



P1421 · GM

Intake Air Low Pressure Switch Circuit High Voltage

P1421 on a GM vehicle means the powertrain control module (PCM) has detected a high-voltage condition on the intake air low pressure switch circuit, which is part of the secondary air injection (AIR) system on many GM applications. The switch is supposed to signal low intake air pressure during the AIR pump's operation, and a high-voltage reading tells the PCM that the circuit is open, shorted to voltage, or the switch is not responding as expected.

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
- Slight hesitation or stumble during cold starts if the AIR system is disabled
- Failed emissions test due to the AIR system not functioning
- Rough idle or poor driveability in rare cases when the fault affects air injection timing
- Intermittent warning light if the circuit fault is temperature or vibration sensitive

Common causes, most likely first

- 1 Open or damaged wire in the intake air low pressure switch signal circuit
- 2 Failed intake air low pressure switch itself
- 3 Corroded or loose electrical connector at the switch or PCM
- 4 Short to voltage on the signal circuit, often from chafed wiring near the exhaust or engine block
- 5 Faulty PCM driver for the switch circuit, though this is uncommon
- 6 Blocked or disconnected vacuum hose to the switch, causing incorrect pressure reading
- 7 Aftermarket or incorrect switch installed previously



How to diagnose and fix it

- 1 Connect a scan tool and verify P1421 is current, then check for related AIR system codes
- 2 Inspect the intake air low pressure switch connector and wiring for corrosion, chafing, or loose pins
- 3 Measure reference voltage and ground at the switch connector with the key on, engine off
- 4 Test the switch operation by applying vacuum or pressure and monitoring signal voltage with a scan tool
- 5 Check the signal circuit for a short to voltage by backprobing the PCM connector
- 6 If the circuit tests good, replace the intake air low pressure switch and clear codes
- 7 Verify repair by running the AIR system monitor and confirming the code does not return

What the P1421 switch circuit really tests

- Many technicians replace the AIR pump when P1421 is stored, but the code specifically points to the pressure switch circuit, not the pump motor.
- A high-voltage reading on this circuit often means the signal wire is open, so a simple continuity test from the switch to the PCM can save unnecessary parts replacement.
- The intake air low pressure switch is sometimes confused with the AIR pump pressure sensor on later GM models, but they are different components with different diagnostic procedures.
- Corrosion inside the switch connector is a common cause on vehicles driven in salty or humid climates, and it can mimic a failed switch.
- P1421 can set intermittently due to engine vibration chafing the wire harness near the exhaust manifold, so a wiggle test while monitoring the signal is a valuable step.

Can I keep driving with P1421?

The vehicle is safe to drive with P1421 because the fault mainly affects emissions equipment and does not compromise engine safety or performance in most cases. Avoid long-term neglect, as continued driving with a disabled AIR system can lead to failed emissions inspections and may eventually affect cold-start emissions.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Vacuum pump with gauge
- Wire piercing probes or backprobe pins
- Service information for wiring diagrams and connector pinouts



Reading P1421

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

Often seen with

P1420 Secondary Air Injection Control Module Electrical Malfunction · **P1420** Fuel Tank Pressure Control Solenoid High Input · **P1420** Intake Air Low Pressure Switch Circuit Low Voltage · **P1420** Intake Air Low Pressure Switch Circuit Low Voltage · **P1420** Secondary Air Valve Control Circuit Electrical · **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

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/gm-p1421/>

