

GENERIC · POWERTRAIN

P033F

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P033F

Crankshaft/Camshaft Loss Of Synchronization

P033F indicates that the engine control module (ECM) has detected a loss of synchronization between the crankshaft position sensor and the camshaft position sensor signals. The ECM expects these two signals to maintain a precise relationship, and when the correlation falls outside the allowed threshold, it sets this code and may disable certain engine management functions.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Ignition system and misfire

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Engine may crank but fail to start or start after an extended crank
- Rough running, misfiring, or stalling shortly after startup
- Reduced engine power or limp mode activation
- Intermittent engine stumble or hesitation during acceleration
- In some cases, the engine may stall unexpectedly while driving

Common causes, most likely first

- 1 Faulty crankshaft position sensor or camshaft position sensor
- 2 Damaged or worn sensor reluctor rings or tone wheels
- 3 Wiring harness damage, including chafed wires, corrosion, or loose connectors at either sensor
- 4 Stretched or jumped timing chain or belt, causing mechanical misalignment
- 5 Engine control module (ECM) software calibration issue or internal fault
- 6 Debris or metal particles on the sensor tip or reluctor wheel interfering with signal
- 7 Low oil pressure affecting variable valve timing (VVT) phaser operation, which can alter cam timing



How to diagnose and fix it

- 1 Perform a visual inspection of the crankshaft and camshaft sensor wiring and connectors for damage or corrosion
- 2 Use a scan tool to check for related codes and freeze-frame data, and verify signal presence with a lab scope if possible
- 3 Check the sensor resistance and compare to manufacturer specifications, replacing if out of range
- 4 Inspect the reluctor rings for cracks, missing teeth, or debris buildup
- 5 Verify engine timing marks align correctly to rule out a jumped timing chain or belt
- 6 Check for technical service bulletins (TSBs) or ECM software updates related to synchronization faults
- 7 If all else fails, perform a pinpoint test for the CKP and CMP circuits, including signal integrity under load, and replace the ECM only as a last resort

Before you replace the crankshaft sensor

- A stretched timing chain is a common cause that many technicians overlook; always verify mechanical timing before condemning sensors.
- Metal debris on a magnetic sensor tip can mimic a failed sensor, so clean and recheck before replacement.
- Intermittent wiring faults often set P033F without storing other codes, so wiggle-test the harness while monitoring live data.
- On engines with variable valve timing, low oil pressure or a faulty VVT solenoid can alter cam timing enough to trigger this code.
- After replacing a sensor, some vehicles require a crankshaft position variation relearn procedure to prevent recurrence.

Can I keep driving with P033F?

If the engine starts and runs smoothly, you may drive cautiously to a repair shop, but avoid heavy acceleration or long trips. If the engine stalls, misfires, or fails to start, stop driving and have the vehicle towed to prevent further damage or safety risk.

Tools that help

- OBD-II scan tool with live data and graphing capability
- Digital multimeter
- Oscilloscope (lab scope) for signal analysis
- Basic hand tools (socket set, wrenches)
- Feeler gauge or timing mark alignment tools
- Manufacturer service information for pinpoint tests



Reading P033F

- 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.
- 3F** The exact fault within that area.

Often seen with

P0016 Crankshaft/Camshaft Position Correlation (Bank 1 Sensor A) · **P0335** Crankshaft Position Sensor A Circuit Malfunction · **P0336** Crankshaft Position Sensor A Circuit Range/Performance · **P0340** Camshaft Position Sensor A Circuit Malfunction (Bank 1) · **P0341** Camshaft Position Sensor A Circuit Range/Performance

See it working

Watch the animated explainer [Four-Stroke Engine Cutaway: Intake to Exhaust](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p033f/>

