

FORD · POWERTRAIN

P1170

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1170 · Ford

ESO Engine Shut Off Solenoid Fault

P1170 on Ford vehicles indicates that the Engine Shut Off Solenoid (ESO) circuit has a fault, meaning the powertrain control module (PCM) detected an unexpected voltage or current condition on the solenoid's control circuit. The ESO solenoid is used on certain Ford diesel applications to cut fuel or air to stop the engine, and this code sets when the PCM's commanded state does not match the feedback it receives.

SYSTEM

Powertrain

CODE TYPE

Ford specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air
metering

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Engine may not shut off immediately when the key is turned to the off position
- Hard starting or a no-start condition if the solenoid fails to open
- Rough running or stalling shortly after startup on some applications
- A clicking or buzzing noise from the solenoid area when the ignition is cycled

Common causes, most likely first

- 1 Faulty ESO solenoid with an open or shorted internal coil
- 2 Damaged or corroded wiring harness connector at the solenoid
- 3 Broken, chafed, or shorted wire in the ESO control circuit
- 4 Poor ground connection for the solenoid or PCM
- 5 Failed PCM driver for the ESO circuit (less common)
- 6 Aftermarket alarm or remote start system improperly tied into the shut-off circuit

How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related powertrain codes before proceeding
- 2 Inspect the ESO solenoid connector and wiring for corrosion, loose pins, or physical damage
- 3 Measure the solenoid coil resistance with a multimeter and compare to the manufacturer's specification
- 4 Check for battery voltage and ground at the solenoid connector with the key on and during commanded shut-off
- 5 Perform a wiggle test on the harness while monitoring solenoid voltage to reveal intermittent faults
- 6 If the circuit tests good, command the ESO solenoid on and off with a bidirectional scan tool to confirm PCM driver operation
- 7 Replace the ESO solenoid only after confirming the circuit and PCM are functioning correctly



ESO solenoid faults that fool good technicians

- A loose or corroded ground strap between the engine and chassis can cause the PCM to see an incorrect ESO circuit voltage, mimicking a failed solenoid.
- Aftermarket remote start or alarm systems spliced into the shut-off wire often introduce resistance that sets P1170 without any hard failure of the factory solenoid.
- The ESO solenoid is not present on all Ford vehicles; this code only applies to models equipped with the engine shut-off solenoid, typically certain diesel applications.
- A weak or failing battery can cause the PCM to misreport solenoid feedback during cranking, so always load-test the battery before condemning the solenoid.
- Clearing the code and having it return immediately points to a hard circuit fault, while an intermittent code often traces to a chafed wire near the engine mount or exhaust.

Can I keep driving with P1170?

You can usually drive the vehicle to a repair shop, but be aware that the engine may not shut off promptly with the key, so avoid parking situations where a runaway engine could be dangerous. Do not continue driving if the engine fails to start or stalls repeatedly.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Wire piercing probes or back-probe kit
- Factory service information for ESO circuit specifications
- Basic hand tools for connector and solenoid access

Reading P1170

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (Ford): its meaning depends on the make.
1	Fuel and air metering.
70	The exact fault within that area.

Often seen with

P1171 Throttle Actuation Potentiometer Signal 2 Range Performance · **P1172** Throttle Actuation Potentiometer Signal 2 Signal Too Low · **P1633** Accelerator Pedal Position Sensor 2 Signal Too Low · **P1633** ECM · **P1633** Battery Overcharge Fault · **P1633** Battery Overcharge · **P1171** System Too Lean Banks 1 And 2 (Lean Fuel Fault) · **P1172** System Too Rich Banks 1 And 2 (Rich Fuel Fault) · **P1171** Fuel System Lean During Acceleration · **P1633** Ignition Power Circuit Low Voltage · **P1171** Rotor Sensor Fault · **P1172** Rotor Control Fault · **P1171** Fuel System Lean During Acceleration · **P1633** Throttle Valve Adaptation Limp Home Position · **P0562** System Voltage Low · **P0606** PCM Processor Fault

See it working

Watch the animated explainer [How a Six-Speed Manual Gearbox Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/ford-p1170/>

