

P046B: CATALYST TEMPERATURE SENSOR 1/2 CORRELATION (BANK 2)

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	\$250-\$350
Can I Still Drive?	:	Yes

What Does The P046B Code Mean?

When an OBD-II equipped vehicle has stored a code P046B, it means that the powertrain control module (PCM) has detected a discrepancy between the temperature signals from the catalytic converter of engine bank two. (Bank 2) denotes the bank of the engine which does not contain the number one cylinder. So far as I know, only diesel applications utilize catalyst temperature sensors.

Clean burning diesel vehicles require various types of diesel exhaust injections to clear the catalytic converter of harmful emissions. Diesel exhaust fluid (DEF) is injected into the catalytic converter in order to elevate the temperature of the catalyst and burn the nitrogen oxide particles trapped within.

These vehicles utilize catalyst temperature sensors (as opposed to oxygen sensors) to monitor catalytic converter efficiency. Using temperature to monitor catalyst efficiency is the most accurate and practical method.

Sensor 1 and Sensor 2 might also be called the upstream and downstream catalyst temperature sensors, respectively. The sensors are typically placed just before and immediately after the catalytic converter in the exhaust system. When the engine is running and warmed up sufficiently, exhaust entering the catalytic converter should be notably cooler than exhaust that is exiting the converter. This is true regardless of the state of the DEF system. The PCM monitors the catalyst temperature sensors constantly and compares the two sensor signals. If the degree of variation

between the two is not within a programmed amount, a code P046B will be stored and a malfunction indicator lamp (MIL) may also be illuminated.

What Are The Symptoms Of The P046B Code?

Symptoms of a P046B trouble code may include:

- There may be no symptoms with this code
- Heavy black smoke from exhaust (more than usual)
- Other DEF and catalytic converter codes
- Reduced fuel efficiency
- Increased exhaust emissions

What Are The Potential Causes Of The P046B Code?

Causes for this P046B transmission code may include:

- Defective exhaust temperature sensor
- Bad catalytic converter
- DEF system malfunction
- Burned or otherwise open/shorted circuits in the exhaust temperature sensor system

How Can You Fix The P046B Code?

Were I diagnosing a code P046B, I would like to have a diagnostic scanner, a digital volt/ohmmeter (DVOM), an infrared thermometer (with a laser pointer if possible), and a reputable vehicle information source (such as AllData DIY).

Please ensure that the DEF system is filled with the correct fluid and working properly. If there are DEF related codes present, I would diagnose and repair them before attempting to diagnose a P046B. I would inspect all system related wiring and connectors. Focus on harnesses that are routed near hot exhaust pipes and manifolds.

Retrieve All Stored Codes

Connect the scanner to the vehicle's diagnostic port and retrieve all stored codes and freeze frame data. Now, write it down and hang on to it for later. Clear the codes and see if the P046D is reset.

If the code is reset, connect the scanner and observe the data stream with the engine running and at normal operating temperature. You may want to narrow the data stream to display only pertinent data. This will speed up data delivery and provide you with a more adequate data signal from the exhaust temperature sensor/s in question.

Obtain temperature variance recommendations for the vehicle in question (from your vehicle

information source) and compare them with actual data (displayed on the scanner data stream).

If scanner data reflects that the difference between the two sensors is not within specifications, use the infrared thermometer to get a physical temperature. Compare your findings with those seen on the scanner data display and test exhaust temperature sensors which do not align.

Use The DVOM To Test Individual Sensors

Use the DVOM to test individual sensors according to manufacturer's recommendations. Replace sensors which do not test within specifications.

Disconnect all related controllers and test individual system circuits if all the sensors are within specifications. Repair or replace circuits which do not comply with manufacturer's specification.

If all sensors and circuits are within specifications, suspect a defective PCM or a PCM programming error.

- A stored code P046B is not a condemnation of any particular catalyst temperature sensor but a discrepancy between the correlation of two separate sensors
- Suspect PCM failure only after all other possibilities have been eliminated

Severity Description

Catalyst temperature variation is crucial to reducing exhaust emissions in diesel engines. While this code may be accompanied by no drivability symptoms, from an environmental standpoint, it should be classified as severe.

Reference Sources

[P046B Catalyst Temp Sensor Correlation Bank 2](#), OBD-Codes.