

GENERIC · POWERTRAIN

P2190

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2190

System Too Rich at Idle (Bank 2)

P2190 means the engine computer has detected an excessively rich air-fuel mixture on bank 2 while the engine is idling, based on oxygen sensor feedback showing more fuel than the computer commanded. Bank 2 is the side of the engine that does not contain cylinder number one, so the fault is isolated to that cylinder bank rather than the whole engine.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Professional	Fuel and air metering

Symptoms you may notice

- Illuminated check engine light, often with no other symptoms besides the warning light
- Rough or unstable idle, sometimes with a slight shake felt through the steering wheel or seat
- A strong fuel or gasoline smell from the exhaust, especially noticeable when standing behind the vehicle at idle
- Black, sooty exhaust smoke or black deposits on the rear bumper above the tailpipe
- Noticeably worse fuel economy than usual, particularly during city driving and extended idling
- Occasional engine stumble or hesitation when pulling away from a stop

Common causes, most likely first

- 1 A leaking or dripping fuel injector on bank 2 that delivers excess fuel at idle
- 2 A faulty or contaminated oxygen sensor on bank 2 that reports a false rich condition
- 3 A stuck-open or leaking evaporative emissions purge valve that feeds fuel vapor into the intake at idle
- 4 High fuel pressure caused by a restricted fuel return line or a failing fuel pressure regulator
- 5 A dirty or failing mass airflow sensor that over-reports airflow, causing the computer to add too much fuel
- 6 An intake air leak after the mass airflow sensor on bank 2 that skews the mixture calculation
- 7 A mechanical fault such as low compression or a misfire on bank 2 that leaves unburned fuel in the exhaust



How to diagnose and fix it

- 1 Connect a scan tool and record freeze-frame data plus fuel trim values for both banks at idle to confirm the rich condition is isolated to bank 2
- 2 Inspect the bank 2 oxygen sensor signal with a graphing scan tool or oscilloscope to verify it is switching correctly and not stuck rich
- 3 Check fuel pressure with a gauge and compare it to the manufacturer's specification, looking for pressure that stays high after the engine is shut off
- 4 Test the evaporative emissions purge valve for sticking open by commanding it closed with a scan tool and watching fuel trims at idle
- 5 Clean or test the mass airflow sensor and inspect the intake tract on bank 2 for leaks or loose clamps
- 6 Perform an injector balance test or remove bank 2 injectors for bench testing to identify a leaking or dripping injector
- 7 Run a compression test and cylinder balance test on bank 2 to rule out a mechanical misfire before replacing sensors or injectors

Why bank 2 runs rich at idle only

- A purge valve that sticks open is one of the most commonly missed causes because it feeds fuel vapor into the intake only at idle, mimicking a leaking injector perfectly.
- A lazy or contaminated oxygen sensor on bank 2 can report a rich condition that does not exist, so always verify the sensor signal against fuel trim and exhaust gas readings before replacing parts.
- Fuel pressure that remains high after the engine is shut off points to a leaking injector or a failing fuel pressure regulator rather than a sensor problem.
- An exhaust leak upstream of the bank 2 oxygen sensor can draw in outside air and skew the sensor reading, so inspect the exhaust manifold and downpipe for cracks or loose fittings.
- This code sets only at idle, so a vehicle that runs fine at speed can still have a leaking injector or purge valve that shows up only when manifold vacuum is highest.

Can I keep driving with P2190?

You can usually drive the vehicle short distances to a repair shop, but avoid prolonged idling and heavy acceleration because excess fuel can overheat and damage the catalytic converter. Have the fault diagnosed promptly, especially if you notice black smoke or a strong fuel smell.



Tools that help

- OBD-II scan tool with live data and graphing capability
- Fuel pressure gauge
- Digital multimeter
- Oscilloscope for oxygen sensor signal analysis
- Compression tester
- Injector balance tester or bench testing equipment

Reading P2190

P	Powertrain: engine, transmission and emissions.
2	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
1	Fuel and air metering.
90	The exact fault within that area.

Often seen with

P0172 System Too Rich (Bank 1) · **P0175** System Too Rich (Bank 2) · **P0302** Cylinder 2 Misfire Detected · **P2189** System Too Lean at Idle (Bank 2) · **P2191** System Too Lean at Higher Load (Bank 1)

See it working

Watch the animated explainer [How Coil-on-Plug Ignition Works: Coil and Spark Plug](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2190/>

