Delphi 2-Step Valve Lift System

The Delphi 2-Step Valve Lift System is an advanced variable valve actuation technology that changes valve lift, duration and timing when opening and closing intake and/or exhaust valves during engine operation. The 2-step valve lift event is achieved through a rocker arm mechanism that works with a 3-lobe cam. The cam switches between high and low cam profiles via corresponding rocker arm lift modes. The system includes a 2-step rocker arm (2-step roller-slider finger follower) and an oil control valve for hydraulic actuation.

Delphi's 2-Step Valve Lift System enables improved engine efficiency, which contributes to emissions reduction, as well as performance and fuel economy enhancements. In conjunction with dual independent variable cam phasing, the system can achieve even better emissions reduction, performance and fuel economy.

Delphi 2-Step Valve Lift Rocker Arm (2-Step Roller-Slider Finger Follower)

Benefits

- Fuel economy improvement ranges from 3.5% to 4.5% (with dual independent cam phasing) versus conventional dual cam phaser technology
- Delivers increased low speed torque (2% to 3%) and higher peak power (3% to 5%) for better engine performance
- Hydrocarbon emissions are reduced by 30 to 50% compared to programs without 2-step valve lift technology
- The system can help manufacturers meet OBD II requirements
- Enabler for homogeneous charge combustion ignition (HCCI) combustion strategies

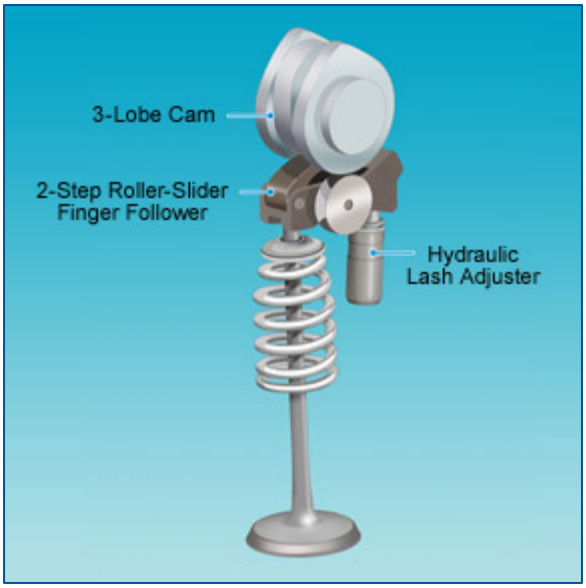
Typical Applications

The Delphi 2-Step Valve Lift System is designed specifically for overhead cam engines that include hydraulic lash adjusters and roller finger followers. It can be configured for either default low mode or default high mode.

Availability

The Delphi 2-Step Valve Lift System has completed the company's rigorous validation testing, including fixture and fired engine durability tests. Contact Delphi to begin application development.

2-Step Valve Lift System



2-Step Rocker Arm (2-Step Roller-Slider Finger Follower) in Overhead Cam Engine Assembly

Performance Advantages

Delphi's 2-Step Valve Lift System is a simplified design that provides manufacturers with a high benefit-to-cost ratio, especially when compared to other powertrain strategies. The system's compact design enables ease of packaging and can be deployed in most existing cylinder head designs.

Delphi offers worldwide engine management systems expertise. We have the ability to provide optimized control algorithms to maximize benefits in any application of our 2-Step Valve Lift technology, as well as diagnostic algorithms. Additionally, Delphi can provide engine and hydraulic simulation capabilities to precisely predict benefits and performance for a specific application.

Delphi's flexible engineering approach encourages collaboration. Delphi works with the customer to meet specific design objectives and provide tailored solutions.

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 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.