Symptom Chart

Symptom Chart: Tire Pressure Monitoring System

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

Symptom Chart

Condition	Possible Sources	Actions
A module does not respond to the scan tool	• Fuse • Wiring, terminals or connectors • Communication network concern • BCM	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
TPMS warning indicator is on continuously and the message center displays LOW TIRE PRESSURE	Refer to the Pinpoint Test	GO to Pinpoint Test E
TPMS warning indicator is on continuously and the message center **does not** display LOW TIRE PRESSURE	• Diagnostic Trouble Codes (DTCs) present in the BCM • Diagnostic Trouble Codes (DTCs) present in the RTM	• Using a diagnostic scan tool, RETRIEVE all Diagnostic Trouble Codes (DTCs) from the BCM and the RTM. • For all BCM Diagnostic Trouble Codes (DTCs), GO to the DTC Chart: BCM. • For all RTM Diagnostic Trouble Codes (DTCs), GO to the DTC Chart: RTM.
The BCM does not enter TPMS sensor training mode	Refer to the Pinpoint Test	GO to Pinpoint Test F
The TPMS warning indicator is never or always on	• Communication network concern • IPC	REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).
One or more TPMS sensors do not train and no Diagnostic Trouble Codes (DTCs) are present	Refer to the Pinpoint Test	GO to Pinpoint Test G
The IPC displays dashes instead of actual tire pressure information	• TPMS sensor faulted • BCM has been flashed or reconfigured	REFER to: Tire Pressure Monitoring System (TPMS) Sensor Activation (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Pinpoint Tests

B1182:00

Normal Operations and Fault Conditions

REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).

Communication between the RTM and the TPMS sensors can be interrupted by RFI, which can cause intermittent issues which are not vehicle concerns. RFI is generated by electrical motors and appliance operation, cellular telephones, remote transmitters, power inverters and portable entertainment equipment.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B1182:00	Tire Pressure Monitoring System (TPMS): No Sub Type Information	Set by the BCM in continuous memory when **all 4** of the tire pressure sensors are faulted, not communicating with the RTM or when sensor data is not received by the BCM from the RTM.

Possible Sources

- RFI
- RTM communication concern
- TPMS sensor(s)
- BCM

Visual Inspection and Diagnostic Pre-checks

- Inspect for cell phone chargers or GPS units.
- Inspect for Non-Original Equipment Manufacturer (OEM) wheels or run-flat tires.
- Verify horn operation.
- Verify spare tire is not in use.

NOTE: *Make sure that all aftermarket electronic equipment has been disconnected (if possible) and the customer has been questioned about the electronic equipment they may have been using in the vehicle when this concern was identified.*

PINPOINT TEST A : B1182:00

A1 CHECK FOR COMMUNICATION WITH THE RTM (RADIO TRANSCEIVER MODULE)

- Ignition ON.
- Using a diagnostic scan tool, carry out the Network Test.

Does the RTM pass the Network Test?

Yes	GO to A2
No	DIAGNOSE the RTM does not respond to the scan tool. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

A2 CHECK FOR RTM (RADIO TRANSCEIVER MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, carry out the RTM self-test.

Are any Diagnostic Trouble Codes (DTCs) present in the RTM?

Yes	DIAGNOSE all RTM Diagnostic Trouble Codes (DTCs). REFER to the DTC Chart: RTM.
No	GO to A3

A3 CHECK THE BCM (BODY CONTROL MODULE) TPMS (TIRE PRESSURE MONITORING SYSTEM) STATUS (TPMS_STATUS) PID (PARAMETER IDENTIFICATION)

- Using a diagnostic scan tool, view the BCM TPMS_STATUS PID.

Does the TPMS_STATUS PID display SYSTEM FAULT?

Yes	GO to A4
No	GO to A7

A4 CARRY OUT THE TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSOR TRAINING PROCEDURE

- Train all 4 TPMS sensors.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did all of the TPMS sensors train and did the horn sound when each sensor was trained?

Yes	The system is operating correctly at this time. The concern may have been caused by RFI. For information on locating sources of RFI, REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).
No	GO to A5

A5 REPEAT THE TPMS (TIRE PRESSURE MONITORING SYSTEM) TRAINING

- **NOTE:** *A spare tire cannot be programmed to the vehicle. If a damaged road wheel is located in the vehicle and the RTM cannot communicate with it, or if the damaged wheel has been dropped off at a repair facility, the BCM sets a TPMS sensor fault. Repair and remount the road wheel as necessary to restore system operation.*

  If the spare tire is in use, repair and remount the road wheel as necessary to restore system operation.
  REFER to: Wheel and Tire (204-04A Wheels and Tires, Removal and Installation).

- Move the vehicle to rotate the wheels at least one-fourth of a turn. Leave the vehicle doors open. Start the sensor training procedure at a different wheel.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did any of the TPMS sensors train and did the horn sound when each sensor was trained?

Yes	If only some of the sensors trained, INSTALL a new TPMS sensor for each sensor that failed to train. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation). If all the sensors trained, the concern may have been caused by RFI. For information on locating sources of RFI, REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).
No	GO to A6

A6 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect all BCM connectors and related in-line connectors.
- Disconnect RTM C9026.
- Using a good light source, inspect the connectors for the following:
  - corrosion - install new connector or terminal and clean the module pins
  - damaged or bent pins - install new terminals or pins
  - pushed-out pins - install new pins as necessary
  - spread terminals - install new terminals as necessary

Are the connectors free of corrosion, damaged pins, bent pins, pushed-out pins and spread terminals?

Yes	GO to A7
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

A7 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Connect all BCM connectors and related in-line connectors. Make sure they seat and latch correctly.
- Connect RTM C9026. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	The sensors may not be present. DISMOUNT the tires and VERIFY the sensors are present and mounted to the wheels. REFER to: Wheel and Tire (204-04A Wheels and Tires, Disassembly and Assembly). If the sensors are missing, INSTALL new sensors. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation). If all the sensors are present, CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (BCM).
No	The system is operating correctly at this time. The concern may have been caused by RFI. For information on locating sources of RFI, REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).

B124D:02

Normal Operation and Fault Conditions

REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).

Communication between the RTM and the TPMS sensors can be interrupted by RFI, which can cause intermittent issues that are not vehicle concerns. RFI is generated by electrical motors and appliance operation, cellular telephones, remote transmitters, power inverters and portable

entertainment equipment.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B124D:02	Tire Pressure Sensor: General Signal Failure	Set by the BCM in continuous memory when 1, 2 or 3 of the tire pressure sensors are faulted, not communicating with the RTM or when sensor data is not received by the BCM from the RTM.

Possible Sources

- RFI
- One or more TPMS sensors not trained
- TPMS sensor(s)

Visual Inspection and Diagnostic Pre-checks

- Inspect for customer electronic devices, such as cell phone chargers or GPS units.
- Inspect for Non-Original Equipment Manufacturer (OEM) wheels or run-flat tires.
- Verify horn operation.
- Verify spare tire is not in use.

PINPOINT TEST B : B124D:02

B1 VERIFY BCM (BODY CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) B124D:02

- Using a diagnostic scan tool, clear the BCM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Activate each TPMS sensor.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Activation (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
- Using a diagnostic scan tool, carry out the BCM self-test.

Is DTC B124D:02 present?

Yes	GO to B2
No	The system is operating correctly at this time. The concern may have been caused by RFI. For information on locating sources of RFI, REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).

B2 CHECK THE BCM (BODY CONTROL MODULE) TPMS (TIRE PRESSURE MONITORING SYSTEM) STATUS (TPMS_STATUS) PID (PARAMETER IDENTIFICATION) AND SENSOR IDENTIFIERS

- Ignition ON.
- Using a diagnostic scan tool, view and record the following BCM Parameter Identifications (PIDs):
  - Left Front Tire Transmitter Identifier (TPM_S_ID_LF)
  - Right Front Tire Transmitter Identifier (TPM_S_ID_RF)
  - Left Rear Tire Transmitter Identifier (TPM_S_ID_LRO)
  - Right Rear Tire Transmitter Identifier (TPM_S_ID_RRO)
- View the BCM TPMS_STATUS PID.

Does the BCM TPMS_STATUS PID display SENSOR FAULT?

Yes	GO to B3
No	If the TPMS_STATUS PID displays SYSTEM FAULT, GO to Pinpoint Test A If the TPMS_STATUS PID displays LOW, GO to Pinpoint Test E If the TPMS_STATUS PID displays SYSTEM ACTIVE, the system is operating correctly at this time. The concern may have been caused by an intermittent condition.

B3 CARRY OUT THE TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSOR TRAINING PROCEDURE

- Train all 4 TPMS sensors.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did all of the TPMS sensors train and did the horn sound when each sensor was trained?

Yes	Using a diagnostic scan tool, LOCATE the updated TPMS sensor identifiers trained to the BCM. COMPARE these values to those recorded prior to the TPMS sensor training procedure. Disregarding sensor position, any sensor identifiers that do not match those retrieved from the module were changed, but not retrained. The sensors are now trained to the vehicle, diagnosis is complete. DOCUMENT all TPMS sensor identifiers on the applicable warranty claim.
No	GO to B4

B4 ATTEMPT TO TRAIN THE TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSORS AGAIN

- Move the vehicle to rotate the wheels at least one-fourth of a turn. Starting at a different wheel, train all 4 TPMS sensors.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did any of the TPMS sensors train and did the horn sound when each sensor was trained?

Yes	If only some of the sensors trained, INSTALL a new TPMS sensor for each sensor that failed to train. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation). If all the sensors trained, the concern may have been caused by RFI. For information on locating sources of RFI, REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).
No	GO to B5

B5 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect all BCM connectors and related in-line connectors.
- Disconnect RTM C9026.
- Using a good light source, inspect the connectors for the following:
  - corrosion - install new connector or terminal and clean the module pins
  - damaged or bent pins - install new terminals or pins
  - pushed-out pins - install new pins as necessary
  - spread terminals - install new terminals as necessary

Are the connectors free of corrosion, damaged pins, bent pins, pushed-out pins and spread terminals?

Yes	GO to B6
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

B6 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Connect the BCM connectors and related in-line connectors. Make sure they seat and latch correctly.
- Connect RTM C9026. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	The sensors may not be present. DISMOUNT the tires and VERIFY the sensors are present and mounted to the wheels. REFER to: Wheel and Tire (204-04A Wheels and Tires, Disassembly and Assembly). If the sensors are missing, INSTALL new sensors. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation). CLEAR the Diagnostic Trouble Codes (DTCs). If all the sensors are present, CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (BCM).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues. CLEAR the Diagnostic Trouble Codes (DTCs).

B1251:00

Normal Operation and Fault Conditions

REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B1251:00	Tire Pressure Sensor Low Battery: No Sub Type Information	Sets in continuous memory when attempting to train a TPMS sensor(s) with a low battery. The TPMS warning indicator flashes for 70 seconds and then remains on continuously when the ignition is turned to the ON position, and the message center displays TIRE PRESSURE SENSOR FAULT.

Possible Sources

- RFI
- One or more TPMS sensors not trained
- TPMS sensor(s)

Visual Inspection and Diagnostic Pre-checks

- Inspect for Non-Original Equipment Manufacturer (OEM) wheels or run-flat tires.
- Verify horn operation.

PINPOINT TEST C : B1251:00

C1 TRAIN THE TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSORS TO DETERMINE THE INOPERATIVE SENSOR

- Train all 4 tire pressure sensors.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did all of the TPMS sensors train and did the horn sound when each sensor was trained?

Yes	The system is operating correctly at this time.
No	**Before installing a new sensor(s):** If a sensor does not respond, MOVE the vehicle to rotate the wheels at least one-fourth of a turn and ATTEMPT to activate the same sensor again. If the sensor still does not respond, ATTEMPT to activate the same sensor again. If the sensor still fails to train, ATTEMPT to train the sensor with the vehicle doors open. If the sensor(s) fails to train a second time, INSTALL a new TPMS sensor(s). REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation).

Diagnosing Radio Frequency Interference Faults

Normal Operation and Fault Conditions

REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).

One or more TPMS sensors not being trained or missing, RTM wiring and BCM wiring, or an internal failure of the RTM or BCM can all present symptoms that are similar to RFI.

Possible Sources

- Not all TPMS sensors are installed
- TPMS sensor(s) not trained
- TPMS sensor(s)
- Intermittent TPMS operation due to RFI
- RTM wiring, terminals or connectors
- RTM
- BCM wiring, terminals or connectors
- BCM

Visual Inspection and Diagnostic Pre-checks

- Inspect for customer electronic devices, such as a cell phone charger or GPS unit.
- Inspect for aftermarket wheels or run-flat tires (tires with steel body cord plies in the tire sidewall).
- Verify horn operation

NOTE: *Make sure that all aftermarket electronic equipment has been disconnected (if possible) and the customer has been questioned about the electronic equipment they may have been using in the vehicle when this concern was identified.*

PINPOINT TEST D : DIAGNOSING RADIO FREQUENCY INTERFERENCE FAULTS

D1 CHECK FOR COMMUNICATION WITH THE RTM (RADIO TRANSCEIVER MODULE)

- Ignition ON.
- Using a diagnostic scan tool, carry out the Network Test.

Does the RTM pass the Network Test?

Yes	GO to D2
No	DIAGNOSE the RTM does not respond to the scan tool. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

D2 CHECK FOR RTM (RADIO TRANSCEIVER MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, carry out the RTM self-test.

Are there any Diagnostic Trouble Codes (DTCs) present in the RTM?

Yes	DIAGNOSE all RTM Diagnostic Trouble Codes (DTCs). REFER to the DTC Chart: RTM.
No	GO to D3

D3 VIEW THE BCM (BODY CONTROL MODULE) TPMS (TIRE PRESSURE MONITORING SYSTEM) STATUS (TPMS_STATUS) PID (PARAMETER IDENTIFICATION)

- Ignition ON.
- Using a diagnostic scan tool, view the BCM TPMS_STATUS PID.

Does the TPMS_STATUS PID display SYSTEM FAULT?

Yes	GO to D4
No	GO to D7

D4 CARRY OUT THE TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSOR TRAINING PROCEDURE

NOTE: *Before beginning TPMS sensor training, make sure the vehicle is away from other vehicles or devices that might cause RFI such as electric motors or radio transmitters.*

- Train all 4 TPMS sensors.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did all of the TPMS sensors train and did the horn sound when each sensor was trained?

Yes	The system is operating correctly at this time. The concern may have been caused by RFI. For information on locating sources of RFI, REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).
No	GO to D5

D5 ATTEMPT TO CARRY OUT THE SENSOR TRAINING PROCEDURE AGAIN USING KNOWN GOOD SENSORS

- Move the vehicle to rotate the wheels at least one-fourth of a turn. Leave the vehicle doors open.
- Attempt to train known good TPMS sensors from another vehicle.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did all of the known good TPMS sensors train and did the horn sound when each known good sensor was trained?

Yes	If some of the sensors trained, INSTALL a new TPMS sensor for each sensor that failed to train. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation). If all the known good sensors trained, INSTALL new TPMS sensors. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation).
No	INSTALL a new RTM. REFER to: Radio Transceiver Module (RTM) (419-10 Multifunction Electronic Modules, Removal and Installation). TEST the system for normal operation. If the concern is still present, GO to D6

D6 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect all BCM connectors and related in-line connectors.
- Using a good light source, inspect the connectors for the following:
  - corrosion - install new connector or terminal and clean the module pins
  - damaged or bent pins - install new terminals or pins
  - pushed-out pins - install new pins as necessary
  - spread terminals - install new terminals as necessary

Are the connectors free of corrosion, damaged pins, bent pins, pushed-out pins and spread terminals?

Yes	GO to D7
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

D7 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION
• Connect the BCM connectors and related in-line connectors. Make sure they seat and latch correctly. • Operate the system and determine if the concern is still present. **Is the concern still present?**

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (BCM).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

TPMS Warning Indicator is on Continuously and the Message Center Displays Low Tire Pressure

Normal Operations and Fault Conditions

REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).

Possible Sources

- Low tire pressure
- Spare tire currently in use
- TPMS sensor(s)
- Tire pressure not set to specifications listed on the VC label

Visual Inspection and Diagnostic Pre-checks

- Inspect for the spare tire in use.
- Inspect for low tire pressure.

PINPOINT TEST E : TPMS (TIRE PRESSURE MONITORING SYSTEM) WARNING INDICATOR IS ON CONTINUOUSLY AND THE MESSAGE CENTER DISPLAYS LOW TIRE PRESSURE

E1 CHECK FOR LOW TIRE PRESSURE

- Measure and record the pressure in all 4 tires using a digital tire pressure gauge.
- Adjust the pressure for those found to be below the specification listed on the VC label.
- To clear the low pressure warning indicator, drive the vehicle for at least 2 minutes above 32.2 km/h (20 mph) or activate each sensor at least twice.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Activation (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
  Do not train the sensors at this time.

Has the TPMS warning indicator gone out?

Yes	The system is operating correctly at this time. The cause was low tire pressure.
No	GO to E2

E2 CHECK FOR BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM self-test.

Is DTC B124D:02 present?

Yes	GO to Pinpoint Test B
No	For all other BCM Diagnostic Trouble Codes (DTCs), GO to the DTC Chart: BCM. If there are no Diagnostic Trouble Codes (DTCs) present in the BCM, GO to E3

E3 CHECK FOR SPARE TIRE IN USE

- **NOTE:** *A spare tire cannot be programmed to the vehicle. If a damaged road wheel is located in the vehicle and the RTM cannot communicate with it, or if the damaged wheel has been dropped off at a repair facility, the BCM sets a TPMS sensor fault. Repair and remount the road wheel as necessary to restore system operation.*

  Check the spare tire location.

Is the spare tire in use?

Yes	REPAIR and REMOUNT the wheel to the vehicle. REFER to: Wheel and Tire (204-04A Wheels and Tires, Disassembly and Assembly). ADJUST tire pressures to the required pressure as defined on the VC label.
No	GO to E4

E4 TRAIN ALL 4 TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSORS

- Train all 4 TPMS sensors.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did all of the TPMS sensors train and did the horn sound when each sensor was trained?

Yes	GO to E5
No	GO to Pinpoint Test G

E5 CHECK THE TIRE PRESSURES USING THE BCM (BODY CONTROL MODULE) TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSOR PARAMETER IDENTIFICATIONS (PIDS)

- Ignition OFF.
- Ignition ON.
- Activate each TPMS sensor.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Activation (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
- Using a diagnostic scan tool, view the following BCM Parameter Identifications (PIDs):
  - Left Front Tire Pressure (TPM_PRES_LF)
  - Right Front Tire Pressure (TPM_PRES_RF)
  - Left Rear Tire Pressure (TPM_PRES_LRO)
  - Right Rear Tire Pressure (TPM_PRES_RRO)

Do the tire pressures indicated by the Parameter Identifications (PIDs) match the tire pressures measured previously, Â±20.7 kPa (3 psi)?

Yes	The system is operating normally at this time. The concern may have been caused by an incomplete or incorrectly performed sensor calibration or low tire pressure.
No	INSTALL a new TPMS sensor(s) for the sensor(s) displaying inaccurate tire pressure. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation).

The BCM Does Not Enter TPMS Sensor Training Mode

Normal Operation and Fault Conditions

REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).

If the vehicle has been stationary for more than 30 minutes, the TPMS sensors enter a "sleep mode" to conserve battery power. It becomes necessary to wake them up so they transmit the latest tire pressure information to the RTM.
REFER to: Tire Pressure Monitoring System (TPMS) Sensor Activation (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Possible Sources

- Network communication concern
- Stoplamp switch concern
- Ignition switch concern (if equipped)
- Start-stop switch concern (if equipped)
- PCM concern
- BCM

Visual Inspection and Diagnostic Pre-checks

- Inspect for customer electronic devices, such as a cell phone charger or GPS unit.
- Inspect for non-Original Equipment Manufacturer (OEM) wheel or run-flat tires.

PINPOINT TEST F : THE BCM (BODY CONTROL MODULE) DOES NOT ENTER TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSOR TRAINING MODE

F1 CHECK THE COMMUNICATION NETWORK

- Ignition ON.
- Using a diagnostic scan tool, carry out the Network Test.

Do both the BCM and PCM pass the Network Test?

Yes	GO to F2
No	DIAGNOSE the no communication with the BCM or PCM. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

F2 CHECK THE BCM (BODY CONTROL MODULE) IGNITION SWITCH INPUT

- Using a diagnostic scan tool, monitor the BCM PID IGN_SW_STATE while changing the ignition state from RUN to OFF and back to RUN.

Does the PID indicate the correct ignition switch position?

Yes	GO to F3
No	DIAGNOSE the start-stop button or ignition switch. REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).

F3 CHECK FOR VEHICLE SPEED-RELATED DIAGNOSTIC TROUBLE CODES (DTCS) IN THE PCM (POWERTRAIN CONTROL MODULE)

- Using a diagnostic scan tool, carry out the PCM KOEO self-test.

Are there any Diagnostic Trouble Codes (DTCs) present in the PCM?

Yes	DIAGNOSE the PCM DTC. REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 2.7L EcoBoost (238kW/324PS), Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 2.7L EcoBoost (238kW/324PS), Diagnosis and Testing).
No	GO to F4

F4 CHECK THE STOPLAMP OPERATION

- Ignition ON.
- Press and release the brake pedal while monitoring the stoplamps.

Do the stoplamps operate correctly?

Yes	GO to F5
No	DIAGNOSE the stoplamp switch and stoplamps. REFER to: Stoplamps (417-01 Exterior Lighting, Diagnosis and Testing).

F5 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect all BCM connectors and related in-line connectors.
- Using a good light source, inspect the connectors for the following:
  - corrosion - install new connector or terminal and clean the module pins
  - damaged or bent pins - install new terminals or pins
  - pushed-out pins - install new pins as necessary
  - spread terminals - install new terminals as necessary

Are the connectors free of corrosion, damaged pins, bent pins, pushed-out pins and spread terminals?

Yes	GO to F6
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

F6 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Connect the BCM connectors and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (BCM).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

One or More TPMS Sensors Do Not Train and No Diagnostic Trouble Codes (DTCs) are Present

Normal Operation and Fault Conditions

REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).

If the vehicle has been stationary for more than 30 minutes, the TPMS sensors enter a "sleep mode" to conserve battery power. It becomes necessary to wake them up so they transmit the latest tire pressure information to the RTM.
REFER to: Tire Pressure Monitoring System (TPMS) Sensor Activation (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Possible Sources

- TPMS sensors
- RFI

Visual Inspection and Diagnostic Pre-checks

- Inspect for customer electronic devices, such as a cell phone charger or GPS unit.
- Inspect for non-Original Equipment Manufacturer (OEM) wheel or run-flat tires.
- Verify horn operation.

PINPOINT TEST G : ONE OR MORE TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSORS DO NOT TRAIN AND NO DIAGNOSTIC TROUBLE CODES (DTCS) ARE PRESENT

G1 ATTEMPT TO TRAIN THE TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSORS

NOTE: *The BCM has a 2-minute time limit between sensor responses. If the BCM does not recognize any of the 4 TPMS sensors during this time limit, the horn sounds twice and the message center displays TIRE NOT TRAINED REPEAT. The entire procedure must be repeated.*

- TRAIN all 4 TPMS sensors.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did all of the TPMS sensors train and did the horn sound when each sensor was trained?

Yes	The system is operating correctly at this time. The concern may have been caused by RFI. For information on locating sources of RFI, REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).
No	If one or more TPMS sensors trained, GO to G2 If none of the TPMS sensors trained, GO to Pinpoint Test D

G2 CHECK FOR RADIO FREQUENCY INTERFERENCE

- Ignition ON.
- Move the vehicle to rotate the wheels at least one-fourth turn.
- TRAIN all 4 TPMS sensors.
  REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

Did all of the TPMS sensors train and did the horn sound when each sensor was trained?

Yes	The system is operating correctly at this time. The concern may have been caused by RFI. For information on locating sources of RFI, REFER to: Tire Pressure Monitoring System (TPMS) - System Operation and Component Description (204-04B Tire Pressure Monitoring System (TPMS), Description and Operation).
No	For each sensor that did not train, INSTALL a new TPMS sensor. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation).

U0146:00

Normal Operation and Fault Conditions

With the ignition ON, the GWM sends messages to the RTM using the MS-CAN. If the RTM does not receive these messages within a predetermined time frame, the RTM sets a DTC.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U0146:00	Lost Communication with Gateway "A": No Sub Type Information	This DTC sets in continuous memory if any of the following messages is missing from the GWM or contain invalid information; vehicle operation modes, TPMS status or engine data.

Possible Sources

- Network communication concern
- GWM
- RTM

PINPOINT TEST H : U0146:00

H1 CHECK THE COMMUNICATION NETWORK

- Ignition ON.
- Using a diagnostic scan tool, carry out the Network Test.

Does the GWM pass the Network Test?

Yes	GO to H2
No	DIAGNOSE the GWM does not respond to the scan tool. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

H2 RECHECK THE RTM (RADIO TRANSCEIVER MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the RTM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, carry out the RTM self-test.

Is DTC U0146:00 retrieved again?

Yes	GO to H3
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

H3 RETRIEVE ALL DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE GWM (GATEWAY MODULE A)

- Using a diagnostic scan tool, carry out the GWM self-test.

Are any Diagnostic Trouble Codes (DTCS) present in the GWM?

Yes	DIAGNOSE the GWM Diagnostic Trouble Codes (DTCS). REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
No	GO to H4

H4 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0146:00 SET IN OTHER MODULES

- Using a diagnostic scan tool, carry out the self-test to retrieve all Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC set in 1 or more modules in addition to the RTM?

Yes	CHECK OASISfor any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new GWM. REFER to: Gateway Module A (GWM) (418-00 Module Communications Network, Removal and Installation).
No	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new RTM. REFER to: Radio Transceiver Module (RTM) (419-10 Multifunction Electronic Modules, Removal and Installation).

U1A00:00

Normal Operation and Fault Conditions

With the ignition ON, the BCM and the RTM communicate using a single circuit, private communication bus. If the RTM is unable to communicate with the BCM using this bus, the RTM sets a DTC.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U1A00:00	Private Communication Network: No Sub Type Information	This DTC sets in continuous memory if the RTM communication bus reset counter reaches zero. This is most likely due to a circuit failure in the communication bus, an internal failure of the BCM or an internal failure of the RTM.

Possible Sources

- Wiring, terminals or connectors
- BCM
- RTM

PINPOINT TEST I : U1A00:00

I1 CHECK THE COMMUNICATION NETWORK

- Ignition ON.
- Using a diagnostic scan tool, carry out the Network Test.

Do the RTM and the BCM pass the Network Test?

Yes	GO to I2
No	DIAGNOSE the RTM or BCM does not respond to the scan tool. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

I2 CHECK FOR BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, carry out the BCM self-test.

Are any Diagnostic Trouble Codes (DTCs) present in the BCM?

Yes	DIAGNOSE the BCM Diagnostic Trouble Codes (DTCs). REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).
No	GO to I3

I3 CHECK THE COMMUNICATION CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect BCM C2280G .
- Disconnect RTM C9026 .
- Measure:

BODY CONTROL MODULE (BCM)	

Positive Lead	Measurement / Action	Negative Lead
C2280G-26	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to I4
No	REPAIR the circuit.

I4 CHECK THE COMMUNICATION CIRCUIT FOR AN OPEN

- Measure:

BODY CONTROL MODULE (BCM)	RADIO TRANSCEIVER MODULE (RTM)

Positive Lead	Measurement / Action	Negative Lead
C2280G-26	Ω	C9026-2

Is the resistance less than 3 ohms?

Yes	GO to I5
No	REPAIR the circuit.

I5 CHECK THE COMMUNICATION CIRCUIT FOR A SHORT TO VOLTAGE

- Connect BCM C2280G .
- Ignition ON.
- Measure:

RADIO TRANSCEIVER MODULE (RTM)	

Positive Lead	Measurement / Action	Negative Lead
C9026-2		Ground

Is a steady voltage greater than 3 volts present?

Yes	REPAIR the circuit.
No	GO to I6

I6 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect all BCM and RTM related in-line connectors.
- Using a good light source, inspect the connectors for the following:
  - corrosion - install new connector or terminal and clean the module pins
  - damaged or bent pins - install new terminals or pins
  - pushed-out pins - install new pins as necessary
  - spread terminals - install new terminals as necessary

Are the connectors free of corrosion, damaged pins, bent pins, pushed-out pins and spread terminals?

Yes	GO to I7
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

I7 CHECK FOR CORRECT RTM (RADIO TRANSCEIVER MODULE) OPERATION

- Connect RTM C9026 and related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new RTM. REFER to: Radio Transceiver Module (RTM) (419-10 Multifunction Electronic Modules, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

General Procedures

Tire Pressure Monitoring System (TPMS) Sensor Activation

Special Tool(s) / General Equipment

 E244584	204-D081A (204-D081) Tire Pressure Monitor (TPMS)

Activation

1. **NOTE:** *The tire pressure sensors will go into a "sleep mode" when a vehicle is stationary to conserve battery power. The sensors do not transmit information while in sleep mode. It will be necessary to wake them up so they will transmit the latest tire pressure information.*

   NOTE: *The tire pressure data in the BCM can be cleared when the module performs a reset. When this occurs the air pressure DIDs will be reset to the factory default of 1033 kPa (149.96 psi) and the cluster will display dashes.*

   Turn the ignition switch to the ON position.

2. Position the special tool against the Left Front (LF) tire sidewall at the tire valve stem.
   Use Special Service Tool: 204-D081A (204-D081) Tire Pressure Monitor (TPMS).

3. **NOTE:** *The special tool should provide feedback in the form of a flashing green light and a beep sound for each successful response from a tire pressure sensor. This feedback may not always be present, do not rely on it as a confirmation that the module heard a particular sensor.*

   NOTE: *If a sensor does not respond to the special tool move the vehicle to rotate the wheels at least one-fourth of a turn and attempt to activate the same sensor again. If the sensor still does not respond, attempt to activate the same sensor again using the customer activation tool (if available). If the sensor still fails to train, attempt to train the sensor with the vehicle doors open.*

   Press the test button on the special tool to activate the sensor. Activate the sensor at least 2 times.
   Use Special Service Tool: 204-D081A (204-D081) Tire Pressure Monitor (TPMS).

4. Repeat Steps 2 and 3 for the remaining tires.

5. If the TPMS indicator remains illuminated after adjusting and activating each sensor,
   Refer to: Tire Pressure Monitoring System (TPMS) (204-04B Tire Pressure Monitoring System (TPMS), Diagnosis and Testing).