Link-Belt® 300 Series Heavy Duty Shurlok Bearing

INSTALLATION INSTRUCTIONS
A300 Series

Bearing Mounting Procedure

WARNING: These instructions should be read entirely and followed carefully before attempting to install or remove Link-Belt Heavy Duty Shurlok Ball bearings. Failure to do so can result in improper installation which could cause bearing performance problems as well as serious personal injury.
If your installation temperature is greater that 120°F or less than 20°F use Alternative Mounting Method on Page 4.

INSTALLATION – One Fixed and One Expansion Unit

1. Inspect shaft size (see shaft tolerance table, Page 3. Table 2). Shaft must be to correct size. Clean shaft and mounting surface as needed.
2. Loosen setscrews in locknut then rotate locknut counterclockwise until there is about one thread left before sliding bearing on shaft. If locknut sleeve assembly is removed, refer to comment 2 in Additional Installation Comments.
3. Slide the bearings on the shaft to their intended positions and loosely bolt down. Back off the setscrews in the locknut so the locknut will turn easily.
4. Tighten the Adapter Assembly of the Fixed Bearing First – Make sure the shaft is locked so as not to rotate. Hand tighten the locknut then use a hook-type spanner wrench to bring the locknut to a snug fit. Snug fit is defined when the locknut has been tightened enough to remove the clearance between shaft, adapter sleeve, and inner ring.
   NOTE: If the adapter sleeve begins to slip around the shaft, then retain the sleeve using a second, small hook-type spanner wrench. Engage the second spanner wrench into the split area of the adapter sleeve. Position the wrench in the opposing direction of the first spanner wrench that is engaged in the locknut (See Figure 1). Continue tightening until the adapter sleeve will no longer slip about the shaft.
5. Mark the position of the locknut relative to the shaft with a grease pencil or a dark marker at the top of the locknut and shaft (See Figure 3).
6. Begin to tighten the locknut using one of these methods:
   - The special SHURLOK™ style-wrench installation tool (see Table 1, Page 2) with a ½ or ¾" drive breaker bar
   - The special SHURLOK impact-style installation tool (see Table 1, Page 2) and a hammer
   - A soft steel drift pin and a hammer.
   - A chain wrench.
7. Tighten the locknut clockwise about ½ of a turn. Check the visual indicators for any color change. It is important to check both indicators. If neither indicator shows any color, continue tightening the locknut in 1/8 turn increments while noting the condition of the visual indicators.
   NOTE: At least one of the visual indicators should show a color change. **It is important to note that any of the color patterns shown in Figure 4 (page 2) or any patterns in between are acceptable. The indication pattern does not need to be centered and may only show on one side of the indicator. Only one of the indicators needs to show color for the bearing to be properly tightened.** If both of the indicators are still clear after tightening to the Minimum Locknut Adjustment in Table 4 (page 3), then continue to tighten in 1/8 turn increments. Discontinue tightening when at least one indicator shows a color change or the Maximum Locknut Adjustment in Table 4 (page 3) is reached. If the Maximum Locknut Adjustment is reached and neither indicator shows a color change, the unit should be dismounted. Remount the unit using the alternate method of mounting as shown on page 4**.
8. If the indicator starts to show yellow and/or red indication anywhere on the indicator, the mounting has been over-tightened, see figure 5 (page 2). To rectify this situation, simply impact the locknut in the counter-clockwise direction. When the adapter assembly becomes completely loose, start the tightening procedure again from step 3.
9. Tighten the two set screws to the recommended seating torque from Table 5 (page 3). If one of the set screws is lined up with the slot in the adapter sleeve, tighten the locknut clockwise until the set screw clears the slot. **Tightening the set screws in most cases changes the eye color and in some cases removes the color. Ignore this change because the bearing have been tightened correctly per above instructions.**
10. *Tighten the Floating Bearing* - Center the floating bearing cartridge in the housing. Tighten the bearing to the shaft following the same procedure for the fixed bearing. Tighten down all mounting bolts at this time.

****See page 4 for ALTERNATIVE MOUNTING METHOD****

INSTALLATION – Two Fixed Units

If you are installing two fixed pillow block units, tighten the mounting bolts of the first unit, and then install it as shown in the INSTALLATION section. Install the second bearing as normal, and then tighten its mounting bolts last.

If you are installing two fixed flange units, tighten the mounting bolts of the first unit and install as normal. Snug up the mounting bolts on the second unit. Now go through the INSTALLATION procedure to take out the adapter assembly looseness for the second bearing, Step 3. After reaching a snug fit for the locknut, loosen the mounting bolts enough to allow for housing movement away from the mounting base. Housing movement should equal the required shim stock thickness shown in Table 7 (page 3). Now complete the installation of the second bearing. Once the second bearing has been mounted, place shim stock underneath each bolt pad between the housing base and the structure. Place the shim stock adjacent to each bolt on two sides about the shaft of the bolt to allow for uniform pressure under each bolt pad. Tighten housing mounting bolts to complete the installation.

ADDITIONAL INSTALLATION COMMENTS

1. Position housings for accessibility of grease fittings.
2. The adapter assembly is shipped inside the bearing. The adapter components do not need to be removed. If you should happen to remove the adapter sleeve from the bearing during installation, you must align the adapter sleeve slot with its mating spline in the inner ring bore as shown in the Figure 2 below.
3. When pillow blocks are mounted on an inclined plane or the work force is parallel with the base, either lateral bolts or welded stop blocks should be used to prevent shifting.
4. Avoid direct hammer blows to the bearing and its components by using a soft drift or block.
5. Do not coat the shaft & bearing bore with grease or oil to facilitate assembly.
6. If an Allen wrench is used as a torque wrench, place a length of pipe over the long end and pull until the wrench begins to twist.

Figure 1) Wrench positioning to prevent sleeve from slipping.

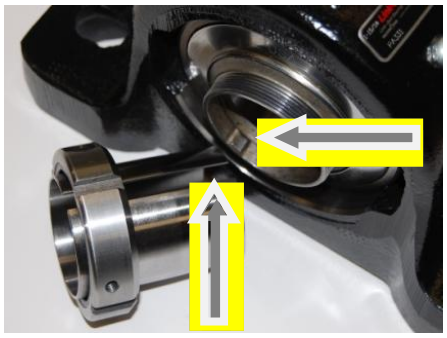

Figure 2) If sleeve is removed from lock, align spline with slot in sleeve to reinstall.

Bearing Mounting Procedure

Figure 3: Position of Locknut relative to Shaft

Figure 4: Tightening Locknut using Impact Wrench

Figure 4: Acceptable changes in the OSS

Figure 5: Over-tightened indicator showing yellow and red

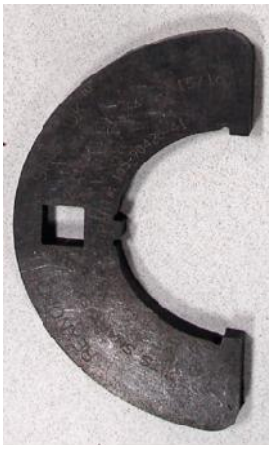

Figure 6: Wrench Style

Figure 7: Impact Style

Table 1: Shurlok Installation Tools

Installation Tools		
Bearing Size	**Wrench Style Part Number (Figure 6)**	**Impact Style Part Number (Figure 7)**
319	N6103-SPN	N6103-IMP
323	N6107-SPN	N6107-IMP
327	N6111-SPN	N6111-IMP
331	105-90420-11	105-90425-11
335	105-90420-21	105-90425-21
339	105-90420-31	105-90425-31
343-344	105-90420-41	105-90425-41
351-355	105-90420-51	105-90425-51
363	105-90420-61	105-90425-61

Bearing Mounting Procedure

Table 2: Recommended Shaft Tolerance Table

Shaft Tolerance		
Nominal Shaft sizes (inches)	**Commercial Shaft Tolerance (Cold Finished Steel, Low Carbon)**	**RECOMMENDED SHAFT TOLERANCES**
1 3/16 – 1 15/16	+.000 -.003	+.000 -.003
2 3/16 – 3 15/16	+.000 -.004	+.000 -.004

Table 4: Final Locknut Adjustment Table

Minimum and Maximum Locknut Adjustment			
Shaft Size Range (in)		**Minimum Locknut Adjustment (Turn)**	**Maximum Locknut Adjustment (Turn)**
From	To		
1 3/16	3 15/16	1	1 1/4

Table 6: Recommended Lubrication Schedule

Lubrication Schedule					
Shaft Size (in)	**Grease WT. Required (OZ.)**	**Recommended Number of Months at Given Shaft Speed**			
		Months			
		6	4	2	1
1 3/16	0.15	3620	5610	8145	10860
1 7/16	0.22	3285	5095	7395	9860
1 11/16	0.41	2640	4225	6060	8100
1 15/16	0.52	2310	3850	5580	7315
2 3/16	0.70	2045	3410	4945	6480
2 7/16	0.83	1830	2990	4320	5815
2 11/16 – 2 3/4	1.25	1660	2580	3865	5155
2 15/16	1.50	1550	2410	3620	4825
3 3/16	1.80	1370	2225	3420	4450
3 7/16	2.42	1350	2025	3040	4050
3 15/16	3.27	1200	1885	2740	3600

Table 7: Shim Stock Thickness for Flange Bearings

Shim Stock for Two Fixed Flange Units		
Shaft Size Range (in)		Shim Stock (in)
From	To	
1 3/16	1 11/16	.042
1 15/16	2 3/16	.063
2 3/8	2 15/16	.070
3 3/16	3 15/16	.080

Table 3: Locknut Toque Limit

Locknut Torque Limit	
Bearing Size	**Torque Limit (lbs-ft)**
319	75
323	95
327	115
331	145
335	205
339	315
343-344	395
351-355	480
363	510

Table 5: Recommended Set Screw Torque

Set Screw Tightening Torque	
Shaft Size (in)	**Seating Torque (in – lbs)**
1 3/16	87 - 92
1 7/16	
1 11/16	
1 15/16	
2 3/16	
2 7/16	
2 11/16	165 - 185
2 3/4	
2 15/16	
3 3/16	
3 7/16	
3 15/16	290 - 325

LUBRICATION INFORMATION

Standard bearings come pre-lubricated from the factory with Exxon Ronex MP grease. Exxon Ronex MP is an NLGI Grade 2 EP (extreme pressure) grease with a lithium complex thickener. It can be used for high loads, and in some cases at temperatures as low as -40°F or as high as +225°F. For high speeds, other special service conditions, or for inquires on other acceptable greases, please consult your local Rexnord representative or the Rexnord Bearing Engineering Department. Oil lubrication is not recommended.

RELUBRICATION

Bearings should be re-lubricated at regular intervals. The frequency and amount of lubricant will be determined by the type of service. General guidelines for re-lubrication frequency and amount are based upon average application conditions. See LUBRICATION TABLE to the left. Oil lubrication is not recommended.

At High temperatures, greases tend to degrade more rapidly and thus require fresh grease more frequently. In general, small amounts of grease added frequently provide better lubrication. When equipment will not be in operation for some time, grease should be added to provide corrosion protection. This is particularly important for equipment exposed to severe weather.

AUTOMATIC LUBRICATION SYSTEMS

A variety of automatic re-lubrication systems are available for use with ball bearings. Key considerations are:

1. NLGI grade of grease used, consistent with system layout
2. An amount/frequency combination necessary to replenish the grease

MIXING OF GREASES

Mixing of 2 greases should be checked with the lubricant manufacturer. If the grease bases are different they should never be mixed.

Bearing Mounting Procedure

REMOVAL
Back out the locknut setscrews, and then loosen the locknut in a counter-clockwise direction until the adapter assembly becomes completely loose. The bearing should slide freely along the shaft.

DISASSEMBLY of BEARING INSERT
1. Remove shaft locking device (adapter assembly) and slide off shaft.
2. Place in vice.
3. With a shaft or bar, misalign bearing 90° in housing and remove through slots.
4. Clean and inspect housing. Do not reuse worn housing.

REASSEMBLY OF BEARING INSERT
1. Insert new bearing into loading slots.
2. Torque bearing 90° and assure lube holes in the bearing are on the same side as lube groove in housing. Fit should be snug.
3. Install bearing via steps on page 1.

ALTERNATIVE MOUNTING METHOD
If for any reason the visual indicator becomes damaged or no color change was seen in Step 3, this alternate method for mounting the adapter assembly must be used, otherwise skip to step 6.

Start at INSTALLATION step 1, then hand-tighten the locknut to take out looseness. Use a hook-type spanner wrench to bring the locknut to a snug fit. If the adapter sleeve begins to slip around the shaft, then retain the sleeve using a second small hook-type spanner wrench. Engage the second spanner wrench into the split area of the adapter sleeve. Position the wrench in the opposing direction of the first spanner wrench that is engaged in the locknut. Continue tightening until the adapter sleeve will no longer slip about the shaft.

Mark the position of the locknut relative to the shaft with a grease pencil or a dark marker at the top of the locknut and shaft. Make sure the mark is legible and marks both the locknut and shaft at the same point. Tighten the locknut clockwise until the Maximum Locknut Adjustment is achieved in Table 4 (page 3). When tightening the locknut, be sure to check the sleeve to make sure it does not turn on the shaft.