

GM · POWERTRAIN

P1541

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1541 · GM

A/C High Side Over Temperature

P1541 on a GM vehicle means the powertrain control module has detected that the air conditioning refrigerant pressure on the high side has exceeded a safe temperature-related threshold. The computer is not reporting a sensor failure directly; it is warning that the high-side pressure is too high, which correlates to excessive temperature in the A/C system.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	GM specific	Medium	Intermediate	Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- The air conditioning may stop cooling or blow warm air when the code sets.
- The A/C compressor clutch may disengage and refuse to re-engage while the fault is active.
- A warning light or A/C system message may appear on the dashboard.
- Often no symptoms besides the warning light, especially if the fault is intermittent.
- In severe cases, the high-side pressure relief valve may vent refrigerant, producing a hissing noise or visible vapor.
- The cooling fans may run continuously or at high speed as the system tries to reduce pressure.

Common causes, most likely first

- Overcharged A/C system with too much refrigerant, raising high-side pressure.
- Restricted airflow across the condenser, often from debris, bent fins, or a failed cooling fan.
- A failing A/C pressure sensor or high-side temperature sensor sending an inaccurate high reading.
- A blocked or restricted expansion valve or orifice tube causing abnormal high-side pressure.
- A condenser that is internally restricted or has poor heat transfer due to corrosion.
- A faulty A/C compressor control circuit or clutch that stays engaged longer than commanded.
- Ambient temperatures extremely high combined with a marginal cooling system can push pressures over the threshold.



How to diagnose and fix it

- 1 Connect a scan tool and verify P1541 is current, then check for any related A/C pressure sensor or fan control codes.
- 2 Inspect the condenser for debris, bent fins, or blockage and clean or repair as needed.
- 3 Verify both cooling fans operate correctly at all commanded speeds, including high speed when A/C is on.
- 4 Recover the refrigerant charge and confirm the system is not overcharged; recharge to the exact specified weight.
- 5 Test the A/C high-side pressure sensor and its wiring for accurate readings compared to a manifold gauge set.
- 6 Check for restrictions in the expansion valve or orifice tube and replace if pressure readings confirm a blockage.
- 7 If all else checks out, evaluate the A/C compressor for internal wear or a control valve issue that keeps high-side pressure elevated.

What Most Techs Miss on P1541

- A dirty or partially blocked condenser is the most common cause that gets overlooked because the A/C still cools adequately at highway speed but pressures spike in traffic.
- The code can set from a lazy cooling fan that works at low speed but fails to engage high speed, so always command both fan speeds with a scan tool.
- An overcharged system from a previous DIY top-off is a frequent culprit, and the only reliable fix is full recovery and recharge by weight, not by gauge readings alone.
- P1541 does not always mean the A/C pressure sensor is bad; a restricted expansion valve can create the same high-side pressure signature without any electrical fault.
- On some GM platforms, a failing engine coolant temperature sensor or thermostat can cause the PCM to misjudge A/C load and set this code indirectly.

Can I keep driving with P1541?

You can drive the vehicle with P1541, but avoid using the air conditioning until the fault is repaired because continued high-side pressure can damage the compressor or cause refrigerant loss. If you hear hissing or see refrigerant venting, stop using the A/C immediately and have the system inspected.

Tools that help

- Scan tool with GM-specific capability to read A/C pressure sensor data
- Manifold gauge set for A/C high and low side pressures
- Refrigerant recovery and recharge machine
- Infrared thermometer to check condenser inlet and outlet temperatures
- Digital multimeter for sensor and fan circuit testing
- Fin comb and condenser cleaning tools



Reading P1541

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (GM): its meaning depends on the make.
- 5** Vehicle speed, idle control and auxiliary inputs.
- 41** The exact fault within that area.

Often seen with

P1545 Throttle Position Control Malfunction · **P1545** A/C Clutch Relay Control Circuit · **P1545** A/C Clutch Relay Control Circuit · **P1545** Pedal Position Sensor · **P0480** Cooling Fan 1 Control Circuit Malfunction · **P0481** Cooling Fan 2 Control Circuit Malfunction · **P0532** A/C Refrigerant Pressure Sensor 'A' Circuit Low · **P0533** A/C Refrigerant Pressure Sensor 'A' Circuit High

See it working

Watch the animated explainer [How a CVT Works: Belt and Pulley Transmission](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1541/>

