

GENERIC · POWERTRAIN

P016B

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P016B

Closed Loop Air/Fuel Ratio Control At Limit - System Too Rich

P016B indicates that the powertrain control module has reached the limit of its ability to shorten fuel injector pulse width while trying to bring the air/fuel ratio back to stoichiometric, meaning the engine is running too rich and the computer can no longer compensate. The code is set when the closed-loop fuel trim correction stays pegged at its richest-lean command for a calibrated time.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Fuel and air metering

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms.
- A strong raw fuel smell from the exhaust, especially at idle or after a cold start.
- Black sooty exhaust smoke or black deposits on the rear bumper and tailpipe.
- Noticeably reduced fuel economy compared with normal driving.
- Rough idle, misfire, or engine stumble due to excessive fuel fouling the spark plugs.
- Failed emissions test with high carbon monoxide or hydrocarbon readings.

Common causes, most likely first

- 1 Leaking or stuck-open fuel injector delivering excess fuel into the cylinder.
- 2 Fuel pressure regulator failure causing abnormally high fuel rail pressure.
- 3 Faulty mass airflow sensor over-reporting incoming air, leading the computer to add too much fuel.
- 4 Contaminated or failed oxygen sensor sending a false rich signal that the computer tries to correct.
- 5 Evaporative emissions purge valve stuck open, allowing raw fuel vapor to enter the intake continuously.
- 6 Restricted engine air intake or dirty air filter reducing actual airflow while fuel delivery stays high.
- 7 Mechanical fault such as low compression or a worn camshaft lobe causing incomplete combustion and a false rich reading.



How to diagnose and fix it

- 1 Connect a scan tool and record live fuel trim data, long-term and short-term, to confirm the rich condition and see whether it affects one bank or both.
- 2 Inspect the air intake tract for restrictions, a collapsed hose, or a severely clogged air filter, and replace as needed.
- 3 Check fuel pressure with a gauge at the rail and compare it with the manufacturer's specification to rule out a failed regulator or restricted return line.
- 4 Test the evaporative emissions purge valve for sticking open by commanding it closed with a scan tool and watching fuel trims.
- 5 Perform an injector balance or leak-down test, and if one injector is suspected, remove and flow-test or replace it.
- 6 Verify oxygen sensor operation by graphing its voltage response and comparing it with a known-good sensor or a wideband reading.
- 7 Clean the mass airflow sensor with approved cleaner and recheck its reported airflow against actual engine demand before condemning it.

Rich codes often misdiagnosed as sensor faults

- A stuck-open purge valve is one of the most commonly overlooked causes of a rich code because it introduces fuel vapor that the oxygen sensor sees but the mass airflow sensor never measured.
- Technicians frequently replace oxygen sensors when the sensor is correctly reporting a genuine rich condition caused by a leaking injector or high fuel pressure.
- A dirty mass airflow sensor can skew rich without setting its own code, so airflow data must be verified against engine displacement and rpm before any parts are thrown at the problem.
- On engines with variable valve timing, a mechanically mistimed camshaft can cause incomplete combustion that reads as rich and will not be fixed by any fuel-system repair.
- Fuel trim limits are learned values, so after a repair the vehicle may need several drive cycles or a relearn procedure before the code stops returning.

Can I keep driving with P016B?

You can drive the vehicle short distances to a repair shop, but avoid sustained high-speed driving or heavy loads because excess fuel can overheat and damage the catalytic converter. If the engine is misfiring or stalling, stop driving and arrange a tow.



Tools that help

- OBD-II scan tool with live data and fuel trim graphing capability
- Fuel pressure gauge
- Vacuum gauge
- Digital multimeter
- Injector balance tester or leak-down kit
- Smoke machine for intake and evaporative leak testing

Reading P016B

P	Powertrain: engine, transmission and emissions.
0	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
1	Fuel and air metering.
6B	The exact fault within that area.

Often seen with

P0132 O2 Sensor Circuit High Voltage (Bank 1 Sensor 1) · **P0135** O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 1) · **P0172** System Too Rich (Bank 1) · **P0175** System Too Rich (Bank 2) · **P0455** EVAP System Leak Detected (Large)

See it working

Watch the animated explainer [How a Radiator Fan Relay Circuit Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p016b/>

