

### Delphi Multec<sup>®</sup> 10 GDi Multi-Hole Fuel Injector

The Delphi Multec<sup>®</sup> 10 GDi Multi-Hole Fuel Injector is designed for homogeneous combustion applications and features a multi-hole spray generator. It is a flexible cost and performance optimized injector capable of high pressure (100 bar nominal). The Multec 10 Injector is compatible with existing driver schemes and has an inwardly opening valve group that includes a multi-hole atomizer, which provides improved spray stability (cone shape) versus counter pressure.

#### ▶ Benefits

- 50 V drive allows use of an industry-standard driver
- Enhanced linear flow range is suitable for turbo-charged engines
- Inward-opening valve group helps provide low leakage
- Flexible spray pattern reduces fuel impingement on cylinder walls and allows flexible mounting
- Corrosion resistance, flow performance, and linear range to accommodate the requirements of ethanol fuel blends

#### ▶ Typical Applications

The Delphi Multec 10 GDi Multi-Hole Fuel Injector can be applied to any size gasoline engine, from small-displacement turbo-charged engines to large displacement engines. The small particles in the spray allow optimum charge distribution for future combustion processes such as gasoline homogeneous charge compression ignition (HCCI).

#### ▶ Performance Advantages

The Delphi Multec 10 GDi Multi-Hole Fuel Injector offers flexible spray-preparation options that allow customization of the spray shape to accommodate a wide variety of combustion chamber shapes. The small particle size provides rapid vaporization for good mixture preparation. An optimized magnetic circuit provides rapid and consistent response times and increased linear flow while using industry-standard drive.

#### ▶ Availability

The Delphi Multec 10 GDi Multi-Hole Fuel Injector will be available to automotive customers starting in the 2010 calendar year. Contact Delphi for further information.



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▶ **Targeted Performance Specifications**

Static flow rate	Up to 20 g/sec
Closing response time	0.4 msec
Opening response time	0.4 msec
Fuel pressure	30-150 bar
Minimum linear flow (at 12.5 g/sec static flow rate)	3.0 mg/pulse
D <sub>32</sub> sauter mean diameter (SMD)	12 µm (at 100 bar)
DV <sub>90</sub>	25 µm (at 100 bar)
0 after inject (no bounce)	No bounce at close
Cone angle as required by combustion	40° to 90°

**Delphi is continuing to develop a complete portfolio of injectors to cover the entire range from homogeneous lambda=1 and lambda>1 to spray guided lambda>>1 applications.**

▶ **The Delphi Advantage**

Delphi offers air and ignition subsystems, valve train systems, exhaust gas recirculation components, and sensors, presenting vehicle manufacturers with the widest portfolio of engine management systems and components. Delphi can integrate air and fuel management systems, and the associated electronic controls and sensors, helping provide complete engine control systems designed to meet emissions requirements worldwide.

Delphi is applying its global resources to the development of homogeneous gasoline direct fuel injection technology, headed by the research staff at the Technical Center Rochester (USA). This world-class facility features advanced testing equipment and a staff committed to working closely with designers to develop fuel injection systems tailored to meet individual customer needs.