

SUBARU · POWERTRAIN

P1087

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1087 · Subaru

Tumble Generator Valve #2 LH Position Sensor Circuit High Input

P1087 on a Subaru means the engine control module (ECM) has detected an abnormally high voltage on the signal circuit of the left-hand tumble generator valve (TGV) position sensor, which is sensor #2. The TGV system uses butterfly flaps in the intake ports to create turbulence at low engine speeds, and the ECM expects the sensor to report a voltage within a specific range as the valve moves; a high input tells the ECM the signal wire is likely shorted to power or the sensor has failed.

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 stumbling idle when the engine is cold, because the tumble generator valves may not move to their commanded position.
- Hesitation or a flat spot during light acceleration from a stop.
- A stored pending or confirmed code P1087 and possibly a related TGV circuit code for the same bank.
- Reduced fuel economy if the ECM defaults to a fixed valve position.
- In rare cases, a limp-home mode that limits engine power.

Common causes, most likely first

- 1 A short to voltage on the signal wire between the TGV position sensor #2 (left-hand) and the ECM, often from chafed insulation or a pinched harness.
- 2 A failed TGV position sensor #2 that internally shorts the signal circuit to its power feed.
- 3 Corrosion or water intrusion in the sensor connector or ECM connector, creating a high-resistance path to voltage.
- 4 A faulty ECM driver for the sensor circuit, though this is uncommon.
- 5 A misadjusted or sticking TGV flap that forces the sensor beyond its normal travel range and produces a high signal.
- 6 Aftermarket electrical accessories improperly tapped into the sensor reference voltage circuit.



How to diagnose and fix it

- 1 Connect a scan tool and record the freeze-frame data and TGV sensor voltage with the key on and engine off; compare it to the expected range in the factory service information.
- 2 Visually inspect the TGV position sensor #2 connector and the harness along the left-hand intake manifold for chafing, corrosion, or loose pins.
- 3 Back-probe the sensor signal wire at the ECM connector and measure voltage with the sensor disconnected; a reading near reference voltage indicates a short to power in the harness.
- 4 Check the sensor's ground circuit for excessive resistance, since a poor ground can cause the signal voltage to float high.
- 5 If the harness and connectors are intact, substitute a known-good TGV position sensor and recheck the live data to see if the high input resolves.
- 6 Clear the code and perform a TGV calibration or relearn procedure with the scan tool, then road-test the vehicle through several cold-start cycles.
- 7 If the code returns with a verified good sensor and harness, test the ECM signal circuit with a breakout box and follow the factory diagnostic flow before condemning the ECM.

TGV sensor high input traps to avoid

- A high input code is often caused by a short to voltage in the harness where it rubs against the intake manifold bracket, not by the sensor itself, so always inspect the loom before replacing parts.
- The left-hand TGV sensor #2 is frequently misidentified because Subaru numbers the tumble generator valves differently from the cylinder banks; confirm the location in the service manual for the exact engine.
- Water from a clogged cowl drain or a missing splash shield can pool near the left-hand TGV connector and corrode the terminals, producing an intermittent high signal that only appears in wet weather.
- A sticking TGV flap can hold the sensor at its high-travel limit and set P1087 even when the sensor and wiring are perfect, so check for carbon buildup on the flaps after repairing the circuit.
- Disconnecting the TGV sensor while the key is on can set a false high-input code, so always clear codes and recheck after any electrical testing before diagnosing further.

Can I keep driving with P1087?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration and cold-start driving because the tumble generator valves may not function correctly and the engine can hesitate. If the check engine light flashes or the engine runs very poorly, stop driving and have the vehicle towed.



Tools that help

- OBD-II scan tool with live data and TGV calibration capability
- Digital multimeter with back-probe pins
- Factory service information or wiring diagram for the Subaru engine
- Basic hand tools for intake and connector access
- Breakout box for ECM circuit testing

Reading P1087

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

Often seen with

P1086 Tumble Generator Valve #2 LH Position Sensor Circuit Low Inp · **P1088** Tumble Generator Valve #1 RH Position Sensor Circuit Low Inp · **P1086** Fuel Control Mixture Rich Bank 2 Sensor 1 · **P1088** O2 Sensor Circuit Slow Response in Rich Control Range Bank 1 · **P2004** Intake Manifold Runner Control Stuck Open (Bank 1) · **P2005** Intake Manifold Runner Control Stuck Open (Bank 2) · **P2016** Intake Manifold Runner Position Sensor/Switch Circuit Low (B

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-p1087/>

