

GENERIC · POWERTRAIN

P0331

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0331

Knock Sensor 2 Circuit Range/Performance

P0331 means the engine computer has detected that the signal from knock sensor number 2 is outside the expected range or performance window, even though the circuit is electrically intact. The computer is not reporting an open or short circuit; it is flagging that the sensor's output does not match what the engine's operating conditions should produce.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Ignition system and misfire

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Reduced engine power or sluggish acceleration if the computer retards ignition timing as a safeguard
- Audible engine knock or pinging under load, especially during acceleration or climbing
- Poor fuel economy as the computer defaults to a conservative timing strategy
- Rough running or hesitation on some vehicles when the fault affects timing control
- In rare cases, a slight decrease in engine performance that the driver senses as a lack of responsiveness

Common causes, most likely first

- 1 Faulty knock sensor 2 that is degraded or internally damaged
- 2 Poor electrical connection at the knock sensor 2 harness connector, such as corrosion or loose pins
- 3 Damaged or chafed wiring between knock sensor 2 and the engine control module (ECM)
- 4 Improperly installed or loose knock sensor 2, including incorrect torque or missing washer
- 5 Engine mechanical noise or vibration that the sensor interprets as abnormal knock
- 6 Failed or failing ECM, though this is less common and should be diagnosed last
- 7 Aftermarket engine modifications or incorrect sensor replacement that alters signal characteristics



How to diagnose and fix it

- 1 Scan all stored codes and freeze-frame data to confirm P0331 is the primary fault and not a companion to another issue
- 2 Visually inspect knock sensor 2 and its harness for physical damage, corrosion, or loose connection
- 3 Check the sensor mounting torque and condition of the mounting surface, ensuring no debris or paint interferes
- 4 Measure the resistance of knock sensor 2 with a multimeter and compare to the manufacturer's specification
- 5 Perform a wiggle test on the harness while monitoring live knock sensor data to reveal intermittent wiring faults
- 6 If the sensor and wiring check out, scope the signal waveform at the ECM to verify the sensor's output under load
- 7 Replace knock sensor 2 only after confirming the sensor itself is at fault, then clear codes and verify the repair

What the code does not tell you

- P0331 is a range/performance code, not a circuit code, so a sensor that is electrically alive but producing a lazy or noisy signal will set it without any open or short being present.
- A loose knock sensor or one installed without the correct torque can generate a signal that the ECM judges out of range, so mounting hardware deserves as much attention as the sensor itself.
- Engine noises such as a failing belt tensioner, loose heat shield, or exhaust rattle can be picked up by the knock sensor and mimic a sensor fault, leading to unnecessary replacement.
- Some vehicles use a second knock sensor for a specific bank or cylinder group, and a fault in that sensor may not produce any driveability symptom until the ECM retards timing enough to be felt.
- Clearing the code without addressing the root cause often results in the code returning after a few drive cycles, so a proper diagnosis should include live data review rather than code clearing alone.

Can I keep driving with P0331?

You can generally drive with P0331, but avoid heavy acceleration, towing, or sustained high-load conditions because the engine may be running with reduced ignition timing or, in some cases, increased knock. Prolonged driving with a faulty knock sensor can lead to engine damage if detonation is not being controlled, so schedule diagnosis soon.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Oscilloscope for signal waveform analysis
- Torque wrench for correct sensor installation
- Socket and ratchet set
- Wire repair kit with crimping tools



Reading P0331

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 3** Ignition system and misfire.
- 31** The exact fault within that area.

Often seen with

P0325 Knock Sensor 1 Circuit Malfunction (Bank 1) · **P0326** Knock Sensor 1 Circuit Range/Performance (Bank 1) · **P0327** Knock Sensor 1 Circuit Low Input (Bank 1) · **P0328** Knock Sensor 1 Circuit High Input (Bank 1) · **P0330** Knock Sensor 2 Circuit

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/p0331/>

