

BMW · POWERTRAIN

P1413

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1413 · BMW

Secondary Air Injection Pump Relay Control Circuit Signal Low

P1413 on a BMW indicates that the engine control module (DME) has detected a low signal on the control circuit for the secondary air injection pump relay. This means the relay coil or its wiring is not receiving the expected voltage when the DME commands the pump to run during cold starts, which can prevent the secondary air system from reducing emissions.

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 (CEL) on the dashboard.
- Often no symptoms besides the warning light, especially if the pump still runs intermittently.
- A slightly rough idle or hesitation during the first few minutes after a cold start.
- Increased tailpipe emissions during the cold-start phase, which may be noticed during an emissions test.
- In rare cases, a faint clicking or buzzing from the relay area if the relay coil is failing.
- Possible stored pending code or freeze-frame data showing the fault occurred during secondary air pump activation.

Common causes, most likely first

- 1 Faulty secondary air injection pump relay (open coil or high resistance).
- 2 Corroded, damaged, or disconnected wiring between the DME and the relay control circuit.
- 3 Blown fuse protecting the relay control circuit (often shared with other components).
- 4 Poor ground connection at the relay or at the DME ground point.
- 5 Water intrusion or corrosion in the relay socket or connector.
- 6 Failed DME driver circuit (rare but possible, especially if other outputs are also affected).
- 7 Aftermarket or incorrect relay installed that does not meet BMW specifications.



How to diagnose and fix it

- 1 Scan all modules for fault codes and verify P1413 is current; clear the code and test-drive to see if it returns.
- 2 Locate the secondary air injection pump relay (often in the engine compartment fuse box) and inspect it for corrosion, water damage, or loose terminals.
- 3 Check the fuse that supplies power to the relay control circuit and replace it if blown, then recheck for the code.
- 4 Measure resistance across the relay coil; compare to BMW specifications (typically 50–120 ohms) and replace the relay if out of range.
- 5 With the relay removed, use a multimeter to check for battery voltage at the relay socket terminal that feeds the coil when the ignition is on, and check the ground side for continuity to chassis.
- 6 Backprobe the DME connector at the relay control circuit and verify the DME provides a ground signal when the secondary air pump is commanded on during a cold start.
- 7 If the control circuit is intact and the relay is good, test the secondary air pump itself for excessive current draw that could damage the relay driver, and repair as needed.

Relay circuit faults often misdiagnosed

- A low signal on the control circuit can be caused by a relay coil that is still functioning but has increased resistance, which may not show up in a simple click test.
- The DME may set P1413 intermittently if the relay control circuit is marginal, so always check for pending codes and freeze-frame data before replacing parts.
- Corrosion in the relay socket is a common cause on older BMWs, especially if the fuse box has been exposed to moisture; cleaning the terminals often resolves the issue.
- A failing secondary air pump that draws excessive current can damage the relay driver in the DME over time, so always test the pump when replacing a relay.
- This code does not always mean the relay itself is bad; wiring harness chafing near the engine mount or exhaust manifold can short the control circuit to ground.

Can I keep driving with P1413?

The vehicle is safe to drive with P1413 because the secondary air system only operates during cold starts to reduce emissions, but avoid long-term neglect as it may cause a failed emissions test and could lead to relay or DME damage if the circuit is shorted. Have the fault diagnosed soon to prevent secondary issues.

Tools that help

- OBD-II scan tool with BMW-specific software
- Digital multimeter
- Relay puller or small flathead screwdriver
- Test light
- Wiring diagram for the secondary air injection system



Reading P1413

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

Often seen with

P1421 Secondary Air Injection Valve Circuit Short To Ground · **P1421** Exhaust Gas Recirculation Circuit High Input · **P1421** Intake Air Low Pressure Switch Circuit High Voltage · **P1421** Intake Air Low Pressure Switch Circuit High Voltage · **P1421** Secondary Air System Bank 1 · **P0411** Secondary Air Injection System Incorrect Flow · **P0413** Secondary Air Injection System Switching Valve 'A' Circuit O · **P0414** Secondary Air Injection System Switching Valve 'A' Circuit S · **P0418** Secondary Air Injection System Control 'A' Circuit

See it working

Watch the animated explainer [Car Relay Test Bench: Test 4-Pin and 5-Pin Relays](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/bmw-p1413/>

