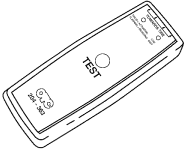
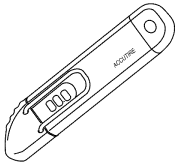
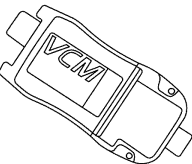


DIAGNOSIS AND TESTING

Tire Pressure Monitoring System

Special Tool(s)

| | |
|--|--|
|  <p>ST2941-A</p> | <p>Activation Tool, Tire Pressure Monitor 204-363</p> |
|  <p>ST2869-A</p> | <p>Digital Tire Gauge 204-354</p> |
|  <p>ST2834-A</p> | <p>Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool</p> |

Principles of Operation

The tire pressure monitoring system (TPMS) monitors the air pressure of all 4 road tires. The wheel-mounted tire pressure sensors transmit via radio frequency signals, to the smart junction box (SJB). TPMS functionality is integral to the SJB. These transmissions are sent approximately every 60 seconds when the vehicle speed exceeds 32 km/h (20 mph). The TPMS function compares each tire pressure sensor transmission against a low-pressure limit. If it has been determined that the tire pressure has fallen below this limit, the SJB communicates this on the vehicle communication bus to the instrument cluster. The instrument cluster then illuminates the TPMS indicator and displays the appropriate message(s) in the message center (if equipped).

For vehicles with different front and rear tire pressures (such as E-Series and certain F-Series), the tire pressure sensors must be trained following a tire rotation. Failure to train the sensors will cause the TPMS indicator to illuminate.

For vehicles with the same tire pressures for front and rear tires, tire rotation will not affect the system.

Ambient Temperature Change and Tire Pressure

⚠ WARNING: The tire pressure monitoring system (TPMS) sensor battery may release hazardous chemicals if exposed to extreme mechanical damage. If these chemicals contact the skin or eyes, flush immediately with water for a minimum of 15 minutes and get prompt medical attention. If any part of the battery is swallowed, contact a physician immediately. When disposing of TPMS sensors, follow the correct procedures for hazardous material disposal. Failure to follow these instructions may result in serious personal injury.

⚠ CAUTION: Do not inflate tire higher than maximum pressure stamped on tire sidewall. Premature tire wear or damage to the tire may result.

Tire pressures fluctuate with temperature changes. For this reason, tire pressure must be set to specification when tires are at outdoor ambient temperatures. If the vehicle is allowed to warm up to shop temperatures, and the outside temperature is less than shop temperature, the tire inflation pressure must be adjusted accordingly.

If the tires are inflated to specification at shop temperatures and the vehicle is moved outdoors when the outdoor ambient temperature is significantly lower, the tire pressure may drop enough to be detected by the TPMS and activate the TPMS warning lamp.

DIAGNOSIS AND TESTING (Continued)

As the ambient temperature decreases by 6°C (10°F), tire pressure decreases 7 kPa (1 psi). Adjust the tire pressure by 7 kPa (1 psi) for each 6°C (10°F) ambient temperature drop as necessary to keep the tire at the specified vehicle certification label pressure. Refer to the following tables to adjust the tire pressure indoors for colder outside temperatures.

Table 1. Use Table to Adjust Tire Pressure Inside Garage for Colder Outside Temperature¹
**** Do Not Inflate Tire Higher than Maximum Pressure Stamped on Tire Sidewall. ****

Table is based on a Garage Temperature of 70°F. Max Pressure Adjustment is 7 psi.

| Outside Temperature (°F) | Tire Placard Pressure (PSI) | | | | | | | | | | | | | | | | | |
|--------------------------|-----------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 30 | 32 | 34 | 35 | 38 | 40 | 41 | 42 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 |
| 70 | 30 | 32 | 34 | 35 | 38 | 40 | 41 | 42 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 |
| 60 | 31 | 33 | 35 | 36 | 39 | 41 | 42 | 43 | 46 | 51 | 56 | 61 | 67 | 72 | 77 | 82 | 87 | 92 |
| 50 | 32 | 34 | 36 | 37 | 40 | 42 | 43 | 44 | 47 | 53 | 58 | 63 | 68 | 73 | 79 | 84 | 89 | 94 |
| 40 | 33 | 35 | 37 | 38 | 41 | 43 | 44 | 45 | 49 | 54 | 59 | 64 | 70 | 75 | 80 | 86 | 91 | 96 |
| 30 | 34 | 36 | 38 | 39 | 42 | 44 | 46 | 47 | 50 | 55 | 61 | 66 | 72 | 77 | 82 | 87 | 92 | 97 |
| 20 | 35 | 37 | 39 | 40 | 43 | 46 | 47 | 48 | 51 | 57 | 62 | 67 | 72 | 77 | 82 | 87 | 92 | 97 |
| 10 | 36 | 38 | 40 | 41 | 45 | 47 | 48 | 49 | 52 | 57 | 62 | 67 | 72 | 77 | 82 | 87 | 92 | 97 |
| 0 | 37 | 39 | 41 | 42 | 45 | 47 | 48 | 49 | 52 | 57 | 62 | 67 | 72 | 77 | 82 | 87 | 92 | 97 |
| -10 | 37 | 39 | 41 | 42 | 45 | 47 | 48 | 49 | 52 | 57 | 62 | 67 | 72 | 77 | 82 | 87 | 92 | 97 |
| -20 | 37 | 39 | 41 | 42 | 45 | 47 | 48 | 49 | 52 | 57 | 62 | 67 | 72 | 77 | 82 | 87 | 92 | 97 |
| -30 | 37 | 39 | 41 | 42 | 45 | 47 | 48 | 49 | 52 | 57 | 62 | 67 | 72 | 77 | 82 | 87 | 92 | 97 |
| -40 | 37 | 39 | 41 | 42 | 45 | 47 | 48 | 49 | 52 | 57 | 62 | 67 | 72 | 77 | 82 | 87 | 92 | 97 |

Table 2. Use Table to Adjust Tire Pressure Inside Garage for Colder Outside Temperature (Metric Units)¹
**** Do Not Inflate Tire Higher than Maximum Pressure Stamped on Tire Sidewall. ****

Table is based on a Garage Temperature of 21°C. Max Pressure Adjustment is 50 kPa.

| Outside Temperature (°C) | Tire Placard Pressure (kPa) | | | | | | | | | | | | | | | | | |
|--------------------------|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 205 | 220 | 235 | 240 | 260 | 275 | 285 | 290 | 310 | 345 | 380 | 415 | 450 | 485 | 515 | 550 | 585 | 620 |
| 21 | 205 | 220 | 235 | 240 | 260 | 275 | 285 | 290 | 310 | 345 | 380 | 415 | 450 | 485 | 515 | 550 | 585 | 620 |
| 16 | 215 | 230 | 240 | 250 | 270 | 285 | 290 | 295 | 315 | 350 | 385 | 420 | 460 | 495 | 530 | 565 | 600 | 635 |
| 10 | 220 | 235 | 250 | 255 | 275 | 290 | 295 | 305 | 325 | 365 | 400 | 435 | 470 | 505 | 545 | 580 | 615 | 650 |
| 4 | 230 | 240 | 255 | 260 | 285 | 295 | 305 | 310 | 340 | 370 | 405 | 440 | 485 | 515 | 550 | 595 | 625 | 660 |
| -1 | 235 | 250 | 260 | 270 | 290 | 305 | 315 | 325 | 345 | 380 | 420 | 455 | 495 | 530 | 565 | 600 | 635 | 670 |
| -7 | 240 | 255 | 270 | 275 | 295 | 315 | 325 | 330 | 350 | 395 | 425 | 460 | 495 | 530 | 565 | 600 | 635 | 670 |
| -12 | 250 | 260 | 275 | 285 | 310 | 325 | 330 | 340 | 360 | 395 | 425 | 460 | 495 | 530 | 565 | 600 | 635 | 670 |
| -18 | 255 | 270 | 285 | 290 | 310 | 325 | 330 | 340 | 360 | 395 | 425 | 460 | 495 | 530 | 565 | 600 | 635 | 670 |
| -23 | 255 | 270 | 285 | 290 | 310 | 325 | 330 | 340 | 360 | 395 | 425 | 460 | 495 | 530 | 565 | 600 | 635 | 670 |
| -29 | 255 | 270 | 285 | 290 | 310 | 325 | 330 | 340 | 360 | 395 | 425 | 460 | 495 | 530 | 565 | 600 | 635 | 670 |
| -34 | 255 | 270 | 285 | 290 | 310 | 325 | 330 | 340 | 360 | 395 | 425 | 460 | 495 | 530 | 565 | 600 | 635 | 670 |
| -40 | 255 | 270 | 285 | 290 | 310 | 325 | 330 | 340 | 360 | 395 | 425 | 460 | 495 | 530 | 565 | 600 | 635 | 670 |

¹When Outside (Ambient) Temperature is greater than 21°C (70°F), Inflate tires to placard pressure.

¹Use the table to adjust tire pressure for P-metric and LT tires only.

¹Do NOT use table for Commercial Truck Tires (i.e. 19.5 inch tires for F450 & F550). See F-Super Duty Service Manual for tire inflation procedure.

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DIAGNOSIS AND TESTING (Continued)

TPMS Indicator and Message Center Messages

The TPMS indicator and vehicle message center (if equipped) sometimes displays faults that cannot be resolved by the customer. Treat these messages as TPMS faults that must be serviced.

TPMS Indicator Illuminates Continuously

NOTE: If the spare tire is in use, the damaged road tire must be repaired and installed on the vehicle to restore complete TPMS functionality before carrying out any diagnosis.

NOTE: For vehicles with different front and rear tire pressures (such as E-Series and certain F-Series), the tire pressure sensors must be trained following a tire rotation. Failure to train the sensors will cause the TPMS indicator to illuminate.

For vehicles with the same tire pressures for front and rear tires, tire rotation will not affect the system.

1. The TPMS indicator remains on continuously for the following condition:
 - Low Tire Pressure — The TPMS indicator is illuminated solid and the message center displays LOW TIRE PRESSURE (if equipped). This is displayed when any of the tire pressures are low. When this condition exists, the tire pressure must be adjusted to the recommended cold pressure as indicated on the vehicle certification label.
2. **NOTE:** The TPMS sensors do not transmit when the vehicle is stationary. If the vehicle has been stationary for more than 30 minutes, it will be necessary to wake up the sensors so they will transmit the latest tire pressure information to the SJB.

If the vehicle has been stationary for more than 30 minutes, refer to Tire Pressure Monitoring System (TPMS) Sensor Training procedure in this section.

TPMS Indicator Flashes

The TPMS indicator flashes for 70 seconds and then remains ON solid when the ignition key is turned to the ON position for the following conditions:

1. Tire Pressure Sensor Fault — If equipped, the message center will display TIRE SENSOR FAULT when a tire pressure sensor is malfunctioning. GO to [Symptom Chart](#).
2. No communication with the SJB (TPMS is integral to the SJB) — The TPMS indicator is illuminated when the instrument cluster has received no signals from the SJB for more than 5 seconds. If equipped, the message center displays TIRE MONITOR FAULT. GO to [Symptom Chart](#).
3. Tire Pressure Monitor Fault — If equipped, the message center will display TIRE MONITOR FAULT when the tire pressure monitoring system is malfunctioning or communication with the instrument cluster has been lost. GO to [Symptom Chart](#).

Inspection and Verification

1. **NOTE:** The tire pressure sensors are not designed to be used with aftermarket wheels.
NOTE: The use of run-flat tires (tires with steel body cord plies in the tire sidewall) where not originally equipped, may cause the TPMS system to malfunction and is therefore not recommended.

Verify the customer concern by inspecting the vehicle and observing the message center (if equipped) and the TPMS indicator.

2. **NOTE:** The valve-mounted TPMS sensors and the strap-mounted TPMS sensors are not compatible. Swapping wheels from one vehicle to another with the different systems will adversely affect TPMS operation.

NOTE: Swapping wheels on vehicles with the same TPMS will set a TPMS fault if the sensors are not trained. Refer to Tire Pressure Monitoring System (TPMS) Sensor Training in this section.

NOTE: Non-original equipment manufacturer (OEM) modifications made to the vehicle may result in false TPMS warnings.

Inspect to determine if one of the following mechanical or electrical concerns apply:

DIAGNOSIS AND TESTING (Continued)**Visual Inspection Chart**

| Mechanical | Electrical |
|---|--|
| <ul style="list-style-type: none"> • Low tire pressure • TPMS sensor damaged or missing • Spare tire installed as a road wheel • Incorrect TPMS sensor installed • TPMS sensor installed incorrectly • Non-OEM wheels installed (aftermarket rims) • Non-OEM equipped run-flat tires installed • Other non-OEM modifications (roll cages, service barriers, part racks, ladder racks) | <ul style="list-style-type: none"> • Circuitry • Electrical connectors • SJB missing or damaged • Aftermarket electronic accessories |

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.

4. **NOTE:** Make sure to use the latest scan tool software release.

If the cause is not visually evident, connect the scan tool to the data link connector (DLC).

5. **NOTE:** The vehicle communication module (VCM) LED prove out confirms power and ground from the DLC are provided to the VCM.

If the scan tool does not communicate with the VCM:

- check the VCM connection to the vehicle.

- check the scan tool connection to the VCM.
- refer to Section 418-00, No Power To The Scan Tool, to diagnose no communication with the scan tool.

6. If the scan tool does not communicate with the vehicle:
 - verify the ignition key is in the ON position.
 - verify the scan tool operation with a known good vehicle.
 - refer to Section 418-00 to diagnose no response from the powertrain control module (PCM).
7. Carry out the network test.
 - If the scan tool responds with no communication for one or more modules, refer to Section 418-00.
 - If the network test passes, retrieve and record continuous memory diagnostic trouble codes (DTCs).
8. Clear the continuous DTCs and carry out the self-test diagnostics for the TPMS module.
9. If the DTCs retrieved are related to the concern, go to the Tire Pressure Monitor System (TPMS) Diagnostic Trouble Code (DTC) Chart. For all other DTCs, refer to Section 419-10.
10. If no DTCs related to the concern are retrieved, GO to [Symptom Chart](#).

Tire Pressure Monitor System (TPMS) Diagnostic Trouble Code (DTC) Chart**Tire Pressure Monitor System (TPMS) Diagnostic Trouble Code (DTC) Chart**

| DTC | Description | Source | Action |
|------------|---|--------------------------|---|
| B106A | Pressure Sensor Range Bit Incorrect State | Smart Junction Box (SJB) | GO to Pinpoint Test H. |
| B106B | Tire Pressure Sensor Low Battery (Could be set configuring new SJB) | SJB | GO to Pinpoint Test I. |
| B1342 | ECU is Defective | SJB | INSTALL a new SJB. REFER to Section 419-10. |

DIAGNOSIS AND TESTING (Continued)**Tire Pressure Monitor System (TPMS) Diagnostic Trouble Code (DTC) Chart (Continued)**

| DTC | Description | Source | Action |
|------------|--|---------------|--|
| B2477 | Module Configuration Failure/Mismatch | SJB | DTC B2477 is only present when a new SJB is installed, the SJB is incorrectly flashed or the SJB is incorrectly configured. Successfully configuring the SJB is the only way to clear this DTC. Make sure the SJB is configured correctly. If the DTC B2477 is still present, REFER to Section 418-00. |
| B2868 | Left Front Tire Pressure Sensor Fault | SJB | DTC B2868 is only present when a new SJB is installed, the SJB is flashed or the SJB is reconfigured. TRAIN the tire pressure sensors. REFER to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. |
| B2869 | Right Front Tire Pressure Sensor Fault | SJB | DTC B2869 is only present when a new SJB is installed, the SJB is flashed or the SJB is reconfigured. TRAIN the tire pressure sensors. REFER to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. |
| B2870 | Right Rear Tire Pressure Sensor Fault | SJB | DTC B2870 is only present when a new SJB is installed, the SJB is flashed or the SJB is reconfigured. TRAIN the tire pressure sensors. REFER to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. |
| B2871 | Left Rear Tire Pressure Sensor Fault | SJB | DTC B2871 is only present when a new SJB is installed, the SJB is flashed or the SJB is reconfigured. TRAIN the tire pressure sensors. REFER to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. |
| B2872 | Tire Pressure Sensor Fault | SJB | NOTE: If the vehicle has been stationary for more than 30 minutes, the sensors will go into a "sleep mode" to conserve battery power. It will be necessary to wake them up so they will transmit the latest tire pressure information to the SJB. ACTIVATE the TPMS sensors. REFER to Tire Pressure Monitoring System (TPMS) Sensor Activation in this section. GO to Pinpoint Test G. |
| C2780 | ECU in Manufacturing Mode | SJB | DTC C2780 is only present when a new SJB is installed, the SJB is flashed or the SJB is reconfigured. TRAIN the tire pressure sensors. REFER to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. |

DIAGNOSIS AND TESTING (Continued)**Symptom Chart**

NOTE: For vehicles with different front and rear tire pressures (such as E-Series and certain F-Series), the tire pressure sensors must be trained following a tire rotation. Failure to train the sensors will cause the TPMS indicator to illuminate.

For vehicles with the same tire pressures for front and rear tires, tire rotation will not affect the system.

Failure of a TPMS component may not cause the message center to display a fault message or a DTC to be stored. The Symptom Chart is a starting point to begin diagnosis of these concerns.

Symptom Chart

| Condition | Possible Sources | Action |
|---|--|---|
| <ul style="list-style-type: none"> TPMS indicator ON continuously and message center (if equipped) displays LOW TIRE PRESSURE | <ul style="list-style-type: none"> Spare tire currently in use Air pressure not set to specifications listed on the vehicle certification label | <ul style="list-style-type: none"> INSTALL the repaired road wheel/tire in place of the spare tire. GO to Pinpoint Test E. |
| <ul style="list-style-type: none"> Smart junction box (SJB) will not enter sensor training mode | <ul style="list-style-type: none"> Brake on/off (BOO) switch Ignition switch Vehicle communication bus ABS module SJB | <ul style="list-style-type: none"> GO to Pinpoint Test F. |
| <ul style="list-style-type: none"> TPMS indicator FLASHES for 70 seconds and then remains ON solid when the ignition key is turned to the ON position and DTC B2872 is present | <ul style="list-style-type: none"> TPMS sensor(s) TPMS sensor(s) not trained to the SJB SJB | <ul style="list-style-type: none"> NOTE: If the vehicle has been stationary for more than 30 minutes, the sensors will go into a “sleep mode” to conserve battery power. It will be necessary to wake them up so they will transmit the latest tire pressure information to the SJB. ACTIVATE the TPMS sensors. REFER to Tire Pressure Monitoring System (TPMS) Sensor Activation in this section. GO to Pinpoint Test G. |
| <ul style="list-style-type: none"> TPMS indicator FLASHES for 70 seconds and then remains ON solid when the ignition key is turned to the ON position, the message center (if equipped) displays TIRE MONITOR FAULT and DTC B1342 is present | <ul style="list-style-type: none"> SJB | <ul style="list-style-type: none"> INSTALL a new SJB. REFER to Section 419-10. |

DIAGNOSIS AND TESTING (Continued)**Symptom Chart (Continued)**

| Condition | Possible Sources | Action |
|---|--|---|
| <ul style="list-style-type: none"> TPMS indicator FLASHES for 70 seconds and then remains ON solid when the ignition key is turned to the ON position, the message center (if equipped) displays TIRE MONITOR FAULT and there are no DTCs present in the SJB | <ul style="list-style-type: none"> Vehicle communication bus SJB Vehicle communication issue between SJB and instrument cluster | <ul style="list-style-type: none"> REFER to Section 418-00 to diagnose the controller area network (CAN) bus. |
| <ul style="list-style-type: none"> One or more sensors will not train | <ul style="list-style-type: none"> Tire pressure sensor(s) Vehicle communication bus SJB | <ul style="list-style-type: none"> RETRIEVE and RECORD DTCs. REFER to the Tire Pressure Monitor System (TPMS) Diagnostic Trouble Code (DTC) Chart. |

Pinpoint Tests**Pinpoint Test E: TPMS Indicator ON Continuously and Message Center (if Equipped) Displays LOW TIRE PRESSURE****Normal Operation**

The tire pressure monitoring system (TPMS) monitors the air pressure of all 4 road tires. The wheel-mounted tire pressure sensors transmit via radio frequency signals, to the smart junction box (SJB). TPMS functionality is integral to the SJB. These transmissions are sent approximately every 60 seconds when the vehicle speed exceeds 32 km/h (20 mph). The TPMS function (integral to the SJB) compares each tire pressure sensor transmission against a low-pressure limit. If it has been determined that the tire pressure has fallen below this limit, the SJB communicates this on the vehicle communication bus to the instrument cluster. The instrument cluster then illuminates the TPMS indicator and displays the appropriate message(s) in the message center (if equipped).

Possible Causes

- Low air pressure in tire(s)
- Tire pressure sensor(s)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST E: TPMS INDICATOR ON CONTINUOUSLY AND MESSAGE CENTER (IF EQUIPPED) DISPLAYS LOW TIRE PRESSURE

⚠ CAUTION: Use only special tool 204-354 any time tire pressures are measured to be sure that accurate values are obtained.

NOTE: If a warranty case is opened for an actual TPMS fault, document and include the actual tire pressure data in all warranty communications.

| Test Step | | Result / Action to Take |
|-----------|--|--|
| E1 | CHECK THE TIRE PRESSURE | <p>Yes The system is functioning normally, diagnosis is complete. INFORM the customer of correct tire pressure maintenance as instructed in the scheduled maintenance guide and the owner guide.</p> <p>No GO to E2.</p> |
| | <ul style="list-style-type: none"> Measure and record the air pressure in all 4 road tires. Adjust the air pressure for those found to be below the specification listed on the vehicle certification label. NOTE: If the vehicle has been stationary for more than 30 minutes, activate each TPMS sensor. Refer to Tire Pressure Monitoring System (TPMS) Sensor Activation in this section. The TPMS sensor does not transmit when the vehicle is stationary. Verify system operation. Have the TPMS indicator and the message center (if equipped) warnings gone out? | |
| E2 | CHECK THE SYSTEM COMPONENTS | <p>Yes The system is functioning normally, diagnosis complete.</p> <p>No Before installing a new sensor(s): If a sensor(s) does not respond to the special tool, ATTEMPT to activate the same sensor(s) with the special tool. If the sensor(s) still does not respond, MOVE the vehicle to rotate the wheels at least 1/4 of a turn and ATTEMPT to activate the same sensor(s) again. INSTALL new tire pressure sensors for those with discrepancies or those that fail to activate. REFER to Tire Pressure Monitoring System (TPMS) Sensor in this section.</p> |
| | <ul style="list-style-type: none"> Train all 4 tire pressure sensors. Refer to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. Using the scan tool, read and record the tire pressures: LF_PRES, RF_PRES, RR_PRES and LR_PRES. Compare the air pressure readings recorded from the function test to those recorded in E1. Do the compared tire pressure values match within ±5 psi, and have the TPMS indicator and the message center (if equipped) warnings gone out? | |

Pinpoint Test F: SJB Will Not Enter Sensor Training Mode

Normal Operation

For the smart junction box (SJB) to enter tire pressure monitoring system (TPMS) sensor training mode, the SJB must receive valid input from the brake pedal position switch (OFF-ON-OFF) and ignition switch (both OFF and RUN), and it must receive valid vehicle speed sensor input (0 km/h [0 mph]). Refer to Tire Pressure Monitoring System (TPMS) Sensor Training in this section for the complete sensor training procedure.

Possible Causes

- Circuit open
- Circuit shorted
- Brake on/off (BOO) switch
- Ignition switch
- Smart junction box (SJB)

PINPOINT TEST F: SJB WILL NOT ENTER SENSOR TRAINING MODE

| Test Step | | Result / Action to Take |
|-----------|--|--|
| F1 | CHECK THE BRAKE PEDAL POSITION (BPP)/BRAKE ON/OFF (BOO) SWITCH | <p>Yes GO to F2.</p> <p>No REFER to Section 206-09 to continue diagnosis of the brake pedal switch.</p> |
| | <ul style="list-style-type: none"> Using the scan tool, monitor the SJB BPP/BOO switch PID (SJB reads the brake switch directly). Press and release the brake pedal while monitoring the PID. Do the brake pedal PID values match the brake pedal positions? | |

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST F: SJB WILL NOT ENTER SENSOR TRAINING MODE (Continued)

| Test Step | | Result / Action to Take |
|-----------|---|--|
| F2 | CHECK THE IGNITION SWITCH | Yes GO to F3 . No REFER to Section 211-05 to continue diagnosis of the ignition switch. |
| | <ul style="list-style-type: none"> Using the scan tool, monitor the SJB ignition switch status PID. Cycle the ignition switch to the ON and OFF position while monitoring the PID (SJB reads the ignition switch directly). Do the ignition switch status PID values match the ignition switch positions? | |
| F3 | CHECK THE VEHICLE SPEED INPUT TO THE SJB | Yes GO to F4 . No REFER to Section 413-01 to diagnose the vehicle speed concern. |
| | <ul style="list-style-type: none"> Using the scan tool, monitor the SJB vehicle speed PID. Does the vehicle speed PID value match the speed of the vehicle? | |
| F4 | CHECK FOR CORRECT SJB OPERATION | Yes INSTALL a new SJB. REFER to Section 419-10. CLEAR the DTCs. REPEAT the self-test. No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test. |
| | <ul style="list-style-type: none"> Disconnect all the SJB connectors. Check the connectors for: <ul style="list-style-type: none"> corrosion. pushed-out pins. spread terminals. Connect all the SJB connectors and make sure that they are seated correctly. Operate the system and verify the concern is still present. Is the concern still present? | |

Pinpoint Test G: TPMS Indicator FLASHES For 70 Seconds and Then Remains ON Solid When the Ignition Key is Turned to the ON Position and DTC B2872 is Present

Normal Operation

If there is a fault in the tire pressure monitor system (TPMS), such as a damaged or missing sensor(s), damaged module or a communication issue within the vehicle, diagnostic trouble codes (DTCs) are set in the smart junction box (SJB), the TPMS warning indicator will flash for 70 seconds and then remain ON solid when the ignition switch is turned to the ON position and the message center (if equipped) will display TIRE PRESSURE SENSOR FAULT. If the SJB does not get a response from all 4 TPMS sensors, the message center (if equipped) will display TIRE PRESSURE MONITOR FAULT.

Possible Causes

- TPMS sensor(s) missing
- TPMS sensor(s) not trained to the vehicle
- TPMS sensor(s) swapped due to wheel swap
- TPMS sensor(s) damaged
- Vehicle communication issue
- SJB

PINPOINT TEST G: TPMS INDICATOR FLASHES FOR 70 SECONDS AND THEN REMAINS ON SOLID WHEN THE IGNITION KEY IS TURNED TO THE ON POSITION AND DTC B2872 IS PRESENT

NOTE: If a warranty case is opened for an actual TPMS fault, document and include the actual tire pressure data in all warranty communications.

| Test Step | | Result / Action to Take |
|-----------|---|---|
| G1 | CHECK FOR DTCs | Yes GO to G2 . No If the TP__STAT PID is equal to SYSTEM FAULT, GO to G3 . |
| | <ul style="list-style-type: none"> Connect the scan tool. Using the scan tool, read the TPMS sensor IDs currently trained to the SJB. Record the sensor IDs. Using the scan tool, read the TPMS System Status: TP__STAT. Is the TP__STAT PID equal to SENSOR FAULT? | |

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST G: TPMS INDICATOR FLASHES FOR 70 SECONDS AND THEN REMAINS ON SOLID WHEN THE IGNITION KEY IS TURNED TO THE ON POSITION AND DTC B2872 IS PRESENT (Continued)

| Test Step | | Result / Action to Take |
|-----------|---|--|
| G2 | CARRY OUT THE SENSOR TRAINING PROCEDURE | |
| | <ul style="list-style-type: none"> Train all 4 tire pressure sensors. Refer to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. Did all of the tire pressure sensors transmit correctly and did the horn sound when each tire pressure sensor transmitted to the SJB? | <p>Yes Using the scan tool, locate the updated TPMS sensor IDs trained to the SJB module. COMPARE these values to those recorded prior to the TPMS sensor training procedure. Disregarding sensor position, any sensor IDs 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 IDs on the applicable warranty claim. VERIFY system operation.</p> <p>No Before installing a new sensor(s): If a sensor(s) does not respond to the special tool, ATTEMPT to activate the same sensor(s) with the special tool. If the sensor(s) still does not respond, MOVE the vehicle to rotate the wheels at least 1/4 of a turn and ATTEMPT to activate the same sensor(s) again. If the sensor(s) fail to train a second time, INSTALL a new tire pressure sensor(s). REFER to Tire Pressure Monitoring System (TPMS) Sensor in this section.</p> |
| G3 | TP_STAT PID EQUALS SYSTEM FAULT | |
| | <ul style="list-style-type: none"> Train all 4 tire pressure sensors. Refer to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. Did all of the tire pressure sensors transmit correctly and did the horn sound when each tire pressure sensor transmitted to the SJB? | <p>Yes Using the scan tool, locate the updated TPMS sensor IDs trained to the SJB module. COMPARE these values to those recorded prior to the TPMS sensor training procedure. Disregarding sensor position, any sensor IDs 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 IDs on the applicable warranty claim. VERIFY system operation.</p> <p>No Before diagnosing the SJB: If the sensors do not respond to the special tool, ATTEMPT to activate the same sensors with the special tool a second time. If the sensors still do not respond, MOVE the vehicle to rotate the wheels at least 1/4 of a turn and ATTEMPT to activate the same sensors again.</p> <p>NOTE:The sensors may not be present. DISMOUNT the tire, REFER to Wheel and Tire in this section. VERIFY that the sensors are present and mounted to the wheels. If missing, INSTALL new sensors. If the sensors are present but all 4 sensors failed to train a second time, GO to G4.</p> |

(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST G: TPMS INDICATOR FLASHES FOR 70 SECONDS AND THEN REMAINS ON SOLID WHEN THE IGNITION KEY IS TURNED TO THE ON POSITION AND DTC B2872 IS PRESENT (Continued)**

| Test Step | | Result / Action to Take |
|-----------|--|--|
| G4 | CHECK FOR CORRECT SJB OPERATION | |
| | <ul style="list-style-type: none"> • Disconnect all the SJB electrical connectors. • Check the connectors for: <ul style="list-style-type: none"> — corrosion. — pushed-out pins. — spread terminals. • Connect all the SJB connectors and make sure that they are seated correctly. • Operate the system and verify the concern is still present. • Is the concern still present? | <p>Yes INSTALL a new SJB module. REFER to Section 419-10. CLEAR the DTCs. REPEAT the self-test.</p> <p>No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p> |

Pinpoint Test H: DTC B106A — Pressure Sensor Range Bit Incorrect State**Normal Operation**

If there is a fault in the tire pressure monitoring system (TPMS), such as a damaged or missing sensor(s), damaged module or a communication issue within the vehicle, DTCs are set in the smart junction box (SJB), the TPMS warning indicator will flash for 70 seconds and then remain ON solid when the ignition switch is turned to the ON position and the message center (if equipped) will display TIRE PRESSURE SENSOR FAULT.

This DTC may be encountered if a high-pressure sensor (designed for trucks with much higher tire pressures and molded in green plastic) was installed. The SJB will only allow a low-pressure sensor to be trained using the TPMS sensor training procedure. Make sure the correct sensors are used to avoid compatibility issues.

Possible Causes

- Tire pressure sensor(s)
- Incorrect tire pressure sensor(s) installed
- SJB

PINPOINT TEST H: DTC B106A — PRESSURE SENSOR RANGE BIT INCORRECT STATE

| Test Step | | Result / Action to Take |
|-----------|---|--|
| H1 | DETERMINE IF THE VEHICLE IS EQUIPPED WITH AN INCORRECT SENSOR | |
| | <ul style="list-style-type: none"> • Train all 4 tire pressure sensors. Refer to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. • Did all of the tire pressure sensors transmit correctly and did the horn sound when each tire pressure sensor transmitted to the SJB? | <p>Yes CLEAR the DTCs. REPEAT the self-test. VERIFY system operation.</p> <p>No Before installing a new sensor(s): If a sensor(s) does not respond to the special tool, ATTEMPT to activate the same sensor(s) with the special tool. If the sensor(s) still does not respond, MOVE the vehicle to rotate the wheels at least 1/4 of a turn and ATTEMPT to activate the same sensor(s) again.</p> <p>If the sensor(s) fail to train a second time, INSTALL a new tire pressure sensor(s). REFER to Tire Pressure Monitoring System (TPMS) Sensor in this section.</p> |

DIAGNOSIS AND TESTING (Continued)

Pinpoint Test I: DTC B106B — Tire Pressure Sensor Low Battery

Normal Operation

If there is a fault in the tire pressure monitoring system (TPMS), such as a damaged or missing sensor(s), damaged module or a communication issue within the vehicle, DTCs are set in the smart junction box (SJB), the TPMS warning indicator will flash for 70 seconds and then remain ON solid when the ignition switch is turned to the ON position and the message center (if equipped) will display TIRE PRESSURE SENSOR FAULT.

The tire pressure sensor is battery powered.

This DTC may be set when attempting to train a tire pressure sensor(s) with a low battery.

Possible Causes

- Tire pressure sensor battery
- Tire pressure sensor(s)
- SJB

PINPOINT TEST I: DTC B106B — TIRE PRESSURE SENSOR LOW BATTERY

| Test Step | | Result / Action to Take |
|-----------|---|---|
| I1 | DETERMINE WHICH SENSOR HAS A LOW BATTERY | |
| | <ul style="list-style-type: none"> • Train all 4 tire pressure sensors. Refer to Tire Pressure Monitoring System (TPMS) Sensor Training in this section. • Did all of the tire pressure sensors transmit correctly and did the horn sound when each tire pressure sensor transmitted to the SJB? | <p>Yes CLEAR the DTCs. REPEAT the self-test. VERIFY system operation.</p> <p>No Before installing a new sensor(s): If a sensor(s) does not respond to the special tool, ATTEMPT to activate the same sensor(s) with the special tool. If the sensor(s) still does not respond, MOVE the vehicle to rotate the wheels at least 1/4 of a turn and ATTEMPT to activate the same sensor(s) again. If the sensor(s) fail to train a second time, INSTALL a new tire pressure sensor(s). REFER to Tire Pressure Monitoring System (TPMS) Sensor in this section.</p> |