

MAZDA · POWERTRAIN

P1126

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1126 · Mazda

Throttle Position Narrow Range Sensor Circuit

P1126 on Mazda vehicles indicates that the powertrain control module (PCM) has detected an implausible or out-of-range signal from the throttle position (TP) sensor's narrow-range circuit, which is a secondary output used for precise throttle angle feedback. The PCM compares this narrow-range signal against the main TP signal and expects them to correlate closely; when the narrow-range voltage falls outside the expected window or disagrees with the main sensor, the code is stored.

SYSTEM

Powertrain

CODE TYPE

Mazda specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Intermittent or sustained loss of engine power, especially during acceleration
- Rough or erratic idle quality, sometimes accompanied by stalling
- Hesitation or stumble when pressing the accelerator pedal from a stop
- Poor fuel economy or an overly rich/lean condition noticed at the tailpipe
- In some cases, the transmission may shift harshly or hold gears longer due to invalid throttle data

Common causes, most likely first

- 1 Worn or contaminated throttle position sensor narrow-range track inside the sensor housing
- 2 Corroded, loose, or damaged electrical connector at the throttle position sensor
- 3 Chafed or open wiring in the narrow-range signal circuit between the sensor and PCM
- 4 Poor ground connection for the throttle position sensor or PCM
- 5 Carbon buildup or mechanical wear on the throttle plate or shaft causing erratic sensor movement
- 6 Failed PCM driver or internal fault in the narrow-range signal processing circuit (rare)



How to diagnose and fix it

- 1 Use a scan tool to read live throttle position data from both the main and narrow-range sensors and compare their voltages through the full pedal sweep.
- 2 Visually inspect the throttle position sensor connector and wiring for corrosion, loose pins, or chafing, and repair as needed.
- 3 Check the sensor's ground circuit for excessive resistance using a multimeter and clean or tighten the ground connection.
- 4 Back-probe the narrow-range signal wire at the sensor and at the PCM to check for continuity and voltage drop while wiggling the harness.
- 5 Remove the throttle body and clean carbon deposits from the throttle plate and bore, then reinstall and perform a throttle relearn procedure.
- 6 Replace the throttle position sensor if live data shows a dead spot or erratic narrow-range signal that does not match the main sensor.
- 7 After repairs, clear the code and verify that the narrow-range signal tracks smoothly and that the code does not return during a test drive.

Narrow-Range Sensor Traps You Should Know

- A common misdiagnosis is replacing the throttle body assembly when only the narrow-range sensor track is worn; always compare both TP signals on a scan tool before condemning parts.
- The narrow-range circuit often fails intermittently due to heat and vibration, so a static voltage check may pass while a wiggle test or road test with live data reveals the fault.
- Carbon buildup on the throttle plate can cause the narrow-range sensor to report a slightly different angle than the main sensor, setting P1126 without any sensor defect.
- A weak battery or poor charging system can cause voltage fluctuations that mimic a faulty narrow-range sensor, so check battery and ground integrity first.
- On some Mazda models, the narrow-range signal is used by the transmission control module for shift scheduling, so ignoring P1126 can lead to premature transmission wear.

Can I keep driving with P1126?

You can usually drive the vehicle to a repair shop, but avoid aggressive acceleration or heavy loads because the PCM may be using default throttle values that affect power and shift quality. If the engine stalls or enters limp mode, stop driving and arrange a tow.



Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Back-probe kit or fine test leads
- Throttle body cleaner and shop rags
- Basic hand tools (screwdrivers, socket set)

Reading P1126

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

Often seen with

P1122 Oxygen Sensor Heater Circuit Bank 2 Sensor 2 Open · **P1121** Oxygen Sensor Heater Circuit Bank 2 Sensor 2 Short To Ground · **P1121** Accelerator Pedal Position Sensor Range Performance Problem · **P1121** Neutral Position Switch Circuit Low Input AT Vehicles · **P1122** Pressure Sources Switching Valve Circuit High Input · **P1122** Throttle Position Higher Than Expected · **P1121** Throttle Position Lower Than Expected · **P1121** Throttle Position Sensor Signal Not Consistent With Mass Air · **P1122** Throttle Position Stuck Closed · **P1121** Pedal Position Sensor A Circuit Range Performance · **P1122** Pedal Position Sensor A Circuit Low Input · **P1121** Throttle Position Lower Than Expected · **P1122** Throttle Position Higher Than Expected · **P1121** Throttle Position Sensor Out of Range · **P1122** Throttle Position Sensor Out of Range · **P1121** Throttle Position Sensor Inconsistent with Mass Air Flow Sen · **P1122** Throttle Position TP Sensor Circuit Intermittent Low Voltage · **P1121** TP Sensor Circuit Intermittent High Voltage · **P1122** TP Sensor Circuit Intermittent Low Voltage · **P1122** Pedal Position Sensor 1 Low Input · **P1121** Pedal Position Sensor 1 Range Performance Problem · **P0122** Throttle Position Sensor A Circuit Low Input · **P0123** Throttle Position Sensor A Circuit High Input · **P0121** Throttle Position Sensor A Circuit Range/Performance

See it working

Watch the animated explainer [How a Radiator Fan Relay Circuit Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/mazda-p1126/>

