

GENERIC · POWERTRAIN

P00EC

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P00EC

Intake Air Temperature Sensor 3 Circuit Intermittent/Erratic Bank 1

P00EC indicates that the powertrain control module (PCM) has detected an intermittent or erratic signal from the intake air temperature (IAT) sensor 3 on bank 1. The PCM expects a steady voltage or resistance from this sensor, but the signal is dropping out or jumping unpredictably, which can affect fuel delivery and ignition timing calculations.

SYSTEM Powertrain	CODE TYPE Generic (all makes)	SEVERITY Low	FIX DIFFICULTY Intermediate	AREA Fuel and air metering and auxiliary emission controls
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Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or hesitation during acceleration if the erratic signal affects fuel mixture
- Poor fuel economy due to incorrect air density calculations
- Intermittent stalling or surging at operating temperature
- A slight decrease in engine performance when the sensor signal drops out

Common causes, most likely first

- 1 Faulty intake air temperature sensor 3 with an internal intermittent connection
- 2 Damaged or chafed wiring in the sensor circuit, often near heat sources or sharp edges
- 3 Corroded or loose electrical connector at the sensor or PCM
- 4 Poor ground connection for the sensor circuit
- 5 PCM software glitch or internal fault causing erratic signal interpretation
- 6 Aftermarket air intake system that exposes the sensor to abnormal airflow or heat



How to diagnose and fix it

- 1 Inspect the sensor connector and wiring for obvious damage, corrosion, or loose pins
- 2 Use a scan tool to monitor live IAT sensor 3 data while wiggling the harness to reproduce the erratic signal
- 3 Measure the sensor's resistance with a multimeter and compare to the manufacturer's temperature-resistance chart
- 4 Check the sensor circuit for shorts to ground or voltage, and verify the reference voltage at the connector
- 5 Perform a voltage drop test on the ground circuit to ensure a clean return path
- 6 Replace the IAT sensor 3 if it fails resistance or wiggle tests
- 7 Repair or replace damaged wiring and clear the code, then verify the repair with a test drive

Intermittent IAT faults often misdiagnosed

- A common oversight is replacing the sensor without checking the harness, yet chafed wires near the intake manifold cause most intermittent IAT codes.
- The code can be set by a poor ground connection at the engine block, which affects the sensor's return signal and mimics a faulty sensor.
- Aftermarket air intakes that place the sensor in a different airflow path can cause erratic readings that trigger P00EC even when the sensor is good.
- Some vehicles use IAT sensor 3 as part of a calculated air temperature strategy, so a failing sensor may not produce noticeable driveability symptoms until the signal drops out completely.
- A PCM software update or reflash may be required if the erratic signal is caused by a known calibration issue rather than a hardware fault.

Can I keep driving with P00EC?

The vehicle is generally safe to drive with P00EC because the fault is intermittent and the PCM can substitute a default temperature value, but avoid heavy towing or aggressive driving until the issue is resolved to prevent potential fuel economy loss or minor performance issues.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wire piercing probes or back-probe kit
- Manufacturer-specific wiring diagram
- Heat gun and thermometer for sensor testing



Reading P00EC

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 0** Fuel and air metering and auxiliary emission controls.
- EC** The exact fault within that area.

Often seen with

P00ED Intake Air Temperature Sensor 3 Circuit Bank 2 · **P00EE** Intake Air Temperature Sensor 3 Circuit Range/Performance Ba · **P0111** Intake Air Temperature Circuit Range/Performance · **P0112** Intake Air Temperature Circuit Low Input · **P0113** Intake Air Temperature Circuit High Input

See it working

Watch the animated explainer [How a Fuel Injector Works: Pulse Width and Spray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p00ec/>

