

Title (en)

Fuel injection valve for internal combustion engines

Title (de)

Kraftstoffeinspritzventil für Brennkraftmaschinen

Title (fr)

Soupape d'injection de combustible pour moteurs à combustion interne

Publication

**EP 1321661 A3 20050713 (DE)**

Application

**EP 02017114 A 20020730**

Priority

DE 10163908 A 20011222

Abstract (en)

[origin: EP1321661A2] Fuel injection valve comprises a valve body (1) having a valve seat (9) with a first annular groove (36) running in a radial plane of a bore (3), and a parallel second annular groove (38) arranged downstream of the first annular groove. <??>Preferred Features: An annular edge (34) lies within the second annular groove when the valve needle is in the closed position. The angle (d2) between a second conical surface (32) and the conical valve seat is greater than the angle (d1) between a first conical surface (30) and the valve seat.

IPC 1-7

**F02M 61/18**

IPC 8 full level

**F02M 51/06** (2006.01); **F02M 61/10** (2006.01); **F02M 61/18** (2006.01)

CPC (source: EP US)

**F02M 61/18** (2013.01 - EP US); **F02M 61/1866** (2013.01 - EP US); **F02M 61/1873** (2013.01 - EP US)

Citation (search report)

- [X] DE 19820513 A1 19991111 - MTU FRIEDRICHSHAFEN GMBH [DE]
- [X] DE 10109345 A1 20010830 - DENSO CORP [JP]
- [A] DE 10020148 A1 20001116 - TOYOTA MOTOR CO LTD [JP]
- [A] DE 19931891 A1 20010118 - SIEMENS AG [DE]

Cited by

EP3156641A1; CN105298706A; EP1857668A1; EP1700030A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR

DOCDB simple family (publication)

**EP 1321661 A2 20030625**; **EP 1321661 A3 20050713**; **EP 1321661 B1 20090916**; DE 10163908 A1 20030703; DE 50213847 D1 20091029; JP 2003201938 A 20030718; US 2003132413 A1 20030717; US 6789783 B2 20040914

DOCDB simple family (application)

**EP 02017114 A 20020730**; DE 10163908 A 20011222; DE 50213847 T 20020730; JP 2002368205 A 20021219; US 32379702 A 20021220