

GENERIC · POWERTRAIN

P249A

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P249A

EGR Cooler Bypass Position Sensor Circuit High Bank 2

P249A means the engine computer has detected an abnormally high voltage on the signal circuit from the bank 2 EGR cooler bypass position sensor, which is the component that reports how far the exhaust gas recirculation cooler bypass valve has moved. The computer expects the sensor voltage to stay within a calibrated range as the valve sweeps, and a reading above the upper limit for a set time triggers this code.

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 symptoms besides the warning light
- Slightly rough idle or a subtle stumble when the bypass valve is commanded to move
- Reduced fuel economy if the computer defaults the bypass valve to a fixed position
- Intermittent hesitation during light-throttle cruising when EGR flow is being modulated
- A stored pending code that returns after clearing, especially in cold or damp weather

Common causes, most likely first

- 1 Damaged or chafed signal wire between the bypass position sensor and the engine computer, shorted to a voltage source
- 2 Corroded or pushed-back terminal in the sensor connector or the computer connector
- 3 Failed EGR cooler bypass position sensor, typically an internal short or worn potentiometer track
- 4 Bypass valve actuator stuck or binding, holding the sensor at an extreme position
- 5 Water or oil intrusion into the sensor housing causing an internal short
- 6 Faulty engine computer driver circuit, rare but possible after other causes are ruled out



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P249A, then visually inspect the bank 2 bypass position sensor connector and wiring for corrosion, chafing, or loose pins
- 2 Backprobe the sensor signal circuit with a digital multimeter and compare the voltage to the manufacturer's expected range at key-on and while commanding the bypass valve through its full travel
- 3 Disconnect the sensor and check the signal circuit for a short to voltage or to the reference circuit with the key on and the computer disconnected
- 4 Check the sensor's ground circuit for excessive resistance and verify the reference voltage is stable
- 5 Remove the bypass valve actuator and confirm the valve moves freely through its full range without binding or carbon buildup
- 6 Replace the bypass position sensor or the complete bypass valve assembly if the sensor output is out of range or erratic during the sweep test
- 7 Clear the code, perform a bypass valve relearn or adaptation reset if the manufacturer requires it, and verify the code does not return after a complete drive cycle

What the bypass sensor voltage really tells you

- A high signal voltage often means the sensor is reading a bypass valve that is mechanically stuck at one end of its travel, so replacing the sensor without checking valve movement leads to a repeat failure.
- The bank 2 bypass position sensor shares a five-volt reference and a ground with other sensors on many engines, so a short in a neighbouring circuit can pull the signal high and set P249A even when the bypass sensor itself is healthy.
- Water intrusion into the sensor connector after steam cleaning or a coolant leak is a common cause that a visual inspection under good light will reveal before any electrical testing.
- This code does not always mean the EGR cooler bypass is failing to divert exhaust flow; a wiring fault can set it while the valve still moves correctly when commanded manually.
- After replacing the sensor, some engines require a bypass valve adaptation reset through the scan tool, and skipping that step leaves the computer comparing against old learned positions and resetting the code.

Can I keep driving with P249A?

You can usually drive the vehicle with P249A set because the computer defaults the bypass valve to a safe position, but avoid long climbs and heavy towing until it is repaired since EGR cooler bypass control affects exhaust temperature management. Have the circuit tested soon so a wiring fault does not damage the engine computer.



Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter with backprobe pins
- Wiring diagram for the bank 2 EGR cooler bypass circuit
- Hand tools for connector and sensor removal
- Vacuum pump or smoke machine for checking diaphragm and seal integrity

Reading P249A

- P** Powertrain: engine, transmission and emissions.
-
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
-
- 4** Auxiliary emission controls.
-
- 9A** The exact fault within that area.

Often seen with

P0401 EGR Flow Insufficient Detected · **P0402** EGR Flow Excessive Detected · **P249B** EGR Cooler Bypass Position Sensor Circuit Intermittent or Er · **P249C** Excessive Time To Enter Closed Loop Reductant Injection Cont · **P249D** Closed Loop Reductant Injection Control At Limit Flow Too Lo

See it working

Watch the animated explainer [How a Padlock Works: Pin Tumbler Lock in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p249a/>

