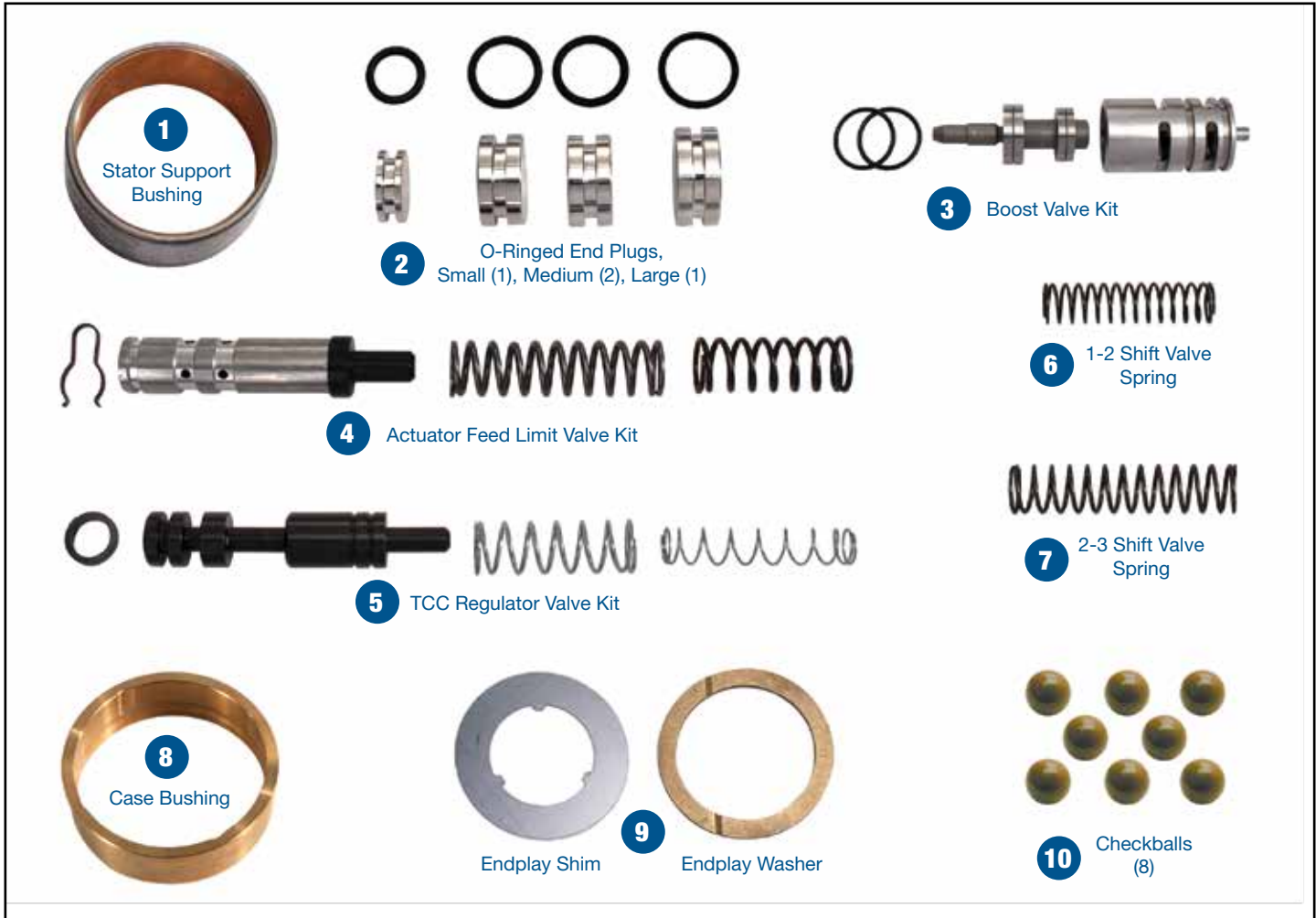


**GM 4L80-E, 4L85-E
 SURE CURE KIT**

PART NUMBER SC-4L80E

INSTRUCTION BOOKLET

*Parts are labeled here in order of installation. See page 2 for details on Sure Cure kit contents.
 See Sure Cure instruction booklet (pages 3-8) for detailed installation steps.*



Sure Cure Contents & Installation Steps See instruction booklet for detailed instructions.

Step 1 Replace Front Stator Support Bushing

Packaging Pocket 1

- Stator Support Bushing

Step 2 Replace TCC Valve & Pressure Regulator Valve Bore O-Ringed End Plugs

Packaging Pocket 2

- End Plug, Large, .668" dia.
- End Plug, Medium, .625" dia., (2)
- End Plug, Small, .500" dia.
- O-Ring, Large
- O-Ring, Medium (2)
- O-Ring, Small

Step 3 Replace Reverse Boost Valve and Sleeve

Packaging Pocket 3

- Valve
- Sleeve
- O-Rings (2)

Step 4 Ream Actuator Feed Limit (AFL) Bore and Install AFL Valve Lineup

NOTE: Requires Sonnax tool kit 77754-TL not included in this kit.

Packaging Pocket 4

- Valve
- Sleeve
- Short Spring, Selective
- Long Spring, Selective
- Clip

Step 5 Replace TCC Regulator Valve Lineup

Packaging Pockets 5

- Regulator Valve
- PTFE Seal
- Spring, .300" dia., Selective
- Spring, .420" dia., Selective

Step 6 Replace 1-2 Shift Valve Spring

Packaging Pocket 6

- Spring

Step 7 Replace 2-3 Shift Valve Spring

Packaging Pocket 7

- Spring

Step 8 Replace Case Bushing

Packaging Pocket 8

- Bushing

Step 9 Set Front & Rear Endplay

Packaging Pocket 9

- Washer
- Shim

Step 10 Install Checkballs

Packaging Pocket 10

- Torlon® Checkballs, .250" dia. (8)

NOTE: The parts listed here may be protected by patent number 6,634,377.

Torque Specifications	
Pump-to-Stator 18 ft-lb	Pump-to-Case 18 ft-lb
4th Clutch Housing in Case Bolt 18 ft-lb	Center Support-to-Case Bolt 32 ft-lb
Valve-Body-to-Case 97 in-lb	Accumulator-Housing to Valve Body 97 in-lb
Oil Pan 18 ft-lb	Extension Housing 25 ft-lb
Clearance & Endplay	
Front Unit Endplay is .004-.022". Check with output shaft pushed up. Adjust with selective pump washers or Sonnax selective washers (included in kit).	
Rear Endplay is .005-.025". Adjust with selective output thrust washers or Sonnax front unit endplay shim (included in kit).	
Pump Clearance Gear to pocket clearance is .0008-.0028"	
Planet Pinion Washer Clearance	
Output/Reaction/Overdrive/Carrier Gear Endplay .009-.024"	
Clutch Clearance	
Overdrive .040-.100" (not adjustable from factory)	Overrun Clutch .033-.094" (not adjustable from factory)
Intermediate/2nd Gear .041-.107" (different thickness frictions available)	Direct .050-.060" (different thickness steels available)
Forward .038-.060" (different thickness steels)	Low reverse Band Gage tool and selective pins
Front Band (manual 2nd) Not adjustable	
Tech Tips	
Cooler Return Line '92-'96 = lower line, '97-Later = rear line	
Solenoid Warning Never reuse shift solenoids made of white plastic. Solenoids that are white plastic where O-ring is located are prone to internal wear and leaking. Later solenoids with brown or tan plastic do not have this problem.	
Important Note For diesel applications with electronic injection pump, (can be identified by no throttle cable and has sensor on gas pedal). Soft shifts, burned clutches and poor line rise can be caused by a bad injection pump. Check to see if the engine can be held at 1500 RPM in Park. If RPMs run away and the fuel rate drops, then diesel injection pump is leaking internally and will cause low transmission line pressure.	
P1870 Code or excess converter slip can be caused by a cracked converter piston. Most common on 2000-later vehicles or units with rebuilt converters.	

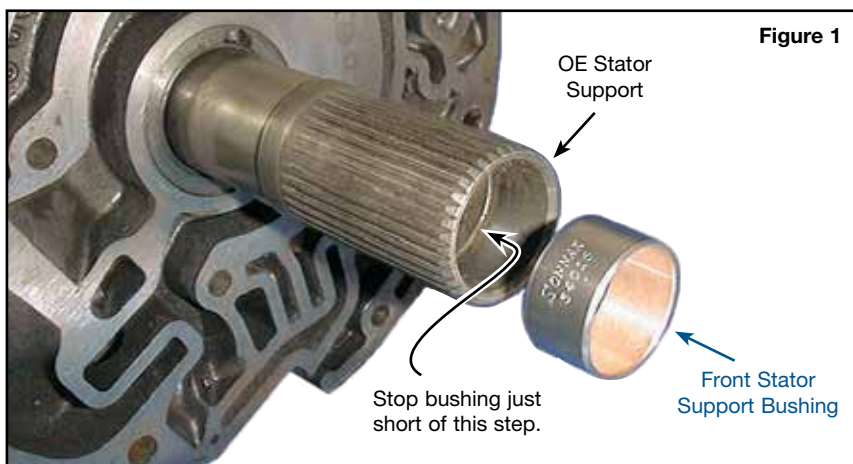
Step 1 Replace Front Stator Support Bushing (Figure 1)

- a. Remove worn bushing from the front of the stator support.
- b. Press in Sonnax bushing.



NOTE: During installation, make sure bushing stops just short of step inside stator tube (Figure 1). If contact is made with step, it will distort bushing and cause inner diameter to narrow, resulting in fitment issues.

- c. Check fit between bushing I.D. and input shaft. In some cases, it may be necessary to hone the bushing I.D. slightly for proper fit due to stator shaft tolerance variations. Hone I.D. to .001" overall clearance with the input shaft.

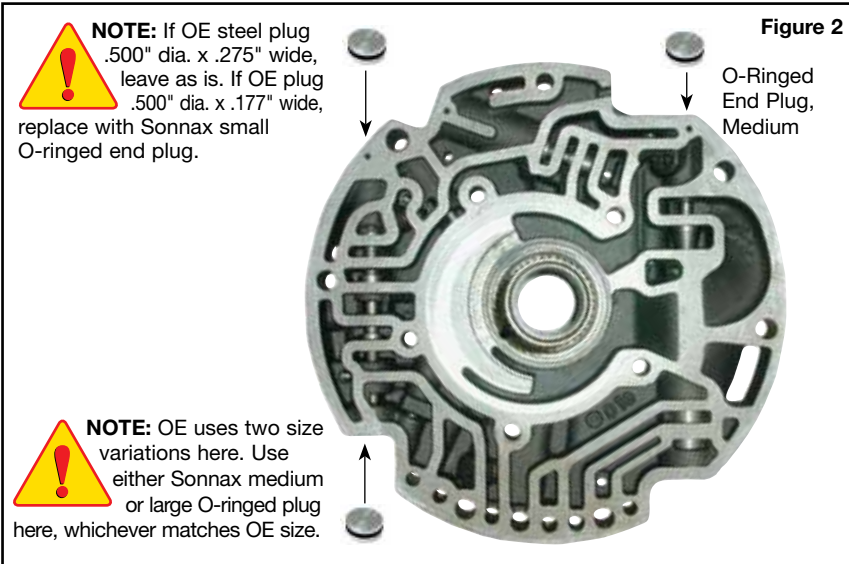


Step 2 Replace TCC Valve & Pressure Regulator Valve Bore O-Ringed End Plugs (Figure 2)

Disassemble pump halves.

For Pressure Regulator Valve Bore:

- a. Remove OE pressure regulator and boost valve train. Discard boost valve and sleeve; save other components for reuse.
- b. Remove balance plug roll pin, set aside for reuse.
- c. Drive OE balance plug outward from the pressure regulator bore.
- d. Remove sharp edges on casting surfaces with 320-grit emery cloth. Pay particular attention to the balance plug roll pin cross-holes, boost sleeve entry near snap ring groove and oval opening in casting.
- e. Install medium O-ring into medium Sonnax plug groove. Lubricate O-rings and roll on clean flat surface to size O-rings.
- f. Install and secure end plug.



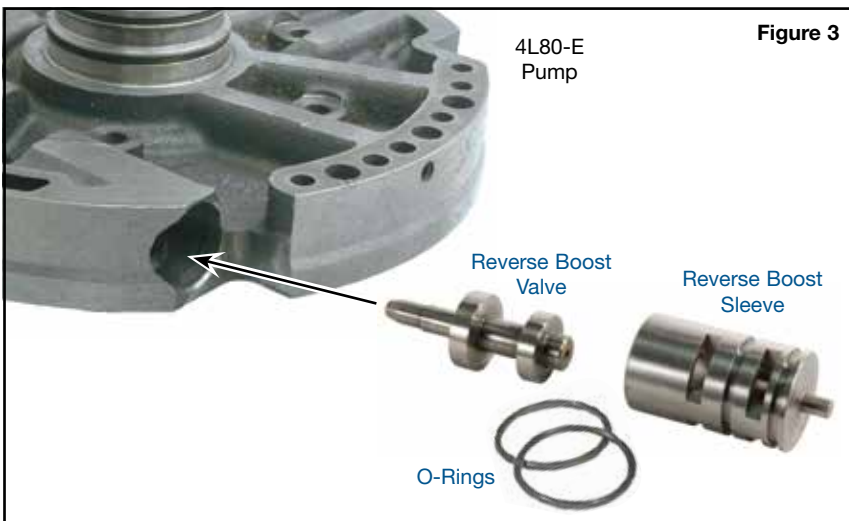
For TCC Valve Bore:

NOTE: Reference **Figure 2** to determine correct size replacement O-ringed end plugs to install in TCC valve bore locations.

Repeat steps a-f above for proper O-ring and end plug installation.

Step 3 Replace Reverse Boost Valve & Sleeve (Figure 3)

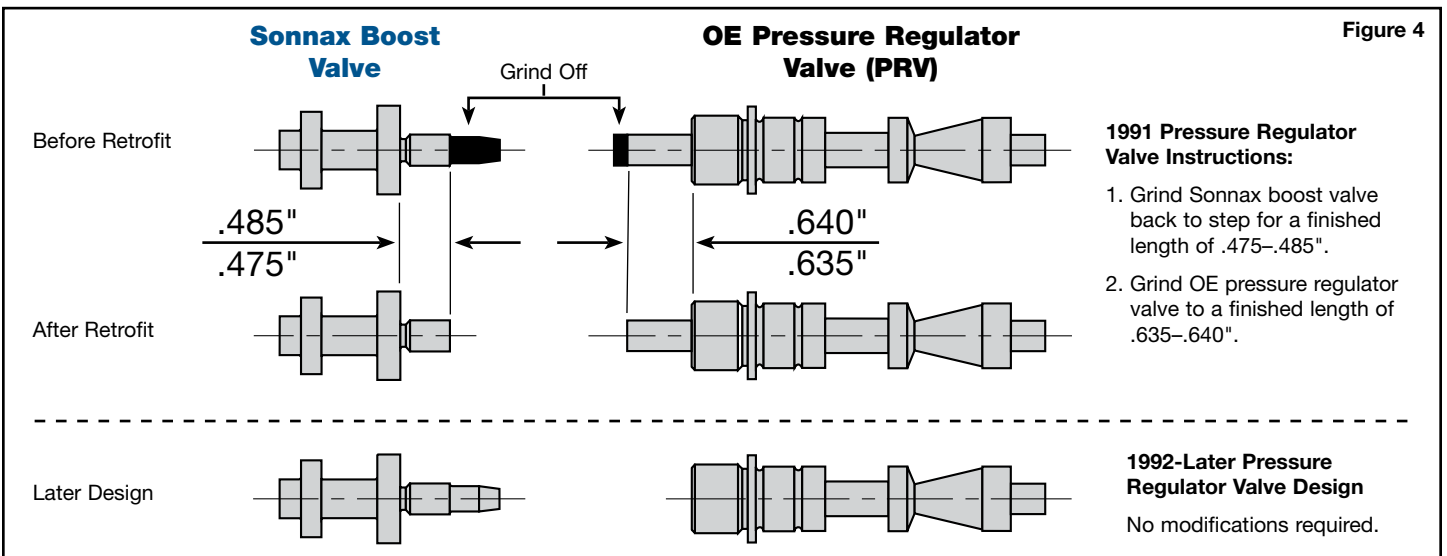
NOTE: '96-Earlier OE boost valves have a large diameter spool that measures .855" dia. Starting in 1997, this diameter was changed to .830". Sonnax boost valve and sleeve can be used to replace either style, so long as both the valve and sleeve are installed (no mixing/matching).



1991 Modifications


- a. Sonnax boost valve and OE pressure regulator valve **MUST** be modified to work in 1991 applications. If this modification is not performed, high line pressure will result.
- b. Grind off material (if necessary) from Sonnax boost valve and OE pressure regulator valve according to illustration (**Figure 4**).

NOTE: No alterations are required for 1992-later OE pressure regulator designs.



Installation

- a. Reinstall OE PR valve and spring.
- b. Install Sonnax O-rings onto Sonnax sleeve.
- c. Lubricate O-rings and roll sleeve on clean, flat surface to size O-rings into grooves.
- d. Install Sonnax boost valve/sleeve assembly and secure with OE retainer.
- e. Reassemble pump halves.

 **TECH TIP:** Apply a small amount of ATF into either the Reverse boost or torque signal orifice (**Figure 5**). Force low pressure (30 psi) into orifice. If oil comes out other orifice, there is leakage across the circuits. Replace or resurface the pump halves to eliminate this leakage.

Step 4 Ream Actuator Feed Limit (AFL) Bore & Install AFL Valve Lineup

1. Drill AFL Bore (Must be done prior to reaming)


- a. Remove OE AFL valve lineup. Set aside valve train, to be inspected after reaming.
- b. Clamp valve body to bench, circuits facing upward.
- c. Insert Sonnax drill jig (from separately available tool kit 77754-TL) and fill bore with cutting fluid (**Figure 6**).
- d. Using drill bit from tool kit 77754-TL, drill bore at approximately 1000 RPM, until bit bottoms out. Take care not to force drill or let it "grab" while drilling.
- e. After drilling, prepare for reaming by thoroughly cleaning valve bore and body of debris.

2. Bore Reaming

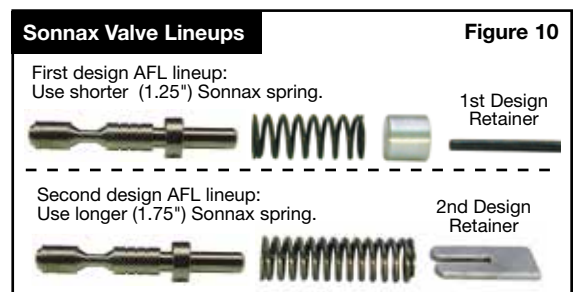
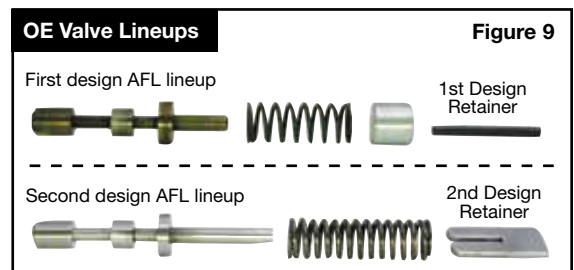
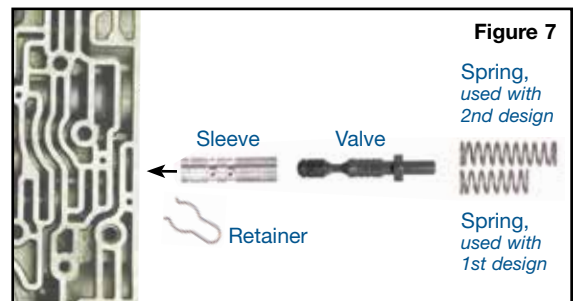
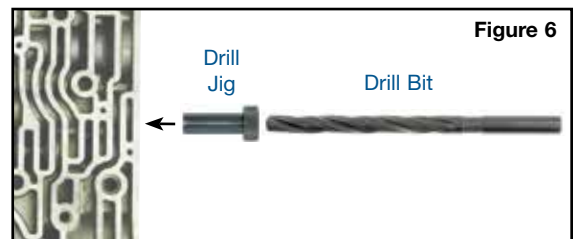
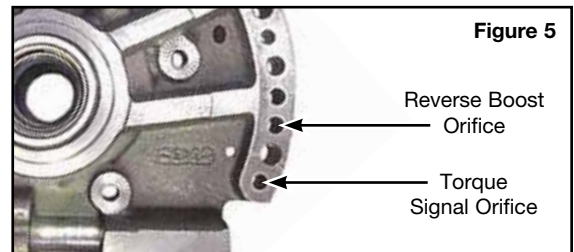
Ream AFL bore (for reaming instructions/reamer care, please visit www.sonnax.com). Reaming tool kit 77754-TL is required for this operation.

3. Install AFL Valve Lineup

- a. Ensure valve bore and body are clean and clear of debris.
- b. Install Sonnax sleeve and valve. Secure with Sonnax retaining clip (**Figure 7**).

 **NOTE:** Sleeve must fit bore with slight resistance. If sleeve slides in easily or rotates in bore, a tubing cutter may be used to raise a slight ridge around sleeve lands (**Figure 8**). Liquid sleeve retainer (such as Loctite® 609) is an alternative, used sparingly on inboard end of sleeve. Apply a surface prep/cleaner (such as Permatex® 24163) to the sleeve and bore, which speeds cure and insures retention. This will cure within 30 seconds, so quickly install the sleeve without the valve. After cure, install valve into sleeve.

- c. Select correct Sonnax spring:
 - If 1st OE design AFL lineup was originally installed, use shorter (1.25" length) Sonnax spring (**Figure 9**).
 - If 2nd OE design AFL lineup was originally installed, use longer (1.75" length) Sonnax spring (**Figure 9**).
- d. Install selected Sonnax spring.



4. Enlarge AFL Balance Orifice in Separator Plate

Enlarge indicated AFL balance orifice to .052" with Sonnax drill bit included in 77754-TL tool kit (Figure 10).

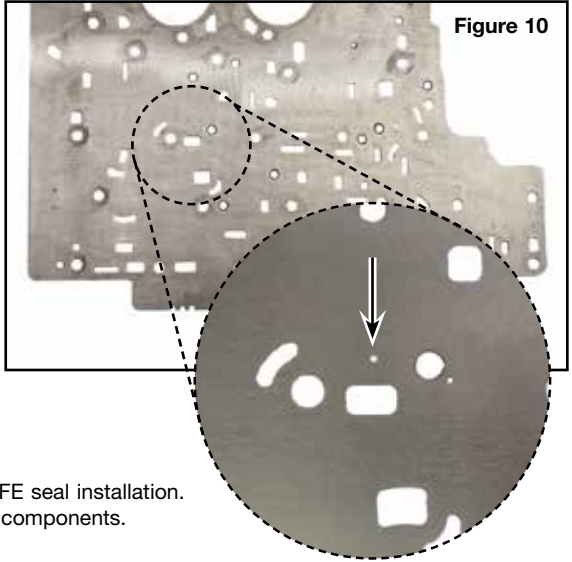


Figure 10



NOTE: On some plates, this orifice might be larger than .052". In these cases, no orifice modification is necessary.

Step 5 Replace TCC Regulator Valve Lineup

- a. Remove OE roll pin retainer and save for reuse.
- b. Remove and discard OE TCC valve and spring.



NOTE: A small chamfer may need to be machined into bore entrance to ease PTFE seal installation. A 15/32" drill or counter-bore is recommended. Clean all debris prior to installing components.

- c. Install Sonnax PTFE seal onto Sonnax valve. Use heavy transjel or Sonnax O-LUBE on seal to seat it completely in groove. To help ease valve installation, edges of seal must not protrude above the spool diameter.

- d. Select appropriate Sonnax spring:
 - For OE TCC apply feel, select the larger diameter (.420") Sonnax spring (Figure 11).
 - For a firmer lockup (best suited for towing applications), select the smaller diameter (.300") Sonnax spring (Figure 11).

- e. Place selected Sonnax spring over long stem of Sonnax TCC valve.

- f. Insert spring/valve assembly into bore, spring end first. Ensure the PTFE seal remains fully seated in valve groove during installation.

- g. Secure lineup with OE roll pin retainer.
- h. Using small pick or screwdriver, carefully stroke the valve in the bore to ensure the seal has not hung up during installation.

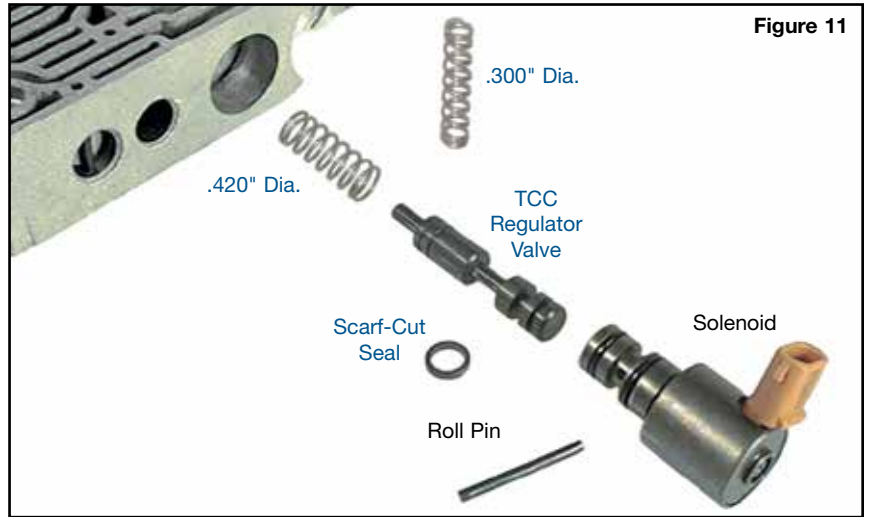


Figure 11

Step 6 Replace 1-2 Shift Valve Spring

- a. Remove OE 1-2 shift valve, set aside for reuse (Figure 12).
- b. Remove and discard OE spring.
- c. Install Sonnax replacement spring, reinstall OE valve as pictured.

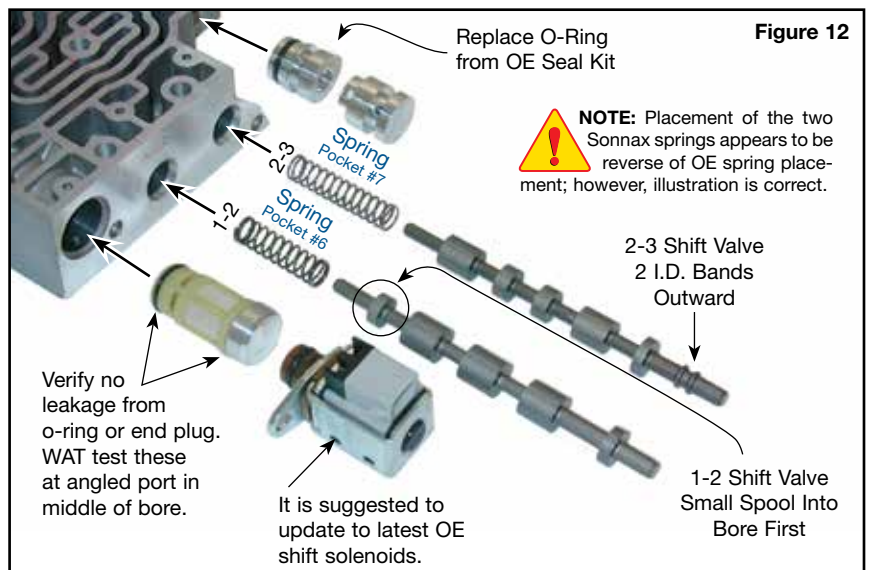


Figure 12

NOTE: Placement of the two Sonnax springs appears to be reverse of OE spring placement; however, illustration is correct.

Step 7 Replace 2-3 Shift Valve Spring

- Remove OE 2-3 shift valve, set aside for reuse (Figure 12).
- Remove and discard OE spring.
- Install Sonnax replacement spring, reinstall OE valve as pictured.

Step 8 Replace Case Bushing

1. Disassembly

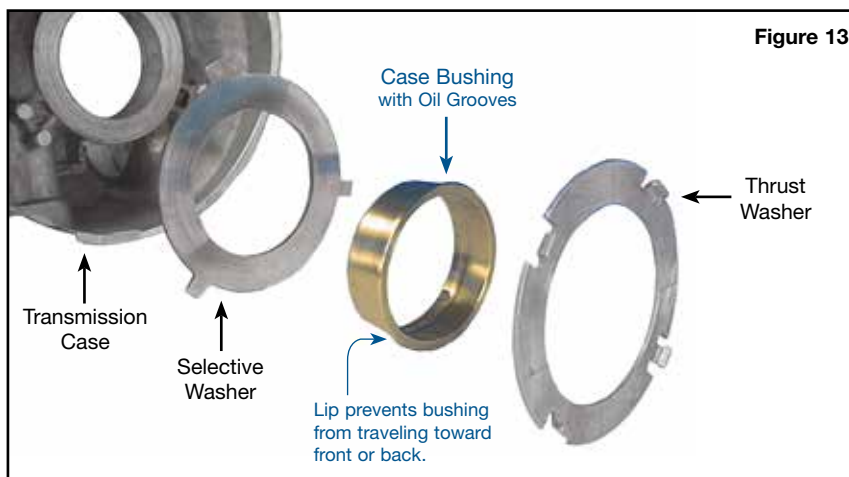
- Remove output shaft, selective washer, thrust washer and OE case bushing from transmission case (Figure 13).

2. Installation & Assembly

- Press Sonnax bushing into housing bore from inside of transmission, ensuring flange seats on flat, raised surface of case. In some instances, the bushing may be slightly longer than the bore depth; this is not a problem.
- Reinstall OE selective washer, thrust washer and output shaft to case.



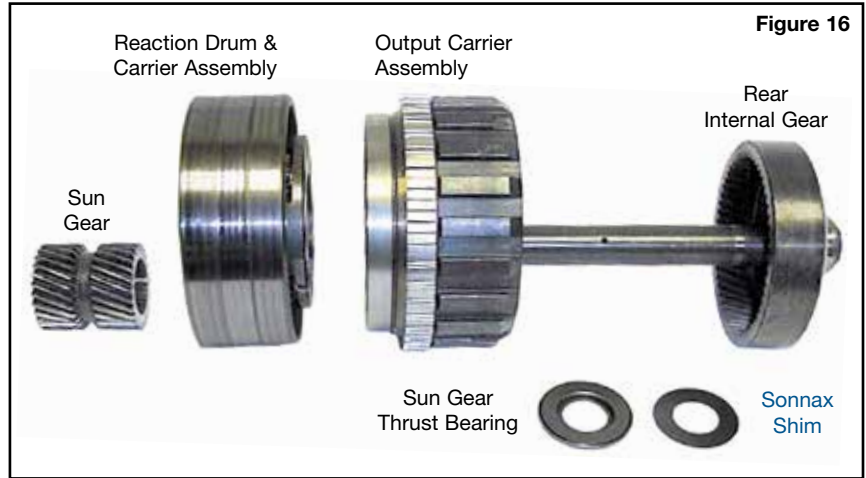
NOTE: Due to tolerance variations, the output shaft may fit the bushing snugly. Tapping the shaft at the spline area will help reform bushing high spots.



Step 9 Set Front & Rear Endplay

1. Rear Endplay

Use a dial indicator on the output shaft to verify and obtain a rear unit endplay of .005-.025". Sonnax shim is .010" thick and installs between the sun gear and the rear internal gear, and can be used to reduce both front and rear unit endplay. The sun gear can only be shimmed to a certain point before it loads the center support. This amount depends on the rear unit accumulated wear. The selective spacers between the rear case and output shaft hub also compensate for rear unit endplay. These OE selective spacers range from .074" to .118" thickness (Figure 16 and charts).



2. Front Endplay

Place dial indicator on input shaft, pre-load shaft inward, zero-out indicator and pull shaft outward to measure endplay. Suggested front endplay of input shaft is .004-.022". This endplay can be manipulated by adding Sonnax selective washer (.015" oversized) or (.030" oversized) (Figure 17 and charts).

CAUTION: Do not shim a forward drum from the pump support washer. Adding shim material here pushes the sealing rings into a very minimal surface contact on the drums.

Rear Unit Endplay Shims

Sonnax Shim: .010" Thick			
	Thickness	I.D. Notch	No.
OE	.074-.078"	none	1
	.082-.086"	1 tab on side	2
	.090-.094"	2 tab on side	3
	.098-.102"	3 tab on side	4
	.105-.110"	4 tab on side	5
	.114-.118"	5 tab on side	6

Front Unit Endplay Shims

Sonnax Selective: .010" Thick Washer: .094" Thick			
	Thickness	I.D. Color	No.
OE	.060-.064"	Yellow	0
	.071-.075"	Blue	1
	.082-.086"	Red	2
	.093-.097"	Brown	3
	.104-.108"	Green	4
	.115-.119"	Black	5
	.126-.130"	Purple	6

Step 10 Install Checkballs

Install Sonnax checkballs in illustrated locations (Figure 18).

