P0743: TORQUE CONVERTER CLUTCH (TCC) SOLENOID CIRCUIT ELECTRICAL

OVERVIEW

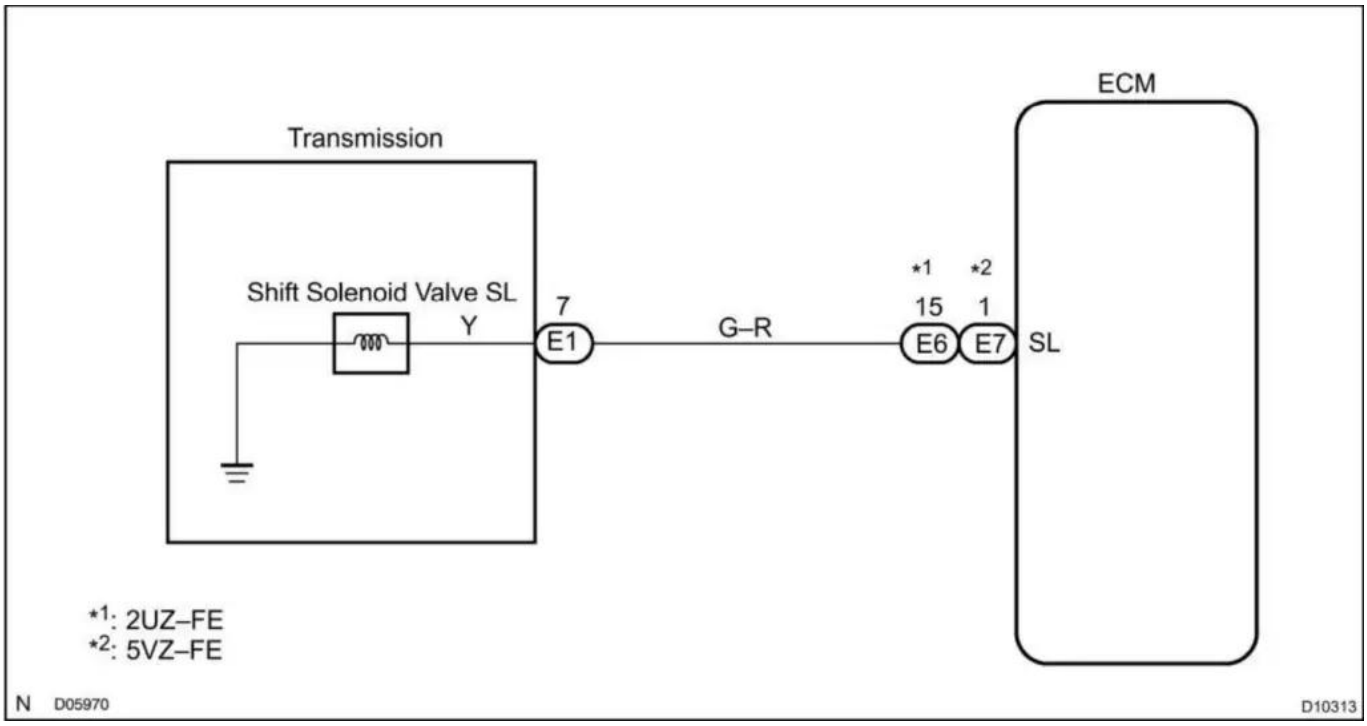
Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$100-$400**
Can I Still Drive?	:	No

What Does The P0743 Code Mean?

This diagnostic trouble code is set when the Engine Management Computer (EMC) also known as the Powertrain Control Module (PCM) and also known as the Engine Control Module (ECM) detects a fault with the torque converter clutch (TCC) solenoid electrical circuit, which is contained inside the transmission.

An automatic transmission is not 100% efficient because it is a fluid coupling that connects the engine to the rest of the internal transmission parts. The torque convertor transfers power using hydraulic force and it is internal to the transmission assembly. With that transfer of power comes excessive heat. The lockup torque converter was designed to make the transmission more efficient at highway speeds and to control heat. The torque convertor clutch is what lockups the convertor. Heat kills transmissions. That is why you hear that stop and go traffic is hard on a automatic transmission

The converter clucth does not lockup at these low speeds therefore heat is generated. This clutch is controlled by an electrical solenoid. The torque convertor clutch is locked changing the fluid coupling to a mechanical one. This solenoid uses power and ground sent through a coil of wires which creates a magnetic field to pull or push a central metal rod. When the solenoid is energized or de-energized, it directs fluid flow through the valve body of the transmission.



P0743 wiring diagram

What Are The Symptoms Of The P0743 Code?

Symptoms of a P0743 DTC may include:

- Malfunction indicator illumination (check engine light or service engine soon light)
- Stalling when coming to a stop after cruising speeds
- Shudder on take off
- Shudder when coming to a stop

What Are The Potential Causes Of The P0743 Code?

Potential causes may include:

- Low or dirty transmission fluid
- Wire/circuit issue shorted to power or ground
- Failed torque converter clutch (TCC) solenoid
- Failed TCC assembly in the torque converter
- Failed PCM/ECM/EMC

Note: This may well be an intermittent condition and may not show up again, so clear the code and keep monitoring.

How Can You Fix The P0743 Code?

Tools required

First you need to gather some tools together or borrow some (a rare occurrence with mechanics as our tools are our livelihood and we don't like to lend out our tools):

- On Board Diagnostic (OBD-II) scan tool- to pull the code; can be found at many parts stores, online, or many parts stores will pull the code for free
- Multimeter that has a resistance (or OHM) reading
- Self powered test light/probe (a Power Probe IIIworks wonders here). If you don't have a Power Probe, a simple set of fused jumper wires and a test light will suffice
- Wire diagrams will be very helpful – you can get these in a Haynes manual or if your friendly with the dealer or your local mechanic, they may be able to run off a photocopy

TIP:

- Remember in most cases there's an internal transmission harness that connects the TCC solenoid and shift solenoids, so the wire fault may only happen when the transmission is hot or cold. Or, when the vehicle is driven above bumps or when making a turn. Make every attempt to recreate it!
- Before addressing any transmission issue make sure the engine is running in tip top shape! Address any other sensor codes or lean/rich codes first. There are a lot of sensors that are networked together that determine transmission shift scheduling. If one is "offline/faulty" then the ECM/PCM/EMC may be throwing this code through the fault it sees at another sensor.
- Many times a simple fluid and filter change will take care of minor transmission issues. There's nothing to lose with a fluid and filter change. Notice I say change and not a fluid flush. A fluid flush on a high mileage transmission may cause further damage. Also, for a transmission that is slipping I recommend Lucas Oil Transmission Fix. I am not endorsing the product nor am I getting paid to use the name. But it works!

Step-by-step guide

Step 1

First verify the condition/concern. In most cases the TCC solenoid applies in overdrive when commanded by the PCM. Locking of the TCC helps with fuel economy and lowers transmission fluid temperature due to the fact the converter is locked (research TCC operation to get an in depth look as the theory and operation is difficult to explain without getting too technical. With that explanation one may have the deer in the headlights look).

In my case my vehicle stumbled and almost stalled stopping at a light. When verified we can begin

diagnosis.

Step 2

Do an overall fluid condition and level check if all is OK. Also, does the transmission shift correctly? Is the engine running correctly? Most transmissions problems are misdiagnosed due to a poor running engine. Remember, the power flow starts at the engine and goes through the transmission then out to the drivetrain.

Step 3

Next, check the external transmission harness and connectors. Also check your fuses and make sure the transmission case is grounded to the body AND the battery.

Step 4

Proceed with finding the appropriate wires that correspond to the torque converter clutch. In most cases, it will be two wires; one for a ground and one for power. Apply power and ground and listen for the solenoid to click.

Step 5

If the solenoid does not click, proceed with checking continuity across the solenoid and continuity to and from the corresponding wires to and from the sensor. The solenoid should have a low ohm (.02 to .05) reading, this will vary with manufacturers so verify your reading with a factory service manual or equivalent. The wires should also have a low ohm reading. Also, make sure neither wire are shorted to ground or power.

Step 6

If the wires check out and the solenoid clicks. There may be a PCM issue, but I advise one to pull the transmission pan and closely examine the TCC solenoid for debris. Any small amount of debris will cause the solenoid to “short” and trick the computer into thinking it is applied. Or, if it’s metallic debris, it will attach itself to the solenoid and prevent it from disengaging. This was the problem in my case.

Step 7

Also I would advise one to get the latest calibration for your vehicles’ computer (PCM) from your dealer. Manufacturers are constantly releasing new and improved software. There may be a revised calibration to address this code. Especially if it’s intermittent.

Step 8

Finally if all checks out OK and you go ahead and replace the PCM, remember it needs to be programmed to the vehicle. In many cases there is an antitheft device in the key and with that the keys need to be programmed. Think dealer or mechanic.

Step 8

If all else fails and your are at wits end, there may be an issue with the clutch assembly in the torque converter. This will most likely be evident if you feel a slip when the transmission goes into lockup in overdrive. Also the fluid may smell burnt or be totally black. Look into a rebuilt transmission or a replacement.

Good luck! In my case, I am a Ford trained technician and due to experience I simply pulled the transmission pan and took a look at the solenoid and found my problem right off the bat. This is a common issue on higher mileage transmissions.

Reference Sources

Diagnostic Chart with Trouble Code for LHD Vehicles for P0743 - Page 193.