

GENERIC · POWERTRAIN

P2C3B

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2C3B

Cylinder Head Temperature Sensor B Circuit High

P2C3B means the engine control module (ECM) has detected an abnormally high voltage on the signal circuit for Cylinder Head Temperature Sensor B, which is a second temperature sensor used on some engines to monitor head temperature independently. The ECM expects the sensor's signal voltage to stay within a calibrated range, and a sustained high reading tells the module 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	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Reduced engine power or limp-home mode if the ECM substitutes a default temperature value
- Poor fuel economy or rough running when the engine is cold because fueling is based on a false cold reading
- Overheating warning or cooling fan running constantly if the ECM misinterprets head temperature
- Intermittent warning light that comes and goes with vibration or temperature changes
- A stored freeze-frame showing the fault occurred at a specific coolant or ambient temperature

Common causes, most likely first

- 1 Open or damaged signal wire between Cylinder Head Temperature Sensor B and the ECM
- 2 Corroded, loose, or water-intruded connector at the sensor or ECM harness
- 3 Failed Cylinder Head Temperature Sensor B element reading out of range
- 4 Short to voltage on the signal circuit from chafed wiring against a hot or moving component
- 5 Faulty ECM driver or internal pull-up resistor on the sensor input
- 6 Aftermarket sensor or pigtail with incorrect resistance characteristics installed during a previous repair



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P2C3B before clearing anything
- 2 Inspect the sensor connector and harness for corrosion, pushed pins, or chafing, and repair as needed
- 3 Measure sensor resistance cold and compare with the manufacturer's temperature-resistance chart
- 4 Back-probe the signal circuit at the ECM and compare voltage with the scan-tool temperature reading
- 5 Check for shorts to voltage on the signal wire with the sensor disconnected and the key on
- 6 Replace Cylinder Head Temperature Sensor B if resistance is out of specification or the signal stays high with a known-good test resistor fitted
- 7 Clear codes, run a road test through a full warm-up cycle, and verify the code does not return

What a high reading really tells you

- A high signal voltage usually means an open circuit or a sensor that has drifted to high resistance, not necessarily a failed sensor, so resistance testing at the sensor is the fastest way to separate the two.
- Some engines use Cylinder Head Temperature Sensor B only for monitoring and default to the primary coolant sensor when it fails, which is why many drivers notice nothing beyond the warning light.
- A short to voltage on the signal wire can mimic a failed sensor, and this is commonly missed when a technician replaces the sensor without checking the harness near hot exhaust components.
- Aftermarket sensors with the wrong temperature curve are a frequent cause of repeat P2C3B codes after a repair, so comparing resistance against the factory chart matters more than a simple pass-fail test.
- The ECM may set P2C3B only after a cold-start rationality check, so a fault that appears only on the first start of the day points to a sensor that is out of range when cold.

Can I keep driving with P2C3B?

You can usually drive the vehicle to a repair shop, but avoid heavy loads and long trips until the fault is diagnosed because the ECM may be fueling the engine on a default temperature value. If the engine overheats or enters limp mode, stop driving and have it towed.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with back-probe pins
- Manufacturer's temperature-resistance chart for the sensor
- Wiring diagram for the sensor circuit
- Basic hand tools for connector and sensor access



Reading P2C3B

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

Often seen with

P0117 Engine Coolant Temperature Circuit Low Input · **P0118** Engine Coolant Temperature Circuit High Input · **P0128** Coolant Thermostat (Coolant Temperature Below Thermostat Reg · **P2C3A** Cylinder Head Temperature Sensor B Circuit Low · **P2C3C** Cylinder Head Temperature Sensor B Circuit Intermittent/Erra

See it working

Watch the animated explainer [How an Automatic Transmission Works, Gear by Gear](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2c3b/>

