

DTC C0277 or C0890 Brake Pedal Position Sensor Circuit

Diagnostic Instructions

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

DTC Descriptors

DTC C0277 06: Brake Pedal Position Sensor Circuit Short to Ground or Open

DTC C0277 07: Brake Pedal Position Sensor Circuit Voltage Above Threshold

DTC C0277 09: Brake Pedal Position Sensor Circuit Rate of Change Above Threshold

DTC C0277 4B: Brake Pedal Position Sensor Calibration Not Learned

DTC C0890 03: Device Voltage Reference Output 3 Circuit Voltage Below Threshold

DTC C0890 07: Device Voltage Reference Output 3 Circuit Voltage Above Threshold

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Brake Position Sensor 5-Volt Reference	C0277 06, C0890 03	C0277 06	C0277 06*, C0890 07	—
Brake Apply Sensor Signal	C0277 06	C0277 06	C0277 07	C0277 09, C0277 4B
Brake Position Sensor Low	—	C0277 06*	—	—

Reference				
* Stop Lamps Are Always ON				

Circuit/System Description

The body control module (BCM) provides a 5-volt reference voltage and a low reference signal to the brake pedal position sensor (BPPS). When the brake pedal is applied, the BPPS sends a variable voltage signal, that will increase as the brake pedal is applied, through the brake apply sensor signal circuit to the BCM. In response to this signal, the BCM applies B+ to the stop lamps, center high mounted stop lamp (CHMSL), transmission control module (TCM), and engine control module (ECM). The stop lamps will not operate unless the ignition is in the ON position.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

C0277 06

The BCM detects a short to ground or open on the brake apply sensor signal circuit, or a short to ground or an open in the brake position sensor 5-volt reference circuit.

C0277 07

The BCM detects short to voltage on the brake apply sensor signal circuit.

C0277 09

The BCM detects the brake pedal position sensor reading is erroneous.

C0277 4B

The BCM detects that the brake pedal position sensor home position is not learned.

C0890 03

The BCM detects a short to ground in the brake position sensor 5-volt reference circuit.

C0890 07

The BCM detects a short to voltage in the brake position sensor 5-volt reference circuit.

Action Taken When the DTC Sets

- The Service Vehicle Soon indicator is commanded ON.
- If the DTC sets while the vehicle is running, the BCM will activate the brake lights when the vehicle transmission is not in the PARK position and the vehicle is not accelerating.
- For DTC C0277 4B, the stop lamps may not activate at the expected brake pedal positions.

Conditions for Clearing the DTC

- For DTC C0277 4B, a successful brake pedal position sensor calibration has been performed.
- A DTC will not clear the current status until the next ignition cycle.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Diagnostic Aids

The stop lamps will not illuminate unless the ignition is in the ON position.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Testing

C0277 06, C0277 07, and C0890 03

- 1). Ignition OFF, disconnect the harness connector at the brake pedal position sensor.
- 2). Ignition OFF, verify that a test lamp illuminates between the low reference circuit terminal C and B+. If the test lamp does not illuminate, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the BCM.
- 3). Ignition ON, test for 4.8–5.2 volts between the 5-volt reference circuit terminal A and ground. If less than the specified range, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM. If greater than the specified range, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the BCM.
- 4). Verify the scan tool BPP Sensor parameter is less than 2 counts. If greater than the specified value, test the signal circuit terminal B for a short to voltage. If the circuit tests normal, replace the BCM.
- 5). Install a 3A fused jumper wire between the signal circuit terminal B and the 5-volt reference circuit terminal A. Verify the scan tool BPP Sensor parameter is greater than 1000 counts. If less than the specified range, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
- 6). If all circuits test normal, test or replace the brake pedal position sensor.

C0277 09

- 7). Replace the brake pedal position sensor.
- 8). Perform the scan tool BPP Sensor Calibration procedure. Refer to Brake Pedal Position Sensor Calibration.
- 9). Operate the vehicle within the Conditions for Running the DTC and verify the DTC does not reset. If the DTC resets, replace the BCM.

C0277 4B

- 10). Ignition ON, verify that no other brake pedal position sensor DTCs are set. If other brake pedal sensor DTCs are set, diagnosis those DTCs first.
- 11). Perform the scan tool BPP Sensor Calibration procedure. Refer to Brake Pedal Position Sensor Calibration.
- 12). Observe the scan tool BPPS Status parameter. The reading should be Learned. If not the specified value, replace the brake pedal position sensor. If the DTC resets, replace the BCM.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Brake Pedal Position Sensor Replacement
- Control Module References for BCM replacement, setup, and

programming

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