

GENERIC · POWERTRAIN

P0533

OBD-II TROUBLE CODE

P0533

A/C Refrigerant Pressure Sensor 'A' Circuit High

P0533 means the air conditioning (A/C) refrigerant pressure sensor on the high side is reporting a voltage above the normal range, so the powertrain control module (PCM) sees an abnormally high pressure reading. The PCM sets this code when the sensor signal circuit voltage stays higher than the manufacturer's threshold for a calibrated time, which usually indicates an open circuit, a short to voltage, or a faulty sensor.

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

Symptoms you may notice

- The A/C compressor clutch may not engage, leaving the cabin without cold air.
- The A/C may blow warm or only intermittently cold air because the PCM disables the compressor for protection.
- The A/C compressor may run continuously or cycle rapidly if the PCM defaults to a fixed pressure value.
- The radiator cooling fan may run constantly or not at all, depending on how the PCM reacts to the fault.
- A stored P0533 code with the check engine light or A/C system warning illuminated.
- Often no symptoms besides the warning light, especially if the A/C still cools adequately.

Common causes, most likely first

- Open or high-resistance wiring in the sensor signal circuit, including a broken wire or poor connector pin tension.
- A short to voltage on the signal circuit, such as a chafed wire touching a power wire.
- A failed A/C refrigerant pressure sensor that outputs a fixed high voltage.
- Corroded or water-intruded sensor connector terminals causing an intermittent high signal.
- A poor ground connection at the sensor or PCM, which skews the signal voltage high.
- A PCM internal fault on the sensor input circuit, though this is less common.
- Low refrigerant charge or a system blockage that causes genuinely high pressure, though this usually sets a different code first.



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P0533, then verify the sensor voltage reading with a scan tool while the A/C is commanded on.
- 2 Inspect the sensor connector and wiring harness for corrosion, chafing, or loose pins, and repair any damage found.
- 3 Measure reference voltage and ground at the sensor connector with a digital multimeter, comparing against the manufacturer's specification.
- 4 Back-probe the signal wire and check for a short to voltage by wiggling the harness while watching the multimeter reading.
- 5 If wiring and connectors pass, substitute a known-good sensor or compare the sensor's voltage output against a manifold gauge reading to confirm the sensor is faulty.
- 6 Replace the A/C refrigerant pressure sensor if it is confirmed faulty, then clear the code and verify the compressor engages and the pressure reading is normal.
- 7 If the fault persists after sensor replacement, check the PCM ground and input circuit, and perform a continuity test from the sensor to the PCM.

What a high pressure reading really means

- A high signal voltage does not always mean high refrigerant pressure; an open signal circuit or a short to voltage will drive the reading high while the actual system pressure is normal.
- Technicians often replace the sensor first, but a corroded connector or a chafed wire shorting to a 5-volt reference is a more common root cause on many vehicles.
- The PCM may disable the A/C compressor clutch entirely when P0533 is active, so a no-cooling complaint can be caused by a wiring fault rather than a mechanical A/C failure.
- Some vehicles use the same pressure sensor signal for radiator fan control, so a faulty circuit can cause cooling fan symptoms that seem unrelated to the A/C system.
- A low refrigerant charge can cause the sensor to read abnormally high on some systems if the compressor cycles rapidly, so always verify system pressures with manifold gauges before condemning the sensor.

Can I keep driving with P0533?

You can usually drive the vehicle with P0533 because the PCM protects the A/C compressor by disabling it, but avoid using the A/C until the fault is repaired. Do not ignore the code for long, because a wiring short to voltage could affect other circuits, and driving without A/C in hot weather can be uncomfortable and unsafe for passengers.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with back-probe pins
- A/C manifold gauge set
- Wiring diagram for the A/C pressure sensor circuit
- Terminal pick and electrical contact cleaner

Reading P0533

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

Often seen with

P0530 A/C Refrigerant Pressure Sensor 'A' Circuit · **P0531** A/C Refrigerant Pressure Sensor 'A' Circuit Range/Performanc · **P0532** A/C Refrigerant Pressure Sensor 'A' Circuit Low · **P0534** Air Conditioner Refrigerant Charge Loss · **P0645** A/C Clutch Relay Control Circuit

See it working

Watch the animated explainer [Car Relay Test Bench: Test 4-Pin and 5-Pin Relays](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0533/>

