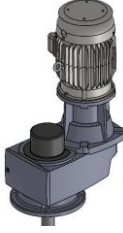
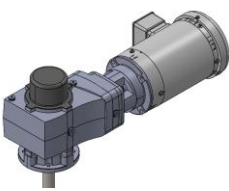
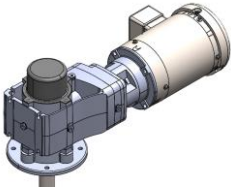
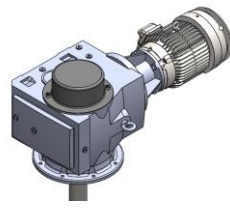




## CAUTION:

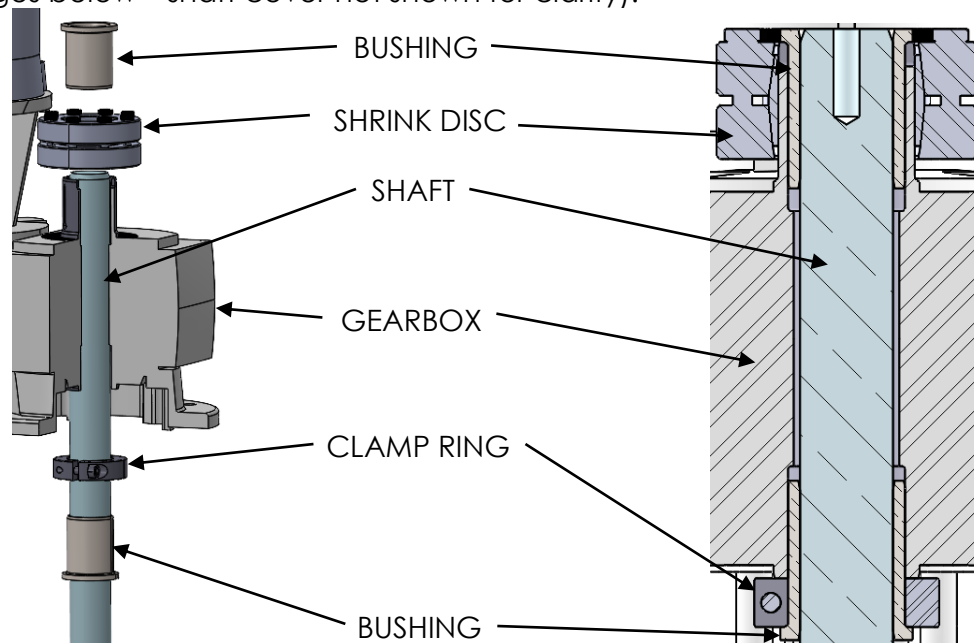
- **ALWAYS SHUT OFF AND LOCK OUT POWER SOURCE AND DISCONNECT FROM POWER SOURCE BEFORE SERVICING MIXER. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN DEATH, PERSONAL INJURY OR PROPERTY DAMAGE.**
- **PINCH POINTS & SHARP EDGES MAY BE LOCATED IN THIS AREA.**
- **HEAVY COMPONENTS – HANDLE PROPERLY.**

The following Fusion mixer models may use a Gripmaxx™ bushing system to secure the shaft to the Nord gearbox:

FG SERIES	FR2E SERIES	FR3 SERIES
	 (ENCLOSED)  (OPEN)	

## Gripmaxx™ Shrink Disc Assembly Concept

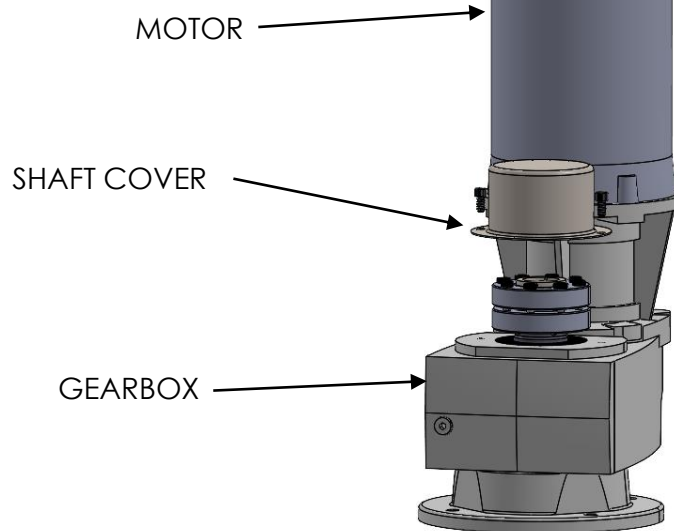
The Gripmaxx™ bushing system uses a shrink disc and keyless bushings for mounting a mixer shaft to the gearbox hollow bore. The shrink disc uses outer clamping discs and a double tapered inner ring to provide high compressive pressure on the mixer shaft. As the locking screws are properly tightened, the inner ring applies pressure on the mixer shaft through the hollow bore and split-bushing creating a high-capacity interference fit (see images below – shaft cover not shown for clarity).



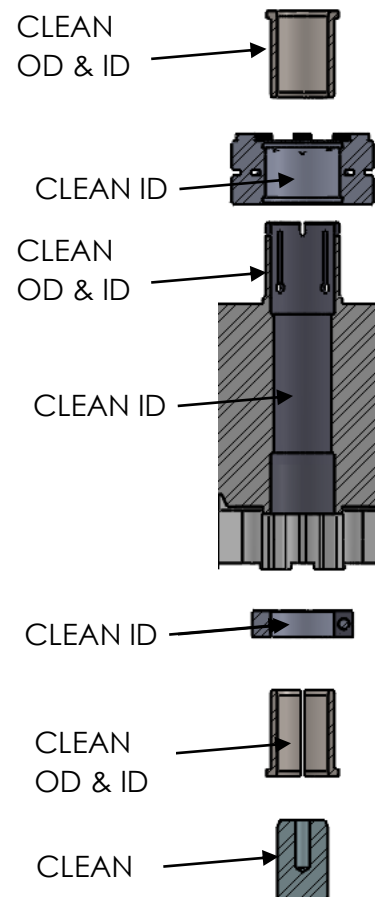
## Shaft Installation with Gripmaxx™

- 1) Remove the gearbox's shaft cover by removing the bolts that hold it down. Keep the shaft cover and bolts.

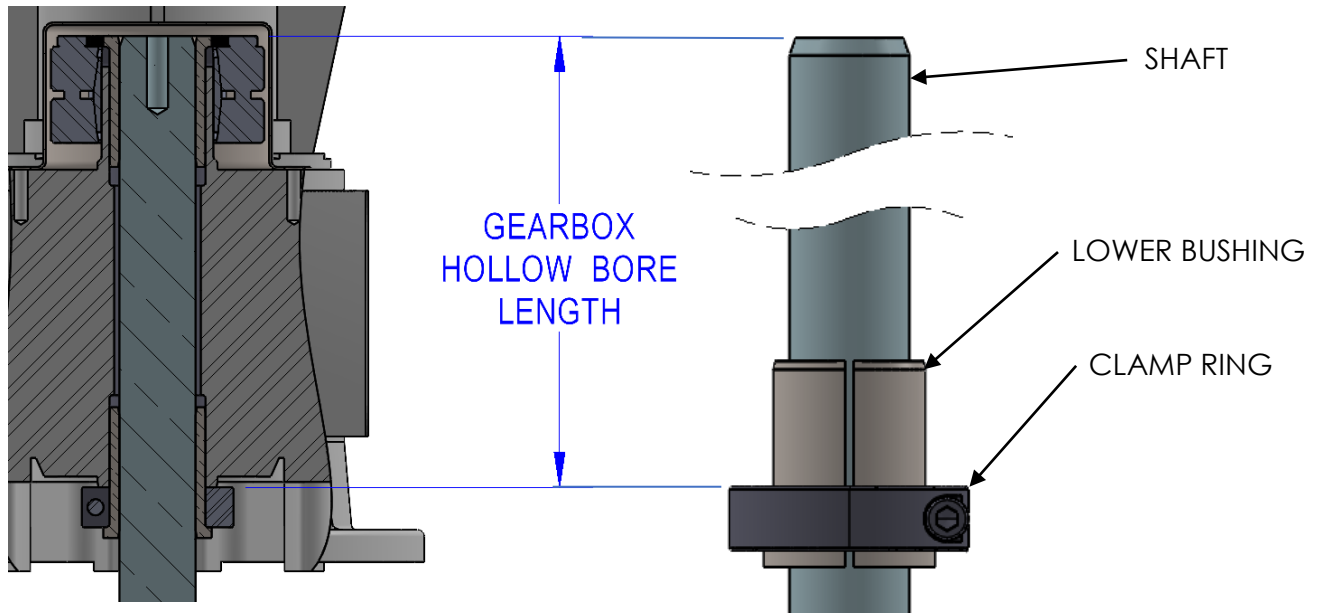
**CAUTION:**  
 TIGHTENING  
 SHRINK DISC  
 WITHOUT A SHAFT  
 IN THE BORE, WILL  
 CAUSE DAMAGE  
 TO THE GEARBOX.



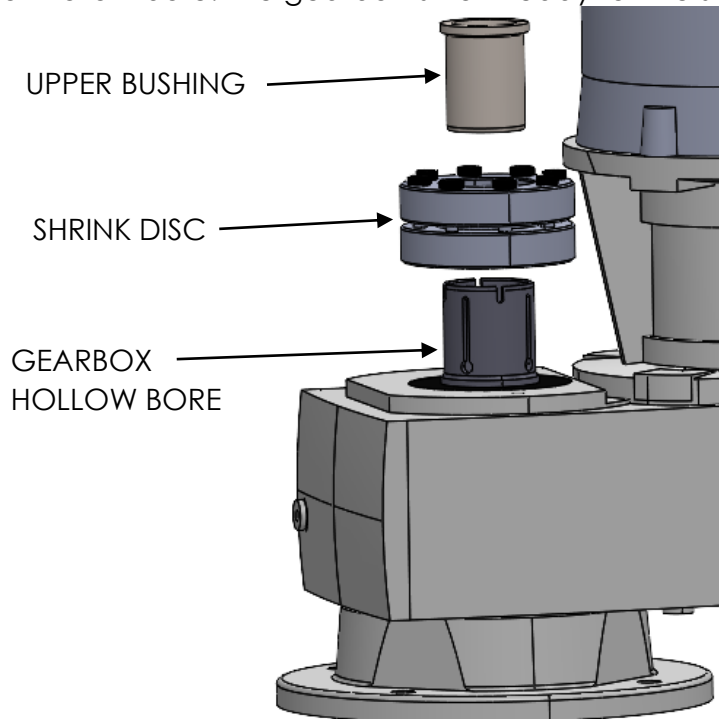
- 2) Make sure the mixer shaft and gearbox hollow bore are free from any rust, corrosion, lubricants, nicks, burrs or foreign matter. If nicks or burrs are present, remove them using an abrasive material such as an emery cloth or Scotch-Brite pad. Clean shaft, hollow bore ID, bushings, clamp ring and shrink disc with acetone or a similar solvent. The shrink disc & upper bushing are typically shipped installed into the gearbox hollow bore. They will need to be removed to be cleaned and to clean the upper portion of the hollow bore.



- 3) Position the clamp ring and lower bushing over the machine shaft as shown below. Make sure the bushing and clamp are in its desired location. The end of the shaft should be flush with the top of the upper bushing as shown on page 1. Once the position is verified, secure the support bushing with the clamp ring and tighten the clamp ring screw.

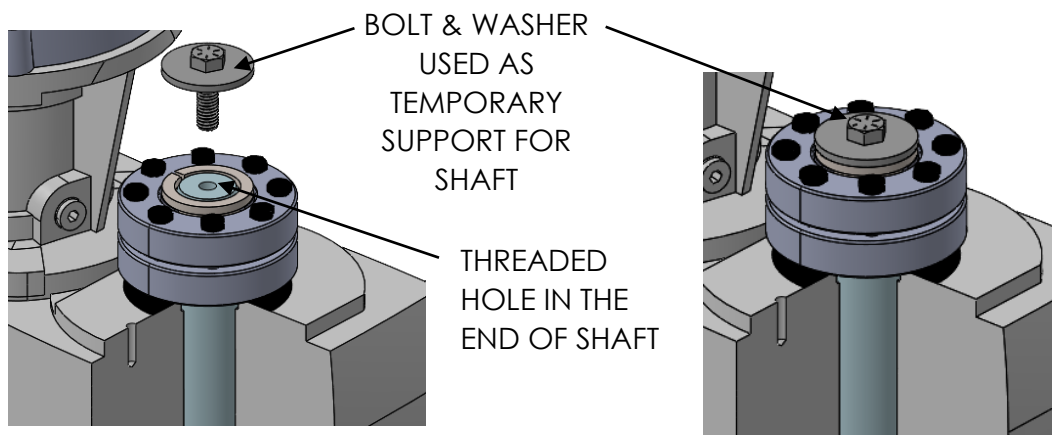
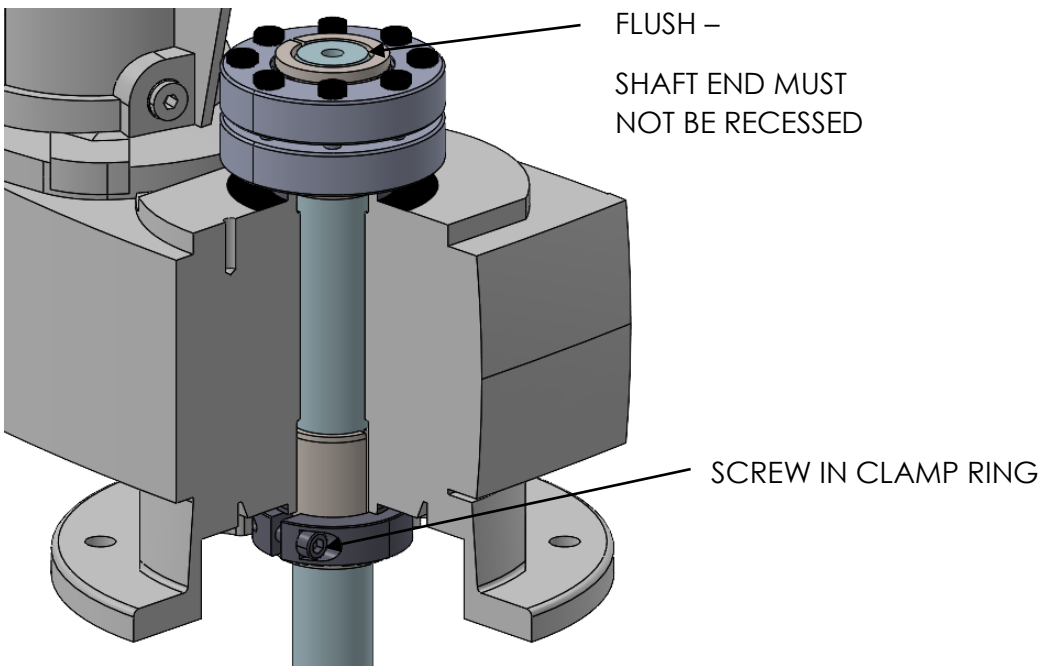


- 4) Without taking the shrink disc apart, verify all the bolts on the shrink disc are loose and slide the shrink disc onto the hollow bore OD. Slide the upper bushing into the gearbox hollow bore. The gearbox is now ready for the shaft installation.

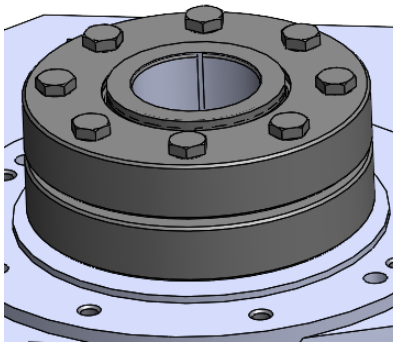
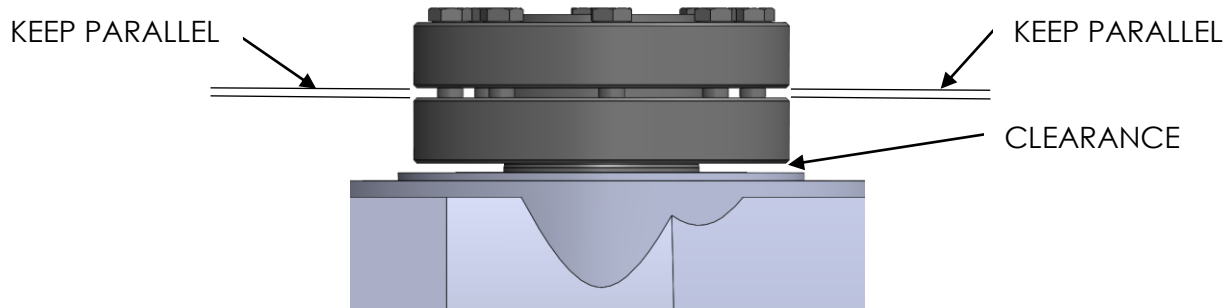


**CAUTION:**  
 TIGHTENING  
 SHRINK DISC  
 WITHOUT A SHAFT  
 IN THE BORE, WILL  
 CAUSE DAMAGE  
 TO THE GEARBOX.

- 5) Insert the shaft into the gearbox hollow bore. Position the shaft so it's flush with the top of the bushing in gearbox hollow bore or as indicated on the approval (or as manufactured) drawing. The screw in clamp ring on the lower bushing may have to be loosened in order for the shaft to be flush. The shaft will typically have a threaded hole in the end. An eyebolt can be used in the threaded hole for lifting shaft in position and holding until the shrink disc is installed. If an eyebolt cannot be used, a bolt through a large washer can be used as a temporary fixing element to support the shaft during assembly. The mixer shaft can also be "BLOCKED UP" in position if an eyebolt cannot be used.



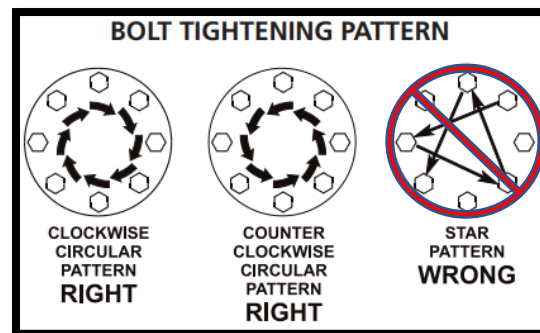
- 6) Confirm the position of the shrink disc and the upper bushing. Make sure the bushing is seated completely seated in the hollow bore. **DO NOT TIGHTEN THE SHRINK DISK UNTIL THE SHAFT AND BUSHING ARE IN CORRECT POSITION, OR THE GEARBOX HOLLOW BORE WILL BE DAMAGED.** Hand tighten 3 or 4 equally spaced bolts. **MAKE SURE THE OUTER COLLARS OF THE SHRINK DISK ARE DRAWN TOGETHER IN A PARALLEL FASHION.** Then hand tighten the remaining bolts.



**CAUTION:** TIGHTENING SHRINK DISK WITHOUT A SHAFT IN THE BORE, WILL CAUSE DAMAGE TO THE GEARBOX.

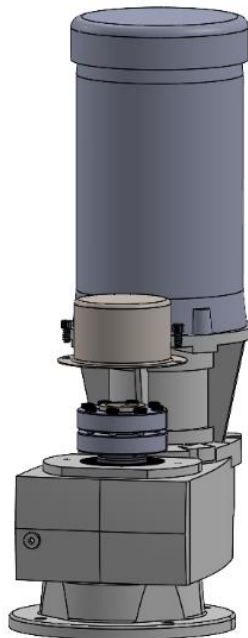
- 7) Tighten the bolts in a circular pattern using 1/4 (90°) turns, even if some bolts initially require very low tightening torque to achieve 1/4 turns. **ENSURE THE SHRINK DISK IS TIGHTENING EVENLY AND PARALLEL.** Tighten to the appropriate “tightening torque” value in the table on next page.

Screw Size	Wrench Size	Tightening Torque	4% Over Torque
M5	8	62 in-lb.	64 in-lb.
M6	10	106 in-lb.	110 in-lb.
M8	13	22 ft-lb.	23 ft-lb.
M10	17	44 ft-lb.	46 ft-lb.
M12	19	74 ft-lb.	77 ft-lb.
M16	24	184 ft-lb.	191 ft-lb.
M20	30	361 ft-lb.	375 ft-lb.
M24	36	620 ft-lb.	645 ft-lb.
M30	46	1254 ft-lb.	1304 ft-lb.



**ENSURE THE SHRINK DISK IS TIGHTENING EVENLY AND PARALLEL**

- 8) When the torque on the bolt is at the “tightening torque” value with less than 1/4 turn on the bolt, proceed to step 9.
- 9) Set the torque wrench to the appropriate value in the table, but use the “4% over torque” value in the table. Do one or two complete rotations using the same circular pattern technique.
- 10) Reset the torque wrench to the appropriate “tightening torque” value in the table. Ensure all of the bolts are properly tightened using the circular pattern.
- 11) If an eyebolt or blocking was used to support shaft during shrink disc installation, this can now be removed.
- 12) Install the shaft cover and bolts back onto the gearbox.



**DANGER:**

- **ALWAYS SHUT OFF AND LOCK OUT POWER SUPPLY AND DISCONNECT FROM POWER SUPPLY BEFORE SERVICING MIXER. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN DEATH, PERSONAL INJURY OR PROPERTY DAMAGE.**
- **PINCH POINTS & SHARP EDGES MAY BE LOCATED IN THIS AREA**
- **MAKE SURE MIXER SHAFT IS SUPPORTED BEFORE THE LOOSENING ANY OF THE SHRINK DISC BOLTS. FAILURE TO DO SO COULD RESULT IN PERSONNEL INJURY, DEATH, DAMAGE TO MIXER SHAFT OR MIXING TANK.**

## Removal of Shrink Disc

- 1) Make sure the mixer shaft is supported in operating position before removing shrink disc. An eyebolt can be use in the threaded hole in the end of the shaft to hold the shaft in place while the shrink disc is removed. The mixer shaft can be "BLOCKED UP" in place if an eyebolt cannot be used.
- 2) Loosen the shrink disc locking screws in a circular pattern by using ½ (180°) turns, until the shrink disc hub can be moved or until the shrink disc hub and gearbox shaft will return to their original fits.

**DANGER:**

**DO NOT COMPLETELY REMOVE THE LOCKING SCREWS BEFORE THE OUTER CLAMPING DISKS OF THE SHRINK DISC ARE DISENGAGED FROM THE INNER RING. A SUDDEN RELEASE OF THE OUTER COLLARS WILL CREATE HIGH SEPARATING FORCES AND COULD RESULT IN INJURY OR EVEN DEATH.**

- 3) Loosen the outer collars of the shrink disc from the tapered inner ring. This may require tapping the bolts with a **soft faced** hammer or prying lightly between the outer collars.
- 4) Remove the mixer shaft from the gearbox.

## Re-installation of Shrink Disc

It may be possible to re-use the bushings and shrink disc. However, the bushings and shrink disc should not be re-used if they become damaged during removal, or if excessively rusty or corroded.

- 1) Shrink discs must always be disassembled and thoroughly cleaned before re-using.
- 2) After cleaning the shrink disc, lubricate between the taper of the outer clamping disks and the outside of the inner ring using MOLYKOTE® G-Rapid Plus Paste (product of Dow Corning) or equivalent. In addition, grease screw threads and head contact area with multi-purpose grease.
- 3) The bushings should be thoroughly cleaned before re-installation.
- 4) The gearbox hollow bore should be thoroughly cleaned and check for damage before reinstalling mixer shaft.
- 5) Begin shrink disc assembly installation starting on page 2.