How to Test the system

The easiest way to test the TCC circuit is to know what’s happening when the computer is ready to apply the TCC. Once all parameters are met, and the computer is ready to apply the TCC, the TCC solenoid is energized by the computer. Hydraulically, the line pressure is supplied to the coast clutch regulator valve. The coast clutch regulator valve charges the TCC solenoid and now the TCC solenoid pulses the TCC regulator valve to apply the torque converter clutch. To determine whether or not the converter, solenoid or both are causing the problem simply energize the TCC in the stall on the lift, or stationary. This test is simply checking the integrity of the converter and the circuit.

If the engine Stalls: The converter is capable of locking-up and the valves definitely moved and the problem may be in the regulation of the valves and the performance of the PWM circuit.

If the engine doesn’t Stall: The first thing to check is the solenoid if the solenoid is working then the TCC charge has a leak in the system. This leak can be in a number of different areas.

Using your scan tool, locate the parameter that says TCC% and TCCAMACT or TCC RPM on your data screen. These parameters will give you a quick look at the system. TCC% is the amount of duty cycle the computer is commanding the TCC solenoid to pulse, usually this parameter runs between 90% and 100% on your scanner. TCCAMACT is the amount of slip RPM the computer is detecting.

GOOD Reading:
- TCC % Varying between 90% and 100%
- TCCAMACT Varying between 0-10 RPM

BAD Reading:
- TCC % Varying between 90% and 100%
- TCCAMCAT Varying higher then 10 RPM and as high as 200 RPM
4R44E/55E and 5R44E/55E  
TCC Concerns (continued)

Torque converter concerns on 4R44E/4R55E/5R55E have been a constant concern. In recent years there have been a number of concerns related to torque converter apply as well as No cooler flow, Harsh TCC and Soft TCC engagement, No Lock-up or loss of TCC when hot. Diagnosing torque converter problems can be troublesome. The following pages have tips you can use to determine the fix.

Here are the common codes you will get:

<table>
<thead>
<tr>
<th>Codes</th>
<th>Descriptions</th>
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<tbody>
<tr>
<td>628:</td>
<td>Torque Converter Clutch Slip or Error</td>
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<tr>
<td>P0740:</td>
<td>Torque Converter Clutch System Problem</td>
</tr>
<tr>
<td>P0741:</td>
<td>Torque Converter Clutch System Performance or Stuck Off</td>
</tr>
<tr>
<td>P0742:</td>
<td>Torque Converter Clutch System Stuck Off</td>
</tr>
<tr>
<td>P0743:</td>
<td>Torque Converter Clutch System Electrical</td>
</tr>
<tr>
<td>P1740:</td>
<td>Torque Converter Clutch Malfunction</td>
</tr>
<tr>
<td>P1741:</td>
<td>Torque Converter Clutch Control Error</td>
</tr>
<tr>
<td>P1742:</td>
<td>Torque Converter Clutch Solenoid Failed On, MIL Lamp On</td>
</tr>
<tr>
<td>P1743:</td>
<td>Torque Converter Clutch Solenoid Failed On, TCIL Lamp ON</td>
</tr>
<tr>
<td>P1744:</td>
<td>Torque Converter Clutch Mechanical Noise or Stuck in Off Position</td>
</tr>
</tbody>
</table>
4R44E/55E and 5R44E/55E
TCC Concerns (continued)
Damaged TCC Solenoid

Concern: A no TCC apply on 1995 through 1998 with a flashing overdrive light, DTC 628, P0741, P1740 or P1744.

Common Cause: TCC solenoid (there were certain TCC solenoid’s that were poorly designed and the result was the tip blowing out and the brackets were cracking.

Repair: Replace solenoid.

Note: Make sure not to reuse lot numbers between 769 and 771, these solenoids are defective.
4R44E/55E and 5R44E/55E
TCC Concerns (continued)
Torque Converter Clutch Failure

Slip codes are very common. Make sure to diagnose converter codes correctly before replacing converter.

Concern: No converter clutch apply.

Common Cause: Torque converter lining burnt or flaked off.

Repair: Replace converter.
Separate Plate Feed Hole Modification

Modify the Separator plate to increase cooler flow. Cooler flow should be a minimum of 1 quart in 20 seconds. Make sure line pressure is within specification, high line pressures can cause low cooler flow.

**Concern:** TCC slip, or insufficient cooler flow.

**Common Cause:** The separator plate may have the wrong size feed holes. The converter feed holes are normally between 0.032” and 0.048”.

**Repair:** Drill the converter feed hole in the separator plate to 0.060” for increased cooler flow.
**Concern:** Slip or no TCC apply.

**Common Cause:** Seal broken or stator shaft worn or cracked.

**Repair:** Replace seal and check stator support for shaft wear or cracking around the seal area. If crack is evident replace stator.

Check seal for damage.
Inner Pump Gear Seal Damaged

**Concern:** TCC slip

**Common Cause:** Installing A4LD pump gears that don’t have an O-ring, or correct pump gear inner O-ring damaged or missing. This will allow converter charge oil to leak into the converter bushing lube or drain back passage creating low converter charge.

**Repair:** Install correct pump gears and O-ring. Inspect converter hub and lubricate prior to installation.

**NOTE:** Must have gear with o-ring.
Always inspect Pump assembly for damage, note any wear marks or warping and replace if necessary.
Valve Body Damage

The valve body can cause many different TCC related problems. There are a number of valves involved:

- Torque Converter Regulator Valve
- Torque Converter Modulator Valve
- Coast Clutch Shift Valve
- Thermostatic Bypass Valve
- Converter Relief Valve

Anyone of these valves can cause a TCC failure.

**Concern:** Slip or No TCC apply.

**Common Cause:** Wear in the Valve Body.

**Repair:** Repair or Replace Valve Body.
Always check valve body surface for warping
4R44E/55E and 5R44E/55E
TCC Concerns (continued)
Valve Body Damage

Tcc Solenoid, valve and bore

Thermostatic Bypass valve and bore
4R44E/55E and 5R44E/55E
TCC Concerns (continued)
Valve Body Damage

Coast Clutch Regulator Valve and Bore
4R44E/55E and 5R44E/55E
TCC Concerns (continued)
Case and Bellhousing Warpage
4R44E/55E and 5R44E/55E
TCC Concerns (continued)
Case and Bellhousing Warpage