

Title (en)

VARIABLE DELIVERY PUMP AND COMMON RAIL FUEL SYSTEM USING THE SAME

Title (de)

PUMPE MIT VARIABLELER FÖRDERMENGE UND IHRE VERWENDUNG IN EINEM COMMON-RAIL-KRAFTSTOFFEINSPRITZSYSTEM

Title (fr)

POMPE D'ALIMENTATION VARIABLE ET SYSTEME DE RAMPE D'INJECTION A CARBURANT UTILISANT CELLE-CI

Publication

EP 1171707 B1 20030903 (EN)

Application

EP 00923379 A 20000414

Priority

- US 0010136 W 20000414
- US 12969999 P 19990416
- US 12970099 P 19990416

Abstract (en)

[origin: WO0063551A1] Pressurized injector actuation fluid is supplied to high pressure common rail (28) by a fixed displacement fluid pump (26). Variable delivery from the pump (26) is achieved by selectively spilling pumped fluid through a digital-acting by-pass or spill valve (90). The by-pass valve (90) is actuated by a momentary electric signal, which causes internal fluid pressure in the valve (90) to latch it in a closed condition, thus permitting high precision variations in the pump delivery with rapid response times. Unit pump (26), radial pump (400), and axial pump (500) configurations are disclosed. Variable delivery is achieved in another embodiment by an improved sleeve metering approach. The sleeve (692) surrounds the reciprocating piston (672) and is manipulated to control venting of pumped fluid through vent ports (686) in the piston (672). The sleeve (692) is moved by preferably being the armature of a solenoid assembly (698). The varying of current to the solenoid coil (696) alters the axial position of the sleeve (692) relative to the piston (672) to vary its effective pumping stroke.

IPC 1-7

F02M 59/36; **F02M 41/12**; **F02M 63/02**

IPC 8 full level

F02M 39/00 (2006.01); **F02M 55/02** (2006.01); **F02M 59/04** (2006.01); **F02M 59/06** (2006.01); **F02M 59/36** (2006.01); **F02M 59/46** (2006.01); **F02M 63/02** (2006.01); **F04B 7/00** (2006.01); **F04B 49/22** (2006.01)

CPC (source: EP US)

F02M 39/00 (2013.01 - EP US); **F02M 55/025** (2013.01 - EP); **F02M 59/04** (2013.01 - EP); **F02M 59/06** (2013.01 - EP); **F02M 59/36** (2013.01 - EP); **F02M 59/366** (2013.01 - EP); **F02M 59/46** (2013.01 - EP US); **F02M 59/466** (2013.01 - EP); **F02M 63/0225** (2013.01 - EP); **F04B 7/0076** (2013.01 - EP); **F04B 49/225** (2013.01 - EP); **F04B 2205/15** (2013.01 - EP)

Cited by

EP1101931A3

Designated contracting state (EPC)

DE FR GB

DOCDB simple family (publication)

WO 0063551 A1 20001026; DE 60004983 D1 20031009; DE 60004983 T2 20040715; EP 1171707 A1 20020116; EP 1171707 B1 20030903

DOCDB simple family (application)

US 0010136 W 20000414; DE 60004983 T 20000414; EP 00923379 A 20000414