

GENERIC · POWERTRAIN

P2613

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2613

A/C Refrigerant Distribution Valve Control Circuit High

P2613 indicates that the powertrain control module (PCM) has detected an abnormally high voltage on the control circuit for the air conditioning (A/C) refrigerant distribution valve, which is used on vehicles with variable-displacement A/C compressors to regulate refrigerant flow. The PCM expects the circuit to operate within a specific voltage range, and a high reading typically means the circuit is open, shorted to voltage, or the valve's internal coil has failed.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Computer and output circuits

Symptoms you may notice

- The A/C may blow warm air or not cool effectively, especially at idle or low engine speeds.
- The A/C compressor may not engage at all, or it may engage but provide poor cooling performance.
- The check engine light (malfunction indicator lamp) is illuminated, often with no other noticeable symptoms.
- In some cases, the A/C compressor may run continuously or cycle rapidly, leading to poor temperature control.
- The driver may notice a decrease in fuel economy if the A/C system is not operating efficiently.
- Often no symptoms besides the warning light, particularly if the valve failure is intermittent or only affects a minor function.

Common causes, most likely first

- 1 An open circuit in the control wire between the PCM and the A/C refrigerant distribution valve, often due to a broken wire or corroded connector.
- 2 A short to voltage on the control circuit, which can be caused by chafed wiring touching a power source.
- 3 A failed A/C refrigerant distribution valve solenoid, where the internal coil is open or shorted.
- 4 A faulty PCM driver for the valve control circuit, though this is less common.
- 5 Corrosion or water intrusion at the valve connector or PCM connector, leading to high resistance or intermittent opens.
- 6 Aftermarket accessories or improper previous repairs that tapped into the circuit and caused a voltage anomaly.



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related codes in the A/C and engine control systems.
- 2 Inspect the wiring harness and connectors at the A/C refrigerant distribution valve and the PCM for damage, corrosion, or loose pins.
- 3 Measure the resistance of the valve solenoid with a multimeter and compare it to the manufacturer's specification to check for an open or shorted coil.
- 4 Backprobe the control circuit at the valve connector and measure voltage with the key on and the A/C commanded on; a high voltage with the valve disconnected indicates a short to voltage or a faulty PCM.
- 5 Check for continuity and voltage drop on the ground circuit for the valve, as a poor ground can cause high voltage readings on the control side.
- 6 If the circuit and valve test good, suspect a faulty PCM; however, confirm by checking for technical service bulletins and performing a wiggle test on the harness.
- 7 Replace the faulty valve, repair the wiring, or replace the PCM as needed, then clear the code and verify the repair with a test drive and A/C performance check.

Common Misdiagnosis Traps for P2613

- A high voltage code on a control circuit often results from an open circuit rather than a short to voltage, so technicians who only look for shorts may miss a broken wire or failed solenoid coil.
- The A/C refrigerant distribution valve is sometimes confused with the A/C compressor control valve, but they are distinct components; misidentifying the valve can lead to replacing the wrong part.
- Intermittent P2613 codes can be caused by a poor connection at the valve connector that only acts up under vibration or temperature changes, so a thorough wiggle test and terminal tension check are essential.
- Some vehicles use a pulse-width modulated (PWM) signal to control the valve, and a high voltage code can be set if the PCM detects an unexpected voltage spike from a failing valve coil, even if the coil still functions.
- A weak battery or charging system issue can cause erratic voltage readings that trigger P2613, so always verify battery and charging system health before condemning the valve or PCM.

Can I keep driving with P2613?

You can generally continue driving with P2613, but the A/C may not function properly, which could reduce comfort and defroster performance. Avoid prolonged driving in high temperatures if cooling is essential, and have the fault diagnosed soon to prevent potential compressor damage from improper refrigerant distribution.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Backprobe pins or breakout box
- Wiring diagram for the specific vehicle
- Basic hand tools for connector and component access



Reading P2613

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 6** Computer and output circuits.
- 13** 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 · **P2612** A/C Refrigerant Distribution Valve Control Circuit Low ·
P2614 Camshaft Position Signal Output Circuit/Open

See it working

Watch the animated explainer [Four-Stroke Engine Cutaway: Intake to Exhaust](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2613/>

