

BMW · POWERTRAIN

P1191

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1191 · BMW

Pre-Catalyst Fuel Trim System Bank 2

P1191 on BMW vehicles indicates that the engine control module (DME) has detected an out-of-range fuel trim correction for the pre-catalyst oxygen sensor on bank 2, meaning the air-fuel mixture on that cylinder bank is not being controlled as expected. The DME monitors short-term and long-term fuel trim values and sets this code when the correction exceeds a calibrated threshold, typically indicating a lean or rich condition that the system cannot compensate for.

SYSTEM

Powertrain

CODE TYPE

BMW specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Rough idle or uneven running, especially when the engine is cold.
- Hesitation or stumble during acceleration.
- Reduced fuel economy compared to normal.
- Occasional misfire or surging at steady speeds.
- Failed emissions test due to high or low carbon monoxide or hydrocarbons.

Common causes, most likely first

- 1 Vacuum leak on bank 2, such as a cracked intake boot, failed intake manifold gasket, or deteriorated vacuum hose.
- 2 Faulty pre-catalyst oxygen sensor on bank 2, causing inaccurate feedback to the DME.
- 3 Leaking or clogged fuel injector on bank 2, leading to imbalanced fuel delivery.
- 4 Exhaust leak upstream of the pre-catalyst oxygen sensor on bank 2, allowing outside air to skew readings.
- 5 Low fuel pressure or volume, affecting both banks but often more pronounced on bank 2 due to fuel rail design.
- 6 Contaminated mass air flow (MAF) sensor, causing incorrect load calculation and fuel trim skew.
- 7 Worn spark plugs or ignition coils on bank 2, causing incomplete combustion and false lean readings.



How to diagnose and fix it

- 1 Perform a visual inspection of all intake and vacuum lines on bank 2 for cracks, loose clamps, or disconnected hoses.
- 2 Use a scan tool to read live fuel trim data for bank 2 and compare with bank 1 to confirm the imbalance.
- 3 Check for exhaust leaks before the pre-catalyst oxygen sensor on bank 2 by listening for ticking or using a smoke machine.
- 4 Test the pre-catalyst oxygen sensor on bank 2 for proper switching and response using a graphing scan tool or oscilloscope.
- 5 Measure fuel pressure and volume to rule out a weak fuel pump or clogged fuel filter.
- 6 Inspect and clean the mass air flow sensor, and verify its reading against expected values.
- 7 Perform a cylinder balance test and inspect spark plugs and ignition coils on bank 2 for wear or failure.

Bank 2 fuel trim faults often misdiagnosed

- A vacuum leak at the intake manifold gasket on bank 2 can be intermittent and only set the code under certain temperature or load conditions, so a cold-start smoke test is more reliable than a visual inspection alone.
- The pre-catalyst oxygen sensor on bank 2 may be slow to respond without completely failing, and a scan tool that only shows a switching pattern may not reveal a lazy sensor; graphing the response time is essential.
- Fuel trim codes for bank 2 can be triggered by a failing bank 1 sensor if the DME uses a shared reference, so always compare both banks before replacing parts.
- A clogged catalytic converter on bank 2 can cause increased backpressure and skew the pre-catalyst oxygen sensor reading, leading to a fuel trim code even though the root cause is exhaust restriction.
- After repairs, the DME may need to relearn fuel trim adaptations; clearing the code and performing a drive cycle is necessary before confirming the fix.

Can I keep driving with P1191?

You can drive the vehicle with P1191 set, but avoid aggressive acceleration or heavy loads until the fault is diagnosed, as prolonged driving with incorrect fuel trim can damage the catalytic converter or cause misfires. If the check engine light begins flashing or you notice severe power loss, stop driving and seek professional diagnosis immediately.

Tools that help

- OBD-II scan tool with live data and graphing capability
- Smoke machine for intake leak detection
- Fuel pressure gauge
- Digital multimeter
- Oscilloscope for oxygen sensor testing
- Basic hand tools (screwdrivers, wrenches, socket set)



Reading P1191

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (BMW): its meaning depends on the make.
- 1** Fuel and air metering.
- 91** The exact fault within that area.

Often seen with

P1188 Linear Oxygen Sensor Compensation Resistor Short To Ground · **P1189** Linear Oxygen Sensor Compensation Resistor Short To B+ · **P1189** Pump Speed Signal · **P1188** O2 Sensor Heater Circuit Resistance · **P1189** O2 Sensor Heater Circuit Low Resistance Fault 1 · **P1188** Engine Oil Pressure Sensor Circuit High Voltage · **P1189** Engine Oil Pressure Switch Circuit · **P1188** Calibration Memory Fault · **P1189** Pump Speed Signal Fault · **P1188** EOT Sensor Circuit High Voltage · **P1189** Engine Oil Pressure Switch Circuit · **P1188** Fuel Control Bank 1 Sensor 1 · **P1189** Fuel Control Bank 2 Sensor 1 · **P0171** System Too Lean (Bank 1) · **P0174** System Too Lean (Bank 2) · **P0300** Random/Multiple Cylinder Misfire Detected

See it working

Watch the animated explainer [Master the Four-Stroke Engine Cycle](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/bmw-p1191/>

