

GENERIC · POWERTRAIN

P2D77

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2D77

Battery Charger Control Module B Performance

P2D77 indicates that the battery charger control module B has reported a performance fault, meaning the module's internal self-checks or the powertrain control module's monitoring has detected that the charger is not regulating voltage or current as commanded. The computer sets this code when the charger's output or response time falls outside the expected range during a specified test window, often during charging or key-on engine-off events.

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

Symptoms you may notice

- Illumination of the battery warning light or a dedicated service charging system message on the dash
- The high-voltage battery may not reach full charge, leading to reduced electric-only range in hybrid or electric vehicles
- The vehicle may enter a reduced-power limp mode or refuse to start after sitting
- A noticeable delay or failure when the charger is commanded to activate during a charging event
- Often no symptoms besides the warning light, especially if the fault is intermittent
- Possible flickering of interior lights or accessories if the charger also supplies low-voltage power

Common causes, most likely first

- 1 Faulty battery charger control module B, including internal circuit board degradation or software corruption
- 2 Damaged or corroded wiring harness or connector pins between the charger module and the battery pack or control module
- 3 Poor ground connection for the charger module, causing voltage reference errors during performance tests
- 4 Low or unstable 12-volt supply to the charger module, often from a weak auxiliary battery or charging system issue
- 5 Overheating of the charger module due to blocked cooling ducts or failed internal fans, triggering performance derating
- 6 Software calibration issues in the charger module or powertrain control module that misjudge charger response
- 7 A failing high-voltage battery pack that cannot accept charge as expected, causing the charger to appear out of performance



How to diagnose and fix it

- 1 Connect a scan tool and record all stored codes, freeze-frame data, and charger module live parameters to understand when the fault occurs
- 2 Perform a visual inspection of the charger module, its connectors, and wiring for corrosion, chafing, or loose pins
- 3 Test the 12-volt supply and ground circuits at the charger module connector under load to rule out voltage drops
- 4 Check the charger module's cooling system for airflow restrictions or fan operation if the design includes active cooling
- 5 Follow the manufacturer's diagnostic flow for charger performance, which may include a commanded charger test and oscilloscope checks of output
- 6 Reprogram or update the charger module and powertrain control module with the latest calibration if applicable
- 7 If diagnostics confirm an internal fault, replace the battery charger control module B and perform any required initialization or adaptation

Charger Performance Codes Often Misread

- A weak 12-volt auxiliary battery frequently causes phantom charger performance codes because the module's internal logic misbehaves when supply voltage sags during cranking or charging events.
- Technicians often replace the charger module only to find the real fault is a corroded ground strap or a pin that backs out of the connector under vibration, so wiggle tests and voltage-drop checks are essential.
- This code does not always mean the charger is dead; it can be set by a one-time glitch during a low-voltage event, so clearing and verifying a repeatable failure is a valid first step.
- On some vehicles, the charger control module B is part of a combined unit with the inverter or DC-DC converter, so a performance fault may actually stem from a related high-voltage component.
- High ambient temperatures or a blocked cooling path can cause the charger to derate and set a performance code without any hard component failure, especially in stop-and-go traffic.

Can I keep driving with P2D77?

You can usually drive the vehicle short distances to a service location, but avoid long trips or relying on charging until the fault is repaired, because the high-voltage battery may not charge properly and could leave you stranded. If the vehicle enters limp mode or shows a red battery warning, stop driving and seek professional diagnosis.



Tools that help

- OBD-II scan tool with manufacturer-specific charger module support
- Digital multimeter with voltage-drop capability
- Oscilloscope for waveform analysis of charger output
- Manufacturer service information and wiring diagrams
- Insulated hand tools for high-voltage safety
- Thermal camera or infrared thermometer to check for overheating components

Reading P2D77

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

Often seen with

P0A0D High Voltage System Interlock Circuit A High · **P0A94** DC/DC Converter A Performance · **P2D76** Battery Charging System Negative Contactor D Control Circuit · **P2D78** Battery Charger Control Module B Processor Performance

See it working

Watch the animated explainer [How an EGR Valve Works: Exhaust Gas Recirculation](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2d77/>

