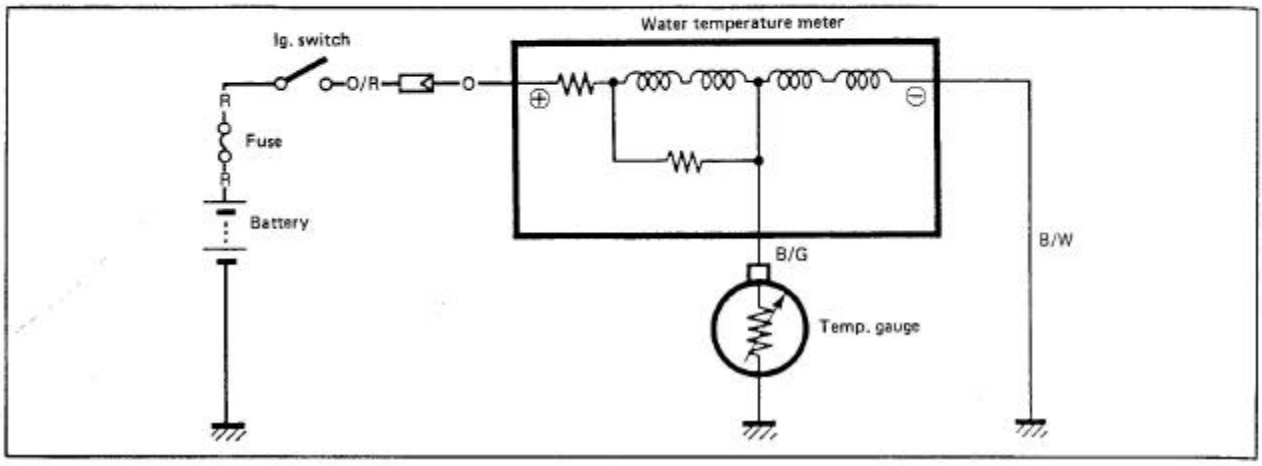
Thermostat valve lift: Over 7.0 mm at 65°C

- A thermostat failing to satisfy either of the two requirements (start-to-open temperature and valve lift) must be replaced.
- Tighten the thermostat cover bolts to the specification.



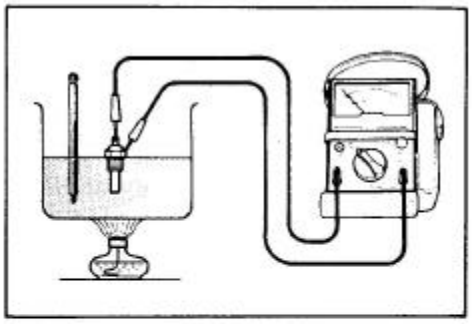
WATER TEMPERATURE AND TEMPERATURE GAUGE

The following circuit diagram shows the electrical wiring for the thermometer. The major components are: temperature gauge in contact with cooling water; and temperature indicator (water temperature meter).



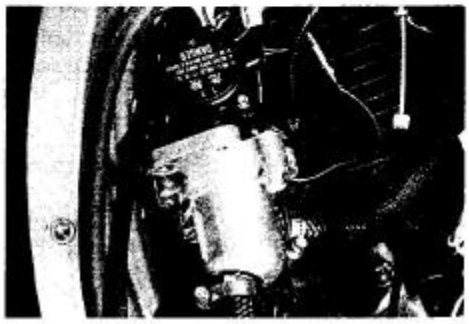
INSPECTION

Test the temperature gauge sensor at the bench to see if its ohmic value changes, as specified, with temperature. The test is to be run as follows: Connect the temperature guage to the ohmmeter and place it in the water contained in a jar, which is placed on a stove; heat the water to raise its temperature slowly, reading the thermometer placed in the jar and also the ohmmeter. A temperature gauge whose ohmic value does not change in the proportion indicated below must be replaced.



Temperature gauge specification

Water temp. (°C)	Standard resistance (Ω)
50	Approx. 134 – 179
120	Approx. 15 – 17



If the resistance is noted to show infinity or too much different resistance value, temperature gauge must be replaced.

For inspecting the water temperature meter, refer to page 6-14.

REASSEMBLY

Apply SUZUKI BOND No. 1207B to the thread portion of the temperature gauge and install it to the thermostat cover.

99000-31140: SUZUKI Bond No. 1207B

Tightening torque: 6 – 10 N·m (0.6 – 1.0 kg-m)

Tighten the thermostat cover bolt and nut to the specification.