

KAHR

Kahr Special Bearings

Kahr enjoys an enviable reputation for supplying specialty designed bearings. When you have need for a unique application — whether it be configuration, material or size — your Kahr representative will be happy to assist you. A phone call is all it takes. Kahr has more experience in this area than any other organization of its kind.

While Kahr, for many years, has been considered expert in "Aircraft Quality" bearings, it has not restricted itself to this field. Send us your requirements. Whether they be for aircraft, land vehicle, marine or industrial application, Kahr will be pleased to study the problem and recommend the most practical and economical design to fulfill your needs.

SARGENT
INDUSTRIES

KAHR BEARING DIVISION



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FOREWORD

In this catalog you will find one of the most extensive ranges of spherical, rod end and journal bearings available anywhere. The Kahr Bearing Division of SARGENT INDUSTRIES, INC. is one of the pioneering firms in the field of self-aligning bearings.

K A H R



SARGENT
INDUSTRIES
KAHR BEARING DIVISION

A Guide to Bearing Selection

With technological advancements expanding exponentially in all the arts and sciences, it is no longer sufficient to maintain merely a broad product line and a competent production facility. Kahr does this, but in addition, Kahr continuously carries on a growing program of research and development in mechanics, metallurgy, and other disciplines which are involved in bearing design for sophisticated applications.

BEARING TYPES

Like many other seemingly complex situations, the proliferation of bearing types becomes understandable once one learns the nature of each type of variation and, therefore, comprehends the underlying reason. This is conveniently done by first examining the nature of a spherical bearing, and then considering separately each of the major variations in size, shape, method of manufacture, material, finish, and so on which have become accepted in the industry.

The "basic" (or simplest) spherical bearing is the "metal-to-metal" bearing, having as its inner member a hard steel ball and as its outer member a less hard aluminum bronze race. The load which this bearing will carry is determined by the contact area

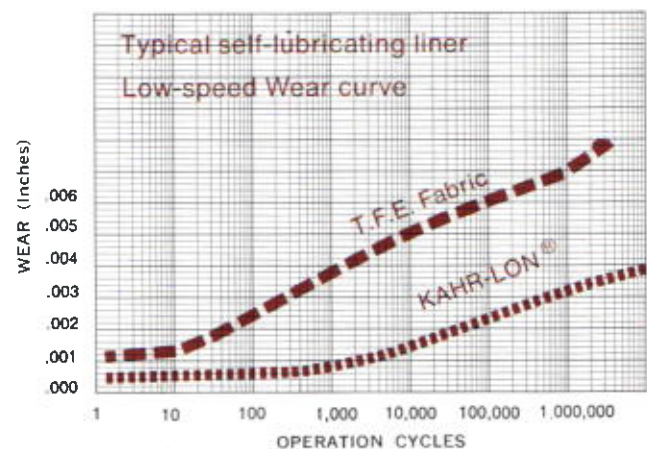
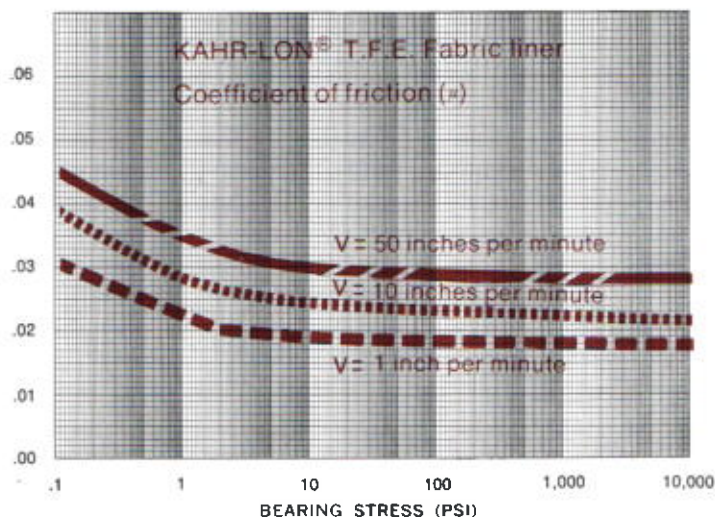
between ball and race, and by the mechanical strength of the race material.

In the plain spherical bearing, there is a hole through the ball which allows an inserted shaft to rotate freely. The rotational freedom of the ball also allows the shaft to misalign, which is, of course, the reason for the existence and employment of a spherical bearing in the first place.

MATERIALS

If aluminum bronze does not have sufficient strength for the application, and the dimensions cannot be enlarged, then a race with higher strength must be used. Heat-treated steels, for example, provide a selection of higher strength materials. Where corrosion resistance is a requirement, chrome plating of the ball is specified. This also provides an extremely hard surface. In lieu of chrome plating, balls can be specified to be of corrosion resistant materials such as 440C stainless steel, for instance.

Should the load requirements exceed the limits for a spherical bearing with an aluminum bronze race, any heat treated steel may be used in its place. This is usually specified to be cadmium plated. In the race, as in the ball, a corrosion resistant material, such as 17-4PH stainless steel, may be used in lieu of the plated steel.





Whatever the choice of materials, one of the elements should usually be made from a softer material than the other. In a plain spherical bearing, the member chosen to be the softer is usually the outer race. This choice insures that the bearing ball will remain spherical, and that the bearing continues to be misalignable. In addition, having the ball as the harder member means it can be used as an anvil during the swaging operation in which the race is formed around the ball.

LUBRICATION

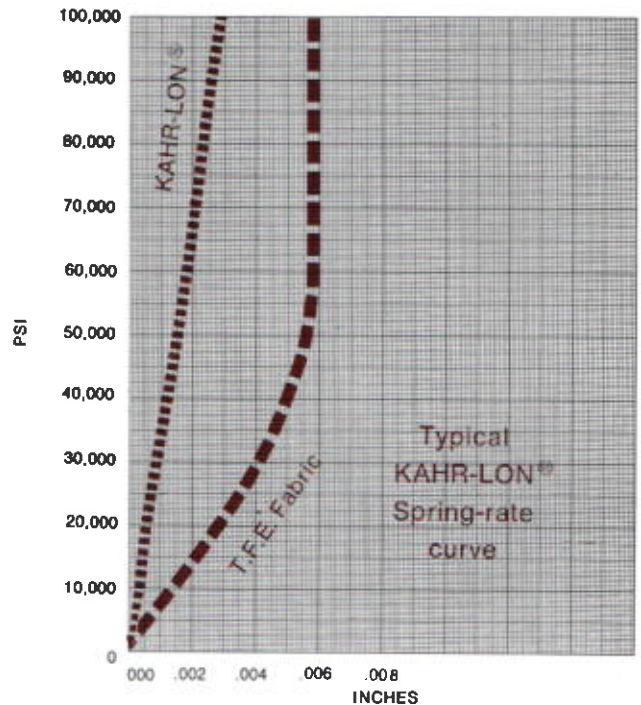
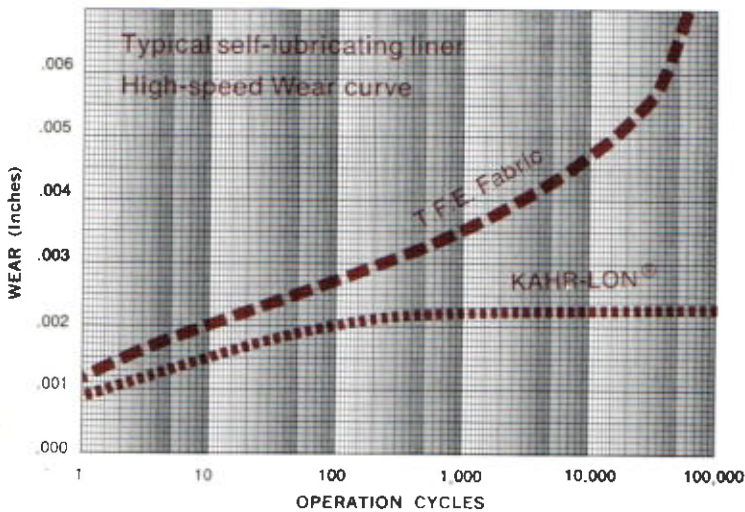
Lubrication is important in spherical bearings as in any bearing. To emphasize, it can be noted that the life of a metal-to-metal bearing is practically indefinite, provided the load is kept within limits and the lubrication is maintained.

The types of lubrication recommended by Kahr are grease, dry-film and Kahr-Lon® fabric. As in other bearings the lubrication performs two main functions, the first being to lower the coefficient of sliding friction between the surfaces, and the

second being to effect a physical separation which prevents bare metal contact and subsequent welding and/or galling.

As mentioned earlier, the choice of bearing materials is made with the supposition that at some time the lubrication may fail (either due to oversight in regreasing, wearout of dry film, or of Kahr-Lon® fabric, any of which can also be created through longterm overloads as well). Thus, lubrication failure does not usually cause immediate bearing failure — indeed, the bearing may still continue to operate satisfactorily for a very long time. Nevertheless, proper lubrication is essential in order to obtain longest, most economic operation and life.

(continued)



A Guide to Bearing Selection

So far, we have examined the nature of the basic spherical bearing, and have then gone on to examine some of the variations in materials, size, and lubrication which affect the bearing's load capacity, life, and operation. Numerous other variations exist. For example, there are many other materials which may be utilized besides those mentioned. As regards lubrication, numerous configurations utilizing holes and grooves within the bearing are available to facilitate lubrication. Many methods of mounting can be procured. All of these options and choices do not apply to all bearings. Even if they did, it would be difficult to define exactly the precise comparison between one bearing and another, unless some means had first been found to compare all of the bearing characteristics of a certain class.

TABLES

Such a comparison is simple to do if a table is made for each of the major items of bearing configuration. The following four tables list and compare each characteristic in the four major areas of variation.

Table 1 — SELF-LUBRICATED (KAHR-LON®) BEARINGS

Config-uration	Load Rating		Mis-alignment	Strength to Weight Ratio
	Swaged	Moderate Service		
Standard Ball & Race	Swaged	Moderate Service	Normal	Best
Wide Ball, Std. Race	Swaged	Regular Service	Large	Excellent
Wide Ball, Wide Race	Swaged	Heavy Service	Normal	Excellent

Table 1A — METAL-TO-METAL, GREASE-LUBRICATED BEARINGS

Config-uration	Load Rating		Mis-alignment	Strength to Weight Ratio
	Swaged	Moderate Service		
Standard Ball & Race	Swaged	Moderate Service	Normal	Best
	Loading Slot*	Regular Service		
Wide Ball, Std. Race	Swaged	Regular Service	Large	Excellent
	Loading Slot*	Heavy Service		
Wide Ball, Wide Race	Swaged	Heavy Service	Normal	Excellent
	Loading Slot*	Extra-heavy Service		

*Note—Loading Slot type bearings utilize a very hard race in which the ball is replaceable, thereby providing higher load bearing capacity than regular swaged bearings.

Table 1 refers to the effects produced by varying the physical configuration, i.e., the size, the shape, and the method of manufacture of Kahr-Lon® lubricated bearings while all other features and options remain unchanged. Table 1-A provides similar information with the single difference that the bearing be lubricated with grease. In these two segments of Table 1, it can readily be seen that the tradeoff for obtaining the negligible maintenance requirements of a self-lubricated Kahr-Lon® fabric bearing is to accept a slightly lower load capacity and operating life.

Table 2, Metallurgy, shows dramatically how performance is affected by the choice of metals in ball and race.

Table 3, Lubrication Options, shows how the various lubrication possibilities tie in with lube hole and groove availability.

Table 4 is simply a description of several methods Kahr provides for retaining the bearing within the assembly which mounts it. Often it is useful — and sometimes mandatory — to be able to remove and/or replace a spherical bearing without destroying or extensively disassembling the portion of the total assembly which contains the bearing.

Table 2 — METALLURGY, SELF-LUBRICATED (KAHR-LON®) BEARINGS

Race	Ball	Load Rating	Strength to Weight Ratio	Atmospheric Resistance
Stainless Steel	Chrome-plated Steel	Regular Service	Excellent	Moderate
	Stainless Steel	Regular Service	Excellent	Excellent
Aluminum	Aluminum	Light Service	Good	Excellent
Titanium	Titanium	Regular Service	Best	Excellent

Table 2A — METALLURGY, METAL-TO-METAL, GREASE-LUBRICATED BEARINGS

Race	Ball	Load Rating	Strength to Weight Ratio	Atmospheric Resistance
Aluminum Bronze	Steel	Moderate Service	Good	Low
	Chrome-plated Steel	Moderate Service	Good	Moderate
	Stainless Steel	Moderate Service	Good	Moderate
Steel (Cadmium Plated)	Steel	Heavy Service	Excellent	Low
	Chrome-plated Steel	Heavy Service	Excellent	Moderate
Stainless Steel	Stainless Steel	Heavy Service	Excellent	Moderate
	Beryllium-Copper	Regular Service	Excellent	Moderate
Stainless Steel	Stainless Steel	Heavy Service	Best	Excellent

Note—Other metallurgical combinations are possible and available. Specific performance data are available from the factory.

All the comments foregoing and in the tables to follow apply equally to rod end bearings, which are essentially spherical bearings in which the race is a part of or is attached to a tie rod with either male or female threaded opposite end.

Although specific applications call for exact performance specifications, this guide and set of tables will point the way for the designer to locate the right group of models to fit his general requirements. Further narrowing down of his choice will also depend on his Mil-Spec requirements, if any, and upon the dollar-versus-weight tradeoffs present in selection of bearings for airborne use.

LUBRICATION OPTIONS

Table 3A — (KAHR-LON®) LUBRICATION

Race I.D. Only
Race I.D. & Ball Bore
Ball Bore Only

Table 3B — GREASE LUBRICATION

Type of Lubrication	Groove in Race O.D.	Groove in Race I.D.	Ball
Grease	Yes	Yes	Plain
	No	Yes	Plain
	No	Yes	Grooved I.D.
	No	Yes	Grooved I.D., with Inner Sleeve*
	Yes	Yes	Grooved I.D.
	Yes	Yes	Grooved I.D., with Inner Sleeve*

Note—The foregoing types of bearings are also available in Self-Lubricated (Teflon® fabric) configurations.

*Sleeve improves bearing life when rotation occurs at ball bore.

Table 3C — DRY FILM LUBRICATION

Dry Film Application
Race I.D. Only
Race I.D. & Ball O.D.
Race I.D. & Ball Bore
Race I.D., Ball O.D. & Ball Bore
Ball Bore Only

It should also be noted that though this catalog presents a very wide selection of bearing models which are either kept in stock at all times or can be manufactured in quantity with short notice, there exists also an even larger variety of other models, sizes, materials, and so forth which have been made for occasional requirements, and which can be produced should requirements dictate. In addition, Kahr does an extensive business in special models for unique requirements. In case of any question whatsoever, please feel invited to consult the factory.

WHAT IS KAHR-LON®?

Kahr is currently producing self lubricating, spherical bearings using their KAHR-LON® liner. It is a high performance liner, developed and perfected by Kahr, for longer life and higher load-carrying capabilities than conventional fabric liners. This proprietary low-friction bearing lining material is essentially a TFE lubricant compound suspended in a matrix of Epoxy type adhesive. The lubricant system is impregnated into a fabric to provide structural strength and resistance to a cold flow.

Almost everyone who has been involved with TFE liners on plain spherical bearings is familiar with the popular composite satin weave fabric. Prior to now, this fabric has been the most wear resistant, self lubricating bearing material available.

The KAHR-LON® fabric liner system exhibits far better wear resisting characteristics with the ultimate result that bearings using the KAHR-LON® material exhibit much longer life and higher load carrying capabilities.

The KAHR-LON® liner is significantly stiffer, improving its utility in feedback controlled servo systems. The coefficient of friction exhibited with the KAHR-LON® liner is essentially the same as with conventional fabric bearing liners. This fabric liner can be applied on every existing conventional fabric lined bearing requirement.

X1200 KAHR-LON® is recommended for temperature applications from -65°F to +350°F. See performance graphs on pages 1-2 and 1-3.

Table 4 — RETENTION SYSTEMS

Retention Method	Remarks
Chamfered Race O.D.	May require separate mounting system
Staking Groove	Self retaining into housing with special mounting tools; housing is reusable
Kaptor™	Self retaining into housing using spanner wrenches; housing is reusable



MASTER VISUAL INDEX

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	GROUP B ROD END BEARINGS		
	GROUP C MS SPHERICAL BEARINGS		
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	GROUP B MS SPHERICAL BEARINGS		
	GROUP C ROD END BEARINGS		
	GROUP D MS ROD END BEARINGS		
	GROUP A MS JOURNAL BEARINGS	SECTION 4	
	GROUP B SLEEVE JOURNAL BEARINGS		

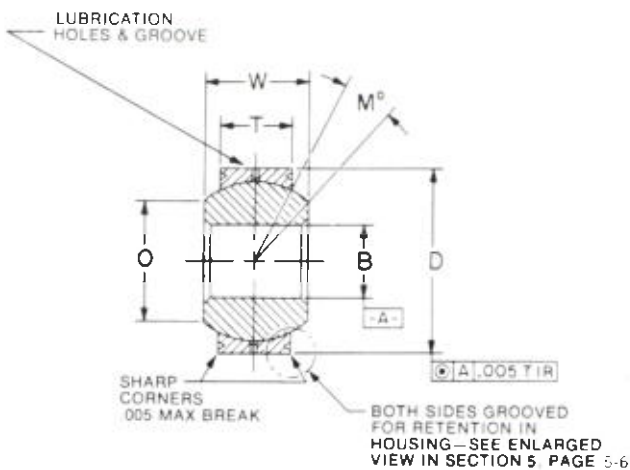


KSB-25 Series

Like KSB series, but has staking groove for retention in housing.
Dimensions apply after cadmium plating (where specified).

SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	Groove Type (See Sect. 5, P. 5-6)	T	W	Ball Dia.	Recommend Housing Bore Dia.	Static Radial Load Yield Allowable in Pounds		Approx. Bearing Weight	M° Mis-Alignment ±
	Bore Dia.	Shoulder Dia.	Outside Dia.		Outer Race Width	Ball Width			Alum. Bronze Race	Stainless Steel Race		
	+ .0000 - .0005	Ref.	+ .0000 - .0005		± .005	+ .000 - .005			Ref.	Pounds	Pounds	
KSB3-25	0.1900	0.296	0.5625	A	0.218	0.281	0.406	0.5623 0.5628	2,700	5,400	0.014	11°
KSB4-25	0.2500	0.366	0.6562	A	0.250	0.343	0.500	0.6560 0.6565	4,200	8,400	0.022	13°
KSB5-25	0.3125	0.422	0.7500	B	0.281	0.375	0.562	0.7498 0.7503	5,800	11,600	0.030	12°
KSB6-25	0.3750	0.518	0.8125	B	0.312	0.406	0.656	0.8123 0.8128	6,800	15,600	0.038	10°
KSB7-25	0.4375	0.572	0.9062	B	0.343	0.437	0.718	0.9060 0.9065	8,500	18,600	0.048	9°
KSB8-25	0.5000	0.644	1.0000	C	0.390	0.500	0.813	0.9998 1.0003	11,200	22,400	0.065	9°
KSB9-25	0.5625	0.714	1.0937	C	0.437	0.562	0.906	1.0935 1.0940	15,000	30,000	0.086	9°
KSB10-25	0.6250	0.742	1.1875	C	0.500	0.625	0.968	1.1873 1.1878	20,000	40,000	0.110	9°
KSB12-25	0.7500	0.923	1.4375	C	0.593	0.750	1.187	1.4373 1.4378	30,000	60,000	0.204	9°
KSB14-25	0.8750	0.980	1.5625	C	0.703	0.875	1.312	1.5623 1.5628	43,000	86,000	0.263	9°
KSB16-25	1.0000	1.121	1.7500	C	0.797	1.000	1.500	1.7498 1.7503	52,000	104,000	0.386	10°

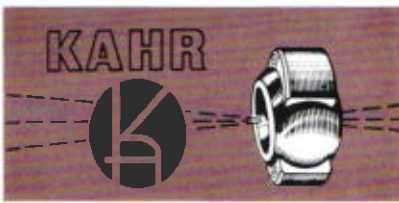


MATERIAL CODE

PART NO.	BALL	RACE
Basic Bearing Number as Shown	2 52100 Steel H.T. & Chrome Plated	Alum. Bronze Cad Plated
Basic Bearing Number + SSB	Beryllium Copper Heat Treated	Stainless Steel Heat Treated
Basic Bearing Number + CR	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

- For Ordering Instructions, please refer to Section 5, page 5-3
- At Kahr's option 440C stainless steel may be used as substitute ball material
- All dimensions & tolerances are met after cadmium plating



KSBG Series

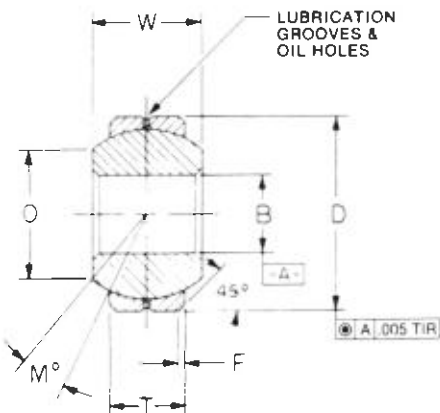
Like KSB, but has oil grooves in race
I.D., O.D. and (2) oil holes.
Dimensions apply after cadmium plating
(where specified).

SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	F	T	W	Ball Dia.	Recommend Housing Bore Dia.	Static Radial Load Yield Allowable in Pounds		Approx. Bearing Weight Pounds	M° Mis-Alignment ±
	Bore Dia.	Shoulder Dia.	Outside Dia.	Chamfer	Outer Race Width	Ball Width			Alum. Bronze Race	Stainless Steel Race		
	+ .0000 - .0005	Ref.	+ .0000 - .0005	+ .000 - .010	± .005	+ .000 - .005			Ref.			
KSBG3	0.1900	0.296	0.5625	0.020	0.218	0.281	0.406	0.5618 0.5623	2,700	5,400	0.014	11°
KSBG4	0.2500	0.366	0.6562	0.022	0.250	0.343	0.500	0.6555 0.6560	4,200	8,400	0.022	13°
KSBG5	0.3125	0.422	0.7500	0.032	0.281	0.375	0.562	0.7493 0.7498	5,800	11,600	0.030	12°
KSBG6	0.3750	0.518	0.8125	0.032	0.312	0.406	0.656	0.8118 0.8123	6,800	15,600	0.038	10°
KSBG7	0.4375	0.572	0.9062	0.032	0.343	0.437	0.718	0.9055 0.9060	8,500	18,600	0.048	9°
KSBG8	0.5000	0.644	1.0000	0.032	0.390	0.500	0.813	0.9993 0.9998	11,200	22,400	0.065	9°
KSBG9	0.5625	0.714	1.0937	0.032	0.437	0.562	0.906	1.0930 1.0935	15,000	30,000	0.086	9°
KSBG10	0.6250	0.742	1.1875	0.032	0.500	0.625	0.968	1.1868 1.1873	20,000	40,000	0.110	9°
KSBG12	0.7500	0.923	1.4375	0.044	0.593	0.750	1.187	1.4368 1.4373	30,000	60,000	0.204	9°
KSBG14	0.8750	0.980	1.5625	0.044	0.703	0.875	1.312	1.5618 1.5623	43,000	86,000	0.263	9°
KSBG16	1.0000	1.121	1.7500	0.044	0.797	1.000	1.500	1.7493 1.7498	52,000	104,000	0.386	10°

MATERIAL CODE

PART NO.	BALL	RACE
Basic Bearing Number as Shown	② 52100 Steel H.T. & Chrome Plated	Alum. Bronze Cad. Plated
Basic Bearing Number +SSB	Beryllium Copper Heat Treated	Stainless Steel Heat Treated
Basic Bearing Number +CR	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated



NOTES

- For Ordering Instructions, please refer to Section 5, page 5-3
- At Kahr's option 440C stainless steel may be used as substitute ball material.
- All dimensions & tolerances are met after cadmium plating, (where specified).

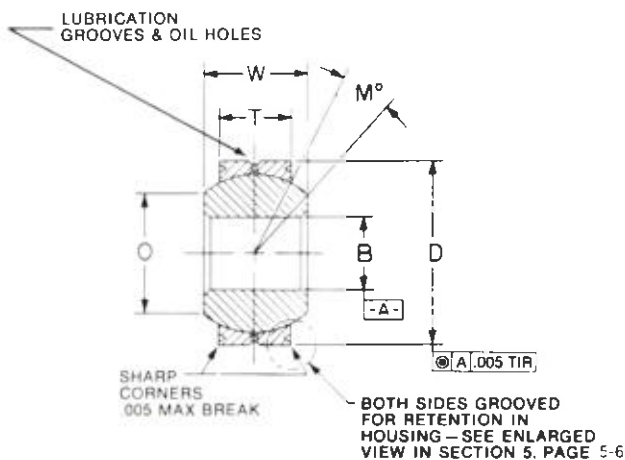


KSBG-25 Series

Like KSBG, but has staking groove for retention in housing.
 Dimensions apply after cadmium plating (where specified).

SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	Groove Type (See Sect. 5, P. 5-6)	T	W	Ball Dia.	Recommend Housing Bore Dia.	Static Radial Load Yield Allowable in Pounds		Approx. Bearing Weight Pounds	M° Mis-Alignment ±
	Bore Dia.	Shoulder Dia.	Outside Dia.		Outer Race Width	Ball Width			Alum. Bronze Race	Stainless Steel Race		
	+ .0000 - .0005	Ref.	+ .0000 - .0005		± .005	+ .000 - .005			Ref.			
KSBG3-25	0.1900	0.296	0.5625	A	0.218	0.281	0.406	0.5623 0.5628	2,700	5,400	0.014	11°
KSBG4-25	0.2500	0.366	0.6562	A	0.250	0.343	0.500	0.6560 0.6565	4,200	8,400	0.022	13°
KSBG5-25	0.3125	0.422	0.7500	B	0.281	0.375	0.562	0.7498 0.7503	5,800	11,600	0.030	12°
KSBG6-25	0.3750	0.518	0.8125	B	0.312	0.406	0.656	0.8123 0.8128	6,800	15,600	0.038	10°
KSBG7-25	0.4375	0.572	0.9062	B	0.343	0.437	0.718	0.9060 0.9065	8,500	18,600	0.048	9°
KSBG8-25	0.5000	0.644	1.0000	C	0.390	0.500	0.813	0.9998 1.0003	11,200	22,400	0.065	9°
KSBG9-25	0.5625	0.714	1.0937	C	0.437	0.562	0.906	1.0935 1.0940	15,000	30,000	0.086	9°
KSBG10-25	0.6250	0.742	1.1875	C	0.500	0.625	0.968	1.1873 1.1878	20,000	40,000	0.110	9°
KSBG12-25	0.7500	0.923	1.4375	C	0.593	0.750	1.187	1.4373 1.4378	30,000	60,000	0.204	9°
KSBG14-25	0.8750	0.980	1.5625	C	0.703	0.875	1.312	1.5623 1.5628	43,000	86,000	0.263	9°
KSBG16-25	1.0000	1.121	1.7500	C	0.797	1.000	1.500	1.7498 1.7503	52,000	104,000	0.386	10°

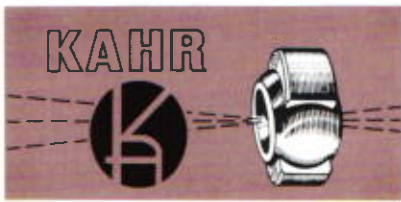


MATERIAL CODE

PART NO.	BALL	RACE
Basic Bearing Number as Shown	② 52100 Steel H.T. & Chrome Plated	Alum. Bronze Cad Plated
Basic Bearing Number + SSB	Beryllium Copper Heat Treated	Stainless Steel Heat Treated
Basic Bearing Number + CR	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

- For Ordering Instructions, please refer to Section 5, page 5-3
- At Kahr's option 440C stainless steel may be used as substitute ball material.
- All dimensions & tolerances are met after cadmium plating, (where specified)



KWB Series

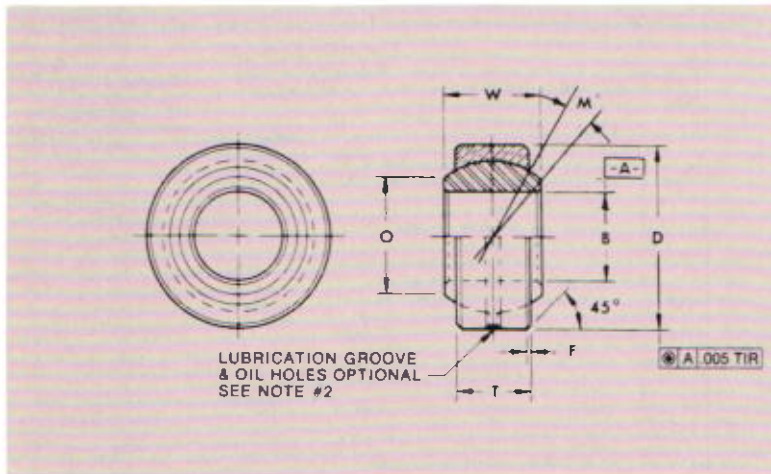
SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	F	T	W	Ball Dia.	Recommend Housing Bore Dia.	Static Radial Load Yield Allowable in Pounds		Approx. Bearing Weight Pounds	M Misalignment
	Bore Dia.	Shoulder Dia.	Outside Dia.	Chamfer	Outer Race Width	Ball Width	Ref.		Alum. Bronze Race	Stainless Steel Race		
	+ .0000 - .0005	Ref.	+ .0000 - .0005	+ .015 - .000	+ .010 - .000	+ .000 - .005			+ .0000 - .0005			
KWB3-1	0.1900	0.301	0.6250	0.010	0.322	0.437	0.531	0.6250	7,000	13,200	0.031	17°
KWB3	0.1900	0.249	0.5000	0.010	0.281	0.359	0.437	0.5000	5,000	7,400	0.015	14°
KWB4	0.2500	0.301	0.6250	0.010	0.322	0.437	0.531	0.6250	7,000	13,200	0.029	17°
KWB5	0.3125	0.401	0.6875	0.010	0.312	0.437	0.593	0.6875	8,000	21,000	0.033	15°
KWB6	0.3750	0.471	0.8125	0.010	0.401	0.500	0.687	0.8125	12,000	30,000	0.053	11°
KWB7	0.4375	0.542	0.9375	0.010	0.437	0.562	0.781	0.9375	15,000	40,000	0.073	12°
KWB8	0.5000	0.612	1.0000	0.020	0.500	0.625	0.875	1.0000	19,000	53,000	0.097	10°
KWB9	0.5625	0.726	1.1250	0.020	0.531	0.687	1.000	1.1250	21,000	65,000	0.125	11°
KWB10	0.6250	0.752	1.1875	0.020	0.562	0.750	1.062	1.1875	24,000	73,500	0.155	12°
KWB12	0.7500	0.892	1.3750	0.020	0.625	0.875	1.250	1.3750	30,000	81,000	0.232	14°
KWB14	0.8750	1.061	1.6250	0.020	0.750	0.875	1.375	1.6250	41,000	108,000	0.346	6°
KWB15	0.9375	1.099	1.3750	0.010	0.350	0.450	1.188	1.3750	16,000	41,000	0.092	5°
KWB16-1	1.0000	1.275	2.1250	0.020	1.000	1.375	1.875	2.1250	75,000	202,000	0.970	15°
KWB20	1.2500	1.464	2.3750	0.020	1.125	1.500	2.093	2.3750	95,000	252,000	1.244	13°
KWB20-1	1.2500	1.408	2.0000	0.020	0.937	1.093	1.781	2.0000	67,000	179,000	0.564	6°
KWB22	1.3750	1.539	2.5625	0.020	1.218	1.687	2.281	2.5625	111,000	295,000	1.592	15°
KWB24-1	1.5000	1.697	2.6875	0.030	1.218	1.687	2.390	2.6875	118,000	310,000	1.693	14°
KWB28	1.7492 1.7500	1.966	2.9990 3.0000	0.030	1.312	1.812	2.672	2.9992 3.0000	126,000	380,000	2.517	13°
KWB32	1.9992 2.0000	2.211	3.2490 3.2500	0.030	1.375	1.937	2.937	3.2492 3.2500	147,000	440,000	2.990	13°
KWB36	2.2492 2.2500	2.444	3.6240 3.6250	0.030	1.406	2.000	3.156	3.6242 3.6250	162,000	480,000	3.286	13°
KWB40	2.499 2.500	2.752	3.9362 3.9375	0.030	1.437	2.062	3.437	3.9365 3.9375	182,000	540,000	3.560	12°
KWB44	2.749 2.750	2.971	4.1237 4.1250	0.030	1.500	2.187	3.687	4.1240 4.1250	206,000	610,000	3.930	12°
KWB48	2.999 3.000	3.190	4.3737 4.3750	0.030	1.562	2.312	3.937	4.3740 4.3750	230,000	680,000	4.270	12°

SEE MATERIAL CODE AND NOTES 1 THROUGH 5 ON NEXT PAGE

Dimensions apply after cadmium plating
(where specified).

DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE
Basic Bearing Number as Shown	5 52100 Steel H.T. & Chrome Plated	3 Alum. Bronze
Basic Bearing Number + SSB	Beryllium Copper Heat Treated	Stainless Steel Heat Treated
Basic Bearing Number + CR	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

1. For Ordering Instructions, please refer to Section 5, page 5-3
2. Add suffix "G" after material code designation for lubrication groove in race O.D. & (3) oil holes thru race. (e.g.) KWB8SSG, KWB8SSBG
3. If cadmium plating is required, specify with suffix "C" (e.g.) KWB8C
4. All dimensions & tolerances are met after cadmium plating.
5. At Kahr's option 440C stainless steel may be used as substitute ball material.



KWB-20 Series

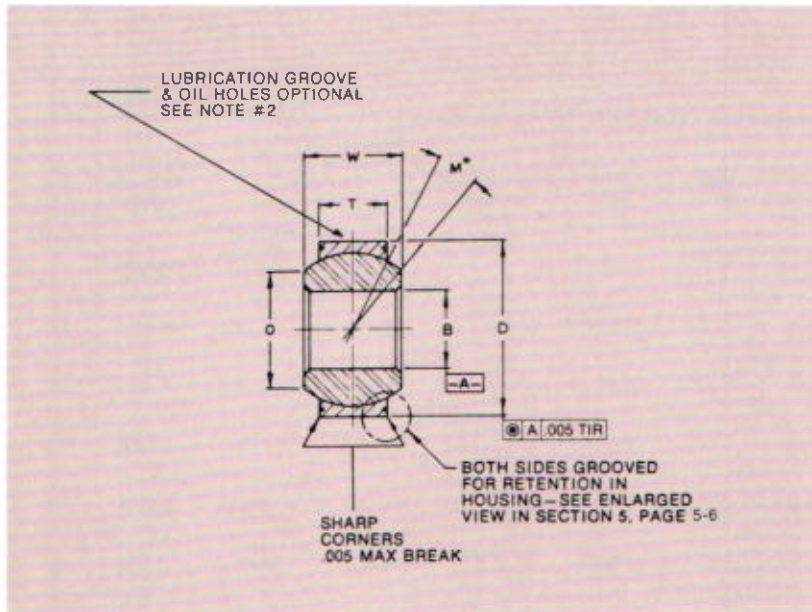
SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	T	W	Ball Dia.	Groove Type (See Sect. 5, P. 5-6)	Recom'd Housing Bore Dia.	Static Radial Load Yield Allowable in Pounds		Approx. Bearing Weight, Pounds	M° Misalignment =
	Bore Dia.	Shoulder Dia.	Outside Dia.	Outer Race Width	Ball Width				Alum. Bronze Race	Stainless Steel Race		
	+ .0000 - .0005	Ref.	+ .0000 - .0005	+ .010 - .000	+ .000 - .005				Ref.	+ .0000 - .0005		
KWB3-20	0.1900	0.301	0.6250	0.322	0.437	0.531	A	0.6253	7,000	13,200	0.031	17°
KWB4-20	0.2500	0.301	0.6250	0.322	0.437	0.531	A	0.6253	7,000	13,200	0.029	17°
KWB5-20	0.3125	0.401	0.6875	0.312	0.437	0.593	A	0.6878	8,000	21,000	0.033	15°
KWB6-20	0.3750	0.471	0.8125	0.401	0.500	0.687	B	0.8128	12,000	30,000	0.053	11°
KWB7-20	0.4375	0.542	0.9375	0.437	0.562	0.781	B	0.9378	15,000	40,000	0.073	12°
KWB8-20	0.5000	0.612	1.0000	0.500	0.625	0.875	B	1.0003	19,000	53,000	0.097	10°
KWB9-20	0.5625	0.726	1.1250	0.531	0.687	1.000	B	1.1253	21,000	65,000	0.125	11°
KWB10-20	0.6250	0.752	1.1875	0.562	0.750	1.062	B	1.1878	24,000	73,500	0.155	12°
KWB12-20	0.7500	0.892	1.3750	0.625	0.875	1.250	B	1.3753	30,000	81,000	0.232	14°
KWB14-20	0.8750	1.061	1.6250	0.750	0.875	1.375	C	1.6253	41,000	108,000	0.346	6°
KWB15-20	0.9375	1.099	1.3750	0.350	0.450	1.188	A	1.3753	16,000	41,000	0.092	5°
KWB16-20	1.0000	1.275	2.1250	1.000	1.375	1.875	C	2.1253	75,000	202,000	0.970	15°
KWB20-20	1.2500	1.464	2.3750	1.125	1.500	2.093	C	2.3753	95,000	252,000	1.244	13°
KWB22-20	1.3750	1.539	2.5625	1.218	1.687	2.281	C	2.5628	111,000	295,000	1.592	15°
KWB24-20	1.5000	1.697	2.6875	1.218	1.687	2.390	C	2.6878	118,000	310,000	1.693	14°
KWB28-20	1.7492 1.7500	1.966	2.9990 3.0000	1.312	1.812	2.672	C	2.9995 3.0003	126,000	380,000	2.517	13°
KWB32-20	1.9992 2.0000	2.211	3.2490 3.2500	1.375	1.937	2.937	C	3.2495 3.2503	147,000	440,000	2.990	13°
KWB36-20	2.2492 2.2500	2.444	3.6240 3.6250	1.406	2.000	3.156	C	3.6245 3.6253	162,000	480,000	3.286	13°
KWB40-20	2.4990 2.5000	2.752	3.9362 3.9375	1.437	2.062	3.437	C	3.9368 3.9378	182,000	540,000	3.560	12°
KWB44-20	2.7490 2.7500	2.971	4.1237 4.1250	1.500	2.187	3.687	C	4.1243 4.1253	206,000	610,000	3.930	12°
KWB48-20	2.9990 3.0000	3.190	4.3737 4.3750	1.562	2.312	3.937	C	4.3743 4.3753	230,000	680,000	4.270	12°

SEE MATERIAL CODE AND NOTES 1 THROUGH 5 ON NEXT PAGE.

Like KWB, but has staking groove
for retention in housing.
Dimensions apply after cadmium plating
(where specified).

DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE
Basic Bearing Number as Shown	5. 52100 Steel H.T. & Chrome Plated	3. Alum. Bronze
Basic Bearing Number +SSB	Beryllium Copper Heat Treated	Stainless Steel Heat Treated
Basic Bearing Number +CR	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

1. For Ordering Instructions, please refer to Section 5, page 5-3
2. Add suffix "G" after material code designation for lubrication groove in race O.D. & (3) oil holes thru race. (e.g.)
KWB8-20SSBG.
3. If cadmium plating is required, specify with suffix "C" (e.g.)
KWB8-20C.
4. All dimensions & tolerances are met after cadmium plating.
5. At Kahr's option 440C stainless steel may be used as substitute ball material.



KSBY Series

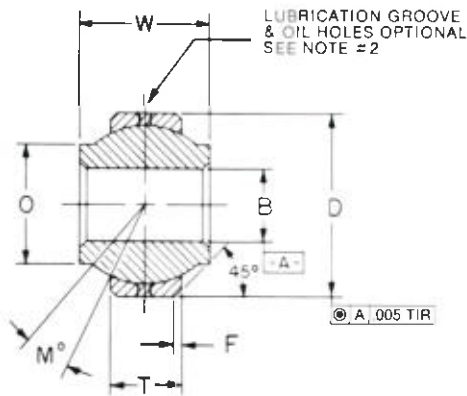
Wide necked ball allows greater misalignment.
Dimensions apply after cadmium plating (where specified).

SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	F	T	W	Ball Dia.	Recommend Housing Bore Dia.	Static Radial Load Yield Allowable in Pounds		Approx. Bearing Weight Pounds	M° Misalignment ±
	Bore Dia.	Shoulder Dia.	Outside Dia.	Chamfer	Outer Race Width	Ball Width			Alum. Bronze Race	Stainless Steel Race		
	+ .0000 - .0005	Ref.	+ .0000 - .0005	+ .000 - .010	+ .010 - .000	+ .000 - .005			Ref.			
KSBY3	0.1900	0.319	0.5625	0.020	0.205	0.500	0.437	0.5620 0.5625	3,600	10,000	0.018	15°
KSBY4	0.2500	0.390	0.7400	0.022	0.250	0.593	0.593	0.7395 0.7400	6,200	17,500	0.036	24°
KSBY5	0.3125	0.418	0.6875	0.032	0.250	0.625	0.593	0.6870 0.6875	6,200	17,500	0.029	20°
KSBY6	0.3750	0.512	0.9060	0.032	0.340	0.813	0.781	0.9055 0.9060	11,500	30,000	0.068	23°
KSBY7	0.4375	0.618	1.0000	0.032	0.340	0.875	0.875	0.9995 1.0000	13,000	34,000	0.095	22°
KSBY8	0.5000	0.730	1.1250	0.032	0.396	0.937	1.000	1.1245 1.1250	16,000	48,000	0.159	20°
KSBY10	0.6250	0.856	1.3750	0.032	0.562	1.200	1.250	1.3745 1.3750	27,000	81,000	0.245	20°
KSBY12	0.7500	0.970	1.5625	0.044	0.615	1.280	1.375	1.5620 1.5625	33,000	87,000	0.315	19°
KSBY14	0.8750	1.140	1.7500	0.044	0.620	1.400	1.531	1.7495 1.7500	37,000	110,000	0.430	18°
KSBY16	1.0000	1.278	2.1250	0.044	0.830	1.875	1.875	2.1245 2.1250	62,000	180,000	0.831	21°

MATERIAL CODE

PART NO.	BALL	RACE
Basic Bearing Number as Shown	5 52100 Steel H.T. & Chrome Plated	3 Alum. Bronze
Basic Bearing Number + CR	440C Stainless Steel H.T.	Stainless Steel Heat Treated



NOTES

- For ordering instructions, please refer to Section 5, page 5-3
- Add suffix "G" after material code designation for lubrication groove in race O.D. & (2) oil-holes thru race. (e.g.) KSBY8CRG

- If cadmium plating is required, specify with suffix "C" (e.g.) KSBY8C.
- All dimensions & tolerances are met after cadmium plating
- At Kahr's option 440C stainless steel may be used as substitute ball material.

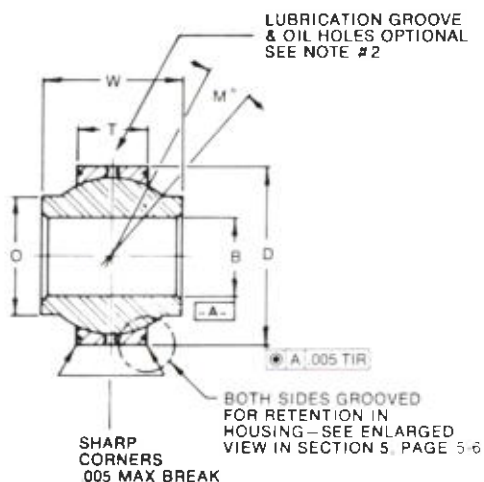


KSBY-20 Series

Like KSBY, but has staking groove for retention in housing.
 Dimensions apply after cadmium plating (where specified).

SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	Groove Type (See Sect. 5, P. 5-6)	T	W	Ball Dia.	Recommend Housing Bore Dia.	Static Radial Load Yield Allowable in Pounds		Approx. Bearing Weight Pounds	M° Misalignment ±
	Bore Dia.	Shoulder Dia.	Outside Dia.		Outer Race Width	Ball Width			Alum. Bronze Race	Stainless Steel Race		
KSBY3-20	0.1900 +.0000 -.0005	0.319 Ref.	0.5625 +.0000 -.0005	A	0.205 +.010 -.000	0.500 +.000 -.005	0.437 Ref.	0.5623 0.5628	3,600	10,000	0.018	15°
KSBY4-20	0.2500	0.390	0.7400	A	0.250	0.593	0.593	0.7398 0.7403	6,200	17,500	0.036	24°
KSBY5-20	0.3125	0.418	0.6875	A	0.250	0.625	0.593	0.6873 0.6878	6,200	17,500	0.029	20°
KSBY6-20	0.3750	0.512	0.9060	A	0.340	0.813	0.781	0.9058 0.9063	11,500	30,000	0.068	23°
KSBY7-20	0.4375	0.618	1.0000	A	0.340	0.875	0.875	0.9998 1.0003	13,000	34,000	0.095	22°
KSBY8-20	0.5000	0.730	1.1250	A	0.396	0.937	1.000	1.1248 1.1253	16,000	48,000	0.159	20°
KSBY10-20	0.6250	0.856	1.3750	B	0.562	1.200	1.250	1.3748 1.3753	27,000	81,000	0.245	20°
KSBY12-20	0.7500	0.970	1.5625	C	0.615	1.280	1.375	1.5623 1.5628	33,000	87,000	0.315	19°
KSBY14-20	0.8750	1.140	1.7500	C	0.620	1.400	1.531	1.7498 1.7503	37,000	110,000	0.430	18°
KSBY16-20	1.0000	1.278	2.1250	C	0.830	1.875	1.875	2.1248 2.1253	62,000	180,000	0.831	21°



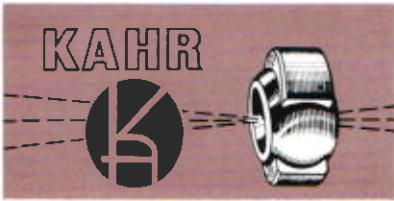
MATERIAL CODE

PART NO.	BALL	RACE
Basic Bearing Number as Shown	5 52100 Steel H.T. & Chrome Plated	3 Alum. Bronze
Basic Bearing Number + CR	440C Stainless Steel H T	Stainless Steel Heat Treated

NOTES

- For Ordering Instructions, please refer to Section 5, page 5-3
- Add suffix "G" after material code designation for lubrication groove in race O.D. & (2) oil-holes thru race. (e.g.) KSBY8-20CRG.

- If cadmium plating is required, specify with suffix "C" (e.g.) KSBY8-20C.
- All dimensions & tolerances are met after cadmium plating.
- At Kahr's option 440C stainless steel may be used as substitute ball material.



KAHR Series

KAHR-KAPTOR®

SPECIFICATIONS

TABLE 1

Basic Spherical Bearing Number	B	O	D	T	W	C	F	G	A	E	H	M°
	Dia. + .0000 - .0005	Dia. Ref.	Dia. + .0000 - .0005	± .005	+ .000 - .002	UNS Thread	± .005	± .010	Dia. ± .010	± .010	± .005	Mis-align-ment ±
KP5	0.3125	0.375	0.7498	0.281	0.375	0.656-40	0.035	0.125	0.790	0.093	0.045	10°
KP6	0.3750	0.454	0.8123	0.321	0.406	0.734-40	0.035	0.125	0.852	0.093	0.045	9°
KP7	0.4375	0.507	0.9060	0.343	0.437	0.812-40	0.035	0.125	0.946	0.093	0.045	8°
KP8	0.5000	0.578	0.9998	0.390	0.500	0.937-40	0.055	0.140	1.080	0.093	0.065	8°
KP9	0.5625	0.638	1.0935	0.437	0.562	1.000-40	0.055	0.150	1.173	0.093	0.065	8°
KP10	0.6250	0.714	1.1873	0.500	0.625	1.125-32	0.055	0.150	1.267	0.093	0.065	8°
KP12	0.7500	0.831	1.4373	0.593	0.750	1.312-32	0.055	0.175	1.517	0.125	0.065	8°
KP14	0.8750	0.937	1.5623	0.703	0.875	1.437-32	0.055	0.220	1.642	0.125	0.065	9°
KP16	1.0000	1.118	1.7498	0.797	1.000	1.625-32	0.055	0.220	1.830	0.125	0.065	9°

TABLE 2

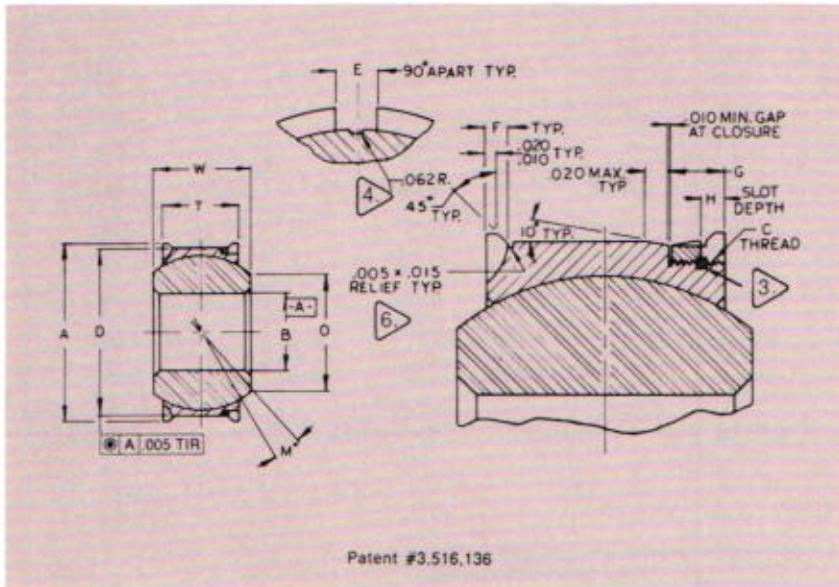
Basic Spherical Bearing Number	Static Loads Pounds Maximum		Weight Pounds Max.	Ball Dia. (Ref.)	Suggested Installation Torque In.-Lbs.	
	Radial	Axial			Basic	W/Locking Element
KP5	11,600	2,200	0.030	0.531	43	64
KP6	15,600	4,500	0.040	0.610	48	71
KP7	18,600	5,500	0.050	0.670	53	79
KP8	22,400	5,600	0.070	0.765	61	92
KP9	30,000	11,000	0.090	0.850	66	98
KP10	40,000	12,800	0.120	0.950	73	110
KP12	60,000	15,000	0.210	1.125	86	129
KP14	86,000	16,400	0.263	1.280	94	141
KP16	104,000	17,000	0.390	1.500	107	160

3

SEE MATERIAL CODE AND NOTES 1 THROUGH 6 ON NEXT PAGE

**KAHR-KAPTOR® type bearing:
metal-to-metal.**
Threaded retainer ring installation.
Installation tools available.
**Replacement bearing where
accessibility for staking of
conventional bearings or high thrust
loads presents problems.**

DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE/RETAINER RING
Basic Bearing Number as Shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated
Basic Bearing Number + B	Beryllium Copper Heat Treated	Stainless Steel Heat Treated

NOTES

- For Ordering Instructions, please refer to Section 5 page 5-3
- Add suffix "G" after material code designation for lubrication grooves in race O.D. and 3 oil holes thru race (e.g.) KP6BG, KP6G.
- 3 Add suffix "P" for thread self-locking element
REF MIL-F-18240 (e.g.) KP6GP, KP6BP.
- 4 Groove is intended to permit bleeding of chromate or similar compounds during installation. Dimensions are for reference only.
- See Table 2 for loads and installation data.
- 6 Relieved to provide clearance for sharp edge in housing bore.



KPW Series

KAHR-KAPTOR®

SPECIFICATIONS

TABLE 1

Basic Spherical Bearing Number	B	O	D	T	W	C	F	G	A	E	H	M°
	Dia. + .0000 - .0005	Dia. Ref.	Dia. + .0000 - .0005	± .005	+ .000 - .002	UNS Thread	± .005	± .010	Dia. ± .010	± .010	± .005	Misalignment ±
KPW5	0.3125	0.375	0.6873	0.317	0.437	0.625-40	0.025	0.137	0.717	0.093	0.035	8°
KPW6	0.3750	0.417	0.8123	0.406	0.500	0.750-40	0.035	0.137	0.852	0.093	0.045	10°
KPW7	0.4375	0.481	0.9373	0.442	0.562	0.875-40	0.035	0.150	0.977	0.093	0.045	12°
KPW8	0.5000	0.580	0.9998	0.505	0.625	0.937-40	0.035	0.150	1.040	0.093	0.045	9°
KPW9	0.5625	0.615	1.1248	0.536	0.687	1.062-32	0.035	0.150	1.165	0.093	0.045	12°
KPW10	0.6250	0.692	1.1873	0.567	0.750	1.125-32	0.035	0.150	1.228	0.093	0.045	12°
KPW12	0.7500	0.791	1.3748	0.630	0.875	1.312-32	0.055	0.175	1.455	0.125	0.065	14°
KPW14	0.8750	0.979	1.6248	0.755	0.875	1.500-32	0.055	0.250	1.705	0.125	0.065	6°
KPW16	1.0000	1.084	2.1248	1.005	1.375	1.953-32	0.055	0.250	2.205	0.125	0.065	14°

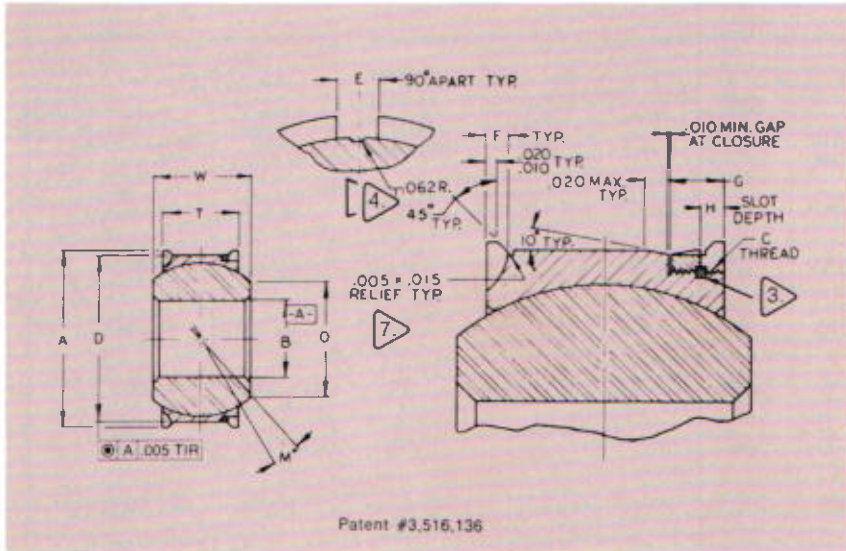
TABLE 2

Basic Spherical Bearing Number	Static Loads Pounds Maximum		Weight Pounds Max.	Ball Dia. (Ref.)	Suggested Installation Torque In.-Lbs.	
	Radial	Axial			Basic	W/Locking Element
KPW5	21,000	2,000	0.035	0.525	41	61
KPW6	30,000	3,710	0.053	0.650	48	73
KPW7	40,000	4,780	0.073	0.740	56	86
KPW8	53,000	5,330	0.100	0.825	60	92
KPW9	65,000	5,650	0.125	0.921	69	104
KPW10	73,500	6,400	0.155	1.020	73	110
KPW12	81,000	12,900	0.240	1.187	86	129
KPW14	108,000	16,400	0.346	1.312	99	148
KPW16	202,000	19,600	0.970	1.750	129	193

SEE MATERIAL CODE AND NOTES 1 THROUGH 7 ON NEXT PAGE

**KAHR-KAPTOR[®] bearing similar to KP,
but has wide ball and race.
Installation tools available.
Replacement bearing where
accessibility for staking of
conventional bearings or high thrust
loads present problems.**

DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE/RETAINER RING
Basic Bearing Number as Shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated
Basic Bearing Number + B	Beryllium Copper Heat Treated	Stainless Steel Heat Treated

NOTES

- For ordering instructions, please refer to Section 5, page 5-3
- Add suffix "G" after material code designation for lubrication groove in race O.D. & 3 oil holes thru race (e.g.) KPW6BG, KPW6G.
- 3 Add suffix "P" for thread self-locking element
REF. MIL-F-18240 (e.g.) KPW6GP, KPW6BP.
- 4 Groove is intended to permit bleeding of chromate or similar compounds during installation. Dimensions are for reference only.
- 5 Neck type ball for KPW5 and 8 size only.
- 6 See Table 2 for loads and installation data.
- 7 Relieved to provide clearance for sharp edge in housing bore.



KMB Series

Replaceable-ball type or "loading slot" bearing.
 Bearing can be manufactured to special order with any material and finish requirements.
 Dimensions apply after cadmium plating (where specified).

SPECIFICATIONS

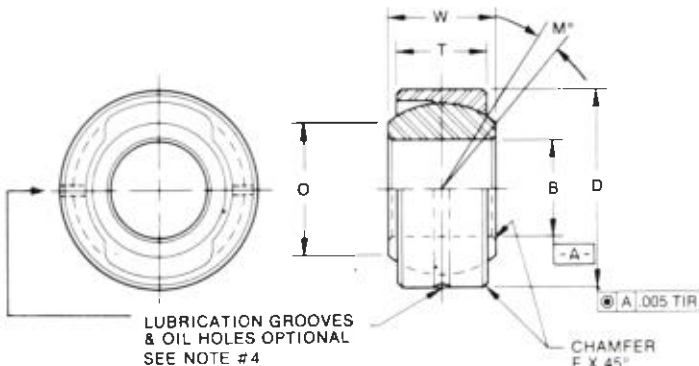
Basic Spherical Bearing Number	B	D	T	W	F		O	Recom'd Housing Bore Dia.	Approx. Bearing Weight Pounds	Static Load Yield Allowable		M° Misalignment ±
	Bore Dia.	Outside Dia.	Race Width +.000 -.005	Ball Width +.000 -.005	Chamfer +.015 -.000	Ball Dia. (Ref.)	Shoulder Dia. Ref.			Radial At 90° To Slots	Axial Away From Slots	
KMB12	0.7495 0.7500	1.2495 1.2500	0.562	0.656	0.020	1.080	0.858	1.2493 1.2498	.15	57,000	24,000	6°
KMB14	0.8745 0.8750	1.4370 1.4375	0.656	0.765	0.020	1.258	0.998	1.4368 1.4373	.23	85,000	32,500	6°
KMB16	0.9995 1.0000	1.6245 1.6250	0.750	0.875	0.020	1.437	1.152	1.6243 1.6248	.30	110,000	42,000	6°
KMB20	1.2495 1.2500	1.9995 2.0000	0.937	1.093	0.020	1.795	1.423	1.9993 1.9998	.52	162,000	66,000	6°
KMB24	1.4995 1.5000	2.4369 2.4375	1.125	1.312	0.030	2.155	1.711	2.4367 2.4373	.83	235,000	95,000	6°
KMB28	1.7492 1.7500	2.8119 2.8125	1.312	1.531	0.030	2.515	2.000	2.8117 2.8123	1.37	330,000	130,000	6°
KMB32	1.9992 2.0000	3.1869 3.1875	1.500	1.750	0.030	2.875	2.280	3.1865 3.1875	1.73	428,000	168,000	6°
KMB36	2.2492 2.2500	3.5617 3.5625	1.687	1.969	0.030	3.235	2.565	3.5615 3.5625	2.39	540,000	210,000	6°
KMB40	2.4990 2.5000	3.9367 3.9375	1.875	2.187	0.030	3.590	2.850	3.9360 3.9375	3.32	673,000	263,000	6°
KMB44	2.7490 2.7500	4.3742 4.3750	2.062	2.406	0.030	3.950	3.140	4.3735 4.3750	4.60	815,000	320,000	6°
KMB48	2.9990 3.0000	4.7492 4.7500	2.250	2.625	0.030	4.312	3.421	4.7485 4.7500	6.15	970,000	390,000	6°

MATERIAL CODE

PART NO.	BALL	RACE
Basic Bearing Number as Shown	52100 Steel Heat Treated Hard Chrome Plated	S A E. 4340 Steel Heat Treated R C. 40-45

NOTES

- For ordering instructions, please refer to Section 5, page 5-3
- Standard radial clearance between ball & outer race .001 - .003 in free assembly. Special clearances can be furnished upon request
- Capacity in direction of slots. Radial — 70% & Axial — 45% of capacities listed.
- Add suffix "G" for lubrication groove in race O.D. & (2) oil holes thru race at 90° to slot. (e.g.) KMB24G
- If cadmium plating is required, specify with suffix "C". (e.g.) KMB24C
- All dimensions & tolerances are met after cadmium plating
- At Kahr's option 440C stainless steel may be used as substitute ball material.





Dry Film Lubrication

CODE FOR ORDERING
BEARINGS TREATED WITH
DRY FILM LUBRICANTS

SPECIFICATIONS

SURFACE TO BE TREATED	COMP. TYPE "S"	COMP. TYPE "H"
OUTER RACE I.D. ONLY	D1	D21
OUTER RACE I.D. & BALL I.D.	D5	D23
BALL I.D. ONLY	D9	D25

NOTES

1. Dry film compound type "S" can be used with or without other forms of lubrication. Operating temperature range: -300°F . to $+600^{\circ}\text{F}$. This dry film exceeds requirements of specification MIL-L-8937 and supersedes previous Kahr dry film types "D," "G" and K350.
2. Bearings to be used at HIGHER temperatures than $+600^{\circ}\text{F}$. without any other form of lubrication are treated with dry film compound Type "H." Safe operating temperature 900 degrees F. Max.
3. All dimensions are met before application of dry film. Allowance of .001 on bore size should be used for total dry film thickness.
4. Dry film lubricant code is to be added to the Bearing callout as a suffix. (See example note below.)

EXAMPLES: **KSBG10D5**, **KWB10GD9**

DESIGNER'S NOTES



HE Series

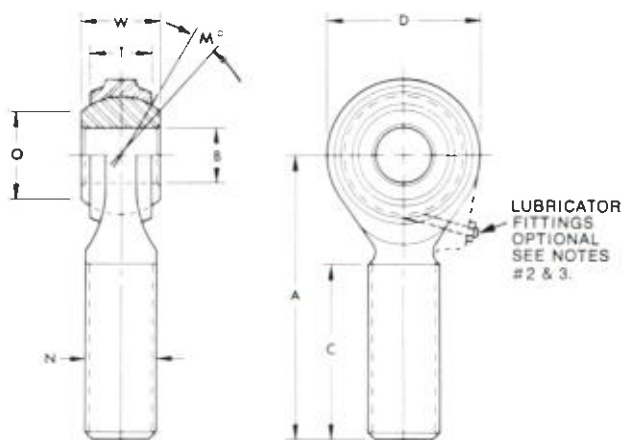
External thread rod end bearing.
 Optional external lubricator fittings.
 Two piece rod end.
 Commercial version also
 available, contact Kahr Sales
 Department for details.

SPECIFICATIONS

Basic Rod-End Bearing Number	B	W	T	D	O	A	C	N	Ball Dia.	Static Radial Load Yield Allowable in Tension Pounds	M° Misalignment ±	Approx. Bearing Weight Pounds
	+ .0015 - .0005	+ .000 - .005	Max.	Max. Dia.	Flat Dia. Ref.	Length + 0 - 1/16	+ 0 - 3/32	UNF 3A	Ref.			
HE3S	0.190	0.437	0.328	0.750	0.302	1 1/32	1 1/16	1/4-28	0.531	3,700	17°	0.050
HE4S	0.250	0.593	0.438	0.938	0.347	1 7/32	1 1/8	3/8-24	0.687	7,200	20°	0.112
HE5S	0.3125	0.437	0.344	0.875	0.490	1 7/32	1 1/8	5/16-24	0.656	5,600	10°	0.075
HE6S	0.375	0.500	0.335	1.000	0.516	1 11/32	1 3/8	3/8-24	0.718	6,000	16°	0.109
HE8S	0.500	0.500	0.390	1.250	0.640	2 15/32	1 3/8	1/2-20	0.813	11,500	9°	0.200
HE10S	0.625	0.750	0.562	1.500	0.838	2 31/32	1 11/8	5/8-18	1.125	16,000	12°	0.437
HE12S	0.750	0.875	0.687	1.750	0.978	2 29/32	1 3/4	3/4-16	1.312	18,000	10°	0.638

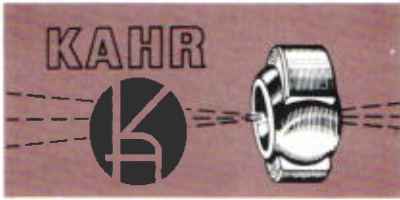
MATERIAL CODE

PART NO.	BALL	BODY
Number as Shown	52100 Steel H.T. & Chrome Plated	Alloy Steel H.T. & Cad Plated
Number + CH (Example: HE6CR)	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated



NOTES

- For ordering instructions, please refer to Section 5, page 5-2.
 - Add suffix "F" after material code designation for zerk type lubricator fitting. (e.g.) HE8SF, HE8CRF.
 - Add suffix "FN" after material code designation for flush type lubricator fitting. (e.g.) HE8SFN, HE8CRFN.
 - Add suffix "W" after material code designation for lock washer slot in shank (please refer to section 5, page 5-5 for detailed information). (e.g.) HE8SW, HE8CRFNW.
 - Add prefix "L" if left hand threads are required. (e.g.) HEL8S, HEL8CR.
- 6 Load ratings are based on rod ends without lubricator fittings. For load ratings with fittings please consult our Engineering Department.
- 7 At Kahr's option 440C stainless steel may be used as substitute ball material.



KB Series

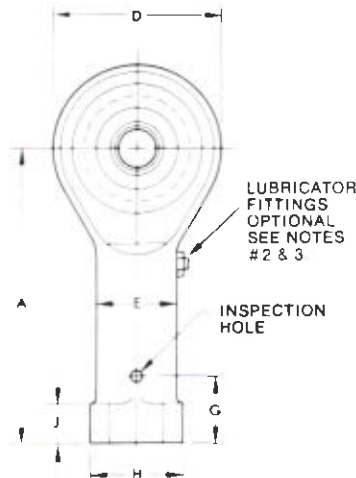
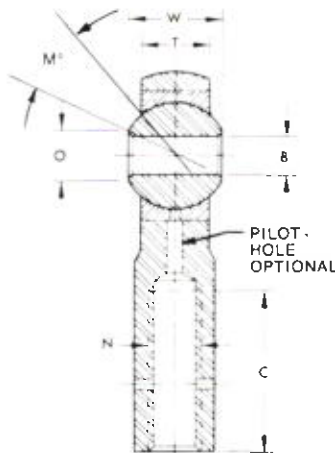
3 piece construction, internal threads.
Optional external lubricator fittings.

SPECIFICATIONS

Basic Rod End Bearing Number	B	W	T	O	D	N	A	C	E	H	J	G	M° Mis-alignment ±	Static Radial Load Yield Allowable in Tension	Approx. Bearing Weight
	+ .0015 - .0005	+ .000 - .005	+ .010 - .000	Dia. Ref.	Dia. - .010	UNF 3B	± .010	+ .062 - .031	Ref. Dia.	Ref. Dia.	+ .000 - .062	Ref.		Pounds	Pounds
KB3	0.190	0.437	0.337	0.302	0.781	5/16-24	1.375	0.750	3/16	1/2	0.250	0.375	17°	4,200	0.081
KB4	0.250	0.437	0.337	0.302	0.781	5/16-24	1.469	0.750	3/16	1/2	0.250	0.375	17°	4,200	0.062
KB4-1	0.250	0.437	0.337	0.302	0.781	1/4-28	1.375	0.750	3/8	3/16	0.250	0.312	17°	4,200	0.062
KB5-1	0.3125	0.437	0.322	0.401	0.906	3/8-24	1.625	0.875	1/2	5/16	0.312	0.375	15°	4,700	0.077
KB5	0.3125	0.437	0.322	0.447	1.188	1/2-20	2.250	1.240	3/4	13/16	0.375	0.593	12°	5,000	0.077
KB6	0.375	0.500	0.416	0.512	1.000	3/8-24	1.812	1.000	5/16	5/8	0.375	0.500	9°	6,600	0.120
KB7	0.4375	0.562	0.452	0.544	1.125	7/16-20	2.000	1.125	5/8	13/16	0.375	0.593	10°	7,000	0.212
KB8	0.500	0.625	0.515	0.612	1.312	1/2-20	2.250	1.250	3/4	13/16	0.375	0.593	10°	13,000	0.440
KB10	0.625	0.750	0.577	0.752	1.500	5/8-18	2.500	1.375	7/8	13/16	0.437	0.625	12°	16,000	0.471

MATERIAL CODE

PART NO.	BALL	RACE	BODY
Basic Bearing Number as Shown	6 52100 Steel H.T. & Chrome Plated	Alum. Bronze	Alloy Steel H.T. Cadmium Plated
Basic Bearing Number + SS	6 52100 Steel H.T. & Chrome Plated	Stainless Steel Heat Treated	Alloy Steel H.T. Cadmium Plated
Basic Bearing Number + CR	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	Stainless Steel Heat Treated



NOTES

- For ordering instructions, please refer to Section 5, page 5-2
 - Add suffix "F" after material code designation for zerkl type lubricator fitting. (e.g.) KB8F, KB5-1SSF.
 - Add suffix "FN" after material code designation for flush type lubrication fitting. (e.g.) KB8FN, KB5-1SSFN.
 - Add prefix "L" if left hand threads are required. (e.g.) KBL8, KBL5-1SSFN.
 - Add suffix "W" after material code designation for lock washer slot in base of shank (please refer to section 5, page 5-5 for detailed information). (e.g.) KB5SSW.
- 6 At Kahr's option 440C stainless steel may be used as substitute ball material.



KB-E Series

3 piece construction, external thread.
Optional external lubricator fittings.

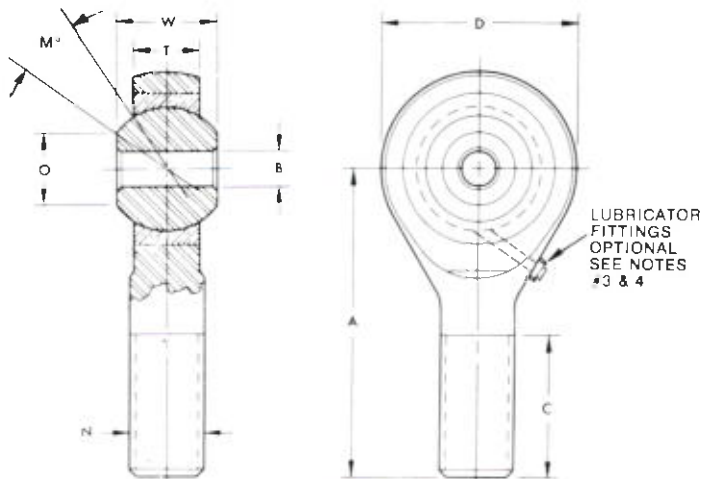
SPECIFICATIONS



Basic Rod-End Bearing Number	B	W	T	O	D	N	A	C	M Mis-alignment ±	Static Radial Load Yield Allowable in Tension	Approx. Bearing Weight
	+ .0015 - .0005	+ .000 - .005	+ .010 - .000	Dia. Ref.	Dia. ± .010	UNF 3A	± .010	+ .062 - .031		Pounds	Pounds
KB3E	0.190	0.437	0.337	0.302	0.781	5/16-24	1.562	1.000	17°	4,200	0.062
KB4E	0.250	0.437	0.337	0.302	0.781	5/16-24	1.562	1.000	17°	4,200	0.070
KB5E1	0.3125	0.437	0.322	0.401	0.906	3/8-24	1.750	1.125	15°	4,700	0.077
KB5E	0.3125	0.437	0.322	0.447	1.188	1/2-20	2.375	1.490	12°	5,000	0.077
KB6E	0.375	0.500	0.416	0.512	1.000	3/8-24	1.938	1.250	9°	6,600	0.120
KB7E	0.4375	0.562	0.452	0.544	1.125	3/8-20	2.125	1.375	9°	7,000	0.180
KB8E	0.500	0.625	0.515	0.612	1.312	1/2-20	2.438	1.500	10°	13,000	0.312
KB10E	0.625	0.750	0.577	0.752	1.500	5/8-18	2.625	1.625	12°	16,000	0.471
KB12E	0.750	0.875	0.640	0.894	1.750	3/4-16	2.875	1.750	14°	19,000	0.550
KB14E	0.875	0.875	0.765	0.980	2.000	7/8-14	3.375	1.875	7°	28,000	0.720

MATERIAL CODE

PART NO.	BALL	RACE	BODY
Basic Bearing Number as Shown	52100 Steel H.T. & Chrome Plated	Alum. Bronze	Alloy Steel H.T. Cadmium Plated
Basic Bearing Number + SS	52100 Steel H.T. & Chrome Plated	Stainless Steel Heat Treated	Alloy Steel H.T. Cadmium Plated
Basic Bearing Number + CR	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	Stainless Steel Heat Treated



NOTES

- For ordering instructions, please refer to Section 5, page 5-2.
 - Add suffix "F" after material code designation for zerk type lubricator fitting. (e.g.) KB8EF, KB5E1SSF.
 - Add suffix "FN" after material code designation for flush type lubricator fitting. (e.g.) KB8EFN, KB5E1SSFN.
 - Add suffix "W" after material code designation for lock washer slot in shank (please refer to section 5, page 5-5 for detailed information). (e.g.) KB8EW, KB5E1SSFNW.
 - Add prefix "L" if left hand threads are required (e.g.) KBL8E, KBL5E1SSFNW.
- 6 Load ratings are based on rod ends without lubricator fittings. For load ratings with fittings please consult our Engineering Department.
- 7 At Kahr's option 440C stainless steel may be used as substitute ball material.



HRB Series

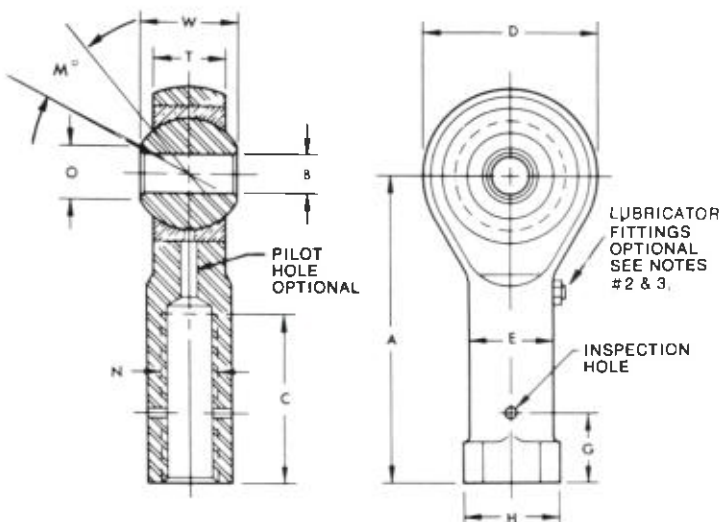
3 piece construction, internal threads.
Optional external lubricator fittings.

SPECIFICATIONS

Basic Rod-End Bearing Number	Type		B	O	W	T	A	C	D	E	H	G	Ball Dia. Ref.	Static Radial Load Yield Allowable in Tension		M° Misalignment ±
	Internal Th'd		+.0015 ---.0005	Dia. Ref.	+.000 ---.005	±.010	± 1/32	Min.	Max.	± 1/32	+ 1/32 - 1/64	± 1/32		Pounds		
	N UNF-3B	Approx. Brg. Wt.												Race		
														Aluminum Bronze	Stainless Steel	
HRBL3	10-32	0.0213	0.190	0.239	0.250	0.187	1.000	0.500	0.562	0.281	0.343	0.281	0.343	1,430	2,100	13°
HRBM3	1/4-28	0.0625	0.190	0.306	0.437	0.328	1.375	0.718	0.812	0.375	0.437	0.312	0.531	3,590	4,650	17°
HRBM4	1/4-28	0.0625	0.250	0.306	0.437	0.328	1.375	0.718	0.812	0.375	0.437	0.312	0.531	3,590	4,650	17°
HRBH4	5/16-24	0.1275	0.250	0.428	0.500	0.312	1.750	0.843	1.093	0.500	0.562	0.375	0.656	5,630	7,300	21°
HRBH5	5/16-24	0.1230	0.312	0.428	0.500	0.312	1.750	0.843	1.093	0.500	0.562	0.375	0.656	5,630	7,300	21°

MATERIAL CODE

PART NO.	BALL	RACE	BODY
Basic Bearing Number as Shown	6 52100 Steel H.T. & Chrome Plated	Alum. Bronze	Alloy Steel H.T. Cadmium Plated
Basic Bearing Number + SS	6 52100 Steel H.T. & Chrome Plated	Stainless Steel Heat Treated	Alloy Steel H.T. Cadmium Plated
Basic Bearing Number + CR	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	Stainless Steel Heat Treated



NOTES

- For ordering instructions, please refer to Section 5, page 5-2.
 - Add suffix "F" after material code designation for zerk type lubricator fitting. (e.g.) HRBH4F, HRBH4SSF.
 - Add suffix "FN" after material code designation for flush type lubricator fitting. (e.g.) HRBH4FN, HRBH4SSFN.
 - Add prefix "L" if left hand threads are required. (e.g.) HRBL3, HRBHL4SSFN.
 - Add suffix "W" after material code designation for lock washer slot in base of shank (please refer to section 5, page 5-5 for detailed information). (e.g.) HRBH4SSW.
- 6 At Kahr's option 440C stainless steel may be used as substitute ball material.



HRB-E Series

3 piece construction, external thread.
Optional external lubricator fittings.

SPECIFICATIONS

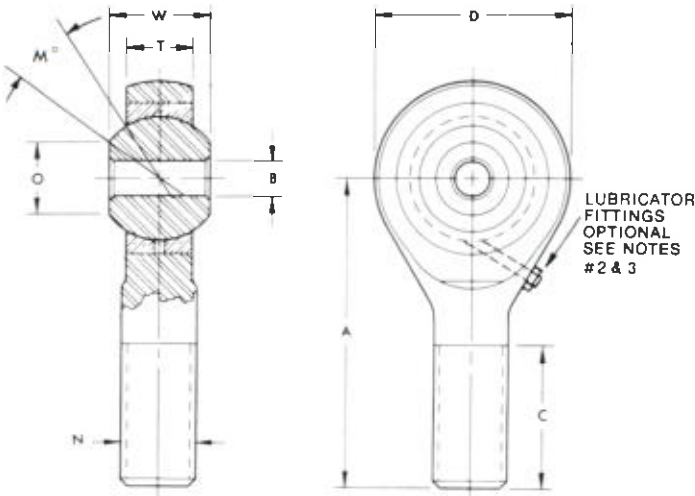
Basic Rod-End Bearing Number	Type		B	O	W	T	A	Ball Dia.	D	C	Static Radial Load Yield Allowable in Tension		M° Misalignment ±
	External Thread										Pounds		
	N UNF-3A	Approx. Brg. Wt.	+ .0015 - .0005	Dia. Ref.	+ .000 - .005	± .010	± 1/32	Ref.	Max.	Min.	Race		
											Aluminum Bronze	Stainless Steel	
HRBL3E	1/4-28	0.0215	0.190	0.239	0.250	0.187	1.000	0.343	0.562	0.593	1,430	2,100	13°
HRBM3E	3/8-24	0.0570	0.190	0.306	0.437	0.328	1.375	0.531	0.812	0.718	2,770	3,680	17°
HRBM4E	1/2-24	0.0570	0.250	0.306	0.437	0.328	1.375	0.531	0.812	0.718	2,770	3,680	17°
HRBH4E	3/4-24	0.1375	0.250	0.428	0.500	0.312	1.750	0.656	1.093	0.968	5,630	7,300	21°
HRBH5E	1-20	0.1250	0.312	0.428	0.500	0.312	1.750	0.656	1.093	0.968	5,630	7,300	21°

MATERIAL CODE

PART NO.	BALL	RACE	BODY
Basic Bearing Number as Shown	52100 Steel H.T. & Chrome Plated	Alum. Bronze	Alloy Steel H.T. Cadmium Plated
Basic Bearing Number + SS	52100 Steel H.T. & Chrome Plated	Stainless Steel Heat Treated	Alloy Steel H.T. Cadmium Plated
Basic Bearing Number + CR	Type 440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

- For ordering instructions, please refer to Section 5, page 5-2
- Add suffix "F" after material code designation for zerk type lubricator fitting. (e.g.) HRBH4EF, HRBH4ESSF.
- Add suffix "FN" after material code designation for flush type lubricator fitting. (e.g.) HRBH4EFN., HRBH4ESSFN.
- Add suffix "W" after material code designation for lock washer slot in shank (please refer to section 5, page 5-5 for detailed information). (e.g.) HRBH4EW.
- Add prefix "L" if left hand threads are required. (e.g.) HRBL3E.
- Load ratings are based on rod ends without lubricator fittings. For load ratings with fittings please consult our Engineering Department.
- At Kahr's option 440C stainless steel may be used as substitute ball material.





Dry Film Lubrication

**CODE FOR ORDERING
BEARINGS TREATED WITH
DRY FILM LUBRICANTS**

SPECIFICATIONS

SURFACE TO BE TREATED	COMP. TYPE "S"	COMP. TYPE "H"
RACE I.D. ONLY	D1	D21
RACE I.D. & BALL I.D.	D5	D23
BALL I.D. ONLY	D9	D25

NOTES

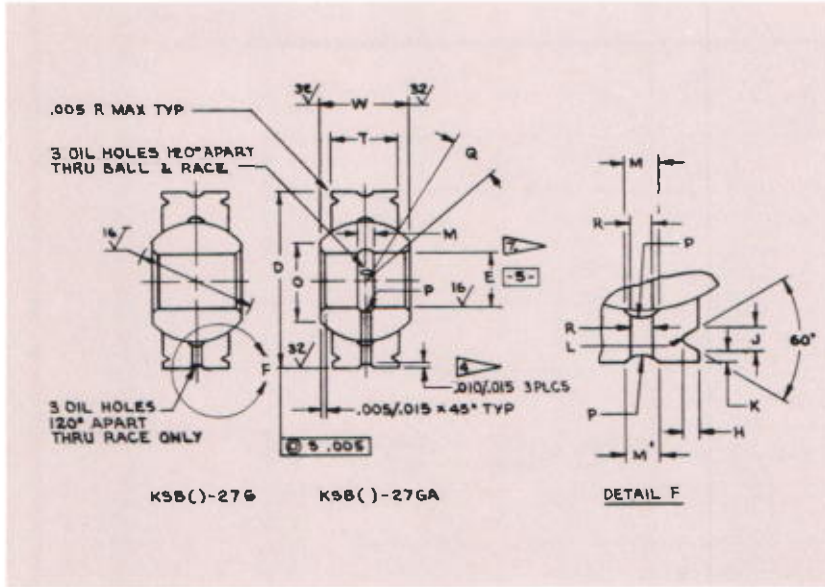
1. Dry film compound type "S" can be used with or without other forms of lubrication. Operating temperature range: -300° F. to +600° F. This dry film exceeds requirements of specification MIL-L-8937 and supersedes previous Kahr dry film types "D," "G" and K350.
2. Bearings to be used at HIGHER temperatures than +600° F. without any other form of lubrication are treated with dry film compound Type "H." Safe operating temperature 900 degrees F. Max.
3. All dimensions are met before application of dry film. Allowance of .001 on bore size should be used for total dry film thickness.
4. Dry film lubricant code is to be added to the Bearing callout as a suffix. (See example note below.)

EXAMPLES **HRBH4D5, KB8ESSFND1.**

DETAIL F

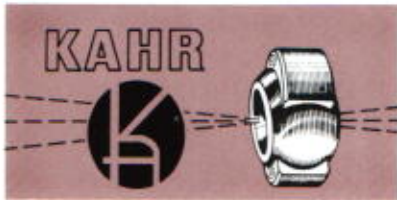
GROOVE TYPE	H +.015 -.000	K ±.005	J +.010 -.000	L Rad.
A	.015	.015	.035	.005/.015
B	.025	.025	.045	.010/.020
C	.045	.025	.070	

DESIGNER'S NOTES



NOTES:

- Bearings supplied to this drawing are qualified to MIL-B-81936/1
- Bearings individually packaged in hermetically sealed, grease proof material per MIL-P-116, Method 1A-8. All interior packages marked per MIL-STD-129. Interior packages
- Bearings shall be free of burrs, pits, scratches, tool marks, rough or sharp edges or other defects & shall not catch or bind when manually oscillated or misaligned.
Internal Clearance: Radial — free running to .001 max.
Axial — free running to .005 max.
- Distortion of oil holes & oil grooves in race after swaging shall not restrict grease flow.
- Temperature range: —65°F to +350°F series KSB ()-() G & KSB ()-() GA
—65°F to +500°F series KSB ()-()
- Series KSB ()-() G & KSB ()-() GA shipped packed with MIL-G-B1322 grease.



KSB-29 Series

QPL APPROVED
MIL-B-81936

SPECIFICATIONS

Basic Spherical Bearing Number	E	D	W	T	O	Ball Dia.	M	P	R Dia.	Q ⁺ Min.
	Dia.	Dia.			Dia. Min.					
	+ .0000 - .0005	+ .0000 - .0005	+ .000 - .005	+ .000 - .005		+ .001 - .005	4	4	4	
KSB4-29	.2500	.6562	.343	.250	.357	.500	.042 .078	.030 .062	.032 / .062	12
KSB5-29	.3125	.7500	.375	.281	.413	.562			.042 .062	11
KSB6-29	.3750	.8125	.406	.312	.509	.656			9	
KSB7-29	.4375	.9062	.437	.343	.563	.718	.065 .094	.060 .094	.052 .062	8
KSB8-29	.5000	1.0000	.500	.390	.634	.813				
KSB9-29	.5625	1.0937	.562	.437	.664	.875				
KSB10-29	.6250	1.1875	.625	.500	.732	.968	.073 .109	.070 .125	.062 .078	8
KSB12-29	.7500	1.4375	.750	.593	.913	1.187				
KSB13-29	.8125	1.5625	.812	.650	.984	1.281				
KSB14-29	.8750	1.6562	.875	.703	1.054	1.375				
KSB16-29	1.0000	1.8750	1.000	.797	1.193	1.562	.082 .109	.090 .125	.078 .093	8
KSB16-15-29	1.0000	1.8750	1.000	.840	1.193	1.562				
KSB18-29	1.1250	2.1250	1.125	.900	1.334	1.750				
KSB20-29	1.2500	2.3125	1.250	1.000	1.473	1.937				
KSB22-29	1.3750	2.5625	1.375	1.100	1.654	2.156	.082 .109	.090 .125	.078 .093	8
KSB24-29	1.5000	2.8125	1.500	1.200	1.794	2.344				

MATERIAL CODE

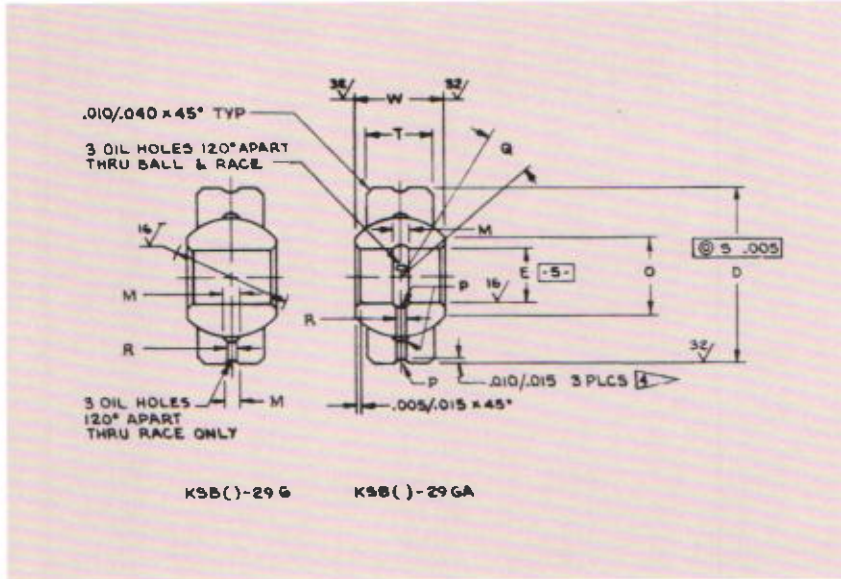
RACE	17-4PH CRES AMS 5643	COND H-1150 Ref MIL-H-6875
BALL	Beryllium Copper QQ-C-530	RC 37 Min. MIL-H-7199
	Material	Heat Treat
		Material Specification

NOTES

- For Ordering Instructions, please refer to Section 5, page 5-3.

DETAIL F

GROOVE TYPE	H +.015 -.000	K ±.005	J +.010 -.000	L Rad.
A	.015	.015	.035	.005/.015
B	.025	.025	.045	.010/.020
C	.045	.025	.070	



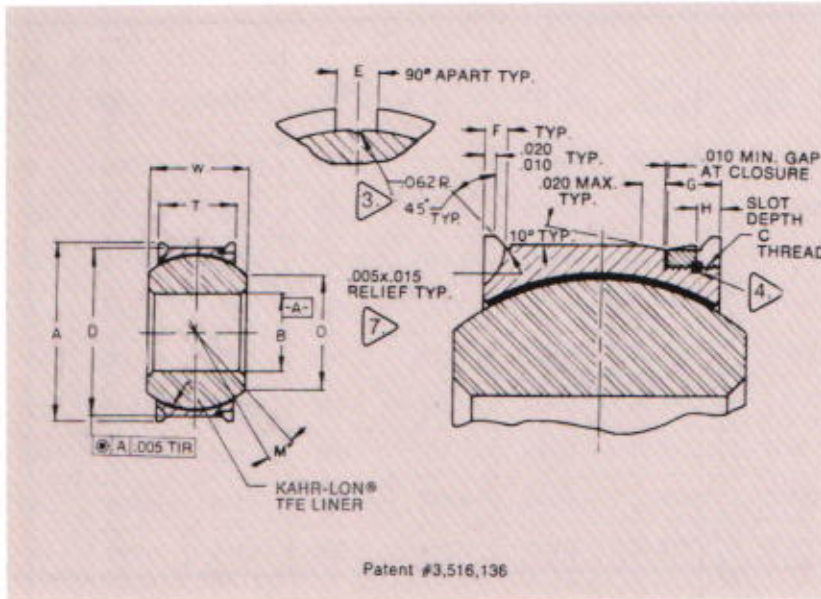
NOTES:

1. Bearings supplied to this drawing are qualified to MIL-B-81936
2. Bearings individually packaged in hermetically sealed, grease proof material per MIL-P-116, Method 1A-8. All interior packages marked per MIL-STD-129. Interior packages also durably marked with the MS, PN, KAHR PN, date, month & year of lubrication & Kahr lot number.
3. Bearings shall be free of burrs, pits, scratches, tool marks, rough or sharp edges or other defects & shall not catch or bind when manually oscillated or misaligned.
Internal Clearance: Radial — free running to .001 max
Axial — free running to .005 max
4. Distortion of oil holes & oil grooves in race after swaging shall not restrict grease flow.
5. Temperature range: -65°F to +350°F
6. Shipped packed with MIL-G-81322 grease.

DESIGNER'S NOTES

**KAHR-KAPTOR® type bearing:
threaded retainer ring installation.
Self lubricated, low friction.
Replacement bearing where
accessibility for staking
conventional bearings or
high thrust loads present problems
(Ref. MS21232 and MS14101 Bearings).**

DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE/RETAINER RING	TFE LINER
Basic Bearing Number as Shown	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Slot is intended to permit bleeding of chromate or similar compounds during installation. Dimensions are for reference only.
- Add suffix "P" for thread self-locking element REF MIL-F-18240 (e.g.) KPD6P.
- Dynamic loads shown in TABLE 2 are in accordance with MIL-B-8942.
- See TABLE 2 for loads, preload & installation data.
- Relieved to provide clearance for sharp edge in housing bore.



KPWD Series

KAHR-KAPTOR®
SELF LUBRICATING.

SPECIFICATIONS

TABLE 1

Basic Spherical Bearing Number	B	O	D	T	W	C	F	G	A	E	H	M°
	Dia. + .0000 - .0005	Dia. Ref.	Dia. + .0000 - .0005	± .005	+ .000 - .002	UNS Thread	± .005	± .010	Dia. ± .010	± .010	± .005	Misalignment ±
KPWD5	0.3125	0.375	0.6873	0.317	0.437	0.625-40	0.025	0.137	0.717	0.093	0.035	8°
KPWD6	0.3750	0.417	0.8123	0.406	0.500	0.750-40	0.035	0.137	0.852	0.093	0.045	10°
KPWD7	0.4375	0.481	0.9373	0.442	0.562	0.875-40	0.035	0.150	0.977	0.093	0.045	12°
KPWD8	0.5000	0.580	0.9998	0.505	0.625	0.937-40	0.035	0.150	1.040	0.093	0.045	9°
KPWD9	0.5625	0.615	1.1248	0.536	0.687	1.062-32	0.035	0.150	1.165	0.093	0.045	12°
KPWD10	0.6250	0.692	1.1873	0.567	0.750	1.125-32	0.035	0.150	1.228	0.093	0.045	12°
KPWD12	0.7500	0.791	1.3748	0.630	0.875	1.312-32	0.055	0.175	1.455	0.125	0.065	14°
KPWD14	0.8750	0.979	1.6248	0.755	0.875	1.500-32	0.055	0.250	1.705	0.125	0.065	6°
KPWD16	1.0000	1.084	2.1248	1.005	1.375	1.953-32	0.055	0.250	2.205	0.125	0.065	14°

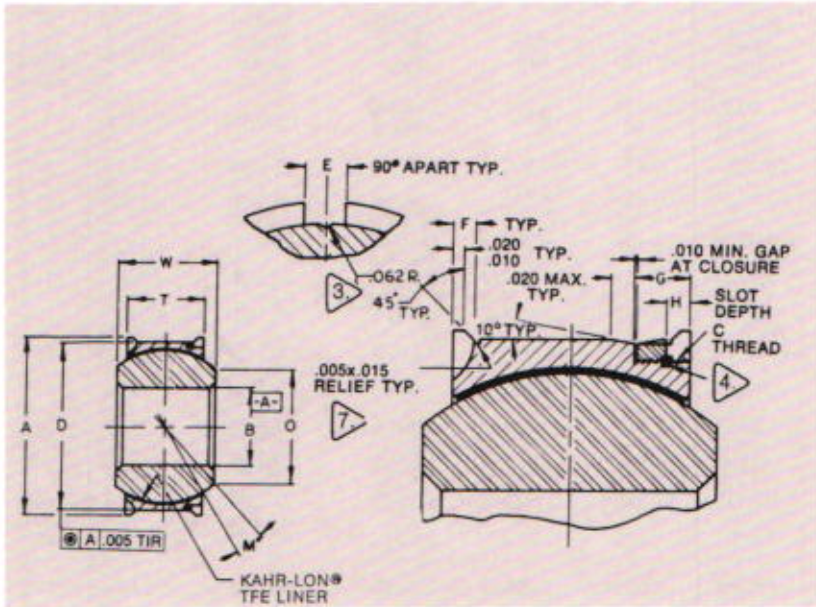
TABLE 2

Basic Spherical Bearing Number	Static Loads in Lbs., Limit			Preload Torque In.-Lbs.	Weight Pounds Max.	Ball Dia. (Ref)	Suggested Installation Torque In.-Lbs.	
	Radial	Axial	Dynamic				Basic	W / Locking Element
KPWD5	11,000	2,000	4,650	1.0 to 5.0	0.035	0.525	41	61
KPWD6	14,900	3,710	6,390		0.053	0.650	48	73
KPWD7	21,600	4,780	9,390		0.073	0.740	56	86
KPWD8	27,500	5,330	12,150		0.100	0.825	60	92
KPWD9	34,400	5,650	14,900		0.125	0.921	69	104
KPWD10	39,000	6,400	16,700		0.155	1.020	73	110
KPWD12	52,300	12,900	22,100		0.240	1.187	86	129
KPWD14	67,300	16,400	28,200	2.0 to 8.0	0.346	1.312	99	148
KPWD16	137,000	19,600	53,700		0.970	1.750	129	193

SEE MATERIAL CODE AND NOTES 1 THROUGH 8 ON NEXT PAGE.

**KAHR-KAPTOR® type bearing;
threaded retainer ring installation.**
Self-lubricating, low friction.
Replacement bearing where accessibility
for staking conventional bearings or
high thrust loads present problems
(Ref. MS21230 and MS14103 Bearings).

DESIGNER'S NOTES



MATERIAL CODE Patent #3,516,136

PART NO.	BALL	RACE/RETAINER RING	TFE LINER
Basic Bearing Number as Shown	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Slot is intended to permit bleeding of chromate or similar compounds during installation. Dimensions are for reference only.
- Add suffix "P" for thread self-locking element REF MIL-F-18240 (e.g.) KPWD6P
- Dynamic loads shown in TABLE 2 are in accordance with MIL-B-8942.
- See TABLE 2 for loads, preload & installation data.
- Relieved to provide clearance for sharp edge in housing bore.
- Neck type ball on 5 and 8 sizes only.



KWDB-CR Series

SELF-LUBRICATING.

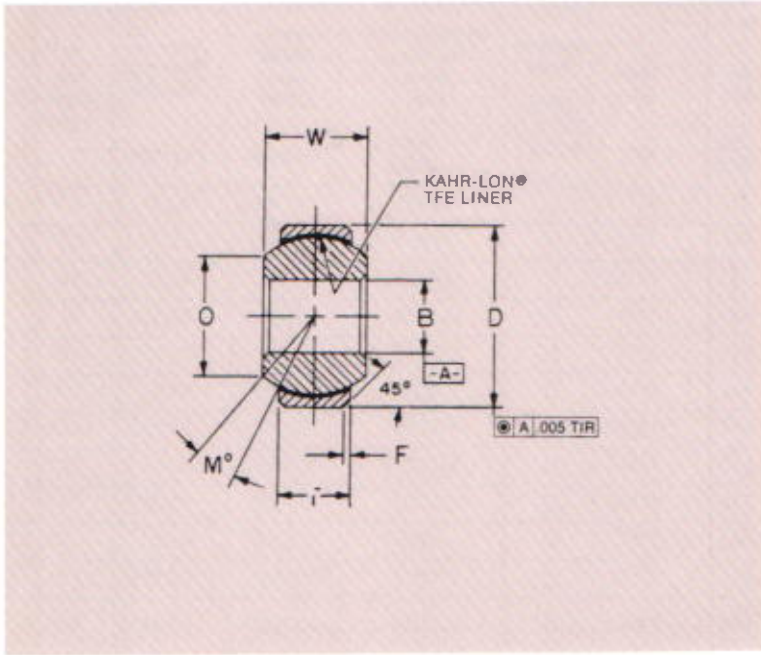
SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	F	T	W		Recommend Housing Bore Dia.	Static Radial Limit Load	Approx. Bearing Weight	M° Misalignment ±
	Bore Dia. +.0000 -.0005	Shoulder Dia. Ref.	Outside Dia. +.0000 -.0005	Chamfer +.015 -.000	Outer Race Width +.010 -.000	Ball Width +.000 -.005	Ball Dia. Ref.		+.0000 -.0005	Pounds	Pounds
KWDB3CR	0.1900	0.301	0.6250	0.010	0.322	0.437	0.531	0.6253	11,400	0.031	17°
KWDB4CR	0.2500	0.301	0.6250	0.010	0.322	0.437	0.531	0.6253	11,400	0.029	17°
KWDB5CR	0.3125	0.401	0.6875	0.010	0.312	0.437	0.593	0.6878	13,000	0.033	15°
KWDB6CR	0.3750	0.471	0.8125	0.010	0.401	0.500	0.687	0.8128	18,800	0.053	11°
KWDB7CR	0.4375	0.542	0.9375	0.010	0.437	0.562	0.781	0.9378	23,500	0.073	12°
KWDB8CR	0.5000	0.612	1.0000	0.020	0.500	0.625	0.875	1.0003	30,000	0.097	10°
KWDB9CR	0.5625	0.726	1.1250	0.020	0.531	0.687	1.000	1.1253	37,000	0.125	11°
KWDB10CR	0.6250	0.752	1.1875	0.020	0.562	0.750	1.062	1.1878	41,500	0.155	12°
KWDB12CR	0.7500	0.892	1.3750	0.020	0.625	0.875	1.250	1.3753	55,000	0.232	14°
KWDB14CR	0.8750	1.061	1.6250	0.020	0.750	0.875	1.375	1.6253	71,000	0.346	6°
KWDB16CR	1.0000	1.275	2.1250	0.020	1.000	1.375	1.875	2.1253	130,000	0.970	15°
KWDB20CR	1.2500	1.464	2.3750	0.020	1.125	1.500	2.093	2.3753	163,000	1.244	13°
KWDB22CR	1.3750	1.539	2.5625	0.020	1.218	1.687	2.281	2.5628	193,000	1.592	15°
KWDB24CR	1.5000	1.697	2.6875	0.030	1.218	1.687	2.390	2.6878	203,000	1.693	14°
KWDB28CR	1.7492 1.7500	1.966	2.9990 3.0000	0.030	1.312	1.812	2.672	2.9997 3.0005	247,000	2.517	13°
KWDB32CR	1.9992 2.0000	2.211	3.2490 3.2500	0.030	1.375	1.937	2.937	3.2497 3.2505	286,000	2.990	13°
KWDB36CR	2.2492 2.2500	2.444	3.6240 3.6250	0.030	1.406	2.000	3.156	3.6247 3.6255	322,000	3.285	13°
KWDB40CR	2.4990 2.5000	2.752	3.9362 3.9375	0.030	1.437	2.062	3.437	3.9370 3.9380	354,000	3.560	12°
KWDB44CR	2.7490 2.7500	2.971	4.1237 4.1250	0.030	1.500	2.187	3.687	4.1245 4.1255	398,000	3.930	12°
KWDB48CR	2.9990 3.0000	3.190	4.3737 4.3750	0.030	1.562	2.312	3.937	4.3745 4.3755	444,000	4.270	12°

SEE MATERIAL CODE AND NOTES 1 THROUGH 3 ON NEXT PAGE

Self lubricated low friction.
Dimensionally
interchangeable with
Metal to Metal KWB series.

DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE	TFE LINER
Number as Shown	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®

NOTES

1. For ordering instructions, please refer to Section 5, page 5-4
2. Self-lubricating liner permanently bonded to race I.D.
3. For rotational torque preloads please refer to Section 5, page 5-4.



KWDB-20CR Series

with RETENTION GROOVE.
SELF-LUBRICATING.

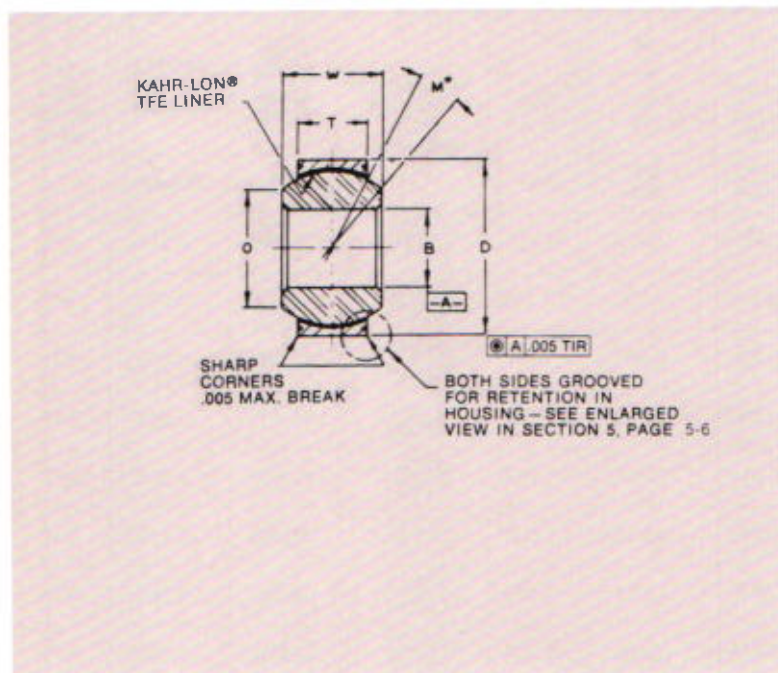
SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	T	W	Ball Dia.	Groove Type (See Sect. 5, P. 5-6)	Recommend Housing Bore Dia.	Static Radial Limit Load	Approx. Bearing Weight	M° Misalignment ±
	Bore Dia. +.0000 -.0005	Shoulder Dia. Ref.	Outside Dia. +.0000 -.0005	Outer Race Width +.010 -.000	Ball Width +.000 -.005			Ref.	+.0000 -.0005	Pounds	
KWDB3-20CR	0.1900	0.301	0.6250	0.322	0.437	0.531	A	0.6253	11.400	0.031	17°
KWDB4-20CR	0.2500	0.301	0.6250	0.322	0.437	0.531	A	0.6253	11.400	0.029	17°
KWDB5-20CR	0.3125	0.401	0.6875	0.312	0.437	0.593	A	0.6878	13.000	0.033	15°
KWDB6-20CR	0.3750	0.471	0.8125	0.401	0.500	0.687	B	0.8128	18.800	0.053	11°
KWDB7-20CR	0.4375	0.542	0.9375	0.437	0.562	0.781	B	0.9378	23.500	0.073	12°
KWDB8-20CR	0.5000	0.612	1.0000	0.500	0.625	0.875	B	1.0003	30.000	0.097	10°
KWDB9-20CR	0.5625	0.726	1.1250	0.531	0.687	1.000	B	1.1253	37.000	0.125	11°
KWDB10-20CR	0.6250	0.752	1.1875	0.562	0.750	1.062	B	1.1878	41.500	0.155	12°
KWDB12-20CR	0.7500	0.892	1.3750	0.625	0.875	1.250	B	1.3753	55.000	0.232	14°
KWDB14-20CR	0.8750	1.061	1.6250	0.750	0.875	1.375	C	1.6253	71.000	0.346	6°
KWDB16-20CR	1.0000	1.275	2.1250	1.000	1.375	1.875	C	2.1253	130.000	0.970	15°
KWDB20-20CR	1.2500	1.464	2.3750	1.125	1.500	2.093	C	2.3753	163.000	1.244	13°
KWDB22-20CR	1.3750	1.539	2.5625	1.218	1.687	2.281	C	2.5628	193.000	1.592	15°
KWDB24-20CR	1.5000	1.697	2.6875	1.218	1.687	2.390	C	2.6878	203.000	1.693	14°
KWDB28-20CR	1.7492 1.7500	1.966	2.9990 3.0000	1.312	1.812	2.672	C	2.9995 3.0003	247.000	2.517	13°
KWDB32-20CR	1.9992 2.0000	2.211	3.2490 3.2500	1.375	1.937	2.937	C	3.2495 3.2503	286.000	2.990	13°
KWDB36-20CR	2.2492 2.2500	2.444	3.6240 3.6250	1.406	2.000	3.156	C	3.6245 3.6253	322.000	3.285	13°
KWDB40-20CR	2.4990 2.5000	2.752	3.9362 3.9375	1.437	2.062	3.437	C	3.9368 3.9378	354.000	3.560	12°
KWDB44-20CR	2.7490 2.7500	2.971	4.1237 4.1250	1.500	2.187	3.687	C	4.1243 4.1253	398.000	3.930	12°
KWDB48-20CR	2.9990 3.0000	3.190	4.3737 4.3750	1.562	2.312	3.937	C	4.3743 4.3753	444.000	4.270	12°

SEE MATERIAL CODE AND NOTES 1 THROUGH 3 ON NEXT PAGE

Like KWDB but has staking groove
for retention in housing.
Self lubricated low friction.
Dimensionally
interchangeable with
Metal to Metal KWB-20 Series.

DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE	TFE LINER
Number as Shown	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®

NOTES

1. For ordering instructions, please refer to Section 5, page 5- 4
2. Self-lubricating liner permanently bonded to race I.D.
3. For rotational torque preloads please refer to Section 5, page 5-4.



KDSY-CR Series

SELF-LUBRICATING.

Self lubricated, low friction.
Has wide necked ball,
allows greater misalignment.

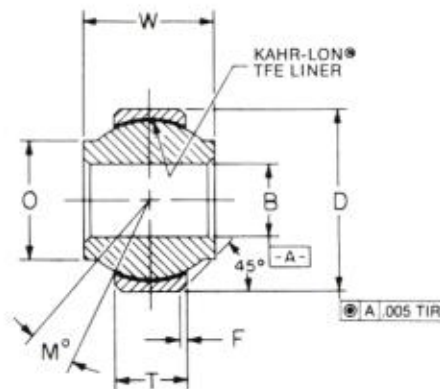
Dimensionally interchangeable with
Metal to Metal KSBY Series.

SPECIFICATIONS

Basic Spherical Bearing Number	B	O	D	F	T	W	Ball Dia.	Recommend Housing Bore Diameter	Static Radial Limit Load	Approx. Bearing Weight	M° Misalignment ±
	Bore Dia.	Shoulder Dia.	Outside Dia.	Chamfer	Outer Race Width	Ball Width			Pounds	Pounds	
	+ .0000 - .0005	Ref.	+ .0000 - .0005	+ .000 - .010	+ .010 - .000	+ .000 - .005			Ref.		
KDSY3CR	0.1900	0.319	0.5625	0.020	0.205	0.500	0.437	0.5623 0.5628	6,400	0.018	15°
KDSY4CR	0.2500	0.390	0.7400	0.022	0.250	0.593	0.593	0.7398 0.7403	10,000	0.036	24°
KDSY5CR	0.3125	0.418	0.6875	0.032	0.250	0.625	0.593	0.6873 0.6878	10,000	0.029	20°
KDSY6CR	0.3750	0.512	0.9060	0.032	0.340	0.813	0.781	0.9058 0.9063	19,000	0.068	23°
KDSY7CR	0.4375	0.618	1.0000	0.032	0.340	0.875	0.875	0.9998 1.0003	22,000	0.095	22°
KDSY8CR	0.5000	0.730	1.1250	0.032	0.396	0.937	1.000	1.1248 1.1253	27,000	0.159	20°
KDSY10CR	0.6250	0.856	1.3750	0.032	0.562	1.200	1.250	1.3748 1.3753	49,000	0.245	20°
KDSY12CR	0.7500	0.970	1.5625	0.044	0.615	1.280	1.375	1.5623 1.5628	59,000	0.315	19°
KDSY14CR	0.8750	1.140	1.7500	0.044	0.620	1.400	1.531	1.7498 1.7503	67,000	0.430	18°
KDSY16CR	1.0000	1.278	2.1250	0.044	0.830	1.875	1.875	2.1248 2.1253	110,000	0.831	21°

MATERIAL CODE

PART NO.	BALL	RACE	TFE LINER
Number as Shown	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®



NOTES

1. For ordering instructions, please refer to Section 5, page 5-4
2. Self-lubricating liner permanently bonded to race I.D.
3. For rotational torque preloads please refer to Section 5, page 5-4



KDSY-6 Series

with RETENTION GROOVE.
SELF-LUBRICATING.

Like KDSY
but has staking groove
for retention in housing.
Self lubricated, low friction.
Dimensionally interchangeable with
Metal to Metal KSBY-20 Series

SPECIFICATIONS

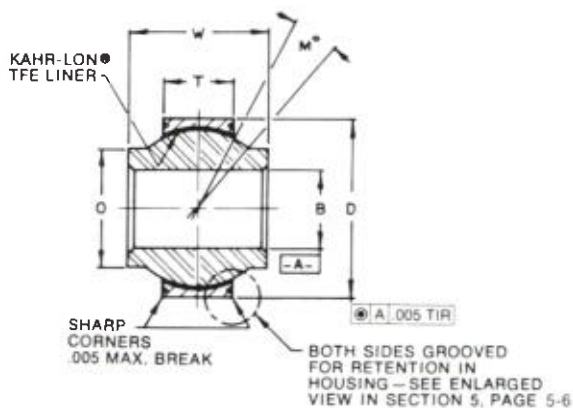
Basic Spherical Bearing Number	B	O	D	Groove Type (See Sect. 5, P. 5-6)	T	W	Ball Dia.	Recommend Housing Bore Diameter	Static Radial Limit Load	Approx. Bearing Weight	M° Misalignment ±
	Bore Dia.	Shoulder Dia.	Outside Dia.		Outer Race Width	Ball Width			Pounds	Pounds	
	+ .0000 - .0005	Ref.	+ .0000 - .0005		+ .010 - .000	+ .000 - .005			Ref.		
KDSY3-6	0.1900	0.319	0.5625	A	0.205	0.500	0.437	0.5623 0.5628	6,400	0.018	15°
KDSY4-6	0.2500	0.390	0.7400	A	0.250	0.593	0.593	0.7398 0.7403	10,000	0.036	24°
KDSY5-6	0.3125	0.418	0.6875	A	0.250	0.625	0.593	0.6873 0.6878	10,000	0.029	20°
KDSY6-6	0.3750	0.512	0.9060	A	0.340	0.813	0.781	0.9058 0.9063	19,000	0.068	23°
KDSY7-6	0.4375	0.618	1.0000	A	0.340	0.875	0.875	0.9998 1.0003	22,000	0.095	22°
KDSY8-6	0.5000	0.730	1.1250	A	0.396	0.937	1.000	1.1248 1.1253	27,000	0.159	20°
KDSY10-6	0.6250	0.856	1.3750	B	0.562	1.200	1.250	1.3748 1.3753	49,000	0.245	20°
KDSY12-6	0.7500	0.970	1.5625	C	0.615	1.280	1.375	1.5623 1.5628	59,000	0.315	19°
KDSY14-6	0.8750	1.140	1.7500	C	0.620	1.400	1.531	1.7498 1.7503	67,000	0.430	18°
KDSY16-6	1.0000	1.278	2.1250	C	0.830	1.875	1.875	2.1248 2.1253	110,000	0.831	21°

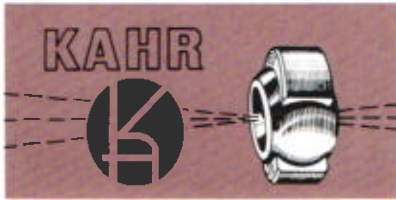
MATERIAL CODE

PART NO.	BALL	RACE	TFE LINER
Number as Shown	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- For rotational torque preloads please refer to Section 5, page 5-4.





Narrow Series

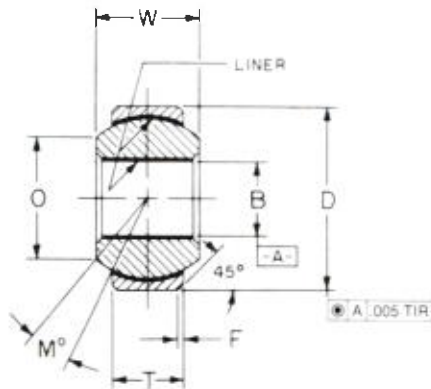
for SHAFT ROTATION.
SELF-LUBRICATING.
KNDB-22

Liner in both race and bore
for shaft rotation.
Self-lubricating, low friction.
Dimensionally equivalent to
MS14104 Series (KNDB-32 Series).

SPECIFICATIONS

Basic Bore Size	B Dia. + .000 - .001	D Dia. + .0000 - .0005	T ± .005	O Dia. Min.	M° Misalignment ±	W + .000 - .002	F Chamfer	Static Load in Pounds		Dyn. Osc. Load Pounds	Limit Static Radial Load Pounds	No-Load Break-away Torque In.-Lbs.	Weight Pounds Max.
								Radial	Axial				
3	0.1900	0.5625	0.218	0.293	10°	0.281		3,975	150	1,500	6,000	.25-5.0	0.020
4	0.2500	0.6562	0.250	0.364	10°	0.343		6,040	430	2,320	8,000	.25-5.0	0.025
5	0.3125	0.7500	0.281	0.419	10°	0.375		8,750	700	3,430	10,000	1.0-15.0	0.030
6	0.3750	0.8125	0.312	0.475	9°	0.406		10,540	1,100	4,200	14,000	1.0-15.0	0.040
7	0.4375	0.9062	0.343	0.530	8°	0.437	0.010	13,200	1,400	5,700	17,000	1.0-15.0	0.050
8	0.5000	1.0000	0.390	0.600	8°	0.500	to	17,900	2,100	7,900	21,000	1.0-15.0	0.080
9	0.5625	1.0937	0.437	0.670	8°	0.562	0.040	23,200	3,680	10,300	27,000	1.0-15.0	0.090
10	0.6250	1.1875	0.500	0.739	8°	0.625		30,500	4,720	13,400	33,000	1.0-15.0	0.120
12	0.7500	1.4375	0.593	0.920	8°	0.750		46,400	6,750	19,700	52,000	1.0-15.0	0.210
14	0.8750	1.5625	0.703	0.980	8°	0.875		62,200	9,350	26,100	65,000	1.0-24.0	0.270
16	1.0000	1.7500	0.797	1.118	9°	1.000		82,200	12,160	34,100	84,000	1.0-28.0	0.390

REMEMBER:
"D" in part number designates
longer-life KAHR-LON® liner.



MATERIAL CODE

BASIC PART NO.	BALL	RACE	LINER
KNDB Bore Size 22 (e.g. KNDB6-22)	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race and ball I.D.'s
- Loads based on specification MIL-B-81820 requirements



Narrow Series

for SHAFT ROTATION
with RETENTION GROOVE.
SELF-LUBRICATING.
KNDB-23

Like KNDB-22 & KSBG-N22 but
has staking groove
for retention in housing.
Self-lubricating, low friction.
Dimensionally equivalent to
MS14101 Series (KNDB-33 Series).

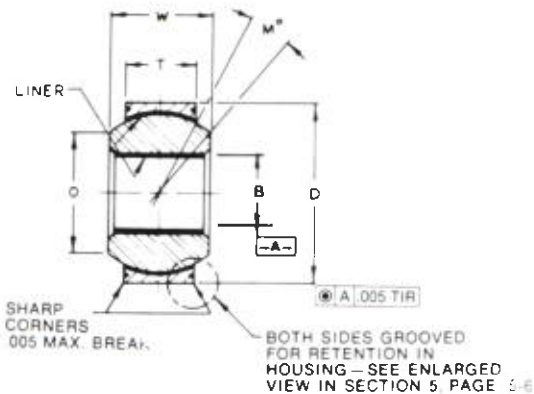
SPECIFICATIONS

Basic Bore Size	B Dia. +0.000 -0.001	D Dia. +0.0000 -0.0005	T ± 0.005	O Dia. Min.	M° Mis-alignment ±	W +0.000 -0.002	Groove Type (See Sect. 5, P. 5-6)	Static Load in Pounds		Dyn. Osc. Load Pounds	Limit Static Radial Load Pounds	No-Load Break-away Torque In.-Lbs.	Weight Pounds Max.
								Radial	Axial				
4	0.2500	0.6562	0.250	0.364	10°	0.343	A	6,040	430	2,320	8,000	.25-5.0	0.020
5	0.3125	0.7500	0.281	0.419	10°	0.375	B	8,750	700	3,430	10,000	1.0-15.0	0.030
6	0.3750	0.8125	0.312	0.475	9°	0.406	B	10,540	1,100	4,200	14,000	1.0-15.0	0.040
7	0.4375	0.9062	0.343	0.530	8°	0.437	B	13,200	1,400	5,700	17,000	1.0-15.0	0.050
8	0.5000	1.0000	0.390	0.600	8°	0.500	C	17,900	2,100	7,900	21,000	1.0-15.0	0.080
9	0.5625	1.0937	0.437	0.670	8°	0.562	C	23,200	3,680	10,300	27,000	1.0-15.0	0.090
10	0.6250	1.1875	0.500	0.739	8°	0.625	C	30,500	4,720	13,400	33,000	1.0-15.0	0.120
12	0.7500	1.4375	0.593	0.920	8°	0.750	C	46,400	6,750	19,700	52,000	1.0-15.0	0.210
14	0.8750	1.5625	0.703	0.980	8°	0.875	C	62,200	9,350	26,100	65,000	1.0-24.0	0.270
16	1.0000	1.7500	0.797	1.118	9°	1.000	C	82,200	12,160	34,100	84,000	1.0-28.0	0.390

REMEMBER:
"D" in part number designates
longer-life KAHR-LON® liner.

MATERIAL CODE

BASIC PART NO.	BALL	RACE	LINER
KNDB ^{Bore Size} 23 (e.g. KNDB6-23)	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®



NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race and ball I.D.'s

3 Loads based on specification MIL-B-81820 requirements.



Wide Series

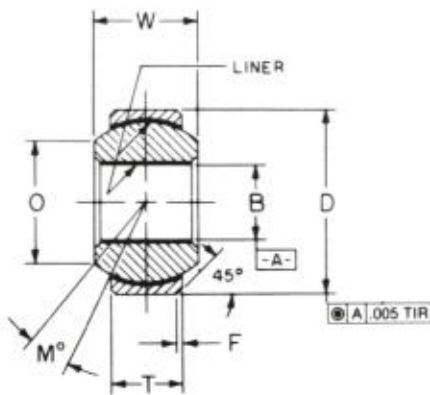
for SHAFT ROTATION.
SELF-LUBRICATING.
KWDB-26

Liner in both race and bore
 for shaft rotation.
 Self-lubricating, low friction.
 Dimensionally equivalent to
 MS14102 (KWDB-36 Series).

SPECIFICATIONS

Basic Bore Size	B Dia. + .000 - .001	D Dia. + .0000 - .0005	T ± .005	O Dia. Min.	M° Mis-alignment ±	W + .000 - .002	F Chamfer	Static Load in Pounds		Dyn. Osc. Load Pounds	Limit Static Radial Load Pounds	No-Load Break-away Torque In.-Lbs.	Weight Pounds Max.
								Radial	Axial				
3	0.1900	0.6250	0.327	0.300	15°	0.437	0.010	9,000	1,770	3,770	11,400	.25-5.0	0.031
4	0.2500											.25-5.0	
5	0.3125	0.6875	0.317	0.360	14°	0.500	0.010	9,400	1,640	4,650	13,000	1.0-15.0	0.035
6	0.3750	0.8125	0.406	0.466	8°			13,700	2,630	6,390	18,800	1.0-15.0	0.060
7	0.4375	0.9375	0.442	0.537	10°	0.562	to	20,700	3,650	9,390	23,500	1.0-15.0	0.080
8	0.5000	1.0000	0.505	0.607	9°	0.625	0.040	27,500	4,970	12,150	30,000	1.0-15.0	0.100
9	0.5625	1.1250	0.536	0.721	10°	0.687		34,400	5,370	14,900	37,000	1.0-15.0	0.135
10	0.6250	1.1875	0.567	0.747	12°	0.750		39,000	6,130	16,700	41,500	1.0-15.0	0.160
12	0.7500	1.3750	0.630	0.845	13°	0.875		52,300	7,730	22,100	55,000	1.0-15.0	0.240
14	0.8750	1.6250	0.755	0.995	6°	0.875		67,300	10,800	28,200	71,000	1.0-24.0	0.350
16	1.0000	2.1250	1.005	1.269	12°	1.375		137,000	19,300	53,700	137,000	1.0-28.0	0.970

REMEMBER:
 "D" in part number designates
 longer-life KAHR-LON® liner.



MATERIAL CODE

BASIC PART NO.	BALL	RACE	LINER
KWDB Bore Size 26 (e.g. KWDB6-26)	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
 - Self-lubricating liner permanently bonded to race and ball I.D.'s.
3. Loads based on specification MIL-B-81820 requirements.



Wide Series

for SHAFT ROTATION
with RETENTION GROOVE.
SELF-LUBRICATING.
KWDB-27

Like KWDB-26 & KWB-N26 but
has staking groove
for retention in housing.
Self-lubricating, low friction.
Dimensionally equivalent to
MS14103 (KWDB-37 Series).

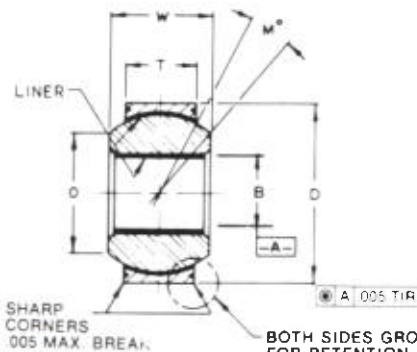
SPECIFICATIONS

Basic Bore Size	B Dia. + .000 - .001	D Dia. + .0000 - .0005	T ± .005	O Dia. Min.	M° Mis-alignment ±	W + .000 - .002	Groove Type (See Sect. 5, P. 5-6)	Static Load in Pounds		Dyn. Osc. Load Pounds	Limit Static Radial Load Pounds	No-Load Break-away Torque In.-Lbs.	Weight Pounds Max.
								Radial	Axial				
3	0.1900	0.6250	0.327	0.300	15°	0.437	A	9,000	1,770	3,770	11,400	.25-5.0	0.031
4	0.2500						A						
5	0.3125	0.6875	0.317	0.360	14°		A	9,400	1,640	4,650	13,000	1.0-15.0	0.035
6	0.3750	0.8125	0.406	0.466	8°	0.500	B	13,700	2,630	6,390	18,800	1.0-15.0	0.060
7	0.4375	0.9375	0.442	0.537	10°	0.562	B	20,700	3,650	9,390	23,500	1.0-15.0	0.080
8	0.5000	1.0000	0.505	0.607	9°	0.625	B	27,500	4,970	12,150	30,000	1.0-15.0	0.100
9	0.5625	1.1250	0.536	0.721	10°	0.687	B	34,400	5,370	14,900	37,000	1.0-15.0	0.135
10	0.6250	1.1875	0.567	0.747	12°	0.750	B	39,000	6,130	16,700	41,500	1.0-15.0	0.160
12	0.7500	1.3750	0.630	0.845	13°	0.875	C	52,300	7,730	22,100	55,000	1.0-15.0	0.240
14	0.8750	1.6250	0.755	0.995	6°	0.875	C	67,300	10,800	28,200	71,000	1.0-24.0	0.350
16	1.0000	2.1250	1.005	1.269	12°	1.375	C	137,000	19,300	53,700	137,000	1.0-28.0	0.970

REMEMBER:
"D" in part number designates
longer-life KAHR-LON® liner.

MATERIAL CODE

BASIC PART NO.	BALL	RACE	LINER
KWDB ^{Bore Size} 27 (e.g. KWDB6-27)	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®



BOTH SIDES GROOVED
FOR RETENTION IN
HOUSING - SEE ENLARGED
VIEW IN SECTION 5, PAGE 5-6

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race and ball I.D.'s.

3. Loads based on specification MIL-B-81820 requirements.

DESIGNER'S NOTES



KWDB-6 Series

QPL APPROVED

Self-lubricated, low friction.

MILITARY STANDARD MS21231

SPECIFICATIONS



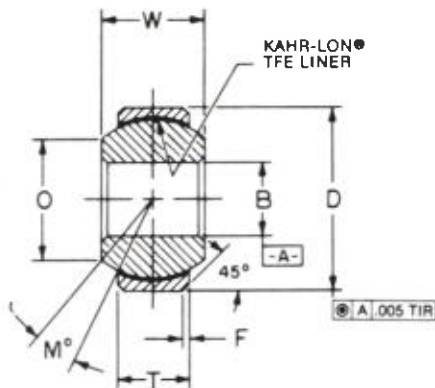
Basic Spherical Bearing Number	B	O	D	T	W	F	Approx. Bearing Weight Pounds	M° Misalignment ±	Static Limit Load in Pounds		Dynamic Load Pounds	No-Load Breakaway Torque In.—Lbs.
	Bore Dia.	Dia.	Outside Dia.	Outer Race Width	Ball Width	Chamfer			Radial	Axial		
Kahr	+ .0000 - .0005	Ref.	+ .0000 - .0005	+ .010 - .000	+ .000 - .002							
KWDB3-6	0.1900	0.301	0.6250	0.322	0.437	0.010 to 0.040	0.031	17°	9,000	1,770	3,770	.25-5.0
KWDB4-6	0.2500	0.301	0.6250	0.322	0.437		0.029	17°	9,000	1,770	3,770	.25-5.0
KWDB5-6	0.3125	0.401	0.6875	0.312	0.437		0.033	15°	9,400	1,640	4,650	1.0-15.0
KWDB6-6	0.3750	0.471	0.8125	0.401	0.500		0.053	11°	13,700	2,630	6,390	1.0-15.0
KWDB7-6	0.4375	0.542	0.9375	0.437	0.562		0.073	12°	20,700	3,650	9,390	1.0-15.0
KWDB8-6	0.5000	0.612	1.0000	0.500	0.625		0.097	10°	27,500	4,970	12,150	1.0-15.0
KWDB9-6	0.5625	0.726	1.1250	0.531	0.687		0.125	11°	34,400	5,370	14,900	1.0-15.0
KWDB10-6	0.6250	0.752	1.1875	0.562	0.750		0.155	12°	39,000	6,130	16,700	1.0-15.0
KWDB12-6	0.7500	0.892	1.3750	0.625	0.875		0.232	14°	52,300	7,730	22,100	1.0-15.0
KWDB14-6	0.8750	1.061	1.6250	0.750	0.875		0.346	6°	67,300	10,800	28,200	1.0-24.0
KWDB16-6	1.0000	1.275	2.1250	1.000	1.375		0.970	15°	137,000	19,300	53,700	1.0-28.0

MATERIAL CODE

PART NO.	BALL	RACE
Number as Shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Loads are in accordance with MIL-B-8942.
- Bearings are qualified to MS21231 and MIL-B-8942.





KNDB-3 Series

QPL APPROVED

Self-lubricated, low friction.
Has staking groove for retention in housing.

MILITARY STANDARD MS21232

SPECIFICATIONS

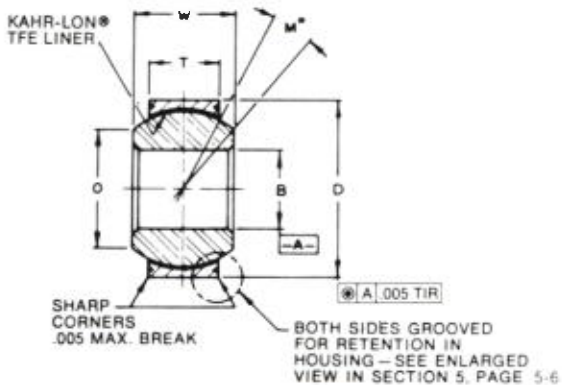
Basic Spherical Bearing Number	B	O	D	T	W	Groove Type (See Sect. 5, p. 5-6.)	Approx. Bearing Weight Pounds	M° Misalignment ±	Static Limit Load in Pounds		Dynamic Load Pounds	No-Load Break away Torque In.—Lbs.
	Bore Dia.	Dia.	Outside Dia.	Outer Race Width	Ball Width				Radial	Axial		
Kahr	+ .0000 - .0005	Ref.	+ .0000 - .0005	± .005	+ .000 - .002							
KNDB4-3	0.2500	0.420	0.6562	0.250	0.343	A	0.022	10°	6,040	430	2,320	.25-5.0
KNDB5-3	0.3125	0.480	0.7500	0.281	0.375	B	0.030	10°	8,750	700	3,430	1.0-15.0
KNDB6-3	0.3750	0.518	0.8125	0.312	0.406	B	0.038	10°	10,540	1,100	4,200	1.0-15.0
KNDB7-3	0.4375	0.572	0.9062	0.343	0.437	B	0.048	9°	13,200	1,400	5,700	1.0-15.0
KNDB8-3	0.5000	0.644	1.0000	0.390	0.500	C	0.065	9°	17,900	2,100	7,900	1.0-15.0
KNDB9-3	0.5625	0.714	1.0937	0.437	0.562	C	0.086	9°	23,200	3,680	10,300	1.0-15.0
KNDB10-3	0.6250	0.821	1.1875	0.500	0.625	C	0.110	8°	30,500	4,720	13,400	1.0-15.0
KNDB12-3	0.7500	1.037	1.4375	0.593	0.750	C	0.204	8°	46,400	6,720	19,700	1.0-15.0
KNDB14-3	0.8750	1.068	1.5625	0.703	0.875	C	0.263	9°	62,200	9,350	26,100	1.0-24.0
KNDB16-3	1.0000	1.200	1.7500	0.797	1.000	C	0.386	9°	82,200	12,160	34,100	1.0-28.0

MATERIAL CODE

PART NO.	BALL	RACE
Number as Shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Loads are in accordance with MIL-B-8942.
- Bearings are qualified to MS21232 and MIL-B-8942.





KNDB-2 Series

QPL APPROVED

Self-lubricated, low friction.

MILITARY STANDARD MS21233

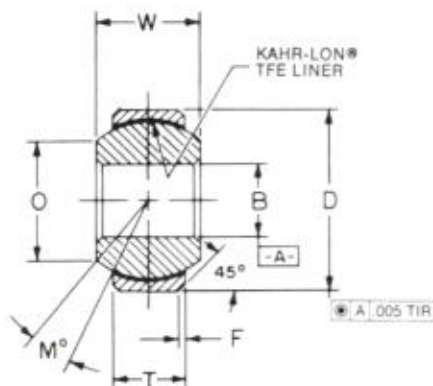
SPECIFICATIONS



Basic Spherical Bearing Number	B	O	D	T	W	F	Approx. Bearing Weight Pounds	M° Mis-alignment	Static Limit Load in Pounds		Dy-namic Load Pounds	No-Load Break away Torque In.—Lbs.
	Bore Dia.	Dia.	Outside Dia.	Outer Race Width	Ball Width	Cham-fer			Radial	Axial		
Kahr	+ .0000 - .0005	Ref.	+ .0000 - .0005	±.005	+ .000 - .002							
KNDB3-2	0.1900	0.335	0.5625	0.218	0.281		0.014	10°	3,975	150	1,500	.25-5.0
KNDB4-2	0.2500	0.420	0.6562	0.250	0.343		0.022	10°	6,040	430	2,320	1.0-15.0
KNDB5-2	0.3125	0.480	0.7500	0.281	0.375		0.030	10°	8,750	700	3,430	1.0-15.0
KNDB6-2	0.3750	0.518	0.8125	0.312	0.406		0.038	10°	10,540	1,100	4,200	1.0-15.0
KNDB7-2	0.4375	0.572	0.9062	0.343	0.437	0.010	0.048	9°	13,200	1,400	5,700	1.0-15.0
KNDB8-2	0.5000	0.644	1.0000	0.390	0.500	to	0.065	9°	17,900	2,100	7,900	1.0-15.0
KNDB9-2	0.5625	0.714	1.0937	0.437	0.562	0.040	0.086	9°	23,200	3,680	10,300	1.0-15.0
KNDB10-2	0.6250	0.821	1.1875	0.500	0.625		0.110	8°	30,500	4,720	13,400	1.0-15.0
KNDB12-2	0.7500	1.037	1.4375	0.593	0.750		0.204	8°	46,400	6,720	19,700	1.0-15.0
KNDB14-2	0.8750	1.068	1.5625	0.703	0.875		0.263	9°	62,200	9,350	26,100	1.0-24.0
KNDB16-2	1.0000	1.200	1.7500	0.797	1.000		0.386	9°	82,200	12,160	34,100	1.0-28.0

MATERIAL CODE

PART NO.	BALL	RACE
Number as Shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated



NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Loads are in accordance with MIL-B-8942
- Bearings are qualified to MS21233 and MIL-B-8942



KNDB-33 Series

QPL APPROVED

Self-lubricated, low friction.
Has staking groove for retention in housing.

MILITARY STANDARD MS14101

SPECIFICATIONS

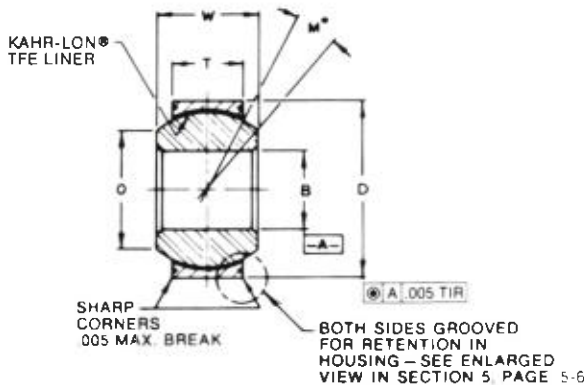
Basic Spherical Bearing Number	B	O	D	T	W	Groove Type (See Sect. 5, p. 5-6.)	Approx. Bearing Weight Pounds	M° Misalignment ±	Static Limit Load in Pounds		Dynamic Load Pounds	No-Load Break away Torque In.-Lbs.
	Bore Dia.	Dia.	Outside Dia.	Outer Race Width	Ball Width				Radial	Axial		
Kahr	+ .0000 - .0005	Ref.	+ .0000 - .0005	± .005	+ .000 - .002							
KNDB3-33	0.1900	0.335	0.5625	0.218	0.281	A	0.020	10°	3,975	150	1,500	0.25 - 5.0
KNDB4-33	0.2500	0.420	0.6562	0.250	0.343	A	0.022	10°	6,040	430	3,320	
KNDB5-33	0.3125	0.480	0.7500	0.281	0.375	B	0.030	10°	8,750	700	5,460	
KNDB6-33	0.3750	0.518	0.8125	0.312	0.406	B	0.038	10°	10,540	1,100	6,600	1.0 - 15.0
KNDB7-33	0.4375	0.572	0.9062	0.343	0.437	B	0.048	9°	13,200	1,400	8,050	
KNDB8-33	0.5000	0.644	1.0000	0.390	0.500	C	0.065	9°	17,900	2,100	10,400	
KNDB9-33	0.5625	0.714	1.0937	0.437	0.562	C	0.086	9°	23,200	3,680	13,000	
KNDB10-33	0.6250	0.821	1.1875	0.500	0.625	C	0.110	8°	30,500	4,720	16,450	
KNDB12-33	0.7500	1.037	1.4375	0.593	0.750	C	0.204	8°	46,400	6,720	23,600	1.0 - 24.0
KNDB14-33	0.8750	1.068	1.5625	0.703	0.875	C	0.263	9°	62,200	9,350	30,250	
KNDB16-33	1.0000	1.200	1.7500	0.797	1.000	C	0.386	9°	82,200	12,160	38,000	

MATERIAL CODE

PART NO.	BALL	RACE
Number as Shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Loads are in accordance with MIL-B-81820.
- Bearings are qualified to MS14101 and MIL-B-81820.





KNDB-32 Series

QPL APPROVED

Self lubricated, low friction.

MILITARY STANDARD MS14104

SPECIFICATIONS

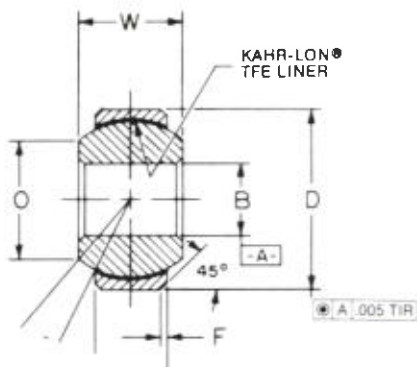
Basic Spherical Bearing Number	B	O	D	T	W	F	Approx. Bearing Weight	M Mis-alignment	Static Limit Load in Pounds		Dynamic Load	No-Load Break away Torque
	Bore Dia.	Dia.	Outside Dia.	Outer Race Width	Ball Width				Radial	Axial		
Kahr	+ .0000 - .0005	Ref.	+ .0000 - .0005	+ .005	+ .000 - .002	Cham-fer 0.010 to 0.040	Pounds					
KNDB3-32	0.1900	0.335	0.5625	0.218	0.281		0.014	10°	3,975	150	1,500	0.25 — 5.0
KNDB4-32	0.2500	0.420	0.6562	0.250	0.343		0.022	10°	6,040	430	3,320	
KNDB5-32	0.3125	0.480	0.7500	0.281	0.375		0.030	10°	8,750	700	5,460	
KNDB6-32	0.3750	0.518	0.8125	0.312	0.406		0.038	10°	10,540	1,100	6,600	1.0 — 15.0
KNDB7-32	0.4375	0.572	0.9062	0.343	0.437		0.048	9°	13,200	1,400	8,050	
KNDB8-32	0.5000	0.644	1.0000	0.390	0.500		0.065	9°	17,900	2,100	10,400	
KNDB9-32	0.5625	0.714	1.0937	0.437	0.562		0.086	9°	23,200	3,680	13,000	
KNDB10-32	0.6250	0.821	1.1875	0.500	0.625		0.110	8°	30,500	4,720	16,400	1.0 — 24.0
KNDB12-32	0.7500	1.037	1.4375	0.593	0.750		0.204	8°	46,400	6,720	23,600	
KNDB14-32	0.8750	1.068	1.5625	0.703	0.875		0.263	9°	62,200	9,350	30,250	
KNDB16-32	1.0000	1.200	1.7500	0.797	1.000		0.386	9°	82,200	12,160	38,000	

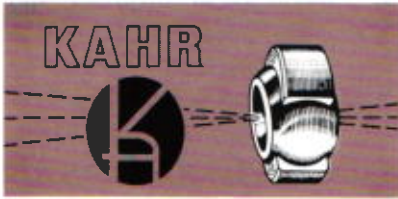
MATERIAL CODE

PART NO.	BALL	RACE
Number as Shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Loads are in accordance with MIL-B-81820.
- Bearings are qualified to MS14104 and MIL-B-81820





KWDB-37 Series

QPL APPROVED

Self-lubricated, low friction.
Has staking groove for retention in housing.

MILITARY STANDARD MS14103

SPECIFICATIONS

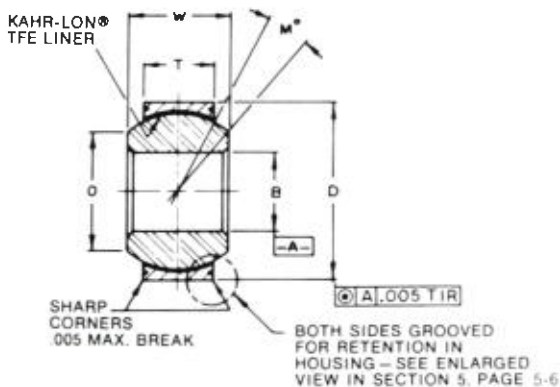
Basic Spherical Bearing Number	B	O	D	T	W	Groove Type (See Sect. 5, P. 5-6)	Approx. Bearing Weight Pounds	M° Misalignment ±	Static Limit Load in Pounds		Dynamic Load Pounds	No-Load Breakaway Torque In.-Lbs.
	Bore Dia.	Dia.	Outside Dia.	Outer Race Width	Ball Width				Radial	Axial		
Kahr	+ .0000 - .0005	Ref.	+ .0000 - .0005	+ .010 - .000	+ .000 - .002							
KWDB3-37	0.1900	0.301	0.6250	0.322	0.437	A	0.031	17°	9,000	1,770	4,900	0.25 – 5.0
KWDB4-37	0.2500	0.301	0.6250	0.322	0.437	A	0.029	17°	9,000	1,770	4,900	
KWDB5-37	0.3125	0.401	0.6875	0.312	0.437	A	0.033	15°	9,400	1,640	6,050	
KWDB6-37	0.3750	0.471	0.8125	0.401	0.500	B	0.053	11°	13,700	2,630	8,310	1.0 – 15.0
KWDB7-37	0.4375	0.542	0.9375	0.437	0.562	B	0.073	12°	20,700	3,650	11,750	
KWDB7-17	0.4375	0.542	0.9062	0.437	0.562	B	0.070	12°	20,700	3,650	11,750	
KWDB8-37	0.5000	0.612	1.0000	0.500	0.625	B	0.097	10°	27,500	4,970	14,950	
KWDB9-37	0.5625	0.726	1.1250	0.531	0.687	B	0.125	11°	34,400	5,370	18,100	
KWDB10-37	0.6250	0.752	1.1875	0.562	0.750	B	0.155	12°	39,000	6,130	20,250	
KWDB12-37	0.7500	0.892	1.3750	0.625	0.875	C	0.232	14°	52,300	7,730	26,200	1.0 – 24.0
KWDB14-37	0.8750	1.061	1.6250	0.750	0.875	C	0.346	6°	67,300	10,800	33,600	
KWDB16-37	1.0000	1.275	2.1250	1.000	1.375	C	0.970	15°	137,000	19,300	56,250	

MATERIAL CODE

PART NO.	BALL	RACE
Number as Shown	Type 440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I D.
- Loads are in accordance with MIL-B-81820.
- Bearings are qualified to MS14103 and MIL-B-81820.





KWDB-36 Series

QPL APPROVED

Self-lubricated, low friction.

MILITARY STANDARD MS14102

SPECIFICATIONS

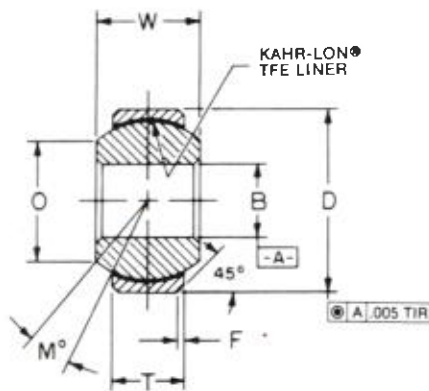
Basic Spherical Bearing Number	B	O	D	T	W	F	Approx. Bearing Weight Pounds	M° Misalignment ±	Static Limit Load in Pounds		Dynamic Load Pounds	No-Load Breakaway Torque In.-Lbs.
	Bore Dia.	Dia.	Outside Dia.	Outer Race Width	Ball Width	Chamfer			Radial	Axial		
Kahr	+ .0000 - .0005	Ref.	+ .0000 - .0005	+ .010 - .000	+ .000 - .002							
KWDB3-36	0.1900	0.301	0.6250	0.322	0.437	0.010 to 0.040	0.031	17°	9,000	1,770	4,900	0.25 -- 5.0
KWDB4-36	0.2500	0.301	0.6250	0.322	0.437		0.029	17°	9,000	1,770	4,900	
KWDB5-36	0.3125	0.401	0.6875	0.312	0.437		0.033	15°	9,400	1,640	6,050	
KWDB6-36	0.3750	0.471	0.8125	0.401	0.500		0.053	11°	13,700	2,630	8,310	1.0 -- 15.0
KWDB7-36	0.4375	0.542	0.9375	0.437	0.562		0.073	12°	20,700	3,650	11,750	
KWDB8-36	0.5000	0.612	1.0000	0.500	0.625		0.097	10°	27,500	4,970	14,950	
KWDB9-36	0.5625	0.726	1.1250	0.531	0.687		0.125	11°	34,400	5,370	18,100	
KWDB10-36	0.6250	0.752	1.1875	0.562	0.750		0.155	12°	39,000	6,130	20,250	
KWDB12-36	0.7500	0.892	1.3750	0.625	0.875		0.232	14°	52,300	7,730	26,200	1.0 -- 24.0
KWDB14-36	0.8750	1.061	1.6250	0.750	0.875		0.346	6°	67,300	10,800	33,600	
KWDB16-36	1.0000	1.275	2.1250	1.000	1.375		0.970	15°	137,000	19,300	56,250	

MATERIAL CODE

PART NO.	BALL	RACE
Number as Shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated

NOTES

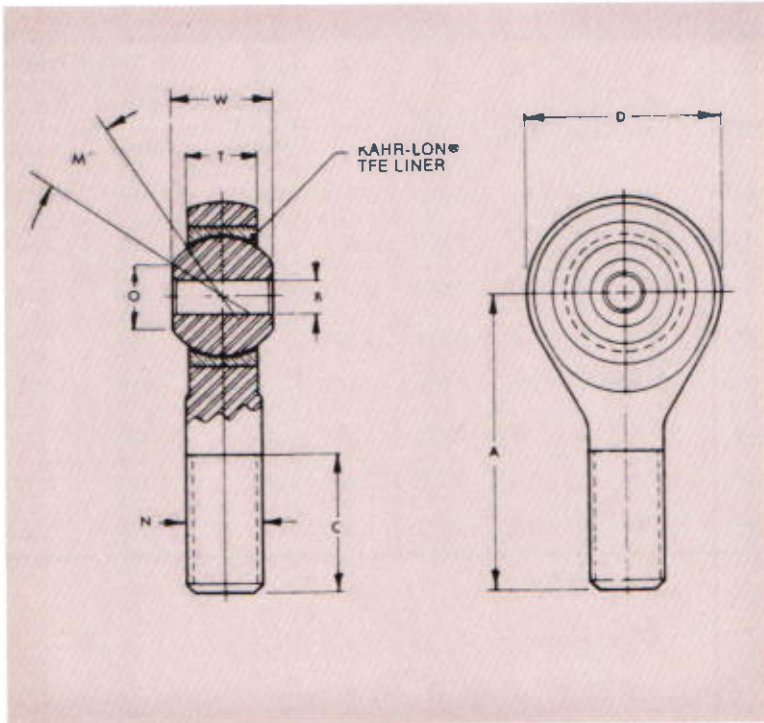
- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Loads are in accordance with MIL-B-81820.
- Bearings are qualified to MS14102 and MIL-B-81820.



DESIGNER'S NOTES

**3-piece rod end bearing with liner,
similar to Metal to Metal KB-E Series.
Self-lubricating, low friction.
Externally threaded.**

DESIGNER'S NOTES



NOTES

1. For ordering instructions, please refer to section 5, page 5-4
2. Self-lubricating liner permanently bonded to race I.D.
3. For rotational torque preloads please refer to Section 5, page 5-4
4. Add suffix "W" for lock washer slot in shank (please refer to Section 5, Page 5-5 for detailed information). (e.g.) KBDE6-8W.
5. Add prefix "L" if left hand threads are required (e.g.) KBDEL6-8.



KBD Series

SELF-LUBRICATING.

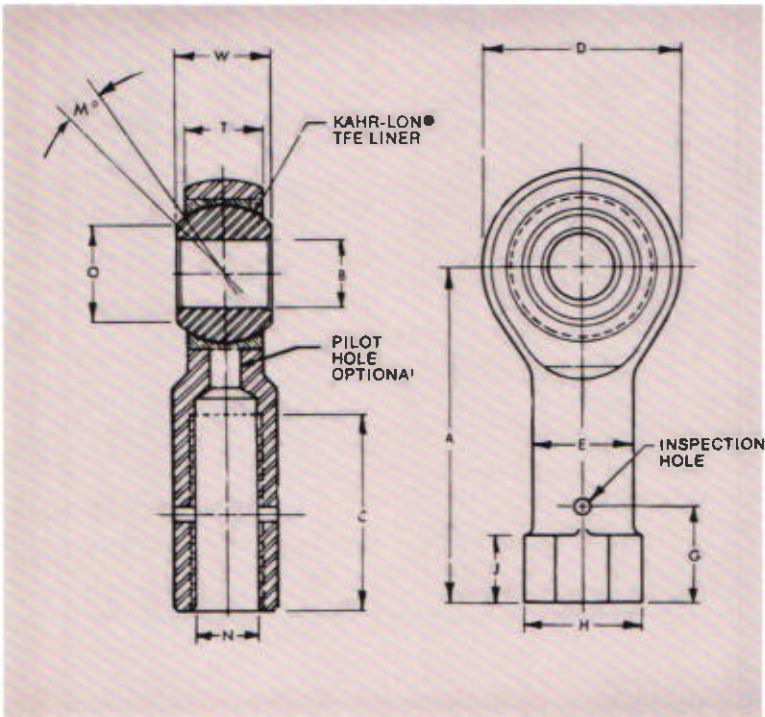
SPECIFICATIONS

Basic Bore Size	B	W	T	O	D	N	A	C	E	H	J	G	M° Misalignment ±	Static Radial Limit Load in Tension	Approx. Bearing Weights
	+ .0000 - .0005	+ .000 - .005	+ .010 - .000	Dia. Ref.	Dia. ±.010	UNF 3B	±.03	+ .062 - .031	Ref. Dia.	Ref. Dia.	+ .000 - .062	Ref.		Pounds	Pounds
3	0.1900	0.437	0.337	0.301	0.781	3/8-24	1.375	0.750	3/8	1/2	0.250	0.375	17°	5,100	0.033
4	0.2500	0.437	0.337	0.301	0.781	3/8-24	1.469	0.750	3/8	1/2	0.250	0.375	17°	5,100	0.084
5	0.3125	0.437	0.327	0.401	0.906	3/8-24	1.625	0.875	1/2	3/8	0.312	0.375	12°	5,900	0.110
6	0.3750	0.500	0.416	0.471	1.000	3/8-24	1.812	1.000	3/8	3/8	0.375	0.500	9°	7,600	0.180
7	0.4375	0.562	0.452	0.542	1.125	3/8-20	2.000	1.125	3/8	1/8	0.375	0.593	10°	8,700	0.200
8	0.5000	0.625	0.515	0.612	1.312	1/2-20	2.250	1.250	3/4	1/8	0.375	0.592	10°	15,500	0.312
10	0.6250	0.750	0.577	0.752	1.500	3/4-18	2.500	1.375	3/4	1/8	0.437	0.625	12°	17,100	0.471
12	0.7500	0.875	0.640	0.892	1.750	3/4-16	2.875	1.500	1.0	1/8	0.437	0.625	14°	23,200	0.550

MATERIAL CODE

BASIC PART NO.	BALL	RACE	BODY	TFE LINER
KBD ^{Bore Size} 12 (e.g. KBD6-12)	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	Alloy Steel Heat Treated Cadmium Plated	KAHR-LON®
KBD ^{Bore Size} CR (e.g. KBD6CR)			Stainless Steel Heat Treated	

**3-piece rod end bearing with liner,
similar to Metal to Metal KB Series.
Self-lubricating, low friction.
Internally threaded.**



NOTES

1. For ordering instructions, please refer to section 5, page 5-4
2. Self-lubricating liner permanently bonded to race I.D.
3. For rotational torque preloads please refer to Section 5, page 5-4
4. Add suffix "W" for lock washer slot in base of shank (please refer to Section 5, page 5-5 for detailed information). (e.g.) KBD6-12W.
5. Add prefix "L" if left hand threads are required (e.g.) KBDL6-12



KBDE-200 Series

SELF-LUBRICATING.

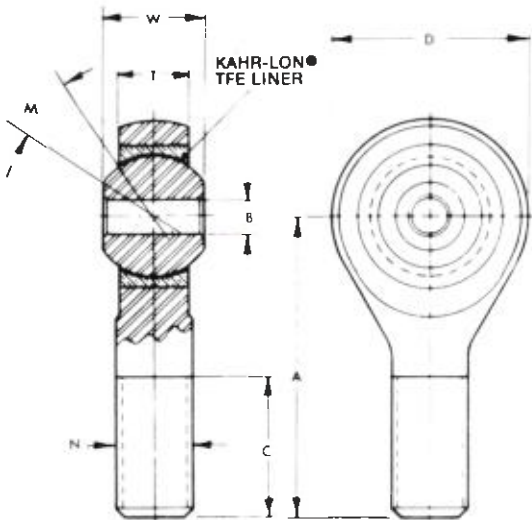
Self lubricated, low friction.
Has 3-piece construction.
Externally threaded.

SPECIFICATIONS

Basic Rod End Bearing Number	B	W	D	A	C	T	N	M	Approx. Bearing Weight Pounds	Static Radial Limit Load in Tension Pounds
	Dia. + .0000 - .0005	+ .000 - .005	Dia. ± .010	± .03	+ .062 - .031	+ .010 - .000	UNF- 3A Thd	Mis- align- ment ±		
KBDE 4-200	0.2500	0.344	0.812	1.718	1.000	0.245	5/8-24	11°	0.08	4,067
KBDE 5-200	0.3125	0.437	1.000	2.062	1.250	0.322	3/8-24	10°	0.13	8,600
KBDE 6-200	0.3750	0.500	1.125	2.312	1.375	0.370	7/8-20	12°	0.19	10,140
KBDE 7-200	0.4375	0.562	1.218	2.500	1.562	0.447	5/8-18	12°	0.28	12,800
KBDE 8-200	0.5000	0.688	1.437	2.875	1.687	0.495	5/8-18	15°	0.41	19,340
KBDE 10-200	0.6250	0.812	1.750	3.312	2.000	0.620	3/4-16	12°	0.69	27,460
KBDE 12-200	0.7500	1.000	2.000	3.500	2.312	0.745	7/8-14	15°	1.01	37,400
KBDE 14-200	0.8750	1.125	2.562	4.500	2.500	0.870	1 -12	12°	1.92	60,700
KBDE 16-200	1.0000	1.375	3.000	5.000	2.812	0.995	1 1/4-12	15°	3.29	78,200
KBDE 20-200	1.2500	1.625	3.625	5.500	3.000	1.120	1 1/2-12	18°	5.61	112,000

MATERIAL CODE

PART NO.	BALL	RACE	BODY	TFE LINER
Part Number as shown	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	Alloy Steel Heat Treated Cadmium Plated	KAHR-LON®
Part Number + CR			Stainless Steel Heat Treated	



NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Add suffix "W" for lock washer slot in shank (please refer to Section 5, Page 5-5 for detailed information). (e.g.) KBDE6-200W.
- Add prefix "L" if left hand threads are required. (e.g.) KBDEL 6-200.
- For rotational torque preloads please refer to Section 5, page 5-4



KBDE-300 Series

SELF-LUBRICATING.

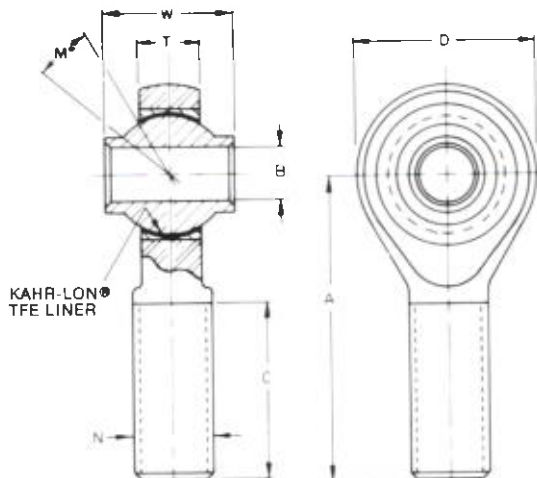
Has wide necked ball allows for greater misalignment.
Self lubricated, low friction.
Has 3-piece construction.
Externally threaded.

SPECIFICATIONS

Basic Rod End Bearing Number	B	W	D	A	C	T	N	M° Misalignment ±	Approx. Bearing Weight	Static Radial Limit Load in Tension
	Dia. +.0000 - .0005	±.000 - .005	Dia. ±.010	±.03	±.062 - .031	±.010 - .000	UNF 3A Thd		Pounds	Pounds
KBDE 3-300	0.1900	0.560	0.781	1.562	1.000	0.332	3/8-24	17°	0.08	2,270
KBDE 4-300	0.2500	0.593	1.000	1.938	1.250	0.262	3/8-24	24°	0.11	2,270
KBDE 5-300	0.3125	0.813	1.125	2.125	1.375	0.350	7/16-20	22°	0.18	3,480
KBDE 6-300	0.3750	0.813	1.125	2.125	1.375	0.350	7/16-20	22°	0.18	3,540
KBDE 7-300	0.4375	0.875	1.312	2.438	1.500	0.350	1/2-20	22°	0.31	5,660
KBDE 8-300	0.5000	0.937	1.500	2.625	1.625	0.406	5/8-18	20°	0.47	7,800
KBDE 10-300	0.6250	1.200	1.750	2.875	1.750	0.572	3/4-16	20°	0.64	13,350
KBDE 12-300	0.7500	1.280	2.000	3.375	1.875	0.625	7/8-14	19°	0.92	15,700
KBDE 14-300	0.8750	1.400	2.200	3.750	2.000	0.630	7/8-14	18°	1.05	16,550
KBDE 16-300	1.0000	1.875	2.750	4.125	2.125	0.840	1 1/4-12	21°	2.10	19,370
KBDE 20-300	1.2500	1.875	3.125	5.000	2.875	1.010	1 1/4-12	20°	3.32	51,400

MATERIAL CODE

PART NO.	BALL	RACE	BODY	TFE LINER
Part Number as shown	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	Alloy Steel Heat Treated Cadmium Plated	KAHR-LON®
Part Number + CR	440 C Stainless Steel Heat Treated	Stainless Steel Heat Treated	Stainless Steel Heat Treated	



NOTES

- For ordering instructions, please refer to Section 5, page 5-4
- Self-lubricating liner permanently bonded to race I.D.
- Add suffix "W" for lock washer slot in shank.
(please refer to Section 5, Page 5-5 for detailed information).
(e.g.) KBDE 4-300W.
- Add prefix "L" if left hand threads are required.
(e.g.) KBDEL 6-300.
- For rotational torque preloads please refer to Section 5 page 5-4



KDE Series

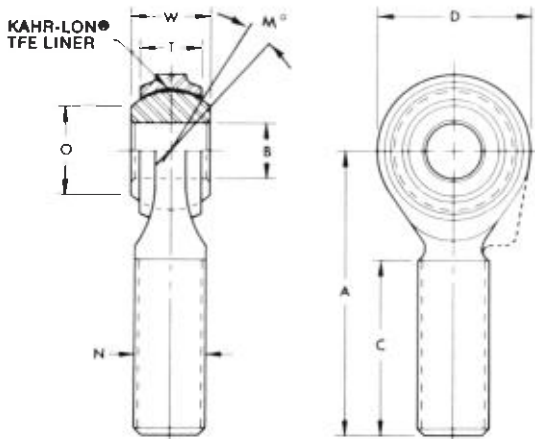
SELF-LUBRICATING.

2-piece self lubricated,
low friction, rod end bearing.
Similar to Metal to Metal HE Series.
Externally threaded.
Commercial version also
available, contact Kahr Sales
Department for details.

SPECIFICATIONS

Basic Rod End Bearing Number	B	W	T	D	O	A	C	N	Ball Dia.	Static Radial Limit Load in Tension Pounds	M° Misalignment ±	Approx. Bearing Weight
	+ .0000 - .0005	+ .000 - .005	Max.	Max. Dia.	Dia. Ref.	+0 -1/16	+0 -3/32	UNF 3A	Ref.			Pounds
KDE 3CR	0.1900	0.437	0.328	0.750	0.302	1 1/32	1/16	1/4-28	.531	3,600	17°	0.050
KDE 4CR	0.2500	0.593	0.438	0.938	0.347	1 3/32	1/16	3/8-24	.687	5,800	20°	0.112
KDE 5CR	0.3125	0.437	0.344	0.875	0.490	1 3/32	1/16	3/8-24	.656	3,850	10°	0.075
KDE 6CR	0.3750	0.500	0.335	1.000	0.516	1 3/32	1/16	3/8-24	.718	4,850	16°	0.109
KDE 8CR	0.5000	0.500	0.390	1.250	0.640	2 1/32	1/16	1/2-20	.813	9,750	9°	0.200
KDE 10CR	0.6250	0.750	0.562	1.500	0.838	2 3/32	1 1/16	5/8-18	1.125	13,500	12°	0.437
KDE 12CR	0.7500	0.875	0.687	1.750	0.978	2 3/32	1/16	3/4-16	1.312	15,500	10°	0.638

MATERIAL CODE



PART NO.	BALL	BODY	TFE LINER
Part Number as shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®

NOTES

- For ordering instructions, please refer to section 5, page 5-4
- Self-lubricating liner permanently bonded to head I.D.
- For rotational torque preloads please refer to Section 5, page 5-4
- Add suffix "W" for lock washer slot in shank (please refer to Section 5, Page 5-5 for detailed information). (e.g.) KDE6CRW.
- Add prefix "L" if left hand threads are required (e.g.) KDEL6CR.



KD Series

SELF-LUBRICATING.

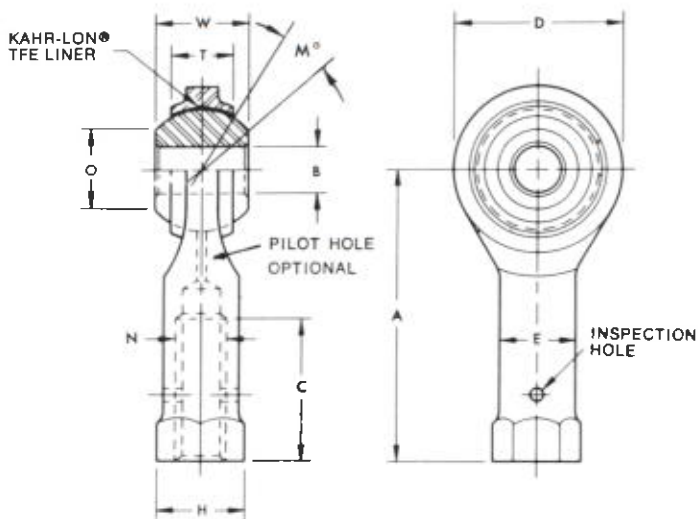
**2-piece, self lubricated,
low friction, rod end bearing.
Similar to Metal to Metal H Series.
Internally threaded.
Commercial version also
available, contact Kahr Sales
Department for details.**

SPECIFICATIONS

Basic Rod End Bearing Number	B	W	T	D	O	E	A	H	C	N	Ball Dia.	Static Radial Limit Load in Tension Pounds	M° Misalignment ±	Approx. Bearing Weight Pounds
	+ .0000 - .0005	+ .000 - .005	Max.	Max. Dia.	Dia. Ref.	± 1/32	+ 0 - 1/16	Hex. Ref.	+ 0 - 1/32	UNF 3B	Ref.			
KD 3CR	0.1900	0.437	0.328	0.750	0.302	3/8	1 1/2	3/16	3/4	1/4-28	0.531	3,600	17°	0.062
KD 4CR	0.2500	0.593	0.438	0.938	0.347	3/8	1 1/2	1/2	1 1/8	3/8-24	0.687	5,800	20°	0.112
KD 5CR	0.3125	0.437	0.344	0.875	0.490	3/8	1 1/2	1/2	1 1/8	3/8-24	0.656	3,850	10°	0.075
KD 6CR	0.3750	0.500	0.335	1.000	0.516	3/8	1 3/2	3/8	1	3/8-24	0.718	4,850	16°	0.125
KD 8CR	0.5000	0.500	0.390	1.250	0.640	3/4	2 1/2	1 1/8	1 1/4	1/2-20	0.813	9,750	9°	0.261
KD 10CR	0.6250	0.750	0.562	1.500	0.838	3/4	2 1/2	1 1/8	1 1/8	3/4-18	1.125	13,500	12°	0.437
KD 12CR	0.7500	0.875	0.687	1.750	0.978	1	2 7/8	1 1/8	1 3/2	3/4-16	1.312	15,500	10°	0.615

MATERIAL CODE

PART NO.	BALL	BODY	TFE LINER
Part Number as shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	KAHR-LON®



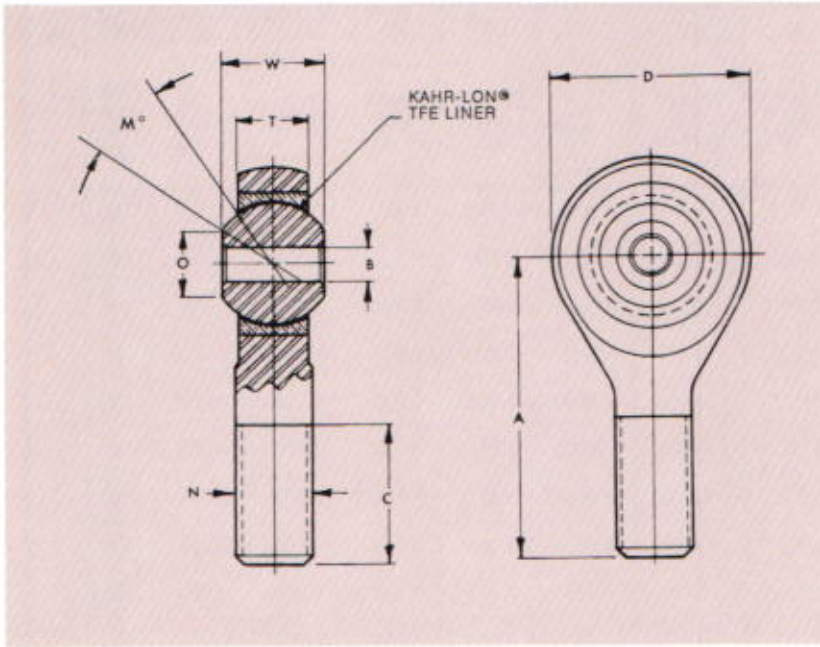
NOTES

- For ordering instructions, please refer to section 5, page 5-4
- Self-lubricating liner permanently bonded to head I.D.
- For rotational torque preloads please refer to Section 5 page 5-4
- Add suffix "W" for lock washer slot in base of shank (please refer to Section 5, Page 5-5 for detailed information). (e.g.) KD6CRW.
- Add prefix "L" if left hand threads are required (e.g.) KDL6CR.

DESIGNER'S NOTES

Self lubricated,
low friction.
Has 3-piece construction.
Externally threaded.



DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE	BODY
Part number as shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	4340 Steel H.T. & Cad. Plated per QQ-P-416 Class 2 Type I
Part number + CR 	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	17-4PH Stainless Steel Heat Treated (H-1025)

NOTES

- For ordering instructions, please refer to section 5, page 5-4
- Loads listed in TABLE 2 are in accordance with MIL-B-8948.
- Self-lubricating liner permanently bonded to race I.D.
- Add suffix "W" after material code designation for lock washer slot in shank (please refer to section 5, Page 5-5 for detailed information). (e.g.) KBDE 8-242CRW.
- Add prefix "L" if left hand threads are required (e.g.) KBDEL 8-242.
-  Threads in accordance with MIL-S-8879.
-  All stainless steel (CR) bearings not available to MS part number



KBD-243 Series

QPL APPROVED
MIL-B-8948

MILITARY STANDARD MS21243

SPECIFICATIONS

TABLE 1



Basic Rod End Bearing Number	B	W	T	O	D	N	A	C	E	H	J	M°
	Bore Dia. + .0000 - .0005	Ball Width + .000 - .002	Body Width ± .005	Flat Dia. Min.	Head Dia. ± .010	Thread Size UNJF-3B	± .010	Thread Length Min.	Shank Dia. ± .010	Ref. Dia.	+ .010 - .062	Mis-alignment Min.
KBD3-243	0.1900	0.437	0.337	0.30	0.806	5/16-24	1.375	0.750	0.422	0.500	0.188	15°
KBD4-243	0.2500	0.437	0.337	0.30	0.806	5/16-24	1.469	0.750	0.422	0.500	0.188	15°
KBD5-243	0.3125	0.437	0.327	0.36	0.900	3/8-24	1.625	0.875	0.485	0.580	0.250	14°
KBD6-243	0.3750	0.500	0.416	0.47	1.025	3/8-24	1.812	1.000	0.547	0.660	0.250	8°
KBD7-243	0.4375	0.562	0.452	0.54	1.150	7/16-20	2.000	1.125	0.610	0.720	0.250	10°
KBD8-243	0.5000	0.625	0.515	0.61	1.337	1/2-20	2.250	1.250	0.735	0.880	0.250	9°
KBD10-243	0.6250	0.750	0.577	0.75	1.525	5/8-18	2.500	1.375	0.860	1.020	0.375	12°
KBD12-243	0.7500	0.875	0.640	0.85	1.775	3/4-16	2.875	1.625	0.985	1.160	0.375	13°
KBD14-243	0.8750	0.875	0.765	1.00	2.025	7/8-14	3.375	1.875	1.110	1.300	0.500	6°
KBD16-243	1.0000	1.375	1.015	1.27	2.775	1 1/4-12	4.125	2.125	1.688	2.020	0.563	12°

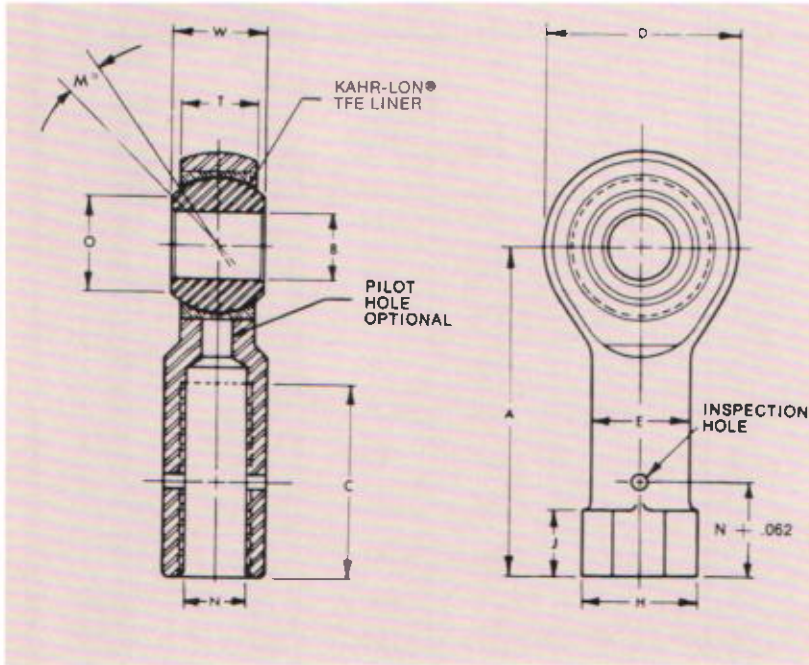
TABLE 2

Basic Rod End Bearing Number	Dynamic Load Pounds	Ultimate Static Load Pounds	Fatigue Load Pounds	Axial Proof Load Pounds	Weight Max. Pounds	No-Load Breakaway Torque In. Lbs.
KBD3-243	1,470	2,360	1,470	1,000	0.080	0.5 to 6
KBD4-243	3,420	4,860	2,380	1,000	0.084	
KBD5-243	3,590	7,180	3,020	1,100	0.102	1 to 10
KBD6-243	5,120	8,550	3,570	1,660	0.161	
KBD7-243	6,130	12,000	4,800	1,850	0.212	
KBD8-243	8,370	19,500	8,260	2,040	0.325	
KBD10-243	10,700	21,900	9,180	2,430	0.481	
KBD12-243	13,200	29,300	11,600	2,810	0.673	
KBD14-243	16,500	34,500	13,100	3,320	0.959	2 to 16
KBD16-243	26,600	80,300	30,400	4,340	2.717	

SEE MATERIAL CODE AND NOTES 1 THROUGH 7 ON NEXT PAGE

Self lubricated,
low friction.
Has 3-piece construction.
Internally threaded.

DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE	BODY
Part number as shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	4340 Steel H.T. & Cad. Plated per QQ-P-416 Class 2 Type I
Part number + CR 7	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	17-4PH Stainless Steel Heat Treated (H-1025)

NOTES

- For ordering instructions, please refer to section 5, page 5- 4
- Loads listed in TABLE 2 are in accordance with MIL-B-8948.
- Self-lubricating liner permanently bonded to race I.D.
- Add suffix "W" after material code designation for lock washer slot in base of shank (please refer to Section 5, Page 5-5 for detailed information.) (e.g.) KBD8-243CRW.
- Add prefix "L" if left hand threads are required. (e.g.) KBDL8-243.

6. Threads in accordance with MIL-S-8879.

7. All stainless steel (CR) bearings not available to MS part number



KBDE-935 Series

QPL APPROVED
MIL-B-81935

MILITARY STANDARD MIL-B-81935/1

SPECIFICATIONS

TABLE 1



Basic Rod End Bearing Number	B	W	T	D	O	A	C	N	M ^c
	Bore Dia. + .0000 - .0005	Ball Width + .000 - .002	Body Width ± .005	Head Dia. + .010	Flat Dia. Min.	± .010	Thd. Length ± .031	Thd. Size UNJF-3A	Mis-alignment Min.
KBDE 3-935	0.1900	0.437	0.337	0.806	0.30	1.562	0.968	5/8-24	15°
KBDE 4-935	0.2500	0.437	0.337	0.806	0.30	1.562	0.968	5/8-24	15°
KBDE 5-935	0.3125	0.437	0.327	0.900	0.36	1.875	1.187	5/8-24	14°
KBDE 6-935	0.3750	0.500	0.416	1.025	0.47	1.938	1.187	3/4-24	8°
KBDE 7-935	0.4375	0.562	0.452	1.150	0.54	2.125	1.281	3/4-20	10°
KBDE 8-935	0.5000	0.625	0.515	1.337	0.61	2.438	1.468	1/2-20	9°
KBDE 10-935	0.6250	0.750	0.577	1.525	0.75	2.625	1.562	5/8-18	12°
KBDE 12-935	0.7500	0.875	0.640	1.775	0.85	2.875	1.687	3/4-16	13°
KBDE 14-935	0.8750	0.875	0.765	2.025	1.00	3.375	2.000	7/8-14	6°
KBDE 16-935	1.0000	1.375	1.015	2.775	1.27	4.125	2.343	1 1/4-12	12°

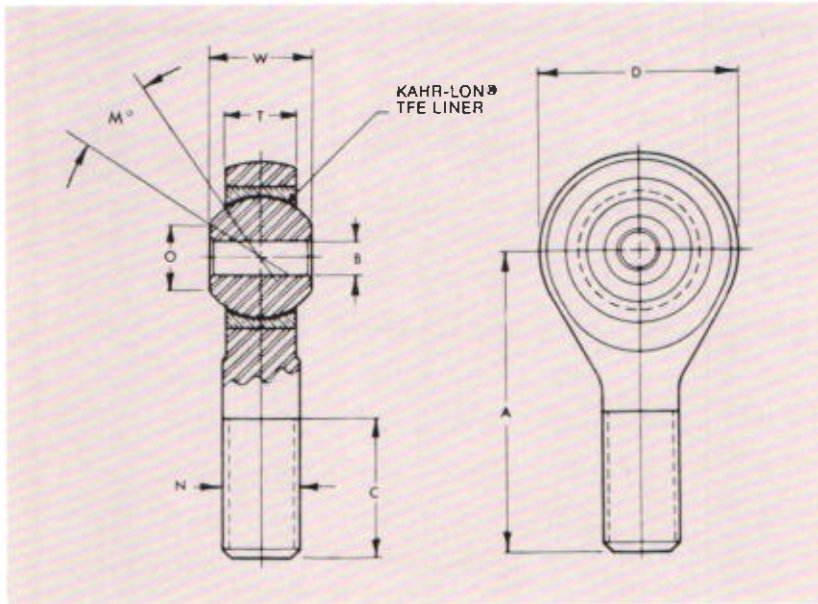
TABLE 2

Basic Rod End Bearing Number	Dynamic Load Pounds	Ultimate Static Load Pounds	Fatigue Load Pounds	Axial Proof Load Pounds	Weight Max. Pounds	No-Load Breakaway Torque In. Lbs.
KBDE 3-935	1,470	2,360	1,470	1,000	0.072	0.5 to 6
KBDE 4-935	3,420	4,860	2,380	1,000	0.072	
KBDE 5-935	3,590	7,180	2,770	1,100	0.087	
KBDE 6-935	5,120	8,550	3,570	1,660	0.136	1 to 15
KBDE 7-935	6,130	12,000	4,800	1,850	0.183	
KBDE 8-935	8,370	19,500	7,680	2,040	0.278	
KBDE 10-935	10,700	21,900	9,180	2,430	0.424	
KBDE 12-935	13,200	29,300	11,600	2,810	0.639	
KBDE 14-935	16,500	34,500	13,100	3,320	0.963	2 to 24
KBDE 16-935	26,600	80,300	30,400	4,340	2.546	

SEE MATERIAL CODE AND NOTES 1 THROUGH 7 ON NEXT PAGE

Self lubricated,
low friction.
Has 3-piece construction.
Externally threaded.

DESIGNER'S NOTES

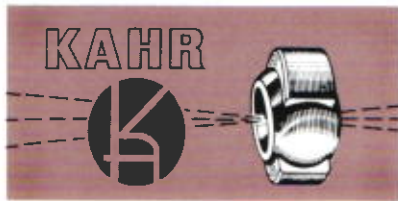


MATERIAL CODE

PART NO.	BALL	RACE	BODY
Part number as shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	4340 Steel H T & Cad Plated per QQ-P-416 Class 2 Type I
Part number + CR 7	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	17-4PH Stainless Steel Heat Treated (H-1025)

NOTES

- For ordering instructions, please refer to section 5, page 5-4
- Loads listed in TABLE 2 are in accordance with MIL-B-81935.
- Self-lubricating liner permanently bonded to race I.D.
- Add suffix "W" after material code designation for lock washer slot in shank (please refer to section 5, Page 5-5 for detailed information) (e.g) KBDE 8-935CRW.
- Add prefix "L" if left hand threads are required. (e.g) KBDEL 8-935
- Threads in accordance with MIL-S-8879
- All stainless steel (CR) bearings not available to MS part number



KBD-935 Series

QPL APPROVED
MIL-B-81935

MILITARY STANDARD MIL-B-81935/2

SPECIFICATIONS

TABLE 1



Basic Rod End Bearing Number	B	W	T	O	D	N	A	C	E	H	J	M
	Bore Dia. + .0000 - .0005	Ball Width + .000 - .002	Body Width ± .005	Flat Dia. Min.	Head Dia. ± .010	Thread Size UNJF-3B	± .010	Thread Length Min.	Shank Dia. ± .010	Ref. Dia.	+ .010 - .062	Misalignment Min.
KBD3-935	0.1900	0.437	0.337	0.30	0.806	1/8-24	1.375	0.750	0.422	0.500	0.188	15°
KBD4-935	0.2500	0.437	0.337	0.30	0.806	1/8-24	1.469	0.750	0.422	0.500	0.188	15°
KBD5-935	0.3125	0.437	0.327	0.36	0.900	3/8-24	1.625	0.875	0.485	0.580	0.250	14°
KBD6-935	0.3750	0.500	0.416	0.47	1.025	3/8-24	1.812	1.000	0.547	0.660	0.250	8°
KBD7-935	0.4375	0.562	0.452	0.54	1.150	7/16-20	2.000	1.125	0.610	0.720	0.250	10°
KBD8-935	0.5000	0.625	0.515	0.61	1.337	1/2-20	2.250	1.250	0.735	0.880	0.250	9°
KBD10-935	0.6250	0.750	0.577	0.75	1.525	5/8-18	2.500	1.375	0.860	1.020	0.375	12°
KBD12-935	0.7500	0.875	0.640	0.85	1.775	3/4-16	2.875	1.625	0.985	1.160	0.375	13°
KBD14-935	0.8750	0.875	0.765	1.00	2.025	7/8-14	3.375	1.875	1.110	1.300	0.500	6°
KBD16-935	1.0000	1.375	1.015	1.27	2.775	1 1/4-12	4.125	2.125	1.688	2.020	0.563	12°

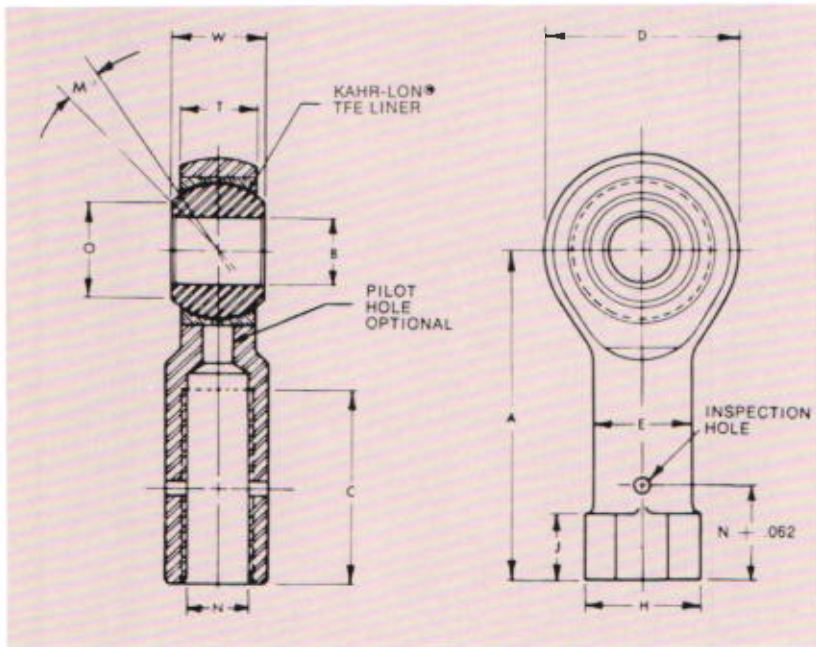
TABLE 2

Basic Rod End Bearing Number	Dynamic Load Pounds	Ultimate Static Load Pounds	Fatigue Load Pounds	Axial Proof Load Pounds	Weight Max. Pounds	No-Load Breakaway Torque In. Lbs.
KBD3-935	1,470	2,360	1,470	1,000	0.080	0.5 to 6
KBD4-935	3,420	4,860	2,380	1,000	0.084	
KBD5-935	3,590	7,180	3,020	1,100	0.102	1 to 15
KBD6-935	5,120	8,550	3,570	1,660	0.161	
KBD7-935	6,130	12,000	4,800	1,850	0.212	
KBD8-935	8,370	19,500	8,260	2,040	0.325	
KBD10-935	10,700	21,900	9,180	2,430	0.481	
KBD12-935	13,200	29,300	11,600	2,810	0.673	2 to 24
KBD14-935	16,500	34,500	13,100	3,320	0.959	
KBD16-935	26,600	80,300	30,400	4,340	2.717	

SEE MATERIAL CODE AND NOTES 1 THROUGH 7 ON NEXT PAGE

Self lubricated,
low friction.
Has 3-piece construction.
Internally threaded.

DESIGNER'S NOTES



MATERIAL CODE

PART NO.	BALL	RACE	BODY
Part number as shown	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	4340 Steel HT & Cad Plated per QQ-P-416 Class 2 Type I
Part number + CR 7	440C Stainless Steel Heat Treated	Stainless Steel Heat Treated	17-4PH Stainless Steel Heat Treated (H-1025)

NOTES

- For ordering instructions, please refer to section 5, page 5- 4
- Loads listed in TABLE 2 are in accordance with MIL-B-81935
- Self-lubricating liner permanently bonded to race I D
- Add suffix "W" after material code designation for lock washer slot in base of shank (please refer to Section 5, Page 5-5 for detailed information). (e g) KBDE 8-935CRW.
- Add prefix "L" if left hand threads are required (e g) KBDL8-935
- Threads in accordance with MIL-S-8879.
- All stainless steel (CR) bearings not available to MS part number

DESIGNER'S NOTES



Self lubricated,
low friction.
Plain sleeve.

SPECIFICATIONS

TABLE 2

Basic Bearing Bore size	L +.000 - .010																										
	¼	⅜	½	⅝	¾	⅞	1	1 ⅛	1 ¼	1 ⅝	1 ¾	2	2 ⅛	2 ¼	2 ⅝	2 ¾	3										
04	008	009	010	011	012	014																					
05	008	009	010	011	012	014	016	018																			
06	008	009	010	011	012	014	016	018	020	022																	
07	008	009	010	011	012	014	016	018	020	022	024	028															
08	008	009	010	011	012	014	016	018	020	022	024	028															
09	008	009	010	011	012	014	016	018	020	022	024	028	032	036													
10	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044											
11	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052									
12	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052									
14	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052									
16	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060							
18			010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060							
20					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068					
22					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068					
24					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	
26						016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088		
28						016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096	
32						016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096	

MATERIAL CODE

"A" = Aluminum Alloy (7075) QQ-A-200/11 or QQ-A-225/9. Anodized MIL-A-8625

"C" = Corrosion resistant steel, AMS 5643 (17-4PH), A1S1 410 or 416. Heat Treated

Surface Finish: 63 RHR on O D . 125 RHR all other surfaces

NOTES

1. For ordering instructions, please refer to section 5, page 5-4

2. Self-lubricating liner permanently bonded to sleeve I D.



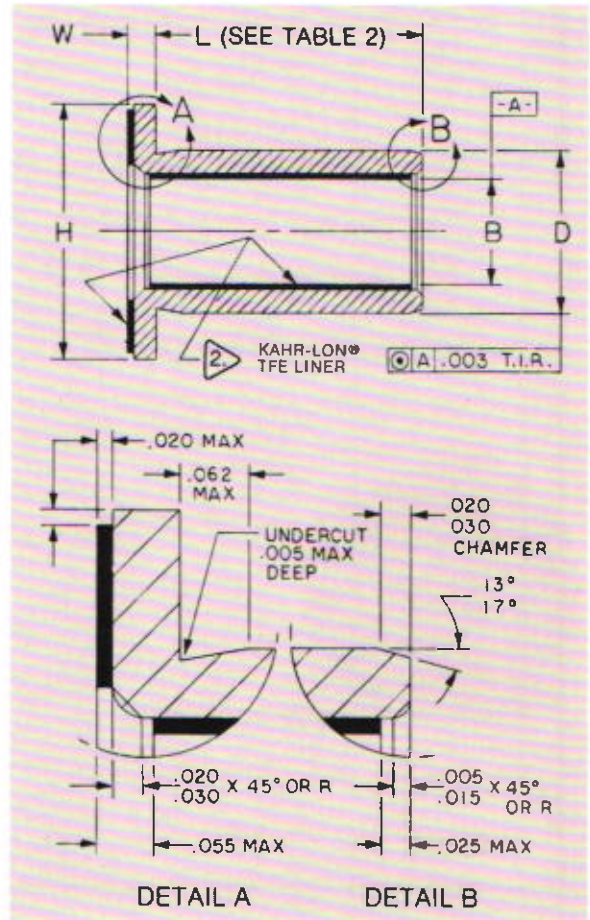
KDJ-241 Series

QPL APPROVED

MILITARY STANDARD MS21241

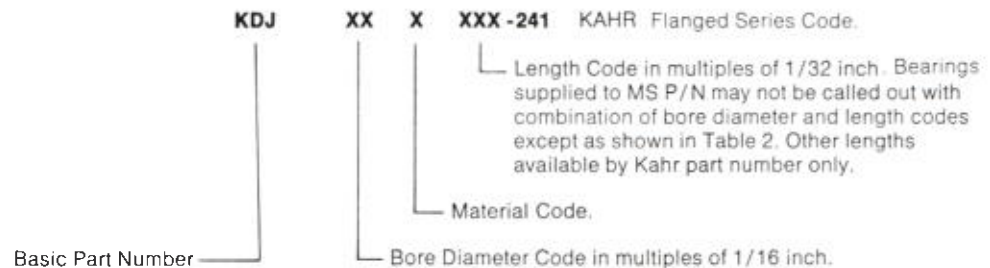
SPECIFICATIONS TABLE 1

Basic Bearing Number	B	D	W	H
	Dia. $\begin{matrix} +.0000 \\ -.0010 \end{matrix}$	Dia. (a)	$\begin{matrix} +.000 \\ -.005 \end{matrix}$	Dia. $\begin{matrix} +.000 \\ -.020 \end{matrix}$
KDJ04 () (-241)	0.2515	0.3760	0.0625	0.750
KDJ05 () (-241)	0.3140	0.4386		0.812
KDJ06 () (-241)	0.3765	0.5012		0.875
KDJ07 () (-241)	0.4390	0.5638		0.937
KDJ08 () (-241)	0.5015	0.6265		1.000
KDJ09 () (-241)	0.5640	0.6892		1.125
KDJ10 () (-241)	0.6265	0.8142		1.250
KDJ11 () (-241)	0.6890	0.8767		1.375
KDJ12 () (-241)	0.7515	0.9393		1.500
KDJ14 () (-241)	0.8765	1.0645		1.625
KDJ16 () (-241)	1.0015	1.1898		1.750
KDJ18 () (-241)	1.1265	1.3148		1.875
KDJ20 () (-241)	1.2515	1.4398		2.000
KDJ22 () (-241)	1.3765	1.5648	2.125	
KDJ24 () (-241)	1.5015	1.7523	0.0937	2.250
KDJ26 () (-241)	1.6265	1.8773		2.375
KDJ28 () (-241)	1.7515	2.0023		2.500
KDJ32 () (-241)	2.0015	2.2523		2.750



(a) D Tolerance—Aluminum ± 0.0005 ;
Corrosion resistant steel $+0.0000 - 0.0005$.

DESCRIPTION OF PART NUMBER:



SEE MATERIAL CODE AND NOTES 1 AND 2 ON NEXT PAGE

Self lubricated,
low friction.
Flanged sleeve.

SPECIFICATIONS TABLE 2

Basic Bearing Bore size	L +.000 —.010																															
	¼	⅜	½	⅝	¾	⅞	1	1 ⅛	1 ¼	1 ⅝	1 ¾	2	2 ⅛	2 ¼	2 ⅝	2 ¾	3															
04	008	009	010	011	012	014																										
05	008	009	010	011	012	014	016	018																								
06	008	009	010	011	012	014	016	018	020	022																						
07	008	009	010	011	012	014	016	018	020	022	024	028																				
08	008	009	010	011	012	014	016	018	020	022	024	028																				
09	008	009	010	011	012	014	016	018	020	022	024	028	032	036																		
10	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044																
11	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052														
12	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052														
14	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052														
16	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060												
18			010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060												
20					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068										
22					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068										
24					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088						
26							016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096					
28							016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096					
32							016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096					

MATERIAL CODE

"A" = Aluminum Alloy (7075) QQ-A-200/11 or QQ-A-225/9 Anodized MIL-A-8625

"C" = Corrosion resistant steel, AMS 5643 (17-4PH), A1S1 410 or 416 Heat Treated

Surface Finish: 63 RHR on O D , 125 RHR all other surfaces

NOTES

1. For ordering instructions, please refer to section 5, page 5-4

2. Self-lubricating liner permanently bonded to sleeve I.D. and flange face.

Self lubricated,
low friction.
Plain sleeve.

SPECIFICATIONS

TABLE 2

Basic Bearing Bore size	L +.000 —.010																												
	¼	⅜	½	⅝	¾	⅞	1	1 ⅛	1 ¼	1 ⅝	1 ¾	2	2 ⅛	2 ¼	2 ⅝	2 ¾	3												
04	008	009	010	011	012	014																							
05	008	009	010	011	012	014	016	018																					
06	008	009	010	011	012	014	016	018	020	022																			
07	008	009	010	011	012	014	016	018	020	022	024	028																	
08	008	009	010	011	012	014	016	018	020	022	024	028																	
09	008	009	010	011	012	014	016	018	020	022	024	028	032	036															
10	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044													
11	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052											
12	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052											
14	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052											
16	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060									
18			010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060									
20					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068							
22					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068							
24					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088			
26						016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088				
28							016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096		
32							016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096		

MATERIAL CODE

"A" = Aluminum Alloy (7075) QQ-A-200/11 or QQ-A-225/9 Anodized MIL-A-8625

"C" = Corrosion resistant steel, AMS 5643 (17-4PH), AISI 410 or 416 Heat Treated

Surface Finish: 63 RHR on O D, 125 RHR all other surfaces.

NOTES

1. For ordering instructions, please refer to section 5, page 5-4

2. Self-lubricating liner permanently bonded to sleeve I D.

Self lubricated,
low friction.
Flanged sleeve.

SPECIFICATIONS TABLE 2

Basic Bearing Bore size	L +.000 —.010																										
	¼	⅜	½	⅝	¾	⅞	1	1 ⅛	1 ¼	1 ⅜	1 ½	1 ⅝	1 ¾	1 ⅞	2	2 ⅛	2 ¼	2 ⅜	2 ½	2 ⅝	2 ¾	3					
04	008	009	010	011	012	014																					
05	008	009	010	011	012	014	016	018																			
06	008	009	010	011	012	014	016	018	020	022																	
07	008	009	010	011	012	014	016	018	020	022	024	028															
08	008	009	010	011	012	014	016	018	020	022	024	028															
09	008	009	010	011	012	014	016	018	020	022	024	028	032	036													
10	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044											
11	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052									
12	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052									
14	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052									
16	008	009	010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060							
18			010	011	012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060							
20					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068					
22					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068					
24					012	014	016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	
26							016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096
28							016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096
32							016	018	020	022	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	088	096

MATERIAL CODE

"A" = Aluminum Alloy (7075) QQ-A-200/11 or QQ-A-225/9 Anodized MIL-A-8625

"C" = Corrosion resistant steel, AMS 5643 (17-4PH), A1S1 410 or 416 Heat Treated

Surface Finish: 63 RHR on O D . 125 RHR all other surfaces.

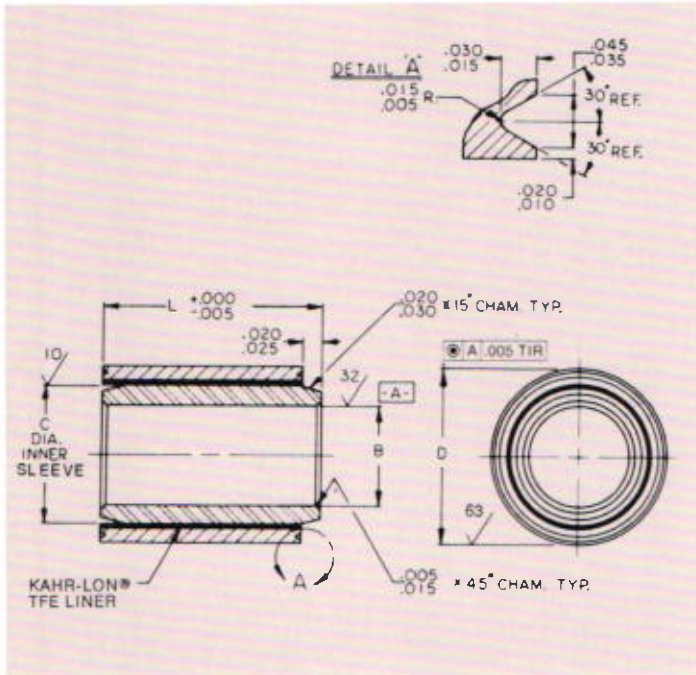
NOTES

1. For ordering instructions, please refer to section 5, page 5-4

2. Self-lubricating liner permanently bonded to sleeve I.D. and flange face

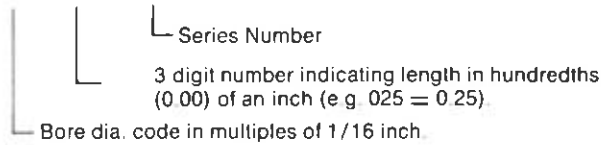
DESIGNER'S NOTES

Double sleeve arrangement.
Staking groove for retention in housing.
Self lubricated, low friction.
Dimensions apply after plate (where specified).



DESCRIPTION OF PART NUMBER:

KDJ XX - XXX - 280



NOTES

1. For ordering instructions, please refer to section 5, page 5-4
2. Self-lubricating liner permanently bonded to I D. of outer sleeve.
3. Assembly preload torque (inner to outer sleeve)
25.0 IN. LBS. maximum
4. If length of bushing is more than two and one half times the bore size, liner installed in two pieces.
5. For cadmium plate on O.D. of outer sleeve add suffix "C"
(e.g.) KDJ04-025-280C

DESIGNER'S NOTES



GENERAL INFORMATION

Bearings manufactured at Kahr are in accordance with the highest standards attained within the bearing industry.

Processing and materials are certifiable to military and Federal specifications or, when required, processed to customer standards; some of the typical requirements to which we comply:

A. Heat Treat.	Mil-H-6875 Mil-H-7199
B. Magnetic Inspect. Penetrant Inspect.	Mil-I-6868 Mil-I-6866
C. Metal Surface Treatment	Mil-S-5002
*D. Chrome Plate	QQ-C-320
**E. Cadmium Plate	QQ-P-416
F. Anodize	Mil-A-8625
G. Chemical Coating	Mil-C-5541

* Chrome Plate applied to the ball spherical surface on cataloged items is in accordance with QQ-C-320 class 2d .0002 min. thickness.

** Cadmium Plate applied to cataloged bearings unless otherwise noted is in accordance with QQ-P-416 Class 3 Type 1. Cataloged female rod-end bodies only QQ-P-416 Class 2 Type 1.



HOW TO ORDER

METAL-TO-METAL Rod End BEARINGS

- (1) Select the basic bearing model number, e.g. KB8E.
- (2) Add the required material code, e.g. KB8ESS.
- (3) Add the lubrication requirements from notes on catalog pages, e.g. KB8ESSFN.
- (4) Specify dry film per instructions on page 2-B8
- (5) Bearings with special radial clearance requirements manufactured to order refer note A below. e.g. KB8ESSFN_X.
- (6) Specify washer slot (keyway, page 5-5) if required, e.g. KB8ESSFN_{XW}.

EXPLANATION OF SPECIAL FEATURE CODE

Rod End bearing types may be modified by the addition of code letters to Basic Part Numbers.

ROD END BEARING		MATERIAL		GREASE FITTINGS		KEYWAY	
Basic Part No. PLUS Code Letter		S = Steel Race SS = Stainless Steel Race CR = Stainless Steel Body, Race & Ball		F = Zerk Type FN = NAS 516-1 (Flush Type)		W = Slot for NAS 559 NAS 513 Lock Washer	
KB	L	SS	A	FN	X	W	D9
	L = Lefthand THREAD		A = Oil Holes & Groove in Ball (Special Order)	X = Max. .0005 Y = Max. .0008	RADIAL PLAY (Special Order)		D = Dryfilm See Page 2-B8
Special Bearings with features other than indicated are identified with dash numbers. Consult Kahr Engineering for additional information.		LUBRICATION (GREASE)				LUBRICATION (DRY FILM)	

NOTES:

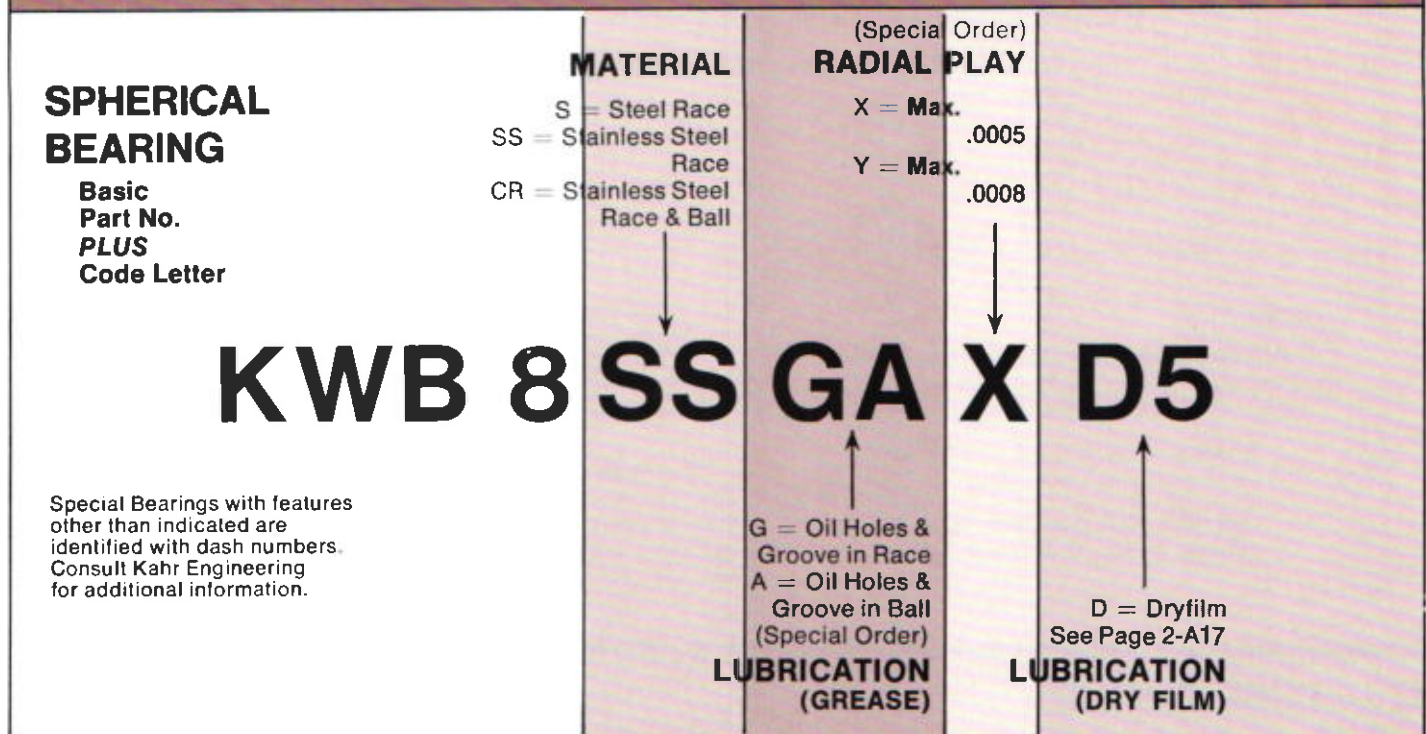
- A. Radial clearance** is defined as the total indicator reading of the amount of diametral clearance between the ball o.d. and the race i.d. Clearances other than standard manufactured to special order shall be specified by appending one of the following letters to the model number:
- (no letter) Standard clearance = free running as a minimum, up to 0.002" maximum T.I.R.
 - X Free running as a minimum, up to 0.0005" maximum T.I.R.
 - Y Free running as a minimum, up to 0.0008" maximum T.I.R.

METAL-TO-METAL Spherical BEARINGS

- (1) Select the basic bearing model number, e.g. KWB10.
- (2) Add the required material code, e.g. KWB10SS.
- (3) Add lubrication requirements from notes on catalog pages, e.g. KWB10SSG.
- (4) Specify Dry Film per instructions on Page 2-A17
- (5) Where applicable, specify cadmium plating as prescribed in notes on catalog pages, e.g. KWB10GC.
- (6) Bearings with special radial clearance requirements manufactured to order refer note A on page 5-2. e.g. KWB10GCX.

EXPLANATION OF SPECIAL FEATURE CODE

Metal to Metal bearing types may be modified by the addition of code letters to Basic Part Numbers.



(Other requirements, including specific misalignment pre-load torque between the ball and the outer race, can be furnished on request)

B. Packaging and preparation for shipment.

Unless otherwise specified on the purchase order or applicable drawing, metallic bearings will be shipped prepacked in grease, with the exception of bearings coated with a dry film which is not compatible with grease (composition type "H").

C. Catalog dimensions and/or materials may be subject to change or corrections.



HOW TO ORDER

Sargent Industries
Kahr Bearing Division
3010 N. San Fernando Blvd.
Burbank, Calif. 91504
TWX : 910-498-2702 / Tel: (213) 843-3731

SELF-LUBRICATING Spherical BEARINGS

- (1) Select the basic bearing model number, e.g. KPD6.

SELF-LUBRICATING Rod End BEARINGS

- (1) Select the basic bearing model number, e.g. KBD6-243.
- (2) Add the required material code, e.g. KBD6-243CR.
- (3) If left hand thread is required add code letter "L."
- (4) For use with NAS559 or NAS513 lockwashers add code letter "W."

NOTES:

A. Rotational torque pre-loads between the ball and the lined outer member for all self-lubricated bearings, unless otherwise noted, are as follows:

- up to and including 0.250 diameter bore: 5.0 inch-pounds maximum ;
- larger than 0.250 diameter bore: up to and including 0.750: 15.0 inch-pounds maximum ;

- larger than 0.750 diameter bore: 24.0 inch-pounds maximum.

- special pre-loads can be furnished on request.

B. Packaging and preparation for shipment.

Self-lubricating bearings are packed dry, excepting bearings with balls of other than corrosion-resistant material, which are prepacked with grease in the bore i.d. only.

SELF-LUBRICATING Journal BEARINGS

- (1) On selection of Journal Bearing, ensure that part number includes material code and length required.
A. All Journal Bearings are shipped dry.

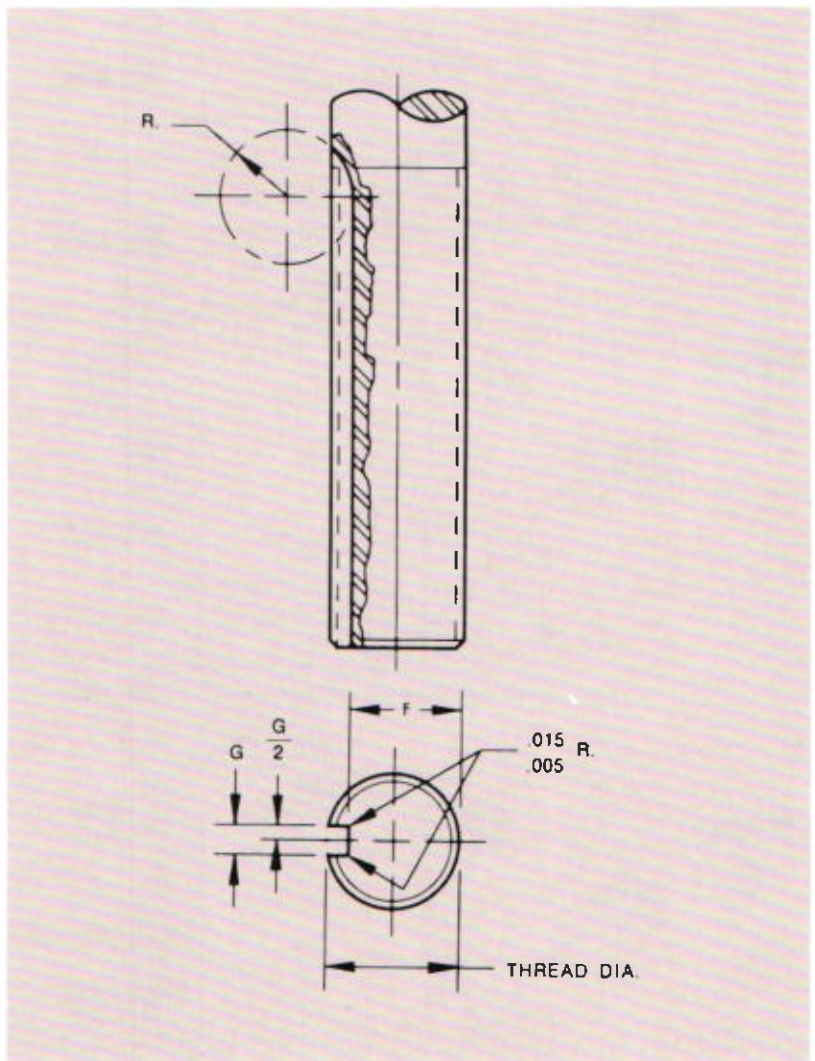


NAS Standard Keyway

ROD END BEARINGS USING NAS 559 OR NAS 513 LOCK WASHERS

SPECIFICATIONS

Thread Dia. (Ref.)	G +.005 -.000	F +.000 -.005	R
.250	.062	.201	¼
.312	.062	.260	¼
.375	.093	.311	¼
.437	.093	.370	¼
.500	.093	.436	¼
.562	.125	.478	¼
.625	.125	.541	¼
.750	.125	.663	¼
.875	.156	.777	¾
1.000	.156	.900	¾
1.125	.187	1.010	¾
1.250	.187	1.136	¾
1.375	.250	1.236	¾
1.500	.250	1.361	¾
1.625	.250	1.477	¾
1.750	.312	1.589	½
1.875	.312	1.714	½
2.000	.312	1.839	½
2.125	.312	1.955	½
2.250	.312	2.080	½



NOTES:

A. Female type rod ends requiring lockwasher, keyway is across base of shank. Depth being thread diameter --Min. 'F' dimension (tolerance +.005).

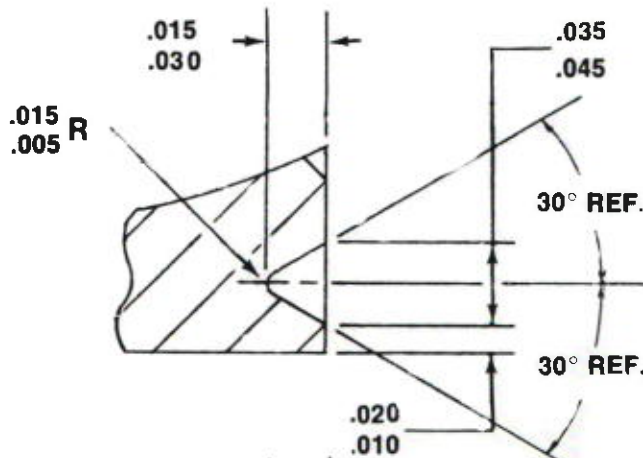


Retention Grooves & Staking

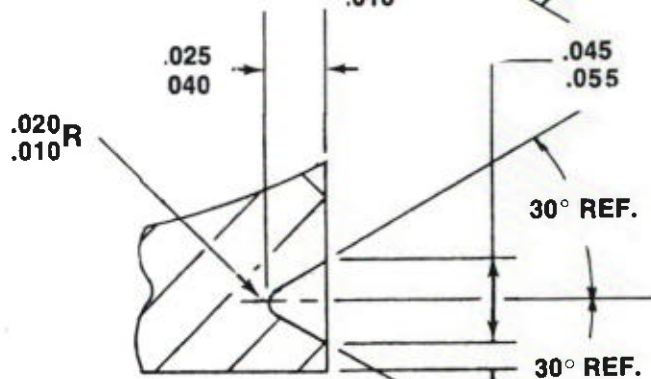
RETENTION GROOVE TYPES

Figure 1

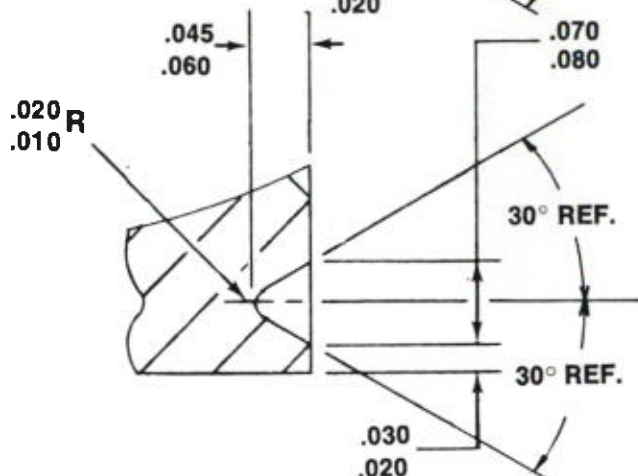
TYPE A



TYPE B



TYPE C



STAKING

RETENTION GROOVED BEARINGS

Kahr's recommended procedure for staking bearings is with the use of a hydraulic press. Using the staking technique outlined below.

An experimental trial assembly may be required to determine the hydraulic pressure necessary to retain the staked bearing capable of resisting required thrust load. Once this pressure is obtained, all like bearings staked under this staking force will be assured of repeatedly resisting the same thrust load.

This ensures reliability of the installed bearing and removes the human element encountered when using roller or spinning type of installation tool.

Both hydraulic and roller type stake tooling is manufactured and supplied by Kahr, contact our sales dept. for availability.

STAKING TECHNIQUE

1. Prepare housing to requirements of Figure 2.
2. Locate bearing in housing within .005 T.I.R. and position staking tools as shown in Figure 3.
3. After application of hydraulic staking force, determined by trial assembly, rotate assembly and re-apply stake force; repeat operation through several rotations. See Figure 4.
4. For design reference this staking technique will provide thrust loads indicated on graph. Figure 5.

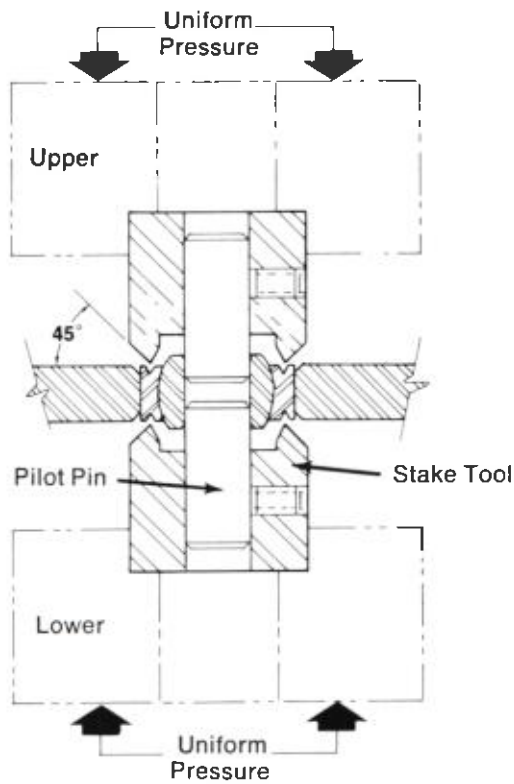


Figure 3

Housing Bore and Chamfer concentric within .005 TIR.

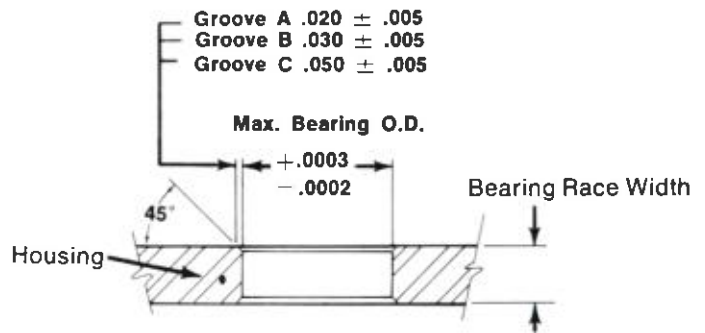


Figure 2

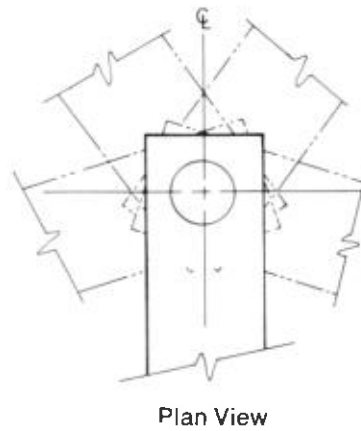
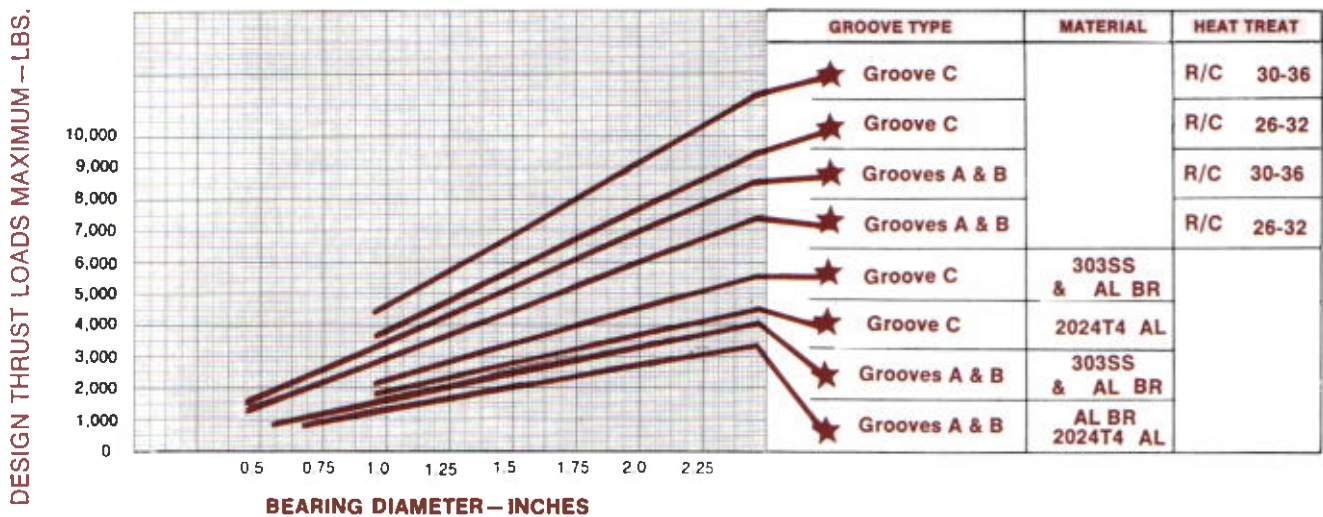


Figure 4

Figure 5

THRUST LOADS BASED ON GROOVE TYPE, RACE MATERIAL OR HEAT TREAT.





Radial and Axial Load Rating Determination

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

The projected area which is supporting a pure radial load can be determined by the following mathematical equation:

$$\text{Area} = \frac{\pi D^2 \sin^{-1} \left(\frac{T}{D} \right) + T \sqrt{D^2 - T^2}}{2}$$

In this equation D represents the ball diameter of the bearing and T represents the race width of the bearing. The angle (\sin^{-1}) is in radians.

The projected area supporting a pure axial load can be determined by the following equation:

$$\text{Area} = \frac{\pi T^2}{4}$$

In this equation T again represents the race width of the bearing.

In determining the load ratings for a metal-to-metal plain spherical bearing, Kahr arbitrarily multiplies the projected area times 80% of the yield stress for the race material. The result of this computation is called the limit load (either radial limit load or axial limit load) for the bearing. The ultimate load is arbitrarily assigned as 1½ times the calculated limit load.

For a fabric-lined bearing using our Kahr-Lon liner system, radial and axial limit loads are determined by multiplying the calculated projected area times 75,000 psi. This result is called the limit load and, again, the ultimate load is arbitrarily 1½ times the limit load.

It should be understood that load ratings determined in this manner apply only if 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, tell us the conditions and we can readily determine whether the bearing is suitable.

Standard Load Definitions:

There are several terms used to define load ratings throughout the industry. These are as follows:

1. Dynamic load
2. Oscillating radial load
3. Radial static limit load
4. Static radial load, yield allowable
5. Radial static ultimate load
6. Radial static ultimate load plus 20%
7. Axial static limit load
8. Axial static ultimate load

The definitions for these various loads are as follows:

"Dynamic load" and "oscillating radial load" both define the same condition, and may be used interchangeably. This load is defined by a test where the bearing is installed in a housing with fit conditions of .0000 to .0010 loose between outer race and the housing bore. A pin is pressed through the ball bore with a fit condition of .0000 to .0005 interference. Bushings are of course installed to be in intimate contact with the ball faces (See Figure 1.) Under these conditions a static radial load is applied to the race while the ball is oscillated through an angle of ± 25 degrees at 10 cpm. The dynamic or oscillating radial load is that load which will cause the bearing to wear out after 25,000 cycles of ball oscillation.

"Radial static limit load" — This is the maximum load which, when applied to a bearing that is installed as 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 "foot-print" area of the bearing by 80% of the yield strength for the weakest bearing component.

"Static radial load, yield allowable" — Strictly interpreted, this describes a load which may cause negligible yielding of the bearing components. At Kahr, we use this interchangeably with "radial static limit load." We use it this way because we recognize



STANDARD LOAD DEFINITIONS

that in the best bearings 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 internal clearance of the bearing.

"Radial static ultimate load" — In this definition the bearing is once again fixtured as in Figure 1, but without ball oscillation. "Ultimate load" is a somewhat meaningless term, and is arbitrarily assigned as 1.5 x the limit load.

"Radial static ultimate load plus 20%" — This definition is self-explanatory. The requirement is tested by some airframe manufacturers identically to the preceding, and the criterion for acceptance is "no cracked or broken components."

"Axial static limit load" — For this test the bearing is installed in a horizontal housing with a fit of .0000 to .0010 clearance between the race O.D. and the housing. The housing is counterbored to provide a step which locates against the full lower outer race face. The load is applied to the upper ball face (See Figure 2). "Axial static limit load" is the maximum load which can be applied in this manner without causing permanent deformation of any of the bearing components.

"Axial static ultimate load" is again arbitrarily 1.5 x the axial static limit load.

Referring to the static loads only, the static limit load (or, at Kahr, the "static load yield allowable") defines the maximum normal operating conditions which the bearing should experience in service. If this load is exceeded, some measurable deformation will occur within the bearing which will shorten its expected life. When such loads occur, the bearing should be replaced during the next normal maintenance.

If the ultimate load (or "static load yield allowable," as defined by some of our competitors) is exceeded, the bearing should be considered "not serviceable," and must be replaced at the earliest opportunity.

"Ultimate load plus 20%" is strictly a test condition to verify design and material integrity.

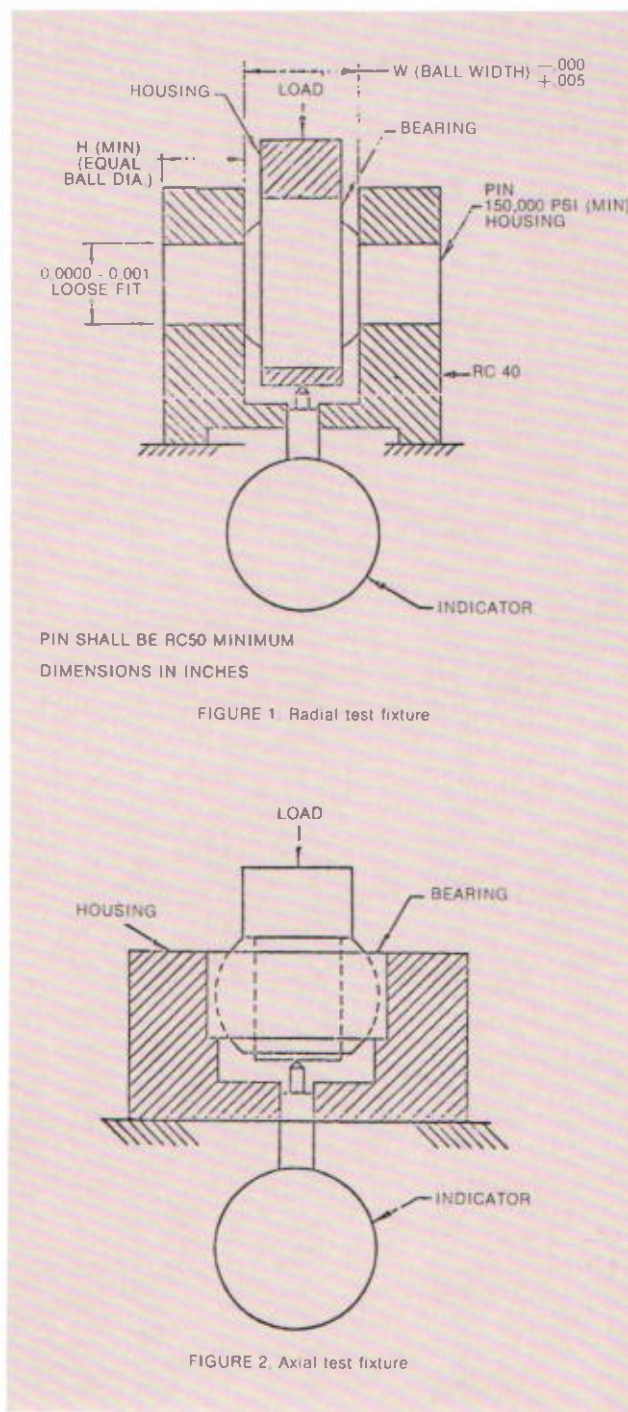


FIGURE 1 Radial test fixture

FIGURE 2 Axial test fixture

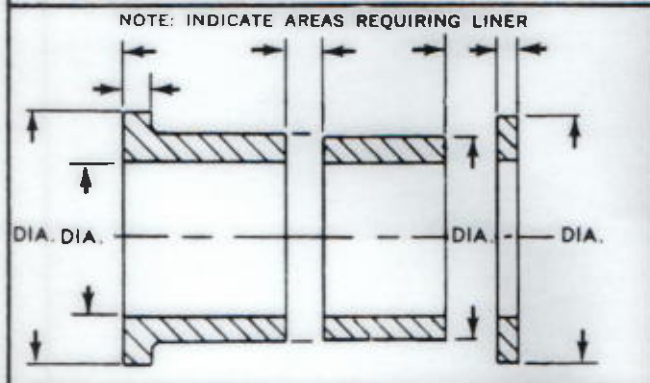
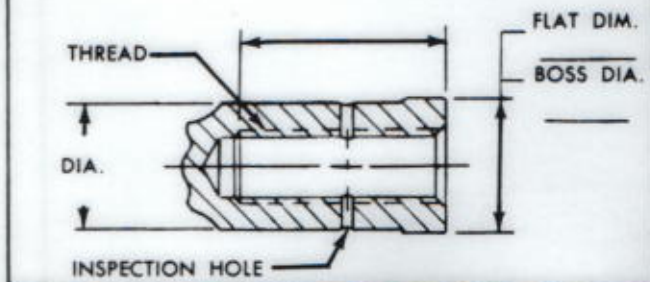
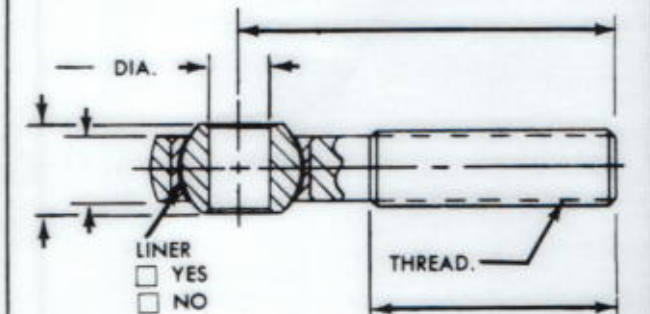
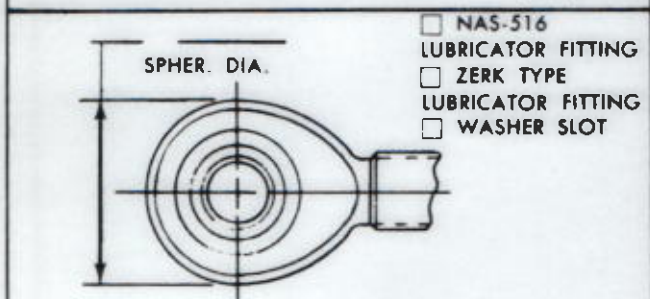
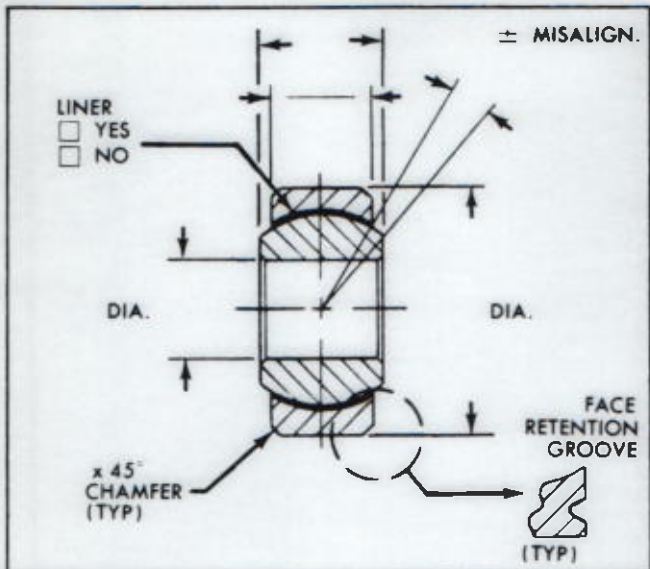
DESIGNER'S NOTES



DESIGN DATA WORK SHEET

KAHR BEARING DIVISION

3010 N. San Fernando Blvd.
 Burbank, California 91504
 TELEPHONE: AREA CODE 213 843-3731



NAME _____

TITLE _____ PHONE _____

FIRM NAME _____

ADDRESS _____ ZIP _____

CUSTOMER PART NO. - _____

COMPETITION PART NO. - _____

APPLICATION

New Requirement Redesign Alternate Source

Quantity: Per Assembly: _____ Per Ship Set: _____

Used on: Aircraft (type) _____

Vehicle _____

Engine _____

Other _____

ENGINEERING INFORMATION

	Ball	Race	Body	Journal
MATERIALS (specify)				
FINISH (specify)				

BEARING CLEARANCE

Radial clearance: _____ min. _____ max.

Preload Torque: _____ min. _____ max.

ENVIRONMENTAL CONDITIONS

Temperature _____ F° Atmospheric _____

BEARING LOADS

Static Constant Reversing Dynamic

Radial: _____ Lbs. Axial: _____ Lbs.

Oscillation angle (±): _____ ° CPM: _____ RPM: _____

MISCELLANEOUS



DESIGN DATA WORK SHEET

KAHR BEARING DIVISION

3010 N. San Fernando Blvd.
 Burbank, California 91504
 TELEPHONE: AREA CODE 213 843-8731

NAME _____

TITLE _____

FIRM NAME _____

ADDRESS _____

ZIP _____

CUSTOMER PART NO. _____

COMPETITION PART NO. _____

APPLICATION

New Reequipment Redesign Alternate Source
 Quantity: Per Assembly: _____ Per Ship Set: _____

Used on: Aircraft (type) _____

Vehicle _____

Engine _____

Other _____

ENGINEERING INFORMATION

MATERIALS (specify)	Ball	Race	Body	Journal
FINISH (specify)				

BEARING CLEARANCE

Radial clearance: _____ min. _____ max.
 Preload Torque: _____ min. _____ max.

ENVIRONMENTAL CONDITIONS

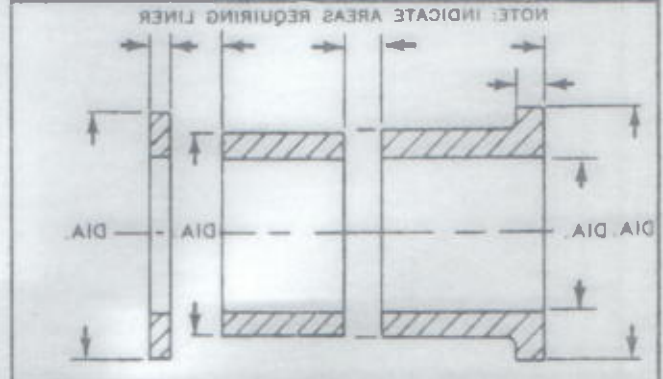
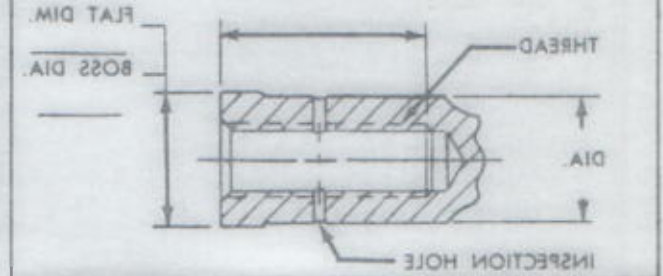
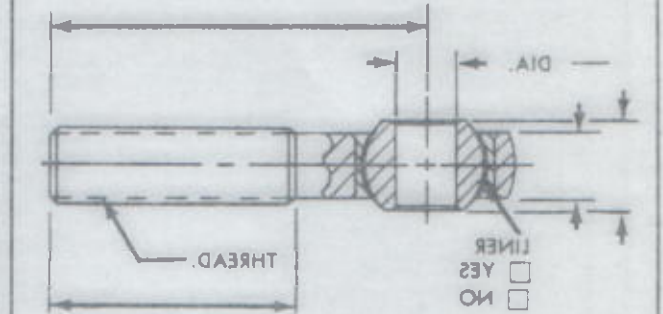
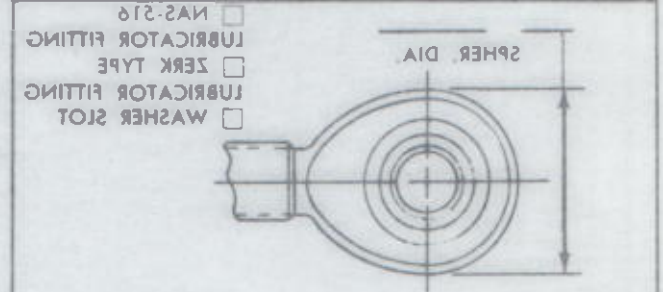
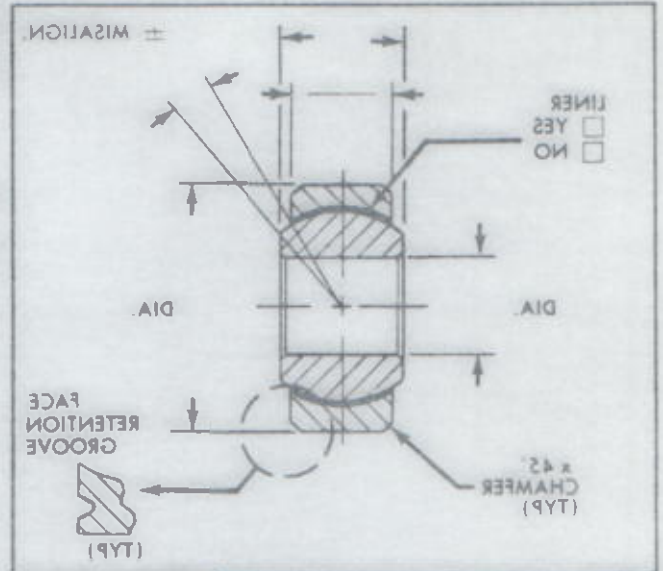
Temperature _____ F° Atmospheric _____

BEARING LOADS

Radial: _____ Lbs. Axial: _____ Lbs.
 Static Constant Reversing Dynamic

Oscillation angle (±): _____ * CPM: _____ RPM: _____

MISCELLANEOUS



SARGENT INDUSTRIES

KAHR BEARING DIVISION

Capabilities

In 1966, when the first Qualified Suppliers List for Military Standard, Teflon®-lined Bearings, was released, *Kahr was the sole manufacturer with 100% approval on all sizes and configurations.* In 1967, Kahr became fully approved for all sizes and configurations of journal bearings and again in 1969 on release of Military Standards for Teflon®-lined rod end bearings Kahr was the sole manufacturer with 100% approval on all sizes.

As the requirements of the aircraft industry for plain spherical bearings with permanent lubrication developed, it became obvious in late 1968 that the conventional woven TFE thread fabric was not adequate to meet the wear life and load capacity requirements which were being imposed. Kahr Bearing launched an R & D program to develop a better fabric than was at that time available.

We were successful. It provided the desirable qualities of the original conventional fabric, low coefficient to friction and flexibility of application, while at the same time giving improved wear life, higher load-carrying capacity and stiffer compressive modulus. This fabric, called KAHR-LON® for temperature applications from -65°F to +350°F, is now commercially available and has been included in a "full line" tabulation for fabric lined bearing designs included in this catalog.

QUALITY CONTROL

Kahr takes pride in its long record of high acceptance in the aviation, aerospace, and defense communities. This record has been achieved largely through emphasis on tight quality control procedures.

Kahr's Quality Control Manual is prepared to meet the requirements of Military Specifications MIL-Q-9858A, MIL-I-45208A, and subsequent revisions.

TESTING

Kahr has developed many of the basic techniques used today in the bearing industry. In devising tests which faithfully simulate the conditions under which the bearing will actually operate—with the tests often conducted in "compressed time"—it is not enough to have the equipment for spinning, twisting, compressing, or otherwise applying various forces to the bearing. It is necessary to have a test procedure which will establish, with sufficient statistical certainty that the bearing will not fail under specified *actual-use* conditions. If a bearing does fail in test, the ability to determine the cause of failure and eliminate that cause in the redesign is paramount.

Kahr's extensive test programs have helped assure that every design added to the product line has

undergone operating conditions which exceed those likely to be encountered in field use. This is the foundation which produces the reliability that has become associated with Kahr products.

SPECIAL PRODUCTS

Bearings represent a unique situation, insofar as special designs go, for unlike other products, few

real novelties are involved in designing for most special requirements. The size may change somewhat, and the shape somewhat less. The material may vary widely, but still within known limits. Basically, then, special designs represent not so much of a radical advance in the state of the art as they do a thorough theoretical and practical knowledge of the effects of varying shape, size, and materials. In a word, *experience* is the important factor.

Facilities

GOVERNMENT INSPECTION

Facilities have been set aside for a Government Inspector normally on the premises.

SECURITY

Kahr maintains industrial level security, with access controlled at the main entrance. Procedures and physical barriers are in existence such that any required level of security for classified contracts can be put into effect on short notice. A bonded storeroom exists and is administered in accordance with applicable regulations at all times.