

Tire Pressure Monitoring System (TPMS)

DTC Charts

DTC Chart: Body Control Module (BCM)

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).

BCM DTC Chart

DTC	Description	Action
B1182:00	Tire Pressure Monitoring System: No Sub Type Information	GO to Pinpoint Test A
B1182:55	Tire Pressure Monitoring System: Not Configured	- This DTC is only present when a new BCM is installed, or the BCM is flashed or reconfigured. This DTC clears when the BCM is correctly configured, all TPMS sensors are trained to the BCM and the BCM self-test completes successfully. - Using a diagnostic scan tool, CONFIGURE the BCM. FOLLOW all diagnostic scan tool instructions. - TRAIN the TPMS sensors, REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures). - CARRY OUT a BCM self-test to clear the DTC.
B124D:02	Tire Pressure Sensor: General Signal Failure	GO to Pinpoint Test C
B1254:51	Right Rear (Outside on Dual Wheel) Tire Pressure Sensor and Transmitter Assembly: Not Programmed	- This DTC is only present when a new BCM is installed, or the BCM is flashed or reconfigured. This DTC is cleared after the TPMS sensors locations are trained to the BCM. - TRAIN the TPMS sensors, REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
B1255:51	Left Rear (Outside On Dual Wheel) Tire Pressure Sensor and Transmitter Assembly: Not Programmed	- This DTC is only present when a new BCM is installed, or the BCM is flashed or reconfigured. This DTC is cleared after the TPMS sensors locations are trained to the BCM. - TRAIN the TPMS sensors, REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
C1A56:51	Left Front Tire Pressure Sensor and Transmitter Assembly: Not Programmed	- This DTC is only present when a new BCM is installed, or the BCM is flashed or reconfigured. This DTC is cleared after the TPMS sensors locations are trained to the BCM. - TRAIN the TPMS sensors, REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
C1A58:51	Right Front Tire Pressure Sensor and Transmitter Assembly: Not Programmed	- This DTC is only present when a new BCM is installed, or the BCM is flashed or reconfigured. This DTC is cleared after the TPMS sensors locations are trained to the BCM. - TRAIN the TPMS sensors, REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).

DTC	Description	Action
U0559:56	Invalid Data Received from Radio Transceiver: Invalid / Incomplete Configuration	- CHECK the service history for recent service actions related to the RTM. This DTC sets due to incomplete or improper PMI procedures. - If there have been recent service actions with the RTM, REPEAT the PMI procedure as directed by the diagnostic scan tool. - If there have been no recent service actions with the RTM, INSTALL a new RTM to correct the failure to retain the configuration data. REFER to: Radio Transceiver Module (RTM) (419-10 Multifunction Electronic Modules, Removal and Installation).
â€”	All Other BCM Diagnostic Trouble Codes (DTCs)	REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).

DTC Chart: Generic Function Module (GFM)

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).

NOTE: The GFM is also known as the trailer TPMS module.

GFM DTC Chart

DTC	Description	Action
B1182:00	Tire Pressure Monitoring System: No Sub Type Information	GO to Pinpoint Test I
B1182:55	Tire Pressure Monitoring System: Not Configured	- This DTC is present when a new GFM is installed or when the GFM is configured with the incorrect number of road wheels. - Using the message center and menu buttons, CONFIGURE the GFM with the correct number of trailer road wheels. - CYCLE the ignition from ON to OFF and back to ON. Using a diagnostic scan tool, CLEAR the DTC. - If the DTC does not return the repair is complete. The most likely cause was incorrect module configuration. - If the DTC returns, INSTALL a new GFM for failure to retain the configuration data.
B124D:02	Tire Pressure Sensor: General Signal Failure	GO to Pinpoint Test I
U0146:00	Lost Communication With Gateway "A": No Sub Type Information	GO to Pinpoint Test J

DTC	Description	Action
U0401:00	Invalid Data Received from ECM / PCM "A": No Sub Type Information	- This DTC sets in the GFM when the vehicle speed message contains "fault" instead of the actual vehicle speed. - Using a diagnostic scan tool, RETRIEVE and DIAGNOSE all PCM and GWM Diagnostic Trouble Codes (DTCs). REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 6.7L Power Stroke Diesel, Diagnosis and Testing). REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing). - If the diagnostic scan tool cannot communicate with the PCM or GWM, REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing). - If there are no Diagnostic Trouble Codes (DTCs) in the PCM or GWM, the DTC may be caused by an intermittent concern. - SET the ignition to OFF. DISCONNECT and INSPECT all PCM and GWM electrical connectors and related in-line electrical connectors for corrosion, bent pins, pushed-out pins and spread terminals. REPAIR as necessary.
U0401:82	Invalid Data Received from ECM / PCM "A": Alive / Sequence Counter Incorrect / Not Updated	- This DTC sets in the GFM when the vehicle speed message has not updated or changed in the last 43 messages. - Using a diagnostic scan tool, RETRIEVE and DIAGNOSE all PCM and GWM Diagnostic Trouble Codes (DTCs). REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 6.7L Power Stroke Diesel, Diagnosis and Testing). REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing). - If the diagnostic scan tool cannot communicate with the PCM or GWM, REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing). - If there are no Diagnostic Trouble Codes (DTCs) in the PCM or GWM, the DTC may be caused by an intermittent concern. - SET the ignition to OFF. DISCONNECT and INSPECT all PCM and GWM electrical connectors and related in-line electrical connectors for corrosion, bent pins, pushed-out pins and spread terminals. REPAIR as necessary.
U3000:45	Control Module: Program Memory Failure	- CHECK vehicle service history for recent service actions related to this module. This DTC sets due to incomplete or improper flash programming procedures. If there have been recent service actions with this module, REPEAT the programming procedure as directed by the diagnostic scan tool. - If there have been no recent service actions, INSTALL a new GFM (trailer TPMS) to correct the failure to retain software data.
U3000:49	Control Module: Internal Electronic Failure	- This DTC sets when the GFM internal micro-controller measures less than 3 volts for more than 12.7 seconds. - DISCONNECT GFM (trailer TPMS module) C4321 and, using a good light source, INSPECT the connector for corrosion, loose terminals, broken terminals, spread terminals, bent pins or broken pins. REPAIR or INSTALL new as necessary. - If the terminals and connector are OK, INSTALL a new GFM (trailer TPMS).
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test K

DTC Chart: Radio Transceiver Module (RTM)

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).

RTM DTC Chart

DTC	Description	Action
U0146:00	Lost Communication with Gateway "A": No Sub Type Information	GO to Pinpoint Test F
U0401:00	Invalid Data Received from ECM / PCM "A": No Sub Type Information	GO to Pinpoint Test H
U0401:82	Invalid Data Received from ECM / PCM "A": Alive / Sequence Counter Incorrect / Not Updated	GO to Pinpoint Test H
U1A00:00	Private Communication Network: No Sub Type Information	- For concerns with the RKE transmitter and vehicle entry, REFER to: Locks, Latches and Entry Systems (501-14 Handles, Locks, Latches and Entry Systems, Diagnosis and Testing). - For concerns with the TPMS, GO to Pinpoint Test G
U2100:00	Initial Configuration Not Complete: No Sub Type Information	- This DTC is present when a new RTM is installed, or when the RTM is incorrectly flashed or reconfigured. This DTC clears when the RTM is correctly configured. - Using a diagnostic scan tool, CONFIGURE the RTM. FOLLOW all diagnostic scan tool instructions.
U3000:04	Control Module: System Internal Failure	- CHECK vehicle service history for recent service actions related to this module. This DTC sets due to incomplete or improper PMI procedures. If there have been recent service actions with this module, REPEAT the PMI procedure as directed by the diagnostic scan tool. - If there have been no recent service actions, INSTALL a new RTM to correct the failure to retain configuration data. REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).

Symptom Chart(s)

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

Condition	Possible Sources	Actions
A module does not respond to the scan tool	• Fuse • Wiring, terminals or connectors • Communication network concern • BCM • RTM • GFM	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
The vehicle TPMS warning indicator is on continuously and the message center displays LOW TIRE PRESSURE	Refer to the Pinpoint Test	GO to Pinpoint Test C
The vehicle TPMS warning indicator is on continuously and the message center does not display LOW TIRE PRESSURE	Diagnostic Trouble Codes (DTCs) present in the BCM or RTM	• Using a diagnostic scan tool, RETRIEVE all Diagnostic Trouble Codes (DTCs) from the BCM and the RTM. • For any BCM Diagnostic Trouble Codes (DTCs), GO to the DTC Chart: Body Control Module (BCM). • For any RTM Diagnostic Trouble Codes (DTCs), GO to the DTC Chart: Radio Transceiver Module (RTM).
The BCM does not enter TPMS sensor training mode	Refer to the Pinpoint Test	GO to Pinpoint Test D
The vehicle 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 vehicle or trailer TPMS sensors do not train and no Diagnostic Trouble Codes (DTCs) are present	Refer to the Pinpoint Test	GO to Pinpoint Test E
The message center displays LOW TRAILER TIRE PRESSURE	Refer to the Pinpoint Test	GO to Pinpoint Test L
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 " BCM

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 causes 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

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 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)
- GWM
- BCM
- Open LIN circuit between RTM and 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 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 “ BCM (BODY CONTROL MODULE)

A1 CHECK FOR COMMUNICATION WITH THE GWM (GATEWAY MODULE A) , THE RTM (RADIO TRANSCEIVER MODULE) AND THE BCM (BODY CONTROL MODULE)

- Ignition ON.
- **NOTE:** Network test only looks for CAN circuit concerns.

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

Does the GWM, the RTM and the BCM all pass the Network Test?

Yes	GO to A2
No	DIAGNOSE the GWM, RTM or BCM 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). GO to the DTC Chart: Radio Transceiver Module (RTM).
No	GO to A3

A3 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect RTM [C9026](#)
- Disconnect BCM [C2280B](#)
- Measure:

BODY CONTROL MODULE (BCM)	RADIO TRANSCEIVER MODULE (RTM)
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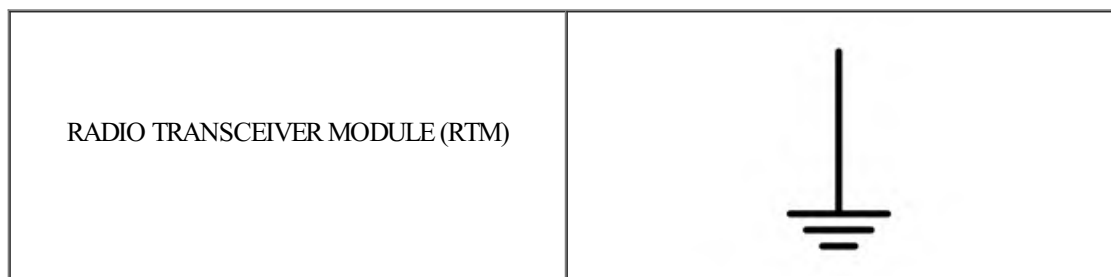
Positive Lead	Measurement / Action	Negative Lead
C2280B-26	Ω	C9026-2

Is the resistance less than 3 ohms?

Yes	GO to A4
No	REPAIR the circuit.

A4 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO GROUND

- Measure:



Positive Lead	Measurement / Action	Negative Lead
C9026-2	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to A5
No	REPAIR the circuit.

A5 CHECK THE BCM (BODY CONTROL MODULE) TPMS (TIRE PRESSURE MONITORING SYSTEM) STATUS (TPMS_STATUS) PID (PARAMETER IDENTIFICATION)

- Connect BCM [C2280B](#)
- Connect RTM [C9026](#)
- Ignition ON.
- Using a diagnostic scan tool, view the BCM TPMS_STATUS PID.

Does the TPMS_STATUS PID display SYSTEM FAULT?

Yes	GO to A6
No	GO to A9

A6 CARRY OUT THE TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSOR TRAINING PROCEDURE

- Train **all** 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 A7

A7 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 - Vehicles With: Dual Rear Wheels (204-04A Wheels and Tires, Removal and Installation).

REFER to: Wheel and Tire - Vehicles With: Single Rear Wheels (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, VERIFY the correct sensors are installed. REFER to: Wheel and Tire (204-04A Wheels and Tires, Disassembly and Assembly). If the correct sensors are not installed, or if the correct sensors are installed but do not train, INSTALL a new TPMS sensor for each incorrect sensor or each sensor failing to train. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation). If all the sensors are present or 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 A8

A8 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect all BCM electrical connectors.
- Disconnect all GWM electrical connectors.
- Disconnect RTM [C9026](#).
- Disconnect all in-line electrical connectors between the BCM and the RTM.
- Using a good light source, inspect all disconnected electrical 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 A9
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

A9 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Connect all in-line electrical connectors between the BCM and the RTM. Make sure they seat and latch correctly.
- Connect RTM [C9026](#). Make sure it seats and latches correctly.
- Connect all GWM electrical connectors. Make sure they seat and latch correctly.
- Connect all BCM electrical 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	The sensors may not be present. DISMOUNT the tires and VERIFY the correct sensors are present and mounted to the wheels. REFER to: Wheel and Tire (204-04A Wheels and Tires, Disassembly and Assembly). If a sensor is missing, INSTALL a new sensor. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation). If all the sensors are present and of the correct type, CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the 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 a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. 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).

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, GFM wiring and BCM wiring, or an internal failure of the RTM, GFM, GWM or BCM can all present symptoms similar to RFI.

Possible Sources

- Wiring, terminals or connectors
- Not all TPMS sensors are installed
- TPMS sensor(s) not trained
- TPMS sensor(s)
- Intermittent TPMS operation due to RFI
- RTM
- GFM
- GWM
- 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 B : DIAGNOSING RADIO FREQUENCY INTERFERENCE FAULTS

B1 CHECK FOR COMMUNICATION WITH THE GWM (GATEWAY MODULE A) , THE RTM (RADIO TRANSCEIVER MODULE) AND THE GFM (GENERIC FUNCTION MODULE)

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

Do the GWM, RTM and (if equipped) the GFM pass the Network Test?

Yes	For vehicle TPMS concerns, GO to B2 For trailer TPMS concerns, GO to B3
No	DIAGNOSE the GWM, RTM or GFM does not respond to the scan tool. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

B2 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: Radio Transceiver Module (RTM).
No	GO to B4

B3 CHECK FOR GFM (GENERIC FUNCTION MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

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

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

Yes	DIAGNOSE all GFM Diagnostic Trouble Codes (DTCs). REFER to the DTC Chart: Generic Function Module (GFM).
No	GO to B4

B4 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 B5
No	GO to B7

B5 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 which may cause RFI such as electric motors or radio transmitters.

- Train **all** TPMS sensors.
 - For vehicle TPMS,
REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
 - For trailer TPMS, refer to the Owner's Literature.

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 B6

B6 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.
 - For vehicle TPMS,
REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
 - For trailer TPMS, refer to the Owner's Literature.

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

Yes	If only some of the sensors trained, VERIFY the correct sensors are installed for those failing to train. REFER to: Wheel and Tire (204-04A Wheels and Tires, Disassembly and Assembly). If the correct sensors are not installed or if the correct sensors are installed but do not train, INSTALL a new TPMS sensor for each incorrect sensor or each sensor failing 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 from another vehicle trained, INSTALL new TPMS sensors. REFER to: Tire Pressure Monitoring System (TPMS) Sensor (204-04B Tire Pressure Monitoring System (TPMS), Removal and Installation).
No	For vehicle TPMS concerns, INSTALL a new RTM. REFER to: Radio Transceiver Module (RTM) (419-10 Multifunction Electronic Modules, Removal and Installation). For trailer TPMS concerns, INSTALL a new GFM. If the concern is still present, GO to B7

B7 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect all BCM electrical connectors.
- Disconnect all GWM electrical connectors.
- For vehicle TPMS concerns, disconnect RTM [C9026](#).
- For trailer TPMS concerns, disconnect GFM [C4321](#).
- Disconnect all in-line electrical connectors between the BCM and the RTM or GFM.
- Using a good light source, inspect all disconnected electrical 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 B8
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

B8 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Connect all in-line electrical connectors between the BCM and the RTM. Make sure they seat and latch correctly.
- For vehicle TPMS concerns, connect RTM [C9026](#). Make sure it seats and latches correctly.
- For trailer TPMS concerns, connect Trailer GFM [C4321](#). Make sure it seats and latches correctly.
- Connect all GWM electrical connectors. Make sure they seat and latch correctly.
- Connect all BCM electrical 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 a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. 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).

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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B124D:02	Tire Pressure Sensor: General Signal Failure	This DTC sets in continuous memory if any of the TPMS sensors fail to transmit any tire pressure data.

Possible Sources

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

Visual Inspection and Diagnostic Pre-checks

- Verify the spare tire is **not** in use.
- Verify the air pressure in **all** tires matches the pressure indicated on the VC label.

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

C1 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 C2
No	For other BCM Diagnostic Trouble Codes (DTCs), GO to the DTC Chart: Body Control Module (BCM). If there are no Diagnostic Trouble Codes (DTCs) present in the BCM, GO to C3

C2 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 all TPMS sensors.
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 Diagnostic Trouble Codes (DTCs).

Is DTC B124D:02 present?

Yes	GO to C3
No	If the TPMS warning indicator is on continuously and the message center is displaying low tire pressure, GO to C3 If the TPMS warning indicator is not illuminated and the message center does not display low tire pressure, 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).

C3 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 - Vehicles With: Dual Rear Wheels (204-04A Wheels and Tires, Removal and Installation). REFER to: Wheel and Tire - Vehicles With: Single Rear Wheels (204-04A Wheels and Tires, Removal and Installation). ADJUST tire pressures to the required pressure as defined on the VC label.
No	GO to C4

C4 CHECK FOR LOW TIRE PRESSURE

- Measure and record the pressure in **all** 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 C5

C5 TRAIN ALL TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSORS

- Train **all** 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 C6
No	GO to Pinpoint Test E

C6 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 Inner Tire Pressure (TPM_PRES_LRI) (single rear wheel and dual rear wheel)
 - Left Rear Outer Tire Pressure (TPM_PRES_LRO) (dual rear wheel only)
 - Right Rear Inner Tire Pressure (TPM_PRES_RRI) (single rear wheel and dual rear wheel)
 - Right Rear Outer Tire Pressure (TPM_PRES_RRO) (dual rear wheel only)

Do the tire pressures indicated by the Parameter Identifications (PIDs) match the tire pressures measured previously, $\hat{A}\pm 20.7$ 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).

Normal Operation and Fault Conditions

The training (calibration) can be carried out manually or by using a diagnostic scan tool,

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

When one or more new TPMS sensors are installed or a new BCM is installed, the sensors must be trained (calibrated) to the BCM. For the manual training procedure, the BCM must receive a valid ignition signal, a valid brake pedal position signal and a valid vehicle speed signal. The start-stop switch signal and the brake pedal position signal are both direct inputs to the BCM, the vehicle speed signal is sent to the BCM from the PCM over the HS-CAN1.

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
- Start-stop switch concern
- 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 D : THE BCM (BODY CONTROL MODULE) DOES NOT ENTER TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSOR TRAINING MODE

D1 CHECK FOR BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

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

Are there any "Lost Communication" or "Invalid Data" Diagnostic Trouble Codes (DTCs) present in the BCM?

Yes	DIAGNOSE all BCM Diagnostic Trouble Codes (DTCs). REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).
No	If the vehicle is equipped with a push-button, start-stop ignition switch, GO to D2 If the vehicle is equipped with a conventional, rotary ignition switch, GO to D3

D2 CHECK THE IGNITION SWITCH INPUT "V" VEHICLES WITH A PUSH-BUTTON IGNITION SWITCH

- Ignition ON.
- Observe the start-stop switch LED indicator after entering RUN mode.

Is the start-stop switch LED indicator illuminated?

Yes	GO to D4
No	DIAGNOSE the start-stop switch. REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).

D3 CHECK THE IGNITION SWITCH INPUT "V" VEHICLES WITH A ROTARY IGNITION SWITCH

- Ignition ON.
- Using a diagnostic scan tool, monitor the BCM ignition switch state (IGN_SW_STATE) PID.
- Cycle the ignition switch to the RUN and OFF position while monitoring the IGN_SW_STATE PID.

Do the IGN_SW_STATE PID values match the ignition switch positions?

Yes	GO to D4
No	DIAGNOSE the ignition switch. REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).

D4 CHECK FOR VEHICLE SPEED-RELATED DIAGNOSTIC TROUBLE CODES (DTCs) IN THE PCM (POWERTRAIN CONTROL MODULE)

- Ignition ON.
- 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 - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 6.7L Power Stroke Diesel, Diagnosis and Testing).
No	GO to D5

D5 CHECK THE STOPLAMP OPERATION

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

Do the stoplamps operate correctly?

Yes	GO to D6
No	DIAGNOSE the stoplamp switch and stoplamps. REFER to: Spot Lamps (417-01 Exterior Lighting, Diagnosis and Testing).

D6 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect all BCM electrical connectors.
- Disconnect all PCM electrical connectors.
- Disconnect the stoplamp switch electrical connector.
- Disconnect the ignition switch electrical connector.
- Disconnect all in-line electrical connectors between the BCM and the PCM, stoplamp switch and ignition switch.
- Using a good light source, inspect all disconnected electrical 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 all in-line electrical connectors between the BCM and the PCM, stoplamp switch and ignition switch. Make sure they seat and latch correctly.
- Connect the stoplamp switch electrical connector. Make sure it seats and latches correctly.
- Connect the ignition switch electrical connector. Make sure it seats and latches correctly.
- Connect all PCM electrical connectors. Make sure they seat and latch correctly.
- Connect all BCM electrical 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 a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

One or More Vehicle Or Trailer 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 or trailer 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 or GFM.

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 E : ONE OR MORE VEHICLE OR TRAILER TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSORS DO NOT TRAIN AND NO DIAGNOSTIC TROUBLE CODES (DTCS) ARE PRESENT

E1 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 vehicle 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** vehicle or trailer TPMS sensors.
 - For vehicle TPMS,
REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
 - For trailer TPMS, refer to the Owner's Literature.

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 E2 If none of the TPMS sensors trained, GO to Pinpoint Test B

E2 CHECK FOR RADIO FREQUENCY INTERFERENCE

- Ignition ON.
- Mover the vehicle or trailer to spin the wheels at least one-fourth turn.
- TRAIN **all** vehicle or trailer TPMS sensors.
 - For vehicle TPMS,
REFER to: Tire Pressure Monitoring System (TPMS) Sensor Location Calibration (204-04B Tire Pressure Monitoring System (TPMS), General Procedures).
 - For trailer TPMS, refer to the Owner's Literature.

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 failing to train, VERIFY the correct sensors are installed. REFER to: Wheel and Tire (204-04A Wheels and Tires, Disassembly and Assembly). If the correct sensors are not installed, or the correct sensors are installed but do not train, INSTALL a new TPMS sensor. REFER to: Wheel and Tire (204-04A Wheels and Tires, Disassembly and Assembly).

U0146:00 â€” RTM

Normal Operation and Fault Conditions

With the ignition ON, the GWM sends messages to the RTM using the MS-CAN1. If the RTM does not receive these messages within a predetermined time frame, the RTM sets a DTC. For information on the messages sent to the RTM by the GWM, refer to the Network Message Chart.

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
U0146:00	Lost Communication with Gateway "A": No Sub Type Information	This DTC sets in continuous memory and on-demand in the GFM if any of the GWM messages are missing. This can be due to a GWM failure, a circuit failure on the MS-CAN1 or an excessive load on the network.

Possible Sources

- Network communication concern
- GWM
- RTM

PINPOINT TEST F : U0146:00 â€” RTM (RADIO TRANSCEIVER MODULE)

F1 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 F2
No	DIAGNOSE the GWM does not respond to the scan tool. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

F2 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 F3
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.

F3 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 F4

F4 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI or the PMI may not have been carried out.

- Check the vehicle service history for recent service actions related to the GWM or RTM. If recent service history is found:
 - verify the correct replacement module was installed.
 - HVBOM may be used to verify correct part fitment.
 - verify the configuration of replacement module was correct.
 - re-configure the module using as-built data if prior configuration is suspect.
 - verify the module was not obtained from a like vehicle and installed into customer vehicle.
 - return the swapped module to source vehicle and obtain new replacement module.
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to F5
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

F5 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect RTM [C9026](#).
- Disconnect all GWM electrical connectors.
- Disconnect all in-line electrical connectors between the RTM and the GWM.
- Using a good light source, inspect all disconnected electrical 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 DTC (DIAGNOSTIC TROUBLE CODE) U0146:XX SET IN OTHER MODULES

- Connect all in-line electrical connectors between the RTM and the GWM. Make sure they seat and latch correctly.
- Connect all GWM electrical connectors. Make sure they seat and latch correctly.
- Connect RTM [C9026](#). Make sure it seats and latches correctly.
- Ignition ON.
- Using the diagnostic scan tool, carry out the self-test for all modules.
- Retrieve and record the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0146:xx set in 1 or more modules in addition to the RTM?

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 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 LIN. If the RTM is unable to communicate with the BCM using the LIN, 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 LIN, an internal failure of the BCM or an internal failure of the RTM.

Possible Sources

- Fuse
- Wiring, terminals or connectors
- BCM
- RTM

Visual Inspection and Diagnostic Pre-checks

- Make sure BCM fuse 32 (10A) is OK.

PINPOINT TEST G : U1A00:00

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may cause damage to the connector.

G1 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 G2
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).

G2 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 Diagnostic Trouble Codes (DTCs). REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).
No	GO to G6

G3 CHECK THE RTM (RADIO TRANSCEIVER MODULE) BATTERY VOLTAGE INPUT FOR AN OPEN

- Ignition OFF.
- Disconnect BCM [C2280C](#).
- Disconnect RTM [C9026](#).
- Measure:

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

Positive Lead	Measurement / Action	Negative Lead
C2280C-22	Ω	C9026-6

Is the resistance less than 3 ohms?

Yes	GO to G4
No	REPAIR the circuit.

G4 CHECK THE RTM (RADIO TRANSCEIVER MODULE) BATTERY VOLTAGE INPUT FOR A SHORT TO GROUND

- Measure:

RADIO TRANSCEIVER MODULE (RTM)	
--------------------------------	--

Positive Lead	Measurement / Action	Negative Lead
C9026-6	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to G5
No	REPAIR the circuit. VERIFY BCM fuse 32 (10A) is OK. INSTALL a new fuse as necessary.

G5 CHECK THE RTM (RADIO TRANSCEIVER MODULE) GROUND CIRCUIT FOR AN OPEN

- Measure:

RADIO TRANSCEIVER MODULE (RTM)	
--------------------------------	--

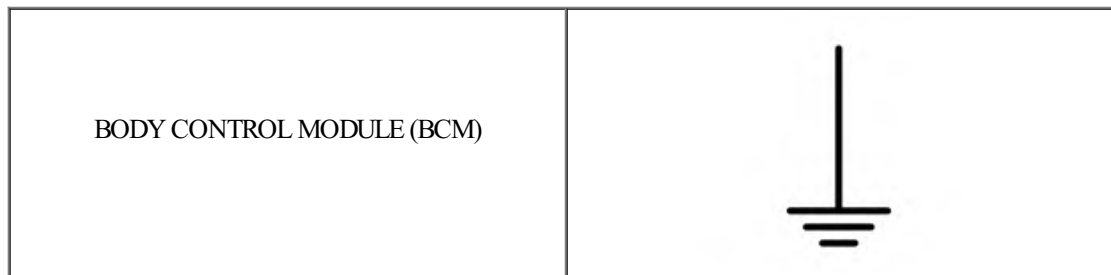
Positive Lead	Measurement / Action	Negative Lead
C9026-1	Ω	Ground

Is the resistance less than 3 ohms?

Yes	GO to G6
No	REPAIR the circuit.

G6 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO GROUND

- Disconnect BCM [C2280B](#).
- Measure:



Positive Lead	Measurement / Action	Negative Lead
C2280B-26	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to G7
No	REPAIR the circuit.

G7 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR AN OPEN

- Measure:



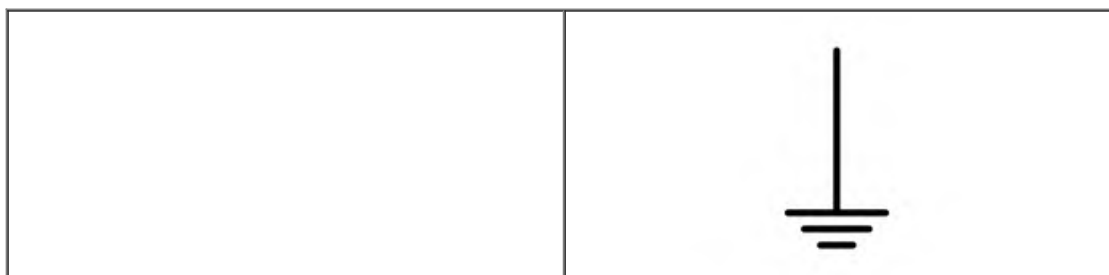
Positive Lead	Measurement / Action	Negative Lead
C2280B-26	Ω	C9026-2

Is the resistance less than 3 ohms?

Yes	GO to G8
No	REPAIR the circuit.

G8 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO VOLTAGE

- Connect BCM [C2280B](#).
- Ignition ON.
- Measure:



Positive Lead	Measurement / Action	Negative Lead
C3156-2		Ground

Is a steady voltage greater than 3 volts present?

Yes	REPAIR the circuit.
No	GO to G9

G9 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect all BCM electrical connectors.
- Disconnect all in-line electrical connectors between the RTM and the BCM.
- Using a good light source, inspect all disconnected electrical 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 G10
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

G10 CHECK FOR CORRECT RTM (RADIO TRANSCEIVER MODULE) OPERATION

- Connect all in-line electrical connectors between the RTM and the BCM. Make sure they seat and latch correctly.
- Connect all BCM electrical 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	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.

U0401:00, U0401:82

Normal Operation and Fault Conditions

With the ignition ON, the PCM sends vehicle speed data messages to the GWM along the HS-CAN1. The GWM relays the messages to the RTM using the MS-CAN1. If the vehicle speed data messages are invalid or faulted, the RTM sets a DTC and the TPMS warning indicator is illuminated.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U0401:00	Invalid Data Received from ECM / PCM "A": No Sub Type Information	This DTC sets in continuous memory if the vehicle speed message from the PCM is "invalid" or "faulted" instead of the actual vehicle speed data.
U0401:82	Invalid Data Received from ECM / PCM "A": Alive / Sequence Counter Incorrect / Not Updated	This DTC sets in continuous memory if the vehicle speed message from the PCM does not refresh.

Possible Sources

- Network communication concern
- GWM
- PCM
- RTM

PINPOINT TEST H : U0401:00, U0401:82

H1 CHECK THE RTM (RADIO TRANSCEIVER MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

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

Is DTC U0146:00 also present?

Yes	DIAGNOSE DTC U0146:00 before diagnosing DTC U0401:00 or U0401:82, GO to Pinpoint Test F
No	GO to H2

H2 CHECK THE COMMUNICATION NETWORK

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

Does the GWM and the PCM pass the Network Test?

Yes	GO to H3
No	DIAGNOSE the GWM or the PCM does not respond to the diagnostic scan tool. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

H3 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.
- Test drive the vehicle for a minimum of 2 minutes at a speed greater than 33 km/h (20 mph).
- Using a diagnostic scan tool, carry out the RTM self-test.

Is DTC U0401:00 or U0401:82 present?

Yes	GO to H4
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.

H4 RETRIEVE ANY DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE GWM (GATEWAY MODULE A)

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

Are there 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 H5

H5 RETRIEVE ANY DIAGNOSTIC TROUBLE CODES (DTCS) FROM 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 - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - 6.2L V8, Diagnosis and Testing). REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 6.7L Power Stroke Diesel, Diagnosis and Testing).
No	GO to H6

H6 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0146:XX SET IN OTHER MODULES

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

Is DTC U0146:xx set in 1 or more modules in addition to the RTM?

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 GWM. REFER to: Gateway Module A (GWM) (418-00 Module Communications Network, Removal and Installation).
No	GO to H7

H7 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0401 OR U0401:XX SET IN OTHER MODULES

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

Is DTC U0401 or U0401:xx set in 1 or more modules in addition to the RTM?

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 (PCM) .
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.

THE TRAILER TPMS IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY

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 GFM and the trailer TPMS sensors can be interrupted by RFI, which causes 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
B1182:00	Tire Pressure Monitoring System (TPMS): No Sub Type Information	Set by the GFM when all of the trailer tire pressure sensors are faulted or not communicating with the GFM.
B124D:02	Tire Pressure Sensor: General Signal Failure	This DTC sets in continuous memory if any of the TPMS sensors fail to transmit any tire pressure.

Possible Sources

- Tire pressure not set to specifications listed on the VC label
- RFI
- TPMS sensor(s)
- GFM

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 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 I : THE TRAILER TPMS (TIRE PRESSURE MONITORING SYSTEM) IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY

I1 CHECK FOR COMMUNICATION WITH THE GFM (GENERIC FUNCTION MODULE)

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

Does the GFM pass the Network Test?

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

I2 CHECK FOR GFM (GENERIC FUNCTION MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

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

Is DTC U0146:00, U3000:45, U3000:49 or U3003:16 present in the GFM?

Yes	DIAGNOSE those GFM Diagnostic Trouble Codes (DTCs) before diagnosing B1182:00 or B124D:02. GO to the DTC Chart: Generic Function Module (GFM).
No	GO to I3

I3 CHECK THE GFM (GENERIC FUNCTION MODULE) TPMS (TIRE PRESSURE MONITORING SYSTEM) STATUS (TPMS_STATUS) PID (PARAMETER IDENTIFICATION)

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

Does the TPMS_STATUS PID display SYSTEM FAULT?

Yes	GO to 14
No	GO to 16

I4 CARRY OUT THE TRAILER TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSOR TRAINING PROCEDURE

- Train **all** trailer TPMS sensors, refer to the Owner's Literature.

Did all of the trailer 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 15

I5 REPEAT THE TRAILER TPMS (TIRE PRESSURE MONITORING SYSTEM) TRAINING

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

If a spare tire is in use, repair and remount the road wheel as necessary to restore system operation.

- Move the trailer to rotate the wheels at least one-fourth of a turn. Leave the vehicle doors open. Start the trailer sensor training procedure at a different wheel. Refer to the Owner's Literature.

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

Yes	If only some of the sensors trained, VERIFY the correct sensors are installed. If the correct sensors are installed but do not train , INSTALL a new trailer TPMS sensor for each sensor failing to train. If all the sensors are present or 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 16

I6 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect GFM [C4321](#).
- Using a good light source, inspect GFM [C4321](#) 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 17
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

I7 CHECK FOR CORRECT GFM (GENERIC FUNCTION MODULE) OPERATION

- Connect GFM [C4321](#). 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 correct sensors are present and mounted to the wheels. If a sensor is missing, INSTALL a new sensor. If all the sensors are present and of the correct type, CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new GFM (trailer TPMS).
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. 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).

U0146:00 "GFM

Normal Operation and Fault Conditions

With the ignition ON, the GWM sends messages to the GFM using the MS-CAN2. If the GFM does not receive these messages within a predetermined time frame, the GFM sets a DTC. For information on the messages sent to the GFM by the GWM refer to the Network Message Chart.

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
U0146:00	Lost Communication with Gateway "A": No Sub Type Information	This DTC sets in continuous memory and on-demand in the GFM if any of the GWM messages are missing. This can be due to a GWM failure, a circuit failure on the MS-CAN2 or an excessive load on the network.

Possible Sources

- Network communication concern
- GWM
- GFM

PINPOINT TEST J : U0146:00 – GFM (GENERIC FUNCTION MODULE)

J1 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 J2
No	DIAGNOSE the GWM does not respond to the scan tool. REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

J2 RECHECK THE GFM (GENERIC FUNCTION MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

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

Is DTC U0146:00 retrieved again?

Yes	GO to J3
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.

J3 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 J4

J4 CHECK FOR OTHER CAUSES OF COMMUNICATION NETWORK CONCERN

NOTE: If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI or the PMI may not have been carried out.

- Check the vehicle service history for recent service actions related to the GWM or GFM. If recent service history is found:
 - verify the correct replacement module was installed.
 - HVBOM may be used to verify correct part fitment.
 - verify the configuration of replacement module was correct.
 - re-configure the module using as-built data if prior configuration is suspect.
 - verify the module was not obtained from a like vehicle and installed into customer vehicle.
 - return the swapped module to source vehicle and obtain new replacement module.
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to J5
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

J5 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect GFM [C4321](#).
- Disconnect all GWM electrical connectors.
- Disconnect all in-line electrical connectors between the GFM and the GWM.
- Using a good light source, inspect all disconnected electrical 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 J6
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

J6 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0146:XX SET IN OTHER MODULES

- Connect all in-line electrical connectors between the GFM and the GWM. Make sure they seat and latch correctly.
- Connect all GWM electrical connectors. Make sure they seat and latch correctly.
- Connect GFM [C4321](#). Make sure it seats and latches correctly.
- Ignition ON.
- Using the diagnostic scan tool, carry out the self-test for all modules.
- Retrieve and record the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0146:xx set in 1 or more modules in addition to the GFM?

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 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 GFM (trailer TPMS).

U3003:16

Normal Operation and Fault Conditions

The GFM requires an operating voltage above 10 volts. The GFM receives ignition voltage from the BJB through the trailer tow electrical connector. The GFM is also grounded through the trailer tow electrical connector. The GFM sets this DTC if there is excessive resistance or an open in one or more of these circuits, a discharged battery or an inoperative charging system.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	This DTC sets in continuous memory and on-demand if the voltage supplied to the GFM falls below 10 volts for more than 6.4 seconds.

Possible Sources

- Fuse
- Wiring, terminals or connectors
- Charging system concern
- 12-volt battery
- GFM

Visual Inspection and Diagnostic Pre-checks

- Make sure the vehicle battery terminals and cables are free of any corrosion and other contaminants.
- Make sure the vehicle battery terminals are tightened to their correct torque specifications.
- Make sure BJB fuse 34 (10A) is OK.

PINPOINT TEST K : U3003:16

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may cause damage to the connector.

K1 RECHECK THE GFM (GENERIC FUNCTION MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

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

Is DTC U3003:16 present?

Yes	GO to K2
No	The system is operating correctly at this time. The DTC may have set due to a previous low battery voltage condition. CARRY OUT the Battery Condition Test diagnostic routine. REFER to: Battery (414-01 Battery, Mounting and Cables, Diagnosis and Testing).

K2 CHECK FOR CHARGING SYSTEM DIAGNOSTIC TROUBLE CODES (DTCS) IN ALL OTHER MODULES

- Using a diagnostic scan tool, retrieve all Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC B1317, B1318, B1676, U3003:16 or U3003:17 present in one or more modules AND are any charging system Diagnostic Trouble Codes (DTCs) present in the PCM?

Yes	DIAGNOSE the vehicle charging concern.
No	GO to K3

K3 CHECK THE BATTERY CONDITION AND STATE OF CHARGE

- Carry out the Battery Condition Test.
REFER to: Battery (414-01 Battery, Mounting and Cables, Diagnosis and Testing).

Did the battery pass the condition test?

Yes	GO to K4
No	INSTALL a new battery. REFER to: Battery (414-01 Battery, Mounting and Cables, Removal and Installation).

K4 CHECK THE GFM (GENERIC FUNCTION MODULE) VOLTAGE SUPPLY

- Measure and record the voltage at the battery.
- Ignition OFF.
- **NOTE:** The GFM is also known as the trailer TPMS module.

Disconnect GFM [C4321](#).

- Ignition ON.
- Measure:

TRAILER TIRE PRESSURE MONITOR SYSTEM (TPMS) MODULE	
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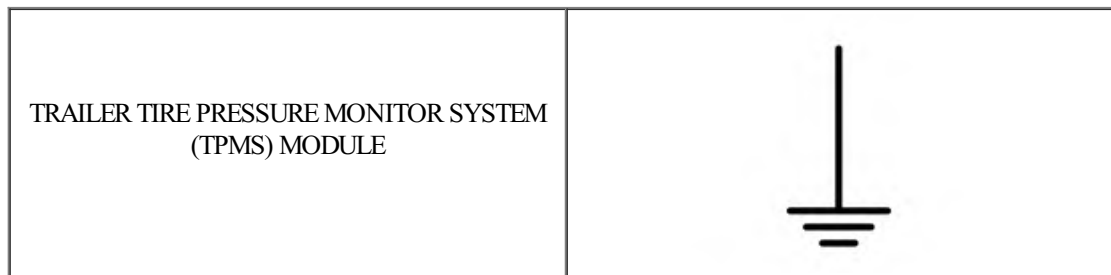
Positive Lead	Measurement / Action	Negative Lead
C4321-1		Ground

Is the voltage within 0.2 volt of the recorded battery voltage?

Yes	GO to K5
No	VERIFY BJB fuse 34 (10A) is OK. If OK, REPAIR the affected circuit for high resistance or an open. If not OK, REFER to the Wiring Diagrams manual to identify the cause of the circuit short.

K5 CHECK THE GFM (GENERIC FUNCTION MODULE) GROUND CIRCUIT FOR AN OPEN

- Ignition OFF.
- Measure:



Positive Lead	Measurement / Action	Negative Lead
C4321-2	Ω	Ground

Is the resistance less than 3 ohms?

Yes	GO to K6
No	REPAIR the circuit.

K6 VERIFY ALL WIRING CONNECTIONS

- Ignition OFF.
- Disconnect the 7-way trailer electrical connector.
- Disconnect all in-line electrical connectors between the GFM and the BJB.
- Using a good light source, inspect all disconnected electrical 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 K7
No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5 for schematic and connector information.

K7 CHECK FOR CORRECT GFM (GENERIC FUNCTION MODULE) OPERATION

- Connect all in-line electrical connectors between the GFM and the BJB. Make sure they seat and latch correctly.
- Connect the 7-way trailer electrical connector. Make sure it seats and latches correctly.
- Connect GFM [C4321](#). Make sure it seats and latches 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 GFM (trailer TPMS).
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.

The Message Center Displays LOW TRAILER 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).

Communication between the GFM and the TPMS sensors can be interrupted by RFI, which causes 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.

Possible Sources

- Tire pressure not set to specifications programmed in the GFM
- Spare tire currently in use
- TPMS sensor

Visual Inspection and Diagnostic Pre-checks

- Verify the spare tire is **not** in use.
- Verify **all** trailer tires are inflated to the correct pressure.

PINPOINT TEST L : THE MESSAGE CENTER DISPLAYS LOW TRAILER TIRE PRESSURE

L1 CHECK FOR SPARE TIRE IN USE

- **NOTE:** A spare tire cannot be programmed to the trailer. If a damaged road wheel is located in the vehicle or trailer and the GFM cannot communicate with it, or if the damaged wheel has been dropped off at a repair facility, the GFM 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 trailer. ADJUST tire pressures to the required pressure as programmed in the GFM.
No	GO to L2

L2 CHECK FOR LOW TIRE PRESSURE

- Measure and record the pressure in **all** trailer tires using a digital tire pressure gauge.
- Adjust the pressure for those found to be below the specification.
- To clear the low trailer tire pressure warning message, drive the trailer 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.

Does the message center still display LOW TRAILER TIRE PRESSURE?

Yes	GO to L3
No	The system is operating correctly at this time. The cause was low tire pressure.

L3 TRAIN ALL TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSORS

- Train **all** trailer TPMS sensors. Refer to the Owner's Literature.

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

Yes	GO to L4
No	GO to Pinpoint Test E

L4 CHECK THE TIRE PRESSURES USING THE GFM (GENERIC FUNCTION MODULE) TPMS (TIRE PRESSURE MONITORING SYSTEM) SENSOR PARAMETER IDENTIFICATIONS (PIDS)

NOTE: The order in which the trailer tires are trained determines if the middle tires show up as Inner or Outer on the diagnostic scan tool.

- Using a diagnostic scan tool, view the following GFM Parameter Identifications (PIDs):
 - Left Front Tire Pressure (TPM_PRES_LF)
 - Right Front Tire Pressure (TPM_PRES_RF)
 - Left Rear Inner Tire Pressure (TPM_PRES_LRI)
 - Left Rear Outer Tire Pressure (TPM_PRES_LRO)
 - Right Rear Inner Tire Pressure (TPM_PRES_RRI)
 - Right Rear Outer Tire Pressure (TPM_PRES_RRO)

Do the tire pressures indicated by the Parameter Identifications (PIDs) match the tire pressures measured previously, $\hat{A}\pm 20.7$ 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).

