

GENERIC · POWERTRAIN

**P2B2A**

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

## P2B2A

# Hybrid/EV Electronics Coolant Pump A Overspeed - Dry Run

P2B2A indicates that the hybrid or electric vehicle electronics coolant pump A has reported an overspeed condition consistent with running dry, meaning the pump is spinning faster than expected because it is not moving liquid. The control module sets this code when pump speed feedback exceeds the commanded speed by a calibrated margin while the system expects normal coolant flow.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Hybrid propulsion

## Symptoms you may notice

- Illumination of the hybrid system warning light or service vehicle soon message
- Often no symptoms besides the warning light when the fault is intermittent
- Reduced hybrid system power or a forced limp-home mode
- Overheating of the power electronics or inverter, which may trigger additional codes
- Audible whining or cavitation noise from the coolant pump area
- Coolant level warning or visible coolant loss under the vehicle

## Common causes, most likely first

- 1 Low coolant level or air trapped in the electronics cooling loop, causing the pump to run dry
- 2 Failed or sticking coolant pump A, including worn impeller or internal seal leakage
- 3 Blocked or restricted coolant passage, hose, or radiator in the electronics cooling circuit
- 4 Faulty coolant pump speed sensor or wiring harness damage at the pump connector
- 5 Corroded or loose electrical connector at the pump or control module
- 6 Control module software calibration issue or internal driver fault
- 7 Debris or contamination in the coolant loop obstructing pump inlet



## How to diagnose and fix it

- 1 Check coolant level in the hybrid electronics reservoir and inspect for leaks or air pockets
- 2 Perform a visual inspection of the coolant pump A connector, wiring, and hose routing for damage or restriction
- 3 Use a scan tool to command the coolant pump on and observe live pump speed and coolant temperature data
- 4 Bleed the cooling system according to the manufacturer's procedure to remove trapped air
- 5 Test the coolant pump A circuit for power, ground, and signal integrity with a multimeter
- 6 Replace the coolant pump A if it fails electrical or flow testing, then refill and bleed the system
- 7 Clear codes and verify the repair with a road test and live data monitoring

## Dry run codes often misdiagnosed as pump failure

- A low coolant level or trapped air from a recent cooling system service is a common cause that mimics a failed pump and should be ruled out before replacement.
- The pump may spin at high speed with no coolant present, so an overspeed code does not always confirm the pump motor itself is defective.
- Air pockets can form after a coolant flush if the bleed procedure is skipped, leading to repeat P2B2A even with a new pump.
- Wiring harness chafing near the pump connector can intermittently interrupt the speed signal and set this code without any mechanical fault.
- Some vehicles require a software update to the hybrid control module to correct overly sensitive overspeed thresholds.

## Can I keep driving with P2B2A?

Driving with P2B2A is not recommended because the electronics coolant pump may not be circulating liquid, which can overheat the inverter or hybrid components. Limit driving to a short distance to a safe location or repair shop, and avoid heavy acceleration or long trips until the fault is resolved.

## Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Coolant refractometer or hydrometer
- Hose clamp pliers
- Vacuum coolant refill tool



### Reading P2B2A

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

### Often seen with

**P0A3F** Drive Motor A Position Sensor Circuit · **P0A93** Inverter A Cooling System Performance · **P0C73** Hybrid Battery Pack Cooling Pump Performance · **P2B29** Hybrid/EV Battery Pack Coolant Pump A Overspeed - Dry Run · **P2B2B** Engine Coolant Temperature Sensor 5 Circuit

### 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/p2b2a/>

