

## P0068: MAP/MAF - THROTTLE POSITION CORRELATION

### OVERVIEW

Severity	:	<div><div>High</div></div>
DIY Difficulty Level	:	<div><div>Intermediate</div></div>
Repair Cost	:	\$100-\$300
Can I Still Drive?	:	Yes (Short-term only)

### What Does The P0068 Code Mean?

The generic trouble code P0068 refers to an engine management problem. A disparity exists between the computer's sensors as to the volume of air entering the intake manifold.

The PCM relies on three sensors to indicate air flow volume in order to calculate fuel and timing tactics. These sensors include the mass airflow sensor, throttle position sensor and the Manifold pressure (MAP) sensor. There are many sensors on the engine however these are the three associated with this code.

The mass airflow sensor is located between the air cleaner and the throttle body. Its job is to signal the amount of air passing through the throttle body. In order to accomplish this, a thin piece of resistance wire the thickness of a hair stretches across in the inlet of the sensor.

The computer sends voltage to this wire to heat it to a predetermined temperature. As air volume increases it requires more voltage to maintain the temperature. Conversely, it requires less voltage as the air volume drops. The computer recognizes this voltage as an indication of air volume.

The throttle position sensor rests on the opposite side of the throttle plate in the throttle body. When closed, the throttle plate prevents airflow into the engine. Air necessary for idle bypasses the throttle valve by way of an idle air control motor.

Most later model vehicles use a throttle position sensor on the floorboards at the top of the gas pedal. As the pedal is depressed the sensor attached to the pedal sends a voltage to an electric motor that controls the opening of the throttle plate.

In operation, the throttle position sensor is nothing more than a rheostat. With the throttle plate closed at idle, the throttle position sensor registers very close to 0.5 volts and when opened as in accelerating, the voltage will rise to approximately 5 volts. The transition from 0.5 to 5 volts should be very smooth. The engine's computer recognizes this increase in voltage as a signal indicating the amount of airflow and rate of opening.

The Manifold Absolute Pressure (MAP) has a dual role in this scenario. It senses the manifold pressure corrected for air density due to temperature, humidity and altitude. It is also linked to the intake manifold through a hose. When the throttle suddenly opens the manifold pressure drops just as sudden and rises again as the air flow increases.

The engine management computer requires all three of these sensors to accurately strategize the length of time to open the injectors and how much spark advance is necessary to maintain a 14.5/1 fuel ratio. If, for some reason one of these sensors or a mechanical problem causes a disparity between the rest, the computer is incapable of making the proper adjustments and sets the P0068 trouble code.

## **What Are The Symptoms Of The P0068 Code?**

The symptoms displayed for a P0068 code will depend on the cause of the overboost condition:

- The service engine soon or check engine light will illuminate.
- Rough running engine – the computer will set the above code and additional codes depicting the faulty sensor if the problem is electrical. Without the correct airflow the engine will develop a rough idle, and depending on the severity, it may not accelerate or have a serious dead spot off idle. In short, it will run lousy

## **What Are The Potential Causes Of The P0068 Code?**

Potential causes for this DTC include:

- Vacuum leaks between the mass airflow sensor and intake manifold and loose or cracked hoses
- Dirty air cleaner
- Leak in the intake manifold or sections
- Faulty sensor
- Coked intake runner behind throttle body
- Poor or corroded electrical connectors
- Obstruction to air flow

- Defective electronic throttle body
- Obstruction in hose from intake manifold to MAP sensor

## How Can You Fix The P0068 Code?

Like an auto technician, start with the most common problems. You will need a volt/ohmmeter, wire-piercing probe for the meter, a can of carburetor cleaner and a can of intake cleaner. Repair any problems as they are found and start the vehicle to determine if the problem is corrected — if not continue the procedures.

### Step 1:

With the engine off, open the hood and check the air cleaner element.

Look for any loose clamps or leaks in the piping from the mass airflow sensor to the throttle body.

### Step 2:

Inspect all the vacuum lines on the intake manifold for obstructions, cracks or looseness which could cause loss of vacuum.

### Step 3:

Disconnect each of the sensors and check the connector for corrosion and pushed out or bent pins.

### Step 4:

Start the engine and use the carburetor cleaner to find any leaks in the intake manifold. A short shot of carburetor cleaner over a leak will change the engine rpm noticeably.

Hold the can at arms length to keep the spray from contacting your eyes lest you learn the lesson much like picking up a cat by the tail. You won't forget next time. Spray all connection points on the manifold for leaks.

### Step 5:

Take the clamp loose on the pipe connecting the mass airflow to the throttle body. Look in the throttle body to see if it's coated with coke — a black greasy looking substance. If it is, pinch the tube from the intake cleaner bottle between the pipe and the throttle body.

Push the pipe on the throttle body and start the engine. Begin the spray until the can is gone. Remove it and reconnect the pipe to the throttle body.

**Step 6:**

Test the mass airflow sensor. Pull the connector off the sensor. Turn the ignition on with the engine off. There are three wires, 12 volt power, sensor ground and signal (usually yellow.) use the red voltmeter lead to probe the connector for 12 volts. Keep the black lead on ground. No voltage is a ignition or wiring problem.

Install the connector and check the sensor ground. It must be under 100 mv. If the sensor has 12 volts and out of range on the ground, replace the sensor. This is a basic test. If it passes yet when finished with all tests and the problem still persists, the mass airflow may still be bad. Have it checked on a graphing computer such as the Tech II.

**Step 7:**

Check the operation of the throttle position sensor. Make sure it is seated properly and the bolts are tight. It is a three-wire connector — dark blue for the signal, grey for the 5 volt reference voltage and a black or orange for the PCM negative wire.

**Step 8:**

Connect the voltmeter red lead to the blue signal wire and the black voltmeter lead to a ground. Turn the key on with the engine off. If the sensor is good it will have less than 1 volt with the throttle closed. As the throttle is advanced the voltage will rise smoothly to approximately 4 volts with no drop outs or glitches.

**Step 9:**

Check the MAP sensor. Turn the key on and backprobe the power reference wire with the red voltmeter lead and the black to ground. With the key on and engine off it must have 4.5 to 5 volts. Start the engine. It must have 0.5 to 1.5 volts depending on altitude and temperature. Raise the engine rpm. The voltage must react to the throttle opening by dropping and rising again. If not replace it.

**Reference Sources**

[Diagnostic Trouble Code \(DTC\) Charts and Descriptions for P0068](#) - Pages 14-15.