

GENERIC · POWERTRAIN

P2D03

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2D03

Motor Electronics Coolant Pump A Supply Voltage Circuit

P2D03 indicates that the engine control module (ECM) has detected an abnormal voltage condition on the supply circuit feeding the motor electronics coolant pump, often called the auxiliary or electric coolant pump. The ECM monitors the voltage on the pump's power feed and sets this code when the signal falls outside the expected range, typically because of an open circuit, high resistance, or a short to ground or power.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- The electric coolant pump may not run after the engine is shut off, leading to heat soak concerns
- Possible overheating warning or elevated coolant temperature under heavy load or in traffic
- A whining or grinding noise from the pump area if the pump is failing mechanically
- Reduced performance of the cabin heater in some vehicles because the auxiliary pump also circulates coolant through the heater core
- In some cases, the engine may enter a reduced power mode to protect against overheating

Common causes, most likely first

- 1 Failed electric coolant pump motor, which can draw excessive current or create an open circuit internally
- 2 Damaged or corroded wiring harness or connector at the pump, often due to heat exposure or road debris
- 3 Blown fuse or faulty relay that supplies power to the pump circuit
- 4 Poor ground connection for the pump circuit, leading to voltage drop under load
- 5 Faulty engine control module (ECM) driver circuit, though this is less common
- 6 Aftermarket or incorrect pump installed that does not meet the original voltage and current specifications



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related codes in other modules, then clear the code and test-drive to see if it returns
- 2 Inspect the coolant pump fuse and relay, and replace any that are blown or suspect
- 3 Visually inspect the pump connector and wiring for corrosion, chafing, or loose pins, and repair as needed
- 4 Measure voltage at the pump connector with the key on and engine off; compare to battery voltage to check for excessive voltage drop
- 5 Perform a resistance test on the pump motor and compare to specifications; replace the pump if resistance is out of range
- 6 Check the ground circuit for the pump using a voltage drop test while the pump is commanded on
- 7 If all external circuits test good, suspect the ECM and perform pinpoint tests according to the manufacturer's service information before replacement

What the supply voltage code really means

- A pump that spins freely by hand can still set this code because the internal electronics that report voltage or current may fail while the motor itself remains mechanically sound.
- The ECM often commands the auxiliary pump to run after engine shutdown to cool the turbocharger or cylinder head, so a supply voltage fault may only appear as a stored code without any dashboard warning during normal driving.
- Corrosion inside the pump connector is a frequent culprit that visual inspection alone can miss; a gentle tug on each wire terminal often reveals a loose or green-tinged pin.
- This code does not always mean the pump is dead; a voltage drop on the ground side can mimic a faulty pump and lead to unnecessary replacement if the ground circuit is not tested first.
- Some vehicles use a pulse-width modulated (PWM) signal to control pump speed, and a failed pump driver can set a supply voltage code even when the wiring and motor are intact.

Can I keep driving with P2D03?

You can usually drive the vehicle short distances at moderate speeds, but avoid heavy loads, prolonged idling in traffic, or aggressive driving that raises coolant temperatures. If the temperature gauge climbs above normal or a overheating warning appears, stop safely and shut off the engine to prevent damage.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter with voltage and resistance functions
- Test light or fused jumper wire
- Basic hand tools for connector and fuse access
- Manufacturer service information for pinpoint tests



Reading P2D03

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- D** Hybrid propulsion.
- 03** The exact fault within that area.

Often seen with

P00B7 Engine Coolant Flow Low/Performance · **P2183** Engine Coolant Temperature Sensor 2 Circuit Range/Performanc · **P2D02** Motor Electronics Coolant Pump A Underspeed · **P2D04** Motor Electronics Coolant Pump A Control Module Overtemperat · **P2D05** Motor Electronics Coolant Pump B Stuck/Stalled

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/p2d03/>

