

**Series 200, 300, 3-U200, 3-Y200,
3-W200, U200, Y200, W200,
U300 and Y300**

Link-Belt® Ball Bearing Units Service Instructions B-BBU-22

IMPORTANT — Read Carefully

These instructions are provided to aid in the proper installation, operation and maintenance of Link-Belt Series 200, 300, 3-U200, 3-Y200, 3-W200, U200, Y200, W200, U300 and Y300 ball bearing units. They should be carefully read and followed. Failure to do so may result in unsatisfactory service as well as serious personal injury or property damage.

U200 series ball bearing units up to and including 2⁷/₁₆ inch shaft size are secured to the shaft with two setscrews threaded into the inner ring. Larger size U200 series and all U300 series units are equipped with spring locking collars having two setscrews. All W200, Y200, and Y300 series ball bearing units feature eccentric locking collars with one setscrew.

CAUTION

The reliability built in all Link-Belt bearings can be realized in service only when they are correctly selected, properly installed, protected and maintained.

The correct selection of bearings or mounted units requires that the magnitude and nature of all loads, speeds, alignment, mounting, operating requirements and maintenance be adequately considered. The selection of materials for and design of housings, shafting, fasteners, seals and accessories as well as provisions for installation and maintenance must follow good engineering principles.

When axial (thrust) loads are present, shaft collars or other means may be required to transmit the thrust from the shaft to the inner ring and prevent the bearing from slipping axially on the shaft.

Housings must be selected and installed with regard to the degree and direction of the forces that will occur. Housings should not be used under tension loads except with adequate safety factors. For this reason pillow blocks are best suited to withstand radial loads passing through the base. When heavy loads or shock loads are possible, it is most important to mount a unit so that the line of force passes directly into its base, or so that the unit is directly and substantially supported other than through its mounting bolts. Where the line of force falls outside the base, such as with horizontal or uplift loads on pillow blocks, serious housing and fastener deflection or failure may occur. These conditions may require designs using different materials, fasteners, mounting design, stop bars, etc., together with proper safety factors. When these conditions are unavoidable, Link-Belt Bearing Division should be consulted.

The following points of installation and operation are very important:

- A. Cleanliness** — Keep dirt, water, and metal chips off all parts.
- B. Careful Handling** — Hammer blows or improper use of force can damage precision parts.
- C. Shaft Fits** — Bearings should have proper fits on the shafts to minimize fret wear. See installation instructions for shaft tolerances. When mounting bearings on a used or worn shaft, care must be taken to clean up the shaft journal and rebuild, as necessary, to the required tolerances. Never replace bearings on a shaft which is bent or which has been damaged or softened by a torch.

- D. Bolts** — Housing mounting bolt tightness is important to prevent the housing from shifting, and to adequately support loads.
- E. Collars and Setscrews** — Eccentric cam locking collars must be securely tightened in the direction of shaft rotation with the setscrew locked, and setscrews in spring locking collars or in setscrew mounted bearings must be properly torqued to prevent the shaft from slipping in the inner ring and to prevent loosening during operation.
- F. Free Rotation and Alignment** — Check for free rotation before machine start-up to assure that final alignment is proper. Although bearings are alignable in housings, they will not "self-align" in many cases and destructive moment loads may be imposed if initial installation alignment is not provided.
- G. Lubrication** — Units designed for relubrication must be adequately lubricated. A bearing not properly lubricated can run to destruction and possibly cause damage to other components. Add grease slowly. Rapid application may blow the seals and allow the grease to escape.
- H. Temperature** — Certain components of these units are made from materials which have temperature limits. Unless units are specifically made for high temperature applications, operating temperatures must not exceed 225°F for units with E, E2, N, U, or housing felt seals, or 275°F for units with H seals.

INSTALLATION

- 1. Check Shaft** — Shafting must be clean, round, straight, free of burrs and nicks and of correct size. For most operating conditions with low to moderate loads and speeds, the following shaft tolerances are recommended:

Shaft Diameter	Recommended Tolerance
1/2" thru 2"	Nominal to minus .0005"
2 1/8" thru 4"	Nominal to minus .0010"

Satisfactory performance may be obtained with increased shaft tolerances under some less severe conditions. Very difficult applications may require a light interference fit of the bearing on the shaft. Consult Link-Belt Bearing Division for recommendations.

- 2. Shaft Preparation** — When frequent removal of bearings is anticipated, file flats on the shaft approximately 1/16" deep under the setscrew locations. This provides for easy removal, as bearings will clear the burrs caused by correctly tightened setscrews.
- 3. Lubricate Shaft & Bearing Bore** — Coat the shaft and bearing bore with grease or oil to facilitate assembly.
- 4. Assemble on Shaft** — If it is necessary to tap or press units on the shaft, use a hardwood block, soft steel bar or tube against the end of the inner ring. DO NOT strike or exert pressure on housing or seals.
 - Setscrew Mounted Units** — Back out all setscrews to clear the shaft and slide the units into position on the shaft.
 - Spring Locking Collar Units** — Back out all collar setscrews to clear the shaft and slide the units into position on the shaft.
 - Eccentric Cam Locking Collar Units** — Slide each unit into position on the shaft with the cam locking collar positioned for engagement with the inner ring cam.
- 5. Preliminary Unit Location** — With both bearing units on the shaft, preliminarily locate the shaft in position. Lightly bolt the units to the mounting structure. SAE Grade 5 mounting bolts can be used. Bridge over housing mounting bolt slots with heavy flat washers. The use of heavy spring lockwashers under bolt heads and nuts is good practice to prevent loosening.
- 6. Final Positioning** — Establish the final shaft position. Align the bearing units by hand, if required, or use a shaft or a rubber mallet. Securely bolt both

TABLE 1 — Inner Ring and Collar Setscrew Tightening Torque

Shaft Size (in.)	Seating Torque (in-lbs.)				
	W200	Y200	U200	U300	Y300
1/2 to 11/16	87 - 92	87 - 92	33 - 40	33 - 40	
3/4	87 - 92	87 - 92	87 - 92	33 - 40	
13/16 to 1	87 - 92	87 - 92	87 - 92	87 - 92	
1-1/16 to 1-3/16	165-185	165-185	87 - 92	165-185	290-325
1-1/4 to 1-7/16	290-325	290-325	165-185	165-185	290-325
1-1/2 to 1-9/16	290-325	290-325	165-185	165-185	
1-5/8 to 1-3/4	290-325	290-325	165-185	290-325	430-460
1-13/16 to 1-15/16	290-325	290-325	290-325	290-325	620-680
2 to 2-3/16		430-460	290-325	430-460	620-680
2-1/4 to 2-7/16		430-460	290-325	430-460	620-680
2-1/2 to 2-11/16			430-460	620-680	1225-1350
2-3/4 to 2-15/16			620-680	620-680	2125-2350
3 to 3-1/2			620-680	1225-1350	
3-9/16 to 3-3/4			1225-1350	1225-1350	
3-13/16 to 4			1225-1350	2125-2350	

Note: Satisfactory tightness may be obtained by using a standard hex wrench (50-52 Minimum RHN C) and tightening until a slight permanent twist is obtained in wrench for each setscrew.

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units to the mounting structure by correctly torquing the bolts.

- 7. Locking The Bearings** — Before the collars or setscrews are tightened, it should be possible to axially move the shaft by hand thru the bearings bores. If this cannot be done, repeat step 6. When satisfied, lock one bearing to the shaft. If one unit is an expansion type, lock the fixed bearing first.

Setscrew Mounted And Spring Locking Collar Units - Tighten both setscrews to the seating torque values in table 1, or, using a good quality individual hex wrench, tighten each setscrew until a slight permanent twist is attained in the shank of the wrench.

Eccentric Cam Locking Collar Units - Engage the collar on the inner ring cam. Rotate the collar in the direction of shaft rotation until it becomes tight using a hammer and a drift pin, continue tightening until solid. Tighten the setscrew.

Rotate the shaft a few revolutions to center the bearings. Locate expansion units in the center of their axial movement. Tighten the setscrews or collars on the remaining unit using the same method.

- 8. Tabbed End Closure Installation - For YG300 & UG300 only** — Insert the end closure tabs into the housing loading slots. Tap on the end closure face by hand or with a rubber mallet until the end closure seats against the housing. Fill the gap between the end closure outer diameter and housing bore with a bead of silicone sealant/adhesive.

- 9. Check for Noise, Freedom of Rotation Or Vibration** — Any condition of strain, irregular rotational torque, abnormal sound or vibration should be investigated. Look for improper alignment, out-of-balance, bent shaft, distorted or weak supports, broken welds, etc. Installation should be rechecked and corrected as required.

The use of stop bars welded to the support at each end of units leaving about 1/32" space after units are securely fastened. These bars assure proper location of the units and prevent shifting when loads are applied.

LUBRICATION

Units are prelubricated. With relubricatable designs no additional lubricant is required for startup. As a precaution, if equipment is to be built and left idle for any period of time prior to actual use relubricatable bearings should be filled 100% full to provide maximum protection from corrosion, etc. The suggested relubrication schedule under Table 2 is a general guide.

The specific conditions on an application such as exact hours of operation, temperature, moisture, speed and dirt govern the required lubrication cycle. This can be determined by inspection of the flushed out lubricant during a trial period of operation. Add grease slowly. Use a sufficient volume of grease to purge the bearing seals of old lubricant. It is preferable to rotate bearings during relubrication where good safety practice permits. Inspection of bearing installations at least every six months is recommended. Any unusual noise or vibration change should be immediately investigated.

TABLE 2 — Grease Lubrication

OPERATING ENVIRONMENT		Bearing Operating Temperature	Greasing Interval (1)	Use Grease Equivalent to these (2)
Dirt Exposure	Moisture Exposure			
Slight	None	32°F to 120°F	6 months	High quality NLGI No. 2 multi-purpose ball bearing greases are generally satisfactory. Consultation with a reputable lubricant supplier is recommended.
Moderate to Heavy		120° to 160°F	2-4 months	
	160°F to 200°F	1-2 months		
Slight to Heavy	Direct water splash or exposure to outdoor environment	32°F to 160°F	1-4 weeks	
		160°F to 200°F	1 week	
Slight	None	32°F to 200°F	Daily to 1 week or as determined by inspection of installation	Mobil Oil Corp., Mobilith AW 2 Shell Oil Co., Alvania EP 2 Texaco Inc., Premium RB 2
Slight		-60°F to 32°F	Determined by inspection of installation	Shell Oil Co., Aeroshell 7A Mobil Oil Corp., Mobiltemp SHC 32
	above 200°F	Special lubrication and seals may be required.		

(1) Frequency of regreasing will vary, depending on the hours of operation, temperature and surrounding conditions.

(2) Do not use dibasic ester type lubricants without consulting Link-Belt Bearing Division, which can provide assistance in selection of lubricants given knowledge of operating conditions.

Link-Belt Bearing Division cannot be held responsible for performance of individual batches of grease. Changes in lubricant specifications, performance, and lubricant guarantees are the responsibility of the lubricant manufacturer.

LIMITED WARRANTY — LIABILITY

- A. IT IS EXPRESSLY AGREED THAT THE FOLLOWING WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION OR LIABILITY ON OUR PART OF ANY KIND OR NATURE WHATSOEVER.**

No representative of ours has any authority to waive, alter, vary or add to the terms hereof without prior approval in writing, to our customer, signed by an officer of our company. It is expressly agreed that the entire warranty given to the customer is embodied in this writing; that this writing constitutes the final expression of the parties' agreement with respect to warranties; and that it is complete and exclusive statement of the terms of the warranty.

We warrant to our customers that all Products manufactured by us will be free from defects in material and workmanship at the time of shipment to our customer for a period of one (1) year from the date of shipment. All warranty claims must be submitted to us within ten days of discovery of defects within the warranty period, or shall be deemed waived. As to Products or parts thereof that are proven to have been defective at the time of shipment, and that were not damaged in shipment, the sole and exclusive remedy shall be repair or replacement of the defective parts or repayment of the proportionate purchase price for such Products or parts, at our option. Replacement parts shall be shipped free of charge f.o.b. our factory.

This warranty shall not apply to any Product which has been subject to misuse; misapplication, neglect (including but not limited to improper maintenance and storage); accident; improper installation, modification (including but not limited to use of unauthorized parts or attachments), adjustment, repair or lubrication. Misuse also includes, without implied limitation, deterioration in the Product or part caused by chemical action, wear caused by the presence of abrasive materials, and improper lubrication. Identifiable items manufactured by others but installed in or affixed to our Products are not warranted by us but, bear only those warranties, express or implied, given by the manufacturer of that item, if any.

Responsibility for system design to insure proper use and application of Link-Belt Products within their published specifications and ratings rests solely with customer. This includes without implied limitation analysis of loads created by torsional vibrations within the entire system regardless of how induced.

- B. It is expressly agreed that our liability for any damages arising out of or related to this transaction, or the use of our Products, whether in contract or in tort, is limited to the repair or replacement of the Products, or the parts thereof by us, or to a refund of the proportionate purchase price. We will not be liable for any other injury, loss, damage or expense, whether direct or consequential, including but not limited to loss of use, income, profit, production, or increased cost of operation, or spoilage of or damage to material, arising in connection with the sale, installation, use of, inability to use, or the replacement of, or late delivery of, our Products.**
- C. It is also expressly agreed that any cause of action for breach of any warranty must be brought within one year from the date of the breach.**

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