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# United States Patent [19]

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Hollis

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## [54] INTEGRAL WATER PUMP/ENGINE BLOCK BYPASS COOLING SYSTEM

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[52] U.S. Cl. .... **123/41.44; 123/41.08**

[58] Field of Search ..... **123/41.08, 41.44**

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### [57] ABSTRACT

A temperature control system in an internal combustion engine includes a water pump which controls the channeling of temperature control fluid between the engine block and the cylinder head. The water pump includes at least one flow channel designed to direct the flow of temperature control fluid into the engine block. There is at least one flow restrictor valve located within the water pump which is adapted to control the flow of temperature control fluid along the flow channel. The flow restrictor valve is actuable between a first position which permits flow of temperature control fluid along the flow channel and a second position which restricts or inhibits flow along the flow channel. In one embodiment of the invention, at least one the flow restrictor valves includes a bypass passageway which channels a flow of temperature control fluid to the cylinder heads when the flow restrictor valve is in its second position. In one operational mode of the invention, the temperature control system actuates the flow restrictor valves in the water pump so as to maintain the temperature of the engine lubricating oil at or near its optimum operating temperature.

23 Claims, 19 Drawing Sheets

