

GENERIC · POWERTRAIN

P0B54

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0B54

Hybrid/EV Battery Voltage Sense F Circuit

P0B54 indicates that the hybrid or electric vehicle battery pack monitoring system has detected an abnormal voltage reading on the voltage sense circuit for battery module 'F'. The computer compares the voltage reported by this sense line against the expected value from the battery management system and flags a fault when the signal is out of range, erratic, or missing.

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

Symptoms you may notice

- Illumination of the hybrid/EV battery warning light or master warning lamp
- Reduced electric-only range or the vehicle refusing to enter EV mode
- A message on the dash advising service of the high-voltage battery system
- Possible reduced engine power or limp-home mode in some vehicles
- Often no symptoms besides the warning light, with the vehicle driving normally
- In rare cases, the vehicle may fail to start or shut down unexpectedly

Common causes, most likely first

- 1 Damaged or chafed wiring in the voltage sense circuit for module F
- 2 Corroded or loose connector pins at the battery module or battery management system
- 3 Faulty voltage sense harness or connector internal to the high-voltage battery pack
- 4 Failed battery management system (BMS) or cell monitoring unit
- 5 Internal fault in the battery module F itself, such as a weak or failing cell
- 6 Water intrusion or contamination in the battery pack affecting sense circuitry
- 7 Software glitch or calibration error in the BMS requiring reprogramming



How to diagnose and fix it

- 1 Retrieve all stored codes and freeze-frame data with a scan tool capable of reading hybrid/EV battery codes
- 2 Inspect the low-voltage and high-voltage wiring harnesses for the battery sense circuit, looking for chafing, corrosion, or loose connectors
- 3 Perform a voltage drop test on the sense circuit wiring and compare readings with the BMS live data
- 4 Check service information for any technical service bulletins or software updates related to the BMS or voltage sensing
- 5 If wiring and connectors are good, test the battery module F voltage directly and compare with the BMS reported value
- 6 Replace the faulty voltage sense harness or connector if resistance or continuity tests fail
- 7 If the sense circuit is intact, replace the battery management system or cell monitoring unit as directed by the manufacturer's diagnostic flow

What the voltage sense code really tells you

- A P0B54 is often set by a poor connection at the battery module connector rather than a failed battery pack, so always inspect and clean terminals before condemning expensive components.
- The code can be triggered by a momentary glitch during extreme temperature swings, and a simple battery pack software update may resolve it without any hardware replacement.
- Technicians sometimes misdiagnose this as a failing battery module when the actual fault is a damaged wire in the sense harness that rubs against the pack casing.
- Because the voltage sense circuit is a low-current signal line, even a small amount of corrosion or pin tension loss can cause an out-of-range reading and set P0B54.
- On some vehicles, a weak 12-volt auxiliary battery can cause erratic behavior in the BMS and set false voltage sense codes, so always verify the 12-volt system first.

Can I keep driving with P0B54?

You can generally continue driving if the vehicle runs normally and only the warning light is on, but avoid aggressive acceleration or long trips until the fault is diagnosed. If the vehicle enters limp mode or shows a high-voltage battery warning, stop driving and have it towed to a qualified technician.

Tools that help

- Hybrid/EV-capable scan tool with live data
- Digital multimeter with high-voltage safety rating
- Insulation tester (megohmmeter) for high-voltage circuits
- Manufacturer service information and wiring diagrams
- Battery pack lifting equipment (if module access is required)



Reading P0B54

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

Often seen with

P0A1F Battery Energy Control Module A Performance · **P0AFA** Hybrid/EV Battery System Voltage Low · **P0B4E** Hybrid/EV Battery Voltage Sense D Circuit Intermittent/Errat · **P0B53** Hybrid/EV Battery Voltage Sense E Circuit Intermittent/Errat · **P0B55** Hybrid/EV Battery Voltage Sense F Circuit Range/Performance

See it working

Watch the animated explainer [How Regenerative Braking Works in Electric Cars](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0b54/>

