

MAZDA · POWERTRAIN

P1451

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1451 · Mazda

Canister Vent Solenoid Circuit

P1451 on a Mazda means the powertrain control module (PCM) has detected an electrical fault in the canister vent solenoid circuit, which is part of the evaporative emissions (EVAP) system. The PCM monitors the solenoid's control circuit for expected voltage or current behavior and sets this code when the signal is out of range, indicating an open, short, or excessive resistance in the wiring or solenoid itself.

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

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- A faint fuel odor around the rear of the vehicle, especially after refueling
- Difficulty or hesitation when refueling, such as the pump nozzle clicking off repeatedly
- Slight rough idle or stumble immediately after a cold start in some cases
- Failed emissions inspection due to the stored trouble code

Common causes, most likely first

- 1 Failed canister vent solenoid (open or shorted coil)
- 2 Damaged, corroded, or disconnected wiring harness at the vent solenoid connector
- 3 Blown fuse or poor ground connection for the vent solenoid circuit
- 4 PCM driver circuit fault (rare but possible after other causes are ruled out)
- 5 Contamination or debris preventing the vent solenoid from moving freely, which can overload the circuit
- 6 Rodent damage to the vent solenoid wiring near the canister



How to diagnose and fix it

- 1 Connect a scan tool and verify P1451 is current, then check for any related EVAP codes and freeze-frame data
- 2 Inspect the canister vent solenoid connector and wiring for corrosion, chafing, or rodent damage, and repair as needed
- 3 Check the fuse that supplies power to the vent solenoid circuit and replace it if blown
- 4 Measure the resistance of the vent solenoid coil with a multimeter and compare to the manufacturer's specification; replace the solenoid if out of range
- 5 Command the vent solenoid on and off with the scan tool and listen for an audible click; no click indicates a faulty solenoid or circuit
- 6 Backprobe the PCM connector to check for control voltage and ground integrity on the solenoid driver circuit
- 7 Clear the code and perform a drive cycle to confirm the repair, then recheck for pending codes

What most technicians overlook on P1451

- A stuck-open vent solenoid can cause the EVAP system to fail a leak test and set P1451, but the solenoid may still click, so resistance and vacuum testing are more reliable than listening alone.
- Corroded pins inside the vent solenoid connector are a frequent cause on older Mazda models, and simply cleaning them often resolves the code without replacing any parts.
- The PCM may set P1451 if the vent solenoid circuit is shorted to ground or power, so always check for voltage on the control wire with the key on and the solenoid disconnected.
- A faulty fuel filler cap or a leaking EVAP hose can mimic vent solenoid symptoms but will usually set different codes, so do not replace the solenoid until the circuit itself is verified.
- After repairs, the EVAP monitor may take several drive cycles to run, so a pending P1451 that reappears immediately points to an intermittent wiring fault rather than a defective new solenoid.

Can I keep driving with P1451?

The vehicle remains safe to drive because P1451 affects only the evaporative emissions system and does not alter engine performance or safety. Avoid topping off the fuel tank and park away from open flames until the fault is repaired, since a vent solenoid failure can allow fuel vapor to escape.

Tools that help

- OBD-II scan tool with bidirectional control
- Digital multimeter
- Wire terminal pick and electrical contact cleaner
- Fuse puller or test light
- Hand tools for accessing the canister vent solenoid



Reading P1451

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

Often seen with

P0442 EVAP System Leak Detected (Small) · **P0446** EVAP Vent Control Circuit Malfunction · **P0455** EVAP System Leak Detected (Large) · **P0456** Evaporative Emission System Leak Detected (very small leak) · **P2404** Evaporative Emission System Leak Detection Pump Sense Circuit

See it working

Watch the animated explainer [How a Gyroscope Works: Gimbals and Precession](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/mazda-p1451/>

