



P050E

Cold Start Engine Exhaust Temperature Too Low

P050E indicates that the powertrain control module (PCM) has determined the exhaust gas temperature did not rise quickly enough after a cold start, based on the cold-start exhaust temperature model. The PCM compares the measured or modeled exhaust temperature against an expected threshold within a calibrated time window after startup and sets the code when the exhaust stays too cool.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Extended fast idle or rough running during the first few minutes after a cold start
- A noticeable fuel smell from the exhaust during warm-up
- Slightly reduced fuel economy during short-trip driving
- In cold weather, the engine may take longer than normal to reach operating temperature
- In some cases, a pending P050E may appear only after a cold soak and then clear itself

Common causes, most likely first

- 1 A faulty exhaust gas temperature (EGT) sensor that reads lower than actual temperature
- 2 A stuck-open or slow-closing thermostat that prevents the engine from warming up normally
- 3 A leaking or disconnected exhaust system ahead of the sensor, allowing cool air into the exhaust stream
- 4 A faulty coolant temperature sensor (CTS) that reports a colder-than-actual engine temperature to the PCM
- 5 Retarded or incorrect ignition timing during cold start due to a sensor or calibration issue
- 6 A weak or failing glow plug system on diesel engines, or a cold-start injector issue on gasoline engines
- 7 A PCM calibration or software issue that misinterprets the cold-start exhaust temperature model



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and record freeze-frame data to confirm the cold-start conditions when P050E set
- 2 Verify the engine coolant temperature sensor reading against actual engine temperature with an infrared thermometer or scan tool live data
- 3 Inspect the exhaust system from the manifold to the EGT sensor for leaks, loose clamps, cracks, or missing hardware
- 4 Compare the EGT sensor reading to ambient temperature after a long cold soak; a reading that is far off indicates a biased sensor
- 5 Check the thermostat operation by monitoring coolant temperature rise during a cold start; replace a thermostat that opens early or sticks open
- 6 On diesel engines, test the glow plug circuit for power, resistance, and proper operation during cold start
- 7 After repairs, clear codes and perform a cold-start drive cycle to confirm the exhaust temperature rises within the expected window

Cold-start exhaust temperature traps to check first

- A biased EGT sensor that reads a few degrees low when cold is a common cause that does not always set a sensor circuit code, so live data comparison after a cold soak is essential.
- A thermostat that sticks partially open may not set a coolant temperature code but will keep exhaust temperatures low long enough to trigger P050E on short trips.
- Exhaust leaks upstream of the EGT sensor pull in cool ambient air and dilute the exhaust stream, making the sensor report a temperature that is lower than actual combustion temperature.
- On diesel vehicles, a single failed glow plug can prevent one cylinder from firing cleanly during cold start, lowering overall exhaust temperature without setting a glow plug code.
- P050E can be set by a PCM calibration issue after a software update or battery replacement, so check for applicable service bulletins before replacing hardware.

Can I keep driving with P050E?

The vehicle is generally safe to drive with P050E, but avoid extended idling and short trips that prevent full warm-up until the fault is repaired. Prolonged driving with a cold-running engine can degrade emissions components and increase fuel dilution in the oil.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Infrared thermometer
- Digital multimeter
- Basic hand tools for exhaust and sensor inspection
- Glow plug tester (for diesel engines)



Reading P050E

P	Powertrain: engine, transmission and emissions.
0	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
5	Vehicle speed, idle control and auxiliary inputs.
0E	The exact fault within that area.

Often seen with

P0128 Coolant Thermostat (Coolant Temperature Below Thermostat Reg · **P0544** Exhaust Gas Temperature Sensor Circuit (Bank 1 Sensor 1) · **P0545** Exhaust Gas Temperature Sensor Circuit Low (Bank 1 Sensor 1) · **P0546** Exhaust Gas Temperature Sensor Circuit High (Bank 1 Sensor 1 · **P2033** Exhaust Gas Temperature Sensor Circuit High (Bank 1 Sensor 2

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/p050e/>

