

Title (en)

ELECTROMAGNETIC VALVE FOR CONTROLLING AN INJECTION VALVE OF AN INTERNAL COMBUSTION ENGINE

Title (de)

MAGNETVENTIL ZUR STEUERUNG EINES EINSPRITZVENTILS EINER BRENNKRAFTMASCHINE

Title (fr)

ELECTROVANNE POUR PILOTER UNE SOUPAPE D'INJECTION DE MOTEUR A COMBUSTION INTERNE

Publication

EP 1332282 A2 20030806 (DE)

Application

EP 01980158 A 20010905

Priority

- DE 0103396 W 20010905
- DE 10052604 A 20001024

Abstract (en)

[origin: DE10052604A1] The invention relates to an electromagnetic valve (2) for controlling an injection valve (1) of an internal combustion engine. Said electromagnetic valve comprises an electromagnet (34), a mobile armature (29), a control valve element (25, 26), which is moved with the armature (29), interacts with a valve seat (24), and which is provided for opening and closing a fuel drainage channel (17) of a control pressure space (14) of the injection valve. The electromagnetic valve also comprises a sliding piece (40), which guides the armature (29) and which, together with the armature (29) and the control valve element (25, 26), is arranged inside an armature space (51, 52). In order to reduce the armature rebound, the invention provides that the sliding piece (40) subdivides the armature space into a relieving space (52), which is connected to a fuel low-pressure connection (10), and into a hydraulic damping space (51), into which the fuel drainage channel (17) runs. Said damping space can be relieved from stress by at least one connecting channel (44, 47), which is provided with a restrictor (43, 48) and which leads up to the relieving space (52). As the electromagnetic valve (2) closes, a fuel pressure cushion acting upon the control valve element (25, 26) reduces the velocity of said control valve element (25, 26) before it comes into contact with the valve seat (24).

[origin: DE10052604A1] The solenoid valve (2) is designed so that the slide piece (40) subdivides the armature chamber into unloading chamber (52) connecting with a fuel lower pressure connection (10) and a hydraulic damping chamber (51), in which the fuel discharge duct (17) opens out. The damping chamber is relievable across at least one connecting duct (44,47) provided with a throttle (43,48) to the unloading chamber. So that the speed of the control valve element (25,26) with the closing of the solenoid valve, before the impact at the valve seat (24), is reduced by a fuel pressure cushion reacting on the damping chamber on the control valve element.

IPC 1-7

F02M 61/00

IPC 8 full level

F02M 47/00 (2006.01); **F02M 47/02** (2006.01); **F02M 51/00** (2006.01); **F02M 59/46** (2006.01); **F02M 61/16** (2006.01); **F02M 63/00** (2006.01)

CPC (source: EP US)

F02M 47/027 (2013.01 - EP US); **F02M 63/0017** (2013.01 - EP US); **F02M 63/0022** (2013.01 - EP US); **F02M 63/0036** (2013.01 - EP US); **F02M 63/022** (2013.01 - EP US); **F02M 2200/304** (2013.01 - EP US); **F02M 2547/003** (2013.01 - EP US)

Citation (search report)

See references of WO 0235080A2

Designated contracting state (EPC)

DE FR IT

DOCDB simple family (publication)

DE 10052604 A1 20020502; DE 50111569 D1 20070111; EP 1332282 A2 20030806; EP 1332282 B1 20061129; JP 2004512457 A 20040422; JP 5044090 B2 20121010; US 2003127614 A1 20030710; US 6820858 B2 20041123; WO 0235080 A2 20020502; WO 0235080 A3 20020718

DOCDB simple family (application)

DE 10052604 A 20001024; DE 0103396 W 20010905; DE 50111569 T 20010905; EP 01980158 A 20010905; JP 2002538036 A 20010905; US 16867102 A 20021024