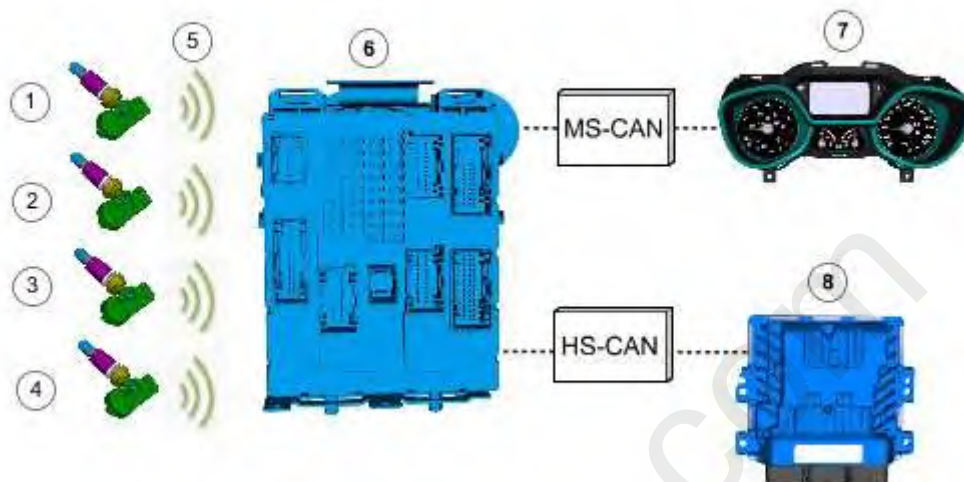


Description and Operation

System Operation

System Diagram



E170854

Item	Description
1	LF TPMS (tire pressure monitoring system) Sensor
2	RF TPMS Sensor
3	LR TPMS Sensor
4	RR TPMS Sensor
5	Radio frequency signals from four sensors
6	Module –BCM (body control module) with integrated receiver
7	Module –IPC (instrument panel cluster)
8	Module – PCM (powertrain control module)

TPMS Function

TPMS is a new comfort feature function of the BCM. It checks the pressure of every single tire and alerts the driver in case of a significant pressure loss via telltale in the IPC. In comparison to the former Deflation Detection System (DDS, no direct pressure monitoring: calculating possible deflation through comparison of wheel speeds) TPMS offers improved functionality. It works with 4 separate sensors in each wheel that monitor tire pressure, tire air temperature and acceleration. This allows the system not only to detect deflation in, 2 or 3 tires but also a consistent loss of pressure in all 4 tires. TPMS reacts to pressure losses of at least 20 % compared to the learned warm tire pressure. The 4 sensors wirelessly transmit their data to the BCM regularly or if a pressure loss is detected immediately. If a deflation of at least 20 % is detected the BCM sends requests to the IPC to switch on the indicator lamp and/or to show a message in the IPC display.

The scan tool is a useful tool in diagnosing TPMS concerns and may be used to verify the accuracy of the tire pressure data transmitted by the TPMS sensors. This is accomplished by comparing the BCM tire pressure Parameter Identification (PID) data to the actual tire

pressure using a digital tire pressure gauge. Training the sensors is not necessary after a tire rotation on vehicles with the same front and rear tire pressures however, the BCM cannot recognize that the sensor identifiers have been moved to different positions and will retain the original position information for each sensor.

Resetting TPMS

TPMS has to be reset after every manual change to the tires or the tire pressure (wheel change or pressure adjustment).

Automatic learning process TPMS

After every reset TPMS has to go through an automatic learning process. In this time the system gets to know all parameters that are necessary to work precisely and the warm tire pressure (depending on isolation, surface temperature, ambient air temperature, tire pressure, driving situation, friction etc.) is learned. The process lasts 10 minutes but the system already works with default parameters before it is completed.

TPMS Warning Indicator

The TPMS warning indicator and vehicle message center occasionally displays faults that cannot be resolved by the customer. Treat these messages as TPMS faults that must be serviced.

TPMS Warning Indicator Illuminates Continuously

The TPMS warning indicator remains on continuously and the message center displays LOW TIRE PRESSURE when any of the tire pressures fall below the low pressure limit. When this condition exists, adjust the tire pressure to the recommended cold tire pressure indicated on the tyre placard. Perform system reset.

Tire Pressure Monitoring System (TAMS) Warning Indicator Flashes

The TPMS warning indicator flashes for 75 seconds and then remains on continuously when the ignition is set to ON and the TPMS is malfunctioning. The Parameter Identification (PID) TP_STAT can be used to determine why the TPMS warning indicator is flashing.

- Tire Pressure Sensor Fault — The message center displays TIRE PRESSURE SENSOR FAULT when a TPMS sensor is malfunctioning.
- No communication with the BCM — The TPMS warning indicator illuminates when the IPC has not received any signals from the BCM for more than 5 seconds. The message center displays TIRE PRESSURE MONITOR FAULT.
- Tire Pressure Monitor Fault — The message center displays TIRE PRESSURE MONITOR FAULT when the TPMS is malfunctioning.