

GENERIC · POWERTRAIN

P0BFD

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0BFD

Drive Motor A Phase U-V-W Current Sensor Correlation

P0BFD indicates that the hybrid or electric vehicle's motor control module has detected a mismatch between the three phase current sensors (U, V, and W) that monitor the drive motor's electrical draw. The computer compares the readings from each sensor and expects them to sum to nearly zero under normal operation; when the correlation falls outside a calibrated threshold, it stores this code and may disable the motor to protect the inverter and battery.

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

Symptoms you may notice

- Illumination of the check engine light or a dedicated hybrid system warning light, often with no other noticeable symptoms.
- Reduced power output or a limp-home mode that limits vehicle speed and acceleration.
- The vehicle may refuse to start or shift into gear if the fault is severe enough to trigger a shutdown.
- Intermittent stalling or sudden loss of propulsion while driving, particularly under heavy load.
- A noticeable shudder or hesitation during acceleration if one phase sensor is only slightly off.
- The hybrid system may fail to enter 'ready' mode, leaving the car inoperable.

Common causes, most likely first

- 1 A faulty current sensor on one of the three motor phases, often due to internal sensor drift or thermal damage.
- 2 Damaged or corroded wiring and connectors between the phase current sensors and the motor control module.
- 3 A failing motor control module (inverter) that misinterprets sensor signals or has internal circuit faults.
- 4 Mechanical binding or damage within the drive motor that causes uneven phase currents and skewed sensor readings.
- 5 Poor electrical ground or reference voltage supply to the sensors, leading to inconsistent correlation.
- 6 Software calibration errors in the motor control module that require a reflash or update.



How to diagnose and fix it

- 1 Use a scan tool to retrieve all stored codes and freeze-frame data, then clear the code and test-drive to see if it returns immediately.
- 2 Visually inspect the phase current sensor wiring harness and connectors for chafing, corrosion, or loose pins, and repair as needed.
- 3 Measure the reference voltage and ground at each sensor connector with a multimeter to confirm the module is supplying correct power.
- 4 Compare live phase current readings from each sensor using a scan tool while the motor is under load; a large deviation points to a specific sensor.
- 5 Perform a resistance and continuity test on the sensor signal wires between the sensor and the control module to rule out open or shorted circuits.
- 6 If a sensor is suspect, swap it with a known-good unit (if accessible) or replace it, then recheck the correlation.
- 7 As a last step, reprogram or replace the motor control module if all sensors and wiring test good but the code persists.

When phase current sensors lie to the module

- A weak or failing 12-volt auxiliary battery can cause erratic sensor readings and set this code without any actual sensor fault, so always load-test the battery first.
- The correlation code often appears after a low-voltage event such as a jump start or battery replacement, and may be a stored history code that clears after a few drive cycles.
- Technicians sometimes replace the expensive motor control module prematurely when the real problem is a chafed wire behind the motor connector that only loses contact during vibration.
- On some vehicles, this code can be triggered by a failing motor resolver or position sensor, which skews the phase current calculation even though the current sensors themselves are fine.
- A coolant leak or oil intrusion into the motor housing can contaminate the current sensor circuitry and cause intermittent correlation faults that only appear when the motor is hot.

Can I keep driving with P0BFD?

Do not continue driving with this code active, because the vehicle may enter a reduced-power mode or shut down without warning, creating a safety risk. Have the vehicle towed to a qualified hybrid or electric vehicle technician for diagnosis.



Tools that help

- Hybrid/EV-capable scan tool with live data and graphing functions
- Digital multimeter with min/max recording
- Oscilloscope for waveform analysis of sensor signals
- Insulation resistance tester for motor and cable checks
- Hand tools for connector and harness inspection
- Manufacturer service information for wiring diagrams and calibration procedures

Reading P0BFD

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

Often seen with

P0A3F Drive Motor A Position Sensor Circuit · **P0A45** Drive Motor B Position Sensor Circuit · **P0BFE** Drive Motor B Phase U-V-W Current Sensor Correlation · **P0BFF** Drive Motor A Current · **P0C00** Drive Motor A Current 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/p0bfd/>

