

GENERIC · CHASSIS

C0031

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

C0031

Right Front Wheel Speed Sensor Circuit

C0031 means the antilock braking system (ABS) control module has detected a fault in the electrical circuit for the right front wheel speed sensor, which is the sensor that reports how fast that wheel is turning. The module monitors the sensor's signal and circuit voltage, and when the signal is missing, erratic, or outside the expected range, it stores this code and usually illuminates the ABS warning light.

SYSTEM

Chassis

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Brakes, steering and suspension

Symptoms you may notice

- The ABS warning light stays on continuously after the engine is started.
- The traction control warning light may also illuminate because traction control relies on the same wheel speed signal.
- The ABS system is disabled, so the wheels can lock during hard braking on slippery surfaces.
- A stability control warning light may appear if the vehicle is equipped with electronic stability control (ESC).
- Often no symptoms besides the warning light, with normal braking performance in everyday driving.

Common causes, most likely first

- 1 Damaged or corroded wiring harness at the right front wheel, often from road debris, chafing, or flexing at the suspension.
- 2 A failed right front wheel speed sensor, typically from heat, contamination, or physical damage.
- 3 A dirty or damaged sensor tone ring (reluctor ring) on the right front hub or axle, which distorts the signal.
- 4 Excessive wheel bearing play or a failing hub assembly that changes the air gap between the sensor and tone ring.
- 5 Corroded or loose electrical connector pins at the sensor or at the ABS module.
- 6 An internal fault in the ABS control module, though this is less common than sensor or wiring problems.



How to diagnose and fix it

- 1 Inspect the right front wheel speed sensor and its wiring for obvious damage, corrosion, or loose connectors, and repair any faults found.
- 2 Clean the sensor mounting area and tone ring, then clear the code and test-drive to see if it returns.
- 3 Measure the sensor's resistance and compare it with the manufacturer's specification, and check the air gap if adjustable.
- 4 Back-probe the sensor connector and observe the AC voltage signal while spinning the wheel by hand to confirm the sensor is generating a signal.
- 5 Check continuity and resistance of the wiring between the sensor and the ABS module to rule out an open or shorted circuit.
- 6 If the sensor and wiring test good, suspect the ABS module and perform further diagnostics before replacement.

Common misdiagnosis traps for C0031

- A dirty or rusty tone ring often mimics a failed sensor, so cleaning the ring and sensor can resolve the code without replacing parts.
- Wheel bearing play can alter the sensor air gap and set this code even when the sensor itself tests perfectly.
- Corrosion inside the connector pins is a frequent cause that visual inspection alone may miss, so always check terminal tension and cleanliness.
- The code can be set intermittently by a wiring harness that rubs only at certain steering or suspension angles, so wiggle-test the harness while watching live data.
- Replacing the sensor without checking the tone ring and bearing is a common mistake that leads to a repeat repair.

Can I keep driving with C0031?

The vehicle remains safe to drive under normal conditions because the base brakes still work, but the ABS and traction control are disabled, so avoid hard braking and slippery surfaces until the fault is repaired.

Tools that help

- OBD-II scan tool with ABS capability
- Digital multimeter
- Jack and jack stands
- Socket and wrench set
- Feeler gauge for air gap measurement
- Manufacturer service information for wiring and specifications



Reading C0031

- C** Chassis: brakes, steering and suspension.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 0** Brakes, steering and suspension.
- 31** The exact fault within that area.

Often seen with

C0030 Left Front Wheel Speed Sensor Circuit Range/Performance · **C0032** Right Front Wheel Speed Sensor Circuit Range/Performance · **C0033** Left Front Wheel Speed Sensor Signal Erratic · **C0034** Left Front Wheel Speed Sensor Circuit · **C0035** Left Front Wheel Speed Sensor Circuit Range/Performance

See it working

Watch the animated explainer [How ABS Works: Anti-Lock Brakes in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/c0031/>

