CHILTON LIBRARY

YOUR CURRENT VEHICLE

2018 Chrysler Pacifica

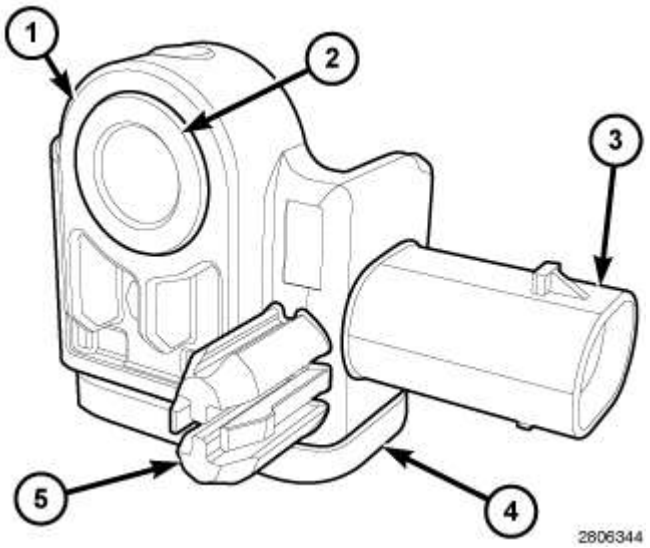
Description & Operation

DESCRIPTION AND OPERATION

DESCRIPTION

Remote or satellite impact sensors are mounted in various strategic locations of the vehicle. These sensors are mounted remotely from the impact sensor that is internal to the Occupant Restraint Controller (ORC). Sensors at the front of the vehicle provide an additional logic input for use by the Occupant Restraint Controller (ORC) to control the front airbags and the seat belt pretensioners. Sensors on each side of the vehicle provide an additional logic input for use by the ORC to control the side curtain airbags, the seat airbags and the seat belt pretensioners. Two types of sensors are used in this vehicle. They are the acceleration-type and the pressure-type, which are described elsewhere within this service information.

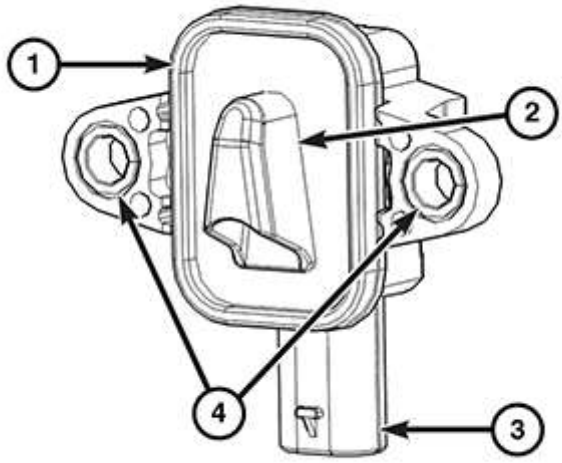
Although the front and side acceleration-type impact sensors are similar in appearance and construction, they may not be interchangeable. The front impact sensors may monitor acceleration forces on a different axis than those monitored by the side impact sensors. Each front sensor is secured with a single screw to its mounting location. Each side sensor is secured with a single nut to its mounting location. The front sensors are located on the back of both the right and left front end module closure panel behind and below the front lamp unit support member in the front of the engine compartment. A side sensor is located on a weld stud within a cavity of each B-pillar and C-pillar and concealed behind the lower B-pillar and C-pillar interior trim (2 and 3). A side sensor is also located on a weld stud within a cavity of each rear quarter panel, below the rear quarter glass (1).



Each accelerometric impact sensor housing has an integral connector receptacle (3), an integral locator pin with two latch features (5), and an integral mounting hole with a metal sleeve (2) to provide crush protection. A cavity in the center of the molded plastic impact sensor housing contains the electronic circuitry of the sensor which includes an electronic communication chip and an electronic acceleration sensor. Potting material fills the cavity and a molded cover (4) is laser welded over the cavity to seal and protect the internal electronic circuitry and components.

The front impact sensors are each connected to the vehicle electrical system through dedicated take outs and connectors of the headlamp and dash wire harness, while the side impact sensors are connected through dedicated take outs and connectors of the body wire harness.

The acceleration-type impact sensors cannot be repaired or adjusted and, if damaged or ineffective, they must be replaced.



Two pressure-type front door side impact sensors (1) are used on this vehicle, one each for the left and right sides of the vehicle. These sensors are mounted remotely from the impact sensor that is internal to the ORC. Each side sensor is secured with two screws and is sealed by a resilient gasket to a front door hardware module carrier. The sensors are concealed behind the front door trim panel within the passenger compartment.

The right and left front door side impact sensors are identical in construction and calibration. The impact sensor housing has an integral connector receptacle (3), two integral mounting tabs (4) and an integral hood-like water shield (2). The water shield extends through a hole in the hardware module carrier into the interior of the door cavity and protects the sensor orifice from contamination. A cavity in the center of the molded plastic impact sensor housing contains the electronic circuitry of the sensor, which includes an electronic communication chip and the pressure sensor.

The pressure sensors can detect a sudden change in air pressure within the door which is consistent with a direct impact to the door. The sensor signal alone cannot command the explosion of the airbag. The ORC or a second sensor must detect a crash event simultaneously to deploy the side airbags.

The housing cavity is filled with a potting material to seal and protect the internal electronic circuitry and components. The pressure-type side impact sensors are each connected to the vehicle electrical system through a dedicated take out and connector of the door wire harness.

These pressure-type door side impact sensors cannot be adjusted or repaired and, if damaged or ineffective, they must be replaced.

OPERATION

Two types of impact sensors are used in this vehicle. They are the acceleration-type and the pressure-type.

ACCELERATION-TYPE

The acceleration-type impact sensors are electronic accelerometers that sense the rate of vehicle deceleration, which provides verification of the direction and severity of an impact. Each sensor also contains an electronic communication chip that allows the unit to communicate the sensor status as well as sensor fault information to the microcontroller within the ORC.

The ORC microcontroller continuously monitors all of the passive restraint system electrical circuits to determine the system readiness. If the ORC detects a monitored system fault, it sets a Diagnostic Trouble Code (DTC) and controls the airbag indicator operation accordingly. The acceleration-type and pressure-type side impact sensors for each side of the vehicle are connected in series (daisy-chained) to the ORC. The impact sensors on each side of the vehicle receive battery current and ground through dedicated left and right sensor plus and minus circuits from the ORC. The impact sensors and the ORC communicate by modulating the voltage in the sensor plus circuit.

The hard wired circuits between the impact sensors and the ORC may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate wiring information. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the impact sensors or the electronic controls

and communication between other modules and devices that provide some features of the Supplemental Restraint System (SRS). The most reliable, efficient and accurate means to diagnose the acceleration-type impact sensors or the electronic controls and communication related to impact sensor operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

PRESSURE-TYPE

The pressure-type door side impact sensors recognize a side impact in the door area by monitoring changes in pressure within the door cavity. A sudden pressure wave is created as the door collapses during an impact event. Each sensor also contains an electronic communication chip that allows the unit to communicate the sensor status as well as sensor fault information to the microcontroller within the ORC.

The ORC microcontroller continuously monitors all of the passive restraint system electrical circuits to determine the system readiness. If the ORC detects a monitored system fault, it sets a DTC and controls the airbag indicator operation accordingly. The pressure-type and acceleration-type side impact sensors for each side of the vehicle are connected in series (daisy-chained) to the ORC. The impact sensors each receive battery current and ground through dedicated left and right sensor plus and minus circuits from the ORC. The impact sensors and the ORC communicate by modulating the current in the sensor plus circuit.

The hard wired circuits between the pressure-type door side impact sensors and the ORC may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate wiring information. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the impact sensors or the electronic controls and communication between other modules and devices that provide features of the Supplemental Restraint System (SRS). The most reliable, efficient and accurate means to diagnose the pressure-type impact sensors or the electronic controls and communication related to impact sensor operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.