

GENERIC · POWERTRAIN

P207F

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P207F

Reductant Quality Performance

P207F means the engine control module has determined that the diesel exhaust fluid (DEF) being injected into the selective catalytic reduction system does not meet the required quality standard. The computer typically makes this judgment by comparing the expected reduction in nitrogen oxides against the actual response from the downstream nitrogen oxide sensor after a dosing event.

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

- Illuminated malfunction indicator lamp, often accompanied by a message about incorrect exhaust fluid quality
- Driver information display warning that the vehicle will be speed-limited or prevented from restarting after a countdown
- Reduced engine power or torque derate as the system protects itself from poor reductant
- No noticeable change in driveability besides the warning light in many cases
- Possible rough running or increased exhaust odor if the fluid is contaminated with fuel or water
- Active regeneration or DEF dosing may be suspended, leading to secondary emissions faults

Common causes, most likely first

- 1 DEF tank filled with the wrong fluid, such as water, coolant, diesel fuel, or a non-certified urea solution
- 2 Contaminated or expired DEF that has been stored improperly and lost its urea concentration
- 3 Failed DEF quality sensor or concentration sensor sending an erroneous signal to the control module
- 4 Wiring or connector corrosion between the DEF quality sensor and the dosing control unit
- 5 Software calibration issue in the dosing control module misinterpreting sensor data
- 6 A failing DEF pump or dosing injector that delivers an incorrect volume, causing the quality monitor to misjudge the fluid
- 7 Coolant or oil contamination entering the DEF tank through a failed heat exchanger or internal leak



How to diagnose and fix it

- 1 Retrieve all stored and pending codes with a scan tool capable of reading manufacturer-specific diesel data, and record freeze-frame information for P207F
- 2 Inspect the DEF tank fill cap and surrounding area for signs of misfueling, then draw a sample from the tank with a clean syringe and check its appearance and smell
- 3 Test the DEF concentration with a refractometer; urea concentration should be within the manufacturer's specified range, typically around 32.5 percent
- 4 If the fluid is out of specification or contaminated, drain and flush the DEF tank and lines, then refill with certified diesel exhaust fluid
- 5 Check the DEF quality sensor connector and wiring for corrosion, chafing, or loose terminals, and verify reference voltage and ground at the sensor
- 6 Command the DEF dosing system with a scan tool to verify pump operation and injector spray pattern, and compare actual versus commanded dosing
- 7 Clear codes and perform a road test that includes several dosing events to confirm the monitor passes and the light stays off

What a quality code really means

- A P207F is frequently set by a simple misfueling event where gasoline, water, or a homemade urea mix was added to the DEF tank, so always sample the fluid before condemning any sensor.
- The code does not automatically mean the DEF quality sensor has failed; a restricted dosing injector or weak DEF pump can deliver too little reductant and cause the same quality performance monitor to fail.
- Some vehicles use a virtual quality sensor strategy that infers DEF concentration from nitrogen oxide sensor response, so a lazy downstream nitrogen oxide sensor can set P207F without any actual fluid problem.
- After repairing the root cause, many manufacturers require a specific drive cycle or a scan-tool routine to re-enable DEF dosing and clear the derate countdown, and simply clearing the code may not restore full power.
- DEF that has been frozen and thawed repeatedly or stored in direct sunlight can degrade even if it was originally certified, so fluid age and storage history matter as much as the brand.

Can I keep driving with P207F?

You can usually drive the vehicle for a short period after the light appears, but most diesel systems will eventually impose a speed limit or a restart lockout if the fault is not corrected. Avoid long trips and do not add any fluid other than certified diesel exhaust fluid while the code is active.



Tools that help

- OBD-II scan tool with diesel-specific and manufacturer-enhanced data
- DEF refractometer
- Clean fluid sample syringe and container
- Digital multimeter
- Scan tool capable of bidirectional DEF dosing control

Reading P207F

- P** Powertrain: engine, transmission and emissions.
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- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
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- 0** Fuel and air metering and auxiliary emission controls.
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- 7F** The exact fault within that area.

Often seen with

P207E Intake Manifold Tuning (IMT) Valve Position Sensor/Switch Ci · **P20B9** Reductant Heater A Control Circuit/Open · **P20BD** Reductant Heater B Control Circuit/Open · **P20BE** Reductant Heater B Control Circuit Performance · **P2BAF** NOx Sensor Heater Sense Circuit Range/Performance Bank 1 Sen

See it working

Watch the animated explainer [How a Starter Motor Works: Pre-Engaged Starter](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p207f/>

