

SUBARU · POWERTRAIN

P1097

OBD-II TROUBLE CODE

P1097 · Subaru

Tumble Generator Valve Circuit #2 Over Current

P1097 on a Subaru means the engine control module (ECM) has detected excessive current draw on the circuit that powers the tumble generator valve (TGV) actuator for the second bank of cylinders. The TGV system uses motorized flaps in the intake ports to swirl incoming air at low engine speeds for better combustion, and an over-current condition tells the ECM that the actuator motor or its wiring is drawing more amperage than expected, often due to a short or a failing motor.

SYSTEM

Powertrain

CODE TYPE

Subaru specific

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
- Rough or unstable idle, especially when the engine is cold
- Hesitation or stumble during light acceleration from a stop
- Reduced fuel economy due to improper air metering
- In rare cases, a limp mode that limits engine power

Common causes, most likely first

- 1 Faulty tumble generator valve actuator motor with internal short or seized bearings
- 2 Chafed or shorted wiring in the TGV harness near the intake manifold or connector
- 3 Corroded or loose electrical connector at the TGV actuator
- 4 Carbon buildup or mechanical binding in the TGV flap linkage, forcing the motor to draw excess current
- 5 Failed ECM driver circuit for the TGV (less common but possible)



How to diagnose and fix it

- 1 Connect a scan tool and verify P1097 is current, then check for related TGV codes and freeze-frame data
- 2 Inspect the TGV actuator connector and wiring for corrosion, chafing, or loose pins, repairing as needed
- 3 Measure resistance across the TGV actuator motor terminals and compare to specification to rule out an open or shorted motor
- 4 Command the TGV actuator with the scan tool and observe current draw or listen for smooth operation to detect binding
- 5 Remove the TGV assembly and inspect the flaps and linkage for carbon buildup or mechanical interference, cleaning or replacing as required
- 6 If the motor and wiring test good, check the ECM control signal with an oscilloscope or substitute a known-good actuator to isolate the fault
- 7 Clear codes and perform a road test to confirm the repair, ensuring the TGV system completes its self-test without resetting the code

TGV Over-Current: Look Beyond the Motor

- A sticking TGV flap from carbon buildup is a frequent root cause that mimics a failed actuator, so always inspect the intake ports before condemning the motor.
- The TGV actuator on bank 2 is often exposed to more heat and oil vapor on turbocharged Subaru engines, leading to connector degradation that causes over-current faults.
- P1097 can be set intermittently by a wiring harness that rubs against the intake manifold during engine movement, so wiggle-test the harness while monitoring current draw.
- Some technicians replace the TGV motor only to find the ECM driver is faulty, so verify the control signal with a scope before installing new parts.
- After repairs, the TGV system may require a relearn or adaptation reset with a scan tool to prevent the code from returning immediately.

Can I keep driving with P1097?

You can generally drive the vehicle short distances to a repair shop, but avoid aggressive acceleration or heavy loads because a faulty TGV can cause poor combustion and increased emissions. If the engine enters limp mode or runs very rough, stop driving and seek professional diagnosis.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter
- Oscilloscope (for signal analysis)
- Socket and wrench set
- Torque wrench
- Inspection mirror and flashlight



Reading P1097

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (Subaru): its meaning depends on the make.
- 0** Fuel and air metering and auxiliary emission controls.
- 97** The exact fault within that area.

Often seen with

P1096 Tumble Generator Valve Circuit #2 Open Circuit · **P1096** O2 Sensor Circuit Slow Switching From Lean to Rich Bank 2 Se · **P1098** O2 Sensor Circuit Slow Response After Coast Down Fuel Cutoff · **P2004** Intake Manifold Runner Control Stuck Open (Bank 1) · **P2006** Intake Manifold Runner Control Stuck Closed (Bank 1) · **P2009** Intake Manifold Runner Control Circuit Low (Bank 1)

See it working

Watch the animated explainer [Four-Stroke Engine Cutaway: Intake to Exhaust](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/subaru-p1097/>

