

GENERIC · POWERTRAIN

P2045

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2045

Reductant Temperature Sensor Circuit High Input

P2045 indicates that the reductant temperature sensor circuit is reporting a voltage higher than the expected range, which the engine control module interprets as an open circuit or a short to voltage. This sensor monitors the temperature of the diesel exhaust fluid (DEF) to ensure proper operation of the selective catalytic reduction (SCR) system.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Fuel and air metering and auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Possible reduction in engine power or limp mode if the SCR system is disabled.
- A message on the dashboard indicating low DEF or a fault in the emissions system.
- Increased DEF consumption or failure to inject DEF, leading to poor emissions performance.
- In some cases, the vehicle may fail an emissions test due to the SCR system being inactive.

Common causes, most likely first

- 1 Faulty reductant temperature sensor, which may be internally open or shorted.
- 2 Damaged or corroded wiring harness or connector at the sensor.
- 3 Open circuit in the signal or ground circuit between the sensor and the ECM.
- 4 Short to voltage on the signal circuit, possibly due to chafed wires.
- 5 Failed ECM driver for the sensor circuit, though this is less common.
- 6 Contaminated or degraded DEF causing sensor malfunction.
- 7 Extreme cold conditions causing the DEF to freeze and the sensor to read abnormally high resistance.



How to diagnose and fix it

- 1 Use a scan tool to verify the code and check live data for the reductant temperature sensor reading.
- 2 Visually inspect the sensor and its connector for damage, corrosion, or loose pins.
- 3 Measure the resistance of the sensor with a multimeter and compare to specifications.
- 4 Check the wiring harness for continuity and shorts to voltage or ground between the sensor and ECM.
- 5 If the sensor is faulty, replace it and clear the code.
- 6 If wiring is damaged, repair or replace the affected section of the harness.
- 7 After repairs, perform a road test to confirm the code does not return and the SCR system operates correctly.

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- A common oversight is assuming the sensor itself is always at fault, but wiring issues such as a chafed wire shorting to voltage are frequent culprits.
- The code can set intermittently due to temperature extremes, so a thorough inspection of the circuit is necessary before replacing parts.
- Some vehicles may set this code if the DEF tank is overfilled or contaminated, affecting sensor readings.
- The reductant temperature sensor is often integrated into the DEF pump module, making replacement more costly than a standalone sensor.
- Always check for related codes in the SCR system, as multiple faults can point to a shared power or ground issue.

Can I keep driving with P2045?

It is generally safe to continue driving with this code, but avoid long trips or heavy loads until repaired, as the SCR system may be disabled, leading to increased emissions and potential limp mode.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram for the specific vehicle
- Basic hand tools for sensor removal
- Electrical contact cleaner



Reading P2045

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

Often seen with

P2044 Reductant Temperature Sensor Circuit Low Input · **P2046** Reductant Temperature Sensor Circuit Intermittent · **P2047** Reductant Injector Circuit/Open (Bank 1 Unit 1) · **P2048** Reductant Injector Circuit Low (Bank 1 Unit 1) · **P2049** Reductant Injector Circuit High (Bank 1 Unit 1)

See it working

Watch the animated explainer [How Airbags Work: A 50 km/h Crash in Slow Motion](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2045/>

