

GENERIC · POWERTRAIN

P0046

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0046

Turbo/Super Charger Boost Control Solenoid Circuit Range/Performance

P0046 indicates that the powertrain control module has detected an out-of-range or performance fault in the electrical circuit that controls the turbocharger or supercharger boost control solenoid. The computer commands a specific duty cycle to regulate boost pressure, but the solenoid circuit's current or response does not match the expected value, so the module sets this code and typically disables boost control.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering and auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Reduced engine power or a limp-home mode because the turbocharger or supercharger boost is limited
- Poor acceleration and sluggish throttle response, especially during merging or passing
- Rough idle or hesitation if the solenoid is stuck and affecting boost pressure at low engine speeds
- A noticeable whistle or hissing sound from the engine bay if a vacuum or pressure line associated with the solenoid has failed
- Decreased fuel economy due to the engine operating without proper boost control

Common causes, most likely first

- 1 Failed boost control solenoid, such as a stuck valve, burned coil, or internal short
- 2 Damaged, corroded, or disconnected electrical connector at the solenoid
- 3 Open or shorted wire in the solenoid control circuit, including chafed insulation or broken strands
- 4 Blocked or leaking vacuum or pressure hose connected to the solenoid or wastegate actuator
- 5 Faulty wastegate actuator or turbocharger linkage that prevents the solenoid from achieving the commanded boost
- 6 Corroded or loose ground connection for the solenoid circuit
- 7 Rarely, a software or internal fault in the powertrain control module that drives the solenoid output



How to diagnose and fix it

- 1 Inspect the boost control solenoid connector and wiring for corrosion, loose pins, or physical damage, and repair as needed
- 2 Check all vacuum and pressure hoses routed to the solenoid and wastegate actuator for cracks, soft spots, or blockage, and replace any faulty hose
- 3 Measure the solenoid's resistance with a multimeter and compare it to the manufacturer's specification to confirm the coil is intact
- 4 Backprobe the solenoid control circuit with a multimeter or oscilloscope to verify the powertrain control module is providing the correct command signal and that the circuit can carry current
- 5 Test the solenoid's mechanical operation by applying vacuum or pressure and observing whether the valve moves freely and holds, replacing the solenoid if it does not
- 6 Verify the wastegate actuator or turbocharger linkage moves freely through its full range and is not seized or disconnected
- 7 Clear the code after repairs and perform a road test with a scan tool to confirm the boost control system reaches commanded pressure and the code does not return

What the boost solenoid code hides

- A sticking wastegate actuator or carboned turbocharger linkage can set P0046 even when the solenoid and its wiring test perfectly, because the solenoid cannot move the mechanism it controls.
- A leaking or restricted vacuum line is one of the most commonly missed causes, since the electrical circuit may pass every test while the solenoid receives the wrong physical signal.
- The code does not always mean the solenoid itself has failed; a shorted or open circuit elsewhere in the harness, including a rubbed-through wire near hot exhaust components, can produce the same fault.
- Some vehicles set P0046 as a result of a low or weak battery or charging system issue that causes the module to misread solenoid current during cranking or low-voltage conditions.
- After replacing a solenoid, technicians who skip a boost pressure sensor calibration or adaptation reset may see the code return immediately even though the repair was correct.

Can I keep driving with P0046?

You can usually drive the vehicle with P0046, but expect reduced power and avoid heavy acceleration or towing until the fault is repaired. If the engine enters limp mode or performance is severely degraded, keep driving to a minimum and have the circuit inspected promptly.



Tools that help

- OBD-II scan tool with live data and bidirectional control capability
- Digital multimeter
- Hand vacuum pump with gauge
- Oscilloscope for signal analysis
- Basic hand tools and wire repair kit

Reading P0046

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

Often seen with

P0045 Turbo/Super Charger Boost Control Solenoid Circuit/Open · **P0047** Turbo/Super Charger Boost Control Solenoid Circuit Low · **P0048** Turbo/Super Charger Boost Control Solenoid Circuit High · **P0234** Engine Overboost Condition · **P0299** Turbo/Supercharger Underboost

See it working

Watch the animated explainer [Turbocharger Trainer: Boost, Wastegate and Intercooler](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0046/>

