



Marine Bearings

KAHR-LON® KSEA—EB-5550 Approved Liner System
Spherical, Rod End, & Journal Bearings



Smoother. Faster. Longer.
Because That's How We Roll.



RBC Bearings® provides global industrial, aerospace, and defense customers with unique design solutions to complex problems and an unparalleled level of service, quality, and support.

RBC manufactures highly engineered precision plain, roller and ball bearings, shaft collars, rigid couplings and keyless locking devices. While RBC designs and manufactures products in these major product categories, RBC excels at solving the most demanding and difficult applications with solutions that improve customers' products and process performance and deliver the lowest total cost of ownership. This has been achieved by providing products such as maintenance free bearings, components, and bearings designed

to withstand environments with extreme temperature, high speed, contamination, corrosion, and severe shock loading.

RBC Bearings® has been providing engineered solutions to customers since 1919. RBC has significantly broadened our end markets, products, customer base and geographic reach through organic growth and through acquisitions. These acquisitions fit well with our philosophy of providing high quality products and solutions to our customer base. They have enhanced our customer solutions and experience, further diversifying our offering to our target markets.

RBC currently has 42 facilities in five countries, with manufacturing in 33 locations.





What We Manufacture

Kahr Bearing®, a division of **RBC Bearings®**, operates out of the **Sargent Aerospace and Defense** facility in Tucson, AZ. **Kahr** specializes in the design and manufacture of PTFE lined metal-to-metal monoball and sliding element bearings for military / commercial aircraft and rotorcraft, industrial / passenger railcars, and military marine applications.

Kahr's High-Quality Bearings Include:

- **Plain Bearings** - A full line of plain bearings including journal bearings (bushings), spherical bearings, rod ends, linkages, and specialty assemblies.
- **Spherical Bearings** - Spherical bearings include conventional swaged outer race, load slot entry, and split ball styles.
- **Kaptor® Bearings** - Kaptor® Bearings are metal-to-metal or self-lubricating, low-friction bearings incorporating a threaded retainer ring for installation and replacement where accessibility for staking or high thrust loads prevent traditional bearing retention methods.
- **Wear Strips** - Wear Strips are composite liners that can be applied to prevent incidental damage to mating components. Wear Strips are sold in standard sheet sizes or custom shapes and are available with peel ply and peel-and-stick backings to allow for ultimate flexibility as each application requires.
- **Fretting Buffers** - Fretting Buffers are composite liners that, when applied between static components, protect against fretting, galling or galvanic corrosion damage to the mating surfaces.
- **Marine Grade Materials** - The use of marine grade materials in our products include; Monel 400, Monel K-500, 440C, 17-4PH, 15-5PH, PH13-8Mo, Stellite®, Inconel®, titanium, and aluminum. Other material options are readily available.

Experts in the Industry

Starting in the concept phase, Kahr partners with our customers to ensure that the end product is a success, and then stands behind the designs with outstanding customer service and product support. Kahr Bearing is proud to be recognized as a 2019 Elite Supplier to the Lockheed Martin Rotary Mission Systems Group, and is the only bearing manufacturer to be qualified and QPL listed to the rigorous standards of AS81819 high speed oscillation specification which is intended for helicopter main and tail rotor bearing applications. We invite you to contact Kahr Bearing for more information about our full range of self-lubricated liner technologies. We love a challenge and are up to the task.

How We Can Serve You

Kahr Bearing® has implemented a total quality control system that uses statistical quality control at all facilities, and manufactures in high volume to a just-in-time program.

To serve the ongoing needs of customers, we have a network of over 2,400 distributors and sales engineers throughout North and South America and Europe, with authorized agents worldwide.

For assistance with your bearing application:



Call Us:
520-744-1000 x4735



Email:
info@sargentaerospace.com



Shop with Us:
<https://www.rbcshop.com>

Warranty

Kahr products are warranted for material and workmanship for a period not to exceed 90 days from shipment and for a value not to exceed purchase price. No other warranty is in effect.

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Smoother. Faster. Longer.

Because That's How We Roll.

Product Overview

- ✓ Ball Bearings
- ✓ Cam Followers
- ✓ Cylindrical Roller Bearings
- ✓ Dowel Pins
- ✓ Heavy Duty Needle Roller Bearings
- ✓ Integrated Assemblies
- ✓ Keyless Locking Assemblies
- ✓ Keyless Rigid Couplings
- ✓ Loose Needle Rollers and Shafts
- ✓ Maintenance-Free Bearings
- ✓ Rigid Couplings
- ✓ Rod Ends
- ✓ Self-Lubricating/Lined Bearings
- ✓ Shaft Collars
- ✓ Shrink Discs
- ✓ Spherical Plain Bearings
- ✓ Tapered Roller Bearings
- ✓ Tapered Roller Thrust Bearings
- ✓ Thin Section Ball Bearings

Industrial Markets Served

- ✓ Automation
- ✓ Construction
- ✓ Food & Beverage
- ✓ Material Handling
- ✓ Mining
- ✓ Oil & Gas
- ✓ Packaging Machinery
- ✓ Refuse & Recycling
- ✓ Renewable Energy
- ✓ Military & Defense
- ✓ Power Generation
- ✓ Robotics
- ✓ Semiconductor
- ✓ Transportation
- ✓ Hydropower & Dams

Custom Engineered Solutions

- ✓ Maintenance-Free Bearings
- ✓ Bearings & Components for Harsh Environments
 - Extreme Temperatures
 - High Speed
 - Contamination
 - Corrosion
 - Shock Loading
- ✓ Advanced Sub-Assemblies



Introduction

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Spherical Bearings



| | | | | |
|-------------|-------------------|-------------------|--|-------|
| Designation | | | | 12-13 |
| KSEAB-N | Narrow | Lined Race | | 14 |
| KSEAB-P | Narrow | Lined Race & Bore | | 15 |
| KSEAB-W | Wide | Lined Race | | 16 |
| KSEAB-Y | Wide | Lined Race & Bore | | 17 |
| KSEAB-E | High Misalignment | Lined Race | | 18 |
| KSEAB-T | Thrust Loaded | Lined Race | | 19 |
| KSEAB-S | Special Size | Lined Race | | 20 |

Rod End Bearings



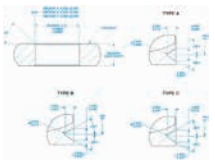
| | | | | |
|-------------|-------------------|-------------------|--------|-------|
| Designation | | | | 22-23 |
| KSEAR-NM | Narrow | Lined Race | Male | 24 |
| KSEAR-NF | Narrow | Lined Race | Female | 25 |
| KSEAR-PM | Narrow | Lined Race & Bore | Male | 26 |
| KSEAR-PF | Narrow | Lined Race & Bore | Female | 27 |
| KSEAR-WM | Wide | Lined Race | Male | 28 |
| KSEAR-WF | Wide | Lined Race | Female | 29 |
| KSEAR-YM | Wide | Lined Race & Bore | Male | 30 |
| KSEAR-YF | Wide | Lined Race & Bore | Female | 31 |
| KSEAR-EM | High Misalignment | Lined Race | Male | 32 |
| KSEAR-EF | High Misalignment | Lined Race | Female | 33 |

Journal Bearings



| | | | |
|-------------|-----------------|---------------------|-------|
| Designation | | | 34-35 |
| KSEAJ-S | Straight Sleeve | Lined Bore | 36 |
| KSEAJ-F | Flanged Sleeve | Lined Bore & Flange | 37 |
| KSEAJ-G | Flanged Sleeve | Lined Bore | 37 |

Appendix



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Introduction

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Introduction

About KAHR® Bearing

The **KAHR® Bearing** division of **RBC® Sargent Aerospace and Defense™** is the market leader in the design, development, and manufacture of lined and metal-to-metal plain, sliding element bearings. Bearings produced by **KAHR®** represent the highest engineering and manufacturing standards attainable today. This is why marine, aerospace, and industrial designers all come to **KAHR®** with their bearing applications and problems. They know that our bearings can be relied on to meet or exceed the most demanding requirements. **KAHR® Bearing** is a wholly owned subsidiary of **RBC® Bearing**.

KAHR® specializes in lubricated and self-lubricating (lined), plain, sliding bearings. These bearings provide higher load ratings than the rolling type, and are ideally suited for the high load, low velocity applications seen in aerospace, marine, and industrial applications. **KAHR®**'s lined bearings makes use of the **KAHR-LON®** liner. As a pioneer in the field of self-lubricating bearings, **KAHR®** has helped the Aerospace Standards Group in the development of Military Standards for self lubricated bearings. The proprietary **KAHR-LON®** liner system provides a smooth, durable, lube-free liner which assures performance and characteristics that exceed that of ordinary fabric liners, allowing **KAHR®** to produce extremely low-friction, long-life bearings that are maintenance-free.

To meet and exceed ever-increasing standards, **KAHR® Bearing** performs extensive research and development in the fields of metallurgy, mechanics, composites, and other disciplines related to friction reduction, energy control, and load transmission. Engineering specialists and technicians continuously test and evaluate new bearing designs, materials, and manufacturing methods. Their findings help to ensure that the customer is provided with the perfect bearing for their application.

Sargent Controls & Aerospace is ISO9001 and AS9100 certified, and an FAA and JAA approved repair station.

Please note that catalog dimensions, loads, and/or materials may be subject to changes or corrections.



Introduction

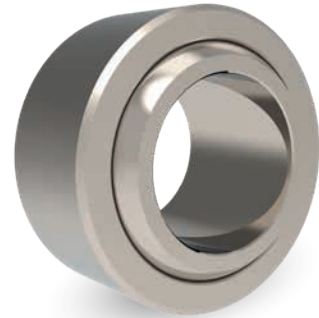
Bearing Types

Spherical Bearings

A self-aligning spherical bearing allows the same freedom of motion as provided by a journal bearing, but also permits a restricted movement in two operating axes (misalignment).

A spherical bearing consists of the ball (or inner race) contained by the outer race. The ball is allowed to pivot within the outer race, which in turn leads to the ability for movement. The design of the inner and outer race allows for varying degrees of allowed misalignment.

Spherical bearings are more complicated to manufacture than journal bearings, because fitting the ball within the outer race is an additional, and complex, process. This can be accomplished by several methods, including swaging, snap-in, split race, split ball, Kaptor-type, or through a loader slot. Spherical bearings can use either a self-lubricating liner, oil, grease, or a dry film lubricant. The bearings in this catalog are swaged with a self-lubricating liner.



Spherical Rod End Bearings

Spherical rod ends consist of a threaded body which retains a spherical bearing insert. The body can have either external or internal threads, depending on the application.

Spherical rod ends can be either a three-piece or a two-piece. A three-piece rod end uses a complete spherical bearing insert to gain its movement, while in a two-piece rod end, the body itself serves as the outer race, and thus may be swaged around the ball.

Rod ends are often used in linkages, and like the other bearings produced at **KAHR**[®], spherical rod ends can be either lined or greased. If the bearing is a metal-to-metal type, a grease fitting is often used in order to facilitate regular lubrication. The spherical rod ends in this catalog are three-piece with a self-lubricating liner.



Journal Bearings

Journal bearings or bushings are used when loads are in the radial (normal to the axis) direction. They consist usually only of a cylindrical tube, in which a pin or similar device is allowed movement through.

Common materials used for plain journal bearings include aluminum bronze, aluminum nickel bronze, and beryllium copper. Flanged journal bearings contain a flange on one or both ends of the cylinder, allowing the bearing to support axial (parallel to the axis) loads.

Flanged bearings that are fabric-lined often contain a liner on the thrust face of the flange as well as within the cylinder. Applications often include landing gear shock struts and helicopter rotor head spindles. Journal bearings can either be self-lubricating or lubricated.

The journal bearings in this catalog are straight or flanged with self-lubricating liner on the inside diameter as well as on the flange when specified.



KAHR-LON® Liner System

The **KAHR-LON®** liner system is one of the most advanced self-lubricating bearing liner systems. The **KAHR-LON®** liner family now contains eleven different varieties, each designed for different applications. Use of a self-lubricating liner eliminates the need for periodic maintenance, and allows for the use of lightweight materials like aluminum or titanium.

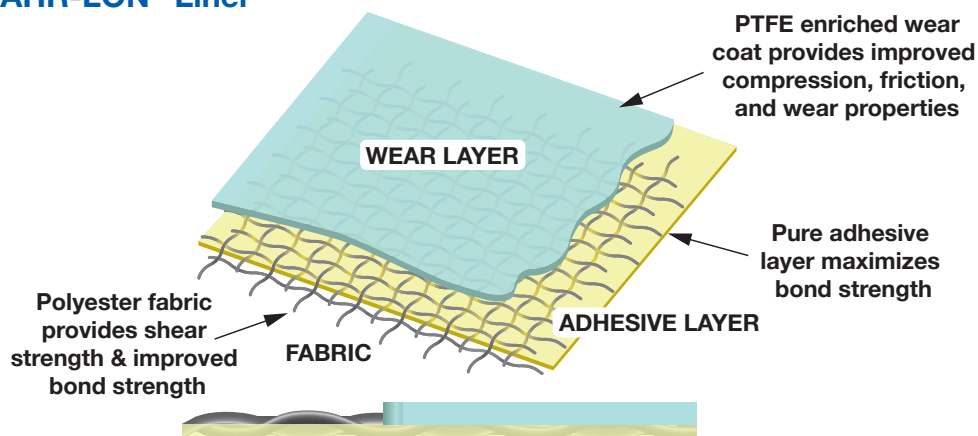
The liner is installed and cured under heat and pressure, resulting in a smooth, durable surface. This surface creates a discreet boundary between the wear surfaces. This discreet surface is also present between the metal substrate and the base fabric. **KAHR-LON®** is a peelable liner, meaning that it can be stripped off in one continuous piece without breakage of the fabric fiber, which aids in refurbishment operations.

Self-lubricated bearings in this catalog use the **KAHR-LON® X1200S** and **KAHR-LON® KSEA** liner systems. For different liner applications, please contact **KAHR®** Engineering.

KAHR-LON® X1200S is an engineered composite self-lubricating liner system that is ideal in applications with low speeds, intermittent and continuous oscillation, and high alternating loads. The proprietary architecture of **KAHR-LON® X1200S** liner contains a blend of polytetrafluoroethylene (PTFE) material suspended in a phenolic based resin. This lubricant system is impregnated into a custom designed woven fabric, which provides structural strength and resistance to cold flow under load. Once bonded, this liner system is resistant to high compressive loads, shear loads and impermeable to contamination under a variety of conditions. **KAHR-LON® X1200S** self-lubricating liner system is the lowest friction liner system in the industry.

KAHR-LON® KSEA liner is an engineered composite self-lubricating liner system that provides longer life and low friction for underwater bearing applications. This liner system is ideal in submerged applications with low speeds, intermittent to continuous oscillation, and high alternating loads. **KAHR-LON® KSEA** liner is proven to meet the industries increasing demands, and is fully qualified to General Dynamics Electric Boat specification EB-5550. The architecture of **KAHR-LON® KSEA** liner contains a proprietary blend of polytetrafluoroethylene (PTFE) material suspended in a phenolic based resin. This lubricant system is impregnated into a custom designed woven fabric, which provides structural strength and resistance to cold flow under load. Once bonded, this composite liner system is resistant to high compressive and shear loads under a variety of conditions.

Anatomy of a KAHR-LON® Liner



KAHR-LON® Self-Lubricating Liner Systems and Capabilities

Kahr Bearing **Kahr-Lon® Self-Lubricating Liners** are engineered composite systems that provides longer life and low friction for Military / Defense applications. **Kahr-Lon®** liners utilize high-strength fabrics and phenolic resins to create a composite with maximum shear and tensile strengths. In addition, our liners are bonded with high-performance thermosetting adhesives that produce the industry's strongest bond. Once bonded, these liner systems are resistant to high compressive loads, shear loads, and impermeable to contamination under various conditions. Technical Data Sheets (TDS) are available for each **Kahr-Lon® Self-Lubricating Liner System** (see pages 40-43).

Introduction

KAHR-LON® PTFE Liners

| Liner | Common Applications | Thickness | Operating Temperature | | Maximum Radial Load Ratings | | | | Maximum Velocity | Approvals |
|------------------|--|-----------------|-----------------------|--------------|-----------------------------|------------------|-----------------|-----------------|------------------|--|
| | | | Min | Max | Limit | Ultimate | Max | Continuous | | |
| | | in (mm) | °F (°C) | Static | | Dynamic | | ft/min (m/sec) | | |
| X1200S | Landing Gear Shock Strut Bearings, Steering Collars/Torque Tubes, Axle Retainers/Tow Fittings, Actuation, Flight Control, Support, Airframe, Space Mechanisms, Helicopter Swashplate | 0.010 (0.25) | -65 (-54) | 325 (163) | 80,000 (552) | 100,000 (689) | 37,500 (257) | 30,000 (207) | 3.0 (0.015) | AS81820 AS81934 AS8943 AS8942 |
| KSEA | Marine Environment, Fully Submerged, Salt Water Immersed, Spherical Bearings, Journal Bearings, Rod End Bearings | 0.010 (0.25) | -65 (-54) | 325 (163) | 80,000 (552) | 100,000 (689) | 37,500 (257) | 30,000 (207) | 3.0 (0.015) | EB-5550 |
| X4110 | Landing Gear Shock Strut Bearings, Steering Collars/Torque Tubes, Axle Retainers/Tow Fittings, Actuation, Flight Control, Support, Airframe | 0.010 (0.25) | -65 (-54) | 500 (260) | 80,000 (552) | 100,000 (689) | 37,500 (257) | 30,000 (207) | 3.0 (0.015) | AS81820* |
| K-HELO-1C | Main Rotor Pitch Link, Main Rotor Swashplate, Main Rotor Damper, Main Rotor Scissor, Tail Rotor Pitch Link | 0.019 (0.48) | -65 (-54) | 325 (163) | 71,000 (490) | 106,000 (731) | 4,600 (32) | 2,300 (16) | 26.0 (0.13) | AS81819 |
| K-HELO-2 | Main Rotor Pitch Link, Main Rotor Swashplate, Main Rotor Damper, Main Rotor Scissor, Tail Rotor Pitch Link | 0.010 (0.25) | -65 (-54) | 325 (163) | 20,000 (138) | 30,000 (207) | 4,220 (29) | 2,110 (14) | 13.6 (0.069) | AS82819** |
| X1540A | Landing Gear Shock Strut, Airframe, Helicopter Swashplate, Main Rotor Bearing, Helicopter Pylon/Spindle | 0.021 (0.53) | -65 (-54) | 325 (163) | 80,000 (552) | 100,000 (689) | 30,000 (207) | 30,000 (207) | 15.0 (0.08) | AS81820** AS81819** |
| X1540D | Landing Gear Shock Strut, Airframe, Helicopter Swashplate, Main Rotor Bearing, Helicopter Pylon/Spindle | 0.021 (0.53) | -65 (-54) | 325 (163) | 80,000 (552) | 100,000 (689) | 30,000 (207) | 30,000 (207) | 15.0 (0.08) | AS81819** |

* Meets or exceeds type A requirement.

** Meets or exceeds.

Load Rating Determination

Radial and axial (or thrust) load capacities for plain bearings are determined on the basis of the projected area of the bearing surface in the direction of the load application.

For a spherical bearing, the projected area which is supporting a pure radial load or pure axial load are given in the equation below, where 'U' represents the ball diameter of the bearing, and 'H' represents the effective race width of the bearing. The arcsine angle is in radians.

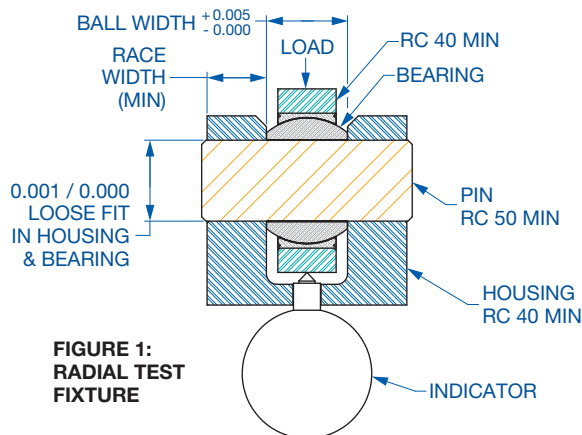
$$Area_{radial} = \frac{1}{2} \left[H \sqrt{U^2 - H^2} + U^2 \sin^{-1} \left(\frac{H}{U} \right) \right] \quad Area_{axial} = \frac{\pi}{4} H^2$$

For a fabric-lined bearing using our **KAHR-LON®** liner system, radial and axial limit loads are determined by multiplying the calculated projected area by 75,000 psi. This result is called the limit load, and the ultimate load is arbitrarily 1.5 times the calculated limit load.

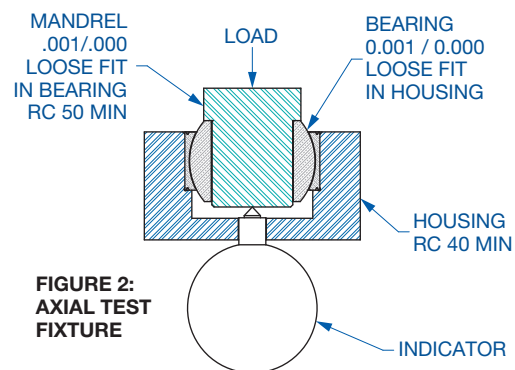
It should be understood that load ratings determined in this manner apply only when the bearing is experiencing either a pure radial load or a pure axial load. That is, the bearing cannot withstand a combined simultaneous application of the radial limit load with the axial limit load. If it is necessary to know whether a specific bearing can support a combined application of radial and axial loads, simply provide **KAHR®** with the conditions and we can readily determine whether the bearing is suitable.

Loads shown for spherical bearing inserts (**KSEAB**) will differ from those supplied for their associated rod end assemblies (**KSEAR**). Loads shown on spherical bearing catalog pages are reflective of the max allowable load that can occur before reaching the yield limit of the liner material, based on the above projected area calculations. Loads shown for the rod end assemblies are reflective of the max allowable load that can occur before reaching the tensile limit of the rod end body material. Please be aware of both load ratings with respect to your application.

| Load Rating Definitions | |
|---|--|
| Dynamic Load or Oscillating Radial Load | May be used interchangeably. For spherical bearings, this load is the suggested maximum load while operating under the following conditions: $\pm 25^\circ$ of angular oscillation of the ball about the bore axis (100° total travel per cycle) at a speed of 10 cycles per minute. This loading is predicted to cause the liner to wear to the maximum allowable limit of AS81820 at 25,000 cycles. |
| Radial Static Limit Load | Is the maximum load which, when applied to a bearing that is installed as shown in Figure 1, but without ball oscillation, will not cause permanent deformation in any of the bearing components. At KAHR [®] , this load rating is determined by multiplying the projected, or «footprint», area of the bearing by the yield strength for the weakest bearing component. |
| Radial Static Load, Yield Allowable | Strictly interpreted, this describes a load which may cause negligible yielding of bearing components. At KAHR [®] we use this interchangeably with "Radial Static Limit Load". We use it this way because we recognize that in the bearing there will be minor instances of non-conformity which may be "ironed out" as a result of the radial static limit load. This will cause an increase in the internal clearance of the bearing. |
| Radial Static Ultimate Load | Refers to bearings fixtured as shown in Figure 1, but without ball oscillation. "Ultimate Load" is a somewhat meaningless term, and is arbitrarily assigned as 1.5 times the limit load. |
| Axial Static Limit Load | Is the maximum load which, when applied to a bearing that is installed as shown in Figure 2, but without ball oscillation, will not cause permanent deformation in any of the bearing components. At KAHR [®] , this load rating is determined by multiplying the projected, or «footprint», area of the bearing by the yield strength for the weakest bearing component. |
| Axial Static Ultimate Load | Is defined arbitrarily as 1.5 times the axial static limit load. |



**FIGURE 1:
RADIAL TEST
FIXTURE**



**FIGURE 2:
AXIAL TEST
FIXTURE**

Spherical Bearings

Self-Lubricating

| | | | | | | | | | |
|---------------------|------------------------------|---------------------|------------------|--------------------|------------------|-------------------|----------------------|-------------------------|----------------------|
| Example: | KSEA B 08 T C Z 5 D 2 | | | | | | | | |
| | KSEA | B | 08 | T | C | Z | 5 | D | 2 |
| Nomenclature | Bearing Line | Bearing Type | Bore Size | Series Type | Race Type | Liner Type | Ball Material | Ball OD Plating* | Race Material |
| Position | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Position 1: Bearing Line

KSEA KAHR® Self-Lubricating Marine Product Line

Position 2: Bearing Type

B Spherical Bearing

Position 3: Bore Size

XX Bore Size Code (2 Digits, see datasheet)

Position 4: Series Type

| | | |
|----------|-------------------|-------------------|
| N | Narrow | Lined Race |
| P | Narrow | Lined Race & Bore |
| W | Wide | Lined Race |
| Y | Wide | Lined Race & Bore |
| E | High Misalignment | Lined Race |
| T | Thrust Loaded | Lined Race |
| S | Special Size | Lined Race |

Position 5: Race Type

| | | |
|----------|-----------|--|
| C | Chamfered | |
| G | Grooved | |

Position 6: Liner Type

| | | |
|----------|------------------|--------------------------------|
| Z | KAHR-LON® KSEA | Qualified to EB-5550 |
| Q | KAHR-LON® X1200S | Qualified to AS81820 & AS81934 |

Position 7 & 9: Ball & Race Materials

| | | |
|----------|------------------------|--------------------------|
| 1 | 13-8 PH CRES Stainless | AMS-5629 |
| 2 | 17-4 PH CRES Stainless | AMS-5643 |
| 3 | Inconel 718 | AMS-5662 or AMS-5663 |
| 4 | Titanium 6AL4V | AMS-4928 |
| 5 | 316 Stainless | AMS-5653 or AMS-QQ-S-763 |
| 6 | Inconel 625 | AMS-5666 |
| 7 | Monel K-500 | AMS-QQ-N-286 |
| 8 | Monel 400 | AMS-QQ-N-281 |

Other options available. Please contact KAHR® Bearing for proper part number.

Position 8: Ball OD Plating*

| | | |
|----------|------------------------|--------------|
| A | Chromium | AMS-QQ-C-320 |
| B | Ceramic | AMS-2437 |
| C | Nickel | AMS-QQ-N-290 |
| D | Cadmium (Race OD only) | AMS-QQ-P-416 |
| N | No Plating | |

*Side face plating is optional.

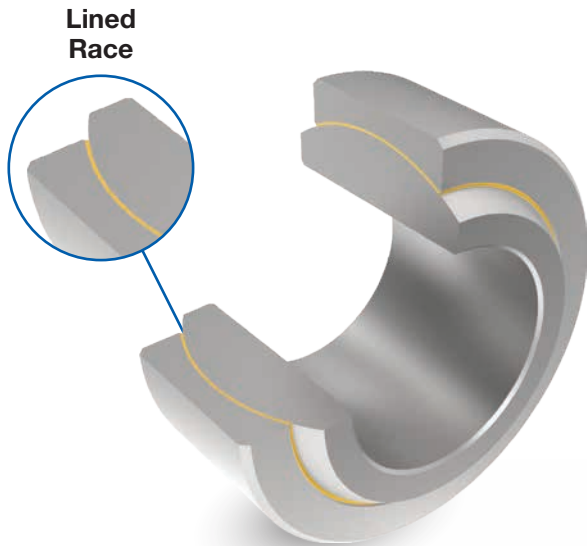
Other options available. Please contact KAHR® Bearing for proper part number.

This catalog offers some of the more standard sized spherical bearings. If a desired size is not found within this catalog, please contact **KAHR® Bearing** at 520-744-1000 x4735 for any special size and geometry requests.

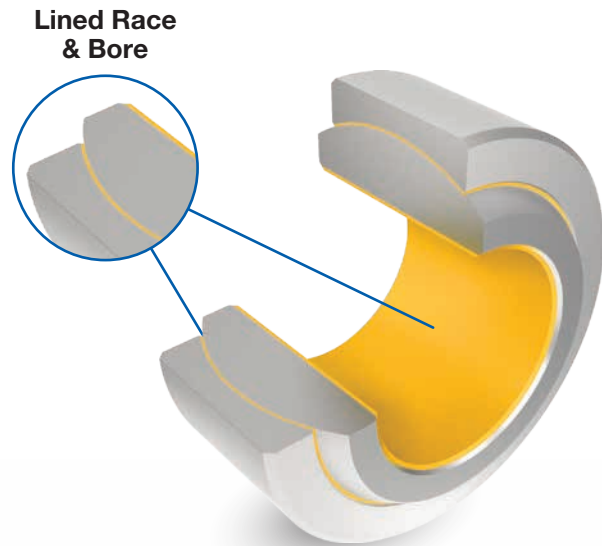
Note: Displayed loads (see datasheets) are based on **KAHR-LON® KSEA** liner strength of 75,000 psi.

Spherical Bearings

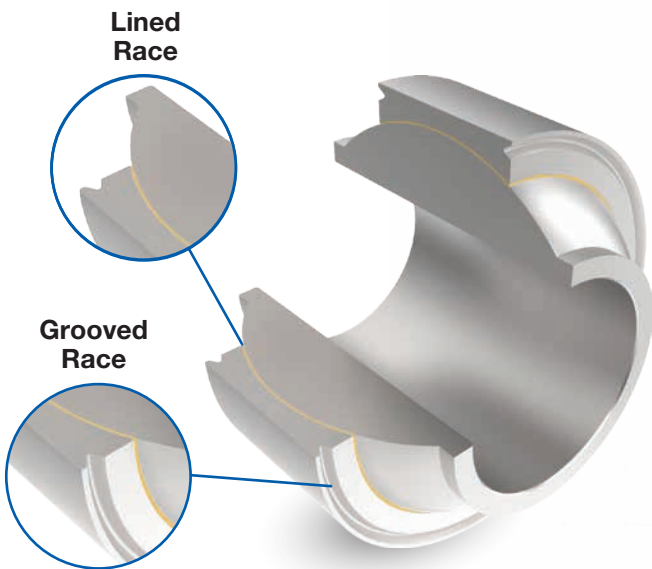
Self-Lubricating



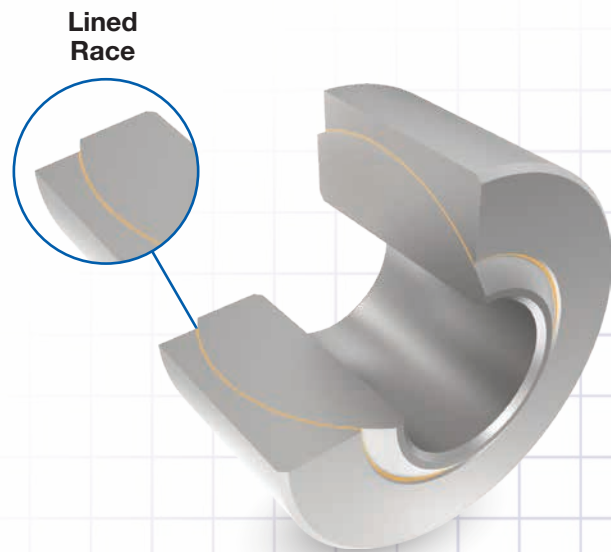
KSEAB-N (Narrow) Pg. 14
KSEAB-W (Wide) Pg. 16
KSEAB-S (Special Size) Pg. 20



KSEAB-P (Narrow) Pg. 15
KSEAB-Y (Wide) Pg. 17



KSEAB-E (High Misalignment) Pg. 18



KSEAB-T (Thrust Loaded) Pg. 19

Note: Liner colors accentuated.

KSEAB-N Narrow, Lined Race

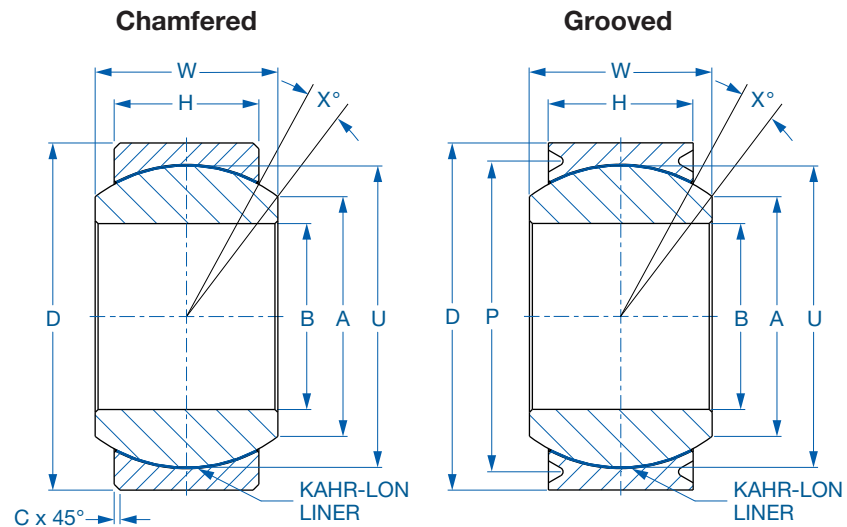
Self-Lubricating Spherical Bearings

Interchangeable with **KNR-CN Series—Narrow**

- ✓ **Narrow Series**
- ✓ **Lined Race**
- ✓ High Temperature—Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar to AS14101 & AS14104 (Formerly MS14101 & MS14104)
- ✓ Found in **KSEAR-N Rod Ends** (see pages 24 & 25)
- ✓ For material, liner, and plating options (see page 12)

| Size | Groove Type |
|-------|-------------|
| 03-04 | A |
| 05-07 | B |
| 08+ | C |

See page 38 for info.



KSEAB-N

| BORE SIZE CODE | B | D | W | H | A | C ⁽¹⁾ | P ⁽²⁾ | X | U | Radial Load Rating | | |
|----------------|--------------------------|--------------------------|--------------------------|------------------------|-------------------|------------------|--------------------------|------------|---------------|--------------------|-----------------|------------|
| | Bore Diameter | Outside Diameter | Ball Width | Race Width | Shoulder Diameter | Chamfer | Groove Diameter | Angle | Ball Diameter | Static Limit | Static Ultimate | Dynamic |
| | + 0.000 - 0.001 in | + 0.000 - 0.001 in | + 0.000 - 0.002 in | + 0.010 0.000 in | Ref in | Min in | + 0.005 - 0.005 in | Ref deg | Ref in | Max lbs | Max lbs | Max lbs |
| 03 | 0.190 | 0.563 | 0.281 | 0.213 | 0.334 | 0.010 | 0.503 | 10 | 0.437 | 4,900 | 7,300 | 2,200 |
| 04 | 0.250 | 0.656 | 0.343 | 0.245 | 0.364 | 0.010 | 0.596 | 10 | 0.500 | 6,700 | 10,000 | 3,000 |
| 05 | 0.313 | 0.750 | 0.375 | 0.276 | 0.459 | 0.010 | 0.650 | 10 | 0.593 | 9,300 | 13,900 | 4,200 |
| 06 | 0.375 | 0.813 | 0.406 | 0.307 | 0.475 | 0.020 | 0.713 | 9 | 0.625 | 10,800 | 16,200 | 4,900 |
| 07 | 0.438 | 0.906 | 0.437 | 0.338 | 0.570 | 0.020 | 0.806 | 8 | 0.718 | 14,000 | 21,000 | 6,300 |
| 08 | 0.500 | 1.000 | 0.500 | 0.385 | 0.600 | 0.020 | 0.875 | 8 | 0.781 | 17,900 | 26,800 | 8,100 |
| 09 | 0.563 | 1.094 | 0.562 | 0.432 | 0.671 | 0.020 | 0.969 | 8 | 0.875 | 22,400 | 33,600 | 10,100 |
| 10 | 0.625 | 1.188 | 0.625 | 0.495 | 0.781 | 0.020 | 1.063 | 8 | 1.000 | 30,200 | 45,300 | 13,700 |
| 12 | 0.750 | 1.438 | 0.750 | 0.588 | 1.000 | 0.030 | 1.313 | 8 | 1.250 | 45,400 | 68,100 | 20,600 |
| 14 | 0.875 | 1.563 | 0.875 | 0.698 | 1.061 | 0.030 | 1.438 | 8 | 1.375 | 60,500 | 90,700 | 27,400 |
| 16 | 1.000 | 1.750 | 1.000 | 0.792 | 1.200 | 0.030 | 1.625 | 9 | 1.562 | 79,300 | 118,900 | 36,000 |
| 18 | 1.125 | 2.125 | 1.125 | 0.906 | 1.340 | 0.030 | 2.000 | 8 | 1.750 | 103,000 | 154,500 | 46,800 |
| 20 | 1.250 | 2.313 | 1.250 | 1.000 | 1.480 | 0.030 | 2.188 | 6 | 1.937 | 127,100 | 190,600 | 57,700 |
| 22 | 1.375 | 2.563 | 1.375 | 1.100 | 1.661 | 0.030 | 2.438 | 8 | 2.156 | 157,100 | 235,600 | 71,400 |
| 24 | 1.500 | 2.813 | 1.500 | 1.200 | 1.801 | 0.030 | 2.688 | 8 | 2.344 | 187,500 | 281,200 | 85,200 |

(1) Chamfered Type Only (2) Grooved Type Only

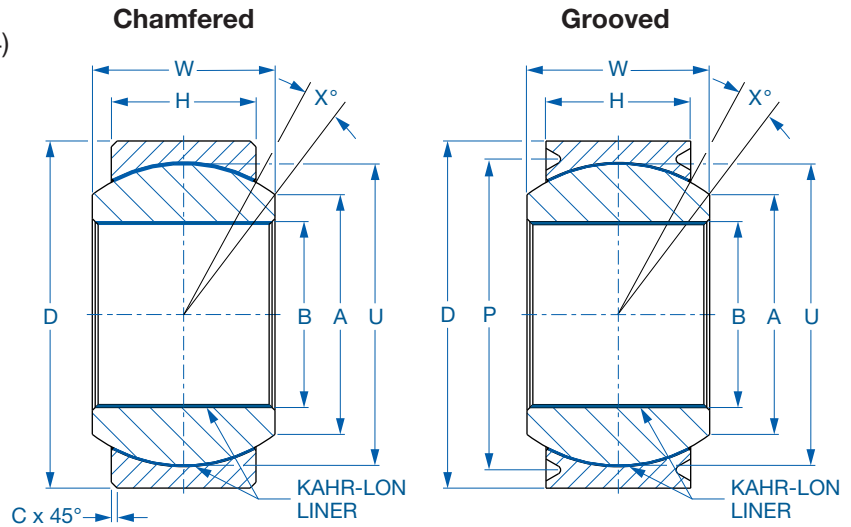
KSEAB-P Narrow, Lined Race & Bore

Self-Lubricating Spherical Bearings

| Size | Groove Type |
|-------|-------------|
| 04 | A |
| 05-07 | B |
| 08+ | C |

See page 38 for info.

- ✓ **Narrow Series**
- ✓ **Lined Race & Bore**
- ✓ High Temperature—Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar to AS81820/1 & AS81820/4 (Formerly MIL-B-81820/1 & MIL-B-81820/4)
- ✓ Found in **KSEAR-P Rod Ends** (see pages 26 & 27)
- ✓ For material, liner, and plating options (see page 12)



KSEAB-P

| BORE SIZE CODE | B | D | W | H | A | C ⁽¹⁾ | P ⁽²⁾ | X | U | Radial Load Rating | | |
|----------------|--------------------------|--------------------------|--------------------------|------------------------|-------------------|------------------|--------------------------|------------|---------------|--------------------|-----------------|------------|
| | Bore Diameter | Outside Diameter | Ball Width | Race Width | Shoulder Diameter | Chamfer | Groove Diameter | Angle | Ball Diameter | Static Limit | Static Ultimate | Dynamic |
| | + 0.000 - 0.001 in | + 0.000 - 0.001 in | + 0.000 - 0.002 in | + 0.010 0.000 in | Ref in | Min in | + 0.005 - 0.005 in | Ref deg | Ref in | Max lbs | Max lbs | Max lbs |
| 04 | 0.251 | 0.656 | 0.343 | 0.245 | 0.420 | 0.010 | 0.596 | 10 | 0.540 | 6,000 | 9,000 | 2,700 |
| 05 | 0.314 | 0.750 | 0.375 | 0.276 | 0.480 | 0.010 | 0.650 | 10 | 0.610 | 8,200 | 12,300 | 3,700 |
| 06 | 0.376 | 0.813 | 0.406 | 0.307 | 0.518 | 0.020 | 0.713 | 9 | 0.656 | 9,900 | 14,800 | 4,400 |
| 07 | 0.439 | 0.906 | 0.437 | 0.338 | 0.572 | 0.020 | 0.806 | 8 | 0.718 | 12,600 | 18,900 | 5,700 |
| 08 | 0.501 | 1.000 | 0.500 | 0.385 | 0.644 | 0.020 | 0.875 | 8 | 0.813 | 16,800 | 25,200 | 7,600 |
| 09 | 0.564 | 1.094 | 0.562 | 0.432 | 0.714 | 0.020 | 0.969 | 8 | 0.906 | 21,500 | 32,200 | 9,700 |
| 10 | 0.626 | 1.188 | 0.625 | 0.495 | 0.821 | 0.020 | 1.063 | 8 | 1.031 | 26,800 | 40,200 | 12,100 |
| 12 | 0.751 | 1.438 | 0.750 | 0.588 | 1.037 | 0.030 | 1.313 | 8 | 1.280 | 39,200 | 58,800 | 17,800 |
| 14 | 0.876 | 1.563 | 0.875 | 0.698 | 1.068 | 0.030 | 1.438 | 8 | 1.380 | 54,000 | 81,000 | 24,500 |
| 16 | 1.001 | 1.750 | 1.000 | 0.792 | 1.200 | 0.030 | 1.625 | 9 | 1.562 | 71,100 | 106,600 | 32,300 |

(1) Chamfered Type Only (2) Grooved Type Only

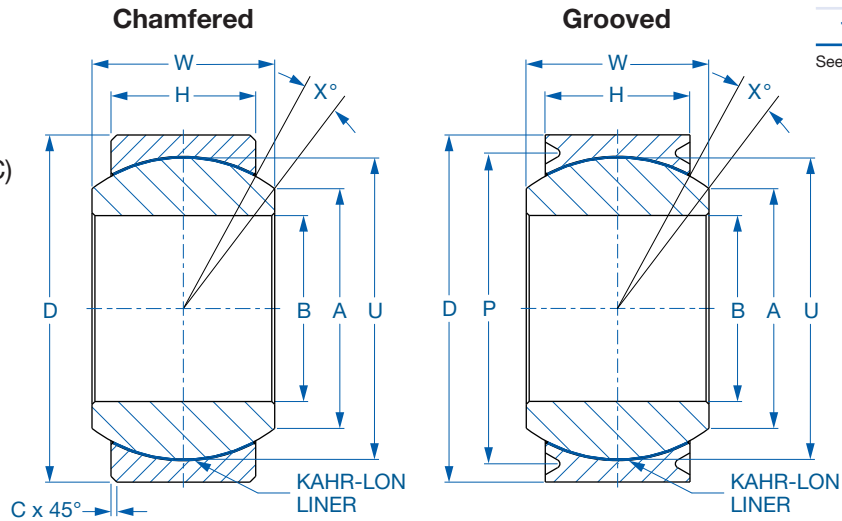
KSEAB-W Wide, Lined Race

Self-Lubricating Spherical Bearings

| Size | Groove Type |
|-------|-------------|
| 03-05 | A |
| 06-10 | B |
| 12+ | C |

Interchangeable with **KNR-CW Series—Wide**

- ✓ **Wide Series**
- ✓ **Lined Race**
- ✓ High Temperature—Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar to AS14101 & AS14104 (Formerly MS14101 & MS14104)
- ✓ Found in **KSEAR-W Rod Ends** (see pages 28 & 29)
- ✓ For material, liner, and plating options (see page 12)



See page 38 for info.

KSEAB-W

| BORE SIZE CODE | B | D | W | H | A | C ⁽¹⁾ | P ⁽²⁾ | X | U | Radial Load Rating | | |
|----------------|--------------------------|--------------------------|--------------------------|------------------------|-------------------|------------------|--------------------------|------------|---------------|--------------------|-----------------|------------|
| | Bore Diameter | Outside Diameter | Ball Width | Race Width | Shoulder Diameter | Chamfer | Groove Diameter | Angle | Ball Diameter | Static Limit | Static Ultimate | Dynamic |
| | + 0.000 - 0.001 in | + 0.000 - 0.001 in | + 0.000 - 0.002 in | + 0.010 0.000 in | Ref in | Min in | + 0.005 - 0.005 in | Ref deg | Ref in | Max lbs | Max lbs | Max lbs |
| 03 | 0.190 | 0.625 | 0.437 | 0.322 | 0.302 | 0.010 | 0.565 | 15 | 0.531 | 9,900 | 14,800 | 4,400 |
| 04 | 0.250 | 0.625 | 0.437 | 0.322 | 0.302 | 0.010 | 0.565 | 15 | 0.531 | 9,900 | 14,800 | 4,400 |
| 05 | 0.313 | 0.688 | 0.437 | 0.312 | 0.401 | 0.010 | 0.628 | 14 | 0.593 | 10,800 | 16,200 | 4,900 |
| 06 | 0.375 | 0.813 | 0.500 | 0.401 | 0.471 | 0.020 | 0.713 | 8 | 0.687 | 16,300 | 24,400 | 7,400 |
| 07 | 0.438 | 0.938 | 0.562 | 0.437 | 0.542 | 0.020 | 0.838 | 10 | 0.781 | 20,600 | 30,900 | 9,300 |
| 08 | 0.500 | 1.000 | 0.625 | 0.500 | 0.612 | 0.020 | 0.900 | 9 | 0.875 | 27,000 | 40,500 | 12,200 |
| 09 | 0.563 | 1.125 | 0.687 | 0.531 | 0.727 | 0.020 | 1.025 | 10 | 1.000 | 32,600 | 48,900 | 14,800 |
| 10 | 0.625 | 1.188 | 0.750 | 0.562 | 0.752 | 0.020 | 1.088 | 12 | 1.062 | 37,000 | 55,500 | 16,800 |
| 12 | 0.750 | 1.375 | 0.875 | 0.625 | 0.893 | 0.030 | 1.250 | 13 | 1.250 | 48,500 | 72,700 | 22,000 |
| 14 | 0.875 | 1.625 | 0.875 | 0.750 | 1.061 | 0.030 | 1.500 | 6 | 1.375 | 65,300 | 97,900 | 29,600 |
| 16 | 1.000 | 2.125 | 1.375 | 1.000 | 1.275 | 0.030 | 2.000 | 12 | 1.875 | 122,700 | 184,000 | 55,700 |
| 20 | 1.250 | 2.375 | 1.500 | 1.125 | 1.460 | 0.030 | 2.250 | 14 | 2.093 | 155,500 | 233,200 | 70,600 |
| 22 | 1.375 | 2.563 | 1.687 | 1.218 | 1.535 | 0.030 | 2.438 | 14 | 2.281 | 184,700 | 277,000 | 83,900 |
| 24 | 1.500 | 2.688 | 1.687 | 1.218 | 1.693 | 0.030 | 2.563 | 13 | 2.390 | 194,400 | 291,600 | 88,300 |
| 26 | 1.625 | 2.875 | 1.750 | 1.281 | 1.829 | 0.030 | 2.750 | 12 | 2.531 | 217,400 | 326,100 | 98,800 |
| 28 | 1.750 | 3.000 | 1.812 | 1.312 | 1.964 | 0.030 | 2.875 | 12 | 2.672 | 236,000 | 354,000 | 107,200 |
| 30 | 1.875 | 3.125 | 1.875 | 1.343 | 2.096 | 0.030 | 3.000 | 12 | 2.812 | 255,200 | 382,800 | 115,900 |
| 32 | 2.000 | 3.250 | 1.937 | 1.375 | 2.208 | 0.030 | 3.125 | 13 | 2.937 | 273,700 | 410,500 | 124,300 |
| 36 | 2.250 | 3.625 | 2.000 | 1.406 | 2.441 | 0.030 | 3.500 | 12 | 3.156 | 302,200 | 453,300 | 137,300 |
| 40 | 2.500 | 3.938 | 2.062 | 1.437 | 2.750 | 0.030 | 3.813 | 11 | 3.437 | 338,100 | 507,100 | 153,600 |
| 44 | 2.750 | 4.125 | 2.187 | 1.500 | 2.968 | 0.030 | 4.000 | 12 | 3.687 | 380,100 | 570,100 | 172,700 |
| 48 | 3.000 | 4.375 | 2.312 | 1.562 | 3.187 | 0.030 | 4.250 | 12 | 3.937 | 424,200 | 636,300 | 192,700 |

(1) Chamfered Type Only (2) Grooved Type Only

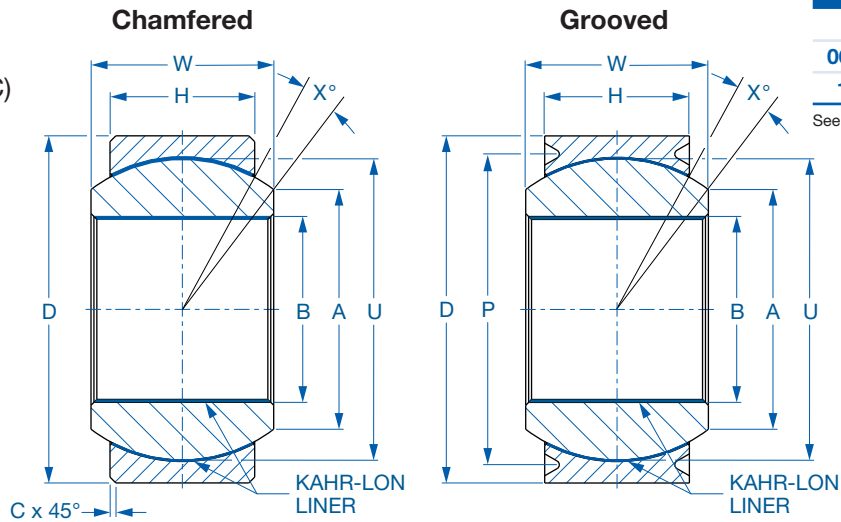
KSEAB-Y Wide, Lined Race & Bore

Self-Lubricating Spherical Bearings

- ✓ **Wide Series**
- ✓ **Lined Race & Bore**
- ✓ High Temperature—Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar to AS81820/2 & AS81820/3 (Formerly MIL-B-81820/2 & MIL-B-81820/3)
- ✓ Found in **KSEAR-Y Rod Ends** (see pages 30 & 31)
- ✓ For material, liner, and plating options (see page 12)

| Size | Groove Type |
|-------|-------------|
| 05 | A |
| 06-10 | B |
| 12+ | C |

See page 38 for info.



KSEAB-Y

| BORE SIZE CODE | B | D | W | H | A | C ⁽¹⁾ | P ⁽²⁾ | X | U | Radial Load Rating | | |
|----------------|--------------------------|--------------------------|--------------------------|------------------------|-------------------|------------------|--------------------------|------------|---------------|--------------------|-----------------|------------|
| | Bore Diameter | Outside Diameter | Ball Width | Race Width | Shoulder Diameter | Chamfer | Groove Diameter | Angle | Ball Diameter | Static Limit | Static Ultimate | Dynamic |
| | + 0.000 - 0.001 in | + 0.000 - 0.001 in | + 0.000 - 0.002 in | + 0.010 0.000 in | Ref in | Min in | + 0.005 - 0.005 in | Ref deg | Ref in | Max lbs | Max lbs | Max lbs |
| 05 | 0.314 | 0.688 | 0.437 | 0.312 | 0.401 | 0.015 | 0.628 | 14 | 0.593 | 9,000 | 13,500 | 4,000 |
| 06 | 0.376 | 0.813 | 0.500 | 0.401 | 0.471 | 0.020 | 0.713 | 8 | 0.687 | 12,600 | 18,900 | 5,700 |
| 07 | 0.439 | 0.938 | 0.562 | 0.437 | 0.542 | 0.020 | 0.838 | 10 | 0.781 | 16,700 | 25,000 | 7,500 |
| 08 | 0.501 | 1.000 | 0.625 | 0.500 | 0.612 | 0.020 | 0.900 | 9 | 0.875 | 21,400 | 32,100 | 9,700 |
| 09 | 0.564 | 1.125 | 0.687 | 0.531 | 0.727 | 0.020 | 1.025 | 10 | 1.000 | 26,700 | 40,000 | 12,100 |
| 10 | 0.626 | 1.188 | 0.750 | 0.562 | 0.752 | 0.020 | 1.088 | 12 | 1.062 | 32,700 | 49,000 | 14,800 |
| 12 | 0.751 | 1.375 | 0.875 | 0.625 | 0.893 | 0.030 | 1.250 | 13 | 1.250 | 46,200 | 69,300 | 20,900 |
| 14 | 0.876 | 1.625 | 0.875 | 0.750 | 1.061 | 0.030 | 1.500 | 6 | 1.375 | 54,000 | 81,000 | 24,500 |
| 16 | 1.001 | 2.125 | 1.375 | 1.000 | 1.275 | 0.030 | 2.000 | 12 | 1.875 | 99,200 | 148,800 | 45,000 |

(1) Chamfered Type Only (2) Grooved Type Only

KSEAB-E High Misalignment, Lined Race

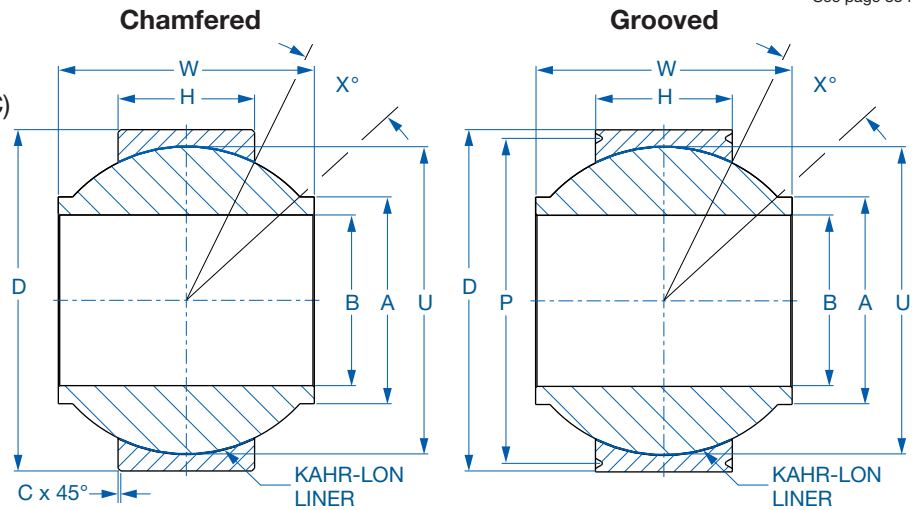
Self-Lubricating Spherical Bearings

| Size | Groove Type |
|---------|-------------|
| 03 - 08 | A |
| 10 | B |
| 12+ | C |

Interchangeable with **KNR-CE Series—High Misalignment**

- ✓ High Misalignment
- ✓ Lined Race
- ✓ High Temperature—Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Found in **KSEAR-E Rod Ends** (see pages 32 & 33)
- ✓ For material, liner, and plating options (see page 12)

See page 38 for info.



KSEAB-E

| BORE SIZE CODE | B | D | W | H | A | C ⁽¹⁾ | P ⁽²⁾ | X | U | Radial Load Rating | | |
|----------------|--------------------------|--------------------------|--------------------------|------------------------|-------------------|------------------|--------------------------|------------|---------------|--------------------|-----------------|------------|
| | Bore Diameter | Outside Diameter | Ball Width | Race Width | Shoulder Diameter | Chamfer | Groove Diameter | Angle | Ball Diameter | Static Limit | Static Ultimate | Dynamic |
| | + 0.000 - 0.001 in | + 0.000 - 0.001 in | + 0.000 - 0.002 in | + 0.010 0.000 in | Ref in | Min in | + 0.005 - 0.005 in | Ref deg | Ref in | Max lbs | Max lbs | Max lbs |
| 03 | 0.190 | 0.625 | 0.560 | 0.250 | 0.346 | 0.020 | 0.565 | 20 | 0.531 | 7,400 | 11,100 | 3,300 |
| 04 | 0.250 | 0.740 | 0.593 | 0.250 | 0.381 | 0.020 | 0.680 | 24 | 0.593 | 8,300 | 12,400 | 3,700 |
| 05 | 0.313 | 0.688 | 0.625 | 0.322 | 0.323 | 0.020 | 0.628 | 23 | 0.593 | 11,200 | 16,800 | 5,000 |
| 06 | 0.375 | 0.906 | 0.813 | 0.340 | 0.506 | 0.020 | 0.846 | 23 | 0.781 | 15,400 | 23,100 | 6,900 |
| 07 | 0.438 | 1.000 | 0.875 | 0.340 | 0.601 | 0.020 | 0.940 | 23 | 0.875 | 17,400 | 26,100 | 7,900 |
| 08 | 0.500 | 1.125 | 0.937 | 0.396 | 0.670 | 0.020 | 1.065 | 24 | 1.000 | 24,000 | 36,000 | 10,900 |
| 09 | 0.563 | 1.250 | 1.000 | 0.437 | 0.761 | 0.020 | 1.150 | 24 | 1.125 | 29,600 | 44,400 | 13,400 |
| 10 | 0.625 | 1.375 | 1.200 | 0.562 | 0.880 | 0.020 | 1.275 | 18 | 1.250 | 44,000 | 66,000 | 19,900 |
| 12 | 0.750 | 1.563 | 1.280 | 0.615 | 0.972 | 0.020 | 1.438 | 18 | 1.375 | 52,700 | 79,000 | 23,900 |
| 14 | 0.875 | 1.750 | 1.400 | 0.620 | 1.132 | 0.020 | 1.625 | 18 | 1.531 | 59,600 | 89,400 | 27,000 |
| 16 | 1.000 | 2.125 | 1.875 | 0.830 | 1.264 | 0.020 | 2.000 | 21 | 1.875 | 101,200 | 151,800 | 45,900 |
| 20 | 1.250 | 2.500 | 1.875 | 1.000 | 1.515 | 0.020 | 2.375 | 21 | 2.250 | 149,200 | 223,800 | 67,800 |
| 24 | 1.500 | 3.000 | 2.250 | 1.170 | 1.815 | 0.030 | 2.875 | 21 | 2.672 | 210,300 | 315,400 | 95,500 |
| 26 | 1.625 | 3.125 | 2.437 | 1.187 | 1.838 | 0.030 | 3.000 | 24 | 2.812 | 225,300 | 337,900 | 102,300 |
| 28 | 1.750 | 3.563 | 2.875 | 1.250 | 1.964 | 0.030 | 3.438 | 30 | 3.250 | 276,600 | 414,900 | 125,700 |

(1) Chamfered Type Only (2) Grooved Type Only

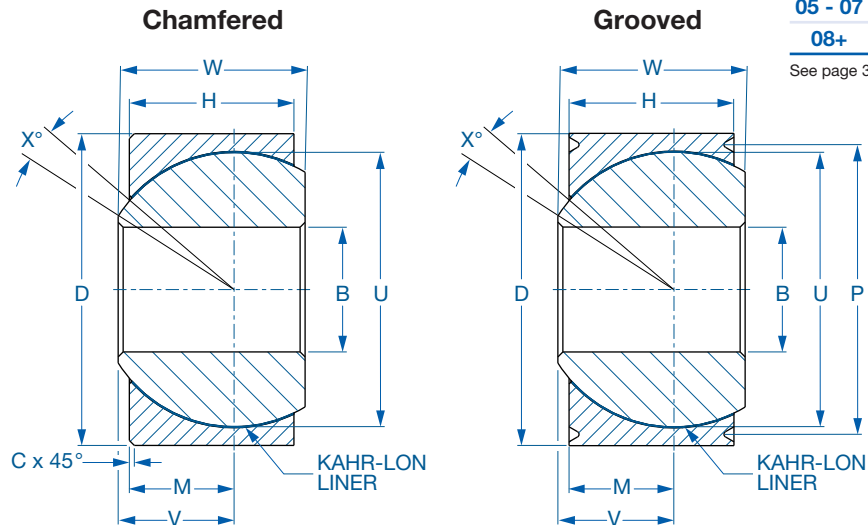
KSEAB-T Thrust Loaded, Lined Race Self-Lubricating Spherical Bearings

Interchangeable with **KNR-CT Series—Thrust Loaded**

- ✓ **Thrust Loaded Series**
- ✓ **Lined Race**
- ✓ High Temperature—Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ For material, liner, and plating options (see page 12)

| Size | Groove Type |
|---------|-------------|
| 04 | A |
| 05 - 07 | B |
| 08+ | C |

See page 38 for info.



KSEAB-T

| BORE SIZE CODE | B | D | W | H | M | V | C ⁽¹⁾ | P | X | U | Axial Load Rating | | |
|----------------|--------------------------|--------------------------|--------------------------|------------------------|--------------------------|--------------------------|------------------|--------------------------|------------|---------------|-------------------|-----------------|------------|
| | Bore Diameter | Outside Diameter | Ball Width | Race Width | Ball to Race | Ball to Face | Chamfer | Groove Diameter | Angle | Ball Diameter | Static Limit | Static Ultimate | Dynamic |
| | + 0.000 - 0.001 in | + 0.000 - 0.001 in | + 0.000 - 0.002 in | + 0.010 0.000 in | + 0.005 - 0.005 in | + 0.005 - 0.005 in | Min in | + 0.005 - 0.005 in | Ref deg | Ref in | Max lbs | Max lbs | Max lbs |
| 04 | 0.250 | 0.813 | 0.437 | 0.375 | 0.250 | 0.281 | 0.025 | 0.753 | 3 | 0.687 | 10,800 | 16,200 | 4,900 |
| 05 | 0.313 | 0.938 | 0.562 | 0.500 | 0.295 | 0.326 | 0.025 | 0.838 | 3 | 0.781 | 15,900 | 23,850 | 7,200 |
| 06 | 0.375 | 1.000 | 0.600 | 0.531 | 0.325 | 0.359 | 0.025 | 0.900 | 3 | 0.875 | 19,100 | 28,650 | 8,600 |
| 07 | 0.438 | 1.125 | 0.656 | 0.578 | 0.375 | 0.414 | 0.025 | 1.025 | 3 | 1.000 | 26,400 | 39,600 | 11,900 |
| 08 | 0.500 | 1.188 | 0.700 | 0.625 | 0.400 | 0.437 | 0.025 | 1.063 | 3 | 1.062 | 30,500 | 45,750 | 13,800 |
| 09 | 0.563 | 1.375 | 0.875 | 0.781 | 0.467 | 0.514 | 0.025 | 1.250 | 3 | 1.250 | 41,900 | 62,850 | 19,000 |
| 10 | 0.625 | 1.563 | 0.937 | 0.825 | 0.525 | 0.581 | 0.025 | 1.438 | 4 | 1.375 | 54,200 | 81,300 | 24,600 |
| 12 | 0.750 | 1.750 | 1.000 | 0.895 | 0.578 | 0.630 | 0.025 | 1.625 | 3 | 1.562 | 65,600 | 98,400 | 29,800 |
| 14 | 0.875 | 2.125 | 1.281 | 1.140 | 0.700 | 0.770 | 0.025 | 2.000 | 4 | 1.781 | 99,500 | 149,250 | 45,200 |
| 16 | 1.000 | 2.375 | 1.437 | 1.250 | 0.755 | 0.848 | 0.025 | 2.250 | 5 | 2.093 | 117,100 | 175,650 | 53,200 |
| 20 | 1.250 | 2.563 | 1.500 | 1.312 | 0.812 | 0.906 | 0.035 | 2.438 | 5 | 2.281 | 136,800 | 205,200 | 62,100 |
| 22 | 1.375 | 2.750 | 1.562 | 1.343 | 0.828 | 0.937 | 0.035 | 2.625 | 5 | 2.500 | 142,600 | 213,900 | 64,800 |
| 24 | 1.500 | 3.000 | 1.625 | 1.375 | 0.843 | 0.968 | 0.035 | 2.875 | 5 | 2.687 | 148,100 | 222,150 | 67,300 |
| 26 | 1.625 | 3.125 | 1.687 | 1.406 | 0.859 | 1.000 | 0.035 | 3.000 | 6 | 2.750 | 154,200 | 231,300 | 70,000 |
| 28 | *1.7500 | *3.2500 | 1.750 | 1.437 | 0.875 | 1.031 | 0.035 | 3.125 | 6 | 2.875 | 160,300 | 240,450 | 72,800 |
| 30 | *1.8750 | *3.3750 | 1.875 | 1.468 | 0.890 | 1.093 | 0.035 | 3.250 | 8 | 3.000 | 166,200 | 249,300 | 75,500 |
| 32 | *2.0000 | *3.5000 | 1.875 | 1.500 | 0.906 | 1.093 | 0.035 | 3.375 | 7 | 3.125 | 172,600 | 258,900 | 78,400 |
| 36 | *2.2500 | *3.9062 | 2.000 | 1.406 | 0.875 | 1.187 | 0.035 | 3.781 | 10 | 3.437 | 160,300 | 240,450 | 72,800 |
| 40 | *2.5000 | *4.1250 | 2.062 | 1.437 | 0.937 | 1.250 | 0.035 | 4.000 | 10 | 3.687 | 185,300 | 277,950 | 84,200 |
| 44 | *2.7500 | *4.3750 | 2.187 | 1.500 | 1.125 | 1.312 | 0.035 | 4.250 | 7 | 3.937 | 272,200 | 408,300 | 123,700 |

* +.0000 / -.0008

KSEAB-S Special Size Series, Lined Race

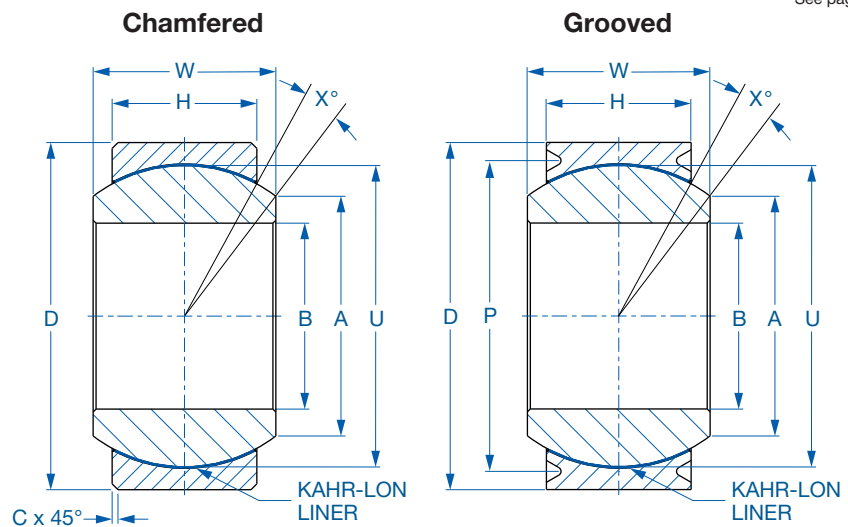
Self-Lubricating Spherical Bearings

Interchangeable with **KNR-CS Series—Special Size**

| Size | Groove Type |
|------|-------------|
| 16+ | C |

See page 38 for info.

- ✓ **Special Size Series**
- ✓ **Lined Race**
- ✓ High Temperature—Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ For material, liner, and plating options (see page 12)



KSEAB-S

| BORE SIZE CODE | B | D | W | H | A | C ⁽¹⁾ | P ⁽²⁾ | X | U | Radial Load Rating | | |
|----------------|--------------------------|--------------------------|--------------------------|------------------------|--------------------------|--------------------------|------------------|------------|---------------|--------------------|-----------------|------------|
| | Bore Diameter | Outside Diameter | Ball Width | Race Width | Ball to Race | Ball to Face | Chamfer | Angle | Ball Diameter | Static Limit | Static Ultimate | Dynamic |
| | + 0.000 - 0.001 in | + 0.000 - 0.001 in | + 0.000 - 0.002 in | + 0.010 0.000 in | + 0.005 - 0.005 in | + 0.005 - 0.005 in | Min in | Ref deg | Ref in | Max lbs | Max lbs | Max lbs |
| 16 | 1.000 | 1.625 | 0.875 | 0.750 | 1.140 | 0.020 | 1.500 | 5 | 1.437 | 68,500 | 102,700 | 31,100 |
| 20 | 1.250 | 2.000 | 1.093 | 0.937 | 1.406 | 0.020 | 1.875 | 5 | 1.781 | 108,700 | 163,000 | 49,400 |
| 24 | 1.500 | 2.438 | 1.312 | 1.125 | 1.711 | 0.030 | 2.313 | 5 | 2.156 | 160,600 | 240,900 | 72,900 |
| 28 | 1.750 | 2.813 | 1.531 | 1.312 | 1.995 | 0.030 | 2.688 | 5 | 2.515 | 221,000 | 331,500 | 100,400 |
| 30 | 1.875 | *3.1250 | 1.625 | 1.343 | 2.295 | 0.030 | 3.000 | 6 | 2.812 | 255,200 | 382,800 | 115,900 |
| 32 | 2.000 | *3.1875 | 1.750 | 1.500 | 2.281 | 0.030 | 3.063 | 5 | 2.875 | 291,300 | 436,900 | 132,300 |
| 36 | 2.250 | *3.5625 | 1.969 | 1.678 | 2.466 | 0.030 | 3.438 | 6 | 3.156 | 359,300 | 538,900 | 163,300 |
| 40 | 2.500 | *3.9375 | 2.187 | 1.875 | 2.733 | 0.030 | 3.813 | 5 | 3.500 | 447,300 | 670,900 | 203,200 |
| 44 | 2.750 | *4.3750 | 2.406 | 2.062 | 3.038 | 0.030 | 4.250 | 5 | 3.875 | 547,300 | 820,900 | 248,700 |
| 48 | 3.000 | *4.7500 | 2.625 | 2.250 | 3.342 | 0.030 | 4.625 | 5 | 4.250 | 657,500 | 986,200 | 298,800 |
| 52 | *3.2500 | **5.1250 | 2.844 | 2.437 | 3.710 | 0.032 | 5.000 | 5 | 4.675 | 786,900 | 1,180,300 | 357,600 |
| 56 | *3.5000 | **5.5000 | 3.062 | 2.625 | 4.003 | 0.032 | 5.375 | 5 | 5.040 | 916,100 | 1,374,100 | 416,300 |
| 60 | *3.7500 | **5.8750 | 3.281 | 2.812 | 4.276 | 0.032 | 5.750 | 5 | 5.390 | 1,051,600 | 1,577,400 | 477,900 |
| 64 | *4.0000 | **6.2500 | 3.500 | 3.000 | 4.562 | 0.032 | 6.125 | 5 | 5.750 | 1,199,000 | 1,798,500 | 544,900 |
| 68 | *4.2500 | **6.6250 | 3.719 | 3.187 | 4.867 | 0.044 | 6.500 | 5 | 6.125 | 1,359,400 | 2,039,100 | 617,800 |
| 72 | *4.5000 | **7.0000 | 3.937 | 3.375 | 5.141 | 0.044 | 6.875 | 5 | 6.475 | 1,523,900 | 2,285,800 | 692,600 |
| 76 | *4.7500 | **7.3750 | 4.156 | 3.562 | 5.414 | 0.044 | 7.250 | 5 | 6.825 | 1,697,200 | 2,545,800 | 771,300 |
| 80 | *5.0000 | **7.7500 | 4.375 | 3.750 | 5.706 | 0.044 | 7.625 | 5 | 7.190 | 1,884,700 | 2,827,000 | 856,500 |
| 88 | *5.5000 | **8.6250 | 4.938 | 4.125 | 6.351 | 0.125 | 8.500 | 6 | 8.045 | 2,328,200 | 3,492,300 | 1,058,100 |
| 96 | *6.0000 | **9.5000 | 5.438 | 4.500 | 7.033 | 0.125 | 9.375 | 7 | 8.890 | 2,814,800 | 4,222,200 | 1,279,300 |

(1) Chamfered Type Only (2) Grooved Type Only
* +.0000 / -.0008 ** +.0000 / -.0010

Note: Size 48 and larger may be constructed with a two-piece welded outer race.

KAHR® Bearings

Marine Applications



Submarines



Aircraft Carriers



Wind Turbines



Commercial Shipping



Oil Rigs



Wave Energy Generation

Rod End Bearings

Self-Lubricating

| | | | | | | | | | | | | |
|---------------------|------------------------------------|---------------------|------------------|--------------------|--------------------|-------------------------|-------------------|----------------------|-------------------------|----------------------|-------------------------|--------------------|
| Example: | KSEA R 06 Y M R Q 1 B 2 2 T | | | | | | | | | | | |
| | KSEA | R | 06 | Y | M | R | Q | 1 | B | 2 | 2 | T |
| Nomenclature | Bearing Line | Bearing Type | Bore Size | Series Type | Thread Type | Thread Direction | Liner Type | Ball Material | Ball OD Plating* | Race Material | Housing Material | Keyway Slot |
| Position | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

Position 1: Bearing Line

KSEA KAHR® Self-Lubricating Marine Product Line

Position 2: Bearing Type

R Rod End Bearing

Position 3: Bore Size

XX Bore Size Code (2 Digits, see datasheet)

Position 4: Series Type

| | | |
|----------|-------------------|-------------------|
| N | Narrow | Lined Race |
| P | Narrow | Lined Race & Bore |
| W | Wide | Lined Race |
| Y | Wide | Lined Race & Bore |
| E | High Misalignment | Lined Race |

Position 5: Thread Type

| | |
|----------|--------|
| M | Male |
| F | Female |

Position 6: Thread Direction

| | |
|----------|------------|
| R | Right Hand |
| L | Left Hand |

This catalog offers some of the more standard sized spherical bearings. If a desired size is not found within this catalog, please contact **KAHR® Bearing** at 520-744-1000 x4735 for any special size and geometry requests.

Position 7: Liner Type

| | | |
|----------|------------------|--------------------------------|
| Z | KAHR-LON® KSEA | Qualified to EB-5550 |
| Q | KAHR-LON® X1200S | Qualified to AS81820 & AS81934 |

Position 8, 10, 11: Ball, Race, Housing Materials

| | | |
|----------|------------------------|--------------------------|
| 1 | 13-8 PH CRES Stainless | AMS-5629 |
| 2 | 17-4 PH CRES Stainless | AMS-5643 |
| 3 | Inconel 718 | AMS-5662 or AMS-5663 |
| 4 | Titanium 6AL4V | AMS-4928 |
| 5 | 316 Stainless | AMS-5653 or AMS-QQ-S-763 |
| 6 | Inconel 625 | AMS-5666 |
| 7 | Monel K-500 | AMS-QQ-N-286 |
| 8 | Monel 400 | AMS-QQ-N-281 |

Other options available. Please contact KAHR® Bearing for proper part number.

Position 9: Ball OD Plating*

| | | |
|----------|------------------------|--------------|
| A | Chromium | AMS-QQ-C-320 |
| B | Ceramic | AMS-2437 |
| C | Nickel | AMS-QQ-N-290 |
| D | Cadmium (Race OD only) | AMS-QQ-P-416 |
| N | No Plating | |

*Side face plating is optional.

Other options available. Please contact KAHR® Bearing for proper part number.

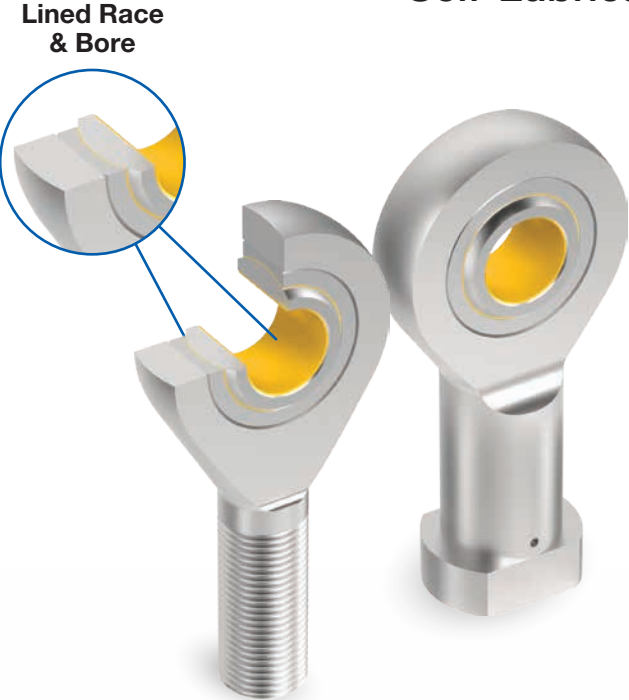
Position 12: Keyway Slot

| | | |
|----------|----------------|---------|
| K | Keyway Slot | NAS-513 |
| T | No Keyway Slot | |

Note: Displayed loads (see datasheets) are based on a rod end body strength of 185,000 psi.

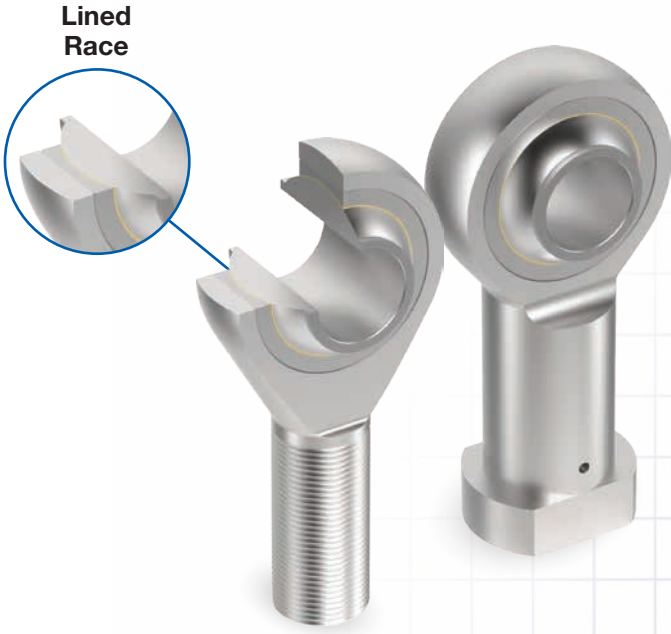
Rod End Bearings

Self-Lubricating



- KSEAR-NM** (Narrow, Male) Pg. 24
- KSEAR-NF** (Narrow, Female) Pg. 25
- KSEAR-WM** (Wide, Male) Pg. 28
- KSEAR-WF** (Wide, Female) Pg. 29

- KSEAR-PM** (Narrow, Male) Pg. 26
- KSEAR-PF** (Narrow, Female) Pg. 27
- KSEAR-YM** (Wide, Male) Pg. 30
- KSEAR-YF** (Wide, Female) Pg. 31



- KSEAR-EM** (High Misalignment, Male) Pg. 32
- KSEAR-EF** (High Misalignment, Female) Pg. 33

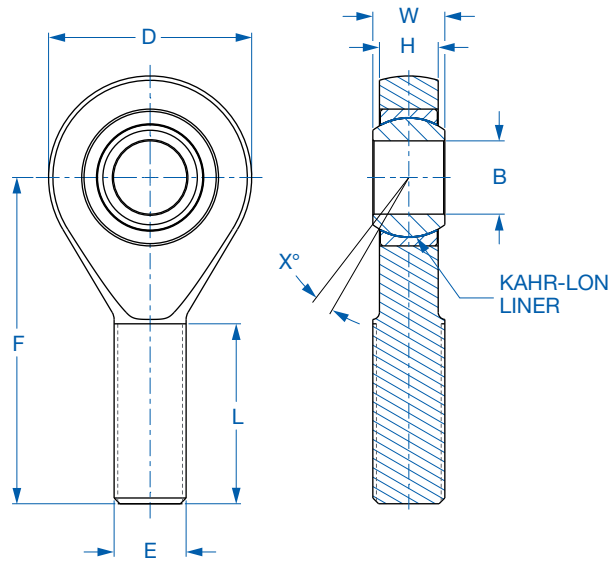
Note: Liner colors accentuated.



KSEAR-NM Narrow, Male, Lined Race

Self-Lubricating Rod End Bearings

- ✓ **Narrow Series—Male**
- ✓ **Lined Race**
- ✓ High Temperature — Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar AS81935/4 & AS81935/8
(Formerly MIL-B-81935/4 & MIL-B-81935/8)
- ✓ Utilizes **KSEAB-N Spherical Bearings** (see page 14)
- ✓ For material, liner, and plating options (see page 22)

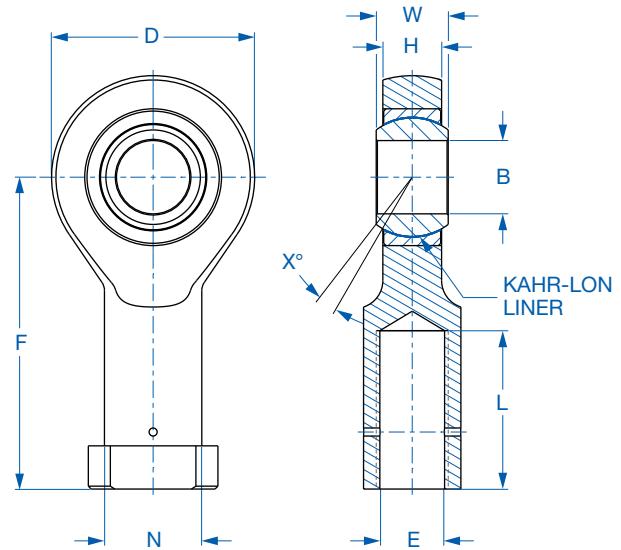


KSEAR-NM

| BORE SIZE CODE | B | D | W | H | F | L | E | X | Load |
|----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------|------------|-----------------|
| | Bore Diameter | Head Diameter | Ball Width | Body Width | Body Length | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.000 - 0.002 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.031 - 0.031 in | UNF-3A UN-3A in | Ref deg | Max lbs |
| 03 | 0.190 | 0.680 | 0.281 | 0.228 | 1.315 | 0.775 | 1/4-28 | 10 | 2,900 |
| 04 | 0.250 | 0.827 | 0.343 | 0.260 | 1.443 | 0.775 | 1/4-28 | 10 | 5,300 |
| 05 | 0.313 | 0.984 | 0.375 | 0.291 | 1.948 | 1.187 | 5/16-24 | 10 | 8,500 |
| 06 | 0.375 | 1.131 | 0.406 | 0.322 | 2.030 | 1.187 | 3/8-24 | 9 | 13,300 |
| 07 | 0.438 | 1.294 | 0.437 | 0.353 | 2.250 | 1.281 | 7/16-20 | 8 | 18,000 |
| 08 | 0.500 | 1.459 | 0.500 | 0.400 | 2.544 | 1.468 | 1/2-20 | 8 | 24,400 |
| 10 | 0.625 | 1.763 | 0.625 | 0.510 | 2.832 | 1.562 | 5/8-18 | 8 | 39,300 |
| 12 | 0.750 | 2.140 | 0.750 | 0.603 | 3.193 | 1.687 | 3/4-16 | 8 | 57,200 |
| 14 | 0.875 | 2.372 | 0.875 | 0.713 | 3.677 | 2.000 | 7/8-14 | 8 | 78,100 |
| 16 | 1.000 | 2.681 | 1.000 | 0.807 | 3.968 | 2.100 | 1-12 | 9 | 102,100 |

KSEAR-NF Narrow, Female, Lined Race Self-Lubricating Rod End Bearings

- ✓ **Narrow Series – Female**
- ✓ **Lined Race**
- ✓ High Temperature – Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar AS81935/5 & AS81935/9
(Formerly MIL-B-81935/5 & MIL-B-81935/9)
- ✓ Utilizes **KSEAB-N Spherical Bearings** (see page 14)
- ✓ For material, liner, and plating options (see page 22)



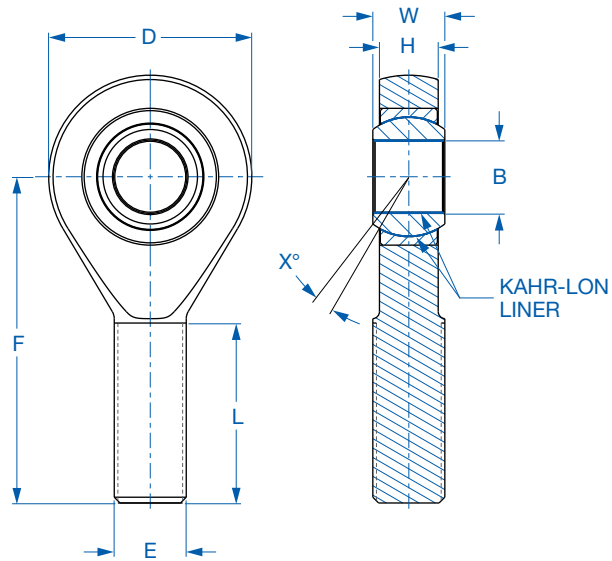
KSEAR-NF

| BORE SIZE CODE | B | D | W | H | F | N | L | E | X | Load |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------|-----------------------|------------|-----------------|
| | Bores Diameter | Head Diameter | Ball Width | Body Width | Body Length | Shank Diameter | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.000 - 0.002 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.010 - 0.010 in | Min in | UNF-3B UN-3B in | Ref deg | Max lbs |
| 03 | 0.190 | 0.680 | 0.281 | 0.228 | 1.210 | 0.329 | 0.625 | 1/4-28 | 10 | 2,900 |
| 04 | 0.250 | 0.827 | 0.343 | 0.260 | 1.338 | 0.329 | 0.625 | 1/4-28 | 10 | 5,300 |
| 05 | 0.313 | 0.984 | 0.375 | 0.291 | 1.566 | 0.413 | 0.750 | 5/16-24 | 10 | 8,500 |
| 06 | 0.375 | 1.131 | 0.406 | 0.322 | 1.908 | 0.501 | 1.000 | 3/8-24 | 9 | 13,300 |
| 07 | 0.438 | 1.294 | 0.437 | 0.353 | 2.125 | 0.584 | 1.125 | 7/16-20 | 8 | 18,000 |
| 08 | 0.500 | 1.459 | 0.500 | 0.400 | 2.356 | 0.672 | 1.250 | 1/2-20 | 8 | 24,400 |
| 10 | 0.625 | 1.763 | 0.625 | 0.510 | 2.707 | 0.845 | 1.375 | 5/8-18 | 8 | 39,300 |
| 12 | 0.750 | 2.140 | 0.750 | 0.603 | 3.193 | 1.017 | 1.625 | 3/4-16 | 8 | 57,200 |
| 14 | 0.875 | 2.372 | 0.875 | 0.713 | 3.677 | 1.187 | 1.875 | 7/8-14 | 8 | 78,100 |
| 16 | 1.000 | 2.681 | 1.000 | 0.807 | 4.101 | 1.356 | 2.125 | 1-12 | 9 | 102,100 |

KSEAR-PM Narrow, Male, Lined Race & Bore

Self-Lubricating Rod End Bearings

- ✓ **Narrow Series—Male**
- ✓ **Lined Race & Bore**
- ✓ High Temperature — Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar AS81935/4 & AS81935/8
(Formerly MIL-B-81935/4 & MIL-B-81935/8)
- ✓ Utilizes **KSEAB-P Spherical Bearings** (see page 15)
- ✓ For material, liner, and plating options (see page 22)

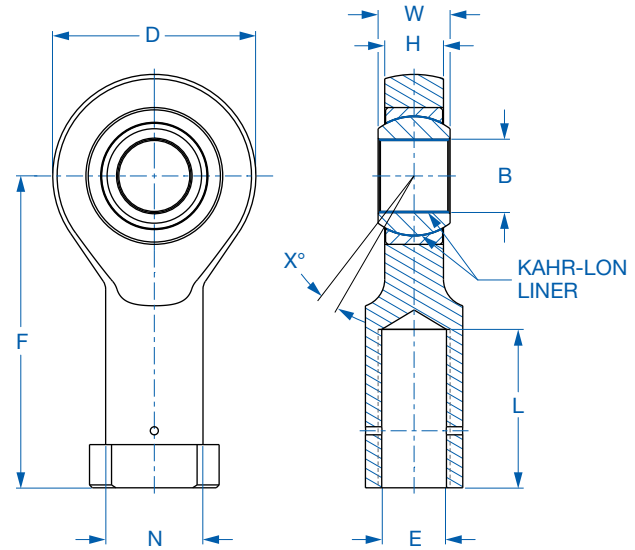


KSEAR-PM

| BORE SIZE CODE | B | D | W | H | F | L | E | X | Load |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------|------------|--------------------|
| | Bore Diameter | Head Diameter | Ball Width | Body Width | Body Length | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.000 - 0.002 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.031 - 0.031 in | UNF-3A UN-3A in | Ref deg | Max lbs |
| 04 | 0.251 | 0.827 | 0.343 | 0.260 | 1.443 | 0.775 | 1/4-28 | 10 | 5,300 |
| 05 | 0.314 | 0.984 | 0.375 | 0.291 | 1.948 | 1.187 | 5/16-24 | 10 | 8,500 |
| 06 | 0.376 | 1.131 | 0.406 | 0.322 | 2.030 | 1.187 | 3/8-24 | 9 | 13,300 |
| 07 | 0.439 | 1.294 | 0.437 | 0.353 | 2.250 | 1.281 | 7/16-20 | 8 | 18,000 |
| 08 | 0.501 | 1.459 | 0.500 | 0.400 | 2.544 | 1.468 | 1/2-20 | 8 | 24,400 |
| 10 | 0.626 | 1.763 | 0.625 | 0.510 | 2.832 | 1.562 | 5/8-18 | 8 | 39,300 |
| 12 | 0.751 | 2.140 | 0.750 | 0.603 | 3.193 | 1.687 | 3/4-16 | 8 | 57,200 |
| 14 | 0.876 | 2.372 | 0.875 | 0.713 | 3.677 | 2.000 | 7/8-14 | 8 | 78,100 |
| 16 | 1.001 | 2.681 | 1.000 | 0.807 | 3.968 | 2.100 | 1-12 | 9 | 102,100 |

KSEAR-PF Narrow, Female, Lined Race & Bore Self-Lubricating Rod End Bearings

- ✓ **Narrow Series—Female**
- ✓ **Lined Race & Bore**
- ✓ High Temperature — Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar AS81935/5 & AS81935/9
(Formerly MIL-B-81935/5 & MIL-B-81935/9)
- ✓ Utilizes **KSEAB-P Spherical Bearings** (see page 15)
- ✓ For material, liner, and plating options (see page 22)



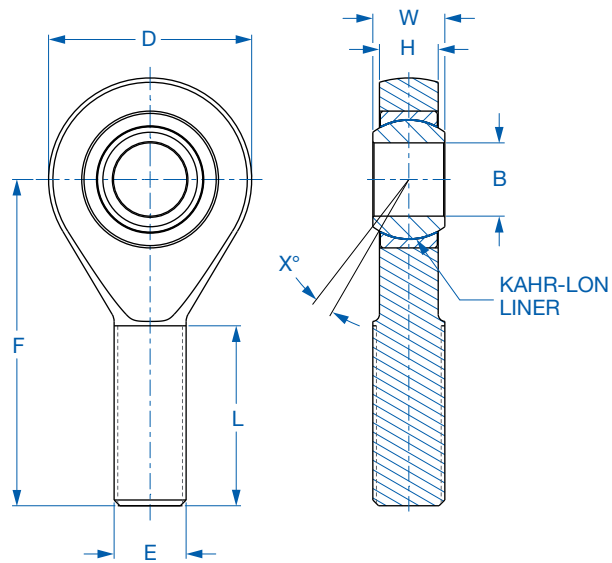
KSEAR-PF

| BORE SIZE CODE | B | D | W | H | F | N | L | E | X | Load |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----------------------|------------|--------------------|
| | Bore Diameter | Head Diameter | Ball Width | Body Width | Body Length | Shank Diameter | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.000 - 0.002 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.010 - 0.010 in | Min in | UNF-3B UN-3B in | Ref deg | Max lbs |
| 04 | 0.251 | 0.827 | 0.343 | 0.260 | 1.338 | 0.329 | 0.625 | 1/4-28 | 10 | 5,300 |
| 05 | 0.314 | 0.984 | 0.375 | 0.291 | 1.566 | 0.413 | 0.750 | 5/16-24 | 10 | 8,500 |
| 06 | 0.376 | 1.131 | 0.406 | 0.322 | 1.908 | 0.501 | 1.000 | 3/8-24 | 9 | 13,300 |
| 07 | 0.439 | 1.294 | 0.437 | 0.353 | 2.125 | 0.584 | 1.125 | 7/16-20 | 8 | 18,000 |
| 08 | 0.501 | 1.459 | 0.500 | 0.400 | 2.356 | 0.672 | 1.250 | 1/2-20 | 8 | 24,400 |
| 10 | 0.626 | 1.763 | 0.625 | 0.510 | 2.707 | 0.845 | 1.375 | 5/8-18 | 8 | 39,300 |
| 12 | 0.751 | 2.140 | 0.750 | 0.603 | 3.193 | 1.017 | 1.625 | 3/4-16 | 8 | 57,200 |
| 14 | 0.876 | 2.372 | 0.875 | 0.713 | 3.677 | 1.187 | 1.875 | 7/8-14 | 8 | 78,100 |
| 16 | 1.001 | 2.681 | 1.000 | 0.807 | 4.101 | 1.356 | 2.125 | 1-12 | 9 | 102,100 |

KSEAR-WM Wide, Male, Lined Race

Self-Lubricating Rod End Bearings

- ✓ **Wide Series—Male**
- ✓ **Lined Race**
- ✓ High Temperature — Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar AS81935/1 & AS81935/6
(Formerly MIL-B-81935/1 & MIL-B-81935/6)
- ✓ Utilizes **KSEAB-W Spherical Bearings** (see page 16)
- ✓ For material, liner, and plating options (see page 22)



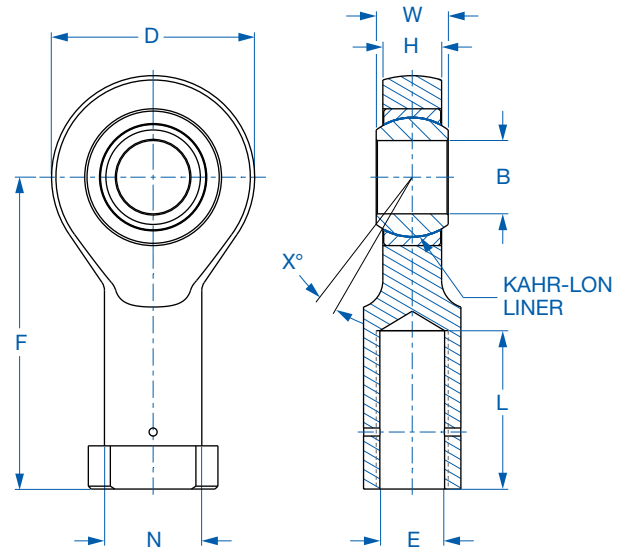
KSEAR-WM

| BORE SIZE CODE | B | D | W | H | F | L | E | X | Load |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------|------------|--------------------|
| | Bore Diameter | Head Diameter | Ball Width | Body Width | Body Length | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.000 - 0.002 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.031 - 0.031 in | UNF-3A UN-3A in | Ref deg | Max lbs |
| 03 | 0.190 | 0.806 | 0.437 | 0.337 | 1.562 | 0.968 | 5/16-24 | 15 | 6,900 |
| 04 | 0.250 | 0.806 | 0.437 | 0.337 | 1.562 | 0.968 | 5/16-24 | 15 | 6,900 |
| 05 | 0.313 | 0.900 | 0.437 | 0.327 | 1.875 | 1.187 | 5/16-24 | 14 | 8,300 |
| 06 | 0.375 | 1.025 | 0.500 | 0.416 | 1.938 | 1.187 | 3/8-24 | 8 | 10,100 |
| 07 | 0.438 | 1.150 | 0.562 | 0.452 | 2.125 | 1.281 | 7/16-20 | 10 | 10,800 |
| 08 | 0.500 | 1.337 | 0.625 | 0.515 | 2.438 | 1.468 | 1/2-20 | 9 | 21,300 |
| 10 | 0.625 | 1.525 | 0.750 | 0.577 | 2.625 | 1.562 | 5/8-18 | 12 | 23,600 |
| 12 | 0.750 | 1.775 | 0.875 | 0.640 | 2.875 | 1.687 | 3/4-16 | 13 | 31,600 |
| 14 | 0.875 | 2.025 | 0.875 | 0.765 | 3.375 | 2.000 | 7/8-14 | 6 | 36,700 |
| 16 | 1.000 | 2.775 | 1.375 | 1.015 | 4.125 | 2.343 | 1 1/4-12 | 12 | 82,900 |
| 20 | 1.250 | 2.875 | 1.500 | 1.140 | 5.000 | 3.125 | 1 1/4-12 | 14 | 66,100 |
| 24 | 1.500 | 3.500 | 1.687 | 1.218 | 6.250 | 3.750 | 1 1/2-12 | 13 | 126,100 |
| 28 | 1.750 | 3.875 | 1.812 | 1.312 | 7.000 | 4.375 | 1 3/4-12 | 12 | 146,800 |
| 32 | 2.000 | 4.375 | 1.937 | 1.375 | 7.875 | 5.000 | 2-12 | 13 | 203,900 |
| 36 | 2.250 | 5.000 | 2.000 | 1.406 | 9.000 | 5.625 | 2 1/4-12 | 12 | 260,500 |
| 40 | 2.500 | 5.437 | 2.062 | 1.437 | 9.875 | 6.250 | 2 1/2-12 | 11 | 292,300 |
| 44 | 2.750 | 5.750 | 2.187 | 1.500 | 10.625 | 6.750 | 2 3/4-12 | 12 | 332,000 |

KSEAR-WF Wide, Female, Lined Race Self-Lubricating Rod End Bearings

Interchangeable with **KNRF Series—Female**

- ✓ **Wide Series—Female**
- ✓ **Lined Race**
- ✓ High Temperature — Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar AS81935/2 & AS81935/7
(Formerly MIL-B-81935/2 & MIL-B-81935/7)
- ✓ Utilizes **KSEAB-W Spherical Bearings** (see page 16)
- ✓ For material, liner, and plating options (see page 22)



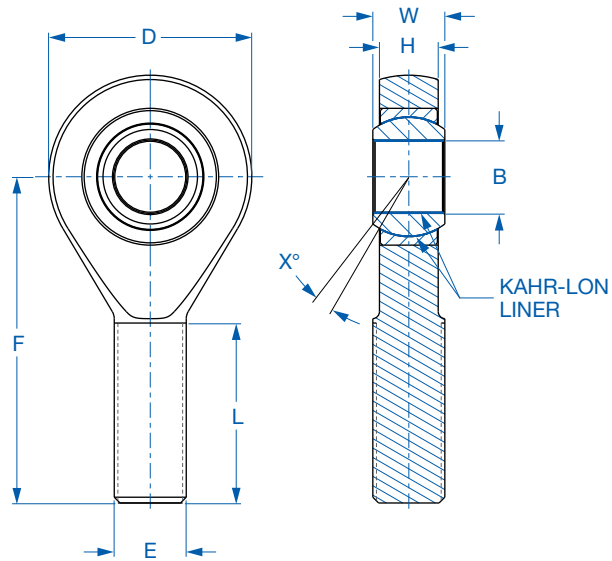
KSEAR-WF

| BORE SIZE CODE | B | D | W | H | F | N | L | E | X | Load |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------|-----------------------|------------|-----------------|
| | Bores Diameter | Head Diameter | Ball Width | Body Width | Body Length | Shank Diameter | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.000 - 0.002 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.010 - 0.010 in | Min in | UNF-3B UN-3B in | Ref deg | Max lbs |
| 03 | 0.190 | 0.806 | 0.437 | 0.337 | 1.375 | 0.422 | 0.750 | 5/16-24 | 15 | 6,900 |
| 04 | 0.250 | 0.806 | 0.437 | 0.337 | 1.469 | 0.422 | 0.750 | 5/16-24 | 15 | 6,900 |
| 05 | 0.313 | 0.900 | 0.437 | 0.327 | 1.625 | 0.485 | 0.875 | 3/8-24 | 14 | 8,300 |
| 06 | 0.375 | 1.025 | 0.500 | 0.416 | 1.812 | 0.547 | 1.000 | 3/8-24 | 8 | 10,100 |
| 07 | 0.438 | 1.150 | 0.562 | 0.452 | 2.000 | 0.610 | 1.125 | 7/16-20 | 10 | 10,800 |
| 08 | 0.500 | 1.337 | 0.625 | 0.515 | 2.250 | 0.735 | 1.250 | 1/2-20 | 9 | 21,300 |
| 10 | 0.625 | 1.525 | 0.750 | 0.577 | 2.500 | 0.860 | 1.375 | 5/8-18 | 12 | 23,600 |
| 12 | 0.750 | 1.775 | 0.875 | 0.640 | 2.875 | 0.985 | 1.625 | 3/4-16 | 13 | 31,600 |
| 14 | 0.875 | 2.025 | 0.875 | 0.765 | 3.375 | 1.110 | 1.875 | 7/8-14 | 6 | 36,700 |
| 16 | 1.000 | 2.775 | 1.375 | 1.015 | 4.125 | 1.688 | 2.125 | 1 1/4-12 | 12 | 82,900 |

KSEAR-YM Wide, Male, Lined Race & Bore

Self-Lubricating Rod End Bearings

- ✓ **Wide Series—Male**
- ✓ **Lined Race & Bore**
- ✓ High Temperature — Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar AS81935/1 & AS81935/6
(Formerly MIL-B-81935/1 & MIL-B-81935/6)
- ✓ Utilizes **KSEAB-Y Spherical Bearings** (see page 17)
- ✓ For material, liner, and plating options (see page 22)



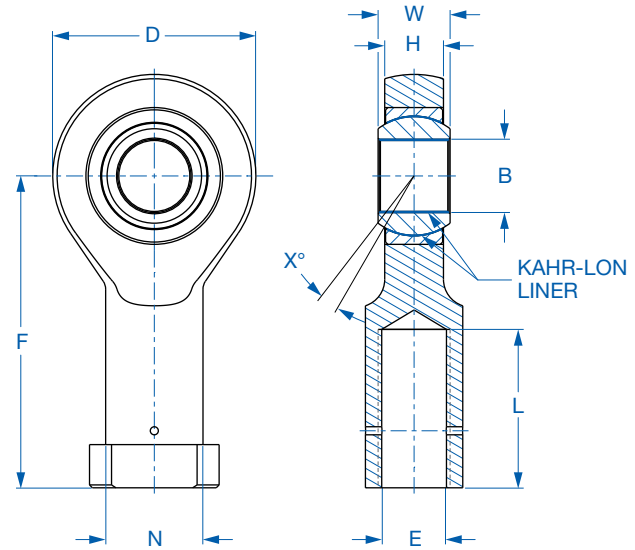
KSEAR-YM

| BORE SIZE CODE | B | D | W | H | F | L | E | X | Load |
|----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------|------------|-----------------|
| | Bore Diameter | Head Diameter | Ball Width | Body Width | Body Length | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.000 - 0.002 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.031 - 0.031 in | UNF-3A UN-3A in | Ref deg | Max lbs |
| 05 | 0.314 | 0.900 | 0.437 | 0.327 | 1.875 | 1.187 | 5/16-24 | 14 | 8,300 |
| 06 | 0.376 | 1.025 | 0.500 | 0.416 | 1.938 | 1.187 | 3/8-24 | 8 | 10,100 |
| 07 | 0.439 | 1.150 | 0.562 | 0.452 | 2.125 | 1.281 | 7/16-20 | 10 | 10,800 |
| 08 | 0.501 | 1.337 | 0.625 | 0.515 | 2.438 | 1.468 | 1/2-20 | 9 | 21,300 |
| 10 | 0.626 | 1.525 | 0.750 | 0.577 | 2.625 | 1.562 | 5/8-18 | 12 | 23,600 |
| 12 | 0.751 | 1.775 | 0.875 | 0.640 | 2.875 | 1.687 | 3/4-16 | 13 | 31,600 |
| 14 | 0.876 | 2.025 | 0.875 | 0.765 | 3.375 | 2.000 | 7/8-14 | 6 | 36,700 |
| 16 | 1.001 | 2.775 | 1.375 | 1.015 | 4.125 | 2.343 | 1 1/4-12 | 12 | 82,900 |

KSEAR-YF Wide, Female, Lined Race & Bore Self-Lubricating Rod End Bearings

Interchangeable with **KNRF Series—Female**

- ✓ **Wide Series—Female**
- ✓ **Lined Race & Bore**
- ✓ High Temperature — Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Similar AS81935/2 & AS81935/7
(Formerly MIL-B-81935/2 & MIL-B-81935/7)
- ✓ Utilizes **KSEAB-Y Spherical Bearings** (see page 17)
- ✓ For material, liner, and plating options (see page 22)



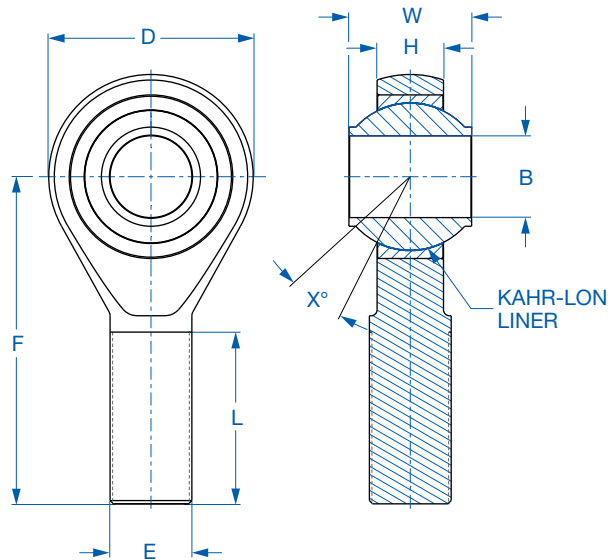
KSEAR-YF

| BORE SIZE CODE | B | D | W | H | F | N | L | E | X | Load |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|-----------------------|------------|--------------------|
| | Bore Diameter | Head Diameter | Ball Width | Body Width | Body Length | Shank Diameter | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.000 - 0.002 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.010 - 0.010 in | Min in | UNF-3B UN-3B in | Ref deg | Max lbs |
| 05 | 0.314 | 0.900 | 0.437 | 0.327 | 1.625 | 0.485 | 0.875 | 3/8-24 | 14 | 8,300 |
| 06 | 0.376 | 1.025 | 0.500 | 0.416 | 1.812 | 0.547 | 1.000 | 3/8-24 | 8 | 10,100 |
| 07 | 0.439 | 1.150 | 0.562 | 0.452 | 2.000 | 0.610 | 1.125 | 7/16-20 | 10 | 10,800 |
| 08 | 0.501 | 1.337 | 0.625 | 0.515 | 2.250 | 0.735 | 1.250 | 1/2-20 | 9 | 21,300 |
| 10 | 0.626 | 1.525 | 0.750 | 0.577 | 2.500 | 0.860 | 1.375 | 5/8-18 | 12 | 23,600 |
| 12 | 0.751 | 1.775 | 0.875 | 0.640 | 2.875 | 0.985 | 1.625 | 3/4-16 | 13 | 31,600 |
| 14 | 0.876 | 2.025 | 0.875 | 0.765 | 3.375 | 1.110 | 1.875 | 7/8-14 | 6 | 36,700 |
| 16 | 1.001 | 2.775 | 1.375 | 1.015 | 4.125 | 1.688 | 2.125 | 1 1/4-12 | 12 | 82,900 |

KSEAR-EM High Misalignment, Male, Lined Race Self-Lubricating Rod End Bearings

Interchangeable with **KNRME Series - High Misalignment Male**

- ✓ **High Misalignment Series – Male**
- ✓ **Lined Race**
- ✓ High Temperature – Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Utilizes **KSEAB-E Spherical Bearings** (see page 18)
- ✓ For material, liner, and plating options (see page 22)



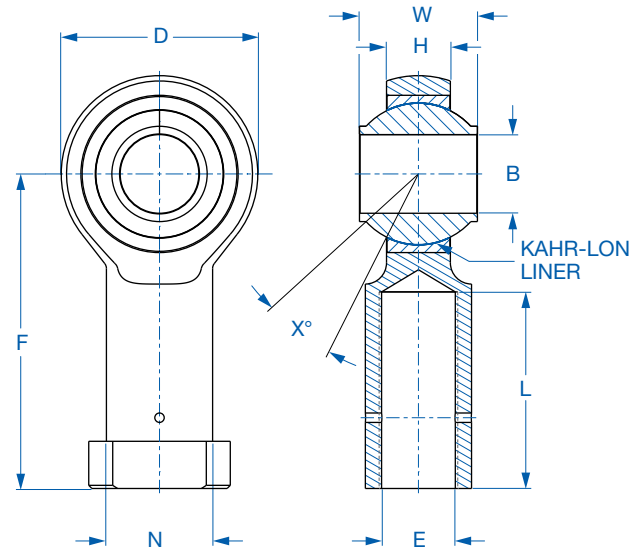
KSEAR-EM

| BORE SIZE CODE | B | D | W | H | F | L | E | X | Load |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------|------------|--------------------|
| | Bore Diameter | Head Diameter | Ball Width | Body Width | Body Length | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.005 - 0.005 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.031 - 0.031 in | UNF-3A UN-3A in | Ref deg | Max lbs |
| 03 | 0.190 | 0.781 | 0.560 | 0.265 | 1.562 | 1.000 | 5/16-24 | 20 | 4,800 |
| 04 | 0.250 | 1.000 | 0.593 | 0.265 | 1.938 | 1.250 | 3/8-24 | 24 | 8,800 |
| 05 | 0.313 | 1.125 | 0.625 | 0.337 | 2.125 | 1.375 | 7/16-20 | 23 | 19,800 |
| 06 | 0.375 | 1.125 | 0.813 | 0.355 | 2.125 | 1.375 | 7/16-20 | 23 | 9,400 |
| 07 | 0.438 | 1.312 | 0.875 | 0.355 | 2.438 | 1.500 | 1/2-20 | 23 | 14,200 |
| 08 | 0.500 | 1.500 | 0.937 | 0.411 | 2.625 | 1.625 | 5/8-18 | 24 | 20,000 |
| 10 | 0.625 | 1.750 | 1.200 | 0.577 | 2.875 | 1.750 | 3/4-16 | 18 | 27,000 |
| 12 | 0.750 | 2.000 | 1.280 | 0.630 | 3.375 | 1.875 | 7/8-14 | 18 | 34,900 |
| 14 | 0.875 | 2.200 | 1.400 | 0.635 | 3.750 | 2.000 | 7/8-14 | 18 | 36,500 |
| 16 | 1.000 | 2.750 | 1.875 | 0.845 | 4.125 | 2.125 | 1 1/4-12 | 21 | 68,200 |
| 20 | 1.250 | 3.125 | 1.875 | 1.015 | 5.000 | 2.875 | 1 1/4-12 | 21 | 80,000 |
| 24 | 1.500 | 3.750 | 2.250 | 1.185 | 6.500 | 3.750 | 1 1/2-12 | 21 | 113,100 |
| 28 | 1.750 | 4.375 | 2.875 | 1.265 | 8.000 | 5.000 | 2-12 | 30 | 155,000 |

KSEAR-EF High Misalignment, Female, Lined Race Self-Lubricating Rod End Bearings

Interchangeable with **KNRFE Series - High Misalignment Female**

- ✓ **High Misalignment Series – Female**
- ✓ **Lined Race**
- ✓ High Temperature – Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ Utilizes **KSEAB-E Spherical Bearings** (see page 18)
- ✓ For material, liner, and plating options (see page 22)



KSEAR-EF

| BORE SIZE CODE | B | D | W | H | F | N | L | E | X | Load |
|----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------|-----------------------|------------|-----------------|
| | Bore Diameter | Head Diameter | Ball Width | Body Width | Body Length | Shank Diameter | Thread Length | Threads | Angle | Radial Ultimate |
| | + 0.000 - 0.001 in | + 0.010 - 0.010 in | + 0.000 - 0.005 in | + 0.005 - 0.005 in | + 0.010 - 0.010 in | + 0.010 - 0.010 in | Min in | UNF-3B UN-3B in | Ref deg | Max lbs |
| 03 | 0.190 | 0.781 | 0.560 | 0.265 | 1.375 | 0.437 | 0.750 | 5/16-24 | 20 | 4,800 |
| 04 | 0.250 | 1.000 | 0.593 | 0.265 | 1.625 | 0.562 | 0.937 | 3/8-24 | 24 | 8,800 |
| 05 | 0.313 | 1.125 | 0.625 | 0.337 | 1.812 | 0.625 | 1.062 | 7/16-20 | 23 | 19,800 |
| 06 | 0.375 | 1.125 | 0.813 | 0.355 | 1.812 | 0.625 | 1.062 | 7/16-20 | 23 | 9,400 |
| 07 | 0.438 | 1.312 | 0.875 | 0.355 | 2.125 | 0.750 | 1.125 | 1/2-20 | 23 | 14,200 |
| 08 | 0.500 | 1.500 | 0.937 | 0.411 | 2.625 | 0.875 | 1.500 | 5/8-18 | 24 | 20,000 |
| 10 | 0.625 | 1.750 | 1.200 | 0.577 | 2.875 | 1.000 | 1.750 | 3/4-16 | 18 | 27,000 |
| 12 | 0.750 | 2.000 | 1.280 | 0.630 | 3.375 | 1.125 | 1.875 | 7/8-14 | 18 | 34,900 |
| 14 | 0.875 | 2.200 | 1.400 | 0.635 | 3.750 | 1.125 | 2.000 | 7/8-14 | 18 | 36,500 |
| 16 | 1.000 | 2.750 | 1.875 | 0.845 | 4.125 | 1.688 | 2.125 | 1 1/4-12 | 21 | 68,200 |
| 20 | 1.250 | 3.125 | 1.875 | 1.015 | 5.000 | 1.688 | 3.125 | 1 1/4-12 | 21 | 80,000 |

Journal Bearings

Self-Lubricating

| | | | | | | | | |
|---------------------|-------------------------------|---------------------|------------------|--------------------|------------------|-------------------|----------------------|-------------------------|
| Example: | KSEA J 008 F 144 Z 8 E | | | | | | | |
| | KSEA | J | 008 | F | 144 | Z | 8 | E |
| Nomenclature | Bearing Line | Bearing Type | Bore Size | Series Type | Race Type | Liner Type | Ball Material | Ball OD Plating* |
| Position | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Position 1: Bearing Line

KSEA KAHR® Self-Lubricating Marine Product Line

Position 2: Bearing Type

J Journal Bearing

Position 3: Bore Size

XX Bore Size Code (3 Digits, see datasheet)

Position 4: Series Type

| | | |
|----------|----------|---------------------|
| S | Straight | Lined Bore |
| F | Flanged | Lined Bore & Flange |
| G | Flanged | Lined Bore |

Position 5: Length Size

XX Length Size Code (3 Digits, see datasheet)

Position 6: Liner Type

| | | |
|----------|------------------|--------------------------------|
| Z | KAHR-LON® KSEA | Qualified to EB-5550 |
| Q | KAHR-LON® X1200S | Qualified to AS81820 & AS81934 |

Position 7: Journal Materials

| | | |
|----------|------------------------|--------------------------|
| 1 | 13-8 PH CRES Stainless | AMS-5629 |
| 2 | 17-4 PH CRES Stainless | AMS-5643 |
| 3 | Inconel 718 | AMS-5662 or AMS-5663 |
| 4 | Titanium 6AL4V | AMS-4928 |
| 5 | 316 Stainless | AMS-5653 or AMS-QQ-S-763 |
| 6 | Inconel 625 | AMS-5666 |
| 7 | Monel K-500 | AMS-QQ-N-286 |
| 8 | Monel 400 | AMS-QQ-N-281 |

Other options available. Please contact KAHR® Bearing for proper part number.

Position 8: OD Plating*

| | | |
|----------|------------------------|--------------------------------|
| D | Cadmium (Race OD only) | AMS-QQ-P-416 |
| E | Zinc-Nickel | AMS-QQ-P-416, TYPE II, CLASS 2 |
| N | No Plating | |

*Adjacent surfaces plating is optional.

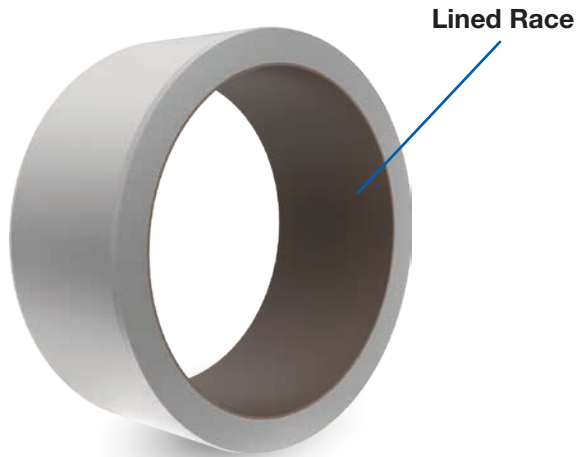
Other options available. Please contact KAHR® Bearing for proper part number.

This catalog offers some of the more standard sized spherical bearings. If a desired size is not found within this catalog, please contact **KAHR® Bearing** at 520-744-1000 x4735 for any special size and geometry requests.

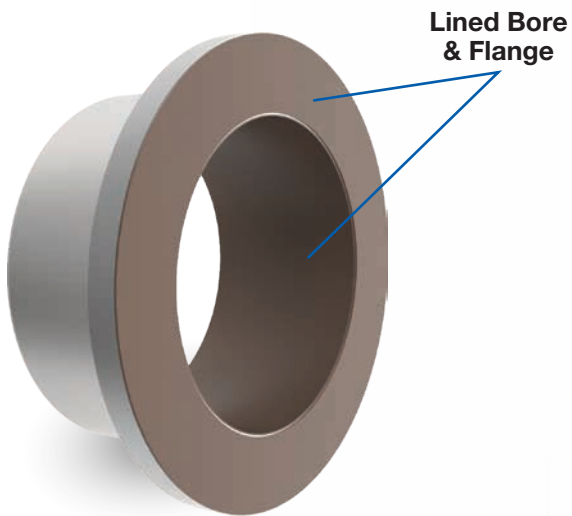
Note: Displayed loads (see datasheets) are based on **KAHR-LON® KSEA** liner strength of 75,000 psi.

Journal Bearings

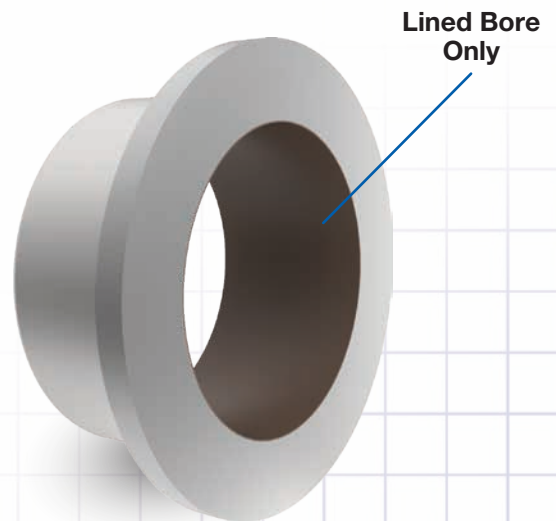
Self-Lubricating



KSEAJ-S (Straight) Pg. 36



KSEAJ-F (Flanged, Lined Bore & Flange) Pg. 37

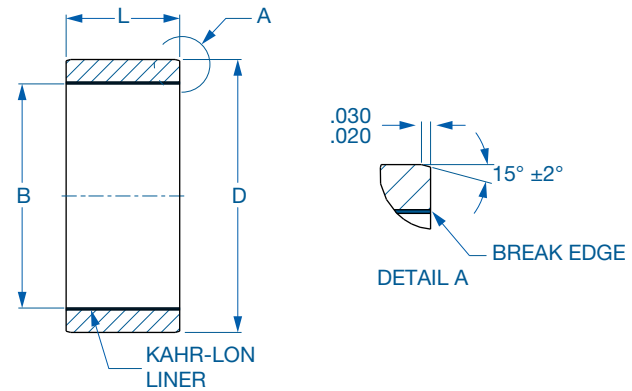


KSEAJ-G (Flanged, Lined Bore only) Pg. 37

KSEAJ-S Straight, Lined Bore Self-Lubricating Journal Bearings

Interchangeable with **KNRJ Series - Straight**

- ✓ **Straight Series**
- ✓ **Lined Bore**
- ✓ High Temperature — Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ For material, liner, and plating options (see page 34)



KSEARJ-S

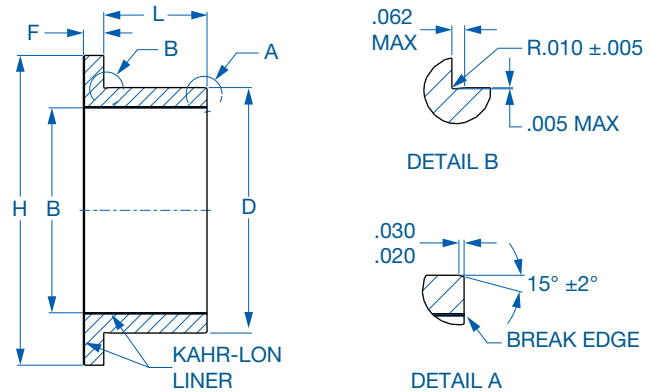
| BORE SIZE CODE | B | | D | | LENGTH SIZE CODE | L | | LENGTH SIZE CODE | L | |
|----------------|---------------|----------------------|------------------|----------------------|------------------|----------------|--------------------|------------------|----------------|--------------------|
| | Bore Diameter | | Outside Diameter | | | Journal Length | | | Journal Length | |
| | in | | in | | | in | | | in | |
| 004 | 0.253 | | 0.377 | | 008 | 0.250 | | 066 | 2.062 | |
| 005 | 0.315 | | 0.439 | | 009 | 0.281 | | 068 | 2.125 | |
| 006 | 0.378 | | 0.564 | | 010 | 0.312 | | 070 | 2.187 | |
| 007 | 0.440 | | 0.627 | | 011 | 0.343 | | 072 | 2.250 | |
| 008 | 0.503 | | 0.689 | | 012 | 0.375 | | 074 | 2.312 | |
| 009 | 0.565 | | 0.752 | | 014 | 0.437 | | 076 | 2.375 | |
| 010 | 0.628 | | 0.877 | | 016 | 0.500 | | 078 | 2.437 | + 0.005 - 0.005 |
| 012 | 0.754 | | 1.002 | + 0.0000 - 0.0005 | 018 | 0.562 | | 080 | 2.500 | |
| 014 | 0.879 | | 1.127 | | 020 | 0.625 | | 082 | 2.562 | |
| 016 | 1.004 | + 0.0000 - 0.0010 | 1.252 | | 022 | 0.687 | | 084 | 2.625 | |
| 018 | 1.129 | | 1.377 | | 024 | 0.750 | | 086 | 2.687 | |
| 020 | 1.254 | | 1.502 | | 026 | 0.812 | | 088 | 2.750 | |
| 022 | 1.380 | | 1.628 | | 028 | 0.875 | | 096 | 3.000 | |
| 024 | 1.505 | | 1.753 | | 030 | 0.937 | | 104 | 3.250 | |
| 026 | 1.630 | | 1.878 | | 032 | 1.000 | + 0.005 - 0.005 | 112 | 3.500 | |
| 028 | 1.755 | | 2.003 | | 034 | 1.062 | | 120 | 3.750 | |
| 030 | 1.880 | | 2.128 | | 036 | 1.125 | | 128 | 4.000 | |
| 032 | 2.005 | | 2.378 | | 038 | 1.187 | | 136 | 4.250 | + 0.010 - 0.010 |
| 036 | 2.255 | | 2.628 | + 0.0000 - 0.0010 | 040 | 1.250 | | 144 | 4.500 | |
| 040 | 2.506 | | 2.878 | | 042 | 1.312 | | 152 | 4.750 | |
| 044 | 2.756 | | 3.128 | | 044 | 1.375 | | 160 | 5.000 | |
| 048 | 3.006 | | 3.503 | | 046 | 1.437 | | 168 | 5.250 | |
| 052 | 3.256 | | 3.753 | | 048 | 1.500 | | 176 | 5.500 | |
| 056 | 3.506 | | 4.003 | | 050 | 1.562 | | 184 | 5.750 | |
| 060 | 3.756 | | 4.253 | + 0.0000 - 0.0015 | 052 | 1.625 | | 192 | 6.000 | |
| 064 | 4.006 | + 0.0000 - 0.0020 | 4.503 | | 054 | 1.687 | | 208 | 6.500 | |
| 068 | 4.256 | | 4.753 | | 056 | 1.750 | | 224 | 7.000 | |
| 072 | 4.507 | | 5.003 | | 058 | 1.812 | | 240 | 7.500 | + 0.030 - 0.030 |
| 076 | 4.757 | | 5.253 | | 060 | 1.875 | | 256 | 8.000 | |
| 080 | 5.007 | | 5.503 | | 062 | 1.937 | | 272 | 8.500 | |
| 088 | 5.507 | | 6.003 | | 064 | 2.000 | | 288 | 9.000 | |
| 096 | 6.007 | | 6.503 | + 0.0000 - 0.0020 | | | | | | |
| 104 | 6.507 | | 7.003 | | | | | | | |
| 112 | 7.007 | + 0.0000 - 0.0030 | 7.503 | | | | | | | |
| 120 | 7.507 | | 8.003 | | | | | | | |
| 128 | 8.007 | | 8.503 | | | | | | | |

Note: The length tabulation block «L» is intended as an aid for ordering and not to imply that all lengths listed are available or suggested for all part numbers listed.

KSEAJ-F & KSEAJ-G Flanged, Lined Bore & Flange Self-Lubricating Journal Bearings

Interchangeable with **KNRJ-UD Series - Flanged**

- ✓ **Flanged Series**
- ✓ **Type 'F' for Lined Bore & Flange**
- ✓ **Type 'G' for Lined Bore only**
- ✓ High Temperature — Low Wear
- ✓ -65°F to +325°F (-53.9°C to 162.8°C)
- ✓ For material, liner, and plating options (see page 34)



KSEARJ-F & KSEARJ-F

| BORE SIZE CODE | B | | D | | H | | F | | L | | L | |
|----------------|-------|----------------------|-------|----------------------|-------|--------------------|-------|--------------------|-----|-------|-----|-------|
| | in | in | in | in | in | in | in | in | in | in | in | |
| 004 | 0.253 | | 0.377 | | 0.500 | | | | 008 | 0.250 | 066 | 2.062 |
| 005 | 0.315 | | 0.439 | | 0.562 | | | | 009 | 0.281 | 068 | 2.125 |
| 006 | 0.378 | | 0.564 | | 0.625 | | | | 010 | 0.312 | 070 | 2.187 |
| 007 | 0.440 | | 0.627 | | 0.750 | | 0.125 | | 011 | 0.343 | 072 | 2.250 |
| 008 | 0.503 | | 0.689 | | 0.875 | | | | 012 | 0.375 | 074 | 2.312 |
| 009 | 0.565 | | 0.752 | | 1.062 | | | | 014 | 0.437 | 076 | 2.375 |
| 010 | 0.628 | | 0.877 | | 1.188 | | | | 016 | 0.500 | 078 | 2.437 |
| 012 | 0.754 | | 1.002 | + 0.0000 - 0.0005 | 1.312 | | | | 018 | 0.562 | 080 | 2.500 |
| 014 | 0.879 | | 1.127 | | 1.500 | | | | 020 | 0.625 | 082 | 2.562 |
| 016 | 1.004 | + 0.0000 - 0.0010 | 1.252 | | 1.750 | | | | 022 | 0.687 | 084 | 2.625 |
| 018 | 1.129 | | 1.377 | | 1.890 | + 0.010 - 0.010 | | | 024 | 0.750 | 086 | 2.687 |
| 020 | 1.254 | | 1.502 | | 2.015 | | | | 026 | 0.812 | 088 | 2.750 |
| 022 | 1.380 | | 1.628 | | 2.140 | | | | 028 | 0.875 | 096 | 3.000 |
| 024 | 1.505 | | 1.753 | | 2.265 | | | | 030 | 0.937 | 104 | 3.250 |
| 026 | 1.630 | | 1.878 | | 2.390 | | | | 032 | 1.000 | 112 | 3.500 |
| 028 | 1.755 | | 2.003 | | 2.515 | | | | 034 | 1.062 | 120 | 3.750 |
| 030 | 1.880 | | 2.128 | | 2.640 | | | | 036 | 1.125 | 128 | 4.000 |
| 032 | 2.005 | | 2.378 | | 3.000 | | 0.187 | + 0.005 - 0.005 | 038 | 1.187 | 136 | 4.250 |
| 036 | 2.255 | | 2.628 | + 0.0000 - 0.0010 | 3.250 | | | | 040 | 1.250 | 144 | 4.500 |
| 040 | 2.506 | | 2.878 | | 3.500 | | | | 042 | 1.312 | 152 | 4.750 |
| 044 | 2.756 | | 3.128 | | 3.750 | | | | 044 | 1.375 | 160 | 5.000 |
| 048 | 3.006 | | 3.503 | | 4.000 | | | | 046 | 1.437 | 168 | 5.250 |
| 052 | 3.256 | | 3.753 | | 4.250 | | | | 048 | 1.500 | 176 | 5.500 |
| 056 | 3.506 | | 4.003 | | 4.500 | | | | 050 | 1.562 | 184 | 5.750 |
| 060 | 3.756 | | 4.253 | + 0.0000 - 0.0015 | 4.750 | + 0.015 - 0.015 | | | 052 | 1.625 | 192 | 6.000 |
| 064 | 4.006 | + 0.0000 - 0.0020 | 4.503 | | 5.000 | | | | 054 | 1.687 | 208 | 6.500 |
| 068 | 4.256 | | 4.753 | | 5.250 | | | | 056 | 1.750 | 224 | 7.000 |
| 072 | 4.507 | | 5.003 | | 5.500 | | | | 058 | 1.812 | 240 | 7.500 |
| 076 | 4.757 | | 5.253 | | 5.750 | | | | 060 | 1.875 | 256 | 8.000 |
| 080 | 5.007 | | 5.503 | | 6.000 | | | | 062 | 1.937 | 272 | 8.500 |
| 088 | 5.507 | | 6.003 | | 6.500 | | | | 064 | 2.000 | 288 | 9.000 |
| 096 | 6.007 | | 6.503 | + 0.0000 - 0.0020 | 7.000 | | 0.250 | | | | | |
| 104 | 6.507 | | 7.003 | | 7.500 | + 0.030 - 0.030 | | | | | | |
| 112 | 7.007 | + 0.0000 - 0.0030 | 7.503 | | 8.000 | | | | | | | |
| 120 | 7.507 | | 8.003 | | 8.500 | | | | | | | |
| 128 | 8.007 | | 8.503 | | 9.000 | | | | | | | |

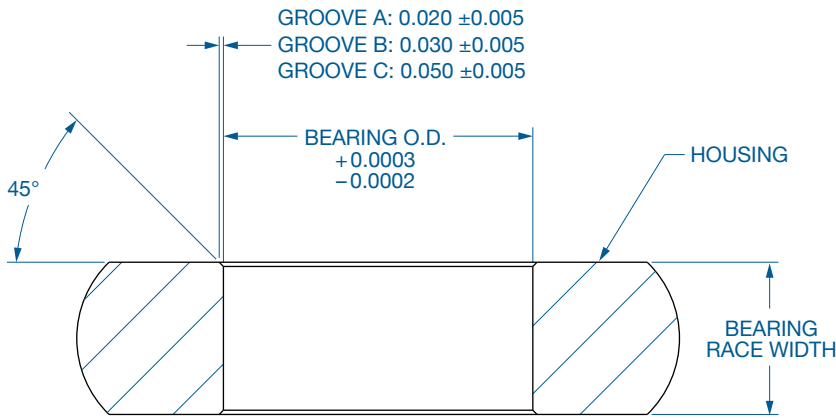
Note: The length tabulation block (L) is intended as an aid for ordering and not to imply that all lengths listed are available or suggested for all part numbers listed.

Appendix A:

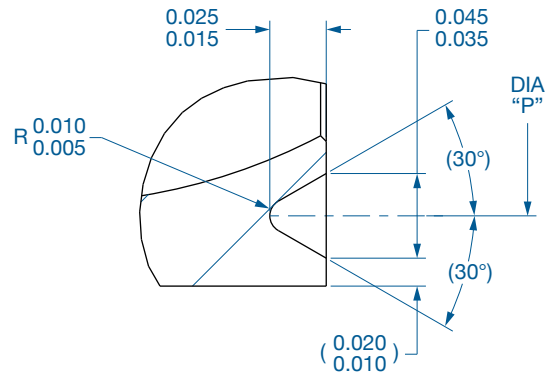
Staking Retention Groove

KAHR® Bearing recommends that the installation procedures set out in NAS 0331 be followed. NAS 0331 provides the formulas for determining the recommended swaging loads for different sizes of bearings, in addition to the formulas for determining proof load testing of these installed bearings.

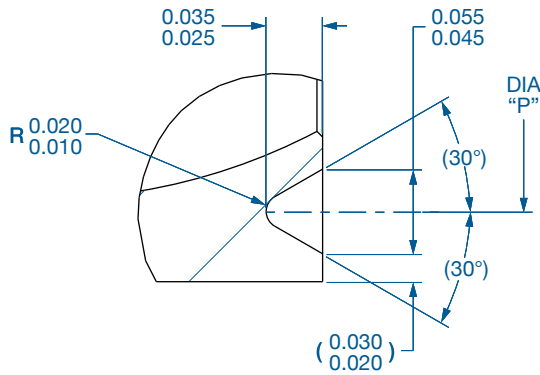
KAHR® follows the military specifications for staking grooves when designing bearings. The housing that the bearing is being installed into should have a chamfer related to the groove size, as seen in the illustration below.



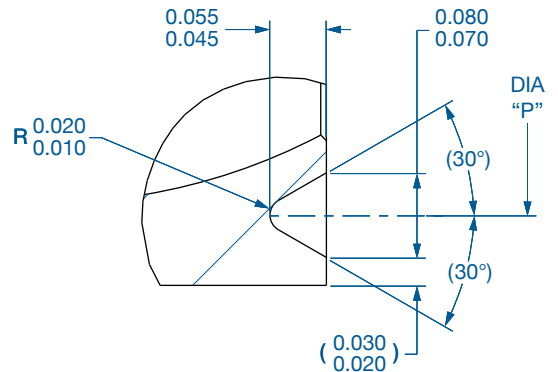
TYPE A



TYPE B



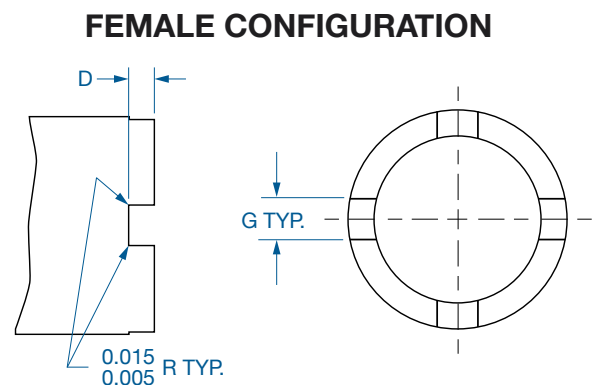
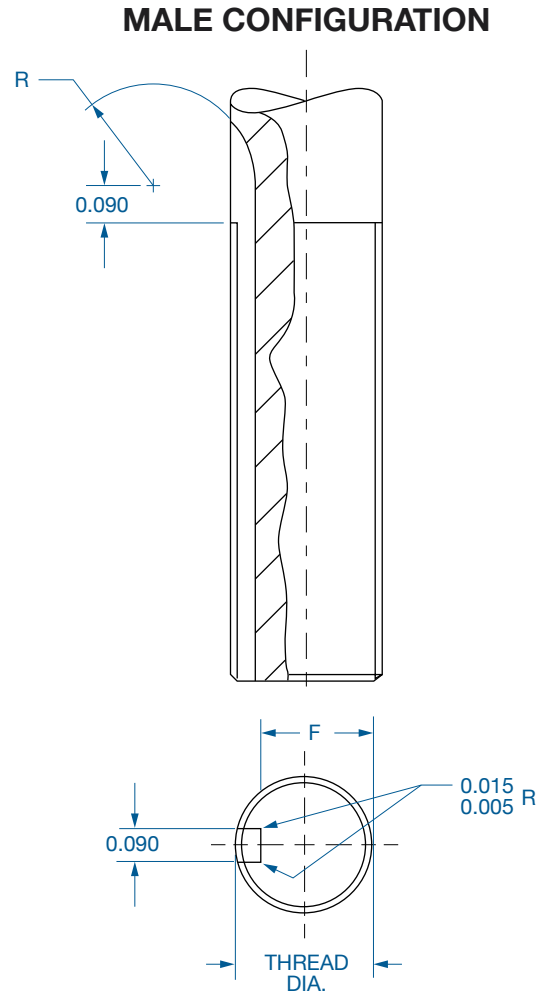
TYPE C



Appendix B: Rod End Keyway Slot

When specified in ordering a rod end bearing (see Rod End Designation) a keyway per NAS 513 is added. Keyways can be added to both male (externally threaded) and female (internally threaded) rod ends. NAS 513 defines keyway dimensions for up to 2 1/4 inch thread diameters.

| Thread Diameter (Ref.) | | G | F | R | D |
|------------------------|--------|------------------|--------------------|-------|------------------|
| | | + 0.005 0.000 | + 0.000 - 0.005 | - | + 0.005 0.000 |
| 1/4 | 0.250 | 0.062 | 0.201 | 0.255 | 0.056 |
| 5/16 | 0.312 | 0.062 | 0.260 | 0.255 | 0.056 |
| 3/8 | w0.375 | 0.093 | 0.311 | 0.255 | 0.056 |
| 7/16 | 0.437 | 0.093 | 0.370 | 0.255 | 0.069 |
| 1/2 | 0.500 | 0.093 | 0.436 | 0.255 | 0.069 |
| 9/16 | 0.562 | 0.125 | 0.478 | 0.255 | 0.077 |
| 5/8 | 0.625 | 0.125 | 0.541 | 0.255 | 0.077 |
| 3/4 | 0.750 | 0.125 | 0.663 | 0.255 | 0.077 |
| 7/8 | 0.875 | 0.156 | 0.777 | 0.318 | 0.086 |
| 1 | 1.000 | 0.156 | 0.900 | 0.318 | 0.094 |
| 1 1/8 | 1.125 | 0.187 | 1.010 | 0.382 | 0.094 |
| 1 1/4 | 1.250 | 0.187 | 1.136 | 0.382 | 0.116 |
| 1 3/8 | 1.375 | 0.250 | 1.236 | 0.445 | 0.116 |
| 1 1/2 | 1.500 | 0.250 | 1.361 | 0.445 | 0.116 |
| 1 5/8 | 1.625 | 0.250 | 1.477 | 0.445 | 0.129 |
| 1 3/4 | 1.750 | 0.312 | 1.589 | 0.508 | 0.129 |
| 1 7/8 | 1.875 | 0.312 | 1.714 | 0.508 | 0.129 |
| 2 | 2.000 | 0.312 | 1.839 | 0.508 | 0.129 |
| 2 1/8 | 2.125 | 0.312 | 1.955 | 0.508 | 0.129 |
| 2 1/4 | 2.250 | 0.312 | 2.080 | 0.508 | 0.129 |
| 2 1/2 | 2.500 | 0.312 | 2.330 | 0.508 | 0.129 |
| 2 3/4 | 2.750 | 0.312 | 2.580 | 0.508 | 0.129 |
| 3 | 3.000 | 0.312 | 2.830 | 0.508 | 0.129 |



KAHR-LON® X1200S

PTFE Self-Lubricating Liner System

Technical Data Sheet | TDS-100

Description

Developed by Kahr Bearing, Kahr-Lon® X1200S is an engineered composite self-lubricating liner system that provides longer life and low friction for aerospace bearing applications. This liner system is ideal in low speed applications, intermittent to continuous oscillation, with high alternating loads. Kahr-Lon® X1200S has a proven pedigree as the superior aerospace liner system since its development in the 1960's. The proprietary architecture of Kahr-Lon® X1200S liner contains a blend of polytetrafluoroethylene (PTFE) material suspended in a phenolic based resin. This lubricant system is impregnated into a custom designed woven fabric, which provides structural strength and resistance to cold flow under load. The liner is bonded with Kahr Bearing's proprietary high performance thermosetting adhesive cured under heat and pressure to produce the industry's strongest bond. Once bonded, this liner system is resistance to high compressive loads, shear loads and impermeable to contamination under a variety of conditions. Kahr-Lon® X1200S self-lubricating liner system is the lowest friction liner system in the industry.

Qualification

- SAE AS81820 (Formerly MIL-B-81820) • SAE AS8942 (Formerly MIL-B-8942)
- SAE AS81934 (Formerly MIL-B-81934) • SAE AS8943 (Formerly MIL-B-8943)

Physical Properties:

| | | |
|------------------|--------------------------|-------------------------|
| Thickness | 0.009 to 0.011 in | 0.23 to 0.28 mm |
| Density | 0.047 lb/in ³ | 1.30 gm/cm ³ |
| Color | Brown | |

Engineering Data:

| | | |
|---|-------------------------|---------------|
| Operating Temperature | -65 to 325 °F | -54 to 163 °C |
| Coefficient of Friction* | 0.02 to 0.10 | |
| Static Limit | 80,000 psi | 552 Mpa |
| Static Ultimate | 100,000 psi | 689 Mpa |
| Max Dynamic Bearing Load* | 37,500 psi | 257 Mpa |
| Continuous Dynamic Bearing Load* | 30,000 psi | 207 Mpa |
| Max Wear Surface Velocity* | 3 ft/min | 0.015 m/s |
| Approximate Compression Modulus | 8 x 10 ⁵ psi | 5515 Mpa |

*Laboratory ambient conditions. May vary based on operation and temperature conditions

Fluid Compatibility:

- MIL-PRF-5606, MIL-PRF-83282, SKYDROL® Hydraulic Fluids • MIL-PRF-7808 Lubricating Oil
- MIL-DTL-5624 Turbine Fuel • AS8243 Anti-Icing Fluid • Water

Applications

- Landing Gear Shock Strut Bearings, Steering Collars/Torque Tubes, Axle Retainers/Tow Fittings
- Actuation Bearings • Flight Control Bearings • Support Bearings • Airframe Bearings • Space Mechanisms
- Helicopter Swashplate Bearings

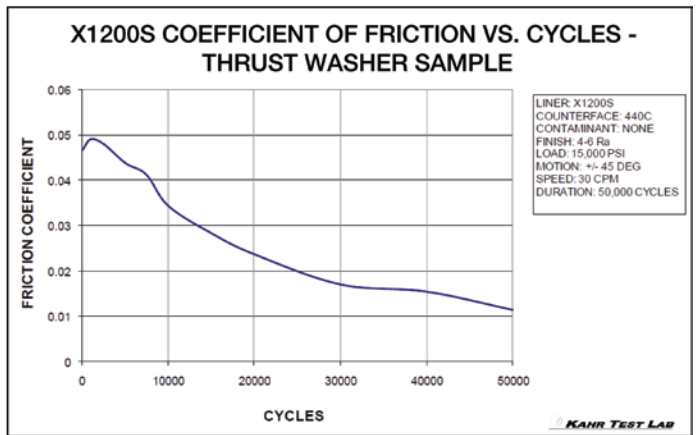
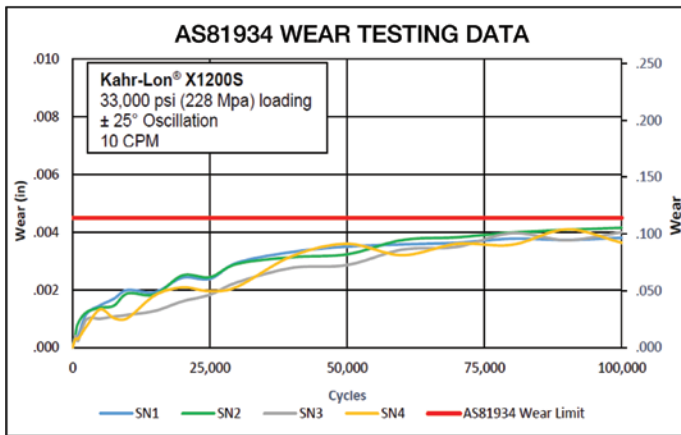
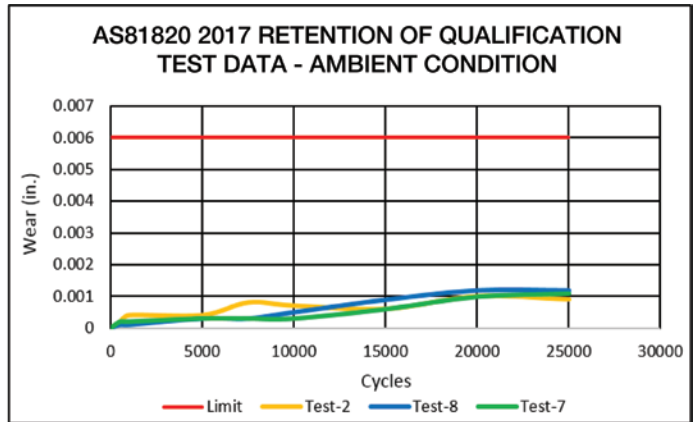
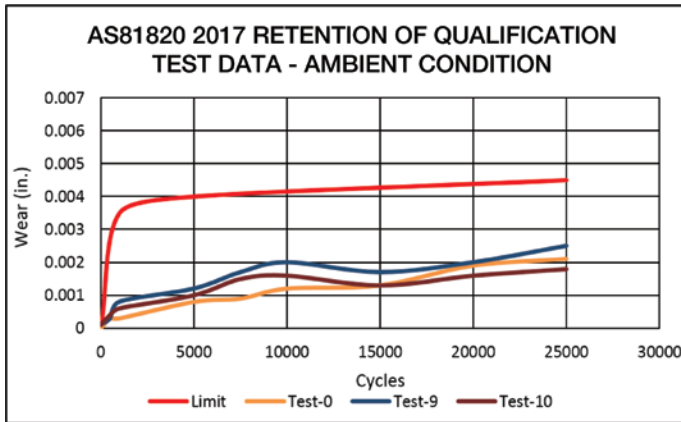
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KAHR-LON® X1200S

PTFE Self-Lubricating Liner System

Technical Data Sheet | TDS-100



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KAHR-LON® KSEA

PTFE Self-Lubricating Submergible Liner System

Technical Data Sheet | TDS-205

Description

Developed by Kahr Bearing, Kahr-Lon® KSEA liner is an engineered composite self-lubricating liner system that provides longer life and low friction for underwater bearing applications. This liner system is ideal in submerged applications with low speeds, intermittent to continuous oscillation, and high alternating loads. Kahr-Lon® KSEA liner is proven to meet the industries increasing demands, and passed all performance requirements of General Dynamics Electric Boat specification EB-5550, and the US Navy's underwater cathodic disbandment testing. The architecture of Kahr-Lon® KSEA liner contains a proprietary blend of polytetrafluoroethylene (PTFE) material suspended in a phenolic based resin. This lubricant system is impregnated into a custom designed woven fabric, which provides structural strength and resistance to cold flow under load. The liner is bonded with a high performance thermosetting adhesive cured under heat and pressure producing the industry's strongest bond, impermeable to salt water contamination. Once bonded, this composite liner system is resistance to high compressive and shear loads under a variety of conditions. Kahr-Lon® KSEA self-lubricating liner system is the industries only self-lubricating liner system for fully submerged, under-water applications.

Qualification

- General Dynamics Electric Boat specification EB-5550

Physical Properties:

| | | |
|-----------|-------------------------|-------------------------|
| Thickness | 0.009 to 0.012 in | 0.23 to 0.30 mm |
| Density | 0.05 lb/in ³ | 1.38 gm/cm ³ |
| Color | Brown | |

Engineering Data:

| | | |
|----------------------------------|---------------|---------------|
| Operating Temperature | -65 to 325 °F | -54 to 163 °C |
| Coefficient of Friction* | 0.05 to 0.20 | |
| Static Limit | 80,000 psi | 552 Mpa |
| Static Ultimate | 100,000 psi | 689 Mpa |
| Max Dynamic Bearing Load* | 37,500 psi | 257 Mpa |
| Continuous Dynamic Bearing Load* | 30,000 psi | 207 Mpa |
| Max Wear Surface Velocity* | 3 ft/min | 0.015 m/s |

*Salt water submerged conditions. May vary based on application pressure and conditions

Fluid Compatibility:

- MIL-PRF-5606, MIL-PRF-83282, SKYDROL® Hydraulic Fluids
- MIL-PRF-7808 Lubricating Oil
- MIL-DTL-5624 Turbine Fuel
- AS8243 Anti-Icing Fluid
- Water
- Salt Water

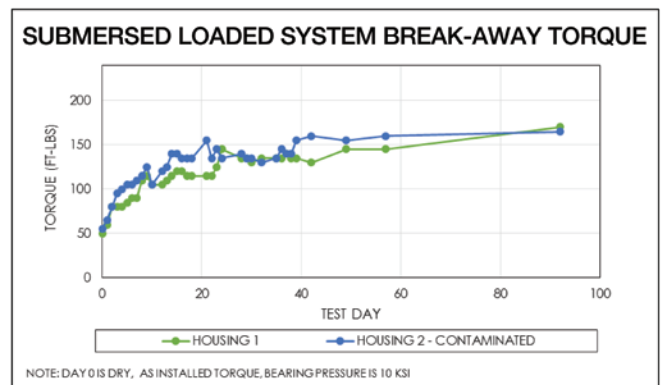
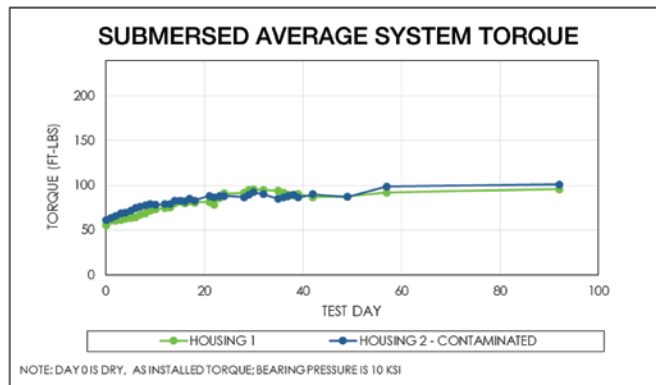
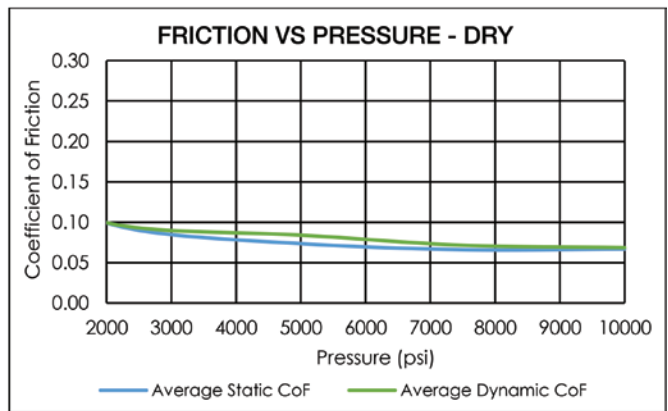
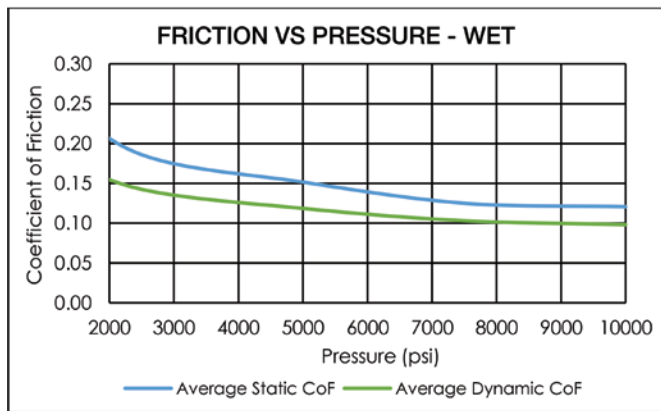
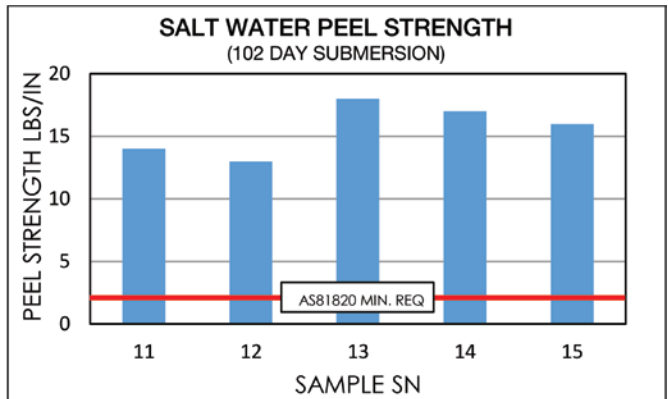
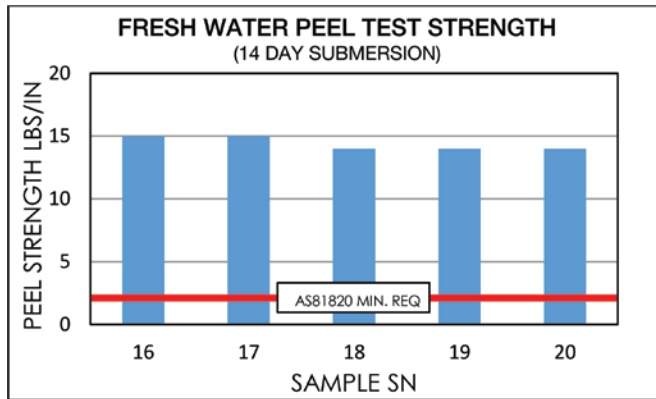
Applications

- Submerged Applications

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Technical Data Sheet | TDS-205



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RBC Bearings® has been producing bearings in the USA since 1919. In addition to unique custom bearings, RBC Bearings® offers a full line of standard industrial and aerospace bearings, including:



Spherical Bearings

- MS approved to AS81820 (Formerly MIL-B-81820)
- Self-lubricating • Metal-to-Metal
- Loader slots • High temperature
- Low coefficient of friction
- Special configurations and materials



Rod End Bearings

- MS approved to AS81935 (Formerly MIL-B-81935)
- Self-lubricating • Metal-to-Metal
- Loader slots • High temperature
- Low coefficient of friction
- Special configurations and materials



Thin Section Ball Bearings

- Standard cross sections to one inch
- Stainless steel and other materials are available
- Sizes to 40"
- Seals available on all sizes and standard cross sections
- Super duplex configurations



Track Rollers

- MS approved to AS39901 (Formerly MIL-B-3990)
- ATF single row and ATL double row
- Sealed with lube holes and grooves
- Heavy duty cross sections
- Advanced AeroCres® materials available



Journal Bearings

- MS approved to AS81934 (Formerly MIL-B-81934)
- Plain and flanged • Self-lubricating
- High temperature • High loads
- Available in inch and metric sizes



Cam Followers

- MS approved to AS39901 (Formerly MIL-B-3990)
- Advanced AeroCres® materials available
- Maximum corrosion resistance
- Superior lubricants & seals to reduce maintenance



Airframe Control Ball Bearings

- MS approved to AS7949 (Formerly MIL-B-7949)
- Single and double row
- Radial, self-aligning, and pulley series
- 52100 Cad plated and 440C stainless
- Zinc Nickel plated



Load Slot Bearings

- Spherical and rod end designs
- Superior ball-to-race conformity
- Reduced maintenance cost
- Variety of race materials available



Ball Bearing Rod Ends

- MS approved to AS6039 (Formerly MIL-B-6039)
- Various shank configurations
- Low coefficient of friction
- Advanced AeroCres® materials available



Specials

- Many specialty bearings, custom-designed and configured for diverse aerospace applications
- Capability for advanced aerospace specialty corrosion resistant and high temperature materials



Rings and Seals

- Solutions for any pneumatic and hydraulic applications
- Seals from .5" to 55" diameter
- Cast Iron to Rene 41
- Precision machined & wire rings to tight tolerances



Control Rods

- Swaging up to 14' length and 4" dia
- Nadcap and customer special process approvals including NDT
- Surface treatments, CNC Machining, Flash Welding, Aluminum Heat Treat
- Design and build to print



Specialty Fasteners

- Hollow Bolts, Fuse Pins, Solid Bolts (Standards), Customized Machined Parts & Nuts
- Hot Headed, Thread Rolled, HVOF Coated
- Large Diameter over 3/4"



Ducting Solutions

- Solutions for pneumatic ducting
- Patented couplings
- Temperatures 450° to 1,500°F
- Engines, Aircraft, APUs



Hydraulic Actuators

- 2-Position Fluid Hydraulic
- Auto or Manual Mechanical Locking
- Lock Sensing/Position Sensing
- Flow/Directional Control Valves; Solenoid/Manual



Machined Components

- Exotic materials • 3, 3.5, 4 and 5 Axis
- Horizontal and Vertical Milling
- Lathes, Hot Head, Gearing, Heat Treat, Special Processes



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