

GENERIC · POWERTRAIN

P06A9

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P06A9

Sensor Reference Voltage D Circuit Range/Performance

P06A9 indicates that the powertrain control module has detected a range or performance error on the reference voltage circuit labeled 'D', which supplies a stable voltage to one or more sensors. The computer compares the actual voltage on this circuit against its expected value and sets the code when the signal falls outside the acceptable window or behaves erratically.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Computer and output circuits

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or hesitation during acceleration if the affected sensors provide faulty data
- Poor fuel economy or increased emissions due to incorrect sensor readings
- Intermittent stalling or difficulty starting in some cases
- Erratic operation of accessories or gauges that share the same reference voltage circuit

Common causes, most likely first

- 1 A short to ground or short to voltage on the reference voltage D circuit wiring
- 2 Corroded, loose, or damaged connector pins at the sensor or PCM
- 3 A faulty sensor that is internally shorted and pulling the reference voltage down
- 4 Open or high-resistance wiring in the reference voltage D circuit
- 5 Internal failure within the powertrain control module affecting the reference voltage output
- 6 Water intrusion or physical damage to the wiring harness



How to diagnose and fix it

- 1 Connect a scan tool and record all stored codes and freeze-frame data to understand the operating conditions when the fault set
- 2 Inspect the wiring harness and connectors associated with the reference voltage D circuit for obvious damage, corrosion, or loose pins
- 3 Measure the reference voltage at each sensor that shares circuit D with a digital multimeter and compare to the specified value
- 4 Disconnect sensors one at a time to see if the reference voltage returns to normal, isolating a faulty sensor
- 5 Perform a voltage drop test on the ground and power sides of the circuit to check for excessive resistance
- 6 Check for continuity and shorts to ground or voltage on the reference voltage D wire using a multimeter
- 7 If all external circuits and sensors test good, suspect an internal PCM fault and perform further diagnostics before replacement

Reference voltage faults that fool good technicians

- A single shorted sensor on a shared reference voltage circuit can drag down the voltage for all sensors on that circuit, causing multiple unrelated codes to set simultaneously.
- The reference voltage D circuit often feeds sensors that are not obviously related, such as the accelerator pedal position sensor and the air conditioning pressure sensor, so a fault in one system can affect another.
- Intermittent faults are frequently caused by chafed wiring that only shorts when the engine moves or the vehicle hits a bump, so wiggle tests are essential during diagnosis.
- Some vehicles use a dedicated reference voltage circuit for each sensor, while others share one circuit among several sensors; always consult the wiring diagram for the specific vehicle.
- A failed PCM is a rare cause of this code, so extensive circuit testing should be completed before condemning the module.

Can I keep driving with P06A9?

It is generally safe to drive the vehicle short distances to a repair facility, but avoid aggressive acceleration or heavy loads because faulty sensor data can affect engine performance and emissions. If the engine runs poorly or stalls, stop driving and seek professional diagnosis immediately.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter with back-probing pins
- Wiring diagram for the specific vehicle
- Test light
- Contact cleaner and dielectric grease



Reading P06A9

- 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.
- A9** The exact fault within that area.

Often seen with

P0641 Sensor Reference Voltage 'A' Circuit/Open · **P0651** Sensor Reference Voltage 'B' Circuit/Open · **P06A8** Sensor Reference Voltage C Circuit Range/Performance · **P06AA** Control Module Internal Temperature B Too High · **P06AB** Control Module Internal Temperature Sensor B Circuit

See it working

Watch the animated explainer [How a Manual Transmission Works: Four-Speed Cutaway](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p06a9/>

