P054C: COLD START B CAMSHAFT POSITION TIMING OVER-ADVANCED BANK 2

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Advanced
Repair Cost	:	**$150-$300**
Can I Still Drive?	:	No

What Does The P054C Code Mean?

The ECM (Engine Control Module) is an extremely able computer that manages and monitors the vehicle's engine ignition system, mechanical positioning of the rotating assemblies, fuel injection, emission systems, exhaust, transmission, among countless other systems.

Another system the ECM is required to monitor and adjust accordingly is, the variable valve timing (VVT) system. Basically, this systems allows the ECM to monitor the mechanical timing between the camshaft and the crankshaft. This increases general efficiency in the operation of the engine.

Not to mention, the fuel economy benefits. Truth is, your engine's ideal timing would adjust according to varying conditions. For this reason, they've designed the VVT system.

P054C (Cold Start B Camshaft Position Timing Over-Advanced Bank 2) is a code that alerts the operator that the ECM monitored an "overly"- advanced VVT position for camshaft timing on bank 2.

Normally due to cold start up. The failure of this VVT self-test stems from the exceeded maximum calibration of the camshaft timing or it remains in an advanced position. Bank 2 is the side of the engine that does not contain the #1 cylinder.

Note: The "B" camshaft is either the exhaust, right, or left camshaft. Left/Right and Front/Rear are

determined as though you are sitting in the driver's seat.

What Are The Symptoms Of The P054C Code?

Symptoms of a P054C diagnostic code may include:

- Poor engine performance
- Decreased fuel economy
- Possible misfire on start-up
- Cold start issues

What Are The Potential Causes Of The P054C Code?

Causes for this P054C trouble code may include:

- The crankshaft position sensor is faulty
- The camshaft position sensor is damaged
- The intake valve timing control solenoid valve is defective
- The intake valve timing intermediate lock control solenoid valve is flawed
- The signal pick-up portion of the camshaft has accumulated debris
- The timing chain is incorrectly installed
- Foreign matter contaminates the oil groove for intake valve timing control

How Can You Fix The P054C Code?

Research The Technical Service Bulletins

The first step in the troubleshooting process for any malfunction is to research the Technical Service Bulletins (TSB) for known issues with the specific vehicle.

Advanced diagnostic steps become very vehicle specific and may require the appropriate advanced equipment and knowledge to perform accurately. We include basic steps below but refer to a vehicle year/make/model/powertrain specific repair guide for specific steps for your vehicle.

Make sure that you check for any Technical Service Bulletins that could provide possible solutions for any problems since most vehicles have upgradeable software in their ECMs. If a replacement is required, it is best to use a brand new factory ECM and to program the latest software. This step will require you to take a trip to an authorized service centre of the brand of your vehicle.

NOTE: Remember that an ECM can easily be replaced when there was actually a defective engine sensor, which can be a result of an overlooked detail in the initial diagnosis.

This is why professional technicians will follow some sort of flow chart when inspecting a trouble code to prevent a misdiagnosis. It's always a good idea to refer to your specific model's service

information first

Test The Camshaft Vacuum Leaks

Having said that, it would be a good idea to test the camshaft vacuum leaks immediately as they can produce more issues down the road if left unattended. Refer to your service manual for specific diagnostic procedures and component locations.

Depending on what type of camshaft position sensor you have (e.g. Hall effect, Variable reluctant sensor, etc.), diagnostics will vary between makes and models.

That said, there should be power present at the sensor in order to monitor the shafts position. If found defective, replace the sensor, reset the codes, and test drive the vehicle.

Given the fact that “cold start” is in the description of the code, you should probably take a look at your cold start injector.

It also, may be mounted to the cylinder head and somewhat accessible. Injector harness’ are extremely susceptible to drying up and cracking, due to conditions, causing an intermittent connection. And most likely a cold start issue as well.

Be very careful when disconnecting any injector connector, during diagnosing. Like mentioned, they tend to be extremely brittle.

This article is strictly for information purposes only and the technical data and service bulletins for your specific vehicle should always take precedence.

Severity Description

The P054C code is a problem that should be immediately taken to the mechanic because it is a highly complex, not to mention, severe issue. The ECM is majorly affected with this kind of problem, which is why a technician should take a look at your vehicle if this trouble code or related ones appear.

Typically, the ECM has not detected the desired response to a few electronic commands to the VVT and a code has been set.

Since the problem is caused by the variable valve timing system, which is a hydraulically controlled system, its functionality during light throttle conditions, when driving flat roads, or at cruising speeds will be dimnished.

Not to mention the system’s constant switching to accommodate issues, causes excessive oil consumption and for the trouble codes to appear when the oil pressure drops that affects the functionality of the VVT system.

Reference Sources

Diagnostic Trouble Code (DTC) Charts and Descriptions for P054C - Page 87.