

P033A: KNOCK SENSOR 4 CIRCUIT MALFUNCTION (BANK 2)

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	\$150-\$500
Can I Still Drive?	:	No

What Does The P033A Code Mean?

A P033A trouble code means that the powertrain control module (PCM) has detected an unexpected sensor reading from the knock sensor #4 on bank 2. Bank 2 is always the side of the engine that does not contain cylinder #1. Refer to a vehicle specific repair source to determine which sensor is knock sensor #4.

Typically threaded directly into the engine block, the knock sensor is a piezoelectric sensor. The location of the sensors in a multi-sensor system may vary between manufacturers but most are in the sides of the block (between water jacket freeze plugs). Knock sensors that are in the sides of the engine block are often threaded directly into engine coolant passages. When the engine is warm and the engine cooling system is under pressure, removal of these sensors could result in severe burns from hot coolant. Before removing a knock sensor, allow the engine to cool and always dispose of coolant properly.

A piezoelectric sensing crystal is at the heart of the knock sensor. When shaken or vibrated, the piezoelectric crystal produces a small amount of voltage. Since the knock sensor control circuit is normally a one-wire ground circuit, the voltage generated by the vibration is recognized by the PCM as engine noise or vibration. The severity of the vibration encountered by the piezoelectric crystal (inside the knock sensor) determines the level of voltage produced in the circuit.

If the PCM detects a degree of knock sensor voltage indicative of a spark detonation; it may retard

ignition timing and no knock sensor control code may be stored. If the PCM detects a level of knock sensor voltage that indicates a more severe engine noise (such as a connecting rod contacting the inside of the engine block), it may discontinue fuel delivery and ignition spark to the affected cylinder and a knock sensor code will be stored.

What Are The Symptoms Of The P033A Code?

Symptoms of this code may include:

- Hesitation when accelerating
- Below normal engine performance
- Abnormal noises from the engine area
- Increased fuel consumption

What Are The Potential Causes Of The P033A Code?

Potential causes for this code to set are:

- Ignition misfire
- Faulty knock sensor
- Internal engine problem
- Contaminated or subpar fuel used
- Defective knock sensor control wiring and/or connectors
- Bad PCM or a PCM programming error

How Can You Fix The P033A Code?

To diagnose a code P033A, a diagnostic scanner, a digital volt/ohmmeter (DVOM), and a reliable vehicle specific repair resource will be necessary. If the engine sounds like it is knocking, or excessively noisy, address that issue before attempting a diagnosis for any knock sensor codes.

Check for technical service bulletins (TSBs) that may apply to your year/make/model. If the issue is a known issue there may exist a bulletin to help with diagnosis and repair specific to your exact problem. That can save you time and money.

Start with a visual inspection of all system related wiring harnesses and connectors. Look for corroded, burnt, or otherwise damaged wiring and connectors that may create an open or shorted circuit. Knock sensors are often in the lower part of the engine block. This makes them susceptible to damage when heavy parts (like starters and engine mounts) are replaced. System connectors, wiring, and fragile knock sensors are frequently broken during repairs in the vicinity.

Connect the OBD-II scanner to the vehicle diagnostic connector and retrieve all stored diagnostic codes and freeze frame data. Write this information down for use in the diagnostic process. Clear

the codes and test drive the vehicle to see if any are reset.

If the P033A is reset, start the engine and use the scanner to observe knock sensor data. If the scanner indicates that knock sensor voltage is not within manufacturer's specifications, use the DVOM to test live data at the knock sensor connector. If the signal at the connector is within specs, suspect a wiring issue between the sensor and the PCM.

If voltage at the knock sensor connector is not within specifications, suspect a defective knock sensor. If replacement of the sensor is the next step, be sure to ensure you don't come in contact with hot coolant. Wait for the engine to cool before removing the old sensor.

Severity Description

A stored code P033A should be considered severe because it could indicate internal engine failure.

Reference Sources

[P033A: Knock Sensor 4 Circuit \(Bank 2\)](#), OBD-Codes.