

Needle bearings with guide ribs without inner ring



Needle bearings without inner ring and with inner ring are the roller bearings for high loading with simple spatial construction. Needle rollers guided evenly to the axis in fix cage are made with tolerance diameter of 2 μm . Outer ring with ribs and a cage with needle rollers create the construction unit.

Needle bearings with ribs without inner ring are supplied in following design: NK, NKS, RNA 49, RNA 69

Needle bearings without inner ring allow optimal solution of the placing problem, whereby the raceway on the shaft may be hardened or grinded. Compared to the bearings with inner ring, it is possible to produce reinforced shafts and enhance the operation accuracy of the bearing as the tolerance of inner ring is eliminated. The shell circle of these needle bearings when not assembled is in the tolerance field of F6. The shell circle is a inner circle made by the needle rollers when they touch to the raceway of the outer ring without clearance. For lubrication purposes the bearings have a lubrication groove and opening, this does not apply for bearings NK $F \leq 10 \text{ mm}$.

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Dimensions					Bearing designation	Basic load rating		Fatigue load limit	Limiting speed for lubrication with		Mass
						dynamic	static		grease	oil	
d	D	B	r _s	F _w		C _r	C _{or}	C _u			
mm						kN			min ⁻¹		kg
5	10	10	0.15	5	NK5/10TV	2.1	1.8	0.214	26000	40000	0.004
5	10	12	0.15	5	NK5/12TV	2.9	2.7	0.329	26000	40000	0.004
6	12	10	0.15	6	NK6/10	2.6	2.2	0.268	22000	36000	0.005
6	12	12	0.15	6	NK6/12TN	3.4	3.1	0.384	22000	36000	0.006
7	14	10	0.3	7	NK7/10TN	2.9	2.7	0.329	20000	34000	0.007
7	14	12	0.3	7	NK7/12TN	3.7	3.6	0.439	20000	34000	0.009
8	15	12	0.3	8	NK8/12	4.0	4.1	0.500	19000	32000	0.011
8	15	16	0.3	8	NK8/16	5.6	5.8	0.707	19000	32000	0.013
9	16	12	0.3	9	NK9/12	4.9	5.0	0.603	18000	30000	0.012
9	16	16	0.3	9	NK9/16	6.5	7.1	0.865	18000	30000	0.015
10	17	12	0.3	10	NK10/12	5.2	5.5	0.670	17000	28000	0.013
10	17	16	0.3	10	NK10/16	5.6	7.4	0.896	17000	28000	0.016

Dimensions					Bearing designation	Basic load rating		Fatigue load limit	Limiting speed for lubrication with		Mass
						dynamic	static				
d	D	B	r _s	F _w		C _r	C _{or}	C _u	grease	oil	
mm						kN			min ⁻¹		kg
12	19	12	0.3	12	NK12/12	5.7	6.6	0.798	16000	26000	0.013
12	19	16	0.3	12	NK12/16	8.2	9.8	1.195	16000	26000	0.018
14	22	13	0.3	14	R NA4900	8.2	9.2	1.115	16000	26000	0.018
14	22	16	0.3	14	NK14/16	11.0	13.7	1.670	16000	26000	0.023
14	22	20	0.3	14	NK14/20	13.2	17.3	2.109	16000	26000	0.028
15	23	16	0.3	15	NK15/16	10.8	13.7	1.670	16000	26000	0.024
15	23	20	0.3	15	NK15/20	13.2	17.3	2.109	16000	26000	0.031
16	24	13	0.3	16	R NA4901	9.0	11.0	1.341	15000	24000	0.020
16	24	16	0.3	16	NK16/16	11.4	15.0	1.829	15000	24000	0.025
16	24	20	0.3	16	NK16/20	13.7	19.0	2.317	15000	24000	0.032
16	24	22	0.3	16	R NA6901	14.3	20.0	2.439	15000	24000	0.036
17	25	16	0.3	17	NK17/16	12.0	16.0	1.951	15000	24000	0.027
17	25	20	0.3	17	NK17/20	15.0	19.0	2.317	15000	24000	0.034
18	26	16	0.3	18	NK18/16	12.0	16.3	1.987	15000	24000	0.028
18	26	20	0.3	18	NK18/20	14.3	20.4	2.487	15000	24000	0.035
19	27	16	0.3	19	NK19/16	13.0	17.0	2.073	14000	22000	0.037
19	27	20	0.3	19	NK19/20	15.0	22.0	2.682	14000	22000	0.039
20	28	13	0.3	20	R NA4902	11.0	12.9	1.573	13000	20000	0.023
20	28	16	0.3	20	NK20/16	12.5	17.6	2.146	13000	20000	0.032
20	28	20	0.3	20	NK20/20	15.6	23.6	2.878	13000	20000	0.038
20	28	23	0.3	20	R NA6902	16.6	25.5	3.109	13000	20000	0.042
20	32	20	0.6	20	NKS20	22.0	25.0	3.048	13000	20000	0.058
21	29	16	0.3	21	NK21/16	13.4	20.0	2.439	13000	20000	0.032
21	29	20	0.3	21	NK21/20	16.3	25.0	3.048	13000	20000	0.040
22	30	13	0.3	22	R NA4903	10.4	14.6	1.780	12000	19000	0.025
22	30	16	0.3	22	NK22/16	13.4	20.0	2.439	12000	19000	0.033
22	30	20	0.3	22	NK22/20	16.0	25.0	3.048	12000	19000	0.041
22	30	23	0.3	22	R NA6903	18.0	29.0	3.536	12000	19000	0.056
22	35	20	0.6	22	NKS22	20.8	25.5	3.109	12000	19000	0.069

Dimensions					Bearing designation	Basic load rating		Fatigue load limit	Limiting speed for lubrication with		Mass
						dynamic	static		grease	oil	
d	D	B	r _s	F _w		C _r	C _{or}	C _u			
mm						kN			min ⁻¹		kg
24	32	16	0.3	24	NK24/16	14.3	22.4	2.731	10000	17000	0.035
24	32	20	0.3	24	NK24/20	17.3	28.5	3.475	10000	17000	0.045
24	37	20	0.6	24	NKS24	26.0	31.0	3.780	10000	17000	0.073
25	33	16	0.3	25	NK25/16	14.3	22.4	2.731	10000	17000	0.037
25	33	20	0.3	25	NK25/20	17.0	28.5	3.475	10000	17000	0.047
25	37	17	0.3	25	R NA4904	19.0	23.6	2.878	10000	17000	0.061
25	37	30	0.3	25	R NA6904	33.5	49.0	5.975	10000	17000	0.091
25	38	20	0.6	25	NKS25	25.8	31.0	3.780	10000	17000	0.076
26	34	16	0.3	26	NK26/16	14.6	23.6	2.878	9500	16000	0.039
26	34	20	0.3	26	NK26/20	17.6	30.0	3.658	9500	16000	0.048
28	37	20	0.3	28	NK28/20	20.0	32.0	3.902	9000	15000	0.057
28	37	30	0.3	28	NK28/30	26.5	52.0	6.341	9000	15000	0.088
28	39	17	0.3	28	R NA49/22	20.8	27.5	3.353	9000	15000	0.059
28	39	30	0.3	28	R NA69/22	40.8	51.0	6.219	9000	15000	0.107
28	42	20	0.6	28	NKS28	27.5	36.5	4.451	9000	15000	0.094
29	38	20	0.3	29	NK29/20	20.8	34.0	4.146	8500	14000	0.059
29	38	30	0.3	29	NK29/30	27.0	54.0	6.585	8500	14000	0.090
30	40	20	0.3	30	NK30/20	21.6	36.0	4.390	8500	14000	0.071
30	40	30	0.3	30	NK30/30	31.5	58.5	7.134	8500	14000	0.107
30	42	17	0.3	30	R NA4905	21.6	30.0	3.658	8500	14000	0.071
30	42	30	0.3	30	R NA6905	36.5	57.0	6.951	8500	14000	0.127
30	45	22	0.6	30	NKS30	31.0	40.5	4.939	8500	14000	0.114
32	42	20	0.3	32	NK32/20	22.0	37.5	4.573	8000	13000	0.074
32	42	30	0.3	32	NK32/30	32.5	62.0	7.560	8000	13000	0.122
32	45	17	0.3	32	R NA49/28	22.4	31.5	3.841	8000	13000	0.080
32	45	30	0.3	32	R NA69/28	40.0	60.0	7.317	8000	13000	0.140
32	47	22	0.6	32	NKS32	32.5	44.0	5.365	8000	13000	0.120
35	45	20	0.3	35	NK35/20	23.2	41.5	5.060	7500	12000	0.081
35	45	30	0.3	35	NK35/30	34.0	68.0	8.292	7500	12000	0.122

Dimensions					Bearing designation	Basic load rating		Fatigue load limit	Limiting speed for lubrication with		Mass
						dynamic	static				
d	D	B	r _s	F _w		C _r	C _{or}	C _u	grease	oil	
mm						kN			min ⁻¹		kg
35	47	17	0.3	35	R NA4906	23.2	33.5	4.085	7500	12000	0.081
35	47	30	0.3	35	R NA6906	39.0	65.5	7.987	7500	12000	0.148
35	50	22	0.6	35	NKS35	34.0	47.5	5.792	7500	12000	0.130
37	47	20	0.3	37	NK37/20	23.6	43.5	5.304	7000	11000	0.084
37	47	30	0.3	37	NK37/30	34.5	71.0	8.658	7000	11000	0.128
37	52	22	0.6	37	NKS37	35.5	51.0	6.219	7000	11000	0.134
38	48	20	0.3	38	NK38/20	20.8	41.5	5.060	7000	11000	0.087
38	48	30	0.3	38	NK38/30	30.5	68.0	8.292	7000	11000	0.131
40	50	20	0.3	40	NK40/20	25.0	47.5	5.792	6700	10000	0.089
40	50	30	0.3	40	NK40/30	36.5	76.5	9.329	6700	10000	0.137
40	52	20	0.6	40	R NA49/32	28.5	46.5	5.670	6700	10000	0.100
40	52	36	0.6	40	R NA69/32	43.0	78.0	9.512	6700	10000	0.185
40	55	22	0.6	40	NKS40	36.5	54.0	6.585	6700	10000	0.140
42	52	20	0.3	42	NK42/20	25.5	49.0	5.764	6700	10000	0.085
42	52	30	0.3	42	NK42/30	37.5	80.0	9.756	6700	10000	0.141
42	55	20	0.6	42	R NA4907	29.0	49.0	5.975	6700	10000	0.114
42	55	36	0.6	42	R NA6907	44.0	83.0	10.121	6700	10000	0.218
43	53	20	0.3	43	NK43/20	25.7	51.0	6.219	6300	9500	0.096
43	53	30	0.3	43	NK43/30	38.0	83.0	10.121	6300	9500	0.134
43	58	22	0.6	43	NKS43	37.5	57.0	6.951	6300	9500	0.150
45	55	20	0.3	45	NK45/20	26.5	53.0	6.463	6300	9500	0.100
45	55	30	0.3	45	NK45/30	39.0	86.5	10.548	6300	9500	0.151
45	60	22	0.6	45	NKS45	39.0	61.0	7.439	6300	9500	0.156
47	57	20	0.3	47	NK47/20	27.0	55.0	6.707	6000	9000	0.104
47	57	30	0.3	47	NK47/30	39.0	90.0	10.975	6000	9000	0.158
48	62	22	0.6	48	R NA4908	40.0	64.0	7.804	5600	8500	0.154
48	62	40	0.6	48	R NA6908	64.0	118.0	14.390	5600	8500	0.300
50	62	25	0.6	50	NK50/25	37.5	76.5	9.329	5600	8500	0.171
50	62	35	0.6	50	NK50/35	51.0	114.0	13.902	5600	8500	0.242

Dimensions					Bearing designation	Basic load rating		Fatigue load limit	Limiting speed for lubrication with		Mass
						dynamic	static				
d	D	B	r _s	F _w		C _r	C _{or}	C _u	grease	oil	
mm						kN			min ⁻¹		kg
50	65	22	1.0	50	NKS50	41.5	68.0	8.292	5600	8500	0.170
52	68	22	0.6	52	R NA4909	41.5	69.5	8.475	5300	8000	0.201
52	68	40	0.6	52	R NA6909	65.5	125.0	15.243	5300	8000	0.392
55	68	25	0.6	55	NK55/25	41.5	81.5	5.060	5000	7500	0.207
55	68	35	0.6	55	NK55/35	57.0	122.0	14.878	5000	7500	0.293
55	72	22	1.0	55	NKS55	42.5	72.0	8.780	5000	7500	0.225
58	72	22	0.6	58	R NA4910	43.0	76.5	9.329	4800	7000	0.179
58	72	40	0.6	58	R NA6910	67.0	132.0	16.097	4800	7000	0.364
60	72	25	0.6	60	NK60/25	40.0	88.0	10.731	4800	7000	0.202
60	72	35	0.6	60	NK60/35	55.0	132.0	16.097	4800	7000	0.286
60	80	28	1.1	60	NKS60	60.0	98.0	11.951	4800	7000	0.337
63	80	25	1.0	63	R NA4911	56.0	99.6	12.146	4500	6700	0.285
63	80	45	1.0	63	R NA6911	83.0	160.0	19.512	4500	6700	0.540
65	78	25	0.6	65	NK65/25	43.0	91.5	11.158	4300	6300	0.257
65	78	35	0.6	65	NK65/35	60.0	137.0	16.707	4300	6300	0.300
65	85	28	1.1	65	NKS65	64.0	108.0	13.170	4300	6300	0.362
68	82	25	0.6	68	NK68/25	43.5	95.0	11.585	4000	6000	0.287
68	82	35	0.6	68	NK68/35	60.0	143.0	17.439	4000	6000	0.350
68	85	25	1.0	68	R NA4912	58.5	108.0	13.170	4000	6000	0.304
68	85	45	1.0	68	R NA6912	71.0	176.0	21.463	4000	6000	0.570
70	85	25	0.6	70	NK70/25	41.5	90.5	11.036	4000	6000	0.298
70	85	35	0.6	70	NK70/35	58.5	140.0	17.073	4000	6000	0.411
70	90	28	1.1	70	NKS70	65.5	114.0	13.902	4000	6000	0.383
72	90	25	1.0	72	R NA4913	58.5	114.0	13.902	4000	6000	0.346
72	90	45	1.0	72	R NA6913	95.0	196.0	23.902	4000	6000	0.679
73	90	25	0.6	73	NK73/25	95.0	112.0	13.658	3800	5600	0.320
73	90	35	0.6	73	NK73/35	75.0	166.0	20.243	3800	5600	0.450
75	92	25	0.6	75	NK75/25	41.5	91.5	11.158	3800	5600	0.364
75	92	23	0.6	75	NK75/35	58.5	143.0	17.439	3800	5600	0.518

Dimensions					Bearing designation	Basic load rating		Fatigue load limit	Limiting speed for lubrication with		Mass
						dynamic	static		grease	oil	
d	D	B	r _s	F _w		C _r	C _{or}	C _u			
mm						kN			min ⁻¹		kg
75	95	28	1.1	75	NKS75	69.5	125.0	15.243	3800	5600	0.413
80	95	25	1.0	80	NK80/25	58.5	122.0	14.878	3600	5300	0.331
80	95	35	1.0	80	NK80/35	72.0	176.0	21.463	3600	5300	0.380
80	100	30	1.0	80	R NA4914	78.0	150.0	18.292	3600	5300	0.502
80	100	54	1.0	80	R NA6914	125.0	270.0	32.926	3600	5300	0.946
85	105	25	1.0	85	NK85/25	69.0	129.0	15.731	3400	5000	0.400
85	105	30	1.0	85	R NA4915	80.0	156.0	19.024	3400	5000	0.528
85	105	35	1.0	85	NK85/35	98.0	208.0	25.365	3400	5000	0.712
85	105	54	1.0	85	R NA6915	129.0	290.0	35.365	3400	5000	1.020
90	110	25	1.0	90	NK90/25	72.0	140.0	17.073	3000	4500	0.530
90	110	30	1.0	90	R NA4916	83.0	170.0	20.731	3000	4500	0.556
90	110	35	1.0	90	NK90/35	102.0	220.0	26.829	3000	4500	0.620
90	110	54	1.0	90	R NA6916	118.0	320.0	39.024	3000	4500	1.050
95	115	26	1.0	95	NK95/26	46.5	116.0	14.146	3000	4500	0.572
95	115	36	1.0	95	NK95/36	104.0	228.0	27.804	3000	4500	0.640
100	120	26	1.0	100	NK100/26	75.0	153.0	18.334	2800	4300	0.480
100	120	35	1.1	100	R NA4917	100.0	220.0	26.346	2800	4300	0.715
100	120	36	1.1	100	NK100/36	108.0	245.0	29.340	2800	4300	0.658
100	120	63	1.1	100	R NA6917	143.0	415.0	49.698	2800	4300	1.150
105	125	26	1.0	105	NK105/26	50.0	129.0	15.448	2600	4000	0.625
105	125	35	1.1	105	R NA4918	104.0	236.0	28.262	2600	4000	0.746
105	125	36	1.0	105	NK105/36	69.5	196.0	23.472	2600	4000	0.870
105	125	63	1.1	105	R NA6918	160.0	405.0	48.501	2600	4000	1.300
110	130	30	1.1	110	NK110/30	93.0	208.0	24.909	2400	3800	0.600
110	130	35	1.1	110	R NA4919	106.0	245.0	29.340	2400	3800	0.777
110	130	40	1.1	110	NK110/40	122.0	290.0	34.729	2400	3800	0.900
110	130	63	1.1	110	R NA6919	150.0	455.0	54.489	2400	3800	1.470
115	140	40	1.1	115	R NA4920	127.0	285.0	34.130	2200	3600	1.220
125	150	40	1.1	125	R NA4922	134.0	315.0	51.640	2000	3400	1.320