WBW BEARINGS

NEEDLE ROLLER BEARING AND CAM FOLLOWER

Ningbo Amol Machinery Co., Ltd.
Jiangsu Amol Bearing Co., Ltd.
Ningbo Amol Intl. Trade Co., Ltd.

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Needle roller bearing covers the following varieties:

Needle roller bearings
Needle roller and cage assemblies
Drawn cup needle roller bearings
Machined-ring needle roller bearings
Thrust cylindrical roller bearings
Thrust needle roller bearings
Cam follower stud type track rollers
Roller follower yoke type track rollers

Materials used in needle roller bearings:

Steel type	Representative example	Standard
High carbon chrome bearing steel	SUJ2	JIS G 4805
Carbon tool steel	SK85 (Former: SK5)	JIS G 4401
Nickel chrome molybdenum steel	SNCM420	JIS G 4053 (Former: JIS G 4103)
Chrome steel	SCr420	JIS G 4053 (Former: JIS G 4104)
Chrome molybdenum steel	SCM420	JIS G 4053 (Former: JIS G 4105)
Stainless steel	SUSU440C	JIS G 4303

Needle roller bearings have low allowable misalignment because the ratio of roller length to roller diameter is high. For normal applications, bearing misalignment must not exceed the values shown in Table:

Bearing type	Allowable misalignment
Radial roller bearings	1/2 000
Thrust roller bearings	1/10 000

Needle roller bearings are rolling bearings which have small diameter cylindrical rolling elements whose length is relatively long compared with their diameter. Needle roller bearings have a small cross sectional height and have a larger load capacity and rigidity than other types of rolling bearings for their relative size. They are also suitable for oscillating motion due to their low moment of inertia. Types of needle roller bearings are shown in the table below. This catalog provides dimension tables for the representative bearing types indicated by blue text in the table below.

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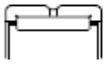
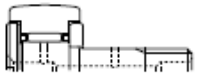
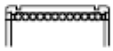
Bearing type		Type code	Shaft diameter	Page of bearing dimension table
Radial roller bearings	Needle roller bearing with cage 	K, K···T2, K···S, KMJ···S, K···ZW, KV···S, KV···ZWS, K···L1	3~285	E-12~25
	Connecting rod needle roller bearings with cage 	PK, KBK, GPK, KMJ···S, KBK, KV···S	———	———
	Drawn cup needle roller bearings 	HK, HMK, HK···ZWD, HMK···ZWD, BK, BK···ZWD, HK···L, HMK···L, HK···LL, HMK···LL, DCL, HCK	3~ 50	E-26~33
	Solid type needle roller bearings 	RNA48, RNA49, RNA49···R, RNA59, RNA69···R, NK, NK···R, NA48, NA49, NA49···R, NA59, NA69···R, NK+IR, NK···R+IR NA49···L, RNA49···L, NA49···LL, RNA49···LL, MR, MR+MI NKS, NKS+IR	5~440	E-34~55
	Separable solid type needle roller bearings 	RNAO, RNAO···ZW, NAO, NAO···ZW	———	———
	Clearance adjusting needle roller bearings 	RNA49···S, NA49···S	———	———
Thrust roller bearings	Thrust cylindrical roller bearings 	811, 812, 893, K811, K812, K893 WS, GS, 874, K874	10~160	E-56~61
	Thrust needle roller bearings 	AXK11, AS, WS, GS	10~160	E-62~65
Complex bearings	Complex bearings 	NKX, NKX…Z, NKXR, NKXR…Z, NKX+IR, NKX…Z+IR, NKXR+IR, NKXR…Z+IR, NKIA, NKIB, AXN, ARN	———	———
Track rollers	Cam followers 	KR···(F), KR···(F)LL, KRV···(F), KRV···(F)LL, KR···(F)H, KRV···(F)H, KRT, KRT···LL, KRVT, KRVT···LL, KRVU, KRVU···LL, CR, CR···LL, CRV, CRV···LL, CR···H, CRV···H, NUKR, NUKRT, NUKRU	3~ 64 (Stud diameter)	E-66~83
	Roller followers 	RNAB2, NAB2, RNA22···LL, NA22···LL, NATR, NATR···LL, NATV, NACV, NATV···LL, NACV···LL, NUTR, NUTW	5~ 50	E-84~91
Components	Inner rings, needle rollers, snap rings, seals 	IR, MI, F, WR, BR, G, GD, LEG, LEGD	———	D-24~27
Linear motion bearings	Linear ball bearings 	KLM, KH, KD, RLM, FF, FF···ZW, RF, BF	———	———
Textile machinery bearings	Bottom roller bearing tension pulleys 	JPU···S, FRIS, FR	———	———

Note: 1. Bearings with polyamide resin cages (supplementary suffix code: T2/example: HK0408FT2) must be used at an allowable temperature of 120°C or below or 100°C or below for continuous use.
2. Bearings with an attached synthetic rubber seal and filled with grease inside (supplementary suffix code: L or LL/example: NATR20LL/3AS) must be used at an allowable temperature of -20 to 120°C or 100°C or below for continuous use.

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Needle roller bearing with cage

These needle roller bearings include needle rollers and cages that guide and hold the needle rollers. The structure is lightweight and compact because no inner ring or outer ring is used and the shaft and the housing are used as raceway surfaces.

When a caged needle roller bearing is used as a single body to be directly guided in the axial direction by a shaft shoulder (Fig. 2), any part coming into contact with the cage side surface must be sufficiently finished without burrs. For high speed or heavy load operation, the contact surface is hardened and finished by grinding. When a cage is to be guided in the axial direction with a snap ring (Fig. 2), a thrust ring is used between the cage and the snap ring so that the snap ring lugs do not come in contact with the cage directly.

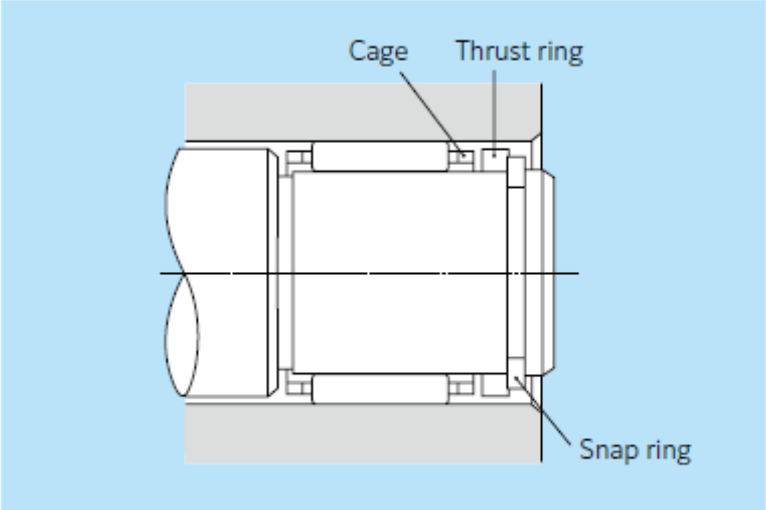


Fig. 2 Fixing using thrust ring

Drawn cup needle roller bearings

The outer ring of drawn cup needle roller bearings is formed by precision drawing from a thin steel plate, and is designed to have an appropriate accuracy for its intended function when press-fit into a rigid housing. Therefore, it is meaningless to measure the dimensional accuracy of the bearing itself before press fitting. After pressing into a ring gage (with wall thickness of 20 mm or more) having appropriate dimensions, the bearing accuracy is evaluated by measuring the roller inscribed circle diameter (Fw) with a plug gauge or a tapered gauge. Recommended fits for drawn cup needle roller bearings are shown in Table 6, and recommended shaft and housing accuracy is shown in Table 7. Tables 8.1 and 8.2 show the dimensional tolerances of the ring gauge inner diameter dimension and the roller inscribed circle diameter (Fw) with respect to the standard metric series HK and BK types and the heavy load series HMK type.

When a plug gauge is used for the measurement of the roller inscribed circle diameter (Fw), the dimension of the go side is the lower limit of the dimensional tolerance of the roller inscribed circle diameter, and the dimension of the no-go side is the value obtained by adding 2 μm to the upper limit of the dimensional tolerance of the roller inscribed circle diameter. Since the outer ring is formed by a thin steel plate, the safety factor (S0) when the bearing is used must be $S0 \geqq 3$ for standard specifications, and $S0 \geqq 2$ must be maintained for the carburized/quenched specification.

Table 6 Drawn cup needle roller bearing housing and shaft fits

Bearing type	Housing		Shaft	
	Iron-based	Light alloy	No inner ring	With an inner ring
HK, BK	N6(N7)	R6(R7)	h5(h6)	k5(j6)
HMK	J6(J7)	M6(M7)		

Table 7 Recommended shaft and housing accuracy

Characteristics	Shaft	Housing
Dimensional accuracy	IT6 (IT5)	IT7 (IT6)
Roundness Cylindricity (Max.)	IT3	IT4
Abutment squareness (Max.)	IT3	IT3
Fitting surface roughness Ra	0.8	1.6

Note: Accuracy in ( ) applies to bearings of accuracy class 5 and higher.

Table 8.1 Accuracy of drawn cup needle roller bearings (1)

Dimensional tolerance of roller inscribed circle diameter (HK and BK types) Unit: mm

Nominal roller inscribed circle diameter F_w	Nominal outer ring outer diameter D	Ring gauge inner diameter	Dimensional tolerance of roller inscribed circle diameter	
			Upper limit	Lower limit
3	6.5	6.484	3.016	3.006
4	8	7.984	4.022	4.010
5	9	8.984	5.022	5.010
6	10	9.984	6.022	6.010
7	11	10.980	7.028	7.013
8	12	11.980	8.028	8.013
9	13	12.980	9.028	9.013
10	14	13.980	10.028	10.013
12	16	15.980	12.034	12.016
12	18	17.980	12.034	12.016
13	19	18.976	13.034	13.016
14	20	19.976	14.034	14.016
15	21	20.976	15.034	15.016
16	22	21.976	16.034	16.016
17	23	22.976	17.034	17.016
18	24	23.976	18.034	18.016
20	26	25.976	20.041	20.020
22	28	27.976	22.041	22.020
25	32	31.972	25.041	25.020
28	35	34.972	28.041	28.020
30	37	36.972	30.041	30.020
35	42	41.972	35.050	35.025
40	47	46.972	40.050	40.025
45	52	51.967	45.050	45.025
50	58	57.967	50.050	50.025

Table 8.2 Accuracy of drawn cup needle roller bearings (2)

Dimensional tolerance of roller inscribed circle diameter (HMK type) Unit: mm

Nominal roller inscribed circle diameter F_w	Nominal outer ring outer diameter D	Ring gauge inner diameter	Dimensional tolerance of roller inscribed circle diameter	
			Upper limit	Lower limit
8	15	14.995	8.028	8.013
9	16	15.995	9.028	9.013
10	17	16.995	10.028	10.013
12	19	18.995	12.034	12.016
14	22	21.995	14.034	14.016
15	22	21.995	15.034	15.016
16	24	23.995	16.034	16.016
17	24	23.995	17.034	17.016
18	25	24.995	18.034	18.016
19	27	26.995	19.041	19.020
20	27	26.995	20.041	20.020
21	29	28.995	21.041	21.020
22	29	28.995	22.041	22.020
24	31	30.994	24.041	24.020
25	33	32.994	25.041	25.020
26	34	33.994	26.041	26.020
28	37	36.994	28.041	28.020
29	38	37.994	29.041	29.020
30	40	39.994	30.041	30.020
32	42	41.994	32.050	32.025
35	45	44.994	35.050	35.025
37	47	46.994	37.050	37.025
38	48	47.994	38.050	38.025
40	50	49.994	40.050	40.025
45	55	54.994	45.050	45.025
50	62	61.994	50.050	50.025

Solid type needle roller bearings

These bearings have a non-separable construction held together by flanges or side plates on both sides of the outer ring, with needle rollers and cages contained within a solid (machined) outer ring. Since the outer ring is solid (machined), it has high rigidity and the bearing accuracy can be increased; therefore, the bearings are suitable for applications that require high speed, high load, and high rotational accuracy. There are two types of solid type needle roller bearings: one having an inner ring and one having no inner ring. Bearings without an inner ring use the shaft directly as a raceway surface, and the required dimensional tolerance of the shaft diameter (raceway diameter) is as shown in Table 9 based on required operating clearance (see Table 1 required accuracy of other parameters). The corresponding dimensional tolerance of the housing bore is set to K7, which is widely used in general.

Tables 10.1 and 10.2 show values of the radial internal clearance of bearings with an inner ring. Table 10.1 shows the clearance of interchangeable bearings, and the clearance values are satisfied even if the inner rings and outer rings are intermixed. Table 10.2 shows the clearance of non-interchangeable bearings, and the clearance range is tightly controlled. Therefore, the inner rings and outer rings cannot be intermixed. The clearance codes are C2, normal, C3, and C4 from smallest to largest, and suffix code NA is added for the non-interchangeable clearance.

Table 10.1 Radial internal clearance of solid type needle roller bearings (1) interchangeable bearings

Unit: μm

Nominal bearing bore diameter d (mm)		Radial internal clearance							
		C2		Normal [1]		C3		C4	
Over	Incl.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
—	10	0	30	10	40	25	55	35	65
10	18	0	30	10	40	25	55	35	65
18	24	0	30	10	40	25	55	35	65
24	30	0	30	10	45	30	65	40	70
30	40	0	35	15	50	35	70	45	80
40	50	5	40	20	55	40	75	55	90
50	65	5	45	20	65	45	90	65	105
65	80	5	55	25	75	55	105	75	125
80	100	10	60	30	80	65	115	90	140
100	120	10	65	35	90	80	135	105	160
120	140	10	75	40	105	90	155	115	180
140	160	15	80	50	115	100	165	130	195
160	180	20	85	60	125	110	175	150	215
180	200	25	95	65	135	125	195	165	235
200	225	30	105	75	150	140	215	180	255
225	250	40	115	90	165	155	230	205	280
250	280	45	125	100	180	175	255	230	310
280	315	50	135	110	195	195	280	255	340
315	355	55	145	125	215	215	305	280	370
355	400	65	160	140	235	245	340	320	415
400	450	70	190	155	275	270	390	355	465

1) No clearance code is given to this type of bearings.

Table 10.2 Radial internal clearance of solid type needle roller bearings (2) non-interchangeable bearings

Unit: μm

Nominal bearing bore diameter d (mm)		Radial internal clearance							
		C2NA		Normal [1]		C3NA		C4NA	
Over	Incl.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
—	10	10	20	20	30	35	45	45	55
10	18	10	20	20	30	35	45	45	55
18	24	10	20	20	30	35	45	45	55
24	30	10	25	25	35	40	50	50	60
30	40	12	25	25	40	45	55	55	70
40	50	15	30	30	45	50	65	65	80
50	65	15	35	35	50	55	75	75	90
65	80	20	40	40	60	70	90	90	110
80	100	25	45	45	70	80	105	105	125
100	120	25	50	50	80	95	120	120	145
120	140	30	60	60	90	105	135	135	160
140	60	35	65	65	100	115	150	150	180
160	180	35	75	75	110	125	165	165	200
180	200	40	80	80	120	140	180	180	220
200	225	45	90	90	135	155	200	200	240
225	250	50	100	100	150	170	215	215	265
250	280	55	110	110	165	185	240	240	295
280	315	60	120	120	180	205	265	265	325
315	355	65	135	135	200	225	295	295	360
355	400	75	150	150	225	255	330	330	405
400	450	85	170	170	255	285	370	370	455

1) Only code "NA" is given to this type of bearings. Example: NA4920NA

Thrust roller bearing

Thrust roller bearings are bearings having a disc-shaped raceway combined with a cage and- roller assembly having needle rollers or cylindrical rollers radially embedded, and are suitable for axial loads applied in a single direction. Further, a shaft or housing can be directly used as a raceway surface without using a separate raceway ring. Thereby, size in the axial direction can be minimized, and lightweight and compact designs can be obtained. Table 11 shows fits recommended for thrust roller bearings. See Table 1 for the required accuracy of the raceway surface.

Table 11 Fits recommended for thrust roller bearings

Bearing parts		Type and class	
		Shaft diameter	Housing bore
AXK type, K811 type	Inner diameter guide	h8 1)	—
K812 type, K893 type	Outer diameter guide	—	H9 1)
WS type raceway (inner ring)		h6	—
GS type raceway (outer ring)		—	H7
Steel raceway AS type	Shaft fixing	h10	Clearance with housing
	Housing fixing	Clearance with shaft Loose	H11

1) The guide surface is finished by grinding.

Cam follower/roller follower

A cam follower is a track roller having a stud in place of an inner ring, and the outer ring rolls on a track. It is a bearing used as an eccentric roller, a guide roller, etc., and it can have a cylindrical shape or a spherical shape for the outer ring outer diameter. Cam follower bearings are offered in both cage type and full complement designs.

When attaching a cam follower do not strike the flange part with a hammer because sharp impact may cause cracks and otational failure (Fig. 5). In addition, the oil supply hole position on the stud raceway surface of the cam follower is indicated by the WBW mark on the stud flange surface. Install it by rotating the nut while the fixing the stud so that the mark (oil hole) is positioned in the non-loaded region (Fig. 6). The thread part may break if too much tightening torque is applied.

Table 14 Fits recommended for cam followers

Bearing	Type and class of mounting hole
Metric series	H7
Inch series	F7

Note: Assembly must be done without backlash for impact loads.

Table 15 Fits recommended for roller followers

Type and class of shaft	
No inner ring	With an inner ring
k5 or k6	g6 or h6

A roller follower is a bearing in which the outer ring rolls on a track. As with the cam follower, there is a cylindrical shape or a spherical shape for the outer ring outer diameter, and are offered in both cage type and full complement designs. Common uses include use as an eccentric roller, guide roller, rocker arm roller, cam roller, pressure roller, etc. A roller follower must be installed so that the oil hole is positioned in the non-loaded region because installing the oil hole position of the inner ring in the loaded region may shorten the bearing life.

Table 12 shows the radial internal clearance of cam followers and roller followers, Tables 13 and 14 show the dimensional accuracy and recommended fits of cam followers, and Table 15 shows the recommended fits of roller followers.

Table 12 Radial internal clearance of cam followers and roller followers

Nominal roller inscribed circle diameter F_w mm		Internal clearance μm							
		C2		CN (normal)		C3		C4	
Over	Incl.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
3	6	0	10	3	17	15	30	20	40
6	10	0	12	5	20	15	30	25	45
10	18	0	15	5	25	15	35	30	55
18	30	0	20	10	30	20	40	40	65
30	50	0	25	10	40	25	55	50	80
50	80	0	30	15	50	30	65	60	100
80	100	0	35	20	55	35	75	70	115

Table 13 Dimensional accuracy of cam followers

Unit: μm

Bearing	Outer ring shape	Stud diameter	Outer ring outer diameter	Outer ring width
Milli series	Spherical surface	h7	0 −50	JIS Class 0
	Cylindrical surface		JIS Class 0	
Inch series	Spherical surface	+25 0	0 −50	0 −130
	Cylindrical surface		0 −25	

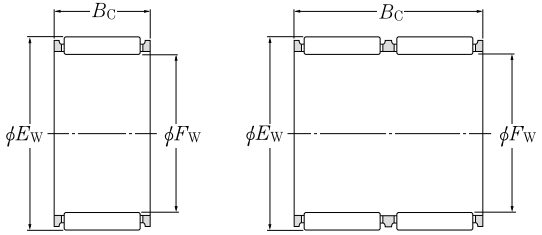
Table 16 Correction coefficient G

Hardness (HRC)	Correction coefficient G	
	Cylindrical shape	Spherical shape
20	0.368	0.223
25	0.459	0.311
30	0.583	0.446
35	0.750	0.650
40	1.000	1.000
45	1.414	1.681
50	1.987	2.800
55	2.787	4.652

The maximum radial load that can be statically permitted on the contact surface between the track and the track roller is referred to as the track load capacity, and the value differs depending on the hardness of the track. The track load capacity specified in the dimension table is a value considering a track hardness of 40 HRC, and the load capacity of tracks having different hardness may be obtained by multiplying the track load capacity in the dimension table by the correction coefficient G in Table 16. However, when the calculated track load capacity exceeds the basic static rating load C0r of the bearing, the track load capacity is equal to the basic static rating load C0r of the bearing

Needle roller and cage assemblies

K type
K··T2 type
K··S type
K··ZW type
KMJ··S type
KV··S type



K type
K··T2 type
K··S type

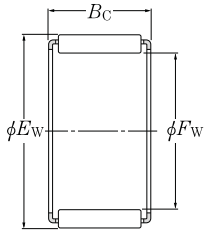
K··ZW type

F_W 3 ～ 10mm

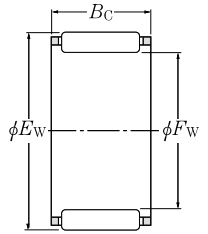
Boundary dimensions mm F_W	E_W	B_C	Basic load rating dynamic N C_r	static C_{0r}	Fatigue load limit N C_u	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Mass kg (approx.)
3	6	7 $^{-0.2}_{-0.55}$	1 460	970	118	33 000	50 000	**K3×6×7T2T**	0.0004
4	6	8 $^{-0.2}_{-0.55}$	1 560	1 330	162	30 000	45 000	**K4×6×7.8XT2**	0.0003
	7	7 $^{-0.2}_{-0.55}$	1 770	1 270	155	30 000	45 000	**K4×7×7T2**	0.0005
5	8	8 $^{-0.2}_{-0.55}$	2 640	2 190	267	27 000	40 000	**K5×8×8T2**	0.0007
	8	10 $^{-0.2}_{-0.55}$	2 720	2 250	275	27 000	40 000	**K5×8×10T2**	0.0009
6	9	8	2 660	2 280	278	25 000	37 000	**K6×9×8T2T**	0.0009
	9	10 $^{-0.2}_{-0.55}$	3 400	3 150	380	25 000	37 000	**K6×9×10T2T**	0.0011
	10	13	4 400	3 700	455	25 000	37 000	**K6×10×13T2**	0.0019
7	10	8	2 670	2 350	286	23 000	34 000	**K7×10×8T2**	0.0009
	10	10 $^{-0.2}_{-0.55}$	3 400	3 200	390	23 000	34 000	**K7×10×10T2**	0.0011
	10	13	5 050	5 400	655	23 000	34 000	**KV7×10×12.8X3S**	0.0023
8	11	8	3 150	3 000	365	21 000	32 000	**K8×11×8T2T**	0.0011
	11	9	3 150	3 000	365	21 000	32 000	**8E-KV8×11×8.8X2S**	0.0019
	11	10	4 000	4 100	500	21 000	32 000	**K8×11×10T2**	0.0013
	11	12 $^{-0.2}_{-0.55}$	4 450	4 650	570	21 000	32 000	**8E-KV8×11×11.8X2S**	0.0025
	11	13 $^{-0.2}_{-0.55}$	4 850	5 200	635	21 000	32 000	**K8×11×13**	0.0026
	12	10	4 650	4 150	510	21 000	32 000	**K8×12×10T2**	0.0020
	12	12	5 600	5 300	650	21 000	32 000	**8E-KV8×12×11.8X1S**	0.0040
	12	13	5 050	4 650	565	21 000	32 000	**K8×12×13**	0.0036
9	12	10 $^{-0.2}_{-0.55}$	4 550	5 000	615	20 000	30 000	**K9×12×10T2**	0.0015
	12	13 $^{-0.2}_{-0.55}$	5 500	6 400	780	20 000	30 000	**K9×12×13T2**	0.0021
10	13	10	4 550	5 100	620	19 000	28 000	**K10×13×10T2T**	0.0016
	13	13	5 450	6 450	790	19 000	28 000	**8E-KV10×13×12.8XS**	0.0032
	14	8	4 300	3 950	485	19 000	28 000	**K10×14×8**	0.0027
	14	10 $^{-0.2}_{-0.55}$	5 500	5 450	660	19 000	28 000	**K10×14×10T**	0.0034
	14	11 $^{-0.2}_{-0.55}$	5 500	5 450	660	19 000	28 000	**8E-KV10×14×10.8XS**	0.0039
	14	11.5	6 800	7 200	875	19 000	28 000	**KMJ10×14×11.3XS**	0.0040
	14	13	6 600	6 900	840	19 000	28 000	**K10×14×13**	0.0044
	14	14	7 150	7 650	930	19 000	28 000	**8E-KV10×14×13.8X4S**	0.0050

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle Roller Bearings WBW



KMJ··S type



KV··S type

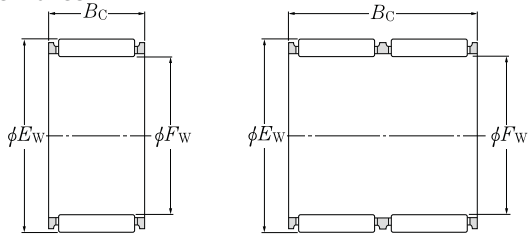
F_W 10 ～ 15mm

Boundary dimensions mm F_W	E_W	B_C	Basic load rating dynamic N C_r	static C_{0r}	Fatigue load limit N C_u	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Mass kg (approx.)
10	14	17 $^{-0.2}_{-0.55}$	8 050	8 850	1 080	19 000	28 000	**8E-K10×14×16.8X1**	0.0064
	16	12 $^{-0.2}_{-0.55}$	7 100	5 950	730	19 000	28 000	**K10×16×12**	0.0066
11	14	10 $^{-0.2}_{-0.55}$	5 050	6 000	735	18 000	27 000	**K11×14×10**	0.0028
12	15	9	4 450	5 250	640	17 000	26 000	**K12×15×9**	0.0027
	15	10	5 000	6 100	740	17 000	26 000	**8Q-K12×15×10**	0.0030
	15	13	6 000	7 700	940	17 000	26 000	**K12×15×13**	0.0038
	15	20	8 550	12 200	1 480	17 000	26 000	**K12×15×20ZW**	0.0059
	16	8	4 850	4 900	600	17 000	26 000	**K12×16×8**	0.0034
	16	11.5	6 750	7 400	900	17 000	26 000	**KMJ12×16×11.3XS**	0.0047
	16	13 $^{-0.2}_{-0.55}$	7 500	8 500	1 040	17 000	26 000	**8Q-K12×16×13**	0.0060
	16	18	9 800	11 900	1 460	17 000	26 000	**8E-K12×16×17.8X1**	0.0070
	16	20	10 300	12 800	1 560	17 000	26 000	**K12×16×19.8X4**	0.010
	17	10	7 350	7 200	880	17 000	26 000	**KMJ12×17×9.8XS**	0.0050
	17	13	9 000	9 400	1 150	17 000	26 000	**K12×17×13**	0.0075
	17	18	12 600	14 400	1 760	17 000	26 000	**KV12×17×17.8XS**	0.0080
	18	12	8 650	8 000	975	17 000	26 000	**8Q-K12×18×12**	0.0089
14	17	10	5 400	7 050	860	16 000	24 000	**KV14×17×10ST**	0.0040
	18	10	6 900	8 000	975	16 000	24 000	**K14×18×10**	0.0046
	18	11	7 600	9 050	1 100	16 000	24 000	**K14×18×11**	0.0053
	18	13	8 300	10 100	1 240	16 000	24 000	**K14×18×13**	0.0063
	18	15 $^{-0.2}_{-0.55}$	9 650	12 300	1 500	16 000	24 000	**K14×18×15S**	0.0076
	18	17 $^{-0.2}_{-0.55}$	10 900	14 400	1 760	16 000	24 000	**K14×18×17V5**	0.0079
	18	39	18 800	28 900	3 500	16 000	24 000	**K14×18×39ZW**	0.018
	19	13	8 950	9 650	1 180	16 000	24 000	**K14×19×13**	0.0080
	20	12	9 350	9 150	1 110	16 000	24 000	**K14×20×12**	0.0095
	20	17	13 500	14 600	1 780	16 000	24 000	**K14×20×17**	0.014
15	18	14	7 850	11 600	1 420	15 000	23 000	**K15×18×14**	0.0060
	19	8 $^{-0.2}_{-0.55}$	5 350	5 850	715	15 000	23 000	**KV15×19×7.8XS**	0.0033
	19	10 $^{-0.2}_{-0.55}$	6 850	8 050	980	15 000	23 000	**K15×19×10T**	0.0055
	19	13	8 250	10 200	1 250	15 000	23 000	**K15×19×13**	0.0067

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle roller and cage assemblies

K type
K··T2 type
K··S type
K··ZW type
KMJ··S type



K type
K··T2 type
K··S type

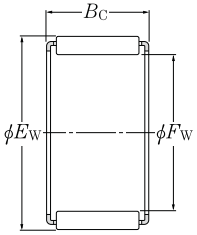
K··ZW type

F_W 15 ～ 18mm

Boundary dimensions mm F_W	E_W	B_c	Basic load rating dynamic N C_r	static C_{0r}	Fatigue load limit N C_u	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Mass kg (approx.)
15	19	17	10 900	14 600	1 780	15 000	23 000	**K15×19×17**	0.0090
	19	24	14 100	20 400	2 490	15 000	23 000	**K15×19×24ZW**	0.013
	20	13	10 100	11 500	1 410	15 000	23 000	**K15×20×13**	0.0088
	20	16 $^{-0.2}_{-0.55}$	12 600	15 200	1 850	15 000	23 000	**KMJ15×20×15.8XS**	0.0090
	21	15	11 900	12 500	1 530	15 000	23 000	**K15×21×15**	0.013
	21	17	14 900	16 800	2 050	15 000	23 000	**KMJ15×21×16.8X1SK**	0.012
	21	21	16 500	19 100	2 330	15 000	23 000	**K15×21×21**	0.017
16	20	10	7 500	9 250	1 130	15 000	23 000	**K16×20×10T**	0.0057
	20	11	8 300	10 500	1 280	15 000	23 000	**K16×20×11T**	0.0061
	20	13	9 050	11 800	1 430	15 000	23 000	**K16×20×13**	0.0071
	20	17	11 900	16 800	2 050	15 000	23 000	**K16×20×17ST**	0.0092
	22	12 $^{-0.2}_{-0.55}$	11 700	12 500	1 530	15 000	23 000	**K16×22×12**	0.010
	22	13	12 600	13 900	1 690	15 000	23 000	**KMJ16×22×13S**	0.011
	22	16	13 600	15 200	1 850	15 000	23 000	**K16×22×15.8X**	0.014
	22	17	14 400	16 400	2 000	15 000	23 000	**K16×22×17**	0.015
	22	20	16 000	18 800	2 300	15 000	23 000	**K16×22×20**	0.017
17	21	10	7 450	9 300	1 140	15 000	22 000	**K17×21×10S**	0.0056
	21	13	9 400	12 600	1 530	15 000	22 000	**K17×21×13S**	0.0075
	21	15	10 400	14 400	1 750	15 000	22 000	**K17×21×15**	0.0089
	21	17 $^{-0.2}_{-0.55}$	11 800	16 900	2 060	15 000	22 000	**K17×21×17**	0.0095
	22	20	14 700	19 200	2 340	15 000	22 000	**K17×22×20**	0.015
	23	17	14 400	16 500	2 020	15 000	22 000	**K17×23×17**	0.016
	23	23	16 800	20 200	2 470	15 000	22 000	**K17×23×22.8X1T2**	0.013
18	22	10	7 400	9 400	1 140	14 000	21 000	**K18×22×10**	0.0061
	22	13	8 900	11 900	1 450	14 000	21 000	**K18×22×13**	0.0077
	22	17 $^{-0.2}_{-0.55}$	11 700	17 000	2 070	14 000	21 000	**K18×22×17**	0.011
	23	20	14 600	19 300	2 360	14 000	21 000	**K18×23×20S**	0.015
	24	12	12 300	13 800	1 690	14 000	21 000	**K18×24×12**	0.012
	24	13	11 600	12 800	1 560	14 000	21 000	**K18×24×13**	0.013

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle Roller Bearings WBW



KMJ··S type

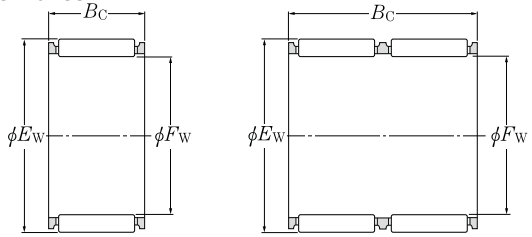
F_W 18 ～ 22mm

Boundary dimensions mm F_W	E_W	B_c	Basic load rating dynamic N C_r	static C_{0r}	Fatigue load limit N C_u	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Mass kg (approx.)
18	24	17	16 000	19 300	2 350	14 000	21 000	**KMJ18×24×17SV1**	0.014
	24	20 $^{-0.2}_{-0.55}$	17 000	20 900	2 550	14 000	21 000	**K18×24×20**	0.019
	25	17	18 000	20 400	2 490	14 000	21 000	**K18×25×17**	0.019
	25	22	22 100	26 600	3 250	14 000	21 000	**K18×25×22**	0.024
19	23	13 $^{-0.2}_{-0.55}$	9 650	13 500	1 640	14 000	21 000	**K19×23×13**	0.0082
	23	17	12 700	19 200	2 340	14 000	21 000	**K19×23×17**	0.011
20	24	10	8 300	11 200	1 370	13 000	20 000	**K20×24×10S**	0.0065
	24	11	9 500	13 400	1 640	13 000	20 000	**K20×24×11**	0.0072
	24	13	10 000	14 300	1 740	13 000	20 000	**K20×24×13SV4**	0.0086
	24	17	13 200	20 400	2 480	13 000	20 000	**K20×24×17S**	0.011
	24	45	16 400	27 100	3 300	13 000	20 000	**K20×24×45ZW**	0.028
	25	40	29 000	48 000	5 880	13 000	20 000	**K20×25×40ZWT**	0.033
	26	12 $^{-0.2}_{-0.55}$	12 900	15 100	1 840	13 000	20 000	**K20×26×12**	0.013
	26	13	14 000	16 700	2 040	13 000	20 000	**KMJ20×26×13ST**	0.012
	26	14	15 800	19 600	2 390	13 000	13 000	**KMJ20×26×13.8X1S**	0.013
	26	17	17 800	22 800	2 780	13 000	20 000	**KMJ20×26×17S**	0.016
	26	20	20 600	27 600	3 350	13 000	20 000	**KMJ20×26×20S**	0.019
	28	17	21 700	24 600	3 000	13 000	20 000	**KMJ20×28×16.8XS**	0.022
	28	20	24 600	28 900	3 500	13 000	20 000	**KMJ20×28×19.8X4S**	0.026
	28	25	27 100	32 500	3 950	13 000	20 000	**8Q-K20×28×25**	0.039
21	25	13 $^{-0.2}_{-0.55}$	10 700	15 900	1 940	13 000	19 000	**KMJ21×25×12.8X1S**	0.0081
	25	17	13 600	21 500	2 630	13 000	19 000	**K21×25×17**	0.012
22	26	10	8 500	11 900	1 450	12 000	18 000	**K22×26×10S**	0.0071
	26	11	10 100	14 900	1 820	12 000	18 000	**8Q-K22×26×11**	0.0090
	26	13	10 200	15 200	1 850	12 000	18 000	**K22×26×13**	0.0094
	26	17 $^{-0.2}_{-0.55}$	13 500	21 600	2 640	12 000	18 000	**K22×26×17S**	0.012
	27	20	17 500	25 900	3 150	12 000	18 000	**K22×27×20**	0.020
	27	28.5	24 200	39 500	4 800	12 000	18 000	**K22×27×28.3X**	0.028
	27	40	29 900	51 500	6 300	12 000	18 000	**K22×27×40ZW**	0.039
	28	17	17 700	23 300	2 850	12 000	18 000	**K22×28×17V1**	0.020

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle roller and cage assemblies

K type
K··T2 type
K··S type
K··ZW type
KMJ··S type
KV··S type



K type
K··T2 type
K··S type

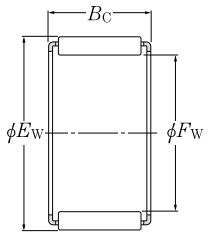
K··ZW type

F_W 22 ～ 25mm

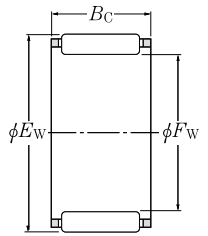
Boundary dimensions mm			Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1} Grease lubrication	Allowable speed min^{-1} Oil lubrication	Number	Mass kg
F_W	E_W	B_C	C_r	C_{0r}	C_u				(approx.)
22	29	16	18 700	22 700	2 770	12 000	18 000	**K22×29×16**	0.023
	30	15 $^{-0.2}_{-0.55}$	19 300	21 700	2 640	12 000	18 000	**K22×30×15T**	0.022
	30	17.5 $^{-0.2}_{-0.55}$	23 200	27 500	3 350	12 000	18 000	**KMJ22×30×17.3X2S**	0.024
	30	24	31 000	40 000	4 900	12 000	18 000	**KMJ22×30×23.8X3S**	0.035
23	27	13	11 400	17 700	2 160	11 000	17 000	**KMJ23×27×12.8X1S**	0.0086
	28	24 $^{-0.2}_{-0.55}$	19 800	31 000	3 750	11 000	17 000	**K23×28×24**	0.023
	29	18	20 600	28 800	3 500	11 000	17 000	**KMJ23×29×17.8X2S**	0.019
24	28	10	9 000	13 200	1 610	11 000	17 000	**K24×28×10T**	0.0080
	28	13	10 800	16 800	2 050	11 000	17 000	**K24×28×13**	0.010
	28	17 $^{-0.2}_{-0.55}$	14 300	23 900	2 920	11 000	17 000	**K24×28×17**	0.013
	29	13 $^{-0.2}_{-0.55}$	12 300	16 900	2 060	11 000	17 000	**K24×29×13**	0.012
	30	17	18 400	25 200	3 050	11 000	17 000	**K24×30×17**	0.022
	30	31	27 900	43 000	5 200	11 000	17 000	**K24×30×31ZW**	0.039
25	29	10	8 950	13 300	1 620	11 000	16 000	**K25×29×10**	0.0083
	29	13	10 800	16 900	2 050	11 000	16 000	**K25×29×13**	0.010
	29	17	14 200	24 000	2 930	11 000	16 000	**K25×29×17S**	0.014
	30	13	13 200	18 800	2 290	11 000	16 000	**K25×30×13**	0.013
	30	17	17 400	26 800	3 250	11 000	16 000	**K25×30×17S**	0.017
	30	20	19 400	31 000	3 750	11 000	16 000	**K25×30×20SV3**	0.021
	30	22	22 300	37 000	4 500	11 000	16 000	**KMJ25×30×21.8XS**	0.020
	30	26 $^{-0.2}_{-0.55}$	21 800	35 500	4 350	11 000	16 000	**K25×30×26ZW**	0.027
	30	39 $^{-0.2}_{-0.55}$	29 800	53 500	6 550	11 000	16 000	**K25×30×39ZW**	0.040
	31	13	15 200	19 900	2 430	11 000	16 000	**K25×31×13V3**	0.018
	31	14	16 500	22 100	2 700	11 000	16 000	**K25×31×14**	0.018
	31	17	18 300	25 300	3 100	11 000	16 000	**K25×31×17**	0.022
	31	18.5	21 000	30 000	3 650	11 000	16 000	**KMJ25×31×18.3X1SK**	0.021
	31	21	22 500	33 000	4 000	11 000	16 000	**K25×31×21V3**	0.028
	32	16	19 500	24 700	3 000	11 000	16 000	**K25×32×16**	0.027
	33	24	34 500	47 000	5 750	11 000	16 000	**KMJ25×33×24S**	0.040

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle Roller Bearings
WBW



KMJ··S type



KV··S type

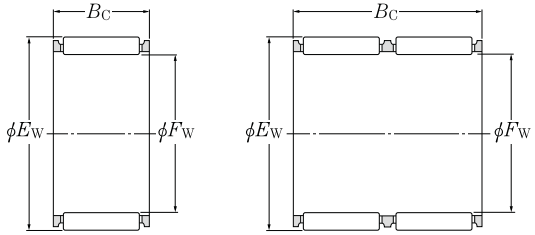
F_W 26 ～ 30mm

Boundary dimensions mm			Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1} Grease lubrication	Allowable speed min^{-1} Oil lubrication	Number	Mass kg
F_W	E_W	B_C	C_r	C_{0r}	C_u				(approx.)
26	30	13	11 800	19 200	2 340	10 000	15 000	**K26×30×13**	0.011
	30	17 $^{-0.2}_{-0.55}$	15 500	27 400	3 350	10 000	15 000	**K26×30×17**	0.015
	31	24 $^{-0.2}_{-0.55}$	21 400	35 500	4 300	10 000	15 000	**8E-K26×31×23.8X1ZW**	0.029
	34	22	24 200	30 000	3 700	10 000	15 000	**K26×34×22**	0.041
28	32	17	15 300	27 500	3 350	9 500	14 000	**K28×32×17**	0.017
	32	21	18 700	35 500	4 350	9 500	14 000	**K28×32×21T**	0.020
	33	13	13 900	20 900	2 550	9 500	14 000	**K28×33×13**	0.015
	33	17	18 300	29 800	3 650	9 500	14 000	**K28×33×17S**	0.020
	33	26 $^{-0.2}_{-0.55}$	23 900	42 000	5 100	9 500	14 000	**K28×33×26ZW**	0.033
	33	27 $^{-0.2}_{-0.55}$	28 300	52 000	6 350	9 500	14 000	**K28×33×27**	0.032
	34	14	17 500	24 800	3 000	9 500	14 000	**K28×34×14**	0.020
	34	17	18 100	25 800	3 150	9 500	14 000	**K28×34×17V1**	0.025
	35	16	21 200	28 400	3 450	9 500	14 000	**K28×35×16**	0.029
	35	18	21 500	28 900	3 550	9 500	14 000	**K28×35×18**	0.031
29	34	17 $^{-0.2}_{-0.55}$	18 900	31 000	3 800	9 500	14 000	**K29×34×17S**	0.022
	34	27 $^{-0.2}_{-0.55}$	28 100	52 000	6 350	9 500	14 000	**K29×34×27**	0.033
30	34	14	12 400	21 500	2 600	8 500	13 000	**KV30×34×13.8XS**	0.014
	34	23	18 000	34 500	4 200	8 500	13 000	**K30×34×22.8X1T2**	0.013
	35	11	12 200	18 000	2 200	8 500	13 000	**K30×35×11S**	0.014
	35	13	14 700	22 900	2 800	8 500	13 000	**KV30×35×13S**	0.017
	35	20	21 600	37 500	4 600	8 500	13 000	**K30×35×20S**	0.025
	35	26 $^{-0.2}_{-0.55}$	25 200	46 000	5 600	8 500	13 000	**K30×35×26ZWV1**	0.036
	35	27 $^{-0.2}_{-0.55}$	29 900	57 000	6 950	8 500	13 000	**K30×35×27S**	0.033
	37	16	21 900	30 500	3 700	8 500	13 000	**K30×37×16**	0.029
	37	18	23 300	33 000	4 000	8 500	13 000	**K30×37×18**	0.034
	37	20	26 200	38 000	4 650	8 500	13 000	**KMJ30×37×20S**	0.032
	37	48	40 000	65 500	8 000	8 500	13 000	**K30×37×48ZW**	0.075
	38	18	25 000	33 000	4 000	8 500	13 000	**K30×38×18**	0.036

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle roller and cage assemblies

K type
K··T2 type
K··S type
K··ZW type
KMJ··S type
KV··S type



K type
K··T2 type
K··S type

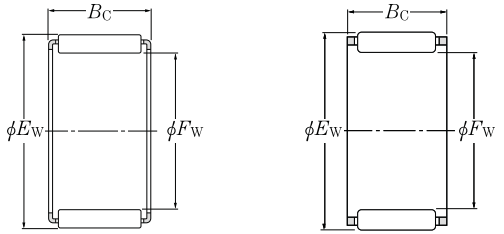
K··ZW type

F_W 31 ~ 35mm

Boundary dimensions mm F_W	E_W	B_C	Basic load rating dynamic N C_r	static C_{0r}	Fatigue load limit N C_u	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Mass kg (approx.)
31	35	24 $^{-0.2}_{-0.55}$	21 200	43 500	5 300	8 500	13 000	**KV31×35×23.8XS**	0.022
	36	14 $^{-0.2}_{-0.55}$	15 800	25 400	3 100	8 500	13 000	**KV31×36×13.8XS**	0.017
32	36	15	14 300	26 400	3 200	8 500	13 000	**K32×36×15ST**	0.017
	37	13	14 500	23 000	2 810	8 500	13 000	**K32×37×13**	0.018
	37	17	19 200	33 000	4 000	8 500	13 000	**K32×37×17S**	0.022
	37	26	24 900	46 000	5 600	8 500	13 000	**K32×37×26ZWV3**	0.032
	37	27 $^{-0.2}_{-0.55}$	29 600	57 500	7 000	8 500	13 000	**K32×37×27**	0.037
	38	14	19 800	30 500	3 700	8 500	13 000	**KMJ32×38×14S**	0.022
	38	26	31 500	54 000	6 600	8 500	13 000	**K32×38×26**	0.041
	39	16	22 600	32 000	3 900	8 500	13 000	**K32×39×16V1**	0.033
	39	18	24 000	35 000	4 250	8 500	13 000	**K32×39×18**	0.037
33	38	30.5 $^{-0.2}_{-0.55}$	28 400	55 000	6 700	8 000	12 000	**K33×38×30.3X1T2**	0.026
34	40	39.5 $^{-0.2}_{-0.55}$	39 000	73 500	8 950	8 000	12 000	**KV34×40×39.3X1ZWS**	0.066
35	39	22.5	21 500	46 000	5 600	7 500	11 000	**KV35×39×22.3XS**	0.024
	39	24	21 300	45 000	5 500	7 500	11 000	**K35×39×23.8X1T2**	0.015
	40	13	15 200	25 100	3 050	7 500	11 000	**K35×40×13**	0.019
	40	17	20 000	36 000	4 350	7 500	11 000	**K35×40×17**	0.025
	40	19	22 300	41 000	5 000	7 500	11 000	**K35×40×19**	0.029
	40	26	26 100	50 000	6 100	7 500	11 000	**K35×40×26ZW**	0.037
	40	30 $^{-0.2}_{-0.55}$	26 100	50 000	6 100	7 500	11 000	**K35×40×30ZW**	0.043
	41	14	19 400	30 500	3 700	7 500	11 000	**K35×41×14**	0.026
	41	15	20 900	33 500	4 050	7 500	11 000	**K35×41×15**	0.027
	41	24	31 000	55 500	6 800	7 500	11 000	**K35×41×23.8X1**	0.042
	41	40	43 000	84 000	10 200	7 500	11 000	**K35×41×40ZW**	0.055
	42	16	24 100	36 000	4 350	7 500	11 000	**K35×42×16**	0.035
	42	18	24 700	37 000	4 500	7 500	11 000	**K35×42×18**	0.039

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle Roller Bearings WBW



KMJ··S type

KV··S type

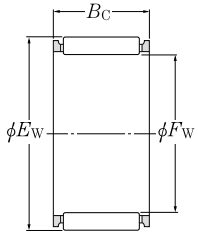
F_W 35 ~ 42mm

Boundary dimensions mm F_W	E_W	B_C	Basic load rating dynamic N C_r	static C_{0r}	Fatigue load limit N C_u	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Mass kg (approx.)
	42	20	26 500	40 500	4 950	7 500	11 000	**KV35×42×20SV2**	0.040
35	42	30 $^{-0.2}_{-0.55}$	39 500	68 000	8 300	7 500	11 000	**K35×42×30**	0.062
	42	45	42 500	74 000	9 000	7 500	11 000	**K35×42×45ZW**	0.106
36	42	46 $^{-0.2}_{-0.55}$	51 000	106 000	12 900	7 500	11 000	**K36×42×46ZW**	0.086
37	42	13	15 900	27 100	3 300	7 500	11 000	**K37×42×13V4**	0.021
	42	17	21 000	38 500	4 700	7 500	11 000	**K37×42×17V2**	0.026
	43	33.5 $^{-0.2}_{-0.55}$	39 000	76 000	9 250	7 500	11 000	**KV37×43×33.3XS**	0.062
	44	18	26 300	41 000	5 000	7 500	11 000	**K37×44×18**	0.042
	45	25	37 000	58 000	7 050	7 500	11 000	**K37×45×24.8XT2**	0.039
38	43	17	20 900	38 500	4 700	7 500	11 000	**8E-K38×43×17**	0.027
	43	27	32 000	67 500	8 250	7 500	11 000	**K38×43×27**	0.043
	43	29 $^{-0.2}_{-0.55}$	32 500	68 000	8 300	7 500	11 000	**K38×43×28.8X**	0.047
	46	32	54 000	95 500	11 600	7 500	11 000	**K38×46×32**	0.073
40	45	13	16 500	29 200	3 550	6 500	10 000	**K40×45×13V2**	0.023
	45	17	21 800	41 500	5 100	6 500	10 000	**K40×45×17T**	0.027
	45	21	26 700	54 000	6 600	6 500	10 000	**K40×45×21V2**	0.035
	45	27	33 500	72 500	8 850	6 500	10 000	**K40×45×27**	0.044
	46	17 $^{-0.2}_{-0.55}$	24 600	43 000	5 200	6 500	10 000	**K40×46×17**	0.030
	46	34 $^{-0.2}_{-0.55}$	40 500	80 500	9 850	6 500	10 000	**KV40×46×33.8XS**	0.063
	47	18	27 700	45 000	5 450	6 500	10 000	**K40×47×18**	0.045
	47	20	31 000	51 500	6 300	6 500	10 000	**K40×47×20**	0.048
	48	20	33 000	51 000	6 250	6 500	10 000	**K40×48×20**	0.052
	48	25	41 000	68 000	8 300	6 500	10 000	**KV40×48×25SV1**	0.065
41	49	22 $^{-0.2}_{-0.55}$	30 500	46 000	5 650	6 500	9 500	**8E-KV41×49×21.8XS**	0.065
42	47	17	22 100	43 000	5 250	6 500	9 500	**K42×47×17**	0.028
	47	27 $^{-0.2}_{-0.55}$	34 000	75 500	9 200	6 500	9 500	**K42×47×27**	0.047
	48	17 $^{-0.2}_{-0.55}$	25 700	46 000	5 650	6 500	9 500	**K42×48×17**	0.036
	50	20	34 000	53 500	6 550	6 500	9 500	**K42×50×20**	0.054

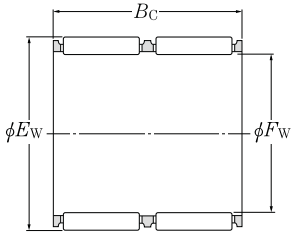
Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle roller and cage assemblies

K type
K··T2 type
K··ZW type
KV··S type
KVS··ZWS type



K type
K··T2 type
K··S type



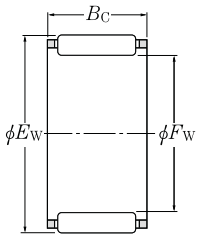
K··ZW type

F_W 43 ~ 50mm

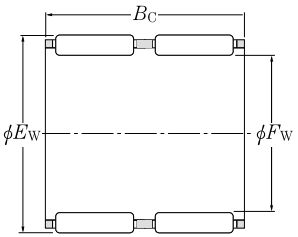
Boundary dimensions mm			Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1}		Number	Mass kg
F_W	E_W	B_C	C_r	C_{0r}	C_u	Grease lubrication	Oil lubrication		(approx.)
43	48	17	22 000	43 000	5 250	6 500	9 500	**K43×48×17**	0.029
	48	27 $^{-0.2}_{-0.55}$	34 000	75 500	9 200	6 500	9 500	**K43×48×27**	0.046
	48	38 $^{-0.2}_{-0.55}$	41 000	96 000	11 700	6 500	9 500	**KV43×48×37.8XZWS**	0.058
	50	18	29 100	49 000	5 950	6 500	9 500	**K43×50×18**	0.049
44	50	31 $^{-0.2}_{-0.55}$	43 500	91 500	11 100	6 500	9 500	**KV44×50×30.8XS**	0.067
45	49	19	22 100	52 000	6 350	6 000	9 000	**K45×49×19**	0.027
	50	17	22 300	44 500	5 450	6 000	9 000	**K45×50×17V3**	0.033
	50	25.8	30 500	66 500	8 100	6 000	9 000	**KV45×50×25.8XS**	0.045
	50	27	34 500	78 000	9 500	6 000	9 000	**K45×50×27**	0.050
	51	27 $^{-0.2}_{-0.55}$	34 500	68 000	8 300	6 000	9 000	**KV45×51×26.8XS**	0.058
	52	18	29 700	51 000	6 200	6 000	9 000	**K45×52×18**	0.051
	52	21	32 000	56 500	6 900	6 000	9 000	**K45×52×21**	0.061
	53	20	36 000	59 000	7 200	6 000	9 000	**K45×53×20**	0.062
	53	25	46 500	82 000	10 000	6 000	9 000	**K45×53×25**	0.077
47	52	15.5	19 400	38 000	4 650	5 500	8 500	**8E-K47×52×15.3X2**	0.031
	52	17	23 200	47 500	5 800	5 500	8 500	**K47×52×17**	0.033
	52	23 $^{-0.2}_{-0.55}$	29 600	65 500	7 950	5 500	8 500	**KV47×52×22.8X2S**	0.044
	52	24 $^{-0.2}_{-0.55}$	33 500	76 500	9 350	5 500	8 500	**K47×52×23.8X**	0.044
	52	27	35 500	83 000	10 100	5 500	8 500	**K47×52×27**	0.051
	52	33	38 000	90 500	11 100	5 500	8 500	**KV47×52×32.8XZWS**	0.064
48	53	22.5	31 000	69 500	8 450	5 500	8 500	**KV48×53×22.3XS**	0.042
	53	26	36 500	86 500	10 600	5 500	8 500	**K48×53×25.8X3T2**	0.029
	53	30	36 500	85 500	10 400	5 500	8 500	**K48×53×29.8X1**	0.062
	53	37 $^{-0.2}_{-0.55}$	45 000	112 000	13 700	5 500	8 500	**KV48×53×36.8XZWS**	0.064
	53	37.5	41 500	101 000	12 300	5 500	8 500	**K48×53×37.5ZW**	0.072
	54	19	31 000	61 000	7 450	5 500	8 500	**K48×54×19**	0.044
	55	24.5	39 000	74 500	9 050	5 500	8 500	**KV48×55×24.3XS**	0.070
50	55	13.5 $^{-0.2}_{-0.55}$	18 100	35 500	4 300	5 500	8 000	**K50×55×13.5T**	0.023
	55	20 $^{-0.2}_{-0.55}$	27 900	62 000	7 550	5 500	8 000	**KV50×55×20S**	0.040

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle Roller Bearings WBW



KV··S type



KV··ZWS type

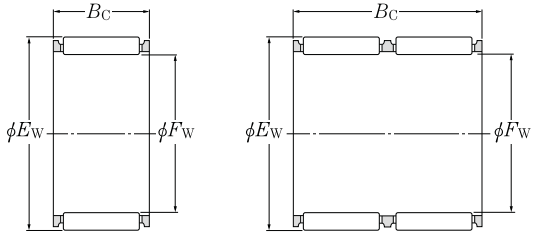
F_W 50 ~ 60mm

Boundary dimensions mm			Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1}		Number	Mass kg
F_W	E_W	B_C	C_r	C_{0r}	C_u	Grease lubrication	Oil lubrication		(approx.)
50	55	27	37 000	88 500	10 800	5 500	8 000	**K50×55×27**	0.053
	55	30	39 500	97 000	11 800	5 500	8 000	**K50×55×30**	0.059
	57	18 $^{-0.2}_{-0.55}$	31 500	57 000	6 950	5 500	8 000	**K50×57×18**	0.053
	58	20 $^{-0.2}_{-0.55}$	38 500	67 500	8 200	5 500	8 000	**K50×58×20**	0.065
	58	25	48 500	90 000	11 000	5 500	8 000	**K50×58×25**	0.081
	58	58	83 500	181 000	22 100	5 500	8 000	**KV50×58×57.8XZWS**	0.188
52	57	18	22 800	48 000	5 850	5 000	7 500	**KV52×57×17.8XS**	0.037
	57	23 $^{-0.2}_{-0.55}$	30 500	69 500	8 500	5 000	7 500	**KV52×57×22.8X1S**	0.048
	58	19	32 000	65 500	7 950	5 000	7 500	**K52×58×19**	0.048
54	59	23 $^{-0.2}_{-0.55}$	31 500	73 500	8 950	5 000	7 500	**KV54×59×22.8XS**	0.049
55	60	17	25 800	58 000	7 050	5 000	7 500	**K55×60×17**	0.043
	60	20	28 800	66 500	8 100	5 000	7 500	**K55×60×20T**	0.045
	60	30	42 000	108 000	13 200	5 000	7 500	**KV55×60×30S**	0.069
	60	37	47 500	127 000	15 500	5 000	7 500	**K55×60×36.8X**	0.086
	61	19	33 000	69 500	8 450	5 000	7 500	**K55×61×19**	0.051
	61	20 $^{-0.2}_{-0.55}$	33 000	69 500	8 450	5 000	7 500	**K55×61×20**	0.054
	61	30	48 000	113 000	13 700	5 000	7 500	**K55×61×30**	0.081
	62	18	33 500	63 000	7 700	5 000	7 500	**K55×62×18**	0.054
	63	20	39 000	70 000	8 500	5 000	7 500	**K55×63×20**	0.073
	63	25	50 500	97 500	11 900	5 000	7 500	**K55×63×25**	0.088
	63	32	61 000	125 000	15 200	5 000	7 500	**K55×63×32**	0.117
56	66	41 $^{-0.2}_{-0.55}$	90 000	178 000	21 700	5 000	7 500	**K56×66×40.8XT2**	0.148
57	65	40 $^{-0.2}_{-0.55}$	66 000	140 000	17 100	4 700	7 000	**KV57×65×39.8XZWS**	0.145
58	64	19 $^{-0.2}_{-0.55}$	34 000	73 500	8 950	4 700	7 000	**K58×64×19**	0.052
60	65	20	29 800	71 500	8 750	4 300	6 500	**K60×65×20**	0.051
	65	27	40 000	104 000	12 700	4 300	6 500	**K60×65×26.8X**	0.067
	65	30 $^{-0.2}_{-0.55}$	43 500	116 000	14 200	4 300	6 500	**K60×65×30**	0.071
	66	19	33 500	73 500	8 950	4 300	6 500	**K60×66×19**	0.053
	66	20	33 500	73 500	8 950	4 300	6 500	**K60×66×20**	0.056

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle roller and cage assemblies

K type
K··T2 type
K··ZW type
KV··S type
KVS··ZWS type



K type
K··T2 type
K··S type

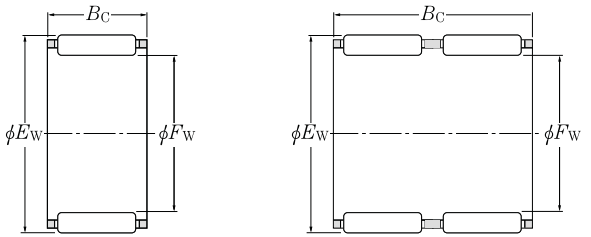
K··ZW type

F_W 60 ～ 73mm

Boundary dimensions mm F_W	E_W	B_C	Basic load rating dynamic N C_r	static C_{0r}	Fatigue load limit N C_u	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Mass kg (approx.)
60	66	30	49 000	119 000	14 600	4 300	6 500	**K60×66×30**	0.084
	68	15	27 200	45 500	5 550	4 300	6 500	**K60×68×15**	0.058
	68	20	40 000	75 000	9 200	4 300	6 500	**K60×68×20**	0.077
	68	23 $^{-0.2}_{-0.55}$	44 500	85 000	10 400	4 300	6 500	**K60×68×23**	0.092
	68	25	52 000	105 000	12 800	4 300	6 500	**K60×68×25T**	0.097
	68	27	52 000	105 000	12 800	4 300	6 500	**K60×68×27**	0.098
	68	30	46 500	91 000	11 100	4 300	6 500	**K60×68×30ZW**	0.119
61	66	20 $^{-0.2}_{-0.55}$	29 700	71 500	8 750	4 300	6 500	**K61×66×20**	0.054
	66	30 $^{-0.2}_{-0.55}$	43 500	116 000	14 200	4 300	6 500	**K61×66×30**	0.073
63	70	21 $^{-0.2}_{-0.55}$	44 500	95 500	11 600	4 300	6 500	**K63×70×21**	0.075
	71	50.5 $^{-0.2}_{-0.55}$	74 500	167 000	20 400	4 300	6 500	**KV63×71×50.3XZWS**	0.193
64	70	16 $^{-0.2}_{-0.55}$	28 400	60 500	7 350	4 300	6 500	**K64×70×16**	0.053
65	70	20	30 500	75 000	9 150	4 000	6 000	**K65×70×20**	0.055
	70	21.5	30 500	75 000	9 150	4 000	6 000	**KV65×70×21.3X1S**	0.056
	70	30 $^{-0.2}_{-0.55}$	45 000	124 000	15 200	4 000	6 000	**K65×70×30**	0.083
	73	23	47 000	94 000	11 500	4 000	6 000	**K65×73×23**	0.100
	73	30	61 000	132 000	16 000	4 000	6 000	**K65×73×30**	0.126
68	74	20	36 000	83 500	10 200	4 000	6 000	**K68×74×20**	0.065
	74	30 $^{-0.2}_{-0.55}$	51 500	133 000	16 200	4 000	6 000	**K68×74×30**	0.097
	74	35 $^{-0.2}_{-0.55}$	49 500	125 000	15 300	4 000	6 000	**K68×74×35ZW**	0.116
	75	21	45 500	101 000	12 300	4 000	6 000	**K68×75×21**	0.077
70	76	20	36 500	86 000	10 500	3 700	5 500	**K70×76×20**	0.070
	76	30	53 000	139 000	17 000	3 700	5 500	**K70×76×30**	0.100
	77	21 $^{-0.2}_{-0.55}$	45 000	101 000	12 300	3 700	5 500	**K70×77×21**	0.080
	78	23	49 500	103 000	12 600	3 700	5 500	**K70×78×23**	0.107
	78	30	65 500	149 000	18 100	3 700	5 500	**K70×78×30**	0.136
72	79	21 $^{-0.2}_{-0.55}$	46 500	106 000	12 900	3 700	5 500	**K72×79×21**	0.085
73	79	20 $^{-0.2}_{-0.55}$	37 500	90 000	11 000	3 700	5 500	**K73×79×20**	0.074
	79	30 $^{-0.2}_{-0.55}$	54 500	146 000	17 800	3 700	5 500	**K73×79×30**	0.106

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle Roller Bearings WBW



KV··S type

KV··ZWS type

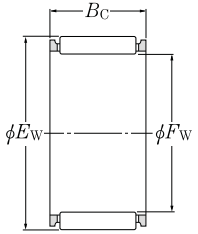
F_W 74 ～ 100mm

Boundary dimensions mm F_W	E_W	B_C	Basic load rating dynamic N C_r	static C_{0r}	Fatigue load limit N C_u	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Mass kg (approx.)
74	90	50 $^{-0.2}_{-0.55}$	157 000	287 000	35 000	3 700	5 500	**K74×90×49.8XT2**	0.380
75	81	20	40 000	99 500	12 200	3 700	5 500	**KV75×81×19.8X1S**	0.071
	81	30	56 000	152 000	18 600	3 700	5 500	**K75×81×30**	0.108
	82	21 $^{-0.2}_{-0.55}$	46 000	106 000	13 000	3 700	5 500	**K75×82×21**	0.088
	83	23	50 500	109 000	13 300	3 700	5 500	**K75×83×23**	0.113
	83	30	67 500	157 000	19 200	3 700	5 500	**K75×83×30**	0.147
80	86	20	39 000	98 000	11 900	3 300	5 000	**KV80×86×20SV1**	0.077
	86	30	57 000	159 000	19 400	3 300	5 000	**K80×86×30**	0.110
	88	23 $^{-0.2}_{-0.55}$	53 000	118 000	14 400	3 300	5 000	**K80×88×23**	0.125
	88	26	61 000	142 000	17 300	3 300	5 000	**K80×88×26**	0.131
	88	30	69 000	166 000	20 300	3 300	5 000	**K80×88×30**	0.157
85	92	30	66 000	176 000	21 500	3 100	4 700	**K85×92×30**	0.142
	93	27 $^{-0.2}_{-0.55}$	64 000	153 000	18 700	3 100	4 700	**K85×93×27**	0.145
	93	30	71 000	175 000	21 400	3 100	4 700	**8Q-K85×93×30**	0.174
90	97	20	46 000	113 000	13 700	2 900	4 400	**K90×97×20**	0.103
	97	30	67 500	184 000	22 400	2 900	4 400	**K90×97×30**	0.151
	98	26 $^{-0.2}_{-0.55}$	64 000	157 000	19 200	2 900	4 400	**K90×98×26**	0.148
	98	27	64 000	157 000	19 200	2 900	4 400	**K90×98×27**	0.150
	98	30	72 500	184 000	22 400	2 900	4 400	**K90×98×30**	0.172
95	102	21	48 000	122 000	14 900	2 800	4 200	**K95×102×21**	0.115
	102	31 $^{-0.2}_{-0.55}$	70 500	199 000	24 300	2 800	4 200	**K95×102×31**	0.172
	103	27	65 500	165 000	20 100	2 800	4 200	**K95×103×27**	0.159
	103	30	74 000	193 000	23 500	2 800	4 200	**K95×103×30**	0.165
100	107	21	47 500	122 000	14 700	2 700	4 000	**KV100×107×21S**	0.120
	107	31 $^{-0.3}_{-0.65}$	71 500	207 000	24 900	2 700	4 000	**K100×107×31**	0.173
	108	27	61 000	153 000	18 400	2 700	4 000	**K100×108×27**	0.176
	108	30	76 000	201 000	24 300	2 700	4 000	**K100×108×30**	0.190

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Needle roller and cage assemblies

K type
K··L1 type



K type
K··L1 type

F_w 105 ～ 170mm

Boundary dimensions mm				Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1} Grease lubrication	Allowable speed min^{-1} Oil lubrication	Number	Mass kg
F_w	E_w	B_c		C_r	C_{0r}	C_u				(approx.)
	112	21		48 500	127 000	15 100	2 500	3 800	**K105×112×21**	0.130
105	112	31	$^{-0.3}_{-0.65}$	71 000	207 000	24 600	2 500	3 800	**K105×112×31**	0.176
	113	30		77 500	210 000	25 000	2 500	3 800	**K105×113×30**	0.198
	117	24		54 500	149 000	17 500	2 400	3 600	**K110×117×24**	0.145
110	117	34	$^{-0.3}_{-0.65}$	77 500	235 000	27 600	2 400	3 600	**K110×117×34**	0.205
	118	30		79 000	219 000	25 700	2 400	3 600	**K110×118×30**	0.217
115	123	27	$^{-0.3}_{-0.65}$	64 000	170 000	19 700	2 300	3 500	**K115×123×27**	0.200
	125	34		95 000	241 000	27 800	2 300	3 500	**K115×125×34**	0.330
120	127	24	$^{-0.3}_{-0.65}$	57 500	165 000	18 900	2 200	3 300	**K120×127×24**	0.160
	127	34		82 000	260 000	29 800	2 200	3 300	**K120×127×34**	0.235
125	133	35	$^{-0.3}_{-0.65}$	87 000	260 000	29 300	2 100	3 200	**K125×133×35**	0.275
	135	34		100 000	265 000	29 800	2 100	3 200	**K125×135×34**	0.350
130	137	24	$^{-0.3}_{-0.65}$	59 000	175 000	19 600	2 100	3 100	**K130×137×24**	0.170
	137	34		84 500	277 000	31 000	2 100	3 100	**K130×137×34**	0.240
135	143	35	$^{-0.3}_{-0.65}$	92 500	288 000	32 000	2 000	3 000	**K135×143×35L1**	0.313
	150	38		145 000	325 000	36 000	2 000	3 000	**K135×150×38**	0.590
	153	26		72 000	214 000	23 100	1 900	2 800	**K145×153×26**	0.250
145	153	28	$^{-0.3}_{-0.65}$	80 500	247 000	26 700	1 900	2 800	**K145×153×28**	0.252
	153	36		100 000	325 000	35 000	1 900	2 800	**K145×153×36**	0.335
150	160	46	$^{-0.3}_{-0.65}$	149 000	470 000	50 500	1 800	2 700	**K150×160×46**	0.550
115	163	26	$^{-0.3}_{-0.65}$	73 500	224 000	23 800	1 700	2 600	**K155×163×26**	0.270
	163	36		102 000	340 000	36 000	1 700	2 600	**K155×163×36**	0.355
160	170	46	$^{-0.3}_{-0.65}$	155 000	505 000	53 000	1 700	2 500	**K160×170×46**	0.570
	173	26		79 000	251 000	26 100	1 600	2 400	**K165×173×26**	0.290
165	173	32	$^{-0.3}_{-0.65}$	97 000	330 000	34 000	1 600	2 400	**K165×173×32**	0.340
	173	36		109 000	380 000	39 500	1 600	2 400	**K165×173×36**	0.375
170	180	46	$^{-0.3}_{-0.65}$	160 000	540 000	55 500	1 600	2 400	**K170×180×46**	0.620

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

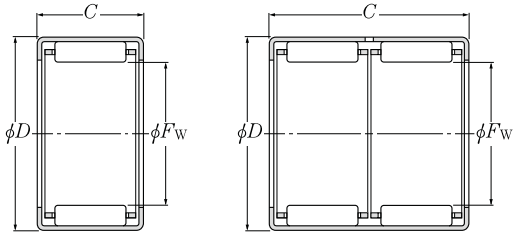
F_w 175 ～ 285mm

Boundary dimensions mm				Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1} Grease lubrication	Allowable speed min^{-1} Oil lubrication	Number	Mass kg
F_w	E_w	B_c		C_r	C_{0r}	C_u				(approx.)
175	183	32	$^{-0.3}_{-0.65}$	101 000	350 000	36 000	1 500	2 300	**K175×183×32L1**	0.379
185	195	37	$^{-0.3}_{-0.65}$	131 000	425 000	43 000	1 500	2 200	**K185×195×37L1**	0.581
195	205	37	$^{-0.3}_{-0.65}$	135 000	450 000	44 500	1 400	2 100	**K195×205×37L1**	0.620
210	220	42	$^{-0.3}_{-0.65}$	156 000	560 000	54 000	1 300	1 900	**K210×220×42**	0.740
220	230	42	$^{-0.3}_{-0.65}$	161 000	590 000	56 500	1 200	1 800	**K220×230×42**	0.790
240	250	42	$^{-0.3}_{-0.65}$	167 000	635 000	59 000	1 100	1 700	**K240×250×42L1**	0.849
265	280	50	$^{-0.3}_{-0.65}$	256 000	850 000	77 000	1 000	1 500	**K265×280×50L1**	1.77
285	300	50	$^{-0.3}_{-0.65}$	268 000	930 000	82 000	950	1 400	**K285×300×50**	1.97

Note: Bearings may be delivered with a different cage type even if they are ordered by the bearing numbers in the table.

Drawn cup needle roller bearings

HK type, HK··ZWD type
HMK type
BK type, BK··ZWD type

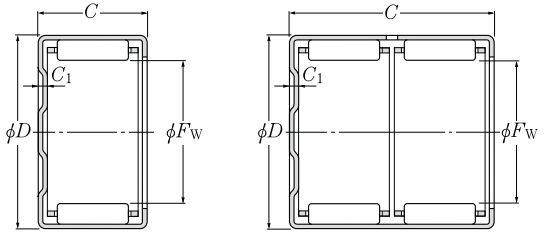


HK type, HMK type　　HK··ZWD type
(Open end type)

F_w 3 ～ 10mm

Boundary dimensions mm F_w	D	C 0 −0.2	C_1 Max.	Basic load rating dynamic N C_r	static N C_{0r}	Fatigue load limit N C_u	Allowable speed min⁻¹ Grease lubrication	Oil lubrication	Number Open end type	Closed end type	Mass kg (approx.)	Applied inner ring 1) (approx.)
3	6.5	6	—	925	565	69	33 000	50 000	**HK0306FT2**	—	0.0006	—
	6.5	6	0.8	925	565	69	33 000	50 000	—	**BK0306T2**	0.0007	—
4	8	8	—	1 770	1 270	155	30 000	45 000	**HK0408FT2**	—	0.0016	—
	8	8	1.6	1 770	1 270	155	30 000	45 000	—	**BK0408T2**	0.0018	—
5	9	9	—	2 450	1 990	243	27 000	40 000	**HK0509FM**	—	0.0019	—
	9	9	1.6	2 450	1 990	243	27 000	40 000	—	**BK0509**	0.0021	—
6	10	9	—	2 920	2 590	315	25 000	37 000	**HK0609FM**	—	0.0022	—
	10	9	1.6	2 660	2 280	278	25 000	37 000	—	**BK0609T2**	0.0024	—
7	11	9	—	3 150	2 930	355	23 000	34 000	**HK0709FM**	—	0.0025	—
	11	9	1.6	3 150	2 930	355	23 000	34 000	—	**BK0709CT**	0.0027	—
8	12	10	—	3 850	3 950	480	20 000	30 000	**HK0810FM**	—	0.0032	IR 5× 8×12
	12	10	1.6	3 850	3 950	480	20 000	30 000	—	**BK0810CT**	0.0034	IR 5× 8×12
	15	10	—	4 200	3 300	400	20 000	30 000	**HMK0810CT**	—	0.0067	IR 5× 8×12
	15	15	—	7 300	6 650	770	20 000	30 000	**HMK0815CT**	—	0.010	IR 5× 8×16
	15	20	—	9 050	8 750	1 070	20 000	30 000	**HMK0820T2**	—	0.013	—
9	13	10	—	4 300	4 650	570	18 000	27 000	**HK0910FM**	—	0.0035	IR 6× 9×12
	13	10	1.6	4 300	4 650	570	18 000	27 000	—	**BK0910CT**	0.0039	IR 6× 9×12
	13	12	—	5 400	6 250	765	18 000	27 000	**HK0912F**	—	0.0042	IR 6× 9×12
	13	12	1.6	5 400	6 250	765	18 000	27 000	—	**BK0912CT**	0.0045	IR 6× 9×12
	16	12	—	5 300	4 450	545	18 000	27 000	**HMK0912**	—	0.0087	IR 6× 9×16
	16	16	—	7 400	6 850	840	18 000	27 000	**HMK0916**	—	0.012	—
10	14	10	—	4 500	5 100	620	16 000	24 000	**HK1010FM**	—	0.0038	IR 7×10×10.5
	14	10	1.6	4 500	5 100	620	16 000	24 000	—	**BK1010**	0.0042	IR 7×10×10.5
	14	12	—	5 650	6 800	830	16 000	24 000	**HK1012F**	—	0.0045	IR 7×10×16
	14	12	1.6	5 900	7 250	880	16 000	24 000	—	**BK1012**	0.0050	IR 7×10×16
	14	15	—	7 250	9 400	1 140	16 000	24 000	**HK1015F**	—	0.0056	IR 7×10×16
	14	15	1.6	7 250	9 400	1 140	16 000	24 000	—	**BK1015CT**	0.0062	IR 7×10×16
	17	10	—	4 250	3 450	420	16 000	24 000	**HMK1010**	—	0.0079	IR 7×10×10.5
	17	12	—	5 600	4 850	590	16 000	24 000	**HMK1012**	—	0.0094	IR 7×10×16

1) If the bearing has an inner ring, the value indicates HK + IR.
Example: HK1012F + IR7 × 10 × 16



BK type　　BK··ZWD type
(Closed end type)

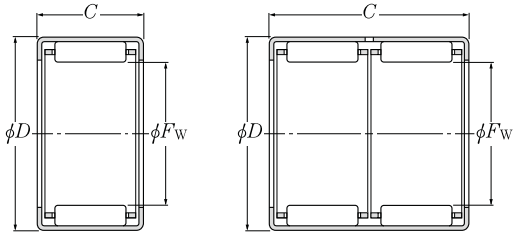
F_w 10 ～ 15mm

Boundary dimensions mm F_w	D	C 0 −0.2	C_1 Max.	Basic load rating dynamic N C_r	static N C_{0r}	Fatigue load limit N C_u	Allowable speed min⁻¹ Grease lubrication	Oil lubrication	Number Open end type	Closed end type	Mass kg (approx.)	Applied inner ring 1) (approx.)
10	17	15	—	7 400	6 950	850	16 000	24 000	**HMK1015**	—	0.012	IR 7×10×16
	17	20	—	9 900	10 100	1 240	16 000	24 000	**7E-HMK1020CT**	—	0.016	—
12	16	10	—	5 050	6 250	760	13 000	20 000	**HK1210FM**	—	0.0046	IR 8×12×10.5
	16	10	1.6	5 050	6 250	760	13 000	20 000	—	**BK1210**	0.0052	IR 8×12×10.5
	18	12	—	6 600	7 300	890	13 000	20 000	**HK1212FM**	—	0.0091	IR 8×12×12.5
	18	12	2.7	6 600	7 300	890	13 000	20 000	—	**BK1212**	0.010	IR 8×12×12.5
	19	12	—	7 100	6 900	845	13 000	20 000	**HMK1212**	—	0.011	IR 8×12×12.5
	19	15	—	9 400	9 900	1 210	13 000	20 000	**7E-HMK1215C**	—	0.014	IR 9×12×16
	19	20	—	12 900	14 900	1 820	13 000	20 000	**HMK1220CT**	—	0.018	—
	19	25	—	15 300	18 600	2 260	13 000	20 000	**HMK1225**	—	0.023	—
13	19	12	—	6 950	7 900	965	12 000	18 000	**HK1312FM**	—	0.010	IR10×13×12.5
	19	12	2.7	6 950	7 900	965	12 000	18 000	—	**BK1312**	0.011	IR10×13×12.5
14	20	12	—	7 200	8 500	1 040	11 000	17 000	**HK1412FM**	—	0.011	IR10×14×13
	20	12	2.7	7 200	8 500	1 040	11 000	17 000	—	**BK1412**	0.012	IR10×14×13
	20	16	—	10 300	13 400	1 640	11 000	17 000	**HK1416F**	—	0.015	—
	20	16	2.7	10 300	13 400	1 640	11 000	17 000	—	**BK1416CT**	0.016	—
	22	16	—	11 500	12 000	1 460	11 000	17 000	**HMK1416C**	—	0.019	IR10×14×20
	22	20	—	14 600	16 200	1 980	11 000	17 000	**HMK1420C**	—	0.024	—
15	21	12	—	7 500	9 100	1 110	11 000	16 000	**HK1512FM**	—	0.011	IR12×15×12.5
	21	12	2.7	7 500	9 100	1 110	11 000	16 000	—	**BK1512**	0.013	IR12×15×12.5
	21	16	—	10 700	14 400	1 750	11 000	16 000	**HK1516F**	—	0.015	IR12×15×16.5
	21	16	2.7	10 700	14 400	1 750	11 000	16 000	—	**BK1516**	0.017	IR12×15×16.5
	21	22	—	12 900	18 200	2 220	11 000	16 000	**HK1522ZWFD**	—	0.020	IR12×15×22.5
	21	22	2.7	12 900	18 200	2 220	11 000	16 000	—	**BK1522ZWD**	0.022	IR12×15×22.5
	22	10	—	6 100	6 000	730	11 000	16 000	**HMK1510**	—	0.011	IR10×15×12.5
	22	12	—	7 950	8 450	1 030	11 000	16 000	**HMK1512**	—	0.013	IR12×15×12.5
	22	15	—	10 500	12 100	1 480	11 000	16 000	**HMK1515C**	—	0.016	IR12×15×16
	22	20	—	15 300	19 700	2 400	11 000	16 000	**HMK1520CV6**	—	0.022	IR12×15×22.5
	22	25	—	18 500	25 000	3 050	11 000	16 000	**HMK1525**	—	0.027	—

1) If the bearing has an inner ring, the value indicates HK + IR.
Example: HK1312FM + IR10 × 13 × 12.5

Drawn cup needle roller bearings

HK type, HK··ZWD type
HMK type
BK type, BK··ZWD type

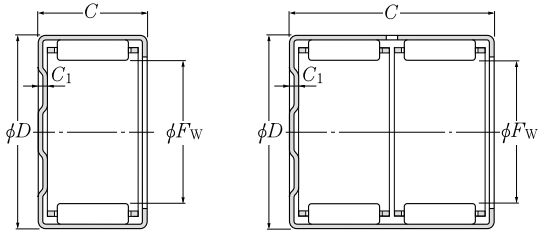


HK type, HMK type (Open end type)　　HK··ZWD type

F_w 16 ～ 20mm

Boundary dimensions mm F_w	D	C 0 −0.2	C_1 Max.	Basic load rating dynamic N C_r	static N C_{0r}	Fatigue load limit N C_u	Allowable speed min⁻¹ Grease lubrication	Oil lubrication	Number Open end type	Closed end type	Mass kg (approx.)	Applied inner ring 1) (approx.)
	22	12	—	7 750	9 700	1 180	10 000	15 000	**HK1612FM**	—	0.012	IR12×16×13
	22	12	2.7	7 750	9 700	1 180	10 000	15 000	—	**BK1612**	0.014	IR12×16×13
	22	16	—	11 100	15 300	1 870	10 000	15 000	**HK1616F**	—	0.016	IR12×16×20
	22	16	2.7	11 100	15 300	1 870	10 000	15 000	—	**BK1616**	0.018	IR12×16×20
16	22	22	—	13 300	19 400	2 370	10 000	15 000	**HK1622ZWFD**	—	0.022	—
	22	22	2.7	13 300	19 400	2 370	10 000	15 000	—	**BK1622ZWD**	0.023	—
	24	16	—	12 400	13 500	1 640	10 000	15 000	**HMK1616**	—	0.021	IR12×16×20
	24	20	—	15 600	18 200	2 220	10 000	15 000	**7E-HMK1620CT**	—	0.027	IR12×16×22
	23	12	—	8 050	10 300	1 260	9 500	14 000	**HK1712FM**	—	0.012	—
	23	12	2.7	8 050	10 300	1 260	9 500	14 000	—	**BK1712CT**	0.015	—
17	24	15	—	11 600	14 200	1 740	9 500	14 000	**7E-HMK1715CT**	—	0.018	IR14×17×17
	24	20	—	15 200	20 000	2 440	9 500	14 000	**7E-HMK1720CT**	—	0.024	IR12×17×20.5
	24	25	—	19 000	26 700	3 250	9 500	14 000	**7E-HMK1725CT**	—	0.030	IR12×17×25.5
	24	12	—	8 300	10 900	1 330	8 500	13 000	**HK1812FM**	—	0.013	IR15×18×12.5
	24	12	2.7	8 300	10 900	1 330	8 500	13 000	—	**BK1812**	0.015	IR15×18×12.5
	24	16	—	11 800	17 300	2 110	8 500	13 000	**HK1816F**	—	0.018	IR15×18×16.5
	24	16	2.7	11 800	17 300	2 110	8 500	13 000	—	**BK1816**	0.020	IR15×18×16.5
18	25	13	—	10 200	12 200	1 480	8 500	13 000	**HMK1813**	—	0.016	IR15×18×16
	25	15	—	12 000	15 100	1 840	8 500	13 000	**HMK1815**	—	0.019	IR15×18×16
	25	17	—	13 300	17 200	2 100	8 500	13 000	**HMK1817C**	—	0.021	IR15×18×17.5
	25	19	—	15 500	20 900	2 540	8 500	13 000	**HMK1819**	—	0.024	IR15×18×20.5
	25	20	—	16 300	22 300	2 720	8 500	13 000	**HMK1820**	—	0.025	IR15×18×20.5
	25	25	—	20 900	31 000	3 750	8 500	13 000	**HMK1825V2**	—	0.031	IR15×18×25.5
19	27	16	—	13 900	16 300	2 000	8 500	13 000	**HMK1916**	—	0.025	IR15×19×20
	27	20	—	18 100	23 000	2 800	8 500	13 000	**HMK1920F**	—	0.031	—
	26	12	—	8 750	12 100	1 480	8 000	12 000	**HK2012FM**	—	0.014	IR15×20×13
	26	12	2.7	9 250	13 000	1 590	8 000	12 000	—	**BK2012**	0.017	IR15×20×13
20	26	16	—	12 500	19 200	2 340	8 000	12 000	**HK2016F**	—	0.019	IR17×20×16.5
	26	16	2.7	13 000	20 100	2 450	8 000	12 000	—	**BK2016**	0.022	IR17×20×16.5
	26	20	—	16 000	26 200	3 200	8 000	12 000	**HK2020F**	—	0.024	IR17×20×20.5

1) If the bearing has an inner ring, the value indicates HK + IR.
Example: HK1812FM + IR15 × 18 × 12.5



BK type (Closed end type)　　BK··ZWD type

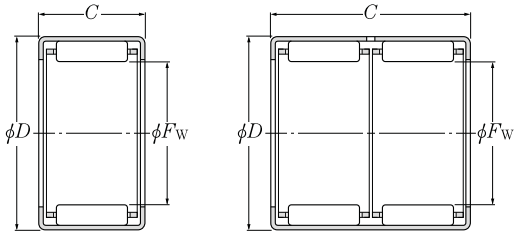
F_w 20 ～ 25mm

Boundary dimensions mm F_w	D	C 0 −0.2	C_1 Max.	Basic load rating dynamic N C_r	static N C_{0r}	Fatigue load limit N C_u	Allowable speed min⁻¹ Grease lubrication	Oil lubrication	Number Open end type	Closed end type	Mass kg (approx.)	Applied inner ring 1) (approx.)
	26	20	2.7	16 000	26 200	3 200	8 000	12 000	—	**BK2020CT**	0.027	IR17×20×20.5
	26	30	—	21 500	38 500	4 700	8 000	12 000	**HK2030ZWFD**	—	0.035	IR17×20×30.5
	26	30	2.7	22 200	40 000	4 900	8 000	12 000	—	**BK2030ZWD**	0.037	IR17×20×30.5
20	27	15	—	13 000	17 300	2 110	8 000	12 000	**HMK2015CV3**	—	0.021	IR17×20×16.5
	27	20	—	17 200	24 800	3 000	8 000	12 000	**HMK2020CT**	—	0.027	IR17×20×20.5
	27	25	—	22 000	34 000	4 150	8 000	12 000	**HMK2025C**	—	0.034	IR15×20×26
	27	30	—	26 100	42 000	5 150	8 000	12 000	**HMK2030**	—	0.041	IR17×20×30.5
21	29	16	—	15 300	19 100	2 320	7 500	11 000	**HMK2116**	—	0.027	IR17×21×20
	29	20	—	19 400	25 800	3 150	7 500	11 000	**HMK2120**	—	0.033	—
	28	12	—	9 200	13 400	1 630	7 500	11 000	**HK2212FM**	—	0.013	IR17×22×13
	28	12	2.7	9 200	13 400	1 630	7 500	11 000	—	**BK2212CT**	0.015	IR17×22×13
	28	16	—	13 200	21 100	2 570	7 500	11 000	**HK2216F**	—	0.021	IR17×22×18
	28	16	2.7	13 600	22 100	2 700	7 500	11 000	—	**BK2216**	0.024	IR17×22×18
	28	20	—	16 800	28 800	3 500	7 500	11 000	**HK2220F**	—	0.026	IR17×22×20.5
22	28	20	2.7	17 200	29 800	3 650	7 500	11 000	—	**BK2220**	0.030	IR17×22×20.5
	29	10	—	8 400	10 100	1 240	7 500	11 000	**HMK2210**	—	0.015	IR17×22×13
	29	15	—	12 900	17 600	2 150	7 500	11 000	**7E-HMK2215C**	—	0.022	IR17×22×16D
	29	20	—	18 200	27 400	3 350	7 500	11 000	**HMK2220CV2**	—	0.030	IR17×22×20.5
	29	25	—	23 200	37 500	4 550	7 500	11 000	**HMK2225CT**	—	0.037	IR17×22×26
	29	30	—	26 900	45 000	5 500	7 500	11 000	**HMK2230**	—	0.045	IR17×22×32
24	31	20	—	18 300	28 200	3 450	6 500	10 000	**HMK2420CT**	—	0.032	—
	31	28	—	26 000	44 500	5 400	6 500	10 000	**HMK2428**	—	0.045	IR20×24×28.5
	32	12	—	11 100	15 200	1 850	6 500	9 500	**HK2512F**	—	0.021	IR20×25×12.5
	32	12	2.7	11 800	16 300	1 990	6 500	9 500	—	**BK2512**	0.023	IR20×25×12.5
	32	16	—	15 900	24 000	2 920	6 500	9 500	**HK2516F**	—	0.027	IR20×25×17
25	32	16	2.7	15 900	24 000	2 920	6 500	9 500	—	**BK2516**	0.031	IR20×25×17
	32	20	—	20 300	33 000	4 000	6 500	9 500	**HK2520**	—	0.034	IR20×25×20.5
	32	20	2.7	20 300	33 000	4 000	6 500	9 500	—	**BK2520**	0.039	IR20×25×20.5
	32	26	—	26 400	46 000	5 600	6 500	9 500	**HK2526C**	—	0.045	IR20×25×26.5
	32	26	2.7	26 400	46 000	5 600	6 500	9 500	—	**BK2526C**	0.049	IR20×25×26.5

1) If the bearing has an inner ring, the value indicates HK + IR.
Example: HK2512F + IR20 × 25 × 12.5

Drawn cup needle roller bearings

HK type, HK··ZWD type
HMK type, HMK··ZWD type
BK type, BK··ZWD type



HK type, HMK type

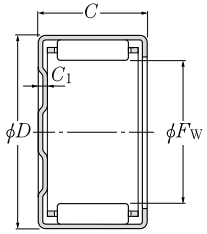
HK··ZWD type
HMK··ZWD type

(Open end type)

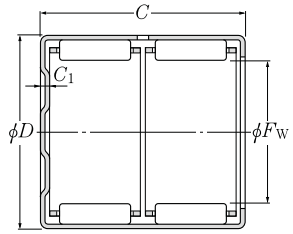
F_w 25 ～ 30mm

Boundary dimensions mm				Basic load rating N		Fatigue load limit N	Allowable speed min⁻¹		Number		Mass kg	Applied inner ring 1)
F_w	D	C 0 −0.2	C_1 Max.	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	Open end type	Closed end type	(approx.)	(approx.)
25	32	38	—	35 000	65 500	8 000	6 500	9 500	**HK2538ZWD**	—	0.065	IR20×25×38.5
	32	38	2.7	35 000	65 500	8 000	6 500	9 500	—	**BK2538ZWD**	0.069	IR20×25×38.5
	33	10	—	9 150	10 400	1 270	6 500	9 500	**HMK2510**	—	0.019	IR20×25×12.5
	33	15	—	15 200	19 900	2 430	6 500	9 500	**HMK2515CT**	—	0.029	IR20×25×16
	33	20	—	21 200	30 500	3 750	6 500	9 500	**HMK2520CT**	—	0.039	IR20×25×20.5
	33	25	—	26 700	41 000	5 000	6 500	9 500	**HMK2525F**	—	0.048	IR20×25×26.5
	33	30	—	32 000	52 000	6 350	6 500	9 500	**7E-HMK2530C**	—	0.058	IR20×25×32
26	34	16	—	17 100	23 400	2 860	6 000	9 000	**7E-HMK2616**	—	0.032	IR22×26×20
	34	20	—	21 100	30 500	3 750	6 000	9 000	**7E-HMK2620CT**	—	0.040	—
28	35	16	—	16 700	26 400	3 200	5 500	8 500	**HK2816CT**	—	0.030	IR22×28×17
	35	16	2.7	16 700	26 400	3 200	5 500	8 500	—	**BK2816CT**	0.034	IR22×28×17
	35	20	—	21 300	36 000	4 400	5 500	8 500	**HK2820**	—	0.038	IR22×28×20.5
	35	20	2.7	21 300	36 000	4 400	5 500	8 500	—	**BK2820**	0.043	IR22×28×20.5
	37	20	—	23 600	32 500	4 000	5 500	8 500	**HMK2820**	—	0.049	IR22×28×20.5
	37	30	—	35 000	54 500	6 600	5 500	8 500	**7E-HMK2830C**	—	0.073	—
29	38	20	—	24 600	35 000	4 250	5 500	8 500	**HMK2920**	—	0.050	—
	38	30	—	34 500	54 000	6 600	5 500	8 500	**HMK2930**	—	0.075	—
30	37	12	—	12 300	18 200	2 220	5 500	8 000	**HK3012CT**	—	0.024	IR25×30×12.5
	37	12	2.7	12 300	18 200	2 220	5 500	8 000	—	**BK3012CT**	0.028	IR25×30×12.5
	37	16	—	18 100	30 000	3 650	5 500	8 000	**7E-HK3016C**	—	0.032	IR25×30×17
	37	16	2.7	18 100	30 000	3 650	5 500	8 000	—	**BK3016CT**	0.037	IR25×30×17
	37	20	—	22 300	39 500	4 800	5 500	8 000	**HK3020F**	—	0.040	IR25×30×20.5
	37	20	2.7	22 300	39 500	4 800	5 500	8 000	—	**BK3020**	0.047	IR25×30×20.5
	37	26	—	28 500	54 000	6 550	5 500	8 000	**HK3026F**	—	0.053	IR25×30×26.5
	37	26	2.7	28 500	54 000	6 550	5 500	8 000	—	**7E-BK3026T**	0.059	IR25×30×26.5
	37	38	—	38 500	78 500	9 600	5 500	8 000	**HK3038ZWD**	—	0.076	IR25×30×38.5
	37	38	2.7	38 500	78 500	9 600	5 500	8 000	—	**BK3038ZWD**	0.083	IR25×30×38.5
	40	13	—	14 100	17 100	2 090	5 500	8 000	**HMK3013**	—	0.040	IR25×30×16
	40	15	—	17 100	22 100	2 690	5 500	8 000	**HMK3015**	—	0.044	IR25×30×16
	40	20	—	24 200	34 500	4 200	5 500	8 000	**HMK3020**	—	0.058	IR25×30×20.5

1) If the bearing has an inner ring, the value indicates HK + IR.
Example: HK2820 + IR22 × 28 × 20.5



BK type



BK··ZWD type

(Closed end type)

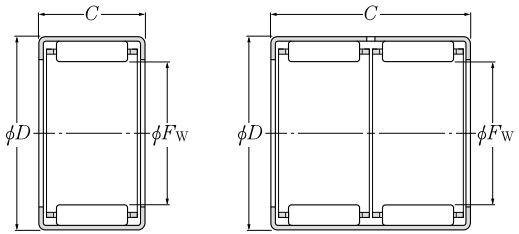
F_w 30 ～ 40mm

Boundary dimensions mm				Basic load rating N		Fatigue load limit N	Allowable speed min⁻¹		Number		Mass kg	Applied inner ring 1)
F_w	D	C 0 −0.2	C_1 Max.	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	Open end type	Closed end type	(approx.)	(approx.)
30	40	25	—	31 000	47 500	5 800	5 500	8 000	**7E-HMK3025CT**	—	0.073	IR25×30×26.5
	40	30	—	36 000	57 500	7 000	5 500	8 000	**HMK3030**	—	0.087	IR25×30×32
32	42	20	—	27 500	38 000	4 600	5 000	7 500	**7E-HMK3220**	—	0.062	—
	42	30	—	41 500	64 500	7 850	5 000	7 500	**7E-HMK3230**	—	0.092	—
35	42	12	—	13 300	21 300	2 600	4 700	7 000	**HK3512CV2**	—	0.028	—
	42	12	2.7	13 300	21 300	2 600	4 700	7 000	—	**BK3512CT**	0.033	—
	42	16	—	19 000	33 500	4 100	4 700	7 000	**HK3516CT**	—	0.037	—
	42	16	2.7	19 000	33 500	4 100	4 700	7 000	—	**BK3516CT**	0.044	—
	42	20	—	24 800	47 500	5 800	4 700	7 000	**HK3520**	—	0.046	—
	42	20	2.7	24 800	47 500	5 800	4 700	7 000	—	**BK3520**	0.055	—
	45	12	—	14 900	17 600	2 150	4 700	7 000	**HMK3512**	—	0.040	—
	45	15	—	20 200	26 200	3 200	4 700	7 000	**HMK3515**	—	0.050	—
	45	20	—	28 400	40 500	4 900	4 700	7 000	**7E-HMK3520B**	—	0.067	—
	45	25	—	36 000	54 500	6 650	4 700	7 000	**HMK3525**	—	0.083	—
	45	30	—	44 000	71 000	8 650	4 700	7 000	**HMK3530CV1**	—	0.100	—
37	47	20	—	29 300	43 000	5 250	4 300	6 500	**HMK3720**	—	0.070	—
	47	30	—	44 500	73 000	8 900	4 300	6 500	**HMK3730**	—	0.105	—
38	48	15	—	21 700	29 300	3 550	4 300	6 500	**HMK3815**	—	0.054	—
	48	20	—	30 500	45 000	5 500	4 300	6 500	**HMK3820**	—	0.072	—
	48	25	—	38 500	61 000	7 450	4 300	6 500	**HMK3825**	—	0.090	—
	48	30	—	46 000	77 000	9 400	4 300	6 500	**HMK3830**	—	0.107	IR32×38×32
	48	45	—	62 000	113 000	13 700	4 300	6 500	**HMK3845ZWD**	—	0.161	—
40	47	12	—	12 100	19 500	2 380	4 000	6 000	**HK4012V2**	—	0.031	IR35×40×12.5
	47	12	2.7	12 600	20 800	2 530	4 000	6 000	—	**7E-BK4012CT**	0.038	IR35×40×12.5
	47	16	—	20 300	38 500	4 700	4 000	6 000	**HK4016CT**	—	0.041	IR35×40×17
	47	16	2.7	20 300	38 500	4 700	4 000	6 000	—	**BK4016CT**	0.051	IR35×40×17
	47	20	—	25 900	52 500	6 400	4 000	6 000	**HK4020F**	—	0.052	IR35×40×20.5
	47	20	2.7	25 900	52 500	6 400	4 000	6 000	—	**BK4020**	0.064	IR35×40×20.5
	50	15	—	23 100	32 500	3 950	4 000	6 000	**HMK4015**	—	0.056	IR35×40×17
	50	20	—	32 500	50 000	6 100	4 000	6 000	**7E-HMK4020**	—	0.075	IR35×40×20.5

1) If the bearing has an inner ring, the value indicates HK + IR.
Example: HK4012 + IR35 × 40 × 12.5

Drawn cup needle roller bearings

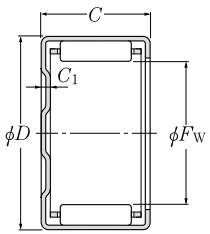
HK type
HMK type, HMK··ZWD type
BK type



HK type, HMK type

HMK··ZWD type

(Open end type)



BK type
(Closed end type)

F_w 40 ～ 50mm

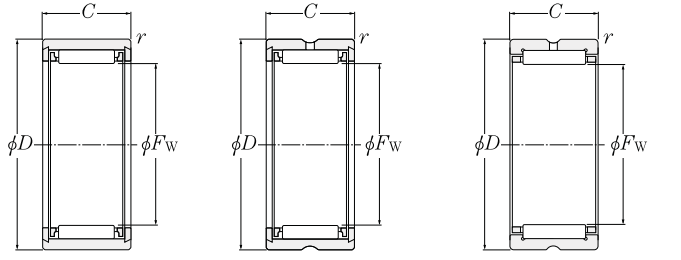
Boundary dimensions mm				Basic load rating dynamic N	Basic load rating static N	Fatigue load limit N	Allowable speed min-1 Grease lubrication	Allowable speed min-1 Oil lubrication	Number Open end type	Number Closed end type	Mass kg	Applied inner ring 1)
F_w	D	C 0 -0.2	C_1 Max.	C_r	C_{0r}	C_u					(approx.)	(approx.)
	50	25	—	41 000	67 500	8 250	4 000	6 000	**7E-HMK4025**	—	0.094	—
40	50	30	—	49 000	85 000	10 400	4 000	6 000	**HMK4030**	—	0.112	IR35×40×34
	50	40	—	58 500	107 000	13 000	4 000	6 000	**HMK4040ZWD**	—	0.150	—
	52	16	—	21 600	43 000	5 250	3 700	5 500	**HK4516**	—	0.046	IR40×45×17
	52	16	2.7	21 600	43 000	5 250	3 700	5 500	—	**BK4516**	0.058	IR40×45×17
	52	20	—	27 600	59 000	7 200	3 700	5 500	**HK4520**	—	0.058	IR40×45×20.5
	52	20	2.7	27 600	59 000	7 200	3 700	5 500	—	**BK4520**	0.072	IR40×45×20.5
45	55	20	—	32 000	51 000	6 200	3 700	5 500	**7E-HMK4520CT**	—	0.083	IR40×45×20.5
	55	25	—	41 500	71 500	8 700	3 700	5 500	**HMK4525**	—	0.104	IR40×45×26.5
	55	30	—	49 500	90 000	11 000	3 700	5 500	**7E-HMK4530CT**	—	0.125	IR40×45×34
	55	40	—	59 500	113 000	13 800	3 700	5 500	**HMK4540ZWD**	—	0.167	—
	58	20	—	31 500	63 000	7 700	3 200	4 800	**HK5020**	—	0.072	IR40×50×22
	58	20	2.7	31 500	63 000	7 700	3 200	4 800	—	**BK5020**	0.087	IR40×50×22
	58	25	—	38 500	82 000	10 000	3 200	4 800	**HK5025**	—	0.090	IR45×50×25.5
	58	25	2.7	38 500	82 000	10 000	3 200	4 800	—	**BK5025**	0.109	IR45×50×25.5
	62	12	—	18 200	23 600	2 880	3 200	4 800	**7E-HMK5012**	—	0.067	—
50	62	15	—	25 900	37 000	4 550	3 200	4 800	**7E-HMK5015**	—	0.084	—
	62	20	—	37 500	60 000	7 300	3 200	4 800	**7E-HMK5020CT**	—	0.112	IR40×50×22
	62	25	—	48 000	82 500	10 100	3 200	4 800	**7E-HMK5025**	—	0.140	IR45×50×25.5
	62	30	—	58 500	105 000	12 800	3 200	4 800	**7E-HMK5030CPX1**	—	0.168	IR45×50×32
	62	40	—	70 000	134 000	16 300	3 200	4 800	**7E-HMK5040ZWD**	—	0.224	—
	62	45	—	79 000	156 000	19 100	3 200	4 800	**7E-HMK5045ZWCDPX1**	—	0.252	—

1) If the bearing has an inner ring, the value indicates HK + IR.
Example: HK4516 + IR40 × 45 × 17

Needle Roller Bearings
WBW

Machined-ring needle roller bearings
without an inner ring

RNA49 type
RNA59 type
RNA69 type
NK type

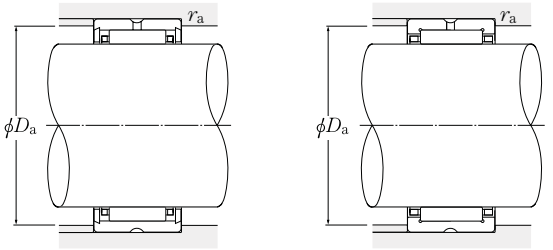


NK type ($\phi F_W \leqq 12$mm)
RNA49 type ($\phi F_W \leqq 12$mm)
RNA49 · · R type ($\phi F_W \geqq 14$mm)
RNA59 type
RNA69 · · R type
NK · · R type ($\phi F_W \geqq 14$mm)

F_w 5 ～ 16mm

Boundary dimensions mm				Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1}		Number	Installation-related dimensions mm		Mass kg
F_w	D	C	$r_{s\,min}$[1]	C_r	C_{0r}	C_u	Grease lubrication	Oil lubrication		D_a Max.	r_{as}[2] Max.	(approx.)
5 +0.018 +0.010	10	10	0.15	2 640	2 190	267	27 000	40 000	NK5/10T2	6.5	0.15	0.0031
	10	12	0.15	2 720	2 250	275	27 000	40 000	NK5/12T2	6.5	0.15	0.0037
6 +0.018 +0.010	12	10	0.15	2 660	2 280	278	25 000	37 000	NK6/10T2	7.5	0.15	0.0047
	12	12	0.15	3 400	3 150	380	25 000	37 000	NK6/12T2	7.5	0.15	0.0057
7 +0.022 +0.013	13	10	0.15	2 670	2 350	286	23 000	34 000	RNA495T2	8.5	0.15	0.0055
	14	10	0.3	2 670	2 350	286	23 000	34 000	NK7/10T2	8.5	0.3	0.0069
	14	12	0.3	3 400	3 200	390	23 000	34 000	NK7/12T2	8.5	0.3	0.0082
8 +0.022 +0.013	15	10	0.15	3 150	3 000	365	21 000	32 000	RNA496T2T	9.5	0.15	0.0073
	15	12	0.3	4 000	4 100	500	21 000	32 000	NK8/12T2	9.5	0.3	0.0087
	15	16	0.3	4 850	5 200	635	21 000	32 000	NK8/16	9.5	0.3	0.012
9 +0.022 +0.013	16	12	0.3	4 550	5 000	615	20 000	30 000	NK9/12T2	10.5	0.3	0.010
	16	16	0.3	5 500	6 400	780	20 000	30 000	NK9/16T2	10.5	0.3	0.013
	17	10	0.15	3 600	3 650	445	20 000	30 000	RNA497	10.5	0.15	0.0095
10 +0.022 +0.013	17	12	0.3	4 550	5 100	620	19 000	28 000	NK10/12T2	11.5	0.3	0.010
	17	16	0.3	5 450	6 450	790	19 000	28 000	8E-NK10/16CT	11.5	0.3	0.013
	19	11	0.15	5 250	5 150	630	19 000	28 000	RNA498CT	12	0.15	0.013
12 +0.027 +0.016	19	12	0.3	5 000	6 100	740	17 000	26 000	NK12/12	13.5	0.3	0.013
	19	16	0.3	6 000	7 700	940	17 000	26 000	NK12/16	13.5	0.3	0.016
	20	11	0.3	4 850	4 900	600	17 000	26 000	RNA499	14	0.3	0.013
14 +0.027 +0.016	22	13	0.3	8 600	9 200	1 120	16 000	24 000	RNA4900R	20	0.3	0.017
	22	16	0.3	10 300	11 500	1 400	16 000	24 000	NK14/16RCT	20	0.3	0.021
	22	20	0.3	13 000	15 600	1 900	16 000	24 000	NK14/20R	20	0.3	0.026
15 +0.027 +0.016	23	16	0.3	10 900	12 700	1 550	15 000	23 000	NK15/16R	21	0.3	0.022
	23	20	0.3	13 800	17 200	2 100	15 000	23 000	NK15/20R	21	0.3	0.027
16 +0.027 +0.016	24	13	0.3	9 550	10 900	1 330	15 000	23 000	RNA4901R	22	0.3	0.017
	24	16	0.3	12 200	14 900	1 820	15 000	23 000	NK16/16R	22	0.3	0.022
	24	20	0.3	14 600	18 800	2 290	15 000	23 000	NK16/20R	22	0.3	0.028
	24	22	0.3	15 400	20 000	2 440	15 000	23 000	RNA6901R	22	0.3	0.031

1) Smallest allowable dimension for chamfer dimension r.
2) Largest allowable dimension for fillet radius r_a of housing and shaft.



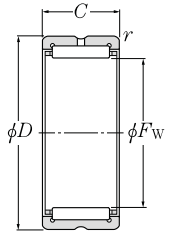
F_w 17 ～ 28mm

Boundary dimensions mm				Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1}		Number	Installation-related dimensions mm		Mass kg
F_w	D	C	$r_{s\,min}$[1]	C_r	C_{0r}	C_u	Grease lubrication	Oil lubrication		D_a Max.	r_{as}[2] Max.	(approx.)
17 +0.027 +0.016	25	16	0.3	12 100	15 000	1 830	15 000	22 000	NK17/16R	23	0.3	0.024
	25	20	0.3	15 400	20 400	2 490	15 000	22 000	NK17/20R	23	0.3	0.030
18 +0.027 +0.016	26	16	0.3	12 700	16 200	1 980	14 000	21 000	NK18/16R	24	0.3	0.025
	26	20	0.3	16 100	22 000	2 690	14 000	21 000	NK18/20RCT	24	0.3	0.031
19 +0.033 +0.020	27	16	0.3	13 300	17 400	2 120	14 000	21 000	NK19/16R	25	0.3	0.026
	27	20	0.3	16 000	22 200	2 700	14 000	21 000	NK19/20R	25	0.3	0.032
20 +0.033 +0.020	28	13	0.3	10 300	12 800	1 560	13 000	20 000	RNA4902R	26	0.3	0.022
	28	16	0.3	13 200	17 500	2 140	13 000	20 000	NK20/16RCT	26	0.3	0.027
	28	18	0.3	14 100	19 100	2 330	13 000	20 000	RNA5902CT	26	0.3	0.033
	28	20	0.3	16 700	23 800	2 900	13 000	20 000	NK20/20R	26	0.3	0.034
	28	23	0.3	17 600	25 300	3 100	13 000	20 000	RNA6902R	26	0.3	0.040
21 +0.033 +0.020	29	16	0.3	13 700	18 700	2 280	13 000	19 000	NK21/16R	27	0.3	0.028
	29	20	0.3	17 400	25 400	3 100	13 000	19 000	NK21/20R	27	0.3	0.035
22 +0.033 +0.020	30	16	0.3	14 200	19 900	2 430	12 000	18 000	NK22/16R	28	0.3	0.034
	30	20	0.3	18 000	27 000	3 300	12 000	18 000	NK22/20R	28	0.3	0.037
	30	13	0.3	11 200	14 600	1 780	12 000	18 000	RNA4903R	28	0.3	0.022
	30	18	0.3	15 200	21 700	2 650	12 000	18 000	RNA5903	28	0.3	0.035
	30	23	0.3	18 200	27 200	3 300	12 000	18 000	RNA6903R	28	0.3	0.042
24 +0.033 +0.020	32	16	0.3	15 200	22 300	2 720	11 000	17 000	NK24/16R	30	0.3	0.032
	32	20	0.3	18 600	28 800	3 500	11 000	17 000	NK24/20R	30	0.3	0.040
25 +0.033 +0.020	33	16	0.3	15 100	22 400	2 730	11 000	16 000	NK25/16R	31	0.3	0.033
	33	20	0.3	19 200	30 500	3 700	11 000	16 000	NK25/20RCT	31	0.3	0.042
	37	17	0.3	21 300	25 500	3 100	11 000	16 000	RNA4904RCT	35	0.3	0.052
	37	23	0.3	28 400	37 000	4 500	11 000	16 000	RNA5904	35	0.3	0.084
	37	30	0.3	36 500	50 500	6 150	11 000	16 000	RNA6904R	35	0.3	0.100
26 +0.033 +0.020	34	16	0.3	15 600	23 600	2 880	10 000	15 000	8E-NK26/16RCT	32	0.3	0.034
	34	20	0.3	19 100	30 500	3 700	10 000	15 000	NK26/20R	32	0.3	0.042
28 +0.033 +0.020	37	20	0.3	22 300	34 000	4 150	9 500	14 000	NK28/20R	35	0.3	0.052
	37	30	0.3	26 700	48 000	5 850	9 500	14 000	NK28/30RCT	35	0.3	0.082

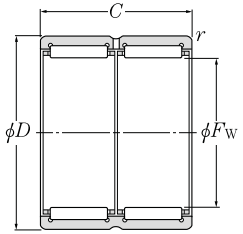
1) Smallest allowable dimension for chamfer dimension r.
2) Largest allowable dimension for fillet radius r_a of housing and shaft.

Machined-ring needle roller bearings
without an inner ring

RNA49 type
RNA59 type
RNA69 type
NK type



RNA49··R type, RNA59 type
RNA69··R type ($\phi F_W \leqq 35$mm)
NK··R type

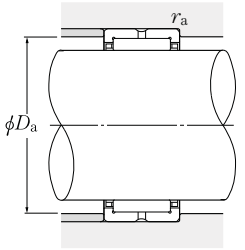


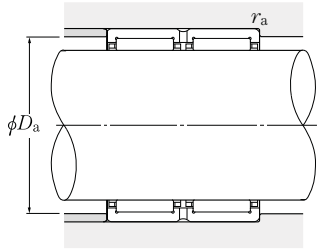
RNA69 type··R type
($\phi F_W \geqq 40$mm)

F_w 28 ～ 40mm

Boundary dimensions mm				Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min⁻¹		Number	Installation-related dimensions mm		Mass kg
F_w	D	C	$r_{s\,min}$[1]	C_r	C_{0r}	C_u	Grease lubrication	Oil lubrication		D_a Max.	r_{as}[2] Max.	(approx.)
28 +0.033 +0.020	39	17	0.3	23 200	29 300	3 600	9 500	14 000	**RNA49/22R**	37	0.3	0.050
	39	23	0.3	26 400	37 500	4 600	9 500	14 000	**RNA59/22**	37	0.3	0.092
	39	30	0.3	40 000	58 500	7 150	9 500	14 000	**RNA69/22R**	37	0.3	0.100
29 +0.033 +0.020	38	20	0.3	22 200	34 000	4 150	9 500	14 000	**NK29/20R**	36	0.3	0.054
	38	30	0.3	27 500	50 500	6 150	9 500	14 000	**NK29/30R**	36	0.3	0.084
30 +0.033 +0.020	40	20	0.3	22 100	34 000	4 150	8 500	13 000	**NK30/20R**	38	0.3	0.065
	40	30	0.3	33 000	57 000	6 950	8 500	13 000	**NK30/30R**	38	0.3	0.098
	42	17	0.3	24 000	31 500	3 800	8 500	13 000	**RNA4905R**	40	0.3	0.061
	42	23	0.3	30 500	43 000	5 200	8 500	13 000	**RNA5905**	40	0.3	0.101
	42	30	0.3	41 500	63 000	7 650	8 500	13 000	**RNA6905R**	40	0.3	0.112
32 +0.041 +0.025	42	20	0.3	23 500	37 500	4 600	8 500	13 000	**NK32/20R**	40	0.3	0.068
	42	30	0.3	34 000	60 500	7 350	8 500	13 000	**NK32/30R**	40	0.3	0.102
	45	17	0.3	24 800	33 500	4 050	8 500	13 000	**RNA49/28RCT**	43	0.3	0.073
	45	23	0.3	32 000	45 500	5 550	8 500	13 000	**RNA59/28**	43	0.3	0.108
	45	30	0.3	43 000	67 000	8 150	8 500	13 000	**RNA69/28R**	43	0.3	0.135
35 +0.041 +0.025	45	20	0.3	24 800	41 500	5 050	7 500	11 000	**NK35/20RCT**	43	0.3	0.074
	45	30	0.3	36 000	66 500	8 100	7 500	11 000	**NK35/30R**	43	0.3	0.112
	47	17	0.3	25 500	35 500	4 300	7 500	11 000	**RNA4906R**	45	0.3	0.069
	47	23	0.3	32 500	48 500	5 950	7 500	11 000	**RNA5906**	45	0.3	0.108
	47	30	0.3	42 500	67 500	8 250	7 500	11 000	**RNA6906R**	45	0.3	0.126
37 +0.041 +0.025	47	20	0.3	25 300	43 500	5 300	7 500	11 000	**NK37/20R**	45	0.3	0.077
	47	30	0.3	36 500	69 500	8 500	7 500	11 000	**NK37/30R**	45	0.3	0.107
38 +0.041 +0.025	48	20	0.3	25 900	45 000	5 500	7 500	11 000	**NK38/20R**	46	0.3	0.079
	48	30	0.3	37 500	73 000	8 900	7 500	11 000	**NK38/30R**	46	0.3	0.107
40 +0.041 +0.025	50	20	0.3	26 400	47 000	5 750	6 500	10 000	**NK40/20R**	48	0.3	0.083
	50	30	0.3	38 500	76 000	9 250	6 500	10 000	**NK40/30R**	48	0.3	0.125
	52	20	0.6	31 500	47 500	5 800	6 500	10 000	**RNA49/32R**	48	0.6	0.089
	52	27	0.6	38 000	61 000	7 450	6 500	10 000	**RNA59/32**	48	0.6	0.149
	52	36	0.6	47 500	82 000	10 000	6 500	10 000	**RNA69/32R**	48	0.6	0.162

1) Smallest allowable dimension for chamfer dimension r.
2) Largest allowable dimension for fillet radius r_a of housing and shaft.





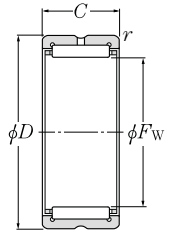
F_w 42 ～ 63mm

Boundary dimensions mm				Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min⁻¹		Number	Installation-related dimensions mm		Mass kg
F_w	D	C	$r_{s\,min}$[1]	C_r	C_{0r}	C_u	Grease lubrication	Oil lubrication		D_a Max.	r_{as}[2] Max.	(approx.)
42 +0.041 +0.025	52	20	0.3	26 900	49 000	5 950	6 500	9 500	**NK42/20R**	50	0.3	0.086
	52	30	0.3	39 000	79 000	9 650	6 500	9 500	**NK42/30R**	50	0.3	0.130
	55	20	0.6	32 000	50 000	6 100	6 500	9 500	**RNA4907R**	51	0.6	0.107
	55	27	0.6	39 000	64 500	7 850	6 500	9 500	**RNA5907**	51	0.6	0.176
	55	36	0.6	49 000	86 500	10 500	6 500	9 500	**RNA6907R**	51	0.6	0.193
43 +0.041 +0.025	53	20	0.3	27 500	51 000	6 200	6 500	9 500	**NK43/20R**	51	0.3	0.086
	53	30	0.3	40 000	82 000	10 000	6 500	9 500	**NK43/30R**	51	0.3	0.133
45 +0.041 +0.025	55	20	0.3	28 000	52 500	6 450	6 000	9 000	**NK45/20R**	53	0.3	0.092
	55	30	0.3	41 000	85 500	10 400	6 000	9 000	**NK45/30RCT**	53	0.3	0.139
47 +0.041 +0.025	57	20	0.3	28 800	55 500	6 800	5 500	8 500	**NK47/20RCT**	55	0.3	0.095
	57	30	0.3	42 500	91 500	11 200	5 500	8 500	**NK47/30R**	55	0.3	0.142
48 +0.041 +0.025	62	22	0.6	43 500	66 500	8 150	5 500	8 500	**RNA4908R**	58	0.6	0.140
	62	30	0.6	53 000	92 500	11 300	5 500	8 500	**RNA5908**	58	0.6	0.225
	62	40	0.6	67 000	116 000	14 100	5 500	8 500	**RNA6908R**	58	0.6	0.256
50 +0.041 +0.025	62	25	0.6	38 500	74 500	9 050	5 500	8 000	**NK50/25RCT**	58	0.6	0.158
	62	35	0.6	51 000	106 000	12 900	5 500	8 000	**NK50/35R**	58	0.6	0.221
52 +0.049 +0.030	68	22	0.6	46 000	73 000	8 950	5 000	7 500	**RNA4909R**	64	0.6	0.182
	68	30	0.6	56 000	101 000	12 300	5 000	7 500	**RNA5909**	64	0.6	0.232
	68	40	0.6	70 500	127 000	15 500	5 000	7 500	**RNA6909R**	64	0.6	0.273
55 +0.049 +0.030	68	25	0.6	41 000	82 000	10 000	5 000	7 500	**NK55/25R**	64	0.6	0.193
	68	35	0.6	54 000	118 000	14 300	5 000	7 500	**NK55/35R**	64	0.6	0.26
58 +0.049 +0.030	72	22	0.6	48 000	80 000	9 750	4 700	7 000	**RNA4910R**	68	0.6	0.163
	72	30	0.6	58 000	110 000	13 400	4 700	7 000	**RNA5910**	68	0.6	0.289
	72	40	0.6	74 000	139 000	17 000	4 700	7 000	**RNA6910R**	68	0.6	0.320
60 +0.049 +0.030	72	25	0.6	41 000	85 000	10 400	4 300	6 500	**NK60/25R**	68	0.6	0.185
	72	35	0.6	57 000	130 000	15 800	4 300	6 500	**NK60/35R**	68	0.6	0.258
63 +0.049 +0.030	80	25	1	58 500	99 500	12 100	4 300	6 500	**RNA4911R**	75	1	0.255
	80	34	1	76 500	140 000	17 100	4 300	6 500	**RNA5911**	75	1	0.367
	80	45	1	94 000	183 000	22 300	4 300	6 500	**RNA6911R**	75	1	0.470

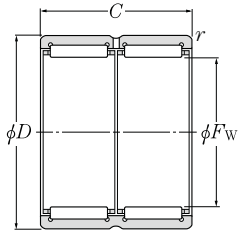
1) Smallest allowable dimension for chamfer dimension r.
2) Largest allowable dimension for fillet radius r_a of housing and shaft.

Machined-ring needle roller bearings
without an inner ring

RNA49 type
RNA59 type
RNA69 type
NK type



RNA48 type
RNA49··R type
RNA59 type
NK··R type

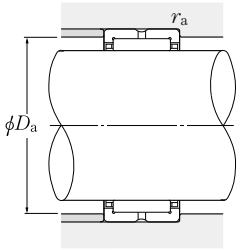


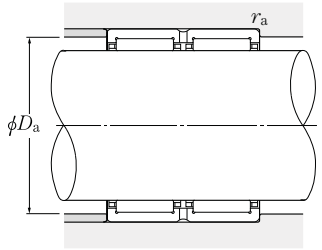
RNA69··R type

F_w 65 ~ 90mm

Boundary dimensions mm				Basic load rating N dynamic	static	Fatigue load limit N	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Installation-related dimensions mm		Mass kg
F_w	D	C	$r_{s\,min}$[1]	C_r	C_{0r}	C_u				D_a Max.	r_{as}[2] Max.	(approx.)
65 +0.049 +0.030	78	25	0.6	45 000	98 000	12 000	4 000	6 000	**NK65/25R**	74	0.6	0.221
	78	35	0.6	60 000	142 000	17 300	4 000	6 000	**NK65/35R**	74	0.6	0.310
68 +0.049 +0.030	82	25	1	44 500	89 000	10 800	4 000	6 000	**NK68/25R**	77	0.6	0.241
	82	35	0.6	63 000	139 000	17 000	4 000	6 000	**NK68/35R**	78	0.6	0.338
	85	25	1	61 500	108 000	13 100	4 000	6 000	**RNA4912R**	80	1	0.275
	85	34	1	80 500	153 000	18 600	4 000	6 000	**RNA5912**	80	1	0.408
	85	45	1	95 500	191 000	23 200	4 000	6 000	**RNA6912R**	80	1	0.488
70 +0.049 +0.030	85	25	0.6	45 000	91 500	11 200	3 700	5 500	**NK70/25R**	81	0.6	0.275
	85	35	0.6	64 000	144 000	17 600	3 700	5 500	**NK70/35R**	81	0.6	0.386
72 +0.049 +0.030	90	25	1	62 500	112 000	13 700	3 700	5 500	**RNA4913R**	85	1	0.312
	90	34	1	84 000	165 000	20 100	3 700	5 500	**RNA5913**	85	1	0.462
	90	45	1	97 000	198 000	24 200	3 700	5 500	**RNA6913R**	85	1	0.520
73 +0.049 +0.030	90	25	0.6	54 000	100 000	12 200	3 700	5 500	**NK73/25R**	86	0.6	0.302
	90	35	0.6	76 500	156 000	19 100	3 700	5 500	**NK73/35R**	86	0.6	0.428
75 +0.049 +0.030	92	25	0.6	55 000	104 000	12 600	3 700	5 500	**NK75/25R**	88	0.6	0.315
	92	35	0.6	78 000	162 000	19 800	3 700	5 500	**NK75/35R**	88	0.6	0.492
80 +0.049 +0.030	95	25	1	57 000	119 000	14 500	3 300	5 000	**NK80/25R**	90	1	0.301
	95	35	1	79 500	184 000	22 400	3 300	5 000	**NK80/35R**	90	1	0.425
	100	30	1	85 500	156 000	19 000	3 300	5 000	**RNA4914R**	95	1	0.460
	100	40	1	103 000	187 000	22 800	3 300	5 000	**RNA5914**	95	1	0.706
	100	54	1	130 000	267 000	32 500	3 300	5 000	**RNA6914R**	95	1	0.857
85 +0.058 +0.036	105	25	1	70 500	123 000	15 000	3 100	4 700	**NK85/25R**	100	1	0.404
	105	30	1	87 000	162 000	19 700	3 100	4 700	**RNA4915R**	100	1	0.489
	105	35	1	100 000	193 000	23 600	3 100	4 700	**NK85/35R**	100	1	0.517
	105	40	1	109 000	205 000	25 000	3 100	4 700	**RNA5915**	100	1	0.745
	105	54	1	132 000	277 000	34 000	3 100	4 700	**RNA6915R**	100	1	0.935
90 +0.058 +0.036	110	25	1	71 500	128 000	15 600	2 900	4 400	**NK90/25R**	105	1	0.426
	110	30	1	90 500	174 000	21 200	2 900	4 400	**RNA4916R**	105	1	0.516
	110	35	1	104 000	208 000	25 400	2 900	4 400	**NK90/35R**	105	1	0.604

1) Smallest allowable dimension for chamfer dimension r.
2) Largest allowable dimension for fillet radius r_a of housing and shaft.





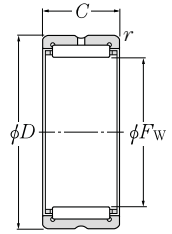
F_w 90 ~ 135mm

Boundary dimensions mm				Basic load rating N dynamic	static	Fatigue load limit N	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number	Installation-related dimensions mm		Mass kg
F_w	D	C	$r_{s\,min}$[1]	C_r	C_{0r}	C_u				D_a Max.	r_{as}[2] Max.	(approx.)
90 +0.058 +0.036	110	40	1	115 000	223 000	27 200	2 900	4 400	**RNA5916**	105	1	0.787
	110	54	1	138 000	298 000	36 500	2 900	4 400	**RNA6916R**	105	1	0.987
95 +0.058 +0.036	115	26	1	74 500	137 000	16 600	2 800	4 200	**NK95/26R**	110	1	0.364
	115	36	1	108 000	223 000	27 000	2 800	4 200	**NK95/36R**	110	1	0.652
100 +0.058 +0.036	120	26	1	73 500	137 000	16 500	2 700	4 000	**NK100/26R**	115	1	0.487
	120	35	1.1	112 000	237 000	28 400	2 700	4 000	**RNA4917R**	113.5	1	0.657
	120	36	1	107 000	223 000	26 700	2 700	4 000	**NK100/36R**	115	1	0.679
	120	46	1.1	137 000	290 000	34 500	2 700	4 000	**RNA5917**	113.5	1	1.00
	120	63	1.1	169 000	400 000	48 000	2 700	4 000	**RNA6917R**	113.5	1	1.20
105 +0.058 +0.036	125	26	1	76 500	147 000	17 300	2 500	3 800	**NK105/26R**	120	1	0.506
	125	35	1.1	116 000	252 000	29 800	2 500	3 800	**RNA4918R**	118.5	1	0.697
	125	36	1	111 000	238 000	28 100	2 500	3 800	**NK105/36R**	120	1	0.713
	125	46	1.1	143 000	310 000	37 000	2 500	3 800	**RNA5918**	118.5	1	1.04
	125	63	1.1	175 000	425 000	50 500	2 500	3 800	**RNA6918R**	118.5	1	1.33
110 +0.058 +0.036	130	30	1.1	97 500	204 000	23 800	2 400	3 600	**NK110/30R**	123.5	1	0.612
	130	35	1.1	118 000	260 000	30 500	2 400	3 600	**RNA4919R**	123.5	1	0.719
	130	40	1.1	129 000	292 000	34 000	2 400	3 600	**NK110/40R**	123.5	1	0.830
	130	46	1.1	149 000	335 000	39 000	2 400	3 600	**RNA5919**	123.5	1	1.13
	130	63	1.1	177 000	440 000	51 000	2 400	3 600	**RNA6919R**	123.5	1	1.46
115 +0.058 +0.036	140	40	1.1	127 000	260 000	29 900	2 300	3 500	**RNA4920**	133.5	1	1.15
	140	54	1.1	182 000	395 000	45 500	2 300	3 500	**RNA5920**	133.5	1	1.76
120 +0.058 +0.036	140	30	1	93 500	210 000	23 900	2 200	3 300	**RNA4822**	135	1	0.670
	140	40	1.1	113 000	268 000	30 500	2 200	3 300	**NK120/40**	133.5	1	0.910
125 +0.068 +0.043	150	40	1.1	131 000	279 000	31 500	2 100	3 200	**RNA4922**	143.5	1	1.24
	150	54	1.1	193 000	440 000	49 500	2 100	3 200	**RNA5922**	143.5	1	1.89
130 +0.068 +0.043	150	30	1	99 500	233 000	25 900	2 100	3 100	**RNA4824**	145	1	0.730
	150	40	1.1	116 000	283 000	31 500	2 100	3 100	**NK130/40**	143.5	1	0.980
135 +0.068 +0.043	165	45	1.1	180 000	380 000	41 500	2 000	3 000	**RNA4924**	158.5	1	1.86
	165	60	1.1	246 000	530 000	57 500	2 000	3 000	**RNA5924**	158.5	1	2.67

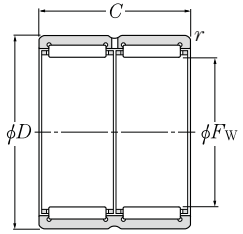
1) Smallest allowable dimension for chamfer dimension r.
2) Largest allowable dimension for fillet radius r_a of housing and shaft.

Machined-ring needle roller bearings
without an inner ring

RNA48 type
RNA49 type
RNA59 type
RNA69 type
NK type



RNA48 type
RNA49··R type, RNA49 type
RNA59 type
NK··R type, NK type

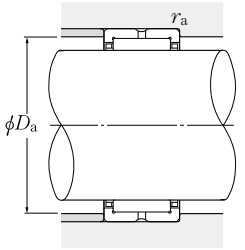


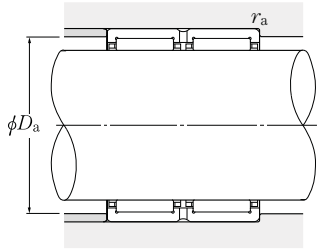
RNA69··R type

F_w 145 ～ 245mm

Boundary dimensions mm				Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min⁻¹ Grease lubrication	Allowable speed min⁻¹ Oil lubrication	Number	Installation-related dimensions mm		Mass kg
F_w	D	C	$r_{s\,min}$[1]	C_r	C_{0r}	C_u				D_a Max.	r_{as}[2] Max.	(approx.)
	165	35	1.1	118 000	305 000	32 500	1 900	2 800	**RNA4826**	158.5	1	0.95
145$^{+0.068}_{+0.043}$	170	32	1.5	111 000	238 000	25 600	1 900	2 800	**NK145/32**	162.5	1.5	1.12
	170	42	1.5	153 000	360 000	38 500	1 900	2 800	**NK145/42**	162.5	1.5	1.49
150$^{+0.068}_{+0.043}$	180	50	1.5	202 000	455 000	48 000	1 800	2 700	**RNA4926**	172	1.5	2.21
	180	67	1.5	296 000	690 000	73 000	1 800	2 700	**RNA5926**	172	1.5	3.21
	175	35	1.1	121 000	315 000	33 500	1 700	2 600	**RNA4828**	168.5	1	1.02
155$^{+0.068}_{+0.043}$	180	32	1.5	114 000	252 000	26 500	1 700	2 600	**NK155/32**	172	1.5	1.20
	180	42	1.5	156 000	380 000	40 000	1 700	2 600	**NK155/42**	172	1.5	1.59
160$^{+0.068}_{+0.043}$	190	50	1.5	209 000	485 000	50 500	1 700	2 500	**RNA4928**	182	1.5	2.35
	190	67	1.5	315 000	760 000	79 000	1 700	2 500	**RNA5928**	182	1.5	3.48
	190	32	1.5	117 000	265 000	27 400	1 600	2 400	**NK165/32**	182	1.5	1.42
165$^{+0.068}_{+0.043}$	190	40	1.1	152 000	390 000	40 500	1 600	2 400	**RNA4830**	183.5	1	1.60
	190	42	1.5	160 000	400 000	41 000	1 600	2 400	**NK165/42**	182	1.5	1.66
170$^{+0.068}_{+0.043}$	210	60	2	261 000	610 000	62 500	1 600	2 400	**RNA4930**	201	2	2.98
175$^{+0.068}_{+0.043}$	200	40	1.1	160 000	425 000	43 500	1 500	2 300	**RNA4832**	193.5	1	1.70
180$^{+0.068}_{+0.043}$	220	60	2	270 000	650 000	65 500	1 500	2 200	**RNA4932**	211	2	3.10
185$^{+0.079}_{+0.050}$	215	45	1.1	185 000	495 000	49 500	1 500	2 200	**RNA4834**	208.5	1	2.54
190$^{+0.079}_{+0.050}$	230	60	2	279 000	690 000	68 500	1 400	2 100	**RNA4934**	221	2	3.22
195$^{+0.079}_{+0.050}$	225	45	1.1	195 000	540 000	53 500	1 400	2 100	**RNA4836**	218.5	1	2.68
205$^{+0.079}_{+0.050}$	250	69	2	375 000	890 000	86 000	1 300	2 000	**RNA4936**	241	2	4.48
210$^{+0.079}_{+0.050}$	240	50	1.5	227 000	680 000	65 500	1 300	1 900	**RNA4838**	232	1.5	3.21
215$^{+0.079}_{+0.050}$	260	69	2	390 000	945 000	90 500	1 300	1 900	**RNA4938**	251	2	4.53
220$^{+0.079}_{+0.050}$	250	50	1.5	231 000	705 000	67 000	1 200	1 800	**RNA4840**	242	1.5	3.35
225$^{+0.079}_{+0.050}$	280	80	2.1	505 000	1 180 000	111 000	1 200	1 800	**RNA4940**	269	2	7.20
240$^{+0.079}_{+0.050}$	270	50	1.5	244 000	780 000	72 500	1 100	1 700	**RNA4844**	262	1.5	3.62
245$^{+0.079}_{+0.050}$	300	80	2.1	525 000	1 270 000	116 000	1 100	1 600	**RNA4944**	289	2	7.81

1) Smallest allowable dimension for chamfer dimension r.
2) Largest allowable dimension for fillet radius r_a of housing and shaft.





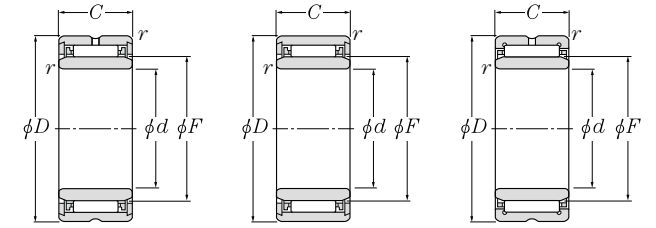
F_w 265 ～ 490mm

Boundary dimensions mm				Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min⁻¹ Grease lubrication	Allowable speed min⁻¹ Oil lubrication	Number	Installation-related dimensions mm		Mass kg
F_w	D	C	$r_{s\,min}$[1]	C_r	C_{0r}	C_u				D_a Max.	r_{as}[2] Max.	(approx.)
265$^{+0.088}_{+0.056}$	300	60	2	365 000	1 090 000	98 500	1 000	1 500	**RNA4848**	291	2	5.40
	320	80	2.1	540 000	1 350 000	121 000	1 000	1 500	**RNA4948**	309	2	8.40
285$^{+0.088}_{+0.056}$	320	60	2	375 000	1 170 000	103 000	950	1 400	**RNA4852**	311	2	5.80
290$^{+0.088}_{+0.056}$	360	100	2.1	810 000	1 920 000	166 000	950	1 400	**RNA4952**	349	2	15.9
305$^{+0.088}_{+0.056}$	350	69	2	455 000	1 300 000	112 000	850	1 300	**RNA4856**	341	2	9.30
310$^{+0.088}_{+0.056}$	380	100	2.1	840 000	2 050 000	175 000	850	1 300	**RNA4956**	369	2	16.7
330$^{+0.098}_{+0.062}$	380	80	2.1	625 000	1 770 000	149 000	800	1 200	**RNA4860**	369	2	12.7
340$^{+0.098}_{+0.062}$	420	118	3	1 080 000	2 640 000	219 000	800	1 200	**RNA4960**	407	2.5	24.0
350$^{+0.098}_{+0.062}$	400	80	2.1	640 000	1 850 000	153 000	750	1 100	**RNA4864**	389	2	13.4
360$^{+0.098}_{+0.062}$	440	118	3	1 120 000	2 820 000	230 000	750	1 100	**RNA4964**	427	2.5	25.2
370$^{+0.098}_{+0.062}$	420	80	2.1	655 000	1 940 000	158 000	750	1 100	**RNA4868**	409	2	14.0
380$^{+0.098}_{+0.062}$	460	118	3	1 160 000	3 000 000	242 000	750	1 100	**RNA4968**	447	2.5	26.5
390$^{+0.098}_{+0.062}$	440	80	2.1	665 000	2 020 000	162 000	650	1 000	**RNA4872**	429	2	14.8
400$^{+0.108}_{+0.068}$	480	118	3	1 200 000	3 200 000	253 000	650	1 000	**RNA4972**	467	2.5	28.2
415$^{+0.108}_{+0.068}$	480	100	2.1	1 000 000	2 840 000	223 000	650	950	**RNA4876**	469	2	26.0
430$^{+0.108}_{+0.068}$	520	140	4	1 400 000	3 750 000	292 000	650	950	**RNA4976**	504	3	38.6
450$^{+0.108}_{+0.068}$	540	140	4	1 450 000	4 000 000	306 000	600	900	**RNA4980**	524	3	40.1
470$^{+0.108}_{+0.068}$	560	140	4	1 500 000	4 250 000	320 000	550	850	**RNA4984**	544	3	51.6
490$^{+0.108}_{+0.068}$	600	160	4	1 750 000	4 600 000	342 000	550	800	**RNA4988**	584	3	66.9

1) Smallest allowable dimension for chamfer dimension r.
2) Largest allowable dimension for fillet radius r_a of housing and shaft.

Machined-ring needle roller bearings with an inner ring

NA49 type
NA59 type
NA69 type
NK+IR type

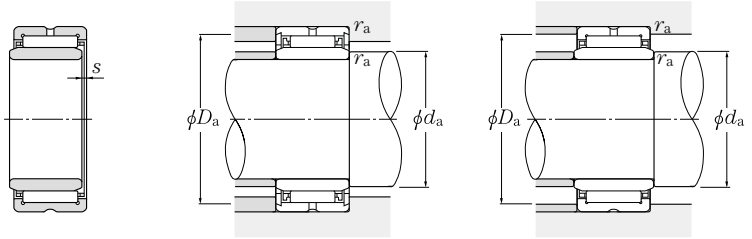


NA49 type ($\phi d \leqq 9$mm)　NK+IR type ($\phi d \leqq 9$mm)　NA49··R type ($\phi d \geqq 10$mm)
NA59 type
NA69··R type
NK+IR type ($\phi d \geqq 10$mm)

d 5 ～ 17mm

Boundary dimensions mm						Basic load rating N		Fatigue load limit N	Allowable speed min-1		Number
d	D	C	$r_{s\,min}$ 1)	F	s 2)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
5	13	10	0.15	7	—	2 670	2 350	287	23 000	34 000	**NA495T2**
	15	12	0.3	8	1.5	4 000	4 100	500	21 000	32 000	**NK8/12T2+IR5×8×12**
	15	16	0.3	8	2	4 850	5 200	635	21 000	32 000	**NK8/16T2+IR5×8×16**
6	15	10	0.15	8	—	3 150	3 000	365	21 000	32 000	**NA496T2T**
	16	12	0.3	9	1.5	4 550	5 000	615	20 000	30 000	**NK9/12T2+IR6×9×12**
	16	16	0.3	9	2	5 500	6 400	780	20 000	30 000	**NK9/16T2+IR6×9×16**
7	17	10	0.15	9	—	3 600	3 650	445	20 000	30 000	**NA497**
	17	12	0.3	10	1.5	4 550	5 100	620	19 000	28 000	**NK10/12T2+IR7×10×12**
	17	16	0.3	10	2	5 450	6 450	790	19 000	28 000	**8E-NK10/16CT+IR7×10×16**
8	19	11	0.15	10	—	5 250	5 150	630	19 000	28 000	**NA498CT**
9	19	12	0.3	12	1.5	5 000	6 100	740	17 000	26 000	**NK12/12+IR9×12×12**
	19	16	0.3	12	2	6 000	7 700	940	17 000	26 000	**NK12/16+IR9×12×16**
	20	11	0.3	12	—	4 850	4 900	595	17 000	26 000	**NA499**
10	22	13	0.3	14	0.5	8 600	9 200	1 120	16 000	24 000	**NA4900R**
	22	16	0.3	14	0.5	10 300	11 500	1 400	16 000	24 000	**NK14/16RCT+IR10×14×16**
	22	20	0.3	14	0.5	13 000	15 600	1 900	16 000	24 000	**NK14/20R+IR10×14×20**
12	24	13	0.3	16	0.5	9 550	10 900	1 330	15 000	23 000	**NA4901R**
	24	16	0.3	16	0.5	12 200	14 900	1 820	15 000	23 000	**NK16/16R+IR12×16×16**
	24	20	0.3	16	0.5	14 600	18 800	2 290	15 000	23 000	**NK16/20R+IR12×16×20**
	24	22	0.3	16	1	15 400	20 000	2 440	15 000	23 000	**NA6901R**
15	27	16	0.3	19	0.5	13 300	17 400	2 120	14 000	21 000	**NK19/16R+IR15×19×16**
	27	20	0.3	19	0.5	16 000	22 200	2 700	14 000	21 000	**NK19/20R+IR15×19×20**
	28	13	0.3	20	0.5	10 300	12 800	1 560	13 000	20 000	**NA4902R**
	28	18	0.3	20	0.5	14 100	19 100	2 330	13 000	20 000	**NA5902CT**
	28	23	0.3	20	1	17 600	25 300	3 100	13 000	20 000	**NA6902R**
17	29	16	0.3	21	0.5	13 700	18 700	2 280	13 000	19 000	**NK21/16R+IR17×21×16**
	29	20	0.3	21	0.5	17 400	25 400	3 100	13 000	19 000	**NK21/20R+IR17×21×20**
	30	13	0.3	22	0.5	11 200	14 600	1 780	12 000	18 000	**NA4903R**

1) Smallest allowable dimension for chamfer dimension r.
2) Allowable axial movement amount of the inner ring with respect to the outer ring.
3) Largest allowable dimension for fillet radius r_a of housing and shaft.

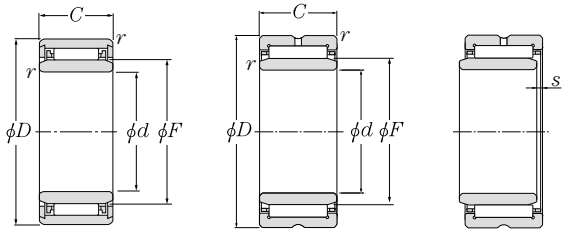


Installation-related dimensions mm			Mass kg
d_a Min.	D_a Max.	r_{as} 3) Max.	(approx.)
6.2	8.5	0.15	0.007
7	9.5	0.3	0.012
7	9.5	0.3	0.016
8	9.5	0.15	0.009
8	10.5	0.3	0.013
8	10.5	0.3	0.017
9	10.5	0.15	0.010
9	11.5	0.3	0.014
9	11.5	0.3	0.018
10	12	0.15	0.016
11	13.5	0.3	0.018
11	13.5	0.3	0.022
11	14	0.3	0.017
12	20	0.3	0.024
12	20	0.3	0.030
12	20	0.3	0.038
14	22	0.3	0.026
14	22	0.3	0.033
14	22	0.3	0.042
14	22	0.3	0.046
17	25	0.3	0.039
17	25	0.3	0.045
17	26	0.3	0.036
17	26	0.3	0.052
17	26	0.3	0.064
19	27	0.3	0.042
19	27	0.3	0.053
19	28	0.3	0.037

Note: The number of inner rings (**IR**) is composed of the **IR** inner diameter dimension × outer diameter dimension × width dimension.

Machined-ring needle roller bearings with an inner ring

NA49 type
NA59 type
NA69 type
NK+IR type

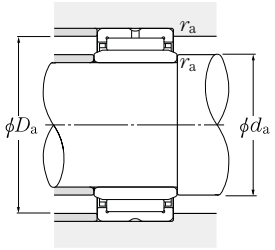


NA49··R type
NA59 type
NA69··R type
NK··R+IR type

d 17～32mm

Boundary dimensions mm						Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1} Grease lubrication	Oil lubrication	Number
d	D	C	$r_{s\,min}$ 1)	F	s 2)	C_r	C_{0r}	C_u			
17	30	18	0.3	22	0.5	15 200	21 700	2 650	12 000	18 000	**NA5903**
	30	23	0.3	22	1	18 200	27 200	3 300	12 000	18 000	**NA6903R**
20	32	16	0.3	24	0.5	15 200	22 300	2 720	11 000	17 000	**NK24/16R＋IR20×24×16**
	32	20	0.3	24	0.5	18 600	28 800	3 500	11 000	17 000	**NK24/20R＋IR20×24×20**
	37	17	0.3	25	0.8	21 300	25 500	3 100	11 000	16 000	**NA4904RCT**
	37	23	0.3	25	0.8	28 400	37 000	4 500	11 000	16 000	**NA5904**
	37	30	0.3	25	1	36 500	50 500	6 150	11 000	16 000	**NA6904R**
22	34	16	0.3	26	0.5	15 600	23 600	2 880	10 000	15 000	**8E-NK26/16RCT＋IR22×26×16**
	34	20	0.3	26	0.5	19 100	30 500	3 700	10 000	15 000	**NK26/20R＋IR22×26×20**
	39	17	0.3	28	0.8	23 200	29 300	3 600	9 500	14 000	**NA49/22R**
	39	23	0.3	28	0.8	26 400	37 500	4 600	9 500	14 000	**NA59/22**
	39	30	0.3	28	0.5	40 000	58 500	7 150	9 500	14 000	**NA69/22R**
25	38	20	0.3	29	1	22 200	34 000	4 150	9 500	14 000	**NK29/20R＋IR25×29×20**
	38	30	0.3	29	1.5	27 500	50 500	6 150	9 500	14 000	**NK29/30R＋IR25×29×30**
	42	17	0.3	30	0.8	24 000	31 500	3 800	8 500	13 000	**NA4905R**
	42	23	0.3	30	0.8	30 500	43 000	5 200	8 500	13 000	**NA5905**
	42	30	0.3	30	1	41 500	63 000	7 650	8 500	13 000	**NA6905R**
28	42	20	0.3	32	1	23 500	37 500	4 600	8 500	13 000	**NK32/20R＋IR28×32×20**
	42	30	0.3	32	1.5	34 000	60 500	7 350	8 500	13 000	**NK32/30R＋IR28×32×30**
	45	17	0.3	32	0.8	24 800	33 500	4 050	8 500	13 000	**NA49/28RCT**
	45	23	0.3	32	0.8	32 000	45 500	5 550	8 500	13 000	**NA59/28**
	45	30	0.3	32	1	43 000	67 000	8 150	8 500	13 000	**NA69/28R**
30	45	20	0.3	35	0.5	24 800	41 500	5 050	7 500	11 000	**NK35/20RCT＋IR30×35×20**
	45	30	0.3	35	1	36 000	66 500	8 100	7 500	11 000	**NK35/30R＋IR30×35×30**
	47	17	0.3	35	0.8	25 500	35 500	4 300	7 500	11 000	**NA4906R**
	47	23	0.3	35	0.8	32 500	48 500	5 950	7 500	11 000	**NA5906**
	47	30	0.3	35	1	42 500	67 500	8 250	7 500	11 000	**NA6906R**
32	47	20	0.3	37	0.5	25 300	43 500	5 300	7 500	11 000	**NK37/20R＋IR32×37×20**
	47	30	0.3	37	1	36 500	69 500	8 500	7 500	11 000	**NK37/30R＋IR32×37×30**
	52	20	0.6	40	0.8	31 500	47 500	5 800	6 500	10 000	**NA49/32R**

1) Smallest allowable dimension for chamfer dimension r.
2) Allowable axial movement amount of the inner ring with respect to the outer ring.
3) Largest allowable dimension for fillet radius r_a of housing and shaft.

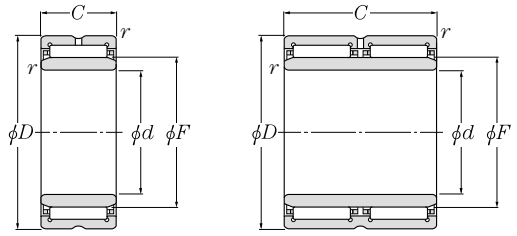


Installation-related dimensions mm			Mass kg
d_a Min.	D_a Max.	r_{as} 3) Max.	(approx.)
19	28	0.3	0.056
19	28	0.3	0.069
22	30	0.3	0.049
22	30	0.3	0.061
22	35	0.3	0.074
22	35	0.3	0.115
22	35	0.3	0.141
24	32	0.3	0.046
24	32	0.3	0.064
24	37	0.3	0.080
24	37	0.3	0.134
24	37	0.3	0.154
27	36	0.3	0.079
27	36	0.3	0.123
27	40	0.3	0.088
27	40	0.3	0.139
27	40	0.3	0.162
30	40	0.3	0.096
30	40	0.3	0.146
30	43	0.3	0.098
30	43	0.3	0.142
30	43	0.3	0.179
32	43	0.3	0.112
32	43	0.3	0.171
32	45	0.3	0.101
32	45	0.3	0.152
32	45	0.3	0.185
34	45	0.3	0.117
34	45	0.3	0.170
36	48	0.6	0.157

Note: The number of inner rings (IR) is composed of the IR inner diameter dimension × outer diameter dimension × width dimension.

Machined-ring needle roller bearings with an inner ring

NA49 type
NA59 type
NA69 type
NK+IR type



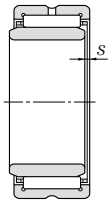
NA49··R type
NA59 type
NA69··R type ($\phi d \leqq 30$mm)
NK··R+IR type

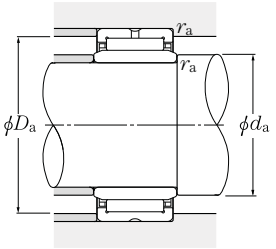
NA69··R type
($\phi d \geqq 32$mm)

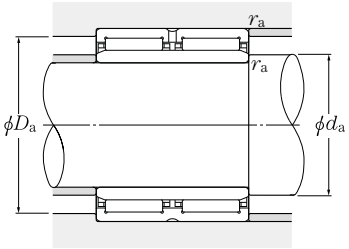
d 32 ～ 55mm

Boundary dimensions mm						Basic load rating dynamic N	static N	Fatigue load limit N	Allowable speed min^{-1}		Number
d	D	C	$r_{s\,min}$ 1)	F	s 2)	C_r	C_{0r}	C_u	Grease lubrication	Oil lubrication	
32	52	27	0.6	40	0.8	38 000	61 000	7 450	6 500	10 000	**NA59/32**
	52	36	0.6	40	0.5	47 500	82 000	10 000	6 500	10 000	**NA69/32R**
35	50	20	0.3	40	0.5	26 400	47 000	5 750	6 500	10 000	**NK40/20R＋IR35×40×20**
	50	30	0.3	40	1	38 500	76 000	9 250	6 500	10 000	**NK40/30R＋IR35×40×30**
	55	20	0.6	42	0.8	32 000	50 000	6 100	6 500	9 500	**NA4907R**
	55	27	0.6	42	0.8	39 000	64 500	7 850	6 500	9 500	**NA5907**
	55	36	0.6	42	0.5	49 000	86 500	10 500	6 500	9 500	**NA6907R**
38	53	20	0.3	43	0.5	27 500	51 000	6 200	6 500	9 500	**NK43/20R＋IR38×43×20**
	53	30	0.3	43	1	40 000	82 000	10 000	6 500	9 500	**NK43/30R＋IR38×43×30**
40	55	20	0.3	45	0.5	28 000	52 500	6 450	6 000	9 000	**NK45/20R＋IR40×45×20**
	55	30	0.3	45	1	41 000	85 500	10 400	6 000	9 000	**NK45/30RCT＋IR40×45×30**
	62	22	0.6	48	1	43 500	66 500	8 150	5 500	8 500	**NA4908R**
	62	30	0.6	48	1	53 000	92 500	11 300	5 500	8 500	**NA5908**
	62	40	0.6	48	0.5	67 000	116 000	14 100	5 500	8 500	**NA6908R**
42	57	20	0.3	47	0.5	28 800	55 500	6 800	5 500	8 500	**NK47/20RCT＋IR42×47×20**
	57	30	0.3	47	1	42 500	91 500	11 200	5 500	8 500	**NK47/30R＋IR42×47×30**
45	62	25	0.6	50	1.5	38 500	74 500	9 050	5 500	8 000	**NK50/25RCT＋IR45×50×25**
	62	35	0.6	50	2	51 000	106 000	12 900	5 500	8 000	**NK50/35R＋IR45×50×35**
	68	22	0.6	52	1	46 000	73 000	8 950	5 000	7 500	**NA4909R**
	68	30	0.6	52	1	56 000	101 000	12 300	5 000	7 500	**NA5909**
	68	40	0.6	52	0.5	70 500	127 000	15 500	5 000	7 500	**NA6909R**
50	68	25	0.6	55	1.5	41 000	82 000	10 000	5 000	7 500	**NK55/25R＋IR50×55×25**
	68	35	0.6	55	2	54 000	118 000	14 300	5 000	7 500	**NK55/35R＋IR50×55×35**
	72	22	0.6	58	1	48 000	80 000	9 750	4 700	7 000	**NA4910R**
	72	30	0.6	58	1	58 000	110 000	13 400	4 700	7 000	**NA5910**
	72	40	0.6	58	0.5	74 000	139 000	17 000	4 700	7 000	**NA6910R**
55	72	25	0.6	60	1.5	41 000	85 000	10 400	4 300	6 500	**NK60/25R＋IR55×60×25**
	72	35	0.6	60	2	57 000	130 000	15 800	4 300	6 500	**NK60/35R＋IR55×60×35**
	80	25	1	63	1.5	58 500	99 500	12 100	4 300	6 500	**NA4911R**

1) Smallest allowable dimension for chamfer dimension r.
2) Allowable axial movement amount of the inner ring with respect to the outer ring.
3) Largest allowable dimension for fillet radius r_a of housing and shaft.





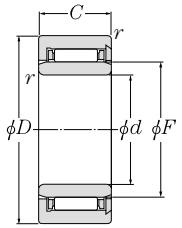


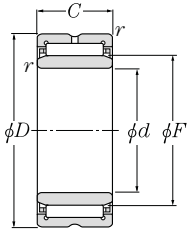
Installation-related dimensions mm			Mass kg
d_a Min.	D_a Max.	r_{as} 3) Max.	(approx.)
36	48	0.6	0.241
36	48	0.6	0.286
37	48	0.3	0.130
37	48	0.3	0.193
39	51	0.6	0.171
39	51	0.6	0.256
39	51	0.6	0.310
40	51	0.3	0.134
40	51	0.3	0.207
42	53	0.3	0.143
42	53	0.3	0.216
44	58	0.6	0.232
44	58	0.6	0.348
44	58	0.6	0.426
44	55	0.3	0.148
44	55	0.3	0.222
48	58	0.6	0.229
48	58	0.6	0.322
49	64	0.6	0.270
49	64	0.6	0.396
49	64	0.6	0.437
53	64	0.6	0.271
53	64	0.6	0.379
54	68	0.6	0.276
54	68	0.6	0.498
54	68	0.6	0.529
58	68	0.6	0.271
58	68	0.6	0.379
60	75	1	0.396

Note: The number of inner rings (**IR**) is composed of the **IR** inner diameter dimension × outer diameter dimension × width dimension.

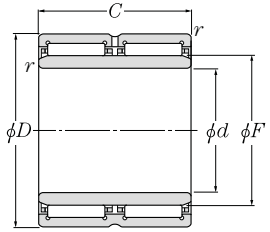
Machined-ring needle roller bearings with an inner ring

NA49 type
NA59 type
NA69 type
NK+IR type





NA49··R type
NA59 type
NK··R+IR type

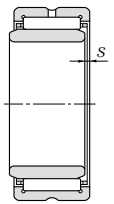


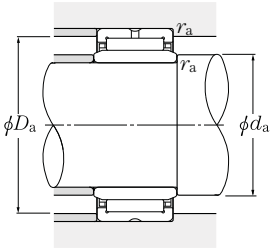
NA69··R type

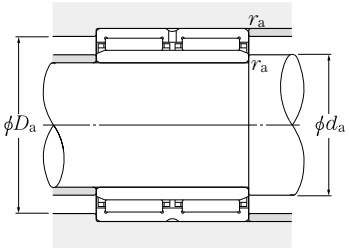
d 55 ~ 85mm

Boundary dimensions mm						Basic load rating N		Fatigue load limit N	Allowable speed min^{-1}		Number
d	D	C	$r_{s\,min}$ 1)	F	s 2)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
55	80	34	1	63	1.5	76 500	140 000	17 100	4 300	6 500	**NA5911**
	80	45	1	63	1.5	94 000	183 000	22 300	4 300	6 500	**NA6911R**
60	82	25	1	68	1	44 500	89 000	10 800	4 000	6 000	**NK68/25R+IR60×68×25**
	82	35	0.6	68	1	63 000	139 000	17 000	4 000	6 000	**NK68/35R+IR60×68×35**
	85	25	1	68	1.5	61 500	108 000	13 100	4 000	6 000	**NA4912R**
	85	34	1	68	1.5	80 500	153 000	18 600	4 000	6 000	**NA5912**
	85	45	1	68	1.5	95 500	191 000	23 200	4 000	6 000	**NA6912R**
65	90	25	0.6	73	1	54 000	100 000	12 200	3 700	5 500	**NK73/25R+IR65×73×25**
	90	25	1	72	1.5	62 500	112 000	13 700	3 700	5 500	**NA4913R**
	90	34	1	72	1.5	84 000	165 000	20 100	3 700	5 500	**NA5913**
	90	35	0.6	73	1	76 500	156 000	19 100	3 700	5 500	**NK73/35R+IR65×73×35**
	90	45	1	72	1.5	97 000	198 000	24 200	3 700	5 500	**NA6913R**
70	95	25	1	80	0.8	57 000	119 000	14 500	3 300	5 000	**NK80/25R+IR70×80×25**
	95	35	1	80	0.8	79 500	184 000	22 400	3 300	5 000	**NK80/35R+IR70×80×35**
	100	30	1	80	1.5	85 500	156 000	19 000	3 300	5 000	**NA4914R**
	100	40	1	80	1.5	103 000	187 000	22 800	3 300	5 000	**NA5914**
	100	54	1	80	1	130 000	267 000	32 500	3 300	5 000	**NA6914R**
75	105	25	1	85	1	70 500	123 000	15 000	3 100	4 700	**NK85/25R+IR75×85×25**
	105	30	1	85	1.5	87 000	162 000	19 700	3 100	4 700	**NA4915R**
	105	35	1	85	1	100 000	193 000	23 600	3 100	4 700	**NK85/35R+IR75×85×35**
	105	40	1	85	1.5	109 000	205 000	25 000	3 100	4 700	**NA5915**
	105	54	1	85	1	132 000	277 000	34 000	3 100	4 700	**NA6915R**
80	110	25	1	90	1	71 500	128 000	15 600	2 900	4 400	**NK90/25R+IR80×90×25**
	110	30	1	90	1.5	90 500	174 000	21 200	2 900	4 400	**NA4916R**
	110	35	1	90	1	104 000	208 000	25 400	2 900	4 400	**NK90/35R+IR80×90×35**
	110	40	1	90	1.5	115 000	223 000	27 200	2 900	4 400	**NA5916**
	110	54	1	90	1.5	138 000	298 000	36 500	2 900	4 400	**NA6916R**
85	115	26	1	95	1.5	74 500	137 000	16 600	2 800	4 200	**NK95/26R+IR85×95×26**
	115	36	1	95	1.5	108 000	223 000	27 000	2 800	4 200	**NK95/36R+IR85×95×36**

1) Smallest allowable dimension for chamfer dimension r.
2) Allowable axial movement amount of the inner ring with respect to the outer ring.
3) Largest allowable dimension for fillet radius r_a of housing and shaft.





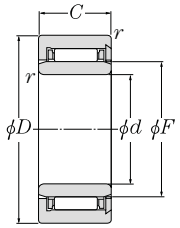


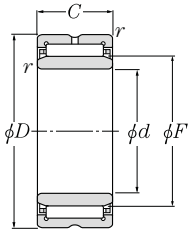
Installation-related dimensions mm			Mass kg
d_a Min.	D_a Max.	r_{as} 3) Max.	(approx.)
60	75	1	0.559
60	75	1	0.726
65	77	0.6	0.393
64	78	0.6	0.551
65	80	1	0.427
65	80	1	0.614
65	80	1	0.758
69	86	0.6	0.466
70	85	1	0.454
70	85	1	0.655
69	86	0.6	0.660
70	85	1	0.779
75	90	1	0.525
75	90	1	0.738
75	95	1	0.727
75	95	1	1.06
75	95	1	1.34
80	100	1	0.642
80	100	1	0.776
80	100	1	0.853
80	100	1	1.13
80	100	1	1.45
85	105	1	0.680
85	105	1	0.820
85	105	1	0.959
85	105	1	1.15
85	105	1	1.53
90	110	1	0.644
90	110	1	1.05

Note: The number of inner rings (**IR**) is composed of the **IR** inner diameter dimension × outer diameter dimension × width dimension.

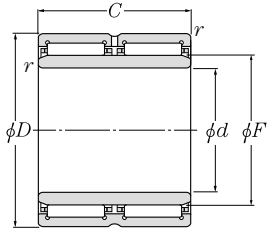
Machined-ring needle roller bearings with an inner ring

NA48 type
NA49 type
NA59 type
NA69 type
NK+IR type





NA49··R type
NA59 type
NK··R+IR type

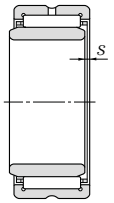


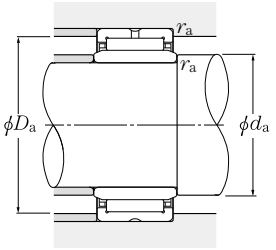
NA69··R type

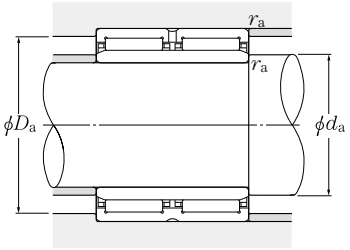
d 85 ~ 130mm

Boundary dimensions mm						Basic load rating N		Fatigue load limit N	Allowable speed min^{-1}		Number
d	D	C	$r_{s\,min}$ 1)	F	s 2)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
85	120	35	1.1	100	1	112 000	237 000	28 400	2 700	4 000	**NA4917R**
	120	46	1.1	100	1.5	137 000	290 000	34 500	2 700	4 000	**NA5917**
	120	63	1.1	100	1	169 000	400 000	48 000	2 700	4 000	**NA6917R**
90	120	26	1	100	1.5	73 500	137 000	16 400	2 700	4 000	**NK100/26R+IR90×100×26**
	120	36	1	100	1.5	107 000	223 000	26 700	2 700	4 000	**NK100/36R+IR90×100×36**
	125	35	1.1	105	1	116 000	252 000	29 800	2 500	3 800	**NA4918R**
	125	46	1.1	105	1	143 000	310 000	37 000	2 500	3 800	**NA5918**
	125	63	1.1	105	1	175 000	425 000	50 500	2 500	3 800	**NA6918R**
95	125	26	1	105	1.5	76 500	147 000	17 300	2 500	3 800	**NK105/26R+IR95×105×26**
	125	36	1	105	1.5	111 000	238 000	28 100	2 500	3 800	**NK105/36R+IR95×105×36**
	130	35	1.1	110	1	118 000	260 000	30 500	2 400	3 600	**NA4919R**
	130	46	1.1	110	1	149 000	335 000	39 000	2 400	3 600	**NA5919**
	130	63	1.1	110	1	177 000	440 000	51 000	2 400	3 600	**NA6919R**
100	130	30	1.1	110	1.5	97 500	204 000	23 800	2 400	3 600	**NK110/30R+IR100×110×30**
	130	40	1.1	110	2	129 000	292 000	34 000	2 400	3 600	**NK110/40R+IR100×110×40**
	140	40	1.1	115	2	127 000	260 000	29 900	2 300	3 500	**NA4920**
	140	54	1.1	115	2	182 000	395 000	45 500	2 300	3 500	**NA5920**
110	140	30	1	120	0.8	95 000	214 000	24 400	2 200	3 300	**NA4822**
	140	40	1.1	120	—	114 000	271 000	31 000	2 200	3 300	**NK120/40+IR110×120×40**
	150	40	1.1	125	2	131 000	279 000	31 500	2 100	3 200	**NA4922**
	150	54	1.1	125	2	193 000	440 000	49 500	2 100	3 200	**NA5922**
120	150	30	1	130	0.8	101 000	237 000	26 400	2 100	3 100	**NA4824**
	150	40	1.1	130	—	117 000	287 000	32 000	2 100	3 100	**NK130/40+IR120×130×40**
	165	45	1.1	135	2	180 000	380 000	41 500	2 000	3 000	**NA4924**
	165	60	1.1	135	2	246 000	530 000	57 500	2 000	3 000	**NA5924**
130	165	35	1.1	145	1	120 000	310 000	33 000	1 900	2 800	**NA4826**
	170	32	1.5	145	—	111 000	238 000	25 600	1 900	2 800	**NK145/32+IR130×145×32**
	170	42	1.5	145	—	153 000	360 000	38 500	1 900	2 800	**NK145/42+IR130×145×42**
	180	50	1.5	150	1.5	202 000	455 000	48 000	1 800	2 700	**NA4926**
	180	67	1.5	150	1.5	296 000	690 000	73 000	1 800	2 700	**NA5926**

1) Smallest allowable dimension for chamfer dimension r.
2) Allowable axial movement amount of the inner ring with respect to the outer ring.
3) Largest allowable dimension for fillet radius r_a of housing and shaft.





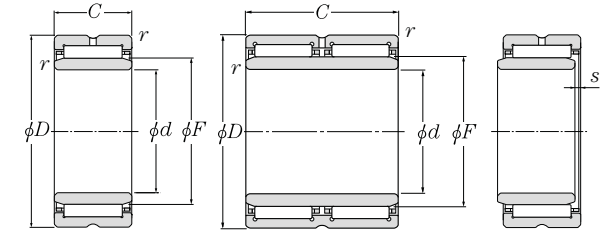


Installation-related dimensions mm			Mass kg
d_a Min.	D_a Max.	r_{as} 3) Max.	(approx.)
91.5	113.5	1	1.24
91.5	113.5	1	1.76
91.5	104	1.1	2.25
95	115	1	0.781
95	115	1	1.09
96.5	118.5	1	1.84
96.5	118.5	1	2.44
96.5	109	1.1	2.37
100	120	1	0.819
100	120	1	1.15
101.5	123.5	1	1.36
101.5	123.5	1	1.98
101.5	123.5	1	2.63
106.5	123.5	1	0.990
106.5	123.5	1	1.34
106.5	133.5	1	1.93
106.5	133.5	1	2.85
115	135	1	1.11
116.5	133.5	1	1.49
116.5	143.5	1	2.08
116.5	143.5	1	2.98
125	145	1	1.17
126.5	143.5	1	1.57
126.5	158.5	1	2.84
126.5	158.5	1	3.92
136.5	158.5	1	1.60
138	162.5	1.5	1.90
138	162.5	1.5	2.54
138	172	1.5	3.90
138	172	1.5	5.60

Note: The number of inner rings (**IR**) is composed of the **IR** inner diameter dimension × outer diameter dimension × width dimension.

Machined-ring needle roller bearings with an inner ring

NA48 type
NA49 type
NA59 type
NA69 type
NK+IR type



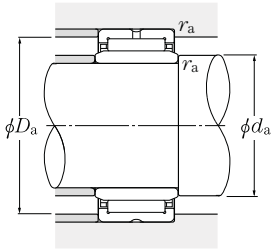
NA48 type
NA49···R type, NA49 type
NA59 type
NK···R+IR type, NK+IR type
NKS+IR type ($\phi d \geqq 100$mm)

NA69···R type

d 140 ～ 280mm

Boundary dimensions mm						Basic load rating N		Fatigue load limit N	Allowable speed min^{-1}		Number
d	D	C	$r_{s\,min}$ [1]	F	s [2]	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
140	175	35	1.1	155	1	121 000	315 000	33 500	1 700	2 600	**NA4828**
	180	32	1.5	155	—	114 000	252 000	26 500	1 700	2 600	**NK155/32+IR140×155×32**
	180	42	1.5	155	—	156 000	380 000	40 000	1 700	2 600	**NK155/42+IR140×155×42**
	190	50	1.5	160	1.5	209 000	485 000	50 500	1 700	2 500	**NA4928**
	190	67	1.5	160	1.5	315 000	760 000	79 000	1 700	2 500	**NA5928**
150	190	32	1.5	165	—	117 000	265 000	27 500	1 600	2 400	**NK165/32+IR150×165×32**
	190	40	1.1	165	1.5	152 000	390 000	40 500	1 600	2 400	**NA4830**
	190	42	1.5	165	—	160 000	400 000	41 000	1 600	2 400	**NK165/42+IR150×165×42**
	210	60	2	170	1.5	261 000	610 000	62 500	1 600	2 400	**NA4930**
160	200	40	1.1	175	1.5	160 000	425 000	43 500	1 500	2 300	**NA4832**
	220	60	2	180	1.5	270 000	650 000	65 500	1 500	2 200	**NA4932**
170	215	45	1.1	185	1.5	185 000	495 000	49 500	1 500	2 200	**NA4834**
	230	60	2	190	1.5	279 000	690 000	68 500	1 400	2 100	**NA4934**
180	225	45	1.1	195	1.5	195 000	540 000	53 500	1 400	2 100	**NA4836**
	250	69	2	205	1.5	375 000	890 000	86 000	1 300	2 000	**NA4936**
190	240	50	1.5	210	1.5	227 000	680 000	65 500	1 300	1 900	**NA4838**
	260	69	2	215	1.5	390 000	945 000	90 500	1 300	1 900	**NA4938**
200	250	50	1.5	220	1.5	231 000	705 000	67 000	1 200	1 800	**NA4840**
	280	80	2.1	225	1.5	505 000	1 180 000	111 000	1 200	1 800	**NA4940**
220	270	50	1.5	240	1.5	244 000	780 000	72 500	1 100	1 700	**NA4844**
	300	80	2.1	245	1.5	525 000	1 270 000	116 000	1 100	1 600	**NA4944**
240	300	60	2	265	2	365 000	1 090 000	98 500	1 000	1 500	**NA4848**
	320	80	2.1	265	2	540 000	1 350 000	121 000	1 000	1 500	**NA4948**
260	320	60	2	285	2	375 000	1 170 000	103 000	950	1 400	**NA4852**
	360	100	2.1	290	2	810 000	1 920 000	166 000	950	1 400	**NA4952**
280	350	69	2	305	2.5	455 000	1 300 000	112 000	850	1 300	**NA4856**
	380	100	2.1	310	2.5	840 000	2 050 000	175 000	850	1 300	**NA4956**

1) Smallest allowable dimension for chamfer dimension r.
2) Allowable axial movement amount of the inner ring with respect to the outer ring.
3) Largest allowable dimension for fillet radius r_a of housing and shaft.

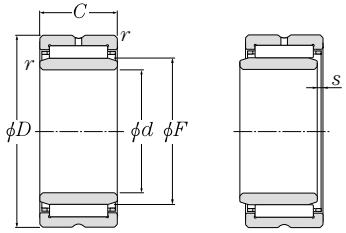


Installation-related dimensions mm			Mass kg
d_a Min.	D_a Max.	r_{as} [3] Max.	(approx.)
146.5	168.5	1	1.82
148	172	1.5	2.04
148	172	1.5	2.69
148	182	1.5	4.05
148	182	1.5	6.18
158	182	1.5	2.32
156.5	183.5	1	2.72
158	182	1.5	2.84
159	201	2	5.33
166.5	193.5	1	2.90
169	211	2	5.60
176.5	208.5	1	3.99
179	221	2	5.87
186.5	218.5	1	4.19
189	241	2	8.58
198	232	1.5	5.62
199	251	2	8.68
208	242	1.5	5.84
211	269	2	12.2
228	262	1.5	6.37
231	289	2	13.5
249	291	2	10.0
251	309	2	14.7
269	311	2	10.8
271	349	2	25.9
289	341	2	15.5
291	369	2	27.5

Note: The number of inner rings (**IR**) is composed of the **IR** inner diameter dimension × outer diameter dimension × width dimension.

Machined-ring needle roller bearings
with an inner ring

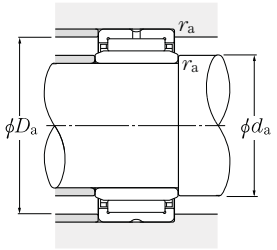
NA48 type
NA49 type
NA59 type
NK+IR type



d 300 ～ 440mm

Boundary dimensions mm						Basic load rating N		Fatigue load limit N	Allowable speed min^{-1}		Number
d	D	C	$r_{s\,min}$ [1]	F	s [2]	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
300	380	80	2.1	330	2	625 000	1 770 000	149 000	800	1 200	**NA4860**
	420	118	3	340	2	1 080 000	2 640 000	219 000	800	1 200	**NA4960**
320	400	80	2.1	350	2	640 000	1 850 000	153 000	750	1 100	**NA4864**
	440	118	3	360	2	1 120 000	2 820 000	230 000	750	1 100	**NA4964**
340	420	80	2.1	370	2	655 000	1 940 000	158 000	750	1 100	**NA4868**
	460	118	3	380	2	1 160 000	3 000 000	242 000	750	1 100	**NA4968**
360	440	80	2.1	390	2	665 000	2 020 000	162 000	650	1 000	**NA4872**
	480	118	3	400	2	1 200 000	3 200 000	253 000	650	1 000	**NA4972**
380	480	100	2.1	415	2	1 000 000	2 840 000	223 000	650	950	**NA4876**
	520	140	4	430	2	1 400 000	3 750 000	292 000	650	950	**NA4976**
400	540	140	4	450	2.5	1 450 000	4 000 000	305 000	600	900	**NA4980**
420	560	140	4	470	2.5	1 500 000	4 250 000	320 000	550	850	**NA4984**
440	600	160	4	490	2.5	1 750 000	4 600 000	340 000	550	800	**NA4988**

1) Smallest allowable dimension for chamfer dimension r.
2) Allowable axial movement amount of the inner ring with respect to the outer ring.
3) Largest allowable dimension for fillet radius r_a of housing and shaft.

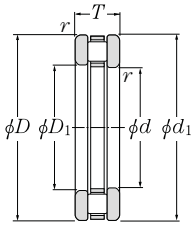


Installation-related dimensions mm			Mass kg
d_a Min.	D_a Max.	r_{as} [3] Max.	(approx.)
311	369	2	22.0
313	407	2.5	42.5
331	389	2	23.2
333	427	2.5	45.2
351	409	2	24.1
353	447	2.5	47.3
371	429	2	25.7
373	467	2.5	49.0
391	469	2	44.5
396	504	3	73.6
416	524	3	76.6
436	544	3	89.8
456	584	3	123

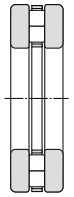
Note: The number of inner rings (**IR**) is composed of the **IR** inner diameter dimension × outer diameter dimension × width dimension.

Thrust cylindrical roller bearings

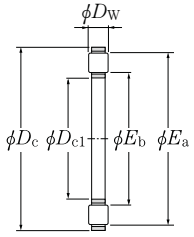
811 type
812 type
893 type



811 type
812 type
(Bearing)

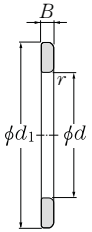


893 type
(Bearing)

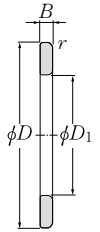


K811 type, K812 type
(Thrust cylindrical roller and cage assembly)

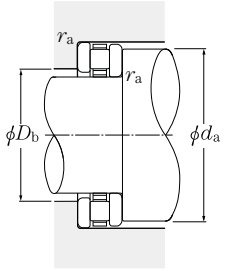
K893 type
(Thrust cylindrical roller and cage assembly)



WS type raceway
(Inner ring)



GS type raceway
(Outer ring)



d 10 ~ 60mm

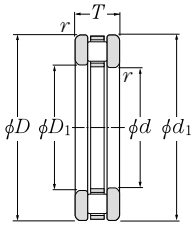
Boundary dimensions mm										Basic load rating N		Fatigue load limit N	Allowable speed min^{-1}	
d	D	d_1	D_1	T	D_{c1} [2] E11	D_c a13	D_w $^{0}_{-0.010}$	B h11	$r_{s\,min}$ [1]	dynamic C_a	static C_{0a}	C_u	Grease lubrication	Oil lubrication
10	24	24	10	9	10	24	3.5	2.75	0.3	10 300	20 100	2 450	3 400	13 000
12	26	26	12	9	12	26	3.5	2.75	0.3	10 900	22 300	2 720	3 000	12 000
15	28	28	16	9	15	28	3.5	2.75	0.3	12 200	26 800	3 250	2 800	11 000
17	30	30	18	9	17	30	3.5	2.75	0.3	12 700	29 000	3 550	2 500	10 000
20	35	35	21	10	20	35	4.5	2.75	0.3	20 200	46 500	5 650	2 100	8 500
25	42	42	26	11	25	42	5	3	0.6	27 300	68 000	8 250	1 800	7 000
	47	47	32	11	30	47	5	3	0.6	27 800	72 500	8 850	1 500	6 000
30	52	52	32	16	30	52	7.5	4.25	0.6	53 000	129 000	15 700	1 500	6 000
	60	60	32	18	30	60	5.5	6.25	1	54 000	166 000	20 200	1 300	5 000
	52	52	37	12	35	52	5	3.5	0.6	31 000	87 000	10 600	1 400	5 500
35	62	62	37	18	35	62	7.5	5.25	1	54 500	139 000	17 000	1 200	4 900
	68	68	37	20	35	68	6	7	1	66 500	214 000	26 100	1 200	4 600
	60	60	42	13	40	60	6	3.5	0.6	43 000	121 000	14 800	1 200	4 800
40	68	68	42	19	40	68	9	5	1	74 500	190 000	23 200	1 100	4 400
	78	78	42	22	40	78	7	7.5	1	85 000	277 000	34 000	1 000	4 000
	65	65	47	14	45	65	6	4	0.6	45 500	135 000	16 500	1 100	4 400
45	73	73	47	20	45	73	9	5.5	1	82 000	222 000	27 000	1 000	4 100
	85	85	47	24	45	85	7.5	8.25	1	102 000	345 000	42 000	900	3 600
	70	70	52	14	50	70	6	4	0.6	48 500	150 000	18 300	1 000	4 000
50	78	78	52	22	50	78	9	6.5	1	85 000	238 000	29 000	950	3 800
	95	95	52	27	50	95	8	9.5	1.1	125 000	445 000	54 000	800	3 200
	78	78	57	16	55	78	6	5	0.6	62 500	215 000	26 200	900	3 600
55	90	90	57	25	55	90	11	7	1	121 000	340 000	41 500	830	3 300
	105	105	57	30	55	105	9	10.5	1.1	158 000	570 000	69 500	730	2 900
	85	85	62	17	60	85	7.5	4.75	1	69 000	215 000	26 200	830	3 300
60	95	95	62	26	60	95	11	7.5	1	126 000	365 000	44 500	780	3 100
	110	110	62	30	60	110	9	10.5	1.1	162 000	600 000	73 500	680	2 700

1) Smallest allowable dimension for chamfer dimension r.
2) The tolerance of bearings with suffix code T2 is E12.

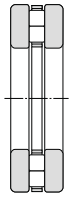
Number				Approx. dimension mm		Installation-related dimensions mm			Mass kg (approx.)			
Bearing	Thrust cylindrical roller and cage assembly	Inner ring	Outer ring	E_b	E_a	d_a Min.	D_b Max.	r_{as} Max.	811	K811 K812 K893	WS811 WS812 WS893	GS811 GS812 GS893
81100T2	**K81100T2**	**WS81100**	**GS81100**	13.5	21.3	21	14	0.3	0.020	0.0035	0.0081	0.0081
81101T2	**K81101T2**	**WS81101**	**GS81101**	15.5	23.3	23	16	0.3	0.022	0.0040	0.0090	0.0090
81102T2	**K81102T2**	**WS81102**	**GS81102**	17.2	25	25	18	0.3	0.024	0.0060	0.0095	0.0090
81103T2	**K81103T2**	**WS81103**	**GS81103**	19.2	27	27	20	0.3	0.028	0.0080	0.010	0.010
81104T2	**K81104T2**	**WS81104**	**GS81104**	22.4	32.3	32	23	0.3	0.039	0.012	0.014	0.013
81105T2	**K81105T2**	**WS81105**	**GS81105**	27.6	38.7	39	28	0.6	0.059	0.018	0.021	0.020
81106T2	**K81106T2**	**WS81106**	**GS81106**	33.1	43.9	44	33	0.6	0.066	0.020	0.024	0.022
81206T2	**K81206T2**	**WS81206**	**GS81206**	32.8	49	48	33	0.6	0.141	0.050	0.047	0.044
89306	**K89306**	**WS89306**	**GS89306**	34	56.4	56	34	1	0.249	0.046	0.104	0.099
81107T2	**K81107T2**	**WS81107**	**GS81107**	38	48.9	49	38	0.6	0.085	0.024	0.032	0.029
81207T2	**K81207T2**	**WS81207**	**GS81207**	39.8	56	56	41	1	0.230	0.065	0.085	0.080
89307	**K89307**	**WS89307**	**GS89307**	40	64.4	64	40	1	0.351	0.064	0.147	0.140
81108T2	**K81108T2**	**WS81108**	**GS81108**	43.2	56.4	56	44	0.6	0.118	0.035	0.043	0.040
81208T2	**K81208T2**	**WS81208**	**GS81208**	43.7	62.9	63	44	1	0.266	0.085	0.093	0.088
89308	**K89308**	**WS89308**	**GS89308**	46	74.4	74	46	1	0.507	0.100	0.207	0.200
81109T2	**K81109T2**	**WS81109**	**GS81109**	48.4	61.6	61	49	0.6	0.144	0.040	0.054	0.050
81209T2	**K81209T2**	**WS81209**	**GS81209**	48.8	68	68	49	1	0.318	0.100	0.112	0.106
89309	**K89309**	**WS89309**	**GS89309**	50.9	81.3	81	51	1	0.660	0.140	0.264	0.255
81110T2	**K81110T2**	**WS81110**	**GS81110**	53.2	66.4	66	54	0.6	0.158	0.045	0.059	0.054
81210T2	**K81210T2**	**WS81210**	**GS81210**	53.7	73.1	73	54	1	0.384	0.105	0.144	0.135
89310	**K89310**	**WS89310**	**GS89310**	58	90.4	90	58	1	0.932	0.180	0.382	0.370
81111T2	**K81111T2**	**WS81111**	**GS81111**	57.8	75.2	75	58	0.6	0.242	0.060	0.094	0.087
81211T2	**K81211T2**	**WS81211**	**GS81211**	60.1	83.4	83	61	1	0.618	0.190	0.219	0.209
89311	**K89311**	**WS89311**	**GS89311**	63.9	100.3	100	64	1	1.26	0.240	0.518	0.503
81112T2	**K81112T2**	**WS81112**	**GS81112**	63.7	80.1	80	65	1	0.288	0.083	0.106	0.099
81212T2	**K81212T2**	**WS81212**	**GS81212**	64.9	88.4	88	66	1	0.690	0.200	0.251	0.240
89312	**K89312**	**WS89312**	**GS89312**	68.9	105.3	105	69	1	1.33	0.250	0.550	0.534

Thrust cylindrical roller bearings

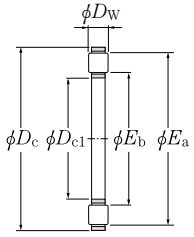
811 type
812 type
893 type



811 type
812 type
(Bearing)



893 type
(Bearing)



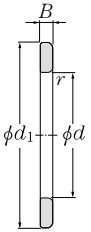
K811 type, K812 type
(Thrust cylindrical roller
and cage assembly)

d 65 ~ 130mm

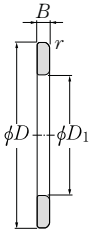
Boundary dimensions mm										Basic load rating N		Fatigue load limit N	Allowable speed min-1	
d	D	d_1	D_1	T	D_{c1} 2) E11	D_c a13	D_w $^{0}_{-0.010}$	B h11	$r_{s\,min}$ 1)	dynamic C_a	static C_{0a}	C_u	Grease lubrication	Oil lubrication
	90	90	67	18	65	90	7.5	5.25	1	73 000	236 000	28 800	780	3 100
65	100	100	67	27	65	100	11	8	1	130 000	385 000	47 000	730	2 900
	115	115	67	30	65	115	9	10.5	1.1	167 000	635 000	77 500	650	2 600
	95	95	72	18	70	95	7.5	5.25	1	76 500	257 000	31 500	730	2 900
70	105	105	72	27	70	105	11	8	1	134 000	410 000	50 000	680	2 700
	125	125	72	34	70	125	10	12	1.1	205 000	790 000	96 500	600	2 400
	100	100	77	19	75	100	7.5	5.75	1	78 000	268 000	32 500	680	2 700
75	110	110	77	27	75	110	11	8	1	138 000	435 000	53 000	650	2 600
	135	135	77	36	75	135	11	12.5	1.5	239 000	920 000	110 000	550	2 200
	105	105	82	19	80	105	7.5	5.75	1	79 500	279 000	34 000	650	2 600
80	115	115	82	28	80	115	11	8.5	1	143 000	460 000	56 000	630	2 500
	140	140	82	36	80	140	11	12.5	1.5	246 000	970 000	114 000	530	2 100
	110	110	87	19	85	110	7.5	5.75	1	83 000	300 000	36 500	630	2 500
85	125	125	88	31	85	125	12	9.5	1	169 000	550 000	66 500	580	2 300
	150	150	88	39	85	150	12	13.5	1.5	281 000	1 100 000	128 000	500	2 000
	120	120	92	22	90	120	9	6.5	1	112 000	395 000	47 500	580	2 300
90	135	135	93	35	90	135	14	10.5	1.1	213 000	680 000	80 000	530	2 100
	155	155	93	39	90	155	12	13.5	1.5	289 000	1 160 000	132 000	480	1 900
	135	135	102	25	100	135	11	7	1	158 000	555 000	65 000	500	2 000
100	150	150	103	38	100	150	15	11.5	1.1	243 000	795 000	91 000	480	1 900
	170	170	103	42	100	170	13	14.5	1.5	335 000	1 370 000	153 000	430	1 700
	145	145	112	25	110	145	11	7	1	165 000	605 000	68 500	480	1 900
110	160	160	113	38	110	160	15	11.5	1.1	258 000	885 000	98 500	450	1 800
	190	190	113	48	110	190	15	16.5	2	430 000	1 770 000	190 000	400	1 600
120	155	155	122	25	120	155	11	7	1	172 000	655 000	72 500	450	1 800
	170	170	123	39	120	170	15	12	1.1	264 000	930 000	101 000	430	1 700
130	170	170	132	30	130	170	12	9	1	197 000	755 000	81 500	400	1 600
	190	187	133	45	130	190	19	13	1.5	360 000	1 210 000	128 000	380	1 500

1) Smallest allowable dimension for chamfer dimension r.
2) The tolerance of bearings with suffix code T2 is E12.

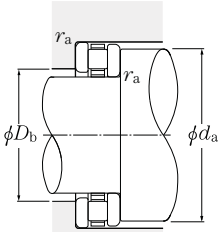
K893 type
(Thrust cylindrical roller
and cage assembly)



WS type raceway
(Inner ring)



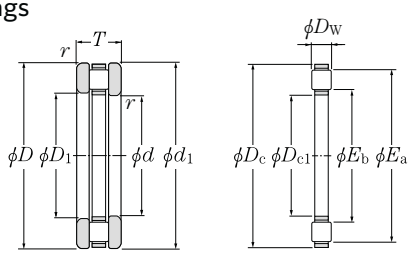
GS type raceway
(Outer ring)



Number				Approx. dimension mm		Installation-related dimensions mm			Mass kg (approx.)			
Bearing	Thrust cylindrical roller and cage assembly	Inner ring	Outer ring	E_b	E_a	d_a Min.	D_b Max.	r_{as} Max.	811	K811 K812 K893	WS811 WS812 WS893	GS811 GS812 GS893
81113T2	**K81113T2**	**WS81113**	**GS81113**	68.8	85.2	85	70	1	0.332	0.090	0.125	0.117
81213T2	**K81213T2**	**WS81213**	**GS81213**	69.9	93.3	93	71	1	0.772	0.215	0.285	0.272
89313	**K89313**	**WS89313**	**GS89313**	73.9	110.3	110	74	1	1.41	0.260	0.583	0.566
81114T2	**K81114T2**	**WS81114**	**GS81114**	73.7	90.1	90	74	1	0.355	0.097	0.134	0.124
81214T2	**K81214T2**	**WS81214**	**GS81214**	75	98.4	98	76	1	0.815	0.225	0.302	0.288
89314	**K89314**	**WS89314**	**GS89314**	79.8	120.2	120	80	1	1.91	0.340	0.793	0.772
81115T2	**K81115T2**	**WS81115**	**GS81115**	78.7	95.1	95	80	1	0.414	0.115	0.155	0.144
81215T2	**K81215T2**	**WS81215**	**GS81215**	80.1	103.7	103	81	1	0.864	0.240	0.319	0.304
89315	**K89315**	**WS89315**	**GS89315**	84.7	129.2	129	85	1.5	2.39	0.470	0.971	0.948
81116T2	**K81116T2**	**WS81116**	**GS81116**	83.7	100.1	100	85	1	0.435	0.119	0.164	0.152
81216T2	**K81216T2**	**WS81216**	**GS81216**	84.8	108.4	106	86	1	0.948	0.250	0.358	0.341
89316	**K89316**	**WS89316**	**GS89316**	89.8	134.2	134	90	1.5	2.50	0.490	1.02	0.992
81117T2	**K81117T2**	**WS81117**	**GS81117**	88.7	105.3	105	89	1	0.458	0.125	0.173	0.161
81217	**K81217**	**WS81217**	**GS81217**	92.2	116.9	116	92	1	1.25	0.300	0.492	0.462
89317	**K89317**	**WS89317**	**GS89317**	95.8	144.2	144	96	1.5	3.09	0.590	1.27	1.23
81118T2	**K81118T2**	**WS81118**	**GS81118**	94.7	114.3	114	95	1	0.660	0.170	0.252	0.238
81218J	**K81218J**	**WS81218**	**GS81218**	97.9	126.7	126	97	1	1.82	0.540	0.655	0.620
89318	**K89318**	**WS89318**	**GS89318**	100.8	149.2	149	101	1.5	3.23	0.620	1.33	1.28
81120T2	**K81120T2**	**WS81120**	**GS81120**	105.1	128.7	128	106	1	0.993	0.300	0.355	0.338
81220	**K81220**	**WS81220**	**GS81220**	109.2	140	139	109	1	2.35	0.620	0.886	0.843
89320	**K89320**	**WS89320**	**GS89320**	110.6	163	163	110	1.5	4.13	0.810	1.69	1.64
81122T2	**K81122T2**	**WS81122**	**GS81122**	115	138.8	138	116	1	1.08	0.325	0.385	0.366
81222	**K81222**	**WS81222**	**GS81222**	119.2	150	149	119	1	2.55	0.685	0.957	0.910
89322	**K89322**	**WS89322**	**GS89322**	122.5	183	183	122	2	5.96	1.15	2.44	2.37
81124T2	**K81124T2**	**WS81124**	**GS81124**	125	148.8	148	126	1	1.15	0.340	0.415	0.395
81224	**K81224**	**WS81224**	**GS81224**	129.2	160	159	129	1	2.82	0.730	1.07	1.02
81126	**K81126**	**WS81126**	**GS81126**	137.7	162.4	162	137	1	1.72	0.415	0.666	0.637
81226	**K81226**	**WS81226**	**GS81226**	140.1	179	178	140	1.5	4.06	1.14	1.45	1.48

Thrust cylindrical roller bearings

811 type
812 type



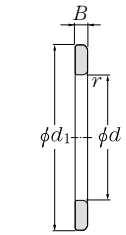
811 type
812 type
(Bearing)

K811 type, K812 type
(Thrust cylindrical roller and cage assembly)

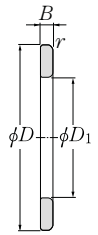
d 140 ～ 160mm

Boundary dimensions mm										Basic load rating N		Fatigue load limit N	Allowable speed min^{-1}	
d	D	d_1	D_1	T	D_{c1} E11	D_c a13	D_w $^{0}_{-0.010}$	B h11	$r_{s\,min}$ [1]	dynamic C_a	static C_{0a}	C_u	Grease lubrication	Oil lubrication
140	180	178	142	31	140	180	12	9.5	1	206 000	815 000	86 000	380	1 500
	200	197	143	46	140	200	19	13.5	1.5	370 000	1 280 000	133 000	350	1 400
150	190	188	152	31	150	190	12	9.5	1	214 000	870 000	90 500	350	1 400
160	200	198	162	31	160	200	12	9.5	1	221 000	930 000	95 000	330	1 300

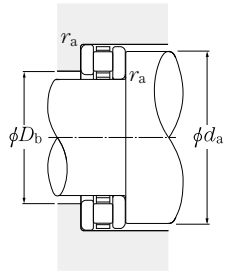
1) Smallest allowable dimension for chamfer dimension r.



WS type raceway
(Inner ring)



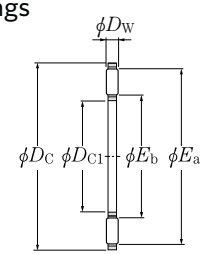
GS type raceway
(Outer ring)



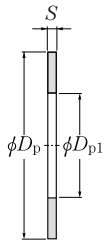
Number				Approx. dimension mm		Installation-related dimensions mm			Mass kg (approx.)			
Bearing	Thrust cylindrical roller and cage assembly	Inner ring	Outer ring	E_b	E_a	d_a Min.	D_b Max.	r_{as} Max.	811	K811 K812 K893	WS811 WS812 WS893	GS811 GS812 GS893
81128	**K81128**	**WS81128**	**GS81128**	147.8	172.5	172	147	1	1.87	0.450	0.708	0.717
81228	**K81228**	**WS81228**	**GS81228**	150.1	189	188	150	1.5	4.43	1.20	1.60	1.63
81130	**K81130**	**WS81130**	**GS81130**	157.7	182.4	182	157	1	1.98	0.470	0.752	0.761
81132	**K81132**	**WS81132**	**GS81132**	167.8	192.5	192	167	1	2.10	0.500	0.797	0.806

Thrust needle roller bearings

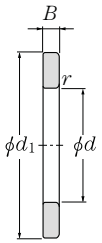
AXK11 type
AS11 type
WS811 type
GS811 type



AXK type
(Thrust needle roller and cage assembly)



AS type raceway
(Washer)

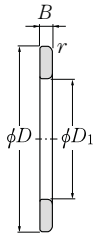


WS type raceway
(Inner ring)

D_{c1} 10 ～ 140mm

Boundary dimensions mm												Basic load rating N		Fatigue load limit N
D_{c1} E11	D_c c12	D_w $^{0}_{-0.010}$	D_p e13	D_{p1} E12	$S^{2)}$ ±0.05	d	d_1	D	D_1	B	$r_{s\,min}$[1)]	dynamic C_a	static C_{0a}	C_u
10	24	2	24	10	1	10	24	24	10	2.75 $^{0}_{-0.060}$	0.3	9 150	25 300	3 100
12	26	2	26	12	1	12	26	26	12	2.75 $^{0}_{-0.060}$	0.3	9 850	28 900	3 500
15	28	2	28	15	1	15	28	28	16	2.75 $^{0}_{-0.060}$	0.3	11 300	36 000	4 400
17	30	2	30	17	1	17	30	30	18	2.75 $^{0}_{-0.060}$	0.3	11 900	39 500	4 800
20	35	2	35	20	1	20	35	35	21	2.75 $^{0}_{-0.060}$	0.3	13 200	46 500	5 650
25	42	2	42	25	1	25	42	42	26	3 $^{0}_{-0.060}$	0.6	14 600	58 000	7 050
30	47	2	47	30	1	30	47	47	32	3 $^{0}_{-0.060}$	0.6	16 300	69 500	8 500
35	52	2	52	35	1	35	52	52	37	3.5 $^{0}_{-0.075}$	0.6	17 800	81 500	9 900
40	60	3	60	40	1	40	60	60	42	3.5 $^{0}_{-0.075}$	0.6	27 400	110 000	13 500
45	65	3	65	45	1	45	65	65	47	4 $^{0}_{-0.075}$	0.6	29 800	128 000	15 600
50	70	3	70	50	1	50	70	70	52	4 $^{0}_{-0.075}$	0.6	31 500	143 000	17 400
55	78	3	78	55	1	55	78	78	57	5 $^{0}_{-0.075}$	0.6	38 000	186 000	22 700
60	85	3	85	60	1	60	85	85	62	4.75 $^{0}_{-0.075}$	1	44 500	234 000	28 600
65	90	3	90	65	1	65	90	90	67	5.25 $^{0}_{-0.075}$	1	46 500	254 000	31 000
70	95	4	95	70	1	70	95	95	72	5.25 $^{0}_{-0.075}$	1	53 500	253 000	31 000
75	100	4	100	75	1	75	100	100	77	5.75 $^{0}_{-0.075}$	1	55 000	266 000	32 500
80	105	4	105	80	1	80	105	105	82	5.75 $^{0}_{-0.075}$	1	56 500	279 000	34 000
85	110	4	110	85	1	85	110	110	87	5.75 $^{0}_{-0.075}$	1	57 500	291 000	35 500
90	120	4	120	90	1	90	120	120	92	6.5 $^{0}_{-0.090}$	1	70 500	390 000	46 500
100	135	4	135	100	1	100	135	135	102	7 $^{0}_{-0.090}$	1	90 000	550 000	64 000
110	145	4	145	110	1	110	145	145	112	7 $^{0}_{-0.090}$	1	93 500	590 000	67 000
120	155	4	155	120	1	120	155	155	122	7 $^{0}_{-0.090}$	1	99 000	650 000	72 000
130	170	5	170	130	1	130	170	170	132	9 $^{0}_{-0.090}$	1	140 000	900 000	97 000
140	180	5	180	140	1	140	178	180	142	9.5 $^{0}_{-0.090}$	1	145 000	960 000	102 000

1) Smallest allowable dimension for chamfer dimension r.
2) The measured thrust load is 2.04 N or above.

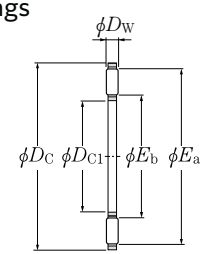


GS type raceway
(Outer ring)

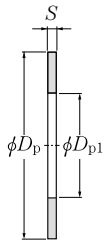
Allowable speed min^{-1}		Number				Approx. dimension mm		Mass kg(approx.)			
Grease lubrication	Oil lubrication	Thrust needle roller and cage assembly	Washer	Inner ring	Outer ring	E_b	E_a	AXK11	AS11	WS811 WS812 WS893	GS811 GS812 GS893
3 500	14 000	**AXK1100**	**AS1100**	**WS81100**	**GS81100**	12.3	21.7	0.0028	0.0029	0.0081	0.0081
3 300	13 000	**AXK1101**	**AS1101**	**WS81101**	**GS81101**	14.3	23.7	0.0030	0.0033	0.0090	0.0090
2 800	11 000	**AXK1102**	**AS1102**	**WS81102**	**GS81102**	17.2	26.5	0.0035	0.0034	0.0095	0.0090
2 500	10 000	**AXK1103**	**AS1103**	**WS81103**	**GS81103**	19.2	28.5	0.0040	0.0038	0.010	0.010
2 100	8 500	**AXK1104**	**AS1104**	**WS81104**	**GS81104**	21.3	31.3	0.0050	0.0051	0.014	0.013
1 800	7 000	**AXK1105**	**AS1105**	**WS81105**	**GS81105**	29.5	39.4	0.0070	0.0070	0.021	0.020
1 500	6 000	**AXK1106**	**AS1106**	**WS81106**	**GS81106**	34.5	44.4	0.0080	0.0081	0.024	0.022
1 400	5 500	**AXK1107**	**AS1107**	**WS81107**	**GS81107**	39.5	49.4	0.010	0.0091	0.032	0.029
1 200	4 700	**AXK1108**	**AS1108**	**WS81108**	**GS81108**	44.2	56.2	0.019	0.012	0.043	0.040
1 100	4 300	**AXK1109**	**AS1109**	**WS81109**	**GS81109**	50.5	62.4	0.021	0.014	0.054	0.050
1 000	3 900	**AXK1110**	**AS1110**	**WS81110**	**GS81110**	55.5	67.4	0.024	0.015	0.059	0.054
900	3 500	**AXK1111**	**AS1111**	**WS81111**	**GS81111**	61.0	74.9	0.031	0.019	0.094	0.087
800	3 200	**AXK1112**	**AS1112**	**WS81112**	**GS81112**	66.0	81.9	0.039	0.022	0.106	0.099
750	3 000	**AXK1113**	**AS1113**	**WS81113**	**GS81113**	71.0	86.9	0.040	0.024	0.125	0.117
750	2 900	**AXK1114**	**AS1114**	**WS81114**	**GS81114**	75.5	91.4	0.060	0.025	0.134	0.124
700	2 700	**AXK1115**	**AS1115**	**WS81115**	**GS81115**	80.5	96.4	0.061	0.027	0.155	0.144
650	2 600	**AXK1116**	**AS1116**	**WS81116**	**GS81116**	84.4	100.3	0.063	0.029	0.164	0.152
600	2 400	**AXK1117**	**AS1117**	**WS81117**	**GS81117**	90.5	106.4	0.067	0.030	0.173	0.161
600	2 300	**AXK1118**	**AS1118**	**WS81118**	**GS81118**	96.5	116.4	0.086	0.039	0.252	0.238
500	2 000	**AXK1120**	**AS1120**	**WS81120**	**GS81120**	107.5	131.4	0.112	0.051	0.355	0.338
480	1 900	**AXK1122**	**AS1122**	**WS81122**	**GS81122**	115.5	139.4	0.122	0.055	0.385	0.366
430	1 700	**AXK1124**	**AS1124**	**WS81124**	**GS81124**	125.5	149.4	0.131	0.059	0.415	0.395
400	1 600	**AXK1126**	**AS1126**	**WS81126**	**GS81126**	136.0	164.0	0.205	0.074	0.666	0.637
380	1 500	**AXK1128**	**AS1128**	**WS81128**	**GS81128**	146.0	174.0	0.219	0.079	0.708	0.717

Thrust needle roller bearings

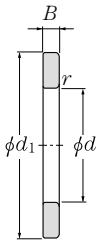
AXK11 type
AS11 type
WS811 type
GS811 type



AXK type
(Thrust needle roller and cage assembly)



AS type raceway
(Washer)

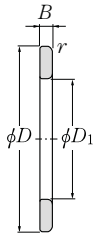


WS type raceway
(Inner ring)

D_{ei} 150 ～ 160mm

Boundary dimensions mm												Basic load rating N		Fatigue load limit N	Allowable speed min^{-1}		Number				Approx. dimension mm		Mass kg(approx.)			
D_{c1} E11	D_c c12	D_w $^{0}_{-0.010}$	D_p e13	D_{p1} E12	$S^{2)}$ ±0.05	d	d_1	D	D_1	B	$r_{s\,min}$[1)]	dynamic C_a	static C_{0a}	C_u	Grease lubrication	Oil lubrication	Thrust needle roller and cage assembly	Washer	Inner ring	Outer ring	E_b	E_a	AXK11	AS11	WS811 WS812 WS893	GS811 GS812 GS893
150	190	5	190	150	1	150	188	190	152	9.5 $^{0}_{-0.090}$	1	149 000	1 020 000	106 000	350	1 400	**AXK1130**	**AS1130**	**WS81130**	**GS81130**	156.0	184.2	0.232	0.084	0.752	0.761
160	200	5	200	160	1	160	198	200	162	9.5 $^{0}_{-0.090}$	1	154 000	1 070 000	110 000	330	1 300	**AXK1132**	**AS1132**	**WS81132**	**GS81132**	166.0	194.2	0.246	0.089	0.797	0.806

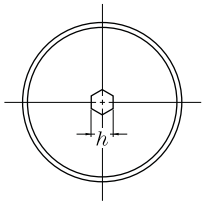
1) Smallest allowable dimension for chamfer dimension r.
2) The measured thrust load is 2.04 N or above.

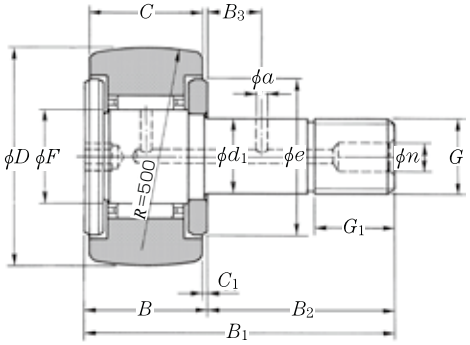


GS type raceway
(Outer ring)

Cam follower stud type track roller metric series

KR··H type
KR··XH type
KR··LLH type
KR··XLLH type



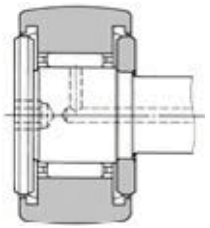


KR··H type
(With cage)

D 10 ～ 90mm

Outer dia.[1] mm D 0 −0.05	Dimensions mm d1	C	F	B	B1	B2	G	G1	B3	C1	n	a	e	h	Basic load rating N dynamic Cr	static C0r	Fatigue load limit N Cu
10	3 0 −0.010	7	4	8	17	9	M3×0.5	5	—	0.5	—	—	7	2.5	1 640	1 270	155
12	4 0 −0.012	8	4.8	9	20	11	M4×0.7	6	—	0.5	—	—	8.5	2.5	2 170	1 690	206
13	5 0 −0.012	9	5.75	10	23	13	M5×0.8	7.5	—	0.5	—	—	9.5	3	2 650	2 260	276
16	6 0 −0.012	11	8	12	28	16	M6×1	8	—	0.6	—	—	12	3	4 050	4 200	510
19	8 0 −0.015	11	10	12	32	20	M8×1.25	10	—	0.6	—	—	14	4	4 750	5 400	660
22	10 0 −0.015	12	12	13	36	23	M10×1.25	12	—	0.6	4	—	17	4	5 300	6 650	810
26	10 0 −0.015	12	12	13	36	23	M10×1.25	12	—	0.6	4	—	17	4	5 300	6 650	810
30	12 0 −0.018	14	15	15	40	25	M12×1.5	13	6	0.6	6	3	23	6	7 850	9 650	1 180
32	12 0 −0.018	14	15	15	40	25	M12×1.5	13	6	0.6	6	3	23	6	7 850	9 650	1 180
35	16 0 −0.018	18	18	19.5	52	32.5	M16×1.5	17	8	0.8	6	3	27	6	12 200	17 900	2 180
40	18 0 −0.018	20	22	21.5	58	36.5	M18×1.5	19	8	0.8	6	3	32	6	14 000	22 800	2 790
47	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	9	0.8	8	4	37	8	20 700	33 500	4 100
52	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	9	0.8	8	4	37	8	20 700	33 500	4 100
62	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	11	0.8	8	4	44	8	28 900	55 000	6 700
72	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	11	0.8	8	4	44	8	28 900	55 000	6 700
80	30 0 −0.021	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	8	45 000	88 500	10 800
85	30 0 −0.021	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	8	45 000	88 500	10 800
90	30 0 −0.021	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	8	45 000	88 500	10 800

1) The tolerance of outer ring outer diameter D of KR··XH type and KR··XLLH type having a cylindrical outer diameter surface is JIS 0 class.

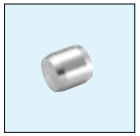


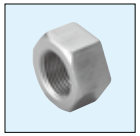
KR··LLH type
(Seal type with cage)

Accessories

Applied bearing number	Grease nipple number	Plug number	Applied hexagonal nut
10～19	—	—	1M3×0.5～1M8×1.25
22～26	NIP-B4	SEN4	1M10×1.25
30～40	NIP-B6	SEN3, SEN6	1M12×1.5～1M18×1.5
47～90	NIP-B8	SEN4, SEN8	1M20×1.5～1M30×1.5


Grease fitting


Plug

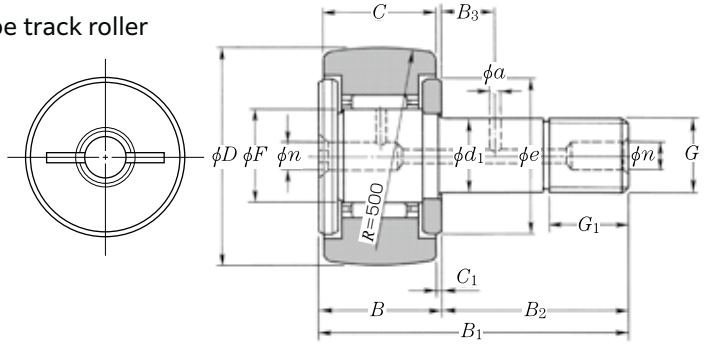

Hexagon nut

Track load capacity N Spherical outer ring	Cylindrical outer ring	Allowable speed[2] min-1 Grease lubrication	Oil lubrication	Maximum tightening torque N · m	Number[3] Without seal Spherical outer ring	Cylindrical outer ring	With seal Spherical outer ring	Cylindrical outer ring	Mass kg (approx.)	Stud dia. mm
560	1 360	*27 000	*40 000	0.5	KR10T2H/3AS	KR10XT2H/3AS	KR10T2LLH/3AS	KR10XT2LLH/3AS	0.005	3
725	1 790	*25 000	*36 000	1	KR12T2H/3AS	KR12XT2H/3AS	KR12T2LLH/3AS	KR12XT2LLH/3AS	0.008	4
805	2 220	*23 000	*33 000	2	KR13T2H/3AS	KR13XT2H/3AS	KR13T2LLH/3AS	KR13XT2LLH/3AS	0.010	5
1 080	3 400	*19 000	*25 000	3	KR16FDOH/L588	KR16FXDOH/L588	KR16FLLDOH/L588	KR16FXLLDOH/L588	0.019	6
1 380	4 050	*15 000	*20 000	8	KR19FDOH/L588	KR19FXDOH/L588	KR19FLLDOH/L588	KR19FXLLDOH/L588	0.031	8
1 690	5 150	*12 000	*16 000	14	KR22FH	KR22FXH	KR22FLLH/3AS	KR22FXLLH/3AS	0.046	10
2 120	6 100	*12 000	*16 000	14	KR26FH	KR26FXH	KR26FLLH/3AS	KR26FXLLH/3AS	0.059	10
2 620	7 700	10 000	*13 000	20	KR30H	KR30XH	KR30LLH/3AS	KR30XLLH/3AS	0.087	12
2 860	8 200	10 000	*13 000	20	KR32H	KR32XH	KR32LLH/3AS	KR32XLLH/3AS	0.097	12
3 200	11 900	8 000	*11 000	52	KR35H	KR35XH	KR35LLH/3AS	KR35XLLH/3AS	0.169	16
3 850	14 500	7 000	9 000	76	KR40H	KR40XH	KR40LLH/3AS	KR40XLLH/3AS	0.248	18
4 700	21 000	6 000	8 000	98	KR47H	KR47XH	KR47LLH/3AS	KR47XLLH/3AS	0.386	20
5 550	23 300	6 000	8 000	98	KR52H	KR52XH	KR52LLH/3AS	KR52XLLH/3AS	0.461	20
6 950	34 500	5 000	6 500	178	KR62H	KR62XH	KR62LLH/3AS	KR62XLLH/3AS	0.790	24
8 050	38 500	5 000	6 500	178	KR72H	KR72XH	KR72LLH/3AS	KR72XLLH/3AS	1.04	24
9 800	53 000	4 000	5 500	360	KR80H	KR80XH	KR80LLH/3AS	KR80XLLH/3AS	1.55	30
10 400	56 000	4 000	5 500	360	KR85H	KR85XH	KR85LLH/3AS	KR85XLLH/3AS	1.74	30
11 400	59 000	4 000	5 500	360	KR90H	KR90XH	KR90LLH/3AS	KR90XLLH/3AS	1.95	30

2) The allowable speed of KR··LLH type and KR··XLLH type with a "＊" mark seal is about 10 000 min-1.
3) Bearings having T2 after the bearing number have a plastic cage, and the allowable temperature is 120°C and 100°C or below for continuous use.

Cam follower stud type track roller
metric series

KR type
KR··X type
KR··LL type
KR··XLL type

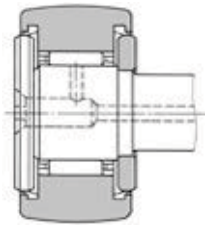


KR type
(With cage)

D 16 ~ 90mm

Outer dia.[1] mm D 0 −0.05	Dimensions mm d1	C	F	B	B1	B2	G	G1	B3	C1	n	a	e	Basic load rating N dynamic Cr	static C0r	Fatigue load limit N Cu
16	6 0 −0.012	11	8	12	28	16	M6×1	8	—	0.6	4[2]	—	12	4 050	4 200	510
19	8 0 −0.015	11	10	12	32	20	M8×1.25	10	—	0.6	4[2]	—	14	4 750	5 400	660
22	10 0 −0.015	12	12	13	36	23	M10×1.25	12	—	0.6	4	—	17	5 300	6 650	810
26	10 0 −0.015	12	12	13	36	23	M10×1.25	12	—	0.6	4	—	17	5 300	6 650	810
30	12 0 −0.018	14	15	15	40	25	M12×1.5	13	6	0.6	6	3	23	7 850	9 650	1 180
32	12 0 −0.018	14	15	15	40	25	M12×1.5	13	6	0.6	6	3	23	7 850	9 650	1 180
35	16 0 −0.018	18	18	19.5	52	32.5	M16×1.5	17	8	0.8	6	3	27	12 200	17 900	2 180
40	18 0 −0.018	20	22	21.5	58	36.5	M18×1.5	19	8	0.8	6	3	32	14 000	22 800	2 780
47	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	9	0.8	8	4	37	20 700	33 500	4 100
52	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	9	0.8	8	4	37	20 700	33 500	4 100
62	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	11	0.8	8	4	44	28 900	55 000	6 700
72	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	11	0.8	8	4	44	28 900	55 000	6 700
80	30 0 −0.021	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	45 000	88 500	10 800
85	30 0 −0.021	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	45 000	88 500	10 800
90	30 0 −0.021	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	45 000	88 500	10 800

1) The tolerance of outer ring outer diameter D of KR··X type and KR··XLL type having a cylindrical outer diameter surface is JIS 0 class.
2) A grease filler hole is provided only on the front surface (left side in the above drawing).

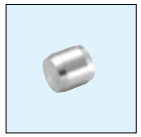


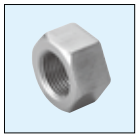
KR··LL type
(Seal type with cage)

Accessories

Applied bearing number	Grease nipple number	Plug number	Applied hexagonal nut
16~26	NIP-B4	SEN4	1M 6×1 ~1M10×1.25
30~40	NIP-B6	SEN3, SEN6	1M12×1.5~1M18×1.5
47~90	NIP-B8	SEN4, SEN8	1M20×1.5~1M30×1.5


Grease fitting


Plug

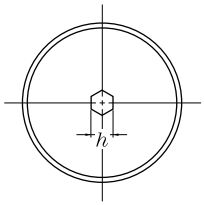

Hexagon nut

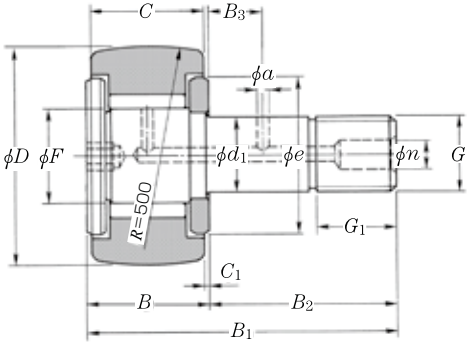
Track load capacity N Spherical outer ring	Cylindrical outer ring	Allowable speed[3] min-1 Grease lubrication	Oil lubrication	Maximum tightening torque N · m	Number Without seal Spherical outer ring	Without seal Cylindrical outer ring	With seal Spherical outer ring	With seal Cylindrical outer ring	Mass kg (approx.)	Stud dia. mm
1 080	3 400	*19 000	*25 000	3	**KR16F**	**KR16FX**	**KR16FLL/3AS**	**KR16FXLL/3AS**	0.019	**6**
1 380	4 050	*15 000	*20 000	8	**KR19F**	**KR19FX**	**KR19FLL/3AS**	**KR19FXLL/3AS**	0.031	**8**
1 690	5 150	*12 000	*16 000	14	**KR22F**	**KR22FX**	**KR22FLL/3AS**	**KR22FXLL/3AS**	0.046	**10**
2 120	6 100	*12 000	*16 000	14	**KR26F**	**KR26FX**	**KR26FLL/3AS**	**KR26FXLL/3AS**	0.059	**10**
2 620	7 700	10 000	*13 000	20	**KR30**	**KR30X**	**KR30LL/3AS**	**KR30XLL/3AS**	0.087	**12**
2 860	8 200	10 000	*13 000	20	**KR32**	**KR32X**	**KR32LL/3AS**	**KR32XLL/3AS**	0.097	**12**
3 200	11 900	8 000	*11 000	52	**KR35**	**KR35X**	**KR35LL/3AS**	**KR35XLL/3AS**	0.169	**16**
3 850	14 500	7 000	9 000	76	**KR40**	**KR40X**	**KR40LL/3AS**	**KR40XLL/3AS**	0.248	**18**
4 700	21 000	6 000	8 000	98	**KR47**	**KR47X**	**KR47LL/3AS**	**KR47XLL/3AS**	0.386	**20**
5 550	23 300	6 000	8 000	98	**KR52**	**KR52X**	**KR52LL/3AS**	**KR52XLL/3AS**	0.461	**20**
6 950	34 500	5 000	6 500	178	**KR62**	**KR62X**	**KR62LL/3AS**	**KR62XLL/3AS**	0.790	**24**
8 050	38 500	5 000	6 500	178	**KR72**	**KR72X**	**KR72LL/3AS**	**KR72XLL/3AS**	1.04	**24**
9 800	53 000	4 000	5 500	360	**KR80**	**KR80X**	**KR80LL/3AS**	**KR80XLL/3AS**	1.55	**30**
10 400	56 000	4 000	5 500	360	**KR85**	**KR85X**	**KR85LL/3AS**	**KR85XLL/3AS**	1.74	**30**
11 400	59 000	4 000	5 500	360	**KR90**	**KR90X**	**KR90LL/3AS**	**KR90XLL/3AS**	1.95	**30**

3) The allowable speed of KR··LL type and KR··XLL type with a "∗" mark seal is about 10 000 min-1.

Cam follower stud type track roller
metric series

KRV··H type
KRV··XH type
KRV··LLH type
KRV··XLLH type



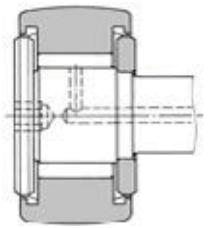


KRV··H type
(Full complement roller type)

D 10 ~ 90mm

Outer dia.[1] mm D $^{0}_{-0.05}$	Dimensions mm d_1	C	F	B	B_1	B_2	G	G_1	B_3	C_1	n	a	e	h	Basic load rating N dynamic C_r	static C_{0r}	Fatigue load limit N C_u
10	3 $^{0}_{-0.010}$	7	4	8	17	9	M3×0.5	5	—	0.5	—	—	7	2.5	2 500	2 610	320
12	4 $^{0}_{-0.012}$	8	4.8	9	20	11	M4×0.7	6	—	0.5	—	—	8.5	2.5	3 500	3 800	460
13	5 $^{0}_{-0.012}$	9	5.75	10	23	13	M5×0.8	7.5	—	0.5	—	—	9.5	3	4 500	5 350	650
16	6 $^{0}_{-0.012}$	11	8	12	28	16	M6×1	8	—	0.6	—	—	12	3	6 500	9 350	1 140
19	8 $^{0}_{-0.015}$	11	10	12	32	20	M8×1.25	10	—	0.6	—	—	14	4	7 450	11 700	1 430
22	10 $^{0}_{-0.015}$	12	12	13	36	23	M10×1.25	12	—	0.6	4	—	17	4	8 200	14 000	1 700
26	10 $^{0}_{-0.015}$	12	12	13	36	23	M10×1.25	12	—	0.6	4	—	17	4	8 200	14 000	1 700
30	12 $^{0}_{-0.018}$	14	15	15	40	25	M12×1.5	13	6	0.6	6	3	23	6	12 000	20 300	2 470
32	12 $^{0}_{-0.018}$	14	15	15	40	25	M12×1.5	13	6	0.6	6	3	23	6	12 000	20 300	2 470
35	16 $^{0}_{-0.018}$	18	18	19.5	52	32.5	M16×1.5	17	8	0.8	6	3	27	6	17 600	34 000	4 150
40	18 $^{0}_{-0.018}$	20	22	21.5	58	36.5	M18×1.5	19	8	0.8	6	3	32	6	19 400	42 000	5 100
47	20 $^{0}_{-0.021}$	24	25	25.5	66	40.5	M20×1.5	21	9	0.8	8	4	37	8	28 800	61 000	7 450
52	20 $^{0}_{-0.021}$	24	25	25.5	66	40.5	M20×1.5	21	9	0.8	8	4	37	8	28 800	61 000	7 450
62	24 $^{0}_{-0.021}$	29	30	30.5	80	49.5	M24×1.5	25	11	0.8	8	4	44	8	39 500	98 500	12 000
72	24 $^{0}_{-0.021}$	29	30	30.5	80	49.5	M24×1.5	25	11	0.8	8	4	44	8	39 500	98 500	12 000
80	30 $^{0}_{-0.021}$	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	8	58 000	147 000	18 000
90	30 $^{0}_{-0.021}$	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	8	58 000	147 000	18 000

1) The tolerance of outer ring outer diameter D of KRV··XH type and KRV··XLLH type having a cylindrical outer diameter surface is JIS 0 class.

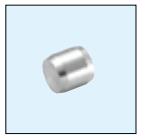


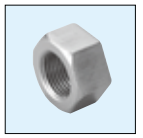
KRV··LLH type
(Full complement roller sealed type)

Accessories

Applied bearing number	Grease nipple number	Plug number	Applied hexagonal nut
10~19	—	—	1M3×0.5~1M8×1.25
22~26	NIP-B4	SEN4	1M10×1.25
30~40	NIP-B6	SEN3, SEN6	1M12×1.5~1M18×1.5
47~90	NIP-B8	SEN4, SEN8	1M20×1.5~1M30×1.5


Grease fitting


Plug

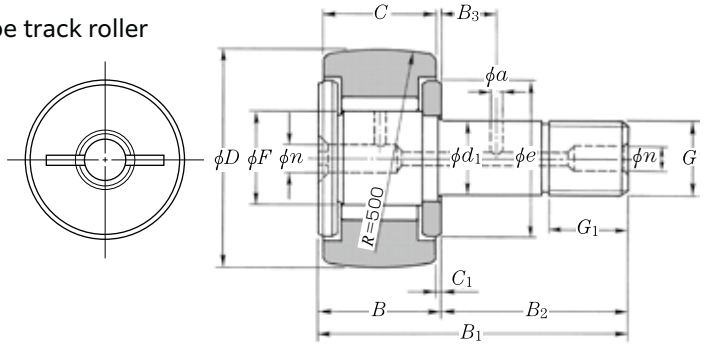

Hexagon nut

Track load capacity N Spherical outer ring	Cylindrical outer ring	Allowable speed[2] min^{-1} Grease lubrication	Oil lubrication	Maximum tightening torque N · m	Number Without seal Spherical outer ring	Without seal Cylindrical outer ring	With seal Spherical outer ring	With seal Cylindrical outer ring	Mass kg (approx.)	Stud dia. mm
560	1 360	*25 000	*32 000	0.5	**KRV10H/3AS**	**KRV10XH/3AS**	**KRV10LLH/3AS**	**KRV10XLLH/3AS**	0.005	**3**
725	1 790	*20 000	*27 000	1	**KRV12H/3AS**	**KRV12XH/3AS**	**KRV12LLH/3AS**	**KRV12XLLH/3AS**	0.008	**4**
805	2 220	*17 000	*22 000	2	**KRV13H/3AS**	**KRV13XH/3AS**	**KRV13LLH/3AS**	**KRV13XLLH/3AS**	0.011	**5**
1 080	3 400	*13 000	*16 000	3	**KRV16FDOH/L588**	**KRV16FXDOH/L588**	**KRV16FLLDOH/L588**	**KRV16FXLLDOH/L588**	0.020	**6**
1 380	4 050	10 000	*13 000	8	**KRV19FDOH/L588**	**KRV19FXDOH/L588**	**KRV19FLLDOH/L588**	**KRV19FXLLDOH/L588**	0.032	**8**
1 690	5 150	8 500	*11 000	14	**KRV22FH/3AS**	**KRV22FXH/3AS**	**KRV22FLLH/3AS**	**KRV22FXLLH/3AS**	0.047	**10**
2 120	6 100	8 500	*11 000	14	**KRV26FH/3AS**	**KRV26FXH/3AS**	**KRV26FLLH/3AS**	**KRV26FXLLH/3AS**	0.061	**10**
2 620	7 700	6 500	8 500	20	**KRV30H/3AS**	**KRV30XH/3AS**	**KRV30LLH/3AS**	**KRV30XLLH/3AS**	0.089	**12**
2 860	8 200	6 500	8 500	20	**KRV32H/3AS**	**KRV32XH/3AS**	**KRV32LLH/3AS**	**KRV32XLLH/3AS**	0.100	**12**
3 200	11 900	5 500	7 000	52	**KRV35H/3AS**	**KRV35XH/3AS**	**KRV35LLH/3AS**	**KRV35XLLH/3AS**	0.172	**16**
3 850	14 500	4 500	6 000	76	**KRV40H/3AS**	**KRV40XH/3AS**	**KRV40LLH/3AS**	**KRV40XLLH/3AS**	0.252	**18**
4 700	21 000	4 000	5 000	98	**KRV47H/3AS**	**KRV47XH/3AS**	**KRV47LLH/3AS**	**KRV47XLLH/3AS**	0.392	**20**
5 550	23 300	4 000	5 000	98	**KRV52H/3AS**	**KRV52XH/3AS**	**KRV52LLH/3AS**	**KRV52XLLH/3AS**	0.465	**20**
6 950	34 500	3 300	4 500	178	**KRV62H/3AS**	**KRV62XH/3AS**	**KRV62LLH/3AS**	**KRV62XLLH/3AS**	0.800	**24**
8 050	38 500	3 300	4 500	178	**KRV72H/3AS**	**KRV72XH/3AS**	**KRV72LLH/3AS**	**KRV72XLLH/3AS**	1.05	**24**
9 800	53 000	2 600	3 500	360	**KRV80H/3AS**	**KRV80XH/3AS**	**KRV80LLH/3AS**	**KRV80XLLH/3AS**	1.56	**30**
11 400	59 000	2 600	3 500	360	**KRV90H/3AS**	**KRV90XH/3AS**	**KRV90LLH/3AS**	**KRV90XLLH/3AS**	1.97	**30**

2) The allowable speed of KRV··LLH type and KRV··XLLH type with a "∗" mark seal is about 10 000 min^{-1}.

Cam follower stud type track roller
metric series

KRV type
KRV··X type
KRV··LL type
KRV··XLL type

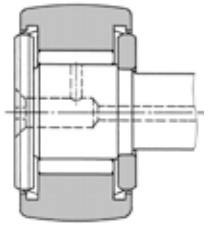


KRV type
(Full complement roller type)

D 16 ~ 90mm

Outer dia.[1] mm D 0 −0.05	Dimensions mm d1	C	F	B	B1	B2	G	G1	B3	C1	n	a	e	Basic load rating dynamic N Cr	static N C0r	Fatigue load limit N Cu
16	6 0 −0.012	11	8	12	28	16	M6×1	8	—	0.6	4[2]	—	12	6 500	9 350	1 140
19	8 0 −0.015	11	10	12	32	20	M8×1.25	10	—	0.6	4[2]	—	14	7 450	11 700	1 430
22	10 0 −0.015	12	12	13	36	23	M10×1.25	12	—	0.6	4	—	17	8 200	14 000	1 700
26	10 0 −0.015	12	12	13	36	23	M10×1.25	12	—	0.6	4	—	17	8 200	14 000	1 700
30	12 0 −0.018	14	15	15	40	25	M12×1.5	13	6	0.6	6	3	23	12 000	20 300	2 470
32	12 0 −0.018	14	15	15	40	25	M12×1.5	13	6	0.6	6	3	23	12 000	20 300	2 470
35	16 0 −0.018	18	18	19.5	52	32.5	M16×1.5	17	8	0.8	6	3	27	17 600	34 000	4 150
40	18 0 −0.018	20	22	21.5	58	36.5	M18×1.5	19	8	0.8	6	3	32	19 400	42 000	5 100
47	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	9	0.8	8	4	37	28 800	61 000	7 450
52	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	9	0.8	8	4	37	28 800	61 000	7 450
62	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	11	0.8	8	4	44	39 500	98 500	12 000
72	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	11	0.8	8	4	44	39 500	98 500	12 000
80	30 0 −0.021	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	58 000	147 000	18 000
90	30 0 −0.021	35	38	37	100	63	M30×1.5	32	15	1	8	4	53	58 000	147 000	18 000

1) The tolerance of outer ring outer diameter D of KRV··X type and KRV··XLL type having a cylindrical outer diameter surface is JIS 0 class.
2) A grease filler hole is provided only on the front surface (left side in the above drawing).

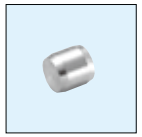


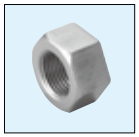
KRV··LL type
(Full complement roller sealed type)

Accessories

Applied bearing number	Grease nipple number	Plug number	Applied hexagonal nut
16~26	NIP-B4	SEN4	1M 6×1 ~1M10×1.25
30~40	NIP-B6	SEN3, SEN6	1M12×1.5~1M18×1.5
47~90	NIP-B8	SEN4, SEN8	1M20×1.5~1M30×1.5


Grease fitting


Plug

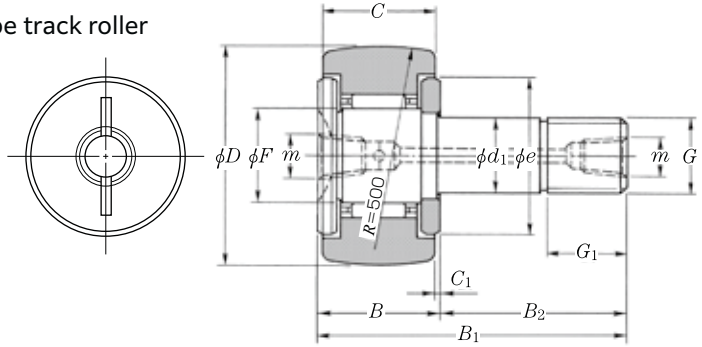

Hexagon nut

Track load capacity N Spherical outer ring	Cylindrical outer ring	Allowable speed[3] min-1 Grease lubrication	Oil lubrication	Maximum tightening torque N · m	Number Without seal Spherical outer ring	Without seal Cylindrical outer ring	With seal Spherical outer ring	With seal Cylindrical outer ring	Mass kg (approx.)	Stud dia. mm
1 080	3 400	*13 000	*16 000	3	KRV16F/3AS	KRV16FX/3AS	KRV16FLL/3AS	KRV16FXLL/3AS	0.020	6
1 380	4 050	10 000	*13 000	8	KRV19F/3AS	KRV19FX/3AS	KRV19FLL/3AS	KRV19FXLL/3AS	0.032	8
1 690	5 150	8 500	*11 000	14	KRV22F/3AS	KRV22FX/3AS	KRV22FLL/3AS	KRV22FXLL/3AS	0.047	10
2 120	6 100	8 500	*11 000	14	KRV26F/3AS	KRV26FX/3AS	KRV26FLL/3AS	KRV26FXLL/3AS	0.061	10
2 620	7 700	6 500	8 500	20	KRV30/3AS	KRV30X/3AS	KRV30LL/3AS	KRV30XLL/3AS	0.089	12
2 860	8 200	6 500	8 500	20	KRV32/3AS	KRV32X/3AS	KRV32LL/3AS	KRV32XLL/3AS	0.100	12
3 200	11 900	5 500	7 000	52	KRV35/3AS	KRV35X/3AS	KRV35LL/3AS	KRV35XLL/3AS	0.172	16
3 850	14 500	4 500	6 000	76	KRV40/3AS	KRV40X/3AS	KRV40LL/3AS	KRV40XLL/3AS	0.252	18
4 700	21 000	4 000	5 000	98	KRV47/3AS	KRV47X/3AS	KRV47LL/3AS	KRV47XLL/3AS	0.390	20
5 550	23 300	4 000	5 000	98	KRV52/3AS	KRV52X/3AS	KRV52LL/3AS	KRV52XLL/3AS	0.465	20
6 950	34 500	3 300	4 500	178	KRV62/3AS	KRV62X/3AS	KRV62LL/3AS	KRV62XLL/3AS	0.800	24
8 050	38 500	3 300	4 500	178	KRV72/3AS	KRV72X/3AS	KRV72LL/3AS	KRV72XLL/3AS	1.05	24
9 800	53 000	2 600	3 500	360	KRV80/3AS	KRV80X/3AS	KRV80LL/3AS	KRV80XLL/3AS	1.56	30
11 400	59 000	2 600	3 500	360	KRV90/3AS	KRV90X/3AS	KRV90LL/3AS	KRV90XLL/3AS	1.97	30

3) The allowable speed of KRV··LL type and KRV··XLL type with a "*" mark seal is about 10 000 min-1.

Cam follower stud type track roller
metric series

KRT type
KRT··X type
KRT··LL type
KRT··XLL type

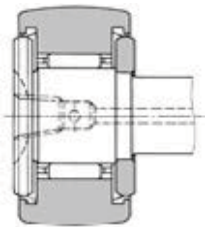


KRT type
(With cage)

D 16 ~ 90mm

Outer dia.[1] mm D 0 −0.05	Dimensions mm d1	C	F	B	B1	B2	G	G1	C1	m	e	Basic load rating dynamic N Cr	static N C0r	Fatigue load limit N Cu
16	6 0 −0.012	11	8	12	28	16	M6×1	8	0.6	M4×0.7[2]	12	4 050	4 200	510
19	8 0 −0.015	11	10	12	32	20	M8×1.25	10	0.6	M4×0.7[2]	14	4 750	5 400	660
22	10 0 −0.015	12	12	13	36	23	M10×1.25	12	0.6	M4×0.7	17	5 300	6 650	810
26	10 0 −0.015	12	12	13	36	23	M10×1.25	12	0.6	M4×0.7	17	5 300	6 650	810
30	12 0 −0.018	14	15	15	40	25	M12×1.5	13	0.6	M6×0.75	23	7 850	9 650	1 180
32	12 0 −0.018	14	15	15	40	25	M12×1.5	13	0.6	M6×0.75	23	7 850	9 650	1 180
35	16 0 −0.018	18	18	19.5	52	32.5	M16×1.5	17	0.8	Rc 1/8	27	12 200	17 900	2 180
40	18 0 −0.018	20	22	21.5	58	36.5	M18×1.5	19	0.8	Rc 1/8	32	14 000	22 800	2 785
47	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	0.8	Rc 1/8	37	20 700	33 500	4 100
52	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	0.8	Rc 1/8	37	20 700	33 500	4 100
62	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	0.8	Rc 1/8	44	28 900	55 000	6 700
72	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	0.8	Rc 1/8	44	28 900	55 000	6 700
80	30 0 −0.021	35	38	37	100	63	M30×1.5	32	1	Rc 1/8	53	45 000	88 500	10 800
85	30 0 −0.021	35	38	37	100	63	M30×1.5	32	1	Rc 1/8	53	45 000	88 500	10 800
90	30 0 −0.021	35	38	37	100	63	M30×1.5	32	1	Rc 1/8	53	45 000	88 500	10 800

1) The tolerance of outer ring outer diameter D of KRT··X type and KRT··XLL type having a cylindrical outer diameter surface is JIS 0 class.
2) A tapped hole is provided only on the front surface (left side in the above drawing).

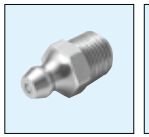


KRT··LL type
(Seal type with cage)

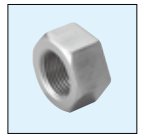
Accessories

Applied Number	Grease nipple number	Number of hex socket screw plug	Applied hexagonal nut Number
16~26	NIP-X30	M4×0.7 ×4ℓ	1M 6×1 ~1M10×1.25
30~32	JIS 1 type (A-M6F)	M6×0.75 ×6ℓ	1M12×1.5
35~90	JIS 2 type (A-PT1/8)	R1/8 (PT1/8) ×7ℓ	1M16×1.5~1M30×1.5


Grease fitting


Grease fitting


Hex socket screw plug

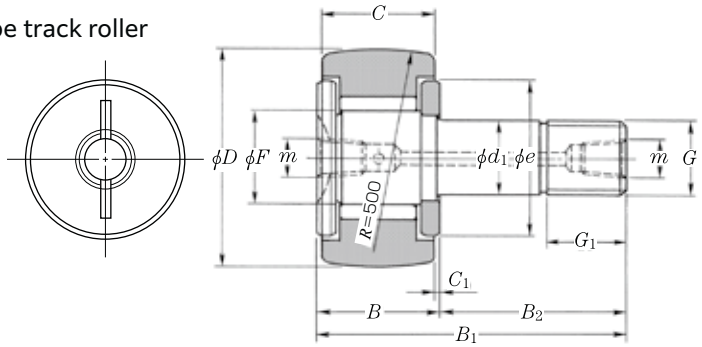

Hexagon nut

Track load capacity N Spherical outer ring	Cylindrical outer ring	Allowable speed[3] min-1 Grease lubrication	Oil lubrication	Maximum tightening torque N · m	Number Without seal Spherical outer ring	Cylindrical outer ring	With seal Spherical outer ring	Cylindrical outer ring	Mass kg (approx.)	Stud dia. mm
1 080	3 400	*19 000	*25 000	3	**KRT16**	**KRT16X**	**KRT16LL/3AS**	**KRT16XLL/3AS**	0.019	**6**
1 380	4 050	*15 000	*20 000	8	**KRT19**	**KRT19X**	**KRT19LL/3AS**	**KRT19XLL/3AS**	0.031	**8**
1 690	5 150	*12 000	*16 000	14	**KRT22**	**KRT22X**	**KRT22LL/3AS**	**KRT22XLL/3AS**	0.046	**10**
2 120	6 100	*12 000	*16 000	14	**KRT26**	**KRT26X**	**KRT26LL/3AS**	**KRT26XLL/3AS**	0.059	**10**
2 620	7 700	10 000	*13 000	20	**KRT30**	**KRT30X**	**KRT30LL/3AS**	**KRT30XLL/3AS**	0.087	**12**
2 860	8 200	10 000	*13 000	20	**KRT32**	**KRT32X**	**KRT32LL/3AS**	**KRT32XLL/3AS**	0.097	**12**
3 200	11 900	8 000	*11 000	52	**KRT35**	**KRT35X**	**KRT35LL/3AS**	**KRT35XLL/3AS**	0.169	**16**
3 850	14 500	7 000	9 000	76	**KRT40**	**KRT40X**	**KRT40LL/3AS**	**KRT40XLL/3AS**	0.248	**18**
4 700	21 000	6 000	8 000	98	**KRT47**	**KRT47X**	**KRT47LL/3AS**	**KRT47XLL/3AS**	0.386	**20**
5 550	23 300	6 000	8 000	98	**KRT52**	**KRT52X**	**KRT52LL/3AS**	**KRT52XLL/3AS**	0.461	**20**
6 950	34 500	5 000	6 500	178	**KRT62**	**KRT62X**	**KRT62LL/3AS**	**KRT62XLL/3AS**	0.790	**24**
8 050	38 500	5 000	6 500	178	**KRT72**	**KRT72X**	**KRT72LL/3AS**	**KRT72XLL/3AS**	1.04	**24**
9 800	53 000	4 000	5 500	360	**KRT80**	**KRT80X**	**KRT80LL/3AS**	**KRT80XLL/3AS**	1.55	**30**
10 400	56 000	4 000	5 500	360	**KRT85**	**KRT85X**	**KRT85LL/3AS**	**KRT85XLL/3AS**	1.74	**30**
11 400	59 000	4 000	5 500	360	**KRT90**	**KRT90X**	**KRT90LL/3AS**	**KRT90XLL/3AS**	1.95	**30**

3) The allowable speed of KRT··LL type and KRT··XLL type with a "*" mark seal is about 10 000 min-1.

Cam follower stud type track roller
metric series

KRVT type
KRVT··X type
KRVT··LL type
KRVT··XLL type

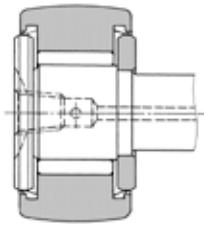


KRVT type
(Full complement roller type)

D 16 ～ 90mm

Outer dia.[1] mm D 0 −0.05	Dimensions mm d1	C	F	B	B1	B2	G	G1	C1	m	e	Basic load rating dynamic N Cr	static N C0r	Fatigue load limit N Cu
16	6 0 −0.012	11	8	12	28	16	M6×1	8	0.6	M4×0.7[2]	12	6 500	9 350	1 140
19	8 0 −0.015	11	10	12	32	20	M8×1.25	10	0.6	M4×0.7[2]	14	7 450	11 700	1 430
22	10 0 −0.015	12	12	13	36	23	M10×1.25	12	0.6	M4×0.7	17	8 200	14 000	1 700
26	10 0 −0.015	12	12	13	36	23	M10×1.25	12	0.6	M4×0.7	17	8 200	14 000	1 700
30	12 0 −0.018	14	15	15	40	25	M12×1.5	13	0.6	M6×0.75	23	12 000	20 300	2 470
32	12 0 −0.018	14	15	15	40	25	M12×1.5	13	0.6	M6×0.75	23	12 000	20 300	2 470
35	16 0 −0.018	18	18	19.5	52	32.5	M16×1.5	17	0.8	Rc 1/8	27	17 600	34 000	4 150
40	18 0 −0.018	20	22	21.5	58	36.5	M18×1.5	19	0.8	Rc 1/8	32	19 400	42 000	5 100
47	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	0.8	Rc 1/8	37	28 800	61 000	7 450
52	20 0 −0.021	24	25	25.5	66	40.5	M20×1.5	21	0.8	Rc 1/8	37	28 800	61 000	7 450
62	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	0.8	Rc 1/8	44	39 500	98 500	12 000
72	24 0 −0.021	29	30	30.5	80	49.5	M24×1.5	25	0.8	Rc 1/8	44	39 500	98 500	12 000
80	30 0 −0.021	35	38	37	100	63	M30×1.5	32	1	Rc 1/8	53	58 000	147 000	18 000
90	30 0 −0.021	35	38	37	100	63	M30×1.5	32	1	Rc 1/8	53	58 000	147 000	18 000

1) The tolerance of outer ring outer diameter D of KRVT··X type and KRVT··XLL type having a cylindrical outer diameter surface is JIS 0 class.
2) A tapped hole is provided only on the front surface (left side in the above drawing).

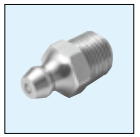


KRVT··LL type
(Full complement roller sealed type)

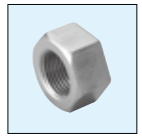
Accessories

Applied Number	Grease nipple number	Number of hex socket screw plug	Applied hexagonal nut Number
16～26	NIP-X30	M4×0.7 ×4ℓ	1M 6×1 ～1M10×1.25
30～32	JIS 1 type (A-M6F)	M6×0.75 ×6ℓ	1M12×1.5
35～90	JIS 2 type (A-PT 1/8)	R 1/8 (PT 1/8) ×7ℓ	1M16×1.5～1M30×1.5


Grease fitting


Grease fitting


Hex socket screw plug

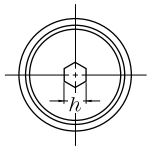

Hexagon nut

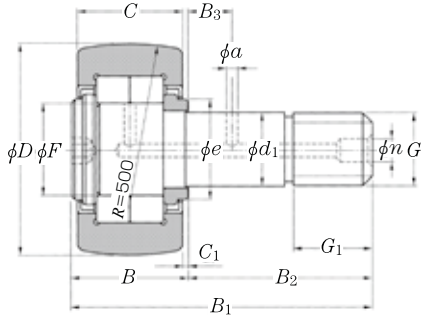
Track load capacity N Spherical outer ring	Cylindrical outer ring	Allowable speed[3] min-1 Grease lubrication	Oil lubrication	Maximum tightening torque N · m	Number Without seal Spherical outer ring	Without seal Cylindrical outer ring	With seal Spherical outer ring	With seal Cylindrical outer ring	Mass kg (approx.)	Stud dia. mm
1 080	3 400	*13 000	*16 000	3	**KRVT16/3AS**	**KRVT16X/3AS**	**KRVT16LL/3AS**	**KRVT16XLL/3AS**	0.020	**6**
1 380	4 050	10 000	*13 000	8	**KRVT19/3AS**	**KRVT19X/3AS**	**KRVT19LL/3AS**	**KRVT19XLL/3AS**	0.032	**8**
1 690	5 150	8 500	*11 000	14	**KRVT22/3AS**	**KRVT22X/3AS**	**KRVT22LL/3AS**	**KRVT22XLL/3AS**	0.047	**10**
2 120	6 100	8 500	*11 000	14	**KRVT26/3AS**	**KRVT26X/3AS**	**KRVT26LL/3AS**	**KRVT26XLL/3AS**	0.061	**10**
2 620	7 700	6 500	8 500	20	**KRVT30/3AS**	**KRVT30X/3AS**	**KRVT30LL/3AS**	**KRVT30XLL/3AS**	0.089	**12**
2 860	8 200	6 500	8 500	20	**KRVT32/3AS**	**KRVT32X/3AS**	**KRVT32LL/3AS**	**KRVT32XLL/3AS**	0.100	**12**
3 200	11 900	5 500	7 000	52	**KRVT35/3AS**	**KRVT35X/3AS**	**KRVT35LL/3AS**	**KRVT35XLL/3AS**	0.172	**16**
3 850	14 500	4 500	6 000	76	**KRVT40/3AS**	**KRVT40X/3AS**	**KRVT40LL/3AS**	**KRVT40XLL/3AS**	0.252	**18**
4 700	21 000	4 000	5 000	98	**KRVT47/3AS**	**KRVT47X/3AS**	**KRVT47LL/3AS**	**KRVT47XLL/3AS**	0.390	**20**
5 550	23 300	4 000	5 000	98	**KRVT52/3AS**	**KRVT52X/3AS**	**KRVT52LL/3AS**	**KRVT52XLL/3AS**	0.465	**20**
6 950	34 500	3 300	4 500	178	**KRVT62/3AS**	**KRVT62X/3AS**	**KRVT62LL/3AS**	**KRVT62XLL/3AS**	0.800	**24**
8 050	38 500	3 300	4 500	178	**KRVT72/3AS**	**KRVT72X/3AS**	**KRVT72LL/3AS**	**KRVT72XLL/3AS**	1.05	**24**
9 800	53 000	2 600	3 500	360	**KRVT80/3AS**	**KRVT80X/3AS**	**KRVT80LL/3AS**	**KRVT80XLL/3AS**	1.56	**30**
11 400	59 000	2 600	3 500	360	**KRVT90/3AS**	**KRVT90X/3AS**	**KRVT90LL/3AS**	**KRVT90XLL/3AS**	1.97	**30**

3) The allowable speed of KRVT··LL type and KRVT··XLL type with a "＊" mark seal is about 10 000 min-1.

Cam follower stud type track roller
metric series

NUKR··H type
NUKR··XH type



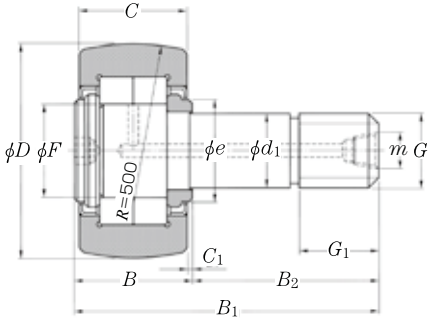


NUKR··H type (D < 100 mm)
(Full complement double-row cylindrical roller bearings with shield)

D 30 ～ 180mm

Outer dia.[1] mm D $^{0}_{-0.05}$	Dimensions mm d_1	C	F	B	B_1	B_2	G	G_1	B_3	C_1	n	m	a	e	h	Fatigue load limit N C_u
30	12 $^{0}_{-0.018}$	14	14.5	15	40	25	M12×1.5	13	6	0.6	6	—	3	15	6	1 650
35	16 $^{0}_{-0.018}$	18	19	19.5	52	32.5	M16×1.5	17	8	0.8	6	—	3	21	6	3 150
40	18 $^{0}_{-0.018}$	20	21.5	21.5	58	36.5	M18×1.5	19	8	0.8	6	—	3	23	6	3 550
47	20 $^{0}_{-0.021}$	24	25.5	25.5	66	40.5	M20×1.5	21	9	0.8	8	—	4	27	8	5 900
52	20 $^{0}_{-0.021}$	24	30	25.5	66	40.5	M20×1.5	21	9	0.8	8	—	4	31	8	7 000
62	24 $^{0}_{-0.021}$	29	35	30.5	80	49.5	M24×1.5	25	11	0.8	8	—	4	38	8	8 850
72	24 $^{0}_{-0.021}$	29	41.5	30.5	80	49.5	M24×1.5	25	11	0.8	8	—	4	44	8	10 400
80	30 $^{0}_{-0.021}$	35	47.5	37	100	63	M30×1.5	32	15	1	8	—	4	51	8	18 400
90	30 $^{0}_{-0.021}$	35	47.5	37	100	63	M30×1.5	32	15	1	8	—	4	51	8	18 400
100	36 $^{0}_{-0.025}$	43	48.5	46	120	74	M36×1.5	38	—	1.5	—	Rc 1/8	—	53	14	20 400
120	42 $^{0}_{-0.025}$	50	60.5	53	140	87	M42×1.5	44	—	1.5	—	Rc 1/8	—	66	14	32 400
140	48 $^{0}_{-0.025}$	57	65	60	160	100	M48×1.5	52	—	1.5	—	Rc 1/8	—	72.5	14	35 900
150	52 $^{0}_{-0.030}$	60	75.5	63	170	107	M52×1.5	52	—	1.5	—	Rc 1/8	—	85.5	17	46 500
160	56 $^{0}_{-0.030}$	63	80.5	67	180	113	M56×3	58	—	2	—	Rc 1/8	—	89.5	17	49 000
170	60 $^{0}_{-0.030}$	66	86	70	190	120	M60×3	58	—	2	—	Rc 1/8	—	96.5	17	58 000
180	64 $^{0}_{-0.030}$	72	91.5	76	200	124	M64×3	65	—	2	—	Rc 1/8	—	103.5	17	67 500

1) The tolerance of outer ring outer diameter D of **NUKR··XH** type having a cylindrical outer diameter surface is JIS 0 class.



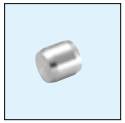
NUKR··H type (D ≧ 100 mm)

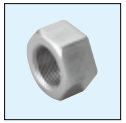
Accessories

Applied Number	Grease nipple number	Plug Number	Applied hexagonal nut
30～40	NIP-B6	SEN3, SEN6	1M12×1.5～1M18×1.5
47～90	NIP-B8	SEN4, SEN8	1M20×1.5～1M30×1.5
100～180	JIS 2 type (A-PT 1/8)	—	1M36×1.5～1M64×3


Grease fitting


Grease fitting

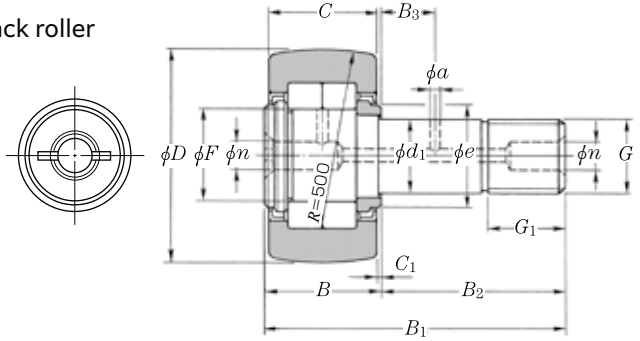

Plug


Hexagon nut

Basic load rating N dynamic C_r	static C_{0r}	Track load capacity N Spherical outer ring	Cylindrical outer ring	Allowable speed min-1 Grease lubrication	Maximum tightening torque N · m	Number Spherical outer ring	Cylindrical outer ring	Mass kg (approx.)	Stud dia. mm
13 300	13 500	2 620	7 700	6 900	20	**NUKR30H/3AS**	**NUKR30XH/3AS**	0.088	**12**
22 300	25 700	3 200	11 900	5 500	52	**NUKR35H/3AS**	**NUKR35XH/3AS**	0.165	**16**
24 100	29 100	3 850	14 500	4 700	76	**NUKR40H/3AS**	**NUKR40XH/3AS**	0.242	**18**
38 500	48 000	4 700	21 000	4 000	98	**NUKR47H/3AS**	**NUKR47XH/3AS**	0.380	**20**
42 500	57 500	5 550	23 300	3 300	98	**NUKR52H/3AS**	**NUKR52XH/3AS**	0.450	**20**
56 500	72 500	6 950	34 500	2 900	178	**NUKR62H/3AS**	**NUKR62XH/3AS**	0.795	**24**
62 000	85 500	8 050	38 500	2 400	178	**NUKR72H/3AS**	**NUKR72XH/3AS**	1.01	**24**
101 000	151 000	9 800	53 000	2 100	360	**NUKR80H/3AS**	**NUKR80XH/3AS**	1.54	**30**
101 000	151 000	11 400	59 000	2 100	360	**NUKR90H/3AS**	**NUKR90XH/3AS**	1.96	**30**
119 000	167 000	13 000	79 000	2 000	630	**NUKR100H/3AS**	**NUKR100XH/3AS**	3.08	**36**
172 000	266 000	16 400	113 000	1 700	1 020	**NUKR120H/3AS**	**NUKR120XH/3AS**	5.17	**42**
201 000	294 000	20 000	152 000	1 500	1 540	**NUKR140H/3AS**	**NUKR140XH/3AS**	7.98	**48**
258 000	380 000	22 000	173 000	1 300	1 950	**NUKR150H/3AS**	**NUKR150XH/3AS**	9.70	**52**
274 000	400 000	24 000	194 000	1 200	2 480	**NUKR160H/3AS**	**NUKR160XH/3AS**	11.7	**56**
320 000	475 000	26 000	218 000	1 100	3 030	**NUKR170H/3AS**	**NUKR170XH/3AS**	13.9	**60**
365 000	555 000	27 900	253 000	1 000	3 670	**NUKR180H/3AS**	**NUKR180XH/3AS**	17.0	**64**

Cam follower stud type track roller metric series

NUKR type
NUKR··X type

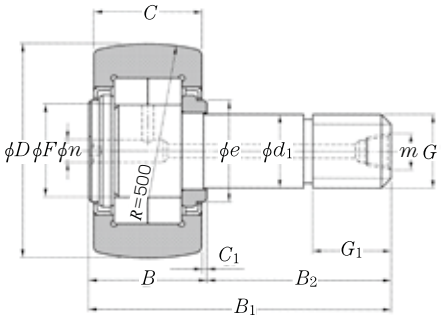


NUKR type (D < 100 mm)
(Full complement double-row cylindrical roller bearings with shield)

D 30 ～ 180mm

Outer dia.[1] mm D 0 −0.05	Dimensions mm d1	C	F	B	B1	B2	G	G1	B3	C1	n	m	a	e	Fatigue load limit N Cu
30	12 0 −0.018	14	14.5	15	40	25	M12×1.5	13	6	0.6	6	—	3	15	1 650
35	16 0 −0.018	18	19	19.5	52	32.5	M16×1.5	17	8	0.8	6	—	3	21	3 150
40	18 0 −0.018	20	21.5	21.5	58	36.5	M18×1.5	19	8	0.8	6	—	3	23	3 550
47	20 0 −0.021	24	25.5	25.5	66	40.5	M20×1.5	21	9	0.8	8	—	4	27	5 900
52	20 0 −0.021	24	30	25.5	66	40.5	M20×1.5	21	9	0.8	8	—	4	31	7 000
62	24 0 −0.021	29	35	30.5	80	49.5	M24×1.5	25	11	0.8	8	—	4	38	8 850
72	24 0 −0.021	29	41.5	30.5	80	49.5	M24×1.5	25	11	0.8	8	—	4	44	10 400
80	30 0 −0.021	35	47.5	37	100	63	M30×1.5	32	15	1	8	—	4	51	18 400
90	30 0 −0.021	35	47.5	37	100	63	M30×1.5	32	15	1	8	—	4	51	18 400
100	36 0 −0.025	43	48.5	46	120	74	M36×1.5	38	—	1.5	8	Rc 1/8	—	53	20 400
120	42 0 −0.025	50	60.5	53	140	87	M42×1.5	44	—	1.5	8	Rc 1/8	—	66	32 500
140	48 0 −0.025	57	65	60	160	100	M48×1.5	52	—	1.5	8	Rc 1/8	—	72.5	36 000
150	52 0 −0.030	60	75.5	63	170	107	M52×1.5	52	—	1.5	8	Rc 1/8	—	85.5	46 500
160	56 0 −0.030	63	80.5	67	180	113	M56×3	58	—	2	8	Rc 1/8	—	89.5	49 000
170	60 0 −0.030	66	86	70	190	120	M60×3	58	—	2	8	Rc 1/8	—	96.5	58 000
180	64 0 −0.030	72	91.5	76	200	124	M64×3	65	—	2	8	Rc 1/8	—	103.5	67 500

1) The tolerance of outer ring outer diameter D of NUKR··X type having a cylindrical outer diameter surface is JIS 0 class.



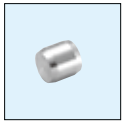
NUKR type (D ≧ 100 mm)

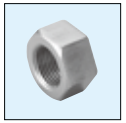
Accessories

Applied Number	Grease nipple number	Plug Number	Applied hexagonal nut
30～40	NIP-B6	SEN3, SEN6	1M12×1.5～1M18×1.5
47～90	NIP-B8	SEN4, SEN8	1M20×1.5～1M30×1.5
100～180	JIS 2 type (A-PT1/8)	—	1M36×1.5～1M64×3


Grease fitting


Grease fitting

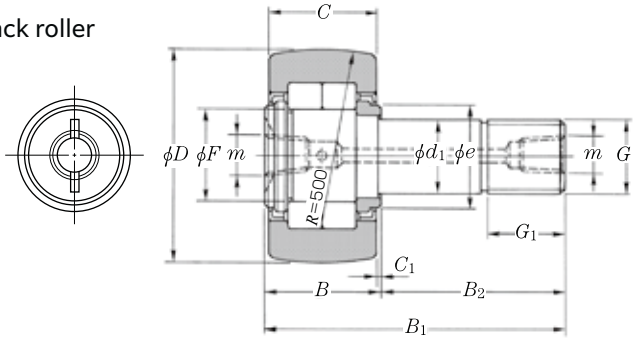

Plug


Hexagon nut

Basic load rating dynamic Cr N	Basic load rating static C0r N	Track load capacity Spherical outer ring N	Track load capacity Cylindrical outer ring N	Allowable speed Grease lubrication min-1	Maximum tightening torque N · m	Number Spherical outer ring	Number Cylindrical outer ring	Mass kg (approx.)	Stud dia. mm
13 300	13 500	2 620	7 700	6 900	20	NUKR 30/3AS	NUKR 30X/3AS	0.088	12
22 300	25 700	3 200	11 900	5 500	52	NUKR 35/3AS	NUKR 35X/3AS	0.165	16
24 100	29 100	3 850	14 500	4 700	76	NUKR 40/3AS	NUKR 40X/3AS	0.242	18
38 500	48 000	4 700	21 000	4 000	98	NUKR 47/3AS	NUKR 47X/3AS	0.380	20
42 500	57 500	5 550	23 300	3 300	98	NUKR 52/3AS	NUKR 52X/3AS	0.450	20
56 500	72 500	6 950	34 500	2 900	178	NUKR 62/3AS	NUKR 62X/3AS	0.795	24
62 000	85 500	8 050	38 500	2 400	178	NUKR 72/3AS	NUKR 72X/3AS	1.01	24
101 000	151 000	9 800	53 000	2 100	360	NUKR 80/3AS	NUKR 80X/3AS	1.54	30
101 000	151 000	11 400	59 000	2 100	360	NUKR 90/3AS	NUKR 90X/3AS	1.96	30
119 000	167 000	13 000	79 000	2 000	630	NUKR 100/3AS	NUKR 100X/3AS	3.08	36
172 000	266 000	16 400	113 000	1 700	1 020	NUKR 120/3AS	NUKR 120X/3AS	5.17	42
201 000	294 000	20 000	152 000	1 500	1 540	NUKR 140/3AS	NUKR 140X/3AS	7.98	48
258 000	380 000	22 000	173 000	1 300	1 950	NUKR 150/3AS	NUKR 150X/3AS	9.70	52
274 000	400 000	24 000	194 000	1 200	2 480	NUKR 160/3AS	NUKR 160X/3AS	11.7	56
320 000	475 000	26 000	218 000	1 100	3 030	NUKR 170/3AS	NUKR 170X/3AS	13.9	60
365 000	555 000	27 900	253 000	1 000	3 670	NUKR 180/3AS	NUKR 180X/3AS	17.0	64

Cam follower stud type track roller
metric series

NUKRT type
NUKRT··X type



NUKRT type
(Full complement double-row cylindrical
roller bearings with shield)

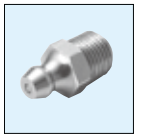
D 30 ～ 180mm

Outer dia.[1] mm D $^{0}_{-0.05}$	Dimensions mm											Basic load rating N		Fatigue load limit N	Track load capacity N		Allowable speed min^{-1}	Maximum tightening torque	Number		Mass	Stud dia.
	d_1	C	F	B	B_1	B_2	G	G_1	C_1	m	e	dynamic C_r	static C_{0r}	C_u	Spherical outer ring	Cylindrical outer ring	Grease lubrication	N · m	Spherical outer ring	Cylindrical outer ring	kg (approx.)	mm
30	12 $^{0}_{-0.018}$	14	14.5	15	40	25	M12×1.5	13	0.6	M6×0.75	15	13 300	13 500	1 650	2 620	7 700	6 900	20	**NUKRT 30/3AS**	**NUKRT 30X/3AS**	0.088	**12**
35	16 $^{0}_{-0.018}$	18	19	19.5	52	32.5	M16×1.5	17	0.8	Rc 1/8	21	22 300	25 700	3 150	3 200	11 900	5 500	52	**NUKRT 35/3AS**	**NUKRT 35X/3AS**	0.165	**16**
40	18 $^{0}_{-0.018}$	20	21.5	21.5	58	36.5	M18×1.5	19	0.8	Rc 1/8	23	24 100	29 100	3 550	3 850	14 500	4 700	76	**NUKRT 40/3AS**	**NUKRT 40X/3AS**	0.242	**18**
47	20 $^{0}_{-0.021}$	24	25.5	25.5	66	40.5	M20×1.5	21	0.8	Rc 1/8	27	38 500	48 000	5 900	4 700	21 000	4 000	98	**NUKRT 47/3AS**	**NUKRT 47X/3AS**	0.380	**20**
52	20 $^{0}_{-0.021}$	24	30	25.5	66	40.5	M20×1.5	21	0.8	Rc 1/8	31	42 500	57 500	7 000	5 550	23 300	3 300	98	**NUKRT 52/3AS**	**NUKRT 52X/3AS**	0.450	**20**
62	24 $^{0}_{-0.021}$	29	35	30.5	80	49.5	M24×1.5	25	0.8	Rc 1/8	38	56 500	72 500	8 850	6 950	34 500	2 900	178	**NUKRT 62/3AS**	**NUKRT 62X/3AS**	0.795	**24**
72	24 $^{0}_{-0.021}$	29	41.5	30.5	80	49.5	M24×1.5	25	0.8	Rc 1/8	44	62 000	85 500	10 400	8 050	38 500	2 400	178	**NUKRT 72/3AS**	**NUKRT 72X/3AS**	1.01	**24**
80	30 $^{0}_{-0.021}$	35	47.5	37	100	63	M30×1.5	32	1	Rc 1/8	51	101 000	151 000	18 400	9 800	53 000	2 100	360	**NUKRT 80/3AS**	**NUKRT 80X/3AS**	1.54	**30**
90	30 $^{0}_{-0.021}$	35	47.5	37	100	63	M30×1.5	32	1	Rc 1/8	51	101 000	151 000	18 400	11 400	59 000	2 100	360	**NUKRT 90/3AS**	**NUKRT 90X/3AS**	1.96	**30**
100	36 $^{0}_{-0.025}$	43	48.5	46	120	74	M36×1.5	38	1.5	Rc 1/8	53	119 000	167 000	20 400	13 000	79 000	2 000	630	**NUKRT 100/3AS**	**NUKRT 100X/3AS**	3.08	**36**
120	42 $^{0}_{-0.025}$	50	60.5	53	140	87	M42×1.5	44	1.5	Rc 1/8	66	172 000	266 000	32 500	16 400	113 000	1 700	1 020	**NUKRT 120/3AS**	**NUKRT 120X/3AS**	5.17	**42**
140	48 $^{0}_{-0.025}$	57	65	60	160	100	M48×1.5	52	1.5	Rc 1/8	72.5	201 000	294 000	36 000	20 000	152 000	1 500	1 540	**NUKRT 140/3AS**	**NUKRT 140X/3AS**	7.98	**48**
150	52 $^{0}_{-0.030}$	60	75.5	63	170	107	M52×1.5	52	1.5	Rc 1/8	85.5	258 000	380 000	46 500	22 000	173 000	1 300	1 950	**NUKRT 150/3AS**	**NUKRT 150X/3AS**	9.70	**52**
160	56 $^{0}_{-0.030}$	63	80.5	67	180	113	M56×3	58	2	Rc 1/8	89.5	274 000	400 000	49 000	24 000	194 000	1 200	2 480	**NUKRT 160/3AS**	**NUKRT 160X/3AS**	11.7	**56**
170	60 $^{0}_{-0.030}$	66	86	70	190	120	M60×3	58	2	Rc 1/8	96.5	320 000	475 000	58 000	26 000	218 000	1 100	3 030	**NUKRT 170/3AS**	**NUKRT 170X/3AS**	13.9	**60**
180	64 $^{0}_{-0.030}$	72	91.5	76	200	124	M64×3	65	2	Rc 1/8	103.5	365 000	555 000	67 500	27 900	253 000	1 000	3 670	**NUKRT 180/3AS**	**NUKRT 180X/3AS**	17.0	**64**

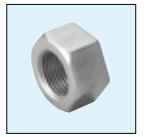
1) The tolerance of outer ring outer diameter D of **NUKRT··X** type having a cylindrical outer diameter surface is JIS 0 class.

Accessories

Applied Number	Grease nipple number	Number of hex socket screw plug	Applied hexagonal nut
30	JIS 1 type (A-M6F)	M6×0.75×6 ℓ	1M12×1.5
35～180	JIS 2 type (A-PT1/8)	R1/8(PT1/8)×7 ℓ	1M16×1.5～1M64×3

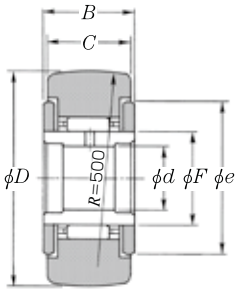

Grease fitting


Hex socket screw plug

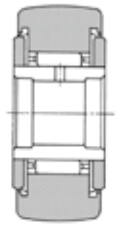

Hexagon nut

Roller follower yoke type track roller
metric series

NATR type
NATR··X type
NATR··LL type
NATR··XLL type



NATR type
(With cage)



NATR··LL type
(Seal type with cage)

D 16 ~ 90mm

Outer dia.[1] mm D $^{0}_{-0.05}$	Dimensions mm d	B	C	e	F	Basic load rating N dynamic C_r	static C_{0r}	Track load capacity N Spherical outer ring	Cylindrical outer ring	Fatigue load limit N C_u
16	5	12 $^{0}_{-0.180}$	11	12	8	4 050	4 200	1 080	3 400	510
19	6	12 $^{0}_{-0.180}$	11	14	10	4 750	5 400	1 380	4 050	660
24	8	15 $^{0}_{-0.180}$	14	19	12	6 900	7 700	1 900	6 650	940
30	10	15 $^{0}_{-0.180}$	14	23	15	7 850	9 650	2 620	7 700	1 180
32	12	15 $^{0}_{-0.180}$	14	25	17	8 400	10 900	2 860	8 200	1 330
35	15	19 $^{0}_{-0.210}$	18	27	20	13 300	20 800	3 200	11 900	2 530
40	17	21 $^{0}_{-0.210}$	20	32	22	14 000	22 800	3 850	14 500	2 790
47	20	25 $^{0}_{-0.210}$	24	37	25	20 700	33 500	4 700	21 000	4 100
52	25	25 $^{0}_{-0.210}$	24	42	30	22 800	40 500	5 500	23 300	4 950
62	30	29 $^{0}_{-0.210}$	28	51	38	36 000	66 000	6 950	33 000	8 100
72	35	29 $^{0}_{-0.210}$	28	58	44.5	39 000	77 000	8 050	37 000	9 400
80	40	32 $^{0}_{-0.250}$	30	66	50	49 500	92 500	9 800	44 500	11 300
85	45	32 $^{0}_{-0.250}$	30	71	55	51 500	100 000	10 400	47 000	12 200
90	50	32 $^{0}_{-0.250}$	30	76	60	53 000	108 000	11 400	50 000	13 200

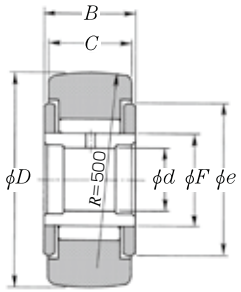
Allowable speed[2] min^{-1} Grease lubrication	Oil lubrication	Number Without seal Spherical outer ring	Cylindrical outer ring	With seal Spherical outer ring	Cylindrical outer ring	Mass kg (approx.)	Outer dia.[1] mm D $^{0}_{-0.05}$
*19 000	*25 000	**NATR5**	**NATR5X**	**NATR5LL/3AS**	**NATR5XLL/3AS**	0.018	**16**
*15 000	*20 000	**NATR6**	**NATR6X**	**NATR6LL/3AS**	**NATR6XLL/3AS**	0.025	**19**
*12 000	*16 000	**NATR8**	**NATR8X**	**NATR8LL/3AS**	**NATR8XLL/3AS**	0.042	**24**
10 000	*13 000	**NATR10**	**NATR10X**	**NATR10LL/3AS**	**NATR10XLL/3AS**	0.061	**30**
9 000	*12 000	**NATR12CT**	**NATR12XCT**	**NATR12CLLT/3AS**	**NATR12CXLLT/3AS**	0.069	**32**
7 500	10 000	**NATR15**	**NATR15X**	**NATR15LL/3AS**	**NATR15XLL/3AS**	0.098	**35**
7 000	9 000	**NATR17**	**NATR17X**	**NATR17LL/3AS**	**NATR17XLL/3AS**	0.140	**40**
6 000	8 000	**NATR20**	**NATR20X**	**NATR20LL/3AS**	**NATR20XLL/3AS**	0.246	**47**
5 000	6 500	**NATR25**	**NATR25X**	**NATR25LL/3AS**	**NATR25XLL/3AS**	0.275	**52**
4 000	5 500	**NATR30**	**NATR30X**	**NATR30LL/3AS**	**NATR30XLL/3AS**	0.470	**62**
3 300	4 500	**NATR35**	**NATR35X**	**NATR35LL/3AS**	**NATR35XLL/3AS**	0.635	**72**
3 000	4 000	**NATR40**	**NATR40X**	**NATR40LL/3AS**	**NATR40XLL/3AS**	0.875	**80**
2 700	3 600	**NATR45**	**NATR45X**	**NATR45LL/3AS**	**NATR45XLL/3AS**	0.910	**85**
2 500	3 300	**NATR50**	**NATR50X**	**NATR50LL/3AS**	**NATR50XLL/3AS**	0.960	**90**

1) The tolerance of outer ring outer diameter D of **NATR··X** type and **NATR··XLL** type having a cylindrical outer diameter surface is JIS 0 class.

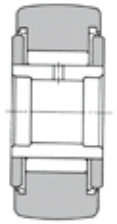
2) The allowable speed of bearings with a "∗" mark seal is about 10 000 min^{-1}.

Roller follower yoke type track roller
metric series

NATV type
NATV··X type
NATV··LL type
NATV··XLL type



NATV type
(Full complement roller type)



NATV··LL type
(Full complement roller sealed type)

D 16 ~ 90mm

Outer dia.[1] mm D $^{0}_{-0.05}$	Dimensions mm d	B	C	e	F	Basic load rating N dynamic C_r	static C_{0r}	Track load capacity N Spherical outer ring	Cylindrical outer ring	Fatigue load limit N C_u
16	5	12 $^{0}_{-0.180}$	11	12	8	6 500	9 350	1 080	3 400	1 140
19	6	12 $^{0}_{-0.180}$	11	14	10	7 450	11 700	1 380	4 050	1 430
24	8	15 $^{0}_{-0.180}$	14	19	12	10 700	16 200	1 900	6 650	1 980
30	10	15 $^{0}_{-0.180}$	14	23	15	12 000	20 300	2 620	7 700	2 470
32	12	15 $^{0}_{-0.180}$	14	25	17	13 000	23 000	2 860	8 200	2 810
35	15	19 $^{0}_{-0.210}$	18	27	20	18 400	38 000	3 200	11 900	4 650
40	17	21 $^{0}_{-0.210}$	20	32	22	19 400	42 000	3 850	14 500	5 100
47	20	25 $^{0}_{-0.210}$	24	37	25	28 800	61 000	4 700	21 000	7 450
52	25	25 $^{0}_{-0.210}$	24	42	30	31 500	73 500	5 500	23 300	8 950
62	30	29 $^{0}_{-0.210}$	28	51	38	47 500	115 000	6 950	33 000	14 000
72	35	29 $^{0}_{-0.210}$	28	58	44.5	52 000	134 000	8 050	37 000	16 300
80	40	32 $^{0}_{-0.250}$	30	66	50	68 500	171 000	9 800	44 500	20 900
90	50	32 $^{0}_{-0.250}$	30	76	60	76 000	205 000	11 400	50 000	25 000

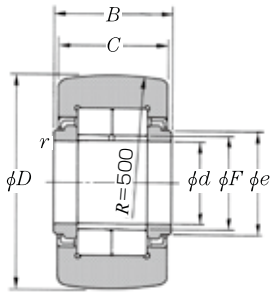
Allowable speed[2] min^{-1} Grease lubrication	Oil lubrication	Number Without seal Spherical outer ring	Cylindrical outer ring	With seal Spherical outer ring	Cylindrical outer ring	Mass kg (approx.)	Outer dia.[1] mm D $^{0}_{-0.05}$
*13 000	*16 000	**NATV5/3AS**	**NATV5X/3AS**	**NATV5LL/3AS**	**NATV5XLL/3AS**	0.020	**16**
10 000	*13 000	**NATV6/3AS**	**NATV6X/3AS**	**NATV6LL/3AS**	**NATV6XLL/3AS**	0.027	**19**
8 500	*11 000	**NATV8/3AS**	**NATV8X/3AS**	**NATV8LL/3AS**	**NATV8XLL/3AS**	0.044	**24**
6 500	8 500	**NATV10/3AS**	**NATV10X/3AS**	**NATV10LL/3AS**	**NATV10XLL/3AS**	0.065	**30**
6 000	7 500	**NATV12/3AS**	**NATV12X/3AS**	**NATV12LL/3AS**	**NATV12XLL/3AS**	0.074	**32**
5 000	6 500	**NATV15/3AS**	**NATV15X/3AS**	**NATV15LL/3AS**	**NATV15XLL/3AS**	0.102	**35**
4 500	6 000	**NATV17/3AS**	**NATV17X/3AS**	**NATV17LL/3AS**	**NATV17XLL/3AS**	0.145	**40**
4 000	5 000	**NATV20/3AS**	**NATV20X/3AS**	**NATV20LL/3AS**	**NATV20XLL/3AS**	0.254	**47**
3 300	4 500	**NATV25/3AS**	**NATV25X/3AS**	**NATV25LL/3AS**	**NATV25XLL/3AS**	0.285	**52**
2 600	3 500	**NATV30/3AS**	**NATV30X/3AS**	**NATV30LL/3AS**	**NATV30XLL/3AS**	0.481	**62**
2 200	2 900	**NATV35/3AS**	**NATV35X/3AS**	**NATV35LL/3AS**	**NATV35XLL/3AS**	0.647	**72**
2 000	2 600	**NATV40/3AS**	**NATV40X/3AS**	**NATV40LL/3AS**	**NATV40XLL/3AS**	0.890	**80**
1 600	2 100	**NATV50/3AS**	**NATV50X/3AS**	**NATV50LL/3AS**	**NATV50XLL/3AS**	0.990	**90**

1) The tolerance of outer ring outer diameter D of **NATV··X** type and **NATV··XLL** type having a cylindrical outer diameter surface is JIS 0 class.

2) The allowable speed of bearings with a "∗" mark seal is about 10 000 min^{-1}.

Roller follower yoke type track roller
metric series

NUTR2 type
NUTR2··X type
NUTR3 type
NUTR3··X type



NUTR2 type
NUTR3 type

D 35 ～ 110mm

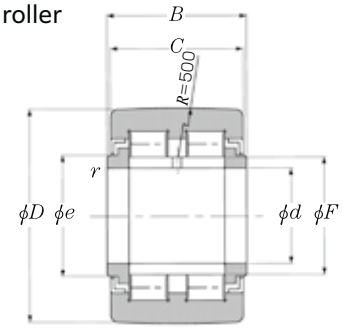
Outer dia.[1] mm D $^{0}_{-0.05}$	Dimensions mm d	B	C	e	F	$r_{s\,min}$[2]	Basic load rating N dynamic C_r	static C_{0r}	Track load capacity N Spherical outer ring	Cylindrical outer ring	Fatigue load limit N C_u
35	15	19 $^{0}_{-0.210}$	18	20	19	0.3	22 300	25 700	3 200	11 900	3 150
40	17	21 $^{0}_{-0.210}$	20	22	21.5	0.3	24 100	29 100	3 850	14 500	3 550
42	15	19 $^{0}_{-0.210}$	18	20	19	0.3	22 300	25 700	4 100	14 300	3 150
47	17	21 $^{0}_{-0.210}$	20	22	21.5	0.3	24 100	29 100	4 700	17 000	3 550
	20	25	24	27	25.5	0.3	38 500	48 000	4 700	21 000	5 900
52	20	25 $^{0}_{-0.210}$	24	27	25.5	0.3	38 500	48 000	5 550	23 300	5 900
	25	25	24	31	30	0.3	42 500	57 500	5 550	23 300	7 000
62	25	25 $^{0}_{-0.210}$	24	31	30	0.3	42 500	57 500	6 950	27 800	7 000
	30	29	28	38	35	0.3	56 500	72 500	6 950	33 000	8 850
72	30	29 $^{0}_{-0.210}$	28	38	35	0.3	56 500	72 500	8 050	38 500	8 850
	35	29	28	44	41.5	0.6	62 000	85 500	8 050	37 000	10 400
80	35	29 $^{0}_{-0.210}$	28	44	41.5	0.6	62 000	85 500	9 800	41 000	10 400
	40	32 $^{0}_{-0.250}$	30	51	47.5	0.6	87 000	125 000	9 800	44 500	15 200
85	45	32 $^{0}_{-0.250}$	30	55	52.5	0.6	92 000	137 000	10 400	47 000	16 700
90	40	32 $^{0}_{-0.250}$	30	51	47.5	0.6	87 000	125 000	11 400	50 000	15 200
	50	32	30	60	57	0.6	96 500	150 000	11 400	50 000	18 300
100	45	32 $^{0}_{-0.250}$	30	55	52.5	0.6	92 000	137 000	13 000	55 500	16 700
110	50	32 $^{0}_{-0.250}$	30	60	57	0.6	96 500	150 000	14 700	61 000	18 300

Allowable speed min^{-1} Grease lubrication	Number Spherical outer ring	Cylindrical outer ring	Mass kg (approx.)	Outer dia.[1] mm D $^{0}_{-0.05}$
5 500	**NUTR202/3AS**	**NUTR202X/3AS**	0.100	**35**
4 700	**NUTR203/3AS**	**NUTR203X/3AS**	0.147	**40**
5 500	**NUTR302/3AS**	**NUTR302X/3AS**	0.160	**42**
4 700	**NUTR303/3AS**	**NUTR303X/3AS**	0.222	**47**
4 000	**NUTR204/3AS**	**NUTR204X/3AS**	0.245	
4 000	**NUTR304/3AS**	**NUTR304X/3AS**	0.321	**52**
3 300	**NUTR205/3AS**	**NUTR205X/3AS**	0.281	
3 300	**NUTR305/3AS**	**NUTR305X/3AS**	0.450	**62**
2 900	**NUTR206/3AS**	**NUTR206X/3AS**	0.466	
2 900	**NUTR306/3AS**	**NUTR306X/3AS**	0.697	**72**
2 400	**NUTR207/3AS**	**NUTR207X/3AS**	0.630	
2 400	**NUTR307/3AS**	**NUTR307X/3AS**	0.840	**80**
2 100	**NUTR208/3AS**	**NUTR208X/3AS**	0.817	
1 900	**NUTR209/3AS**	**NUTR209X/3AS**	0.883	**85**
2 100	**NUTR308/3AS**	**NUTR308X/3AS**	1.13	**90**
1 800	**NUTR210/3AS**	**NUTR210X/3AS**	0.950	
1 900	**NUTR309/3AS**	**NUTR309X/3AS**	1.40	**100**
1 800	**NUTR310/3AS**	**NUTR310X/3AS**	1.69	**110**

1) The tolerance of outer ring outer diameter D of **NUTR2··X** type and **NUTR3··X** type having a cylindrical outer diameter surface is JIS 0 class.
2) Smallest allowable dimension for chamfer dimension r.

Roller follower yoke type track roller
metric series

NUTW2 type
NUTW··X type



NUTW2 type

D 35 ~ 90mm

Outer dia.[1] mm D 0 −0.05	Dimensions mm d	B	C	e	F	r s min[2]	Basic load rating N dynamic Cr	static C0r	Track load capacity N Spherical outer ring	Cylindrical outer ring	Fatigue load limit N Cu
35	15	22 0 −0.210	21	20	19	0.3	24 100	28 300	3 200	14 200	3 450
40	17	24 0 −0.210	23	22	21.5	0.3	26 000	32 000	3 850	17 100	3 900
47	20	29 0 −0.210	28	27	25.5	0.3	40 500	51 500	4 700	25 100	6 300
52	25	29 0 −0.210	28	31	30	0.3	45 000	61 500	5 550	27 700	7 500
62	30	35 0 −0.210	34	38	35	0.3	59 500	77 000	6 950	41 000	9 400
72	35	35 0 −0.210	34	44	41.5	0.6	65 000	91 000	8 050	46 000	11 100
80	40	38 0 −0.250	36	51	47.5	0.6	90 500	131 000	9 800	54 500	16 000
85	45	38 0 −0.250	36	55	52.5	0.6	95 500	144 000	10 400	58 000	17 600
90	50	38 0 −0.250	36	60	57	0.6	100 000	158 000	11 400	61 500	19 200

Allowable speed min-1 Grease lubrication	Number Spherical outer ring	Cylindrical outer ring	Mass kg (approx.)	Outer dia.[1] mm D 0 −0.05
5 500	**NUTW202/3AS**	**NUTW202X/3AS**	0.115	**35**
4 700	**NUTW203/3AS**	**NUTW203X/3AS**	0.167	**40**
4 000	**NUTW204/3AS**	**NUTW204X/3AS**	0.280	**47**
3 300	**NUTW205/3AS**	**NUTW205X/3AS**	0.322	**52**
2 900	**NUTW206/3AS**	**NUTW206X/3AS**	0.549	**62**
2 400	**NUTW207/3AS**	**NUTW207X/3AS**	0.747	**72**
2 100	**NUTW208/3AS**	**NUTW208X/3AS**	0.953	**80**
1 900	**NUTW209/3AS**	**NUTW209X/3AS**	1.03	**85**
1 800	**NUTW210/3AS**	**NUTW210X/3AS**	1.11	**90**

1) For bearings having a cylindrical outer ring surface, code "X" is added after the bearing number. In this case, the tolerance of outer ring outer diameter D of cylindrical bearings is JIS 0 class. **Example**: NUTW203X
2) Smallest allowable dimension for chamfer dimension r.

Needle Roller Bearings WBW