

GENERIC · POWERTRAIN

P2C6F

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2C6F

Drive Motor "A" Phase Z Current

P2C6F indicates that the inverter controller for drive motor 'A' has detected an out-of-range current in phase Z, which is one of the three stator windings of the traction motor. The computer compares the commanded current to the actual current measured by the phase current sensor and sets this code when the feedback signal falls outside the expected window for a calibrated time.

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

Symptoms you may notice

- Illumination of the hybrid or electric vehicle service warning light, often with a message to reduce power or pull over safely
- Reduced propulsion power or a limp-home mode that limits vehicle speed and acceleration
- The vehicle may refuse to start or shift into drive if the fault is active at key-on
- Intermittent shudder or hesitation during acceleration under load
- Often no symptoms besides the warning light if the fault is stored but not currently active
- Possible audible whine or click from the inverter area in severe cases

Common causes, most likely first

- 1 Faulty phase Z current sensor inside the drive motor inverter or motor assembly
- 2 Damaged or corroded wiring harness between the motor phase current sensor and the inverter controller
- 3 Loose or contaminated connector pins at the motor or inverter interface
- 4 Internal short or open in the phase Z stator winding or its terminal connection
- 5 Failed inverter power module or gate driver affecting current regulation
- 6 Software calibration error or outdated inverter control module firmware
- 7 Coolant intrusion or thermal damage to the inverter assembly causing sensor drift



How to diagnose and fix it

- 1 Connect a scan tool and record all hybrid/EV control module codes, freeze-frame data, and live current values for all three motor phases to confirm the fault is active and isolate it to phase Z.
- 2 Visually inspect the motor-to-inverter harness and connectors for chafing, corrosion, moisture, or loose pins, and perform a wiggle test while watching phase current PIDs.
- 3 Measure the phase Z current sensor signal voltage at the inverter connector with a multimeter and compare it to the service specification for key-on, engine-off conditions.
- 4 Check the phase Z stator winding resistance and insulation to ground using a milliohm meter and insulation tester, comparing readings to the other two phases.
- 5 If the sensor signal is out of range but the winding checks good, replace the current sensor or the inverter assembly as required by the manufacturer's service procedure.
- 6 After repair, clear codes, perform any required inverter calibration or learning procedure, and road-test the vehicle under load to verify the code does not return.

Phase Z current sensor misdiagnosis traps

- A phase Z current sensor fault can be caused by a simple loose connector pin that only acts up under vibration, so always wiggle-test the harness while monitoring live data before condemning the inverter.
- The code does not always mean the motor winding is bad; a failed current sensor or a chafed signal wire will set the same code and is far more common than stator failure.
- On many hybrids and EVs, the phase current sensors are integrated into the inverter assembly and cannot be replaced separately, so verify the sensor signal at the connector before replacing the entire unit.
- Low coolant level or a restricted inverter cooling circuit can cause thermal drift in the current sensor and set this code intermittently, so check coolant condition and flow as part of the diagnosis.
- After any inverter or motor replacement, some manufacturers require a current sensor offset learning procedure; skipping it will cause the code to return immediately.

Can I keep driving with P2C6F?

Do not continue driving with an active P2C6F code because the inverter may lose control of motor current, which can cause a sudden loss of propulsion or a safety shutdown. Have the vehicle towed to a qualified hybrid/EV service facility for diagnosis.

Tools that help

- Hybrid/EV-capable scan tool with live data and freeze-frame recording
- Digital multimeter with min/max and peak capture
- Milliohm meter for low-resistance winding checks
- Insulation tester (megohmmeter) for winding-to-ground checks
- Oscilloscope for viewing phase current sensor waveforms
- Manufacturer service information for connector pinouts and sensor specifications



Reading P2C6F

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- C** Hybrid propulsion.
- 6F** The exact fault within that area.

Often seen with

P0A3F Drive Motor A Position Sensor Circuit · **P0A45** Drive Motor B Position Sensor Circuit · **P2C6E** Drive Motor "A" Phase Y Current High · **P2C70** Drive Motor "A" Phase Z 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/p2c6f/>

