

GENERIC · POWERTRAIN

P0B90

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0B90

Hybrid/EV Battery Voltage Sense R Circuit

P0B90 indicates that the hybrid or electric vehicle battery pack's voltage sensing circuit for the 'R' module or cell group is reporting a signal that falls outside the expected range or is intermittent. The battery energy control module (BECM) monitors this dedicated sense line to verify that the measured cell voltage matches the actual pack voltage, and it sets the code when the signal is implausible, missing, or inconsistent with other voltage sensors.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the hybrid system warning light or service vehicle soon message
- Reduced electric-only range or a switch to limp-home mode
- The vehicle may refuse to enter ready mode or start the high-voltage system
- Intermittent loss of power or hesitation under electric drive
- Often no symptoms besides the warning light, especially if the fault is stored but not active

Common causes, most likely first

- 1 A faulty voltage sense wire or connector at the battery module, often due to corrosion or vibration damage
- 2 A failed cell voltage sensor or sensing harness integrated into the battery pack
- 3 Loose or degraded high-voltage battery pack terminal connections
- 4 Internal failure within the battery energy control module (BECM) or its sensing circuitry
- 5 A weak or failing battery module that causes voltage readings to drift outside the expected range
- 6 Water intrusion or contamination in the battery pack connector causing signal interference



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 data to confirm P0B90 is active or pending
- 2 Inspect the battery pack sense harness and connectors for corrosion, loose pins, or physical damage, and repair as needed
- 3 Measure the voltage at the sense circuit terminals and compare with the BECM-reported value to identify a wiring or sensor discrepancy
- 4 Perform a battery pack voltage measurement across the affected module and compare with the sense circuit reading to isolate a faulty sensor
- 5 Check for technical service bulletins (TSBs) or software updates for the BECM that address voltage sensing accuracy
- 6 If the sense circuit and sensor are intact, test the BECM inputs and outputs according to the manufacturer's diagnostic flow chart
- 7 Replace the faulty voltage sensor, sense harness, or BECM only after confirming the root cause with voltage and resistance tests

Sense circuit faults often mimic module failure

- A loose or corroded sense connector can set P0B90 without any actual battery module degradation, so always inspect the harness before condemning the pack.
- The code can be stored intermittently by vibration or temperature changes, and a wiggle test of the sense harness while monitoring live data often reveals the fault.
- Some vehicles set this code when the 12-volt auxiliary battery is weak, because low system voltage corrupts the BECM's reference signal, so check the 12-volt system first.
- After any battery pack service, the BECM may need a relearn or calibration procedure, and skipping it can cause P0B90 to return immediately.
- Do not assume the code means the high-voltage battery is failing; a simple sense wire repair resolves many cases, and unnecessary pack replacement is a common misdiagnosis.

Can I keep driving with P0B90?

If the warning light is on but the vehicle drives normally, you can continue driving short distances to a repair shop, but avoid aggressive acceleration or long trips. If the vehicle enters limp mode or refuses to start, do not force it; have it towed to avoid further high-voltage system stress.



Tools that help

- Hybrid/EV-capable scan tool with live battery data
- Digital multimeter with high-voltage safety rating
- Insulation tester (megohmmeter) for high-voltage circuit checks
- Wiring diagram and connector pinout for the battery pack
- Battery pack service plug removal tool (if required)

Reading P0B90

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

Often seen with

P0A1F Battery Energy Control Module A Performance · **P0AFA** Hybrid/EV Battery System Voltage Low · **P0B8F** Hybrid/EV Battery Voltage Sense Q Circuit Intermittent/Errat · **P0B91** Hybrid/EV Battery Voltage Sense R Circuit Range/Performance · **P0B92** Hybrid/EV Battery Voltage Sense R Circuit Low

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/p0b90/>

