

Smart-Tech[®] Drum Module

Part No.
34555-01K

Forward Housing & Piston

- Forward Piston Housing
- Forward Piston
- Forward Piston Return Springs (16)
- Forward Spring Retainer
- Forward Snap Ring
- O-Ring 1.674"
- Lip Seals (2)

Direct Housing & Piston

- Direct Housing Assembly
- Direct Piston
- Direct Piston Return Springs (26)
- Direct Spring Retainer
- Direct Snap Ring
- O-Ring 2.737"

Sprag Shaft

- Sprag Shaft
- Front Sprag Retainer Plate
- Heavy Duty Sprag 36 Element
- Outer Sprag Race
- Rear Sprag Retainer Plate
- Sprag Retainer Screws (4) 6-32 x 5/16"
- Quad Ring Seals (2)
- Anti-rotation Seal Rings (2)

Assembly Components

- Drum
- Pressure Plate
- Outer Snap Rings (4)
- Bearing Small
- Forward Clutch Hub
- Bearing Large
- Direct Clutch Hub
- Steel Clutch Plates (4) .060"
- Steel Clutch Plates (11) .077"
- Friction Clutch Plates (13) .080"
- Clutch Separators (60) .103"

Patent Nos. 11,773,925 B2 & 12,085,132 B2

GM TH400



Watch a step-by-step video of the key assembly and installation steps by visiting this product page at www.sonnax.com or by scanning the QR code shown here.

Sonnax Smart-Tech drum module for racing TH400 applications improves on track performance and consistency, leading to quicker ET's, more wins and greater reliability.

This kit replaces both forward and direct drums and includes everything from intermediate sprag up to the back of the pump. Input shafts are available separately.

The instructions begin with the four main assemblies: forward housing and piston group, direct housing and piston group, sprag shaft group and pressure plate installation into the drum. Then the main assemblies are brought together with remaining components for a fully assembled module.

TH400 inefficiency results from the fact that the direct drum counter rotates, spinning backwards in 1st Gear, brakes to a complete stop on the 1-2 shift, then restarts from zero RPM to input RPM on the 2-3 shift. Significant energy is wasted through this cycle that robs power, upsets traction on the shifts and contributes to broken internal parts. This kit improves efficiency and safety of the TH400 by significantly reducing the weight, moment of inertia and energy required to stop and restart the counter rotating components (Figures 1 & 2).

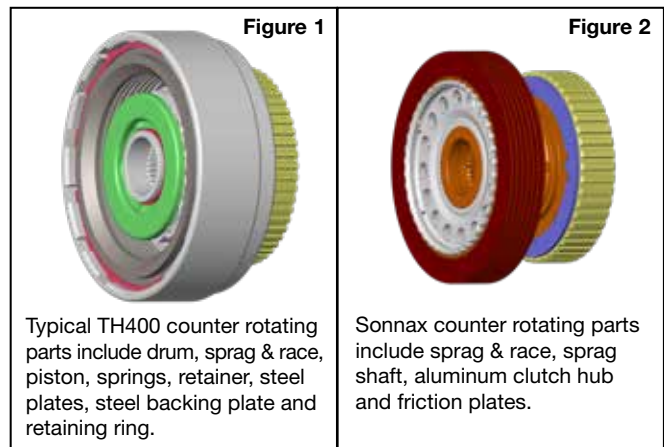


Figure 1
Typical TH400 counter rotating parts include drum, sprag & race, piston, springs, retainer, steel plates, steel backing plate and retaining ring.

Figure 2
Sonnax counter rotating parts include sprag & race, sprag shaft, aluminum clutch hub and friction plates.

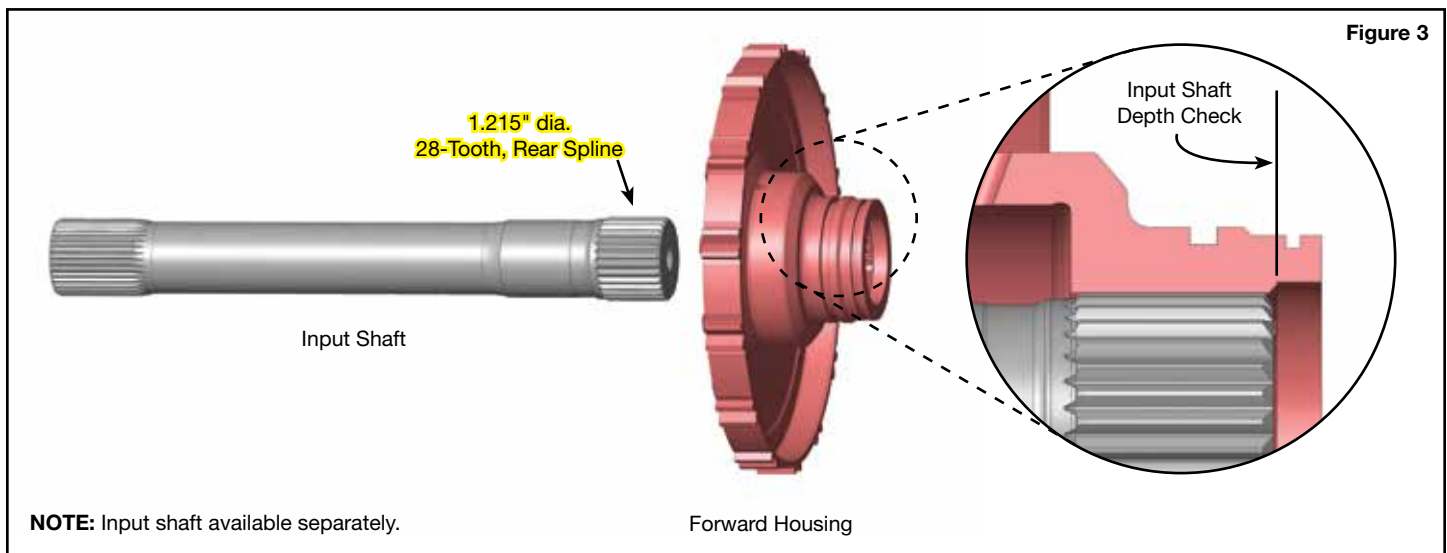
NOTES: For racing applications that do not use front band.



- See page 8 for Sonnax shaft options.
- On the center support do not install sealing ring at the 2nd ring location (from front).
- Use OE style intermediate clutches. Do not use larger inner diameter C6 style clutches.

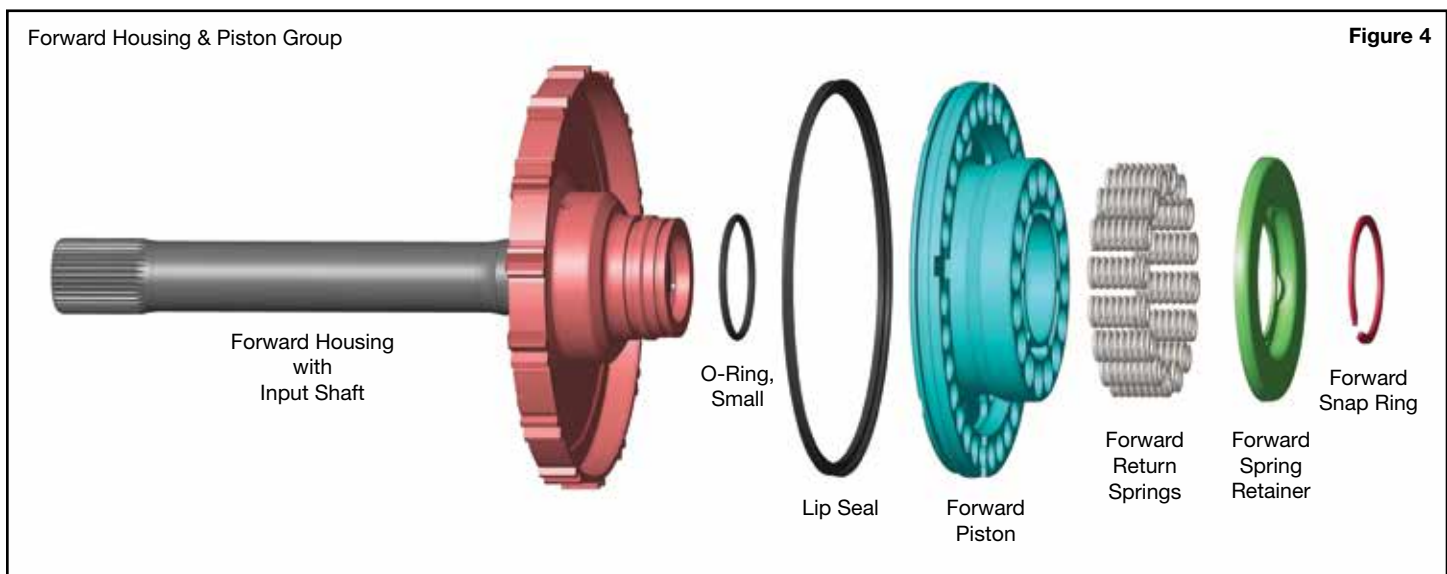
1. Preparation

- For non-Sonnax shafts, verify rear spline is 28 splines and 1.215" diameter.
- Carefully press shaft into forward housing (Figure 3).
- Verify rear of input shaft has proper depth. Rear of shaft should not extend any further inward than step in bore.



2. Forward Housing & Piston Group

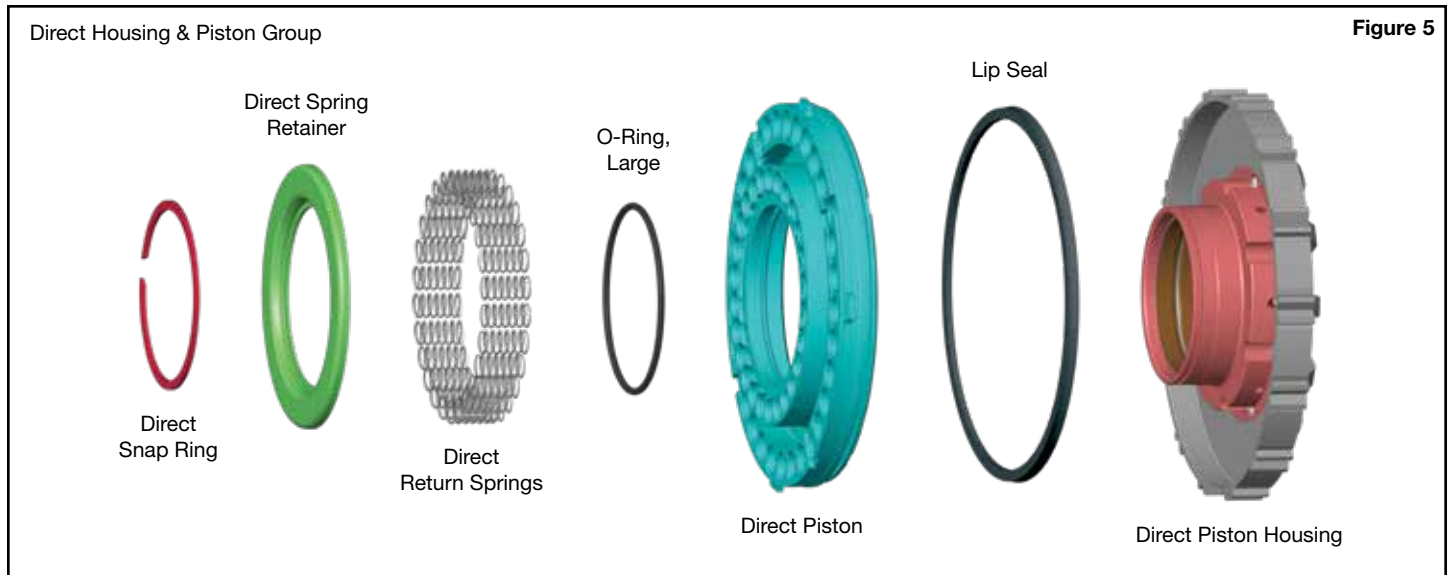
Assemble forward piston and related parts into forward housing (Figure 4).



3. Direct Housing & Piston Group

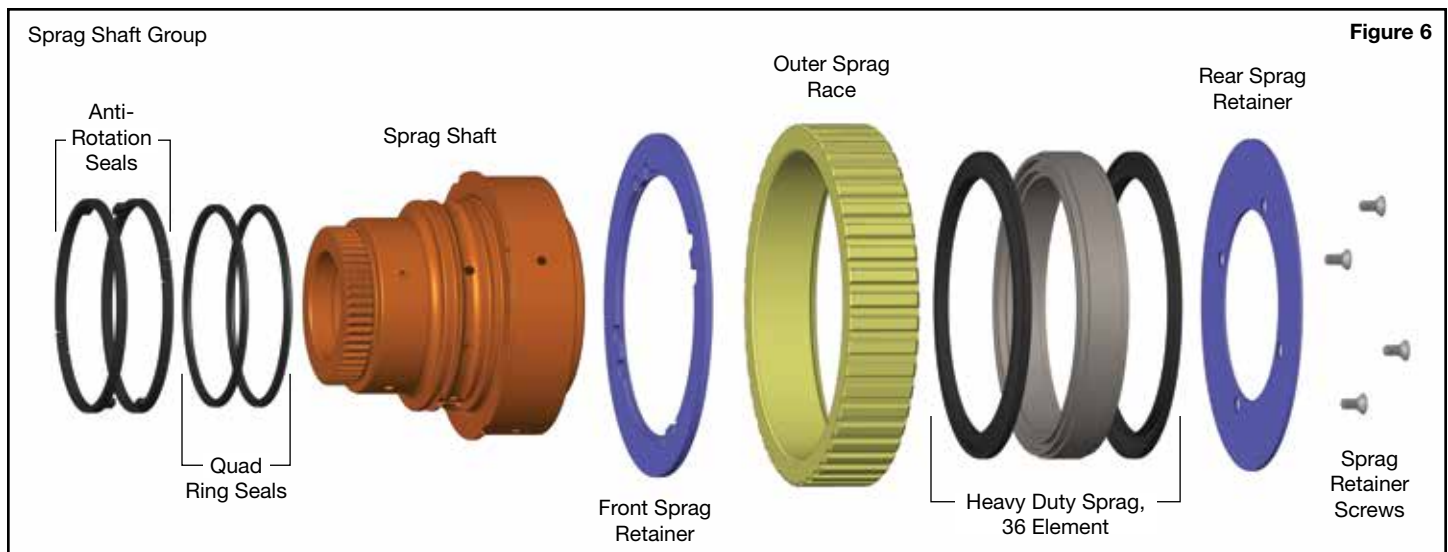
NOTE: Increase size of bleed hole in direct housing as required for trans brake installation.

Assemble direct piston and related parts into the direct housing (**Figure 5**).



4. Sprag Shaft Group (Figure 6)

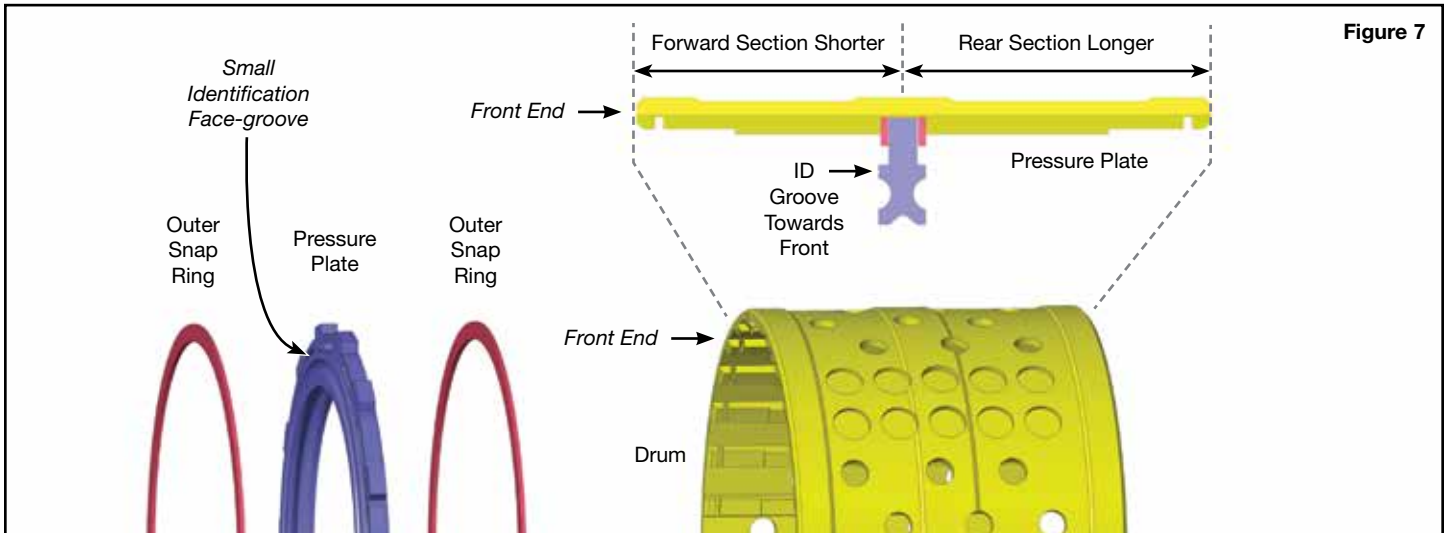
- Install front sprag retainer onto sprag shaft making sure tabs on front sprag retainer engage notches on sprag shaft.
- Install sprag element and outer race making sure sprag outer race freewheels in clockwise direction.
- Install rear sprag retainer. Verify sprag outer race freewheels in direction of arrow on rear sprag retainer.
- Install four (4) rear sprag retainer screws. Apply a small amount of red thread locker to threads, tighten with #15 Torx driver to 17 in.-lb.
- Install rubber quad ring seals into seal ring grooves. Verify quad rings are not twisted or rolled over.
- Install anti-rotation seal rings with ring end gaps offset 180° from each other.
- Test fit sprag assembly into direct housing.



5. Pressure Plate Installation (Figure 7)

- NOTES:** Front of drum is marked with "F" on front edge.
Front face of the pressure plate has small identification groove that must face forward.

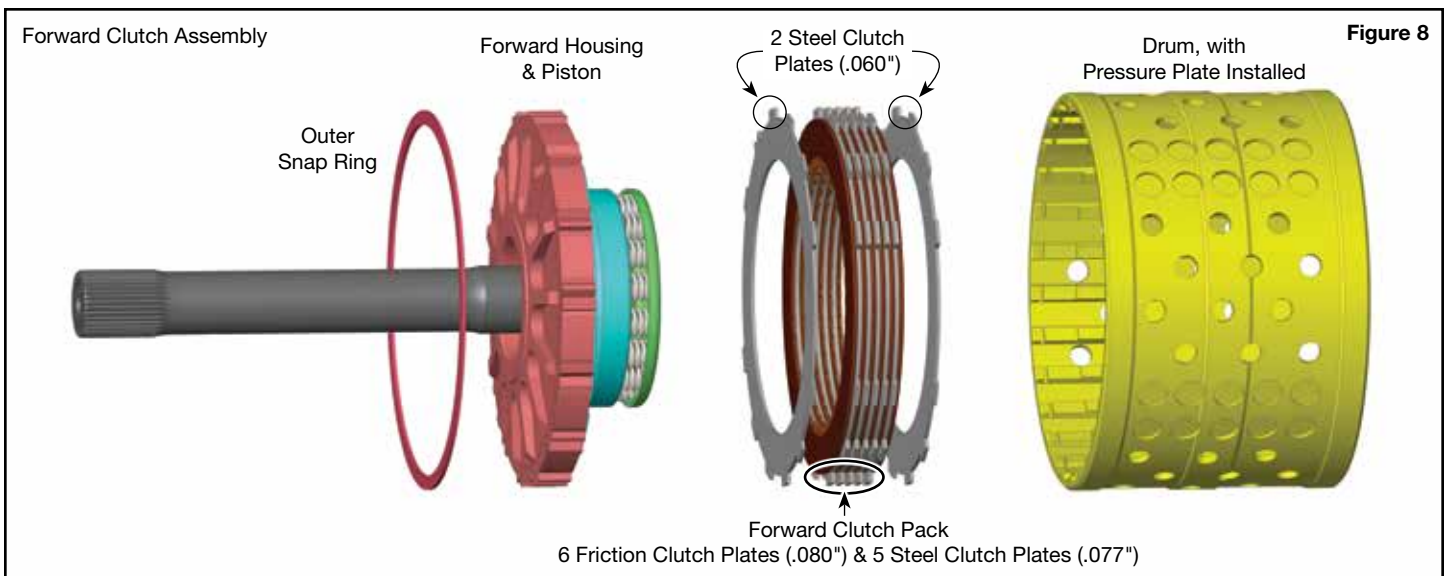
- Install one of the large outer snap rings into one of the grooves in the middle of the drum.
- Install the pressure plate with the small identification face-groove facing same direction as front of drum.
- Install another large outer snap ring to secure pressure plate. Offset snap ring end gaps to keep balance as neutral as possible.



6. Front Section, Forward Clutch Assembly (Figure 8)

- NOTES:** For optional clutch separators, see page 6.

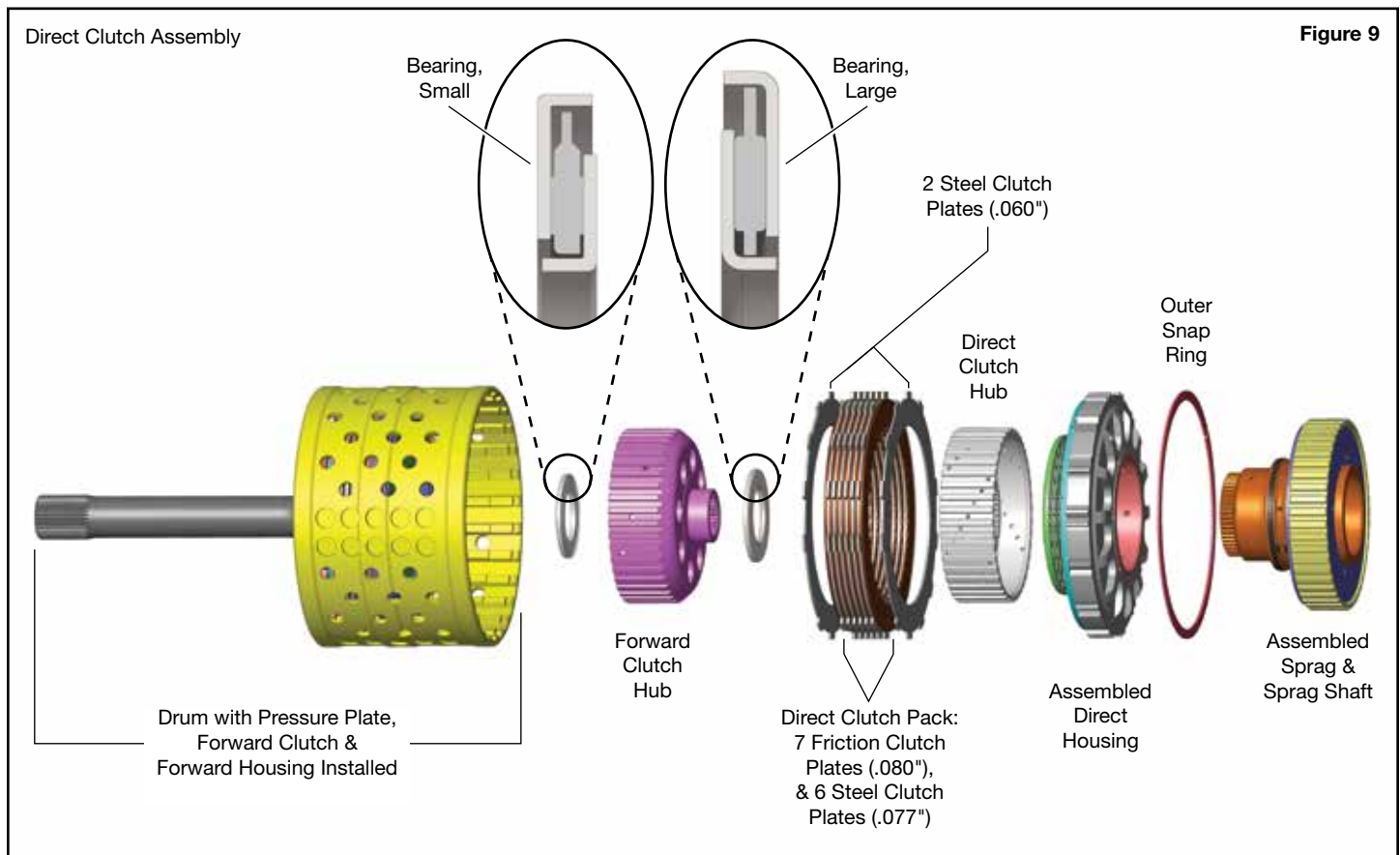
- Install one .060" steel against pressure plate.
- Follow with alternating six .080" frictions and five .077" steels.
- Install one .060" steel between last friction and forward piston.
- Install forward piston housing assembly into drum.
- Install large outer snap ring.
- Clutch clearance can be checked through hole on side of drum.
- Target clearance is .010" per friction plate or .060".
- Clutch clearance can be adjusted as desired by changing steel thickness, clutch thickness or removing up to .050" from forward piston.



7. Rear Section, Direct Clutch Assembly (Figure 9)

! **NOTES:** For optional clutch separators, see page 6.

- Install smaller of the two bearings onto the forward piston housing, reference (Figure 9) for bearing orientation.
- Install forward clutch hub into forward clutches. Verify forward clutch hub is seated on bearing and not hung up on a friction plate.
- Install larger of the two bearings onto the forward hub, reference (Figure 9) for bearing orientation.
- Install one .060" steel against pressure plate.
- Follow with alternating seven .080" frictions and six .077" steels.
- Install one .060" steel between last friction and direct piston.
- Install direct clutch hub into direct clutches. Four lube notches on inner spline of hub should be facing up (rearward). Verify direct clutch hub is seated on bearing and not hung up on a friction plate.
- Install direct piston housing assembly into drum.
- Install large outer snap ring. Offset snap ring end gaps to keep balance as neutral as possible
- Clutch clearance can be checked through hole on side of drum.
- Target clearance is .010" per friction plate or .070".
- Clutch clearance can be adjusted as desired by changing steel thickness, clutch thickness or removing up to .120" from direct piston.



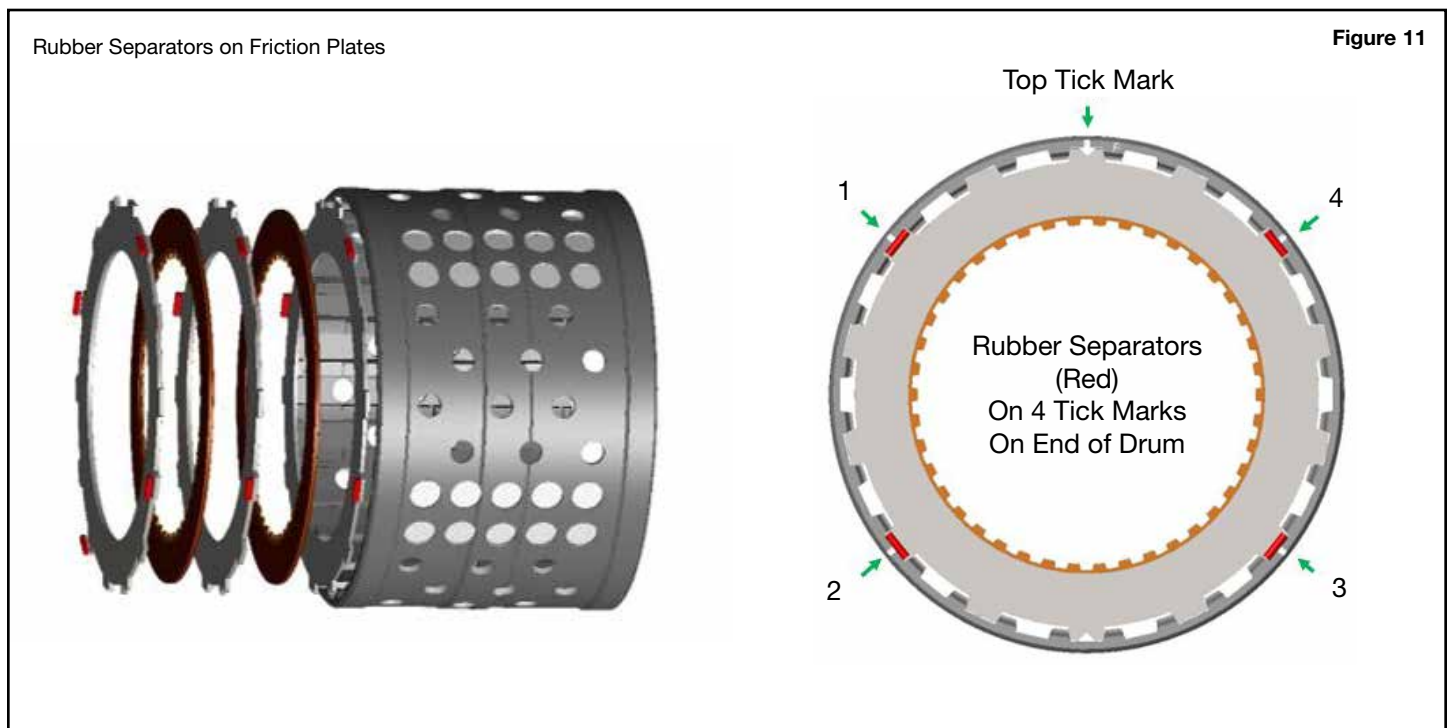
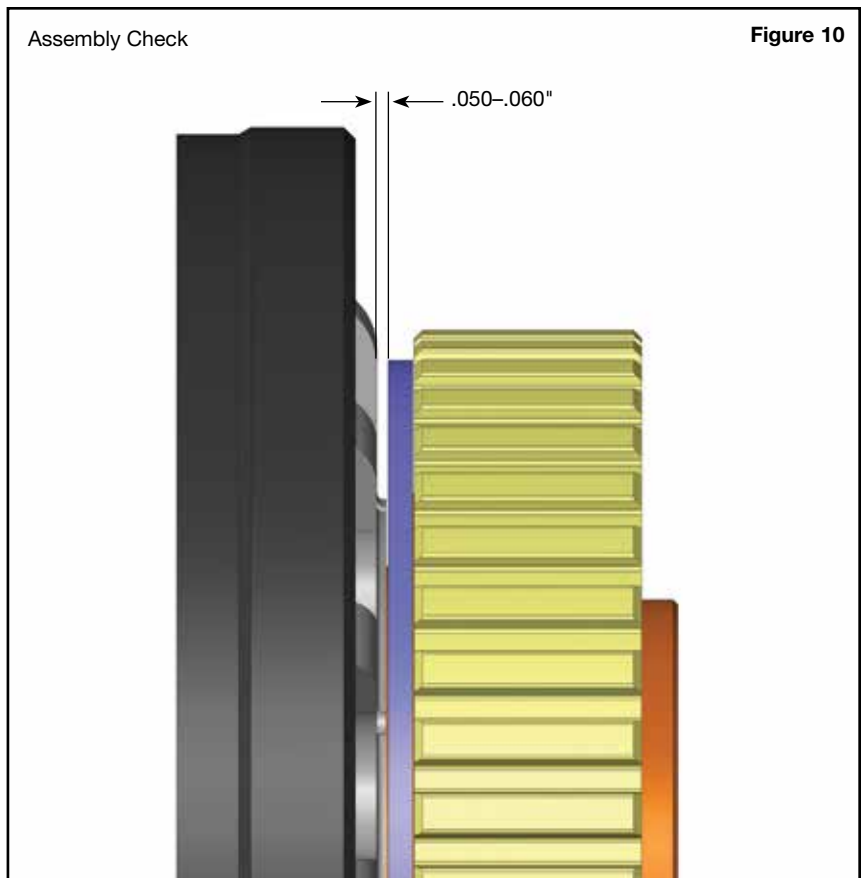
8. Final Assembly

- Test fit sprag assembly into direct housing again.
- Verify small gap between direct housing and sprag retainer of about .050-.060" (**Figure 10**).
- Remove sprag assembly from housing.
- Install sprag assembly into intermediate clutches in transmission.
- Carefully lower drum assembly down onto sprag assembly.
- Install pump and thrust washer.
- Check and set end play to .020" +/- .005".
- After end play is set, but before final assembly, verify clearance between housing and rear of pump cover.

Optional Clutch Separators (Figure 11)

NOTES: Clutch separators are not needed for all applications but can be installed for greater efficiency.

Four rubber separators should be installed for each friction plate.



Sonnax Service Part List				Figure 12
Fig.	Part Description	Part No.	Qty	OE Application
4	Forward Piston Housing	34555-21R	1	
4	Forward Piston	34555-22R	1	
4	Forward Piston Return Spring	34555-37R	16	
4	Forward Spring Retainer	34554-12	1	TH400 Fwd/Dir
4	Forward Snap Ring	34577-01	1	TH400 Fwd/Dir
4	O-Ring, 1.674"	34555-131R	1	
4 & 5	Lip Seal, Fwd & Direct Piston	34555-43R	2	TH400/4L80E Fwd & Dir Outer
5	Direct Housing Assembly	34555-24R	1	
*	Direct Housing, Outer	34555-24AR	1	
*	Direct Housing, Inner	34555-24BR	1	
*	High RPM Checkball Capsule	57510-01	1	Multiple
*	A Clutch Drum Bushing	95030-03	2	ZF6HP19/26/28
*	Screw, Torx 8-32 X 3/8"	34555-10R	7	
*	O-Ring, 79 mm I.D.	34555-24	1	
5	Direct Piston	34555-25R	1	
5	Direct Piston Return Spring	34555-38R	26	
5	Direct Spring Retainer	34555-32R	1	
5	Direct Snap Ring	34555-36R	1	
5	O-Ring, 2.737"	34555-148R	1	
6	Sprag Shaft	34555-29R	1	
6	Front Sprag Retainer Plate	34555-47R	1	
6	Sprag Element	34658	1	4T80E
6	Outer Sprag Race	34555-30R	1	
6	Rear Sprag Retainer Plate	34555-31R	1	
6	Screw, Torx 6-32 X 5/16"	34555-87R	4	
6	Quad Ring Seal	34555-41R	2	4T80E
6	Anti-rotation Seal Ring	34555-42R	2	4T80E
7	Drum	34555-28R	1	
7	Pressure Plate	34555-27R	1	
7, 8, 9	Outer Snap Ring	34555-39R	4	TH400/4L80E Fwd & Dir Outer
9	Bearing, Small	77409	1	4L60E Input Housing
9	Forward Clutch Hub	34555-23R	1	
9	Bearing, Large	96403R	1	
9	Direct Clutch Hub	34555-26R	1	
8 & 9	Steel Clutch Plate, .060" Thk	34555-45R	4	TH400/4L80E Fwd & Dir
8 & 9	Steel Clutch Plate, .077" Thk	34555-44R	11	TH400/4L80E Fwd & Dir
8 & 9	Friction Clutch Plate, .080" Thk	34555-46R	13	TH400/4L80E Fwd & Dir
11	Clutch Separator, Bag 60pc	ORCS-103-380	1	
*	Seal Kit	34555-01SK	1	

*Not Illustrated

Optional Heavy Duty & Extreme Shafts for TH400

Heavy Duty Input Shaft 30280-01 (Figure 13)

For use without internal turbine support.

- Shaft Material: 300M
- Shaft Dia.: 1"
- Front Spline Tooth Count: 30

Heavy Duty Input Shaft 30280-02 (Figure 14)

For use with turbine support bushing in cover.

- Shaft Material: 300M
- Shaft Dia.: 1"
- Front Spline Tooth Count: 30

Extreme Duty Input Shaft 35280-02 (Figure 15)

For use with turbine support bushing in cover.

- Shaft Material: 300M
- Shaft Dia.: 1.125"
- Front Spline Tooth Count: 35

Extreme Duty Input Shaft 27280-02 (Figure 16)

For use with pumps converted for 27-spline, 1-3/16" shaft configuration.

- Shaft Material: 300M
- Shaft Dia.: 1-3/16"
- Front Spline Tooth Count: 27

Extreme Duty Main Shaft 34672-05 (Figure 17)

- Material: Aermet



Figure 13



Figure 14



Figure 15



Figure 17

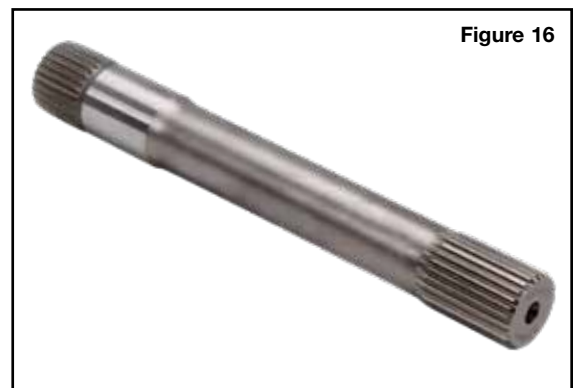


Figure 16