P050D: COLD START ROUGH IDLE

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Advanced
Repair Cost	:	**$150-$1000**
Can I Still Drive?	:	No

What Does The P050D Code Mean?

So, you are faced with diagnosing a stored a code P050D. It means that the powertrain control module (PCM) has detected a rough engine idle during cold start. Cold start is a term used to describe an engine drivability strategy that is implemented only when the engine is at (or below) ambient temperature.

Engine RPM is monitored (by the PCM) using data input signal voltage from the crankshaft position (CKP) sensor and the camshaft position (CMP) sensor.

The idle RPM level is also controlled by the PCM. To accomplish this ongoing task, intake airflow must be regulated during closed throttle conditions. The PCM regulates engine intake air at idle with an electronically controlled device called an idle air control (IAC) valve. If air is introduced to the engine that is not regulated by the PCM, it may result in a rough engine idle at cold start and a code P050D being stored. If lean exhaust codes or IAC related codes accompany the P050D, diagnose and repair those before attempting to diagnose the P050D.

Engine misfire can also be a contributor to rough idle under cold start conditions. If there are misfire codes stored, you will also want to diagnose and repair those prior to diagnosing a P050D. Chances are that if you fix the misfire; you'll also repair the rough idle at cold start.

If the rough idle occurs only under cold start conditions, a malfunctioning engine coolant temperature (ECT) sensor may be at the root of your problem. Engine drivability strategy is much

different under cold start conditions. If the PCM receives an inaccurate engine temperature signal at cold start-up, a rough idle may be created from insufficient fuel delivery or improper timing advance. An ECT sensor code may also be stored. As you have probably guessed, you will need to diagnose and repair any ECT sensor related codes before the P050D.

If, under cold start conditions the PCM detects a rough idle that cannot be stabilized within the programmed parameters, a code P050D will be stored and a malfunction indicator lamp (MIL) may be illuminated. Multiple ignition cycles (with a failure) may be required for MIL illumination.

What Are The Symptoms Of The P050D Code?

Symptoms of a P050D engine code may include:

- Rich/lean exhaust
- Cold start drivability issues
- Other drivability related codes
- Hissing or sucking noise from engine

What Are The Potential Causes Of The P050D Code?

Causes for this code may include:

- Vacuum or air intake leaks
- Bad spark plugs, plug boots, or ignition coils
- Insufficient fuel pressure/volume
- Defective ECT sensor
- Shorted or open circuits or connectors

How Can You Fix The P050D Code?

Diagnose and repair any other engine drivability related codes before attempting to diagnose the P050D.

You will need a source of reliable vehicle information, a diagnostic scanner, and a digital volt/ohmmeter (DVOM) to accurately diagnose a code P050D.

Your vehicle information source can provide you with diagnostic flow charts, wiring diagrams, connector face views, connector pin-out charts, and component testing procedures and specifications that will help you to accurately diagnose a code P050D.

Retrieve all stored codes and freeze frame data by connecting the scanner to the vehicle diagnostic port. Write this info down as it will be helpful as the diagnostic process goes forth. Next, clear the codes and allow the engine to completely cool down before you test-drive the vehicle.

If the code is not reset and the PCM enters readiness mode, you may be dealing with an intermittent code. In some cases, the conditions which led to the code being stored may need to worsen before an accurate diagnosis can be made.

If the code is immediately reset, begin by focusing on factors which most dramatically impact cold start drivability.

Excessive Air Intake

Too much air getting into the intake, at a time when it demands a richer fuel mixture, can create a rough idle.

Check for vacuum leaks. Vacuum hoses and lines should not be cracked or collapsed. Listen for hissing or sucking noises and don't forget to listen around the throttle body, intake manifold gasket, brake booster and the PCV valve.

The air intake hose (from the air filter box to the throttle body), should have no cracks or holes.

The IAC valve plays an important role in cold start drivability. Make sure that the valve and seat are clean and free of debris.

Make sure that the throttle plate is clean and free of carbon coking.

Check EGR valve position, It should be closed at idle. If it is open, it creates a vacuum leak.

Low Fuel Pressure

Make sure that the fuel tank has good, clean fuel.

If fuel pressure is low, check the fuel filter for obstruction.

Engine Misfire

An ignition misfire will also create a rough idle at cold start. Misfire is a lot more likely to occur after the engine reaches normal operating temperature but I have witnessed cases in which a misfire could only be detected during cold start conditions.

Check spark plugs, spark plug boots, and ignition coils for signs of oil or water/coolant contamination.

Note: Technical service bulletins (TSB) which match the vehicle in question, as well as the code and symptoms exhibited, should help your diagnosis along

Severity Description

A rough idle, or poor idle quality under cold start conditions, could be an indicator of a more serious problem. A code P050D should be addressed at your earliest convenience and considered severe.

Reference Sources

P050D Cold Start Rough Idle, OBD-Codes.