

⚠ WARNING

- Read and follow all instructions carefully.
- Disconnect and lock out power before installation and maintenance. Working on or near energized equipment could result in severe injury or death.
- Do not operate equipment without guards in place. Exposed equipment could result in severe injury or death.

⚠ CAUTION

- Periodic inspections should be performed. Failure to perform proper maintenance can result in premature product failure and personal injury.
- Use appropriate personal protective equipment during handling, installation and maintenance (e.g. gloves, safety glasses, etc.).
- Failure to do so could result in injury.

Mounting Lock Collar Units:

Step 1: Inspect Shaft and Bore:

Shaft should be within tolerance range shown in Table 1, clean and free of nicks and burrs. Mount bearings on unused section of shafting or repair/ replace shafting as required. Inspect both the shaft and the bearing bore for debris or contaminants. Wipe clean as necessary. Do not apply any lubricant (ex. Grease, oil or anti-seize) to shaft or bearing bore.

Table 1

Lock Collar Shaft Recommendation	
Shaft Size	Tolerance
up to 2"	+0.0000 / -0.0005"
2 3/16 - 4"	+0.0000 / -0.0010"
4 7/16 - 5 15/16"	+0.0000 / -0.0015"
6 7/16 - 8"	+0.0000 / -0.0020"

Step 2: Check Support Surfaces:

Make sure the base of the housing and the support surfaces are clean and free from burrs. If the housing elevation is adjusted with shims these must cover the entire contact area between the housing and the support surface.

Step 3: Install Unit:

To aid installation, keep weight off bearing during mounting. Slide unit onto the shaft by pushing on the inner ring. If it is difficult to mount bearing on shaft, use a piece of emery cloth to reduce any high spots on the shaft. Do not exert force to the housing or misalign bearing and housing more than 2 degrees during installation process. If necessary, turn collar nut counter clockwise 1 turn to allow easier fit onto shaft.



Step 4: Fasten Unit In Place:

Install housing mounting bolts and check bearing alignment. Align the bearing units as closely as possible and do not exceed 2 degrees. Tighten mounting bolts to recommended fastener torques. Check the shaft for freedom of rotation by rotating shaft with hand in both directions.



Step 5: Expansion Units Only, Position Insert:

If expansion units are used, the insert must be located in the housing to allow for axial shaft expansion and/or contraction. When holding the lock collar outside diameter, lightly push or pull to slide bearing within housing to the desired position. In most applications, position the bearing insert within the housing towards the fixed (non-expansion) unit. It may be necessary to unload the bearing while moving the assembly.

Step 6: Tighten Setscrews:

Setscrews in multiple bearing applications should be aligned as seen in Figure 1. Tighten the bearing units to the shaft as follows:

- Torque the first setscrew to one half of the recommended torque in Table 2.
- Torque the second setscrew to the full torque. Go back to the first setscrew and tighten to the full torque.

If the bearing unit has two lock collars, one on either end, repeat the same procedure for the second lock collar. Check shaft again for freedom of rotation and then tighten second bearing unit in the same fashion. When all bearings are tightened, perform a final check to the shaft for freedom of rotation.

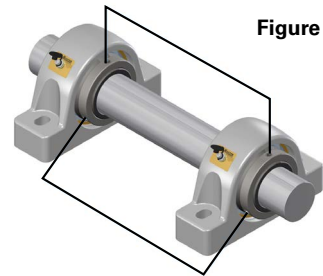


Table 2

Lock Collar Set Screw Torque		
Bore Size	Hex Size	Foot-Pounds
up to 1 3/4"	5/32	14
1 15/16 - 2 1/2"	3/16	25
2 15/16 - 3 1/2"	1/4	55
3 15/16 - 4 1/2"	5/16	120
4 15/16 - 5 15/16"	3/8	180
6 7/16 - 7"	1/2	260

Step 7: Monitor Installed Bearing:

After bearing has been run for several minutes, and again after several hours, check bearing for excessive noise or vibration. Shut down machine and check housing temperature, typical applications operate at 100°F – 150°F (38°C – 66°C). Check tightness of all set screws after 500 hours or 3 months, whichever comes first.

Klamploc™ Adapter Lock Units:

NOTICE: When using adapter lock bearings, it is recommended to use one non-expansion bearing and one expansion bearing. The non-expansion bearing would be installed first, the expansion bearing would be installed second to allow axial movement during the tightening process. Failure to do so may cause reduction in bearing performance and may lead to equipment failure.

Step 1: Inspect Shaft and Bore:

Shaft should be within tolerance range shown in Table 3, clean and free of nicks and burrs. Mount bearings on unused section of shafting or repair/replace shafting as required. Inspect both the shaft and the adapter bore for debris or contaminants. Wipe clean as necessary.

NOTICE: Do not apply any additional lubricant (ex. grease, oil, or antiseize compound) to bearing tapered surfaces, bore or shafting. Bearing components have a light oil, rust preventative coating that should not be removed. Application of additional lubricant may cause reduction in bearing performance and may lead to equipment failure.

Table 3

Adapter Lock Shaft Recommendation	
Shaft Size	Tolerance
up to 2"	+0.000 / -0.003"
2 3/16 - 4"	+0.000 / -0.004"
4 7/16 - 5 15/16"	+0.000 / -0.005"
6 7/16 - 8"	+0.000 / -0.006"

Step 2: Check Support Surfaces:

Make sure the base of the housing and the support surfaces are clean and free from burrs. If the housing elevation is adjusted with shims these must cover the entire contact area between the housing and the support surface.

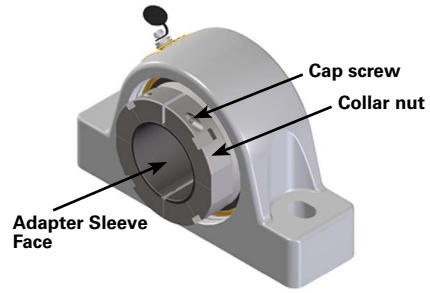
Step 3: Install Unit:

To aid installation, keep weight off bearing during mounting. Slide unit onto the shaft by pushing on the inner ring. If it is difficult to mount bearing on shaft, use a piece of emery cloth to reduce any high spots on the shaft. Do not exert force to the housing or misalign bearing and housing more than 2 degrees during installation process.



Step 4: Fasten Unit In Place:

Install housing mounting bolts and check bearing alignment. Align the bearing units as closely as possible and do not exceed 2 degrees. Tighten mounting bolts to recommended fastener torques. Check the shaft for freedom of rotation by rotating shaft with hand in both directions.

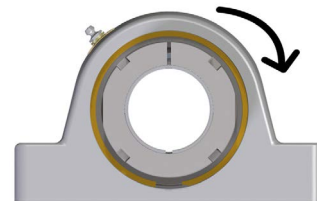


Step 5: Tighten Non-Expansion Bearing First:

Note: Keep weight off bearing during tightening process.

Note: Preventing shaft rotation will make installation easier.

- a) Wearing gloves, rotate the collar nut with both hands as tight as possible to remove clearance between the sleeve and shaft until no radial or axial slip can occur. For units over 3" in shaft size, tap on the collar nut OD during hand tightening as necessary to overcome binding.



- b) Mark the collar nut face and the shaft or sleeve face to indicate the initial starting point prior to further tightening.

- c) Using a drift pin and hammer, continue rotating the collar nut until it has rotated the desired amount per Table 4.

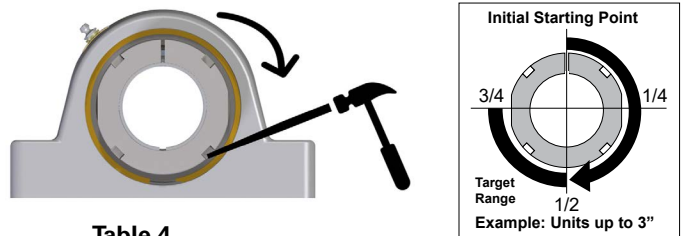


Table 4

Collar Nut Rotation from Initial Starting Point	
Bore Size	Rotation Turns
1 1/8 - 3"	1/2 to 3/4
3 3/16 - 5 15/16"	5/8 to 7/8
6 7/16 - 8"	3/4 - 1

- d) Tighten the collar nut capscrew to the torque listed in table 5.

Table 5

Collar Nut Capscrew Torque		
Bore Size	Hex Size	Foot-Pounds
1 1/8 - 2 1/2"	5/32	7
2 11/16 - 3"	3/16	15
3 3/16 - 4 1/2"	1/4	25
4 15/16 - 5 7/16"	5/16	40
5 15/16"	3/8	55
6 7/6 - 8"	3/8	65



Mounting Adapter Lock Units - Continued:

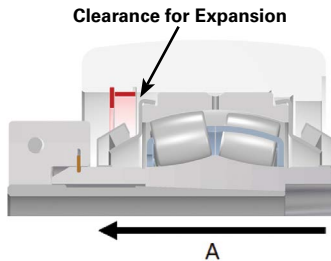
Step 6: Tighten Expansion Bearing Second:

Note: Keep weight off bearing during tightening process.

Note: Preventing shaft rotation will make installation easier.

- The insert must be located in the housing to allow for axial motion when tightening the locking device. When holding the collar nut outside diameter, lightly push or pull to move bearing within housing to the desired position.

Shaft Growth Due To Temperature	Bearing Position In Housing
None or direction A (most common)	Push inward as shown
Opposite direction A	Center in housing



- Wearing gloves, rotate the collar nut with both hands as tight as possible to remove clearance between the sleeve and shaft until no radial or axial slip can occur. For units over 3" in shaft size, tap on the collar nut OD during hand tightening as necessary.
- Mark the collar nut face and the shaft or sleeve face to indicate the initial starting point prior to further tightening.
- Using a drift pin and hammer, continue rotating the collar nut until it has rotated the desired amount per Table 3.
- Tighten the collar nut capscrew to the torque listed in table 4.

Step 7: Monitor Installed Bearing:

After bearing has been run for several minutes, and again after several hours, check bearing for excessive noise or vibration. Shut down machine and check housing temperature, typical applications operate at 100°F - 150°F (38°C - 66°C). Check tightness of all capscrews after 500 hours or 3 months, whichever comes first.

Converting Non-Expansion Bearings to Expansion:

WARNING! The following steps should not be performed while the bearing is mounted to the equipment as any axial load present within the system may cause the bearing to slide out of the housing when removing the snap ring.

One Piece Housing Design:

Step 1: Look in the housing bore on the locking end of the bearing and locate the snap ring. There are 2 snap ring grooves where the position of the snap ring determines if the bearing is a non-expansion or expansion design. **See figure 2.**

Non-Expansion Design: Snap ring at inner groove

Expansion Design: Snap ring at outermost groove

Step 2: Using a flat head screw driver or a similar tool, insert the head of the tool into the gap between the snap ring and housing bore.

Step 3: Pry the snap ring inward to pull it out of the snap ring groove in the housing bore. Another small screwdriver or tool may be needed to get under the snap ring and lift upward and move the snap ring.

Step 4: Move the snap ring to the outermost snap ring groove location and make sure it fully snaps into the groove. Do not remove the metal spacer element located behind the snap ring.

Split Housing Design:

Step 1: Remove housing cap bolts and top half of housing.

Step 2: Remove spacer element (see next page figure 3).

Step 3: Install housing top per step 6 on next page.

Use of Two Non-Expansion Adapter Lock Bearings: (Follow Steps 1-5 per page 2 except leave housing bolts loose for second bearing)

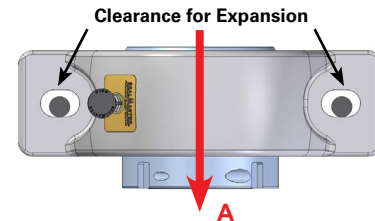
Step 6: Pillow Block Bearings:

Note: Keep weight off bearing during tightening process.

Note: Preventing shaft rotation will make installation easier.

- The housing must be located relative to the equipment bolt holes to allow for axial motion when tightening the locking device. Lightly push or pull the housing to the desired position.

Shaft Growth Due to Temperature	Bearing Position to Bolt Holes
None or direction A (most common)	Push housing inward as shown
Opposite direction A	Center bolt holes in housing slots



- Tighten locking device per steps 6b-e
- Tighten housing mounting bolts to recommended fastener torques.
- Rotate the shaft by hand to verify it turns easily with no binding. If hard to turn or binding is present, loosen housing bolts of both bearings, re-center housings over equipment bolt holes and retighten bolts.

Flange Bearings:

- Position the bearing roughly 1/16" away from the equipment mounting frame to allow for axial movement during tightening.
- Rotate the collar nut until hand tight per step 6b.
- Tightening the housing mounting bolts to recommended fastener torques.
- Complete tightening the locking device per steps 6c-e.
- Rotate the shaft by hand to verify it turns easily with no binding. If hard to turn or binding is present, loosen housing bolts of both bearings and then retighten the bolts.

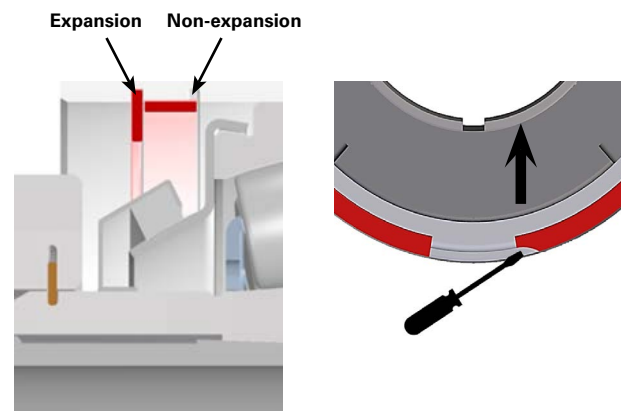


Figure 2



Replacing Existing Sealmaster® Inserts:

Step 1: Remove Housing Cap Bolts

Step 2: Remove Top Half of Housing

Step 3: Remove Bearing from Shaft

For setscrew units, loosen the setscrews and slide the bearing off the shaft. For adapter lock units, loosen collar cap screw, rotate collar counter-clockwise and slide the bearing off the shaft.

Step 4: Inspect Shaft and Bore:

Shaft should be within tolerance range, clean and free of nicks and burrs. Mount bearings on unused section of shafting or repair/replace shafting as required. Inspect both the shaft and the bearing bore for debris or contaminants. Also be sure to inspect the housing bore and stabilizing ring. Wipe clean as necessary.

Step 5: Load New Insert:

Slide the bearing onto the shaft and seat the bearing in the housing base.

Step 6: Install Top Half of Housing:

Be sure to check the bearing inserts for proper alignment. Align the bearing. Install the top half of the housing. Tighten down the cap bolts to the recommended torque in Table 6. Rotate the shaft by hand to check for freedom of rotation.

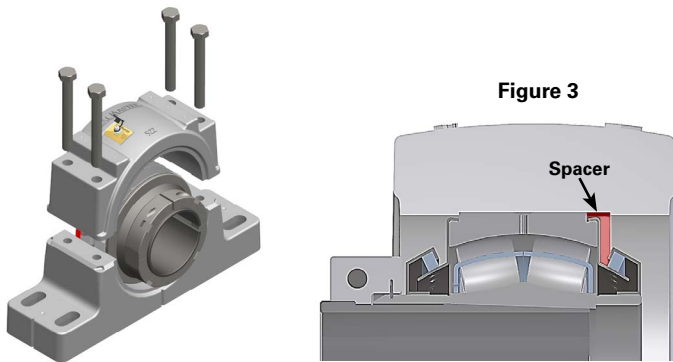


Table 6

Cap Bolt Tightening Torque		
Casting	Bore size	Foot-Pounds
509	1 7/16 - 1 1/2"	31
511	1 15/16 - 2"	31
515	2 7/16 - 2 1/2"	75
517	2 15/16 - 3"	75
520	3 7/16 - 3 1/2"	109
522	3 15/16 - 4"	150
526	4 7/16 - 4 1/2"	150
528	4 15/16 - 5"	266
532	5 7/16 - 5 1/2"	266
534	5 15/16"	266
536	6 7/16 - 6 1/2"	266
538	6 15/16 - 7"	600
544	7 1/2 - 8"	600

Step 7: Refer to Steps 5 and 6 from the Previous Installation Sections for the Respective Shaft Locking Mechanism

Relubrication Instructions:

Lubrication:

All Sealmaster® spherical roller bearings are delivered with a high quality lithium complex base grease with an EP additive. The bearing is ready for use with no initial lubrication required. The grease is a lithium complex base, mineral oil, NLGI grade 2 consistency, with a base oil viscosity of ISO VG 220. Compatibility of grease is critical; therefore consult with Sealmaster Bearings Application Engineering and your grease supplier to insure greases are compatible. For best performance it is recommended to relubricate with lithium complex thickened grease with a comparable NLGI consistency and base oil viscosity.

Relubricatable Sealmaster bearings are supplied with grease fittings or zerks for ease of lubrication with hand or automatic grease guns. Always wipe the fitting and grease nozzle clean.

CAUTION: Bearing lubrication within rotating equipment may present a safety concern that could result in personal injury. If possible, it is preferred to lubricate the bearing while rotating, until grease purge is seen from the seals. If this is not an option due to safety reasons, follow the alternate lubrication procedure below.

Alternate Lubrication Procedure:

Stop rotating equipment. Add one half the recommended amount shown in Table 7. Start the bearing and run for a few minutes. Stop bearing and add the second half of the recommended amount. A temperature rise after lubrication, sometimes 30°F (17°C), is normal. Bearing should operate at temperatures less than 200°F (94°C) and should not exceed 250°F (121°C) for intermittent operation. For lubrication guides, see Tables 8 and 9.

Table 7

Grease Charge for Relubrication	
Bore Size	Grease Charge (Mass Ounces)
1 7/16 - 1 1/2"	0.3
1 11/16 - 2"	0.4
2 3/16"	0.6
2 7/16 - 2 1/2"	0.9
2 15/16 - 3"	1.2
3 7/16 - 3 1/2"	1.9
3 15/16 - 4"	3.0
4 7/16 - 4 1/2"	5.1
4 15/16 - 5"	6.5
5 7/16 - 5 1/2"	8.1
5 15/16"	14.5
6 7/16 - 7"	19.4
7 1/2 - 8"	24.8

Table 8

Relubrication Recommendations			
Environment	Temperature (°F)	Speed (% Catalog Max)	HI Suffix
Dirty	-20 to 220	0 - 100%	Daily to 1 Week
		0 - 25%	4 to 10 Months
Clean	-20 to 125	26 - 50%	1 to 4 Months
		51 - 75%	1 Week to 1 Month
		76 - 100%	Daily to 1 Week
		0 - 25%	2 to 6 Weeks
	125 to 175	26 - 50%	1 Week to 1 Month
		51 - 75%	Daily to 1 Week
		76 - 100%	
		175 to 220	0 - 100%

Table 9

Maximum Operating Speed		
Bore Size	Felt Seal (RPM)	Contact Seal (RPM)
Up to 1 1/2"	4000	3000
1 11/16 - 1 3/4"	4000	2750
1 15/16 - 2"	4000	2500
2 3/16"	3750	2200
2 7/16 - 2 1/2"	3250	1750
2 11/16 - 3"	3000	1600
3 3/16 - 3 1/2"	2500	1350
3 11/16 - 4"	2250	1200
4 7/16 - 4 1/2"	2000	1100
4 15/16 - 5"	1750	900
5 7/16 - 5 1/2"	1500	900
5 15/16"	1300	800
6 7/16 - 7"	1200	750
7 1/2 - 8"	1100	750