

VOLKSWAGEN · POWERTRAIN

P1411

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1411 · Volkswagen

Secondary Air Injection System Bank 2 Flow Too Lean

P1411 on a Volkswagen indicates that the engine computer has detected a lean condition in the secondary air injection (SAI) system on bank 2, meaning the amount of air reaching the exhaust is lower than expected during the cold-start test. The computer monitors the system by comparing oxygen sensor readings before and after the air pump runs, and it sets this code when the measured airflow is insufficient to meet the programmed threshold.

SYSTEM

Powertrain

CODE TYPE

Volkswagen specific

SEVERITY

Low

FIX DIFFICULTY

Intermediate

AREA

Auxiliary emission controls

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Slight rough idle or hesitation during the first minute after a cold start
- A faint hissing or whistling noise from the engine bay during cold starts
- Occasional stumble or lean misfire when the engine is cold
- Failed emissions test due to incomplete readiness monitors

Common causes, most likely first

- 1 Leaking or disconnected secondary air injection hose or pipe on bank 2
- 2 Failed secondary air injection pump (weak output or seized motor)
- 3 Stuck-closed or faulty secondary air injection combi valve on bank 2
- 4 Clogged secondary air injection passages inside the cylinder head
- 5 Failed secondary air injection solenoid or vacuum control valve
- 6 Corroded or damaged wiring to the air pump or solenoid
- 7 Carbon buildup on the oxygen sensor causing slow response during the test



How to diagnose and fix it

- 1 Inspect all secondary air injection hoses and pipes on bank 2 for cracks, loose clamps, or disconnections
- 2 Command the secondary air pump on with a scan tool and listen for operation; verify airflow at the combi valve
- 3 Test the combi valve for vacuum operation and check that it opens and closes freely
- 4 Check the secondary air injection solenoid for proper vacuum switching and electrical continuity
- 5 Measure voltage and ground at the air pump connector during commanded activation to rule out wiring faults
- 6 Remove the combi valve and inspect the cylinder head passages for carbon blockage; clean if restricted
- 7 Replace the faulty component (pump, valve, or solenoid) and clear the code, then complete a cold-start drive cycle to verify

What a lean SAI code really means

- A lean code in the secondary air injection system does not mean the engine is running lean; it means the computer saw less air than expected reaching the exhaust during the cold-start test.
- A clogged passage inside the cylinder head is a common cause that many technicians miss because the pump and valve test fine on the bench.
- The combi valve often fails intermittently, so a cold-start test may pass one morning and fail the next, making the code hard to reproduce.
- A weak air pump can still spin and sound normal while delivering insufficient volume, so measuring actual airflow is more reliable than listening.
- Corroded wiring near the air pump connector is a frequent hidden fault on older Volkswagens, especially in regions with road salt.

Can I keep driving with P1411?

You can continue driving with P1411 because the secondary air injection system only operates during cold starts and does not affect normal engine performance. Avoid long periods of idling from cold and have the fault repaired soon to prevent damage to the catalytic converter and to pass emissions testing.

Tools that help

- OBD-II scan tool with bidirectional control
- Hand vacuum pump
- Digital multimeter
- Basic socket and wrench set
- Flashlight or inspection mirror



Reading P1411

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

Often seen with

P1410 Tank Ventilation Valve Circuit Short To B+ · **P1410** EGR Valve Position Sensor Circuit Malfunction · **P1410** Fuel Tank Pressure Control Solenoid Circuit Fault · **P1410** EGR Boost Solenoid Valve Stuck · **P1410** EVAP Purge Control Solenoid Circuit High Voltage · **P1410** Fuel Tank Pressure System · **P1410** EGR Barometric Pressure Sensor VREF Voltage · **P1410** Fuel Tank Pressure System · **P0171** System Too Lean (Bank 1) · **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 [V6 Engine Explained: 60° Bank and Firing Order](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/volkswagen-p1411/>

