

GM · POWERTRAIN

P1415

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1415 · GM

Secondary Air Injection (AIR) System

P1415 on a GM vehicle indicates that the powertrain control module has detected a fault within the secondary air injection (AIR) system, which pumps fresh air into the exhaust stream during cold starts to speed catalytic converter warm-up. The computer monitors the AIR system's electrical circuits and/or the resulting oxygen sensor response, and it sets this code when the expected change in exhaust oxygen content does not occur or when a circuit fault is detected.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	GM specific	Low	Intermediate	Auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- A slight hesitation or stumble during the first few seconds after a cold start
- A brief, faint hissing or rushing air sound from the engine bay during cold-start that may be absent or constant
- Slightly higher tailpipe emissions during the warm-up phase, though usually not perceptible to the driver
- In some cases, a rough idle or lean-condition driveability complaint if the AIR system is stuck open
- No change in normal driving performance once the engine reaches operating temperature

Common causes, most likely first

- 1 Failed or seized secondary air injection pump (electric air pump)
- 2 Blown fuse or corroded relay in the AIR pump circuit
- 3 Damaged, disconnected, or cracked air injection hoses or tubing
- 4 Faulty secondary air injection check valve that is stuck open or closed
- 5 Corroded or damaged electrical connector or wiring at the AIR pump or solenoid
- 6 Failed AIR system solenoid or vacuum control valve (on vacuum-operated systems)
- 7 Carbon buildup or blockage in the air injection passages inside the cylinder head or exhaust manifold



How to diagnose and fix it

- 1 Inspect all AIR system hoses and tubing for cracks, disconnects, or melted sections, and repair or replace as needed
- 2 Check the AIR pump fuse and relay, and test the relay operation with a multimeter or by swapping with a known-good relay
- 3 Command the AIR pump on with a scan tool and listen for pump operation; if silent, check for battery voltage and ground at the pump connector
- 4 Test the AIR check valve for proper one-way flow and replace it if it is stuck or leaking
- 5 Verify vacuum supply and operation of the AIR solenoid or control valve on vacuum-operated systems
- 6 Perform a resistance and voltage-drop test on the AIR pump circuit wiring and connectors to rule out high resistance
- 7 If all electrical and mechanical components pass, inspect the air injection passages in the cylinder head for carbon blockage and clean as necessary

What the P1415 code does not always mean

- A P1415 does not automatically condemn the AIR pump; a stuck-open check valve can cause the same code by allowing exhaust backflow that damages the pump or skews oxygen sensor readings.
- Many technicians replace the AIR pump only to find the real fault is a corroded ground wire or a failed relay that costs far less to fix.
- On some GM engines, a leaking vacuum line to the AIR solenoid will set this code without any pump or valve failure, so always inspect the vacuum circuit first.
- The code can be set by a lazy upstream oxygen sensor that fails to respond to the air injection pulse, even though the AIR system itself is functioning correctly.
- Carbon-blocked air passages in the cylinder head are a common cause on higher-mileage GM trucks and SUVs, and they mimic a failed pump because the pump runs but no air reaches the exhaust.

Can I keep driving with P1415?

You can generally continue driving with a P1415 code because the secondary air injection system only operates during cold starts and does not affect engine power or safety. Avoid long periods of idling from a cold start and have the fault diagnosed soon to prevent potential catalytic converter damage from unburned fuel during warm-up.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Hand vacuum pump
- Basic socket and wrench set
- Inspection mirror and flashlight



Reading P1415

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (GM): its meaning depends on the make.
- 4** Auxiliary emission controls.
- 15** The exact fault within that area.

Often seen with

P0410 Secondary Air Injection System Malfunction · **P0411** Secondary Air Injection System Incorrect Flow · **P0412** Secondary Air Injection System Switching Valve 'A' Circuit · **P0413** Secondary Air Injection System Switching Valve 'A' Circuit O · **P0414** Secondary Air Injection System Switching Valve 'A' Circuit S

See it working

Watch the animated explainer [How Misfire Detection Works: Crankshaft Speed](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1415/>

