DELPHI

POWERTRAIN SYSTEMS

Delphi Enhanced Precision Purge Actuator

The Delphi Enhanced Precision Purge Actuator removes, or purges, hydrocarbon vapors routinely created when gasoline is stored in a vehicle's fuel tank. The actuator controls the flow of vapors that are stored in the evaporative emissions canister and purged to the engine via the intake manifold so that they can be burned, thus, helping to reduce evaporative emissions.

The Delphi Enhanced Precision Purge Actuator has an adjustable full flow capability to meet specific customer requirements.

Delphi Enhanced Precision Purge Actuators include: (clockwise from top left) rubber bracket mount with quick-connect and barbed ports, steel bracket mount with bead-type port, direct-mount with quick-connect port.

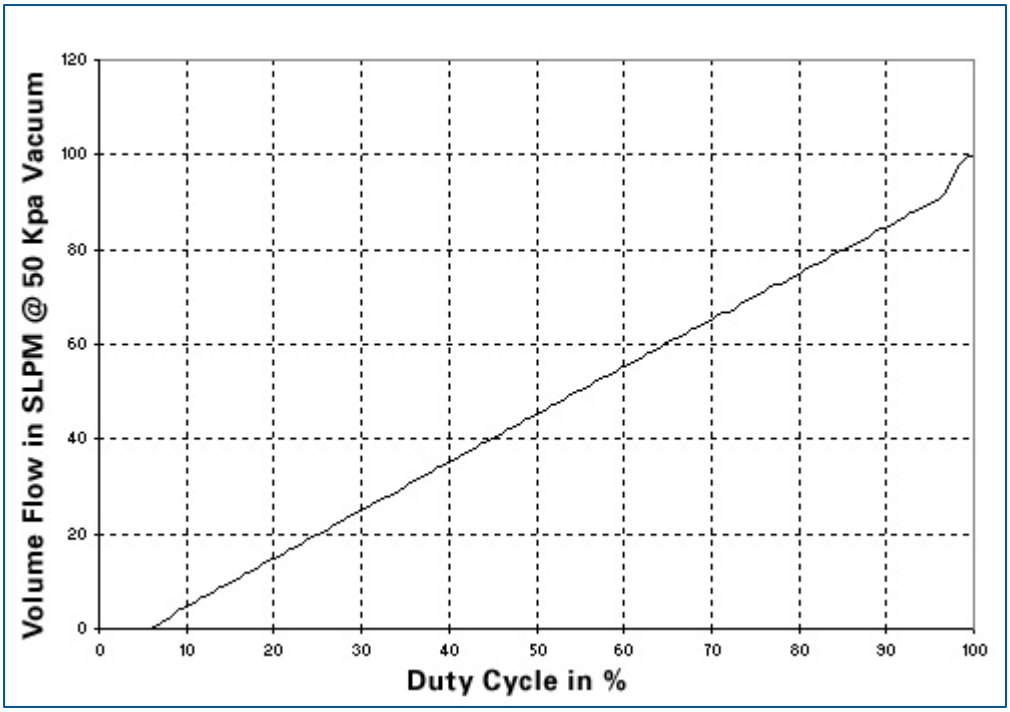
Benefits

- Uses pulse-width modulated (PWM) voltage control for a variable flow rate.
- Large dynamic range provides purge at idle capability and provides a linear response.
- Provides reliable fuel vapor purge under all engine operating conditions to help reduce evaporative emissions and help improve fuel economy.
- Adjustable rate of flow provides flexibility to meet specific customer application requirements (55 to 100 liters per minute) over full vacuum range.
- Delivers stable performance with temperature to enable simplified engine calibration.
- Proven durability up to 150,000 vehicle miles (240,000 km) provides low warranty rates.
- Design is robust to the introduction of foreign particles up to 350 microns. Integral filter also available for additional protection.
- Selection of robust materials results in proven capability with a variety of flexible fuels, including methanol and ethanol blends.
- Low-noise option available to provide greater flexibility for use in low temperatures.
- Various available mounting configurations that include rubber brackets, steel brackets, or direct-mount to intake manifold to provide isolation and maximum flexibility in packaging into any customer application.
- Various available pneumatic interface configurations that include quick-connect (SAE or Norma-Rasmussen), barbed (for PA tube), or bead-type ports (for rubber hose), allow easy application, mounting and assembly.
- Various electrical connector configurations available to match customer application requirements.

Typical Applications

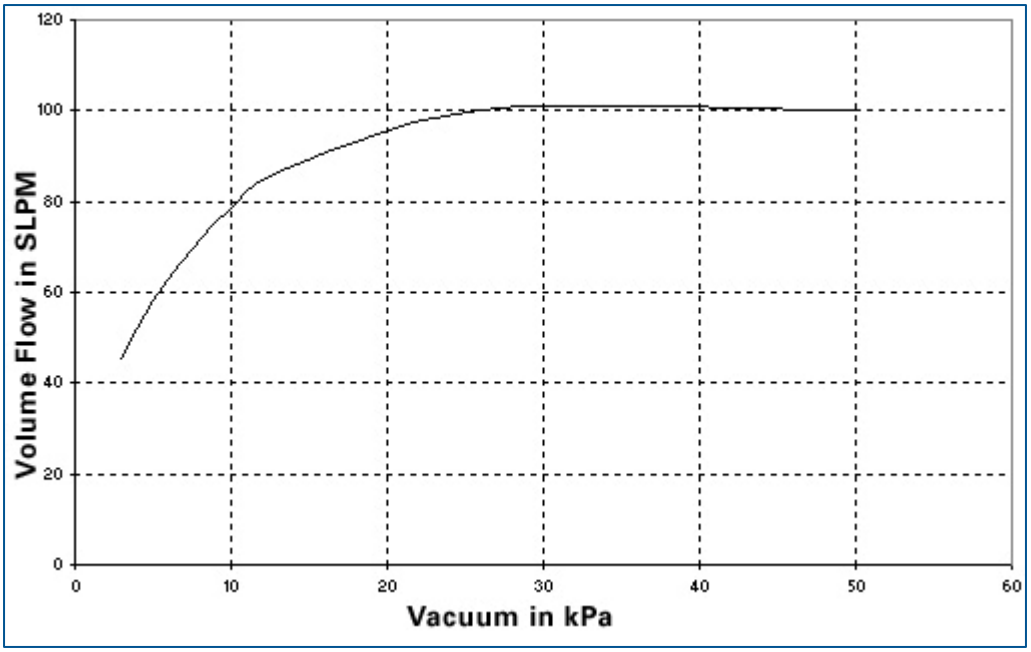
The Delphi Enhanced Precision Purge Actuator is an integral element of a gasoline-powered vehicle's evaporative emissions control system. It can be used on variable valve train engines, direct injection gasoline engines, and on gasoline engines requiring high flow rates. It can also be used in idle-bypass applications for small engines, or on other applications requiring regulated flow of air.

Flow versus Duty Cycle at 10 Hz Driving Frequency



This chart shows the linearity of the Delphi Enhanced Precision Purge Actuator which enables ease of engine calibration.

Full Load Flow Curve



This chart demonstrates that the Delphi Enhanced Precision Purge Actuator achieves high flow with low vacuum. This can be important when high purge flow is needed at low-vacuum conditions, such as for hybrid vehicle programs.

Performance Advantages

The Delphi Enhanced Precision Purge Actuator provides precise linear high-flow rates over the full engine load range. This helps reduce evaporative emissions and contributes to fuel economy improvement. Flow performance remains stable over a wide temperature range.

The materials used in the Delphi Enhanced Precision Purge Actuator are compatible with a wide range of flexible fuels. An integral filter can be provided in the actuator, making it robust to the introduction of unforeseen upstream particles.

Delphi offers the benefits of more than 25 years' experience with purge actuators and we have manufacturing capabilities on four continents (in China, Mexico, Portugal, and Brazil).

The Delphi Advantage

Delphi has a long history of actuator design, development and manufacturing expertise and offers one of the widest portfolios of actuators for the automotive industry. Delphi is continually developing new and improved actuating technologies to help automotive manufacturers meet objectives for emissions control, fuel economy, drivability and noise. Delphi has the capability to provide a single actuating device or a complete assembly that includes hoses, brackets and back-pressure valves to meet specific customer needs.

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 approach 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.