

Title (en)  
Internal combustion piston engine

Title (de)  
Hubkolbenbrennkraftmaschine

Title (fr)  
Moteur à combustion interne à piston

Publication  
**EP 0989297 B1 20040929 (DE)**

Application  
**EP 99810529 A 19990616**

Priority  
• EP 99810529 A 19990616  
• EP 98810944 A 19980921

Abstract (en)  
[origin: EP0989297A1] The engine has several pumps (7, 107) for feed of fuel and control medium, and one or more accumulators for fuel and control medium connected to the pumps and to the injections system (11) and/or gas exchange system. The engine also has a hydraulic system with components (14) to control fuel injection and gas exchange, a lubricating system for each cylinder, one or more angle transmitters (22,24), and a control unit with several electronic modules to regulate fuel supply and gas exchange and to control starting air supply.

IPC 1-7  
**F02M 59/10**; F01L 9/02; F01M 1/06; F02M 59/46

IPC 8 full level  
**F01M 1/16** (2006.01); **F01L 3/24** (2006.01); **F01L 9/10** (2021.01); **F01M 1/06** (2006.01); **F02D 1/16** (2006.01); **F02D 13/02** (2006.01); **F02D 41/22** (2006.01); **F02D 41/26** (2006.01); **F02D 43/00** (2006.01); **F02M 37/00** (2006.01); **F02M 47/00** (2006.01); **F02M 47/02** (2006.01); **F02M 47/04** (2006.01); **F02M 59/10** (2006.01); **F02M 59/46** (2006.01); **F02B 3/06** (2006.01)

CPC (source: EP KR)  
**F01L 9/10** (2021.01 - EP); **F02D 41/22** (2013.01 - EP); **F02D 41/266** (2013.01 - EP); **F02M 59/10** (2013.01 - KR); **F02M 59/105** (2013.01 - EP); **F02M 59/46** (2013.01 - EP); **F01M 1/06** (2013.01 - EP); **F02B 3/06** (2013.01 - EP); **F02F 2007/0097** (2013.01 - EP); **F02N 9/04** (2013.01 - EP)

Cited by  
EP1561935A1; GB2410060A; US2011308493A1; EP1591649A1; WO2013020749A1

Designated contracting state (EPC)  
DE DK FR IT

DOCDB simple family (publication)  
**EP 0989297 A1 20000329**; **EP 0989297 B1 20040929**; CN 1204337 C 20050601; CN 1248671 A 20000329; DE 59910639 D1 20041104; DK 0989297 T3 20041025; JP 2000104612 A 20000411; KR 100689947 B1 20070308; KR 20000023307 A 20000425; PL 335359 A1 20000327

DOCDB simple family (application)  
**EP 99810529 A 19990616**; CN 99120325 A 19990920; DE 59910639 T 19990616; DK 99810529 T 19990616; JP 24558799 A 19990831; KR 19990040410 A 19990920; PL 33535999 A 19990910