



NEEDLE ROLLER BEARINGS

RADIAL NEEDLE ROLLER AND CAGE ASSEMBLIES

METRIC SERIES

Metric series radial needle roller and cage assemblies are available in a variety of sizes and designs. This catalog includes the most popular, standardized designs.

REFERENCE STANDARDS ARE:

- **ISO 3030** – needle roller bearings – radial needle roller and cage assemblies – boundary dimensions and tolerances.
- **DIN 5405 Part 1** – rolling bearings – needle roller bearings – radial needle roller and cage assemblies.
- **ANSI/ABMA 18.1** – needle roller bearings – radial, metric design.

Before selecting specific metric series radial needle roller and cage assemblies, the engineering section should be reviewed.

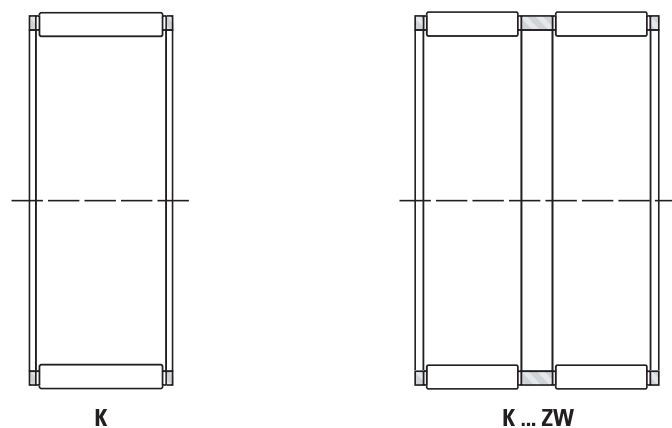


Fig. B-1. Types of Metric Series Radial Needle Roller and Cage Assemblies

Suffixes	
TN	molded cage of reinforced engineered polymer
ZW	double-row
TNZW	molded cage of reinforced engineered polymer – double-row
H	hardened steel cage
F	machined cage
FH	machined cage, case hardened
FV	machined cage, hardened and tempered

CONSTRUCTION

Radial needle roller and cage assemblies have a steel cage that provides both inward and outward retention for the needle rollers. The designs provide maximum cage strength consistent with the inherent high load-ratings of needle roller bearings. Accurate guidance of the needle rollers by the cage bars allows for operation at high speeds. Needle roller and cage assemblies have either one or two rows of needle rollers.

Also listed are metric series needle roller and cage assemblies using molded, one-piece glass-reinforced engineered polymer cages (suffix TN). These operate well at temperatures up to

120° C (250° F) over extended periods. However, care should be exercised when these assemblies are lubricated with oils containing additives as service life may be reduced if the operating temperature exceeds 100° C (212° F). At such high temperatures oil can deteriorate with time and it is suggested that oil change intervals are observed.

Needle rollers with relieved ends used in these assemblies are made of high-carbon chrome steel, through-hardened, ground and lapped to close tolerances for diameter and roundness. See the engineering section for further discussion of relieved end rollers.

DIMENSIONAL ACCURACY

NEEDLE ROLLER GROUPS (GAGES)

Metric series radial needle roller and cage assemblies are supplied with needle roller complements subdivided into groups (gages) shown in Table B-1. This is in accordance with Grade G2 specified in ISO 3096 standard (see needle rollers, page B-357). The group limits of the needle rollers are indicated on the package. Labels of identifying colors show the group limits of the needle rollers. The needle roller and cage assemblies of one shipment usually contain needle rollers with group limits of between 0.000 to -0.002 mm (0.0000 to -0.00008 in.) and -0.005 to -0.007 mm (-0.0002 to -0.0003 in.) [colors red, blue and white]. For additional information on needle roller and cage assemblies with needle rollers of different group limits contact your representative.

Table B-1. Needle roller group limits (Grade G2)

Group tolerance		Marking gage	Identifying color on label or on package
mm in.	mm in.		
0.000 0.0000	-0.002 -0.00008	P0M2	Red
-0.001 -0.00004	-0.003 -0.00012	M1M3	Red
-0.002 -0.00008	-0.004 -0.0002	M2M4	Blue
-0.003 -0.00012	-0.005 -0.0002	M3M5	Blue
-0.004 -0.0002	-0.006 -0.0002	M4M6	White (gray)
-0.005 -0.0002	-0.007 -0.0003	M5M7	White (gray)
-0.006 -0.0002	-0.008 -0.0003	M6M8	Green
-0.007 -0.0003	-0.009 -0.0004	M7M9	Green
-0.008 -0.0003	-0.010 -0.0004	M8M10	Yellow
-0.009 -0.0004	-0.011 -0.0004	M9M11	Yellow

In the marking of the gages, P identifies zero (0) or plus (+), M identifies minus (-).

MOUNTING DIMENSIONS

DESIGN OF RACEWAYS

Radial needle roller and cage assemblies use the housing bore as the outer raceway and the shaft as the inner raceway. To realize full bearing load rating and life, the housing bore and the shaft raceways must have the correct geometric and metallurgical characteristics. The housing should be of sufficient cross section to maintain adequate roundness and running clearance under load. Additional design details for housings and shafts used as outer and inner raceways can be found in the engineering section. The only limit to precision of the radial clearance of a mounted assembly is the capability of the user to hold close tolerances on the inner and outer raceways. The suggested shaft tolerances listed in Table B-2 are based on housing bore tolerance G6 and apply to metric series radial needle roller and cage assemblies with needle rollers of group limits between P0M2 and M5M7.

Table B-2. Suggested shaft tolerances for housing bores machined to G6

Nominal shaft diameter in mm	≤ 80	> 80
Radial clearance	Shaft tolerance	
Smaller than normal	j5	h5
Normal	h5	g5
Larger than normal	g6	f6

AXIAL GUIDANCE REQUIREMENTS

Radial needle roller and cage assembly must be axially guided by shoulders or other suitable means. The end guiding surfaces should be hardened to minimize wear and must provide sufficient axial clearance to prevent end-locking of the assembly. Length tolerance H11 is suggested.

If end guidance is provided by a housing shoulder at one end and by a shaft shoulder at the other end, the shaft must be axially positioned to prevent end-locking of needle roller and cage assembly. The housing and shaft shoulder heights should be 70 percent to 90 percent of the needle roller diameter to provide proper axial guidance.

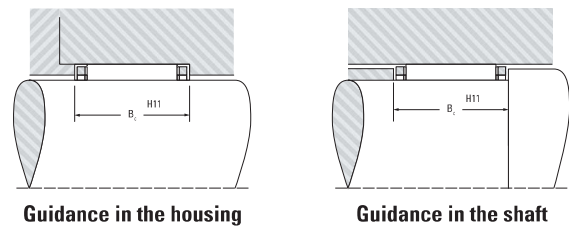


Fig. B-2. Axial guidance requirements

MOUNTING IN SETS

Radial needle roller and cage assemblies that are mounted side by side must have needle rollers of the same group limits to ensure uniform load distribution.

LUBRICATION

Oil is the preferred lubricant for most applications. In critical applications involving high speeds, ample oil flow must be provided. Where assemblies are subjected to high centrifugal forces—such as in epicyclic gearing, or inertia forces, as in the small end of a connecting rod—the contact pressure between the cage and the raceway guiding surface becomes critical. The allowable contact pressure depends on a combination of the induced force and the relative velocity between the cage and raceway and the rate of lubricant flow. Consult your representative when cages will be subjected to high induced forces.

SPECIAL DESIGNS

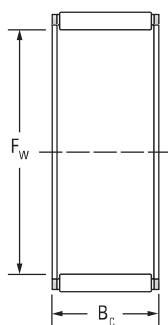
Radial needle roller and cage assemblies made to special dimensions or configurations—such as those which are split to assemble around a one-piece crankshaft—can be made available on special order. Special coated or plated cages to enhance life, under conditions of marginal lubrication and high induced forces, also can be made available.



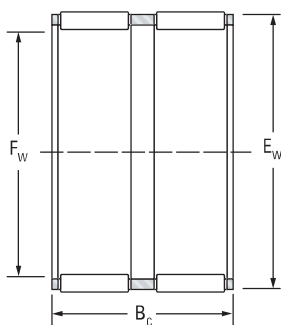
NEEDLE ROLLER BEARINGS

SINGLE-ROW, DOUBLE-ROW ASSEMBLIES

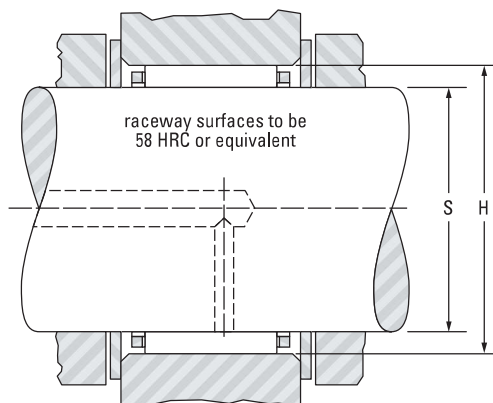
METRIC SERIES



K



KZW



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings	Mounting Dimension								
						Grease	Oil	Max.		Min.	Max.	Min.		
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
3 0.1181	3 0.1181	5 0.1969	7 0.2756	K3X5x7TN	1.56 351	1.29 290	48000	74000	—	3.000 0.1181	2.996 0.1180	5.004 0.1970	5.012 0.1973	0.0002 0.0004
	3 0.1181	5 0.1969	9 0.3543	K3X5x9TN	1.74 391	1.48 333	48000	74000	—	3.000 0.1181	2.996 0.1180	5.004 0.1970	5.012 0.1973	0.0003 0.0007
4 0.1575	4 0.1575	7 0.2756	7 0.276	K4X7X7TN	1.83 411	1.32 297	34000	52000	—	4.000 0.1575	3.995 0.1573	7.014 0.2761	7.005 0.2758	0.0005 0.001
5 0.1969	5 0.1969	8 0.3150	8 0.315	K5X8X8TN	2.18 490	1.71 384	31000	47000	—	5.000 0.1969	4.995 0.1967	8.014 0.3155	8.005 0.3152	0.0007 0.002
	5 0.1969	8 0.3150	10 0.394	K5X8X10TN	3.04 683	2.63 591	31000	47000	—	5.000 0.1969	4.995 0.1967	8.014 0.3155	8.005 0.3152	0.0008 0.002
	5 0.1969	9 0.3543	13 0.512	K5X9X13TN	4.29 964	3.55 798	26000	40000	—	5.000 0.1969	4.995 0.1967	9.014 0.3549	9.005 0.3545	0.002 0.004
6 0.2362	6 0.2362	9 0.3543	8 0.315	K6X9X8	3.19 717	2.90 652	29000	44000	0.0116	6.000 0.2362	5.995 0.2360	9.014 0.3549	9.005 0.3545	0.0008 0.002
	6 0.2362	9 0.3543	8 0.315	K6X9X8TN	2.47 555	2.07 465	29000	44000	—	6.000 0.2362	5.995 0.2360	9.014 0.3549	9.005 0.3545	0.001 0.002
	6 0.2362	9 0.3543	10 0.394	K6X9X10TN	3.07 690	2.74 616	29000	44000	—	6.000 0.2362	5.995 0.2360	9.014 0.3549	9.005 0.3545	0.001 0.002
7 0.2756	7 0.2756	10 0.3937	8 0.315	K7X10X8TN	2.74 616	2.44 549	28000	42000	—	7.000 0.2756	6.994 0.2754	10.014 0.3943	10.005 0.3939	0.001 0.002
	7 0.2756	10 0.3937	10 0.394	K7X10X10TN	3.40 764	3.22 724	28000	42000	—	7.000 0.2756	6.994 0.2754	10.014 0.3943	10.005 0.3939	0.001 0.002
	7 0.2756	11 0.4331	15 0.591	K7X11X15TN	6.44 1450	6.24 1400	23000	35000	—	7.000 0.2756	6.994 0.2754	11.017 0.4337	11.006 0.4333	0.003 0.007
8 0.3150	8 0.3150	11 0.4331	8 0.315	K8X11X8FV	3.23 726	3.11 699	26000	41000	0.0132	8.000 0.3150	7.994 0.3147	11.017 0.4337	11.006 0.4333	0.002 0.004
	8 0.3150	11 0.4331	8 0.315	K8X11X8TN	2.34 526	2.05 461	26000	41000	—	8.000 0.3150	7.994 0.3147	11.017 0.4337	11.006 0.4333	0.001 0.002
	8 0.3150	11 0.4331	10 0.394	K8X11X10	4.57 1030	4.89 1100	26000	41000	0.0148	8.000 0.3150	7.994 0.3147	11.017 0.4337	11.006 0.4333	0.002 0.004
	8 0.3150	11 0.4331	10 0.394	K8X11X10FV	4.01 901	4.11 924	26000	41000	0.0142	8.000 0.3150	7.994 0.3147	11.017 0.4337	11.006 0.4333	0.002 0.004
	8 0.3150	11 0.4331	10 0.394	K8x11x10TN	3.84 864	3.91 880	26000	41000	—	8.000 0.3150	7.994 0.3147	11.006 0.4333	11.017 0.4337	0.001 0.002

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.	Min.	
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
8 0,3150	8 0,3150	11 0,4331	13 0,512	K8x11x13TN	5.18 1170	5.75 1290	26000	41000	—	8.000 0,3150	7.994 0,3147	11.006 0,4333	11.017 0,4337	0.002 0,004
	8 0,3150	11 0,4331	13 0,512	K8X11X13H	5.22 1170	5.78 1300	26000	41000	0.0154	8.000 0,3150	7.994 0,3147	11.017 0,4337	11.006 0,4333	0.003 0.007
	8 0,3150	12 0,4724	10 0,394	K8X12X10F	5.05 1140	4.69 1050	22000	33000	0,0143	8.000 0,3150	7.994 0,3147	12.017 0,4731	12.006 0,4727	0.002 0.004
9 0,3543	9 0,3543	12 0,4724	10 0,394	K9X12X10FH	4.27 960	4.60 1030	26000	40000	0.0153	9.000 0,3543	8.994 0,3541	12.017 0,4731	12.006 0,4727	0.003 0.007
	9 0,3543	12 0,4724	10 0,394	K9X12X10FV	4.27 960	4.60 1030	26000	40000	0.0153	9.000 0,3543	8.994 0,3541	12.017 0,4731	12.006 0,4727	0.002 0.004
	9 0,3543	12 0,4724	13 0,512	K9X12X13F	5.57 1250	6.47 1450	26000	40000	0.0167	9.000 0,3543	8.994 0,3541	12.017 0,4731	12.006 0,4727	0.003 0.007
	9 0,3543	12 0,4724	13 0,512	K9X12X13FH	5.57 1250	6.47 1450	26000	40000	0.0167	9.000 0,3543	8.994 0,3541	12.017 0,4731	12.006 0,4727	0.003 0.007
	9 0,3543	12 0,4724	13 0,512	K9X12X13FV	5.57 1250	6.47 1450	26000	40000	0.0167	9.000 0,3543	8.994 0,3541	12.017 0,4731	12.006 0,4727	0.003 0.007
	9 0,3543	13 0,5118	8 0,315	K9X13X8H	3.96 890	3.50 787	21000	32000	0.0139	9.000 0,3543	8.994 0,3541	13.017 0,5125	13.006 0,5120	0.003 0.007
10 0,3937	10 0,3937	13 0,5118	10 0,394	K10X13X10	5.40 1210	6.43 1450	25000	39000	0,0174	10.000 0,3937	9.994 0,3935	13.017 0,5125	13.006 0,5120	0.002 0.004
	10 0,3937	13 0,5118	10 0,394	K10X13X10H	5.40 1210	6.43 1450	25000	39000	0,0174	10.000 0,3937	9.994 0,3935	13.017 0,5125	13.006 0,5120	0.002 0.004
	10 0,3937	13 0,5118	10 0,394	K10X13X10TN	4.29 964	4.77 1070	25000	39000	—	10.000 0,3937	9.994 0,3935	13.017 0,5125	13.006 0,5120	0.002 0.004
	10 0,3937	13 0,5118	13 0,512	K10X13X13	5.90 1330	7.16 1610	25000	39000	0.0178	10.000 0,3937	9.994 0,3935	13.017 0,5125	13.006 0,5120	0.003 0.007
	10 0,3937	13 0,5118	16 0,630	K10X13X16	7.43 1670	9.64 2170	25000	39000	0.0192	10.000 0,3937	9.994 0,3935	13.017 0,5125	13.006 0,5120	0.004 0.009
	10 0,3937	14 0,5512	10 0,394	K10X14X10H	6.12 1380	6.29 1410	20000	31000	0.0167	10.000 0,3937	9.994 0,3935	14.017 0,5519	14.006 0,5514	0.003 0.007
	10 0,3937	14 0,5512	13 0,512	K10X14X13H	7.88 1770	8.71 1960	20000	31000	0.0181	10.000 0,3937	9.994 0,3935	14.017 0,5519	14.006 0,5514	0.004 0.009
	10 0,3937	16 0,6299	12 0,472	K10X16X12F	8.39 1890	7.47 1680	15000	24000	0.0168	10.000 0,3937	9.994 0,3935	16.017 0,6306	16.006 0,6302	0.006 0.013
	10 0,3937	16 0,6299	12 0,472	K10X16X12TN	7.50 1690	6.40 1440	15000	24000	—	10.000 0,3937	9.994 0,3935	16.017 0,6306	16.006 0,6302	0.005 0.011
12 0,4724	12 0,4724	15 0,5906	10 0,394	K12X15X10H	5.85 1320	7.51 1690	24000	37000	0.0195	12.000 0,4724	11.992 0,4721	15.017 0,5912	15.006 0,5908	0.003 0.007
	12 0,4724	15 0,5906	13 0,512	K12X15X13H	6.78 1520	9.03 2030	24000	37000	0.0204	12.000 0,4724	11.992 0,4721	15.017 0,5912	15.006 0,5908	0.004 0.009
	12 0,4724	16 0,6299	13 0,512	K12X16X13	7.49 1680	8.51 1910	19000	30000	0,0194	12.000 0,4724	11.992 0,4721	16.017 0,6306	16.006 0,6302	0.006 0.013
	12 0,4724	17 0,6693	13 0,512	K12X17X13	8.93 2010	9.29 2090	16000	25000	0.0194	12.000 0,4724	11.992 0,4721	17.017 0,6700	17.006 0,6695	0.008 0.018
	12 0,4724	18 0,7087	12 0,472	K12X18X12H	9.76 2190	9.40 2110	14000	22000	0.0191	12.000 0,4724	11.992 0,4721	18.017 0,7093	18.006 0,7089	0.009 0.020
13 0,5118	13 0,5118	17 0,6693	10 0,394	K13X17X10	7.22 1620	8.33 1870	19000	29000	0.0199	13.000 0,5118	12.992 0,5115	17.017 0,6700	17.006 0,6695	0.004 0.009

Continued on next page.

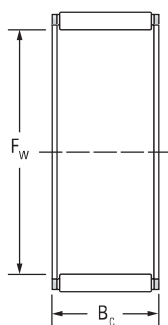


NEEDLE ROLLER BEARINGS

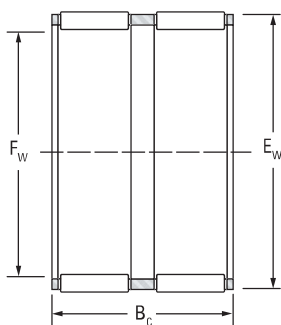
SINGLE-ROW, DOUBLE-ROW ASSEMBLIES –

continued

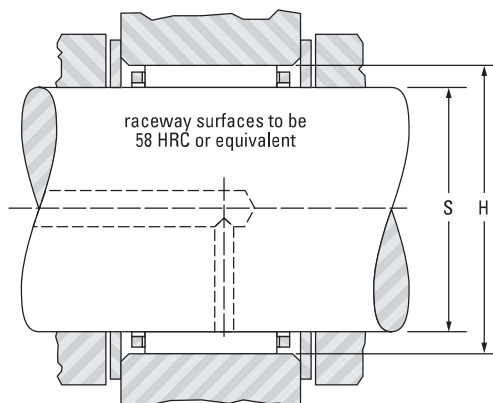
METRIC SERIES



K



KZW



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			Load Ratings		Grease	Oil				Mounting Dimension				
							Max.	Min.		Max.	Min.			
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
13 0.5118	13 0.5118	18 0.7087	15 0.591	K13X18X15F	10.8 2430	12.1 2720	16000	25000	0.0213	13.000 0.5118	12.992 0.5115	18.017 0.7093	18.006 0.7089	0.008 0.01
14 0.5512	14 0.5512	18 0.7087	8 0.315	K14X18X8	5.39 1210	5.82 1310	19000	29000	0.0188	14.000 0.5512	13.992 0.5509	18.017 0.7093	18.006 0.7089	0.004 0.009
	14 0.5512	18 0.7087	10 0.394	K14X18X10	7.17 1 610	8.41 1890	19000	29000	0.0206	14.000 0.5512	13.992 0.5509	18.017 0.7093	18.006 0.7089	0.005 0.011
	14 0.5512	18 0.7087	13 0.512	K14X18X13	9.73 2190	12.5 2810	19000	29000	0.0227	14.000 0.5512	13.992 0.5509	18.017 0.7093	18.006 0.7089	0.006 0.013
	14 0.5512	18 0.7087	15 0.591	K14X18X15	10.5 2360	13.8 3100	19000	29000	0.0233	14.000 0.5512	13.992 0.5509	18.017 0.7093	18.006 0.7089	0.007 0.015
	14 0.5512	18 0.7087	17 0.669	K14X18X17H	12.4 2790	17.1 3840	19000	29000	0.0246	14.000 0.5512	13.992 0.5509	18.017 0.7093	18.006 0.7089	0.008 0.018
	14 0.5512	19 0.7480	13 0.512	K14X19X13H	10.2 2290	11.4 2560	16000	24000	0.0217	14.000 0.5512	13.992 0.5509	19.020 0.7488	19.007 0.7483	0.008 0.018
	14 0.5512	19 0.7480	18 0.709	K14X19X18F	13.2 2970	16.0 3600	16000	24000	0.0236	14.000 0.5512	13.992 0.5509	19.020 0.7488	19.007 0.7483	0.011 0.024
	14 0.5512	20 0.7874	12 0.472	K14X20X12	10.5 2360	10.6 2380	14000	21000	0.0209	14.000 0.5512	13.992 0.5509	20.020 0.7882	20.007 0.7877	0.009 0.020
15 0.5906	15 0.5906	18 0.7087	14 0.551	K15X18X14TN	7.92 1780	11.9 2680	13000	23000	—	15.000 0.5906	14.992 0.5902	18.017 0.7093	18.006 0.7089	0.003 0.007
	15 0.5906	18 0.7087	16 0.630	K15X18X16F	8.36 1880	12.6 2830	13000	23000	0.0244	15.000 0.5906	14.992 0.5902	18.017 0.7093	18.006 0.7089	0.005 0.011
	15 0.5906	18 0.7087	17 0.669	K15X18X17	8.08 1820	12.1 2720	23000	36000	0.0241	15.000 0.5906	14.992 0.5902	18.017 0.7093	18.006 0.7089	0.005 0.011
	15 0.5906	19 0.7480	10 0.394	K15X19X10	7.87 1770	9.69 2180	18000	28000	0.0220	15.000 0.5906	14.992 0.5902	19.020 0.7488	19.007 0.7483	0.005 0.011
	15 0.5906	19 0.7480	13 0.512	K15X19X13	9.66 2170	12.6 2830	18000	28000	0.0235	15.000 0.5906	14.992 0.5902	19.020 0.7488	19.007 0.7483	0.007 0.015
	15 0.5906	19 0.7480	17 0.669	K15X19X17	12.3 2770	17.2 3870	18000	28000	0.0254	15.000 0.5906	14.992 0.5902	19.020 0.7488	19.007 0.7483	0.009 0.020
	15 0.5906	19 0.7480	17 0.669	K15X19X17H	12.3 2770	17.2 3870	18000	28000	0.0254	15.000 0.5906	14.992 0.5902	19.020 0.7488	19.007 0.7483	0.009 0.020
	15 0.5906	19 0.7480	22 0.866	K15X19X22ZW	12.2 2740	17.0 3820	18000	28000	0.0253	15.000 0.5906	14.992 0.5902	19.020 0.7488	19.007 0.7483	0.010 0.022

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S	H		Wt.	
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil				Max.		Min.
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹		mm in.	mm in.	mm in.	mm in.	kg lbs.	
15 0.5906	15 0.5906	20 0.7874	13 0.512	K15X20X13H	9.93 2230	11.3 2540	16000	24000	0.0222	15.000 0.5906	14.992 0.5902	20.020 0.7882	20.007 0.7877	0.008 0.018
	15 0.5906	21 0.8268	15 0.591	K15X21X15	13.4 3010	14.8 3330	14000	21000	0.0233	15.000 0.5906	14.992 0.5902	21.020 0.8276	21.007 0.8270	0.013 0.029
	15 0.5906	21 0.8268	21 0.827	K15X21X21H	18.0 4050	21.7 4880	14000	21000	0.0256	15.000 0.5906	14.992 0.5902	21.020 0.8276	21.007 0.8270	0.018 0.040
16 0.6299	16 0.6299	20 0.7874	8 0.315	K16X20X8F	6.37 1430	7.51 1690	18000	28000	0.0212	16.000 0.6299	15.992 0.6296	20.020 0.7882	20.007 0.7877	0.005 0.011
	16 0.6299	20 0.7874	10 0.394	K16X20X10	7.82 1760	9.76 2190	18000	28000	0.0226	16.000 0.6299	15.992 0.6296	20.020 0.7882	20.007 0.7877	0.006 0.013
	16 0.6299	20 0.7874	10 0.394	K16X20X10H	7.82 1760	9.76 2190	18000	28000	0.0226	16.000 0.6299	15.992 0.6296	20.020 0.7882	20.007 0.7877	0.006 0.013
	16 0.6299	20 0.7874	10.6 0.417	K16X20X10,6TN1	6.06 1360	7.01 1580	18000	28000	—	16.000 0.6299	15.992 0.6296	20.020 0.7882	20.007 0.7877	0.003 0.007
	16 0.6299	20 0.7874	13 0.512	K16X20X13	10.1 2270	13.5 3030	18000	28000	0.0245	16.000 0.6299	15.992 0.6296	20.020 0.7882	20.007 0.7877	0.007 0.015
	16 0.6299	20 0.7874	14 0.551	K16X20X14	10.8 2430	14.8 3330	18000	28000	0.0251	16.000 0.6299	15.992 0.6296	20.020 0.7882	20.007 0.7877	0.007 0.015
	16 0.6299	20 0.7874	17 0.669	K16X20X17F	11.9 2680	16.8 3780	18000	28000	0.0259	16.000 0.6299	15.992 0.6296	20.020 0.7882	20.007 0.7877	0.009 0.020
	16 0.6299	20 0.7874	17 0.669	K16X20X17H	12.9 2900	18.5 4160	18000	28000	0.0265	16.000 0.6299	15.992 0.6296	20.020 0.7882	20.007 0.7877	0.008 0.018
	16 0.6299	20 0.7874	20 0.787	K16X20X20	13.4 3010	19.5 4380	18000	28000	0.0269	16.000 0.6299	15.992 0.6296	20.020 0.7882	20.007 0.7877	0.011 0.024
	16 0.6299	22 0.8661	12 0.472	K16X22X12	11.2 2520	11.9 2680	19000	29000	0.0227	16.000 0.6299	15.992 0.6296	22.020 0.8669	22.007 0.8664	0.010 0.022
	16 0.6299	22 0.8661	16 0.630	K16X22X16	14.9 3350	17.2 3870	19000	29000	0.0248	16.000 0.6299	15.992 0.6296	22.020 0.8669	22.007 0.8664	0.014 0.031
	16 0.6299	22 0.8661	16 0.630	K16X22X16H	14.9 3350	17.2 3870	19000	29000	0.0248	16.000 0.6299	15.992 0.6296	22.020 0.8669	22.007 0.8664	0.014 0.031
	16 0.6299	22 0.8661	20 0.787	K16X22X20	18.6 4180	22.9 5150	19000	29000	0.0267	16.000 0.6299	15.992 0.6296	22.020 0.8669	22.007 0.8664	0.017 0.037
	16 0.6299	24 0.9449	20 0.787	K16X24X20	20.2 4540	21.4 4810	20000	30000	0.0255	16.000 0.6299	15.992 0.6296	24.020 0.9457	24.007 0.9452	0.025 0.055
17 0.6693	17 0.6693	20 0.7874	10 0.394	K17X20X10	5.96 1340	8.53 1920	16000	25000	0.0234	17.000 0.6693	16.992 0.6690	20.020 0.7882	20.007 0.7877	0.004 0.009
	17 0.6693	21 0.8268	10 0.394	K17X21X10	8.12 1830	10.4 2340	17000	26000	0.0236	17.000 0.6693	16.992 0.6690	21.020 0.8276	21.007 0.8270	0.006 0.013
	17 0.6693	21 0.8268	12.8 0.504	K17X21X13H	10.5 2360	14.5 3260	17000	26000	0.0256	17.000 0.6693	16.992 0.6690	21.020 0.8276	21.007 0.8270	0.008 0.018
	17 0.6693	21 0.8268	13 0.512	K17X21X13	10.5 2360	14.5 3260	17000	26000	0.0256	17.000 0.6693	16.992 0.6690	21.020 0.8276	21.007 0.8270	0.008 0.018
	17 0.6693	21 0.8268	15 0.591	K17X21X15	11.4 2560	16.1 3620	17000	26000	0.0263	17.000 0.6693	16.992 0.6690	21.020 0.8276	21.007 0.8270	0.008 0.018
	17 0.6693	21 0.8268	17 0.669	K17X21X17H	13.4 3010	19.8 4450	17000	26000	0.0277	17.000 0.6693	16.992 0.6690	21.020 0.8276	21.007 0.8270	0.011 0.024
	17 0.6693	22 0.8661	20 0.787	K17X22X20FH	17.0 3820	23.3 5240	17000	27000	0.0280	17.000 0.6693	16.992 0.6690	22.020 0.8669	22.007 0.8664	0.015 0.033

Continued on next page.

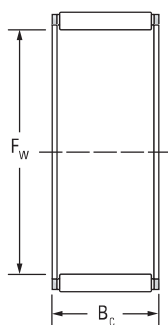


NEEDLE ROLLER BEARINGS

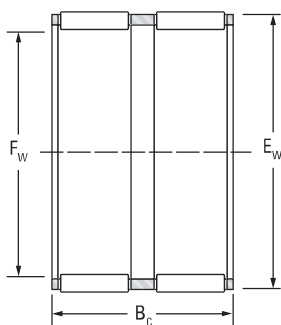
SINGLE-ROW, DOUBLE-ROW ASSEMBLIES –

continued

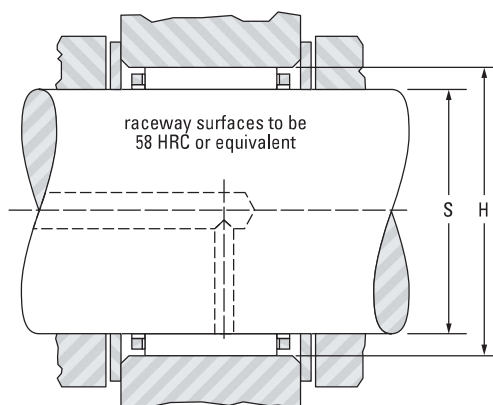
METRIC SERIES



K



KZW



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.	Min.	
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
17 0.6693	17 0.6693	23 0.9055	15 0.591	K17X23X15F	14.1 3170	16.3 3660	18000	27000	0.0251	17.000 0.6693	16.992 0.6690	23.020 0.9063	23.007 0.9058	0.010 0.022
18 0.7087	18 0.7087	22 0.8661	8 0.315	K18X22X8F	6.32 1420	7.70 1730	16000	24000	0.0224	18.000 0.7087	17.992 0.7083	22.020 0.8669	22.007 0.8664	0.005 0.011
	18 0.7087	22 0.8661	10 0.394	K18X22X10	8.41 1890	11.1 2500	16000	24000	0.0246	18.000 0.7087	17.992 0.7083	22.020 0.8669	22.007 0.8664	0.006 0.013
	18 0.7087	22 0.8661	10 0.394	K18X22X10H	8.41 1890	11.1 2500	16000	24000	0.0246	18.000 0.7087	17.992 0.7083	22.020 0.8669	22.007 0.8664	0.006 0.013
	18 0.7087	22 0.8661	13 0.512	K18X22X13H	10.8 2430	15.4 3460	16000	24000	0.0266	18.000 0.7087	17.992 0.7083	22.020 0.8669	22.007 0.8664	0.008 0.018
	18 0.7087	22 0.8661	14 0.551	K18X22X14	11.6 2610	16.8 3780	16000	24000	0.0272	18.000 0.7087	17.992 0.7083	22.020 0.8669	22.007 0.8664	0.009 0.020
	18 0.7087	22 0.8661	14 0.551	K18X22X14FV	11.3 2540	16.3 3660	16000	24000	0.0270	18.000 0.7087	17.992 0.7083	22.020 0.8669	22.007 0.8664	0.009 0.020
	18 0.7087	22 0.8661	17 0.669	K18X22X17H	13.3 2990	19.9 4470	16000	24000	0.0284	18.000 0.7087	17.992 0.7083	22.020 0.8669	22.007 0.8664	0.009 0.020
	18 0.7087	22 0.8661	20 0.787	K18X22X20F	15.0 3370	23.4 5260	16000	24000	0.0296	18.000 0.7087	17.992 0.7083	22.020 0.8669	22.007 0.8664	0.011 0.024
	18 0.7087	24 0.9449	12 0.472	K18X24X12	11.8 2650	13.1 2940	17000	25000	0.0243	18.000 0.7087	17.992 0.7083	24.020 0.9457	24.007 0.9452	0.011 0.024
	18 0.7087	24 0.9449	20 0.787	K18X24X20H	19.4 4360	24.9 5600	16000	25000	0.0285	18.000 0.7087	17.992 0.7083	24.020 0.9457	24.007 0.9452	0.019 0.042
	18 0.7087	25 0.9843	22 0.866	K18X25X22H	23.3 5240	28.6 6430	17000	26000	0.0291	18.000 0.7087	17.992 0.7083	25.020 0.9850	25.007 0.9845	0.025 0.055
	18 0.7087	26 1.0236	12 0.472	K18X26X12FV	13.8 3100	13.5 3030	11000	17000	0.0238	18.000 0.7087	17.992 0.7083	26.020 1.0244	26.007 1.0239	0.020 0.044
	18 0.7087	26 1.0236	20 0.787	K18X26X20F	21.7 4880	24.1 5420	17000	26000	0.0275	18.000 0.7087	17.992 0.7083	26.020 1.0244	26.007 1.0239	0.027 0.060
19 0.7480	19 0.7480	23 0.9055	13 0.512	K19X23X13	10.8 2430	15.5 3480	15000	23000	0.0273	19.000 0.7480	18.991 0.7477	23.020 0.9063	23.007 0.9058	0.008 0.018
	19 0.7480	23 0.9055	17 0.669	K19X23X17	13.4 3010	20.6 4630	15000	23000	0.0293	19.000 0.7480	18.991 0.7477	23.020 0.9063	23.007 0.9058	0.011 0.024
20 0.7874	20 0.7874	24 0.9449	8 0.315	K20X24X8F	7.31 1640	9.60 2160	14000	22000	0.0248	20.000 0.7874	19.991 0.7870	24.020 0.9457	24.007 0.9452	0.005 0.011

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.	Min.	
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
20 0,7874	20 0,7874	24 0,9449	10 0,394	K20X24X10	8.97 2020	12.5 2810	14000	22000	0.0265	20.000 0,7874	19.991 0,7870	24.020 0,9457	24.007 0,9452	0.006 0,013
	20 0,7874	24 0,9449	10 0,394	K20X24X10H	8.97 2020	12.5 2810	14000	22000	0.0265	20.000 0,7874	19.991 0,7870	24.020 0,9457	24.007 0,9452	0.006 0,013
	20 0,7874	24 0,9449	12 0,472	K20X24X12	10.7 2410	15.7 3530	14000	22000	0.0280	20.000 0,7874	19.991 0,7870	24.020 0,9457	24.007 0,9452	0.008 0,018
	20 0,7874	24 0,9449	13 0,512	K20X24X13	11.5 2590	17.3 3890	14000	22000	0.0287	20.000 0,7874	19.991 0,7870	24.020 0,9457	24.007 0,9452	0.008 0,018
	20 0,7874	24 0,9449	13 0,512	K20X24X13H	11.5 2590	17.3 3890	14000	22000	0.0287	20.000 0,7874	19.991 0,7870	24.020 0,9457	24.007 0,9452	0.009 0,020
	20 0,7874	24 0,9449	14 0,551	K20X24X14	12.4 2790	18.9 4250	14000	22000	0.0293	20.000 0,7874	19.991 0,7870	24.020 0,9457	24.007 0,9452	0.009 0,020
	20 0,7874	24 0,9449	17 0,669	K20X24X17H	14.8 3330	23.7 5330	14000	22000	0.0310	20.000 0,7874	19.991 0,7870	24.020 0,9457	24.007 0,9452	0.011 0,024
	20 0,7874	26 1,0236	12 0,472	K20X26X12	13.0 2920	15.3 3440	15000	23000	0.0264	20.000 0,7874	19.991 0,7870	26.020 1,0244	26.007 1,0239	0.012 0,026
	20 0,7874	26 1,0236	13 0,512	K20X26X13H	13.4 3010	15.9 3570	15000	23000	0.0267	20.000 0,7874	19.991 0,7870	26.020 1,0244	26.007 1,0239	0.014 0,031
	20 0,7874	26 1,0236	17 0,669	K20X26X17H	19.3 4340	25.5 5730	15000	23000	0.0300	20.000 0,7874	19.991 0,7870	26.020 1,0244	26.007 1,0239	0.017 0,037
	20 0,7874	26 1,0236	20 0,787	K20X26X20	20.3 4560	27.2 6110	15000	23000	0.0305	20.000 0,7874	19.991 0,7870	26.020 1,0244	26.007 1,0239	0.020 0,044
	20 0,7874	28 1,1024	20 0,787	K20X28X20H	24.6 5530	29.0 6520	15000	23000	0.0300	20.000 0,7874	19.991 0,7870	28.020 1,1031	28.007 1,1026	0.028 0,062
	20 0,7874	28 1,1024	25 0,984	K20X28X25H	29.7 6680	37.0 8320	15000	23000	0.0319	20.000 0,7874	19.991 0,7870	28.020 1,1031	28.007 1,1026	0.036 0,079
	20 0,7874	30 1,1811	30 1,181	K20X30X30H	38.9 8750	45.8 10300	16000	24000	0.0329	20.000 0,7874	19.991 0,7870	30.020 1,1819	30.007 1,1814	0.055 0,121
	20 0,7874	32 1,2598	36 1,417	K20X32X36H	49.9 11220	57.0 12810	16000	25000	0.0344	20.000 0,7874	19.991 0,7870	32.025 1,2608	32.009 1,2602	0.082 0,181
21 0,8268	21 0,8268	25 0,9843	17 0,669	K21X25X17F	14.3 3210	23.1 5190	14000	21000	0.0315	21.000 0,8268	20.991 0,8264	25.020 0,9850	25.007 0,9845	0.012 0,026
	21 0,8268	25 0,9843	17 0,669	K21X25X17H	14.3 3210	23.1 5190	14000	21000	0.0315	21.000 0,8268	20.991 0,8264	25.020 0,9850	25.007 0,9845	0.013 0,029
22 0,8661	22 0,8661	26 1,0236	10 0,394	K22X26X10H	9.81 2210	14.5 3 260	13000	20000	0.0291	22.000 0,8661	21.991 0,8658	26.020 1,0244	26.007 1,0239	0.007 0,015
	22 0,8661	26 1,0236	13 0,512	K22X26X13H	11.8 2650	18.3 4110	13000	20000	0.0303	22.000 0,8661	21.991 0,8658	26.020 1,0244	26.007 1,0239	0.012 0,026
	22 0,8661	26 1,0236	17 0,669	K22X26X17	15.6 3510	26.3 5910	13000	20000	0.0332	22.000 0,8661	21.991 0,8658	26.020 1,0244	26.007 1,0239	0.015 0,033
	22 0,8661	26 1,0236	17 0,669	K22X26X17H	15.6 3510	26.3 5910	13000	20000	0.0332	22.000 0,8661	21.991 0,8658	26.020 1,0244	26.007 1,0239	0.012 0,026
	22 0,8661	26 1,0236	18 0,709	K22X26X18H	15.3 3440	25.5 5730	13000	20000	0.0329	22.000 0,8661	21.991 0,8658	26.020 1,0244	26.007 1,0239	0.017 0,037
	22 0,8661	28 1,1024	13 0,512	K22X28X13	13.9 3120	17.1 3840	13000	20000	0.0283	22.000 0,8661	21.991 0,8658	28.020 1,1031	28.007 1,1026	0.015 0,033
	22 0,8661	28 1,1024	17 0,669	K22X28X17H	18.2 4090	24.2 5440	13000	20000	0.0308	22.000 0,8661	21.991 0,8658	28.020 1,1031	28.007 1,1026	0.020 0,044

Continued on next page.

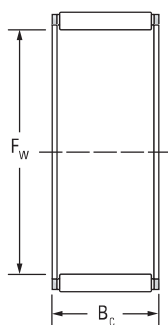


NEEDLE ROLLER BEARINGS

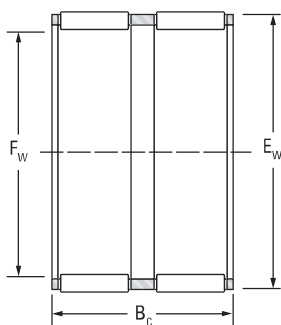
SINGLE-ROW, DOUBLE-ROW ASSEMBLIES –

continued

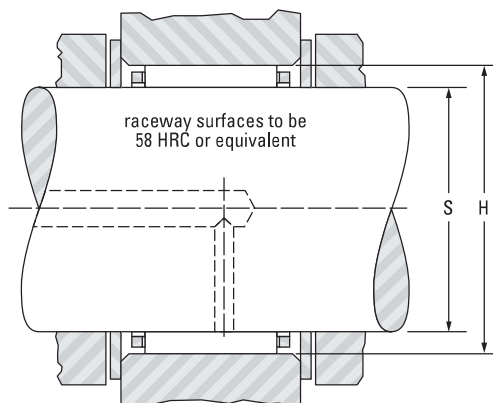
METRIC SERIES



K



KZW



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Max.	Min.		Max.	Min.			
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
22 0.8661	22 0.8661	30 1.1811	15 0.591	K22X30X15H	19.7 4430	22.3 5010	14000	21000	0.0292	22.000 0.8661	21.991 0.8658	30.020 1.1819	30.007 1.1814	0.023 0.051
	22 0.8661	30 1.1811	20 0.787	K22X30X20FV	24.4 5490	29.4 6610	14000	21000	0.0313	22.000 0.8661	21.991 0.8658	30.020 1.1819	30.007 1.1814	0.031 0.068
	22 0.8661	32 1.2598	24 0.945	K22X32X24F	33.1 7440	37.9 8520	14000	22000	0.0326	22.000 0.8661	21.991 0.8658	32.025 1.2608	32.009 1.2602	0.046 0.101
	22 0.8661	32 1.2598	30 1.181	K22X32X30H	41.8 9400	51.3 11530	14000	22000	0.0351	22.000 0.8661	21.991 0.8658	32.025 1.2608	32.009 1.2602	0.057 0.126
23 0.9055	23 0.9055	28 1.1024	24 0.945	K23X28X24F	22.4 5040	36.2 8140	12000	19000	0.0355	23.000 0.9055	22.991 0.9052	28.020 1.1031	28.007 1.1026	0.023 0.051
	23 0.9055	35 1.3780	16 0.630	K23X35X16H	25.9 5820	25.1 5640	14000	21000	0.0294	23.000 0.9055	22.991 0.9052	35.025 1.3789	35.009 1.3783	0.040 0.088
	23 0.9055	35 1.3780	16.2 0.638	K23X35X16.2H	29.1 6540	29.3 6590	14000	21000	0.0306	23.000 0.9055	22.991 0.9052	35.025 1.3789	35.009 1.3783	0.040 0.088
24 0.9449	24 0.9449	28 1.1024	10 0.394	K24X28X10H	9.67 2170	14.6 3280	12000	18000	0.0298	24.000 0.9449	23.991 0.9445	28.020 1.1031	28.007 1.1026	0.027 0.060
	24 0.9449	28 1.1024	13 0.512	K24X28X13H	12.5 2810	20.2 4540	12000	18000	0.0323	24.000 0.9449	23.991 0.9445	28.020 1.1031	28.007 1.1026	0.010 0.022
	24 0.9449	28 1.1024	16 0.630	K24X28X16F						24.000 0.9449	23.991 0.9445	28.020 1.1031	28.007 1.1026	
	24 0.9449	28 1.1024	17 0.669	K24X28X17H	15.4 3460	26.4 5930	12000	18000	0.0345	24.000 0.9449	23.991 0.9445	28.020 1.1031	28.007 1.1026	0.013 0.029
	24 0.9449	30 1.1811	10 0.394	K24X30X10TN	11.3 2540	13.5 3030	12000	19000	—	24.000 0.9449	23.991 0.9445	30.020 1.1819	30.007 1.1814	0.008 0.018
	24 0.9449	30 1.1811	17 0.669	K24X30X17H	19.8 4450	27.7 6230	12000	19000	0.0331	24.000 0.9449	23.991 0.9445	30.020 1.1819	30.007 1.1814	0.020 0.044
	24 0.9449	30 1.1811	22 0.866	K24X30X22	25.0 5620	37.3 8390	12000	19000	0.0356	24.000 0.9449	23.991 0.9445	30.020 1.1819	30.007 1.1814	0.024 0.053
	24 0.9449	36 1.4173	23 0.906	K24X36X23H	37.1 8340	40.1 9010	13000	20000	0.0336	24.000 0.9449	23.991 0.9445	36.025 1.4183	36.009 1.4177	0.070 0.154
25 0.9843	25 0.9843	29 1.1417	10 0.394	K25X29X10H	9.61 2160	14.6 3280	11000	17000	0.0303	25.000 0.9843	24.991 0.9839	29.020 1.1425	29.007 1.1420	0.008 0.018
	25 0.9843	29 1.1417	13 0.512	K25X29X13H	12.8 2880	21.1 4740	11000	17000	0.0332	25.000 0.9843	24.991 0.9839	29.020 1.1425	29.007 1.1420	0.010 0.022

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S	H		Wt.	
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.		Min.
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
25 0,9843	25 0,9843	29 1,1417	17 0,669	K25X29X17H	15.1 3390	26.2 5890	11000	17000	0.0351	25,000 0,9843	24,991 0,9839	29,020 1,1425	29,007 1,1420	0.016 0,035
	25 0.9843	30 1.1811	13 0.512	K25X30X13	14.6 3280	21.4 4810	11000	17000	0.0323	25,000 0.9843	24,991 0.9839	30,020 1.1819	30,007 1.1814	0.012 0.026
	25 0.9843	30 1.1811	17 0.669	K25X30X17H	18.8 4230	29.8 6700	11000	17000	0.0351	25,000 0.9843	24,991 0.9839	30,020 1.1819	30,007 1.1814	0.016 0.035
	25 0.9843	30 1.1811	18 0.709	K25X30X18	20.6 4630	33.4 7510	11000	17000	0.0361	25,000 0.9843	24,991 0.9839	30,020 1.1819	30,007 1.1814	0.017 0.037
	25 0.9843	30 1.1811	20 0.787	K25X30X20H	21.9 4920	36.1 8120	11000	17000	0.0368	25,000 0.9843	24,991 0.9839	30,020 1.1819	30,007 1.1814	0.019 0.042
	25 0.9843	30 1.1811	24 0.945	K25X30X24H	24.8 5580	42.4 9530	11000	17000	0.0383	25,000 0.9843	24,991 0.9839	30,020 1.1819	30,007 1.1814	0.024 0.053
	25 0.9843	30 1.1811	26 1.024	K25X30X26ZW	23.0 5170	38.6 8680	11000	17000	0.0374	25,000 0.9843	24,991 0.9839	30,020 1.1819	30,007 1.1814	0.027 0.060
	25 0.9843	31 1.2205	14 0.551	K25X31X14H	16.8 3780	22.7 5100	12000	18000	0.0320	25,000 0.9843	24,991 0.9839	31,025 1.2215	31,009 1.2208	0.017 0.037
	25 0.9843	31 1.2205	17 0.669	K25X31X17H	19.7 4430	27.8 6250	12000	18000	0.0337	25,000 0.9843	24,991 0.9839	31,025 1.2215	31,009 1.2208	0.020 0.044
	25 0.9843	31 1.2205	21 0.827	K25X31X21	25.1 5640	38.0 8540	12000	18000	0.0364	25,000 0.9843	24,991 0.9839	31,025 1.2215	31,009 1.2208	0.026 0.057
	25 0.9843	31 1.2205	21 0.827	K25X31X21F	25.1 5640	38.0 8540	12000	18000	0.0364	25,000 0.9843	24,991 0.9839	31,025 1.2215	31,009 1.2208	0.026 0.057
	25 0.9843	31 1.2205	21 0.827	K25X31X21H	25.1 5640	38.0 8540	12000	18000	0.0364	25,000 0.9843	24,991 0.9839	31,025 1.2215	31,009 1.2208	0.026 0.057
	25 0.9843	31 1.2205	24 0.945	K25X31X24F	25.3 5690	38.5 8660	12000	18000	0.0365	25,000 0.9843	24,991 0.9839	31,025 1.2215	31,009 1.2208	0.031 0.068
	25 0.9843	31 1.2205	24 0.945	K25X31X24FH	25.3 5690	38.5 8660	12000	18000	0.0365	25,000 0.9843	24,991 0.9839	31,025 1.2215	31,009 1.2208	0.031 0.068
	25 0.9843	32 1.2598	16 0.630	K25X32X16	19.8 4450	25.3 5690	12000	18000	0.0323	25,000 0.9843	24,991 0.9839	32,025 1.2608	32,009 1.2602	0.027 0.060
	25 0.9843	33 1.2992	20 0.787	K25X33X20FH	25.6 5760	32.3 7260	12000	18000	0.0337	25,000 0.9843	24,991 0.9839	33,025 1.3002	33,009 1.2996	0.035 0.077
	25 0.9843	33 1.2992	20 0.787	K25X33X20H	28.8 6470	37.6 8450	12000	18000	0.0350	25,000 0.9843	24,991 0.9839	33,025 1.3002	33,009 1.2996	0.035 0.077
	25 0.9843	33 1.2992	24 0.945	K25X33X24H	32.3 7260	43.5 9780	12000	18000	0.0363	25,000 0.9843	24,991 0.9839	33,025 1.3002	33,009 1.2996	0.038 0.084
	25 0.9843	33 1.2992	25 0.984	K25X33X25H	33.0 7420	44.6 10030	12000	18000	0.0365	25,000 0.9843	24,991 0.9839	33,025 1.3002	33,009 1.2996	0.041 0.090
	25 0.9843	35 1.3780	23.7 0.933	K25X35X23,7H	35.9 8070	42.3 9510	12000	19000	0.0354	25,000 0.9843	24,991 0.9839	35,025 1.3789	35,009 1.3783	0.050 0.110
	25 0.9843	35 1.3780	25 0.984	K25X35X25H	37.8 8500	46.2 10390	12000	19000	0.0360	25,000 0.9843	24,991 0.9839	35,025 1.3789	35,009 1.3783	0.054 0.119
	25 0.9843	35 1.3780	30 1.181	K25X35X30H	44.6 10030	57.2 12860	12000	19000	0.0379	25,000 0.9843	24,991 0.9839	35,025 1.3789	35,009 1.3783	0.060 0.132
	25 0.9843	35 1.3780	36 1.417	K25X35X36H	52.4 11780	70.4 15830	12000	19000	0.0399	25,000 0.9843	24,991 0.9839	35,025 1.3789	35,009 1.3783	0.074 0.163
	25 0.9843	37 1.4567	20 0.787	K25X37X20H	32.5 7310	34.1 7670	12000	19000	0.0328	25,000 0.9843	24,991 0.9839	37,025 1.4577	37,009 1.4570	0.055 0.121

Continued on next page.

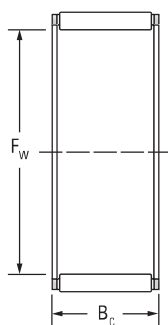


NEEDLE ROLLER BEARINGS

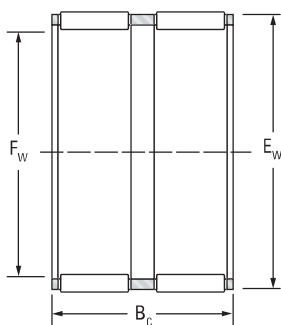
SINGLE-ROW, DOUBLE-ROW ASSEMBLIES –

continued

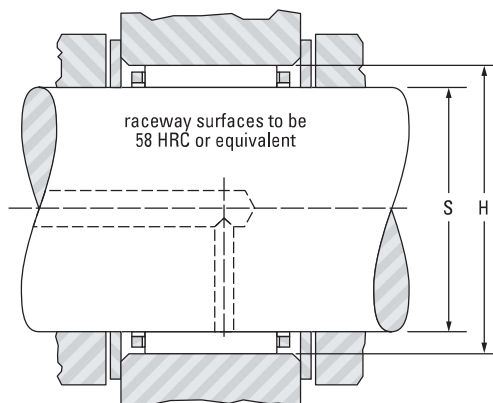
METRIC SERIES



K



KZW



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			Load Ratings		Mounting Dimension									
					-0.20 -0.008 -0.55 -0.022	Grease	Oil	Max.		Min.	Max.	Min.		
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
26 1.0236	26 1.0236	30 1.1811	10 0.394	K26X30X10F	9.46 2130	14.5 3260	11000	16000	0.0308	26.000 1.0236	25.991 1.0233	30.020 1.1819	30.007 1.1814	0.007 0.015
	26 1.0236	30 1.1811	13 0.512	K26X30X13	12.3 2770	20.4 4590	10000	16000	0.0335	26.000 1.0236	25.991 1.0233	30.020 1.1819	30.007 1.1814	0.011 0.024
	26 1.0236	30 1.1811	17 0.669	K26X30X17	15.0 3370	26.3 5910	10000	16000	0.0357	26.000 1.0236	25.991 1.0233	30.020 1.1819	30.007 1.1814	0.014 0.031
	26 1.0236	30 1.1811	22 0.866	K26X30X22ZW	16.7 3750	30.2 6790	10000	16000	0.0370	26.000 1.0236	25.991 1.0233	30.020 1.1819	30.007 1.1814	0.018 0.040
28 1.1024	28 1.1024	32 1.2598	21 0.827	K28X32X21F	18.7 4200	35.7 8030	9900	15000	0.0398	28.000 1.1024	27.991 1.1020	32.025 1.2608	32.009 1.2602	0.018 0.040
	28 1.1024	33 1.2992	13 0.512	K28X33X13F	14.1 3170	21.4 4810	10000	15000	0.0339	28.000 1.1024	27.991 1.1020	33.025 1.3002	33.009 1.2996	0.015 0.033
	28 1.1024	33 1.2992	13 0.512	K28X33X13FV	14.1 3170	21.4 4810	10000	15000	0.0339	28.000 1.1024	27.991 1.1020	33.025 1.3002	33.009 1.2996	0.015 0.033
	28 1.1024	33 1.2992	17 0.669	K28X33X17H	19.8 4450	33.0 7420	10000	15000	0.0378	28.000 1.1024	27.991 1.1020	33.025 1.3002	33.009 1.2996	0.018 0.040
	28 1.1024	33 1.2992	27 1.063	K28X33X27	29.0 6520	53.8 12090	10000	15000	0.0427	28.000 1.1024	27.991 1.1020	33.025 1.3002	33.009 1.2996	0.027 0.060
	28 1.1024	34 1.3386	17 0.669	K28X34X17	21.1 4740	31.5 7080	10000	16000	0.0364	28.000 1.1024	27.991 1.1020	34.025 1.3396	34.009 1.3389	0.022 0.049
	28 1.1024	34 1.3386	20 0.787	K28X34X20H	24.4 5490	37.8 8500	10000	16000	0.0381	28.000 1.1024	27.991 1.1020	34.025 1.3396	34.009 1.3389	0.025 0.055
	28 1.1024	35 1.3780	15 0.591	K28X35X15H	19.5 4380	25.6 5760	10000	16000	0.0339	28.000 1.1024	27.991 1.1020	35.025 1.3789	35.009 1.3783	0.025 0.055
	28 1.1024	35 1.3780	16 0.630	K28X35X16FH	21.5 4830	29.1 6540	10000	16000	0.0350	28.000 1.1024	27.991 1.1020	35.025 1.3789	35.009 1.3783	0.026 0.057
	28 1.1024	35 1.3780	16 0.630	K28X35X16H	21.5 4830	29.1 6540	10000	16000	0.0350	28.000 1.1024	27.991 1.1020	35.025 1.3789	35.009 1.3783	0.026 0.057
	28 1.1024	35 1.3780	27 1.063	K28X35X27H	35.2 7910	54.7 12300	10000	16000	0.0409	28.000 1.1024	27.991 1.1020	35.025 1.3789	35.009 1.3783	0.042 0.093
	28 1.1024	36 1.4173	20 0.787	K28X36X20FV	27.8 6250	37.0 8320	10000	16000	0.0365	28.000 1.1024	27.991 1.1020	36.025 1.4183	36.009 1.4177	0.039 0.086
	28 1.1024	38 1.4961	25 1.004	K28X38X25,5	40.9 9190	52.7 11850	11000	16000	0.0389	28.000 1.1024	27.991 1.1020	38.025 1.4970	38.009 1.4964	0.059 0.130

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S	H		Wt.	
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.		Min.
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
28 1,1024	28 1,1024	40 1,5748	18 0,709	K28X40X18H	33.6 7550	36.5 8210	11000	17000	0.0349	28.000 1,1024	27.991 1,1020	40.025 1,5758	40.009 1,5752	0.060 0,132
	28 1,1024	40 1,5748	25 0,984	K28X40X25H	45.5 10230	54.0 12140	11000	17000	0.0384	28.000 1,1024	27.991 1,1020	40.025 1,5758	40.009 1,5752	0.072 0,159
	28 1,1024	40 1,5748	30 1,181	K28X40X30H	54.3 12210	67.8 15240	11000	17000	0,0406	28.000 1,1024	27.991 1,1020	40.025 1,5758	40.009 1,5752	0.100 0,220
	28 1,1024	41 1,6142	25 0,984	K28X41X25H	49.2 11060	57.1 12840	11000	17000	0.0386	28.000 1,1024	27.991 1,1020	41.025 1,6152	41.009 1,6145	0.082 0,181
29 1,1417	29 1,1417	34 1,3386	27 1,063	K29X34X27F	28.9 6500	54.0 12140	9700	15000	0.0434	29.000 1,1417	28.991 1,1414	34.025 1,3396	34.009 1,3389	0.033 0,073
30 1,1811	30 1,1811	34 1,3386	13 0,512	K30X34X13	13.5 3030	24.1 5420	9200	14000	0.0372	30.000 1,1811	29.991 1,1807	34.025 1,3396	34.009 1,3389	0.011 0,024
	30 1,1811	35 1,3780	13 0,512	K30X35X13H	15.6 3510	24.9 5600	9300	14000	0.0363	30.000 1,1811	29.991 1,1807	35.025 1,3789	35.009 1,3783	0.017 0,037
	30 1,1811	35 1,3780	17 0,669	K30X35X17H	20.2 4540	34.6 7780	9300	14000	0.0394	30.000 1,1811	29.991 1,1807	35.025 1,3789	35.009 1,3783	0.022 0,049
	30 1,1811	35 1,3780	20 0,787	K30X35X20H	23.5 5280	41.9 9420	9300	14000	0.0413	30.000 1,1811	29.991 1,1807	35.025 1,3789	35.009 1,3783	0.023 0,051
	30 1,1811	35 1,3780	22.8 0,898	K30X35X23F	25.6 5760	46.8 10520	9300	14000	0,0425	30.000 1,1811	29.991 1,1807	35.025 1,3789	35.009 1,3783	0.028 0,062
	30 1,1811	35 1,3780	27 1,063	K30X35X27H	30.6 6880	59.0 13260	9300	14000	0,0450	30.000 1,1811	29.991 1,1807	35.025 1,3789	35.009 1,3783	0.032 0,071
	30 1,1811	35 1,3780	27 1,063	K30X35X27HZW	19.9 4470	33.6 7550	9300	14000	0.0391	30.000 1,1811	29.991 1,1807	35.025 1,3789	35.009 1,3783	0.033 0,073
	30 1,1811	36 1,4173	14 0,551	K30X36X14	18.0 4050	26.2 5890	9500	15000	0.0358	30.000 1,1811	29.991 1,1807	36.025 1,4183	36.009 1,4177	0.020 0,044
	30 1,1811	37 1,4567	17.8 0,701	K30X37X18	24.3 5460	34.8 7820	9600	15000	0.0377	30.000 1,1811	29.991 1,1807	37.025 1,4577	37.009 1,4570	0.033 0,073
	30 1,1811	37 1,4567	18 0,709	K30X37X18FV	24.3 5460	34.8 7820	9600	15000	0.0377	30.000 1,1811	29.991 1,1807	37.025 1,4577	37.009 1,4570	0.033 0,073
	30 1,1811	40 1,5748	30 1,181	K30X40X30H	49.2 11060	67.8 15240	9900	15000	0.0426	30.000 1,1811	29.991 1,1807	40.025 1,5758	40.009 1,5752	0.077 0,170
	30 1,1811	42 1,6535	30 1,181	K30X42X30H	54.2 12180	68.6 15420	10000	16000	0.0419	30.000 1,1811	29.991 1,1807	42.025 1,6545	42.009 1,6539	0.096 0,212
	30 1,1811	44 1,7323	26 1,024	K30X44X26H	52.4 11780	59.9 13470	10000	16000	0.0399	30.000 1,1811	29.991 1,1807	44.025 1,7333	44.009 1,7326	0.095 0,209
31 1,2047	31 1,2047	37 1,4409	24 0,945	K30,6X36,6X24FV	27.8 6250	46.2 10390	9300	14000	0.0416	30.600 1,2047	30.591 1,2044	36.625 1,4419	36.609 1,4413	0.038 0,084
32 1,2598	32 1,2598	36 1,4173	15 0,591	K32X36X15F	11.6 2610	20.2 4540	8600	13000	0.0367	32.000 1,2598	31.989 1,2594	36.025 1,4183	36.009 1,4177	0.015 0,033
	32 1,2598	37 1,4567	13 0,512	K32X37X13	15.2 3420	24.4 5490	8700	13000	0.0372	32.000 1,2598	31.989 1,2594	37.025 1,4577	37.009 1,4570	0.018 0,040
	32 1,2598	37 1,4567	17 0,669	K32X37X17H	20.0 4500	34.8 7820	8700	13000	0.0406	32.000 1,2598	31.989 1,2594	37.025 1,4577	37.009 1,4570	0.020 0,044
	32 1,2598	37 1,4567	27 1,063	K32X37X27	29.3 6590	56.8 12770	8700	13000	0.0459	32.000 1,2598	31.989 1,2594	37.025 1,4577	37.009 1,4570	0.035 0,077
	32 1,2598	38 1,4961	20 0,787	K32X38X20H	27.3 6140	45.7 10270	8800	14000	0.0423	32.000 1,2598	31.989 1,2594	38.025 1,4970	38.009 1,4964	0.030 0,066

Continued on next page.

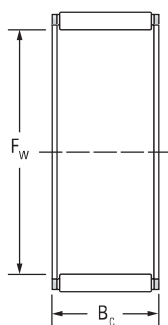


NEEDLE ROLLER BEARINGS

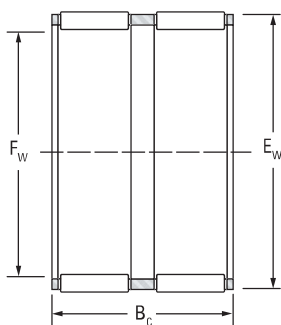
SINGLE-ROW, DOUBLE-ROW ASSEMBLIES –

continued

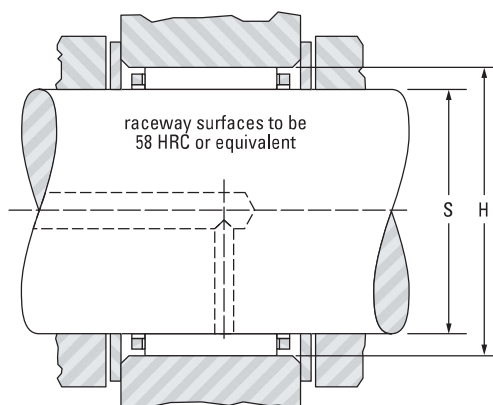
METRIC SERIES



K



KZW



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.	Min.	
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
32 1.2598	32 1.2598	38 1.4961	26 1.024	K32X38X26H	33.2 7460	58.8 13220	8800	14000	0.0451	32.000 1.2598	31.989 1.2594	38.025 1.4970	38.009 1.4964	0.037 0.082
	32 1.2598	39 1.5354	16 0.630	K32X39X16H	23.0 5170	33.0 7420	8900	14000	0.0382	32.000 1.2598	31.989 1.2594	39.025 1.5364	39.009 1.5358	0.030 0.066
	32 1.2598	39 1.5354	18 0.709	K32X39X18H	25.8 5800	38.2 8590	8900	14000	0.0397	32.000 1.2598	31.989 1.2594	39.025 1.5364	39.009 1.5358	0.033 0.073
	32 1.2598	40 1.5748	25 0.984	K32X40X25H	37.9 8520	57.2 12860	9000	14000	0.0431	32.000 1.2598	31.989 1.2594	40.025 1.5758	40.009 1.5752	0.052 0.115
	32 1.2598	40 1.5748	36 1.417	K32X40X36H	52.3 11760	86.4 19420	9000	14000	0.0477	32.000 1.2598	31.989 1.2594	40.025 1.5758	40.009 1.5752	0.080 0.176
	32 1.2598	42 1.6535	42 1.654	K32X42X42H	69.2 15560	108 24280	9200	14000	0.0491	32.000 1.2598	31.989 1.2594	42.025 1.6545	42.009 1.6539	0.110 0.243
	32 1.2598	46 1.8110	18 0.709	K32X46X18H	39.2 8810	41.9 9420	9600	15000	0.0374	32.000 1.2598	31.989 1.2594	46.025 1.8120	46.009 1.8114	0.075 0.165
	32 1.2598	46 1.8110	32 1.260	K32X46X32H	67.0 15060	83.4 18750	9600	15000	0.0444	32.000 1.2598	31.989 1.2594	46.025 1.8120	46.009 1.8114	0.140 0.309
	32 1.2598	46 1.8110	40 1.575	K32X46X40H	81.7 18370	108 24280	9600	15000	0.0473	32.000 1.2598	31.989 1.2594	46.025 1.8120	46.009 1.8114	0.158 0.348
33 1.2992	33 1.2992	51 2.0079	23 0.906	K33X51X23H	55.9 12570	57.6 12950	9600	15000	0.0401	33.000 1.2992	32.989 1.2988	51.029 2.0090	51.010 2.0083	0.140 0.309
34 1.3386	34 1.3386	38 1.4961	11 0.433	K34X38X11	12.2 2740	21.9 4920	8100	12000	0.0385	34.000 1.3386	33.989 1.3381	38.025 1.4970	38.009 1.4964	0.011 0.024
	34 1.3386	44 1.7323	26 1.024	K34X44X26FH	42.9 9640	58.9 13240	8600	13000	0.0433	34.000 1.3386	33.989 1.3381	44.025 1.7333	44.009 1.7326	0.080 0.176
	34 1.3386	44 1.7323	26 1.024	K34X44X26FV	42.9 9640	58.9 13240	8600	13000	0.0433	34.000 1.3386	33.989 1.3381	44.025 1.7333	44.009 1.7326	0.075 0.165
35 1.3780	35 1.3780	40 1.5748	13 0.512	K35X40X13H	16.2 3640	27.2 6110	7900	12000	0.0398	35.000 1.3780	34.989 1.3775	40.025 1.5758	40.009 1.5752	0.018 0.040
	35 1.3780	40 1.5748	17 0.669	K35X40X17H	22.1 4970	40.8 9170	7900	12000	0.0440	35.000 1.3780	34.989 1.3775	40.025 1.5758	40.009 1.5752	0.025 0.055
	35 1.3780	40 1.5748	19 0.748	K35X40X19F	23.2 5220	43.2 9710	7900	12000	0.0446	35.000 1.3780	34.989 1.3775	40.025 1.5758	40.009 1.5752	0.025 0.055
	35 1.3780	40 1.5748	19 0.748	K35X40X19H	23.2 5220	43.2 9710	7900	12000	0.0446	35.000 1.3780	34.989 1.3775	40.025 1.5758	40.009 1.5752	0.025 0.055

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S	H		Wt.	
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.		Min.
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹		mm in.	mm in.	mm in.	mm in.	kg lbs.	
35 1,3780	35 1,3780	40 1,5748	25 0,984	K35X40X25H	28.4 6380	56.2 12630	7900	12000	0.0476	35,000 1,3780	34,989 1,3775	40,025 1,5758	40,009 1,5752	0.035 0,077
	35 1,3780	40 1,5748	27 1,063	K35X40X27H	29.8 6700	59.6 13400	7900	12000	0.0483	35,000 1,3780	34,989 1,3775	40,025 1,5758	40,009 1,5752	0.037 0,082
	35 1,3780	42 1,6535	16 0,630	K35X42X16	24.5 5510	36.8 8270	8100	12000	0.0408	35,000 1,3780	34,989 1,3775	42,025 1,6545	42,009 1,6539	0.032 0,071
	35 1,3780	42 1,6535	16 0,630	K35X42X16AH	24.5 5510	36.8 8270	8100	12000	0.0408	35,000 1,3780	34,989 1,3775	42,025 1,6545	42,009 1,6539	0.031 0,068
	35 1,3780	42 1,6535	18 0,709	K35X42X18	27.5 6180	42.6 9580	8100	12000	0.0423	35,000 1,3780	34,989 1,3775	42,025 1,6545	42,009 1,6539	0.035 0,077
	35 1,3780	42 1,6535	20 0,787	K35X42X20H	30.4 6830	48.5 10900	8100	12000	0.0437	35,000 1,3780	34,989 1,3775	42,025 1,6545	42,009 1,6539	0.037 0,082
	35 1,3780	42 1,6535	30 1,181	K35X42X30FH	40.5 9100	70.0 15740	8100	12000	0.0479	35,000 1,3780	34,989 1,3775	42,025 1,6545	42,009 1,6539	0.061 0,134
	35 1,3780	45 1,7717	20 0,787	K35X45X20FH	36.5 8210	49.9 11220	8400	13000	0.0421	35,000 1,3780	34,989 1,3775	45,025 1,7726	45,009 1,7720	0.059 0,130
	35 1,3780	45 1,7717	30 1,181	K35X45X30F	51.2 11510	74.5 16750	8400	13000	0.0465	35,000 1,3780	34,989 1,3775	45,025 1,7726	45,009 1,7720	0.100 0,220
	35 1,3780	45 1,7717	35 1,378	K35X45X35H	62.1 13960	95.5 21470	8400	13000	0.0494	35,000 1,3780	34,989 1,3775	45,025 1,7726	45,009 1,7720	0.085 0,187
	35 1,3780	45 1,7717	41 1,614	K35X45X41	70.8 15920	113 25400	8400	13000	0.0515	35,000 1,3780	34,989 1,3775	45,025 1,7726	45,009 1,7720	0.120 0,265
	35 1,3780	45 1,7717	49 1,929	K35X45X49H	82.5 18550	138 31020	8400	13000	0.0541	35,000 1,3780	34,989 1,3775	45,025 1,7726	45,009 1,7720	0.143 0,315
	35 1,3780	45 1,7717	49 1,929	K35X45X49HZW	71.8 16140	115 25850	8400	13000	0.0518	35,000 1,3780	34,989 1,3775	45,025 1,7726	45,009 1,7720	0.143 0,315
	35 1,3780	48 1,8898	22.8 0,898	K35X48X22,8H	47.6 10700	57.4 12900	8600	13000	0.0423	35,000 1,3780	34,989 1,3775	48,025 1,8907	48,009 1,8901	0.100 0,220
	35 1,3780	50 1,9685	40 1,575	K35X50X40F	79.7 17920	102 22930	8700	13000	0.0480	35,000 1,3780	34,989 1,3775	50,025 1,9695	50,009 1,9689	0.200 0,441
36 1,4173	36 1,4173	40 1,5748	29 1,142	K36X40X29TN	21.2 4770	45.2 10160	7600	12000	—	36,000 1,4173	35,989 1,4169	40,025 1,5758	40,009 1,5752	0.029 0,064
	36 1,4173	42 1,6535	16 0,630	K36X42X16	22.8 5130	37.7 8480	7800	12000	0.0425	36,000 1,4173	35,989 1,4169	42,025 1,6545	42,009 1,6539	0.027 0,060
	36 1,4173	44 1,7323	27.5 1,083	K36X44X27,5H	42.8 9620	69.2 15560	7900	12000	0.0475	36,000 1,4173	35,989 1,4169	44,025 1,7333	44,009 1,7326	0.064 0,140
37 1,4567	37 1,4567	42 1,6535	13 0,512	K37X42X13H	16.9 3800	29.4 6610	7500	11000	0.0416	37,000 1,4567	36,989 1,4563	42,025 1,6545	42,009 1,6539	0.017 0,037
	37 1,4567	42 1,6535	17 0,669	K37X42X17H	21.9 4920	41.0 9220	7500	11000	0.0451	37,000 1,4567	36,989 1,4563	42,025 1,6545	42,009 1,6539	0.025 0,055
	37 1,4567	42 1,6535	27 1,063	K37X42X27F	32.1 7220	66.9 15040	7500	11000	0.0510	37,000 1,4567	36,989 1,4563	42,025 1,6545	42,009 1,6539	0.039 0,086
	37 1,4567	44 1,7323	19 0,748	K37X44X19H	29.7 6680	48.0 10790	7600	12000	0.0447	37,000 1,4567	36,989 1,4563	44,025 1,7333	44,009 1,7326	0.039 0,086
38 1,4961	38 1,4961	41 1,6142	9 0,354	K38X41X9TN	5.93 1330	11.0 2470	7100	11000	—	38,000 1,4961	37,989 1,4956	41,025 1,6152	41,009 1,6145	0.004 0,009
	38 1,4961	43 1,6929	17 0,669	K38X43X17F	21.8 4900	41.0 9220	7300	11000	0.0457	38,000 1,4961	37,989 1,4956	43,025 1,6939	43,009 1,6933	0.032 0,071

Continued on next page.

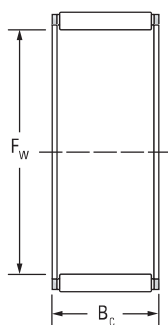


NEEDLE ROLLER BEARINGS

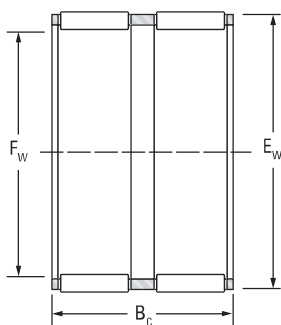
SINGLE-ROW, DOUBLE-ROW ASSEMBLIES –

continued

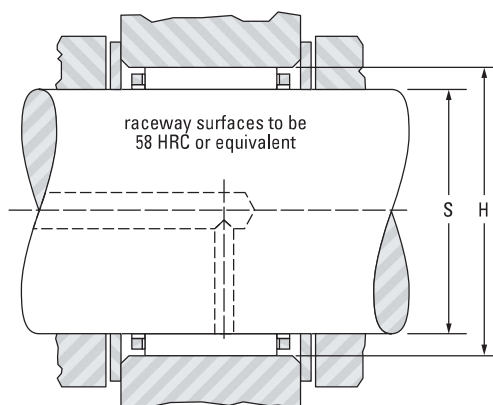
METRIC SERIES



K



KZW



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Max.	Min.		Max.	Min.			
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
38 1.4961	38 1.4961	43 1.6929	17 0.669	K38X43X17H	21.8 4900	41.0 9220	7300	11000	0.0457	38.000 1.4961	37.989 1.4956	43.025 1.6939	43.009 1.6933	0.032 0.071
	38 1.4961	43 1.6929	27 1.063	K38X43X27	31.9 7170	67.0 15060	7300	11000	0.0516	38.000 1.4961	37.989 1.4956	43.025 1.6939	43.009 1.6933	0.041 0.090
	38 1.4961	46 1.8110	19.8 0.780	K38X46X20	33.3 7490	51.0 11470	7500	12000	0.0450	38.000 1.4961	37.989 1.4956	46.025 1.8120	46.009 1.8114	0.055 0.121
	38 1.4961	46 1.8110	19.8 0.780	K38X46X20H	33.3 7490	51.0 11470	7500	12000	0.0450	38.000 1.4961	37.989 1.4956	46.025 1.8120	46.009 1.8114	0.055 0.121
	38 1.4961	46 1.8110	32 1.260	K38X46X32FV1	53.7 12070	94.6 21270	7500	12000	0.0525	38.000 1.4961	37.989 1.4956	46.025 1.8120	46.009 1.8114	0.080 0.176
	38 1.4961	46 1.8110	32 1.260	K38X46X32H	55.2 12410	98.1 22050	7500	12000	0.0530	38.000 1.4961	37.989 1.4956	46.025 1.8120	46.009 1.8114	0.090 0.198
	38 1.4961	50 1.9685	25 0.984	K38X50X25	53.0 11910	70.8 15920	7800	12000	0.0464	38.000 1.4961	37.989 1.4956	50.025 1.9695	50.009 1.9689	0.100 0.220
	38 1.4961	50 1.9685	33 1.299	K38X50X33H	68.3 15350	98.2 22080	7800	12000	0.0504	38.000 1.4961	37.989 1.4956	50.025 1.9695	50.009 1.9689	0.126 0.278
	38 1.4961	50 1.9685	40 1.575	K38X50X40FH	76.2 17130	113 25400	7800	12000	0.0521	38.000 1.4961	37.989 1.4956	50.025 1.9695	50.009 1.9689	0.170 0.375
40 1.5748	40 1.5748	45 1.7717	13 0.512	K40X45X13H	17.6 3960	31.7 7130	6900	11000	0.0438	40.000 1.5748	39.989 1.5744	45.025 1.7726	45.009 1.7720	0.022 0.049
	40 1.5748	45 1.7717	18 0.709	K40X45X18H	25.1 5640	50.4 11330	6900	11000	0.0492	40.000 1.5748	39.989 1.5744	45.025 1.7726	45.009 1.7720	0.031 0.068
	40 1.5748	45 1.7717	21 0.827	K40X45X21H	23.3 5240	45.2 10160	6900	11000	0.0479	40.000 1.5748	39.989 1.5744	45.025 1.7726	45.009 1.7720	0.033 0.073
	40 1.5748	45 1.7717	27 1.063	K40X45X27H	32.7 7350	70.2 15780	6900	11000	0.0534	40.000 1.5748	39.989 1.5744	45.025 1.7726	45.009 1.7720	0.040 0.088
	40 1.5748	45 1.7717	27 1.063	K40X45X27TN	33.3 7490	72.1 16210	6900	11000	0.0538	40.000 1.5748	39.989 1.5744	45.025 1.7726	45.009 1.7720	0.030 0.066
	40 1.5748	45 1.7717	29 1.142	K40X45X29H	34.7 7800	75.9 17060	6900	11000	0.0545	40.000 1.5748	39.989 1.5744	45.025 1.7726	45.009 1.7720	0.050 0.110
	40 1.5748	46 1.8110	17 0.669	K40X46X17	25.2 5670	44.0 9890	7000	11000	0.0464	40.000 1.5748	39.989 1.5744	46.025 1.8120	46.009 1.8114	0.033 0.073
	40 1.5748	47 1.8504	18 0.709	K40X47X18	28.0 6290	45.6 10250	7000	11000	0.0456	40.000 1.5748	39.989 1.5744	47.025 1.8514	47.009 1.8507	0.041 0.090

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.	Min.	
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
40 1,5748	40 1,5748	47 1,8504	20 0,787	K40X47X20	31.1 6990	52.1 11710	7000	11000	0.0472	40.000 1,5748	39.989 1,5744	47.025 1,8514	47.009 1,8507	0.042 0,093
	40 1,5748	48 1,8898	20 0,787	K40X48X20FV1	35.5 7980	56.3 12660	7100	11000	0.0472	40.000 1,5748	39.989 1,5744	48.025 1,8907	48.009 1,8901	0.052 0,115
	40 1,5748	48 1,8898	20 0,787	K40X48X20H	35.5 7980	56.3 12660	7100	11000	0.0472	40.000 1,5748	39.989 1,5744	48.025 1,8907	48.009 1,8901	0.050 0,110
	40 1,5748	48 1,8898	35 1,378	K40X48X35H	57.3 12880	104 23380	7100	11000	0.0550	40.000 1,5748	39.989 1,5744	48.025 1,8907	48.009 1,8901	0.098 0,216
	40 1,5748	50 1,9685	27 1,063	K40X50X27H	53.0 11910	81.0 18210	7200	11000	0.0502	40.000 1,5748	39.989 1,5744	50.025 1,9695	50.009 1,9689	0.084 0,185
	40 1,5748	55 2,1654	45 1,772	K40X55X45H	103 23160	146 32820	7500	12000	0.0554	40.000 1,5748	39.989 1,5744	55.029 2,1665	55.010 2,1657	0.221 0,487
	40 1,5748	56 2,2047	26 1,024	K40X56X26H	63.7 14320	75.7 17020	7600	12000	0.0467	40.000 1,5748	39.989 1,5744	56.029 2,2059	56.010 2,2051	0.138 0,304
41 1,6142	41 1,6142	48 1,8898	31 1,220	K41X48X31HZW	38.0 8540	68.1 15310	6800	11000	0.0510	41.000 1,6142	40.989 1,6137	48.025 1,8907	48.009 1,8901	0.067 0,148
42 1,6535	42 1,6535	47 1,8504	13 0,512	K42X47X13H	18.7 4200	34.9 7850	6500	10000	0.0459	42.000 1,6535	41.989 1,6531	47.025 1,8514	47.009 1,8507	0.027 0,060
	42 1,6535	47 1,8504	17 0,669	K42X47X17H	22.8 5130	45.2 10160	6500	10000	0.0490	42.000 1,6535	41.989 1,6531	47.025 1,8514	47.009 1,8507	0.028 0,062
	42 1,6535	47 1,8504	27 1,063	K42X47X27FH	33.8 7600	74.7 16790	6500	10000	0.0555	42.000 1,6535	41.989 1,6531	47.025 1,8514	47.009 1,8507	0.041 0,090
	42 1,6535	47 1,8504	27 1,063	K42X47X27H	33.8 7600	74.7 16790	6500	10000	0.0555	42.000 1,6535	41.989 1,6531	47.025 1,8514	47.009 1,8507	0.041 0,090
	42 1,6535	48 1,8898	24 0,945	K42X48X24F	33.1 7440	63.9 14370	6600	10000	0.0519	42.000 1,6535	41.989 1,6531	48.025 1,8907	48.009 1,8901	0.046 0,101
	42 1,6535	50 1,9685	13 0,512	K42X50X13H	20.9 4700	28.9 6500	6700	10000	0.0409	42.000 1,6535	41.989 1,6531	50.025 1,9695	50.009 1,9689	0.035 0,077
	42 1,6535	50 1,9685	20 0,787	K42X50X20H	35.2 7910	56.6 12720	6700	10000	0.0483	42.000 1,6535	41.989 1,6531	50.025 1,9695	50.009 1,9689	0.054 0,119
	42 1,6535	50 1,9685	30 1,181	K42X50X30H	51.3 11530	91.9 20660	6700	10000	0.0545	42.000 1,6535	41.989 1,6531	50.025 1,9695	50.009 1,9689	0.080 0,176
	42 1,6535	54 2,1260	30.7 1,209	K42X54X30,7H	62.7 14100	90.1 20260	7000	11000	0.0514	42.000 1,6535	41.989 1,6531	54.029 2,1271	54.010 2,1264	0.140 0,309
43 1,6929	43 1,6929	48 1,8898	17 0,669	K43X48X17FH	23.0 5170	45.8 10300	6400	9800	0.0496	43.000 1,6929	42.989 1,6925	48.025 1,8907	48.009 1,8901	0.036 0,079
	43 1,6929	48 1,8898	27 1,063	K43X48X27H	34.8 7820	78.0 17540	6400	9800	0.0567	43.000 1,6929	42.989 1,6925	48.025 1,8907	48.009 1,8901	0.050 0,110
44 1,7323	44 1,7323	50 1,9685	22 0,866	K44X50X22	31.6 7100	60.6 13620	6400	9900	0.0523	44.000 1,7323	43.989 1,7319	50.025 1,9695	50.009 1,9689	0.046 0,101
	44 1,7323	50 1,9685	22 0,866	K44X50X22H	31.6 7100	60.6 13620	6400	9900	0.0523	44.000 1,7323	43.989 1,7319	50.025 1,9695	50.009 1,9689	0.046 0,101
	44 1,7323	50 1,9685	30 1,201	K44X50X30,5HZW	35.5 7980	70.5 15850	6400	9900	0.0543	44.000 1,7323	43.989 1,7319	50.025 1,9695	50.009 1,9689	0.068 0,150
45 1,7717	45 1,7717	50 1,9685	13 0,512	K45X50X13H	18.4 4140	35.1 7890	6100	9400	0.0474	45.000 1,7717	44.989 1,7712	50.025 1,9695	50.009 1,9689	0.022 0,049
	45 1,7717	50 1,9685	15 0,591	K45X50X15H	19.4 4360	37.3 8390	6100	9400	0.0482	45.000 1,7717	44.989 1,7712	50.025 1,9695	50.009 1,9689	0.028 0,062

Continued on next page.

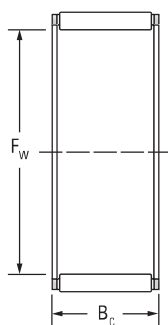


NEEDLE ROLLER BEARINGS

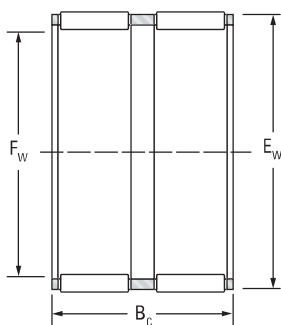
SINGLE-ROW, DOUBLE-ROW ASSEMBLIES –

continued

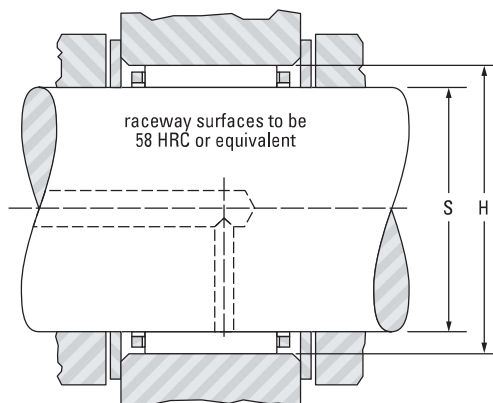
METRIC SERIES



K



KZW



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Max.	Min.		Max.	Min.			
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
45 1.7717	45 1.7717	50 1.9685	17 0.669	K45X50X17H	24.9 5600	51.8 11650	6100	9400	0.0523	45.000 1.7717	44.989 1.7712	50.025 1.9695	50.009 1.9689	0.030 0.066
	45 1.7717	50 1.9685	20 0.787	K45X50X20F	27.0 6070	57.4 12900	6100	9400	0.0536	45.000 1.7717	44.989 1.7712	50.025 1.9695	50.009 1.9689	0.040 0.088
	45 1.7717	50 1.9685	21 0.827	K45X50X21CH	24.6 5530	50.4 11330	6100	9400	0.0519	45.000 1.7717	44.989 1.7712	50.025 1.9695	50.009 1.9689	0.036 0.079
	45 1.7717	50 1.9685	27 1.063	K45X50X27FH	34.2 7690	77.4 17400	6100	9400	0.0577	45.000 1.7717	44.989 1.7712	50.025 1.9695	50.009 1.9689	0.043 0.095
	45 1.7717	50 1.9685	27 1.063	K45X50X27TN	31.8 7150	70.7 15890	6100	9400	—	45.000 1.7717	44.989 1.7712	50.025 1.9695	50.009 1.9689	0.048 0.106
	45 1.7717	52 2.0472	18 0.709	K45X52X18H	30.1 6770	52.0 11690	6200	9500	0.0497	45.000 1.7717	44.989 1.7712	52.029 2.0484	52.010 2.0476	0.045 0.099
	45 1.7717	52 2.0472	21 0.827	K45X52X21F	35.0 7870	63.2 14210	6200	9500	0.0521	45.000 1.7717	44.989 1.7712	52.029 2.0484	52.010 2.0476	0.055 0.121
	45 1.7717	53 2.0866	20 0.787	K45X53X20H	36.0 8090	59.5 13380	6200	9600	0.0504	45.000 1.7717	44.989 1.7712	53.029 2.0878	53.010 2.0870	0.054 0.119
	45 1.7717	53 2.0866	24.8 0.976	K45X53X25H	45.9 10320	81.5 18320	6200	9600	0.0545	45.000 1.7717	44.989 1.7712	53.029 2.0878	53.010 2.0870	0.072 0.159
	45 1.7717	53 2.0866	25 0.984	K45X53X25F	42.5 9550	73.7 16570	6200	9600	0.0531	45.000 1.7717	44.989 1.7712	53.029 2.0878	53.010 2.0870	0.075 0.165
	45 1.7717	53 2.0866	28 1.102	K45X53X28H	49.3 11080	89.2 20050	6200	9600	0.0557	45.000 1.7717	44.989 1.7712	53.029 2.0878	53.010 2.0870	0.078 0.172
	45 1.7717	55 2.1654	20 0.787	K45X55X20H	42.0 9440	62.2 13980	6400	9800	0.0494	45.000 1.7717	44.989 1.7712	55.029 2.1665	55.010 2.1657	0.074 0.163
	45 1.7717	59 2.3228	18 0.709	K45X59X18H	47.8 10750	58.9 13240	6600	10000	0.0467	45.000 1.7717	44.989 1.7712	59.029 2.3240	59.010 2.3232	0.107 0.236
	45 1.7717	59 2.3228	18 0.709	K45X59X18TN	45.7 10270	55.4 12450	6600	10000	—	45.000 1.7717	44.989 1.7712	59.029 2.3240	59.010 2.3232	0.097 0.214
	45 1.7717	59 2.3228	36 1.417	K45X59X36H	82.4 18520	118 26530	6600	10000	0.0555	45.000 1.7717	44.989 1.7712	59.029 2.3240	59.010 2.3232	0.181 0.399
	45 1.7717	60 2.3622	30 1.181	K45X60X30H	75.5 16970	101 22710	6600	10000	0.0530	45.000 1.7717	44.989 1.7712	60.029 2.3633	60.010 2.3626	0.171 0.377
	45 1.7717	60 2.3622	45 1.772	K45X60X45H	108 24280	160 35970	6600	10000	0.0594	45.000 1.7717	44.989 1.7712	60.029 2.3633	60.010 2.3626	0.280 0.617

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.	Min.	
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
46 1,8110	46 1,8110	53 2,0866	36 1,417	K46X53X36HZW	48.6 10930	96.7 21740	6100	9300	0.0585	46.000 1,8110	45.989 1,8106	53.029 2,0878	53.010 2,0870	0.100 0,220
47 1.8504	47 1.8504	52 2.0472	15 0.591	K47X52X15FH	20.1 4520	39.8 8950	5800	8900	0.0499	47.000 1.8504	46.989 1.8500	52.029 2.0484	52.010 2.0476	0.030 0.066
	47 1.8504	52 2.0472	17 0.669	K47X52X17H	24.2 5440	50.4 11330	5800	8900	0.0529	47.000 1.8504	46.989 1.8500	52.029 2.0484	52.010 2.0476	0.032 0.071
	47 1.8504	52 2.0472	26.8 1.055	K47X52X27FH	35.4 7960	82.4 18520	5800	8900	0.0598	47.000 1.8504	46.989 1.8500	52.029 2.0484	52.010 2.0476	0.045 0.099
	47 1.8504	52 2.0472	27 1.063	K47X52X27H	36.6 8230	85.9 19310	5800	8900	0.0604	47.000 1.8504	46.989 1.8500	52.029 2.0484	52.010 2.0476	0.045 0.099
	47 1.8504	55 2.1654	28 1.102	K47X55X28FV1	48.9 10990	89.5 20120	6000	9200	0.0568	47.000 1.8504	46.989 1.8500	55.029 2.1665	55.010 2.1657	0.092 0.203
48 1.8898	48 1.8898	53 2.0866	17 0.669	K48X53X17H	25.7 5780	54.9 12340	5700	8700	0.0546	48.000 1.8898	47.989 1.8893	53.029 2.0878	53.010 2.0870	0.032 0.071
	48 1.8898	54 2.1260	19 0.748	K48X54X19H	30.9 6950	61.2 13760	5700	8800	0.0545	48.000 1.8898	47.989 1.8893	54.029 2.1271	54.010 2.1264	0.042 0.093
49 1,9291	49 1,9291	55 2,1654	32 1,260	K49X55X32HZW	40.2 9040	86.4 19420	5600	8600	0.0599	49.000 1,9291	48.989 1,9287	55.029 2,1665	55.010 2,1657	0.080 0,176
	49 1.9291	65 2.5591	38 1.496	K49X65X38H	100 22480	142 31920	6100	9300	0.0593	49.000 1.9291	48.989 1.9287	65.029 2.5602	65.010 2.5594	0.244 0.538
50 1,9685	50 1,9685	55 2,1654	17 0,669	K50X55X17H	25.5 5730	55.0 12360	5400	8400	0.0557	50.000 1,9685	49.989 1,9681	55.029 2,1665	55.010 2,1657	0.032 0,071
	50 1.9685	55 2.1654	20 0.787	K50X55X20H	30.2 6790	68.5 15400	5400	8400	0.0588	50.000 1.9685	49.989 1.9681	55.029 2.1665	55.010 2.1657	0.038 0.084
	50 1.9685	55 2.1654	30 1.181	K50X55X30	38.2 8590	92.4 20770	5400	8400	0.0633	50.000 1.9685	49.989 1.9681	55.029 2.1665	55.010 2.1657	0.057 0.120
	50 1.9685	55 2.1654	30 1.181	K50X55X30FV1	38.2 8590	92.4 20770	5400	8400	0.0633	50.000 1.9685	49.989 1.9681	55.029 2.1665	55.010 2.1657	0.057 0.126
	50 1.9685	56 2.2047	23 0.906	K50X56X23	35.5 7980	74.1 16660	5500	8500	0.0582	50.000 1.9685	49.989 1.9681	56.029 2.2059	56.010 2.2051	0.051 0.112
	50 1.9685	57 2.2441	18 0.709	K50X57X18FH	31.3 7040	56.4 12680	5500	8500	0.0531	50.000 1.9685	49.989 1.9681	57.029 2.2452	57.010 2.2445	0.050 0.110
	50 1.9685	58 2.2835	20 0.787	K50X58X20H	38.8 8720	67.8 15240	5600	8600	0.0545	50.000 1.9685	49.989 1.9681	58.029 2.2846	58.010 2.2839	0.065 0.143
	50 1.9685	58 2.2835	25 0.984	K50X58X25H	46.5 10450	85.6 19240	5600	8600	0.0577	50.000 1.9685	49.989 1.9681	58.029 2.2846	58.010 2.2839	0.081 0.179
	50 1.9685	58 2.2835	35 1.378	K50X58X35H	64.9 14590	131 29450	5600	8600	0.0642	50.000 1.9685	49.989 1.9681	58.029 2.2846	58.010 2.2839	0.105 0.231
	50 1.9685	62 2.4409	30 1.181	K50X62X30H	64.6 14520	98.1 22050	5800	8900	0.0565	50.000 1.9685	49.989 1.9681	62.029 2.4421	62.010 2.4413	0.136 0.300
	50 1.9685	66 2.5984	30 1.181	K50X66X30H	80.9 18190	109 24500	5900	9100	0.0559	50.000 1.9685	49.989 1.9681	66.029 2.5996	66.010 2.5988	0.192 0.423
	50 1.9685	70 2.7559	32 1.260	K50X70X32H	103 23160	129 29000	6100	9300	0.0569	50.000 1.9685	49.989 1.9681	70.029 2.7570	70.010 2.7563	0.224 0.494
52 2,0472	52 2,0472	57 2,2441	12 0,472	K52X57X12	18.4 4140	36.7 8250	5200	8000	0.0512	52.000 2,0472	51.987 2,0467	57.029 2,2452	57.010 2,2445	0.022 0,049
	52 2.0472	57 2.2441	17 0.669	K52X57X17FCH	21.4 4810	44.3 9960	5200	8000	0.0537	52.000 2.0472	51.987 2.0467	57.029 2.2452	57.010 2.2445	0.035 0.077

Continued on next page.

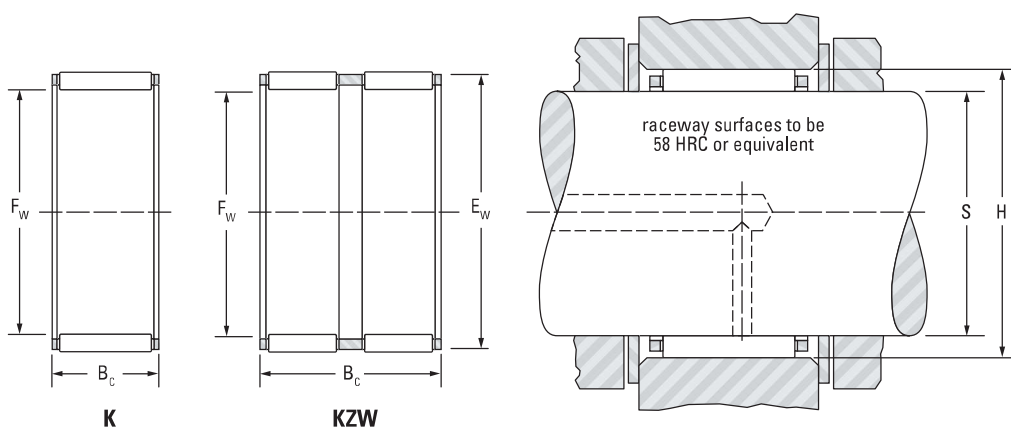


NEEDLE ROLLER BEARINGS

SINGLE-ROW, DOUBLE-ROW ASSEMBLIES –

continued

METRIC SERIES



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			Load Ratings		Grease	Oil				Mounting Dimension				
							Max.	Min.		Max.	Min.			
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
52 2.0472	52 2.0472	57 2.2441	17 0.669	K52X57X17H	21.4 4810	44.3 9960	5200	8000	0.0537	52.000 2.0472	51.987 2.0467	57.029 2.2452	57.010 2.2445	0.035 0.077
	52 2.0472	60 2.3622	24 0.945	K52X60X24	47.1 10600	88.3 19900	5400	8200	0.0592	52.000 2.0472	51.987 2.0467	60.029 2.3633	60.010 2.3626	0.078 0.172
55 2.1654	55 2.1654	60 2.3622	17 0.669	K55X60X17	26.0 5850	58.3 13100	4900	7600	0.0590	55.000 2.1654	54.987 2.1648	60.029 2.3633	60.010 2.3626	0.037 0.082
	55 2.1654	60 2.3622	20 0.787	K55X60X20H	30.7 6900	72.4 16300	4900	7600	0.0622	55.000 2.1654	54.987 2.1648	60.029 2.3633	60.010 2.3626	0.042 0.093
	55 2.1654	60 2.3622	27 1.063	K55X60X27H	40.1 9010	102 22900	4900	7600	0.0677	55.000 2.1654	54.987 2.1648	60.029 2.3633	60.010 2.3626	0.055 0.121
	55 2.1654	60 2.3622	30 1.181	K55X60X30	40.6 9130	103 23200	4900	7600	0.0680	55.000 2.1654	54.987 2.1648	60.029 2.3633	60.010 2.3626	0.066 0.146
	55 2.1654	60 2.3622	30 1.181	K55X60X30FH	40.6 9130	103 23200	4900	7600	0.0680	55.000 2.1654	54.987 2.1648	60.029 2.3633	60.010 2.3626	0.068 0.150
	55 2.1654	61 2.4016	26 1.024	K55X61X26H	44.3 9960	102 22900	5000	7600	0.0657	55.000 2.1654	54.987 2.1648	61.029 2.4027	61.010 2.4020	0.063 0.139
	55 2.1654	62 2.4409	18 0.709	K55X62X18H	33.2 7460	62.8 14100	5000	7700	0.0569	55.000 2.1654	54.987 2.1648	62.029 2.4421	62.010 2.4413	0.055 0.121
	55 2.1654	63 2.4803	15 0.591	K55X63X15F	30.5 6860	51.5 11600	5000	7800	0.0531	55.000 2.1654	54.987 2.1648	63.029 2.4815	63.010 2.4807	0.054 0.119
	55 2.1654	63 2.4803	20 0.787	K55X63X20	40.3 9060	73.5 16500	5000	7800	0.0580	55.000 2.1654	54.987 2.1648	63.029 2.4815	63.010 2.4807	0.072 0.159
	55 2.1654	63 2.4803	25 0.984	K55X63X25	49.8 11200	96.5 21700	5000	7800	0.0621	55.000 2.1654	54.987 2.1648	63.029 2.4815	63.010 2.4807	0.080 0.176
	55 2.1654	63 2.4803	32 1.260	K55X63X32	62.3 14000	129 29000	5000	7800	0.0667	55.000 2.1654	54.987 2.1648	63.029 2.4815	63.010 2.4807	0.108 0.238
58 2.2835	58 2.2835	63 2.4803	17 0.669	K58X63X17F	27.0 6070	62.6 14100	4700	7200	0.0615	58.000 2.2835	57.987 2.2830	63.029 2.4815	63.010 2.4807	0.037 0.082
	58 2.2835	64 2.5197	19 0.748	K58X64X19H	32.9 7400	70.6 15900	4700	7200	0.0615	58.000 2.2835	57.987 2.2830	64.029 2.5208	64.010 2.5201	0.037 0.082
	58 2.2835	65 2.5591	18 0.709	K58X65X18H	34.3 7710	67.1 15100	4700	7300	0.0593	58.000 2.2835	57.987 2.2830	65.029 2.5602	65.010 2.5594	0.058 0.128
60 2.3622	60 2.3622	65 2.5591	20 0.787	K60X65X20H	31.9 7170	78.1 17600	4500	6900	0.0660	60.000 2.3622	59.987 2.3617	65.029 2.5602	65.010 2.5594	0.046 0.101

Radial Needle Roller and Cage Assemblies

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Grease	Oil		Max.	Min.	Max.	Min.	
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
60 2,3622	60 2,3622	65 2,5591	26.8 1,055	K60X65X27FH	39.5 8880	103 23200	4500	6900	0.0707	60.000 2,3622	59.987 2,3617	65.029 2,5602	65.010 2,5594	0.059 0,130
	60 2,3622	65 2,5591	29.8 1,173	K60X65X30FH	42.9 9640	114 25600	4500	6900	0.0726	60.000 2,3622	59.987 2,3617	65.029 2,5602	65.010 2,5594	0.085 0,187
	60 2,3622	65 2,5591	30 1,181	K60X65X30	42.9 9640	114 25600	4500	6900	0.0726	60.000 2,3622	59.987 2,3617	65.029 2,5602	65.010 2,5594	0.070 0,154
	60 2,3622	68 2,6772	17 0,669	K60X68X17F	34.2 7690	61.4 13800	4600	7100	0.0577	60.000 2,3622	59.987 2,3617	68.029 2,6783	68.010 2,6776	0.066 0,146
	60 2,3622	68 2,6772	20 0,787	K60X68X20H	41.8 9400	79.2 17800	4600	7100	0.0614	60.000 2,3622	59.987 2,3617	68.029 2,6783	68.010 2,6776	0.066 0,146
	60 2,3622	68 2,6772	23 0,906	K60X68X23F	49.0 11000	97.2 21900	4600	7100	0.0646	60.000 2,3622	59.987 2,3617	68.029 2,6783	68.010 2,6776	0.089 0,196
	60 2,3622	68 2,6772	23 0,906	K60X68X23FH	49.0 11000	97.2 21900	4600	7100	0.0646	60.000 2,3622	59.987 2,3617	68.029 2,6783	68.010 2,6776	0.089 0,196
	60 2,3622	68 2,6772	23 0,906	K60X68X23H	49.0 11000	97.2 21900	4600	7100	0.0646	60.000 2,3622	59.987 2,3617	68.029 2,6783	68.010 2,6776	0.089 0,196
	60 2,3622	68 2,6772	25 0,984	K60X68X25	51.6 11600	104 23400	4600	7100	0.0657	60.000 2,3622	59.987 2,3617	68.029 2,6783	68.010 2,6776	0.091 0,201
	60 2,3622	68 2,6772	30 1,181	K60X68X30ZW	46.4 10400	90.1 20300	4600	7100	0.0634	60.000 2,3622	59.987 2,3617	68.029 2,6783	68.010 2,6776	0.119 0,262
63 2,4803	63 2,4803	71 2,7953	20 0,787	K63X71X20	41.4 9310	79.4 17800	4400	6700	0.0628	63.000 2,4803	62.987 2,4798	71.029 2,7964	71.010 2,7957	0.070 0,154
64 2,5197	64 2,5197	70 2,7559	16 0,630	K64X70X16	26.4 5930	55.1 12400	4200	6500	0.0605	64.000 2,5197	63.987 2,5192	70.029 2,7570	70.010 2,7563	0.049 0,108
65 2,5591	65 2,5591	70 2,7559	20 0,787	K65X70X20CH	28.6 6430	69.2 15600	4100	6400	0.0665	65.000 2,5591	64.987 2,5585	70.029 2,7570	70.010 2,7563	0.050 0,110
	65 2,5591	70 2,7559	20 0,787	K65X70X20H	31.5 7080	78.9 17700	4100	6400	0.0687	65.000 2,5591	64.987 2,5585	70.029 2,7570	70.010 2,7563	0.050 0,110
	65 2,5591	70 2,7559	30 1,181	K65X70X30	44.4 9980	123 27700	4100	6400	0.0766	65.000 2,5591	64.987 2,5585	70.029 2,7570	70.010 2,7563	0.075 0,165
	65 2,5591	73 2,8740	23 0,906	K65X73X23H	48.2 10800	97.7 22000	4200	6500	0.0671	65.000 2,5591	64.987 2,5585	73.029 2,8752	73.010 2,8744	0.091 0,201
	65 2,5591	73 2,8740	30 1,181	K65X73X30H	60.1 13500	129 29100	4200	6500	0.0719	65.000 2,5591	64.987 2,5585	73.029 2,8752	73.010 2,8744	0.116 0,256
68 2,6772	68 2,6772	74 2,9134	20 0,787	K68X74X20FH	37.5 8430	88.1 19800	4000	6100	0.0699	68.000 2,6772	67.987 2,6767	74.029 2,9145	74.010 2,9138	0.062 0,137
	68 2,6772	74 2,9134	28 1,102	K68X74X28CH	44.8 10100	110 24700	4000	6100	0.0739	68.000 2,6772	67.987 2,6767	74.029 2,9145	74.010 2,9138	0.082 0,181
	68 2,6772	74 2,9134	30 1,181	K68X74X30H	47.6 10700	119 26800	4000	6100	0.0754	68.000 2,6772	67.987 2,6767	74.029 2,9145	74.010 2,9138	0.098 0,216
	68 2,6772	74 2,9134	35 1,378	K68X74X35HZW	45.1 10100	111 25000	4000	6100	0.0740	68.000 2,6772	67.987 2,6767	74.029 2,9145	74.010 2,9138	0.120 0,265
	68 2,6772	76 2,9921	20 0,787	K68X76X20	43.8 9850	87.8 19700	4000	6200	0.0667	68.000 2,6772	67.987 2,6767	76.029 2,9933	76.010 2,9925	0.086 0,190
	68 2,6772	82 3,2283	38.5 1,516	K68X82X38,5H	117 26300	209 47000	4200	6400	0.0761	68.000 2,6772	67.987 2,6767	82.034 3,2297	82.012 3,2288	0.320 0,705
70 2,7559	70 2,7559	76 2,9921	20 0,787	K70X76X20	36.1 8120	84.7 19000	3900	5900	0.0702	70.000 2,7559	69.987 2,7554	76.029 2,9933	76.010 2,9925	0.065 0,143

Continued on next page.

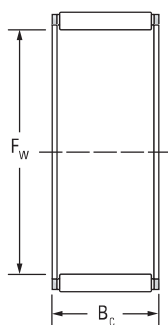


NEEDLE ROLLER BEARINGS

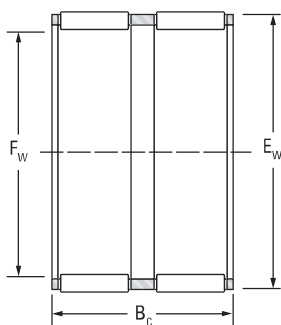
SINGLE-ROW, DOUBLE-ROW ASSEMBLIES —

continued

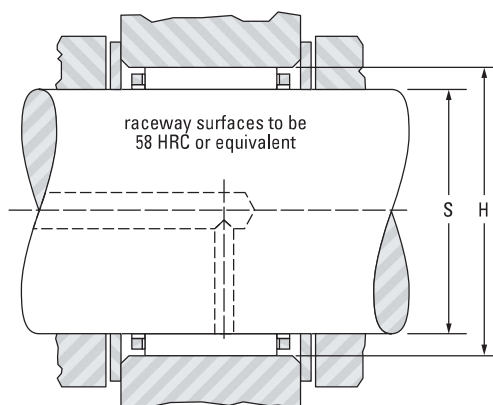
METRIC SERIES



K



KZW



Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings					Mounting Dimension				
							Max.	Min.		Max.	Min.			
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
70 2.7559	70 2.7559	76 2.9921	30 1.181	K70X76X30	51.6 11600	134.0 30100	3900	5900	0.0786	70.000 2.7559	69.987 2.7554	76.029 2.9933	76.010 2.9925	0.097 0.214
	70 2.7559	78 3.0709	20 0.787	K70X78X20H	43.6 9800	87.9 19800	3900	6000	0.0676	70.000 2.7559	69.987 2.7554	78.029 3.0720	78.010 3.0713	0.090 0.198
	70 2.7559	78 3.0709	23 0.906	K70X78X23F	49.8 11200	104.0 23400	3900	6000	0.0705	70.000 2.7559	69.987 2.7554	78.029 3.0720	78.010 3.0713	0.115 0.254
	70 2.7559	78 3.0709	24.8 0.976	K70X78X25F	49.8 11200	104.0 23400	3900	6000	0.0705	70.000 2.7559	69.987 2.7554	78.029 3.0720	78.010 3.0713	0.115 0.254
	70 2.7559	78 3.0709	30 1.181	K70X78X30H	62.2 14000	139.0 31200	3900	6000	0.0757	70.000 2.7559	69.987 2.7554	78.029 3.0720	78.010 3.0713	0.140 0.309
	70 2.7559	78 3.0709	46 1.811	K70X78X46ZW	78.4 17600	187.0 42000	3900	6000	0.0815	70.000 2.7559	69.987 2.7554	78.029 3.0720	78.010 3.0713	0.188 0.414
	70 2.7559	85 3.3465	40 1.575	K70X85X40F	118 26500	203 45600	4100	6300	0.0758	70.000 2.7559	69.987 2.7554	85.034 3.3478	85.012 3.3469	0.338 0.745
	70 2.7559	88 3.4646	30 1.181	K70X88X30H	115 25900	175 39300	4100	6400	0.0714	70.000 2.7559	69.987 2.7554	88.034 3.4659	88.012 3.4650	0.205 0.452
72 2.8346	72 2.8346	80 3.1496	20 0.787	K72X80X20	44.4 9980	90.7 20400	3800	5800	0.0690	72.000 2.8346	71.987 2.8341	80.029 3.1507	80.010 3.1500	0.084 0.185
73 2.8740	73 2.8740	79 3.1102	20 0.787	K73X79X20	37.0 8320	88.7 19900	3700	5700	0.0723	73.000 2.8740	72.987 2.8735	79.029 3.1114	79.010 3.1106	0.068 0.150
75 2.9528	75 2.9528	81 3.1890	20 0.787	K75X81X20F	37.4 8410	90.7 20400	3600	5500	0.0737	75.000 2.9528	74.987 2.9522	81.034 3.1903	81.012 3.1894	0.075 0.165
	75 2.9528	83 3.2677	23 0.906	K75X83X23	52.5 11800	114.0 25600	3600	5600	0.0744	75.000 2.9528	74.987 2.9522	83.034 3.2691	83.012 3.2682	0.104 0.229
	75 2.9528	83 3.2677	30 1.181	K75X83X30	60.9 13700	138 31000	3600	5600	0.0780	75.000 2.9528	74.987 2.9522	83.034 3.2691	83.012 3.2682	0.141 0.311
	75 2.9528	83 3.2677	30 1.181	K75X83X30FH	60.9 13700	138 31000	3600	5600	0.0780	75.000 2.9528	74.987 2.9522	83.034 3.2691	83.012 3.2682	0.141 0.311
80 3.1496	80 3.1496	86 3.3858	20 0.787	K80X86X20H	38.6 8680	96.7 21700	3400	5200	0.0771	80.000 3.1496	79.987 3.1491	86.034 3.3872	86.012 3.3863	0.072 0.159
	80 3.1496	88 3.4646	25 0.984	K80X88X25FV1	54.0 12100	121 27200	3400	5200	0.0778	80.000 3.1496	79.987 3.1491	88.034 3.4659	88.012 3.4650	0.134 0.295
	80 3.1496	88 3.4646	30 1.181	K80X88X30	67.5 15200	161 36200	3400	5200	0.0835	80.000 3.1496	79.987 3.1491	88.034 3.4659	88.012 3.4650	0.153 0.337

Shaft Dia.	F _w	E _w	B _c	Assembly Designation	C	C ₀	Speed Rating		C _g	S		H		Wt.
			-0.20 -0.008 -0.55 -0.022		Load Ratings	Mounting Dimension								
						Grease	Oil	Max.		Min.	Max.	Min.		
mm in.	mm in.	mm in.	mm in.		kN lbf.		min ⁻¹			mm in.	mm in.	mm in.	mm in.	kg lbs.
85 3.3465	85 3.3465	92 3.6220	20 0.787	K85X92X20H	39.9 8970	91.7 20600	3200	4900	0.0763	84.988 3.3460	84.973 3.3454	92.034 3.6234	92.012 3.6225	0.085 0.187
	85 3.3465	93 3.6614	25 0.984	K85X93X25F	58.8 13219	138 31024	3200	4900	—	84.988 3.3460	84.973 3.3454	93.034 3.6628	93.012 3.6619	0.000 0.000
	85 3.3465	93 3.6614	30 1.181	K85X93X30H	31024" 15600	3200 38200	4900	4900	0.0870	84.988 3.3460	84.973 3.3454	93.034 3.6628	93.012 3.6619	0.166 0.366
90 3.5433	90 3.5433	97 3.8189	20 0.787	K90X97X20	46.3 10400	114 25600	3000	4600	0.0827	89.988 3.5428	89.973 3.5422	97.034 3.8202	97.012 3.8194	0.095 0.209
	90 3.5433	98 3.8583	25 0.984	K90X98X25F	54.8 12300	128 28800	3000	4600	0.0832	89.988 3.5428	89.973 3.5422	98.034 3.8596	98.012 3.8587	0.134 0.295
	90 3.5433	98 3.8583	30 1.181	K90X98X30	63.6 14300	155 34800	3000	4600	0.0873	89.988 3.5428	89.973 3.5422	98.034 3.8596	98.012 3.8587	0.168 0.370
95 3.7402	95 3.7402	103 4.0551	20 0.787	K95X103X20	49.3 11100	114 25600	2800	4400	0.0829	94.988 3.7397	94.973 3.7391	103.034 4.0565	103.012 4.0556	0.130 0.287
	95 3.7402	103 4.0551	30 1.181	K95X103X30F	71.0 16000	183 41100	2800	4400	0.0932	94.988 3.7397	94.973 3.7391	103.034 4.0565	103.012 4.0556	0.180 0.39
100 3.9370	100 3.9370	108 4.2520	30 1.181	K100X108X30	72.4 16300	191 42900	2700	4200	0.0965	99.988 3.9365	99.973 3.9359	108.034 4.2533	108.012 4.2524	0.210 0.463
110 4.3307	110 4.3307	118 4.6457	24 0.945	K110X118X24	64.0 14400	168 37800	2400	3800	0.0977	109.988 4.3302	109.973 4.3296	118.034 4.6470	118.012 4.6461	0.165 0.364
	110 4.3307	118 4.6457	30 1.181	K110X118X30H	75.3 16900	207 46500	2400	3800	0.1029	109.988 4.3302	109.973 4.3296	118.034 4.6470	118.012 4.6461	0.200 0.441
120 4.7244	120 4.7244	128 5.0393	25 0.984	K120X128X25	66.4 14927	181.0 40690	2200	3400	—	119.988 4.7239	119.973 4.7233	128.039 5.0409	128.014 5.0399	0.237 0.523
130 5.1181	130 5.1181	137 5.3937	24 0.945	K130X137X24	64.3 14455	197.0 44287	2100	3200	—	129.986 5.1176	129.968 5.1168	137.039 5.3952	137.014 5.3942	0.211 0.465
	130 5.1181	140 5.5118	45 1.7717	K130X140X45	135.0 30349	397.0 89249	2100	3200	—	129.986 5.1176	129.968 5.1168	140.039 5.5133	140.014 5.5124	0.586 1.292
135 5.3150	135 5.3150	145 5.7090	38 1.4961	K135X145X38	123.0 27651	355.0 79807	2000	3100	—	134.986 5.3144	134.968 5.3137	145.039 5.7102	145.014 5.7092	0.511 1.127
140 5.5118	140 5.5118	150 5.9055	43 1.6929	K140X150X43	141.0 31698	428.0 96218	1900	3000	—	139.986 5.5113	139.968 5.5106	150.039 5.9070	150.014 5.9061	0.596 1.314
150 5.9055	150 5.9055	160 6.2992	43 1.6929	K150X160X43	144.0 32372	452.0 101613	1800	2800	—	149.986 5.9050	149.968 5.9042	160.039 6.3007	160.014 6.3000	0.636 1.402
160 6.2992	160 6.2992	168 6.6142	22 0.8661	K160X168X22	65.4 14702	196.0 44062	1700	2600	—	159.986 6.2987	159.968 6.2980	168.039 6.6157	168.014 6.6147	0.281 0.620
165 6.4961	165 6.4961	173 6.8110	26 1.0236	K165X173X26	78.8 17715	251.0 56427	1600	2500	—	164.986 6.4955	164.968 6.4948	173.039 6.8126	173.014 6.8116	0.338 0.745

B

