

GENERIC · POWERTRAIN

P0C50

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0C50

Drive Motor A Position Sensor Circuit A Circuit

P0C50 indicates that the hybrid or electric vehicle control module has detected an abnormal signal from the position sensor circuit for drive motor A, which is the primary traction motor. The circuit's voltage or rationality check has failed, so the module cannot reliably determine the motor's rotor position for proper torque control.

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 hybrid system warning light
- Often no symptoms besides the warning light, especially if the fault is intermittent
- Reduced power or limp mode due to the controller limiting motor output
- Rough operation or hesitation during acceleration or regenerative braking
- In rare cases, the vehicle may fail to start or move because the controller cannot confirm motor position

Common causes, most likely first

- 1 Faulty motor position sensor (resolver or encoder) internal failure
- 2 Damaged or corroded wiring or connector at the sensor or controller
- 3 Open or short circuit in the sensor signal or excitation wiring
- 4 Failed motor controller (inverter) internal circuit for the position sensor
- 5 Mechanical damage to the sensor tone ring or resolver rotor
- 6 Loose or improperly seated sensor mounting causing air gap variation

How to diagnose and fix it

- 1 Perform a visual inspection of the sensor, wiring, and connectors for damage or corrosion
- 2 Check for technical service bulletins (TSBs) or known issues for the specific vehicle make and model
- 3 Measure resistance and continuity of the sensor windings and wiring harness
- 4 Back-probe the sensor signal at the controller and compare to specifications
- 5 Perform a wiggle test on the harness while monitoring sensor signal with a scan tool
- 6 Replace the motor position sensor if faulty, following proper alignment procedures
- 7 If the sensor and wiring are good, diagnose or replace the motor controller as needed



Before you replace the motor position sensor

- A common cause of this code is a poor connection at the sensor connector, often due to water intrusion or terminal fretting, which can mimic a failed sensor.
- The code does not always mean the sensor itself is bad; the motor controller's internal signal processing circuit can fail and set the same code.
- On some vehicles, a weak 12-volt auxiliary battery can cause erratic sensor signals and set this code, so always check battery health first.
- After replacing the sensor, a relearn or calibration procedure is often required; skipping it can cause the code to return immediately.
- Mechanical issues like a loose resolver rotor or damaged tone ring can produce a good electrical signal but still set the code due to erratic position readings.

Can I keep driving with P0C50?

If the vehicle is in limp mode or the warning light is flashing, avoid driving and have it towed to a qualified technician. If the light is steady and the vehicle drives normally, you may drive cautiously to a repair shop, but avoid heavy acceleration or high speeds.

Tools that help

- OBD-II scan tool with manufacturer-specific software
- Digital multimeter (DMM)
- Oscilloscope for signal analysis
- Wiring diagram for the specific vehicle
- Breakout box or back-probe kit

Reading P0C50

P	Powertrain: engine, transmission and emissions.
0	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
C	Hybrid propulsion.
50	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 · **P0C51** Drive Motor A Position Sensor Circuit A Range/Performance · **P0C52** Drive Motor A Position Sensor Circuit A Circuit Low · **P0C53** Drive Motor A Position Sensor Circuit A Circuit High



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/p0c50/>

