

GENERIC · POWERTRAIN

P2257

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2257

Secondary Air Injection System Control 'A' Circuit Low

P2257 means the engine computer has detected a low-voltage condition on the control circuit for the secondary air injection system's 'A' control solenoid or valve, which is usually the valve that directs fresh air into the exhaust stream during cold starts. The computer expects to see a specific voltage on the control wire when it commands the valve on or off, and a reading below the expected threshold for a set time triggers this code.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Low	Intermediate	Fuel and air metering (injector circuits)

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- A slight rough idle or stumble during the first minute after a cold start
- A brief hissing or rushing air sound from the engine bay during cold-start air injection
- Slightly higher tailpipe emissions during warm-up, which may not be obvious to the driver
- In some vehicles, a noticeable delay or failure of the cold-start fast-idle strategy

Common causes, most likely first

- 1 Failed secondary air injection control solenoid or valve, often due to internal coil failure or corrosion
- 2 Damaged, chafed, or disconnected wiring in the control circuit between the computer and the solenoid
- 3 Corroded or loose electrical connector at the secondary air injection solenoid or valve
- 4 Poor ground connection for the secondary air injection system or the computer
- 5 Faulty engine computer driver circuit, though this is less common than wiring or solenoid failure
- 6 Water intrusion or road debris damage to the solenoid or its connector, especially on vehicles with underbody air injection plumbing



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related secondary air injection codes before proceeding
- 2 Inspect the control solenoid and its electrical connector for corrosion, looseness, or physical damage
- 3 Disconnect the solenoid and measure the control circuit voltage with a multimeter while commanding the solenoid on and off with a scan tool
- 4 Check the resistance of the solenoid coil against the manufacturer's specification to rule out an open or shorted winding
- 5 Perform a voltage drop test on the ground circuit and the power feed to the solenoid to confirm clean connections
- 6 If the circuit and solenoid test good, inspect the computer connector and wiring for intermittent faults before condemning the computer
- 7 Replace the faulty solenoid, repair damaged wiring, or replace the computer only after all other tests confirm the fault

What the low circuit code really tells you

- A low circuit code does not automatically mean the solenoid is bad; a poor ground or a chafed wire often causes the same voltage drop and is far cheaper to fix.
- The secondary air injection system only runs for a short period after a cold start, so the fault may not set until the vehicle has sat overnight and the computer commands the system on.
- Some vehicles use a separate air pump and a combination valve, and a failing pump can draw excessive current that damages the control solenoid circuit, so always check the pump and its wiring as well.
- A corroded connector pin can pass a voltage test with no load but fail under the solenoid's current draw, so a load test with a bulb or the solenoid connected is more reliable than a simple voltmeter reading.
- After replacing the solenoid, clear the code and perform a cold-start drive cycle to confirm the repair, because the computer may not run the self-test until the engine coolant is cold again.

Can I keep driving with P2257?

The vehicle is safe to drive with this code because the secondary air injection system only affects emissions during cold starts and does not impair engine performance or safety. Avoid long periods of idling from a cold start and have the fault repaired when convenient to prevent excess emissions and possible related codes.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Test light or load tester
- Wire repair kit with crimp connectors and heat shrink
- Manufacturer's service information for circuit specifications



Reading P2257

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 2** Fuel and air metering (injector circuits).
- 57** The exact fault within that area.

Often seen with

P0410 Secondary Air Injection System Malfunction · **P0411** Secondary Air Injection System Incorrect Flow · **P0413** Secondary Air Injection System Switching Valve 'A' Circuit O · **P2258** Secondary Air Injection System Control 'A' Circuit High · **P2259** Secondary Air Injection System Control 'B' Circuit Low

See it working

Watch the animated explainer [Helicopter Simulator: Take Off, Hover and Land](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2257/>

