

GENERIC · POWERTRAIN

P0C54

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0C54

Drive Motor A Position Sensor Circuit A Circuit Intermittent/Erratic

P0C54 indicates that the controller for Drive Motor A has detected an intermittent or erratic signal from the position sensor circuit that reports the motor's rotor angle. The computer expects a smooth, continuous voltage or digital pattern as the motor turns, and it flags this code when that signal drops out, jumps, or becomes noisy in a way that does not match the motor's commanded speed.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the hybrid or electric vehicle warning light, often with no other noticeable symptoms
- Intermittent loss of propulsion or a sudden reduction in power while driving
- Rough operation or shuddering from the drive motor during acceleration or deceleration
- The vehicle may enter a limp-home mode or refuse to restart after a stop
- Unusual noises or vibration from the motor area, though this is less common
- A stored freeze-frame showing the fault occurred at a specific motor speed or temperature

Common causes, most likely first

- 1 A damaged or chafed wire in the position sensor harness, often near a connector or where the loom flexes
- 2 Corrosion or poor pin tension inside the sensor connector, causing an intermittent connection
- 3 A failing position sensor itself, such as a cracked circuit board or worn internal contacts
- 4 Electrical interference from a nearby high-voltage cable or a poor ground connection
- 5 Loose or damaged motor housing ground strap, leading to a floating reference voltage
- 6 A faulty controller or inverter assembly that misreads an otherwise good sensor signal
- 7 Debris or metallic particles on the sensor pickup, disturbing the magnetic field



How to diagnose and fix it

- 1 Inspect the position sensor harness and connector for chafing, corrosion, or loose pins, and repair as needed
- 2 Check the motor housing ground strap and all related ground points for tightness and cleanliness
- 3 Measure the sensor circuit resistance and voltage drop while wiggling the harness to catch intermittent faults
- 4 Use a scan tool to view live position sensor data and compare it with commanded motor speed for dropouts or spikes
- 5 Perform a continuity and short-to-ground test on each wire in the sensor circuit, including the shield if present
- 6 Replace the position sensor if the wiring and grounds are proven good but the signal remains erratic
- 7 If the sensor and wiring are confirmed good, diagnose the controller or inverter for internal signal processing faults

Intermittent faults hide in the harness

- A common mistake is replacing the position sensor immediately, when a chafed wire or corroded connector pin is the actual cause in many cases.
The code can set from electrical noise rather than a hard failure, so a poor ground or a loose high-voltage cable shield may be the real culprit.
- Freeze-frame data often shows the fault occurred at a specific motor speed or temperature, which can point to a mechanical or thermal issue rather than a wiring problem.
- Some controllers log this code after a low-voltage event or a jump start, and clearing it after a full battery charge may prevent a unnecessary repair.
A failing sensor may still produce a plausible-looking signal on a basic scan tool, so oscilloscope testing of the waveform is often needed to catch erratic behavior.

Can I keep driving with P0C54?

It is not safe to ignore this code because an erratic position signal can cause a sudden loss of propulsion or a limp-home event. Avoid sustained highway driving and heavy acceleration until the fault is diagnosed, and have the vehicle checked promptly.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with min/max recording
- Oscilloscope for waveform analysis
- Wire piercing probes and back-probe pins
- Service information for connector pinouts and ground locations
- Insulated hand tools for harness repair



Reading P0C54

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

Often seen with

P0A3F Drive Motor A Position Sensor Circuit · **P0A45** Drive Motor B Position Sensor Circuit · **P0C55** Drive Motor B Position Sensor Circuit A Circuit · **P0C56** Drive Motor B Position Sensor Circuit A Range/Performance · **P0C57** Drive Motor B Position Sensor Circuit A 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/p0c54/>

