

VOLKSWAGEN · POWERTRAIN

P1790

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1790 · Volkswagen

Transmission Range Display Circuit Open

P1790 on Volkswagen vehicles indicates that the transmission control module (TCM) has detected an open circuit in the wiring for the transmission range display, which is the signal that tells the driver and other modules which gear the selector is in. The TCM monitors the circuit for expected voltage or continuity and sets this code when the signal is missing or outside the normal range.

SYSTEM

Powertrain

CODE TYPE

**Volkswagen
specific**

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Transmission

Symptoms you may notice

- The gear position indicator on the instrument cluster may be blank, flashing, or show incorrect positions.
- The transmission may default to a limp mode, staying in a single gear or refusing to shift normally.
- The starter may not engage because the TCM does not recognize the selector in Park or Neutral.
- A warning light or message such as 'Transmission: Workshop!' may appear on the dash.
- Often no symptoms besides the warning light, especially if the fault is intermittent.

Common causes, most likely first

- 1 Broken, chafed, or corroded wiring in the harness between the transmission range sensor and the TCM.
- 2 Faulty transmission range sensor (also called multifunction switch) internal contacts.
- 3 Loose or corroded electrical connector at the transmission range sensor or TCM.
- 4 Water intrusion or damage to the connector pins causing an open circuit.
- 5 Failed TCM driver circuit for the range display signal (less common).
- 6 Aftermarket alarm or remote start wiring that has tapped into the range signal circuit.



How to diagnose and fix it

- 1 Scan all modules for fault codes and record freeze-frame data to confirm P1790 is current and not historical.
- 2 Visually inspect the transmission range sensor connector and harness for damage, corrosion, or loose pins.
- 3 Disconnect the battery and use a multimeter to check continuity and resistance of the range signal circuit from sensor to TCM.
- 4 Check the sensor's ground and power supply circuits to rule out a shared fault.
- 5 If wiring checks out, test the transmission range sensor with a multimeter while moving the selector through all positions.
- 6 Replace the transmission range sensor if it fails testing, then clear codes and perform a road test to verify the fix.
- 7 If the circuit remains open after sensor replacement, inspect the TCM connector and internal circuitry, and repair or replace as needed.

Before you replace the range sensor

- A common misdiagnosis is replacing the transmission range sensor when the real fault is a chafed wire in the harness near the transmission mount or a corroded connector pin.
- The range display signal often shares a connector with other circuits, so water intrusion can cause multiple codes and misleading symptoms.
- Intermittent P1790 can be caused by a loose selector cable adjustment that prevents the sensor from aligning properly, mimicking an open circuit.
- Aftermarket electrical accessories tapped into the range circuit can introduce resistance or open circuits that trigger this code without any factory component failure.
- The TCM may set P1790 even when the range sensor is functional if the signal wire is shorted to ground or power intermittently, so always check for shorts as well as opens.

Can I keep driving with P1790?

If the transmission is in limp mode or the gear indicator is blank, avoid driving because the car may not shift properly or may not start. If the only symptom is a warning light and the car drives normally, you can drive cautiously to a repair shop, but do not tow heavy loads or rely on the range display.

Tools that help

- OBD-II scan tool with manufacturer-specific software
- Digital multimeter
- Wiring diagram for the specific Volkswagen model
- Trim removal tools for accessing connectors
- Jack and jack stands or ramps for under-vehicle access



Reading P1790

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

Often seen with

P1793 Output Speed Sensor 2 Circuit No Signal · **P1791** Transmission Range Display Circuit Short To Ground · **P1792** Transmission Range Display Circuit Short To B+ · **P1793** Intake Air Volume Circuit · **P1791** TP Electric Circuit · **P1792** Barometer Pressure Circuit · **P1791** PCM ECT Level Signal To TCM Circuit Fault · **P1793** Intake Air Volume Circuit · **P1791** TP Electric Circuit · **P1792** Barometer Pressure Circuit · **P1792** Ignition Supply Malfunction · **P1793** Ignition Supply Malfunction · **P1791** Ignition Supply Malfunction · **P1793** Automatic Transmission System Malfunction · **P1791** TCM A/T Vehicle Speed Sensor Circuit Fault · **P1792** Transmission Control Module Reprogrammable Memory · **P1793** Transmission Control Module Stack Overrun · **P1791** Transmission Control Module Loop · **P0705** Transmission Range Sensor Circuit Malfunction · **P0706** Transmission Range Sensor Circuit Range/Performance

See it working

Watch the animated explainer [How an Automatic Transmission Works, Gear by Gear](#) on Auto Veteran to see the parts involved moving.

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

