

P002D: B CAMSHAFT PROFILE CONTROL CIRCUIT/OPEN BANK 2

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Intermediate
Repair Cost	:	\$100-\$400
Can I Still Drive?	:	Yes (Short-term only)

What Does The P002D Code Mean?

The camshaft is responsible for the valves' positions. It uses a shaft with lobes integrated in the design to a specific measurement (depending on engine manufacturer and model) to, when mechanically timed properly, precisely open and close valves at the optimal amount/speed. The crankshaft and camshaft are connected mechanically using different styles (e.g. belt, chain).

In the code description, they mention the camshaft "profile". What they are referring to here, is the shape or the roundness of the lobe. Some systems use these adjustable lobes, I am going to call it, to precisely integrate a more efficient "lobe design" at given times. These are beneficial because, at different engine speeds and loads, having a different camshaft profile can increase volumetric efficiency among other benefits depending on operator demands. It is important to note, most times it is not another physical lobe rather, manufacturers mimic a "new lobe" by using varying strategies (i.e. switchable/adjustable rocker arm components).

The letter "2" in the description is extremely valuable in this case. Not only could the camshaft be on either side, but there may be 2 shafts on each cylinder head. So it's important to clarify which camshaft you are working with before proceeding. As far as banks go, bank 1 will be the one with cylinder #1. Most times, B refers to the exhaust camshaft and A refers to the intake camshaft. This all depends on which particular engine you are working with as there are countless different designs that will alter these diagnosis procedures depending which one you own. Refer to the

manufacturer's service manual for the specifics.

The ECM (Engine Control Module) illuminates the CEL (Check Engine Light) with P002D and related codes when it detects a malfunction within the camshaft profile control circuit. P002D is set when there is an open within the bank 2 circuit.

What Are The Symptoms Of The P002D Code?

Symptoms of a P002D trouble code may include:

- Low power
- Poor driveability
- Reduced fuel economy
- Abnormal throttle response
- General reduction in efficiency
- Altered power bands

What Are The Potential Causes Of The P002D Code?

Causes for this P002D code may include:

- Lack of oil maintenance
- Incorrect oil
- Contaminated oil
- Defective oil solenoid
- Stuck valve
- Broken wire
- Electrical short (internal or mechanical)
- ECM (Engine Control Module) issue

How Can You Fix The P002D Code?

Basic Step #1

First thing you will need to do here is verify the general integrity of the oil your engine is currently using. If level is OK, check the cleanliness of the oil itself. If black or a dark color, replace the oil and filter. Also, always keep an eye on your oil schedule. This is extremely important in this case because, when your oil is not maintained properly, the oil can slowly become contaminated. This is a problem because oil that has accumulated dirt or debris can cause malfunctions in engine's hydraulic systems (i.e. camshaft profile control system). Sludge is another consequence of lack in oil maintenance, it also can cause malfunctions in different engine systems. All that said, refer to your service manual for schedules and compare with your service records. Very important!

NOTE: Always use manufacturer recommended oil viscosity. Oil that is too thick or too thin can and will cause problems down the road so assure yourself before buying any oil.

Basic Step #2

Locate the harness, wires and connectors used in the camshaft profile control circuit. You will need to find a wiring diagram to aid in wire identification. Diagrams can be found in your vehicle's specific service manual. Check all wires and harnesses for any signs of damage or wear. Connections should also be inspected at the connector. It is common for connectors to come loose due to broken tabs. Especially these connectors, because they are subject to consistent engine vibrations.

NOTE: It's a good idea to use electrical contact cleaner on the pins and connections to make connecting and removing connectors a breeze as you are working on it and for the future as well.

Severity Description

Severity is set to medium. That said, this is a general guide. Depending on your particular symptoms and faults, the severity will vary significantly. Generally speaking though, any hydraulic issue or anything to do with internal engine systems, I tend to recommend repairing the issue as soon as possible. Not really an area of the vehicle you want to neglect, so get it diagnosed and repaired, by a professional if you have to!

Reference Sources

[P002D: B Camshaft Profile Control Circuit/Open Bank 2](#), OBD-Codes.