

Title (en)

Internal combustion engine with two-stage internal gear pump

Title (de)

Brennkraftmaschine mit zweistufiger Innenläufer-Zahnradpumpe

Title (fr)

Moteur à combustion interne avec pompe à engrenages internes à deux étages

Publication

EP 0811765 B1 20020828 (DE)

Application

EP 97106781 A 19970424

Priority

DE 19622688 A 19960605

Abstract (en)

[origin: EP0811765A2] The engine comprises a two-stage internal runner gear wheel pump (1) with an intermediate runner (3), with separate pressure connections (6,7). Each pressure chamber (8,9) via a pressure limiting valve (7,20) integrated in the pump housing (4) is connected with the suction chamber (10,11). The second hydraulic circuit is used for the control and regulation of a valve drive-adjustment device, particularly a camshaft rotary angle adjustment device. The control and regulating pressure (P2) is greater than the delivery pressure (P1) for the lubrication system. The lubricating system hydraulic circuit, when a predetermined minimal pressure is not reached, is connectable via a controllable 4/2 path valve with the hydraulic circuit of the adjustment device. The path valve is integrated in the pump housing (4).

IPC 1-7

F04C 2/10; **F04C 15/04**

IPC 8 full level

F04C 2/10 (2006.01); **F04C 11/00** (2006.01); **F04C 14/26** (2006.01); **F04C 15/06** (2006.01)

CPC (source: EP)

F04C 2/103 (2013.01); **F04C 11/001** (2013.01); **F04C 15/06** (2013.01)

Cited by

AT407563B; GB2516523A; CN112879279A; CN102900665A; EP3848592A1; CN113107637A; EP1961961A3; CN104929930A; CN109469609A; US11598071B2; EP1961961A2; US9951771B2; US6195990B1; US7946402B2; WO2006102948A1; WO0042321A1; JP2008202488A; JP2008537580A; JP4833277B2

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