

Title (en)
Fuel injection nozzle

Title (de)
Kraftstoffeinspritzdüse

Title (fr)
Buse d'injection de combustible

Publication
EP 0978649 A3 20030129 (DE)

Application
EP 99115711 A 19990806

Priority
DE 19835629 A 19980806

Abstract (en)
[origin: EP0978649A2] The nozzle has a nozzle body (12) with a tip (10) with two axially separate rows of injection holes (14,16) and a nozzle needle (20) axially movable in the nozzle body, whereby a conical surface (22) on the needle tip selectively frees and blocks the fuel path to the injection holes. A protruding insertion body (30) on the needle tip moves axially w.r.t. the needle. In the closed state the conical surface is in contact with the first, upper row (14) of injection holes on the inside of the tip and a wedge body (32) is in contact with the inside of the tip between the rows of holes. After raising the conical surface to free the fuel path to the first row the wedge body frees the fuel path to the second, lower row (16) of holes.

IPC 1-7
F02M 45/08; **F02M 61/18**; **F02M 47/02**

IPC 8 full level
F02M 45/08 (2006.01); **F02M 47/02** (2006.01); **F02M 59/46** (2006.01); **F02M 61/18** (2006.01); **F02M 63/00** (2006.01)

CPC (source: EP)
F02M 45/086 (2013.01); **F02M 47/027** (2013.01); **F02M 63/0026** (2013.01); **F02M 2200/46** (2013.01)

Citation (search report)

- [X] EP 0054612 A1 19820630 - BOSCH GMBH ROBERT [DE]
- [X] DE 4115457 A1 19911121 - AVL VERBRENNUNGSKRAFT MESSTECH [AT]
- [A] DE 4432686 A1 19960523 - MAN B & W DIESEL AG [DE]

Cited by
EP1630406A1; DE102004046191B3; DE102004049702B3; DE102004036367B3; DE10323871A1; EP2765300A1; EP1703117A1; EP1413742A1; DE102004041172B3; DE102004042558B4; CN100366889C; DE102005025638B4; DE102004051406B4; DE102004014198B3; DE102013220794A1; WO2006040290A1; EP1640604A1; US7051958B2; US6971592B2; US7309030B2; WO2004109091A1; WO2006018439A1; WO2005026525A1; WO2090754A1; WO03006816A1; WO03069151A1; WO2005073546A1

Designated contracting state (EPC)
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)
EP 0978649 A2 20000209; **EP 0978649 A3 20030129**; **EP 0978649 B1 20040512**; DE 59909449 D1 20040617

DOCDB simple family (application)
EP 99115711 A 19990806; DE 59909449 T 19990806