

## Transmission Report

Volume 10, No. 1

May 2019

### An Important Change to Sonnax Packaging

On March 1, Sonnax stopped inserting instructions into the packaging of approximately 1,000 products.

This change primarily impacts parts such as end plugs, valve kits and bushings that come in small bags. In general, instructions continue to ship with larger components and boxed products such as Zip Kits® and The Sure Cure® kits.

Instructions for all products will remain available on the Sonnax website. To ensure everyone has quick access to those documents, we created a simple search tool found at [www.sonnax.com/in](http://www.sonnax.com/in).

If you have questions, comments or concerns, please contact Sonnax Inside Sales Manager Pat Kinney at 802-463-0349 or [patricia.kinney@sonnax.com](mailto:patricia.kinney@sonnax.com).

#### Why is Sonnax doing this?

**Reduce Waste** — We printed more than 1 million pages of instructions last year— that’s a LOT of trees.

**Make the Sonnax Workplace Safer** — The rising number of pages has been matched by more repetitive motion concerns and injuries among Sonnax employees packaging our smallest, bagged parts. Products packaged this way are also among the easiest to install. Instructions are often thrown away, unused.

### Use Our New Instructions Finder at [www.sonnax.com/in](http://www.sonnax.com/in)

- 1 Type [www.sonnax.com/in](http://www.sonnax.com/in) into your browser address bar.
- 2 In the search box, enter the Sonnax part number found on the Sonnax packaging.

If instructions are available, a PDF will open or your browser will download the file (your own browser settings control what happens).

If no instructions are found, verify you are typing the correct part number or visit the part page on the website for product information.

Sonnax part numbers can be found in these locations on Sonnax packaging.



## Sonnax Parts, Tools & Tech Resources: Helping You Deliver Top-Quality Repairs

Complex systems are made up of parts that all must work together. In this regard, a valve body is much like a human body. Now, imagine preparing yourself to run a 5K race: everything from head to toe needs to be in tip-top shape to make it to the finish line. Getting a valve body into peak condition works the same way. Rebuilders know the interrelationship between valves is extremely critical, and proper function of one or two does not make the entire hydraulic system fully functional.

A great example of why it pays to take a holistic approach to valve body repair is a common issue with the GM 6T70: wear at the AFL valve bore can result in various solenoid codes and shift issues. This can be corrected using Sonnax oversized valve **124740-01**. However, the AFL valve is fed line pressure, so if the main PR valve bore is worn and not addressed, reduced feed pressure is supplied to the AFL valve, which prevents it from optimum performance. And even if both the AFL and main PR valve bores are in great shape, wear at the various clutch regulator valve end plugs allows solenoid apply oil leakage and results in shift complaints. Fixing one area of the valve body without checking to see whether others are working right is asking for a comeback. Taking a holistic approach spares you the worry about what may have been missed.

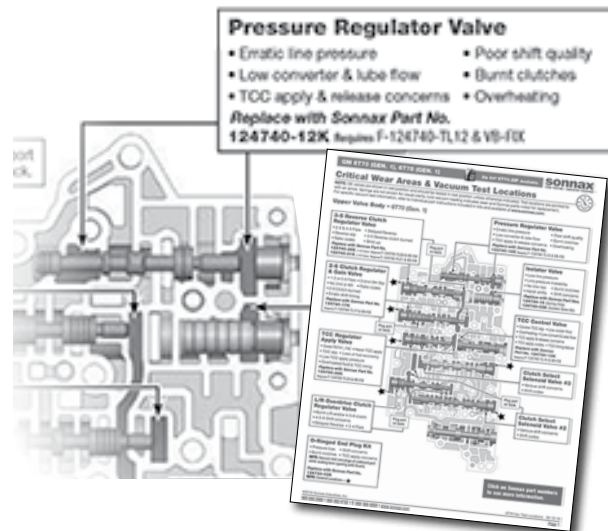
If you're getting off the couch and prepping for a 5K, it's probably a good idea to get a physical, as the doctor will use special tools and testing to check for problems you might not see or feel. Vacuum testing is the same idea — while the transmission may have come in with a specific complaint, you can't "see" what's going on inside the valve body until you vacuum test.

Free Sonnax vacuum test guides are available for most common applications (**Figure 1**). They show locations to check for wear using Sonnax vacuum test stand kit **VACTEST-01K**, plus recommended parts for repairing leaks. Sealing up all the circuits ensures individual components can work properly. The ideal way to verify this is to vacuum test again after new parts are installed. Sonnax part instructions and website part pages show you where to test and what vacuum reading you should get after repair (**Figure 2**).

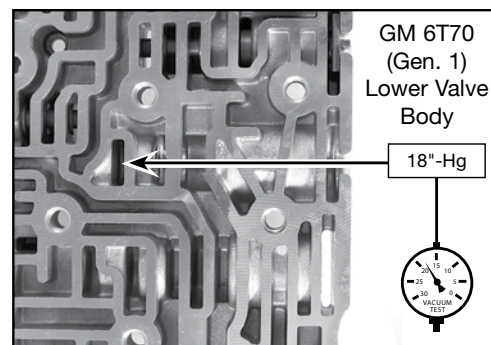
Want to vacuum test significantly faster? Consider getting your shop a Sonnax valve body vacuum test plate, especially if you're working on a high volume of a particular unit. Plates seal over the entire valve body, with test and exhaust ports open at all the proper locations for fast, easy testing.

### Choosing the Right Repair

Once you've diagnosed the problem areas, it's time to decide how to address them. Sonnax offers various solution options that are tailored to



**Figure 1 – Find free vacuum test guides like this one online in the Sonnax tech library.**



**Figure 2 – It's a good idea to vacuum test again after repairs to verify there are no leaks.**

the level of wear, your warranty, your customer's wallet and your time and familiarity with the particular application. Many applications have Sonnax Zip Kits® available — which are an easy, no-tooling way to restore the hydraulic system in units not showing high wear. Restoring valve function in bores with extreme wear usually requires reaming the casting and installing an oversized valve kit. Sonnax oversized parts are sold individually and often included in Sure Cure kits. When you've got a high-mileage unit that needs a complete overhaul, a Sure Cure is a great choice because you get all the parts you need in one box. No two valve bodies will wear the same, so Sonnax has made sure you have options when it comes to picking an approach to repairs.

# Of Its Parts

## Evaluating Rebuild Options When Time is Money

Sonnax encourages you to look at the dollars and cents of your repair options along with your warranty and customer needs to determine the best choice for your shop and the job at hand. Take reamer kits, for example, used to install oversized valves.

### Reamer Tool Kit Amortization

**Tool Kit Cost / # of Repairs = Tool Kit Cost per Valve Body**  
 $\$270/100 = \$2.70$

If the application is a common one for your shop, purchasing tool kits knowing they're going to pay for themselves over 100-plus valve bodies likely makes sense.

If the specific valve body only requires one reamed solution and a few no-reaming required parts, for instance, for a customer wanting about 12 more months before they trade-in their vehicle — repairing the valve body yourself likely makes financial sense.

### DIY Valve Body Repair

**Tool Amortization + Oversized Valve Kit + No-Reaming Req'd Part + Labor = DIY Fix Total**  
 $\$2.70 + \$28 + \$55 + \$50 = \$135$

For one reamed solution and a few no-reaming parts required, repairing the valve body yourself likely makes financial sense.

However, if a different customer repair requires a longer warranty and needs four bores reamed in addition to some other components, or it's for an application that you don't see very often so tool investment will take longer to recoup, a remanufactured valve body might make a lot more sense.

### DIY vs. Remanufactured Valve Body

**(4X) Tool Amortization + (4X) Oversized Valve Kit + No-Reaming Req'd Part + Labor = DIY Fix Total**  
 $\$10.80 + \$112 + \$55 + \$100 = \$277.80$

Longer warranty? Four bores reamed in addition to some other components? An application that you don't see very often? Need to turn around the job quickly? These scenarios might point to purchasing a remanufactured valve body as the better choice for you and your customer.

*Article Continues on Pages 4 & 5*



## Investing in a Sonnax Vacuum Test Plate Kit to Save Time & Money

In the business of repairing transmissions, there's one thing every shop has in common: No one likes to waste time. You want to make repairs that solve the original issue and prevent any others from occurring. You also want to get the job done as efficiently as possible while still remaining profitable.

Vacuum testing valve bodies with a Sonnax vacuum test plate is the easiest, most straightforward method for achieving these goals.

Instead of checking ports one-by-one with a hand-held test plate, you just lay down a big plate custom-made for the valve body and use the built-in ports to test each location quickly and accurately.

This lets you save time while performing the test and speeds up the process of documenting readings, comparing them to the transmission symptoms and selecting the right parts for repairs. There is no better way to determine the degree of bore wear in a valve body, a critical factor when getting a job done right the first time without a lot of wasted effort or expense.

How do you know when it's time to swap your hand-held tester for a valve body plate? That really boils down to how frequently you work on a specific transmission. If you're seeing — say — 6L80's on a regular basis and doing your own valve body repairs, then having a plate on hand is incredibly valuable for understanding failures, preventing future problems and getting repairs completed cost-effectively.

Also remember that it's hard to specialize in a particular unit when you don't have all the information regarding nuances of bore wear in the valve body. Valve body vacuum test plate kits provide this information accurately and quickly, making them an essential tool for any shop that wants to grow their business and earn a reputation for their expertise and quality of work.

**NEW!**

### New in Vacuum Testing

Sonnax vacuum test plate kit **Part No. 37000-VTP** is now available for Allison® 1000/2000/2400 units.

With plates for 11 popular kits already available, what units do YOU think Sonnax should cover next? Let us know by voting at [www.surveymonkey.com/r/vactestplate](http://www.surveymonkey.com/r/vactestplate). Survey ends Friday, May 17.

# Sonnax Remanufactured Valve Bodies: Your Choice for Guaranteed OE Performance

While Sonnax has figured out what parts you need to get just about any valve body in tip-top shape, we've touched on circumstances where purchasing a remanufactured valve body may be a better choice for you and your customer. Sonnax has you covered with quality solutions here as well. Not only will Sonnax take your extremely worn valve bodies, but we'll provide you with a limited life-time warranty valve body that comes with significant additional benefits.

Sonnax takes the same systematic approach to remanufacturing valve bodies as we do to developing individual components. Bringing a unit back to OE performance is a multi-faceted process that goes far beyond the parts you put in it. First, the core is thoroughly cleaned and 100% vacuum tested. Then, we use the same Sonnax components you've come to trust to bring it back to proper functionality. In many instances, new electronics are installed. However, if we can clean, remanufacture, test and verify the integrity of the original electronics, we will reclaim them in order to pass savings on to you.

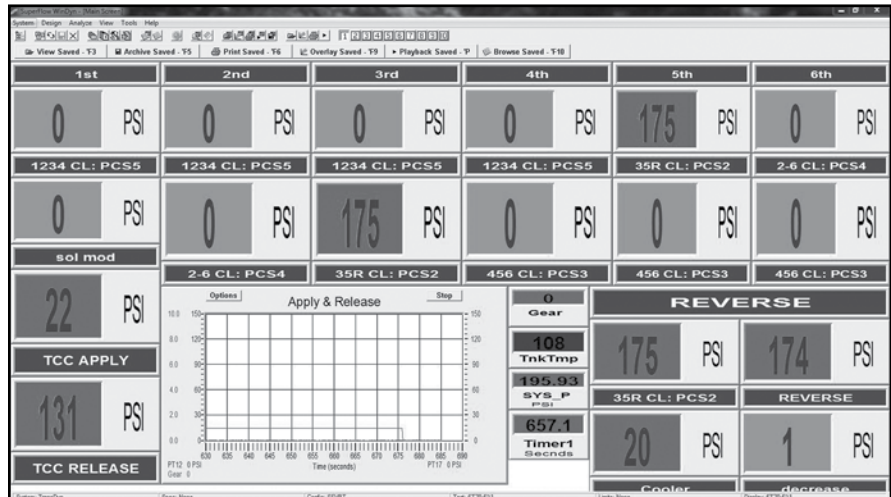
### Testing Process

The only way to verify that a valve body works is to perform a system check in a vehicle. For that reason, Sonnax invests in test vehicles so we can validate our valve and remanufactured valve body solutions. This vehicle fleet also allows us to use sophisticated data acquisition software to pull real-time drive events from the transmission (Figure 3) to see the various pressures, shift timings, solenoid firing orders

Figure 3 – The Sonnax test vehicle fleet allows for in-vehicle testing.



Figure 4 – Comprehensive Valve Body Testing



and frequencies, etc. This allows us to create a valve body test for our VBT-8000 that simulates comprehensive drive events as accurately as possible (Figure 4).

To ensure proper test simulation for Sonnax GM and Ford 6-speed units sold without a TEHCM or solenoid body, we create a slave unit on our test stand. The baseline standard that we set for these tests is a new OE valve body. Every remanufactured valve body is final tested against this OE

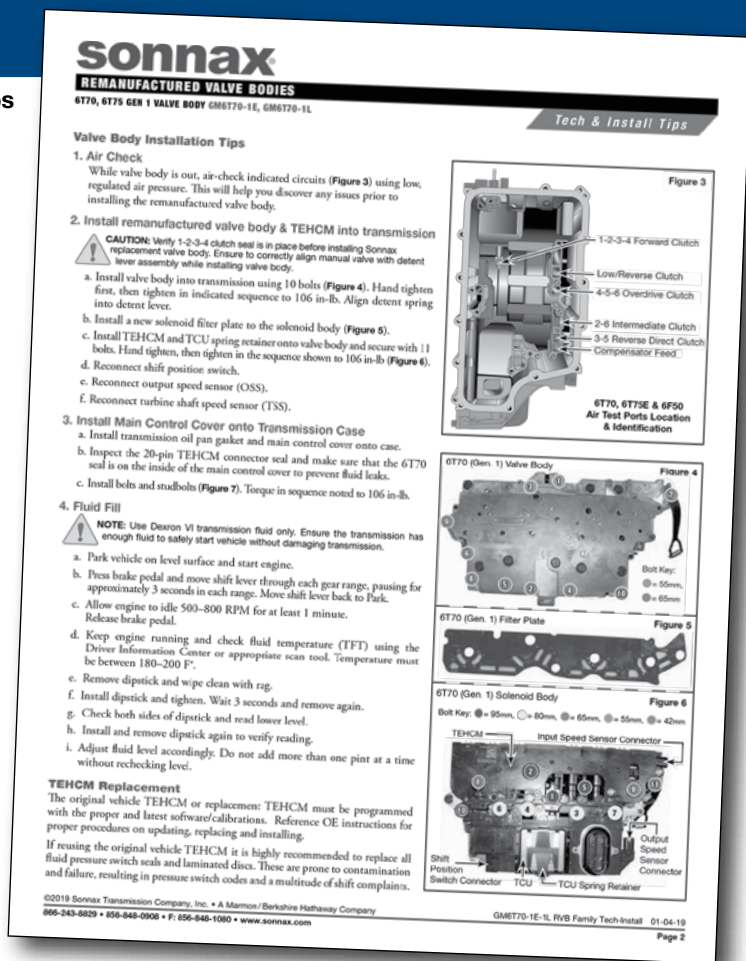
Figure 5 – Tech & Install Tips

baseline to ensure that it meets the criteria before being put into stock.

This comprehensive approach ensures that Sonnax remanufactured valve bodies are more than the sum of their parts. Verifying that all electronic and hydraulic components interact with each other correctly in a refurbished casting is crucial, especially in later-model applications with multiple solenoids, numerous valves and clutch-overlap shift timing. As the number of components in a valve body increases, the number of potential interactions between them increase exponentially, which requires a more rigorous system check to ensure all the connections are working correctly. To help shops with the installation and relearn processes, Sonnax includes Tech & Install Tips (Figure 5) with many valve bodies. And because the valve body is part of an even larger transmission system, these tips include other areas to check for drivability complaints that may be falsely attributed to the valve body.

So whatever approach is required for

your particular job, Sonnax is here to help. From tech resources, diagnostic tools and individual parts to remanufactured valve bodies, you can hit the ground running. When you succeed in winning your customers' confidence (and repeat business) by getting the job done right and keeping their vehicle on the road, we join in your sense of accomplishment.



## Remanufactured Valve Bodies for Ford & GM Applications

### GM Gen. 1 6T40, 6T45, 6T50

Part No. **GM6T40-1** Sold without TEHCM.

### GM Gen. 1 6T70, 6T75

Part No. **GM6T70-1E**

Fits '07-'08 units with 1.35 ratio 3-5-R clutch regulator valve. Sold without TEHCM.

Part No. **GM6T70-1L**

Fits '09-later units with 1.83 ratio 3-5-R clutch regulator valve. Sold without TEHCM.

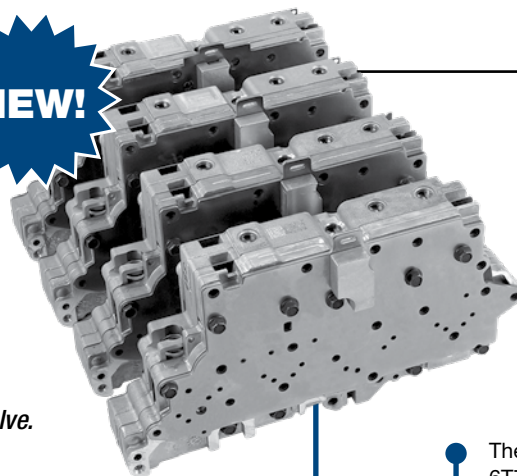
### Ford 6F50, 6F55

Part No. **FD6F50E**

Fits '07-'09 units with a 1.35 ratio 3-5-R. Sold without transmission control module.

Part No. **FD6F50L**

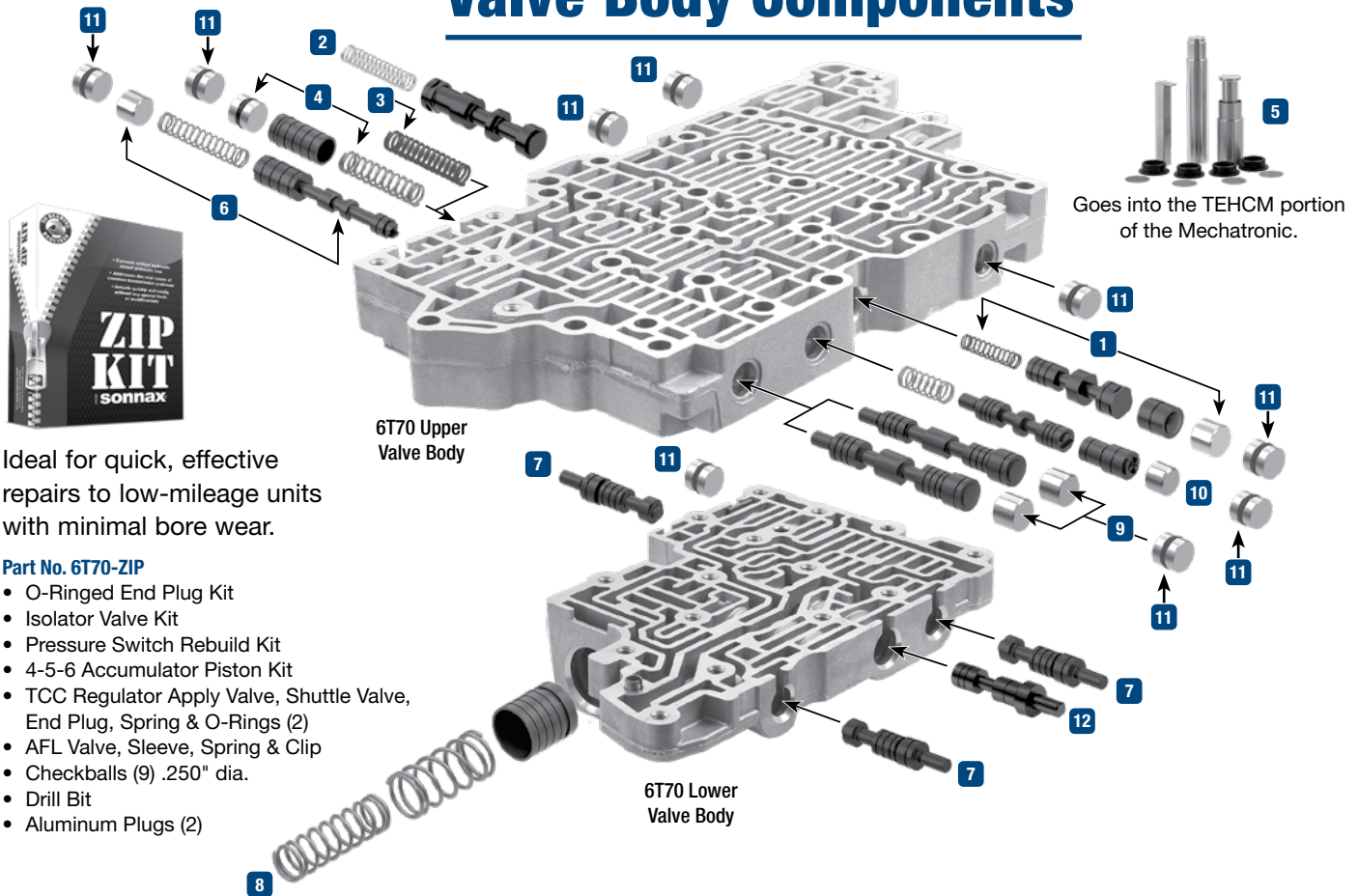
Fits '09-later units with 1.83 ratio 3-5-R. Sold without transmission control module.



The GM Gen. 1 6T70/75 valve bodies (shown) can be hard to identify, so make sure you check out the Sonnax tech resource library at [www.sonnax.com](http://www.sonnax.com) for a helpful identification guide.

## Gen. 1 6T70 & 6T75 Valve Body Components

Gen. 2 components also available. See details at [www.sonnax.com](http://www.sonnax.com).



Ideal for quick, effective repairs to low-mileage units with minimal bore wear.

### Part No. 6T70-ZIP

- O-Ringed End Plug Kit
- Isolator Valve Kit
- Pressure Switch Rebuild Kit
- 4-5-6 Accumulator Piston Kit
- TCC Regulator Apply Valve, Shuttle Valve, End Plug, Spring & O-Rings (2)
- AFL Valve, Sleeve, Spring & Clip
- Checkballs (9) .250" dia.
- Drill Bit
- Aluminum Plugs (2)

Symptoms/Part Type	Product Name	Part No.	Details	Tooling
<b>TCC/Lockup Symptoms</b>				
Code P0741, Code 742, Harsh TCC apply, TCC slip, Loss of fuel economy, Low TCC apply pressure	Oversized TCC Regulator Valve Kit	1 124740-24K		F-124740-TL24*
Excess TCC slip, Low cooler flow, Overheating, TCC apply & release concerns, TCC apply codes	Oversized TCC Control Valve Kit	2 124740-14K		F-124740-TL14*
<b>Pressure Problems</b>				
No line rise, Line pressure instability	Isolator Valve Spring	3 124740-16	5/Bag	
Low line pressure, Line pressure instability, No line rise, Burnt clutches, Harsh shifts	Isolator Valve Kit	4 124740-03K		
<b>Shift/Engagement Concerns</b>				
Pressure switch codes, Switch codes, Pressure control out-of-range codes, Failsafe mode	Pressure Switch Rebuild Kit	5 124740-30K	Services one valve body, requires installation tool kit	124740-TL30
	Pressure Switch Rebuild Master Pack	5 124740-28K	Services 10 valve bodies, includes installation tool kit	
Erratic line pressure, Poor shift quality, Burnt clutches, Low converter & lube flow	Oversized Pressure Regulator Valve Kit	6 124740-12K		F-124740-TL12*
Shift quality is not load sensitive, Harsh shifts, Slips & flares, Delayed engagement	Oversized Clutch Boost/Latch Valve	7 144740-23	Fits any of 3 locations	F-144740-TL22*
3-4 Flare, Ratio codes, 4-5-6 Clutch burned, Slipping gears, 3-4 Harsh	4-5-6 Accumulator Piston Kit	8 124740-04K		
2-3 Flare, 4-5 Flare, Delayed Reverse, Reverse slip, 3-5-Reverse clutch burned, Ratio codes	Oversized 3-5-R Clutch Regulator Valve Kit	9 124740-26K	1.35 Ratio	F-124740-TL26*
	Oversized 3-5-R Clutch Regulator Valve Kit	9 124740-21K	1.83 Ratio	F-124740-TL21*
1-2 Flare, 5-6 Flare, 2nd Slip, 6th Slip, No 2nd, No 6th, Ratio codes, 2-6 Clutch burned	Oversized 2-6 Clutch Regulator Valve Kit	10 124740-17K		F-124740-TL17*
Pressure loss, Shift concerns, Burnt clutches, TCC apply concerns	O-Ringed End Plug Kit	11 124740-02K	Includes 9 end plugs	
Solenoid performance codes, Wrong gear starts, Clutch failure	Oversized AFL/Solenoid Pressure Regulator Valve	12 124740-01		F-104740-TL12*
Harsh/Soft Shifts, Solenoid performance codes	Oversized Actuator Feed Accumulator Piston Kit	124740-40K		124740-TL40

\* VB-FIX Required

# Stop Chasing 4R70W Direct Drum Problems

## Ramp Up Performance & Reliability with the Sonnax All-In-One Upgrade

- **One-Piece Design:** Eliminates weak point where drum splines strip & shafts break
- **Rugged Shaft:** 50% Thicker & 2X as strong as the best 300M shafts
- **17% More Clutch Capacity:** Custom drum & piston hold one extra friction for optimum protection against burn-up

The Smart-Tech® direct clutch drum and shaft kit **76656-01K** ELIMINATES every critical weakness of the OE drum and is packed with all the parts you need for hassle-free rebuilds. It's an unbeatable upgrade for any vehicle pushing the limits of the stock drum, **PROVEN** to easily handle even the most extreme horsepower and torque.

A heavy duty intermediate stub shaft **76670A-01**



Sun gear also sold separately, Part No. 76612A-01.

**Part No. 76656-01K**  
Fits 4R70E/W,  
4R75E/W, AODE

Sun gear fits all 2.84/1.55 gear sets. Use a late AODE sun gear in place of Sonnax gear with 2.40/1.46 gear sets.

is available as a drop-in upgrade over stock shafts. And don't forget: Sonnax offers the Smart-Tech® high capacity forward clutch drum kit **76655-01K** that features 20% more clutch capacity and a one-piece, forged drum design that prevents cracking.

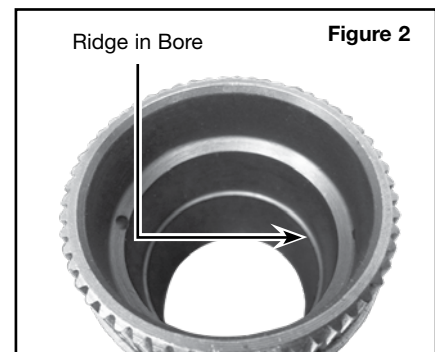
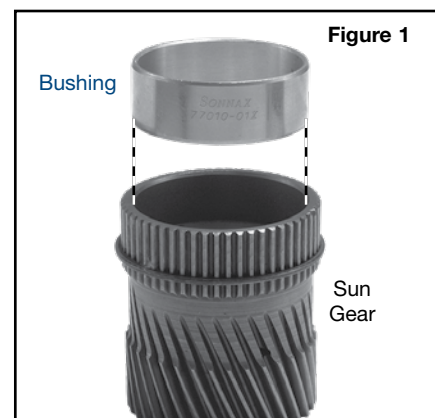
## Tech Tip: How to Properly Install Sonnax 4L60-Series Wide Reaction Sun Gear Bushing

*This information can also be found on the part page and instructions. We strongly advise that you read the instructions for all Sonnax parts before installation to ensure it is done correctly. All instructions are easily accessible on the Sonnax website. Use the handy instruction finder at [www.sonnax.com/in](http://www.sonnax.com/in).*

The Sonnax wide reaction sun gear bushing **77010-01** for GM 4L60, 4L60-E, 4L65-E and 4L70-E applications is one-and-a-half times the width of the OE version and fills the entire sun gear bushing groove. This wider bushing maximizes support, and is precision machined from steel-backed bronze to guarantee minimal clearance with the mating shaft.

Be aware that this bushing may not work in some late-production sun gears with OE finish-in-place bushings, so be sure to measure the sun gear bore. Installing this bushing into a bore that is smaller than 1.705"–1.706" will result in a tight fit with the mating reaction shaft.

1. Install the bushing using an arbor press.
2. Press the bushing in until it's lightly seated against the ridge in the bore (**Figure 2**). Check the bushing alignment with the small lube hole on the mating reaction shaft to make sure the bushing does not block the lube hole.



# sonnax®



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## Transmission Report

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### Featured in this Issue

- Important Sonnax Packaging Change
- Your Rebuild is More Than the Sum Of Its Parts
- Gen. 1 6T70/75 Valve Body Components
- Revolutionary AODE, 4R70W Upgrade Eliminates Direct Drum Problems

To update your address or request to stop this mailing, please call 800-843-2600, 8:30 a.m. to 5 p.m. ET, or email to [news@sonnax.com](mailto:news@sonnax.com).

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 Earns Four Top Product Awards!

Every year, *Transmission Digest* accepts nominations for the top 10 products and tools in the powertrain aftermarket. Readers vote for their favorites to determine the winners. Thanks to YOU, Sonnax won four top product awards!



**GM 400, 425, 4L80-E, 4L85-E**

**Extreme Duty Forward Clutch Hub Kit**

Part No. 34322-02K

Hardened splines and added bearing, no machining required.



**GM 4L60, 4L60-E, 4L65-E, 4L70-E**

**2.84 Ratio Input Carrier Kit**

Part No. 77284-K

Ramp up from OE wide ratio to race-ready close ratio.



**GM 4L60, 4L60-E, 4L65-E, 4L70-E**

**Heavy Duty Overrun Clutch Hub**

Part No. 74574-HD

Stop hub cracking and breaking in extreme applications.



**Chrysler 45/545/65/66/68RFE Accumulator Piston Kit**

Part No. 44894-01K

Prevent bore scuffing and salvage worn bores. Also available as a set of five pistons: 44894-01MK.

**INSIDE: An Important Change to Sonnax Packaging**