

Title (en)  
FUEL INJECTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Title (de)  
KRAFTSTOFFEINSPRITZEINRICHTUNG FÜR EINE BRENNKRAFTMASCHINE

Title (fr)  
SYSTEME D'INJECTION DE CARBURANT POUR MOTEUR A COMBUSTION INTERNE

Publication  
**EP 1490592 A1 20041229 (DE)**

Application  
**EP 02795011 A 20021217**

Priority  
• DE 0204606 W 20021217  
• DE 10211439 A 20020315

Abstract (en)  
[origin: WO03078828A1] The fuel injection device is provided with a high-pressure fuel pump (10) for each cylinder of the internal combustion engine and a fuel injection valve (12) connected thereto. A pump plunger (18) of the high-pressure fuel pump (10) defines a pump working chamber (22) which is connected to a pressure chamber (40) of the fuel injection valve (12) which comprises an injection valve member (24) which is used to control the injection openings (32) and which can move by means of the pressure prevailing in the pressure chamber (40) counter to the closing force in an opening direction (29). A control valve (70) is used to control a connection (64) between a control pressure chamber (52) connected to the pump working chamber (22) defined by a control piston (50) and a discharge chamber (24). When the injection valve member (28) is in a closed position, the control piston (50) releases a main connection (84) having a large through-flow diameter. When the injection valve member (28) is in an open position, said control piston closes the main connection (84) and releases only a bypass connection (80) having a low through-flow diameter. The bypass connection (80) is embodied in a housing part (54) defining the control pressure chamber (52).

IPC 1-7  
**F02M 57/02**; **F02M 47/02**

IPC 8 full level  
**F02M 47/00** (2006.01); **F02M 47/02** (2006.01); **F02M 51/00** (2006.01); **F02M 57/02** (2006.01); **F02M 59/36** (2006.01); **F02M 61/10** (2006.01); **F02M 61/20** (2006.01); **F02M 63/00** (2006.01)

CPC (source: EP US)  
**F02M 47/027** (2013.01 - EP US); **F02M 57/023** (2013.01 - EP US); **F02M 59/366** (2013.01 - EP US); **F02M 61/205** (2013.01 - EP US); **F02M 2200/16** (2013.01 - EP US); **F02M 2200/21** (2013.01 - EP US); **F02M 2200/28** (2013.01 - EP US)

Citation (search report)  
See references of WO 03078828A1

Designated contracting state (EPC)  
DE ES FR GB IT SE

DOCDB simple family (publication)  
**WO 03078828 A1 20030925**; BR 0209654 A 20041207; DE 10211439 A1 20031002; DE 50203649 D1 20050818; EP 1490592 A1 20041229; EP 1490592 B1 20050713; JP 2005520968 A 20050714; JP 4173821 B2 20081029; US 2004144366 A1 20040729; US 6892955 B2 20050517

DOCDB simple family (application)  
**DE 0204606 W 20021217**; BR 0209654 A 20021217; DE 10211439 A 20020315; DE 50203649 T 20021217; EP 02795011 A 20021217; JP 2003576805 A 20021217; US 47783703 A 20031117