

GENERIC · POWERTRAIN

P05F2

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P05F2

Reductant Pump Supply Voltage Circuit Stuck Off

P05F2 indicates that the powertrain control module (PCM) has detected the reductant pump supply voltage circuit is stuck in the off state, meaning the pump is not receiving the voltage it needs to operate. The PCM monitors the circuit and sets this code when the expected voltage is absent despite the pump being commanded on, which typically prevents diesel exhaust fluid (DEF) from being injected into the exhaust.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- Illumination of the malfunction indicator lamp (MIL) on the dashboard.
- Often no symptoms besides the warning light, especially if the vehicle is not yet in a strict emissions monitoring mode.
- Reduced engine power or limp mode may be activated as a protective measure.
- A message on the driver information center indicating that the reductant system requires service or that the vehicle will not restart after the next shutdown.
- Increased diesel exhaust fluid (DEF) consumption may be noticed if the pump is intermittently working, but more commonly the fluid level remains unchanged because the pump is not running.
- Possible rough running or poor acceleration if the engine derates due to the fault.

Common causes, most likely first

- 1 Blown fuse or tripped circuit breaker supplying power to the reductant pump.
- 2 Open or high-resistance wiring in the supply voltage circuit, including poor connections or corroded terminals.
- 3 Failed reductant pump relay or faulty relay control circuit.
- 4 Defective reductant pump itself, such as an internal open circuit or seized motor.
- 5 Faulty powertrain control module (PCM) driver for the pump supply circuit, though this is less common.
- 6 Corroded or damaged connector at the pump or in the wiring harness.
- 7 Aftermarket accessories or poor previous repairs tapping into the circuit and causing a voltage drop.



How to diagnose and fix it

- 1 Check all fuses and relays related to the reductant pump supply circuit, replacing any that are blown or suspect.
- 2 Perform a visual inspection of the wiring and connectors between the PCM, relay, and pump for damage, corrosion, or loose pins.
- 3 Use a digital multimeter to measure voltage at the pump connector with the key on and the pump commanded on; compare to battery voltage to identify a voltage drop.
- 4 Test the reductant pump relay by swapping it with a known-good relay of the same type or by performing a resistance check on the relay coil and contacts.
- 5 Check for continuity and resistance in the supply voltage circuit from the relay to the pump, repairing any open or high-resistance faults.
- 6 If the circuit and relay are good, command the pump on with a scan tool and listen for operation; if no sound, remove the pump and bench-test it for proper operation.
- 7 If all components test good, check the PCM driver output with an oscilloscope or consult factory service information for further diagnostics, as PCM failure is rare but possible.

Reductant Pump Circuit Stuck Off Diagnostics

- A common oversight is assuming the pump itself has failed when the actual problem is a poor ground connection at the pump or chassis, which can cause the circuit to appear stuck off.
- The code can be set by a voltage drop in the supply circuit that only occurs under load, so a simple voltage check with the pump disconnected may not reveal the fault; a loaded circuit test is necessary.
- Some vehicles use a smart relay or a solid-state driver integrated into the PCM, and a failure there can mimic a faulty pump or wiring, leading to unnecessary parts replacement.
- Aftermarket alarm systems or remote starters that tap into the reductant pump circuit can introduce resistance and set this code, so always check for non-factory wiring.
- A reductant pump that is mechanically seized can draw excessive current and blow the fuse, but the code may still set as stuck off if the fuse is replaced without addressing the pump.

Can I keep driving with P05F2?

It is generally safe to drive with this code as long as the vehicle is not in limp mode, but the reductant system will not function, which can lead to increased emissions and eventual derating. Avoid long trips and schedule diagnosis promptly, as many vehicles will limit engine starts or power after a certain number of ignition cycles with this fault.



Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Test light
- Relay puller and jumper wires
- Factory service information for wiring diagrams

Reading P05F2

P	Powertrain: engine, transmission and emissions.
0	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
5	Vehicle speed, idle control and auxiliary inputs.
F2	The exact fault within that area.

Often seen with

P05F0 Reductant Pump Supply Voltage Circuit High · **P05F1** Reductant Pump Supply Voltage Circuit Stuck On
 · **P05F3** Exhaust Aftertreatment Power Relay Control Circuit/Open · **P208E** Reductant Injection Valve Stuck Closed (Bank 1 Unit 1) · **P20E8** Reductant Pressure Too Low

See it working

Watch the animated explainer [EV Powertrain Trainer: How an Electric Car Drives](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p05f2/>

