

GENERIC · POWERTRAIN

P2259

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2259

Secondary Air Injection System Control 'B' Circuit Low

P2259 indicates that the powertrain control module (PCM) has detected a low-voltage condition on the control circuit for the secondary air injection (SAI) system's 'B' circuit, which is typically the control side of the air pump relay or the air switching valve. The PCM commands the circuit on and monitors the voltage on the control wire; when the voltage stays below the expected threshold, the PCM sets this code and may disable the SAI system.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Low

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering (injector circuits)

Symptoms you may notice

- Illumination of the check engine light (malfunction indicator lamp, MIL), often with no other symptoms.
- A slight hesitation or stumble during the first few seconds after a cold start, as the SAI system normally adds air to the exhaust to reduce emissions.
- In some cases, a noticeable whine or lack of the usual air-pump noise during the cold-start period.
- Possible stored pending code P2259 without an active MIL if the fault is intermittent.
- No drivability complaints in most cases because the SAI system only operates during warm-up.
- If the control circuit is shorted to ground, the pump may run continuously, leading to a drained battery or a burned-out pump.

Common causes, most likely first

- 1 Open or high-resistance wiring in the control circuit between the PCM and the SAI relay or valve, often due to corrosion or a broken wire.
- 2 Failed SAI control relay or air switching valve solenoid, causing the control circuit to remain at low voltage.
- 3 Shorted control wire to ground, which keeps the circuit voltage low and may cause the pump to run constantly.
- 4 Poor electrical connection at the PCM connector or the relay/valve connector, leading to intermittent low voltage.
- 5 Faulty PCM driver for the control circuit, though this is less common and should be confirmed after other causes are ruled out.
- 6 Corroded or damaged ground connection for the SAI system, which can affect control circuit voltage.
- 7 Aftermarket electrical accessories improperly tapped into the SAI circuit, causing voltage drops or shorts.



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related codes in the SAI system, then inspect the control circuit wiring and connectors for obvious damage or corrosion.
- 2 Measure the resistance of the control circuit from the PCM connector to the relay or valve; compare to the manufacturer's specification to detect opens or high resistance.
- 3 Check for a short to ground on the control wire with a multimeter, disconnecting the PCM and relay to isolate the circuit.
- 4 Test the SAI control relay or air switching valve by applying power and ground directly to confirm it clicks or opens/closes; replace if faulty.
- 5 Inspect and clean the PCM connector pins and the relay/valve connector pins, then apply dielectric grease to prevent future corrosion.
- 6 If the circuit and components test good, use a scan tool to command the SAI system on and monitor control circuit voltage; if voltage remains low, suspect a faulty PCM driver and perform further PCM diagnostics.
- 7 Clear the code and perform a road test with several cold-start cycles to confirm the repair and ensure the code does not return.

Don't overlook the control circuit ground

- A poor ground for the SAI relay or valve can cause the control circuit to read low voltage even when the PCM and wiring are functioning correctly, so always check ground integrity before replacing parts.
- The 'B' circuit designation often refers to the air pump relay control on systems with multiple control circuits, but on some vehicles it may indicate the air switching valve; consult the specific service information to identify the exact component.
- A shorted control wire to ground can cause the air pump to run continuously, which may drain the battery and overheat the pump, leading to additional codes like P0410 or P0413.
- Intermittent low voltage can be caused by a chafed wire that only shorts when the engine moves or during cold starts, so wiggle-test the harness while monitoring the circuit.
- Replacing the air pump or valve without diagnosing the control circuit is a common misdiagnosis; the code points to the control circuit, not necessarily the mechanical component.

Can I keep driving with P2259?

The vehicle is generally safe to drive with P2259 because the secondary air injection system only affects emissions during cold starts and does not impact engine performance or safety. Avoid long-term driving with the code unresolved, as a shorted control circuit could cause the air pump to run continuously and drain the battery, and have the system diagnosed at your earliest convenience.



Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter (DMM)
- Wiring diagram for the specific vehicle
- Test light
- Socket set and trim removal tools for access

Reading P2259

- P** Powertrain: engine, transmission and emissions.
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- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
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- 2** Fuel and air metering (injector circuits).
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- 59** The exact fault within that area.

Often seen with

P0410 Secondary Air Injection System Malfunction · **P0413** Secondary Air Injection System Switching Valve 'A' Circuit O · **P0418** Secondary Air Injection System Control 'A' Circuit · **P2257** Secondary Air Injection System Control 'A' Circuit Low · **P2258** Secondary Air Injection System Control 'A' Circuit High

See it working

Watch the animated explainer [How a MAF Sensor Works: Hot-Wire Airflow Explained](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2259/>

