

MB Precision Mounted Bearings

MOUNTED BALL BEARINGS WITH PATENTED K-LOK® AND CENTRICK-LOK® SHAFT LOCKING DEVICES

INSTRUCTIONS FOR BEARING INSTALLATION AND LUBRICATION

CAUTION

Failure to comply with proper installation, lubrication and maintenance procedures could result in catastrophic bearing failure. If operating in an explosive environment or in or around combustible materials, such catastrophic failure could lead to property damage and personal injury.

IMPORTANT NOTICE

The performance of any mounted unit is dependent upon proper installation, lubrication and maintenance. Premature failure may result if recommended instructions are not followed.

INSTALLATION

1. The shaft must be clean and free of nicks and burrs. If used shafting is again utilized, the bearing must be located on a smooth, unworn section.
 - a. A ground shaft must be used to obtain a snug fit, except where the unit is used for heavy loads, high speeds, or where dynamic balance is critical, in which case a light press fit is required. The following shaft diameters and tolerances must be used to obtain a snug fit:

Shaft diameters, Inches	Tolerances, Inches, From Nominal
1/2 to 1-15/16	+ .0000 to -.0005
2 to 3-1/2	+.0000 to -.0010

- Heavy loads are loads greater than 15% of the Basic Dynamic Rating (BDR) of the bearing used in the mounted unit. The bearing number and Basic Dynamic Rating for each unit can be found on our MB Catalog. High speeds are those defined as being in excess of 1,500 feet per minute.
- b. To obtain a light press fit, a line-to-line fit between the bearing bore and the shaft diameter must be maintained. Any fit tighter than line-to-line can cause premature bearing failure. Thus, selective fitting of bearing bores and shaft diameters is required to maintain proper light press fit for heavy loads, high speeds or when dynamic balance is critical.
 - c. For moderate thrust loads, shock loads, vibration or higher speeds, the shaft should be spot drilled to provide additional holding. Heavy thrust load applications require a shouldered shaft back-up against the inner ring face, or an added thrust collar.

2. Even very small raised edges and burrs on the mounting surfaces can lead to overstressing and fracture of the housing. Therefore, the support member surface to which the housing will be mounted, and the housing mounting surface, must be clean and free of burrs and nicks that have raised edges, so that a smooth, flat mounting surface is present. Careful handling of mounted units is required to avoid damage to the mounting surface.
3. Slide the unit on the shaft by applying light pressure against the face of the inner ring. **DO NOT HAMMER THE ENDS OF THE INNER RING OR ANY PART OF THE HOUSING.**
4. Bolt the housed units securely to the support members.
5. Tighten the set screws of one bearing locking device to the recommended torque value given in Chart I, below.
 - a. Bearings with the K-LOK locking device have no collar—the set screws in the inner race extension tighten against the shaft.
 - b. Bearings with the CENTRIK-LOK locking device have a collar. The set screws in the collar are started into countersunk holes in the inner race extension. These set screws **must** be tightened to the Chart I recommended torque values into those countersunk holes to obtain satisfactory and efficient locking to the shaft.
6. Check the shaft for freedom of rotation. If possible, run the bearings a short time under load.
7. Tighten all bearing set screws to the Chart I recommended torque values.

CHART I

RECOMMENDED SET SCREW TORQUE					
Set Screw Size	Socket Size	Inch	Pounds	Foot	Pounds
		Min.	Max.	Min.	Max.
#10	3/32	25	33	2.1	2.8
1/4	1/8	65	87	5.4	7.3
5/16	5/32	124	165	10.3	13.8
3/8	3/16	218	290	18.2	24.2

LUBRICATION

All standard MB ball bearing mounted units are prelubricated with grease and must be periodically relubricated to obtain full bearing fatigue life. This is even more important when these units are used in a dusty or moist environment. The required relubrication cycle will be dependent upon the operating conditions, speed, temperature, dust, moisture and other environmental conditions. The following lubrication guide must be followed to prevent catastrophic bearing failures:

LUBRICATION GUIDE

Conditions

Dust
Moisture

Minimum Relubrication Interval

Daily to twice weekly)
Twice daily to weekly) See Paragraph 2b.

1. Grease should be added slowly while the shaft is rotating, until a slight bead of grease forms at the seals. This indicates the correct amount of grease has been added. A slight grease leakage at the seals is beneficial as it assures lubrication of the seal contacts, purging of old grease from the bearing and provides protection in the form of a grease dam against contamination.

CAUTION:

Proper care must be exercised during relubrication to avoid any rotating parts that would cause personal injury.

2. MB mounted ball bearing units are prelubricated with lithium base grease for normal operating conditions and a temperature range of -30° F. to +275° F. These units must be relubricated with a lithium base grease, or a grease recommended by a reputable grease manufacturer as being suitable for ball bearings and compatible with lithium base grease.
 - a. Relubrication will generally cause a slight rise in bearing operating temperature until the bearing has stabilized with the proper amount of lubricant. Under normal conditions, this slight rise in operating temperature should not exceed 30° F. This will usually take place within a period of 10 to 30 minutes following the relubrication.
 - b. Some environmental operating conditions, such as an unusual amount of dust, operation in dirt or in moisture laden environments, will require more frequent relubrication with as much grease as possible while maintaining a normal bearing operating temperature range of ambient to approximately 210° F. Relubrication should be as often as necessary to maintain a slight grease leakage at the seals.
 - c. In the event bearings are to be stored in a wet, dusty, or corrosive environment, extra protection must be provided by first adding grease and rotating the bearing until the grease is seen at the seals. In addition, fresh grease must be added before operation, when stored under such adverse conditions.
3. Special optional sealing arrangements are available for unusual or adverse operating conditions. Normally, a special grease pre-pack is required in conjunction with such special sealing arrangements. The MB Engineering Department should be consulted for special application conditions and/or abnormal or severe environmental conditions.

IMPORTANT NOTICE

Periodic relubrication, at a frequency that will be determined by application conditions, is absolutely necessary to avoid catastrophic bearing failure.

In addition, periodic inspection must be made to assure continued satisfactory bearing operation. During such periodic inspection, bearing operating temperatures should be checked. If operating temperatures are found to be rising, the reason for this should be determined. It may be that replacement of the mounted bearing is required.

Temperature sensitive crayons and temperature sensitive labels can be used for determining bearing temperature. Marking the housing with temperature sensitive crayon or applying a temperature sensitive label to the housing will indicate if the bearing operating temperature has exceeded a prescribed level. At any time the bearing operating temperature exceeds 210° F., the reason should be determined. Replacement of the mounted unit may be necessary.

Specified procedures and safety codes must be followed. This may require the use of protective guards or other devices. Temperature sensitive crayons or labels, protective guards and other safety devices are not provided by MB nor is their use or lack of use the responsibility of MB Manufacturing, Inc.

BEARING INSERT REPLACEMENT

1. The MB bearing insert has mounted in its spherical outside surface an anti-rotation pin, unless the bearing package is marked "-W/OP". To be effective, this anti-rotation pin must engage one of the loading slots in the cast housing.

2. In addition to the anti-rotation pin, MB housings and bearing inserts are fitted together to provide controlled limits on torque required to align the insert in the spherical seat of the housing. Failure to observe the prescribed alignment to torque values can lead to premature bearing failure. Those alignment torque values can be obtained from Link-Belt Engineering Department.

CAUTION:

The replacement of MB inserts into housings of other manufacturers can lead to premature bearing failure. The lubrication fittings in other in other housing designs may not line up with the lubrication groove and hole in the outer ring of the MB bearing insert. If that occurs, the bearing will not receive lubricant at relubrication and early, and possibly catastrophic, failure can occur.

3. Installation of a MB bearing insert into a MB cast housing is initiated by installing the bearing into the housing insertion slots with the bearing turned 90° from its normal position, and with the anti-rotation pin located in one of the insertion slots. Care must be exercised to avoid shearing the anti-rotation pin when the bearing is gimbaled to its final position, and the bearing must be gimbaled so that the anti-rotation pin (located closer to one face of the bearing outer race) is in position toward the insertion slot face of the casting. Further, the bearing insert should be installed so that the lubrication hole in the outer ring outside surface is approximately in line with the lubrication fitting in the housing. The lubrication groove in the outer ring outside surface **must** be under the housing lubrication fitting.
4. After bearing insert assembly into the housing, the aligning torque must be checked with a torque wrench to verify satisfactory aligning torque. Failure to do so and/or shearing the anti-rotation pin can lead to spinning of the bearing outer race in the housing with resultant housing wear and premature unit failure.

MB PRECISION MOUNTED BEARINGS

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