

Title (en)
FUEL-INJECTOR WITH TWO-STAGE OPENING

Title (de)
ZWEISTUFIG ÖFFNENDER KRAFTSTOFFINJEKTOR

Title (fr)
INJECTEUR DE CARBURANT S'OUVRANT A DEUX NIVEAUX

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Application
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Abstract (en)
[origin: WO2006108741A1] The invention relates to a fuel injector (110), which has the advantages of a direct needle regulation by means of a piezoelectric actuator (150), without using an inverse needle regulation. To achieve this, the stroke of the fuel injector (110) is reversed by means of a two-stage pressure converter. If the piezoelectric actuator (150) is extended, a pressure p_{2} in a second control chamber (192) is temporarily increased by means of a control piston (154). This pushes a converter piston (170) against a closing direction (134), which again increases the pressure p_{2} of the hydraulic fluid in the second control chamber (192). The converter piston (170) carries an injection valve member (128) along with it during the upwards displacement by means of a mechanical stop (184) and an annular collar (186), thus initiating a first opening displacement of the injection valve member (128). In addition, a pressure p_{1} in a first control chamber (166) is temporarily decreased by the displacement of the control piston (154) in the closing direction (134). The first control chamber (166) is linked to a rear chamber (178) of the injection valve member (128) via a pressure compensation channel (198). The pressure p_{3} in the rear chamber (178) thus decreases, exerting an additional hydraulic force on the injection valve member (128), which causes the latter (128) to be raised again.

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