

# sonnax<sup>®</sup> PERFORMANCE

faster

tougher

stronger



# TH400

TRANSMISSION PARTS

VOL. 2

# Smart-Tech® Drum Module

*"All the claims are true, no hype. If you are the type of racer that is always seeking an edge, this is worth it in many different scenarios."*

S. Trance • Hot Rod Drag Week Class Champion

## The GAME-CHANGER for a Faster, Tougher, Stronger TH400

- Increase wheel horsepower, improve acceleration & reduce shock on shifts while ramping up durability & safety
- All-in-one kit upgrades forward & direct drums plus everything else from intermediate sprag to back of the pump
- Unique design improves efficiency without reducing capacity
- Easy to assemble & install



When racing a TH400, it's critical to upgrade the forward and direct drums. The key is not only stronger, more durable parts, but improving efficiency for better performance, consistency and safety.

Grab a radical edge over the competition with the Sonnax Smart-Tech drum module. It's the first and only TH400 upgrade to optimize drum function with a unique configuration of both lighter and stronger components. The result: a big boost in transmission efficiency for more power to the ground, traction/stability on the shifts and the best protection you can get against catastrophic drum failure.

Part No. 34555-01K

**Note:** The Smart-Tech drum module is for use only in drag racing applications that do not use a front band.

For maximum durability in all other applications, a Sonnax clutch hub and heavy duty forward drum are recommended.



## HOW IT WORKS

Just like you might run lighter wheels, a lighter driveshaft or rotating assembly in your engine to reduce rotational mass and improve performance, you can achieve a similar effect inside your transmission with the Smart-Tech drum module.



### The OE drum design limits performance.

In a standard TH400, when the unit shifts from 1<sup>st</sup> to 2<sup>nd</sup> to 3<sup>rd</sup>, the direct drum and internal components are spinning up backwards, completely stopping and then re-accelerating to input RPM. At racing RPMs this takes a huge amount of energy and puts a lot of strain on the transmission, which is why parts fail when they hit their limit. The traditional method of installing lighter components to improve performance won't overcome this basic inefficiency of the TH400.



### The Smart-Tech drum module gives you a better option.

Sonnax re-engineered the entire forward/direct drum system so only a few parts counter-rotate instead of the entire direct drum: the inner sprag shaft, aluminum clutch hub and friction plates. Weighing 3.3 lbs less than an aluminum drum, with weight concentrated at the center, the Smart-Tech drum module's direct clutch components take 53% less energy to start/stop/re-start than an aftermarket aluminum drum. This is a HUGE advantage no matter vehicle power level or what type of racing you're looking to do. Plus, direct drums that explode due to overspeeding are simply no longer a threat thanks to the module's unique design.

# INPUT SHAFTS

The forward drum spline on these input shafts is designed to be used with the Sonnax Smart-Tech® drum module, Sonnax heavy duty forward drum or other aftermarket drums with compatible 28-tooth spline.

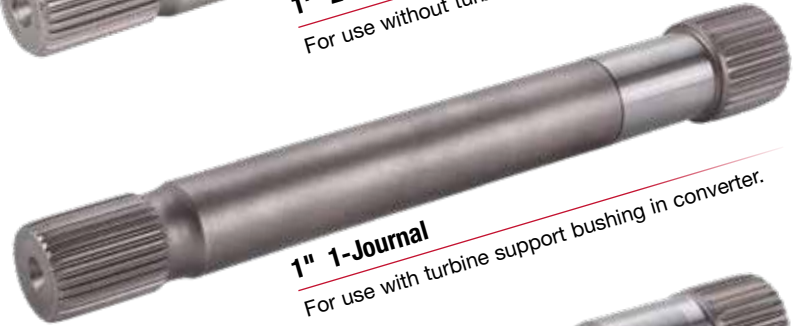
## 1" Heavy Duty

2-Journal Shaft **Part No. 30280-01**

1-Journal Shaft **Part No. 30280-02**

### Max Durability from a Stock-Size Shaft

- Ideal for high horsepower street/strip applications running 1" dia. input shafts
- High-strength 300M steel shaft undergoes additional processing to build-in resistance to fracture



## 1-1/8" Extreme Duty

**Part No. 35280-02**

### 35% Stronger than Standard, 1" Shafts

- 1-1/8", 35-spline shaft is ideal for high-horsepower racing applications
- High-strength, 300M steel undergoes additional processing to build in resistance to fracture

**Note:** Using this 1-1/8" shaft requires changing to a 35-spline turbine hub in the torque converter and use of Sonnax big shaft stator support tube kit 28154S-125 with larger inner diameter.

Sonnax offers several styles of 35-spline performance converter kits for the TH400. Learn more at [www.sonnax.com](http://www.sonnax.com) or talk to a converter builder about options.

# MAIN SHAFTS

## 1" Heavy Duty

**Part No. 34672-01**



### Performance, Durability & Value

- 300M steel shaft recommended for applications up to 1,000HP
- Advanced torsional design, plus spline & cross hole refinements for added strength
- Direct OE shaft replacement

## 1" Extreme Duty

**Part No. 34672-05**



### Most Durable 1" Main Shaft Available

- Aermet shaft recommended for 1,000+ HP applications
- Exceptionally tough, high-strength Aermet steel alloy with proprietary heat treatment stands up to the most extreme horsepower & abuse
- Full spline engagement prevents the rear internal gear, journal-end from twisting off



# Heavy Duty Forward Drum

Part No. 34554-01

Optimum Performance & Reliability  
at ANY Power Level

- Ultra-modern drum delivers both high strength & light weight
- Enhanced with race-ready design features
- Compatible with Sonnax & other aftermarket 28-spline input shafts

## RACE-READY DESIGN FEATURES:

- Optimized for use with rubber clutch separators (sold separately, see back page) for applications with clean neutral setups.
- Clutch spline major diameter is reduced slightly, and two sets of full-length clutch splines added to back up clutch separators.
- Lightening holes correspond to input speed sensor locations in aftermarket cases for more accurate converter and shift data.
- Middle seal is eliminated. An aluminum clutch volume spacer kit 34554-11K is available separately for applications in which clutch fill/drain time is a concern.
- Sonnax high RPM checkball capsule 57510-01 is installed to eliminate pressure drop at high (5500+) RPM — a common problem with OE and other aftermarket checkballs.

For radically improved durability, the Sonnax drum is manufactured from chromoly steel with many unique lightening features. It weighs 3 lbs less than the OE drum and is just 3 oz. heavier than a common aluminum drum, a soft material with huge wear issues. This means racers seeking enhanced performance don't need to switch to an aluminum drum for reduced weight.

## Forward Clutch Hub Front Washer

Part No. 34298-078 5/Bag



A MUST for Every Build!

This unique, .078" washer is .015" thicker than the OE. It installs between the forward drum and forward clutch hub to quickly and easily snug up endplay.

## FORWARD CLUTCH HUBS

### Heavy Duty

Part No. 34322-01



The #1 Aftermarket TH400 Hub

- Ideal for daily drivers, work trucks & mild performance applications
- Forged 1045 steel hub is an ideal upgrade over OE hubs
- Thicker cross-section for increased strength

### Extreme Duty

Part No. 34322-02K



Bearing & Hardened Splines, No Machining Required

- Forged 4140 steel, nitrided & case-hardened splines eliminate spline wear in extreme applications
- Case-hardening at bearing surface cut back to make further mods easier
- .025" Thicker than OE to slightly tighten endplay

Once you've upgraded the critical drum, shaft and hub areas, the Sonnax components below are recommended for enhanced durability in every performance build.

## SMALL BUT MIGHTY UPGRADES

MORE PARTS

### Heavy Duty Low/Reverse Servo Piston

Part No. 34914-01

Direct replacement upgrade made from high-strength, billet aluminum to prevent breakage.



### Adjustable Rear Servo Pin Kit

Part No. 34912-01K

Adjustment range covers the five longest OE pin lengths to allow for accurate setting of the Low/Reverse servo piston travel. The pin features an O-ring groove to prevent leakage of line pressure past the case pin bore.



### Case Saver Retainer Part No. 34762-10



- The ONLY way to prevent lug blow out while retaining the intermediate band
- Salvages cases with one or two blown lugs
- Use with or without intermediate band

### Heavy Duty Intermediate Backing Plate



Part No. 34144HD-01

- .375" Thick plate allows for more options when expanding TH400 clutch capacity
- Stronger material & full set of case lugs prevent failure at higher pressures
- Compatible with OE & aftermarket cases — use with Sonnax case saver retainer to eliminate OE case lug blow out, no plate modifications required

### Shift Lever Kit

Part No. 38512-01K



- O-Ring on the shaft prevents case leakage
- Sturdy, solid steel construction
- Works with all common competition shifters

### Heavy Duty Case Bushing Kit

Part No. 34006-SPB



This kit combines the tried-and-true no-walk case bushing with a high-quality thrust bearing and selective shims that update this area for maximum durability in all applications.

# MORE UPGRADES & REPAIRS

Part numbers in **RED** below should always be considered for performance builds.



Description	Part Name	Part No.	Details
<b>Pump</b>			
Symptoms: Low line rise, 1-2 Soft, 2-3 Soft, Delayed Reverse, Reverse shudder	Boost Valve Kit	34910-01K	ZIP O-Ring style
	Boost Valve Kit	34910-05K	ZIP Factory style
Correct length for proper thread engagement	Front Pump Bolt	28136	5/16-18 x 1.375" Long, 8/bag
Classic, large-ratio boost valve for crisp, clean shifts without harshness	Line Pressure Booster Kit	400-LB1	ZIP
Symptoms: High & uncontrollable line pressure, Delayed converter charge, Poor Reverse engagement	Pressure Regulator Valve Kit	34910-03K	ZIP '71-Later only
Superior wear resistance & fit	Pump Bushing	34034T-01	Precision, PTFE-lined, OE 29511860
High-temperature bronze lining withstands extreme peak temperatures	Pump Bushing	34234B-01	Precision, OE 29511860
Material & design upgrades for added strength	Stator Support Shaft	34910S-01	Heat-treated chromoly
Material & design upgrades for added strength, converts pumps to stronger input shaft	Big Shaft Stator Support Tube Kit	28154S-125	Use with 1-1/8" dia., 35-spline shafts, heat-treated chromoly, including 2 bushings
<b>Internal</b>			
Symptoms: Bearing noise, bearing failure	Bearing Kit	SBK-G10	Includes 3 bearings
Symptoms: Direct clutch failure, Delayed 3rd/Reverse	Direct Drum Sleeve Kit	34838-01K	
Wider & stronger than OE ring	Heavy Duty Clutch Retaining Ring	28124	Intermediate clutch backing plate
Reduces fluid apply volume if clutch apply/release time is a concern in sensitive applications	Clutch Volume Spacer Kit	34554-11K	Billet aluminum, optional component for 34554-01
Symptoms: Excess front endplay, Forward clutch & sealing ring failure	Forward Clutch Hub Washer (Rear)	34301-078	.078" Thick, 5/bag
	Forward Clutch Hub Washer (Rear)	34301-094	.094" Thick, 5/bag
Symptoms: Lost or damaged component	Forward & Direct Clutch Inner Snap Ring	34577-01	OE 8623105, 5/bag
Symptoms: Excess front endplay, Excess rear endplay, Burnt Forward clutch	Front/Rear Unit Endplay Shim	34500-Z	.010" Thick, between sun gear & rear internal gear, 10/bag
Thicker retainer prevents snap rings from detaching at high RPM	Heavy Duty Forward/Direct Spring Retainer	34554-12	.052" Thick with 5 retaining notches, OE 8679934, 5/bag
Prevents pressure drop above 5500 RPM	High RPM Checkball Capsule	57510-01	Retrofit into existing pistons/drums, 5/bag
Symptoms: Shift concerns	Governor	400	2nd Design only
	Governor Gear Kit	402	
Symptoms: Lost or damaged component	Pinion Washer	34875-03	8/Bag
	Pinion Pin	34875-01	4/Bag
	Pinion Thrust Washer	34875-04	8/Bag
	Planetary Rebuild Kit	34875RK	
Symptoms: Excess rear endplay	Rear Unit Endplay Shim	34006-05	.005" Thick, fits 2 locations, 10/bag
Reduces clutch drag	Rubber Clutch Separator	ORCS-070-380	.070" Dia., 70/bag
	Rubber Clutch Separator	ORCS-103-380	.103" Dia., 60/bag
Used in some TH400 aftermarket modified intermediate sprag assemblies	Sprag Element	34006-05	OE 24210445
<b>Case</b>			
Symptoms: Bushing walks out	Case Bushing	34006-SP	Precision, no walk out
Symptoms: Lost or damaged component	Manual Shift Shaft Kit	38511-05K	
Protects against case thread stripping	Oil Pan Stud Kit	28711-01K	14 Studs & nuts
<b>Driveshaft</b> High-performance, bushing-style yokes also available, see <a href="http://www.sonnax.com">www.sonnax.com</a> for details.			
Precision machined, forged 4340 chromoly	Roller Bearing Slip Yoke	T3-3-2431CBH	1350 Series, 32-spline, counterbore