

P0171: SYSTEM TOO LEAN (BANK 1)

OVERVIEW

Severity	:	<div><div>Medium</div></div>
DIY Difficulty Level	:	<div><div>Intermediate</div></div>
Repair Cost	:	\$80-\$150
Can I Still Drive?	:	Yes (Short-term only)

What Does The P0171 Code Mean?

Basically this means that an oxygen sensor in bank 1 has detected a lean condition (too much oxygen in the exhaust). On V6/V8/V10 engines, Bank 1 is the side of the engine that has cylinder #1. The P0171 is one of the more common trouble codes.

This code is triggered by the first downstream (front) O2 sensor. The sensor provides a reading of the air:fuel ratio leaving the engine's cylinders, and the vehicles powertrain/engine control module (PCM/ECM) uses that reading and adjusts to keep the engine running at that optimum ratio of 14.7:1. If something is not right and the PCM cannot maintain the 14.7:1 ratio, but rather there is too much air, it triggers this code.

You'll want to also read our article on short and long term fuel trims to help understand the operation of the engine.

Note: This DTC is very similar to [P0174](#), and in fact your vehicle may show both codes at the same time.

What Are The Symptoms Of The P0171 Code?

You will more than likely not notice any drivability problems, although there may be symptoms such as:

- a lack of power

- detonation (spark knock)
- rough idle
- hesitation/surge on acceleration.

What Are The Potential Causes Of The P0171 Code?

A code P0171 may mean that one or more of the following has happened:

- The MAF (Mass Air Flow) Sensor is dirty or faulty. **Note:** The use of “oiled” air filters may cause the MAF to become dirty if the filter is over-oiled. There is also an issue with some vehicles where the MAF sensors leak the silicone potting material used to protect the circuitry.
- There could be a vacuum leak downstream of the MAF sensor
- Possible cracked vacuum or PCV line/connection
- Faulty or stuck open PCV valve
- Failed or faulty oxygen sensor (bank 1, sensor 1)
- Sticking/plugged or failed fuel injector
- Low fuel pressure (possible plugged/dirty fuel filter!)
- Exhaust leak between engine and first oxygen sensor

How Can You Fix The P0171 Code?

A lot of times, cleaning the MAF sensor and finding/fixing vacuum leaks fix the problem. If you're on a tight budget, start there, but that may not be the fix for certain. So, possible solutions include:

- Clean the MAF sensor. Consult your service manual for it's location if you need help. I find it's best to take it off and spray it with electronics cleaner or brake cleaner. Make sure you are careful not to damage the MAF sensor, and make sure it's dry before reinstalling
- Inspect all vacuum and PCV hoses, replace/repair as required
- Inspect all hoses and connections in the air intake system
- Inspect and/or test the intake manifold gaskets for leakage
- Check for a dirty fuel filter and proper fuel pressure
- Ideally you'll want to monitor short and long term fuel trims using an advanced scan tool
- If you have access, you may want to run a smoke test

Reference Sources

- [Technical Service Bulletin for P0171](#) - GM
- [Diagnostic Trouble Code \(DTC\) Charts and Descriptions for P0171](#) - Page 42.