P2190: SYSTEM TOO RICH OFF IDLE BANK 2

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$100-$300**
Can I Still Drive?	:	**Yes**

What Does The P2190 Code Mean?

This code is mostly concerned about the value provided by the air/fuel ratio sensor, more commonly called an oxygen sensor (located in the exhaust) which helps the vehicle's PCM (powertrain control module) control the amount of fuel being injected into the engine. Specifically, the PCM is detecting a rich condition which means too much fuel in the air/fuel ratio. This code is set for Bank 2, which is the bank of cylinders that does not include cylinder number 1. This can be a mechanical or an electrical circuit fault, depending upon vehicle manufacturer and fuel system.

Troubleshooting steps may vary depending upon manufacturer, type of fuel system, type of mass airflow sensor (MAF) and wire colors and type of air/fuel ratio sensor/oxygen sensor (AFR/O2) and wire colors.

What Are The Symptoms Of The P2190 Code?

Symptoms of a P2190 engine code may include:

- Malfunction Indicator Lamp (MIL) illuminated
- Lack of power
- Occasional misfire
- Poor fuel economy

What Are The Potential Causes Of The P2190 Code?

Potential causes for this code to set are:

- Faulty air/fuel ratio sensor/oxygen sensor (AFR/O2)
- Faulty mass airflow sensor (MAF)
- Rarely – faulty Powertrain Control Module (PCM)

How Can You Fix The P2190 Code?

Check for technical service bulletins (TSB)

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.

First, note if there are any other diagnostic fault codes. If any of them are fuel/fuel system related, diagnose them first. Misdiagnosis has been known to occur if a technician diagnoses this code before any fuel related system codes have been thoroughly diagnosed and dismissed.

Locate both the air/fuel ratio sensor/oxygen sensor

Next, locate both the air/fuel ratio sensor/oxygen sensor and the mass airflow sensor on your particular vehicle.

Once located, visually inspect the connectors and wiring. Look for chafing, rubbing, bare wires, burn spots or melted plastic. Pull the connectors apart and carefully inspect the terminals (the metal parts) inside the connectors.

See if they look corroded, burnt or possibly green in color versus the normal metal color you are probably used to seeing. You can get some Electrical Contact cleaner at any parts store if cleaning of the terminals is needed. If this is not possible, find some 91% rubbing alcohol and a light plastic bristle brush to clean them with. Afterwards let them air dry, get some dielectric silicone compound (same stuff they use for light bulb sockets and spark plug wires) and put some where the terminals come into contact.

If you have a scan tool, clear the diagnostic trouble codes from memory, and see if this code returns. If it does not, then the connections were most likely your problem.

Test the MAF sensor voltage signal to the PCM

If the code does return, we will need to test the MAF sensor voltage signal to the PCM. Monitor MAF sensor voltage on your scan tool. If a scan tool is not available, then test the signal coming from the

MAF sensor with a digital volt ohm meter (DVOM). With the sensor connected, the red voltmeter lead should be attached to the MAF sensor signal wire and the black voltmeter lead connected to ground. Start the engine and monitor the MAF sensor input.

As engine RPM is increased, the MAF sensor signal should increase. Check the manufacturer's specifications, as there may be a chart informing you of what the voltage should be at a given RPM. If it fails this test, replace the MAF sensor and retest.

Monitor the air/fuel ratio sensor/oxygen sensor (AFR/O2)

If the prior tests have passed and the code is still present, monitor the air/fuel ratio sensor/oxygen sensor (AFR/O2). If it continually indicates that the engine is running rich, locate any and all possibilities that could cause a rich running engine. These include:

- Fuel system, including fuel pressure/fuel pressure regulator.
- Fuel pressure sensor
- Fuel injectors
- O2 sensor after the catalytic converter
- EVAP system, to include the canister purge regulator valve.
- If the bank 2 AFR/O2 sensor indicates the engine is running normal or even lean, a PCM may be suspected as long as all other issues have been eliminated.

Again, it cannot be stressed enough that all other codes must be diagnosed prior to this one, as issues that cause other codes to set can also cause this one to set as well.

Reference Sources

P2190 System Too Rich Off Idle Bank 2, OBD-Codes.