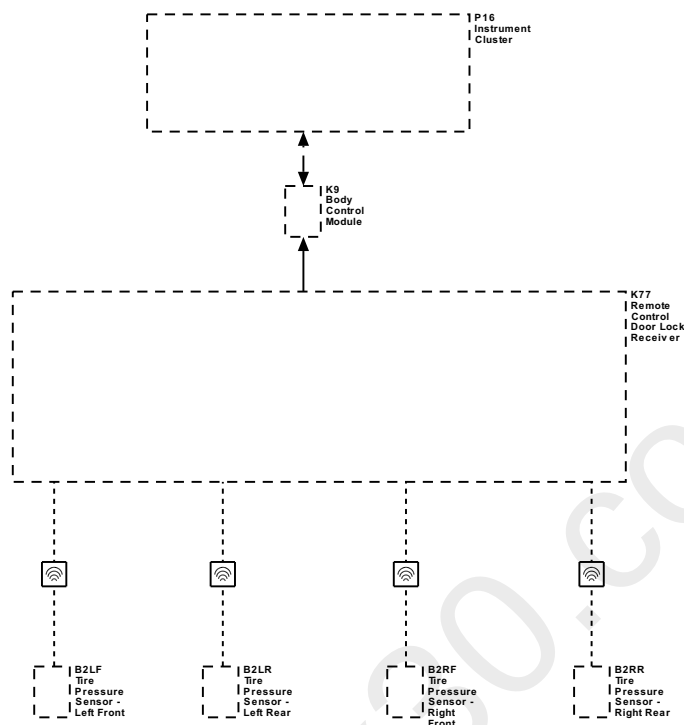


2022 CHEVROLET CORVETTE SERVICE MANUAL

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Tire Pressure Monitor Description and Operation



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Special Tools

EL-52545 Tire Pressure Monitor Sensor and RF Diagnostic Tool

For equivalent regional tools, refer to Special Tools.

Tire Pressure Monitoring System Operation

The tire pressure monitor system warns the driver when a significant loss of tire pressure occurs in any of the equipped tires. It allows the driver to display the individual tire pressures and their locations on the driver information center.

The system uses the body control module (BCM), driver information center, instrument cluster, remote control door lock receiver, and a radio frequency transmitting pressure sensor in each tire assembly. Each sensor has an internal power supply.

Tire Fill Alert (TFA) (If Equipped) feature provides visual and audible alerts (light flashes and horn chirps) to drivers to assist in inflating an underinflated tire to the recommended tire pressure without the need to check a gauge or the instrument panel. TFA only functions once the tire pressure is low enough to trigger the telltale on the dashboard. When the driver starts filling the underinflated tire, the corner lamp nearest to that tire will begin to flash. When the recommended pressure is reached, the horn sounds once and the turn signal lamps will stop flashing and briefly turn solid. If the tire is overinflated by more than 35 kPa (5 psi), the horn will sound multiple times and the turn signal lamp will continue to flash for several seconds after filling stops. To release and correct the pressure, while the turn signal lamp is still flashing, briefly press the center of the valve stem. When the recommended pressure is reached, the horn sounds once.

Software Auto-location (SAL) (If Equipped) is achieved by correlating information from the sensor with information from the ABS system to make a location decision. Factors such as rolling radius, steering angle etc. cause each vehicle wheel to rotate at a unique speed and difference in tire speeds helps software auto learn feature to assign sensor IDs to the correct locations. If a new sensor has been installed or tire rotated, the vehicle must be stationary for about 20 minutes before the system can start the process of calculating correct sensor locations. For this to happen, the

vehicle will need to be driven at speed greater than 20 km/h (12 mph) for about 10 min.

When the vehicle is stationary, the sensors internal shock sensor is inactive which puts the sensors into a Stationary state. In this state the sensors sample tire pressure once every 30 sec and do not transmit at all if the tire pressure does not change. As vehicle speed increases, the shock sensor pulses every wheel rotation, which puts the sensor into Rolling mode. The remote control door lock receiver receives and then sends the tire pressure and temperature data to the body control module (BCM). The BCM translates the data contained in the tire pressure sensor radio frequency transmissions into sensor presence, sensor mode, and tire pressure. Once vehicle speed is greater than 40 km/h (25 MPH), the sensors begin to transmit once a minute keeping the pressure data up to date.

Each sensor has its own unique identification (ID) code which it transmits as part of each RF message and must be learned into the BCM memory. Once all 4 ID's have been learned and vehicle speed is greater than 40 km/h (25 mph), the BCM continuously compares ID's and pressure data in the received transmissions to the learned ID's and pressures to determine if all 4 sensors are present and if one or more tires are low. If the BCM detects a low tire pressure condition, or a malfunction in the system, it will send a serial data message to the instrument cluster requesting the appropriate tire pressure monitor indicator illumination and also to display the appropriate data message on the driver information center, if equipped.

The sensors continuously compare their last pressure sample to their current pressure sample and will transmit in Alert mode if a 8.3 kPa (1.2 PSI) change in tire pressure has been detected in either a Stationary or Rolling state. When the tire pressure system detects a significant loss, or gain of tire pressure, the tire pressure monitor indicator icon is continuously illuminated on the instrument cluster and if equipped, a check tire pressure type message is displayed on the driver information center.

Both the indicator icon and driver information center message can be cleared by adjusting the tire pressures to the recommended kPa/PSI.

If power is disconnected from the BCM or if the vehicle battery is disconnected each tire pressure sensor ID is retained but all of the tire pressure information is lost. Under these circumstances the BCM cannot assume that the tire pressures were maintained over an unknown period of time. Cars equipped with the driver information center will display dashes and the scan tool will indicate a default tire pressure value of 220 kPa (32 PSI) for each tire. To reactivate the sensors, the vehicle must be driven above 40 km/h (25 MPH) for at least 2 min. When the sensors are activated, the driver information center displays the current tire pressures. The EL-52545 tire pressure monitor sensor and RF diagnostic tool may also be used to activate the sensors as well.

The BCM has the ability to detect malfunctions within the tire pressure monitor system. In the event a DTC is set, the tire pressure monitor indicator icon on the instrument cluster will flash for approximately 1 min. and then remain illuminated for the remainder of the key cycle. After a key cycle and the instrument cluster bulb check has been completed the indicator will again flash for 1 min. and then remain illuminated if the DTC persists. Any malfunction detected will cause the driver information center to display a service tire monitor system type message.