

GENERIC · POWERTRAIN

P2D5F

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2D5F

Battery Charging System Positive Contactor C Control Circuit Range/Performance

P2D5F indicates that the powertrain control module has detected an out-of-range or performance fault in the control circuit for the positive contactor of the battery charging system. The contactor is a high-current relay that connects the battery pack to the charging system, and the module monitors the control wire for expected voltage or current behavior. When the signal does not match the commanded state within the calibrated window, the code is stored and the charging system may be disabled.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

High

FIX DIFFICULTY

Professional

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the battery/charging system warning light or service vehicle soon message
- Often no symptoms besides the warning light, especially if the contactor remains in a safe default state
- Failure of the high-voltage battery to charge, leading to reduced electric range or a no-start condition on plug-in vehicles
- Intermittent charging interruption or a charging session that aborts shortly after starting
- Audible clicking or no click from the contactor area when the charging system is commanded on
- Reduced power or limp-home mode if the vehicle relies on the contactor for normal operation

Common causes, most likely first

- 1 Damaged or corroded wiring or connector terminals in the positive contactor control circuit
- 2 Faulty positive contactor coil or internal contactor assembly
- 3 Failed control module driver or internal circuit fault within the battery charging system controller
- 4 Poor ground connection for the contactor or its control module
- 5 Water intrusion or contamination in the contactor housing or connector
- 6 Aftermarket accessories or improper previous repairs tapping into the control circuit



How to diagnose and fix it

- 1 Verify the stored code and check for any related charging system or high-voltage codes before proceeding
- 2 Inspect the positive contactor control circuit wiring and connectors for chafing, corrosion, or loose terminals
- 3 Measure resistance and voltage drop across the contactor coil and compare with manufacturer specifications
- 4 Check the control module ground and power supply to rule out a shared circuit fault
- 5 Command the contactor on and off with a scan tool and observe control circuit voltage or current to confirm the driver output
- 6 If the control signal is present but the contactor does not actuate, replace the contactor and retest
- 7 If the control signal is absent or incorrect, diagnose the control module and repair or replace as required

Contactor control faults that fool technicians

- A contactor that fails to close can set this code even when the coil is electrically good, because the module may monitor current signature or feedback rather than simple continuity.
- Intermittent codes often trace to a pin fit issue in the connector that only acts up under vibration or temperature change, so a wiggle test while monitoring live data is more revealing than a static ohm check.
- Some vehicles set P2D5F when the 12-volt auxiliary battery is weak, because the contactor driver cannot supply enough current to pull in the coil reliably.
- Replacing the contactor without checking the control module driver output can lead to a repeat failure if the module is intermittently shorting or open internally.
- This code does not always mean the contactor itself is bad; a shorted or open control wire between the module and contactor is just as common and far cheaper to fix.

Can I keep driving with P2D5F?

Do not continue driving under normal conditions because a failed positive contactor can prevent the high-voltage battery from charging and may leave you stranded. Limit driving to a safe location or a repair shop, and avoid relying on the vehicle for long trips until the fault is repaired.

Tools that help

- OBD-II scan tool with bidirectional control and live data capability
- Digital multimeter with min/max and duty cycle functions
- Wiring diagram and connector pinout for the specific vehicle
- Insulated hand tools and safety gloves for high-voltage system work
- Oscilloscope for capturing contactor control signals



Reading P2D5F

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- D** Hybrid propulsion.
- 5F** The exact fault within that area.

Often seen with

P0AA6 Hybrid/EV Battery Voltage System Isolation Fault · **P2D5E** Battery Charging System Positive Contactor C Control Circuit · **P2D60** Battery Charging System Positive Contactor C Control Circuit · **U0111** Lost Communication With Battery Energy Control Module 'A'

See it working

Watch the animated explainer [How a Refrigerator Works: The Cooling Cycle](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2d5f/>

