

GENERIC · POWERTRAIN

P0490

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0490

Exhaust Gas Recirculation Control Circuit High

P0490 means the engine computer has detected an abnormally high voltage on the exhaust gas recirculation (EGR) control circuit, which usually points to an open circuit, a short to voltage, or a failed EGR valve solenoid. The computer commands the EGR valve to open or close and monitors the feedback voltage on the control wire; when that voltage stays higher than expected for a set time, it stores this code and turns on the check engine light.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Auxiliary emission controls

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough idle or stalling when coming to a stop
- Engine pinging or knocking under light acceleration
- Failed emissions test due to high oxides of nitrogen (NOx) levels
- Slightly reduced fuel economy over time
- In some cases, a noticeable surge or hesitation during light-throttle cruising

Common causes, most likely first

- 1 Open or broken wire in the EGR control circuit between the computer and the EGR valve
- 2 Short to voltage on the EGR control wire, often from chafed insulation against a power wire
- 3 Failed EGR valve solenoid or stepper motor winding
- 4 Corroded or loose electrical connector at the EGR valve
- 5 Faulty engine computer driver for the EGR circuit, though this is less common
- 6 Carbon buildup or mechanical binding inside the EGR valve causing the computer to see unexpected feedback voltage



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data to confirm P0490 is the only EGR-related code
- 2 Visually inspect the EGR valve connector and wiring harness for corrosion, chafing, or loose pins
- 3 Measure resistance of the EGR valve solenoid and compare to the manufacturer's specification
- 4 Back-probe the EGR control circuit with a multimeter to check for an open or short to voltage while wiggling the harness
- 5 Command the EGR valve open and closed with a scan tool and observe feedback voltage for smooth operation
- 6 If wiring and solenoid test good, check the computer driver circuit with a lab scope or substitute a known-good computer
- 7 Replace the faulty EGR valve, repair the wiring, or replace the computer as needed, then clear codes and verify the repair with a test drive

What a high EGR circuit voltage really tells you

- A short to voltage on the EGR control wire often comes from the harness rubbing against a nearby power feed, so inspect the entire run, not just the connector.
- The EGR valve can be mechanically stuck open or closed while the electrical circuit tests perfectly, so always verify valve movement with a scan tool before condemning the computer.
- P0490 can be set by a failing computer driver that intermittently pulls the control wire high, which is why wiggle tests and voltage-drop checks are more reliable than a simple resistance check.
- Carbon buildup inside the EGR valve can cause the pintle to bind, making the computer see a feedback voltage that looks like a circuit fault even though the wiring is fine.
- On some vehicles, a weak battery or poor ground can cause phantom EGR circuit codes, so check charging system and grounds before replacing expensive parts.

Can I keep driving with P0490?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration and long trips because a faulty EGR system can cause engine knock and increased emissions. If the engine runs rough or stalls, stop driving and have it towed to prevent damage.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter
- Lab scope for capturing intermittent signals
- Wire piercing probes and back-probe pins
- Hand tools for removing and replacing the EGR valve



Reading P0490

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 4** Auxiliary emission controls.
- 90** The exact fault within that area.

Often seen with

P0400 Exhaust Gas Recirculation Flow Malfunction · **P0401** EGR Flow Insufficient Detected · **P0402** EGR Flow Excessive Detected · **P0403** EGR Circuit Malfunction · **P0491** Secondary Air Injection System Insufficient Flow (Bank 1)

See it working

Watch the animated explainer [How a Supercharger Works: Roots Blower in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0490/>

