

GENERIC · POWERTRAIN

P0A4A

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0A4A

Drive Motor B Position Sensor Circuit Overspeed

P0A4A indicates that the hybrid or electric vehicle's control module has detected an overspeed condition in the position sensor circuit for drive motor B, which is typically the motor-generator unit that drives the wheels or assists the engine. The computer compares the motor's reported speed from its position sensor against expected values and sets this code when the signal indicates the motor is spinning faster than the system's safe design limit.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

High

FIX DIFFICULTY

Professional

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the hybrid system warning light or service vehicle soon light on the dashboard
- The vehicle may enter a reduced power or limp mode, limiting speed and acceleration
- Possible stalling or refusal to restart after the vehicle has been shut off
- Unusual noises from the motor or transmission area, such as whining or grinding, if the overspeed is mechanical
- Often no symptoms besides the warning light, especially if the fault is intermittent or stored during a brief overspeed event

Common causes, most likely first

- 1 Faulty position sensor (resolver) inside drive motor B, such as a damaged winding or internal short
- 2 Damaged or chafed wiring in the position sensor circuit, including opens, shorts to ground, or shorts to voltage
- 3 Corroded or loose electrical connectors at the motor or control module, leading to intermittent signal loss
- 4 Failed motor control module or inverter assembly that misinterprets the position sensor signal
- 5 Mechanical issues within the motor or transmission, such as a slipping clutch or gear ratio error, causing actual overspeed
- 6 Software calibration errors in the control module that incorrectly set an overspeed threshold



How to diagnose and fix it

- 1 Perform a thorough visual inspection of the motor position sensor wiring and connectors for damage, corrosion, or loose pins
- 2 Use a scan tool to retrieve all stored codes and freeze-frame data, then clear codes and test-drive to see if P0A4A returns
- 3 Check the position sensor circuit with a multimeter for continuity, resistance, and short circuits according to the manufacturer's specifications
- 4 Inspect the motor's resolver signal with an oscilloscope to verify a clean waveform and correct amplitude while rotating the motor by hand
- 5 If the sensor circuit tests good, check for mechanical binding or transmission issues that could cause actual overspeed
- 6 Replace the faulty position sensor or resolver if testing indicates an internal failure, following the manufacturer's procedures
- 7 If all else fails, reprogram or replace the motor control module after confirming power and ground integrity

When the sensor is not the real culprit

- A common misdiagnosis is replacing the motor position sensor when the actual problem is a chafed wire harness near the motor, which can short only when the engine moves under load.
- The code can be set by a momentary loss of signal during a hard acceleration event, so intermittent faults may not appear during a simple idle test.
- On some vehicles, a weak 12-volt auxiliary battery can cause the control module to log false overspeed codes due to voltage spikes during cranking.
- A failing inverter coolant pump that causes overheating can lead to derating and overspeed detection, so always check cooling system health before condemning the motor.
- After replacing a position sensor, a relearn or calibration procedure is often required; skipping it can immediately reset the code.

Can I keep driving with P0A4A?

Do not continue driving with this code active, as an overspeed condition can lead to sudden loss of power or catastrophic motor damage. Have the vehicle towed to a qualified hybrid service facility for diagnosis.

Tools that help

- Hybrid/EV-capable OBD-II scan tool with live data and graphing
- Digital multimeter with min/max and duty cycle functions
- Oscilloscope for waveform analysis
- Manufacturer-specific service information and wiring diagrams
- Insulation tester (megohmmeter) for checking motor windings



Reading P0A4A

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- A** Hybrid propulsion.
- 4A** The exact fault within that area.

Often seen with

P0A3F Drive Motor A Position Sensor Circuit · **P0A40** Drive Motor A Position Sensor Circuit Range/Performance · **P0A44** Drive Motor A Position Sensor Circuit Overspeed · **P0A45** Drive Motor B Position Sensor Circuit · **P0A4B** Generator Position Sensor Circuit

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/p0a4a/>

