



P05EB

Cold Start SCR NOx Catalyst Inlet Temperature Too Low

P05EB indicates that during a cold start, the engine control module detected the selective catalytic reduction (SCR) nitrogen oxide (NOx) catalyst inlet temperature remained below the expected threshold for too long. This means the exhaust aftertreatment system is not reaching the temperature needed for the SCR catalyst to efficiently reduce NOx, often due to a faulty temperature sensor, a stuck-open thermostat, or a problem with the dosing system.

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

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Reduced engine power or limp mode in some vehicles as a protective measure.
- Increased diesel exhaust fluid (DEF) consumption if the system attempts to compensate.
- Possible rough running or hesitation during cold starts in severe cases.
- A message on the dashboard indicating emissions system fault or service required.

Common causes, most likely first

- 1 Faulty SCR inlet temperature sensor or its wiring.
- 2 Stuck-open engine thermostat preventing coolant and exhaust from warming up properly.
- 3 Defective DEF injector or dosing module not injecting urea, leading to insufficient temperature rise.
- 4 Exhaust gas recirculation (EGR) valve stuck open, cooling exhaust excessively.
- 5 Low DEF level or poor DEF quality causing improper system operation.
- 6 Software calibration issue in the engine control module (ECM) requiring update.
- 7 Restricted exhaust flow or damaged SCR catalyst substrate.



How to diagnose and fix it

- 1 Verify DEF level and quality; top off or replace DEF if contaminated.
- 2 Use a scan tool to check for related codes and monitor SCR inlet temperature sensor readings during a cold start.
- 3 Inspect the thermostat operation by monitoring coolant temperature; replace if it fails to reach operating temperature.
- 4 Test the DEF injector for proper spray pattern and flow; clean or replace as needed.
- 5 Check wiring and connectors at the SCR temperature sensor for corrosion or damage; repair or replace.
- 6 Perform a forced regeneration or SCR system test with a diagnostic tool to confirm repair.
- 7 Update ECM software if a known calibration issue exists for the vehicle.

Cold Start SCR Temperature Diagnostics

- A stuck-open thermostat is a frequently overlooked cause because it prevents the engine and exhaust from reaching normal operating temperature, directly affecting SCR efficiency.
The code can be set by a DEF injector that is clogged or failing to spray, which reduces the exothermic reaction needed to raise catalyst temperature.
- Technicians sometimes replace the SCR catalyst unnecessarily when the real issue is a faulty temperature sensor or a wiring problem that provides false low readings.
- In some vehicles, this code may be accompanied by other SCR-related codes like P20B9 or P207F, indicating a broader dosing system fault.
Cold ambient temperatures and short drive cycles can trigger this code even on a healthy system if the vehicle never reaches the required temperature threshold.

Can I keep driving with P05EB?

You can generally continue driving, but avoid long periods of idling and short trips that prevent the exhaust from warming up. If the engine enters limp mode or you notice reduced power, have the vehicle inspected promptly to avoid further emissions system damage.

Tools that help

- OBD-II scan tool with live data capability
- Infrared thermometer
- Digital multimeter
- DEF refractometer
- Diagnostic software for forced regeneration and system tests



Reading P05EB

- 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.
- EB** The exact fault within that area.

Often seen with

P042E EGR A Control Stuck Open · **P207F** Reductant Quality Performance · **P20B9** Reductant Heater A Control Circuit/Open · **P20EE** NOx Catalyst Efficiency Below Threshold (Bank 1) · **P2453** Diesel Particulate Filter Pressure Sensor Circuit Range/Perf

See it working

Watch the animated explainer [How a MAP Sensor Works: Engine Vacuum and Load](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p05eb/>

