

BMW · POWERTRAIN

P1421

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1421 · BMW

Secondary Air System Bank 1

P1421 on a BMW indicates that the engine control module (DME) has detected a fault within the secondary air injection system on bank 1, which is the bank of cylinders that includes cylinder 1. The DME monitors the secondary air pump and its associated check valve, and it sets this code when the expected increase in oxygen content in the exhaust stream is not seen during the cold-start air injection phase. This system is emissions-related and only operates for a short period after a cold start to help the catalytic converter heat up quickly.

SYSTEM

Powertrain

CODE TYPE

BMW specific

SEVERITY

Low

FIX DIFFICULTY

Intermediate

AREA

Auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- A slight rough idle or hesitation during the first minute after a cold start.
- A faint hissing or rushing air noise from the engine bay during cold-start operation.
- In some cases, a stored code may be accompanied by a secondary air pump that runs longer than normal or not at all.
- Rarely, a sulfur or rotten egg smell from the exhaust if the catalytic converter is being stressed.

Common causes, most likely first

- 1 Failed secondary air pump (electric motor seized or worn brushes).
- 2 Leaking or stuck-open secondary air check valve, allowing exhaust gas to backflow and corrode the pump.
- 3 Cracked or disconnected secondary air injection hose or vacuum line.
- 4 Blown fuse or faulty relay for the secondary air pump circuit.
- 5 Carbon buildup or blockage in the secondary air passages inside the cylinder head.
- 6 Faulty secondary air pressure sensor or mass air flow sensor providing incorrect feedback.
- 7 Wiring damage or corroded connector at the secondary air pump or valve.



How to diagnose and fix it

- 1 Verify the code with a BMW-specific scan tool and check for related codes in the DME.
- 2 Inspect all secondary air hoses and vacuum lines for cracks, splits, or disconnection, and replace as needed.
- 3 Check the fuse and relay for the secondary air pump; test the relay operation and replace if faulty.
- 4 Command the secondary air pump on with the scan tool and listen for operation; if it does not run, test the pump motor directly with 12 volts.
- 5 Remove and inspect the secondary air check valve for carbon buildup or sticking; clean or replace it if it does not seal properly.
- 6 Perform a secondary air system functional test with the scan tool to verify that the DME sees the expected oxygen change during cold start.
- 7 If all components test good, check for carbon blockage in the cylinder head air passages and clean them as necessary.

Before you replace the secondary air pump

- A failed check valve is often the root cause of a failed secondary air pump, so replacing only the pump without addressing the valve will lead to repeat failure.
- The secondary air system only runs for a short time after a cold start, so a pump that works when tested directly may still be intermittent due to a faulty relay or wiring.
- Carbon buildup in the cylinder head passages can mimic a failed pump or valve, and this is often overlooked after replacing external components.
- A vacuum-operated secondary air check valve can fail due to a leaking vacuum diaphragm, which may not set a separate code and can be misdiagnosed as a pump failure.
- On some BMW engines, a faulty mass air flow sensor can cause incorrect fuel mixture that affects the secondary air system's oxygen sensing, leading to a false P1421.

Can I keep driving with P1421?

You can continue driving with P1421 because the secondary air system only affects emissions during cold starts and does not impact engine performance or safety. However, avoid prolonged idling and schedule diagnosis soon to prevent potential catalytic converter damage from unburned fuel during cold-start enrichment.

Tools that help

- BMW-specific scan tool (e.g., INPA, ISTA, or a capable OBD-II scanner with manufacturer software)
- Digital multimeter
- Vacuum pump and gauge
- Basic hand tools (sockets, screwdrivers, pliers)
- Flashlight or inspection mirror



Reading P1421

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

Often seen with

P1422 Secondary Air Injection Valve Circuit Short To B+ · **P1423** Secondary Air Injection System Bank 1 Flow Too Low · **P1422** EVAP Purge Control Solenoid Valve Circuit High Input · **P1423** EVAP Vent Control High Input · **P1423** Intake Air High Pressure Switch Circuit High Voltage · **P1423** Intake Air High Pressure Switch Circuit High Voltage · **P1422** Secondary Air System Bank 2 · **P0411** Secondary Air Injection System Incorrect Flow · **P0491** Secondary Air Injection System Insufficient Flow (Bank 1) · **P0492** Secondary Air Injection System Insufficient Flow (Bank 2)

See it working

Watch the animated explainer [How Regenerative Braking Works in Electric Cars](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/bmw-p1421/>

