

GENERIC · POWERTRAIN

P249C

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P249C

Excessive Time To Enter Closed Loop Reductant Injection Control

P249C is set when the engine control module (ECM) commands the diesel exhaust fluid (DEF) injector to enter closed-loop control but the system fails to reach that state within the expected time. The ECM monitors the reductant injection control circuit and detects that the feedback signal or system response is too slow, indicating a problem with the DEF injection system or its associated sensors.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Auxiliary emission controls

Symptoms you may notice

- Malfunction indicator lamp (MIL) illuminated on the dashboard
- Often no symptoms besides the warning light
- Reduced engine power or limp mode in some vehicles
- Increased diesel exhaust fluid (DEF) consumption
- Possible rough running or hesitation if the system affects regeneration
- Exhaust fluid warning message displayed on the driver information center

Common causes, most likely first

- 1 Faulty diesel exhaust fluid (DEF) injector or clogged injector nozzle
- 2 Defective DEF pump or restricted filter causing low pressure
- 3 Damaged or corroded wiring or connectors in the reductant injection circuit
- 4 Failed nitrogen oxide (NOx) sensor providing incorrect feedback
- 5 Leaking or blocked DEF line or fitting
- 6 Software calibration issue in the engine control module (ECM)
- 7 Contaminated or diluted diesel exhaust fluid (DEF)



How to diagnose and fix it

- 1 Verify diesel exhaust fluid (DEF) level and quality; top off or replace fluid if contaminated
- 2 Inspect all wiring and connectors at the DEF injector, pump, and NOx sensors for damage or corrosion
- 3 Check for technical service bulletins (TSBs) or software updates for the engine control module (ECM)
- 4 Perform an actuator test on the DEF injector and pump using a scan tool to confirm operation
- 5 Measure DEF pressure with a gauge and compare to specification; replace pump or filter if low
- 6 Test the NOx sensor response and replace if sluggish or out of range
- 7 Replace the DEF injector if clogged or electrically faulty, then clear codes and verify repair

What Most Techs Overlook on P249C

- A weak DEF pump that still builds enough pressure for normal dosing can cause slow closed-loop entry without setting a low-pressure code, so always check pump performance under load.
- Contaminated DEF from using the wrong fluid or a degraded batch is a frequent cause that many technicians miss because the fluid looks normal; a refractometer test confirms quality.
- The code can be set by a lazy NOx sensor that responds slowly but does not fail outright, so live data graphing during a test drive is more revealing than a simple resistance check.
- Corroded pins in the DEF injector connector often cause intermittent slow response that does not appear during a static test; wiggle-test the harness while monitoring injector feedback.
- After any repair, the ECM may require a relearn or adaptation drive cycle to enter closed loop, and skipping this step leads to a false repeat code.

Can I keep driving with P249C?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy loads or long trips because the system may enter limp mode and increase emissions. If the engine derates or warning messages appear, seek service promptly.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter (DMM)
- Diesel exhaust fluid (DEF) refractometer
- Fuel pressure gauge (for DEF system)
- Hand tools and wire terminal cleaning kit



Reading P249C

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 4** Auxiliary emission controls.
- 9C** The exact fault within that area.

Often seen with

P207F Reductant Quality Performance · **P20B9** Reductant Heater A Control Circuit/Open · **P20BE** Reductant Heater B Control Circuit Performance · **P249D** Closed Loop Reductant Injection Control At Limit Flow Too Lo · **P249E** Closed Loop Reductant Injection Control At Limit Flow Too Hi

See it working

Watch the animated explainer [How a CVT Works: Belt and Pulley Transmission](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p249c/>

