Radial, Angular, and 4-point Contact

Thin Section Ball Bearings

Precision-engineered solutions for aerospace, semiconductor, and custom machinery applications.

RBC BEARINGS®

Industrial Tectonics Bearings
ISO9001/AS9100

www.rbcbearings.com
800.390.3300

RBC Bearings Incorporated (RBC Bearings, RBC) 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, SpreadLock® Seal, and MillTuff™ 3-part bearings.

• 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 roller 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 Thin Section Bearings

RBC thin section ball bearings are engineered to solve a variety of design problems that cannot be solved with conventional ball bearings.

A bearing is considered a thin section when the bore diameter is greater than four times the radial cross section. Within any thin section bearing series, the cross section remains constant as the bore diameter changes. Typically the cross section is twice the ball diameter, and nominal dimensions are given in inches.

Some advantages of RBC thin section ball bearings are:

- **Light weight**
- **High stiffness**
- **Small cross section**
- **Multi-load capabilities**
- **Variety of cross sections & sizes**
- **Modified & custom bearings**

RBC thin section ball bearings are most often found where space limitations, combined loading, and weight restrictions pose unique design requirements.

RBC also designs and manufactures special thin section ball bearings tailored for specific applications.

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 the US, Europe and South America, with authorized agents worldwide. For assistance with your bearing application, contact:

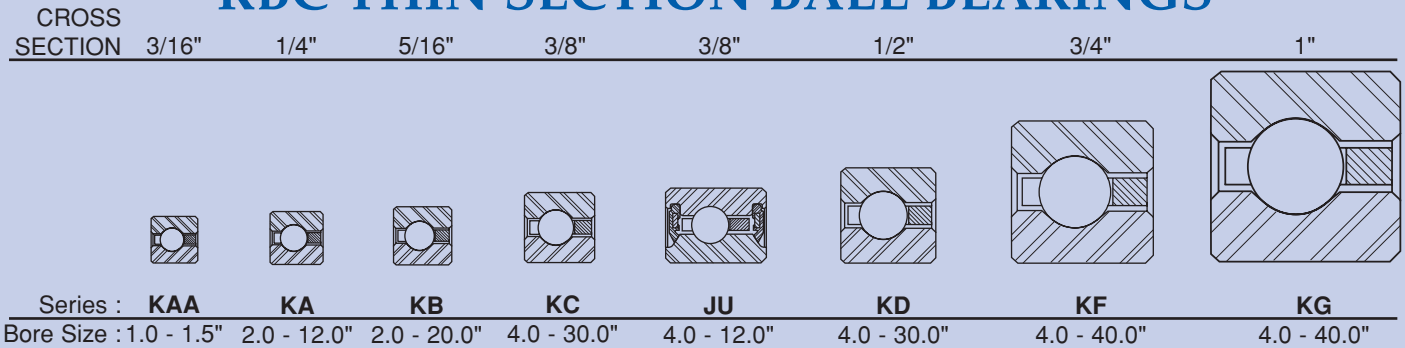
Customer Service - 800.390.3300

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.

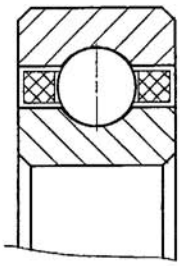
TABLE OF CONTENTS

CROSS SECTIONS OF RBC THIN SECTION BALL BEARINGS

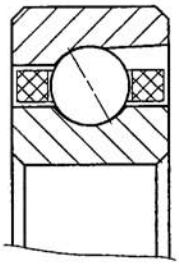


RBC THIN SECTION BALL BEARING SELECTION

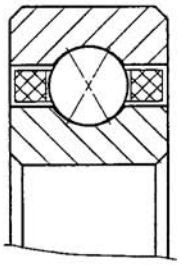
Bearing Type	Ball Contract	LOAD CONDITION				
		Radial	Axial	Moment	Reversing Axial	Combined Radial, Axial & Moment
C	Radial	Good	Fair	Poor	Fair	Poor
A	Angular	Good	Very Good	Do not use	Do not use	Do not use
X	4-Point	Fair	Good	Good	Good	Fair
B	Double Angular	Very Good	Very Good	Very Good	Very Good	Good
F	Double Angular	Very Good	Very Good	Very Good	Very Good	Good
T	Double Angular	Very Good	Excellent	Do not use	Do not use	Do not use
M	Double Angular	Excellent	Excellent	Excellent	Excellent	Excellent
W	Double Angular	Excellent	Excellent	Excellent	Excellent	Excellent



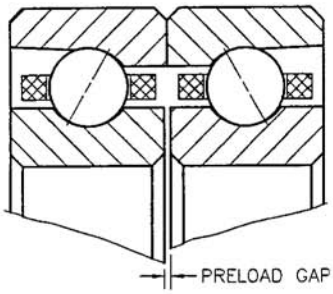
C—TYPE
(RADIAL CONTACT)



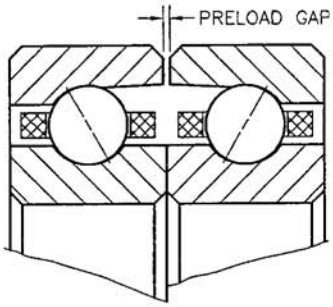
A—TYPE
(ANGULAR CONTACT)



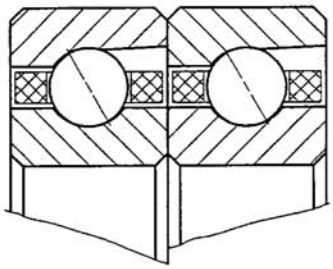
X—TYPE
(4-POINT CONTACT)



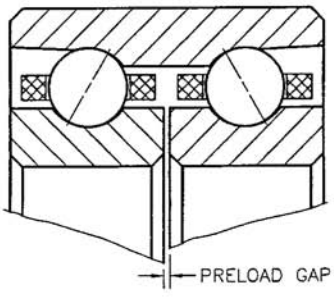
B—TYPE
DUPLEX BACK-TO-BACK (DB)



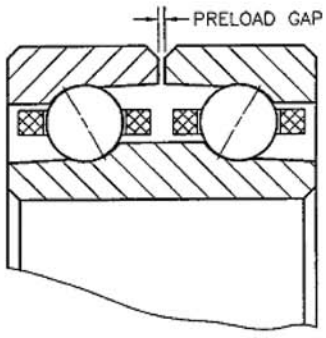
F—TYPE
DUPLEX FACE-TO-FACE (DF)



T—TYPE
DUPLEX TANDEM (DT)



M—TYPE
SUPERDUPLEX BACK-TO-BACK



W—TYPE
SUPERDUPLEX FACE-TO-FACE

For more information visit our web site at **rbcbearings.com**

RBC THIN SECTION BALL BEARINGS
PART NUMBER DESIGNATION

EXAMPLE	K	A	1	2	0	X	P	0	M*	RBC
NOMENCLATURE	Material	Series	Size			Type	Separator	Precision	Radial Play	
POSITION	1	2	3	4	5	6	7	8	9**	

Position 1 - Material

	Rings, Balls	Seals, Shields, Coating
J	52100 Bearing Steel	Two seals - molded rubber, steel reinforced
K	52100 Bearing Steel	No seals or shields
M	M-50 Tool Steel	No seals or shields
N	52100 Bearing Steel	Thin Dense Chrome plating
S	440 C Stainless Steel	No seals or shields
Z	Other	

Positions 3, 4, 5 - Size

Bore size (inches) multiplied by 10

Position 8 - RBC Precision Class

Class	Description
0	ABEC 1F
3	ABEC 3F
4	ABEC 5F
6	ABEC 7F
	Reference: ANSI/ABMA Std 26.2

Position 9 - Radial Clearance (C) Radial or Axial Preload (P)

Code		
A	.0000 to .0005	C
B	.0000 to .0010	C
C	.0005 to .0010	C
D	.0005 to .0015	C
E	.0010 to .0020	C
F	.0015 to .0025	C
G	.0020 to .0030	C
H	.0030 to .0040	C
I	.0040 to .0050	C
J	.0050 to .0060	C
K	.0000 to .0005	P
L	.0000 to .0010	P
M	.0005 to .0010	P
N	.0005 to .0015	P
P	.0010 to .0020	P
R	.0015 to .0025	P
S	.0020 to .0030	P
T	.0030 to .0040	P
U	.0040 to .0050	P
Z	Other	

**Position 9 only required when designating special radial play. Standard Radial play is shown in tolerance tables, pages 34 - 36.

Note: Radially & axially preloaded bearings meet bore and O.D. tolerances prior to preload.

Position 2 - Series

Series	Radial Thickness		Width
AA	0.187	x	0.187
A	0.250	x	0.250
B	0.312	x	0.312
C	0.375	x	0.375
D	0.500	x	0.500
F	0.750	x	0.750
G	1.000	x	1.000
U	0.375	x	0.500

Position 6 - Type

Type	Description
A	Angular contact single bearing
B	Back-to-Back Angular contact duplex pair
C	Radial contact
F	Face-to-Face Angular contact duplex pair
M	Super duplex Back-to-Back
T	Tandem Angular contact duplex pair
W	Super duplex Face-to-Face
X	Four-point contact

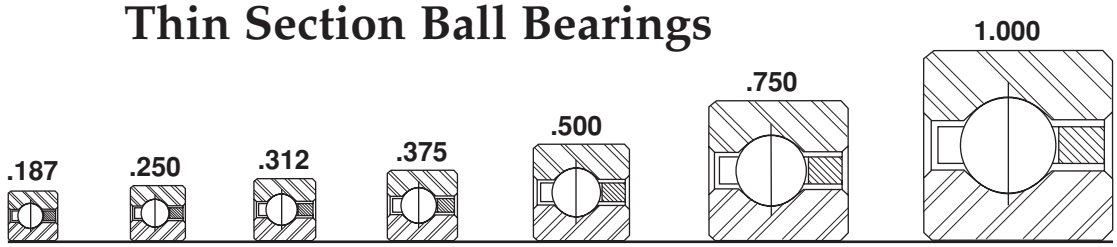
Position 7 - Separator

Type	Design	Material
D	Snap-over cage	Phenolic Laminate
F	None (full complement)	N/A
G	Circular pocket	Nylon
H	Circular pocket	Phenolic Laminate
L	Snap-over cage	Nylon
P	Snap-over cage	Brass or Composite
R	Circular pocket	Brass or Composite
T	Snap-over cage	Stainless Steel
U	Circular pocket	Stainless Steel
Z	Other (toroids, spacer balls, etc.)	as specified

*The alphanumeric identification system is used under license.

RADIAL CONTACT, C-TYPE

Thin Section Ball Bearings

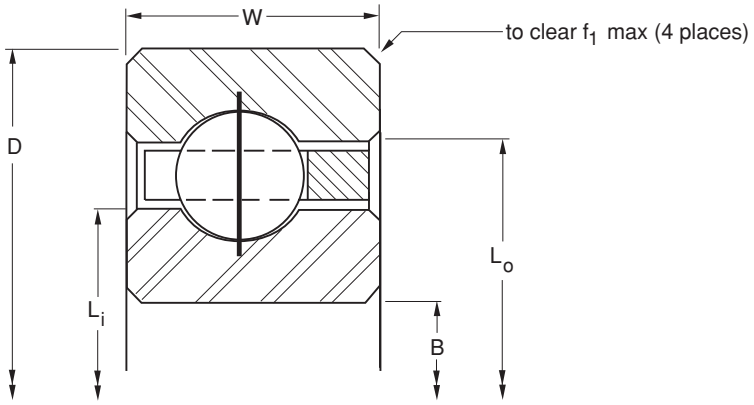


Series:	KAA	KA	KB	KC	KD	KF	KG
Cross Section Size:	3/16"	1/4"	5/16"	3/8"	1/2"	3/4"	1"

PART NUMBER*	NOMINAL DIMENSIONS IN INCHES						
	B Bore	D Outside Diameter	W Width	Land Diameter		f_1	Ball Diameter
				L_i -Inner Ring	L_o -Outer Ring	Housing Fillet	
KAA10CL0*RBC	1.0000	1.3750	0.1875	1.141	1.234	0.015	3/32
KAA15CL0*RBC	1.5000	1.8750	0.1875	1.641	1.734	0.015	3/32
KA020CP0*RBC	2.0000	2.5000	0.2500	2.188	2.313	0.025	1/8
KB020CP0*RBC	2.0000	2.6250	0.3125	2.234	2.391	0.032	5/32
KA025CP0*RBC	2.5000	3.0000	0.2500	2.688	2.813	0.025	1/8
KB025CP0*RBC	2.5000	3.1250	0.3125	2.734	2.891	0.032	5/32
KA030CP0*RBC	3.0000	3.5000	0.2500	3.188	3.313	0.025	1/8
KB030CP0*RBC	3.0000	3.6250	0.3125	3.234	3.391	0.032	5/32
KA035CP0*RBC	3.5000	4.0000	0.2500	3.688	3.813	0.025	1/8
KB035CP0*RBC	3.5000	4.1250	0.3125	3.734	3.897	0.032	5/32
KA040CP0*RBC	4.0000	4.5000	0.2500	4.188	4.313	0.025	1/8
KB040CP0*RBC	4.0000	4.6250	0.3125	4.234	4.391	0.032	5/32
KC040CP0*RBC	4.0000	4.7500	0.3750	4.281	4.469	0.040	3/16
KD040CP0*RBC	4.0000	5.0000	0.5000	4.375	4.625	0.060	1/4
KF040CP0*RBC	4.0000	5.5000	0.7500	4.563	4.938	0.080	3/8
KG040CP0*RBC	4.0000	6.0000	1.0000	4.750	5.250	0.080	1/2
KA042CP0*RBC	4.2500	4.7500	0.2500	4.438	4.563	0.025	1/8
KB042CP0*RBC	4.2500	4.8750	0.3125	4.484	4.641	0.032	5/32
KC042CP0*RBC	4.2500	5.0000	0.3750	4.531	4.719	0.040	3/16
KD042CP0*RBC	4.2500	5.2500	0.5000	4.625	4.875	0.060	1/4
KF042CP0*RBC	4.2500	5.7500	0.7500	4.813	5.188	0.080	3/8
KG042CP0*RBC	4.2500	6.2500	1.0000	5.000	5.500	0.080	1/2
KA045CP0*RBC	4.5000	5.0000	0.2500	4.688	4.813	0.025	1/8
KB045CP0*RBC	4.5000	5.1250	0.3125	4.734	4.891	0.032	5/32
KC045CP0*RBC	4.5000	5.2500	0.3750	4.781	4.969	0.040	3/16
KD045CP0*RBC	4.5000	5.5000	0.5000	4.875	5.125	0.060	1/4
KF045CP0*RBC	4.5000	6.0000	0.7500	5.063	5.438	0.080	3/8
KG045CP0*RBC	4.5000	6.5000	1.0000	5.250	5.750	0.080	1/2
KA047CP0*RBC	4.7500	5.2500	0.2500	4.938	5.063	0.025	1/8
KB047CP0*RBC	4.7500	5.3750	0.3125	4.984	5.141	0.032	5/32
KC047CP0*RBC	4.7500	5.5000	0.3750	5.031	5.219	0.040	3/16
KD047CP0*RBC	4.7500	5.7500	0.5000	5.125	5.375	0.060	1/4
KF047CP0*RBC	4.7500	6.2500	0.7500	5.313	5.688	0.080	3/8
KG047CP0*RBC	4.7500	6.7500	1.0000	5.500	6.000	0.080	1/2
KA050CP0*RBC	5.0000	5.5000	0.2500	5.188	5.313	0.025	1/8
KB050CP0*RBC	5.0000	5.6250	0.3125	5.234	5.391	0.032	5/32
KC050CP0*RBC	5.0000	5.7500	0.3750	5.281	5.469	0.040	3/16
KD050CP0*RBC	5.0000	6.0000	0.5000	5.375	5.625	0.060	1/4
KF050CP0*RBC	5.0000	6.5000	0.7500	5.563	5.938	0.080	3/8
KG050CP0*RBC	5.0000	7.0000	1.0000	5.750	6.250	0.080	1/2
KA055CP0*RBC	5.5000	6.0000	0.2500	5.688	5.813	0.025	1/8
KB055CP0*RBC	5.5000	6.1250	0.3125	5.734	5.891	0.032	5/32
KC055CP0*RBC	5.5000	6.2500	0.3750	5.781	5.969	0.040	3/16
KD055CP0*RBC	5.5000	6.5000	0.5000	5.875	6.125	0.060	1/4
KF055CP0*RBC	5.5000	7.0000	0.7500	6.063	6.438	0.080	3/8
KG055CP0*RBC	5.5000	7.5000	1.0000	6.250	6.750	0.080	1/2

*The alphanumeric identification system is used under license.

- Large Diameter
- Light Weight
- Small Cross Section
- Snap-Over Ball Separator

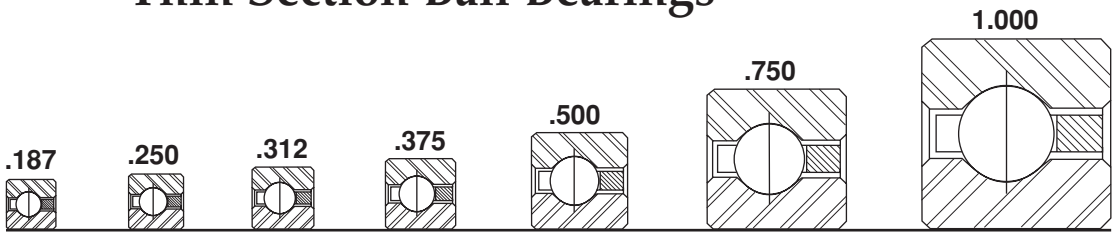


Ball Quantity	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
21	0.03	240	300	480	880	110	210	16,840
29	0.04	330	350	650	1,020	220	350	11,850
27	0.10	540	560	1,080	1,640	490	740	8,890
23	0.16	730	800	1,460	2,320	680	1,070	8,650
33	0.13	650	610	1,310	1,770	720	970	7,270
28	0.20	880	860	1,750	2,510	990	1,410	7,110
39	0.15	760	650	1,530	1,880	990	1,220	6,150
33	0.24	1,020	920	2,050	2,680	1,360	1,770	6,040
45	0.18	880	690	1,750	1,990	1,320	1,490	5,330
38	0.27	1,170	970	2,340	2,810	1,780	2,140	5,250
51	0.19	990	720	1,980	2,080	1,680	1,770	4,710
43	0.30	1,310	1,020	2,630	2,950	2,270	2,550	4,640
35	0.45	1,550	1,290	3,110	3,740	2,720	3,280	4,570
27	0.78	2,470	2,250	4,950	6,520	4,450	5,870	4,440
19	1.90	3,990	3,940	7,980	11,420	7,580	10,850	4,210
15	3.60	6,480	6,700	12,960	19,440	12,960	19,440	4,000
54	0.20	1,040	730	2,090	2,110	1,880	1,900	4,440
45	0.31	1,370	1,030	2,740	3,000	2,500	2,730	4,380
37	0.47	1,640	1,320	3,270	3,830	3,030	3,550	4,320
28	0.83	2,560	2,270	5,110	6,580	4,860	6,250	4,210
20	2.00	4,200	4,070	8,400	11,810	8,400	11,810	4,000
15	3.80	6,480	6,700	12,960	19,440	13,600	20,410	3,810
57	0.22	1,100	750	2,200	2,170	2,090	2,060	4,210
48	0.33	1,460	1,060	2,920	3,080	2,810	2,960	4,160
39	0.48	1,720	1,350	3,440	3,910	3,360	3,810	4,100
30	0.88	2,730	2,350	5,460	6,820	5,460	6,820	4,000
21	2.10	4,410	4,210	8,820	12,200	9,270	12,810	3,810
16	4.00	6,910	7,000	13,820	20,290	15,200	22,320	3,640
60	0.23	1,160	760	2,310	2,220	2,310	2,220	4,000
50	0.34	1,520	1,070	3,030	3,110	3,070	3,140	3,950
41	0.50	1,800	1,370	3,610	3,970	3,700	4,070	3,900
31	0.94	2,810	2,360	5,620	6,840	5,910	7,180	3,810
22	2.20	4,610	4,310	9,220	12,490	10,140	13,740	3,640
17	4.10	7,340	7,290	14,680	21,130	16,890	24,300	3,480
63	0.24	1,210	770	2,420	2,240	2,540	2,350	3,810
53	0.38	1,610	1,100	3,210	3,190	3,410	3,390	3,760
43	0.58	1,890	1,390	3,780	4,040	4,060	4,340	3,720
33	1.00	2,990	2,430	5,970	7,040	6,570	7,740	3,640
23	2.30	4,800	4,380	9,600	12,710	11,050	14,620	3,480
18	4.30	7,770	7,570	15,550	21,950	18,660	26,340	3,330
69	0.25	1,320	800	2,650	2,320	3,040	2,660	3,480
58	0.41	1,750	1,130	3,500	3,280	4,070	3,810	3,440
47	0.59	2,060	1,440	4,110	4,170	4,830	4,900	3,400
36	1.06	3,240	2,510	6,480	7,270	7,780	8,720	3,330
25	2.50	5,190	4,540	10,370	13,170	12,970	16,460	3,200
19	4.70	8,210	7,850	16,410	22,750	21,330	29,580	3,080

Refer to the Engineering Data section for load and speed limitations.

RADIAL CONTACT, C-TYPE

Thin Section Ball Bearings

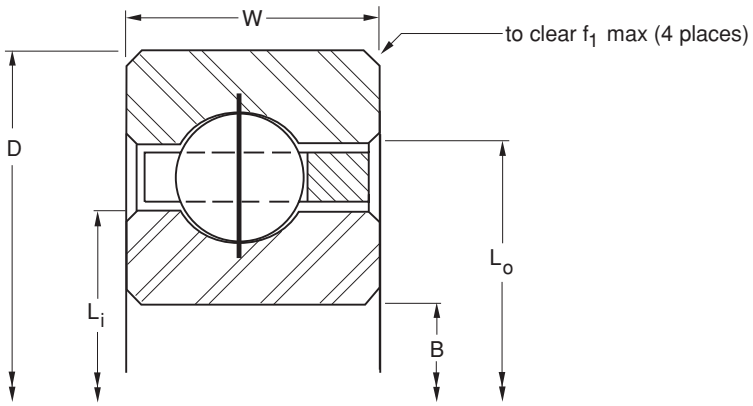


Series:	KAA	KA	KB	KC	KD	KF	KG
Cross Section Size:	3/16"	1/4"	5/16"	3/8"	1/2"	3/4"	1"

PART NUMBER*	NOMINAL DIMENSIONS IN INCHES						
	B Bore	D Outside Diameter	W Width	Land Diameter		f_1 Housing Fillet	Ball Diameter
				L_i -Inner Ring	L_o -Outer Ring		
KA060CP0*RBC	6.0000	6.5000	0.2500	6.188	6.313	0.025	1/8
KB060CP0*RBC	6.0000	6.6250	0.3125	6.234	6.391	0.032	5/32
KC060CP0*RBC	6.0000	6.7500	0.3750	6.281	6.469	0.040	1/8
KD060CP0*RBC	6.0000	7.0000	0.5000	6.375	6.625	0.060	5/32
KF060CP0*RBC	6.0000	7.5000	0.7500	6.563	6.938	0.080	1/8
KG060CP0*RBC	6.0000	8.0000	1.0000	6.750	7.250	0.080	5/32
KA065CP0*RBC	6.5000	7.0000	0.2500	6.688	6.813	0.025	1/8
KB065CP0*RBC	6.5000	7.1250	0.3125	6.734	6.891	0.032	5/32
KC065CP0*RBC	6.5000	7.2500	0.3750	6.781	6.969	0.040	3/16
KD065CP0*RBC	6.5000	7.5000	0.5000	6.875	7.125	0.060	1/4
KF065CP0*RBC	6.5000	8.0000	0.7500	7.063	7.438	0.080	3/8
KG065CP0*RBC	6.5000	8.5000	1.0000	7.250	7.750	0.080	1/2
KA070CP0*RBC	7.0000	7.5000	0.2500	7.188	7.313	0.025	1/8
KB070CP0*RBC	7.0000	7.6250	0.3125	7.234	7.391	0.032	5/32
KC070CP0*RBC	7.0000	7.7500	0.3750	7.281	7.469	0.040	3/16
KD070CP0*RBC	7.0000	8.0000	0.5000	7.375	7.625	0.060	1/4
KF070CP0*RBC	7.0000	8.5000	0.7500	7.563	7.938	0.080	3/8
KG070CP0*RBC	7.0000	9.0000	1.0000	7.750	8.250	0.080	1/2
KA075CP0*RBC	7.5000	8.0000	0.2500	7.688	7.813	0.025	1/8
KB075CP0*RBC	7.5000	8.1250	0.3125	7.734	7.891	0.032	5/32
KC075CP0*RBC	7.5000	8.2500	0.3750	7.781	7.969	0.040	3/16
KD075CP0*RBC	7.5000	8.5000	0.5000	7.875	8.125	0.060	1/4
KF075CP0*RBC	7.5000	9.0000	0.7500	8.063	8.438	0.080	3/8
KG075CP0*RBC	7.5000	9.5000	1.0000	8.250	8.750	0.080	1/2
KA080CP0*RBC	8.0000	8.5000	0.2500	8.188	8.313	0.025	1/8
KB080CP0*RBC	8.0000	8.6250	0.3125	8.234	8.391	0.032	5/32
KC080CP0*RBC	8.0000	8.7500	0.3750	8.281	8.469	0.040	3/16
KD080CP0*RBC	8.0000	9.0000	0.5000	8.375	8.625	0.060	1/4
KF080CP0*RBC	8.0000	9.5000	0.7500	8.563	8.938	0.080	3/8
KG080CP0*RBC	8.0000	10.0000	1.0000	8.750	9.250	0.080	1/2
KA090CP0*RBC	9.0000	9.5000	0.2500	9.188	9.313	0.025	1/8
KB090CP0*RBC	9.0000	9.6250	0.3125	9.234	9.391	0.032	5/32
KC090CP0*RBC	9.0000	9.7500	0.3750	9.281	9.469	0.040	3/16
KD090CP0*RBC	9.0000	10.0000	0.5000	9.375	9.625	0.060	1/4
KF090CP0*RBC	9.0000	10.5000	0.7500	9.563	9.938	0.080	3/8
KG090CP0*RBC	9.0000	11.0000	1.0000	9.750	10.250	0.080	1/2
KA100CP0*RBC	10.0000	10.5000	0.2500	10.188	10.313	0.025	1/8
KB100CP0*RBC	10.0000	10.6250	0.3125	10.234	10.391	0.032	5/32
KC100CP0*RBC	10.0000	10.7500	0.3750	10.281	10.469	0.040	3/16
KD100CP0*RBC	10.0000	11.0000	0.5000	10.375	10.625	0.060	1/4
KF100CP0*RBC	10.0000	11.5000	0.7500	10.563	10.938	0.080	3/8
KG100CP0*RBC	10.0000	12.0000	1.0000	10.750	11.250	0.080	1/2

*The alphanumeric identification system is used under license.

- Large Diameter
- Light Weight
- Small Cross Section
- Snap-Over Ball Separator

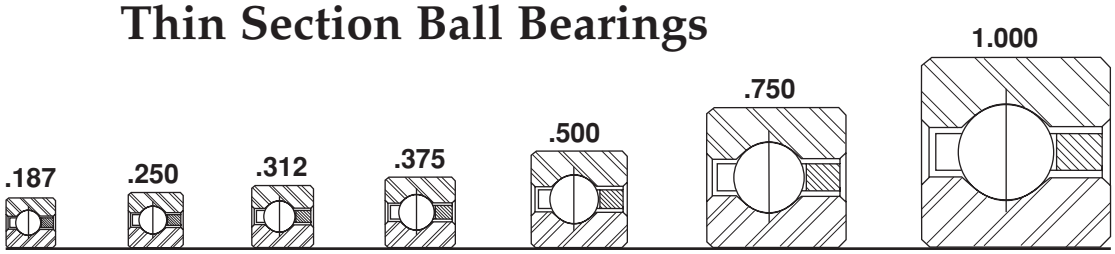


Ball Quantity	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
75	0.28	1,440	830	2,870	2,420	3,590	3,020	3,200
63	0.44	1,900	1,170	3,790	3,380	4,790	4,270	3,170
51	0.63	2,220	1,490	4,450	4,320	5,670	5,510	3,140
39	1.16	3,500	2,580	6,990	7,500	9,090	9,740	3,080
27	2.70	5,570	4,660	11,130	13,530	15,030	18,260	2,960
21	5.10	9,070	8,390	18,140	24,320	25,390	34,050	2,860
81	0.30	1,550	850	3,100	2,450	4,180	3,310	2,960
68	0.47	2,040	1,200	4,080	3,470	5,560	4,730	2,940
55	0.68	2,390	1,530	4,790	4,440	6,580	6,110	2,910
42	1.22	3,750	2,650	7,500	7,680	10,500	10,760	2,860
29	2.90	5,950	4,790	11,900	13,900	17,250	20,160	2,760
22	5.40	9,450	8,520	18,910	24,700	28,360	37,050	2,670
87	0.31	1,660	870	3,320	2,520	4,810	3,660	2,760
73	0.50	2,190	1,240	4,380	3,600	6,400	5,260	2,740
59	0.73	2,560	1,570	5,120	4,550	7,550	6,710	2,710
45	1.31	4,010	2,730	8,020	7,910	12,030	11,870	2,670
31	3.20	6,340	4,920	12,670	14,280	19,640	22,130	2,580
24	5.80	10,260	8,880	20,520	25,750	32,840	41,210	2,500
93	0.34	1,770	890	3,540	2,580	5,490	4,000	2,580
78	0.53	2,330	1,280	4,670	3,710	7,300	5,800	2,560
63	0.78	2,730	1,600	5,450	4,640	8,590	7,300	2,540
48	1.41	4,270	2,800	8,530	8,120	13,650	12,990	2,500
33	3.40	6,720	5,040	13,440	14,610	22,170	24,100	2,420
25	6.10	10,640	8,960	21,270	25,990	36,160	44,190	2,350
99	0.38	1,880	910	3,770	2,640	6,220	4,350	2,420
83	0.57	2,480	1,280	4,960	3,720	8,240	6,190	2,410
67	0.84	2,900	1,650	5,790	4,770	9,700	7,990	2,390
51	1.53	4,520	2,860	9,040	8,290	15,370	14,090	2,350
35	3.50	7,100	5,140	14,200	14,900	24,840	26,070	2,290
27	6.50	11,440	9,300	22,890	26,960	41,200	48,520	2,220
111	0.44	2,110	940	4,210	2,730	7,800	5,050	2,160
93	0.66	2,770	1,330	5,540	3,860	10,320	7,190	2,150
75	0.94	3,230	1,730	6,470	5,020	12,120	9,410	2,130
57	1.72	5,030	2,970	10,060	8,620	19,120	16,390	2,110
39	3.90	7,870	5,360	15,740	15,550	30,690	30,320	2,050
30	7.20	12,630	9,720	25,270	28,200	50,540	56,390	2,000
123	0.50	2,330	990	4,660	2,860	9,560	5,860	1,950
103	0.73	3,060	1,400	6,130	4,050	12,630	8,350	1,940
83	1.06	3,570	1,780	7,140	5,170	14,810	10,730	1,930
63	1.88	5,540	3,070	11,080	8,900	23,270	18,680	1,900
43	4.30	8,630	5,540	17,260	16,060	37,110	34,530	1,860
33	7.90	13,810	10,040	27,620	29,110	60,760	64,040	1,820

Refer to the Engineering Data section for load and speed limitations.

RADIAL CONTACT, C-TYPE

Thin Section Ball Bearings

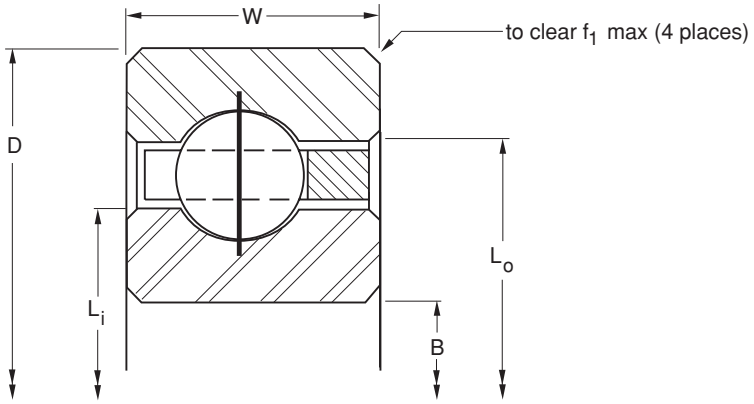


Series:	KAA	KA	KB	KC	KD	KF	KG
Cross Section Size:	3/16"	1/4"	5/16"	3/8"	1/2"	3/4"	1"

PART NUMBER*	NOMINAL DIMENSIONS IN INCHES						
	B Bore	D Outside Diameter	W Width	Land Diameter L_i -Inner Ring	Land Diameter L_o -Outer Ring	f_1 Housing Fillet	Ball Diameter
KA110CP0*RBC	11.0000	11.5000	0.2500	11.188	11.313	0.025	1/8
KB110CP0*RBC	11.0000	11.6250	0.3125	11.234	11.391	0.032	5/32
KC110CP0*RBC	11.0000	11.7500	0.3750	11.281	11.469	0.040	3/16
KD110CP0*RBC	11.0000	12.0000	0.5000	11.375	11.625	0.060	1/4
KF110CP0*RBC	11.0000	12.5000	0.7500	11.563	11.938	0.080	3/8
KG110CP0*RBC	11.0000	13.0000	1.0000	11.750	12.250	0.080	1/2
KA120CP0*RBC	12.0000	12.5000	0.2500	12.188	12.313	0.025	1/8
KB120CP0*RBC	12.0000	12.6250	0.3125	12.234	12.391	0.032	5/32
KC120CP0*RBC	12.0000	12.7500	0.3750	12.281	12.469	0.040	3/16
KD120CP0*RBC	12.0000	13.0000	0.5000	12.375	12.625	0.060	1/4
KF120CP0*RBC	12.0000	13.5000	0.7500	12.563	12.938	0.080	3/8
KG120CP0*RBC	12.0000	14.0000	1.0000	12.750	13.250	0.080	1/2
KB140CP0*RBC	14.0000	14.6250	0.3125	14.234	14.391	0.032	5/32
KC140CP0*RBC	14.0000	14.7500	0.3750	14.281	14.469	0.040	3/16
KD140CP0*RBC	14.0000	15.0000	0.5000	14.375	14.625	0.060	1/4
KF140CP0*RBC	14.0000	15.5000	0.7500	14.563	14.938	0.080	3/8
KG140CP0*RBC	14.0000	16.0000	1.0000	14.750	15.250	0.080	1/2
KB160CP0*RBC	16.0000	16.6250	0.3125	16.234	16.391	0.032	5/32
KC160CP0*RBC	16.0000	16.7500	0.3750	16.281	16.469	0.040	3/16
KD160CP0*RBC	16.0000	17.0000	0.5000	16.375	16.625	0.060	1/4
KF160CP0*RBC	16.0000	17.5000	0.7500	16.563	16.938	0.080	3/8
KG160CP0*RBC	16.0000	18.0000	1.0000	16.750	17.250	0.080	1/2
KB180CP0*RBC	18.0000	18.6250	0.3125	18.234	18.391	0.032	5/32
KC180CP0*RBC	18.0000	18.7500	0.3750	18.281	18.469	0.040	3/16
KD180CP0*RBC	18.0000	19.0000	0.5000	18.375	18.625	0.060	1/4
KF180CP0*RBC	18.0000	19.5000	0.7500	18.563	18.938	0.080	3/8
KG180CP0*RBC	18.0000	20.0000	1.0000	18.750	19.250	0.080	1/2
KB200CP0*RBC	20.0000	20.6250	0.3125	20.234	20.391	0.032	5/32
KC200CP0*RBC	20.0000	20.7500	0.3750	20.281	20.469	0.040	3/16
KD200CP0*RBC	20.0000	21.0000	0.5000	20.375	20.625	0.060	1/4
KF200CP0*RBC	20.0000	21.5000	0.7500	20.563	20.938	0.080	3/8
KG200CP0*RBC	20.0000	22.0000	1.0000	20.750	21.250	0.080	1/2
KC250CP0*RBC	25.0000	25.7500	0.3750	25.281	25.469	0.040	3/16
KD250CP0*RBC	25.0000	26.0000	0.5000	25.375	25.625	0.060	1/4
KF250CP0*RBC	25.0000	26.5000	0.7500	25.563	25.938	0.080	3/8
KG250CP0*RBC	25.0000	27.0000	1.0000	25.750	26.250	0.080	1/2
KC300CP0*RBC	30.0000	30.7500	0.3750	30.281	30.469	0.040	3/16
KD300CP0*RBC	30.0000	31.0000	0.5000	30.375	30.625	0.060	1/4
KF300CP0*RBC	30.0000	31.5000	0.7500	30.563	30.938	0.080	3/8
KG300CP0*RBC	30.0000	32.0000	1.0000	30.750	31.250	0.080	1/2
KF350CP0*RBC	35.0000	36.5000	0.7500	35.563	35.938	0.080	3/8
KG350CP0*RBC	35.0000	37.0000	1.0000	35.750	36.250	0.080	1/2
KF400CP0*RBC	40.0000	41.5000	0.7500	40.563	40.938	0.080	3/8
KG400CP0*RBC	40.0000	42.0000	1.0000	40.750	41.250	0.080	1/2

*The alphanumeric identification system is used under license.

- Large Diameter
- Light Weight
- Small Cross Section
- Snap-Over Ball Separator

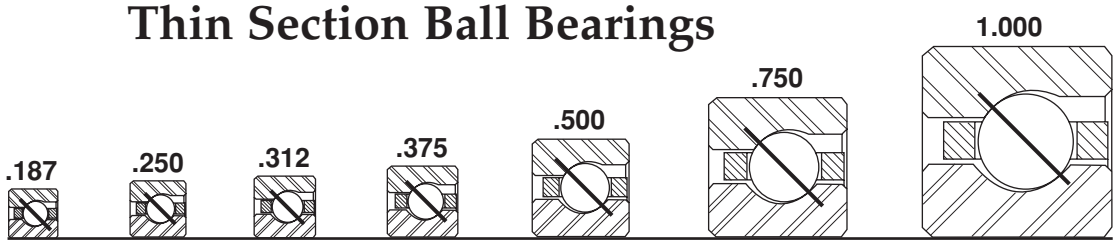


Ball Quantity	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
135	0.52	2,560	1,030	5,110	2,980	11,500	6,700	1,780
113	0.75	3,350	1,420	6,700	4,130	15,160	9,340	1,770
91	1.16	3,900	1,820	7,800	5,280	17,750	12,020	1,760
69	2.06	6,050	3,180	12,100	9,220	27,830	21,210	1,740
47	4.80	9,400	5,730	18,790	16,610	44,160	39,040	1,700
36	8.60	14,990	10,360	29,980	30,060	71,940	72,140	1,670
147	0.56	2,780	1,060	5,560	3,080	13,620	7,550	1,630
123	0.83	3,640	1,470	7,290	4,270	17,940	10,530	1,620
99	1.25	4,240	1,890	8,480	5,470	20,980	13,550	1,620
75	2.25	6,570	3,320	13,140	9,630	32,840	24,070	1,600
51	5.20	10,170	5,930	20,340	17,200	51,860	43,850	1,570
39	9.30	16,170	10,690	32,350	30,990	84,100	80,580	1,540
143	1.05	4,220	1,560	8,450	4,520	24,180	12,930	1,400
115	1.52	4,910	2,000	9,820	5,800	28,240	16,680	1,390
87	2.73	7,590	3,460	15,180	10,030	44,020	29,100	1,380
59	6.00	11,700	6,240	23,410	18,090	69,050	53,380	1,360
45	10.80	18,540	11,280	37,080	32,710	111,250	98,140	1,330
163	1.20	4,810	1,660	9,620	4,800	31,370	15,670	1,230
131	1.73	5,580	2,090	11,160	6,050	36,550	19,830	1,220
99	3.10	8,610	3,620	17,230	10,500	56,850	34,660	1,210
67	7.10	13,240	6,550	26,480	19,000	88,690	63,630	1,190
51	12.30	20,900	11,820	41,810	34,270	142,150	116,530	1,180
183	1.35	5,390	1,740	10,780	5,050	39,490	18,490	1,090
147	1.94	6,250	2,200	12,510	6,390	45,960	23,480	1,090
111	3.48	9,630	3,750	19,260	10,870	71,270	40,200	1,080
75	7.90	14,780	6,890	29,560	19,980	110,840	74,910	1,070
57	13.70	23,270	12,300	46,540	35,660	176,870	135,510	1,050
203	1.50	5,970	1,810	11,940	5,260	48,520	21,370	980
163	2.16	6,920	2,300	13,850	6,670	56,430	27,170	980
123	3.85	10,660	3,930	21,320	11,380	87,400	46,680	980
83	8.90	16,310	7,090	32,620	20,570	135,390	85,380	960
63	15.80	25,620	12,680	51,240	36,780	215,210	154,490	950
203	2.69	8,600	2,520	17,200	7,300	87,290	37,070	790
153	4.79	13,200	4,230	26,410	12,260	134,690	62,530	780
103	10.90	20,140	7,550	40,270	21,910	207,390	112,830	780
78	19.50	31,550	13,830	63,110	40,100	328,150	208,540	770
243	3.21	10,280	2,760	20,560	8,000	124,910	48,610	660
183	5.73	15,770	4,640	31,540	13,440	192,420	82,010	660
123	13.00	23,980	8,150	47,960	23,620	294,970	145,270	650
93	23.30	37,470	14,660	74,940	42,510	464,640	263,580	650
143	15.10	27,810	8,610	55,610	24,970	397,620	178,510	560
108	27.10	43,340	15,210	86,680	44,120	624,100	317,650	560
163	17.20	31,650	9,150	63,300	26,530	515,930	216,240	490
123	30.80	49,290	16,230	98,590	47,080	808,420	386,040	490

Refer to the Engineering Data section for load and speed limitations.

ANGULAR CONTACT, A-TYPE

Thin Section Ball Bearings

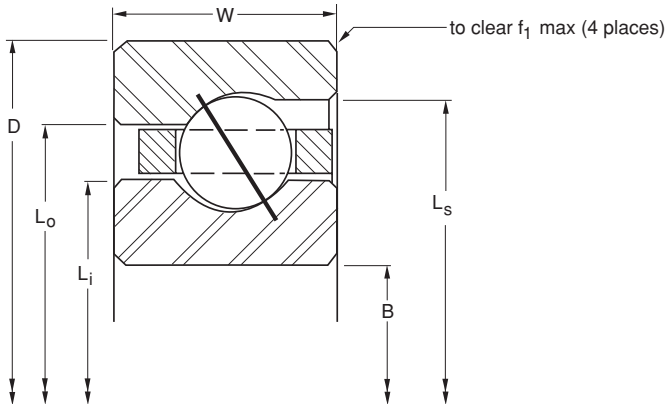


Series:	KAA	KA	KB	KC	KD	KF	KG
Cross Section Size:	3/16"	1/4"	5/16"	3/8"	1/2"	3/4"	1"

PART NUMBER*	NOMINAL DIMENSIONS IN INCHES							
	B	D	W	Land Diameter			f_1	Ball
	Bore	Outside Diameter	Width	L_i -Inner Ring	L_o -Outer Ring	L_S -Counter Bore	Housing Fillet	Diameter
KAA10AG0*RBC	1.0000	1.3750	0.1875	1.141	1.234	1.235	0.015	3/32
KAA15AG0*RBC	1.5000	1.8750	0.1875	1.641	1.734	1.735	0.015	3/32
KA020AR0*RBC	2.0000	2.5000	0.2500	2.188	2.313	2.375	0.025	1/8
KB020AR0*RBC	2.0000	2.6250	0.3125	2.234	2.391	2.469	0.032	5/32
KA025AR0*RBC	2.5000	3.0000	0.2500	2.688	2.813	2.875	0.025	1/8
KB025AR0*RBC	2.5000	3.1250	0.3125	2.734	2.891	2.969	0.032	5/32
KA030AR0*RBC	3.0000	3.5000	0.2500	3.188	3.313	3.375	0.025	1/8
KB030AR0*RBC	3.0000	3.6250	0.3125	3.234	3.391	3.469	0.032	5/32
KA035AR0*RBC	3.5000	4.0000	0.2500	3.688	3.813	3.875	0.025	1/8
KB035AR0*RBC	3.5000	4.1250	0.3125	3.734	3.891	3.969	0.032	5/32
KA040AR0*RBC	4.0000	4.5000	0.2500	4.188	4.313	4.375	0.025	1/8
KB040AR0*RBC	4.0000	4.6250	0.3125	4.234	4.391	4.469	0.032	5/32
KC040AR0*RBC	4.0000	4.7500	0.3750	4.281	4.469	4.563	0.040	3/16
KD040AR0*RBC	4.0000	5.0000	0.5000	4.375	4.625	4.750	0.060	1/4
KF040AR0*RBC	4.0000	5.5000	0.7500	4.563	4.938	5.125	0.080	3/8
KG040AR0*RBC	4.0000	6.0000	1.0000	4.750	5.250	5.500	0.080	1/2
KA042AR0*RBC	4.2500	4.7500	0.2500	4.438	4.563	4.625	0.025	1/8
KB042AR0*RBC	4.2500	4.8750	0.3125	4.484	4.641	4.719	0.032	5/32
KC042AR0*RBC	4.2500	5.0000	0.3750	4.531	4.719	4.813	0.040	3/16
KD042AR0*RBC	4.2500	5.2500	0.5000	4.625	4.875	5.000	0.060	1/4
KF042AR0*RBC	4.2500	5.7500	0.7500	4.813	5.188	5.375	0.080	3/8
KG042AR0*RBC	4.2500	6.2500	1.0000	5.000	5.500	5.750	0.080	1/2
KA045AR0*RBC	4.5000	5.0000	0.2500	4.688	4.813	4.875	0.025	1/8
KB045AR0*RBC	4.5000	5.1250	0.3125	4.734	4.891	4.969	0.032	5/32
KC045AR0*RBC	4.5000	5.2500	0.3750	4.781	4.969	5.063	0.040	3/16
KD045AR0*RBC	4.5000	5.5000	0.5000	4.875	5.125	5.250	0.060	1/4
KF045AR0*RBC	4.5000	6.0000	0.7500	5.063	5.438	5.625	0.080	3/8
KG045AR0*RBC	4.5000	6.5000	1.0000	5.250	5.750	6.000	0.080	1/2
KA047AR0*RBC	4.7500	5.2500	0.2500	4.938	5.063	5.125	0.025	1/8
KB047AR0*RBC	4.7500	5.3750	0.3125	4.984	5.141	5.219	0.032	5/32
KC047AR0*RBC	4.7500	5.5000	0.3750	5.031	5.219	5.313	0.040	3/16
KD047AR0*RBC	4.7500	5.7500	0.5000	5.125	5.375	5.500	0.060	1/4
KF047AR0*RBC	4.7500	6.2500	0.7500	5.313	5.688	5.875	0.080	3/8
KG047AR0*RBC	4.7500	6.7500	1.0000	5.500	6.000	6.250	0.080	1/2
KA050AR0*RBC	5.0000	5.5000	0.2500	5.188	5.313	5.375	0.025	1/8
KB050AR0*RBC	5.0000	5.6250	0.3125	5.234	5.391	5.469	0.032	5/32
KC050AR0*RBC	5.0000	5.7500	0.3750	5.281	5.469	5.563	0.040	3/16
KD050AR0*RBC	5.0000	6.0000	0.5000	5.375	5.625	5.750	0.060	1/4
KF050AR0*RBC	5.0000	6.5000	0.7500	5.563	5.938	6.125	0.080	3/8
KG050AR0*RBC	5.0000	7.0000	1.0000	5.750	6.250	6.500	0.080	1/2
KA055AR0*RBC	5.5000	6.0000	0.2500	5.688	5.813	5.875	0.025	1/8
KB055AR0*RBC	5.5000	6.1250	0.3125	5.734	5.891	5.969	0.032	5/32
KC055AR0*RBC	5.5000	6.2500	0.3750	5.781	5.969	6.063	0.040	3/16
KD055AR0*RBC	5.5000	6.5000	0.5000	5.875	6.125	6.250	0.060	1/4
KF055AR0*RBC	5.5000	7.0000	0.7500	6.063	6.438	6.625	0.080	3/8
KG055AR0*RBC	5.5000	7.5000	1.0000	6.250	6.750	7.000	0.080	1/2

*The alphanumeric identification system is used under license.

- Large Diameter
- Light Weight
- Small Cross Section
- Circular Pocket Ball Separator

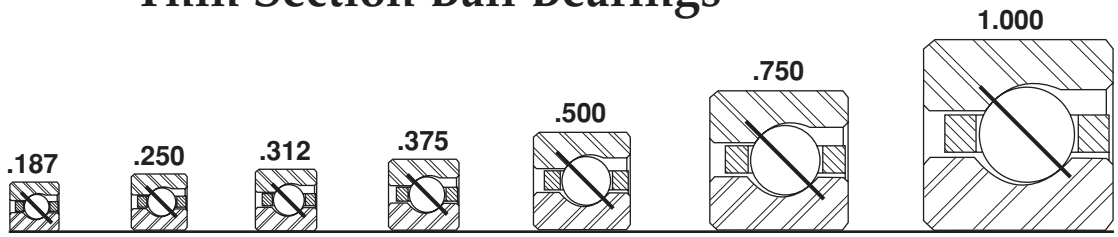


Ball Quantity	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
28	0.03	280	330	830	960	N/A	N/A	16,840
40	0.04	390	380	1,160	1,100	N/A	N/A	11,850
36	0.10	620	600	1,860	1,730	N/A	N/A	8,890
31	0.16	840	850	2,530	2,460	N/A	N/A	8,650
44	0.13	750	640	2,250	1,860	N/A	N/A	7,270
38	0.20	1,020	920	3,060	2,680	N/A	N/A	7,110
52	0.15	880	680	2,630	1,980	N/A	N/A	6,150
44	0.24	1,170	970	3,510	2,800	N/A	N/A	6,040
60	0.18	1,010	720	3,020	2,070	N/A	N/A	5,330
51	0.27	1,350	1,020	4,050	2,970	N/A	N/A	5,250
68	0.19	1,140	750	3,410	2,180	N/A	N/A	4,710
58	0.30	1,530	1,080	4,580	3,130	N/A	N/A	4,640
49	0.45	1,870	1,410	5,610	4,080	N/A	N/A	4,570
36	0.78	2,830	2,070	8,500	6,020	N/A	N/A	4,440
26	1.90	4,720	4,350	14,160	12,620	N/A	N/A	4,210
20	3.60	7,680	7,340	23,050	21,290	N/A	N/A	4,000
72	0.20	1,200	770	3,600	2,240	N/A	N/A	4,440
61	0.31	1,600	1,090	4,800	3,170	N/A	N/A	4,380
52	0.47	1,980	1,440	5,940	4,180	N/A	N/A	4,320
38	0.83	2,980	2,410	8,930	6,990	N/A	N/A	4,210
27	2.00	4,880	4,390	14,630	12,740	N/A	N/A	4,000
21	3.80	8,070	7,580	24,200	21,990	N/A	N/A	3,810
76	0.22	1,260	780	3,790	2,260	N/A	N/A	4,210
64	0.33	1,680	1,120	5,030	3,240	N/A	N/A	4,160
55	0.48	2,090	1,470	6,270	4,260	N/A	N/A	4,100
40	0.88	3,130	2,460	9,380	7,140	N/A	N/A	4,000
29	2.10	5,220	4,550	15,650	13,200	N/A	N/A	3,810
22	4.00	8,450	7,820	25,350	22,690	N/A	N/A	3,640
80	0.23	1,330	800	3,990	2,310	N/A	N/A	4,000
68	0.34	1,780	1,140	5,330	3,290	N/A	N/A	3,950
58	0.50	2,200	1,500	6,590	4,340	N/A	N/A	3,900
42	0.94	3,270	2,510	9,820	7,280	N/A	N/A	3,810
30	2.20	5,380	4,610	16,150	13,380	N/A	N/A	3,640
23	4.10	8,830	8,060	26,500	23,370	N/A	N/A	3,480
84	0.24	1,390	810	4,180	2,360	N/A	N/A	3,810
71	0.38	1,850	1,160	5,560	3,350	N/A	N/A	3,760
61	0.58	2,310	1,540	6,920	4,450	N/A	N/A	3,720
44	1.00	3,420	2,550	10,260	7,400	N/A	N/A	3,640
31	2.30	5,540	4,650	16,630	13,480	N/A	N/A	3,480
24	4.30	9,220	8,290	27,660	24,040	N/A	N/A	3,330
92	0.25	1,520	830	4,570	2,410	N/A	N/A	3,480
78	0.41	2,030	1,200	6,090	3,480	N/A	N/A	3,440
66	0.59	2,490	1,560	7,460	4,540	N/A	N/A	3,400
48	1.06	3,720	2,640	11,150	7,660	N/A	N/A	3,330
34	2.50	6,040	4,820	18,120	13,980	N/A	N/A	3,200
26	4.70	9,940	8,610	29,810	24,960	N/A	N/A	3,080

Refer to the Engineering Data section for load and speed limitations.

ANGULAR CONTACT A-TYPE

Thin Section Ball Bearings

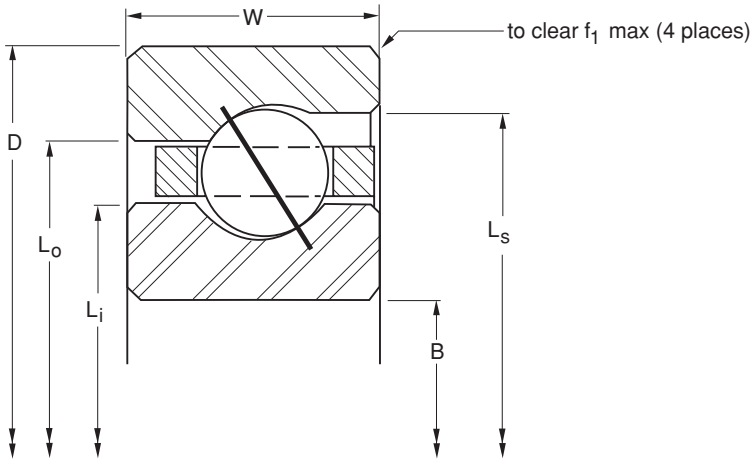


Series:	KAA	KA	KB	KC	KD	KF	KG
Cross Section Size:	3/16"	1/4"	5/16"	3/8"	1/2"	3/4"	1"

PART NUMBER*	NOMINAL DIMENSIONS IN INCHES							
	B	D	W	Land Diameter			f_1	Ball
	Bore	Outside Diameter	Width	L_i -Inner Ring	L_o -Outer Ring	L_S -Counter Bore	Housing Fillet	Diameter
KA060AR0*RBC	6.0000	6.5000	0.2500	6.188	6.313	6.375	0.025	1/8
KB060AR0*RBC	6.0000	6.6250	0.3125	6.234	6.391	6.469	0.032	5/32
KC060AR0*RBC	6.0000	6.7500	0.3750	6.281	6.469	6.563	0.040	3/16
KD060AR0*RBC	6.0000	7.0000	0.5000	6.375	6.625	6.750	0.060	1/4
KF060AR0*RBC	6.0000	7.5000	0.7500	6.563	6.938	7.125	0.080	3/8
KG060AR0*RBC	6.0000	8.0000	1.0000	6.750	7.250	7.500	0.080	1/2
KA065AR0*RBC	6.5000	7.0000	0.2500	6.688	6.813	6.875	0.025	1/8
KB065AR0*RBC	6.5000	7.1250	0.3125	6.734	6.891	6.969	0.032	5/32
KC065AR0*RBC	6.5000	7.2500	0.3750	6.781	6.969	7.063	0.040	3/16
KD065AR0*RBC	6.5000	7.5000	0.5000	6.875	7.125	7.250	0.060	1/4
KF065AR0*RBC	6.5000	8.0000	0.7500	7.063	7.438	7.625	0.080	3/8
KG065AR0*RBC	6.5000	8.5000	1.0000	7.250	7.750	8.000	0.080	1/2
KA070AR0*RBC	7.0000	7.5000	0.2500	7.188	7.313	7.375	0.025	1/8
KB070AR0*RBC	7.0000	7.6250	0.3125	7.234	7.391	7.469	0.032	5/32
KC070AR0*RBC	7.0000	7.7500	0.3750	7.281	7.469	7.563	0.040	3/16
KD070AR0*RBC	7.0000	8.0000	0.5000	7.375	7.625	7.750	0.060	1/4
KF070AR0*RBC	7.0000	8.5000	0.7500	7.563	7.938	8.125	0.080	3/8
KG070AR0*RBC	7.0000	9.0000	1.0000	7.750	8.250	8.500	0.080	1/2
KA075AR0*RBC	7.5000	8.0000	0.2500	7.688	7.813	7.875	0.025	1/8
KB075AR0*RBC	7.5000	8.1250	0.3125	7.734	7.891	7.969	0.032	5/32
KC075AR0*RBC	7.5000	8.2500	0.3750	7.781	7.969	8.063	0.040	3/16
KD075AR0*RBC	7.5000	8.5000	0.5000	7.875	8.125	8.250	0.060	1/4
KF075AR0*RBC	7.5000	9.0000	0.7500	8.063	8.438	8.625	0.080	3/8
KG075AR0*RBC	7.5000	9.5000	1.0000	8.250	8.750	9.000	0.080	1/2
KA080AR0*RBC	8.0000	8.5000	0.2500	8.188	8.313	8.375	0.025	1/8
KB080AR0*RBC	8.0000	8.6250	0.3125	8.234	8.391	8.469	0.032	5/32
KC080AR0*RBC	8.0000	8.7500	0.3750	8.281	8.469	8.563	0.040	3/16
KD080AR0*RBC	8.0000	9.0000	0.5000	8.375	8.625	8.750	0.060	1/4
KF080AR0*RBC	8.0000	9.5000	0.7500	8.563	8.938	9.125	0.080	3/8
KG080AR0*RBC	8.0000	10.0000	1.0000	8.750	9.250	9.500	0.080	1/2
KA090AR0*RBC	9.0000	9.5000	0.2500	9.188	9.313	9.375	0.025	1/8
KB090AR0*RBC	9.0000	9.6250	0.3125	9.234	9.391	9.469	0.032	5/32
KC090AR0*RBC	9.0000	9.7500	0.3750	9.281	9.469	9.563	0.040	3/16
KD090AR0*RBC	9.0000	10.0000	0.5000	9.375	9.625	9.750	0.060	1/4
KF090AR0*RBC	9.0000	10.5000	0.7500	9.563	9.938	10.125	0.080	3/8
KG090AR0*RBC	9.0000	11.0000	1.0000	9.750	10.250	10.500	0.080	1/2
KA100AR0*RBC	10.0000	10.5000	0.2500	10.188	10.313	10.375	0.025	1/8
KB100AR0*RBC	10.0000	10.6250	0.3125	10.234	10.391	10.469	0.032	5/32
KC100AR0*RBC	10.0000	10.7500	0.3750	10.281	10.469	10.563	0.040	3/16
KD100AR0*RBC	10.0000	11.0000	0.5000	10.375	10.625	10.750	0.060	1/4
KF100AR0*RBC	10.0000	11.5000	0.7500	10.563	10.938	11.125	0.080	3/8
KG100AR0*RBC	10.0000	12.0000	1.0000	10.750	11.250	11.500	0.080	1/2

*The alphanumeric identification system is used under license.

- Large Diameter
- Light Weight
- Small Cross Section
- Circular Pocket Ball Separator

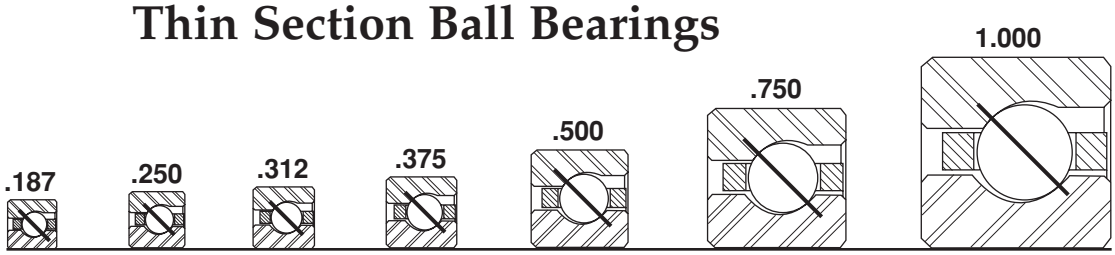


	Ball Quantity	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
			Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
			Static	Dynamic	Static	Dynamic	Static	Dynamic	
	100	0.28	1,650	860	4,960	2,500	N/A	N/A	3,200
	85	0.44	2,210	1,240	6,620	3,600	N/A	N/A	3,170
	72	0.63	2,710	1,620	8,120	4,690	N/A	N/A	3,140
	52	1.16	4,010	2,720	12,040	7,880	N/A	N/A	3,080
	37	2.70	6,550	5,010	19,650	14,530	N/A	N/A	2,960
	28	5.10	10,640	8,860	31,910	25,700	N/A	N/A	2,860
	108	0.30	1,780	890	5,350	2,580	N/A	N/A	2,960
	91	0.47	2,360	1,260	7,070	3,650	N/A	N/A	2,940
	78	0.68	2,920	1,670	8,770	4,830	N/A	N/A	2,910
	56	1.22	4,300	2,780	12,910	8,070	N/A	N/A	2,860
	40	2.90	7,040	5,140	21,130	14,920	N/A	N/A	2,760
	30	5.40	11,340	9,110	34,010	26,410	N/A	N/A	2,670
	116	0.31	1,910	900	5,730	2,600	N/A	N/A	2,760
	98	0.50	2,530	1,300	7,600	3,760	N/A	N/A	2,740
	83	0.73	3,110	1,720	9,320	4,980	N/A	N/A	2,710
	60	1.31	4,600	2,850	13,800	8,260	N/A	N/A	2,670
	43	3.20	7,540	5,290	22,630	15,350	N/A	N/A	2,580
	32	5.80	12,050	9,370	36,140	27,160	N/A	N/A	2,500
	124	0.34	2,040	920	6,110	2,660	N/A	N/A	2,580
	105	0.53	2,710	1,330	8,130	3,860	N/A	N/A	2,560
	89	0.78	3,320	1,750	9,970	5,090	N/A	N/A	2,540
	64	1.41	4,900	2,940	14,700	8,520	N/A	N/A	2,500
	45	3.40	7,870	5,380	23,620	15,590	N/A	N/A	2,420
	34	6.10	12,740	9,560	38,210	27,710	N/A	N/A	2,350
	132	0.38	2,170	960	6,510	2,770	N/A	N/A	2,420
	112	0.57	2,890	1,360	8,660	3,950	N/A	N/A	2,410
	95	0.84	3,540	1,800	10,630	5,210	N/A	N/A	2,390
	68	1.53	5,190	2,990	15,580	8,670	N/A	N/A	2,350
	48	3.50	8,380	5,520	25,130	16,020	N/A	N/A	2,290
	36	6.50	13,450	9,800	40,350	28,430	N/A	N/A	2,220
	148	0.44	2,430	990	7,280	2,860	N/A	N/A	2,160
	125	0.66	3,210	1,410	9,640	4,080	N/A	N/A	2,150
	106	0.94	3,940	1,860	11,820	5,400	N/A	N/A	2,130
	76	1.72	5,780	3,100	17,340	9,000	N/A	N/A	2,110
	54	3.90	9,370	5,780	28,120	16,760	N/A	N/A	2,050
	40	7.20	14,850	10,190	44,550	29,540	N/A	N/A	2,000
	164	0.50	2,680	1,030	8,050	3,000	N/A	N/A	1,950
	139	0.73	3,570	1,480	10,710	4,290	N/A	N/A	1,940
	118	1.06	4,380	1,920	13,130	5,570	N/A	N/A	1,930
	84	1.88	6,370	3,240	19,110	9,390	N/A	N/A	1,900
	59	4.30	10,200	5,980	30,610	17,330	N/A	N/A	1,860
	44	7.90	16,250	10,560	48,750	30,620	N/A	N/A	1,820

Refer to the Engineering Data section for load and speed limitations.

ANGULAR CONTACT, A-TYPE

Thin Section Ball Bearings

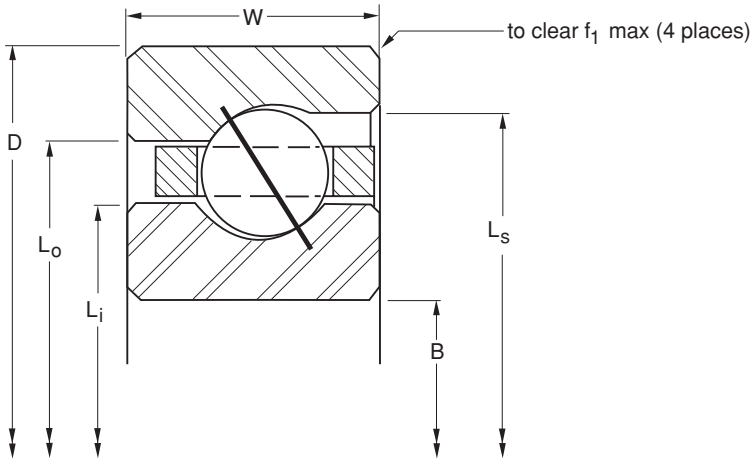


Series:	KAA	KA	KB	KC	KD	KF	KG
Cross Section Size:	3/16"	1/4"	5/16"	3/8"	1/2"	3/4"	1"

PART NUMBER*	NOMINAL DIMENSIONS IN INCHES							
	B	D	W	Land Diameter			f_1	Ball
	Bore	Outside Diameter	Width	L_i -Inner Ring	L_o -Outer Ring	L_S -Counter Bore	Housing Fillet	Diameter
KA110AR0*RBC	11.0000	11.5000	0.2500	11.188	11.313	11.375	0.025	1/8
KB110AR0*RBC	11.0000	11.6250	0.3125	11.234	11.391	11.469	0.032	5/32
KC110AR0*RBC	11.0000	11.7500	0.3750	11.281	11.469	11.563	0.040	3/16
KD110AR0*RBC	11.0000	12.0000	0.5000	11.375	11.625	11.750	0.060	1/4
KF110AR0*RBC	11.0000	12.5000	0.7500	11.563	11.938	12.125	0.080	3/8
KG110AR0*RBC	11.0000	13.0000	1.0000	11.750	12.250	12.500	0.080	1/2
KA120AR0*RBC	12.0000	12.5000	0.2500	12.188	12.313	12.375	0.025	1/8
KB120AR0*RBC	12.0000	12.6250	0.3125	12.234	12.391	12.469	0.032	5/32
KC120AR0*RBC	12.0000	12.7500	0.3750	12.281	12.469	12.563	0.040	3/16
KD120AR0*RBC	12.0000	13.0000	0.5000	12.375	12.625	12.750	0.060	1/4
KF120AR0*RBC	12.0000	13.5000	0.7500	12.563	12.938	13.125	0.080	3/8
KG120AR0*RBC	12.0000	14.0000	1.0000	12.750	13.250	13.500	0.080	1/2
KB140AR0*RBC	14.0000	14.6250	0.3125	14.234	14.391	14.469	0.032	5/32
KC140AR0*RBC	14.0000	14.7500	0.3750	14.281	14.469	14.563	0.040	3/16
KD140AR0*RBC	14.0000	15.0000	0.5000	14.375	14.625	14.750	0.060	1/4
KF140AR0*RBC	14.0000	15.5000	0.7500	14.563	14.938	15.125	0.080	3/8
KG140AR0*RBC	14.0000	16.0000	1.0000	14.750	15.250	15.500	0.080	1/2
KB160AR0*RBC	16.0000	16.6250	0.3125	16.234	16.391	16.469	0.032	5/32
KC160AR0*RBC	16.0000	16.7500	0.3750	16.281	16.469	16.563	0.040	3/16
KD160AR0*RBC	16.0000	17.0000	0.5000	16.375	16.625	16.750	0.060	1/4
KF160AR0*RBC	16.0000	17.5000	0.7500	16.563	16.938	17.125	0.080	3/8
KG160AR0*RBC	16.0000	18.0000	1.0000	16.750	17.250	17.500	0.080	1/2
KB180AR0*RBC	18.0000	18.6250	0.3125	18.234	18.391	18.469	0.032	5/32
KC180AR0*RBC	18.0000	18.7500	0.3750	18.281	18.469	18.563	0.040	3/16
KD180AR0*RBC	18.0000	19.0000	0.5000	18.375	18.625	18.750	0.060	1/4
KF180AR0*RBC	18.0000	19.5000	0.7500	18.563	18.938	19.125	0.080	3/8
KG180AR0*RBC	18.0000	20.0000	1.0000	18.750	19.250	19.500	0.080	1/2
KB200AR0*RBC	20.0000	20.6250	0.3125	20.234	20.391	20.469	0.032	5/32
KC200AR0*RBC	20.0000	20.7500	0.3750	20.281	20.469	20.563	0.040	3/16
KD200AR0*RBC	20.0000	21.0000	0.5000	20.375	20.625	20.750	0.060	1/4
KF200AR0*RBC	20.0000	21.5000	0.7500	20.563	20.938	21.125	0.080	3/8
KG200AR0*RBC	20.0000	22.0000	1.0000	20.750	21.250	21.500	0.080	1/2
KC250AR0*RBC	25.0000	25.7500	0.3750	25.281	25.469	25.563	0.040	3/16
KD250AR0*RBC	25.0000	26.0000	0.5000	25.375	25.625	25.750	0.060	1/4
KF250AR0*RBC	25.0000	26.5000	0.7500	25.563	25.938	26.125	0.080	3/8
KG250AR0*RBC	25.0000	27.0000	1.0000	25.750	26.250	26.500	0.080	1/2
KC300AR0*RBC	30.0000	30.7500	0.3750	30.281	30.469	30.563	0.040	3/16
KD300AR0*RBC	30.0000	31.0000	0.5000	30.375	30.625	30.750	0.060	1/4
KF300AR0*RBC	30.0000	31.5000	0.7500	30.563	30.938	31.125	0.080	3/8
KG300AR0*RBC	30.0000	32.0000	1.0000	30.750	31.250	31.500	0.080	1/2
KF350AR0*RBC	35.0000	36.5000	0.7500	35.563	35.938	36.125	0.080	3/8
KG350AR0*RBC	35.0000	37.0000	1.0000	35.750	36.250	36.500	0.080	1/2
KF400AR0*RBC	40.0000	41.5000	0.7500	40.563	40.938	41.125	0.080	3/8
KG400AR0*RBC	40.0000	42.0000	1.0000	40.750	41.250	41.500	0.080	1/2

*The alphanumeric identification system is used under license.

- Large Diameter
- Light Weight
- Small Cross Section
- Circular Pocket Ball Separator

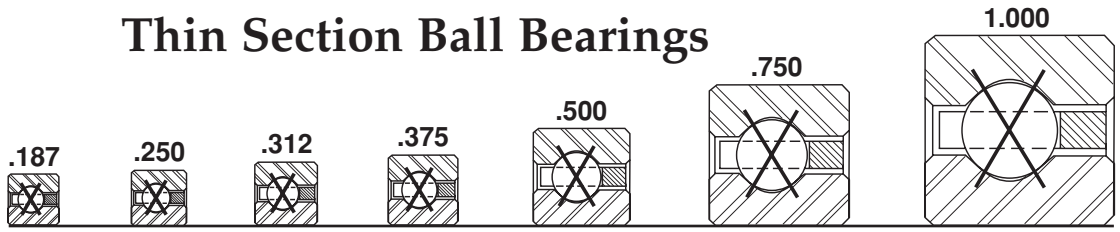


Ball Quantity	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
180	0.52	2,940	1,070	8,830	3,100	N/A	N/A	1,780
152	0.75	3,890	1,500	11,680	4,350	N/A	N/A	1,770
129	1.16	4,780	1,990	14,330	5,780	N/A	N/A	1,760
92	2.06	6,960	3,310	20,880	9,600	N/A	N/A	1,740
65	4.80	11,200	6,160	33,590	17,870	N/A	N/A	1,700
48	8.60	17,660	10,920	52,980	31,660	N/A	N/A	1,670
196	0.56	3,200	1,100	9,600	3,200	N/A	N/A	1,630
166	0.83	4,250	1,560	12,740	4,510	N/A	N/A	1,620
140	1.25	5,180	2,060	15,530	5,980	N/A	N/A	1,620
100	2.25	7,550	3,430	22,660	9,950	N/A	N/A	1,600
70	5.20	12,020	6,320	36,070	18,340	N/A	N/A	1,570
52	9.30	19,060	11,230	57,170	32,570	N/A	N/A	1,540
192	1.05	4,900	1,670	14,710	4,840	N/A	N/A	1,400
163	1.52	6,010	2,180	18,040	6,330	N/A	N/A	1,390
116	2.73	8,730	3,560	26,180	10,340	N/A	N/A	1,380
81	6.00	13,860	6,720	41,580	19,490	N/A	N/A	1,360
60	10.80	21,850	11,770	65,540	34,150	N/A	N/A	1,330
219	1.20	5,590	1,770	16,760	5,150	N/A	N/A	1,230
186	1.73	6,840	2,270	20,530	6,580	N/A	N/A	1,220
132	3.10	9,920	3,800	29,760	11,030	N/A	N/A	1,210
92	7.10	15,680	7,000	47,040	20,310	N/A	N/A	1,190
68	12.30	24,660	12,360	73,980	35,850	N/A	N/A	1,180
246	1.35	6,270	1,860	18,800	5,410	N/A	N/A	1,090
209	1.94	7,680	2,390	23,030	6,920	N/A	N/A	1,090
148	3.48	11,090	3,930	33,270	11,390	N/A	N/A	1,080
104	7.90	17,680	7,310	53,030	21,200	N/A	N/A	1,070
76	13.70	27,450	12,840	82,360	37,230	N/A	N/A	1,050
273	1.50	6,950	1,940	20,840	5,630	N/A	N/A	980
231	2.16	8,470	2,480	25,420	7,200	N/A	N/A	980
164	3.85	12,270	4,110	36,820	11,920	N/A	N/A	980
115	8.90	19,500	7,510	58,490	21,770	N/A	N/A	960
84	15.80	30,260	13,390	90,790	38,830	N/A	N/A	950
288	2.69	10,550	2,790	31,660	8,100	N/A	N/A	790
204	4.79	15,230	4,510	45,680	13,070	N/A	N/A	780
142	10.90	23,980	8,110	71,930	23,500	N/A	N/A	780
104	19.50	37,270	14,280	111,810	41,420	N/A	N/A	770
345	3.21	12,620	3,060	37,870	8,870	N/A	N/A	660
244	5.73	18,190	4,940	54,560	14,320	N/A	N/A	660
170	13.00	28,630	8,740	85,880	25,330	N/A	N/A	650
124	23.30	44,260	15,080	132,780	43,740	N/A	N/A	650
198	15.10	33,300	9,420	99,890	27,310	N/A	N/A	560
144	27.10	51,330	16,310	153,990	47,290	N/A	N/A	560
226	17.20	37,900	9,740	113,710	28,230	N/A	N/A	490
164	30.80	58,300	17,000	174,910	49,300	N/A	N/A	490

Refer to the Engineering Data section for load and speed limitations.

4-POINT CONTACT, X-TYPE

Thin Section Ball Bearings

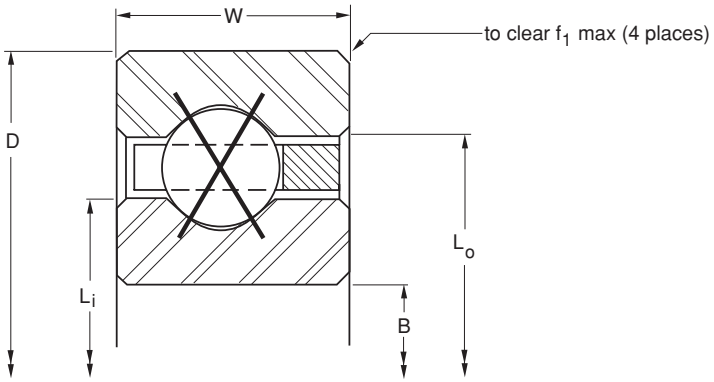


Series:	KAA	KA	KB	KC	KD	KF	KG
Cross Section Size:	3/16"	1/4"	5/16"	3/8"	1/2"	3/4"	1"

PART NUMBER*	NOMINAL DIMENSIONS IN INCHES						
	B Bore	D Outside Diameter	W Width	Land Diameter L_i -Inner Ring	Land Diameter L_o -Outer Ring	f_1 Housing Fillet	Ball Diameter
KAA10XL0*RBC	1.0000	1.3750	0.1875	1.141	1.234	0.015	3/32
KAA15XL0*RBC	1.5000	1.8750	0.1875	1.641	1.734	0.015	3/32
KA020XP0*RBC	2.0000	2.5000	0.2500	2.188	2.313	0.025	1/8
KB020XP0*RBC	2.0000	2.6250	0.3125	2.234	2.391	0.032	5/32
KA025XP0*RBC	2.5000	3.0000	0.2500	2.688	2.813	0.025	1/8
KB025XP0*RBC	2.5000	3.1250	0.3125	2.734	2.891	0.032	5/32
KA030XP0*RBC	3.0000	3.5000	0.2500	3.188	3.313	0.025	1/8
KB030XP0*RBC	3.0000	3.6250	0.3125	3.234	3.391	0.032	5/32
KA035XP0*RBC	3.5000	4.0000	0.2500	3.688	3.813	0.025	1/8
KB035XP0*RBC	3.5000	4.1250	0.3125	3.734	3.891	0.032	5/32
KA040XP0*RBC	4.0000	4.5000	0.2500	4.188	4.313	0.025	1/8
KB040XP0*RBC	4.0000	4.6250	0.3125	4.234	4.391	0.032	5/32
KC040XP0*RBC	4.0000	4.7500	0.3750	4.281	4.469	0.040	3/16
KD040XP0*RBC	4.0000	5.0000	0.5000	4.375	4.625	0.060	1/4
KF040XP0*RBC	4.0000	5.5000	0.7500	4.563	4.938	0.080	3/8
KG040XP0*RBC	4.0000	6.0000	1.0000	4.750	5.250	0.080	1/2
KA042XP0*RBC	4.2500	4.7500	0.2500	4.438	4.563	0.025	1/8
KB042XP0*RBC	4.2500	4.8750	0.3125	4.484	4.641	0.032	5/32
KC042XP0*RBC	4.2500	5.0000	0.3750	4.531	4.719	0.040	3/16
KD042XP0*RBC	4.2500	5.2500	0.5000	4.625	4.875	0.060	1/4
KF042XP0*RBC	4.2500	5.7500	0.7500	4.813	5.188	0.080	3/8
KG042XP0*RBC	4.2500	6.2500	1.0000	5.000	5.500	0.080	1/2
KA045XP0*RBC	4.5000	5.0000	0.2500	4.688	4.813	0.025	1/8
KB045XP0*RBC	4.5000	5.1250	0.3125	4.734	4.891	0.032	5/32
KC045XP0*RBC	4.5000	5.2500	0.3750	4.781	4.969	0.040	3/16
KD045XP0*RBC	4.5000	5.5000	0.5000	4.875	5.125	0.060	1/4
KF045XP0*RBC	4.5000	6.0000	0.7500	5.063	5.438	0.080	3/8
KG045XP0*RBC	4.5000	6.5000	1.0000	5.250	5.750	0.080	1/2
KA047XP0*RBC	4.7500	5.2500	0.2500	4.938	5.063	0.025	1/8
KB047XP0*RBC	4.7500	5.3750	0.3125	4.984	5.141	0.032	5/32
KC047XP0*RBC	4.7500	5.5000	0.3750	5.031	5.219	0.040	3/16
KD047XP0*RBC	4.7500	5.7500	0.5000	5.125	5.375	0.060	1/4
KF047XP0*RBC	4.7500	6.2500	0.7500	5.313	5.688	0.080	3/8
KG047XP0*RBC	4.7500	6.7500	1.0000	5.500	6.000	0.080	1/2
KA050XP0*RBC	5.0000	5.5000	0.2500	5.188	5.313	0.025	1/8
KB050XP0*RBC	5.0000	5.6250	0.3125	5.234	5.391	0.032	5/32
KC050XP0*RBC	5.0000	5.7500	0.3750	5.281	5.469	0.040	3/16
KD050XP0*RBC	5.0000	6.0000	0.5000	5.375	5.625	0.060	1/4
KF050XP0*RBC	5.0000	6.5000	0.7500	5.563	5.938	0.080	3/8
KG050XP0*RBC	5.0000	7.0000	1.0000	5.750	6.250	0.080	1/2
KA055XP0*RBC	5.5000	6.0000	0.2500	5.688	5.813	0.025	1/8
KB055XP0*RBC	5.5000	6.1250	0.3125	5.734	5.891	0.032	5/32
KC055XP0*RBC	5.5000	6.2500	0.3750	5.781	5.969	0.040	3/16
KD055XP0*RBC	5.5000	6.5000	0.5000	5.875	6.125	0.060	1/4
KF055XP0*RBC	5.5000	7.0000	0.7500	6.063	6.438	0.080	3/8
KG055XP0*RBC	5.5000	7.5000	1.0000	6.250	6.750	0.080	1/2

*The alphanumeric identification system is used under license.

- Large Diameter
- Light Weight
- Small Cross Section
- Snap-Over Ball Separator

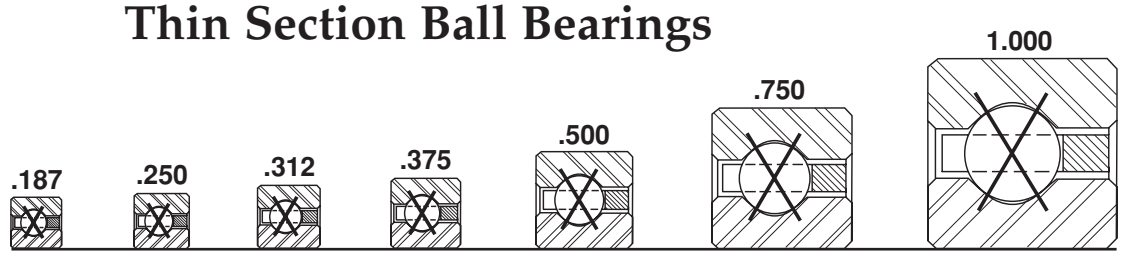


Ball Quantity	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
21	0.03	210	270	630	680	150	160	10,110
29	0.04	280	310	840	770	280	260	7,110
27	0.10	460	490	1,390	1,230	630	550	5,330
23	0.16	630	700	1,880	1,740	870	800	5,190
33	0.13	560	530	1,680	1,320	930	730	4,360
28	0.20	750	750	2,260	1,880	1,270	1,060	4,270
39	0.15	660	560	1,970	1,410	1,280	920	3,690
33	0.24	880	800	2,630	1,990	1,750	1,320	3,620
45	0.18	750	590	2,260	1,480	1,700	1,110	3,200
38	0.27	1,000	840	3,010	2,100	2,300	1,600	3,150
51	0.19	850	620	2,560	1,550	2,170	1,320	2,820
43	0.30	1,130	880	3,390	2,210	2,930	1,900	2,780
35	0.45	1,340	1,120	4,010	2,810	3,510	2,460	2,740
27	0.78	2,120	1,960	6,370	4,890	5,730	4,400	2,670
19	1.90	3,450	3,530	10,350	8,830	9,830	8,390	2,530
15	3.60	5,610	6,060	16,830	15,150	16,830	15,150	2,400
54	0.20	900	640	2,700	1,590	2,430	1,430	2,670
45	0.31	1,180	890	3,540	2,230	3,230	2,040	2,630
37	0.47	1,410	1,150	4,230	2,870	3,910	2,650	2,590
28	0.83	2,190	1,970	6,580	4,920	6,250	4,670	2,530
20	2.00	3,610	3,600	10,840	8,990	10,840	8,990	2,400
15	3.80	5,610	6,060	16,830	15,150	17,670	15,910	2,290
57	0.22	950	640	2,840	1,610	2,700	1,530	2,530
48	0.33	1,260	920	3,770	2,300	3,630	2,220	2,490
39	0.48	1,480	1,170	4,440	2,920	4,330	2,850	2,460
30	0.88	2,340	2,030	7,030	5,080	7,030	5,080	2,400
21	2.10	3,780	3,670	11,340	9,180	11,900	9,640	2,290
16	4.00	5,980	6,330	17,950	15,820	19,750	17,400	2,180
60	0.23	1,000	660	2,990	1,650	2,990	1,650	2,400
50	0.34	1,310	930	3,920	2,310	3,970	2,340	2,370
41	0.50	1,550	1,190	4,660	2,970	4,780	3,040	2,340
31	0.94	2,420	2,050	7,250	5,130	7,610	5,380	2,290
22	2.20	3,950	3,750	11,850	9,380	13,030	10,320	2,180
17	4.10	6,360	6,590	19,080	16,470	21,940	18,940	2,090
63	0.24	1,050	670	3,140	1,680	3,290	1,760	2,290
53	0.38	1,380	950	4,150	2,380	4,410	2,520	2,260
43	0.58	1,630	1,220	4,880	3,040	5,250	3,270	2,230
33	1.00	2,570	2,110	7,700	5,270	8,470	5,800	2,180
23	2.30	4,110	3,810	12,340	9,520	14,190	10,950	2,090
18	4.30	6,730	6,840	20,200	17,110	24,240	20,530	2,000
69	0.25	1,140	690	3,430	1,720	3,940	1,970	2,090
58	0.41	1,510	990	4,530	2,460	5,260	2,860	2,060
47	0.59	1,770	1,250	5,310	3,120	6,240	3,660	2,040
36	1.06	2,790	2,180	8,370	5,450	10,040	6,540	2,000
25	2.50	4,440	3,930	13,320	9,820	16,660	12,270	1,920
19	4.70	7,070	6,980	21,210	17,460	27,580	22,700	1,850

Refer to the Engineering Data section for load and speed limitations.

4-POINT CONTACT X-TYPE

Thin Section Ball Bearings

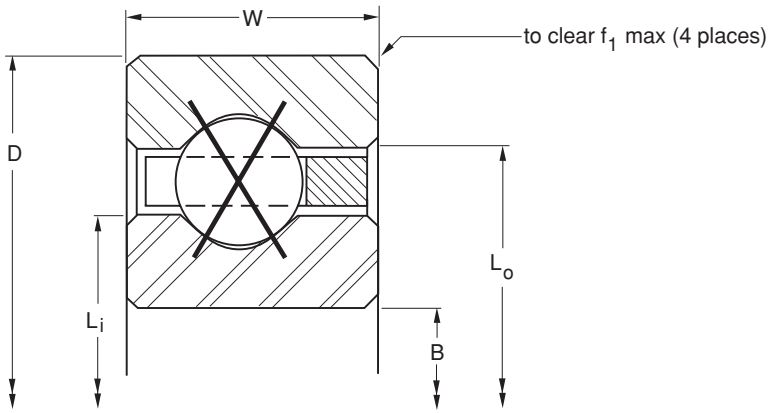


Series:	KAA	KA	KB	KC	KD	KF	KG
Cross Section Size:	3/16"	1/4"	5/16"	3/8"	1/2"	3/4"	1"

PART NUMBER*	NOMINAL DIMENSIONS IN INCHES						
	B Bore	D Outside Diameter	W Width	Land Diameter L_i -Inner Ring	Land Diameter L_o -Outer Ring	f_1 Housing Fillet	Ball Diameter
KA060XP0*RBC	6.0000	6.5000	0.2500	6.188	6.313	0.025	1/8
KB060XP0*RBC	6.0000	6.6250	0.3125	6.234	6.391	0.032	5/32
KC060XP0*RBC	6.0000	6.7500	0.3750	6.281	6.469	0.040	3/16
KD060XP0*RBC	6.0000	7.0000	0.5000	6.375	6.625	0.060	1/4
KF060XP0*RBC	6.0000	7.5000	0.7500	6.563	6.938	0.080	3/8
KG060XP0*RBC	6.0000	8.0000	1.0000	6.750	7.250	0.080	1/2
KA065XP0*RBC	6.5000	7.0000	0.2500	6.688	6.813	0.025	1/8
KB065XP0*RBC	6.5000	7.1250	0.3125	6.734	6.891	0.032	5/32
KC065XP0*RBC	6.5000	7.2500	0.3750	6.781	6.969	0.040	3/16
KD065XP0*RBC	6.5000	7.5000	0.5000	6.875	7.125	0.060	1/4
KF065XP0*RBC	6.5000	8.0000	0.7500	7.063	7.438	0.080	3/8
KG065XP0*RBC	6.5000	8.5000	1.0000	7.250	7.750	0.080	1/2
KA070XP0*RBC	7.0000	7.5000	0.2500	7.188	7.313	0.025	1/8
KB070XP0*RBC	7.0000	7.6250	0.3125	7.234	7.391	0.032	5/32
KC070XP0*RBC	7.0000	7.7500	0.3750	7.281	7.469	0.040	3/16
KD070XP0*RBC	7.0000	8.0000	0.5000	7.375	7.625	0.060	1/4
KF070XP0*RBC	7.0000	8.5000	0.7500	7.563	7.938	0.080	3/8
KG070XP0*RBC	7.0000	9.0000	1.0000	7.750	8.250	0.080	1/2
KA075XP0*RBC	7.5000	8.0000	0.2500	7.688	7.813	0.025	1/8
KB075XP0*RBC	7.5000	8.1250	0.3125	7.734	7.891	0.032	5/32
KC075XP0*RBC	7.5000	8.2500	0.3750	7.781	7.969	0.040	3/16
KD075XP0*RBC	7.5000	8.5000	0.5000	7.875	8.125	0.060	1/4
KF075XP0*RBC	7.5000	9.0000	0.7500	8.063	8.438	0.080	3/8
KG075XP0*RBC	7.5000	9.5000	1.0000	8.250	8.750	0.080	1/2
KA080XP0*RBC	8.0000	8.5000	0.2500	8.188	8.313	0.025	1/8
KB080XP0*RBC	8.0000	8.6250	0.3125	8.234	8.391	0.032	5/32
KC080XP0*RBC	8.0000	8.7500	0.3750	8.281	8.469	0.040	3/16
KD080XP0*RBC	8.0000	9.0000	0.5000	8.375	8.625	0.060	1/4
KF080XP0*RBC	8.0000	9.5000	0.7500	8.563	8.938	0.080	3/8
KG080XP0*RBC	8.0000	10.0000	1.0000	8.750	9.250	0.080	1/2
KA090XP0*RBC	9.0000	9.5000	0.2500	9.188	9.313	0.025	1/8
KB090XP0*RBC	9.0000	9.6250	0.3125	9.234	9.391	0.032	5/32
KC090XP0*RBC	9.0000	9.7500	0.3750	9.281	9.469	0.040	3/16
KD090XP0*RBC	9.0000	10.0000	0.5000	9.375	9.625	0.060	1/4
KF090XP0*RBC	9.0000	10.5000	0.7500	9.563	9.938	0.080	3/8
KG090XP0*RBC	9.0000	11.0000	1.0000	9.750	10.250	0.080	1/2
KA100XP0*RBC	10.0000	10.5000	0.2500	10.188	10.313	0.025	1/8
KB100XP0*RBC	10.0000	10.6250	0.3125	10.234	10.391	0.032	5/32
KC100XP0*RBC	10.0000	10.7500	0.3750	10.281	10.469	0.040	3/16
KD100XP0*RBC	10.0000	11.0000	0.5000	10.375	10.625	0.060	1/4
KF100XP0*RBC	10.0000	11.5000	0.7500	10.563	10.938	0.080	3/8
KG100XP0*RBC	10.0000	12.0000	1.0000	10.750	11.250	0.080	1/2

*The alphanumeric identification system is used under license.

- Large Diameter
- Light Weight
- Small Cross Section
- Snap-Over Ball Separator

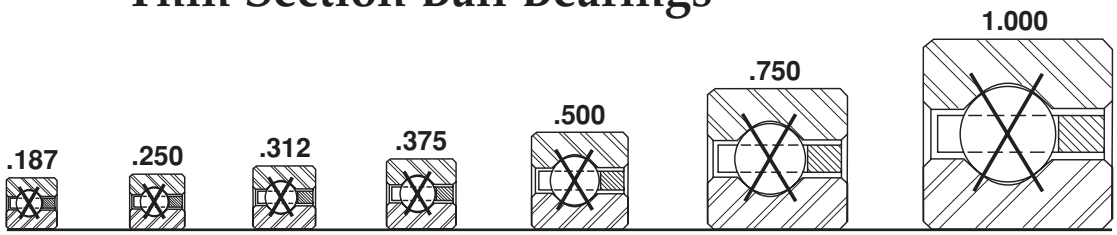


Ball Quantity	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
75	0.28	1,240	710	3,720	1,780	4,650	2,220	1,920
63	0.44	1,640	1,020	4,910	2,540	6,190	3,210	1,900
51	0.63	1,920	1,290	5,750	3,220	7,330	4,100	1,880
39	1.16	3,010	2,240	9,030	5,610	11,730	7,290	1,850
27	2.70	4,780	4,060	14,340	10,150	19,350	13,700	1,780
21	5.10	7,770	7,320	23,300	18,290	32,620	25,610	1,710
81	0.30	1,340	730	4,010	1,840	5,410	2,480	1,780
68	0.47	1,760	1,040	5,280	2,590	7,200	3,530	1,760
55	0.68	2,060	1,320	6,180	3,300	8,500	4,540	1,750
42	1.22	3,230	2,300	9,680	5,740	13,560	8,040	1,710
29	2.90	5,110	4,150	15,320	10,380	22,210	15,050	1,660
22	5.40	8,100	7,410	24,290	18,520	36,430	27,770	1,600
87	0.31	1,430	740	4,300	1,850	6,230	2,680	1,660
73	0.50	1,890	1,070	5,660	2,660	8,280	3,900	1,640
59	0.73	2,210	1,370	6,630	3,420	9,770	5,040	1,630
45	1.31	3,450	2,350	10,350	5,880	15,520	8,810	1,600
31	3.20	5,440	4,260	16,310	10,640	25,280	16,490	1,550
24	5.80	8,800	7,730	26,390	19,330	42,230	30,930	1,500
93	0.34	1,530	760	4,590	1,890	7,110	2,930	1,550
78	0.53	2,010	1,090	6,040	2,730	9,440	4,270	1,540
63	0.78	2,350	1,390	7,060	3,480	11,110	5,490	1,520
48	1.41	3,670	2,430	11,020	6,060	17,640	9,700	1,500
33	3.40	5,770	4,370	17,320	10,930	28,580	18,040	1,450
25	6.10	9,120	7,790	27,350	19,460	46,500	33,090	1,410
99	0.38	1,630	790	4,880	1,970	8,060	3,250	1,450
83	0.57	2,140	1,120	6,420	2,790	10,670	4,640	1,440
67	0.84	2,500	1,420	7,490	3,560	12,550	5,970	1,430
51	1.53	3,890	2,470	11,680	6,170	19,860	10,490	1,410
35	3.50	6,110	4,470	18,320	11,190	32,060	19,580	1,370
27	6.50	9,820	8,090	29,470	20,230	53,040	36,420	1,330
111	0.44	1,820	810	5,460	2,040	10,100	3,770	1,300
93	0.66	2,390	1,150	7,180	2,890	13,360	5,380	1,290
75	0.94	2,790	1,480	8,370	3,690	15,690	6,920	1,280
57	1.72	4,330	2,560	13,000	6,410	24,710	12,170	1,260
39	3.90	6,770	4,650	20,310	11,630	39,610	22,680	1,230
30	7.20	10,840	8,410	32,530	21,020	65,070	42,040	1,200
123	0.50	2,010	850	6,040	2,130	12,380	4,370	1,170
103	0.73	2,650	1,210	7,940	3,030	16,370	6,240	1,160
83	1.06	3,080	1,520	9,230	3,790	19,160	7,870	1,160
63	1.88	4,780	2,670	14,330	6,680	30,100	14,030	1,140
43	4.30	7,440	4,840	22,310	12,100	47,960	26,010	1,120
33	7.90	11,870	8,720	35,600	21,790	78,320	47,930	1,090

Refer to the Engineering Data section for load and speed limitations.

4-POINT CONTACT, X-TYPE

Thin Section Ball Bearings

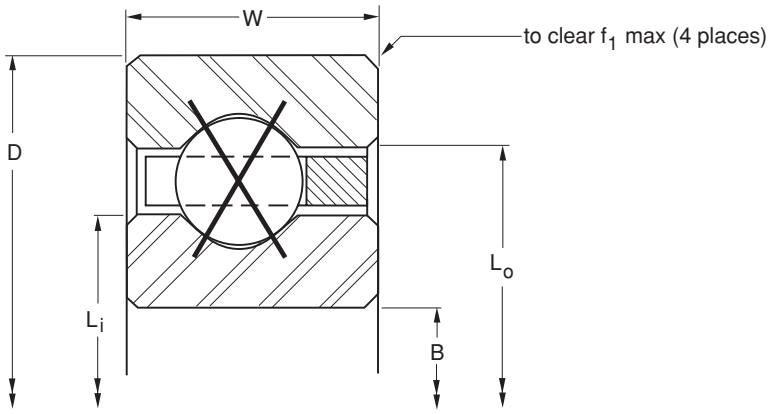


Series:	KAA	KA	KB	KC	KD	KF	KG
Cross Section Size:	3/16"	1/4"	5/16"	3/8"	1/2"	3/4"	1"

PART NUMBER*	NOMINAL DIMENSIONS IN INCHES						
	B Bore	D Outside Diameter	W Width	Land Diameter		f_1 Housing Fillet	Ball Diameter
				L_i -Inner Ring	L_o -Outer Ring		
KA110XP0*RBC	11.0000	11.5000	0.2500	11.188	11.313	0.025	1/8
KB110XP0*RBC	11.0000	11.6250	0.3125	11.234	11.391	0.032	5/32
KC110XP0*RBC	11.0000	11.7500	0.3750	11.281	11.469	0.040	3/16
KD110XP0*RBC	11.0000	12.0000	0.5000	11.375	11.625	0.060	1/4
KF110XP0*RBC	11.0000	12.5000	0.7500	11.563	11.938	0.080	3/8
KG110XP0*RBC	11.0000	13.0000	1.0000	11.750	12.250	0.080	1/2
KA120XP0*RBC	12.0000	12.5000	0.2500	12.188	12.313	0.025	1/8
KB120XP0*RBC	12.0000	12.6250	0.3125	12.234	12.391	0.032	5/32
KC120XP0*RBC	12.0000	12.7500	0.3750	12.281	12.469	0.040	3/16
KD120XP0*RBC	12.0000	13.0000	0.5000	12.375	12.625	0.060	1/4
KF120XP0*RBC	12.0000	13.5000	0.7500	12.563	12.938	0.080	3/8
KG120XP0*RBC	12.0000	14.0000	1.0000	12.750	13.250	0.080	1/2
KB140XP0*RBC	14.0000	14.6250	0.3125	14.234	14.391	0.032	5/32
KC140XP0*RBC	14.0000	14.7500	0.3750	14.281	14.469	0.040	3/16
KD140XP0*RBC	14.0000	15.0000	0.5000	14.375	14.625	0.060	1/4
KF140XP0*RBC	14.0000	15.5000	0.7500	14.563	14.938	0.080	3/8
KG140XP0*RBC	14.0000	16.0000	1.0000	14.750	15.250	0.080	1/2
KB160XP0*RBC	16.0000	16.6250	0.3125	16.234	16.391	0.032	5/32
KC160XP0*RBC	16.0000	16.7500	0.3750	16.281	16.469	0.040	3/16
KD160XP0*RBC	16.0000	17.0000	0.5000	16.375	16.625	0.060	1/4
KF160XP0*RBC	16.0000	17.5000	0.7500	16.563	16.938	0.080	3/8
KG160XP0*RBC	16.0000	18.0000	1.0000	16.750	17.250	0.080	1/2
KB180XP0*RBC	18.0000	18.6250	0.3125	18.234	18.391	0.032	5/32
KC180XP0*RBC	18.0000	18.7500	0.3750	18.281	18.469	0.040	3/16
KD180XP0*RBC	18.0000	19.0000	0.5000	18.375	18.625	0.060	1/4
KF180XP0*RBC	18.0000	19.5000	0.7500	18.563	18.938	0.080	3/8
KG180XP0*RBC	18.0000	20.0000	1.0000	18.750	19.250	0.080	1/2
KB200XP0*RBC	20.0000	20.6250	0.3125	20.234	20.391	0.032	5/32
KC200XP0*RBC	20.0000	20.7500	0.3750	20.281	20.469	0.040	3/16
KD200XP0*RBC	20.0000	21.0000	0.5000	20.375	20.625	0.060	1/4
KF200XP0*RBC	20.0000	21.5000	0.7500	20.563	20.938	0.080	3/8
KG200XP0*RBC	20.0000	22.0000	1.0000	20.750	21.250	0.080	1/2
KC250XP0*RBC	25.0000	25.7500	0.3750	25.281	25.469	0.040	3/16
KD250XP0*RBC	25.0000	26.0000	0.5000	25.375	25.625	0.060	1/4
KF250XP0*RBC	25.0000	26.5000	0.7500	25.563	25.938	0.080	3/8
KG250XP0*RBC	25.0000	27.0000	1.0000	25.750	26.250	0.080	1/2
KC300XP0*RBC	30.0000	30.7500	0.3750	30.281	30.469	0.040	3/16
KD300XP0*RBC	30.0000	31.0000	0.5000	30.375	30.625	0.060	1/4
KF300XP0*RBC	30.0000	31.5000	0.7500	30.563	30.938	0.080	3/8
KG300XP0*RBC	30.0000	32.0000	1.0000	30.750	31.250	0.080	1/2
KF350XP0*RBC	35.0000	36.5000	0.7500	35.563	35.938	0.080	3/8
KG350XP0*RBC	35.0000	37.0000	1.0000	35.750	36.250	0.080	1/2
KF400XP0*RBC	40.0000	41.5000	0.7500	40.563	40.938	0.080	3/8
KG400XP0*RBC	40.0000	42.0000	1.0000	40.750	41.250	0.080	1/2

*The alphanumeric identification system is used under license.

- Large Diameter
- Light Weight
- Small Cross Section
- Snap-Over Ball Separator

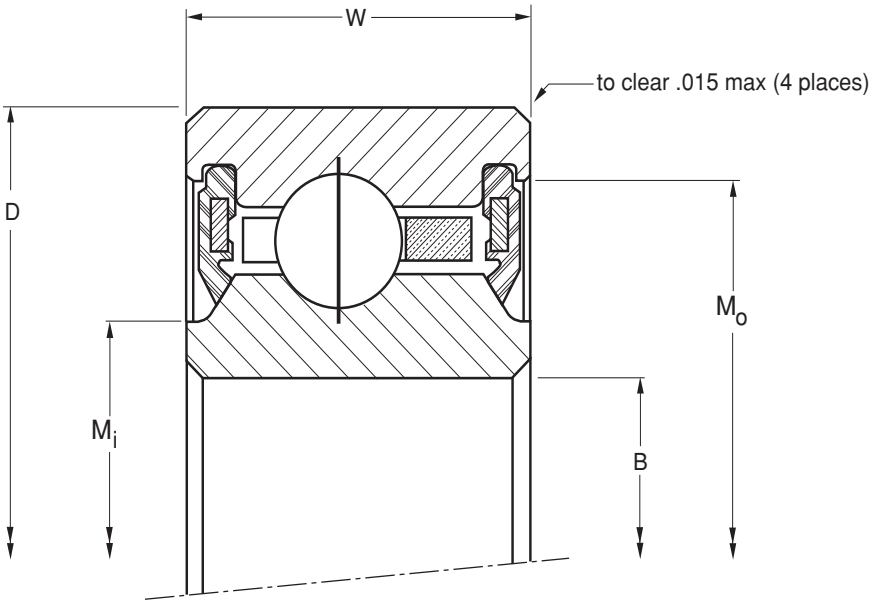


Ball Quantity	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
135	0.52	2,210	880	6,620	2,210	14,900	4,970	1,070
113	0.75	2,890	1,230	8,680	3,080	19,650	6,970	1,060
91	1.16	3,370	1,580	10,110	3,950	23,000	8,990	1,050
69	2.06	5,220	2,730	15,660	6,830	36,010	15,720	1,040
47	4.80	8,100	4,960	24,290	12,410	57,070	29,160	1,020
36	8.60	12,900	9,010	38,690	22,530	92,850	54,080	1,000
147	0.56	2,400	910	7,200	2,280	17,640	5,580	980
123	0.83	3,150	1,270	9,440	3,190	23,240	7,840	970
99	1.25	3,660	1,640	10,980	4,090	27,190	10,130	970
75	2.25	5,670	2,830	17,000	7,080	42,490	17,710	960
51	5.20	8,760	5,120	26,280	12,800	67,020	32,640	940
39	9.30	13,920	9,270	41,750	23,180	108,550	60,270	920
143	1.05	3,650	1,370	10,960	3,430	31,370	9,820	840
115	1.52	4,240	1,730	12,730	4,330	36,590	12,440	830
87	2.73	6,550	2,940	19,640	7,360	56,950	21,330	830
59	6.00	10,100	5,440	30,290	13,600	89,340	40,130	810
45	10.80	15,950	9,720	47,860	24,300	143,580	72,900	800
163	1.20	4,160	1,460	12,480	3,640	40,700	11,880	740
131	1.73	4,820	1,800	14,460	4,490	47,350	14,710	730
99	3.10	7,440	3,140	22,320	7,850	73,650	25,900	730
67	7.10	11,420	5,670	34,260	14,170	114,760	47,480	720
51	12.30	18,010	10,200	54,030	25,510	183,690	86,730	710
183	1.35	4,660	1,530	13,990	3,830	51,230	14,020	660
147	1.94	5,400	1,890	16,200	4,720	59,540	17,350	650
111	3.48	8,320	3,240	24,960	8,110	92,340	29,990	650
75	7.90	12,750	5,880	38,240	14,700	143,420	55,110	640
57	13.70	20,050	10,600	60,140	26,500	228,550	100,690	630
203	1.50	5,170	1,590	15,500	3,980	62,950	16,190	590
163	2.16	5,980	1,970	17,940	4,920	73,110	20,040	590
123	3.85	9,210	3,390	27,620	8,480	113,230	34,780	590
83	8.90	14,070	6,040	42,210	15,100	175,180	62,670	580
63	15.80	22,100	11,050	66,300	27,630	278,460	116,040	570
203	2.69	7,440	2,210	22,310	5,530	113,240	28,080	470
153	4.79	11,420	3,720	34,260	9,300	174,730	47,430	470
103	10.90	17,390	6,540	52,170	16,360	268,690	84,240	470
78	19.50	27,220	11,790	81,650	29,470	424,580	153,250	460
243	3.21	8,890	2,420	26,670	6,060	162,040	36,790	400
183	5.73	13,640	4,080	40,920	10,190	249,630	62,170	390
123	13.00	20,710	7,040	62,140	17,600	382,150	108,250	390
93	23.30	32,320	12,450	96,960	31,130	601,170	192,990	390
143	15.10	24,050	7,580	72,140	18,950	515,830	135,520	340
108	27.10	37,480	13,460	112,450	33,650	809,650	242,280	330
163	17.20	27,340	7,830	82,010	19,570	668,410	159,530	290
123	30.80	42,580	14,030	127,730	35,080	1,047,360	287,670	290

Refer to the Engineering Data section for load and speed limitations.

SEALED RADIAL CONTACT, C-TYPE

Thin Section Ball Bearings



PART NUMBER*	NOMINAL DIMENSIONS IN INCHES						Ball Quantity	
	B Bore	D Outside Diameter	W Width	M_i	M_o	Ball Diameter		
JU040CP0*RBC	4.0000	4.7500	0.500	4.155	4.550	3/16	35	
JU042CP0*RBC	4.2500	5.0000	0.500	4.405	4.800	3/16	37	
JU045CP0*RBC	4.5000	5.2500	0.500	4.655	5.050	3/16	39	
JU047CP0*RBC	4.7500	5.5000	0.500	4.905	5.300	3/16	41	
JU050CP0*RBC	5.0000	5.7500	0.500	5.155	5.550	3/16	43	
JU055CP0*RBC	5.5000	6.2500	0.500	5.655	6.050	3/16	47	
JU060CP0*RBC	6.0000	6.7500	0.500	6.155	6.550	3/16	51	
JU065CP0*RBC	6.5000	7.2500	0.500	6.655	7.050	3/16	55	
JU070CP0*RBC	7.0000	7.7500	0.500	7.155	7.550	3/16	59	
JU075CP0*RBC	7.5000	8.2500	0.500	7.655	8.050	3/16	63	
JU080CP0*RBC	8.0000	8.7500	0.500	8.155	8.550	3/16	67	
JU090CP0*RBC	9.0000	9.7500	0.500	9.155	9.550	3/16	75	
JU100CP0*RBC	10.0000	10.7500	0.500	10.155	10.550	3/16	83	
JU110CP0*RBC	11.0000	11.7500	0.500	11.155	11.550	3/16	91	
JU120CP0*RBC	12.0000	12.7500	0.500	12.155	12.550	3/16	99	

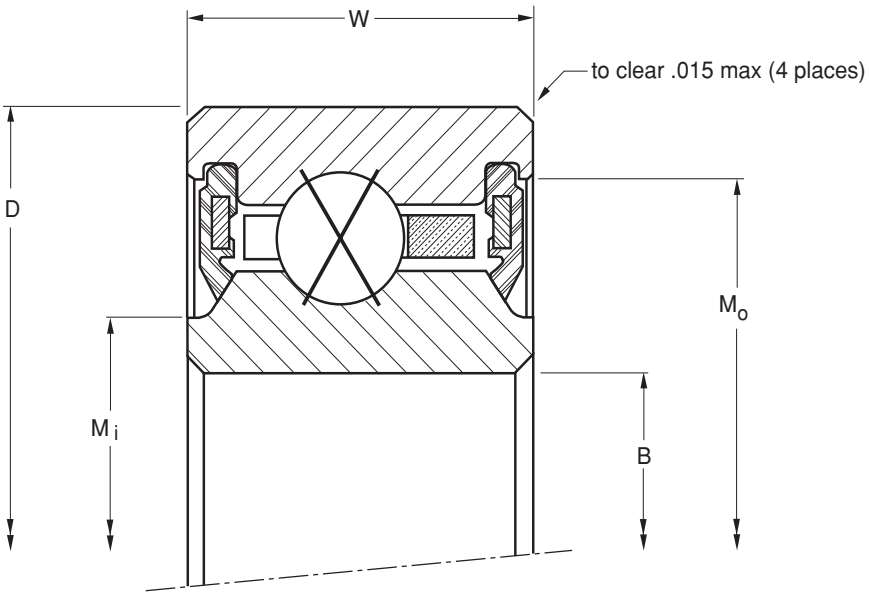
*The alphanumeric identification system is used under license.
JU Series are also available in low-torque design using PTFE seals.

	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
	0.55	1,550	1,290	3,110	3,740	2,720	3,280	3,660
	0.58	1,640	1,320	3,270	3,830	3,030	3,550	3,460
	0.61	1,720	1,350	3,440	3,910	3,360	3,810	3,280
	0.65	1,800	1,370	3,610	3,970	3,700	4,070	3,120
	0.68	1,890	1,390	3,780	4,040	4,060	4,340	2,980
	0.74	2,060	1,440	4,110	4,170	4,830	4,900	2,720
	0.81	2,220	1,490	4,450	4,320	5,670	5,510	2,510
	0.87	2,390	1,530	4,790	4,440	6,580	6,110	2,330
	0.93	2,560	1,570	5,120	4,550	7,550	6,710	2,170
	0.99	2,730	1,600	5,450	4,640	8,590	7,300	2,030
	1.06	2,900	1,650	5,790	4,770	9,700	7,990	1,910
	1.18	3,230	1,730	6,470	5,020	12,120	9,410	1,700
	1.31	3,570	1,780	7,140	5,170	14,810	10,730	1,540
	1.43	3,900	1,820	7,800	5,280	17,750	12,020	1,410
	1.56	4,240	1,890	8,480	5,470	20,980	13,550	1,300

Refer to the Engineering Data section for load and speed limitations.

SEALED RADIAL CONTACT X-TYPE

Thin Section Ball Bearings



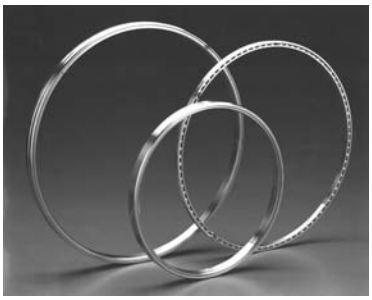
PART NUMBER*	NOMINAL DIMENSIONS IN INCHES						Ball Quantity	
	B Bore	D Outside Diameter	W Width	M_i	M_o	Ball Diameter		
JU040XP0*RBC	4.0000	4.7500	0.500	4.155	4.550	3/16	35	
JU042XP0*RBC	4.2500	5.0000	0.500	4.405	4.800	3/16	37	
JU045XP0*RBC	4.5000	5.2500	0.500	4.655	5.050	3/16	39	
JU047XP0*RBC	4.7500	5.5000	0.500	4.905	5.300	3/16	41	
JU050XP0*RBC	5.0000	5.7500	0.500	5.155	5.550	3/16	43	
JU055XP0*RBC	5.5000	6.2500	0.500	5.655	6.050	3/16	47	
JU060XP0*RBC	6.0000	6.7500	0.500	6.155	6.550	3/16	51	
JU065XP0*RBC	6.5000	7.2500	0.500	6.655	7.050	3/16	55	
JU070XP0*RBC	7.0000	7.7500	0.500	7.155	7.550	3/16	59	
JU075XP0*RBC	7.5000	8.2500	0.500	7.655	8.050	3/16	63	
JU080XP0*RBC	8.0000	8.7500	0.500	8.155	8.550	3/16	67	
JU090XP0*RBC	9.0000	9.7500	0.500	9.155	9.550	3/16	75	
JU100XP0*RBC	10.0000	10.7500	0.500	10.155	10.550	3/16	83	
JU110XP0*RBC	11.0000	11.7500	0.500	11.155	11.550	3/16	91	
JU120XP0*RBC	12.0000	12.7500	0.500	12.155	12.550	3/16	99	

*The alphanumeric identification system is used under license.
JU Series are also available in low-torque design using PTFE seals.

	Approx. Weight (lb)	LOAD RATINGS						Limiting Speed (RPM)
		Radial (lbf)		Thrust (lbf)		Moment (lbf - in)		
		Static	Dynamic	Static	Dynamic	Static	Dynamic	
	0.55	1,340	1,120	4,010	2,810	3,510	2,460	2,280
	0.58	1,410	1,150	4,230	2,870	3,910	2,650	2,160
	0.61	1,480	1,170	4,440	2,920	4,330	2,850	2,050
	0.65	1,550	1,190	4,660	2,970	4,780	3,040	1,950
	0.68	1,630	1,220	4,880	3,040	5,250	3,270	1,860
	0.74	1,770	1,250	5,310	3,120	6,240	3,660	1,700
	0.81	1,920	1,290	5,750	3,220	7,330	4,100	1,570
	0.87	2,060	1,320	6,180	3,300	8,500	4,540	1,460
	0.93	2,210	1,370	6,630	3,420	9,770	5,040	1,360
	0.99	2,350	1,390	7,060	3,480	11,110	5,490	1,270
	1.06	2,500	1,420	7,490	3,560	12,550	5,970	1,190
	1.18	2,790	1,480	8,370	3,690	15,690	6,920	1,070
	1.31	3,080	1,520	9,230	3,790	19,160	7,870	970
	1.43	3,370	1,580	10,110	3,950	23,000	8,990	880
	1.56	3,660	1,640	10,980	4,090	27,190	10,130	810

Refer to the Engineering Data section for load and speed limitations.

THIN SECTION BALL BEARING ENGINEERING DATA



The methods, equations, and technical data presented in this section allow the user to select the correct bearings and estimate their performance for a wide range of applications. For applications with severe or unusual operating conditions, RBC is prepared to provide an in-depth analysis and recommend the most suitable bearing arrangement.

Where standard bearings cannot be used, RBC can meet the application requirements with a special bearing design specifically tailored for optimum performance. Contact your RBC Sales Engineer for special sizes, materials, application requirements, dimensions and tolerances.

Capacity and Fatigue Life of Ball Bearings

The BASIC DYNAMIC RADIAL LOAD RATING, C, or "dynamic capacity", for a ball bearing is that calculated, constant radial load at which 90% of a group of apparently identical bearings with stationary outer rings can statistically endure 10^6 revolutions of the inner ring. ANSI/ABMA Standard 9 with correction factors for race curvatures was used to calculate the catalog ratings.

The DYNAMIC THRUST and DYNAMIC MOMENT LOAD RATINGS are also shown in the product tables. The ratings shown are a guide for the maximum loads under which these bearings should be operated with either pure thrust or pure moment loading. Thrust ratings are 2.5 to 3.0 times the radial ratings depending on the bearing type and cross section. These load ratings are not additive. For combined radial and thrust loads, an equivalent radial load is to be calculated.

The BASIC STATIC LOAD RATING, C_o, or "static capacity", is that uniformly distributed load, which produces a maximum theoretical contact stress of 609,000 psi. At this contact stress permanent deformation of ball and raceway occurs. This deformation is approximately .0001% of the ball diameter.

The RATING LIFE, L_{10}, is a statistical measure of the life which 90% of a large group of apparently identical ball bearings will achieve or exceed. For a single bearing, L_{10} also refers to the life associated with 90% reliability. Median Life, L_{50}, is the life which 50% of the group of ball bearings will achieve or exceed. Median life is approximately five times the rating life.

The relationship between rating life, load rating, and load is:

$L_{10} = (C/P)^3$ with L_{10} = rating life (10^6 rev)
C = basic dynamic radial load rating (lbf)
P = equivalent radial load (lbf)

To obtain the rating life in hours, use:

$L_{10\ hrs} = 16667/n * (C/P)^3$ with n = speed (rpm)

The Equivalent Radial Load is defined as:

$P = XF_r + YF_a$ with F_r = radial load (lbf)
F_a = axial load (lbf)
X - see below
Y - see below

Radial Contact Bearing Calculations

For radial contact bearings calculate P with X = 1 and Y = 0. Then recalculate P with X = 0.56 and Y = (see chart below). Use the larger value of P to determine L_{10} life.

$\frac{F_a}{nd^2}$	Y
25	2.30
50	1.99
100	1.71
150	1.55
200	1.45
300	1.31
500	1.15
750	1.04
1000	1.00

n = number of balls
d = diameter of balls

Angular or 4-Point Contact Bearing Calculations

For angular contact and 4-point contact bearings calculate P with X = 1.0 and Y = 0. Then recalculate P with X = 0.39 and Y = 0.76. Use the larger value of P to determine L_{10} life.

The equations are valid in the range of approximately 100 hrs to 100,000 hrs of life. Extreme loads or speeds may result in a shorter life; while in less demanding applications, metal fatigue may never affect bearing service life.

Capacity and fatigue life information is based on ANSI/ABMA Standard 9-1990 published by:
The American Bearing Manufacturers Association, Inc., 1200 19th Street, NW, Suite 300, Washington, DC 20036-2401

Adjustment Factors for Rating Life

If a bearing design and operation deviates significantly from normal, it may be necessary to use additional factors to estimate the fatigue life L_n.

$$L_n = a_1 * a_2 * a_3 * L_{10\,hrs}$$

with a_1 = reliability factor
a_2 = material & processing factor
a_3 = application factor

Reliability Factor a_1

Reliability is the percentage of a group of apparently identical ball bearings that is expected to attain or exceed a specified life. For an individual bearing it is the probability that the bearing will attain or exceed a specified life. Typical bearing fatigue life is calculated for 90% reliability. The life adjustment factors for other reliability numbers are shown below.

Reliability %	L_n	Reliability Factor a_1
90	L_{10}	1.00
95	L_5	.62
96	L_4	.53
97	L_3	.44
98	L_2	.33
99	L_1	.21

Material Factor a_2

For standard bearings the material factor a_2 is equal to 1.00. Factor a_2 is determined by material processing, forming methods, heat treatment, and other manufacturing methods. Some commonly used material factors are listed below:

Material, Condition	a_2 max
52100, Air melt	1.00
52100, Vacuum degassed	1.50
52100, Air melt & TDC Plate	2.00
52100, Vacuum melt, (CEVM)	3.00
440C, Air melt	1.00
440C, Vacuum melt (CEVM)	3.00
M50, Vacuum melt (CEVM)	5.00
M50, Vacuum re-melt (VIM-VAR)	8.00

Application Factor a_3

The application factor a_3 is equal to 1.0 for most applications. Unusual or extreme conditions in certain applications such as low speed, shock loading, vibration, and extreme temperature may lower the application factor to 0.50. Contact your RBC Sales Engineer for help in determining this factor for your special applications.

Load and Speed Limitations

The load ratings shown in the product tables are not additive. For combined simultaneous loading, an equivalent radial or thrust load must be considered. In general, C-Type bearings are designed for radial loading applications; moderate thrust and/or moment loading may be applied in combination with radial loading. For thrust loading applications use the A-Type bearing; any radial loading should only be applied in combination with thrust loading. X-Type bearings are primarily for reversing thrust and moment loading, pure radial loading should not be applied.

The limiting speeds shown in the product tables are based on standard lubrication. The unsealed bearing speeds are calculated assuming the bearings are lubricated with MIL-PRF-3150. Limiting speeds for sealed bearings are calculated assuming the bearings are lubricated with MIL-PRF-23827 grease. If bearings are lubricated with alternate oils or greases, new limiting speeds must be calculated, see page 30.

Operating Conditions

Lubrication

Lubricants serve a number of very important purposes in ball bearings, including:

- protecting bearing surfaces from corrosion
- reducing rolling and sliding friction
- preventing metal-to-metal contact between balls and raceway
- providing a barrier against external contaminants (grease)
- removing heat (oil)

Lack of lubrication or inadequate lubrication is the most common cause of bearing failure.

Standard RBC Thin Section Ball Bearings are lubricated with either oil or grease. The unsealed bearings, the K series, are thoroughly coated in MIL-PRF-3150 oil and drained of excess. Sealed bearings are lubricated with MIL-PRF-23827 grease. The external surfaces of sealed bearings are lightly coated with the same grease for corrosion resistance. Additional lubricants are also available. Your RBC Sales Engineer can help select the appropriate lubricant for special applications.

Temperature

Standard RBC Thin Section Ball Bearings can operate at temperatures from -65°F to 250°F. Temperatures up to 350°F can be reached if the bearings are temperature stabilized. By the use of special materials RBC can provide bearings for operation to 700°F. Contact your RBC Sales Engineer for recommendations on bearings operating above 250°F.

Limiting Speed

The limiting speed of a bearing is dependent upon a number of different factors including bearing size, bearing type, ball separator design, lubrication and loading. The limiting speeds for the bearings shown in this catalog are determined using the following:

$$n = \frac{1000 * k}{E} \quad \text{with} \quad n = \text{Speed (RPM)}$$

$$E = \frac{D + B}{2} \text{ (Bearing Pitch Diameter)}$$

k = constant, see table below

Bearing Type	Load Condition	k Value	
		Grease	Oil
C or A	Radial or Thrust	16	20
X	Thrust	10	12
X	Radial,Combined Radial & Thrust, or Moment	3	4

The *k* values shown give the maximum speeds at which a typical thin section ball bearing can operate. It is recommended that operating speeds of large diameter bearings in a given series be reduced up to 40% of the calculated rating to avoid high bearing temperatures. Speed ratings can also be impacted by load conditions, lubrication, alignment and ambient temperature. All of these factors must be considered when designing thin section ball bearings into your application.

Duplex Pairs and Axial Preloading

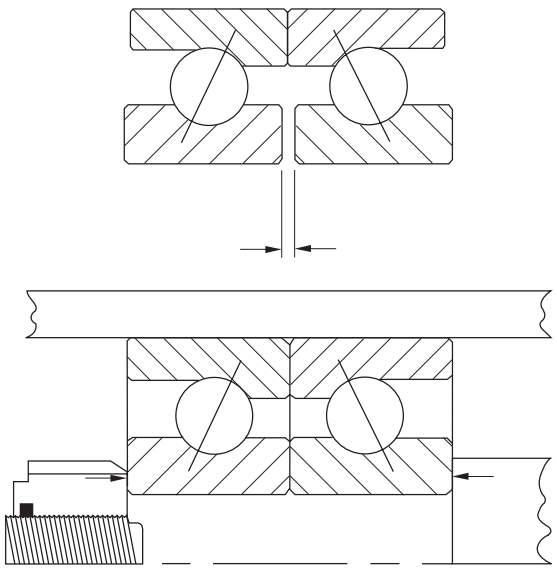
Duplex Pairs

Duplex bearings are a pair of angular contact RBC Thin Section Ball Bearings specially ground for use as a matched set. A duplexed pair can be used to provide accurate shaft location, to increase capacity or to increase stiffness of the bearing assembly. A duplex pair of RBC Thin Section Ball Bearings is ground so that when mounted using recommended fits, there will be no internal clearance in the bearings. There are three basic mounting methods to accommodate different loading requirements:

- **Back-to-Back (DB), B-Type**
- **Face-to-Face (DF), F-Type**
- **Tandem (DT), T-Type**

Back-to-Back, DB

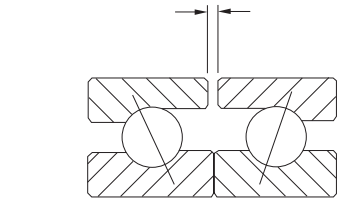
B-Type

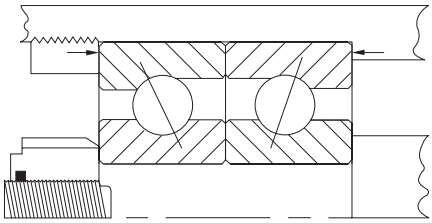


- **Heavy radial loads**
- **Combined thrust & radial loads**
- **Reversing thrust load**
- **Excellent rigidity**
- **Moment loads**

Face-to-Face, DF

F-Type

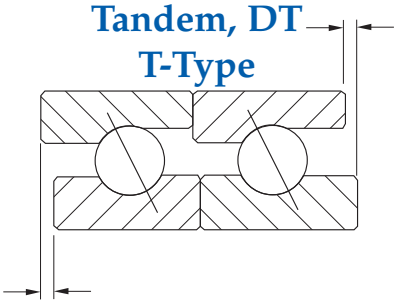


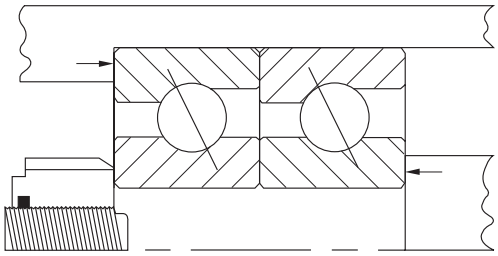


- Heavy radial loads
- Combined thrust & radial loads
- Reversing thrust load
- Moment loads

Tandem, DT

T-Type





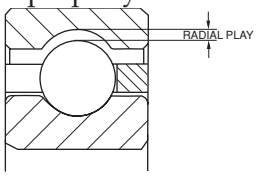
- High one-direction thrust loads
- Minimum axial shaft deflection
- Heavy radial loads

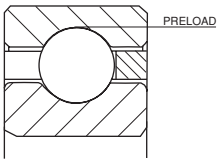
Axial Preloading

Standard duplex bearings are ground so that there will be a light axial preload induced on the bearing at nominal conditions. In some applications increased bearing stiffness may be required. In these cases the duplex grinding can be done such that a heavier axial load is induced in the mounted bearing. This load can be increased or decreased to meet the requirements of a particular application. Consult your RBC Sales Engineer for special requirements.

Radial Play

Radial play (diametral clearance) is the distance the inner ring can be moved radially from one extreme position to the other. Standard RBC Thin Section Ball Bearings are manufactured with enough radial play that some clearance remains after the bearing is properly installed.





When there is negative radial play (diametral preload) there is interference rather than clearance between the balls and the races. As the interference increases, the friction, stiffness and torque also increase. RBC Thin Section Ball Bearings can be manufactured with customer specified diametral preload or clearance. Consult your RBC Sales Engineer for design assistance.

Radial and Axial Runout

Radial runout of RBC Thin Section Ball Bearings is a measurement of the thickness variation of the bearing rings. The outer ring is measured from the ball path to the outer diameter of the ring, the inner ring is measured from the ball path to the bore. Radial runout is defined as the wall thickness variation of the rotating ring.

Axial runout is measured from the ball path to the face of the bearing rings. The variation in thickness measured is the axial runout.

Tolerances

Precision Grades

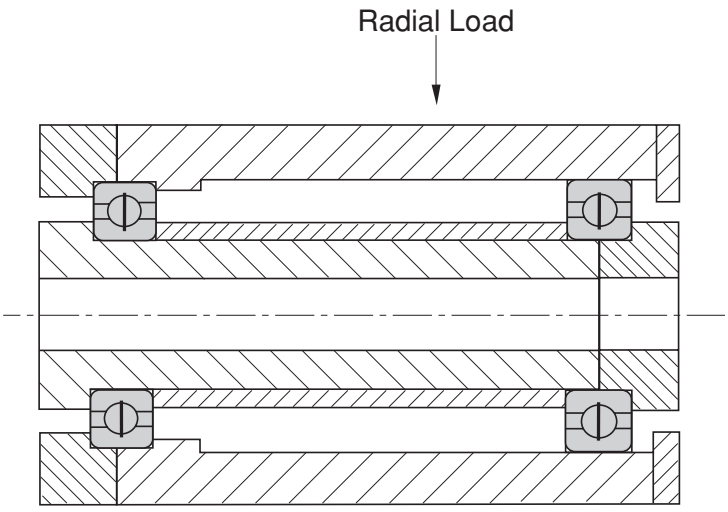
RBC Thin Section Ball Bearings are available in four precision grades. RBC Precision classes 0, 3, 4 and 6 correspond to ABMA ABEC grades 1F, 3F, 5F and 7F respectively. The tolerances for the bearing bores, outer diameters, radial runouts, axial runouts and radial plays are shown in the Tolerance Tables on pages 34 thru 36.

Shaft and Housing Fits

Proper shaft and housing fits are critical to the successful operation of a thin section ball bearing. The internal clearance of the bearing will be reduced proportionally by an interference fit. In addition, the roundness of the shaft and housing will directly affect the roundness of the inner and outer ring raceways. For most applications the inner ring is rotating and the load is stationary with respect to the outer ring. In this circumstance a light press fit onto the shaft is recommended. The recommended shaft and housing fits are shown in the Tolerance Tables on pages 34 thru 36.

Mounting Arrangements

When selecting a mounting arrangement for RBC Thin Section Ball Bearings, you must first consider the loading condition. A duplex pair of angular contact bearings may be used for combined loading, moment loading, or heavy thrust loading. Combination A and C-Type, A and X-Type, or C and X-Type bearings are common mounting arrangements. Two X-Type bearings should never be mounted on the same shaft. There may be many different bearing arrangements for carrying the same load, some typical mounting arrangements are shown below.

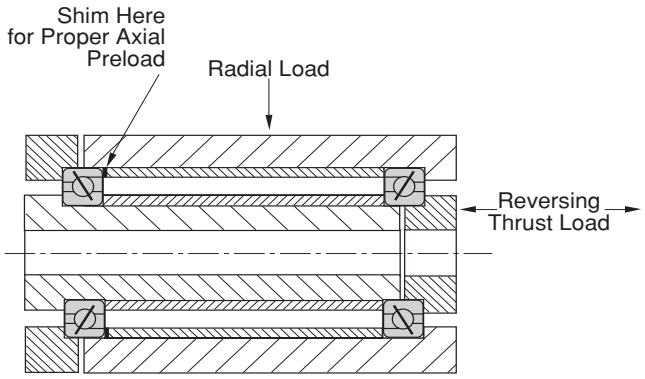


Heavy Radial Loads

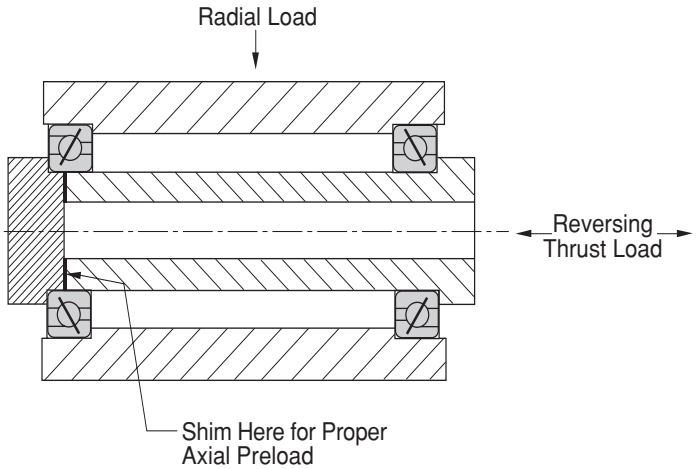
The C-Type bearing is designed primarily for heavy radial loads. Two bearings can be installed on the same shaft as shown. By axially fixing one bearing and allowing the other to float, this configuration allows differential expansion between the housing and shaft, such as caused by temperature difference, without adding axial stress to the bearings. Although the C-Type bearing is designed for radial loads, they can withstand moderate thrust, moment and reversing loads.

Reversing Loads

The duplex pair of A-Type bearings offers several configurations. For reversing loads, either back-to-back, B-Type, or face-to-face, F-Type, should be used. The F-Type mounting method demonstrates reversing thrust load. Combined radial and thrust loads are shown on the B-Type configuration. Both of these methods can be used for heavy radial loads, combined thrust and radial loads, or moment loads.



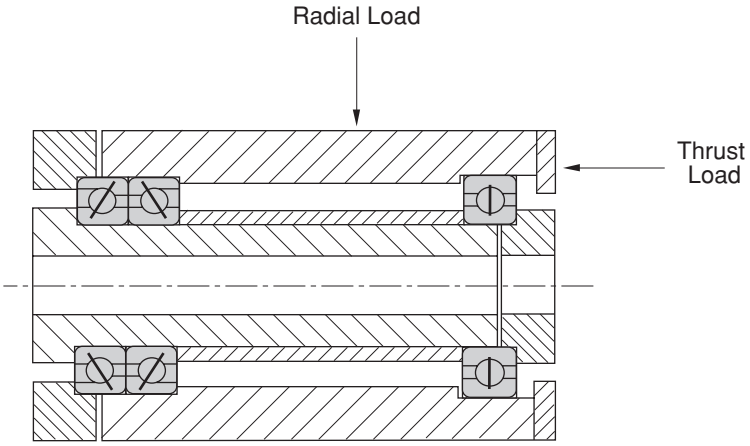
F-Type Configuration

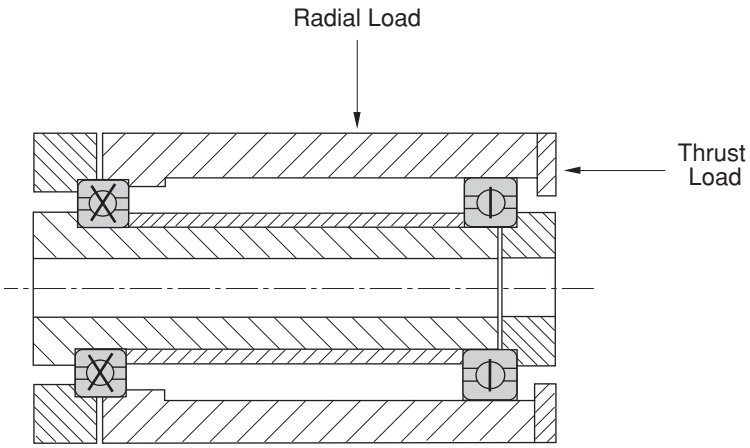


B-Type Configuration

Heavy Combined Loading

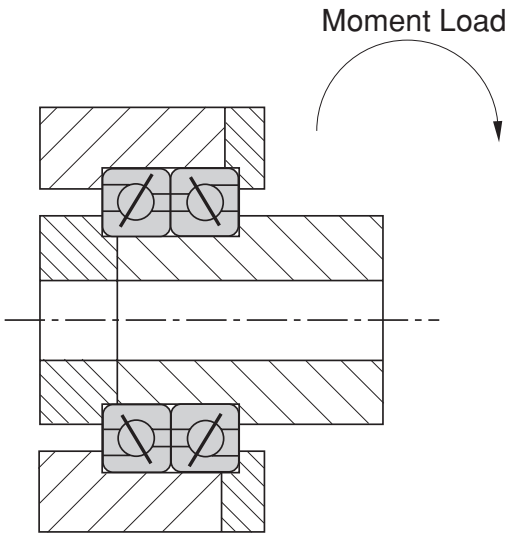
For heavy combined loading other special mounting arrangements may be employed. As shown in the top drawing, a duplex pair of A-Type bearings can be used with a floating C-Type bearing. In this configuration the A-Type bearings will carry the thrust load and part of the radial load while the C-Type carries only radial load. An X-Type bearing can replace the duplex pair of A-Type bearings to carry lower thrust loads as shown in the second drawing.



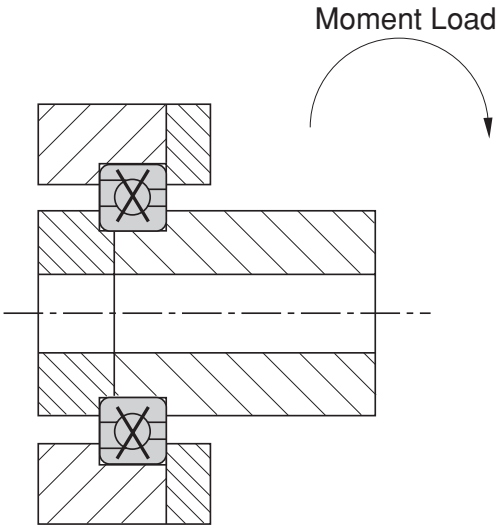


Heavy Combined Loading or Moment Loading

Alternate mountings for heavy combined loading or moment loading are shown below. A duplex pair of B-Type bearings resists high thrust, radial and moment loads. An X-Type bearing may replace the duplex pair in less heavily loaded applications for weight, space and cost savings.



B-Type Configuration



Single Bearing X-Type Configuration

RBC THIN SECTION BALL BEARINGS
TOLERANCE TABLES & RECOMMENDED FITS

Precision Tolerances

The RBC Thin Section Bearings shown in this catalog are manufactured to ABEC 1F precision tolerances. Where required, RBC Thin Section Bearings can be manufactured to ABEC 3F, ABEC 5F and ABEC 7F precision tolerances.

RBC PRECISION CLASS 0

Values in 0.0001 inches

Bearing Bore Size Inches	ABEC 1F C-TYPE												
	Diameters		Race Runout Radial & Axial			Radial Play Before Installation		Rotating Shaft		Stationary Shaft			
	Bore Nominal	O.D. Nominal	Inner Max	Outer Max	Width Nominal	Min	Max	Shaft OD Nominal	Housing ID Nominal	Shaft OD Max	Shaft OD Min	Housing ID Max	Housing ID Min
1.00	-4	-5	5	8	-50	10	16	+4	+5	-4	-8	-5	-10
1.50	-5	-5	6	8	-50	12	18	+5	+5	-5	-10	-5	-10
2.00	-6	-5	8	10	-50	12	24	+6	+5	-6	-12	-5	-10
2.50	-6	-5	8	10	-50	12	24	+6	+5	-6	-12	-5	-10
3.00	-6	-6	8	10	-50	12	24	+6	+6	-6	-12	-6	-12
3.50	-8	-6	10	12	-50	16	28	+8	+6	-8	-16	-6	-12
4.00	-8	-6	10	12	-50	16	28	+8	+6	-8	-16	-6	-12
4.25	-8	-8	10	14	-50	16	28	+8	+8	-8	-16	-8	-16
4.50	-8	-8	10	14	-50	16	28	+8	+8	-8	-16	-8	-16
4.75	-10	-8	12	14	-50	20	34	+10	+8	-10	-20	-8	-16
5.00	-10	-8	12	14	-50	20	34	+10	+8	-10	-20	-8	-16
5.50	-10	-10	12	16	-50	20	34	+10	+10	-10	-20	-10	-20
6.00	-10	-10	12	16	-50	20	34	+10	+10	-10	-20	-10	-20
6.50	-10	-10	12	16	-50	20	34	+10	+10	-10	-20	-10	-20
7.00	-10	-10	12	16	-50	20	34	+10	+10	-10	-20	-10	-20
7.50	-12	-12	16	18	-50	24	42	+12	+12	-12	-24	-12	-24
8.00	-12	-12	16	18	-50	24	42	+12	+12	-12	-24	-12	-24
9.00	-12	-12	16	18	-50	24	42	+12	+12	-12	-24	-12	-24
10.00	-14	-14	18	20	-50	28	48	+14	+14	-14	-28	-14	-28
11.00	-14	-14	18	20	-50	28	48	+14	+14	-14	-28	-14	-28
12.00	-14	-14	18	20	-50	28	48	+14	+14	-14	-28	-14	-28
14.00	-16	-16	18	20	-100	32	52	+16	+16	-16	-32	-16	-32
16.00	-18	-18	18	20	-100	36	56	+18	+18	-18	-36	-18	-36
18.00	-18	-18	20	20	-100	36	56	+18	+18	-18	-36	-18	-36
20.00	-20	-20	20	20	-100	40	60	+20	+20	-20	-40	-20	-40
25.00	-30	-30	20	20	-100	60	80	+30	+30	-30	-60	-30	-60
30.00	-30	-30	20	20	-100	60	80	+30	+30	-30	-60	-30	-60
35.00	-40	-40	20	20	-100	80	100	+40	+40	-40	-80	-40	-80
40.00	-40	-40	20	20	-100	80	100	+40	+40	-40	-80	-40	-80

Does not apply to bearings with preload.

DUPLEX PAIR WIDTH TOLERANCES

Values in 0.0001 inches

Bearing Bore Size (inches)		Width	
Over	Including	Max	Min
-	2.00	0	-200
2.00	5.00	0	-300
5.00	14.00	0	-400
14.00	40.00	0	-500

RBC THIN SECTION BALL BEARINGS
TOLERANCE TABLES & RECOMMENDED FITS

RBC PRECISION CLASS 0

Values in 0.0001 inches

Bearing Bore Size Inches	ABEC 1F A-TYPE & X-TYPE												
	Diameters		Race Runout Radial & Axial			Bearing Radial Play Before Installation (X-Type Only)		Rotating Shaft		Stationary Shaft			
	Bore Nominal	O.D. Nominal	Inner Max	Outer Max	Width Nominal	Min	Max	Shaft OD Nominal	Housing ID Nominal	Shaft OD Max	Shaft OD Min	Housing ID Max	Housing ID Min
1.00	-4	-5	3	4	-50	10	15	+4	+5	-4	-8	-5	-10
1.50	-5	-5	4	4	-50	12	17	+5	+5	-5	-10	-5	-10
2.00	-6	-5	5	5	-50	12	22	+6	+5	-6	-12	-5	-10
2.50	-6	-5	5	5	-50	12	22	+6	+5	-6	-12	-5	-10
3.00	-6	-6	6	6	-50	12	22	+6	+6	-6	-12	-6	-12
3.50	-8	-6	6	6	-50	16	26	+8	+6	-8	-16	-6	-12
4.00	-8	-6	6	6	-50	16	26	+8	+6	-8	-16	-6	-12
4.25	-8	-8	6	8	-50	16	26	+8	+8	-8	-16	-8	-16
4.50	-8	-8	6	8	-50	16	26	+8	+8	-8	-16	-8	-16
4.75	-10	-8	8	8	-50	20	30	+10	+8	-10	-20	-8	-16
5.00	-10	-8	8	8	-50	20	30	+10	+8	-10	-20	-8	-16
5.50	-10	-10	10	10	-50	20	30	+10	+10	-10	-20	-10	-20
6.00	-10	-10	10	10	-50	20	30	+10	+10	-10	-20	-10	-20
6.50	-10	-10	10	10	-50	20	30	+10	+10	-10	-20	-10	-20
7.00	-10	-12	10	10	-50	20	30	+10	+12	-10	-20	-12	-24
7.50	-12	-12	12	12	-50	24	34	+12	+12	-12	-24	-12	-24
8.00	-12	-12	12	12	-50	24	34	+12	+12	-12	-24	-12	-24
9.00	-12	-12	12	12	-50	24	34	+12	+12	-12	-24	-12	-24
10.00	-14	-14	14	14	-50	28	38	+14	+14	-14	-28	-14	-28
11.00	-14	-14	14	14	-50	28	38	+14	+14	-14	-28	-14	-28
12.00	-14	-14	14	14	-50	28	38	+14	+14	-14	-28	-14	-28
14.00	-14	-14	14	14	-100	28	38	+14	+14	-14	-28	-14	-28
16.00	-16	-16	16	16	-100	32	42	+16	+16	-16	-32	-16	-32
18.00	-16	-16	16	16	-100	32	42	+16	+16	-16	-32	-16	-32
20.00	-18	-18	18	18	-100	36	46	+18	+18	-18	-36	-18	-36
25.00	-18	-18	18	18	-100	36	46	+18	+18	-18	-36	-18	-36
30.00	-18	-18	18	18	-100	36	46	+18	+18	-18	-36	-18	-36
35.00	-20	-20	20	20	-100	40	50	+20	+20	-20	-40	-20	-40
40.00	-20	-20	20	20	-100	40	50	+20	+20	-20	-40	-20	-40

Does not apply to bearings with preload.

RBC PRECISION CLASS 3

Values in 0.0001 inches

Bearing Bore Size Inches	ABEC 3F ALL TYPES												
	Diameters		Race Runout Radial & Axial			Bearing Radial Play Before Installation (C & X-Type Only)		Rotating Shaft		Stationary Shaft			
	Bore Nominal	O.D. Nominal	Inner Max	Outer Max	Width Nominal	Min	Max	Shaft OD Nominal	Housing ID Nominal	Shaft OD Max	Shaft OD Min	Housing ID Max	Housing ID Min
1.00	-2	-3	3	4	-50	7	11	+2	+3	-2	-4	-3	-6
1.50	-3	-3	4	4	-50	8	12	+3	+3	-3	-6	-3	-6
2.00	-4	-4	4	5	-50	8	18	+4	+4	-4	-8	-4	-8
2.50	-4	-4	4	5	-50	8	18	+4	+4	-4	-8	-4	-8
3.00	-4	-4	4	6	-50	8	18	+4	+4	-4	-8	-4	-8
3.50	-5	-4	5	6	-50	10	20	+5	+4	-5	-10	-4	-8
4.00	-5	-4	5	6	-50	10	20	+5	+4	-5	-10	-4	-8
4.25	-5	-5	5	8	-50	10	20	+5	+5	-5	-10	-5	-10
4.50	-5	-5	5	8	-50	10	20	+5	+5	-5	-10	-5	-10
4.75	-6	-5	6	8	-50	12	22	+6	+5	-6	-12	-5	-10
5.00	-6	-5	6	8	-50	12	22	+6	+5	-6	-12	-5	-10
5.50	-6	-6	6	9	-50	12	22	+6	+6	-6	-12	-6	-12
6.00	-6	-6	6	9	-50	12	22	+6	+6	-6	-12	-6	-12
6.50	-6	-6	6	9	-50	12	22	+6	+6	-6	-12	-6	-12
7.00	-6	-7	6	10	-50	14	24	+6	+7	-6	-12	-7	-14
7.50	-7	-7	8	10	-50	14	24	+7	+7	-7	-14	-7	-14
8.00	-7	-7	8	10	-50	14	24	+7	+7	-7	-14	-7	-14
9.00	-7	-7	8	10	-50	14	24	+7	+7	-7	-14	-7	-14
10.00	-8	-8	10	12	-50	16	26	+8	+8	-8	-16	-8	-16
11.00	-8	-8	10	12	-50	16	26	+8	+8	-8	-16	-8	-16
12.00	-8	-9	10	14	-50	18	28	+8	+9	-8	-16	-9	-18
14.00	-8	-9	12	14	-100	18	28	+8	+9	-8	-16	-9	-18
16.00	-9	-10	14	16	-100	20	30	+9	+10	-9	-18	-10	-20
18.00	-9	-10	14	16	-100	20	30	+9	+10	-9	-18	-10	-20
20.00	-10	-12	16	18	-100	24	34	+10	+12	-10	-20	-12	-24

Does not apply to bearings with preload.

RBC THIN SECTION BALL BEARINGS
TOLERANCE TABLES & RECOMMENDED FITS

RBC PRECISION CLASS 4

Values in 0.0001 inches

Bearing Bore Size Inches	ABEC 5F ALL TYPES														
	Diameters		Race Runout				Width Nominal	Bearing Radial Play Before Installation (C & X-Type Only)		Rotating Shaft		Stationary Shaft			
			Radial		Axial										
	Bore Nominal	O.D. Nominal	Inner Max	Outer Max	Inner Max	Outer Max		Min	Max	Shaft OD Nominal	Housing ID Nominal	Shaft OD Max	Shaft OD Min	Housing ID Max	Housing ID Min
1.00	-2	-2	2	2	3	3	-50	5	9	+2	+2	-2	-4	-2	-4
1.50	-2	-2	2	2	3	3	-50	5	9	+2	+2	-2	-4	-2	-4
2.00	-3	-3	2	3	3	4	-50	5	9	+3	+3	-3	-6	-3	-6
2.50	-3	-3	2	3	3	4	-50	5	9	+3	+3	-3	-6	-3	-6
3.00	-3	-3	2	4	3	5	-50	6	12	+3	+3	-3	-6	-3	-6
3.50	-3	-3	3	4	4	5	-50	6	12	+3	+3	-3	-6	-3	-6
4.00	-3	-3	3	4	4	5	-50	6	12	+3	+3	-3	-6	-3	-6
4.25	-3	-4	3	4	4	5	-50	8	14	+3	+4	-3	-6	-4	-8
4.50	-3	-4	3	4	4	5	-50	8	14	+3	+4	-3	-6	-4	-8
4.75	-4	-4	3	4	4	5	-50	8	14	+4	+4	-4	-8	-4	-8
5.00	-4	-4	3	4	4	5	-50	8	14	+4	+4	-4	-8	-4	-8
5.50	-4	-5	3	5	4	6	-50	10	16	+4	+5	-4	-8	-5	-10
6.00	-4	-5	3	5	4	6	-50	10	16	+4	+5	-4	-8	-5	-10
6.50	-4	-5	3	5	4	6	-50	10	16	+4	+5	-4	-8	-5	-10
7.00	-4	-5	3	5	4	6	-50	10	16	+4	+5	-4	-8	-5	-10
7.50	-5	-5	4	5	5	6	-50	10	16	+5	+5	-5	-10	-5	-10
8.00	-5	-5	4	5	5	6	-50	10	16	+5	+5	-5	-10	-5	-10
9.00	-5	-5	4	5	5	6	-50	10	16	+5	+5	-5	-10	-5	-10
10.00	-5	-5	5	6	6	7	-50	10	16	+5	+5	-5	-10	-5	-10
11.00	-5	-5	5	6	6	7	-50	10	16	+5	+5	-5	-10	-5	-10
12.00	-5	-6	5	7	6	8	-50	12	18	+5	+6	-5	-10	-6	-12
14.00	-6	-6	5	7	7	8	-100	12	18	+6	+6	-6	-12	-6	-12
16.00	-6	-7	7	8	8	9	-100	14	20	+6	+7	-6	-12	-7	-14
18.00	-6	-7	7	8	8	9	-100	14	20	+6	+7	-6	-12	-7	-14
20.00	-7	-8	8	9	9	10	-100	14	22	+7	+8	-7	-14	-8	-16

Does not apply to bearings with preload.

RBC PRECISION CLASS 6

Values in 0.0001 inches

Bearing Bore Size Inches	ABEC 7F ALL TYPES												
	Diameters		Race Runout Radial & Axial		Width Nominal	Bearing Radial Play Before Installation (C & X-Type Only)		Rotating Shaft		Stationary Shaft			
	Bore Nominal	O.D. Nominal	Inner Max	Outer Max		Min	Max	Shaft OD Nominal	Housing ID Nominal	Shaft OD Max	Shaft OD Min	Housing ID Max	Housing ID Min
1.00	-1.5	-2	1.5	2	-50	4	8	+2	+2	-2	-4	-2	-4
1.50	-2	-2	1.5	2	-50	5	9	+2	+2	-2	-4	-2	-4
2.00	-2	-2	1.5	2	-50	5	10	+2	+2	-2	-4	-2	-4
2.50	-2	-2	1.5	2	-50	5	10	+2	+2	-2	-4	-2	-4
3.00	-2	-3	1.5	2	-50	6	12	+2	+3	-2	-4	-3	-6
3.50	-2.5	-3	2	2	-50	6	12	+3	+3	-3	-5	-3	-6
4.00	-2.5	-3	2	2	-50	6	12	+3	+3	-3	-5	-3	-6
4.25	-2.5	-4	2	3	-50	8	14	+3	+4	-3	-5	-4	-8
4.50	-2.5	-4	2	3	-50	8	14	+3	+4	-3	-5	-4	-8
4.75	-3	-4	3	3	-50	8	14	+3	+4	-3	-6	-4	-8
5.00	-3	-4	3	3	-50	8	14	+3	+4	-3	-6	-4	-8
5.50	-3	-4	3	3	-50	8	14	+3	+4	-3	-6	-4	-8
6.00	-3	-4	3	3	-50	8	14	+3	+4	-3	-6	-4	-8
6.50	-3	-4	3	3	-50	8	14	+3	+4	-3	-6	-4	-8
7.00	-3	-4	3	4	-50	8	14	+3	+4	-3	-6	-4	-8
7.50	-4	-4	3	4	-50	8	14	+4	+4	-4	-8	-4	-8
8.00	-4	-4	3	4	-50	8	14	+4	+4	-4	-8	-4	-8
9.00	-4	-4	3	4	-50	8	14	+4	+4	-4	-8	-4	-8
10.00	-5	-5	4	4	-50	10	16	+5	+5	-5	-10	-5	-10
11.00	-5	-5	4	4	-50	10	16	+5	+5	-5	-10	-5	-10
12.00	-5	-5	4	5	-50	10	16	+5	+5	-5	-10	-5	-10
14.00	-5	-6	4	5	-100	12	18	+5	+6	-5	-10	-6	-12

Does not apply to bearings with preload.

CUSTOM FEATURES

RBC manufactures many custom bearings designed to optimize bearing performance for specific applications. Special features include changes in radial play, lubricants, materials, preloading and design. Contact your RBC Sales Engineer for your custom bearing needs.

Challenge us: There are many design options available to solve difficult application problems.

Materials

The standard bearings shown in the catalog have SAE 52100 steel rings and balls. RBC Thin Section Ball Bearings can be manufactured from other specialty bearing steels to provide corrosion resistance, high temperature capability, alternative load capacity or chemical compatibility.

Rings. RBC has manufactured thin section ball bearings from SAE 440C stainless steel to provide corrosion resistance. As an alternative to stainless steel rings, the entire surface of the rings can be plated with nodular thin dense chrome (TDC). This plating, which meets AMS 2438, achieves a molecular bond that will not flake, peel or separate from the base material. The TDC plate has a hardness of HRC 70 - 78 and can withstand temperatures well beyond the range of the base material.

Special RBC Thin Section Ball Bearings have been manufactured from Aluminum, 300 Series Stainless Steel, 17-4 Stainless Steel, and other metals.

Balls. Some special ball materials available include 440C Stainless Steel, 300 Series Stainless Steel, Silicon Nitride and M-50 Steel.

Lubrication

Many different lubricants are available from RBC for special applications. Greases which are designed specifically for high speed, low torque, water resistance, high temperature, oscillatory motion and food machinery can be provided. Additional lubricants, such as dry film, are suitable for use in vacuums and space applications.

Sealing

Standard seals for thin section ball bearings are molded from elastomers. Polytetra-flouroethylene (PTFE) seals, fiber glass reinforced PTFE seals, stainless steel shields and many other options are available for low torque and other special applications.

Radial Play

The radial play (diametral clearance) of a thin section ball bearing will need to be predetermined if mounting fits other than those recommended are used. Special radial play may be required for a temperature differential across the bearing, for housing and shaft materials that have different coefficients of thermal expansion, or to change operating characteristics of the bearing. Radial preloaded bearings are measured to meet bore and O.D. tolerances prior to preload.

Preloading of Duplex Bearings

Standard duplex bearings are ground so that there will be a light axial preload induced on the bearing at nominal conditions. In some applications increased bearing stiffness may be required. In these cases the duplex grinding can be done such that a heavier axial load is induced in the mounted bearing. This load can be increased or decreased to meet the requirements of a particular application. Consult your RBC Sales Engineer for special requirements.

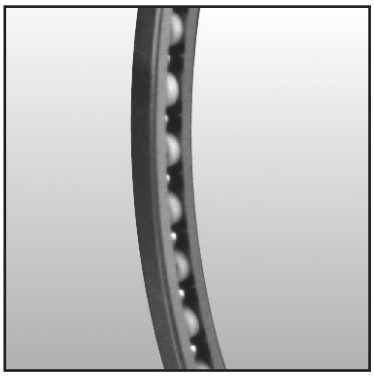
Mounting Features

Mounting features, such as flanges, anti-rotation tabs and mounting holes can be incorporated on the inner and outer rings. Mating parts, such as gears and housings, may be integrated into the bearing rings for improved performance and cost.

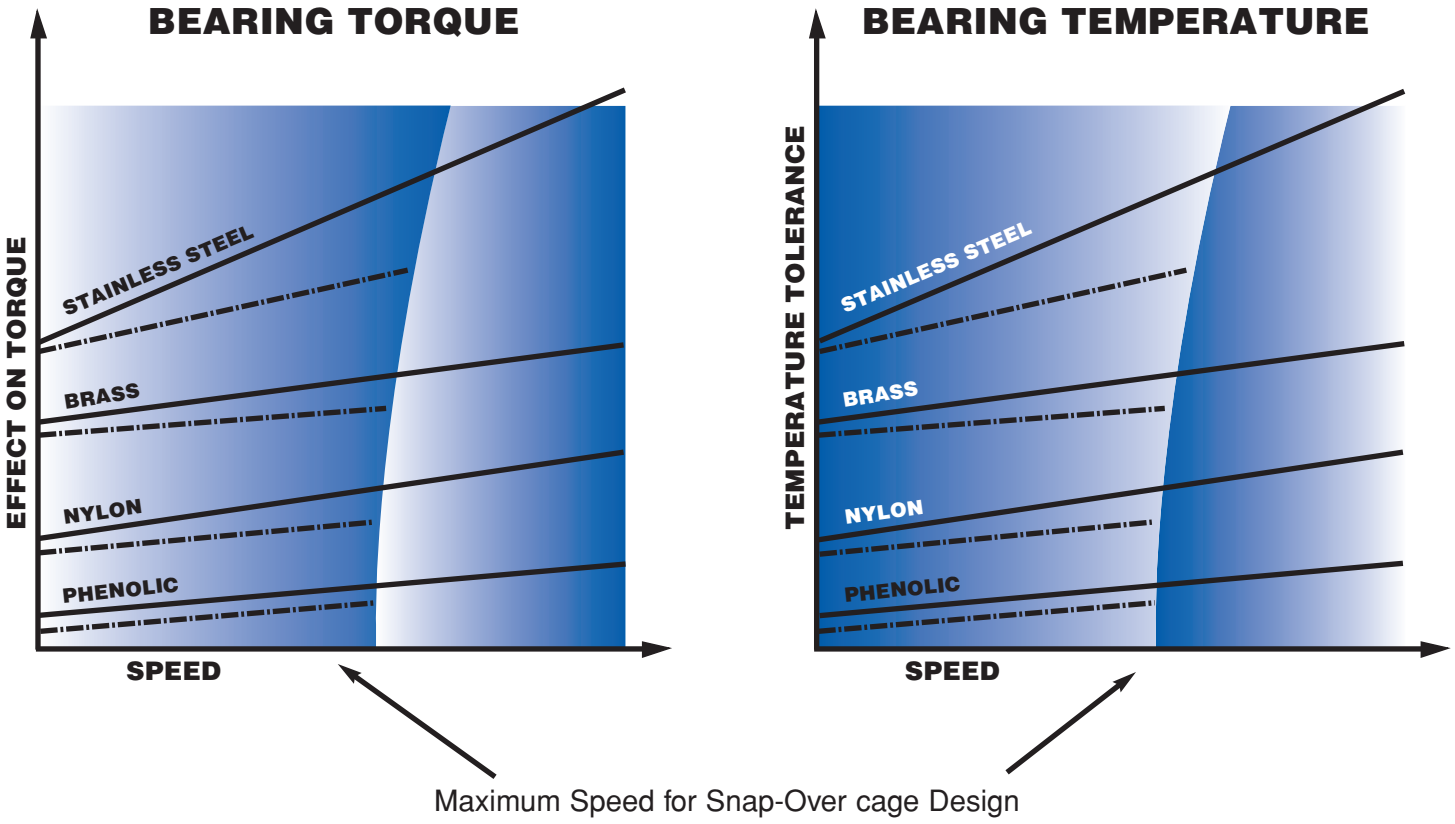
Separators

Standard RBC Thin Section Ball Bearings, KA through KG and JU series, are manufactured with variety of ball separator designs such as metallic and a non-metallic cages, toroids, slugs, and spacer balls. See page 39 for illustration.

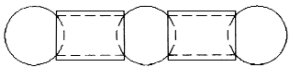
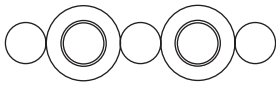
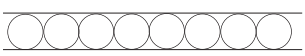
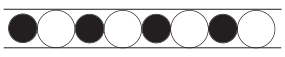
The graph below schematically illustrates the effects of cage design and material on bearing performance. For example, the one piece circular pocket design may reach roughly two times the speed of the snap-over design. Likewise, a brass separator design will generate more torque and withstand higher temperatures than a phenolic separator. Exact speed limits depend on bearing size, bearing type, lubrication and loading. For assistance in selecting the appropriate separator for special applications, contact your RBC Sales Engineer.



Schematic Illustration of Effects of Cage Design and Material on Bearing Torque, Speed and Temperature.



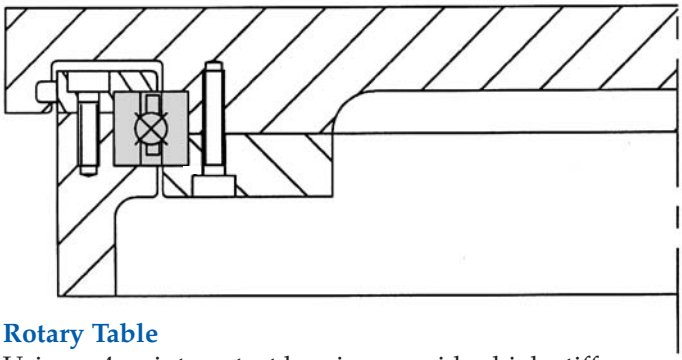
SEPARATOR SELECTION GUIDE

DESIGN	Separator Type	Description	Material	Advantages	Bearing Features	Limitations
	G	One-piece ring, circular pockets	Nylon	Low torque and light weight applications. High speed limits.	Used in A-Type bearings, standard for KAA series.	Not recommended for temperatures outside of the standard range: -65° to 250°F.
	H	One-piece ring, circular pockets	Phenolic Laminate	Low torque and light weight applications. Can be oil impregnated as required.	Used in A-Type bearings.	Not recommended for temperatures above 250°F.
	R	One-piece ring, circular pockets	Brass or Composite	Ideal for commercial applications with moderate torque and speed requirements.	Standard separator for A-Type bearings KA through KG series.	Not recommended for low torque applications.
	U	One-piece ring, circular pockets	Stainless Steel	High strength, improved corrosion resistance. High temperature capabilities.	Used in A-Type bearings.	Not recommended for low torque applications.
	D	One-piece ring, snap-over type	Phenolic Laminate	Low torque and light weight applications. Can be oil impregnated as required.	Designed for use in C-Type and X-Type bearings.	Not recommended for high speed or high temperature applications above 250°F.
	L	One-piece ring, snap-over type	Nylon	Low torque and light weight applications. High speed limits.	Used in both C- and X-Type bearings, standard for KAA series.	Not recommended for temperatures outside of the standard range: -65° to 250°F.
	P	One-piece ring, snap-over type	Brass or Composite	Ideal for commercial applications with moderate torque and speed requirements.	Standard separator for C- and X-Type bearings KA through KG series.	Not recommended for low torque applications.
	T	One-piece ring, snap-over type	Stainless Steel	High strength, improved corrosion resistance. High temperature capabilities.	Used in C- and X-Type bearings.	Not recommended for low-torque applications.
	I	Slugs	PTFE	Low torque applications, higher capacity than standard bearings.	Used in C and X-Type bearings. Offers increased ball complement.	Not intended for use in high speed applications. Material may have temperature limitations.
	S	Helical coil springs	Stainless Steel, or music wire	Low torque and light weight applications.	Used in C and X-Type bearings.	Not intended for use in high speed applications.
	W	Wire cage, open segmental	Stainless Steel, or music wire	High torque, low speed, and light weight applications.	Used in A-Type bearings. May also be used in C and X-Type bearings with half as many balls.	Not intended for use in high speed applications.
	I	Toroids	PTFE or Polymide	Low torque applications, higher capacity than standard bearings.	Used in A-Type bearings. Offers increased ball complement.	Not intended for use in high speed applications. Material may have temperature limitations.
	F	Full complement of balls	N/A	Highest loading capacity and maximum stiffness.	All bearing types. C- and X-Type require a filling slot.	Higher torque and lower speed limits. Not recommended for high torque and/or high speed.
	Z	Spacer Balls	Metal or ceramics, same as ball material	High temperature applications, offers higher resistance to wear.	Filling slot required for C- and X-type bearings. Reduced ball complement in A-Type bearings.	Lower load capacity in A-Type bearings.

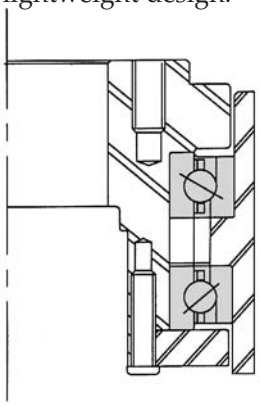
TYPICAL APPLICATIONS

Thin section ball bearings are generally used in applications with space, weight, and load constraints. Some typical applications for standard RBC Thin Section Ball Bearings include:

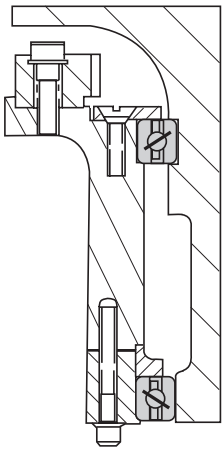
Medical Equipment
Radar Equipment
Material Handling
Antenna Pedestals
Aerospace
Optical Equipment
Rotary Joints
Military Turrets
Robotics
Machine Tools
Textile Machinery
Satellite Systems
Packaging Machinery
Scanning Equipment
Semi-Conductor Manufacturing Equipment
Slip Ring Assemblies
Harmonic Drives
Speed Reducers



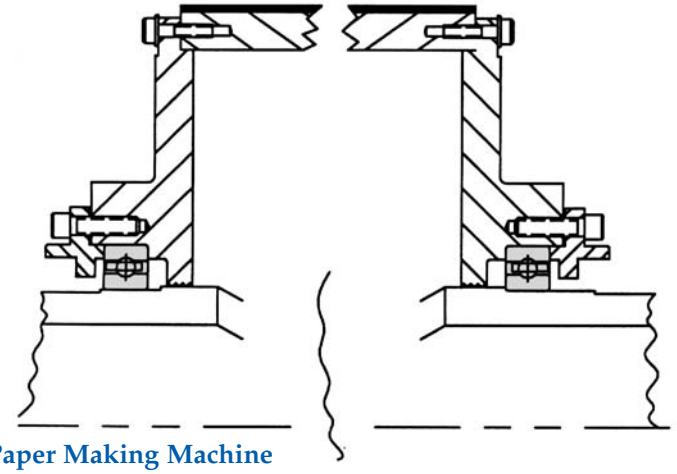
Rotary Table
Using a 4-point contact bearing provides high stiffness with minimum deflection resulting in a streamlined and lightweight design.



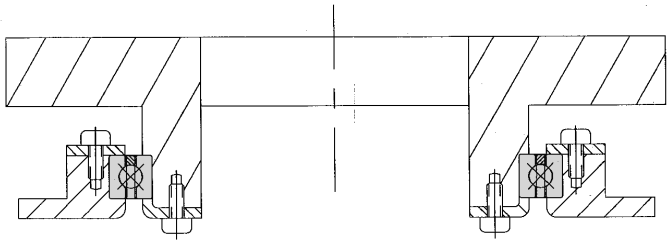
Direct Drive Assembly
A duplex pair of angular contact RBC Thin Section Ball Bearings provide the optimal load carrying capabilities in a compact design.



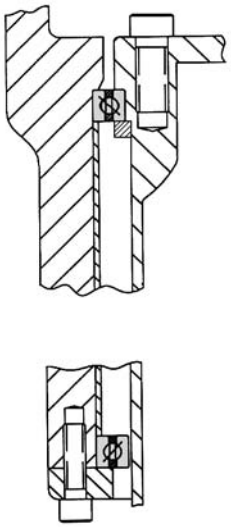
Lightweight Airborne Electro-Optical Imaging Equipment
This application requires bearings with combined load carrying capabilities and minimal added weight. A pair of angular contact RBC Thin Section Ball Bearings provides high stiffness and multiple load carrying capabilities in a compact, lightweight envelope.



Paper Making Machine
A pair of radial contact RBC Thin Section Ball Bearings is the ideal choice for applications with severe space constraints and significant loads.



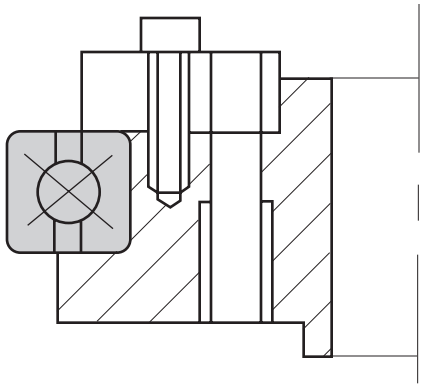
Rotating Polishing Table
To provide necessary stiffness with a more compact, lighter weight machine design, use the 4-point contact RBC Thin Section Ball Bearing.



Rotary Joint
By using a pair of angular contact RBC Thin Section Ball Bearings, this design can carry radial, axial and moment loads.

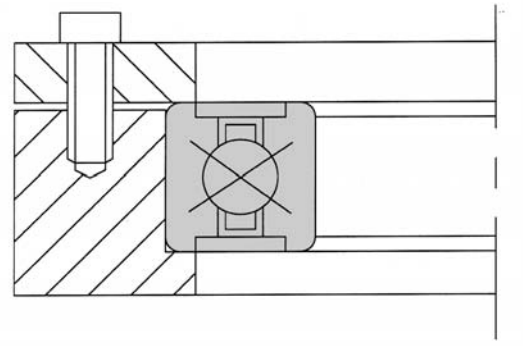
CUSTOM BEARINGS

In addition to the standard RBC Thin Section Ball Bearings, RBC will also manufacture specially designed bearings for specific applications. RBC Sales Engineers and Customer Service Representatives are available for consultation.



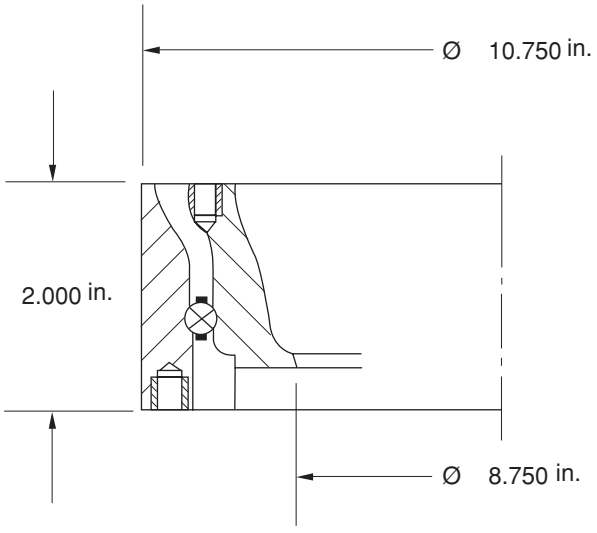
Continuous Rotating Machine Tool Table

Using a 4-point contact RBC Thin Section Ball Bearing provides stiffness for accurate positioning as well as carrying multiple loads. RBC supplied this assembly as shown.



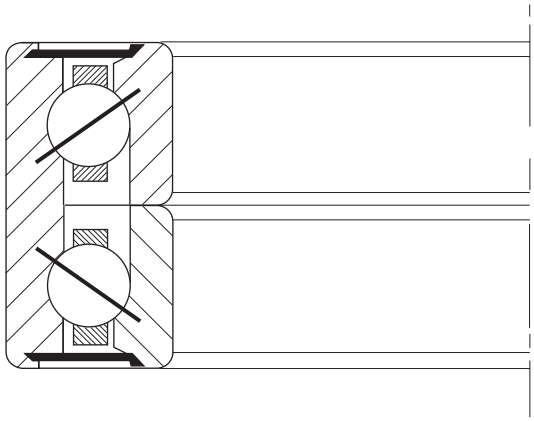
Machine Tool Indexing Table

Running at slow speeds with combined load carrying capabilities and minimal space determined the use of this 4-point RBC Thin Section Ball Bearing. RBC supplied this assembly as shown.



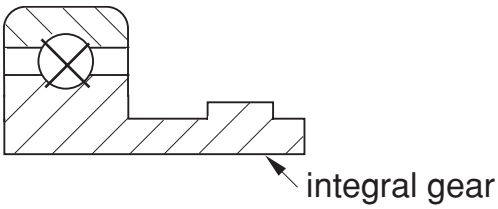
Aerial Camera Assembly

For use in an aerial camera assembly, an extra-light, low torque bearing was required. By redesigning a standard RBC Thin Section Ball Bearing 4-point contact design, the overall assembly weight was lowered from 7 lbs. to 3.8 lbs. In addition to weight reduction, this design, also reduced the running torque below 1 in.-lbs. with the starting torque below 2 in.-lbs.



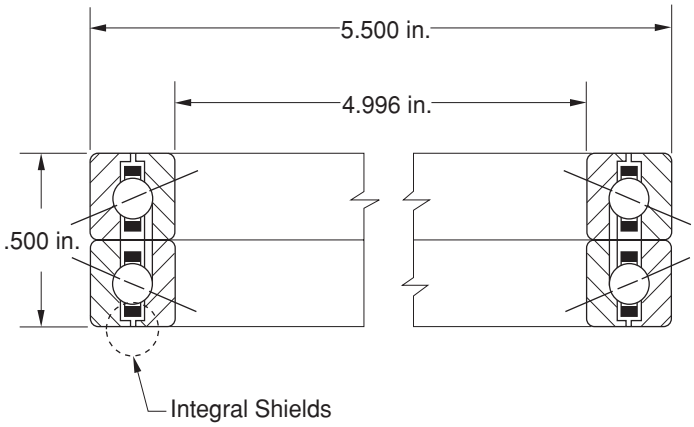
Airborne Radar System

A duplex pair of angular contact RBC Thin Section Ball Bearings was designed for an airborne radar system. This bearing application required combined load carrying capabilities, low temperature compatibility, and relatively low torque. Different from a standard Thin Section, this duplex bearing was designed with one outer ring and two inner rings with a slight preload. This design provided low torque and multiple loading capabilities.



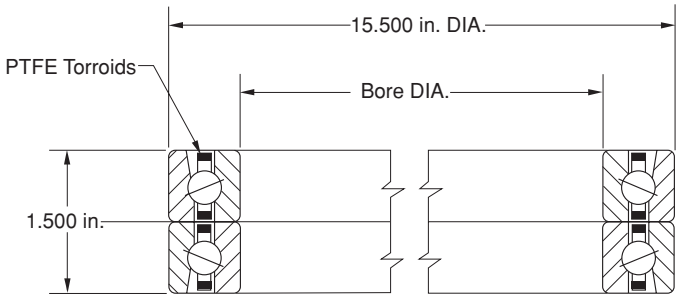
Radar Antenna Drive

An RBC Thin Section Ball Bearing designed with a gear integrated with the inner ring, achieved both a significant weight reduction and improved accuracy as well as simplicity of assembly. This bearing is used in a radar antenna drive which has limited space available for its support bearing. Coil springs were used as spacers between balls to lower bearing torque and further reduce weight.



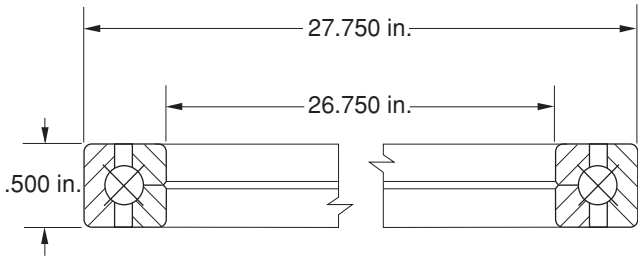
Instrument Gimbal Assembly

A preloaded duplex pair of angular contact RBC Thin Section Ball Bearings were designed to meet the low torque and corrosion resistant requirements in a combined load application. Designed for an instrument gimbal assembly in a missile, the duplex pair of bearings are subjected to combined radial, axial and moment loads. These special RBC Thin Section Ball Bearings have a light preload and were manufactured with integral shields as part of the rings.



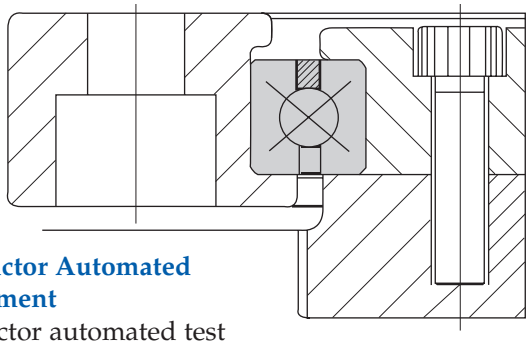
Vacuum Operation

Bearing requirements included minimal radial runout, low torque, corrosion resistance, combined load capabilities and vacuum operation capabilities. Special designed duplex stainless steel angular contact RBC Thin Section Ball Bearings, provided the capabilities required.



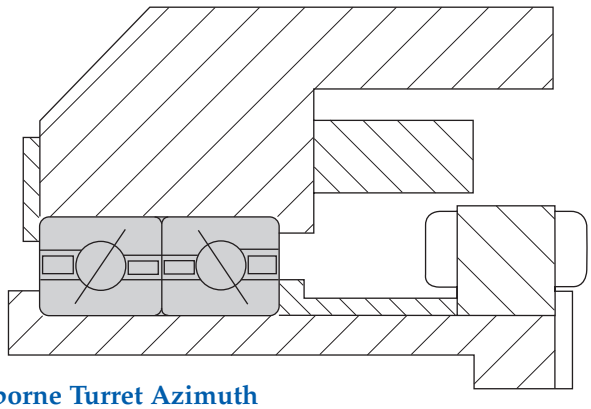
Aircraft Gun Turret

A bearing was required which would take radial, axial, and moment loading, to support an aircraft gun turret. It was desirable to have the bearing match the coefficient of expansion of the aluminum with a split inner ring and special balls to absorb shock and vibration loading. This bearing performed at 25% of the torque of the steel bearings previously used.



Semiconductor Automated Test Equipment

Semiconductor automated test equipment required an RBC Thin Section Ball Bearing to accurately position a table. In this application the bearing oscillates to ±10°, this bearing was designed as a 4-point contact bearing.



Airborne Turret Azimuth

A low torque, high stiffness, multiple load capacity, corrosion resistant bearing was required for an airborne turret azimuth drive assembly. For this application a duplexed pair of angular contact RBC Thin Section Ball Bearings was designed with toroid separators and stainless steel rings. This design maintained low torque, but still allowed multiple load carrying capabilities.

ENGINEERING APPLICATION DATA
FAST FAX

For assistance in selecting the correct bearings for your design, complete this form and fax or mail it to:

RBC Bearings
400 Sullivan Way, P.O. Box 77430
West Trenton, NJ 08628-7430
FAX: 609-882-5533

www.rbcbearings.com

Company Name: _____ Date: _____

Street Address: _____

City: _____ State: _____ Zip Code: _____

Name: _____ Title: _____

Phone: _____ Fax: _____ e-mail: _____

Description of application: _____

Speed:

Rotational _____ rpm ☐ Inner Ring Rotating

Oscillatory _____ cpm ☐ Outer Ring Rotating

Temperature:

Average running _____ min _____ max _____

Loading:

☐ Shock ☐ Vibration ☐ Safety factor (Please specify) _____

Dynamic radial _____ Lbs. ☐ Stationary Load ☐ Rotating Load

Dynamic thrust _____ Lbs.

Dynamic moment _____ Ft. Lbs. ☐ Stationary Load ☐ Rotating Load
(show application of load on sketch)

Static radial _____ Lbs.

Static thrust _____ Lbs.

Static moment _____ Ft. Lbs. (show application of load on sketch)

Life: _____

Lubricant:

☐ Grease ☐ Oil ☐ Special (Please specify) _____

Size limitations:

Max. OD_____inches Min. bore_____inches Max. Width_____inches

Other data:

☐ Seals ☐ Shields ☐ Special (Please specify)

Housing material _____ Shaft material _____

Further description of application and/or special requirements: ☐ Sketch included

(continue on second sheet if necessary)

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

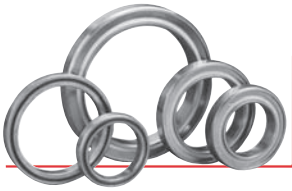
Radial, angular contact, extended inner ring, high misalignment. **QuadLube®**, **ImpactTuff®**, **SpreadLock® Seal**, **CrossLube®**, **DuraLube™, MillTuff™** bearings, and self-lubricating bearings. Available in inch and metric sizes.

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.

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.

Ball Screws

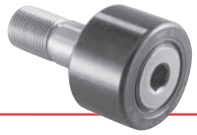
Precision ground, rolled, ball splines. Long life, low wear, high accuracy. **QuickTurn®** Ball Screw Repair Service.

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, semiground, unground. High loads, long life, smooth operation. **Nice™** ball bearings are offered in caged and full complement configurations.

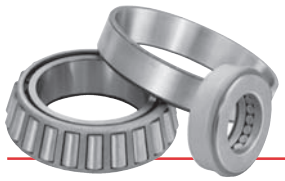


Cam Followers

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.



Tapered Roller and Thrust Bearings

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

Specials

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

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