

GENERIC · POWERTRAIN

P06D7

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P06D7

Sensor Reference Voltage F Circuit Low

P06D7 indicates that the powertrain control module (PCM) has detected a low voltage condition on the sensor reference voltage circuit labeled 'F'. This circuit typically supplies a regulated 5-volt reference to one or more sensors, and a low reading means the PCM sees the voltage below its expected threshold, which can affect sensor accuracy and overall engine management.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Computer and output circuits

Symptoms you may notice

- Illumination of the check engine light (malfunction indicator lamp) with no other noticeable symptoms
- Rough idle or hesitation during acceleration if the affected sensor is critical to fuel delivery
- Poor fuel economy or increased emissions due to incorrect sensor readings
- Intermittent stalling or difficulty starting in some cases
- Erratic operation of accessories or systems that share the reference voltage circuit

Common causes, most likely first

- 1 A short to ground in the reference voltage wiring or a sensor internally shorted
- 2 Corroded, loose, or damaged electrical connector at a sensor or the PCM
- 3 Failed sensor pulling down the reference voltage (e.g., a faulty manifold absolute pressure sensor or throttle position sensor)
- 4 Chafed or pinched wire harness causing a partial ground short
- 5 Internal fault in the PCM affecting the reference voltage output

How to diagnose and fix it

- 1 Use a scan tool to retrieve all stored codes and freeze-frame data to identify which sensor circuit is affected
- 2 Visually inspect the wiring harness and connectors related to circuit F for damage, corrosion, or loose pins
- 3 Disconnect sensors one by one that share the reference voltage circuit and observe if the voltage returns to normal
- 4 Measure reference voltage at the PCM connector with a digital multimeter to confirm the PCM output is within specification
- 5 Check for continuity to ground on the reference voltage wire with sensors disconnected to locate a short
- 6 Repair or replace the faulty sensor or damaged wiring as identified
- 7 Clear codes and perform a road test to verify the repair and ensure no pending codes return



Reference Voltage Circuit F Diagnostic Traps

- A single shorted sensor on a shared reference voltage circuit can pull down the voltage for multiple sensors, causing unrelated codes to set and misleading you into replacing good parts.
- The PCM may set P06D7 even when the root cause is a poor ground connection at the sensor or engine block, so always verify ground integrity before condemning the PCM.
- Intermittent low voltage can be caused by wire chafing that only occurs under certain engine vibration or temperature conditions, making it essential to wiggle-test the harness while monitoring live data.
- Some vehicles use the same reference voltage for the accelerator pedal position sensor and the throttle position sensor; a fault in one can disable the other and trigger reduced power mode.
- A failed PCM is rare, but when all external circuits test good, check for technical service bulletins (TSBs) specific to your make and model before replacing the module.

Can I keep driving with P06D7?

You can usually drive the vehicle short distances to a repair shop, but avoid aggressive acceleration or heavy loads because the fault may cause poor engine performance or stalling. If the engine runs rough or enters reduced power mode, stop driving and seek professional diagnosis immediately.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter (DMM)
- Wiring diagram for the specific vehicle
- Test light or jumper wires
- Socket set and trim removal tools

Reading P06D7

P	Powertrain: engine, transmission and emissions.
0	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
6	Computer and output circuits.
D7	The exact fault within that area.

Often seen with

P0641 Sensor Reference Voltage 'A' Circuit/Open · **P0651** Sensor Reference Voltage 'B' Circuit/Open · **P06A6** Sensor Reference Voltage A Circuit Range/Performance · **P06D6** Sensor Reference Voltage F Circuit/Open · **P06D8** Sensor Reference Voltage F Circuit High



See it working

Watch the animated explainer [Inline-Four Engine X-Ray: Firing Order 1-3-4-2](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p06d7/>

