

GENERIC · POWERTRAIN

P2301

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2301

Ignition Coil 'A' Primary Control Circuit High

P2301 means the engine computer has detected an abnormally high voltage on the primary control circuit for ignition coil 'A', which is the coil responsible for the first cylinder in the firing order or a designated coil pack. The computer commands the coil to fire by pulling the control wire low, and it monitors the circuit for a voltage that stays too high, indicating an open circuit, a short to voltage, or a failed coil driver.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Ignition system and misfire

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Engine misfire or rough running, especially under acceleration or load
- Reduced engine power or limp mode in some vehicles
- Shaking or vibration felt through the steering wheel or seat
- Difficulty starting or an engine that stalls shortly after starting
- A noticeable decrease in fuel economy

Common causes, most likely first

- 1 Open or damaged wire in the coil primary control circuit, such as a broken conductor or corroded connector
- 2 Short to voltage on the control wire, often from chafed insulation touching a power wire
- 3 Failed ignition coil 'A' with an open primary winding
- 4 Faulty engine control module (ECM) driver for that coil circuit
- 5 Poor electrical connection at the coil or ECM connector, including loose pins or corrosion
- 6 Aftermarket alarm or remote start wiring that has tapped into the coil circuit incorrectly



How to diagnose and fix it

- 1 Inspect the ignition coil 'A' connector and wiring for corrosion, loose pins, or physical damage, and repair as needed
- 2 Measure resistance of the coil primary winding with a multimeter and compare to the manufacturer's specification
- 3 Check for battery voltage on the coil control circuit with the key on and engine off, then verify the control wire is not shorted to power
- 4 Perform a wiggle test on the harness while monitoring the circuit with a scan tool or multimeter to reveal intermittent opens
- 5 Swap ignition coil 'A' with a known-good coil from another cylinder and see if the code moves, confirming a faulty coil
- 6 Check the ECM connector for tightness and corrosion, and verify the control circuit has continuity from the ECM to the coil
- 7 If all wiring and the coil test good, diagnose the ECM driver circuit or replace the ECM as a last resort

What the high voltage reading really means

- A high voltage on the control circuit often indicates an open circuit rather than a short, because the computer expects to see the voltage pulled low when the coil is commanded on.
- Many technicians replace the ignition coil first, but a chafed wire or a loose ground can mimic a failed coil and cause the new part to set the same code.
- The code can be set by a faulty crankshaft position sensor or camshaft position sensor if the computer loses the timing signal and commands an abnormal coil dwell.
- Aftermarket remote start or alarm systems that splice into ignition coil wiring are a common hidden cause of this code on used vehicles.
- A weak or failing battery or charging system can cause voltage spikes that the computer interprets as a high control circuit fault, so always check system voltage first.

Can I keep driving with P2301?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration or towing because a misfire can overheat the catalytic converter. If the engine is running very rough or stalling, stop driving and have it towed to prevent further damage.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Test light
- Wiring diagram for the specific vehicle
- Socket set and Torx bits for coil removal



Reading P2301

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 3** Ignition system and misfire.
- 01** The exact fault within that area.

Often seen with

P0351 Ignition Coil A Primary/Secondary Circuit Malfunction · **P0352** Ignition Coil B Primary/Secondary Circuit Malfunction · **P2300** Ignition Coil 'A' Primary Control Circuit Low · **P2302** Ignition Coil 'A' Secondary Circuit · **P2303** Ignition Coil 'B' Primary Control Circuit Low

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/p2301/>

