

wheel speed sensor inputs to evaluate rear wheel slip. Once the rear wheel slip exceeds a predetermined threshold, the ABS module commands the HCU to close the appropriate isolation valves to hold the rear brake pressure constant while allowing the front brake pressure to build. This creates a balanced braking condition between the front and rear wheels. If the rear wheel slip continues and exceeds a second predetermined threshold, the ABS module commands the HCU to open the dump valves to decrease the rear brake pressure and allow the rear wheels to recover. A slight bump sensation may be felt in the brake pedal when EBD is active. If the ABS is disabled due to Diagnostic Trouble Codes (DTCs) being present in the ABS module, EBD continues to function unless the Diagnostic Trouble Codes (DTCs) are for wheel speed sensors or the HCU solenoid valves. When EBD is disabled, the ABS warning indicator, the red brake warning indicator and traction control indicator illuminate.

DESCRIPTION AND OPERATION > ANTI-LOCK BRAKE SYSTEM (ABS) AND STABILITY CONTROL - SYSTEM OPERATION AND COMPONENT DESCRIPTION > SUPPLEMENTAL BRAKING ASSIST

In addition to preventing wheel lock up during braking events, the ABS module is also able to provide supplemental hydraulic brake assist through the use of the hydraulic pump motor and the HCU. This is done in the event of a severe vacuum loss at the brake booster, to maintain the distance gap set by the adaptive cruise control system or to aid in the avoidance of forward collisions.

The ABS module utilizes the HCU and hydraulic pump motor to aid in bringing the vehicle to a safe, controlled stop in the event of severe vacuum loss at the brake booster. The ABS module continually monitors the vacuum in the brake booster through the use of a vacuum sensor. When the vacuum sensor indicates vacuum is below a predetermined level, a DTC is set in the ABS module. If this occurs during a braking event or if the driver attempts to stop the vehicle with a low vacuum condition in the brake booster, the ABS module activates the hydraulic pump motor in the HCU to assist with vehicle braking.

On vehicles equipped with adaptive cruise control, the CCM monitors the area forward of the vehicle. When an object enters this area and closes the distance gap set by the driver, the CCM sends a deceleration request to the ABS module over the HS-CAN2 (either an adaptive cruise control deceleration request or a collision avoidance deceleration request). When the deceleration request message is received, the ABS module activates the hydraulic pump motor and solenoid valves in the HCU to slow the vehicle down to maintain the distance gap set by the driver. Once the distance gap set by the driver is achieved, the CCM stops sending the deceleration request message and the ABS module deactivates the hydraulic pump motor and solenoid valves in the HCU. If the CCM determines the amount of braking provided by the ABS module is insufficient, the CCM sends a forward collision avoidance braking request message to the ABS module and warns the driver, both audibly and visually, through the use of the HUD. After receiving the braking request message, the ABS module waits for brake pedal input and, once received, applies maximum braking assist using the hydraulic pump motor and the HCU.

For additional information on the adaptive cruise control system, Refer to: Cruise Control - System Operation and Component Description .

For additional information on the collision avoidance system, Refer to: Collision Warning and Collision Avoidance System - System Operation and Component Description .