

GENERIC · POWERTRAIN

P20C5

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P20C5

Reductant Heater D Control Circuit/Open

P20C5 indicates that the powertrain control module (PCM) has detected an open circuit or excessive resistance in the control circuit for the reductant heater 'D', which is part of the diesel exhaust fluid (DEF) heating system. The PCM commands the heater on to thaw frozen DEF in cold weather, and it monitors the circuit for expected voltage or current; when the feedback does not match the command, this code is stored.

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 (malfunction indicator lamp, MIL), often with no other symptoms.
- A driver information message indicating a DEF system fault or emissions system service required.
- Possible reduction in engine power or activation of limp mode if the fault persists and the PCM limits vehicle speed.
- In cold weather, the DEF may not thaw properly, leading to a no-start condition or poor DEF dosing.
- A stored freeze frame showing the conditions when the fault was set, such as low ambient temperature and engine runtime.
- No noticeable performance change in warm climates where the heater is rarely commanded on.

Common causes, most likely first

- 1 Open or damaged wiring in the reductant heater control circuit, including chafed, corroded, or broken wires.
- 2 Failed reductant heater element 'D' (open internal circuit).
- 3 Poor electrical connection at the heater connector or PCM connector, such as loose terminals or corrosion.
- 4 Blown fuse or faulty relay that supplies power to the reductant heater control circuit.
- 5 Faulty PCM driver for the heater control circuit, though this is less common.
- 6 Aftermarket or incorrect DEF fluid that has caused heater degradation, though this is indirect.



How to diagnose and fix it

- 1 Perform a visual inspection of the reductant heater 'D' wiring and connectors for damage, corrosion, or loose pins.
- 2 Check the fuse and relay associated with the reductant heater circuit and replace if faulty.
- 3 Use a scan tool to command the reductant heater on and off while monitoring the control circuit voltage and current with a multimeter.
- 4 Measure resistance across the heater element 'D' and compare to the manufacturer's specification to check for an open circuit.
- 5 Backprobe the PCM connector to verify the control signal is present and within specification when commanded.
- 6 If the heater element is open, replace the reductant heater assembly as required by the manufacturer's procedure.
- 7 Clear the diagnostic trouble codes (DTCs) and perform a road test or heater activation test to confirm the repair.

Reductant heater circuit diagnostic nuances

- A common mistake is to replace the reductant heater without first checking the control circuit wiring, as an open circuit in the harness can mimic a failed heater.
- The PCM may set this code only after a cold-start condition where the heater is commanded on, so the fault may not be present during warm-weather testing.
- Some vehicles use a smart connector with an integrated thermistor; a fault in the thermistor circuit can cause the PCM to disable the heater and set a related code, but P20C5 specifically points to the control circuit open.
- After repairs, the DEF system may require a relearn or adaptation reset using a scan tool to prevent the code from returning immediately.
- Corrosion at the heater connector is a frequent cause in areas where road salt is used, and it can create an intermittent open that only appears under vibration.

Can I keep driving with P20C5?

You can generally continue driving with P20C5, but avoid long trips in freezing conditions where the DEF heater is needed to prevent the fluid from freezing and causing a no-start or limp mode. Have the fault diagnosed soon to avoid more severe emissions system derating.

Tools that help

- OBD-II scan tool with bidirectional control and live data capabilities
- Digital multimeter with resistance and voltage measurement
- Wiring diagram for the reductant heater circuit
- Terminal pick and electrical contact cleaner
- Fuse puller and test light



Reading P20C5

- 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.
- C5** The exact fault within that area.

Often seen with

P20B9 Reductant Heater A Control Circuit/Open · **P20BA** Reductant Heater A Control Performance · **P20BB** Reductant Heater A Control Circuit Low · **P20BC** Reductant Heater A Control Circuit High · **P20C4** Reductant Heater C Control Circuit High

See it working

Watch the animated explainer [How a Coolant Temperature Sensor Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p20c5/>

