

VOLKSWAGEN · POWERTRAIN

P1331

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1331 · Volkswagen

Cylinder 7 Knock Control Limit Attained

P1331 on Volkswagen vehicles means the engine control module has detected that cylinder 7 has reached the knock control limit, meaning the knock sensor signal for that cylinder is retarding ignition timing beyond the allowed threshold to prevent detonation. The computer is protecting the engine from damaging pre-ignition or knock, but it can no longer compensate, so it flags the fault.

SYSTEM

Powertrain

CODE TYPE

Volkswagen
specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Ignition system
and misfire

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Reduced engine power or sluggish acceleration due to timing retard
- Audible pinging or knocking from the engine under load, especially during acceleration
- Rough idle or misfire-like shuddering, particularly on turbocharged or direct-injection engines
- Poor fuel economy as the engine runs with retarded timing
- In some cases, the engine may enter limp mode to protect itself

Common causes, most likely first

- 1 Faulty knock sensor or damaged knock sensor wiring on the cylinder 7 bank
- 2 Carbon buildup on cylinder 7 pistons or valves, raising compression and causing knock
- 3 Low-octane or contaminated fuel, or fuel with ethanol content beyond the engine's calibration
- 4 Overheating or a cooling system fault causing elevated combustion chamber temperatures
- 5 Incorrect spark plugs (wrong heat range) or worn spark plugs on cylinder 7
- 6 Vacuum leaks or intake air leaks causing a lean condition on that cylinder
- 7 Mechanical issues such as a failing injector, valve problem, or excessive oil consumption leading to knock



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and check freeze-frame data for engine speed, load, and timing retard on cylinder 7
- 2 Verify fuel octane and quality; drain and refill with the correct octane fuel if contamination is suspected
- 3 Inspect and test the knock sensor and its wiring for cylinder 7, including resistance and signal output with an oscilloscope
- 4 Check spark plugs on cylinder 7 for correct heat range, wear, and gap; replace if fouled or incorrect
- 5 Perform a carbon cleaning service (intake valve and combustion chamber) if carbon buildup is suspected, especially on direct-injection engines
- 6 Pressure-test the cooling system and check for overheating issues that could raise combustion temperatures
- 7 Run a compression test and cylinder leak-down test on cylinder 7 to rule out mechanical faults

What most technicians miss on P1331

- A knock sensor that is loose, over-torqued, or has corroded threads can produce a false knock signal, so always verify sensor mounting and torque before replacing it.
- Carbon buildup on direct-injection Volkswagen engines is a leading cause of cylinder-specific knock codes, and a simple fuel additive will not remove it; walnut blasting or chemical cleaning is often required.
- P1331 can be set by a lean condition on cylinder 7 from a failing injector or intake leak, so fuel trim data per bank should be reviewed before condemning the knock sensor.
- On some Volkswagen engines, a faulty ignition coil or spark plug on cylinder 7 can cause misfire that the ECM misinterprets as knock, so always check for misfire counters.
- After repairs, the ECM may need a adaptation reset or a drive cycle to relearn knock control, and the code may not clear immediately until the monitor runs.

Can I keep driving with P1331?

You can drive the vehicle cautiously to a repair shop, but avoid heavy acceleration, towing, or high-load driving because continued knock can damage pistons and bearings. If the engine is making loud knocking noises or overheating, stop driving and have it towed.

Tools that help

- OBD-II scan tool with manufacturer-specific software
- Oscilloscope for knock sensor signal testing
- Torque wrench for knock sensor installation
- Compression tester
- Fuel pressure gauge
- Vacuum gauge



Reading P1331

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (Volkswagen): its meaning depends on the make.
- 3** Ignition system and misfire.
- 31** The exact fault within that area.

Often seen with

P1330 Cylinder 6 Knock Control Limit Attained · **P1332** Cylinder 8 Knock Control Limit Attained · **P1330** Igniter Circuit Malfunction No 7 · **P1332** Knock Sensor 4 Low Input · **P0307** Cylinder 7 Misfire Detected · **P0325** Knock Sensor 1 Circuit Malfunction (Bank 1) · **P0328** Knock Sensor 1 Circuit High Input (Bank 1)

See it working

Watch the animated explainer [How a Car Thermostat Works: Wax Pellet and Cooling Fan](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/volkswagen-p1331/>

