

Title (en)  
FUEL INJECTION VALVE FOR INTERNAL COMBUSTION ENGINES

Title (de)  
KRAFTSTOFFEINSPRITZVENTIL FÜR BRENNKRAFTMASCHINEN

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

Publication  
**EP 1387939 B1 20080116 (DE)**

Application  
**EP 02726069 A 20020322**

Priority  
• DE 0201036 W 20020322  
• DE 10122241 A 20010508

Abstract (en)  
[origin: WO02090754A1] The invention relates to a fuel injection valve for internal combustion engines, comprising a housing (1), in which a piston-shaped outer valve needle (10) is arranged in a longitudinally displaceable manner in a bore (3). Said valve needle cooperates with a valve seat (13) configured on the end of the bore (3) located on the combustion chamber side in order to control at least one injection port (7). A control chamber (24) is configured in the housing (1), wherein pressure in the control chamber (24) can be regulated by a valve (33). As a result of the pressure in the control chamber (24), a closing force is exerted at least indirectly upon the outer valve needle (10) in the direction of the valve seat (13). At least one pressure surface (9; 101) is configured in the outer valve needle (10). An inner valve needle (12) is guided in the outer valve needle (10), which controls at least one additional injection port (7) on the valve seat (13) and which is impinged upon by the pressure in the control chamber (24) at least indirectly in the direction of the valve seat (13).

IPC 8 full level  
**F02M 45/00** (2006.01); **F02M 45/08** (2006.01); **F02M 47/00** (2006.01); **F02M 47/02** (2006.01); **F02M 63/00** (2006.01)

CPC (source: EP US)  
**F02M 45/086** (2013.01 - EP US); **F02M 47/027** (2013.01 - EP US); **F02M 2200/46** (2013.01 - EP US)

Designated contracting state (EPC)  
DE FR GB IT

DOCDB simple family (publication)  
**WO 02090754 A1 20021114**; DE 10122241 A1 20021205; DE 50211554 D1 20080306; EP 1387939 A1 20040211; EP 1387939 B1 20080116; JP 2004519597 A 20040702; JP 4116448 B2 20080709; US 2005199753 A1 20050915; US 7117842 B2 20061010

DOCDB simple family (application)  
**DE 0201036 W 20020322**; DE 10122241 A 20010508; DE 50211554 T 20020322; EP 02726069 A 20020322; JP 2002587791 A 20020322; US 33237503 A 20031001