

Title (en)
Fuel injector

Title (de)
Kraftstoffeinspritzdüse

Title (fr)
Injecteur à carburant

Publication
EP 2320061 A1 20110511 (EN)

Application
EP 09175036 A 20091104

Priority
EP 09175036 A 20091104

Abstract (en)
A fuel injector (100; 200; 300) for an internal combustion engine is disclosed. The injector includes a slave piston (130; 230; 330) provided with a control bore (144; 244; 344) and associated with a valve needle (110; 210; 310), such that movement of the slave piston causes movement of the valve needle. An end of the slave piston remote from the valve needle is exposed to fuel pressure in a control chamber (152; 252; 352) of the injector, in use. A control piston (148; 348) is operable to move relative to the slave piston so as to control fuel flow through first and second control ports that connect the control bore to a high-pressure fuel supply and a low-pressure drain respectively. By suitable positioning of the control piston, the valve needle can be biased in an opening direction and in a closing direction and, optionally, the valve needle can be held in one or more intermediate positions between its fully-lifted and fully-seated positions. Proportional control of the position and velocity of the valve needle is possible, and a low-force actuator can be used to control the valve needle.

IPC 8 full level
F02M 45/12 (2006.01); **F02M 47/02** (2006.01); **F02M 63/00** (2006.01)

CPC (source: EP)
F02M 45/12 (2013.01); **F02M 47/027** (2013.01); **F02M 63/004** (2013.01)

Citation (applicant)
• EP 0647780 A2 19950412 - LUCAS IND PLC [GB]
• EP 0740068 B1 20061004 - DELPHI TECH INC [US]
• EP 2065590 A1 20090603 - DELPHI TECH INC [US]
• EP 09166712 A 20090729
• EP 0767304 B1 19991117 - LUCAS IND PLC [GB]
• EP 1626173 B1 20080305 - DELPHI TECH INC [US]

Citation (search report)
• [XY] US 6024298 A 20000215 - KELLY WILLIAM W [US]
• [Y] US 5860597 A 19990119 - TARR YUL J [US]
• [YD] EP 0647780 A2 19950412 - LUCAS IND PLC [GB]
• [Y] GB 2341893 A 20000329 - LUCAS INDUSTRIES LTD [GB]

Cited by
CN105593507A; EP2829718A1; US10400698B2; WO2015052332A1; WO2015010995A1; US10458379B2

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

Designated extension state (EPC)
AL BA RS

DOCDB simple family (publication)
EP 2320061 A1 20110511; WO 2011054613 A1 20110512

DOCDB simple family (application)
EP 09175036 A 20091104; EP 2010064853 W 20101005