

GENERIC · POWERTRAIN

P20BC

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P20BC

Reductant Heater A Control Circuit High

P20BC indicates that the powertrain control module (PCM) has detected an abnormally high voltage on the control circuit for the reductant heater, which is the heating element used to keep diesel exhaust fluid (DEF) from freezing. The PCM expects the control circuit to pull the voltage low when the heater is commanded on, but it is seeing voltage at or near battery voltage instead, indicating an open circuit, a short to voltage, or a failed heater driver.

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
- A pending or stored P20BC code with possible reduced engine power or limp mode
- DEF system-related warnings on the dashboard, such as 'Service Exhaust Fluid System'
- In cold weather, the reductant may freeze, leading to poor DEF dosing and increased emissions
- Possible rough running or reduced fuel economy if the system enters a protection strategy
- In some cases, the vehicle may fail to complete a regeneration cycle or set additional emissions codes

Common causes, most likely first

- 1 Open circuit in the reductant heater control wire, such as a broken wire or disconnected connector
- 2 Short to voltage on the reductant heater control circuit, often from chafed wiring harness
- 3 Failed reductant heater element (open internal circuit) causing the control circuit to see high voltage
- 4 Faulty PCM driver for the reductant heater control circuit
- 5 Corroded or damaged electrical connectors at the heater or PCM
- 6 Blown fuse or relay supplying power to the reductant heater circuit (though this usually causes a low voltage code)



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related codes in the reductant system
- 2 Inspect the reductant heater wiring harness and connectors for damage, corrosion, or loose pins
- 3 Measure resistance of the reductant heater element and compare to specifications
- 4 Check for voltage on the control circuit with the heater commanded off and on to identify a short or open
- 5 Test the control circuit for continuity from the PCM to the heater connector
- 6 If the circuit and heater are good, test the PCM output with a lab scope or substitute a known-good PCM
- 7 Repair or replace the faulty wiring, connector, heater, or PCM as needed, then clear codes and verify

Reductant heater circuit diagnostics pitfalls

- A high voltage code on a control circuit often means the heater element itself has failed open, so the PCM sees no voltage drop when it commands the heater on.
- Technicians sometimes replace the PCM prematurely when the real problem is a simple open in the heater element or a corroded connector.
- The reductant heater is only active in cold temperatures, so the code may not set immediately after a repair; a cold soak may be needed to verify the fix.
- A short to voltage on the control circuit can be caused by wiring chafing against a hot exhaust component, which is easy to overlook during a visual inspection.
- This code can be set by a low battery or charging system issue that causes the PCM to see erratic voltages, so always check the basics first.

Can I keep driving with P20BC?

You can usually drive with this code, but the vehicle may enter a reduced power or limp mode, and the DEF system may not function properly in freezing conditions. Avoid long trips in cold weather until repaired, as the reductant can freeze and cause further emissions system faults.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram for the reductant heater circuit
- Test light or lab scope for circuit testing
- Basic hand tools for connector and component access



Reading P20BC

- 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.
- BC** 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 · **P20BD** Reductant Heater B Control Circuit/Open · **P20BE** Reductant Heater B Control Circuit Performance

See it working

Watch the animated explainer [Car Relay Test Bench: Test 4-Pin and 5-Pin Relays](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p20bc/>

