

Title (en)

FUEL INJECTION SYSTEM FOR DIRECT FUEL INJECTION IN INTERNAL-COMBUSTION ENGINES

Publication

**EP 0083001 B1 19880420 (DE)**

Application

**EP 82111427 A 19821209**

Priority

DE 3151293 A 19811224

Abstract (en)

[origin: US4549511A] A fuel injection system is proposed, having a valve each for the pre-injection quantity and for the main injection quantity, each of the valves having plural injection ports. The injection ports for the pre-injection quantity are smaller than those for the main injection quantity. Furthermore, the injection streams of the pre-injection quantity form a cone angle which is smaller than the cone angle of the main injection streams. By means of the two injection pumps it becomes possible to regulate exactly and independently the amount of injection as well as the injection time of the pre-injection quantity and of the main injection quantity.

IPC 1-7

**F02M 45/08**; **F02M 45/04**; **F02M 61/14**

IPC 8 full level

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CPC (source: EP US)

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Citation (examination)

- DE 879934 C 19530618 - STUTTGARTER MOTORZUBEHOER G M
- FR 2384124 A1 19781013 - BOSCH GMBH ROBERT [DE]
- FR 2432095 A1 19800222 - MASCHF AUGSBURG NUERNBERG AG [DE]
- DE 2753953 A1 19790607 - DAIMLER BENZ AG
- EP 0028288 A1 19810513 - BOSCH GMBH ROBERT [DE]
- DE 2943895 A1 19810514 - BOSCH GMBH ROBERT [DE]

Designated contracting state (EPC)

DE FR GB IT

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