

VOLKSWAGEN · POWERTRAIN

P1745

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1745 · Volkswagen

Transmission Control Unit Relay Short To B+

P1745 on Volkswagen vehicles means the transmission control module (TCM) has detected a short to battery positive voltage in the relay circuit that supplies power to the transmission control unit. The TCM monitors the relay control wire and sees voltage present when the relay should be off, indicating a wiring fault or a failed relay.

SYSTEM

Powertrain

CODE TYPE

Volkswagen
specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Transmission

Symptoms you may notice

- The transmission may enter limp mode with harsh or delayed shifts
- The gear indicator may flash or show an error, and the car may stay in a single gear
- Intermittent loss of power to the transmission, causing the car to stall or refuse to move
- Often no symptoms besides the warning light, especially if the short is intermittent
- The engine may crank but not start if the relay also supplies power to other circuits
- A dead battery if the short keeps the relay energised when the ignition is off

Common causes, most likely first

- 1 Chafed or pinched wiring in the relay control circuit shorting to a battery positive wire
- 2 A failed transmission control relay with internally welded contacts
- 3 Corrosion or water intrusion in the relay socket or TCM connector causing a bridge to power
- 4 A faulty TCM driver circuit holding the relay control wire high
- 5 Aftermarket accessories or alarm wiring tapped into the relay circuit incorrectly
- 6 A shorted relay coil or suppression diode inside the relay



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data to confirm P1745 is current and not a ghost code
- 2 Inspect the transmission control relay and its socket for corrosion, burning, or loose terminals
- 3 Disconnect the TCM and relay, then measure resistance from the relay control wire to battery positive with the ignition off
- 4 Wiggle-test the harness while watching live relay control status on a scan tool to expose intermittent shorts
- 5 Check for aftermarket wiring or water ingress along the harness route to the TCM
- 6 Replace the relay only after the control wire tests clean, then clear codes and verify the circuit stays off with key on
- 7 If the short persists with the relay removed, trace and repair the harness or replace the TCM as a last step

Why this relay code fools good technicians

- A relay with welded contacts can set P1745 even though the control wire and TCM are perfect, so always bench-test or swap the relay before condemning the module.
Water in the plenum or footwell can wick into the TCM connector and bridge the relay control pin to a nearby power feed, a fault that never shows on a static meter test.
- An aftermarket alarm or remote starter tapped into the relay circuit often creates this short, and the code appears months after the installation.
- P1745 can be stored by a low battery or voltage spike during cranking, so clear it once and verify it returns before starting a wiring repair.
The relay may also feed other engine components, so a short here can cause no-start or battery drain symptoms that seem unrelated to the transmission.

Can I keep driving with P1745?

If the transmission is in limp mode or the car will not move reliably, do not drive it because you risk a stall in traffic. If the only symptom is the warning light and the car shifts normally, you can drive cautiously to a workshop, but avoid long trips until the short is found.

Tools that help

- OBD-II scan tool with live data and bidirectional control
- Digital multimeter with min/max recording
- Wiring diagram for the specific Volkswagen model
- Relay puller and terminal pick set
- Test light or power probe



Reading P1745

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

Often seen with

P1746 Transmission Control Unit Relay Malfunction · **P1747** Transmission Control Unit Relay Open Short To Ground · **P1750** Power Supply Voltage Low · **P1750** Solenoid Assembly · **P1746** Electronic Pressure Control Solenoid Circuit Open · **P1747** Electronic Pressure Control Solenoid Circuit · **P1746** Pressure Regulator 2 · **P1747** Pressure Regulator 3 · **P1746** Electronic Pressure Control Solenoid A Open Circuit · **P1747** Electronic Pressure Control Solenoid A Short Circuit · **P1746** Transmission Control Module Output Stage · **P1747** CAN Bus Monitoring · **P1750** Secondary Pressure Solenoid Circuit Range Performance · **P0700** Transmission Control System 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-p1745/>

