

P0149: FUEL TIMING ERROR

OVERVIEW

Severity	:	<div><div>High</div></div>
DIY Difficulty Level	:	<div><div>Intermediate</div></div>
Repair Cost	:	\$90-\$500
Can I Still Drive?	:	Yes (Short-term only)

What Does The P0149 Code Mean?

If your OBD II equipped vehicle has presented a code P0149, it means that the powertrain control module (PCM) has detected a malfunction in the timing sequence of the fuel pump. I have never seen this code exhibited in a vehicle that was not propelled by a diesel engine.

Most of today's clean burning, direct injection, diesel engines utilize a mechanical fuel pump that is driven directly off the crankshaft. In order to overcome the high compression ratios associated with diesel engines, this type of pump is timed in sequence with the position of the crankshaft to provide a high pressure injection pulse (up to 44,000 psi) at a precise point and interval, for each cylinder of the engine.

The fuel pump is typically small enough to fit underneath the intake manifold and has the low pressure pump, the high pressure pump, the fuel timing solenoid, and the fuel pressure control actuator integrated within. There will likely be a fuel pressure sensor nearby as well.

The fuel pump is pulsed using a toothed sprocket which is aligned with a toothed sprocket on the front of the crankshaft. Timing of the two sprockets (using a steel chain) is critical to fuel pump timing and fuel delivery. If the two sprockets are misaligned by even a single tooth, a code P0149 may be stored.

The PCM uses inputs related to engine RPM and engine load to calculate fuel timing advance. The electronic fuel timing solenoid is controlled by the PCM and allows direct injection timing to be

advanced according to engine speed and load.

The electronic fuel pressure regulator is also controlled by the PCM and is responsible for controlling fuel pump pressure. The fuel pressure sensor monitors fuel pressure, with the engine running, and provides the PCM with an actual reading so that it can continue to plot fuel pump timing and monitor fuel pressure requirements.

If the PCM detects a fuel pressure input signal, indicating that there is a problem with fuel pump timing, a code P0149 will be stored and a malfunction indicator lamp may be illuminated.

NOTE: Please use extreme caution when attempting to service the high pressure fuel system. This type of system should be serviced only by trained personnel. Consult a reliable vehicle information source (such as All Data DIY) for more precautions.

What Are The Symptoms Of The P0149 Code?

Symptoms of a P0149 code may include:

- No start condition
- Diminished engine performance
- Additional fuel system codes
- Intense fuel odor
- The vehicle may enter limp-in mode
- Excessive smoke from exhaust

What Are The Potential Causes Of The P0149 Code?

Potential causes for this code to set are:

- Defective fuel timing solenoid
- Misaligned timing marks on mechanical sprockets
- Bad fuel pressure sensor
- Malfunctioning fuel pressure control actuator
- Fuel system leaks
- Faulty PCM or a PCM programming error

How Can You Fix The P0149 Code?

A good starting point is always to check for technical service bulletins (TSB) for your particular vehicle. Your issue may be a known issue with a known fix put out by the manufacturer and can save you time and money during diagnosis.

Although a stored code P0149 may be caused by either a mechanical failure or an electrical issue, mechanical failure is not likely unless recent related repairs have been performed. If the engine

and/or the high pressure fuel pump have recently been re-timed, definitely suspect that a misalignment of the corresponding timing marks has taken place and caused this code to be stored.

Barring a mechanical glitch, you will need a diagnostic scanner, a digital volt/ohmmeter (DVOM), and a vehicle information source like All Data DIY to diagnose a code P0149.

Retrieve all stored codes and freeze frame data by connecting the scanner to the vehicle diagnostic connector. Write this information down just in case you need it later, then clear the codes and proceed.

If there is an intense fuel odor, suspect that a fuel leak is at the root of your problem. Fuel system components which have been recently replaced should be carefully inspected if a fuel leak is detected. Once you have performed a visual inspection of all fuel delivery lines and components, repair leaks as necessary and retest the system to see if the code is reset.

Test the fuel pressure sensor, fuel control actuator, and the fuel timing solenoid as recommended in your vehicle information source, using the DVOM. Replace components which fail to meet manufacturer's recommended specifications and retest the system.

If you continue to have issues, use your vehicle information source to search technical service bulletins (TSB) for one that matches your specific vehicle, symptoms, and code/s. The information contained therein may help you to pinpoint the malfunction and rectify the situation.

Additional diagnostic notes:

- Suspect mechanical timing issues only if recent repairs have been executed
- Caution: Diesel fuel at 40,000 psi can penetrate your bloodstream and may be fatal

Severity Description

Assuming that the vehicle will start, inconsistencies in fuel pump timing can result in engine damage. A stored code P0149 should be considered severe.

Reference Sources

[P0149: Fuel Timing Error](#), OBD-Codes.