P2088: A CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW BANK 1

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Advanced
Repair Cost	:	**$300-$400**
Can I Still Drive?	:	**Yes**

What Does The P2088 Code Mean?

OBD-II diagnostic code P2088 is associated with the A camshaft position actuator control circuit on bank 1. When the Engine Control Unit (ECU) detects improper signals within the A camshaft position actuator control circuit code, P2088 will be set and the check engine light will be illuminated. Some vehicles may require multiple failure cycles before the check engine light is illuminated.

The purpose of the camshaft position actuator control circuit is to monitor variations of between the camshaft/s and the crankshaft and send a corresponding signal to the ECU. This process is accomplished with camshaft and crankshaft position sensors which convert varying degrees between the camshaft/s and the crankshaft into a voltage signal that is used by the ECU to adjust the timing and optimize the performance of the engine.

This code is defined as A Camshaft Position Actuator Control Circuit Low Bank 1 and indicates a detected low electrical condition within the A camshaft position actuator control circuit on bank 1 as mentioned earlier.

Note: The “A” camshaft is either the intake, left, or front camshaft. Conversely, the “B” camshaft is either the exhaust, right, or rear camshaft. Left/Right and Front/Rear are determined as though you are sitting in the driver’s seat. Bank 1 is the side of the engine that contains the #1 cylinder, whereas bank 2 is the opposite bank. If the engine is an inline or straight design, there is only one

bank.

What Are The Symptoms Of The P2088 Code?

Symptoms of a P2088 trouble code may include:

- Rough engine idle
- Decreased oil pressure
- Engine may misfire
- Poor engine performance
- Increased fuel consumption
- Change oil or service soon light is illuminated
- Check engine light illuminated

What Are The Potential Causes Of The P2088 Code?

Causes for this P2088 code may include:

- Worn timing belt or chain
- Defective camshaft variable timing solenoid
- Defective variable valve timing actuator
- Engine oil level is too low
- Blown fuse or fuse-able link (if applicable)
- Misalignment of timing components
- Corroded or damaged connector
- Faulty or damaged wiring
- Faulty ECU

How Can You Fix The P2088 Code?

The first step in the troubleshooting process for any malfunction is to research the Technical Service Bulletins (TSB's) for the specific vehicle by year, model and engine combination. In some circumstances this can save a lot of time in the long run by pointing you in the right direction.

The second step is to check the oil level and the condition of the oil. The proper oil pressure plays a key role in the function of this circuit. Then locate all of the components within this circuit and perform a thorough visual inspection to check the associated wiring for obvious defects such as scraping, rubbing, bare wires, or burn spots. Next is to check the connectors for security, corrosion and damaged pins. This process must include all associated sensors, components and the ECU.

Advanced Steps

The advanced steps become very vehicle specific and require the appropriate advanced equipment

to perform accurately. These procedures require a digital multi meter and the specific technical references for the vehicle. Other ideal tools for this situation are a timing light and an oil pressure gauge. Voltage requirements will vary based on the specific year and model of the vehicle.

Timing Checks

The timing must be checked using the appropriate test equipment and the settings must be precise for the engine to operate correctly. An incorrect timing reading is an indication that essential timing components such as the belt, chain or gears may be worn or damaged. If this code is exhibited immediately after a timing belt or chain replacement, then you can suspect misalignment of timing components as the possible cause.

Voltage Checks

The camshaft and crankshaft sensors are typically supplied with a voltage reference of approximately 5-volts from the ECU.

If this process identifies the absence of a power source or ground, continuity testing may be required to check the integrity of the wiring, connectors and other components. Continuity tests should always be performed with the power removed from the circuit and the normal readings for wiring and connections should be 0 ohms of resistance. Resistance or no continuity is an indication of faulty wiring that is open or shorted and must be repaired or replaced.

Severity Description

The severity of this code can vary tremendously from just an illuminated check engine light on a vehicle that starts and runs to an automobile that will idle rough or not start at all. The code can be serious depending on what symptoms are present. If the code is caused by a failed timing chain or belt the result can be internal engine damage.

Reference Sources

Diagnostic Trouble Code (DTC) Charts and Descriptions for P2088 - Page 133.