

M3000 EVEN-LOK™ APPLICATION GUIDE

At Moline, our goal is to provide you with the most reliable products, helpful service, and expert support. We work to make our mounting instructions clear and easy to understand. But if you have further questions, please feel free to call 800.242.4633 or e-mail support@molinebearing.com. We are here to help.

MOUNTING INSTRUCTIONS

PLEASE NOTE: BEFORE MOUNTING, MAKE SURE THERE IS SUFFICIENT CLEARANCE TO ACCESS DISMOUNTING SET SCREWS ON BACK OF UNIT (YELLOW PLASTIC PROTECTION PLUGS).

For optimum bearing performance, it is important to start the mounting process with a shaft that is free of burrs and dirt. Please review your shaft and file down burrs and wipe clean then lubricate shaft with light oil. Check shaft diameter and review recommended shaft tolerances below:

SHAFT DIAMETER	TOLERANCE
1 7/16"–1 15/16"	+ .000" to -.003"
2"– 4"	+ .000" to -.004"



- Do not remove plastic end cap or plastic protection plugs inserted in the set screw holes until you are ready to install bearing onto shaft.
- Do not disassemble bearing prior to installation.
- **Do not tighten any mounting screws prior to installation.**
- Use only the supplied Even-lok™ wrench for tightening set screws on bearing. After storage or idle period, add a little fresh grease before running.

1. Clean the base of the bearing and support surface on which it rests. Be sure the supporting surface is flat. If the bearing elevation must be adjusted by shims, the shims **MUST** extend the full length and width of the support surface.
2. Slide the bearing, with the mounting side facing outward, on the shaft where the unit is to be secured. Leave 1 1/2" minimum housing spacing to allow for insertion of an Allen wrench in the dismounting side set screws. Bolt the housing securely to the support. Note: The mounting side of the bearing is the side which does not have the yellow plastic protection plugs inserted in the set screw holes.
3. The Expansion bearing must be centered in the housing to allow for axial shaft expansion. Move the bearing axially in the housing in both directions as far as it will go and determine the centered position. It will be necessary to relieve the bearing load while moving the assembly.
4. Snug the mounting screws located in the mounting side collar to finger tightness holding the short leg of the supplied Even-lok™ wrench. Tighten the mounting screws a total of 1/2 turn by alternately tightening in two increments (1/4 turn and 1/4 turn). Please refer to the following diagram for proper tightening pattern for each bearing size:

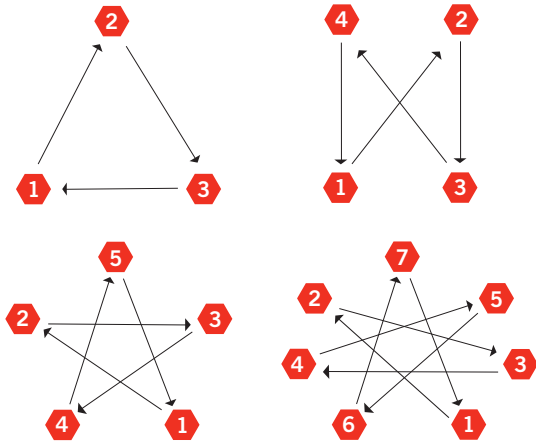
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M3000 TIGHTENING PATTERNS

5. Tighten each set screw until the long end of the Even-lok™ wrench bows ½" under finger pressure. **Caution:** Do not use power driven or auxiliary equipment such as a hammer or pipe in tightening the screws.



DISMOUNTING INSTRUCTIONS



1. Retighten the mounting side set screws until the long end of the Even-Lok™ wrench bows ½" under finger pressure only.
2. Loosen the mounting side set screws 1–2 full turns.

3. Using a screw driver or other suitable tool, remove and discard the 2 plastic protection plugs.
4. Alternately tighten the dismantling screws in ¼ turn increments until the bearing is released from the shaft. You should hear a distinctive “pop” indicating release.
5. Loosen the dismantling set screws, unbolt the housing from the support structure and remove the complete assembled unit from the shaft.

Note: If the bearing unit will not slip off the shaft during removal, do not continue to further tighten the dismantling set screws. This may tend to reverse tighten the bearing to the shaft. In the unlikely event that reverse tightening occurs, loosen the dismantling screws and retighten the screws on the mounting collar side following instructions. Repeat the dismantling procedure Steps 2 through 5.

LUBRICATION INSTRUCTIONS

This bearing is factory lubricated with No. 2 consistency lithium base grease which is suitable for most applications. However, extra protection is necessary if bearing is subjected to excessive moisture, dust, or corrosive vapor. In these cases, bearing should contain as much grease as speed will permit (a full bearing with consequent slight leakage through the seal is the best protection against contaminant entry).

In extremely dirty environments, the bearing should be purged daily to flush out contaminants. For added protection, it is advisable to shroud the bearing from falling material.

High Speed Operation

At higher operating speed, too much grease may cause overheating. In these cases, the amount of lubrication can only be determined by experience. If excess grease in the bearing causes overheating, it will be necessary to remove grease fittings and run for 10 minutes. This will allow excess grease to escape. Then wipe off excess grease and replace grease fittings.

In higher speed applications, a small amount of grease at frequent intervals is preferable to a large amount at long intervals. However, the proper volume and interval of lubrication can best be determined by experience.



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Lubrication Guide

Read preceding paragraphs before establishing lubrication schedule.

HOURS RUN PER DAY	SUGGESTED LUBRICATION PERIOD IN WEEKS							
	1 TO 250 RPM	251 TO 500 RPM	501 TO 750 RPM	751 TO 1000 RPM	1001 TO 1500 RPM	1501 TO 2000 RPM	2001 TO 2500 RPM	2501 TO 3000 RPM
8	12	12	10	7	5	4	3	2
16	12	7	5	4	2	2	2	1
24	12	5	3	2	1	1	1	1

The following table is a general guide for normal operating conditions. However, some situations may require a change in lubricating periods as dictated by experience. If the bearing is exposed to unusual operating conditions, consult a reputable grease manufacturer.

LUBRICATION GUIDE

Read preceding paragraphs before establishing lubrication schedule.

Abnormal bearing temperatures may indicate insufficient lubrication. Normal temperature may range from “cool to warm to the touch” up to the point of “too hot to touch for more than a few seconds,” depending on the bearing size and speed, and surrounding conditions. Unusually high temperature accompanied by excessive leakage of grease indicates too much grease. High temperature with no grease showing at the seals, particularly if the bearing seems noisy, usually indicates too little grease. Normal temperature and a slight showing of grease at the seals indicate proper lubrication.

If equipment will be idle for some time, before shutting down, add grease to the bearing until grease purges from the seals. This will ensure protection of the bearing, particularly when exposed to severe environmental conditions. After storage or idle period, add fresh grease to the bearing before starting.

SPECIAL OPERATING CONDITIONS

Refer acid, chemical, extreme or other special operating conditions to the Moline Bearing Company.

Moline spherical bearings have the capacity to carry substantial radial loads, thrust loads or a combined radial and thrust load. The maximum load that can be applied is limited by the various components in the system, and the life requirements listed in this catalog. The factory should be consulted on any application that exceeds the recommendations in the catalog.

Select a bearing from the M3000 load-rating chart having a radial load rating at the operating speed equal to or greater than the calculated Equivalent Radial Load for a desired L10 life. This simple method is all that is necessary for most general applications and provides for occasional shock loads.

L10 Hours of Life – Is the life that may be expected from at least 90% of a given group of bearings operated under identical conditions. The average life (L50) will be approximately five times the L10 life.



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M3000 Even-Lok™ Thrust Factors and Seal Speed

SHAFT SIZE	E	LIGHT THRUST IF FA/FR ≤ E		HEAVY THRUST IF FA/FR ≥ E		DYNAMIC CAPACITY C*		STANDARD SEAL RPM	MAXIMUM SLIP FIT RADIAL LOAD FR**
		X	Y	X	Y	LBS.	NEWTONS		
1 7/16 - 1 1/2	.28	1.0	2.4	.67	3.6	16500	73600	2800	2000
1 11/16 - 1 3/4	.26	1.0	2.6	.67	3.9	17300	77100	2650	2100
1 15/16 - 2	.24	1.0	2.8	.67	4.2	19000	84500	2400	2300
2 3/16	.23	1.0	2.9	.67	4.3	22400	99500	2150	2700
2 7/16 - 2 1/2	.24	1.0	2.8	.67	4.2	33300	148000	1800	4000
2 11/16 - 3	.22	1.0	3.1	.67	4.6	34600	158000	1600	4200
3 7/16 - 3 1/2	.23	1.0	2.9	.67	4.3	56900	253000	1300	6800
3 11/16 - 4	.24	1.0	2.8	.67	4.2	69900	311000	1200	8400

* Comparing Spherical to Tapered Roller Bearings—The dynamic capacity C (Spherical) and C90 (Tapered) are not the same base. To compare basic dynamic capacities, multiply C x .259 and compare to C90.

To select and then compare, use the complete procedure for each bearing and then compare.

** If load exceeds maximum allowable slip fit radial load, snug to light press fit of shaft is required.

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