

GENERIC · POWERTRAIN

P2D42

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

### P2D42

## A/C Compressor Motor Voltage B Low

P2D42 indicates that the powertrain control module has detected a low voltage condition on the electrical circuit that supplies power to the air conditioning compressor motor, specifically on the 'B' side or phase. The computer monitors this circuit and sets the code when the voltage falls below the expected threshold for a calibrated amount of time, which typically points to a problem with the power supply, ground, or the compressor motor itself.

| SYSTEM     | CODE TYPE           | SEVERITY | FIX DIFFICULTY | AREA              |
|------------|---------------------|----------|----------------|-------------------|
| Powertrain | Generic (all makes) | Medium   | Intermediate   | Hybrid propulsion |

### Symptoms you may notice

- The air conditioning system may blow warm air or fail to cool the cabin.
- The A/C compressor clutch may not engage, or the compressor may not spin.
- A warning light on the dashboard, often the check engine light or a dedicated A/C indicator.
- In some vehicles, the A/C system may be automatically disabled to protect the compressor.
- Often no symptoms besides the warning light, especially if the fault is intermittent.
- Possible electrical burning smell or visible damage to wiring near the compressor.

### Common causes, most likely first

- A faulty A/C compressor motor, such as an open winding or internal short.
- Damaged or corroded wiring or connectors in the compressor motor circuit.
- Poor ground connection for the compressor motor or its control module.
- A blown fuse or faulty relay that supplies power to the compressor motor circuit.
- A malfunctioning power control module or inverter that regulates voltage to the compressor.
- Low system voltage from a weak battery or charging system issue affecting the entire vehicle.



## How to diagnose and fix it

- 1 Perform a visual inspection of the compressor motor wiring, connectors, and ground points for damage or corrosion.
- 2 Check the battery voltage and charging system to ensure the vehicle's electrical supply is stable.
- 3 Test the fuse and relay associated with the A/C compressor motor circuit and replace if faulty.
- 4 Measure resistance and voltage at the compressor motor connector to compare with manufacturer specifications.
- 5 Check for continuity and voltage drop across the ground circuit to rule out a bad ground.
- 6 If the circuit tests good, test the compressor motor itself for internal faults using a multimeter or oscilloscope.
- 7 Replace the faulty component, such as the compressor motor, wiring harness, or control module, and clear the code to verify the repair.

## Don't overlook the ground circuit

- A poor ground connection at the compressor motor or chassis can cause a low voltage code even when the power wire and motor are in good condition.
- This code often sets intermittently due to vibration or heat affecting a marginal connection, so wiggle tests and load tests are more reliable than static resistance checks.
- A weak battery or failing alternator can trigger this code because the compressor motor circuit is sensitive to overall system voltage, so always check the charging system first.
- The 'B' designation refers to one phase or side of a multi-phase compressor motor, so the fault may be isolated to a specific winding or driver circuit rather than the entire motor.
- Replacing the compressor motor without testing the control module and wiring can lead to a repeat failure if the root cause is a shorted driver or damaged harness.

## Can I keep driving with P2D42?

You can generally drive the vehicle with this code, but the air conditioning may not function, and prolonged driving with a known electrical fault could lead to further damage to the compressor or control module. Avoid using the A/C system until the fault is diagnosed and repaired, and address any charging system issues promptly to prevent collateral damage.

## Tools that help

- Digital multimeter
- OBD-II scanner
- Test light
- Wiring diagram for the A/C compressor circuit
- Socket set and trim removal tools



## Reading P2D42

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- D** Hybrid propulsion.
- 42** The exact fault within that area.

## Often seen with

**P0532** A/C Refrigerant Pressure Sensor 'A' Circuit Low · **P0533** A/C Refrigerant Pressure Sensor 'A' Circuit High  
 · **P0645** A/C Clutch Relay Control Circuit · **P2D43** A/C Compressor Motor Voltage B High · **P2D44** A/C Compressor Motor Performance

## See it working

Watch the animated explainer [How an Elevator Works: Traction Lift in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2d42/>

