WRITTEN AND PUBLISHED QUARTERLY FOR TORQUE CONVERTER REBUILDERS BY Sonnax

THE TORQUE CONVERTER JOURNAL

VOLUME 2 NUMBER 2

Converter rebuilding has its ups and downs

Fielding torque converter tech calls is very interesting, to say the least. Digging for that extra piece of information or simply trying to put the pieces together for an answer forces you to think outside the box.

Some of those things you thought of over the years that previously seemed impossible are now not so hard to believe. Here are a few examples to add to what you already know.

Did you know that you could put an E4OD converter into an AODE/ 4R70W transmission and drive the vehicle? You just don't want to.

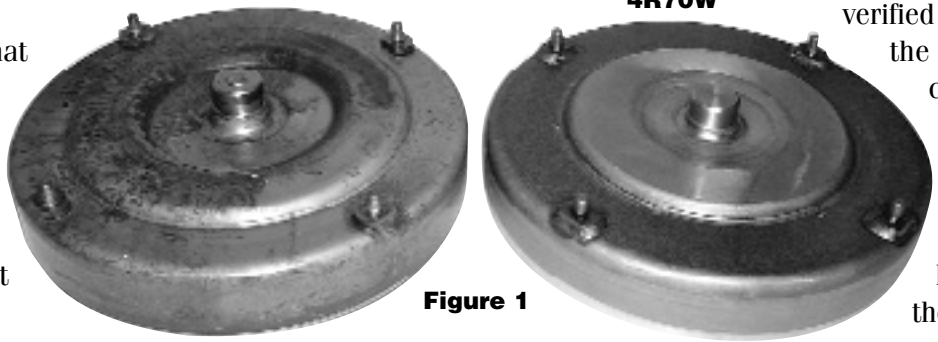

Figure 1

The discovery originated at a Ford dealership. A vehicle came in with a TCC shudder complaint. A scan check verified the problem, and the customer was sold a transmission service and torque converter replacement. Everything seemed routine enough, until the vehicle began exhibiting similar problems after the work had been completed. Now the converter would try to lock up a time or two when the vehicle was cold, but would not even attempt to lock up once the vehicle warmed up.

Since the vehicle was having the same problems both before and after the torque converter was replaced, the torque converter was ruled out as a potential suspect, and no one looked to see if there was a difference in the part number. After several frustrating days the vehicle was taken to a local transmission shop. The shop checked out the vehicle and came to the conclusion that the transmission components were working properly. This fact was verified by tapping one of the cooler lines. The cooler line tap proved that the converter should work hydraulically and that the problem must be inside the converter.

The torque converter rebuilder at the shop was given the converter and told the symptoms. Of course, he knew that the converter was for an E4OD transmision just by looking at the cover (*see Figure 1*) but he was NOT told that the vehicle had a 4R70W transmission.

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The technician checked the torque converter for lock-up, determined that the converter was fine, and said cutting it apart would be a waste of time. The converter was eventually cut and he was proven correct.

So the converter was welded back together and it looked like a long merry-go-round ride was going to continue. The converter rebuilder's comment, "You made me cut a perfectly good E4OD converter apart," was followed by the service manager's reply, "That was a 4R70W converter," and led to the obvious conclusion. You cannot install a 4R70W converter into an E4OD transmission because the stator support will hit the turbine hub, but **it will fit the other way around.**

Here's another example. Did you know that you could put a stator assembly into a torque converter upside down?

Now, this is not exactly breaking news. Getting Honda stators installed properly has been keeping us on our toes for years. This became especially problematic when Honda and Acura had similar-looking transmissions located on opposite sides of the vehicle. The transmission for the 24-valve V-6 is on the driver's side, and the transmission for the 4-cylinder is on the passenger side. There is a rule that will cover any transversely mounted transmission. When viewing an engine from the front, the crankshaft will rotate in the same direction that the wheels turn when the vehicle is going forward. The converter will turn and the stator will free wheel in the same direction that the crankshaft rotates.

On domestic units, interference between the stator and the turbine, or stator and impeller, usually alerts the builder that the stator is installed upside down. The dual stator 4L80-E does not have these clearance issues and can be installed upside down. The vanes have an exit appearance on both sides, so this is an easy mistake to make. The single stage stator in the 4L80-E converter will also install either way without interference, but the rounded edge on the entrance side of the vanes make a mistake less likely.

This is where new news comes in. Did you know you can install the 5R55 series stators upside down? Figures 2 and 3 show a 5R55 stator that was installed in a Jaguar for a short time. There were no drivability


Figure 2

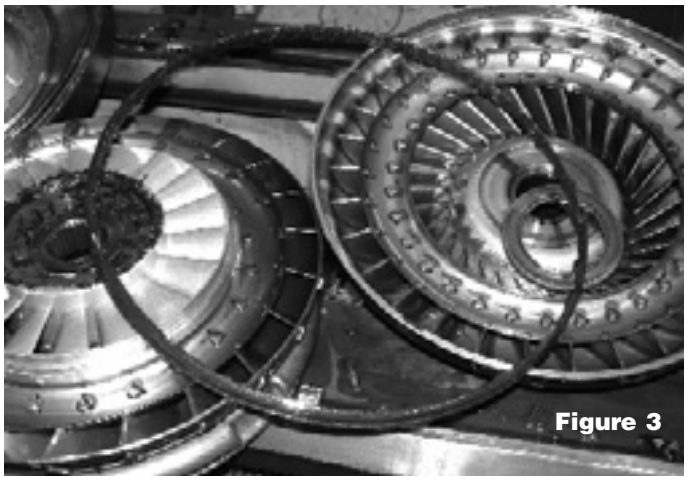
Figure 3

complaints – but the stator cap did not live very long. Figure 4 shows how the stator should look. This would not be difficult to figure out if you were present when the converter was cut apart. Having only the pictures made it a little harder.


Figure 4

Coming in May 2006, the latest Sonnax® Torque Converter Parts Catalog incorporates many new products and revisions, reflecting the growing number of units on the road and our customers' needs. In addition to new converter drawings, the catalog will include product information about our growing High Performance line of racekits and an updated details section, along with practical information from some of the best technicians in the industry.

To reserve your FREE catalogs,
call your Sonnax sales representative at
800-843-2600 or 802-463-9722,
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TECH ADVI

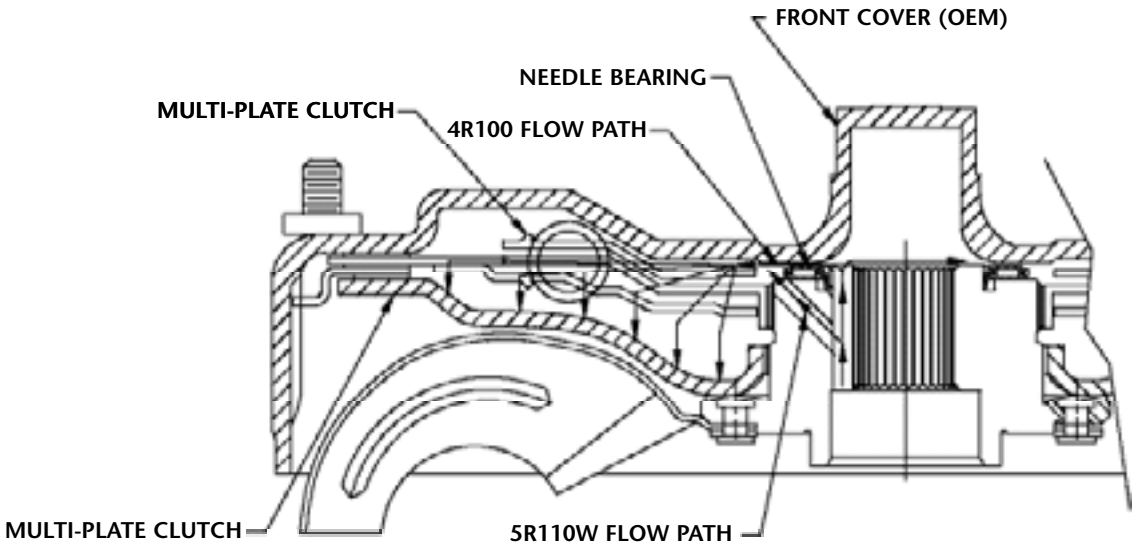
TORQUE CONVERTER
Spring Tech Advisory

4R100 PISTON RELEASE FLOW

The Ford 4R100 multiplate clutch converter does not have piston release oil flow passages to the outside diameter of the turbine hub, like the E4OD single clutch converter. Ford has intentionally allowed extra clearance between the front cover and the needle bearing to allow the piston release oil to flow between the two and thus apply pressure on the whole diameter of the piston. This clearance must be maintained or the flow will be reduced and the lockup piston released too slowly. This causes the clutch to drag on the cover. Symptoms are converter overheating, lockup cover surface turning blue and premature clutch failure. This may cause a 1728 scanner code. See the figure below.

It has come to our attention that some converter rebuilders are reducing this clearance by machining the reaction surface on the cover to improve the needle bearing life. While this is better for the bearing, it can interfere with the piston release. The OEM and Sonnax covers are designed with this extra clearance for oil flow.

Ford has changed the 5R110W turbine hub so that the piston release oil exits on the outside of the needle bearing: Thus, the extra clearance is not required. The 5R110W turbine hub should not be substituted with the 4R100 turbine hub unless the cross-drilled oil holes are added, like the ones on 5R110W hubs.



SORY

sonnax®

CH-CC-4 CHRYSLER FRONT COVER

Application Details

In January 2006 we announced another new Sonnax front cover, **CH-CC-4**, for Chrysler 10-3/4" lockup applications.

It is important to know that although this cover works well in 5.2L and 3.9L engine applications, modifications are required for use in 5.9L (360 CID) units where the balance weights are mounted on the flex plate.

Sonnax is currently working on an alernate version of **CH-CC-4**, configured to clear the balance weights on the flex plate.

Chrysler 727 (TF8) & 904 (TF6)

Racekit Front Cover

Features & Benefits:
- One-piece machined forging
- Both “offset” and 90º bolt patterns
- For use with GM 245mm core
- Includes **CH-B-2-CP** bushing, already installed

Use with:
- **CH-RG-130**, 130-Tooth Ring Gear
- **CH-WP6-OE**, Front Cover Thrust Washer

CH-CC-3 •

Racekit Front Cover

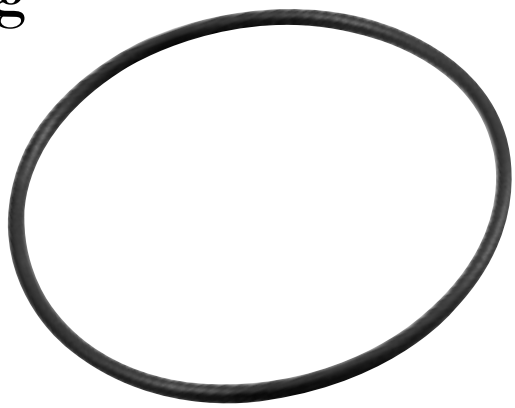
Part Summary

Sonnax is pleased to offer **CH-CC-3**, a one-piece forged and machined front cover for Chrysler 904 and 727 performance applications. This cover is designed for use with GM 245mm cores and features both “offset” and 90° bolt patterns.

Spring savings start with your next purchase of **GM-PI-16**, the weld-in pilot/adapter from Sonnax. Using **GM-PI-16** with other Sonnax components and a GM 245mm core, a builder can assemble a low-cost performance converter for Powerglide, 350 and 400 applications. The **GM-PI-16** is also included in our **GM-RK-14** rackit.

"Half Price Sale" on GM-PI-16 $12.96 each

FS-O-2V
O-Ring



Application:
- Fichtel & Sachs ZF5HP19 and ZF5HP24

Details:
- 69.52mm (2.737") I.D.
- 2.62mm (.103") cross section
- Green color
- Prepackaged quantities of 25 units

Associated Parts:
- **FS-O-27V**, Radial Lip Seal

FD-O-15
Piston Seal (Scarf Cut)

Application:
- Ford 5R55N/S/W

Details:
- Scarf cut option
- 1.721" (43.70mm) O.D.
- .100" (2.55mm) axial width
- Prepackaged quantities of 25 units

Associated Parts:
- **FD-HT-37HS**, Turbine Hub
- **FD-O-14**, OEM Solid Version Piston Seal

FD-O-16
Piston Seal (Scarf Cut)

Application:
- Ford CD4E 9-1/4"

Details:
- Scarf cut version
- 1.673" (42.50mm) O.D.
- 1.320" (3.35mm) axial width
- Prepackaged quantities of 25 units

Associated Parts:
- **FD-HT-5HS**, Turbine Hub
- **FD-O-7V**, Radial Lip Seal
- **FD-O-14**, OEM Solid Version Piston Seal

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INSIDE

Available Summer 2006

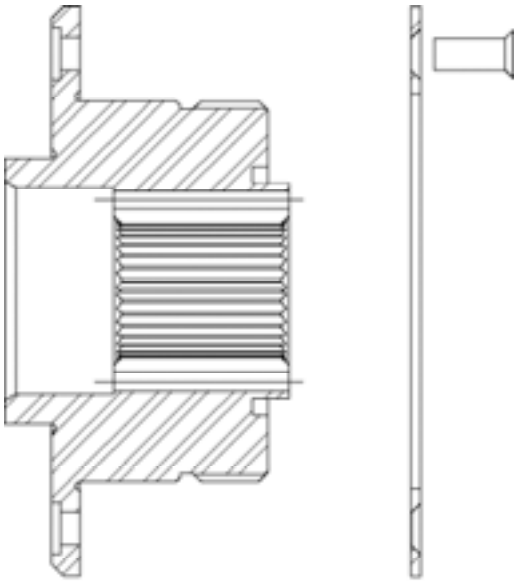
FD-HT-40HSK

Turbine Hub Kit

Application:
Adapts the E4OD turbine to the new 4R100 multi-plate clutch.

Details:
- 31-tooth internal hardened spline
- 68-tooth external spline
- Made from AISI 1045 steel forging
- Kit includes turbine hub, reinforcement ring and rivets

Sonnax has your solution for rebuilding E4OD converters with the early-design, single-piece multi-plate clutch. These early clutches are difficult to repair and replacements are not available. The current 4R100 turbine hub cannot be used with the E4OD turbine. The Sonnax **FD-HT-40HSK** turbine hub kit is designed to adapt the E4OD turbine to the 4R100 converter with a multi-plate clutch assembly (**FD-DA-13**).



FD-HT-40HSK
E4OD TURBINE TO 4R100
MUTI-PLATE CLUTCH (**FD-DA-13**)
ADAPTER KIT

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