

P2589: TURBO BOOST CONTROL POSITION SENSOR "B" CIRCUIT HIGH

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	\$100-\$1600
Can I Still Drive?	:	No

What Does The P2589 Code Mean?

This trouble code can typically apply to all turbocharged OBDII equipped engines, but shows up more often in certain Hyundai and Kia vehicles. The Turbo Boost Control Position Sensor (TBCPS) converts the turbo boost pressure into an electrical signal for the Powertrain Control Module (PCM).

The Turbo Boost Control Position Sensor (TBCPS) provides additional turbo boost pressure information to the Powertrain Control Module or PCM. This information is typically used to fine-tune the amount of boost provided to the engine by the turbocharger.

The boost pressure sensor provides the PCM with the rest of the information needed for turbo boost pressure calculations. Anytime the voltage on the TBCPS sensor signal wire goes above a set level (usually over 4.8V), the PCM will set code P2589. This code is considered to be an electrical circuit fault only.

Troubleshooting steps may vary depending upon manufacturer, type of sensor and wire colors to the sensor. Refer to a vehicle specific repair guide to determine which is the "B" sensor for your particular vehicle.

Related turbo boost control position sensor "B" circuit codes:

- [P2586](#) Turbocharger Boost Control Position Sensor "B" Circuit

- [P2587](#) Turbocharger Boost Control Position Sensor "B" Circuit Range/Performance
- [P2588](#) Turbocharger Boost Control Position Sensor "B" Circuit Low
- [P2590](#) Turbocharger Boost Control Position Sensor "B" Circuit Intermittent/Erratic

What Are The Symptoms Of The P2589 Code?

Symptoms of a P2589 code may include:

- Malfunction Indicator Light On
- Poor performance
- Hesitation during acceleration
- Decrease in fuel economy

What Are The Potential Causes Of The P2589 Code?

Potential causes for this code to set are:

- Short to power in the signal circuit to the TBCPS sensor – possible
- Open in ground circuit at TBCPS sensor – possible
- Failed TBCPS Sensor – likely
- Failed PCM – unlikely

How Can You Fix The P2589 Code?

Step 1

A good starting point is always to check for technical service bulletins (TSB) for your particular vehicle. Your issue may be a known issue with a known fix put out by the manufacturer and can save you time and money during diagnosis.

Step 2

Next, locate the TBCPS sensor on your particular vehicle. This sensor is usually found directly screwed / bolted into the turbocharger housing.

Once located, visually inspect the connector and wiring. Look for scraping, rubbing, bare wires, burn spots or melted plastic. Pull the connector apart and carefully inspect the terminals (the metal parts) inside the connector. See if they look burned or have a green tint indicating corrosion. Use electrical contact cleaner and a plastic bristle brush if cleaning of the terminals is needed. Let dry and apply electrical grease where the terminals contact.

Step 3

If you have a scan tool, clear the diagnostic trouble codes from memory, and see if P2589 code

returns. If it does not, then the connections were most likely your problem.

Step 4

If the P2589 code does return, we will need to test the TBCPS sensor and its associated circuits. With the Key Off, disconnect the electrical connector at the TBCPS sensor. Connect a Digital Voltmeter black lead to the ground terminal at the TBCPS sensor wiring harness connector.

Connect the red lead of the Digital Voltmeter to the power terminal at the TBCPS sensor wiring harness connector. Turn Key On Engine Off. Check manufacturer's specifications; voltmeter should read either 12 volts or 5 volts. If not, repair open in wiring on the power or ground wire, or replace the PCM.

Step 5

If the prior test passed, we will need to test the signal wire. With the connector still disconnected, move the red lead of the voltmeter from the power wire terminal to the signal wire terminal. The voltmeter should now read 5 volts. If not, repair the open on the signal wire, or replace the PCM.

Step 7

If all prior tests have passed and you continue to get a P2589, this would most likely indicate a failed TBCPS sensor, although a failed PCM could not be ruled out until the TBCPS sensor had been replaced. If unsure, seek assistance from a trained automotive diagnostician. PCMs must be programmed, or calibrated to the vehicle in order to be installed correctly.

Reference Sources

[ENGINE CONTROL SYSTEM \[GASOLINE ENGINE \(V-6\)\] SERVICE MANUAL for P2589](#) - Pages 868-870.