

Tire Pressure Monitoring

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Description and Operation

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Tire Pressure Monitor Description and Operation

Special Tools

- *EL-46079/J-46079* Tire Pressure Monitor Diagnostic Tool
- *EL-50448* Tire Pressure Monitor Sensor Activation Tool

For equivalent regional tools, refer to [Special Tools](#).

The tire pressure monitor system warns the driver when a significant loss of tire pressure occurs in any of the 4 tires and allows the driver to display the individual tire pressures and their locations on the driver information center.

The system uses the tire pressure indicator module, driver information center, instrument cluster, and a radio frequency (RF) transmitting pressure sensor in each wheel/tire assembly, and the serial data circuit to perform the system functions. Each sensor has an internal power supply with an approximate 10-year service life.

When the vehicle is stationary, the sensor's internal accelerometer is inactive, which puts the sensors into a Stationary state. In this state the sensors sample tire pressure once every 30 seconds and do not transmit at all if the tire pressure does not change. As vehicle speed increases, centrifugal force activates the sensors internal accelerometer causing the sensors to go into Wake and then Drive mode. In Drive mode, the sensors sample tire pressure once every 30 seconds and transmit in Drive mode once every 60 seconds. The antenna in tire pressure indicator module receives and the tire pressure indicator module translates the data contained in each sensors RF transmission into sensor presence, sensor mode, and tire. In turn, the tire pressure indicator module sends the tire pressure and tire location data to the driver information center via the serial data circuit where they are displayed.

The sensors continuously compare their last pressure sample to their current pressure sample and will transmit in Learn Mode-Pressure Triggered if a 8.3 kPa (1.2 psi) change in tire pressure has been detected in either a Stationary or Drive state. When the tire pressure monitor system detects a significant loss of tire pressure, the tire pressure monitor indicator icon is illuminated on the instrument cluster and if equipped, a tire pressure low, add air to tire 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 pressures and driving the vehicle above 40 km/h (25 mph) for at least 2 minutes.

If power is disconnected from the tire pressure indicator module or if the vehicle battery is disconnected, each tire pressure monitor sensor ID is retained but all of the tire pressure information is lost. Under these circumstances the tire pressure indicator module cannot assume that the tire pressures were maintained over an unknown period of time. If equipped, the driver information center will display all dashes and the scan tool will indicate a default tire pressure value of 1020 kPa (148 psi) for each tire. Driving the vehicle above 40 km/h (25 mph) for at least 2 minutes will activate the sensors causing the driver information center to display the current tire pressures. The *EL-46079/J-46079* tire pressure monitor diagnostic tool, *EL-50448* tire pressure monitor sensor activation tool, or equivalent may also be used to activate the sensors as well.

The tire pressure indicator module 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, if equipped will flash for 1 minute and then remain illuminated after the ignition is turned ON and the instrument cluster bulb check has been completed. Any malfunction detected will cause the driver information center to display a service tire monitor system type message.

Diagnostic Information and Procedures

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DTC C0750, C0755, C0760, or C0765

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptor

DTC C0750

Left Front Tire Pressure Sensor Low Voltage

DTC C0750

Left Front Tire Pressure Sensor Too Few Pulses

DTC C0750

Left Front Tire Pressure Sensor Internal Malfunction

DTC C0755

Right Front Tire Pressure Sensor Low Voltage

DTC C0755

Right Front Tire Pressure Sensor Too Few Pulses

DTC C0755

Right Front Tire Pressure Sensor Internal Malfunction

DTC C0760

Left Rear Tire Pressure Sensor Low Voltage

DTC C0760

Left Rear Tire Pressure Sensor Too Few Pulses

DTC C0760

Left Rear Tire Pressure Sensor Internal Malfunction

DTC C0765

Right Rear Tire Pressure Sensor Low Voltage

DTC C0765

Right Rear Tire Pressure Sensor Too Few Pulses

DTC C0765

Right Rear Tire Pressure Sensor Internal Malfunction

Circuit/System Description

The tire pressure monitor system has a radio frequency (RF) transmitting pressure sensor in each wheel/tire assembly. As vehicle speed increases, centrifugal force puts the sensor into Drive mode. The sensors send the tire pressure data to the tire pressure indicator module which in turn translates the received sensor data into sensor presence, sensor mode, and tire pressure. Once vehicle speed is greater than 40 km/h

(25â€‰%MPH), the tire pressure indicator module waits for the first sensor to go into Drive mode, then checks if all sensors have gone into Drive mode. If one or more sensors does not go into these modes, or does not transmit at all, the tire pressure indicator module will set DTC C0750, C0755, C0760, or C0765 respectively.

Conditions for Running the DTC

Vehicle speed is greater than 40â€‰%km/h (25â€‰%MPH).

Conditions for Setting the DTC

- A sensor does not transmit or transmits invalid data to the tire pressure indicator module.
- A sensor low battery condition.

Action Taken When the DTC Sets

- The tire pressure monitor system indicator icon on the instrument cluster flashes for 1â€‰%min and then remains illuminated after the ignition switch is cycled ON and the instrument cluster bulb check is complete.
- If equipped, the driver information center displays a service tire monitor type message.

Conditions for Clearing the DTC

A current DTC will clear when the malfunction is no longer present and one ignition cycle occurs.

Diagnostic Aids

- Some aftermarket wheel valve stem holes are located further from the wheel rim than original equipment wheels. When using the tire pressure monitor special tool to activate a sensor, ensure the tool is placed along the tire sidewall and no further than 15 cm (6 in) from the sensor and the antenna is aiming upward.
- Aftermarket wheel valve system locations can cause a sensor to not function correctly.
- A sensor may have been damaged due to a previous wheel/tire service or flat tire event.
- The use of other than GM approved tire sealants can obstruct the sensor pressure sensing port and cause inaccurate tire pressure readings. If this condition is verified, remove the sealer from the tire and replace the sensor. Refer to [Tire Pressure Indicator Sensor Replacement](#).
- Occasionally sensor transmissions are not received by the tire pressure indicator module due to vehicle level radio frequency interference from items such as but not limited to aftermarket ignition systems, DVD players, CB radios, or metallic type window tinting.
- The sensor activation procedure may have to be repeated up to 3 times before determining a sensor is malfunctioning. In the event a particular sensor information is displayed on the special tool upon activation but the horn does not chirp, it may be necessary to rotate the wheel valve stem to a different position due to the RF signal being blocked by another component.
- Occasionally sensors can become mislocated due to previous tire rotations where the sensor learn procedure was not performed. Always learn the sensors to ensure the DTC set is for that actual physical corner of the vehicle. Refer to [Tire Pressure Indicator Sensor Learn](#).
- A sensor low battery condition will set a sensor DTC but will not illuminate the low tire pressure indicator or display a message on the driver information center, if equipped. The sensor battery condition can be verified in the scan tool data list. If a sensor low battery condition is indicated on the scan tool, the sensor will need to be replaced. Refer to [Tire Pressure Indicator Sensor Replacement](#).

Reference Information

Description and Operation

[Tire Pressure Monitor Description and Operation](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Verify there are no communication DTCs set along with DTCâ€‰%C0750, C0755, C0760, and C0765.
- 2.
3. If a communication DTC is set

◦ If a communication DTC is set

- Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#).

3.

- If a communication DTC is not set

4. Verify if all 4 tire monitor pressure sensor DTCs are not set.

5.

- If 2 or more tire monitor pressure sensor DTCs are set, test the keyless entry antenna for proper operation, or if antenna is properly seated. Refer to [Keyless Entry System Malfunction](#)

6. Perform the [Tire Pressure Indicator Sensor Learn](#).

7. Verify the scan tool Tire Pressure Sensor Mode parameters change to Drive while driving the vehicle above 40 km/h (25 mph) for greater than 2 min.

8.

- If a Tire Pressure Sensor Mode parameter does not change to Drive

9.

1. Replace the appropriate Tire Pressure Sensor.
2. Perform the [Tire Pressure Indicator Sensor Learn](#).

10.

- If the Tire Pressure Sensor Mode parameter changes to Drive

11. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Tire Pressure Indicator Sensor Replacement](#)
- [Tire Pressure Indicator Sensor Learn](#)

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Symptoms - Tire Pressure Monitoring

1. Perform the [Diagnostic System Check - Vehicle](#) , before using the Symptom Tables in order to verify that all of the following are true:
2.
 - There are no DTCs set.
 - The control modules can communicate via the serial data link.
3. Review the system operation in order to familiarize yourself with the system functions. Refer to [Tire Pressure Monitor Description and Operation](#).

Visual/Physical Inspection

- Inspect if tires are inflated per placard values.
- Inspect for aftermarket devices which may affect the operation of the Tire Pressure Monitoring (TPM) System. Refer to [Checking Aftermarket Accessories](#).
- Inspect the easily accessible or visible system components for obvious damage or conditions which may cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to [Testing for Intermittent Conditions and Poor Connections](#).

Symptom List

Refer to [Low Tire Pressure Indicator Malfunction](#) in order to diagnose the symptom.