

Title (en)
Fuel injection device

Title (de)
Kraftstoffeinspritzventileinrichtung

Title (fr)
Dispositif d'injection de carburant

Publication
EP 1167746 B1 20041020 (EN)

Application
EP 01115087 A 20010621

Priority
JP 2000187466 A 20000622

Abstract (en)
[origin: EP1167746A2] A fuel injection device for internal combustion engines includes a needle valve (3) for opening and closing an injection port (33), a control chamber (5) for applying a fuel pressure to the needle valve (3) in a needle valve opening direction, a spring (13) for applying a biasing force to the needle valve (3) in a needle valve closing direction, a piezoelectric actuator (4) for increasing and decreasing a fuel pressure in the control chamber(5), a piston (2) which slides with the needle valve (3) so as to receive the fuel pressure in the control chamber (5) at a lower end face (2b) thereof, and a pressure storage chamber (11) for storing a fuel to be supplied to the injection port (33). The fuel injection device further includes another control chamber (6) which communicates with a fuel supply line (17) for applying a fuel pressure to an upper end face (2c) of the piston (2) in a needle valve closing direction. The another control chamber (6) communicates with the pressure storage chamber (11) via communication means (22). <IMAGE>

IPC 1-7
F02M 47/02; **F02M 47/04**; **F02M 47/06**

IPC 8 full level
F02M 47/00 (2006.01); **F02M 47/02** (2006.01); **F02M 47/04** (2006.01); **F02M 47/06** (2006.01); **F02M 51/00** (2006.01); **F02M 63/00** (2006.01)

CPC (source: EP)
F02M 47/06 (2013.01); **F02M 51/0603** (2013.01); **F02M 2200/704** (2013.01)

Cited by
EP1970556A1; CN104018964A; DE10254186A1; WO2007057170A1

Designated contracting state (EPC)
DE FR GB IT SE

DOCDB simple family (publication)
EP 1167746 A2 20020102; **EP 1167746 A3 20031210**; **EP 1167746 B1 20041020**; DE 60106523 D1 20041125; DE 60106523 T2 20060302; DE 60106523 T8 20060608; JP 2002004970 A 20020109; JP 4079578 B2 20080423

DOCDB simple family (application)
EP 01115087 A 20010621; DE 60106523 T 20010621; JP 2000187466 A 20000622