Gasoline Systems

High-pressure solenoid injector HDEV5

BOSCH
Invented for life

High-pressure injector HDEV5

Customer benefits

- Series experience: high number of customer applications worldwide, compliance to major global fuel specifications
- Individual sprays through laser-drilled spray holes for an optimal spray preparation
- Local supply of our customers in our international production network
- Flow rate and spray angle are independent injector parameters
- High deposit robustness
- High evaporation rate
- High spray stability and accuracy – minor influence of back pressure and air movement on spray propagation
- Improved fuel evaporation by optimal interaction of fuel and air
- Large metering range with system pressure modification

Engines with gasoline direct injection generate the air-fuel mixture directly in the combustion chamber. Only fresh air flows through the open intake valve.

The fuel is injected directly into the combustion chamber using high-pressure injectors. This improves combustion chamber cooling and enables higher engine efficiency due to higher compression, resulting in increased fuel efficiency and torque.

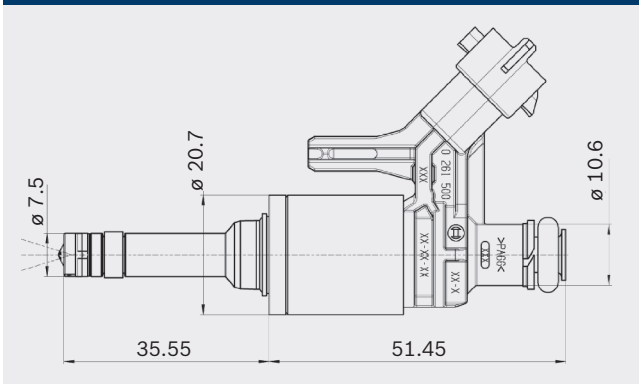
The high-pressure circuit is fed via the high-pressure pump. The high-pressure injectors, fitted to the fuel rail, meter and atomize the fuel at high pressure and extremely rapidly to provide optimum mixture preparation directly in the combustion chamber.

As a result of increasingly strict emission laws and demand for low fuel consumption on one hand and the desire for more fun-to-drive at low cost on the other hand, the technical components require innovative concepts and ideas. Within this field the high-pressure injector (HDEV5) plays a major role.

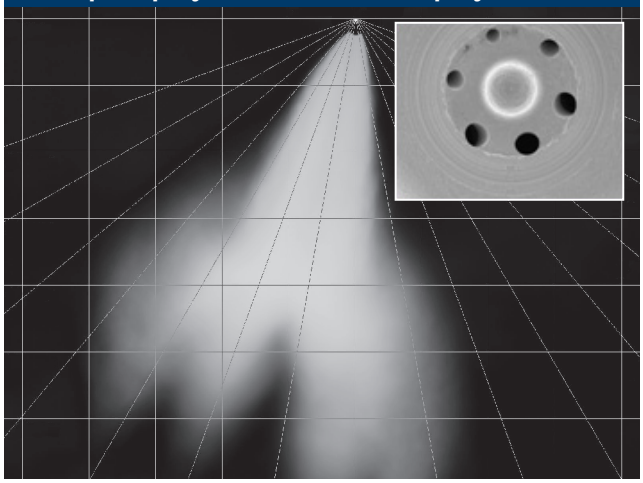
Task

The HDEV5 meters and atomizes the fuel equally (homogeneously) in the entire combustion chamber to achieve an optimal mixture of fuel and air.

Dimensions



Example: spray with laser-drilled spray holes



High-pressure injector HDEV5

Long version

Function

- Inward-opening solenoid injector
- Multihole injector (MHI) with high variability concerning spray angle and spray shape
- For variable system pressure up to 20 MPa nominal
- Suitable for highly integrated power stage (65 V booster voltage)
- Easy assembly and fixing for central or side installation at the cylinder head
- Option: variable lengths (for different installation requirements)

Application

By its flexibility regarding spray shape as well as flow rate the high-pressure injector is qualified for various engine types.

Today the injector is applied worldwide in a 1.0 l 3-cylinder as well as a V8 with turbocharging, both for consumption (e.g. downsizing) and fun-to-drive concepts (e.g. in combination with turbocharging).

Thereby the high-pressure injector supports different engine operating points – from high-pressure start with catalyst heating and multiple injection to homogeneous full load.

Technical features

System pressure	≤ 20 MPa
Flow rate	≤ 22.5 cm^3/s at 10 MPa
Leakage	< 2.5 mm^3/min at 10 MPa
Fuels	Current worldwide qualities
Droplet size SMD (Sauter Mean Diameter)	15 µm
Spray form	Variable number and position of spray holes
Injector installation	Central or side installation at the cylinder head

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