

SUBARU · POWERTRAIN

P1096

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1096 · Subaru

Tumble Generator Valve Circuit #2 Open Circuit

P1096 on a Subaru means the engine control module (ECM) has detected an open circuit on the tumble generator valve (TGV) circuit for the right-hand bank. The TGV system uses butterfly valves in the intake ports to create turbulence at low engine speeds for better combustion, and an open circuit means the ECM cannot command or monitor that valve, so it sets this code and typically disables the TGV function.

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 less efficient low-speed combustion.
- In some cases, a slight loss of power at low RPM.
- Rarely, a hard start or stalling when the engine is cold.

Common causes, most likely first

- 1 Broken or chafed wire in the TGV harness for the right bank, often near the connector or where the harness bends.
- 2 Corroded or loose electrical connector at the right-bank TGV actuator.
- 3 Failed TGV actuator motor (open winding) on the right bank.
- 4 Damaged or stuck TGV valve assembly causing the motor to overheat and fail open.
- 5 Poor connection at the ECM connector (less common).
- 6 Rodent damage to the wiring harness (in some environments).



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related TGV codes to confirm the right bank is affected.
- 2 Inspect the right-bank TGV actuator connector and wiring for corrosion, looseness, or physical damage; repair as needed.
- 3 Measure resistance across the TGV actuator motor terminals; compare to specification (typically a few ohms) to check for an open winding.
- 4 Check continuity of each wire from the TGV connector to the ECM connector; repair any open or high-resistance wire.
- 5 If the actuator motor is open, replace the TGV actuator assembly (or the complete TGV unit if the motor is not serviceable separately).
- 6 Clear the code and perform a TGV relearn or drive cycle as required by the Subaru service procedure.
- 7 Road test the vehicle to confirm the code does not return and the TGV system operates correctly.

TGV open circuit: what the code hides

- A P1096 can be set by a simple unplugged connector that was not fully seated after previous engine work, so always check connector engagement before condemning the actuator.
- The TGV actuator on the right bank is often exposed to more heat and oil vapor than the left, making its wiring and motor more prone to failure over time.
- An open circuit code does not always mean the valve itself is stuck; the ECM only monitors the electrical circuit, so a mechanically free valve can still trigger this code if the motor winding is open.
- Some Subaru models use a single TGV motor for both banks, but P1096 specifically refers to circuit #2, so confirm the wiring diagram for your exact model year before probing.
- After repairs, the ECM may require a TGV position relearn; skipping this step can cause a repeat code or poor idle quality.

Can I keep driving with P1096?

You can generally drive the car with P1096, but expect reduced low-speed smoothness and slightly worse fuel economy; avoid heavy acceleration or towing until the fault is repaired, and address it promptly to prevent secondary issues.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wire probe set or back-probe pins
- Service manual with wiring diagrams for your Subaru model
- Basic hand tools (socket set, screwdrivers, pliers)



Reading P1096

- 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.
- 96** The exact fault within that area.

Often seen with

P1094 Tumble Generator Valve Circuit #1 Open Circuit · **P1095** Tumble Generator Valve Circuit #1 Over Current · **P1097** Tumble Generator Valve Circuit #2 Over Current · **P1094** O2 Sensor Circuit Slow Response in Rich Control Range Bank 2 · **P1095** O2 Sensor Circuit Slow Switching From Lean to Rich Bank 1 Se · **P1097** O2 Sensor Circuit Slow Response After Coast Down Fuel Cut-of · **P2004** Intake Manifold Runner Control Stuck Open (Bank 1) · **P2005** Intake Manifold Runner Control Stuck Open (Bank 2)

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-p1096/>

