

GENERIC · POWERTRAIN

P20B5

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P20B5

Reductant Metering Unit Heater Control Circuit/Open

P20B5 indicates that the powertrain control module (PCM) has detected an open circuit or excessive resistance in the electrical path for the reductant metering unit heater, which is part of the diesel exhaust fluid (DEF) injection system. The heater is responsible for thawing frozen DEF in cold conditions, and when the circuit is open, the PCM cannot verify that the heater is functioning, triggering the malfunction indicator lamp (MIL).

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering and auxiliary emission controls

Symptoms you may notice

- Illumination of the malfunction indicator lamp (MIL) on the dashboard.
- Often no symptoms besides the warning light, especially in warm ambient temperatures where the heater is not needed.
- Possible derate or reduced engine power if the PCM limits operation to protect the aftertreatment system.
- In cold weather, the DEF system may not inject properly, leading to increased emissions and potential limp mode.
- A stored freeze frame may show low ambient temperature at the time of fault detection.
- No noticeable change in engine performance or fuel economy in many cases.

Common causes, most likely first

- 1 Open or damaged wiring harness between the PCM and the reductant metering unit heater, including chafed or broken wires.
- 2 Failed reductant metering unit heater element (open circuit internally).
- 3 Corroded or disconnected electrical connector at the reductant metering unit or PCM.
- 4 Blown fuse or faulty relay supplying power to the heater circuit.
- 5 PCM internal fault causing incorrect open-circuit detection (rare).
- 6 Poor ground connection for the heater circuit, leading to high resistance.



How to diagnose and fix it

- 1 Verify the stored code with a scan tool and check for any related pending or history codes in the reductant system.
- 2 Inspect the wiring harness and connectors at the reductant metering unit and PCM for damage, corrosion, or loose pins; repair as needed.
- 3 Check the fuse and relay that supply power to the reductant metering unit heater circuit; replace if faulty.
- 4 Measure the resistance of the heater element at the reductant metering unit connector and compare to the manufacturer's specification; replace the unit if out of range.
- 5 Perform a voltage drop test on the ground circuit to ensure a good ground connection; clean or repair grounds as necessary.
- 6 If all external circuits and components test good, suspect a faulty PCM; follow the manufacturer's diagnostic flow for PCM replacement.

Before replacing the reductant metering unit

- A common oversight is assuming the heater element is faulty when the real problem is a corroded connector pin or chafed wire near the DEF tank, so always perform a thorough visual and resistance check of the harness first.
- The code can set intermittently due to vibration or temperature changes, so a wiggle test of the harness while monitoring heater circuit data can reveal an intermittent open.
- Some vehicles will not command the heater on unless ambient temperature is below a certain threshold, so the code may only appear in cold weather and not during a warm-weather diagnosis.
- A blown fuse for the heater circuit is often caused by a shorted heater element, so replacing the fuse without checking the heater resistance may lead to a repeat failure.
- The PCM may set this code if the heater circuit resistance is slightly out of range, not just completely open, so a resistance measurement is more reliable than a simple continuity check.

Can I keep driving with P20B5?

It is generally safe to continue driving with P20B5, but avoid long trips in freezing conditions where the DEF heater is needed, as the system may enter a derate or limp mode. Have the vehicle diagnosed promptly to prevent aftertreatment system damage and ensure compliance with emissions regulations.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram for the specific vehicle
- Basic hand tools for connector and harness inspection
- Fuse puller and test light



Reading P20B5

- 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.
- B5** The exact fault within that area.

Often seen with

P20B6 Reductant Metering Unit Heater Control Circuit Performance · **P20B7** Reductant Metering Unit Heater Control Circuit Low · **P20B8** Reductant Metering Unit Heater Control Circuit High · **P20B9** Reductant Heater A Control Circuit/Open · **P20BA** Reductant Heater A Control Performance

See it working

Watch the animated explainer [How a Wideband Air-Fuel Sensor Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p20b5/>

