

Title (en)
FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Title (de)
KRAFTSTOFFEINSPRITZVORRICHTUNG FÜR BRENNKRAFTMASCHINEN

Title (fr)
DISPOSITIF D'INJECTION DE CARBURANT POUR MOTEURS A COMBUSTION INTERNE

Publication
EP 1210511 A1 20020605 (DE)

Application
EP 00956130 A 20000810

Priority
• DE 0002678 W 20000810
• DE 19939446 A 19990820

Abstract (en)
[origin: DE19939446A1] The invention relates to a fuel injection device for internal combustion engines. Said fuel injection device comprises a plurality of fuel injection valves (10) that are supplied with fuel by a high-pressure fuel accumulator (24). Every fuel injection valve (10) has a needle-shaped injection valve member (15) whose movement is controlled via the fuel pressure that prevails in a control chamber (35). According to the invention, the movement of the valve member (70) that relieves the control chamber (35) to a relief chamber (39) and that is coupled to a tappet (57) is controlled by means of two piezo actuators (45, 65). The piezo actuators (45, 65) are mounted in series so that their travel has the same effective direction.

IPC 1-7
F02M 47/02; **F02M 51/06**; **F02M 59/46**

IPC 8 full level
F02M 51/06 (2006.01); **F02M 47/00** (2006.01); **F02M 47/02** (2006.01); **F02M 59/46** (2006.01); **F02M 63/02** (2006.01)

CPC (source: EP)
F02M 47/027 (2013.01); **F02M 63/0026** (2013.01); **F02M 63/0063** (2013.01); **F02M 63/0225** (2013.01); **F02M 2200/703** (2013.01)

Citation (search report)
See references of WO 0114717A1

Designated contracting state (EPC)
DE FR

DOCDB simple family (publication)
DE 19939446 A1 20010301; CZ 2002606 A3 20030618; EP 1210511 A1 20020605; JP 2003507642 A 20030225; WO 0114717 A1 20010301

DOCDB simple family (application)
DE 19939446 A 19990820; CZ 2002606 A 20000810; DE 0002678 W 20000810; EP 00956130 A 20000810; JP 2001518566 A 20000810