

P06B7: INTERNAL CONTROL MODULE KNOCK SENSOR PROCESSOR 2 PERFORMANCE

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Advanced
Repair Cost	:	\$500-\$1500
Can I Still Drive?	:	Yes

What Does The P06B7 Code Mean?

When a code P06B7 is stored, it means that the powertrain control module (PCM) has detected an internal processor performance error with a certain knock sensor (designated 2) circuit. Other controllers may also detect an internal PCM performance error (with the knock sensor circuit) and cause a P06B7 to be stored.

The knock sensor is typically threaded directly into the engine block. It is a piezoelectric sensor. The location of the knock sensor will vary between manufacturers but most are in the sides of the block (between water jacket freeze plugs) or in the valley beneath the intake manifold.

Knock sensors that are in the sides of the engine block are often threaded directly into engine coolant passages. When the engine is warm and the engine cooling system is under pressure, removal of these sensors could result in severe burns from hot coolant.

Before removing any knock sensor/s, allow the engine to cool and always dispose of coolant properly.

A piezoelectric sensing crystal is at the heart of the knock sensor. When shaken or vibrated, the piezoelectric crystal produces a small amount of voltage. Since the knock sensor control circuit is normally a one-wire circuit, the voltage generated by the vibration is recognized by the PCM as engine noise or vibration.

The severity of the vibration encountered by the piezoelectric crystal (inside the knock sensor) determines the level of voltage produced in the circuit.

If the PCM detects a degree of knock sensor voltage indicative of an engine knock or severe spark detonation; it may retard ignition timing and a knock sensor control code may be stored.

A very small amount of voltage is always produced by the knock sensor when the engine is running. This is because a slight amount of vibration is inevitable, no matter how smoothly an engine runs.

Internal control module monitoring processors are responsible for various controller self-test duties and overall internal control module accountability.

Knock sensor input and output signals are subject to self-test and are monitored constantly by the PCM and other related controllers. The transmission control module (TCM), traction control module (TCSM), and other controllers also interact with the knock sensor system.

Whenever the ignition is on and the PCM is energized, knock sensor system self-tests are initiated. In addition to running internal controller self-tests, the controller area network (CAN) also compares signals from each individual module to ensure that each controller is functioning properly. These tests are performed simultaneously.

If the PCM detects an internal discrepancy in the knock sensor processor, a code P06B7 will be stored and a malfunction indicator lamp (MIL) may be illuminated.

Additionally, if the PCM detects a problem between any of the on-board controllers, which would indicate an internal knock sensor system error, a code P06B7 will be stored and a malfunction indicator lamp (MIL) may be illuminated. Multiple failure cycles may be necessary for MIL illumination, depending upon the perceived severity of the malfunction.

What Are The Symptoms Of The P06B7 Code?

Symptoms of a P06B7 trouble code may include:

- Loud noises from the engine area
- Diminished fuel efficiency
- A variety of engine drivability symptoms
- Other stored diagnostic trouble codes

What Are The Potential Causes Of The P06B7 Code?

Causes for this code may include:

- Bad PCM or a PCM programming error
- Defective knock sensor/s

- Defective knock sensor control wiring and/or connectors
- A bad controller power relay or blown fuse
- Open or shorted circuit or connectors in the CAN harness
- Insufficient control module ground

How Can You Fix The P06B7 Code?

Even to the most experienced and well-equipped professional technician, diagnosing a code P06B7 can prove to be quite a challenge. There is also the issue of reprogramming. Without the necessary reprogramming equipment, it will be impossible to replace a defective controller and complete a successful repair.

If there are ECM/PCM power supply codes present, they will obviously need to be rectified before attempting to diagnose a P06B7.

There are several preliminary tests that can be performed prior to declaring any controller defective. A diagnostic scanner, a digital volt/ohmmeter (DVOM), and a source of reliable vehicle information will be required.

Retrieve All Stored Codes

Connect the scanner to the vehicle diagnostic port and retrieve all stored codes and freeze frame data. You will want to write this information down, just in case the code proves to be an intermittent one.

After recording all pertinent information, clear the codes and test drive the vehicle until the code is reset or the PCM enters readiness mode. If the PCM enters readiness mode, the code is intermittent and will be more difficult to diagnose. The condition, which caused the P06B7 to be stored, may even need to worsen before a diagnosis can be made. If the code is reset, continue with this short list of preliminary tests.

When attempting to diagnose a P06B7, information may be your greatest tool. Search your vehicle information source for technical service bulletins (TSB) that parallel the code stored, vehicle (year, make, model, and engine), and symptoms exhibited. If you find the right TSB, it may yield diagnostic information that will aid you in a major way.

Use your source of vehicle information to obtain connector face views, connector pin-out charts, component locators, wiring diagrams, and diagnostic flow charts related to the code and vehicle in question.

Use The DVOM To Test Controller Power Supply Fuses And Relays

Use the DVOM to test controller power supply fuses and relays. Test and replace blown fuses as

required. Fuses should be tested with the circuit loaded.

If all fuses and relays appear to be functioning as intended, a visual inspection of controller related wiring and harnesses is in order. You will also want to check chassis and engine ground junctions. Use your vehicle information source to obtain ground locations for related circuits. Use the DVOM to test ground integrity.

Visually Inspect System Controllers

Visually inspect system controllers for signs of water, heat, or collision damage. Any controller that is damaged, especially by water, should be considered defective.

If controller power and ground circuits are intact, suspect a defective controller or a controller programming error. Controller replacement will require reprogramming. In some cases, you may purchase reprogrammed controllers through aftermarket sources. Other vehicles/controllers will require on-board reprogramming that may only be done through a dealership or other qualified source.

- Unlike most other codes, the P06B7 is likely caused by a defective controller or a controller programming error
- Test system ground integrity by connecting the negative test lead of the DVOM to ground and the positive test lead to battery voltage

Severity Description

Internal control module processor codes should be categorized as severe. A stored code P06B7 could result in a variety of drivability concerns.

Reference Sources

[P06B7 ICM Knock Sensor Processor 2 Performance](#), OBD-Codes.