

2022 CHEVROLET CORVETTE SERVICE MANUAL

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Electronic Suspension Control Description and Operation

The BWI electronic suspension control system, individually controls the damping force of each of the 4 shock absorbers in order to keep the vehicle's body as calm as possible. Changes of the damping forces can be accomplished within milliseconds. Suspension characteristics can be changed at any time by activating the sport mode or tour mode.

The electronic suspension control system consists of the following major components:

- K19 Suspension Control Module
- Four corner vertical accelerometers
- Four shock absorber actuators, which are integrated within the shock absorbers

The K19 Suspension Control Module controls the damping forces according to the following factors:

- Vehicle speed
- Steering wheel position
- Engine torque
- Brake pressure

The K19 Suspension Control Module evaluates these inputs in order to separately control the shock absorbers, providing an enhanced ride and comfort level over the widest possible range of operating conditions.

K19 Suspension Control Module

The K19 Suspension Control Module controls the system functions and detects failures. The K19 Suspension Control Module receives input information by the four suspension vertical accelerometers that are directly connected to the module and by other systems through the serial data. The K19 Suspension Control Module commands variable levels of current to each shock absorber actuator.

Suspension Vertical Accelerometers

The K19 Suspension Control Module supplies a common 5 V reference and a ground circuit to each of the four wheel hub vertical accelerometers. The accelerometers send a signal of 0.3 V to 4.7 V to the K19 Suspension Control Module. The system uses four accelerometers to measure vertical acceleration, one per hub, and an Inertial Measurement Unit (internal to the module) to measure body motion. Using the accelerometers and the internal Inertial Measurement Unit, the module is able to determine wheel to body velocity.

Shock Absorber Actuators

The shock absorber actuators are integrated within the shock absorbers. The electronic suspension control system uses a proportional valve that is located in the external bypass of the displacement module.

Adjustment is performed by current control. The current range is 0 A to 5 A. The actuators respond to commands of the K19 Suspension Control Module within milliseconds.

Driver Information Center Message

The electronic suspension control system uses the instrument cluster for the display functions instead. When the K19 Suspension Control Module detects a fault that sets a DTC, it sends a message on the serial data line to the instrument cluster, which will display the following message:

SERVICE SUSPENSION SYSTEM

The K19 Suspension Control Module has the ability to store DTCs as current or history codes. Most electronic suspension control system malfunctions will display a message in the instrument cluster and set a DTC. As long as the DTC is present, the message will be displayed.

Actions taken when a fault is detected will remain until the ignition is turned OFF, even if the fault condition is not present anymore.

If a fault is no longer present, the DTC will be stored as a history code. After 40 consecutive malfunction-free ignition cycles the DTC will be deleted.

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