

GENERIC · POWERTRAIN

P20EF

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P20EF

Reductant Injection Valve Performance

P20EF indicates that the powertrain control module has detected a performance fault in the reductant injection valve circuit, which is responsible for spraying diesel exhaust fluid into the exhaust stream. The computer monitors the valve's electrical response and expected pressure or flow changes, and it sets this code when the valve does not behave as commanded.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	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 triggered by the powertrain control module
- A message on the dash indicating low diesel exhaust fluid or a service emissions system warning
- Rough running or hesitation during regeneration events
- Increased diesel exhaust fluid consumption in some cases
- Exhaust smell or visible white vapor from the tailpipe if the valve sticks open

Common causes, most likely first

- 1 Faulty reductant injection valve that is clogged, stuck, or electrically failed
- 2 Wiring damage or corrosion at the valve connector or along the harness
- 3 Failed reductant pump or pressure sensor causing the valve to receive incorrect commands
- 4 Restricted or blocked reductant line or filter preventing proper flow
- 5 Crystallized diesel exhaust fluid deposits obstructing the valve or injector nozzle
- 6 Powertrain control module software issue or internal driver fault



How to diagnose and fix it

- 1 Connect a scan tool and record all stored and pending codes, then verify the P20EF is active and check freeze-frame data
- 2 Inspect the reductant injection valve connector and harness for corrosion, chafing, or loose pins
- 3 Check reductant level and quality, and verify the fluid is not contaminated or diluted
- 4 Command the reductant injection valve on and off with the scan tool and listen for a click or observe pressure changes
- 5 Measure resistance across the valve solenoid and compare to the manufacturer's specification
- 6 Check for crystallized diesel exhaust fluid at the injector nozzle and clean or replace the valve if restricted
- 7 If electrical and flow tests pass, follow the manufacturer's diagnostic flow chart for the reductant system, including pump and pressure sensor tests

What the reductant valve code really means

- A P20EF can be set by a simple loose or corroded connector at the reductant valve, so always inspect the plug before condemning the valve itself.
- Crystallized diesel exhaust fluid from sitting unused or from a weak concentration is a very common cause that many technicians overlook during diagnosis.
- The code does not always mean the valve is bad; a failing reductant pump or a restricted filter can cause the valve to perform outside expected parameters.
- After replacing the valve, the powertrain control module may require a learned adaptation reset or a regeneration drive cycle to clear the code permanently.
- Low diesel exhaust fluid level or poor fluid quality can trigger performance codes for the valve even when the valve is mechanically sound.

Can I keep driving with P20EF?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy loads and long trips because the powertrain control module may soon derate engine power. If the check engine light starts flashing or the vehicle enters limp mode, stop driving and seek service.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter for resistance and voltage checks
- Basic hand tools for connector and valve access
- Flashlight or inspection mirror for visual checks
- Manufacturer service information for diagnostic flow charts



Reading P20EF

- 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.
- EF** The exact fault within that area.

Often seen with

P20E8 Reductant Pressure Too Low · **P20E9** Reductant Pressure Too High · **P20F0** SCR NOx Catalyst Over Temperature (Bank 2) · **P20F1** SCR NOx Pre-Catalyst Over Temperature (Bank 2) · **P20F2** SCR NOx Catalyst Efficiency Below Threshold (Bank 2)

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/p20ef/>

