

GENERIC · POWERTRAIN

P0543

OBD-II TROUBLE CODE

P0543

Intake Air Heater 'A' Circuit Open

P0543 means the engine computer has detected an open circuit in the intake air heater 'A' circuit, which is the electrical path that powers the heating element used to warm incoming air on certain diesel engines. The computer commands the heater on and then monitors the circuit for expected current flow or voltage feedback, and it sets this code when the circuit remains open, indicating no current is reaching the heater or the feedback signal is missing.

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

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Hard starting or rough idle in cold ambient temperatures
- White smoke from the exhaust after a cold start
- Reduced engine performance or hesitation during warm-up
- Longer than normal warm-up period in cold weather
- Possible glow plug or intake heater related drivability issues in freezing conditions

Common causes, most likely first

- 1 Failed intake air heater element (open internal coil)
- 2 Broken or corroded wiring between the heater and the control module
- 3 Blown fuse or fusible link supplying power to the heater circuit
- 4 Faulty intake air heater relay or control module output driver
- 5 Loose or damaged electrical connector at the heater or relay
- 6 High resistance in the ground circuit for the heater
- 7 Aftermarket or damaged wiring modifications in the heater circuit



How to diagnose and fix it

- 1 Inspect the intake air heater fuse and replace it if blown, then recheck for the code
- 2 Visually inspect the heater connector and wiring for corrosion, chafing, or loose pins
- 3 Disconnect the heater and measure its resistance with a multimeter to check for an open element
- 4 Check for battery voltage at the heater connector when the heater is commanded on
- 5 Test the intake air heater relay and its control circuit if voltage is missing
- 6 Perform a voltage drop test on the ground circuit to rule out high resistance
- 7 If all electrical checks pass, suspect the control module and perform pinpoint tests per the service manual

Intake heater circuit checks before parts

- A blown fuse is often the first sign of a shorted heater element, so replacing the fuse without checking the heater can lead to a repeat failure.
- The intake air heater is not present on all diesel engines, and this code only applies to vehicles equipped with that system, so confirm the vehicle has one before diagnosing.
- Corrosion inside the heater connector can create an open circuit that looks like a failed heater, so always inspect the pins and terminals before condemning the element.
- The code can set intermittently due to vibration or temperature changes, so a wiggle test of the harness while monitoring live data can reveal a marginal connection.
- On some vehicles, the intake air heater shares a power feed with other components, so a blown fuse may also disable other circuits and set additional codes.

Can I keep driving with P0543?

You can generally continue driving with this code because the intake air heater only affects cold-start emissions and warm-up performance, but avoid heavy loads or extended idling in freezing temperatures until the fault is repaired. If the engine is hard to start or runs roughly when cold, have it diagnosed promptly to prevent excessive cranking and starter wear.

Tools that help

- OBD-II scan tool
- Digital multimeter
- Test light
- Fuse puller
- Socket and ratchet set
- Wiring diagram for the intake air heater circuit



Reading P0543

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

Often seen with

P0540 Intake Air Heater 'A' Circuit · **P0541** Intake Air Heater 'A' Circuit Low · **P0542** Intake Air Heater 'A' Circuit High · **P0544** Exhaust Gas Temperature Sensor Circuit (Bank 1 Sensor 1) · **P0545** Exhaust Gas Temperature Sensor Circuit Low (Bank 1 Sensor 1)

See it working

Watch the animated explainer [How a Rotary Engine Works: Wankel in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0543/>

