

P2590: TURBO BOOST CONTROL POSITION SENSOR "B" CIRCUIT INTERMITTENT

OVERVIEW

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

What Does The P2590 Code Mean?

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 there is an electrical problem with the TBCPS, depending on how the manufacturer wants to identify the fault, the PCM will set code P2590. This code is considered to be an electrical circuit fault only.

It also looks at the voltage signal from the TBCPS sensor to determine if it is correct at initial Key On Engine Off. This code could have been set because of mechanical (typically exhaust back pressure / intake restrictions) or electrical (boost pressure sensor/boost control position sensor circuit) issues.

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](#)
- [P2589 Turbocharger Boost Control Position Sensor "B" Circuit High](#)

What Are The Symptoms Of The P2590 Code?

Symptoms of a P2590 code may include:

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

What Are The Potential Causes Of The P2590 Code?

Potential causes for this code to set are:

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

How Can You Fix The P2590 Code?

Locate a technical service bulletin (TSB)

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.

Locate the TBCPS sensor

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.

If you have a scan tool, clear the diagnostic trouble codes from memory, and see if P2590 code returns. If it does not, then the connections were most likely your problem.

If the P2590 code does return, insure that you have good turbo boost pressure by testing with a mechanical gauge. Check with the manufacturers specs for your vehicle. If the boost pressure does not pass, determine the root problem for the low boost pressure (possible exhaust restrictions, wastegate issue, bad turbocharger, intake leaks, etc), clear codes and retest. If the P2590 is now gone, then the problem was mechanical.

Test the TBCPS sensor and its associated circuits

If the P2590 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.

Test the signal wire

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.

If all prior tests have passed and you continue to get a P2590, 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 P2590](#) - Pages 861-863.