

Transmission Report

Volume 11, No. 1

January 2020

RFE Universal Valve Bodies: One SKU Does it All!

Henry Ford famously said about the Model T, “You can have any color you want, so long as it’s black.” While this pertained to the cosmetics of the car, it does illustrate the point that uniformity eases production, inventory and forecasting. Imagine what a difference a universal ATF could have in your shop or the impact to your tool budget if a single scanner worked for all transmissions. The cost and time savings would be enormous!

While Sonnax hasn’t invented anything quite that revolutionary, we have lessened the complexity and redundancy of the popular Chrysler 45/545/65/66/68RFE valve bodies by creating a universal RFE remanufactured valve body that works in any early, late, 5- or 6-speed application. So whether your customer is the vehicle owner or the transmission shop, the value of carrying only one valve body to suit all applications is significant.

As the above chart shows, Chrysler has gone through numerous design iterations on this RFE valve body that results in five to nine different variants depending upon your desire to repair/replace it with a functional or an exact design match.

In 2004, Chrysler significantly changed the original solenoid block (black connector) design to reduce operational noise by switching to internal solenoids (white connector). This was a welcome functional change that also retrofitted back to early designs. In 2010, Chrysler changed the solenoid block (grey connector) again to accommodate a change made to the shifter assembly

	Solenoid Block Connector Color	Checkball Quantity	5-Speed		6-Speed		
			45RFE	545RFE	65RFE	66RFE	68RFE
OE	Black	7	✓	✓			
	White	7	✓	✓			✓
	Grey	5		✓	✓	✓	✓
Sonnax CHR146	White	7			✓		
Sonnax CHR145	Any (Solenoid Not Included)	7			✓		

that no longer offered a Manual 2 or Manual 1 gear shift position. This change provided an “M” manual shift position on the shifter, which allows manual toggle shifting. This shifter change is what led to simplifying the hydraulics associated with the overdrive clutch. In this latest design block, the overdrive solenoid was eliminated, and the multi-function solenoid now is used solely to apply the overdrive clutch. This circuitry change also resulted in the elimination of two checkballs and changes to the separator plate. While the white connector solenoid could still be used in these later design valve body applications, the grey connector block and late valve body could not retrofit to previous applications.

The Sonnax universal RFE remanufactured valve body eliminates the interchange dilemma and inventorying of various part numbers — which, in itself, has huge value. This unique solution contains a host of component improvements as highlighted on the back cover of this newsletter, providing a quality solution at reasonable cost. The included heavy-

duty, billet aluminum pistons have two guide seal rings to prevent bore scuffing and a mid-piston seal that runs in an unworn portion of the casting bore. Each valve body also includes our patented oversized solenoid switch valve and plugs. These eliminate the chronic wear that causes numerous codes, shift complaints, clutch distress and converter issues, plus prevent the small plugs from sticking. Even the late-design, anodized OE castings are prone to wear at this active switch valve, and the design of the plugs still allows them to cock and jam in the bore. And as only 20% of the nearly 4 million RFE transmissions in the U.S. are being used in Ram 2500/3500 applications (which are the most prone to chipping-related, high-torque, high pressure casting issues), the Sonnax separator plate, gasket and resurfacing approach is a great fix at an affordable price.

Consider stocking either **CHR145** or **CHR146** to be ready for your next RFE job — whatever the vintage — and benefit from having the exact right valve body, full of valuable Sonnax updates, immediately available.

Tougher, Stronger Transmissions Start Here

Heavy-Duty Value in Remanufactured Valve Bodies

Would you be surprised to know that there are still over 6.5 million vehicles in operation in the U.S. with a 4R70E, 4R70W, 4R75E or 4R75W transmission? And of those vehicles, almost 5 million were produced after 2001. And to throw one last factoid into the mix, 99% of those 5 million vehicles are Ford F150s, Expeditions, Econolines, Crown Victorias or Mercury Grand Marquis.

Why is this relevant to you or your shop? These vehicles are all commonly used in fleets (taxis, police cruisers) and work vehicles (towing, hauling, delivery, etc.). So when the owner of this vehicle has a transmission problem, every day it's in the shop is usually costing them money. This means turnaround time on the transmission rebuild is critical. Besides a quality rebuild, the other thing these fleet vehicle owners would appreciate is a slight shift performance upgrade that they can feel in the seat of their pants, yet doesn't break the bank or their neck coming off a full stop.

Sonnax recently released two heavy-duty 4R70E/W, 4R75E/W remanufactured valve bodies (**F095HD** for '01-'08 and **F098HD** for '09-later) that will help you turn the job quicker for your customer and provide firmer shifts under load with moderately increased line pressure. Your customer will be pleased with the shift feel, and your shop will be pleased with the added durability, limited lifetime warranty and value of these remanufactured valve bodies.

Sonnax has addressed all of the chronic failure points of these valve bodies by:

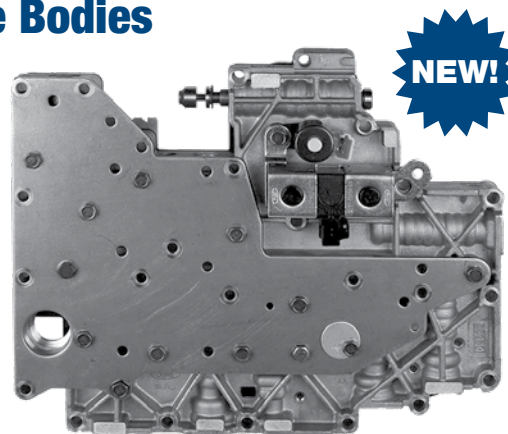
- Eliminating wear at the pressure regulator, converter limit and solenoid regulator valve bores
- Replacing worn reverse boost, bypass clutch control and overdrive servo regulator valve/sleeve assemblies
- Sealing critical oil leakage at the 1-2/2-3 and 3-4 shift valves
- Installing new lockup and dual shift solenoids
- Adding a valve body stiffener plate and gasket at the 2-3 accumulator area
- Including performance springs at the pressure regulator valve and for the 1-2 accumulator

Combined with your skilled transmission rebuild, the quality and durability of these Sonnax valve body components and our full, post-assembly electro-hydraulic test will get your customer back on the road quickly with a better-shifting transmission. This is sure to earn you a great profit on the job as well as repeat business on those valuable fleet accounts.

Oversized Converter Limit Valve Kit

- Lengthened outboard spool for added stability and wear prevention
- Hardcoat anodized aluminum valve combats premature wear and maintains proper clearance at all temperature ranges

Various TCC concerns and failures are common problems with these Ford transmissions. Many problems can be traced to excess wear and/or binding at the converter limit valve. Excess wear at the inboard converter limit valve spool leads to unwanted converter pressure loss, and debris damage at the outboard valve spool creates binding that can stick the valve in either a high or low converter pressure position. Reconditioning the bore and installing Sonnax oversized converter limit valve kit **76948-58K** eliminates this wear and binding, thus better controlling the pressure into the converter circuit.



Part No. F095HD Fits '01-'08
Part No. F098HD Fits '09-Later



Part No. 76948-58K
Fits 4R70E/W, 4R75E/W, AODE

Smart-Tech® Direct Clutch Drum & Shaft Kit

Stop Chasing Direct Drum Problems

- One-piece design eliminates weak point where drum splines strip and shafts break
- Rugged shaft is 50% thicker and twice as strong as OE
- Custom drum and piston deliver 17% more clutch capacity with optimum protection against burn-up
- High-strength drum and shaft are precision-machined from hardened 8620 steel
- Sun gear is precision-machined from 9310, heat-treated steel

Sonnax 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.

Part No. **76656-01K**

Fits 4R70E/W,
4R75E/W, AODE

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



Smart-Tech® High Capacity Forward Clutch Drum Kit

Part No.
76655-01K

Fits 4R70E/W,
4R75E/W,
AOD/E



20–40% MORE Clutch Capacity, No Modifications Required

- Broad range of clutch adjustability
- Guards against shift timing issues
- One-piece, forged design prevents cracking

Overcome clutch durability issues with the Smart-Tech high capacity forward clutch drum kit **76655-01K**. The unique design increases clutch capacity without abandoning the wave plate.

Heavy Duty Input Shaft

Build In Maximum Strength & Exceptional Toughness

- Suitable for any high-horsepower street, towing or competition application
- Specially heat-treated and processed for maximum toughness and straightness
- Manufactured from 300M ultra high-strength steel for maximum strength and resistance to fracture

Input shaft failure is common as power levels are increased in these units. Sonnax heavy duty input shaft **76655A-HD** is precision engineered for unrivaled performance in high-horsepower applications. Machined from 300M, ultra high-strength steel for exceptional toughness and manufactured with improved turbine-end splines to prevent breakage, the shaft also features revised sealing ring grooves for increased strength and resistance to fracture.



Part No. **76655A-HD**

Fits 4R70E/W,
4R75E/W, AODE



Get Your Racers Ready for Their Best Season EVER!

Powerglide

**Never Underspec or Overpay
for a Winning Build That LASTS**

Only Sonnax offers strong, durable component options for all budgets, applications and power levels to guarantee racers unmatched transmission performance. Once you've got critical upgrades specced out, then choose from a huge selection of key components essential for getting racing units in top condition.

Check out parts, build guides, videos and request a catalog at
www.sonnax.com/powerglide



FREE CATALOG

Need a handy reference for parts or a great tool for getting customers on board with a build? Request a Sonnax Powerglide parts catalog today!

THM400 Main Shaft & Forward Clutch Hub Options for Any Budget, Any Power Level

These Parts Also Fit 4L80-E & 4L85-E

Heavy Duty



Extreme Duty



Roller Bearing Slip Yokes

27- & 32-Spline Yokes for Powerglide, TH400 & More!

Proven INDESTRUCTIBLE in track and street runs plus torture tests in the lab, you can count on Sonnax slip yokes to drive huge horsepower from transmission to driveshaft with unmatched strength and durability.

- Forged 4340 chromoly
- Unique Sonnax design increases strength in critical areas
- Through-hardened, tempered barrel
- Use with single- or double-roller bearings



Smart-Tech® Big Input Shaft Kit



THE END of 48RE Input Shaft Failure

For drivers pushing the limits with massive torque and 1,000+ HP, the ULTIMATE protection against spline twist and shaft breakage is here. Designed in fit and function to work just like the OE, the 35-spline Sonnax shaft is bigger and better in all the right places for unmatched durability in Chrysler 47RH, 47RE and 48RE transmissions.

- 35% Stronger than even the best heavy-duty, 23- or 29-spline input shafts
- Keeps OE oil flow areas and eliminates leakage for predictable, trouble-free converter function
- Easy to install, no customization or machining required
- Works with any matching converter fitted with a 35-spline turbine hub

Part No. 22121B-08K



There's a lot to unpack with the big shaft system. Learn how each component works together to handle extreme torque and watch a NEW VIDEO at www.sonnax.com/chrysler-48re-big-shaft

700-R4, 4L60/E Heavy Duty Reaction Shaft



Universal Upgrade Outperforms All OE & Other Aftermarket Shafts

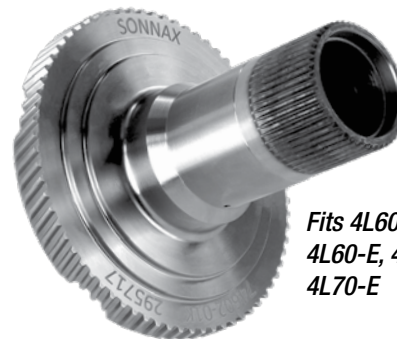
- Prevents spline twist and wear
- Universal fit
- High-strength alloy outperforms all other OE & aftermarket shafts

Beginning with the introduction of the 700-R4 back in 1982, the 700-R4, 4L60/E family of transmissions has had to play catch-up year after year to the ever-increasing torque levels as vehicles evolved with increasing power.

Today — 38 years later and with the help of great aftermarket parts from Sonnax — the 4L60/E models have unheard of reliability at over double the highest OE power levels. Upgraded transmissions are working reliably at 800HP and some even above 1,000HP. One of the weak links that's now surfaced in high-torque or hard-shifting units is twist or breakage of the reaction shaft that connects the front ring gear to the rear planet. The OEM and lower-cost aftermarket parts are made from relatively soft-cast, plain carbon steel. Even with heat-treated splines, there still is not enough strength to prevent spline twist.

Sonnax heavy duty reaction shaft kit **74602-01K** is made from high-strength chromoly steel alloy to eliminate spline twist and wear. The kit includes a shim and two bearings to make it a universal fit for all input carrier styles. One bearing is for the shaft-to-reaction shell, the other bearing plus shim combination is for shaft-to-front carrier.

Part No. 74602-01K



Fits 4L60, 4L60-E, 4L65-E, 4L70-E

Universal Fit Components

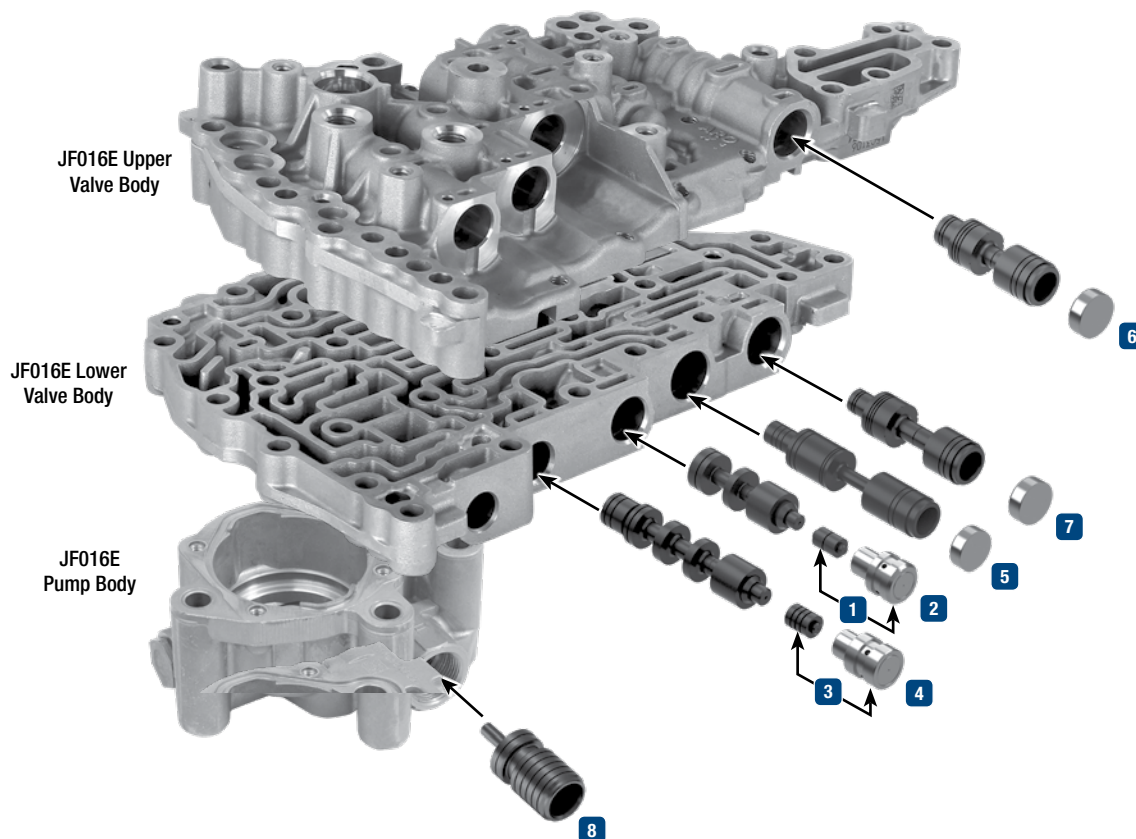
- A** Bearing, Reaction Shaft-to-Front Carrier
- B** Shim
- C** Bearing, Reaction Shaft-to-Shell



Twisted Splines on OE Shaft



JF016E (REOF10D), JF017E (REOF10E) Valve Body Components



Symptoms/Part Type	Product Name	Part No.	Details	Tooling
TCC/Lockup Symptoms				
Jerking on coastdown, Overheated fluid, No lockup, Engine stall on engagement	Torque Converter Lube Regulator Plunger Valve Kit	1 33510N-06K		
Jerking on coastdown, No lockup, Engine stall on engagement, Overheated fluid	Oversized Torque Converter Lube Regulator & Plunger Valve Kit	2 33510N-08K		F-33510N-TL8*
TCC apply codes, Burnt converter, Converter shudder	Lockup Control Plunger Valve Kit	3 33510N-11K		
	Oversized Lockup Control & Plunger Valve Kit	4 33510N-13K		F-33510N-TL13*
Pressure Problems				
Low pressure, Delayed engagement, Push belt slippage	Oversized Main PR Valve Kit	5 33510N-05K		F-33510N-TL5*
Chatter on acceleration, High line pressure, Low line pressure, Pulley breakage	Oversized Primary Pulley Reducing Valve Kit	6 33510N-03K	JF016E (REOF10D) Only	F-33510N-TL3*
Chatter on acceleration, High or low primary pulley pressure, Pulley breakage	Oversized Primary Pulley Reducing Valve Kit	6 33510N-04K	JF017E (REOF10E) Only	F-33510N-TL4*
RPM surge on acceleration, Chatter on acceleration, Push belt slippage & pulley fracture	Oversized Secondary Pulley Reducing Valve Kit	7 33510N-16K		F-33510N-TL16*
Shift/Engagement Concerns				
Push belt slippage, Delayed engagement, Low pump volume	Pump Flow Control Valve	8 33510N-02		
	Oversized Pump Flow Control Valve	8 33510N-01		F-33510N-TL*

* VB-FIX Required

Genuine OE, Direct Replacement Bearings



Thrust Bearings Available Individually or as Kits

Thrust bearings are vital to a successful rebuild, and Sonnax is the leading supplier of OE bearings to the transmission aftermarket. Don't let a comeback happen to you for a preventable reason — use Sonnax thrust bearings in all your transmission builds.



Make	Unit(s)	Part Name	Part No.
Chrysler	62TE, '07-'08 units only	Bearing Kit	SBK-C21
Chrysler	62TE, '09-later units only	Bearing Kit	SBK-C22
Ford	4R70E, 4R70W, 4R75E, 4R75W, AOD, AODE, all years	Direct Drum Thrust Bearing	76243-01
GM	4L60-E, 4L65-E, 4L70-E, '07-later units only	Front Planet to Reaction Shaft Thrust Bearing	74238-01
GM	6L45, 6L50	Bearing Kit	SBK-G45
GM	6L80, 6L90	Bearing Kit	SBK-G80
Toyota	U760E, U760F	Bearing Kit	SBK-TOY01
Toyota	U760E, U760F	Rear Cover Bearing	47740-01

Check out the latest new kits and individual bearings from Sonnax, available now from your favorite distributor.

Jatco CVT Pulley Bearings

As we start 2020, the availability of Jatco CVT pulley bearings from Sonnax has increased dramatically.

Plus, all bearings are now sold individually — getting just the ones you need is quick and easy!



Part No. 323264-A

Call your distributor today to get the bearings you need to get the job done right.

Unit	Primary Pulley		Secondary Pulley	
	Front	Rear	Front	Rear
JF010E (RE0F09A/B)	33236G	33235G	33228G	33229H RE0F09A 33229G RE0F09B
JF011E (RE0F10A)*	33236N	33235N	33228N	33229N
JF015E (RE0F11A)	323235-A Under 1.6L 323235-C 1.6L/Over	—	323264-A	323229-A
JF016E (RE0F10D)	333264A	333235A	—	333229A
JF017E (RE0F10E)	343264A	333235A	343228A	343229A
JF019E (RE0F10J)	343264A	333235A	343228A	343229A

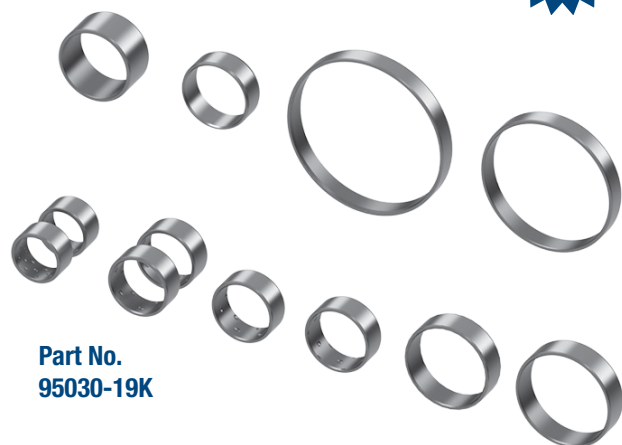
* JF011E bearings also fit Mitsubishi F1CJA.

Full Line of ZF 6-Speed Precision Bushings



In ZF6HP units, several of the bushings are relied on to seal particular circuits; the precision-fit must be tightly controlled, otherwise leaks past the bushing can result in drivability problems. While the OE bushings wear out relatively rapidly, Sonnax precision-engineered, replacement bushings have the unsurpassed tolerance and durability to support the load and seal appropriate circuits for even the longest warranty period.

With the release of the new ZF6HP19/21 bushing kit **95030-19K** to complement the existing ZF6HP26/28 kit **95030-26K**, Sonnax now has full bushing coverage for ZF 6-speed units (bushings are also available individually).



Part No. 95030-19K

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- **Must-Have 4R70W Series Upgrades**
- **Get Your Racers Ready for Their
Best Season EVER!**
- **Genuine OE, Direct Replacement Bearings**

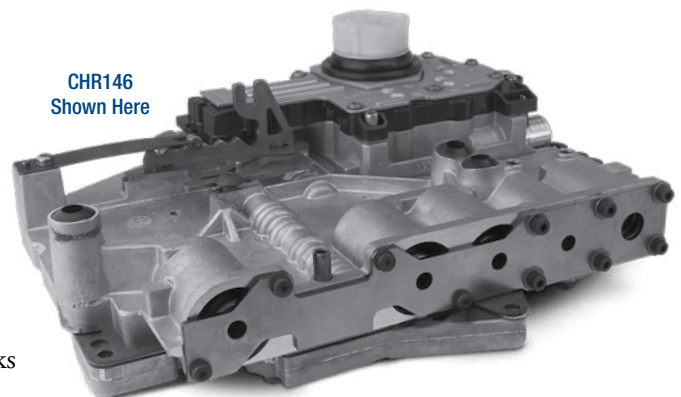
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or email to news@sonnax.com.

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.

ONE SKU DOES IT ALL Service ANY '99-Later 45/545RFE or 65/66/68RFE

Uniquely designed to fit all '99-later listed Chrysler applications, regardless of OE checkball or solenoid configuration, this Sonnax remanufactured valve body fixes chronic channel casting warpage, without the added expense of a billet plate.

- Seasoned channel casting — resurfaced to SAE recommended flatness & surface finish — eliminates warpage, burrs & cross-leaks
- New, double-thick separator plate & gaskets provide the critical seal between cast surfaces
- Patented Sonnax accumulator cover plate is stronger than OE to prevent flexing & breaking
- Patented Sonnax valves & heavy-duty pistons restore hydraulic integrity of circuits to eliminate shift complaints & clutch distress
- Tested on state-of-the-art equipment to verify that pressures match OE specification



CHR146
Shown Here



Sonnax
Resurfaced
Channel
Casting



Typical
OE
Channel
Casting

Available with or without **REMANUFACTURED SOLENOID BLOCK**

With Block Part No. CHR146

Without Block Part No. CHR145