

Title (en)
FUEL INJECTION NOZZLE

Title (de)
KRAFTSTOFFEINSPRITZDÜSE

Title (fr)
INJECTEUR DE CARBURANT

Publication
EP 1576282 A1 20050921 (EN)

Application
EP 03781188 A 20031205

Priority
• SE 0301873 W 20031205
• SE 0203625 A 20021206

Abstract (en)
[origin: WO2004053326A1] A fuel injection nozzle (10) for internal combustion engines provided with a valve, in particular a needle valve (24), and a nozzle sac (20) below the valve which includes plural injection orifices (22) distributing the fuel in combustion space. A swirl flow is induced upstream the nozzle sac, for instance by using a swirl fluid passage (34). A free ball (32) from a material of higher density than the fuel is located in the nozzle sac (20) moved by the swirling flow around the sac and following a track (36) in the form of a rounded corner of a radius slightly larger than the ball and connecting the injection orifices with entrances in the center of the rounded corner. The ball sequentially covers the injection orifices so that it provides multiple fuel injection pulses during a single opening of the fuel valve i.e. per single cylinder firing. The multiple injections provide substantially improved fuel atomization, air entrainment into the fuel spray and better air utilization in the engine, increasing power density, combustion and cycle efficiency and reducing emissions. For best effects the fuel swirl rate in the sac shall be three to four times the air swirl rate in the combustion chamber. The ratio of the ball diameter to the sac diameter is preferably between 0.6 and 0.8.

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IPC 8 full level
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