

**TURNUP**

**SPHERICAL ROLLER BEARING CATALOG**

**NOMENCLATURE**

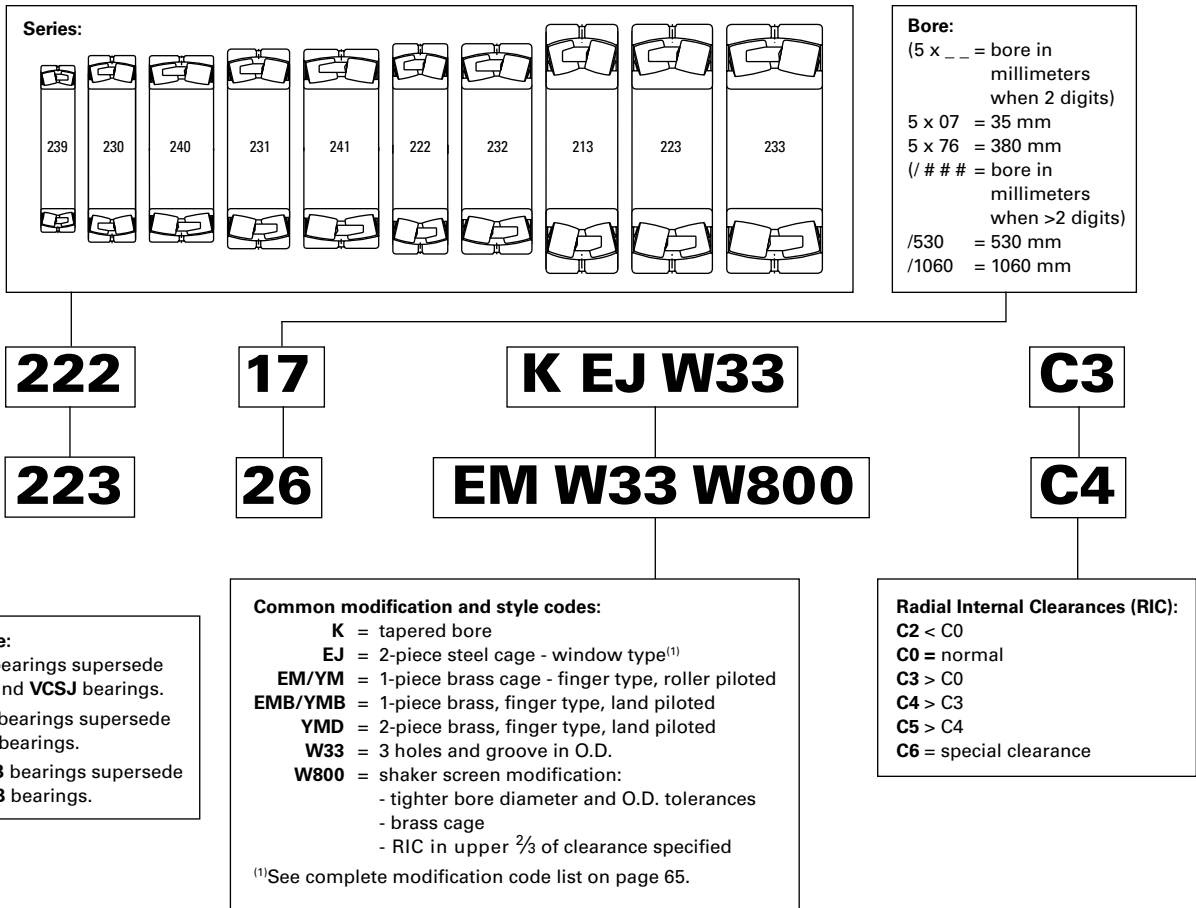


Fig. 23. Turnup spherical roller bearing nomenclature.

TABLE 27. TURNUP SPHERICAL ROLLER BEARING MODIFICATION CODES

TURNUP <sup>(1)</sup>	SKF <sup>(2)</sup>	FAG <sup>(3)</sup>	NSK	TURNUP General Definition
EJ	E, EJA, C, CC, CCJA, EC, ECC	E1	EA, C, CD	Stamped nitrided steel cage – high performance
EM	CA, ECA, CAMA	M	CA	One-piece, roller-riding, machined-brass cage – high performance
EMB	CA, ECA, CAMA	MB	CA	One-piece, inner-ring-piloted, machined-brass cage – high performance
YMB	CA, ECA, CAMA	MB	CA	One-piece, inner-ring-piloted, machined-brass cage
YMD				Two-piece, inner-ring-piloted, machined-brass cage
C2	C2	C2	C2	Bearing radial internal clearance (RIC) smaller than normal
C3	C3	C3	C3	Bearing radial internal clearance (RIC) greater than normal
C4	C4	C4	C4	Bearing radial internal clearance (RIC) greater than C3
C5	C5	C5	C5	Bearing radial internal clearance (RIC) greater than C4
C6	C6	C6	CGxx, SLxx	Specific RIC designed to bearing size
S1(4)	S1	S1	S11	Bearing rings dimensionally stabilized for use at operating temperatures up to 200° C (392° F)
S2	S2	S2		Bearing rings dimensionally stabilized for use at operating temperatures up to 250° C (482° F)
S3	S3	S3		Bearing rings dimensionally stabilized for use at operating temperatures up to 300° C (572° F)
S4	S4	S4		Bearing rings dimensionally stabilized for use at operating temperatures up to 350° C (662° F)
C02	C02	T52BE	P5B, P53	Inner ring with P5 running accuracy, high point of eccentricity marked (SKF does not mark)
C04	C04	T52BN	P5C, P52	Outer ring with P5 running accuracy, high point of eccentricity marked (SKF does not mark)
C08	C08	T52BW	P55	P5 running accuracy (C02 + C04)
C08C3	C083	C3, T52BW	P55, C3	P5 running accuracy (C02 + C04), C3 RIC
C08C4	C084	C4, T52BW	P55, C4	P5 running accuracy (C02 + C04), C4 RIC
K	K	K	K	Tapered bore (1:12 on diameter 13, 22, 23, 30, 31, 32, 33, 38, 39 series)
K	K30	K30	K30	Tapered bore (1:30 on diameter 40, 41, 42 series)
W4	W4	J26A		Inner ring or sleeve marked to show high point of eccentricity
W6R				Engineered surface thin-film coating ES302 on roller contact surfaces
W20	W20	SY	E3	Outer ring with lubrication holes
W22	W22	T50H	S (a, b)	Special reduced O.D. tolerance on outer rings
W25	W73			Outer ring counter-drilled lubrication holes
W31	W31		U22	Bearing inspected to certain quality control requirements
W33	W33	S	E4	Standard lubrication holes and groove in outer ring
W40	ECD-	W209	g	Bearing made of carburizing-grade steel
W40I	HA3, ECB-	W209B	g3	Inner ring only made of carburizing-grade steel
W40R			g1	Roller only made of carburizing-grade steel
W40E			g2	Outer ring only made of carburizing-grade steel
W45A	VE 553			Tapped lifting holes in face of outer ring to facilitate lifting and handling
W47	VA414 (incl W800 & W47)	T41B (incl W22 & W47)		Inner ring with oversize bore
W84	W77	H44SA, H40	E42	Outer ring with standard lubrication holes plugged
W841	W	H40		Outer ring with no lubrication hole
W88				Special reduced bore tolerance on inner ring
W89				Inner ring with lubrication holes and lubrication groove
W94	W26	H40AB	E5	Inner ring lubrication holes
W507	W507	J26A	E4U22, E4P53	W31 + W33 + W45A
W509	W509 (W26 + W31 + W33)	S.H40A	E7U22	W31 + W33 + W94 + W45A (where feasible)
W525	W525 (W31 + W77)	S.H44S		W31 + W33 + W84 + W45A (where feasible)
W534				W507 + C08
W800	VA405	T41A	U15, VS	Shaker screen modification (W22 + W88 + radial internal clearance in upper 2/3 of range specified)
W906A	C083HA3	T52BW.W209B		C08 + W31 + W33 + W40I + W40R – Modification mainly used in paper industry

<sup>(1)</sup>Turnup offers differentiated solutions for many applications. This is only a partial list of common modification codes.

<sup>(2)</sup>E suffix for SKF Explorer available in some sizes.

<sup>(3)</sup>E1 suffix for FAG X-life available in some sizes.

<sup>(4)</sup>Standard for all Turnup spherical roller bearings.

Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.

# SPHERICAL ROLLER BEARINGS

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix "K" to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static	Oil		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>	
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y				F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	In All Cases Y <sub>0</sub>		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.						RPM	RPM		
22205	25 0.9843	52 2.0472	18 0.7087	50.6 11400	43.1 9690	EJ	1 0.04	30 1.2	47 1.9	0.34	2.00	2.98	1.96	0.033	11500	9200	17220	0.2 0.4
21305	25 0.9843	62 2.4409	17 0.6693	55.5 12500	44.3 9970	EJ	1 0.04	35 1.4	55 2.1	0.27	2.48	3.70	2.43	0.037	10100	8100	13720	0.3 0.6
22206	30 1.1811	62 2.4409	20 0.7874	67.4 15200	60.8 13700	EJ	1 0.04	38 1.5	56 2.2	0.31	2.15	3.20	2.10	0.037	9700	7800	13360	0.3 0.6
22206	30 1.1811	62 2.4409	20 0.7874	64.3 14400	56.8 12800	EM	1 0.04	38 1.5	56 2.2	0.31	2.15	3.20	2.10	0.036	9900	7900	14030	0.3 0.6
21306	30 1.1811	72 2.8346	19 0.7480	70.3 15800	56.5 12700	EJ	1 0.04	41 1.6	64 2.5	0.26	2.60	3.87	2.54	0.041	8900	7200	11590	0.4 0.9
22207	35 1.3780	72 2.8346	23 0.9055	90.5 20300	88 19700	EJ	1 0.04	45 1.8	65 2.6	0.31	2.21	3.29	2.16	0.041	8600	6900	11900	0.4 1.0
22207	35 1.3780	72 2.8346	23 0.9055	86.5 19400	82 18500	EM	1 0.04	45 1.8	65 2.6	0.31	2.21	3.29	2.16	0.041	8700	7000	13290	0.4 1.0
21307	35 1.3780	80 3.1496	21 0.8268	90.2 20300	77.8 17500	EJ	1.5 0.06	47 1.9	71 2.8	0.26	2.56	3.81	2.50	0.044	7900	6400	10580	0.5 1.1
22208	40 1.5748	80 3.1496	23 0.9055	104 23400	99.7 22400	EJ	1 0.04	50 2.0	73 2.9	0.27	2.47	3.67	2.41	0.044	7500	6000	10980	0.5 1.2
22208	40 1.5748	80 3.1496	23 0.9055	99.6 22400	93.4 21000	EM	1 0.04	50 2.0	73 2.9	0.27	2.47	3.67	2.41	0.044	7600	6100	9990	0.5 1.2
21308	40 1.5748	90 3.5433	23 0.9055	113 25400	102 22900	EJ	1.5 0.06	54 2.1	80 3.2	0.26	2.64	3.93	2.58	0.048	7100	5800	9240	0.7 1.5
22308	40 1.5748	90 3.5433	33 1.2992	155 34900	147 33100	EJ	1.5 0.06	53 2.1	81 3.2	0.36	1.87	2.79	1.83	0.046	6700	5600	7560	1.0 2.2
22308	40 1.5748	90 3.5433	33 1.2992	147 33100	137 30800	EM	1.5 0.06	53 2.1	81 3.2	0.36	1.87	2.79	1.83	0.045	6700	5600	8040	1.1 2.3
22209	45 1.7717	85 3.3465	23 0.9055	109 24500	108 24200	EJ	1 0.04	55 2.2	77 3.0	0.26	2.64	3.93	2.58	0.046	6800	5500	10400	0.6 1.3
22209	45 1.7717	85 3.3465	23 0.9055	104 23500	101 22800	EM	1 0.04	55 2.2	77 3.0	0.26	2.64	3.93	2.58	0.046	6900	5600	9400	0.6 1.3
21309	45 1.7717	100 3.9370	25 0.9843	138 31000	125 28200	EJ	1.5 0.06	60 2.4	90 3.5	0.25	2.75	4.09	2.69	0.052	6500	5300	8510	1.0 2.2
22309	45 1.7717	100 3.9370	36 1.4173	190 42700	182 40800	EJ	1.5 0.06	58 2.3	90 3.5	0.36	1.90	2.83	1.86	0.049	6100	5100	7090	1.3 3.0
22309	45 1.7717	100 3.9370	36 1.4173	180 40500	169 37900	EM	1.5 0.06	58 2.3	90 3.5	0.36	1.90	2.83	1.86	0.048	6100	5100	7020	1.4 3.1

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

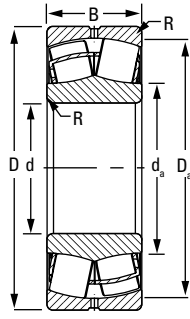
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

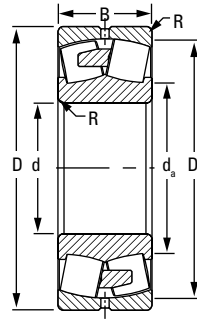
<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

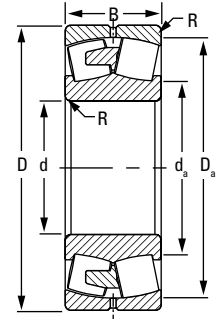
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EJ



EM/YM



EMB/YMB

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	RPM	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				Oil		Grease	kg lbs.		
22210	50 1.9685	90 3.5433	23 0.9055	117 26300	118 26600	EJ	1 0.04	59 2.3	82 3.2	0.24	2.84	4.23	2.78	0.049	6200	5000	9450	0.6 1.3
22210	50 1.9685	90 3.5433	23 0.9055	112 25200	112 25100	EM	1 0.04	59 2.3	82 3.2	0.24	2.84	4.23	2.78	0.048	6300	5100	9110	0.6 1.3
21310	50 1.9685	110 4.3307	27 1.0630	163 36700	151 33800	EJ	2 0.08	67 2.6	99 3.9	0.24	2.83	4.21	2.76	0.055	5900	4900	7710	1.2 2.6
22310	50 1.9685	110 4.3307	40 1.5748	238 53500	241 54200	EJ	2 0.08	65 2.6	98 3.9	0.36	1.89	2.81	1.85	0.055	5500	4600	6430	1.9 4.2
22310	50 1.9685	110 4.3307	40 1.5748	227 51000	225 50600	EM	2 0.08	65 2.6	98 3.9	0.36	1.89	2.81	1.85	0.052	5600	4700	6630	1.9 4.2
22211	55 2.1654	100 3.9370	25 0.9843	140 31400	142 31900	EJ	1.5 0.06	66 2.6	91 3.6	0.23	2.95	4.40	2.89	0.052	5800	4700	8980	0.8 1.8
22211	55 2.1654	100 3.9370	25 0.9843	134 30100	134 30100	EM	1.5 0.06	66 2.6	91 3.6	0.23	2.95	4.40	2.89	0.052	5900	4700	8910	0.9 1.9
21311	55 2.1654	120 4.7244	29 1.1417	188 42400	176 39500	EJ	2 0.08	73 2.9	108 4.2	0.24	2.81	4.18	2.75	0.051	5500	4500	6930	1.6 3.5
22311	55 2.1654	120 4.7244	43 1.6929	266 59800	265 59500	EJ	2 0.08	69 2.7	106 4.2	0.36	1.89	2.81	1.84	0.050	5100	4300	5890	2.4 5.3
22311	55 2.1654	120 4.7244	43 1.6929	266 59800	265 59500	EM	2 0.08	69 2.7	106 4.2	0.36	1.89	2.81	1.84	0.050	5200	4400	6110	2.4 5.3
22212	60 2.3622	110 4.3307	28 1.1024	169 38100	174 39000	EJ	1.5 0.06	72 2.8	100 4.0	0.24	2.84	4.23	2.78	0.055	5500	4400	7960	1.1 2.5
22212	60 2.3622	110 4.3307	28 1.1024	163 36600	164 36900	EM	1.5 0.06	72 2.8	100 4.0	0.24	2.84	4.23	2.78	0.055	5600	4500	9000	1.2 2.6
21312	60 2.3622	130 5.1181	31 1.2205	225 50500	219 49200	EJ	2 0.08	80 3.2	116 4.6	0.23	2.91	4.33	2.84	0.054	5100	4200	6660	2.0 4.4
22312	60 2.3622	130 5.1181	46 1.8110	306 68800	307 69000	EJ	2 0.08	77 3.0	117 4.6	0.34	1.98	2.94	1.93	0.053	4700	4000	5360	3.0 6.6
22312	60 2.3622	130 5.1181	46 1.8110	306 68800	307 69000	EM	2 0.08	77 3.0	117 4.6	0.34	1.98	2.94	1.93	0.053	4900	4100	5540	3.0 6.6
22213	65 2.5591	120 4.7244	31 1.2205	206 46400	216 48600	EJ	1.5 0.06	78 3.1	109 4.3	0.24	2.79	4.15	2.73	0.051	5100	4200	7320	1.5 3.3

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases	Oil		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>	
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y				F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Y <sub>0</sub>		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.						RPM	RPM		
22213	<b>65</b> 2.5591	<b>120</b> 4.7244	<b>31</b> 1.2205	<b>198</b> 44600	<b>204</b> 45900	EM	<b>1.5</b> 0.06	<b>78</b> 3.1	<b>109</b> 4.3	0.24	2.79	4.15	2.73	0.051	5200	4200	7520	<b>1.6</b> 3.4
21313	<b>65</b> 2.5591	<b>140</b> 5.5118	<b>33</b> 1.2992	<b>259</b> 58200	<b>254</b> 57100	EJ	<b>2</b> 0.08	<b>86</b> 3.4	<b>126</b> 5.0	0.23	2.94	4.37	2.87	0.057	4800	3900	6110	<b>2.4</b> 5.3
22313	<b>65</b> 2.5591	<b>140</b> 5.5118	<b>48</b> 1.8898	<b>344</b> 77400	<b>346</b> 77800	EJ	<b>2</b> 0.08	<b>84</b> 3.3	<b>127</b> 5.0	0.33	2.05	3.05	2.00	0.056	4400	3800	4960	<b>3.6</b> 7.9
22313	<b>65</b> 2.5591	<b>140</b> 5.5118	<b>48</b> 1.8898	<b>344</b> 77400	<b>346</b> 77800	EM	<b>2</b> 0.08	<b>84</b> 3.3	<b>127</b> 5.0	0.33	2.05	3.05	2.00	0.056	4600	3900	5110	<b>3.6</b> 7.9
22214	<b>70</b> 2.7559	<b>125</b> 4.9213	<b>31</b> 1.2205	<b>213</b> 47800	<b>231</b> 52000	EJ	<b>1.5</b> 0.06	<b>84</b> 3.3	<b>114</b> 4.5	0.23	2.90	4.32	2.84	0.055	4800	3900	7040	<b>1.6</b> 3.5
22214	<b>70</b> 2.7559	<b>125</b> 4.9213	<b>31</b> 1.2205	<b>205</b> 46000	<b>219</b> 49200	EM	<b>1.5</b> 0.06	<b>84</b> 3.3	<b>114</b> 4.5	0.23	2.90	4.32	2.84	0.055	4900	4000	7110	<b>1.6</b> 3.5
21314	<b>70</b> 2.7559	<b>150</b> 5.9055	<b>35</b> 1.3780	<b>292</b> 65600	<b>289</b> 65000	EJ	<b>2</b> 0.08	<b>93</b> 3.7	<b>135</b> 5.3	0.23	2.97	4.42	2.90	0.059	4500	3700	5660	<b>3.0</b> 6.6
22314	<b>70</b> 2.7559	<b>150</b> 5.9055	<b>51</b> 2.0079	<b>395</b> 88800	<b>414</b> 93100	EJ	<b>2</b> 0.08	<b>91</b> 3.6	<b>135</b> 5.3	0.33	2.07	3.08	2.02	0.059	4200	3600	4690	<b>4.4</b> 9.7
22314	<b>70</b> 2.7559	<b>150</b> 5.9055	<b>51</b> 2.0079	<b>395</b> 88800	<b>414</b> 93100	EM	<b>2</b> 0.08	<b>91</b> 3.6	<b>135</b> 5.3	0.33	2.07	3.08	2.02	0.059	4200	3600	5020	<b>4.4</b> 9.7
22215	<b>75</b> 2.9528	<b>130</b> 5.1181	<b>31</b> 1.2205	<b>222</b> 49900	<b>240</b> 54100	EJ	<b>1.5</b> 0.06	<b>88</b> 3.5	<b>120</b> 4.7	0.22	3.14	4.67	3.07	0.055	4600	3700	6640	<b>1.7</b> 3.7
21315	<b>75</b> 2.9528	<b>160</b> 6.2992	<b>37</b> 1.4567	<b>322</b> 72400	<b>321</b> 72200	EJ	<b>2</b> 0.08	<b>99</b> 3.9	<b>144</b> 5.7	0.23	2.98	4.43	2.91	0.062	4300	3600	5280	<b>3.5</b> 7.7
22315	<b>75</b> 2.9528	<b>160</b> 6.2992	<b>55</b> 2.1654	<b>450</b> 101000	<b>478</b> 107000	EJ	<b>2</b> 0.08	<b>97</b> 3.8	<b>144</b> 5.7	0.33	2.04	3.04	2.00	0.061	4000	3400	4330	<b>5.2</b> 11.9
22315	<b>75</b> 2.9528	<b>160</b> 6.2992	<b>55</b> 2.1654	<b>450</b> 101000	<b>478</b> 107000	EM	<b>2</b> 0.08	<b>97</b> 3.8	<b>144</b> 5.7	0.33	2.04	3.04	2.00	0.061	4000	3400	4750	<b>5.4</b> 11.9
22216	<b>80</b> 3.1496	<b>140</b> 5.5118	<b>33</b> 1.2992	<b>254</b> 57200	<b>278</b> 62500	EJ	<b>2</b> 0.08	<b>95</b> 3.7	<b>129</b> 5.1	0.22	3.14	4.67	3.07	0.057	4300	3500	6190	<b>2.0</b> 4.5
22216	<b>80</b> 3.1496	<b>140</b> 5.5118	<b>33</b> 1.2992	<b>245</b> 55100	<b>263</b> 59200	EM	<b>2</b> 0.08	<b>95</b> 3.7	<b>129</b> 5.1	0.22	3.14	4.67	3.07	0.057	4400	3600	6650	<b>2.1</b> 4.7
21316	<b>80</b> 3.1496	<b>170</b> 6.6929	<b>39</b> 1.5354	<b>363</b> 81700	<b>363</b> 81700	EJ	<b>2</b> 0.08	<b>105</b> 4.1	<b>153</b> 6.0	0.22	3.01	4.47	2.94	0.065	4100	3400	5050	<b>4.2</b> 9.2
22316	<b>80</b> 3.1496	<b>170</b> 6.6929	<b>58</b> 2.2835	<b>499</b> 112000	<b>534</b> 120000	EJ	<b>2</b> 0.08	<b>103</b> 4.1	<b>153</b> 6.0	0.33	2.06	3.06	2.01	0.064	3700	3200	4160	<b>6.4</b> 14.1
22316	<b>80</b> 3.1496	<b>170</b> 6.6929	<b>58</b> 2.2835	<b>499</b> 112000	<b>534</b> 120000	EM	<b>2</b> 0.08	<b>103</b> 4.1	<b>153</b> 6.0	0.33	2.06	3.06	2.01	0.064	3800	3300	4590	<b>6.4</b> 14.1

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

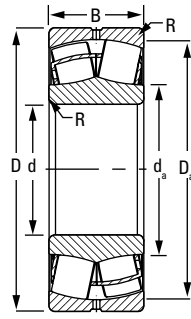
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

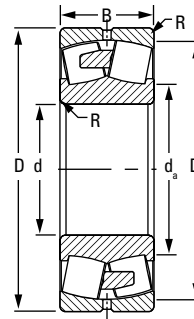
<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

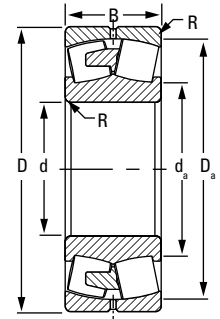
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EJ



EM/YM



EMB/YMB

Continued from previous page.

Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	RPM	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				Oil		Grease	kg lbs.		
22217	85 3.3465	150 5.9055	36 1.4173	297 66900	320 71900	EJ	2 0.08	101 4.0	139 5.5	0.22	3.07	4.57	3.00	0.060	4200	3400	5840	2.6 5.6
22217	85 3.3465	150 5.9055	36 1.4173	286 64200	302 67900	EM	2 0.08	101 4.0	139 5.5	0.22	3.07	4.57	3.00	0.059	4200	3500	5960	2.7 6.0
21317	85 3.3465	180 7.0866	41 1.6142	403 90600	407 91500	EJ	2.5 0.1	112 4.4	162 6.4	0.22	3.04	4.53	2.97	0.067	3900	3200	4730	4.9 10.8
22317	85 3.3465	180 7.0866	60 2.3622	543 122000	584 131000	EJ	2.5 0.1	110 4.3	162 6.4	0.32	2.11	3.14	2.06	0.066	3500	3000	3860	7.5 16.5
22317	85 3.3465	180 7.0866	60 2.3622	543 122000	584 131000	EM	2.5 0.1	110 4.3	162 6.4	0.32	2.11	3.14	2.06	0.066	3500	3000	4320	7.5 16.5
22218	90 3.5433	160 6.2992	40 1.5748	355 79700	388 87200	EJ	2 0.08	105 4.2	146 5.8	0.23	2.90	4.31	2.83	0.064	4300	3500	5520	3.5 7.7
22218	90 3.5433	160 6.2992	40 1.5748	355 79700	388 87200	EM	2 0.08	105 4.2	146 5.8	0.23	2.90	4.31	2.83	0.064	4300	3500	5790	3.5 7.7
23218	90 3.5433	160 6.2992	52.4 2.0630	436 98000	521 117000	EJ	2 0.08	107 4.2	147 5.8	0.30	2.28	3.40	2.23	0.065	3000	2600	4160	4.5 9.9
23218	90 3.5433	160 6.2992	52.4 2.0630	436 98000	521 117000	EM	2 0.08	107 4.2	147 5.8	0.30	2.28	3.40	2.23	0.065	3000	2600	3850	4.5 9.9
21318	90 3.5433	190 7.4803	43 1.6929	442 99400	449 101000	EJ	2.5 0.1	118 4.7	171 6.7	0.22	3.05	4.55	2.99	0.069	3700	3100	4460	5.8 12.8
22318	90 3.5433	190 7.4803	64 2.5197	606 136000	659 148000	EJ	2.5 0.1	116 4.6	171 6.7	0.32	2.09	3.11	2.04	0.069	3400	2900	3640	8.3 19.4
22318	90 3.5433	190 7.4803	64 2.5197	606 136000	659 148000	EM	2.5 0.1	116 4.6	171 6.7	0.32	2.09	3.11	2.04	0.069	3400	2900	4190	8.8 19.4
23318	90 3.5433	190 7.4803	73 2.8740	623 140000	672 151000	EM	2.5 0.1	110 4.3	167 6.6	0.40	1.70	2.52	1.66	0.067	2500	2100	2970	9.8 21.6
21319	95 3.7402	200 7.8740	45 1.7717	474 107000	483 109000	EJ	2.5 0.1	125 4.9	180 7.1	0.22	3.02	4.50	2.96	0.072	3600	3000	4460	6.5 14.4
22219	95 3.7402	170 6.6929	43 1.6929	385 86600	441 99000	EJ	2 0.08	114 4.5	155 6.1	0.23	2.88	4.29	2.82	0.067	3900	3200	5120	4.2 9.2
22219	95 3.7402	170 6.6929	43 1.6929	385 86600	441 99000	EM	2 0.08	114 4.5	155 6.1	0.23	2.88	4.29	2.82	0.067	3900	3200	5550	4.2 9.2

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

Continued on next page.



**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

*Continued from previous page.*

Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>			Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight	
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>		
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	$\frac{F_a}{F_r} \leq e$ X = 1 Y			$\frac{F_a}{F_r} > e$ X = 0.67 Y	Oil			Grease
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.					RPM	RPM	RPM		kg lbs.
22319	<b>95</b> 3.7402	<b>200</b> 7.8740	<b>67</b> 2.6378	<b>694</b> 156000	<b>774</b> 174000	EJ	<b>2.5</b> 0.1	<b>122</b> 4.8	<b>180</b> 7.1	0.32	2.10	3.13	2.05	0.072	3000	2600	3470	<b>10.2</b> 22.4
22319	<b>95</b> 3.7402	<b>200</b> 7.8740	<b>67</b> 2.6378	<b>663</b> 149000	<b>725</b> 163000	EM	<b>2.5</b> 0.1	<b>122</b> 4.8	<b>180</b> 7.1	0.32	2.10	3.13	2.05	0.071	3100	2600	4020	<b>10.2</b> 22.4
24020	<b>100</b> 3.9370	<b>150</b> 5.9055	<b>50</b> 1.9685	<b>352</b> 79100	<b>506</b> 114000	EJ	<b>1.5</b> 0.06	<b>111</b> 4.4	<b>139</b> 5.5	0.29	2.32	3.45	2.26	0.065	3200	2700	4060	<b>3.0</b> 6.6
21320	<b>100</b> 3.9370	<b>215</b> 8.4646	<b>47</b> 1.8504	<b>521</b> 119000	<b>530</b> 121000	EJ	<b>2.5</b> 0.1	<b>133</b> 5.2	<b>193</b> 7.6	0.22	3.13	4.66	3.06	0.075	3400	2800	4190	<b>8.1</b> 17.7
23120	<b>100</b> 3.9370	<b>165</b> 6.4961	<b>52</b> 2.0472	<b>446</b> 100000	<b>583</b> 131000	EJ	<b>2</b> 0.08	<b>114</b> 4.5	<b>150</b> 6.0	0.28	2.35	3.50	2.30	0.067	3200	2700	4070	<b>4.4</b> 9.7
23120	<b>100</b> 3.9370	<b>165</b> 6.4961	<b>52</b> 2.0472	<b>446</b> 100000	<b>583</b> 131000	EM	<b>2</b> 0.08	<b>114</b> 4.5	<b>150</b> 6.0	0.28	2.35	3.50	2.30	0.067	3200	2700	4060	<b>4.4</b> 9.7
22220	<b>100</b> 3.9370	<b>180</b> 7.0866	<b>46</b> 1.8110	<b>435</b> 97700	<b>502</b> 113000	EJ	<b>2</b> 0.08	<b>120</b> 4.7	<b>163</b> 6.4	0.24	2.85	4.24	2.78	0.069	3800	3100	4990	<b>5.0</b> 11.0
22220	<b>100</b> 3.9370	<b>180</b> 7.0866	<b>46</b> 1.8110	<b>435</b> 97700	<b>502</b> 113000	EM	<b>2</b> 0.08	<b>120</b> 4.7	<b>163</b> 6.4	0.24	2.85	4.24	2.78	0.069	3800	3100	5230	<b>5.0</b> 11.0
23220	<b>100</b> 3.9370	<b>180</b> 7.0866	<b>60.3</b> 2.3740	<b>554</b> 124000	<b>678</b> 152000	EJ	<b>2</b> 0.08	<b>119</b> 4.7	<b>164</b> 6.5	0.30	2.22	3.30	2.17	0.070	2700	2300	3780	<b>6.6</b> 14.5
23220	<b>100</b> 3.9370	<b>180</b> 7.0866	<b>60.3</b> 2.374	<b>554</b> 124000	<b>678</b> 152000	EM	<b>2</b> 0.08	<b>119</b> 4.7	<b>164</b> 6.5	0.30	2.22	3.30	2.17	0.070	2700	2300	3440	<b>6.6</b> 14.5
22320	<b>100</b> 3.9370	<b>215</b> 8.4646	<b>73</b> 2.8740	<b>804</b> 181000	<b>910</b> 205000	EJ	<b>2.5</b> 0.1	<b>131</b> 5.1	<b>193</b> 7.6	0.33	2.06	3.07	2.02	0.075	2800	2400	3250	<b>12.7</b> 28.2
22320	<b>100</b> 3.9370	<b>215</b> 8.4646	<b>73</b> 2.8740	<b>768</b> 173000	<b>853</b> 192000	EM	<b>2.5</b> 0.1	<b>130</b> 5.1	<b>193</b> 7.6	0.33	2.06	3.07	2.02	0.074	2900	2500	3810	<b>12.8</b> 28.2
23022	<b>110</b> 4.3307	<b>170</b> 6.6929	<b>45</b> 1.7717	<b>391</b> 88000	<b>534</b> 120000	EJ	<b>2</b> 0.08	<b>125</b> 4.9	<b>158</b> 6.2	0.23	2.90	4.32	2.84	0.071	3600	2900	4300	<b>3.6</b> 7.9
24022	<b>110</b> 4.3307	<b>170</b> 6.6929	<b>60</b> 2.3622	<b>493</b> 111000	<b>706</b> 159000	EJ	<b>2</b> 0.08	<b>122</b> 4.8	<b>157</b> 6.2	0.31	2.15	3.21	2.11	0.070	2900	2500	3660	<b>4.9</b> 10.8
23122	<b>110</b> 4.3307	<b>180</b> 7.0866	<b>56</b> 2.2047	<b>518</b> 116000	<b>686</b> 154000	EJ	<b>2</b> 0.08	<b>126</b> 5.0	<b>166</b> 6.5	0.28	2.40	3.58	2.35	0.072	2900	2500	3730	<b>5.6</b> 12.3
23122	<b>110</b> 4.3307	<b>180</b> 7.0866	<b>56</b> 2.2047	<b>518</b> 116000	<b>686</b> 154000	EM	<b>2</b> 0.08	<b>126</b> 5.0	<b>166</b> 6.5	0.28	2.40	3.58	2.35	0.072	2900	2500	3720	<b>5.6</b> 12.3
24122	<b>110</b> 4.3307	<b>180</b> 7.0866	<b>69</b> 2.7165	<b>595</b> 134000	<b>811</b> 182000	EJ	<b>2</b> 0.08	<b>124</b> 4.9	<b>164</b> 6.5	0.34	1.96	2.92	1.92	0.071	2100	1800	3000	<b>6.7</b> 14.7
22222	<b>110</b> 4.3307	<b>200</b> 7.8740	<b>53</b> 2.0866	<b>555</b> 125000	<b>653</b> 147000	EJ	<b>2</b> 0.08	<b>133</b> 5.2	<b>182</b> 7.2	0.25	2.73	4.06	2.67	0.074	3500	2900	4410	<b>7.2</b> 15.8

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

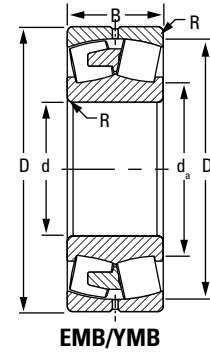
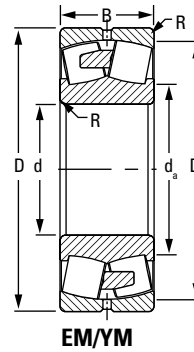
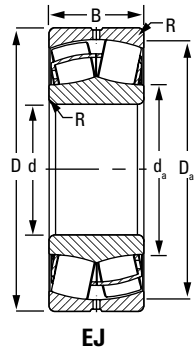
<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Oil	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM	kg lbs.	
22222	110 4.3307	200 7.8740	53 2.0866	555 125000	653 147000	EM	2 0.08	133 5.2	182 7.2	0.25	2.73	4.06	2.67	0.074	3500	2900	4800	7.2 15.8
23222	110 4.3307	200 7.8740	69.8 2.7480	710 160000	887 199000	EJ	2 0.08	131 5.2	182 7.2	0.32	2.11	3.14	2.06	0.074	2300	2000	3390	9.6 21.1
23222	110 4.3307	200 7.8740	69.8 2.7480	710 160000	887 199000	EM	2 0.08	131 5.2	182 7.2	0.32	2.11	3.14	2.06	0.074	2300	2000	3100	9.6 21.1
22322	110 4.3307	240 9.4488	80 3.1496	949 213000	1050 236000	EJ	2.5 0.1	144 5.7	215 8.5	0.32	2.08	3.10	2.04	0.079	2500	2100	2890	17.8 39.2
22322	110 4.3307	240 9.4488	80 3.1496	949 213000	1050 236000	EM	2.5 0.1	144 5.7	215 8.5	0.32	2.08	3.10	2.04	0.079	2500	2200	3540	17.8 39.2
23322	110 4.3307	240 9.4488	92.1 3.6260	979 220000	1080 243000	EM	2.5 0.1	136 5.4	209 8.2	0.40	1.67	2.49	1.63	0.077	1800	1600	2490	20.4 44.9
23024	120 4.7244	180 7.0866	46 1.8110	408 91700	574 129000	EJ	2 0.08	134 5.3	167 6.6	0.22	3.02	4.49	2.95	0.074	3300	2700	4260	4.0 8.8
24024	120 4.7244	180 7.0866	60 2.3622	523 117000	762 171000	EJ	2 0.08	132 5.2	167 6.6	0.29	2.32	3.45	2.26	0.073	2700	2200	3410	5.2 11.4
23124	120 4.7244	200 7.8740	62 2.4409	621 140000	816 183000	EJ	2 0.08	138 5.4	182 7.2	0.28	2.38	3.54	2.32	0.075	2600	2200	3460	7.9 17.4
23124	120 4.7244	200 7.8740	62 2.4409	621 140000	816 183000	EM	2 0.08	138 5.4	182 7.2	0.28	2.38	3.54	2.32	0.075	2600	2200	3420	7.9 17.4
24124	120 4.7244	200 7.8740	80 3.1496	778 175000	1080 242000	EJ	2 0.08	135 5.3	182 7.2	0.36	1.86	2.77	1.82	0.075	1700	1600	2660	10.0 22.0
22224	120 4.7244	215 8.4646	58 2.2835	647 145000	772 174000	EJ	2 0.08	143 5.6	196 7.7	0.25	2.70	4.02	2.64	0.078	3200	2600	4060	9.0 19.8
22224	120 4.7244	215 8.4646	58 2.2835	647 145000	772 174000	EM	2 0.08	143 5.6	196 7.7	0.25	2.70	4.02	2.64	0.078	3200	2600	4440	9.0 19.8
23224	120 4.7244	215 8.4646	76 2.9921	824 185000	1040 234000	EJ	2 0.08	142 5.6	197 7.7	0.32	2.10	3.13	2.05	0.078	2100	1800	3100	11.8 26.0
23224	120 4.7244	215 8.4646	76 2.9921	824 185000	1040 234000	EM	2 0.08	142 5.6	197 7.7	0.32	2.10	3.13	2.05	0.078	2100	1800	2910	11.8 26.0
22324	120 4.7244	260 10.2362	86 3.3858	1080 244000	1210 272000	EJ	2.5 0.1	157 6.2	234 9.2	0.32	2.11	3.15	2.07	0.083	2200	1900	2680	21.4 48.4

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

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**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases	Oil		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>	
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y				F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Y <sub>0</sub>		
	mm	mm	mm	kN	kN		mm	mm	mm						RPM	RPM		
22324	120 4.7244	260 10.2362	86 3.3858	1080 244000	1210 272000	EM	2.5 0.1	157 6.2	234 9.2	0.32	2.11	3.15	2.07	0.083	2200	1900	3320	22.3 49.1
23324	120 4.7244	260 10.2362	106 4.1732	1230 276000	1410 318000	EM	2.5 0.1	147 5.8	226 8.9	0.43	1.57	2.34	1.54	0.082	1500	1400	2310	27.8 61.2
23926	130 5.1181	180 7.0866	37 1.4567	302 67900	453 102000	EM	1 0.04	142 5.6	169 6.7	0.18	3.83	5.70	3.75	0.076	300	2400	3460	2.8 6.2
23026	130 5.1181	200 7.8740	52 2.0472	518 116000	723 162000	EJ	2 0.08	146 5.8	185 7.3	0.23	2.94	4.37	2.87	0.078	3100	2500	3890	5.9 13.0
24026	130 5.1181	200 7.8740	69 2.7165	664 149000	966 217000	EJ	2 0.08	144 5.7	185 7.3	0.31	2.21	3.29	2.16	0.078	2400	2000	3040	7.8 17.2
23126	130 5.1181	210 8.2677	64 2.5197	679 153000	937 211000	EJ	2 0.08	149 5.9	193 7.6	0.27	2.48	3.69	2.43	0.080	2400	2000	3240	8.6 18.9
23126	130 5.1181	210 8.2677	64 2.5197	679 153000	937 211000	EM	2 0.08	149 5.9	193 7.6	0.27	2.48	3.69	2.43	0.080	2400	2000	3300	8.6 18.9
24126	130 5.1181	210 8.2677	80 3.1496	798 179000	1130 255000	EJ	2 0.08	146 5.7	192 7.6	0.34	1.99	2.96	1.94	0.079	1600	1500	2490	10.5 23.1
22226	130 5.1181	230 9.0551	64 2.5197	757 170000	945 212000	EJ	2.5 0.1	155 6.1	210 8.3	0.26	2.62	3.90	2.56	0.082	2900	2400	3750	11.3 24.9
22226	130 5.1181	230 9.0551	64 2.5197	757 170000	945 212000	EM	2.5 0.1	155 6.1	210 8.3	0.26	2.62	3.90	2.56	0.082	2900	2400	4280	11.3 24.9
23226	130 5.1181	230 9.0551	80 3.1496	915 206000	1170 262000	EJ	2.5 0.1	153 6.0	211 8.3	0.32	2.14	3.19	2.09	0.082	1900	1700	2910	14.0 30.8
23226	130 5.1181	230 9.0551	80 3.1496	915 206000	1170 262000	EM	2.5 0.1	153 6.0	211 8.3	0.32	2.14	3.19	2.09	0.082	1900	1700	2740	14.0 30.8
22326	130 5.1181	280 11.0236	93 3.6614	1250 281000	1410 318000	EJ	3 0.1	169 6.7	252 9.9	0.32	2.11	3.14	2.06	0.087	2000	1800	2520	26.7 60.3
22326	130 5.1181	280 11.0236	93 3.6614	1250 281000	1410 318000	EM	3 0.1	169 6.7	252 9.9	0.32	2.11	3.14	2.06	0.087	2000	1800	3090	27.8 61.2
23326	130 5.1181	280 11.0236	112 4.4094	1340 302000	1590 359000	EM	3 0.1	164 6.5	245 9.6	0.42	1.62	2.42	1.59	0.086	1400	1200	2130	33.8 74.4
23928	140 5.5118	190 7.4803	37 1.4567	314 70500	477 107000	EM	1.5 0.06	152 6.0	180 7.1	0.16	4.10	6.10	4.01	0.079	2800	2200	3340	2.9 6.4
23028	140 5.5118	210 8.2677	53 2.0866	551 124000	802 180000	EJ	2 0.08	158 6.2	196 7.7	0.22	3.10	4.61	3.03	0.082	2800	2300	3480	6.2 13.6
24028	140 5.5118	210 8.2677	69 2.7165	702 158000	1060 238000	EJ	2 0.08	154 6.1	195 7.7	0.29	2.36	3.51	2.31	0.081	2100	1800	2980	8.2 18.0

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

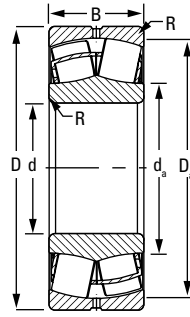
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

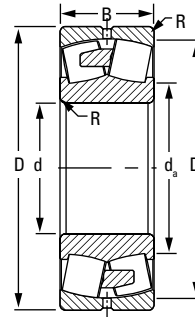
<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

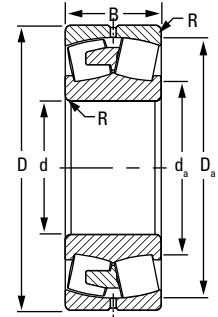
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EJ



EM/YM



EMB/YMB

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Oil	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM	kg lbs.	
23128	140 5.5118	225 8.8583	68 2.6772	766 172000	1070 240000	EJ	2 0.08	160 6.3	208 8.2	0.27	2.50 3.72	2.45	0.083	2100	1800	2960	10.4 22.9	
23128	140 5.5118	225 8.8583	68 2.6772	766 172000	1070 240000	EM	2 0.08	160 6.3	208 8.2	0.27	2.50 3.72	2.45	0.083	2100	1800	3160	10.2 22.3	
24128	140 5.5118	225 8.8583	85 3.3465	894 201000	1290 289000	EJ	2 0.08	157 6.2	206 8.1	0.34	2.01 2.99	1.96	0.082	1500	1300	2290	12.7 27.9	
26228	140 5.5118	240 9.4488	80 3.1496	863 194000	1110 249000	EM	2.5 0.1	161 6.3	218 8.6	0.32	2.08 3.10	2.04	0.083	1500	1300	1840	14.7 32.3	
22228	140 5.5118	250 9.8425	68 2.6772	863 194000	1060 237000	EJ	2.5 0.1	167 6.6	228 9.0	0.25	2.67 3.98	2.61	0.086	2600	2200	3500	14.2 31.2	
22228	140 5.5118	250 9.8425	68 2.6772	863 194000	1060 237000	EM	2.5 0.1	167 6.6	228 9.0	0.25	2.67 3.98	2.61	0.086	2600	2200	3900	14.2 31.2	
23228	140 5.5118	250 9.8425	88 3.4646	1090 246000	1410 317000	EJ	2.5 0.1	165 6.5	229 9.0	0.32	2.11 3.13	2.06	0.086	1700	1500	2700	18.0 39.6	
23228	140 5.5118	250 9.8425	88 3.4646	1090 246000	1410 317000	EM	2.5 0.1	165 6.5	229 9.0	0.32	2.11 3.13	2.06	0.086	1700	1500	2610	18.5 40.6	
22328	140 5.5118	300 11.8110	102 4.0157	1450 326000	1670 375000	EJ	3 0.1	182 7.1	270 10.6	0.33	2.06 3.06	2.01	0.091	1800	1600	2360	33.6 73.9	
22328	140 5.5118	300 11.8110	102 4.0157	1450 326000	1670 375000	EM	3 0.1	182 7.1	270 10.6	0.33	2.06 3.06	2.01	0.091	1800	1600	2970	34.2 75.3	
23328	140 5.5118	300 11.8110	118 4.6457	1570 352000	1910 429000	EMB	3 0.1	175 6.9	261 10.3	0.41	1.65 2.45	1.61	0.091	1200	1100	1900	41.7 91.7	
23030	150 5.9055	225 8.8583	56 2.2047	621 140000	911 205000	EJ	2 0.08	169 6.7	210 8.3	0.21	3.14 4.68	3.07	0.086	2600	2100	3220	7.5 16.6	
23030	150 5.9055	225 8.8583	56 2.2047	621 140000	911 205000	EM	2 0.08	169 6.7	210 8.3	0.21	3.14 4.68	3.07	0.086	2600	2100	3190	7.7 16.9	
24030	150 5.9055	225 8.8583	75 2.9528	808 182000	1240 278000	EJ	2 0.08	165 6.5	209 8.2	0.29	2.32 3.46	2.27	0.085	2000	1700	2800	10.2 22.3	
23130	150 5.9055	250 9.8425	80 3.1496	1000 225000	1390 312000	EJ	2 0.08	173 6.8	229 9.0	0.29	2.32 3.45	2.26	0.088	1900	1600	2690	15.5 34.2	
23130	150 5.9055	250 9.8425	80 3.1496	1000 225000	1390 312000	EM	2 0.08	173 6.8	229 9.0	0.29	2.32 3.45	2.26	0.088	1900	1600	2920	15.5 34.2	

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

Continued on next page.

**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases	Oil		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>	
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y				F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Y <sub>0</sub>		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.						RPM	RPM		
24130	150 5.9055	250 9.8425	100 3.9370	1180 264000	1680 378000	EJ	2 0.08	169 6.7	227 8.9	0.36	1.86	2.77	1.82	0.087	1300	1200	2070	19.4 42.7
22230	150 5.9055	270 10.6299	73 2.8740	1000 225000	1230 276000	EJ	2.5 0.1	179 7.0	246 9.7	0.25	2.69	4.00	2.63	0.090	2400	2000	3250	17.5 39.2
22230	150 5.9055	270 10.6299	73 2.8740	1000 225000	1230 276000	EM	2.5 0.1	179 7.0	246 9.7	0.25	2.69	4.00	2.63	0.090	2400	2000	3600	17.8 39.2
23230	150 5.9055	270 10.6299	96 3.7795	1270 286000	1660 372000	EJ	2.5 0.1	178 7.0	247 9.7	0.32	2.08	3.10	2.04	0.090	1500	1400	2540	23.0 52.4
23230	150 5.9055	270 10.6299	96 3.7795	1270 286000	1660 372000	EM	2.5 0.1	178 7.0	247 9.7	0.32	2.08	3.10	2.04	0.090	1500	1400	2440	23.8 52.4
22330	150 5.9055	320 12.5984	108 4.2520	1620 365000	1890 424000	EJ	3 0.1	194 7.6	288 11.3	0.33	2.08	3.09	2.03	0.088	1600	1500	2200	40.6 94.6
22330	150 5.9055	320 12.5984	108 4.2520	1620 365000	1890 424000	EMB	3 0.1	194 7.6	288 11.3	0.33	2.08	3.09	2.03	0.088	1600	1500	1950	43.0 94.6
23330	150 5.9055	320 12.5984	128 5.0394	1780 400000	2130 479000	EMB	3 0.1	185 7.3	280 11.0	0.41	1.64	2.44	1.60	0.087	1100	1000	1630	50.4 111.0
23932	160 6.2992	220 8.6614	45 1.7717	421 94700	654 147000	EM	2 0.08	175 6.9	207 8.2	0.18	3.78	5.63	3.70	0.086	2500	2100	2970	4.9 10.8
23032	160 6.2992	240 9.4488	60 2.3622	705 159000	1040 235000	EJ	2 0.08	180 7.1	224 8.8	0.22	3.12	4.65	3.05	0.089	2400	2000	3080	9.3 20.4
23032	160 6.2992	240 9.4488	60 2.3622	705 159000	1040 235000	EM	2 0.08	180 7.1	224 8.8	0.22	3.12	4.65	3.05	0.089	2400	2000	3080	9.3 20.4
24032	160 6.2992	240 9.4488	80 3.1496	914 206000	1410 317000	EJ	2 0.08	176 6.9	223 8.8	0.29	2.32	3.45	2.27	0.089	1800	1500	2670	12.5 27.5
23132	160 6.2992	270 10.6299	86 3.3858	1160 261000	1580 354000	EJ	2 0.08	185 7.3	248 9.8	0.29	2.33	3.46	2.27	0.092	1700	1500	2520	19.7 43.3
23132	160 6.2992	270 10.6299	86 3.3858	1160 261000	1580 354000	EM	2 0.08	185 7.3	248 9.8	0.29	2.33	3.46	2.27	0.092	1700	1500	2710	20.2 44.4
24132	160 6.2992	270 10.6299	109 4.2913	1390 313000	2000 449000	EJ	2 0.08	181 7.1	245 9.7	0.37	1.84	2.74	1.80	0.091	1100	1000	1920	25.1 55.2
22232	160 6.2992	290 11.4173	80 3.1496	1120 253000	1370 309000	EJ	2.5 0.1	192 7.5	264 10.4	0.26	2.62	3.91	2.57	0.093	2200	1900	2980	21.9 50.6
22232	160 6.2992	290 11.4173	80 3.1496	1120 253000	1370 309000	EM	2.5 0.1	192 7.5	264 10.4	0.26	2.62	3.91	2.57	0.093	2200	1900	3380	23.0 50.6
23232	160 6.2992	290 11.4173	104 4.0945	1470 330000	1940 435000	EJ	2.5 0.1	190 7.5	264 10.4	0.33	2.06	3.06	2.01	0.094	1400	1200	2360	29.3 64.3

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

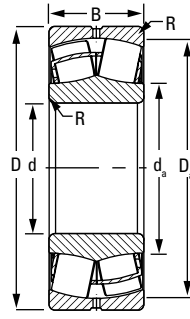
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

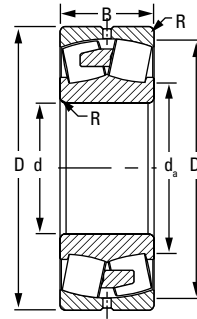
<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

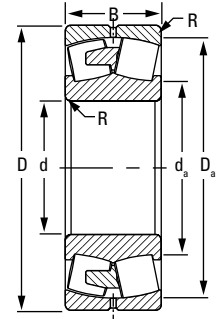
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EM/YM



EMB/YMB

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	RPM	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM	kg lbs.	
23232	160 6.2992	290 11.4173	104 4.0945	1470 330000	1940 435000	EM	2.5 0.1	190 7.5	264 10.4	0.33	2.06	3.06	2.01	0.094	1400	1200	2310	30.0 66.0
22332	160 6.2992	340 13.3858	114 4.4882	1800 405000	2110 475000	EJ	3 0.1	207 8.1	306 12.0	0.32	2.09	3.11	2.04	0.092	1500	1300	2060	51.0 112.2
22332	160 6.2992	340 13.3858	114 4.4882	1800 405000	2110 475000	EMB	3 0.1	207 8.1	306 12.0	0.32	2.09	3.11	2.04	0.092	1500	1300	1800	51.0 112.2
23332	160 6.2992	340 13.3858	136 5.3543	2000 449000	2530 568000	EMB	3 0.1	202 8.0	297 11.7	0.42	1.62	2.41	1.58	0.091	990	900	1590	61.2 134.7
23934	170 6.6929	230 9.0551	45 1.7717	453 102000	716 161000	EM	2 0.08	184 7.2	217 8.6	0.17	4.07	6.05	3.97	0.090	2300	1900	2990	5.2 11.4
23034	170 6.6929	260 10.2362	67 2.6378	858 193000	1250 282000	EJ	2 0.08	192 7.6	242 9.5	0.22	3.02	4.49	2.95	0.093	2200	1800	2820	12.5 27.5
23034	170 6.6929	260 10.2362	67 2.6378	858 193000	1250 282000	EM	2 0.08	192 7.6	242 9.5	0.22	3.02	4.49	2.95	0.093	2200	1800	2870	12.5 27.5
24034	170 6.6929	260 10.2362	90 3.5433	1030 233000	1570 354000	EJ	2 0.08	189 7.4	240 9.5	0.30	2.22	3.30	2.17	0.092	1700	1500	2460	16.7 37.8
23134	170 6.6929	280 11.0236	88 3.4646	1220 274000	1710 384000	EJ	2 0.08	195 7.7	258 10.1	0.28	2.39	3.55	2.33	0.095	1600	1400	2420	21.1 46.5
23134	170 6.6929	280 11.0236	88 3.4646	1220 274000	1710 384000	EM	2 0.08	195 7.7	258 10.1	0.28	2.39	3.55	2.33	0.095	1600	1400	2620	21.7 47.7
24134	170 6.6929	280 11.0236	109 4.2913	1440 324000	2110 475000	EJ	2 0.08	192 7.5	255 10.1	0.35	1.93	2.87	1.88	0.094	1000	960	1830	26.4 57.8
22234	170 6.6929	310 12.2047	86 3.3858	1290 290000	1590 359000	EJ	3 0.1	204 8.0	281 11.1	0.26	2.61	3.89	2.55	0.090	2000	1700	2780	27.3 62.7
22234	170 6.6929	310 12.2047	86 3.3858	1290 290000	1590 359000	EM	3 0.1	204 8.0	281 11.1	0.26	2.61	3.89	2.55	0.090	2000	1700	3180	28.5 62.7
23234	170 6.6929	310 12.2047	110 4.3307	1660 373000	2200 494000	EJ	3 0.1	202 8.0	281 11.1	0.33	2.08	3.09	2.03	0.091	1200	1100	2220	35.8 78.8
23234	170 6.6929	310 12.2047	110 4.3307	1660 373000	2200 494000	EM	3 0.1	202 8.0	281 11.1	0.33	2.08	3.09	2.03	0.091	1200	1100	2190	36.6 80.5
22334	170 6.6929	360 14.1732	120 4.7244	2000 450000	2360 530000	EJ	3 0.1	219 8.6	325 12.8	0.32	2.11	3.15	2.07	0.096	1400	1200	1980	59.9 131.8

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

Continued on next page.

**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

*Continued from previous page.*

Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static	Oil		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>	
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y				F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	In All Cases Y <sub>0</sub>		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.						RPM	RPM		
22334	170 6.6929	360 14.1732	120 4.7244	2000 450000	2360 530000	EMB	3 0.1	219 8.6	325 12.8	0.32	2.11	3.15	2.07	0.096	1400	1200	1680	59.9 131.8
23334	170 6.6929	360 14.1732	140 5.5118	2170 487000	2580 581000	EMB	3 0.1	208 8.2	315 12.4	0.40	1.67	2.49	1.63	0.094	950	860	1440	70.3 154.7
23936	180 7.0866	250 9.8425	52 2.0472	572 129000	907 204000	EJ	2 0.08	197 7.8	235 9.3	0.18	3.77	5.62	3.69	0.094	2200	1800	2890	7.6 16.7
23936	180 7.0866	250 9.8425	52 2.0472	572 129000	907 204000	EM	2 0.08	197 7.8	235 9.3	0.18	3.77	5.62	3.69	0.094	2200	1800	2840	7.6 16.7
23036	180 7.0866	280 11.0236	74 2.9134	1020 229000	1480 332000	EJ	2 0.08	204 8.0	260 10.2	0.23	2.91	4.34	2.85	0.097	2000	1700	2620	16.8 37.0
23036	180 7.0866	280 11.0236	74 2.9134	1020 229000	1480 332000	EM	2 0.08	204 8.0	260 10.2	0.23	2.91	4.34	2.85	0.097	2000	1700	2660	16.8 37.0
24036	180 7.0866	280 11.0236	100 3.9370	1320 296000	2040 460000	EJ	2 0.08	200 7.9	258 10.2	0.32	2.13	3.17	2.08	0.097	1500	1300	2280	22.6 49.7
23136	180 7.0866	300 11.8110	96 3.7795	1410 317000	2000 449000	EJ	2.5 0.1	208 8.2	275 10.8	0.29	2.32	3.45	2.27	0.099	1500	1300	2250	27.6 60.7
23136	180 7.0866	300 11.8110	96 3.7795	1410 317000	2000 449000	EM	2.5 0.1	208 8.2	275 10.8	0.29	2.32	3.45	2.27	0.099	1500	1300	2470	27.6 60.7
24136	180 7.0866	300 11.8110	118 4.6457	1650 370000	2450 550000	EJ	2.5 0.1	204 8.1	273 10.7	0.36	1.90	2.82	1.85	0.098	950	870	1700	33.4 73.5
22236	180 7.0866	320 12.5984	86 3.3858	1340 301000	1700 382000	EJ	3 0.1	215 8.5	292 11.5	0.25	2.72	4.05	2.66	0.094	1900	1600	2690	29.1 64.0
22236	180 7.0866	320 12.5984	86 3.3858	1340 301000	1700 382000	EM	3 0.1	215 8.5	292 11.5	0.25	2.72	4.05	2.66	0.093	1900	1600	3030	29.4 64.7
23236	180 7.0866	320 12.5984	112 4.4094	1720 387000	2290 515000	EJ	3 0.1	211 8.3	292 11.5	0.32	2.11	3.15	2.07	0.093	1200	1100	2150	39.0 85.0
23236	180 7.0866	320 12.5984	112 4.4094	1720 387000	2290 515000	EMB	3 0.1	211 8.3	292 11.5	0.32	2.11	3.15	2.07	0.093	1200	1100	1510	38.6 84.9
22336	180 7.0866	380 14.9606	126 4.9606	2190 491000	2600 584000	EJ	3 0.1	232 9.2	343 13.5	0.32	2.13	3.17	2.08	0.099	1300	1200	1890	69.0 153.0
22336	180 7.0866	380 14.9606	126 4.9606	2190 491000	2600 584000	EMB	3 0.1	232 9.2	343 13.5	0.32	2.13	3.17	2.08	0.099	1300	1200	1570	69.0 153.0
23938	190 7.4803	260 10.2362	52 2.0472	589 133000	964 217000	EM	2 0.08	207 8.2	245 9.6	0.17	4.01	5.97	3.92	0.097	2000	1700	2710	8.0 17.6
23038	190 7.4803	290 11.4173	75 2.9528	1060 239000	1580 355000	EJ	2 0.08	214 8.4	270 10.6	0.23	3.00	4.47	2.93	0.100	1900	1600	2470	17.8 39.2

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

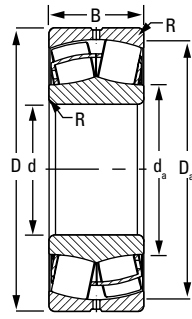
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

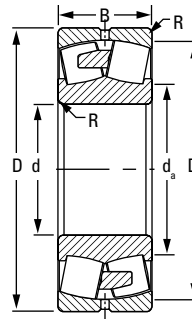
<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

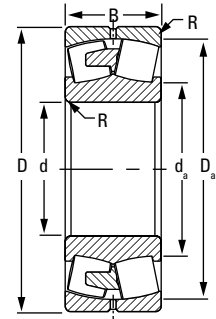
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**EJ**



**EM/YM**



**EMB/YMB**

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	RPM	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM	kg lbs.	
23038	190 7.4803	290 11.4173	75 2.9528	1060 239000	1580 355000	EM	2 0.08	214 8.4	270 10.6	0.23	3.00	4.47	2.93	0.100	1900	1600	2570	17.8 39.2
24038	190 7.4803	290 11.4173	100 3.9370	1330 300000	2100 473000	EJ	2 0.08	210 8.3	268 10.6	0.31	2.20	3.27	2.15	0.100	1400	1200	2180	24.0 52.0
24038	190 7.4803	290 11.4173	100 3.9370	1330 300000	2100 473000	EM	2 0.08	210 8.3	268 10.6	0.31	2.20	3.27	2.15	0.100	1400	1200	2000	24.0 52.0
23138	190 7.4803	320 12.5984	104 4.0945	1630 365000	2340 525000	EJ	2.5 0.1	221 8.7	293 11.5	0.30	2.26	3.36	2.21	0.095	1400	1200	2120	33.9 74.6
23138	190 7.4803	320 12.5984	104 4.0945	1630 365000	2340 525000	EM	2.5 0.1	221 8.7	293 11.5	0.30	2.26	3.36	2.21	0.095	1400	1200	2340	34.7 76.4
24138	190 7.4803	320 12.5984	128 5.0394	1870 421000	2760 619000	EJ	2.5 0.1	215 8.5	290 11.4	0.36	1.85	2.76	1.81	0.094	880	810	1570	42.0 92.0
22238	190 7.4803	340 13.3858	92 3.6220	1550 348000	1960 440000	EJ	3 0.1	226 8.9	310 12.2	0.25	2.67	3.98	2.62	0.097	1800	1500	2540	35.0 77.0
22238	190 7.4803	340 13.3858	92 3.6220	1550 348000	1960 440000	EMB	3 0.1	226 8.9	310 12.2	0.25	2.67	3.98	2.62	0.097	1800	1500	2130	36.0 79.0
23238	190 7.4803	340 13.3858	120 4.7244	1940 436000	2610 586000	EJ	3 0.1	225 8.9	311 12.2	0.32	2.10	3.12	2.05	0.097	1100	980	2040	47.0 104.0
23238	190 7.4803	340 13.3858	120 4.7244	1940 436000	2610 586000	EMB	3 0.1	225 8.9	311 12.2	0.32	2.10	3.12	2.05	0.097	1100	990	1430	47.1 103.6
22338	190 7.4803	400 15.7480	132 5.1969	2380 534000	2830 635000	EJ	4 0.2	245 9.6	361 14.2	0.32	2.12	3.15	2.07	0.102	1200	1100	1800	80.0 177.0
22338	190 7.4803	400 15.7480	132 5.1969	2380 534000	2830 635000	EMB	4 0.2	245 9.6	361 14.2	0.32	2.12	3.15	2.07	0.102	1200	1100	1610	80.9 178.0
23940	200 7.8740	280 11.0236	60 2.3622	712 160000	1130 254000	EM	2 0.08	219 8.6	263 10.3	0.19	3.65	5.43	3.57	0.101	1900	1600	2500	11.0 25.0
23040	200 7.8740	310 12.2047	82 3.2283	1230 276000	1760 395000	EJ	2 0.08	225 8.9	289 11.4	0.23	2.95	4.40	2.89	0.092	1800	1500	2380	22.1 48.6
23040	200 7.8740	310 12.2047	82 3.2283	1230 276000	1760 395000	EM	2 0.08	225 8.9	289 11.4	0.23	2.95	4.40	2.89	0.092	1800	1500	2390	21.9 48.1
24040	200 7.8740	310 12.2047	109 4.2913	1560 351000	2460 552000	EJ	2 0.08	223 8.8	286 11.2	0.31	2.16	3.22	2.12	0.096	1300	1100	2050	30.0 67.0

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

Continued on next page.



**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

*Continued from previous page.*

Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases	Oil		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>	
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y				F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Y <sub>0</sub>		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.						RPM	RPM		
24040	<b>200</b> 7.8740	<b>310</b> 12.2047	<b>109</b> 4.2913	<b>1560</b> 351000	<b>2460</b> 552000	EM	<b>2</b> 0.08	<b>223</b> 8.8	<b>286</b> 11.2	0.31	2.16	3.22	2.12	0.096	1300	1100	1890	<b>30.0</b> 66.0
23140	<b>200</b> 7.8740	<b>340</b> 13.3858	<b>112</b> 4.4094	<b>1720</b> 386000	<b>2400</b> 540000	EJ	<b>2.5</b> 0.1	<b>230</b> 9.0	<b>308</b> 12.1	0.31	2.15	3.20	2.10	0.098	1300	1200	2010	<b>40.8</b> 89.9
23140	<b>200</b> 7.8740	<b>340</b> 13.3858	<b>112</b> 4.4094	<b>1660</b> 373000	<b>2290</b> 514000	EMB	<b>2.5</b> 0.1	<b>230</b> 9.0	<b>308</b> 12.1	0.31	2.15	3.20	2.10	0.097	1400	1200	1890	<b>40.7</b> 89.6
24140	<b>200</b> 7.8740	<b>340</b> 13.3858	<b>140</b> 5.5118	<b>2030</b> 456000	<b>2930</b> 658000	EJ	<b>2.5</b> 0.1	<b>226</b> 8.9	<b>308</b> 12.1	0.39	1.74	2.59	1.70	0.097	850	790	1440	<b>51.7</b> 113.7
24140	<b>200</b> 7.8740	<b>340</b> 13.3858	<b>140</b> 5.5118	<b>2030</b> 456000	<b>2930</b> 658000	EMB	<b>2.5</b> 0.1	<b>226</b> 8.9	<b>308</b> 12.1	0.39	1.74	2.59	1.70	0.097	850	790	1360	<b>52.1</b> 114.7
22240	<b>200</b> 7.8740	<b>360</b> 14.1732	<b>98</b> 3.8583	<b>1580</b> 356000	<b>2010</b> 452000	EJ	<b>3</b> 0.1	<b>236</b> 9.3	<b>323</b> 12.7	0.27	2.50	3.72	2.44	0.099	1700	1500	2480	<b>41.7</b> 91.8
22240	<b>200</b> 7.8740	<b>360</b> 14.1732	<b>98</b> 3.8583	<b>1580</b> 356000	<b>2010</b> 452000	EMB	<b>3</b> 0.1	<b>236</b> 9.3	<b>323</b> 12.7	0.27	2.50	3.72	2.44	0.099	1700	1500	2330	<b>42.6</b> 93.8
23240	<b>200</b> 7.8740	<b>360</b> 14.1732	<b>128</b> 5.0394	<b>2140</b> 480000	<b>2890</b> 650000	EMB	<b>3</b> 0.1	<b>237</b> 9.3	<b>329</b> 12.9	0.33	2.06	3.06	2.01	0.100	1000	920	1470	<b>56.5</b> 124.3
26340	<b>200</b> 7.8740	<b>380</b> 14.9606	<b>126</b> 4.9606	<b>1900</b> 427000	<b>2690</b> 605000	EMB	<b>4</b> 0.2	<b>240</b> 9.4	<b>336.7</b> 13.3	0.33	2.02	3.01	1.98	0.101	820	740	1250	<b>66.0</b> 145.2
23340	<b>200</b> 7.8740	<b>420</b> 16.5354	<b>165</b> 6.4961	<b>2940</b> 660000	<b>3730</b> 838000	EMB	<b>4</b> 0.2	<b>246</b> 9.7	<b>366</b> 14.4	0.41	1.66	2.47	1.62	0.104	720	670	1250	<b>112.6</b> 247.7
22340	<b>200</b> 7.8740	<b>420</b> 16.5354	<b>138</b> 5.4331	<b>2470</b> 556000	<b>2930</b> 658000	EJ	<b>4</b> 0.2	<b>246</b> 9.7	<b>369</b> 14.5	0.33	2.02	3.01	1.98	0.103	1200	1000	1750	<b>89.0</b> 195.8
22340	<b>200</b> 7.8740	<b>420</b> 16.5354	<b>138</b> 5.4331	<b>2470</b> 556000	<b>2930</b> 658000	EMB	<b>4</b> 0.2	<b>247</b> 9.7	<b>369</b> 14.5	0.33	2.02	3.01	1.98	0.103	1200	1000	1640	<b>93.0</b> 204.5
23944	<b>220</b> 8.6614	<b>300</b> 11.8110	<b>60</b> 2.3622	<b>739</b> 166000	<b>1210</b> 272000	EM	<b>2</b> 0.08	<b>239</b> 9.4	<b>283</b> 11.2	0.17	3.94	5.87	3.85	0.106	1700	1400	2280	<b>12.0</b> 26.4
23044	<b>220</b> 8.6614	<b>340</b> 13.3858	<b>90</b> 3.5433	<b>1340</b> 300000	<b>1970</b> 443000	EJ	<b>2.5</b> 0.1	<b>247</b> 9.7	<b>313</b> 12.3	0.24	2.77	4.13	2.71	0.101	1700	1400	2120	<b>28.7</b> 63.1
23044	<b>220</b> 8.6614	<b>340</b> 13.3858	<b>90</b> 3.5433	<b>1340</b> 300000	<b>1970</b> 443000	EM	<b>2.5</b> 0.1	<b>247</b> 9.7	<b>313</b> 12.3	0.24	2.77	4.13	2.71	0.101	1700	1400	2260	<b>28.8</b> 63.4
24044	<b>220</b> 8.6614	<b>340</b> 13.3858	<b>118</b> 4.6457	<b>1720</b> 388000	<b>2720</b> 612000	EJ	<b>2.5</b> 0.1	<b>245</b> 9.6	<b>313</b> 12.3	0.32	2.14	3.18	2.09	0.101	1200	1000	1830	<b>39.0</b> 86.0
24044	<b>220</b> 8.6614	<b>340</b> 13.3858	<b>118</b> 4.6457	<b>1720</b> 388000	<b>2720</b> 612000	EMB	<b>2.5</b> 0.1	<b>245</b> 9.6	<b>313</b> 12.3	0.32	2.14	3.18	2.09	0.101	1200	1000	1710	<b>39.3</b> 86.5
23144	<b>220</b> 8.6614	<b>370</b> 14.5669	<b>120</b> 4.7244	<b>1940</b> 436000	<b>2740</b> 616000	EJ	<b>3</b> 0.1	<b>252</b> 9.9	<b>336</b> 13.2	0.31	2.17	3.24	2.12	0.103	1200	1000	1810	<b>52.8</b> 116.2

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

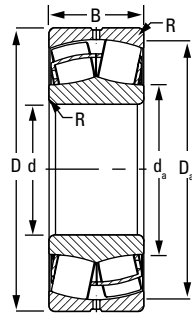
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

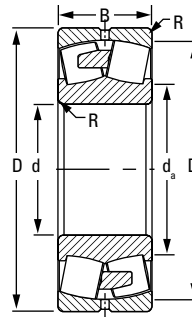
<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

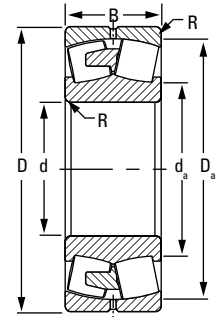
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**EJ**



**EM/YM**



**EMB/YMB**

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Oil	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM	kg lbs.	
23144	220 8.6614	370 14.5669	120 4.7244	1940 436000	2740 616000	EMB	3 0.1	252 9.9	336 13.2	0.31	2.17	3.24	2.12	0.103	1200	1000	1760	52.8 116.2
24144	220 8.6614	370 14.5669	150 5.9055	2250 505000	3220 725000	EJ	3 0.1	248 9.8	337 13.3	0.36	1.86	2.77	1.82	0.103	780	720	1310	65.0 144.0
24144	220 8.6614	370 14.5669	150 5.9055	2250 505000	3220 725000	EMB	3 0.1	248 9.8	337 13.3	0.36	1.86	2.77	1.82	0.103	780	720	1170	65.0 144.0
22244	220 8.6614	400 15.7480	108 4.2520	1850 415000	2310 520000	EJ	3 0.1	261 10.3	359 14.1	0.27	2.51	3.73	2.45	0.106	1500	1300	2220	59.4 130.7
22244	220 8.6614	400 15.7480	108 4.2520	1850 415000	2310 520000	EMB	3 0.1	261 10.3	359 14.1	0.27	2.51	3.73	2.45	0.106	1500	1300	2010	59.4 130.7
23244	220 8.6614	400 15.7480	144 5.6693	2490 559000	3350 754000	EJ	3 0.1	257 10.1	359 14.1	0.35	1.95	2.90	1.90	0.105	920	830	1730	79.0 174.0
23244	220 8.6614	400 15.7480	144 5.6693	2490 559000	3350 754000	EMB	3 0.1	257 10.1	359 14.1	0.35	1.95	2.90	1.90	0.105	920	830	1330	79.4 174.7
26344	220 8.6614	420 16.5354	138 5.4331	2480 558000	3260 733000	EMB	4 0.2	265 10.42	372 14.6	0.33	2.04	3.03	1.99	0.108	700	640	1110	88.2 194.0
22344	220 8.6614	460 18.1102	145 5.7087	2740 615000	3240 729000	EJ	4 0.2	273 10.7	404 15.9	0.32	2.08	3.10	2.04	0.110	1100	940	1600	111.0 244.2
22344	220 8.6614	460 18.1102	145 5.7087	2740 615000	3240 729000	EMB	4 0.2	273 10.7	404 15.9	0.32	2.08	3.10	2.04	0.110	1100	940	1610	118.5 260.7
23948	240 9.4488	320 12.5984	60 2.3622	785 176000	1340 300000	EM	2 0.08	260 10.2	304 12.0	0.16	4.16	6.20	4.07	0.104	1600	1300	2280	12.9 28.4
23048	240 9.4488	360 14.1732	92 3.6220	1400 315000	2140 480000	EJ	2.5 0.1	267 10.5	334 13.1	0.23	2.91	4.34	2.85	0.106	1500	1300	1980	33.0 72.0
23048	240 9.4488	360 14.1732	92 3.6220	1400 315000	2140 480000	EM	2.5 0.1	267 10.5	334 13.1	0.23	2.91	4.34	2.85	0.106	1500	1300	2120	33.0 72.0
24048	240 9.4488	360 14.1732	118 4.6457	1790 403000	2900 652000	EJ	2.5 0.1	265 10.4	334 13.1	0.29	2.31	3.44	2.26	0.106	1100	940	1720	42.0 92.0
24048	240 9.4488	360 14.1732	118 4.6457	1790 403000	2900 652000	EMB	2.5 0.1	265 10.4	334 13.1	0.29	2.31	3.44	2.26	0.106	1100	940	1520	41.8 92.0
23148	240 9.4488	400 15.7480	128 5.0394	2280 512000	3330 748000	EJ	3 0.1	276 10.9	364 14.3	0.30	2.28	3.40	2.23	0.111	1000	910	1680	64.9 142.8

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

Continued on next page.

**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

*Continued from previous page.*

Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases	Oil		Grease	Limiting Speed <sup>(5)</sup>		
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y						F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.							RPM	RPM	
23148	<b>240</b> 9.4488	<b>400</b> 15.7480	<b>128</b> 5.0394	<b>2200</b> 495000	<b>3180</b> 714000	EMB	<b>3</b> 0.1	<b>276</b> 10.9	<b>364</b> 14.3	0.30	2.28	3.40	2.23	0.110	1100	930	1460	<b>65.0</b> 142.0
24148	<b>240</b> 9.4488	<b>400</b> 15.7480	<b>160</b> 6.2992	<b>2690</b> 606000	<b>4050</b> 912000	EJ	<b>3</b> 0.1	<b>270</b> 10.7	<b>364</b> 14.3	0.37	1.80	2.68	1.76	0.109	650	610	1200	<b>80.5</b> 177.1
24148	<b>240</b> 9.4488	<b>400</b> 15.7480	<b>160</b> 6.2992	<b>2690</b> 606000	<b>4050</b> 912000	EMB	<b>3</b> 0.1	<b>270</b> 10.7	<b>364</b> 14.3	0.37	1.80	2.68	1.76	0.109	650	610	1080	<b>80.5</b> 177.1
22248	<b>240</b> 9.4488	<b>440</b> 17.3228	<b>120</b> 4.7244	<b>2330</b> 524000	<b>2950</b> 663000	EJ	<b>3</b> 0.1	<b>283</b> 11.1	<b>395</b> 15.6	0.27	2.46	3.67	2.41	0.112	1300	1100	2050	<b>77.0</b> 169.5
22248	<b>240</b> 9.4488	<b>440</b> 17.3228	<b>120</b> 4.7244	<b>2330</b> 524000	<b>2950</b> 663000	EMB	<b>3</b> 0.1	<b>284</b> 11.2	<b>395</b> 15.6	0.27	2.46	3.67	2.41	0.112	1300	1100	1760	<b>81.0</b> 178.2
23248	<b>240</b> 9.4488	<b>440</b> 17.3228	<b>160</b> 6.2992	<b>3050</b> 685000	<b>4160</b> 935000	EJ	<b>3</b> 0.1	<b>280</b> 11.0	<b>394</b> 15.5	0.35	1.92	2.86	1.88	0.112	790	720	1600	<b>104.8</b> 230.4
23248	<b>240</b> 9.4488	<b>440</b> 17.3228	<b>160</b> 6.2992	<b>3050</b> 685000	<b>4160</b> 935000	EMB	<b>3</b> 0.1	<b>281</b> 11.1	<b>394</b> 15.5	0.35	1.92	2.86	1.88	0.112	790	720	1160	<b>108.0</b> 237.5
26348	<b>240</b> 9.4488	<b>460</b> 18.1102	<b>147</b> 5.7874	<b>2910</b> 653000	<b>3690</b> 829000	EMB	<b>4</b> 0.2	<b>286</b> 11.3	<b>410</b> 16.1	0.32	2.08	3.10	2.04	0.113	690	580	970	<b>113.0</b> 248.6
22348	<b>240</b> 9.4488	<b>500</b> 19.6850	<b>155</b> 6.1024	<b>3270</b> 734000	<b>3960</b> 890000	EMB	<b>4</b> 0.2	<b>297</b> 11.7	<b>439</b> 17.3	0.32	2.10	3.13	2.05	0.117	910	820	1480	<b>149.2</b> 328.2
26250	<b>250</b> 9.8425	<b>410</b> 16.1417	<b>128</b> 5.0394	<b>2190</b> 492000	<b>3150</b> 709000	EM	<b>3</b> 0.1	<b>284.5</b> 11.2	<b>374</b> 14.7	0.30	2.28	3.39	2.23	0.111	680	620	1230	<b>64.0</b> 140.8
23952	<b>260</b> 10.2362	<b>360</b> 14.1732	<b>75</b> 2.9528	<b>1120</b> 251000	<b>1860</b> 419000	EM	<b>2</b> 0.08	<b>284</b> 11.2	<b>339</b> 13.3	0.18	3.74	5.56	3.65	0.110	1400	1200	1990	<b>22.8</b> 50.2
23052	<b>260</b> 10.2362	<b>400</b> 15.7480	<b>104</b> 4.0945	<b>1820</b> 409000	<b>2740</b> 617000	EJ	<b>3</b> 0.12	<b>291</b> 11.5	<b>369</b> 14.5	0.24	2.85	4.24	2.78	0.113	1300	1100	1830	<b>47.5</b> 104.5
23052	<b>260</b> 10.2362	<b>400</b> 15.7480	<b>104</b> 4.0945	<b>1820</b> 409000	<b>2740</b> 617000	EMB	<b>3</b> 0.1	<b>291</b> 11.5	<b>369</b> 14.5	0.24	2.85	4.24	2.78	0.113	1300	1100	1620	<b>47.6</b> 104.7
24052	<b>260</b> 10.2362	<b>400</b> 15.7480	<b>140</b> 5.5118	<b>2380</b> 535000	<b>3840</b> 864000	EJ	<b>3</b> 0.1	<b>288</b> 11.3	<b>369</b> 14.5	0.32	2.12	3.15	2.07	0.113	930	820	1580	<b>63.9</b> 140.6
24052	<b>260</b> 10.2362	<b>400</b> 15.7480	<b>140</b> 5.5118	<b>2380</b> 535000	<b>3840</b> 864000	EMB	<b>3</b> 0.1	<b>288</b> 11.3	<b>369</b> 14.5	0.32	2.12	3.15	2.07	0.113	940	830	1360	<b>63.9</b> 140.6
23152	<b>260</b> 10.236	<b>440</b> 17.3228	<b>144</b> 5.6693	<b>2680</b> 603000	<b>3930</b> 885000	EJ	<b>3</b> 0.1	<b>301</b> 11.8	<b>400</b> 15.7	0.30	2.23	3.31	2.18	0.116	930	830	1550	<b>87.7</b> 193.0
23152	<b>260</b> 10.2362	<b>440</b> 17.3228	<b>144</b> 5.6693	<b>2680</b> 603000	<b>3930</b> 885000	EMB	<b>3</b> 0.1	<b>302</b> 11.9	<b>400</b> 15.7	0.30	2.23	3.31	2.18	0.116	930	830	1240	<b>90.0</b> 199.0
24152	<b>260</b> 10.2362	<b>440</b> 17.3228	<b>180</b> 7.0866	<b>3160</b> 710000	<b>4800</b> 1080000	EJ	<b>3</b> 0.1	<b>294</b> 11.6	<b>398</b> 15.7	0.37	1.82	2.70	1.78	0.115	580	540	1090	<b>112.0</b> 246.0

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

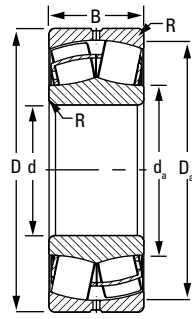
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

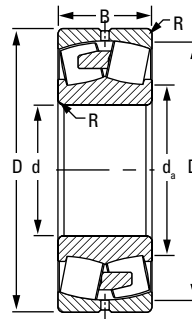
<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

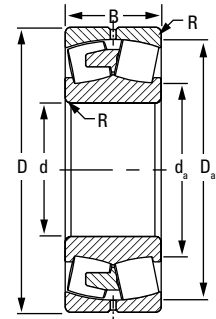
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EJ



EM/YM



EMB/YMB

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM	kg lbs.	
24152	260 10.2362	440 17.3228	180 7.0866	3160 710000	4800 1080000	EMB	3 0.1	296 11.7	398 15.7	0.37	1.82	2.70	1.78	0.115	580	540	960	111.4 245.1
22252	260 10.2362	480 18.8976	130 5.1181	2740 616000	3500 787000	EMB	4 0.2	309 12.2	430 16.9	0.27	2.46	3.66	2.41	0.118	1200	1000	1600	105.5 232.1
23252	260 10.2362	480 18.8976	174 6.8504	3510 790000	4850 1090000	EJ	4 0.2	307 12.1	430 16.9	0.34	1.98	2.95	1.94	0.119	710	650	1470	135.8 298.8
23252	260 10.2362	480 18.8976	174 6.8504	3510 790000	4850 1090000	EMB	4 0.2	308 12.1	430 16.9	0.34	1.98	2.95	1.94	0.119	710	650	1000	140.0 308.0
22352	260 10.2362	540 21.2598	165 6.4961	3730 838000	4550 1020000	EMB	5 0.2	321 12.6	475 18.7	0.32	2.13	3.17	2.08	0.123	810	730	1340	184.5 405.9
23352	260 10.2362	540 21.2598	206 8.1102	4600 1030000	5990 1350000	EM	5 0.2	318 12.5	473 18.6	0.39	1.71	2.54	1.67	0.123	490	460	1270	227.0 499.4
23956	280 11.0236	380 14.9606	75 2.9528	1170 264000	1990 446000	EMB	2 0.08	304 12.0	360 14.2	0.17	3.95	5.88	3.86	0.115	1300	1100	1690	24.3 53.5
23056	280 11.0236	420 16.5354	106 4.1732	1820 410000	2810 631000	EJ	3 0.1	309 12.2	389 15.3	0.23	2.92	4.35	2.86	0.118	1300	1100	1690	48.8 107.3
23056	280 11.0236	420 16.5354	106 4.1732	1820 410000	2810 631000	EMB	3 0.1	312 12.3	389 15.3	0.23	2.92	4.35	2.86	0.118	1300	1100	1600	51.0 112.2
24056	280 11.0236	420 16.5354	140 5.5118	2420 544000	4090 921000	EJ	3 0.1	307 12.1	388 15.3	0.30	2.25	3.35	2.20	0.117	860	760	1310	68.0 149.0
24056	280 11.0236	420 16.5354	140 5.5118	2420 544000	4090 921000	EMB	3 0.1	310 12.2	388 15.3	0.30	2.25	3.35	2.20	0.117	860	760	1290	68.0 149.6
23156	280 11.0236	460 18.1102	146 5.7480	2780 626000	4170 937000	EJ	4 0.2	318 12.5	419 16.5	0.30	2.26	3.36	2.21	0.121	870	770	1480	93.3 205.2
23156	280 11.0236	460 18.1102	146 5.7480	2780 626000	4170 937000	EMB	4 0.2	320 12.6	419 16.5	0.30	2.26	3.36	2.21	0.121	870	770	1320	96.8 213.0
24156	280 11.0236	460 18.1102	180 7.0866	3210 723000	5060 1140000	EJ	4 0.2	316 12.5	419 16.5	0.36	1.86	2.77	1.82	0.121	540	510	1010	118.0 260.0
24156	280 11.0236	460 18.1102	180 7.0866	3210 723000	5060 1140000	EMB	4 0.2	319 12.6	419 16.5	0.36	1.86	2.77	1.82	0.121	540	510	910	118.0 259.6
22256	280 11.0236	500 19.6850	130 5.1181	2800 630000	3750 844000	EMB	4 0.2	331 13.0	449 17.7	0.26	2.62	3.91	2.57	0.123	1100	940	1570	112.1 246.6

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

Continued on next page.

**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases	Oil		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>	
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y				F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Y <sub>0</sub>		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.						RPM	RPM		
23256	<b>280</b> 11.0236	<b>500</b> 19.6850	<b>176</b> 6.9291	<b>3680</b> 828000	<b>5250</b> 1180000	EJ	<b>4</b> 0.2	<b>327</b> 12.9	<b>450</b> 17.7	0.33	2.07	3.08	2.02	0.123	650	590	1400	<b>149.0</b> 328.0
23256	<b>280</b> 11.0236	<b>500</b> 19.6850	<b>176</b> 6.9291	<b>3680</b> 828000	<b>5250</b> 1180000	EMB	<b>4</b> 0.2	<b>329</b> 13.0	<b>450</b> 17.7	0.33	2.07	3.08	2.02	0.123	650	590	940	<b>149.6</b> 329.1
22356	<b>280</b> 11.0236	<b>580</b> 22.8346	<b>175</b> 6.8898	<b>4280</b> 962000	<b>5280</b> 1190000	EMB	<b>5</b> 0.2	<b>345</b> 13.6	<b>511</b> 20.1	0.32	2.13	3.17	2.08	0.129	720	660	1210	<b>226.3</b> 497.9
23356	<b>280</b> 11.0236	<b>580</b> 22.8346	<b>224</b> 8.8189	<b>5340</b> 1200000	<b>7050</b> 1580000	EMB	<b>5</b> 0.2	<b>341</b> 13.4	<b>508</b> 20.0	0.40	1.69	2.52	1.65	0.128	440	410	800	<b>284.0</b> 624.8
23960	<b>300</b> 11.8110	<b>420</b> 16.5354	<b>90</b> 3.5433	<b>1570</b> 352000	<b>2630</b> 592000	EMB	<b>2.5</b> 0.1	<b>328</b> 12.9	<b>394</b> 15.5	0.19	3.59	5.34	3.51	0.121	1200	970	1530	<b>38.4</b> 84.5
23060	<b>300</b> 11.8110	<b>460</b> 18.1102	<b>118</b> 4.6457	<b>2330</b> 525000	<b>3570</b> 803000	EJ	<b>3</b> 0.1	<b>334</b> 13.1	<b>425</b> 16.8	0.24	2.87	4.27	2.80	0.123	1100	940	1550	<b>68.2</b> 150.0
23060	<b>300</b> 11.8110	<b>460</b> 18.1102	<b>118</b> 4.6457	<b>2330</b> 525000	<b>3570</b> 803000	EMB	<b>3</b> 0.1	<b>336</b> 13.2	<b>425</b> 16.8	0.24	2.87	4.27	2.80	0.123	1100	940	1410	<b>71.2</b> 156.5
24060	<b>300</b> 11.8110	<b>460</b> 18.1102	<b>160</b> 6.2992	<b>3070</b> 689000	<b>5190</b> 1170000	EJ	<b>3</b> 0.1	<b>331</b> 13.0	<b>423</b> 16.7	0.32	2.11	3.13	2.06	0.123	750	670	1210	<b>96.0</b> 211.0
24060	<b>300</b> 11.8110	<b>460</b> 18.1102	<b>160</b> 6.2992	<b>3070</b> 689000	<b>5190</b> 1170000	EMB	<b>3</b> 0.1	<b>334</b> 13.1	<b>423</b> 16.7	0.32	2.11	3.13	2.06	0.123	750	670	1210	<b>97.4</b> 214.3
23160	<b>300</b> 11.8110	<b>500</b> 19.6850	<b>160</b> 6.2992	<b>3370</b> 757000	<b>5120</b> 1150000	EJ	<b>4</b> 0.2	<b>343</b> 13.5	<b>453</b> 17.8	0.30	2.25	3.35	2.20	0.127	760	680	1380	<b>124.9</b> 274.8
23160	<b>300</b> 11.8110	<b>500</b> 19.6850	<b>160</b> 6.2992	<b>3370</b> 757000	<b>5120</b> 1150000	EMB	<b>4</b> 0.2	<b>345</b> 13.6	<b>453</b> 17.8	0.30	2.25	3.35	2.20	0.127	760	680	1180	<b>128.7</b> 283.1
24160	<b>300</b> 11.8110	<b>500</b> 19.6850	<b>200</b> 7.8740	<b>4060</b> 913000	<b>6270</b> 1410000	EJ	<b>4</b> 0.2	<b>336</b> 13.2	<b>455</b> 17.9	0.37	1.82	2.71	1.78	0.125	470	440	930	<b>158.0</b> 347.0
24160	<b>300</b> 11.8110	<b>500</b> 19.6850	<b>200</b> 7.8740	<b>4060</b> 913000	<b>6270</b> 1410000	EMB	<b>4</b> 0.2	<b>338</b> 13.3	<b>455</b> 17.9	0.37	1.82	2.71	1.78	0.125	470	440	810	<b>157.1</b> 345.6
22260	<b>300</b> 11.8110	<b>540</b> 21.2598	<b>140</b> 5.5118	<b>3290</b> 740000	<b>4400</b> 989000	EMB	<b>4</b> 0.2	<b>355</b> 14.0	<b>484</b> 19.1	0.26	2.59	3.86	2.53	0.128	980	850	1410	<b>142.0</b> 312.4
23260	<b>300</b> 11.8110	<b>540</b> 21.2598	<b>192</b> 7.5591	<b>4210</b> 946000	<b>6170</b> 1390000	EJ	<b>4</b> 0.2	<b>351</b> 13.8	<b>482</b> 19.0	0.34	2.00	2.98	1.96	0.130	580	530	1310	<b>191.0</b> 420.0
23260	<b>300</b> 11.8110	<b>540</b> 21.2598	<b>192</b> 7.5591	<b>4210</b> 946000	<b>6170</b> 1390000	EMB	<b>4</b> 0.2	<b>353</b> 13.9	<b>482</b> 19.0	0.34	2.00	2.98	1.96	0.130	580	530	1020	<b>194.5</b> 427.9
23964	<b>320</b> 12.5984	<b>440</b> 17.3228	<b>90</b> 3.5433	<b>1600</b> 359000	<b>2780</b> 625000	EMB	<b>2.5</b> 0.1	<b>349</b> 13.8	<b>414</b> 16.3	0.18	3.79	5.65	3.71	0.126	1100	900	1450	<b>40.6</b> 89.3
23064	<b>320</b> 12.5984	<b>480</b> 18.8976	<b>121</b> 4.7638	<b>2410</b> 543000	<b>3880</b> 873000	EJ	<b>3</b> 0.1	<b>355</b> 14.0	<b>444</b> 17.5	0.23	2.93	4.36	2.86	0.128	1000	880	1470	<b>74.2</b> 163.2

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

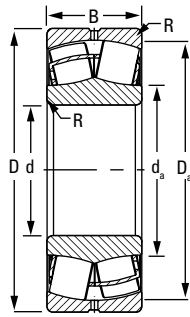
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

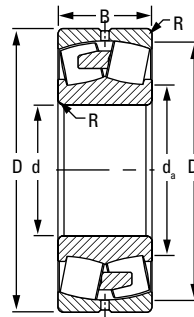
<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

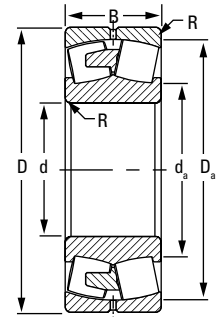
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EJ



EM/YM



EMB/YMB

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM	kg lbs.	
23064	320 12.5984	480 18.8976	121 4.7638	2410 543000	3880 873000	EMB	3 0.1	357 14.1	444 17.5	0.23	2.93	4.36	2.86	0.128	1000	880	1370	77.4 170.2
24064	320 12.5984	480 18.8976	160 6.2992	3130 703000	5380 1210000	EJ	3 0.1	351 13.8	444 17.5	0.30	2.24	3.34	2.19	0.128	710	630	1150	101.0 222.0
24064	320 12.5984	480 18.8976	160 6.2992	3130 703000	5380 1210000	EMB	3 0.1	354 13.9	444 17.5	0.30	2.24	3.34	2.19	0.128	710	630	1130	102.0 224.4
23164	320 12.5984	540 21.2598	176 6.9291	3990 898000	5950 1340000	EJ	4 0.2	364 14.3	490 19.3	0.31	2.14	3.19	2.10	0.131	690	620	1260	160.5 353.0
23164	320 12.5984	540 21.2598	176 6.9291	3990 898000	5950 1340000	EMB	4 0.2	367 14.4	490 19.3	0.31	2.14	3.19	2.10	0.131	690	620	1100	167.1 367.5
24164	320 12.5984	540 21.2598	218 8.5827	4790 1080000	7530 1690000	EJ	4 0.2	360 14.2	489 19.3	0.38	1.77	2.63	1.73	0.131	410	390	860	203.0 448.0
24164	320 12.5984	540 21.2598	218 8.5827	4790 1080000	7530 1690000	EMB	4 0.2	362 14.3	489 19.3	0.38	1.77	2.63	1.73	0.131	410	390	720	204.6 450.1
22264	320 12.5984	580 22.8346	150 5.9055	3720 835000	5000 1120000	EMB	4 0.2	380 15.0	519 20.4	0.26	2.58	3.84	2.52	0.134	900	780	1290	177.1 389.6
23264	320 12.5984	580 22.8346	208 8.1890	4770 1070000	7090 1590000	EJ	4 0.2	377 14.8	516 20.3	0.34	1.98	2.94	1.93	0.135	530	490	1220	240.0 528.0
23264	320 12.5984	580 22.8346	208 8.1890	4770 1070000	7090 1590000	EMB	4 0.2	379 14.9	516 20.3	0.34	1.98	2.94	1.93	0.135	530	490	940	245.1 539.2
23968	340 13.3858	460 18.1102	90 3.5433	1670 376000	2990 673000	EMB	2.5 0.1	369 14.5	435 17.1	0.17	3.98	5.93	3.89	0.131	990	830	1390	43.0 94.6
23068	340 13.3858	520 20.4724	133 5.2362	2890 650000	4630 1040000	EJ	4 0.2	381 15.0	481 18.9	0.23	2.96	4.40	2.89	0.135	930	800	1350	101.0 223.0
23068	340 13.3858	520 20.4724	133 5.2362	2890 650000	4630 1040000	EMB	4 0.2	384 15.1	481 18.9	0.23	2.96	4.40	2.89	0.135	930	800	1150	102.7 225.9
24068	340 13.3858	520 20.4724	180 7.0866	3820 859000	6540 1470000	EJ	4 0.2	375 14.7	479 18.9	0.32	2.14	3.18	2.09	0.134	640	570	1070	137.0 302.0
24068	340 13.3858	520 20.4724	180 7.0866	3820 859000	6540 1470000	EMB	4 0.2	377 14.9	479 18.9	0.32	2.14	3.18	2.09	0.134	640	570	1030	139.0 305.8
23168	340 13.3858	580 22.8346	190 7.4803	4500 1010000	6850 1540000	EJ	4 0.2	395 15.5	526 20.7	0.30	2.22	3.30	2.17	0.138	630	570	1170	206.0 455.0

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

Continued on next page.

**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static	Oil		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>	
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y				F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	In All Cases Y <sub>0</sub>		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.						RPM	RPM		
23168	<b>340</b> 13.3858	<b>580</b> 22.8346	<b>190</b> 7.4803	<b>4500</b> 1010000	<b>6850</b> 1540000	EMB	<b>4</b> 0.2	<b>397</b> 15.6	<b>526</b> 20.7	0.30	2.22	3.30	2.17	0.138	630	570	940	<b>210.3</b> 462.7
24168	<b>340</b> 13.3858	<b>580</b> 22.8346	<b>243</b> 9.5669	<b>5680</b> 1280000	<b>8900</b> 2000000	EMB	<b>4</b> 0.2	<b>385</b> 15.2	<b>525</b> 20.7	0.39	1.75	2.61	1.71	0.137	370	350	660	<b>266.0</b> 585.2
23268	<b>340</b> 13.3858	<b>620</b> 24.4094	<b>224</b> 8.8189	<b>5160</b> 1160000	<b>8200</b> 1840000	YMB	<b>5</b> 0.2	<b>399</b> 15.7	<b>554</b> 21.8	0.35	1.91	2.84	1.86	0.086	470	440	870	<b>292.4</b> 643.4
23972	<b>360</b> 14.1732	<b>480</b> 18.8976	<b>90</b> 3.5433	<b>1710</b> 385000	<b>3140</b> 707000	EMB	<b>2.5</b> 0.1	<b>389</b> 15.3	<b>455</b> 17.9	0.16	4.12	6.13	4.03	0.135	920	780	1310	<b>45.0</b> 99.0
23072	<b>360</b> 14.1732	<b>540</b> 21.2598	<b>134</b> 5.2756	<b>2840</b> 638000	<b>4610</b> 1040000	EJ	<b>4</b> 0.2	<b>400</b> 15.7	<b>499</b> 19.7	0.23	2.94	4.38	2.88	0.139	900	770	1290	<b>107.0</b> 236.0
23072	<b>360</b> 14.1732	<b>540</b> 21.2598	<b>134</b> 5.2756	<b>2840</b> 638000	<b>4610</b> 1040000	EMB	<b>4</b> 0.2	<b>403</b> 15.9	<b>499</b> 19.7	0.23	2.94	4.38	2.88	0.139	900	770	1200	<b>108.3</b> 238.3
24072	<b>360</b> 14.1732	<b>540</b> 21.2598	<b>180</b> 7.0866	<b>3920</b> 881000	<b>6850</b> 1540000	EJ	<b>4</b> 0.2	<b>395</b> 15.6	<b>500</b> 19.7	0.30	2.24	3.33	2.19	0.138	600	540	1030	<b>144.0</b> 316.0
24072	<b>360</b> 14.1732	<b>540</b> 21.2598	<b>180</b> 7.0866	<b>3920</b> 881000	<b>6850</b> 1540000	EMB	<b>4</b> 0.2	<b>398</b> 15.7	<b>500</b> 19.7	0.30	2.24	3.33	2.19	0.138	600	540	960	<b>145.4</b> 319.9
23172	<b>360</b> 14.1732	<b>600</b> 23.6220	<b>192</b> 7.5591	<b>4660</b> 1050000	<b>7300</b> 1640000	EJ	<b>4</b> 0.2	<b>416</b> 16.4	<b>546</b> 21.5	0.29	2.29	3.42	2.24	0.143	590	530	1120	<b>218.0</b> 480.0
23172	<b>360</b> 14.1732	<b>600</b> 23.6220	<b>192</b> 7.5591	<b>4660</b> 1050000	<b>7300</b> 1640000	EMB	<b>4</b> 0.2	<b>419</b> 16.5	<b>546</b> 21.5	0.29	2.29	3.42	2.24	0.143	590	530	900	<b>222.1</b> 488.6
24172	<b>360</b> 14.1732	<b>600</b> 23.6220	<b>243</b> 9.5669	<b>5900</b> 1330000	<b>9550</b> 2150000	EMB	<b>4</b> 0.2	<b>406</b> 16.0	<b>545</b> 21.4	0.38	1.79	2.67	1.75	0.142	340	320	630	<b>279.5</b> 614.9
22272	<b>360</b> 14.1732	<b>650</b> 25.5906	<b>170</b> 6.6929	<b>4210</b> 946000	<b>6280</b> 1410000	YMB	<b>5</b> 0.2	<b>427</b> 16.8	<b>583</b> 23.0	0.25	2.66	3.95	2.60	0.089	770	680	1170	<b>245.0</b> 539.0
23272	<b>360</b> 14.1732	<b>650</b> 25.5906	<b>232</b> 9.1339	<b>5530</b> 1240000	<b>8790</b> 1980000	YMB	<b>5</b> 0.2	<b>420</b> 16.5	<b>583</b> 23.0	0.35	1.95	2.91	1.91	0.089	450	410	990	<b>338.6</b> 744.9
23976	<b>380</b> 14.9606	<b>520</b> 20.4724	<b>106</b> 4.1732	<b>2130</b> 479000	<b>3940</b> 886000	EMB	<b>3</b> 0.1	<b>416</b> 16.4	<b>488</b> 19.2	0.18	3.80	5.66	3.72	0.141	860	720	1180	<b>67.1</b> 147.6
23076	<b>380</b> 14.9606	<b>560</b> 22.0472	<b>135</b> 5.3150	<b>3070</b> 690000	<b>5110</b> 1150000	EJ	<b>4</b> 0.2	<b>420</b> 16.5	<b>520</b> 20.5	0.22	3.08	4.58	3.01	0.142	830	710	1240	<b>112.0</b> 248.0
23076	<b>380</b> 14.9606	<b>560</b> 22.0472	<b>135</b> 5.3150	<b>3070</b> 690000	<b>5110</b> 1150000	EMB	<b>4</b> 0.2	<b>422</b> 16.6	<b>520</b> 20.5	0.22	3.08	4.58	3.01	0.142	830	710	880	<b>114.2</b> 251.2
24076	<b>380</b> 14.9606	<b>560</b> 22.0472	<b>180</b> 7.0866	<b>4030</b> 905000	<b>7090</b> 1590000	EMB	<b>4</b> 0.2	<b>418</b> 16.4	<b>520</b> 20.5	0.29	2.32	3.45	2.27	0.141	570	510	870	<b>151.2</b> 332.6
23176	<b>380</b> 14.9606	<b>620</b> 24.4094	<b>194</b> 7.6378	<b>4490</b> 1010000	<b>7580</b> 1700000	YMB	<b>4</b> 0.2	<b>431</b> 17.0	<b>566</b> 22.3	0.30	2.28	3.39	2.23	0.090	560	510	1140	<b>232.6</b> 511.7

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

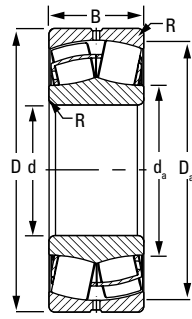
<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

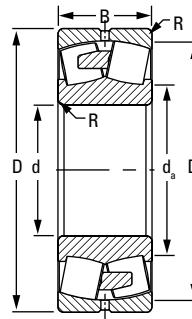
<sup>(5)</sup>See limiting speed on page 61.

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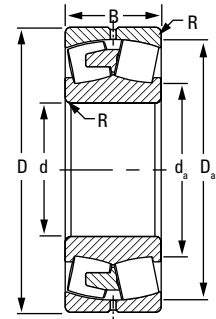




EJ



EM/YM



EMB/YMB

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Oil	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM	kg lbs.	
24176	380 14.9606	620 24.4094	243 9.5669	5580 1250000	10100 2260000	YMB	4 0.2	427 16.8	565 22.3	0.36	1.87 2.79	1.83	0.090	320	300	630	291.0 640.2	
22276	380 14.9606	680 26.7716	175 6.8898	4540 1020000	6780 1520000	YMB	5 0.2	449 17.7	611 24.1	0.25	2.71 4.03	2.65	0.092	720	640	1110	274.0 604.0	
23276	380 14.9606	680 26.7716	240 9.4488	5970 1340000	9520 2140000	YMB	5 0.2	442 17.4	611 24.1	0.34	1.98 2.95	1.94	0.092	420	390	920	379.4 834.7	
23980	400 15.7480	540 21.2598	106 4.1732	2180 489000	4020 903000	EMB	3 0.1	436 17.2	511 20.1	0.17	3.99 5.94	3.90	0.146	810	690	1100	69.2 152.2	
23080	400 15.7480	600 23.6220	148 5.8268	3630 815000	5980 1340000	EJ	4 0.2	444 17.5	555 21.9	0.23	2.98 4.44	2.92	0.147	760	660	1160	146.0 321.0	
23080	400 15.7480	600 23.6220	148 5.8268	3630 815000	5980 1340000	EMB	4 0.2	447 17.6	555 21.9	0.23	2.98 4.44	2.92	0.147	760	660	1230	148.7 327.1	
24080	400 15.7480	600 23.6220	200 7.8740	4790 1080000	8480 1910000	EMB	4 0.2	442 17.4	555 21.9	0.30	2.24 3.33	2.19	0.147	510	460	1010	200.0 440.0	
23180	400 15.7480	650 25.5906	200 7.8740	4770 1070000	8110 1820000	YMB	5 0.2	454 17.9	594 23.4	0.29	2.32 3.46	2.27	0.092	530	480	1060	261.6 575.5	
24180	400 15.7480	650 25.5906	250 9.8425	5810 1310000	10400 2330000	YMB	5 0.2	449 17.7	594 23.4	0.35	1.91 2.84	1.87	0.092	310	290	570	322.3 709.1	
22280	400 15.7480	720 28.3465	185 7.2835	5040 1130000	7590 1710000	YMB	5 0.2	474 18.7	646 25.4	0.25	2.70 4.03	2.64	0.095	670	590	1040	326.0 719.0	
23280	400 15.7480	720 28.3465	256 10.0787	6720 1510000	10800 2430000	YMB	5 0.2	466 18.4	646 25.4	0.34	1.96 2.93	1.92	0.095	380	350	850	457.5 1006.5	
22380	400 15.7480	820 32.2835	243 9.5669	7220 1620000	10100 2280000	YMB	6 0.2	496 19.5	729 28.7	0.30	2.28 3.40	2.23	0.099	440	410	930	618.7 1361.1	
23984	420 16.5354	560 22.0472	106 4.1732	2270 511000	4240 953000	EMB	3 0.1	454 17.9	531 20.9	0.16	4.14 6.17	4.05	0.149	770	650	1090	71.9 158.2	
23084	420 16.5354	620 24.4094	150 5.9055	3450 774000	6360 1430000	YMB	4 0.2	467 18.4	576 22.7	0.22	3.05 4.54	2.98	0.094	720	620	1230	156.0 343.2	
24084	420 16.5354	620 24.4094	200 7.8740	4390 987000	8630 1940000	YMB	4 0.2	463 18.2	575 22.7	0.29	2.37 3.52	2.31	0.093	490	440	1010	206.7 454.7	
23184	420 16.5354	700 27.5591	224 8.8189	5720 1290000	9640 2170000	YMB	5 0.2	480 18.9	636 25.1	0.31	2.21 3.20	2.16	0.096	480	440	970	350.8 771.8	

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

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**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>			Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight	
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases		Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>		
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y			F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	Oil			Grease
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.					RPM	RPM	RPM		kg lbs.
24184	<b>420</b> 16.5354	<b>700</b> 27.5591	<b>280</b> 11.0236	<b>6990</b> 1570000	<b>12400</b> 2780000	YMB	<b>5</b> 0.2	<b>474</b> 18.7	<b>636</b> 25.1	0.37	1.81	2.70	1.77	0.096	270	260	510	<b>432.6</b> 951.7
23284	<b>420</b> 16.5354	<b>760</b> 29.9213	<b>272</b> 10.7087	<b>7360</b> 1650000	<b>11800</b> 2660000	YMB	<b>6</b> 0.2	<b>490</b> 19.3	<b>681</b> 26.8	0.35	1.90	2.83	1.86	0.098	360	330	750	<b>541.0</b> 1191.0
23988	<b>440</b> 17.3228	<b>600</b> 23.6220	<b>118</b> 4.6457	<b>2760</b> 619000	<b>5040</b> 1130000	EMB	<b>3</b> 0.1	<b>479</b> 18.9	<b>566</b> 22.3	0.17	3.93	5.85	3.84	0.154	710	600	1180	<b>98.0</b> 215.6
23088	<b>440</b> 17.3228	<b>650</b> 25.5906	<b>157</b> 6.1811	<b>3750</b> 844000	<b>6970</b> 1570000	YMB	<b>5</b> 0.2	<b>489</b> 19.3	<b>603</b> 23.7	0.22	3.04	4.53	2.97	0.096	680	590	1160	<b>180.0</b> 396.0
24088	<b>440</b> 17.3228	<b>650</b> 25.5906	<b>212</b> 8.3465	<b>4910</b> 1100000	<b>9770</b> 2200000	YMB	<b>5</b> 0.2	<b>485</b> 19.1	<b>603</b> 23.7	0.29	2.31	3.44	2.26	0.096	450	410	950	<b>241.8</b> 532.0
23188	<b>440</b> 17.3228	<b>720</b> 28.3465	<b>226</b> 8.8976	<b>5970</b> 1340000	<b>10300</b> 2310000	YMB	<b>5</b> 0.2	<b>500</b> 19.7	<b>657</b> 25.9	0.30	2.26	3.37	2.21	0.098	450	410	940	<b>367.8</b> 809.2
24188	<b>440</b> 17.3228	<b>720</b> 28.3465	<b>280</b> 11.0236	<b>7120</b> 1600000	<b>12900</b> 2900000	YMB	<b>5</b> 0.2	<b>495</b> 19.5	<b>656</b> 25.8	0.36	1.88	2.79	1.84	0.098	260	250	500	<b>449.1</b> 988.0
23288	<b>440</b> 17.3228	<b>790</b> 31.1024	<b>280</b> 11.0236	<b>8090</b> 1820000	<b>13200</b> 2970000	YMB	<b>6</b> 0.2	<b>512</b> 20.1	<b>710</b> 28.0	0.35	1.95	2.91	1.91	0.101	320	300	760	<b>602.0</b> 1324.4
23992	<b>460</b> 18.1102	<b>620</b> 24.4094	<b>118</b> 4.6457	<b>2520</b> 567000	<b>5100</b> 1150000	YMB	<b>3</b> 0.1	<b>499</b> 19.7	<b>586</b> 23.1	0.16	4.14	6.17	4.05	0.098	680	580	1200	<b>100.9</b> 222.0
23092	<b>460</b> 18.1102	<b>680</b> 26.7717	<b>163</b> 6.4173	<b>4060</b> 913000	<b>7570</b> 1700000	YMB	<b>5</b> 0.2	<b>512</b> 20.1	<b>631</b> 24.9	0.22	3.06	4.56	2.99	0.099	640	550	1090	<b>205.0</b> 451.0
24092	<b>460</b> 18.1102	<b>680</b> 26.7717	<b>218</b> 8.5827	<b>5210</b> 1170000	<b>10300</b> 2330000	YMB	<b>5</b> 0.2	<b>507</b> 20.0	<b>631</b> 24.8	0.28	2.37	3.53	2.32	0.099	430	390	900	<b>270.8</b> 595.8
23192	<b>460</b> 18.1102	<b>760</b> 29.9213	<b>240</b> 9.4488	<b>6500</b> 1460000	<b>11100</b> 2500000	YMB	<b>6</b> 0.2	<b>524</b> 20.6	<b>692</b> 27.2	0.30	2.24	3.33	2.19	0.101	430	390	760	<b>436.9</b> 961.2
24192	<b>460</b> 18.1102	<b>760</b> 29.9213	<b>300</b> 11.8110	<b>8200</b> 1840000	<b>14900</b> 3350000	YMB	<b>6</b> 0.2	<b>518</b> 20.4	<b>692</b> 27.2	0.37	1.84	2.74	1.80	0.102	230	220	460	<b>544.9</b> 1198.7
23292	<b>460</b> 18.1102	<b>830</b> 32.6772	<b>296</b> 11.6535	<b>8680</b> 1950000	<b>14000</b> 3150000	YMB	<b>6</b> 0.2	<b>535</b> 21.1	<b>746</b> 29.4	0.34	1.96	2.93	1.92	0.103	310	290	670	<b>696.7</b> 1532.7
23896	<b>480</b> 18.8976	<b>600</b> 23.6220	<b>90</b> 3.5433	<b>1910</b> 430000	<b>3950</b> 888000	EMB	<b>2.5</b> 0.1	<b>511</b> 20.1	<b>576</b> 22.67	0.13	5.38	8.01	5.26	0.159	340	300	1110	<b>57.0</b> 127.0
23996	<b>480</b> 18.8976	<b>650</b> 25.5906	<b>128</b> 5.0394	<b>2820</b> 633000	<b>5890</b> 1320000	YMB	<b>4</b> 0.2	<b>523</b> 20.6	<b>612</b> 24.1	0.17	3.99	5.94	3.90	0.101	640	550	1120	<b>123.3</b> 271.2
23096	<b>480</b> 18.8976	<b>700</b> 27.5591	<b>165</b> 6.4961	<b>4170</b> 938000	<b>7980</b> 1790000	YMB	<b>5</b> 0.2	<b>532</b> 21.0	<b>651</b> 25.6	0.22	3.14	4.67	3.07	0.102	600	530	1050	<b>215.0</b> 473.0
24096	<b>480</b> 18.8976	<b>700</b> 27.5591	<b>218</b> 8.5827	<b>5450</b> 1230000	<b>10900</b> 2450000	YMB	<b>5</b> 0.2	<b>526</b> 20.7	<b>652</b> 25.7	0.28	2.45	3.64	2.39	0.101	410	370	820	<b>282.1</b> 620.6

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

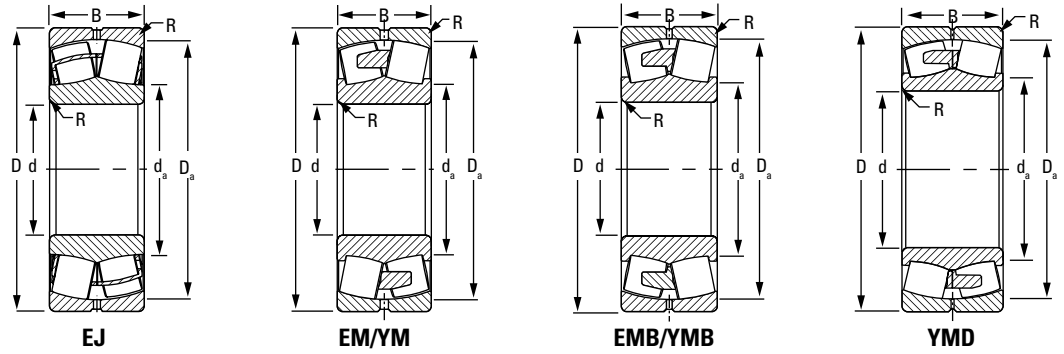
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM	kg lbs.	
23196	480 18.8976	790 31.1024	248 9.7638	7110 1600000	12400 2790000	YMB	6 0.2	547 21.5	719 28.3	0.30	2.26	3.36	2.21	0.104	390	360	840	490.4 1078.9
24196	480 18.8976	790 31.1024	308 12.1260	8580 1930000	15900 3570000	YMB	6 0.2	542 21.3	718 28.3	0.37	1.85	2.75	1.81	0.105	220	210	410	605.3 1331.7
23296	480 18.8976	870 34.2520	310 12.2047	9860 2220000	16400 3690000	YMB	6 0.2	561 22.1	779 30.7	0.35	1.92	2.85	1.87	0.107	280	260	680	821.2 1806.6
238/500	500 19.6850	620 24.4094	90 3.5433	1750 393000	4010 902000	YMB	2.5 0.1	531 20.9	596 23.5	0.12	5.68	8.45	5.55	0.101	330	290	1060	60.0 132.0
239/500	500 19.6850	670 26.3779	128 5.0394	2910 653000	6060 1360000	YMB	4 0.2	542 21.4	634 25.0	0.16	4.13	6.15	4.04	0.103	610	520	1070	125.7 276.5
230/500	500 19.6850	720 28.3465	167 6.5748	4290 965000	8160 1840000	YMB	5 0.2	550 21.7	673 26.5	0.21	3.26	4.85	3.18	0.104	580	510	1010	222.0 488.4
240/500	500 19.6850	720 28.3465	218 8.5827	5510 1240000	11200 2510000	YMB	5 0.2	547 21.5	673 26.5	0.27	2.51	3.74	2.45	0.104	390	350	810	290.8 639.8
231/500	500 19.6850	830 32.6772	264 10.3937	7880 1770000	13900 3130000	YMB	6 0.2	572 22.5	753 29.7	0.30	2.22	3.30	2.17	0.107	360	330	800	584.3 1285.5
241/500	500 19.6850	830 32.6772	325 12.7953	9660 2170000	17600 3950000	YMB	6 0.2	563 22.1	755 29.7	0.37	1.81	2.69	1.77	0.107	200	200	380	700.0 1540.0
232/500	500 19.6850	920 36.2205	336 13.2283	10900 2460000	17900 4010000	YMB	6 0.2	585 23.0	824 32.4	0.36	1.90	2.83	1.86	0.110	260	250	620	995.1 2189.2
239/530	530 20.8661	710 27.9528	136 5.3543	3270 735000	6880 1550000	YMB	4 0.2	575 22.6	672 26.4	0.16	4.11	6.12	4.02	0.107	560	480	1000	150.4 330.9
230/530	530 20.8661	780 30.7087	185 7.2835	5150 1160000	9720 2190000	YMB	5 0.2	588 23.2	725 28.6	0.21	3.14	4.68	3.07	0.108	530	460	910	302.6 665.7
240/530	530 20.8661	780 30.7087	250 9.8425	6770 1520000	13700 3080000	YMB	5 0.2	583 23.0	725 28.5	0.28	2.37	3.53	2.32	0.108	350	320	750	408.0 897.6
231/530	530 20.8661	870 34.2520	272 10.7087	8530 1920000	15100 3400000	YMB	6 0.2	603 23.7	793 31.2	0.30	2.27	3.38	2.22	0.111	340	310	740	650.6 1431.3
241/530	530 20.8661	870 34.2520	335 13.1890	10300 2300000	19100 4290000	YMD	6 0.2	596 23.5	794 31.3	0.36	1.90	2.83	1.86	0.111	190	180	360	791.0 1740.0
232/530	530 20.8661	980 38.5827	355 13.9764	12400 2780000	20200 4550000	YMB	7 0.3	621 24.4	878 34.6	0.35	1.91	2.85	1.87	0.115	240	230	550	1164.0 2560.8

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

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**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases	Oil		Grease	Limiting Speed <sup>(5)</sup>		
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y						F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.							RPM	RPM	
239/560	<b>560</b> 22.0472	<b>750</b> 29.5276	<b>140</b> 5.5118	<b>3500</b> 787000	<b>7290</b> 1640000	YMB	<b>4</b> 0.2	<b>607</b> 23.9	<b>710</b> 28.0	0.16	4.21	6.27	4.12	0.110	530	450	890	<b>172.4</b> 379.3
230/560	<b>560</b> 22.0472	<b>820</b> 32.2835	<b>195</b> 7.6772	<b>5690</b> 1280000	<b>10800</b> 2430000	YMB	<b>5</b> 0.2	<b>619</b> 24.4	<b>764</b> 30.1	0.22	3.14	4.67	3.07	0.112	490	430	850	<b>349.1</b> 768.0
240/560	<b>560</b> 22.0472	<b>820</b> 32.2835	<b>258</b> 10.1575	<b>7140</b> 1600000	<b>14800</b> 3330000	YMB	<b>5</b> 0.2	<b>617</b> 24.3	<b>761</b> 30.0	0.28	2.42	3.60	2.37	0.112	330	300	670	<b>463.9</b> 1020.6
231/560	<b>560</b> 22.0472	<b>920</b> 36.2205	<b>280</b> 11.0236	<b>9240</b> 2080000	<b>16400</b> 3680000	YMB	<b>6</b> 0.2	<b>638</b> 25.1	<b>838</b> 33.0	0.29	2.33	3.47	2.28	0.115	310	290	690	<b>751.0</b> 1652.2
241/560	<b>560</b> 22.0472	<b>920</b> 36.2205	<b>355</b> 13.9764	<b>11700</b> 2630000	<b>21800</b> 4900000	YMB	<b>6</b> 0.2	<b>630</b> 24.8	<b>839</b> 33.0	0.36	1.87	2.78	1.83	0.115	170	160	340	<b>941.7</b> 2071.7
241/560	<b>560</b> 22.0472	<b>920</b> 36.2205	<b>355</b> 13.9764	<b>11700</b> 2630000	<b>21800</b> 4900000	YMD	<b>6</b> 0.2	<b>630</b> 24.8	<b>839</b> 33.0	0.36	1.87	2.78	1.83	0.115	170	160	370	<b>941.7</b> 2071.7
232/560	<b>560</b> 22.0472	<b>1030</b> 40.5512	<b>365</b> 14.3701	<b>13200</b> 2960000	<b>22300</b> 5020000	YMB	<b>7</b> 0.3	<b>661</b> 26.0	<b>918</b> 36.1	0.35	1.96	2.91	1.91	0.119	220	210	550	<b>1333.0</b> 2932.6
238/600	<b>600</b> 23.6220	<b>730</b> 28.7402	<b>98</b> 3.8583	<b>2100</b> 473000	<b>5080</b> 1140000	YMB	<b>2.5</b> 0.1	<b>634</b> 25.0	<b>705</b> 27.8	0.11	6.10	9.09	5.97	0.113	260	230	900	<b>81.0</b> 178.2
239/600	<b>600</b> 23.6220	<b>800</b> 31.4960	<b>150</b> 5.9055	<b>3970</b> 892000	<b>8600</b> 1930000	YMB	<b>4</b> 0.2	<b>650</b> 25.6	<b>757</b> 29.8	0.16	4.20	6.25	4.11	0.115	480	410	870	<b>209.6</b> 461.1
230/600	<b>600</b> 23.6220	<b>870</b> 34.2520	<b>200</b> 7.8740	<b>6040</b> 1360000	<b>11700</b> 2630000	YMB	<b>5</b> 0.2	<b>664</b> 26.1	<b>811</b> 31.9	0.21	3.27	4.87	3.20	0.117	450	400	770	<b>395.0</b> 869.0
230/600	<b>600</b> 23.6220	<b>870</b> 34.2520	<b>200</b> 7.8740	<b>6040</b> 1360000	<b>11700</b> 2630000	YMD	<b>5</b> 0.2	<b>664</b> 26.1	<b>811</b> 31.9	0.21	3.27	4.87	3.20	0.117	450	400	780	<b>394.0</b> 867.0
240/600	<b>600</b> 23.6220	<b>870</b> 34.2520	<b>272</b> 10.7087	<b>8040</b> 1810000	<b>16800</b> 3780000	YMB	<b>5</b> 0.2	<b>658</b> 25.9	<b>811</b> 31.9	0.28	2.44	3.64	2.39	0.117	290	270	660	<b>538.9</b> 1185.6
240/600	<b>600</b> 23.6220	<b>870</b> 34.2520	<b>272</b> 10.7087	<b>8040</b> 1810000	<b>16800</b> 3780000	YMD	<b>5</b> 0.2	<b>658</b> 25.9	<b>811</b> 31.9	0.28	2.44	3.64	2.39	0.117	290	270	670	<b>538.9</b> 1185.6
231/600	<b>600</b> 23.6220	<b>980</b> 38.5827	<b>300</b> 11.8110	<b>10500</b> 2360000	<b>18800</b> 4230000	YMB	<b>6</b> 0.2	<b>681</b> 26.8	<b>895</b> 35.2	0.29	2.32	3.46	2.27	0.120	280	260	620	<b>905.0</b> 1991.0
241/600	<b>600</b> 23.6220	<b>980</b> 38.5827	<b>375</b> 14.7638	<b>12800</b> 2890000	<b>23800</b> 5360000	YMB	<b>6</b> 0.2	<b>673</b> 26.5	<b>896</b> 35.3	0.35	1.95	2.90	1.90	0.119	160	150	290	<b>1088.9</b> 2395.4
241/600	<b>600</b> 23.6220	<b>980</b> 38.5827	<b>375</b> 14.7638	<b>12800</b> 2890000	<b>23800</b> 5360000	YMD	<b>6</b> 0.2	<b>673</b> 26.5	<b>896</b> 35.3	0.35	1.95	2.90	1.90	0.119	160	150	310	<b>1087.9</b> 2393.6
232/600	<b>600</b> 23.6220	<b>1090</b> 42.9134	<b>388</b> 15.2756	<b>15000</b> 3370000	<b>25700</b> 5770000	YMD	<b>7</b> 0.3	<b>702</b> 27.6	<b>975.6</b> 38.4	0.35	1.94	2.89	1.90	0.124	190	180	530	<b>1565.1</b> 3443.2
239/630	<b>630</b> 24.8031	<b>850</b> 33.4646	<b>165</b> 6.4961	<b>4740</b> 1070000	<b>10100</b> 2260000	YMB	<b>5</b> 0.2	<b>684</b> 26.9	<b>804</b> 31.6	0.17	4.02	5.99	3.93	0.119	440	380	790	<b>267.6</b> 588.7

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

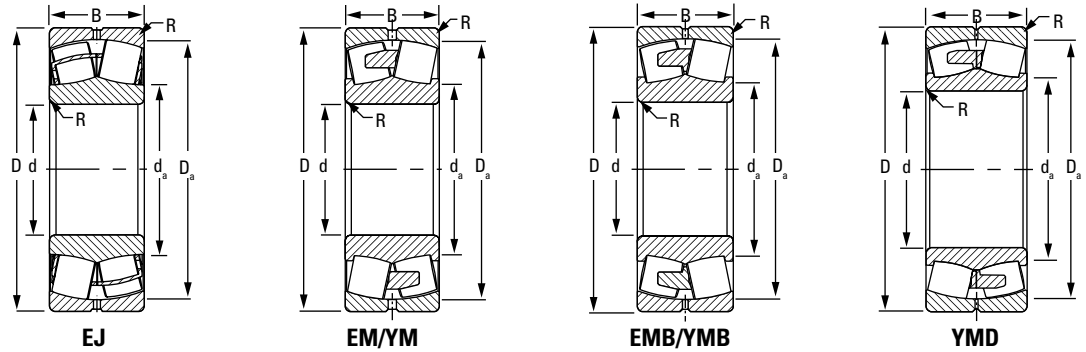
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight kg lbs.
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Oil		Grease	Limiting Speed <sup>(5)</sup>		
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y						F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y	
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.									
230/630	630 24.8031	920 36.2205	212 8.3465	6940 1560000	13400 3010000	YMB	6 0.2	697 27.4	858 33.8	0.21	3.18	4.74	3.11	0.120	420	370	710	477.2 1049.8
240/630	630 24.8031	920 36.2205	290 11.4173	9010 2030000	18700 4200000	YMB	6 0.2	691 27.2	857 33.7	0.28	2.41	3.59	2.36	0.120	270	250	600	647.8 1425.2
240/630	630 24.8031	920 36.2205	290 11.4173	9010 2030000	18700 4200000	YMD	6 0.2	691 27.2	857 33.7	0.28	2.41	3.59	2.36	0.120	270	250	600	647.1 1423.6
231/630	630 24.8031	1030 40.5512	315 12.4016	11700 2630000	21200 4760000	YMD	6 0.2	715 28.2	940 37.0	0.29	2.30	3.42	2.25	0.124	260	240	600	1056.3 2323.9
241/630	630 24.8031	1030 40.5512	400 15.7480	14300 3220000	27200 6120000	YMD	6 0.2	707 27.8	940 37.0	0.36	1.88	2.81	1.84	0.124	140	140	320	1294.5 2845.0
238/670	670 26.3780	820 32.2835	112 4.4094	2800 630000	6870 1550000	YMB	3 0.1	709 27.9	790 31.1	0.11	5.96	8.88	5.83	0.121	210	190	710	125.5 276.1
239/670	670 26.3780	900 35.4331	170 6.6929	5100 1150000	11000 2480000	YMB	5 0.2	727 28.6	851 33.5	0.16	4.15	6.18	4.06	0.124	410	350	740	306.7 674.7
230/670	670 26.3780	980 38.5827	230 9.0551	7890 1770000	15800 3540000	YMB	6 0.2	744 29.3	911 35.9	0.22	3.12	4.65	3.05	0.126	380	330	690	596.0 1311.2
240/670	670 26.3780	980 38.5827	308 12.1260	10200 2300000	21800 4910000	YMB	6 0.2	738 29.1	910 35.8	0.28	2.39	3.55	2.33	0.126	240	230	540	794.5 1747.9
231/670	670 26.3780	1090 42.9134	336 13.2283	12800 2880000	23400 5270000	YMB	6 0.2	760 30.0	995 39.2	0.29	2.31	3.44	2.26	0.128	240	220	530	1247.0 2743.3
241/670	670 26.3780	1090 42.9134	412 16.2205	15700 3520000	30000 6750000	YMD	6 0.2	751 29.6	996 39.2	0.36	1.90	2.82	1.85	0.128	130	130	280	1513.4 3329.5
232/670	670 26.3780	1220 48.0315	438 17.2441	18800 4220000	31800 7140000	YMD	9 0.4	779 30.7	1097 43.2	0.35	1.95	2.91	1.91	0.126	160	160	440	2181.4 4799.1
239/710	710 27.9528	950 37.4016	180 7.0866	5570 1250000	12400 2780000	YMB	5 0.2	771 30.4	898 35.3	0.16	4.13	6.15	4.04	0.129	380	330	690	360.6 793.3
230/710	710 27.9528	1030 40.5512	236 9.2913	8370 1880000	16700 3750000	YMB	6 0.2	785 30.9	960 37.8	0.21	3.26	4.86	3.19	0.130	350	310	620	658.8 1449.4
240/710	710 27.9528	1030 40.5512	315 12.4016	10900 2440000	23100 5200000	YMD	6 0.2	779 30.7	960 37.8	0.27	2.49	3.71	2.44	0.130	230	210	530	865.2 1903.5
231/710	710 27.9528	1150 45.2756	345 13.5827	13800 3110000	26000 5850000	YMB	7 0.3	809 31.8	1048 41.3	0.28	2.38	3.54	2.32	0.133	220	200	500	1382.7 3042.0

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

Continued on next page.

**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

*Continued from previous page.*

Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>			Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight kg lbs.	
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases		Oil	Grease	Limiting Speed <sup>(5)</sup>		
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y							F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.							RPM		RPM
241/710	<b>710</b> 27.9528	<b>1150</b> 45.2756	<b>438</b> 17.2441	<b>17400</b> 3910000	<b>33800</b> 7590000	YMD	<b>7</b> 0.3	<b>795</b> 31.3	<b>1051</b> 41.4	0.36	1.89	2.81	1.84	0.133	120	110	260	<b>1754.7</b> 3860.5
232/710	<b>710</b> 27.9528	<b>1280</b> 50.3937	<b>450</b> 17.7165	<b>20200</b> 4550000	<b>35300</b> 7950000	YMD	<b>9</b> 0.4	<b>827</b> 32.6	<b>1149</b> 45.2	0.34	1.97	2.93	1.93	0.131	150	140	420	<b>2478.4</b> 5452.4
238/750	<b>750</b> 29.5276	<b>920</b> 36.2205	<b>128</b> 5.0394	<b>3430</b> 771000	<b>8460</b> 1900000	YMB	<b>4</b> 0.2	<b>795</b> 31.3	<b>886</b> 34.9	0.12	5.80	8.64	5.68	0.130	180	170	600	<b>182.7</b> 401.9
239/750	<b>750</b> 29.5276	<b>1000</b> 39.3701	<b>185</b> 7.2835	<b>6010</b> 1350000	<b>13400</b> 3000000	YMB	<b>5</b> 0.2	<b>813</b> 32.0	<b>946</b> 37.3	0.16	4.23	6.30	4.14	0.133	350	310	650	<b>405.7</b> 892.6
230/750	<b>750</b> 29.5276	<b>1090</b> 42.9134	<b>250</b> 9.8425	<b>9330</b> 2100000	<b>18700</b> 4210000	YMB	<b>6</b> 0.2	<b>830</b> 32.7	<b>1016</b> 40.0	0.21	3.26	4.85	3.18	0.135	330	290	600	<b>786.0</b> 1729.2
240/750	<b>750</b> 29.5276	<b>1090</b> 42.9134	<b>335</b> 13.1890	<b>12200</b> 2730000	<b>26100</b> 5870000	YMD	<b>6</b> 0.2	<b>824</b> 32.4	<b>1015</b> 40.0	0.27	2.48	3.69	2.42	0.135	210	190	490	<b>1049.2</b> 2308.2
241/750	<b>750</b> 29.5276	<b>1220</b> 48.0315	<b>475</b> 18.7008	<b>19800</b> 4450000	<b>38700</b> 8700000	YMD	<b>7</b> 0.3	<b>839</b> 33.0	<b>1114</b> 43.9	0.36	1.86	2.77	1.82	0.131	110	100	250	<b>2144.4</b> 4717.6
239/800	<b>800</b> 31.4961	<b>1060</b> 41.7323	<b>195</b> 7.6772	<b>6600</b> 1480000	<b>15000</b> 3380000	YMB	<b>5</b> 0.2	<b>866</b> 34.1	<b>1004</b> 39.5	0.16	4.27	6.36	4.17	0.138	320	280	600	<b>474.2</b> 1043.2
249/800	<b>800</b> 31.4961	<b>1060</b> 41.7323	<b>258</b> 10.1575	<b>8080</b> 1820000	<b>19800</b> 4450000	YMB	<b>5</b> 0.2	<b>863</b> 34.0	<b>999</b> 39.3	0.21	3.25	4.84	3.18	0.136	140	130	430	<b>612.7</b> 1347.9
230/800	<b>800</b> 31.4961	<b>1150</b> 45.2756	<b>258</b> 10.1575	<b>10200</b> 2300000	<b>21100</b> 4750000	YMB	<b>6</b> 0.2	<b>888</b> 35.0	<b>1075</b> 42.3	0.19	3.50	5.22	3.43	0.140	300	260	480	<b>860.7</b> 1893.5
230/800	<b>800</b> 31.4961	<b>1150</b> 45.2756	<b>258</b> 10.1575	<b>10200</b> 2300000	<b>21100</b> 4750000	YMD	<b>6</b> 0.2	<b>888</b> 35.0	<b>1075</b> 42.3	0.19	3.50	5.22	3.43	0.140	300	260	480	<b>887.2</b> 1951.8
240/800	<b>800</b> 31.4961	<b>1150</b> 45.2756	<b>345</b> 13.5827	<b>13000</b> 2920000	<b>28600</b> 6420000	YMD	<b>6</b> 0.2	<b>877</b> 34.5	<b>1072</b> 42.2	0.26	2.55	3.80	2.50	0.140	190	180	460	<b>1181.1</b> 2598.4
231/800	<b>800</b> 31.4961	<b>1280</b> 50.3937	<b>375</b> 14.7638	<b>16600</b> 3730000	<b>31400</b> 7060000	YMB	<b>7</b> 0.3	<b>905</b> 35.6	<b>1172</b> 46.1	0.28	2.45	3.65	2.40	0.136	180	170	430	<b>1887.0</b> 4151.4
241/800	<b>800</b> 31.4961	<b>1280</b> 50.3937	<b>475</b> 18.7008	<b>20000</b> 4490000	<b>39200</b> 8810000	YMD	<b>7</b> 0.3	<b>894</b> 35.2	<b>1173</b> 46.2	0.34	1.96	2.93	1.92	0.135	100	100	230	<b>2320.8</b> 5105.9
232/800	<b>800</b> 31.4961	<b>1420</b> 55.9056	<b>488</b> 19.2126	<b>23900</b> 5370000	<b>43600</b> 9800000	YMD	<b>11</b> 0.4	<b>935</b> 36.8	<b>1272</b> 50.1	0.33	2.04	3.03	1.99	0.140	130	120	400	<b>3310.0</b> 7282.0
238/850	<b>850</b> 33.4646	<b>1030</b> 40.5512	<b>136</b> 5.3543	<b>3920</b> 881000	<b>10400</b> 2330000	YMB	<b>4</b> 0.2	<b>900</b> 35.4	<b>993</b> 39.1	0.11	6.23	9.27	6.09	0.141	150	140	570	<b>235.7</b> 518.5
239/850	<b>850</b> 33.4646	<b>1120</b> 44.0945	<b>200</b> 7.8740	<b>7120</b> 1600000	<b>16200</b> 3650000	YMB	<b>5</b> 0.2	<b>918</b> 36.1	<b>1063</b> 41.9	0.15	4.40	6.56	4.31	0.144	300	260	580	<b>552.7</b> 1215.9
249/850	<b>850</b> 33.4646	<b>1120</b> 44.0945	<b>272</b> 10.7087	<b>8950</b> 2010000	<b>22000</b> 4950000	YMB	<b>5</b> 0.2	<b>913</b> 36.0	<b>1057</b> 41.6	0.21	3.24	4.82	3.16	0.141	120	120	440	<b>708.0</b> 1557.6

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

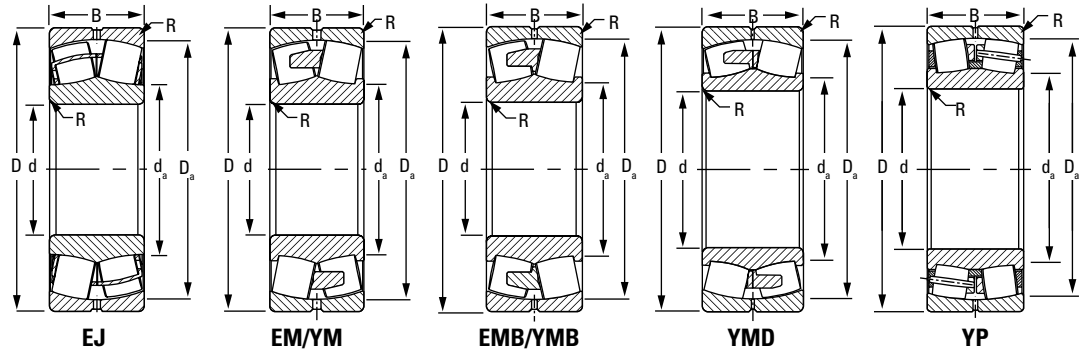
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight kg lbs.
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM		
230/850	850 33.4646	1220 48.0315	295 11.6142	11100 2500000	23000 5180000	YMB	6 0.2	938 36.9	1139 44.8	0.20	3.37 5.02	3.30	0.138	280	250	500	1048.0 2305.6	
240/850	850 33.4646	1220 48.0315	365 14.3701	14500 3260000	32200 7240000	YMD	6 0.2	931 36.7	1138 44.8	0.26	2.56 3.81	2.50	0.138	170	160	420	1401.9 3084.2	
231/850	850 33.4646	1360 53.5433	400 15.7480	18600 4190000	35700 8020000	YMB	9 0.4	962 37.9	1245 49.0	0.28	2.44 3.63	2.39	0.141	170	160	400	2219.0 4892.0	
232/850	850 33.4646	1500 59.0551	515 20.2756	25600 5750000	47100 10600000	YMD	11 0.4	990 39.0	1347 53.1	0.33	2.06 3.06	2.01	0.145	120	110	340	3950.8 8691.8	
239/900	900 35.4331	1180 46.4567	206 8.1102	7710 1730000	18100 4060000	YMB	5 0.2	965 38.0	1112 43.8	0.14	4.69 6.98	4.58	0.150	270	240	510	677.4 1490.3	
249/900	900 35.4331	1180 46.4567	280 11.0236	9480 2130000	23500 5290000	YMB	5 0.2	965 38.0	1113 43.8	0.20	3.33 4.96	3.25	0.146	120	110	400	811.6 1785.5	
230/900	900 35.4331	1280 50.3937	280 11.0236	12200 2740000	25500 5740000	YMB	6 0.2	989 39.0	1198 47.2	0.20	3.41 5.08	3.33	0.143	250	230	460	1130.2 2486.5	
240/900	900 35.4331	1280 50.3937	375 14.7638	15700 3530000	35200 7900000	YMD	6 0.2	983 38.7	1198 47.1	0.26	2.60 3.87	2.54	0.143	160	150	390	1557.0 3425.1	
231/900	900 35.4331	1420 55.9055	412 16.2205	19700 4420000	38900 8730000	YMB	9 0.4	1017 40.0	1301 51.2	0.27	2.49 3.71	2.43	0.146	150	150	380	2446.0 5393.0	
241/900	900 35.4331	1420 55.9055	515 20.2756	24100 5430000	50300 11300000	YMD	9 0.4	1007 39.7	1299 51.2	0.34	2.00 2.98	1.96	0.146	80	80	200	3054.3 6719.6	
232/900	900 35.4331	1580 62.2047	515 20.2756	27700 6230000	52300 11800000	YMD	11 0.4	1058 41.6	1417 55.8	0.31	2.16 3.22	2.12	0.152	100	100	320	4302.0 9464.4	
239/950	950 37.4016	1250 49.2126	224 8.8189	8690 1950000	20400 4580000	YMB	6 0.2	1026 40.4	1186 46.7	0.15	4.43 6.60	4.33	0.146	260	230	500	712.7 1567.9	
230/950	950 37.4016	1360 53.5433	300 11.8110	13600 3060000	28500 6410000	YMB	6 0.2	1047 41.2	1271 50.0	0.20	3.42 5.09	3.34	0.148	240	210	450	1428.6 3142.9	
230/950	950 37.4016	1360 53.5433	300 11.8110	13600 3060000	28500 6410000	YMD	6 0.2	1047 41.2	1271 50.0	0.20	3.42 5.09	3.34	0.148	240	210	450	1530.4 3366.8	
240/950	950 37.4016	1360 53.5433	412 16.2205	18100 4070000	40800 9180000	YMD	6 0.2	1039 40.9	1270 50.0	0.27	2.53 3.77	2.47	0.148	150	140	380	1921.0 4225.3	
231/950	950 37.4016	1500 59.0551	438 17.2441	22000 4950000	43900 9880000	YMB	9 0.4	1074 42.3	1373 54.1	0.27	2.47 3.68	2.42	0.151	140	130	350	2905.0 6404.0	

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

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**SPHERICAL ROLLER BEARINGS** – *continued*

- Shaft and housing fits, internal clearances, tolerances and other technical data for these bearings are found in the engineering section of this catalog and the Turnup Engineering Manual (order no. 10424).
- Bearings are available with a tapered bore for adapter-type mounting. To order, add the suffix “K” to bearing number (e.g., 23120K).
- Consult your Turnup sales engineer for up-to-date information about the availability of the bearings you have selected.

*Continued from previous page.*

Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>			Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight kg lbs.	
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> (Max.) R	Backing Diameter		Dynamic		Static In All Cases		Oil	Grease	Limiting Speed <sup>(5)</sup>		
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1							F <sub>a</sub> > e F <sub>r</sub> X = 0.67
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.									
241/950	<b>950</b> 37.4016	<b>1500</b> 59.0551	<b>545</b> 21.4567	<b>26800</b> 6030000	<b>56400</b> 12700000	YMD	<b>9</b> 0.4	<b>1064</b> 41.9	<b>1372</b> 54.0	0.34	2.00	2.97	1.95	0.151	80	70	180	<b>3615.0</b> 7969.0
238/1000	<b>1000</b> 39.3701	<b>1220</b> 48.0315	<b>165</b> 6.4961	<b>5270</b> 1190000	<b>14100</b> 3180000	YMB	<b>5</b> 0.2	<b>1049</b> 41.3	<b>1169</b> 46.0	0.12	5.83	8.67	5.70	0.148	120	110	440	<b>409.2</b> 900.3
239/1000	<b>1000</b> 39.3701	<b>1320</b> 51.9685	<b>236</b> 9.2913	<b>9770</b> 2200000	<b>22800</b> 5120000	YMB	<b>6</b> 0.2	<b>1080</b> 42.5	<b>1252</b> 49.3	0.15	4.39	6.54	4.29	0.152	240	210	480	<b>862.0</b> 1901.0
230/1000	<b>1000</b> 39.3701	<b>1420</b> 55.9055	<b>308</b> 12.1260	<b>14600</b> 3290000	<b>31700</b> 7120000	YMB	<b>6</b> 0.2	<b>1101</b> 43.4	<b>1327</b> 52.3	0.20	3.44	5.12	3.36	0.153	220	200	400	<b>1541.0</b> 3397.0
240/1000	<b>1000</b> 39.3701	<b>1420</b> 55.9055	<b>412</b> 16.2205	<b>18300</b> 4110000	<b>41300</b> 9270000	YMD	<b>6</b> 0.2	<b>1093</b> 43.1	<b>1330</b> 52.4	0.25	2.69	4.01	2.63	0.154	140	130	320	<b>2087.1</b> 4591.6
231/1000	<b>1000</b> 39.3701	<b>1580</b> 62.2047	<b>462</b> 18.1890	<b>24400</b> 5480000	<b>49000</b> 11000000	YMB	<b>9</b> 0.4	<b>1131</b> 44.5	<b>1446</b> 56.9	0.27	2.47	3.68	2.42	0.156	130	120	330	<b>3403.0</b> 7502.0
241/1000	<b>1000</b> 39.3701	<b>1580</b> 62.2047	<b>580</b> 22.8346	<b>29800</b> 6700000	<b>61400</b> 13800000	YMD	<b>9</b> 0.4	<b>1114</b> 43.9	<b>1451</b> 57.1	0.33	2.02	3.01	1.98	0.156	70	70	160	<b>4276.4</b> 9408.1
238/1060	<b>1060</b> 41.7323	<b>1280</b> 50.3937	<b>165</b> 6.4961	<b>5340</b> 1200000	<b>14600</b> 3290000	YMD	<b>5</b> 0.2	<b>1122</b> 44.2	<b>1233</b> 48.6	0.11	6.23	9.27	6.09	0.153	120	110	440	<b>432.6</b> 951.7
239/1060	<b>1060</b> 41.7323	<b>1400</b> 55.1181	<b>250</b> 9.8425	<b>10700</b> 2410000	<b>25800</b> 5810000	YMB	<b>6</b> 0.2	<b>1149</b> 45.3	<b>1324</b> 52.1	0.15	4.43	6.60	4.33	0.157	220	190	450	<b>1056.4</b> 2324.1
230/1060	<b>1060</b> 41.7323	<b>1500</b> 59.0551	<b>325</b> 12.7953	<b>16200</b> 3650000	<b>35300</b> 7930000	YMB	<b>7</b> 0.3	<b>1165</b> 45.9	<b>1404</b> 55.3	0.20	3.44	5.12	3.36	0.159	200	180	390	<b>1802.0</b> 3972.0
240/1060	<b>1060</b> 41.7323	<b>1500</b> 59.0551	<b>438</b> 17.2441	<b>20200</b> 4550000	<b>47300</b> 10600000	YMD	<b>7</b> 0.3	<b>1160</b> 45.7	<b>1401</b> 55.2	0.26	2.63	3.91	2.57	0.158	130	120	340	<b>2470.5</b> 5435.1
231/1060	<b>1060</b> 41.7323	<b>1660</b> 65.3543	<b>475</b> 18.7008	<b>26300</b> 5920000	<b>53000</b> 11900000	YMB	<b>11</b> 0.4	<b>1193</b> 47.0	<b>1525</b> 60.0	0.27	2.53	3.77	2.48	0.162	120	110	310	<b>3815.0</b> 8412.0
239/1120	<b>1120</b> 44.0945	<b>1460</b> 57.4803	<b>250</b> 9.8425	<b>11200</b> 2530000	<b>26700</b> 6010000	YMB	<b>6</b> 0.2	<b>1204</b> 47.42	<b>1390</b> 54.7	0.15	4.62	6.87	4.51	0.162	190	170	370	<b>1079.0</b> 2373.8
230/1120	<b>1120</b> 44.0945	<b>1580</b> 62.2047	<b>345</b> 13.5827	<b>16700</b> 3750000	<b>36700</b> 8260000	YMD	<b>9</b> 0.4	<b>1237</b> 48.7	<b>1480</b> 58.3	0.20	3.41	5.08	3.33	0.164	190	170	380	<b>2109.0</b> 4649.0
240/1120	<b>1120</b> 44.0945	<b>1580</b> 62.2047	<b>462</b> 18.1890	<b>22100</b> 4970000	<b>52100</b> 11700000	YMB	<b>7</b> 0.3	<b>1224</b> 48.2	<b>1476</b> 58.1	0.26	2.62	3.90	2.56	0.164	120	110	290	<b>2824.0</b> 6226.0
231/1120	<b>1120</b> 44.0945	<b>1750</b> 68.8976	<b>475</b> 18.7008	<b>27700</b> 6230000	<b>55500</b> 12500000	YMB	<b>11</b> 0.4	<b>1261</b> 49.7	<b>1609</b> 63.4	0.25	2.67	3.98	2.62	0.167	110	110	290	<b>4227.0</b> 9319.0
238/1180	<b>1180</b> 46.4567	<b>1420</b> 55.9055	<b>180</b> 7.0866	<b>6330</b> 1420000	<b>17600</b> 3960000	YMB	<b>5</b> 0.2	<b>1243</b> 48.9	<b>1365</b> 53.7	0.11	6.36	9.46	6.21	0.145	100	90	370	<b>545.8</b> 1200.9
239/1180	<b>1180</b> 46.4567	<b>1540</b> 60.6300	<b>288</b> 11.3386	<b>12700</b> 2860000	<b>31000</b> 6970000	YMB	<b>6</b> 0.2	<b>1271</b> 50.0	<b>1464</b> 57.6	0.15	4.51	6.71	4.41	0.168	190	170	410	<b>1331.5</b> 2929.4

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

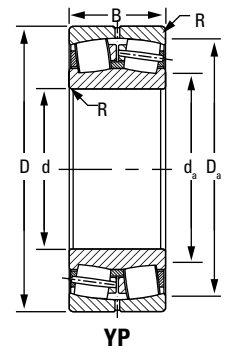
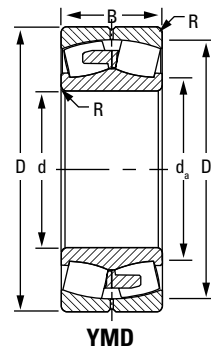
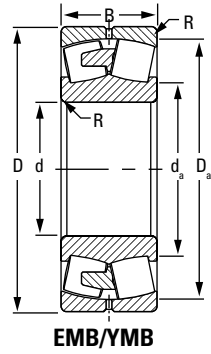
<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a31 is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

*Continued on next page.*



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Bearing Part Number	Bearing Dimensions			Load Ratings		Cage Type	Mounting Data			Equivalent Radial Load Factors <sup>(2)</sup>				Geometry Factor <sup>(3)</sup> C <sub>g</sub>	Speed Reference			Weight kg lbs.
	Bore d	O.D. D	Width B	Dynamic C	Static C <sub>0</sub>		Fillet <sup>(1)</sup> R	Backing Diameter		Dynamic		Static In All Cases Y <sub>0</sub>	Thermal Reference Speed <sup>(4)</sup>		Limiting Speed <sup>(5)</sup>			
								Shaft d <sub>a</sub>	Housing D <sub>a</sub>	e	F <sub>a</sub> ≤ e F <sub>r</sub> X = 1 Y					F <sub>a</sub> > e F <sub>r</sub> X = 0.67 Y		
	mm in.	mm in.	mm in.	kN lbf.	kN lbf.		mm in.	mm in.	mm in.				RPM		RPM	RPM		
230/1180	1180 46.4567	1660 65.3543	355 13.9764	19200 4320000	43200 9700000	YMD	7 0.3	1293 50.9	1558 61.34	0.19	3.50	5.21	3.42	0.170	170	160	340	2447.9 5385.4
240/1180	1180 46.4567	1660 65.3543	475 18.7008	23700 5320000	56000 12600000	YMD	7 0.3	1289 50.7	1553 61.1	0.25	2.69	4.00	2.63	0.169	110	100	290	3228.3 7102.3
231/1180	1180 46.4567	1850 72.8346	500 19.6850	30600 6890000	61700 13900000	YMB	11 0.4	1332 52.4	1699 66.9	0.25	2.68	4.00	2.62	0.173	100	100	270	4996.0 11014.0
230/1250	1250 49.2126	1750 68.8976	375 14.7638	20700 4660000	46300 10400000	YMB	7 0.3	1370 54.0	1642 64.6	0.19	3.56	5.30	3.48	0.175	160	150	310	2769.0 6091.8
240/1250	1250 49.2126	1750 68.8976	500 19.6850	27200 6120000	65800 14800000	YMB	7 0.3	1362 53.6	1640 64.6	0.25	2.68	3.99	2.62	0.176	100	90	250	3691.0 8120.2
231/1250	1250 49.2126	1950 76.7717	530 20.8661	34100 7660000	69300 15600000	YMB	11 0.4	1406 55.4	1795 70.7	0.25	2.67	3.98	2.62	0.179	90	90	250	5843.0 12854.6
249/1500	1500 59.0551	1950 76.7717	450 17.7165	22700 5110000	61500 13800000	YMD	7 0.3	1611 63.4	1845 72.6	0.20	3.43	5.10	3.35	0.191	50	50	190	3407.0 7495.4

<sup>(1)</sup>Maximum shaft or housing fillet radius that bearing corners will clear.

<sup>(2)</sup>These factors apply for both inch and metric calculations. See engineering section for instructions on use.

<sup>(3)</sup>Geometry constant for Lubrication Life Factor a<sub>31</sub> is found in the Bearing Ratings section of the Engineering Manual (order no. 10424).

<sup>(4)</sup>See thermal reference speed in the Engineering Manual (order no. 10424) and on page 61.

<sup>(5)</sup>See limiting speed on page 61.

## ***SPHERICAL ROLLER BEARING METRIC AND INCH ACCESSORIES***

Spherical roller bearing accessories are manufactured to the same quality standards as our bearings, ensuring a secure fit to straight and stepped shafts.

- **Sizes:** Accessories are available for metric and inch shaft sizes from 20 mm (0.78 inch) to 1000 mm (40 inch).
- **Features:** Extensive product range, including hydraulic assist, for integration into a full range of industrial applications.
- **Benefits:** Supports full range of installation and removal needs, minimizing the chance for damage to the bearing.



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### NOMENCLATURE

Turnup provides accessories for your every need. To complement our line of Turnup spherical roller bearings, we offer bearing sleeves and locking devices in a wide range of sizes. These accessories are manufactured to the same quality standards as our bearings, ensuring a secure fit to straight and stepped shafts. Available in sizes up to 1000 mm (39.3701 inch), bearing sleeves are available in two distinct designs: assembled adapter sleeves and adapter sleeve assemblies.

### ADAPTER SLEEVES

Turnup adapter sleeves are used in conjunction with a nut and locking device to mount a tapered bore bearing onto a straight shaft using a pull-type fit. Smaller size assemblies (20 mm [0.78 inch] -200 mm [12 inch] shaft) commonly use simple nuts, whereas larger assemblies (sizes >200 mm [12 inch]) may use HMV hydraulic nuts to assist in mounting. Tables 32, 33 and 34 outline our part number nomenclature, which is consistent with world standards for adapter sleeves.

**TABLE 34. METRIC ADAPTER SLEEVES (H, OH) FOR METRIC SHAFT SIZES ARE SUPPLIED WITH CORRESPONDING LOCKNUT AND LOCKING DEVICE**

Sleeve	Locknut	Locking Device
H standard metric/ OH hydraulic assist	KM, KML, HM	MB, MBL, MS

**TABLE 35. METRIC ADAPTER SLEEVES (HA, HE) FOR INCH SHAFT SIZES ARE SUPPLIED WITH CORRESPONDING LOCKNUT AND LOCKING DEVICE**

Sleeve	Locknut	Locking Device
HE standard inch (English Standard) HA standard inch (American standard)	KM, KML	MB, MBL

**TABLE 36. INCH ADAPTER SLEEVES (SNW, SNP) FOR INCH SHAFT SIZES ARE SUPPLIED WITH CORRESPONDING LOCKNUT AND LOCKING DEVICE**

Assembly	Sleeve	Locknut	Locking Device
SNW	S	N, AN	W
SNP	S	N	P

SNW assembly consists of a sleeve, locknut and lockwasher.  
SNP assembly consists of a sleeve, locknut and lockplate.

### WITHDRAWAL SLEEVES

Withdrawal sleeves feature a push-type mounting arrangement and a locking device (i.e., locknut or lockplate) to secure a bearing to a shaft. This design is not as widely used as the adapter sleeve assembly, and it does require the use of a specially

designed dismantling nut. Turnup’s part number nomenclature for withdrawal sleeves also conforms to industry-accepted standards. Nuts are not supplied with the withdrawal sleeve and must be ordered separately. The dismantling of large assemblies can be eased by using a hydraulic nut (HMV).

**TABLE 37. METRIC WITHDRAWAL SLEEVE FOR METRIC SHAFT SIZES**

Sleeve	Dismounting Nut	Hydraulic Nut
AH standard metric/AOH hydraulic assist	KM, HM	HMV

**TABLE 38. INCH WITHDRAWAL SLEEVE FOR INCH SHAFT SIZES**

Sleeve	Locknut	Lockwasher/Plate	Dismounting Nut
SK	N, AN	W, P	AN, ARN, RN, N

### LOCKING DEVICE

Turnup offers a wide range of locknuts to locate bearing assemblies on application shafts. Sometimes referred to as shaft or withdrawal nuts, they are used to secure the assembly onto, and sometimes aid with the removal from the shaft.

### LOCKWASHERS (MB, MBL AND W)

Locking washers are designed to secure the relative movement of a properly positioned locknut, so that a bearing and adapter sleeve remain tightly fitted to a shaft or a bearing remains secure against a shaft shoulder. The tab in the bore of the washer engages a keyway in the shaft or slot in the adapter sleeve. There are tabs on the O.D. of the washer that can be bent over into slots on the circumference of the locknut. Locking washers are used with locknuts in the KM and KML series as well as for the locknuts with inch dimensions in the N and AN series.

### LOCKPLATES (MS AND P)

Lockplates are bolted onto the outboard face of the locknut and fit into a keyway machined in the shaft or a slot in the adapter sleeve.

- MS series are mounted on metric shafts sizes with HM locknuts.
- P series are mounted on metric shafts sizes with N locknuts.

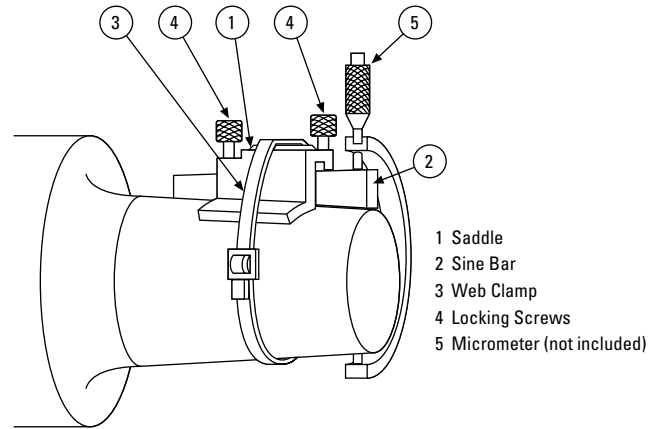
To learn more about our spherical roller bearing accessories, contact your Turnup sales engineer. Standard suffixes and prefixes are found on page 167.

## ***ACCESSORIES PREFIXES AND SUFFIXES***

Prefix	Suffix	Part Description	Full Description
AH		Withdrawal sleeve	Withdrawal sleeve
AHX		Withdrawal sleeve	Withdrawal sleeve – modified
AOH		Withdrawal sleeve – hydraulic	Withdrawal sleeve with oil hole on nut end
AOHX		Withdrawal sleeve – hydraulic	Withdrawal sleeve – modified with oil hole on nut end
H		Adapter sleeve – metric	Adapter sleeve
OH		Adapter sleeve – hydraulic	Adapter sleeve with oil hole on large end (opposite to the threaded end)
HA		Adapter sleeve metric – inch shaft	Metric adapter sleeves for shafts with inch dimensions (American standards)
HE		Adapter sleeve metric – inch shaft	Metric adapter sleeves for shafts with inch dimensions (English standards)
SNW		Adapter sleeve – inch	Adapter sleeves, locknut and lockwasher with inch dimensions
SNP		Adapter sleeve – inch	Adapter sleeves, locknut and lockplate with inch dimensions
KM		Locknut	Locknut
KML		Locknut	Locknut – light; smaller outside diameter
HM		Locknut	Locknut/removal nut
HML		Locknut	Locknut/removal nut – light
HME		Locknut	Locknut/removal nut – with locking screw
HM...T		Locknut	Locknut/removal nut
HML...T		Locknut	Locknut/removal nut – light
HMLL...T		Locknut	Locknut/removal nut – super light
MB		Lockwasher	Lockwasher
MBL		Lockwasher	Lockwasher – light
MS		Lock clip	Locking clip
	G	Sleeve	Thread pitch diameter changed to ISO standard
	H	Locknut	Additional threaded holes on locknut for locking screws (no screws)
	HS	Locknut	Additional threaded holes on locknut for locking screws and screws
OH..	H	Adapter sleeve – hydraulic	Adapter sleeve with oil hole on nut end – standard design
OH..	HB	Adapter sleeve – hydraulic	Adapter sleeve with grooves and oil hole or two holes for bigger sizes on nut end
OH..	B	Adapter sleeve – hydraulic	Adapter sleeve with grooves and oil hole or two holes for bigger sizes on large end (opposite to the threaded end)
OH..	S	Adapter sleeve – hydraulic	Adapter sleeve with oil hole on large end (opposite to the threaded end) plus nut with eight threaded holes
OH..	BS	Adapter sleeve – hydraulic	Adapter sleeve with grooves and oil hole or two holes for bigger sizes on large end (opposite to the threaded end) plus nut with eight threaded holes

### INCH SINE BAR GAGES

- Tapered-bore, antifriction bearings are mounted either on adapter sleeves or on tapered shaft seats.
- In cases where tapered bore bearings are mounted directly on the shaft, the shaft must conform to the tapered bore of the bearing to ensure a proper fit. If a proper fit is not achieved, the results could be:
  - Turning of the bearing inner race on the shaft.
  - Uneven loading of the bearing.
  - Severe inner race hoop stress.
  - Insufficient support (back-up) of the inner race on the shaft.
- All of these conditions could lead to premature bearing wear. Therefore, the manufacture, maintenance and measurement of accurate shaft tapers is important.
- There are two accepted ways of measuring tapered shafts: ring gages and sine bar gages.
- Precision measurement of tapered shafts is difficult with ring gages and may be impossible in the case of large shafts where gages are large, cumbersome and heavy.
- Sine bar gages provide an accurate and easy method of measurement.
- Lightweight, and easy to handle and use, sine bar gages achieve precise gaging of the shaft size and taper.
- A complete set for measurement of 1:12 shaft tapers consists of 3 inch, 4 inch, 5½ inch, 7 inch, 10 inch and 14



**Fig. 50. Parts of a sine gage.**

inch sine bar gages, sine bar saddle no. T-5491-C, web clamp no. T-5489-A and a wooden box no. T-5224-C. A complete set for 1:30 shaft tapers consists of 4 inch, 6 inch, 8 inch and 12 inch sine bar gages.

- Sine bars can be purchased individually or in any combination of sizes to meet your individual needs.
- All sine bars require a sine bar saddle and web clamp. A wooden box is optional.
- For information on the use of sine bars, prices and delivery, consult your Turnup sales engineer.

**TABLE 39.**

Part Number	Size in.	For Bearings
T-3071-C	3.0000	22232K to 22240K
	3.0000	22322K to 22328K
	3.0000	23040K to 23048K
	3.0000	23130K to 23136K
	3.0000	23226K to 23230K
T-3072-C	4.0000	23960K to 23972K
	4.0000	22248K to 22256K
	4.0000	22330K to 22340K
	4.0000	23052K to 23076K
	4.0000	23138K to 23148K
T-3073-C	5.5000	23232K to 23240K
	5.5000	23976K to 239/560K
	5.5000	22260K to 22264K
	5.5000	23080K to 230/500K
	5.5000	23152K to 23164K
	5.5000	23244K to 23256K
	5.5000	239/600K to 239/710K

Note: All sine bars require a sine bar saddle, T-5491-C, and a web clamp, T-5489-A.

**TABLE 40.**

Part Number	Size in.	For Bearings
T-3074-C	7.0000	230/530K to 230/750K
	7.0000	23168K to 23196K
	7.0000	23260K to 23276K
	7.0000	239/750K to 239/1120K
T-3075-C	10.0000	230/800K to 230/1180
	10.0000	231/500K to 231/710K
	10.0000	23280K to 232/530K
T-3076-C	14.0000	230/1250 and up
	14.0000	231/750K and up
	14.0000	232/560K and up
T-5476-C	4.0000	239/118K and up
	4.0000	24040K to 24056K
T-5477-C	6.0000	24132K to 24144K
	6.0000	24060K to 24084K
T-5478-C	8.0000	24148K to 24160K
	8.0000	24089K to 240/630K
T-5479-C	12.0000	24164K to 24192K
	12.0000	240/670K and up
	12.0000	24196K and up

The table above represents the sine bar sizes developed for a full range of tapered bore bearings with a 1:12 and a 1:30 taper. Additional sizes are available to fit a variety of width-and-taper combinations. Consult your local Turnup sales engineer for availability.

**METRIC ACCESSORIES INDEX**

Bearing Bore mm	Bearing Part Number	Adapter Sleeve		Withdrawal Sleeve	
		Metric Shaft	Hydraulic Metric Shaft	Metric Shaft	Hydraulic Metric Shaft
25	22205K	H305			
30	22206K	H306			
35	22207K	H307			
40	21308K	H308		AH308	
40	22208K	H308		AH308	
40	22308K	H2308		AH2308	
45	21309K	H309		AH309	
45	22209K	H309		AH309	
45	22309K	H2309		AH2309	
50	21310K	H310		AHX310	
50	22210K	H310		AHX310	
50	22310K	H2310		AHX2310	
55	21311K	H311		AHX311	
55	22211K	H311		AHX311	
55	22311K	H2311		AHX2311	
60	21312K	H312		AHX312	
60	22212K	H312		AHX312	
60	22312K	H2312		AHX2312	
65	21313K	H313		AH313G	
65	22213K	H313		AH313G	
65	22313K	H2313		AH2313G	
70	21314K	H314		AH314G	
70	22214K	H314		AH314G	
70	22314K	H2314		AHX2314G	
75	21315K	H315		AH315G	
75	22215K	H315		AH315G	
75	22315K	H2315		AHX2315G	
80	21316K	H316		AH316	
80	22216K	H316		AH316	
80	22316K	H2316		AHX2316	
85	21317K	H317		AHX317	
85	22217K	H317		AHX317	
85	22317K	H2317		AHX2317	
90	21318K	H318		AHX318	
90	22218K	H318		AHX318	
90	22318K	H2318		AHX2318	
90	23218K	H2318		AHX3218	
95	22219K	H319		AHX319	
95	22319K	H2319		AHX2319	
100	22220K	H320		AHX320	
100	22320K	H2320		AHX2320	
100	23120K	H3120		AHX3120	
100	23220K	H2320		AHX3220	
105	23221K	H2321			
110	22222K	H322		AHX3122	
110	22322K	H2322		AHX2322G	
110	23022K	H322		AHX322	
110	23122K	H3122		AHX3122	
110	23222K	H2322		AHX3222G	
110	24122K			AH24122	

Continued on next page.



**METRIC ACCESSORIES INDEX** – continued

Bearing Bore <b>mm</b>	Bearing Part Number	Adapter Sleeve		Withdrawal Sleeve	
		Metric Shaft	Hydraulic Metric Shaft	Metric Shaft	Hydraulic Metric Shaft
120	22224K	H3124		AHX3124	
120	22324K	H2324		AHX2324G	
120	23024K	H3024		AHX3024	
120	23124K	H3124		AHX3124	
120	23224K	H2324		AHX3224G	
120	24024K			AH24024	
120	24124K			AH24124	
130	22226K	H3126		AHX3126	
130	22326K	H2326		AHX2326G	
130	23026K	H3026		AHX3026	
130	23126K	H3126		AHX3126	
130	23226K	H2326		AHX3226G	
130	23926K	H3926			
130	24026K			AH24026	
130	24126K			AH24126	
140	22228K	H3128		AHX3128	
140	22328K	H2328		AHX2328G	
140	23028K	H3028		AHX3028	
140	23128K	H3128		AHX3128	
140	23228K	H2328		AHX3228G	
140	23928K	H3928			
140	24028K			AH24028	
140	24128K			AH24128	
150	22230K	H3130		AHX3130G	
150	22330K	H2330		AHX2330G	
150	23030K	H3030		AHX3030	
150	23130K	H3130		AHX3130G	
150	23230K	H2330		AHX3230G	
150	23930K	H3930			
150	24030K			AH24030	
150	24130K			AH24130	
160	22232K	H3132	OH3132H	AH3132G	AOH3132G
160	22332K	H2332	OH2332H	AH2332G	AOH2332G
160	23032K	H3032	OH3032H	AH3032	
160	23132K	H3132	OH3132H	AH3132G	AOH3132G
160	23232K	H2332	OH2332H	AH3232G	AOH3232G
160	23932K	H3932	OH3932H		
160	24032K			AH24032	
160	24132K			AH24132	
170	22234K	H3134	OH3134H	AH3134G	AOH3134G
170	22334K	H2334	OH2334H	AH2334G	AOH2334G
170	23034K	H3034	OH3034H	AH3034	
170	23134K	H3134	OH3134H	AH3134G	AOH3134G
170	23234K	H2334	OH2334H	AH3234G	AOH3234G
170	23934K	H3934	OH3934H	AH3934	AOH3934
170	24034K			AH24034	
170	24134K			AH24134	
180	22236K	H3136	OH3136H	AH2236G	AOH2236G
180	22336K	H2336	OH2336H	AH2336G	AOH2336G
180	23036K	H3036	OH3036H	AH3036	AOH3036

Continued on next page.

Bearing Bore <b>mm</b>	Bearing Part Number	Adapter Sleeve		Withdrawal Sleeve	
		Metric Shaft	Hydraulic Metric Shaft	Metric Shaft	Hydraulic Metric Shaft
180	23136K	H3136	OH3136H	AH3136G	AOH3136G
180	23236K	H2336	OH2336H	AH3236G	AOH3236G
180	23936K	H3936	OH3936H	AH3936	AOH3936
180	24036K			AH24036	
180	24136K			AH24136	
190	22238K	H3138	OH3138H	AH2238G	AOH2238G
190	22338K	H2338	OH2338H	AH2338G	AOH2338G
190	23038K	H3038	OH3038H	AH3038G	AOH3038G
190	23138K	H3138	OH3138H	AH3138G	AOH3138G
190	23238K	H2338	OH2338H	AH3238G	AOH3238G
190	23938K	H3938	OH3938H	AH3938	AOH3938
190	24038K			AH24038	
190	24138K			AH24138	
200	22240K	H3140	OH3140H	AH2240	AOH2240
200	22340K	H2340	OH2340H	AH2340	AOH2340
200	23040K	H3040	OH3040H	AH3040G	AOH3040G
200	23140K	H3140	OH3140H	AH3140	AOH3140
200	23240K	H2340	OH2340H	AH3240	AOH3240
200	23940K	H3940	OH3940H	AH3940	AOH3940
200	24040K			AH24040	
200	24140K			AH24140	
220	22244K	H3144	OH3144H	AH2244	AOH2244
220	22344K	H2344	OH2344H	AH2344	AOH2344
220	23044K	H3044	OH3044H	AH3044G	AOH3044G
220	23144K	H3144	OH3144H	AH3144	AOH3144
220	23244K	H2344	OH2344H	AH2344	AOH2344
220	23944K	H3944	OH3944H	AH3944	AOH3944
220	24044K			AH24044	AOH24044
220	24144K			AH24144	AOH24144
240	22248K	H3148	OH3148H	AH2248	AOH2248
240	22348K	H2348	OH2348H	AH2348	AOH2348
240	23048K	H3048	OH3048H	AH3048	AOH3048
240	23148K	H3148	OH3148H	AH3148	AOH3148
240	23248K	H2348	OH2348H	AH2348	AOH2348
240	23948K	H3948	OH3948H	AH3948	AOH3948
240	24048K			AH24048	AOH24048
240	24148K			AH24148	AOH24148
260	22252K	H3152	OH3152H	AH2252G	AOH2252G
260	22352K	H2352	OH2352H	AH2352G	AOH2352G
260	23052K	H3052	OH3052H	AH3052	AOH3052
260	23152K	H3152	OH3152H	AH3152G	AOH3152G
260	23252K	H2352	OH2352H	AH2352G	AOH2352G
260	23952K	H3952	OH3952H	AH3952	AOH3952
260	24052K				AOH24052G
260	24152K			AH24152	AOH24152
280	22256K	H3156	OH3156H	AH2256G	AOH2256G
280	22356K	H2356	OH2356H	AH2356G	AOH2356G
280	23056K	H3056	OH3056H	AH3056	AOH3056
280	23156K	H3156	OH3156H	AH3156G	AOH3156G
280	23256K	H2356	OH2356H	AH2356G	AOH2356G

Continued on next page.

**METRIC ACCESSORIES INDEX** – *continued*

Bearing Bore <b>mm</b>	Bearing Part Number	Adapter Sleeve		Withdrawal Sleeve	
		Metric Shaft	Hydraulic Metric Shaft	Metric Shaft	Hydraulic Metric Shaft
280	23956K	H3956	OH3956H	AH3956	AOH3956
280	24056K				AOH24056G
280	24156K			AH24156	AOH24156
300	22260K	H3160	OH3160H	AH2260G	AOH2260G
300	23060K	H3060	OH3060H	AH3060	AOH3060
300	23160K	H3160	OH3160H	AH3160G	AOH3160G
300	23260K	H3260	OH3260H	AH3260G	AOH3260G
300	23960K	H3960	OH3960H	AH3960	AOH3960
300	24060K				AOH24060G
300	24160K			AH24160	AOH24160
320	22264K	H3164	OH3164H	AH2264G	AOH2264G
320	23064K	H3064	OH3064H	AH3064G	AOH3064G
320	23164K	H3164	OH3164H	AH3164G	AOH3164G
320	23264K	H3264	OH3264H	AH3264G	AOH3264G
320	23964K	H3964	OH3964H	AH3964	AOH3964
320	24064K				AOH24064G
320	24164K			AH24164	AOH24164
340	23068K	H3068	OH3068H	AH3068G	AOH3068G
340	23168K	H3168	OH3168H	AH3168G	AOH3168G
340	23268K	H3268	OH3268H	AH3268G	AOH3268G
340	23968K	H3968	OH3968H	AH3968	AOH3968
340	24068K			AH24068	AOH24068
340	24168K			AH24168	AOH24168
360	23072K	H3072	OH3072H	AH3072G	AOH3072G
360	23172K	H3172	OH3172H	AH3172G	AOH3172G
360	23272K	H3272	OH3272H	AH3272G	AOH3272G
360	23972K	H3972	OH3972H	AH3972	AOH3972
360	24072K			AH24072	AOH24072
360	24172K			AH24172	AOH24172
380	23076K	H3076	OH3076H	AH3076G	AOH3076G
380	23176K	H3176	OH3176H	AH3176G	AOH3176G
380	23276K	H3276	OH3276H	AH3276G	AOH3276G
380	23976K	H3976	OH3976H	AH3976	AOH3976
380	24076K			AH24076	AOH24076
380	24176K			AH24176	AOH24176
400	22380K	H3280	OH3280H	AH3280G	AOH3280G
400	23080K	H3080	OH3080H	AH3080G	AOH3080G
400	23180K	H3180	OH3180H	AH3180G	AOH3180G
400	23280K	H3280	OH3280H	AH3280G	AOH3280G
400	23980K	H3980	OH3980H	AH3980	AOH3980
400	24080K			AH24080	AOH24080
400	24180K			AH24180	AOH24180
420	23084K	H3084	OH3084H	AH3084G	AOH3084G
420	23184K	H3184	OH3184H	AH3184G	AOH3184G
420	23284K	H3284	OH3284H	AH3284G	AOH3284G
420	23984K	H3984	OH3984H	AH3984	AOH3984
420	24084K			AH24084	AOH24084
420	24184K			AH24184	AOH24184
440	23088K	H3088	OH3088H	AHX3088G	AOHX3088G
440	23188K	H3188	OH3188H	AHX3188G	AOHX3188G

*Continued on next page.*

Bearing Bore mm	Bearing Part Number	Adapter Sleeve		Withdrawal Sleeve	
		Metric Shaft	Hydraulic Metric Shaft	Metric Shaft	Hydraulic Metric Shaft
440	23288K	H3288	OH3288H	AHX3288G	AOHX3288G
440	23988K	H3988	OH3988H	AH3988	AOH3988
440	24088K			AH24088	AOH24088
440	24188K			AH24188	AOH24188
460	23092K		OH3092H	AHX3092G	AOHX3092G
460	23192K	H3192	OH3192H	AHX3192G	AOHX3192G
460	23292K	H3292	OH3292H	AHX3292G	AOHX3292G
460	23992K	H3992	OH3992H	AH3992	AOH3992
460	24092K			AH24092	AOH24092
460	24192K			AH24192	AOH24192
480	23096K		OH3096H		AOHX3096G
480	23196K		OH3196H		AOHX3196G
480	23296K	H3296	OH3296H	AHX3296G	AOHX3296G
480	23996K	H3996	OH3996H	AH3996	AOH3996
480	24096K			AH24096	AOH24096
480	24196K			AH24196	AOH24196
500	230/500K		OH30/500H		AOHX30/500G
500	231/500K		OH31/500H		AOHX31/500G
500	232/500K		OH32/500H		AOHX32/500G
500	239/500K		OH39/500H		AOH39/500
500	240/500K				AOH240/500
500	241/500K				AOH241/500
530	230/530K		OH30/530H		AOH30/530
530	231/530K		OH31/530H		AOH31/530
530	232/530K		OH32/530H		AOH32/530G
530	239/530K		OH39/530H		AOH39/530
530	240/530K				AOH240/530G
530	241/530K				AOH241/530G
560	230/560K		OH30/560H		AOH30/560
560	231/560K		OH31/560H		AOH31/560
560	232/560K		OH32/560H		AOH32/560
560	239/560K		OH39/560H		AOH39/560
560	240/560K				AOH240/560G
560	241/560K				AOH241/560G
600	230/600K		OH30/600H		AOH30/600
600	231/600K		OH31/600H		AOH31/600
600	232/600K		OH32/600H		AOH32/600G
600	239/600K		OH39/600H		AOH39/600
600	240/600K				AOH240/600
600	241/600K				AOH241/600
630	230/630K		OH30/630H		AOH30/630
630	231/630K		OH31/630H		AOH31/630
630	232/630K		OH32/630H		AOH32/630G
630	239/630K		OH39/630H		AOH39/630
630	240/630K				AOH240/630G
630	241/630K				AOH241/630G
670	230/670K		OH30/670H		AOH30/670
670	231/670K		OH31/670H		AOH31/670
670	232/670K		OH32/670H		AOH32/670G
670	239/670K		OH39/670H		AOH39/670

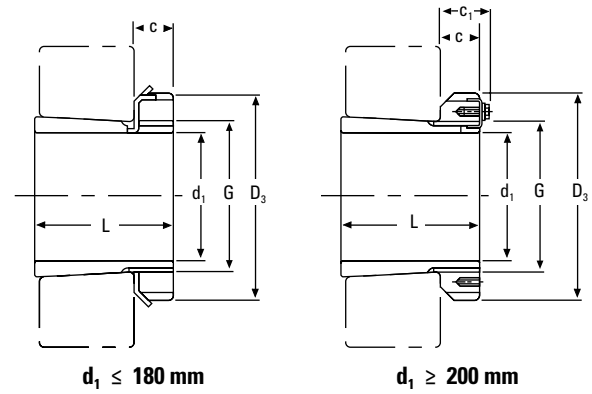
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**METRIC ACCESSORIES INDEX** – continued

Bearing Bore	Bearing Part Number	Adapter Sleeve		Withdrawal Sleeve	
		Metric Shaft	Hydraulic Metric Shaft	Metric Shaft	Hydraulic Metric Shaft
<b>mm</b>					
670	240/670K				AOH240/670G
670	241/670K				AOH241/670
710	230/710K		OH30/710H		AOH30/710
710	231/710K		OH31/710H		AOH31/710
710	232/710K		OH32/710H		AOH32/710G
710	239/710K		OH39/710H		AOH39/710
710	240/710K				AOH240/710G
710	241/710K				AOH241/710
750	230/750K		OH30/750H		AOH30/750
750	239/750K		OH39/750H		AOH39/750
750	240/750K				AOH240/750G
750	241/750K				AOH241/750G
800	230/800K		OH30/800H		AOH30/800
800	231/800K		OH31/800H		AOH31/800
800	232/800K		OH32/800H		AOH32/800G
800	239/800K		OH39/800H		AOH39/800
800	240/800K				AOH240/800G
800	241/800K				AOH241/800G
850	230/850K		OH30/850H		AOH30/850
850	231/850K		OH31/850H		AOH31/850
850	232/850K		OH32/850H		AOH32/850
850	239/850K		OH39/850H		AOH39/850
850	240/850K				AOH240/850G
900	230/900K		OH30/900H		AOH30/900
900	231/900K		OH31/900H		AOH31/900
900	232/900K		OH32/900H		AOH32/900
900	239/900K		OH39/900H		AOH39/900
900	240/900K				AOH240/900
900	241/900K				AOH241/900
950	230/950K		OH30/950H		AOH30/950
950	231/950K		OH31/950H		AOH31/950
950	232/950K		OH32/950H		AOH32/950
950	239/950K		OH39/950H		AOH39/950
950	240/950K				AOH240/950
950	241/950K				AOH241/950
1000	230/1000K		OH30/1000H		AOH30/1000
1000	231/1000K		OH31/1000H		AOH31/1000
1000	232/1000K		OH32/1000H		AOH32/1000
1000	239/1000K		OH39/1000H		AOH39/1000
1000	240/1000K				AOH240/1000
1000	241/1000K				AOH241/1000
1060	230/1060K		OH30/1060H		AOH30/1060
1060	231/1060K		OH31/1060H		AOH31/1060
1060	239/1060K		OH39/1060H		AOH39/1060
1060	240/1060K				AOH240/1060
1120	239/1120K		OH39/1120H		

### METRIC H ADAPTER SLEEVES

- Effective tapered bore bearing assembly.
- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Other dimensions may be available, consult your Turnup sales engineer.



d <sub>1</sub>	Sleeve Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)</sup> G	D <sub>3</sub>	C <sub>1</sub>	Weight	Locknuts	Lockwasher and Lockplates	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	mm	kg			
20	H305	29	8	M 25x1.5	38	–	0.17	KM5	MB5	–
25	H306	31	8	M 30x1.5	45	–	0.24	KM6	MB6	–
30	H307	35	9	M 35x1.5	52	–	0.31	KM7	MB7	–
35	H308	36	10	M 40x1.5	58	–	0.42	KM8	MB8	–
35	H2308	46	10	M 40x1.5	58	–	0.22	KM8	MB8	–
40	H309	39	11	M 45x1.5	65	–	0.55	KM9	MB9	–
40	H2309	50	11	M 45x1.5	65	–	0.28	KM9	MB9	–
45	H310	42	12	M 50x1.5	70	–	0.67	KM10	MB10	HMV10
45	H2310	55	12	M 50x1.5	70	–	0.36	KM10	MB10	HMV10
50	H311	45	12	M 55x2	75	–	0.76	KM11	MB11	HMV11
50	H2311	59	12	M 55x2	75	–	0.42	KM11	MB11	HMV11
55	H312	47	13	M 60x2	80	–	0.87	KM12	MB12	HMV12
55	H2312	62	13	M 60x2	80	–	0.48	KM12	MB12	HMV12
60	H313	50	14	M 65x2	85	–	1.01	KM13	MB13	HMV13
60	H314	52	14	M 70x2	92	–	1.59	KM14	MB14	HMV14
60	H2313	65	14	M 65x2	85	–	0.56	KM13	MB13	HMV13
60	H2314	68	14	M 70x2	92	–	0.90	KM14	MB14	HMV14
65	H315	55	15	M 75x2	98	–	1.83	KM15	MB15	HMV15
65	H2315	73	15	M 75x2	98	–	1.05	KM15	MB15	HMV15
70	H316	59	17	M 80x2	105	–	2.27	KM16	MB16	HMV16
70	H2316	78	17	M 80x2	105	–	1.28	KM16	MB16	HMV16
75	H317	63	18	M 85x2	110	–	2.60	KM17	MB17	HMV17
75	H2317	82	18	M 85x2	110	–	1.45	KM17	MB17	HMV17
80	H318	65	18	M 90x2	120	–	3.02	KM18	MB18	HMV18
80	H2318	86	18	M 90x2	120	–	1.69	KM18	MB18	HMV18
85	H319	68	19	M 95x2	125	–	3.44	KM19	MB19	HMV19
85	H2319	90	19	M 95x2	125	–	1.92	KM19	MB19	HMV19
90	H320	71	20	M 100x2	130	–	3.73	KM20	MB20	HMV20
90	H3120	76	20	M 100x2	130	–	1.80	KM20	MB20	HMV20
90	H2320	97	20	M 100x2	130	–	2.15	KM20	MB20	HMV20

<sup>(1)</sup>Adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

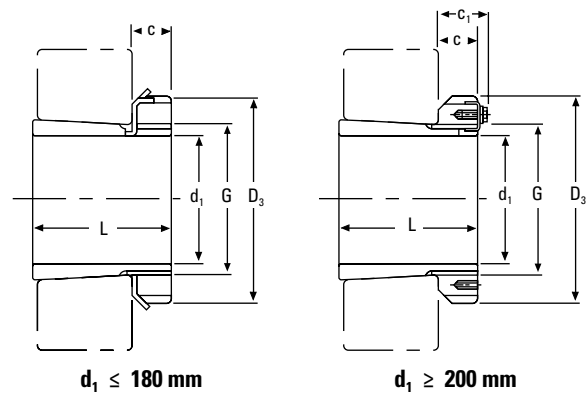
<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

NOTE: Sleeves are not sold separately.

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### METRIC H ADAPTER SLEEVES – continued

- Effective tapered bore bearing assembly.
- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Other dimensions may be available, consult your Turnup sales engineer.



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$d_1$	Sleeve Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)</sup> G	$D_3$	$C_1$	Weight	Locknuts	Lockwasher and Lockplates	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	mm	kg			
95	H321	74	20	M 105x2	140	–	4.30	KM 21	MB21	HMV21
95	H2321	101	20	M 105x2	140	–	2.46	KM21	MB21	HMV21
100	H322	77	21	M 110x2	145	–	4.81	KM22	MB22	HMV22
100	H3122	81	21	M 110x2	145	–	2.25	KM22	MB22	HMV22
100	H2322	105	21	M 110x2	145	–	2.74	KM22	MB22	HMV22
110	H3024	72	22	M 120x2	145	–	1.93	KML24	MBL24	HMV24
110	H3124	88	22	M 120x2	155	–	2.64	KM24	MB24	HMV24
110	H2324	112	22	M 120x2	155	–	3.19	KM24	MB24	HMV24
115	H3926	65	23	M 130x2	155	–	2.40	KML26	MBL26	HMV26
115	H3026	80	23	M 130x2	155	–	2.85	KML26	MBL26	HMV26
115	H3126	92	23	M 130x2	165	–	3.66	KM26	MB26	HMV26
115	H2326	121	23	M 130x2	165	–	4.60	KM26	MB26	HMV26
125	H3928	66	24	M 140x2	165	–	2.70	KML28	MBL28	HMV28
125	H3028	82	24	M 140x2	165	–	3.16	KML28	MBL28	HMV28
125	H3128	97	24	M 140x2	180	–	4.34	KM28	MB28	HMV28
125	H2328	131	24	M 140x2	180	–	5.55	KM28	MB28	HMV28
135	H3930	76	26	M 150x2	180	–	3.60	KML30	MBL30	HMV30
135	H3030	87	26	M 150x2	180	–	3.89	KML30	MBL30	HMV30
135	H3130	111	26	M 150x2	195	–	5.52	KM30	MB30	HMV30
135	H2330	139	26	M 150x2	195	–	6.63	KM30	MB30	HMV30
140	H3932	78	27.5	M 160x3	190	–	4.60	KML32	MBL32	HMV32
140	H3032	93	27.5	M 160x3	190	–	5.21	KML32	MBL32	HMV32
140	H3132	119	28	M 160x3	210	–	7.67	KM32	MB32	HMV32
140	H2332	147	28	M 160x3	210	–	9.14	KM32	MB32	HMV32
150	H3934	79	27.5	M 170x3	200	–	5.00	KML34	MBL34	HMV34
150	H3034	101	28.5	M 170x3	200	–	5.99	KML34	MBL34	HMV34
150	H3134	122	29	M 170x3	220	–	8.38	KM34	MB34	HMV34
150	H2334	154	29	M 170x3	220	–	10.20	KM34	MB34	HMV34

<sup>(1)</sup>Adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

NOTE: Sleeves are not sold separately.

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d <sub>1</sub>	Sleeve Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)(3)</sup> G	D <sub>3</sub>	C <sub>1</sub>	Weight	Locknuts	Lockwasher and Lockplates	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	mm	kg			
160	H3936	87	29.5	M 180x3	210	–	5.70	KML36	MBL36	HMV36
160	H3036	109	29.5	M 180x3	210	–	6.83	KML36	MBL36	HMV36
160	H3136	131	30	M 180x3	230	–	9.50	KM36	MB36	HMV36
160	H2336	161	30	M 180x3	230	–	11.30	KM36	MB36	HMV36
170	H3938	89	30.5	M 190x3	220	–	6.19	KML38	MBL38	HMV38
170	H3038	112	30.5	M 190x3	220	–	7.45	KML38	MBL38	HMV38
170	H3138	141	31	M 190x3	240	–	10.80	KM38	MB38	HMV38
170	H2338	169	31	M 190x3	240	–	12.60	KM38	MB38	HMV38
180	H3940	98	31.5	M 200x3	240	–	7.89	KML40	MBL40	HMV40
180	H3040	120	31.5	M 200x3	240	–	9.19	KML40	MBL40	HMV40
180	H3140	150	32	M 200x3	250	–	12.10	KM40	MB40	HMV40
180	H2340	176	32	M 200x3	250	–	13.90	KM40	MB40	HMV40
200	H3944	96	30	Tr 220x4	260	41	8.16	HM3044	MS3044	HMV44
200	H3044	126	30	Tr 220x4	260	41	10.30	HM3044	MS3044	HMV44
200	H3144	161	35	Tr 220x4	280	–	15.10	HM44T	MB44	HMV44
200	H2344	186	35	Tr 220x4	280	–	17.00	HM44T	MB44	HMV44
220	H3948	101	34	Tr 240x4	290	46	11.00	HM3048	MS3048	HMV48
220	H3048	133	34	Tr 240x4	290	46	13.20	HM3048	MS3048	HMV48
220	H3148	172	37	Tr 240x4	300	–	17.60	HM48T	MS48	HMV48
220	H2348	199	37	Tr 240x4	300	–	20.00	HM48T	MS48	HMV48
240	H3952	116	34	Tr 260x4	310	46	12.80	HM3052	MS3052	HMV52
240	H3052	145	34	Tr 260x4	310	46	15.30	HM3052	MS3052	HMV52
240	H3152	190	39	Tr 260x4	330	–	22.30	HM52T	MB52	HMV52
240	H2352	211	39	Tr 260x4	330	–	24.50	HM52T	MB52	HMV52
260	H3956	121	38	Tr 280x4	330	50	15.30	HM3056	MS3056	HMV56
260	H3056	152	38	Tr 280x4	330	50	17.70	HM3056	MS3056	HMV56
260	H3156	195	41	Tr 280x4	350	–	25.10	HM56T	MB56	HMV56
260	H2356	224	41	Tr 280x4	350	–	28.40	HM56T	MB56	HMV56
280	H3960	140	42	Tr 300x4	360	54	20.00	HM3060	MS3060	HMV60
280	H3060	168	42	Tr 300x4	360	54	22.80	HM3060	MS3060	HMV60
280	H3160	208	40	Tr 300x4	380	53	30.20	HM3160	MS3160	HMV60
280	H3260	240	40	Tr 300x4	380	53	34.10	HM3160	MS3160	HMV60
300	H3964	140	42	Tr 320x5	380	55	21.50	HM3064	MS3064	HMV64
300	H3064	171	42	Tr 320x5	380	55	24.60	HM3064	MS3064	HMV64
300	H3164	226	42	Tr 320x5	400	56	34.90	HM3164	MS3164	HMV64
300	H3264	258	42	Tr 320x5	400	56	39.30	HM3164	MS3164	HMV64

<sup>(1)</sup>Adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

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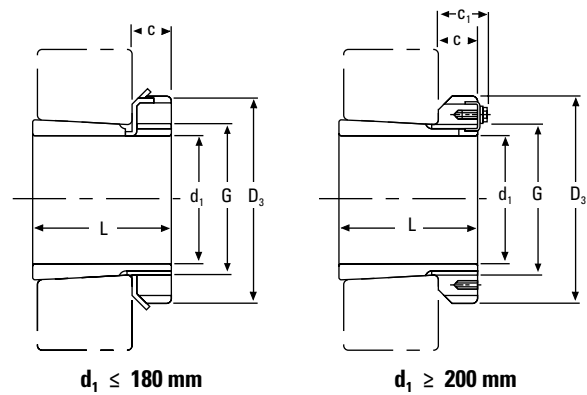
<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

<sup>(3)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

NOTE: Sleeves are not sold separately.

### METRIC H ADAPTER SLEEVES – continued

- Effective tapered bore bearing assembly.
- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Other dimensions may be available, consult your Turnup sales engineer.



Continued from previous page.

$d_1$	Sleeve Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)</sup> G	$D_3$	$C_1$	Weight	Locknuts	Lockwasher and Lockplates	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	mm	kg			
320	H3968	144	45	Tr 340x5	400	58	24.50	HM3068	MS3068	HMV68
320	H3068	187	45	Tr 340x5	400	58	28.70	HM3068	MS3068	HMV68
320	H3168	254	55	Tr 340x5	440	72	50.00	HM3168	MS3168	HMV68
320	H3268	288	55	Tr 340x5	440	72	54.60	HM3168	MS3168	HMV68
340	H3972	144	45	Tr 360x5	420	58	25.20	HM3072	MS3072	HMV72
340	H3072	188	45	Tr 360x5	420	58	30.50	HM3072	MS3072	HMV72
340	H3172	259	58	Tr 360x5	460	75	56.00	HM3172	MS3172	HMV72
340	H3272	299	58	Tr 360x5	460	75	60.60	HM3172	MS3172	HMV72
360	H3976	164	48	Tr 380x5	450	62	31.50	HM3076	MS3076	HMV76
360	H3076	193	48	Tr 380x5	450	62	35.80	HM3076	MS3076	HMV76
360	H3176	264	60	Tr 380x5	490	77	61.70	HM3176	MS3176	HMV76
360	H3276	310	60	Tr 380x5	490	77	69.60	HM3176	MS3176	HMV76
380	H3980	168	52	Tr 400x5	470	66	35.00	HM3080	MS3080	HMV80
380	H3080	210	52	Tr 400x5	470	66	41.30	HM3080	MS3080	HMV80
380	H3180	272	62	Tr 400x5	520	82	73.00	HM3180	MS3180	HMV80
380	H3280	328	62	Tr 400x5	520	82	81.00	HM3180	MS3180	HMV80
400	H3984	168	52	Tr 420x5	490	66	36.60	HM3084	MS3084	HMV84
400	H3084	212	52	Tr 420x5	490	66	43.70	HM3084	MS3084	HMV84
400	H3184	304	70	Tr 420x5	540	90	84.20	HM3184	MS3184	HMV84
400	H3284	352	70	Tr 420x5	540	90	96.00	HM3184	MS3184	HMV84
410	H3988	189	60	Tr 440x5	520	77	58.00	HM3088	MS3088	HMV88
410	H3088	228	60	Tr 440x5	520	77	65.20	HM3088	MS3088	HMV88
410	H3188	307	70	Tr 440x5	560	90	104.00	HM3188	MS3188	HMV88
410	H3288	361	70	Tr 440x5	560	90	118.00	HM3188	MS3188	HMV88
430	H3992	189	60	Tr 460x5	540	77	60.00	HM3092	MS3092	HMV92
430	H3192	326	75	Tr 460x5	580	95	116.00	HM3192	MS3192	HMV92
430	H3292	382	75	Tr 460x5	580	95	134.00	HM3192	MS3192	HMC92
450	H3996	200	60	Tr 480x5	560	77	66.00	HM3096	MS3096	HMV96
450	H3296	397	75	Tr 480x5	620	95	153.00	HM3196	MS3196	HMV96

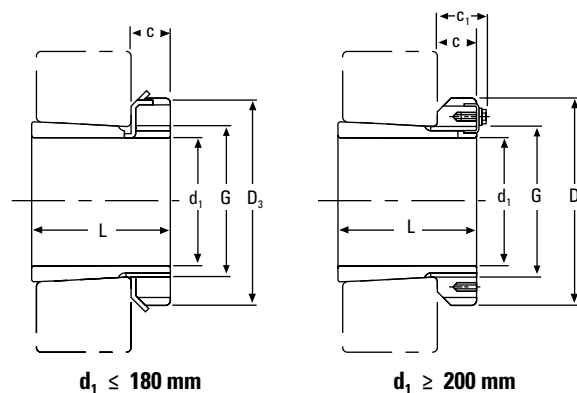
<sup>(1)</sup>Adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

NOTE: Sleeves are not sold separately.

## METRIC HE ADAPTER SLEEVES FOR INCH SHAFT

- Effective tapered bore bearing assembly.
- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Other dimensions may be available, consult your Turnup sales engineer.



d <sub>1</sub>		Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)</sup> G	D <sub>3</sub>	C <sub>1</sub>	Weight	Locknuts	Lockwasher and Lockplate	Appropriate Hydraulic Nut
in.	mm										
¾	19.05	HE305	29	8.00	M 25x1.5	38.00	—	0.08	KM5	MB5	
1	25.40	HE306	31	8.00	M 30x1.5	45.00	—	0.10	KM6	MB6	
1 ¼	31.75	HE308	36	10.00	M 40x1.5	58.00	—	0.22	KM8	MB8	
1 ¼	31.75	HE2308	46	10.00	M 40x1.5	58.00	—	0.28	KM8	MB8	
1 ½	38.10	HE309	39	11.00	M 45x1.5	65.00	—	0.24	KM9	MB9	
1 ½	38.10	HE2309	50	11.00	M 45x1.5	65.00	—	0.31	KM9	MB9	
1 ¾	44.45	HE310	42	12.00	M 50x1.5	70.00	—	0.29	KM10	MB10	HMV10
1 ¾	44.45	HE2310	55	12.00	M 50x1.5	70.00	—	0.36	KM10	MB10	HMV10
2	50.80	HE311	45	12.00	M 55x2	75.00	—	0.35	KM11	MB11	HMV11
2	50.80	HE2311	59	12.00	M 55x2	75.00	—	0.42	KM11	MB11	HMV11
2 ¼	57.15	HE313	50	14.00	M 65x2	85.00	—	0.52	KM13	MB13	HMV13
2 ¼	57.15	HE2313	65	14.00	M 65x2	85.00	—	0.65	KM13	MB13	HMV13
2 ½	63.50	HE315	55	15.00	M 75x2	98.00	—	0.85	KM15	MB15	HMV15
2 ½	63.50	HE2315	73	15.00	M 75x2	98.00	—	1.09	KM15	MB15	HMV15
2 ¾	69.85	HE316	59	17.00	M 80x2	105.00	—	0.97	KM16	MB16	HMV16
2 ¾	69.85	HE2316	78	17.00	M 80x2	105.00	—	1.20	KM16	MB16	HMV16
3	76.20	HE317	63	18.00	M 85x2	110.00	—	1.00	KM17	MB17	HMV17
3	76.20	HE2317	82	18.00	M 85x2	110.00	—	1.30	KM17	MB17	HMV17
3 ¼	82.55	HE318	65	18.00	M 90x2	120.00	—	1.10	KM18	MB18	HMV18
3 ¼	82.55	HE319	68	19.00	M 95x2	125.00	—	1.60	KM19	MB19	HMV19
3 ¼	82.55	HE2318	86	18.00	M 90x2	120.00	—	1.40	KM18	MB18	HMV18
3 ¼	82.55	HE2319	90	19.00	M 95x2	125.00	—	2.00	KM19	MB19	HMV19
3 ½	88.90	HE320	71	20.00	M 100x2	130.00	—	1.75	KM20	MB20	HMV20
3 ½	88.90	HE3120	76	20.00	M 100x2	130.00	—	1.80	KM20	MB20	HMV20
3 ½	88.90	HE2320	97	20.00	M 100x2	130.00	—	2.20	KM20	MB20	HMV20
4	101.60	HE322	77	21.00	M 110x2	145.00	—	1.90	KM22	MB22	HMV22
4	101.60	HE3122	81	21.00	M 110x2	145.00	—	2.25	KM22	MB22	HMV22
4	101.60	HE2322	105	21.00	M 110x2	145.00	—	2.40	KM22	MB22	HMV22

<sup>(1)</sup>Adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

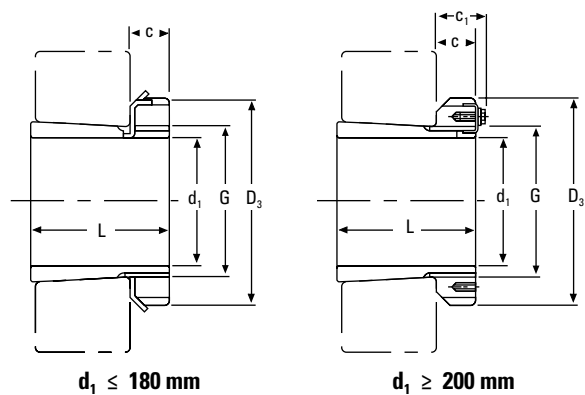
<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

NOTE: Sleeves are not sold separately.

Continued on next page.

### METRIC HE ADAPTER SLEEVES FOR INCH SHAFT – continued

- Effective tapered bore bearing assembly.
- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Other dimensions may be available, consult your Turnup sales engineer.



Continued from previous page.

d <sub>1</sub>		Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)(3)</sup> G	D <sub>3</sub>	C <sub>1</sub>	Weight	Locknuts	Lockwasher and Lockplate	Appropriate Hydraulic Nut
in.	mm										
4 ¼	107.95	HE3024	72	22.00	M 120x2	145.00	–	2.00	KML24	MBL24	HMV24
4 ¼	107.95	HE3124	88	22.00	M 120x2	155.00	–	2.64	KM24	MB24	HMV24
4 ¼	107.95	HE2324	112	22.00	M 120x2	155.00	–	3.35	KM24	MB24	HMV24
4 ½	114.30	HE3026	80	23.00	M 130x2	155.00	–	2.90	KML26	MBL26	HMV26
4 ½	114.30	HE3126	92	23.00	M 130x2	165.00	–	3.66	KM26	MB26	HMV26
4 ½	114.30	HE2326	121	23.00	M 130x2	165.00	–	4.55	KM26	MB26	HMV26
5	127.00	HE3028	82	24.00	M 140x2	165.00	–	3.16	KML28	MBL28	HMV28
5	127.00	HE3128	97	24.00	M 140x2	180.00	–	3.80	KM28	MB28	HMV28
5	127.00	HE2328	131	24.00	M 140x2	180.00	–	5.00	KM28	MB28	HMV28
5 ¼	133.35	HE3030	87	26.00	M 150x2	180.00	–	4.00	KML30	MBL30	HMV30
5 ¼	133.35	HE3130	111	26.00	M 150x2	195.00	–	5.50	KM30	MB30	HMV30
5 ¼	133.35	HE2330	139	26.00	M 150x2	195.00	–	6.80	KM30	MB30	HMV30
5 ½	139.70	HE3032	93	27.50	M 160x3	190.00	–	5.10	KML32	MBL32	HMV32
5 ½	139.70	HE3132	119	28.00	M 160x3	210.00	–	7.30	KM32	MB32	HMV32
5 ½	139.70	HE2332	147	28.00	M 160x3	210.00	–	8.80	KM32	MB32	HMV32
6	152.40	HE3034	101	28.50	M 170x3	200.00	–	5.99	KML34	MBL34	HMV34
6	152.40	HE3134	122	29.00	M 170x3	220.00	–	7.55	KM34	MB34	HMV34
6	152.40	HE2334	154	29.00	M 170x3	220.00	–	10.20	KM34	MB34	HMV34
6 ½	165.10	HE3036	109	29.50	M 180x3	210.00	–	6.83	KML36	MBL36	HMV36
6 ½	165.10	HE3136	131	30.00	M 180x3	230.00	–	7.80	KM36	MB36	HMV36
6 ½	165.10	HE2336	161	30.00	M 180x3	230.00	–	9.35	KM36	MB36	HMV36
6 ¾	171.45	HE3038	112	30.50	M 190x3	220.00	–	7.20	KML38	MBL38	HMV38
6 ¾	171.45	HE3138	141	31.00	M 190x3	240.00	–	10.80	KM38	MB38	HMV38
6 ¾	171.45	HE2338	169	31.00	M 190x3	240.00	–	12.60	KM38	MB38	HMV38
7	177.80	HE3040	120	31.50	M 200x3	240.00	–	9.35	KML40	MBL40	HMV40
7	177.80	HE3140	150	32.00	M 200x3	250.00	–	12.30	KM40	MB40	HMV40
7	177.80	HE2340	176	32.00	M 200x3	250.00	–	14.20	KM40	MB40	HMV40
8	203.20	HE3044	126	30.00	Tr 220x4	260.00	41	10.30	HM 3044	MS3044	HMV44
8	203.20	HE3144	161	35.00	Tr 220x4	280.00	–	14.70	HM44T	MB44	HMV44
8	203.20	HE2344	186	35.00	Tr 220x4	280.00	–	16.70	HM44T	MB44	HMV44

<sup>(1)</sup>Adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

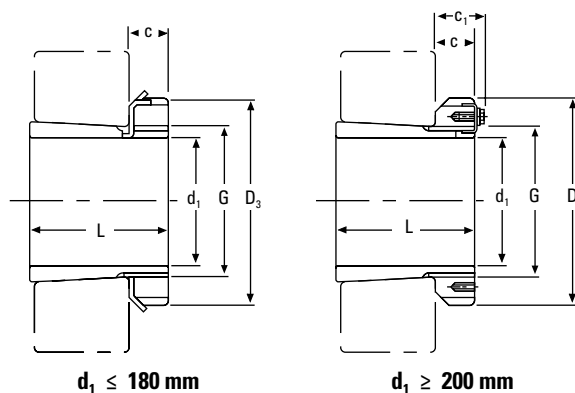
<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

<sup>(3)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

NOTE: Sleeves are not sold separately.

## METRIC HA ADAPTER SLEEVES FOR INCH SHAFT

- Effective tapered bore bearing assembly.
- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Other dimensions may be available, consult your Turnup sales engineer.



$d_1 \leq 180 \text{ mm}$

$d_1 \geq 200 \text{ mm}$

$d_1$		Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)</sup> G	$D_3$	$C_1$	Weight	Locknuts	Lockwasher and Lockplate	Appropriate Hydraulic Nut
in.	mm										
1/16	23.81	HA306	31	8	M 30x1.5	45	—	0.12	KM6	MB6	
1 3/16	30.16	HA307	35	9	M 35x1.5	52	—	0.14	KM7	MB7	
1 5/16	33.34	HA308	36	10	M 40x1.5	58	—	0.19	KM8	MB8	
1 5/8	33.34	HA2308	46	10	M 40x1.5	58	—	0.22	KM8	MB8	
1 7/16	36.51	HA309	39	11	M 45x1.5	65	—	0.29	KM9	MB9	
1 7/8	36.51	HA2309	50	11	M 45x1.5	65	—	0.35	KM9	MB9	
1 11/16	42.86	HA310	42	12	M 50x1.5	70	—	0.32	KM10	MB10	HMV10
1 11/8	42.86	HA2310	55	12	M 50x1.5	70	—	0.40	KM10	MB10	HMV10
1 15/16	49.21	HA311	45	12	M 55x2	75	—	0.34	KM11	MB11	HMV11
1 15/8	49.21	HA2311	59	12	M 55x2	75	—	0.42	KM11	MB11	HMV11
2 3/16	55.56	HA313	50	14	M 65x2	85	—	0.58	KM13	MB13	HMV13
2 3/8	55.56	HA2313	65	14	M 65x2	85	—	0.75	KM13	MB13	HMV13
2 7/16	61.91	HA315	55	15	M 75x2	98	—	0.91	KM15	MB15	HMV15
2 7/8	61.91	HA2315	73	15	M 75x2	98	—	1.15	KM15	MB15	HMV15
2 11/16	68.26	HA316	59	17	M 80x2	105	—	1.05	KM16	MB16	HMV16
2 11/8	68.26	HA2316	78	17	M 80x2	105	—	1.30	KM16	MB16	HMV16
2 15/16	74.61	HA317	63	18	M 85x2	110	—	1.10	KM17	MB17	HMV17
2 15/8	74.61	HA2317	82	18	M 85x2	110	—	1.40	KM17	MB17	HMV17
3 3/16	80.96	HA318	65	18	M 90x2	120	—	1.25	KM18	MB18	HMV18
3 3/8	80.96	HA2318	86	18	M 90x2	120	—	1.50	KM18	MB18	HMV18
3 7/16	87.31	HA320	71	20	M 100x2	130	—	1.80	KM20	MB20	HMV20
3 7/8	87.31	HA3120	76	20	M 100x2	130	—	1.80	KM20	MB20	HMV20
3 7/16	87.31	HA2320	97	20	M 100x2	130	—	2.35	KM20	MB20	HMV20
3 15/16	100.01	HA322	77	21	M 110x2	145	—	2.18	KM22	MB22	HMV22
3 15/8	100.01	HA3122	81	21	M 110x2	145	—	2.25	KM22	MB22	HMV22
3 15/16	100.01	HA2322	105	21	M 110x2	145	—	2.74	KM22	MB22	HMV22
4 3/16	106.36	HA3024	72	22	M 120x2	145	—	2.25	KML24	MBL24	HMV24
4 3/8	106.36	HA3124	88	22	M 120x2	155	—	2.90	KM24	MB24	HMV24
4 3/16	106.36	HA2324	112	22	M 120x2	155	—	3.19	KM24	MB24	HMV24
4 7/16	112.71	HA3026	80	23	M 130x2	155	—	3.05	KML26	MBL26	HMV26
4 7/8	112.71	HA3126	92	23	M 130x2	165	—	3.75	KM26	MB26	HMV26
4 7/16	112.71	HA2326	121	23	M 130x2	165	—	4.74	KM26	MB26	HMV26

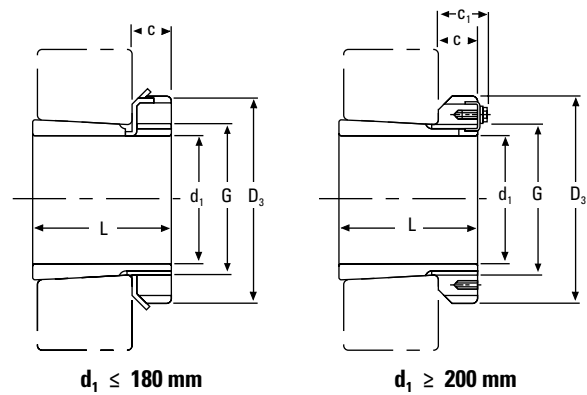
<sup>(1)</sup>Adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

Continued on next page.

### METRIC HA ADAPTER SLEEVES FOR INCH SHAFT – continued

- Effective tapered bore bearing assembly.
- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Other dimensions may be available, consult your Turnup sales engineer.



Continued from previous page.

d <sub>1</sub>		Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)(3)</sup> G	D <sub>3</sub>	C <sub>1</sub>	Weight	Locknuts	Lockwasher and Lockplate	Appropriate Hydraulic Nut
in.	mm										
4 1/16	125.41	HA3028	82	24	M 140x2	165	–	3.00	KML28	MBL28	HMV28
4 1/16	125.41	HA3128	97	24	M 140x2	180	–	4.10	KM28	MB28	HMV28
4 1/16	125.41	HA2328	131	24	M 140x2	180	–	5.30	KM28	MB28	HMV28
5 3/16	131.76	HA3030	87	26	M 150x2	180	–	3.89	KML30	MBL30	HMV30
5 3/16	131.76	HA3130	111	26	M 150x2	195	–	5.80	KM30	MB30	HMV30
5 3/16	131.76	HA2330	139	26	M 150x2	195	–	6.63	KM30	MB30	HMV30
5 7/16	138.11	HA3032	93	28	M 160x3	190	–	5.21	KML32	MBL32	HMV32
5 7/16	138.11	HA3132	119	28	M 160x3	210	–	7.55	KM32	MB32	HMV32
5 7/16	138.11	HA2332	147	28	M 160x3	210	–	9.40	KM32	MB32	HMV32
5 15/16	150.81	HA3034	101	29	M 170x3	200	–	5.99	KML34	MBL34	HMV34
5 15/16	150.81	HA3134	122	29	M 170x3	220	–	7.80	KM34	MB34	HMV34
5 15/16	150.81	HA2334	154	29	M 170x3	220	–	9.60	KM34	MB34	HMV34
6 7/16	163.51	HA3036	109	30	M 180x3	210	–	6.00	KML36	MBL36	HMV36
6 7/16	163.51	HA3136	131	30	M 180x3	230	–	8.15	KM36	MB36	HMV36
6 7/16	163.51	HA2336	161	30	M 180x3	230	–	9.90	KM36	MB36	HMV36
6 15/16	176.21	HA3038	112	31	M 190x3	220	–	5.80	KML38	MBL38	HMV38
6 15/16	176.21	HA3138	141	31	M 190x3	240	–	8.50	KM38	MB38	HMV38
6 15/16	176.21	HA2338	169	31	M 190x3	240	–	12.60	KM38	MB38	HMV38
7 3/16	182.56	HA3040	120	32	M 200x3	240	–	8.25	KML40	MBL40	HMV40
7 3/16	182.56	HA3140	150	32	M 200x3	250	–	11.20	KM40	MB40	HMV40
7 3/16	182.56	HA2340	176	32	M 200x3	250	–	13.90	KM40	MB40	HMV40
7 15/16	201.61	HA3044	126	30	Tr 220x4	260	41	10.30	HM3044	MS3044	HMV44
7 15/16	201.61	HA3144	161	35	Tr 220x4	280	–	14.70	HM44T	MB44	HMV44
8 15/16	227.01	HA3048	133	34	Tr 240x4	290	46	13.20	HM3048	MS3048	HMV48
9 1/16	239.71	HA3052	145	34	Tr 260x4	310	46	15.30	HM3052	MS3052	HMV52
10 1/16	265.11	HA3056	152	38	Tr 280x4	330	50	17.70	HM3056	MS3056	HMV56
10 15/16	277.81	HA3060	168	42	Tr 300x4	360	54	22.80	HM3060	MS3060	HMV60
11 15/16	303.21	HA3064	171	42	Tr 320x5	380	55	24.60	HM3064	MS3064	HMV64
12 7/16	315.91	HA3068	187	45	Tr 340x5	400	58	28.70	HM3068	MS3068	HMV68
13 7/16	341.31	HA3072	188	45	Tr 360x5	420	58	30.50	HM3072	MS3072	HMV72
13 15/16	354.01	HA3076	193	48	Tr 380x5	450	62	35.80	HM3076	MS3076	HMV76

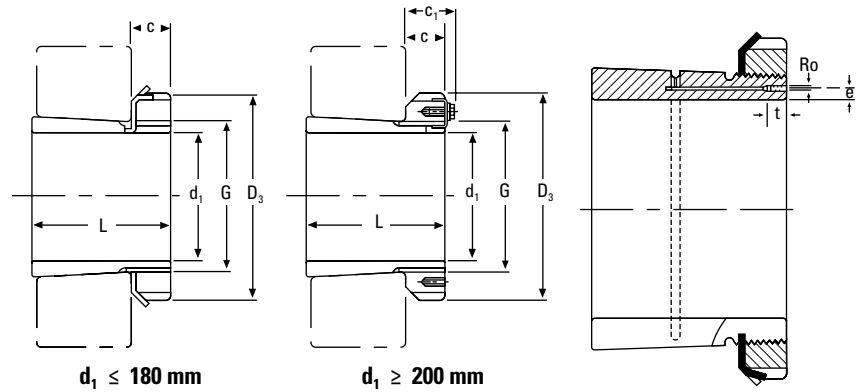
<sup>(1)</sup>Adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

<sup>(3)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

### METRIC OH HYDRAULIC ADAPTER SLEEVES

- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Hydraulic assistance facilitates mounting of large bearing. Oil pump required to inject pressurized oil.
- Other dimensions may be available, consult your Turnup sales engineer.



$d_1 \leq 180 \text{ mm}$

$d_1 \geq 200 \text{ mm}$

$d_1$	Sleeve Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)(3)</sup> G	$D_3$	$C_1$ <sup>(4)</sup>	$R_o$	e	t	Weight	Locknuts	Lockwasher and Lockplate	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	mm		mm	mm	kg			
140	OH3032H	93	27.5	M 160x3	190	–		4	7	5.21	KML32	MBL32	HMV32
140	OH3132H	119	28	M 160x3	210	–		4	7	7.67	KM32	MB32	HMV32
150	OH3034H	101	28.5	M 170x3	200	–		4	7	5.99	KML34	MBL34	HMV34
150	OH3134H	122	29	M 170x3	220	–		4	7	8.38	KM34	MB34	HMV34
160	OH3936H	87	29.5	M 180x3	210	–		4	7	5.70	KML36	MBL36	HMV36
160	OH3036H	109	29.5	M 180x3	210	–		4	7	6.83	KML36	MBL36	HMV36
160	OH3136H	131	30	M 180x3	230	–		4	7	9.50	KM36	MB36	HMV36
170	OH3938H	89	30.5	M 190x3	220	–		4	7	6.19	KML38	MBL38	HMV38
170	OH3038H	112	30.5	M 190x3	220	–		4	7	7.45	KML38	MBL38	HMV38
170	OH3138H	141	31	M 190x3	240	–		4	7	10.80	KM38	MB38	HMV38
170	OH2338H	169	31	M 190x3	240	–		4	7	12.60	KM38	MB38	HMV38
180	OH3940H	98	31.5	M 200x3	240	–		4	7	7.89	KML40	MBL40	HMV40
180	OH3040H	120	31.5	M 200x3	240	–		4	7	9.19	KML40	MBL40	HMV40
180	OH3140H	150	32	M 200x3	250	–		4	7	12.10	KM40	MB40	HMV40
180	OH2340H	176	32	M 200x3	250	–		4	7	13.90	KM40	MB40	HMV40
200	OH3944H	96	30	Tr 220x4	260	41	M6	4	7	8.16	HM3044	MS3044	HMV44
200	OH3044H	126	30	Tr 220x4	260	41	M6	4	7	10.30	HM3044	MS3044	HMV44
200	OH3144H	161	35	Tr 220x4	280	–	M6	4	7	15.10	HM44T	MB44	HMV44
200	OH2344H	186	35	Tr 220x4	280	–	M6	4	7	17.00	HM44T	MB44	HMV44
220	OH3948H	101	34	Tr 240x4	290	46	M6	4	7	11.00	HM3048	MS3048	HMV48
220	OH3048H	133	34	Tr 240x4	290	46	M6	4	7	13.20	HM3048	MS3048	HMV48
220	OH3148H	172	37	Tr 240x4	300	–	M6	4	7	17.60	HM48T	MB48	HMV48
220	OH2348H	199	37	Tr 240x4	300	–	M6	4	7	20.00	HM48T	MB48	HMV48
240	OH3952H	116	34	Tr 260x4	310	46	M6	4	7	12.80	HM3052	MS3052	HMV52
240	OH3052H	145	34	Tr 260x4	310	46	M6	4	7	15.30	HM3052	MS3052	HMV52
240	OH3152H	190	39	Tr 260x4	330	–	M6	4	7	22.30	HM52T	MB52	HMV52
240	OH2352H	211	39	Tr 260x4	330	–	M6	4	7	24.50	HM52T	MB52	HMV52

<sup>(1)</sup>Hydraulic adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

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<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

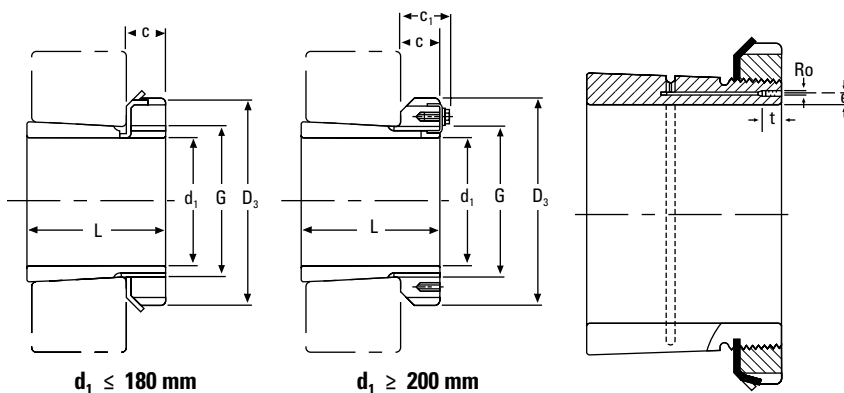
<sup>(3)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

<sup>(4)</sup>Adapters with dimensions  $C_1$  having a locking device as shown in the illustration.



### METRIC OH HYDRAULIC ADAPTER SLEEVES – continued

- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Hydraulic assistance facilitates mounting of large bearing. Oil pump required to inject pressurized oil.
- Other dimensions may be available, consult your Turnup sales engineer.



Continued from previous page.

$d_1$	Sleeve Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)</sup> G	$D_3$	$C_1$ <sup>(3)</sup>	$R_o$	e	t	Weight	Locknuts	Lockwasher and Lockplate	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	mm		mm	mm	kg			
260	OH3956H	121	38	Tr 280x4	330	50	M6	4	7	15.30	HM3056	MS3056	HMV56
260	OH3056H	152	38	Tr 280x4	330	50	M6	4	7	17.70	HM3056	MS3056	HMV56
260	OH3156H	195	41	Tr 280x4	350	–	M6	4	7	25.10	HM56T	MB56	HMV56
260	OH2356H	224	41	Tr 280x4	350	–	M6	4	7	28.40	HM56T	MB56	HMV56
280	OH3960H	140	42	Tr 300x4	360	54	M6	4	7	20.00	HM3060	MS3060	HMV60
280	OH3060H	168	42	Tr 300x4	360	54	M6	4	7	22.80	HM3060	MS3060	HMV60
280	OH3160H	208	40	Tr 300x4	380	53	M6	4	7	30.20	HM3160	MS3160	HMV60
280	OH3260H	240	40	Tr 300x4	380	53	M6	4	7	34.10	HM3160	MS3160	HMV60
300	OH3964H	140	42	Tr 320x5	380	55	M6	3.5	7	21.50	HM3064	MS3064	HMV64
300	OH3064H	171	42	Tr 320x5	380	55	M6	3.5	7	24.60	HM3064	MS3064	HMV64
300	OH3164H	226	42	Tr 320x5	400	56	M6	3.5	7	34.90	HM3164	MS3164	HMV64
300	OH3264H	258	42	Tr 320x5.4	400	56	M6	3.5	7	39.30	HM3164	MS3164	HMV64
320	OH3968H	144	45	Tr 340x5	400	58	M6	3.5	7	24.50	HM3068	MS3068	HMV68
320	OH3068H	187	45	Tr 340x5	400	58	M6	3.5	7	28.70	HM3068	MS3068	HMV68
320	OH3168H	254	55	Tr 340x5	440	72	M6	3.5	7	50.00	HM3168	MS3168	HMV68
320	OH3268H	288	55	Tr 340x5	440	72	M6	3.5	7	54.60	HM3168	MS3168	HMV68
340	OH3972H	144	45	Tr 360x5	420	58	M6	3.5	7	25.20	HM3072	MS3072	HMV72
340	OH3072H	188	45	Tr 360x5	420	58	M6	3.5	7	30.50	HM3072	MS3072	HMV72
340	OH3172H	259	58	Tr 360x5	460	75	M6	3.5	7	56.00	HM3172	MS3172	HMV72
340	OH3272H	299	58	Tr 360x5	460	75	M6	3.5	7	60.60	HM3172	MS3172	HMV72
360	OH3976H	164	48	Tr 380x5	450	62	M6	3.5	7	31.50	HM3076	MS3076	HMV76
360	OH3076H	193	48	Tr 380x5	450	62	M6	3.5	7	35.80	HM3076	MS3076	HMV76
360	OH3176H	264	60	Tr 380x5	490	77	M6	3.5	7	61.70	HM3176	MS3176	HMV76
360	OH3276H	310	60	Tr 380x5	490	77	M6	3.5	7	69.60	HM3176	MS3176	HMV76
380	OH3980H	168	52	Tr 400x5	470	66	M6	3.5	7	35.00	HM3080	MS3080	HMV80
380	OH3080H	210	52	Tr 400x5	470	66	M6	3.5	7	41.30	HM3080	MS3080	HMV80
380	OH3180H	272	62	Tr 400x5	520	82	M6	3.5	7	73.00	HM3180	MS3180	HMV80
380	OH3280H	328	62	Tr 400x5	520	82	M6	3.5	7	81.00	HM3180	MS3180	HMV80

<sup>(1)</sup>Hydraulic adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

<sup>(3)</sup>Adapters with dimensions  $C_1$  having a locking device as shown in the illustration.

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d <sub>1</sub>	Sleeve Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)</sup> G	D <sub>3</sub>	C <sub>1</sub> <sup>(3)</sup>	Ro	e	t	Weight	Locknuts	Lockwasher and Lockplate	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	mm		mm	mm	kg			
400	OH3984H	168	52	Tr 420x5	490	66	M6	3.5	7	36.60	HM3084	MS3084	HMV84
400	OH3084H	212	52	Tr 420x5	490	66	M6	3.5	7	43.70	HM3084	MS3084	HMV84
400	OH3184H	304	70	Tr 420x5	540	90	M6	3.5	7	84.20	HM3184	MS3184	HMV84
400	OH3284H	352	70	Tr 420x5	540	90	M6	3.5	7	96.00	HM3184	MS3184	HMV84
410	OH3988H	189	60	Tr 440x5	520	77	M8	6.5	12	58.00	HM3088	MS3088	HMV88
410	OH3088H	228	60	Tr 440x5	520	77	M8	6.5	12	65.20	HM3088	MS3088	HMV88
410	OH3188H	307	70	Tr 440x5	560	90	M8	6.5	12	104.00	HM3188	MS3188	HMV88
410	OH3288H	361	70	Tr 440x5	560	90	M8	6.5	12	118.00	HM3188	MS3188	HMV88
430	OH3992H	189	60	Tr 460x5	540	77	M8	6.5	12	60.00	HM3092	MS3092	HMV92
430	OH3092H	234	60	Tr 460x5	540	77	M8	6.5	12	71.00	HM3092	MS3092	HMV92
430	OH3192H	326	75	Tr 460x5	580	95	M8	6.5	12	116.00	HM3192	MS3192	HMV92
430	OH3292H	382	75	Tr 460x5	580	95	M8	6.5	12	134.00	HM3192	MS3192	HMV92
450	OH3996H	200	60	Tr 480x5	560	77	M8	6.5	12	66.00	HM3096	MS30/96	HMV96
450	OH3096H	237	60	Tr 480x5	560	77	M8	6.5	12	75.00	HM3096	MS30/96	HMV96
450	OH3196H	335	75	Tr 480x5	620	95	M8	6.5	12	135.00	HM3196	MS3196	HMV96
450	OH3296H	397	75	Tr 480x5	620	95	M8	6.5	12	153.00	HM3196	MS3196	HMV96
470	OH39/500H	208	68	Tr 500x5	580	85	M8	6.5	12	74.30	HM30/500	MS30/500	HMV100
470	OH31/500H	356	80	Tr 500x5	630	100	M8	6.5	12	145.00	HM31/500	MS31/500	HMV100
470	OH32/500H	428	80	Tr 500x5	630	100	M8	6.5	12	166.00	HM31/500	MS31/500	HMV100
500	OH39/530H	216	68	Tr 530x6	630	90	M8	6	12	87.90	HM30/530	MS30/530	HMV106
500	OH31/530H	364	80	Tr 530x6	670	105	M8	6	12	161.00	HM31/530	MS31/530	HMV106
500	OH32/530H	447	80	Tr 530x6	670	105	M8	6	12	192.00	HM31/530	MS31/530	HMV106
530	OH39/560H	227	75	Tr 560x6	650	97	M8	6	12	95.00	HM30/560	MS30/560	HMV112
530	OH31/560H	377	85	Tr 560x6	710	110	M8	6	12	185.00	HM31/560	MS31/560	HMV112
530	OH32/560H	462	85	Tr 560x6	710	110	M8	6	12	219.00	HM31/560	MS31/560	HMV112
560	OH39/600H	239	75	Tr 600x6	700	97	G1/8	8	13	127.00	HM30/600	MS30/600	HMV120
560	OH30/600H	289	75	Tr 600x6	700	97	G1/8	8	13	147.00	HM30/600	MS30/600	HMV120
560	OH31/600H	399	85	Tr 600x6	750	110	G1/8	8	13	234.00	HM31/600	MS31/600	HMV120
560	OH32/600H	487	85	Tr 600x6	750	110	G1/8	8	13	278.00	HM31/600	MS31/600	HMV120
600	OH39/630H	254	75	Tr 630x6	730	97	M8	6	12	124.00	HM30/630	MS30/630	HMV126
600	OH30/630H	301	75	Tr 630x6	730	97	M8	6	12	138.00	HM30/630	MS30/630	HMV126
600	OH31/630H	424	95	Tr 630x6	800	120	M8	6	12	254.00	HM31/630	MS31/630	HMV126
600	OH32/630H	521	95	Tr 630x6	800	120	M8	6	12	300.00	HM 31/630	MS31/630	HMV126

<sup>(1)</sup>Hydraulic adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

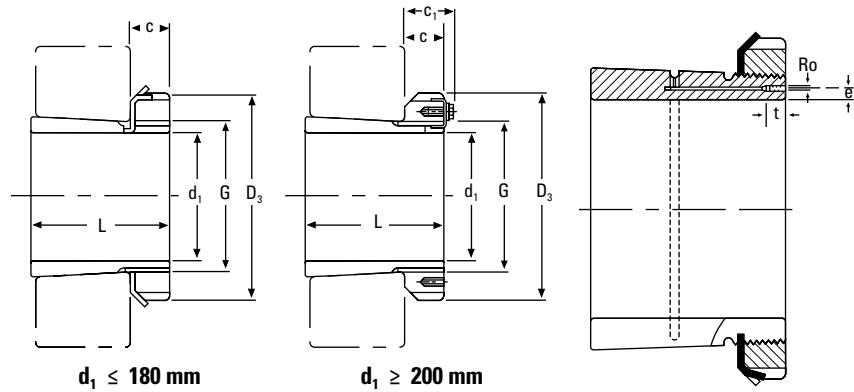
<sup>(3)</sup>Adapters with dimensions C<sub>1</sub> having a locking device as shown in the illustration.

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## METRIC OH HYDRAULIC ADAPTER SLEEVES

### METRIC OH HYDRAULIC ADAPTER SLEEVES – continued

- Includes mounting sleeve, locknut and lockwasher or lockplate.
- Hydraulic assistance facilitates mounting of large bearing. Oil pump required to inject pressurized oil.
- Other dimensions may be available, consult your Turnup sales engineer.



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$d_1$	Sleeve Part Number <sup>(1)</sup>	L	C	Thread <sup>(2)</sup> G	$D_3$	$C_1$ <sup>(3)</sup>	$R_o$	e	t	Weight	Locknuts	Lockwasher and Lockplate	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	mm		mm	mm	kg			
630	OH39/670H	264	80	Tr 670x6	780	102	G1/8	8	13	162.00	HM30/670	MS30/670	HMV134
630	OH30/670H	324	80	Tr 670x6	780	102	G1/8	8	13	190.00	HM30/670	MS30/670	HMV134
630	OH31/670H	456	106	Tr 670x6	850	131	G1/8	8	13	340.00	HM31/670	MS31/670	HMV134
630	OH32/670H	558	106	Tr 670x6	850	131	G1/8	8	13	401.00	HM31/670	MS31/670	HMV134
670	OH39/710H	286	90	Tr 710x7	830	112	G1/8	8	13	183.00	HM30/710	MS30/710	HMV142
670	OH30/710H	342	90	Tr 710x7	830	112	G1/8	8	13	228.00	HM30/710	MS30/710	HMV142
670	OH31/710H	467	106	Tr 710x7	900	135	G1/8	8	13	392.00	HM31/710	MS31/710	HMV142
670	OH32/710H	572	106	Tr 710x7	900	135	G1/8	8	13	459.00	HM31/710	MS31/710	HMV142
710	OH39/750H	291	90	Tr 750x7	870	112	G1/8	8	13	211.00	HM30/750	MS30/750	HMV150
710	OH30/750H	356	90	Tr 750x7	870	112	G1/8	8	13	246.00	HM30/750	MS30/750	HMV150
710	OH31/750H	493	112	Tr 750x7	950	141	G1/8	8	13	451.00	HM31/750	MS31/750	HMV150
710	OH32/750H	603	112	Tr 750x7	950	141	G1/8	8	13	526.00	HM31/750	MS31/750	HMV150
750	OH39/800H	303	90	Tr 800x7	920	112	G1/8	10	13	259.00	HM30/800	MS30/800	HMV160
750	OH31/800H	505	112	Tr 800x7	1000	141	G1/8	10	13	535.00	HM31/800	MS31/800	HMV160
750	OH32/800H	618	112	Tr 800x7	1000	141	G1/8	10	13	629.00	HM31/800	MS31/800	HMV160
800	OH39/850H	308	90	Tr 850x7	980	115	G1/8	10	13	288.00	HM30/850	MS30/850	HMV170
800	OH31/850H	536	118	Tr 850x7	1060	147	G1/8	10	13	616.00	HM31/850	MS31/850	HMV170
800	OH32/850H	651	118	Tr 850x7	1060	147	G1/8	10	13	722.00	HM31/850	MS31/850	HMV170
850	OH39/900H	326	100	Tr 900x7	1030	125	G1/8	10	13	330.00	HM30/900	MS30/900	HMV180
850	OH31/900H	557	125	Tr 900x7	1120	154	G1/8	10	13	677.00	HM31/900	MS31/900	HMV180
850	OH32/900H	660	125	Tr 900x7	1120	154	G1/8	10	13	776.00	HM31/900	MS31/900	HMV180
900	OH39/950H	344	100	Tr 950x8	1080	125	G1/8	10	13	362.00	HM30/950	MS30/950	HMV190
900	OH31/950H	583	125	Tr 950x8	1170	154	G1/8	10	13	738.00	HM31/950	MS31/950	HMV190
900	OH32/950H	675	125	Tr 950x8	1170	154	G1/8	10	13	834.00	HM31/950	MS31/950	HMV190
950	OH39/1000H	358	100	Tr 1000x8	1140	125	G1/8	10	13	407.00	HM30/1000	MS30/1000	HMV200
950	OH31/1000H	609	125	Tr 1000x8	1240	154	G1/8	10	13	842.00	HM31/1000	MS31/1000	HMV200
950	OH32/1000H	707	125	Tr 1000x8	1240	154	G1/8	10	13	952.00	HM31/1000	MS31/1000	HMV200
1000	OH39/1060H	372	100	Tr 1060x8	1200	125	G1/8	12	15	490.00	HM30/1060	MS30/1060	HMV212
1000	OH30/1060H	447	100	Tr 1060x8	1200	125	G1/8	12	15	571.00	HM30/1060	MS30/1060	HMV212
1000	OH31/1060H	622	125	Tr 1060x8	1300	154	G1/8	12	15	984.00	HM31/1060	MS31/1060	HMV212

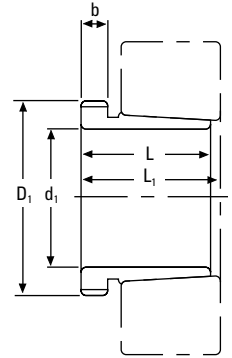
<sup>(1)</sup>Hydraulic adapter sleeves are supplied complete with locknuts and lockwasher or lockplates.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

<sup>(3)</sup>Adapters with dimensions  $C_1$  having a locking device as shown in the illustration.

## METRIC AH WITHDRAWAL SLEEVES

- Sleeves used in the dismounting of tapered bore bearing from shaft.
- Effective dismounting.
- Other dimensions may be available, consult your Turnup sales engineer.



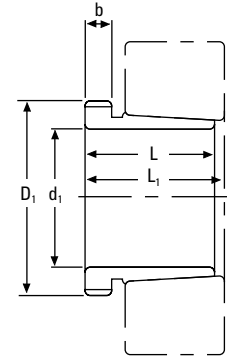
d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Thread D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	kg		
35	AH308	29	32	6	M 45x1,5	0.09	KM9	
35	AH2308	40	43	7	M 45x1.5	0.13	KM9	
40	AH309	31	34	6	M 50x1,5	0.11	KM10	HMV10
40	AH2309	44	47	7	M 50x1.5	0.16	KM10	HMV10
45	AHX310	35	38	7	M 55x2	0.14	KM11	HMV11
45	AHX2310	50	53	9	M 55x2	0.21	KM11	HMV11
50	AHX311	37	40	7	M 60x2	0.16	KM12	HMV12
50	AHX2311	54	57	10	M 60x2	0.25	KM12	HMV12
55	AHX312	40	43	8	M 65x2	0.19	KM13	HMV13
55	AHX2312	58	61	11	M 65x2	0.30	KM13	HMV13
60	AH313G	42	45	8	M 70x2	0.35	KM14	HMV14
65	AH314G	43	47	8	M 75x2	0.24	KM15	HMV15
65	AHX2314G	64	68	12	M 75x2	0.42	KM15	HMV15
70	AH315G	45	49	8	M 80x2	0.29	KM16	HMV16
70	AHX2315G	68	72	12	M 80x2	0.48	KM16	HMV16
75	AH316	48	52	8	M 90x2	0.37	KM18	HMV18
75	AHX2316	71	75	12	M 90x2	0.60	KM18	HMV18
80	AHX317	52	56	9	M 95x2	0.43	KM19	HMV19
80	AHX2317	74	78	13	M 95x2	0.67	KM19	HMV19
85	AHX318	53	57	9	M 100x2	0.46	KM20	HMV20
85	AHX3218	63	67	10	M 100x2	0.58	KM20	HMV20
85	AHX2318	79	83	14	M 100x2	0.78	KM20	HMV20
90	AHX319	57	61	10	M 105x2	0.53	KM21	HMV21
90	AHX2319	85	89	16	M 105x2	0.89	KM21	HMV21
95	AHX320	59	63	10	M 110x2	0.60	KM22	HMV22
95	AHX3120	64	68	11	M 110x2	0.65	KM22	HMV22
95	AHX3220	73	77	11	M 110x2	0.77	KM22	HMV22
95	AHX2320	90	94	16	M 110x2	1.00	KM22	HMV22

<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the withdrawal sleeve is driven in during mounting.

Continued on next page.

### METRIC AH WITHDRAWAL SLEEVES – continued

- Sleeves used in the dismantling of tapered bore bearing from shaft.
- Effective dismantling.
- Other dimensions may be available, consult your Turnup sales engineer.



Continued from previous page.

d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Thread <sup>(2)</sup> D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	kg		
105	AHX322	63	67	12	M 120X2	0.66	KM24	HMV24
105	AHX3122	68	72	11	M 120X2	0.76	KM24	HMV24
105	AH24122	82	91	13	M 115x2	0.73	KM23	HMV23
105	AHX3222G	82	86	11	M 120X2	1.00	KM24	HMV24
105	AHX2322G	98	102	16	M 120X2	1.26	KM24	HMV24
115	AHX3024	60	64	13	M 130x2	0.75	KM26	HMV26
115	AH24024	73	82	13	M 125x2	0.65	KM25	HMV25
115	AHX3124	75	79	12	M 130x2	0.95	KM26	HMV26
115	AHX3224G	90	94	13	M 130x2	1.20	KM26	HMV26
115	AH24124	93	102	13	M 130x2	1.00	KM26	HMV26
115	AHX2324G	105	109	17	M 130x2	1.49	KM26	HMV26
125	AHX3026	67	71	14	M 140x2	0.93	KM28	HMV28
125	AHX3126	78	82	12	M 140x2	1.09	KM28	HMV28
125	AH24026	83	93	14	M 135x2	0.84	KM27	HMV27
125	AH24126	94	104	14	M 140x2	1.15	KM28	HMV28
125	AHX3226G	98	102	15	M 140x2	1.47	KM28	HMV28
125	AHX2326G	115	119	19	M 140x2	1.83	KM28	HMV28
135	AHX3028	68	73	14	M 150x2	1.01	KM30	HMV30
135	AH24028	83	93	14	M 145x2	0.91	KM29	HMV29
135	AHX3128	83	88	14	M 150x2	1.28	KM30	HMV30
135	AH24128	99	109	14	M 150x2	1.25	KM30	HMV30
135	AHX3228G	104	109	15	M 150x2	1.72	KM30	HMV30
135	AHX2328G	125	130	20	M 150x2	2.22	KM30	HMV30
145	AHX3030	72	77	15	M 160x3	1.15	KM32	HMV32
145	AHX3130G	96	101	15	M 160x3	1.64	KM32	HMV32
145	AHX3230G	114	119	17	M 160x3	2.07	KM32	HMV32
145	AH24130	115	126	15	M 160x3	1.60	KM32	HMV32
145	AHX2330G	135	140	24	M 160x3	2.60	KM32	HMV32

<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the withdrawal sleeve is driven in during mounting.

<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

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d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Thread <sup>(2)(3)</sup> D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	kg		
150	AH3032	77	82	16	M 170x3	2.06	KM34	HMV34
150	AH24032	95	106	15	M 170x3	2.27	KM34	HMV34
150	AH3132G	103	108	16	M 170x3	2.90	KM34	HMV34
150	AH24132	124	135	15	M 170x3	3.00	KM34	HMV34
150	AH3232G	124	130	20	M 170x3	3.63	KM34	HMV34
160	AH3034	85	90	17	M 180x3	2.43	KM36	HMV36
160	AH3134G	104	109	16	M 180x3	3.04	KM36	HMV36
160	AH24034	106	117	16	M 180x3	2.80	KM36	HMV36
160	AH24134	125	136	16	M 180x3	3.21	KM36	HMV36
160	AH3234G	134	140	24	M 180x3	4.35	KM36	HMV36
170	AH3136G	116	122	19	M 190x3	3.77	KM38	HMV38
170	AH3236G	140	146	24	M 190x3	4.77	KM38	HMV38
180	AH3038G	96	102	18	M 200x3	3.16	KM40	HMV40
180	AH24038	118	131	18	M 200x3	3.46	KM40	HMV40
180	AH3138G	125	131	20	M 200x3	4.38	KM40	HMV40
180	AH3238G	145	152	25	M 200x3	5.30	KM40	HMV40
180	AH24138	146	159	18	M 200x3	4.28	KM40	HMV40
190	AH3040G	102	108	19	Tr 210x4	3.57	HM42T	HMV42
190	AH24040	127	140	18	Tr 210x4	3.93	HM42T	HMV42
190	AH3140	134	140	21	Tr 220x4	5.55	HM3044	HMV44
190	AH3240	153	160	25	Tr 220x4	6.59	HM3044	HMV44
190	AH24140	158	171	18	Tr 210x4	5.10	HM42T	HMV42
200	AH3044G	111	117	20	Tr 230x4	7.10	HM46T	HMV46
200	AH24044	138	152	20	Tr 230x4	8.25	HM46T	HMV46
200	AH3144	145	151	23	Tr 240x4	10.40	HM48	HMV48
200	AH24144	170	184	20	Tr 230x4	10.20	HM46	HMV46
220	AH3948	77	83	16	Tr 250x4	5.29	HM50	HMV50
220	AH3048	116	123	21	Tr 260x4	8.75	HML52	HMV52
220	AH24048	138	153	20	Tr 250x4	9.00	HM50	HMV50
220	AH3148	154	161	25	Tr 260x4	12.00	HM52	HMV52
220	AH24148	180	195	20	Tr 260x4	12.50	HM52	HMV52
240	AH3952	94	100	18	Tr 270x4	7.06	HM54	HMV54
240	AH3052	128	135	23	Tr 280x4	10.70	HML56	HMV56
240	AH3152G	172	179	26	Tr 280x4	15.10	HM56T	HMV56
240	AH24152	202	218	22	Tr 280x4	15.40	HM56	HMV56

<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the withdrawal sleeve is driven in during mounting.

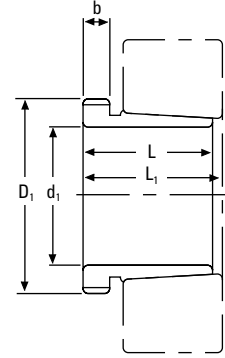
<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

<sup>(3)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

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### METRIC AH WITHDRAWAL SLEEVES – continued

- Sleeves used in the dismounting of tapered bore bearing from shaft.
- Effective dismounting.
- Other dimensions may be available, consult your Turnup sales engineer.



Continued from previous page.

d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Thread <sup>(2)</sup> D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	kg		
260	AH3956	94	100	18	Tr 290x4	7.70	HM58	HMV58
260	AH3056	131	139	24	Tr 300x4	12.00	MB52	HMV52
260	AH3156G	175	183	28	Tr 300x4	16.70	HM3160	HMV60
260	AH24156	202	219	22	Tr 300x4	16.30	HM60	HMV60
280	AH3960	112	119	21	Tr 310x5	10.10	HM62	HMV62
280	AH3060	145	153	26	Tr 320x5	14.40	HML64	HMV64
280	AH3160G	192	200	30	Tr 320x5	19.90	HM3164	HMV64
280	AH24160	224	242	24	Tr 320x5	19.50	HM64	HMV64
280	AH3260G	228	236	34	Tr 320x5	24.60	HM3164	HMV64
300	AH3964	112	119	21	Tr 330x5	10.80	HM66	HMV66
300	AH3064G	149	157	27	Tr 340x5	15.80	HM3068	HMV68
300	AH3164G	209	217	31	Tr 340x5	23.60	HM3168	HMV68
300	AH24164	242	260	24	Tr 340x5	21.40	HM68	HMV68
300	AH3264G	246	254	36	Tr 340x5	28.90	HM3168	HMV68
320	AH3968	112	119	21	Tr 360x5	12.40	HML72	HMV72
320	AH3068G	162	171	28	Tr 360x5	18.60	HM3072	HMV72
320	AH3168G	225	234	33	Tr 360x5	27.60	HM3172	HMV72
320	AH3268G	264	273	38	Tr 360x5	33.70	HM3172	HMV72
320	AH24168	269	288	26	Tr 360x5	27.10	HM72	HMV72
340	AH3972	112	119	21	Tr 380x5	13.10	HML76	HMV76
340	AH3072G	167	176	30	Tr 380x5	20.40	HM3076	HMV76
340	AH3172G	229	238	35	Tr 380x5	29.90	HM3176	HMV76
340	AH24172	269	289	26	Tr 380x5	29.60	HM76	HMV76
340	AH3272G	274	283	40	Tr 380x5	37.50	HM3176	HMV76

<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the withdrawal sleeve is driven in during mounting.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

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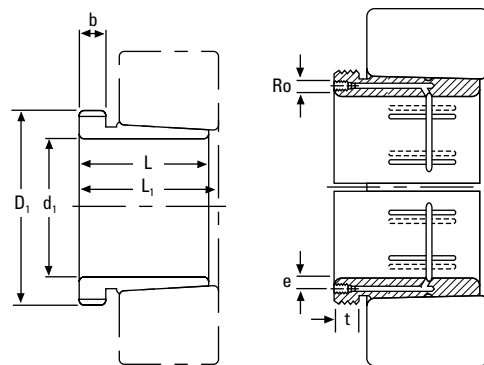
d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Thread <sup>(2)</sup> D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm	mm	kg		
360	AH3976	130	138	22	Tr 400x5	15.90	HML80	HMV80
360	AH3076G	170	180	31	Tr 400x5	22.10	HM3080	HMV80
360	AH3176G	232	242	36	Tr 400x5	32.20	HM3180	HMV80
360	AH24176	271	291	28	Tr 400x5	31.30	HM80	HMV80
360	AH3276G	284	294	42	Tr 400x5	41.50	HM3180	HMV80
380	AH3980	130	138	22	Tr 420x5	17.20	HML84	HMV84
380	AH3080G	183	193	33	Tr 420x5	25.40	HM3084	HMV84
380	AH3280G	302	312	44	Tr 420x5	47.40	HM3184	HMV84
400	AH3984	130	138	22	Tr 440x5	18.10	HML88	HMV88
400	AH3084G	186	196	34	Tr 440x5	27.30	HM3088	HMV88
400	AH24084	230	252	30	Tr 440x5	29.00	HML88	HMV88
400	AH3184G	266	276	40	Tr 440x5	42.30	HM3188	HMV88
400	AH24184	310	332	30	Tr 440x5	40.30	HM88	HMV88
400	AH3284G	321	331	46	Tr 440x5	54.00	HM3188	HMV88
420	AH3988	145	153	25	Tr 460x5	21.50	HML92	HMV92
420	AHX3088G	194	205	35	Tr 460x5	30.10	HM3092	HMV92
420	AH24088	242	264	30	Tr 460x5	31.90	HML92	HMV92
420	AHX3188G	270	281	42	Tr 460x5	42.30	HM3192	HMV92
420	AH24188	310	332	30	Tr 460x5	42.30	HM92	HMV92
420	AHX3288	330	341	48	Tr 460x5	63.80	HM3192	HMV92
420	AHX3288G	330	341	48	Tr 460x5	58.80	HM3192	HMV92
440	AH3992	145	153	25	Tr 480x5	22.50	HML96	HMV96
440	AHX3092G	202	213	37	Tr 480x5	33.10	HM3096	HMV96
440	AH24092	250	273	32	Tr 480x5	34.70	HML96	HMV96
440	AHX3192G	285	296	43	Tr 480x5	50.80	HML3196	HMV96
440	AH24192	332	355	32	Tr 480x5	47.60	HM96	HMV96
440	AHX3292G	349	360	50	Tr 480x5	66.30	HM3196	HMV96
460	AH3996	158	167	28	Tr 500x5	26.00	HML100	HMV100
460	AH24096	250	273	32	Tr 500x5	36.60	HML100	HMV100
460	AHX3196G	295	307	45	Tr 500x5	55.50	HM31/500	HMV100
460	AH24196	340	363	32	Tr 500x5	52.70	HM100	HMV100
460	AHX3296G	364	376	52	Tr 500x5	73.40	HM31/500	HMV100
710	AH32/750	540	556	65	Tr 800x7	317.00	HM31/800	HMV160

<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the withdrawal sleeve is driven in during mounting.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

### METRIC AOH HYDRAULIC WITHDRAWAL SLEEVES

- Sleeves used in the dismounting of tapered bore bearing from shaft.
- Hydraulic assistance facilitates dismounting of large bearing. Oil pump required to inject pressurized oil.
- Other dimensions may be available, consult your Turnup sales engineer.



d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Ro	e	t	Thread <sup>(2)</sup> D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm		mm	mm	mm	kg		
200	AOH3044G	111	117	20	G ½	6.5	12	Tr 230x4	7.29	HM46T	HMV46
200	AOH2244	130	136	20	G ¼	9	15	Tr 240x4	9.1	HM3048	HMV48
200	AOH24044	138	152	20	G ½	6.5	12	Tr 230x4	8.25	HM46T	HMV46
200	AOH3144	145	151	23	G ¼	9	15	Tr 240x4	10.4	HM3048	HMV48
200	AOH24144	170	184	20	G ½	6.5	12	Tr 230x4	10.2	HM46T	HMV46
200	AOH2344	181	189	30	G ¼	9	15	Tr 240x4	13.5	HM3048	HMV48
220	AOH3948	77	83	16	M 8	7.5	12	Tr 250x4	5.29	HM50	HMV50
220	AOH3048	116	123	21	G ¼	9	15	Tr 260x4	8.75	HM3052	HMV52
220	AOH24048	138	153	20	G ½	6.5	12	Tr 250x4	9	HM50T	HMV50
220	AOH3148	154	161	25	G ¼	9	15	Tr 260x4	12	HM3052	HMV52
220	AOH24148	180	195	20	G ¼	9	15	Tr 260x4	12.5	HM3052	HMV52
220	AOH2348	189	197	30	G ¼	9	15	Tr 260x4	15.5	HM3052	HMV52
240	AOH3952	94	100	18	M 8	7.5	12	Tr 270x4	7.06	HM54	HMV54
240	AOH3052	128	135	23	G ¼	9	15	Tr 280x4	10.7	HM3056	HMV56
240	AOH2252G	155	161	23	G ¼	9	15	Tr 280x4	13	HM3056	HMV56
240	AOH24052G	162	178	22	G ½	6.5	12	Tr 280x4	12.3	HM3056	HMV56
240	AOH3152G	172	179	26	G ¼	9	15	Tr 280x4	15.5	HM3056	HMV56
240	AOH24152	202	218	22	G ¼	9	15	Tr 280x4	15.4	HM3056	HMV56
240	AOH2352G	205	213	30	G ¼	9	15	Tr 280x4	18.9	HM3056	HMV56
260	AOH3956	94	100	18	M 8	7.5	12	Tr 290x4	7.07	HM58	HMV58
260	AOH3056	131	139	24	G ¼	9	15	Tr 300x4	12	HM3060	HMV60
260	AOH2256G	155	163	24	G ¼	9	15	Tr 300x4	14.6	HM3160	HMV60
260	AOH24056G	162	179	22	G ½	6.5	12	Tr 300x4	13.4	HM3160	HMV60
260	AOH3156G	175	183	28	G ¼	9	15	Tr 300x4	17.1	HM3160	HMV60
260	AOH24156	202	219	22	G ¼	9	15	Tr 300x4	16.3	HM3160	HMV60
260	AOH2356G	212	220	30	G ¼	9	15	Tr 300x4	21.3	HM3160	HMV60

<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the hydraulic withdrawal sleeve is driven in during mounting.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

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d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Ro	e	t	Thread <sup>(2)</sup> D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm		mm	mm	mm	kg		
280	AOH3960	112	119	21	M 8	7.5	12	Tr 310x5	10.1	HM62	HMV62
280	AOH3060	145	153	26	G ¼	9	15	Tr 320x5	14.4	HM3064	HMV64
280	AOH2260G	170	178	26	G ¼	9	15	Tr 320x5	17.5	HM3164	HMV64
280	AOH24060G	184	202	24	G ⅝	6.5	12	Tr 320x5	16.4	HM3164	HMV64
280	AOH3160G	192	200	30	G ¼	9	15	Tr 320x5	20.4	HM3164	HMV64
280	AOH24160	224	242	24	G ¼	9	15	Tr 320x5	20.2	HM3164	HMV64
280	AOH3260G	228	236	34	G ¼	9	15	Tr 320x5	23.4	HM3164	HMV64
300	AOH3964	112	119	21	M 8	7.5	12	Tr 330x5	10.8	HM66	HMV66
300	AOH3064G	149	157	27	G ¼	9	15	Tr 340x5	15.6	HM3068	HMV68
300	AOH2264G	180	190	27	G ¼	9	15	Tr 340x5	19.7	HM3168	HMV68
300	AOH24064G	184	202	24	G ⅝	6.5	12	Tr 340x5	17.5	HM3168	HMV68
300	AOH3164G	209	217	31	G ¼	9	15	Tr 340x5	23.6	HM3168	HMV68
300	AOH24164	242	260	24	G ¼	9	15	Tr 340x5	21.4	HM3168	HMV68
300	AOH3264G	246	254	36	G ¼	9	15	Tr 340x5	28.9	HM3168	HMV68
320	AOH3968	112	119	21	M 8	7.5	12	Tr 360x5	12.4	HML72	HMV72
320	AOH3068G	162	171	28	G ¼	9	15	Tr 360x5	18.6	HM3072	HMV72
320	AOH24068	206	225	26	G ¼	9	15	Tr 360x5	21.7	HM3172	HMV72
320	AOH3168G	225	234	33	G ¼	9	15	Tr 360x5	27.6	HM3172	HMV72
320	AOH3268G	264	273	38	G ¼	9	15	Tr 360x5	31.9	HM3172	HMV72
320	AOH24168	269	288	26	G ¼	9	15	Tr 360x5	27.1	HM3172	HMV72
340	AOH3972	112	119	21	M 8	7.5	12	Tr 380x5	13.1	HML76	HMV76
340	AOH3072G	167	176	30	G ¼	9	15	Tr 380x5	20.4	HM3076	HMV76
340	AOH24072	206	226	26	G ¼	9	15	Tr 380x5	22.7	HM3176	HMV76
340	AOH3172G	229	238	35	G ¼	9	15	Tr 380x5	30.6	HM3176	HMV76
340	AOH24172	269	289	26	G ¼	9	15	Tr 380x5	30.0	HM3176	HMV76
340	AOH3272G	274	283	40	G ¼	9	15	Tr 380x5	35.4	HM3176	HMV76
360	AOH3976	130	138	22	M 8	7.5	12	Tr 400x5	15.9	HML80	HMV80
360	AOH3076G	170	180	31	G ¼	9	15	Tr 400x5	22.7	HM3080	HMV80
360	AOH24076	208	228	28	G ¼	9	15	Tr 400x5	23.7	HM3180	HMV80
360	AOH3176G	232	242	36	G ¼	9	15	Tr 400x5	32.9	HM3180	HMV80
360	AOH24176	271	291	28	G ¼	9	15	Tr 400x5	31.3	HM3180	HMV80
360	AOH3276G	284	294	42	G ¼	9	15	Tr 400x5	42.1	HM3180	HMV80
380	AOH3980	130	138	22	M 8	7.5	12	Tr 420x5	17.2	HML84	HMV84

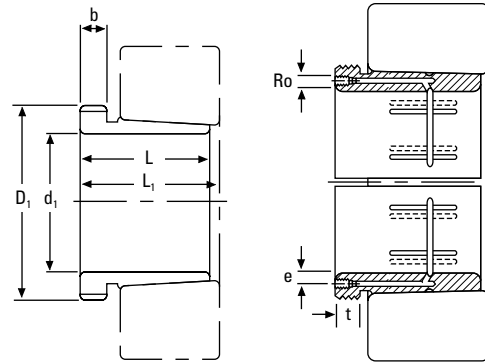
<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the hydraulic withdrawal sleeve is driven in during mounting.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

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### METRIC AOH HYDRAULIC WITHDRAWAL SLEEVES – continued

- Sleeves used in the dismounting of tapered bore bearing from shaft.
- Hydraulic assistance facilitates dismounting of large bearing. Oil pump required to inject pressurized oil.
- Other dimensions may be available, consult your Turnup sales engineer.



Continued from previous page.

d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Ro	e	t	Thread <sup>(2)</sup> D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm		mm	mm	mm	kg		
380	AOH3080G	183	193	33	G ¼	9	15	Tr 420x5	26.1	HM3084	HMV84
380	AOH24080	228	248	28	G ¼	9	15	Tr 420x5	27.1	HM3184	HMV84
380	AOH3180G	240	250	38	G ¼	9	15	Tr 420x5	36.1	HM3184	HMV84
380	AOH24180	278	298	28	G ¼	9	15	Tr 420x5	35.0	HM3184	HMV84
380	AOH3280G	302	312	44	G ¼	9	15	Tr 420x5	48.0	HM3184	HMV84
400	AOH3984	130	138	22	M 8	7.5	12	Tr 440x5	18.1	HML88	HMV88
400	AOH3084G	186	196	34	G ¼	9	15	Tr 440x5	27.3	HM3088	HMV88
400	AOH24084	230	252	30	G ¼	9	15	Tr 440x5	29.0	HM3188	HMV88
400	AOH3184G	266	276	40	G ¼	9	15	Tr 440x5	42.3	HM3188	HMV88
400	AOH24184	310	332	30	G ¼	9	15	Tr 440x5	40.3	HM3188	HMV88
400	AOH3284G	321	331	46	G ¼	9	15	Tr 440x5	54.0	HM3188	HMV88
420	AOH3988	145	153	25	Rc ½	8.5	14	Tr 460x5	21.5	HML92	HMV92
420	AOHX3088G	194	205	35	G ¼	9	15	Tr 460x5	31.0	HM3092	HMV92
420	AOHX3188G	270	281	42	G ¼	9	15	Tr 460x5	46.0	HM3192	HMV92
420	AOHX3288	330	341	48	G ¼	14.5	15	Tr 480x5	63.8	HM3196	HMV96
420	AOHX3288G	330	341	48	G ¼	9	15	Tr 460x5	64.5	HM3192	HMV92
440	AOH3992	145	153	25	Rc ½	8.5	14	Tr 480x5	22.5	HML96	HMV96
440	AOHX3092G	202	213	37	G ¼	9	15	Tr 480x5	34.0	HM3096	HMV96
440	AOH24092	250	273	32	G ¼	9	15	Tr 480x5	34.7	HM3196	HMV96
440	AOHX3192G	285	296	43	G ¼	9	15	Tr 480x5	51.5	HM3196	HMV96
440	AOH24192	332	355	32	G ¼	9	15	Tr 480x5	47.4	HM3196	HMV96
440	AOHX3292	349	360	50	G ¼	15	15	Tr 510x6	74.8	HM102T	HMV102
440	AOHX3292G	349	360	50	G ¼	9	15	Tr 480x5	80.0	HM3196	HMV96

<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the hydraulic withdrawal sleeve is driven in during mounting.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

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d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Ro	e	t	Thread <sup>(2)</sup> D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm		mm	mm	mm	kg		
460	AOH3996	158	167	28	Rc 1/8	8.5	14	Tr 500x5	26.0	HML100	HMV100
460	AOHX3096G	205	217	38	G 1/4	9	15	Tr 500x5	34.0	HM30/500	HMV100
460	AOH24096	250	273	32	G 1/4	9	15	Tr 500x5	36.3	HM31/500	HMV100
460	AOHX3196G	295	307	45	G 1/4	9	15	Tr 500x5	63.0	HM31/500	HMV100
460	AOH24196	340	363	32	G 1/4	9	15	Tr 500x5	53.7	HM31/500	HMV100
460	AOHX3296	364	376	52	G 1/4	15.5	15	Tr 530x6	82.1	HM31/530	HMV106
460	AOHX3296G	364	376	52	G 1/4	9	15	Tr 500x5	81.0	HM31/500	HMV100
480	AOH39/500	162	172	32	Rc 1/8	8.5	14	Tr 530x6	30.1	HML106	HMV106
480	AOHX30/500G	209	221	40	G 1/4	9	15	Tr 530x6	41.0	HM30/530	HMV106
480	AOHX31/500G	313	325	47	G 1/4	9	15	Tr 530x6	66.5	HM31/530	HMV106
480	AOH241/500	360	383	35	G 1/4	9	15	Tr 530x6	59.6	HM31/530	HMV106
480	AOHX32/500	393	405	54	G 1/4	16.5	15	Tr 550x6	94.6	HM110T	HMV110
480	AOHX32/500G	393	405	54	G 1/4	9	15	Tr 530x6	89.5	HM31/530	HMV106
500	AOH30/530	230	242	45	G 1/4	10	15	Tr 560x6	63.5	HM30/560	HMV112
500	AOH240/530G	285	309	35	G 1/4	9	15	Tr 560x6	64.5	HM31/560	HMV112
500	AOH31/530	325	337	53	G 1/4	10	15	Tr 560x6	93.5	HM31/560	HMV112
500	AOH241/530G	370	394	35	G 1/4	9	15	Tr 560x6	92.0	HM31/560	HMV112
500	AOH32/530G	412	424	57	G 1/4	10	15	Tr 560x6	127.0	HM31/560	HMV113
530	AOH31/560	335	347	55	G 1/4	11	15	Tr 600x6	107.0	HM31/600	HMV120
530	AOH241/560G	393	417	38	G 1/4	9	15	Tr 600x6	107.0	HM31/600	HMV120
560	AOH30/600	245	259	45	G 1/4	11	15	Tr 630x6	77.0	HM30/630	HMV126
560	AOH31/600	355	369	55	G 1/4	11	15	Tr 630x6	120.0	HM31/630	HMV126
560	AOH241/600	413	439	38	G 1/4	9	15	Tr 630x6	120.0	HM31/630	HMV126
560	AOH32/600G	445	459	55	G 1/4	11	15	Tr 630x6	159.0	HM31/630	HMV126
600	AOH30/630	258	272	45	G 1/4	11	15	Tr 670x6	88.5	HM30/670	HMV134
600	AOH31/630	375	389	60	G 1/4	11	15	Tr 670x6	139.0	HM31/670	HMV134
600	AOH241/630G	440	466	40	G 1/4	9	15	Tr 670x6	139.0	HM31/670	HMV134
600	AOH32/630G	475	489	63	G 1/4	11	15	Tr 670x6	188.0	HM31/670	HMV134
630	AOH30/670	280	294	50	G 1/4	12	15	Tr 710x7	125.0	HM30/710	HMV142
630	AOH241/670	452	478	40	G 1/4	12	15	Tr 710x7	180.0	HM31/710	HMV142
630	AOH32/670G	500	514	62	G 1/4	12	15	Tr 710x7	252.0	HM31/710	HMV142
670	AOH32/710G	515	531	65	G 1/4	15	15	Tr 750x7	278.0	HM31/750	HMV150
710	AOH30/750	300	316	50	G 1/4	15	15	Tr 800x7	145.0	HM30/800	HMV160

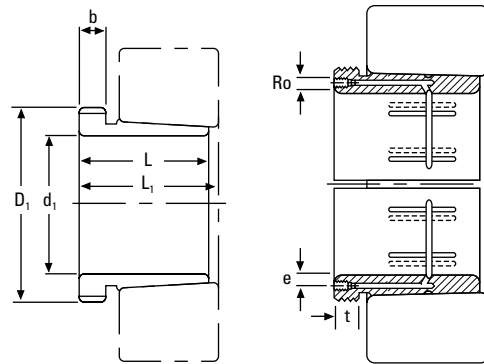
<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the hydraulic withdrawal sleeve is driven in during mounting.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

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### METRIC AOH HYDRAULIC WITHDRAWAL SLEEVES – continued

- Sleeves used in the dismounting of tapered bore bearing from shaft.
- Hydraulic assistance facilitates dismounting of large bearing. Oil pump required to inject pressurized oil.
- Other dimensions may be available, consult your Turnup sales engineer.



Continued from previous page.

d <sub>1</sub>	Withdrawal Sleeve Part Number	L	L <sub>1</sub> <sup>(1)</sup>	b	Ro	e	t	Thread <sup>(2)</sup> D <sub>1</sub>	Weight	Appropriate Withdrawal Nut No.	Appropriate Hydraulic Nut
mm		mm	mm	mm		mm	mm	mm	kg		
710	AOH31/750	425	441	60	G ¼	15	15	Tr 800x7	238.0	HM31/800	HMV160
710	AOH32/750	540	556	65	G ¼	15	15	Tr 800x7	320.0	HM31/800	HMV160
750	AOH30/800	308	326	50	G ¼	15	15	Tr 850x7	204.0	HM30/850	HMV170
750	AOH31/800	438	456	63	G ¼	15	15	Tr 850x7	305.0	HM31/850	HMV170
750	AOH32/800G	550	568	67	G ¼	15	15	Tr 850x7	401.0	HM31/850	HMV170
800	AOH30/850	325	343	53	G ¼	15	15	Tr 900x7	230.0	HM30/900	HMV180
800	AOH31/850	462	480	62	G ¼	15	15	Tr 900x7	345.0	HM31/900	HMV180
800	AOH32/850	585	603	70	G ¼	15	15	Tr 900x7	461.0	HM31/900	HMV180
850	AOH30/900	335	355	55	G ¼	15	15	Tr 950x8	250.0	HM30/950	HMV190
850	AOH240/900	430	475	55	G ¼	15	15	Tr 950x8	296.0	HM31/950	HMV190
850	AOH31/900	475	495	63	G ¼	15	15	Tr 950x8	379.0	HM31/950	HMV190
850	AOH32/900	585	605	70	G ¼	15	15	Tr 950x8	489.0	HM31/950	HMV190
900	AOH30/950	355	375	55	G ¼	15	15	Tr 1000x8	285.0	HM30/1000	HMV200
900	AOH31/950	500	520	62	G ¼	15	15	Tr 1000x8	426.0	HM31/1000	HMV200
900	AOH32/950	600	620	70	G ¼	15	15	Tr 1000x8	533.0	HM31/1000	HMV200
950	AOH30/1000	365	387	57	G ¼	15	15	Tr 1060x8	318.0	HM30/1060	HMV212
950	AOH31/1000	525	547	63	G ¼	15	15	Tr 1060x8	485.0	HM31/1060	HMV212
950	AOH32/1000	630	652	70	G ¼	15	15	Tr 1060x8	608.0	HM31/1060	HMV212
950	AOH241/1000	645	695	65	G ¼	15	15	Tr 1060x8	519.0	HM31/1060	HMV212
1000	AOH30/1060	385	407	60	G ¼	15	15	Tr 1120x8	406.0	HM30/1120	HMV224
1000	AOH31/1060	540	562	65	G ¼	15	15	Tr 1120x8	599.0	HM31/1120	HMV224
1000	AOH241/1060	665	715	65	G ¼	15	15	Tr 1120x8	652.0	HM31/1120	HMV224

<sup>(1)</sup>Dimension L<sub>1</sub> decreases as the hydraulic withdrawal sleeve is driven in during mounting.

<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

## METRIC HMV HYDRAULIC NUTS

### INTRODUCTION

- Designed to install and remove tapered bore bearings with minimal effort.
- Allow better control of the bearing internal clearance reduction without damaging the bearing or other components.
- Substantially reduces downtime during installation or removal of tapered bore bearings.

### DESCRIPTION

- Consist of a female threaded ring and a male ring with two O-ring seals.
- All hydraulic nuts are supplied with:
  - Quick connection fittings (male ¼ inch B.S.P. and female ⅜ inch N.P.T.).
  - Two pipe plugs ¼ inch B.S.P.
  - One set of spare O-rings.

### ORDERING COMPONENTS:

- To order spare components for the hydraulic nuts, order part numbers as listed below:
  - O-ring Seal Kits:  
Use the hydraulic nut part number plus the number 132.  
Example: HMVC 40/132
  - Pipe Plug ¼ inch B.S.P.:  
Use the hydraulic nut part number plus the number 647.  
Example: HMVC 40/647
  - Quick Connection Fittings (male ¼ inch B.S.P. and female ⅜ inch N.P.T.): Use the hydraulic nut part number plus the number 849.  
Example: HMVC 40/849

### ENGINEERING SERVICES

- Special applications should be referred to a Turnup sales engineer for review.

### INSTRUCTIONS

- When the hydraulic nut is used, the piston must be in the innermost position.
- For this operation, please ensure the valve of the hydraulic hose is disconnected from the nut so the nut is not under pressure.
- To contract the piston inside the female threaded ring, insert a rod or bar in one of the four drilled holes located on the outside diameter of the female threaded ring.
- Screw the hydraulic nut on the thread with the piston in contact with the surface, until the groove machined on the outside diameter of the piston near the outboard face is level with the face of the female threaded ring.
- One of the two threaded holes must be plugged with the ¼" B.S.P. pipe plug before the hydraulic nut is pressurized.
- The maximum pressure permissible in the hydraulic nut is 14000 psi (110 Kpa).
- The oil viscosity suggested is 1400 SUS (300cSt) at operating temperature (SAE 90 oil).
- To avoid overextension of the piston, a second groove has been machined on the outside diameter of the piston inboard used to judge contraction.
- When this second groove is level with the face of the female threaded ring, the piston has reached its length of travel as shown in the illustration. If the second groove of the piston travels past the face of the female threaded ring, the hydraulic nut can be damaged.
- Should the oil start to leak from the piston area, it is certain that the O-ring seals are damaged or worn and need to be replaced.
- When the hydraulic nut is not in use, ensure that the threaded holes are plugged to prevent entry of contaminants in the piston cavity.
- To help prevent against corrosion during storage, apply a coat of light oil on the hydraulic nut surfaces.

### Installation

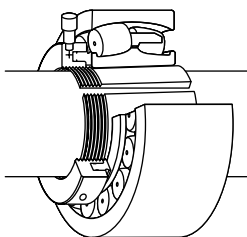


Fig. 51. Hydraulic nut used to mount the bearing on a pull-type sleeve.

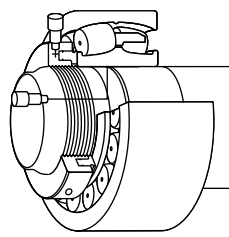


Fig. 52. Hydraulic nut used to mount the bearing on tapered journal.

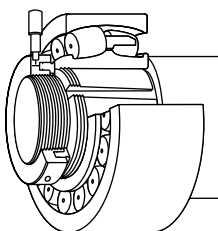


Fig. 53. Hydraulic nut used to mount the bearing on a push-type adapter sleeve.

### Removal

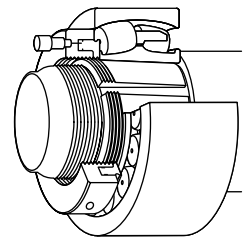


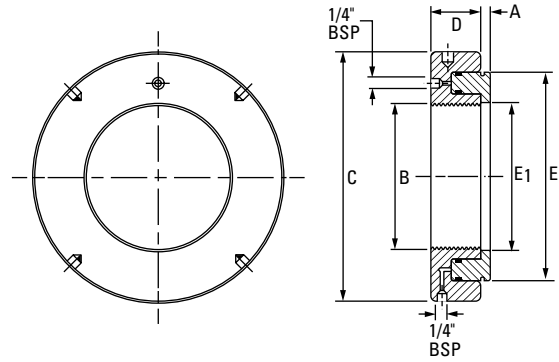
Fig. 54. Hydraulic nut used to withdraw a push-type adapter sleeve.

**⚠ WARNING**  
*Failure to observe the following warning could create a risk of death or serious injury.*

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



### METRIC HMV HYDRAULIC NUTS



Part Number	Thread <sup>(1)</sup> B	Dimensions					Piston Length of Travel	Piston Area	Assembly Weight
		C	D	E	E <sub>1</sub>	A			
	mm	mm	mm	mm	mm	mm	mm	mm <sup>2</sup>	kg.
HMV10	M 50X1.5	114	38	86	51	4	5	2900	2.5
HMV12	M 60X2	125	38	94	61	5	5	3200	2.8
HMV13	M 65X2	135	38	101	66	5	5	3500	3.0
HMV14	M 70X2	140	38	107	71	5	5	3900	3.3
HMV15	M 75X2	145	38	112	76	5	5	4100	3.5
HMV16	M 80X2	150	38	117	81	5	5	4200	3.8
HMV17	M 85X2	155	38	122	86	5	5	4400	3.9
HMV18	M 90X2	160	38	127	91	5	5	4800	4.1
HMV19	M 95X2	165	38	133	96	5	5	5000	4.4
HMV20	M 100X2	170	38	138	101	6	5	5200	4.5
HMV21	M 105X2	175	38	143	106	6	5	5400	5.4
HMV22	M 110X2	180	38	149	111	6	5	5700	5.7
HMV23	M 115X2	185	38	154	116	6	5	5900	5.1
HMV24	M 120X2	190	38	159	121	6	5	6100	5.3
HMV25	M 125X2	195	38	164	126	6	5	6300	5.4
HMV26	M 130X2	200	38	170	131	6	5	6500	5.7
HMV27	M 135X2	205	38	175	136	6	5	6700	5.9
HMV28	M 140X2	210	38	180	141	7	5	6900	6.1
HMV29	M 145X2	215	39	186	146	7	5	7300	6.5
HMV30	M 150X2	220	39	190	151	7	5	7500	6.6
HMV31	M 155X3	225	39	198	156	7	5	8100	6.9
HMV32	M 160X3	235	40	206	161	7	6	8600	7.7
HMV33	M 165X3	240	40	209	166	7	6	9000	8.0
HMV34	M 170X3	245	41	215	171	7	6	9500	8.4
HMV36	M 180X3	255	41	227	181	7	6	10300	9.1

<sup>(1)</sup>M means metric thread and the digits are major diameter of thread and pitch.  
 HMV10 through HMV40 have a Metric ISO fine-thread profile.  
 HMV41 through HMV236 have a Metric ISO trapezoidal thread.

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Part Number	Thread <sup>(1)(2)</sup> B	Dimensions					Piston Length of Travel	Piston Area	Assembly Weight
		C	D	E	E <sub>i</sub>	A			
	mm	mm	mm	mm	mm	mm	mm	mm <sup>2</sup>	kg.
HMV38	M 190X3	270	42	239	191	8	7	11500	10.8
HMV40	M 200X3	280	43	251	201	8	8	12500	11.4
HMV41	Tr 205X4	290	43	256	207	8	8	12900	12.2
HMV42	Tr 210X4	295	44	262	212	8	9	13500	12.5
HMV43	Tr 215X4	300	44	267	217	8	9	13800	13.0
HMV44	Tr 220X4	305	44	273	222	8	9	14400	13.4
HMV45	Tr 225X4	315	45	280	227	8	9	15200	14.6
HMV46	Tr 230X4	320	45	285	232	8	9	15600	14.8
HMV47	Tr 235X4	325	46	291	237	8	10	16200	16.0
HMV48	Tr 240X4	330	46	296	242	9	10	16500	16.3
HMV50	Tr 250X4	345	46	307	252	9	10	17800	17.6
HMV52	Tr 260X4	355	47	319	262	9	11	18800	19.0
HMV54	Tr 270X4	370	48	330	272	9	12	19700	20.4
HMV56	Tr 280X4	380	49	341	282	9	12	21100	22.0
HMV58	Tr 290X4	390	49	353	292	9	13	22600	22.5
HMV60	Tr 300X4	405	51	364	302	10	14	23600	25.6
HMV62	Tr 310X5	415	52	375	312	10	14	24900	27.0
HMV64	Tr 320X5	430	53	387	322	10	14	26300	29.6
HMV66	Tr 330X5	440	53	397	332	10	14	27000	31.0
HMV68	Tr 340X5	450	53	408	342	10	14	28400	32.5
HMV69	Tr 345X5	455	54	414	347	10	14	29400	33.6
HMV70	Tr 350X5	465	56	420	352	10	14	30000	35.0
HMV72	Tr 360X5	475	56	431	362	10	15	31300	37.0
HMV73	Tr 365X5	482	57	436	367	11	15	31700	38.5
HMV74	Tr 370X5	490	57	442	372	11	16	32800	39.2
HMV76	Tr 380X5	500	58	452	382	11	16	33600	41.0
HMV77	Tr 385X5	505	58	459	387	11	16	34700	42.0
HMV80	Tr 400X5	525	60	475	402	11	17	36700	46.0
HMV82	Tr 410X5	535	61	486	412	11	17	38300	48.2
HMV84	Tr 420X5	545	61	498	422	11	17	40000	50.4
HMV86	Tr 430X5	555	62	508	432	11	17	40800	53.0
HMV88	Tr 440X5	565	62	519	442	12	17	42500	55.0
HMV90	Tr 450X5	580	64	530	452	12	17	44100	58.2
HMV92	Tr 460X5	590	64	541	462	12	17	45000	61.0
HMV94	Tr 470X5	600	65	552	472	12	18	46900	63.7
HMV96	Tr 480X5	612	65	563	482	12	19	48500	65.0
HMV98	Tr 490X5	625	66	573	492	12	19	49800	69.0
HMV100	Tr 500X5	635	67	585	502	12	19	52000	71.5
HMV102	Tr 510X6	645	68	596	512	12	20	53300	75.0
HMV104	Tr 520X6	657	68	606	522	13	20	54200	77.0

<sup>(1)</sup>M means metric thread and the digits are major diameter of thread and pitch.

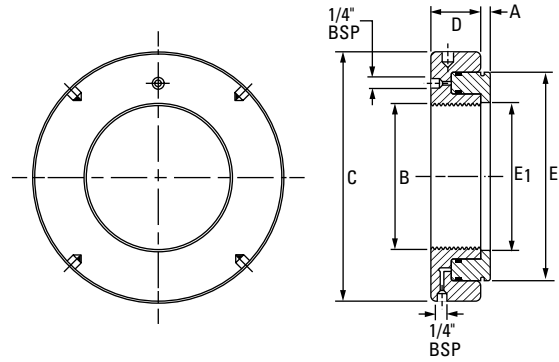
<sup>(2)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.

HMV10 through HMV40 have a Metric ISO fine-thread profile.

HMV41 through HMV236 have a Metric ISO trapezoidal thread.

Continued on next page.

### METRIC HMV HYDRAULIC NUTS – continued

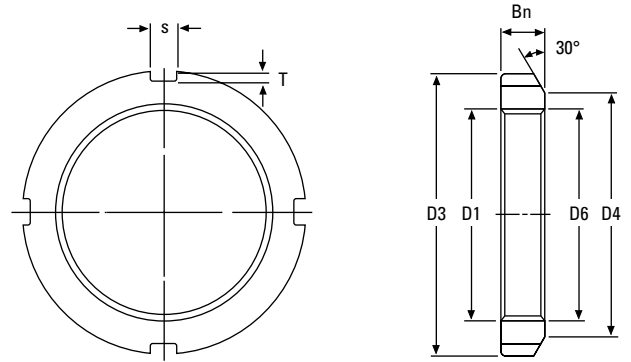


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Part Number	Thread <sup>(1)</sup> B	Dimensions					Piston Length of Travel	Piston Area	Assembly Weight
		C	D	E	E <sub>1</sub>	A			
	mm	mm	mm	mm	mm	mm	mm	mm <sup>2</sup>	kg.
HMV106	Tr 530X6	670	69	617	532	13	21	56200	80.0
HMV108	Tr 540X6	680	69	629	542	13	21	58200	83.0
HMV110	Tr 550X6	692	70	639	552	13	21	59200	86.0
HMV112	Tr 560X6	705	71	650	562	13	22	61200	90.0
HMV114	Tr 570X6	715	72	661	572	13	23	63200	93.0
HMV116	Tr 580X6	725	72	671	582	13	23	64200	96.0
HMV120	Tr 600X6	750	73	693	602	13	23	67400	100.0
HMV126	Tr 630X6	780	74	726	632	14	23	72900	110.0
HMV130	Tr 650X6	805	75	747	652	14	23	76200	116.0
HMV134	Tr 670X6	825	76	768	672	14	24	79500	123.0
HMV138	Tr 690X6	850	77	791	692	14	25	84200	130.0
HMV142	Tr 710X7	870	78	812	712	15	25	87700	137.0
HMV150	Tr 750X7	915	79	855	752	15	25	97000	150.0
HMV160	Tr 800X7	970	80	908	802	16	25	104000	173.0
HMV170	Tr 850X7	1020	83	962	852	16	26	114600	190.0
HMV180	Tr 900X7	1070	86	1015	902	17	30	124000	210.0
HMV190	Tr 950X8	1125	86	1069	952	17	30	135600	238.0
HMV200	Tr 1000X8	1180	88	1122	1002	17	34	145600	263.0
HMV212	Tr 1060X8	1255	95	1184	1063	18	34	161200	325.0
HMV216	Tr 1080X8	1280	100	1206	1083	18	34	167400	345.0
HMV224	Tr 1120X8	1340	106	1250	1123	19	36	178200	410.0
HMV236	Tr 1180X8	1420	115	1320	1183	22	40	189200	530.0

<sup>(1)</sup>Tr means 30°. Trapezoid thread and the digits are outside diameter of thread and pitch.  
 HMV10 through HMV40 have a Metric ISO fine-thread profile.  
 HMV41 through HMV236 have a Metric ISO trapezoidal thread.

**METRIC LOCKNUTS**



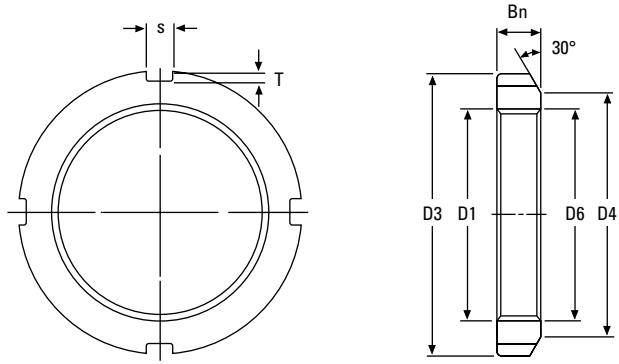
Locknut No. <sup>(1)</sup>	Thread <sup>(2)</sup> D <sub>1</sub>	D <sub>3</sub>	D <sub>4</sub>	B <sub>n</sub>	s	T	D <sub>6</sub>	Weight	Lockwasher No.
	mm	mm	mm	mm	mm	mm	mm	kg	
KM0	M 10 X 0.75	18	13	4	3	2	10.5	0.01	MB00
KM1	M 12 X 1.0	22	17	4	3	2	12.5	0.01	MB01
KM2	M 15 X 1.0	25	21	5	4	2	15.5	0.01	MB02
KM3	M 17 X 1.0	28	24	5	4	2	17.5	0.01	MB03
KM4	M 20 X 1.0	32	26	6	4	2	20.5	0.02	MB04
KM5	M 25 X 1.5	38	32	7	5	2	25.8	0.03	MB05
KM6	M 30 X 1.5	45	38	7	5	2	30.8	0.04	MB06
KM7	M 35 X 1.5	52	44	8	5	2	35.8	0.05	MB07
KM8	M 40 X 1.5	58	50	9	6	2.5	40.8	0.09	MB08
KM9	M 45 X 1.5	65	56	10	6	2.5	45.8	0.12	MB09
KM10	M 50 X 1.5	70	61	11	6	2.5	50.8	0.15	MB10
KM11	M 55 X 2.0	75	67	11	7	3	56.0	0.16	MB11
KM12	M 60 X 2.0	80	73	11	7	3	61.0	0.17	MB12
KM13	M 65 X 2.0	85	79	12	7	3	66.0	0.20	MB13
KM14	M 70 X 2.0	92	85	12	8	3.5	71.0	0.24	MB14
KM15	M 75 X 2.0	98	90	13	8	3.5	76.0	0.29	MB15
KM16	M 80 X 2.0	105	95	15	8	3.5	81.0	0.40	MB16
KM17	M 85 X 2.0	110	102	16	8	3.5	86.0	0.45	MB17
KM18	M 90 X 2.0	120	108	16	10	4	91.0	0.56	MB18
KM19	M 95 X 2.0	125	113	17	10	4	96.0	0.66	MB19
KM20	M 100 X 2.0	130	120	18	10	4	101.0	0.70	MB20
KM21	M 105 X 2.0	140	126	18	12	5	106.0	0.85	MB21
KM22	M 110 X 2.0	145	133	19	12	5	111.0	0.97	MB22
KM23	M 115 X 2.0	150	137	19	12	5	116.0	1.01	MB23
KM24	M 120 X 2.0	160	148	21	12	5	126.0	1.80	MB24
KM25	M 125 X 2.0	160	148	21	12	5	126.0	1.19	MB25
KM26	M 130 X 2.0	165	149	21	12	5	131.0	1.25	MB26
KM27	M 135 X 2.0	175	160	22	14	6	136.0	1.55	MB27
KM28	M 140 X 2.0	180	160	22	14	6	141.0	1.56	MB28
KM29	M145 X 2.0	190	172	24	14	6	146.0	2.00	MB29

<sup>(1)</sup>No. KM0-KM40 also available in 304 stainless steel.

<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

Continued on next page.

### METRIC LOCKNUTS – continued



Continued from previous page.

Locknut No. <sup>(1)</sup>	Thread <sup>(2)</sup> D <sub>1</sub>	D <sub>3</sub>	D <sub>4</sub>	B <sub>n</sub>	s	T	D <sub>6</sub>	Weight	Lockwasher No.
	mm	mm	mm	mm	mm	mm	mm	kg	
KM30	M150 X 2.0	195	171	24	14	6	151.0	2.03	MB30
KM31	M155 X 3.0	200	182	25	16	7	156.5	2.21	MB31
KM32	M160 X 3.0	210	182	25	16	7	161.5	2.59	MB32
KM33	M165 X 3.0	210	193	26	16	7	166.5	2.43	MB33
KM34	M170 X 3.0	220	193	26	16	7	171.5	2.80	MB34
KM36	M180 X 3.0	230	203	27	18	8	181.5	3.07	MB36
KM38	M190 X 3.0	240	214	28	18	8	191.5	3.39	MB38
KM40	M200 X 3.0	250	226	29	18	8	201.5	3.69	MB40

<sup>(1)</sup>No. KM0 - KM40 also available in 304 stainless steel.

<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

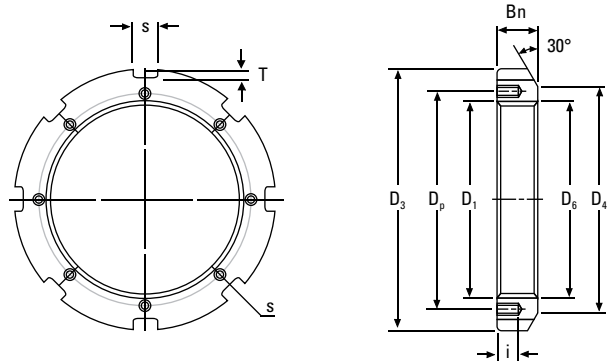
Locknut No. <sup>(1)</sup>	Thread <sup>(2)</sup> D <sub>1</sub>	D <sub>3</sub>	D <sub>4</sub>	B <sub>n</sub>	s	T	D <sub>6</sub>	Weight	Lockwasher No.
	mm	mm	mm	mm	mm	mm	mm	kg	
KML24	M120 x 2.0	145	133	20	12	5	121	0.78	MBL24
KML26	M130 x 2.0	155	143	21	12	5	131	0.88	MBL26
KML28	M140 x 2.0	165	151	22	14	6	141	0.99	MBL28
KML30	M150 x 2.0	180	164	24	14	6	151	1.38	MBL30
KML32	M160 x 3.0	190	174	25	16	7	161.5	1.56	MBL32
KML34	M170 x 3.0	200	184	26	16	7	171.5	1.72	MBL34
KML36	M180 x 3.0	210	192	27	18	8	181.5	1.95	MBL36
KML38	M190 x 3.0	220	202	28	18	8	191.5	2.08	MBL38
KML40	M200 x 3.0	240	218	29	18	8	201.5	2.98	MBL40

<sup>(1)</sup>No. KML24 - KML40 also available in 304 stainless steel.

<sup>(2)</sup>M means metric thread and the digits are major diameter of thread and pitch.

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**METRIC LOCKNUTS** – continued



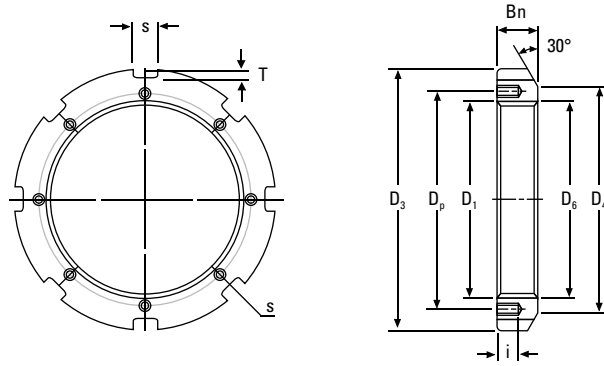
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Locknut No.	Thread <sup>(1)</sup> D <sub>1</sub>	D <sub>3</sub>	D <sub>4</sub>	s	T	D <sub>6</sub>	B <sub>n</sub>	i	Tapped Hole Threads	D <sub>p</sub>	Appropriate Lockplate No.	Weight
	mm	mm	mm	mm	mm	mm	mm	mm		mm		kg
HM3144	Tr 220 x 4	280	250	20	10	222	32	15	M 8 x 1.25	238	MS3144	5.20
HM3148	Tr 240 x 4	300	270	20	10	242	34	15	M 8 x 1.25	258	MS3148	5.95
HM3152	Tr 260 x 4	330	300	24	12	262	36	18	M 10 x 1.5	281	MS3152	8.05
HM3156	Tr 280 x 4	350	320	24	12	282	38	18	M 10 x 1.5	301	MS3156	9.05
HM3160	Tr 300 x 4	380	340	24	12	302	40	18	M 10 x 1.5	326	MS3160	11.80
HM3164	Tr 320 x 5	400	360	24	12	322.5	42	18	M 10 x 1.5	345	MS3164	13.10
HM3168	Tr 340 x 5	440	400	28	15	342.5	55	21	M 12 x 1.75	372	MS3168	23.10
HM3172	Tr 360 x 5	460	420	28	15	362.5	58	21	M 12 x 1.75	392	MS3172	25.10
HM3176	Tr 380 x 5	490	450	32	18	382.5	60	21	M 12 x 1.75	414	MS3176	30.90
HM3180	Tr 400 x 5	520	470	32	18	402.5	62	27	M 16 x 2	439	MS3180	36.90
HM3184	Tr 420 x 5	540	490	32	18	422.5	70	27	M 16 x 2	459	MS3184	43.50
HM3188	Tr 440 x 5	560	510	36	20	442.5	70	27	M 16 x 2	477	MS3188	45.30
HM3192	Tr 460 x 5	580	540	36	20	462.5	75	27	M 16 x 2	497	MS3192	50.40
HM3196	Tr 480 x 5	620	560	36	20	482.5	75	27	M 16 x 2	527	MS3196	62.20
HM31/500	Tr 500 x 5	630	580	40	23	502.5	80	27	M 16 x 2	539	MS31/500	63.30

<sup>(1)</sup>Tr means 30°; trapezoid thread and the digits are major diameter of thread and pitch.

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### METRIC LOCKNUTS – continued



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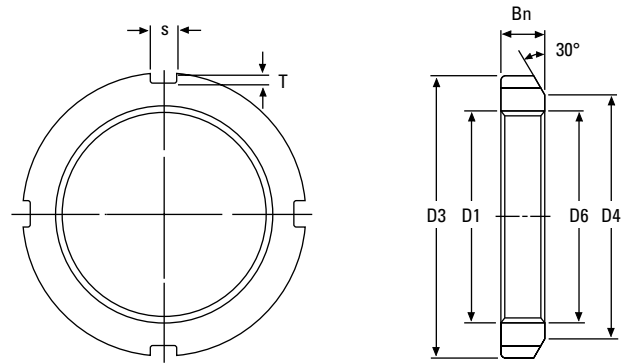
Locknut No.	Thread <sup>(1)</sup> D <sub>1</sub>	D <sub>3</sub>	D <sub>4</sub>	s	T	D <sub>6</sub>	B <sub>n</sub>	i	Tapped Hole Threads	D <sub>p</sub>	Appropriate Lockplate No.	Weight
	mm	mm	mm	mm	mm	mm	mm	mm		mm		kg
HM3044	Tr 220 x 4	260	242	20	9	222	30	12	M 6 x 1	229	MS3044	3.09
HM3048	Tr 240 x 4	290	270	20	10	242	34	15	M 8 x 1.25	253	MS3048	5.16
HM3052	Tr 260 x 4	310	290	20	10	262	34	15	M 8 x 1.25	273	MS3052	5.67
HM3056	Tr 280 x 4	330	310	24	10	282	38	15	M 8 x 1.25	293	MS3056	6.78
HM3060	Tr 300 x 4	360	336	24	12	302	42	15	M 8 x 1.25	316	MS3060	9.62
HM3064	Tr 320 x 5	380	356	24	12	322.5	42	15	M 8 x 1.25	335	MS3064	9.94
HM3068	Tr 340 x 5	400	376	24	12	342.5	45	15	M 8 x 1.25	355	MS3068	11.70
HM3072	Tr 360 x 5	420	394	28	13	362.5	45	15	M 8 x 1.25	374	MS3072	12.00
HM3076	Tr 380 x 5	450	422	28	14	382.5	48	18	M 10 x 1.5	398	MS3076	14.90
HM3080	Tr 400 x 5	470	442	28	14	402.5	52	18	M 10 x 1.5	418	MS3080	16.90
HM3084	Tr 420 x 5	490	462	32	14	422.5	52	18	M 10 x 1.5	438	MS3084	17.40
HM3088	Tr 440 x 5	520	490	32	15	442.5	60	21	M 12 x 1.75	462	MS3088	26.20
HM3092	Tr 460 x 5	540	510	32	15	462.5	60	21	M 12 x 1.75	482	MS3092	29.60
HM3096	Tr 480 x 5	560	530	36	15	482.5	60	21	M 12 x 1.75	502	MS3096	28.30
HM30/500	Tr 500 x 5	580	550	36	15	502.5	68	21	M 12 x 1.75	522	MS30/500	33.60

<sup>(1)</sup>Tr means 30°; trapezoid thread and the digits are major diameter of thread and pitch.

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**METRIC LOCKNUTS** – continued



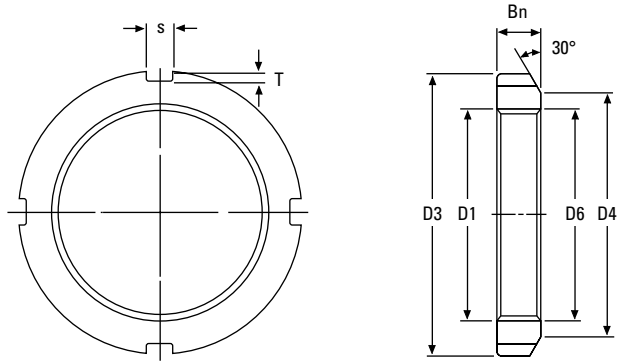
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Locknut No.	Thread <sup>(1)</sup> D <sub>1</sub>	D <sub>3</sub>	D <sub>4</sub>	B <sub>n</sub>	s	T	D <sub>6</sub>	Weight
	mm	mm	mm	mm	mm	mm	mm	kg
HM42	Tr 210 x 4	270	238	30	20	10	212	4.75
HM44	Tr 220 x 4	280	250	32	20	10	222	5.35
HM46	Tr 230 x 4	290	260	34	20	10	232	5.80
HM48	Tr 240 x 4	300	270	34	20	10	242	6.20
HM50	Tr 250 x 4	320	290	36	20	10	252	7.00
HM52	Tr 260 x 4	330	300	36	24	12	262	8.55
HM54	Tr 270 x 4	340	310	38	24	12	272	9.20
HM56	Tr 280 x 4	350	320	38	24	12	282	10.00
HM58	Tr 290 x 4	370	330	40	24	12	292	11.80
HM60	Tr 300 x 4	380	340	40	24	12	302	12.00
HM62	Tr 310 x 5	390	350	42	24	12	312.5	13.40
HM64	Tr 320 x 5	400	360	42	24	12	322.5	13.50
HM66	Tr 330 x 5	420	380	52	28	15	332.5	20.40
HM68	Tr 340 x 5	440	400	55	28	15	342.5	24.50
HM70	Tr 350 x 5	450	410	55	28	15	352.5	25.20
HM72	Tr 360 x 5	460	420	58	28	15	362.5	27.50
HM74	Tr 370 x 5	470	430	58	28	15	372.5	28.20
HM76	Tr 380 x 5	490	450	60	32	18	382.5	33.50
HM80	Tr 400 x 5	520	470	62	32	18	402.5	40.00
HM84	Tr 420 x 5	540	490	70	32	18	422.5	46.90
HM88	Tr 440 x 5	560	510	70	36	20	442.5	48.50
HM92	Tr 460 x 5	580	540	75	36	20	462.5	55.00
HM96	Tr 480 x 5	620	560	75	36	20	482.5	67.00
HM100	Tr 500 x 5	630	590	80	40	23	502.5	69.00
HM102	Tr 510 x 6	650	590	80	40	23	513	75.00
HM106	Tr 530 x 6	670	610	80	40	23	533	78.00
HM110	Tr 550 x 6	700	640	80	40	23	553	92.50

<sup>(1)</sup>Tr means 30°; trapezoid thread and the digits are major diameter of thread and pitch.

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### METRIC LOCKNUTS – continued

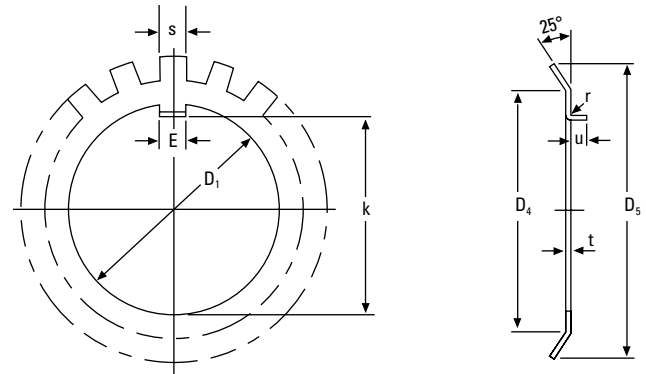


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Locknut No.	Thread <sup>(1)</sup> D <sub>1</sub>	D <sub>3</sub>	D <sub>4</sub>	B <sub>n</sub>	s	T	D <sub>6</sub>	Weight
	mm	mm	mm	mm	mm	mm	mm	kg
HML41	Tr 205 x 4	250	232	30	18	8	207	3.43
HML43	Tr 215 x 4	260	242	30	20	9	217	3.72
HML47	Tr 235 x 4	280	262	34	20	9	237	4.60
HML52	Tr 260 x 4	310	290	34	20	10	262	5.80
HML56	Tr 280 x 4	330	310	38	24	10	282	6.72
HML60	Tr 300 x 4	360	336	42	24	12	302	9.60
HML64	Tr 320 x 5	380	356	42	24	12	322.5	10.30
HML69	Tr 345 x 5	410	384	45	28	13	347.5	11.50
HML72	Tr 360 x 5	420	394	45	28	13	362.5	12.10
HML73	Tr 365 x 5	430	404	48	28	13	367.5	14.20
HML76	Tr 380 x 5	450	422	48	28	14	382.5	16.00
HML77	Tr 385 x 5	450	422	48	28	14	387.5	15.00
HML80	Tr 400 x 5	470	442	52	28	14	402.5	18.50
HML82	Tr 410 x 5	480	452	52	32	14	412.5	19.00
HML84	Tr 420 x 5	490	462	52	32	14	422.5	19.40
HML86	Tr 430 x 5	500	472	52	32	14	432.5	19.80
HML88	Tr 440 x 5	520	490	60	32	15	442.5	27.00
HML90	Tr 450 x 5	520	490	60	32	15	452.5	23.80
HML92	Tr 460 x 5	540	510	60	32	15	462.5	28.00
HML94	Tr 470 x 5	540	510	60	32	15	472.5	25.00
HML96	Tr 480 x 5	560	530	60	36	15	482.5	29.50
HML98	Tr 490 x 5	580	550	60	36	15	492.5	34.00
HML100	Tr 500 x 5	580	550	68	36	15	502.5	35.00
HML104	Tr 520 x 6	600	570	68	36	15	523	37.00
HML106	Tr 530 x 6	630	590	68	40	20	533	47.00
HML108	Tr 540 x 6	630	590	68	40	20	543	43.50

<sup>(1)</sup>Tr means 30°; trapezoid thread and the digits are major diameter of thread and pitch.

**METRIC LOCKWASHERS**



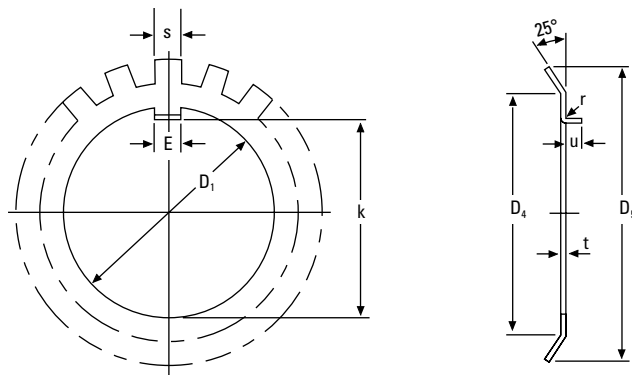
Lockwasher <sup>(1)</sup> No.	Thread D <sub>1</sub>	k	E	t	S	D <sub>4</sub>	D <sub>5</sub>	r <sup>(2)</sup>	u <sup>(2)</sup>	Number of Tangs	Weight per 100 pieces	Locknut No.
	mm	mm	mm	mm	mm	mm	mm	mm	mm		kg	
MB0	10	8.5	3	1	3	13	21	0.5	2	9	0.13	KM00
MB1	12	10.5	3	1	3	17	25	0.5	2	9	0.19	KM01
MB2	15	13.5	4	1	4	21	28	1	2.5	13	0.25	KM02
MB3	17	15.5	4	1	4	24	32	1	2.5	13	0.31	KM03
MB4	20	18.5	4	1	4	26	36	1	2.5	13	0.35	KM04
MB5	25	23	5	1.2	5	32	42	1	2.5	13	0.64	KM05
MB6	30	27.5	5	1.2	5	38	49	1	2.5	13	0.78	KM06
MB7	35	32.5	6	1.2	5	44	57	1	2.5	15	1.04	KM07
MB8	40	37.5	6	1.2	6	50	62	1	2.5	15	1.23	KM08
MB9	45	42.5	6	1.2	6	56	69	1	2.5	17	1.52	KM09
MB10	50	47.5	6	1.2	6	61	74	1	2.5	17	1.60	KM10
MB11	55	52.5	8	1.2	7	67	81	1	4	17	1.96	KM11
MB12	60	57.5	8	1.5	7	73	86	1.2	4	17	2.53	KM12
MB13	65	62.5	8	1.5	7	79	92	1.2	4	19	2.90	KM13
MB14	70	66.5	8	1.5	8	85	98	1.2	4	19	3.34	KM14
MB15	75	71.5	8	1.5	8	90	104	1.2	4	19	3.56	KM15
MB16	80	76.5	10	1.8	8	95	112	1.2	4	19	4.64	KM16
MB17	85	81.5	10	1.8	8	102	119	1.2	4	19	5.24	KM17
MB18	90	86.5	10	1.8	10	108	126	1.2	4	19	6.23	KM18
MB19	95	91.5	10	1.8	10	113	133	1.2	4	19	6.70	KM19
MB20	100	96.5	12	1.8	10	120	142	1.2	6	19	7.65	KM20
MB21	105	100.5	12	1.8	12	126	145	1.2	6	19	8.26	KM21
MB22	110	105.5	12	1.8	12	133	154	1.2	6	19	9.40	KM22
MB23	115	110.5	12	2	12	137	159	1.5	6	19	10.80	KM23
MB24	120	115	14	2	12	138	164	1.5	6	19	10.50	KM24
MB25	125	120	14	2	12	148	170	1.5	6	19	11.80	KM25
MB26	130	125	14	2	12	149	175	1.5	6	19	11.30	KM26
MB27	135	130	14	2	14	160	185	1.5	6	19	14.40	KM27
MB28	140	135	16	2	14	160	192	1.5	8	19	14.20	KM28
MB29	145	140	16	2	14	171	202	1.5	8	19	16.80	KM29

<sup>(1)</sup>No. MB0-MB40 also available in 304 stainless steel.

<sup>(2)</sup>Straight tangs when t ≥ 3 mm.

*Continued on next page.*

### METRIC LOCKWASHERS – continued



Continued from previous page.

Lockwasher <sup>(1)</sup> No.	Thread D <sub>1</sub>	k	E	t	S	D <sub>4</sub>	D <sub>5</sub>	r <sup>(2)</sup>	u <sup>(2)</sup>	Number of Tangs	Weight per 100 pieces	Locknut No.
	mm	mm	mm	mm	mm	mm	mm	mm	mm		kg	
MB30	150	145	16	2	14	171	205	1.5	8	19	15.50	KM30
MB31	155	147.5	16	2.5	16	182	212	1.5	8	19	20.90	KM31
MB32	160	154	18	2.5	18	182	217	1.5	8	19	22.20	KM32
MB33	165	157.5	18	2.5	16	193	222	1.5	8	19	24.10	KM33
MB34	170	164	18	2.5	16	193	232	1.5	8	19	24.70	KM34
MB36	180	174	20	2.5	18	203	242	1.5	8	19	26.80	KM36
MB38	190	184	20	2.5	18	214	252	1.5	8	19	27.80	KM38
MB40	200	194	20	2.5	18	226	262	1.5	8	19	29.30	KM40
MB44	220	213	24	3.0	20	250	292	–	–	19	48.30	HM3144
MB48	240	233	24	3.0	20	270	312	–	–	19	50.20	HM3148
MB52	260	253	28	3.0	24	300	342	–	–	23	72.90	HM3152
MB56	280	273	28	3.0	24	320	362	–	–	23	75.90	HM3156

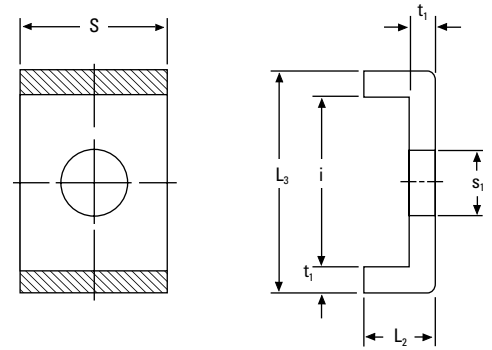
<sup>(1)</sup>No. MB0-MB40 also available in 304 stainless steel.

<sup>(2)</sup>Straight tangs when t ≥ 3 mm.

Lockwasher <sup>(1)</sup> No.	Thread D <sub>1</sub>	k	E	t	S	D <sub>4</sub>	D <sub>5</sub>	r	u	Number of Tangs	Weight per 100 pieces	Locknut No.
	mm	mm	mm	mm	mm	mm	mm	mm	mm		kg	
MBL24	120	115	14	2	12	133	155	1.5	6	19	7.70	KML24
MBL26	130	125	14	2	12	143	165	1.5	6	19	8.70	KML26
MBL28	140	135	16	2	14	151	175	1.5	8	19	10.90	KML28
MBL30	150	145	16	2	14	164	190	1.5	8	19	11.30	KML30
MBL32	160	154	18	2.5	16	174	200	1.5	8	19	16.20	KML32
MBL34	170	164	18	2.5	16	184	210	1.5	8	19	19.00	KML34
MBL36	180	174	20	2.5	18	192	220	1.5	8	19	18.00	KML36
MBL38	190	184	20	2.5	18	202	230	1.5	8	19	20.50	KML38
MBL40	200	194	20	2.5	18	218	240	1.5	8	19	21.40	KML40

<sup>(1)</sup>No. MBL24-MBL40 also available in 304 stainless steel.

**METRIC LOCKPLATES**

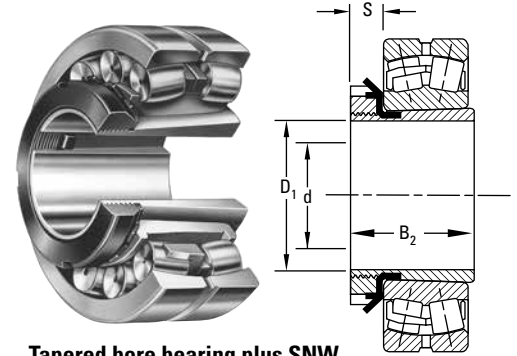


Lockplate No.	t <sub>1</sub>	S	L <sub>2</sub>	S <sub>1</sub>	i	L <sub>3</sub>	Appropriate Locknut No.	Weight per 100 pieces
	mm	mm	mm	mm	mm	mm		kg
MS3144	4	20	12	9	22.5	30.5	HM3144	2.60
MS3148	4	20	12	9	22.5	30.5	HM3148	2.60
MS3152	4	24	12	12	25.5	33.5	HM3152	3.39
MS3156	4	24	12	12	25.5	33.5	HM3156	3.39
MS3160	4	24	12	12	30.5	38.5	HM3160	3.79
MS3164	5	24	15	12	31	41	HM3164	5.35
MS3168	5	28	15	14	38	48	HM3168	6.65
MS3172	5	28	15	14	38	48	HM3172	6.65
MS3176	5	32	15	14	40	50	HM3176	7.96
MS3180	5	32	15	18	45	55	HM3180	8.20
MS3184	5	32	15	18	45	55	HM3184	8.20
MS3188	5	36	15	18	43	53	HM3188	9.00
MS3192	5	36	15	18	43	53	HM3192	9.00
MS3196	5	36	15	18	53	63	HM3196	10.40
MS31/500	5	40	15	18	45	55	HM31/500	10.50
MS3044	4	20	12	7	13.5	21.5	HM3044	2.12
MS3048	4	20	12	9	17.5	25.5	HM3048	2.29
MS3052	4	20	12	9	17.5	25.5	HM3052	2.29
MS3056	4	24	12	9	17.5	25.5	HM3056	2.92
MS3060	4	24	12	9	20.5	28.5	HM3060	3.16
MS3064	5	24	15	9	21	31	HM3064	4.56
MS3068	5	24	15	9	21	31	HM3068	4.56
MS3072	5	28	15	9	20	30	HM3072	5.03
MS3076	5	28	15	12	24	34	HM3076	5.28
MS3080	5	28	15	12	24	34	HM3080	5.28
MS3084	5	32	15	12	24	34	HM3084	6.11
MS3088	5	32	15	14	28	38	HM3088	6.45
MS3092	5	32	15	14	28	38	HM3092	6.45
MS3096	5	36	15	14	28	38	HM3096	7.29
MS30/500	5	36	15	14	28	38	HM30/500	7.29

## INCH ACCESSORIES – PULL-TYPE SLEEVES

### 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.



Tapered bore bearing plus SNW.

Bearing Number <sup>(1)</sup>	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			SNW/SNP Assembly Weight
	Assembly	Sleeve	Locknut	Lockwasher Lockplate	Diameter d	Tolerance <sup>(2)</sup>	B <sub>2</sub>	S	D <sub>1</sub>	
					in.	in.	in.	in.	in.	lbs.
<b>SERIES 222K</b>										
<b>22207K</b>	<b>SNW-07 x 1 3/16</b>	<b>S-07</b>	<b>N-07</b>	<b>W-07</b>	<b>1 3/16</b>	<b>-0.003</b>	<b>1 29/64</b>	<b>29/64</b>	<b>2 1/16</b>	<b>0.32</b>
<b>22208K</b>	<b>SNW-08 x 1 5/16</b>	<b>S-08</b>	<b>N-08</b>	<b>W-08</b>	<b>1 5/16</b>	<b>-0.003</b>	<b>1 21/32</b>	<b>29/64</b>	<b>2 1/4</b>	<b>0.42</b>
	SNW-09 x 1 3/8	S-09 x 1 3/8			1 3/8					
<b>22209K</b>	<b>SNW-09 x 1 7/16</b>	<b>S-09</b>	<b>N-09</b>	<b>W-09</b>	<b>1 7/16</b>	<b>-0.003</b>	<b>1 37/64</b>	<b>1/2</b>	<b>2 17/32</b>	<b>0.6</b>
	SNW-09 x 1 1/2	S-09 x 1 1/2			1 1/2					
<b>22210K</b>	<b>SNW-10 x 1 5/8</b>	<b>S-10</b>	<b>N-10</b>	<b>W-10</b>	<b>1 5/8</b>	<b>-0.003</b>	<b>1 49/64</b>	<b>9/16</b>	<b>2 11/16</b>	<b>0.7</b>
	SNW-10 x 1 3/4	S-10 x 1 3/4			1 3/4					
<b>22211K</b>	<b>SNW-11 x 1 7/8</b>	<b>S-11</b>	<b>N-11</b>	<b>W-11</b>	<b>1 7/8</b>	<b>-0.003</b>	<b>1 27/32</b>	<b>9/16</b>	<b>2 31/32</b>	<b>0.8</b>
	SNW-11 x 2	S-11 x 2			2					
<b>22212K</b>	<b>SNW-12 x 2 1/16</b>	<b>S-12</b>	<b>N-12</b>	<b>W-12</b>	<b>2 1/16</b>	<b>-0.004</b>	<b>1 63/64</b>	<b>19/32</b>	<b>3 5/32</b>	<b>1.1</b>
	SNW-13 x 2 1/8	S-13 x 2 1/8			2 1/8					
<b>22213K</b>	<b>SNW-13 x 2 3/16</b>	<b>S-13</b>	<b>N-13</b>	<b>W-13</b>	<b>2 3/16</b>	<b>-0.004</b>	<b>2 3/32</b>	<b>5/8</b>	<b>3 3/8</b>	<b>1.4</b>
	SNW-13 x 2 1/4	S-13 x 2 1/4			2 1/4					
<b>22214K</b>	<b>SNW-14 x 2 5/16</b>	<b>S-14</b>	<b>N-14</b>	<b>W-14</b>	<b>2 5/16</b>	<b>-0.004</b>	<b>2 11/64</b>	<b>5/8</b>	<b>3 5/8</b>	<b>1.8</b>
	SNW-15 x 2 3/8	S-15 x 2 3/8			2 3/8					
<b>22215K</b>	<b>SNW-15 x 2 7/16</b>	<b>S-15</b>	<b>AN-15</b>	<b>W-15</b>	<b>2 7/16</b>	<b>-0.004</b>	<b>2 19/64</b>	<b>43/64</b>	<b>3 7/8</b>	<b>2</b>
	SNW-15 x 2 1/2	S-15 x 2 1/2			2 1/2					
<b>22216K</b>	<b>SNW-16 x 2 5/8</b>	<b>S-16</b>	<b>AN-16</b>	<b>W-16</b>	<b>2 5/8</b>	<b>-0.004</b>	<b>2 3/8</b>	<b>43/64</b>	<b>4 5/32</b>	<b>2.4</b>
	SNW-16 x 2 3/4	S-16 x 2 3/4			2 3/4					
<b>22217K</b>	SNW-17 x 2 13/16	S-17 x 2 13/16			2 13/16					
	SNW-17 x 2 7/8	S-17 x 2 7/8			2 7/8					
	<b>SNW-17 x 2 15/16</b>	<b>S-17</b>	<b>AN-17</b>	<b>W-17</b>	<b>2 15/16</b>	<b>-0.004</b>	<b>2 31/64</b>	<b>45/64</b>	<b>4 13/32</b>	<b>3.0</b>
	SNW-17 x 3	S-17 x 3			3					
<b>22218K</b>	SNW-18 x 3 1/16	S-18 x 3 1/16			3 1/16					
	SNW-18 x 3 1/8	S-18 x 3 1/8			3 1/8					
	<b>SNW-18 x 3 3/16</b>	<b>S-18</b>	<b>AN-18</b>	<b>W-18</b>	<b>3 3/16</b>	<b>-0.004</b>	<b>2 41/64</b>	<b>25/32</b>	<b>4 21/32</b>	<b>3.0</b>
	SNW-18 x 3 1/4	S-18 x 3 1/4			3 1/4					
<b>22219K</b>	<b>SNW-19 x 3 5/16</b>	<b>S-19</b>	<b>AN-19</b>	<b>W-19</b>	<b>3 5/16</b>	<b>-0.004</b>	<b>2 49/64</b>	<b>13/16</b>	<b>4 15/16</b>	<b>3.3</b>
	SNW-20 x 3 3/8	S-20 x 3 3/8			3 3/8					
<b>22220K</b>	<b>SNW-20 x 3 7/16</b>	<b>S-20</b>	<b>AN-20</b>	<b>W-20</b>	<b>3 7/16</b>	<b>-0.004</b>	<b>2 7/8</b>	<b>27/32</b>	<b>5 3/16</b>	<b>4.4</b>
	SNW-20 x 3 1/2	S-20 x 3 1/2			3 1/2					
<b>22222K</b>	SNW-22 x 3 13/16	S-22 x 3 13/16			3 13/16					
	SNW-22 x 3 7/8	S-22 x 3 7/8			3 7/8					
	<b>SNW-22 x 3 15/16</b>	<b>S-22</b>	<b>AN-22</b>	<b>W-22</b>	<b>3 15/16</b>	<b>-0.004</b>	<b>3 13/64</b>	<b>29/32</b>	<b>5 23/32</b>	<b>5.0</b>
	SNW-22 x 4	S-22 x 4			4					

<sup>(1)</sup> Bold shaft sizes are standard. When ordering non-standard accessories, specify shaft size.

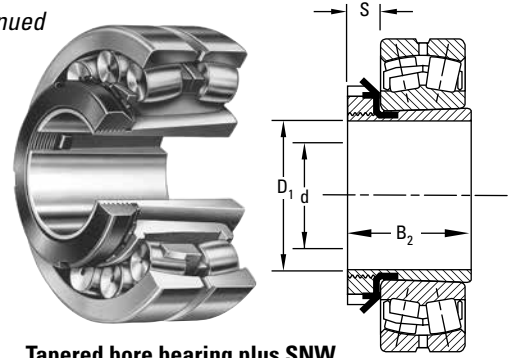
<sup>(2)</sup> Tolerance range is from +0 to value listed.

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### INCH ACCESSORIES – PULL-TYPE SLEEVES – continued

#### 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.



Tapered bore bearing plus SNW.

Continued from previous page.

Bearing Number <sup>(1)</sup>	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			SNW/SNP Assembly Weight
	Assembly	Sleeve	Locknut	Lockwasher Lockplate	Diameter d	Tolerance <sup>(2)</sup>	B <sub>2</sub>	S	D <sub>1</sub>	
					in.	in.	in.	in.	in.	lbs.
22224K	SNW-24 x 4 1/16	S-22 x 4 1/16			4 1/16					
	SNW-24 x 4 1/8	S-22 x 4 1/8			4 1/8					
	<b>SNW-24 x 4 3/16</b>	<b>S-24</b>	<b>AN-24</b>	<b>W-24</b>	<b>4 3/16</b>	<b>-0.005</b>	<b>3 15/32</b>	<b>15/16</b>	<b>6 1/8</b>	<b>6.7</b>
	SNW-24 x 4 1/4	S-24 x 4 1/4			4 1/4					
22226K	SNW-26 x 4 5/16	S-26 x 4 5/16			4 5/16					
	SNW-26 x 4 3/8	S-26 x 4 3/8			4 3/8					
	<b>SNW-26 x 4 7/16</b>	<b>S-26</b>	<b>AN-26</b>	<b>W-26</b>	<b>4 7/16</b>	<b>-0.005</b>	<b>3 49/64</b>	<b>1</b>	<b>6 3/4</b>	<b>8.6</b>
	SNW-26 x 4 1/2	S-26 x 4 1/2			4 1/2					
22228K	SNW-28 x 4 13/16	S-28 x 4 13/16			4 13/16					
	SNW-28 x 4 7/8	S-28 x 4 7/8			4 7/8					
	<b>SNW-28 x 4 15/16</b>	<b>S-28</b>	<b>AN-28</b>	<b>W-28</b>	<b>4 15/16</b>	<b>-0.005</b>	<b>3 63/64</b>	<b>1 1/16</b>	<b>7 3/32</b>	<b>10.3</b>
	SNW-28 x 5	S-28 x 5			5					
22230K	SNW-30 x 5 1/8	S-30 x 5 1/8			5 1/8					
	<b>SNW-30 x 5 3/16</b>	<b>S-30</b>	<b>AN-30</b>	<b>W-30</b>	<b>5 3/16</b>	<b>-0.005</b>	<b>4 15/64</b>	<b>1 1/8</b>	<b>7 11/16</b>	<b>13.5</b>
	SNW-30 x 5 1/4	S-30 x 5 1/4			5 1/4					
22232K	SNW-32 x 5 3/8	S-30 x 5 3/8			5 3/8					
	<b>SNW-32 x 5 7/16</b>	<b>S-32</b>	<b>AN-32</b>	<b>W-32</b>	<b>5 7/16</b>	<b>-0.005</b>	<b>4 37/64</b>	<b>1 3/16</b>	<b>8 1/16</b>	<b>15.6</b>
	SNW-32 x 5 1/2	S-32 x 5 1/2			5 1/2					
22234K	SNW-34 x 5 13/16	S-34 x 5 13/16			5 13/16					
	SNW-34 x 5 7/8	S-34 x 5 7/8			5 7/8					
	<b>SNW-34 x 5 15/16</b>	<b>S-34</b>	<b>AN-34</b>	<b>W-34</b>	<b>5 15/16</b>	<b>-0.005</b>	<b>4 27/32</b>	<b>1 7/32</b>	<b>8 21/32</b>	<b>19.4</b>
	SNW-34 x 6	S-34 x 6			6					
22236K	SNW-36 x 6 15/16	S-36 x 6 15/16			6 15/16					
	SNW-36 x 6 3/8	S-36 x 6 3/8			6 3/8					
	<b>SNW-36 x 6 7/16</b>	<b>S-36</b>	<b>AN-36</b>	<b>W-36</b>	<b>6 7/16</b>	<b>-0.005</b>	<b>5 1/32</b>	<b>1 1/4</b>	<b>9 1/16</b>	<b>20.5</b>
	SNW-36 x 6 1/2	S-36 x 6 1/2			6 1/2					
22238K	SNW-38 x 6 13/16	S-38 x 6 13/16			6 13/16					
	SNW-38 x 6 7/8	S-38 x 6 7/8			6 7/8					
	<b>SNW-38 x 6 15/16</b>	<b>S-38</b>	<b>AN-38</b>	<b>W-38</b>	<b>6 15/16</b>	<b>-0.005</b>	<b>5 17/64</b>	<b>1 9/32</b>	<b>9 15/32</b>	<b>23.4</b>
	SNW-38 x 7	S-38 x 7			7					
22240K	SNW-40 x 7 1/8	S-40 x 7 1/8			7 1/8					
	<b>SNW-40 x 7 3/16</b>	<b>S-40</b>	<b>AN-40</b>	<b>W-40</b>	<b>7 3/16</b>	<b>-0.005</b>	<b>5 31/64</b>	<b>1 11/32</b>	<b>9 27/32</b>	<b>30.5</b>
	SNW-40 x 7 1/4	S-40 x 7 1/4			7 1/4					
22244K	SNW-44 x 7 13/16	S-44 x 7 13/16			7 13/16					
	SNW-44 x 7 7/8	S-44 x 7 7/8			7 7/8					
	<b>SNW-44 x 7 15/16</b>	<b>S-44</b>	<b>N-044</b>	<b>W-44</b>	<b>7 15/16</b>	<b>-0.005</b>	<b>5 29/32</b>	<b>1 3/8</b>	<b>11</b>	<b>33.0</b>
	SNW-44 x 8	S-44 x 8			8					
22248K	<b>SNP-48 x 8 7/16</b>	<b>S-48</b>	<b>N-048</b>	<b>P-48</b>	<b>8 7/16</b>	<b>-0.006</b>	<b>6 5/8</b>	<b>1 23/64</b>	<b>11 7/16</b>	<b>37.5</b>
	SNP-48 x 8 15/16	S-48 x 8 15/16			8 15/16					
22252K	<b>SNP-52 x 9 7/16</b>	<b>S-52</b>	<b>N-052</b>	<b>P-52</b>	<b>9 7/16</b>	<b>-0.006</b>	<b>7 37/64</b>	<b>1 27/64</b>	<b>12 3/16</b>	<b>44.0</b>

<sup>(1)</sup>Bold shaft sizes are standard. When ordering non-standard accessories, specify shaft size.

<sup>(2)</sup>Tolerance range is from +0 to value listed.

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Bearing Number <sup>(1)</sup>	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			SNW/SNP Assembly Weight
	Assembly	Sleeve	Locknut	Lockwasher Lockplate	Diameter d	Tolerance <sup>(2)</sup>	B <sub>2</sub>	S	D <sub>1</sub>	
					in.	in.	in.	in.	in.	lbs.
<b>SERIES 230K</b>										
<b>23024K</b>	SNW-3024 x 4 1/16	S-3024 x 4 1/16			4 1/16					
	SNW-3024 x 4 1/8	S-3024 x 4 1/8			4 1/8					
	<b>SNW-3024 x 4 3/16</b>	<b>S-3024</b>	<b>N-024</b>	<b>W-024</b>	<b>4 3/16</b>	<b>-0.005</b>	<b>2 9/64</b>	<b>13/16</b>	<b>5 11/16</b>	<b>6.1</b>
	SNW-3024 x 4 1/4	S-3024 x 4 1/4			4 1/4					
<b>23026K</b>	SNW-3026 x 4 3/16	S-3024 x 4 3/16			4 3/16					
	SNW-3026 x 4 3/8	S-3024 x 4 3/8			4 3/8					
	<b>SNW-3026 x 4 7/16</b>	<b>S-3026</b>	<b>N-026</b>	<b>W-026</b>	<b>4 7/16</b>	<b>-0.005</b>	<b>3 15/64</b>	<b>7/8</b>	<b>6 1/8</b>	<b>7.5</b>
	SNW-3026 x 4 1/2	S-3026 x 4 1/2			4 1/2					
<b>23028K</b>	SNW-3028 x 4 13/16	S-3028 x 4 13/16			4 13/16					
	SNW-3028 x 4 7/8	S-3028 x 4 7/8			4 7/8					
	<b>SNW-3028 x 4 15/16</b>	<b>S-3028</b>	<b>N-028</b>	<b>W-028</b>	<b>4 15/16</b>	<b>-0.005</b>	<b>3 11/32</b>	<b>15/16</b>	<b>6 1/2</b>	<b>8.4</b>
<b>23030K</b>	SNW-3030 x 5 1/8	S-3030 x 5 1/8			5 1/8					
	<b>SNW-3030 x 5 3/16</b>	<b>S-3030</b>	<b>N-030</b>	<b>W-030</b>	<b>5 3/16</b>	<b>-0.005</b>	<b>3 31/64</b>	<b>31/32</b>	<b>7 1/8</b>	<b>9.8</b>
	SNW-3030 x 5 1/4	S-3030 x 5 1/4			5 1/4					
<b>23032K</b>	SNW-3032 x 5 3/8	S-3032 x 5 3/8			5 3/8					
	<b>SNW-3032 x 5 7/16</b>	<b>S-3032</b>	<b>N-032</b>	<b>W-032</b>	<b>5 7/16</b>	<b>-0.005</b>	<b>3 23/32</b>	<b>1 1/32</b>	<b>7 1/2</b>	<b>11.8</b>
	SNW-3032 x 5 1/2	S-3032 x 5 1/2			5 1/2					
<b>23034K</b>	SNW-3034 x 5 13/16	S-3034 x 5 13/16			5 13/16					
	SNW-3034 x 5 7/8	S-3034 x 5 7/8			5 7/8					
	<b>SNW-3034 x 5 15/16</b>	<b>S-3034</b>	<b>N-034</b>	<b>W-034</b>	<b>5 15/16</b>	<b>-0.005</b>	<b>4 1/64</b>	<b>1 1/16</b>	<b>7 7/8</b>	<b>13.3</b>
	SNW-3034 x 6	S-3034 x 6			6					
<b>23036K</b>	SNW-3036 x 6 3/16	S-3036 x 6 3/16			6 3/16					
	SNW-3036 x 6 3/8	S-3036 x 6 3/8			6 3/8					
	<b>SNW-3036 x 6 7/16</b>	<b>S-3036</b>	<b>N-036</b>	<b>W-036</b>	<b>6 7/16</b>	<b>-0.005</b>	<b>4 11/32</b>	<b>1 3/32</b>	<b>8 1/4</b>	<b>15.2</b>
	SNW-3036 x 6 1/2	S-3036 x 6 1/2			6 1/2					
<b>23038K</b>	SNW-3038 x 6 13/16	S-3038 x 6 13/16			6 13/16					
	SNW-3038 x 6 7/8	S-3038 x 6 7/8			6 7/8					
	<b>SNW-3038 x 6 15/16</b>	<b>S-3038</b>	<b>N-038</b>	<b>W-038</b>	<b>6 15/16</b>	<b>-0.005</b>	<b>4 13/32</b>	<b>1 1/8</b>	<b>8 11/16</b>	<b>16.7</b>
	SNW-3038 x 7	S-3038 x 7			7					
<b>23040K</b>	SNW-3040 x 7 1/8	S-3040 x 7 1/8			7 1/8					
	<b>SNW-3040 x 7 3/16</b>	<b>S-3040</b>	<b>N-040</b>	<b>W-040</b>	<b>7 3/16</b>	<b>-0.005</b>	<b>4 3/4</b>	<b>1 3/16</b>	<b>9 7/16</b>	<b>19.7</b>
	SNW-3040 x 7 1/4	S-3040 x 7 1/4			7 1/4					
<b>23044K</b>	SNW-3044 x 7 13/16	S-3044 x 7 13/16			7 13/16					
	SNW-3044 x 7 7/8	S-3044 x 7 7/8			7 7/8					
	<b>SNW-3044 x 7 15/16</b>	<b>S-3044</b>	<b>N-044</b>	<b>W-044</b>	<b>7 15/16</b>	<b>-0.005</b>	<b>5 1/8</b>	<b>1 1/4</b>	<b>10 1/4</b>	<b>24.4</b>
	SNW-3044 x 8	S-3044 x 8			8					

<sup>(1)</sup>Bold shaft sizes are standard. When ordering non-standard accessories, specify shaft size.

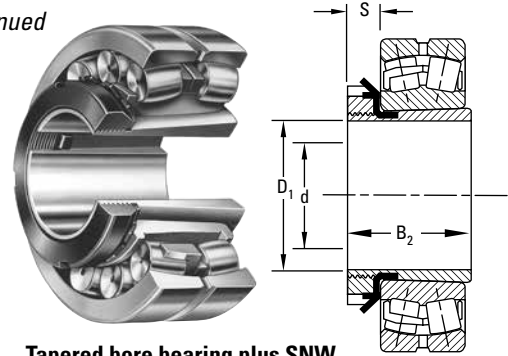
<sup>(2)</sup>Tolerance range is from +0 to value listed.

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### INCH ACCESSORIES – PULL-TYPE SLEEVES – continued

#### 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.



Tapered bore bearing plus SNW.

Continued from previous page.

Bearing Number <sup>(1)</sup>	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			SNW/SNP Assembly Weight
	Assembly	Sleeve	Locknut	Lockwasher Lockplate	Diameter d	Tolerance <sup>(2)</sup>	B <sub>2</sub>	S	D <sub>1</sub>	
					in.	in.	in.	in.	in.	lbs.
<b>23048K</b>	SNP-3048 x 8 7/16	S-3048 x 8 7/16			8 7/16					
	SNP-3048 x 8 1/2	S-3048 x 8 1/2			8 1/2					
	<b>SNP-3048 x 8 15/16</b>	<b>S-3048</b>	<b>N-048</b>	<b>P-48</b>	<b>8 15/16</b>	<b>-0.006</b>	<b>5 7/16</b>	<b>1 11/32</b>	<b>11 7/16</b>	<b>32.2</b>
	SNP-3048 x 9	S-3048 x 9			9					
<b>23052K</b>	<b>SNP-3052 x 9 7/16</b>	<b>S-3052</b>	<b>N-052</b>	<b>P-52</b>	<b>9 7/16</b>	<b>-0.006</b>	<b>6 1/64</b>	<b>1 13/32</b>	<b>12 3/16</b>	<b>41.1</b>
	SNP-3052 x 9 1/2	S-3052 x 9 1/2			9 1/2					
<b>23056K</b>	SNP-3056 x 9 15/16	S-3056 x 9 15/16			9 15/16					
	SNP-3056 x 10	S-3056 x 10			10					
	<b>SNP-3056 x 10 7/16</b>	<b>S-3056</b>	<b>N-056</b>	<b>P-56</b>	<b>10 7/16</b>	<b>-0.007</b>	<b>6 3/16</b>	<b>1 1/2</b>	<b>13</b>	<b>45.4</b>
	SNP-3056 x 10 1/2	S-3056 x 10 1/2			10 1/2					
<b>23060K</b>	<b>SNP-3060 x 10 15/16</b>	<b>S-3060</b>	<b>N-060</b>	<b>P-60</b>	<b>10 15/16</b>	<b>-0.007</b>	<b>6 47/64</b>	<b>1 9/16</b>	<b>14 3/16</b>	<b>58.9</b>
	SNP-3060 x 11	S-3060 x 11			11					
<b>23064K</b>	SNP-3064 x 11 7/16	S-3060 x 11 7/16			11 7/16					
	SNP-3064 x 11 1/2	S-3060 x 11 1/2			11 1/2					
	<b>SNP-3064 x 11 15/16</b>	<b>S-3064</b>	<b>N-064</b>	<b>P-64</b>	<b>11 15/16</b>	<b>-0.007</b>	<b>6 61/64</b>	<b>1 21/32</b>	<b>15</b>	<b>65.7</b>
	SNP-3064 x 12	S-3064 x 12			12					
<b>23068K</b>	<b>SNP-3068 X 12 7/16</b>	<b>S-3068</b>	<b>N-068</b>	<b>P-68</b>	<b>12 7/16</b>	<b>-0.008</b>	<b>7 35/64</b>	<b>1 25/32</b>	<b>15 3/4</b>	<b>77.8</b>
	SNP-3068 X 12 1/2	S-3068 x 12 1/2			12 1/2					
<b>23072K</b>	SNP-3072 X 12 15/16	S-3072 x 12 15/16			12 15/16					
	SNP-3072 X 13	S-3072 x 13			13					
	<b>SNP-3072 X 13 7/16</b>	<b>S-3072</b>	<b>N-072</b>	<b>P-72</b>	<b>13 7/16</b>	<b>-0.008</b>	<b>7 37/64</b>	<b>1 25/32</b>	<b>16 1/2</b>	<b>86.2</b>
	SNP-3072 X 13 1/2	S-3072 x 13 1/2			13 1/2					
<b>23076K</b>	<b>SNP-3076 X 13 15/16</b>	<b>S-3076</b>	<b>N-076</b>	<b>P-76</b>	<b>13 15/16</b>	<b>-0.008</b>	<b>7 3/4</b>	<b>1 57/64</b>	<b>17 3/4</b>	<b>94.3</b>
	SNP-3076 X 14	S-3076 x 14			14					
<b>23080K</b>	<b>SNP-3080 x 15</b>	<b>S-3080</b>	<b>N-080</b>	<b>P-80</b>	<b>15</b>	<b>-0.008</b>	<b>8 13/32</b>	<b>2 1/16</b>	<b>18 1/2</b>	<b>100.0</b>
<b>23084K</b>	<b>SNP-3084 x 15 3/4</b>	<b>S-3084</b>	<b>N-084</b>	<b>P-84</b>	<b>15 3/4</b>	<b>-0.008</b>	<b>8 31/64</b>	<b>2 1/16</b>	<b>19 5/16</b>	<b>110.0</b>
<b>23088K</b>	<b>SNP-3088 x 16 1/2</b>	<b>S-3088</b>	<b>N-088</b>	<b>P-88</b>	<b>16 1/2</b>	<b>-0.008</b>	<b>9 7/64</b>	<b>2 3/8</b>	<b>20 1/2</b>	<b>144.0</b>
<b>23092K</b>	<b>SNP-3092 x 17</b>	<b>S-3092</b>	<b>N-092</b>	<b>P-92</b>	<b>17</b>	<b>-0.008</b>	<b>9 11/32</b>	<b>2 3/8</b>	<b>21 1/4</b>	<b>153.0</b>
<b>23096K</b>	<b>SNP-3096 x 18</b>	<b>S-3096</b>	<b>N-096</b>	<b>P-96</b>	<b>18</b>	<b>-0.008</b>	<b>9 29/64</b>	<b>2 3/8</b>	<b>22 1/16</b>	<b>162.0</b>
<b>230/500K</b>	<b>SNP-30/500 x 18 1/2</b>	<b>S-30/500</b>	<b>N-500</b>	<b>P-500</b>	<b>18 1/2</b>	<b>-0.008</b>	<b>9 27/32</b>	<b>2 45/64</b>	<b>22 13/16</b>	<b>180.0</b>
<b>230/530K</b>	<b>SNP-30/530 x 19 1/2</b>	<b>S-30/530</b>	<b>N-530</b>	<b>P-530</b>	<b>19 1/2</b>	<b>-0.008</b>	<b>10 37/64</b>	<b>2 45/64</b>	<b>24 13/16</b>	<b>221.0</b>
<b>230/560K</b>	<b>SNP-30/560 x 20 15/16</b>	<b>S-30/560</b>	<b>N-560</b>	<b>P-560</b>	<b>20 15/16</b>	<b>-0.008</b>	<b>11 7/32</b>	<b>2 61/64</b>	<b>25 9/16</b>	<b>243.0</b>
<b>230/600K</b>	<b>SNP-30/600 x 21 15/16</b>	<b>S-30/600</b>	<b>N-600</b>	<b>P-600</b>	<b>21 15/16</b>	<b>-0.008</b>	<b>11 29/64</b>	<b>2 61/64</b>	<b>27 9/16</b>	<b>322.0</b>
<b>230/630K</b>	<b>SNP-30/630 x 23 15/16</b>	<b>S-30/630</b>	<b>N-630</b>	<b>P-630</b>	<b>23 15/16</b>	<b>-0.008</b>	<b>11 59/64</b>	<b>2 61/64</b>	<b>28 3/4</b>	<b>350.0</b>
<b>230/670K</b>	<b>SNP-30/670 x 24 15/16</b>	<b>S-30/670</b>	<b>N-670</b>	<b>P-670</b>	<b>24 15/16</b>	<b>-0.008</b>	<b>12 27/32</b>	<b>3 9/64</b>	<b>30 11/16</b>	<b>421.0</b>
<b>230/710K</b>	<b>SNP-30/710 x 26 7/16</b>	<b>S-30/710</b>	<b>N-710</b>	<b>P-710</b>	<b>26 7/16</b>	<b>-0.008</b>	<b>13 1/2</b>	<b>3 37/64</b>	<b>32 11/16</b>	<b>492.0</b>
<b>230/750K</b>	<b>SNP-30/750 x 27 15/16</b>	<b>S-30/750</b>	<b>N-750</b>	<b>P-750</b>	<b>27 15/16</b>	<b>-0.008</b>	<b>14 3/32</b>	<b>3 37/64</b>	<b>34 1/4</b>	<b>536.0</b>
<b>230/800K</b>	<b>SNP-30/800 x 29 7/16</b>	<b>S-30/800</b>	<b>N-800</b>	<b>P-800</b>	<b>29 7/16</b>	<b>-0.008</b>	<b>14 13/32</b>	<b>3 37/64</b>	<b>36 1/4</b>	<b>662.0</b>
<b>230/850K</b>	<b>SNP-30/850 x 31 7/16</b>	<b>S-30/850</b>	<b>N-850</b>	<b>P-850</b>	<b>31 7/16</b>	<b>-0.008</b>	<b>15</b>	<b>3 37/64</b>	<b>38 9/16</b>	<b>747.0</b>
<b>230/900K</b>	<b>SNP-30/900 x 33 7/16</b>	<b>S-30/900</b>	<b>N-900</b>	<b>P-900</b>	<b>33 7/16</b>	<b>-0.008</b>	<b>15 11/16</b>	<b>3 61/64</b>	<b>40 9/16</b>	<b>853.0</b>
<b>230/950K</b>	<b>SNP-30/950 x 34 7/16</b>	<b>S-30/950</b>	<b>N-950</b>	<b>P-950</b>	<b>35 7/16</b>	<b>-0.008</b>	<b>16 1/2</b>	<b>3 61/64</b>	<b>43</b>	<b>935.0</b>

<sup>(1)</sup>Bold shaft sizes are standard. When ordering non-standard accessories, specify shaft size.

<sup>(2)</sup>Tolerance range is from +0 to value listed.

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Bearing Number <sup>(1)</sup>	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			SNW/SNP Assembly Weight
	Assembly	Sleeve	Locknut	Lockwasher Lockplate	Diameter d	Tolerance <sup>(2)</sup>	B <sub>2</sub>	S	D <sub>1</sub>	
					in.	in.	in.	in.	in.	lbs.
<b>SERIES 223K AND 232K</b>										
<b>22308K</b>	<b>SNW-108 x 1 5/16</b>	<b>S-108</b>	<b>N-08</b>	<b>W-08</b>	<b>1 5/16</b>	<b>-0.003</b>	<b>2 1/64</b>	<b>1/2</b>	<b>2 1/4</b>	<b>0.8</b>
<b>22309K</b>	<b>SNW-109 x 1 7/16</b>	<b>S-109</b>	<b>N-09</b>	<b>W-09</b>	<b>1 7/16</b>	<b>-0.003</b>	<b>2 9/64</b>	<b>1/2</b>	<b>2 17/32</b>	<b>0.8</b>
<b>22310K</b>	<b>SNW-110 x 1 11/16</b>	<b>S-110</b>	<b>N-10</b>	<b>W-10</b>	<b>1 11/16</b>	<b>-0.003</b>	<b>2 25/64</b>	<b>9/16</b>	<b>2 11/16</b>	<b>0.9</b>
<b>22311K</b>	<b>SNW-111 x 1 15/16</b>	<b>S-111</b>	<b>N-11</b>	<b>W-11</b>	<b>1 15/16</b>	<b>-0.003</b>	<b>2 33/64</b>	<b>9/16</b>	<b>2 31/32</b>	<b>0.9</b>
<b>22312K</b>	<b>SNW-112 x 2 1/16</b>	<b>S-112</b>	<b>N-12</b>	<b>W-12</b>	<b>2 1/16</b>	<b>-0.004</b>	<b>2 21/32</b>	<b>19/32</b>	<b>3 5/32</b>	<b>1.2</b>
<b>22313K</b>	<b>SNW-113 x 2 3/16</b>	<b>S-113</b>	<b>N-13</b>	<b>W-13</b>	<b>2 3/16</b>	<b>-0.004</b>	<b>2 49/64</b>	<b>5/8</b>	<b>3 3/8</b>	<b>1.7</b>
<b>22314K</b>	<b>SNW-114 x 2 5/16</b>	<b>S-114</b>	<b>N-14</b>	<b>W-14</b>	<b>2 5/16</b>	<b>-0.004</b>	<b>2 61/64</b>	<b>5/8</b>	<b>3 5/8</b>	<b>2.3</b>
<b>22315K</b>	SNW-115 x 2 3/8	S-115 x 2 3/8			2 3/8					
	<b>SNW-115 x 2 7/16</b>	<b>S-115</b>	<b>AN-15</b>	<b>W-15</b>	<b>2 7/16</b>	<b>-0.004</b>	<b>3 5/64</b>	<b>43/64</b>	<b>3 7/8</b>	<b>3.0</b>
<b>22316K</b>	SNW-116 x 2 1/2	S-116 x 2 1/2			2 1/2					
	<b>SNW-116 x 2 5/8</b>	<b>S-116</b>	<b>AN-16</b>	<b>W-16</b>	<b>2 5/8</b>	<b>-0.004</b>	<b>3 13/64</b>	<b>43/64</b>	<b>4 5/32</b>	<b>3.2</b>
<b>22317K</b>	SNW-116 x 2 3/4	S-116 x 2 3/4			2 3/4					
	SNW-117 x 2 13/16	S-117 x 2 13/16			2 13/16					
<b>22317K</b>	SNW-117 x 2 7/8	S-117 x 2 7/8			2 7/8					
	<b>SNW-117 x 2 15/16</b>	<b>S-117</b>	<b>AN-17</b>	<b>W-17</b>	<b>2 15/16</b>	<b>-0.004</b>	<b>3 5/16</b>	<b>45/64</b>	<b>4 13/32</b>	<b>3.5</b>
<b>22318K</b>	SNW-117 x 3	S-117 x 3			3					
	SNW-118 x 3 1/16	S-118 x 3 1/16			3 1/16					
<b>22318K</b>	SNW-118 x 3 1/8	S-118 x 3 1/8			3 1/8					
	<b>SNW-118 x 3 3/16</b>	<b>S-118</b>	<b>AN-18</b>	<b>W-18</b>	<b>3 3/16</b>	<b>-0.004</b>	<b>3 35/64</b>	<b>25/32</b>	<b>4 21/32</b>	<b>4.0</b>
<b>22319K</b>	SNW-118 x 3 1/4	S-118 x 3 1/4			3 1/4					
	<b>SNW-119 x 3 5/16</b>	<b>S-119</b>	<b>AN-19</b>	<b>W-19</b>	<b>3 5/16</b>	<b>-0.004</b>	<b>3 45/64</b>	<b>13/16</b>	<b>4 15/16</b>	<b>5.0</b>
<b>22320K 23220K</b>	SNW-120 x 3 9/16	S-120 x 3 9/16			3 9/16					
	SNW-120 x 3 3/8	S-120 x 3 3/8			3 3/8					
<b>22320K 23220K</b>	<b>SNW-120 x 3 7/16</b>	<b>S-120</b>	<b>AN-20</b>	<b>W-20</b>	<b>3 7/16</b>	<b>-0.004</b>	<b>3 31/32</b>	<b>27/32</b>	<b>5 3/16</b>	<b>6.2</b>
	SNW-120 x 3 1/2	S-120 x 3 1/2			3 1/2					
<b>22322K 23222K</b>	SNW-122 x 3 13/16	S-122 x 3 13/16			3 13/16					
	SNW-122 x 3 3/8	S-122 x 3 3/8			3 3/8					
<b>22322K 23222K</b>	<b>SNW-122 x 3 15/16</b>	<b>S-122</b>	<b>AN-22</b>	<b>W-22</b>	<b>3 15/16</b>	<b>-0.004</b>	<b>4 11/32</b>	<b>29/32</b>	<b>5 23/32</b>	<b>6.5</b>
	SNW-122 x 4	S-122 x 4			4					

<sup>(1)</sup>Bold shaft sizes are standard. When ordering non-standard accessories, specify shaft size.

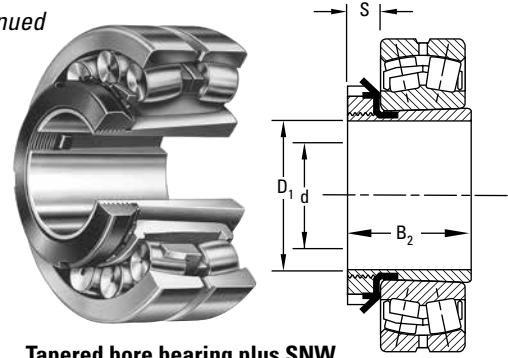
<sup>(2)</sup>Tolerance range is from +0 to value listed.

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### INCH ACCESSORIES – PULL-TYPE SLEEVES – continued

#### 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.



Tapered bore bearing plus SNW.

Continued from previous page.

Bearing Number <sup>(1)</sup>	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			SNW/SNP Assembly Weight
	Assembly	Sleeve	Locknut	Lockwasher Lockplate	Diameter d	Tolerance <sup>(2)</sup>	B <sub>2</sub>	S	D <sub>1</sub>	
					in.	in.	in.	in.	in.	lbs.
<b>22324K</b> 23224K	SNW-124 x 4 1/16	S-124 x 4 1/16			4 1/16					
	SNW-124 x 4 1/8	S-124 x 4 1/8			4 1/8					
	<b>SNW-124 x 4 3/16</b>	<b>S-124</b>	<b>AN-24</b>	<b>W-24</b>	<b>4 3/16</b>	<b>-0.005</b>	<b>4 41/64</b>	<b>15/16</b>	<b>6 1/8</b>	<b>8.0</b>
	SNW-124 x 4 1/4	S-124 x 4 1/4			4 1/4					
<b>22326K</b> 23226K	SNW-126 x 4 5/16	S-126 x 4 5/16			4 5/16					
	SNW-126 x 4 3/8	S-126 4 3/8			4 3/8					
	<b>SNW-126 x 4 7/16</b>	<b>S-126</b>	<b>AN-26</b>	<b>W-26</b>	<b>4 7/16</b>	<b>-0.005</b>	<b>4 63/64</b>	<b>1</b>	<b>6 3/4</b>	<b>12.4</b>
	SNW-126 x 4 1/2	S-126 x 4 1/2			4 1/2					
	SNW-126 x 4 9/16	S-126 x 4 9/16			4 9/16					
<b>22328K</b> 23228K	SNW-128 x 4 13/16	S-128 x 4 13/16			4 13/16					
	SNW-128 x 4 7/8	S-128 x 4 7/8			4 7/8					
	<b>SNW-128 x 4 15/16</b>	<b>S-128</b>	<b>AN-28</b>	<b>W-28</b>	<b>4 15/16</b>	<b>-0.005</b>	<b>5 21/64</b>	<b>1 1/16</b>	<b>7 3/32</b>	<b>13.0</b>
	SNW-128 x 5	S-128 x 5			5					
<b>22330K</b> 23230K	SNW-130 x 5 1/8	S-130 x 5 1/8			5 1/8					
	<b>SNW-130 x 5 3/16</b>	<b>S-130</b>	<b>AN-30</b>	<b>W-30</b>	<b>5 3/16</b>	<b>-0.005</b>	<b>5 5/8</b>	<b>1 1/8</b>	<b>7 11/16</b>	<b>17.6</b>
	SNW-130 x 5 1/4	S-130 x 5 1/4			5 1/4					
	SNW-130 x 5 5/16	S-130 x 5 5/16			5 5/16					
	SNW-130 x 5 3/8	S-130 x 5 3/8			5 3/8					
<b>22332K</b> 23232K	SNW-132 x 5 3/8	S-132 x 5 3/8			5 3/8					
	<b>SNW-132 x 5 7/16</b>	<b>S-132</b>	<b>AN-32</b>	<b>W-32</b>	<b>5 7/16</b>	<b>-0.005</b>	<b>5 59/64</b>	<b>1 3/16</b>	<b>8 1/16</b>	<b>18.5</b>
	SNW-132 x 5 1/2	S-132 x 5 1/2			5 1/2					
<b>22334K</b> 23234K	SNW-134 x 5 13/16	S-134 x 5 13/16			5 13/16					
	SNW-134 x 5 7/8	S-134 x 5 7/8			5 7/8					
	<b>SNW-134 x 5 15/16</b>	<b>S-134</b>	<b>AN-34</b>	<b>W-34</b>	<b>5 15/16</b>	<b>-0.005</b>	<b>6 3/16</b>	<b>1 7/32</b>	<b>8 21/32</b>	<b>21.0</b>
	SNW-134 x 6	S-134 x 6			6					
<b>22336K</b> 23236K	<b>SNW-136 x 6 7/16</b>	<b>S-136</b>	<b>AN-36</b>	<b>W-36</b>	<b>6 7/16</b>	<b>-0.005</b>	<b>6 29/64</b>	<b>1 1/4</b>	<b>9 1/16</b>	<b>22.5</b>
<b>22338K</b> 23238K	SNW-138 x 6 13/16	S-138 x 6 13/16			6 13/16					
	SNW-138 x 6 7/8	S-138 x 6 7/8			6 7/8					
	<b>SNW-138 x 6 15/16</b>	<b>S-138</b>	<b>AN-38</b>	<b>W-38</b>	<b>6 15/16</b>	<b>-0.005</b>	<b>6 3/4</b>	<b>1 9/32</b>	<b>9 15/32</b>	<b>28.0</b>
	SNW-138 x 7	S-138 x 7			7					
<b>22340K</b> 23240K	SNW-140 x 7 1/8	S-140 x 7 1/8			7 1/8					
	<b>SNW-140 x 7 3/16</b>	<b>S-140</b>	<b>AN-40</b>	<b>W-40</b>	<b>7 3/16</b>	<b>-0.005</b>	<b>7 3/32</b>	<b>1 11/32</b>	<b>9 27/32</b>	<b>36.0</b>
	SNW-140 x 7 1/4	S-140 x 7 1/4			7 1/4					

<sup>(1)</sup>Bold shaft sizes are standard. When ordering non-standard accessories, specify shaft size.

<sup>(2)</sup>Tolerance range is from +0 to value listed.

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Bearing Number <sup>(1)</sup>	Accessory Numbers					Shaft Dimensions		Adapter Dimensions			SNW/SNP Assembly Weight
	Assembly	Sleeve	Locknut	Lockwasher Lockplate		Diameter d	Tolerance <sup>(2)</sup>	B <sub>2</sub>	S	D <sub>1</sub>	
						in.	in.	in.	in.	in.	lbs.
<b>22344K</b> 23244K	<b>SNW-144</b> x 7 <sup>15</sup> / <sub>16</sub>	<b>S-144</b>	<b>N-044</b>	<b>W-44</b>		<b>7 <sup>15</sup>/<sub>16</sub></b>	<b>-0.005</b>	<b>7 <sup>9</sup>/<sub>32</sub></b>	<b>1 <sup>3</sup>/<sub>8</sub></b>	<b>11</b>	<b>47.0</b>
<b>22348K</b> 23248K	<b>SNP-148</b> x 8 <sup>15</sup> / <sub>16</sub> SNP-148 x 9	<b>S-148</b> S-148 x 9	<b>N-048</b>	<b>P-48</b>		<b>8 <sup>15</sup>/<sub>16</sub></b> 9	<b>-0.006</b>	<b>8 <sup>7</sup>/<sub>64</sub></b>	<b>1 <sup>11</sup>/<sub>32</sub></b>	<b>11 <sup>7</sup>/<sub>16</sub></b>	<b>38.3</b>
<b>22352K</b> 23252K	<b>SNP-152</b> x 9 <sup>7</sup> / <sub>16</sub> SNP-152 x 9 <sup>1</sup> / <sub>2</sub>	<b>S-152</b> S-152 x 9 <sup>1</sup> / <sub>2</sub>	<b>N-052</b>	<b>P-52</b>		<b>9 <sup>7</sup>/<sub>16</sub></b> 9 <sup>1</sup> / <sub>2</sub>	<b>-0.006</b>	<b>8 <sup>49</sup>/<sub>64</sub></b>	<b>1 <sup>13</sup>/<sub>32</sub></b>	<b>12 <sup>13</sup>/<sub>16</sub></b>	<b>53.4</b>
<b>22356K</b> 23256K	<b>SNP-3256</b> x 10 <sup>7</sup> / <sub>16</sub> SNP-3256 x 10 <sup>1</sup> / <sub>2</sub>	<b>S-3256</b> S-3256 x 10 <sup>1</sup> / <sub>2</sub>	<b>N-056</b>	<b>P-56</b>		<b>10 <sup>7</sup>/<sub>16</sub></b> 10 <sup>1</sup> / <sub>2</sub>	<b>-0.007</b> <b>-0.007</b>	<b>8 <sup>15</sup>/<sub>16</sub></b>	<b>1 <sup>1</sup>/<sub>2</sub></b>	<b>13</b>	<b>61.3</b>
<b>23260K</b>	<b>SNP-3260</b> x 10 <sup>15</sup> / <sub>16</sub> SNP-3260 x 11	<b>S-3260</b> S-3260 x 11	<b>N-060</b>	<b>P-60</b>		<b>10 <sup>15</sup>/<sub>16</sub></b> 11	<b>-0.007</b> <b>-0.007</b>	<b>9 <sup>5</sup>/<sub>8</sub></b>	<b>1 <sup>9</sup>/<sub>16</sub></b>	<b>14 <sup>3</sup>/<sub>32</sub></b>	<b>68.5</b>
<b>23264K</b>	<b>SNP-3264</b> x 11 <sup>15</sup> / <sub>16</sub> SNP-3264 x 12	<b>S-3264</b> S-3264 x 12	<b>N-064</b>	<b>P-64</b>		<b>11 <sup>15</sup>/<sub>16</sub></b> 12	<b>-0.007</b> <b>-0.007</b>	<b>10 <sup>23</sup>/<sub>64</sub></b>	<b>1 <sup>21</sup>/<sub>32</sub></b>	<b>15</b>	<b>98.0</b>
<b>23268K</b>	SNP-3268 x 12 <sup>1</sup> / <sub>2</sub> <b>SNP-3268</b> x 12 <sup>7</sup> / <sub>8</sub>	S-3268 x 12 <sup>1</sup> / <sub>2</sub> <b>S-3268</b>	<b>N-068</b>	<b>P-68</b>		12 <sup>1</sup> / <sub>2</sub> <b>12 <sup>7</sup>/<sub>8</sub></b>	<b>-0.007</b> <b>-0.007</b>	<b>11 <sup>1</sup>/<sub>8</sub></b>	<b>1 <sup>25</sup>/<sub>32</sub></b>	<b>15 <sup>3</sup>/<sub>4</sub></b>	<b>105.0</b>
<b>23272K</b>	<b>SNP-3272</b> x 13 <sup>7</sup> / <sub>16</sub> SNP-3272 x 13 <sup>1</sup> / <sub>2</sub>	<b>S-3272</b> S-3272 x 13 <sup>1</sup> / <sub>2</sub>	<b>N-072</b>	<b>P-72</b>		<b>13 <sup>7</sup>/<sub>16</sub></b> 13 <sup>1</sup> / <sub>2</sub>	<b>-0.007</b> <b>-0.007</b>	<b>11 <sup>27</sup>/<sub>64</sub></b>	<b>1 <sup>25</sup>/<sub>32</sub></b>	<b>16 <sup>1</sup>/<sub>2</sub></b>	<b>135.0</b>
<b>23276K</b>	<b>SNP-3276</b> x 13 <sup>15</sup> / <sub>16</sub> SNP-3276 x 14	<b>S-3276</b> S-3276 x 14	<b>N-076</b>	<b>P-76</b>		<b>13 <sup>15</sup>/<sub>16</sub></b> 14	<b>-0.007</b> <b>-0.007</b>	<b>11 <sup>7</sup>/<sub>8</sub></b>	<b>1 <sup>29</sup>/<sub>32</sub></b>	<b>17 <sup>3</sup>/<sub>4</sub></b>	<b>145.0</b>
<b>23280K</b>	<b>SNP-3280</b> x 15	<b>S-3280</b>	<b>N-080</b>	<b>P-80</b>		<b>15</b>	<b>-0.007</b>	<b>12 <sup>21</sup>/<sub>32</sub></b>	<b>2 <sup>1</sup>/<sub>16</sub></b>	<b>18 <sup>1</sup>/<sub>2</sub></b>	<b>165.0</b>
<b>23284K</b>	<b>SNP-3284</b> x 15 <sup>3</sup> / <sub>4</sub>	<b>S-3284</b>	<b>N-084</b>	<b>P-84</b>		<b>15 <sup>3</sup>/<sub>4</sub></b>	<b>-0.007</b>	<b>13 <sup>19</sup>/<sub>64</sub></b>	<b>2 <sup>1</sup>/<sub>16</sub></b>	<b>19 <sup>5</sup>/<sub>16</sub></b>	<b>170.0</b>
<b>23288K</b>	<b>SNP-3288</b> x 16 <sup>1</sup> / <sub>2</sub>	<b>S-3288</b>	<b>N-088</b>	<b>P-88</b>		<b>16 <sup>1</sup>/<sub>2</sub></b>	<b>-0.007</b>	<b>13 <sup>61</sup>/<sub>64</sub></b>	<b>2 <sup>3</sup>/<sub>8</sub></b>	<b>20 <sup>1</sup>/<sub>2</sub></b>	<b>260.0</b>
<b>23292K</b>	<b>SNP-3292</b> x 16 <sup>15</sup> / <sub>16</sub>	<b>S-3292</b>	<b>N-092</b>	<b>P-92</b>		<b>16 <sup>15</sup>/<sub>16</sub></b>	<b>-0.007</b>	<b>18 <sup>1</sup>/<sub>16</sub></b>	<b>2 <sup>3</sup>/<sub>8</sub></b>	<b>21 <sup>1</sup>/<sub>4</sub></b>	<b>291.0</b>
<b>23296K</b>	<b>SNP-3296</b> x 17 <sup>15</sup> / <sub>16</sub>	<b>S-3296</b>	<b>N-096</b>	<b>P-96</b>		<b>17 <sup>15</sup>/<sub>16</sub></b>	<b>-0.007</b>	<b>15 <sup>5</sup>/<sub>32</sub></b>	<b>2 <sup>3</sup>/<sub>8</sub></b>	<b>22 <sup>1</sup>/<sub>16</sub></b>	<b>335.0</b>
<b>232/500K</b>	<b>SNP-32/500</b> x 18 <sup>7</sup> / <sub>16</sub>	<b>S-32/500</b>	<b>N-500</b>	<b>P-500</b>		<b>18 <sup>7</sup>/<sub>16</sub></b>	<b>-0.007</b>	<b>16 <sup>1</sup>/<sub>2</sub></b>	<b>2 <sup>45</sup>/<sub>64</sub></b>	<b>22 <sup>13</sup>/<sub>16</sub></b>	<b>366.0</b>
<b>232/530K</b>	<b>SNP-32/530</b> x 18 <sup>15</sup> / <sub>16</sub> SNP-32/530 x 19 <sup>7</sup> / <sub>16</sub>	<b>S-32/530</b> x 18 <sup>15</sup> / <sub>16</sub> S-32/530 x 19 <sup>7</sup> / <sub>16</sub>	<b>N-530</b>	<b>P-530</b>		<b>18 <sup>15</sup>/<sub>16</sub></b> 19 <sup>7</sup> / <sub>16</sub>	<b>-0.007</b> <b>-0.007</b>	<b>17 <sup>17</sup>/<sub>64</sub></b>	<b>2 <sup>45</sup>/<sub>64</sub></b>	<b>24 <sup>13</sup>/<sub>16</sub></b>	<b>421.0</b>
<b>232/560K</b>	<b>SNP-32/560</b> x 20 <sup>15</sup> / <sub>16</sub>	<b>S-32/560</b>	<b>N-560</b>	<b>P-560</b>		<b>20 <sup>15</sup>/<sub>16</sub></b>	<b>-0.007</b>	<b>17 <sup>59</sup>/<sub>64</sub></b>	<b>2 <sup>61</sup>/<sub>64</sub></b>	<b>25 <sup>9</sup>/<sub>16</sub></b>	<b>478.0</b>
<b>232/600K</b>	<b>SNP-32/600</b> x 21 <sup>15</sup> / <sub>16</sub>	<b>S-32/600</b>	<b>N-600</b>	<b>P-600</b>		<b>21 <sup>15</sup>/<sub>16</sub></b>	<b>-0.007</b>	<b>18 <sup>55</sup>/<sub>64</sub></b>	<b>2 <sup>61</sup>/<sub>64</sub></b>	<b>27 <sup>9</sup>/<sub>16</sub></b>	<b>613.0</b>
<b>232/630K</b>	<b>SNP-32/630</b> x 23 <sup>15</sup> / <sub>16</sub>	<b>S-32/630</b>	<b>N-630</b>	<b>P-630</b>		<b>23 <sup>15</sup>/<sub>16</sub></b>	<b>-0.007</b>	<b>19 <sup>51</sup>/<sub>64</sub></b>	<b>2 <sup>61</sup>/<sub>64</sub></b>	<b>28 <sup>3</sup>/<sub>4</sub></b>	<b>657.0</b>
<b>232/670K</b>	<b>SNP-32/670</b> x 24 <sup>15</sup> / <sub>16</sub>	<b>S-32/670</b>	<b>N-670</b>	<b>P-670</b>		<b>24 <sup>15</sup>/<sub>16</sub></b>	<b>-0.007</b>	<b>21 <sup>1</sup>/<sub>32</sub></b>	<b>3 <sup>9</sup>/<sub>64</sub></b>	<b>30 <sup>11</sup>/<sub>16</sub></b>	<b>891.0</b>
<b>232/710K</b>	<b>SNP-32/710</b> x 26 <sup>7</sup> / <sub>16</sub>	<b>S-32/710</b>	<b>N-710</b>	<b>P-710</b>		<b>26 <sup>7</sup>/<sub>16</sub></b>	<b>-0.007</b>	<b>21 <sup>15</sup>/<sub>16</sub></b>	<b>3 <sup>37</sup>/<sub>64</sub></b>	<b>32 <sup>11</sup>/<sub>16</sub></b>	<b>979.0</b>
<b>232/750K</b>	<b>SNP-32/750</b> x 27 <sup>15</sup> / <sub>16</sub>	<b>S-32/750</b>	<b>N-750</b>	<b>P-750</b>		<b>27 <sup>15</sup>/<sub>16</sub></b>	<b>-0.007</b>	<b>22 <sup>63</sup>/<sub>64</sub></b>	<b>3 <sup>37</sup>/<sub>64</sub></b>	<b>34 <sup>1</sup>/<sub>4</sub></b>	<b>1118.0</b>

<sup>(1)</sup>Bold shaft sizes are standard. When ordering non-standard accessories, specify shaft size.

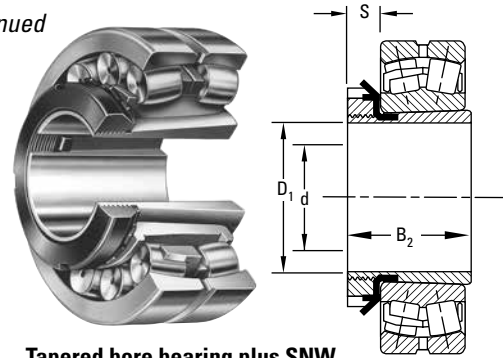
<sup>(2)</sup>Tolerance range is from +0 to value listed.

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### INCH ACCESSORIES – PULL-TYPE SLEEVES – continued

#### 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.



Tapered bore bearing plus SNW.

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Bearing Number <sup>(1)</sup>	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			SNW/SNP Assembly Weight
	Assembly	Sleeve	Locknut	Lockwasher Lockplate	Diameter d	Tolerance <sup>(2)</sup>	B <sub>2</sub>	S	D <sub>1</sub>	
					in.	in.	in.	in.	in.	lbs.
<b>SERIES 231K</b>										
23122K	SNW-3122 x 3 15/16	S-22	N-022	W-022	3 15/16	-0.004	3 13/64	25/32	5 5/32	4.2
23124K	SNW-3124 x 4 3/16	S-24	N-024	W-024	4 3/16	-0.005	3 15/32	13/16	5 11/16	5.8
23126K	SNW-3126 x 4 7/16	S-26	N-026	W-026	4 7/16	-0.005	3 49/64	7/8	6 1/8	8.3
23128K	SNW-3128 x 4 15/16	S-28	N-028	W-028	4 15/16	-0.005	3 63/64	15/16	6 1/2	8.8
23130K	SNW-3130 x 5 3/16	S-30	N-030	W-030	5 3/16	-0.005	4 15/64	31/32	7 1/8	13.7
23132K	SNW-3132 x 5 7/16	S-32	N-032	W-032	5 7/16	-0.005	4 37/64	1 1/32	7 1/2	13.3
23134K	SNW-3134 x 5 15/16	S-34	N-034	W-034	5 15/16	-0.005	4 27/32	1 1/16	7 7/8	16.1
23136K	SNW-3136 x 6 7/16	S-36	N-036	W-036	6 7/16	-0.005	5 1/32	1 3/32	8 1/4	17.1
23138K	SNW-3138 x 6 15/16	S-38	N-038	W-038	6 15/16	-0.005	5 17/64	1 1/8	8 11/16	19.7
23140K	SNW-3140 x 7 3/16	S-40	N-040	W-040	7 3/16	-0.005	5 31/64	1 3/16	9 7/16	28.4
23144K	SNW-3144 x 7 15/16	S-44	N-044	W-044	7 15/16	-0.005	5 29/32	1 1/4	10 1/4	28.1
23148K	SNP-3148 x 8 15/16	S-48	N-048	P-48	8 15/16	-0.006	6 41/64	1 11/32	11 7/16	36.0
23152K	SNP-3152 x 9 7/16	S-52	N-052	P-52	9 7/16	-0.006	7 19/32	1 13/32	12 3/16	39.0
	SNP-3152 x 9 1/2	S-52 x 9 1/2			9 1/2					
	SNP-3156 x 9 15/16	S-3156 x 9 15/16			9 15/16					
	SNP-3156 x 10	S-3156 x 10			10					
23156K	SNP-3156 x 10 7/16	S-3156	N-056	P-56	10 7/16	-0.007	7 49/64	1 1/2	13	60.0
	SNP-3156 x 10 1/2	S-3156 x 10 1/2			10 1/2					
23160K	SNP-3160 x 10 15/16	S-3160	N-060	P-60	10 15/16	-0.007	8 3/8	1 9/16	14 3/16	65.0
	SNP-3160 x 11	S-3160 x 11			11					
23164K	SNP-3164 x 11 15/16	S-3164	N-064	P-64	11 15/16	-0.007	9 7/64	1 21/32	15	70.0
	SNP-3164 x 12	S-3164 x 12			12					
	SNP-3168 x 12 1/2	S-3168 x 12 1/2			12 1/2					
23168K	SNP-3168 x 12 7/8	S-3168	N-068	P-68	12 7/8	-0.007	9 25/32	1 25/32	15 3/4	93.5
23172K	SNP-3172 x 13 7/16	S-3172	N-072	P-72	13 7/16	-0.007	11 27/64	1 25/32	16 1/2	120.0
	SNP-3172 x 13 1/2	S-3172 x 13 1/2			13 1/2					
23176K	SNP-3176 x 13 15/16	S-3176	N-076	P-76	13 15/16	-0.007	11 7/8	1 29/32	17 3/4	125.0
	SNP-3176 x 14	S-3176 x 14			14					
	SNP-3180 x 14 15/16	S-3180 x 14 15/16			14 15/16					
23180K	SNP-3180 x 15	S-3180	N-080	P-80	15	-0.007	12 21/32	2 1/16	18 1/2	140.0

<sup>(1)</sup>Bold shaft sizes are standard. When ordering non-standard accessories, specify shaft size.

<sup>(2)</sup>Tolerance range is from +0 to value listed.

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Bearing Number <sup>(1)</sup>	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			SNW/SNP Assembly Weight
	Assembly	Sleeve	Locknut	Lockwasher Lockplate	Diameter d	Tolerance <sup>(2)</sup>	B <sub>2</sub>	S	D <sub>1</sub>	
					in.	in.	in.	in.	in.	lbs.
<b>23184K</b>	<b>SNP-3184 x 15 3/4</b>	<b>S-3184</b>	<b>N-084</b>	<b>P-84</b>	<b>15 3/4</b>	<b>-0.007</b>	<b>13 19/64</b>	<b>2 1/16</b>	<b>19 5/16</b>	<b>145.0</b>
<b>23188K</b>	<b>SNP-3188 x 16 1/2</b>	<b>S-3188</b>	<b>N-088</b>	<b>P-88</b>	<b>16 1/2</b>	<b>-0.007</b>	<b>13 61/64</b>	<b>2 3/8</b>	<b>20 1/2</b>	<b>229.0</b>
<b>23192K</b>	<b>SNP-3192 x 17</b>	<b>S-3192</b>	<b>N-092</b>	<b>P-92</b>	<b>17</b>	<b>-0.007</b>	<b>18 1/16</b>	<b>2 3/8</b>	<b>21 1/4</b>	<b>255.0</b>
<b>23196K</b>	<b>SNP-3196 x 18</b>	<b>S-3196</b>	<b>N-096</b>	<b>P-96</b>	<b>18</b>	<b>-0.007</b>	<b>15 5/32</b>	<b>2 3/8</b>	<b>22 1/16</b>	<b>293.0</b>
<b>231/500K</b>	<b>SNP-31/500 x 18 7/16</b>	<b>S-31/500</b>	<b>N-500</b>	<b>P-500</b>	<b>18 7/16</b>	<b>-0.007</b>	<b>16 1/2</b>	<b>2 45/64</b>	<b>22 13/16</b>	<b>315.0</b>
<b>231/530K</b>	<b>SNP-31/530 x 18 15/16</b> SNP-31/530 x 19 7/16	<b>S-31/500 x 18 15/16</b> S-31/530 x 19 7/16	<b>N-530</b>	<b>P-530</b>	<b>18 15/16</b> 19 7/16	<b>-0.007</b>	<b>17 17/64</b>	<b>2 45/64</b>	<b>24 13/16</b>	<b>355.0</b>
<b>231/560K</b>	<b>SNP-31/560 x 20 15/16</b>	<b>S-31/560</b>	<b>N-560</b>	<b>P-560</b>	<b>20 15/16</b>	<b>-0.007</b>	<b>17 59/64</b>	<b>2 61/64</b>	<b>25 9/16</b>	<b>408.0</b>
<b>231/600K</b>	<b>SNP-31/600 x 21 15/16</b>	<b>S-31/600</b>	<b>N-600</b>	<b>P-600</b>	<b>21 15/16</b>	<b>-0.007</b>	<b>18 55/64</b>	<b>2 61/64</b>	<b>27 9/16</b>	<b>516.0</b>
<b>231/630K</b>	<b>SNP-31/630 x 23 15/16</b>	<b>S-31/630</b>	<b>N-630</b>	<b>P-630</b>	<b>23 15/16</b>	<b>-0.007</b>	<b>19 51/64</b>	<b>2 61/64</b>	<b>28 3/4</b>	<b>556.0</b>
<b>231/670K</b>	<b>SNP-31/670 x 24 15/16</b>	<b>S-31/670</b>	<b>N-670</b>	<b>P-670</b>	<b>24 15/16</b>	<b>-0.007</b>	<b>21 1/32</b>	<b>3 3/64</b>	<b>30 11/16</b>	<b>759.0</b>
<b>231/710K</b>	<b>SNP-31/710 x 26 7/16</b>	<b>S-31/710</b>	<b>N-710</b>	<b>P-710</b>	<b>26 7/16</b>	<b>-0.007</b>	<b>21 15/16</b>	<b>3 37/64</b>	<b>32 11/16</b>	<b>833.0</b>
<b>231/750K</b>	<b>SNP-31/750 x 27 15/16</b>	<b>S-31/750</b>	<b>N-750</b>	<b>P-750</b>	<b>27 15/16</b>	<b>-0.007</b>	<b>22 63/64</b>	<b>3 37/64</b>	<b>34 1/4</b>	<b>997.0</b>
<b>231/800K</b>	<b>SNP-31/800 x 29 7/16</b>	<b>S-31/800</b>	<b>N-800</b>	<b>P-800</b>	<b>29 7/16</b>	<b>-0.007</b>	<b>19 1/64</b>	<b>3 37/64</b>	<b>36 1/4</b>	<b>1136.0</b>
<b>231/850K</b>	<b>SNP31/850 x 31 7/16</b>	<b>S-31/850</b>	<b>N-850</b>	<b>P-850</b>	<b>31 7/16</b>	<b>-0.007</b>	<b>20 1/32</b>	<b>3 37/64</b>	<b>38 9/16</b>	<b>1303.0</b>

<sup>(1)</sup>Bold shaft sizes are standard. When ordering non-standard accessories, specify shaft size.

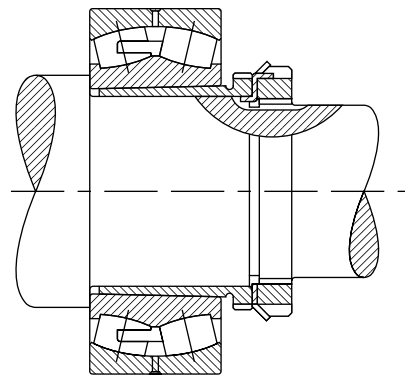
<sup>(2)</sup>Tolerance range is from +0 to value listed.



### INCH ACCESSORIES – PUSH-TYPE SLEEVES

#### PUSH-TYPE REMOVABLE SLEEVE, LOCKNUT AND LOCKWASHER

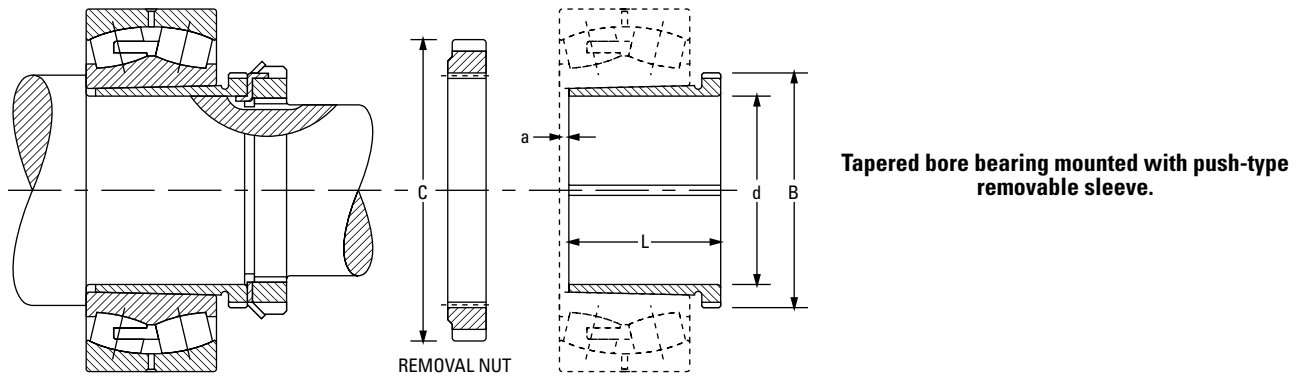
The chart below shows dimensions for adapter assemblies and components used in the tapered bore bearings on shafts.



Bearing Number	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			Removal Nut O.D. C	Sleeve Weight
	Sleeve	Locknut	Lockwasher Lockplate	Removal Nut	Diameter d	Tolerance <sup>(1)</sup>	Pitch Diameter B	L	a		
					mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.
<b>SERIES 222K</b>											
22216K	SK-8022	N-14	W-14	AN-18	<b>70</b> 2.7559	<b>-0.10</b> -0.004	<b>88.19</b> 3.472	<b>50</b> 1.969	<b>3.50</b> 0.138	<b>118.39</b> 4.661	<b>0.5</b> 1.2
22217K	SK-8522	AN-15	W-15	AN-19	<b>75</b> 2.9528	<b>-0.10</b> -0.004	<b>93.35</b> 3.675	<b>52</b> 2.047	<b>3.50</b> 0.138	<b>125.55</b> 4.943	<b>0.6</b> 1.4
22218K	SK-9022	AN-16	W-16	AN-20	<b>80</b> 3.1496	<b>-0.10</b> -0.004	<b>98.12</b> 3.863	<b>53</b> 2.087	<b>3.50</b> 0.138	<b>131.90</b> 5.193	<b>0.6</b> 1.5
22219K	SK-9522	AN-17	W-17	AN-21	<b>85</b> 3.3465	<b>-0.10</b> -0.004	<b>103.28</b> 4.066	<b>57</b> 2.244	<b>4.00</b> 0.157	<b>138.25</b> 5.443	<b>0.8</b> 1.8
22220K	SK-10022	AN-18	W-18	AN-22	<b>90</b> 3.5433	<b>-0.10</b> -0.004	<b>109.12</b> 4.269	<b>59</b> 2.323	<b>4.00</b> 0.157	<b>145.39</b> 5.724	<b>0.9</b> 2.0
22222K	SK-11022	AN-20	W-20	ARN-22	<b>100</b> 3.9370	<b>-0.10</b> -0.004	<b>119.94</b> 4.722	<b>65</b> 2.559	<b>4.00</b> 0.157	<b>158.75</b> 6.250	<b>1.1</b> 2.4
22224K	SK-12022	AN-22	W-22	ARN-24	<b>110</b> 4.3307	<b>-0.13</b> -0.005	<b>130.28</b> 5.129	<b>72</b> 2.835	<b>4.00</b> 0.157	<b>174.63</b> 6.875	<b>1.4</b> 3.1
22226K	SK-13022	AN-22	W-22	ARN-26	<b>115</b> 4.5276	<b>-0.13</b> -0.005	<b>141.38</b> 5.566	<b>78</b> 3.071	<b>4.00</b> 0.15.7	<b>184.15</b> 7.250	<b>2.2</b> 5.0
22228K	SK-14022	AN-24	W-24	RN-28	<b>125</b> 4.9213	<b>-0.13</b> -0.005	<b>152.73</b> 6.013	<b>82</b> 3.228	<b>5.00</b> 0.197	<b>200.03</b> 7.875	<b>2.6</b> 5.8
22230K	SK-15022	AN-26	W-26	RN-30	<b>135</b> 5.3150	<b>-0.13</b> -0.005	<b>163.04</b> 6.419	<b>88</b> 3.465	<b>5.00</b> 0.197	<b>209.55</b> 8.250	<b>3.0</b> 6.8
22232K	SK-16022	AN-28	W-28	RN-32	<b>140</b> 5.5118	<b>-0.13</b> -0.005	<b>173.76</b> 6.841	<b>96</b> 3.780	<b>5.00</b> 0.197	<b>225.43</b> 8.875	<b>4.5</b> 9.9

<sup>(1)</sup>Tolerance range is from +0 to value listed.

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Bearing Number	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			Removal Nut O.D. C	Sleeve Weight
	Sleeve	Locknut	Lockwasher Lockplate	Removal Nut	Diameter d	Tolerance <sup>(1)</sup>	Pitch Diameter B	L	a		
					mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg. lbs.
22234K	SK-17022	AN-30	W-30	RN-34	<b>150</b> 5.9055	<b>-0.13</b> -0.005	<b>184.07</b> 7.247	<b>104</b> 4.095	<b>5.00</b> 0.197	<b>234.95</b> 9.250	<b>5.2</b> 11.5
22236K	SK-18022	AN-32	W-32	RN-36	<b>160</b> 6.2992	<b>-0.13</b> -0.005	<b>194.79</b> 7.669	<b>104</b> 4.095	<b>5.00</b> 0.197	<b>247.65</b> 9.750	<b>5.6</b> 12.5
22238K	SK-19022	AN-34	W-34	RN-38	<b>170</b> 6.6929	<b>-0.13</b> -0.005	<b>205.92</b> 8.107	<b>112</b> 4.409	<b>5.00</b> 0.197	<b>269.88</b> 10.625	<b>6.5</b> 14.5
22240K	SK-20022	AN-36	W-36	N-044	<b>180</b> 7.0866	<b>-0.13</b> -0.005	<b>217.02</b> 8.544	<b>118</b> 4.646	<b>5.00</b> 0.197	<b>279.53</b> 11.005	<b>7.4</b> 16.3
22244K	SK-22022	AN-40	W-40	N-048	<b>200</b> 7.8740	<b>-0.13</b> -0.005	<b>236.98</b> 9.330	<b>130</b> 5.118	<b>6.00</b> 0.236	<b>290.65</b> 11.443	<b>8.8</b> 19.6
22248K	SK-24022	N-44	W-44	N-052	<b>220</b> 8.6614	<b>-0.15</b> -0.006	<b>256.03</b> 10.080	<b>144</b> 5.669	<b>6.00</b> 0.236	<b>309.70</b> 12.193	<b>11.0</b> 24.3
22252K	SK-26022	N-048	P-48	N-056	<b>240</b> 9.4488	<b>-0.15</b> -0.006	<b>276.66</b> 10.892	<b>155</b> 6.102	<b>6.00</b> 0.236	<b>330.33</b> 13.005	<b>14.0</b> 30.9
22256K	SK-28022	N-052	P-52	RN-56	<b>260</b> 10.2362	<b>-0.15</b> -0.006	<b>301.27</b> 11.861	<b>155</b> 6.102	<b>8.00</b> 0.315	<b>425.45</b> 16.750	<b>15.0</b> 33.1
22260K	SK-30022	N-056	P-56	RN-60	<b>280</b> 11.0236	<b>-0.15</b> -0.006	<b>325.88</b> 12.830	<b>170</b> 6.693	<b>8.00</b> 0.315	<b>416.10</b> 16.382	<b>17.7</b> 39.2
22264K	SK-32022	N-060	P-60	RN-64	<b>300</b> 11.8110	<b>-0.15</b> -0.006	<b>345.72</b> 13.611	<b>180</b> 7.087	<b>10.00</b> 0.394	<b>431.8</b> 17.000	<b>21.0</b> 46.3

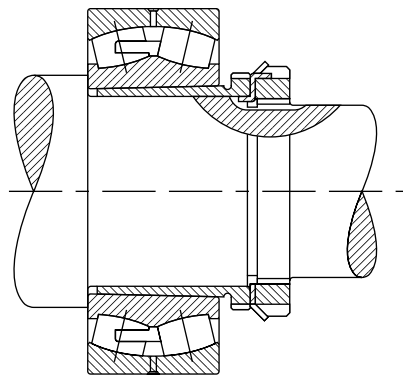
<sup>(1)</sup>Tolerance range is from +0 to value listed.

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### INCH ACCESSORIES – PUSH-TYPE SLEEVES – continued

#### PUSH-TYPE REMOVABLE SLEEVE, LOCKNUT AND LOCKWASHER

The chart below shows dimensions for adapter assemblies and components used in the tapered bore bearings on shafts.

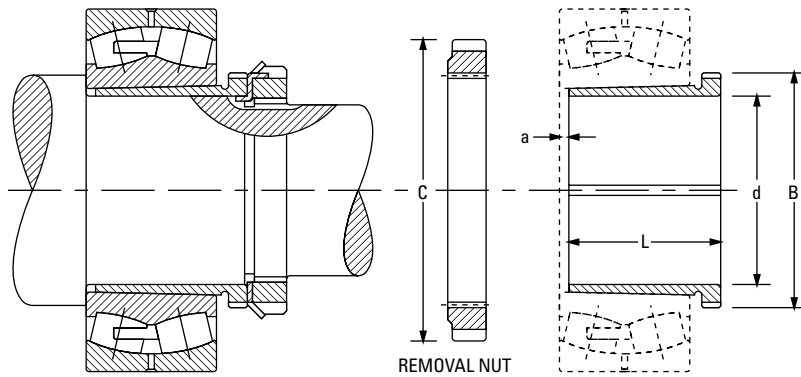


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Bearing Number	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			Removal Nut O.D. C	Sleeve Weight
	Sleeve	Locknut	Lockwasher Lockplate	Removal Nut	Diameter d	Tolerance <sup>(1)</sup>	Pitch Diameter B	L	a		
					mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	kg lbs.
<b>SERIES 223K</b>											
22308K	SK-4023	N-07	W-07	N-09	35 1.3780	-0.08 -0.003	43.94 1.730	40 1.575	3.00 0.118	64.41 2.536	0.1 0.2
22309K	SK-4523	N-08	W-08	N-10	40 1.5748	-0.08 -0.003	49.02 1.930	44 1.732	3.00 0.118	68.40 2.693	0.1 0.3
22310K	SK-5023	N-09	W-09	RN-10	45 1.7717	-0.08 -0.003	55.04 2.167	50 1.969	3.00 0.118	76.20 3.000	0.2 0.4
22311K	SK-5523	N-10	W-10	RN-11	50 1.9685	-0.08 -0.003	60.20 2.370	54 2.126	3.00 0.118	81.76 3.219	0.2 0.5
22312K	SK-6023	N-11	W-11	RN-12	55 2.1654	-0.10 -0.004	65.76 2.589	57 2.244	3.50 0.138	87.33 3.438	0.3 0.6
22313K	SK-6523	N-12	W-12	AN-15	60 2.3622	-0.10 -0.004	73.10 2.878	61 2.402	3.50 0.138	98.55 3.880	0.3 0.8
22314K	SK-7023	N-12	W-12	AN-16	60 2.3622	-0.10 -0.004	78.28 3.082	65 2.559	3.50 0.138	105.69 4.161	0.6 1.5
22315K	SK-7523	N-13	W-13	AN-17	65 2.5591	-0.10 -0.004	83.44 3.285	69 2.717	3.50 0.138	112.04 4.411	0.8 1.7
22316K	SK-8023	N-14	W-14	AN-18	70 2.7559	-0.10 -0.004	88.19 3.472	72 2.835	3.50 0.138	118.39 4.661	0.9 2.0
22317K	SK-8523	AN-15	W-15	AN-19	75 2.9528	-0.10 -0.004	93.35 3.675	75 2.953	3.50 0.138	125.55 4.943	1.0 2.2
22318K	SK-9023	AN-16	W-16	AN-20	80 3.1496	-0.10 -0.004	98.12 3.863	80 3.150	3.50 0.138	131.90 5.193	1.1 2.5
22319K	SK-9523	AN-17	W-17	AN-21	85 3.3465	-0.10 -0.004	103.28 4.066	85 3.346	4.00 0.157	138.25 5.443	1.3 2.9
22320K	SK-10023	AN-18	W-18	AN-22	90 3.5433	-0.10 -0.004	109.12 4.269	90 3.543	4.00 0.157	145.39 5.724	1.5 3.3

<sup>(1)</sup>Tolerance range is from +0 to value listed.

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**Tapered bore bearing mounted with push-type removable sleeve.**

Continued from previous page.

Bearing Number	Accessory Numbers				Shaft Dimensions		Adapter Dimensions			Removal Nut O.D. C	Sleeve Weight
	Sleeve	Locknut	Lockwasher Lockplate	Removal Nut	Diameter d	Tolerance <sup>(1)</sup>	Pitch Diameter B	L	a		
					mm in.	mm in.	mm in.	mm in.	mm in.		
22322K	SK-11023	AN-20	W-20	ARN-22	<b>100</b> 3.9370	<b>-0.10</b> -0.004	<b>119.94</b> 4.722	<b>98</b> 3.858	<b>4.00</b> 0.157	<b>158.75</b> 6.250	<b>1.9</b> 4.2
22324K	SK-12023	AN-22	W-22	ARN-24	<b>110</b> 4.3307	<b>-0.13</b> -0.005	<b>130.28</b> 5.129	<b>105</b> 4.134	<b>4.00</b> 0.157	<b>174.63</b> 6.875	<b>2.2</b> 5.0
22326K	SK-13023	AN-22	W-22	ARN-26	<b>115</b> 4.5276	<b>-0.13</b> -0.005	<b>141.38</b> 5.566	<b>115</b> 4.528	<b>4.00</b> 0.157	<b>184.15</b> 7.250	<b>3.6</b> 8.0
22328K	SK-14023	AN-24	W-24	RN-28	<b>125</b> 4.9213	<b>-0.13</b> -0.005	<b>152.73</b> 6.013	<b>125</b> 4.921	<b>5.00</b> 0.197	<b>200.03</b> 7.875	<b>4.3</b> 9.5
22330K	SK-15023	AN-26	W-26	RN-30	<b>135</b> 5.3150	<b>-0.13</b> -0.005	<b>163.04</b> 6.419	<b>135</b> 5.315	<b>5.00</b> 0.197	<b>209.55</b> 8.250	<b>5.1</b> 11.4
22332K	SK-16023	AN-28	W-28	RN-32	<b>140</b> 5.5118	<b>-0.13</b> -0.005	<b>173.76</b> 6.841	<b>140</b> 5.512	<b>6.00</b> 0.236	<b>225.43</b> 8.875	<b>7.0</b> 15.5
22334K	SK-17023	AN-30	W-30	RN-34	<b>150</b> 5.9055	<b>-0.13</b> -0.005	<b>184.07</b> 7.247	<b>146</b> 5.748	<b>6.00</b> 0.236	<b>234.95</b> 9.250	<b>7.8</b> 17.2
22336K	SK-18023	AN-32	W-32	RN-36	<b>160</b> 6.2992	<b>-0.13</b> -0.005	<b>194.79</b> 7.669	<b>154</b> 6.063	<b>6.00</b> 0.236	<b>247.65</b> 9.750	<b>9.1</b> 20.2
22338K	SK-19023	AN-34	W-34	RN-38	<b>170</b> 6.6929	<b>-0.13</b> -0.005	<b>205.92</b> 8.107	<b>160</b> 6.299	<b>7.00</b> 0.276	<b>269.88</b> 10.625	<b>10.0</b> 22.1
22340K	SK-20023	AN-36	W-36	N-044	<b>180</b> 7.0866	<b>-0.13</b> -0.005	<b>217.02</b> 8.544	<b>170</b> 6.693	<b>7.00</b> 0.276	<b>279.53</b> 11.005	<b>11.4</b> 25.2
22344K	SK-22023	AN-40	W-40	N-048	<b>200</b> 7.8740	<b>-0.13</b> -0.005	<b>236.98</b> 9.330	<b>181</b> 7.126	<b>8.00</b> 0.315	<b>290.65</b> 11.443	<b>13.3</b> 29.5
22348K	SK-24023	N-44	W-44	N-052	<b>220</b> 8.6614	<b>-0.15</b> -0.006	<b>256.03</b> 10.080	<b>189</b> 7.441	<b>8.00</b> 0.315	<b>309.70</b> 12.193	<b>15.5</b> 34.2
22352K	SK-26023	N-048	P-48	N-056	<b>240</b> 9.4488	<b>-0.15</b> -0.006	<b>276.66</b> 10.892	<b>200</b> 7.874	<b>8.00</b> 0.315	<b>330.33</b> 13.005	<b>18.2</b> 40.2
22356K	SK-28023	N-052	P-52	RN-56	<b>260</b> 10.2362	<b>-0.15</b> -0.006	<b>301.27</b> 11.861	<b>210</b> 8.268	<b>10.00</b> 0.394	<b>425.45</b> 16.75	<b>22.0</b> 48.5

<sup>(1)</sup>Tolerance range is from +0 to value listed.

**TURNUP**