

NISSAN · POWERTRAIN

P1790

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1790 · Nissan

TP Mechanical Circuit

P1790 on Nissan vehicles indicates that the Transmission Control Module (TCM) has detected a mechanical fault in the Throttle Position (TP) sensor circuit, meaning the electrical signal from the throttle position sensor does not correlate with expected values under specific driving conditions. The TCM monitors the TP signal for consistency with engine load and transmission shift patterns, and when the signal is mechanically implausible, it sets this code and may default to a limp-home mode.

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

Symptoms you may notice

- Illumination of the Check Engine Light or Service Engine Soon light on the dashboard
- Harsh or delayed transmission shifts, often accompanied by a flare between gears
- Transmission stuck in a single gear (limp mode) with reduced vehicle speed
- Poor engine performance, hesitation, or stumbling during acceleration
- Often no symptoms besides the warning light, especially if the fault is intermittent

Common causes, most likely first

- 1 Worn or damaged throttle position sensor (TPS) internal tracks causing erratic signal output
- 2 Corroded, loose, or damaged electrical connector at the throttle position sensor
- 3 Chafed or broken wires in the TP sensor circuit between the sensor and the TCM
- 4 Contaminated or sticking throttle body causing the TP sensor to report implausible values
- 5 Faulty TCM software or internal TCM fault misinterpreting a valid TP signal
- 6 Improperly adjusted or installed TP sensor after previous repairs
- 7 Engine vacuum leaks or intake air leaks that skew the relationship between throttle position and engine load



How to diagnose and fix it

- 1 Connect a scan tool and record freeze-frame data to see the TP sensor voltage and engine conditions when the code set
- 2 Visually inspect the TP sensor connector and wiring for corrosion, looseness, or damage, and repair as needed
- 3 Back-probe the TP sensor signal wire and verify a smooth voltage sweep from about 0.5V at closed throttle to about 4.5V at wide-open throttle without drops or spikes
- 4 Clean the throttle body and perform a throttle position relearn procedure if the throttle plate is carbon-fouled
- 5 Replace the throttle position sensor if the voltage sweep is erratic or out of specification, then clear the code and verify the repair
- 6 Check for intake vacuum leaks using a smoke machine or carburetor cleaner while monitoring fuel trim data
- 7 If all external checks pass, consult Nissan service information for TCM reprogramming or replacement procedures

What the TP Mechanical code really means

- A P1790 can be set by a dirty throttle body that causes the TP sensor to report a slightly different voltage than expected, even though the sensor itself is still good.
- Many technicians replace the TPS only to find the real problem is a chafed wire harness near the throttle body that intermittently shorts to ground.
- This code often appears after battery replacement or throttle body cleaning because the TCM loses its learned throttle position values and needs a relearn procedure.
- On some Nissan models, a failing accelerator pedal position sensor can cause related codes and mimic TP sensor faults, so always check both sensors.
- The code does not always mean the TPS is mechanically broken; it can also set from a loose ground connection at the engine block that corrupts the sensor signal.

Can I keep driving with P1790?

You can usually drive the vehicle to a repair shop, but expect reduced power and harsh shifting due to limp mode. Avoid heavy acceleration and highway driving until the fault is diagnosed, as the transmission may not shift properly and could cause further damage.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Back-probe kit
- Smoke machine for vacuum leak detection
- Throttle body cleaner and shop rags



Reading P1790

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

Often seen with

P1705 Direct Clutch Speed Circuit Fault · **P1705** TCM ECT Sensor Circuit Fault · **P1705** 2-4 Brake Pressure Solenoid Valve Solenoid D Circuit · **P1705** Throttle Position Sensor Circuit AT · **P1705** Starter Lock-Out Backup Lamp Switch S161 · **P1705** Transmission Range Sensor Out Of Self Test Range · **P1705** TCM A/T Gear Position Switch Circuit Shorted · **P1705** P/N Signal Output Circuit · **P1705** Manual Lever Position Sensor Out of Self-Test Range · **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

See it working

Watch the animated explainer [How a Knock Sensor Works: Spark Timing and Octane](#) on Auto Veteran to see the parts involved moving.

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

