

PATENT SPECIFICATION



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COMPLETE SPECIFICATION

Improvements in or relating to thermostatically controlled circulating fluid cooling systems for internal combustion engines

We, MATT PAYNE, of 50, Hook Road, Surbiton, Surrey, a British Subject, and THE BRITISH THERMOSTAT COMPANY, LIMITED, of Teddington Works, Windmill Road, Sunbury, Middlesex, a British Company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to thermostatically controlled circulating fluid cooling systems for internal combustion engines. The invention has more particular reference to systems of the kind in which there is a main thermostatic valve actuated by a temperature sensitive expansible chamber immersed in the circulating fluid and arranged to open the valve when the temperature rises above a present limit, and in which there is also an auxiliary valve actuated by the aforesaid expansible chamber and adapted to regulate the flow of fluid through a by-pass conduit by which the circulation of fluid through the engine cooling jacket is maintained when the main thermostatic valve is closed, the purpose of this being to prevent the formation of hot spots due to arrested or sluggish circulation in the engine cooling jacket during cold weather.

The object of the present invention is to provide an improved or simplified construction and arrangement of thermostatic valve mechanism for cooling systems of the type above referred to.

According to the invention, a duct connected to one end of the by-pass conduit projects into the main thermostatic valve chamber and communicates with the interior of the chamber through an annular opening formed round the main valve stem and controlled by an auxiliary valve element carried directly by the expansible chamber by which the main valve stem is actuated.

In the preferred construction, the main valve stem is fixed at one end to the expansible chamber and is guided in an opening in the wall of the aforementioned

duct, the main valve element being in the form of a plate or disc attached to one end of the valve stem and co-operating with a fixed annular seat carried by the main valve casing and disposed coaxially to the valve stem. The expansible chamber, which is located on the side of the aforesaid duct remote from the main valve seat, preferably takes the form of a metal bellows fixed at one end to the valve stem and at the other end to a fixed support suitably constructed to permit the flow of fluid round the bellows chamber.

The valve casing is preferably located in the flow conduit between the upper end of the engine cooling jacket and the upper end of the cooling radiator. For this purpose the main valve casing is preferably provided with a flange or other suitable means for attaching it directly to the upper end of the engine cooling jacket, the valve casing being thus used as a connector for connecting the engine cooling jacket to the usual flexible pipe leading to the upper end of the cooling radiator.

The invention will now be more particularly described with reference to the accompanying drawing which shows a valve mechanism in section and which also shows portions of the engine cooling jacket and radiator.

In the accompanying drawing, 1 represents a portion of the engine cooling jacket and 3 the upper tank or header of the cooling radiator.

The upper end of the cooling jacket 1 is connected to the upper tank or header of the radiator by a flexible conduit 2, the lower tank or header of this radiator (not shown) being connected as usual by a suitable return conduit to the lower end of the engine cooling jacket.

The circulation of cooling fluid through the conduit 2 and radiator 3 is controlled by a main thermostatic valve 6 located in a valve chamber formed at one end with a flange or other suitable connection bolted or otherwise secured to an outlet opening at the upper end of the engine cooling jacket 1, this valve chamber forming the

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