

BMW · POWERTRAIN

P1164

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1164 · BMW

Fuel Trim Adaptation Additive Per Ignition Bank 2 Low

P1164 on BMW vehicles indicates that the engine control module has detected an excessively low additive fuel trim adaptation value for bank 2 during ignition-on or idle conditions, meaning the computer is adding maximum fuel to compensate for a lean condition that it cannot correct within normal limits. The additive adaptation specifically affects low-load, low-rpm operation, so the fault points to a vacuum leak or fuel delivery issue that is most pronounced at idle.

SYSTEM

Powertrain

CODE TYPE

BMW specific

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Fuel and air metering

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough or unstable idle, especially when the engine is cold
- Occasional hesitation or stumble when accelerating from a stop
- Slightly elevated fuel consumption as the engine control module adds extra fuel
- In severe cases, a lean misfire code or reduced engine power may accompany the warning light

Common causes, most likely first

- 1 Vacuum leak on bank 2, such as a cracked intake boot, deteriorated vacuum hose, or leaking intake manifold gasket
- 2 Faulty or contaminated mass air flow sensor reporting less air than actually enters the engine
- 3 Leaking or stuck-open fuel injector on bank 2 causing an imbalance that the oxygen sensor interprets as lean
- 4 Weak fuel pump or restricted fuel filter reducing fuel delivery at low demand
- 5 Failed oxygen sensor on bank 2 providing a false lean signal to the engine control module
- 6 Crankcase ventilation system leak, including a torn valve cover diaphragm or failed PCV valve
- 7 Intake manifold runner control fault or sticking swirl flap causing uneven air distribution to bank 2



How to diagnose and fix it

- 1 Connect a scan tool and read live fuel trim data for both banks to confirm bank 2 additive trim is pegged high while bank 1 remains normal
- 2 Perform a visual inspection of all intake and vacuum lines on bank 2, including the intake boot, valve cover breather hoses, and intake manifold gaskets
- 3 Smoke test the intake system to pinpoint any vacuum leaks that are not visible to the eye
- 4 Clean or replace the mass air flow sensor if its reported airflow does not match expected values at idle
- 5 Check fuel pressure and delivery volume at the rail to rule out a weak pump or restricted filter
- 6 Swap the bank 2 oxygen sensor with the bank 1 sensor to see if the lean trim follows the sensor, confirming a sensor fault
- 7 If all external causes are ruled out, perform an injector balance test or remove injectors for professional cleaning and flow testing

Why bank 2 additive trim runs lean

- Additive fuel trim only affects idle and very low load, so a vacuum leak that seals itself as the engine moves under load can set P1164 without ever triggering a lean code at cruise.
- A failing crankcase ventilation diaphragm on BMW inline-six engines often leaks unmetered air into bank 2 specifically, and the leak is hidden inside the valve cover so a visual inspection misses it.
- Technicians sometimes replace the bank 2 oxygen sensor first because the code names bank 2, but a sensor that reads lean when the mixture is actually correct will also set this code and is easily misdiagnosed.
- The additive adaptation value is stored per ignition cycle, so the code may only set after several cold starts and short idle periods, which makes intermittent vacuum leaks hard to reproduce in a quick shop visit.
- A dirty or failing mass air flow sensor on BMW engines often under-reports airflow at idle, causing the engine control module to add fuel and push additive trim beyond its limit on both banks, but bank 2 may hit the threshold first.

Can I keep driving with P1164?

You can usually drive the vehicle short distances to a repair shop, but avoid prolonged idling and heavy acceleration because a persistent lean condition can overheat the catalytic converter and cause misfires. If the check engine light begins flashing or the engine runs rough, stop driving and arrange a tow.

Tools that help

- OBD-II scan tool with live fuel trim and data-stream capability
- Smoke machine for intake leak detection
- Fuel pressure gauge
- Digital multimeter for sensor and wiring checks
- Socket set and Torx bits for BMW intake and engine covers



Reading P1164

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

Often seen with

P1163 Fuel Temperature Sensor Circuit Open/Short To B+ · **P1163** HO2S11 Slow Response Bank 1 Sensor 1 · **P1163** HO2S11 Slow Response Bank 1 Sensor 1 · **P1163** HO2S Bank 2 Sensor 3 Lean System Or Low Voltage · **P1163** HO2S Bank 2 Sensor 3 Lean System Or Low Voltage · **P1163** Fuel Trim Adaptation Additive Per Ignition Bank 1 High · **P0171** System Too Lean (Bank 1) · **P0174** System Too Lean (Bank 2) · **P0300** Random/Multiple Cylinder Misfire Detected · **P0302** Cylinder 2 Misfire Detected

See it working

Watch the animated explainer [Four-Stroke Engine Cutaway: Intake to Exhaust](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/bmw-p1164/>

