

# **SURECURE<sup>®</sup>** **AODE ('95 & EARLIER)**

## **Transmission Reconditioning Kit**

### **FULL COMPATIBILITY**

- Full compatibility with 1991 through 1995 units.
- Identified by alignment pins with 13mm heads.

### **IMPORTANT**


This kit fits 1991 thru 1995 only. It will not work on 1996 and later units. For 1996 and later units, order **SC-AODE-1**

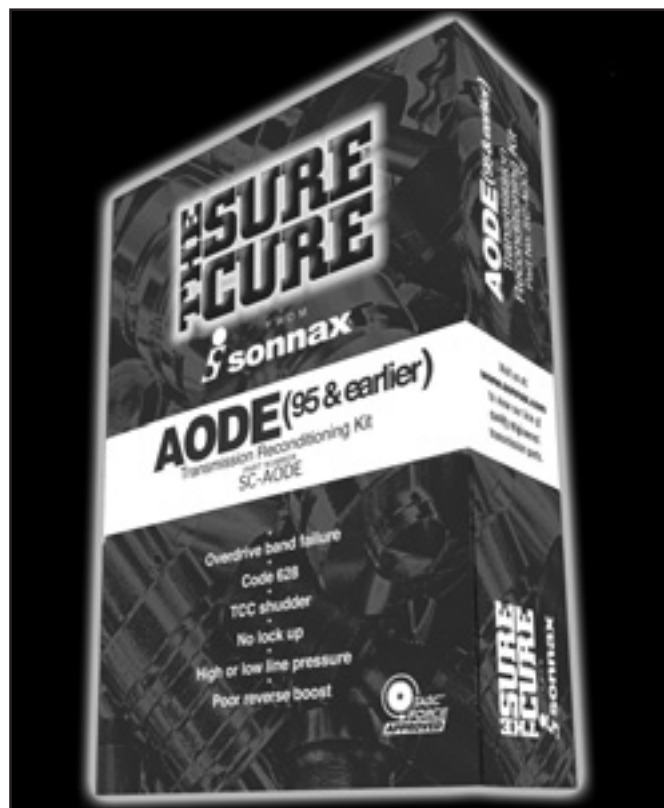
### **VALVE BODY PARTS**

- Pressure regulator valve (**76948-01**)
- PR boost sleeve and valve (**76948-02K**)
- Bypass clutch control valve and sleeve (**76948-04K**)
- 2-3 shift valve endplug (**76999-MED**)
- Solenoid regulator valve clip

### **REASSEMBLY PARTS**

- Overdrive servo pin (**76833E**)
- Intermediate clutch spiral snap ring (**76554RK**)
- Direct drum Teflon<sup>®</sup> rings
- Input shaft Teflon<sup>®</sup> rings
- Forward drum Teflon<sup>®</sup> rings


**sonnax<sup>®</sup>**  
**SC-AODE**



## TORQUE SPECIFICATIONS

### Pump to stator

12 to 16 ft. lbs.

### Pump to case

16 to 20 ft. lbs.

### VB Stiffener Plate

6.5 to 8 ft. lbs.

### Valve body to case

6.5 to 8 ft. lbs.

### Valve body pilot bolts

11.5 to 13 ft. lbs.

### Solenoids

6.5 to 8 ft. lbs.

### MLPS Bolts

5 to 7.5 ft. lbs.

### Oil Pan

9 to 11 ft. lbs.

### Speed sensor bolt

5 to 7.5 ft. lbs.

### Extension housing

16 to 20 ft. lbs.

## CLEARANCE AND ENDPLAY

### Total Unit Endplay

.005" to .020" (selective plastic washer on stator) Red colored #4 usually will get you there.

## PUMP CLEARANCE

**IMPORTANT:** ALL MEASUREMENTS must be done after a new pump bushing is installed. Then place the pump body over the converter hub. Install inner and outer gears. Line up lobes on gears and take measurements.

### Pump pocket clearance is

.0005" to .002"

### Outer rotor to pump body

.006" max.

### Lobe to Lobe

.004" to .006" max

**NOTE:** Excessive lobe to lobe clearance = low pump volume and cooler flow, which kills converter and gear train.

## CLUTCH CLEARANCE

### Forward;

.050" to .070" (selective snap rings)

### Intermediate / 2nd Gear

.010" to .020" (selective steels)

**NOTE:** Use an H-gauge to check clearance. If you do not have one, make sure top steel is flush or just below the pump gasket surface.

### Reverse input

.040" to .060" (selective snap rings)

### Direct (selective snap rings)

4 friction - .040" to .050"

5 friction - .050" to .060"

6 friction - .060" to .070"

## BAND ADJUSTMENT

### Low Reverse band:

.250" (selective servos)

Here's how to check it:

1. Install servo assembly into case.
2. Use the back of a hammer handle to push down on the servo until it stops.
3. Measure the distance between the bottom of the snap ring and servo cover. This is your clearance.
4. Adjust by grinding or welding end of servo pin.

### OD band: (non adjustable)

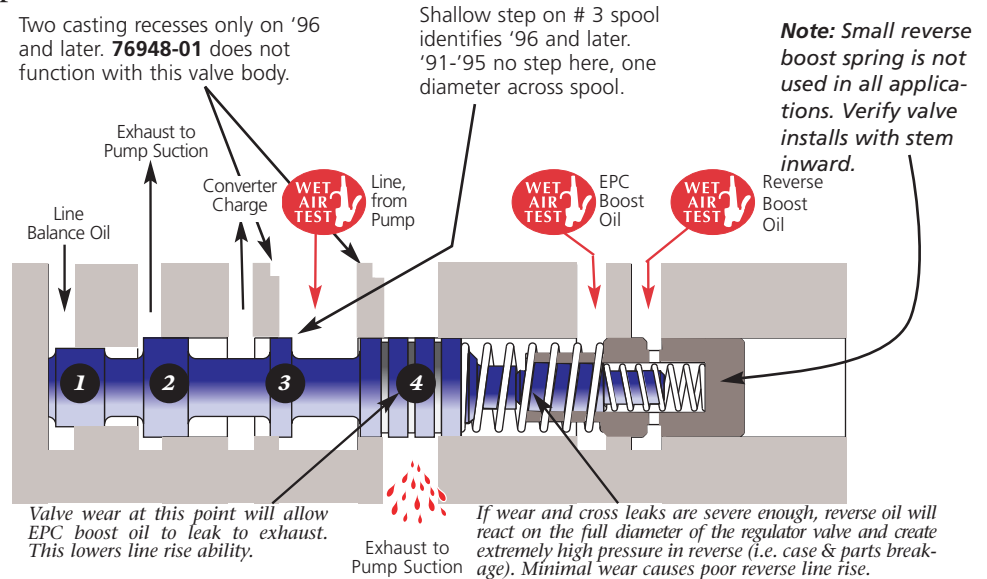
**Non adjustable** - However, once the pump is tight and the OD servo is installed, take a pair of pliers and make sure you can turn the output shaft in both directions. If the output shaft turns one way, the band is too tight. Fix it by grinding the pin shorter.

## VALVE IDENTIFICATION (76948-01, 76948-09 APPLICATION)

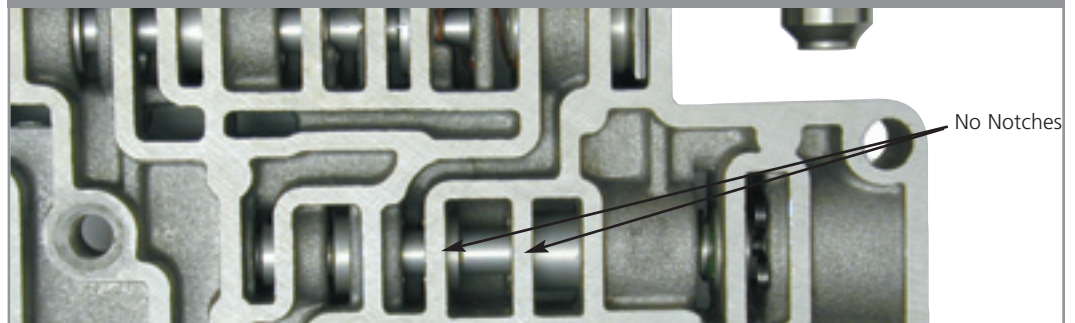
**76948-01** is designed to replace the valve identified below, for '91-'95 applications only! These units will not have a step on the # 3 spool. Valve bodies will have alignment pins with 13mm heads. **76948-01** is included in the SC-AODE kit.

**76948-09** is designed for use with '96 & up transmissions. In 1996 the valve body was changed to include smaller diameter alignment pins. These later design pins are 10mm at the bolt head and .173" pin diameter. The valve body casting is recessed in two places and the # 3 spool is stepped. **76948-09** is included in the SC-AODE-1 kit.

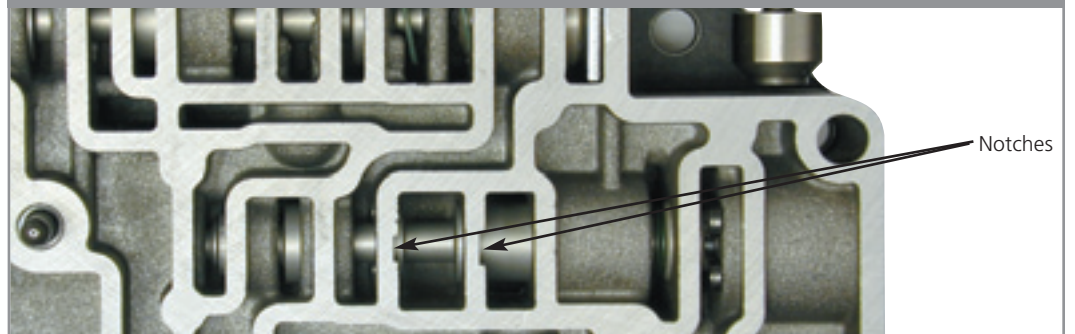
Installation of **76948-01** in a '96 and later unit will result in low line pressure in drive and/or reverse. Pressure will increase with engine RPM but only to a maximum of 50 to 75 psi.



## '95 & EARLIER-NO NOTCHES



## '96 & LATER-NOTCHES



## TECH TIP

\* Cooler return line = Rear line

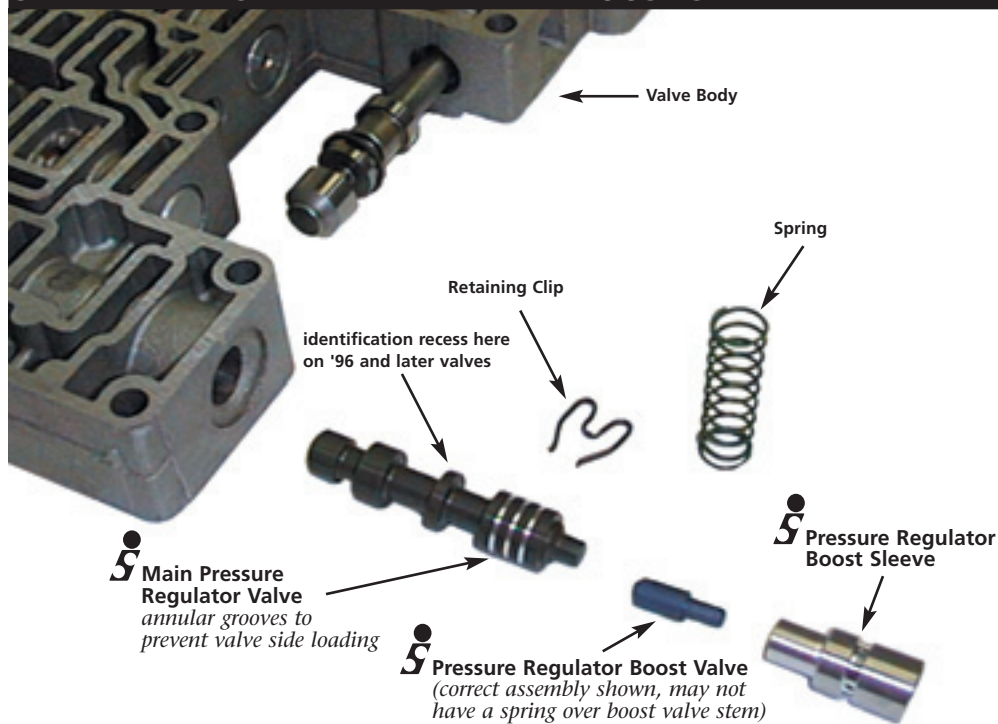
\* Check the inner ring area of the stator support very carefully. Damage here can cause low forward clutch pressure, resulting in a burned OD band.

\* Always replace the 2 shift solenoids on every rebuild. Restricted shift solenoids can cause a neutral condition at heavy throttle from a stop.

\* It is a good idea to re-torque the valve body at the 2 week check. This will help reduce cross leaks of line pressure into the EPC circuit, a major cause of excessive line pressure.

\* Always use the late-style one-piece molded rubber 2-3 accumulator piston in place of the earlier aluminum piston. Ford part # F7AZ-7H292-AB.

## STEP 1 INSTALL PR VALVE AND BOOST SLEEVE KIT

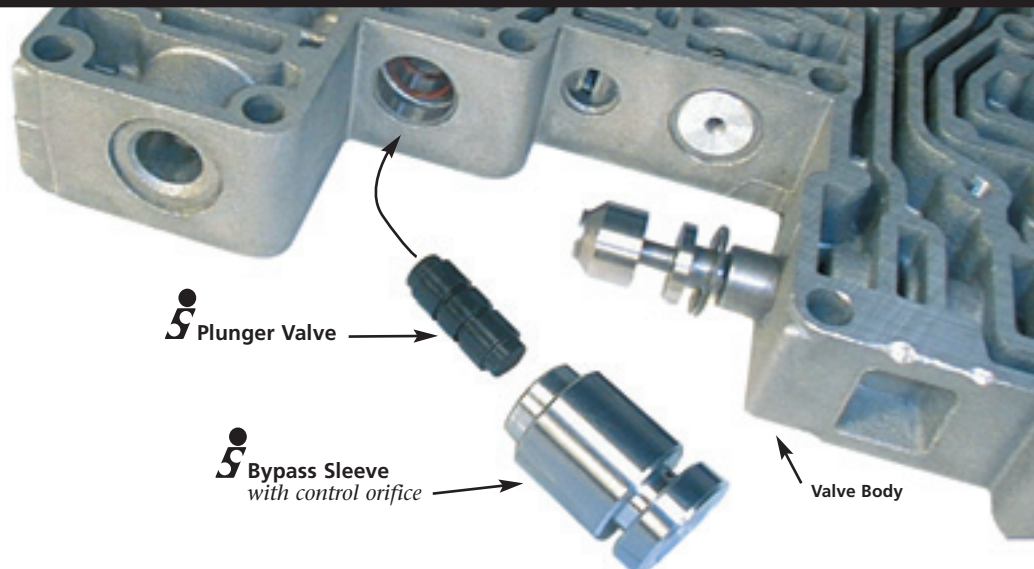


### INSTALLATION INSTRUCTIONS (identify valve body & valve application. See illustrations.)

1. Remove the OEM clip, PR boost valve and sleeve assembly, springs and PR valve. Save the clip, large spring and the small spring from inside the boost assembly if present in the OEM lineup.
2. Lubricate the replacement valves prior to installing. When returning the parts to the valve body, the main pressure regulator valve should be installed first, with the small diameter spool at the bottom of the valve body bore.
3. Return the large OEM spring to the bore.
4. The small reverse boost spring was eliminated in later applications. This spring is not required. If your application has the spring, you may reinstall it. The spring will return the boost valve and result in a slightly quicker reverse line rise.
5. Verify the reverse boost valve is assembled with smaller diameter stem into sleeve first.
6. Push the boost sleeve assembly into the valve body, open end first, just far enough to reinstall the retaining ring.

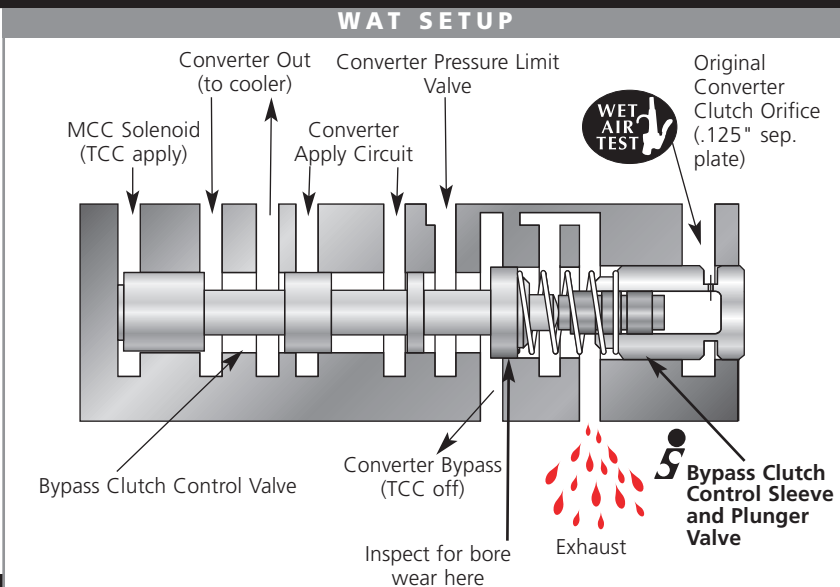


## STEP 2 INSTALL BYPASS CLUTCH CONTROL SLEEVE & VALVE



### AREAS TO BE INSPECTED FOR TCC COMPLAINTS

- Installing **76948-04K** bypass clutch valve and sleeve will correct a common problem associated with TCC complaints caused by valve bore wear at the largest diameter spool. Insert the OEM valve backward, partway into its sleeve bore. If the valve has excessive wiggle clearance or sags, the bore is worn. Wet Air Test may be done before and after valve replacement to verify the repair (see illustration).
- Valve body gaskets should be retorqued after reaching operating temperature.
- The Teflon™ sealing rings on the turbine shaft and the stator bushings are critical.
- Use fresh Mercon 5 or Chrysler 7176 ATF.
- Converter friction material may be glazed or defective.

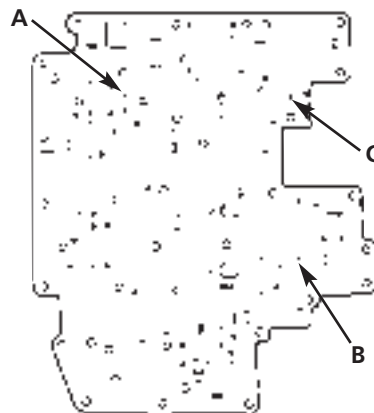


### INSTALLATION INSTRUCTIONS AND MODIFICATIONS TO TCC APPLY

1. Remove the original bypass clutch control sleeve and plunger valve from the valve body and discard.
2. Up to 1995: For firmer quicker TCC apply, install the Sonnax sleeve as is. For OEM TCC apply feel, perform the sleeve modification in step 3.
3. For OEM apply feel, using a  $\frac{1}{16}$ \" drill bit, drill through existing Sonnax sleeve orifice hole and out through the other side of the sleeve.
4. Install plunger and sleeve, ensuring the retaining clip does not block the sleeve orifice hole.
5. Perform the separator plate modifications shown to the right (hole \"B\" will already be enlarged in some applications).

#### TO ENSURE BYPASS/TCC SYSTEM HAS FULL CONTROL

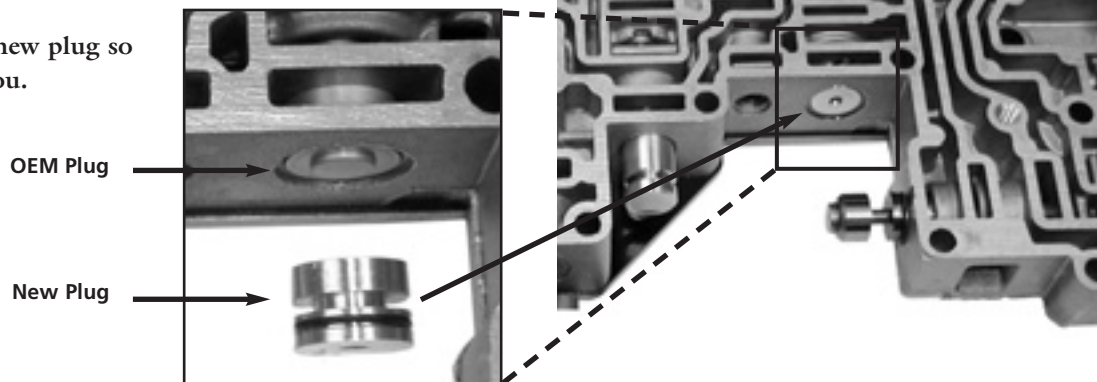
1. Drill hole marked \"A\" out to .062\".
2. Drill hole marked \"B\" out to .062\".
3. No need to alter hole marked \"C\" as Sonnax sleeve corrects improper orifice size.



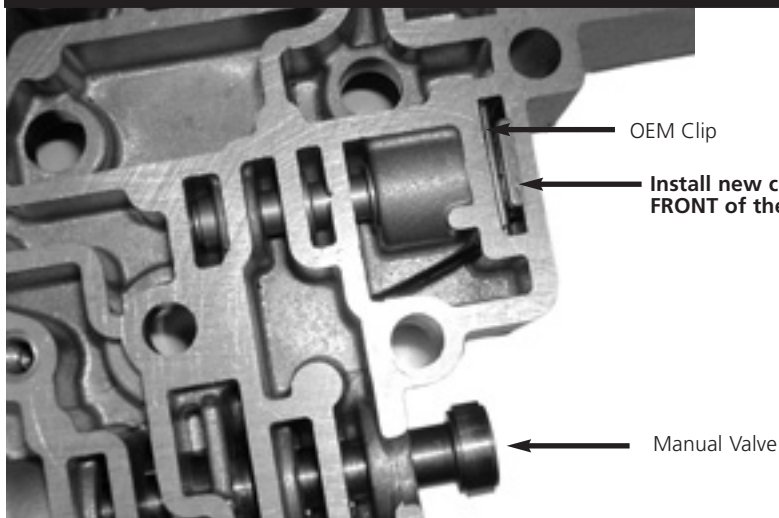
### STEP 3 INSTALL 2-3 SHIFT VALVE END PLUG

#### 2-3 End Plug

Discard OEM plug. Install the new plug so the o-ring faces OUT toward you.



### STEP 4 INSTALL SOLENOID REGULATOR VALVE CLIP

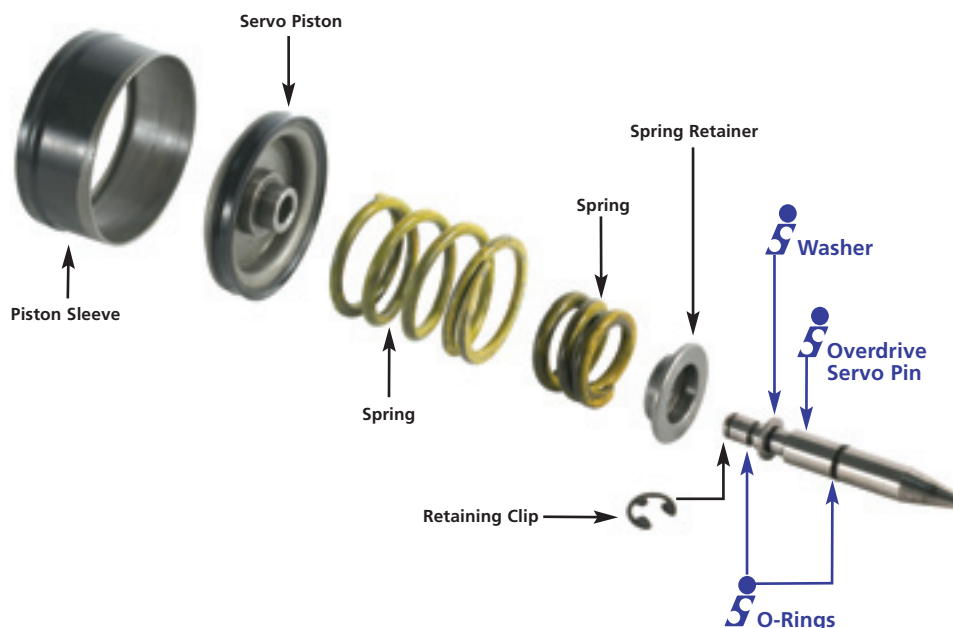


#### Solenoid Regulator Valve

Scotchbrite® bore to remove ridge. Valve is prone to hang-up. Install Sonnax clip in FRONT of the OEM clip as shown.

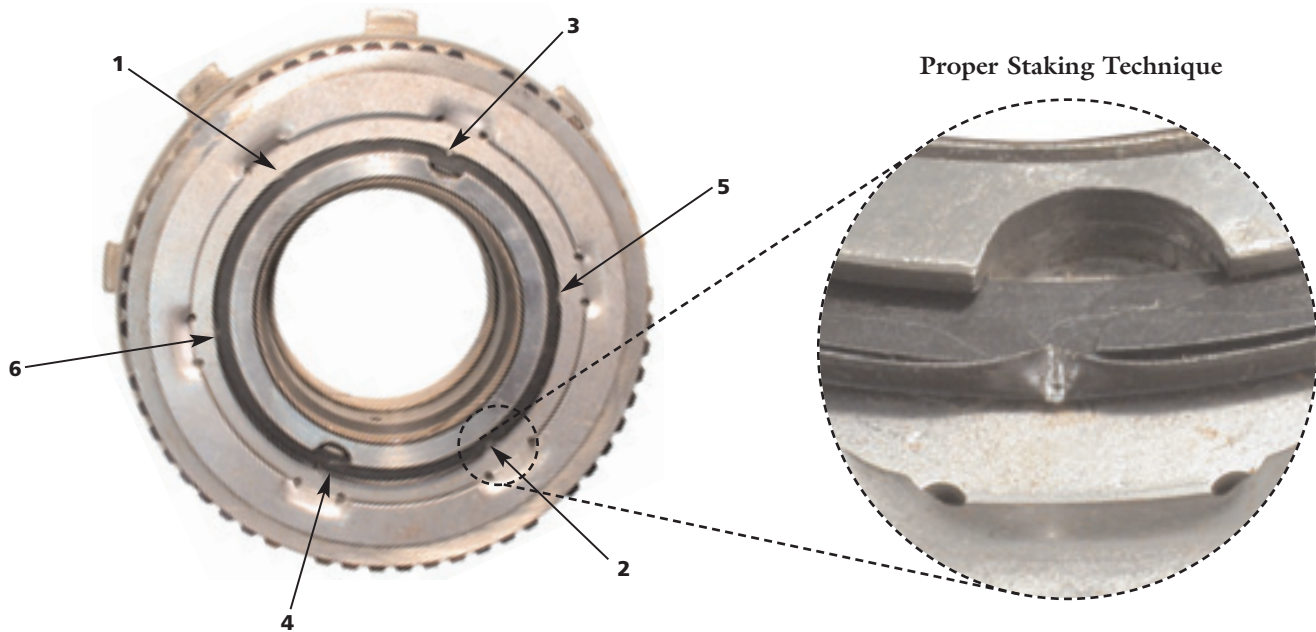
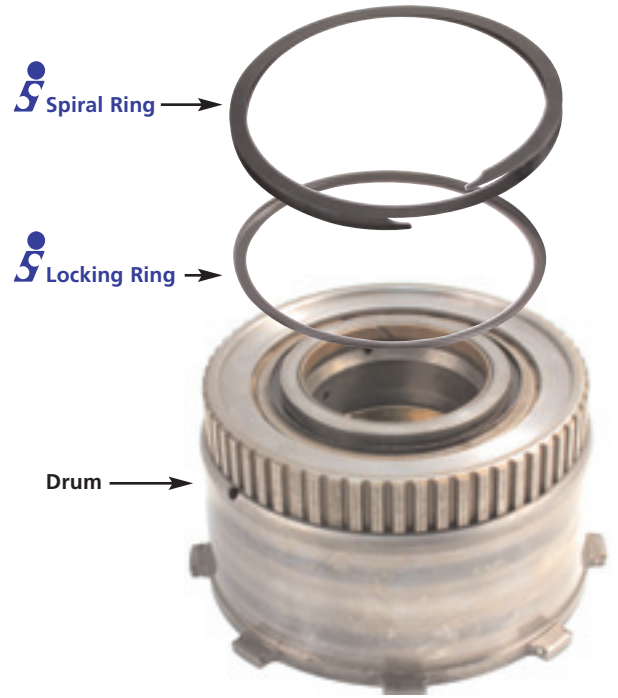
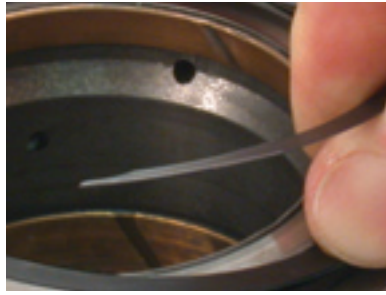
### STEP 5 INSTALL OVERDRIVE SERVO PIN

1. Remove sharp edge of overdrive servo pin bore in case.
2. Assemble the overdrive servo pin with o-rings. If a firmer 3-4 shift is desired, place washer on pin against shoulder to preload spring.
3. Install spring seat on top of washer or shoulder, followed by spring, piston and E-clip.
4. Assembly may be easier if piston is compressed in a bench vise to allow E-clip installation.
5. Before installation of piston assembly into the sleeve, pre-lube and “roll” the o-ring over the bench to preset its O.D.

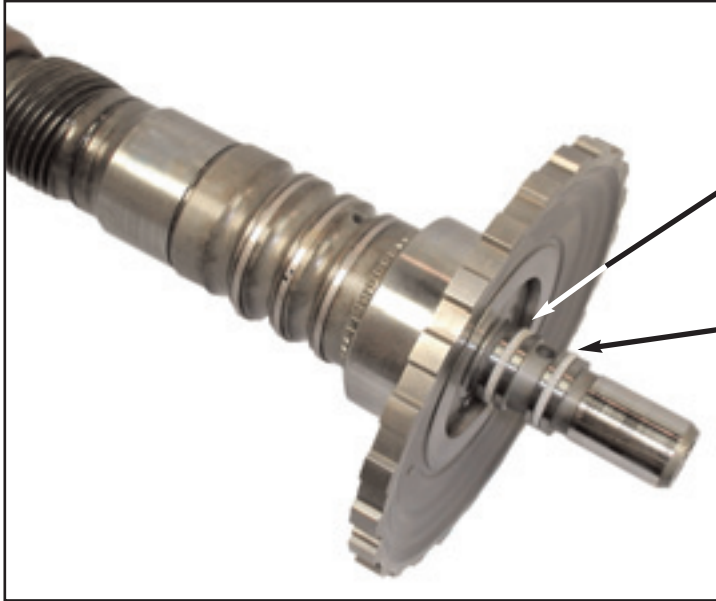


## STEP 6 INSTALL INTERMEDIATE CLUTCH SPIRAL SNAP RING

1. Remove and discard the OEM snap ring from the intermediate roller clutch or mechanical diode assembly.
2. Install the locking ring, cup side facing up, as shown.
3. Walk the spiral ring into the retaining groove as pictured. The locking ring may need to be moved for correct spiral ring positioning.
4. Make sure the spiral ring is fully seated in the groove all the way around the assembly.
5. Stake the locking ring in six equally spaced places around the outside. (Refer to photo for the proper staking sequence.)



## STEP 7A DIRECT DRUM UPGRADE & WET AIR TEST



### TEFLON® RINGS

Discard rings on output shaft & replace with the special Teflon® rings in the kit.

No nicks allowed on ring lands.



### DIRECT PISTON

Checkball in direct piston is prone to leak. Make sure you flush it out with WD40 & reseal it with a small punch & hammer.



### HERE'S HOW TO CHECK THE DRUM

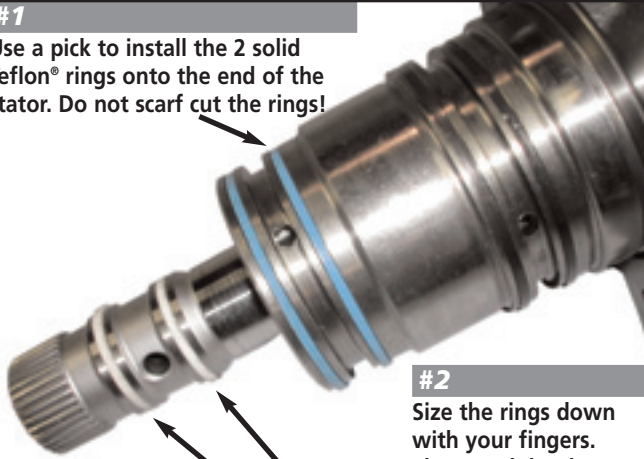
1. Squirt ATF into apply hole.
  2. Blow into direct drum feed using 30-60 psi.
  3. There must be no leaks (air/ATF) at output shaft to direct drum!
- Direct drum leaks? Check for worn drum bushing, ring grooves in drum, leaking checkball or nicks in ring grooves.



## STEP 7B FORWARD DRUM UPGRADES

### #1

Use a pick to install the 2 solid Teflon® rings onto the end of the stator. Do not scarf cut the rings!



### #2

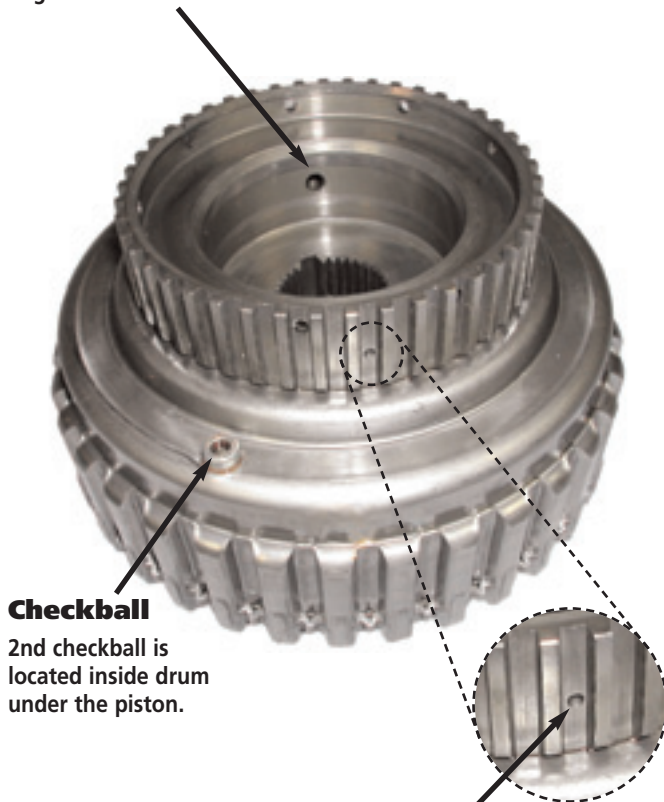
Size the rings down with your fingers. Then pre-lube the rings. A 50/50 mix of ATF & STP works best.

### #4

Press input shaft out of AODE drum. Sand ring surface with 320 grit. Use a crosshatch pattern. Next, buff the bore with Scotchbrite® to remove sharp edges from feed hole.

### #5

Install solid Teflon® rings onto input shaft. Resize rings with your fingers. Pre-lube rings & install into stator for final sizing.



### Checkball

2nd checkball is located inside drum under the piston.

### IMPORTANT

This orifice ends up full of debris when run through parts washer. Flush & blow it out very thoroughly. Clean the 2 checkballs out with WD40. Plugged orifice or checkballs = delayed forward.



### #3

You need an AOD forward drum for this step to use as a sizing tool. The drum has a larger bevel on it for the sealing rings. You will need to remove the input shaft.

Set AODE stator down onto the AOD drum. Work the edges of the rings with a pick & ease the stator down into the drum until you need it for assembly later.

### #6

Set AODE stator & shaft back onto AOD drum to let size until forward drum is built. When AODE drum is ready, you can press input shaft back in. This will take a little more time & patience.



### NOTE

If you don't have a press or AOD fwd. drum you can still install the rings. It just will take a little more time & patience. Check ball – 2nd checkball is located inside drum under the piston.