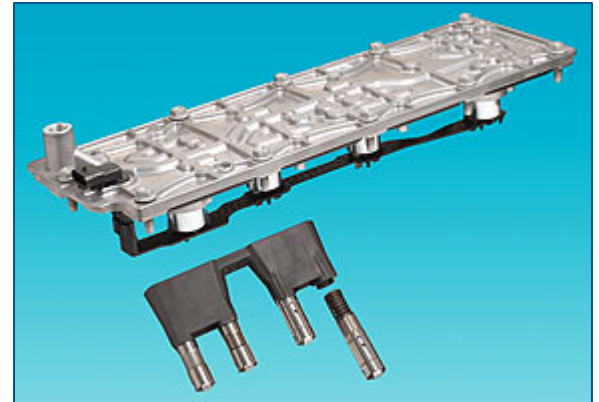


Delphi Cylinder Deactivation for Overhead Valve Engines

Delphi has engineered Cylinder Deactivation for Overhead Valve (OHV) Engines, a unique active fuel management, or variable displacement, technology that is designed to help reduce fuel consumption and exhaust emissions. There are two key components in the technology:

- Deactivation Roller Hydraulic Valve Lifters (DRHVL), which deactivate the intake and exhaust valves on selected cylinders. Most engine architectures group the DRHVL into a Lifter Guide Assembly (LGA), which facilitates handling and assembly, and provides an anti-rotation feature for both the DRHVL and the conventional roller hydraulic valve lifters on the non-deactivated cylinders.
- The Lifter Oil Manifold Assembly (LOMA), which houses solenoids and a hydraulic circuit that control the flow of high-pressure engine oil to actuate the switching mechanism within the DRHVL.



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Delphi's Cylinder Deactivation for OHV Engines selectively deactivates one half of the cylinders in an engine by synchronously switching off the exhaust and intake valves during light load operation. When cylinder deactivation mode is scheduled, the exhaust and intake valves are decoupled from the cam lobe motion by means of the switchable DRHVL. The cam motion is absorbed as "lost motion" within the DRHVL. Thus, the valves remain closed and their respective cylinders are inactive. The result is a relatively substantial fuel economy improvement and a significant reduction of CO₂ emissions.

► Benefits

- Engine displacement is optimally adjusted for load requirements: Horsepower and torque are maximized for high load operation, and fuel economy is maximized for light load conditions.
- Under certain conditions, a high output 8- or 6-cylinder engine can operate like a 4- or 3-cylinder engine so that efficiency is maximized.
- With the improved computing power of the powertrain controller and software for torque matching, the transition to deactivation operation is virtually seamless to the driver.
- Delphi's Cylinder Deactivation for OHV Engines provides vehicle manufacturers with a high benefit to cost ratio.

► Typical Applications

Delphi Cylinder Deactivation for Overhead Valve Engines is suitable for most 6- and 8-cylinder pushrod gasoline engines with roller hydraulic valve lifter valve trains.

► Performance Advantages

The Delphi Cylinder Deactivation for Overhead Valve Engines is a result of advancements in electronics, which enable digital control for selectively deactivating half the engine's cylinders under certain conditions. The technology can help improve fuel economy by up to 8 percent and help reduce green house gas emissions by up to 8 percent.

Delphi's Cylinder Deactivation for OHV Engines offers a tremendous value for the consumer while helping to reduce the impact on the environment.

Delphi is the current valve train supplier for many well respected vehicle manufacturers around the world. Delphi offers engine and valve train simulation support capabilities to help our customers predict benefits and performance. Delphi can support cylinder deactivation programs around the world with engineering design and manufacturing implementation capabilities.

▶ **The Delphi Advantage**

Delphi has more than 75 years' experience in valve train systems and our high quality conventional valve train products have earned industry-wide respect. Our deep understanding of the combustion process and our vast research and development capabilities have also enabled continuing innovation. Delphi offers one of the industry's most comprehensive lines of valve train products and we support our customers at many levels, from components to valve train systems design and optimization.

As a global leader in engine management systems technology, Delphi can help manufacturers around the world 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 a global network of resources.