

Northland Transmission:

TSRP



This tool is for use on **Ford Torqshift (5R110W)** transmissions.

**READ ALL APPLICABLE INSTRUCTIONS
BEFORE ATTEMPTING TO USE THE TOOL**

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Staking Plate



Align Pin Here.

Do Not clamp on planetary gears.

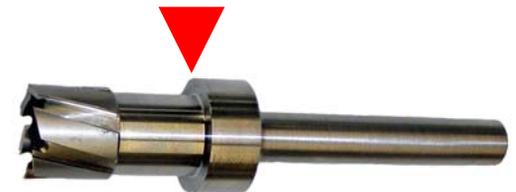


1. Install the drill jig into the planetary carrier from the front (diode) side of the carrier. Retain the jig in the carrier by placing the staking plate (plate pictured at left) on the bottom of the carrier and bolting the two together with the 3 1/2" long, 1/2"-13 bolt. Don't tighten the bolt at this point.
2. Align the jig with the first pin to be trimmed by rotating the jig until a pin is visible through the hole in the jig. The jig will center itself off the pin opposite the one your cutting.
3. Align the dowel pins in the staking plate with any two pins. It is not necessary to align the staking plate with the pin you are reaming, aligning the plate simply prevents the plate from rotating while tightening the reamer guide.
4. Tighten the reaming fixture (WITH A TOOL!), clamp the planetary assembly in a vise, and cut the top of the pin with the arbor and a suitable drill. Use cutting oil* while trimming the pins.

*- **CUTTING OIL** should be used for lubrication. Improper or inadequate lubrication will drastically reduce tool bit effectiveness and life.



Ream until this shoulder **CONTACTS** the jig.



5. Loosen the jig and rotate it to the next pin. Ream that pin in the same fashion. Repeat for both remaining pins.
6. Remove the reaming fixture from the planetary assembly.
7. Drive the pins out of the planetary with a punch and hammer. Remove the planetary gears, remove the clutch.



8. Either clean the carrier with some other form of dissolving parts cleaner or follow the optional instructions located on the next page.
9. Clean the planetary gears and their rollers. After cleaning, pack the rollers into the planetary gears with TransJel™ or suitable substitute.



OPTIONAL

This section describes how to service the mechanical diode. The kit does not include, nor do we offer, service parts for the diode. However, disassembly allows for complete cleaning of the planetary carrier. This section should be completed instead of step 8.

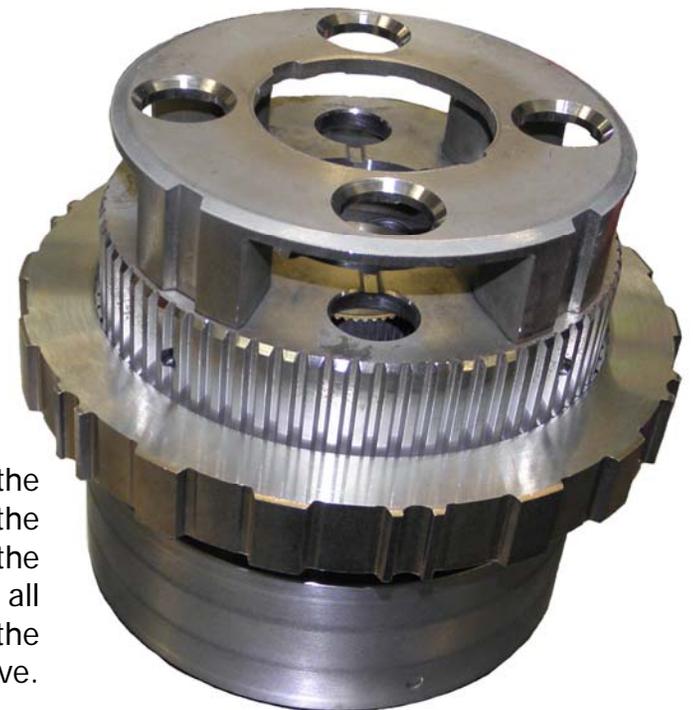
- O 1. Remove the snap ring from the diode race. It's best to hold the race with one hand while removing the snap ring with the other. Do this so that the race doesn't fall off and risk losing the internal diode components.
- O 2. Clean the planetary carrier and diode components.
- O 3. Place the planetary carrier on something tall enough to allow the diode race to drop past the carrier (a 4R70W planet works extremely well).
- O 4. Place each pawl into the carrier, then each spring, finally place the thrust washer over the pawls. Cut a strip of flexible tag board (overhaul kit backing boards work great) and wrap it around the base of the planetary carrier, compressing the pawls as you go. Tape the ends together
- O 5. Install the diode race over the pawls. Push the tag board retainer off with the race. The retainer will not totally install the diode race, but it will get all of the pawls started at the same time. Rotate the race until it engages all of the pawls. If it is possible to install the snap ring, the race has engaged all pawls.
- O 6. Install the snap ring.



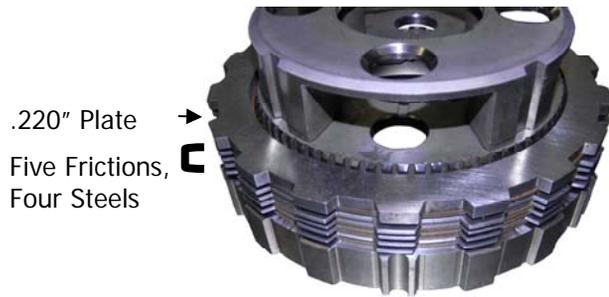
Load each pawl and spring like this. Put the spring side with three joints down (against the carrier).



Left- Wrapped and supported carrier. Notice the thrust washer



Right- This is by far the most difficult part of the entire job. Remove the tag board retainer once all of the pawls are inside the snap ring groove.

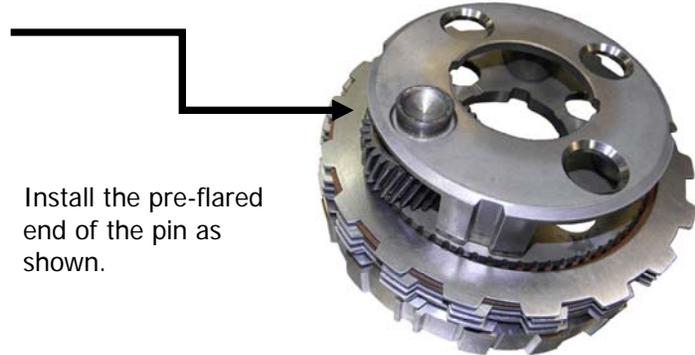


For the five plate stack-up, place the .220" plate on top. All steels are the same thickness in the six plate stack-up.



10. Install the clutch pack onto the planetary carrier. There are two stack ups from the factory; one with five clutches and one with six.

11. Install all four planetary gears, washers, and new pins. The pre flared end of the pins goes to the rear (top as pictured) side of the planet.



12. With a hammer and punch, drive the pins into the carrier until they bottom against the pre-flared shoulder.

13. Install the staking and clamping plates. Make sure that the pins on the staking plate are aligned with two of the pins. Tighten this **WITH A TOOL**. Failure to adequately tighten these plates will allow the pin to walk forward in the next steps.



The two plates need to be at right angles to each other, otherwise the clamping plate will cover the heads of the pins being supported by the staking plate.



14. Strike one of the supported pins with the swedging tool. Hit the pin in that position until you see an indentation as in the picture below. Once you have that, rotate the swedging tool 90° and do it again (this is actually what's pictured below). Once you have that rotate the tool so it is on material that has not been swedged and do it again. Continue this until the head has been fully swedged.



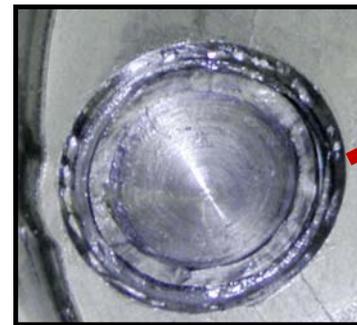
15. Take a drift punch (preferably 3/8" or slightly larger) and peen the head where you just swedged it. Care must be taken on this step not to excessively peen, as it is possible to crack the head of the pins.



16. Repeat steps 14 & 15 for the other pin being supported by the staking plate.



17. Loosen the clamping plate assembly and rotate it so as to support and expose the other two pins. Repeat steps 14, 15, & 16 for these pins.



18. Take a drift punch and lightly tap on each pin from both sides. The pin should not move in either direction. If movement is felt, tap the pin towards the front of the carrier, put the staking assembly back on the loose pin, and stake it again.



Check for movement in both directions, if pins aren't tight yet, if loose tap the pins forward before re-staking (drive as shown in picture at right).



Important Reamer Info



The projected life of the cutting tip on this tool is roughly 40 pins (ten planets). The tips are available separately for purchase. If your tool life is substantially shorter than this, please review your lubrication. We recommend a good soaking of cutting oil. Use of some substitutes will lead to decreased performance and tool life.



We Recommend
Tap Magic®
for Lubrication.
MSC #00261933
Phone: 800-645-7270

Fixing servos in these transmissions:

- CD4E (LA4A-EL)
- AX0D/E/AX4S/N/4F50N
- C3/A4LD/4R44E/4R55E/5R55E
- 5R55W/5R55S/5R55N
- A0D/A0DE/4R70W/4R75W/4R75E
- 180/4L30E
- 700/4L60E
- 375/400/425/4L80E
- 4T60/65E
- 4T80E
- 4F27E (FN4A-EL)/FNR5 (FS5A-EL)
- 4EAT-F (F4A-EL)
- 4EAT-G (G4A-EL)
- AW55-50SN/AW55-51SN
- TF-80/81SC (AF20/21)

Also available:

Torque Flight Throttle Valve
48RE Transfer Case Plate

Torque Flight Rooster Comb Detent
46RE/H Steel Reverse Servo Pin

For pricing, availability, and other information, check us out on the web at www.servobore.com or call us at 715-458-2617