P0657: ACTUATOR SUPPLY VOLTAGE A CIRCUIT/OPEN

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$200-$400**
Can I Still Drive?	:	**Yes**

What Does The P0657 Code Mean?

The ECM (Engine control module) is not only responsible for monitoring and adjusting numerous sensors, solenoids, actuators, valves, etc.. but also for making sure all of these components are operating seamlessly and in conjunction to meet desired values. All of this to ensure you get the most economy and performance out of your vehicle as possible.

In this case, if you get a P0657 or related code, depending on your make and model, you may be experiencing transmission drivability issues.

It's important to note, in my experience with European models, I have also seen this code as an EVAP diagnostic code. Having highlighted the potential differences, it should go without saying, you need to refer to your service manual to ensure proper diagnostic direction.

Most times, your symptoms will be a strong indicator as to what systems/ components you will be working with to rectify the fault.

When it comes to the P0657 and related codes, the ECM has detected an abnormal value within the actuator supply voltage circuit. It recognizes the abnormality by comparing the actual values to desired ones. If they go outside of a desired scope, it illuminates the MIL (Malfunction indicator lamp) on your instrument panel. It must monitor this fault through multiple drive cycles before illuminating the MIL.

Make sure to research the designation for "A" within the circuit. Depending on your make and

model, this could designate a certain wire, harness, location, etc. That said, always use OEM (Original equipment manufacturer) technical service information for this.

This could also be detected by the TCM (Transmission control module) depending on what description your particular make and model has for this code.

P0657 (Actuator Supply Voltage A Circuit/Open) is is active when the ECM or TCM has detected an open (or general malfunction) within the actuator supply voltage “A” circuit

What Are The Symptoms Of The P0657 Code?

Symptoms of a P0657 diagnostic code may include:

- Poor shifting
- Lack of torque
- Stuck in gear
- CEL (Check engine light) illuminated
- Overall poor drivability
- Limited power output
- Poor fuel mileage
- Abnormal engine revving/speeds

What Are The Potential Causes Of The P0657 Code?

Causes for this P0657 trouble code may include:

- Open/chafed wire
- Water intrusion
- Melted/broken connector(s)
- Short to power
- General electrical issue (e.g. charging system issue, wrong battery, etc.)

How Can You Fix The P0657 Code?

The first step in the troubleshooting process for any malfunction is to research the Technical Service Bulletins (TSB) for known issues with the specific vehicle.

Advanced diagnostic steps become very vehicle specific and may require the appropriate advanced equipment and knowledge to perform accurately. We include basic steps below but refer to a vehicle year/make/model/powertrain specific repair guide for specific steps for your vehicle.

Basic Step #1

How you will approach your diagnosing of this will depend on your make and model and what

symptoms you are experiencing. But generally speaking, the first thing we should do is clear the codes with your scanner and drive the vehicle until it becomes active again. If so, after locating the correct circuit/harness we are working with, inspect it for any damages. It could be routed under the vehicle where road debris, dirt, ice, etc. can damage the circuits under there. Repair any open and/or chafed wires if present.

Also, it would be a good idea to inspect the connectors involved. You can disconnect them to inspect the pins for any bent or damaged ones that could cause electrical issues. Sometimes high resistance within a circuit can cause excessive heat. So much so that it can burn through the insulation! This would be a good sign that you found your problem.

NOTE: Always solder and shrink wrap any damaged wires. Especially when they are subject to the elements. Replace connectors with OEM ones to ensure proper electrical connections.

Basic Step #2

Locate your actuator using your service information. At times, these can be accessible externally. If so in your case, you could verify the integrity of the actuator itself. The desired values involved with this test vary significantly but make sure to have your multimeter and service manual at hand.

Always use appropriate test pin connectors to avoid any unnecessary damage to the connections. If the values recorded are outside of the desired ones, the sensor can be deemed defective and should be replaced with a new one.

Basic Step #3

Take a look at your ECM (engine control module) and TCM (transmission control module) for any obvious damage. At times, they are located in a location that is susceptible to water being trapped and causing corrosion. Any green powder present should be taken as a red flag. A license technician should take it from here given the complexities of ECM diagnosis.

This article is strictly for information purposes only and the technical data and service bulletins for your specific vehicle should always take precedence.

Severity Description

Severity here is set to moderate, generally speaking. Given the fact that there are multiple code descriptions, you should use caution when diagnosing. Proper service data will be necessary.

If this happens to be a transmission code in your case, you definitely want to repair this sooner rather than later. Daily usage of a vehicle with an active transmission code is a risk that we do not want to take.

Reference Sources

Diagnostic Trouble Code (DTC) Guide for P0657 - Ominitek Advanced Technologies, page 131.