

### Delphi Calipers and Linings

Delphi knows vehicles inside and out. By leveraging decades of its automotive experience and expertise, Delphi continues to design, develop, test, and manufacture automotive vehicle innovations that meet or exceed customer expectations. This vast knowledge of the total vehicle, combined with Delphi's resources and global locations, contributes to a production capacity of more than 7 million calipers and 20 million disc linings each year. Delphi supplies a full range of braking components, modules, and systems that can be tailored to manufacturers' specific requirements. In addition, Delphi provides personalized customer service and on-time, cost-effective deliveries to vehicle manufacturers and other Tier 1 suppliers.



#### ► Description

Delphi calipers and linings are custom designed and validated for a consistently robust performance—both as individual components and as part of an integrated brake corner.

*Calipers:* Delphi disc brake calipers are designed to efficiently convert the brake system hydraulic pressure to mechanical clamp force on the brake linings and rotor. By balancing the pressure distribution, the brake linings wear uniformly, resulting in consistent, smooth, and quiet brake operation. In addition, Delphi's calipers have low drag, which is accomplished without excessive fluid displacement via a combination of component stiffness and analytical piston seal and seal groove design.

Benefits of low drag include reduced friction-induced lining wear and improved fuel economy. Low drag also helps minimize wear-induced disc thickness variation (DTV), which can result in damaged rotors and pulsation or "shuddering" during braking.

The most recent generation of Delphi calipers combines a stiffer and more balanced housing, stiffer shoe and bracket, and pinch-bolt suspension for smoother and improved performance. Piston diameters range from 32 mm to 64 mm in single-bore designs and 46 mm to 60 mm in dual-bore designs.

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Available in both aluminum and cast iron, the calipers are tailored to vehicle manufacturers' unique requirements for torque and mass specifications to help them provide optimal brake performance.

*Linings:* Delphi disc brake linings provide the frictional interface between the caliper and rotor. By using production equipment and processes during the prototype phase, Delphi helps confirm that each lining prototype is consistent with linings that are selected for production.



Delphi linings are fabricated from non-asbestos organic ingredients specifically formulated to help maximize lining life and provide consistently uniform fade-resistant brake performance while minimizing lining dusting common to traditional semi-metallic linings.

Features	Benefits
Stiffer caliper housing and shoe and lining bracket with pinch-bolt suspension	Uniform, robust performance (consistent output) Reduced DTV Low drag Improved pedal feel
Wide range of piston diameters	Design flexibility
Aluminum or cast iron housings	Performance flexibility Mass reduction
Part-to-part, batch-to-batch chemistry uniformity	Consistent lining size during mass production with consistent prototype-to-production performance
Non-asbestos organic lining material	Uniform performance Environmentally friendly Excellent durability Minimal rotor surface wear Improved lining wear and fade

#### ▶ Typical Applications

Delphi calipers and linings, which are sold separately and as an assembly, are currently used in a wide spectrum of vehicle classifications—from compact passenger cars to light-duty trucks.

#### ▶ Performance Advantages

Delphi calipers and linings integrate seamlessly to offer smooth braking performance for a variety of vehicle operating conditions. The caliper's stiff housing construction and the lining's durability characteristics unite to help provide low rotor wear. Additionally, pedal travel and noise are also improved.