

Spherical Roller Bearings

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INTRODUCTION

The Timken self-aligning spherical roller bearing is a combination radial and thrust bearing, designed to operate even if shaft and housing are, or become, misaligned under load. This high-capacity bearing is the favored choice when conditions include heavy loads, plus difficulties in establishing or maintaining housing alignment, or when shaft deflection can be expected.

Shaft deflections and housing distortions caused by shock or heavy loads, which lead to misalignment, are compensated for by the internal self-alignment of the bearing elements during operation. Edge loading of rollers, a condition that limits service life on other types of bearings, does not develop in spherical roller bearings. Optimum bearing capacity can often be realized with up to $\pm 1\frac{1}{2}$ degrees of misalignment, depending on the size and series of bearing selected.

The inherent compensation for misalignment provided by the spherical roller bearing offers the designer the opportunity to use weldments for housing frames instead of complex castings, eliminating high-cost machining operations. Even when castings may be preferred, bore alignment is less critical if spherical roller bearings are specified. Unit design and construction also make the spherical roller bearing convenient to handle during installation or maintenance.

Several types of radial spherical roller bearings include CJ, YM, YMB, YMD, and VCSJ types.

Bearings are made to RBEC-1 tolerances. Life calculations, shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog.

BEARING TYPES



CJ



YM



Tapered Bore with Adapter Sleeve

YM

- Higher load ratings for longer life.
- Incorporates advanced features and precision-machined roller-riding one piece brass cage.
- Suited for severe conditions of use.

YMB

- Higher load ratings for longer life.
- Incorporates advanced features and precision-machined, land-riding one piece brass cage.
- Suited for use in severe conditions.

YMD

- Incorporates advanced features and offers higher load ratings for longer life.
- Precision-machined, land-riding and two-pieced brass cages.
- Suited for use in severe conditions.

CJ

- High load ratings for longer life.
- Incorporates stamped steel window type cage for a broad range of applications.
- Utilize advanced features.

VCSJ

- Compact design for general use.
- Stamped steel finger type cage.

TAPERED BORE BEARINGS WITH ADAPTER SLEEVES

- SNW adapter assemblies consist of a sleeve and locknut. Lockwashers are available for shaft mounting of tapered bore "K" bearings.
- Description of shaft mounting techniques for tapered bore bearings with adapter sleeves are found on page B380.

SHAKER SCREEN EQUIPMENT

- Vibrating equipment commonly found in the aggregate industry is one of the most demanding applications for spherical roller bearings.
- Timken manufactures spherical roller bearings suited for high rotational speeds, high radial and impact loads, fluctuating and unbalanced loads, misalignment and extreme centrifugal forces in tough environmental conditions.
- The design allows for static and dynamic misalignment in the application while maintaining the bearing's full dynamic capacity. This achieves maximum expected service life.
- Standards and special modification codes are available for shaft (s4 or m6) and housing (P6 or H7) fits as in the engineering section.

TIMKEN SPHERICAL ROLLER BEARING MODIFICATIONS

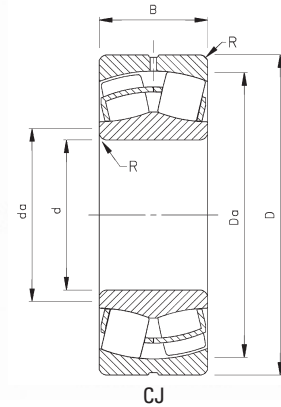
TKN	SKF	FAG	TIMKEN GENERAL DEFINITION
Other modifications available, contact your local Timken representative for more information.			
CJ	CJ, CC	J	Spherical with stamped steel cage
YM	M2	M	One-piece roller riding machined brass cage
YMB	MC	MB	One-piece inner ring piloted machined brass cage
C02	C02	T52BE	Inner ring with P5 running accuracy, W4 (SKF does not include W4)
C02 C3	C023	C3, T52BE	Inner ring with P5 running accuracy, C3 RIC
C02 C4	C024	C4, T52BE	Inner ring with P5 running accuracy, C4 RIC
C04	C04	T52BN	Outer ring with P5 running accuracy, W4 (SKF does not include W4)
C04 C3	C043	C3, T52BN	Outer ring with P5 running accuracy, C3 RIC
C04 C4	C044	C4, T52BN	Outer ring with P5 running accuracy, C4 RIC
C08	C08	T52BW C02	P5 running accuracy (C02 and C04)
C08 C3	C083	C3, T52BW	P5 running accuracy (C02 and C04), C3 RIC
C08 C4	C084	C4, T52BW	PS running accuracy (C02 and C04), C4 RIC
C6	C6	—	Special RIC non-specific
K	K	K	Tapered bore (1: 12 on diameter 22, 23, 30, 31, 32, 33, 39 series)
K	K30	K30	Tapered bore (1: 30 on diameter 40,41,42 series)
W4	W4	J26A	Mark high and low points of eccentricity on face of rings
W6R	—	—	Engineered coating on rollers to combat low lube or abrasive contamination
W8	—	—	Rings and rollers TDC® coated
W20	W20	SY	Outer ring with standard lubrication holes
W22	W22	700855	Special reduced O.D. tolerance on outer rings
W25	W73	—	Outer ring with counter drilled lubrication hole
W31	W31	—	Bearing inspected to certain quality control requirements
W33	W33	S	Standard lubrication holes and groove in outer ring (FAG drops S from number for sizes larger than 315 mm O.D.)
W33 W4	W503	S + J26A	Timken and FAG drop W33 W4 in conjunction with C08, W507
W33 W22 W31	W512 (W22 + W31 + W33)	S + 700855	Timken and FAG drop W31 in conjunction with C02, C04, and C08
W33 W94	W513 (W26 + W33)	S + H40A	See other component description
W37			Special finish
W40I	ECB (Prefix)	W209B	Inner ring only made of carburizing grade steel
W40R	—	—	Rollers only made of carburizing grade steel
W45A	W61	—	Tapped lifting holes in face of outer ring to facilitate lifting and handling
W84	W77	H44S (H40)*	Outer ring with standard lubrication holes plugged
W88	—	—	Special reduced bore tolerance on inner ring
W93	—	—	Inner ring with keyway in bore
W94	W26	H40A	Inner ring lubrication holes and retainer face grooves SKF and FAG - no retainer face grooves
W502	W502 (W22 + W33)	S + 700855	W22, W33 and W45A (where feasible)
W507	W507 (W4 + W31 + W33)	S +	W31, W33 and W45A (where feasible)
W509	W509 (W26 + W31 + W33)	S.H40A + ...	W31, W33, W94 and W45A (where feasible)
W525	W525 (W31 + W77)	S.H44S (H40)*	W31, W33, W84 and W45A (where feasible)
W534	W534 (C08 + W507)	—	W507 and C08
W800	VA405	T41A	W22 + W88 + radial internal clearance in upper two-thirds of range specified range (shaker screen modification)
W906A	—	—	C02 + C04 + W31 + W33 + W401 + W40R (offered on tapered bore product, supercedes W507A, W534A)

Data in this chart has been compiled to make the information as complete as possible, Timken cannot assume any responsibility for errors, omissions or accuracy of the published data.



SPHERICAL ROLLER BEARINGS

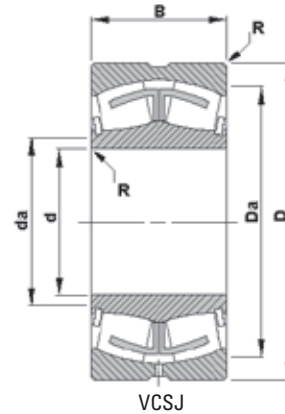
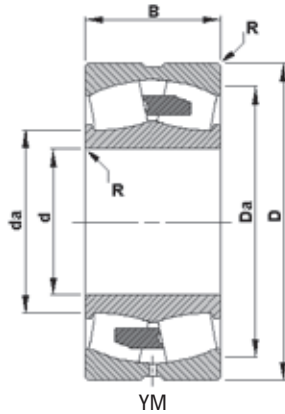
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- Consult your Timken representative for up-to-date information about the availability of the bearings you have selected.
- Life calculations, shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog.
- Bearings are available with a tapered bore for adapter type mounting. To order, add the suffix "K" to bearing number (e.g., 23120K).



Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									T/R ≤ e X = 1	T/R > e X = .67						
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀	RPM	RPM	kg lbs.		
22205CJ	25 0.9843	52 2.0472	18.0 0.7087	1.0 0.04	30 1.2	47 1.9	43.0 9700	44.0 9800	0.34	2.00	2.98	1.96	0.0384	7700	9600	0.2 0.4
21305VCSJ	25 0.9843	62 2.4409	17.0 0.6693	1.0 0.04	33 1.3	54 2.1	38.0 8400	41.0 9200	0.29	2.33	3.47	2.28	0.0403	7000	8700	0.30 0.6
22206CJ	30 1.1811	62 2.4409	20.0 0.7874	1.0 0.04	38 1.5	56 2.2	61.0 13700	58.0 13100	0.31	2.15	3.20	2.10	0.0435	6600	8100	0.3 0.6
21306VCSJ	30 1.1811	72 2.8346	19.0 0.7480	1.0 0.04	39 1.5	63 2.5	51.0 11300	53.0 12000	0.28	2.45	3.64	2.39	0.0444	6200	7600	0.40 0.8
22207CJ	35 1.3780	72 2.8346	23.0 0.9055	1.0 0.04	45 1.8	65 2.6	88.0 19700	78.0 17500	0.31	2.21	3.29	2.16	0.0484	5900	7200	0.5 1.0
21307VCSJ	35 1.3779	80 3.1496	21.0 0.8268	1.5 0.06	44 1.7	71 2.8	66.0 14800	67.0 15000	0.27	2.48	3.69	2.42	0.0484	5600	6900	0.50 1.1
22208CJ	40 1.5748	80 3.1496	23.0 0.9055	1.0 0.04	50 2.0	72 2.9	100 22400	90.0 20100	0.27	2.47	3.67	2.41	0.0494	5100	6300	0.6 1.2
22208YM	40 1.5748	80 3.1496	23.0 0.9055	1.0 0.04	50 2.0	72 2.9	93.5 21000	85.5 19200	0.27	2.47	3.67	2.41	0.0514	5200	6400	0.6 1.2
21308VCSJ	40 1.5748	90 3.5433	23.0 0.9055	1.5 0.06	51 2.0	81 3.2	85.0 19100	81.0 18200	0.26	2.55	3.80	2.50	0.0529	5100	6200	0.70 1.5
22308CJ	40 1.5748	90 3.5433	33.0 1.2992	1.5 0.06	53 2.1	81 3.2	148 33100	133 29800	0.36	1.87	2.79	1.83	0.0541	4900	5800	1.1 2.3
22308YM	40 1.5748	90 3.5433	33.0 1.2992	1.5 0.06	53 2.1	81 3.2	148 33100	133 29800	0.36	1.87	2.79	1.83	0.0541	4900	5800	1.1 2.3
22209CJ	45 1.7717	85 3.3465	23.0 0.9055	1.0 0.04	55 2.2	77 3.0	108 24200	94.0 21100	0.26	2.64	3.93	2.58	0.0547	4700	5700	0.6 1.3
22209YM	45 1.7717	85 3.3465	23.0 0.9055	1.0 0.04	55 2.2	77 3.0	101 22800	90.0 20100	0.26	2.64	3.93	2.58	0.0547	4700	5800	0.6 1.3
21309VCSJ	45 1.7717	100 3.9370	25.0 0.9843	1.5 0.06	57 2.2	91 3.6	106 23900	100 22500	0.26	2.64	3.93	2.58	0.0567	4600	5700	0.90 2
22309CJ	45 1.7717	100 3.9370	36.0 1.4173	1.5 0.06	58 2.3	90 3.5	182 40800	162 36400	0.36	1.90	2.83	1.86	0.0565	4500	5300	1.4 3.1
22309YM	45 1.7717	100 3.9370	36.0 1.4173	1.5 0.06	58 2.3	90 3.5	182 40800	162 36400	0.36	1.90	2.83	1.86	0.0579	4500	5300	1.4 3.1
22210CJ	50 1.9685	90 3.5433	23.0 0.9055	1.0 0.04	59 2.3	82 3.2	118 26000	101 22600	0.24	2.84	4.23	2.78	0.0575	4300	5200	0.6 1.4
22210YM	50 1.9685	90 3.5433	23.0 0.9055	1.0 0.04	59 2.3	82 3.2	112 25100	96.5 21700	0.24	2.84	4.23	2.78	0.0575	4300	5300	0.6 1.4
22310CJ	50 1.9685	110 4.3307	40.0 1.5748	2.0 0.08	64 2.5	98 3.9	226 51000	197 44200	0.36	1.87	2.79	1.83	0.0422	4200	4900	1.9 4.2
22310YM	50 1.9685	110 4.3307	40.0 1.5748	2.0 0.08	64 2.5	98 3.9	226 51000	197 44200	0.36	1.87	2.79	1.83	0.0422	4200	4900	1.9 4.2
22211CJ	55 2.1654	100 3.9370	25.0 0.9843	1.5 0.06	66 2.6	91 3.6	142 32000	120 27000	0.23	2.95	4.40	2.89	0.0604	4000	4800	0.9 1.9

(1) These factors apply for both inch and metric calculations. See engineering section for instructions on use.
 (2) Maximum shaft or housing fillet radius that bearing corners will clear.
 * Available in standard shaker screen bearing design configuration (example: 223xxYMW33W800C4).

(3) See thermal speed ratings in the engineering section.
 (4) Geometry constant for Lubrication Life Adjustment Factor a3l. See "Bearing Load Ratings and Life Calculations."



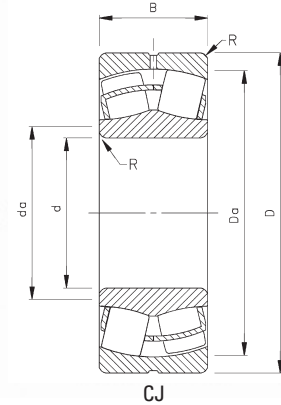
Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									e	T R X = 1						
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.		Y	Y	Y ₀			kg lbs.	
22311CJ	55 2.1654	120 4.7244	43.0 1.6929	2.0 0.08	69 2.7	107 4.2	248 55800	221 49600	0.36	1.87	2.79	1.83	0.0446	3900	4700	2.4 5.3
22311YM	55 2.1654	120 4.7244	43.0 1.6929	2.0 0.08	69 2.7	107 4.2	248 55800	221 49600	0.36	1.87	2.79	1.83	0.0446	3900	4700	2.4 5.3
21311VCSJ	55 2.1654	120 4.7244	29.0 1.1417	2.0 0.08	70 2.8	109 4.3	158 35500	141 31700	0.24	2.82	4.20	2.76	0.0446	4000	4800	1.50 3.3
22212CJ	60 2.3622	110 4.3307	28.0 1.1024	1.5 0.06	72 2.8	100 4.0	174 39100	146 32800	0.24	2.84	4.23	2.78	0.0652	3800	4600	1.2 2.6
22212YM	60 2.3622	110 4.3307	28.0 1.1024	1.5 0.06	72 2.8	100 4.0	164 36900	140 31400	0.24	2.84	4.23	2.78	0.0645	3800	4700	1.2 2.6
22312CJ	60 2.3622	130 5.1181	46.0 1.8110	2.0 0.08	75 3.0	117 4.6	312 70100	269 60400	0.35	1.95	2.90	1.91	0.0463	3600	4300	3.0 6.6
22312YM	60 2.3622	130 5.1181	46.0 1.8110	2.0 0.08	75 3.0	117 4.6	312 70100	269 60400	0.35	1.95	2.90	1.91	0.0471	3600	4300	3.0 6.6
21312VCSJ	60 2.3622	130 5.1181	31.0 1.2205	2.0 0.08	76 3.0	118 4.7	179 40200	158 35500	0.24	2.81	4.19	2.75	0.0467	3700	4600	1.90 4.2
22213CJ	65 2.5591	120 4.7244	31.0 1.2205	1.5 0.06	78 3.1	109 4.3	217 49000	177 39800	0.24	2.79	4.15	2.73	0.0473	3600	4400	1.6 3.4
22213YM	65 2.5591	120 4.7244	31.0 1.2205	1.5 0.06	78 3.1	109 4.3	204 46000	170 38200	0.24	2.79	4.15	2.73	0.0468	3600	4400	1.6 3.4
21313VCSJ	65 2.5591	140 5.5118	33.0 1.2992	2.0 0.08	82 3.2	128 5.0	215 48300	189 42500	0.23	2.91	4.33	2.84	0.0463	3500	4300	2.40 5.3
22313CJ	65 2.5591	140 5.5118	48.0 1.8898	2.0 0.08	82 3.2	126 5.0	333 74900	290 65200	0.33	2.06	3.06	2.01	0.0455	3400	4100	3.6 8.0
22313YM	65 2.5591	140 5.5118	48.0 1.8898	2.0 0.08	82 3.2	126 5.0	333 74900	290 65200	0.33	2.06	3.06	2.01	0.0464	3400	4100	3.6 8.0
22214CJ	70 2.7559	125 4.9213	31.0 1.2205	1.5 0.06	84 3.3	115 4.5	231 52000	184 41400	0.22	3.01	4.48	2.94	0.0464	3400	4100	1.6 3.6
22314CJ	70 2.7559	150 5.9055	51.0 2.0079	2.0 0.08	87 3.4	131 5.2	385 86500	331 74300	0.34	2.00	2.98	1.96	0.0482	3200	3800	4.4 9.7
21314VCSJ	70 2.7559	150 5.9055	35.0 1.3780	2.0 0.08	88 3.5	138 5.4	240 54000	208 46700	0.23	2.90	4.31	2.83	0.0480	3300	4100	2.90 6.4
22314YM	70 2.7559	150 5.9055	51.0 2.0079	2.0 0.08	87 3.4	131 5.2	385 86500	331 74300	0.34	2.00	2.98	1.96	0.0482	3200	3800	4.4 9.7
22215CJ	75 2.9528	130 5.1181	31.0 1.2205	1.5 0.06	88 3.5	120 4.7	241 54100	191 42900	0.22	3.14	4.67	3.07	0.0477	3200	3900	1.7 3.8
22315CJ	75 2.9528	160 6.2992	55.0 2.1654	2.0 0.08	93 3.7	140 5.5	456 102000	387 87100	0.34	2.00	2.98	1.96	0.0505	3100	3600	5.4 11.9
21315VCSJ	75 2.9528	160 6.2992	37.0 1.4567	2.0 0.08	94 3.7	148 5.8	274 61600	237 53200	0.23	2.94	4.37	2.87	0.0502	3200	3800	3.50 7.7
22315YM	75 2.9528	160 6.2992	55.0 2.1654	2.0 0.08	93 3.7	140 5.5	456 102000	387 87100	0.34	2.00	2.98	1.96	0.0505	3100	3600	5.4 11.9

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B

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					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
					e	T/R ≤ e X = 1	T/R > e X = .67	In All Cases X ₀ = 1	Y ₀	RPM	RPM					
22216CJ	80 3.1496	140 5.5118	33.0 1.2992	2.0 0.08	95 3.7	129 5.1	278 62500	218 49100	0.22	3.14	4.67	3.07	0.0499	3000	3700	2.2 4.7
22216YM	80 3.1496	140 5.5118	33.0 1.2992	2.0 0.08	95 3.7	129 5.1	263 59200	210 47100	0.22	3.14	4.67	3.07	0.0495	3000	3700	2.2 4.7
21316VCSJ	80 3.1496	170 6.6929	39.0 1.5354	2.0 0.08	100 3.9	158 6.2	305 68500	260 58400	0.23	2.95	4.40	2.89	0.0522	3000	3700	4.10 9
22316CJ	80 3.1496	170 6.6929	58.0 2.2835	2.0 0.08	97 3.8	148 5.8	510 115000	427 96100	0.34	2.00	2.98	1.96	0.0526	2900	3500	6.4 14.2
22316YM	80 3.1496	170 6.6929	58.0 2.2835	2.0 0.08	97 3.8	148 5.8	510 115000	427 96100	0.34	2.00	2.98	1.96	0.0526	2900	3500	6.4 14.2
22217CJ	85 3.3465	150 5.9055	36.0 1.4173	2.0 0.08	101 4.0	139 5.5	320 72000	255 57200	0.22	3.07	4.57	3.00	0.0518	2900	3500	2.7 6.0
22217YM	85 3.3465	150 5.9055	36.0 1.4173	2.0 0.08	101 4.0	139 5.5	302 67900	244 54800	0.22	3.07	4.57	3.00	0.0513	2900	3600	2.7 6.0
21317VCSM	85 3.3465	180 7.0866	41.0 1.6142	3.0 0.12	107 4.2	166 6.5	365 82000	301 67800	0.23	2.99	4.46	2.93	0.0547	2900	3500	5.20 11.5
22317CJ	85 3.3465	180 7.0866	60.0 2.3622	2.5 0.10	106 4.2	158 6.2	591 133000	474 107000	0.32	2.09	3.11	2.04	0.0554	2700	3200	7.5 16.4
22317YM	85 3.3465	180 7.0866	60.0 2.3622	2.5 0.10	106 4.2	158 6.2	591 133000	474 107000	0.32	2.09	3.11	2.04	0.0554	2700	3200	7.5 16.4
22218CJ	90 3.5433	160 6.2992	40.0 1.5748	2.0 0.08	105 4.2	146 5.8	388 87200	303 68100	0.23	2.90	4.31	2.83	0.0536	2800	3400	3.5 7.6
22218YM	90 3.5433	160 6.2992	40.0 1.5748	2.0 0.08	105 4.2	146 5.8	388 87200	303 68100	0.23	2.90	4.31	2.83	0.0536	2800	3400	3.5 7.6
23218CJ	90 3.5433	160 6.2992	52.0 2.0630	2.0 0.08	104 4.1	146 5.8	504 113000	369 83000	0.30	2.25	3.34	2.20	0.0536	2300	2700	4.5 10.0
23218YM	90 3.5433	160 6.2992	52.0 2.0630	2.0 0.08	104 4.1	146 5.8	504 113000	369 83000	0.30	2.25	3.34	2.20	0.0536	2300	2700	4.5 10.0
22318CJ	90 3.5433	190 7.4803	64.0 2.5197	2.5 0.10	110 4.3	167 6.6	642 144000	529 119000	0.35	1.92	2.86	1.88	0.0565	2600	3000	8.8 19.4
22318YM	90 3.5433	190 7.4803	64.0 2.5197	2.5 0.10	110 4.3	167 6.6	642 144000	529 119000	0.33	2.06	3.06	2.01	0.0565	2600	3000	8.8 19.4
21318VCSM	90 3.5433	190 7.4803	43.0 1.6929	3.0 0.12	113 4.5	176 6.9	398 89500	327 73400	0.23	3.00	4.47	2.93	0.0567	2800	3300	6.00 13.5
22319CJ	90 3.5433	190 7.4803	64.0 2.5197	2.5 0.10	110 4.3	167 6.6	642 144000	529 119000	0.33	2.06	3.06	2.01	0.0593	2600	3000	8.8 19.4
23318YM	90 3.5433	190 7.4803	73.0 2.8740	2.5 0.10	110 4.3	167 6.6	664 149000	516 116000	0.40	1.70	2.52	1.66	0.0555	1900	2200	10.1 22.2
22219CJ	95 3.7402	170 6.6929	43.0 1.6929	2.0 0.08	112 4.4	152 6.0	383 86200	289 65000	0.25	2.68	3.99	2.62	0.0556	2800	3400	4.2 9.3
22219YM	95 3.7402	170 6.6929	43.0 1.6929	2.0 0.08	112 4.4	152 6.0	383 86200	289 65000	0.25	2.68	3.99	2.62	0.0558	2800	3400	4.2 9.3

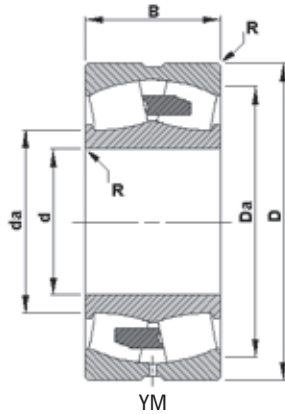
(1) These factors apply for both inch and metric calculations. See engineering section for instructions on use.

(2) Maximum shaft or housing fillet radius that bearing corners will clear.

* Available in standard shaker screen bearing design configuration (example: 223xxYMW33W800C4).

(3) See thermal speed ratings in the engineering section.

(4) Geometry constant for Lubrication Life Adjustment Factor a3l. See "Bearing Load Ratings and Life Calculations."



B

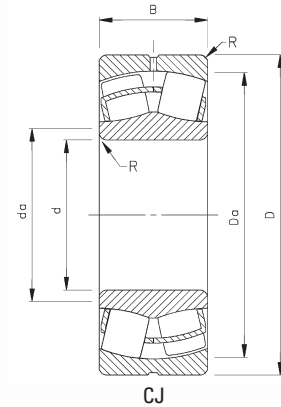
Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾				Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight kg lbs.
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static	Grease			Oil		
									$\frac{T}{R} \leq e$ X = 1	$\frac{T}{R} > e$ X = .67						In All Cases X ₀ = 1	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀	RPM	RPM	kg lbs.			
22319YM	95 3.7402	200 7.8740	67.0 2.6378	2.5 0.10	119 4.7	175 6.9	735 165000	580 130000	0.32	2.09	3.11	2.04	0.0593	2400	2800	10.2 22.5	
23120YM	100 3.9370	165 6.4961	52.0 2.0472	2.0 0.08	112 4.5	151 6.0	575 129000	379 85200	0.28	2.39	3.56	2.34	0.0567	2400	2800	4.4 9.7	
22220CJ	100 3.9370	180 7.0866	46.0 1.8110	2.0 0.08	119 4.7	160 6.3	484 109000	373 83800	0.24	2.84	4.23	2.78	0.0577	2700	3200	5.1 11.2	
22220YM	100 3.9370	180 7.0866	46.0 1.8110	2.0 0.08	119 4.7	160 6.3	484 109000	373 83800	0.24	2.84	4.23	2.78	0.0577	2700	3200	5.1 11.2	
23220CJ	100 3.9370	180 7.0866	60.3 2.3740	2.0 0.08	118 4.7	165 6.5	646 145000	463 104000	0.31	2.18	3.24	2.13	0.0579	2100	2500	6.6 15.0	
23220YM	100 3.9370	180 7.0866	60.3 2.3740	2.0 0.08	118 4.7	165 6.5	646 145000	463 104000	0.31	2.18	3.24	2.13	0.0579	2100	2500	6.6 15.0	
22320CJ	100 3.9370	215 8.4646	73.0 2.8740	2.5 0.10	125 4.9	187 7.4	756 170000	586 132000	0.36	1.90	2.82	1.85	0.0618	2300	2700	13.0 28.7	
22320YM	100 3.9370	215 8.4646	73.0 2.8740	2.5 0.10	125 4.9	187 7.4	756 170000	586 132000	0.36	1.90	2.82	1.85	0.0618	2300	2700	13.0 28.7	
23122CJ	110 4.3307	180 7.0866	56.0 2.2047	2.0 0.08	127 5.0	169 6.7	615 138000	377 84800	0.28	2.37	3.53	2.32	0.0596	2200	2600	5.6 12.3	
23122YM	110 4.3307	180 7.0866	56.0 2.2047	2.0 0.08	127 5.0	169 6.7	615 138000	377 84800	0.28	2.37	3.53	2.32	0.0596	2200	2600	5.6 12.3	
24122CJ	110 4.3307	180 7.0866	69.0 2.7165	2.0 0.08	124 4.9	164 6.5	676 152000	448 101000	0.36	1.85	2.76	1.81	0.0588	1800	2100	6.9 15.2	
22222CJ	110 4.3307	200 7.8740	53.0 2.0866	2.0 0.08	132 5.2	179 7.0	627 141000	475 107000	0.25	2.69	4.00	2.63	0.0616	2500	3000	7.3 16.1	
22222YM	110 4.3307	200 7.8740	53.0 2.0866	2.0 0.08	132 5.2	179 7.0	627 141000	475 107000	0.25	2.69	4.00	2.63	0.0616	2500	3000	7.3 16.1	
23222CJ	110 4.3307	200 7.8740	69.8 2.7480	2.0 0.08	130 5.1	183 7.2	853 192000	596 134000	0.32	2.12	3.15	2.07	0.0618	1900	2200	9.6 21.1	
23222YM	110 4.3307	200 7.8740	69.8 2.7480	2.0 0.08	130 5.1	183 7.2	853 192000	596 134000	0.32	2.12	3.15	2.07	0.0618	1900	2200	9.6 21.1	
22322CJ	110 4.3307	240 9.4488	80.0 3.1496	2.5 0.10	139 5.5	208 8.2	962 216000	733 165000	0.35	1.92	2.86	1.88	0.0654	2000	2300	18.0 39.5	
22322YM	110 4.3307	240 9.4488	80.0 3.1496	2.5 0.10	139 5.5	208 8.2	962 216000	733 165000	0.35	1.92	2.86	1.88	0.0654	2000	2300	18.0 39.5	
23322YM	110 4.3307	240 9.4488	92.1 3.6260	2.5 0.10	137 5.4	210 8.3	1070 240000	808 182000	0.40	1.67	2.49	1.63	0.0641	1500	1700	20.7 45.5	
23024CJ	120 4.7244	180 7.0866	46.0 1.8110	2.0 0.08	134 5.3	169 6.6	564 127000	352 79200	0.22	3.14	4.67	3.07	0.0616	2300	2900	4.1 9.0	
24024CJ	120 4.7244	180 7.0866	60.0 2.3622	2.0 0.08	131 5.2	164 6.5	642 144000	393 88400	0.30	2.25	3.34	2.20	0.0610	2000	2400	5.3 11.7	
23124CJ	120 4.7244	200 7.8740	62.0 2.4409	2.0 0.08	142 5.6	189 7.4	803 180000	524 118000	0.30	2.28	3.39	2.23	0.0636	2000	2300	7.8 17.2	

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SPHERICAL ROLLER BEARINGS - continued

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- Consult your Timken representative for up-to-date information about the availability of the bearings you have selected.
- Life calculations, shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog.
- Bearings are available with a tapered bore for adapter type mounting. To order, add the suffix "K" to bearing number (e.g., 23120K).



Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
					e	T/R ≤ e X = 1	T/R > e X = .67	In All Cases X ₀ = 1	Y ₀	RPM	RPM					
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.		Y	Y			RPM	RPM	kg lbs.	
23124YM	120 4.7244	200 7.8740	62.0 2.4409	2.0 0.08	142 5.6	189 7.4	803 180000	524 118000	0.30	2.28	3.39	2.23	0.0636	2000	2300	7.8 17.2
24124CJ	120 4.7244	200 7.8740	80.0 3.1496	2.0 0.08	136 5.4	181 7.1	923 207000	590 133000	0.39	1.74	2.59	1.70	0.0625	1600	1800	10.1 22.2
22224CJ	120 4.7244	215 8.4646	58.0 2.2835	2.0 0.08	142 5.6	192 7.6	667 150000	475 107000	0.27	2.51	3.74	2.46	0.0648	2400	2900	9.1 20.0
22224YM	120 4.7244	215 8.4646	58.0 2.2835	2.0 0.08	142 5.6	192 7.6	667 150000	475 107000	0.27	2.51	3.74	2.46	0.0648	2400	2900	9.1 20.0
23224YM	120 4.7244	215 8.4646	76.0 2.9921	2.0 0.08	140 5.5	197 7.8	977 220000	678 152000	0.32	2.09	3.11	2.04	0.0647	1700	2000	12.0 26.0
22324CJ	120 4.7244	260 10.2362	86.0 3.3858	2.5 0.10	151 5.9	225 8.9	1090 245000	825 185000	0.35	1.92	2.85	1.87	0.0680	1800	2100	22.6 49.6
22324YM	120 4.7244	260 10.2362	86.0 3.3858	2.5 0.10	151 5.9	225 8.9	1090 245000	825 185000	0.35	1.92	2.85	1.87	0.0704	1800	2100	22.6 49.6
23324YM	120 4.7244	260 10.2362	106.0 4.1732	2.5 0.10	147 5.8	226 8.9	1420 320000	1030 232000	0.43	1.57	2.34	1.54	0.0681	1300	1400	27.8 61.2
23926YM	130 5.1181	180 7.0866	37.0 1.4567	1.5 0.06	142 5.6	169 6.7	427 95900	245 55000	0.18	3.76	5.60	3.68	0.0880	2000	2500	2.8 6.2
23026CJ	130 5.1181	200 7.8740	52.0 2.0472	2.0 0.08	146 5.8	187 7.4	703 158000	446 100000	0.22	3.01	4.48	2.94	0.0654	2200	2700	5.9 13.0
24026CJ	130 5.1181	200 7.8740	69.0 2.7165	2.0 0.08	144 5.7	182 7.2	795 179000	501 113000	0.32	2.09	3.11	2.04	0.0642	1900	2200	7.9 17.3
23126CJ	130 5.1181	210 8.2677	64.0 2.5197	2.0 0.08	149 5.9	195 7.7	888 200000	562 126000	0.29	2.34	3.49	2.29	0.0663	1800	2100	8.6 19.0
23126YM	130 5.1181	210 8.2677	64.0 2.5197	2.0 0.08	149 5.9	195 7.7	888 200000	562 126000	0.29	2.34	3.49	2.29	0.0663	1800	2100	8.6 19.0
24126CJ	130 5.1181	210 8.2677	80.0 3.1496	2.0 0.08	147 5.8	190 7.5	967 217000	608 137000	0.36	1.85	2.76	1.81	0.0655	1500	1700	10.7 23.6
22226CJ	130 5.1181	230 9.0551	64.0 2.5197	2.5 0.10	152 6.0	206 8.1	805 181000	562 126000	0.27	2.47	3.68	2.42	0.0676	2200	2600	11.4 25.0
22226YM	130 5.1181	230 9.0551	64.0 2.5197	2.5 0.10	152 6.0	206 8.1	805 181000	562 126000	0.27	2.47	3.68	2.42	0.0676	2200	2600	11.4 25.0
23226YM	130 5.1181	230 9.0551	80.0 3.1496	2.5 0.10	151 5.9	211 8.3	1110 249000	759 171000	0.32	2.12	3.15	2.07	0.0676	1600	1800	14.0 31.0
22326CJ	130 5.1181	280 11.0236	93.0 3.6614	3.0 0.12	161 6.4	242 9.5	1270 286000	952 214000	0.35	1.92	2.85	1.87	0.0610	1700	1900	28.2 62.1
22326YM	130 5.1181	280 11.0236	93.0 3.6614	3.0 0.12	161 6.4	242 9.5	1270 286000	952 214000	0.35	1.92	2.85	1.87	0.0610	1700	1900	28.2 62.1
23326YM	130 5.1181	280 11.0236	112.0 4.4094	3.0 0.12	164 6.5	244 9.6	1550 348000	1090 245000	0.42	1.62	2.42	1.59	0.0600	1200	1300	34.0 74.7
23928YM	140 5.5118	190 7.4803	37.0 1.4567	1.5 0.06	152 6.0	179 7.1	456 102000	253 56900	0.17	4.01	5.97	3.92	0.0920	1900	2300	3.0 6.6

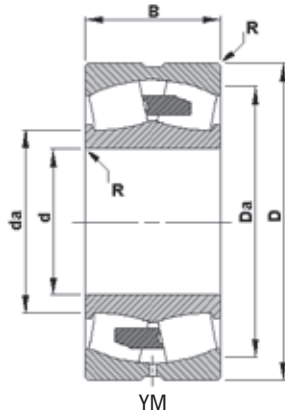
(1) These factors apply for both inch and metric calculations. See engineering section for instructions on use.

(2) Maximum shaft or housing fillet radius that bearing corners will clear.

* Available in standard shaker screen bearing design configuration (example: 223xxYMW33W800C4).

(3) See thermal speed ratings in the engineering section.

(4) Geometry constant for Lubrication Life Adjustment Factor a3L. See "Bearing Load Ratings and Life Calculations."



B

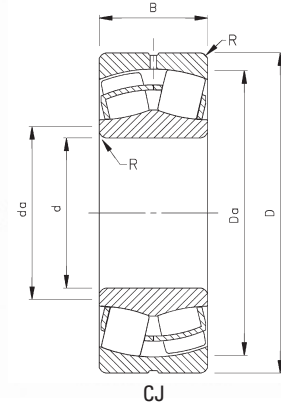
Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									$\frac{T}{R} \leq e$ X = 1	$\frac{T}{R} > e$ X = .67						
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀	RPM	RPM	kg lbs.		
23028CJ	140 5.5118	210 8.2677	53.0 2.0866	2.0 0.08	156 6.1	197 7.8	764 173000	471 106000	0.22	3.14	4.67	3.07	0.0680	2000	2500	6.4 14.0
24028CJ	140 5.5118	210 8.2677	69.0 2.7165	2.0 0.08	154 6.1	192 7.6	899 202000	527 118000	0.31	2.21	3.29	2.16	0.0676	1700	2000	8.3 18.3
23128YM	140 5.5118	225 8.8583	68.0 2.6772	2.0 0.08	159 6.3	209 8.2	1010 228000	636 143000	0.29	2.37	3.52	2.31	0.0670	1700	2000	10.0 23.0
24128CJ	140 5.5118	225 8.8583	85.0 3.3465	2.0 0.08	156 6.2	203 8.0	1120 252000	701 158000	0.36	1.90	2.83	1.86	0.0684	1300	1500	13.0 28.6
26228YM	140 5.5118	240 9.4488	80.0 3.1496	2.5 0.10	161 6.3	217 8.6	1120 251000	726 163000	0.32	2.08	3.10	2.04	0.0693	1200	1400	14.7 32.4
22228CJ	140 5.5118	250 9.8425	68.0 2.6772	2.5 0.10	166 6.5	225 8.9	930 209000	646 145000	0.27	2.51	3.73	2.45	0.0713	2000	2400	14.4 31.7
22228YM	140 5.5118	250 9.8425	68.0 2.6772	2.5 0.10	166 6.5	225 8.9	930 209000	646 145000	0.27	2.51	3.73	2.45	0.0713	2000	2400	14.4 31.7
22328CJ	140 5.5118	300 11.8110	102.0 4.0157	3.0 0.12	174 6.9	262 10.3	1520 341000	1120 252000	0.36	1.88	2.81	1.84	0.0648	1500	1700	35.4 77.9
22328YM	140 5.5118	300 11.8110	102.0 4.0157	3.0 0.12	174 6.9	262 10.3	1520 341000	1120 252000	0.36	1.88	2.81	1.84	0.0648	1500	1700	35.4 77.9
23328YM	140 5.5118	300 11.8110	118.0 4.6457	3.0 0.12	175 6.9	261 10.3	1920 432000	1310 295000	0.41	1.64	2.45	1.61	0.0632	1000	1100	41.0 90.1
23030YM	150 5.9055	225 8.8583	56.0 2.2047	2.0 0.08	169 6.6	211 8.3	872 196000	521 117000	0.21	3.20	4.77	3.13	0.0714	1900	2300	7.8 17.0
24030CJ	150 5.9055	225 8.8583	75.0 2.9528	2.0 0.08	166 6.5	206 8.1	1000 226000	603 136000	0.31	2.18	3.24	2.13	0.0699	1600	1900	10.4 22.9
23130YM	150 5.9055	250 9.8425	80.0 3.1496	2.0 0.08	172 6.8	230 9.1	1320 298000	837 188000	0.31	2.20	3.27	2.15	0.0614	1500	1700	16.0 35.0
24130CJ	150 5.9055	250 9.8425	100.0 3.9370	2.0 0.08	169 6.7	225 8.9	1400 315000	901 203000	0.38	1.78	2.65	1.74	0.0603	1200	1300	19.7 43.4
22230CJ	150 5.9055	270 10.6299	73.0 2.8740	2.5 0.10	179 7.0	242 9.5	1100 247000	752 169000	0.27	2.52	3.75	2.46	0.0626	1800	2200	18.2 39.9
22230YM	150 5.9055	270 10.6299	73.0 2.8740	3.0 0.10	177 7.0	248 9.8	1200 269000	853 192000	0.25	2.74	4.08	2.68	0.0626	1800	2100	18.0 40.0
23230YM	150 5.9055	270 10.6299	96.0 3.7795	2.5 0.10	175 6.9	247 9.7	1590 357000	1060 239000	0.33	2.03	3.02	1.98	0.0625	1300	1500	24.0 53.0
22330CJ	150 5.9055	320 12.5984	108.0 4.2520	3.0 0.12	186 7.3	280 11.0	1720 386000	1260 283000	0.35	1.91	2.84	1.87	0.0667	1400	1600	42.6 93.6
22330YM	150 5.9055	320 12.5984	108.0 4.2520	3.0 0.12	186 7.3	280 11.0	1720 386000	1260 283000	0.35	1.91	2.84	1.87	0.0667	1400	1600	42.6 93.6
23330YM	150 5.9055	320 12.5984	128.0 5.0394	3.0 0.12	185 7.3	280 11.0	2130 478000	1480 332000	0.41	1.64	2.44	1.60	0.0654	960	1100	50.4 111
23932YM	160 6.2992	220 8.6614	45.0 1.7717	2.0 0.08	175 6.9	206 8.1	655 147000	348 78200	0.19	3.60	5.35	3.52	0.0724	1800	2100	5.1 11.1

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SPHERICAL ROLLER BEARINGS - continued

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B

Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾				Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static	Grease			Oil		
									T/R ≤ e X = 1	T/R > e X = .67						In All Cases X ₀ = 1	
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀	RPM	RPM	kg lbs.			
23032YM	160 6.2992	240 9.4488	60.0 2.3622	2.0 0.08	179 7.0	225 8.9	979 220000	591 133000	0.21	3.20	4.77	3.13	0.0620	1700	2100	9.4 21.0	
24032CJ	160 6.2992	240 9.4488	80.0 3.1496	2.0 0.08	173 6.8	224 8.8	1100 246000	665 150000	0.30	2.28	3.39	2.23	0.0611	1500	1800	12.6 27.8	
23132YM	160 6.2992	270 10.6299	86.0 3.3858	2.0 0.08	189 7.4	244 9.6	1560 350000	968 218000	0.30	2.23	3.32	2.18	0.0633	1400	1600	20.1 44.1	
22232CJ	160 6.2992	290 11.4173	80.0 3.1496	2.5 0.10	192 7.6	260 10.2	1280 288000	864 194000	0.27	2.47	3.67	2.41	0.0655	1700	2000	23.1 50.8	
23232YM	160 6.2992	290 11.4173	104.0 4.0945	2.5 0.10	187 7.4	260 10.2	1680 377000	1090 246000	0.34	1.96	2.91	1.91	0.0645	1200	1400	30.0 66.0	
22332CJ	160 6.2992	340 13.3858	114.0 4.4882	3.0 0.12	198 7.8	298 11.7	1920 432000	1400 314000	0.35	1.92	2.86	1.88	0.0702	1300	1500	50.6 111	
22332YMB	160 6.2992	340 13.3858	114.0 4.4882	3.0 0.12	198 7.8	298 11.7	1920 432000	1400 314000	0.35	1.92	2.86	1.88	0.0702	1300	1500	50.6 111	
23332YM	160 6.2992	340 13.3858	136.0 5.3543	3.0 0.12	202 8.0	297 11.7	2540 572000	1670 375000	0.42	1.62	2.41	1.58	0.0686	850	940	60.4 133	
23934YM	170 6.6929	230 9.0551	45.0 1.7717	2.0 0.08	184 7.3	217 8.6	692 156000	371 83400	0.18	3.79	5.65	3.71	0.0627	1600	2000	5.3 11.7	
23034YM	170 6.6929	260 10.2362	67.0 2.6378	2.0 0.08	192 7.6	243 9.6	1220 274000	724 163000	0.22	3.07	4.57	3.00	0.0649	1600	1900	12.8 28.1	
24034CJ	170 6.6929	260 10.2362	90.0 3.5433	2.0 0.08	185 7.3	242 9.5	1430 322000	851 191000	0.32	2.12	3.15	2.07	0.0641	1300	1600	17.2 38.0	
23134YM	170 6.6929	280 11.0236	88.0 3.4646	2.0 0.08	194 7.7	255 10.2	1670 375000	1010 226000	0.30	2.28	3.40	2.23	0.0654	1300	1500	21.5 47.3	
24134CJ	170 6.6929	280 11.0236	109.0 4.2913	2.0 0.08	191 7.5	252 10.1	1840 413000	1110 248000	0.37	1.83	2.72	1.79	0.0657	980	1100	26.6 58.5	
22234CJ	170 6.6929	310 12.2047	86.0 3.3858	3.0 0.12	201 7.9	278 10.9	1450 326000	999 225000	0.28	2.44	3.63	2.38	0.0672	1600	1900	28.5 62.7	
23234YM	170 6.6929	310 12.2047	110.0 4.3307	3.0 0.12	200 7.9	276 10.9	1960 441000	1240 279000	0.34	1.97	2.94	1.93	0.0676	1100	1200	36.5 80.2	
23036YM	180 7.0866	280 11.0236	74.0 2.9134	2.0 0.08	204 8.0	261 10.3	1420 321000	851 192000	0.23	2.95	4.40	2.89	0.0677	1500	1800	17.0 37.0	
24036CJ	180 7.0866	280 11.0236	100.0 3.9370	2.0 0.08	198 7.8	260 10.2	1700 385000	992 223000	0.33	2.03	3.02	1.98	0.0671	1200	1500	23.0 50.0	
23136YM	180 7.0866	300 11.8110	96.0 3.7795	2.5 0.10	205 8.1	273 10.8	1810 406000	1100 247000	0.31	2.20	3.28	2.15	0.0677	1200	1400	27.0 60.0	
24136CJ	180 7.0866	300 11.8110	118.0 4.6457	2.5 0.10	201 7.9	275 10.8	2050 464000	1250 280000	0.38	1.78	2.65	1.74	0.0680	920	1000	33.0 74.0	
22236CJ	180 7.0866	320 12.5984	86.0 3.3858	3.0 0.12	213 8.4	288 11.3	1540 346000	1030 231000	0.27	2.54	3.78	2.48	0.0698	1500	1700	30.0 65.0	
23236YM	180 7.0866	320 12.5984	112.0 4.4094	3.0 0.12	209 8.2	288 11.3	2110 473000	1330 298000	0.34	2.00	2.97	1.95	0.0694	1000	1200	39.0 85.0	

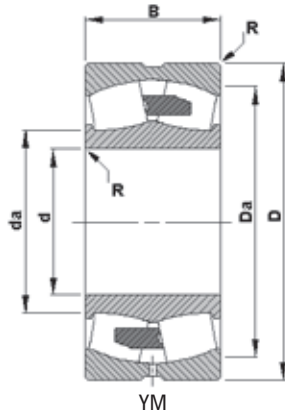
(1) These factors apply for both inch and metric calculations. See engineering section for instructions on use.

(2) Maximum shaft or housing fillet radius that bearing corners will clear.

* Available in standard shaker screen bearing design configuration (example: 223xxYMW33W800C4).

(3) See thermal speed ratings in the engineering section.

(4) Geometry constant for Lubrication Life Adjustment Factor a3l. See "Bearing Load Ratings and Life Calculations."



B

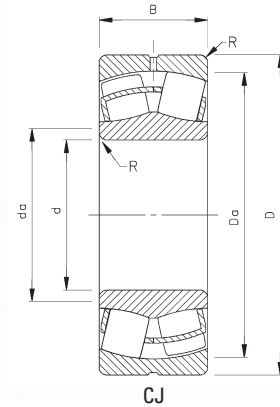
Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									e	T R ≤ e X = 1						
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.		Y	Y	Y ₀			kg lbs.	
22336YMB	180 7.0866	380 14.9606	126.0 4.9606	3.0 0.12	222 8.8	334 13.1	2460 554000	1760 395000	0.34	1.98	2.94	1.93	0.0730	1100	1200	69.0 153
23938YM	190 7.4803	260 10.2362	52.0 2.0472	2.0 0.08	207 8.2	245 9.6	910 205000	480 108000	0.18	3.84	5.72	3.75	0.0677	1400	1700	8.1 18.0
23038YM	190 7.4803	290 11.4173	75.0 2.9528	2.0 0.08	213 8.4	271 10.7	1540 349000	901 203000	0.22	3.01	4.48	2.94	0.0698	1400	1700	18.0 39.0
24038CJ	190 7.4803	290 11.4173	100.0 3.9370	2.0 0.08	211 8.3	264 10.4	1810 407000	957 215000	0.31	2.16	3.22	2.12	0.0682	1200	1400	24.0 52.0
23138YM	190 7.4803	320 12.5984	104.0 4.0945	2.5 0.10	218 8.6	290 11.4	2090 470000	1250 282000	0.31	2.15	3.21	2.11	0.0716	1100	1300	34.0 75.0
24138CJ	190 7.4803	320 12.5984	128.0 5.0394	2.5 0.10	211 8.3	286 11.3	2310 520000	1350 305000	0.40	1.68	2.50	1.64	0.0710	860	950	42.0 92.0
22238YM	190 7.4803	340 13.3858	92.0 3.6220	3.0 0.12	224 8.8	306 12.0	1810 407000	1200 270000	0.27	2.53	3.77	2.48	0.0725	1400	1600	36.0 79.0
23238YM	190 7.4803	340 13.3858	120.0 4.7244	3.0 0.12	221 8.7	306 12.0	2390 536000	1490 335000	0.34	1.99	2.96	1.95	0.0714	960	1100	47.0 104
22338YMB	190 7.4803	400 15.7480	132.0 5.1969	4.0 0.16	236 9.3	350 13.8	2730 614000	1900 428000	0.34	1.97	2.94	1.93	0.0761	1000	1200	80.0 177
23940YM	200 7.8740	280 11.0236	60.0 2.3622	2.0 0.08	219 8.6	263 10.3	1140 256000	608 137000	0.19	3.65	5.43	3.57	0.0704	1400	1600	11.0 25.0
23040YM	200 7.8740	310 12.2047	82.0 3.2283	2.0 0.08	225 8.9	289 11.4	1760 398000	1040 234000	0.23	2.95	4.40	2.89	0.0723	1300	1600	23.0 50.0
24040CJ	200 7.8740	310 12.2047	109.0 4.2913	2.0 0.08	223 8.8	284 11.2	2080 468000	1120 251000	0.32	2.09	3.11	2.04	0.0710	1100	1300	30.0 66.0
23140YM	200 7.8740	340 13.3858	112.0 4.4094	2.5 0.10	230 9.0	308 12.1	2300 518000	1390 313000	0.31	2.15	3.20	2.10	0.0730	1100	1200	42.0 92.0
23140YMB	200 7.8740	340 13.3858	112.0 4.4094	2.5 0.10	230 9.0	308 12.1	2300 518000	1390 313000	0.31	2.15	3.20	2.10	0.0730	1100	1200	42.0 92.0
24140YMB	200 7.8740	340 13.3858	140.0 5.5118	2.5 0.10	226 8.9	308 12.1	2950 663000	1690 380000	0.39	1.74	2.59	1.70	0.0730	750	830	52.0 115
22240YMB	200 7.8740	360 14.1732	98.0 3.8583	3.0 0.12	236 9.3	323 12.7	2030 456000	1330 300000	0.27	2.50	3.72	2.44	0.0751	1300	1500	43.0 95.0
23240YM	200 7.8740	360 14.1732	128.0 5.0394	3.0 0.12	233 9.2	323 12.7	2720 611000	1670 376000	0.35	1.95	2.90	1.91	0.0746	890	1000	56.0 124
26340YM	200 7.8740	380 14.9606	126.0 4.9606	4.0 0.16	240 9.4	337 13.3	2710 610000	1740 391000	0.33	2.02	3.01	1.98	0.0759	700	780	65.8 145
22340YMB	200 7.8740	420 16.5354	138.0 5.4331	4.0 0.16	247 9.7	369 14.5	2950 663000	2070 465000	0.33	2.02	3.01	1.98	0.0778	970	1100	93.0 204
23340YM	200 7.8740	420 16.5354	165.0 6.4961	4.0 0.16	246 9.7	366 14.4	3750 844000	2450 550000	0.41	1.66	2.47	1.62	0.0784	640	700	111 244
23944YM	220 8.6614	300 11.8110	60.0 2.3622	2.0 0.08	239 9.4	283 11.2	1220 275000	632 142000	0.17	3.94	5.87	3.85	0.0743	1200	1500	12.0 27.0

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SPHERICAL ROLLER BEARINGS - continued

- Timken inventory systems are designed to provide fast delivery for frequently-ordered sizes and styles.
- Consult your Timken representative for up-to-date information about the availability of the bearings you have selected.
- Life calculations, shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog.
- Bearings are available with a tapered bore for adapter type mounting. To order, add the suffix "K" to bearing number (e.g., 23120K).



B

Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									T/R ≤ e X = 1	T/R > e X = .67						
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀		RPM	RPM	kg lbs.
23044YM	220 8.6614	340 13.3858	90.0 3.5433	2.5 0.10	247 9.7	313 12.3	1990 447000	1130 254000	0.24	2.77	4.13	2.71	0.0767	1200	1400	30.0 66.0
24044YM	220 8.6614	340 13.3858	118.0 4.6457	2.5 0.10	245 9.6	313 12.3	2740 616000	1450 326000	0.32	2.14	3.18	2.09	0.0762	930	1100	39.0 86.0
23144YM	220 8.6614	370 14.5669	120.0 4.7244	3.0 0.12	252 9.9	336 13.2	2760 621000	1630 366000	0.31	2.17	3.24	2.12	0.0777	940	1100	52.0 115
23144YMB	220 8.6614	370 14.5669	120.0 4.7244	3.0 0.12	252 9.9	336 13.2	2760 621000	1630 366000	0.31	2.17	3.24	2.12	0.0777	940	1100	52.0 115
24144YMB	220 8.6614	370 14.5669	150.0 5.9055	3.0 0.12	248 9.8	337 13.3	3250 730000	1870 421000	0.36	1.86	2.77	1.82	0.0773	690	760	65.0 144
22244YMB	220 8.6614	400 15.7480	108.0 4.2520	3.0 0.12	261 10.3	359 14.1	2330 524000	1550 349000	0.27	2.51	3.73	2.45	0.0810	1200	1400	59.0 131
23244YM	220 8.6614	400 15.7480	144.0 5.6693	3.0 0.12	257 10.1	359 14.1	3380 760000	2080 467000	0.35	1.95	2.90	1.90	0.0790	780	870	79.0 174
26344YM	220 8.6614	420 16.5354	138.0 5.4331	4.0 0.16	265 10.4	372 14.6	3280 738000	2080 468000	0.33	2.04	3.03	1.99	0.0808	610	680	88.2 194
22344YMB	220 8.6614	460 18.1102	145.0 5.7087	4.0 0.16	273 10.7	404 15.9	3490 784000	2400 540000	0.32	2.08	3.10	2.04	0.0834	840	950	116 257
23344YM	220 8.6614	460 18.1102	180.0 7.0866	4.0 0.16	269 10.6	402 15.8	4500 1010000	2900 652000	0.40	1.67	2.48	1.63	0.0832	560	610	145 319
23948YM	240 9.4488	320 12.5984	60.0 2.3622	2.0 0.08	260 10.2	303 11.9	1360 306000	666 150000	0.16	4.19	6.24	4.09	0.0782	1100	1300	13.0 29.0
23048YM	240 9.4488	360 14.1732	92.0 3.6220	2.5 0.10	267 10.5	334 13.1	2150 484000	1180 266000	0.23	2.91	4.34	2.85	0.0797	1100	1300	33.0 72.0
24048YM	240 9.4488	360 14.1732	118.0 4.6457	2.5 0.10	265 10.4	334 13.1	2920 657000	1500 338000	0.29	2.31	3.44	2.26	0.0797	850	980	42.0 92.0
23148YMB	240 9.4488	400 15.7480	128.0 5.0394	3.0 0.12	276 10.9	364 14.3	3200 719000	1850 415000	0.30	2.28	3.40	2.23	0.0817	850	970	65.0 142
24148YMB	240 9.4488	400 15.7480	160.0 6.2992	3.0 0.12	271 10.7	364 14.3	4090 919000	2250 505000	0.37	1.80	2.68	1.76	0.0817	580	640	81.0 178
22248YMB	240 9.4488	440 17.3228	120.0 4.7244	3.0 0.12	284 11.2	395 15.6	2970 668000	1960 441000	0.27	2.46	3.67	2.41	0.0840	1000	1200	80.0 177
23248YM	240 9.4488	440 17.3228	160.0 6.2992	3.0 0.12	281 11.1	394 15.5	4190 942000	2540 571000	0.35	1.92	2.86	1.88	0.0839	680	760	107 236
26348YM	240 9.4488	460 18.1102	147.0 5.7874	4.0 0.16	286 11.3	410 16.2	3720 836000	2430 547000	0.32	2.08	3.10	2.04	0.0852	550	610	113 248
22348YMB	240 9.4488	500 19.6850	155.0 6.1024	4.0 0.16	297 11.7	439 17.3	3990 897000	2740 616000	0.32	2.10	3.13	2.05	0.0880	760	850	147 324
23348YM	240 9.4488	500 19.6850	195.0 7.6772	4.0 0.16	293 11.5	437 17.2	5320 1200000	3380 761000	0.40	1.67	2.49	1.64	0.0878	500	540	185 407
26250YM	250 9.8425	410 16.1417	128.0 5.0394	3.0 0.12	284 11.2	374 14.7	3180 714000	1830 412000	0.30	2.28	3.39	2.23	0.0831	580	650	64.0 141

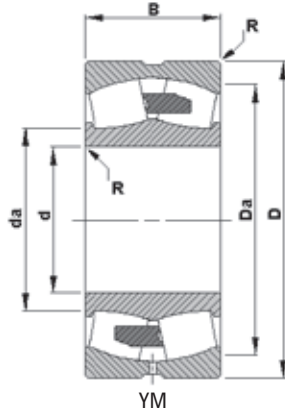
(1) These factors apply for both inch and metric calculations. See engineering section for instructions on use.

(2) Maximum shaft or housing fillet radius that bearing corners will clear.

* Available in standard shaker screen bearing design configuration (example: 223xxYMW33W800C4).

(3) See thermal speed ratings in the engineering section.

(4) Geometry constant for Lubrication Life Adjustment Factor a3l. See "Bearing Load Ratings and Life Calculations."



B

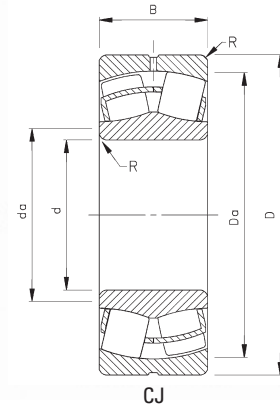
Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									$\frac{T}{R} \leq e$ X = 1	$\frac{T}{R} > e$ X = .67						
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀				kg lbs.
23952YM	260 10.2362	360 14.1732	75.0 2.9528	2.0 0.08	284 11.2	339 13.3	1880 422000	951 214000	0.18	3.74	5.56	3.65	0.0830	1000	1200	23.0 50.0
23052YM	260 10.2362	400 15.7480	104.0 4.0945	3.0 0.12	291 11.5	369 14.5	2770 622000	1540 345000	0.24	2.85	4.24	2.78	0.0847	990	1200	47.0 104
23052YMB	260 10.2362	400 15.7480	104.0 4.0945	3.0 0.12	291 11.5	369 14.5	2770 622000	1540 345000	0.24	2.85	4.24	2.78	0.0847	990	1200	47.0 104
24052YM	260 10.2362	400 15.7480	140.0 5.5118	3.0 0.12	288 11.3	369 14.5	3870 871000	1990 448000	0.32	2.12	3.15	2.07	0.0846	750	860	64.0 140
23152YMB	260 10.2362	440 17.3228	144.0 5.6693	3.0 0.12	302 11.9	400 15.7	3970 891000	2240 504000	0.30	2.23	3.31	2.18	0.0867	760	860	89.0 197
24152YMB	260 10.2362	440 17.3228	180.0 7.0866	3.0 0.12	296 11.7	398 15.7	4840 1090000	2630 592000	0.37	1.82	2.70	1.78	0.0865	530	570	112 246
22252YMB	260 10.2362	480 18.8976	130.0 5.1181	4.0 0.16	309 12.2	430 16.9	3530 793000	2300 518000	0.27	2.46	3.66	2.41	0.0887	910	1100	104 230
23252YM	260 10.2362	480 18.8976	174.0 6.8504	4.0 0.16	308 12.1	430 16.9	4880 1100000	2930 658000	0.34	1.98	2.95	1.94	0.0893	610	680	139 307
22352YMB	260 10.2362	540 21.2598	165.0 6.4961	5.0 0.20	321 12.6	475 18.7	4590 1030000	3130 703000	0.32	2.13	3.17	2.08	0.0924	680	770	182 401
23352YM	260 10.2362	540 21.2598	206.0 8.1102	5.0 0.20	318 12.5	473 18.6	6040 1360000	3830 861000	0.39	1.71	2.54	1.67	0.0923	450	480	227 501
23956YMB	280 11.0236	380 14.9606	75.0 2.9528	2.0 0.08	304 12.0	360 14.2	2000 450000	1000 225000	0.17	3.95	5.88	3.86	0.0865	920	1100	24.0 54.0
23056YMB	280 11.0236	420 16.5354	106.0 4.1732	3.0 0.12	312 12.3	389 15.3	2830 636000	1540 346000	0.23	2.92	4.35	2.86	0.0879	930	1100	51.0 113
24056YMB	280 11.0236	420 16.5354	140.0 5.5118	3.0 0.12	310 12.2	388 15.3	4130 927000	2030 456000	0.30	2.25	3.35	2.20	0.0883	690	790	68.0 149
23156YMB	280 11.0236	460 18.1102	146.0 5.7480	4.0 0.16	320 12.6	419 16.5	4200 944000	2330 524000	0.30	2.26	3.36	2.21	0.0900	710	800	96.0 211
24156YMB	280 11.0236	460 18.1102	180.0 7.0866	4.0 0.16	319 12.6	419 16.5	5100 1150000	2670 601000	0.36	1.86	2.77	1.82	0.0899	490	530	118 260
22256YMB	280 11.0236	500 19.6850	130.0 5.1181	4.0 0.16	331 13.0	449 17.7	3780 850000	2360 530000	0.26	2.62	3.91	2.57	0.0927	850	990	110 242
23256YMB	280 11.0236	500 19.6850	176.0 6.9291	4.0 0.16	329 13.0	450 17.7	5290 1190000	3070 689000	0.33	2.07	3.08	2.02	0.0921	560	620	149 328
22356YMB	280 11.0236	580 22.8346	175.0 6.8898	5.0 0.20	345 13.6	511 20.1	5320 1200000	3590 806000	0.32	2.13	3.17	2.08	0.0968	620	690	222 490
23356YM	280 11.0236	580 22.8346	224.0 8.8189	5.0 0.20	341 13.4	508 20.0	7100 1600000	4430 997000	0.40	1.69	2.52	1.65	0.0966	400	430	284 627
23960YMB	300 11.8110	420 16.5354	90.0 3.5433	2.5 0.10	328 12.9	394 15.5	2650 596000	1330 300000	0.19	3.59	5.34	3.51	0.0911	840	1000	38.0 84.0
23060YMB	300 11.8110	460 18.1102	118.0 4.6457	3.0 0.12	336 13.2	425 16.8	3600 809000	1970 442000	0.24	2.87	4.27	2.80	0.0926	830	980	71.0 156

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SPHERICAL ROLLER BEARINGS - continued

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- Bearings are available with a tapered bore for adapter type mounting. To order, add the suffix "K" to bearing number (e.g., 23120K).



B

Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾				Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed Grease RPM	Thermal Ratings ⁽³⁾ Oil RPM	Weight kg lbs.
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static					
									T/R ≤ e X = 1	T/R > e X = .67		In All Cases X ₀ = 1				
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀	RPM	RPM	kg lbs.		
24060YMB	300 11.8110	460 18.1102	160.0 6.2992	3.0 0.12	334 13.1	423 16.7	5230 1180000	2560 576000	0.32	2.11	3.13	2.06	0.0928	620	700	96.0 211
23160YMB	300 11.8110	500 19.6850	160.0 6.2992	4.0 0.16	345 13.6	453 17.8	5160 1160000	2810 632000	0.30	2.25	3.35	2.20	0.0946	630	710	126 278
24160YMB	300 11.8110	500 19.6850	200.0 7.8740	4.0 0.16	338 13.3	455 17.9	6320 1420000	3380 759000	0.37	1.82	2.71	1.78	0.0942	430	460	158 347
22260YMB	300 11.8110	540 21.2598	140.0 5.5118	4.0 0.16	355 14.0	484 19.1	4430 997000	2760 621000	0.26	2.59	3.86	2.53	0.0965	770	890	139 306
23260YMB	300 11.8110	540 21.2598	192.0 7.5591	4.0 0.16	353 13.9	482 19.0	6210 1400000	3510 788000	0.34	2.00	2.98	1.96	0.0967	510	560	191 420
23964YMB	320 12.5984	440 17.3228	90.0 3.5433	2.5 0.10	349 13.8	414 16.3	2800 629000	1360 305000	0.18	3.79	5.65	3.71	0.0946	780	930	40.0 89.0
23064YMB	320 12.5984	480 18.8976	121.0 4.7638	3.0 0.12	357 14.1	444 17.5	3910 880000	2040 458000	0.23	2.93	4.36	2.86	0.0962	780	910	76.0 168
24064YMB	320 12.5984	480 18.8976	160.0 6.2992	3.0 0.12	354 13.9	444 17.5	5420 1220000	2620 588000	0.30	2.24	3.34	2.19	0.0961	580	660	101 222
23164YMB	320 12.5984	540 21.2598	176.0 6.9291	4.0 0.16	367 14.4	490 19.3	6000 1350000	3330 749000	0.31	2.14	3.19	2.10	0.0988	580	650	164 361
24164YMB	320 12.5984	540 21.2598	218.0 8.5827	4.0 0.16	362 14.3	489 19.3	7580 1710000	3980 894000	0.38	1.77	2.63	1.73	0.0986	380	410	203 448
22264YMB	320 12.5984	580 22.8346	150.0 5.9055	4.0 0.16	380 15.0	519 20.4	5040 1130000	3110 700000	0.26	2.58	3.84	2.52	0.1009	710	820	173 381
23264YMB	320 12.5984	580 22.8346	208.0 8.1890	4.0 0.16	379 14.9	516 20.3	7140 1610000	3960 891000	0.34	1.98	2.94	1.93	0.1013	460	510	240 528
23968YMB	340 13.3858	460 18.1102	90.0 3.5433	2.5 0.10	369 14.5	435 17.1	3020 678000	1420 320000	0.17	3.98	5.93	3.89	0.0983	730	860	43.0 94.0
23068YMB	340 13.3858	520 20.4724	133.0 5.2362	4.0 0.16	384 15.1	481 18.9	4670 1050000	2430 546000	0.23	2.96	4.40	2.89	0.1005	710	830	101 223
24068YMB	340 13.3858	520 20.4724	180.0 7.0866	4.0 0.16	377 14.9	479 18.9	6590 1480000	3190 717000	0.32	2.14	3.18	2.09	0.1004	530	600	137 302
23168YMB	340 13.3858	580 22.8346	190.0 7.4803	4.0 0.16	397 15.6	526 20.7	6900 1550000	3750 843000	0.30	2.22	3.30	2.17	0.1033	530	590	206 455
24168YMB	340 13.3858	580 22.8346	243.0 9.5669	4.0 0.16	385 15.2	525 20.7	8970 2020000	4720 1060000	0.39	1.75	2.61	1.71	0.1033	340	370	264 582
23268YMB	340 13.3858	620 24.4094	224.0 8.8189	5.0 0.20	399 15.7	554 21.8	8290 1860000	4700 1060000	0.35	1.91	2.84	1.86	0.1051	420	460	296 653
23972YMB	360 14.1732	480 18.8976	90.0 3.5433	2.5 0.10	389 15.3	455 17.9	3170 712000	1460 328000	0.16	4.12	6.13	4.03	0.1013	680	810	45.0 98.0
23072YMB	360 14.1732	540 21.2598	134.0 5.2756	4.0 0.16	403 15.9	499 19.7	4640 1040000	2390 538000	0.23	2.94	4.38	2.88	0.1035	680	800	107 236
24072YMB	360 14.1732	540 21.2598	180.0 7.0866	4.0 0.16	398 15.7	500 19.7	6900 1550000	3270 736000	0.30	2.24	3.33	2.19	0.1036	500	560	144 316

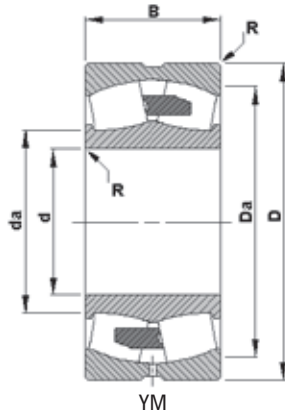
(1) These factors apply for both inch and metric calculations. See engineering section for instructions on use.

(2) Maximum shaft or housing fillet radius that bearing corners will clear.

* Available in standard shaker screen bearing design configuration (example: 223xxYMW33W800C4).

(3) See thermal speed ratings in the engineering section.

(4) Geometry constant for Lubrication Life Adjustment Factor a3l. See "Bearing Load Ratings and Life Calculations."



B

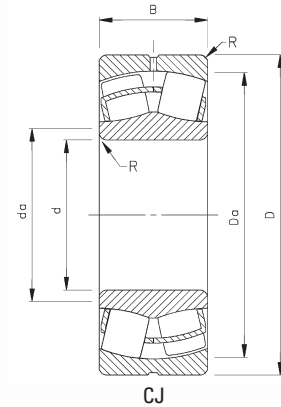
Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight kg lbs.
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									$\frac{T}{R} \leq e$ X = 1	$\frac{T}{R} > e$ X = .67						
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀		RPM	RPM	kg lbs.	
23172YMB	360 14.1732	600 23.6220	192.0 7.5591	4.0 0.16	419 16.5	546 21.5	7360 1650000	3880 872000	0.29	2.29	3.42	2.24	0.1065	500	560	218 480
24172YMB	360 14.1732	600 23.6220	243.0 9.5669	4.0 0.16	406 16.0	545 21.4	9620 2160000	4890 1100000	0.38	1.79	2.67	1.75	0.1064	320	340	276 608
23272YMB	360 14.1732	650 25.5906	232.0 9.1339	5.0 0.20	420 16.5	583 22.9	8900 2000000	5040 1130000	0.35	1.95	2.91	1.91	0.1086	400	430	334 737
23976YMB	380 14.9606	520 20.4724	106.0 4.1732	3.0 0.12	416 16.4	488 19.2	3970 893000	1810 407000	0.18	3.80	5.66	3.72	0.1057	640	750	66.0 145
23076YMB	380 14.9606	560 22.0472	135.0 5.3150	4.0 0.16	422 16.6	520 20.5	5150 1160000	2590 581000	0.22	3.08	4.58	3.01	0.1068	630	740	112 248
24076YMB	380 14.9606	560 22.0472	180.0 7.0866	4.0 0.16	418 16.4	520 20.5	7150 1610000	3360 755000	0.29	2.32	3.45	2.27	0.1062	470	530	150 330
23176YMB	380 14.9606	620 24.4094	194.0 7.6378	4.0 0.16	431 17.0	566 22.3	7670 1720000	4100 922000	0.30	2.28	3.39	2.23	0.1090	470	530	229 505
24176YMB	380 14.9606	620 24.4094	243.0 9.5669	4.0 0.16	427 16.8	565 22.3	10200 2290000	5080 1140000	0.36	1.87	2.79	1.83	0.1097	300	320	287 633
23276YMB	380 14.9606	680 26.7717	240.0 9.4488	5.0 0.20	442 17.4	611 24.1	9630 2170000	5430 1220000	0.34	1.98	2.95	1.94	0.1119	370	400	376 828
23980YMB	400 15.7480	540 21.2598	106.0 4.1732	3.0 0.12	436 17.2	511 20.1	4050 910000	1850 415000	0.17	3.99	5.94	3.90	0.1086	600	720	69.0 151
23080YMB	400 15.7480	600 23.6220	148.0 5.8268	4.0 0.16	447 17.6	555 21.9	6020 1350000	3050 685000	0.23	2.98	4.44	2.92	0.1109	590	690	146 321
24080YMB	400 15.7480	600 23.6220	200.0 7.8740	4.0 0.16	442 17.4	555 21.9	8550 1920000	3990 898000	0.30	2.24	3.33	2.19	0.1108	430	480	197 434
23180YMB	400 15.7480	650 25.5906	200.0 7.8740	5.0 0.20	454 17.9	594 23.4	8210 1850000	4350 979000	0.29	2.32	3.46	2.27	0.1123	440	500	258 570
24180YMB	400 15.7480	650 25.5906	250.0 9.8425	5.0 0.20	449 17.7	594 23.4	10500 2350000	5280 1190000	0.35	1.91	2.84	1.87	0.1123	290	310	323 712
23280YMB	400 15.7480	720 28.3465	256.0 10.0787	5.0 0.20	466 18.4	646 25.4	11000 2460000	6110 1370000	0.34	1.96	2.93	1.92	0.1159	340	370	452 996
22380YMB	400 15.7480	820 32.2835	243.0 9.5669	6.0 0.24	496 19.5	729 28.7	10200 2290000	6570 1480000	0.30	2.28	3.40	2.23	0.1213	390	430	613 1350
23984YMB	420 16.5354	560 22.0472	106.0 4.1732	3.0 0.12	454 17.9	531 20.9	4270 961000	1930 434000	0.16	4.14	6.17	4.05	0.1117	570	670	72.0 158
23084YMB	420 16.5354	620 24.4094	150.0 5.9055	4.0 0.16	467 18.4	576 22.7	6430 1450000	3170 713000	0.22	3.05	4.54	2.98	0.1139	560	650	154 339
24084YMB	420 16.5354	620 24.4094	200.0 7.8740	4.0 0.16	463 18.2	575 22.7	8710 1960000	4010 901000	0.29	2.37	3.52	2.31	0.1138	410	460	205 451
23184YMB	420 16.5354	700 27.5591	224.0 8.8189	5.0 0.20	480 18.9	637 25.1	9760 2190000	5210 1170000	0.31	2.21	3.28	2.16	0.1166	410	450	346 762
24184YMB	420 16.5354	700 27.5591	280.0 11.0236	5.0 0.20	473 18.6	637 25.1	12500 2810000	6330 1420000	0.37	1.81	2.70	1.77	0.1166	260	280	432 953

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SPHERICAL ROLLER BEARINGS - continued

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B

Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									T/R ≤ e X = 1	T/R > e X = .67						
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀	RPM	RPM	kg lbs.		
23284YMB	420 16.5354	760 29.9213	272.0 10.7087	6.0 0.24	490 19.3	681 26.8	12000 2690000	6670 1500000	0.35	1.90	2.83	1.86	0.1187	320	350	537 1180
23988YMB	440 17.3228	600 23.6220	118.0 4.6457	3.0 0.12	479 18.9	566 22.3	5080 1140000	2340 525000	0.17	3.93	5.85	3.84	0.1157	530	630	97.0 213
23088YMB	440 17.3228	650 25.5906	157.0 6.1811	5.0 0.20	489 19.3	603 23.8	7050 1590000	3460 777000	0.22	3.04	4.53	2.97	0.1173	520	610	177 390
24088YMB	440 17.3228	650 25.5906	212.0 8.3465	5.0 0.20	485 19.1	603 23.7	9870 2220000	4480 1010000	0.29	2.31	3.44	2.26	0.1173	380	430	239 527
23188YMB	440 17.3228	720 28.3465	226.0 8.8976	5.0 0.20	500 19.7	657 25.9	10400 2340000	5440 1220000	0.30	2.26	3.37	2.21	0.1198	380	430	361 797
24188YMB	440 17.3228	720 28.3465	280.0 11.0236	5.0 0.20	495 19.5	656 25.8	13100 2930000	6450 1450000	0.36	1.88	2.79	1.84	0.1197	250	260	448 987
23288YMB	440 17.3228	790 31.1024	280.0 11.0236	6.0 0.24	512 20.1	710 27.9	13400 3010000	7350 1650000	0.35	1.95	2.91	1.91	0.1231	300	320	593 1310
23992YMB	460 18.1102	620 24.4094	118.0 4.6457	3.0 0.12	504 19.9	582 22.9	4700 1060000	2050 460000	0.16	4.13	6.15	4.04	0.1187	520	620	101 221
23092YMB	460 18.1102	680 26.7717	163.0 6.4173	5.0 0.20	512 20.1	631 24.8	7660 1720000	3740 840000	0.22	3.06	4.56	2.99	0.1207	500	570	202 444
24092YMB	460 18.1102	680 26.7717	218.0 8.5827	5.0 0.20	507 20.0	630 24.8	10400 2350000	4750 1070000	0.28	2.37	3.53	2.32	0.1207	360	410	270 593
23192YMB	460 18.1102	760 29.9213	240.0 9.4488	6.0 0.24	524 20.6	692 27.2	11200 2530000	5920 1330000	0.30	2.24	3.33	2.19	0.1230	370	410	433 953
24192YMB	460 18.1102	760 29.9213	300.0 11.8110	6.0 0.24	517 20.4	692 27.2	15000 3360000	7420 1670000	0.37	1.82	2.71	1.78	0.1239	220	240	542 1190
23292YMB	460 18.1102	830 32.6772	296.0 11.6535	6.0 0.24	535 21.1	746 29.4	14200 3190000	7870 1770000	0.34	1.96	2.93	1.92	0.1259	280	310	697 1530
23996YMB	480 18.8976	650 25.5906	128.0 5.0394	4.0 0.16	522 20.6	614 24.2	5430 1220000	2490 559000	0.17	3.86	5.75	3.78	0.1224	500	590	121 267
23096YMB	480 18.8976	700 27.5591	165.0 6.4961	5.0 0.20	532 21.0	650 25.6	8070 1810000	3840 863000	0.22	3.14	4.67	3.07	0.1236	470	550	211 465
24096YMB	480 18.8976	700 27.5591	218.0 8.5827	5.0 0.20	527 20.7	652 25.7	11000 2470000	4970 1120000	0.28	2.45	3.64	2.39	0.1233	340	380	279 614
23196YMB	480 18.8976	790 31.1024	248.0 9.7638	6.0 0.24	547 21.5	719 28.3	12600 2830000	6480 1460000	0.30	2.26	3.36	2.21	0.1269	340	370	482 1060
24196YMB	480 18.8976	790 31.1024	308.0 12.1260	6.0 0.24	542 21.3	717 28.2	16300 3660000	7840 1760000	0.37	1.85	2.75	1.80	0.1266	210	220	598 1320
23296YMB	480 18.8976	870 34.2520	310.0 12.2047	6.0 0.24	561 22.1	779 30.7	16600 3740000	8940 2010000	0.35	1.92	2.85	1.87	0.1305	250	270	805 1770
239/500YMB	500 19.6850	670 26.3780	128.0 5.0394	4.0 0.16	544 21.4	634 25.0	5730 1290000	2540 571000	0.17	4.02	5.98	3.93	0.1251	470	560	126 276
230/500YMB	500 19.6850	720 28.3465	167.0 6.5748	5.0 0.20	551 21.7	673 26.5	8260 1860000	3950 889000	0.21	3.26	4.85	3.18	0.1263	460	530	221 486

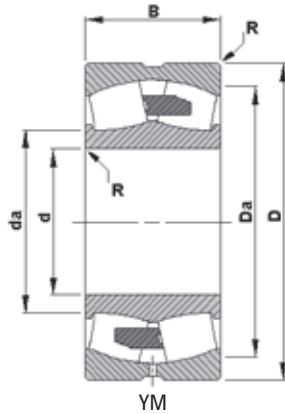
(1) These factors apply for both inch and metric calculations. See engineering section for instructions on use.

(2) Maximum shaft or housing fillet radius that bearing corners will clear.

* Available in standard shaker screen bearing design configuration (example: 223xxYMW33W800C4).

(3) See thermal speed ratings in the engineering section.

(4) Geometry constant for Lubrication Life Adjustment Factor a3l. See "Bearing Load Ratings and Life Calculations."



B

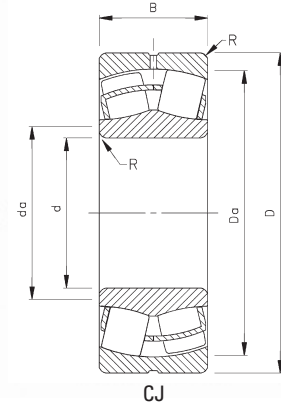
Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight kg lbs.
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									T _R ≤ e X = 1	T _R > e X = .67						
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀		RPM	RPM	kg lbs.
240/500YMB	500 19.6850	720 28.3465	218.0 8.5827	5.0 0.20	547 21.5	672 26.5	11300 2540000	5040 1130000	0.27	2.51	3.74	2.45	0.1263	330	370	289 635
231/500YMB	500 19.6850	830 32.6772	264.0 10.3937	6.0 0.24	573 22.5	753 29.6	14100 3170000	7180 1610000	0.30	2.22	3.30	2.17	0.1307	320	350	572 1260
241/500YMB	500 19.6850	830 32.6772	325.0 12.7953	6.0 0.24	563 22.2	755 29.7	17700 3990000	8720 1960000	0.37	1.81	2.69	1.77	0.1300	200	210	704 1550
232/500YMB	500 19.6850	920 36.2205	336.0 13.2283	6.0 0.24	585 23.0	823 32.4	18100 4070000	9910 2230000	0.36	1.90	2.83	1.86	0.1340	240	260	988 2170
239/530YMB	530 20.8661	710 27.9528	136.0 5.3543	4.0 0.16	575 22.6	672 26.4	6950 1560000	3030 682000	0.16	4.11	6.12	4.02	0.1298	430	500	149 329
230/530YMB	530 20.8661	780 30.7087	185.0 7.2835	5.0 0.20	588 23.2	725 28.5	9840 2210000	4740 1070000	0.21	3.14	4.68	3.07	0.1319	420	480	299 657
240/530YMB	530 20.8661	780 30.7087	250.0 9.8425	5.0 0.20	583 23.0	725 28.5	13900 3110000	6170 1390000	0.28	2.37	3.53	2.32	0.1318	300	330	403 888
231/530YMB	530 20.8661	870 34.2520	272.0 10.7087	6.0 0.24	603 23.7	793 31.2	15300 3440000	7770 1750000	0.30	2.27	3.38	2.22	0.1350	300	320	637 1400
241/530YMB	530 20.8661	870 34.2520	335.0 13.1890	6.0 0.24	596 23.5	792 31.2	19800 4440000	9430 2120000	0.37	1.84	2.74	1.80	0.1352	180	190	785 1730
232/530YMB	530 20.8661	980 38.5827	355.0 13.9764	7.0 0.28	621 24.4	878 34.6	20500 4610000	11200 2520000	0.35	1.91	2.85	1.87	0.1395	220	240	1190 2620
239/560YMB	560 22.0472	750 29.5276	140.0 5.5118	4.0 0.16	607 23.9	710 28.0	7370 1660000	3240 729000	0.16	4.21	6.27	4.12	0.1339	400	470	172 378
230/560YMB	560 22.0472	820 32.2835	195.0 7.6772	5.0 0.20	620 24.4	764 30.1	10900 2460000	5230 1180000	0.22	3.14	4.67	3.07	0.1364	390	450	344 759
240/560YMB	560 22.0472	820 32.2835	258.0 10.1575	5.0 0.20	617 24.3	761 30.0	15000 3360000	6500 1460000	0.28	2.42	3.60	2.37	0.1365	280	310	456 1000
231/560YMB	560 22.0472	920 36.2205	280.0 11.0236	6.0 0.24	638 25.1	838 33.0	16600 3730000	8410 1890000	0.29	2.33	3.47	2.28	0.1399	270	300	734 1620
241/560YMB	560 22.0472	920 36.2205	355.0 13.9764	6.0 0.24	629 24.8	839 33.0	22100 4960000	10600 2370000	0.36	1.87	2.78	1.83	0.1400	160	170	931 2050
232/560YMB	560 22.0472	1030 40.5512	365.0 14.3701	7.0 0.28	661 26.0	918 36.1	22600 5090000	11900 2690000	0.34	1.96	2.91	1.91	0.1449	200	220	1340 2960
239/600YMB	600 23.6220	800 31.4961	150.0 5.9055	4.0 0.16	650 25.6	757 29.8	8690 1950000	3680 827000	0.16	4.20	6.25	4.11	0.1404	370	430	207 456
230/600YMB	600 23.6220	870 34.2520	200.0 7.8740	5.0 0.20	664 26.1	811 31.9	11900 2670000	5530 1240000	0.21	3.27	4.87	3.20	0.1413	360	410	391 861
240/600YMB	600 23.6220	870 34.2520	272.0 10.7087	5.0 0.20	658 25.9	811 31.9	17000 3820000	7320 1650000	0.28	2.44	3.64	2.39	0.1421	260	280	531 1170
231/600YMB	600 23.6220	980 38.5827	300.0 11.8110	6.0 0.24	681 26.8	895 35.2	19100 4290000	9560 2150000	0.29	2.32	3.46	2.27	0.1458	250	270	887 1950
239/630YMB	630 24.8031	850 33.4646	165.0 6.4961	5.0 0.20	684 26.9	804 31.6	10200 2290000	4390 986000	0.17	4.02	5.99	3.93	0.1451	340	400	264 583

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SPHERICAL ROLLER BEARINGS - continued

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- Bearings are available with a tapered bore for adapter type mounting. To order, add the suffix "K" to bearing number (e.g., 23120K).



B

Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									T/R ≤ e X = 1	T/R > e X = .67						
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀	RPM	RPM	kg lbs.		
230/630YMB	630 24.8031	920 36.2205	212.0 8.3465	6.0 0.24	696 27.4	858 33.8	13600 3050000	6370 1430000	0.21	3.18	4.74	3.11	0.1466	330	380	469 1030
240/630YMB	630 24.8031	920 36.2205	290.0 11.4173	6.0 0.24	691 27.2	856 33.7	18900 4240000	8180 1840000	0.28	2.41	3.59	2.36	0.1465	240	260	642 1410
231/630YMB	630 24.8031	1030 40.5512	315.0 12.4016	6.0 0.24	716 28.2	940 37.0	21500 4820000	10600 2390000	0.29	2.30	3.42	2.25	0.1505	230	250	1030 2270
241/630YMB	630 24.8031	1030 40.5512	400.0 15.7480	6.0 0.24	707 27.8	939 37.0	27900 6270000	13000 2920000	0.37	1.84	2.74	1.80	0.1504	140	140	1310 2880
239/670YMB	670 26.3780	900 35.4331	170.0 6.6929	5.0 0.20	727 28.6	851 33.5	11200 2510000	4720 1060000	0.16	4.15	6.18	4.06	0.1509	320	370	302 666
230/670YMB	670 26.3780	980 38.5827	230.0 9.0551	6.0 0.24	744 29.3	911 35.9	16000 3590000	7230 1630000	0.22	3.12	4.65	3.05	0.1531	310	350	579 1280
240/670YMB	670 26.3780	980 38.5827	308.0 12.1260	6.0 0.24	738 29.0	910 35.8	22100 4960000	9280 2090000	0.28	2.39	3.55	2.33	0.1530	220	240	775 1710
231/670YMB	670 26.3780	1090 42.9134	336.0 13.2283	6.0 0.24	760 29.9	995 39.2	23700 5340000	11600 2610000	0.29	2.31	3.44	2.26	0.1560	210	230	1220 2700
241/670YMD	670 26.3780	1090 42.9134	412.0 16.2205	6.0 0.24	751 29.6	996 39.2	30400 6830000	14100 3180000	0.36	1.90	2.82	1.85	0.1560	130	130	1500 3300
232/670YMD	670 26.3780	1220 48.0315	438.0 17.2441	9.0 0.35	779 30.7	1097 43.2	32100 7220000	16900 3800000	0.35	1.95	2.91	1.91	0.1608	160	170	2240 4940
239/710YMB	710 27.9528	950 37.4016	180.0 7.0866	5.0 0.20	771 30.4	898 35.3	12500 2820000	5150 1160000	0.16	4.13	6.15	4.04	0.1565	300	340	353 778
230/710YMB	710 27.9528	1030 40.5512	236.0 9.2913	6.0 0.24	785 30.9	960 37.8	16900 3800000	7680 1730000	0.21	3.26	4.86	3.19	0.1583	290	330	647 1430
240/710YMD	710 27.9528	1030 40.5512	315.0 12.4016	6.0 0.24	779 30.7	960 37.8	23400 5260000	9880 2220000	0.27	2.49	3.71	2.44	0.1582	200	220	863 1900
231/710YMB	710 27.9528	1150 45.2756	345.0 13.5827	7.0 0.28	809 31.8	1048 41.3	26200 5880000	12500 2800000	0.28	2.38	3.54	2.32	0.1622	200	210	1390 3060
241/710YMD	710 27.9528	1150 45.2756	438.0 17.2441	7.0 0.28	795 31.3	1050 41.4	34300 7720000	15700 3520000	0.36	1.87	2.78	1.83	0.1613	120	120	1760 3890
239/750YMB	750 29.5276	1000 39.3701	185.0 7.2835	5.0 0.20	813 32.0	946 37.3	13500 3040000	5550 1250000	0.16	4.23	6.30	4.14	0.1619	280	320	398 878
230/750YMB	750 29.5276	1090 42.9134	250.0 9.8425	6.0 0.24	830 32.7	1015 40.0	19000 4270000	8550 1920000	0.21	3.26	4.85	3.18	0.1641	270	300	770 1700
240/750YMD	750 29.5276	1090 42.9134	335.0 13.1890	6.0 0.24	824 32.4	1014 39.9	26400 5940000	11000 2480000	0.27	2.48	3.69	2.42	0.1640	190	200	1030 2270
241/750YMD	750 29.5276	1220 48.0315	475.0 18.7008	7.0 0.28	840 33.1	1114 43.9	39200 8800000	17800 4000000	0.36	1.86	2.77	1.82	0.1676	110	110	2170 4770
239/800YMB	800 31.4961	1060 41.7323	195.0 7.6772	5.0 0.20	868 34.2	1007 39.6	13800 3100000	5700 1280000	0.16	4.20	6.25	4.10	0.1685	270	310	465 1020
230/800YMB	800 31.4961	1150 45.2756	258.0 10.1575	6.0 0.24	888 35.0	1074 42.3	20300 4570000	8940 2010000	0.19	3.50	5.22	3.43	0.1696	250	280	868 1910

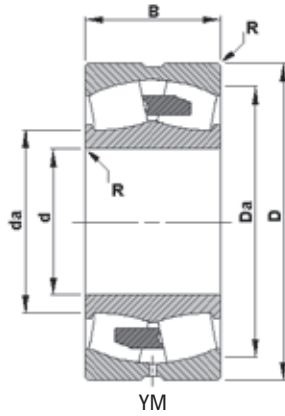
(1) These factors apply for both inch and metric calculations. See engineering section for instructions on use.

(2) Maximum shaft or housing fillet radius that bearing corners will clear.

* Available in standard shaker screen bearing design configuration (example: 223xxYMW33W800C4).

(3) See thermal speed ratings in the engineering section.

(4) Geometry constant for Lubrication Life Adjustment Factor a3l. See "Bearing Load Ratings and Life Calculations."



B

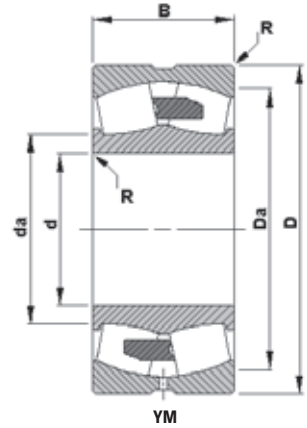
Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight kg lbs.
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									$\frac{T}{R} \leq e$ X = 1	$\frac{T}{R} > e$ X = .67						
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.	e	Y	Y	Y ₀				
240/800YMD	800 31.4961	1150 45.2756	345.0 13.5827	6.0 0.24	877 34.5	1072 42.2	28900 6500000	11800 2650000	0.26	2.55	3.80	2.50	0.1790	170	190	1160 2560
231/800YMB	800 31.4961	1280 50.3937	365.0 14.3701	7.0 0.28	906 35.7	1171 46.1	31900 7170000	15000 3380000	0.28	2.45	3.65	2.40	0.1741	160	180	1800 3950
241/800YMD	800 31.4961	1280 50.3937	475.0 18.7008	7.0 0.28	896 35.3	1170 46.1	41900 9430000	18500 4170000	0.35	1.95	2.90	1.90	0.1740	97	100	2340 5150
232/800YMD	800 31.4961	1420 55.9055	488.0 19.2126	11.0 0.43	935 36.8	1272 50.1	44000 9900000	21500 4830000	0.33	2.04	3.03	1.99	0.1798	120	130	3310 7290
238/850YMB	850 33.4646	1030 40.5512	136.0 5.3543	4.0 0.16	900 35.4	993 39.1	10500 2350000	3650 822000	0.11	6.23	9.27	6.09	0.1718	130	150	233 513
239/850YMB	850 33.4646	1120 44.0945	200.0 7.8740	5.0 0.20	919 36.2	1050 41.4	14700 3300000	5720 1290000	0.15	4.54	6.76	4.44	0.1747	250	290	525 1150
230/850YMB	850 33.4646	1220 48.0315	272.0 10.7087	6.0 0.24	938 36.9	1138 44.8	23400 5250000	10200 2290000	0.20	3.37	5.02	3.30	0.1771	230	260	1030 2260
240/850YMD	850 33.4646	1220 48.0315	365.0 14.3701	6.0 0.24	931 36.7	1138 44.8	32600 7320000	13200 2960000	0.26	2.56	3.81	2.50	0.1770	160	170	1380 3030
231/850YMB	850 33.4646	1360 53.5433	400.0 15.7480	9.0 0.35	962 37.9	1245 49.0	36200 8140000	16900 3800000	0.28	2.44	3.63	2.39	0.1810	150	160	2220 4890
232/850YMD	850 33.4646	1500 59.0551	515.0 20.2756	11.0 0.43	990 39.0	1347 53.0	48400 10900000	23500 5280000	0.33	2.06	3.06	2.01	0.1864	110	120	3880 8540
239/900YMB	900 35.4331	1180 46.4567	206.0 8.1102	5.0 0.20	965 38.0	1112 43.8	18300 4110000	7120 1600000	0.14	4.69	6.98	4.58	0.1801	220	250	592 1300
230/900YMB	900 35.4331	1280 50.3937	280.0 11.0236	6.0 0.24	990 39.0	1198 47.2	25900 5820000	11100 2500000	0.20	3.41	5.08	3.33	0.1828	210	240	1140 2520
240/900YMD	900 35.4331	1280 50.3937	375.0 14.7638	6.0 0.24	983 38.7	1197 47.1	35600 7990000	14200 3200000	0.26	2.60	3.87	2.54	0.1827	150	160	1530 3370
231/900YMB	900 35.4331	1420 55.9055	412.0 16.2205	9.0 0.35	1018 40.1	1300 51.2	39400 8860000	17800 4010000	0.27	2.49	3.71	2.43	0.1871	140	150	2450 5390
241/900YMD	900 35.4331	1420 55.9055	515.0 20.2756	9.0 0.35	1008 39.7	1298 51.1	51000 11500000	21700 4870000	0.34	2.00	2.98	1.96	0.1869	82	85	3060 6740
232/900YMD	900 35.4331	1580 62.2047	515.0 20.2756	11.0 0.43	1056 41.6	1423 56.0	51400 11600000	24700 5560000	0.32	2.11	3.13	2.06	0.1926	100	110	4280 9420
239/950YMB	950 37.4016	1250 49.2126	224.0 8.8189	6.0 0.24	1025 40.3	1187 46.7	20700 4660000	8160 1830000	0.15	4.39	6.54	4.29	0.1874	210	240	729 1600
230/950YMB	950 37.4016	1360 53.5433	300.0 11.8110	6.0 0.24	1046 41.2	1273 50.1	27600 6190000	12100 2720000	0.19	3.49	5.19	3.41	0.1899	200	230	1400 3080
240/950YMD	950 37.4016	1360 53.5433	412.0 16.2205	6.0 0.24	1039 40.9	1269 50.0	41300 9290000	16400 3680000	0.27	2.53	3.77	2.47	0.1898	130	140	1920 4230
231/950YMB	950 37.4016	1500 59.0551	438.0 17.2441	9.0 0.35	1074 42.3	1373 54.1	44400 9980000	19900 4460000	0.27	2.47	3.68	2.42	0.1937	130	140	2910 6400
241/950YMD	950 37.4016	1500 59.0551	545.0 21.4567	9.0 0.35	1064 41.9	1371 54.0	57100 12800000	24100 5410000	0.34	2.00	2.97	1.95	0.1935	75	77	3620 7970

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Bearing Number	d Bore	D O.D.	B Width	R Fillet ⁽²⁾ (max.)	Backing Diameter		Load Ratings		Equivalent Radial load Factors ⁽¹⁾			Lubrication Life Adjustment Factor ⁽⁴⁾ C _g	Reference Speed RPM	Thermal Ratings ⁽³⁾		Weight
					d _a Shaft	D _a Housing	Static Load Rating C ₀	Dynamic Load Rating C	Dynamic		Static			Grease	Oil	
									e	T/R ≤ e X = 1						
mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kN lbs.	kN lbs.		Y	Y				kg lbs.	
239/1000YMB	1000 39.3701	1320 51.9685	236.0 9.2913	6.0 0.24	1080 42.5	1252 49.3	23100 5190000	9020 2030000	0.15	4.39	6.54	4.29	0.1939	190	220	864 1900
230/1000YMB	1000 39.3701	1420 55.9055	308.0 12.1260	6.0 0.24	1101 43.4	1327 52.2	32100 7220000	13400 3010000	0.20	3.44	5.12	3.36	0.1960	180	200	1540 3400
240/1000YMD	1000 39.3701	1420 55.9055	412.0 16.2205	6.0 0.24	1094 43.1	1329 52.3	41800 9390000	16600 3730000	0.25	2.69	4.01	2.63	0.1952	130	140	2070 4540
231/1000YMB	1000 39.3701	1580 62.2047	462.0 18.1890	9.0 0.35	1131 44.5	1446 56.9	49500 11100000	22000 4940000	0.27	2.47	3.68	2.42	0.2002	120	130	3410 7500
241/1000YMB	1000 39.3701	1580 62.2047	580.0 22.8346	9.0 0.35	1120 44.1	1444 56.9	64400 14500000	26800 6030000	0.34	1.98	2.95	1.93	0.2000	69	71	4280 9420
239/1060YMB	1060 41.7323	1400 55.1181	250.0 9.8425	6.0 0.24	1145 45.1	1328 52.3	26500 5950000	10200 2300000	0.16	4.25	6.32	4.15	0.2004	180	200	1030 2270
230/1060YMB	1060 41.7323	1500 59.0551	325.0 12.7953	7.0 0.28	1165 45.9	1404 55.3	35800 8050000	14800 3330000	0.20	3.44	5.12	3.36	0.2031	170	190	1810 3970
240/1060YMD	1060 41.7323	1500 59.0551	438.0 17.2441	7.0 0.28	1157 45.6	1403 55.2	49500 11100000	19000 4280000	0.26	2.61	3.88	2.55	0.2030	110	120	2430 5350
231/1060YMB	1060 41.7323	1660 65.3543	475.0 18.7008	11.0 0.43	1194 47.0	1524 60.0	53500 12000000	23700 5330000	0.27	2.53	3.77	2.48	0.2070	110	120	3820 8410
239/1120YMB	1120 44.0945	1460 57.4803	250.0 9.8425	6.0 0.24	1205 47.4	1389 54.7	27100 6090000	10400 2330000	0.15	4.62	6.87	4.51	0.2077	170	190	1080 2380
230/1120YMB	1120 44.0945	1580 62.2047	345.0 13.5827	7.0 0.28	1229 48.4	1480 58.3	40200 9040000	16500 3710000	0.20	3.42	5.09	3.34	0.2101	160	170	2110 4650
240/1120YMD	1120 44.0945	1580 62.2047	462.0 18.1890	7.0 0.28	1220 48.1	1480 58.3	55600 12500000	21200 4760000	0.26	2.62	3.90	2.56	0.2100	110	110	2830 6230
231/1120YMB	1120 44.0945	1750 68.8976	475.0 18.7008	11.0 0.43	1262 49.7	1609 63.3	56100 12600000	25000 5620000	0.25	2.67	3.98	2.62	0.2142	110	110	4240 9320
239/1180YMB	1180 46.4567	1540 60.6299	272.0 10.7087	6.0 0.24	1269 50.0	1465 57.7	31500 7090000	11900 2670000	0.15	4.48	6.67	4.38	0.2148	160	180	1310 2890
230/1180YMB	1180 46.4567	1660 65.3543	355.0 13.9764	7.0 0.28	1293 50.9	1557 61.3	43500 9780000	17800 4000000	0.19	3.50	5.21	3.42	0.2170	150	160	2390 5250
240/1180YMD	1180 46.4567	1660 65.3543	475.0 18.7008	7.0 0.28	1284 50.6	1557 61.3	59800 13400000	22700 5110000	0.25	2.67	3.98	2.61	0.2169	98	110	3190 7030
231/1180YMB	1180 46.4567	1850 72.8346	500.0 19.6850	11.0 0.43	1332 52.5	1698 66.9	62400 14000000	27600 6200000	0.25	2.68	4.00	2.62	0.2217	97	100	5010 11000
239/1250YMB	1250 49.2126	1630 64.1732	280.0 11.0236	6.0 0.24	1345 52.9	1551 61.1	34200 7680000	12800 2890000	0.15	4.60	6.85	4.50	0.2227	140	160	1510 3330
230/1250YMB	1250 49.2126	1750 68.8976	375.0 14.7638	7.0 0.28	1370 54.0	1640 64.6	48800 11000000	19400 4350000	0.19	3.50	5.21	3.42	0.2250	140	150	2770 6100
240/1250YMD	1250 49.2126	1750 68.8976	500.0 19.6850	7.0 0.28	1362 53.6	1639 64.5	66700 15000000	24600 5530000	0.25	2.68	3.99	2.62	0.2249	90	96	3700 8140
231/1250YMB	1250 49.2126	1950 76.7717	530.0 20.8661	11.0 0.43	1407 55.4	1794 70.6	70000 15700000	30700 6900000	0.25	2.67	3.98	2.62	0.2296	89	95	5860 12900

⁽¹⁾ These factors apply for both inch and metric calculations. See engineering section for instructions on use.

⁽²⁾ Maximum shaft or housing fillet radius that bearing corners will clear.

* Available in standard shaker screen bearing design configuration (example: 223xxYMW33W800C4).

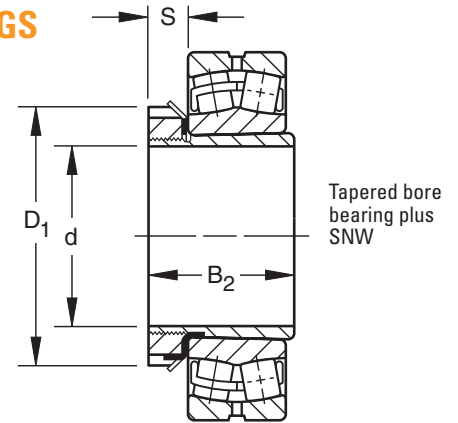
⁽³⁾ See thermal speed ratings in the engineering section.

⁽⁴⁾ Geometry constant for Lubrication Life Adjustment Factor a3l. See "Bearing Load Ratings and Life Calculations."

SHAFT ADAPTER ACCESSORIES FOR TAPERED BORE BEARINGS

SNW/SNP – PULL TYPE SLEEVE, LOCKNUT, LOCKWASHER/LOCKPLATE ASSEMBLIES

- The table below shows dimensions for adapter assemblies and components used in the mounting of tapered bore bearings on shafts.
- SNW assembly consists of a sleeve, locknut and lockwasher.
- SNP assembly consists of a sleeve, locknut and lockplate.



B

Bearing Number SNW/SNP	Accessory Numbers				Shaft Dimensions Inches		Adapter Dimensions Inches			Assembly Weight lbs.
	Assembly	Sleeve	Locknut	Lockwasher Lockplate	Diameter d	Tolerance +0.000	B ₂	S	D ₁	
					in.		in.	in.	in.	

FOR SERIES 222K

22209K	SNW-09	S-09	N-09	W-09	1 7/16	-0.003	1 37/64	1/2	2 17/32	0.6
22210K	SNW-10	S-10	N-10	W-10	1 11/16	-0.003	1 49/64	9/16	2 11/16	0.7
22211K	SNW-11	S-11	N-11	W-11	1 15/16	-0.003	1 27/32	9/16	2 31/32	0.8
22212K	SNW-12	S-12	N-12	W-12	2 1/16	-0.004	1 63/64	19/32	3 5/32	1.1
22213K	SNW-13	S-13	N-13	W-13	2 3/16	-0.004	2 3/32	5/8	3 3/8	1.4
22214K	SNW-14	S-14	N-14	W-14	2 5/16	-0.004	2 11/64	5/8	3 5/8	1.8
22215K	SNW-15	S-15	AN-15	W-15	2 7/16	-0.004	2 19/64	43/64	3 7/8	2
22216K	SNW-16	S-16	AN-16	W-16	2 11/16	-0.004	2 3/8	43/64	4 5/32	2.4
22217K	SNW-17	S-17	AN-17	W-17	2 15/16	-0.004	2 31/64	45/64	4 13/32	3
22218K	SNW-18	S-18	AN-18	W-18	3 3/16	-0.004	2 41/64	25/32	4 21/32	3
22219K	SNW-19	S-19	AN-19	W-19	3 5/16	-0.004	2 49/64	13/16	4 15/16	3.3
22220K	SNW-20	S-20	AN-20	W-20	3 7/16	-0.004	2 7/8	27/32	5 3/16	4.4
22222K	SNW-22	S-22	AN-22	W-22	3 15/16	-0.004	3 13/64	29/32	5 23/32	5
22224K	SNW-24	S-24	AN-24	W-24	4 3/16	-0.005	3 15/32	15/16	6 1/8	6.7
22226K	SNW-26	S-26	AN-26	W-26	4 7/16	-0.005	3 49/64	1	6 3/4	8.6
22228K	SNW-28	S-28	AN-28	W-28	4 15/16	-0.005	3 63/64	1 1/16	7 3/32	10.3
22230K	SNW-30	S-30	AN-30	W-30	5 3/16	-0.005	4 15/64	1 1/8	7 11/16	13.5
22232K	SNW-32	S-32	AN-32	W-32	5 7/16	-0.005	4 37/64	1 3/16	8 1/16	15.6
22234K	SNW-34	S-34	AN-34	W-34	5 15/16	-0.005	4 27/32	1 7/32	8 21/32	19.4
22236K	SNW-36	S-36	AN-36	W-36	6 7/16	-0.005	5 1/32	1 1/4	9 1/16	20.5
22238K	SNW-38	S-38	AN-38	W-38	6 15/16	-0.005	5 17/64	1 9/32	9 15/32	23.4
22240K	SNW-40	S-40	AN-40	W-40	7 3/16	-0.005	5 31/64	1 11/32	9 27/32	30.5
22244K	SNW-44	S-44	AN-44	W-44	7 15/16	-0.005	5 29/32	1 3/8	11	33

FOR SERIES 230K

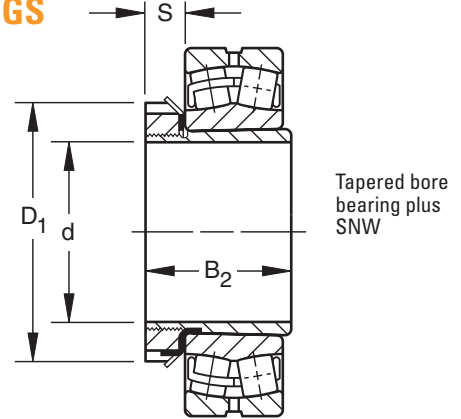
23024K	SNW-3024	S-3024	N-024	W-024	4 3/16	-0.005	2 61/64	13/16	5 11/16	6.1
23026K	SNW-3026	S-3026	N-026	W-026	4 7/16	-0.005	3 15/64	7/8	6 1/8	7.5
23028K	SNW-3028	S-3028	N-028	W-028	4 15/16	-0.005	3 11/32	15/16	6 1/2	8.4
23030K	SNW-3030	S-3030	N-030	W-030	5 3/16	-0.005	3 31/64	31/32	7 1/8	9.8
23032K	SNW-3032	S-3032	N-032	W-032	5 7/16	-0.005	3 23/32	1 1/32	7 1/2	11.8
23034K	SNW-3034	S-3034	N-034	W-034	5 15/16	-0.005	4 1/64	1 1/16	7 7/8	13.3
23036K	SNW-3036	S-3036	N-036	W-036	6 7/16	-0.005	4 11/32	1 1/32	8 1/4	15.2
23038K	SNW-3038	S-3038	N-038	W-038	6 15/16	-0.005	4 13/32	1 1/8	8 11/16	16.7
23040K	SNW-3040	S-3040	N-040	W-040	7 3/16	-0.005	4 3/4	1 3/16	9 7/16	19.7
23044K	SNW-3044	S-3044	N-044	W-044	7 15/16	-0.005	5 1/8	1 1/4	10 1/4	24.4
23048K	SNP-3048	S-3048	N-048	P-048	8 15/16	-0.006	5 7/16	1 11/32	11 7/16	32.2
23052K	SNP-3052	S-3052	N-052	P-052	9 7/16	-0.006	6 1/64	1 13/32	12 3/16	41.1
23056K	SNP-3056	S-3056	N-056	P-056	10 7/16	-0.007	6 3/16	1 1/2	13	45.4
23060K	SNP-3060	S-3060	N-060	P-060	10 15/16	-0.007	6 47/64	1 9/16	14 3/16	58.9
23064K	SNP-3064	S-3064	N-064	P-064	11 15/16	-0.007	6 61/64	1 21/32	15	65.7
23068K	SNP-3068	S-3068	N-068	P-068	12 7/16	-0.008	7 35/64	1 25/32	15 3/4	77.8
23072K	SNP-3072	S-3072	N-072	P-072	13 7/16	-0.008	7 37/64	1 25/32	16 1/2	86.2
23076K	SNP-3076	S-3076	N-076	P-076	13 15/16	-0.008	7 3/4	1 57/64	17 3/4	94.3
23080K	SNP-3080	S-3080	N-080	P-080	15	-0.008	8 13/32	2 1/16	18 1/2	105



SHAFT ADAPTER ACCESSORIES FOR TAPERED BORE BEARINGS

SNW/SNP – PULL TYPE SLEEVE, LOCKNUT, LOCKWASHER/LOCKPLATE ASSEMBLIES

- The table below shows dimensions for adapter assemblies and components used in the mounting of tapered bore bearings on shafts.
- SNW assembly consists of a sleeve, locknut and lockwasher.
- SNP assembly consists of a sleeve, locknut and lockplate.



Bearing Number	Accessory Numbers				Shaft Dimensions Inches		Adapter Dimensions Inches			SNW/SNP Assembly Weight lbs.
	Assembly	Sleeve	Locknut	Lockwasher	Diameter d	Tolerance +.000	B ₂	S	D ₁	
				Lockplate						

FOR SERIES 223K and 232K

22308K		SNW-108	S-108	N-08	W-08	1 5/16	-.003	2 1/64	1/2	2 1/4	0.8
22309K		SNW-109	S-109	N-09	W-09	1 7/16	-.003	2 9/64	1/2	2 17/32	0.8
22310K		SNW-110	S-110	N-10	W-10	1 11/16	-.003	2 25/64	9/16	2 11/16	0.9
22311K		SNW-111	S-111	N-11	W-11	1 15/16	-.003	2 33/64	9/16	2 31/32	0.9
22312K		SNW-112	S-112	N-12	W-12	2 1/16	-.004	2 21/32	19/32	3 5/32	1.2
22313K		SNW-113	S-113	N-13	W-13	2 3/16	-.004	2 49/64	5/8	3 3/8	1.7
22314K		SNW-114	S-114	N-14	W-14	2 5/16	-.004	2 61/64	5/8	3 5/8	2.3
22315K		SNW-115	S-115	AN-15	W-15	2 7/16	-.004	3 5/64	43/64	3 7/8	3
22316K		SNW-116	S-116	AN-16	W-16	2 11/16	-.004	3 13/64	43/64	4 5/32	3.2
22317K		SNW-117	S-117	AN-17	W-17	2 15/16	-.004	3 5/16	45/64	4 13/32	3.5
22318K		SNW-118	S-118	AN-18	W-18	3 3/16	-.004	3 35/64	25/32	4 21/32	4
22319K		SNW-119	S-119	AN-19	W-19	3 5/16	-.004	3 45/64	13/16	4 15/16	5
22320K	23220K	SNW-120	S-120	AN-20	W-20	3 7/16	-.004	3 31/32	27/32	5 3/16	6.2
22322K	23222K	SNW-122	S-122	AN-22	W-22	3 15/16	-.004	4 11/32	29/32	5 23/32	6.5
22324K	23224K	SNW-124	S-124	AN-24	W-24	4 3/16	-.005	4 41/64	15/16	6 1/8	8
22326K	23226K	SNW-126	S-126	AN-26	W-26	4 7/16	-.005	4 63/64	1	6 3/4	12.4
22328K	23228K	SNW-128	S-128	AN-28	W-28	4 15/16	-.005	5 21/64	1 1/16	7 3/32	13
22330K	23230K	SNW-130	S-130	AN-30	W-30	5 3/16	-.005	5 5/8	1 1/8	7 11/16	17.6
22332K	23232K	SNW-132	S-132	AN-32	W-32	5 7/16	-.005	5 59/64	1 3/16	8 1/16	18.5
22334K	23234K	SNW-134	S-134	AN-34	W-34	5 15/16	-.005	6 3/16	1 7/32	8 21/32	21
22336K	23236K	SNW-136	S-136	AN-36	W-36	6 7/16	-.005	6 29/64	1 1/4	9 1/16	22.5
22338K	23238K	SNW-138	S-138	AN-38	W-38	6 15/16	-.005	6 3/4	1 9/32	9 15/32	28
22340K	23240K	SNW-140	S-140	AN-40	W-40	7 3/16	-.005	7 3/32	1 11/32	9 27/32	36
22344K	23244K	SNW-144	S-144	AN-44	W-44	7 15/16	-.005	7 9/32	1 3/8	11	47
22348K	23248K	SNP-148	S-148	N-048	P-48	8 15/16	-.006	8 7/64	1 11/32	11 7/16	38.3
22352K	23252K	SNP-152	S-152	N-052	P-52	9 7/16	-.006	8 49/64	1 13/32	12 13/16	53.4
22356K	23256K	SNP-3256	S-3256	N-056	P-56	10 7/16	-.007	8 15/16	1 1/2	13	61.3

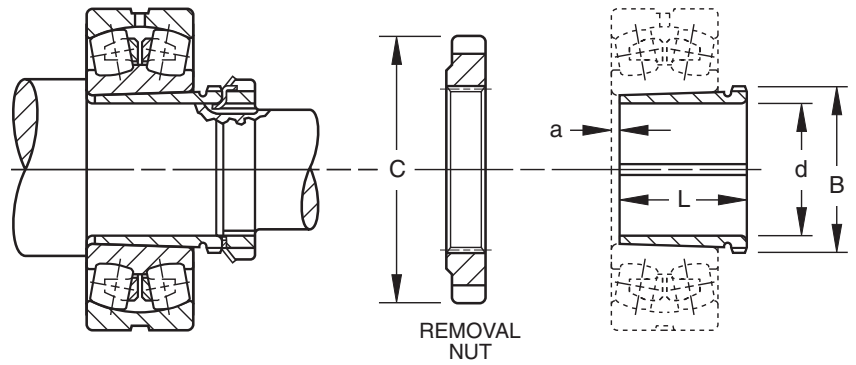
FOR SERIES 231K

23122K		SNW-3122	S-22	N-022	W-022	3 15/16	-.004	3 13/64	25/32	5 5/32	4.2
23124K		SNW-3124	S-24	N-024	W-024	4 3/16	-.005	3 15/32	13/16	5 11/16	5.8
23126K		SNW-3126	S-26	N-026	W-026	4 7/16	-.005	3 49/64	7/8	6 1/8	8.3
23128K		SNW-3128	S-28	N-028	W-028	4 15/16	-.005	3 63/64	15/16	6 1/2	8.8
23130K		SNW-3130	S-30	N-030	W-030	5 3/16	-.005	4 15/64	31/32	7 1/8	13.7
23132K		SNW-3132	S-32	N-032	W-032	5 7/16	-.005	4 37/64	1 1/32	7 1/2	13.3
23134K		SNW-3134	S-34	N-034	W-034	5 15/16	-.005	4 27/32	1 1/16	7 7/8	16.1
23136K		SNW-3136	S-36	N-036	W-036	6 7/16	-.005	5 1/32	1 3/32	8 1/4	17.1
23138K		SNW-3138	S-38	N-038	W-038	6 15/16	-.005	5 17/64	1 1/8	8 11/16	19.7
23140K		SNW-3140	S-40	N-040	W-040	7 3/16	-.005	5 31/64	1 3/16	9 7/16	28.4
23144K		SNW-3144	S-44	N-044	W-044	7 15/16	-.005	5 29/32	1 1/4	10 1/4	28.1
23148K		SNP-3148	S-48	N-048	P-48	8 15/16	-.006	6 41/64	1 11/32	11 7/16	36
23152K		SNP-3152	S-52	N-052	P-52	9 7/16	-.006	7 19/32	1 13/32	12 3/16	39
23156K		SNP-3156	S-3156	N-056	P-56	10 7/16	-.007	7 49/64	1 1/2	13	60
23160K		SNP-3160	S-3160	N-060	P-060	10 15/16	-.007	8 3/8	1 9/16	14 3/16	65
23164K		SNP-3164	S-3164	N-064	P-064	11 15/16	-.007	9 7/64	1 21/32	15	70

SHAFT ADAPTER ACCESSORIES FOR TAPERED BORE BEARINGS

PUSH TYPE REMOVABLE SLEEVE LOCKNUT AND LOCKWASHER

- The table below shows dimensions for adapter assemblies and components used in the mounting of tapered bore bearings on shafts.



Tapered bore bearing mounted with push type removable sleeve

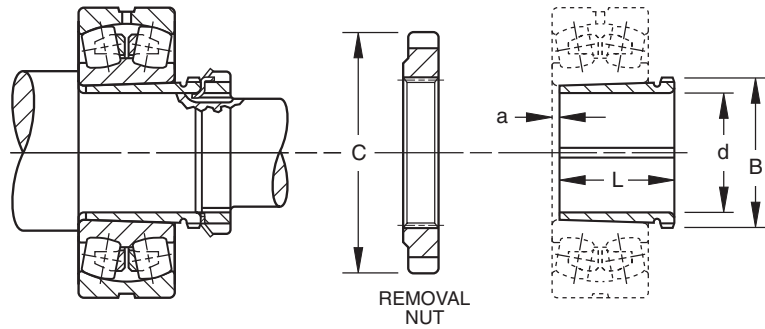
Bearing Number	Accessory Numbers				Shaft Dimensions		Sleeve Dimensions			C Removal Nut O.D.	Sleeve Weight
	Sleeve	Locknut	Lockwasher Lockplate	Removal Nut	Diameter d	Tolerance +.000	B Pitch Dia.	L	a		
					mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg. lbs.
SERIES 222K											
22216K	SK-8022	N-14	W-14	AN-18	70 2.7559	-.10 -.004	88.19 3.472	50 1.969	3.5 0.138	118.39 4.661	0.57 1.25
22217K	SK-8522	AN-15	W-15	AN-19	75 2.9528	-.10 -.004	93.35 3.675	52 2.047	3.5 0.138	125.55 4.943	0.65 1.44
22218K	SK-9022	AN-16	W-16	AN-20	80 3.1496	-.10 -.004	98.12 3.863	53 2.087	3.5 0.138	131.90 5.193	0.69 1.53
22219K	SK-9522	AN-17	W-17	AN-21	85 3.3465	-.10 -.004	103.28 4.066	57 2.244	4.0 0.157	138.25 5.443	0.82 1.81
22220K	SK-10022	AN-18	W-18	AN-22	90 3.5433	-.10 -.004	109.12 4.269	59 2.323	4.0 0.157	145.39 5.724	0.91 2.00
22222K	SK-11022	AN-20	W-20	ARN-22	100 3.9370	-.10 -.004	119.94 4.722	65 2.559	4.0 0.157	158.75 6.250	1.12 2.47
22224K	SK-12022	AN-22	W-22	ARN-24	110 4.3307	-.13 -.005	130.28 5.129	72 2.835	4.0 0.157	174.63 6.875	1.42 3.13
22226K	SK-13022	AN-22	W-22	ARN-26	115 4.5276	-.13 -.005	141.38 5.566	78 3.071	4.0 0.157	184.15 7.250	2.27 5.00
22228K	SK-14022	AN-24	W-24	RN-28	125 4.9213	-.13 -.005	152.73 6.013	82 3.228	5.0 0.197	200.03 7.875	2.67 5.88
22230K	SK-15022	AN-26	W-26	RN-30	135 5.3150	-.13 -.005	163.04 6.419	88 3.465	5.0 0.197	209.55 8.250	3.09 6.81
22232K	SK-16022	AN-28	W-28	RN-32	140 5.5118	-.13 -.005	173.76 6.841	96 3.780	5.0 0.197	225.43 8.875	4.51 9.94
22234K	SK-17022	AN-30	W-30	RN-34	150 5.9055	-.13 -.005	184.07 7.247	104 4.095	5.0 0.197	234.95 9.250	5.22 11.50
22236K	SK-18022	AN-32	W-32	RN-36	160 6.2992	-.13 -.005	194.79 7.669	104 4.095	5.0 0.197	247.65 9.750	5.67 12.50
22238K	SK-19022	AN-34	W-34	RN-38	170 6.6929	-.13 -.005	205.92 8.107	112 4.409	5.0 0.197	269.88 10.625	6.58 14.50
22240K	SK-20022	AN-36	W-36	N-44	180 7.0866	-.13 -.005	217.02 8.544	118 4.646	5.0 0.197	279.53 11.005	7.43 16.37
22244K	SK-22022	AN-40	W-40	N-048	200 7.8740	-.13 -.005	236.98 9.330	130 5.118	6.0 0.236	290.65 11.443	8.89 19.60
22248K	SK-24022	N-44	W-44	N-052	220 8.6614	-.15 -.006	256.03 10.080	144 5.689	6.0 0.236	309.70 12.193	11.02 24.30
22252K	SK-26022	N-048	P-48	N-056	240 9.4488	-.15 -.006	276.66 10.892	155 6.102	6.0 0.236	330.33 13.005	14.02 30.90
22256K	SK-28022	N-052	P-52	RN-56	260 10.2362	-.15 -.006	301.27 11.861	155 6.102	8.0 0.315	425.45 16.75	15.01 33.10
22260K	SK-30022	N-056	P-56	RN-60	280 11.0236	-.15 -.006	325.88 12.830	170 6.693	8.0 0.315	416.10 16.382	17.78 39.20
22264K	SK-32022	N-060	P-60	RN-64	300 11.8110	-.15 -.006	345.72 13.611	180 7.087	10.0 0.394	431.80 17.000	21.00 46.30



SHAFT ADAPTER ACCESSORIES FOR TAPERED BORE BEARINGS

PUSH TYPE REMOVABLE SLEEVE, LOCKNUT AND LOCKWASHER

- The table below shows dimensions for adapter assemblies and components used in the mounting of tapered bore bearings on shafts.



Tapered bore bearing mounted with push type removable sleeve

Bearing Number	Accessory Numbers				Dimensions Shaft		Sleeve Dimensions			C Removal Nut O.D.	Sleeve Weight
	Sleeve	Locknut	Lockwasher Lockplate	Removal Nut	Diameter d	Tolerance ±.000	B Pitch Dia.	L	a		
					mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg. lbs.

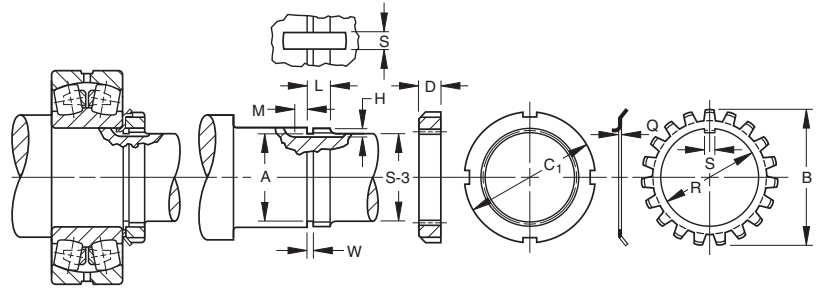
SERIES 223K

22308K	SK-4023	N-07	W-07	N-09	35	-.08	43.94	40	3.0	64.41	0.11
					1.3780	-.003	1.730	1.575	0.118	2.536	0.25
22309K	SK-4523	N-08	W-08	N-10	40	-.08	49.02	44	3.0	68.40	0.14
					1.5748	-.003	1.930	1.732	0.118	2.693	0.31
22310K	SK-5023	N-09	W-09	RN-10	45	-.08	55.04	50	3.0	76.20	0.21
					1.7717	-.003	2.167	1.969	0.118	3.000	0.47
22311K	SK-5523	N-10	W-10	RN-11	50	-.08	60.20	54	3.0	81.76	0.25
					1.9685	-.003	2.370	2.126	0.118	3.219	0.56
22312K	SK-6023	N-11	W-11	RN-12	55	-.10	65.76	57	3.5	87.33	0.31
					2.1654	-.004	2.589	2.244	0.138	3.438	0.69
22313K	SK-6523	N-12	W-12	AN-15	60	-.10	73.10	61	3.5	98.55	0.38
					2.3622	-.004	2.878	2.402	0.138	3.880	0.84
22314K	SK-7023	N-12	W-12	AN-16	60	-.10	78.28	65	3.5	105.69	0.69
					2.3622	-.004	3.082	2.559	0.138	4.161	1.53
22315K	SK-7523	N-13	W-13	AN-17	65	-.10	83.44	69	3.5	112.04	0.81
					2.5591	-.004	3.285	2.717	0.138	4.411	1.78
22316K	SK-8023	N-14	W-14	AN-18	70	-.10	88.19	72	3.5	118.39	0.91
					2.7559	-.004	3.472	2.835	0.138	4.661	2.00
22317K	SK-8523	AN-15	W-15	AN-19	75	-.10	93.35	75	3.5	125.55	1.02
					2.9528	-.004	3.675	2.953	0.138	4.943	2.25
22318K	SK-9023	AN-16	W-16	AN-20	80	-.10	98.12	80	3.5	131.90	1.16
					3.1496	-.004	3.863	3.150	0.138	5.193	2.56
22319K	SK-9523	AN-17	W-17	AN-21	85	-.10	103.28	85	4.0	138.25	1.33
					3.3465	-.004	4.066	3.346	0.157	5.443	2.94
22320K	SK-10023	AN-18	W-18	AN-22	90	-.10	109.12	90	4.0	145.39	1.53
					3.5433	-.004	4.269	3.543	0.157	5.724	3.38
22322K	SK-11023	AN-20	W-20	ARN-22	100	-.10	119.94	98	4.0	158.75	1.93
					3.9370	-.004	4.722	3.858	0.157	6.250	4.25
22324K	SK-12023	AN-22	W-22	ARN-24	110	-.13	130.28	105	4.0	174.63	2.27
					4.3307	-.005	5.129	4.134	0.157	6.875	5.00
22326K	SK-13023	AN-22	W-22	ARN-26	115	-.13	141.38	115	4.0	184.15	3.63
					4.5276	-.005	5.566	4.528	0.157	7.250	8.00
22328K	SK-14023	AN-24	W-24	RN-28	125	-.13	152.73	125	5.0	200.03	4.31
					4.9213	-.005	6.013	4.921	0.197	7.875	9.50
22330K	SK-15023	AN-26	W-26	RN-30	135	-.13	163.04	135	5.0	209.55	5.18
					5.3150	-.005	6.419	5.315	0.197	8.250	11.43
22332K	SK-16023	AN-28	W-28	RN-32	140	-.13	173.76	140	6.0	225.43	7.03
					5.5118	-.005	6.841	5.512	0.236	8.875	15.50
22334K	SK-17023	AN-30	W-30	RN-34	150	-.13	184.07	146	6.0	234.95	7.82
					5.9055	-.005	7.247	5.748	0.236	9.250	17.25
22336K	SK-18023	AN-32	W-32	RN-36	160	-.13	194.79	154	6.0	247.65	9.19
					6.2992	-.005	7.669	6.063	0.236	9.750	20.25
22338K	SK-19023	AN-34	W-34	RN-38	170	-.13	205.92	160	7.0	269.88	10.03
					6.6929	-.005	8.107	6.299	0.276	10.625	22.12
22340K	SK-20023	AN-36	W-36	N-44	180	-.13	217.02	170	7.0	279.53	11.45
					7.0866	-.005	8.544	6.693	0.276	11.005	25.25
22344K	SK-22023	AN-40	W-40	N-048	200	-.13	236.98	181	8.0	290.65	13.38
					7.8740	-.005	9.330	7.126	0.315	11.443	29.50
22348K	SK-24023	N-44	W-44	N-052	220	-.15	256.03	189	8.0	309.70	15.51
					8.6614	-.006	10.080	7.441	0.315	12.193	34.20
22352K	SK-26023	N-048	P-48	N-056	240	-.15	276.66	200	8.0	330.33	18.26
					9.4488	-.006	10.892	7.874	0.315	13.005	40.25
22356K	SK-28023	N-052	P-52	RN-56	260	-.15	301.27	210	10.0	425.45	22.00
					10.2362	-.006	11.861	8.268	0.394	16.75	48.50

SHAFT ADAPTER ACCESSORIES FOR CYLINDRICAL BORE BEARINGS

LOCKNUT AND LOCKWASHER

- The table below shows dimensions for locknuts and lockwashers used in the mounting of cylindrical bore bearings on shafts.
- Other dimensions and tolerances related to shaft configurations also are shown.
- Dimensions are presented according to bearing bore size and are applicable to bearings in the various series (e.g., 222, 223, etc.).



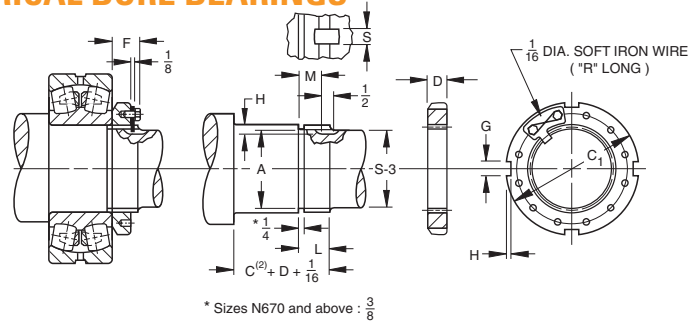
Bearing Bore	Lock-nut	Lock-washer	Thds. Per Inch	Threads				Shaft							Locknut		Lockwasher				
				Major Dia. Max.	Major Dia. Min.	Pitch Dia. Max.	Pitch Dia. Min.	Minor Dia. A	Relief Dia.	S-3 ⁽¹⁾	W + 1/64 -0	L + 1/64 -0	H + 1/64 -0	S + 1/64 -0	M + 1/64 -0	C ₁	D	Q	R	B	S
mm				mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
35	N 07	W 07	18	34.95	34.74	34.03	33.93	33.22	32.82	31.75	2.4	12.7	2.4	4.8	3.2	52.39	11.4	1.3	36.0	57.2	4.5
				1.376	1.3678	1.3399	1.3359	1.3078	1.2922	1 1/4	3/32	1/2	3/32	3/16	1/8	2 1/16	0.448	0.050	1.416	2 1/4	0.176
40	N 08	W 08	18	39.7	39.49	38.78	38.67	37.97	37.57	36.51	3.2	13.5	2.4	7.9	3.2	57.15	11.4	1.5	40.7	62.7	7.4
				1.563	1.5548	1.5269	1.5224	1.4948	1.4792	1 7/16	1/8	17/32	3/32	5/16	1/8	2 1/4	0.448	0.058	1.603	2 15/32	0.290
45	N 09	W 09	18	44.88	44.67	43.96	43.85	43.15	42.75	42.86	3.2	13.5	2.4	7.9	4.0	64.3	11.4	1.5	46.2	69.5	7.4
				1.767	1.7588	1.7309	1.7264	1.6988	1.6832	1 11/16	1/8	17/32	3/32	5/16	5/32	2 17/32	0.448	0.058	1.817	2 47/64	0.290
50	N 10	W 10	18	49.96	49.75	49.05	48.93	48.23	47.83	47.63	3.2	15.1	2.4	7.9	4.0	68.3	13.0	1.5	51.2	74.2	7.4
				1.967	1.9588	1.9309	1.9264	1.8988	1.8832	1 7/8	1/8	19/32	3/32	5/16	5/32	2 11/16	0.510	0.058	2.017	2 59/64	0.290
55	N 11	W 11	18	54.79	54.58	53.87	53.74	53.06	52.66	52.39	3.2	15.1	3.2	7.9	4.0	75.4	13.0	1.6	56.1	79.0	7.4
				2.157	2.1488	2.1209	2.1158	2.0888	2.0732	2 1/16	1/8	19/32	1/8	5/16	5/32	2 31/32	0.510	0.063	2.207	3 7/64	0.290
60	N 12	W 12	18	59.94	59.74	59.03	58.90	58.21	57.82	57.15	3.2	15.9	3.2	7.9	4.0	80.2	13.7	1.6	61.6	85.0	7.4
				2.360	2.3518	2.3239	2.3188	2.2918	2.2762	2 1/4	1/8	5/8	1/8	5/16	5/32	3 5/32	0.541	0.063	2.425	3 11/32	0.290
65	N 13	W 13	18	64.72	64.51	63.80	63.67	62.99	62.59	61.91	3.2	16.7	3.2	7.9	4.0	85.7	14.6	1.6	66.4	90.9	7.4
				2.548	2.5398	2.5119	2.5068	2.4798	2.4642	2 7/16	1/8	21/32	1/8	5/16	5/32	3 3/8	0.573	0.063	2.613	3 37/64	0.290
70	N 14	W 14	18	69.88	69.67	68.96	68.83	68.14	67.75	66.68	3.2	16.7	3.2	7.9	6.4	92.1	14.6	1.6	71.5	97.2	7.4
				2.751	2.7428	2.7149	2.7098	2.6828	2.6672	2 5/8	1/8	21/32	1/8	5/16	1/4	3 5/8	0.573	0.063	2.816	3 53/64	0.290
75	AN 15	W 15	12	74.50	74.21	73.12	72.99	71.90	71.11	71.44	4.0	17.5	3.2	7.9	6.4	98.4	15.3	1.6	76.3	104.4	7.4
				2.933	2.9218	2.8789	2.8735	2.8308	2.7995	2 13/16	5/32	11/16	1/8	5/16	1/4	3 7/8	0.604	0.072	3.003	4 7/64	0.290
80	AN 16	W 16	12	79.68	79.40	78.31	78.16	77.08	76.29	76.20	4.0	17.5	3.2	9.5	6.4	105.6	15.3	1.8	81.5	111.1	9.0
				3.137	3.1258	3.0829	3.0770	3.0348	3.0035	3	5/32	11/16	1/8	3/8	1/4	4 5/32	0.604	0.063	3.207	4 3/8	0.353
85	AN 17	W 17	12	84.84	84.55	83.46	83.31	82.24	81.45	80.96	4.0	16.7	3.2	9.5	6.4	111.9	16.1	1.8	87.0	117.5	9.0
				3.340	3.3288	3.2859	3.2800	3.2378	3.2065	3 3/16	5/32	21/32	1/8	3/8	1/4	4 13/32	0.635	0.072	3.425	4 5/8	0.353
90	AN 18	W 18	12	89.59	89.30	88.21	88.02	86.99	86.20	85.73	4.0	20.6	4.0	9.5	6.4	118.3	17.7	2.4	91.7	125.4	9.0
				3.527	3.5158	3.4729	3.4655	3.4248	3.3935	3 3/8	5/32	13/16	5/32	3/8	1/4	4 21/32	0.698	0.094	3.612	4 15/16	0.353
95	AN 19	W 19	12	94.74	94.46	93.37	93.18	92.15	91.35	90.49	4.0	21.4	4.0	9.5	6.4	125.4	18.5	2.4	97.3	132.6	9.0
				3.730	3.7188	3.6759	3.6685	3.6278	3.5965	3 9/16	5/32	27/32	5/32	3/8	1/4	4 15/16	0.729	0.094	3.830	5 7/32	0.353
100	AN 20	W 20	12	99.52	99.23	98.14	97.96	96.92	96.13	96.84	4.0	22.2	4.0	9.5	7.9	131.8	19.3	2.4	102.1	139.7	9.0
				3.918	3.9068	3.8639	3.8565	3.8158	3.7845	3 13/16	5/32	7/8	5/32	3/8	5/16	5 3/16	0.760	0.094	4.018	5 1/2	0.353
105	AN 21	W 21	12	104.70	104.41	103.32	103.11	102.10	101.31	100.01	4.0	22.2	4.0	9.5	7.9	138.1	19.3	2.4	107.2	144.9	9.0
				4.122	4.1108	4.0679	4.0596	4.0198	3.9885	3 15/16	5/32	7/8	5/32	3/8	5/16	5 7/16	0.760	0.094	4.222	5 45/64	0.353
110	AN 22	W 22	12	109.86	109.57	108.48	108.27	107.26	106.46	106.36	4.0	23.0	4.8	9.5	7.9	145.3	20.1	3.2	112.4	154.0	9.0
				4.325	4.3138	4.2709	4.2626	4.2228	4.1915	4 3/16	5/32	29/32	3/16	3/8	5/16	5 23/32	0.791	0.125	4.425	6 1/16	0.353
120	AN 24	W 24	12	119.79	119.50	118.41	118.20	117.19	116.40	115.89	4.0	23.8	4.8	9.5	7.9	155.6	20.9	3.2	122.7	164.3	9.0
				4.716	4.7048	4.6619	4.6536	4.6138	4.5825	4 9/16	5/32	15/16	3/16	3/8	5/16	6 1/8	0.823	0.125	4.831	6 15/32	0.353
130	AN 26	W 26	12	129.69	129.41	128.32	128.11	127.10	126.30	125.41	4.0	25.4	4.8	12.7	7.9	171.5	22.5	3.2	132.7	178.6	11.1
				5.106	5.0948	5.0519	5.0436	5.0038	4.9725	4 15/16	5/32	1	3/16	1/2	5/16	6 3/4	0.885	0.125	5.226	7 1/32	0.435
140	AN 28	W 28	12	139.62	139.34	138.25	138.04	137.03	136.23	134.94	4.0	27.0	4.8	15.9	7.9	180.2	24.1	3.2	142.7	188.9	15.0
				5.497	5.4858	5.4429	5.4346	5.3948	5.3635	5 5/16	5/32	1 1/16	3/16	5/8	5/16	7 3/32	0.948	0.125	5.617	7 7/16	0.590
150	AN 30	W 30	12	149.56	149.27	148.18	147.97	146.96	146.16	146.05	4.0	28.6	5.6	15.9	9.5	195.3	24.9	4.0	152.9	204.8	15.0
				5.888	5.8768	5.8339	5.8256	5.7858	5.7545	5 3/4	5/32	1 1/8	7/32	5/8	3/8	7 11/16	0.979	0.156	6.018	8 1/16	0.590
160	AN 32	W 32	8	159.61	159.23	157.55	157.32	155.72	154.92	153.99	6.4	30.2	6.0	15.9	9.5	204.8	26.4	4.0	163.2	214.3	15.0
				6.284	6.2688	6.2028	6.1937	6.1306	6.0993	6 1/16	1/4	1 3/16	15/64	5/8	3/8	8 1/16	1.041	0.156	6.424	8 7/16	0.590
170	AN 34	W 34	8	169.14	168.75	167.08	166.85	165.24	164.45	163.51	6.4	31.0	6.0	19.1	9.5	219.9	27.3	4.0	172.7	230.2	18.2
				6.659	6.6438	6.5778	6.5687	6.5056	6.4743	6 7/16	1/4	1 7/32	15/64	3/4	3/8	8 21/32	1.073	0.156	6.799	9 1/16	0.715
180	AN 36	W 36	8	179.48	179.09	177.41	177.18	175.58	174.79	174.63	6.4	31.8	6.0	19.1	9.5	230.2	28.0	4.0	183.0	239.7	18.2
				7.066	7.0508	6.9848	6.9757	6.9126	6.8813	6 7/8	1/4	1 1/4	15/64	3/4	3/8	9 1/16	1.104	0.156	7.206	9 7/16	0.715
190	AN 38	W 38	8	189.79	189.40	187.73	187.50	185.89	185.10	184.15	6.4	32.5	6.0	19.1	9.5	240.5	28.8	4.0	193.3	250.8	18.2
				7.472	7.4568	7.3908	7.3817	7.3186	7.2873	7 1/4	1/4	1 9/32	15/64	3/4	3/8	9 15/32	1.135	0.156	7.612	9 7/8	0.715
200	AN 40	W 40	8	199.31	198.93	197.25	196.96	195.42	194.62	193.68	6.4	34.1	6.0	22.2	9.5	250.0	30.4	4.0	203.6	261.9	21.3
				7.847	7.8318	7.7658	7.7544	7.6936	7.6623	7 5/8	1/4	1 11/32	15/64	7/8	3/8	9 27/32	1.198	0.156	8.017	10 5/16	0.840
220	N 44	W 44	8	219.15	218.77	217.09	216.78	215.25	214.46	211.14	6.4	34.9	9.5	27.0	9.5	279.4	31.8	3.2	221.1</		



SHAFT ADAPTER ACCESSORIES FOR CYLINDRICAL BORE BEARINGS

LOCKNUT AND LOCKPLATE

- The table below shows dimensions for locknuts and lockwashers used in the mounting of cylindrical bore bearings on shafts.
- Other dimensions and tolerances related to shaft configurations also are shown.
- Dimensions are presented according to bearing bore size and are applicable to bearings in the various series (e.g., 222, 223, etc.).



Bearing Bore	Locknut	Lockwasher	Thds. Per Inch	Threads						Shaft					Locknut/Lockplate					
				Major Dia. Max.	Major Dia. Min.	Pitch Dia. Max.	Pitch Dia. Min.	Minor Dia.	Relief Dia. A	S-3 ⁽¹⁾	L +1/64 -0	H +1/64 -0	S +1/64 -0	M +1/64 -0	C ₁	D	G	H ±.010"	R	F
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
240	N 048	P 48	6	239.83	239.31	237.08	236.76	234.63	233.44	233.36	42.86	11.1	28.6	34.9	290.5	34.1	22.48	9.5	203.2	43.26
260	N 052	P 52	6	258.88	258.36	256.13	255.8	253.68	252.49	252.41	45.24	11.1	30.2	37.3	309.6	35.7	22.48	9.5	228.6	44.85
280	N 056	P 56	6	279.50	278.99	276.75	276.42	274.31	273.11	273.05	47.63	11.1	31.8	39.7	330.2	38.1	25.65	9.5	228.6	47.23
300	N 060	P 60	6	299.34	298.83	296.59	296.26	294.14	292.95	292.1	49.21	11.1	34.9	41.3	360.4	39.7	25.65	12.7	254.0	50.01
320	N 064	P 64	6	319.08	318.56	316.32	315.98	313.88	312.69	312.74	51.59	11.1	36.5	43.7	381.0	42.1	25.65	12.7	254.0	52.39
340	N 068	P 68	5	337.90	337.49	335.36	334.95	332.31	331.11	331.79	56.36	11.1	38.1	48.4	400.1	45.2	25.65	12.7	279.4	55.56
360	N 072	P 72	5	359.00	358.60	356.46	356.06	353.42	352.22	350.84	56.36	12.7	38.1	48.4	419.1	45.2	32.00	12.7	279.4	55.56
380	N 076	P 76	5	378.99	378.59	376.45	376.05	373.41	372.21	371.48	59.53	12.7	38.1	51.59	450.9	48.4	32.00	15.1	304.8	61.12
400	N 080	P 80	5	399.01	398.60	396.47	396.06	393.42	392.23	390.53	63.50	12.7	41.3	55.6	469.9	52.4	32.00	15.1	330.2	65.09
420	N 084	P 84	5	419.00	418.59	416.46	416.05	413.41	412.22	411.16	63.50	12.7	41.3	55.6	490.5	52.4	35.18	15.1	330.2	65.09
440	N 088	P 88	5	438.99	438.58	436.45	436.05	433.40	432.21	431.80	71.44	12.7	46.0	63.50	520.7	60.3	35.18	15.1	355.6	75.41
460	N 092	P 92	5	459.00	458.60	456.46	456.06	453.42	452.22	450.85	71.44	12.7	46.0	63.50	539.8	60.3	35.18	15.1	406.4	75.41
480	N 096	P 96	5	478.99	478.59	476.45	476.05	473.41	472.21	469.9	71.44	12.7	46.0	63.50	560.4	60.3	38.35	15.1	406.4	75.41
500	N 500	P 500	5	499.01	498.60	496.47	496.06	493.42	492.23	489.0	79.4	12.7	46.0	71.4	579.4	68.3	38.35	15.1	406.4	83.3
530	N 530	P 530	4	529.01	528.50	525.83	525.32	522.15	520.55	517.5	79.4	12.7	46.0	71.4	630.2	68.3	41.53	20.6	425.5	83.3
560	N 560	P 560	4	559.00	558.50	555.83	555.32	552.15	550.55	549.3	85.7	12.7	46.0	77.8	649.3	71.4	41.53	20.6	476.3	89.7
600	N 600	P 600	4	599.01	598.50	595.83	595.33	592.15	590.55	587.4	85.7	12.7	46.0	77.8	700.1	74.6	41.53	20.6	508.0	89.7
630	N 630	P 630	4	629.01	628.50	625.83	625.32	622.15	620.55	619.1	85.7	12.7	50.8	77.8	730.3	74.6	47.88	20.6	520.7	92.1
670	N 670	P 670	4	669.01	668.50	665.84	665.33	662.15	660.55	657.2	90.5	12.7	50.8	82.6	779.5	79.4	47.88	20.6	546.1	96.8
710	N 710	P 710	3	709.02	708.33	704.77	704.09	700.02	698.42	695.3	101.6	15.9	50.8	93.7	830.3	90.5	51.30	25.4	571.5	108.0
750	N 750	P 750	3	749.02	748.34	744.78	744.09	740.03	738.43	736.6	101.6	15.9	50.8	93.7	870.0	90.5	57.66	25.4	584.2	108.0
800	N 800	P 800	3	799.01	798.32	794.77	794.08	790.02	788.42	787.4	101.6	15.9	50.8	93.7	920.8	90.5	57.66	25.4	616.0	108.0
850	N 850	P 850	3	849.02	848.34	844.78	844.09	840.03	838.43	835.0	101.6	15.9	50.8	93.7	979.5	90.5	64.01	25.4	647.7	108.0
900	N 900	P 900	3	899.01	898.32	894.77	894.08	890.02	888.42	885.8	111.1	15.9	50.8	103.2	1030.3	100.0	64.01	25.4	666.8	117.5
950	N 950	P 950	3	949.02	948.33	944.78	944.09	940.03	938.43	933.5	114.3	19.1	50.8	108	1092.2	100.0	64.01	25.4	692.2	117.5

⁽¹⁾ See page B395 for suggested S-3 shaft tolerances.

⁽²⁾ C is outer ring width which may be obtained from bearing dimension tables.

MOUNTING PROCEDURES

Depending on the size of the bearing and the application, there are different methods for mounting roller bearings. In all methods, certain basic rules must be followed.

CLEANLINESS

- Choose a clean environment, free from dust or moisture.
- The installer should make every effort to ensure cleanliness by use of protective screens and clean cloths.

PLAN THE WORK

- Know in advance your plans and have the necessary tools at hand. This reduces the amount of time for the job and decreases the chance for dirt to get into the bearing.

INSPECTION AND PREPARATION

- All component parts of the machine should be on hand and thoroughly cleaned before proceeding.
- Housings should be cleaned, including blowing out the oil holes.
- Do not use air hose on bearings.
- If blind holes are used, insert a magnetic rod to remove metal chips that might be lodged there during fabrication.
- Shaft shoulders and spacer rings contacting the bearing should be square with the shaft axis.
- The shaft fillet must be small enough to clear the radius of the bearing.
- On original installations, all component parts should be checked against the detail specification prints for dimensional accuracy. Shaft and housing should be carefully checked for size and form (roundness, etc.).

SHAFT AND HOUSING FINISH

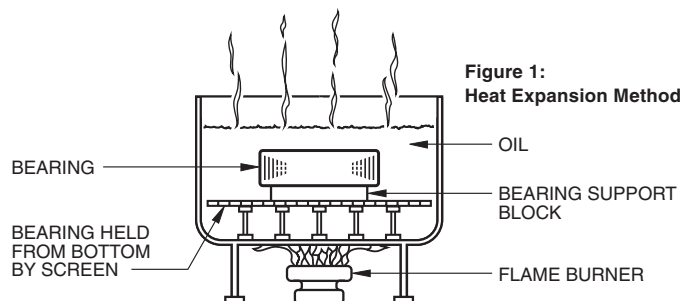
- Shaft surfaces on which the bearing will be mounted must be clean and free from nicks and burrs.
- For applications with stationary housing and rotating shaft, it is suggested that the bearing seat on the shaft be ground to 63 RMS (micro-inches) maximum.
- If it is impractical to use a ground finish, a machined finish of 125 RMS is acceptable in many cases, but the amount of interference fit should be slightly increased.
- For a stationary outer ring, which is required to float (e.g., slide axially in the housing), a housing finish of 63 RMS maximum is suggested.
- Where the outer ring is not required to float, a surface finish of 125 RMS maximum is generally satisfactory.

DO NOT REMOVE THE BEARING FROM ITS WRAPPING UNTIL YOU ARE READY TO MOUNT IT.

MOUNTING CYLINDRICAL BORE BEARINGS

HEAT EXPANSION METHOD

- Most applications require a tight interference fit on the shaft.
- Mounting is simplified by heating the bearing to expand it sufficiently to slide easily onto the shaft.
- Two methods of heating are commonly used:
 - Tank of heated oil.
 - Induction heating.
- The first is accomplished by heating the bearing in a tank of oil that has a high flash point.
- The oil temperature should not be allowed to exceed 121° C (250° F). A temperature of 93° C (200° F) is sufficient for most applications.
- The bearing should be heated for 20 or 30 minutes, until it is expanded sufficiently to slide onto the shaft easily.
- Induction heating method is used for mounting small bearings in production line assembly.
- Induction heating is rapid. Care must be taken to prevent bearing temperature from exceeding 93° C (200° F).
- Trial runs with the unit and bearing are usually necessary to obtain proper timing.
- Thermal crayons melted at predetermined temperatures can be used to check the bearing temperature.
- While bearing is hot, it should be positioned squarely against the shoulder.
- Lockwashers and locknuts or clamping plates are then installed to hold the bearing against the shoulder of the shaft.
- As the bearing cools, the locknut or clamping plate should be tightened.
- In cases of outer ring rotation, where the outer ring is a tight fit in the housing, the housing member can be expanded by heating.
- The oil bath is shown in Figure 1. The bearing should not be in direct contact with the heat source.
- The usual arrangement is to have a screen several inches from the bottom of the tank. Small support blocks separate the bearing from the screen.
- It is important to keep the bearing away from any localized high-heat source that may raise its temperature excessively, resulting in race hardness reduction.



- Flame-type burners are commonly used. An automatic device for temperature control is desirable.
- If safety regulations prevent the use of an open heated oil bath, a mixture of 15 percent soluble-oil water may be used. This mixture may be heated to a maximum of 93° C (200° F) without being flammable.



ARBOR PRESS METHOD

- The alternate method of mounting, generally used only on smaller sizes, is to press the bearing onto the shaft or into the housing. This can be done by using an arbor press and a mounting tube as shown in Figure 2.
- The tube can be made from soft steel with an inside diameter slightly larger than the shaft.
- The O.D. of the tube should not exceed the maximum shoulder height given in the table of dimensions.
- The tube should be faced square at both ends. It should be thoroughly clean inside and out, and long enough to clear the end of the shaft after the bearing is mounted.

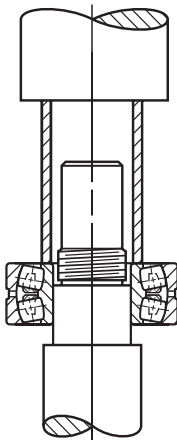
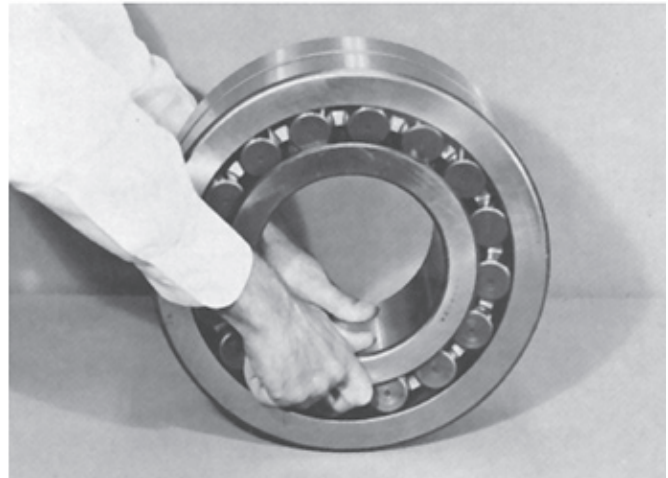


Figure 2:
Arbor Press Method

- If outer ring is being pressed into housing, the O.D. of the mounting tube should be slightly smaller than the housing bore. The I.D. should not be less than the suggested housing basking diameter in the tables of dimensions.
- Coat the shaft with a light machine oil to reduce the force needed for a press fit.
- Carefully place the bearing on the shaft, making sure it is square with the shaft axis.
- Apply steady pressure from the arbor ram to drive the bearing firmly against the shoulder.
- Never attempt a press fit on a shaft by applying pressure to the outer ring, or a press fit in a housing by applying pressure to the inner ring.

SHAFT MOUNTING TAPERED BORE SPHERICAL ROLLER BEARINGS

- Use a feeler gage with the thinnest blade of .0015 in.
- Place the bearing in an upright position with the inner and outer ring faces parallel.
- Place the thumbs on the inner ring bore and oscillate the inner ring two or three elements.
- Position the individual roller assemblies so that a roller is at the top of the inner ring on both sides of the bearing.
- With the roller in the correct position, insert a thin blade of the feeler gage between the roller and the outer ring.
- Move it carefully along the top roller, between the roller and outer ring raceway. Repeat this procedure, using thicker feeler gage blades, until one is found that will not go through.
- The blade thickness that preceded the “no-go” blade is a measure of RIC before installation.



- Start the mounting procedure by lubricating the tapered shaft with a light coat of machine oil.
- Slide bearing onto the shaft as far as it will go.
- As the locknut is tightened, the interference fit builds up resulting in expansion of the inner ring.
- Periodically measure to keep track of the reduction in RIC.
- Continue the procedure until the proper amount of reduction is obtained. Do not exceed suggested amount of reduction.
- As a final check, make sure that the remaining RIC equals or exceeds the minimum mounted clearance shown in the table to the right.

B

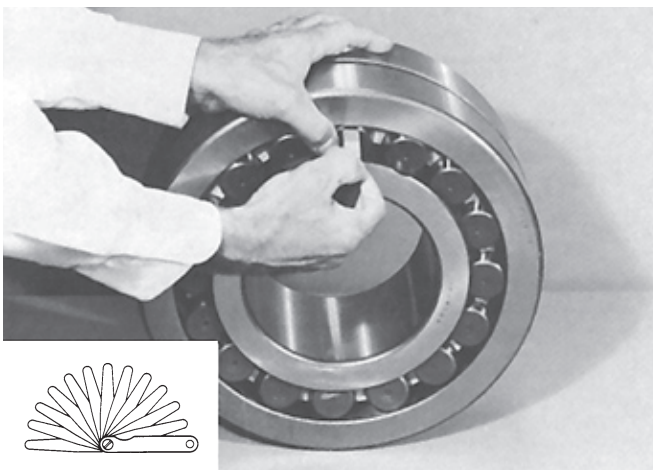
MOUNTING TIMKEN® TAPERED BORE SPHERICAL ROLLER BEARINGS

Nominal bearing bore (mm)		Radial Internal Clearance prior to mounting (mm)						Suggested reduction of RIC (mm)		Axial displacement tapered shaft installation (mm)				Minimum permissible RIC after installation		
		Normal		C3		C4				1:12 Taper**		1:30 Taper**				
		Min.	Max.	Min.	Max.	Min.	Max.			Min.	Max.	Min.	Max.			
30	40	0.035	0.050	0.050	0.065	0.065	0.085	0.020	0.025	0.300	0.380	-	-	0.015	0.025	0.040
40	50	0.045	0.060	0.060	0.080	0.080	0.100	0.025	0.030	0.380	0.460	-	-	0.020	0.030	0.050
50	65	0.055	0.075	0.075	0.095	0.095	0.120	0.030	0.040	0.460	0.560	-	-	0.025	0.040	0.060
65	80	0.070	0.095	0.095	0.120	0.120	0.150	0.040	0.050	0.560	0.760	-	-	0.025	0.045	0.075
80	100	0.080	0.110	0.100	0.140	0.140	0.180	0.045	0.065	0.680	0.970	-	-	0.035	0.050	0.075
100	120	0.100	0.135	0.135	0.170	0.170	0.220	0.050	0.070	0.760	1.070	1.900	2.540	0.050	0.060	0.100
120	140	0.120	0.160	0.160	0.200	0.200	0.260	0.065	0.090	0.890	1.270	2.290	3.050	0.055	0.075	0.115
140	160	0.130	0.180	0.180	0.230	0.230	0.300	0.075	0.100	1.140	1.520	2.670	3.430	0.055	0.075	0.125
160	180	0.140	0.200	0.200	0.260	0.260	0.340	0.075	0.115	1.140	1.650	2.670	4.060	0.060	0.090	0.150
180	200	0.160	0.220	0.220	0.290	0.290	0.370	0.090	0.125	1.400	1.900	3.050	4.450	0.070	0.100	0.165
200	225	0.180	0.250	0.250	0.320	0.320	0.410	0.100	0.140	1.520	2.030	3.560	4.830	0.075	0.115	0.180
225	250	0.200	0.270	0.270	0.350	0.350	0.450	0.115	0.150	1.780	2.290	4.060	5.330	0.090	0.115	0.200
250	280	0.220	0.300	0.300	0.390	0.390	0.490	0.115	0.165	1.780	2.540	4.060	5.840	0.100	0.140	0.230
280	315	0.240	0.330	0.330	0.430	0.430	0.540	0.125	0.180	1.900	2.670	4.450	6.220	0.100	0.150	0.250
315	355	0.270	0.360	0.360	0.470	0.470	0.590	0.140	0.190	2.030	2.790	4.830	6.600	0.115	0.165	0.280
355	400	0.300	0.400	0.400	0.520	0.520	0.650	0.150	0.200	2.290	3.050	5.330	7.110	0.130	0.190	0.330
400	450	0.330	0.440	0.440	0.570	0.570	0.720	0.165	0.215	2.540	3.300	5.840	7.620	0.150	0.230	0.360
450	500	0.370	0.490	0.490	0.630	0.630	0.790	0.180	0.230	2.670	3.430	6.220	8.000	0.165	0.270	0.410
500	560	0.410	0.540	0.540	0.680	0.680	0.870	0.200	0.250	3.050	3.810	7.110	8.890	0.180	0.290	0.440
560	630	0.460	0.600	0.600	0.760	0.760	0.980	0.230	0.280	3.430	4.190	8.000	9.780	0.200	0.320	0.510
630	710	0.510	0.670	0.670	0.850	0.850	1.090	0.250	0.300	3.810	4.570	8.890	10.670	0.200	0.370	0.550
710	800	0.570	0.750	0.750	0.960	0.960	1.220	0.280	0.350	4.190	5.330	9.780	12.450	0.230	0.390	0.610
800	900	0.640	0.840	0.840	1.070	1.070	1.370	0.300	0.380	4.570	5.720	10.670	13.330	0.250	0.460	0.690
900	1000	0.710	0.930	0.930	1.190	1.190	1.520	0.350	0.430	5.334	6.480	12.450	15.110	0.280	0.490	0.750
1000	1120	0.770	1.030	1.030	1.300	1.300	1.670	0.400	0.480	6.100	7.240	14.220	16.890	0.280	0.550	0.810
1120	1250	0.830	1.120	1.120	1.420	1.420	1.830	0.430	0.500	6.480	7.620	15.110	17.780	0.330	0.610	0.910

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* Axial displacement values apply to solid steel shafts or to hollow steel shafts with bore diameter less than half the shaft diameter. For shaft materials other than steel or for thin-wall shafts, please consult your Timken representative.
 ** 1:12 Taper used for 222, 223, 230, 231, 232, 233, 239 series. 1: 30 Taper used for 240, 241, 242 series. For sleeve mounting, multiply axial displacement values by 1.1 for 1:12 taper or by 1.05 for 1:30 taper. Questions on tapered shaft data, consult your Timken representative.



Example: Bearing 22328K C3 (140 mm bore with a C3 clearance pattern) is being mounted on a tapered shaft.

- By measuring with feeler gage, initial RIC is established to be .007 in.
- Reference to chart above indicates proper fit is obtained when RIC is reduced by .0025 in. to .0035 in., or approximately .003in.

Initial clearance	.007"
Reduction of RIC	<u>-.003"</u>
	.004"
- Locknut is tightened until RIC reaches .004 in.. Final check against minimum RIC after mounting shows this value to be safe.

Note: Tapered bore bearings must have the proper amount of radial internal clearance before installation to provide for the required reduction of RIC during mounting and to compensate for any further internal reduction from abnormal temperature conditions. For special applications, send complete operating data to your Timken representative for suggestions on radial internal clearance.

- During mounting, the RIC should be checked at the unloaded roller. If this is at the bottom, make sure that the roller is raised to seat firmly at the inboard position of the inner race.
- When the suggested amount of reduction of RIC has been accomplished, the bearing is properly fitted.
- Complete the procedure by peening the lockwasher tang into the locknut slot or securing the lockplate.