

GENERIC · POWERTRAIN

P2E41

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2E41

Hybrid/EV Electronics Coolant Pump B Control Circuit/Open

P2E41 indicates that the powertrain control module has detected an open circuit or control fault on the coolant pump circuit for the hybrid or electric vehicle electronics cooling system, specifically on the 'B' pump. The computer monitors the pump's electrical circuit and sets this code when it does not see the expected voltage or current feedback, meaning the pump may not be running or the wiring is compromised.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light or service vehicle soon message
- Often no symptoms besides the warning light, especially if the pump is only intermittently failing
- Reduced hybrid system performance or a message to pull over safely
- Overheating of the hybrid/EV electronics, which may trigger additional warnings or power reduction
- In some cases, the vehicle may enter a fail-safe mode limiting speed or disabling the hybrid system
- Cooling fan may run excessively or not at all, depending on the failure mode

Common causes, most likely first

- 1 Faulty coolant pump B (open winding, seized motor, or internal electronics failure)
- 2 Damaged or corroded wiring harness or connector at the pump
- 3 Blown fuse or faulty relay supplying power to the pump circuit
- 4 Open circuit in the control wire between the PCM and the pump
- 5 Poor ground connection for the pump circuit
- 6 PCM internal fault (rare but possible)



How to diagnose and fix it

- 1 Check the fuse and relay for the coolant pump circuit and replace if blown or faulty
- 2 Inspect the wiring and connector at the pump for damage, corrosion, or loose pins; repair as needed
- 3 Measure resistance across the pump motor terminals to check for an open winding; replace pump if out of specification
- 4 Test for power and ground at the pump connector with the key on and engine running; verify voltage and ground integrity
- 5 Check the control signal from the PCM to the pump using a scan tool or oscilloscope; if missing, diagnose PCM or wiring further
- 6 If all electrical checks pass, command the pump on with a scan tool and listen for operation; replace pump if it does not run
- 7 Clear the code and verify the repair by test-driving the vehicle and ensuring the code does not return

Don't overlook the simple electrical checks

- A loose or corroded ground connection at the pump or chassis can mimic a failed pump, so always verify ground integrity before condemning the pump.
- The 'B' pump designation means there may be multiple coolant pumps in the system; ensure you are testing the correct pump, as codes for pump A or other pumps may also be present.
- In some hybrid systems, the electronics coolant pump runs continuously whenever the vehicle is on, so an open circuit may not immediately cause overheating until the electronics reach a threshold temperature.
- After replacing the pump, some vehicles require a coolant bleed procedure or a scan tool command to activate the pump and purge air from the system; skipping this can lead to overheating and repeat codes.
- A failing pump may intermittently set the code due to heat or vibration, so wiggle-test the harness and connector while monitoring live data to catch intermittent faults.

Can I keep driving with P2E41?

It is not advisable to continue driving with this code because the hybrid or EV electronics may overheat, leading to reduced performance or potential damage. If the vehicle must be moved, drive directly to a repair facility and avoid heavy acceleration or long distances.

Tools that help

- OBD-II scan tool with live data and bidirectional control
- Digital multimeter
- Test light
- Wiring diagram for the specific vehicle
- Socket set and basic hand tools



Reading P2E41

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

Often seen with

P0A01 Motor Electronics Coolant Temperature Sensor Circuit Range/P · **P0A93** Inverter A Cooling System Performance · **P0C73** Hybrid Battery Pack Cooling Pump Performance · **P2E40** Battery Charger B Module Forced Shutdown Voltage High · **P2E42** Hybrid/EV Electronics Coolant Pump B Performance

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/p2e41/>

