

MAZDA · POWERTRAIN

P1401

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1401 · Mazda

DPFE Sensor Circuit High Input

The powertrain control module (PCM) monitors the differential pressure feedback exhaust (DPFE) sensor, which measures the pressure drop across the exhaust gas recirculation (EGR) valve orifice to calculate actual EGR flow. Code P1401 sets when the sensor signal voltage on its reference or signal circuit rises above the calibrated high limit, indicating an open circuit, a short to voltage, or a sensor that has failed with an abnormally high output.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Mazda specific	Medium	Intermediate	Auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other symptoms besides the warning light
- A noticeable stumble or hesitation during light-throttle acceleration when the EGR valve is commanded open
- Rough idle or idle surge that appears only after the engine reaches operating temperature
- Reduced fuel economy because the PCM substitutes a default EGR strategy and runs less spark advance
- Intermittent pingging or spark knock under load if the EGR system is disabled by the fault
- Failed emissions inspection due to an incomplete EGR monitor or stored pending code

Common causes, most likely first

- 1 Open or damaged signal wire between the DPFE sensor and the PCM, often from corrosion at the connector or a broken conductor in the harness
- 2 Short to voltage on the DPFE signal circuit, typically where the harness rubs against a bracket or the intake manifold
- 3 Failed DPFE sensor producing an abnormally high output voltage, common on Mazda units exposed to exhaust heat and carbon
- 4 Contaminated or blocked pressure hoses between the EGR tube and the DPFE sensor, causing a false high differential reading
- 5 Corroded or loose pins in the DPFE sensor electrical connector that raise circuit resistance and skew the signal
- 6 PCM internal fault on the sensor input circuit, rare but possible after water intrusion or a voltage spike
- 7 Exhaust restriction or a leaking EGR tube that changes the pressure relationship the sensor is calibrated to read



How to diagnose and fix it

- 1 Connect a scan tool and record the DPFE sensor voltage with the key on and engine off, then compare it to the Mazda specification for your model to confirm the high reading
- 2 Inspect the DPFE sensor connector and the full length of its harness for corrosion, chafing, or a short to voltage, repairing any damaged wire before replacing parts
- 3 Check the two pressure hoses for cracks, soft spots, or carbon blockage and clear or replace them as needed
- 4 Back-probe the sensor signal circuit and verify reference voltage and ground integrity at the sensor, ruling out a supply-side fault
- 5 Replace the DPFE sensor only after the wiring and hoses pass inspection, then clear the code and verify the sensor voltage returns to the normal range
- 6 Run the EGR monitor to completion with the scan tool and confirm the code does not return during a road test with steady light-throttle cruise
- 7 If the code persists with a known-good sensor and verified wiring, test the PCM input circuit for an internal short before condemning the module

DPFE faults that mimic a bad sensor

- A blocked or melted pressure hose on the DPFE sensor will produce the same high-voltage reading as a failed sensor, so always inspect both hoses before buying a replacement.
- Corrosion inside the DPFE connector often raises resistance only when the engine bay is hot, which is why the code may set intermittently and the sensor tests fine when cold.
- A short to voltage on the signal wire can be caused by the harness rubbing against the EGR tube or intake bracket, and this damage is frequently missed when only the sensor is replaced.
- The PCM may set P1401 as a secondary code when the EGR valve itself is stuck or the EGR tube is restricted, so check EGR flow before assuming the sensor is at fault.
- On some Mazda models the DPFE sensor shares a ground with other engine sensors, and a bad ground can push the signal high without any fault in the sensor itself.

Can I keep driving with P1401?

The vehicle remains safe to drive because the PCM defaults to a conservative EGR strategy, but avoid heavy throttle and long climbs until the fault is repaired to prevent spark knock and elevated combustion temperatures. Have the code diagnosed promptly, especially if you need to pass an emissions test.

Tools that help

- OBD-II scan tool with live data and EGR monitor capability
- Digital multimeter with back-probe pins
- Hand vacuum pump for testing the EGR valve and pressure hoses
- Mazda service information or wiring diagram for the DPFE circuit
- Basic hand tools for connector and hose access



Reading P1401

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (Mazda): its meaning depends on the make.
- 4** Auxiliary emission controls.
- 01** The exact fault within that area.

Often seen with

P1402 EGR Valve Circuit Short To B+ · **P1400** EGR Valve Circuit Electrical Malfunction · **P1400** Sub-Throttle Position Sensor · **P1400** Fuel Tank Pressure Control Solenoid Low Input · **P1402** Fuel Level Pressure Sensor Circuit Fault · **P1400** EGRC Solenoid Valve · **P1402** EGR System · **P1400** Manifold Differential Pressure Sensor Circuit · **P1400** DPFE Sensor Circuit Low Input · **P1402** EGR Valve Position Sensor Circuit · **P1402** EGR Control Solenoid Circuit Signal High · **P1400** Exhaust Gas Recirculation Valve Position Control · **P1400** Differential Pressure Feedback Electronic Sensor Circuit Low · **P1402** EGR Metering Orifice Restricted · **P1400** Heated Catalyst Battery Voltage or Current Too Low During He · **P1402** Heated Catalyst Power Switch Overtemperature Condition Bank · **P0401** EGR Flow Insufficient Detected · **P0403** EGR Circuit Malfunction · **P0402** EGR Flow Excessive Detected

See it working

Watch the animated explainer [Inline-Four Engine X-Ray: Firing Order 1-3-4-2](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/mazda-p1401/>

