DELPHI

CHASSIS AND STEERING SYSTEMS

Delphi Active Stabilizer Bar System

Delphi uses its knowledge of the complete vehicle to offer a full array of advanced vehicle dynamics components and systems technologies. This selection allows vehicle manufacturers to provide their own distinctive ride and handling characteristics, enhancing vehicle performance and customer enthusiasm. With innovations in controlled suspension, braking, front and rear steering, as well as coordinated engine torque management control, Delphi can supply one product or a combination of integrated systems. Advanced vehicle dynamics includes such innovations as collision avoidance, rollover prevention, skid reduction, and reduced turning radius. Delphi's understanding of these ride and handling functions and others also helps vehicle manufacturers avoid the costly trial and error process. To further satisfy its customers, Delphi's numerous technical centers and manufacturing sites located from North America to China help provide personalized customer service and the timely delivery of these products.

Description

The Delphi active stabilizer bar system is a chassis-based option that adjusts the stabilizer bar force to help reduce vehicle roll while cornering, allows increased off-road wheel articulation, and improves ride comfort in straight-ahead and cornering conditions. The active, proportional active stabilizer bar system responds in real time to driving conditions based on actual or anticipated body motions. The system contains one or two controlled active stabilizer bar modules, a hydraulic pressure source, a hydraulic manifold with integral valves and pressure sensor, a controller, and vehicle sensors (e.g., steer angle, lateral acceleration, vehicle speed, etc.). The active stabilizer bar system can be integrated with other systems, such as brake systems and steering systems, to further enhance vehicle stability and control.

Front and Rear Actuator Bars

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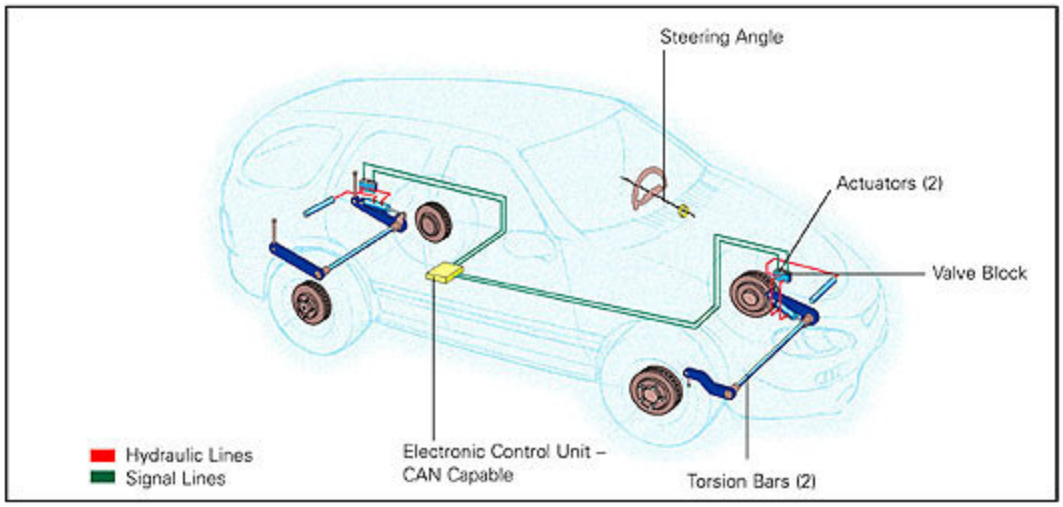
Delphi Active Stabilizer Bar System

Features	Benefits
4000-6000 Nm maximum roll moment; 180 bar capable actuators with near-zero leakage High articulation linear actuator and torsion bar configuration or a rotary actuator for improved packaging, suitable for a wider range of vehicles Normally locked failure mode Single channel- or two channel-capable Linear drop link, triangulated, or rotary actuator	Improved driver comfort through better isolation, reduced head toss, and reduced impact harshness Anticipatory control of transient driver-induced handling maneuvers Precise control of body roll angles, up to zero degrees, when cornering or in severe steering maneuvers Enhanced vehicle stability and control Extended limits of vehicle performance Improved low-speed off- road traction with increased wheel articulation

Typical Applications

The active stabilizer bar system offers the ability to improve off-road performance for SUVs, while improving vehicle handling, stability, and ride comfort for all vehicles from passenger cars to light-duty trucks.



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Performance Advantages

The active stabilizer bar system helps improve vehicle handling and reduces body motion during cornering and severe steering maneuvers, with no adverse effects on normal or rough-road ride performance. It helps provide increased safety and stability during handling maneuvers, and a more comfortable ride—with less head toss—for the driver. The main performance advantage comes from the ability to reduce stabilizer bar forces under normal driving conditions, and road impacts, while applying only the required stabilizer bar forces to maintain up to zero body roll angle in the corners. Another performance advantage of the active stabilizer bar system is improved wheel articulation, which helps significantly increase off-road capability (traction) and driver comfort at very low vehicle speeds on rough terrain.

Operating Conditions:

- Up to 180 bar operating pressure
- Controller: vehicle component or underbody
- Hydraulic and mechanical modules validated in 0.5 m-deep water

Specifications

Parameters	Requirements
Type	Single channel Two axle/single channel Two axle/two channel
Burst pressure	400 bar
Fail-safe mechanism	Normally locked
Mass	Drop link: 1-2 kg per actuator Triangulated: 15-20 kg per module Rotary: 18-26 kg per module
Nominal pump flow rate	4-12 liters/minute
Response time	80 ms to 150 bar

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