Machined-ring needle roller bearings

1. Bearing materials

The available **SLB** Machined Ring Needle Roller Bearings, without an inner ring, include the series NK and RNA (metric series) The dimension series of the series RNA includes the RNA 49, RNA 59, and RNA 69. The bearing series with an inner ring include NKI and NA (metric series) The dimension series of series NA in clude NA 48, NA 49, NA 59, and NA 69. The boundary dimensions (bore diameter, outside diameter, width, and chamfer dimension) for these dimension series are specified in ISO 15. The third and fourth significant numerals in their bearing numbers represent width number and diameter number, respectively.

Particular bearings, whose inscribed enveloping circle diameter is 40 mm or greater, among the RNA 69 (NA 69) bearings have double-row needle rollers, while bearings of other models and dimension series have single-row needle rollers. With bearings whose inscribed enveloping circle diameter (Fw) does not exceed 12 mm, the needle rollers and cage are retained in the outer ring by the side plate: in the case of the inscribed enveloping circle diameter (Fw) exceeding 12 mm, the needle rollers and cage are retained in the outer ring by the rib. The outer rings (other than those of series NK bearings whose inscribed enveloping circle diameter does not exceed 12 mm) have a lubrication hole and oil groove to simplify relubrication of the bearing. The cage used on **SLB** Machined Ring Needle Roller Bearings is usually a machined or pressed-steel type. However, cages of molded polyamide reinforced with glass fiber or carbon fiber (suffix TV) may be used. The T2 cage features a maximum allowable operating temperature of 120°C and maximum allowable continuous operating temperature of 100°C . Series RNA 49 (NA 49) bearings include a sealed type whose outer ring has a synthetic rubber seal on one or both ends (suffix RSR, 2RSR). This variant is pre-filled with lithium soap grease and can operate within a temperate range of -25°C to 100°C.

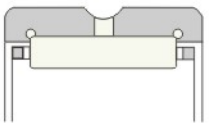


Fig. 1 Series RNA (NK)

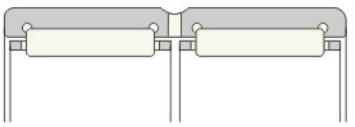


Fig. 2 Series RNA (double row)

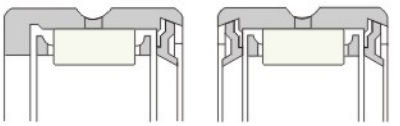


Fig. 3 Series RNA 49..RSR(2RSR)

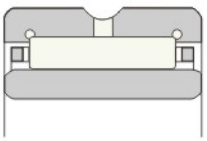


Fig. 4 Series NA

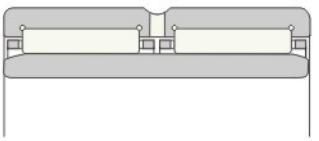


Fig. 5 Series NA (double row)

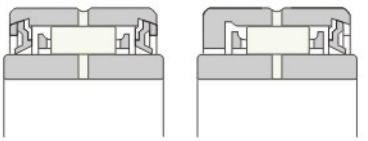
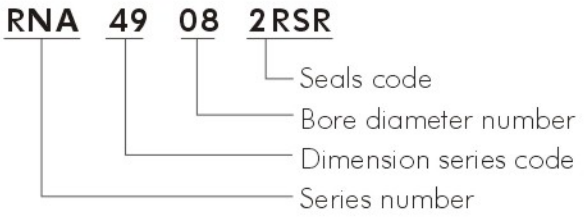


Fig. 6 Series NA 49..RSR (2RSR)

2. Interpreting bearing numbers

The bearing numbers of **SLB** Machined Ring Needle Roller Bearings, series RNA and NA, comprise a series number, dimension series code, bore diameter number, and suffix. Bearing numbers of series NK bearings comprise a series number, dimension code (inscribed enveloping circle diameter/width dimension)

Series RNA, NA



Series NK

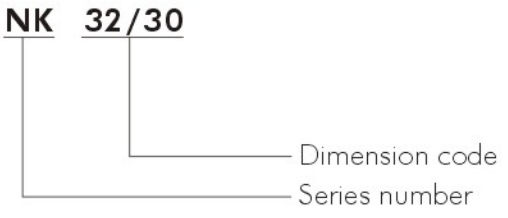


Fig. 7

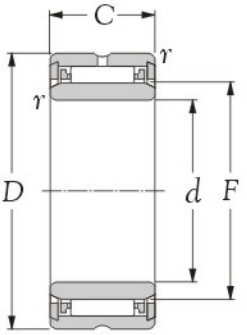
3. Interpreting clearance and bearing fits

The radial clearances of **SLB** Machined Ring Roller Bearings with an Inner ring are given in " Bearing Internal Clearance". Because the range of non-interchangeable clearance is limited, a bearing delivered adjusted to a non-interchangeable clearance must be mounted as is.
The dimensional tolerances (fits) with the shaft and housing bore when installing a bearing with an inner ring vary with the type and magnitude of load, shaft diameter, and housing bore size, and must satisfy the requirements in " Recommended fits ". The required form accuracy and surface roughness are specified in "Shaft and housing accuracy ". The bearing without an inner ring uses a shaft as a raceway surface.
The required tolerances of the shaft diameter (raceway diameter) corresponding with the running clearance are given in Table 1 below. The dimensional tolerance of the housing bore is K7, which is commonly used. For the form accuracy, roughness, and hardness of the shaft as a raceway surface, refer to Table 1 "Accuracy of Raceway surface".

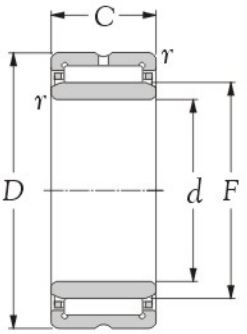
Table 1 Dimensional tolerances of shaft (raceway diameter)

Enveloping circle dia. Fw mm		Tolerance class of shaft		
over	incl.	smaller than normal clearance	normal clearance	greater than normal clearance
-	80	k5	h5	f6
80	160	k5	g5	f6
160	180	k5	g5	e6
180	200	j5	g5	e6
200	250	j5	f6	e6
250	315	h5	f6	e6
315	400	g5	f6	d6

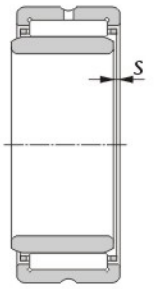
MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING



Type NA 49 (d≤9 mm)



Type NA 49 (d≥10 mm)
Type NA 59
Type NA 69 (d≤30 mm)



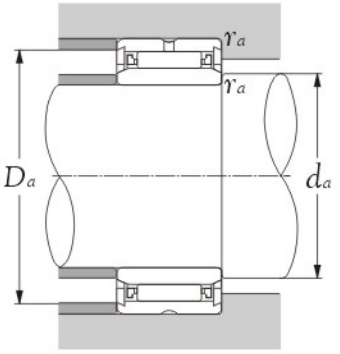
Inner bore d	Bearing number	Principal dimensions					Basic load ratings			
		D	C	r s min 1)	F	s 2)	dynamic C	static Co	dynamic C	static Co
mm		mm					N		kgf	
5	NA 495	13	10	0.15	7	-	2670	2350	272	239
6	NA 496	15	10	0.15	8	-	3150	3000	320	305
7	NA 497	17	10	0.15	9	-	3600	3650	365	375
8	NA 498	19	11	0.15	10	-	4300	3950	435	405
9	NA 499	20	11	0.30	12	-	4850	4900	495	500
10	NA 4900	22	13	0.30	14	0.5	8600	9200	875	935
12	NA 4901	24	13	0.30	16	0.5	9550	10900	975	1110
12	NA 6901	24	22	0.30	16	1.0	15400	20000	1570	2040
15	NA 4902	28	13	0.30	20	0.5	10300	12800	1050	1310
15	NA 5902	28	18	0.30	20	0.5	14100	19100	1440	1950
15	NA 6902	28	23	0.30	20	1.0	17600	25300	1790	2580
17	NA 4903	30	13	0.30	22	0.5	11200	14600	1140	1490
17	NA 5903	30	18	0.30	22	0.5	15200	21700	1550	2210
17	NA 6903	30	23	0.30	22	1.0	18200	27200	1850	2770
20	NA 4904	37	17	0.30	25	0.8	21300	25500	2170	2600
20	NA 5904	37	23	0.30	25	0.8	28400	37000	2900	3750
20	NA 6904	37	30	0.30	25	1.0	36500	50500	3700	5150
22	NA 49/22	39	17	0.30	28	0.8	23200	29300	2360	2990
22	NA 59/22	39	23	0.30	28	0.8	26400	37500	2690	3850
22	NA 69/22	39	30	0.30	28	0.5	40000	58500	4050	6000
25	NA 4905	42	17	0.30	30	0.8	24000	31500	2450	3200
25	NA 5905	42	23	0.30	30	0.8	30500	43000	3150	4350
25	NA 6905	42	30	0.30	30	1.0	41500	63000	4200	6400
28	NA 49/28	45	17	0.30	32	0.8	24800	33500	2530	3400

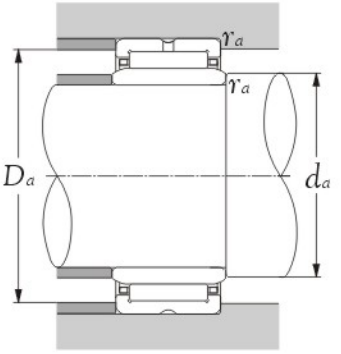
Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r
2) These values are the possible axial displacement of the inner ring against outer ring

Technical supplement

Cages		Precision	Grease
Steel -	√		
Polymid -	X	Normal (ISO)	Nil
Brass -	X		

MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING

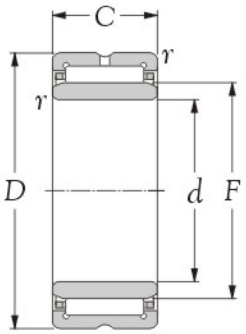




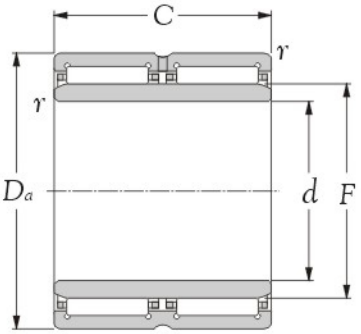
Max runout speed grease	oil	Abutment dimensions			Weight
r/min		d_a min	D_a max	r_{as} max	kg.
23000	34000	6.2	8.5	0.15	0.007
21000	32000	8.0	9.5	0.15	0.009
20000	30000	9.0	10.5	0.15	0.010
19000	28000	10.0	12.0	0.15	0.016
17000	26000	11.0	14.0	0.30	0.017
16000	24000	12.0	20.0	0.30	0.024
15000	23000	14.0	22.0	0.30	0.026
15000	23000	14.0	22.0	0.30	0.046
13000	20000	17.0	26.0	0.30	0.036
13000	20000	17.0	26.0	0.30	0.052
13000	20000	17.0	26.0	0.30	0.064
12000	18000	19.0	28.0	0.30	0.056
12000	18000	19.0	28.0	0.30	0.037
12000	18000	19.0	28.0	0.30	0.069
11000	16000	22.0	35.0	0.30	0.074
11000	16000	22.0	35.0	0.30	0.115
11000	16000	22.0	35.0	0.30	0.141
9500	14000	24.0	37.0	0.30	0.080
9500	14000	24.0	37.0	0.30	0.134
9500	14000	24.0	37.0	0.30	0.154
8500	13000	27.0	40.0	0.30	0.088
8500	13000	27.0	40.0	0.30	0.139
8500	13000	27.0	40.0	0.30	0.162
8500	13000	30.0	43.0	0.30	0.098

SLB® NA 49-59-69 SERIES

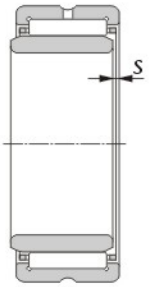
MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING



Type NA 49 (d≥10 mm)
Type NA 59



Type NA 69 ZW (d≥32 mm)



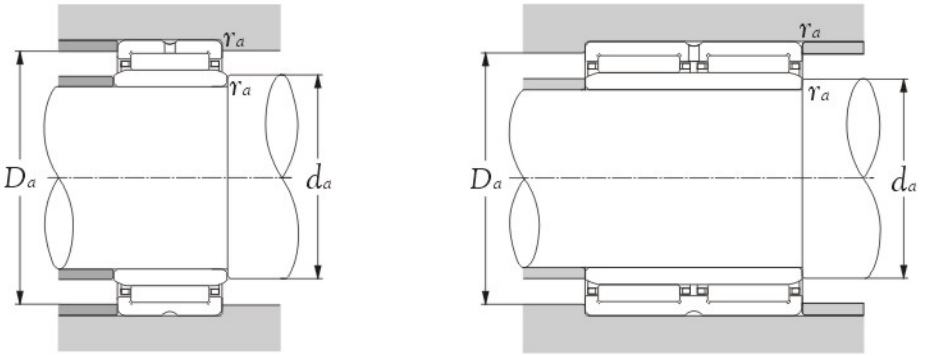
Inner bore d	Bearing number	Principal dimensions					Basic load ratings			
		D	C	r s min 1)	F	s 2)	dynamic C	static Co	dynamic C	static Co
mm		mm					N		kgf	
28	NA 59/28	45	23	0.30	32	0.8	32000	45500	3250	4650
28	NA 69/28	45	30	0.30	32	1.0	43000	67000	4350	6850
30	NA 4906	47	17	0.30	35	0.8	25500	35500	2600	3600
30	NA 5906	47	23	0.30	35	0.8	32500	48500	3350	4950
30	NA 6906	47	30	0.30	35	1.0	42500	67500	4300	6900
32	NA 49/32	52	20	0.60	40	0.8	31500	47500	3200	4850
32	NA 59/32	52	27	0.60	40	0.8	38000	61000	3850	6250
32	NA 69/32 ZW	52	36	0.6	40	0.5	47500	82000	4850	4350
35	NA 4907	55	20	0.6	42	0.8	32000	50000	3300	5100
35	NA 5907	55	27	0.6	42	0.8	39000	64500	3950	6550
35	NA 6907 ZW	55	36	0.6	42	0.5	49000	86500	5000	8800
40	NA 4908	62	22	0.6	48	1.0	43500	66500	4450	6800
40	NA 5908	62	30	0.6	48	1.0	53000	92500	5450	9450
40	NA 6908 ZW	62	40	0.6	48	0.5	67000	116000	6850	11800
45	NA 4909	68	22	0.6	52	1.0	46000	73000	4700	7450
45	NA 5909	68	30	0.6	52	1.0	56000	101000	5700	10300
45	NA 6909 ZW	68	40	0.6	52	0.5	70500	127000	7200	13000
50	NA 4910	72	22	0.6	58	1.0	48000	80000	4900	8150
50	NA 5910	72	30	0.6	58	1.0	58000	110000	5950	11200
50	NA 6910 ZW	72	40	0.6	58	0.5	74000	139000	7500	14200
55	NA 4911	80	25	1.0	63	1.5	58500	99500	6000	10100
55	NA 5911	80	34	1.0	63	1.5	76500	140000	7800	14300
55	NA 6911 ZW	80	45	1.0	63	1.5	94000	183000	9600	18600
60	NA 4912	85	25	1.0	68	1.5	61500	108000	6250	11000

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r
2) These values are the possible axial displacement of the inner ring against outer ring

Technical supplement

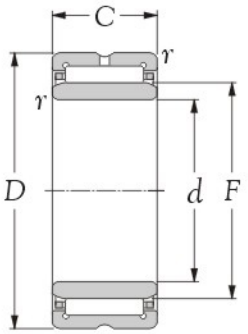
Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING

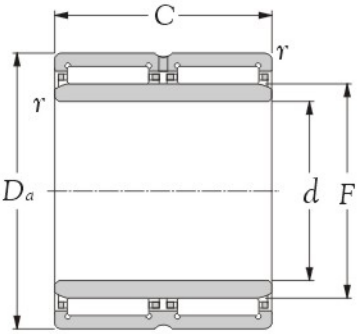


Max runout speed grease	Max runout speed oil	Abutment dimensions d_a min	Abutment dimensions D_a max	Abutment dimensions r_{as} max	Weight
r/min					kg.
8500	13000	30.0	43.0	0.30	0.142
8500	13000	30.0	43.0	0.30	0.179
7500	11000	32.0	45.0	0.30	0.101
7500	11000	32.0	45.0	0.30	0.152
7500	11000	32.0	45.0	0.30	0.185
6500	10000	36.0	48.0	0.60	0.157
6500	10000	36.0	48.0	0.60	0.241
6500	10000	36	48	0.6	0.286
6500	9500	39	51	0.6	0.171
6500	9500	39	51	0.6	0.256
6500	9500	39	51	0.6	0.310
5500	8500	44	58	0.6	0.232
5500	8500	44	58	0.6	0.348
5500	8500	44	58	0.6	0.426
5000	7500	49	64	0.6	0.270
5000	7500	49	64	0.6	0.396
5000	7500	49	64	0.6	0.437
4700	7000	54	68	0.6	0.276
4700	7000	54	68	0.6	0.498
4700	7000	54	68	0.6	0.529
4300	6500	60	75	1.0	0.396
4300	6500	60	75	1.0	0.559
4300	6500	60	75	1.0	0.726
4000	6000	65	80	1.0	0.427

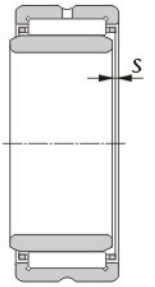
MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING



Type NA 48
Type NA 49 (d≥10 mm)
Type NA 59



Type NA 69 ZW (d≥32 mm)



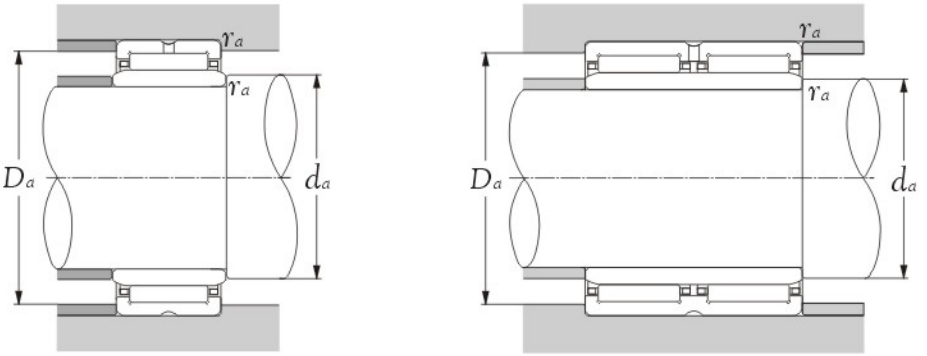
Inner bore d	Bearing number	Principal dimensions					Basic load ratings			
		D	C	r s min 1)	F	s 2)	dynamic C	static Co	dynamic C	static Co
mm		mm					N		kgf	
60	NA 5912	85	34	1.0	68	1.5	80500	153000	8200	15600
60	NA 6912 ZW	85	45	1.0	68	1.5	95500	191000	9750	19400
65	NA 4913	90	25	1.0	72	1.5	62500	112000	6350	11400
65	NA 5913	90	34	1.0	72	1.5	84000	165000	8600	16800
65	NA 6913 ZW	90	45	1.0	72	1.5	97000	198000	9900	20200
70	NA 4914	100	30	1.0	80	1.5	85500	156000	8750	15900
70	NA 5914	100	40	1.0	80	1.5	103000	187000	10500	19100
70	NA 6914 ZW	100	54	1.0	80	1.0	130000	267000	13300	27200
75	NA 4915	105	30	1.0	85	1.5	87000	162000	8900	16500
75	NA 5915	105	40	1.0	85	1.5	109000	205000	11100	20900
75	NA 6915 ZW	105	54	1.0	85	1.0	132000	277000	13500	28300
80	NA 4916	110	30	1.0	90	1.5	90500	174000	9250	17700
80	NA 5916	110	40	1.0	90	1.5	115000	223000	11700	22700
80	NA 6916 ZW	110	54	1.0	90	1.5	137000	298000	14000	30500
85	NA 4917	120	35	1.1	100	1.0	112000	237000	11500	24200
85	NA 5917	120	46	1.1	100	1.5	137000	290000	14000	29600
85	NA 6917 ZW	120	63	1.1	100	1.0	169000	400000	17300	41000
90	NA 4918	125	35	1.1	105	1.0	116000	252000	11900	25700
90	NA 5918	125	46	1.1	105	1.0	143000	310000	14600	32000
90	NA 6918 ZW	125	63	1.1	105	1.0	175000	425000	17900	43500
95	NA 4919	130	35	1.1	110	1.0	118000	260000	12000	26500
95	NA 5919	130	46	1.1	110	1.0	149000	335000	15200	34000
95	NA 6919 ZW	130	63	1.1	110	1.0	177000	440000	18100	45000
100	NA 4920	140	40	1.1	115	2.0	127000	260000	12900	26500

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r
2) These values are the possible axial displacement of the inner ring against outer ring

Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

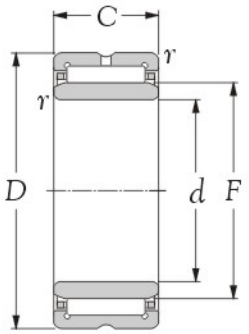
MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING

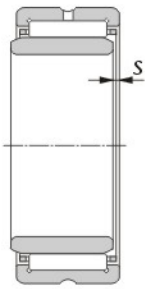


Max runout speed grease	Max runout speed oil	Abutment dimensions d_a min	Abutment dimensions D_a max	Abutment dimensions r_{as} max	Weight
r/min					kg.
4000	6000	65	80	1.0	0.614
4000	6000	65	80	1.0	0.758
3700	5500	70	85	1.0	0.454
3700	5500	70	85	1.0	0.655
3700	5500	70	85	1.0	0.779
3300	5000	75	95	1.0	0.727
3300	5000	75	95	1.0	1.060
3300	5000	75	95	1.0	1.340
3100	4700	80	100	1.0	0.776
3100	4700	80	100	1.0	1.130
3100	4700	80	100	1.0	1.450
2900	4400	85	105	1.0	0.820
2900	4400	85	105	1.0	1.150
2900	4400	85	105	1.0	1.530
2700	4000	91.5	113.5	1.0	1.24
2700	4000	91.5	113.5	1.0	1.76
2700	4000	91.5	113.5	1.0	2.25
2500	3800	96.5	118.5	1.0	1.31
2500	3800	96.5	118.5	1.0	1.84
2500	3800	96.5	118.5	1.0	2.44
2400	3600	101.5	123.5	1.0	1.36
2400	3600	101.5	123.5	1.0	1.98
2400	3600	101.5	123.5	1.0	2.63
2300	3500	106.5	133.5	1.0	1.93

SLB® NA 48-49 SERIES

MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING





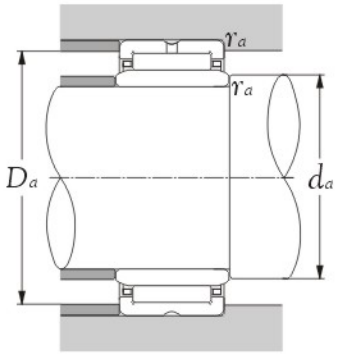
Type NA 48
Type NA 49 (d ≥ 10 mm)

Inner bore d	Bearing number	Principal dimensions					Basic load ratings			
		D	C	r s min 1)	F	s 2)	dynamic C	static Co	dynamic C	static Co
mm		mm					N		kgf	
100	NA 5920	140	54	1.1	115	2.0	182000	395000	18600	40500
110	NA 4822	140	30	1.0	120	0.8	93500	210000	9550	21400
110	NA 4922	150	40	1.1	125	2.0	131000	279000	13300	28400
110	NA 5922	150	54	1.1	125	2.0	193000	440000	19700	45000
120	NA 4824	150	30	1.0	130	0.8	99500	233000	10100	23800
120	NA 4924	165	45	1.1	135	2.0	180000	380000	18300	38500
120	NA 5924	165	60	1.1	135	2.0	245000	525000	25000	53500
130	NA 4826	165	35	1.1	145	1.0	118000	305000	12100	31000
130	NA 4926	180	50	1.5	150	1.5	202000	455000	20600	46500
130	NA 5926	180	67	1.5	150	1.5	294000	685000	30000	70000
140	NA 4828	175	35	1.1	155	1.0	121000	315000	12300	32500
140	NA 4928	190	50	1.5	160	1.5	209000	485000	21300	49500
140	NA 5928	190	67	1.5	160	1.5	310000	755000	31500	77000
150	NA 4830	190	40	1.1	165	1.5	152000	390000	15500	40000
150	NA 4930	210	60	2.0	170	1.5	261000	610000	26600	62500
160	NA 4832	200	40	1.1	175	1.5	160000	425000	16300	43500
160	NA 4932	220	60	2.0	180	1.5	270000	650000	27600	66500
170	NA 4834	215	45	1.1	185	1.5	185000	495000	18800	50500
170	NA 4934	230	60	2.0	190	1.5	279000	690000	28500	70500
180	NA 4836	225	45	1.1	195	1.5	195000	540000	19800	55000
180	NA 4936	250	69	2.0	205	1.5	375000	890000	38500	90500
190	NA 4838	240	50	1.5	210	1.5	227000	680000	23200	69000
190	NA 4938	260	69	2.0	215	1.5	390000	945000	40000	96500
200	NA 4840	250	50	1.5	220	1.5	231000	705000	23600	71500

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r
2) These values are the possible axial displacement of the inner ring against outer ring

Technical supplement

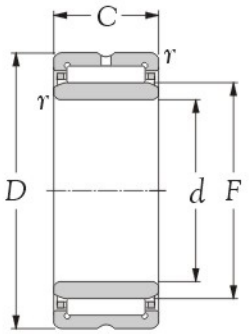
Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

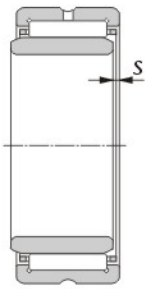


Max runout speed grease	Max runout speed oil	Abutment dimensions d_a min	Abutment dimensions D_a max	Abutment dimensions r_{as} max	Weight
r/min					kg.
2300	3500	106.5	133.5	1.0	2.85
2200	3300	115.0	135.0	1.0	1.11
2100	3200	116.5	143.5	1.0	2.08
2100	3200	116.5	143.5	1.0	2.98
2100	3100	125.0	145.0	1.0	1.17
2000	3000	126.5	158.5	1.0	2.84
2000	3000	126.5	158.5	1.0	3.92
1900	2800	136.5	158.5	1.0	1.60
1800	2700	138.0	172.0	1.5	3.90
1800	2700	138.0	172.0	1.5	5.60
1700	2600	146.5	168.5	1.0	1.82
1700	2500	148.0	182.0	1.5	4.05
1700	2500	148.0	182.0	1.5	6.18
1600	2400	156.5	183.5	1.0	2.72
1600	2400	159.0	201.0	2.0	5.33
1500	2300	166.5	193.5	1.0	2.90
1500	2200	169.0	211.0	2.0	5.60
1500	2200	176.5	208.5	1.0	3.99
1400	2100	179.0	221.0	2.0	5.87
1400	2100	186.5	218.5	1.0	4.19
1300	2000	189.0	241.0	2.0	8.58
1300	1900	198	232	1.5	5.62
1300	1900	199	251	2.0	8.68
1200	1800	208	242	1.5	5.84

SLB NA 48-49 SERIES

MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING





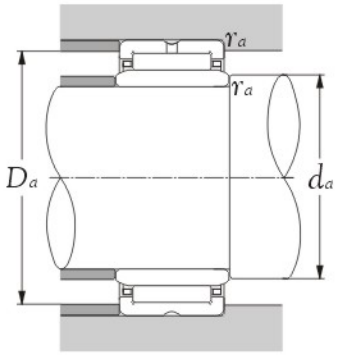
Type NA 48
Type NA 49 (d ≥ 10 mm)

Inner bore d	Bearing number	Principal dimensions					Basic load ratings			
		D	C	r_s min[1]	F	s[2]	dynamic C	static Co	dynamic C	static Co
mm		mm					N		kgf	
200	NA 4940	280	80	2.1	225	1.5	505000	1180000	51500	120000
220	NA 4844	270	50	1.5	240	1.5	244000	780000	24900	79500
220	NA 4944	300	80	2.1	245	1.5	525000	1270000	53500	129000
240	NA 4848	300	60	2.0	265	2.0	360000	1080000	37000	110000
240	NA 4948	320	80	2.1	265	2.0	540000	1350000	55000	138000
260	NA 4852	320	60	2.0	285	2.0	375000	1160000	38000	119000
260	NA 4952	360	100	2.1	290	2.0	805000	1900000	82000	193000
280	NA 4856	350	69	2.0	305	2.5	455000	1300000	46500	133000
280	NA 4956	380	100	2.1	310	2.5	835000	2030000	85000	207000
300	NA 4860	380	80	2.1	330	2.0	625000	1770000	64000	180000
300	NA 4960	420	118	3.0	340	2.0	1080000	2640000	110000	269000
320	NA 4864	400	80	2.1	350	2.0	640000	1850000	65500	189000
320	NA 4964	440	118	3.0	360	2.0	1120000	2820000	114000	288000
340	NA 4868	420	80	2.1	370	2.0	655000	1940000	66500	197000
340	NA 4968	460	118	3.0	380	2.0	1160000	3000000	118000	305000
360	NA 4872	440	80	2.1	390	2.0	665000	2020000	68000	206000
360	NA 4972	480	118	3.0	400	2.0	1200000	3200000	122000	325000
380	NA 4876	480	100	2.1	415	2.0	1000000	2840000	102000	289000
380	NA 4976	520	140	4.0	430	2.0	1400000	3750000	143000	385000
400	NA 4980	540	140	4.0	450	2.5	1450000	4000000	148000	410000
420	NA 4984	560	140	4.0	470	2.5	1500000	4250000	153000	430000
440	NA 4988	600	160	4.0	490	2.5	1750000	4600000	179000	470000

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r
2) These values are the possible axial displacement of the inner ring against outer ring

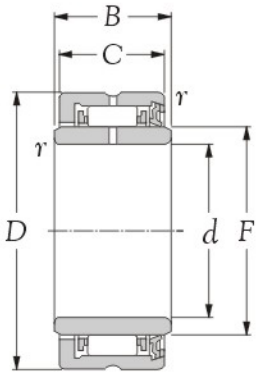
Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

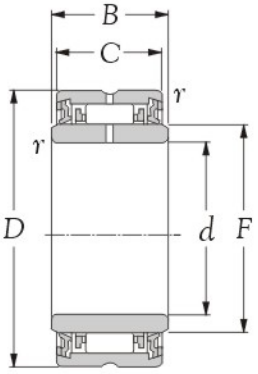


Max runout speed grease	oil	Abutment dimensions			Weight
r/min		d_a min	D_a max	r_{as} max	kg.
1200	1800	211	269	2.0	12.20
1100	1700	228	262	1.5	6.37
1100	1600	231	289	2.0	13.50
1000	1500	249	291	2.0	10.00
1000	1500	251	309	2.0	14.70
950	1400	269	311	2.0	10.80
950	1400	271	349	2.0	25.90
850	1300	289	341	2.0	15.50
850	1300	291	369	2.0	27.50
800	1200	311	369	2.0	22.00
800	1200	313	407	2.5	42.50
750	1100	331	389	2.0	23.20
750	1100	333	427	2.5	45.20
750	1100	351	409	2.0	24.10
750	1100	353	447	2.5	47.30
650	1000	371	429	2.0	25.70
650	1000	373	467	2.5	49.00
650	950	391	469	2.0	44.50
650	950	396	504	3.0	73.60
600	900	416	524	3.0	76.60
550	850	436	544	3.0	89.80
550	800	456	584	3.0	123.00

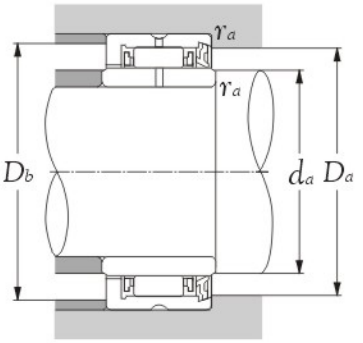
MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING SEALED TYPE



Type NA 49..RSR
(With single seal)



Type NA 49..2RSR
(With double seals)



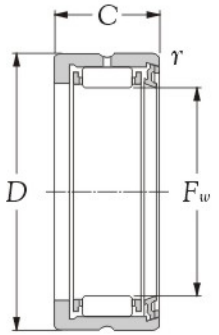
Inner bore d	Bearing number	Principal dimensions					Basic load ratings				Limiting speeds	Abutment dimensions				Weight
							dynamic	static	dynamic	static						
		D	B	C	F	rs min1)	C	Co	C	Co		da max	Da max	Db max	ras max	
mm		mm					N		kgf		rpm					kg.
10	NA 4900 RSR NA 4900 2RSR	22	14	13	14	0.3	7200	8500	735	865	10000	12	16	20	0.3	0.025
12	NA 4901 RSR NA 4901 2RSR	24	14	13	16	0.3	7750	9700	795	990	10000	14	18	22	0.3	0.028
15	NA 4902 RSR NA 4902 2RSR	28	14	13	20	0.3	8300	11200	845	1150	10000	17	22	26	0.3	0.036
17	NA 4903 RSR NA 4903 2RSR	30	14	13	22	0.3	8500	11900	865	1220	9000	19	24	28	0.3	0.039
20	NA 4904 RSR NA 4904 2RSR	37	18	17	25	0.3	15200	19900	1550	2030	8000	22	28	35	0.3	0.080
25	NA 4905 RSR NA 4905 2RSR	42	18	17	30	0.3	16000	22600	1640	2300	6500	27	33	40	0.3	0.093
30	NA 4906 RSR NA 4906 2RSR	47	18	17	35	0.3	18000	27400	1830	2800	5500	32	38	45	0.3	0.107
35	NA 4907 RSR NA 4907 2RSR	55	21	20	42	0.6	22700	39500	2320	4000	4800	39	45	51	0.6	0.175
40	NA 4908 RSR NA 4908 2RSR	62	23	22	48	0.6	27800	53500	2830	5450	4200	44	51	58	0.6	0.252
45	NA 4909 RSR NA 4909 2RSR	68	23	22	52	0.6	28600	57000	2920	5800	3800	49	55	64	0.6	0.290
50	NA 4910 RSR NA 4910 2RSR	72	23	22	58	0.6	30500	64000	3100	6500	3400	54	61	68	0.6	0.295

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

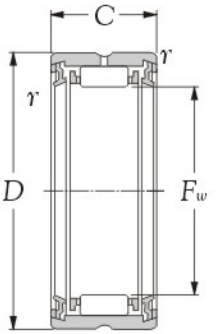
Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass-	X		

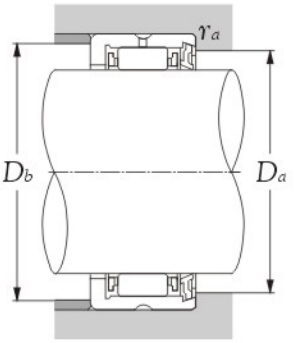
MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING SEALED TYPE



Type RNA 49..RSR
(With single seal)



Type RNA 49..2RSR
(With double seals)



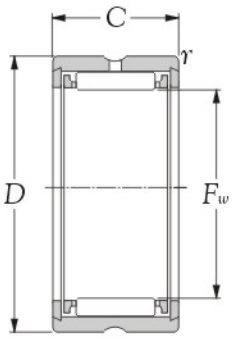
Inner bore F_w mm	Bearing number		Principal dimensions D	C	r_s min[1] mm	Basic load ratings dynamic C	static Co	dynamic C	static Co N / kgf	Limiting speeds rpm	Abutment dimensions D_a max	D_b max	r_{as} max	Weight kg.
14 $^{+0.027}_{+0.016}$	RNA 4900 RSR	RNA 4900 2RSR	22	13	0.3	7200	8500	735	865	10000	16	20	0.3	0.016
16 $^{+0.027}_{+0.016}$	RNA 4901 RSR	RNA 4901 2RSR	24	13	0.3	7750	9700	795	990	10000	18	22	0.3	0.018
20 $^{+0.033}_{+0.020}$	RNA 4902 RSR	RNA 4902 2RSR	28	13	0.3	8300	11200	845	1150	10000	22	26	0.3	0.022
22 $^{+0.033}_{+0.020}$	RNA 4903 RSR	RNA 4903 2RSR	30	13	0.3	8500	11900	865	1220	9000	24	28	0.3	0.022
25 $^{+0.033}_{+0.020}$	RNA 4904 RSR	RNA 4904 2RSR	37	17	0.3	15200	19900	1550	2030	8000	28	35	0.3	0.055
30 $^{+0.033}_{+0.020}$	RNA 4905 RSR	RNA 4905 2RSR	42	17	0.3	16000	22600	1640	2300	6500	33	40	0.3	0.063
35 $^{+0.041}_{+0.025}$	RNA 4906 RSR	RNA 4906 2RSR	47	17	0.3	18000	27400	1830	2800	5500	38	45	0.3	0.072
42 $^{+0.041}_{+0.025}$	RNA 4907 RSR	RNA 4907 2RSR	55	20	0.6	22700	39500	2320	4000	4800	45	51	0.6	0.113
48 $^{+0.041}_{+0.025}$	RNA 4908 RSR	RNA 4908 2RSR	62	22	0.6	27800	53500	2830	5450	4200	51	58	0.6	0.154
52 $^{+0.049}_{+0.030}$	RNA 4909 RSR	RNA 4909 2RSR	68	22	0.6	28600	57000	2920	5800	3800	55	64	0.6	0.157
58 $^{+0.049}_{+0.030}$	RNA 4910 RSR	RNA 4910 2RSR	72	22	0.6	30500	64000	3100	6500	3400	61	68	0.6	0.160

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

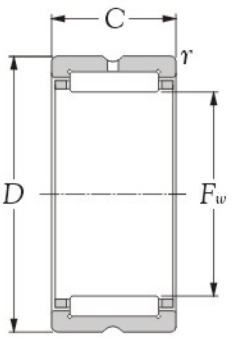
Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING



Type RNA 49 (Fw≤12 mm)



Type RNA 49 (Fw≥14 mm)
Type RNA 59
Type RNA 69 (Fw≤35 mm)

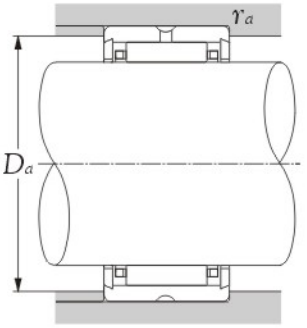
Inner bore F_w mm	Bearing number	Principal dimensions D	C	r_s min[1]	Basic load ratings dynamic C	static Co	dynamic C	static Co
		mm			N		kgf	
7 $^{+0.022}_{+0.013}$	RNA 495	13	10	0.15	2670	2350	272	239
8 $^{+0.022}_{+0.013}$	RNA 496	15	10	0.15	3150	3000	320	305
9 $^{+0.022}_{+0.013}$	RNA 497	17	10	0.15	3600	3650	365	375
10 $^{+0.022}_{+0.013}$	RNA 498	19	11	0.15	4300	3950	435	405
12 $^{+0.027}_{+0.016}$	RNA 499	20	11	0.30	4850	4900	495	500
14 $^{+0.027}_{+0.016}$	RNA 4900	22	13	0.30	8600	9200	875	935
16 $^{+0.027}_{+0.016}$	RNA 4901	24	13	0.30	9550	10900	975	1110
16 $^{+0.027}_{+0.016}$	RNA 6901	24	22	0.30	15400	20000	1570	2040
20 $^{+0.033}_{+0.020}$	RNA 4902	28	13	0.30	10300	12800	1050	1310
20 $^{+0.033}_{+0.020}$	RNA 5902	28	18	0.30	14100	19100	1440	1950
20 $^{+0.033}_{+0.020}$	RNA 6902	28	23	0.30	17600	25300	1790	2580
22 $^{+0.033}_{+0.020}$	RNA 4903	30	13	0.30	11200	14600	1140	1490
22 $^{+0.033}_{+0.020}$	RNA 5903	30	18	0.30	15200	21700	1550	2210
22 $^{+0.033}_{+0.020}$	RNA 6903	30	23	0.30	18200	27200	1850	2770
25 $^{+0.033}_{+0.020}$	RNA 4904	37	17	0.30	21300	25500	2170	2600
25 $^{+0.033}_{+0.020}$	RNA 5904	37	23	0.30	28400	37000	2900	3750
25 $^{+0.033}_{+0.020}$	RNA 6904	37	30	0.30	36500	50500	3700	5150
28 $^{+0.033}_{+0.020}$	RNA 49/22	39	17	0.30	23200	29300	2360	2990
28 $^{+0.033}_{+0.020}$	RNA 59/22	39	23	0.30	26400	37500	2690	3850
28 $^{+0.033}_{+0.020}$	RNA 69/22	39	30	0.30	40000	58500	4050	6000
30 $^{+0.033}_{+0.020}$	RNA 4905	42	17	0.30	24000	31500	2450	3200
30 $^{+0.033}_{+0.020}$	RNA 5905	42	23	0.30	30500	43000	3150	4350
30 $^{+0.033}_{+0.020}$	RNA 6905	42	30	0.30	41500	63000	4200	6400
32 $^{+0.041}_{+0.025}$	RNA 49/28	45	17	0.30	24800	33500	2530	3400

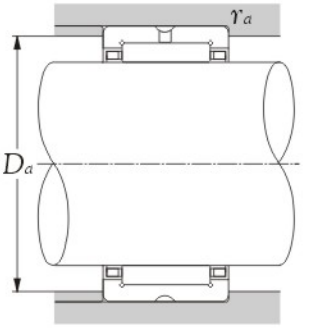
Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

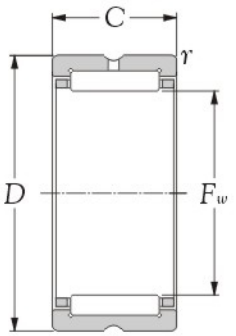
MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING



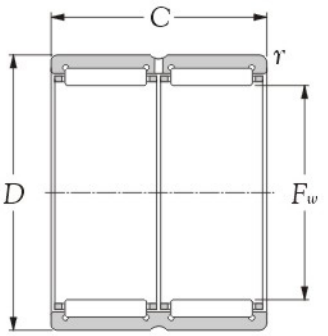


Max runout speed grease	oil	Abutment dimensions		Weight
r/min		$D_{a\ max}$	$r_{as\ max}$	kg.
23000	34000	8.5	0.15	0.0055
21000	32000	9.5	0.15	0.0073
20000	30000	10.5	0.15	0.0095
19000	28000	12.0	0.15	0.0130
17000	26000	14.0	0.30	0.0130
16000	24000	20.0	0.30	0.0170
15000	23000	22.0	0.30	0.0170
15000	23000	22.0	0.30	0.0310
13000	20000	26.0	0.30	0.0220
13000	20000	26.0	0.30	0.0330
13000	20000	26.0	0.30	0.0400
12000	18000	28.0	0.30	0.0220
12000	18000	28.0	0.30	0.0350
12000	18000	28.0	0.30	0.0420
11000	16000	35.0	0.30	0.0520
11000	16000	35.0	0.30	0.0840
11000	16000	35.0	0.30	0.1000
9500	14000	37.0	0.30	0.0500
9500	14000	37.0	0.30	0.0920
9500	14000	37.0	0.30	0.1000
8500	13000	40.0	0.30	0.0610
8500	13000	40.0	0.30	0.1010
8500	13000	40.0	0.30	0.1120
8500	13000	43.0	0.30	0.0730

MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING



Type RNA 49 (Fw≥14 mm)
Type RNA 59



Type RNA 69 ZW (Fw≥40 mm)

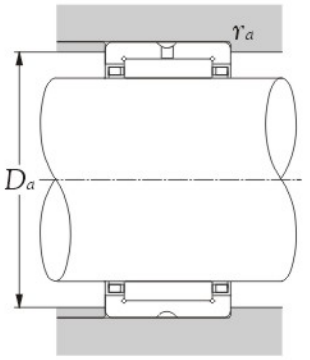
Inner bore F_w mm	Bearing number	Principal dimensions D	C mm	$r_{s\,min}$ [1]	Basic load ratings dynamic C N	static Co N	dynamic C kgf	static Co kgf
$32^{+0.041}_{+0.025}$	RNA 59/28	45	23	0.30	32000	45500	3250	4650
$32^{+0.041}_{+0.025}$	RNA 69/28	45	30	0.30	43000	67000	4350	6850
$35^{+0.041}_{+0.025}$	RNA 4906	47	17	0.30	25500	35500	2600	3600
$35^{+0.041}_{+0.025}$	RNA 5906	47	23	0.30	32500	48500	3350	4950
$35^{+0.041}_{+0.025}$	RNA 6906	47	30	0.30	42500	67500	4300	6900
$40^{+0.041}_{+0.025}$	RNA 49/32	52	20	0.60	31500	47500	3200	4850
$40^{+0.041}_{+0.025}$	RNA 59/32	52	27	0.60	38000	61000	3850	6250
$40^{+0.041}_{+0.025}$	RNA 69/32 ZW	52	36	0.6	47500	82000	4850	8350
$42^{+0.041}_{+0.025}$	RNA 4907	55	20	0.6	32000	50000	3300	5100
$42^{+0.041}_{+0.025}$	RNA 5907	55	27	0.6	39000	64500	3950	6550
$42^{+0.041}_{+0.025}$	RNA 6907 ZW	55	36	0.6	49000	86500	5000	8800
$48^{+0.041}_{+0.025}$	RNA 4908	62	22	0.6	43500	66500	4450	6800
$48^{+0.041}_{+0.025}$	RNA 5908	62	30	0.6	53000	92500	5450	9450
$48^{+0.041}_{+0.025}$	RNA 6908 ZW	62	40	0.6	67000	116000	6850	11800
$52^{+0.049}_{+0.030}$	RNA 4909	68	22	0.6	46000	73000	4700	7450
$52^{+0.049}_{+0.030}$	RNA 5909	68	30	0.6	56000	101000	5700	10300
$52^{+0.049}_{+0.030}$	RNA 6909	68	40	0.6	70500	127000	7200	13000
$58^{+0.049}_{+0.030}$	RNA 4910	72	22	0.6	48000	80000	4900	8150
$58^{+0.049}_{+0.030}$	RNA 5910	72	30	0.6	58000	110000	5950	11200
$58^{+0.049}_{+0.030}$	RNA 6910 ZW	72	40	0.6	74000	139000	7500	14200
$63^{+0.049}_{+0.030}$	RNA 4911	80	25	1.0	58500	99500	6000	10100
$63^{+0.049}_{+0.030}$	RNA 5911	80	34	1.0	76500	140000	7800	14300
$63^{+0.049}_{+0.030}$	RNA 6911 ZW	80	45	1.0	94000	183000	9600	18600
$68^{+0.049}_{+0.030}$	RNA 4912	85	25	1.0	61500	108000	6250	11000

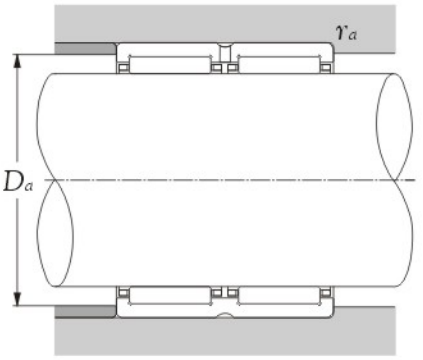
Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

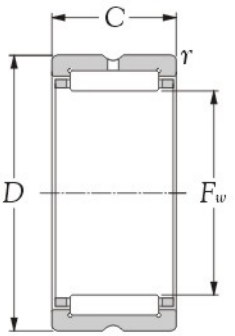
MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING



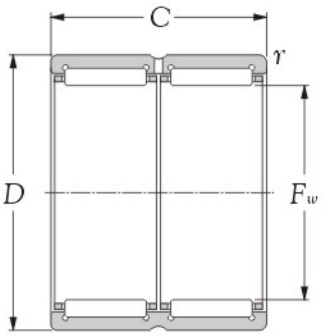


Max runout speed grease	oil	Abutment dimensions		Weight
r/min		$D_{a\ max}$	$r_{as\ max}$	kg.
8500	13000	43.0	0.30	0.1080
8500	13000	43.0	0.30	0.1350
7500	11000	45.0	0.30	0.0690
7500	11000	45.0	0.30	0.1080
7500	11000	45.0	0.30	0.1260
6500	10000	48.0	0.60	0.0890
6500	10000	48.0	0.60	0.1490
6500	10000	48	0.6	0.162
6500	9500	51	0.6	0.107
6500	9500	51	0.6	0.176
6500	9500	51	0.6	0.193
5500	8500	58	0.6	0.140
5500	8500	58	0.6	0.225
5500	8500	58	0.6	0.256
5000	7500	64	0.6	0.182
5000	7500	64	0.6	0.232
5000	7500	64	0.6	0.273
4700	7000	68	0.6	0.163
4700	7000	68	0.6	0.289
4700	7000	68	0.6	0.320
4300	6500	75	1.0	0.255
4300	6500	75	1.0	0.367
4300	6500	75	1.0	0.470
4000	6000	80	1.0	0.275

MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING



Type RNA 48
Type RNA 49 (Fw≥14 mm)
Type RNA 59



Type RNA 69 ZW (Fw≥40 mm)

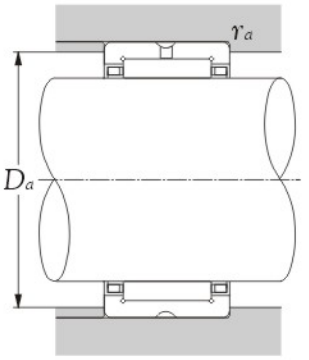
Inner bore F_w	Bearing number	Principal dimensions			Basic load ratings			
		D	C	$r_{s\,min}$ [1]	dynamic C	static Co	dynamic C	static Co
mm		mm			N		kgf	
$68^{+0.049}_{+0.030}$	RNA 5912	85	34	1.0	80500	153000	8200	15600
$68^{+0.049}_{+0.030}$	RNA 6912 ZW	85	45	1.0	95500	191000	9750	19400
$72^{+0.049}_{+0.030}$	RNA 4913	90	25	1.0	62500	112000	6350	11400
$72^{+0.049}_{+0.030}$	RNA 5913	90	34	1.0	84000	165000	8600	16800
$72^{+0.049}_{+0.030}$	RNA 6913 ZW	90	45	1.0	97000	198000	9900	20200
$80^{+0.049}_{+0.030}$	RNA 4914	100	30	1.0	85500	156000	8750	15900
$80^{+0.049}_{+0.030}$	RNA 5914	100	40	1.0	103000	187000	10500	19100
$80^{+0.049}_{+0.030}$	RNA 6914 ZW	100	54	1.0	130000	267000	13300	27200
$85^{+0.058}_{+0.036}$	RNA 4915	105	30	1.0	87000	162000	8900	16500
$85^{+0.058}_{+0.036}$	RNA 5915	105	40	1.0	109000	205000	11100	20900
$85^{+0.058}_{+0.036}$	RNA 6915 ZW	105	54	1.0	132000	277000	13500	28300
$90^{+0.058}_{+0.036}$	RNA 4916	110	30	1.0	90500	174000	9250	17700
$90^{+0.058}_{+0.036}$	RNA 5916	110	40	1.0	115000	223000	11700	22700
$90^{+0.058}_{+0.036}$	RNA 6916 ZW	110	54	1.0	137000	298000	14000	30500
$100^{+0.058}_{+0.036}$	RNA 4917	120	35	1.1	112000	237000	11500	24200
$100^{+0.058}_{+0.036}$	RNA 5917	120	46	1.1	137000	290000	14000	29600
$100^{+0.058}_{+0.036}$	RNA 6917 ZW	120	63	1.1	169000	400000	17300	41000
$105^{+0.058}_{+0.036}$	RNA 4918	125	35	1.1	116000	252000	11900	25700
$105^{+0.058}_{+0.036}$	RNA 5918	125	46	1.1	143000	310000	14600	32000
$105^{+0.058}_{+0.036}$	RNA 6918 ZW	125	63	1.1	175000	425000	17900	43500
$110^{+0.058}_{+0.036}$	RNA 4919	130	35	1.1	118000	260000	12000	26500
$110^{+0.058}_{+0.036}$	RNA 5919	130	46	1.1	149000	335000	15200	34000
$110^{+0.058}_{+0.036}$	RNA 6919 ZW	130	63	1.1	177000	440000	18100	45000
$115^{+0.058}_{+0.036}$	RNA 4920	140	40	1.1	127000	260000	12900	26500

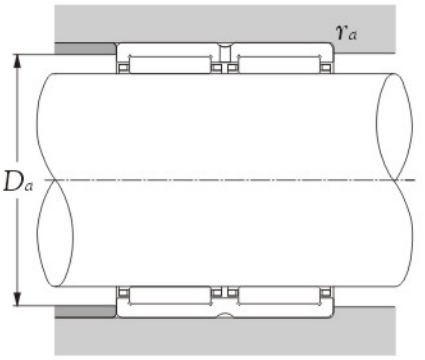
Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

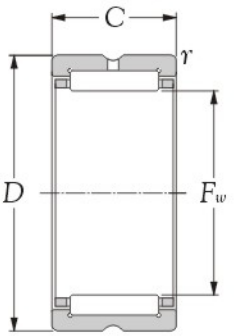
MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING



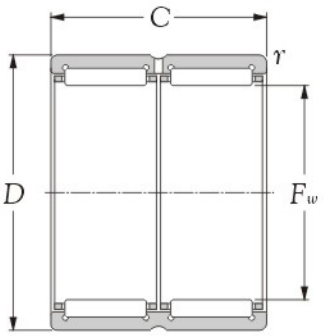


Max runout speed grease	oil	Abutment dimensions		Weight
r/min		$D_{a\ max}$	$r_{as\ max}$	kg.
4000	6000	80	1.0	0.408
4000	6000	80	1.0	0.488
3700	5500	85	1.0	0.312
3700	5500	85	1.0	0.462
3700	5500	85	1.0	0.520
3300	5000	95	1.0	0.460
3300	5000	95	1.0	0.706
3300	5000	95	1.0	0.857
3100	4700	100	1.0	0.489
3100	4700	100	1.0	0.745
3100	4700	100	1.0	0.935
2900	4400	105	1.0	0.516
2900	4400	105	1.0	0.787
2900	4400	105	1.0	0.987
2700	4000	113.5	1.0	0.657
2700	4000	113.5	1.0	1.000
2700	4000	113.5	1.0	1.200
2500	3800	118.5	1.0	0.697
2500	3800	118.5	1.0	1.040
2500	3800	118.5	1.0	1.330
2400	3600	123.5	1.0	0.719
2400	3600	123.5	1.0	1.130
2400	3600	123.5	1.0	1.460
2300	3500	133.5	1.0	1.150

MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING



Type RNA 48
Type RNA 49 (Fw≥14 mm)
Type RNA 59



Type RNA 69 ZW (Fw≥40 mm)

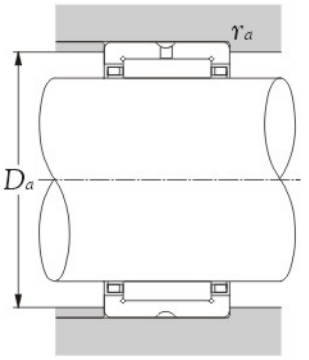
Inner bore F_w mm	Bearing number	Principal dimensions D	C mm	$r_{s\,min}$ [1]	Basic load ratings dynamic C N	static Co N	dynamic C kgf	static Co kgf
115 $^{+0.058}_{+0.036}$	RNA 5920	140	54	1.1	182000	395000	18600	40500
120 $^{+0.058}_{+0.036}$	RNA 4822	140	30	1.0	93500	210000	9550	21400
125 $^{+0.068}_{+0.043}$	RNA 4922	150	40	1.1	131000	279000	13300	28400
125 $^{+0.068}_{+0.043}$	RNA 5922	150	54	1.1	193000	440000	19700	45000
130 $^{+0.068}_{+0.043}$	RNA 4824	150	30	1.0	99500	233000	10100	23800
135 $^{+0.068}_{+0.043}$	RNA 4924	165	45	1.1	180000	380000	18300	38500
135 $^{+0.068}_{+0.043}$	RNA 5924	165	60	1.1	245000	525000	25000	53500
145 $^{+0.068}_{+0.043}$	RNA 4826	165	35	1.1	118000	305000	12100	31000
150 $^{+0.068}_{+0.043}$	RNA 4926	180	50	1.5	202000	455000	20600	46500
150 $^{+0.068}_{+0.043}$	RNA 5926	180	67	1.5	294000	685000	30000	70000
155 $^{+0.068}_{+0.043}$	RNA 4828	175	35	1.1	121000	315000	12300	32500
160 $^{+0.068}_{+0.043}$	RNA 4928	190	50	1.5	209000	485000	21300	49500
160 $^{+0.068}_{+0.043}$	RNA 5928	190	67	1.5	310000	755000	31500	77000
165 $^{+0.068}_{+0.043}$	RNA 4830	190	40	1.1	152000	390000	15500	40000
170 $^{+0.068}_{+0.043}$	RNA 4930	210	60	2.0	261000	610000	26600	62500
175 $^{+0.068}_{+0.043}$	RNA 4832	200	40	1.1	160000	425000	16300	43500
180 $^{+0.068}_{+0.043}$	RNA 4932	220	60	2.0	270000	650000	27600	66500
185 $^{+0.079}_{+0.050}$	RNA 4834	215	45	1.1	185000	495000	18800	50500
190 $^{+0.079}_{+0.050}$	RNA 4934	230	60	2.0	279000	690000	28500	70500
195 $^{+0.079}_{+0.050}$	RNA 4836	225	45	1.1	195000	540000	19800	55000
205 $^{+0.079}_{+0.050}$	RNA 4936	250	69	2.0	375000	890000	38500	90500
210 $^{+0.079}_{+0.050}$	RNA 4838	240	50	1.5	227000	680000	23200	69000
215 $^{+0.079}_{+0.050}$	RNA 4938	260	69	2.0	390000	945000	40000	96500
220 $^{+0.079}_{+0.050}$	RNA 4840	250	50	1.5	231000	705000	23600	71500

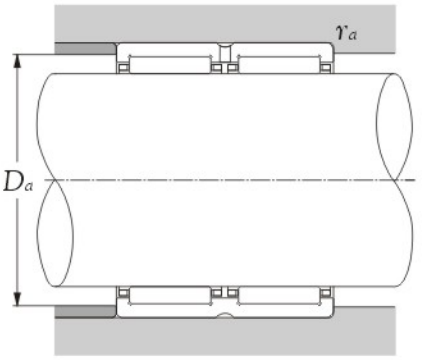
Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

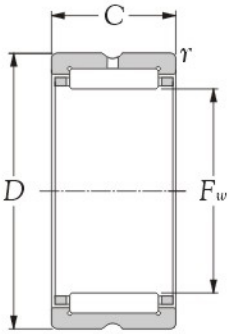
MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING





Max runout speed grease	oil	Abutment dimensions		Weight
r/min		$D_{a\ max}$	$r_{as\ max}$	kg.
2300	3500	133.5	1.0	1.760
2200	3300	135.0	1.0	0.670
2100	3200	143.5	1.0	1.240
2100	3200	143.5	1.0	1.890
2100	3100	145.0	1.0	0.730
2000	3000	158.5	1.0	1.860
2000	3000	158.5	1.0	2.670
1900	2800	158.5	1.0	0.950
1800	2700	172.0	1.5	2.210
1800	2700	172.0	1.5	3.210
1700	2600	168.5	1.0	1.020
1700	2500	182.0	1.5	2.350
1700	2500	182.0	1.5	3.480
1600	2400	183.5	1.0	1.600
1600	2400	201.0	2.0	2.980
1500	2300	193.5	1.0	1.700
1500	2200	211.0	2.0	3.100
1500	2200	208.5	1.0	2.540
1400	2100	221.0	2.0	3.220
1400	2100	218.5	1.0	2.680
1300	2000	241.0	2.0	4.480
1300	1900	232	1.5	3.210
1300	1900	251	2.0	4.530
1200	1800	242	1.5	3.350

MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING



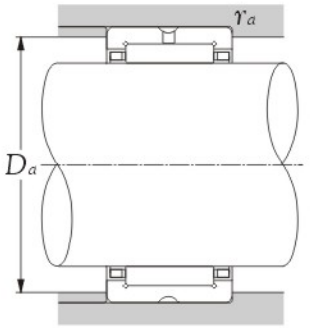
Type RNA 48
Type RNA 49 (Fw≥14 mm)
Type RNA 59

Inner bore F_w	Bearing number	Principal dimensions			Basic load ratings			
					dynamic	static	dynamic	static
		D	C	$r_{s\,min}$ [1]	C	Co	C	Co
mm		mm			N		kgf	
225 $^{+0.079}_{+0.050}$	RNA 4940	280	80	2.1	505000	1180000	51500	120000
240 $^{+0.079}_{+0.050}$	RNA 4844	270	50	1.5	242000	770000	24700	78500
245 $^{+0.079}_{+0.050}$	RNA 4944	300	80	2.1	525000	1270000	53500	129000
265 $^{+0.088}_{+0.056}$	RNA 4848	300	60	2.0	360000	1080000	37000	110000
265 $^{+0.088}_{+0.056}$	RNA 4948	320	80	2.1	540000	1350000	55000	138000
285 $^{+0.088}_{+0.056}$	RNA 4852	320	60	2.0	375000	1160000	38000	119000
290 $^{+0.088}_{+0.056}$	RNA 4952	360	100	2.1	805000	1900000	82000	193000
305 $^{+0.088}_{+0.056}$	RNA 4856	350	69	2.0	455000	1300000	46500	133000
310 $^{+0.088}_{+0.056}$	RNA 4956	380	100	2.1	835000	2030000	85000	207000
330 $^{+0.098}_{+0.062}$	RNA 4860	380	80	2.1	625000	1770000	64000	180000
340 $^{+0.098}_{+0.062}$	RNA 4960	420	118	3.0	1080000	2640000	110000	269000
350 $^{+0.098}_{+0.062}$	RNA 4864	400	80	2.1	640000	1850000	655000	189000
360 $^{+0.098}_{+0.062}$	RNA 4964	440	118	3.0	1120000	2820000	114000	288000
370 $^{+0.098}_{+0.062}$	RNA 4868	420	80	2.1	665000	1940000	66500	197000
380 $^{+0.098}_{+0.062}$	RNA 4968	460	118	3.0	1160000	3000000	118000	305000
390 $^{+0.098}_{+0.062}$	RNA 4872	440	80	2.1	665000	2020000	68000	206000
400 $^{+0.108}_{+0.068}$	RNA 4972	480	118	3.0	1200000	3200000	122000	325000
415 $^{+0.108}_{+0.068}$	RNA 4876	480	100	2.1	1000000	2840000	102000	289000
430 $^{+0.108}_{+0.068}$	RNA 4976	520	140	4.0	1400000	3750000	143000	385000
450 $^{+0.108}_{+0.068}$	RNA 4980	540	140	4.0	1450000	4000000	148000	410000
470 $^{+0.108}_{+0.068}$	RNA 4984	560	140	4.0	1500000	4250000	153000	430000
490 $^{+0.108}_{+0.068}$	RNA 4988	600	160	4.0	1750000	4600000	179000	470000

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

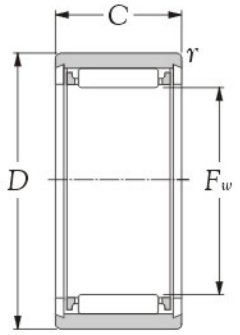
Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

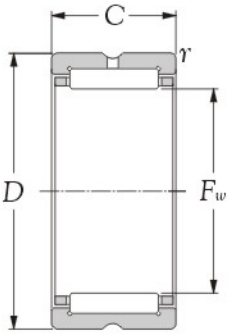


Max runout speed grease	Max runout speed oil	Abutment dimensions		Weight
r/min		$D_{a\ max}$	$r_{as\ max}$	kg.
1200	1800	269	2.0	7.200
1100	1700	262	1.5	3.620
1100	1600	289	2.0	7.810
1000	1500	291	2.0	5.400
1000	1500	309	2.0	8.400
950	1400	311	2.0	5.800
950	1400	349	2.0	15.900
850	1300	341	2.0	9.300
850	1300	369	2.0	16.700
800	1200	369	2.0	12.700
800	1200	407	2.5	24.000
750	1100	389	2.0	13.400
750	1100	427	2.5	25.200
750	1100	409	2.0	14.000
750	1100	447	2.5	26.500
650	1000	429	2.0	14.800
650	1000	467	2.5	28.200
650	950	469	3.0	26.000
650	950	504	3.0	38.600
600	900	524	3.0	40.100
550	850	544	3.0	51.600
550	800	584	3.0	66.900

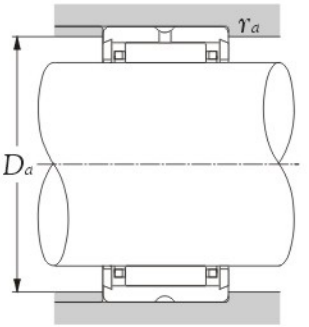
MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING

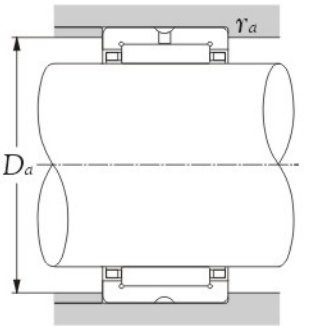


Type NK (Fw≤12 mm)



Type NK (Fw≥14 mm)





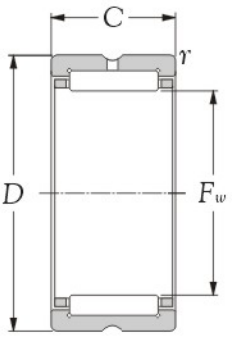
Inner bore F_w	Bearing number	Principal dimensions			Basic load ratings				Max runout speed		Abutment dimensions		Weight
					dynamic	static	dynamic	static	grease	oil			
		D	C	$r_s\ min^{1)}$	C	Co	C	Co			D_a max	D_b max	
mm		mm			N		kgf		r/min				kg.
5 $^{+0.018}_{+0.010}$	NK 5/10 TV	10	10	0.15	2640	2190	269	224	27000	40000	6.5	0.15	0.0031
5 $^{+0.018}_{+0.010}$	NK 5/12 TV	10	12	0.15	2720	2250	277	230	27000	40000	6.5	0.15	0.0037
6 $^{+0.018}_{+0.010}$	NK 6/10 TV	12	10	0.15	2660	2280	272	233	25000	37000	7.5	0.15	0.0047
6 $^{+0.018}_{+0.010}$	NK 6/12 TV	12	12	0.15	3400	3150	345	320	25000	37000	7.5	0.15	0.0057
7 $^{+0.022}_{+0.013}$	NK 7/10 TV	14	10	0.30	2670	2350	272	239	23000	34000	8.5	0.30	0.0069
7 $^{+0.022}_{+0.013}$	NK 7/12 TV	14	12	0.30	3400	3200	345	330	23000	34000	8.5	0.30	0.0082
8 $^{+0.022}_{+0.013}$	NK 8/12 TV	15	12	0.30	4000	4100	410	420	21000	32000	9.5	0.30	0.0087
8 $^{+0.022}_{+0.013}$	NK 8/16 TV	15	16	0.30	4850	5200	495	535	21000	32000	9.5	0.30	0.0120
9 $^{+0.022}_{+0.013}$	NK 9/12 TV	16	12	0.30	4550	5000	465	510	20000	30000	10.5	0.30	0.0100
9 $^{+0.022}_{+0.013}$	NK 9/16 TV	16	16	0.30	5500	6400	560	650	20000	30000	10.5	0.30	0.0130
10 $^{+0.022}_{+0.013}$	NK 10/12 TV	17	12	0.30	4550	5100	460	520	19000	28000	11.5	0.30	0.0100
10 $^{+0.022}_{+0.013}$	NK 10/16 TV	17	16	0.30	5450	6450	555	660	19000	28000	11.5	0.30	0.0130
12 $^{+0.027}_{+0.016}$	NK 12/12	19	12	0.30	5000	6100	510	620	17000	26000	13.5	0.30	0.0130
12 $^{+0.027}_{+0.016}$	NK 12/16	19	16	0.30	6000	7700	615	785	17000	26000	13.5	0.30	0.0160
14 $^{+0.027}_{+0.016}$	NK 14/16	22	16	0.30	10300	11500	1050	1170	16000	24000	20.0	0.30	0.0210
14 $^{+0.027}_{+0.016}$	NK 14/20	22	20	0.30	13000	15600	1330	1590	16000	24000	20.0	0.30	0.0260
15 $^{+0.027}_{+0.016}$	NK 15/16	23	16	0.30	10900	12700	1110	1290	15000	23000	21.0	0.30	0.0220
15 $^{+0.027}_{+0.016}$	NK 15/20	23	20	0.30	13800	17200	1410	1750	15000	23000	21.0	0.30	0.0270
16 $^{+0.027}_{+0.016}$	NK 16/16	24	16	0.30	12200	14900	1240	1520	15000	23000	22.0	0.30	0.0220
16 $^{+0.027}_{+0.016}$	NK 16/20	24	20	0.30	14600	18800	1490	1920	15000	23000	22.0	0.30	0.0280
17 $^{+0.027}_{+0.016}$	NK 17/16	25	16	0.30	12100	15000	1240	1530	15000	22000	23.0	0.30	0.0240
17 $^{+0.027}_{+0.016}$	NK 17/20	25	20	0.30	15400	20400	1570	2080	15000	22000	23.0	0.30	0.0300
18 $^{+0.027}_{+0.016}$	NK 18/16	26	16	0.30	12700	16200	1300	1650	14000	21000	24.0	0.30	0.0250
18 $^{+0.027}_{+0.016}$	NK 18/20	26	20	0.30	16100	22000	1640	2250	14000	21000	24.0	0.30	0.0310

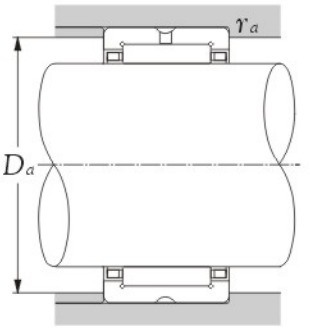
Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass-	X		

MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING





Type NK (Fw≥14 mm)

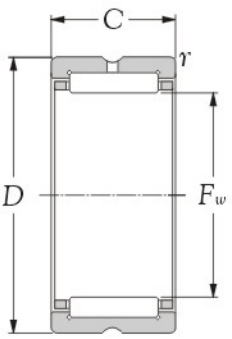
Inner bore F_w	Bearing number	Principal dimensions			Basic load ratings				Max runout speed		Abutment dimensions		Weight
					dynamic	static	dynamic	static	grease	oil			
		D	C	$r_s\ min^{1)}$	C	Co	C	Co			D_a max	D_b max	
mm		mm			N		kgf		r/min				kg.
$19^{+0.033}_{+0.020}$	NK 19/16	27	16	0.30	13300	17400	1350	1780	14000	21000	25.0	0.30	0.0260
$19^{+0.033}_{+0.020}$	NK 19/20	27	20	0.30	16000	22200	1630	2260	14000	21000	25.0	0.30	0.0320
$20^{+0.033}_{+0.020}$	NK 20/16	28	16	0.30	13200	17500	1340	1790	13000	20000	26.0	0.30	0.0270
$20^{+0.033}_{+0.020}$	NK 20/20	28	20	0.30	16700	23800	1700	2420	13000	20000	26.0	0.30	0.0340
$21^{+0.033}_{+0.020}$	NK 21/16	29	16	0.30	13700	18700	1400	1910	13000	19000	27.0	0.30	0.0280
$21^{+0.033}_{+0.020}$	NK 21/20	29	20	0.30	18300	27100	1860	2760	13000	19000	27.0	0.30	0.0350
$22^{+0.033}_{+0.020}$	NK 22/16	30	16	0.30	14200	19900	1450	2030	12000	18000	28.0	0.30	0.0340
$22^{+0.033}_{+0.020}$	NK 22/20	30	20	0.3	18000	27000	1840	2760	12000	18000	28	0.3	0.037
$24^{+0.033}_{+0.020}$	NK 24/16	32	16	0.3	15200	22300	1550	2280	11000	17000	30	0.3	0.032
$24^{+0.033}_{+0.020}$	NK 24/20	32	20	0.3	18600	28800	1890	2930	11000	17000	30	0.3	0.040
$25^{+0.033}_{+0.020}$	NK 25/16	33	16	0.3	15100	22400	1540	2280	11000	16000	31	0.3	0.033
$25^{+0.033}_{+0.020}$	NK 25/20	33	20	0.3	19200	30500	1960	3100	11000	16000	31	0.3	0.042
$26^{+0.033}_{+0.020}$	NK 26/16	34	16	0.3	15600	23600	1590	2410	10000	15000	32	0.3	0.034
$26^{+0.033}_{+0.020}$	NK 26/20	34	20	0.3	19100	30500	1940	3100	10000	15000	32	0.3	0.042
$28^{+0.033}_{+0.020}$	NK 28/20	37	20	0.3	22300	34000	2280	3450	9500	14000	35	0.3	0.052
$28^{+0.033}_{+0.020}$	NK 28/30	37	30	0.3	26700	48000	2720	4900	9500	14000	35	0.3	0.082
$29^{+0.033}_{+0.020}$	NK 29/20 TV	38	20	0.3	22200	34000	2270	3450	9500	14000	36	0.3	0.054
$29^{+0.033}_{+0.020}$	NK 29/30	38	30	0.3	27500	50500	2810	5150	9500	14000	36	0.3	0.084
$30^{+0.033}_{+0.020}$	NK 30/20 TV	40	20	0.3	22100	34000	2260	3500	8500	13000	38	0.3	0.065
$30^{+0.033}_{+0.020}$	NK 30/30 TV	40	30	0.3	33000	57000	3350	5800	8500	13000	38	0.3	0.098
$32^{+0.041}_{+0.025}$	NK 32/20 TV	42	20	0.3	23500	37500	2400	3850	8500	13000	40	0.3	0.068
$32^{+0.041}_{+0.025}$	NK 32/30	42	30	0.3	34000	60500	3450	6150	8500	13000	40	0.3	0.102
$35^{+0.041}_{+0.025}$	NK 35/20	45	20	0.3	24800	41500	2520	4250	7500	11000	43	0.3	0.074
$35^{+0.041}_{+0.025}$	NK 35/30	45	30	0.3	36000	66500	3650	6800	7500	11000	43	0.3	0.112

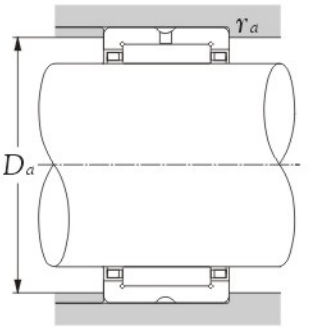
Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING





Type NK (Fw≥14 mm)

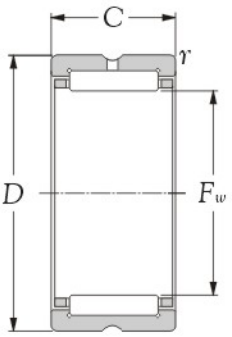
Inner bore F_w	Bearing number	Principal dimensions			Basic load ratings				Max runout speed		Abutment dimensions		Weight
					dynamic	static	dynamic	static	grease	oil			
		D	C	r_s min[1]	C	Co	C	Co			D_a max	D_b max	
mm		mm			N		kgf		r/min				kg.
$37^{+0.041}_{+0.025}$	NK 37/20	47	20	0.3	25300	43500	2580	4400	7500	11000	45	0.3	0.077
$37^{+0.041}_{+0.025}$	NK 37/30	47	30	0.3	36500	69500	3750	7100	7500	11000	45	0.3	0.107
$38^{+0.041}_{+0.025}$	NK 38/20	48	20	0.3	25900	45000	2640	4600	7500	11000	46	0.3	0.079
$38^{+0.041}_{+0.025}$	NK 38/30	48	30	0.3	37500	73000	3850	7400	7500	11000	46	0.3	0.107
$40^{+0.041}_{+0.025}$	NK 40/20 TV	50	20	0.3	26400	47000	2700	4800	6500	10000	48	0.3	0.083
$40^{+0.041}_{+0.025}$	NK 40/30	50	30	0.3	38500	76000	3900	7750	6500	10000	48	0.3	0.125
$42^{+0.041}_{+0.025}$	NK 42/20	52	20	0.3	26900	49000	2750	5000	6500	9500	50	0.3	0.086
$42^{+0.041}_{+0.025}$	NK 42/30	52	30	0.3	39000	79000	4000	8050	6500	9500	50	0.3	0.130
$43^{+0.041}_{+0.025}$	NK 43/20	53	20	0.3	27500	51000	2810	5200	6500	9500	51	0.3	0.086
$43^{+0.041}_{+0.025}$	NK 43/30	53	30	0.3	40000	82000	4100	8400	6500	9500	51	0.3	0.133
$45^{+0.041}_{+0.025}$	NK 45/20 TV	55	20	0.3	28000	52500	2860	5400	6000	9000	53	0.3	0.092
$45^{+0.041}_{+0.025}$	NK 45/30 TV	55	30	0.3	41000	85500	4150	8700	6000	9000	53	0.3	0.139
$47^{+0.041}_{+0.025}$	NK 47/20	57	20	0.3	28800	55500	2940	5650	5500	8500	55	0.3	0.095
$47^{+0.041}_{+0.025}$	NK 47/30	57	30	0.3	42500	91500	4350	9350	5500	8500	55	0.3	0.142
$50^{+0.041}_{+0.025}$	NK 50/25 TV	62	25	0.6	38500	74500	3950	7550	5500	8000	58	0.6	0.158
$50^{+0.041}_{+0.025}$	NK 50/35 TV	62	35	0.6	51000	106000	5200	10800	5500	8000	58	0.6	0.221
$55^{+0.049}_{+0.030}$	NK 55/25	68	25	0.6	41000	82000	4150	8400	5000	7500	64	0.6	0.193
$55^{+0.049}_{+0.030}$	NK 55/35	68	35	0.6	54000	118000	5500	12000	5000	7500	64	0.6	0.267
$60^{+0.049}_{+0.030}$	NK 60/25 TV	72	25	0.6	41000	85000	4200	8700	4300	6500	68	0.6	0.185
$60^{+0.049}_{+0.030}$	NK 60/35	72	35	0.6	57000	130000	5800	13200	4300	6500	68	0.6	0.258
$65^{+0.049}_{+0.030}$	NK 65/25	78	25	0.6	45000	98000	4550	10000	4000	6000	74	0.6	0.221
$65^{+0.049}_{+0.030}$	NK 65/35	78	35	0.6	60000	142000	6100	14400	4000	6000	74	0.6	0.310
$68^{+0.049}_{+0.030}$	NK 68/25	82	25	1.0	44500	89000	4500	9050	4000	6000	77	0.6	0.241
$68^{+0.049}_{+0.030}$	NK 68/35	82	35	0.6	63000	139000	6400	14200	4000	6000	78	0.6	0.338

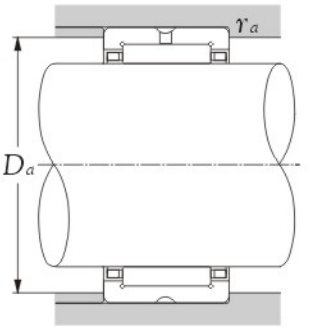
Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass-	X		

MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING





Type NK (Fw≥14 mm)

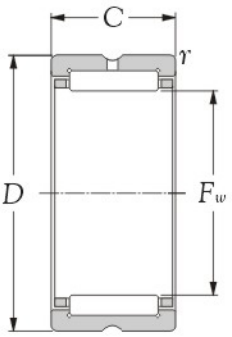
Inner bore F_w	Bearing number	Principal dimensions			Basic load ratings				Max runout speed		Abutment dimensions		Weight
					dynamic	static	dynamic	static	grease	oil			
		D	C	$r_s\ min^{1)}$	C	Co	C	Co			D_a max	D_b max	
mm		mm			N		kgf		r/min				kg.
70 $^{+0.049}_{+0.030}$	NK 70/25	85	25	0.6	45000	91500	4600	9350	3700	5500	81.0	0.6	0.275
70 $^{+0.049}_{+0.030}$	NK 70/35	85	35	0.6	64000	144000	6550	14700	3700	5500	81.0	0.6	0.386
73 $^{+0.049}_{+0.030}$	NK 73/25	90	25	0.6	54000	100000	5500	10200	3700	5500	86.0	0.6	0.302
73 $^{+0.049}_{+0.030}$	NK 73/35	90	35	0.6	76500	156000	7800	16000	3700	5500	86.0	0.6	0.428
75 $^{+0.049}_{+0.030}$	NK 75/25	92	25	0.6	55000	104000	5600	10600	3700	5500	88.0	0.6	0.315
75 $^{+0.049}_{+0.030}$	NK 75/35	92	35	0.6	78000	162000	7950	16500	3700	5500	88.0	0.6	0.492
80 $^{+0.049}_{+0.030}$	NK 80/25	95	25	1.0	57000	119000	5800	12200	3300	5000	90.0	1.0	0.301
80 $^{+0.049}_{+0.030}$	NK 80/35	95	35	1.0	79500	184000	8150	18700	3300	5000	90.0	1.0	0.425
85 $^{+0.058}_{+0.036}$	NK 85/25	105	25	1.0	70500	123000	7200	12600	3100	4700	100.0	1.0	0.404
85 $^{+0.058}_{+0.036}$	NK 85/35	105	35	1.0	100000	193000	10200	19700	3100	4700	100.0	1.0	0.517
90 $^{+0.058}_{+0.036}$	NK 90/25	110	25	1.0	71500	128000	7300	13100	2900	4400	105.0	1.0	0.426
90 $^{+0.058}_{+0.036}$	NK 90/35	110	35	1.0	104000	208000	10600	21200	2900	4400	105.0	1.0	0.604
95 $^{+0.058}_{+0.036}$	NK 95/26	115	26	1.0	74500	137000	7600	14000	2800	4200	110.0	1.0	0.364
95 $^{+0.058}_{+0.036}$	NK 95/36	115	36	1.0	108000	223000	11100	22700	2800	4200	110.0	1.0	0.652
100 $^{+0.058}_{+0.036}$	NK 100/26	120	26	1.0	73500	137000	7500	14000	2700	4000	115.0	1.0	0.487
100 $^{+0.058}_{+0.036}$	NK 100/36	120	36	1.0	107000	223000	11000	22800	2700	4000	115.0	1.0	0.679
105 $^{+0.058}_{+0.036}$	NK 105/26	125	26	1.0	76500	147000	7800	14900	2500	3800	120.0	1.0	0.506
105 $^{+0.058}_{+0.036}$	NK 105/36	125	36	1.0	111000	238000	11400	24300	2500	3800	120.0	1.0	0.713
110 $^{+0.058}_{+0.036}$	NK 110/30	130	30	1.1	97500	204000	9950	20800	2400	3600	123.5	1.0	0.612
110 $^{+0.058}_{+0.036}$	NK 110/40	130	40	1.1	129000	292000	13100	29700	2400	3600	123.5	1.0	0.830
120 $^{+0.058}_{+0.036}$	NK 120/40	140	40	1.1	113000	268000	11500	27300	2200	3300	133.5	1.0	0.910
130 $^{+0.068}_{+0.043}$	NK 130/40	150	40	1.1	116000	283000	11800	28800	2100	3100	143.5	1.0	0.980
145 $^{+0.068}_{+0.043}$	NK 145/32	170	32	1.5	111000	238000	11300	24300	1900	2800	162.5	1.5	1.120
145 $^{+0.068}_{+0.043}$	NK 145/42	170	42	1.5	153000	360000	15600	36500	1900	2800	162.5	1.5	1.490

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

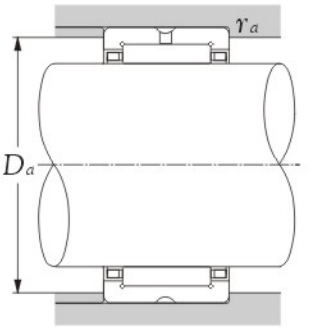
Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass -	X		

MACHINED-RING NEEDLE ROLLER BEARINGS
WITHOUT INNER RING



Type NK (Fw≥14 mm)



Inner bore F_w	Bearing number	Principal dimensions			Basic load ratings				Max runout speed		Abutment dimensions		Weight
					dynamic	static	dynamic	static	grease	oil			
		D	C	$r_s\ min^{1)}$	C	Co	C	Co			D_a max	D_b max	
mm		mm			N		kgf		r/min				kg.
$155^{+0.068}_{+0.043}$	NK 155/32	180	32	1.5	114000	252000	11600	25700	1700	2600	172.0	1.5	1.200
$155^{+0.068}_{+0.043}$	NK 155/42	180	42	1.5	156000	380000	16000	38500	1700	2600	172.0	1.5	1.590
$165^{+0.068}_{+0.043}$	NK 165/32	190	32	1.5	117000	265000	11900	27000	1600	2400	182.0	1.5	1.420
$165^{+0.068}_{+0.043}$	NK 165/42	190	42	1.5	160000	400000	16300	40500	1600	2400	182.0	1.5	1.660

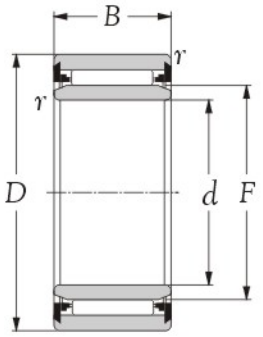
Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

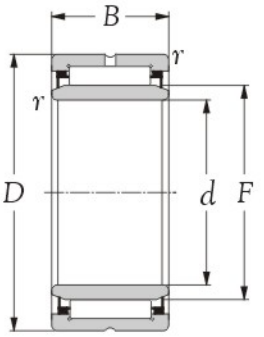
Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass-	X		

SLB® NKI SERIES

MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING



Type NKI (d ⩽ 9 mm)



Type NKI (d ⩾ 10 mm)

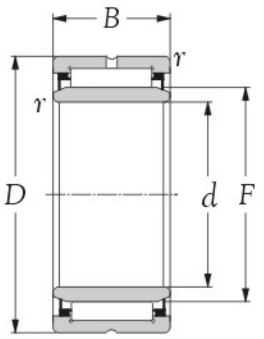
Inner bore d	Bearing number	Principal dimensions				Basic load ratings		Limiting speed oil	Weight
		F	D	B	r s min 1)	dynamic C	static Co		
mm		mm				N		r/min	kg.
5	NKI 5/12 TV	8	15	12	0.3	3950	4100	32000	0.012
5	NKI 5/16 TV	8	15	16	0.3	5100	5800	32000	0.015
6	NKI 6/12 TV	9	16	12	0.3	4500	5000	31000	0.014
6	NKI 6/16 TV	9	16	16	0.3	5900	7100	31000	0.018
7	NKI 7/12 TV	10	17	12	0.3	4750	5500	29000	0.014
7	NKI 7/16 TV	10	17	16	0.3	6200	7800	29000	0.018
9	NKI 9/12	12	19	12	0.3	6400	7100	27000	0.017
9	NKI 9/16	12	19	16	0.3	9000	11000	27000	0.022
10	NKI 10/16	14	22	16	0.3	10100	11500	25000	0.029
10	NKI 10/20	14	22	20	0.3	12800	15600	25000	0.037
12	NKI 12/16	16	24	16	0.3	11300	13900	23000	0.033
12	NKI 12/20	16	24	20	0.3	14400	18800	23000	0.042
15	NKI 15/16	19	27	16	0.3	13000	17400	22000	0.039
15	NKI 15/20	19	27	20	0.3	16500	23600	22000	0.049
17	NKI 17/16	21	29	16	0.3	13500	18700	21000	0.043
17	NKI 17/20	21	29	20	0.3	17100	25500	21000	0.054
20	NKI 20/16	24	32	16	0.3	15000	22300	18000	0.049
20	NKI 20/20	24	32	20	0.3	19000	30500	18000	0.061
22	NKI 22/16	26	34	16	0.3	15300	23600	17000	0.052
22	NKI 22/20	26	34	20	0.3	19400	32000	17000	0.065
25	NKI 25/20 TV	29	38	20	0.3	21900	34000	15000	0.080
25	NKI 25/30	29	38	30	0.3	32500	57000	15000	0.120
28	NKI 28/20 TV	32	42	20	0.3	23100	37500	14000	0.097
28	NKI 28/30	32	42	30	0.3	34500	63000	14000	0.150

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		Precision	Grease
Steel -	√		
Polymid -	X	Normal (ISO)	Nil
Brass -	X		

MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING



Type NKI (d ⩾ 10 mm)

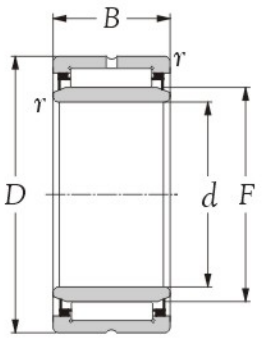
Inner bore d	Bearing number	Principal dimensions				Basic load ratings dynamic	Basic load ratings static	Limiting speed oil	Weight
		F	D	B	$r_{s\,min}$ [1]	C	Co		
mm		mm				N		r/min	kg.
30	NKI 30/20 TV	35	45	20	0.3	24300	41500	13000	0.110
30	NKI 30/30 TV	35	45	30	0.3	36500	69000	13000	0.170
32	NKI 32/20	37	47	20	0.3	24900	43500	12000	0.120
32	NKI 32/30	37	47	30	0.3	37000	73000	12000	0.180
35	NKI 35/20 TV	40	50	20	0.3	26000	47000	11000	0.130
35	NKI 35/30	40	50	30	0.3	39000	79000	11000	0.190
38	NKI 38/20	43	53	20	0.3	27000	51000	11000	0.140
38	NKI 38/30	43	53	30	0.3	40500	85000	11000	0.210
40	NKI 40/20 TV	45	55	20	0.3	27500	53000	10000	0.140
40	NKI 40/30 TV	45	55	30	0.3	41000	88000	10000	0.220
42	NKI 42/20	47	57	20	0.3	28500	56000	10000	0.150
42	NKI 42/30	47	57	30	0.3	43000	94000	10000	0.220
45	NKI 45/25 TV	50	62	25	0.6	38000	74000	9000	0.230
45	NKI 45/35 TV	50	62	35	0.6	50000	106000	9000	0.320
50	NKI 50/25	55	68	25	0.6	40000	82000	8500	0.270
50	NKI 50/35	55	68	35	0.6	53000	118000	8500	0.380
55	NKI 55/25 TV	60	72	25	0.6	42000	90000	7500	0.270
55	NKI 55/35	60	72	35	0.6	56000	130000	7500	0.380
60	NKI 60/25	68	82	25	0.6	43500	89000	7000	0.400
60	NKI 60/35	68	82	35	0.6	62000	139000	7000	0.550
65	NKI 65/25	73	90	25	1.0	53000	100000	6500	0.470
65	NKI 65/35	73	90	35	1.0	75000	156000	6500	0.660
70	NKI 70/25	80	95	25	1.0	56000	119000	6000	0.520
70	NKI 70/35	80	95	35	1.0	78000	184000	6000	0.740

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		Precision	Grease
Steel-	√		
Polymid-	X	Normal (ISO)	Nil
Brass-	X		

MACHINED-RING NEEDLE ROLLER BEARINGS
WITH INNER RING



Type NKI (d ⩾ 10 mm)

Inner bore d	Bearing number	Principal dimensions				Basic load ratings		Limiting speed oil	Weight
		F	D	B	$r_{s\,min}$[1]	dynamic C	static Co		
mm		mm				N		r/min	kg.
75	NKI 75/25	85	105	25	1.0	69000	123000	5500	0.640
75	NKI 75/35	85	105	35	1.0	98000	193000	5500	0.910
80	NKI 80/25	90	110	25	1.0	72000	132000	5000	0.680
80	NKI 80/35	90	110	35	1.0	103000	208000	5000	0.960
85	NKI 85/26	95	115	26	1.0	73000	137000	4800	0.750
85	NKI 85/36	95	115	36	1.0	107000	223000	4800	1.050
90	NKI 90/26	100	120	26	1.0	76000	146000	4600	0.780
90	NKI 90/36	100	120	36	1.0	111000	237000	4600	1.100
95	NKI 95/26	105	125	26	1.0	78000	155000	4400	0.820
95	NKI 95/36	105	125	36	1.0	114000	250000	4400	1.150
100	NKI 100/30	110	130	30	1.1	98000	210000	4200	1.000
100	NKI 100/40	110	130	40	1.1	127000	290000	4200	1.350

Note: 1) These values are the allowable minimum dimensions of the chamfer dimension r

Technical supplement

Cages		*Precision*	*Grease*
Steel -	√		
Polymid -	X	Normal (ISO)	Nil
Brass -	X		