

Title (en)
AUTOMOTIVE ELECTRIC SIDE-CHANNEL LIQUID PUMP WITH MOTOR COOLING

Title (de)
ELEKTRISCHE SEITENKANALFLÜSSIGKEITSPUMPE FÜR KRAFTFAHRZEUGE MIT MOTORKÜHLUNG

Title (fr)
POMPE À LIQUIDE À CANAL LATÉRAL ÉLECTRIQUE DE VÉHICULE AUTOMOBILE DOTÉE D'UN REFROIDISSEMENT PAR MOTEUR

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Application
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Abstract (en)
[origin: WO2023001370A1] The invention is related to an automotive electric side-channel liquid pump (10; 10') for providing liquid within a vehicle system, with a pump housing (12) defining both a pump chamber (18) in which the liquid is pressurised by a rotating pump wheel (15; 15'), and a motor chamber (16) for housing an electric drive motor (30), the pump chamber (18) comprising a side-channel (183), a low-pressure liquid inlet zone (181) and a high-pressure liquid outlet zone (182), the motor chamber (16) comprising a rotor chamber (161) for housing a motor rotor (31) of the electric drive motor (30) and a stator chamber (162) for housing a motor stator (32) of the electric drive motor (30), the rotor chamber (161) and the stator chamber (162) being fluidically separated by a separating means (17), a printed circuit board (40) being provided with power electronic components (45) for driving the electric drive motor (30), wherein the rotor chamber (161) is fluidically connected to the pump chamber (18) by a rotor chamber inlet channel (21) branching off of the side-channel (183) or the following high-pressure liquid outlet zone (182) downstream of the low-pressure liquid inlet zone (181) for flooding the rotor chamber (161) with the pumped liquid, and wherein the rotor chamber (161) is fluidically connected to the pump chamber (18) by a rotor chamber outlet channel (22) fluidically connecting the rotor chamber (161) with the side-channel (183) or the low-pressure inlet zone (181). Thereby a relatively large pressure gradient is provided between the inlet zone (181) and the outlet zone (182) which ensures a constant cooling flow through the rotor chamber (161). The specifically designed pump wheel (15; 15') avoids relevant leakages or shortcuts between the inlet zone (181) and the outlet zone (182).

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