



P0A3D

Drive Motor B Inverter Over Temperature

P0A3D indicates that the inverter responsible for controlling drive motor B has reported an internal temperature above its safe operating limit to the hybrid or electric vehicle control module. The computer sets this code when the inverter's temperature sensor signal exceeds a calibrated threshold, typically to protect the power electronics from heat damage.

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
- Reduced power output or limp-home mode, often limiting vehicle speed
- The vehicle may refuse to start or shift into drive if the inverter is too hot
- In rare cases, a burning smell or visible coolant leak near the inverter assembly
- Often no symptoms besides the warning light, especially if the fault is intermittent

Common causes, most likely first

- 1 Low or contaminated inverter coolant (if the system is liquid-cooled) due to a leak or neglected service
- 2 Failed inverter cooling fan or blocked air passages on air-cooled designs
- 3 Faulty inverter temperature sensor sending an inaccurate high reading
- 4 Restricted coolant flow from a clogged radiator, failing water pump, or kinked hose
- 5 Overheating caused by prolonged heavy load, such as towing or repeated hard acceleration
- 6 Internal inverter fault, such as degraded thermal paste or failing power modules, leading to excessive heat generation
- 7 Software calibration issue in the hybrid control module misinterpreting temperature data



How to diagnose and fix it

- 1 Use a scan tool to retrieve all hybrid system codes and freeze-frame data, then verify the inverter temperature reading against actual conditions with a infrared thermometer.
- 2 Inspect the inverter coolant level, condition, and specific gravity; top off or flush the system if the fluid is low or degraded.
- 3 Check the operation of the inverter cooling fan (if equipped) by commanding it on with the scan tool and listening for operation.
- 4 Pressure-test the cooling system and inspect for leaks at the inverter, hoses, and radiator.
- 5 Measure the resistance of the inverter temperature sensor and compare to specifications; replace the sensor if out of range.
- 6 If the sensor and cooling system are good, perform a load test to see if the inverter overheats under normal driving conditions, which may indicate an internal inverter fault.
- 7 Reprogram the hybrid control module with the latest software calibration if a known issue exists, then clear codes and verify the repair with a road test.

Cooling system faults often mimic inverter failure

- A significant number of P0A3D codes are caused by something as simple as a low coolant level or a failed radiator fan, not by a defective inverter.
- The inverter temperature sensor can fail in a way that reports high temperatures even when the inverter is cold, leading to unnecessary inverter replacement.
- On air-cooled inverters, a clogged cooling fin or a failed fan motor is a common culprit that is often overlooked during diagnosis.
- Intermittent P0A3D codes may only appear during heavy load or hot ambient temperatures, so a thorough test drive under those conditions is essential.
- Always check for related codes such as P0A3C or P0A3E, which can indicate a circuit fault with the temperature sensor rather than an actual overheat condition.

Can I keep driving with P0A3D?

Do not continue driving with this code active, as overheating can permanently damage the inverter and leave you stranded. If the warning light is on, pull over safely and arrange for a tow to a qualified hybrid repair shop.

Tools that help

- Hybrid-capable OBD-II scan tool with live data and bidirectional controls
- Infrared thermometer
- Digital multimeter
- Cooling system pressure tester
- Factory service information for the specific vehicle



Reading P0A3D

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- A** Hybrid propulsion.
- 3D** The exact fault within that area.

Often seen with

P0A3C Drive Motor A Inverter Over Temperature · **P0A3E** Generator Inverter Over Temperature · **P0A3F** Drive Motor A Position Sensor Circuit · **P0A40** Drive Motor A Position Sensor Circuit Range/Performance · **P0A41** Drive Motor A Position Sensor 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/p0a3d/>

