



P20BF

Reductant Heater B Control Circuit Low

P20BF indicates that the powertrain control module has detected a low-voltage condition on the control circuit for the reductant heater B, which is part of the diesel exhaust fluid system. The heater is responsible for thawing or maintaining the temperature of the DEF to ensure proper injection into the exhaust stream, and a low circuit fault means the control wire is likely shorted to ground or the heater element has failed.

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 driver information message indicating a DEF system fault or service required
- Reduced engine power or limp mode if the fault triggers a derate strategy
- Difficulty starting the engine in cold ambient temperatures due to frozen DEF
- Increased DEF consumption or poor DEF dosing performance
- A stored freeze frame showing the fault occurred during a cold start or heater activation

Common causes, most likely first

- 1 Short to ground in the reductant heater control circuit wiring, often due to chafing or pinched insulation
- 2 Failed reductant heater element B, causing excessive current draw or an open circuit that the driver interprets as a low-side fault
- 3 Corroded or loose electrical connector at the heater or the control module
- 4 Internal short to ground within the reductant heater control module or the powertrain control module driver
- 5 Water intrusion into the heater connector or wiring harness, leading to a low-resistance path to ground
- 6 Aftermarket or damaged DEF tank components that alter the heater circuit resistance



How to diagnose and fix it

- 1 Inspect the reductant heater wiring and connector for visible damage, corrosion, or water intrusion, and repair as needed
- 2 Disconnect the heater connector and measure the resistance of the heater element to compare against the manufacturer's specification
- 3 Check for a short to ground on the control circuit between the heater and the control module using a multimeter
- 4 Verify the control module's ground and power supply are intact and free of voltage drops
- 5 If the circuit and heater test good, substitute a known-good control module or perform a driver circuit test as directed by the service information
- 6 Clear the diagnostic trouble codes and perform a heater activation test with a scan tool to confirm the repair

Reductant heater circuit low-voltage traps

- A low circuit code often results from a heater element that has partially failed and draws excessive current, which the driver perceives as a short to ground, so always test the heater resistance before replacing wiring.
- The reductant heater B may only activate below a certain ambient temperature, so the fault may not reappear during a warm shop visit; use a scan tool to command the heater on during diagnosis.
- Water intrusion into the DEF tank connector is a common cause that is easily overlooked, especially on vehicles that operate in wet or snowy conditions.
- This code does not always mean the heater itself is faulty; a poor ground connection at the control module can create a low-voltage condition on the control circuit.
- Related codes such as P20B9 or P20BA may also be present, indicating a broader heater circuit issue rather than a single component failure.

Can I keep driving with P20BF?

You can generally continue driving with this code, but avoid long trips in freezing temperatures because a failed heater can allow the DEF to freeze and prevent proper exhaust aftertreatment. If the engine enters limp mode or you notice reduced power, seek service promptly to avoid further derate.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter with resistance and voltage measurement
- Wiring diagram and service information for the specific vehicle
- Basic hand tools for connector and component access
- Heat gun or controlled temperature source for cold-weather testing



Reading P20BF

- 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.
- BF** 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 · **P20BD** Reductant Heater B Control Circuit/Open

See it working

Watch the animated explainer [Engine Cooling System Trainer: How Engines Stay Cool](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p20bf/>

