

GENERIC · POWERTRAIN

P20F2

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P20F2

SCR NOx Catalyst Efficiency Below Threshold (Bank 2)

P20F2 indicates that the powertrain control module has determined the selective catalytic reduction system on bank 2 is not converting nitrogen oxides efficiently enough to meet the calibrated threshold. The computer monitors nitrogen oxide sensor readings before and after the SCR catalyst and flags this code when the downstream sensor reports a conversion efficiency below the expected value under normal operating conditions.

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

- Illumination of the check engine light, often with no other noticeable symptoms
- Reduced engine power or limp mode in some vehicles as a protective strategy
- A message on the driver information display indicating low diesel exhaust fluid or an emissions system fault
- Slightly increased diesel exhaust fluid consumption in some cases
- A noticeable sulfur or ammonia odor from the exhaust under certain conditions
- Failure to pass an emissions inspection due to the stored fault

Common causes, most likely first

- 1 Degraded or contaminated diesel exhaust fluid reducing the ammonia available for the reduction reaction
- 2 A failing nitrogen oxide sensor downstream of the SCR catalyst providing inaccurate efficiency readings
- 3 Exhaust leaks upstream of the SCR catalyst allowing untreated exhaust to bypass the catalyst
- 4 Aged or thermally damaged SCR catalyst substrate losing its active surface area
- 5 Defective diesel exhaust fluid injector or dosing module delivering insufficient or poorly atomized fluid
- 6 Crystallized diesel exhaust fluid deposits blocking the injector or mixing chamber
- 7 Incorrect diesel exhaust fluid quality, such as dilution with water or use of a non-compliant product



How to diagnose and fix it

- 1 Verify the diesel exhaust fluid level and confirm the fluid meets the required specification using a refractometer
- 2 Inspect the entire exhaust system from the turbocharger to the SCR catalyst for leaks, loose clamps, and cracked pipes
- 3 Command the diesel exhaust fluid dosing system with a scan tool and observe injector operation and spray pattern
- 4 Compare nitrogen oxide sensor readings before and after the SCR catalyst under steady-state conditions to assess catalyst efficiency
- 5 Check for stored or pending codes related to the diesel exhaust fluid system, nitrogen oxide sensors, or exhaust gas recirculation that could affect SCR performance
- 6 Perform a controlled regeneration or a dedicated SCR efficiency test if the scan tool supports it, and review the results against the manufacturer's specifications
- 7 Replace the faulty component, such as the downstream nitrogen oxide sensor, diesel exhaust fluid injector, or SCR catalyst, only after confirming the diagnosis with live data

What P20F2 Really Tells You About SCR Efficiency

- A common misdiagnosis is replacing the SCR catalyst when the actual fault is a lazy downstream nitrogen oxide sensor that reads low, making the catalyst appear inefficient when it is functioning correctly.
- Diesel exhaust fluid that has been diluted or contaminated with water will cause this code even though the fluid level is correct, so always verify fluid quality with a refractometer before condemning hardware.
- Exhaust leaks between the diesel particulate filter and the SCR catalyst can draw in ambient air and skew nitrogen oxide sensor readings, triggering an efficiency code without any catalyst degradation.
- Some vehicles require a specific driving cycle or a scan-tool-initiated SCR efficiency test to complete the monitor after a repair, and the code may remain stored until that cycle runs.
- A failing diesel exhaust fluid injector can cause this code without setting a separate injector circuit code, so command the injector with a scan tool and observe its operation as part of the diagnostic routine.

Can I keep driving with P20F2?

The vehicle remains safe to drive in most cases, but prolonged operation with this code can lead to reduced engine power, increased diesel exhaust fluid consumption, and eventual damage to the SCR catalyst. Avoid heavy loads and long idle periods, and schedule a diagnostic appointment promptly to prevent the fault from escalating.



Tools that help

- OBD-II scan tool with live data and bidirectional control capability
- Refractometer for testing diesel exhaust fluid concentration
- Digital multimeter for checking sensor and injector circuits
- Exhaust leak detector or smoke machine
- Infrared thermometer for checking catalyst inlet and outlet temperatures

Reading P20F2

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.
F2	The exact fault within that area.

Often seen with

P207F Reductant Quality Performance · **P20E8** Reductant Pressure Too Low · **P20EE** NOx Catalyst Efficiency Below Threshold (Bank 1) · **P229F** NOx Sensor Circuit Range/Performance Bank 1 Sensor 2 · **P2BAF** NOx Sensor Heater Sense Circuit Range/Performance Bank 1 Sen

See it working

Watch the animated explainer [How a Car Clutch Works: Diaphragm Clutch Cutaway](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p20f2/>

