# P006D: BAROMETRIC PRESSURE - TURBOCHARGER/SUPERCHARGER INLET PRESSURE CORRELATION

OVERVIEW

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|---|---|---|
| **Severity** | : | High |
| **DIY Difficulty Level** | : | Intermediate |
| **Repair Cost** | : | **$100-$300** |
| **Can I Still Drive?** | : | **Yes** (Short-term only) |

## What Does The P006D Code Mean?

A stored code P006D means that the powertrain control module (PCM) has detected a discrepancy in the correlating signals between the barometric pressure sensor and the turbocharger/supercharger inlet pressure sensor.

The code P006D is applicable exclusively to vehicles with forced air induction systems. Other stored barometric pressure sensor or forced air induction system codes should be diagnosed and repaired before attempting to diagnose a code P006D.

Barometric pressure (air density) is measured in either kilopascal (kPa) units or inches of mercury (Hg), utilizing the barometric pressure sensor. These measurements are input to the PCM as varying degrees of voltage. Barometric pressure and barometric pressure signals are measured in similar increments.

The turbocharger/supercharger inlet pressure sensor will typically be of a similar design to the barometric pressure sensor. It also monitors air density. It is most often positioned inside the turbocharger/supercharger inlet hose and it provides the PCM with an appropriate voltage signal reflecting such.

If voltage input signals (between the barometric pressure sensor and the turbocharger/supercharger inlet pressure sensor) differ by more than a programmed degree (over a certain period of time and under a particular set of circumstances), a code P006D will be stored, and a malfunction indicator lamp (MIL) may be illuminated.

In some vehicle applications, MIL illumination may require multiple drive cycles with a failure. Exact parameters for code storage (as it relates to the vehicle in question) can be obtained by consulting a reliable vehicle information source (such as AllData DIY).

## What Are The Symptoms Of The P006D Code?

Symptoms of a P006D engine code may include:

- Reduced engine performance
- Decreased fuel efficiency
- Delayed engine acceleration
- A rich or lean condition
- Louder than normal hissing/suction noise upon acceleration

## What Are The Potential Causes Of The P006D Code?

Causes for this engine code may include:

- Defective barometric pressure sensor
- Faulty turbocharger/supercharger inlet pressure sensor
- Open or shorted wiring or connector
- Insufficient engine vacuum
- Restricted air intake
- PCM or PCM programming error

## How Can You Fix The P006D Code?

I would begin with a visual inspection of all barometric pressure sensor and turbocharger inlet pressure sensor wiring and connectors. I would also make sure that the turbocharger/supercharger inlet hoses are secure and in working order. Additionally, I would inspect the air filter. It must be relatively clean and clear of obstruction.

When diagnosing a code P006D, I would need a manual vacuum pressure gauge, a diagnostic scanner, a digital volt/ohmmeter (DVOM), and a source of reliable vehicle information.

A reasonable precursor to any barometric pressure sensor related code is a manual engine intake vacuum pressure test. Use the vacuum pressure gauge and get specification guidelines from your vehicle information source. If engine vacuum is insufficient, there is an internal engine malfunction

that must be rectified before proceeding.

Now, I would connect the scanner to the vehicle diagnostic port and retrieve all stored codes and freeze frame data. Freeze frame data provides a picture of the exact circumstances which were occurring at the instant of the malfunction which led to the stored code P006D. I would write this information down as it may be helpful as my diagnosis unfolds. Next, I'd clear the codes and test-drive the vehicle to see if the code is reset.

If it is:

- Use the DVOM to test for a reference signal (typically 5-volts) and a ground at the barometric pressure sensor and turbocharger/supercharger inlet pressure sensor connectors
- This can be accomplished by connecting the positive test lead of the DVOM to the reference voltage pin of the sensor connector and the negative test lead to the ground pin of the connector

If the appropriate degree of reference voltage and a ground are discovered:

- I would test the barometric pressure sensor and turbocharger/supercharger inlet pressure sensor using the DVOM and my vehicle information source
- The vehicle information source should yield wiring diagrams, connector face views, connector pin-out charts, and diagnostic flow charts as well as component testing specifications
- Test the individual sensors while they are unplugged with the DVOM placed on the ohms setting
- barometric pressure and/ turbocharger/supercharger inlet pressure sensors which do not comply with manufacturer's specifications, should be considered faulty

If the respective sensors are in compliance with manufacturer's specifications:

- With the key on and the engine running (KOER), reconnect the sensors and use the DVOM to test individual sensor signal circuit wiring directly behind the respective sensor connectors
- In order to determine if the respective sensor signals are correct, follow the air pressure to voltage charts (that should be located within the vehicle information source)
- If either of the sensors do not reflect a degree of voltage which falls within manufacturer's specifications (according to barometric pressure and turbocharger/supercharger boost pressure), consider that sensor defective

If the correct barometric pressure sensor and turbocharger/supercharger inlet pressure sensor voltage signal is present:

- Gain access to the PCM and test the corresponding signal circuit (for each sensor in question) at the (PCM) connector. If there is a sensor signal at the sensor connector, that is not present at the PCM connector, suspect an open circuit between the two components

- You may disconnect the PCM (and all related controllers) and test individual system circuits using the DVOM. Follow wiring diagrams and connector pin out charts to test individual circuit resistance and/or continuity

Suspect PCM failure or a PCM programing error if all barometric pressure/ turbocharger/supercharger inlet pressure sensors and circuits are within specifications.

- Locating applicable technical service bulletins (TSB) may help dramatically in your diagnosis
- The turbocharger/supercharger inlet pressure sensor is often left unplugged after air filter replacement and other related maintenance. If the vehicle in question has been recently serviced, check this connector first

## Severity Description

Engine performance, drivability, and fuel efficiency will likely be hindered by the conditions which contribute to storage of a code P006D. It must be addressed with urgency.

## Reference Sources

P006D: Barometric Pressure - Turbocharger/Supercharger Inlet Pressure Correlation, OBD-Codes.