

Delphi Premium GDi High Pressure Fuel Pump

The Delphi Premium GDi High Pressure Fuel Pump for gasoline direct engine applications offers reduced noise levels versus conventional pump designs. Working with high pressure fuel pump partner Magneti Marelli, Delphi engineers improved a high value single-piston engine driven pump to noticeably reduce the primary sources of high pressure fuel pump operating noise.

The pump delivers operating pressures from 30 bar to 200 bar to meet customer requirements. It includes an integrated flow control valve for accurate demand fuel control and an integrated over-pressure relief valve. The pump also has a high flow capability for larger displacement engine applications.

To optimize system noise and performance in a homogeneous mode engine application, the Delphi Premium GDi High Pressure Fuel Pump can be included with low acoustic noise Delphi Multec® GDi Multi-Hole Fuel Injectors and a Delphi Multec® Gasoline Direct Injection Fuel Rail, which is also designed to reduce system-generated noise.



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► Benefits

- Enables gasoline direct injection systems, which versus conventional port fuel injection systems, offer fuel economy, power, torque and emissions benefits for engine manufacturers
- Internal design changes reduce noise generation on spill valve actuation and deactivation events
- Changes to the spill valve drive current further reduce actuation noise
- External design changes reduce noise transmitted by the damper cover
- The Delphi Premium GDi High Pressure Fuel Pump also provides many other important benefits provided by Delphi's standard GDi fuel pump, including:
 - High fuel flow capability to enable rail pressure build-up more quickly for faster start times
 - Integrated design offers system cost savings and system mass reduction
 - Design options provide packaging flexibility for the vehicle manufacturer
 - Integrated over-pressure relief valve reduces system complexity
 - Manufactured with corrosion resistant and multi-fuel-capable materials
 - Low mass: approximately 600 grams
 - Capable of operating with 2-, 3- or 4-lobe cams to provide flexibility for engine design (i.e. number of cylinders)
 - Allows high rpm engine operation (up to 7,500 rpm)
 - Provides fast control valve response time (less than 2 msec.)
 - Low power consumption
 - Competitively priced

► Typical Applications

The Delphi Premium GDi High Pressure Fuel Pump is suitable for most homogeneous and stratified combustion gasoline direct injection engine programs. It is compatible with most market-approved fuels including ethanol blends.

▶ Availability

The Delphi Premium GDi High Pressure Fuel Pump will be available for production in the 4th quarter of 2011. Delphi is locating production sites for the pump in North American and China. Engineering samples are available to automotive manufacturer customers. Contact Delphi for additional information.

▶ Performance Advantages

The Delphi Premium GDi High Pressure Fuel Pump features a unique hydraulic braking design for the moving spill valve components. The design can be used with low energy waveforms and adaptive software to control actuation noise that is typically created when the armature of the spill control valve strikes the pump's pole piece.

Additional high frequency noise reduction is achieved by the use of a stiffer external damper cover, which also decreases the transmission of actuating and de-actuating noise.

▶ The Delphi Advantage

Delphi offers a wide range of advanced gasoline direct injection systems that provide high performance and excellent value. Our technologies are designed to respond optimally to the challenging conditions of the most demanding GDi engine programs.

As a global leader in engine management systems technology, Delphi can help manufacturers meet emissions requirements, improve fuel economy and enhance performance. Delphi is a source for high value solutions and our systems expertise is built into every product. Delphi's flexible engineering approach encourages collaboration. And, Delphi has a thorough understanding of automotive markets around the world and global network of resources.