

GENERIC · POWERTRAIN

P04B1

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

## P04B1

# Refueling Vapor Control Valve Circuit Low

P04B1 means the powertrain control module (PCM) has detected a low-voltage condition on the electrical circuit that operates the refueling vapor control valve, which is the solenoid that seals or opens the fuel tank vent path during refueling. The PCM monitors the valve's control circuit and sets this code when the signal voltage stays below the expected threshold, indicating a short to ground, an open circuit, or a failed valve coil.

| SYSTEM     | CODE TYPE           | SEVERITY | FIX DIFFICULTY | AREA                        |
|------------|---------------------|----------|----------------|-----------------------------|
| Powertrain | Generic (all makes) | Medium   | Intermediate   | Auxiliary emission controls |

## Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- A fuel odor around the rear of the vehicle, especially after refueling.
- Difficulty or hesitation when adding fuel at the pump, or the pump nozzle clicking off repeatedly.
- A hiss or whoosh sound when removing the fuel cap, indicating tank pressure is not being managed.
- In some cases, a slight rough idle or stumble immediately after refueling.
- Failed emissions inspection due to the check engine light being on.

## Common causes, most likely first

- 1 Failed refueling vapor control valve solenoid (open or shorted coil).
- 2 Damaged, corroded, or disconnected electrical connector at the valve.
- 3 Broken or chafed wire in the valve control circuit, causing a short to ground or an open.
- 4 Corrosion or water intrusion in the wiring harness or connector pins.
- 5 Faulty powertrain control module (PCM) driver circuit, though this is less common.
- 6 Poor ground connection for the valve or the PCM, leading to a low-voltage reading.



## How to diagnose and fix it

- 1 Connect a scan tool and verify P04B1 is active or pending, then check for related evaporative emission (EVAP) codes.
- 2 Visually inspect the refueling vapor control valve connector and wiring for corrosion, damage, or looseness.
- 3 Measure the resistance of the valve solenoid with a multimeter and compare to the manufacturer's specification.
- 4 Check for battery voltage at the valve connector with the key on, engine off, and verify the ground circuit.
- 5 Perform a voltage drop test on the control circuit to locate excessive resistance or a short to ground.
- 6 If the circuit tests good, command the valve on and off with the scan tool and listen for an audible click.
- 7 Replace the refueling vapor control valve if it fails electrical or functional testing, then clear the code and verify repair.

## What a low circuit code really means

- A low-voltage code on a solenoid circuit often results from a short to ground in the wiring, not a failed valve, so always inspect the harness before replacing parts.
- The refueling vapor control valve is sometimes called a fuel tank isolation valve or refueling valve, and its exact name varies by manufacturer even though the circuit function is the same.
- A stuck-open valve can cause a large evaporative emission leak that sets other codes, so P04B1 may appear alongside P0455 or P0456.
- Corrosion inside the valve connector is a common cause that is easily missed if only the valve itself is tested. The PCM may set this code intermittently if the circuit only shorts when the vehicle is exposed to moisture or vibration, so a wiggle test of the harness is essential.

## Can I keep driving with P04B1?

You can generally continue driving with P04B1, but avoid topping off the fuel tank and park away from open flames until the fault is repaired, because a failed valve can allow fuel vapor to escape. Have the vehicle diagnosed soon to prevent evap system damage and to ensure the check engine light does not mask a more serious fault.

## Tools that help

- OBD-II scan tool with live data and bidirectional control
- Digital multimeter
- Wire probe set and back-probe pins
- Service information for circuit specifications
- Basic hand tools for connector and component access



### Reading P04B1

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 4** Auxiliary emission controls.
- B1** The exact fault within that area.

### Often seen with

**P0440** Evaporative Emission Control System Malfunction · **P0442** EVAP System Leak Detected (Small) · **P0455** EVAP System Leak Detected (Large) · **P0456** Evaporative Emission System Leak Detected (very small leak) · **P04B2** Refueling Vapor Control Valve Circuit High

### 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/p04b1/>

