

GENERIC · POWERTRAIN

P03EA

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P03EA

A Camshaft Profile Actuator Position Sensor B Exceeded Learning Limit

P03EA indicates that the engine control module (ECM) has detected that the camshaft profile actuator position sensor B has exceeded its learned operating range. The ECM monitors the sensor's feedback during the actuator's self-calibration and learning process, and when the sensor's signal falls outside the expected limits, it stores this code.

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

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or unstable engine operation due to incorrect camshaft profile positioning
- Reduced engine power or sluggish acceleration as the ECM limits actuator operation
- Poor fuel economy or increased emissions from inefficient valve timing
- In rare cases, engine misfire or stalling if the actuator fails to respond

Common causes, most likely first

- 1 Faulty camshaft profile actuator position sensor B
- 2 Wiring or connector issues in the sensor circuit, such as corrosion or damaged pins
- 3 Contaminated or degraded engine oil affecting actuator and sensor performance
- 4 Mechanical binding or wear in the camshaft profile actuator assembly
- 5 ECM software calibration issues or internal fault
- 6 Low oil pressure or oil sludge preventing proper actuator movement

How to diagnose and fix it

- 1 Perform a visual inspection of the sensor and its wiring for obvious damage or corrosion
- 2 Check engine oil level and condition; replace oil and filter if contaminated
- 3 Use a scan tool to monitor live sensor data and compare to specifications
- 4 Test the sensor's resistance and signal output with a multimeter
- 5 Inspect the actuator for mechanical binding and verify oil pressure to the actuator
- 6 Reprogram or update the ECM software if applicable
- 7 Replace the camshaft profile actuator position sensor B and perform a relearn procedure



Oil Quality and Sensor Relearn Traps

- Degraded or incorrect viscosity engine oil is a frequent hidden cause because it affects actuator response and sensor feedback, leading to false sensor codes.
- The code can set intermittently due to wiring harness chafing that only occurs under specific engine vibration conditions, so a wiggle test is essential.
- After replacing the sensor, a relearn or calibration procedure is often required; skipping it can cause the code to return immediately.
- A low oil pressure condition from a worn oil pump or clogged pickup can mimic a sensor failure, so oil pressure should be verified before parts replacement.
- Some vehicles use the same sensor signal for multiple camshaft profiles, and a fault in the actuator solenoid can cause the sensor to exceed limits without the sensor itself being defective.

Can I keep driving with P03EA?

You can usually continue driving with this code, but avoid aggressive acceleration or heavy loads because the actuator may not function correctly, which can affect performance and emissions. Have the vehicle diagnosed soon to prevent potential worsening of the fault.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Oil pressure gauge
- Basic hand tools (socket set, screwdrivers)
- Wiring diagram for the specific vehicle

Reading P03EA

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.
EA	The exact fault within that area.

Often seen with

P0011 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P0014** Exhaust Camshaft Position - Over-Advanced (Bank 1) · **P0016** Crankshaft/Camshaft Position Correlation (Bank 1 Sensor A) · **P03E9** A Camshaft Profile Actuator Position Sensor A Exceeded Learn · **P03EB** A Camshaft Profile Actuator Position Sensor C Exceeded Learn



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/p03ea/>

