

Title (en)

PUMP/NOZZLE UNIT AND METHOD FOR SETTING THE HARDNESS OF CONTACT AREAS OF A CONTROL VALVE

Title (de)

PUMPE-DÜSE-EINHEIT UND VERFAHREN ZUR EINSTELLUNG DER HÄRTE VON ANLAGEBEREICHEN EINES STEUERVERTILS

Title (fr)

UNITE POMPE-BUSE ET PROCEDE POUR REGULER LA DURETE DE ZONES D'APPUI D'UNE SOUPAPE DE COMMANDE

Publication

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Application

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Abstract (en)

[origin: WO2004027252A1] The invention relates to a pump/nozzle unit for delivering fuel (10) into a combustion chamber (12) of an internal combustion engine, comprising a fuel pump (14-22), which can be controlled and/or regulated and which has a control valve (22) with a valve needle (48) that is displaced by a piezo actuator (76). The comparatively short travel of the piezo actuator (76) is increased by a mechanical multiplication device (56, 58) to the extent necessary for displacing the valve needle (48). In order to avoid jeopardizing the pressure resistance of the control valve housing while yet providing the comparatively wear-resistant contact areas (80, 82) coming into contact with the mechanical multiplication device (56, 58), the invention provides that the control valve housing is made of a material having a comparatively lower basic hardness, for example, Ovako 677, and the contact areas (80, 82) of the control valve (22) are subsequently hardened by laser.

IPC 8 full level

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- DE 10104617 A1 20020808 - BOSCH GMBH ROBERT [DE]
- DE 4426006 A1 19960125 - BOSCH GMBH ROBERT [DE]
- DE 10008542 A1 20010906 - BOSCH GMBH ROBERT [DE]
- DE 19726991 A1 19990107 - BOSCH GMBH ROBERT [DE]

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