

GENERIC · POWERTRAIN

P0A33

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0A33

Drive Motor B Temperature Sensor Circuit High

P0A33 indicates that the hybrid or electric vehicle control module has detected an abnormally high voltage signal from the temperature sensor monitoring drive motor B, which is often the rear or secondary traction motor in a dual-motor system. The sensor circuit is expected to produce a voltage within a specific range that corresponds to the motor's temperature, and a sustained high reading tells the computer that the circuit is open, shorted to voltage, or the sensor element has failed.

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

Symptoms you may notice

- Illumination of the check engine light or hybrid system warning light, often with no other noticeable symptoms
- Reduced power output or a limp-home mode as the vehicle limits motor operation to protect against perceived overheating
- The hybrid system may refuse to start or may shut down shortly after startup if the fault is severe
- Inaccurate or erratic temperature readings on a scan tool data stream for drive motor B
- Possible activation of the engine cooling fan at high speed or continuous operation due to the control module's default strategy
- In some cases, the vehicle may switch to gasoline-engine-only operation and disable electric drive

Common causes, most likely first

- 1 A failed temperature sensor element inside drive motor B, reading open or high resistance
- 2 Damaged or corroded wiring harness between the sensor and the control module, including chafed wires or broken pins
- 3 A poor electrical connection at the sensor connector or at the control module connector
- 4 An open circuit in the sensor's ground return path, causing the signal voltage to float high
- 5 A short to voltage on the signal wire, often from adjacent harness damage or fluid intrusion
- 6 A faulty control module that misinterprets a correct sensor signal, though this is less common
- 7 Internal motor damage or overheating that has permanently skewed the sensor's resistance curve



How to diagnose and fix it

- 1 Connect a scan tool and read the live data for drive motor B temperature to confirm the high reading and check for related codes
- 2 Visually inspect the sensor connector and harness for corrosion, loose pins, or obvious damage, and repair as needed
- 3 Measure the sensor's resistance with a multimeter at the sensor connector and compare it to the manufacturer's specification for the ambient temperature
- 4 Check the signal wire for a short to voltage by measuring voltage on the signal circuit with the sensor disconnected and the key on
- 5 Check the ground circuit for continuity to the control module or chassis ground, repairing any open or high-resistance path
- 6 If the wiring and connectors are good, replace the drive motor B temperature sensor, which may require removing the motor end cover or the motor assembly depending on design
- 7 After repair, clear the codes and verify that the live temperature reading is accurate and that the code does not return during a test drive

Why a high reading is not always a bad sensor

- A common misdiagnosis is replacing the temperature sensor when the real problem is a corroded connector pin or a chafed wire in the harness near the motor, so always perform a voltage drop test on both the signal and ground circuits before condemning the sensor.
- The control module often defaults to a fixed high temperature value when it detects an open circuit, which can make the scan tool data look like a genuine overheat even though the motor is cold to the touch.
- On some hybrid systems, the drive motor temperature sensor shares a reference voltage or ground with other sensors, so a fault in a neighbouring circuit can pull the signal high and set P0A33 as a secondary code.
- A low coolant level or a failed motor cooling pump can cause actual overheating that sets this code, so check the cooling system and pump operation before assuming an electrical fault.
- The code can be set intermittently by vibration or temperature changes if a wire is only partially broken, so a wiggle test of the harness while watching live data is a valuable step that many technicians skip.

Can I keep driving with P0A33?

It is generally safe to drive the vehicle a short distance to a repair shop if the only symptom is the warning light and the motor temperature reading is not genuinely high, but avoid heavy acceleration, long grades, or towing until the fault is repaired. If the vehicle enters limp mode or shows signs of actual overheating, stop driving and have it towed to prevent damage to the drive motor.



Tools that help

- OBD-II scan tool with live data and hybrid system capability
- Digital multimeter with resistance and voltage measurement functions
- Back probe pins or breakout leads for testing connectors without damage
- Vehicle-specific service information for wiring diagrams and sensor resistance specifications
- Insulated hand tools and a torque wrench for sensor replacement
- Heat gun or hair dryer for temperature-based resistance testing

Reading P0A33

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

Often seen with

P0A2F Drive Motor A Over Temperature · **P0A30** Drive Motor B Temperature Sensor Circuit · **P0A34** Drive Motor B Temperature Sensor Circuit Intermittent · **P0A35** Drive Motor B Over Temperature · **P0A3F** Drive Motor A Position Sensor Circuit

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/p0a33/>

