



Fig. 50 — 6/1

The thermostat operates independently of the pressure prevailing in the cooling water system. Inside the thermostat is a wax-like mass. A diaphragm is situated between the wax and the pin soldered to the housing. When the thermostat warms up, the wax expands. This causes the diaphragm to bear upon the soldered pin, and the thermostat opens in the opposite direction to the direction of flow of the cooling water. As the temperature drops, the compression spring which is situated between the valve plate and the thermostat guide plate, causes the diaphragm to return to its original position.

Removal:

1. Open the engine hood, remove the radiator cap and drain off part of the cooling water. Collect, if additives (anti-freeze, anti-corrosive etc.) are present.
2. Unfasten the cooling water hose clamps. Disconnect the short-circuit line to the thermostat and take the thermostat out of the connecting hoses.

Testing:

3. Check the thermostat to see that it is working properly. To do this, stand the thermo-

stat in a vessel filled with water. In order to prevent the thermostat from being affected by radiated heat, stand it on a suitable base. The directional arrow on the housing should point downward.

Warm the water, stirring it occasionally so as to obtain uniform water temperature.

4. Check the point at which the thermostat begins to open. It should begin to open at a water temperature of $78^{\circ} - 79^{\circ} \text{ C}$. At a water temperature of $91^{\circ} - 94^{\circ} \text{ C}$, the thermostat should be completely open, i. e. the valve plate should have lifted 8—9 mm.

5. Check the water flow rate in the thermostat in cold condition.

The water flow rate should be 50—70 l/h at a water temperature of 15°—20° C, a water pressure of 1 atm. and with the thermostat closed.

Note: When the thermostat is closed, the water flow rate is regulated by a corrugation in the valve plate. This is necessary so that the cooling system can be completely filled with water when the engine is cold.

If the water flow is found to be excessive, first check whether particles of dirt have gathered at the valve plate, so that the thermostat no longer closes perfectly. This test can best be carried out by the "light chink" method.

Replace the thermostat only if it is found to be defective after checking as described above.

If the cooling water temperature is too low, the cause may not only be a faulty thermostat, but also a defective overpressure valve, or a cooling water thermometer which is giving false readings.

Installation:

1. Insert the thermostat between the two water hoses so that the directional arrow on the housing points forward toward the radiator, and the connection for the short-circuit line points downward.
2. Insert the hose for the short-circuit line.
3. Attach and fasten the hose clamps to the hoses.
4. **Slowly** fill up with cooling water as far as the water level marking plate (5) (see Fig. 50 — 1/2), and run the engine for approximately one minute at a fast idle, leaving the radiator filler neck open.
5. Reduce the idle and, if necessary, top up the cooling water.
6. Screw on the radiator cap. When tightening, turn it as far as it will go (notch II).
7. Check hose unions, radiator and heat exchangers for leakage.