

## Transmission Report

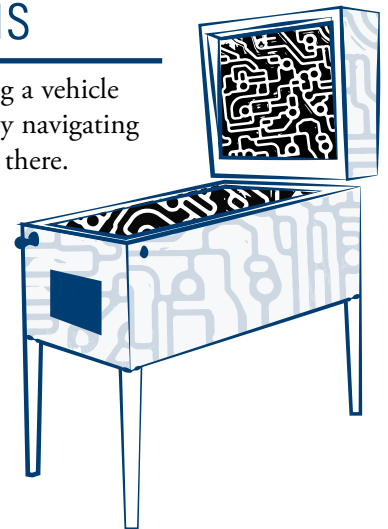
Volume 7, No. 1

March 2016

### Pinball Wizard U341E/F TCC Slip Diagnosis

If you've been in the transmission business for a while you have no doubt had someone bring a vehicle to you that no one else can seem to figure out. The customer may have tried self-diagnosis by navigating various web forums and trying to pick through the (usually questionable) tech advice found there. After he got frustrated, perhaps a friend who "knows transmissions" offered a "Buddy Deal" to fix the problem. When that failed, he made the rounds to the local repair shops. Each shop takes a stab at it, but in the end he shows up in your shop with a complaint that has not been resolved. This guy has pin-balled from back yard to back yard and shop to shop, and by the time he gets to you he is on full-tilt.

These scenarios typically happen with vehicles that are not brought into the shop for regular maintenance, and usually involve transmissions that do not have great technical information available. These are fundamental causes of misdiagnosis, the pinball effect, and the unhappy customers that result. *Continued on page 2*



### Introducing the Ford 6R140 Zip Kit®

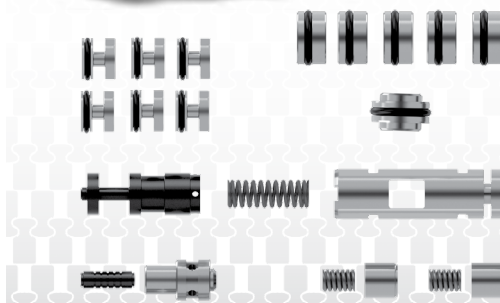
#### The Quick, Affordable Fix for Common Shift Problems

Sonnax Zip Kit **6R140-ZIP** effectively restores normal shift quality in Ford 6R140 units to get your vehicle back on the road fast. Featuring a winning combination of uniquely designed parts, this innovative kit targets the root cause of valve body problems by sealing up critical circuit pressure losses in the most common wear areas of the transmission.

One-page instructions deliver clear installation steps, and parts install quickly and easily with no special tools or reaming required. Also included is a detailed technical booklet which provides additional rebuild and inspection tips for comprehensive valve body repair. Visit [www.sonnax.com](http://www.sonnax.com) for more details.

#### Kit Includes:

- TCC Apply Boost Valve Kit
- Converter Limit Valve, Sleeve & Spring
- Accumulator Pistons (3)
- O-Ringed End Plug Kit
- Internal O-Ringed End Plug Kit
- Accumulator Springs (3)



# Pinball Wizard U341E/F TCC Slip Diagnosis

*Continued from page 1*

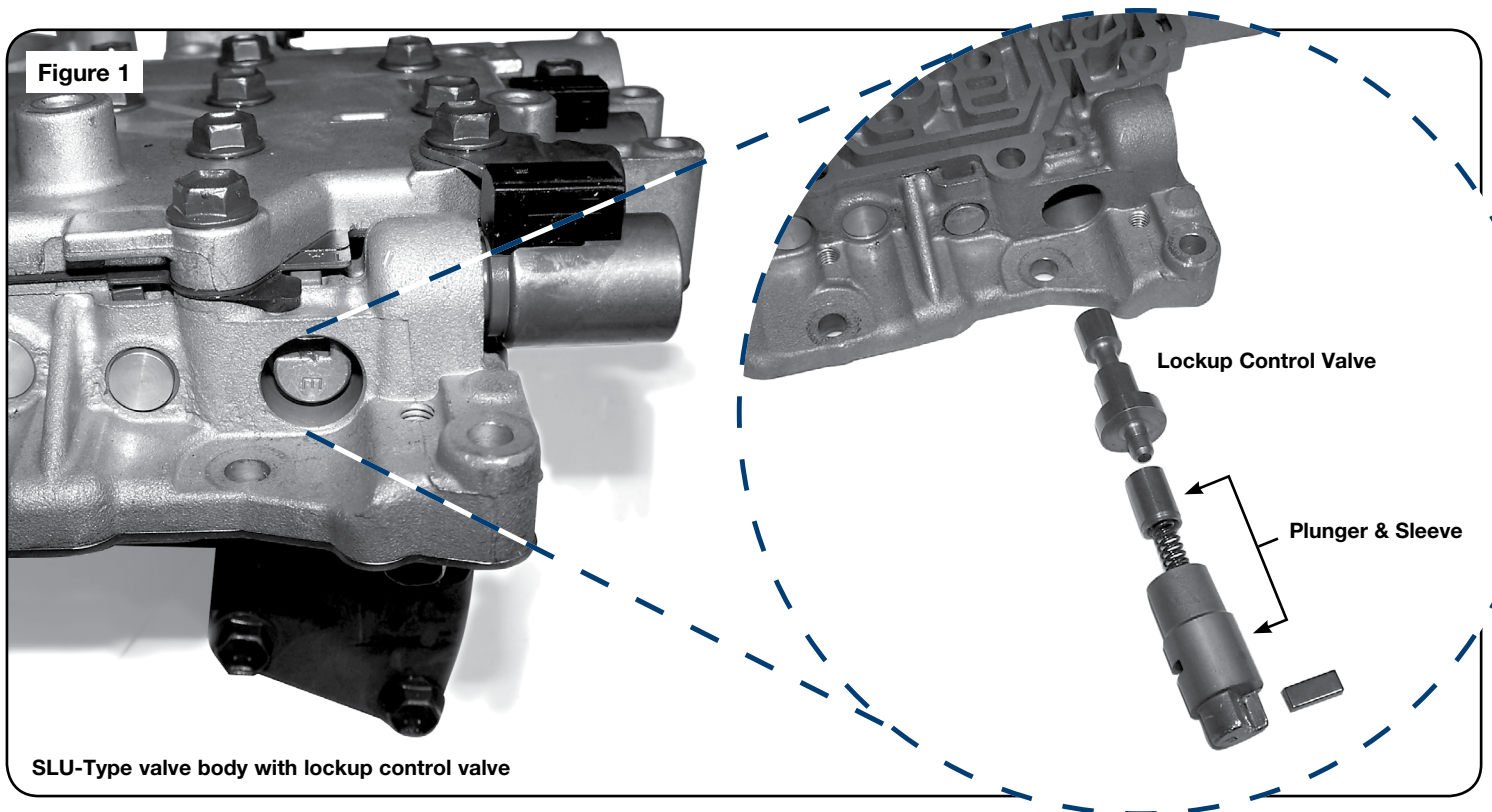
The U341E/F transmission is a prime example of a problem child that many transmission shops have not worked on yet, and the technical information available is scarce. In particular this transmission has had common concerns of torque converter slip along with two related diagnostic trouble codes (DTCs):

- P0741 — Torque Converter Clutch Solenoid Performance (SL, ON-OFF type)
- P2757 — Torque Converter Clutch Pressure Control Solenoid Performance (SLU, PWM-type)

Both DTCs signify a mechanical or hydraulic problem causing no lockup; these codes do not indicate an electrical problem. The key word in the code definition is “performance”. If the codes were electrical in nature, they would instead refer to the “circuit”.

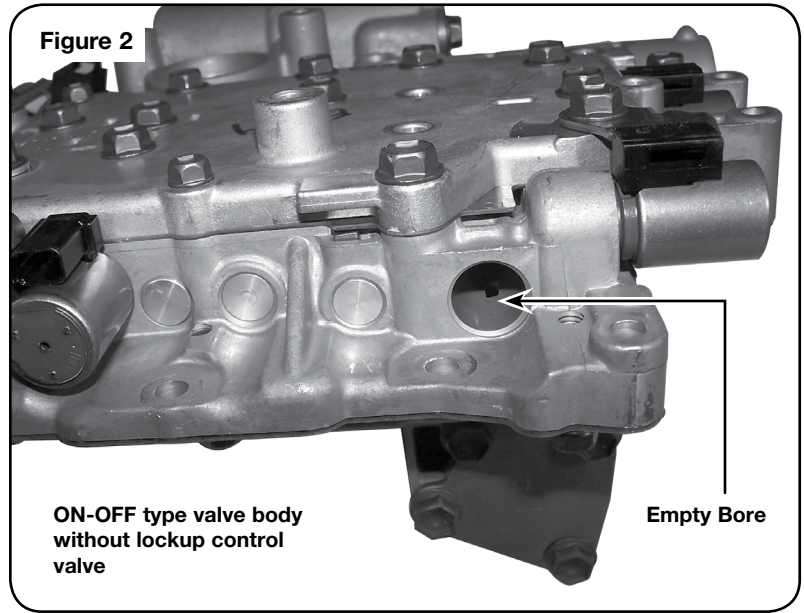
The U340/U341E/F series valve bodies are very similar, but changed from an ON-OFF to a modulated SLU-type TCC control, a modification that occurred over a span of years and has not been documented very well. One of the biggest hurdles is finding out which type you have, as they are both found in a range of Toyota and Scion vehicles. A good indicator on whether it is an ON-OFF or a modulated SLU-type is by simply referring to which DTC is set:

- P0741 denotes ON-OFF type
- P2757 denotes SLU-type

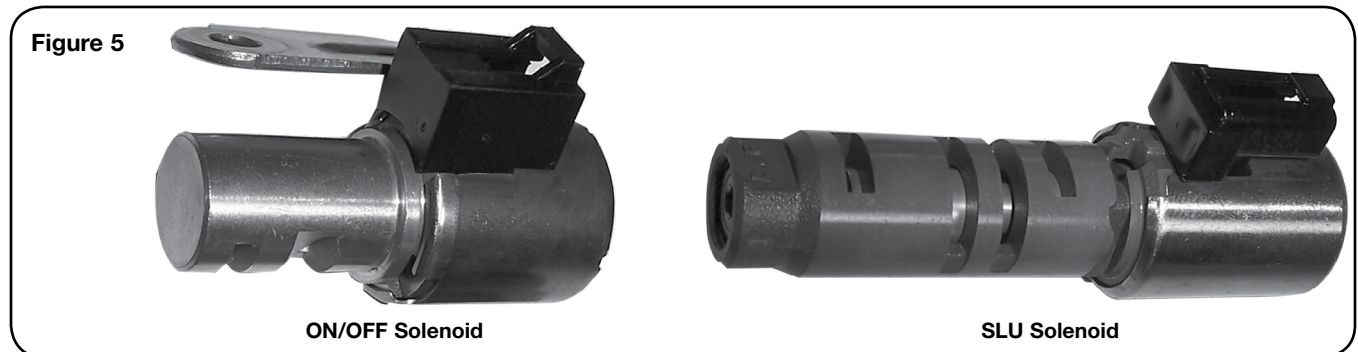
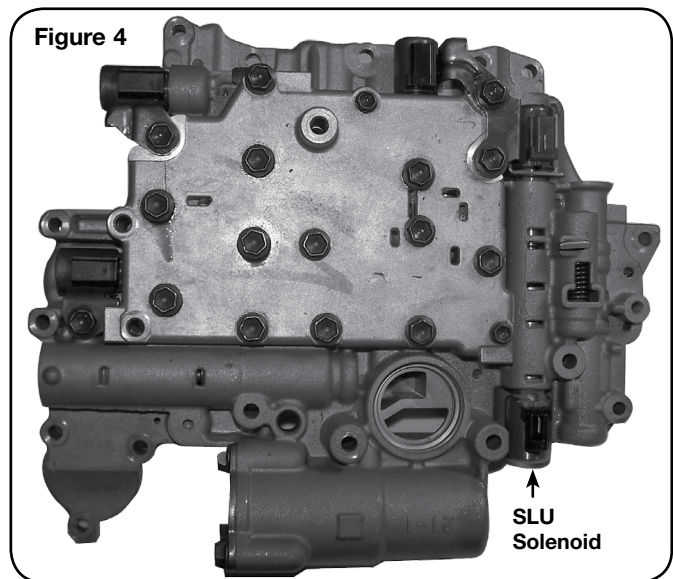
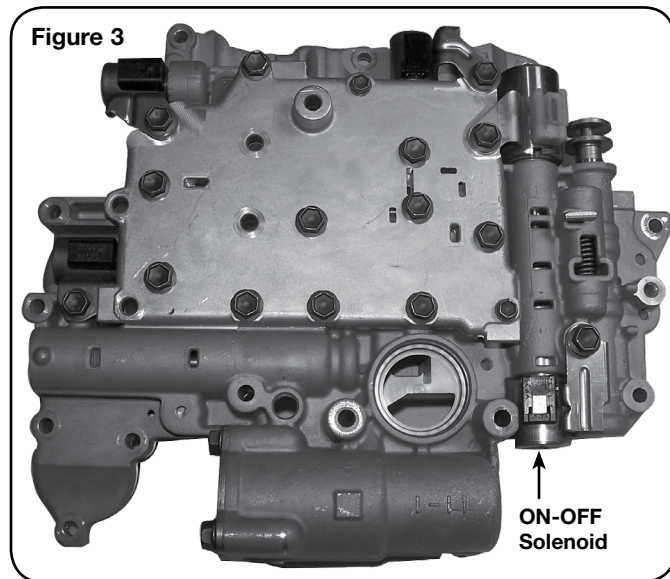


The SLU-type valve body had some changes that incorporated a new lockup control valve, along with a new plunger and sleeve assembly that the ON-OFF did not have (**Figure 1**). **Figure 2** shows this bore is empty for the ON-OFF type. This is a quick way to identify whether the valve body you are working on is an ON-OFF or SLU type. Another way to identify the two is to note the difference between the ON-OFF solenoid (**Figure 3**) and the SLU solenoid (**Figure 4**). **Figure 5** shows a close-up of the two solenoids side by side. By the way, the SLU solenoid is the same as that found on the U660E. In a pinch, the SLU from a U660E can be swapped with the U341E SLU for solenoid diagnostic purposes.

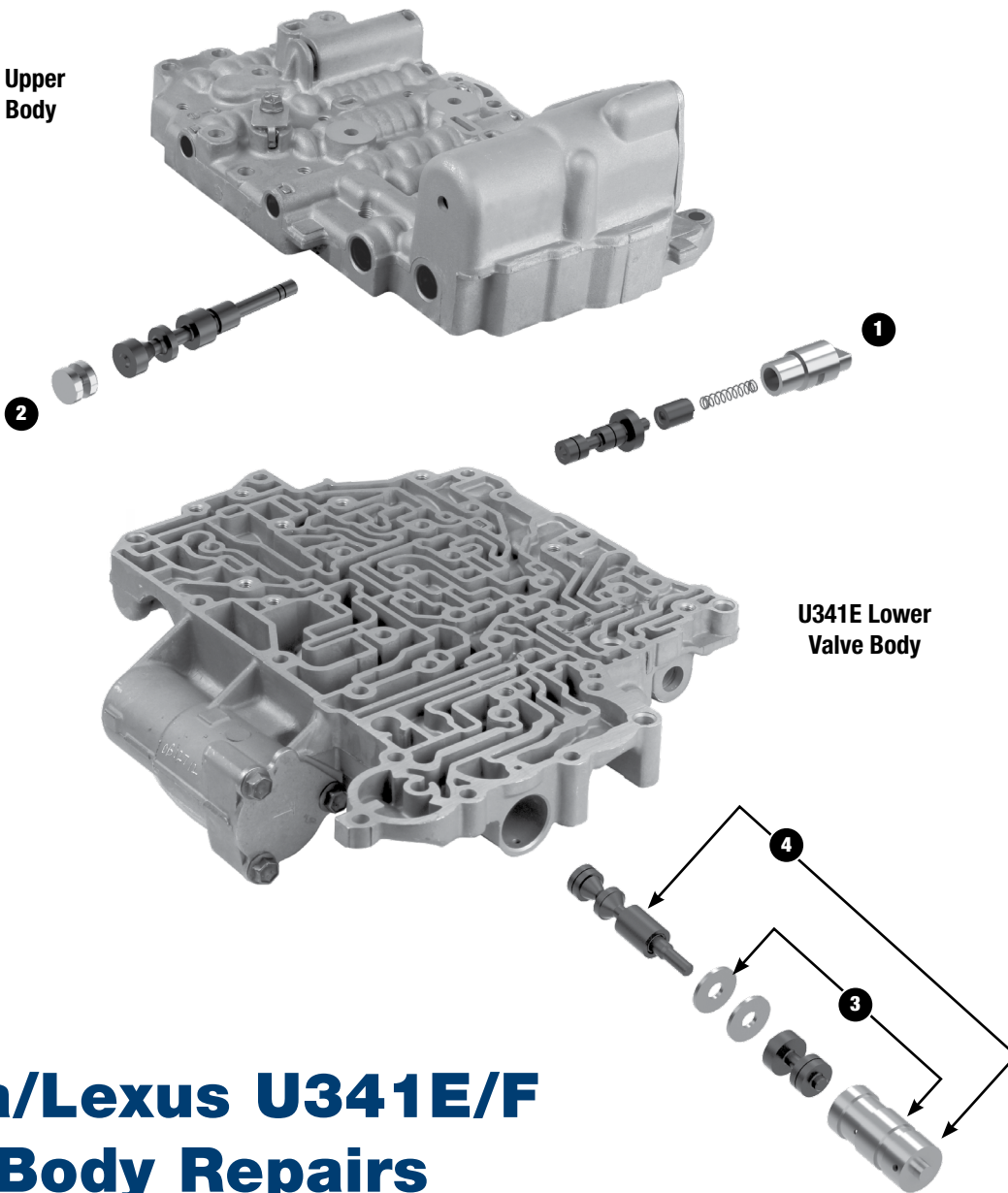
The modulated SLU-type has been more problematic than the ON-OFF type. The root cause of the TCC-related problems on the SLU-type is typically related to wear in both the lockup control valve bore and at the outboard plunger valve and sleeve. This creates a loss of TCC apply pressure, especially in the plunger and sleeve area because the plunger is near an exhaust. During the pinball process many shops typically throw torque converters and numerous SLU solenoids at the problem, then replace valve bodies with “good used”. But good used valve bodies are extremely hard to find and after numerous replacements you will realize that a large percentage of them have the same problem. Stopping this leakage and verifying the torque converter clutch is okay are the keys to keeping this vehicle from bouncing back to you with TCC-related complaints. Reaming the bore and installing Sonnax oversized lockup control valve kit [37740-08K](#) will restore optimal pressure for renewed TCC control.



Repairing the root cause will keep those hard-to-fix vehicles from continuing the pinball process, which will also bring word of mouth business to the “Pinball Wizard” who uses this information to figure out how to end the game once and for all.



**U341E Upper Valve Body**



**U341E Lower Valve Body**

# Toyota/Lexus U341E/F Valve Body Repairs

Symptoms	Description	Part No.	Tooling
<ul style="list-style-type: none"> <li>• TCC apply &amp; release concerns</li> <li>• TCC codes</li> <li>• No lockup</li> <li>• Converter shudder &amp; slip</li> </ul>	<b>1</b> Oversized Lockup Control Valve Kit	37740-08K	F-37740-TL8 & VB-FIX
<ul style="list-style-type: none"> <li>• Harsh TCC apply &amp; release</li> <li>• Excess TCC slip</li> <li>• TCC codes</li> <li>• Erratic TCC apply pressure</li> </ul>	<b>2</b> Oversized Secondary Pressure Regulator Valve Kit	37740-07K	F-37740-TL7 & VB-FIX
<ul style="list-style-type: none"> <li>• Harsh shifts</li> <li>• Burnt clutches</li> <li>• Delayed engagement</li> <li>• Reverse slip</li> </ul>	<b>3</b> Boost Valve Kit	37740-01K	
<ul style="list-style-type: none"> <li>• Harsh shifts</li> <li>• Burnt clutches</li> <li>• Delayed engagement</li> <li>• Reverse slip</li> </ul>	<b>4</b> Oversized Pressure Regulator & Boost Valve Kit	37740-03K	F-37740-TL3 & VB-FIX

# GM 6L80/90 Performance Upgrades



## NEW 1-2-3-4 Piston

GM 6L80/6L90 1-2-3-4 pistons commonly crack due to cantilevered stress on the cast material. Though the OE part has been through several revisions in attempt to correct this, all OE versions are still known to suffer from unwanted chronic cracking. Sonnax 1-2-3-4 piston **104984-01** is made from stronger, billet aluminum, making it a reliable solution for lasting results.

- Superior design refinements provide additional strength
- Prevents breakage and delivers maximum performance

### Zip Kit®

Tackle the root cause of multiple shift problems with Sonnax Zip Kit **6L45-6L90-ZIP**. Featuring a winning combination of uniquely-designed parts, this kit effectively stops critical circuit pressure losses to get your vehicle back on the road fast.



- Quick, hassle-free installation with no special tools or reaming required
- Detailed tech booklet provides clear installation steps, diagnostics and solutions for comprehensive valve body repair.

### Line Pressure Booster Kit

Sonnax kit **6L80-LB1** combines 10% stronger-than-OE pressure regulator spring and a large ratio boost valve for an impressive, yet affordable performance upgrade. It allows the transmission to respond intelligently to driving conditions by delivering the right amount of pressure exactly when you need it; a moderate increase under light throttle, and progressively greater pressure as the transmission is worked harder.



- Fits all 6L45-6L90 applications
- Easy installation with no special tools or reaming required

### 4-5-6 Clutch Apply Piston Kit

Tackle failure of the 4-5-6 clutch assembly due to OE design shortcomings including insufficient clutch piston-to-plate apply surface area, and flexing and bowing of the backing plate with Sonnax kit **104960-01K**.



- Rigid backing plate design outperforms OE and aftermarket plates
- Increased apply ring surface area strengthens and reinforces assembly

### Pump Slide Spring

Sonnax high-performance pump slide spring **104534-HD** is able to keep the pump slide in a maximum-volume position to hold line pressure and prevent clutch failure, despite increased pressure and high engine speed.



- Spring is stiffer than OE
- Designed specifically for high-RPM conditions

Watch online as Sonnax High Performance Product Line Manager, Gregg Nader, delivers an in-depth look at four featured GM 6L80-series transmission upgrades and repairs. Find this video and more in the Tech Resources section at [www.sonnax.com](http://www.sonnax.com).



# Transmission Digest Top 10 Awards

## Sonnax Wins Big – Thanks to YOU!

Every year, *Transmission Digest* accepts nominations for the top 10 tools and top 10 products in the powertrain aftermarket industry. Readers vote for their favorites in each of the two categories to determine the winners.

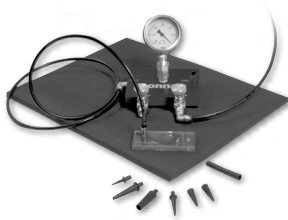
The results are in: Sonnax won seven top product awards, and four top tool awards! Thank you all for your trust and support of Sonnax products – we couldn't have done it without you!



### GM 6L45-6L90

#### Pressure Switch Installation Tool Kit: 124740-TL30

Patent-pending tool kit is key to effective, affordable pressure switch rebuilds.



#### Vacuum Test Stand Kit: VACTEST-01K

Essential equipment for proper vacuum testing.



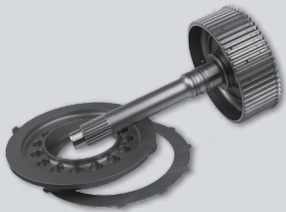
#### Vacuum Test Guides

Better diagnostics = better rebuilds and fewer comebacks.



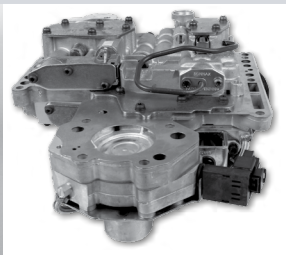
#### Sonnax Roadshow

Hands-on, on-site training in cutting-edge diagnostic and transmission repair techniques.



**Chrysler 47RE/47RH & 48RE**  
**Smart-Tech® High Capacity Input Shaft & Piston Kit: 22121B-02K**

20% More direct clutch torque capacity – no modifications required.



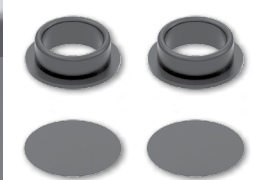
**Chrysler 48RE**  
**Converted Valve Body: CHR135**

The breakthrough solution for 48RE valve body shortage.



**GM 6L45-6L90**  
**Zip Kit®: 6L45-6L90-ZIP**

Tackle common shift problems straight from the source.



**GM 6L45-6L90 & 6T70/6T75**  
**Pressure Switch Rebuild Kit: 124740-30K**

Save hundreds by rebuilding the TEHCM, instead of buying an expensive replacement.



**GM 6L80/6L90**  
**4-5-6 Clutch Apply Piston Kit: 104960-01K**

Overcome insufficient clutch piston-to-plate apply surface area, and flexing and bowing of the backing plate.



**Ford 4R100**  
**Performance Pack: HP-4R100-01**

Powerhouse kit for a stronger, faster, more reliable transmission.



**Ford 4R70W Series**  
**Smart-Tech® Forward Clutch Drum: 76654-01K**

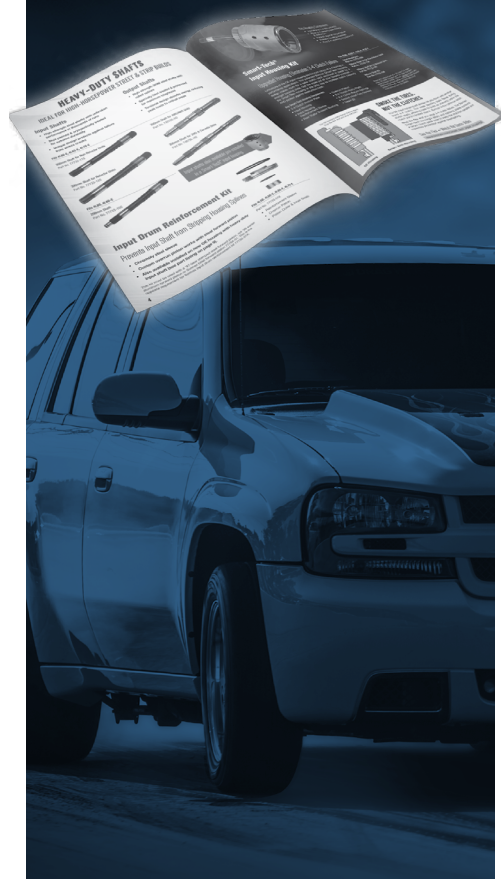
One-piece forged material provides increased strength and durability over the OE stamped drum.

# 4L60/E Heavy Duty & Performance Catalog Vol. 3

Sonnax parts have made the 4L60/E the leading performance transmission in the world. New for 2016, an expanded catalog for this classic unit is your best upgrades guide for all rebuild levels, from street enthusiast to extreme racing.

- Ramp up durability with heavy-duty parts
- Rule the track with elite racing components
- Learn killer tips for the best builds

View online or request a free copy TODAY at [www.sonnax.com](http://www.sonnax.com).



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### Featured in this issue

**U341E Slip Diagnosis**

**Ford 6R140 Zip Kit<sup>®</sup>**

**U341E/F Valve Body Repairs**

**6L80/90 Performance Upgrades**

***Transmission Digest* Top 10 Winners**

**4L60/E Performance Catalog, Vol. 3**

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Sonnax designs, manufactures, tests and distributes a wide variety of components used to remanufacture torque converters, rebuild automatic transmissions, upgrade driveshafts and protect the driveline from over-torque damage.

**Sonnax is a 100% Employee-Owned Company**



Live webinars with Sonnax Tech Specialist Steve Garrett deliver transmission expertise into your hands!



- Convenient, 1-hour lunchtime sessions
- Join via computer or phone/tablet
- Ask questions and request additional tech support
- Download detailed handouts and access full webinar after each event

## ZF6 Gen. 1 & Gen. 2 Identification & Repair Techniques

- Introduction to the ZF6
- Differences between Gen. 1 and Gen. 2
- Solenoid and valve operation and diagnosis
- Valve wear repair techniques
- Common transmission and non-transmission related issues

### Choose to attend any of five sessions:

- Tues. March 22 at noon EST or MST
- Wed. March 23 at noon CST or PST
- Wed. March 23 at 7 a.m. AEDT (Australia)

### Sign up TODAY at [www.sonnax.com/webinars](http://www.sonnax.com/webinars)

Can't make it to the live event? No problem! The recorded presentation and slides are posted online after the final session and are freely available anytime you want them.

Sonnax is a leading diversified supplier of specialized drivetrain products to the automotive and commercial vehicle industries, and to industrial sectors utilizing drivetrain technology. We design, manufacture and distribute replacement components worldwide.