Title (en)

Total cooling assembly for a vehicle having an internal combustion engine

Title (de)

Totaler Kühlungszusammenbau für Kraftfahrzeuge, die mit Brennkraftmaschinen angetrieben werden

Title (fr)

Système de refroidissement global pour véhicules possédant un moteur à combustion interne

Publication

EP 0969189 B1 20040407 (EN)

Application

EP 98112126 A 19980701

Priority

EP 98112126 A 19980701

Abstract (en)

[origin: EP0969189A1] A total cooling assembly (10) adapted for installation in an engine compartment of an I.C. engine vehicle. The assembly (10) includes a heat exchanger module (18) to transfer heat from fluid coolant to air entering the air flow path and having front and rear faces such that air can pass in heat exchange relation across the heat exchanger module (18) to absorb heat from fluid coolant flowing through the heat exchanger module (18). The heat exchanger module (18) includes an inlet (26) and an outlet (30). A cooling fan module (12) carries the heat exchanger module (18) and includes a fan and an electric fan motor (48) for drawing air across the heat exchanger module (18) from the front face to the rear face of the heat exchanger module. Pump structure (14) is carried by the cooling fan module (12) to circulate fluid coolant. The pump structure (14) has at least one pump and an electric motor (P1,P2) driving the pump. A cooling circuit is provided in which fluid coolant is circulated by the action of the pump structure (14). The cooling circuit permits the fluid coolant to move from the pump structure (14) to the engine. An outlet of the engine is constructed and arranged to communicate fluid coolant with the inlet to the heat exchanger module (18). The outlet of the heat exchanger module (18) is fluidly connected with an inlet to the pump structure (14) to return the fluid coolant to the pump structure (14). The cooling circuit includes bypass structure (43) constructed and arranged to fluidly connect an outlet of the engine with an inlet to the pump structure (14). Valve structure (74) is provided in the cooling circuit to regulate flow therethrough. A controller controls operation of the at least one electric motor of the pump structure (14), the electric fan motor, and the valve structure (74). During a warm-up operating condition of the engine, the bypass structure permits fluid coolant to flow from the outlet of the engine to the inlet of the pump structure (14) while substantially preventing fluid coolant to flow through the heat exchanger module (18). <IMAGE>

IPC 1-7

F01P 7/16

IPC 8 full level

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CPC (source: EP)

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Citation (examination)

JP S58162716 A 19830927 - MITSUBISHI MOTORS CORP

Cited by

FR2965297A1; KR20150071174A; EP3936709A1; CN109532467A; EP1201889A1; FR2816004A1; GB2593919A; GB2593919B; FR3002280A1; JP2014206115A; US11320215B2; US6634323B2; US2018022209A1; US10661650B2; CN113217169A; US2021252968A1; WO02077426A1; WO2023139119A1; WO2005111391A1; WO2023104900A1; WO2024121278A1; US10906388B2; US11964550B2

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