P0324: KNOCK CONTROL SYSTEM ERROR

OVERVIEW

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

What Does The P0324 Code Mean?

A stored code P0324 means that the powertrain control module (PCM) has detected a malfunction in the knock sensor control system.

The knock sensor control system typically consists of the knock sensor connector, wiring, and the PCM. The knock sensoris a piezoelectric sensor that is usually threaded directly into the engine block. The location of the sensor varies between manufacturers but most are either in the sides of the block (between water jacket freeze plugs) or underneath the intake manifold. Use caution when removing knock sensors that are in the sides of the engine block as they are often threaded directly into engine coolant passages.

Removal of these sensors, when the engine is warm and the engine cooling system is under pressure, could result in being burned by hot coolant. Before removing the knock sensor, allow the engine to cool sufficiently and drain the coolant into a suitable container for lawful disposal.

The key component of the knock sensor is a piezoelectric sensing crystal. When shaken, or vibrated in this case, 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 inadvertent vibration is recognized by the PCM as engine knock or ping. The level of voltage produced is dependent on the severity of the vibration encountered by the piezoelectric crystal inside the knock sensor.

Knock sensor control systems are usually arranged with a knock sensor for each engine bank but some manufacturers use as many as one knock sensor per cylinder. Consult a reliable vehicle information source for the configuration of the knock sensor control system for the vehicle in question.

If the PCM detects a level of knock sensor voltage that indicates a spark detonation; it could retard ignition timing to prevent engine damage and no knock sensor control code may be stored (unless it is very severe). If the PCM detects a level of knock sensor voltage that is indicative of 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.

There is almost always a very small amount of voltage produced by the knock sensor when the engine is running. This is because no matter how smooth an engine runs, a slight amount of vibration is inevitable. If the PCM detects an unexpected signal from the knock sensor, like battery voltage, complete battery ground, or pulsing voltage, a code P0324 will be stored and a MIL may be illuminated.

Related knock sensor / circuit trouble codes include P0325, P0326, P0327, P0328, P0329, P0330, P0331, P0332, P0333, and P0334.

What Are The Symptoms Of The P0324 Code?

Symptoms of this code may include:

- Diminished engine performance
- Hesitation upon acceleration
- Loud noises from the engine area
- Decreased fuel efficiency

What Are The Potential Causes Of The P0324 Code?

Potential causes for this code to set are:

- Defective knock sensor/s
- Internal engine malfunction
- Ignition misfire/s
- Contaminated or substandard fuel
- Defective knock sensor control wiring and/or connectors
- Bad PCM or a PCM programing error

How Can You Fix The P0324 Code?

A diagnostic scanner, a digital volt/ohmmeter, and a reliable vehicle information source will be necessary to diagnose a code P0324.

If the engine is knocking, or excessively noisy in any way, address that before attempting a diagnosis for any knock sensor codes.

Consult your vehicle information source for technical service bulletins (TSB) which match the symptom/s exhibited and the code/s stored in the vehicle in question. If the problem that you are having is a common one; the correct TSB may aid in a successful diagnosis. Follow the diagnostic steps found therein and you will likely arrive at a successful diagnosis.

Begin with a visual inspection of all system related wiring harnesses and connectors. Look for burnt, corroded, or otherwise broken wiring and connectors that may create an open circuit and repair them. Some vehicle manufacturers place the knock sensor in the lower part of the engine block. This may make it susceptible to damage when heavy parts (like starters and engine mounts) are replaced. System connectors, wiring, and fragile knock sensors are frequently broken when repairs are made in the vicinity. If no discrepancies are observed, continue to the next step.

Connect the scanner to the vehicle diagnostic connector and retrieve all stored codes and freeze frame data. Record this information for use in the ensuing diagnostic process. Clear the codes and test drive the vehicle to see if the code is reset.

If the code is reset, start the engine and use the scanner to observe knock sensor data. If 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 problem between the sensor and the PCM. If voltage at the knock sensor connector is not within specifications, suspect a defective knock sensor.

Additional diagnostic notes:

- Knock sensor controller codes are usually confined to wiring, connectors, and controllers
- Beware of knock sensors that are threaded into engine coolant passages

Severity Description

A stored code P0324 could be a sign of severe internal engine failure. For this cause, it must be addressed with some degree of urgency.

Reference Sources

P0324: Knock Control System Error, OBD-Codes.