

GENERIC · POWERTRAIN

P0AE2

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0AE2

Hybrid/EV Battery Precharge Contactor Circuit Stuck Closed

P0AE2 indicates that the hybrid or electric vehicle's battery management system has detected the precharge contactor is stuck in the closed position, meaning the contactor's contacts are welded together or the circuit is permanently conducting when it should be open. The computer typically monitors voltage across the contactor or current flow during the precharge sequence and flags an error when the expected voltage drop or isolation is not achieved.

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

Symptoms you may notice

- Illumination of the hybrid system warning light or service vehicle soon message
- Often no symptoms besides the warning light, especially if the fault is intermittent
- Vehicle may fail to start or enter 'ready' mode because the precharge sequence is aborted
- Possible reduced power or limp mode if the high-voltage system is disabled for safety
- In rare cases, a burning smell or heat from the battery pack area due to continuous current flow through the stuck contactor
- No noticeable performance issue if the contactor sticks closed but the system still operates, though safety risk remains

Common causes, most likely first

- 1 Welded or fused contacts inside the precharge contactor due to repeated high inrush currents or normal wear
- 2 Mechanical failure of the contactor's return spring or armature, preventing it from opening
- 3 Contactor driver circuit fault in the battery management system or control module, holding the coil energized
- 4 Damaged wiring or connector in the contactor control circuit causing a short to power
- 5 Contamination or debris inside the contactor preventing contact separation
- 6 Overheating of the contactor from excessive cycling or a cooling system fault
- 7 Manufacturing defect or premature failure of the contactor assembly



How to diagnose and fix it

- 1 Perform a visual inspection of the precharge contactor and its wiring for signs of overheating, melting, or loose connections
- 2 Use a scan tool to command the contactor open and closed while monitoring voltage and current to confirm the stuck condition
- 3 Measure resistance across the contactor terminals with the system powered down to check for continuity when open is commanded
- 4 Check the control circuit for shorts to power or ground that could keep the contactor energized
- 5 If the contactor is confirmed stuck closed, replace the precharge contactor assembly following manufacturer procedures
- 6 After replacement, clear the code and verify the precharge sequence operates correctly with a test drive
- 7 If the contactor is not stuck, diagnose the battery management system or control module for internal faults

Contactor stuck closed: don't overlook these

- A stuck-closed precharge contactor can sometimes be caused by a faulty control module that continuously energizes the coil, so replacing the contactor alone may not fix the issue.
- The code may set intermittently due to a contactor that sticks only when hot or after repeated cycling, making it important to test under conditions that reproduce the fault.
- Some vehicles use the precharge contactor in parallel with the main contactor, and a stuck precharge contactor can mimic a main contactor failure, leading to misdiagnosis.
- Always follow high-voltage safety procedures; the battery pack remains energized even when the vehicle is off, and the stuck contactor may mean high voltage is present at unexpected terminals.
- A weak 12-volt battery or poor ground can cause erratic contactor operation and set this code without a defective contactor.

Can I keep driving with P0AE2?

Do not continue driving with this code set, as a stuck precharge contactor can prevent the high-voltage system from safely shutting down and may lead to overheating or arcing. Have the vehicle inspected by a qualified hybrid/EV technician immediately, and avoid charging or operating the vehicle until repaired.

Tools that help

- Hybrid/EV safety gloves and insulated tools
- Digital multimeter with high-voltage rating
- Scan tool with hybrid/EV capabilities
- Oscilloscope for monitoring contactor control signals
- Manufacturer service information for precharge circuit testing



Reading P0AE2

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- A** Hybrid propulsion.
- E2** The exact fault within that area.

Often seen with

P0A94 DC/DC Converter A Performance · **P0AA6** Hybrid/EV Battery Voltage System Isolation Fault · **P0AE0** Hybrid/EV Battery Negative Contactor Control Circuit High · **P0AE1** Hybrid/EV Battery Precharge Contactor Circuit · **P0AE3** Hybrid/EV Battery Precharge Contactor Circuit Stuck Open

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/p0ae2/>

