

P0429: CATALYST HEATER CONTROL CIRCUIT (BANK 1)

OVERVIEW

Severity	:	<div>High</div>
DIY Difficulty Level	:	<div>Intermediate</div>
Repair Cost	:	\$250-\$350
Can I Still Drive?	:	Yes

What Does The P0429 Code Mean?

If you are faced with diagnosing a stored a code P0429, you need to know it means that the powertrain control module (PCM) has detected a problem with the catalyst heater control circuit for engine bank 1. Bank one specifies that the malfunction has occurred in the catalytic converter for the bank of the engine that contains the #1 cylinder. Conditions which may cause this code to be stored may be electrical or mechanical.

The primary function of the heated catalytic converter is to reduce exhaust emissions from diesel and gasoline fueled engines. It is a dense filtration element of ceramic fibers and precious metals enclosed in a steel housing and positioned in the exhaust pipe. Harmful nitrogen oxides (N₂O), carbon monoxide, and unburned hydrocarbons are all converted to harmless ions of nitrogen, oxygen, carbon dioxide, and water after flowing through the heated catalytic converter. This is accomplished using the filtration element and the extreme heat of the engine exhaust.

In the case of the heated catalytic converter, the filtration element is further heated with a PCM controlled injection of some type of flammable diesel exhaust fluid. Catalytic converter temperatures must reach at least 800-degrees Fahrenheit and heated catalyst units reach as high as 1,200-degrees Fahrenheit.

Catalytic converter efficiency is monitored using upstream and downstream oxygen (O₂) sensors and exhaust temperature sensors.

If the heated catalyst is not functioning properly, variations in oxygen concentration between inlet exhaust and outlet exhaust will not be significant. If upstream and downstream O2 sensors reflect a similar exhaust oxygen concentration, or if an electrical malfunction is detected in the heated catalyst control circuit, a code P0429 will be stored and a malfunction indicator lamp may be illuminated.

Other bank 1 catalyst efficiency trouble codes include:

- [P0420 Catalyst System Efficiency Below Threshold \(Bank 1\)](#)
- [P0421 Warm Up Catalyst Efficiency Below Threshold \(Bank 1\)](#)
- [P0422 Main Catalyst Efficiency Below Threshold \(Bank 1\)](#)
- [P0423 Heated Catalyst Efficiency Below Threshold \(Bank 1\)](#)
- [P0424 Heated Catalyst Temperature Below Threshold \(Bank 1\)](#)
- [P0425, P0426, P0427, P0428 Catalyst Temperature Sensor Circuit Codes](#)

What Are The Symptoms Of The P0429 Code?

Symptoms of this code may include:

- Decreased fuel efficiency
- A lack of general engine performance
- Excessive black smoke from exhaust
- Other related diagnostic trouble codes
- MIL (malfunction indicator lamp) illumination

What Are The Potential Causes Of The P0429 Code?

Potential causes for this code to set are:

- Defective exhaust temperature sensor
- Improper or insufficient diesel exhaust fluid
- Malfunctioning diesel exhaust fluid injection system
- Burnt, chafed, broken, or disconnected wiring and/or connectors
- Faulty O2 sensor/s
- Bad catalytic converter
- Engine exhaust leak

How Can You Fix The P0429 Code?

For me, a diagnostic scanner, a digital volt ohmmeter (DVOM), an infrared thermometer (with a laser pointer), and a reliable vehicle information source (such as All Data DIY) will be required when diagnosing a code P0429.

Any diesel exhaust fluid injection codes, ignition misfire codes, throttle position sensor codes, manifold air pressure codes, and mass air flow sensor codes should be addressed before attempting to diagnose a stored code P0429. The engine must be in good running order before diagnosing this code.

I usually begin my diagnosis with a visual inspection of system wiring harnesses and connectors. I would focus my attention on harnesses that are routed near hot exhaust pipes and manifolds, as well as those that are routed near sharp edges like the ones found on exhaust shields.

Next, I would connect the scanner to the vehicle diagnostic port and retrieve all trouble codes and freeze frame data. I write this information down because it may come in handy if this proves to be an intermittent code. Clear the codes and test drive the vehicle to see if the P0429 is reset.

If applicable, make sure that the diesel exhaust fluid reservoir is filled with the correct fluid and that the injection system is functioning properly. If the diesel exhaust fluid injection system fails, the heated catalyst will not function efficiently and a code P0429 will be stored. If the diesel exhaust fluid injection system is not working properly, check system fuses and relays to make sure that the controller is operable.

If the diesel fluid injection system is functioning as designed, use the infrared thermometer to test input and output temps of the catalytic converter. Use the vehicle information source and compare the actual temperature data with manufacturer's specifications. If the output temperature is not within specifications, suspect a defective catalytic converter.

If the output temperature of the heated catalyst meets specifications, use the DVOM to test the exhaust temperature sensor using the specifications found in the vehicle information source. Replace the exhaust temperature sensor if it fails to comply with manufacturer's specifications.

Test O2 sensors following manufacturer's recommendations.

Additional diagnostic notes:

- The code P0429 is frequently stored as a result of incorrect or insufficient diesel exhaust fluid
- Disconnect related controllers before probing circuits with the DVOM

Severity Description

Since the catalyst heater is crucial for exhaust emission reduction, a code P0429 should be considered severe.

Reference Sources

[P0429 Catalyst Heater Control Circuit \(Bank 1\)](#), OBD-Codes.