TIMKEN





TIMKEN® DEEP GROOVE BALL BEARINGS

DEEP GROOVE BALL BEARING CATALOG INDEX

DEEP GROOVE BALL BEARINGS

- Deep Groove Ball Bearing Range 1
- Bearing Size Range 1
- Standard 6000 Series. 2
- Thin-Section 61000 Series 6
- Narrow 16000 Series 8
- Wide 62000-63000 Series 9
- Miniature and Extra-Small 600 Series 10

ENGINEERING

- Bearings Shields and Seals 11
- Deep Groove Ball Bearing Tolerances 12
- Lubrication. 12
- Fitting Practice 13

WARNINGS

NOMENCLATURE

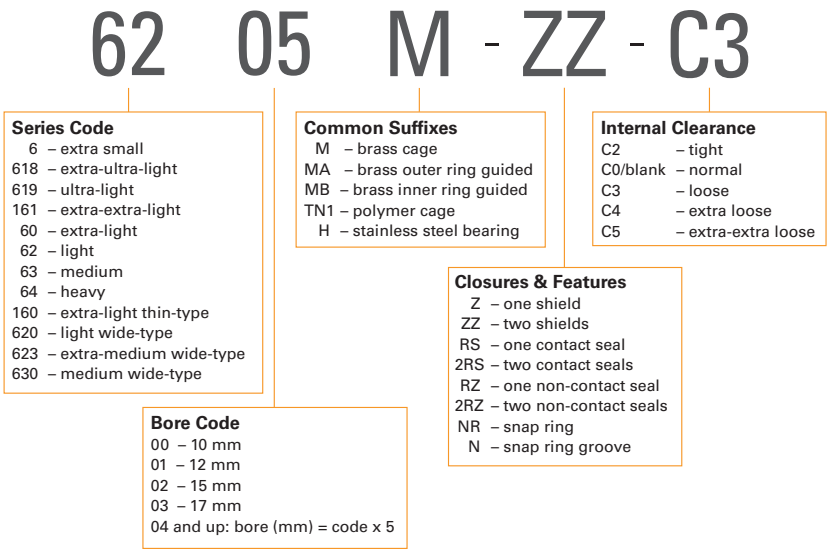


Fig. 1. Deep groove ball bearing nomenclature.

DEEP GROOVE BALL BEARING RANGE

Deep groove ball bearings are available in a variety of sizes. This type of bearing supports radial load and a small degree of axial load in both directions simultaneously. Deep groove ball bearings are popular due to their versatility, affordability, and capability to run at high speeds.

Timken offers deep groove ball bearings in a wide range of sizes and configurations. Offered sizes range from 3 mm to 400 mm bore, and maximum outside diameter of 600 mm.

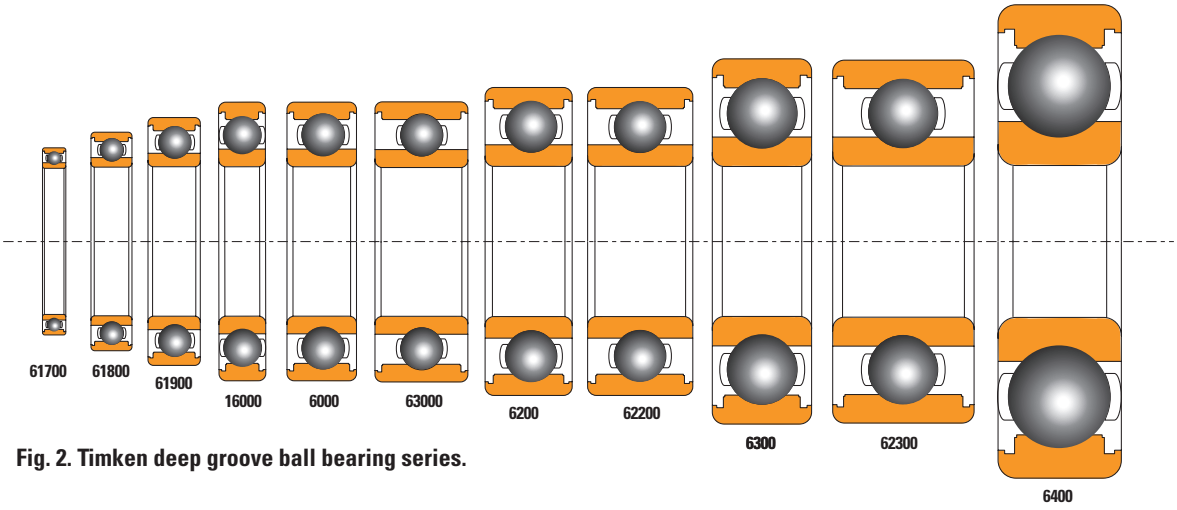


Fig. 2. Timken deep groove ball bearing series.

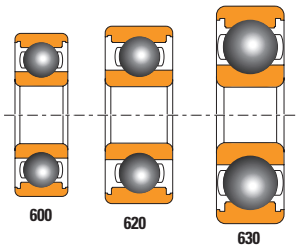


Fig. 3. Timken miniature and extra-small deep groove ball bearing series.

CONFIGURATIONS

There are several series of deep groove ball bearings that have been standardized by bearing manufacturers. The boundary dimensions for standard metric bearings are contained in the general plans as specified in ISO (International Organization for Standardization) standard 15:2017 for radial rolling bearings.

The Timken offering includes standard, thin section, narrow, wide, extra small and miniature constructions. Those are offered in several configurations including the following:

- Open basic design
- With shields
- With contact seals
- With non-contact seals
- With a snap ring groove only
- With a snap ring on the outer ring O.D.

Configurations may differ based on bearing size and/or series. Details are listed in the product tables on pages 2-7.

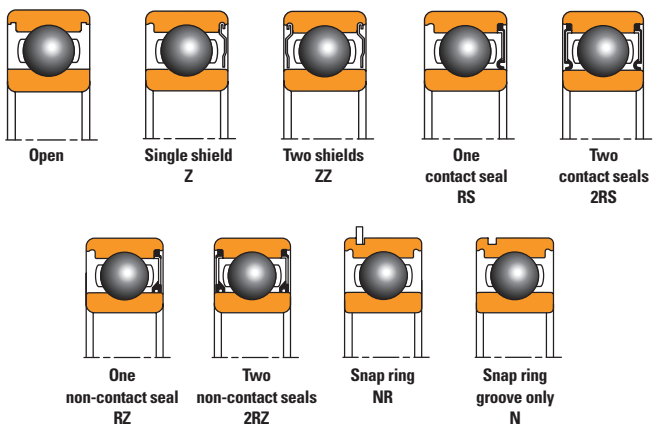
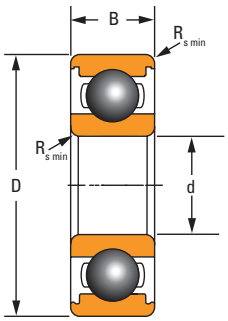


Fig. 4. Deep groove ball bearing variations.

STANDARD 6000 SERIES



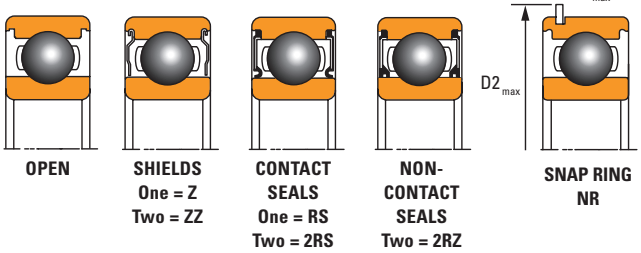


TABLE 1. 6000 SERIES

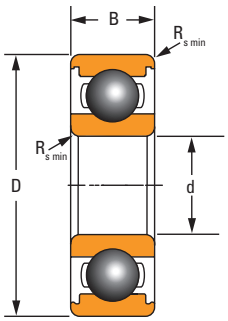
Bearing No.							Boundary Dimensions						Load Ratings		Thermal Reference Speed		Weight
Description	Features						Bore	O.D.	Width	Radius			Dynamic	Static	Grease	Oil	
							d	D	B	$R_{s\ min}$	$D2_{max}$	f_{max}	C_r	C_{0r}			
	Z	ZZ	RS	2RS	2RZ	NR	mm	mm	mm	mm	mm	mm	kN	kN	RPM	RPM	kg
6000	•	•	•	•	•	•	10	26	8	0.3	29.2	0.70	4.60	2.00	26000	38000	0.020
6200	•	•	•	•		•	10	30	9	0.6	34.7	1.12	5.10	2.40	22000	32000	0.030
6300	•	•	•	•		•	10	35	11	0.6	39.7	1.12	8.10	3.50	20000	29000	0.050
6001	•	•	•	•		•	12	28	8	0.3	30.8	0.85	5.10	2.40	23000	33000	0.020
6201	•	•	•	•	•	•	12	32	10	0.6	36.7	1.12	6.80	3.00	21000	30000	0.040
6301	•	•	•	•		•	12	37	12	1.0	41.3	1.12	9.70	4.20	19000	27000	0.060
6002	•	•	•	•		•	15	32	9	0.3	36.7	1.12	5.60	2.80	20000	30000	0.030
6202	•	•	•	•	•	•	15	35	11	0.6	39.7	1.12	7.60	3.70	19000	28000	0.050
6302	•	•	•	•	•	•	15	42	13	1.0	46.3	1.12	11.40	5.40	16000	24000	0.080
6003	•	•	•	•		•	17	35	10	0.3	39.7	1.12	6.00	3.30	19000	28000	0.040
6203	•	•	•	•	•	•	17	40	12	0.6	44.6	1.12	9.60	4.80	17000	25000	0.070
6303	•	•	•	•	•	•	17	47	14	1.0	52.7	1.12	13.60	6.60	15000	22000	0.120
6004	•	•	•	•	•	•	20	42	12	0.6	46.3	1.12	9.40	5.00	17000	25000	0.070
6204	•	•	•	•	•	•	20	47	14	1.0	52.7	1.12	12.80	6.60	15000	22000	0.100
6304	•	•	•	•	•	•	20	52	15	1.1	57.9	1.12	15.90	7.80	13000	20000	0.140
6005	•	•	•	•	•	•	25	47	12	0.6	52.7	1.12	10.10	5.80	14000	21000	0.080
6205	•	•	•	•	•	•	25	52	15	1.0	57.9	1.12	14.00	7.90	14000	20000	0.130
6305	•	•	•	•		•	25	62	17	1.1	67.7	1.70	20.60	11.20	12000	17000	0.220
6405						•	25	80	21	1.5	86.6	1.70	36.10	18.80	10000	15000	0.530
6006	•	•	•	•	•	•	30	55	13	1.0	60.7	1.12	13.20	8.30	12000	18000	0.110
6206	•	•	•	•	•	•	30	62	16	1.0	67.7	1.70	19.50	11.30	11000	16000	0.200
6306	•	•	•	•	•	•	30	72	19	1.1	78.6	1.70	26.60	15.00	10000	15000	0.350
6406						•	30	90	23	1.5	96.5	2.46	47.30	24.50	9300	13000	0.740
6007	•	•	•	•	•	•	35	62	14	1.0	67.7	1.70	15.90	10.30	11000	16000	0.150
6207	•	•	•	•	•	•	35	72	17	1.1	78.6	1.70	25.70	15.30	10000	14000	0.290
6307	•	•	•	•	•	•	35	80	21	1.5	86.6	1.70	33.40	19.20	9300	13000	0.450
6307MB							35	80	21	1.5	-	-	33.40	19.20	9300	13000	0.550
6407							35	100	25	1.5	-	-	55.50	29.40	8500	12000	0.950
6008	•	•	•	•	•	•	40	68	15	1.0	74.6	1.70	16.80	11.50	10000	15000	0.190
6208	•	•	•	•	•	•	40	80	18	1.1	86.6	1.70	29.50	18.10	8800	13000	0.370
6308	•	•	•	•	•	•	40	90	23	1.5	96.5	2.46	40.70	24.00	8500	12000	0.640
6408						•	40	110	27	2.0	116.6	2.46	63.70	34.60	7800	11000	1.250
6009	•	•	•	•	•	•	45	75	16	1.0	81.6	1.70	19.90	14.00	9200	13000	0.230
6209	•	•	•	•		•	45	85	19	1.1	91.6	1.70	31.20	20.30	8200	12000	0.420
6309	•	•	•	•	•	•	45	100	25	1.5	106.5	2.46	48.80	29.30	7800	11000	0.840
6309MB				•			45	100	25	1.5	-	-	48.80	29.30	7800	11000	1.025
6409						•	45	120	29	2.0	129.7	2.82	77.20	45.20	7200	10000	1.550
6010	•	•	•	•	•	•	50	80	16	1.0	86.6	1.70	21.80	16.50	8300	12000	0.250
6210	•	•	•	•	•	•	50	90	20	1.1	96.5	2.46	35.00	23.20	7700	11000	0.460
6310	•	•	•	•		•	50	110	27	2.0	116.6	2.46	57.50	35.30	7200	10000	1.050
6310MB							50	110	27	2.0	-	-	57.50	35.30	7200	10000	1.260
6410							50	130	31	2.1	-	-	83.10	49.40	6800	9700	1.900
6011	•	•	•	•		•	55	90	18	1.1	96.5	2.46	28.30	22.40	7800	11000	0.360
6211	•	•	•	•		•	55	100	21	1.5	106.5	2.46	43.40	29.20	7000	10000	0.610

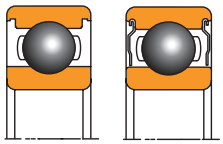
Speed ratings are for open bearings. Use 50 to 60 percent of the published speed ratings for bearings with contact seals.

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STANDARD 6000 SERIES

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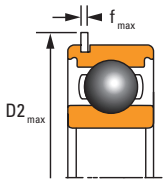




SHIELDS
One = Z
Two = ZZ

CONTACT SEALS
One = RS
Two = 2RS

NON-CONTACT SEALS
Two = 2RZ



SNAP RING
NR

Continued from Table 1.

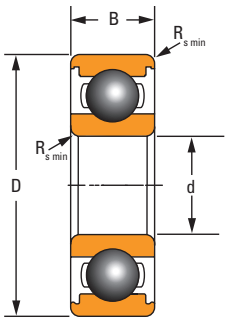
Bearing No.							Boundary Dimensions						Load Ratings		Thermal Reference Speed		Weight
Description	Features						Bore	O.D.	Width	Radius			Dynamic	Static	Grease	Oil	
							d	D	B	$R_{s\ min}$	$D2_{max}$	f_{max}	C_r	C_{0r}			
	Z	ZZ	RS	2RS	2RZ	NR	mm	mm	mm	mm	mm	mm	kN	kN	RPM	RPM	kg
6211MB							55	100	21	1.5	-	-	43.40	29.20	7000	10000	0.724
6311	•	•	•	•	•	•	55	120	29	2.0	129.7	2.82	71.50	44.60	6700	10000	1.350
6311MB							55	120	29	2.0	-	-	71.50	44.60	6700	10000	1.642
6411						•	55	140	33	2.1	149.7	2.82	100.70	62.40	6300	9100	2.300
6012	•	•	•	•	•	•	60	95	18	1.1	101.6	2.46	29.50	22.70	7200	10000	0.390
6212	•	•	•	•		•	60	110	22	1.5	116.6	2.46	47.80	32.90	6500	9300	0.780
6212MB							60	110	22	1.5	-	-	47.80	32.90	6500	9300	0.932
6312	•	•	•	•		•	60	130	31	2.1	139.7	2.82	81.80	51.80	6400	9100	1.700
6312MB							60	130	31	2.1	-	-	81.80	51.80	6400	9100	2.141
6412			•				60	150	35	2.1	-	-	109.00	70.10	6000	8600	2.730
6013	•	•	•	•		•	65	100	18	1.1	106.5	2.46	30.50	23.50	6700	9700	0.430
6213	•	•	•	•		•	65	120	23	1.5	129.7	2.82	57.20	40.00	6000	8600	0.990
6213MB							65	120	23	1.5	-	-	57.20	40.00	6000	8600	1.218
6313	•	•	•	•		•	65	140	33	2.1	149.7	2.82	92.60	59.70	6000	8600	2.100
6313MB							65	140	33	2.1	-	-	92.60	59.70	6000	8600	2.539
6413							65	160	37	2.1	-	-	118.00	78.60	5700	8200	3.300
6014	•	•	•	•	•	•	70	110	20	1.1	116.6	2.46	38.60	30.40	6400	9300	0.570
6214	•	•	•	•		•	70	125	24	1.5	134.7	2.82	60.80	44.00	5700	8300	1.100
6314	•	•	•	•		•	70	150	35	2.1	159.7	2.82	104.00	68.00	5700	8200	2.500
6314MB							70	150	35	2.1	-	-	104.00	68.00	5700	8200	3.172
6015	•	•	•	•		•	75	115	20	1.1	121.6	2.46	40.10	33.10	6000	8700	0.600
6015MB							75	115	20	1.1	-	-	40.10	33.10	6000	8700	0.636
6215	•	•	•	•		•	75	130	25	1.5	139.7	2.82	66.10	49.30	5500	7900	1.200
6315	•	•	•	•		•	75	160	37	2.1	169.7	2.82	113.40	76.50	5400	7800	3.000
6016	•	•	•	•	•	•	80	125	22	1.1	134.7	2.82	47.50	39.80	5800	8400	0.820
6016MB							80	125	22	1.1	-	-	47.50	39.80	5800	8400	0.999
6216	•	•	•	•		•	80	140	26	2.0	149.7	2.82	72.70	53.00	5200	7500	1.400
6216MB							80	140	26	2.0	-	-	72.70	53.00	5200	7500	1.678
6316	•	•	•	•			80	170	39	2.1	-	-	123.00	86.50	5200	7500	3.600
6316MB				•			80	170	39	2.1	-	-	123.00	86.50	5200	7500	4.480
6017	•	•	•	•		•	85	130	22	1.1	139.7	2.82	52.80	44.50	5400	7900	0.850
6017MB							85	130	22	1.1	-	-	52.80	44.50	5400	7900	1.064
6217	•	•	•	•			85	150	28	2.0	-	-	83.20	63.80	5000	7200	1.800
6217MB							85	150	28	2.0	-	-	83.20	63.80	5000	7200	2.175
6317	•	•	•	•		•	85	180	41	3.0	192.9	3.10	132.70	96.50	5000	7200	4.250
6317MB				•			85	180	41	3.0	-	-	132.70	96.50	5000	7200	5.298
6018	•	•	•	•		•	90	140	24	1.5	149.7	2.82	58.00	50.60	5300	7600	1.120
6218	•	•	•	•		•	90	160	30	2.0	169.7	2.82	96.00	71.50	4800	6900	2.150
6218MB							90	160	30	2.0	-	-	96.00	71.50	4800	6900	2.230
6318	•	•	•	•			90	190	43	3.0	-	-	142.60	107.20	4800	6900	4.900
6318MB							90	190	43	3.0	-	-	142.60	107.20	4800	6900	6.129
6019	•	•	•	•			95	145	24	1.5	-	-	60.50	51.00	5000	7300	1.180
6219	•	•	•	•			95	170	32	2.1	-	-	109.00	82.00	4700	6700	2.600
6219MB							95	170	32	2.1	-	-	109.00	82.00	4700	6700	3.167

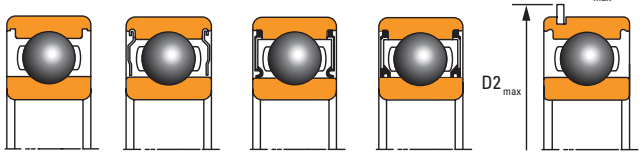
Speed ratings are for open bearings. Use 50 to 60 percent of the published speed ratings for bearings with contact seals.

Continued on next page.

STANDARD 6000 SERIES

– continued





SHIELDS
One = Z
Two = ZZ

CONTACT SEALS
One = RS
Two = 2RS

NON-CONTACT SEALS
Two = 2RZ

SNAP RING
NR

Continued from Table 1.

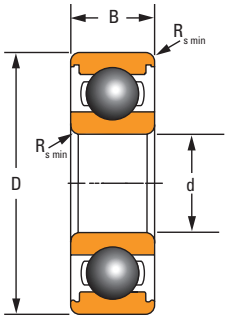
Bearing No.							Boundary Dimensions						Load Ratings		Thermal Reference Speed		Weight
Description	Features						Bore	O.D.	Width	Radius			Dynamic	Static	Grease	Oil	
							d	D	B	$R_{s\ min}$	$D2_{max}$	f_{max}	C_r	C_{0r}			
	Z	ZZ	RS	2RS	2RZ	NR	mm	mm	mm	mm	mm	mm	kN	kN	RPM	RPM	kg
6319	•	•	•	•			95	200	45	3.0	-	-	152.70	118.00	4600	6600	5.750
6319MB							95	200	45	3.0	-	-	152.70	118.00	4600	6600	7.106
6020	•	•	•	•		•	100	150	24	1.5	159.7	2.82	60.20	54.20	4800	6900	1.250
6020MB							100	150	24	1.5	-	-	60.20	54.20	4800	6900	1.466
6220	•	•	•	•			100	180	34	2.1	-	-	122.00	92.70	4500	6500	3.200
6220MB							100	180	34	2.1	-	-	122.00	92.70	4500	6500	3.915
6320	•	•	•	•			100	215	47	3.0	-	-	173.00	140.20	4400	6200	6.980
6320MB							100	215	47	3.0	-	-	173.00	140.20	4400	6200	8.540
6021	•	•		•			105	160	26	2.0	-	-	69.20	61.20	4700	6700	1.600
6021MB							105	160	26	2.0	-	-	69.20	61.20	4700	6700	1.908
6221		•				•	105	190	36	2.1	202.9	3.10	133.00	105.00	4400	6300	3.710
6321							105	225	49	3.0	-	-	183.70	153.10	4200	6000	8.110
6321MB							105	225	49	3.0	-	-	183.70	153.10	4200	6000	9.983
6022	•	•		•		•	110	170	28	2.0	182.9	3.10	82.00	73.00	4600	6600	1.930
6022MB							110	170	28	2.0	-	-	82.00	73.00	4600	6600	2.300
6222	•	•	•	•			110	200	38	2.1	-	-	144.00	117.00	4300	6100	4.440
6222MB							110	200	38	2.1	-	-	144.00	117.00	4300	6100	5.333
6322		•	•				110	240	50	3.0	-	-	205.00	178.30	3900	5500	9.480
6322MB							110	240	50	3.0	-	-	205.00	178.30	3900	5500	11.815
6024	•	•	•	•		•	120	180	28	2.0	192.9	3.10	88.10	79.30	4200	6100	2.030
6024MB							120	180	28	2.0	-	-	88.10	79.30	4200	6100	2.500
6224		•	•	•			120	215	40	2.1	-	-	155.30	131.10	4000	5700	5.160
6224MB							120	215	40	2.1	-	-	155.30	131.10	4000	5700	6.615
6324							120	260	55	3.0	-	-	227.60	207.40	3600	5100	12.400
6324MB							120	260	55	3.0	-	-	227.60	207.40	3600	5100	12.960
6026		•		•		•	130	200	33	2.0	212.9	3.10	250.90	96.80	4100	5900	3.150
6026MB							130	200	33	2.0	-	-	250.90	96.80	4100	5900	3.799
6226		•	•	•			130	230	40	3.0	-	-	165.00	148.00	3700	5200	5.850
6226MB							130	230	40	3.0	-	-	165.00	148.00	3700	5200	7.540
6326							130	280	58	4.0	-	-	250.90	238.70	3300	4600	15.300
6326MB							130	280	58	4.0	-	-	250.90	238.70	3300	4600	18.150
6028		•		•			140	210	33	2.0	-	-	274.00	101.80	3800	5600	3.500
6028MB							140	210	33	2.0	-	-	274.00	101.80	3800	5600	4.275
6228			•				140	250	42	3.0	-	-	166.00	150.00	3400	4900	7.450
6228MB							140	250	42	3.0	-	-	166.00	150.00	3400	4900	8.460
6328							140	300	62	4.0	-	-	253.00	254.00	3100	4300	18.500
6328MB							140	300	62	4.0	-	-	253.00	254.00	3100	4300	22.980
6030		•		•			150	225	35	2.1	-	-	131.70	124.50	3600	5200	4.900
6030MB							150	225	35	2.1	-	-	131.70	124.50	3600	5200	4.960
6230							150	270	45	3.0	-	-	176.00	168.00	3200	4500	9.400
6230MB							150	270	45	3.0	-	-	176.00	168.00	3200	4500	11.900
6330							150	320	65	4.0	-	-	274.00	270.00	2800	4000	22.000
6330MB							150	320	65	4.0	-	-	274.00	270.00	2800	4000	28.200
6032		•		•			160	240	38	2.1	-	-	136.60	135.40	3500	5100	5.150

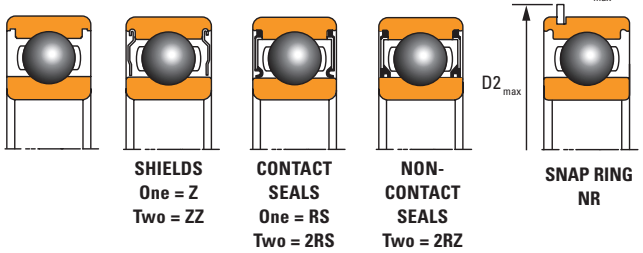
Speed ratings are for open bearings. Use 50 to 60 percent of the published speed ratings for bearings with contact seals.

Continued on next page.

STANDARD 6000 SERIES

– continued



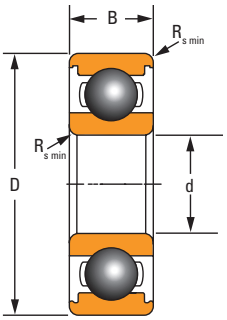


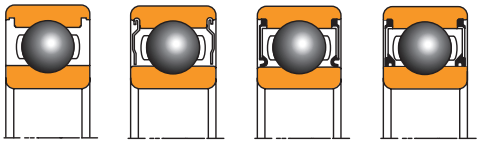
Continued from Table 1.

Bearing No.							Boundary Dimensions						Load Ratings		Thermal Reference Speed		Weight
Description	Features						Bore	O.D.	Width	Radius			Dynamic	Static	Grease	Oil	
							d	D	B	$R_{s\ min}$	$D2_{max}$	f_{max}	C_r	C_{0r}			
	Z	ZZ	RS	2RS	2RZ	NR	mm	mm	mm	mm	mm	mm	kN	kN	RPM	RPM	kg
6032MB							160	240	38	2.1	-	-	136.60	135.40	3500	5100	6.230
6232							160	290	48	3.0	-	-	185.00	186.00	2900	4200	11.700
6232MB							160	290	48	3.0	-	-	185.00	186.00	2900	4200	15.300
6332							160	340	68	4.0	-	-	301.00	317.00	2600	3700	26.000
6332MB							160	340	68	4.0	-	-	301.00	317.00	2600	3700	32.900
6034							170	260	42	2.1	-	-	168.00	172.00	3300	4800	6.700
6034MB							170	260	42	2.1	-	-	168.00	172.00	3300	4800	8.320
6234							170	310	52	4.0	-	-	212.00	223.00	2700	3900	14.500
6234MB							170	310	52	4.0	-	-	212.00	223.00	2700	3900	19.140
6334							170	360	72	4.0	-	-	335.50	378.10	2400	3400	30.700
6334MB							170	360	72	4.0	-	-	335.50	378.10	2400	3400	38.800
6036							180	280	46	2.1	-	-	189.00	198.00	3100	4500	8.800
6036MB							180	280	46	2.1	-	-	189.00	198.00	3100	4500	10.692
6236							180	320	52	4.0	-	-	227.00	241.00	2600	3700	15.100
6236MB							180	320	52	4.0	-	-	227.00	241.00	2600	3700	21.386
6336							180	380	75	4.0	-	-	355.00	405.00	2300	3200	35.600
6336MB							180	380	75	4.0	-	-	355.00	405.00	2300	3200	45.770
6038							190	290	46	2.1	-	-	172.00	200.00	3000	4300	9.100
6038MB							190	290	46	2.1	-	-	172.00	200.00	3000	4300	11.010
6238							190	340	55	4.0	-	-	378.00	439.00	2400	3400	18.200
6238MB							190	340	55	4.0	-	-	378.00	439.00	2400	3400	23.600
6338							190	400	78	5.0	-	-	255.00	281.00	2200	3000	41.000
6338MB							190	400	78	5.0	-	-	255.00	281.00	2200	3000	51.370
6040							200	310	51	2.1	-	-	218.00	243.00	2800	4000	11.900
6040MB							200	310	51	2.1	-	-	218.00	243.00	2800	4000	14.540
6240							200	360	58	4.0	-	-	269.00	310.00	2300	3200	21.600
6240MB							200	360	58	4.0	-	-	269.00	310.00	2300	3200	28.050
6340							200	420	80	5.0	-	-	380.00	445.00	2100	2900	46.300
6340MB							200	420	80	5.0	-	-	380.00	445.00	2100	2900	46.450
6044MB							220	340	56	3.0	-	-	247.00	290.00	2600	3600	17.750
6244MB							220	400	65	4.0	-	-	296.00	365.00	2100	2900	3.700
6344MB							220	460	88	5.0	-	-	410.00	520.00	1900	2600	72.700
6048MB							240	360	56	3.0	-	-	255.00	315.00	2300	3300	17.900
6248MB							240	440	72	4.0	-	-	358.00	475.00	2200	3100	51.000
6052MB							260	400	65	4.0	-	-	291.00	375.00	2100	3000	30.400
6252MB							260	480	80	5.0	-	-	390.00	530.00	1700	2400	66.600
6056MB							280	420	65	4.0	-	-	302.00	405.00	2000	2800	31.000
6060MB							300	460	74	4.0	-	-	358.00	500.00	2000	2800	43.600
6064MB							320	480	74	4.0	-	-	371.00	540.00	1700	2400	46.000
6068MB							340	520	82	5.0	-	-	423.00	640.00	1800	2600	63.800
6072MB							360	540	82	5.0	-	-	460.00	720.00	1500	2100	69.000
6076MB							380	560	82	5.0	-	-	462.00	750.00	1600	2300	70.400
6080MB							400	600	90	5.0	-	-	520.00	865.00	1300	1900	85.800

Speed ratings are for open bearings. Use 50 to 60 percent of the published speed ratings for bearings with contact seals.

THIN-SECTION 61000 SERIES





OPEN | SHIELDS Two = ZZ | CONTACT SEALS Two = 2RS | NON-CONTACT SEALS Two = 2RZ

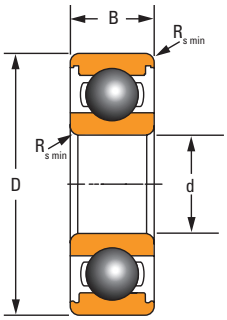
TABLE 2. 61000 SERIES

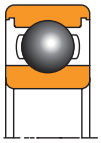
Bearing No.	Features			Boundary Dimensions				Load Ratings		Limiting Speed		Weight
Description				Bore d	O.D. D	Width B	Radius $R_{s\ min}$	Dynamic C_r	Static C_{0r}	Grease	Oil	
	ZZ	2RS	2RZ	mm	mm	mm	mm	kN	kN	RPM	RPM	kg
61800		•		10	19	5	0.3	1.70	0.84	34000	40000	0.005
61900	•	•		10	22	6	0.3	2.70	1.30	31000	37000	0.009
61701				12	18	4	0.2	0.93	0.53	13000	15000	0.003
61801	•	•		12	21	5	0.3	1.90	1.00	30000	36000	0.005
61901	•	•		12	24	6	0.3	2.90	1.50	28000	33000	0.010
61702				15	21	4	0.2	0.94	0.58	11000	13000	0.003
61802	•	•		15	24	5	0.3	2.10	1.30	26000	31000	0.006
61902	•	•		15	28	7	0.3	4.30	2.30	24000	29000	0.015
61703				17	23	4	0.2	1.00	0.66	9500	11000	0.004
61803	•	•		17	26	5	0.3	2.20	1.50	24000	29000	0.007
61903	•	•		17	30	7	0.3	4.60	2.60	22000	26000	0.016
61704				20	27	4	0.2	1.00	0.72	8500	10000	0.005
61804	•	•		20	32	7	0.3	4.00	2.50	21000	25000	0.016
61904	•	•		20	37	9	0.3	6.40	3.70	19000	22000	0.033
61705				25	32	4	0.2	1.10	0.84	7000	8000	0.006
61805	•	•		25	37	7	0.3	4.30	2.90	18000	21000	0.020
61905	•	•		25	42	9	0.3	7.00	4.60	16000	19000	0.039
61706				30	37	4	0.2	1.10	0.95	5500	7000	0.007
61806	•	•		30	42	7	0.3	4.50	3.40	15000	18000	0.023
61906	•	•		30	47	9	0.3	7.20	5.00	14000	17000	0.044
61707				35	44	5	0.3	1.90	1.60	4900	6000	0.014
61807	•	•		35	47	7	0.3	4.70	3.80	13000	16000	0.027
61907	•	•	•	35	55	10	0.6	9.60	6.80	12000	14000	0.069
61708				40	50	6	0.3	2.50	2.20	4300	5000	0.021
61808	•	•		40	52	7	0.3	4.90	4.20	12000	14000	0.029
61908	•	•		40	62	12	0.6	13.70	9.90	11000	13000	0.101
61709				45	55	6	0.3	2.60	2.40	3900	4600	0.023
61809	•	•		45	58	7	0.3	6.20	5.40	11000	13000	0.034
61909	•	•		45	68	12	0.6	14.10	10.90	10000	11000	0.123
61710				50	62	6	0.3	2.70	2.70	3500	4100	0.034
61810	•	•		50	65	7	0.3	6.20	5.80	9500	11000	0.047
61910	•	•		50	72	12	0.6	14.50	11.70	9000	11000	0.123
61811	•	•		55	72	9	0.3	8.80	8.10	8600	10000	0.075
61911		•		55	80	13	1.0	16.60	14.10	8100	9600	0.168
61812	•	•		60	78	10	0.3	11.50	10.60	7900	9400	0.094
61912		•		60	85	13	1.0	20.20	17.30	7500	8900	0.180
61813	•	•		65	85	10	0.6	11.90	11.50	7300	8600	0.118
61913				65	90	13	1.0	17.30	16.00	7000	8300	0.198
61814	•	•		70	90	10	1.0	12.10	11.90	6700	8000	0.130
61914	•	•		70	100	16	1.5	23.70	21.10	6300	7500	0.340
61815	•	•		75	95	10	1.0	12.50	12.80	6300	7500	0.150
61915	•	•		75	105	16	1.5	24.30	22.50	6000	7100	0.360
61816	•	•		80	100	10	1.0	12.70	13.30	6000	7100	0.150
61916	•	•		80	110	16	1.5	24.90	23.90	5600	6700	0.390
61817	•	•		85	110	13	1.5	19.20	19.80	5600	6700	0.270
61917	•	•		85	120	18	2.0	31.90	29.60	5300	6300	0.550

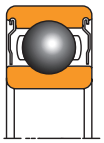
Speed ratings are for open bearings. Use 50 to 60 percent of the published speed ratings for bearings with contact seals.

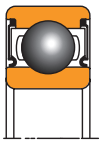
THIN-SECTION 61000 SERIES

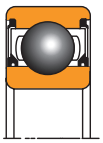
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OPEN


SHIELDS
Two = ZZ


CONTACT SEALS
Two = 2RS


NON-CONTACT SEALS
Two = 2RZ

Continued from Table 2.

Bearing No.	Features			Boundary Dimensions				Load Ratings		Limiting Speed		Weight
Description				Bore d	O.D. D	Width B	Radius $R_{s\ min}$	Dynamic C_r	Static C_{0r}	Grease	Oil	
	ZZ	2RS	2RZ	mm	mm	mm	mm	kN	kN	RPM	RPM	kg
61818	•	•		90	115	13	1.5	19.50	20.50	5300	6300	0.280
61918	•	•		90	125	18	2.0	32.80	31.50	5000	6000	0.590
61826		•		130	165	18	1.1	37.90	42.90	3400	5000	0.780
61928MA				140	190	24	1.5	66.50	71.50	3200	3800	2.000
61932MA				160	220	28	2.0	86.90	95.50	2600	3200	3.120
61830				150	190	20	1.1	49.10	57.10	3000	3700	1.170
61944MA				220	300	38	2.1	151.00	177.00	1900	2400	8.000
61848MA				240	300	28	2.0	104.90	133.70	1800	2200	4.670
61948MA				240	320	38	2.1	159.00	200.00	1800	2200	8.600
61860MA				300	380	38	2.1	171.00	228.00	1300	1600	10.700
61864MA				320	400	38	2.1	172.70	236.20	1300	1600	11.000
61984MA				420	560	65	4.0	352.00	586.00	900	1100	43.000
61884MA				420	520	46	2.1	251.00	393.00	950	1200	21.50
61888MA				440	540	46	2.1	255.00	405.00	900	1100	22.50
61892MA				460	580	56	3.0	311.00	515.00	900	1100	35.90
61896MA				480	600	56	3.0	325.00	560.00	850	1000	36.50
618/500MA				500	620	56	3.0	330.00	580.00	800	950	37.50
618/530MA				530	650	56	3.0	333.00	595.00	750	900	39.50
618/560MA				560	680	56	3.0	290.00	523.00	700	850	43.90
618/600MA				600	730	60	3.0	365.00	690.00	670	800	52.00
618/670MA				670	820	69	4.0	395.00	780.00	560	670	80.30
618/710MA				710	870	74	4.0	480.00	1010.00	530	630	87.40
618/750MA				750	920	78	5.0	475.00	1010.00	500	600	115.10
618/800MA				800	980	82	5.0	560.00	1250.00	450	530	130.00
618/850MA				850	1030	82	5.0	565.00	1290.00	380	450	140.00

Speed ratings are for open bearings. Use 50 to 60 percent of the published speed ratings for bearings with contact seals.

NARROW 16000 SERIES

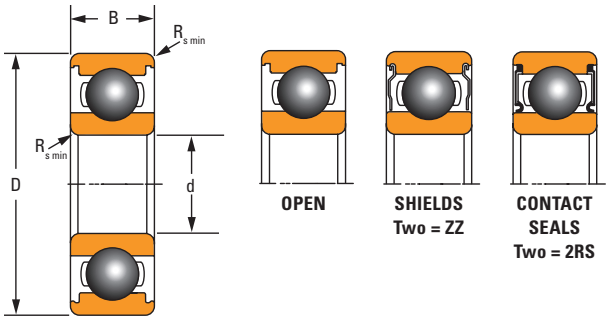


TABLE 3. 16000 SERIES

Bearing No.			Boundary Dimensions				Load Ratings		Limiting Speed		Weight
Description	Features		Bore d	O.D. D	Width B	Radius $R_{s\ min}$	Dynamic C_r	Static C_{0r}	Grease	Oil	
	ZZ	2RS	mm	mm	mm	mm	kN	kN	RPM	RPM	kg
16100	•		10	28	8	0.3	4.60	2.00	25000	37000	0.022
16101	•	•	12	30	8	0.3	5.10	2.40	22000	33000	0.024
16002	•		15	32	8	0.3	5.60	2.80	19000	27000	0.027
16003	•		17	35	8	0.3	6.00	3.30	17000	24000	0.030
16004			20	42	8	0.3	6.30	3.80	13000	20000	0.050
16005	•		25	47	8	0.3	7.00	4.60	11000	16000	0.060
16006			30	55	9	0.3	9.20	6.30	10000	14000	0.080
16007			35	62	9	0.3	12.20	8.80	8400	12000	0.100
16008			40	68	9	0.3	12.60	9.70	7400	11000	0.130
16009			45	75	10	0.6	15.60	12.20	6900	10000	0.170
16010			50	80	10	0.6	16.10	13.10	6300	9100	0.180
16011			55	90	11	0.6	19.40	16.30	5800	8500	0.260
16012			60	95	11	0.6	19.90	17.50	5400	7800	0.220
16013			65	100	11	0.6	20.50	18.70	5000	7300	0.290
16014			70	110	13	0.6	26.80	23.60	5000	7200	0.430
16015			75	115	13	0.6	27.60	25.30	4600	6700	0.450
16016			80	125	14	0.6	31.90	29.60	4400	6400	0.590
16017			85	130	14	0.6	32.60	31.60	4200	6000	0.570
16018			90	140	16	1.0	39.90	37.00	4200	6100	0.670
16019			95	145	16	1.0	42.70	41.90	3900	5300	0.710
16020			100	150	16	1.0	43.80	44.30	3800	5300	0.740
16021			105	160	18	1.0	51.80	50.60	3800	4800	1.000
16022			110	170	19	1.0	57.40	56.70	3600	5300	1.300
16024			120	180	19	1.0	58.80	60.40	3300	4800	1.400
16026			130	200	22	1.1	79.70	79.20	3200	4700	1.900
16028			140	210	22	1.1	82.10	85.00	3000	4400	2.000
16030			150	225	24	1.1	91.90	98.50	2900	4200	2.600
16032			160	240	25	1.5	99.00	108.00	2800	4000	4.200

Speed ratings are for open bearings. Use 50 to 60 percent of the published speed ratings for bearings with contact seals.

WIDE 62000-63000 SERIES

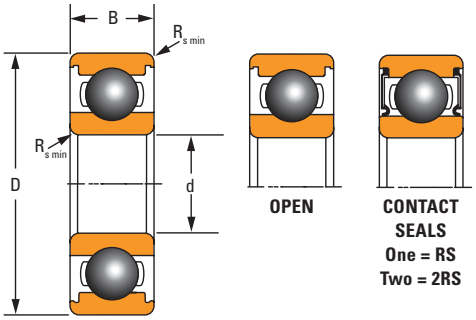


TABLE 4. 62000-63000 SERIES

Bearing No.			Boundary Dimensions				Load Ratings		Limiting Speed		Weight
Description	Features		Bore	O.D.	Width	Radius	Dynamic	Static	Grease	Oil	
			d	D	B	$R_{s\,min}$	C_r	C_{0r}			
	RS	2RS	mm	mm	mm	mm	kN	kN	RPM	RPM	kg
62200		•	10	30	14	0.6	6.00	2.40	29000	42000	0.040
62300		•	10	35	17	0.6	8.10	3.40	26000	38000	0.070
63000		•	10	26	12	0.3	4.60	2.00	33000	49000	0.030
62201		•	12	32	14	0.6	6.90	3.10	26000	37000	0.050
62301		•	12	37	17	1.0	9.80	4.20	23000	34000	0.080
63001		•	12	28	12	0.3	5.10	2.40	29000	43000	0.030
62202		•	15	35	14	0.6	7.80	3.80	22000	32000	0.050
62302		•	15	42	17	1.0	11.40	5.40	19000	28000	0.100
63002		•	15	32	13	0.3	5.60	2.80	25000	37000	0.040
62203		•	17	40	16	0.6	9.60	4.80	20000	30000	0.080
62303		•	17	47	19	1.0	13.50	6.60	18000	26000	0.140
63003		•	17	35	14	0.3	6.00	3.30	23000	34000	0.050
62204		•	20	47	18	1.0	12.70	6.60	18000	26000	0.120
62304		•	20	52	21	1.1	15.90	7.80	17000	24000	0.140
63004		•	20	42	16	0.6	9.40	5.00	20000	30000	0.090
62205		•	25	52	18	1.0	14.00	7.80	15000	22000	0.150
62305		•	25	62	24	1.1	22.50	11.60	14000	21000	0.300
63005		•	25	47	16	0.6	10.10	5.80	17000	25000	0.100
62206		•	30	62	20	1.0	19.50	11.20	13000	19000	0.230
62306		•	30	72	27	1.1	28.10	16.00	13000	18000	0.470
63006		•	30	55	19	1.0	13.20	8.30	15000	23000	0.150
62207		•	35	72	23	1.1	25.50	15.30	12000	17000	0.370
62307		•	35	80	31	1.5	33.20	19.00	12000	17000	0.620
63007	•	•	35	62	20	1.0	16.00	10.30	14000	20000	0.200
62208		•	40	80	23	1.1	30.70	19.00	10000	15000	0.440
62308		•	40	90	33	1.5	41.00	24.00	11000	15000	0.850
63008		•	40	68	21	1.0	16.80	11.60	12000	18000	0.240
62209		•	45	85	23	1.1	33.20	21.60	9200	13000	0.460
62309		•	45	100	36	1.5	52.70	31.50	9700	14000	1.100
63009		•	45	75	23	1.5	20.90	15.20	5300	10000	0.330
62210		•	50	90	23	1.1	35.10	23.20	8500	12000	0.470
62310		•	50	110	40	2.0	61.80	38.00	9200	13000	1.500
63010		•	50	80	23	1.5	21.80	16.60	4800	9000	0.360
62211		•	55	100	25	1.5	43.60	29.00	7800	11000	0.680
62311			55	120	43	2.0	71.50	45.00	4000	8000	2.000
62212		•	60	110	28	1.5	52.70	36.00	7500	11000	1.000
62312			60	130	46	2.1	81.80	51.90	8100	12000	2.500
62213			65	120	31	1.5	55.90	40.50	7200	10000	1.300
62214			70	125	31	1.5	60.50	45.50	6700	9700	1.400

Speed ratings are for open bearings. Use 50 to 60 percent of the published speed ratings for bearings with contact seals.

MINIATURE AND EXTRA-SMALL 600 SERIES

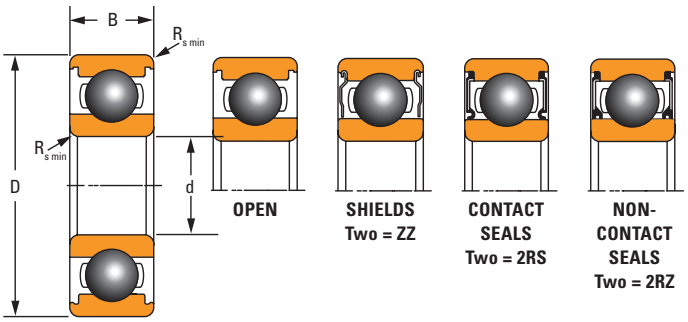


TABLE 5. 600 SERIES

Bearing No.				Boundary Dimensions				Load Ratings		Limiting Speed		Weight
Description	Features			Bore	O.D.	Width	Radius	Dynamic	Static	Grease	Oil	
				d	D	B	$R_{s\,min}$	C_r	C_{0r}			
	ZZ	2RS	2RZ	mm	mm	mm	mm	kN	kN	RPM	RPM	kg
618/3				3	7	2	0.10	0.31	0.11	74000	88000	0.0003
619/3				3	8	3	0.15	0.56	0.18	70000	82000	0.0006
603				3	9	3	0.15	0.57	0.19	66000	78000	0.0009
623	•	•		3	10	4	0.15	0.63	0.22	66000	78000	0.0016
633				3	13	5	0.20	1.30	0.49	51000	60000	0.0030
618/4				4	9	2.5	0.10	0.64	0.23	63000	75000	0.0006
619/4				4	11	4	0.15	1.00	0.35	57000	67000	0.0017
604	•			4	12	4	0.20	1.00	0.35	57000	67000	0.0020
624	•	•		4	13	5	0.20	1.30	0.49	51000	60000	0.0027
634	•	•		4	16	5	0.30	1.30	0.52	46000	54000	0.0050
618/5				5	11	3	0.15	0.72	0.28	54000	64000	0.0012
619/5				5	13	4	0.20	1.10	0.43	50000	59000	0.0021
605	•	•		5	14	5	0.20	1.30	0.51	48000	56000	0.0030
625	•	•		5	16	5	0.30	1.70	0.67	44000	52000	0.0040
635	•	•		5	19	6	0.30	2.30	0.89	38000	45000	0.0080
618/6				6	13	3.5	0.15	1.10	0.44	48000	56000	0.0019
619/6	•			6	15	5	0.20	1.30	0.52	46000	54000	0.0040
606	•	•		6	17	6	0.30	2.30	0.84	42000	49000	0.0050
626	•	•	•	6	19	6	0.30	2.30	0.89	38000	45000	0.0070
636				6	22	7	0.30	3.30	1.40	33000	39000	0.0120
618/7				7	14	3.5	0.15	1.20	0.51	44000	52000	0.0020
619/7				7	17	5	0.30	1.60	0.72	40000	47000	0.0050
607	•	•	•	7	19	6	0.30	2.30	0.89	38000	45000	0.0070
627	•	•	•	7	22	7	0.30	3.30	1.40	33000	39000	0.0120
637	•			7	26	9	0.30	4.60	2.00	28000	33000	0.0220
618/8				8	16	4	0.20	1.30	0.59	40000	47000	0.0032
619/8	•	•		8	19	6	0.30	2.20	0.91	37000	44000	0.0060
608	•	•	•	8	22	7	0.30	3.30	1.40	33000	39000	0.0110
628	•	•		8	24	8	0.30	3.30	1.40	31000	37000	0.0170
638	•			8	28	9	0.30	4.60	2.00	28000	33000	0.0270
618/9				9	17	4	0.20	1.30	0.66	37000	44000	0.0034
619/9	•			9	20	6	0.30	2.50	1.10	35000	42000	0.0070
609	•	•	•	9	24	7	0.30	3.40	1.40	30000	36000	0.0130
629	•	•	•	9	26	8	0.30	4.60	2.00	28000	33000	0.0180
639	•			9	30	10	0.60	5.10	2.40	25000	30000	0.0330

Speed ratings are for open bearings. Use 50 to 60 percent of the published speed ratings for bearings with contact seals.

BEARING SHIELDS AND SEALS

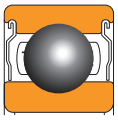
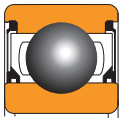
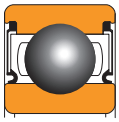
Bearing shields and seals help keep lubricant in and dust, water and other contaminants out.

Timken shielded deep groove ball bearings are available with one or two shields for coarse debris. Single shielded bearings allow for re-lubrication from the open side.

Sealed ball bearings are available with one or two seals for improved protection in harsh environments. Offered in contact or non-contact configurations, Timken seals use high-performance Nitrile Buna Rubber with reinforced low-carbon steel case for standard operating temperatures.

The following table summarizes the main characteristics of shields and seals.

TABLE 6. CHARACTERISTICS OF TIMKEN BALL BEARING SHIELDS AND SEALS

Type	Shields One = Z Two = ZZ	Non-Contact Seals One = RZ Two = 2RZ	Contact Seals One = RS Two = 2RS
Construction			
Material	Low carbon pressed steel	Nitrile Buna Rubber with steel case	Nitrile Buna Rubber with steel case
Speed Capability	High speed	High speed	Lower than shield and non-contact configurations
Operating Temperature	-50 to +120° C	-40 to +120° C	-40 to +120° C
Grease Retention	Good	Better than shield type	Excellent
Dust Resistance	Good	Better than shield type	Excellent
Torque	Low	Low	Higher than shield and non-contact configurations

NOTE: The above operating temperature ranges are for standard shielded and sealed bearings. If higher temperature capability is needed, alternative bearing, grease or seal materials may be considered. Please contact your Timken sales engineer for such requirements.

SPEED RATING

THERMAL REFERENCE SPEED

The thermal reference speed is the bearing thermal equilibrium speed based on industry standard reference conditions outlined in ISO 15312: 2003. Thermal equilibrium balances the heat generated by the bearing, with heat conduction through the housing and shaft. This standard applies to both bath oil lubricated and 30 percent grease fill packed bearings. It excludes any heat removed by a circulating lubricant. This standard also excludes the outer ring rotating application and heat generated by contact seals.

The ISO 15312 thermal reference speed rating calculations are based on the following assumptions:

- The bearing ambient temperature is 20° C.
- The tolerable bearing/housing interface temperature is 70° C.
- Oil and grease lubricants are considered.
  - For radial bearings with oil lubrication: ISO VG 32 oil.
  - For radial bearings with grease lubrication: ISO VG 150 grease.
- The radial loads assume a normal clearance (C0).
- For radial bearings, the applied load is 5 percent of the static load rating (C_{0r}).

Thermal reference speed ratings assume the bearing has been sufficiently broken in. During the break-in process, temperatures may exceed the tolerable limit. Break-in commonly takes between 10 to 36 hours.

Standard bearing materials and lubricants can generally withstand temperatures up to and beyond 100° C. For this reason, a permissible temperature of 100° C was assumed for the thermal speed rating calculation. Contact your Timken sales engineer if your application requires speeds above the Timken published values.

LIMITING SPEED

For certain ball bearing types and sizes, cage behavior becomes the limiting factor to bearing operating speed. For such bearings, the thermal speed rating per ISO 15312:2003 is not shown. Instead, Timken publishes limiting speeds for those bearings, as is the case for thin-section and extra-small deep groove ball bearings.

For bearings with contact seals, the speed rating also is impacted by the speed of the seal. In general, bearings with contact seals have speed ratings that are 50 percent to 60 percent of the published speed rating of the equivalent open bearing.

DEEP GROOVE BALL BEARING TOLERANCES

Ball bearings are manufactured to a number of specifications, with each having classes that define tolerances on dimensions such as bore, outer diameter, width and runout.

Standard Timken deep groove ball bearings maintain normal tolerances (P0) according to the current ISO 492 standard. For applications where running tolerance is critical, P6 or P5 tolerances are recommended.

The term "deviation" is defined as the difference between a single ring dimension and the nominal dimension. For metric tolerances, the normal dimension is at a +0 mm tolerance. The deviation is the tolerance range for the listed parameter. Variation is defined as the difference between the largest and smallest measurement of a given parameter for an individual ring.

Tables 7 and 8 provide tolerances for deep groove ball bearing inner and outer rings respectively.

TABLE 7. INNER RING TOLERANCES

Bearing Bore		Bore Deviation	Width Variation	Radial Runout	Face Runout with Bore	Axial Runout	Width Deviation Inner and Outer Rings	
d		Δd_{mp}	V_{BS}	K_{ia}	S_d	S_{ia}	ΔBs and ΔCs	
over	incl.	P0	P0, P6	P0	P5	P5	P0, P6	P5
mm	**mm**	µm	µm	µm	µm	µm	µm	µm
2.5	**10**	-8	15	10	7	7	-120	-40
10	**18**	-8	20	10	7	7	-120	-80
18	**30**	-10	20	13	8	8	-120	-120
30	**50**	-12	20	15	8	8	-120	-120
50	**80**	-15	25	20	8	8	-150	-150
80	**120**	-20	25	25	9	9	-200	-200
120	**150**	-25	30	30	10	10	-250	-250
150	**180**	-25	30	30	10	10	-250	-250
180	**250**	-30	30	40	11	13	-300	-300
250	**315**	-35	35	50	13	15	-350	-350
315	**400**	-40	40	60	15	20	-400	-400
400	**500**	-45	50	65	–	–	-450	–
500	**630**	-50	60	70	–	–	-500	–
630	**800**	-75	70	80	–	–	-750	–
800	**1000**	-100	80	90	–	–	-1000	–
1000	**1250**	-125	100	100	–	–	-1250	–
1250	**1600**	-160	120	120	–	–	-1600	–

TABLE 8. OUTER RING TOLERANCES

Bearing O.D.		Outside Deviation	Width Variation	Radial Runout	Axial Runout	Outside Diameter Runout With Face
D		ΔD_{mp}	V_{CS}	K_{ea}	S_{ea}	S_D
over	incl.	P0	P0	P0	P5	P5
mm	**mm**	µm	µm	µm	µm	µm
6	**18**	-8	15	15	8	8
18	**30**	-9	15	15	8	8
30	**50**	-11	20	20	8	8
50	**80**	-13	25	25	10	8
80	**120**	-15	25	35	11	9
120	**150**	-18	30	40	13	10
150	**180**	-25	30	45	14	10
180	**250**	-30	30	50	15	11
250	**315**	-35	35	60	18	13
315	**400**	-40	40	70	20	13
400	**500**	-45	45	80	23	15
500	**630**	-50	50	100	25	18
630	**800**	-75	60	120	30	20
800	**1000**	-100	70	140	–	–
1000	**1250**	-125	80	160	–	–

LUBRICATION

Ball bearings must be lubricated to minimize friction between balls and raceways, as well as between balls and cages. Lubricants also help to protect the bearings from corrosion and, in some cases, to dissipate heat.

Timken open ball bearings, as well as single-sealed/shielded bearings, are supplied with rust preventive (RP) covering all bearing surfaces. For such bearings, the end user selects and applies the desired lubrication type and quantity as required by the application.

Timken double-sealed and double-shielded deep groove ball bearings are factory pre-lubricated with water-resistant grease chosen for chemical and mechanical stability.

The standard factory grease fill is 30 percent to 50 percent for most Timken double-sealed/shielded ball bearings. This accommodates most applications. The type and amount of grease needed varies depending on operating conditions and bearing series. Most bearings can be filled with customer-specified greases upon request to meet specific application needs.

FITTING PRACTICE

As a general guideline, bearing rings mounted on a rotating member should have an interference fit. Loose fits may permit the ring to creep or turn, and wear the mating surface and backing shoulder. This wear can result in excessive bearing looseness and damage the bearing, shaft or housing.

The choice of fitting practices will mainly depend upon the following parameters:

- Precision class of the bearing.
- Rotating or stationary ring.
- Type of layout (single- or double-row bearings).
- Type and direction of load (continuous/alternate rotating).
- Particular running conditions like shocks, vibrations, over-loading or high speed.
- Capability for machining the seats (grinding, turning or boring).
- Shaft and housing section and material.
- Mounting and setting conditions.

Fig. 5 is a graphical representation of ball bearing shaft and housing fit selection that conforms to accepted industry standards and practices. The bars designated g6, h6, etc., represent shaft/housing diameter and tolerance ranges to achieve various loose and interference fits required for various load and ring rotation conditions.

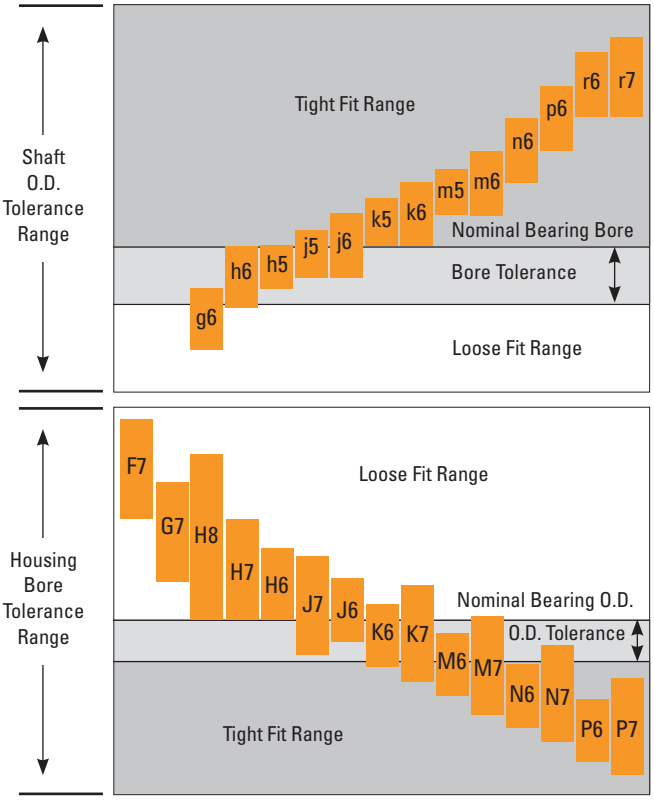


Fig. 5. Shaft and housing fit selection.

NOTE

Do not attempt to disassemble unitized bearings. Components may become damaged and affect the performance and service life of the bearing.

Do not mix components of matched assemblies. Mixing components can reduce the service life of the bearing.

NOT TO BE USED AS A DESIGN MANUAL.
This is not a manual for the selection of bearings for new applications. Whenever it is necessary to select Timken bearings for new applications, consult the Timken Engineering Manual (order no. 10424) or get in touch with the nearest office of The Timken Company.

Never use steam or hot water when cleaning the bearings because these methods can create rust or corrosion.

Do not heat components with an open flame.

Do not heat bearing beyond 120° C (250° F).

COMPLIANCE

European REACH compliance *Timken-branded lubricants, greases and similar products sold in stand-alone containers or delivery systems are subject to the European REACH (**R**egistration, **E**valuation, **A**uthorization and Restriction of **CH**emicals) directive. For import into the European Union, Timken can sell and provide only those lubricants and greases that are registered with ECHA (**E**uropean **CH**emical **A**gency). For further information, please contact your Timken sales engineer.*

The Timken Company products shown in this catalog may be directly or indirectly subject to a number of regulatory standards and directives originating from authorities in the USA, European Union and around the world including: REACH (EC 1907/2006, RoHS (2011/65/EU), ATEX (94/9/EC), 'CE' MARKING (93/68/EEC), CONFLICT MINERALS (Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act).

For any questions or concerns regarding the compliancy or applicability of Timken products to these or other unspecified standards, please contact your Timken sales engineer or customer services representative.

Updates are made periodically to this catalog. Visit www.timken.com for the most recent version of the Timken® Deep Groove Ball Bearing Catalog.

⚠ WARNING

Failure to observe the following warnings could create a risk of death or serious injury.

Proper maintenance and handling practices are critical. Always follow installation instructions and maintain proper lubrication.

Tensile stresses can be very high in tightly fitted bearing components. Attempting to remove such components by cutting the cone (inner race) may result in a sudden shattering of the component, causing fragments of metal to be forcefully expelled. Always use properly guarded presses or bearing pullers to remove bearings from shafts, and always use suitable personal protective equipment, including safety glasses.

CAUTION

Failure to follow these cautions may result in property damage.

The products catalogued are application-specific. Any use in applications other than those intended could lead to equipment failure or to reduced equipment life.

Use of improper bearing fits may cause damage to equipment.

Do not use damaged bearings. The use of a damaged bearing can result in equipment damage.

DISCLAIMER

This catalog is provided solely to give you analysis tools and data to assist you in your product selection. Product performance is affected by many factors beyond the control of Timken. Therefore, the suitability and feasibility of all product selection must be validated by you.

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