

GENERIC · POWERTRAIN

P20B2

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P20B2

Reductant Heater Coolant Control Valve Performance/Stuck Open

P20B2 indicates that the powertrain control module (PCM) has detected a performance fault in the reductant heater coolant control valve, which is used to warm the diesel exhaust fluid (DEF) heater circuit. The PCM commands the valve to open or close and monitors the resulting coolant temperature change or circuit feedback; when the response does not match the expected behavior, or the valve appears stuck open, this code is stored.

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 check engine light (malfunction indicator lamp).
- Often no symptoms besides the warning light, especially in warm ambient temperatures.
- Prolonged DEF heater warm-up times in cold weather, potentially leading to a driver inducement such as speed limitation or no-start.
- Possible poor fuel economy or reduced engine performance if the PCM enters a protective strategy.
- In rare cases, coolant leaks or abnormal coolant temperature fluctuations if the valve remains stuck open.
- A stored freeze-frame showing the fault occurred during a cold start or heater activation request.

Common causes, most likely first

- 1 Coolant control valve mechanically stuck open due to debris, corrosion, or internal wear.
- 2 Failed valve actuator or solenoid that prevents the valve from closing properly.
- 3 Damaged or corroded electrical connector at the coolant control valve.
- 4 Open or shorted wiring in the valve control circuit.
- 5 Faulty coolant temperature sensor providing inaccurate feedback to the PCM.
- 6 Low coolant level or air pockets in the cooling system affecting valve operation.
- 7 PCM software calibration issue or internal driver fault (less common).



How to diagnose and fix it

- 1 Verify coolant level and condition; top off or bleed the cooling system if air is present.
- 2 Inspect the coolant control valve connector and wiring for corrosion, chafing, or loose pins.
- 3 Use a scan tool to command the valve open and closed while monitoring coolant temperature response and circuit feedback.
- 4 Test the valve actuator with a multimeter for resistance and compare to manufacturer specifications.
- 5 Check the coolant temperature sensor signal for accuracy against a known good thermometer.
- 6 If the valve fails to respond correctly, replace the reductant heater coolant control valve and clear the code.
- 7 After repair, perform a road test or actuator test to confirm the code does not return and the DEF heater functions properly.

Valve Stuck Open Isn't Always the Valve's Fault

- A stuck-open valve can be caused by debris from a deteriorating coolant hose or a failing water pump, so flushing the cooling system may be necessary to prevent recurrence.
The PCM may set P20B2 even when the valve is electrically functional if the coolant temperature does not rise as expected, pointing to a thermostat or sensor issue rather than the valve itself.
- In some vehicles, the reductant heater coolant control valve is part of a larger coolant bypass assembly, and replacing only the valve may not solve the problem if the assembly is warped or clogged.
- A weak battery or charging system fault can cause erratic valve operation and set this code, so always check battery voltage and ground connections before condemning the valve.
This code is often accompanied by other reductant heater or DEF system codes, and diagnosing them together can reveal a shared root cause such as a wiring harness chafe.

Can I keep driving with P20B2?

You can generally continue driving with P20B2, but avoid long trips in cold weather because the DEF heater may not function correctly, which can lead to derate or no-start conditions. Have the fault diagnosed soon to prevent more severe emissions system damage.

Tools that help

- OBD-II scan tool with bidirectional control and live data capability
- Digital multimeter
- Coolant refractometer or hydrometer
- Basic hand tools (socket set, screwdrivers, pliers)
- Service information for valve testing and cooling system bleeding



Reading P20B2

- 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.
- B2** The exact fault within that area.

Often seen with

P20A0 Reductant Purge Control Valve A Circuit/Open · **P20A1** Reductant Purge Control Valve A Performance · **P20B1** Reductant Heater Coolant Control Valve Circuit/Open · **P20B3** Reductant Heater Coolant Control Valve Circuit Low · **P20B4** Reductant Heater Coolant Control Valve Circuit High

See it working

Watch the animated explainer [Four-Stroke Engine Cutaway: Intake to Exhaust](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p20b2/>

