

Title (en)  
Fluid cooled reciprocating-piston internal combustion engine

Title (de)  
Durch Flüssigkeit gekühlte Hubkolbenbrennkraftmaschine

Title (fr)  
Moteur à combustion interne à piston alternatif refroidi par liquide

Publication  
**EP 1253303 A3 20030326 (DE)**

Application  
**EP 02007810 A 20020406**

Priority  
DE 10119969 A 20010424

Abstract (en)  
[origin: EP1253303A2] The engine has a cylinder head (12) and a cylinder block (14) with their coolant cavities connected to a coolant circuit (16) with a pump (18), radiator (20) and fan (24). The coolant cavities of the cylinder head and the cylinder block are separated from each other and are connected by separate outlet lines (38, 40) to a common return flow line (26).

IPC 1-7  
**F01P 3/02**; **F01P 7/16**

IPC 8 full level  
**F01P 3/02** (2006.01); **F01P 7/16** (2006.01); **F01P 7/14** (2006.01)

CPC (source: EP)  
**F01P 3/02** (2013.01); **F01P 7/165** (2013.01); **F01P 2003/021** (2013.01); **F01P 2003/024** (2013.01); **F01P 2003/027** (2013.01); **F01P 2007/146** (2013.01); **F01P 2060/08** (2013.01)

Citation (search report)  
• [X] US 4423705 A 19840103 - MORITA YASUYUKI [JP], et al  
• [X] DE 19938614 A1 20010222 - BOSCH GMBH ROBERT [DE]  
• [X] DE 19628542 A1 19980122 - NAEGELER JUERGEN DIPL ING [DE]  
• [A] DE 908930 C 19540412 - MASCHF AUGSBURG NUERNBERG AG  
• [A] US 4369738 A 19830125 - HIRAYAMA TSUTOMU [JP]  
• [X] PATENT ABSTRACTS OF JAPAN vol. 007, no. 024 (M - 189) 29 January 1983 (1983-01-29)  
• [A] PATENT ABSTRACTS OF JAPAN vol. 010, no. 375 (M - 545) 13 December 1986 (1986-12-13)

Cited by  
FR2845420A1; CN112739893A; FR2859757A1; DE10342935B4; GB2420847A; GB2420847B; WO2020058084A1

Designated contracting state (EPC)  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

DOCDB simple family (publication)  
**EP 1253303 A2 20021030**; **EP 1253303 A3 20030326**; **EP 1253303 B1 20071031**; DE 10119969 A1 20021031; DE 50211125 D1 20071213; JP 2002332840 A 20021122

DOCDB simple family (application)  
**EP 02007810 A 20020406**; DE 10119969 A 20010424; DE 50211125 T 20020406; JP 2002120974 A 20020423