

GENERIC · POWERTRAIN

P2002

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2002

Particulate Trap Efficiency Below Threshold (Bank 1)

P2002 means the powertrain control module (PCM) has determined that the diesel particulate filter (DPF) is not trapping soot efficiently enough, based on the pressure difference measured across the filter compared with what the engine's operating conditions predict. The computer is not reporting a completely blocked or missing filter, but a filter that is allowing more exhaust gas through than it should for the amount of soot it believes has accumulated.

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

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms besides the warning light
- Reduced engine power or limp mode triggered by the PCM to protect the exhaust system
- More frequent active DPF regenerations than normal, or a regeneration that fails to complete
- Black or grey exhaust smoke under acceleration if the filter substrate is cracked or damaged
- A faint diesel soot or burnt-oil smell around the tailpipe after shutdown
- Poor fuel economy as the engine runs more regeneration cycles

Common causes, most likely first

- 1 A cracked, melted, or physically damaged DPF substrate allowing soot to pass through
- 2 A DPF that has been removed or gutted, leaving an empty canister that cannot build pressure
- 3 Faulty or contaminated differential pressure sensor reading incorrectly across the filter
- 4 Leaking, cracked, or disconnected pressure hoses between the DPF and the pressure sensor
- 5 Excessive soot loading from a leaking injector, faulty EGR, or chronic short-trip driving that overwhelms the filter
- 6 Incorrect or missing exhaust temperature sensors causing the PCM to misjudge regeneration and soot load
- 7 An aftermarket or incorrect DPF fitted that does not match the engine's calibration



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and record freeze-frame data for P2002 and any related DPF or exhaust codes
- 2 Inspect the differential pressure sensor hoses for cracks, blockages, or incorrect routing, and verify the sensor reads zero with the engine off
- 3 Compare live differential pressure readings at idle and during a road test against the manufacturer's expected values to confirm the filter is genuinely inefficient
- 4 Check exhaust gas temperature sensors and the mass airflow sensor for accuracy, since the PCM uses them to calculate soot load and regeneration timing
- 5 Perform a manufacturer-specified DPF regeneration or soot load reset, then recheck whether P2002 returns
- 6 If the filter is confirmed damaged or gutted, replace the DPF with the correct original-equipment unit and reset all learned values
- 7 After repair, clear codes and complete a full drive cycle to verify the monitor runs and P2002 does not reset

What a P2002 often really means

- A surprisingly common cause is a DPF that has been physically removed or gutted by a previous owner, which leaves the pressure sensor reading near zero and sets this code immediately.
- The differential pressure sensor and its rubber hoses fail far more often than the filter itself, so always verify the sensor reading against a known-good gauge before condemning the DPF.
- Chronic short-trip driving that never lets the exhaust reach regeneration temperature can load the filter with soot and trigger P2002 even on a physically healthy DPF.
- A leaking injector or a stuck-open EGR valve can produce so much soot that the filter saturates faster than the PCM expects, setting the efficiency code without any filter damage.
- Some vehicles set P2002 after a battery replacement or ECU flash because the learned soot load values are lost, and a relearn or forced regeneration clears it without any parts.

Can I keep driving with P2002?

You can usually drive the vehicle to a workshop, but avoid heavy acceleration and long high-speed runs because a damaged or overloaded filter can worsen quickly. If the engine enters limp mode or you see heavy black smoke, stop driving and have it diagnosed promptly to prevent exhaust system damage.

Tools that help

- OBD-II scan tool with live data and bidirectional regeneration capability
- Digital multimeter for checking sensor reference voltages and wiring
- Hand vacuum pump or pressure gauge for testing the differential pressure sensor
- Infrared thermometer for verifying exhaust gas temperature sensor readings
- Basic hand tools for inspecting hoses and sensor connections



Reading P2002

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

Often seen with

P0401 EGR Flow Insufficient Detected · **P2003** Particulate Trap Efficiency Below Threshold (Bank 2) · **P2458** DPF Regeneration Duration · **P2459** Diesel Particulate Filter Regeneration Frequency · **P2463** Diesel Particulate Filter Restriction - Soot Accumulation

See it working

Watch the animated explainer [How a MAF Sensor Works: Hot-Wire Airflow Explained](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2002/>

