QuadLube®, SpreadLock® Seal, ImpactTuff®, DuraLube™

Spherical Plain Bearings

Innovative product features that provide unique performance advantages.
High load capacity, re-lubrication options, and patented designs.

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Motion Technologies S.A. de C.V.
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RBC BEARINGS®

ISO 9001:2000

www.rbcbearings.com
800.390.3300

RBC Bearings Incorporated has had a long tradition of innovation, commitment, and quality since the company was founded in 1919. Today, RBC Bearings has grown into a world-class manufacturer of standard and custom-engineered bearings and related products, with a product focus on research, testing, and development of the best product for specific applications.

What We Manufacture

RBC Bearings, with facilities throughout North America and Europe, provides bearings and precision products for applications in the construction, mining, material handling, transportation and off-highway equipment, robotics and automation, farming, machine tool, and semiconductor equipment industries. Through RBC Aerospace Bearings, the company is a major manufacturer of highly-engineered bearings and precision products for military, defense, and commercial aerospace applications.

RBC's high-quality bearings include:

• Heavy Duty Needle Roller Bearings - Pitchlign® caged heavy duty needle roller bearings, inner rings, type TJ TandemRoller® bearings for long life.

• Spherical Plain Bearings - Radial, angular, contact, high misalignment, extended inner ring, DuraLube™ maintenance-free spherical plain bearings, QuadLube® long life bearings, ImpactTuff® case carburized bearings, ShimPack® double-acting angular contact bearings, CrossLube® lubrication groove systems, and SpreadLock® Seal.

• Cam Followers and Yoke Rollers - Standard stud, heavy stud, yoke type, caged roller followers, RBC Roller® long life cam followers, HexLube® universal cam followers, airframe track rollers. Mastguide rollers and carriage rollers, chain sheaves (for leaf chain), toothless sprockets (for roller chain), and heavy-duty roller bearing construction.

• Rod Ends - Commercial and aerospace, precision, Mil-Spec series, self-lubricating, inch and metric. Heim®, Unibal®, and Spherco® brands.

• Self-Lubricating Bearings - Radial, thrust, rod ends, spherical plain bearings, high temperature, high loads, inch and metric. Fiberglide® brand.

• Thin Section Ball Bearings - Standard cross sections to one inch. Sizes to 40 inches. Stainless steel and other materials available. Seals available on all sizes and standard cross sections.

• Airframe Control Bearings - Ball bearing types, self-lubricating types, needle rollers, track rollers.

• Ground, Semiground, and Unground Ball Bearings - Full complement, utilizes design and burnished races for higher loads, long life, and smooth operation.

• Dowel Pins, Loose Needle Rollers, Shafts

• Tapered Roller and Tapered Thrust Bearings - Case-hardened and through-hardened in a variety of sizes, used in Class 8 heavy truck and trailer wheel bearings, final drive transmissions and gear boxes.

• Custom Designed Bearings - RBC produces a wide range of custom bearings in various materials for specific applications.

RBC Sphercial Plain Bearings

RBC has been a pioneer in spherical plain bearing technology since inventing the fractured outer race design many years ago. Since that time, RBC has continued to introduce industry leading innovations such as high misalignment, angular contact, extended inner ring, tapered bore, and extended lubrication groove spherical plain bearing designs.

These advanced products are used wherever pivoting, high load bearing applications are found. Most typically, RBC spherical plain bearings are employed in hydraulic cylinder rod ends, vehicle suspensions, heavy equipment articulated joints, and other severe duty uses.

Industries served include off-highway mobile construction equipment, large agricultural machinery, mining equipment, forestry products, and other large equipment requiring bearings that provide misalignment capabilities while carrying high loads.

Unique spherical plain bearing products are offered under the following trademarks:

- **DuraLube™**
- **QuadLube®**
- **ImpactTuff®**
- **CrossLube®**
- **SpreadLock® Seal**
- **ShimPack®**

How We Can Serve You

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

To serve the ongoing needs of customers, RBC has a network of over 1,600 distributors and sales engineers throughout North and South America and Europe, with authorized agents worldwide. For assistance with your bearing application, contact:

Customer Service - 800.390.3300

Warranty

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

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RBC originated the precision ground single fracture spherical plain bearing and continues to be the leader in design and innovation. Listed below are the basic types of spherical plain bearings that RBC makes with pertinent selection criteria.

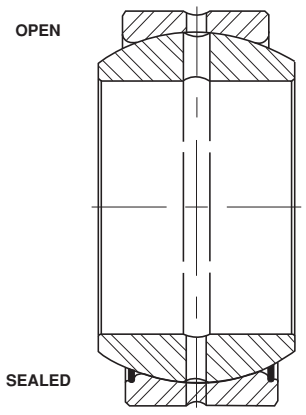
SPHERICAL PLAIN BEARING SELECTION GUIDE

	B-L B-LSS MB- MB-SS Standard Radial	**B-EL B-ELSS MB-E MB-ESS** Extended Inner Ring	**BH-L BH-LSS MBH- MBH-SS** High Misalignment	**B-LSSQ MB-SSQ** QuadLube®	**B-LNMSS MB-NMSS** Self-Lubricated DuraLube™	**B-SA MB-SA** Angular Contact	**B-DSA-3 MB-DSA3** Double Acting Angular Contact
Radial load	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent
Reversing radial load	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent
Uni-Directional Load	Good	Good	Good	Excellent	Excellent	Good	Good
Thrust Load	Good	Good	Good	Good	Good	Excellent	Excellent
Reversing Thrust Load	Good	Good	Good	Good	Poor	None	Excellent
Capability of Misalignment	Good	Good	Excellent	Good	Good	Good	Minimal
Max. Operating Temp. (open) ❶	500	500	500	500	-	500	500
Max. Operating Temp. (sealed)	250	250	250	250	250	-	-
Sensitivity to Contamination	Low	Low	Low	Low	High	Low	Low
Re-lubrication	Yes	Yes	Yes	Yes	No	Yes	Yes
Corrosion Protection	Good	Good	Good	Good	Excellent	Good	Good
Adjustable Clearance	No	No	No	No	No	Yes	Yes

❶ Operating temperatures above 300°F require a special heat treatment.

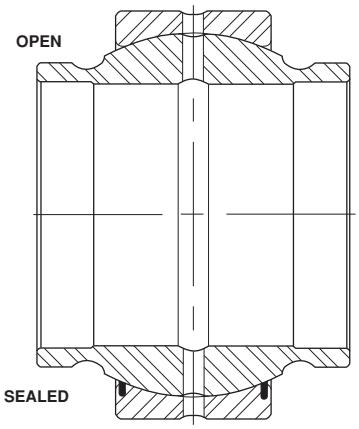
RADIAL TYPE SPHERICAL PLAIN BEARINGS STANDARD SERIES

B-L and MB- SERIES



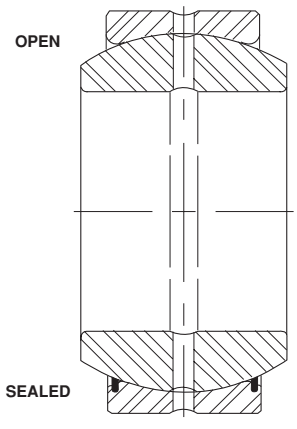
Designed to support heavy radial loads under misalignment. These bearings also possess moderate thrust loading capability. They are non-separable with a single fractured outer ring, and are available in open or sealed designs and inch or metric sizes.

B-EL and MB-E SERIES



With an extended inner ring, the need for additional locational spacers is eliminated. The inner ring bore is relieved to prevent excess bending stress. Available in open or sealed designs and inch or metric sizes.

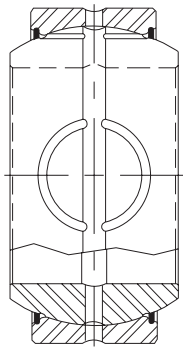
BH-L and MBH- SERIES



Due to greater inner ring cross section, the BH-L and MBH series is capable of greater misalignment. Available in open or sealed designs and inch or metric sizes.

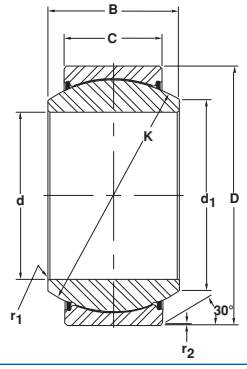
RADIAL TYPE SPHERICAL PLAIN BEARINGS
EXTENDED LIFE SERIES

B-LSSQ and MB-SSQ SERIES



Up to 300% improved service life provided by innovative lubrication system. The patented system distributes lubrication to the load zone even when no load reversal exists and allows re-lubrication without removing the load. These bearings provide an increased life to many problem applications. Available in inch or metric sizes.

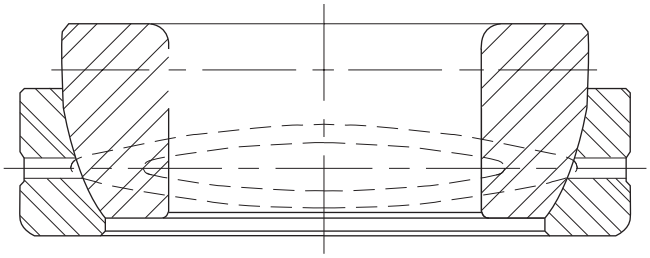
B-LNMSS and MB-NMSS SERIES



RBC's DuraLube™ self-lubricating spherical plain bearings provide long life in demanding applications. Grease-free operation is accomplished through the use of a durable PTFE liner system that reduces friction between the spherical surfaces of the inner ring and outer ring. These bearings are ideal for applications in which re-lubrication is impractical or impossible, but longevity is a must. Available in inch or metric sizes.

ANGULAR CONTACT SPHERICAL PLAIN BEARINGS

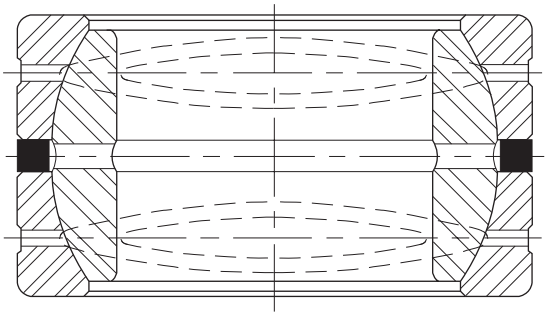
B-SA and MB-SA SERIES



B-SA Single Acting Angular Contact

Designed to support heavy unidirectional thrust and combination radial/thrust loads. Elliptical lubricating grooves are a standard feature. Available in both inch or metric sizes.

B-DSA-3 and MB-DSA3 SERIES



B-DSA-3 ShimPack® Double Acting Angular Contact

B-DSA-3 series bearings can support radial and thrust loads in both directions. They are commonly used in articulating joint applications. Tapered bore designs are available, as well as inch or metric sizes.

PLAIN BEARINGS, ROD ENDS and SPECIALS

Hardened and Precision Ground Steel Bushings are available for applications that would see costly wear in the housing or on the shaft and where no misalignment occurs. They are supplied with or without oil holes and grooves and with various oil groove configurations.

Industrial Rod Ends can be supplied with any style radial spherical plain bearing. RBC rod ends are available with a male or female shank.

Standard Radial Outer Rings are the outer rings from the standard inch and metric spherical plain bearing offering. They can be used whenever the user provides the inner ring or ball stud.

Special Spherical Plain Bearings are available for custom requirements. Unique fractures, nonstandard envelopes, various degrees of metallurgical hardness as well as unique coatings and sealing arrangements have been developed for specific needs. RBC's experienced team of engineers is available for consultation for your unique requirements.

Spherical Plain Bearings

Radial - Inch

Series B--L

Part Number	d Inside Diameter			D Outside Diameter			B Inner Ring Width +0.000 -0.005	C Outer Ring Width +0.000 -0.005	K Sphere Dia. (REF)	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle (deg)	
Open	Nom.	Max.	Min.	Nom.	Max.	Min.							
B8-L	1/2	0.5000	0.4995	7/8	0.8750	0.8745	0.437	0.375	0.719	0.002/0.006	0.563	14	
B10-L	5/8	0.6250	0.6245	1 1/16	1.0625	1.0620	0.547	0.469	0.899	0.002/0.006	0.703	14	
B12-L	3/4	0.7500	0.7495	1 1/4	1.2500	1.2495	0.656	0.562	1.080	0.003/0.007	0.844	14	
B14-L	7/8	0.8750	0.8745	1 7/16	1.4375	1.4370	0.765	0.656	1.258	0.003/0.007	0.984	14	
B16-L	1	1.0000	0.9995	1 5/8	1.6250	1.6245	0.875	0.750	1.437	0.003/0.007	1.125	13	
B20-L	1 1/4	1.2500	1.2495	2	2.0000	1.9995	1.093	0.937	1.795	0.003/0.007	1.406	13	
B22-L	1 3/8	1.3750	1.3745	2 3/16	2.1875	2.1869	1.187	1.031	1.937	0.003/0.007	1.516	13	
B24-L	1 1/2	1.5000	1.4995	2 7/16	2.4375	2.4369	1.312	1.125	2.155	0.003/0.007	1.703	13	
B28-L	1 3/4	1.7500	1.7495	2 13/16	2.8125	2.8119	1.531	1.312	2.515	0.003/0.007	1.984	13	
B32-L	2	2.0000	1.9995	3 3/16	3.1875	3.1869	1.750	1.500	2.875	0.003/0.007	2.266	12	
B36-L	2 1/4	2.2500	2.2494	3 9/16	3.5625	3.5617	1.969	1.687	3.235	0.004/0.008	2.563	12	
B40-L	2 1/2	2.5000	2.4994	3 15/16	3.9375	3.9367	2.187	1.875	3.590	0.004/0.008	2.844	12	
B44-L	2 3/4	2.7500	2.7494	4 3/8	4.3750	4.3742	2.406	2.062	3.950	0.004/0.008	3.125	12	
B48-L	3	3.0000	2.9994	4 3/4	4.7500	4.7492	2.625	2.250	4.312	0.004/0.008	3.406	12	
B52-L	3 1/4	3.2500	3.2492	5 1/8	5.1250	5.1240	2.844	2.437	4.675	0.005/0.009	3.703	12	
B56-L	3 1/2	3.5000	3.4992	5 1/2	5.5000	5.4990	3.062	2.625	5.040	0.005/0.009	4.000	11	
B60-L	3 3/4	3.7500	3.7492	5 7/8	5.8750	5.8740	3.281	2.812	5.390	0.005/0.009	4.266	11	
B64-L	4	4.0000	3.9992	6 1/4	6.2500	6.2490	3.500	3.000	5.750	0.005/0.009	4.563	11	
B72-9L	4 1/2	4.5000	4.4992	7	7.0000	6.9990	3.937	3.375	6.475	0.005/0.009	5.125	7	
B80-9L	5	5.0000	4.9990	7 3/4	7.7500	7.7488	4.375	3.750	7.190	0.005/0.009	5.703	7	
B96-9L	6	6.0000	5.9990	8 3/4	8.7500	8.7488	4.750	4.125	8.156	0.005/0.009	6.625	7	
B104-9L	6 1/2	6.5000	6.4990	9 3/4	9.7500	9.7488	4.875	4.062	8.775	0.007/0.012	7.293	7	
B112-9L	7	7.0000	6.9990	10 1/2	10.5000	10.4986	5.250	4.375	9.450	0.007/0.012	7.854	7	
B120-9L	7 1/2	7.5000	7.4988	11 1/4	11.2500	11.2486	5.625	4.687	10.125	0.007/0.012	8.415	7	
B128-9L	8	8.0000	7.9988	12	12.0000	11.9986	6.000	5.000	10.800	0.007/0.012	8.976	7	
B136-9L	8 1/2	8.5000	8.4988	12 3/4	12.7500	12.7484	6.375	5.312	11.475	0.008/0.013	9.537	7	
B144-9L	9	9.0000	8.9988	13 1/2	13.5000	13.4984	6.750	5.625	12.150	0.008/0.013	10.098	7	
B152-9L	9 1/2	9.5000	9.4988	14 1/4	14.2500	14.2484	7.125	5.937	12.825	0.008/0.013	10.659	7	
B160-9L	10	10.0000	9.9986	15	15.0000	14.9984	7.500	6.250	13.500	0.008/0.013	11.220	7	
B168-9L	10 1/2	10.5000	10.4986	15 3/4	15.7500	15.7482	7.875	6.562	14.175	0.009/0.014	11.781	7	
B176-9L	11	11.0000	10.9986	16 1/2	16.5000	16.4982	8.250	6.875	14.850	0.009/0.014	12.342	7	
B184-9L	11 1/2	11.5000	11.4986	17 1/4	17.2500	17.2482	8.625	7.187	15.525	0.009/0.014	12.903	7	
B192-9L	12	12.0000	11.9986	18	18.0000	17.9982	9.000	7.500	16.200	0.009/0.014	13.464	7	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).
Bore dimensions apply after MoS_2 coating. All other dimensions are before coating.

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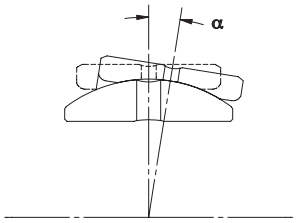
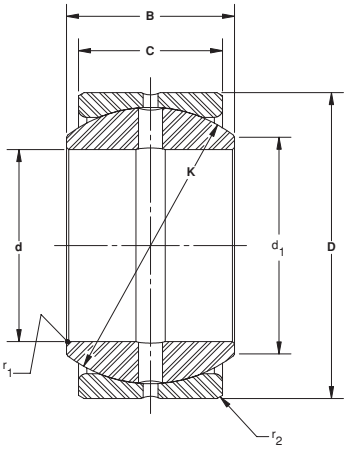
Spherical Plain Bearings

Radial - Inch





Series B--L

r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (lb)	Recommended Load Limits ❶			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
			Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
						Max.	Min.	Max.	Min.	Max.	Min.	
0.010	0.022	0.044	9,400	1,400	2,300	0.4994	0.4989	0.5006	0.5003	0.8742	0.8734	-8
0.010	0.032	0.079	14,700	2,500	3,600	0.6244	0.6239	0.6256	0.6253	1.0617	1.0609	-10
0.022	0.032	0.126	21,200	3,900	5,300	0.7492	0.7487	0.7507	0.7503	1.2490	1.2480	-12
0.022	0.032	0.193	28,800	5,400	7,200	0.8742	0.8737	0.8757	0.8753	1.4365	1.4355	-14
0.022	0.032	0.276	37,700	7,300	9,400	0.9992	0.9987	1.0007	1.0003	1.6240	1.6230	-16
0.022	0.032	0.516	58,800	11,900	14,700	1.2490	1.2484	1.2508	1.2504	1.9988	1.9976	-20
0.022	0.032	0.770	69,800	13,500	17,400	1.3740	1.3734	1.3758	1.3754	2.1863	2.1851	-22
0.022	0.032	0.934	84,800	16,600	21,200	1.4990	1.4984	1.5008	1.5004	2.4363	2.4351	-24
0.022	0.032	1.430	115,400	23,600	28,800	1.7490	1.7484	1.7508	1.7504	2.8113	2.8101	-28
0.022	0.032	2.070	150,900	31,900	37,700	1.9988	1.9981	2.0010	2.0005	3.1860	3.1846	-32
0.022	0.032	2.920	191,000	42,000	47,700	2.2488	2.2481	2.2510	2.2505	3.5610	3.5596	-36
0.022	0.032	4.090	235,500	52,900	58,800	2.4988	2.4981	2.5010	2.5005	3.9359	3.9345	-40
0.022	0.032	5.380	285,000	62,600	71,200	2.7488	2.7481	2.7510	2.7505	4.3734	4.3720	-44
0.022	0.032	6.870	339,500	76,300	84,800	2.9988	2.9981	3.0010	3.0005	4.7481	4.7465	-48
0.022	0.032	8.630	398,700	91,500	99,600	3.2486	3.2477	3.2511	3.2505	5.1231	5.1215	-52
0.022	0.032	10.650	463,000	109,200	115,700	3.4986	3.4977	3.5011	3.5005	5.4981	5.4965	-56
0.022	0.032	12.950	530,400	126,100	132,600	3.7486	3.7477	3.7511	3.7505	5.8731	5.8715	-60
0.022	0.032	15.590	603,700	144,500	150,900	3.9986	3.9977	4.0011	4.0005	6.2481	6.2465	-64
0.032	0.044	21.920	764,800	290,400	191,200	4.4986	4.4977	4.5011	4.5005	6.9979	6.9963	-72
0.032	0.044	29.710	943,600	360,900	235,900	4.9983	4.9973	5.0013	5.0006	7.7476	7.7458	-80
0.032	0.044	38.770	1,177,000	387,600	294,200	5.9983	5.9973	6.0013	6.0006	8.7475	8.7457	-96
0.080	0.080	50.360	1,247,000	299,700	311,700	6.4983	6.4973	6.5013	6.5006	9.7474	9.7456	-104
0.080	0.080	62.910	1,447,000	431,100	361,700	6.9983	6.9973	7.0013	7.0006	10.4971	10.4950	-112
0.080	0.080	77.370	1,660,000	506,500	415,000	7.4980	7.4969	7.5015	7.5007	11.2470	11.2449	-120
0.080	0.080	93.910	1,890,000	582,400	472,500	7.9980	7.9969	8.0015	8.0007	11.9970	11.9949	-128
0.080	0.080	112.600	2,133,000	663,500	533,200	8.4980	8.4969	8.5015	8.5007	12.7465	12.7443	-136
0.080	0.080	133.700	2,392,000	749,900	598,000	8.9980	8.9969	9.0015	9.0007	13.4965	13.4943	-144
0.080	0.080	157.200	2,664,000	841,500	666,000	9.4980	9.4969	9.5015	9.5007	14.2463	14.2441	-152
0.080	0.080	183.400	2,953,000	938,500	738,200	9.9978	9.9965	10.0017	10.0008	14.9963	14.9941	-160
0.080	0.080	212.300	3,255,000	1,047,000	813,700	10.4978	10.4965	10.5017	10.5008	15.7459	15.7435	-168
0.080	0.080	244.000	3,573,000	1,184,000	893,200	10.9978	10.9965	11.0017	11.0008	16.4959	16.4935	-176
0.080	0.080	279.000	3,905,000	1,299,000	976,200	11.4978	11.4965	11.5017	11.5008	17.2459	17.2435	-184
0.080	0.080	317.000	4,252,000	1,422,000	1,063,000	11.9978	11.9965	12.0017	12.0008	17.9957	17.9932	-192

❶ Ultimate static and impact loads should not exceed 150% of catalog ratings.

❷ See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

Radial - Inch

Series B--LSS

Part Number	d Inside Diameter			D Outside Diameter			B Inner Ring Width +0.000 -0.005	C Outer Ring Width +0.000 -0.005	K Sphere Dia. (REF)	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle (deg)	
Sealed	Nom.	Max.	Min.	Nom.	Max.	Min.							
B12-LSS	3/4	0.7500	0.7495	1 1/4	1.2500	1.2495	0.656	0.562	1.080	0.003/0.007	0.844	7	
B14-LSS	7/8	0.8750	0.8745	1 7/16	1.4375	1.4370	0.765	0.656	1.258	0.003/0.007	0.984	7	
B16-LSS	1	1.0000	0.9995	1 5/8	1.6250	1.6245	0.875	0.750	1.437	0.003/0.007	1.125	7	
B20-LSS	1 1/4	1.2500	1.2495	2	2.0000	1.9995	1.093	0.937	1.795	0.003/0.007	1.406	7	
B22-LSS	1 3/8	1.3750	1.3745	2 3/16	2.1875	2.1869	1.187	1.031	1.937	0.003/0.007	1.516	7	
B24-LSS	1 1/2	1.5000	1.4995	2 7/16	2.4375	2.4369	1.312	1.125	2.155	0.003/0.007	1.703	7	
B28-LSS	1 3/4	1.7500	1.7495	2 13/16	2.8125	2.8119	1.531	1.312	2.515	0.003/0.007	1.984	7	
B32-LSS	2	2.0000	1.9995	3 3/16	3.1875	3.1869	1.750	1.500	2.875	0.003/0.007	2.266	7	
B36-LSS	2 1/4	2.2500	2.2494	3 9/16	3.5625	3.5617	1.969	1.687	3.235	0.004/0.008	2.563	7	
B40-LSS	2 1/2	2.5000	2.4994	3 15/16	3.9375	3.9367	2.187	1.875	3.590	0.004/0.008	2.844	7	
B44-LSS	2 3/4	2.7500	2.7494	4 3/8	4.3750	4.3742	2.406	2.062	3.950	0.004/0.008	3.125	7	
B48-LSS	3	3.0000	2.9994	4 3/4	4.7500	4.7492	2.625	2.250	4.312	0.004/0.008	3.406	7	
B52-LSS	3 1/4	3.2500	3.2492	5 1/8	5.1250	5.1240	2.844	2.437	4.675	0.005/0.009	3.703	7	
B56-LSS	3 1/2	3.5000	3.4992	5 1/2	5.5000	5.4990	3.062	2.625	5.040	0.005/0.009	4.000	7	
B60-LSS	3 3/4	3.7500	3.7492	5 7/8	5.8750	5.8740	3.281	2.812	5.390	0.005/0.009	4.266	7	
B64-LSS	4	4.0000	3.9992	6 1/4	6.2500	6.2490	3.500	3.000	5.750	0.005/0.009	4.563	7	
B72-9LSS	4 1/2	4.5000	4.4992	7	7.0000	6.9990	3.937	3.375	6.475	0.005/0.009	5.125	7	
B80-9LSS	5	5.0000	4.9990	7 3/4	7.7500	7.7488	4.375	3.750	7.190	0.005/0.009	5.703	7	
B96-9LSS	6	6.0000	5.9990	8 3/4	8.7500	8.7488	4.750	4.125	8.156	0.005/0.009	6.625	7	
B104-9LSS	6 1/2	6.5000	6.4990	9 3/4	9.7500	9.7488	4.875	4.062	8.775	0.007/0.012	7.293	7	
B112-9LSS	7	7.0000	6.9990	10 1/2	10.5000	10.4986	5.250	4.375	9.450	0.007/0.012	7.854	7	
B120-9LSS	7 1/2	7.5000	7.4988	11 1/4	11.2500	11.2486	5.625	4.687	10.125	0.007/0.012	8.415	7	
B128-9LSS	8	8.0000	7.9988	12	12.0000	11.9986	6.000	5.000	10.800	0.007/0.012	8.976	7	
B136-9LSS	8 1/2	8.5000	8.4988	12 3/4	12.7500	12.7484	6.375	5.312	11.475	0.008/0.013	9.537	7	
B144-9LSS	9	9.0000	8.9988	13 1/2	13.5000	13.4984	6.750	5.625	12.150	0.008/0.013	10.098	7	
B152-9LSS	9 1/2	9.5000	9.4988	14 1/4	14.2500	14.2484	7.125	5.937	12.825	0.008/0.013	10.659	7	
B160-9LSS	10	10.0000	9.9986	15	15.0000	14.9984	7.500	6.250	13.500	0.008/0.013	11.220	7	
B168-9LSS	10 1/2	10.5000	10.4986	15 3/4	15.7500	15.7482	7.875	6.562	14.175	0.009/0.014	11.781	7	
B176-9LSS	11	11.0000	10.9986	16 1/2	16.5000	16.4982	8.250	6.875	14.850	0.009/0.014	12.342	7	
B184-9LSS	11 1/2	11.5000	11.4986	17 1/4	17.2500	17.2482	8.625	7.187	15.525	0.009/0.014	12.903	7	
B192-9LSS	12	12.0000	11.9986	18	18.0000	17.9982	9.000	7.500	16.200	0.009/0.014	13.464	7	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).
Bore dimensions apply after MoS_2 coating. All other dimensions are before coating.

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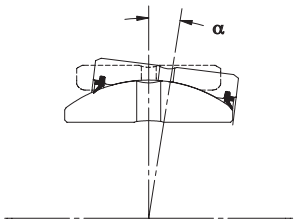
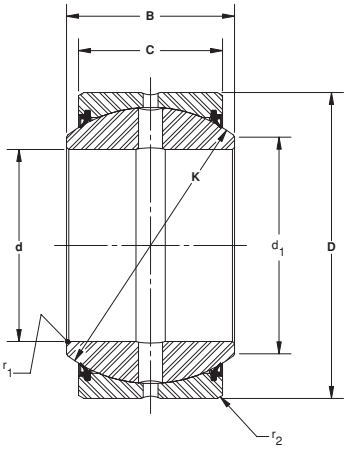
Spherical Plain Bearings

Radial - Inch





Series B--LSS

	r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (lb)	Recommended Load Limits ❶			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
				Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
							Max.	Min.	Max.	Min.	Max.	Min.	
	0.022	0.015	0.126	21,200	3,900	5,300	0.7492	0.7487	0.7507	0.7503	1.2490	1.2480	**-12**
	0.022	0.015	0.193	28,800	5,400	7,200	0.8742	0.8737	0.8757	0.8753	1.4365	1.4355	**-14**
	0.022	0.015	0.276	37,700	7,300	9,400	0.9992	0.9987	1.0007	1.0003	1.6240	1.6230	**-16**
	0.022	0.032	0.516	58,800	11,900	14,700	1.2490	1.2484	1.2508	1.2504	1.9988	1.9976	**-20**
	0.022	0.032	0.770	69,800	13,500	17,400	1.3740	1.3734	1.3758	1.3754	2.1863	2.1851	**-22**
	0.022	0.032	0.934	84,800	16,600	21,200	1.4990	1.4984	1.5008	1.5004	2.4363	2.4351	**-24**
	0.022	0.032	1.430	115,400	23,600	28,800	1.7490	1.7484	1.7508	1.7504	2.8113	2.8101	**-28**
	0.022	0.032	2.070	150,900	31,900	37,700	1.9988	1.9981	2.0010	2.0005	3.1860	3.1846	**-32**
	0.022	0.032	2.920	191,000	42,000	47,700	2.2488	2.2481	2.2510	2.2505	3.5610	3.5596	**-36**
	0.022	0.032	4.090	235,500	52,900	58,800	2.4988	2.4981	2.5010	2.5005	3.9359	3.9345	**-40**
	0.022	0.032	5.380	285,000	62,600	71,200	2.7488	2.7481	2.7510	2.7505	4.3734	4.3720	**-44**
	0.022	0.032	6.870	339,500	76,300	84,800	2.9988	2.9981	3.0010	3.0005	4.7481	4.7465	**-48**
	0.022	0.032	8.630	398,700	91,500	99,600	3.2486	3.2477	3.2511	3.2505	5.1231	5.1215	**-52**
	0.022	0.032	10.650	463,000	109,200	115,700	3.4986	3.4977	3.5011	3.5005	5.4981	5.4965	**-56**
	0.022	0.032	12.950	530,400	126,100	132,600	3.7486	3.7477	3.7511	3.7505	5.8731	5.8715	**-60**
	0.022	0.032	15.590	603,700	144,500	150,900	3.9986	3.9977	4.0011	4.0005	6.2481	6.2465	**-64**
	0.032	0.044	21.920	764,800	290,400	191,200	4.4986	4.4977	4.5011	4.5005	6.9979	6.9963	**-72**
	0.032	0.044	29.710	943,600	360,900	235,900	4.9983	4.9973	5.0013	5.0006	7.7476	7.7458	**-80**
	0.032	0.044	38.770	1,177,000	387,600	294,200	5.9983	5.9973	6.0013	6.0006	8.7475	8.7457	**-96**
	0.080	0.080	50.360	1,247,000	299,700	311,700	6.4983	6.4973	6.5013	6.5006	9.7474	9.7456	**-104**
	0.080	0.080	62.910	1,447,000	431,100	361,700	6.9983	6.9973	7.0013	7.0006	10.4971	10.4950	**-112**
	0.080	0.080	77.370	1,660,000	506,500	415,000	7.4980	7.4969	7.5015	7.5007	11.2470	11.2449	**-120**
	0.080	0.080	93.910	1,890,000	582,400	472,500	7.9980	7.9969	8.0015	8.0007	11.9970	11.9949	**-128**
	0.080	0.080	112.600	2,133,000	663,500	533,200	8.4980	8.4969	8.5015	8.5007	12.7465	12.7443	**-136**
	0.080	0.080	133.700	2,392,000	749,900	598,000	8.9980	8.9969	9.0015	9.0007	13.4965	13.4943	**-144**
	0.080	0.080	157.200	2,664,000	841,500	666,000	9.4980	9.4969	9.5015	9.5007	14.2463	14.2441	**-152**
	0.080	0.080	183.400	2,953,000	938,500	738,200	9.9978	9.9965	10.0017	10.0008	14.9963	14.9941	**-160**
	0.080	0.080	212.300	3,255,000	1,047,000	813,700	10.4978	10.4965	10.5017	10.5008	15.7459	15.7435	**-168**
	0.080	0.080	244.000	3,573,000	1,184,000	893,200	10.9978	10.9965	11.0017	11.0008	16.4959	16.4935	**-176**
	0.080	0.080	279.000	3,905,000	1,299,000	976,200	11.4978	11.4965	11.5017	11.5008	17.2459	17.2435	**-184**
	0.080	0.080	317.000	4,252,000	1,422,000	1,063,000	11.9978	11.9965	12.0017	12.0008	17.9957	17.9932	**-192**

❶ Ultimate static and impact loads should not exceed 150% of catalog ratings.

❷ See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

Radial - Metric

Series MB--

Part Number	d Inside Diameter		D Outside Diameter		B Inner Ring Width		C Outer Ring Width		K Sphere Dia.	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle	
Open	Nom.	Tol. +0.000	Nom.	Tol. +0.000	Nom.	Tol. +0.00	Nom.	Tol. +0.00	(REF)			(deg)	
MB12	12	-0.008	22	-0.009	10	-0.12	7	-0.24	19	0.05/0.15	16	11	
MB15	15	-0.008	26	-0.009	12	-0.12	9	-0.24	22	0.05/0.15	18	10	
MB17	17	-0.008	30	-0.009	14	-0.12	10	-0.24	25	0.05/0.15	21	11	
MB20	20	-0.010	35	-0.011	16	-0.12	12	-0.24	30	0.07/0.17	25	9	
MB25	25	-0.010	42	-0.011	20	-0.12	16	-0.24	36	0.07/0.17	30	8	
MB30	30	-0.010	47	-0.011	22	-0.12	18	-0.24	41	0.07/0.17	35	7	
MB35	35	-0.012	55	-0.013	25	-0.12	20	-0.30	48	0.07/0.17	41	7	
MB40	40	-0.012	62	-0.013	28	-0.12	22	-0.30	55	0.07/0.17	47	7	
MB45	45	-0.012	68	-0.013	32	-0.12	25	-0.30	60	0.07/0.17	51	8	
MB50	50	-0.012	75	-0.013	35	-0.12	28	-0.30	67	0.07/0.17	57	7	
MB60	60	-0.015	90	-0.015	44	-0.15	36	-0.40	81	0.10/0.20	68	7	
MB70	70	-0.015	105	-0.015	49	-0.15	40	-0.40	94	0.10/0.20	80	6	
MB80	80	-0.015	120	-0.015	55	-0.15	45	-0.40	107	0.10/0.20	92	6	
MB90	90	-0.020	130	-0.018	60	-0.20	50	-0.50	117	0.13/0.23	100	5	
MB100	100	-0.020	150	-0.018	70	-0.20	55	-0.50	134	0.13/0.23	114	7	
MB110	110	-0.020	160	-0.025	70	-0.20	55	-0.50	143	0.13/0.23	125	6	
MB120	120	-0.020	180	-0.025	85	-0.20	70	-0.50	160	0.13/0.23	136	6	
MB140	140	-0.025	210	-0.030	90	-0.25	70	-0.60	187	0.13/0.23	164	7	
MB160-9L	160	-0.025	230	-0.030	105	-0.25	80	-0.60	206	0.15/0.27	177	8	
MB180-9L	180	-0.025	260	-0.035	105	-0.25	80	-0.70	234	0.15/0.27	209	7	
MB200-9L	200	-0.030	290	-0.035	130	-0.30	100	-0.70	265	0.15/0.27	231	7	
MB220-9L	220	-0.030	320	-0.040	135	-0.30	100	-0.80	286	0.15/0.27	252	8	
MB240-9L	240	-0.030	340	-0.040	140	-0.30	100	-0.80	306	0.15/0.27	272	8	
MB260-9L	260	-0.035	370	-0.040	150	-0.35	110	-0.80	333	0.17/0.30	297	7	
MB280-9L	280	-0.035	400	-0.040	155	-0.35	120	-0.80	360	0.17/0.30	325	6	
MB300-9L	300	-0.035	430	-0.045	165	-0.35	120	-0.90	375	0.17/0.30	349	7	
MB320-9L	320	-0.040	440	-0.045	160	-0.40	135	-0.90	380	0.20/0.34	345	4	

All dimensions are in millimeters.
Outer rings of bearings size 160 and above are double fractured (suffix-9L).
All dimensions apply before MoS_2 coating and Fracture.

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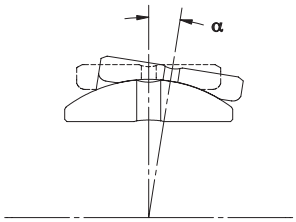
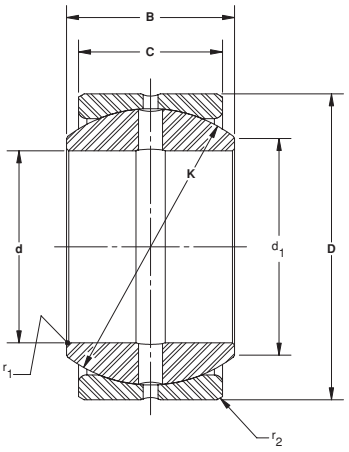
Spherical Plain Bearings

Radial - Metric





Series MB--

r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (kg) ❶	Recommended Load Limits			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
			Static Radial (kN)	Static Thrust (kN)	Dynamic Radial (kN)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
						Max.	Min.	Max.	Min.	Max.	Min.	
0.3	0.3	0.02	57	8.3	11.4	11.984	11.973	12.015	12.007	21.980	21.959	-12
0.3	0.3	0.03	85	13.7	17.0	14.984	14.973	15.015	15.007	25.980	25.959	-15
0.3	0.3	0.04	107	16.9	21.5	16.984	16.973	17.015	17.007	29.980	29.959	-17
0.3	0.3	0.07	155	24.3	31.0	19.980	19.967	20.017	20.008	34.975	34.950	-20
0.6	0.6	0.12	248	43.2	49.5	24.980	24.967	25.017	25.008	41.975	41.950	-25
0.6	0.6	0.15	317	54.7	63.5	29.980	29.967	30.017	30.008	46.975	46.950	-30
0.6	1.0	0.23	413	67.5	82.6	34.975	34.959	35.020	35.009	54.970	54.940	-35
0.6	1.0	0.32	520	81.7	104.0	39.975	39.959	40.020	40.009	61.970	61.940	-40
0.6	1.0	0.42	645	106.0	129.0	44.975	44.959	45.020	45.009	67.968	67.938	-45
0.6	1.0	0.57	807	132.0	161.0	49.975	49.959	50.020	50.009	74.968	74.938	-50
1.0	1.0	1.05	1,250	219.0	250.0	59.970	59.951	60.024	60.011	89.962	89.927	-60
1.0	1.0	1.60	1,620	270.0	325.0	69.970	69.951	70.024	70.011	104.959	104.924	-70
1.0	1.0	2.35	2,070	342.0	410.0	79.970	79.951	80.024	80.011	119.959	119.924	-80
1.0	1.0	2.84	2,520	422.0	500.0	89.964	89.942	90.028	90.013	129.952	129.912	-90
1.0	1.0	4.58	3,200	510.0	640.0	99.964	99.942	100.028	100.013	149.950	149.910	-100
1.0	1.0	4.94	3,400	510.0	680.0	109.964	109.942	110.028	110.013	159.950	159.910	-110
1.0	1.0	8.10	4,800	830.0	960.0	119.964	119.942	120.028	120.013	179.947	179.907	-120
1.0	1.0	11.52	5,600	830.0	1,120.0	139.957	139.932	140.033	140.015	209.937	209.891	-140
1.0	1.0	14.70	7,100	1,100.0	1,420.0	159.957	159.932	160.033	160.015	229.933	229.887	-160
1.1	1.1	19.29	8,000	1,100.0	1,600.0	179.957	179.932	180.033	180.015	259.926	259.874	-180
1.1	1.1	30.11	11,400	1,700.0	2,300.0	199.950	199.921	200.037	200.017	289.922	289.870	-200
1.1	1.1	37.36	12,300	1,700.0	2,500.0	219.950	219.921	220.037	220.017	319.913	319.856	-220
1.1	1.1	40.77	13,200	1,700.0	2,600.0	239.950	239.921	240.037	240.017	339.913	339.856	-240
1.1	1.1	53.32	15,700	2,000.0	3,200.0	259.944	259.912	260.043	260.020	369.907	369.850	-260
1.1	1.1	67.17	18,600	2,400.0	3,700.0	279.944	279.912	280.043	280.020	399.907	399.850	-280
1.1	1.1	78.35	20,000	2,400.0	4,000.0	299.944	299.912	300.043	300.020	429.897	429.834	-300
1.1	3.0	78.52	22,000	3,100.0	4,400.0	319.938	319.902	320.046	320.021	439.897	439.834	-320

❶ To obtain weight in pounds, multiply by 2.20462 (lb/kg).

❷ See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

Radial - Metric

Series MB--SS

Part Number	d Inside Diameter		D Outside Diameter		B Inner Ring Width		C Outer Ring Width		K Sphere Dia.	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle	
Sealed	Nom.	Tol. +0.000	Nom.	Tol. +0.000	Nom.	Tol. +0.00	Nom.	Tol. +0.00	(REF)			(deg)	
MB17-SS	17	-0.008	30	-0.009	14	-0.12	10	-0.24	25	0.05/0.15	21	4	
MB20-SS	20	-0.010	35	-0.011	16	-0.12	12	-0.24	30	0.07/0.17	25	4	
MB25-SS	25	-0.010	42	-0.011	20	-0.12	16	-0.24	36	0.07/0.17	30	4	
MB30-SS	30	-0.010	47	-0.011	22	-0.12	18	-0.24	41	0.07/0.17	35	4	
MB35-SS	35	-0.012	55	-0.013	25	-0.12	20	-0.30	48	0.07/0.17	41	4	
MB40-SS	40	-0.012	62	-0.013	28	-0.12	22	-0.30	55	0.07/0.17	47	4	
MB45-SS	45	-0.012	68	-0.013	32	-0.12	25	-0.30	60	0.07/0.17	51	4	
MB50-SS	50	-0.012	75	-0.013	35	-0.12	28	-0.30	67	0.07/0.17	57	4	
MB60-SS	60	-0.015	90	-0.015	44	-0.15	36	-0.40	81	0.10/0.20	68	4	
MB70-SS	70	-0.015	105	-0.015	49	-0.15	40	-0.40	94	0.10/0.20	80	4	
MB80-SS	80	-0.015	120	-0.015	55	-0.15	45	-0.40	107	0.10/0.20	92	4	
MB90-SS	90	-0.020	130	-0.018	60	-0.20	50	-0.50	117	0.13/0.23	100	4	
MB100-SS	100	-0.020	150	-0.018	70	-0.20	55	-0.50	134	0.13/0.23	114	4	
MB110-SS	110	-0.020	160	-0.025	70	-0.20	55	-0.50	143	0.13/0.23	125	4	
MB120-SS	120	-0.020	180	-0.025	85	-0.20	70	-0.50	160	0.13/0.23	136	4	
MB140-SS	140	-0.025	210	-0.030	90	-0.25	70	-0.60	187	0.13/0.23	164	4	
MB160-9LSS	160	-0.025	230	-0.030	105	-0.25	80	-0.60	206	0.15/0.27	177	4	
MB180-9LSS	180	-0.025	260	-0.035	105	-0.25	80	-0.70	234	0.15/0.27	209	4	
MB200-9LSS	200	-0.030	290	-0.035	130	-0.30	100	-0.70	265	0.15/0.27	231	4	
MB220-9LSS	220	-0.030	320	-0.040	135	-0.30	100	-0.80	286	0.15/0.27	252	4	
MB240-9LSS	240	-0.030	340	-0.040	140	-0.30	100	-0.80	306	0.15/0.27	272	4	
MB260-9LSS	260	-0.035	370	-0.040	150	-0.35	110	-0.80	333	0.17/0.30	297	4	
MB280-9LSS	280	-0.035	400	-0.040	155	-0.35	120	-0.80	360	0.17/0.30	325	4	
MB300-9LSS	300	-0.035	430	-0.045	165	-0.35	120	-0.90	375	0.17/0.30	349	4	
MB320-9LSS	320	-0.040	440	-0.045	160	-0.40	135	-0.90	380	0.20/0.34	345	4	

All dimensions are in millimeters.
Outer rings of bearings size 160 and above are double fractured (suffix-9L).
All dimensions apply before MoS_2 coating and Fracture.

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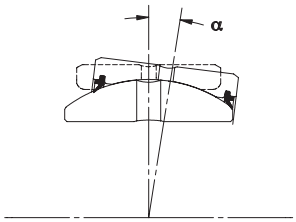
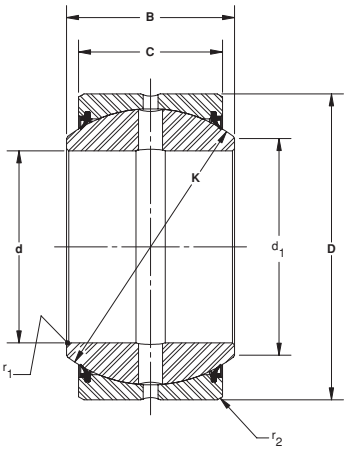
Spherical Plain Bearings

Radial - Metric





Series MB--SS

	r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (kg) ❶	Recommended Load Limits			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
				Static Radial (kN)	Static Thrust (kN)	Dynamic Radial (kN)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
							Max.	Min.	Max.	Min.	Max.	Min.	
	0.3	0.3	0.04	107	16.9	21.5	16.984	16.973	17.015	17.007	29.980	29.959	-17
	0.3	0.3	0.07	155	24.3	31.0	19.980	19.967	20.017	20.008	34.975	34.950	-20
	0.6	0.6	0.12	248	43.2	49.5	24.980	24.967	25.017	25.008	41.975	41.950	-25
	0.6	0.6	0.15	317	54.7	63.5	29.980	29.967	30.017	30.008	46.975	46.950	-30
	0.6	1.0	0.23	413	67.5	82.6	34.975	34.959	35.020	35.009	54.970	54.940	-35
	0.6	1.0	0.32	520	81.7	104.0	39.975	39.959	40.020	40.009	61.970	61.940	-40
	0.6	1.0	0.42	645	106.0	129.0	44.975	44.959	45.020	45.009	67.968	67.938	-45
	0.6	1.0	0.57	807	132.0	161.0	49.975	49.959	50.020	50.009	74.968	74.938	-50
	1.0	1.0	1.05	1,250	219.0	250.0	59.970	59.951	60.024	60.011	89.962	89.927	-60
	1.0	1.0	1.60	1,620	270.0	325.0	69.970	69.951	70.024	70.011	104.959	104.924	-70
	1.0	1.0	2.35	2,070	342.0	410.0	79.970	79.951	80.024	80.011	119.959	119.924	-80
	1.0	1.0	2.84	2,520	422.0	500.0	89.964	89.942	90.028	90.013	129.952	129.912	-90
	1.0	1.0	4.58	3,200	510.0	640.0	99.964	99.942	100.028	100.013	149.950	149.910	-100
	1.0	1.0	4.94	3,400	510.0	680.0	109.964	109.942	110.028	110.013	159.950	159.910	-110
	1.0	1.0	8.10	4,800	830.0	960.0	119.964	119.942	120.028	120.013	179.947	179.907	-120
	1.0	1.0	11.52	5,600	830.0	1,120.0	139.957	139.932	140.033	140.015	209.937	209.891	-140
	1.0	1.0	14.70	7,100	1,100.0	1,420.0	159.957	159.932	160.033	160.015	229.933	229.887	-160
	1.1	1.1	19.29	8,000	1,100.0	1,600.0	179.957	179.932	180.033	180.015	259.926	259.874	-180
	1.1	1.1	30.11	11,400	1,700.0	2,300.0	199.950	199.921	200.037	200.017	289.922	289.870	-200
	1.1	1.1	37.36	12,300	1,700.0	2,500.0	219.950	219.921	220.037	220.017	319.913	319.856	-220
	1.1	1.1	40.77	13,200	1,700.0	2,600.0	239.950	239.921	240.037	240.017	339.913	339.856	-240
	1.1	1.1	53.32	15,700	2,000.0	3,200.0	259.944	259.912	260.043	260.020	369.907	369.850	-260
	1.1	1.1	67.17	18,600	2,400.0	3,700.0	279.944	279.912	280.043	280.020	399.907	399.850	-280
	1.1	1.1	78.35	20,000	2,400.0	4,000.0	299.944	299.912	300.043	300.020	429.897	429.834	-300
	1.1	3.0	78.52	22,000	3,100.0	4,400.0	319.938	319.902	320.046	320.021	439.897	439.834	-320

❶ To obtain weight in pounds, multiply by 2.20462 (lb/kg).

❷ See technical section for alternate housing diameter recommendations.

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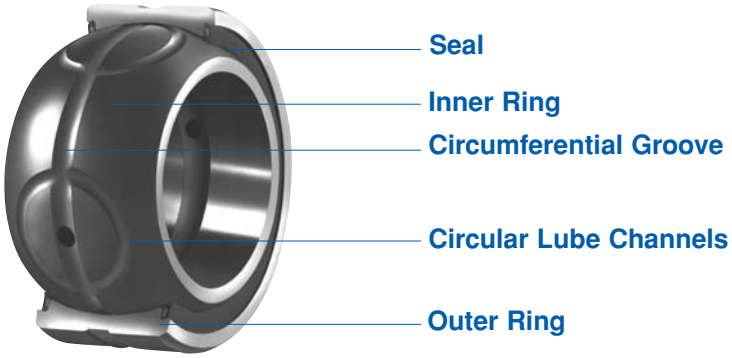
FEATURED PRODUCT

The RBC **QuadLube®**

Long Life Spherical Plain Bearing



Tough applications in construction and material handling requires a spherical plain bearing with longer life, less maintenance and less downtime than standard spherical plain bearings. A bearing with total interchangeability to standard designs is preferred. RBC engineering developed the QuadLube® spherical plain bearing after observing the three predominant factors which contribute to the failure of spherical plain bearings:

1) Unidirectional loads

2) Heavy loads

3) Neglected lubrication intervals

Each factor contributes to a lack of lubrication in the load zone area which eventually allows for metal to metal contact and premature failure of the bearing in the application.

RBC engineering developed the QuadLube® spherical plain bearing to solve each of these three failure modes. The RBC QuadLube® spherical plain bearing is manufactured within the same envelope dimensions as standard inch and metric spherical plain bearings. The lubrication system contains four precisely machined circular grooves on the spherical surface of the inner ring. Each circular groove is connected by a lubrication groove around the circumference of the inner ring. The bearing is packed with an EP moly grease and is sealed with lip contacts seals for grease retention.

Industry Applications for

The RBC QuadLube® Long Life Spherical Plain Bearing

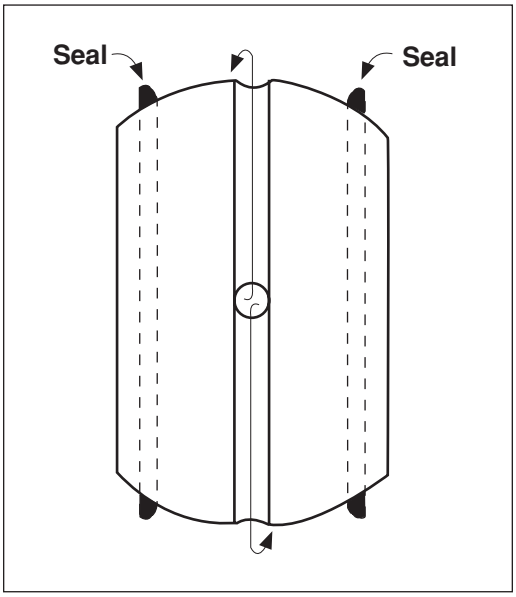
- ***Construction Equipment***
- ***Mining Machinery***
- ***Lift Trucks and Material Handling Equipment***
- ***Log Skidders***
- ***Off-Highway Vehicles***
- ***Satellite Dishes***

FEATURED PRODUCT

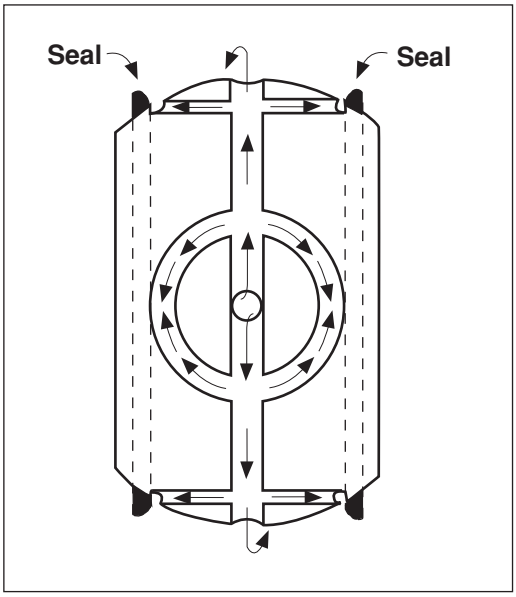
The RBC **QuadLube®**

Long Life Spherical Plain Bearing

Lubrication Flow



Conventional
Spherical Plain Bearing



***RBC* Quadlube®**
Spherical Plain Bearing

The innovative design of the RBC QuadLube® interconnecting lubricating groove system ensures a more efficient distribution of the lubricant by providing channels that transport the grease throughout the entire bearing, including into the contact area of the bearing under load. In cases of unidirectional load or when lubrication intervals are missed, the groove system retains extra lubricant where it is needed for added margin of performance. In the dirtiest of environments the grooves and channels capture any dirt or debris and keep these contaminants away from the raceway surfaces.

The RBC QuadLube® long life spherical plain bearing maintains the same size capacity ratings as conventional bearings with the same envelope. They can immediately replace conventional bearings without modifying housings or shafts. Should you have a nonstandard spherical plain bearing in your problem application, RBC can design a QuadLube® bearing specifically for your existing envelope sizes.

The RBC **QuadLube®**

Long Life Spherical Plain Bearing

The Practical Solution to Today's
Tough Spherical Plain Bearing Problems

QuadLube®

Long Life Spherical Plain Bearings - Inch

Series B--LSSQ

Part Number	d Inside Diameter			D Outside Diameter			B Inner Ring Width +0.000 - 0.005	C Outer Ring Width +0.000 - 0.005	K Sphere Dia. (REF)	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle (deg)	
Sealed	Nom.	Max.	Min.	Nom.	Max.	Min.							
B12-LSSQ	3/4	0.7500	0.7495	1 1/4	1.2500	1.2495	0.656	0.562	1.080	0.003/0.007	0.844	7	
B14-LSSQ	7/8	0.8750	0.8745	1 7/16	1.4375	1.4370	0.765	0.656	1.258	0.003/0.007	0.984	7	
B16-LSSQ	1	1.0000	0.9995	1 5/8	1.6250	1.6245	0.875	0.750	1.437	0.003/0.007	1.125	7	
B20-LSSQ	1 1/4	1.2500	1.2495	2	2.0000	1.9995	1.093	0.937	1.795	0.003/0.007	1.406	7	
B22-LSSQ	1 3/8	1.3750	1.3745	2 3/16	2.1875	2.1869	1.187	1.031	1.937	0.003/0.007	1.516	7	
B24-LSSQ	1 1/2	1.5000	1.4995	2 7/16	2.4375	2.4369	1.312	1.125	2.155	0.003/0.007	1.703	7	
B28-LSSQ	1 3/4	1.7500	1.7495	2 13/16	2.8125	2.8119	1.531	1.312	2.515	0.003/0.007	1.984	7	
B32-LSSQ	2	2.0000	1.9995	3 3/16	3.1875	3.1869	1.750	1.500	2.875	0.003/0.007	2.266	7	
B36-LSSQ	2 1/4	2.2500	2.2494	3 9/16	3.5625	3.5617	1.969	1.687	3.235	0.004/0.008	2.563	7	
B40-LSSQ	2 1/2	2.5000	2.4994	3 15/16	3.9375	3.9367	2.187	1.875	3.590	0.004/0.008	2.844	7	
B44-LSSQ	2 3/4	2.7500	2.7494	4 3/8	4.3750	4.3742	2.406	2.062	3.950	0.004/0.008	3.125	7	
B48-LSSQ	3	3.0000	2.9994	4 3/4	4.7500	4.7492	2.625	2.250	4.312	0.004/0.008	3.406	7	
B52-LSSQ	3 1/4	3.2500	3.2492	5 1/8	5.1250	5.1240	2.844	2.437	4.675	0.005/0.009	3.703	7	
B56-LSSQ	3 1/2	3.5000	3.4992	5 1/2	5.5000	5.4990	3.062	2.625	5.040	0.005/0.009	4.000	7	
B60-LSSQ	3 3/4	3.7500	3.7492	5 7/8	5.8750	5.8740	3.281	2.812	5.390	0.005/0.009	4.266	7	
B64-LSSQ	4	4.0000	3.9992	6 1/4	6.2500	6.2490	3.500	3.000	5.750	0.005/0.009	4.563	7	
B72-9LSSQ	4 1/2	4.5000	4.4992	7	7.0000	6.9990	3.937	3.375	6.475	0.005/0.009	5.125	7	
B80-9LSSQ	5	5.0000	4.9990	7 3/4	7.7500	7.7488	4.375	3.750	7.190	0.005/0.009	5.703	7	
B96-9LSSQ	6	6.0000	5.9990	8 3/4	8.7500	8.7488	4.750	4.125	8.156	0.005/0.009	6.625	7	
B104-9LSSQ	6 1/2	6.5000	6.4990	9 3/4	9.7500	9.7488	4.875	4.062	8.775	0.007/0.012	7.293	7	
B112-9LSSQ	7	7.0000	6.9990	10 1/2	10.5000	10.4986	5.250	4.375	9.450	0.007/0.012	7.854	7	
B120-9LSSQ	7 1/2	7.5000	7.4988	11 1/4	11.2500	11.2486	5.625	4.687	10.125	0.007/0.012	8.415	7	
B128-9LSSQ	8	8.0000	7.9988	12	12.0000	11.9986	6.000	5.000	10.800	0.007/0.012	8.976	7	
B136-9LSSQ	8 1/2	8.5000	8.4988	12 3/4	12.7500	12.7484	6.375	5.312	11.475	0.008/0.013	9.537	7	
B144-9LSSQ	9	9.0000	8.9988	13 1/2	13.5000	13.4984	6.750	5.625	12.150	0.008/0.013	10.098	7	
B152-9LSSQ	9 1/2	9.5000	9.4988	14 1/4	14.2500	14.2484	7.125	5.937	12.825	0.008/0.013	10.659	7	
B160-9LSSQ	10	10.0000	9.9986	15	15.0000	14.9984	7.500	6.250	13.500	0.008/0.013	11.220	7	
B168-9LSSQ	10 1/2	10.5000	10.4986	15 3/4	15.7500	15.7482	7.875	6.562	14.175	0.009/0.014	11.781	7	
B176-9LSSQ	11	11.0000	10.9986	16 1/2	16.5000	16.4982	8.250	6.875	14.850	0.009/0.014	12.342	7	
B184-9LSSQ	11 1/2	11.5000	11.4986	17 1/4	17.2500	17.2482	8.625	7.187	15.525	0.009/0.014	12.903	7	
B192-9LSSQ	12	12.0000	11.9986	18	18.0000	17.9982	9.000	7.500	16.200	0.009/0.014	13.464	7	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).
Bore dimensions apply after MoS_2 coating. All other dimensions are before coating.

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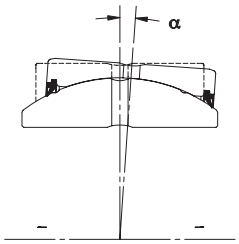
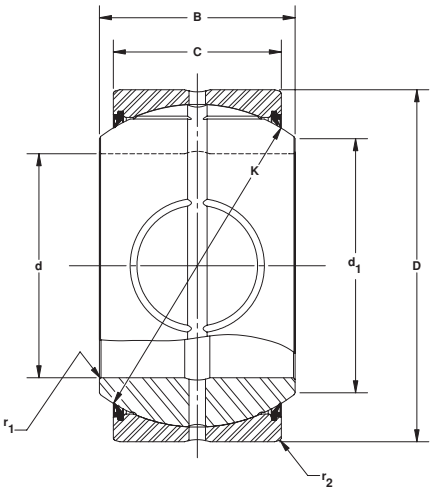
QuadLube®

Long Life Spherical Plain Bearings - Inch





Series B--LSSQ

r1 Shaft Fillet Max.	r2 Hsg. Fillet Max.	Approx. Weight (lb)	Recommended Load Limits ❶			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
			Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
						Max.	Min.	Max.	Min.	Max.	Min.	
0.022	0.015	0.126	21,200	3,900	5,300	0.7492	0.7487	0.7507	0.7503	1.2490	1.2480	-12
0.022	0.015	0.193	28,800	5,400	7,200	0.8742	0.8737	0.8757	0.8753	1.4365	1.4355	-14
0.022	0.015	0.276	37,700	7,300	9,400	0.9992	0.9987	1.0007	1.0003	1.6240	1.6230	-16
0.022	0.032	0.516	58,800	11,900	14,700	1.2490	1.2484	1.2508	1.2504	1.9988	1.9976	-20
0.022	0.032	0.770	69,800	13,500	17,400	1.3740	1.3734	1.3758	1.3754	2.1863	2.1851	-22
0.022	0.032	0.934	84,800	16,600	21,200	1.4990	1.4984	1.5008	1.5004	2.4363	2.4351	-24
0.022	0.032	1.430	115,400	23,600	28,800	1.7490	1.7484	1.7508	1.7504	2.8113	2.8101	-28
0.022	0.032	2.070	150,900	31,900	37,700	1.9988	1.9981	2.0010	2.0005	3.1860	3.1846	-32
0.022	0.032	2.920	191,000	42,000	47,700	2.2488	2.2481	2.2510	2.2505	3.5610	3.5596	-36
0.022	0.032	4.090	235,500	52,900	58,800	2.4988	2.4981	2.5010	2.5005	3.9359	3.9345	-40
0.022	0.032	5.380	285,000	62,600	71,200	2.7488	2.7481	2.7510	2.7505	4.3734	4.3720	-44
0.022	0.032	6.870	339,500	76,300	84,800	2.9988	2.9981	3.0010	3.0005	4.7481	4.7465	-48
0.022	0.032	8.630	398,700	91,500	99,600	3.2486	3.2477	3.2511	3.2505	5.1231	5.1215	-52
0.022	0.032	10.650	463,000	109,200	115,700	3.4986	3.4977	3.5011	3.5005	5.4981	5.4965	-56
0.022	0.032	12.950	530,400	126,100	132,600	3.7486	3.7477	3.7511	3.7505	5.8731	5.8715	-60
0.022	0.032	15.590	603,700	144,500	150,900	3.9986	3.9977	4.0011	4.0005	6.2481	6.2465	-64
0.032	0.044	21.920	764,800	290,400	191,200	4.4986	4.4977	4.5011	4.5005	6.9979	6.9963	-72
0.032	0.044	29.710	943,600	360,900	235,900	4.9983	4.9973	5.0013	5.0006	7.7476	7.7458	-80
0.032	0.044	38.770	1,177,000	387,600	294,200	5.9983	5.9973	6.0013	6.0006	8.7475	8.7457	-96
0.080	0.080	50.360	1,247,000	299,700	311,700	6.4983	6.4973	6.5013	6.5006	9.7474	9.7456	-104
0.080	0.080	62.910	1,447,000	431,100	361,700	6.9983	6.9973	7.0013	7.0006	10.4971	10.4950	-112
0.080	0.080	77.370	1,660,000	506,500	415,000	7.4980	7.4969	7.5015	7.5007	11.2470	11.2449	-120
0.080	0.080	93.910	1,890,000	582,400	472,500	7.9980	7.9969	8.0015	8.0007	11.9970	11.9949	-128
0.080	0.080	112.600	2,133,000	663,500	533,200	8.4980	8.4969	8.5015	8.5007	12.7465	12.7443	-136
0.080	0.080	133.700	2,392,000	749,900	598,000	8.9980	8.9969	9.0015	9.0007	13.4965	13.4943	-144
0.080	0.080	157.200	2,664,000	841,500	666,000	9.4980	9.4969	9.5015	9.5007	14.2463	14.2441	-152
0.080	0.080	183.400	2,953,000	938,500	738,200	9.9978	9.9965	10.0017	10.0008	14.9963	14.9941	-160
0.080	0.080	212.300	3,255,000	1,047,000	813,700	10.4978	10.4965	10.5017	10.5008	15.7459	15.7435	-168
0.080	0.080	244.000	3,573,000	1,184,000	893,200	10.9978	10.9965	11.0017	11.0008	16.4959	16.4935	-176
0.080	0.080	279.000	3,905,000	1,299,000	976,200	11.4978	11.4965	11.5017	11.5008	17.2459	17.2435	-184
0.080	0.080	317.000	4,252,000	1,422,000	1,063,000	11.9978	11.9965	12.0017	12.0008	17.9957	17.9932	-192

❶ Ultimate static and impact loads should not exceed 150% of catalog ratings.

❷ See technical section for alternate housing diameter recommendations.

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Long Life Spherical Plain Bearings - Metric

Series MB--SSQ

Part Number	d Inside Diameter		D Outside Diameter		B Inner Ring Width		C Outer Ring Width		K Sphere Dia.	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle	
Sealed	Nom.	Tol. +0.000	Nom.	Tol. +0.000	Nom.	Tol. +0.00	Nom.	Tol. +0.00	(REF)			(deg)	
MB17-SSQ	17	-0.008	30	-0.009	14	-0.12	10	-0.24	25	0.05/0.15	21	4	
MB20-SSQ	20	-0.010	35	-0.011	16	-0.12	12	-0.24	30	0.07/0.17	25	4	
MB25-SSQ	25	-0.010	42	-0.011	20	-0.12	16	-0.24	36	0.07/0.17	30	4	
MB30-SSQ	30	-0.010	47	-0.011	22	-0.12	18	-0.24	41	0.07/0.17	35	4	
MB35-SSQ	35	-0.012	55	-0.013	25	-0.12	20	-0.30	48	0.07/0.17	41	4	
MB40-SSQ	40	-0.012	62	-0.013	28	-0.12	22	-0.30	55	0.07/0.17	47	4	
MB45-SSQ	45	-0.012	68	-0.013	32	-0.12	25	-0.30	60	0.07/0.17	51	4	
MB50-SSQ	50	-0.012	75	-0.013	35	-0.12	28	-0.30	67	0.07/0.17	57	4	
MB60-SSQ	60	-0.015	90	-0.015	44	-0.15	36	-0.40	81	0.10/0.20	68	4	
MB70-SSQ	70	-0.015	105	-0.015	49	-0.15	40	-0.40	94	0.10/0.20	80	4	
MB80-SSQ	80	-0.015	120	-0.015	55	-0.15	45	-0.40	107	0.10/0.20	92	4	
MB90-SSQ	90	-0.020	130	-0.018	60	-0.20	50	-0.50	117	0.13/0.23	100	4	
MB100-SSQ	100	-0.020	150	-0.018	70	-0.20	55	-0.50	134	0.13/0.23	114	4	
MB110-SSQ	110	-0.020	160	-0.025	70	-0.20	55	-0.50	143	0.13/0.23	125	4	
MB120-SSQ	120	-0.020	180	-0.025	85	-0.20	70	-0.50	160	0.13/0.23	136	4	
MB140-SSQ	140	-0.025	210	-0.030	90	-0.25	70	-0.60	187	0.13/0.23	164	4	
MB160-9LSSQ	160	-0.025	230	-0.030	105	-0.25	80	-0.60	206	0.15/0.27	177	4	
MB180-9LSSQ	180	-0.025	260	-0.035	105	-0.25	80	-0.70	234	0.15/0.27	209	4	
MB200-9LSSQ	200	-0.030	290	-0.035	130	-0.30	100	-0.70	265	0.15/0.27	231	4	
MB220-9LSSQ	220	-0.030	320	-0.040	135	-0.30	100	-0.80	286	0.15/0.27	252	4	
MB240-9LSSQ	240	-0.030	340	-0.040	140	-0.30	100	-0.80	306	0.15/0.27	272	4	
MB260-9LSSQ	260	-0.035	370	-0.040	150	-0.35	110	-0.80	333	0.17/0.30	297	4	
MB280-9LSSQ	280	-0.035	400	-0.040	155	-0.35	120	-0.80	360	0.17/0.30	325	4	
MB300-9LSSQ	300	-0.035	430	-0.045	165	-0.35	120	-0.90	375	0.17/0.30	349	4	
MB320-9LSSQ	320	-0.040	440	-0.045	160	-0.40	135	-0.90	380	0.20/0.34	345	4	

All dimensions are in millimeters.
Outer rings of bearings size 160 and above are double fractured (suffix-9L).
All dimensions apply before MoS_2 coating and Fracture.

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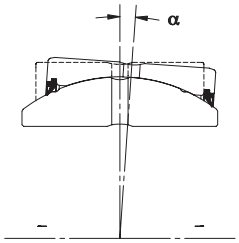
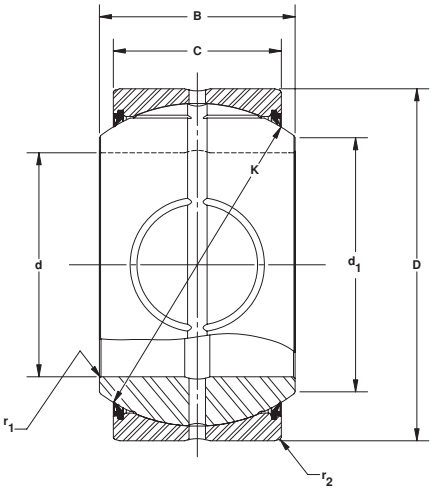
Long Life Spherical Plain Bearings - Metric





Series MB--SSQ

r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (kg)❶	Recommended Load Limits			Recommended Shaft Diameter				Recommended Housing Bore❷		Basic Part Number
			Static Radial (kN)	Static Thrust (kN)	Dynamic Radial (kN)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
						Max.	Min.	Max.	Min.	Max.	Min.	
0.3	0.3	0.04	107	16.9	21.5	16.984	16.973	17.015	17.007	29.980	29.959	**-17**
0.3	0.3	0.07	155	24.3	31.0	19.980	19.967	20.017	20.008	34.975	34.950	**-20**
0.6	0.6	0.12	248	43.2	49.5	24.980	24.967	25.017	25.008	41.975	41.950	**-25**
0.6	0.6	0.15	317	54.7	63.5	29.980	29.967	30.017	30.008	46.975	46.950	**-30**
0.6	1.0	0.23	413	67.5	82.6	34.975	34.959	35.020	35.009	54.970	54.940	**-35**
0.6	1.0	0.32	520	81.7	104.0	39.975	39.959	40.020	40.009	61.970	61.940	**-40**
0.6	1.0	0.42	645	106.0	129.0	44.975	44.959	45.020	45.009	67.968	67.938	**-45**
0.6	1.0	0.57	807	132.0	161.0	49.975	49.959	50.020	50.009	74.968	74.938	**-50**
1.0	1.0	1.05	1,250	219.0	250.0	59.970	59.951	60.024	60.011	89.962	89.927	**-60**
1.0	1.0	1.60	1,620	270.0	325.0	69.970	69.951	70.024	70.011	104.959	104.924	**-70**
1.0	1.0	2.35	2,070	342.0	410.0	79.970	79.951	80.024	80.011	119.959	119.924	**-80**
1.0	1.0	2.84	2,520	422.0	500.0	89.964	89.942	90.028	90.013	129.952	129.912	**-90**
1.0	1.0	4.58	3,200	510.0	640.0	99.964	99.942	100.028	100.013	149.950	149.910	**-100**
1.0	1.0	4.94	3,400	510.0	680.0	109.964	109.942	110.028	110.013	159.950	159.910	**-110**
1.0	1.0	8.10	4,800	830.0	960.0	119.964	119.942	120.028	120.013	179.947	179.907	**-120**
1.0	1.0	11.52	5,600	830.0	1,120.0	139.957	139.932	140.033	140.015	209.937	209.891	**-140**
1.0	1.0	14.70	7,100	1,100.0	1,420.0	159.957	159.932	160.033	160.015	229.933	229.887	**-160**
1.1	1.1	19.29	8,000	1,100.0	1,600.0	179.957	179.932	180.033	180.015	259.926	259.874	**-180**
1.1	1.1	30.11	11,400	1,700.0	2,300.0	199.950	199.921	200.037	200.017	289.922	289.870	**-200**
1.1	1.1	37.36	12,300	1,700.0	2,500.0	219.950	219.921	220.037	220.017	319.913	319.856	**-220**
1.1	1.1	40.77	13,200	1,700.0	2,600.0	239.950	239.921	240.037	240.017	339.913	339.856	**-240**
1.1	1.1	53.32	15,700	2,000.0	3,200.0	259.944	259.912	260.043	260.020	369.907	369.850	**-260**
1.1	1.1	67.17	18,600	2,400.0	3,700.0	279.944	279.912	280.043	280.020	399.907	399.850	**-280**
1.1	1.1	78.35	20,000	2,400.0	4,000.0	299.944	299.912	300.043	300.020	429.897	429.834	**-300**
1.1	3.0	78.52	22,000	3,100.0	4,400.0	319.938	319.902	320.046	320.021	439.897	439.834	**-320**

❶ To obtain weight in pounds, multiply by 2.20462 (lb/kg).

❷ See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

High Misalignment - Inch

Series BH--L

Part Number	d Inside Diameter			D Outside Diameter			B Inner Ring Width +0.000 - 0.005	C Outer Ring Width +0.000 - 0.005	K Sphere Dia. (REF)	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle (deg)	
Open	Nom.	Max.	Min.	Nom.	Max.	Min.							
BH2024-L	1 1/4	1.2500	1.2495	2 7/16	2.4375	2.4369	1.390	1.125	2.155	0.003/0.007	1.660	15	
BH2428-L	1 1/2	1.5000	1.4995	2 13/16	2.8125	2.8119	1.580	1.312	2.515	0.003/0.007	1.950	14	
BH2832-L	1 3/4	1.7500	1.7495	3 3/16	3.1875	3.1869	1.820	1.500	2.875	0.003/0.007	2.220	14	
BH3236-L	2	2.0000	1.9995	3 9/16	3.5625	3.5617	2.070	1.687	3.235	0.004/0.008	2.500	14	
BH3640-L	2 1/4	2.2500	2.2494	3 15/16	3.9375	3.9367	2.318	1.875	3.590	0.004/0.008	2.750	14	
BH4044-L	2 1/2	2.5000	2.4994	4 3/8	4.3750	4.3742	2.545	2.062	3.950	0.004/0.008	3.030	14	
BH4448-L	2 3/4	2.7500	2.7494	4 3/4	4.7500	4.7492	2.790	2.250	4.312	0.004/0.008	3.300	14	
BH4852-L	3	3.0000	2.9994	5 1/8	5.1250	5.1240	3.022	2.437	4.675	0.005/0.009	3.580	14	
BH5256-L	3 1/4	3.2500	3.2492	5 1/2	5.5000	5.4990	3.265	2.625	5.040	0.005/0.009	3.850	14	
BH5660-L	3 1/2	3.5000	3.4992	5 7/8	5.8750	5.8740	3.560	2.812	5.390	0.005/0.009	4.100	14	
BH6064-L	3 3/4	3.7500	3.7492	6 1/4	6.2500	6.2490	3.738	3.000	5.750	0.005/0.009	4.370	14	
BH6472-9L	4	4.0000	3.9992	7	7.0000	6.9990	4.225	3.375	6.475	0.005/0.009	4.900	10	
BH7280-9L	4 1/2	4.5000	4.4992	7 3/4	7.7500	7.7488	4.690	3.750	7.190	0.005/0.009	5.470	10	
BH8896-9L	5 1/2	5.5000	5.4990	8 3/4	8.7500	8.7488	4.950	4.125	8.156	0.005/0.009	6.500	9	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).
Bore dimensions apply after MoS_2 coating. All other dimensions are before coating.

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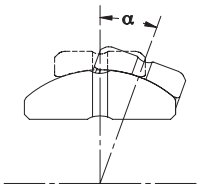
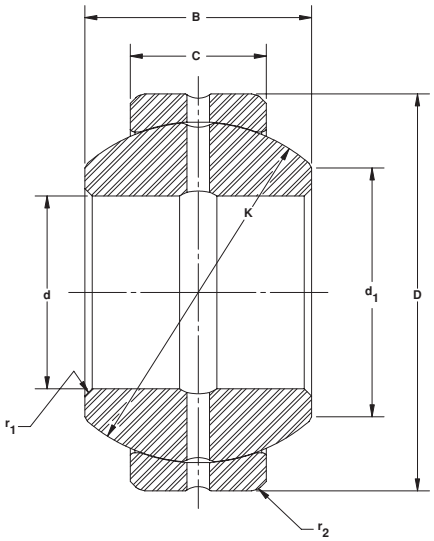
Spherical Plain Bearings

High Misalignment - Inch





Series BH--L

	r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (lb)	Recommended Load Limits ❶			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
				Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
							Max.	Min.	Max.	Min.	Max.	Min.	
	0.040	0.032	1.000	84,800	16,600	21,200	1.2490	1.2484	1.2508	1.2504	2.4363	2.4351	**-2024**
	0.040	0.032	1.600	115,400	23,600	28,800	1.4990	1.4984	1.5008	1.5004	2.8113	2.8101	**-2428**
	0.060	0.032	2.500	150,900	31,900	37,700	1.7490	1.7484	1.7508	1.7504	3.1860	3.1846	**-2832**
	0.060	0.032	3.700	191,000	42,000	47,700	1.9988	1.9981	2.0010	2.0005	3.5610	3.5596	**-3236**
	0.060	0.032	4.400	235,500	52,900	58,800	2.2488	2.2481	2.2510	2.2505	3.9359	3.9345	**-3640**
	0.080	0.032	6.500	285,000	62,600	71,200	2.4988	2.4981	2.5010	2.5005	4.3734	4.3720	**-4044**
	0.080	0.032	8.000	339,500	76,300	84,800	2.7488	2.7181	2.7510	2.7505	4.7481	4.7465	**-4448**
	0.080	0.032	9.600	398,700	91,500	99,600	2.9988	2.9981	3.0010	3.0005	5.1231	5.1215	**-4852**
	0.800	0.032	11.700	463,000	109,200	115,700	3.2486	3.2477	3.2511	3.2505	5.4981	5.4965	**-5256**
	0.080	0.032	15.000	530,400	126,100	132,600	3.4986	3.4977	3.5011	3.5005	5.8731	5.8715	**-5660**
	0.080	0.032	19.500	603,700	144,500	150,900	3.7486	3.7477	3.7511	3.7505	6.2481	6.2465	**-6064**
	0.080	0.044	22.500	764,800	290,400	191,200	3.9986	3.9977	4.0011	4.0005	6.9979	6.9963	**-6472**
	0.080	0.044	30.000	943,600	360,900	235,900	4.4986	4.4977	4.5011	4.5005	7.7476	7.7458	**-7280**
	0.080	0.044	45.000	1,177,000	387,600	294,200	5.4983	5.4973	5.5013	5.5006	8.7475	8.7457	**-8896**

❶ Ultimate static and impact loads should not exceed 150% of catalog ratings.

❷ See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

High Misalignment - Inch

Series BH--LSS

Part Number	d Inside Diameter			D Outside Diameter			B Inner Ring Width +0.000 - 0.005	C Outer Ring Width +0.000 - 0.005	K Sphere Dia. (REF)	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle (deg)	
Sealed	Nom.	Max.	Min.	Nom.	Max.	Min.							
BH2024-LSS	1 1/4	1.2500	1.2495	2 7/16	2.4375	2.4369	1.390	1.125	2.155	0.003/0.007	1.660	9	
BH2428-LSS	1 1/2	1.5000	1.4995	2 13/16	2.8125	2.8119	1.580	1.312	2.515	0.003/0.007	1.950	9	
BH2832-LSS	1 3/4	1.7500	1.7495	3 3/16	3.1875	3.1869	1.820	1.500	2.875	0.003/0.007	2.220	9	
BH3236-LSS	2	2.0000	1.9995	3 9/16	3.5625	3.5617	2.070	1.687	3.235	0.004/0.008	2.500	9	
BH3640-LSS	2 1/4	2.2500	2.2494	3 15/16	3.9375	3.9367	2.318	1.875	3.590	0.004/0.008	2.750	9	
BH4044-LSS	2 1/2	2.5000	2.4994	4 3/8	4.3750	4.3742	2.545	2.062	3.950	0.004/0.008	3.030	9	
BH4448-LSS	2 3/4	2.7500	2.7494	4 3/4	4.7500	4.7492	2.790	2.250	4.312	0.004/0.008	3.300	9	
BH4852-LSS	3	3.0000	2.9994	5 1/8	5.1250	5.1240	3.022	2.437	4.675	0.005/0.009	3.580	9	
BH5256-LSS	3 1/4	3.2500	3.2492	5 1/2	5.5000	5.4990	3.265	2.625	5.040	0.005/0.009	3.850	9	
BH5660-LSS	3 1/2	3.5000	3.4992	5 7/8	5.8750	5.8740	3.560	2.812	5.390	0.005/0.009	4.100	9	
BH6064-LSS	3 3/4	3.7500	3.7492	6 1/4	6.2500	6.2490	3.738	3.000	5.750	0.005/0.009	4.370	9	
BH6472-9LSS	4	4.0000	3.9992	7	7.0000	6.9990	4.225	3.375	6.475	0.005/0.009	4.900	9	
BH7280-9LSS	4 1/2	4.5000	4.4992	7 3/4	7.7500	7.7488	4.690	3.750	7.190	0.005/0.009	5.470	9	
BH8896-9LSS	5 1/2	5.5000	5.4990	8 3/4	8.7500	8.7488	4.950	4.125	8.156	0.005/0.009	6.500	9	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).
Bore dimensions apply after MoS_2 coating. All other dimensions are before coating.

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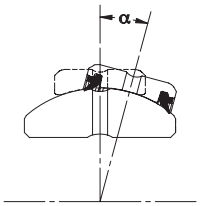
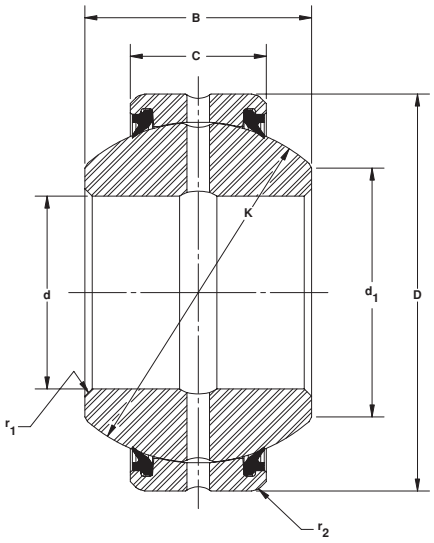
Spherical Plain Bearings

High Misalignment - Inch





Series BH--LSS

	r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (lb)	Recommended Load Limits ❶			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
				Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
							Max.	Min.	Max.	Min.	Max.	Min.	
	0.040	0.032	1.000	84,800	16,600	21,200	1.2490	1.2484	1.2508	1.2504	2.4363	2.4351	**-2024**
	0.040	0.032	1.600	115,400	23,600	28,800	1.4990	1.4984	1.5008	1.5004	2.8113	2.8101	**-2428**
	0.060	0.032	2.500	150,900	31,900	37,700	1.7490	1.7484	1.7508	1.7504	3.1860	3.1846	**-2832**
	0.060	0.032	3.700	191,000	42,000	47,700	1.9988	1.9981	2.0010	2.0005	3.5610	3.5596	**-3236**
	0.060	0.032	4.400	235,500	52,900	58,800	2.2488	2.2481	2.2510	2.2505	3.9359	3.9345	**-3640**
	0.080	0.032	6.500	285,000	62,600	71,200	2.4988	2.4981	2.5010	2.5005	4.3734	4.3720	**-4044**
	0.080	0.032	8.000	339,500	76,300	84,800	2.7488	2.7181	2.7510	2.7505	4.7481	4.7465	**-4448**
	0.080	0.032	9.600	398,700	91,500	99,600	2.9988	2.9981	3.0010	3.0005	5.1231	5.1215	**-4852**
	0.800	0.032	11.700	463,000	109,200	115,700	3.2486	3.2477	3.2511	3.2505	5.4981	5.4965	**-5256**
	0.080	0.032	15.000	530,400	126,100	132,600	3.4986	3.4977	3.5011	3.5005	5.8731	5.8715	**-5660**
	0.080	0.032	19.500	603,700	144,500	150,900	3.7486	3.7477	3.7511	3.7505	6.2481	6.2465	**-6064**
	0.080	0.044	22.500	764,800	290,400	191,200	3.9986	3.9977	4.0011	4.0005	6.9979	6.9963	**-6472**
	0.080	0.044	30.000	943,600	360,900	235,900	4.4986	4.4977	4.5011	4.5005	7.7476	7.7458	**-7280**
	0.080	0.044	45.000	1,177,000	387,600	294,200	5.4983	5.4973	5.5013	5.5006	8.7475	8.7457	**-8896**

❶ Ultimate static and impact loads should not exceed 150% of catalog ratings.

❷ See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

High Misalignment - Metric

Series MBH--

Part Number	d Inside Diameter		D Outside Diameter		B Inner Ring Width		C Outer Ring Width		K Sphere Dia.	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle
Open	Nom.	Tol. +0.000	Nom.	Tol. +0.000	Nom.	Tol. +0.00	Nom.	Tol. +0.00	(REF)			(deg)
MBH1215	12	-0.008	26	-0.009	15	-0.12	9	-0.24	22	0.05/0.15	16	20
MBH1517	15	-0.008	30	-0.009	16	-0.12	10	-0.24	25	0.05/0.15	19	17
MBH1720	17	-0.008	35	-0.011	20	-0.12	12	-0.24	30	0.07/0.17	22	19
MBH2025	20	-0.010	42	-0.011	25	-0.12	16	-0.24	36	0.07/0.17	26	18
MBH2530	25	-0.010	47	-0.011	28	-0.12	18	-0.24	41	0.07/0.17	30	18
MBH3035	30	-0.010	55	-0.013	32	-0.12	20	-0.30	48	0.07/0.17	36	18
MBH3540	35	-0.012	62	-0.013	35	-0.12	22	-0.30	55	0.07/0.17	42	16
MBH4045	40	-0.012	68	-0.013	40	-0.12	25	-0.30	60	0.07/0.17	44	17
MBH4550	45	-0.012	75	-0.013	43	-0.12	28	-0.30	67	0.07/0.17	51	16
MBH5060	50	-0.012	90	-0.015	56	-0.12	36	-0.40	81	0.10/0.20	58	18
MBH6070	60	-0.015	105	-0.015	63	-0.15	40	-0.40	94	0.10/0.20	70	17
MBH7080	70	-0.015	120	-0.015	70	-0.15	45	-0.40	107	0.10/0.20	81	16
MBH8090	80	-0.015	130	-0.018	75	-0.15	50	-0.50	117	0.13/0.23	90	15
MBH90100	90	-0.020	150	-0.018	85	-0.20	55	-0.50	134	0.13/0.23	103	15
MBH100110	100	-0.020	160	-0.025	85	-0.20	55	-0.50	143	0.13/0.23	115	14
MBH110120	110	-0.020	180	-0.025	100	-0.20	70	-0.50	160	0.13/0.23	125	13
MBH120140	120	-0.020	210	-0.030	115	-0.20	70	-0.60	187	0.13/0.23	147	16
MBH140160-9L	140	-0.025	230	-0.030	130	-0.25	80	-0.60	206	0.13/0.23	160	16
MBH160180-9L	160	-0.025	260	-0.035	135	-0.25	80	-0.70	234	0.15/0.27	191	15
MBH180200-9L	180	-0.025	290	-0.035	155	-0.25	100	-0.70	265	0.15/0.27	215	14
MBH200220-9L	200	-0.030	320	-0.040	165	-0.30	100	-0.80	286	0.15/0.27	233	15
MBH220240-9L	220	-0.030	340	-0.040	175	-0.30	100	-0.80	306	0.15/0.27	251	16
MBH240260-9L	240	-0.030	370	-0.040	190	-0.30	110	-0.80	333	0.15/0.27	273	15
MBH260280-9L	260	-0.035	400	-0.040	205	-0.35	120	-0.80	360	0.17/0.30	296	15
MBH280300-9L	280	-0.035	430	-0.045	210	-0.35	120	-0.90	375	0.17/0.30	324	15

All dimensions are in millimeters.
Outer rings of bearings size 160 and above are double fractured (suffix-9L).
All dimensions apply before MoS_2 coating.

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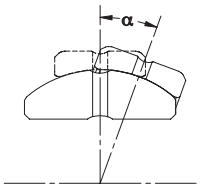
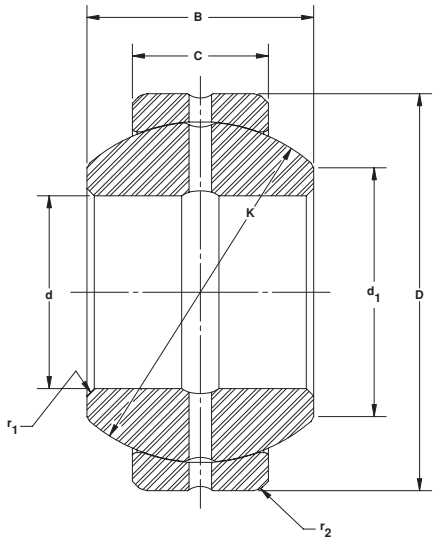
Spherical Plain Bearings

High Misalignment - Metric





Series MBH--

r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (kg)[1]	Recommended Load Limits			Recommended Shaft Diameter				Recommended Housing Bore[2]		Basic Part Number
			Static Radial (kN)	Static Thrust (kN)	Dynamic Radial (kN)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
						Max.	Min.	Max.	Min.	Max.	Min.	
0.3	0.3	0.04	85	13.7	17.0	11.984	11.973	12.015	12.007	25.980	25.959	**-1215**
0.3	0.3	0.05	107	16.9	21.5	14.984	14.973	15.015	15.007	29.980	29.959	**-1517**
0.3	0.3	0.08	155	24.3	31.0	16.984	16.973	17.015	17.007	34.975	34.950	**-1720**
0.6	0.6	0.16	248	43.2	49.5	19.980	19.967	20.017	20.008	41.975	41.950	**-2025**
0.6	0.6	0.20	317	54.7	63.5	24.980	24.967	25.017	25.008	46.975	46.950	**-2530**
0.6	1.0	0.31	413	67.5	82.6	29.980	29.967	30.017	30.008	54.970	54.940	**-3035**
0.6	1.0	0.42	520	81.7	104.0	34.975	34.959	35.020	35.009	61.970	61.940	**-3540**
0.6	1.0	0.54	645	106.0	129.0	39.975	39.959	40.020	40.009	67.968	67.938	**-4045**
0.6	1.0	0.72	807	132.0	161.0	44.975	44.959	45.020	45.009	74.968	74.938	**-4550**
0.6	1.0	1.46	1,250	219.0	250.0	49.975	49.959	50.020	50.009	89.962	89.927	**-5060**
1.0	1.0	2.17	1,620	270.0	325.0	59.970	59.951	60.024	60.011	104.959	104.924	**-6070**
1.0	1.0	3.10	2,070	342.0	410.0	69.970	69.951	70.024	70.011	119.959	119.924	**-7080**
1.0	1.0	3.72	2,520	422.0	500.0	79.970	79.951	80.024	80.011	129.952	129.912	**-8090**
1.0	1.0	5.75	3,200	510.0	640.0	89.964	89.942	90.028	90.013	149.950	149.910	**-90100**
1.0	1.0	6.26	3,400	510.0	680.0	99.964	99.942	100.028	100.013	159.950	159.910	**-100110**
1.0	1.0	9.76	4,800	830.0	960.0	109.964	109.942	110.028	110.013	179.947	179.907	**-110120**
1.0	1.0	15.93	5,600	830.0	1,120.0	119.964	119.942	120.028	120.013	209.937	209.891	**-120140**
1.0	1.0	19.96	7,100	1,100.0	1,420.0	139.957	139.932	140.033	140.015	229.933	229.887	**-140160**
1.0	1.1	26.39	8,000	1,100.0	1,600.0	159.957	159.932	160.033	160.015	259.926	259.874	**-160180**
1.1	1.1	38.87	11,400	1,700.0	2,300.0	179.957	179.932	180.033	180.015	289.922	289.870	**190200**
1.1	1.1	47.88	12,300	1,700.0	2,500.0	199.950	199.921	200.037	200.017	319.913	319.856	**-200220**
1.1	1.1	53.07	13,200	1,700.0	2,600.0	219.950	219.921	220.037	220.017	339.913	339.856	**-220240**
1.1	1.1	68.51	15,700	2,000.0	3,200.0	239.950	239.921	240.037	240.017	369.907	369.850	**-240260**
1.1	1.1	86.51	18,600	2,400.0	3,700.0	259.944	259.912	260.043	260.020	399.907	399.850	**-260280**
1.1	1.1	97.57	20,000	2,400.0	4,000.0	279.944	279.912	280.043	280.020	429.897	429.834	**-280300**

[1] To obtain weight in pounds, multiply by 2.20462 (lb/kg).

[2] See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

High Misalignment - Metric

Series MBH--SS

Part Number	d Inside Diameter		D Outside Diameter		B Inner Ring Width		C Outer Ring Width		K Sphere Dia.	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle
Sealed	Nom.	Tol. +0.000	Nom.	Tol. +0.000	Nom.	Tol. +0.00	Nom.	Tol. +0.00	(REF)			(deg)
MBH1517-SS	15	-0.008	30	-0.009	16	-0.12	10	-0.24	25	0.05/0.15	19	9
MBH1720-SS	17	-0.008	35	-0.011	20	-0.12	12	-0.24	30	0.07/0.17	22	9
MBH2025-SS	20	-0.010	42	-0.011	25	-0.12	16	-0.24	36	0.07/0.17	26	9
MBH2530-SS	25	-0.010	47	-0.011	28	-0.12	18	-0.24	41	0.07/0.17	30	9
MBH3035-SS	30	-0.010	55	-0.013	32	-0.12	20	-0.30	48	0.07/0.17	36	9
MBH3540-SS	35	-0.012	62	-0.013	35	-0.12	22	-0.30	55	0.07/0.17	42	9
MBH4045-SS	40	-0.012	68	-0.013	40	-0.12	25	-0.30	60	0.07/0.17	44	9
MBH4550-SS	45	-0.012	75	-0.013	43	-0.12	28	-0.30	67	0.07/0.17	51	9
MBH5060-SS	50	-0.012	90	-0.015	56	-0.12	36	-0.40	81	0.10/0.20	58	9
MBH6070-SS	60	-0.015	105	-0.015	63	-0.15	40	-0.40	94	0.10/0.20	70	9
MBH7080-SS	70	-0.015	120	-0.015	70	-0.15	45	-0.40	107	0.10/0.20	81	9
MBH8090-SS	80	-0.015	130	-0.018	75	-0.15	50	-0.50	117	0.13/0.23	90	9
MBH90100-SS	90	-0.020	150	-0.018	85	-0.20	55	-0.50	134	0.13/0.23	103	9
MBH100110-SS	100	-0.020	160	-0.025	85	-0.20	55	-0.50	143	0.13/0.23	115	9
MBH110120-SS	110	-0.020	180	-0.025	100	-0.20	70	-0.50	160	0.13/0.23	125	9
MBH120140-SS	120	-0.020	210	-0.030	115	-0.20	70	-0.60	187	0.13/0.23	147	9
MBH140160-9LSS	140	-0.025	230	-0.030	130	-0.25	80	-0.60	206	0.13/0.23	160	9
MBH160180-9LSS	160	-0.025	260	-0.035	135	-0.25	80	-0.70	234	0.15/0.27	191	9
MBH180200-9LSS	180	-0.025	290	-0.035	155	-0.25	100	-0.70	265	0.15/0.27	215	9
MBH200220-9LSS	200	-0.030	320	-0.040	165	-0.30	100	-0.80	286	0.15/0.27	233	9
MBH220240-9LSS	220	-0.030	340	-0.040	175	-0.30	100	-0.80	306	0.15/0.27	251	9
MBH240260-9LSS	240	-0.030	370	-0.040	190	-0.30	110	-0.80	333	0.15/0.27	273	9
MBH260280-9LSS	260	-0.035	400	-0.040	205	-0.35	120	-0.80	360	0.17/0.30	296	9
MBH280300-9LSS	280	-0.035	430	-0.045	210	-0.35	120	-0.90	375	0.17/0.30	324	9

All dimensions are in millimeters.
Outer rings of bearings size 160 and above are double fractured (suffix-9L).
All dimensions apply before MoS_2 coating and Fracture.

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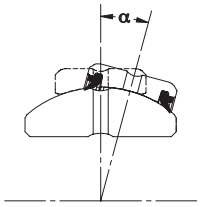
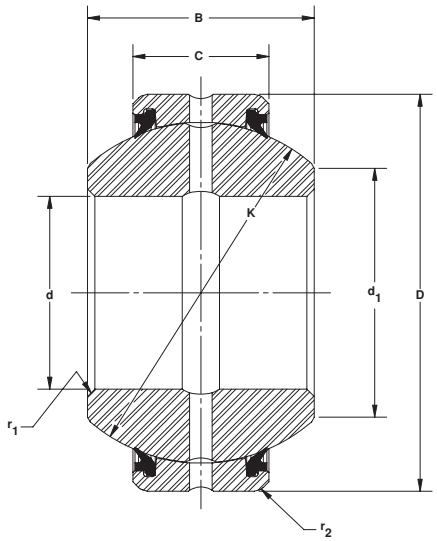
Spherical Plain Bearings

High Misalignment - Metric





Series MBH--SS

r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (kg)[1]	Recommended Load Limits			Recommended Shaft Diameter				Recommended Housing Bore[2]		Basic Part Number
			Static Radial (kN)	Static Thrust (kN)	Dynamic Radial (kN)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
						Max.	Min.	Max.	Min.	Max.	Min.	
0.3	0.3	0.05	107	16.9	21.5	14.984	14.973	15.015	15.007	29.980	29.959	**-1517**
0.3	0.3	0.08	155	24.3	31.0	16.984	16.973	17.015	17.007	34.975	34.950	**-1720**
0.6	0.6	0.16	248	43.2	49.5	19.980	19.967	20.017	20.008	41.975	41.950	**-2025**
0.6	0.6	0.20	317	54.7	63.5	24.980	24.967	25.017	25.008	46.975	46.950	**-2530**
0.6	1.0	0.31	413	67.5	82.6	29.980	29.967	30.017	30.008	54.970	54.940	**-3035**
0.6	1.0	0.42	520	81.7	104.0	34.975	34.959	35.020	35.009	61.970	61.940	**-3540**
0.6	1.0	0.54	645	106.0	129.0	39.975	39.959	40.020	40.009	67.968	67.938	**-4045**
0.6	1.0	0.72	807	132.0	161.0	44.975	44.959	45.020	45.009	74.968	74.938	**-4550**
0.6	1.0	1.46	1,250	219.0	250.0	49.975	49.959	50.020	50.009	89.962	89.927	**-5060**
1.0	1.0	2.17	1,620	270.0	325.0	59.970	59.951	60.024	60.011	104.959	104.924	**-6070**
1.0	1.0	3.10	2,070	342.0	410.0	69.970	69.951	70.024	70.011	119.959	119.924	**-7080**
1.0	1.0	3.72	2,520	422.0	500.0	79.970	79.951	80.024	80.011	129.952	129.912	**-8090**
1.0	1.0	5.75	3,200	510.0	640.0	89.964	89.942	90.028	90.013	149.950	149.910	**-90100**
1.0	1.0	6.26	3,400	510.0	680.0	99.964	99.942	100.028	100.013	159.950	159.910	**-100110**
1.0	1.0	9.76	4,800	830.0	960.0	109.964	109.942	110.028	110.013	179.947	179.907	**-110120**
1.0	1.0	15.93	5,600	830.0	1,120.0	119.964	119.942	120.028	120.013	209.937	209.891	**-120140**
1.0	1.0	19.96	7,100	1,100.0	1,420.0	139.957	139.932	140.033	140.015	229.933	229.887	**-140160**
1.0	1.1	26.39	8,000	1,100.0	1,600.0	159.957	159.932	160.033	160.015	259.926	259.874	**-160180**
1.1	1.1	38.87	11,400	1,700.0	2,300.0	179.957	179.932	180.033	180.015	289.922	289.870	**-180200**
1.1	1.1	47.88	12,300	1,700.0	2,500.0	199.950	199.921	200.037	200.017	319.913	319.856	**-200220**
1.1	1.1	53.07	13,200	1,700.0	2,600.0	219.950	219.921	220.037	220.017	339.913	339.856	**-220240**
1.1	1.1	68.51	15,700	2,000.0	3,200.0	239.950	239.921	240.037	240.017	369.907	369.850	**-240260**
1.1	1.1	86.51	18,600	2,400.0	3,700.0	259.944	259.912	260.043	260.020	399.907	399.850	**-260280**
1.1	1.1	97.57	20,000	2,400.0	4,000.0	279.944	279.912	280.043	280.020	429.897	429.834	**-280300**

[1] To obtain weight in pounds, multiply by 2.20462 (lb/kg).

[2] See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

Tapered Bore - Inch

Series BT--L

Part Number	d Nominal Dia. of Inner Ring [1]	d_1 Bore Dia.	D Outside Diameter			B Inner Ring Width +0.000 -0.005	C Outer Ring Width +0.000 -0.005	K Sphere Dia.	Unmounted Diametral Clearance	G End Plate Dia.	
Open		(REF)	Nom.	Max.	Min.			(REF)			
BT2024-L	1.250	1.175	2 7/16	2.4375	2.4369	1.390	1.125	2.155	0.003/0.007	1.66	
BT2428-L	1.500	1.415	2 13/16	2.8125	2.8119	1.580	1.312	2.515	0.003/0.007	1.95	
BT2832-L	1.750	1.650	3 3/16	3.1875	3.1869	1.820	1.500	2.875	0.003/0.007	2.22	
BT3236-L	2.000	1.888	3 9/16	3.5625	3.5617	2.070	1.687	3.235	0.004/0.008	2.50	
BT3640-L	2.250	2.125	3 15/16	3.9375	3.9367	2.318	1.875	3.590	0.004/0.008	2.75	
BT4044-L	2.500	2.365	4 3/8	4.3750	4.3742	2.545	2.062	3.950	0.004/0.008	3.03	
BT4448-L	2.750	2.600	4 3/4	4.7500	4.7492	2.790	2.250	4.312	0.004/0.008	3.30	
BT4852-L	3.000	2.835	5 1/8	5.1250	5.1240	3.022	2.437	4.675	0.005/0.009	3.58	
BT5256-L	3.250	3.070	5 1/2	5.5000	5.4990	3.265	2.625	5.040	0.005/0.009	3.85	
BT5660-L	3.500	3.300	5 7/8	5.8750	5.8740	3.560	2.812	5.390	0.005/0.009	4.10	
BT6064-L	3.750	3.540	6 1/4	6.2500	6.2490	3.738	3.000	5.750	0.005/0.009	4.37	
BT6472-9L	4.000	3.760	7	7.0000	6.9990	4.225	3.375	6.475	0.005/0.009	4.90	
BT7280-9L	4.500	4.230	7 3/4	7.7500	7.7488	4.690	3.750	7.190	0.005/0.009	5.47	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).
All dimensions apply before MoS_2 coating.

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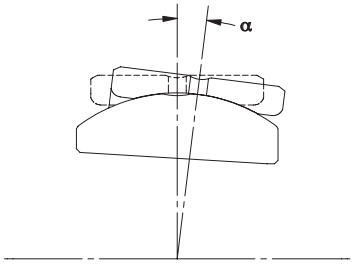
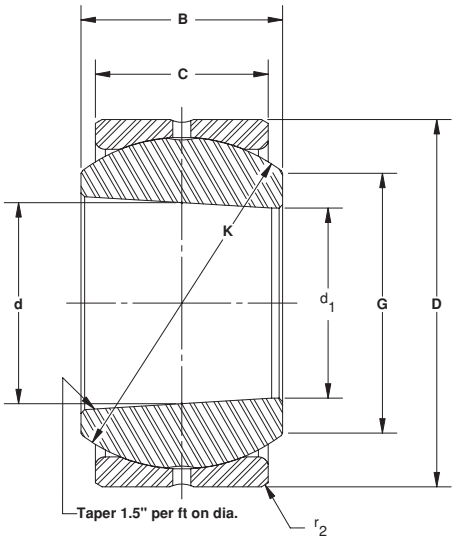
Spherical Plain Bearings

Tapered Bore - Inch





Series BT--L

	α Tilt Angle (deg)	r2 Hsg. Fillet Max.	Approx. Weight (lb)	Inner Ring Clamping Force ❹ (lbf)	Recommended ❷ Load Limit			Recommended Mounting Dimensions ❸ Housing Bore				Basic Part Number
					Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO N7 (Press Fit)		ISO R7 (Press Fit)		
								Max.	Min.	Max.	Min.	
	15	0.032	1.000	12,000	84,800	16,600	21,200	2.4372	2.4360	2.4363	2.4351	**-2024**
	14	0.032	1.600	13,000	115,400	23,600	28,800	2.8122	2.8110	2.8112	2.8101	**-2428**
	14	0.032	2.500	14,000	150,900	31,900	37,700	3.1871	3.1857	3.1860	3.1846	**-2832**
	14	0.032	3.700	16,000	191,000	42,000	47,700	3.5621	3.5607	3.5610	3.5596	**-3236**
	14	0.032	4.400	17,000	235,500	52,900	58,800	3.9371	3.9357	3.9359	3.9345	**-3640**
	14	0.032	6.500	18,000	285,000	62,600	71,200	4.3746	4.3732	4.3734	4.3720	**-4044**
	14	0.032	8.000	19,000	339,500	76,300	84,800	4.7495	4.7480	4.7481	4.7465	**-4448**
	14	0.032	9.600	20,000	398,700	91,500	99,600	5.1245	5.1230	5.1231	5.1215	**-4852**
	14	0.032	11.700	21,000	463,000	109,200	115,700	5.4995	5.4980	5.4981	5.4965	**-5256**
	14	0.032	15.000	22,000	530,400	126,100	132,600	5.8745	5.8730	5.8730	5.8715	**-5660**
	14	0.032	19.500	23,000	603,700	144,500	150,900	6.2495	6.2480	6.2480	6.2465	**-6064**
	10	0.044	22.500	25,000	764,800	290,400	191,200	6.9995	6.9980	6.9979	6.9963	**-6472**
	10	0.044	30.000	27,000	943,600	360,900	235,900	7.7494	7.7476	7.7476	7.7458	**-7280**

❶ The nominal bore diameter is measured at the inner ring center.
❷ Ultimate static and impact loads should not exceed 150% of catalog ratings.
❸ See technical section for alternate housing diameter recommendations.
❹ Higher clamping forces reduce bearing clearance.

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Spherical Plain Bearings

Tapered Bore - Inch

Series BT--LSS

Part Number	d Nominal Dia. of Inner Ring [1]	d_1 Bore Dia.	D Outside Diameter			B Inner Ring Width +0.000 -0.005	C Outer Ring Width +0.000 -0.005	K Sphere Dia.	Unmounted Diametral Clearance	G End Plate Dia.	
Sealed		(REF)	Nom.	Max.	Min.			(REF)			
BT2024-LSS	1.250	1.175	2 7/16	2.4375	2.4369	1.390	1.125	2.155	0.003/0.007	1.66	
BT2428-LSS	1.500	1.415	2 13/16	2.8125	2.8119	1.580	1.312	2.515	0.003/0.007	1.95	
BT2832-LSS	1.750	1.650	3 3/16	3.1875	3.1869	1.820	1.500	2.875	0.003/0.007	2.22	
BT3236-LSS	2.000	1.888	3 9/16	3.5625	3.5617	2.070	1.687	3.235	0.004/0.008	2.50	
BT3640-LSS	2.250	2.125	3 15/16	3.9375	3.9367	2.318	1.875	3.590	0.004/0.008	2.75	
BT4044-LSS	2.500	2.365	4 3/8	4.3750	4.3742	2.545	2.062	3.950	0.004/0.008	3.03	
BT4448-LSS	2.750	2.600	4 3/4	4.7500	4.7492	2.790	2.250	4.312	0.004/0.008	3.30	
BT4852-LSS	3.000	2.835	5 1/8	5.1250	5.1240	3.022	2.437	4.675	0.005/0.009	3.58	
BT5256-LSS	3.250	3.070	5 1/2	5.5000	5.4990	3.265	2.625	5.040	0.005/0.009	3.85	
BT5660-LSS	3.500	3.300	5 7/8	5.8750	5.8740	3.560	2.812	5.390	0.005/0.009	4.10	
BT6064-LSS	3.750	3.540	6 1/4	6.2500	6.2490	3.738	3.000	5.750	0.005/0.009	4.37	
BT6472-9LSS	4.000	3.760	7	7.0000	6.9990	4.225	3.375	6.475	0.005/0.009	4.90	
BT7280-9LSS	4.500	4.230	7 3/4	7.7500	7.7488	4.690	3.750	7.190	0.005/0.009	5.47	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).
All dimensions apply before MoS_2 coating.

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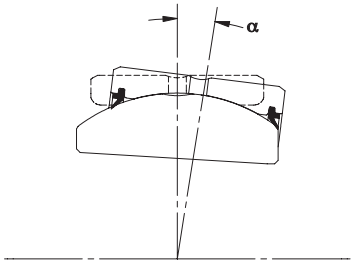
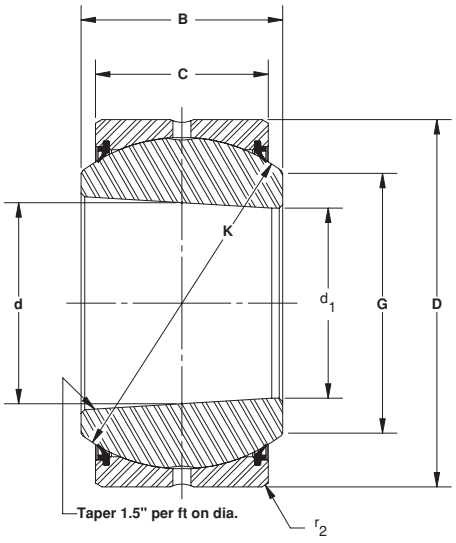
Spherical Plain Bearings

Tapered Bore - Inch





Series BT--LSS

α Tilt Angle (deg)	r2 Hsg. Fillet Max.	Approx. Weight (lb)	Inner Ring Clamping Force ❹ (lbf)	Recommended ❷ Load Limit			Recommended Mounting Dimensions ❸ Housing Bore				Basic Part Number
				Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO N7 (Press Fit)		ISO R7 (Press Fit)		
							Max.	Min.	Max.	Min.	
15	0.032	1.000	12,000	84,800	16,600	21,200	2.4372	2.4360	2.4363	2.4351	**-2024**
14	0.032	1.600	13,000	115,400	23,600	28,800	2.8122	2.8110	2.8112	2.8101	**-2428**
14	0.032	2.500	14,000	150,900	31,900	37,700	3.1871	3.1857	3.1860	3.1846	**-2832**
14	0.032	3.700	16,000	191,000	42,000	47,700	3.5621	3.5607	3.5610	3.5596	**-3236**
14	0.032	4.400	17,000	235,500	52,900	58,800	3.9371	3.9357	3.9359	3.9345	**-3640**
14	0.032	6.500	18,000	285,000	62,600	71,200	4.3746	4.3732	4.3734	4.3720	**-4044**
14	0.032	8.000	19,000	339,500	76,300	84,800	4.7495	4.7480	4.7481	4.7465	**-4448**
14	0.032	9.600	20,000	398,700	91,500	99,600	5.1245	5.1230	5.1231	5.1215	**-4852**
14	0.032	11.700	21,000	463,000	109,200	115,700	5.4995	5.4980	5.4981	5.4965	**-5256**
14	0.032	15.000	22,000	530,400	126,100	132,600	5.8745	5.8730	5.8730	5.8715	**-5660**
14	0.032	19.500	23,000	603,700	144,500	150,900	6.2495	6.2480	6.2480	6.2465	**-6064**
10	0.044	22.500	25,000	764,800	290,400	191,200	6.9995	6.9980	6.9979	6.9963	**-6472**
10	0.044	30.000	27,000	943,600	360,900	235,900	7.7494	7.7476	7.7476	7.7458	**-7280**

❶ The nominal bore diameter is measured at the inner ring center.
❷ Ultimate static and impact loads should not exceed 150% of catalog ratings.
❸ See technical section for alternate housing diameter recommendations.
❹ Higher clamping forces reduce bearing clearance.

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Spherical Plain Bearings

Extended Inner Ring - Inch

Series B--EL

Part Number	d Inside Diameter			D Outside Diameter			B Inner Ring Width +0.000 - 0.005	C Outer Ring Width +0.000 - 0.005	K Sphere Dia. (REF)	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle (deg)	
Open	Nom.	Max.	Min.	Nom.	Max.	Min.							
B8-EL	1/2	0.5000	0.4995	7/8	0.8750	0.8745	0.750	0.375	0.719	0.002/0.006	0.625	9	
B10-EL	5/8	0.6250	0.6245	1 1/16	1.0625	1.0620	0.937	0.469	0.899	0.002/0.006	0.780	9	
B12-EL	3/4	0.7500	0.7495	1 1/4	1.2500	1.2495	1.125	0.562	1.080	0.003/0.007	0.920	9	
B14-EL	7/8	0.8750	0.8745	1 7/16	1.4375	1.4370	1.312	0.656	1.258	0.003/0.007	1.070	9	
B16-EL	1	1.0000	0.9995	1 5/8	1.6250	1.6245	1.500	0.750	1.437	0.003/0.007	1.220	9	
B20-EL	1 1/4	1.2500	1.2495	2	2.0000	1.9995	1.875	0.937	1.795	0.003/0.007	1.525	9	
B22-EL	1 3/8	1.3750	1.3745	2 3/16	2.1875	2.1869	2.062	1.031	1.937	0.003/0.007	1.670	9	
B24-EL	1 1/2	1.5000	1.4995	2 7/16	2.4375	2.4369	2.250	1.125	2.155	0.003/0.007	1.850	9	
B28-EL	1 3/4	1.7500	1.7495	2 13/16	2.8125	2.8119	2.625	1.312	2.515	0.003/0.007	2.165	9	
B32-EL	2	2.0000	1.9995	3 3/16	3.1875	3.1869	3.000	1.500	2.875	0.003/0.007	2.460	9	
B36-EL	2 1/4	2.2500	2.2494	3 9/16	3.5625	3.5617	3.375	1.687	3.235	0.004/0.008	2.760	9	
B40-EL	2 1/2	2.5000	2.4994	3 15/16	3.9375	3.9367	3.750	1.875	3.590	0.004/0.008	3.060	9	
B44-EL	2 3/4	2.7500	2.7494	4 3/8	4.3750	4.3742	4.125	2.062	3.950	0.004/0.008	3.380	9	
B48-EL	3	3.0000	2.9994	4 3/4	4.7500	4.7492	4.500	2.250	4.312	0.004/0.008	3.675	9	
B52-EL	3 1/4	3.2500	3.2492	5 1/8	5.1250	5.1240	4.875	2.437	4.675	0.005/0.009	3.985	9	
B56-EL	3 1/2	3.5000	3.4992	5 1/2	5.5000	5.4990	5.250	2.625	5.040	0.005/0.009	4.300	9	
B60-EL	3 3/4	3.7500	3.7492	5 7/8	5.8750	5.8740	5.625	2.812	5.390	0.005/0.009	4.590	9	
B64-EL	4	4.0000	3.9992	6 1/4	6.2500	6.2490	6.000	3.000	5.750	0.005/0.009	4.905	9	
B72-E9L	4 1/2	4.5000	4.4992	7	7.0000	6.9990	6.750	3.375	6.475	0.005/0.009	5.525	7	
B80-E9L	5	5.0000	4.9990	7 3/4	7.7500	7.7488	7.500	3.750	7.190	0.005/0.009	6.130	7	
B96-E9L	6	6.0000	5.9990	8 3/4	8.7500	8.7488	8.250	4.125	8.156	0.005/0.009	7.020	7	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).
Bore dimensions apply after MoS_2 coating. All other dimensions are before coating.

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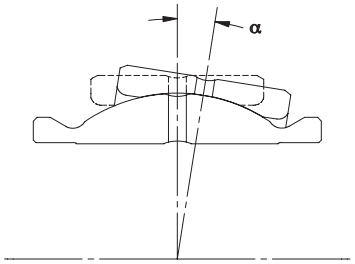
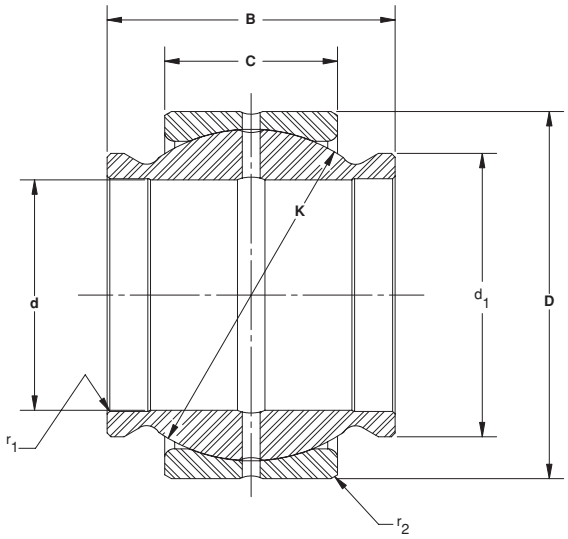
Spherical Plain Bearings

Extended Inner Ring - Inch





Series B--EL

	r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (lb)	Recommended Load Limits ❶			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
				Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
							Max.	Min.	Max.	Min.	Max.	Min.	
	0.015	0.022	0.050	9,400	1,400	2,300	0.4994	0.4989	0.5006	0.5003	0.8742	0.8734	**-8**
	0.022	0.032	0.080	14,700	2,500	3,600	0.6244	0.6239	0.6256	0.6253	1.0617	1.0609	**-10**
	0.022	0.032	0.140	21,200	3,900	5,300	0.7492	0.7487	0.7507	0.7503	1.2490	1.2480	**-12**
	0.022	0.032	0.210	28,800	5,400	7,200	0.8742	0.8737	0.8757	0.8753	1.4365	1.4355	**-14**
	0.022	0.032	0.310	37,700	7,300	9,400	0.9992	0.9987	1.0007	1.0003	1.6240	1.6230	**-16**
	0.022	0.032	0.590	58,800	11,900	14,700	1.2490	1.2484	1.2508	1.2504	1.9988	1.9976	**-20**
	0.022	0.032	0.750	69,800	13,500	17,400	1.3740	1.3734	1.3758	1.3754	2.1863	2.1851	**-22**
	0.022	0.032	1.090	84,800	16,600	21,200	1.4990	1.4984	1.5008	1.5004	2.4363	2.4351	**-24**
	0.022	0.032	1.680	115,400	23,600	28,800	1.7490	1.7484	1.7508	1.7504	2.8113	2.8101	**-28**
	0.022	0.032	2.440	150,900	31,900	37,700	1.9988	1.9981	2.0010	2.0005	3.1860	3.1846	**-32**
	0.022	0.032	3.460	191,000	42,000	47,700	2.2488	2.2481	2.2510	2.2505	3.5610	3.5596	**-36**
	0.022	0.032	4.750	235,500	52,900	58,800	2.4988	2.4981	2.5010	2.5005	3.9359	3.9345	**-40**
	0.022	0.032	6.400	285,000	62,600	71,200	2.7488	2.7481	2.7510	2.7505	4.3734	4.3720	**-44**
	0.022	0.032	7.920	339,500	76,300	84,800	2.9988	2.9981	3.0010	3.0005	4.7481	4.7465	**-48**
	0.022	0.032	10.300	398,700	91,500	99,600	3.2486	3.2477	3.2511	3.2505	5.1231	5.1215	**-52**
	0.022	0.032	12.900	463,000	109,200	115,700	3.4986	3.4977	3.5011	3.5005	5.4981	5.4965	**-56**
	0.022	0.032	15.700	530,400	126,100	132,600	3.7486	3.7477	3.7511	3.7505	5.8731	5.8715	**-60**
	0.022	0.032	18.900	603,700	144,500	150,900	3.9986	3.9977	4.0011	4.0005	6.2481	6.2465	**-64**
	0.032	0.044	27.000	764,800	290,400	191,200	4.4986	4.4977	4.5011	4.5005	6.9979	6.9963	**-72**
	0.032	0.044	36.700	943,600	360,900	235,900	4.9983	4.9973	5.0013	5.0006	7.7476	7.7458	**-80**
	0.032	0.044	45.500	1,177,000	387,600	294,200	5.9983	5.9973	6.0013	6.0006	8.7475	8.7457	**-96**

❶ Ultimate static and impact loads should not exceed 150% of catalog ratings.

❷ See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

Extended Inner Ring - Inch

Series B--ELSS

Part Number	d Inside Diameter			D Outside Diameter			B Inner Ring Width +0.000 - 0.005	C Outer Ring Width +0.000 - 0.005	K Sphere Dia. (REF)	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle (deg)	
Sealed	Nom.	Max.	Min.	Nom.	Max.	Min.							
B12-ELSS	3/4	0.7500	0.7495	1 1/4	1.2500	1.2495	1.125	0.562	1.080	0.003/0.007	0.920	5	
B14-ELSS	7/8	0.8750	0.8745	1 7/16	1.4375	1.4370	1.312	0.656	1.258	0.003/0.007	1.070	5	
B16-ELSS	1	1.0000	0.9995	1 5/8	1.6250	1.6245	1.500	0.750	1.437	0.003/0.007	1.220	5	
B20-ELSS	1 1/4	1.2500	1.2495	2	2.0000	1.9995	1.875	0.937	1.795	0.003/0.007	1.525	5	
B22-ELSS	1 3/8	1.3750	1.3745	2 3/16	2.1875	2.1869	2.062	1.031	1.937	0.003/0.007	1.670	5	
B24-ELSS	1 1/2	1.5000	1.4995	2 7/16	2.4375	2.4369	2.250	1.125	2.155	0.003/0.007	1.850	5	
B28-ELSS	1 3/4	1.7500	1.7495	2 13/16	2.8125	2.8119	2.625	1.312	2.515	0.003/0.007	2.165	5	
B32-ELSS	2	2.0000	1.9995	3 3/16	3.1875	3.1869	3.000	1.500	2.875	0.003/0.007	2.460	5	
B36-ELSS	2 1/4	2.2500	2.2494	3 9/16	3.5625	3.5617	3.375	1.687	3.235	0.004/0.008	2.760	5	
B40-ELSS	2 1/2	2.5000	2.4994	3 15/16	3.9375	3.9367	3.750	1.875	3.590	0.004/0.008	3.060	5	
B44-ELSS	2 3/4	2.7500	2.7494	4 3/8	4.3750	4.3742	4.125	2.062	3.950	0.004/0.008	3.380	5	
B48-ELSS	3	3.0000	2.9994	4 3/4	4.7500	4.7492	4.500	2.250	4.312	0.004/0.008	3.675	5	
B52-ELSS	3 1/4	3.2500	3.2492	5 1/8	5.1250	5.1240	4.875	2.437	4.675	0.005/0.009	3.985	5	
B56-ELSS	3 1/2	3.5000	3.4992	5 1/2	5.5000	5.4990	5.250	2.625	5.040	0.005/0.009	4.300	5	
B60-ELSS	3 3/4	3.7500	3.7492	5 7/8	5.8750	5.8740	5.625	2.812	5.390	0.005/0.009	4.590	5	
B64-ELSS	4	4.0000	3.9992	6 1/4	6.2500	6.2490	6.000	3.000	5.750	0.005/0.009	4.905	5	
B72-E9LSS	4 1/2	4.5000	4.4992	7	7.0000	6.9990	6.750	3.375	6.475	0.005/0.009	5.525	5	
B80-E9LSS	5	5.0000	4.9990	7 3/4	7.7500	7.7488	7.500	3.750	7.190	0.005/0.009	6.130	5	
B96-E9LSS	6	6.0000	5.9990	8 3/4	8.7500	8.7488	8.250	4.125	8.156	0.005/0.009	7.020	5	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).
Bore dimensions apply after MoS_2 coating. All other dimensions are before coating.

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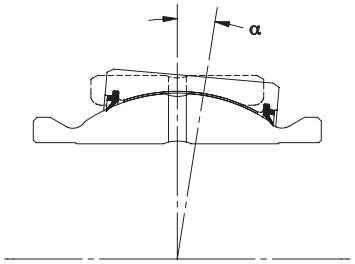
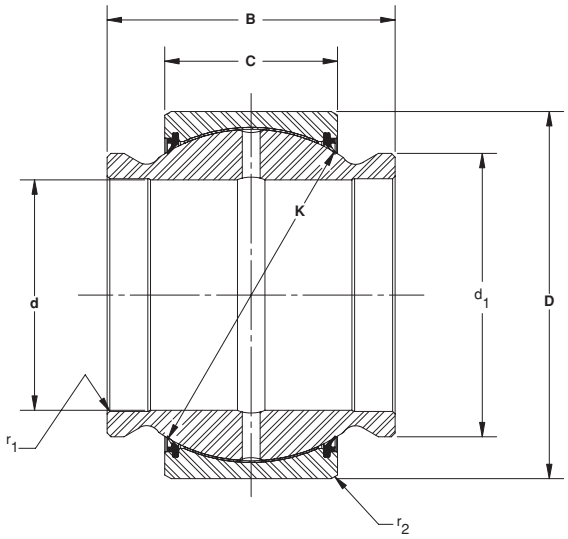
Spherical Plain Bearings

Extended Inner Ring - Inch





Series B--ELSS

r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (lb)	Recommended Load Limits ❶			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
			Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
						Max.	Min.	Max.	Min.	Max.	Min.	
0.022	0.015	0.140	21,200	3,900	5,300	0.7492	0.7487	0.7507	0.7503	1.2490	1.2480	**-12**
0.022	0.015	0.210	28,800	5,400	7,200	0.8742	0.8737	0.8757	0.8753	1.4365	1.4355	**-14**
0.022	0.015	0.310	37,700	7,300	9,400	0.9992	0.9987	1.0007	1.0003	1.6240	1.6230	**-16**
0.022	0.032	0.590	58,800	11,900	14,700	1.2490	1.2484	1.2508	1.2504	1.9988	1.9976	**-20**
0.022	0.032	0.750	69,800	13,500	17,400	1.3740	1.3734	1.3758	1.3754	2.1863	2.1851	**-22**
0.022	0.032	1.090	84,800	16,600	21,200	1.4990	1.4984	1.5008	1.5004	2.4363	2.4351	**-24**
0.022	0.032	1.680	115,400	23,600	28,800	1.7490	1.7484	1.7508	1.7504	2.8113	2.8101	**-28**
0.022	0.032	2.440	150,900	31,900	37,700	1.9988	1.9981	2.0010	2.0005	3.1860	3.1846	**-32**
0.022	0.032	3.460	191,000	42,000	47,700	2.2488	2.2481	2.2510	2.2505	3.5610	3.5596	**-36**
0.022	0.032	4.750	235,500	52,900	58,800	2.4988	2.4981	2.5010	2.5005	3.9359	3.9345	**-40**
0.022	0.032	6.400	285,000	62,600	71,200	2.7488	2.7481	2.7510	2.7505	4.3734	4.3720	**-44**
0.022	0.032	7.920	339,500	76,300	84,800	2.9988	2.9981	3.0010	3.0005	4.7481	4.7465	**-48**
0.022	0.032	10.300	398,700	91,500	99,600	3.2486	3.2477	3.2511	3.2505	5.1231	5.1215	**-52**
0.022	0.032	12.900	463,000	109,200	115,700	3.4986	3.4977	3.5011	3.5005	5.4981	5.4965	**-56**
0.022	0.032	15.700	530,400	126,100	132,600	3.7486	3.7477	3.7511	3.7505	5.8731	5.8715	**-60**
0.022	0.032	18.900	603,700	144,500	150,900	3.9986	3.9977	4.0011	4.0005	6.2481	6.2465	**-64**
0.032	0.044	27.000	764,800	290,400	191,200	4.4986	4.4977	4.5011	4.5005	6.9979	6.9963	**-72**
0.032	0.044	36.700	943,600	360,900	235,900	4.9983	4.9973	5.0013	5.0006	7.7476	7.7458	**-80**
0.032	0.044	45.500	1,177,000	387,600	294,200	5.9983	5.9973	6.0013	6.0006	8.7475	8.7457	**-96**

❶ Ultimate static and impact loads should not exceed 150% of catalog ratings.

❷ See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

Extended Inner Ring - Metric

Series MB--E

Part Number	d Inside Diameter		D Outside Diameter		B Inner Ring Width		C Outer Ring Width		K Sphere Dia.	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle	
Open	Nom.	Tol. +0.000	Nom.	Tol. +0.000	Nom.	Tol.	Nom.	Tol. +0.00	(REF)			(deg)	
MB17-E	17	-0.008	30	-0.009	17	+/-0.20	10	-0.24	25	0.05/0.15	21	4	
MB20-E	20	-0.010	35	-0.011	20	+/-0.20	12	-0.24	30	0.07/0.17	25	4	
MB25-E	25	-0.010	42	-0.011	25	+/-0.20	16	-0.24	36	0.07/0.17	30	4	
MB30-E	30	-0.010	47	-0.011	30	+/-0.25	18	-0.24	41	0.07/0.17	35	4	
MB35-E	35	-0.012	55	-0.013	35	+/-0.25	20	-0.30	48	0.07/0.17	41	4	
MB40-E	40	-0.012	62	-0.013	40	+/-0.25	22	-0.30	55	0.07/0.17	47	4	
MB45-E	45	-0.012	68	-0.013	45	+/-0.25	25	-0.30	60	0.07/0.17	51	4	
MB50-E	50	-0.012	75	-0.013	50	+/-0.25	28	-0.30	67	0.07/0.17	57	4	
MB60-E	60	-0.015	90	-0.015	60	+/-0.30	36	-0.40	81	0.10/0.20	68	4	
MB70-E	70	-0.015	105	-0.015	70	+/-0.30	40	-0.40	94	0.10/0.20	80	4	
MB80-E	80	-0.015	120	-0.015	80	+/-0.30	45	-0.40	107	0.10/0.20	92	4	

All dimensions are in millimeters.
All dimensions apply before MoS_2 coating and Fracture.

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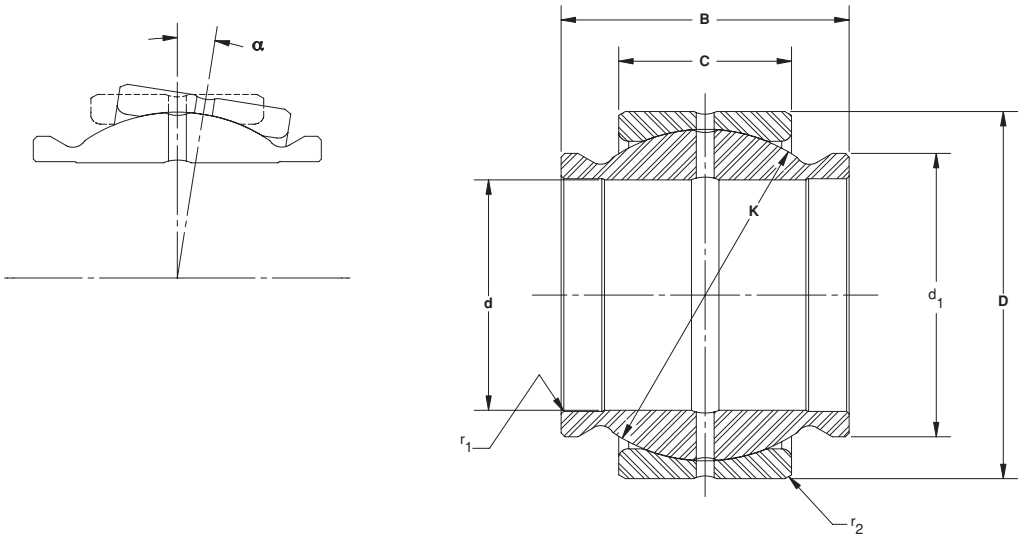
Spherical Plain Bearings

Extended Inner Ring - Metric



Series MB--E

	r1 Shaft Fillet Max.	r2 Hsg. Fillet Max.	Approx. Weight (kg) ❶	Recommended Load Limits			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
				Static Radial (kN)	Static Thrust (kN)	Dynamic Radial (kN)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
							Max.	Min.	Max.	Min.	Max.	Min.	
	0.3	0.3	0.05	107	16.9	21.5	16.984	16.973	17.015	17.007	29.980	29.959	**-17**
	0.3	0.3	0.08	155	24.3	31.0	19.980	19.967	20.017	20.008	34.975	34.950	**-20**
	0.6	0.6	0.14	248	43.2	49.5	24.980	24.967	25.017	25.008	41.975	41.950	**-25**
	0.6	0.6	0.19	317	54.7	63.5	29.980	29.967	30.017	30.008	46.975	46.950	**-30**
	0.3	0.6	0.31	413	67.5	82.6	34.975	34.959	35.020	35.009	54.970	54.940	**-35**
	0.6	1.0	0.33	520	81.7	104.0	39.975	39.959	40.020	40.009	61.970	61.940	**-40**
	0.6	1.0	0.55	645	106.0	129.0	44.975	44.959	45.020	45.009	67.968	67.938	**-45**
	0.6	1.0	0.74	807	132.0	161.0	49.975	49.959	50.020	50.009	74.968	74.938	**-50**
	1.0	1.0	1.33	1,250	219.0	250.0	59.970	59.951	60.024	60.011	89.962	89.927	**-60**
	1.0	1.0	2.04	1,620	270.0	325.0	69.970	69.951	70.024	70.011	104.959	104.924	**-70**
	1.0	1.0	3.06	2,070	342.0	410.0	79.970	79.951	80.024	80.011	119.959	119.924	**-80**

❶ To obtain weight in pounds, multiply by 2.20462 (lb/kg).

❷ See technical section for alternate housing diameter recommendations.

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Spherical Plain Bearings

Extended Inner Ring - Metric

Series MB--ESS

Part Number	d Inside Diameter		D Outside Diameter		B Inner Ring Width		C Outer Ring Width		K Sphere Dia.	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle	
Sealed	Nom.	Tol. +0.000	Nom.	Tol. +0.000	Nom.	Tol.	Nom.	Tol. +0.00	(REF)			(deg)	
MB17-ESS	17	-0.008	30	-0.009	17	+/-0.20	10	-0.24	25	0.05/0.15	21	3	
MB20-ESS	20	-0.010	35	-0.011	20	+/-0.20	12	-0.24	30	0.07/0.17	25	3	
MB25-ESS	25	-0.010	42	-0.011	25	+/-0.20	16	-0.24	36	0.07/0.17	30	3	
MB30-ESS	30	-0.010	47	-0.011	30	+/-0.25	18	-0.24	41	0.07/0.17	35	3	
MB35-ESS	35	-0.012	55	-0.013	35	+/-0.25	20	-0.30	48	0.07/0.17	41	3	
MB40-ESS	40	-0.012	62	-0.013	40	+/-0.25	22	-0.30	55	0.07/0.17	47	3	
MB45-ESS	45	-0.012	68	-0.013	45	+/-0.25	25	-0.30	60	0.07/0.17	51	3	
MB50-ESS	50	-0.012	75	-0.013	50	+/-0.25	28	-0.30	67	0.07/0.17	57	3	
MB60-ESS	60	-0.015	90	-0.015	60	+/-0.30	36	-0.40	81	0.10/0.20	68	3	
MB70-ESS	70	-0.015	105	-0.015	70	+/-0.30	40	-0.40	94	0.10/0.20	80	3	
MB80-ESS	80	-0.015	120	-0.015	80	+/-0.30	45	-0.40	107	0.10/0.20	92	3	

All dimensions are in millimeters.
All dimensions apply before MoS_2 coating and Fracture.

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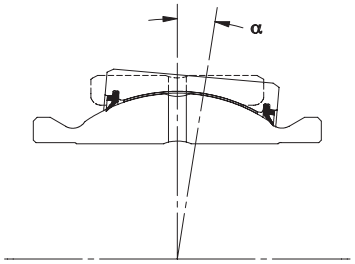
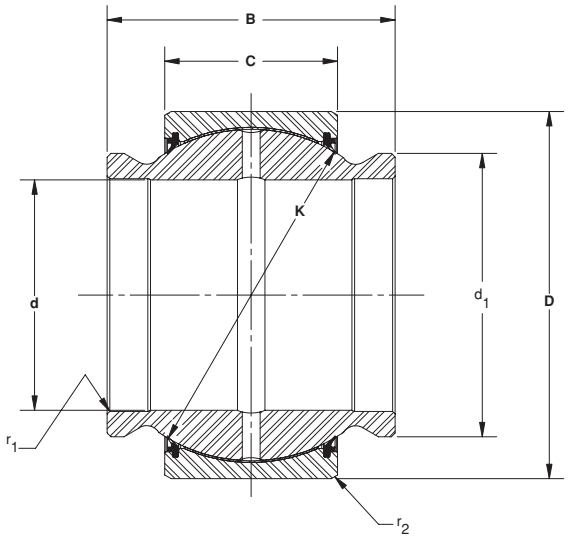
Spherical Plain Bearings

Extended Inner Ring - Metric





Series MB--ESS

	r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (kg) ❶	Recommended Load Limits			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
				Static Radial (kN)	Static Thrust (kN)	Dynamic Radial (kN)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO R7 (Press Fit)		
							Max.	Min.	Max.	Min.	Max.	Min.	
	0.3	0.3	0.05	107	16.9	21.5	16.984	16.973	17.015	17.007	29.980	29.959	**-17**
	0.3	0.3	0.08	155	24.3	31.0	19.980	19.967	20.017	20.008	34.975	34.950	**-20**
	0.6	0.6	0.14	248	43.2	49.5	24.980	24.967	25.017	25.008	41.975	41.950	**-25**
	0.6	0.6	0.19	317	54.7	63.5	29.980	29.967	30.017	30.008	46.975	46.950	**-30**
	0.3	0.6	0.31	413	67.5	82.6	34.975	34.959	35.020	35.009	54.970	54.940	**-35**
	0.6	1.0	0.33	520	81.7	104.0	39.975	39.959	40.020	40.009	61.970	61.940	**-40**
	0.6	1.0	0.55	645	106.0	129.0	44.975	44.959	45.020	45.009	67.968	67.938	**-45**
	0.6	1.0	0.74	807	132.0	161.0	49.975	49.959	50.020	50.009	74.968	74.938	**-50**
	1.0	1.0	1.33	1,250	219.0	250.0	59.970	59.951	60.024	60.011	89.962	89.927	**-60**
	1.0	1.0	2.04	1,620	270.0	325.0	69.970	69.951	70.024	70.011	104.959	104.924	**-70**
	1.0	1.0	3.06	2,070	342.0	410.0	79.970	79.951	80.024	80.011	119.959	119.924	**-80**

❶ To obtain weight in pounds, multiply by 2.20462 (lb/kg).

❷ See technical section for alternate housing diameter recommendations.

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FEATURED PRODUCT

SpreadLock® Seal

Advanced Seal Technology

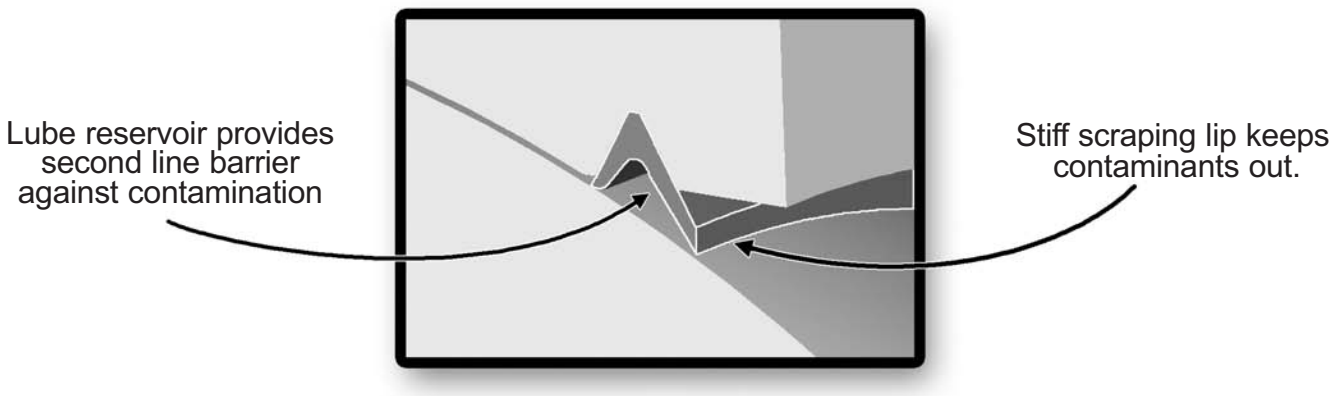
SpreadLock® Seals for spherical plain bearings employ double positive contacting lips to keep the dirt out and the lubricant in. Compare new SpreadLock® Seal technology with single or double lip designs oriented in one direction only.

Positive, yet functional, sealing is one of the ongoing challenges in bearing design. In our quest to develop the definitive seal that would work more effectively with our spherical plain bearings, we asked several tough questions to help establish the design priorities. How can we provide maximum protection against the entry of contaminants and wear debris while maintaining proper bearing operation? How do we minimize seal wear and protect the seal from outside damage? Also, we wanted to maximize lube loss with constant pressure on the inner sphere, while maximizing lube replacement efficiency.

Total Protection Package

The design of the outer ring retention groove and the sealing of the inner ring bore to shaft interface is critical to the total protection package. The groove profile is engineered to exert optimum pressure on the sealing surface, while reducing the seal profile exposure. Less profile exposure reduces the potential of damage and wear. Optimum pressure is the key to maximizing the lube-in/dirt-out advantage and providing the most efficient re-lubrication and purging.

The integrity of the inner ring/shaft is essential to effective overall performance of the bearing. Even the most precise fit is subject to movement under load. Protective SpreadLock® Seals block dirt and retain lube to help assure stability of the interface. In addition, inner ring sealing is particularly important where re-lube is performed through the pin.



FEATURED PRODUCT

DuraLube™

Maintenance-Free Spherical Plain Bearings

Advanced Technology

RBC's DuraLube™ self-lubricating spherical plain bearings provide long life in demanding applications. Grease-free operation is accomplished through the use of a durable PTFE liner system that reduces friction between the spherical surfaces of the inner ring and outer ring. This proprietary liner system has been developed for rigorous industrial applications, and has been proven successful time and time again.

Applications

Self-lubricating bearings are being utilized in skid steer, telehandler, off-road forklift, and wheel loader applications primarily on the cylinders, as well as on the pivot points of such equipment. The benefits of using these bearings include improved field reliability and lowered warranty costs. DuraLube™ Self-lubricating Spherical plain bearings has also reduced the cost of ownership by eliminating the need for zerk fittings, and costs associated with greasing and maintaining the bearings.

Guidelines for Use

- These are dry lubricant bearings and should not receive additional lubrication. This will minimize entrapment of abrasive dirt and grit.
- DuraLube™ bearings are dimensionally interchangeable with standard steel-on-steel spherical plain bearings.
- DuraLube™ bearings utilize the same housing and shaft fits as standard steel-on-steel spherical plain bearings, thus allowing for easier replacement.
- Required running clearance is developed through initial compression of the self-lubricated liner material.

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DuraLube™

Self-Lubricating, Maintenance-Free - Inch

Series B--LNMSS

Part Number	d Inside Diameter			D Outside Diameter			B Inner Ring Width +0.000 -0.005	C Outer Ring Width +0.000 -0.005	K Sphere Dia.	Unmounted Diametral Clearance	d_1 Shaft Shoulder Dia.	α Tilt Angle	
Sealed	Nom.	Max.	Min.	Nom.	Max.	Min.			(REF)			(deg)	
B12-LNMSS	3/4	0.7500	0.7495	1 1/4	1.2500	1.2495	0.656	0.562	1.080	0.003/0.007	0.844	7	
B14-LNMSS	7/8	0.8750	0.8745	1 7/16	1.4375	1.4370	0.765	0.656	1.258	0.003/0.007	0.984	7	
B16-LNMSS	1	1.0000	0.9995	1 5/8	1.6250	1.6245	0.875	0.750	1.437	0.003/0.007	1.125	7	
B20-LNMSS	1 1/4	1.2500	1.2495	2	2.0000	1.9995	1.093	0.937	1.795	0.003/0.007	1.406	7	
B22-LNMSS	1 3/8	1.3750	1.3745	2 3/16	2.1875	2.1869	1.187	1.031	1.937	0.003/0.007	1.516	7	
B24-LNMSS	1 1/2	1.5000	1.4995	2 7/16	2.4375	2.4369	1.312	1.125	2.155	0.003/0.007	1.703	7	
B28-LNMSS	1 3/4	1.7500	1.7495	2 13/16	2.8125	2.8119	1.531	1.312	2.515	0.003/0.007	1.984	7	
B32-LNMSS	2	2.0000	1.9995	3 3/16	3.1875	3.1869	1.750	1.500	2.875	0.003/0.007	2.266	7	
B36-LNMSS	2 1/4	2.2500	2.2494	3 9/16	3.5625	3.5617	1.969	1.687	3.235	0.004/0.008	2.563	7	
B40-LNMSS	2 1/2	2.5000	2.4994	3 15/16	3.9375	3.9367	2.187	1.875	3.590	0.004/0.008	2.844	7	
B44-LNMSS	2 3/4	2.7500	2.7494	4 3/8	4.3750	4.3742	2.406	2.062	3.950	0.004/0.008	3.125	7	
B48-LNMSS	3	3.0000	2.9994	4 3/4	4.7500	4.7492	2.625	2.250	4.312	0.004/0.008	3.406	7	
B52-LNMSS	3 1/4	3.2500	3.2492	5 1/8	5.1250	5.1240	2.844	2.437	4.675	0.005/0.009	3.703	7	
B56-LNMSS	3 1/2	3.5000	3.4992	5 1/2	5.5000	5.4990	3.062	2.625	5.040	0.005/0.009	4.000	7	
B60-LNMSS	3 3/4	3.7500	3.7492	5 7/8	5.8750	5.8740	3.281	2.812	5.390	0.005/0.009	4.266	7	
B64-LNMSS	4	4.0000	3.9992	6 1/4	6.2500	6.2490	3.500	3.000	5.750	0.005/0.009	4.563	7	
B72-9LNMSS	4 1/2	4.5000	4.4992	7	7.0000	6.9990	3.937	3.375	6.475	0.005/0.009	5.125	7	
B80-9LNMSS	5	5.0000	4.9990	7 3/4	7.7500	7.7488	4.375	3.750	7.190	0.005/0.009	5.703	7	
B96-9LNMSS	6	6.0000	5.9990	8 3/4	8.7500	8.7488	4.750	4.125	8.156	0.005/0.009	6.625	7	
B104-9LNMSS	6 1/2	6.5000	6.4990	9 3/4	9.7500	9.7488	4.875	4.062	8.775	0.007/0.012	7.293	7	
B112-9LNMSS	7	7.0000	6.9990	10 1/2	10.5000	10.4986	5.250	4.375	9.450	0.007/0.012	7.854	7	
B120-9LNMSS	7 1/2	7.5000	7.4988	11 1/4	11.2500	11.2486	5.625	4.687	10.125	0.007/0.012	8.415	7	
B128-9LNMSS	8	8.0000	7.9988	12	12.0000	11.9986	6.000	5.000	10.800	0.007/0.012	8.976	7	
B136-9LNMSS	8 1/2	8.5000	8.4988	12 3/4	12.7500	12.7484	6.375	5.312	11.475	0.008/0.013	9.537	7	
B144-9LNMSS	9	9.0000	8.9988	13 1/2	13.5000	13.4984	6.750	5.625	12.150	0.008/0.013	10.098	7	
B152-9LNMSS	9 1/2	9.5000	9.4988	14 1/4	14.2500	14.2484	7.125	5.937	12.825	0.008/0.013	10.659	7	
B160-9LNMSS	10	10.0000	9.9986	15	15.0000	14.9984	7.500	6.250	13.500	0.008/0.013	11.220	7	
B168-9LNMSS	10 1/2	10.5000	10.4986	15 3/4	15.7500	15.7482	7.875	6.562	14.175	0.009/0.014	11.781	7	
B176-9LNMSS	11	11.0000	10.9986	16 1/2	16.5000	16.4982	8.250	6.875	14.850	0.009/0.014	12.342	7	
B184-9LNMSS	11 1/2	11.5000	11.4986	17 1/4	17.2500	17.2482	8.625	7.187	15.525	0.009/0.014	12.903	7	
B192-9LNMSS	12	12.0000	11.9986	18	18.0000	17.9982	9.000	7.500	16.200	0.009/0.014	13.464	7	

All dimensions are in inches.
Outer rings of bearings size 72 and above are double fractured (suffix-9L).

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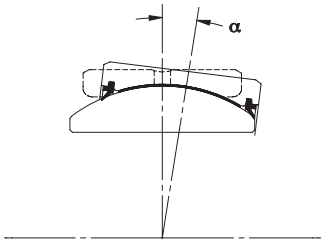
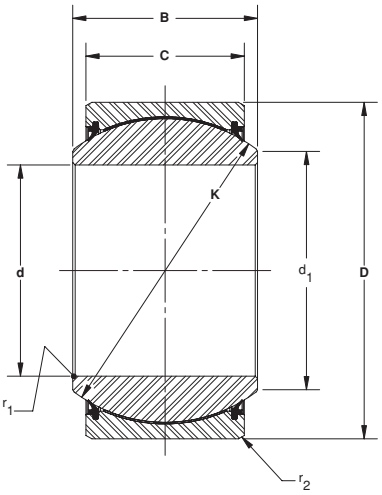
DuraLube™

Self-Lubricating, Maintenance-Free - Inch





Series B--LNMSS

r1 Shaft Fillet Max.	r2 Hsg. Fillet Max.	Approx. Weight (lb)	Recommended Load Limits ❶			Recommended Shaft Diameter				Recommended Housing Bore ❷		Basic Part Number
			Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	ISO f6 (Slip Fit)		ISO m5 (Press Fit)		ISO N7 (Press Fit)		
						Max.	Min.	Max.	Min.	Max.	Min.	
0.022	0.015	0.126	16,024	2,688	10,682	0.7492	0.7487	0.7507	0.7503	1.2497	1.2487	-12
0.022	0.015	0.193	21,787	3,663	14,524	0.8742	0.8737	0.8757	0.8753	1.4372	1.4362	-14
0.022	0.015	0.276	28,453	4,788	18,968	0.9992	0.9987	1.0007	1.0003	1.6247	1.6237	-16
0.022	0.015	0.516	44,403	7,473	29,602	1.2490	1.2484	1.2508	1.2504	1.9997	1.9985	-20
0.022	0.032	0.770	52,722	9,048	35,148	1.3740	1.3734	1.3758	1.3754	2.1872	2.1860	-22
0.022	0.032	0.934	64,004	10,773	42,669	1.4990	1.4984	1.5008	1.5004	2.4372	2.4360	-24
0.022	0.032	1.430	87,112	14,652	58,074	1.7490	1.7484	1.7508	1.7504	2.8122	2.8110	-28
0.022	0.032	2.070	113,850	19,151	75,900	1.9988	1.9981	2.0010	2.0005	3.1871	3.1858	-32
0.022	0.032	2.920	144,077	24,224	96,051	2.2488	2.2481	2.2510	2.2505	3.5621	3.5607	-36
0.022	0.032	4.090	177,705	29,924	118,470	2.4988	2.4981	2.5010	2.5005	3.9371	3.9357	-40
0.022	0.032	5.380	215,025	36,191	143,350	2.7488	2.7481	2.7510	2.7505	4.3746	4.3732	-44
0.022	0.032	6.870	256,133	43,091	170,755	2.9988	2.9981	3.0010	3.0005	4.7494	4.7479	-48
0.022	0.032	8.630	300,775	50,551	200,516	3.2486	3.2477	3.2511	3.2505	5.1244	5.1228	-52
0.022	0.032	10.650	349,272	58,651	232,848	3.4986	3.4977	3.5011	3.5005	5.4994	5.4978	-56
0.022	0.032	12.950	400,136	67,306	266,758	3.7486	3.7477	3.7511	3.7505	5.8744	5.8728	-60
0.022	0.032	15.590	455,400	76,606	303,600	3.9986	3.9977	4.0011	4.0005	6.2494	6.2478	-64
0.032	0.044	21.920	576,923	96,954	384,615	4.4986	4.4977	4.5011	4.5005	6.9994	6.9978	-72
0.032	0.044	29.710	711,810	119,697	474,540	4.9983	4.9973	5.0013	5.0006	7.7492	7.7474	-80
0.032	0.044	38.770	888,188	144,833	592,126	5.9983	5.9973	6.0013	6.0006	8.7492	8.7474	-96
0.080	0.080	50.360	941,003	150,443	627,335	6.4983	6.4973	6.5013	6.5006	9.7474	9.7476	-104
0.080	0.080	62.910	1,091,475	162,921	727,650	6.9983	6.9973	7.0013	7.0006	10.4994	10.4974	-112
0.080	0.080	77.370	1,252,835	186,986	835,223	7.4980	7.4969	7.5015	7.5007	11.2494	11.2474	-120
0.080	0.080	93.910	1,425,600	212,794	950,400	7.9980	7.9969	8.0015	8.0007	11.9994	11.9974	-128
0.080	0.080	112.600	1,609,217	240,180	1,072,812	8.4980	8.4969	8.5015	8.5007	12.7494	12.7471	-136
0.080	0.080	133.700	1,804,275	269,318	1,202,850	8.9980	8.9969	9.0015	9.0007	13.4994	13.4971	-144
0.080	0.080	157.200	2,010,149	300,023	1,340,100	9.4980	9.4969	9.5015	9.5007	14.2494	14.2471	-152
0.080	0.080	183.400	2,227,500	332,491	1,485,000	9.9978	9.9965	10.0017	10.0008	14.9994	14.9971	-160
0.080	0.080	212.300	2,455,632	366,516	1,637,088	10.4978	10.4965	10.5017	10.5008	15.7493	15.7469	-168
0.080	0.080	244.000	2,695,275	402,314	1,796,850	10.9978	10.9965	11.0017	11.0008	16.4993	16.4969	-176
0.080	0.080	279.000	2,945,664	439,658	1,963,776	11.4978	11.4965	11.5017	11.5008	17.2493	17.2469	-184
0.080	0.080	317.000	3,207,600	478,787	2,138,400	11.9978	11.9965	12.0017	12.0008	17.9998	17.9969	-192

❶ Ultimate static and impact loads should not exceed 150% of catalog ratings.

❷ See technical section for alternate housing diameter recommendations.

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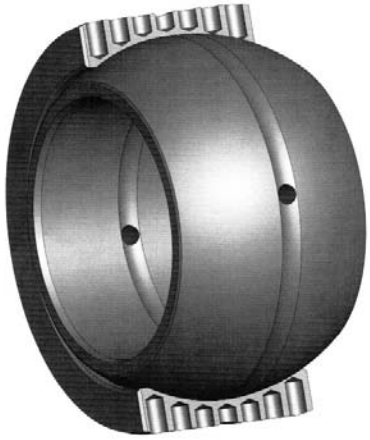
FEATURED PRODUCT

ImpactTuff®

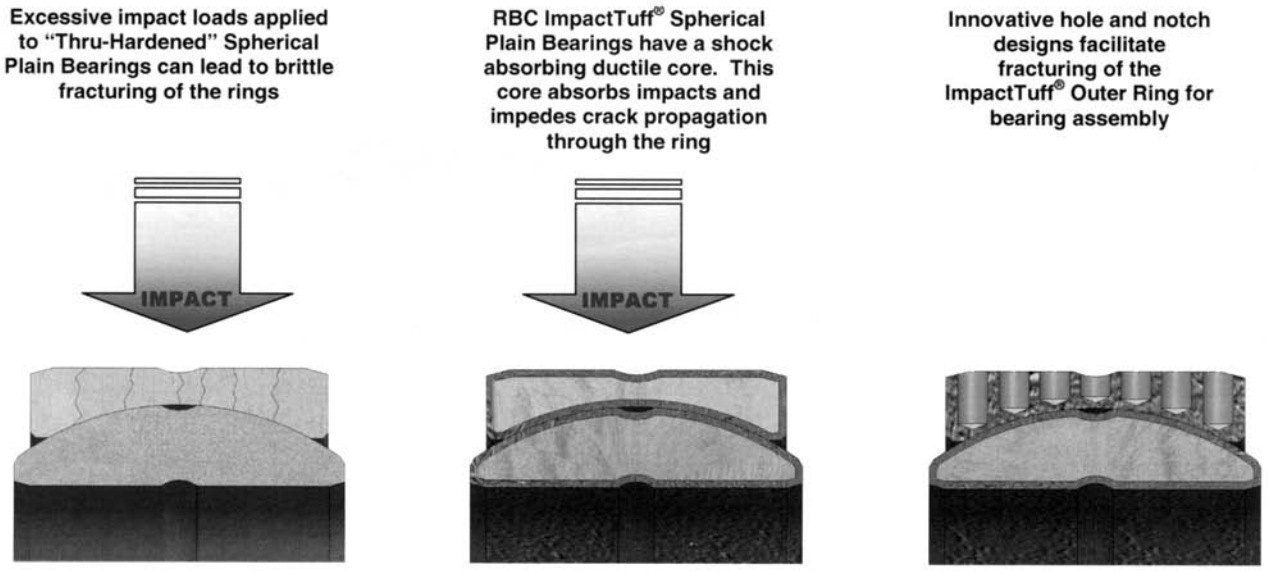


Advanced Shock Load Protection

The ImpactTuff® spherical plain bearing improves resistance to shock loads by 300%! In many rugged applications where substantial impact loads are common, spherical plain bearings can break and chip, adding to the high cost of warranties. In particular, suspension components in off-highway construction vehicles have been subject to abuse from impacting rocks or abrupt terrain changes. Often, the result is broken bearings resulting in costly machinery repair.

Up to the Challenge

The real challenge of the case carburized design is being able to fracture the outer ring to facilitate assembly. We designed a unique outer ring profile with a minimal notch exposure that permits controlled fracture through the softer inner core. The ductile inner core provides a high degree of protection against the devastating effects of impact and shock loads. ImpactTuff® technology can be incorporated into almost any traditional RBC spherical plain bearing configuration.



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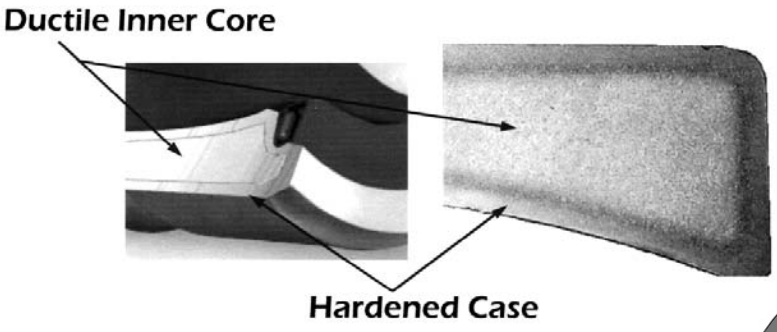
FEATURED PRODUCT

ImpactTuff®



- Patented case hardened construction
- Hard HR_C 60+ wear surface
- Fracture resistant ductile inner core
- 300% improvement in resistance to shock loading

CrossLube®

(Single-Acting) Improved Lubrication Distribution Technology

A Clean Solution

Designed specifically for applications that involve high levels of dirt or other contamination, the RBC CrossLube® spherical plain bearing utilizes the latest generation of lube groove design technology.

While this system greatly improves lube distribution, it also facilitates relubrication purging to flush out wear debris and contaminants.

The CrossLube® feature is particularly effective in dusty, highly contaminated environments, such as kingpin applications in farm machinery.

Spherical Plain Angular Contact Bearings

Single Acting - Inch

Series B--SA

Part Number	Component Part Numbers		d Inside Diameter			D Outside Diameter			F Overall Width +0.000 -0.025	B Inner Ring Width +0.000 -0.005	C Outer Ring Width +0.000 -0.005	K Sphere Dia. (REF)	J End to Hole (REF)	H Loc. Sphere Dia.	
	Outer Ring	Inner Ring	Nom.	Max.	Min.	Nom.	Max.	Min.							
B8-SA (1)	ORB8-SA	IRB8-SA	1/2	0.5000	0.4995	7/8	0.8750	0.8745	0.300	0.270	0.190	0.719	—	0.06	
B10-SA	ORB10-SA	IRB10-SA	5/8	0.6250	0.6245	1 1/16	1.0625	1.0620	0.370	0.340	0.250	0.899	0.109	0.07	
B12-SA	ORB12-SA	IRB12-SA	3/4	0.7500	0.7495	1 1/4	1.2500	1.2495	0.440	0.410	0.310	1.080	0.125	0.08	
B14-SA	ORB14-SA	IRB14-SA	7/8	0.8750	0.8745	1 7/16	1.4375	1.4370	0.520	0.480	0.380	1.258	0.172	0.09	
B16-SA	ORB16-SA	IRB16-SA	1	1.0000	0.9995	1 5/8	1.6250	1.6245	0.600	0.550	0.440	1.437	0.203	0.11	
B20-SA	ORB20-SA	IRB20-SA	1 1/4	1.2500	1.2495	2	2.0000	1.9995	0.740	0.700	0.550	1.795	0.234	0.14	
B22-SA	ORB22-SA	IRB22-SA	1 3/8	1.3750	1.3745	2 3/16	2.1875	2.1869	0.840	0.770	0.600	1.937	0.281	0.15	
B24-SA	ORB24-SA	IRB24-SA	1 1/2	1.5000	1.4995	2 7/16	2.4375	2.4369	0.910	0.840	0.660	2.155	0.312	0.16	
B28-SA	ORB28-SA	IRB28-SA	1 3/4	1.7500	1.7495	2 13/16	2.8125	2.8119	1.070	0.980	0.790	2.515	0.328	0.19	
B32-SA	ORB32-SA	IRB32-SA	2	2.0000	1.9995	3 3/16	3.1875	3.1869	1.230	1.130	0.920	2.875	0.375	0.22	
B36-SA	ORB36-SA	IRB36-SA	2 1/4	2.2500	2.2494	3 9/16	3.5625	3.5617	1.390	1.270	1.050	3.235	0.453	0.25	
B40-SA	ORB40-SA	IRB40-SA	2 1/2	2.5000	2.4994	3 15/16	3.9375	3.9367	1.540	1.420	1.180	3.590	0.500	0.27	
B44-SA	ORB44-SA	IRB44-SA	2 3/4	2.7500	2.7494	4 3/8	4.3750	4.3742	1.700	1.560	1.275	3.950	0.515	0.30	
B48-SA	ORB48-SA	IRB48-SA	3	3.0000	2.9994	4 3/4	4.7500	4.7492	1.860	1.710	1.405	4.312	0.578	0.33	
B52-SA	ORB52-SA	IRB52-SA	3 1/4	3.2500	3.2492	5 1/8	5.1250	5.1240	2.030	1.860	1.545	4.675	0.656	0.36	
B56-SA	ORB56-SA	IRB56-SA	3 1/2	3.5000	3.4992	5 1/2	5.5000	5.4990	2.180	2.000	1.675	5.040	0.703	0.38	
B60-SA	ORB60-SA	IRB60-SA	3 3/4	3.7500	3.7492	5 7/8	5.8750	5.8740	2.340	2.150	1.805	5.390	0.765	0.41	
B64-SA	ORB64-SA	IRB64-SA	4	4.0000	3.9992	6 1/4	6.2500	6.2490	2.500	2.300	1.935	5.750	0.781	0.44	
B72-SA	ORB72-SA	IRB72-SA	4 1/2	4.5000	4.4992	7	7.0000	6.9990	2.800	2.590	2.195	6.475	0.875	0.48	
B80-SA	ORB80-SA	IRB80-SA	5	5.0000	4.9990	7 3/4	7.7500	7.7488	3.130	2.880	2.455	7.190	1.000	0.55	
B96-SA	ORB96-SA	IRB96-SA	6	6.0000	5.9990	8 3/4	8.7500	8.7488	3.375	3.100	2.615	8.156	1.370	0.63	

All dimensions are in inches.
Bore dimensions are after MoS_2 coating. All other dimensions are before coating.
For bearings with grooves extended to the face of the outer ring at two places, add suffix "-1", e.g. B32SA-1

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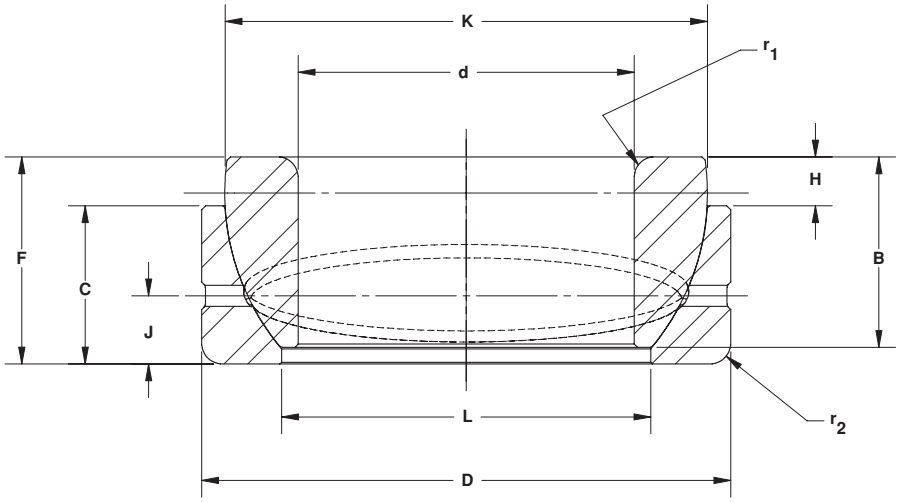
Spherical Plain Angular Contact Bearings

Single Acting - Inch



Series B--SA

L Outer Ring Bore	r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (lb)	Recommended Load Limits ❷				Recommended Shaft Diameter				Housing Bore ❸		Basic Part Number
				Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	Dynamic Thrust (lbf)	ISO g6 (Slip Fit)		ISO m5 (Press Fit)		ISO N7 (Press Fit)		
								Max.	Min.	Max.	Min.	Max.	Min.	
0.57	0.02	0.02	0.029	4,000	5,200	1,000	1,300	0.4997	0.4993	0.5006	0.5003	0.8747	0.8739	-8
0.70	0.03	0.03	0.056	6,900	8,700	1,700	2,200	0.6247	0.6243	0.6256	0.6253	1.0622	1.0614	-10
0.84	0.04	0.04	0.083	10,500	12,600	2,600	3,200	0.7497	0.7492	0.7507	0.7503	1.2497	1.2487	-12
0.97	0.08	0.08	0.110	14,900	17,600	3,700	4,400	0.8747	0.8742	0.8757	0.8753	1.4372	1.4362	-14
1.12	0.08	0.08	0.188	19,600	22,200	4,900	5,600	0.9997	0.9992	1.0007	1.0003	1.6247	1.6237	-16
1.39	0.08	0.08	0.351	32,000	35,400	8,000	8,900	1.2496	1.2490	1.2508	1.2504	1.9997	1.9985	-20
1.48	0.10	0.10	0.470	35,900	42,900	8,900	10,700	1.3746	1.3740	1.3758	1.3754	2.1872	2.1860	-22
1.66	0.10	0.10	0.662	44,500	51,900	11,100	13,000	1.4996	1.4990	1.5008	1.5004	2.4372	2.4360	-24
1.95	0.10	0.10	1.010	61,600	69,300	15,400	17,300	1.7496	1.7490	1.7508	1.7504	2.8122	2.8110	-28
2.22	0.14	0.14	1.480	82,500	91,700	20,600	22,900	1.9996	1.9989	2.0010	2.0005	3.1871	3.1858	-32
2.50	0.14	0.14	2.090	105,200	115,800	26,300	29,000	2.2496	2.2489	2.2510	2.2505	3.5621	3.5607	-36
2.75	0.14	0.14	2.490	133,100	146,300	33,200	36,600	2.4996	2.4989	2.5010	2.5005	3.9371	3.9357	-40
3.03	0.18	0.18	3.860	156,900	176,500	39,200	44,100	2.7496	2.7489	2.7510	2.7505	4.3746	4.3732	-44
3.30	0.18	0.18	6.670	189,400	211,700	47,300	52,900	2.9996	2.9989	3.0010	3.0005	4.7494	4.7479	-48
3.58	0.18	0.18	6.360	224,900	248,400	56,200	62,100	3.2495	3.2486	3.2511	3.2505	5.1244	5.1228	-52
3.85	0.18	0.18	7.870	263,700	290,800	65,900	72,700	3.4995	3.4986	3.5011	3.5005	5.4994	5.4978	-56
4.10	0.18	0.18	9.590	304,600	336,500	76,100	84,100	3.7495	3.7486	3.7511	3.7505	5.8744	5.8728	-60
4.37	0.18	0.18	11.560	349,100	383,800	87,200	96,000	3.9995	3.9986	4.0011	4.0005	6.2494	6.2478	-64
4.90	0.18	0.18	17.120	449,800	492,400	112,400	123,100	4.4995	4.4986	4.5011	4.5005	6.9994	6.9978	-72
5.47	0.18	0.18	24.400	554,800	598,500	138,700	149,600	4.9994	4.9984	5.0013	5.0006	7.7492	7.7474	-80
6.50	0.18	0.18	38.340	667,900	667,100	166,900	166,800	5.9994	5.9984	6.0013	6.0006	8.7492	8.7474	-96

❶ No lubrication grooves and holes in outer ring.

❷ Ultimate static and impact loads should not exceed 150% of catalog ratings.

❸ See technical section for alternate housing diameter recommendations.

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Spherical Plain Angular Contact Bearings

Single Acting - Metric

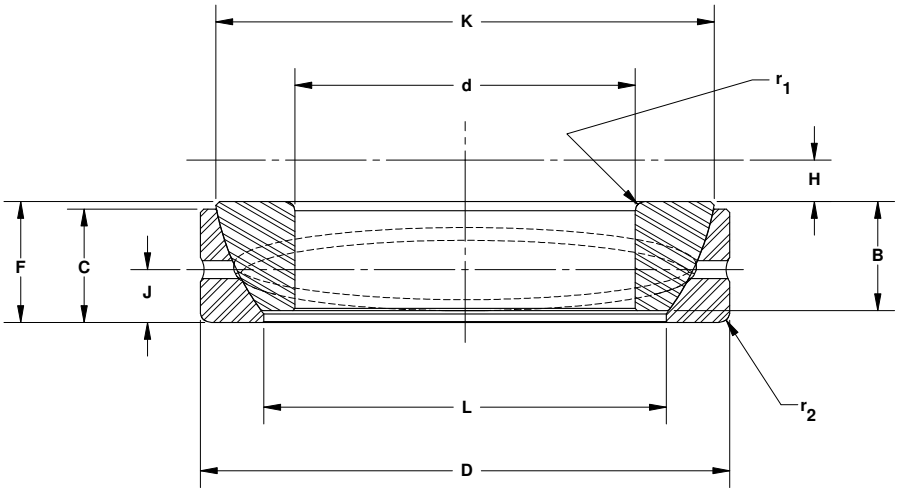
Series MB--SA

Part Number	Component Part Numbers		d Inside Diameter		D Outside Diameter		F Overall Width		B Inner Ring Width		C Outer Ring Width		K Sphere Dia. (REF)	J End to Hole (REF)	H Loc. Sphere Dia.	
	Outer Ring	Inner Ring	Nom.	Tol. +0.000	Nom.	Tol. +0.000	Nom.	Tol.	Nom.	Tol. +0.000	Nom.	Tol. +0.000				
MB25-SA	**ORMB25-SA**	**IRMB25-SA**	25	-0.012	47	-0.014	15	+0.250 -0.400	14	-0.240	14	-0.200	41	6.5	1.0	
MB30-SA	**ORMB30-SA**	**IRMB30-SA**	30	-0.012	55	-0.016	17	+0.250 -0.400	16	-0.240	16	-0.200	48	7.5	2.0	
MB35-SA	**ORMB35-SA**	**IRMB35-SA**	35	-0.012	62	-0.016	18	+0.250 -0.400	17	-0.240	17	-0.240	55	8.0	2.0	
MB40-SA	**ORMB40-SA**	**IRMB40-SA**	40	-0.012	68	-0.016	19	+0.250 -0.400	18	-0.240	18	-0.240	60	8.5	2.0	
MB45-SA	**ORMB45-SA**	**IRMB45-SA**	45	-0.012	75	-0.016	20	+0.250 -0.400	19	-0.240	19	-0.240	67	9.0	3.0	
MB50-SA	**ORMB50-SA**	**IRMB50-SA**	50	-0.012	80	-0.016	20	+0.250 -0.400	19	-0.240	19	-0.240	74	9.0	4.0	
MB55-SA	**ORMB55-SA**	**IRMB55-SA**	55	-0.015	90	-0.018	23	+0.250 -0.500	22	-0.300	22	-0.300	81	10.5	5.0	
MB60-SA	**ORMB60-SA**	**IRMB60-SA**	60	-0.015	95	-0.018	23	+0.250 -0.500	22	-0.300	22	-0.300	86	10.5	5.0	
MB65-SA	**ORMB65-SA**	**IRMB65-SA**	65	-0.015	100	-0.018	23	+0.250 -0.500	22	-0.300	22	-0.300	94	10.5	6.0	
MB70-SA	**ORMB70-SA**	**IRMB70-SA**	70	-0.015	110	-0.018	25	+0.250 -0.500	24	-0.300	24	-0.300	102	11.5	7.0	
MB80-SA	**ORMB80-SA**	**IRMB80-SA**	80	-0.015	125	-0.020	29	+0.250 -0.500	27	-0.300	27	-0.300	117	12.5	9.0	
MB90-SA	**ORMB90-SA**	**IRMB90-SA**	90	-0.020	140	-0.020	32	+0.250 -0.600	30	-0.400	30	-0.400	134	14.0	11.0	
MB100-SA	**ORMB100-SA**	**IRMB100-SA**	100	-0.020	150	-0.020	32	+0.250 -0.600	30	-0.400	31	-0.400	143	14.0	12.0	
MB110-SA	**ORMB110-SA**	**IRMB110-SA**	110	-0.020	170	-0.025	38	+0.250 -0.600	36	-0.400	36	-0.400	160	17.0	14.0	
MB120-SA	**ORMB120-SA**	**IRMB120-SA**	120	-0.020	180	-0.025	38	+0.250 -0.600	36	-0.400	37	-0.400	170	17.0	16.0	
MB130-SA	**ORMB130-SA**	**IRMB130-SA**	130	-0.025	200	-0.030	45	+0.350 -0.700	42	-0.500	43	-0.500	187	19.5	18.0	
MB140-SA	**ORMB140-SA**	**IRMB140-SA**	140	-0.025	210	-0.030	48	+0.350 -0.700	42	-0.500	46	-0.500	200	19.5	19.0	
MB150-SA	**ORMB150-SA**	**IRMB150-SA**	150	-0.025	225	-0.030	48	+0.350 -0.700	45	-0.500	46	-0.500	206	21.0	20.0	
MB160-SA	**ORMB160-SA**	**IRMB160-SA**	160	-0.025	240	-0.030	51	+0.350 -0.700	48	-0.500	49	-0.500	225	22.5	20.0	
MB170-SA	**ORMB170-SA**	**IRMB170-SA**	170	-0.025	260	-0.035	57	+0.350 -0.700	54	-0.500	55	-0.500	234	25.5	21.0	
MB180-SA	**ORMB180-SA**	**IRMB180-SA**	180	-0.025	280	-0.035	64	+0.350 -0.700	61	-0.500	61	-0.500	260	29.0	21.0	

All dimensions are in millimeters.
All dimensions apply before MoS_2 coating.
For bearings with grooves extended to the face of the outer ring at two places, add suffix "-1", e.g. MB50SA-1

Spherical Plain Angular Contact Bearings

Single Acting - Metric



Series MB--SA

L Outer Ring Bore	r_1 Shaft Fillet Max.	r_2 Hsg. Fillet Max.	Approx. Weight (kg) ❶	Recommended Load Limits ❷				Recommended Shaft Diameter				Housing Bore ❸		Basic Part Number
				Static Radial (kN)	Static Thrust (kN)	Dynamic Radial (kN)	Dynamic Thrust (kN)	ISO g6 (Slip Fit)		ISO m5 (Press Fit)		ISO N7 (Press Fit)		
								Max.	Min.	Max.	Min.	Max.	Min.	
27	0.6	1.0	0.14	230	270	44	54	24.993	24.980	25.017	25.008	46.992	46.967	-25
31	1.0	1.0	0.21	310	390	60	78	29.993	29.980	30.017	30.008	54.991	54.961	-30
39	1.0	1.0	0.28	380	430	74	86	34.991	34.975	35.020	35.009	61.991	61.961	-35
45	1.0	1.0	0.34	440	450	86	90	39.991	39.975	40.020	40.009	67.991	67.961	-40
52	1.0	1.0	0.42	520	510	102	102	44.991	44.975	45.020	45.009	74.991	74.961	-45
57	1.0	1.0	0.46	570	640	114	128	49.991	49.975	50.020	50.009	79.991	79.961	-50
62	1.5	1.5	0.68	730	780	146	156	54.990	54.971	55.024	55.011	89.990	89.955	-55
66	1.5	1.5	0.73	780	870	154	174	59.990	59.971	60.024	60.011	94.990	94.955	-60
76	1.5	1.5	0.77	850	880	168	176	64.990	64.971	65.024	65.011	99.990	99.955	-65
80	1.5	1.5	1.02	1,010	1,150	200	230	69.990	69.971	70.024	70.011	109.990	109.955	-70
90	1.5	1.5	1.53	1,260	1,600	250	320	79.990	79.971	80.024	80.011	124.988	124.948	-80
105	2.0	2.0	2.14	1,610	1,990	322	398	89.988	89.966	90.028	90.013	139.988	139.948	-90
115	2.0	2.0	2.35	1,720	2,070	344	414	99.988	99.966	100.028	100.013	149.988	149.948	-100
123	2.5	2.5	3.77	2,340	3,010	466	602	109.988	109.966	110.028	110.013	169.988	169.948	-110
132	2.5	2.5	3.98	2,490	3,290	496	658	119.988	119.966	120.028	120.013	179.988	179.948	-120
139	2.5	2.5	6.12	3,140	4,490	626	898	129.986	129.961	130.033	130.015	199.986	199.940	-130
156	3.0	3.0	6.53	3,350	4,500	670	900	139.986	139.961	140.033	140.015	209.986	209.940	-140
158	3.0	3.0	7.95	3,720	5,020	744	1,004	149.986	149.961	150.033	150.015	224.986	224.940	-150
177	3.0	3.0	9.58	4,350	5,540	870	1,108	159.986	159.961	160.033	160.015	239.986	239.940	-160
179	3.0	3.0	12.95	5,130	6,520	1,026	1,304	169.986	169.961	170.033	170.015	259.986	259.934	-170
201	3.0	3.0	17.23	6,480	7,810	1,296	1,562	179.986	179.961	180.033	180.015	279.986	279.934	-180

❶ To obtain weight in pounds, multiply by 2.20462 (lb/kg).
❷ To obtain capacity in pounds, multiply by 224.82 (lb/kN).
❸ See technical section for alternate housing diameter recommendations.

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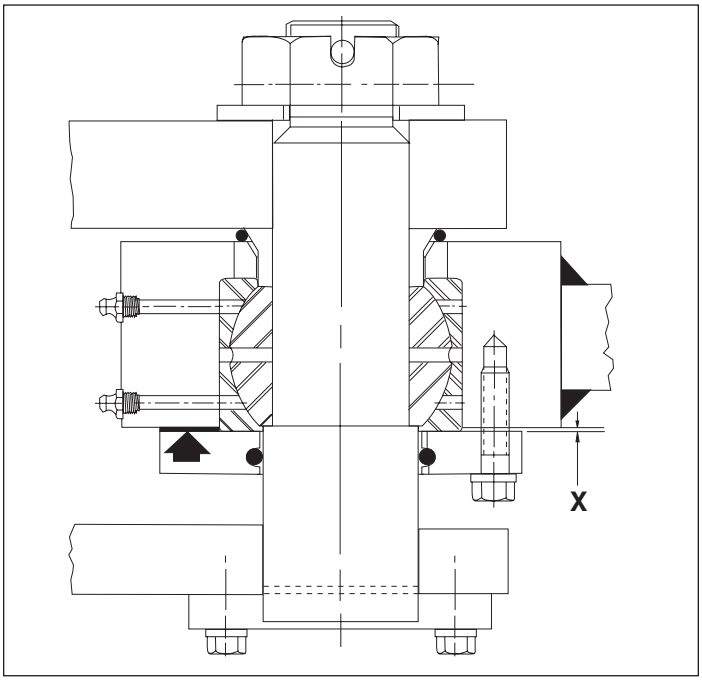
FEATURED PRODUCT

The RBC ShimPack®

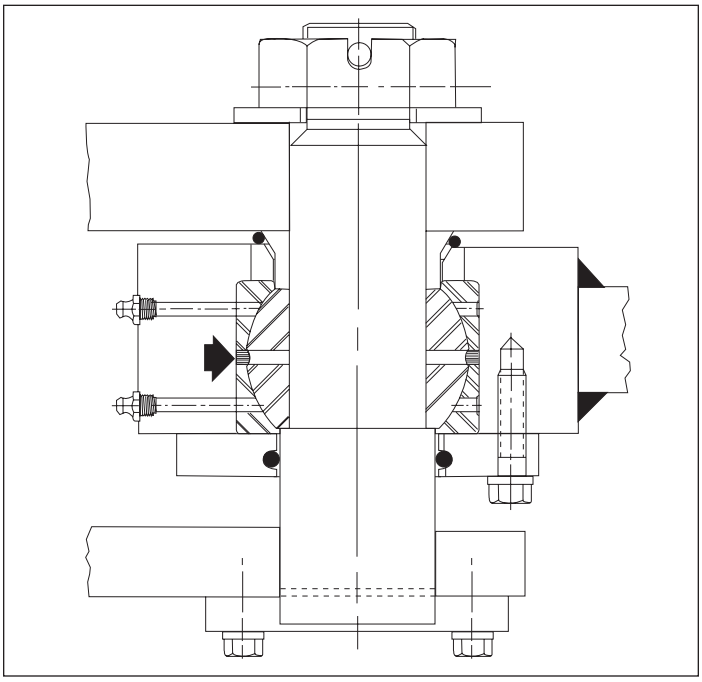
B-DSA-3 Double Acting Angular Contact Spherical Plain Bearing

The RBC ShimPack® double acting angular contact spherical plain bearing was developed to ease the installation procedures required on the assembly line. Traditionally the bearing assembly was completed, clearance was measured and then the assembly was disassembled, shimmed and reassembled. With the RBC ShimPack® double acting angular contact spherical plain bearing, a spacer is preset and individually calibrated at the factory to provide the optimum amount of axial internal clearance.



Old Method of Shimming

The cover plate has to be bolted down until all clearance in the bearing is eliminated and gap X measured. The cover plate is then removed and shims added. The housing begins to fret and deteriorate as the outer ring slides because of the loose fit.



The B-DSA-3 ShimPack® Double Acting Angular Contact Spherical Plain Bearing

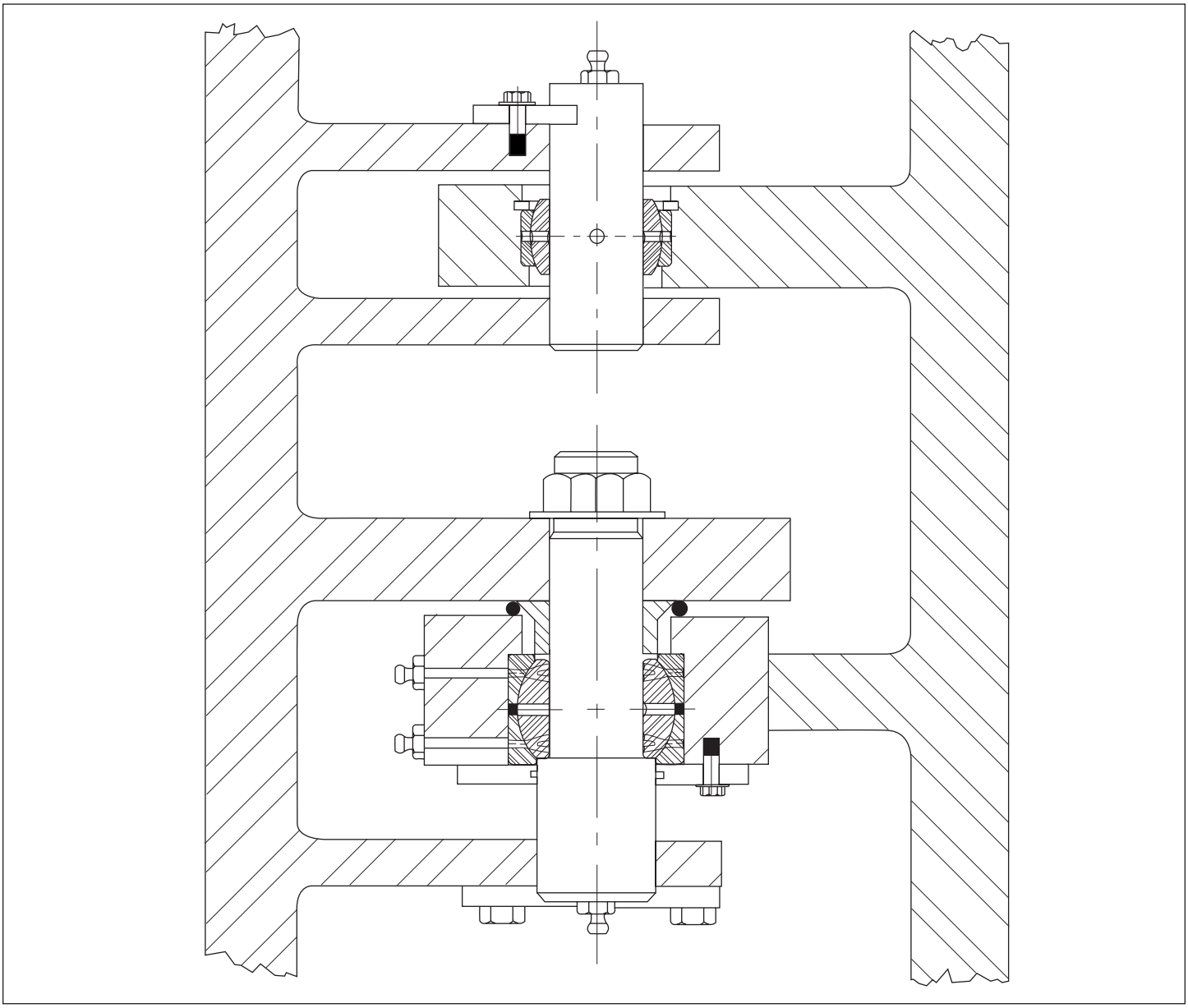
The bearing is mounted with a press fit and cover plate installed. The proper amount of clearance is already preset into the bearing at the factory. As the outer ring is press fit and axially clamped, it will not rotate and damage the housing.

The RBC ShimPack® double acting angular contact spherical plain bearing design eliminates the sliding fit and allows a press fit of the outer ring. As the required clearance is determined by RBC application engineers and set at the RBC factory, consistency is maintained from size to size and bearing to bearing. The customer simply installs the RBC ShimPack® double acting angular contact spherical plain bearing as he would any other self-aligning spherical plain bearing, with no need of concern as to the axial clearance or press fit of the outer ring.

FEATURED PRODUCT

The RBC ShimPack® Bearing
in an Articulated Joint

The use of the RBC ShimPack® double acting angular contact spherical plain bearing in articulated joints in place of a tapered roller bearing offers many advantages. The misalignment capable B-DSA-3 design means that costly line boring is no longer necessary. Alignment becomes less critical allowing the relaxation of bore tolerances and an easier assembly. Assembly also becomes easier as axial clearance no longer has to be set during installation. Dirt and water, which would destroy a roller bearing, are more easily tolerated with the B-DSA-3 design. Misalignment from shaft and housing bore wear have less effect on the RBC ShimPack® double acting angular contact spherical plain bearing than on a roller bearing as contact geometry is critical to successful roller bearing operation.



Like all RBC spherical plain bearings, the RBC ShimPack® double acting angular contact spherical plain bearing is made to withstand the harsh environment seen by off-highway vehicles. The B-DSA-3 design is much more tolerant than tapered roller bearings to rough conditions and seal damage. Overloads and shock loads which lead to early failure in tapered roller bearings are better tolerated by the RBC ShimPack® double acting angular contact spherical plain bearing design. The RBC ShimPack® double acting angular contact spherical plain bearing is the bearing ***designed specifically*** for articulating joint applications.

ShimPack® Series
Spherical Plain Angular Contact Bearings
Double Acting - Inch

Series B--DSA3

Part Number	d Inside Diameter			D Outside Diameter			F Overall Width	B Inner Ring Width	C Outer Ring Width	K Sphere Dia.	Axial Clearance ❶	J End to Hole	L Outer Ring Bore	
	Nom.	Max.	Min.	Nom.	Max.	Min.	+0.000 -0.025	+0.000 -0.005	+0.000 -0.005	(REF)		(REF)	(REF)	
B2024-DSA3	1 1/4	1.2500	1.2495	2 7/16	2.4375	2.4369	1.500	1.390	0.660	2.155	0.003/0.007	0.312	1.66	
B2428-DSA3	1 1/2	1.5000	1.4995	2 13/16	2.8125	2.8119	1.760	1.580	0.790	2.515	0.003/0.007	0.328	1.95	
B2832-DSA3	1 3/4	1.7500	1.7495	3 3/16	3.1875	3.1869	2.020	1.820	0.920	2.875	0.003/0.007	0.375	2.22	
B3236-DSA3	2	2.0000	1.9995	3 9/16	3.5625	3.5617	2.280	2.070	1.050	3.235	0.003/0.007	0.453	2.50	
B3640-DSA3	2 1/4	2.2500	2.2494	3 15/16	3.9375	3.9367	2.540	2.318	1.180	3.590	0.003/0.007	0.500	2.75	
B4044-DSA3	2 1/2	2.5000	2.4994	4 3/8	4.3750	4.3742	2.800	2.545	1.275	3.950	0.004/0.008	0.515	3.03	
B4448-DSA3	2 3/4	2.7500	2.7494	4 3/4	4.7500	4.7492	3.060	2.790	1.405	4.312	0.004/0.008	0.578	3.30	
B4852-DSA3	3	3.0000	2.9994	5 1/8	5.1250	5.1240	3.340	3.022	1.545	4.675	0.004/0.008	0.656	3.58	
B5256-DSA3	3 1/4	3.2500	3.2492	5 1/2	5.5000	5.4990	3.600	3.265	1.675	5.040	0.004/0.008	0.703	3.85	
B5660-DSA3	3 1/2	3.5000	3.4992	5 7/8	5.8750	5.8740	3.860	3.560	1.805	5.390	0.006/0.010	0.765	4.10	
B6064-DSA3	3 3/4	3.7500	3.7492	6 1/4	6.2500	6.2490	4.120	3.738	1.935	5.750	0.006/0.010	0.781	4.37	
B6472-DSA3	4	4.0000	3.9992	7	7.0000	6.9990	4.640	4.225	2.195	6.475	0.006/0.010	0.875	4.90	
B7280-DSA3	4 1/2	4.5000	4.4992	7 3/4	7.7500	7.7488	5.160	4.690	2.455	7.190	0.006/0.010	1.000	5.47	
B8896-DSA3	5 1/2	5.5000	5.4990	8 3/4	8.7500	8.7488	5.480	4.950	2.615	8.156	0.006/0.010	1.370	6.50	

All dimensions are in inches.
Bore dimensions are after MoS_2 coating. All other dimensions are before coating.
For bearings with grooves extended to the face of the outer ring at two places, add suffix "-1" e.g. B3236DSA3-1.

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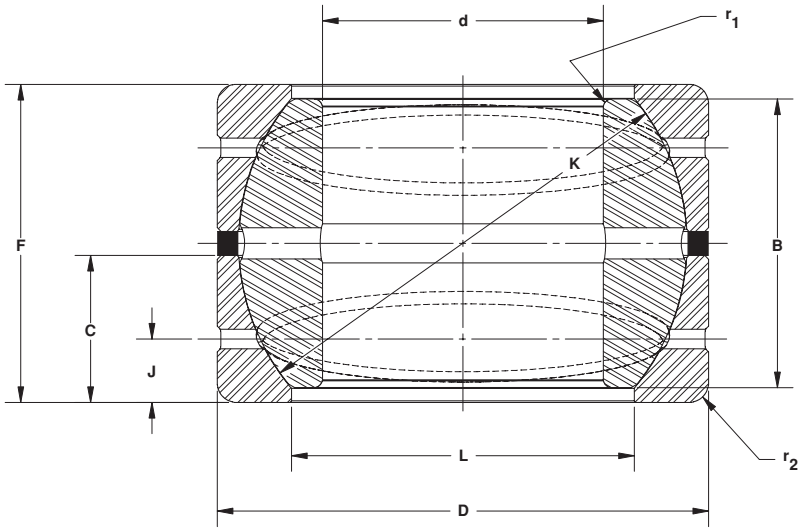
ShimPack® Series
Spherical Plain Angular Contact Bearings
Double Acting - Inch



Series B--DSA3

	r1 Shaft Fillet Max.	r2 Hsg. Fillet Max.	Approx. Weight (lb)	Rec. Max Shim Pack Compression (lbf)	Recommended Load Limits❷				Recommended Shaft Diameter				Housing Bore ❸		Basic Part Number
					Static Radial (lbf)	Static Thrust (lbf)	Dynamic Radial (lbf)	Dynamic Thrust (lbf)	ISO g6 (Slip Fit)		ISO m5 (Press Fit)		ISO N7 (Press Fit)		
									Max.	Min.	Max.	Min.	Max.	Min.	
	0.04	0.10	0.80	30,900	89,000	51,900	22,300	13,000	1.2496	1.2490	1.2508	1.2504	2.4372	2.4360	-2024
	0.04	0.10	1.20	33,700	123,200	69,300	30,800	17,300	1.4996	1.4990	1.5008	1.5004	2.8122	2.8110	-2428
	0.06	0.14	2.15	45,700	165,000	91,700	41,300	22,900	1.7496	1.7490	1.7508	1.7504	3.1871	3.1858	-2832
	0.06	0.14	3.05	50,400	210,400	115,800	52,600	29,000	1.9996	1.9989	2.0010	2.0005	3.5621	3.5607	-3236
	0.06	0.14	4.19	65,700	266,200	146,300	66,600	36,600	2.2496	2.2489	2.2510	2.2505	3.9371	3.9357	-3640
	0.08	0.18	5.65	86,800	313,800	176,500	78,500	44,100	2.4996	2.4989	2.5010	2.5005	4.3746	4.3732	-4044
	0.08	0.18	7.55	98,400	378,800	211,700	94,700	52,900	2.7496	2.7489	2.7510	2.7505	4.7494	4.7479	-4448
	0.08	0.18	9.72	110,000	449,800	248,400	112,500	62,100	2.9996	2.9989	3.0010	3.0005	5.1244	5.1228	-4852
	0.80	0.18	12.24	121,000	527,400	290,800	131,900	72,700	3.2495	3.2486	3.2511	3.2505	5.4994	5.4978	-5256
	0.08	0.18	15.10	136,000	609,200	336,500	152,300	84,100	3.4995	3.4986	3.5011	3.5005	5.8744	5.8728	-5660
	0.08	0.18	18.42	158,000	698,200	383,800	174,600	96,000	3.7495	3.7486	3.7511	3.7505	6.2494	6.2478	-6064
	0.08	0.18	22.02	177,000	899,600	492,400	224,900	123,100	3.9995	3.9986	4.0011	4.0005	6.9994	6.9978	-6472
	0.08	0.18	32.77	210,000	1,109,600	598,500	277,400	149,600	4.4995	4.4986	4.5011	4.5005	7.7492	7.7474	-7280
	0.08	0.18	48.00	255,000	1,335,800	667,100	334,000	166,800	5.4994	5.4984	5.5013	5.5006	8.7492	8.7474	-8896

❶ Clearance after shim pack compression.
❷ Ultimate static and impact loads should not exceed 150% of catalog ratings.
❸ See technical section for alternate housing diameter recommendations.

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ShimPack® Series
Spherical Plain Angular Contact Bearings
Tapered Bore, Double Acting - Inch

Series BT--DSA3

Part Number	d Inside Diameter Nom.❶	d_1 Bore Diameter (REF)	D Outside Diameter			F Overall Width	B Inner Ring Width	C Outer Ring Width	K Sphere Dia.	Axial Clearance ❷	J End to Hole (REF)	L Outer Ring Bore (REF)	
			Nom.	Max.	Min.	+0.000 -0.025	+0.000 -0.005	+0.000 -0.005	(REF)				
BT2024-DSA3	1 1/4	1.175	2 7/16	2.4375	2.4369	1.500	1.390	0.660	2.155	0.004/0.008	0.312	1.66	
BT2428-DSA3	1 1/2	1.415	2 13/16	2.8125	2.8119	1.760	1.580	0.790	2.515	0.004/0.008	0.328	1.95	
BT2832-DSA3	1 3/4	1.650	3 3/16	3.1875	3.1869	2.020	1.820	0.920	2.875	0.004/0.008	0.375	2.22	
BT3236-DSA3	2	1.888	3 9/16	3.5625	3.5617	2.280	2.070	1.050	3.235	0.004/0.008	0.453	2.50	
BT3640-DSA3	2 1/4	2.125	3 15/16	3.9375	3.9367	2.540	2.318	1.180	3.590	0.004/0.008	0.500	2.75	
BT4044-DSA3	2 1/2	2.365	4 3/8	4.3750	4.3742	2.800	2.545	1.275	3.950	0.005/0.009	0.515	3.03	
BT4448-DSA3	2 3/4	2.600	4 3/4	4.7500	4.7492	3.060	2.790	1.405	4.312	0.005/0.009	0.578	3.30	
BT4852-DSA3	3	2.835	5 1/8	5.1250	5.1240	3.340	3.022	1.545	4.675	0.005/0.009	0.656	3.58	
BT5256-DSA3	3 1/4	3.070	5 1/2	5.5000	5.4990	3.600	3.265	1.675	5.040	0.005/0.009	0.703	3.85	
BT5660-DSA3	3 1/2	3.300	5 7/8	5.8750	5.8740	3.860	3.560	1.805	5.390	0.007/0.011	0.765	4.10	
BT6064-DSA3	3 3/4	3.540	6 1/4	6.2500	6.2490	4.120	3.738	1.935	5.750	0.007/0.011	0.781	4.37	
BT6472-DSA3	4	3.760	7	7.0000	6.9990	4.640	4.225	2.195	6.475	0.007/0.011	0.875	4.90	
BT7280-DSA3	4 1/2	4.230	7 3/4	7.7500	7.7488	5.160	4.690	2.455	7.190	0.007/0.011	1.000	5.47	
BT8896-DSA3	5 1/2	5.220	8 3/4	8.7500	8.7488	5.480	4.950	2.615	8.156	0.007/0.011	1.370	6.50	

All dimensions are in inches.
Bore dimensions are after MoS_2 coating. All other dimensions are before coating.
For bearings with grooves extended to the face of the outer ring at two places, add suffix "-1" e.g. BT3236DSA3-1.

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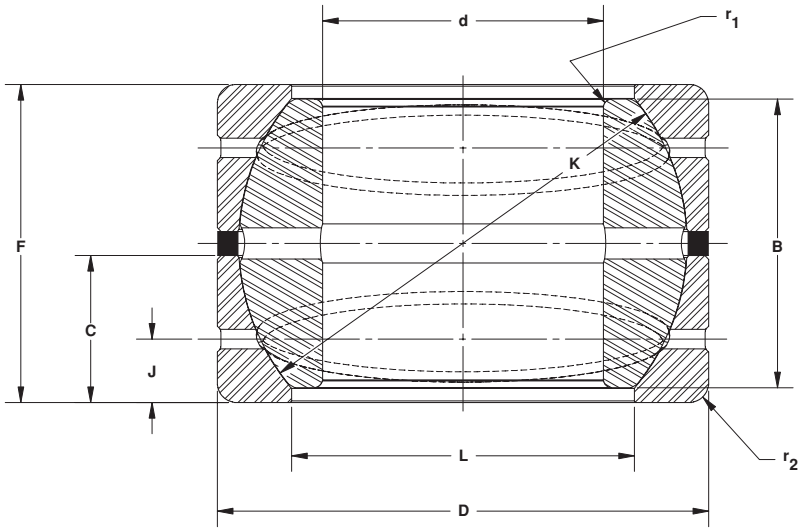
ShimPack® Series
Spherical Plain Angular Contact Bearings
Tapered Bore, Double Acting - Inch



Series BT--DSA3

	r_2 Hsg. Fillet Max.	Approx. Weight (lb)	Rec. Max Shim Pack Compression (lbf)	Inner Ring Clamping Force ❹ (lbf)	Recommended Load Limits❸				Recommended Mounting Dimensions		Basic Part Number
					Static Radial (lbf)	Static Thrust ❺ (lbf)	Dynamic Radial (lbf)	Dynamic Thrust ❺ (lbf)	Housing Bore ISO N7 (Press Fit) Max.	Min.	
	0.100	0.85	30,900	12,000	89,000	51,900	22,300	13,000	2.4372	2.4360	-2024
	0.100	1.26	33,700	13,000	123,200	69,300	30,800	17,300	2.8122	2.8110	-2428
	0.140	2.22	45,700	14,000	165,000	91,700	41,300	22,900	3.1871	3.1858	-2832
	0.140	3.14	50,400	16,000	210,400	115,800	52,600	29,000	3.5621	3.5607	-3236
	0.140	4.29	65,700	17,000	266,200	146,300	66,600	36,600	3.9371	3.9357	-3640
	0.180	5.84	86,800	18,000	313,800	176,500	78,500	44,100	4.3746	4.3732	-4044
	0.180	7.77	98,400	19,000	378,800	211,700	94,700	52,900	4.7494	4.7479	-4448
	0.180	9.96	110,000	20,000	449,800	248,400	112,500	62,100	5.1244	5.1228	-4852
	0.180	12.50	121,000	21,000	527,400	290,800	131,900	72,700	5.4994	5.4978	-5256
	0.180	15.40	136,000	22,000	609,200	336,500	152,300	84,100	5.8744	5.8728	-5660
	0.180	18.80	158,000	23,000	698,200	383,800	174,600	96,000	6.2494	6.2478	-6064
	0.180	22.40	177,000	25,000	899,600	492,400	224,900	123,100	6.9994	6.9978	-6472
	0.180	33.30	210,000	27,000	1,109,600	598,500	277,400	149,600	7.7492	7.7474	-7280
	0.180	48.60	255,000	29,000	1,335,800	667,100	334,000	166,800	8.7492	8.7474	-8896

❶ The nominal bore diameter is measured at the inner ring center.
❷ Clearance after shim pack compression.
❸ Ultimate static and impact loads should not exceed 150% of catalog rating.
❹ Excessive clamping forces will cause loss of bearing clearance.
❺ Contact RBC engineering in cases where operating thrust load exceeds inner ring clamping force.

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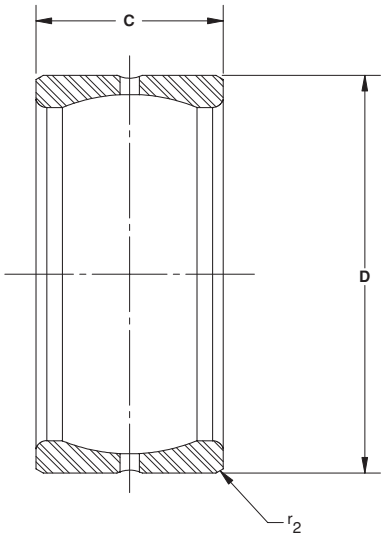
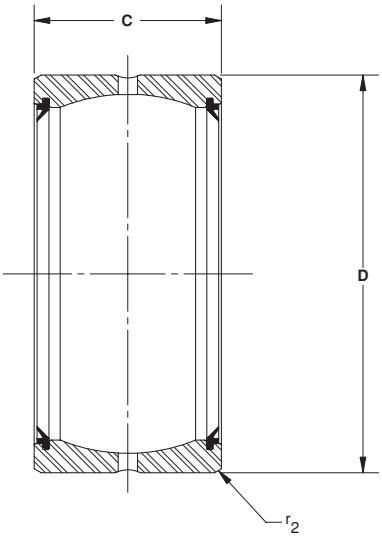
Spherical Outer Rings

Unsealed - Inch



Sealed - Inch



Series ORB--L, Series ORB--LSS

Part Number		Recommended Spherical Dia. of Ball Stud		D Outside Diameter			C Outer Ring Width	Diametral Clearance (Unmounted)	r_2 Hsg. Fillet	Weight approx	Housing Bore ISO R7 (Press Fit)		Housing Bore ISO N7 (Press Fit)		Basic Part Number
Open	Sealed	Max.	Min.	Nom.	Max.	Min.	+.000 -.005		Max.	(lb)	Max.	Min.	Max.	Min.	
ORB8-L	—	0.7194	0.7186	7/8	0.8750	0.8745	0.375	0.002/0.006	0.022	0.020	0.8742	0.8734	0.8747	0.8739	-8
ORB10-L	—	0.8994	0.8986	1 1/16	1.0625	1.0620	0.469	0.002/0.006	0.032	0.040	1.0617	1.0609	1.0622	1.0614	-10
ORB12-L	ORB12-LSS	1.0794	1.0786	1 1/4	1.2500	1.2495	0.562	0.003/0.007	0.032	0.050	1.2490	1.2480	1.2497	1.2487	-12
ORB14-L	ORB14-LSS	1.2574	1.2566	1 7/16	1.4375	1.4370	0.656	0.003/0.007	0.032	0.080	1.4365	1.4355	1.4372	1.4362	-14
ORB16-L	ORB16-LSS	1.4364	1.4356	1 5/8	1.6250	1.6245	0.750	0.003/0.007	0.032	0.110	1.6240	1.6230	1.6247	1.6237	-16
ORB20-L	ORB20-LSS	1.7944	1.7936	2	2.0000	1.9995	0.937	0.003/0.007	0.032	0.200	1.9988	1.9976	1.9997	1.9985	-20
ORB22-L	ORB22-LSS	1.9364	1.9356	2 3/16	2.1875	2.1869	1.031	0.003/0.007	0.032	0.290	2.1863	2.1851	2.1872	2.1860	-22
ORB24-L	ORB24-LSS	2.1544	2.1536	2 7/16	2.4375	2.4369	1.125	0.003/0.007	0.032	0.380	2.4363	2.4351	2.4372	2.4360	-24
ORB28-L	ORB28-LSS	2.5144	2.5136	2 13/16	2.8125	2.8119	1.312	0.003/0.007	0.032	0.560	2.8113	2.8101	2.8122	2.8110	-28
ORB32-L	ORB32-LSS	2.8744	2.8736	3 3/16	3.1875	3.1869	1.500	0.003/0.007	0.032	0.790	3.1860	3.1846	3.1871	3.1858	-32
ORB36-L	ORB36-LSS	3.2344	3.2336	3 9/16	3.5625	3.5617	1.687	0.004/0.008	0.032	1.070	3.5610	3.5596	3.5621	3.5607	-36
ORB40-L	ORB40-LSS	3.5894	3.5886	3 15/16	3.9375	3.9367	1.875	0.004/0.008	0.032	1.420	3.9359	3.9345	3.9371	3.9357	-40
ORB44-L	ORB44-LSS	3.9494	3.9486	4 3/8	4.3750	4.3742	2.062	0.004/0.008	0.032	2.080	4.3734	4.3720	4.3746	4.3732	-44
ORB48-L	ORB48-LSS	4.3114	4.3106	4 3/4	4.7500	4.7492	2.250	0.004/0.008	0.032	2.590	4.7481	4.7465	4.7494	4.7479	-48
ORB52-L	ORB52-LSS	4.6744	4.6736	5 1/8	5.1250	5.1240	2.437	0.005/0.009	0.032	3.150	5.1231	5.1215	5.1244	5.1228	-52
ORB56-L	ORB56-LSS	5.0394	5.0386	5 1/2	5.5000	5.4990	2.625	0.005/0.009	0.032	3.790	5.4981	5.4965	5.4994	5.4978	-56
ORB60-L	ORB60-LSS	5.3894	5.3886	5 7/8	5.8750	5.8740	2.812	0.005/0.009	0.032	4.840	5.8731	5.8715	5.8744	5.8728	-60
ORB64-L	ORB64-LSS	5.7494	5.7486	6 1/4	6.2500	6.2490	3.000	0.005/0.009	0.032	5.680	6.2481	6.2465	6.2494	6.2478	-64
ORB72-9L	ORB72-9LSS	6.4744	6.4736	7	7.0000	6.9990	3.375	0.005/0.009	0.044	7.780	6.9979	6.9963	6.9994	6.9978	-72
ORB80-9L	ORB80-9LSS	7.1894	7.1886	7 3/4	7.7500	7.7488	3.750	0.005/0.009	0.044	10.280	7.7476	7.7458	7.7492	7.7474	-80
ORB96-9L	ORB96-9LSS	8.1524	8.1512	8 3/4	8.7500	8.7488	4.125	0.005/0.009	0.044	14.930	8.7475	8.7457	8.7492	8.7474	-96

All dimensions are in inches and apply before MoS_2 coating.

Seals will be furnished unmounted.

Outer rings size 72 and above are double fractured (suffix "9L").

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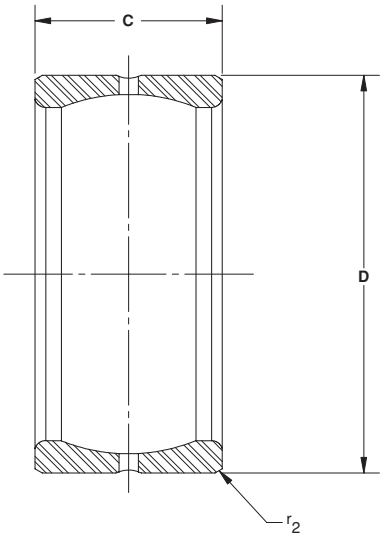
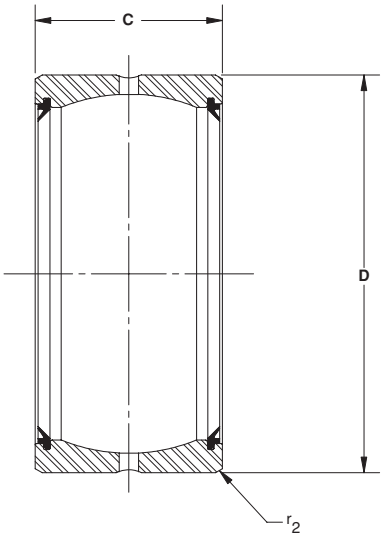
Spherical Outer Rings

Sealed - Metric





Series ORMB--, Series ORMB--SS

Part Number		Recommended Spherical Dia. of Ball Stud		D Outside Diameter		C Outer Ring Width		Diametral Clearance (Unmounted)	r_2 Hsg Fillet	Weight approx. [N]	Housing Bore ISO R7 (Press Fit)		Mean Inter-ference
Open	Sealed	Max.	Min.	Nom.	Tol. +0.000	Nom.	Tol. +0.000				Max.	Min.	
ORMB12	—	19.000	18.980	22	-0.009	7	-0.240	0.05/0.15	0.3	0.06	21.980	21.959	0.026
ORMB15	—	22.000	21.980	26	-0.009	9	-0.240	0.05/0.15	0.3	0.11	25.980	25.959	0.026
ORMB17	ORMB17-SS	25.000	24.980	30	-0.009	10	-0.240	0.05/0.15	0.3	0.18	29.980	29.959	0.026
ORMB20	ORMB20-SS	30.000	29.980	35	-0.011	12	-0.240	0.07/0.17	0.6	0.26	34.975	34.950	0.030
ORMB25	ORMB25-SS	36.000	35.980	42	-0.011	16	-0.240	0.07/0.17	0.6	0.50	41.975	41.950	0.030
ORMB30	ORMB30-SS	41.000	40.980	47	-0.011	18	-0.240	0.07/0.17	0.6	0.63	46.975	46.950	0.030
ORMB35	ORMB35-SS	48.000	47.980	55	-0.013	20	-0.300	0.07/0.17	0.6	0.96	54.970	54.940	0.037
ORMB40	ORMB40-SS	55.000	54.980	62	-0.013	22	-0.300	0.07/0.17	0.6	1.20	61.970	61.940	0.037
ORMB45	ORMB45-SS	60.000	59.980	68	-0.013	25	-0.300	0.07/0.17	0.6	1.70	67.968	67.938	0.037
ORMB50	ORMB50-SS	67.000	66.980	75	-0.013	28	-0.300	0.07/0.17	0.6	2.12	74.968	74.938	0.037
ORMB60	ORMB60-SS	81.000	80.980	90	-0.015	36	-0.400	0.10/0.20	1.0	3.69	89.962	89.927	0.042
ORMB70	ORMB70-SS	94.000	93.980	105	-0.015	40	-0.400	0.10/0.20	1.0	5.83	104.959	104.924	0.042
ORMB80	ORMB80-SS	107.000	106.980	120	-0.015	45	-0.400	0.10/0.20	1.0	8.83	119.959	119.924	0.042
ORMB90	ORMB90-SS	117.000	116.980	130	-0.018	50	-0.500	0.13/0.23	1.0	10.70	129.952	129.912	0.049
ORMB100	ORMB100-SS	134.000	133.980	150	-0.018	55	-0.500	0.13/0.23	1.0	16.60	149.950	149.910	0.049
ORMB110	ORMB110-SS	143.000	142.980	160	-0.025	55	-0.500	0.13/0.23	1.0	18.80	159.950	159.910	0.052
ORMB120	ORMB120-SS	160.000	159.980	180	-0.025	70	-0.500	0.13/0.23	1.0	31.70	179.947	179.907	0.052
ORMB140	ORMB140-SS	187.000	186.980	210	-0.030	70	-0.600	0.13/0.23	1.0	42.50	209.937	209.891	0.061
ORMB160-9L	ORMB160-9LSS	206.000	205.980	230	-0.030	80	-0.600	0.15/0.27	1.0	55.70	229.933	229.887	0.061
ORMB180-9L	ORMB180-9LSS	234.000	233.970	260	-0.035	80	-0.700	0.15/0.27	1.1	68.40	259.926	259.874	0.069
ORMB200-9L	ORMB200-9LSS	265.000	264.970	290	-0.035	100	-0.700	0.15/0.27	1.1	92.30	289.922	289.870	0.070
ORMB220-9L	ORMB220-9LSS	286.000	285.970	320	-0.040	100	-0.800	0.15/0.27	1.1	137.00	319.913	319.856	0.077
ORMB240-9L	ORMB240-9LSS	306.000	305.970	340	-0.040	100	-0.800	0.15/0.27	1.1	146.00	339.913	339.856	0.077
ORMB260-9L	ORMB260-9LSS	333.000	332.970	370	-0.040	110	-0.800	0.17/0.30	1.1	190.00	369.907	369.850	0.077
ORMB280-9L	ORMB280-9LSS	360.000	359.970	400	-0.040	120	-0.800	0.17/0.30	1.1	243.00	399.907	399.850	0.077
ORMB300-9L	ORMB300-9LSS	375.000	374.970	430	-0.045	120	-0.900	0.17/0.30	1.1	287.00	429.897	429.834	0.085
ORMB320-9L	ORMB320-9LSS	380.000	379.970	440	-0.045	135	-0.900	0.20/0.34	1.1	442.00	439.897	439.834	0.085

All dimensions are in millimeters.
All dimensions apply before MoS_2 coating.
Outer rings of bearings size 160 and above are double fractured (suffix "-9L").

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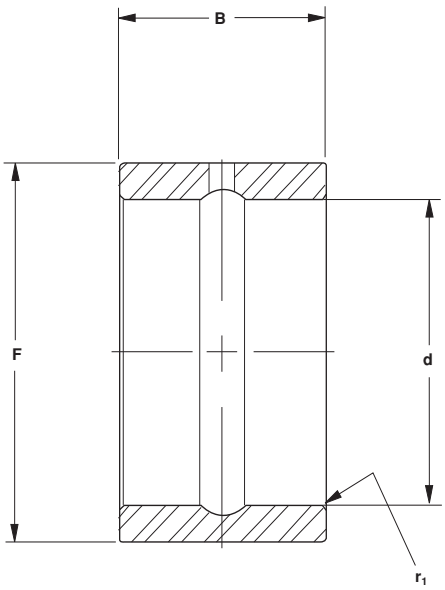
Hardened Cylindrical Steel Bushings

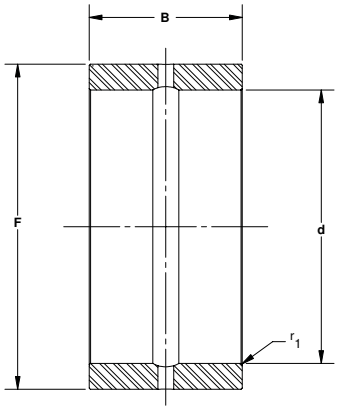


Series IR

Part Number	d Inside Diameter			F Outside Diameter			B Width +0.000 - 0.005	r_1 Shaft Fillet Max.	Weight approx. [lb.]	Recommended Shaft Diameter			
										Slip Fit ISO g6		Press Fit ISO m6	
	Nom.	Max.	Min.	Nom.	Max.	Min.				Max.	Min.	Max.	Min.
IR 7133	3/8	0.3750	0.3746	5/8	0.6245	0.6241	0.760	0.04	0.042	0.3748	0.3744	0.3755	0.3752
IR 7134	3/8	0.3750	0.3746	5/8	0.6245	0.6241	1.010	0.04	0.055	0.3748	0.3744	0.3755	0.3752
IR 7153	1/2	0.5000	0.4996	3/4	0.7493	0.7488	0.760	0.04	0.050	0.4997	0.4993	0.5006	0.5003
IR 7154	1/2	0.5000	0.4996	3/4	0.7493	0.7488	1.010	0.04	0.067	0.4997	0.4993	0.5006	0.5003
IR 7173	5/8	0.6250	0.6246	7/8	0.8743	0.8738	0.760	0.04	0.058	0.6247	0.6243	0.6256	0.6253
IR 7174	5/8	0.6250	0.6246	7/8	0.8743	0.8738	1.010	0.04	0.077	0.6247	0.6243	0.6256	0.6253
IR 7193	3/4	0.7500	0.7496	1	0.9993	0.9988	0.760	0.04	0.065	0.7497	0.7492	0.7507	0.7503
IR 7194	3/4	0.7500	0.7496	1	0.9993	0.9988	1.010	0.04	0.087	0.7497	0.7492	0.7507	0.7503
IR 7204	13/16	0.8125	0.8120	1 1/16	1.0618	1.0613	1.010	0.04	0.097	0.8122	0.8117	0.8132	0.8128
IR 7205	13/16	0.8125	0.8120	1 1/16	1.0618	1.0613	1.260	0.04	0.121	0.8122	0.8117	0.8132	0.8128
IR 7214	7/8	0.8750	0.8745	1 1/8	1.1241	1.1236	1.010	0.04	0.106	0.8747	0.8742	0.8757	0.8753
IR 7215	7/8	0.8750	0.8745	1 1/8	1.1241	1.1236	1.260	0.04	0.132	0.8747	0.8742	0.8757	0.8753
IR 7234	1	1.0000	0.9995	1 1/4	1.2491	1.2485	1.010	0.04	0.126	0.9997	0.9992	1.0007	1.0003
IR 7235	1	1.0000	0.9995	1 1/4	1.2491	1.2485	1.260	0.04	0.157	0.9997	0.9992	1.0007	1.0003
IR 7244	1 1/16	1.0625	1.0620	1 5/16	1.3116	1.3110	1.010	0.04	0.130	1.0622	1.0617	1.0632	1.0628
IR 7245	1 1/16	1.0625	1.0620	1 5/16	1.3116	1.3110	1.260	0.04	0.163	1.0622	1.0617	1.0632	1.0628
IR 7254	1 1/8	1.1250	1.1245	1 3/8	1.3741	1.3735	1.010	0.04	0.135	1.1247	1.1242	1.1257	1.1253
IR 7255	1 1/8	1.1250	1.1245	1 3/8	1.3741	1.3735	1.260	0.04	0.169	1.1247	1.1242	1.1257	1.1253
IR 7274	1 3/16	1.1875	1.1870	1 1/2	1.4990	1.4984	1.010	0.06	0.184	1.1871	1.1865	1.1883	1.1879
IR 7275	1 3/16	1.1875	1.1870	1 1/2	1.4990	1.4984	1.260	0.06	0.230	1.1871	1.8650	1.1883	1.1879
IR 7284	1 1/4	1.2500	1.2495	1 9/16	1.5615	1.5609	1.010	0.06	0.184	1.2496	1.2490	1.2508	1.2504
IR 7285	1 1/4	1.2500	1.2495	1 9/16	1.5615	1.5609	1.260	0.06	0.228	1.2496	1.2490	1.2508	1.2504
IR 7294	1 5/16	1.3125	1.3120	1 5/8	1.6240	1.6234	1.010	0.06	0.203	1.3121	1.3115	1.3133	1.3129
IR 7295	1 5/16	1.3125	1.3120	1 5/8	1.6240	1.6234	1.260	0.06	0.254	1.3121	1.3115	1.3133	1.3129
IR 7304	1 3/8	1.3750	1.3745	1 11/16	1.6865	1.6859	1.010	0.06	0.212	1.3746	1.3740	1.3758	1.3754
IR 7305	1 3/8	1.3750	1.3745	1 11/16	1.6865	1.6859	1.260	0.06	0.265	1.3746	1.3740	1.3758	1.3754
IR 7314	1 7/16	1.4375	1.4370	1 3/4	1.7490	1.7484	1.010	0.06	0.223	1.4371	1.4365	1.4383	1.4379
IR 7315	1 7/16	1.4375	1.4370	1 3/4	1.7490	1.7484	1.260	0.06	0.278	1.4371	1.4365	1.4383	1.4379
IR 7324	1 1/2	1.5000	1.4995	1 13/16	1.8115	1.8109	1.010	0.06	0.232	1.4996	1.4990	1.5008	1.5004
IR 7325	1 1/2	1.5000	1.4995	1 13/16	1.8115	1.8109	1.260	0.06	0.289	1.4996	1.4990	1.5008	1.5004
IR 7334	1 9/16	1.5625	1.5620	1 7/8	1.8740	1.8734	1.010	0.06	0.240	1.5621	1.5615	1.5633	1.5629
IR 7335	1 9/16	1.5625	1.5620	1 7/8	1.8740	1.8734	1.260	0.06	0.300	1.5621	1.5615	1.5633	1.5629
IR 7344	1 5/8	1.6250	1.6245	1 15/16	1.9364	1.9357	1.010	0.06	0.249	1.6246	1.6240	1.6258	1.6254
IR 7345	1 5/8	1.6250	1.6245	1 15/16	1.9364	1.9357	1.260	0.06	0.311	1.6246	1.6240	1.6258	1.6254
IR 7354	1 11/16	1.6875	1.6870	2	1.9989	1.9982	1.010	0.06	0.258	1.6871	1.6865	1.6883	1.6879
IR 7355	1 11/16	1.6875	1.6870	2	1.9989	1.9982	1.260	0.06	0.322	1.6871	1.6865	1.6883	1.6879

All dimensions are in inches.

Hardened Cylindrical Steel Bushings



Series IR

Part Number	d Inside Diameter			F Outside Diameter			B Width +0.000 - 0.005	r_1 Shaft Fillet Max.	Weight approx. [lb.]	Recommended Shaft Diameter			
										Slip Fit ISO g6		Press Fit ISO m6	
	Nom.	Max.	Min.	Nom.	Max.	Min.				Max.	Min.	Max.	Min.
IR 8406	1 3/4	1.7500	1.7495	2 1/4	2.2489	2.2482	1.510	0.06	0.67	1.7496	1.7490	1.7508	1.7504
IR 8407	1 3/4	1.7500	1.7495	2 1/4	2.2489	2.2482	1.760	0.06	0.78	1.7496	1.7490	1.7508	1.7504
IR 8446	1 15/16	1.9375	1.9370	2 1/2	2.4989	2.4982	1.510	0.08	0.84	1.9371	1.9365	1.9383	1.9379
IR 8447	1 15/16	1.9375	1.9370	2 1/2	2.4989	2.4982	1.760	0.08	0.98	1.9371	1.9365	1.9383	1.9379
IR 8476	2 3/16	2.1875	2.1869	2 3/4	2.7489	2.7482	1.510	0.08	0.93	2.1871	2.1864	2.1885	2.1880
IR 8477	2 3/16	2.1875	2.1869	2 3/4	2.7489	2.7482	1.760	0.08	1.09	2.1871	2.1864	2.1885	2.1880
IR 8516	2 3/8	2.3750	2.3744	3	2.9989	2.9982	1.510	0.08	1.13	2.3746	2.3739	2.3760	2.3755
IR 8517	2 3/8	2.3750	2.3744	3	2.9989	2.9982	1.760	0.08	1.31	2.3746	2.3739	2.3760	2.3755
IR 8536	2 1/2	2.5000	2.4994	3 1/8	3.1237	3.1228	1.510	0.08	1.18	2.4996	2.4989	2.5010	2.5005
IR 8537	2 1/2	2.5000	2.4994	3 1/8	3.1237	3.1228	1.760	0.08	1.37	2.4996	2.4989	2.5010	2.5005
IR 9567	2 3/4	2.7500	2.7494	3 1/4	3.2487	3.2478	1.760	0.08	1.17	2.7496	2.7489	2.7510	2.7505
IR 9568	2 3/4	2.7500	2.7494	3 1/4	3.2487	3.2478	2.010	0.08	1.34	2.7496	2.7489	2.7510	2.7505
IR 9607	2 15/16	2.9375	2.9369	3 1/2	3.4987	3.4978	1.760	0.08	1.41	2.9371	2.9364	2.9385	2.9379
IR 9608	2 15/16	2.9375	2.9369	3 1/2	3.4987	3.4978	2.010	0.08	1.61	2.9371	2.9364	2.9385	2.9379
IR 9647	3 1/8	3.1250	3.1244	3 3/4	3.7487	3.7478	1.760	0.10	1.67	3.1246	3.1239	3.1260	3.1254
IR 9648	3 1/8	3.1250	3.1244	3 3/4	3.7487	3.7478	2.010	0.10	1.91	3.1246	3.1239	3.1260	3.1254
IR 9687	3 3/8	3.3750	3.3742	4	3.9985	3.9976	1.760	0.10	1.79	3.3745	3.3737	3.3761	3.3755
IR 9688	3 3/8	3.3750	3.3742	4	3.9985	3.9976	2.010	0.10	2.05	3.3745	3.3737	3.3761	3.3755
IR 9717	3 1/2	3.5000	3.4992	4 1/8	4.1235	4.1226	1.760	0.10	1.85	3.4995	3.4987	3.5011	3.5005
IR 9718	3 1/2	3.5000	3.4992	4 1/8	4.1235	4.1226	2.010	0.10	2.12	3.4995	3.4987	3.5011	3.5005
IR 9728	3 1/2	3.5000	3.4992	4 1/4	4.2485	4.2476	2.010	0.10	2.58	3.4995	3.4987	3.5011	3.5005
IR 6768	3 3/4	3.7500	3.7492	4 1/2	4.4985	4.4976	2.010	0.10	2.75	3.7495	3.7487	3.7511	3.7505
IR 6769	3 3/4	3.7500	3.7492	4 1/2	4.4985	4.4976	2.260	0.10	3.09	3.7495	3.7487	3.7511	3.7505
IR 6770	3 3/4	3.7500	3.7492	4 1/2	4.4985	4.4976	2.515	0.10	3.44	3.7495	3.7487	3.7511	3.7505
IR 6848	4	4.0000	3.9992	5	4.9985	4.9975	2.010	0.10	4.00	3.9995	3.9987	4.0011	4.0005
IR 6849	4	4.0000	3.9992	5	4.9985	4.9975	2.260	0.10	4.50	3.9995	3.9987	4.0011	4.0005
IR 6850	4	4.0000	3.9992	5	4.9985	4.9975	2.515	0.10	5.01	3.9995	3.9987	4.0011	4.0005
IR 6918	4 1/2	4.5000	4.4992	5 1/2	5.4985	5.4975	2.515	0.10	5.57	4.4995	4.4987	4.5011	4.5005
IR 6919	4 1/2	4.5000	4.4992	5 1/2	5.4985	5.4975	3.015	0.10	6.68	4.4995	4.4987	4.5011	4.5005
IR 6922	4 3/4	4.7500	4.7492	5 3/4	5.7483	5.7473	3.015	0.12	7.02	4.7494	4.7487	4.7513	4.7506
IR 6925	5	5.0000	4.9990	6	5.9983	5.9973	2.515	0.12	6.13	4.9994	4.9985	5.0013	5.0006
IR 6926	5	5.0000	4.9990	6	5.9983	5.9973	3.015	0.12	7.35	4.9994	4.9985	5.0013	5.0006
IR 6935	5 1/2	5.5000	5.4990	6 1/2	6.4983	6.4973	2.515	0.12	6.68	5.4994	5.4985	5.5013	5.5006
IR 6936	5 1/2	5.5000	5.4990	6 1/2	6.4983	6.4973	3.015	0.12	8.01	5.4994	5.4985	5.5013	5.5006
IR 2325	6	6.0000	5.9990	7 1/4	7.2481	7.2469	2.515	0.12	9.22	5.9994	5.9985	6.0013	6.0006
IR 2326	6	6.0000	5.9990	7 1/4	7.2481	7.2469	3.015	0.12	11.06	5.9994	5.9985	6.0013	6.0006
IR 2425	6 1/2	6.5000	6.4990	7 3/4	7.7481	7.7469	2.515	0.12	9.92	6.4994	6.4985	6.5013	6.5006
IR 2426	6 1/2	6.5000	6.4990	7 3/4	7.7481	7.7469	3.015	0.12	11.90	6.4994	6.4985	6.5013	6.5006
IR 2526	7	7.0000	6.9990	8 1/4	8.2481	8.2469	3.015	0.12	12.73	6.9994	6.9985	7.0013	7.0006
IR 2626	7 1/2	7.5000	7.4988	8 3/4	8.7480	8.7468	3.015	0.16	13.57	7.4994	7.4983	7.5015	7.5007
IR 2726	8	8.0000	7.9988	9 1/4	9.2480	9.2468	3.015	0.16	14.40	7.9994	7.9983	8.0015	8.0007

All dimensions are in inches.

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Industrial Rod Ends

Female Shank, Heavy Duty Forging - Inch

Series REF

Part Number		d Inside Diameter			B Inner Ring Width +0.000 -0.005	d_1 Shaft Shoulder Diameter (Ref)	α Tilt in Clevis Max. ❶ (Deg)	H Length to Center (Ref)	G Thread UNF-2B ❷	G_1 Eff. Thread Length	
Open	Sealed	Nom.	Max.	Min.							
REF12	**REF12-SS**	3/4	0.7500	0.7495	0.656	0.844	2	3.000	3/4-16	1.125	
REF12-E	**REF12-ESS**	3/4	0.7500	0.7495	1.125	0.920	9	3.000	3/4-16	1.125	
REF14	**REF14-SS**	7/8	0.8750	0.8745	0.765	0.984	2	3.375	7/8-14	1.281	
REF14-E	**REF14-ESS**	7/8	0.8750	0.8745	1.312	1.070	9	3.375	7/8-14	1.281	
REF16	**REF16-SS**	1	1.0000	0.9995	0.875	1.125	2	3.750	1-12	1.437	
REF16-E	**REF16- ESS**	1	1.0000	0.9995	1.500	1.220	9	3.750	1-12	1.437	
REF20	**REF20-SS**	1 1/4	1.2500	1.2495	1.093	1.406	2	4.562	1 1/4-12	1.812	
REF20-E	**REF20-ESS**	1 1/4	1.2500	1.2495	1.875	1.525	9	4.562	1 1/4-12	1.812	
REF2024	**REF2024-SS**	1 1/4	1.2500	1.2495	1.390	1.660	4	5.406	1 1/2-12	2.125	
REF22	**REF22-SS**	1 3/8	1.3750	1.3745	1.187	1.516	2	5.000	1 3/8-12	2.000	
REF22-E	**REF22-ESS**	1 3/8	1.3750	1.3745	2.062	1.670	9	5.000	1 3/8-12	2.000	
REF24	**REF24-SS**	1 1/2	1.5000	1.4995	1.312	1.703	2	5.406	1 1/2-12	2.125	
REF24-E	**REF24-ESS**	1 1/2	1.5000	1.4995	2.250	1.850	9	5.406	1 1/2-12	2.125	
REF2428	**REF2428-SS**	1 1/2	1.5000	1.4995	1.580	1.500	4	6.312	1 3/4-12	2.437	
REF28	**REF28-SS**	1 3/4	1.7500	1.7495	1.531	1.984	3	6.312	1 3/4-12	2.437	
REF28-E	**REF28-ESS**	1 3/4	1.7500	1.7495	2.625	2.165	9	6.312	1 3/4-12	2.437	
REF2832	**REF2832-SS**	1 3/4	1.7500	1.7495	1.820	1.750	4	7.187	2-12	2.750	
REF32	**REF32-SS**	2	2.0000	1.9995	1.750	2.266	3	7.187	2-12	2.750	
REF32-E	**REF32-ESS**	2	2.0000	1.9995	3.000	2.460	9	7.187	2-12	2.750	
REF3236	**REF3236-SS**	2	2.0000	1.9995	2.070	2.000	4	8.125	2 1/4-12	3.000	
REF36	**REF36-SS**	2 1/4	2.2500	2.2494	1.969	2.563	3	8.125	2 1/4-12	3.000	
REF36-E	**REF36-ESS**	2 1/4	2.2500	2.2494	3.375	2.760	9	8.125	2 1/4-12	3.000	
REF3640	**REF3640-SS**	2 1/4	2.2500	2.2494	2.318	2.250	5	9.000	2 1/2-12	3.250	
REF40	**REF40-SS**	2 1/2	2.5000	2.4994	2.187	2.844	3	9.000	2 1/2-12	3.250	
REF40-E	**REF40-ESS**	2 1/2	2.5000	2.4994	3.750	3.060	9	9.000	2 1/2-12	3.250	

All dimensions are in inches.
Consult RBC engineering for bearings with tapered bore.

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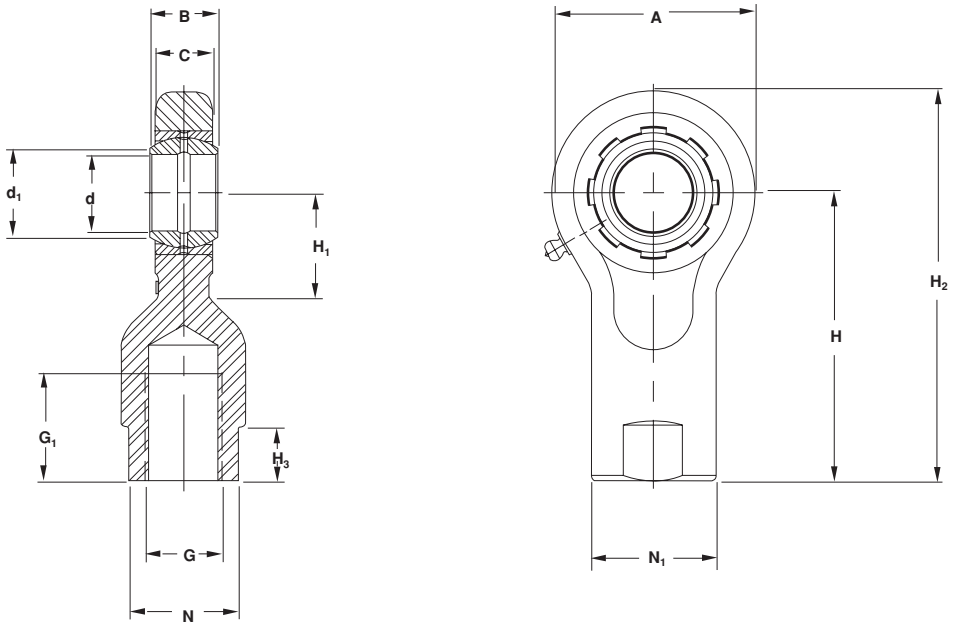
Industrial Rod Ends

Female Shank, Heavy Duty Forging - Inch



Series REF

A Head Dia.	N_1 Shank Dia.	C Head Thickness	H_3 Length of Flat	H_2 Overall Length	N Width across Flats	H_1 Neck to Center (lb.)	Diametral Clearance	Approx. Weight (lb.)	Recommended Static Load Limit		Part Number
									Radial (lbf.)	Thrust (lbf.)	
2.062	1.187	0.562	0.625	4.031	1.062	1.000	0.001/0.006	0.69	7,500	4,500	**REF12**
2.062	1.187	0.562	0.625	4.031	1.062	1.000	0.001/0.006	0.69	7.500	4.500	**REF12-E**
2.375	1.312	0.656	0.671	4.562	1.125	1.187	0.001/0.006	1.03	10,200	5,200	**REF14**
2.375	1.312	0.656	0.671	4.562	1.125	1.187	0.001/0.006	1.03	10,200	5,200	**REF14-E**
2.687	1.562	0.750	0.718	5.093	1.375	1.312	0.001/0.006	1.36	13,300	5,800	**REF16**
2.687	1.562	0.750	0.718	5.093	1.375	1.312	0.001/0.006	1.36	13,300	5,800	**REF16-E**
3.312	1.875	0.937	0.750	6.218	1.625	1.625	0.001/0.006	2.13	20,700	7,100	**REF20**
3.312	1.875	0.937	0.750	6.218	1.625	1.625	0.001/0.006	2.13	20,700	7,100	**REF20-E**
4.000	2.312	1.125	1.000	7.406	2.000	2.000	0.001/0.006	4.84	29,800	8,700	**REF2024**
3.625	2.000	1.031	0.875	6.812	1.750	1.875	0.001/0.006	3.12	23,900	7,900	**REF22**
3.625	2.000	1.031	0.875	6.812	1.750	1.875	0.001/0.006	3.12	23,900	7,900	**REF22-E**
4.000	2.312	1.125	1.000	7.406	2.000	2.000	0.001/0.006	4.84	29,800	8,700	**REF24**
4.000	2.312	1.125	1.000	7.406	2.000	2.000	0.001/0.006	4.84	29,800	8,700	**REF24-E**
4.625	2.750	1.312	1.187	8.625	2.375	2.125	0.001/0.006	7.04	40,800	10,000	**REF2428**
4.625	2.750	1.312	1.187	8.625	2.375	2.125	0.001/0.006	7.04	40,800	10,000	**REF28**
4.625	2.750	1.312	1.187	8.625	2.375	2.125	0.001/0.006	7.04	40,800	10,000	**REF28-E**
5.250	3.125	1.500	1.187	9.812	2.750	2.500	0.001/0.006	9.02	52,800	11,200	**REF2832**
5.250	3.125	1.500	1.187	9.812	2.750	2.500	0.001/0.006	9.02	52,800	11,200	**REF32**
5.250	3.125	1.500	1.187	9.812	2.750	2.500	0.001/0.006	9.02	52,800	11,200	**REF32-E**
5.875	3.375	1.687	1.375	11.062	3.000	2.937	0.002/0.006	12.32	66,800	12,500	**REF3236**
5.875	3.375	1.687	1.375	11.062	3.000	2.937	0.002/0.006	12.32	66,800	12,500	**REF36**
5.875	3.375	1.687	1.375	11.062	3.000	2.937	0.002/0.006	12.80	66,800	12,500	**REF36-E**
6.500	3.687	1.875	1.375	12.250	3.250	3.250	0.002/0.006	15.60	82,800	13,800	**REF3640**
6.500	3.687	1.875	1.375	12.250	3.250	3.250	0.002/0.006	15.60	82,800	13,800	**REF40**
6.500	3.687	1.875	1.375	12.250	3.250	3.250	0.002/0.006	16.20	82,800	13,800	**REF40-E**

❶ For sealed bearings with extended inner ring use 5 degrees.

❷ To order left handed thread, add suffix “L” to part number shown in chart (e.g. REF 12L).

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Industrial Rod Ends

Male Shank, Heavy Duty Forging - Inch

Series REM

Part Number		d Inside Diameter			B Inner Ring Width	d_1 Shaft Shoulder Diameter (Ref)	α Tilt in Clevis Max. (deg) ❶	H Length to Center (Ref)	G Thread UNF-2A ❷	G_1 Thread Length	
Open	Sealed	Nom.	Min.	Max.							
REM12	**REM12-SS**	3/4	0.7495	0.7500	0.656	0.844	2	3.000	3/4-16	1.562	
REM12-E	**REM12-ESS**	3/4	0.7495	0.7500	1.125	0.920	9	3.000	3/4-16	1.562	
REM14	**REM14-SS**	7/8	0.8745	0.8750	0.765	0.984	2	3.375	7/8-14	1.812	
REM14-E	**REM14-ESS**	7/8	0.8745	0.8750	1.312	1.070	9	3.375	7/8-14	1.812	
REM16	**REM16-SS**	1	0.9995	1.0000	0.875	1.125	2	3.750	1-12	2.062	
REM16-E	**REM16-ESS**	1	0.9995	1.0000	1.500	1.220	9	3.750	1-12	2.062	
REM20	**REM20-SS**	1 1/4	1.2495	1.2500	1.093	1.406	2	4.562	1 1/4-12	2.562	
REM20-E	**REM20-ESS**	1 1/4	1.2495	1.2500	1.875	1.525	9	4.562	1 1/4-12	2.562	
REM2024	**REM2024-SS**	1 1/4	1.2495	1.2500	1.390	1.660	4	5.406	1 1/2-12	3.062	
REM22	**REM22-SS**	1 3/8	1.3745	1.3750	1.187	1.516	2	5.000	1 3/8-12	2.812	
REM22-E	**REM22-ESS**	1 3/8	1.3745	1.3750	2.062	1.670	9	5.000	1 3/8-12	2.812	
REM24	**REM24-SS**	1 1/2	1.4995	1.5000	1.312	1.703	2	5.406	1 1/2-12	3.062	
REM24-E	**REM24-ESS**	1 1/2	1.4995	1.5000	2.250	1.850	9	5.406	1 1/2-12	3.062	
REM2428	**REM2428-SS**	1 1/2	1.4995	1.5000	1.580	1.950	4	6.312	1 3/4-12	3.562	
REM28	**REM28-SS**	1 3/4	1.7495	1.7500	1.531	1.984	3	6.312	1 3/4-12	3.562	
REM28-E	**REM28-ESS**	1 3/4	1.7495	1.7500	2.625	2.165	9	6.312	1 3/4-12	3.562	
REM2832	**REM2832-SS**	1 3/4	1.7495	1.7500	1.820	2.220	4	7.187	2-12	4.062	
REM32	**REM32-SS**	2	1.9995	2.0000	1.750	2.266	3	7.187	2-12	4.062	
REM32-E	**REM32-ESS**	2	1.9995	2.0000	3.000	2.460	9	7.187	2-12	4.062	
REM3236	**REM3236- SS**	2	1.9995	2.0000	2.070	2.500	4	8.125	2 1/4-12	4.500	
REM36	**REM36-SS**	2 1/4	2.2494	2.2500	1.969	2.563	3	8.125	2 1/4-12	4.500	
REM36-E	**REM36-ESS**	2 1/4	2.2494	2.2500	3.375	2.760	9	8.125	2 1/4-12	4.500	
REM3640	**REM3640-SS**	2 1/4	2.2494	2.2500	2.318	2.750	5	9.000	2 1/2-12	5.000	
REM40	**REM40-SS**	2 1/2	2.4994	2.5000	2.187	2.844	3	9.000	2 1/2-12	5.000	
REM40-E	**REM40-ESS**	2 1/2	2.4994	2.5000	3.750	3.060	9	9.000	2 1/2-12	5.000	

All dimensions are in inches.
Consult RBC engineering for bearings with tapered bore.

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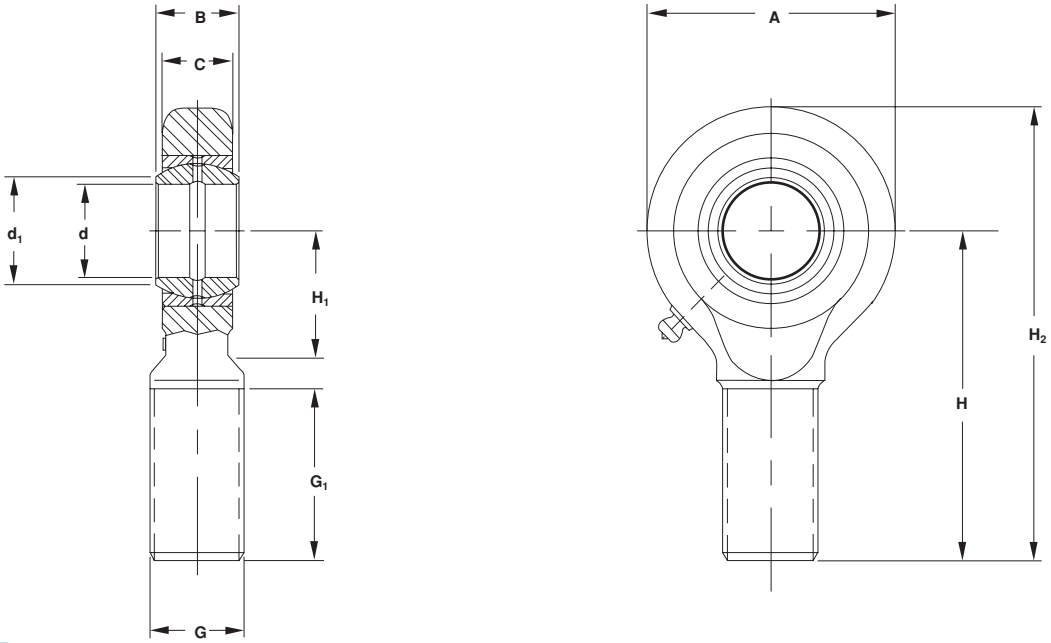
Industrial Rod Ends

Male Shank, Heavy Duty Forging - Inch



Series REM

	A Head Dia.	C Head Thickness	H_2 Overall Length	H_1 Neck to Center	Diametral Clearance	Approx. Weight (lb.)	Recommended Static Load Limit		Part Number
							Radial (lbf.)	Thrust (lbf.)	
	2.062	0.562	4.031	1.000	0.001/0.006	0.62	7,500	4,500	**REM12**
	2.062	0.562	4.031	1.000	0.001/0.006	0.62	7,500	4,500	**REM12-E**
	2.375	0.656	4.562	1.125	0.001/0.006	0.83	10,200	5,200	**REM14**
	2.375	0.656	4.562	1.125	0.001/0.006	0.83	10,200	5,200	**REM14-E**
	2.687	0.750	5.093	1.187	0.001/0.006	1.10	13,300	5,800	**REM16**
	2.687	0.750	5.093	1.187	0.001/0.006	1.10	13,300	5,800	**REM16-E**
	3.312	0.937	6.218	1.375	0.001/0.006	1.82	20,700	7,100	**REM20**
	3.312	0.937	6.218	1.375	0.001/0.006	1.82	20,700	7,100	**REM20-E**
	4.000	1.125	7.406	1.750	0.001/0.006	4.19	29,800	8,700	**REM2024**
	3.625	1.031	6.812	1.562	0.001/0.006	2.87	23,900	7,900	**REM22**
	3.625	1.031	6.812	1.562	0.001/0.006	2.87	23,900	7,900	**REM22-E**
	4.000	1.125	7.406	1.750	0.001/0.006	4.19	29,800	8,700	**REM24**
	4.000	1.125	7.406	1.750	0.001/0.006	4.19	29,800	8,700	**REM24-E**
	4.625	1.312	8.625	2.187	0.001/0.006	5.62	40,800	10,000	**REM2428**
	4.625	1.312	8.625	2.187	0.001/0.006	5.62	40,800	10,000	**REM28**
	4.625	1.312	8.625	2.187	0.001/0.006	5.62	40,800	10,000	**REM28-E**
	5.250	1.500	9.812	2.375	0.001/0.006	8.16	52,800	11,200	**REM2832**
	5.250	1.500	9.812	2.375	0.001/0.006	8.16	52,800	11,200	**REM32**
	5.250	1.500	9.812	2.375	0.001/0.006	8.16	52,800	11,200	**REM32-E**
	5.875	1.687	11.062	2.687	0.002/0.006	10.00	66,800	12,500	**REM3236**
	5.875	1.687	11.062	2.687	0.002/0.006	10.00	66,800	12,500	**REM36**
	5.875	1.687	11.062	2.687	0.002/0.006	10.00	66,800	12,500	**REM36-E**
	6.500	1.875	12.250	3.000	0.002/0.006	14.00	82,800	13,800	**REM3640**
	6.500	1.875	12.250	3.000	0.002/0.006	14.00	82,800	13,800	**REM40**
	6.500	1.875	12.250	3.000	0.002/0.006	14.00	82,800	13,800	**REM40-E**

❶ For sealed bearings with extended inner ring use 5 degrees.

❷ To order left handed thread, add suffix “L” to part number shown in chart (e.g. REM 12L)

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Basic Radial Bearing Design

Spherical plain bearings have spherical contact surfaces which permit the inner ring to rotate freely in all directions within bearing and application design constraints. This gives them the capability to self-align, which means, for example, to adjust automatically to misalignment stemming from inaccurate machining, frame distortions from welding, or deformations of pin and frame due to static and dynamic forces. Such misalign - ment would generate considerable end loading and cause early failure of plain cylindrical sleeve bearings. Thus spherical plain bearings are thought to have their origin as replacement for plain cylindrical sleeve bearings or bushings and are still occasionally called ball bushings.

The first modern radial spherical plain bearing had a non-fractured outer ring with a loading slot slightly wider than the inner ring width (figure 1). Such a bearing can easily be assembled and disassembled simply by rotating the inner ring 90 deg out of plane to where it fits through the loading slot. Because the loading slots take away a significant portion of the contact area, radial and thrust capacity in the direction of the loading slots are affected. The bearing is sensitive to the orientation of the loading slots with respect to the main load direction. Lubricating with grease is problematic. It may be lost prematurely by escaping through the loading slots. Yet, this type of bearing is still made today for applications where the outer ring cannot be fractured, either because the outer ring material is too soft for fracturing, or because of application requirements which cannot tolerate a fractured outer ring.

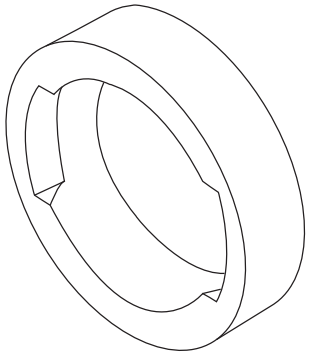

Figure 1: Outer Ring with Loading Slots

The loading slot bearing eventually evolved into a bearing with a fractured outer ring. Initially, outer rings were double fractured, followed later by a single fractured design. Both designs get by without a loading slot and are insensitive to the orientation of the fracture plane with respect to the load direction as long as the outer ring maintains a press fit inside a sufficiently rigid housing bore. A double fractured outer ring consists essentially of two segments of approxi-mately equal size and a means of holding the bearing assem-bly together (figure 2). After pressing the bearing into a housing bore, the fractured surfaces of the two outer ring halves interlock perfectly. The fracture line cannot be felt. It follows that outer ring halves cannot be interchanged among bearings and must not be inadvertently rotated 180˚ out of position.

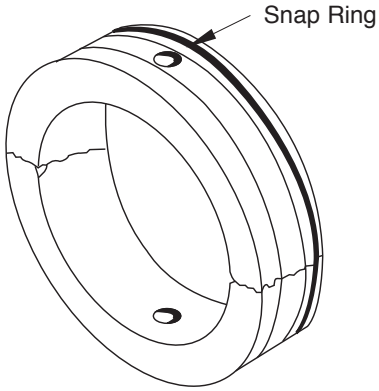

Figure 2: Double Fractured Outer Ring

The RBC Single Fracture Design

The requirement to keep outer ring halves together and properly aligned eventually spawned the single fracture design. This RBC feature is the industry standard today. After being fractured at a single point on its circumference, the outer ring is still a single piece (figure 3). To assemble the inner ring, the outer ring must be spread open far enough to let the inner ring pass through.

The plane of fracture is 90 deg from the lubricating holes for both single and double fractured outer rings.

Note: The fracture in the outer ring is intentional.

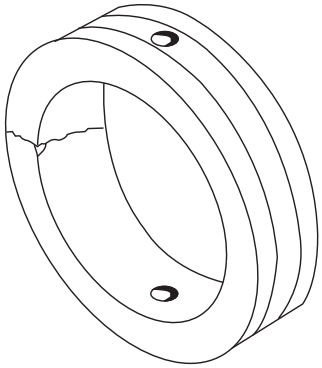

Figure 3: Single Fractured Outer Ring

It is not an indication of a defective bearing.

In typical applications, spherical plain bearings support heavy static loads allowing for initial misalignment. Dynamic applications are limited to slow oscillations and rotations below the recommended maximum pv-value (pressure∗velocity). The pv-value is used to measure the amount of heat generated by the bearing. Spherical plain bearings can operate above the recommended pv-value, but only under special lubrication conditions.

Metric spherical plain bearings have evolved differently from inch dimensional bearings, not just in their geometry, but also in their load ratings. For comparable inner ring bores, metric bearings have a smaller outside diameter and a smaller width, but by convention, their permissible static contact pressure is higher. (See section LOAD RATING).

More Radial Bearing Designs

RBC QuadLube® Design

With few exceptions, steel-on-steel spherical plain bearings used in dynamic applications must be relubricated periodically. To be effective, the grease must penetrate into the contact area between inner and outer ring. If a bearing is subject to a unidirectional load, it must be unloaded during relubrication or only a minimal amount of grease will ever reach the contact area. Most of the lubricant will accumulate in the unloaded zone and eventually exit without benefiting the bearing service life.

The QuadLube® design solves the lubricant flow problem of bearings where the load acts always in the same direction. The additional circular grooves on the spherical diameter of the inner ring allow grease to flow into the contact area even with the bearing under load. The grooves help to collect wear debris which is purged from the bearing during a subsequent relubrication cycle.

Heavy Section

In a typical bearing application, the inner ring mounts on a shaft and its face abuts against a shoulder. If the bearing must support significant thrust loads, the shoulder diameter should match the outside diameter of the inner ring at the face to minimize contact pressure. See the catalog pages for this dimension. A tilting outer ring will eventually make contact with this shaft shoulder, which defines the bearings maximum tilt angle (figure 4).

CAUTION: The actual tilt angle of a bearing assembly may be limited by the design of surrounding components.

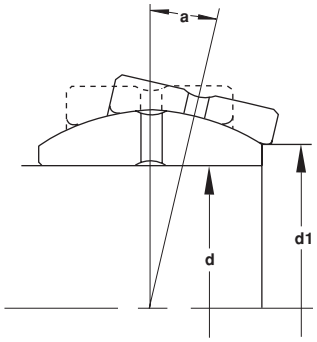

Figure 4: Maximum Tilt Angle

To increase the tilt angle of a standard bearing, the width of the inner ring must be increased. But simply increasing the width is not sufficient because there would be no inner ring face left if we did not also reduce the inside diameter of the inner ring. These inner rings with greater width and wall thickness form the heavy section series BH-L (figure 5). For a given shaft size, the heavy section bearings have greater misalignment capabilities and a greater load carrying capacity compared to the standard series at the cost of increased overall dimensions.

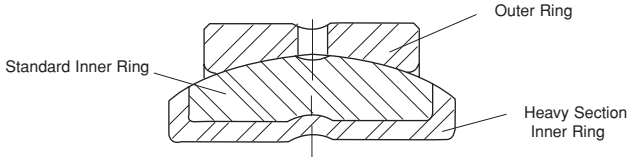

Figure 5: Standard vs. Heavy Section Inner Ring

Tapered Bore Inner Rings

Bearings with heavy section inner rings are also available with a tapered bore, see series BT-L (figure 6). The taper is 1:8 or 1.5" per ft on diameter. There are 2 main reasons for using a tapered bore bearing:

- To prevent rotation between inner ring bore and shaft.
- To control the diametral clearance of the bearing assembly. As the inner ring is forced up the tapered pin, its outside diameter expands effectively reducing the diametral clearance.

CAUTION: Reducing the operating clearance below 0.001" (0.025mm) may increase bearing friction and wear rate. A substantial thrust force in the direction of the large end of the taper may cause additional inner ring expansion which could lock up the bearing.

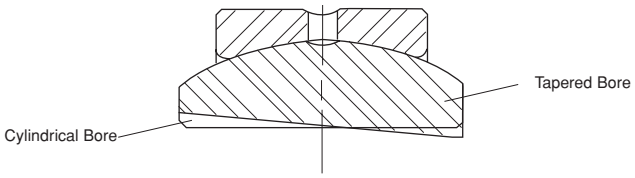

Figure 6: Heavy Section Inner Ring Cylindrical vs. Tapered Bore

Extended Inner Rings

For applications with substantial outer ring tilt, for example yoke supported rod ends of some hydraulic cylinders, RBC offers radial bearings with extended inner rings (figure 7). Using a bearing with an extended inner ring obviates the need to add separate spacers to the bearing assembly to create the axial space required by the outer ring housing.

CAUTION: Spacers and inner ring extensions increase the distance between pin supports. At high loads, pin deflection may become a problem.

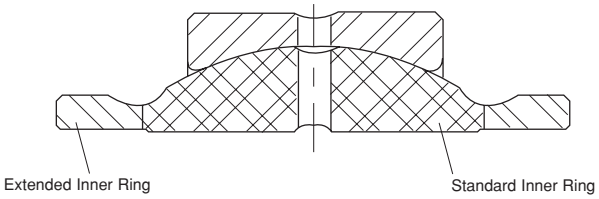

Figure 7: Standard vs. Extended Inner Ring

DuraLube™ Maintenance-Free Bearings

RBC offers maintenance-free bearings consisting of a chromium plated inner ring, an outer ring with a bonded PTFE liner and seals. The liner provides excellent load bearing capacity and a low wear rate (figure 8).

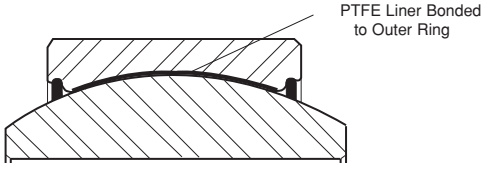

Figure 8: Maintenance-Free Bearings

Sealed Bearings

Except for the very small sizes, all radial spherical plain bearings can be ordered with integral seals. Their function is twofold, retain the lubricant as much as possible inside the bearing and slow the ingress of contaminants. Rubber or plastic seals work best in bearings which experience circumferential motion or very frequent tilting, which tends to keep the contact surfaces clean. The seals are not effective at scraping off paint or accumulated and hardened dirt during an occasional tilting motion.

Angular Contact Bearings

Single Acting

Angular contact bearings, RBC series B-SA, are intended for applications with thrust loads exceeding the capability of a radial bearing. Angular contact bearings can support both radial and thrust loads. Single acting bearings are separable and support thrust loads in only one direction (figure 9). To support heavy thrust loads in both directions, use either 2 single acting bearings mounted in an "O" or "X" configuration (figure 10) or consider a double acting bearing, see below. Angular contact bearings do not have the misalignment capabilities of radial bearings, in fact, the angle of misalignment is generally quite small.

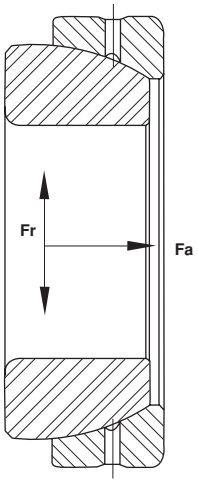

Figure 9: Angular Contact Bearing. Single Acting. Permissible Load Directions

Double Acting

Combining two single acting angular contact bearings into a singular unit yields a double acting bearing with a heavy section inner ring, the RBC series B-DSA3 (figure 11). This type of bearing is often used as a locating bearing because it can support much heavier thrust loads than a standard radial bearing. Like a single acting bearing its angle of misalignment is limited. The heavy section inner ring allows a tapered bore with the same advantages and disadvantages as described above.

As in all angular contact bearings, the proper axial clearance after assembly is critical. To eliminate the need for external shims, RBC produces these bearing assemblies

CAUTION: 2 single acting angular contact bearings mounted in an "X" configuration a fair distance apart may bind if there is an appreciable temperature difference between shaft and housing. Allow for thermal expansion or use "O" configuration.

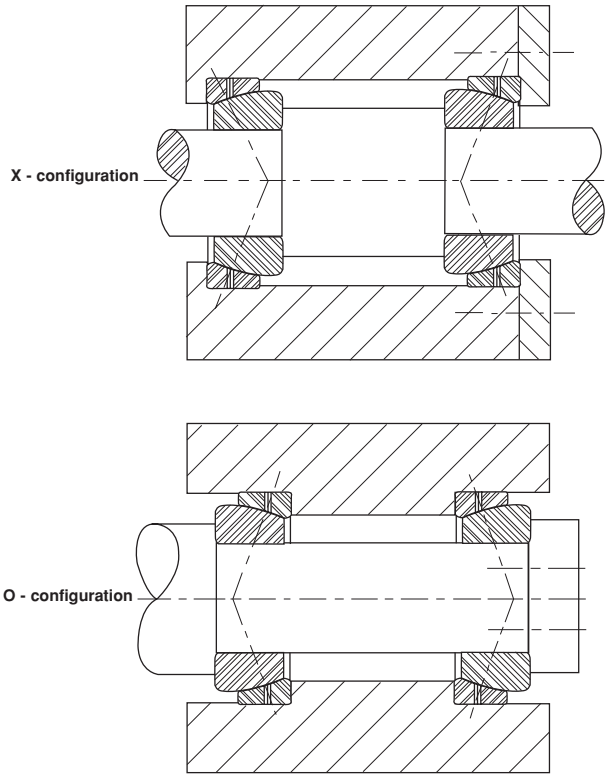

Figure 10: Bearing Arrangement

with an axial clearance preset at the factory. A shim pack inserted between the two outer rings determines the actual clearance. The thickness of this shim pack may differ from one bearing assembly to the next, therefore care must be taken not to mix components from different assemblies. The ties of each bearing should only be cut immediately before installation.

CAUTION: Do not interchange components of ShimPack® Bearings.

The shim pack spacer is an elastic component. To prevent excessive elastic or plastic deformations, the catalog pages list a recommended shim pack compression force (figure 12). Such a compression force could be generated by an end plate being tightened down with a number of bolts. As long as the clamping force does not exceed the recommended shim pack compression force, the listed axial bearing clearance will be maintained. Clamping beyond that limit will start to plastically deform the shim pack spacer and reduce the axial bearing clearance accordingly. Unless such an effect is actually intended, the assembly instructions should specify a maximum tightening torque for the bolts.

CAUTION: Observe the maximum recommended shim pack compression force.

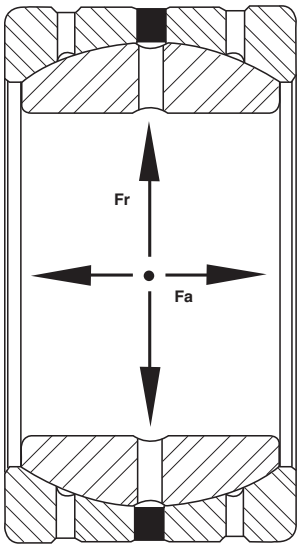

Figure 11: Angular Contact Bearing, Double Acting. Permissible Load Directions.

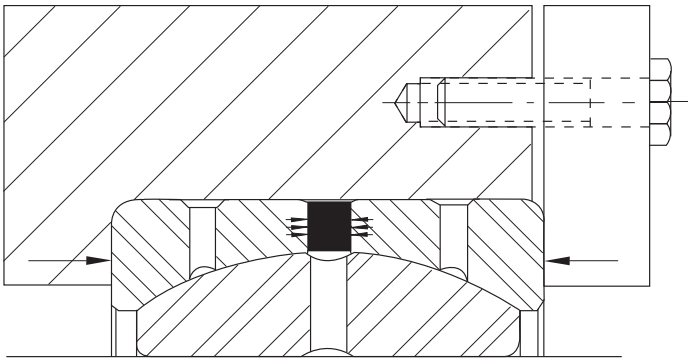

Figure 12: ShimPack® Compression Force=Fc

Material and Specifications

Inner and outer rings are manufactured from through hardened bearing quality steel per ASTM A485, and, unless otherwise specified, heat treated to HRc 56 minimum for optimum wear resistance. The spherical contact surfaces are precision ground. Inner and outer rings are phosphate treated prior to coating with a dry film lubricant (MoS_2).

The inch and metric radial bearings described in this catalog meet the requirements of series 3 of ANSI/ABMA Std 22.

Except for the larger sizes, the outer rings of radial bearings are single fractured which allows assembly of the inner ring. Larger bearing sizes have double fractured outer rings and can be disassembled if necessary. These bearings carry the suffix -9L. The fractured rings may be slightly out-of-round in the free state, but will round up when mounted in a proper housing bore. It is generally not necessary to orient the fracture plane relative to the load direction.

Load Ratings

Both inch and metric bearings consist of the same high quality, high strength bearing steel, with a strength of material of 285,000 to 300,000 psi [1965 to 2069 MPa].

In most applications the bearings are mated with shafts and housings made of lower strength steel, which makes it impossible to realize a contact stress level approaching this magnitude. For practical purposes, the bearings must be down rated to a level where they can safely work with lower strength mating components. (See also sections on housing design, shaft design, typical failure modes). Applications with loads in excess of the recommended load limits are possible but should be reviewed by RBC engineering.

By convention, the permissible contact stress has been defined differently for metric and inch dimensional bearings. The definitions given apply to radial bearings, they are similar for other bearing types.

A) Inch Dimensional Bearings

The maximum recommended static contact pressure is 50,000 psi [345 MPa]. The maximum recommended dynamic contact pressure is 25% of that or 12,500 psi [86 MPa].

The radial and thrust ratings are based on the projected area and can be derived with the following equations:

$$C_O = 50{,}000 * K * C * f_r$$
$$C_{OA} = 35{,}000 * (K^2 - f_a * (K^2 - C^2)) * (\pi/4)$$

C_O = recommended static radial load limit [lbf]
C_{OA} = recommended static axial load limit [lbf]
K = spherical diameter [in]
C = outer ring width [in]
f_r = geometry factor, typically $f_r = 0.7$. Makes allowance for lube grooves & undercuts.
f_a = geometry factor,
$f_a = 1.17$ approx., for single fractured,
$f_a = 1.04$ approx., for double fractured bearings

B) Metric Bearings

The static radial load limit is given at a pressure of 430 MPa [62,370 psi]. The maximum recommended dynamic contact pressure is 20% of that or 86 MPa [12,470 psi]. The static thrust load limit is based on a contact pressure of 215 MPa [31,185 psi]. No allowance is made to account for the effects of lubricating groove and undercuts. The equations are then:

$$C_O = 430 * K * C / 1000 \ \text{[kN]}$$
$$C_{OA} = 215 * C^2 * (\pi/4) / 1000 \ \text{[kN]}$$

C_O = recommended static radial load limit [kN]
C_{OA} = recommended static axial load limit [kN]
K = spherical diameter [mm]
C = outer ring width [mm]

For comparable bearing inside diameters, e.g. 2.000" and 50mm, inch dimensional bearings typically have a somewhat larger outside diameter and considerably greater width. In this particular case, the projected gross radial contact area for the 2" bearing is 4.3125 in^2 (2782 mm^2) compared to 2.9078 in^2 (1876 mm^2) for the 50 mm bearing. For a given load, the inch dimensional bearing typically sees a much lower contact pressure but requires more mounting space.

Working Loads

STATIC - The static load limits given in the tables are safe bearing operating loads, provided housing and shaft are sufficiently rigid to prevent excessive deformation. The safety factor against static fracture is greater than 1.5. See the sections on shaft and housing designs to check for conditions which could require reducing the bearing load.

DYNAMIC - Applications are considered to be dynamic if the bearing is subject to more than initial misalignment or an occasional oscillation. Spherical plain bearings are best suited for oscillating motion as in hydraulic cylinders.

The dynamic bearing load for grease lubrication should not exceed:

a) the dynamic capacity given in the tables and

b) a pv value (pressure∗velocity) of 10,000 psi∗ft/min.

These limits do not apply to oil lubrication. To find the p∗v-value, use the following equation:

$p*v$ = $46.5 * (F/C_O) * K * ß * f <= 10{,}000$ psi ∗ ft/min

F = dynamic radial Load [lbf]

C_O = recommended static radial load limit [lbf]

K = spherical diameter [in]

ß = angle of oscillation side to side [deg]

f = frequency of oscillation [1/min]

The above equation applies to radial bearings under radial load. Please contact RBC engineering for an estimate of service life and for other operating conditions and bearing types.

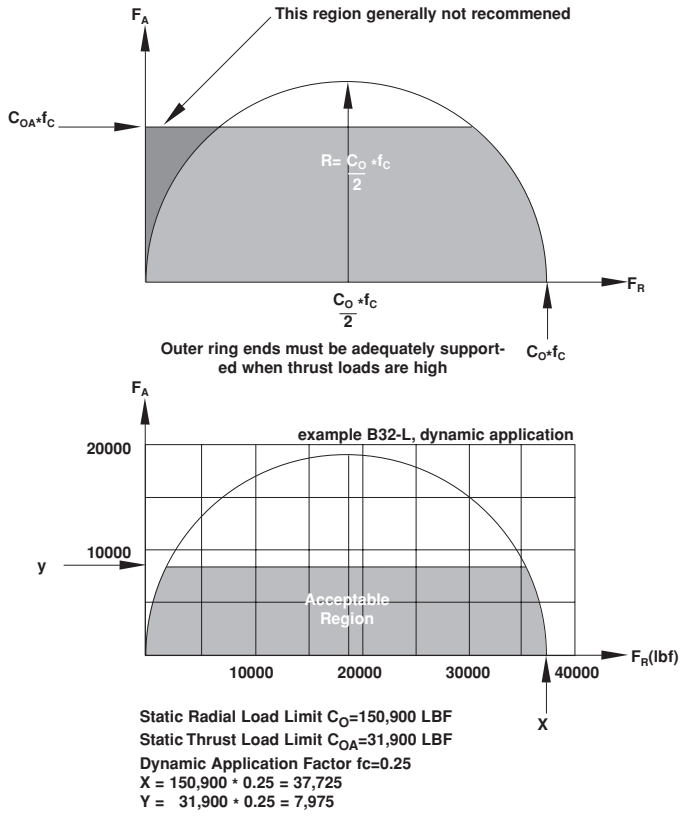

Figure 13: Radial Bearings

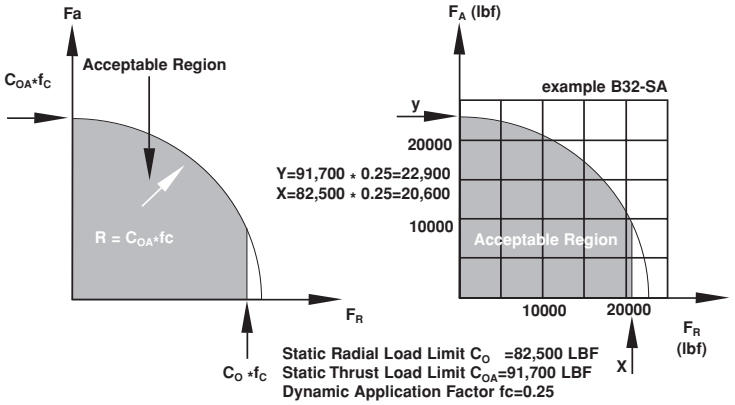

Figure 14: Angular Contact Bearings, Single Acting

COMBINATION RADIAL AND AXIAL LOADS - To determine the acceptability of a combination radial and thrust load under static and dynamic operating conditions, diagrams of acceptable regions may be constructed for radial and angular contact bearings as shown in figures 13 - 15. Any load whose radial and thrust components plot in the hatched area is permissible. The inequalities in numerical form are as follows:

Radial Bearings

$F_r^2 + F_a^2 <= F_r * C_0 * f_C$ and $F_a <= C_{OA} * f_C$

Angular Contact Bearings, single acting

$F_r^2 + F_a^2 <= C_{OA} * f_C$ and $F_r <= C_0 * f_C$

Angular Contact Bearings, double acting

If $F_r <= (C_0 - C_{OA}) * f_C$ then $F_a <= C_{OA} * f_C$

If $F_r > (C_0 - C_{OA}) * f_C$ then $(F_r - (C_0 - C_{OA}) * f_C)^2 + F^2_a <= (C_{OA} * f_C)^2$

F_r = radial load component

F_a = thrust load component

C_O = static radial load limit

C_{OA} = static thrust load limit

f_C = 1 for static operating condition

f_C = 0.25 dynamic operation, inch dimensional bearings

f_C = 0.20 dynamic operation, metric bearings

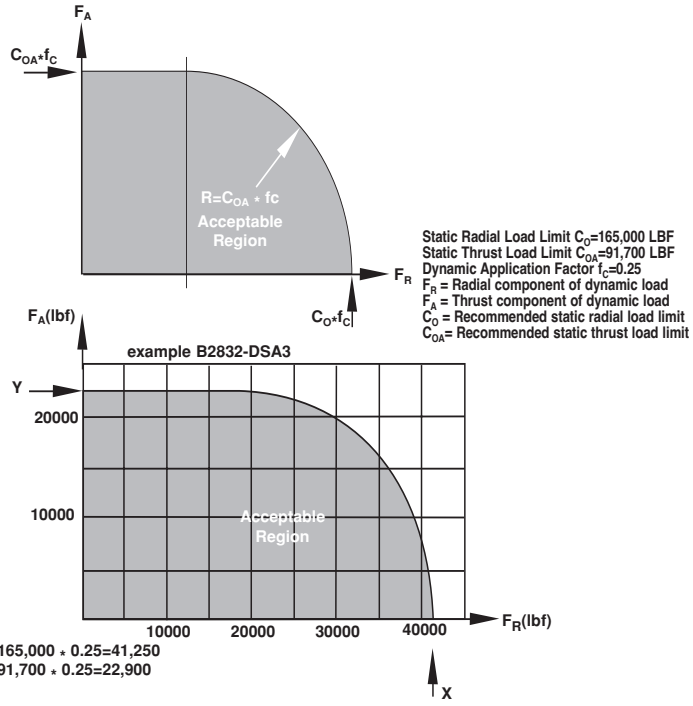

Fig. 15: Angular Contact Bearings, Double Acting

Operating Conditions

TEMPERATURE - The maximum operating temperature of sealed bearings is limited by the seal to 250 deg F. Standard bearings without seals can operate without modifications from -60 deg F to + 350 deg F. For operation below -60 deg F and above +350 deg F, up to +500 deg F, it is recommended to use bearings temperature stabilized at the factory. For operation to +1000 deg F and at cryogenic temperatures, contact RBC engineering.

ENVIRONMENT - Standard bearings are phosphate treated and coated with a dry film lubricant (MOS_2). This surface treatment provides a certain protection against corrosion from atmospheric conditions and an occasional splash. Additional protection should be supplied for operation in continuously wet environments by adding internal or external seals. RBC can supply bearings with special coatings for underwater applications.

Ingress of hard solid particles like debris, sand, grit and mud will accelerate the bearing wear and may clog lubricating holes. The bearing should be protected from exposure to solid particles.

Mounting - Fractured Outer Rings

Bearings with single or double fractured outer rings (series B-L, BH-L, MB, MBH) should be mounted with an interference fit in the housing. The interference fit corrects any out-of-roundness of the outer ring due to the fracturing process and will make the fracture line functionally invisible. For light loads of less than 20% of dynamic capacity, an ISO N7 fit may be used. RBC recommends using an ISO R7 fit whenever possible. The internal bearing clearance can accommodate the reduced spherical diameter of the outer ring caused by an R7 press fit. An even heavier press fit may be required in applications with heavy shock loads, a rotating load on the outer ring, or when the housing is made from a light metal. In the case of heavier fits, the mounted diametral clearance must be reviewed.

Mounting - Solid Outer Rings

The bearings with non-fractured outer rings are the single and double acting angular contact series B-SA, MB-SA, B-DSA3. While the outer rings of single acting angular contact bearings may be heavily press fitted, it is often desirable to maintain axial adjustability for double acting bearings. An ISO N7 fit is still light enough to move outer rings axially in the housing bore without too great a force.

CAUTION: Outer rings of angular contact bearings subject to heavy thrust loads must not be clearance fitted.

Mounting - Inner Rings, Cylindrical Bore

It is generally recommended to press fit the inner rings where feasible to prevent rotation taking place between inner ring bore and shaft. If assembly or operating conditions require a loose fit, it is preferable to let the inner ring slide on the shaft rather than the outer ring rotate in the housing.

Mounting - Inner Rings, Tapered Bore

Heavy section inner rings of the series BT-L and BT-DSA3 feature a tapered bore with a taper of 1:8 (1.5" per ft on diameter). Tapered bores are useful to prevent inner ring rotation on the pin and to control the diametral bearing clearance by expanding the inner ring.

To ensure sufficient operating clearance for the bearing, the inner ring clamping forces given in the table should normally not be exceeded.

Housing Design

To safely support the high load capacity of spherical plain bearings, the housing must have sufficient strength to avoid excessive deformation and fatigue failure. Certain housing types like cylinder rod eyes and pivot brackets under tensile stress experience maximum stress at points perpendicular to the line of force. To obtain the maximum tensile stress, multiply the normal tensile stress of the total cross section by a factor "K" found in figure 16. The result must be less than the endurance limit of the housing material.

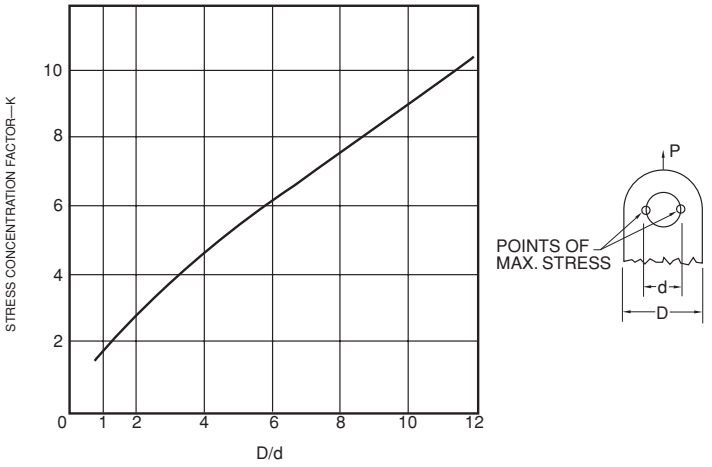

Figure 16: Stress Concentration Factor

Housings must be sufficiently strong to prevent excessive outer ring deformation. Sufficient housing strength can be achieved either by a great enough wall thickness, here expressed as a ratio of housing outside diameter divided by housing bore, or by selecting a higher strength material. The effects of housing wall thickness and strength on available bearing capacity can be observed in figure 17.

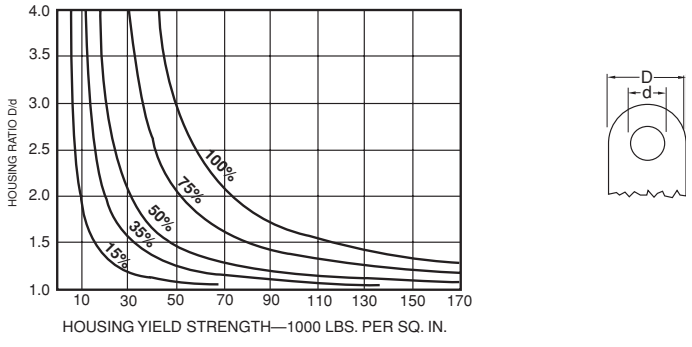

Figure 17: Influence of Housing Design on Bearing Capacity

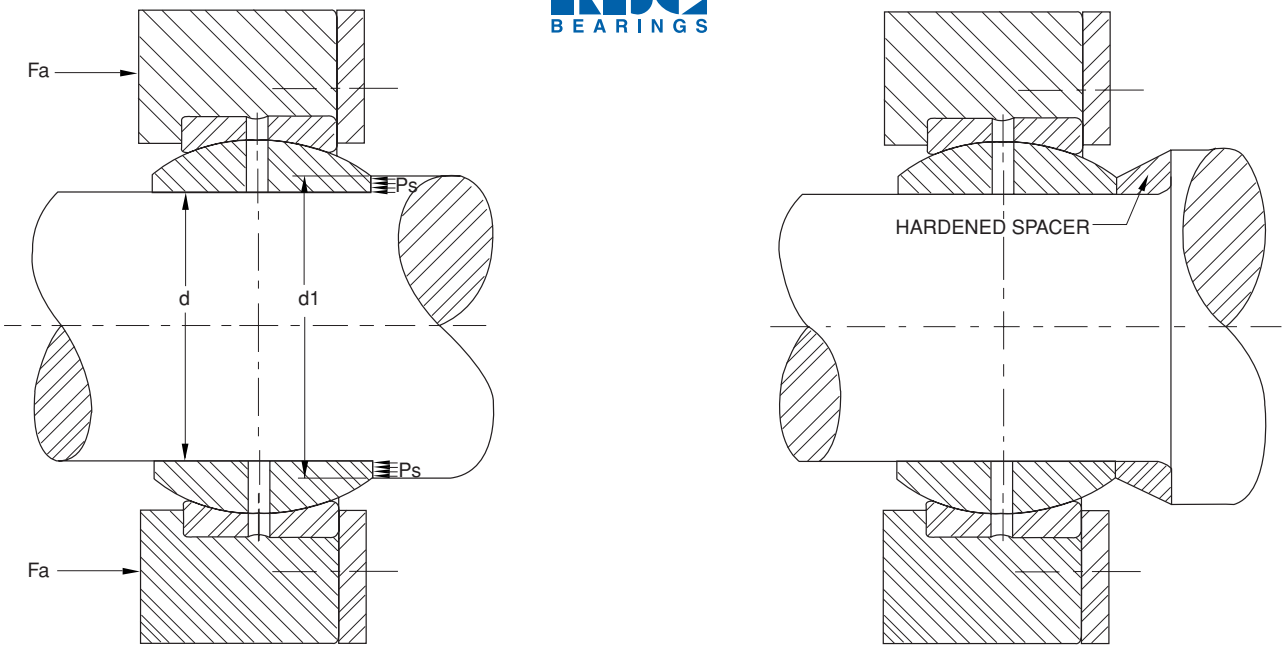

Figure 18: Reduce Contact Pressure by Using a Hardened and Tapered Spacer

Shaft Design

With the exception of bearings under light load and press fitted inner rings, it is generally recommended that shafts or pins be heat treated to a surface hardness of HRc 55 min and have a surface finish of 32 rms. Under dynamic operating conditions and with a loosely fitted inner ring, it must be expected that rotation takes place between inner ring and shaft. Under very heavy loads, even an interference fit does not guarantee that the inner ring will not rotate on the shaft.

Thrust loads on radial bearings are transmitted via the face of the inner ring. The contact stress of this annular area should be checked against the yield strength in compression of the shaft material or any spacer which may be used. Even under static conditions, it may be necessary to harden the shaft shoulder to prevent plastic deformation. Hardened spacers with a tapered OD may be used if the shoulder cannot be heat treated (figure 18).

Lubrication

Standard RBC spherical plain bearings are phosphate treated and coated with a dry film lubricant (MoS_2). This surface treatment is sufficient for static applications and occasional movements. If used in a dynamic application, the bearings must be lubricated with oil or grease.

Oil Lubrication - Steel-on-steel bearings operating in an oil bath can be essentially maintenance-free. This can be accomplished by enclosing the entire bearing assembly in a gearbox style structure or by mounting spring loaded lip seals next to the bearings. The latter is only feasible in applications with very little tilting motion. Bearings subject to large degrees of tilting will require an oil filled boot.

Note: The integral seals of spherical plain bearings are not suitable for sealing against oil pressure.

For oil lubrication at ambient temperature use #90 gear oil.

Grease Lubrication - It is recommended that the bearings be thoroughly lubricated with grease at the time of installation. Lubrication after installation may make it difficult for the grease to penetrate into the load zone. Failure to do so may cause surface damage to the bearing rings during the critical run-in period. Steel-on-steel bearings must be relubricated periodically depending on operating conditions. The frequency and efficacy of relubrication greatly influence the ultimate bearing service life. For example, more frequent relubrication is necessary if the bearings operate in a dirty and dusty environment. The grease flow through the bearing helps purge contaminants.

Radial bearings can be relubricated either through the shaft or the housing. In those cases where rotation between inner ring bore and shaft must be expected, relubrication through the shaft helps to lubricate that interface.

To become effective, the grease must be able to reach the contact area between inner and outer ring. In applications where the load direction alternates, e.g. the push-pull type action of a hydraulic cylinder, the grease will be moved around due to the different inner ring positions.

By contrast, in applications where the load always acts in the same direction, e.g. in some suspension systems, grease will not be able to flow into the load zone, if the bearing is relubricated under load. For effective lubrication, the bearing must be unloaded. Alternatively, use the RBC developed bearing with special lubricating grooves, the QuadLube® series, which permits relubrication under load. See also section “More Radial Bearing Designs”.

Angular contact bearings with extended lubrication grooves, series B-SA-1 and B-DSA3-1, have lubricating grooves extended to the small diameter of the outer ring to facilitate grease flow through the bearing while under load. Angular contact bearings without these lube groove extensions should not be relubricated while under heavy thrust load or air may become trapped in the grease passages which will expell the grease promptly.

Recommended grease type: for operating temperatures between -40 deg F and +250 deg F, use a lithium based grease, NLGI Grade 2, with EP and MoS_2 additives.

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Bearing Failure Modes

This section is intended to help the user identify bearing problems and correct or prevent their causes. By definition, the useful service life of a spherical plain bearing has ended after one of the following condition occurs:

- Outer ring, inner ring, or both are broken.
- The coefficient of friction exceeds 0.22.
- The diametral clearance has grown to more than the application can tolerate.

1. Component Fracture

1.1 Causes of outer ring failure

- During assembly:
  Pressing the outer ring into the housing bore at an angle, trying to press fit the outer ring by pushing against the inner ring face, trying to press fit the outer ring with hammer blows.
- During operation:
  Excessive outer ring deformation due to shock loads, thin walled housing, partial outer ring support, insufficient interference fit.

1.2 Causes of inner ring failure

- During assembly:
  Attempting to mount bearing in the housing by pushing against the inner ring face.
- During operation:
  Excessive clearance between shaft and inner ring bore. Excessive shaft deflection.

2. Excessive Friction Due to Adhesive Wear

- Appearance:
  Inner and outer ring spherical surfaces have deep gouge marks, chunks of metal are torn out of the surface. The bearing makes a screeching noise during operation.
- Causes:
  Excessive pv-value, excessive dynamic load, lack of maintenance, insufficient lubrication where lubricant does not reach the load zone, contamination by hard particles, rust and corrosion.

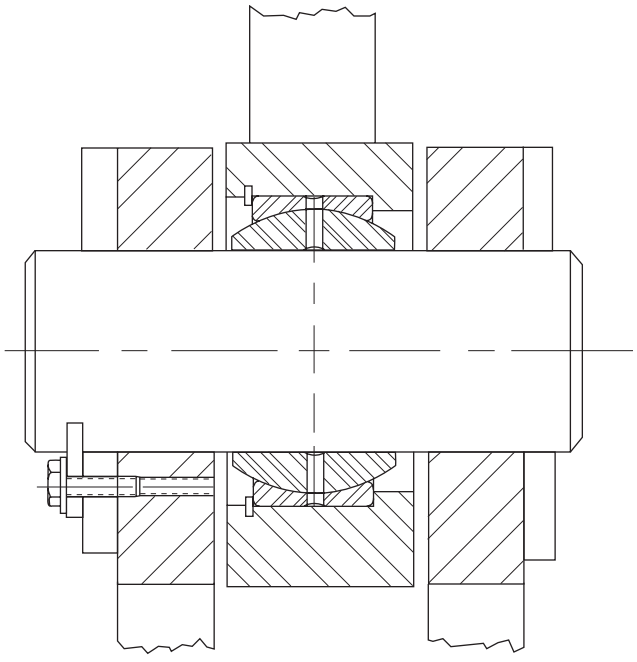
3. Excessive Diametral Bearing Clearance Due to Abrasive Wear

- Appearance:
  Inner and outer ring spherical surfaces are shiny, appear polished. Ridges are worn into the contact area.
- Causes:
  Contamination by a powdery substance or mud, lubrication insufficient to flush wear particles from the contact area.

RBC BEARINGS

APPLICATIONS

Grader and Mobile Hydraulic Cranes

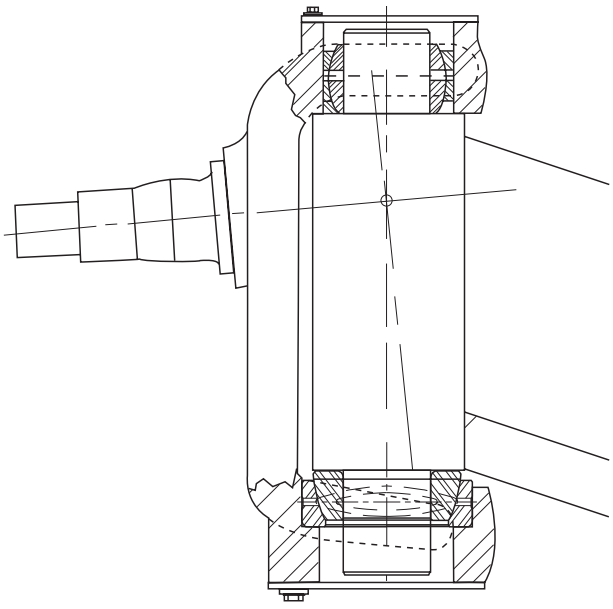


Hydraulic Cylinder

This is a typical clevis mounted bearing installed in one of the many cylinder rod ends.

Steering Axle

B-L and B-SA bearings complement each other in the power steering axle of the grader.



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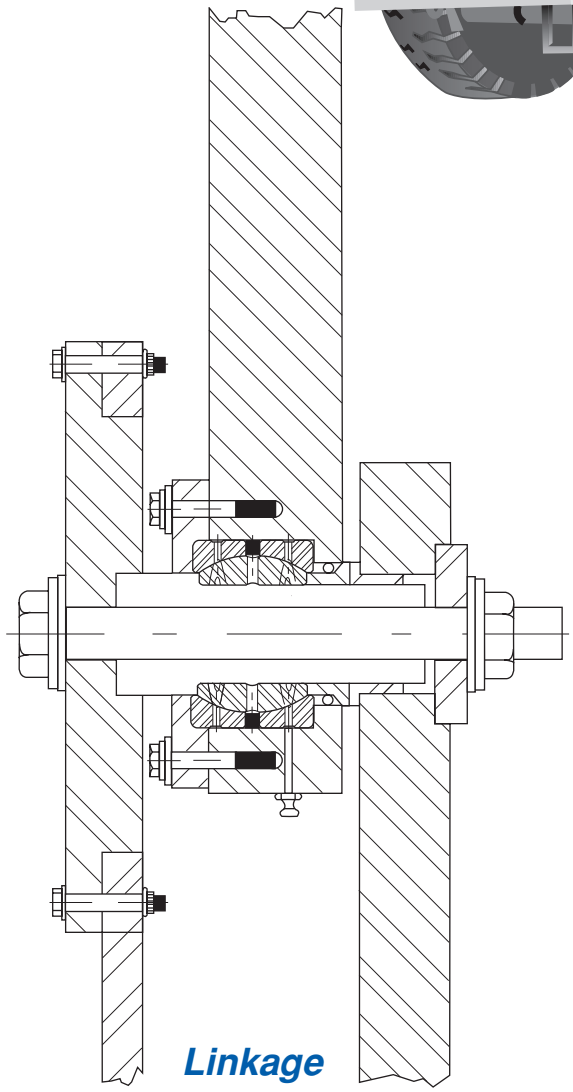
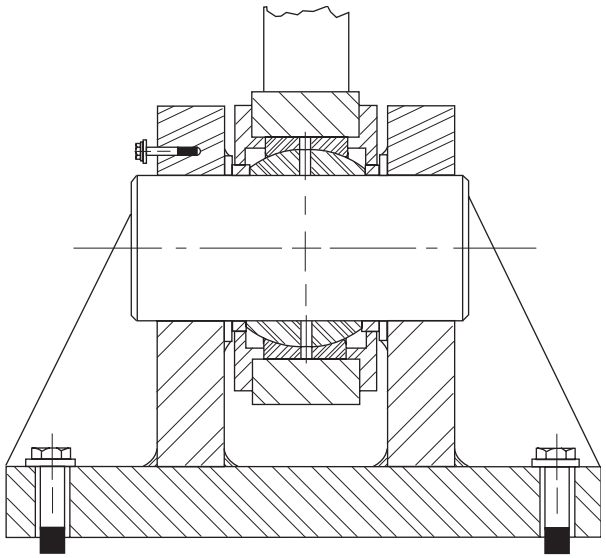
Haul Trucks



Linkage

The versatility of B-DSA-3 bearings becomes evident in a linkage assembly on the haul truck. At the factory the ShimPack® double acting angular contact spherical plain bearing spacer is preset to the required width, thus ensuring a proper fit with the first installation.



Hinge Pin

The tremendous cargo weight is supported by B-L bearings in the hinge between the truck bed and frame.

RBC BEARINGS

APPLICATIONS

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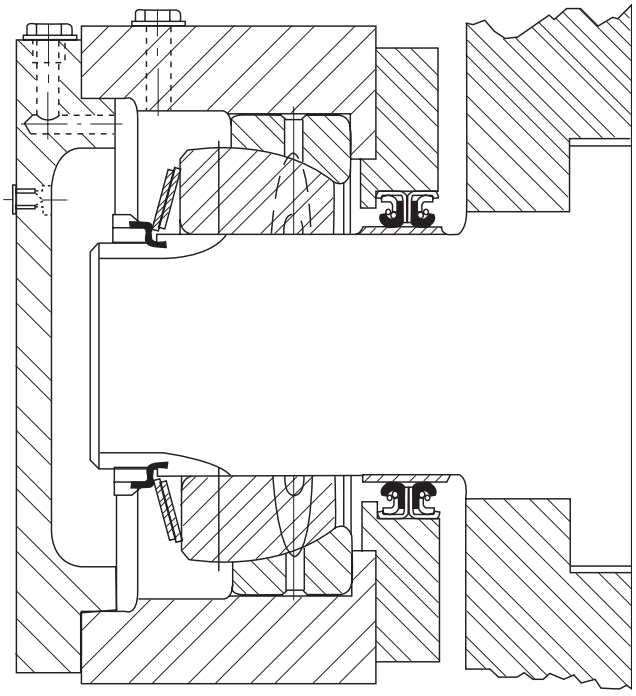
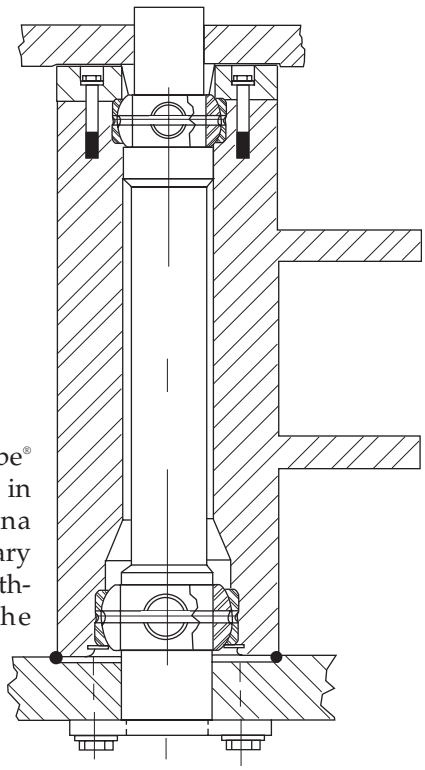
Wind Turbines



B-SA bearings carry the thrust loads in a windmill application.

Satellite Antennas

B-LSSQ QuadLube® bearings are used in a satellite antenna where it is necessary to re-lubricate without removing the load.



RBC BEARINGS

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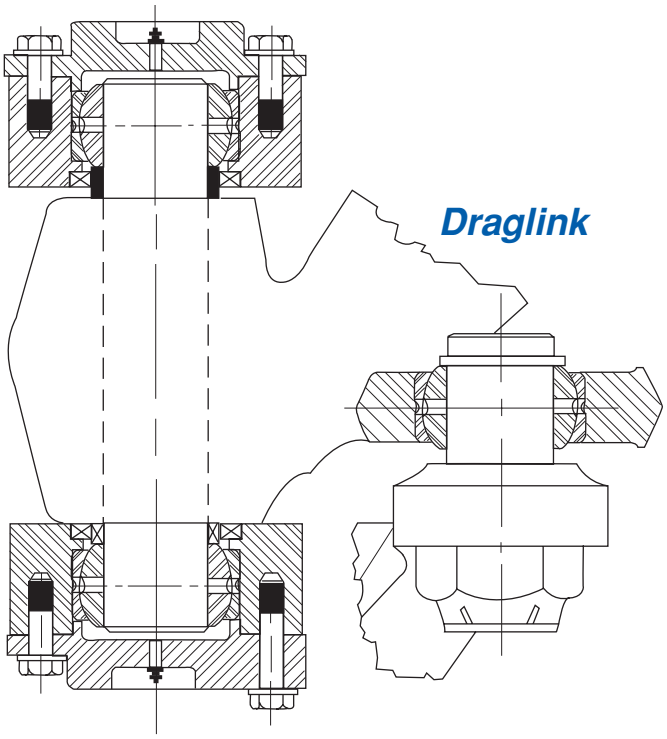
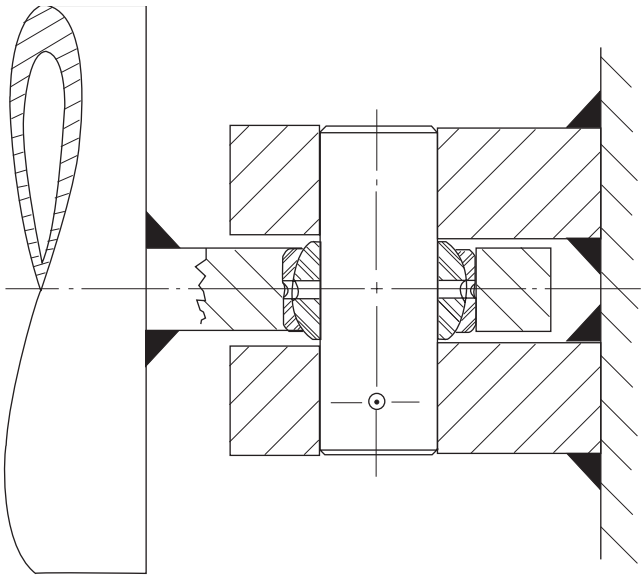
Forklift Trucks



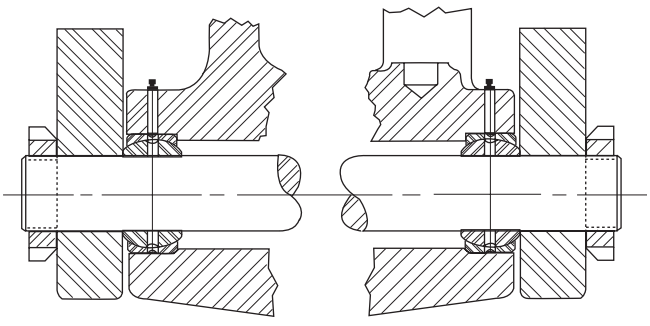
King Pin

Radial spherical plain bearings are used in the articulated steering axle, drag link and king pin of the steering assembly of the fork truck.



Tilt Cylinder

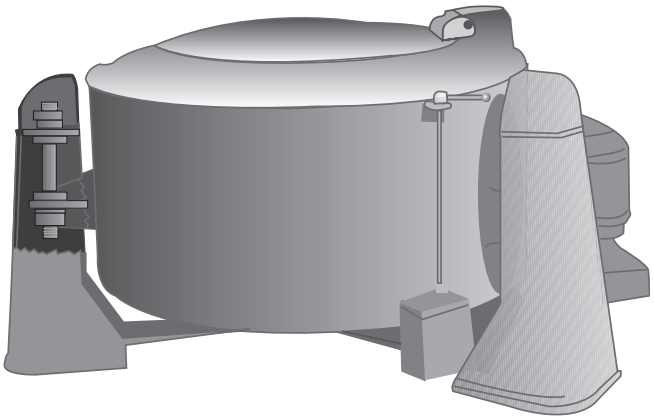
B-L bearings are used in the rod eye of the fork lift's tilt cylinder, which guide the movement of the mast.



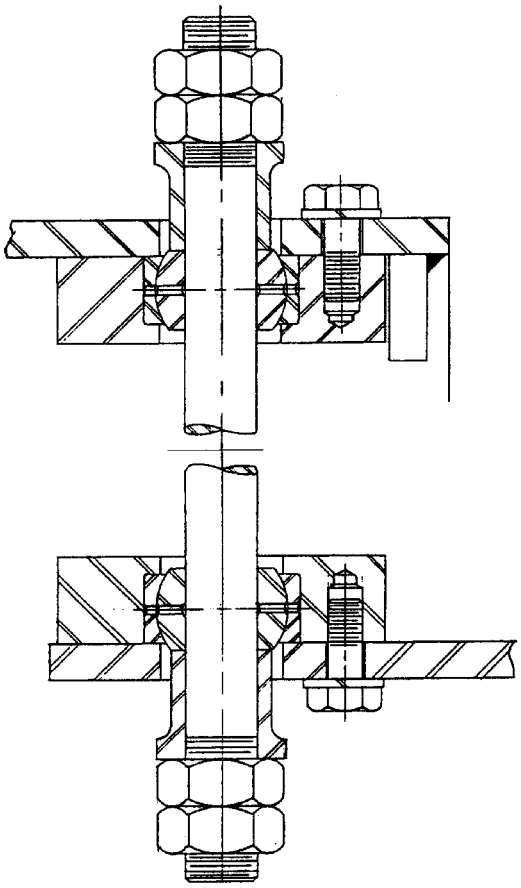
Steering Axle

RBC BEARINGS

APPLICATIONS

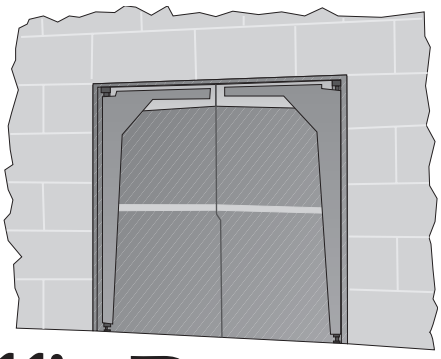


Heavy Duty Extractors

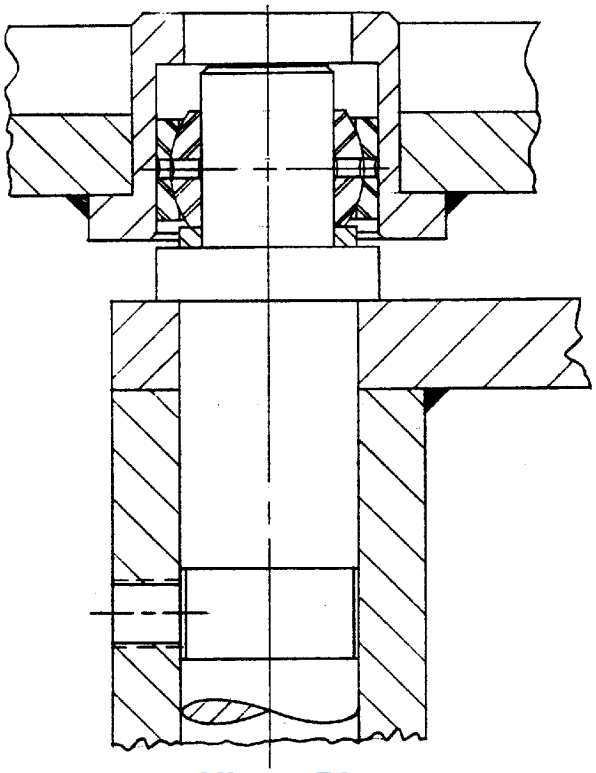


Suspension Rod

MB-L metric radial type spherical plain bearings are used in a heavy duty extractor in the textile industry. In this particular application, the bearings are used to take up the misalignment in the suspension rods.

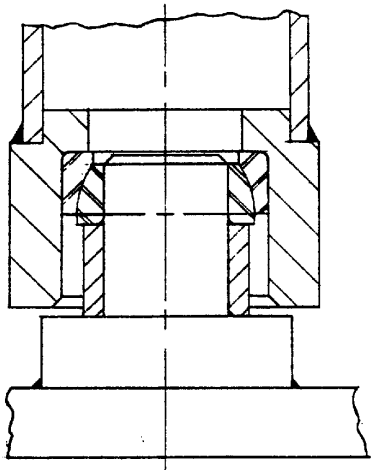


Traffic Doors



Hinge Pin

Heavy Duty traffic doors, common in warehouses and factories require B-SA (radial load only) and B-L bearings for the bottom hinges where substantial thrust loads are present.



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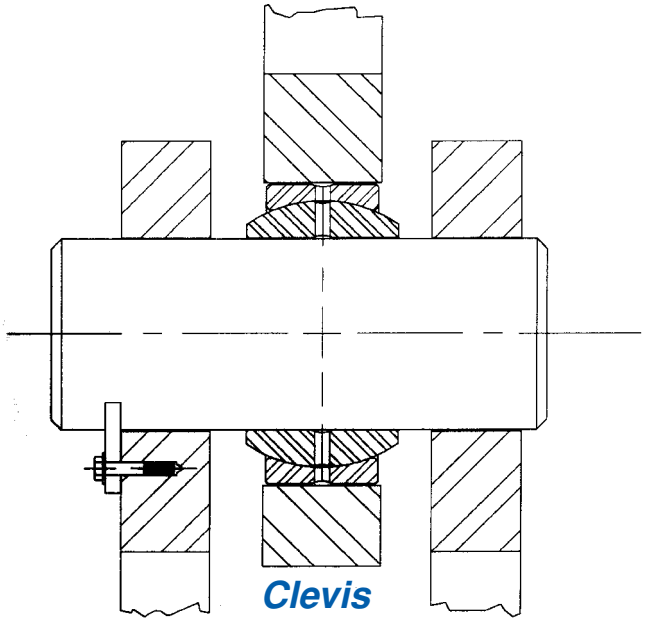
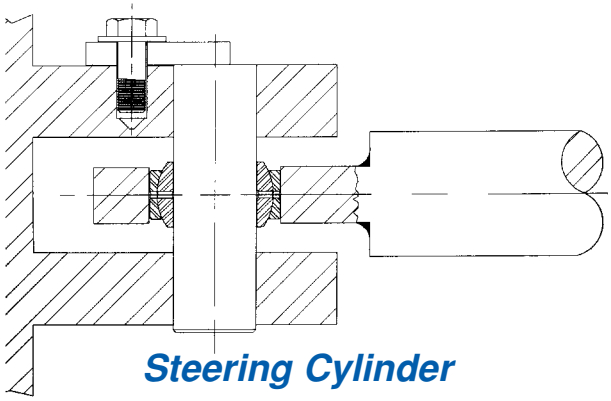
Front End Loaders



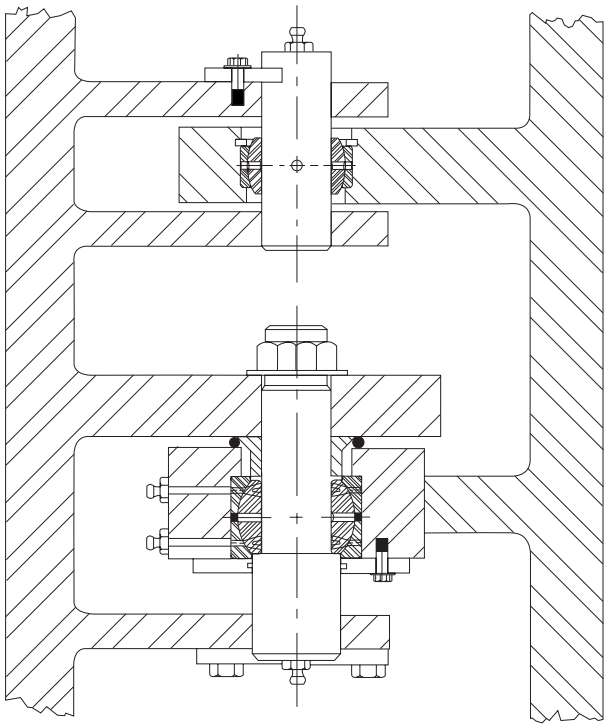
Clevis

The boom cylinders and connections on the shovel incorporate a B-L bearing into a typical clevis mount application.



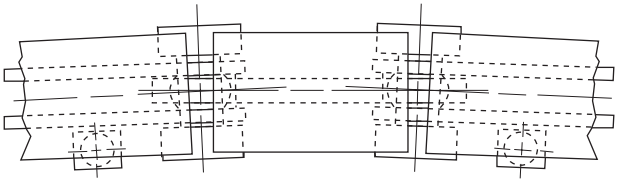
Steering Cylinder

The steering cylinder of the loader uses a B-L bearing where radial loads are present.

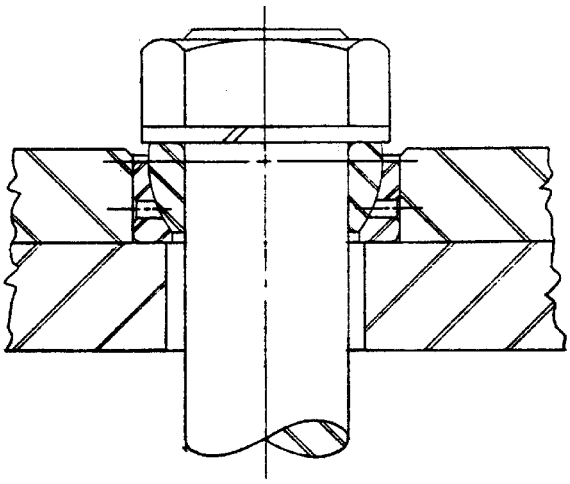


Articulated Joint

B-DSA-3 and B-L spherical plain bearings work together in an articulated joint of the front end loader. The B-DSA-3 is well suited for the heavy thrust loads in both directions which may occur in this type of application. The B-L in the top position takes only radial loads.

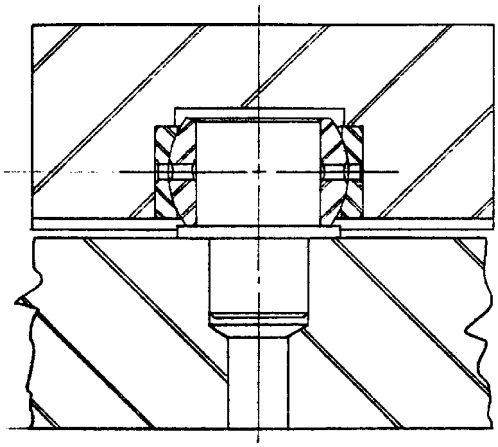


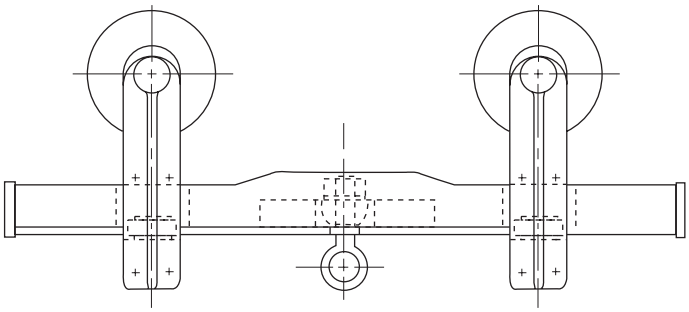
Overhead Carriers



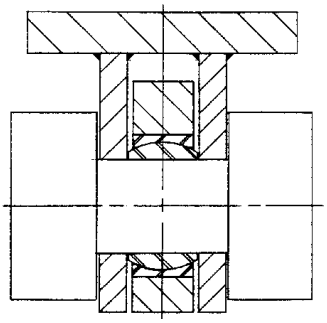
Eyebolt

An overhead carrier uses a combination of B-SA and B-L bearings to overcome the high loads carried by the eye-bolt and wheels.



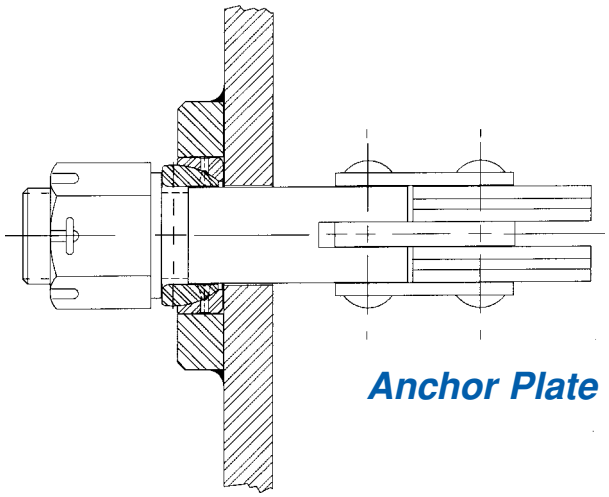


Chain Conveyors



Chain Link

In a chain conveyor, B-L radial type bearings are used to insure proper alignment of the top plates while a B-SA bearing accepts the high thrust loads in the anchor plate of the chain.



Anchor Plate

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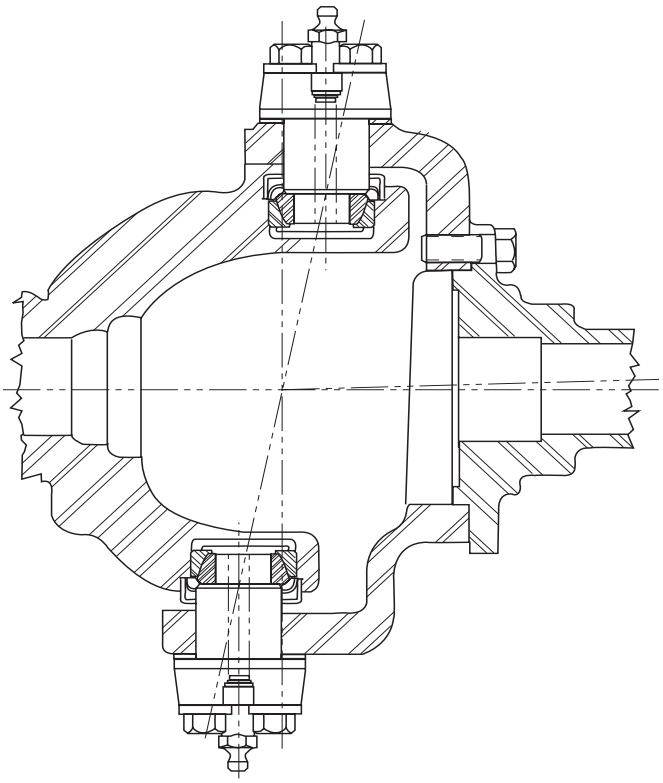
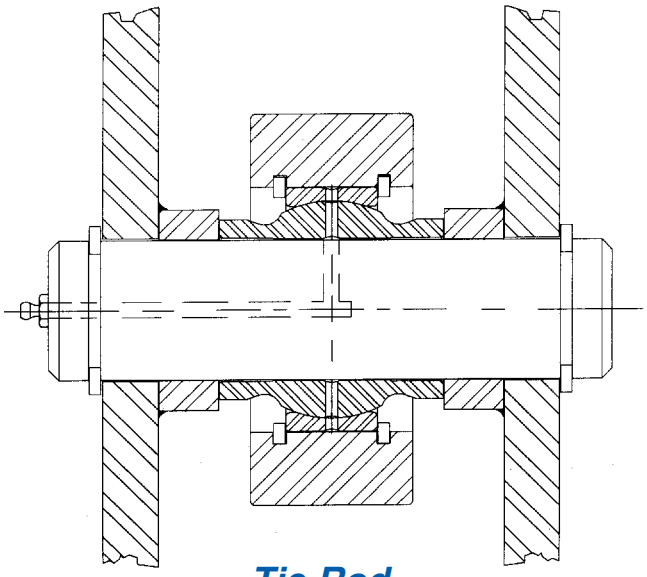
Log Skidders



King Pin

Application of two B-SA bearings in a kingpin assembly.



Tie Rod

In a typical tie rod and pin, B-EL bearing with an extended inner ring is used. This eliminates the need for annular spacers for location purposes.

A thin dense chrome coated extended inner ring spherical plain bearing is pressed into a roller and used in a flexible conveyor train in underground coal mines. The thin dense chrome is used for its corrosion resistance properties.

A spherical plain bearing with O-ring grooves to seal the O.D. against the housing and special lubrication holes in the O.D. of the outer ring. This bearing is used in the upper position of the articulating joint of a front end loader.

This half-sleeve with crisscross lubrication grooves is used in a construction vehicle. It is assembled with a second half-sleeve.

A heavy duty industrial rod end with special, left hand threads used in a forklift.

SPECIALS

An extended inner ring spherical plain bearing with spiral lubrication grooves in the bore of the inner ring to facilitate lubrication flow. This bearing is used in the suspension of a heavy duty industrial trailer.

A keyway is machined in the inner ring bore of this spherical plain bearing. The keyway stops the inner ring from spinning on the shaft in the application.

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This special rod end is for aircraft applications. It utilizes two flush type lubricators for ease of maintenance and is made by RBC's Heim Bearing Division.

This aircraft flanged spherical plain bearing, made by RBC's Heim Bearing Division, uses a threaded O.D. to provide retention. The threaded O.D. also allows for ease of replacement in the application.

A spherical plain bearing with an extended inner ring made of aluminum bronze and a double fractured, softened outer ring. It is used in large mining haul trucks.

Notes

Notes

Innovation. Commitment. Quality.

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

Spherical Plain Bearings

Radial, angular contact, extended inner ring, high misalignment. QuadLube®, ImpactTuff®, SpreadLock® Seal, CrossLube®, DuraLube™, and self-lubricating bearings. Available in inch and metric sizes.

Thin Section Ball Bearings

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

Tapered Roller Bearings

Tyson® case-hardened and through-hardened tapered roller bearings. Available in many sizes. Used in Class 8 heavy truck and trailer wheel bearings, gear boxes, and final drive transmissions.

Tapered Roller Thrust Bearings

Case-hardened. Sealed and unsealed for truck, tractor, and construction equipment steer axles, and Class 8 trailer landing gear.

Integrated Assemblies

For robots and other process tool applications. Engineering design assistance. Production volume capacity.

Cam Followers

Standard stud, heavy stud, yoke type, caged roller followers. Patented RBC Roller® cylindrical roller cam followers, HexLube® universal cam followers, airframe track rollers.

Needle Roller Bearings

Pitchlign® caged heavy duty needle roller bearings, inner rings, TJ TandemRoller® bearings for long life.

Self-Lubricating Bearings

Radial, thrust, rod ends, spherical bearings, high temperature, high loads. Available in inch and metric sizes. Fiberglide® self-lubricating bearings.

Airframe Control Bearings

Ball bearing types, self-lubricating types, needle roller track rollers.

Dowel Pins, Loose Needle Rollers, Shafts

Precision Products dowel pins, loose needle rollers, and shafts.

Commercial Rod Ends

Commercial and industrial, precision, Mil-Spec series, self-lubricating, and aircraft. Sold under the Heim®, Unibal®, and Spherco® brands. Available in inch and metric sizes.

Ball Bearings

Precision ground, semi-ground, unground. High loads, long life, smooth operation. Nice® ball bearings are offered in caged and full complement configurations.

Specials

RBC manufactures many specialty bearings for the aerospace, oil and energy, semiconductor equipment, packaging, transportation, and other industries.

RBC BEARINGS

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