P060D: INTERNAL CONTROL MODULE ACCELERATOR PEDAL POSITION PERFORMANCE

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$100-$200**
Can I Still Drive?	:	**Yes** (Short-term only)

What Does The P060D Code Mean?

When a code P060D is stored, it means that the powertrain control module (PCM) has detected an internal performance error with the accelerator pedal position (APP) sensor circuit. Other controllers may also detect an internal PCM performance error (in the APP circuit) and cause a P060D to be stored.

This code is used exclusively in vehicles equipped with a drive by wire (DBW) throttle system.

Internal control module monitoring processors are responsible for various controller self-test duties and overall internal control module accountability. TPS/APP 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 are subject to interaction with the TPS/APP sensor.

Most OBD-II equipped vehicles use the DBW system (instead of a cable operated throttle). This not only helps to decrease exhaust emissions and increase fuel efficiency, it also promotes more efficient interaction with stability and traction control systems and aids in optimizing the accuracy of cruise control systems.

Controlled by the PCM using an electric throttle actuator motor, the DBW system employs one or more APP sensors (also called pedal position sensors) and multiple throttle position sensors (TPS).

All of these sensors are supplied with a 5-volt (typically) reference and a ground signal.

TPS/APP sensors are generally of the potentiometer type. Sensor resistance (circuit voltage) varies according to the position of the throttle plate (TPS) or accelerator pedal (APP). Each individual sensor completes a particular circuit. The sensors are actuated by a pivoting fulcrum extension on the accelerator pedal or the throttle plate shaft. As the contacts of the sensor are moved across a circuit board, sensor resistance changes; causing variations in circuit resistance and (therefore) signal input voltage into the PCM and other controllers.

Inside the cockpit of the vehicle, the APP sensors are affixed to the accelerator pedal bracket. From one APP sensor, the PCM and other controllers receive an input signal (to open or close the throttle plate) whenever the pedal is depressed/released. From a second APP sensor, the PCM and other controllers receive a signal determining to what degree the throttle plate should be opened/closed.

A separate signal from the TPS is input to the PCM (and the other controllers), reflecting actual throttle position. On-board controllers constantly monitor the signals from the APP sensor and the TPS and compare actual throttle position with desired throttle position.

Whenever the ignition is on and the PCM is energized, APP sensor and TPS 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 TPS/APP sensor inputs exceed the maximum degree of variance as set forth by the manufacturer, an APP sensor or TPS code will be stored and a malfunction indicator lamp (MIL) may be illuminated. Normally, the PCM will enter limp in mode. In this mode, engine acceleration will be restricted. Additionally, if the PCM detects a discrepancy between any of the on-board controllers, which would indicate an internal APP sensor or TPS error, a code P060D 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 P060D Code?

Symptoms of a P060D trouble code may include:

- Multiple drivability issues
- Harsh or erratic automatic transmission shifting
- Reduction in fuel efficiency
- Rough idle or stall (especially at idle)
- Hesitation upon acceleration
- Limited or no acceleration
- Stuck throttle (at any RPM)
- Cruise control inoperative

What Are The Potential Causes Of The P060D Code?

Causes for this code may include:

- Defective controller or programming error
- Open or shorted circuit or connectors in the CAN harness
- Insufficient control module ground
- Defective TPS or APP sensor
- Corroded electrical connectors
- Open or shorted circuits between the TPS/APP sensor and the PCM
- Faulty DBW actuator motor

How Can You Fix The P060D Code?

Even to the most experienced and well-equipped professional technician, diagnosing a code P060D 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 P060D. Also, if there are TPS/APP sensor codes present, these must be diagnosed and repaired first.

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

Step 1

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 P060D 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.

Step 2

When attempting to diagnose a P060D, information may be your greatest tool. Search you 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.

The scanner data stream (or oscilloscope) may yield useful information regarding glitches and voltage spikes in individual TPS/APP sensors.

Step 3

You can use the DVOM to test the individual sensors if no inconsistencies are detected using the oscilloscope (or scanner display stream). Test APP sensor and TPS resistance following manufacturer's specifications and procedures. If all sensors and circuits appear to be functioning as intended, proceed by testing the controller power supply and ground.

Step 4

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.

Step 5

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.

Step 6

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

Step 7

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.

Note:

- Unlike most other codes, the P060D 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 P060D could result in serious drivability and fuel efficiency issues, suddenly and without warning.

Reference Sources

Diagnostic Trouble Code (DTC) Charts and Descriptions for P060D - Page 92.