P212E: THROTTLE POSITION SENSOR/SWITCH "G" CIRCUIT INTERMITTENT

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$100-$200**
Can I Still Drive?	:	**Yes**

What Does The P212E Code Mean?

In my own personal experience, I have found that a stored P212E code means that the powertrain control module (PCM) has detected an intermittent malfunction in the circuit for the “G” throttle position sensor (TPS) circuit.

The TPS is typically a potentiometer type sensor that completes a five-volt reference circuit. The TPS is mechanically actuated using an extension of the throttle plate shaft or a specially designed tab on the sensor.

As the throttle is opened and closed, contacts in the sensor are dragged across a circuit board, varying sensor resistance. As sensor resistance is changed, TPS circuit voltage fluctuates. The PCM recognizes these fluctuations as varying degrees of throttle plate actuation.

The PCM uses input voltage signals from the TPS to calculate fuel delivery and ignition timing. It also uses TPS input data to monitor intake air flow, exhaust oxygen content, exhaust gas recirculation (EGR) function, and engine load percentage.

If the PCM detects a certain number of intermittent or erratic signals from the TPS, over a set period of time, and under a programmed set of circumstances, a code P212E will be stored and a malfunction indicator lamp (MIL) may be illuminated.

What Are The Symptoms Of The P212E Code?

Symptoms of a P212E code may include:

- Hesitation upon acceleration
- Black smoke from engine exhaust (especially on start up)
- Delayed engine startup (particularly on cold start)
- Diminished fuel efficiency
- Stored emissions related codes may accompany a P212E

What Are The Potential Causes Of The P212E Code?

Possible causes for this engine code include:

- Defective or misadjusted TPS
- Open or shorted TPS “G” wiring or connectors
- Binding or damaged throttle plate
- Bad PCM or a PCM programming error

How Can You Fix The P212E Code?

A good starting point is always to check for technical service bulletins (TSB) for your particular vehicle. Your issue may be a known issue with a known fix put out by the manufacturer and can save you time and money during diagnosis.

I typically use a diagnostic scanner, a digital volt/ohmmeter (DVOM), and an accurate vehicle information source (ALL DATA DIY) to diagnose a code P212E.

Step 1

A successful diagnosis usually begins with a visual inspection of all system related wiring and connectors. I also like to test the throttle plate for signs of carbon coking or damage. Repair or replace defective wiring or components as required, then recheck the throttle body and TPS.

Step 2

Connect the scanner to the diagnostic connector; retrieve all stored trouble codes and write them down for future reference. I also keep any related freeze frame data. My notes are often helpful if the stored code proves to be intermittent. Next, I would clear the codes and test-drive the vehicle. Continue with the diagnosis if the code is reset.

If it is not reset, the condition may need to worsen before a correct diagnosis can be made. Operate the vehicle normally until the PCM enters readiness mode or the code is reset.

Step 3

Proceed by checking for technical service bulletins (TSB) that apply to the particular malfunction (and vehicle) in question by consulting your vehicle information source. If applicable, use the information contained in the appropriate TSB to help with your diagnosis. TSBs can be especially helpful when diagnosing an intermittent condition.

Step 4

The scanner data stream may yield useful information regarding glitches and inconsistencies in the throttle position sensor. If you narrow the scanner data stream to display only pertinent data, you will get a more accurate data response.

Step 5

If no glitches are detected, use the DVOM to test the TPS. Using the DVOM gives you access to live data if the appropriate test leads are connected to the ground and signal circuits. Watch the DVOM display while operating the throttle manually.

Look for glitches in voltage as the throttle is actuated slowly from the closed position to wide open throttle. Voltage typically ranges from .5-volts at closed throttle to 4.5-volts at wide open throttle. If glitches or other inconsistencies are detected, suspect that the sensor being tested is defective or misadjusted.

Additional diagnostic notes:

- If the TPS has been replaced and a P212E continues to be stored, consult the vehicle information source for TPS adjustment specs
- Use the DVOM (with the test leads connected to the ground and signal circuits) to adjust the TPS accurately

Severity Description

The TPS plays an important role in engine drivability, therefore a stored code P212E should be addressed with some degree of urgency.

Reference Sources

P212E Throttle Position Sensor/Switch G Circuit Intermittent, OBD-Codes.