P0100: MASS OR VOLUME AIR FLOW (MAF) CIRCUIT MALFUNCTION

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$50-$500**
Can I Still Drive?	:	

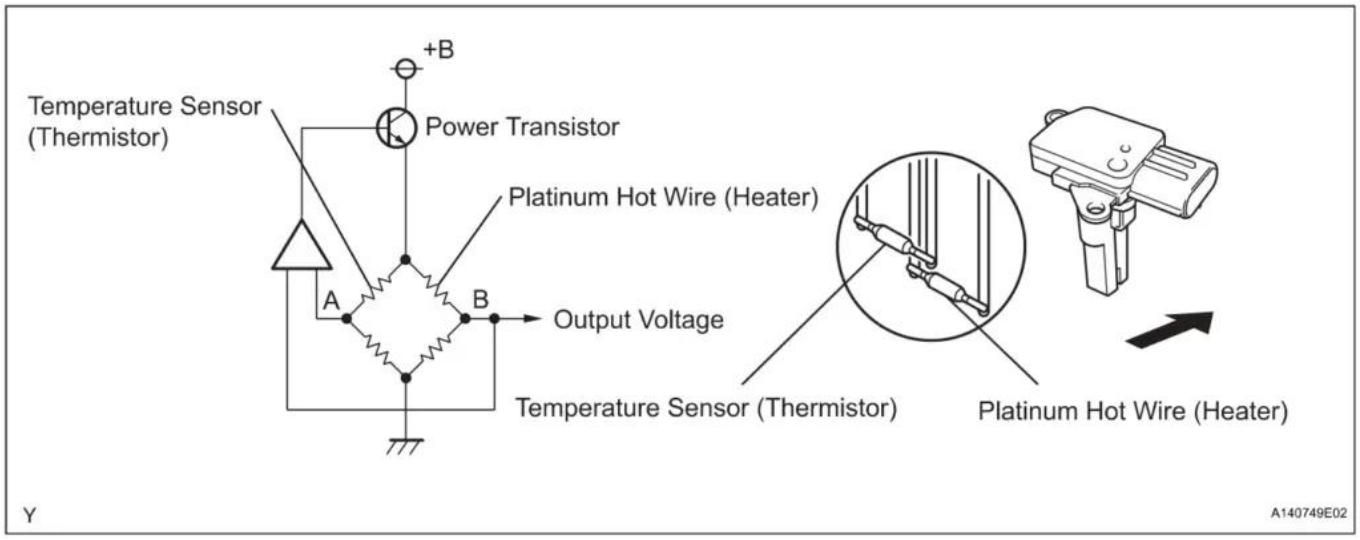
What Does The P0100 Code Mean?

The MAF (mass air flow) sensor is a sensor mounted in a vehicle's engine air intake tract downstream from the air filter, and is used to measure the volume and density of air being drawn into the engine. The MAF sensor itself only measures a portion of the air entering and that value is used to calculate the total volume and density of air being ingested.

The powertrain control module (PCM) uses that reading along with other sensor parameters to ensure proper fuel delivery at any given time for optimum power and fuel efficiency.

This P0100 diagnostic trouble code (DTC) means that there is a detected problem with the Mass Air Flow (MAF) sensor or circuit. The PCM detects that the actual MAF sensor frequency signal is not performing within the normal expected range of the calculated MAF value.

Note: Some MAF sensors also incorporate an air temperature sensor, which is another value used by the PCM for optimal engine operation.



P0100 wiring diagram

Closely related MAF circuit trouble codes include:

- P0101: Mass or Volume Air Flow “A” Circuit Range/Performance
- P0102: Mass or Volume Air Flow “A” Circuit Low Input
- P0103: Mass or Volume Air Flow “A” Circuit High Input
- P0104: Mass or Volume Air Flow “A” Circuit Intermittent

What Are The Symptoms Of The P0100 Code?

Symptoms of a P0100 code may include:

- Malfunction indicator lamp (MIL) illumination (a.k.a. check engine light)
- Rough running engine
- Black smoke from tail pipe
- Stalling
- Engine hard start or stalling after it starts
- Possible other driveability symptoms or even no symptoms

What Are The Potential Causes Of The P0100 Code?

Potential causes for this trouble code may include:

- Dirty or contaminated mass air flow sensor
- Failed MAF sensor
- Intake air leaks
- MAF sensor electrical harness or wiring problem (open, shorted, frayed, poor connection, etc.)

Note that other codes may be present if you have a P0101. You may have misfire codes or O2 sensor codes, so it's important to take a "big picture" look at how the systems work together and effect each other when doing a diagnosis.

How Can You Fix The P0100 Code?

- Visually inspect all MAF sensor wiring and connectors to make sure they are intact, not frayed, broken, routed too close to ignition wires/coils, relays, motors, etc.
- Visually inspect for any obvious air leaks in the air intake system
- Visually *closely* inspect the MAF sensor wires or film to see if you can see contamination such as dirt, dust, oil, etc.
- If the air filter is dirty, replace it with a new original equipment filter from the dealer
- Carefully clean the MAF using MAF cleaner spray is generally a good DIY friendly diagnostic/repair step
- If the air intake system has a mesh in it, make sure that is also clean (VWs mainly)
- Loss of vacuum to the MAP sensor can trigger this DTC
- A low minimum air rate through the sensor bore may cause this DTC to set at idle or during deceleration. Inspect for any vacuum leaks downstream of the MAF sensor.
- Use a scan tool to monitor real-time sensor values from the MAF sensor, O2 sensors, etc.
- Check for Technical Service Bulletins (TSBs) for your particular make/model in case of known issues on your vehicle.
- The barometric pressure (BARO) used to calculate the predicted MAF value is initially based on the MAP sensor at key ON.
- A high resistance on the ground circuit of the MAP sensor can cause this DTC to set

If you do need to replace the MAF sensor, we recommend using an original equipment OEM one from the manufacturer rather than buying an aftermarket part.

Note: The use of a reusable oiled air filter could be a cause of this code, if it is over-oiled. Oil can transfer to the fine wire or film inside the MAF sensor and contaminate it. Use something such as MAF cleaner sprayto clean the MAF in such situations. We do not recommend the use of oiled air filters.

Reference Sources

Diagnostic Trouble Code (DTC) Charts and Descriptions for P0100 - Page 20.