

Principles of Operation

Hydraulic Brakes

The brake pedal is connected to the power brake booster, which is connected to the brake master cylinder. When the brake pedal is pressed, brake fluid is forced through the double-walled steel tubes and flexible hoses to the Hydraulic Control Unit (HCU). The brake fluid is then distributed to the front and rear brake calipers. The fluid enters the caliper, forcing the caliper pistons and brake pads outward against the brake disc friction surface, slowing or stopping rotation of the brake disc. When the brake pedal is released, brake fluid pressure is relieved, returning the front and rear brake caliper pistons and brake pads to the unapplied position.

To diagnose hydraulic brake concerns, refer to [Section 206-00](#).

For information on the HCU, refer to [Section 206-09](#).

Adjustable Pedals Without Memory Feature

The adjustable pedals without memory are controlled by the brake pedal control switch and the Steering Column Control Module (SCCM). The adjustable pedals motor is attached to the accelerator pedal bracket and controls the accelerator pedals directly. It operates forward and rearward, depending on which direction the switch is pressed. The adjustable brake pedals is connected to the motor by a cable that rotates inside a sleeve. This allows both the brake and accelerator pedals to move together as an assembly. When the brake pedal control switch is pressed, voltage is applied from the SCCM to the adjustable pedals motor. The end of the motor that is attached to the accelerator pedal bracket rotates the pinion of a worm gear set and causes the accelerator pedal to move. At the same time, the other end of the motor rotates the cable inside the sleeve which causes the brake pedal adjuster to move through the use of a worm gear set. The pedals can be adjusted with the ignition switch in the OFF, ACC or RUN position, regardless of gear selector position.

The SCCM monitors the adjustable pedals motor and circuits for faults. If a fault is detected, the SCCM is capable of setting DTCs.

Adjustable Pedals With Memory Feature

The adjustable pedals with memory are controlled by the SCCM, Body Control Module (BCM) and Driver Seat Module (DSM). The pedals can be adjusted in 3 different ways:

- Using the brake pedal control switch.
- Using the memory SET switch.
- Using the Remote Keyless Entry (RKE) transmitter.

The SCCM monitors the position of the pedals using a Hall-effect sensor that is integral to the adjustable pedals motor. When a memory position is recalled through either the memory SET switch or the RKE transmitter, the SCCM monitors the Hall-effect sensor and stops sending voltage to the motor once the

commanded memory position is reached. If the SCCM receives a pedals position input during a memory position recall function, the module stops the memory recall and responds to the new pedals position input.

When the RKE transmitter is activated, a message is sent over the Medium Speed Controller Area Network (MS-CAN) to the DSM. When the memory SET switch is pressed, the DSM senses continuity to ground on the switch circuit. When the DSM receives either the MS-CAN message or the ground input through the switch circuit, it sends a message over the MS-CAN to the BCM. The BCM acts as a gateway module, relaying the MS-CAN message that was received from the DSM to the SCCM over the High Speed Controller Area Network (HS-CAN). The SCCM then sends voltage over the appropriate circuit to the adjustable pedals motor to adjust the pedals.

The SCCM continuously monitors the adjustable pedals motor and circuits for faults. If a fault is detected, the SCCM is capable of setting DTCs.

The DSM also controls the driver seat and the exterior mirrors.

For information on setting and recalling a memory pedal position, refer to Memory Position Programming in [Section 501-10](#).
