

Title (en)  
FUEL INJECTION VALVE FOR COMBUSTION ENGINES

Title (de)  
KRAFTSTOFFEINSPRITZVENTIL FÜR BRENNKRAFTMASCHINEN

Title (fr)  
SOUPAPE D'INJECTION DE CARBURANT POUR MOTEURS A COMBUSTION INTERNE

Publication  
**EP 1644636 B2 20160803 (DE)**

Application  
**EP 04730825 A 20040503**

Priority  
• DE 2004000932 W 20040503  
• DE 10330256 A 20030704

Abstract (en)  
[origin: DE10330256A1] The injection valve has a valve body (1) with an inlet opening (20) and an outlet opening (22). The inlet opening has a circular shape with a radius and a center. A bulge is formed over a first angular range of the periphery of the circular shape. The first angular range is less than 180 degrees. A second bulge is formed which is mirror symmetrical to the first bulge. Both bulges are arranged with respect to each other in such a way that the two connecting lines of the points of largest distance to the center form an angle of less than 180 degrees with the mirror plane.

IPC 8 full level  
**F02M 61/18** (2006.01)

CPC (source: EP)  
**F02M 61/1833** (2013.01); **F02M 61/184** (2013.01); **F02M 61/1846** (2013.01)

Citation (opposition)  
Opponent :  
• EP 0370659 A1 19900530 - LUCAS IND PLC [GB]  
• EP 0890735 B1 20061018 - BOSCH GMBH ROBERT [DE]  
• DE 19507171 C1 19960814 - BOSCH GMBH ROBERT [DE]  
• TSCHÖKE, LEYH ET AL.: "Diesel- und Benzindirekteinspritzung II", HAUS DER TECHNIK FACHBUCH BAND 20, EXPERT-VERLAG, 1., December 2002 (2002-12-01), ESSEN, pages 68 - 77  
• "Diesel- und Benzindirekteinspritzung", 3. TAGUNG  
• "Hydro-erosives Schleifen von Diesel-Einspritzdüsen"

Cited by  
DE102008051365A1; DE102008051365B4

Designated contracting state (EPC)  
DE FR GB TR

DOCDB simple family (publication)  
**DE 10330256 A1 20050120**; DE 502004003489 D1 20070524; EP 1644636 A1 20060412; EP 1644636 B1 20070411; EP 1644636 B2 20160803; WO 2005010350 A1 20050203

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