

Title (en)

Fuel injection device for internal combustion engines

Title (de)

Kraftstoffeinspritzeinrichtung für Brennkraftmaschinen

Title (fr)

Dispositif d'injection de combustible pour moteurs à combustion interne

Publication

**EP 0657643 B1 19990113 (DE)**

Application

**EP 94113011 A 19940820**

Priority

DE 4341545 A 19931207

Abstract (en)

[origin: EP0657643A2] Fuel injection device for internal combustion engines with a high pressure accumulator (9), fillable by a high pressure fuel pump (1), from which accumulator high pressure lines (13) lead off to the individual injection valves (15). At the same time control valves (17) are inserted in the individual high pressure lines (13) in order to control the high pressure injection to the injection valves (15), together with an additional pressure reservoir (19) between the said control valves (17) and the high pressure accumulator (9). In order at the same time to be able to modify the rate-of-discharge curve on the injection valve, the control valve (17) has a hydraulic restrictor (51) arranged on an additional flange (39) on the valve element (23) and a damping chamber (53) formed between the flange (39) and a flat valve seat (47), the restricted relief of which chamber retards the opening movement of the valve element (23) at the start of injection. <IMAGE>

IPC 1-7

**F02M 63/00**; **F02M 45/12**; **F02M 59/46**

IPC 8 full level

**F02M 47/00** (2006.01); **F02M 45/12** (2006.01); **F02M 47/02** (2006.01); **F02M 55/02** (2006.01); **F02M 59/46** (2006.01); **F02M 61/10** (2006.01); **F02M 63/00** (2006.01); **F02B 3/06** (2006.01)

CPC (source: EP US)

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Cited by

WO2006072757A1; DE10031571A1; DE10120804A1; EP1176306A3

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**DE 4341545 A1 19950608**; DE 59407646 D1 19990225; EP 0657643 A2 19950614; EP 0657643 A3 19951206; EP 0657643 B1 19990113; JP 3502456 B2 20040302; JP H07189850 A 19950728; US 5524826 A 19960611

DOCDB simple family (application)

**DE 4341545 A 19931207**; DE 59407646 T 19940820; EP 94113011 A 19940820; JP 30395194 A 19941207; US 33968294 A 19941114