

BMW · POWERTRAIN

P1453

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1453 · BMW

Secondary Air Injection Pump Relay Control Circuit Electrical

P1453 on a BMW means the engine control module (DME) has detected an electrical fault in the control circuit for the secondary air injection pump relay, which is the relay that switches power to the air pump during cold starts. The DME monitors the relay control wire for expected voltage behavior and flags this code when the circuit is open, shorted to ground, or shorted to power, so the pump never runs or runs when it should not.

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 symptoms besides the warning light
- A brief, audible absence of the secondary air pump whine during the first minute after a cold start
- Rough or slightly elevated idle for the first 30 to 90 seconds after a cold start on some engines
- A stored pending or permanent P1453 code that returns immediately after clearing
- In rare cases, a faint burning smell from the relay or fuse box area if the coil is shorted
- No noticeable performance loss during normal driving once the engine is warm

Common causes, most likely first

- 1 Failed secondary air injection pump relay, usually due to burnt or pitted internal contacts
- 2 Corroded, loose, or backed-out terminals at the relay socket or the DME connector
- 3 Broken or chafed control wire between the DME and the relay coil, often near the engine bay harness
- 4 Blown fuse in the secondary air pump circuit, which can mimic a relay control fault
- 5 Short to ground or short to power on the relay control wire caused by harness rubbing
- 6 Internal driver failure in the DME, rare but possible after water intrusion or voltage spikes
- 7 Aftermarket alarm or remote start wiring tapped into the relay control circuit



How to diagnose and fix it

- 1 Scan all modules with a BMW-capable scan tool and record freeze-frame data plus any stored secondary air pump codes before clearing anything
- 2 Locate the secondary air pump relay in the engine bay fuse box and inspect the fuse, relay socket, and relay pins for corrosion or heat damage
- 3 Test the relay coil resistance and contact continuity with a multimeter, then swap in a known-good relay of the same part number to see if the code clears
- 4 Back-probe the relay control wire at the DME and at the relay, checking for open circuit, short to ground, and short to power with the key on and off
- 5 Inspect the harness section between the DME and the relay for chafing, pinched wires, or rodent damage, repairing any damaged insulation and conductors
- 6 Command the secondary air pump on with the scan tool and verify the relay clicks and the pump runs, confirming the control circuit is now functional
- 7 Clear the code, perform a cold-start drive cycle, and recheck for P1453 to confirm the repair before returning the car

Relay control faults that fool good technicians

- A relay that clicks does not prove the control circuit is healthy, because the DME can still see an out-of-range voltage on the control wire and set P1453 even when the relay actuates.
- Many P1453 cases are caused by a blown fuse or a corroded relay socket rather than the relay itself, so inspect the fuse box before condemning any component.
- The secondary air pump only runs for roughly 30 to 90 seconds after a cold start, so a fault that appears only on the first start of the day is easy to miss during a warm-engine inspection.
- Aftermarket remote start or alarm wiring tapped into the relay control circuit is a common hidden cause on older BMWs, and the splice is often buried under the dash or in the engine harness.
- A failed secondary air pump can draw excessive current and damage the relay or fuse, so always check pump motor resistance and free rotation before installing a new relay.

Can I keep driving with P1453?

You can keep driving the car with P1453 because the secondary air pump only affects cold-start emissions and does not compromise engine safety or performance. Avoid long-term neglect, though, since repeated cold starts with an inoperative pump can eventually load the catalytic converter and trigger additional emissions codes.



Tools that help

- BMW-capable scan tool with bidirectional control and freeze-frame data
- Digital multimeter with back-probe pins
- Relay puller or small pick for fuse box terminals
- Wiring diagram for the specific BMW chassis and engine
- Test light or fused jumper wire for circuit loading checks

Reading P1453

- P** Powertrain: engine, transmission and emissions.
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- 1** Manufacturer-specific code (BMW): its meaning depends on the make.
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- 4** Auxiliary emission controls.
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- 53** 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 · **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 [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-p1453/>

