

SUBARU · POWERTRAIN

P1089

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1089 · Subaru

Tumble Generator Valve #1 RH Position Sensor Circuit High Input

P1089 on a Subaru means the engine control module (ECM) has detected an abnormally high voltage on the position sensor circuit for the right-hand tumble generator valve (TGV), which is the flap in the intake tract that swirls air at low engine speeds. The sensor normally returns a voltage that sweeps smoothly as the valve moves, and a high input tells the ECM the signal wire is seeing battery voltage or an open circuit rather than a valid position reading.

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 besides the warning light
- Rough or stumbling idle when the engine is cold, because the tumble generator valve may stay in the wrong position
- Hesitation or a flat spot during light acceleration from a stop
- Slightly reduced fuel economy or a richer-than-normal exhaust smell
- In some cases a stored pending code without the light staying on, especially after a battery disconnect

Common causes, most likely first

- 1 Open or broken signal wire between the TGV position sensor and the ECM, often from chafing or a corroded connector pin
- 2 Failed TGV position sensor internally shorted to voltage or worn through its sweep
- 3 Corroded or water-intruded electrical connector at the TGV actuator on the right-hand bank
- 4 Damaged or misrouted engine harness near the intake manifold or cylinder head
- 5 Poor ground connection for the sensor circuit, causing a reference voltage offset
- 6 Sticking TGV flap or linkage that holds the sensor at an extreme position and sets a high-input fault
- 7 Rarely, a fault inside the ECM driver circuit for the sensor reference voltage



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P1089, then clear the code and verify whether it returns immediately or only after a cold start
- 2 Visually inspect the right-hand TGV actuator connector and the harness routing for corrosion, water intrusion, or chafed insulation
- 3 Back-probe the sensor signal wire at the connector and compare voltage with the ECM data parameter while moving the valve through its range
- 4 Measure resistance and reference voltage at the sensor pins to confirm whether the sensor or the wiring is pulling the signal high
- 5 Check continuity and resistance to ground on the sensor ground circuit, repairing any high-resistance ground or open wire
- 6 If wiring and grounds pass, remove the TGV actuator and inspect the flap and linkage for carbon sticking or mechanical binding
- 7 Replace the faulty TGV position sensor or actuator assembly only after electrical checks confirm the sensor is the source, then clear codes and verify the monitor runs to completion

Why a high TGV signal is often wiring

- A high-input code on a TGV position sensor is more often an open signal wire or a bad ground than a failed sensor, so resistance and continuity checks should come before parts replacement.
- The right-hand TGV connector sits low on the intake and can collect water or road splash, which corrodes pins and creates a high-resistance path that mimics a sensor failure.
- A sticking TGV flap can hold the sensor at full travel and set a high-input code even when the sensor and wiring are healthy, so mechanical freedom of the flap must be checked.
- Disconnecting the battery or unplugging the TGV connector with the key on can set P1089 as a history code, so always clear and recheck before condemning a component.
- Subaru TGVs only operate during cold-start and low-load conditions, so a fault may not appear on a warm engine and a cold-start freeze-frame is the most useful data to capture.

Can I keep driving with P1089?

You can usually drive the car to a shop, but avoid hard acceleration and long idling until the fault is repaired because a stuck tumble generator valve can cause rough running and higher emissions. If the engine runs poorly or stalls at idle, stop driving and have it diagnosed promptly.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with back-probe pins
- Wiring diagram for the Subaru TGV circuit
- Small pick and contact cleaner for connector pins
- Basic hand tools for intake and actuator access

Reading P1089

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

Often seen with

P1088 Tumble Generator Valve #1 RH Position Sensor Circuit Low Inp · **P1090** Tumble Generator Valve #1 RH Malfunction Stuck Open · **P1091** Tumble Generator Valve #1 RH Malfunction Stuck Close · **P1088** O2 Sensor Circuit Slow Response in Rich Control Range Bank 1 · **P1090** Pre-Catalyst Fuel Trim Too Lean Bank 1 · **P1091** Pre-Catalyst Fuel Trim Too Rich Bank 1 · **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-p1089/>

