

BALL BEARING NUMBERING STRUCTURE

The Circular Technologies numbering system utilizes a basic number to identify the bearing series. A collection of prefix and suffix designations are used to further define the characteristics of each bearing.

Material	Type	Bearing Number	Closure	Retainer	OD Modification	ID Modification	Internal Clearance	Tolerance	Lubrication	Noise Level
1	2		3	4	5	6	7	8	9	10
s	FR	168	ZZ				P25	A1	BG1	
	FR	6	2RS		NR		C3	A3	BG6	EMQ
		6003	2RS				C0	A1	B01	
s	F	608	2RS	M				A3	BG8	
		6203	2RS			5/8	C3	A3	BG1	

1. Material

Blank: SAE52100 Chrome Steel
 S: AISI 440C Stainless Steel
 D: AISI 300 Stainless Steel
 C: Carbon Steel

2. Type:

Blank or M: Metric Series
 F or MF: Flanged Metric Series
 R: Inch Series
 FR: Flanged Inch Series
 W: Wider Width

3. Closure

Blank: Open
 Z: Single Shielded
 ZZ: Double Shielded
 RS: Single Rubber Seal (Buna-N)
 2RS: Double Rubber Seal (Buna-N)
 V: Single Non-Contact Seal (Buna-N)
 VV: Double Non-Contact Seal (Buna-N)
 RST: Single Trash Seal
 2RST: Double Trash Seal
 TS: Single Teflon Seal
 2TS: Double Teflon Seal
 2VS: Double Viton Seal

4. Retainer

Blank: Steel
 M: Brass or Bronze
 TN: Nylon

5. OD Modification

N: Grooved without snap-ring
 NR: Grooved with snap-ring

6. ID Modification

7. Internal Clearance

Blank or C0: Standard
 C2: Tight
 C3: Loose
 C4: Extra Loose

8. Tolerance(s)

A1: ABEC 1
 A3: ABEC 3
 A5: ABEC 5

9. Lubrication:

See Lubrication Chart

10. Noise Level:

Blank: Standard
 EMQ: Electric Motor Quality

LUBRICATION

Lubrication is essential and is probably the most critical factor in preventing ball bearing failure

The lubrication functions to:

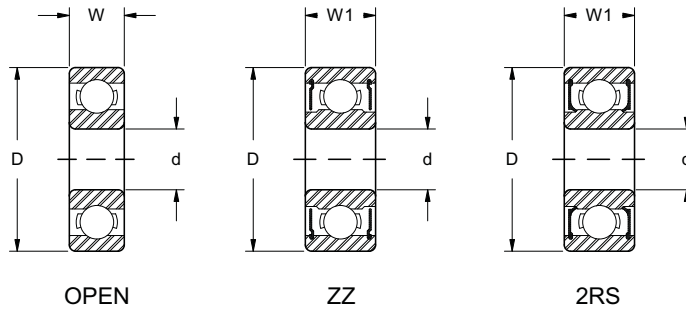
- Minimize friction between balls and raceways
- Act as a preventative against rust and corrosion
- Dissipate heat build-up
- Provide a barrier against the entry of foreign matter

The type of lubricant used plays a critical factor in operating efficiency. Conventional ball bearing lubes fall into the categories of oil or grease, each with specific properties appropriate for different bearing applications. Generally, grease is the preferred choice due to its ease of application and maintenance, performing well in the 0°F to 300°F operating range. Oil, however does function better in extreme temperature conditions, below -40°F or above 350°F.

Code	Grease/Oil Name	Color	Operating Range °F	Base Oil	Thickener	Mil-Spec
BG1	Chevron SRI-2	Green	-20 to +350	Petroleum	Polyurea	MILG3545G
BG2	Shell Alvania-2	Amber	-30 to +230	Petroleum	Lithium	MILG18709
BG3	Exxon Beacon 325	Light Tan	-60 to +250	Diester	Lithium	MILG3278
BG4	Kyodo Yushi Multitemp SRL	Tan	-40 to +300	Synthetic	Lithium	-
BG5	Mobil Mobilgrease 28	Dark Red	-80 to +350	Synthetic	Synthetic	MILG81322E
BG6	Exxon Polyrex EM	Blue-Green	-20 to +350	Mineral	Polyurea	-
BG7	Shell Aeroshell #7	Buff	-100 to +250	Diester	Microgel	MILG23827A
BG8	DuPont Krytox 240AC	White	-30 to +550	Fluorinated	Fluorotelomer	MILG27617E Type 3
BG9	Mobil Mobilgrease XHP	Dark Blue	-20 to +250	Mineral	Lithium	-
B01	Shell Aeroshell #3	oil	-70 to +240	Petroleum	-	
B02	Shell Aeroshell #12	oil	-70 to +300	Diester	-	MILL6085A
B03	Anderson Oil L245X	oil	-70 to +350	Diester	-	MILL6085A

Note: Other lubricants available upon request.

MINIATURE AND INSTRUMENT METRIC SERIES

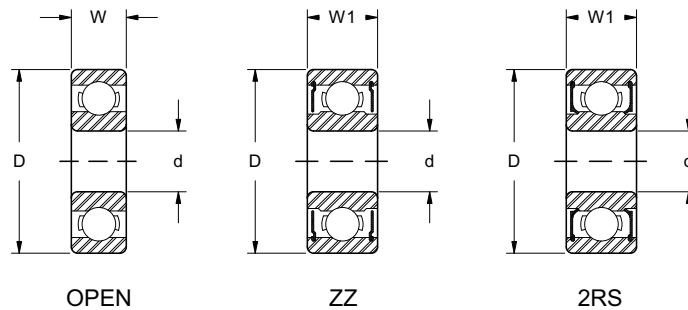


Bearing Number	Bore (mm)	Outside Diameter (mm)	Width (mm)		Basic Load Rating lbs	
			Open	Enclosed	Dynamic Cr	Static Cor
	d	D	W	W1		
681	1	3	1	-	18	5
MR31	1	3	1.5	-	18	5
691	1	4	1.6	-	24	8
MR41X	1.2	4	1.8	2.5	24	8
681X	1.5	4	1.2	2	20	7
691X	1.5	5	2	2.6	29	11
601X	1.5	6	2.5	3	55	22
682	2	5	1.5	2.3	29	11
MR52	2	5	2	2.5	37	11
692	2	6	2.3	3	55	22
MR62	2	6	2.5	2.5	60	22
MR72	2	7	2.5	3	65	26
602	2	7	2.8	3.5	66	29
682X	2.5	6	1.8	2.6	35	14
692X	2.5	7	2.5	3.5	66	29
MR82X	2.5	8	2.5	-	64	24
602X	2.5	8	2.8	4	64	24
MR63	3	6	2	2.5	35	14
683	3	7	2	3	66	29
MR83	3	8	2.5	-	64	24
693	3	8	3	4	64	24
MR93	3	9	2.5	4	70	30
603	3	9	3	-	99	42
623	3	10	4	4	99	42

For Stainless Steel, add an "S" prefix to part number.

MINIATURE AND INSTRUMENT

METRIC SERIES: CONTINUED

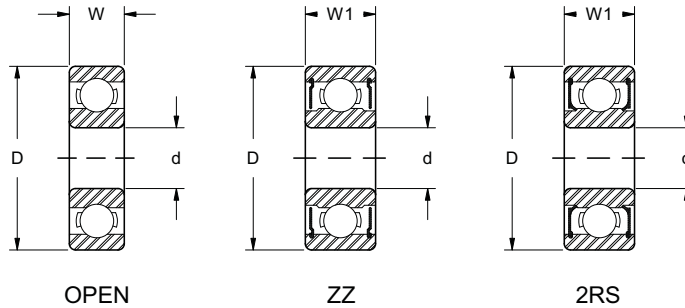


Bearing Number	Bore (mm)	Outside Diameter (mm)	Width (mm)		Basic Load Rating lbs	
			Open	Enclosed	Dynamic Cr	Static Cor
	d	D	W	W1		
633	3	13	5	5	266	98
MR74	4	7	2	2.5	58	25
MR84	4	8	2	3	88	33
684	4	9	2.5	4	99	42
MR104	4	10	3	4	99	42
694	4	11	4	4	123	57
604	4	12	4	4	167	77
624	4	13	5	5	224	108
634	4	16	5	5	300	140
MR85	5	8	2	2.5	62	31
MR95	5	9	2.5	3	112	46
MR105	5	10	3	4	115	55
MR115	5	11	3	4	123	57
685	5	11	3	5	123	57
695	5	13	4	4	187	90
605	5	14	5	5	229	110
625	5	16	5	5	300	140
635	5	19	6	6	400	190
MR106	6	10	2.5	3	123	57
MR126	6	12	3	4	187	82
686	6	13	3.5	5	187	90
696	6	15	5	5	300	140
606	6	17	6	6	300	140
626	6	19	6	6	400	190

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MINIATURE AND INSTRUMENT

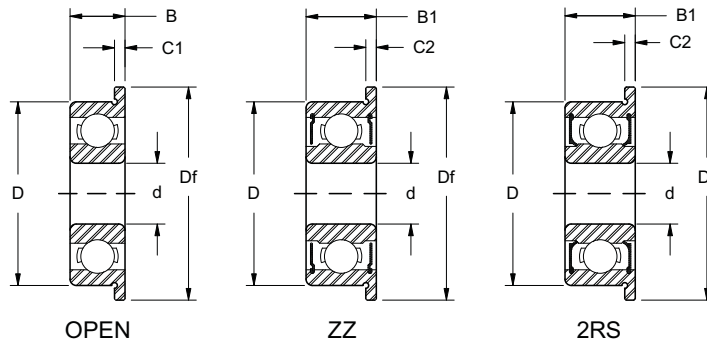
METRIC SERIES: CONTINUED



Bearing Number	Bore (mm)	Outside Diameter (mm)	Width (mm)		Basic Load Rating lbs	
			Open	Enclosed	Dynamic Cr	Static Cor
	d	D	W	W1		
636	6	22	7	7	670	280
MR117	7	11	2.5	3	101	46
MR137	7	13	3	4	198	88
687	7	14	3.5	5	202	103
697	7	17	5	5	235	120
607	7	19	6	6	385	180
627	7	22	7	7	580	290
637	7	26	9	9	820	330
MR128	8	12	2.5	3.5	115	57
MR148	8	14	3.5	4	198	88
688	8	16	4	5	310	160
698	8	19	6	6	285	145
X117	8	22	6	6	580	290
608	8	22	7	7	580	290
628	8	24	8	8	690	350
638	8	28	9	9	1012	440
689	9	17	4	5	310	143
699	9	20	6	6	528	231
609	9	24	7	7	580	280
629	9	26	8	8	790	400
639	9	30	10	10	1045	462
63800 or L1910	10	19	5	7	328	173

For Stainless Steel, add an "S" prefix to part number.

MINIATURE AND INSTRUMENT METRIC FLANGED SERIES

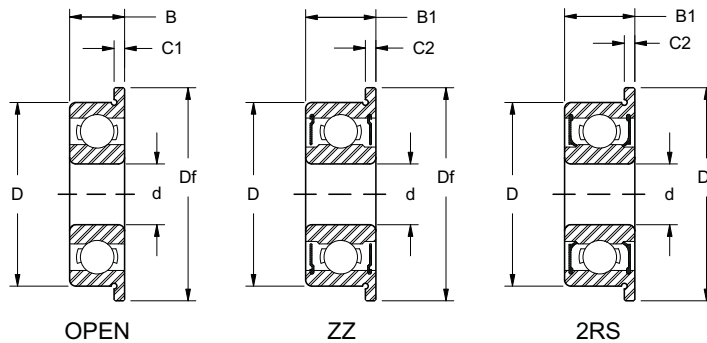


Bearing Number	Bore (mm)	Outside Diameter (mm)		Width (mm)		Flange Dimensions (mm)		Basic Load Rating lbs	
				open	enclosed			Dynamic Cr	Static Cor
	d	D	Df	B	B1	C1	C2		
F681	1	3	3.8	1	-	0.3	-	18	5
F691	1	4	5	1.6	-	0.5	-	24	9
MF41X	1.2	4	4.8	1.8	2.5	0.4	-	24	9
F681X	1.5	4	5	1.2	2	0.4	-	20	7
F691X	1.5	5	6.5	2	2.6	0.6	0.8	29	11
F601X	1.5	6	7.5	2.5	3	0.6	0.8	55	22
F682	2	5	6.1	1.5	2.3	0.5	0.6	29	11
MF52	2	5	6.2	2	2.5	0.6	0.6	29	11
F692	2	6	7.5	2.3	3	0.6	0.8	55	22
MF62	2	6	7.2	2.5	2.5	0.6	-	55	22
MF72	2	7	8.2	2.5	3	0.6	0.6	66	29
F602	2	7	8.5	2.8	3.5	0.7	0.9	66	29
F682X	2.5	6	7.1	1.8	2.6	0.5	0.8	35	14
F692X	2.5	7	8.5	2.5	3.5	0.7	0.9	66	29
MF82X	2.5	8	9.2	2.5	-	0.6	-	46	17
F602X	2.5	8	9.5	2.8	4	0.7	0.9	64	24
MF63	3	6	7.2	2	2.5	0.6	0.6	35	14
F683	3	7	8.1	2	3	0.5	0.8	66	29
MF83	3	8	9.2	2.5	-	0.6	-	64	24
F693	3	8	9.5	3	4	0.7	0.9	64	24
MF93	3	9	10.2*	2.5	4	0.6	0.8	99	42
F603	3	9	10.5	3	-	0.7	-	99	42
F623	3	10	11.5	4	4	1	1	99	42

For Stainless Steel, add an "S" prefix to part number.
* Flange Diameter .4mm larger for shielded bearings.

MINIATURE AND INSTRUMENT

METRIC FLANGED SERIES: CONTINUED

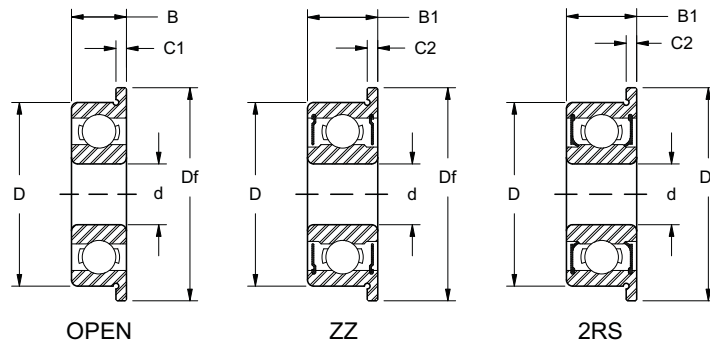


Bearing Number	Bore (mm)	Outside Diameter (mm)		Width (mm)		Flange Dimensions (mm)		Basic Load Rating lbs	
				open	enclosed				
	d	D	Df	B	B1	C1	C2	Dynamic Cr	Static Cor
MF74	4	7	8.2	2	2.5	0.6	0.6	58	25
MF84	4	8	9.2	2	3	0.6	0.6	88	33
F684	4	9	10.3	2.5	4	0.6	1	99	42
MF104	4	10	11.2*	3	4	0.6	0.8	99	42
F694	4	11	12.5	4	4	1	1	123	57
F604	4	12	13.5	4	4	1	1	167	77
F624	4	13	15	5	5	1	1	224	108
F634	4	16	18	5	5	1	1	300	140
MF85	5	8	9.2	2	2.5	0.6	0.6	62	31
MF95	5	9	10.2	2.5	3	0.6	0.6	112	46
MF105	5	10	11.2*	3	4	0.6	0.8	115	55
MF115	5	11	12.6	-	4	-	0.8	123	57
F685	5	11	12.5	3	5	0.8	1	123	57
F695	5	13	15	4	4	1	1	187	90
F605	5	14	16	5	5	1	1	229	110
F625	5	16	18	5	5	1	1	300	140
F635	5	19	22	6	6	1.5	1.5	400	190

For Stainless Steel, add an "S" prefix to part number.

* Flange Diameter .4mm larger for shielded bearings.

MINIATURE AND INSTRUMENT METRIC FLANGED SERIES: CONTINUED

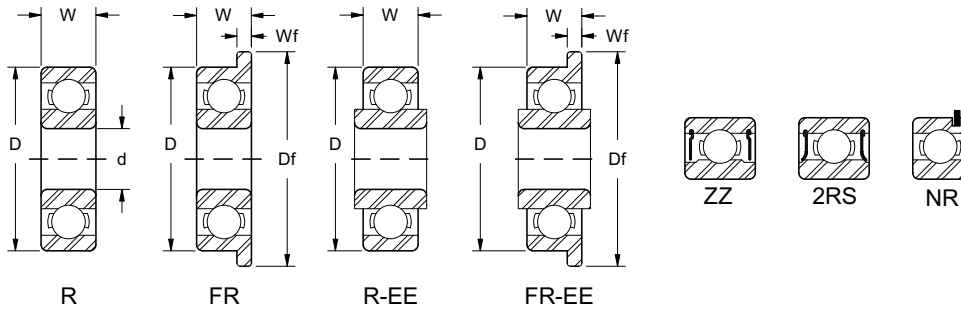


Bearing Number	Bore (mm)	Outside Diameter (mm)		Width (mm)		Flange Dimensions (mm)		Basic Load Rating lbs	
				open	enclosed				
	d	D	Df	B	B1	C1	C2	Dynamic Cr	Static Cor
MF106	6	10	11.2	2.5	3	0.6	0.6	123	57
MF126	6	12	13.2*	3	4	0.6	0.8	187	82
F686	6	13	15	3.5	5	1	1.1	187	90
F696	6	15	17	5	5	1.2	1.2	300	140
F606	6	17	19	6	6	1.2	1.2	300	140
F626	6	19	22	6	6	1.5	1.5	400	190
MF117	7	11	12.2	2.5	3	0.6	0.6	101	46
MF137	7	13	14.2*	3	4	0.6	0.8	198	88
F687	7	14	16	3.5	5	1	1.1	202	103
F697	7	17	19	5	5	1.2	1.2	235	120
F607	7	19	22	6	6	1.5	1.5	385	180
F627	7	22	25	7	7	1.5	1.5	580	290
MF128	8	12	13.2*	2.5	3.5	0.6	0.8	115	57
MF148	8	14	15.6	3.5	4	0.8	0.8	198	88
F688	8	16	18	4	5	1	1.1	310	160
F698	8	19	22	6	6	1.5	1.5	285	145
F608	8	22	25	7	7	1.5	1.5	580	290
F689	9	17	19	4	5	1	1.1	310	143
F699	9	20	23	6	6	1.5	1.5	528	231
F609	9	24	27	7	7	1.5	1.5	580	280

For Stainless Steel, add an "S" prefix to part number.

* Flange Diameter .4mm larger for shielded bearings.

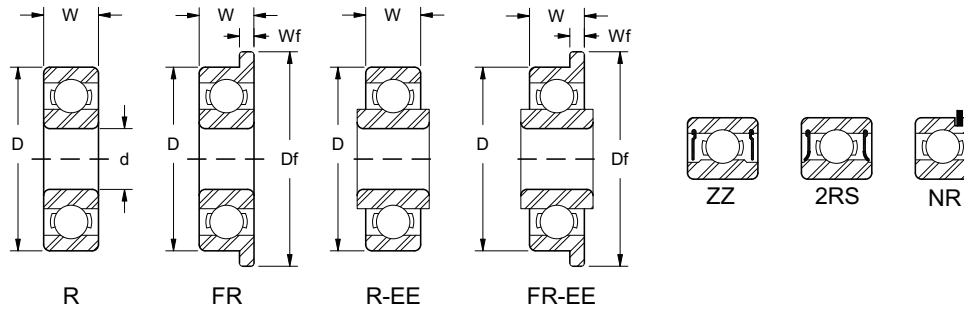
MINIATURE AND INSTRUMENT INCH SERIES



Bearing Number	Bore (inch) d	Outside Diameter (inch) D	Width (inch)				Flange Dimensions (inch)		Basic Load Rating lbs	
			W		Extended Inner Ring		df	Wf	Dynamic Cr	Static Cor
			open	enclosed	open	enclosed				
R1-4	.0781	.2500	.0937	.1406	.1250	.1719	.2960	.0230	63	20
R133	.0937	.1875	.0625	.0937	.0937	.1250	.2340	.0180	28	9.5
R1-5	.0937	.3125	.1094	.1406	.1406	.1719	.3590	.0230	96	34
R144	.1250	.2500	.0937	.1094	.1250	.1406	.2960	.0230	64	22
R2-5	.1250	.3125	.1094	.1406	.1406	.1719	.3590	.0230	26	40
R2-6	.1250	.3750	.1094	.1406	.1406	.1719	.4220	.0230	44	50
R2	.1250	.3750	.1562	.1562	.1875	.1875	.4400	.0300	44	50
R2A	.1250	.5000	.1719	.1719	-	-	-	-	58	89
R155	.1562	.3125	.1094	.1250	.1406	.1562	.3590	.0230	76	30
R156	.1875	.3125	.1094	.1250	.1406	.1562	.3590	.0230	89	32
R166	.1875	.3750	.1250	.1250	.1562	.1562	.4220	.0230	160	60
R3	.1875	.5000	.1562	.1960	.2272	.2272	.5650	.0420	295	110
R3A	.1875	.5000	.1960	.1960	-	-	-	-	295	110
R168	.2500	.3750	.1250	.1250	.1562	.1562	.4220	.0230	60	31
R188	.2500	.5000	.1250	.1875	.1562	.2188	.5470	.0230	186	84
R4	.2500	.6250	.1960	.1960	.2272	.2272	.6900	.0420	335	139
R4A	.2500	.7500	.2188	.2812	-	-	-	-	525	199
R1810	.3125	.5000	.1562	.1562	.1875	.1875	.5470	.0310	117	57

For Stainless Steel, add an "S" prefix to part number.

MINIATURE AND INSTRUMENT INCH SERIES: CONTINUED



Bearing Number	Bore (inch) d	Outside Diameter (inch) D	Width (inch)				Flange Dimensions (inch)		Basic Load Rating lbs	
			W		Extended Inner Ring		df	Wf	Dynamic Cr	Static Cor
			open	enclosed	open	enclosed				
R1038	.3750	.6250	.1562	.1562	-	-	-	-	187	92
R1238	.3750	.7500	.1960	.1960	-	-	-	-	385	189
R6	.3750	.8750	.2188	.2812	-	-	.9690	.0620	745	315
R1212	.5000	.7500	.1562	.1562	-	-	-	-	200	114
R1412	.5000	.8750	.1960	.1960	-	-	-	-	422	222
R8	.5000	1.1250	.2500	.3125	-	-	1.225	.0620	1148	535
R1458	.6250	.8750	.1562	.1562	-	-	-	-	202	130
R1658	.6250	1.0000	.1960	.1960	-	-	-	-	462	295
R10	.6250	1.3750	.2812	.3438	-	-	-	-	1347	734
R1634	.7500	1.0000	.1562	.1562	-	-	-	-	216	139
R1834	.7500	1.1250	.2812	.2812	-	-	-	-	225	154
R12	.7500	1.6250	.3125	.4375	-	-	-	-	1770	1018
R14	.8750	1.8750	.3750	.5000	-	-	-	-	2261	1316
R16	1.0000	2.0000	.3750	.5000	-	-	-	-	2261	1316
R18	1.1250	2.1250	.3750	.5000	-	-	-	-	2150	1407
R20	1.2500	2.2500	.3750	.5000	-	-	-	-	2973	1858
R22	1.3750	2.5000	.4375	.5625	-	-	-	-	2756	1910
R24	1.5000	2.6250	.4375	.5625	-	-	-	-	2906	2084

For Stainless Steel, add an "S" prefix to part number.