

Cooling Water Thermostat

Job No.

50-6

A. Steam-Pressure Thermostat

Model 180 and Model 180 D 1" Version

In the case of steam pressure thermostats the valve plate is forced open by the alcohol-filled metal bellows in the direction of flow of the cooling water. The opening phase therefore is dependent on the pressure obtaining in the cooling system, that is to say the steam-pressure thermostat is pressure-sensitive.

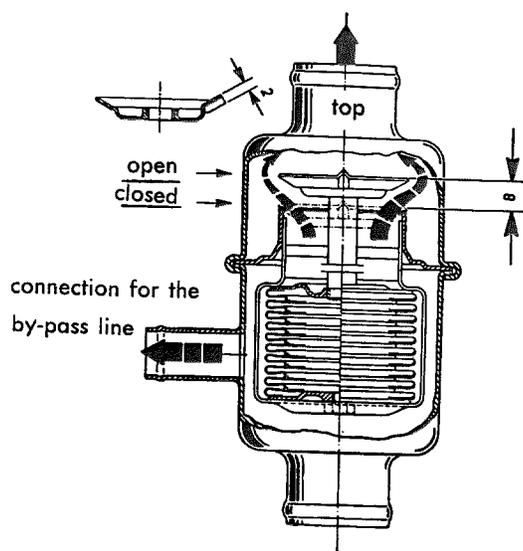


Fig. 50-6/1

Steam Pressure Thermostat

Only wax thermostats are supplied as replacement parts (see Section B). For testing instructions see Section D.

B. Wax Thermostats

a) Wax Thermostats without By-Pass Control

Models 180 (in case of replacement), 180 a, 180 D, 190 SL (thermostat element only), 220 a, 219, 220 S

The wax thermostat is independent of the pressure in the cooling water system, that is to say it is not pressure-sensitive. The thermostat element has a diaphragm (5) which is located between the wax-like mass (4) and the pin (1) soldered to the housing (Fig. 50-6/2).

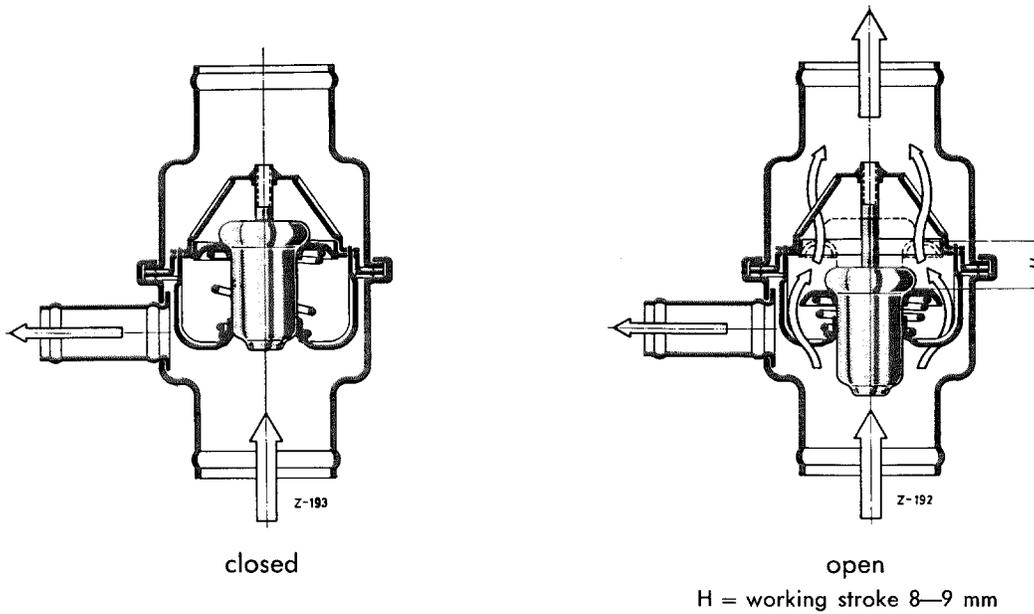


Fig. 50-6/2

Wax thermostat without by-pass control

When the cooling water warms up the wax-like mass (4) expands, which causes the diaphragm to bear upon the soldered pin (1) and the valve opens in the direction opposite to that of the flow of the cooling water. As the temperature of the cooling water drops, the valve is closed by the pressure spring situated between the valve plate and the thermostat guide plate. The by-pass line is open whether the valve is open or closed (see Fig. 50-6/2).

b) Wax Thermostat with By-Pass Control

Models 180 Db, 180 b, 190 D, 190 Db, 220 SE

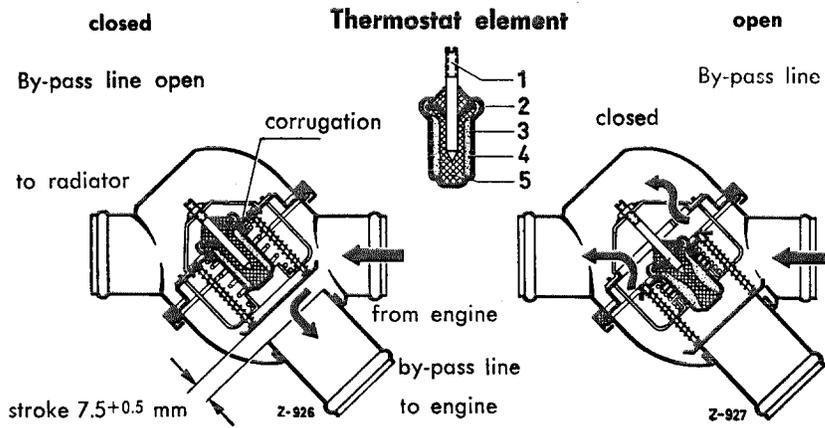


Fig. 50-6/3

Wax thermostat with by-pass control

- 1 Pressure pin
- 2 Cover disk
- 3 Housing
- 4 Wax
- 5 Rubber diaphragm

The element of the wax thermostat with by-pass control works and is designed on the same principle as that of the wax thermostat without by-pass control. The only difference is that the diameter of the connecting branch for the by-pass line has the same size as the diameter of the two connecting branches for the cooling water hoses from the engine to the radiator and this by-pass line is opened and closed by the valve (by-pass control).

When the valve is closed, the cooling water circulation from the engine to the radiator is interrupted. The whole amount of cooling water is returned to the engine via the completely open by-pass line.

When the valve is fully opened, the by-pass line is completely closed and the cooling water inlet to the radiator is completely open.

In the various intermediate positions of the valve the cooling water flows both to the radiator and via the by-pass line to the engine.

As a result the same amount of cooling water flows through the thermostat independent of its varying operating positions and the cooling water in the cylinder crankcase and the cylinder head is heated rapidly and at a uniform rate.

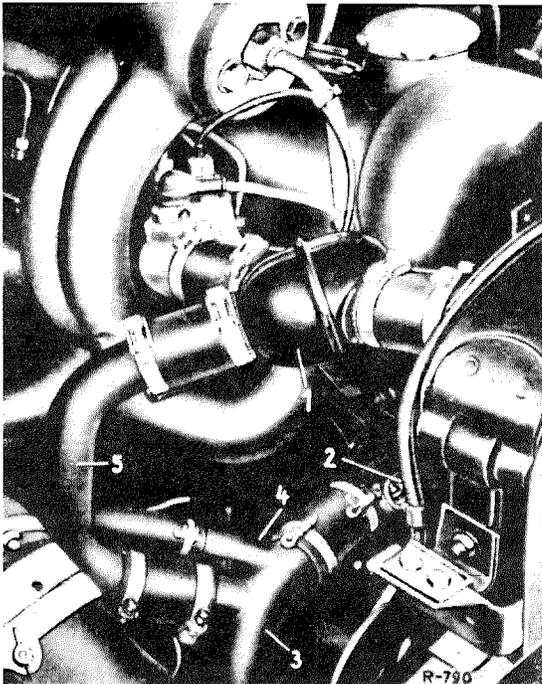


Fig. 50-6/4

Wax thermostat with by-pass control
(Fig. shows Model 220 SE)

- 1 Thermostat
- 2 Connection to heat feeler on injection pump
- 3 Cooling water line from radiator to engine
- 4 Heater connection
- 5 By-pass line

C. Subsequent Installation of a Wax Thermostat with By-Pass Control

I. Model 180 D

The cooling water line from the radiator to the engine (3) must be replaced by the cooling water line Part No. 636 200 12 53 (see Fig. 50-6/4). When this line is installed, the diameter of the pipe socket of the line is 28 mm. The thermostat is connected to the cooling water system by two hoses and the new by-pass line (5) Part No. 635 501 00 24 which has to be installed.

II. Model 180 a

The arrangement of the wax thermostat with by-pass control (1) and the by-pass line (5) is shown in Fig. 50-6/4. The subsequent installation requires the cooling water line (3) Part No. 121 500 14 91 from the radiator to the engine with a diameter of the connection for the by-pass line of 32 mm and the by-pass line (5) Part No. 121 500 15 91.