

# BEARINGS WITH CAGE - GUIDED NEEDLES



ADIFOR AÉRO

# Technical features

## Bearings with cage - guided needles



Caged needle bearings possess an outer ring made from through-hardened bearing steel. The cage guides the needles and retains them in the outer ring.

The bearings may be used without an inner ring if the shaft journal serving as a raceway is of sufficient hardness and has the correct surface finish. To ensure that the full load capacity of these bearings is achieved, a hardness of 58-64 HRC is required. A lower hardness will entail a reduction in the load capacities (both dynamic and static) as shown in the table of dimensions (see Technical Section).

### CONSTRUCTION

The basic constructions of needle roller bearings are:

- with integral end flanges on the one-piece, channel-shaped outer rings ( $F_w \geq 12$  mm)
- with inserted-end washers to provide axial retention of the needle roller and cage assemblies ( $F_w \leq 10$  mm).

### Needle roller bearings with integral flanges

The needle roller bearing has a one-piece, channel-shaped outer ring of bearing-quality steel heat treated to yield maximum load rating.

The integral end flanges provide axial location for the needle rollers. The bores of the end flanges serve as piloting surfaces for the cage.

A steel cage provides inward retention for the needle rollers, and the design assures roller stability and minimizes friction between the cage and the needle rollers. The cage has maximum strength consistent with the inherent high-load ratings of needle roller bearings. The outer ring has a lubricating groove and a lubricating hole for more convenient lubrication of the bearing. However, the smaller bearings of series **NKJ** ( $d \leq 7$  mm) and **NK** ( $F_w \leq 10$  mm) do not have a lubricating groove or a lubricating hole.

### Reference standards are:

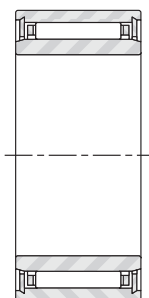
- **ISO 1206** - Needle roller bearings - Light and medium series - Dimensions and tolerances.

### SUFFIXES

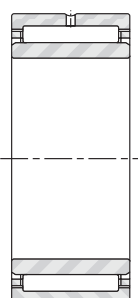
<b>TN</b>	molded cage of engineered, reinforced polymer
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### TYPES OF BEARINGS

#### Needle roller bearings with inner rings



**NKJ**  
( $d \leq 7$  mm)

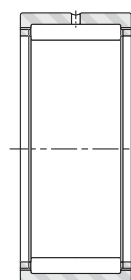


**NKJ, NKJS**  
( $d \geq 9$  mm)

#### Needle roller bearings without inner rings



**NK**  
( $F_w \leq 10$  mm)



**NK, NKS**  
( $F_w \geq 12$  mm)

# Technical features

## Bearings with cage - guided needles

### Needle roller bearings with inner rings

When it is impractical to finish the shaft to meet the desired raceway design requirements, an inner ring may be used. Standard needle roller bearings are available with inner rings to form complete bearings. Bearings furnished with inner rings meet the quality requirements in accordance with ISO standards.

- For inner- and outer-ring tolerances, the bearings follow the normal tolerance class in **ISO Standard 492** covering radial bearings. Bearings to more precise tolerance classes, P6 and P5, may be obtained upon request (see tables at the end of the catalogue).
- These bearings may be obtained with radial internal clearance in accordance with **ISO Standard 5753**, also specified for cylindrical roller bearings. Mostly, they follow the normal (C0) radial clearance group, although bearings to clearance groups C2, C3 and C4 may be made available on request (see tables at the end of the catalogue).
- Inner ring and outer ring chamfer dimensions meet the requirements of **ISO Standard 582**.

### Needle roller bearings without inner rings

Whenever the shaft can be used as the inner raceway, needle roller bearings without inner rings provide advantages of economy and close control of radial internal clearance in operation. Tolerance class F6 is the normal specification for the needle roller complement bore diameter of an unmounted bearing, as shown in Table 1.

**Table 1 - Caged needle roller complement bore diameter for bearings without inner rings**

$F_w$ mm		$\Delta F_w$ min $\mu\text{m}$	
>	$\leq$	low	high
	6	+10	+18
6	10	+13	+22
10	18	+16	+27
18	30	+20	+33
30	50	+25	+41
50	80	+30	+49
80	120	+36	+58
120	180	+43	+68
180	250	+50	+79
250	315	+56	+88
315	400	+62	+98

### BEARING MOUNTING

#### General requirements

In general the mounting of needle roller bearings with or without inner rings, of normal precision, requires the shaft seat or raceway to be machined to quality IT5 or IT6. The housing bore should meet quality IT6 or IT7. Other quality requirements for shafts and housings are given on page 13.

#### Mounting dimensions

It is suggested that needle roller bearings are mounted in their housings with a clearance fit, if the load is stationary relative to the housing, or with a tight transition fit, if the load rotates relative to the housing. Table 2 lists the suggested tolerances for the housing bore and the shaft raceway for bearings without inner rings. Table 3 lists the suggested shaft tolerances for the above two mounting conditions when the bearings are used with inner rings.

Other mounting dimensions may be required for special operating conditions such as:

1. Extremely heavy radial loads.
2. Shock loads.
3. Temperature gradient across bearing.
4. Housing material with heat expansion coefficient different than that of the bearing.
5. Oscillating motion applications.

**Table 2 - Mounting tolerances for bearings without inner ring**

Rotation conditions	Nominal housing bore diameter D mm	ISO tolerance zone for housing	Nominal shaft diameter F mm	ISO tolerance zone for shaft
Load stationary relative to housing	All diameters	H7 (J7)	All diameters	h6
General work with larger clearance	All diameters	K7	All diameters	g6
Load rotates relative to housing	All diameters	N7	All diameters	f6

**NOTE:** Care should be taken that the selected bearing internal clearance is appropriate for the operating conditions. Details of shaft and housing quality requirements are given on pages 13 and 14.

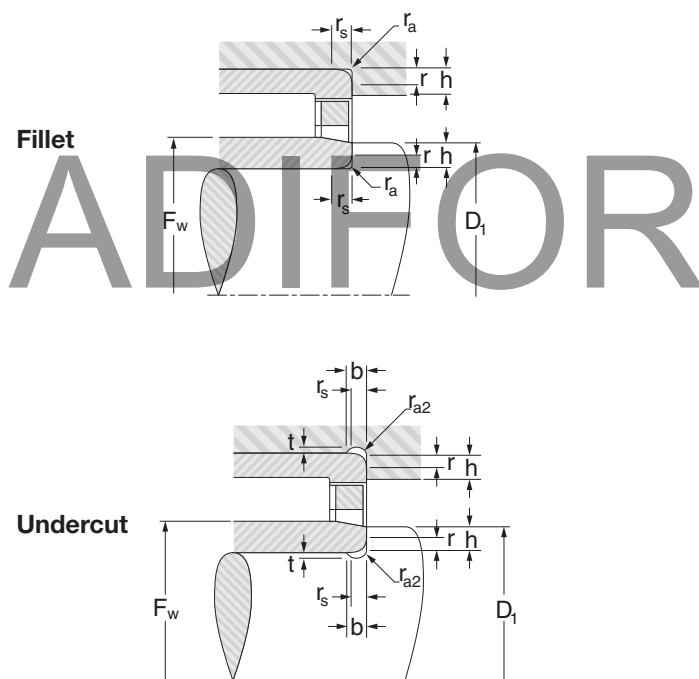
# Technical features

## Bearings with cage - guided needles

**Table 3 - Shaft tolerances for bearings with inner**

Rotation conditions	Nominal shaft diameter $d_1$ mm		ISO tolerance zone for shaft
Load rotates relative to housing	All diameters		g6
Load stationary relative to housing	>	≤	
		40	k6
	40	100	m6
	100	140	m6
	140		n6

**NOTE:** Care should be taken that the selected bearing internal clearance is appropriate for the operating conditions. Details of shaft and housing quality requirements are given on pages 13 and 14.



**Table 4 - Fillets, undercuts, and shoulder heights**

$r_s$ min mm	$r_{as}$ max	t	$r_{a2}$ min	b	h min
0,15	0,15				0,6
0,3	0,3				1
0,6	0,6				2
1	1	0,2	1,3	2	2,5
1,1	1	0,3	2	3	3,25
1,5	1,5	0,4	2	3,2	4
2	2	0,5	2,5	4	5
2,1	2,1	0,5	3	4,7	5,5
3	2,5	0,5	3,5	5,3	6

Regardless of the fit of the bearing outer ring in the housing, the outer ring should be axially located by housing shoulders or other positive means. The bearing rings should closely fit against the shaft and housing shoulders and must not contact the fillet radius.

The maximum shaft or housing fillet  $r_{a \max}$  should be no greater than the minimum bearing chamfer  $r_{s \min}$  as shown in Table 4.

In order to permit mounting and dismounting of the shaft, the maximum diameter  $D_{\max}$ , in Table 5 must not be exceeded.  $F_w$  is shown in the bearing tables.

**Table 5 - Shoulder diameter  $D_{1\max}$**

		Dimensions in mm				
Needle roller complement bore diameter $F_w$	>	20	55	100	250	
	≤	20	55	100	250	
Diameter	$D_{\max}$	$F_w-0,3$	$F_w-0,5$	$F_w-0,7$	$F_w-1$	$F_w-1,5$

### LOAD RATING FACTORS

#### Dynamic loads

Needle roller bearings can accommodate only radial loads.

The maximum dynamic radial load that may be applied to a needle roller bearing based on the dynamic load rating  $C$ , given in the bearing tables, should be  $\leq C/3$ .

#### Static loads

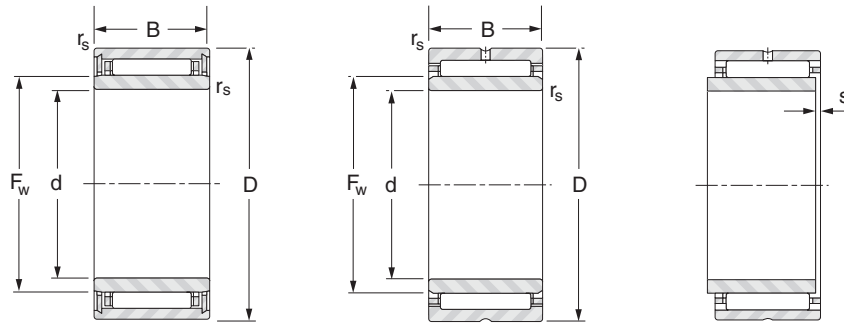
Needle roller bearings can accommodate only radial loads.

The maximum static radial load that may be applied to a needle roller bearing is based on the static load rating  $C_0$  given in the bearing tables. For calculations see the section "Technical notes" on page 11.

#### Mounting in sets

Radial needle roller bearings which are mounted side by side must or must have the same cross-section and radial internal clearance, after mounting.

# Bearings with cage - guided needles with inner ring



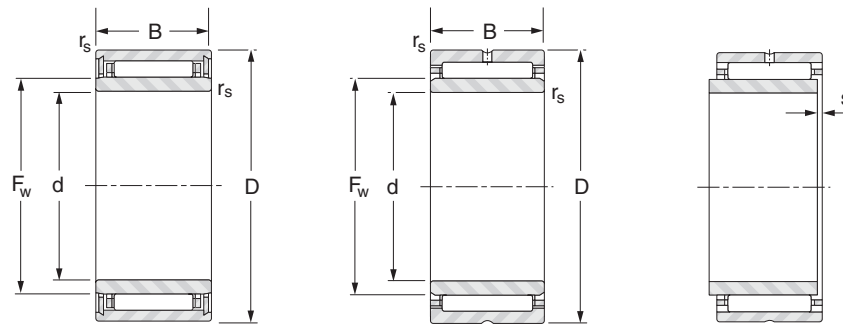
NKJ ( $d \leq 7$ )

NKJ, NKJS

Shaft Ø mm	Designation	d mm	D mm	B mm	F <sub>w</sub> mm	r <sub>s</sub> min. mm	s <sup>(1)</sup> mm	Load Ratings kN		Speed rating min <sup>-1</sup>		Weight kg
								Dynamic	Static	Oil	Grease	
								C	C <sub>0</sub>			
5	NKJ5/12	5	15	12	8	0.3	1.5	4.57	4.89	41000	26000	0.014
	NKJ5/16	5	15	16	8	0.3	1.5	5.22	5.78	41000	26000	0.017
6	NKJ6/12	6	16	12	9	0.3	1.5	4.27	4.60	40000	26000	0.015
	NKJ6/16	6	16	16	9	0.3	1.5	5.57	6.47	40000	26000	0.019
7	NKJ7/12	7	17	12	11.5	0.3	1.5	5.40	6.43	39000	25000	0.017
	NKJ7/16TN	7	17	16	11.5	0.3	1.5	5.30	6.27	39000	25000	0.021
9	NKJ9/12	9	19	12	12	0.3	1.5	6.86	7.60	30000	19000	0.018
	NKJ9/16	9	19	16	12	0.3	1.5	6.78	9.03	30000	19000	0.024
10	NKJ10/16	10	22	16	14	0.6	1.5	12.4	14.8	24000	16000	0.032
	NKJ10/20	10	22	20	14	0.3	1.5	14.7	18.4	24000	16000	0.040
12	NKJ12/16	12	24	16	16	0.3	1.5	13.0	16.2	28000	18000	0.036
	NKJ12/20	12	24	20	16	0.3	1.5	15.4	20.2	28000	18000	0.046
15	NKJ15/16	15	27	16	19	0.3	1.5	14.1	19.0	24000	15000	0.042
	NKJ15/20	15	27	20	19	0.3	1.5	16.8	23.6	24000	15000	0.054
17	NKJ17/16	17	29	16	21	0.3	2.0	15.3	21.6	21000	14000	0.047
	NKJ17/20	17	29	20	21	0.3	1.5	18.1	23.9	21000	14000	0.059
	NKJS17	17	37	20	24	0.6	1.0	29.1	32.8	20000	13000	0.108
20	NKJ20/16	20	32	16	24	0.3	1.5	16.2	24.3	18000	12000	0.053
	NKJ20/20	20	32	20	24	0.3	1.5	19.3	30.3	18000	12000	0.067
	NKJS20	20	42	20	28	0.6	1.0	30.3	38.4	16000	11000	0.130
22	NKJ22/16	22	34	16	26	0.3	1.5	16.6	25.7	17000	11000	0.058
	NKJ22/20	22	34	20	26	0.3	2.0	19.7	32.0	17000	11000	0.071
25	NKJ25/20	25	38	20	29	0.3	2.0	23.4	36.4	15000	9800	0.086
	NKJ25/30	25	38	30	29	0.3	2.0	29.8	56.4	15000	9800	0.130
	NKJS25	25	47	22	32	0.6	1.5	36.0	36.2	14000	9200	0.174
28	NKJ28/20	28	42	20	32	0.3	2.0	24.8	40.4	14000	8800	0.104
	NKJ28/30	28	42	30	32	0.3	2.0	35.6	64.3	14000	8800	0.156

<sup>(1)</sup> maximum axial movement

# Bearings with cage - guided needles with inner ring



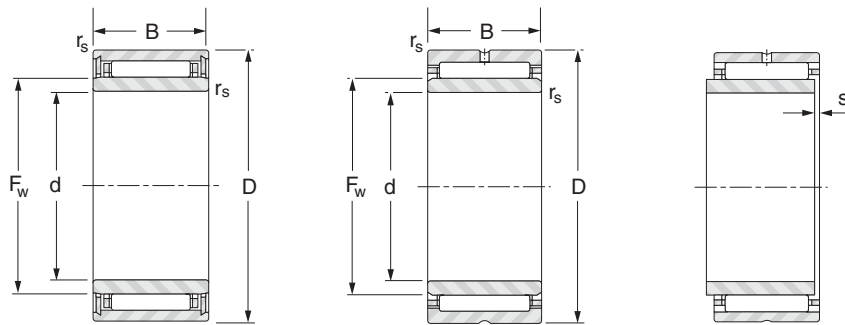
NKJ ( $d \leq 7$ )

NKJ, NKJS

Shaft Ø mm	Designation	d mm	D mm	B mm	F <sub>w</sub> mm	r <sub>s</sub> min. mm	s <sup>(1)</sup> mm	Load Ratings kN		Speed rating min <sup>-1</sup>		Weight kg
								Dynamic	Static	Oil	Grease	
								C	C <sub>0</sub>			
30	NKJ30/20	30	45	20	35	0.3	1.5	26.1	44.4	12000	8000	0.120
	NKJ30/30	30	45	30	35	0.3	1.5	37.4	70.6	12000	8000	0.179
	NKJS30	30	52	22	37	0.6	1.5	39.0	53.4	12000	7900	0.198
32	NKJ32/20	32	47	20	37	0.3	2.0	26.6	46.4	12000	7600	0.127
	NKJ32/30	32	47	30	37	0.3	1.5	38.2	73.9	12000	7600	0.192
35	NKJ35/20	35	50	20	40	0.3	2.0	27.8	50.4	11000	7000	0.135
	NKJ35/30	35	50	30	40	0.3	1.5	40.0	80.2	11000	7000	0.208
	NKJS35	35	58	22	43	0.6	1.0	41.6	60.7	10000	6700	0.235
38	NKJ38/20	38	53	20	43	0.3	2.0	29.0	54.4	9900	6400	0.146
	NKJ38/30	38	53	30	43	0.3	1.5	41.6	86.6	9900	6400	0.196
40	NKJ40/20	40	55	20	45	0.3	2.0	29.5	56.4	9400	6100	0.152
	NKJ40/30	40	55	30	45	0.3	1.5	42.3	89.8	9400	6100	0.229
	NKJS40	40	65	22	50	1.0	1.0	45.5	71.3	8700	5700	0.292
42	NKJ42/20	42	57	20	47	0.3	2.0	30.0	58.5	9000	5900	0.159
	NKJ42/30	42	57	30	47	0.3	1.5	39.9	84.1	9000	5900	0.241
45	NKJ45/25	45	62	25	50	0.6	3.0	40.7	79.3	8500	5500	0.223
	NKJ45/35	45	62	35	50	0.6	3.0	55.0	117	8500	5500	0.345
	NKJS45	45	72	22	55	1.0	1.0	47.9	78.4	7900	5100	0.360
50	NKJ50/25	50	68	25	55	0.6	3.0	46.1	87.3	7800	5000	0.288
	NKJ50/35	50	68	35	55	0.6	3.0	62.3	129	7800	5000	0.406
	NKJS50	50	80	28	60	1.1	1.5	66.9	103	7300	4800	0.523
55	NKJ55/25	55	72	25	60	0.6	3.0	44.3	94.0	7000	4600	0.290
	NKJ55/35	55	72	35	60	0.6	3.0	59.9	139	7000	4600	0.410
	NKJS55	55	85	28	65	1.1	1.5	71.0	114	6700	4400	0.569
60	NKJ60/25	60	82	25	68	0.6	2.0	49.0	101	6200	4000	0.440
	NKJ60/35	60	82	35	68	0.6	2.5	66.2	149	6200	4000	0.520
	NKJS60	60	90	28	70	1.1	1.5	72.6	120	6200	4000	0.607

<sup>(1)</sup> maximum axial movement

# Bearings with cage - guided needles with inner ring



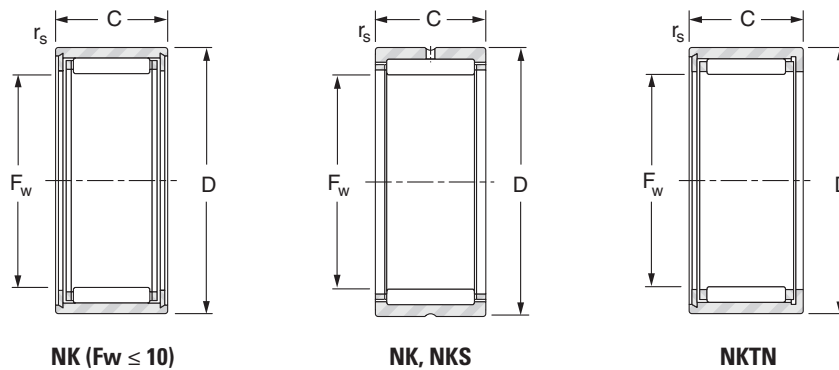
NKJ ( $d \leq 7$ )

NKJ, NKJS

Shaft ∅ mm	Designation	d mm	D mm	B mm	F <sub>w</sub> mm	r <sub>s</sub> min. mm	s <sup>(1)</sup> mm	Load Ratings kN		Speed rating min <sup>-1</sup>		Weight kg
								Dynamic	Static	Oil	Grease	
								C	C <sub>0</sub>			
65	NKJ65/25	65	90	25	73	0.6	2.0	61.5	119	5800	3800	0.500
	NKJ65/35	65	90	35	73	0.6	2.0	82.5	173	5800	3800	0.690
	NKJS65	65	95	28	75	1.1	1.5	76.5	132	5800	3700	0.655
70	NKJ70/25	70	95	25	80	1.0	2.0	65.0	131	5300	3400	0.561
	NKJ70/35	70	95	35	80	1.0	3.5	79.7	184	5300	3400	0.779
	NKJS70	70	100	28	80	1.1	1.5	80.1	143	5400	3500	0.772
75	NKJ75/25	75	105	25	85	1.0	2.0	76.4	137	5000	3300	0.640
	NKJS75	75	105	32	90	1.1	1.5	91.5	176	4700	3100	1.060
	NKJ75/35	75	105	35	85	1.0	2.0	108	214	5000	3300	1.050
80	NKJ80/25	80	110	25	90	1.0	2.0	79.5	147	4700	3100	0.790
	NKJS80	80	110	32	95	1.1	2.0	95.1	188	4500	2900	1.140
	NKJ80/35	80	110	35	90	1.0	2.0	113	230	4700	3100	0.980
85	NKJ85/26	85	115	26	95	1.0	3.0	49.3	114	4400	2800	0.862
	NKJ85/36	85	115	36	95	1.0	2.0	114	238	4400	2800	1.040
90	NKJ90/26	90	120	26	100	1.0	3.0	83.6	163	4200	2800	0.780
	NKJ90/36	90	120	36	100	1.0	2.5	118	254	4200	2800	1.080
95	NKJ95/26	95	125	26	105	1.0	2.5	52.2	127	3900	2600	0.935
	NKJ95/36	95	125	36	105	1.0	3.5	72.8	195	3900	2600	1.300
100	NKJ100/30	100	130	30	110	1.1	2.0	103	220	3800	2500	0.984
	NKJ100/40	100	130	40	110	1.1	2.0	132	301	3800	2500	1.410
	NKJS100	100	135	32	115	1.1	2.0	104	226	3700	2400	2.010

<sup>(1)</sup> maximum axial movement

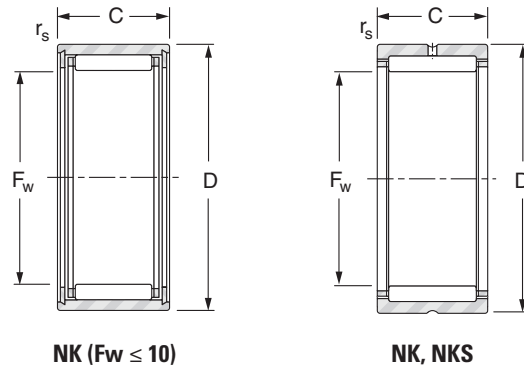
# Bearings with cage - guided needles without inner ring



Shaft ∅ mm	Designation	F <sub>w</sub> mm	D mm	C mm	r <sub>s</sub> min. mm	Load Ratings kN		Speed rating min <sup>-1</sup>		Weight kg
						Dynamic	Static	Oil	Grease	
						C	C <sub>0</sub>			
5	NK5/10TN	5	10	10	0.2	2.18	1.71	47000	31000	0.004
	NK5/12TN	5	10	12	0.2	3.04	2.63	47000	31000	0.004
6	NK6/10	6	12	10	0.2	3.19	2.90	44000	29000	0.005
	NK6/12TN	6	12	12	0.2	3.07	2.74	44000	29000	0.006
7	NK7/10TN	7	14	10	0.3	2.74	2.44	42000	28000	0.007
	NK7/12TN	7	14	12	0.3	3.40	3.22	42000	28000	0.009
8	NK8/12	8	15	12	0.3	4.57	4.89	41000	26000	0.011
	NK8/16	8	15	16	0.3	5.22	5.78	41000	26000	0.013
9	NK9/12	9	16	12	0.3	4.27	4.60	40000	26000	0.012
	NK9/16	9	16	16	0.3	5.57	6.47	40000	26000	0.015
10	NK10/12	10	17	12	0.3	5.40	6.43	39000	25000	0.013
	NK10/16TN	10	17	16	0.3	5.30	6.27	39000	25000	0.015
12	NK12/12	12	19	12	0.3	6.86	7.60	30000	19000	0.013
	NK12/16	12	19	16	0.3	6.78	9.03	37000	24000	0.018
14	NK14/16	14	22	16	0.3	12.4	14.8	24000	16000	0.023
	NK14/20	14	22	20	0.3	14.7	18.4	24000	16000	0.028
15	NK15/16	15	23	16	0.3	12.4	15.0	24000	15000	0.024
	NK15/20	15	23	20	0.3	14.7	18.6	24000	15000	0.031
16	NK16/16	16	24	16	0.3	15.4	20.2	28000	18000	0.025
	NK16/20	16	24	20	0.3	16.1	21.3	28000	18000	0.036
17	NK17/16	17	25	16	0.3	13.6	17.5	27000	17000	0.027
	NK17/20	17	25	20	0.3	15.4	20.4	27000	17000	0.034
18	NK18/16	18	26	16	0.3	13.6	17.7	25000	16000	0.028
	NK18/20	18	26	20	0.3	16.1	22.0	25000	16000	0.035
19	NK19/16	19	27	16	0.3	14.1	19.0	24000	15000	0.029
	NK19/20	19	27	20	0.3	18.8	23.6	24000	15000	0.037
	NKS18	19	30	16	0.3	15.9	16.2	26000	17000	0.045

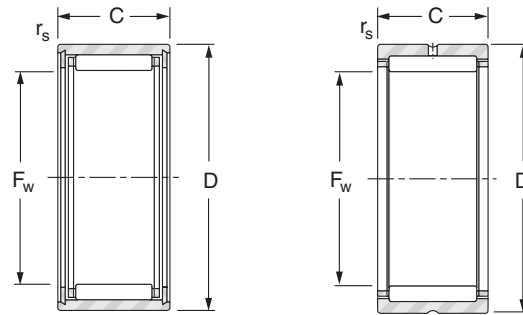


# Bearings with cage - guided needles without inner ring



Shaft ∅ mm	Designation	F <sub>w</sub> mm	D mm	C mm	r <sub>s</sub> min. mm	Load Ratings kN		Speed rating min <sup>-1</sup>		Weight kg
						Dynamic	Static	Oil	Grease	
						C	C <sub>0</sub>			
20	NK20/16	20	28	16	0.3	14.1	19.1	22000	14000	0.030
	NK20/20	20	28	20	0.3	17.5	25.3	22000	14000	0.038
	NKS20	20	32	20	0.6	24.4	26.7	24000	15000	0.058
21	NK21/16	21	29	16	0.3	15.3	21.6	21000	14000	0.032
	NK21/20	21	29	20	0.3	18.1	26.9	21000	14000	0.040
22	NK22/16	22	30	16	0.3	15.2	21.7	20000	13000	0.033
	NK22/20	22	30	20	0.3	18.0	27.0	20000	13000	0.041
	NKS22	22	35	20	0.6	22.9	27.1	21000	14000	0.069
24	NK24/16	24	32	16	0.3	16.2	24.3	18000	12000	0.035
	NK24/20	24	32	20	0.3	19.3	30.3	18000	12000	0.045
	NKS24	24	37	20	0.6	29.1	32.8	20000	13000	0.073
25	NK25/16	25	33	16	0.3	16.1	24.4	17000	11000	0.037
	NK25/20	25	33	20	0.3	19.1	30.4	17000	11000	0.047
	NKS25	25	38	20	0.6	29.1	33.0	19000	12000	0.076
26	NK26/16	26	34	16	0.3	16.6	25.7	17000	11000	0.039
	NK26/20	26	34	20	0.3	19.7	32.0	17000	11000	0.048
28	NK28/20	28	37	20	0.3	22.6	34.4	16000	10000	0.057
	NK28/30	28	37	30	0.3	29.0	53.8	16000	10000	0.088
	NKS28	28	42	20	0.6	30.3	38.4	16000	11000	0.094
29	NK29/20	29	38	20	0.3	23.4	36.4	15000	9800	0.059
	NK29/30	29	38	30	0.3	29.8	56.4	15000	9700	0.090
30	NK30/20	30	40	20	0.3	24.2	38.3	15000	9500	0.071
	NK30/30	30	40	30	0.3	34.7	61.0	15000	9500	0.107
	NKS30	30	45	20	0.6	34.3	42.8	15000	9900	0.114
32	NK32/20	32	42	20	0.3	24.8	40.4	14000	8800	0.074
	NK32/30	32	42	30	0.3	35.6	64.3	14000	8800	0.112
	NKS32	32	47	22	0.6	36.0	46.2	14000	9200	0.120
35	NK35/20	35	45	20	0.3	26.1	44.4	12000	8000	0.081
	NK35/30	35	45	30	0.3	37.4	70.6	12000	8000	0.122
	NKS35	35	50	22	0.6	37.5	49.9	13000	8400	0.130

# Bearings with cage - guided needles without inner ring

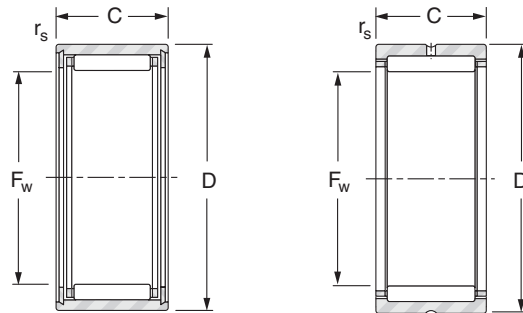


NK ( $F_w \leq 10$ )

NK, NKS

Shaft Ø mm	Designation	F <sub>w</sub> mm	D mm	C mm	r <sub>s</sub> min. mm	Load Ratings kN		Speed rating min <sup>-1</sup>		Weight kg
						Dynamic	Static	Oil	Grease	
						C	C <sub>0</sub>			
37	NK37/20	37	47	20	0.3	26.6	46.4	12000	7600	0.084
	NK37/30	37	47	30	0.3	38.2	73.9	12000	7600	0.128
	NKS37	37	52	22	0.6	39.0	53.4	12000	7900	0.134
38	NK38/20	38	48	20	0.3	21.7	40.9	11000	7300	0.087
	NK38/30	38	48	30	0.3	31.9	67.0	11000	7300	0.131
40	NK40/20	40	50	20	0.3	27.8	50.4	11000	7000	0.089
	NK40/30	40	50	30	0.3	40.0	80.2	11000	7000	0.137
	NKS40	40	55	22	0.6	40.3	57.0	11000	7200	0.140
42	NK42/20	42	52	20	0.3	28.3	52.4	10000	6600	0.085
	NK42/30	42	52	30	0.3	40.7	83.5	10000	6600	0.141
43	NK43/20	43	53	20	0.3	29.0	54.4	9900	6400	0.096
	NK43/30	43	53	30	0.3	41.6	86.6	9900	6400	0.134
	NKS43	43	58	22	0.6	41.6	60.7	10000	6700	0.150
45	NK45/20	45	55	20	0.3	29.5	56.4	9400	6100	0.100
	NK45/30	45	55	30	0.3	42.3	89.8	9400	6100	0.151
	NKS45	45	60	22	0.6	43.0	64.2	9800	6400	0.156
47	NK47/20	47	57	20	0.3	30.0	58.5	9000	5900	0.104
	NK47/30	47	57	30	0.3	43.0	93.1	9000	5900	0.158
50	NK50/25	50	62	25	0.3	40.7	79.3	8500	5500	0.171
	NK50/35	50	62	35	0.6	55.0	117	8500	5500	0.242
	NKS50	50	65	22	1.0	45.5	71.3	8700	5700	0.170
55	NK55/25	55	68	25	0.6	46.1	87.3	7800	5000	0.207
	NK55/35	55	68	35	0.6	62.3	129	7800	5000	0.293
	NKS55	55	72	22	1.0	47.9	78.4	7900	5100	0.225
60	NK60/25	60	72	25	0.6	44.3	94.0	7000	4400	0.202
	NK60/35	60	72	35	0.6	59.9	139	7000	4400	0.286
	NKS60	60	80	28	1.1	66.9	103	7300	4800	0.337
65	NK65/25	65	78	25	0.6	48.2	97.7	6500	4200	0.257
	NK65/35	65	78	35	0.6	65.2	144	6500	4200	0.298
	NKS65	65	85	28	1.1	71.0	114	6700	4200	0.362

# Bearings with cage - guided needles without inner ring



NK ( $F_w \leq 10$ )

NK, NKS

Shaft Ø mm	Designation	F <sub>w</sub> mm	D mm	C mm	r <sub>s</sub> min. mm	Load Ratings kN		Speed rating min <sup>-1</sup>		Weight kg
						Dynamic	Static	Oil	Grease	
						C	C <sub>0</sub>			
68	NK68/25	68	82	25	0.6	49.0	101	6200	4000	0.287
	NK68/35	68	82	35	0.6	66.2	149	6200	4000	0.350
70	NK70/25	70	85	25	0.6	43.6	87.9	6000	3900	0.298
	NK70/35	70	85	35	0.6	62.2	139	6000	3900	0.411
	NKS70	70	90	28	1.1	72.6	120	6200	4000	0.383
73	NK73/25	73	90	25	0.6	61.5	119	5800	3800	0.320
	NK73/35	73	90	35	0.6	82.5	173	5800	3800	0.450
75	NK75/25	75	92	25	0.6	43.7	90.2	5600	3600	0.364
	NK75/35	75	92	35	0.6	60.9	138	5600	3600	0.518
	NKS75	75	95	28	1.1	76.5	132	5800	3700	0.413
80	NK80/25	80	95	25	1.0	65.0	131	5300	3400	0.331
	NK80/35	80	95	35	1.0	79.7	184	5300	3400	0.380
85	NK85/25	85	105	25	1.0	76.4	137	5000	3300	0.506
	NK85/35	85	105	35	1.0	108	214	5000	3300	0.610
90	NK90/25	90	110	25	1.0	79.5	147	4700	3100	0.450
	NK90/35	90	110	35	1.0	113	230	4700	3100	0.745
95	NK95/26	95	115	26	1.0	49.3	114	4400	2800	0.572
	NK95/36	95	115	36	1.0	114	238	4500	2900	0.803
100	NK100/26	100	120	26	1.0	83.6	163	4200	2800	0.530
	NK100/36	100	120	36	1.0	118	254	4200	2800	0.658
105	NK105/26	105	125	26	1.0	52.2	127	3900	2600	0.595
110	NK110/30	110	130	30	1.1	103	220	3800	2500	0.660
	NK110/40	110	130	40	1.1	132	301	3800	2500	0.900



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