

MAZDA · POWERTRAIN

P1790

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1790 · Mazda

TP Mechanical Circuit

P1790 on Mazda vehicles indicates that the powertrain control module (PCM) has detected a mechanical fault within the throttle position (TP) sensor circuit, meaning the electrical signal does not correlate with expected throttle plate movement. The PCM monitors the TP sensor voltage and compares it to other inputs such as mass airflow and engine load, and when the mechanical relationship is outside the expected range, it stores this code.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Mazda specific	Medium	Intermediate	Transmission

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Hesitation or stumble during acceleration
- Erratic or surging idle speed
- Reduced engine power or limp mode
- Poor fuel economy or increased emissions
- In rare cases, stalling when coming to a stop

Common causes, most likely first

- 1 Worn or sticking throttle plate or throttle body linkage
- 2 Faulty throttle position sensor (internal wear or dead spots)
- 3 Damaged or corroded TP sensor wiring or connector
- 4 Carbon buildup on the throttle plate causing restricted movement
- 5 PCM software calibration issue or faulty PCM (less common)
- 6 Binding throttle cable or pedal assembly (on cable-operated systems)

How to diagnose and fix it

- 1 Inspect the throttle body and throttle plate for carbon buildup or mechanical binding, and clean if necessary
- 2 Check the TP sensor connector and wiring for corrosion, loose pins, or damaged insulation
- 3 Measure TP sensor resistance and voltage output through its sweep using a multimeter or scan tool
- 4 Compare TP sensor readings with actual throttle plate movement to confirm mechanical correlation
- 5 Replace the throttle position sensor if it shows dead spots or inconsistent readings
- 6 Perform a throttle body calibration or relearn procedure after repair
- 7 Clear the code and verify the repair with a test drive and live data monitoring



TP sensor mechanical faults often misdiagnosed

- A sticking throttle plate due to carbon buildup is a frequent cause of P1790 on higher-mileage Mazda engines, and cleaning the throttle body often resolves the code without replacing any sensors.
- The TP sensor may test fine with a basic resistance check but still set P1790 because the mechanical linkage between the pedal and throttle plate is worn or binding, so always verify actual throttle movement.
- On Mazda vehicles with electronic throttle control, a dirty throttle body can cause the PCM to command a throttle position that the TP sensor does not match, triggering this code even when the sensor itself is good.
- P1790 can be set intermittently by a loose or corroded TP sensor connector that only loses contact during engine vibration, so wiggle-test the harness while monitoring live data.
- After replacing the TP sensor or throttle body, a relearn or calibration procedure is often required; skipping it can cause the code to return immediately.

Can I keep driving with P1790?

You can usually drive the vehicle short distances to a repair shop, but avoid aggressive acceleration or heavy loads because the engine may enter limp mode or hesitate unexpectedly. If the vehicle stalls or loses power, pull over safely and arrange a tow.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Throttle body cleaner and soft brush
- Socket set and screwdrivers
- Feeler gauge or feeler blades for linkage check

Reading P1790

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (Mazda): its meaning depends on the make.
7	Transmission.
90	The exact fault within that area.

Often seen with

P0120 Throttle Position Sensor A Circuit Malfunction · **P0121** Throttle Position Sensor A Circuit Range/Performance · **P0122** Throttle Position Sensor A Circuit Low Input · **P0123** Throttle Position Sensor A Circuit High Input · **P2135** Throttle/Pedal Position Sensor A/B Voltage Correlation



See it working

Watch the animated explainer [How a MAF Sensor Works: Hot-Wire Airflow Explained](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/mazda-p1790/>

