Anti-Lock Brake System (ABS) and Stability Control - Overview

Overview

The ABS and stability control systems are comprised of the following subsystems which assist the driver in maintaining control of the vehicle:

- ABS
- EBD
- ESC
- Hill descent control
- Hill start assist
- RSC
- Supplemental braking assist
- Supports adaptive cruise control
- Supports collision avoidance
- Traction control
- Trailer sway control

The ABS helps maintain steering control during hard braking by preventing wheel lock up. The ABS also includes a brake assist function which provides maximum brake system pressure during a severe braking situation.

The EBD system helps maintain vehicle control by keeping a balanced braking condition between the front and rear wheels.

The ESC system helps prevent skids or lateral slides by modulating brake fluid pressure to individual brake calipers and reducing engine torque.

The hill descent control feature helps to maintain a low vehicle speed while descending steep inclines on various surface conditions.

The hill start assist feature is designed to assist the driver during hill-starts. Using the ABS, the hill start assist system holds the vehicle on an incline for a short time, allowing the driver to release the brake pedal and press the accelerator pedal without needing to use the parking brake.

The RSC system helps prevent excessive vehicle roll by modulating brake fluid pressure to individual brake calipers and reducing engine torque.

The supplemental braking assist system uses the hydraulic pump motor and HCU to provide additional braking assist during a severe braking event or to compensate for a loss of vacuum in the brake booster.

The ABS supports the adaptive cruise control system by applying the brakes as necessary to maintain the distance gap set by the driver. For information on the adaptive cruise control system,
Refer to: Cruise Control - System Operation and Component Description (419-03B Cruise Control - Vehicles With: Adaptive Cruise Control, Description and Operation).

The ABS supports the collision avoidance system by monitoring information and precharging the brake system allowing the vehicle to stop in the shortest distance possible. For information on the collision avoidance system,
Refer to: Collision Warning and Collision Avoidance System - System Operation and Component Description (419-03C Collision Warning and Collision Avoidance System, Description and Operation).

The traction control system helps prevent loss of traction by reducing drive-wheel spin during acceleration.

The trailer sway control system helps maintain vehicle stability while towing a trailer by detecting and aiding in the reduction of conditions causing trailer sway.

Some noise from the system and pulsations in the brake pedal are normal conditions during most ABS and stability control system activations. Longer than normal brake pedal travel may also be experienced immediately following an ABS or stability control system activation.