

GENERIC · CHASSIS

C050A

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

C050A

Right Front Wheel Speed Sensor A Intermittent/Erratic

C050A means the anti-lock brake system (ABS) module has detected an intermittent or erratic signal from the right front wheel speed sensor, which is used to monitor wheel rotation for ABS, traction control, and stability control. The computer sets this code when the sensor signal drops out, jumps, or becomes inconsistent during driving, rather than failing completely.

SYSTEM

Chassis

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Brakes, steering and suspension

Symptoms you may notice

- ABS warning light illuminated on the dashboard, often accompanied by traction control and stability control lights
- Intermittent activation of the ABS or traction control system on dry pavement without wheel slip
- A pulsating brake pedal or unusual brake feel during low-speed stops
- Speedometer needle fluctuation or inoperative speedometer if the signal is used for vehicle speed
- Often no symptoms besides the warning light, especially if the fault is brief and does not affect normal braking

Common causes, most likely first

- 1 Damaged or chafed wiring harness at the right front wheel, often near the strut or steering knuckle
- 2 Corroded or loose electrical connector at the wheel speed sensor or ABS module
- 3 Debris or metallic particles stuck to the sensor tip or tone ring, disrupting the magnetic signal
- 4 Worn or damaged tone ring (reluctor ring) on the right front hub or CV joint
- 5 Excessive wheel bearing play or hub runout causing an erratic air gap
- 6 Failing wheel speed sensor that intermittently drops its signal when hot or vibrating
- 7 Electrical interference from a poorly routed aftermarket accessory or a bad ground connection



How to diagnose and fix it

- 1 Inspect the right front wheel speed sensor wiring and connector for chafing, corrosion, or loose pins, and repair as needed
- 2 Remove the sensor and clean the mounting surface and tone ring of debris, then reinstall and clear the code
- 3 Use a scan tool to view live wheel speed data for all four wheels and compare the right front signal during a test drive
- 4 Perform a resistance and AC voltage output test on the right front sensor while wiggling the harness to catch intermittent faults
- 5 Check the tone ring for cracks, missing teeth, or excessive rust, and replace the hub or tone ring if damaged
- 6 Verify wheel bearing play and hub runout, replacing the bearing or hub assembly if out of specification
- 7 If all external checks pass, substitute a known-good sensor or test the ABS module circuits before replacing the module

What most technicians miss on C050A

- A common oversight is replacing the wheel speed sensor when the real fault is a corroded connector pin or a chafed wire inside the harness loom near the strut tower.
- Metallic debris from brake dust or a failing wheel bearing can collect on the sensor tip and cause an erratic signal that mimics a failed sensor.
- An intermittent code that only sets during cold starts or after driving over bumps often points to a wiring issue rather than a defective sensor.
- Aftermarket brake pads or rotors with incorrect dimensions can alter the air gap or introduce vibration that confuses the wheel speed signal.
- The ABS module may store C050A as a secondary code when another module, such as the transmission control module, is interrupting the controller area network (CAN) bus.

Can I keep driving with C050A?

The vehicle remains safe to drive under normal braking because the base hydraulic system is unaffected, but avoid relying on ABS or traction control and do not tow or drive aggressively until the fault is repaired. If the brake pedal feels abnormal or the warning light is accompanied by a hard pedal, stop driving and seek professional diagnosis.

Tools that help

- OBD-II scan tool with live wheel speed data capability
- Digital multimeter
- Jack and jack stands or a lift
- Basic hand tools for removing wheels and trim
- Wiring diagram for the ABS circuit



Reading C050A

- 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.
- 0A** The exact fault within that area.

Often seen with

C0035 Left Front Wheel Speed Sensor Circuit Range/Performance · **C0040** Left Rear Wheel Speed Sensor Circuit · **C050B** Right Front Wheel Speed Sensor A Correlation · **C050C** Left Rear Wheel Speed Sensor A Circuit/Open · **C050D** Left Rear Wheel Speed Sensor A 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/c050a/>

