



C0504

Left Front Wheel Speed Sensor A Intermittent/Erratic

C0504 means the anti-lock brake system (ABS) module has detected an intermittent or erratic signal from the left front wheel speed sensor circuit. The computer expects a smooth, consistent pulse train from that sensor and flags the code when the signal drops out, spikes, or becomes irregular without meeting a hard-failure threshold.

SYSTEM Chassis	CODE TYPE Generic (all makes)	SEVERITY Medium	FIX DIFFICULTY Intermediate	AREA Brakes, steering and suspension
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Symptoms you may notice

- ABS warning light illuminated on the dashboard
- Traction control or stability control warning light also on
- ABS may activate unexpectedly at low speeds or during light braking
- Speedometer or odometer fluctuation if the left front signal is used for vehicle speed
- Intermittent loss of ABS function during braking
- Often no symptoms besides the warning light

Common causes, most likely first

- 1 Damaged or chafed wheel speed sensor wiring near the left front strut or steering knuckle
- 2 Corroded or loose electrical connector at the left front wheel speed sensor
- 3 Debris or metallic particles stuck to the sensor tip or tone ring
- 4 Worn or cracked tone ring on the left front hub or CV joint
- 5 Excessive wheel bearing play or hub runout causing an erratic air gap
- 6 Failed left front wheel speed sensor
- 7 Water intrusion or internal fault in the ABS module connector



How to diagnose and fix it

- 1 Inspect the left front wheel speed sensor connector and wiring for corrosion, chafing, or loose pins
- 2 Remove the sensor and clean the tip and tone ring of metallic debris or dirt
- 3 Check the tone ring for cracks, missing teeth, or runout while rotating the wheel
- 4 Measure the sensor air gap and compare it to specification if adjustable
- 5 Perform a wiggle test on the harness while watching live wheel speed data on a scan tool
- 6 Replace the left front wheel speed sensor if resistance or signal output is out of specification
- 7 Repair or replace damaged harness sections and clear the code to verify the repair

Intermittent codes hide in plain sight

- A wheel speed sensor can pass a static resistance test and still set C0504 because the fault only appears when the suspension moves or the wheel rotates, so live data during a road test is more revealing than a bench meter.
- Metallic debris from a worn brake rotor or hub bearing can collect on the sensor tip and mimic a failing sensor, so cleaning the tip and tone ring often resolves the code without any parts replacement.
- Excessive wheel bearing play on the left front hub changes the air gap dynamically and produces an erratic signal that looks exactly like a bad sensor, so always check bearing play before condemning the sensor.
- The ABS module may share the left front wheel speed signal with the speedometer, traction control, and stability systems, so a fault here can trigger unrelated warning lights and confuse diagnosis.
- A poor ground connection at the ABS module or chassis can cause intermittent signal dropout on multiple wheel speed circuits, so verify grounds before replacing the left front sensor.

Can I keep driving with C0504?

The vehicle remains drivable with normal braking, but ABS and traction control may not function during an emergency stop or on slippery surfaces. Avoid hard braking and wet or icy roads until the fault is repaired, and address the code promptly to restore full safety system operation.

Tools that help

- OBD-II scan tool with live ABS wheel speed data
- Digital multimeter
- Jack and jack stands
- Feeler gauge set
- Wire brush or contact cleaner
- Basic hand tools for sensor and wheel removal



Reading C0504

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

Often seen with

C0500 Anti-lock Brake System Disabled · **C0501** ESC Active Performance · **C0502** Left Front Wheel Speed Sensor A Circuit Low · **C0503** Left Front Wheel Speed Sensor A Circuit High · **C0510** Hill Hold Function Disabled

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/c0504/>

