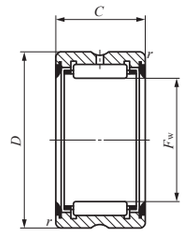
MACHINED TYPE NEEDLE ROLLER BEARINGS

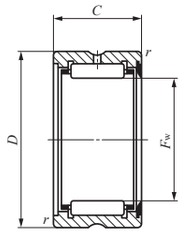
With Seal, Without Inner Ring



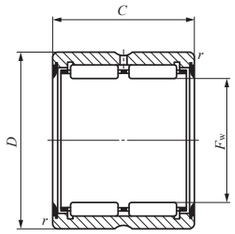




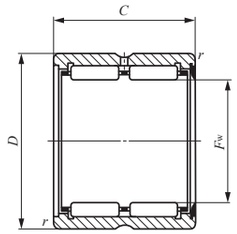
RNA49 ··· UU
RNA69 ··· UU($F_w \leqq 35$)



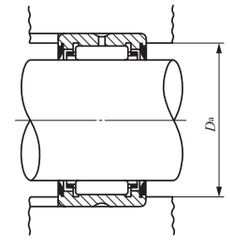
RNA49 ··· U
RNA69 ··· U($F_w \leqq 35$)



RNA69 ··· UU



RNA69 ··· U



Shaft dia. 14 — 45mm

Shaft dia. mm	Identification number: With two seals	With one seal	With two seals	With one seal	Mass (Ref.) g	Boundary dimensions mm: F_w	D	C	$r_{s\,min}$ (1)
14	**RNA 4900UU**	**RNA 4900U**	—	—	16.3	14	22	13	0.3
16	**RNA 4901UU**	**RNA 4901U**	—	—	17.9	16	24	13	0.3
	—	—	**RNA 6901UU**	**RNA 6901U**	30	16	24	22	0.3
18	**RNA 49/14UU**	**RNA 49/14U**	—	—	19.7	18	26	13	0.3
20	**RNA 4902UU**	**RNA 4902U**	—	—	21.5	20	28	13	0.3
	—	—	**RNA 6902UU**	**RNA 6902U**	37.5	20	28	23	0.3
22	**RNA 4903UU**	**RNA 4903U**	—	—	23	22	30	13	0.3
	—	—	**RNA 6903UU**	**RNA 6903U**	40.5	22	30	23	0.3
25	**RNA 4904UU**	**RNA 4904U**	—	—	54.5	25	37	17	0.3
	—	—	**RNA 6904UU**	**RNA 6904U**	95.5	25	37	30	0.3
28	**RNA 49/22UU**	**RNA 49/22U**	—	—	55.5	28	39	17	0.3
	—	—	**RNA 69/22UU**	**RNA 69/22U**	97.5	28	39	30	0.3
30	**RNA 4905UU**	**RNA 4905U**	—	—	63	30	42	17	0.3
	—	—	**RNA 6905UU**	**RNA 6905U**	111	30	42	30	0.3
32	**RNA 49/28UU**	**RNA 49/28U**	—	—	75.5	32	45	17	0.3
	—	—	**RNA 69/28UU**	**RNA 69/28U**	133	32	45	30	0.3
35	**RNA 4906UU**	**RNA 4906U**	—	—	71	35	47	17	0.3
	—	—	**RNA 6906UU**	**RNA 6906U**	125	35	47	30	0.3
40	**RNA 49/32UU**	**RNA 49/32U**	—	—	94.5	40	52	20	0.6
	—	—	**RNA 69/32UU**	**RNA 69/32U**	170	40	52	36	0.6
42	**RNA 4907UU**	**RNA 4907U**	—	—	112	42	55	20	0.6
	—	—	**RNA 6907UU**	**RNA 6907U**	200	42	55	36	0.6
45	**RNA 49/38UU**	**RNA 49/38U**	—	—	119	45	58	20	0.6

Standard mounting dimension D_a Max. mm	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
20	8 080	8 490	14 000
22	8 470	9 320	12 000
22	15 500	20 400	12 000
24	9 260	10 800	11 000
26	9 570	11 600	9 500
26	18 500	27 100	9 500
28	10 300	13 100	8 500
28	19 800	30 600	8 500
35	18 000	20 500	7 500
35	33 000	44 600	7 500
37	18 300	23 700	7 000
37	33 800	52 000	7 000
40	20 300	25 100	6 500
40	39 200	58 700	6 500
43	21 000	26 800	6 000
43	38 900	59 100	6 000
45	21 500	28 400	5 500
45	40 100	63 000	5 500
48	29 400	44 200	5 000
48	50 300	88 300	5 000
51	30 100	46 300	4 500
51	51 600	92 600	4 500
54	31 600	50 400	4 000

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to grease lubrication.
Remarks1. The outer ring has an oil groove and an oil hole.
2. Bearings are provided with prepacked grease. Bearings with a seal on one side are not provided with prepacked grease. Perform proper lubrication for use.

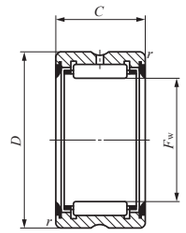
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1mm=0.03937inch

MACHINED TYPE NEEDLE ROLLER BEARINGS

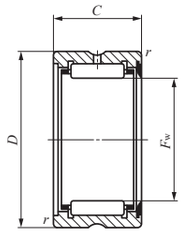
With Seal, Without Inner Ring



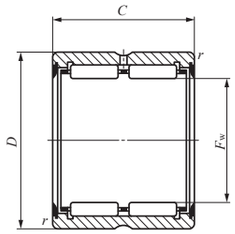




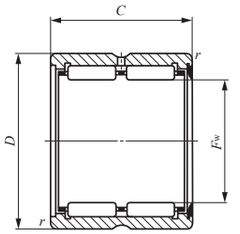
RNA49 ··· UU



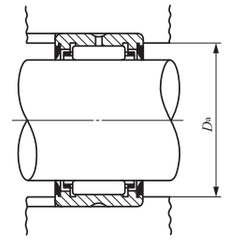
RNA49 ··· U



RNA69 ··· UU



RNA69 ··· U



Shaft dia. 48 — 85mm

Shaft dia. mm	Identification number: With two seals	With one seal	With two seals	With one seal	Mass (Ref.) g	Boundary dimensions mm: F_w	D	C	$r_{s\,min}$ (1)
48	**RNA 4908UU**	**RNA 4908U**	—	—	150	48	62	22	0.6
	—	—	**RNA 6908UU**	**RNA 6908U**	270	48	62	40	0.6
50	**RNA 49/42UU**	**RNA 49/42U**	—	—	173	50	65	22	0.6
52	**RNA 4909UU**	**RNA 4909U**	—	—	197	52	68	22	0.6
	—	—	**RNA 6909UU**	**RNA 6909U**	355	52	68	40	0.6
55	**RNA 49/48UU**	**RNA 49/48U**	—	—	187	55	70	22	0.6
58	**RNA 4910UU**	**RNA 4910U**	—	—	177	58	72	22	0.6
	—	—	**RNA 6910UU**	**RNA 6910U**	320	58	72	40	0.6
60	**RNA 49/52UU**	**RNA 49/52U**	—	—	200	60	75	22	0.6
63	**RNA 4911UU**	**RNA 4911U**	—	—	265	63	80	25	1
	—	—	**RNA 6911UU**	**RNA 6911U**	470	63	80	45	1
65	**RNA 49/58UU**	**RNA 49/58U**	—	—	275	65	82	25	1
68	**RNA 4912UU**	**RNA 4912U**	—	—	285	68	85	25	1
	—	—	**RNA 6912UU**	**RNA 6912U**	505	68	85	45	1
70	**RNA 49/62UU**	**RNA 49/62U**	—	—	320	70	88	25	1
72	**RNA 4913UU**	**RNA 4913U**	—	—	325	72	90	25	1
	—	—	**RNA 6913UU**	**RNA 6913U**	580	72	90	45	1
75	**RNA 49/68UU**	**RNA 49/68U**	—	—	465	75	95	30	1
80	**RNA 4914UU**	**RNA 4914U**	—	—	495	80	100	30	1
	—	—	**RNA 6914UU**	**RNA 6914U**	910	80	100	54	1
85	**RNA 4915UU**	**RNA 4915U**	—	—	520	85	105	30	1
	—	—	**RNA 6915UU**	**RNA 6915U**	960	85	105	54	1

Standard mounting dimension D_a Max. mm	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min⁻¹
58	37 200	58 400	4 000
58	63 700	117 000	4 000
61	38 000	60 900	4 000
64	38 900	63 400	3 500
64	66 600	127 000	3 500
66	39 600	66 100	3 500
68	41 300	71 100	3 500
68	70 800	142 000	3 500
71	42 100	73 600	3 000
75	52 200	85 700	3 000
75	89 400	171 000	3 000
77	53 400	89 200	3 000
80	54 500	92 800	3 000
80	93 400	186 000	3 000
83	55 700	96 300	2 500
85	56 800	99 800	2 500
85	97 400	200 000	2 500
90	73 900	133 000	2 500
95	76 900	143 000	2 500
95	124 000	281 000	2 500
100	79 600	153 000	2 000
100	128 000	299 000	2 000

Notes(1) Minimum allowable value of chamfer dimension *r*
(2) Allowable rotational speed applies to grease lubrication.
Remarks1. The outer ring has an oil groove and an oil hole.
2. Bearings are provided with prepacked grease. Bearings with a seal on one side are not provided with prepacked grease. Perform proper lubrication for use.

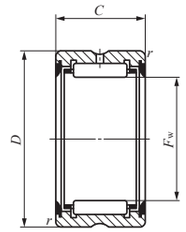
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1mm=0.03937inch

MACHINED TYPE NEEDLE ROLLER BEARINGS

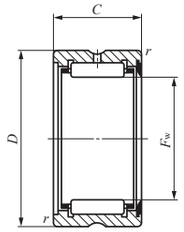
With Seal, Without Inner Ring



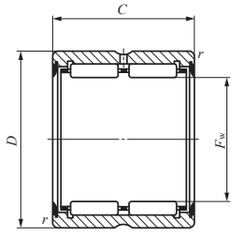




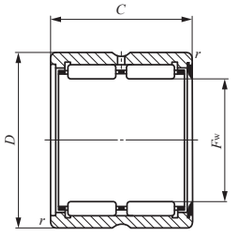
RNA49 ··· UU



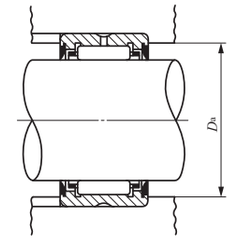
RNA49 ··· U



RNA69 ··· UU



RNA69 ··· U



Shaft dia. 90 ─ 160mm

Shaft dia. mm	Identification number: With two seals	With one seal	With two seals	With one seal	Mass (Ref.) g	Boundary dimensions mm: F_w	D	C	$r_{s\,min}$ (1)
90	**RNA 4916UU**	**RNA 4916U**	—	—	545	90	110	30	1
	—	—	**RNA 6916UU**	**RNA 6916U**	1 010	90	110	54	1
95	**RNA 49/82UU**	**RNA 49/82U**	—	—	570	95	115	30	1
100	**RNA 4917UU**	**RNA 4917U**	—	—	695	100	120	35	1.1
	—	—	**RNA 6917UU**	**RNA 6917U**	1 300	100	120	63	1.1
105	**RNA 4918UU**	**RNA 4918U**	—	—	730	105	125	35	1.1
	—	—	**RNA 6918UU**	**RNA 6918U**	1 360	105	125	63	1.1
110	**RNA 4919UU**	**RNA 4919U**	—	—	760	110	130	35	1.1
	—	—	**RNA 6919UU**	**RNA 6919U**	1 420	110	130	63	1.1
115	**RNA 4920UU**	**RNA 4920U**	—	—	1 200	115	140	40	1.1
125	**RNA 4922UU**	**RNA 4922U**	—	—	1 280	125	150	40	1.1
135	**RNA 4924UU**	**RNA 4924U**	—	—	1 940	135	165	45	1.1
150	**RNA 4926UU**	**RNA 4926U**	—	—	2 360	150	180	50	1.5
160	**RNA 4928UU**	**RNA 4928U**	—	—	2 510	160	190	50	1.5

Standard mounting dimension D_a Max. mm	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min⁻¹
105	80 700	158 000	2 000
105	132 000	317 000	2 000
110	83 200	168 000	2 000
113.5	103 000	225 000	1 900
113.5	168 000	448 000	1 900
118.5	106 000	238 000	1 800
118.5	172 000	471 000	1 800
123.5	109 000	250 000	1 700
123.5	177 000	493 000	1 700
133.5	134 000	297 000	1 700
143.5	140 000	322 000	1 500
158.5	178 000	410 000	1 400
172	206 000	511 000	1 300
182	214 000	549 000	1 200

Notes(1) Minimum allowable value of chamfer dimension *r*
(2) Allowable rotational speed applies to grease lubrication.

Remarks1. The outer ring has an oil groove and an oil hole.
2. Bearings are provided with prepacked grease. Bearings with a seal on one side are not provided with prepacked grease. Perform proper lubrication for use.

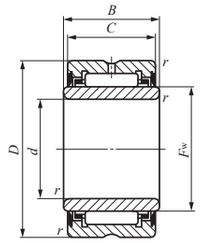
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1mm=0.03937inch

MACHINED TYPE NEEDLE ROLLER BEARINGS

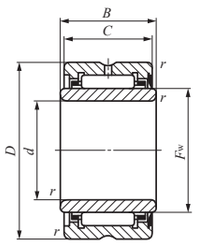
With Seal, With Inner Ring



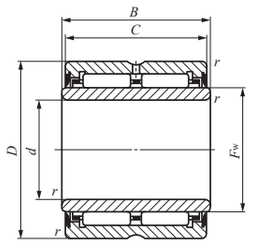




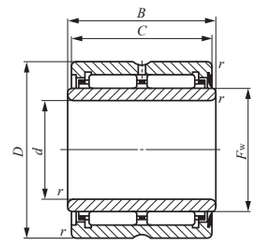
NA49 ··· UU
NA69 ··· UU($d \leqq 30$)



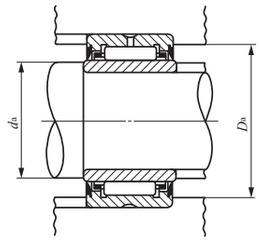
NA49 ··· U
NA69 ··· U($d \leqq 30$)



NA69 ··· UU



NA69 ··· U



Shaft dia. 10 — 40mm

Shaft dia. mm	Identification number: With two seals	With one seal	With two seals	With one seal	Mass (Ref.) g	Boundary dimensions mm: d	D	C	B
10	NA 4900UU	NA 4900U	—	—	24.5	10	22	13	14
12	NA 4901UU	NA 4901U	—	—	27.5	12	24	13	14
	—	—	NA 6901UU	NA 6901U	45.5	12	24	22	23
15	NA 4902UU	NA 4902U	—	—	36	15	28	13	14
	—	—	NA 6902UU	NA 6902U	62.5	15	28	23	24
17	NA 4903UU	NA 4903U	—	—	39.5	17	30	13	14
	—	—	NA 6903UU	NA 6903U	68.5	17	30	23	24
20	NA 4904UU	NA 4904U	—	—	78.5	20	37	17	18
	—	—	NA 6904UU	NA 6904U	137	20	37	30	31
22	NA 49/22UU	NA 49/22U	—	—	87.5	22	39	17	18
	—	—	NA 69/22UU	NA 69/22U	153	22	39	30	31
25	NA 4905UU	NA 4905U	—	—	92.5	25	42	17	18
	—	—	NA 6905UU	NA 6905U	162	25	42	30	31
28	NA 49/28UU	NA 49/28U	—	—	101	28	45	17	18
	—	—	NA 69/28UU	NA 69/28U	177	28	45	30	31
30	NA 4906UU	NA 4906U	—	—	106	30	47	17	18
	—	—	NA 6906UU	NA 6906U	185	30	47	30	31
32	NA 49/32UU	NA 49/32U	—	—	167	32	52	20	21
	—	—	NA 69/32UU	NA 69/32U	300	32	52	36	37
35	NA 4907UU	NA 4907U	—	—	179	35	55	20	21
	—	—	NA 6907UU	NA 6907U	320	35	55	36	37
40	NA 4908UU	NA 4908U	—	—	245	40	62	22	23
	—	—	NA 6908UU	NA 6908U	440	40	62	40	41

$r_{s\,min}$ (1)	F_w	Standard mounting dimensions mm: d_a Min.	d_a Max.	D_a Max.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min⁻¹	Assembled inner ring
0.3	14	12	13	20	8 080	8 490	14 000	**LRTZ 101414**
0.3	16	14	15	22	8 470	9 320	12 000	**LRTZ 121614**
0.3	16	14	15	22	15 500	20 400	12 000	**LRTZ 121623**
0.3	20	17	19	26	9 570	11 600	9 500	**LRTZ 152014**
0.3	20	17	19	26	18 500	27 100	9 500	**LRTZ 152024**
0.3	22	19	21	28	10 300	13 100	8 500	**LRTZ 172214**
0.3	22	19	21	28	19 800	30 600	8 500	**LRTZ 172224**
0.3	25	22	24	35	18 000	20 500	7 500	**LRTZ 202518**
0.3	25	22	24	35	33 000	44 600	7 500	**LRTZ 202531**
0.3	28	24	27	37	18 300	23 700	7 000	**LRTZ 222818**
0.3	28	24	27	37	33 800	52 000	7 000	**LRTZ 222831**
0.3	30	27	29	40	20 300	25 100	6 500	**LRTZ 253018**
0.3	30	27	29	40	39 200	58 700	6 500	**LRTZ 253031**
0.3	32	30	31	43	21 000	26 800	6 000	**LRTZ 283218**
0.3	32	30	31	43	38 900	59 100	6 000	**LRTZ 283231**
0.3	35	32	34	45	21 500	28 400	5 500	**LRTZ 303518**
0.3	35	32	34	45	40 100	63 000	5 500	**LRTZ 303531**
0.6	40	36	39	48	29 400	44 200	5 000	**LRTZ 324021**
0.6	40	36	39	48	50 300	88 300	5 000	**LRTZ 324037**
0.6	42	39	41	51	30 100	46 300	4 500	**LRTZ 354221**
0.6	42	39	41	51	51 600	92 600	4 500	**LRTZ 354237**
0.6	48	44	47	58	37 200	58 400	4 000	**LRTZ 404823**
0.6	48	44	47	58	63 700	117 000	4 000	**LRTZ 404841**

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to grease lubrication.
Remarks1. The outer ring has an oil groove and an oil hole.
2. Bearings are provided with prepacked grease. Bearings with a seal on one side are not provided with prepacked grease. Perform proper lubrication for use.

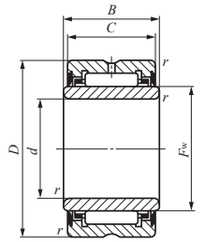
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

MACHINED TYPE NEEDLE ROLLER BEARINGS

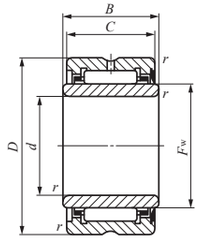
With Seal, With Inner Ring



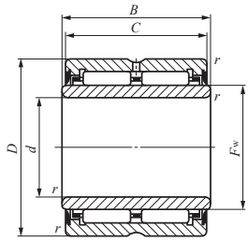




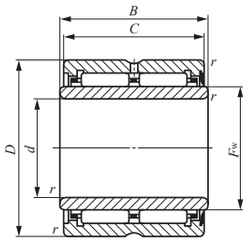
NA49 ··· UU



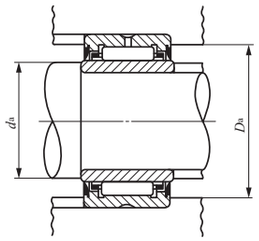
NA49 ··· U



NA69 ··· UU



NA69 ··· U



Shaft dia. 45 — 110mm

Shaft dia. mm	Identification number: With two seals	With one seal	With two seals	With one seal	Mass (Ref.) g	Boundary dimensions mm: d	D	C	B
45	**NA 4909UU**	**NA 4909U**	—	—	290	45	68	22	23
	—	—	**NA 6909UU**	**NA 6909U**	520	45	68	40	41
50	**NA 4910UU**	**NA 4910U**	—	—	295	50	72	22	23
	—	—	**NA 6910UU**	**NA 6910U**	530	50	72	40	41
55	**NA 4911UU**	**NA 4911U**	—	—	415	55	80	25	26
	—	—	**NA 6911UU**	**NA 6911U**	730	55	80	45	46
60	**NA 4912UU**	**NA 4912U**	—	—	445	60	85	25	26
	—	—	**NA 6912UU**	**NA 6912U**	785	60	85	45	46
65	**NA 4913UU**	**NA 4913U**	—	—	475	65	90	25	26
	—	—	**NA 6913UU**	**NA 6913U**	845	65	90	45	46
70	**NA 4914UU**	**NA 4914U**	—	—	770	70	100	30	31
	—	—	**NA 6914UU**	**NA 6914U**	1 400	70	100	54	55
75	**NA 4915UU**	**NA 4915U**	—	—	815	75	105	30	31
	—	—	**NA 6915UU**	**NA 6915U**	1 480	75	105	54	55
80	**NA 4916UU**	**NA 4916U**	—	—	860	80	110	30	31
	—	—	**NA 6916UU**	**NA 6916U**	1 570	80	110	54	55
85	**NA 4917UU**	**NA 4917U**	—	—	1 300	85	120	35	36
	—	—	**NA 6917UU**	**NA 6917U**	2 360	85	120	63	64
90	**NA 4918UU**	**NA 4918U**	—	—	1 360	90	125	35	36
	—	—	**NA 6918UU**	**NA 6918U**	2 480	90	125	63	64
95	**NA 4919UU**	**NA 4919U**	—	—	1 420	95	130	35	36
	—	—	**NA 6919UU**	**NA 6919U**	2 600	95	130	63	64
100	**NA 4920UU**	**NA 4920U**	—	—	1 980	100	140	40	41
110	**NA 4922UU**	**NA 4922U**	—	—	2 150	110	150	40	41

$r_{s\,min}$ (1)	F_w	Standard mounting dimensions mm: d_a Min.	d_a Max.	D_a Max.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed (2) min^{-1}	Assembled inner ring
0.6	52	49	51	64	38 900	63 400	3 500	**LRTZ 455223**
0.6	52	49	51	64	66 600	127 000	3 500	**LRTZ 455241**
0.6	58	54	57	68	41 300	71 100	3 500	**LRTZ 505823**
0.6	58	54	57	68	70 800	142 000	3 500	**LRTZ 505841**
1	63	60	61	75	52 200	85 700	3 000	**LRTZ 556326**
1	63	60	61	75	89 400	171 000	3 000	**LRTZ 556346**
1	68	65	66	80	54 500	92 800	3 000	**LRTZ 606826**
1	68	65	66	80	93 400	186 000	3 000	**LRTZ 606846**
1	72	70	70.5	85	56 800	99 800	2 500	**LRTZ 657226**
1	72	70	70.5	85	97 400	200 000	2 500	**LRTZ 657246**
1	80	75	78	95	76 900	143 000	2 500	**LRTZ 708031**
1	80	75	78	95	124 000	281 000	2 500	**LRTZ 708055**
1	85	80	83	100	79 600	153 000	2 000	**LRTZ 758531**
1	85	80	83	100	128 000	299 000	2 000	**LRTZ 758555**
1	90	85	88	105	80 700	158 000	2 000	**LRTZ 809031**
1	90	85	88	105	132 000	317 000	2 000	**LRTZ 809055**
1.1	100	91.5	98	113.5	103 000	225 000	1 900	**LRTZ 8510036**
1.1	100	91.5	98	113.5	168 000	448 000	1 900	**LRTZ 8510064**
1.1	105	96.5	103	118.5	106 000	238 000	1 800	**LRTZ 9010536**
1.1	105	96.5	103	118.5	172 000	471 000	1 800	**LRTZ 9010564**
1.1	110	101.5	108	123.5	109 000	250 000	1 700	**LRTZ 9511036**
1.1	110	101.5	108	123.5	177 000	493 000	1 700	**LRTZ 9511064**
1.1	115	106.5	113	133.5	134 000	297 000	1 700	**LRTZ 10011541**
1.1	125	116.5	123	143.5	140 000	322 000	1 500	**LRTZ 11012541**

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to grease lubrication.

Remarks1. The outer ring has an oil groove and an oil hole.
2. Bearings are provided with prepacked grease. Bearings with a seal on one side are not provided with prepacked grease. Perform proper lubrication for use.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

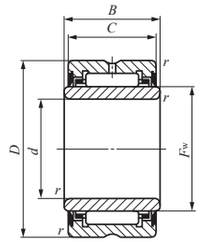
MACHINED TYPE NEEDLE ROLLER BEARINGS

With Seal, With Inner Ring

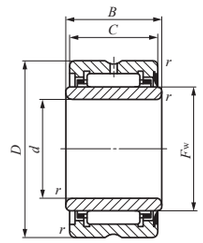


Shaft dia. 120 — 140mm

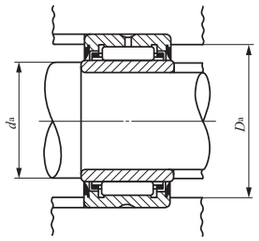
Shaft dia. mm	Identification number: With two seals	Identification number: With one seal	Identification number: With two seals	Identification number: With one seal	Mass (Ref.) g	Boundary dimensions mm: d	D	C	B
120	**NA 4924UU**	**NA 4924U**	—	—	2 990	120	165	45	46
130	**NA 4926UU**	**NA 4926U**	—	—	4 080	130	180	50	51
140	**NA 4928UU**	**NA 4928U**	—	—	4 340	140	190	50	51



NA49 ··· UU



NA49 ··· U



$r_{s\,min}$ (1)	F_w	Standard mounting dimensions mm: d_a Min.	d_a Max.	D_a Max.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}	Assembled inner ring
1.1	135	126.5	133	158.5	178 000	410 000	1 400	**LRTZ 12013546**
1.5	150	138	148	172	206 000	511 000	1 300	**LRTZ 13015051**
1.5	160	148	158	182	214 000	549 000	1 200	**LRTZ 14016051**

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to grease lubrication.

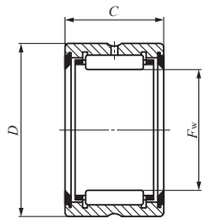
Remarks1. The outer ring has an oil groove and an oil hole.
2. Bearings are provided with prepacked grease. Bearings with a seal on one side are not provided with prepacked grease. Perform proper lubrication for use.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

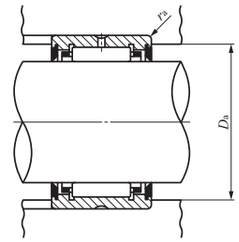
MACHINED TYPE NEEDLE ROLLER BEARINGS

With Seal, Without Inner Ring, Inch Series





BR ··· UU



Shaft dia. 15.875 — 50.800mm

Shaft dia. mm (inch)	Identification number With two seals	Mass (Ref.) g	Boundary dimensions mm(inch) F_w	D	C	Standard mounting dimensions mm D_a Max.	$r_{as\ max}$ (1)	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min⁻¹
15.875 (5/8)	**BR 101816 UU**	54	15.875 (5/8)	28.575 (1 1/8)	25.400 (1)	24.5	0.6	18 300	20 000	12 000
19.050 (3/4)	**BR 122016 UU**	68	19.050 (3/4)	31.750 (1 1/4)	25.400 (1)	26.5	1.0	20 700	24 400	10 000
22.225 (7/8)	**BR 142216 UU**	76	22.225 (7/8)	34.925 (1 3/8)	25.400 (1)	29.7	1.0	21 600	26 900	9 000
25.400 (1)	**BR 162416 UU**	83	25.400 (1)	38.100 (1 1/2)	25.400 (1)	32.9	1.0	23 600	31 300	8 000
28.575 (1 1/8)	**BR 182620 UU**	115	28.575 (1 1/8)	41.275 (1 5/8)	31.750 (1 1/4)	36.0	1.0	34 900	49 900	7 000
31.750 (1 1/4)	**BR 202820 UU**	124	31.750 (1 1/4)	44.450 (1 3/4)	31.750 (1 1/4)	39.2	1.0	36 000	53 500	6 500
34.925 (1 3/8)	**BR 223020 UU**	134	34.925 (1 3/8)	47.625 (1 7/8)	31.750 (1 1/4)	42.4	1.0	38 500	60 000	5 500
38.100 (1 1/2)	**BR 243320 UU**	168	38.100 (1 1/2)	52.388 (2 1/16)	31.750 (1 1/4)	45.1	1.5	43 700	66 900	5 500
41.275 (1 5/8)	**BR 263520 UU**	179	41.275 (1 5/8)	55.562 (2 3/16)	31.750 (1 1/4)	48.3	1.5	44 800	70 900	4 500
44.450 (1 3/4)	**BR 283720 UU**	193	44.450 (1 3/4)	58.738 (2 5/16)	31.750 (1 1/4)	51.5	1.5	47 500	78 200	4 500
47.625 (1 7/8)	**BR 303920 UU**	202	47.625 (1 7/8)	61.912 (2 7/16)	31.750 (1 1/4)	54.7	1.5	48 500	82 100	4 000
50.800 (2)	**BR 324120 UU**	216	50.800 (2)	65.088 (2 9/16)	31.750 (1 1/4)	57.8	1.5	51 000	89 400	4 000

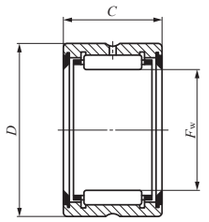
Notes(1) Maximum permissible corner radius of the housing
(2) Allowable rotational speed applies to grease lubrication.
Remarks1. The outer ring has an oil groove and an oil hole.
2. Bearings are provided with prepacked grease.
3. If one side sealed type are needed, please contact IKO.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

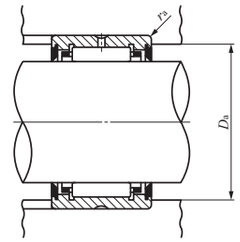
MACHINED TYPE NEEDLE ROLLER BEARINGS

With Seal, Without Inner Ring, Inch Series





BR ··· UU



Shaft dia. 57.150 — 95.250mm

Shaft dia. mm (inch)	Identification number With two seals	Mass (Ref.) g	Boundary dimensions mm(inch) F_w	D	C	Standard mounting dimensions mm D_a Max.	$r_{as\,max}$ (1)	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min⁻¹
57.150 (2 1/4)	**BR 364828 UU**	459	57.150 (2 1/4)	76.200 (3)	44.450 (1 3/4)	69.0	1.5	90 300	158 000	3 500
63.500 (2 1/2)	**BR 405228 UU**	499	63.500 (2 1/2)	82.550 (3 1/4)	44.450 (1 3/4)	74.3	2.0	94 600	174 000	3 000
69.850 (2 3/4)	**BR 445628 UU**	540	69.850 (2 3/4)	88.900 (3 1/2)	44.450 (1 3/4)	80.7	2.0	98 700	189 000	2 500
76.200 (3)	**BR 486028 UU**	585	76.200 (3)	95.250 (3 3/4)	44.450 (1 3/4)	87.0	2.0	105 000	211 000	2 500
82.550 (3 1/4)	**BR 526828 UU**	891	82.550 (3 1/4)	107.950 (4 1/4)	44.450 (1 3/4)	99.7	2.0	109 000	227 000	2 500
88.900 (3 1/2)	**BR 567232 UU**	1 098	88.900 (3 1/2)	114.300 (4 1/2)	50.800 (2)	106.1	2.0	142 000	265 000	2 000
95.250 (3 3/4)	**BR 607632 UU**	1 161	95.250 (3 3/4)	120.650 (4 3/4)	50.800 (2)	111.4	2.5	148 000	287 000	2 000

Notes(1) Maximum permissible corner radius of the housing
(2) Allowable rotational speed applies to grease lubrication.

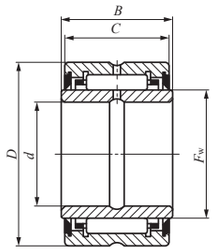
Remarks1. The outer ring has an oil groove and an oil hole.
2. Bearings are provided with prepacked grease.
3. If one side sealed type are needed, please contact IKO.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

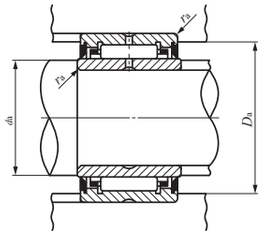
MACHINED TYPE NEEDLE ROLLER BEARINGS

With Seal, With Inner Ring, Inch Series





BRI ··· UU



Shaft dia. 9.525 — 44.450mm

Shaft dia. mm (inch)	Identification number With two seals	Mass (Ref.) g	Boundary dimensions mm(inch) d	D	C	B	F_w	Standard mounting dimensions mm d_a Min.	d_a Max.	D_a Max.	$r_{as\,max}$ (1)	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed (2) min⁻¹	Assembled inner ring
9.525 (3/8)	**BRI 61816 UU**	79	9.525 (3/8)	28.575 (1 1/8)	25.400 (1)	25.650	15.875 (5/8)	14	14.5	24.5	0.6	18 300	20 000	12 000	**LRBZ 61016 B**
12.700 (1/2)	**BRI 82016 UU**	99	12.700 (1/2)	31.750 (1 1/4)	25.400 (1)	25.650	19.050 (3/4)	17.5	18	26.5	0.6	20 700	24 400	10 000	**LRBZ 81216 B**
15.875 (5/8)	**BRI 102216 UU**	113.5	15.875 (5/8)	34.925 (1 3/8)	25.400 (1)	25.650	22.225 (7/8)	21	21.2	29.7	0.6	21 600	26 900	9 000	**LRBZ 101416 B**
19.050 (3/4)	**BRI 122416 UU**	127	19.050 (3/4)	38.100 (1 1/2)	25.400 (1)	25.650	25.400 (1)	24	24.4	32.9	0.6	23 600	31 300	8 000	**LRBZ 121616 B**
22.225 (7/8)	**BRI 142620 UU**	177	22.225 (7/8)	41.275 (1 5/8)	31.750 (1 1/4)	32.000	28.575 (1 1/8)	27	27.5	36.0	0.6	34 900	49 900	7 000	**LRBZ 141820 B**
25.400 (1)	**BRI 162820 UU**	196	25.400 (1)	44.450 (1 3/4)	31.750 (1 1/4)	32.000	31.750 (1 1/4)	30.5	30.7	39.2	0.6	36 000	53 500	6 500	**LRBZ 162020 B**
28.575 (1 1/8)	**BRI 183020 UU**	211	28.575 (1 1/8)	47.625 (1 7/8)	31.750 (1 1/4)	32.000	34.925 (1 3/8)	33.5	33.9	42.4	0.6	38 500	60 000	5 500	**LRBZ 182220 B**
31.750 (1 1/4)	**BRI 203320 UU**	254	31.750 (1 1/4)	52.388 (2 1/16)	31.750 (1 1/4)	32.000	38.100 (1 1/2)	37	37.1	45.1	0.6	43 700	66 900	5 500	**LRBZ 202420 B**
34.925 (1 3/8)	**BRI 223520 UU**	275	34.925 (1 3/8)	55.562 (2 3/16)	31.750 (1 1/4)	32.000	41.275 (1 5/8)	40.2	40.2	48.3	0.6	44 800	70 900	4 500	**LRBZ 222620 B**
38.100 (1 1/2)	**BRI 243720 UU** **BRI 243920 UU**	293 362	38.100 (1 1/2) 38.100 (1 1/2)	58.738 (2 5/16) 61.912 (2 7/16)	31.750 (1 1/4) 31.750 (1 1/4)	32.000 32.000	44.450 (1 3/4) 47.625 (1 7/8)	43.3 43.3	43.4 45	51.5 54.7	0.6 1	47 500 48 500	78 200 82 100	4 500 4 000	**LRBZ 242820 B** **LRBZ 243020 B**
41.275 (1 5/8)	**BRI 264120 UU**	386	41.275 (1 5/8)	65.088 (2 9/16)	31.750 (1 1/4)	32.000	50.800 (2)	48	49	57.8	1	51 000	89 400	4 000	**LRBZ 263220 B**
44.450 (1 3/4)	**BRI 284828 UU**	804	44.450 (1 3/4)	76.200 (3)	44.450 (1 3/4)	44.700	57.150 (2 1/4)	52.5	55	69.0	1.5	90 300	158 000	3 500	**LRBZ 283628 B**

Notes(1) Maximum permissible corner radius of the shaft or housing
(2) Allowable rotational speed applies to grease lubrication.

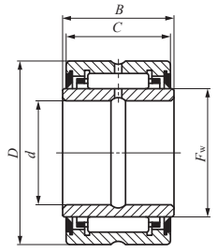
Remarks1. The inner ring and the outer ring each have an oil groove and an oil hole.
2. Bearings are provided with prepacked grease.
3. If one side sealed type are needed, please contact IKO.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

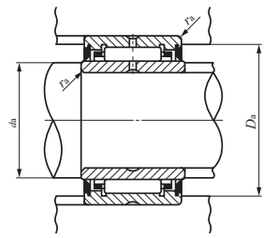
MACHINED TYPE NEEDLE ROLLER BEARINGS

With Seal, With Inner Ring, Inch Series





BRI ··· UU



Shaft dia. 50.800 — 82.550mm

Shaft dia. mm (inch)	Identification number	Mass (Ref.)	Boundary dimensions mm(inch)					Standard mounting dimensions mm				Basic dynamic load rating	Basic static load rating	Allowable rotational speed(2)	Assembled inner ring
								d_a		D_a	$r_{as\ max}$(1)				
	With two seals	g	d	D	C	B	F_w	Min.	Max.	Max.		C N	C_0 N	min^{-1}	
50.800 (2)	**BRI 325228 UU**	889	50.800 (2)	82.550 (3 1/4)	44.450 (1 3/4)	44.700	63.500 (2 1/2)	58	61	74.3	1.5	94 600	174 000	3 000	**LRBZ 324028 B**
57.150 (2 1/4)	**BRI 365628 UU**	980	57.150 (2 1/4)	88.900 (3 1/2)	44.450 (1 3/4)	44.700	69.850 (2 3/4)	65	67	80.7	1.5	98 700	189 000	2 500	**LRBZ 364428 B**
63.500 (2 1/2)	**BRI 406028 UU**	1 065	63.500 (2 1/2)	95.250 (3 3/4)	44.450 (1 3/4)	44.700	76.200 (3)	71	73	87.0	1.5	105 000	211 000	2 500	**LRBZ 404828 B**
69.850 (2 3/4)	**BRI 446828 UU**	1 421	69.850 (2 3/4)	107.950 (4 1/4)	44.450 (1 3/4)	44.700	82.550 (3 1/4)	77	79	99.7	1.5	109 000	227 000	2 500	**LRBZ 445228 B**
76.200 (3)	**BRI 487232 UU**	1 738	76.200 (3)	114.300 (4 1/2)	50.800 (2)	51.050	88.900 (3 1/2)	83.5	86	106.1	1.5	142 000	265 000	2 000	**LRBZ 485632 B**
82.550 (3 1/4)	**BRI 527632 UU**	1 851	82.550 (3 1/4)	120.650 (4 3/4)	50.800 (2)	51.050	95.250 (3 3/4)	91	93	111.4	1.5	148 000	287 000	2 000	**LRBZ 526032 B**

Notes(1) Maximum permissible corner radius of the shaft or housing
(2) Allowable rotational speed applies to grease lubrication.

Remarks1. The inner ring and the outer ring each have an oil groove and an oil hole.
2. Bearings are provided with prepacked grease.
3. If one side sealed type are needed, please contact IKO.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

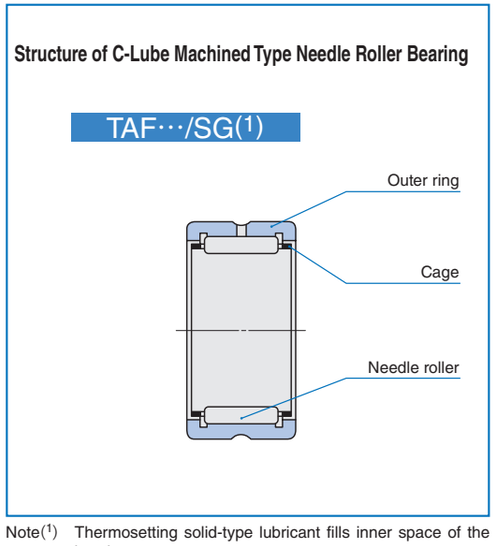
C-LUBE
MACHINED TYPE NEEDLE ROLLER BEARINGS

Structure and features

C-Lube Machined Type Needle Roller Bearing is a bearing that is lubricated with a newly developed thermosetting solid-type lubricant. A large amount of lubricating oil and fine particles of ultra high molecular weight polyolefin resin are solidified by heat treatment to fill the inner space of the bearing. As the bearing rotates, the lubricating oil oozes out onto the raceway in proper quantities, maintaining the lubrication performance for a long period of time.
C-Lube Machined Type Needle Roller Bearings are bearings with a low sectional height and large load ratings. The outer ring has high rigidity and can easily be used even for light alloy housings.



Structure of C-Lube Machined Type Needle Roller Bearing



Note(1) Thermosetting solid-type lubricant fills inner space of the bearing.

Type

C-Lube Machined Type Needle Roller Bearing is available in type shown in Table 1.

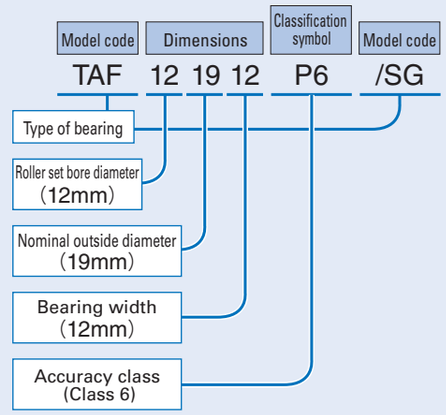
Table 1 Type of bearing

Series	Type	Needle bearing with cage
		Without inner ring
Metric series	For light duty	TAF···/SG

Identification number

The identification number of C-Lube Machined Type Needle Roller Bearing consists of model code, dimensions and classification symbol. Example is shown below.

Example of identification number



Accuracy

C-Lube Machined Type Needle Roller Bearings are manufactured based on JIS (See page A31.). The tolerances for the smallest single roller set bore diameter of bearings without inner ring are based on Table 14 on page A33.

Fit

The recommended fits for C-Lube Machined Type Needle Roller Bearings are shown in Tables 21 to 23 on pages A41 and A42.

Allowable Rotational Speed

The allowable rotational speed of C-Lube Machined Type Needle Roller Bearing is affected by mounting and operating conditions. The reference $d_m n$ value (1) is 20,000.

Note(1) $d_m n$ value = {(Bore diameter of bearing [mm] + Outside diameter of bearing [mm])/2} x rotational speed [min^{-1}]

Lubrication

As the internal space of C-Lube Machined Type Needle Roller Bearing is filled with thermosetting solid-type lubricant C-Lube, regreasing is not possible due to the structure.

Oil hole

Table 2 shows the number of oil holes on the outer ring.

Table 2 Number of oil holes of outer ring

Nominal roller set bore diameter F_w mm	Number of hole holes of outer ring
$F_w \leqq 26$	0
$26 < F_w$	1

Remark If there is oil hole on the outer ring, care must be exercised not to let oil holes within the load range.

Mounting

❶ Mounting dimensions for C-Lube Machined Type Needle Roller Bearings are shown in the table of dimensions.
❷ When mounting, pay special attention to avoid locating the oil hole within the loading zone. This may lead to a short bearing life.

Precaution for Use

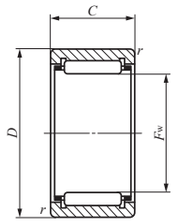
❶ Do not wash C-Lube Machined Type Needle Roller Bearing with organic solvent and/or white kerosene, which have the ability of removing fat nor leave them in contact with the above agents.
❷ To ensure normal rotation of the C-Lube Machined Type Needle Roller Bearing, apply a load of 1% or over of the dynamic load rating at use.
❸ The operating temperature range is -15～+80˚C. For continuous operation, the recommended operating temperature is +60˚C or less.
❹ When using two or more C-Lube Machined Type Needle Roller Bearings adjacent to each other on the same shaft, it is necessary to obtain an even load distribution. On request, a set of bearings is available, in which bearings are matched to obtain an even load distribution.

Further, C-Lube Machined Type Needle Roller Bearing for food machinery is also available. If needed, please contact IKO.

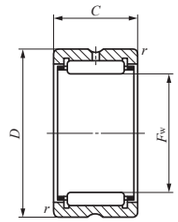
C-LUBE MACHINED TYPE NEEDLE ROLLER BEARINGS

Without Inner Ring

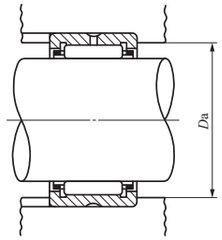




TAF ··· /SG
$F_w \leqq 26$



TAF ··· /SG
$F_w > 26$



Shaft dia. 10—45mm

Shaft dia.	Identification number	Mass (Ref.)	Boundary dimensions mm				Standard mounting dimension	Basic dynamic load rating	Basic static load rating
			F_w	D	C	$r_{s\,min}$(1)	D_a Max.	C	C_0
		g					mm	N	N
10	TAF 101712/SG	11	10	17	12	0.2	15.4	5 880	5 970
	TAF 101716/SG	14.7	10	17	16	0.2	15.4	8 230	9 190
12	TAF 121912/SG	12.5	12	19	12	0.3	17	6 610	7 260
	TAF 121916/SG	16.8	12	19	16	0.3	17	9 250	11 200
14	TAF 142216/SG	22	14	22	16	0.3	20	11 700	13 700
	TAF 142220/SG	27.5	14	22	20	0.3	20	14 800	18 600
15	TAF 152316/SG	23.5	15	23	16	0.3	21	12 300	14 900
	TAF 152320/SG	29	15	23	20	0.3	21	15 600	20 200
16	TAF 162416/SG	24	16	24	16	0.3	22	12 300	15 100
	TAF 162420/SG	30	16	24	20	0.3	22	15 500	20 400
18	TAF 182616/SG	26.5	18	26	16	0.3	24	13 400	17 500
	TAF 182620/SG	33	18	26	20	0.3	24	17 000	23 600
19	TAF 192716/SG	28	19	27	16	0.3	25	14 000	18 700
	TAF 192720/SG	35.5	19	27	20	0.3	25	17 700	25 300
20	TAF 202816/SG	28.5	20	28	16	0.3	26	13 900	18 800
	TAF 202820/SG	37	20	28	20	0.3	26	17 600	25 400
21	TAF 212916/SG	30	21	29	16	0.3	27	14 400	20 000
	TAF 212920/SG	37.5	21	29	20	0.3	27	18 200	27 100
22	TAF 223016/SG	31	22	30	16	0.3	28	14 900	21 200
	TAF 223020/SG	39	22	30	20	0.3	28	18 900	28 700
24	TAF 243216/SG	33	24	32	16	0.3	30	15 300	22 500
	TAF 243220/SG	42	24	32	20	0.3	30	19 400	30 500
25	TAF 253316/SG	35	25	33	16	0.3	31	15 800	23 700
	TAF 253320/SG	43.5	25	33	20	0.3	31	20 000	32 100
29	TAF 293820/SG	59	29	38	20	0.3	36	21 600	37 200
	TAF 293830/SG	88	29	38	30	0.3	36	30 900	59 100
30	TAF 304020/SG	67	30	40	20	0.3	38	25 100	40 100
	TAF 304030/SG	101	30	40	30	0.3	38	36 000	63 900
35	TAF 354520/SG	76.5	35	45	20	0.3	43	26 900	46 200
	TAF 354530/SG	116.5	35	45	30	0.3	43	38 600	73 600
40	TAF 405020/SG	86	40	50	20	0.3	48	29 400	54 100
	TAF 405030/SG	130	40	50	30	0.3	48	42 300	86 200
45	TAF 455520/SG	95.5	45	55	20	0.3	53	31 000	60 200
	TAF 455530/SG	144	45	55	30	0.3	53	44 600	95 800

Note(1) Minimum allowable value of chamfer dimension r.

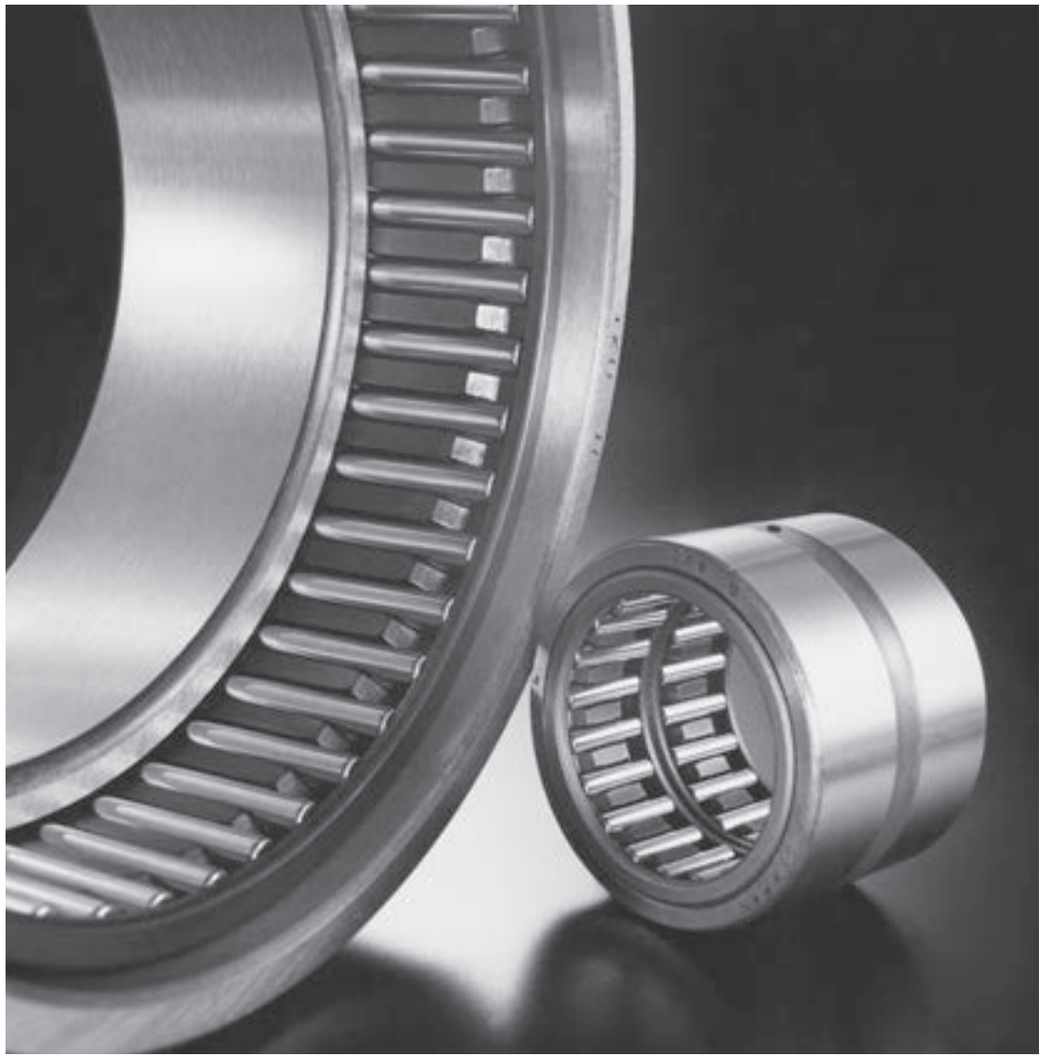
Remarks1. Models with a nominal roller set bore diameter F_w of 26mm or less are provided without oil holes. other models are provided with one oil hole and oil groove.

2. This bearing can not be re-lubricated as thermosetting solid-type lubricant C-Lube fills inner space of the bearing.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEEDLE ROLLER BEARINGS WITH SEPARABLE CAGE

●Needle Roller Bearings with Separable Cage - Without Inner Ring
●Needle Roller Bearings with Separable Cage - With Inner Ring

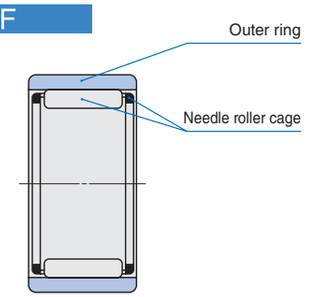


Structure and Features

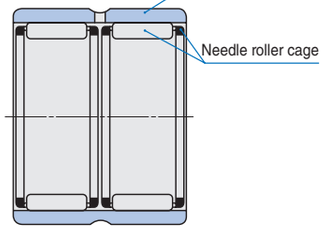
In IKO Needle Roller Bearings with Separable Cage, the inner ring, outer ring and IKO Needle Roller Cage are combined, and they can be separated easily. This type has a simple structure with high accuracy. In addition, the radial clearance can be freely chosen by selecting and combining these component parts. As Needle Roller Cages are used, these bearings have excellent rotational performance.
These bearings are most suitable for mass-production high accuracy products such as machine tools, textile machinery, and printing machines.

Structures of Needle Roller Bearings with Separable Cage

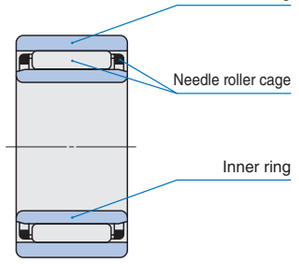
RNAF



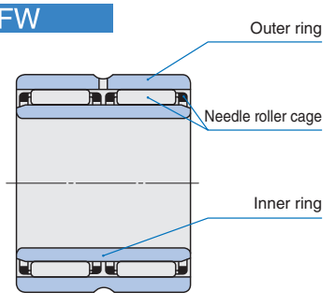
RNAFW



NAF



NAFW



Types

Needle Roller Bearings with Separable Cage are available in the types shown in Table 1.

Table 1 Type of bearing

Type	Single-row		Double-row	
	Without inner ring	With inner ring(1)	Without inner ring	With inner ring(1)
Model code	RNAF	NAF	RNAFW	NAFW

Note(1) For the Needle Roller Bearings with Separable Cage with inner rings, the needle roller bearings and inner rings will be delivered separately. Please contact IKO if in need of delivery as an integrated product.

Needle Roller Bearings with Separable Cage - Without Inner Ring

The single-row as well as the double-row types are available with the same sectional height, and either of them can be selected according to load conditions. As shown in the section, "Design of shaft and housing" on page A44, any desired radial internal clearance can be selected by combining a shaft which is heat-treated and finished by grinding.

Needle Roller Bearings with Separable Cage - With Inner Ring

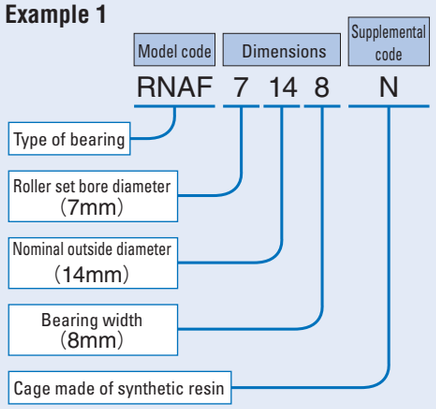
These bearings are made to the CN clearance shown in Table 19 on page A37. When especially high accuracy is required, it is possible to supply semi-finished inner rings which have a finishing allowance on their outside diameter so that they can be ground after being press-fitted to shafts.

Identification Number

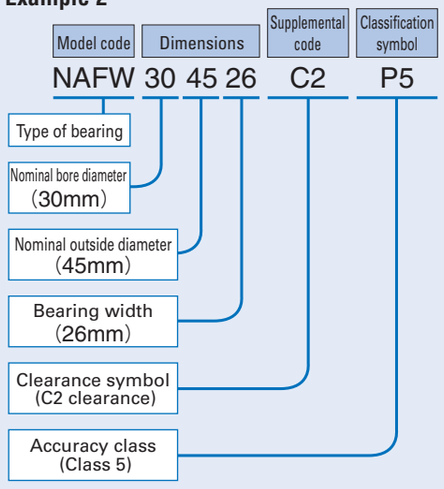
The identification number of Needle Roller Bearings with Separable Cage consists of a model code, dimensions, any supplemental codes and a classification symbol. The arrangement examples are as follows.

Examples of identification number

Example 1



Example 2



Accuracy

Needle Roller Bearings with Separable Cage are manufactured to the accuracy based on JIS (See page A31.). Tolerances for the smallest single roller set bore diameter of bearings without inner ring are based on Table 14 on page A33.

Clearance

Radial internal clearances of Needle Roller Bearings with Separable Cage are made to the CN clearance shown in Table 18 on page A37.

Fit

Recommended fits for Needle Roller Bearings with Separable Cage are shown in Tables 21 to 23 on pages A41 and A42.

Lubrication

Needle Roller Bearings with Separable Cage are not provided with prepacked grease. Perform proper lubrication for use. Using them without lubrication will increase the wear of the rolling contact surfaces and shorten their lives.

Oil Hole

The double-row type outer rings have both an oil hole and an oil groove, but the single-row type outer rings do not. When outer rings with an oil hole are required, attach "-OH" before the clearance symbol in the identification number, and when outer rings with both an oil hole and an oil groove are required, attach "-OG" to the same position.
Example: NAF 203517 - OH C2 P6
When outer rings with multiple oil holes or inner rings with oil hole(s) are required, please contact IKO.

Operating temperature range

For synthetic resin cages, "N" is added at the end of the identification number. The operating temperature range for Needle Roller Bearings with Separable Cage is -20 ～ +120˚C. However, the maximum allowable temperature for synthetic resin cages is +110˚C, and when they are continuously operated, it is +100˚C.

Mounting

Mounting examples of Needle Roller Bearings with Separable Cage are shown in Fig.1.
When mounting Needle Roller Bearings with Separable Cage, it is necessary to locate the needle cage axially. The needle cage is guided by shoulders of the shaft and housing or by side plates, and their guide surfaces must be heat-treated and finished by grinding at right angles to the shaft central axis.
Dimensions related to mounting are shown in the table of dimensions.

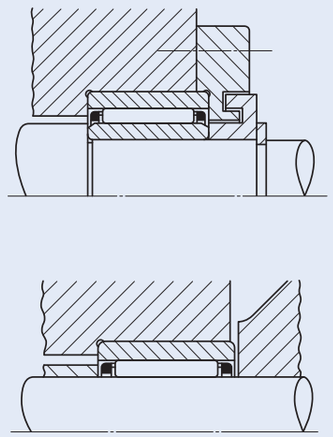


Fig.1 Mounting examples

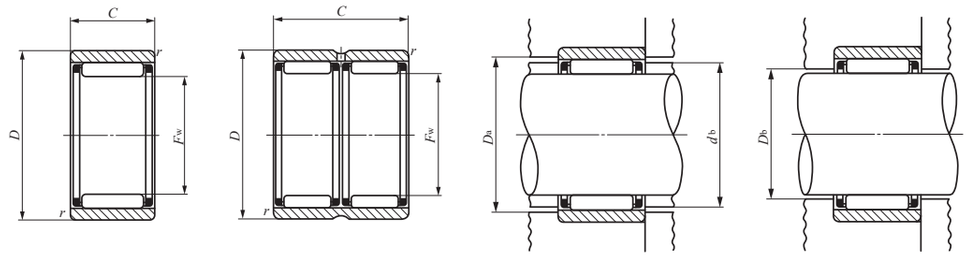
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEEDLE ROLLER BEARINGS WITH SEPARABLE CAGE

Without Inner Ring







RNAF RNAFW

Shaft dia. 5 — 18mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm F_w	D	C	$r_{s\,min}$ (1)	Standard mounting dimensions mm d_b	D_a Max.	D_b	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
5	RNAF 5108N	2.8	5	10	8	0.2	6.7	8.4	5.4	2 420	1 950	85 000
6	RNAF 6138N	5.5	6	13	8	0.3	8.4	11	6.4	2 700	2 320	75 000
7	RNAF 7148N	6.1	7	14	8	0.3	9.4	12	7.4	2 960	2 690	65 000
8	RNAF 81510	8.2	8	15	10	0.3	10.4	13	8.4	3 630	3 600	60 000
	RNAFW 81620	20.5	8	16	20	0.3	10.8	14	8.4	6 220	7 200	60 000
10	RNAF 101710	9.6	10	17	10	0.3	12.4	15	10.4	4 160	4 550	50 000
	RNAF 102012	18.7	10	20	12	0.3	13.5	18	10.4	5 940	6 000	50 000
12	RNAF 122212	19.5	12	22	12	0.3	15.5	20	12.4	9 030	8 460	40 000
14	RNAF 142213	18.7	14	22	13	0.3	17.6	20	14.6	7 860	9 410	35 000
	RNAFW 142220	28.5	14	22	20	0.3	17.6	20	14.6	10 800	14 200	35 000
	RNAF 142612	29	14	26	12	0.3	19.4	24	14.6	9 790	9 680	35 000
15	RNAF 152313	19.7	15	23	13	0.3	18.6	21	15.6	8 250	10 200	35 000
	RNAFW 152320	30.5	15	23	20	0.3	18.6	21	15.6	11 400	15 400	35 000
16	RNAF 162413	21	16	24	13	0.3	19.6	22	16.6	8 620	11 000	30 000
	RNAFW 162420	32	16	24	20	0.3	19.6	22	16.6	11 900	16 700	30 000
	RNAF 162812	31.5	16	28	12	0.3	21.4	26	16.6	10 500	10 900	30 000
17	RNAF 172513	22	17	25	13	0.3	20.6	23	17.6	8 980	11 800	30 000
	RNAFW 172520	33.5	17	25	20	0.3	20.6	23	17.6	12 400	17 900	30 000
18	RNAF 182613	23	18	26	13	0.3	21.6	24	18.6	9 330	12 700	30 000
	RNAFW 182620	35	18	26	20	0.3	21.6	24	18.6	12 900	19 100	30 000
	RNAF 183012	34.5	18	30	12	0.3	23.4	28	18.6	11 800	13 100	30 000
	RNAFW 183024	69.5	18	30	24	0.3	23.4	28	18.6	20 200	26 200	30 000

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 50% of this value is allowable.

Remarks1. The character "N" at the end of the identification number indicates that a synthetic resin cage is incorporated.
2. RNAF has no oil hole. RNAFW is provided with an oil groove and an oil hole on the outer ring.
3. No grease is prepacked. Perform proper lubrication.

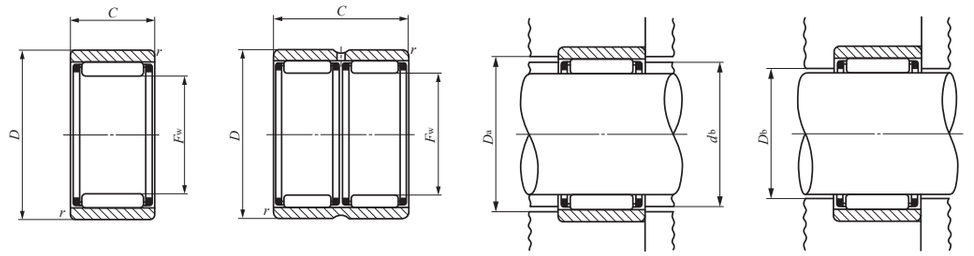
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEEDLE ROLLER BEARINGS WITH SEPARABLE CAGE

Without Inner Ring







RNAF RNAFW

D

NAF

Shaft dia. 20 — 40mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm F_w	D	C	$r_{s\,min}$ (1)	Standard mounting dimensions mm d_b	D_a Max.	D_b	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
20	RNAF 202813	25	20	28	13	0.3	23.6	26	20.6	9 590	13 500	25 000
	RNAFW 202826	49.5	20	28	26	0.3	23.6	26	20.6	16 400	27 100	25 000
	RNAF 203212	37.5	20	32	12	0.3	25.4	30	20.6	12 400	14 300	25 000
	RNAFW 203224	75	20	32	24	0.3	25.4	30	20.6	21 200	28 600	25 000
22	RNAF 223013	27	22	30	13	0.3	25.6	28	22.6	10 200	15 200	25 000
	RNAFW 223026	53.5	22	30	26	0.3	25.6	28	22.6	17 500	30 300	25 000
	RNAF 223516	58.5	22	35	16	0.3	27.8	33	22.6	17 600	20 900	25 000
	RNAFW 223532	117	22	35	32	0.3	27.8	33	22.6	30 200	41 800	25 000
25	RNAF 253517	51	25	35	17	0.3	29.5	33	25.6	17 300	26 600	20 000
	RNAFW 253526	78	25	35	26	0.3	29.5	33	25.6	22 400	37 200	20 000
	RNAF 253716	57	25	37	16	0.3	30.4	35	25.6	19 400	24 500	20 000
	RNAFW 253732	114	25	37	32	0.3	30.4	35	25.6	33 200	49 000	20 000
28	RNAF 284016	62.5	28	40	16	0.3	33.4	38	28.6	20 100	26 500	18 000
	RNAFW 284032	125	28	40	32	0.3	33.4	38	28.6	34 400	53 000	18 000
30	RNAF 304017	59	30	40	17	0.3	34.5	38	30.6	18 700	31 100	17 000
	RNAFW 304026	90.5	30	40	26	0.3	34.5	38	30.6	24 200	43 400	17 000
	RNAF 304216	66	30	42	16	0.3	35.4	40	30.6	20 800	28 400	17 000
	RNAFW 304232	132	30	42	32	0.3	35.4	40	30.6	35 700	56 800	17 000
35	RNAF 354517	67.5	35	45	17	0.3	39.5	43	35.6	20 500	36 900	14 000
	RNAFW 354526	103	35	45	26	0.3	39.5	43	35.6	26 600	51 500	14 000
	RNAF 354716	75.5	35	47	16	0.3	40.4	45	35.6	23 100	33 900	14 000
	RNAFW 354732	151	35	47	32	0.3	40.4	45	35.6	39 500	67 800	14 000
40	RNAF 405017	76	40	50	17	0.3	43.5	48	40.8	22 200	42 700	12 000
	RNAFW 405034	152	40	50	34	0.3	43.5	48	40.8	38 000	85 400	12 000
	RNAF 405520	140	40	55	20	0.3	45.2	53	40.8	31 400	48 000	12 000
	RNAFW 405540	280	40	55	40	0.3	45.2	53	40.8	53 900	96 000	12 000

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 50% of this value is allowable.
Remarks1. RNAF has no oil hole. RNAFW is provided with an oil groove and an oil hole on the outer ring.
2. No grease is prepacked. Perform proper lubrication.

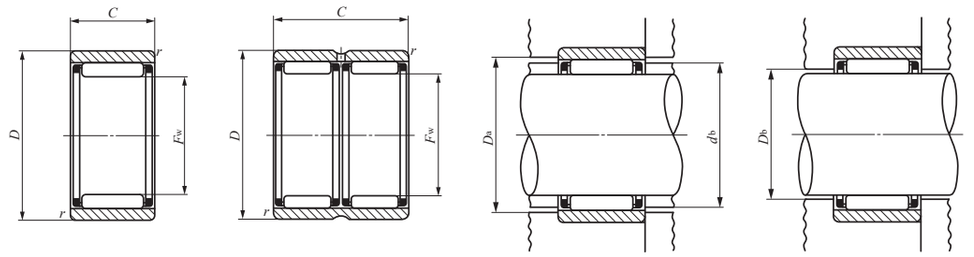
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEEDLE ROLLER BEARINGS WITH SEPARABLE CAGE

Without Inner Ring







RNAF RNAFW

Shaft dia. 45 — 100mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm F_w	D	C	$r_{s\,min}$ (1)	Standard mounting dimensions mm d_b	D_a Max.	D_b	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
45	RNAF 455517	83.5	45	55	17	0.3	48.5	53	45.8	23 300	47 100	11 000
	RNAFW 455534	167	45	55	34	0.3	48.5	53	45.8	39 900	94 200	11 000
	RNAF 456220	184	45	62	20	0.3	50.9	60	45.8	33 200	53 300	11 000
	RNAFW 456240	370	45	62	40	0.3	50.9	60	45.8	56 900	107 000	11 000
50	RNAF 506220	138	50	62	20	0.3	54.2	60	50.8	27 100	59 300	10 000
	RNAFW 506240	275	50	62	40	0.3	54.2	60	50.8	46 400	119 000	10 000
	RNAF 506520	170	50	65	20	0.3	55.2	63	50.8	35 900	61 100	10 000
	RNAFW 506540	340	50	65	40	0.6	55.2	61	50.8	61 500	122 000	10 000
55	RNAF 556820	167	55	68	20	0.3	59.5	66	55.8	28 600	66 000	9 000
	RNAFW 556840	335	55	68	40	0.3	59.5	66	55.8	49 000	132 000	9 000
	RNAF 557220	220	55	72	20	1	60.9	67	55.8	37 400	66 400	9 000
	RNAFW 557240	440	55	72	40	1	60.9	67	55.8	64 100	133 000	9 000
60	RNAF 607820	255	60	78	20	1	66.3	73	60.8	38 900	71 700	8 500
	RNAFW 607840	510	60	78	40	1	66.3	73	60.8	66 700	143 000	8 500
65	RNAF 658530	470	65	85	30	1.5	72	77	66	59 300	127 000	7 500
	RNAFW 658560	945	65	85	60	1.5	72	77	66	102 000	255 000	7 500
70	RNAF 709030	500	70	90	30	1.5	77	82	71	61 200	136 000	7 000
	RNAFW 709060	1 000	70	90	60	1.5	77	82	71	105 000	272 000	7 000
75	RNAF 759530	530	75	95	30	1.5	82	87	76	63 100	144 000	6 500
	RNAFW 759560	1 060	75	95	60	1.5	82	87	76	108 000	289 000	6 500
80	RNAF 8010030	560	80	100	30	1.5	87	92	81	65 000	153 000	6 000
	RNAFW 8010060	1 120	80	100	60	1.5	87	92	81	111 000	306 000	6 000
85	RNAF 8510530	590	85	105	30	1.5	92	97	86	66 600	161 000	6 000
90	RNAF 9011030	625	90	110	30	1.5	97	102	91	69 600	174 000	5 500
95	RNAF 9511530	655	95	115	30	1.5	102	107	96	70 900	182 000	5 500
100	RNAF 10012030	685	100	120	30	1.5	107	112	101	72 500	191 000	4 500

Notes(1) Minimum allowable value of chamfer dimension r

(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 50% of this value is allowable.

Remarks1. RNAF has no oil hole. RNAFW is provided with an oil groove and an oil hole on the outer ring.

2. No grease is prepacked. Perform proper lubrication.

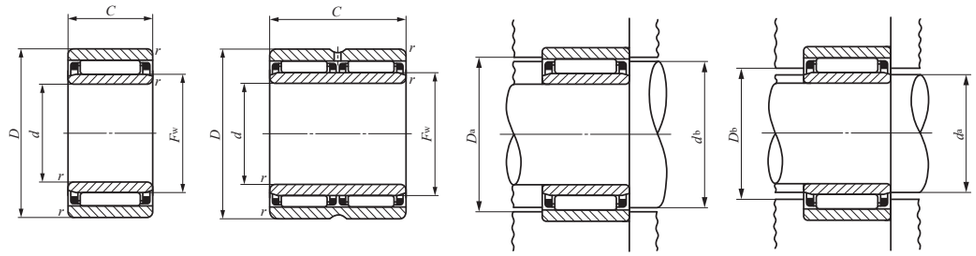
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEEDLE ROLLER BEARINGS WITH SEPARABLE CAGE

With Inner Ring







NAF NAFW

Shaft dia. 6 — 25mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm d	D	C	$r_{s\,min}$ (1)	F_w	Standard mounting dimensions mm d_b	D_a Max.	d_a Min.	d_a Max.	D_b	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}	Assembled inner ring
6	**NAF 61710**	13.5	6	17	10	0.3	10	12.4	15	8	9.7	10.4	4 160	4 550	50 000	**LRT 61010**
7	**NAF 72012**	22.5	7	20	12	0.3	10	13.5	18	9	9.7	10.4	5 940	6 000	50 000	**LRT 71012-1**
9	**NAF 92212**	24	9	22	12	0.3	12	15.5	20	11	11.5	12.4	9 030	8 460	40 000	**LRT 91212**
10	**NAF 102213**	26	10	22	13	0.3	14	17.6	20	12	13	14.6	7 860	9 410	35 000	**LRT 101413**
	NAFW 102220	40	10	22	20	0.3	14	17.6	20	12	13	14.6	10 800	14 200	35 000	**LRT 101420**
	NAF 102612	36	10	26	12	0.3	14	19.4	24	12	13	14.6	9 790	9 680	35 000	**LRT 101412**
12	**NAF 122413**	29.5	12	24	13	0.3	16	19.6	22	14	15	16.6	8 620	11 000	30 000	**LRT 121613**
	NAFW 122420	45.5	12	24	20	0.3	16	19.6	22	14	15	16.6	11 900	16 700	30 000	**LRT 121620**
	NAF 122812	40	12	28	12	0.3	16	21.4	26	14	15	16.6	10 500	10 900	30 000	**LRT 121612**
15	**NAF 152813**	38.5	15	28	13	0.3	20	23.6	26	17	19	20.6	9 590	13 500	25 000	**LRT 152013**
	NAFW 152826	77.5	15	28	26	0.3	20	23.6	26	17	19	20.6	16 400	27 100	25 000	**LRT 152026**
	NAF 153212	50.5	15	32	12	0.3	20	25.4	30	17	19	20.6	12 400	14 300	25 000	**LRT 152012**
17	**NAF 173013**	42.5	17	30	13	0.3	22	25.6	28	19	21	22.6	10 200	15 200	25 000	**LRT 172213**
	NAFW 173026	84.5	17	30	26	0.3	22	25.6	28	19	21	22.6	17 500	30 300	25 000	**LRT 172226**
	NAF 173516	77.5	17	35	16	0.3	22	27.8	33	19	21	22.6	17 600	20 900	25 000	**LRT 172216**
	NAFW 173532	155	17	35	32	0.3	22	27.8	33	19	21	22.6	30 200	41 800	25 000	**LRT 172232**
20	**NAF 203517**	74	20	35	17	0.3	25	29.5	33	22	24	25.6	17 300	26 600	20 000	**LRT 202517**
	NAFW 203526	114	20	35	26	0.3	25	29.5	33	22	24	25.6	22 400	37 200	20 000	**LRT 202526**
	NAF 203716	79	20	37	16	0.3	25	30.4	35	22	24	25.6	19 400	24 500	20 000	**LRT 202516**
	NAFW 203732	158	20	37	32	0.3	25	30.4	35	22	24	25.6	33 200	49 000	20 000	**LRT 202532**
25	**NAF 254017**	87.5	25	40	17	0.3	30	34.5	38	27	29	30.6	18 700	31 100	17 000	**LRT 253017**
	NAFW 254026	135	25	40	26	0.3	30	34.5	38	27	29	30.6	24 200	43 400	17 000	**LRT 253026**
	NAF 254216	94	25	42	16	0.3	30	35.4	40	27	29	30.6	20 800	28 400	17 000	**LRT 253016**
	NAFW 254232	186	25	42	32	0.3	30	35.4	40	27	29	30.6	35 700	56 800	17 000	**LRT 253032**

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 50% of this value is allowable.
Remarks1. NAF has no oil hole. NAFW is provided with an oil groove and an oil hole on the outer ring.
2. No grease is prepacked. Perform proper lubrication.

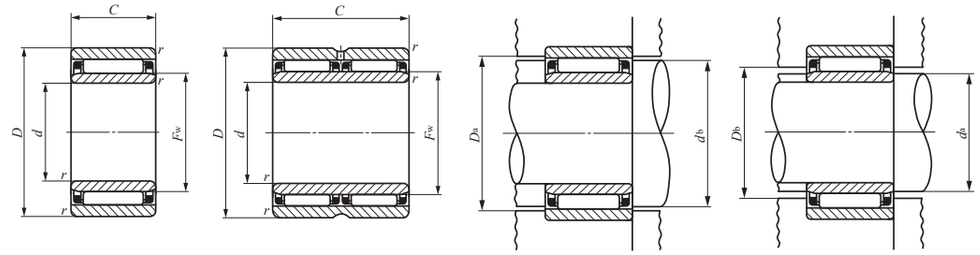
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEEDLE ROLLER BEARINGS WITH SEPARABLE CAGE

With Inner Ring







NAF NAFW

Shaft dia. 30 — 65mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm d	D	C	$r_{s\,min}$ (1)	F_w	Standard mounting dimensions mm d_b	D_a Max.	d_a Min.	d_a Max.	D_b	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}	Assembled inner ring
30	NAF 304517	101	30	45	17	0.3	35	39.5	43	32	34	35.6	20 500	36 900	14 000	LRT 303517
	NAFW 304526	155	30	45	26	0.3	35	39.5	43	32	34	35.6	26 600	51 500	14 000	LRT 303526
	NAF 304716	107	30	47	16	0.3	35	40.4	45	32	34	35.6	23 100	33 900	14 000	LRT 303516
	NAFW 304732	215	30	47	32	0.3	35	40.4	45	32	34	35.6	39 500	67 800	14 000	LRT 303532
35	NAF 355017	115	35	50	17	0.3	40	43.5	48	37	39	40.8	22 200	42 700	12 000	LRT 354017
	NAFW 355034	230	35	50	34	0.3	40	43.5	48	37	39	40.8	38 000	85 400	12 000	LRT 354034
	NAF 355520	186	35	55	20	0.3	40	45.2	53	37	39	40.8	31 400	48 000	12 000	LRT 354020
	NAFW 355540	375	35	55	40	0.3	40	45.2	53	37	39	40.8	53 900	96 000	12 000	LRT 354040
40	NAF 405517	128	40	55	17	0.3	45	48.5	53	42	44	45.8	23 300	47 100	11 000	LRT 404517
	NAFW 405534	255	40	55	34	0.3	45	48.5	53	42	44	45.8	39 900	94 200	11 000	LRT 404534
	NAF 406220	235	40	62	20	0.3	45	50.9	60	42	44	45.8	33 200	53 300	11 000	LRT 404520
	NAFW 406240	475	40	62	40	0.3	45	50.9	60	42	44	45.8	56 900	107 000	11 000	LRT 404540
45	NAF 456220	196	45	62	20	0.3	50	54.2	60	47	49	50.8	27 100	59 300	10 000	LRT 455020
	NAFW 456240	390	45	62	40	0.3	50	54.2	60	47	49	50.8	46 400	119 000	10 000	LRT 455040
	NAF 457220	340	45	72	20	1	55	60.9	67	50	54	55.8	37 400	66 400	9 000	LRT 455520
	NAFW 457240	685	45	72	40	1	55	60.9	67	50	54	55.8	64 100	133 000	9 000	LRT 455540
50	NAF 506820	230	50	68	20	0.3	55	59.5	66	52	54	55.8	28 600	66 000	9 000	LRT 505520
	NAFW 506840	465	50	68	40	0.3	55	59.5	66	52	54	55.8	49 000	132 000	9 000	LRT 505540
	NAF 507820	390	50	78	20	1	60	66.3	73	55	59	60.8	38 900	71 700	8 500	LRT 506020
	NAFW 507840	775	50	78	40	1	60	66.3	73	55	59	60.8	66 700	143 000	8 500	LRT 506040
55	NAF 558530	690	55	85	30	1.5	65	72	77	63	63.5	66	59 300	127 000	7 500	LRT 556530
	NAFW 558560	1 380	55	85	60	1.5	65	72	77	63	63.5	66	102 000	255 000	7 500	LRT 556560
60	NAF 609030	740	60	90	30	1.5	70	77	82	68	68.5	71	61 200	136 000	7 000	LRT 607030
	NAFW 609060	1 480	60	90	60	1.5	70	77	82	68	68.5	71	105 000	272 000	7 000	LRT 607060
65	NAF 659530	790	65	95	30	1.5	75	82	87	73	73.5	76	63 100	144 000	6 500	LRT 657530
	NAFW 659560	1 580	65	95	60	1.5	75	82	87	73	73.5	76	108 000	289 000	6 500	LRT 657560

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 50% of this value is allowable.
Remarks1. NAF has no oil hole. NAFW is provided with an oil groove and an oil hole on the outer ring.
2. No grease is prepacked. Perform proper lubrication.

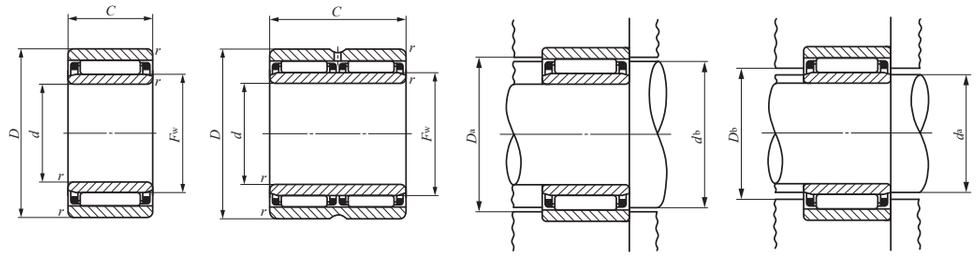
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEEDLE ROLLER BEARINGS WITH SEPARABLE CAGE

With Inner Ring







NAF NAFW

Shaft dia. 70 — 90mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm d	D	C	$r_{s\,min}$ (1)	F_w	Standard mounting dimensions mm d_b	D_a Max.	d_a Min.	d_a Max.	D_b	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}	Assembled inner ring
70	**NAF 7010030**	835	70	100	30	1.5	80	87	92	78	78.5	81	65 000	153 000	6 000	**LRT 708030-1**
	NAFW 7010060	1 680	70	100	60	1.5	80	87	92	78	78.5	81	111 000	306 000	6 000	**LRT 708060**
75	**NAF 7510530**	885	75	105	30	1.5	85	92	97	83	83.5	86	66 600	161 000	6 000	**LRT 758530-1**
80	**NAF 8011030**	935	80	110	30	1.5	90	97	102	88	88.5	91	69 600	174 000	5 500	**LRT 809030-1**
85	**NAF 8511530**	985	85	115	30	1.5	95	102	107	93	93.5	96	70 900	182 000	5 500	**LRT 859530**
90	**NAF 9012030**	1 040	90	120	30	1.5	100	107	112	98	98.5	101	72 500	191 000	4 500	**LRT 9010030**

Notes(1) Minimum allowable value of chamfer dimension r

(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 50% of this value is allowable.

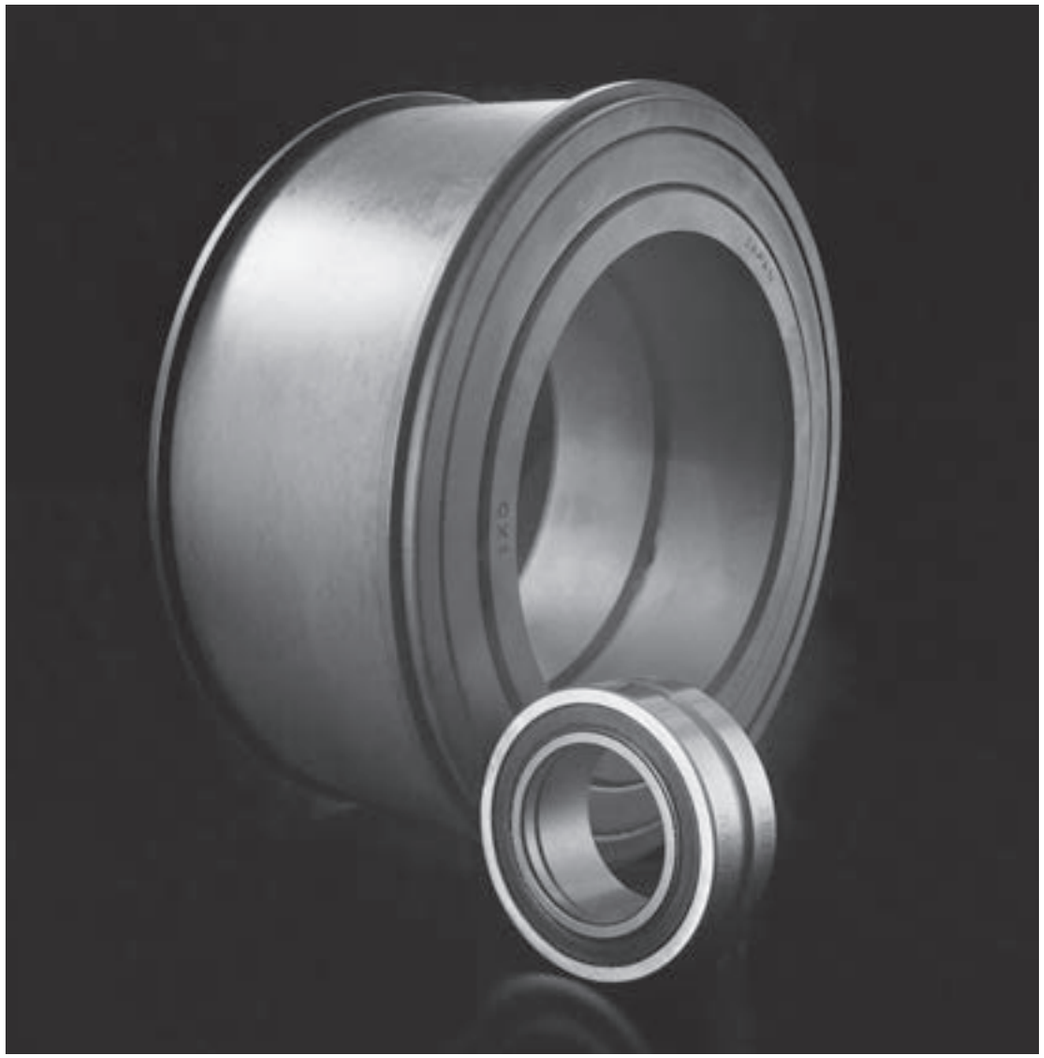
Remarks1. NAF has no oil hole. NAFW is provided with an oil groove and an oil hole on the outer ring.

2. No grease is prepacked. Perform proper lubrication.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

ROLLER BEARINGS

- Caged Roller Bearings
- Full Complement Roller Bearings
- Roller Bearings for Sheaves

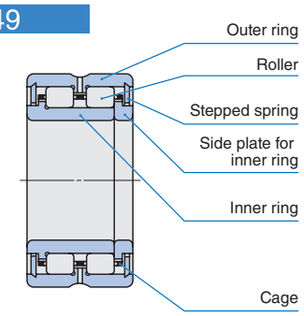


Structure and Features

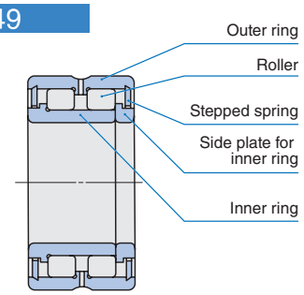
IKO Roller Bearings in which rollers are incorporated in two rows are non-separable heavy-duty bearings. They can withstand not only radial loads but axial loads as well, which are supported at the contacts between the shoulders of inner and outer rings and the end faces of rollers. Therefore, they are most suitable for use at the fixing side of a shaft. Like needle roller bearings, they are also compact.
Roller bearings include the caged type, full complement type and the type for sheaves, and any bearings suitable for the operating conditions can be selected. In particular, these bearings are used for heavy-duty machines such as construction machinery, and industrial machinery.

Structures of Roller Bearings

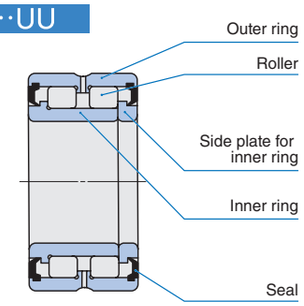
NAU49



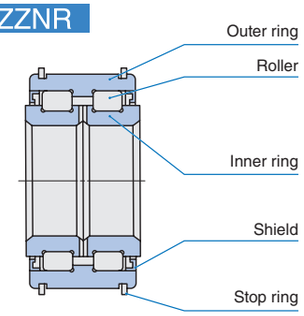
NAG49



NAG49···UU



NAS50···ZZNR



Types

The types of Roller Bearings shown in Table 1 are available.

Table 1 Type of bearing

Type / Series	Caged type	Full complement type	For sheaves
Standard	NAU49 TRU	NAG49	——
With seal	NAU49…UU TRU…UU	NAG49…UU	NAS50…UUNR
With shield	——	——	NAS50…ZZNR

Caged Roller Bearings

These bearings are suitable for high-speed rotations and fluctuating loads. Also, as the axial distance between the double-row rollers is comparatively large, large moment loads can be supported.
Caged roller bearings with seal incorporate seals on both sides. Synthetic resin rubber seals are excellent in the prevention of dust penetration and grease leakage, providing an excellent sealing effect.

Full Complement Roller Bearings

These bearings are suitable for low-speed rotations or oscillating motions and heavy loads. Similar to the caged type, the structure is advantageous for supporting moment loads.
The bearings with seal incorporate seals on both sides.

Roller Bearings for Sheaves

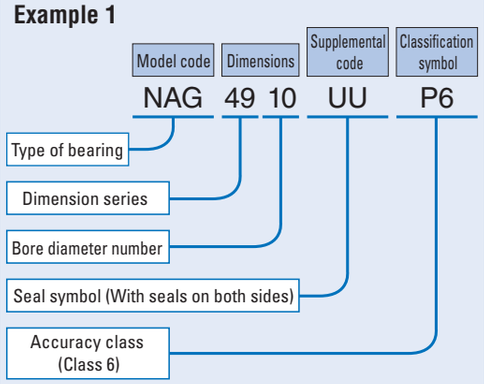
These bearings are the double-row full complement type with a low sectional height designed for use in sheaves. There are two types; the sealed type and the shield type. They can withstand heavy radial loads and shock loads at comparatively low-speed rotations, and can also withstand axial loads.
They can easily be fixed axially to sheaves using the stop rings of the outer ring. As the width of the inner ring is designed to be larger than that of the outer ring, they require no spacer between sheaves. The structure is stable because the double-row rollers can withstand the moment loads caused by rope transition.
The surfaces of these bearings are treated to have high corrosion resistance.

Identification Number

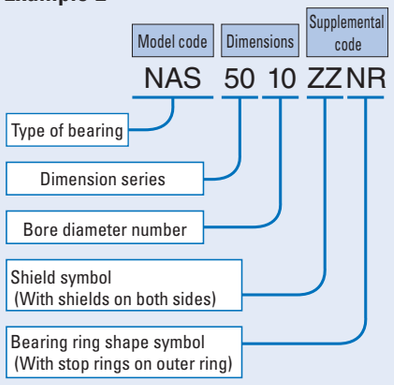
The identification number of Roller Bearings consists of a model code, dimensions, any supplemental codes and a classification symbol. The arrangement examples are shown below.

Examples of identification number

Example 1



Example 2



Accuracy

Roller Bearings are manufactured in accordance with JIS (See page A31.). A side plate for inner ring is assembled on one side of caged or full complement roller bearings. The tolerance of bore diameter of the side plate is shown below. Tolerances of Roller Bearings for Sheaves represent the values before surface treatment. The tolerance of internal distance between cir-clips is shown below.
Tolerance of bore diameter of the side plate d: E7
Tolerance of internal distance between cir-clips C_1: 0～+0.4mm

Clearance

Roller Bearings are manufactured to the CN clearance shown in Table 18 on page A37. However, Roller Bearings for Sheaves are manufactured so that proper operating clearances are obtained after being mounted with a specified fit.

Fit

The recommended fits for Roller Bearings are shown in Tables 21 to 22 on pages A41 and A42. The recommended fits for Roller Bearings for Sheaves are shown in Table 2.

Table 2 Recommended fits for Roller Bearings for Sheaves

Tolerance class of shaft	Tolerance class of housing bore
g6	N7

Lubrication

Bearings with prepacked grease are shown in Table 3. For Caged Roller Bearings and Full Complement Roller Bearings, ALVANIA GREASE S2 (Shell Lubricants Japan K.K.) is prepacked as the lubricating grease. For Roller Bearings for Sheaves, ALVANIA GREASE EP2 (Shell Lubricants Japan K.K.) is prepacked as the lubricating grease.
In the case of bearings without prepacked grease, perform proper lubrication for use. Operating without lubrication will increase the wear of the rolling contact surfaces and shorten their lirees.

Table 3 Bearings with prepacked grease ○: With prepacked grease ×: Without prepacked grease

Type		Standard	With seals	With shields
Caged type	NAU, TRU	×	○	–
Full complement type	NAG	×	○	–
For sheaves	NAS	–	○	○

Oil Hole

The number of oil holes of the inner and outer rings is shown in Table 4.

Table 4 Number of oil holes of the inner ring and outer ring

Type			Number of oil holes of the outer ring			Number of oil holes of the inner ring
		Nominal bore diameter d mm	Standard	With seals	With shields	
Caged type	NAU	$d \leqq 17$	0	0	—	0
		$17 < d$	2	2		
	TRU		2	2	—	0
Full complement type	NAG	$d \leqq 17$	0	0	—	0
		$17 < d$	2	2		
For sheaves	NAS		—	0	0	2

Remark The bearings with oil holes are also provided with an oil groove.

Operating Temperature Range

The operating temperature range for Roller Bearings is −20℃～+120℃. However, the maximum allowable temperature for Roller Bearings for Sheaves is +110℃.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Axial Load Capacity

Axial load capacity is not determined from the basic dynamic load rating based on rolling fatigue, but is determined by the amount of heat generated by sliding contact between the ends of rollers and guide shoulders of the inner and outer rings. It is therefore limited by the load conditions, sliding speeds, lubrication methods, etc.

The axial load capacity of Roller Bearings is obtained from the following equation.

If the axial load increases in comparison with the radial load, it will start to interfere with the smooth rolling motion. The axial load should therefore be within 20% of the radial load.

$$C_A = f_v \, a \, f_A \quad \cdots\cdots (1)$$

where, C_A : Axial load capacity N

f_v : Speed correction factor

f_v is obtained from Fig.2 by calculating the $d_m n$ value.

$d_m n = d_m \times n$

d_m : Mean value of bearing bore and outside diameters mm

$$\left(d_m \fallingdotseq \frac{d + D}{2} \right)$$

n : Rotational speed min^{-1}

When $d_m n \leqq 1000$, $f_v = 1$.

a : Value determined by type of bearing (See Table 5.)

f_A : Axial load capacity factor (See Fig.1.)

Table 5 Value by type of bearing

Type of bearing	a
NAS 50	1
NAG 49	0.78
NAU 49, TRU	0.7

Calculation example

When a roller bearing for sheaves NAS 5016 ZZ NR is run at n = 250 min^{-1} under grease lubrication and subjected to an intermittent axial load, the axial load capacity is calculated as follows.

As the bearing bore diameter is 80 mm, f_A = 18000 is obtained from the axial load capacity line of Fig. 1 (ii).

$a = 1$

$$d_m \fallingdotseq \frac{80 + 125}{2} = 102.5$$

$d_m n$ = 102.5 x 250 ≒ 25600

From Fig. 2, f_v ≒ 0.87

Therefore, the axial load capacity C_A is obtained.

$C_A = f_v \, a \, f_A$ = 0.87 × 1 × 18000 ≒ 15700 N

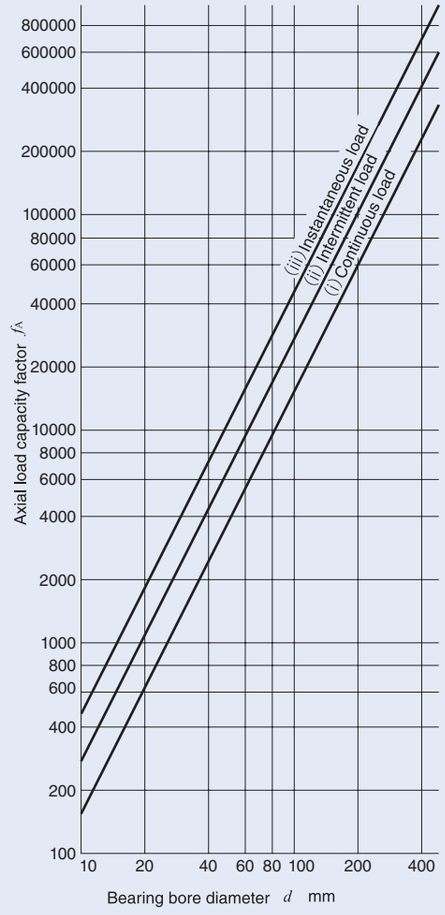


Fig. 1 Axial load capacity factor

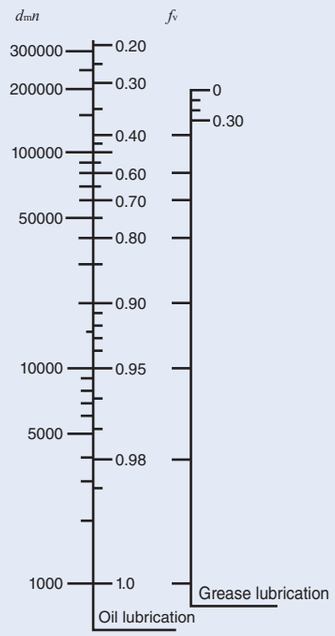


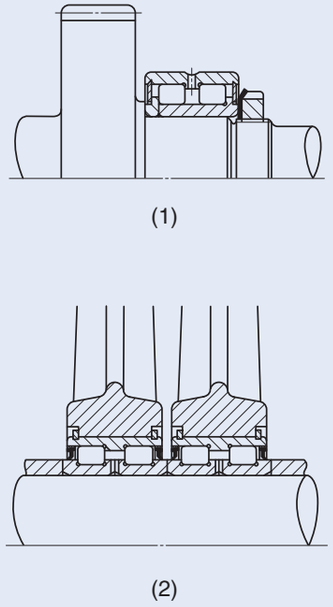
Fig. 2 Speed correction factor

Mounting

Unlike needle roller bearings, Caged and Full Complement Roller Bearings are non-separable.

As shown in Fig. 3 (1), the inner ring should be press-fitted until it makes close contact with the shaft shoulder, and fixed axially with a nut. Dimensions of the shoulders of the shaft and housing should be based on J and E_W shown in the table of dimensions, respectively.

In the case of Roller Bearings for Sheaves, as shown in Fig. 3 (2), the outer ring should be fixed by stop rings after being press-fitted into the sheaves, and the inner ring should be fixed securely in the axial direction.



(1)

(2)

Fig. 3 Mounting examples

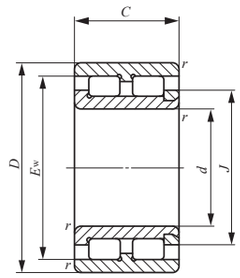
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

ROLLER BEARINGS

Caged Roller Bearings
Full Complement Roller Bearings



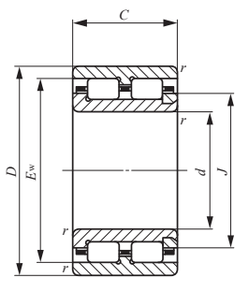




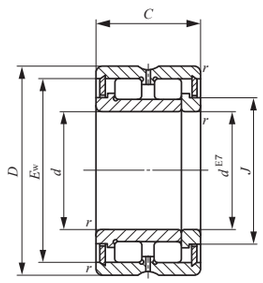
NAG49
($d \leqq 17$)

Shaft dia. 10 — 35mm

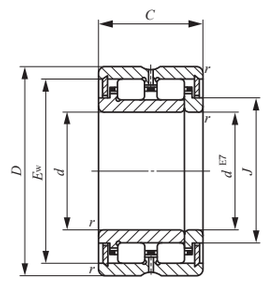
Shaft dia. mm	Identification number: Full complement type	Identification number: Caged type		Mass (Ref.) g	Boundary dimensions mm: d	D	C	$r_{s\,min}$ (1)	J	E_w
10	**NAG 4900**	—	—	25.5	10	22	13	0.3	15.5	18.5
	—	**NAU 4900**	—	24.5	10	22	13	0.3	15.5	18.5
12	**NAG 4901**	—	—	28.5	12	24	13	0.3	17	20
	—	**NAU 4901**	—	27.5	12	24	13	0.3	17	20
15	**NAG 4902**	—	—	38	15	28	13	0.3	21	24
	—	**NAU 4902**	—	36.5	15	28	13	0.3	21	24
	—	—	**TRU 153320**	80.5	15	33	20	0.3	19.5	27
17	**NAG 4903**	—	—	41	17	30	13	0.3	22.5	25.5
	—	**NAU 4903**	—	39.5	17	30	13	0.3	22.5	25.5
	—	—	**TRU 173425**	100	17	34	25	0.3	21.5	29.5
20	**NAG 4904**	—	—	76.5	20	37	17	0.3	24	31.5
	—	**NAU 4904**	—	76	20	37	17	0.3	24	31.5
	—	—	**TRU 203820**	96.5	20	38	20	0.3	25	32.5
	—	—	**TRU 203825**	122	20	38	25	0.3	25	32.5
25	**NAG 4905**	—	—	89.5	25	42	17	0.3	29.5	37
	—	**NAU 4905**	—	89	25	42	17	0.3	29.5	37
	—	—	**TRU 254425**	154	25	44	25	0.3	30.5	38
28	—	—	**TRU 284530**	173	28	45	30	0.3	31.5	39.5
30	**NAG 4906**	—	—	103	30	47	17	0.3	34	41.5
	—	**NAU 4906**	—	102	30	47	17	0.3	34	41.5
	—	—	**TRU 304830**	197	30	48	30	0.3	35	42.5
32	—	—	**TRU 325230**	260	32	52	30	0.6	38	46
35	**NAG 4907**	—	—	172	35	55	20	0.6	40	49
	—	**NAU 4907**	—	168	35	55	20	0.6	40	49
	—	—	**TRU 355630**	270	35	56	30	0.6	40	49



NAU49
($d \leqq 17$)



NAG49



NAU49 TRU

Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
9 650	10 800	17 000
6 580	6 470	30 000
10 300	12 000	15 000
6 950	7 120	25 000
11 800	15 200	12 000
7 950	9 020	20 000
10 400	10 400	20 000
12 300	16 500	11 000
8 240	9 670	19 000
18 000	21 600	18 000
15 600	18 900	9 500
10 700	11 300	16 000
12 100	13 400	16 000
18 700	23 600	16 000
17 500	23 200	7 500
11 900	13 900	13 000
21 000	28 900	13 000
28 700	43 800	12 000
19 400	27 600	6 500
13 000	16 200	12 000
29 400	46 600	11 000
29 800	44 200	10 000
28 700	43 800	5 500
19 500	26 300	10 000
32 200	49 800	10 000

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable. Considering that the axial load acts under practical operating conditions, up to 1/10 of this value is recommended for actual use.

Remarks1. The NAG and NAU series with a bore diameter d of 17 mm or less have no oil hole. In others, the outer ring has an oil groove and two oil holes.
2. No grease is prepacked. Perform proper lubrication.

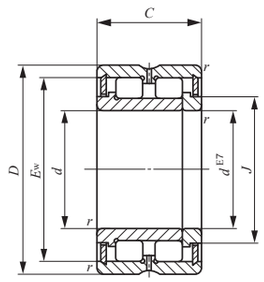
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

ROLLER BEARINGS

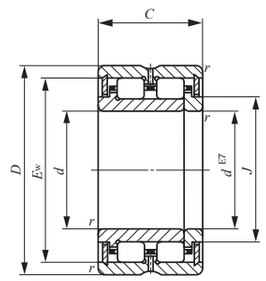
Caged Roller Bearings
Full Complement Roller Bearings







NAG49



NAU49 TRU

E

NAG
NAU
TRU
NAS

Shaft dia. 40 — 80mm

Shaft dia. mm	Identification number: Full complement type	Identification number: Caged type		Mass (Ref.) g	Boundary dimensions mm: d	D	C	$r_{s\,min}$ (1)	J	E_w	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed (2) min⁻¹
40	**NAG 4908**	—	—	225	40	62	22	0.6	46	56	34 600	49 500	5 000
	—	—	**TRU 405930**	265	40	59	30	0.6	45	52.5	34 700	62 500	8 500
	—	**NAU 4908**	—	220	40	62	22	0.6	46	56	23 400	29 400	8 500
42	—	—	**TRU 426230**	290	42	62	30	0.6	48	56.5	34 600	57 800	8 000
45	**NAG 4909**	—	—	265	45	68	22	0.6	51	61	36 400	54 700	4 500
	—	—	**TRU 456430**	295	45	64	30	0.6	50.5	58.5	32 600	59 700	8 000
	—	**NAU 4909**	—	260	45	68	22	0.6	51	61	24 800	32 800	8 000
50	**NAG 4910**	—	—	270	50	72	22	0.6	55.5	65.5	38 200	59 900	4 000
	—	**NAU 4910**	—	265	50	72	22	0.6	55.5	65.5	26 200	36 200	7 000
	—	—	**TRU 507745**	710	50	77	45	1	58	69	75 700	134 000	7 000
55	**NAG 4911**	—	—	395	55	80	25	1	61.5	72.5	48 100	77 700	3 500
	—	**NAU 4911**	—	385	55	80	25	1	61.5	72.5	33 000	47 000	6 500
	—	—	**TRU 558138**	615	55	81	38	1	61.5	72.5	61 400	104 000	6 500
60	**NAG 4912**	—	—	425	60	85	25	1	67	77.5	50 300	84 300	3 500
	—	**NAU 4912**	—	415	60	85	25	1	67	77.5	34 700	51 400	6 000
	—	—	**TRU 608945**	880	60	89	45	1	69.5	81.5	88 100	152 000	6 000
65	**NAG 4913**	—	—	455	65	90	25	1	72	83	53 200	93 000	3 000
	—	**NAU 4913**	—	440	65	90	25	1	72	83	36 900	57 100	5 500
70	**NAG 4914**	—	—	725	70	100	30	1	79	91.5	77 700	139 000	3 000
	—	**NAU 4914**	—	705	70	100	30	1	79	91.5	53 700	84 600	5 000
75	**NAG 4915**	—	—	775	75	105	30	1	83.5	95.5	80 000	146 000	2 500
	—	**NAU 4915**	—	750	75	105	30	1	83.5	95.5	54 800	88 200	5 000
	—	—	**TRU 7510845**	1 240	75	108	45	1	85.5	98.5	103 000	190 000	4 500
80	**NAG 4916**	—	—	815	80	110	30	1	89.5	102	83 000	157 000	2 500
	—	**NAU 4916**	—	790	80	110	30	1	89.5	102	57 200	95 500	4 500

Notes(1) Minimum allowable value of chamfer dimension *r*
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable. Considering that the axial load acts under practical operating conditions, up to 1/10 of this value is recommended for actual use.

Remarks1. The outer ring has an oil groove and two oil holes.
2. No grease is prepacked. Perform proper lubrication.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

ROLLER BEARINGS

Caged Roller Bearings
Full Complement Roller Bearings



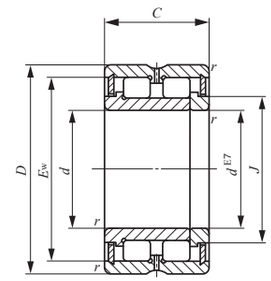


Shaft dia. 85 — 140mm

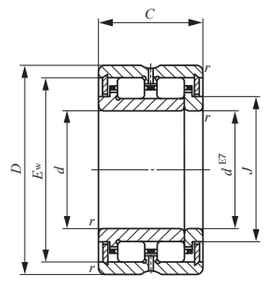
Shaft dia. mm	Identification number: Full complement type	Identification number: Caged type		Mass (Ref.) g	Boundary dimensions mm: d	D	C	$r_{s\,min}$ (1)	J	E_w
85	**NAG 4917**	—	—	1 190	85	120	35	1.5	96	110
	—	—	**TRU 8511850**	1 530	85	118	50	1	94.5	107.5
	—	**NAU 4917**	—	1 150	85	120	35	1.5	96	110
	—	—	**TRU 8512045**	1 500	85	120	45	1.5	96.5	110
90	**NAG 4918**	—	—	1 250	90	125	35	1.5	101	115.5
	—	**NAU 4918**	—	1 210	90	125	35	1.5	101	115.5
	—	—	**TRU 9012550**	1 740	90	125	50	1.5	101	114
95	**NAG 4919**	—	—	1 300	95	130	35	1.5	106	120.5
	—	**NAU 4919**	—	1 270	95	130	35	1.5	106	120.5
100	**NAG 4920**	—	—	1 850	100	140	40	1.5	114.5	129.5
	—	—	**TRU 10013550**	1 900	100	135	50	1.5	112	125.5
	—	**NAU 4920**	—	1 770	100	140	40	1.5	114.5	129.5
105	—	—	**TRU 10515350**	2 890	105	153	50	1.5	120	138
110	**NAG 4922**	—	—	2 010	110	150	40	1.5	123	138.5
	—	**NAU 4922**	—	1 930	110	150	40	1.5	123	138.5
120	**NAG 4924**	—	—	2 780	120	165	45	1.5	136	153.5
	—	**NAU 4924**	—	2 680	120	165	45	1.5	136	153.5
125	—	—	**TRU 12517860**	4 490	125	178	60	1.5	143.5	162
130	**NAG 4926**	—	—	3 750	130	180	50	2	147	165.5
	—	**NAU 4926**	—	3 610	130	180	50	2	147	165.5
135	—	—	**TRU 13518860**	4 790	135	188	60	1.5	154	172.5
140	**NAG 4928**	—	—	3 990	140	190	50	2	157.5	176
	—	**NAU 4928**	—	3 840	140	190	50	2	157.5	176

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable. Considering that the axial load acts under practical operating conditions, up to 1/10 of this value is recommended for actual use.

Remarks1. The outer ring has an oil groove and two oil holes.
2. No grease is prepacked. Perform proper lubrication.



NAG49



NAU49 TRU

Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
111 000	200 000	2 500
114 000	222 000	4 000
75 400	120 000	4 000
110 000	215 000	4 000
114 000	211 000	2 500
79 500	130 000	4 000
119 000	240 000	4 000
117 000	222 000	2 000
81 000	136 000	4 000
152 000	292 000	2 000
124 000	264 000	3 500
106 000	181 000	3 500
159 000	286 000	3 500
161 000	322 000	1 900
113 000	200 000	3 500
208 000	431 000	1 700
146 000	268 000	3 000
211 000	408 000	3 000
240 000	495 000	1 600
166 000	304 000	2 500
220 000	442 000	2 500
249 000	531 000	1 500
174 000	327 000	2 500

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

ROLLER BEARINGS

Caged Roller Bearings With Seal
Full Complement Roller Bearings With Seal



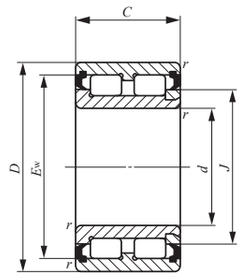


Shaft dia. 10 — 40mm

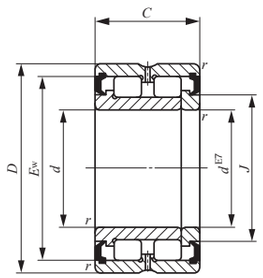
Shaft dia. mm	Identification number: Full complement type	Identification number: Caged type		Mass (Ref.) g	Boundary dimensions mm: d	D	C	$r_{s\,min}$ (1)	J
10	**NAG 4900UU**	—	—	25.5	10	22	13	0.3	15.5
12	**NAG 4901UU**	—	—	28.5	12	24	13	0.3	17
15	**NAG 4902UU**	—	—	38	15	28	13	0.3	21
	—	—	**TRU 153320UU**	80.5	15	33	20	0.3	19.5
17	**NAG 4903UU**	—	—	41	17	30	13	0.3	22.5
	—	—	**TRU 173425UU**	100	17	34	25	0.3	21.5
20	**NAG 4904UU**	—	—	76.5	20	37	17	0.3	24
	—	**NAU 4904UU**	—	76	20	37	17	0.3	24
	—	—	**TRU 203820UU**	96.5	20	38	20	0.3	25
	—	—	**TRU 203825UU**	122	20	38	25	0.3	25
25	**NAG 4905UU**	—	—	89.5	25	42	17	0.3	29.5
	—	**NAU 4905UU**	—	89	25	42	17	0.3	29.5
	—	—	**TRU 254425UU**	154	25	44	25	0.3	30.5
28	—	—	**TRU 284530UU**	173	28	45	30	0.3	31.5
30	**NAG 4906UU**	—	—	103	30	47	17	0.3	34
	—	**NAU 4906UU**	—	102	30	47	17	0.3	34
	—	—	**TRU 304830UU**	197	30	48	30	0.3	35
32	—	—	**TRU 325230UU**	260	32	52	30	0.6	38
35	**NAG 4907UU**	—	—	172	35	55	20	0.6	40
	—	**NAU 4907UU**	—	168	35	55	20	0.6	40
	—	—	**TRU 355630UU**	270	35	56	30	0.6	40
40	**NAG 4908UU**	—	—	225	40	62	22	0.6	46
	—	—	**TRU 405930UU**	265	40	59	30	0.6	45
	—	**NAU 4908UU**	—	220	40	62	22	0.6	46

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to grease lubrication. Considering that the axial load acts under practical operating conditions, up to 1/10 of this value is recommended for actual use.

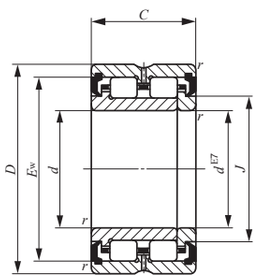
Remarks1. The NAG and NAU series with a bore diameter, d, of 17 mm or less have no oil hole. In others, the outer ring has an oil groove and two oil holes.
2. The bearings with seals are provided with prepacked grease.



NAG49 ··· UU
($d \leqq 17$)



NAG49 ··· UU



NAU49 ··· UU
TRU ··· UU

E_w	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
19.5	9 650	10 800	10 000
21	10 300	12 000	9 000
25	11 800	15 200	7 000
27	10 400	10 400	9 500
26.5	12 300	16 500	6 500
29.5	18 000	21 600	8 500
31.5	15 600	18 900	5 500
31.5	10 700	11 300	8 000
32.5	12 100	13 400	7 500
32.5	18 700	23 600	7 500
37	17 500	23 200	4 500
37	11 900	13 900	6 500
38	21 000	28 900	6 000
39.5	28 700	43 800	6 000
41.5	19 400	27 600	4 000
41.5	13 000	16 200	5 500
42.5	29 400	46 600	5 500
46	29 800	44 200	5 000
49	28 700	43 800	3 500
49	19 500	26 300	4 500
49	32 200	49 800	4 500
56	34 600	49 500	3 000
52.5	34 700	62 500	4 000
56	23 400	29 400	4 000

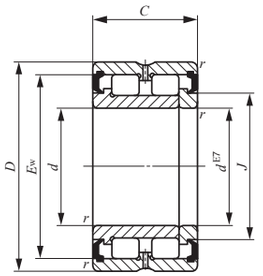
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

ROLLER BEARINGS

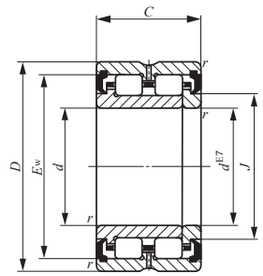
Caged Roller Bearings With Seal
Full Complement Roller Bearings With Seal







NAG49 ··· UU



NAU49 ··· UU
TRU ··· UU

Shaft dia. 42 — 80mm

Shaft dia. mm	Identification number: Full complement type	Identification number: Caged type		Mass (Ref.) g	Boundary dimensions mm: d	D	C	$r_{s\,min}$ (1)	J	E_w	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
42	—	—	**TRU 426230UU**	290	42	62	30	0.6	48	56.5	34 600	57 800	4 000
45	**NAG 4909UU**	—	—	265	45	68	22	0.6	51	61	36 400	54 700	2 500
	—	—	**TRU 456430UU**	295	45	64	30	0.6	50.5	58.5	32 600	59 700	3 500
	—	**NAU 4909UU**	—	260	45	68	22	0.6	51	61	24 800	32 800	3 500
50	**NAG 4910UU**	—	—	270	50	72	22	0.6	55.5	65.5	38 200	59 900	2 500
	—	**NAU 4910UU**	—	265	50	72	22	0.6	55.5	65.5	26 200	36 200	3 500
	—	—	**TRU 507745UU**	710	50	77	45	1	58	69	75 700	134 000	3 500
55	**NAG 4911UU**	—	—	395	55	80	25	1	61.5	72.5	48 100	77 700	2 000
	—	**NAU 4911UU**	—	385	55	80	25	1	61.5	72.5	33 000	47 000	3 000
	—	—	**TRU 558138UU**	615	55	81	38	1	61.5	72.5	61 400	104 000	3 000
60	**NAG 4912UU**	—	—	425	60	85	25	1	67	77.5	50 300	84 300	2 000
	—	**NAU 4912UU**	—	415	60	85	25	1	67	77.5	34 700	51 400	3 000
	—	—	**TRU 608945UU**	880	60	89	45	1	69.5	81.5	88 100	152 000	3 000
65	**NAG 4913UU**	—	—	455	65	90	25	1	72	83	53 200	93 000	1 900
	—	**NAU 4913UU**	—	440	65	90	25	1	72	83	36 900	57 100	2 500
70	**NAG 4914UU**	—	—	725	70	100	30	1	79	91.5	77 700	139 000	1 800
	—	**NAU 4914UU**	—	705	70	100	30	1	79	91.5	53 700	84 600	2 500
75	**NAG 4915UU**	—	—	775	75	105	30	1	83.5	95.5	80 000	146 000	1 700
	—	**NAU 4915UU**	—	750	75	105	30	1	83.5	95.5	54 800	88 200	2 500
	—	—	**TRU 7510845UU**	1 240	75	108	45	1	85.5	98.5	103 000	190 000	2 000
80	**NAG 4916UU**	—	—	815	80	110	30	1	89.5	102	83 000	157 000	1 600
	—	**NAU 4916UU**	—	790	80	110	30	1	89.5	102	57 200	95 500	2 000

Notes(1) Minimum allowable value of chamfer dimension r.
(2) Allowable rotational speed applies to grease lubrication. Considering that the axial load acts under practical operating conditions, up to 1/10 of this value is recommended for actual use.

Remarks1. The outer ring has an oil groove and two oil holes.
2. The bearings with seals are provided with prepacked grease.

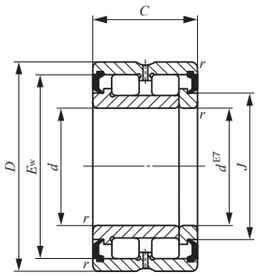
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

ROLLER BEARINGS

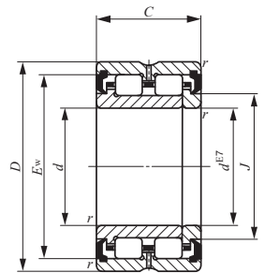
Caged Roller Bearings With Seal
Full Complement Roller Bearings With Seal







NAG49 ··· UU



NAU49 ··· UU
TRU ··· UU

Shaft dia. 85 — 140mm

Shaft dia. mm	Identification number: Full complement type	Identification number: Caged type		Mass (Ref.) g	Boundary dimensions mm: d	D	C	$r_{s\,min}$ (1)	J	E_w	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
85	**NAG 4917UU**	—	—	1 190	85	120	35	1.5	96	110	111 000	200 000	1 500
	—	—	**TRU 8511850UU**	1 530	85	118	50	1	94.5	107.5	114 000	222 000	2 000
	—	**NAU 4917UU**	—	1 150	85	120	35	1.5	96	110	75 400	120 000	2 000
	—	—	**TRU 8512045UU**	1 500	85	120	45	1.5	96.5	110	110 000	215 000	2 000
90	**NAG 4918UU**	—	—	1 250	90	125	35	1.5	101	115.5	114 000	211 000	1 400
	—	**NAU 4918UU**	—	1 210	90	125	35	1.5	101	115.5	79 500	130 000	1 900
	—	—	**TRU 9012550UU**	1 740	90	125	50	1.5	101	114	119 000	240 000	1 900
95	**NAG 4919UU**	—	—	1 300	95	130	35	1.5	106	120.5	117 000	222 000	1 300
	—	**NAU 4919UU**	—	1 270	95	130	35	1.5	106	120.5	81 000	136 000	1 800
100	**NAG 4920UU**	—	—	1 850	100	140	40	1.5	114.5	129.5	152 000	292 000	1 200
	—	—	**TRU 10013550UU**	1 900	100	135	50	1.5	112	125.5	124 000	264 000	1 700
	—	**NAU 4920UU**	—	1 770	100	140	40	1.5	114.5	129.5	106 000	181 000	1 700
105	—	—	**TRU 10515350UU**	2 890	105	153	50	1.5	120	138	159 000	286 000	1 600
110	**NAG 4922UU**	—	—	2 010	110	150	40	1.5	123	138.5	161 000	322 000	1 100
	—	**NAU 4922UU**	—	1 930	110	150	40	1.5	123	138.5	113 000	200 000	1 600
120	**NAG 4924UU**	—	—	2 780	120	165	45	1.5	136	153.5	208 000	431 000	1 000
	—	**NAU 4924UU**	—	2 680	120	165	45	1.5	136	153.5	146 000	268 000	1 400
125	—	—	**TRU 12517860UU**	4 490	125	178	60	1.5	143.5	162	211 000	408 000	1 400
130	**NAG 4926UU**	—	—	3 750	130	180	50	2	147	165.5	240 000	495 000	950
	—	**NAU 4926UU**	—	3 610	130	180	50	2	147	165.5	166 000	304 000	1 300
135	—	—	**TRU 13518860UU**	4 790	135	188	60	1.5	154	172.5	220 000	442 000	1 300
140	**NAG 4928UU**	—	—	3 990	140	190	50	2	157.5	176	249 000	531 000	900
	—	**NAU 4928UU**	—	3 840	140	190	50	2	157.5	176	174 000	327 000	1 200

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to grease lubrication. Considering that the axial load acts under practical operating conditions, up to 1/10 of this value is recommended for actual use.

Remarks1. The outer ring has an oil groove and two oil holes.
2. The bearings with seals are provided with prepacked grease.

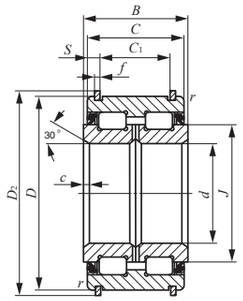
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

ROLLER BEARINGS

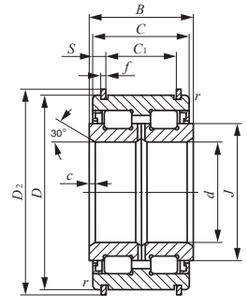
Roller Bearings for Sheaves







NAS50 ··· UUNR



NAS50 ··· ZZNR

Shaft dia. 40 — 170mm

Shaft dia. mm	Identification number		Mass (Ref.)	Boundary dimensions mm						
	Sealed type	Shield type	kg	d	D	D_2	B	C	C_1	S
40	**NAS 5008UUNR**	**NAS 5008ZZNR**	0.55	40	68	71.8	38	37	28	4.5
45	**NAS 5009UUNR**	**NAS 5009ZZNR**	0.70	45	75	78.8	40	39	30	4.5
50	**NAS 5010UUNR**	**NAS 5010ZZNR**	0.75	50	80	83.8	40	39	30	4.5
55	**NAS 5011UUNR**	**NAS 5011ZZNR**	1.15	55	90	94.8	46	45	34	5.5
60	**NAS 5012UUNR**	**NAS 5012ZZNR**	1.20	60	95	99.8	46	45	34	5.5
65	**NAS 5013UUNR**	**NAS 5013ZZNR**	1.30	65	100	104.8	46	45	34	5.5
70	**NAS 5014UUNR**	**NAS 5014ZZNR**	1.90	70	110	114.5	54	53	42	5.5
75	**NAS 5015UUNR**	**NAS 5015ZZNR**	2.00	75	115	119.5	54	53	42	5.5
80	**NAS 5016UUNR**	**NAS 5016ZZNR**	2.65	80	125	129.5	60	59	48	5.5
85	**NAS 5017UUNR**	**NAS 5017ZZNR**	2.80	85	130	134.5	60	59	48	5.5
90	**NAS 5018UUNR**	**NAS 5018ZZNR**	3.70	90	140	145.4	67	66	54	6
95	**NAS 5019UUNR**	**NAS 5019ZZNR**	3.90	95	145	150.4	67	66	54	6
100	**NAS 5020UUNR**	**NAS 5020ZZNR**	4.05	100	150	155.4	67	66	54	6
110	**NAS 5022UUNR**	**NAS 5022ZZNR**	6.50	110	170	175.4	80	79	65	7
120	**NAS 5024UUNR**	**NAS 5024ZZNR**	6.95	120	180	188.4	80	79	65	7
130	**NAS 5026UUNR**	**NAS 5026ZZNR**	10.5	130	200	208.4	95	94	77	8.5
140	**NAS 5028UUNR**	**NAS 5028ZZNR**	11.0	140	210	218.4	95	94	77	8.5
150	**NAS 5030UUNR**	**NAS 5030ZZNR**	13.5	150	225	233.4	100	99	81	9
160	**NAS 5032UUNR**	**NAS 5032ZZNR**	16.5	160	240	248.4	109	108	89	9.5
170	**NAS 5034UUNR**	**NAS 5034ZZNR**	22.5	170	260	270	122	121	99	11

f	c	$r_{s\,min}$ (1)	J	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
2	1.5	0.6	50	79 500	116 000	2 500
2	1.5	0.6	56	95 500	144 000	2 000
2	1.5	0.6	61	100 000	158 000	2 000
2.5	2	0.6	68	118 000	193 000	1 800
2.5	2	0.6	73	123 000	208 000	1 700
2.5	2	0.6	78	128 000	224 000	1 600
2.5	2	0.6	84	171 000	284 000	1 400
2.5	2	0.6	91	179 000	308 000	1 300
2.5	2	0.6	97	251 000	428 000	1 300
2.5	2	0.6	101	257 000	446 000	1 200
2.5	2.5	0.6	110	305 000	540 000	1 100
2.5	2.5	0.6	114	312 000	562 000	1 100
2.5	2.5	0.6	118	318 000	584 000	1 000
2.5	3	1	130	384 000	697 000	900
3	3	1	139.5	400 000	750 000	850
3	3	1	156	537 000	1 000 000	750
3	3	1	167	543 000	1 070 000	700
3	3.5	1	176.5	623 000	1 210 000	650
3	3.5	1.5	188.5	720 000	1 390 000	650
4	3.5	1.5	204.5	857 000	1 730 000	600

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to grease lubrication. Considering that the axial load acts under practical operating conditions, up to 1/10 of this value is recommended for actual use.

Remarks1. The inner ring has an oil groove and two oil holes.
2. Roller Bearings for Sheaves are provided with prepacked grease.

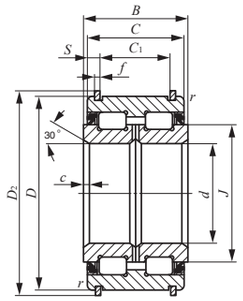
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

ROLLER BEARINGS

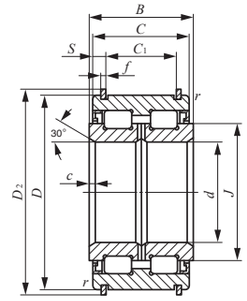
Roller Bearings for Sheaves







NAS50 ··· UUNR



NAS50 ··· ZZNR

Shaft dia. 180 — 280mm

Shaft dia. mm	Identification number Sealed type	Identification number Shield type	Mass (Ref.) kg	Boundary dimensions mm d	D	D_2	B	C	C_1	S
180	**NAS 5036UUNR**	**NAS 5036ZZNR**	30.0	180	280	294	136	135	110	12.5
190	**NAS 5038UUNR**	**NAS 5038ZZNR**	31.5	190	290	306	136	135	110	12.5
200	**NAS 5040UUNR**	**NAS 5040ZZNR**	40.5	200	310	326	150	149	120	14.5
220	**NAS 5044UUNR**	**NAS 5044ZZNR**	52.0	220	340	356	160	159	130	14.5
240	**NAS 5048UUNR**	**NAS 5048ZZNR**	55.5	240	360	376	160	159	130	14.5
260	**NAS 5052UUNR**	**NAS 5052ZZNR**	85.0	260	400	416	190	189	154	17.5
280	**NAS 5056UUNR**	**NAS 5056ZZNR**	90.9	280	420	440	190	189	154	17.5

f	c	$r_{s\,min}$ (1)	J	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
5	3.5	1.5	217	1 070 000	2 140 000	550
5	3.5	1.5	225	1 120 000	2 230 000	500
5	3.5	1.5	242	1 310 000	2 650 000	500
6	4	1.5	260	1 510 000	3 110 000	450
6	4	1.5	278.5	1 570 000	3 350 000	400
7	5	2	312	2 130 000	4 510 000	350
7	5	2	335	2 210 000	4 860 000	350

Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to grease lubrication. Considering that the axial load acts under practical operating conditions, up to 1/10 of this value is recommended for actual use.

Remarks1. The inner ring has an oil groove and two oil holes.
2. Roller Bearings for Sheaves are provided with prepacked grease.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

THRUST BEARINGS

●Thrust Needle Roller Bearings
●Thrust Roller Bearings

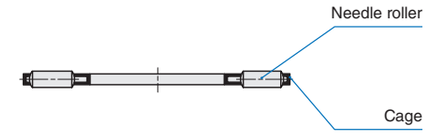


Structure and Features

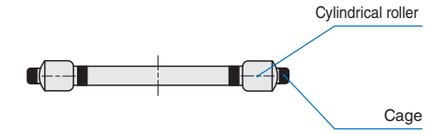
IKO Thrust Bearings consist of a precisely made cage and rollers. They have high rigidity and high load capacities and can be used in small spaces.
Thrust Needle Roller Bearings incorporate needle rollers, while Thrust Roller Bearings incorporate cylindrical rollers. Various types of raceway rings are available, and suitable bearings can be selected according to the operating conditions.
When the bearing mounting surfaces of a machine are heat-treated and finished by grinding as raceways, Thrust Bearings can be used without raceway rings allowing the machine to be made more compact. They are most suited to applications where high accuracy is required at high speeds and under fluctuating heavy loads, such as driving mechanisms for automobiles, machine tools, and high-pressure pumps.

Structures of Thrust Bearings

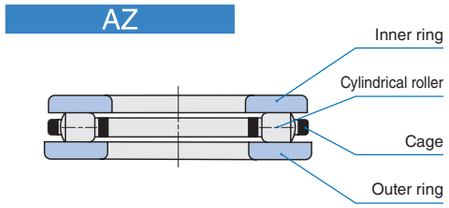
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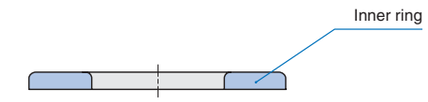
AZK



AZ



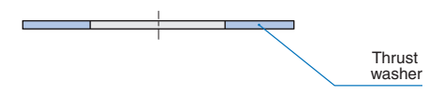
WS



GS



AS



Types

In IKO Thrust Bearings, the types shown in Table 1 are available.

Table 1.1 Type of bearing

Type	Thrust needle roller bearings	Thrust roller bearings	
		Without inner and outer rings	With inner and outer rings(1)
Model code	NTB	AZK	AZ

Table 1.2 Type of bearing ring

Type	Inner ring	Outer ring	Thrust washer
Model code	WS	GS	AS

Note(1) For the Thrust Bearings with inner/outer rings, the thrust bearings and inner/outer rings will be delivered separately. Please contact IKO if in need of delivery as an integrated product.

Thrust Needle Roller Bearings

These bearings consist of a cage made from a steel plate, which is precisely press formed and surface-hardened, and needle rollers with a diameter variation within 2 μ m. They have a rigid structure and a high lubricant-retaining capacity.

As they have the lowest sectional height compared with other thrust bearings, they can be used instead of conventional thrust washers and can withstand high-speed rotations with a low coefficient of friction.

Specially designed thin inner rings (WS) and outer rings (GS), and especially thin (1 mm thick) thrust washers (AS), are available for use in various applications.

These bearings are generally used by utilizing their inner surface as the guide surface.

Thrust Roller Bearings

In this series, the caged cylindrical rollers AZK and the complete bearings AZ in which AZK are combined with an inner ring (WS) and an outer ring (GS) are available.

The cage has a special precise structure which is highly rigid, and cylindrical rollers are outwardly arranged and guided by the cage with exact precision to enable them to withstand heavy loads even at high rotational speeds.

Owing to the high accuracy of the bearing height T, they are suitable for use in machine tools, ultra-high pressure pumps, etc.

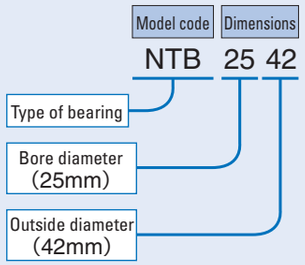
These bearings are generally used by utilizing their inner surface as the guide surface.

Identification Number

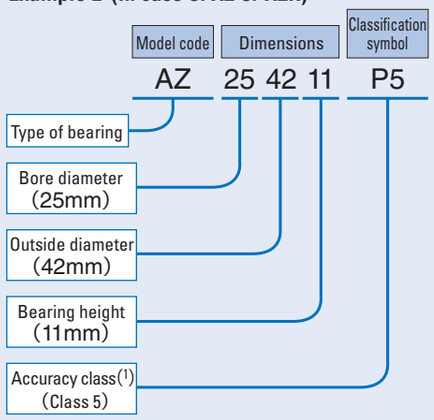
The identification number of Thrust Bearings consists of a model code, dimensions and a classification symbol. Some examples are shown below.

Examples of identification number

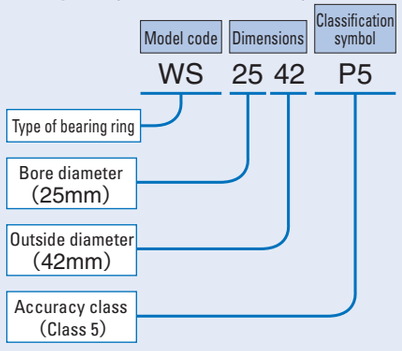
Example 1 (In case of NTB or AS)



Example 2 (In case of AZ or AZK)



Example 3 (In case of WS or GS)



Note(1) Not applicable to the model AZK.

Accuracy

The accuracy of Thrust Bearings is based on JIS B 1514-2, -3 as shown in Table 2.

Table 2.1 Tolerances unit: μ m

Type of bearing	Item	Dimension	Dimension symbol	Tolerance	
Thrust needle roller bearings	NTB	Bore diameter	d	E11	
		Outside diameter	D	c12	
		Width	D_w	Equivalent to JIS B 1506 Class 2	
Thrust roller bearings	AZK	Bore diameter	d_c	As per Table 2.2	
		Outside diameter	D_c		
		Width	D_w	$1 \leqq D_w \leqq 10$	Equivalent to JIS B 1506 Class 2
				$10 < D_w \leqq 30$	Equivalent to JIS B 1506 Class 3
	AZ	Height	T	As per Table 2.3	
Inner rings	WS	Bore diameter	d	As per Table 2.4	
		Outside diameter	D	b12	
		Width	B	h11	
Outer rings	GS	Bore diameter	d	B12	
		Outside diameter	D	As per Table 2.4	
		Width	B	h11	
Thrust washers	AS	Bore diameter	d	E12	
		Outside diameter	D	e12	
		Width	s	± 50	

Table 2.2 Tolerances of bore and outside diameters for AZK series unit: μ m

Nominal dimension mm		Δ_{dc} Cage bore diameter deviation		Δ_{Dc} Cage outside diameter deviation	
Over	Incl.	High	Low	High	Low
—	50	+ 100	0	0	− 300
50	100	+ 200	0	0	− 400
100	200	+ 300	0	0	− 500
200	300	+ 500	0	0	− 700
300	400	+ 700	0	0	− 1000
400	500	—	—	0	− 1200

Table 2.3 Tolerances of height for AZ series unit: μ m

d Nominal bearing bore dia. mm		Δ_{Ts} Deviation of an actual bearing height	
Over	Incl.	High	Low
—	18	0	− 75
18	30	0	− 75
30	50	0	− 100
50	80	0	− 125
80	120	0	− 150
120	180	0	− 175
180	250	0	− 200
250	315	0	− 225
315	400	0	− 300
400	500	0	− 400

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

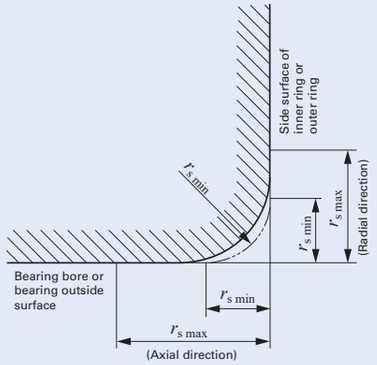
Table 2.4 Tolerances and allowable values for WS and GS

unit: μm

d or D (1) Nominal bearing bore dia. or outside dia. mm		Inner ring			Outer ring			Inner ring or outer ring		
		Δ_{dmp} Single plane mean bore diameter deviation		V_{dsp} Bore diameter variation in a single radial plane	Δ_{Dmp} Single plane mean outside diameter deviation		V_{Dsp} Outside diameter variation in a single radial plane	S_i or S_e (2) Bearing ring thickness variation		
								Class 0	Class 6	Class 5
Over	Incl.	High	Low	Max.	High	Low	Max.	Max.		
—	18	0	− 8	6	0	− 11	8	10	5	3
18	30	0	− 10	8	0	− 13	10	10	5	3
30	50	0	− 12	9	0	− 16	12	10	6	3
50	80	0	− 15	11	0	− 19	14	10	7	4
80	120	0	− 20	15	0	− 22	17	15	8	4
120	180	0	− 25	19	0	− 25	19	15	9	5
180	250	0	− 30	23	0	− 30	23	20	10	5
250	315	0	− 35	26	0	− 35	26	25	13	7
315	400	0	− 40	30	0	− 40	30	30	15	7
400	500	0	− 45	34	0	− 45	34	30	18	9

Notes(1) d for Δ_{dmp} and V_{dp}, and D for Δ_{Dmp} and V_{Dp}, respectively.
d for thickness variations of inner and outer rings .
(2) d_i for thickness variations of rings for NAX(I) and NBX(I) .

Table 2.5 Permissible limit values for chamfer dimension



unit: mm

$r_{s\,min}$	Radial and axial directions $r_{s\,max}$
0.3	0.8
0.6	1.5
1	2.2
1.1	2.7
1.5	3.5
2	4
2.1	4.5
3	5.5
4	6.5
5	8

Fit

The recommended fits for Thrust Bearings are shown in Table 3.

Table 3 Recommended fits

Type of bearing		Tolerance class	
		Shaft	Housing bore
Thrust needle roller bearings	NTB	h8	——
Thrust roller bearings	AZK	h6	——
	AZ		H7
Inner rings	WS	h6	——
Outer rings	GS	——	H7
Thrust washers	AS	h8	——

Mounting

When mounting Thrust Bearings, the following items should be considered.

❶When inner and outer rings are not used, the hardness of the raceway surfaces should be 58 ～ 64HRC, the effective hardening depth should be adequate, and the surface roughness should be less than 0.2 μmR_a.

❷When mounting inner and outer rings to shaft and housing bore, dimensions related to mounting should be based on the dimension tables.
Also, the mounting surfaces should be finished at right angles to the center axis and they should be sufficiently rigid.

❸To avoid elastic deformation, the thrust washer AS must be seated uniformly on its mating surface.
A small warp in an AS washer will be corrected automatically when an axial load is applied.

❹Thrust Roller Bearings are combinations of a copper alloy component and cylindrical rollers. When handling the AZK itself, care should be taken to prevent deformations, blemishes, etc.

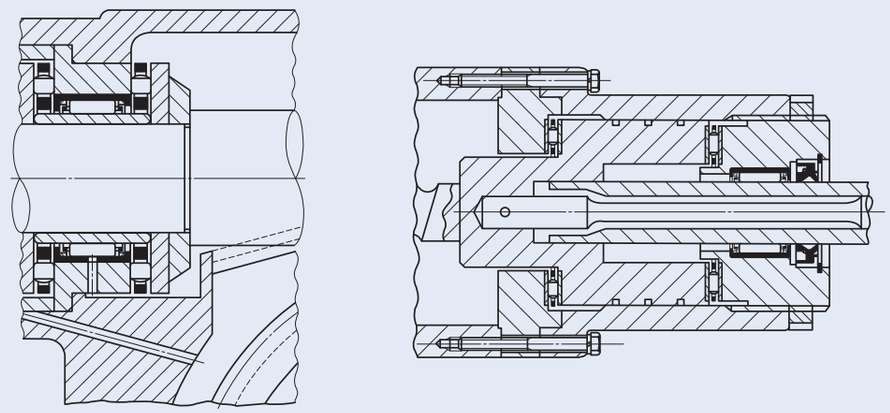


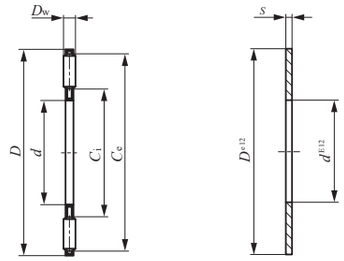
Fig.1 Mounting examples

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

THRUST BEARINGS

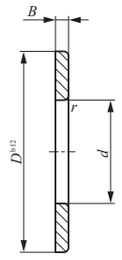
Thrust Needle Roller Bearings



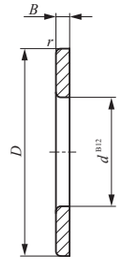


NTB

AS



WS



GS

Shaft dia. 10 — 85mm

Shaft dia. mm	Identification number: Thrust needle roller bearing	Mass (Ref.) g	Thrust washer	Mass (Ref.) g	Inner ring	Outer ring	Mass (Ref.) g
10	NTB 1024	3.3	AS 1024	2.9	WS 1024	GS 1024	8
12	NTB 1226	3.8	AS 1226	3.2	WS 1226	GS 1226	8.9
15	NTB 1528	4.1	AS 1528	3.4	WS 1528	GS 1528	9.3
16	NTB 1629	4.3	AS 1629	3.6	WS 1629	GS 1629	9.8
17	NTB 1730	4.5	AS 1730	3.7	WS 1730	GS 1730	10.2
18	NTB 1831	4.7	AS 1831	3.9	WS 1831	GS 1831	10.7
20	NTB 2035	6.1	AS 2035	5	WS 2035	GS 2035	13.8
25	NTB 2542	8.2	AS 2542	6.9	WS 2542	GS 2542	21
30	NTB 3047	9.4	AS 3047	7.9	WS 3047	GS 3047	24
35	NTB 3552	10.6	AS 3552	8.9	WS 3552	GS 3552	31.5
40	NTB 40603	22	AS 4060	12.1	WS 4060	GS 4060	42.5
45	NTB 4565	24.5	AS 4565	13.3	WS 4565	GS 4565	53.5
50	NTB 5070	26.5	AS 5070	14.5	WS 5070	GS 5070	58.5
55	NTB 5578	33.5	AS 5578	18.5	WS 5578	GS 5578	93
60	NTB 6085	38.5	AS 6085	22	WS 6085	GS 6085	105
65	NTB 6590	41.5	AS 6590	23.5	WS 6590	GS 6590	124
70	NTB 7095	61	AS 7095	25	WS 7095	GS 7095	132
75	NTB 75100	65	AS 75100	26.5	WS 75100	GS 75100	153
80	NTB 80105	68.5	AS 80105	28	WS 80105	GS 80105	162
85	NTB 85110	72	AS 85110	29.5	WS 85110	GS 85110	170

Boundary dimensions mm d	D	D_w	s	B	$r_{s\,min}$ (1)	C_i	C_e	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
10	24	2	1	2.75	0.3	14	22	7 820	23 900	15 000
12	26	2	1	2.75	0.3	16	24	8 340	26 900	13 000
15	28	2	1	2.75	0.3	18	26	8 830	29 900	12 000
16	29	2	1	2.75	0.3	19	27	9 070	31 400	11 000
17	30	2	1	2.75	0.3	20	28	9 320	32 900	11 000
18	31	2	1	2.75	0.3	21	29	9 550	34 400	10 000
20	35	2	1	2.75	0.3	23	33	11 700	46 500	9 000
25	42	2	1	3	0.6	29	40	14 400	64 700	7 500
30	47	2	1	3	0.6	34	45	15 400	73 300	6 500
35	52	2	1	3.5	0.6	39	50	16 300	81 900	5 500
40	60	3	1	3.5	0.6	45	57	24 200	108 000	5 000
45	65	3	1	4	0.6	50	62	25 900	121 000	4 500
50	70	3	1	4	0.6	55	67	27 600	135 000	4 000
55	78	3	1	5	0.6	61	75	32 400	171 000	4 000
60	85	3	1	4.75	1	66	82	38 200	219 000	3 500
65	90	3	1	5.25	1	71	87	40 100	237 000	3 000
70	95	4	1	5.25	1	75	91	47 400	244 000	3 000
75	100	4	1	5.75	1	80	96	48 400	256 000	3 000
80	105	4	1	5.75	1	85	101	49 500	267 000	2 500
85	110	4	1	5.75	1	90	106	50 300	279 000	2 500

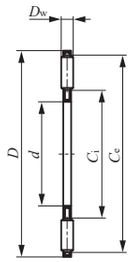
Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 25% of this value is allowable.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

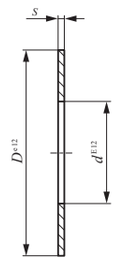
THRUST BEARINGS

Thrust Needle Roller Bearings

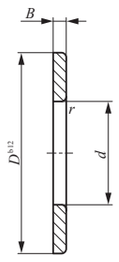




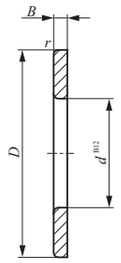
NTB



AS



WS



GS

Shaft dia. 90 — 130mm

Shaft dia. mm	Identification number: Thrust needle roller bearing	Mass (Ref.) g	Thrust washer	Mass (Ref.) g	Inner ring	Outer ring	Mass (Ref.) g
90	**NTB 90120**	92	**AS 90120**	38	**WS 90120**	**GS 90120**	250
100	**NTB 100135**	119	**AS 100135**	50	**WS 100135**	**GS 100135**	350
110	**NTB 110145**	129	—	—	**WS 110145**	**GS 110145**	380
120	**NTB 120155**	139	—	—	**WS 120155**	**GS 120155**	410
130	**NTB 130170**	225	—	—	**WS 130170**	**GS 130170**	660

Boundary dimensions mm d	D	D_w	s	B	$r_{s\,min}$ (1)	C_i	C_e	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed (2) min^{-1}
90	120	4	1	6.5	1	96	116	64 500	394 000	2 500
100	135	4	1	7	1	107	131	80 300	541 000	2 000
110	145	4	—	7	1	117	141	83 200	578 000	2 000
120	155	4	—	7	1	127	151	87 900	634 000	1 800
130	170	5	—	9	1	137	165	120 000	839 000	1 700

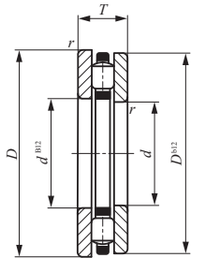
Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 25% of this value is allowable.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

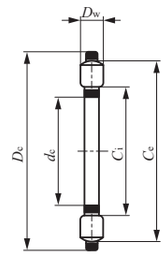
THRUST BEARINGS

Thrust Roller Bearings

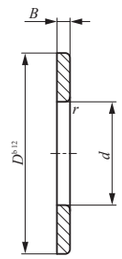




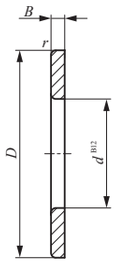
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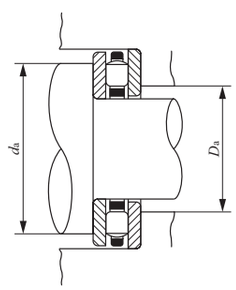
AZK



WS



GS



Shaft dia. 10 — 65mm

Shaft dia. mm	Identification number: Thrust roller bearing	Mass (Ref.) g	Thrust roller bearing	Mass (Ref.) g	Inner ring	Outer ring	Mass (Ref.) g
10	AZ 10249	24.6	AZK 10243.5	8.6	WS 1024	GS 1024	8
12	AZ 12269	26.5	AZK 12263.5	8.7	WS 1226	GS 1226	8.9
15	AZ 15289	28	AZK 15283.5	9.4	WS 1528	GS 1528	9.3
17	AZ 17309	30.5	AZK 17303.5	10.1	WS 1730	GS 1730	10.2
20	AZ 203510	45.5	AZK 20354.5	17.9	WS 2035	GS 2035	13.8
25	AZ 254211	70	AZK 25425	28	WS 2542	GS 2542	21
30	AZ 304711	79	AZK 30475	31	WS 3047	GS 3047	24
	AZ 305216	160	AZK 30527.5	70	WS 3052	GS 3052	45
35	AZ 355212	99	AZK 35525	36	WS 3552	GS 3552	31.5
	AZ 356218	260	AZK 35627.5	98	WS 3562	GS 3562	81
40	AZ 406013	139	AZK 40606	54	WS 4060	GS 4060	42.5
	AZ 406819	310	AZK 40689	132	WS 4068	GS 4068	89
45	AZ 456514	169	AZK 45656	62	WS 4565	GS 4565	53.5
	AZ 457320	360	AZK 45739	144	WS 4573	GS 4573	108
50	AZ 507014	185	AZK 50706	68	WS 5070	GS 5070	58.5
	AZ 507822	430	AZK 507811	194	WS 5078	GS 5078	118
55	AZ 557816	275	AZK 55786	89	WS 5578	GS 5578	93
	AZ 559025	725	AZK 559011	275	WS 5590	GS 5590	225
60	AZ 608517	345	AZK 60857.5	135	WS 6085	GS 6085	105
	AZ 609526	770	AZK 609511	290	WS 6095	GS 6095	240
	AZ 6013026	2 090	AZK 6013010	790	WS 60130	GS 60130	650
65	AZ 659018	380	AZK 65907.5	132	WS 6590	GS 6590	124
	AZ 6510027	860	AZK 6510011	310	WS 65100	GS 65100	275

Boundary dimensions mm d	D	T	d_c	D_c	D_w	B	$r_{s\,min}$ (1)	C_i	C_e	Standard mounting dimensions mm d_a Min.	D_a Max.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(2) min^{-1}
10	24	9	10.04	23.6	3.5	2.75	0.3	13	21	21	13	8 990	19 100	18 000
12	26	9	12.04	25.6	3.5	2.75	0.3	15	23	23	16	10 400	23 900	16 000
15	28	9	15.04	27.6	3.5	2.75	0.3	17	25	25	18	10 200	23 900	14 000
17	30	9	17.04	29.6	3.5	2.75	0.3	19	27	27	20	11 400	28 600	13 000
20	35	10	20.04	34.6	4.5	2.75	0.3	22	33	33	23	19 000	48 700	11 000
25	42	11	25.05	41.6	5	3	0.6	28	39	39	28	22 700	60 700	9 000
30	47	11	30.05	46.5	5	3	0.6	33	44	44	33	27 400	81 000	8 000
30	52	16	30.05	51.5	7.5	4.25	0.6	35	49	48	36	38 400	95 700	7 500
35	52	12	35.05	51.5	5	3.5	0.6	38	49	49	39	29 100	91 100	7 000
35	62	18	35.05	61.5	7.5	5.25	1	42	58	57	43	47 900	135 000	6 500
40	60	13	40.05	59.5	6	3.5	0.6	44	57	57	44	41 700	133 000	6 000
40	68	19	40.05	67.5	9	5	1	45	64	64	46	68 700	195 000	5 500
45	65	14	45.05	64.5	6	4	0.6	49	62	62	49	40 800	133 000	5 500
45	73	20	45.05	72.5	9	5.5	1	50	69	69	51	75 700	227 000	5 000
50	70	14	50.05	69.5	6	4	0.6	54	67	67	54	43 300	148 000	5 000
50	78	22	50.05	77.5	11	5.5	1	55	74	73	56	84 300	232 000	4 500
55	78	16	55.05	77.5	6	5	0.6	59	75	75	60	51 700	192 000	4 500
55	90	25	55.05	89.5	11	7	1	63	85	84	63	108 000	332 000	4 000
60	85	17	60.05	84.5	7.5	4.75	1	65	81	81	66	64 600	224 000	4 000
60	95	26	60.05	94.5	11	7.5	1	68	90	89	68	106 000	332 000	4 000
60	130	26	60.05	129.5	10	8	1.5	79	119	119	80	158 000	634 000	3 000
65	90	18	65.05	89.5	7.5	5.25	1	70	86	86	71	68 300	247 000	4 000
65	100	27	65.05	99.5	11	8	1	73	95	94	73	116 000	379 000	3 500

Notes(1) Minimum allowable value of chamfer dimension r

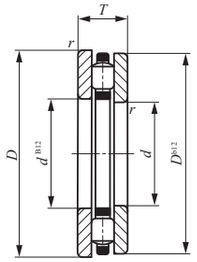
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 25% of this value is allowable.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

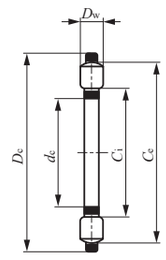
THRUST BEARINGS

Thrust Roller Bearings

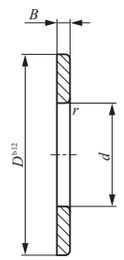




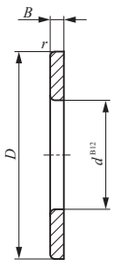
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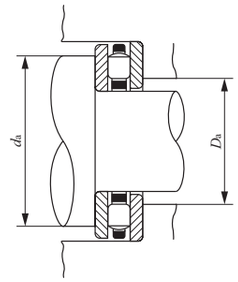
AZK



WS



GS



Shaft dia. 70 — 130mm

Shaft dia. mm	Identification number: Thrust roller bearing	Mass (Ref.) g	Thrust roller bearing	Mass (Ref.) g	Inner ring	Outer ring	Mass (Ref.) g
70	AZ 709518	420	AZK 70957.5	156	WS 7095	GS 7095	132
	AZ 7010527	905	AZK 7010511	325	WS 70105	GS 70105	290
	AZ 7014026	2 250	AZK 7014010	890	WS 70140	GS 70140	680
75	AZ 7510019	465	AZK 751007.5	159	WS 75100	GS 75100	153
	AZ 7511027	960	AZK 7511011	340	WS 75110	GS 75110	310
80	AZ 8010519	495	AZK 801057.5	171	WS 80105	GS 80105	162
	AZ 8011528	1 060	AZK 8011511	370	WS 80115	GS 80115	345
	AZ 8015026	2 500	AZK 8015010	920	WS 80150	GS 80150	790
85	AZ 8511019	530	AZK 851107.5	190	WS 85110	GS 85110	170
	AZ 8512531	1 460	AZK 8512512	510	WS 85125	GS 85125	475
90	AZ 9012022	790	AZK 901209	290	WS 90120	GS 90120	250
	AZ 9013535	2 040	AZK 9013514	750	WS 90135	GS 90135	645
	AZ 9016026	2 710	AZK 9016010	1 000	WS 90160	GS 90160	855
100	AZ 10013525	1 190	AZK 10013511	490	WS 100135	GS 100135	350
	AZ 10015038	2 720	AZK 10015015	980	WS 100150	GS 100150	870
	AZ 10019039	5 960	AZK 10019015	2 120	WS 100190	GS 100190	1 920
110	AZ 11014525	1 350	AZK 11014511	590	WS 110145	GS 110145	380
	AZ 11016040	3 220	AZK 11016017	1 320	WS 110160	GS 110160	950
	AZ 11020039	6 400	AZK 11020015	2 280	WS 110200	GS 110200	2 060
120	AZ 12015525	1 450	AZK 12015511	630	WS 120155	GS 120155	410
	AZ 12017542	4 020	AZK 12017518	1 640	WS 120175	GS 120175	1 190
	AZ 12022039	7 730	AZK 12022015	2 730	WS 120220	GS 120220	2 500
130	AZ 13017030	2 180	AZK 13017012	860	WS 130170	GS 130170	660
	AZ 13018542	4 300	AZK 13018518	1 760	WS 130185	GS 130185	1 270
	AZ 13023039	8 240	AZK 13023015	2 940	WS 130230	GS 130230	2 650

Boundary dimensions mm: d	D	T	d_c	D_c	D_w	B	$r_{s\,min}$ (1)	C_i	C_e	Standard mounting dimensions mm: d_a Min.	D_a Max.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed (2) min^{-1}
70	95	18	70.05	94.5	7.5	5.25	1	75	91	91	76	72 000	269 000	3 500
70	105	27	70.05	104.5	11	8	1	78	100	99	78	114 000	379 000	3 500
70	140	26	70.05	139.5	10	8	1.1	89	129	129	90	169 000	713 000	3 000
75	100	19	75.05	99.5	7.5	5.75	1	80	96	96	81	71 100	269 000	3 500
75	110	27	75.05	109.5	11	8	1	83	105	104	83	123 000	427 000	3 000
80	105	19	80.05	104.5	7.5	5.75	1	85	101	101	86	74 500	292 000	3 000
80	115	28	80.05	114.5	11	8.5	1	88	110	109	88	122 000	427 000	3 000
80	150	26	80.05	149.5	10	8	1.5	99	139	139	100	180 000	792 000	2 500
85	110	19	85.05	109.5	7.5	5.75	1	90	106	106	91	77 800	314 000	3 000
85	125	31	85.05	124.5	12	9.5	1	95	119	118	95	145 000	513 000	3 000
90	120	22	90.05	119.5	9	6.5	1	97	116	115	97	99 700	390 000	3 000
90	135	35	90.05	134.5	14	10.5	1.1	100	129	128	101	181 000	626 000	2 500
90	160	26	90.05	159.5	10	8	1.5	109	149	149	110	189 000	871 000	2 500
100	135	25	100.05	134.5	11	7	1	108	130	129	108	136 000	522 000	2 500
100	150	38	100.05	149.5	15	11.5	1.1	112	143	142	113	219 000	796 000	2 500
100	190	39	100.1	189.3	15	12	1.5	119	179	177	120	333 000	1 420 000	2 000
110	145	25	110.1	144.5	11	7	1	118	140	139	118	142 000	569 000	2 500
110	160	40	110.1	159.5	17	11.5	1.1	120	154	153	121	282 000	1 030 000	2 000
110	200	39	110.1	199.3	15	12	2	129	188	187	130	388 000	1 770 000	2 000
120	155	25	120.1	154.5	11	7	1	128	150	149	128	149 000	617 000	2 000
120	175	42	120.1	174.5	18	12	1.1	132	168	167	133	313 000	1 160 000	2 000
120	220	39	120.1	219	15	12	2.1	141	207	206	142	415 000	1 980 000	1 800
130	170	30	130.1	169.5	12	9	1	140	164	163	140	176 000	741 000	2 000
130	185	42	130.1	184.5	18	12	1.5	142	178	177	143	333 000	1 290 000	1 900
130	230	39	130.1	229	15	12	2.1	151	217	216	152	440 000	2 180 000	1 700

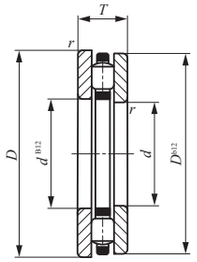
Notes(1) Minimum allowable value of chamfer dimension r
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 25% of this value is allowable.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

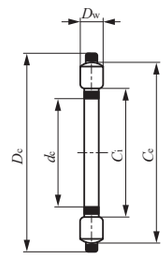
THRUST BEARINGS

Thrust Roller Bearings

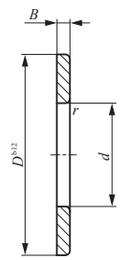




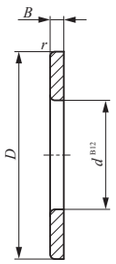
AZ



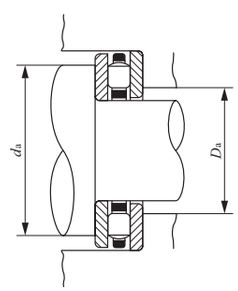
AZK



WS



GS



Shaft dia. 140 — 280mm

Shaft dia. mm	Identification number: Thrust roller bearing	Mass (Ref.) g	Thrust roller bearing	Mass (Ref.) g	Inner ring	Outer ring	Mass (Ref.) g
140	AZ 14018031	2 410	AZK 14018012	920	WS 140180	GS 140180	745
	AZ 14019542	4 560	AZK 14019518	1 860	WS 140195	GS 140195	1 350
	AZ 14024039	8 680	AZK 14024015	3 100	WS 140240	GS 140240	2 790
150	AZ 15019031	2 560	AZK 15019012	980	WS 150190	GS 150190	790
	AZ 15020542	4 840	AZK 15020518	1 980	WS 150205	GS 150205	1 430
	AZ 15025039	9 140	AZK 15025015	3 260	WS 150250	GS 150250	2 940
160	AZ 16020031	2 710	AZK 16020012	1 030	WS 160200	GS 160200	840
	AZ 16027039	10 800	AZK 16027015	3 840	WS 160270	GS 160270	3 480
170	AZ 17023045	6 220	AZK 17023019	2 420	WS 170230	GS 170230	1 900
	AZ 17028039	11 300	AZK 17028015	4 020	WS 170280	GS 170280	3 640
180	AZ 18024045	6 540	AZK 18024019	2 540	WS 180240	GS 180240	2 000
	AZ 18031039	14 600	AZK 18031015	5 200	WS 180310	GS 180310	4 700
190	AZ 19025548	8 060	AZK 19025520	3 100	WS 190255	GS 190255	2 480
	AZ 19032039	15 000	AZK 19032015	5 280	WS 190320	GS 190320	4 860
200	AZ 20026548	8 430	AZK 20026520	3 250	WS 200265	GS 200265	2 590
	AZ 20034039	17 200	AZK 20034015	6 120	WS 200340	GS 200340	5 540
220	AZ 22029050	10 400	AZK 22029022	4 280	WS 220290	GS 220290	3 060
	AZ 22036052	24 000	AZK 22036020	8 000	WS 220360	GS 220360	8 000
240	AZ 24031554	13 200	AZK 24031524	5 520	WS 240315	GS 240315	3 840
	AZ 24038052	26 500	AZK 24038020	9 440	WS 240380	GS 240380	8 530
260	AZ 26034055	15 400	AZK 26034025	6 600	WS 260340	GS 260340	4 400
	AZ 26042080	51 600	AZK 26042030	18 200	WS 260420	GS 260420	16 700
280	AZ 28044080	54 600	AZK 28044030	19 200	WS 280440	GS 280440	17 700

Boundary dimensions mm d	D	T	d_c	D_c	D_w	B	$r_{s\,min}$ (1)	C_i	C_e	Standard mounting dimensions mm d_a Min.	D_a Max.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed (2) min^{-1}
140	180	31	140.1	179.5	12	9.5	1	150	174	173	150	184 000	798 000	1 900
140	195	42	140.1	194.5	18	12	1.5	152	188	187	153	353 000	1 420 000	1 800
140	240	39	140.1	239	15	12	2.1	161	227	226	162	435 000	2 180 000	1 600
150	190	31	150.1	189.5	12	9.5	1	160	184	183	160	181 000	798 000	1 800
150	205	42	150.1	204.5	18	12	1.5	162	198	197	163	349 000	1 420 000	1 700
150	250	39	150.1	249	15	12	2.1	171	237	236	172	459 000	2 380 000	1 500
160	200	31	160.1	199.5	12	9.5	1	170	194	193	170	189 000	855 000	1 700
160	270	39	160.1	269	15	12	3	183	256	255	184	519 000	2 850 000	1 400
170	230	45	170.1	229	19	13	1.5	183	221	220	184	406 000	1 730 000	1 500
170	280	39	170.1	279	15	12	3	193	266	265	194	543 000	3 070 000	1 300
180	240	45	180.1	239	19	13	1.5	193	231	230	194	426 000	1 870 000	1 400
180	310	39	180.1	308	15	12	3	204	294	293	205	619 000	3 710 000	1 200
190	255	48	190.1	254	20	14	2	205	245	244	206	470 000	2 080 000	1 300
190	320	39	190.1	318	15	12	4	214	304	303	215	647 000	3 980 000	1 200
200	265	48	200.15	264	20	14	2	215	255	254	216	465 000	2 080 000	1 300
200	340	39	200.15	338	15	12	4	227	323	322	228	710 000	4 580 000	1 100
220	290	50	220.15	289	22	14	2	236	280	278	237	557 000	2 530 000	1 300
220	360	52	220.15	358	20	16	4	246	343	342	247	943 000	5 520 000	1 000
240	315	54	240.15	314	24	15	2	256	304	302	257	695 000	3 250 000	1 100
240	380	52	240.15	378	20	16	4	266	363	362	267	977 000	5 910 000	1 000
260	340	55	260.15	339	25	15	2.1	278	328	326	279	739 000	3 510 000	1 000
260	420	80	260.15	418	30	25	5	289	402	400	291	1 430 000	7 490 000	900
280	440	80	280.15	438	30	25	5	309	422	420	311	1 420 000	7 490 000	800

Notes(1) Minimum allowable value of chamfer dimension r.
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 25% of this value is allowable.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

COMBINED TYPE NEEDLE ROLLER BEARINGS

- Needle Roller Bearings with Thrust Ball Bearing
- Needle Roller Bearings with Thrust Roller Bearing
- Needle Roller Bearings with Angular Contact Ball Bearing
- Needle Roller Bearings with Three-point Contact Ball Bearing



Structure and Features

IKO Combined Type Needle Roller Bearings are combinations of a radial bearing and a thrust bearing. Caged needle roller bearings are used as radial bearings and thrust ball bearings or thrust roller bearings are used as thrust bearings. They are compact and very economical, and can be subjected to radial loads and axial loads simultaneously.
They are widely used for machine tools, textile machinery, and industrial machinery.

Types

The types of Combined Type Needle Roller Bearings shown in Table 1 are available.

Table 1.1 Type of bearing

Type	Combined with thrust ball bearing		Combined with thrust roller bearing	
	Without inner ring	With inner ring(1)	Without inner ring	With inner ring(1)
——	NAX	NAXI	NBX	NBXI
With dust cover	NAX ··· Z	NAXI ··· Z	NBX ··· Z	NBXI ··· Z

Table 1.2 Type of bearing

Type	Combined with angular contact ball bearing	Combined with three-point contact ball bearing
Model code	NATA	NATB

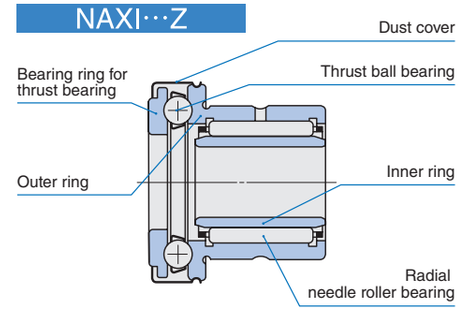
Note(1) For the Combined Type Needle Roller Bearings with inner rings, the needle roller bearings and inner rings will be delivered separately. Please contact IKO if in need of delivery as an integrated product.

Needle Roller Bearings with Thrust Ball Bearing

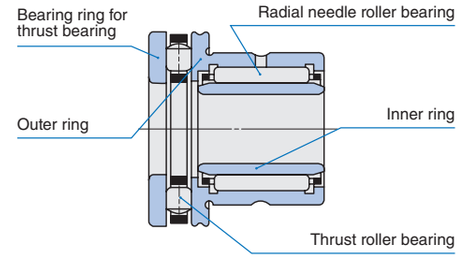
In this series, needle roller bearings are combined with thrust ball bearings to receive thrust loads.
In bearings with a dust cover, the dust cover is formed from a thin steel plate and fixed to a groove cut on the outer cylindrical surface of the outer ring collar. The cover forms a labyrinth with the thrust raceway ring, and is therefore effective in preventing leakage of grease and penetration of dust and dirt.
In the case of bearings without an inner ring, the tolerances of roller set bore diameter F_w are shown in Table 14 on page A33. Therefore, the required radial internal clearances can be selected by combining the bearings with shafts that have been heat-treated and finished by grinding as shown in Table 23 on page A42 and Table 26 on page A44.

Structures of Combined Type Needle Roller Bearings

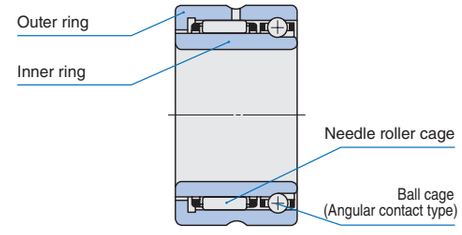
NAXI···Z



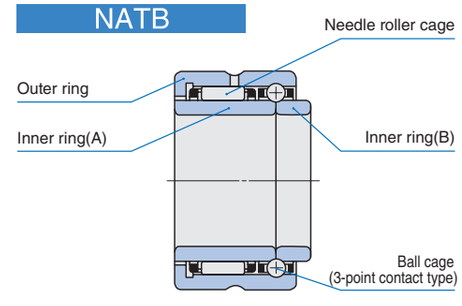
NBXI



NATA



NATB



Needle Roller Bearings with Thrust Roller Bearing

In this series, needle roller bearings are combined with thrust roller bearings to receive thrust loads.
Their axial load ratings are greater than those of bearings that are combined with thrust ball bearings. Also, elastic deformation of the rolling contact surfaces under load is minimal. Furthermore, the thrust bearing section is finished to high accuracy, and therefore high rotational accuracy is obtained in the case of both vertical and horizontal shafts.
Like the needle roller bearings with thrust ball bearing, this series also includes bearings with a dust cover and bearings with an inner ring.

Needle Roller Bearings with Angular Contact Ball Bearing

In this series, caged needle roller bearings are combined with angular contact ball bearings to receive thrust loads. These bearings conform to the international dimension series #59, which is based on the ISO Standard. They can withstand heavy radial loads and unidirectional axial loads simultaneously.
When the axial load exceeds 25% of the radial load, the radial load will be induced in the angular contact ball bearing, and bearing life will be affected. The relationship between the two loads must therefore be taken into careful consideration.

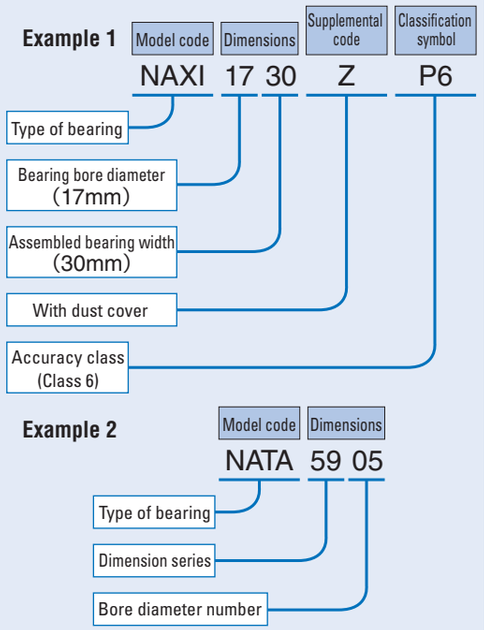
Needle Roller Bearings with Three-point Contact Ball Bearing

These bearings can withstand heavy radial loads and bi-directional axial loads at the same time during high-speed rotation.
Since the non-interchangeable inner rings are separated at the center of the ball raceway surface, they must be firmly tightened against the shaft in the axial direction. The axial clearance of this bearing is 0.1 ～ 0.3 mm, and like NATA59, the axial load should not exceed 25% of the radial load.

Identification Number

The identification number of Combined Type Needle Roller Bearings consists of a model code, dimensions, any supplemental codes and a classification symbol. Some examples are shown below.

Examples of identification number



Accuracy

Dimensional accuracy and rotational accuracy of Combined Type Needle Roller Bearings are based on Table 2 below and Tables 12 and 13 on page A31. The tolerances for the smallest single roller set bore diameter of bearings without inner ring are based on Table 14 on page A33. Thickness variations of thrust rings of NAX(I) and NBX(I) are based on Table 2.4 on page F5.
Bore diameter of the small width inner ring of NATB59 is made for a transition fit with k5 tolerance shaft.

Table 2 Tolerances unit: mm

Item / Type of bearing	Dimension	Dimension symbol	Tolerance
NAX(I)(1) NBX(I)(1)	Bore dia. of bearing ring for thrust bearing	d_i	E7
	Assembled bearing width	L	0 / − 0.25
	Bearing height of thrust bearing	H	0 / − 0.20
NATB59	Width of inner ring	B	0 / − 0.3

Note(1) Also applicable to bearings with dust cover

Clearance

Combined Type Needle Roller Bearings are manufactured to have the radial internal clearance CN shown in Table 18 on page A37.

Fit

The recommended fits for Combined Type Needle Roller Bearings are shown in Table 3.

Table 3 Recommended fits

Item / Type of bearing	Tolerance class		
	Shaft		Housing bore
	Without inner ring	With inner ring	
NAX(I)(1) NBX(I)(1)	h5, k5	k5	K6, M6
NATA59 NATB59	——	k5(2)	M6(2)

Notes(1) The housing bore for the thrust bearing must be machined to be more than 0.5 mm larger than the outside diameters D_1 and D_2 to ensure that it does not incur radial loads.
(2) If the fit is made tighter than specified in this table, radial loads will act upon the thrust bearing, limiting its function.

Lubrication

Grease is not prepacked in Combined Type Needle Roller Bearings, so perform proper lubrication for use. Operating without lubrication will increase the wear of the rolling contact surfaces and shorten the bearing life.

Oil Hole

The outer ring of Combined Type Needle Roller Bearings has an oil groove and an oil hole. When outer rings with multiple oil holes or inner rings with oil hole(s) are required, please contact IKO.

Rating Life

In Combined Type Needle Roller Bearings, caged needle roller bearings are subjected to radial loads while thrust bearings receive axial loads. Therefore, it is necessary to calculate their lives respectively (page A17).

Mounting

Fig.1 shows mounting examples of Combined Type Needle Roller Bearings. When applying preload to the NAX and NBX models, it is recommended that thrust raceway rings are not tightened directly with nuts, but are tightened using springs as shown in Fig. 2.
Mounting two NATA models symmetrically allows them to be subjected to two-way axial loads. When mounting these models, an axial clearance of 0.2 ～ 0.3 mm should be provided in the angular contact ball bearings so that radial loads are not applied to the angular contact ball bearings.
Dimensions related to mounting should be based on the table of dimensions.

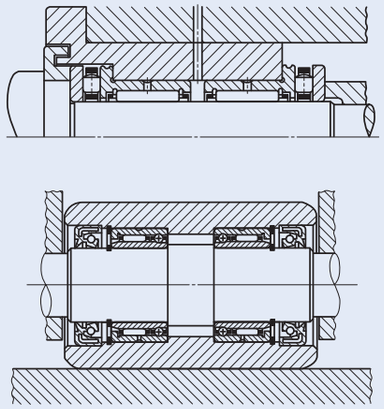


Fig.1 Mounting examples



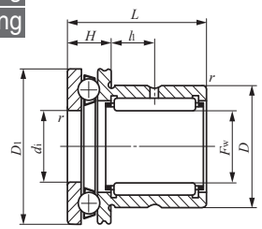
Fig.2 Mounting example when applying preload

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

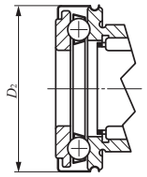
COMBINED TYPE NEEDLE ROLLER BEARINGS

Needle Roller Bearings with Thrust Ball Bearing — Without Inner Ring
Needle Roller Bearings with Thrust Roller Bearing — Without Inner Ring

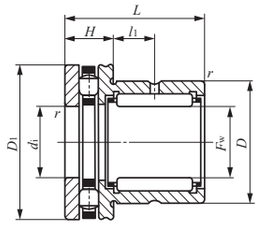




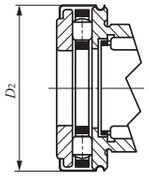
NAX



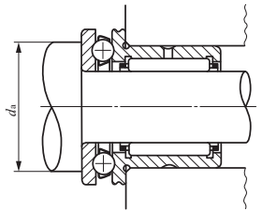
NAX ··· Z



NBX



NBX ··· Z



Shaft dia. 10 — 70mm

Shaft dia. mm	Identification number	Mass (Ref.) g	With dust cover	Mass (Ref.) g		Mass (Ref.) g	With dust cover	Mass (Ref.) g
10	NAX 1023	38.5	NAX 1023Z	40	—	—	—	—
12	NAX 1223	43.5	NAX 1223Z	45.5	—	—	—	—
15	NAX 1523	47.5	NAX 1523Z	48.5	—	—	—	—
	—	—	—	—	NBX 1523	54	NBX 1523Z	55
17	NAX 1725	54	NAX 1725Z	56	—	—	—	—
	—	—	—	—	NBX 1725	61	NBX 1725Z	63
20	NAX 2030	85.5	NAX 2030Z	89	—	—	—	—
	—	—	—	—	NBX 2030	94	NBX 2030Z	97.5
25	NAX 2530	131	NAX 2530Z	135	—	—	—	—
	—	—	—	—	NBX 2530	143	NBX 2530Z	147
30	NAX 3030	145	NAX 3030Z	151	—	—	—	—
	—	—	—	—	NBX 3030	160	NBX 3030Z	166
35	NAX 3530	169	NAX 3530Z	176	—	—	—	—
	—	—	—	—	NBX 3530	186	NBX 3530Z	193
40	NAX 4032	219	NAX 4032Z	227	—	—	—	—
	—	—	—	—	NBX 4032	240	NBX 4032Z	248
45	NAX 4532	264	NAX 4532Z	273	—	—	—	—
	—	—	—	—	NBX 4532	293	NBX 4532Z	302
50	NAX 5035	287	NAX 5035Z	297	—	—	—	—
	—	—	—	—	NBX 5035	315	NBX 5035Z	325
60	NAX 6040	417	NAX 6040Z	454	—	—	—	—
	—	—	—	—	NBX 6040	501	NBX 6040Z	538
70	NAX 7040	555	NAX 7040Z	606	—	—		—

F_w	D	D_1	D_2	L	H	l_1	$r_{s\,min}$ (1)	d_i	Standard mounting dimension d_a Min. mm	Basic dynamic load rating C Radial N	Basic dynamic load rating C Axial N	Basic static load rating C_0 Radial N	Basic static load rating C_0 Axial N	Allowable rotational speed(2) min⁻¹
10	19	24	25	23	9	6.5	0.3	10	18	8 230	10 000	9 190	11 100	9 500
12	21	26	27	23	9	6.5	0.3	12	20	9 250	9 670	11 200	11 100	9 000
15	24	28	29	23	9	6.5	0.3	15	23	12 300	9 930	14 900	12 200	8 500
15	24	28	29	23	9	6.5	0.3	15	26	12 300	10 200	14 900	23 900	14 000
17	26	30	31	25	9	8	0.3	17	25	12 900	10 800	16 300	14 500	8 500
17	26	30	31	25	9	8	0.3	17	28	12 900	11 400	16 300	28 600	13 000
20	30	35	36	30	10	10.5	0.3	20	29	17 600	14 200	25 400	19 700	7 500
20	30	35	36	30	10	10.5	0.3	20	33	17 600	19 000	25 400	48 700	11 000
25	37	42	43	30	11	9.5	0.6	25	35	20 000	19 600	32 100	29 700	7 000
25	37	42	43	30	11	9.5	0.6	25	40	20 000	22 700	32 100	60 700	9 000
30	42	47	48	30	11	9.5	0.6	30	40	25 100	20 400	40 100	33 600	6 500
30	42	47	48	30	11	9.5	0.6	30	45	25 100	27 400	40 100	81 000	8 000
35	47	52	53	30	12	9	0.6	35	45	26 900	21 200	46 200	37 600	6 000
35	47	52	53	30	12	9	0.6	35	50	26 900	29 100	46 200	91 100	7 000
40	52	60	61	32	13	10	0.6	40	52	29 400	26 900	54 100	50 000	5 500
40	52	60	61	32	13	10	0.6	40	57	29 400	41 700	54 100	133 000	6 000
45	58	65	66.5	32	14	9	0.6	45	57	31 000	27 900	60 200	55 100	5 000
45	58	65	66.5	32	14	9	0.6	45	62	31 000	40 800	60 200	133 000	5 500
50	62	70	71.5	35	14	10	0.6	50	62	42 200	28 800	83 400	60 100	4 500
50	62	70	71.5	35	14	10	0.6	50	67	42 200	43 300	83 400	148 000	5 000
60	72	85	86.5	40	17	12	1	60	75	47 500	41 400	103 000	89 700	4 000
60	72	85	86.5	40	17	12	1	60	82	47 500	64 600	103 000	224 000	4 000
70	85	95	96.5	40	18	11	1	70	85	55 500	43 100	120 000	101 000	3 500

Notes(1) Minimum allowable value of chamfer dimension *r*
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 70% of this value is allowable in the NAX series, and a maximum of 25% of this value is allowable in the NBX series.

Remarks1. The outer ring has an oil groove and an oil hole.
2. No grease is prepacked. Perform proper lubrication.

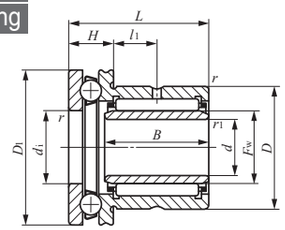
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

COMBINED TYPE NEEDLE ROLLER BEARINGS

Needle Roller Bearings with Thrust Ball Bearing — With Inner Ring
Needle Roller Bearings with Thrust Roller Bearing — With Inner Ring







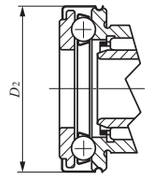
NAXI

Shaft dia. 7 — 60mm

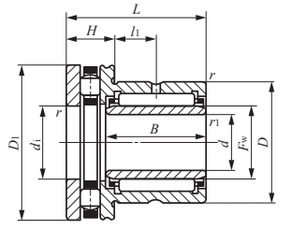
Shaft dia. mm	Identification number	Mass (Ref.) g	With dust cover	Mass (Ref.) g		Mass (Ref.) g	With dust cover	Mass (Ref.) g	d	D	D_1
7	**NAXI 723**	43.5	**NAXI 723Z**	45	—	—	—	—	7	19	24
9	**NAXI 923**	49.5	**NAXI 923Z**	51.5	—	—	—	—	9	21	26
12	**NAXI 1223**	55.5	**NAXI 1223Z**	56.5	—	—	—	—	12	24	28
	—	—	—	—	**NBXI 1223**	62	**NBXI 1223Z**	63	12	24	28
14	**NAXI 1425**	63.5	**NAXI 1425Z**	65.5	—	—	—	—	14	26	30
	—	—	—	—	**NBXI 1425**	70.5	**NBXI 1425Z**	72.5	14	26	30
17	**NAXI 1730**	99	**NAXI 1730Z**	103	—	—	—	—	17	30	35
	—	—	—	—	**NBXI 1730**	108	**NBXI 1730Z**	111	17	30	35
20	**NAXI 2030**	159	**NAXI 2030Z**	163	—	—	—	—	20	37	42
	—	—	—	—	**NBXI 2030**	171	**NBXI 2030Z**	175	20	37	42
25	**NAXI 2530**	179	**NAXI 2530Z**	185	—	—	—	—	25	42	47
	—	—	—	—	**NBXI 2530**	194	**NBXI 2530Z**	200	25	42	47
30	**NAXI 3030**	208	**NAXI 3030Z**	215	—	—	—	—	30	47	52
	—	—	—	—	**NBXI 3030**	225	**NBXI 3030Z**	232	30	47	52
35	**NAXI 3532**	265	**NAXI 3532Z**	273	—	—	—	—	35	52	60
	—	—	—	—	**NBXI 3532**	286	**NBXI 3532Z**	294	35	52	60
40	**NAXI 4032**	315	**NAXI 4032Z**	324	—	—	—	—	40	58	65
	—	—	—	—	**NBXI 4032**	344	**NBXI 4032Z**	353	40	58	65
45	**NAXI 4535**	358	**NAXI 4535Z**	368	—	—	—	—	45	62	70
	—	—	—	—	**NBXI 4535**	386	**NBXI 4535Z**	396	45	62	70
50	**NAXI 5040**	582	**NAXI 5040Z**	619	—	—	—	—	50	72	85
	—	—	—	—	**NBXI 5040**	666	**NBXI 5040Z**	703	50	72	85
60	**NAXI 6040**	750	**NAXI 6040Z**	801	—	—	—	—	60	85	95

Notes(1) Minimum allowable value of chamfer dimension r or r_1
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 70% of this value is allowable in the NAXI series, and a maximum of 25% of this value is allowable in the NBXI series.

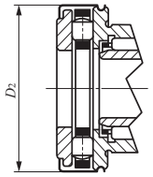
Remarks1. The outer ring has an oil groove and an oil hole.
2. No grease is prepacked. Perform proper lubrication.



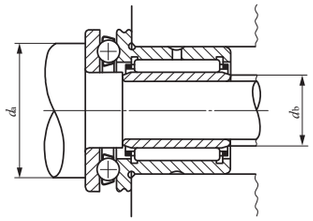
NAXI ··· Z



NBXI



NBXI ··· Z



Boundary dimensions mm D_2	L	B	H	l_1	$r_{s\,min}$ (1)	$r_{ls\,min}$ (1)	F_w	d_i	Standard mounting dimensions mm d_a Min.	d_b	Basic dynamic load rating C Radial N	Axial N	Basic static load rating C_0 Radial N	Axial N	Allowable rotational speed(2) min^{-1}	Assembled inner ring
25	23	16	9	6.5	0.3	0.2	10	10	18	9	8 230	10 000	9 190	11 100	9 500	**LRT 71016**
27	23	16	9	6.5	0.3	0.3	12	12	20	11	9 250	9 670	11 200	11 100	9 000	**LRT 91216**
29	23	16.5	9	6.5	0.3	0.3	15	15	23	14	12 300	9 930	14 900	12 200	8 500	**LRT 121516**
29	23	16.5	9	6.5	0.3	0.3	15	15	26	14	12 300	10 200	14 900	23 900	14 000	**LRT 121516**
31	25	17	9	8	0.3	0.3	17	17	25	16	12 900	10 800	16 300	14 500	8 500	**LRT 141717**
31	25	17	9	8	0.3	0.3	17	17	28	16	12 900	11 400	16 300	28 600	13 000	**LRT 141717**
36	30	20.5	10	10.5	0.3	0.3	20	20	29	19	17 600	14 200	25 400	19 700	7 500	**LRT 172020**
36	30	20.5	10	10.5	0.3	0.3	20	20	33	19	17 600	19 000	25 400	48 700	11 000	**LRT 172020**
43	30	20.5	11	9.5	0.6	0.3	25	25	35	24	20 000	19 600	32 100	29 700	7 000	**LRT 202520**
43	30	20.5	11	9.5	0.6	0.3	25	25	40	24	20 000	22 700	32 100	60 700	9 000	**LRT 202520**
48	30	20.5	11	9.5	0.6	0.3	30	30	40	29	25 100	20 400	40 100	33 600	6 500	**LRT 253020**
48	30	20.5	11	9.5	0.6	0.3	30	30	45	29	25 100	27 400	40 100	81 000	8 000	**LRT 253020**
53	30	20	12	9	0.6	0.3	35	35	45	34	26 900	21 200	46 200	37 600	6 000	**LRT 303520**
53	30	20	12	9	0.6	0.3	35	35	50	34	26 900	29 100	46 200	91 100	7 000	**LRT 303520**
61	32	20	13	10	0.6	0.3	40	40	52	39	29 400	26 900	54 100	50 000	5 500	**LRT 354020**
61	32	20	13	10	0.6	0.3	40	40	57	39	29 400	41 700	54 100	133 000	6 000	**LRT 354020**
66.5	32	20	14	9	0.6	0.3	45	45	57	44	31 000	27 900	60 200	55 100	5 000	**LRT 404520**
66.5	32	20	14	9	0.6	0.3	45	45	62	44	31 000	40 800	60 200	133 000	5 500	**LRT 404520**
71.5	35	25	14	10	0.6	0.3	50	50	62	49	42 200	28 800	83 400	60 100	4 500	**LRT 455025**
71.5	35	25	14	10	0.6	0.3	50	50	67	49	42 200	43 300	83 400	148 000	5 000	**LRT 455025**
86.5	40	25.5	17	12	1	1	60	60	75	59	47 500	41 400	103 000	89 700	4 000	**LRT 506025**
86.5	40	25.5	17	12	1	1	60	60	82	59	47 500	64 600	103 000	224 000	4 000	**LRT 506025**
96.5	40	25.5	18	11	1	1	70	70	85	68	55 500	43 100	120 000	101 000	3 500	**LRT 607025**

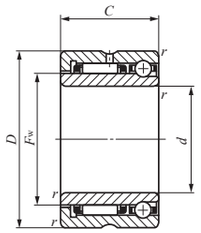
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

COMBINED TYPE NEEDLE ROLLER BEARINGS

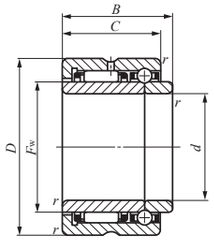
Needle Roller Bearings with Angular Contact Ball Bearing
Needle Roller Bearings with Three-point Contact Ball Bearing



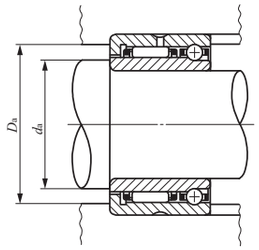


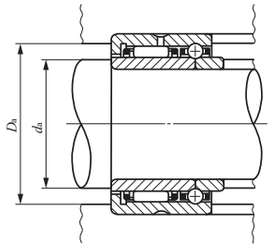


NATA59



NATB59





Shaft dia. 15 — 70mm

Shaft dia. mm	Identification number: Angular contact type	Mass (Ref.) g	Three-point contact type	Mass (Ref.) g	Boundary dimensions mm: d	D	C	B	$r_{s\,min}$(1)	F_w
15	**NATA 5902**	50.5	**NATB 5902**	53	15	28	18	20	0.3	20
17	**NATA 5903**	55.5	**NATB 5903**	58.5	17	30	18	20	0.3	22
20	**NATA 5904**	111	**NATB 5904**	115	20	37	23	25	0.3	25
25	**NATA 5905**	131	**NATB 5905**	136	25	42	23	25	0.3	30
30	**NATA 5906**	151	**NATB 5906**	157	30	47	23	25	0.3	35
35	**NATA 5907**	250	**NATB 5907**	260	35	55	27	30	0.6	42
40	**NATA 5908**	355	**NATB 5908**	375	40	62	30	34	0.6	48
45	**NATA 5909**	410	**NATB 5909**	435	45	68	30	34	0.6	55
50	**NATA 5910**	420	**NATB 5910**	445	50	72	30	34	0.6	58
55	**NATA 5911**	585	**NATB 5911**	615	55	80	34	38	1	63
60	**NATA 5912**	625	**NATB 5912**	660	60	85	34	38	1	68
65	**NATA 5913**	665	**NATB 5913**	710	65	90	34	38	1	75
70	**NATA 5914**	1 070	**NATB 5914**	1 130	70	100	40	45	1	80

Standard mounting dimensions mm: d_a Min.	D_a Max.	Basic dynamic load rating C: Radial N	Axial N	Basic static load rating C_0: Radial N	Axial N	Allowable rotational speed(2) min^{-1}
17	26	7 710	1 900	10 200	2 920	20 000
19	28	8 220	2 050	11 500	3 340	18 000
22	35	14 300	3 810	18 400	6 110	16 000
27	40	15 800	4 300	22 100	7 520	13 000
32	45	17 700	4 550	26 800	8 460	11 000
39	51	24 000	4 890	42 100	9 870	9 500
44	58	30 600	5 350	60 400	11 800	8 500
49	64	32 600	5 450	68 500	12 700	7 000
54	68	33 600	5 660	72 500	13 600	7 000
60	75	39 500	10 400	74 400	24 700	6 500
65	80	41 800	10 700	82 200	26 700	6 000
70	85	43 800	11 000	90 200	28 700	5 500
75	95	56 400	13 500	127 000	35 000	5 000

Notes(1) Minimum allowable value of chamfer dimension *r*
(2) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
Remarks1. The outer ring has an oil groove and an oil hole.
2. No grease is prepacked. Perform proper lubrication.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

●Inner Rings for Shell Type Needle Roller Bearings
●Inner Rings for General Usage



Structure and Features

IKO Inner Rings are heat-treated and finished by grinding to a high degree of accuracy. In the case of needle roller bearings, normally, the shafts are heat-treated and finished by grinding, and used as the raceway surfaces. However, when it is impossible to make shaft surfaces according to the specified surface hardness or surface roughness, inner rings are used.

Inner rings include those for Shell Type Needle Roller Bearings and those for general use and are available in a variety of dimensions. When shafts move axially or seals are used adjacent to bearings, wide inner rings can be selected.

Inner rings can also be used economically as bushings without requiring any additional machining.

Types

For Inner Rings, the types shown in Table 1 are available.

Table 1.1 Inner Rings for Shell Type Needle Roller Bearings

Series		Model codes of assembled bearings
Metric series	IRT	TA···Z, TLA···Z TAM, TLAM, YT, YTL
Inch series	IRB	BA···Z, BHA···Z BAM, BHAM, YB, YBH

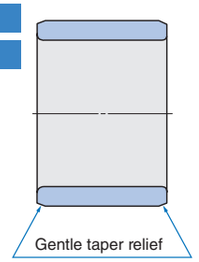
Remark For Inner Rings for Shell Type Needle Roller Bearings with Seal, please consult IKO.

Table 1.2 Inner Rings for General Usage

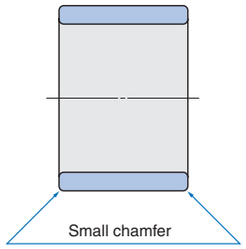
Series		Model codes of assembled bearings
Metric series	LRT	RNA 49, RNA 69 RNA 48, TAF, TR RNAF, NAX, NBX
	LRTZ	RNA 49···UU, RNA 69···UU GTR
Inch series	LRB	BR
	LRBZ···B	BR···UU

Shapes of Inner Rings

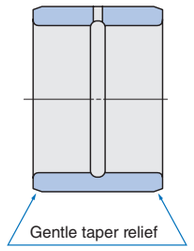
IRT
IRB
LRT



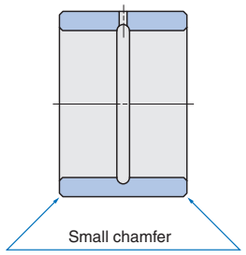
LRTZ



LRB



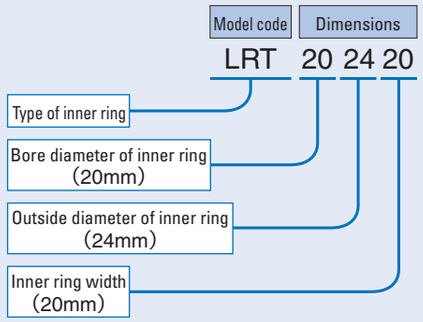
LRBZ···B



Identification number

The identification number of Inner Rings consists of a model code and dimensions. An example is shown below.

Example of identification number



Accuracy

Dimensional accuracy of Inner Rings is based on Table 2. Inner Rings for Shell Type Needle Roller Bearings are manufactured so that exact radial internal clearances can be obtained when assembled with Shell Type Needle Roller Bearings. Inner Rings for General Usage produce CN clearance when used in the assembled bearings shown in Table 1.2. LRB and LRBZ ··· B models produce the radial internal clearances shown in Table 4 on page D5.

When clearances other than CN clearance or accuracy other than Class 0 are required, please consult IKO.

Table 2 Tolerances for inner ring

Model code	Tolerance
IRT LRT, LRTZ	JIS Class 0 (See the table 12, page A31)
IRB	Based on Table 3
LRB LRBZ ··· B	Based on Table 4

Remark Tolerances of outside diameter of inner ring are based on Table 5.

Table 3 Tolerances of IRB unit: μm

d Nominal inside diameter of inner ring mm		Δ_{dmp} Single plane mean bore diameter deviation		Δ_{Bs} Deviation of a single inner ring width		K_{ia} Radial runout of assembled bearing inner ring
Over	Incl.	High	Low	High	Low	Max.
2.5	10	0	− 13	0	− 250	10
10	18	0	− 13	0	− 250	10
18	30	0	− 13	0	− 250	13
30	50	0	− 13	0	− 250	15
50	80	0	− 13	0	− 250	20

Table 4 Tolerances of LRB,LRBZ···B unit: μm

d Nominal inside diameter of inner ring mm		Δ_{dmp} Single plane mean bore diameter deviation		Δ_{Bs} Deviation of a single inner ring width		K_{ia} Radial runout of assembled bearing inner ring
Over	Incl.	High	Low	High	Low	Max.
—	19.050	0	− 10	0	− 130	10
19.050	30.162	0	− 13	0	− 130	13
30.162	50.800	0	− 13	0	− 130	15
50.800	82.550	0	− 15	0	− 130	20
82.550	120.650	0	− 20	0	− 130	25

Table 5 Tolerances of outside diameter of inner ring unit: μm

Model code	Tolerance
IRT	g5
IRB	0 ～− 13
LRT, LRTZ	Based on Table 6
LRB, LRBZ ··· B	Based on Table 7

Table 7 Tolerances of outside diameters of LRB and LRBZ ··· B unit: μm

Nominal outside diameter of inner ring mm		Tolerance	
Over	Incl.	High	Low
—	18.034	− 13	− 23
18.034	25.908	− 18	− 30
25.908	30.226	− 23	− 36
30.226	35.052	− 23	− 38
35.052	50.038	− 25	− 41
50.038	80.010	− 28	− 46
80.010	100.076	− 32	− 56
100.076	102.108	− 37	− 66

Fit

The recommended fits between Inner Rings and shafts are shown in Table 22 on page A42.

Oil Hole

The number of oil holes is shown in Table 8.

When Inner Rings with an oil hole are especially required for a model without an oil hole, attach an "OH" to the end of the identification number when ordering.

Example: LRT 202420 OH

For Inner Rings with multiple oil holes, please consult IKO.

Table 8 Number of oil holes

Bearing type			Bore diameter of inner ring d mm	Number of oil holes
For Shell Type Needle Roller Bearings	Metric series	IRT		0
	Inch series	IRB		0
For General Usage	Metric series	LRT		0
		LRTZ		0
	Inch series	LRB	$d \leqq 76.200$	1
			$76.200 < d$	2
		LRBZ ··· B		1

Remark Inner rings with an oil hole are provided with an oil groove.

Table 6 Tolerances of outside diameters for LRT and LRTZ (When the clearance is CN clearance) unit: μm

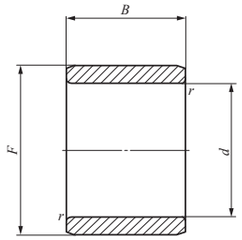
d Bore diameter of inner ring mm		F Outside diameter of inner ring mm																						d Bore diameter of inner ring mm	
		$3 < F \leqq 6$		$6 < F \leqq 10$		$10 < F \leqq 18$		$18 < F \leqq 30$		$30 < F \leqq 50$		$50 < F \leqq 80$		$80 < F \leqq 120$		$120 < F \leqq 180$		$180 < F \leqq 250$		$250 < F \leqq 315$		$315 < F \leqq 400$		$400 < F \leqq 500$			
Over	Incl.	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	Over	Incl.
—	24	− 10	− 27	− 7	− 23	− 4	− 18	0	− 12																	—	24
24	30							0	− 12	+ 5	− 4															24	30
30	40									0	− 9															30	40
40	50									− 5	− 19	0	− 11													40	50
50	65											− 10	− 21													50	65
65	80											− 10	− 26	− 4	− 17											65	80
80	100													− 14	− 27											80	100
100	120													− 14	− 32	− 7	− 22									100	120
120	140															− 17	− 37									120	140
140	160															− 27	− 52									140	160
160	180																	− 25	− 46							160	180
180	200																	− 40	− 66							180	200
200	225																	− 55	− 86							200	225
225	250																			− 54	− 87					225	250
250	280																			− 69	− 107					250	280
280	315																					− 68	− 107			280	315
315	355																					− 83	− 127			315	355
355	400																					− 128	− 182	− 122	− 172	355	400
400	450																							− 142	− 202	400	450
450	500																							− 152	− 222	450	500

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

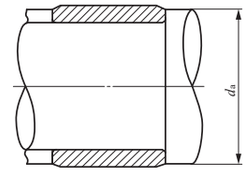
INNER RINGS

Inner Rings for Shell Type Needle Roller Bearings





IRT



Shaft dia. 7 — 17mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings TA···Z (TAM)	TLA···Z (TLAM)	YT YTL
7	**IRT 710**	3.2	7	10	10.5	0.3	9	9.7	**TA 1010Z**	**TLA 1010Z**	—
	IRT 712	3.9	7	10	12.5	0.3	9	9.7	**TA 1012Z**	**TLA 1012Z**	—
	IRT 715	4.8	7	10	15.5	0.3	9	9.7	**TA 1015Z**	**TLA 1015Z**	—
8	**IRT 810**	5.1	8	12	10.5	0.3	10	11	—	**TLA 1210Z**	**YTL 1210**
	IRT 812	6	8	12	12.5	0.3	10	11	**TA 1212Z**	**TLA 1212Z**	**YT 1212**
	IRT 815	7.5	8	12	15.5	0.3	10	11	**TA 1215Z**	—	—
10	**IRT 1012**	5.2	10	13	12.5	0.3	12	12.7	—	**TLA 1312Z**	—
	IRT 1012-2	7.2	10	14	12.5	0.3	12	13	—	**TLA 1412Z**	—
	IRT 1016-2	9.6	10	14	16.5	0.3	12	13	**TA 1416Z**	**TLA 1416Z**	—
	IRT 1020-2	11.9	10	14	20.5	0.3	12	13	**TA 1420Z**	—	—
	IRT 1010-1	7.9	10	15	10.5	0.3	12	14	**TA 1510Z**	—	—
	IRT 1012-1	9.4	10	15	12.5	0.3	12	14	**TA 1512Z**	**TLA 1512Z**	—
	IRT 1015-1	11.7	10	15	15.5	0.3	12	14	**TA 1515Z**	—	—
	IRT 1020-1	15.5	10	15	20.5	0.3	12	14	**TA 1520Z**	—	—
	IRT 1025-1	19.3	10	15	25.5	0.3	12	14	**TA 1525Z**	—	—
12	**IRT 1212**	6.1	12	15	12.5	0.3	14	14.5	**TA 1512Z**	**TLA 1512Z**	—
	IRT 1216	8.1	12	15	16.5	0.3	14	14.5	—	**TLA 1516Z**	—
	IRT 1222	11	12	15	22.5	0.3	14	14.5	—	**TLA 1522Z**	—
	IRT 1212-1	8.5	12	16	12.5	0.3	14	15	—	**TLA 1612Z**	—
	IRT 1216-1	11.2	12	16	16.5	0.3	14	15	**TA 1616Z**	**TLA 1616Z**	—
	IRT 1220-1	13.9	12	16	20.5	0.3	14	15	**TA 1620Z**	—	—
	IRT 1222-1	15.2	12	16	22.5	0.3	14	15	—	**TLA 1622Z**	—
	IRT 1215-2	13.6	12	17	15.5	0.3	14	16	**TA 1715Z**	—	**YT 1715**
	IRT 1220-2	18	12	17	20.5	0.3	14	16	**TA 1720Z**	—	—
	IRT 1225-2	22.5	12	17	25.5	0.3	14	16	**TA 1725Z**	—	**YT 1725**
15	**IRT 1512**	7.5	15	18	12.5	0.3	17	17.5	—	**TLA 1812Z**	—
	IRT 1513	8.1	15	18	13.5	0.3	17	17.5	**TA 1813Z**	—	—
15	**IRT 1515**	9.3	15	18	15.5	0.3	17	17.5	**TA 1815Z**	—	—
	IRT 1516	9.9	15	18	16.5	0.3	17	17.5	—	**TLA 1816Z**	—
	IRT 1517	10.5	15	18	17.5	0.3	17	17.5	**TA 1817Z**	—	—
	IRT 1519	11.7	15	18	19.5	0.3	17	17.5	**TA 1819Z**	—	—
	IRT 1520	12.3	15	18	20.5	0.3	17	17.5	**TA 1820Z**	—	—
	IRT 1525	15.2	15	18	25.5	0.3	17	17.5	**TA 1825Z**	—	—
	IRT 1516-1	13.6	15	19	16.5	0.3	17	18	**TA 1916Z**	—	—
	IRT 1520-1	16.8	15	19	20.5	0.3	17	18	**TA 1920Z**	—	—
	IRT 1515-2	16.4	15	20	15.5	0.3	17	19	**TA 2015Z**	—	**YT 2015**
	IRT 1520-2	21.5	15	20	20.5	0.3	17	19	**TA 2020Z** **TA 202820Z**	**TLA 2020Z**	**YT 202820**
	IRT 1525-2	27	15	20	25.5	0.3	17	19	**TA 2025Z**	—	**YT 2025**
	IRT 1530-2	32	15	20	30.5	0.3	17	19	**TA 2030Z**	**TLA 2030Z**	—
17	**IRT 1716**	11.1	17	20	16.5	0.3	19	19.5	—	**TLA 2016Z**	—
	IRT 1720	13.7	17	20	20.5	0.3	19	19.5	**TA 2020Z** **TA 202820Z**	**TLA 2020Z**	**YT 202820**
	IRT 1730	20.5	17	20	30.5	0.3	19	19.5	**TA 2030Z**	**TLA 2030Z**	—
	IRT 1716-1	15.1	17	21	16.5	0.3	19	20	**TA 2116Z**	—	**YT 2116**
	IRT 1720-1	18.8	17	21	20.5	0.3	19	20	**TA 2120Z**	—	**YT 2120**
	IRT 1710-2	12.4	17	22	10.5	0.3	19	21	**TA 2210Z**	—	—
	IRT 1715-2	18.3	17	22	15.5	0.3	19	21	**TA 2215Z**	—	—
	IRT 1716-2	19.4	17	22	16.5	0.3	19	21	**TA 223016Z**	**TLA 2216Z**	**YT 223016**
	IRT 1720-2	24	17	22	20.5	0.3	19	21	**TA 2220Z** **TA 223020Z**	**TLA 2220Z**	**YT 223020**
	IRT 1725-2	30	17	22	25.5	0.3	19	21	**TA 2225Z**	—	—
	IRT 1730-2	36	17	22	30.5	0.3	19	21	**TA 2230Z**	—	—

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

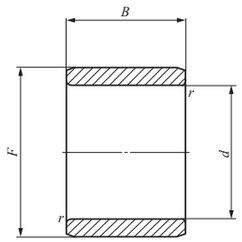
Inner Rings for Shell Type Needle Roller Bearings

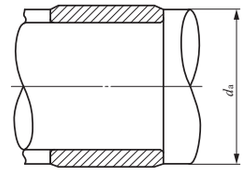


Shaft dia. 20 — 45mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings TA···Z (TAM)	TLA···Z (TLAM)	YT YTL
20	**IRT 2016**	17.5	20	24	16.5	0.3	22	23	**TA 243216Z**	—	**YT 243216**
	IRT 2020	22	20	24	20.5	0.3	22	23	**TA 2420Z**	—	**YT 243220**
									TA 243220Z		
	IRT 2028	30.5	20	24	28.5	0.3	22	23	**TA 2428Z**	—	**YT 2428**
	IRT 2010-1	14.3	20	25	10.5	0.3	22	24	**TA 2510Z**	—	**YT 2510**
	IRT 2015-1	21	20	25	15.5	0.3	22	24	**TA 2515Z**	—	**YT 2515**
	IRT 2020-1	28	20	25	20.5	0.3	22	24	**TA 2520Z**	**TLA 2520Z**	**YT 2520**
	IRT 2025-1	34.5	20	25	25.5	0.3	22	24	**TA 2525Z**	—	**YT 2525**
	IRT 2026-1	36	20	25	26.5	0.3	22	24	—	**TLA 2526Z**	**YTL 2526**
	IRT 2030-1	41.5	20	25	30.5	0.3	22	24	**TA 2530Z**	—	—
	IRT 2038-1	52.5	20	25	38.5	0.3	22	24	—	**TLAW 2538Z**	—
22	**IRT 2216**	19.1	22	26	16.5	0.3	24	25	**TA 2616Z**	—	**YT 2616**
	IRT 2220	24	22	26	20.5	0.3	24	25	**TA 2620Z**	—	**YT 2620**
	IRT 2220-1	37	22	28	20.5	0.3	24	27	**TA 2820Z**	**TLA 2820Z**	**YT 2820**
	IRT 2230-1	55.5	22	28	30.5	0.3	24	27	**TA 2830Z**	—	—
25	**IRT 2520**	26.5	25	29	20.5	0.3	27	28	**TA 2920Z**	—	**YT 2920**
	IRT 2530	40	25	29	30.5	0.3	27	28	**TA 2930Z**	—	—
	IRT 2515-1	25.5	25	30	15.5	0.3	27	29	**TA 3015Z**	—	—
	IRT 2520-1	34	25	30	20.5	0.3	27	29	**TA 3020Z**	**TLA 3020Z**	—
	IRT 2525-1	42.5	25	30	25.5	0.3	27	29	**TA 3025Z**	—	—
	IRT 2526-1	44	25	30	26.5	0.3	27	29	—	**TLA 3026Z**	—
	IRT 2530-1	50.5	25	30	30.5	0.3	27	29	**TA 3030Z**	—	—
	IRT 2538-1	64	25	30	38.5	0.3	27	29	—	**TLAW 3038Z**	—
28	**IRT 2820**	29.5	28	32	20.5	0.3	30	31	**TA 3220Z**	—	**YT 3220**
	IRT 2830	44	28	32	30.5	0.3	30	31	**TA 3230Z**	—	—
30	**IRT 3012**	24.5	30	35	12.5	0.6	34	34.5	**TA 3512Z**	**TLA 3512Z**	—
	IRT 3015	30.5	30	35	15.5	0.6	34	34.5	**TA 3515Z**	—	—

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.





IRT

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings TA···Z (TAM)	TLA···Z (TLAM)	YT YTL
30	**IRT 3020**	40	30	35	20.5	0.6	34	34.5	**TA 3520Z**	**TLA 3520Z**	—
	IRT 3025	50	30	35	25.5	0.6	34	34.5	**TA 3525Z**	—	—
	IRT 3030	60	30	35	30.5	0.6	34	34.5	**TA 3530Z**	—	—
32	**IRT 3220**	42.5	32	37	20.5	0.6	36	36.5	**TA 3720Z**	—	**YT 3720**
	IRT 3230	63.5	32	37	30.5	0.6	36	36.5	**TA 3730Z**	—	—
	IRT 3215-1	39.5	32	38	15.5	0.6	36	37	**TA 3815Z**	—	—
	IRT 3220-1	52	32	38	20.5	0.6	36	37	**TA 3820Z**	—	—
	IRT 3225-1	64.5	32	38	25.5	0.6	36	37	**TA 3825Z**	—	—
	IRT 3230-1	77.5	32	38	30.5	0.6	36	37	**TA 3830Z**	—	—
	IRT 3245-1	115	32	38	45.5	0.6	36	37	**TAW 3845Z**	—	—
35	**IRT 3515**	35	35	40	15.5	0.6	39	39.5	**TA 4015Z**	—	**YT 4015**
	IRT 3520	46.5	35	40	20.5	0.6	39	39.5	**TA 4020Z**	**TLA 4020Z**	—
	IRT 3525	58	35	40	25.5	0.6	39	39.5	**TA 4025Z**	—	**YT 4025**
	IRT 3530	69	35	40	30.5	0.6	39	39.5	**TA 4030Z**	—	—
	IRT 3540	91.5	35	40	40.5	0.6	39	39.5	**TA 4040Z**	—	—
40	**IRT 4020**	52.5	40	45	20.5	0.6	44	45.5	**TA 4520Z**	**TLA 4520Z**	**YT 4520**
	IRT 4025	65.5	40	45	25.5	0.6	44	45.5	**TA 4525Z**	—	**YT 4525**
	IRT 4030	78.5	40	45	30.5	0.6	44	45.5	**TA 4530Z**	—	—
	IRT 4040	104	40	45	40.5	0.6	44	45.5	**TA 4540Z**	—	—
45	**IRT 4512**	36	45	50	12.5	0.6	49	49.5	**TA 5012Z**	—	—
	IRT 4515	44.5	45	50	15.5	0.6	49	49.5	**TA 5015Z**	—	—
	IRT 4520	59	45	50	20.5	0.6	49	49.5	**TA 5020Z**	**TLA 5020Z**	—
	IRT 4525	73	45	50	25.5	0.6	49	49.5	**TA 5025Z**	**TLA 5025Z**	—
	IRT 4530	87.5	45	50	30.5	0.6	49	49.5	**TA 5030Z**	—	—
	IRT 4540	116	45	50	40.5	0.6	49	49.5	**TA 5040Z**	—	—
	IRT 4545	131	45	50	45.5	0.6	49	49.5	**TAW 5045Z**	—	—

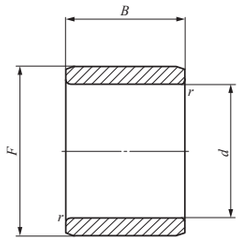
Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

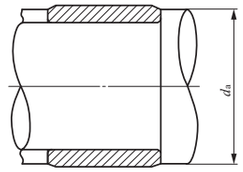
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

Inner Rings for Shell Type Needle Roller Bearings







IRT

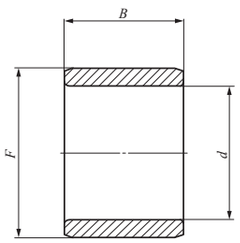
Shaft dia. 50 — 60mm

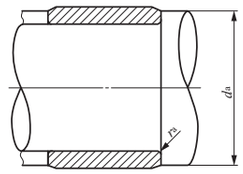
Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings TA···Z (TAM)	TLA···Z (TLAM)	YT YTL
50	**IRT 5020-1**	65	50	55	20.5	0.6	54	54.5	**TA 5520Z**	**TLA 5520Z**	—
	IRT 5025-1	81	50	55	25.5	0.6	54	54.5	**TA 5525Z**	**TLA 5525Z**	—
	IRT 5030-1	96.5	50	55	30.5	0.6	54	54.5	**TA 5530Z**	—	—
	IRT 5040-1	128	50	55	40.5	0.6	54	54.5	**TA 5540Z**	—	—
	IRT 5045-1	144	50	55	45.5	0.6	54	54.5	**TAW 5545Z**	—	—
	IRT 5050-1	160	50	55	50.5	0.6	54	54.5	**TAW 5550Z**	—	—
	IRT 5025	169	50	60	25.5	1.5	58	59	**TA 6025Z**	—	—
	IRT 5030	205	50	60	30.5	1.5	58	59	**TA 6030Z**	—	—
	IRT 5040	270	50	60	40.5	1.5	58	59	**TA 6040Z**	—	—
	IRT 5045	300	50	60	45.5	1.5	58	59	**TAW 6045Z**	—	—
	IRT 5050	335	50	60	50.5	1.5	58	59	**TAW 6050Z**	—	—
52	**IRT 5212**	86	52	62	12.5	1.5	60	60.5	**TA 6212Z**	—	—
55	**IRT 5525**	185	55	65	25.5	1.5	63	63.5	**TA 6525Z**	—	—
	IRT 5530	220	55	65	30.5	1.5	63	63.5	**TA 6530Z**	—	—
	IRT 5545	330	55	65	45.5	1.5	63	63.5	**TAW 6545Z**	—	—
	IRT 5550	365	55	65	50.5	1.5	63	63.5	**TAW 6550Z**	—	—
60	**IRT 6025**	200	60	70	25.5	1.5	68	68.5	**TA 7025Z**	—	—
	IRT 6030	240	60	70	30.5	1.5	68	68.5	**TA 7030Z**	—	—
	IRT 6040	320	60	70	40.5	1.5	68	68.5	**TA 7040Z**	—	—
	IRT 6050	395	60	70	50.5	1.5	68	68.5	**TAW 7050Z**	—	—

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

Inner Rings for Shell Type Needle Roller Bearings Inch Series







IRB

Shaft dia. 7.938 — 15.875mm

Shaft dia. mm (inch)	Identification number	Mass (Ref.) g	Boundary dimensions mm(inch) d	F	B	Standard mounting dimensions mm (1) d_a Min.	Max.	$r_{as\,max}$ Max.	Assembled bearings BA···Z (BAM)	BHA···Z (BHAM)	YB YBH
7.938 (5/16)	**IRB 58**	8	7.938 (5/16)	12.700 (1/2)	13.08	11.3	11.7	0.3	**BA 88Z**	**BHA 88Z**	**YB 88**
9.525 (3/8)	**IRB 68**	8.9	9.525 (3/8)	14.288 (9/16)	13.08	12.8	13.2	0.3	**BA 98Z**	**BHA 98Z**	**YB 98**
	IRB 68-1	12.6	9.525 (3/8)	15.875 (5/8)	13.08	12.8	14	0.3	**BA 108Z**	**BHA 108Z**	**YB 108** **YBH 108**
	IRB 612	13.2	9.525 (3/8)	14.288 (9/16)	19.43	12.8	13.2	0.3	**BA 912Z**	—	**YB 912**
	IRB 612-1	18.8	9.525 (3/8)	15.875 (5/8)	19.43	12.8	14	0.3	**BA 1012Z**	**BHA 1012Z**	**YB 1012**
11.112 (7/16)	**IRB 78**	10.1	11.112 (7/16)	15.875 (5/8)	13.08	14.4	14.8	0.3	**BA 108Z**	**BHA 108Z**	**YB 108** **YBH 108**
	IRB 712	15	11.112 (7/16)	15.875 (5/8)	19.43	14.4	14.8	0.3	**BA 1012Z**	**BHA 1012Z**	**YB 1012**
	IRB 714	17.4	11.112 (7/16)	15.875 (5/8)	22.60	14.4	14.8	0.3	**BA 1014Z**	—	—
	IRB 716	19.9	11.112 (7/16)	15.875 (5/8)	25.78	14.4	14.8	0.3	**BA 1016Z**	**BHA 1016Z**	—
12.700 (1/2)	**IRB 86**	8.5	12.700 (1/2)	17.462 (11/16)	9.90	16.9	16.9	0.3	**BA 116Z**	—	—
	IRB 88	11.2	12.700 (1/2)	17.462 (11/16)	13.08	16.9	16.9	0.3	**BA 118Z**	**BHA 118Z**	—
	IRB 812	16.7	12.700 (1/2)	17.462 (11/16)	19.43	16.9	16.9	0.3	**BA 1112Z**	**BHA 1112Z**	**YB 1112**
	IRB 88-1	15.8	12.700 (1/2)	19.050 (3/4)	13.08	16.9	17.5	0.6	**BA 128Z**	—	**YB 128**
	IRB 810-1	19.6	12.700 (1/2)	19.050 (3/4)	16.25	16.9	17.5	0.6	**BA 1210Z**	—	**YB 1210**
	IRB 812-1	23.5	12.700 (1/2)	19.050 (3/4)	19.43	16.9	17.5	0.6	**BA 1212Z**	**BHA 1212Z**	**YB 1212**
	IRB 814-1	27.5	12.700 (1/2)	19.050 (3/4)	22.60	16.9	17.5	0.6	**BA 1214Z**	—	—
	IRB 816-1	31	12.700 (1/2)	19.050 (3/4)	25.78	16.9	17.5	0.6	**BA 1216Z**	—	—
14.288 (9/16)	**IRB 98**	17.3	14.288 (9/16)	20.638 (13/16)	13.08	19	19.6	0.6	**BA 138Z**	**BHA 138Z**	**YB 138**
	IRB 910	21.5	14.288 (9/16)	20.638 (13/16)	16.25	19	19.6	0.6	**BA 1310Z**	**BHA 1310Z**	**YBH 1310**
	IRB 912	26	14.288 (9/16)	20.638 (13/16)	19.43	19	19.6	0.6	**BA 1312Z**	**BHA 1312Z**	**YBH 1312**
	IRB 914	30	14.288 (9/16)	20.638 (13/16)	22.60	19	19.6	0.6	**BA 1314Z**	—	—
	IRB 916	34.5	14.288 (9/16)	20.638 (13/16)	25.78	19	19.6	0.6	**BA 1316Z**	—	—
	IRB 920	43	14.288 (9/16)	20.638 (13/16)	32.13	19	19.6	0.6	**BA 1320Z**	—	—
15.875 (5/8)	**IRB 106**	14.5	15.875 (5/8)	22.225 (7/8)	9.90	20.7	21.2	0.6	**BA 146Z**	—	—
	IRB 108	18.9	15.875 (5/8)	22.225 (7/8)	13.08	20.7	21.2	0.6	**BA 148Z**	—	**YB 148**
	IRB 1012	28	15.875 (5/8)	22.225 (7/8)	19.43	20.7	21.2	0.6	**BA 1412Z**	**BHA 1412Z**	**YB 1412**

Note(1) Maximum allowable fillet corner radius of shaft
Remark No oil hole is provided.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

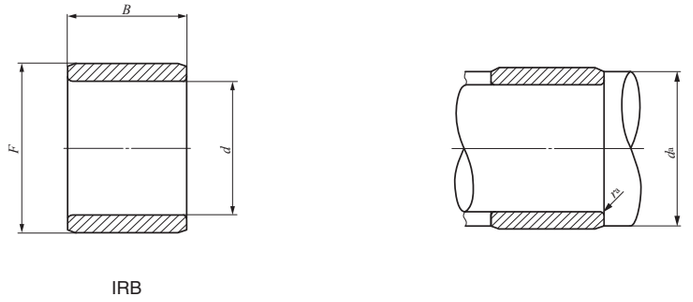
Inner Rings for Shell Type Needle Roller Bearings Inch Series



Shaft dia. 15.875 — 63.500mm

Shaft dia. mm (inch)	Identification number	Mass (Ref.) g	Boundary dimensions mm(inch) d	F	B	Standard mounting dimensions mm (1) d_a Min.	d_a Max.	$r_{as\,max}$ Max.	Assembled bearings BA···Z (BAM)	BHA···Z (BHAM)	YB YBH
15.875 (5/8)	IRB 1014	33	15.875 (5/8)	22.225 (7/8)	22.60	20.7	21.2	0.6	BA 1414Z	—	—
	IRB 1016	37.5	15.875 (5/8)	22.225 (7/8)	25.78	20.7	21.2	0.6	BA 1416Z	BHA 1416Z	YB 1416
	IRB 1022	51.5	15.875 (5/8)	22.225 (7/8)	35.30	20.7	21.2	0.6	BA 1422Z	—	—
17.462 (11/16)	IRB 1110	25.5	17.462 (11/16)	23.812 (15/16)	16.25	22.3	22.8	0.6	BA 1510Z	—	—
	IRB 1116	40.5	17.462 (11/16)	23.812 (15/16)	25.78	22.3	22.8	0.6	BA 1516Z	—	—
19.050 (3/4)	IRB 128	22	19.050 (3/4)	25.400 (1)	13.08	23.9	24.4	0.6	BA 168Z	BHA 168Z	YB 168 YBH 168
	IRB 1212	33	19.050 (3/4)	25.400 (1)	19.43	23.9	24.4	0.6	BA 1612Z	BHA 1612Z	YB 1612 YBH 1612
	IRB 1214	38.5	19.050 (3/4)	25.400 (1)	22.60	23.9	24.4	0.6	BA 1614Z	BHA 1614Z	—
	IRB 1216	43.5	19.050 (3/4)	25.400 (1)	25.78	23.9	24.4	0.6	BA 1616Z	BHA 1616Z	YB 1616 YBH 1616
	IRB 1220	54.5	19.050 (3/4)	25.400 (1)	32.13	23.9	24.4	0.6	BA 1620Z	BHA 1620Z	—
20.638 (13/16)	IRB 1316	34	20.638 (13/16)	25.400 (1)	25.78	24.9	24.9	0.6	BA 1616Z	BHA 1616Z	YB 1616 YBH 1616
22.225 (7/8)	IRB 148	25	22.225 (7/8)	28.575 (1 1/8)	13.08	27	27.5	0.6	BA 188Z	—	YB 188
	IRB 1412	37.5	22.225 (7/8)	28.575 (1 1/8)	19.43	27	27.5	0.6	BA 1812Z	BHA 1812Z	YB 1812
	IRB 1416	50	22.225 (7/8)	28.575 (1 1/8)	25.78	27	27.5	0.6	BA 1816Z	BHA 1816Z	YB 1816
	IRB 1420	62.5	22.225 (7/8)	28.575 (1 1/8)	32.13	27	27.5	0.6	BA 1820Z	BHA 1820Z	—
25.400 (1)	IRB 168	28.5	25.400 (1)	31.750 (1 1/4)	13.08	30	30.7	0.6	BA 208Z	BHA 208Z	—
	IRB 1610	35.5	25.400 (1)	31.750 (1 1/4)	16.25	30	30.7	0.6	BA 2010Z	—	YB 2010
	IRB 1612	42.5	25.400 (1)	31.750 (1 1/4)	19.43	30	30.7	0.6	BA 2012Z	BHA 2012Z	YB 2012
	IRB 1616	56	25.400 (1)	31.750 (1 1/4)	25.78	30	30.7	0.6	BA 2016Z	BHA 2016Z	YB 2016
	IRB 1620	70	25.400 (1)	31.750 (1 1/4)	32.13	30	30.7	0.6	BA 2020Z	BHA 2020Z	—
	IRB 168-1	36.5	25.400 (1)	33.338 (1 5/16)	13.08	30	32.1	0.6	BA 218Z	—	—
	IRB 1610-1	45.5	25.400 (1)	33.338 (1 5/16)	16.25	30	32.1	0.6	BA 2110Z	—	—
	IRB 1612-1	54.5	25.400 (1)	33.338 (1 5/16)	19.43	30	32.1	0.6	BA 2112Z	—	—

Note(1) Maximum allowable fillet corner radius of shaft
Remark No oil hole is provided.



IRB

Shaft dia. mm (inch)	Identification number	Mass (Ref.) g	Boundary dimensions mm(inch) d	F	B	Standard mounting dimensions mm (1) d_a Min.	d_a Max.	$r_{as\,max}$ Max.	Assembled bearings BA···Z (BAM)	BHA···Z (BHAM)	YB YBH
28.575 (1 1/8)	IRB 188	31.5	28.575 (1 1/8)	34.925 (1 3/8)	13.08	33.2	33.9	0.6	BA 228Z	BHA 228Z	YB 228
	IRB 1812	47	28.575 (1 1/8)	34.925 (1 3/8)	19.43	33.2	33.9	0.6	BA 2212Z	BHA 2212Z	YB 2212
	IRB 1816	62.5	28.575 (1 1/8)	34.925 (1 3/8)	25.78	33.2	33.9	0.6	BA 2216Z	BHA 2216Z	—
	IRB 1820	78	28.575 (1 1/8)	34.925 (1 3/8)	32.13	33.2	33.9	0.6	BA 2220Z	BHA 2220Z	YB 2220
31.750 (1 1/4)	IRB 2010	43	31.750 (1 1/4)	38.100 (1 1/2)	16.25	37	37.1	0.6	BA 2410Z	—	—
	IRB 2014	60	31.750 (1 1/4)	38.100 (1 1/2)	22.60	37	37.1	0.6	BA 2414Z	—	YB 2414
	IRB 2016	68.5	31.750 (1 1/4)	38.100 (1 1/2)	25.78	37	37.1	0.6	BA 2416Z	—	YB 2416
	IRB 2020	85.5	31.750 (1 1/4)	38.100 (1 1/2)	32.13	37	37.1	0.6	BA 2420Z	—	YB 2420
34.925 (1 3/8)	IRB 2210	47	34.925 (1 3/8)	41.275 (1 5/8)	16.25	40.2	40.2	0.6	BA 2610Z	—	YB 2610
	IRB 2220	93.5	34.925 (1 3/8)	41.275 (1 5/8)	32.13	40.2	40.2	0.6	BA 2620Z	—	—
36.512 (1 7/16)	IRB 2316	99	36.512 (1 7/16)	44.450 (1 3/4)	25.78	42.5	43.2	0.6	BA 2816Z	—	—
38.100 (1 1/2)	IRB 2412	62	38.100 (1 1/2)	44.450 (1 3/4)	19.43	43.3	43.4	0.6	BA 2812Z	—	—
	IRB 2416	81	38.100 (1 1/2)	44.450 (1 3/4)	25.78	43.3	43.4	0.6	BA 2816Z	—	YB 2816
	IRB 2424	121	38.100 (1 1/2)	44.450 (1 3/4)	38.48	43.3	43.4	0.6	BA 2824Z	BHA 2824Z	—
	IRB 248-1	64	38.100 (1 1/2)	47.625 (1 7/8)	13.08	44.5	45.5	1	BA 308Z	—	—
	IRB 2410-1	79.5	38.100 (1 1/2)	47.625 (1 7/8)	16.25	44.5	45.5	1	BA 3010Z	—	—
41.275 (1 5/8)	IRB 2616	136	41.275 (1 5/8)	50.800 (2)	25.78	47.5	48.5	1	BA 3216Z	—	—
	IRB 2628	235	41.275 (1 5/8)	50.800 (2)	44.83	47.5	48.5	1	BAW 3228Z	—	—
42.862 (1 11/16)	IRB 2720	146	42.862 (1 11/16)	50.800 (2)	32.13	48.5	49.5	0.6	BA 3220Z	— —	— —
47.625 (1 7/8)	IRB 3016	100	47.625 (1 7/8)	53.975 (2 1/8)	25.78	52.9	52.9	0.6	BA 3416Z	—	—
	IRB 3024	149	47.625 (1 7/8)	53.975 (2 1/8)	38.48	52.9	52.9	0.6	BA 3424Z	—	—
57.150 (2 1/4)	IRB 3616	183	57.150 (2 1/4)	66.675 (2 5/8)	25.78	63.5	64.5	1	BA 4216Z	— —	— —
63.500 (2 1/2)	IRB 4016	131	63.500 (2 1/2)	69.850 (2 3/4)	25.78	68.7	68.8	0.6	BA 4416Z	—	—
	IRB 4020	164	63.500 (2 1/2)	69.850 (2 3/4)	32.13	68.7	68.8	0.6	BA 4420Z	—	—

Note(1) Maximum allowable fillet corner radius of shaft
Remark No oil hole is provided.

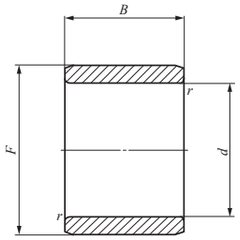
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1mm=0.03937inch

INNER RINGS

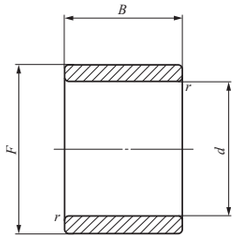
Inner Rings for General Usage



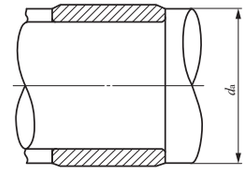




LRT



LRTZ



Shaft dia. 5 — 20mm

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	(1) $r_{s\,min}$	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings	
5	LRT 5710	—	1.4	5	7	10	0.15	6.2	6.7	RNA 495	
	LRT 5812	—	2.8	5	8	12	0.2	6.6	7.7	TAF 81512	
	LRT 5816	—	3.8	5	8	16	0.2	6.6	7.7	TAF 81516	
6	LRT 6810	—	1.7	6	8	10	0.15	7.2	7.7	RNA 496	
	LRT 6912	—	3.2	6	9	12	0.2	7.6	8.7	TAF 91612	
	LRT 6916	—	4.3	6	9	16	0.2	7.6	8.7	TAF 91616	
	LRT 61010	—	3.9	6	10	10	0.3	8	9.7	RNAF 101710	
7	LRT 7910	—	1.9	7	9	10	0.15	8.2	8.7	RNA 497	
	LRT 71012	—	3.6	7	10	12	0.2	8.6	9.7	TAF 101712	
	LRT 71012-1	—	3.6	7	10	12	0.3	9	9.7	RNAF 102012	
	LRT 71016	—	4.9	7	10	16	0.2	8.6	9.7	TAF 101716	NAX 1023
8	LRT 81011	—	2.4	8	10	11	0.2	9.6	9.9	RNA 498	
9	LRT 91211	—	3.1	9	12	11	0.3	11	11.5	RNA 499	
	LRT 91212	—	4.5	9	12	12	0.3	11	11.5	TAF 121912	RNAF 122212
	LRT 91216	—	6	9	12	16	0.3	11	11.5	TAF 121916	NAX 1223
10	LRT 101412	—	7	10	14	12	0.3	12	13	RNAF 142612	
	LRT 101413	—	7.5	10	14	13	0.3	12	13	RNA 4900	RNAF 142213
	—	LRTZ 101414	8.2	10	14	14	0.3	12	13	RNA 4900 UU	
	LRT 101416	—	9	10	14	16	0.3	12	13	TAF 142216	
	LRT 101420	—	11.5	10	14	20	0.3	12	13	TAF 142220	RNAFW142220
12	LRT 121516	—	8	12	15	16.5	0.3	14	14.5	NAX 1523	NBX 1523
	LRT 121612	—	8.5	12	16	12	0.3	14	15	RNAF 162812	
	LRT 121613	—	8.5	12	16	13	0.3	14	15	RNA 4901	RNAF 162413
	—	LRTZ 121614	9.6	12	16	14	0.3	14	15	RNA 4901 UU	
	LRT 121616	—	10.5	12	16	16	0.3	14	15	TAF 162416	
	LRT 121620	—	13.5	12	16	20	0.3	14	15	TAF 162420	RNAFW162420

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	(1) $r_{s\,min}$	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings	
12	LRT 121622	—	14.5	12	16	22	0.3	14	15	RNA 6901	
	—	LRTZ 121623	15.5	12	16	23	0.3	14	15	RNA 6901 UU	
14	LRT 141717	—	9.5	14	17	17	0.3	16	16.5	NAX 1725	NBX 1725
15	LRT 151916	—	12.5	15	19	16	0.3	17	18	TAF 192716	
	LRT 151920	—	16	15	19	20	0.3	17	18	TAF 192720	
	LRT 152012	—	12	15	20	12	0.3	17	19	RNAF 203212	
	LRT 152013	—	13.5	15	20	13	0.3	17	19	RNA 4902	RNAF 202813
	—	LRTZ 152014	14.5	15	20	14	0.3	17	19	RNA 4902 UU	
	LRT 152020	—	21.5	15	20	20.5	0.3	17	19	TR 203320	
	—	LRTZ 152020	21.5	15	20	20.5	0.3	17	19	GTR 203320	
	LRT 152023	—	24	15	20	23	0.3	17	19	RNA 6902	
	—	LRTZ 152024	25	15	20	24	0.3	17	19	RNA 6902 UU	
	LRT 152026	—	28	15	20	26	0.3	17	19	RNAFW 202826	
17	LRT 172020	—	13.5	17	20	20.5	0.3	19	19.5	NAX 2030	NBX 2030
	LRT 172116	—	14.5	17	21	16	0.3	19	20	TAF 212916	
	LRT 172120	—	18	17	21	20	0.3	19	20	TAF 212920	
	LRT 172213	—	15.5	17	22	13	0.3	19	21	RNA 4903	RNAF 223013
	—	LRTZ 172214	16.5	17	22	14	0.3	19	21	RNA 4903 UU	
	LRT 172216	—	19	17	22	16	0.3	19	21	RNAF 223516	
	LRT 172223	—	26.5	17	22	23	0.3	19	21	RNA 6903	
	—	LRTZ 172224	28	17	22	24	0.3	19	21	RNA 6903 UU	
	LRT 172225	—	30	17	22	25.5	0.3	19	21	TR 223425	
	—	LRTZ 172225	30	17	22	25.5	0.3	19	21	GTR 223425	
	LRT 172226	—	31	17	22	26	0.3	19	21	RNAFW 223026	
	LRT 172232	—	38	17	22	32	0.3	19	21	RNAFW 223532	
20	LRT 202416	—	16.5	20	24	16	0.3	22	23	TAF 243216	
	LRT 202420	—	20.5	20	24	20	0.3	22	23	TAF 243220	

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

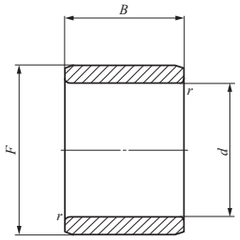
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INNER RINGS

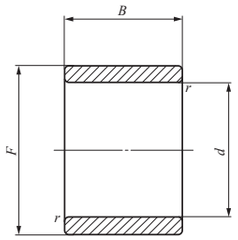
Inner Rings for General Usage



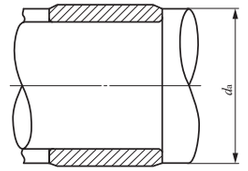




LRT



LRTZ



Shaft dia. 20 — 32mm

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings	
20	LRT 202516	—	22	20	25	16	0.3	22	24	RNAF 253716	
	LRT 202517	—	23	20	25	17	0.3	22	24	RNA 4904	RNAF 253517
	—	LRTZ 202518	24	20	25	18	0.3	22	24	RNA 4904 UU	
	LRT 202520	—	28	20	25	20.5	0.3	22	24	TR 253820	NAX 2530
										NBX 2530	
	—	LRTZ 202520	28	20	25	20.5	0.3	22	24	GTR 253820	
	LRT 202525	—	35	20	25	25.5	0.3	22	24	TR 253825	
	—	LRTZ 202525	35	20	25	25.5	0.3	22	24	GTR 253825	
	LRT 202526	—	36	20	25	26	0.3	22	24	RNAFW 253526	
	LRT 202530	—	40.5	20	25	30	0.3	22	24	RNA 6904	
	—	LRTZ 202531	41.5	20	25	31	0.3	22	24	RNA 6904 UU	
	LRT 202532	—	44	20	25	32	0.3	22	24	RNAFW 253732	
22	LRT 222616	—	17.5	22	26	16	0.3	24	25	TAF 263416	
	LRT 222620	—	24	22	26	20	0.3	24	25	TAF 263420	
	LRT 222817	—	30.5	22	28	17	0.3	24	27	RNA 49/22	
	—	LRTZ 222818	32	22	28	18	0.3	24	27	RNA 49/22 UU	
	LRT 222830	—	55	22	28	30	0.3	24	27	RNA 69/22	
	—	LRTZ 222831	55	22	28	31	0.3	24	27	RNA 69/22 UU	
25	LRT 252920	—	25	25	29	20	0.3	27	28	TAF 293820	
	LRT 252930	—	38	25	29	30	0.3	27	28	TAF 293830	
	LRT 253016	—	28	25	30	16	0.3	27	29	RNAF 304216	
	LRT 253017	—	28.5	25	30	17	0.3	27	29	RNA 4905	RNAF 304017
	—	LRTZ 253018	29.5	25	30	18	0.3	27	29	RNA 4905 UU	
	LRT 253020	—	34	25	30	20.5	0.3	27	29	NAX 3030	NBX 3030
	LRT 253025	—	42	25	30	25.5	0.3	27	29	TR 304425	
	—	LRTZ 253025	42	25	30	25.5	0.3	27	29	GTR 304425	
	LRT 253026	—	44.5	25	30	26	0.3	27	29	RNAFW 304026	
	LRT 253030	—	49	25	30	30	0.3	27	29	RNA 6905	

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings	
25	—	LRTZ 253031	51	25	30	31	0.3	27	29	RNA 6905 UU	
	LRT 253032	—	54	25	30	32	0.3	27	29	RNAFW 304232	
28	LRT 283217	—	24.5	28	32	17	0.3	30	31	RNA 49/28	
	—	LRTZ 283218	25.5	28	32	18	0.3	30	31	RNA 49/28 UU	
	LRT 283220	—	28.5	28	32	20	0.3	30	31	TAF 324220	
	LRT 283230	—	43	28	32	30	0.3	30	31	RNA 69/28	TAF 324230
	—	LRTZ 283230	43	28	32	30.5	0.3	30	31	GTR 324530	
	—	LRTZ 283231	44	28	32	31	0.3	30	31	RNA 69/28 UU	
30	LRT 303516	—	31.5	30	35	16	0.3	32	34	RNAF 354716	
	LRT 303517	—	33.5	30	35	17	0.3	32	34	RNA 4906	RNAF 354517
	—	LRTZ 303518	35	30	35	18	0.3	32	34	RNA 4906 UU	
	LRT 303520	—	38.5	30	35	20	0.3	32	34	TAF 354520	NAX 3530
										NBX 3530	
	LRT 303526	—	52	30	35	26	0.3	32	34	RNAFW 354526	
	LRT 303530	—	59	30	35	30	0.3	32	34	RNA 6906	TAF 354530
	LRT 303530-1	—	59	30	35	30.5	0.3	32	34	TR 354830	
	—	LRTZ 303530	59	30	35	30.5	0.3	32	34	GTR 354830	
	—	LRTZ 303531	61	30	35	31	0.3	32	34	RNA 6906 UU	
	LRT 303532	—	64	30	35	32	0.3	32	34	RNAFW 354732	
32	LRT 323720	—	43.5	32	37	20	0.3	34	36	TAF 374720	
	LRT 323730	—	63	32	37	30	0.3	34	36	TAF 374730	
	LRT 323830	—	77	32	38	30.5	0.6	36	37	TR 385230	
	—	LRTZ 323830	77	32	38	30.5	0.6	36	37	GTR 385230	
	LRT 324020	—	69	32	40	20	0.6	36	39	RNA 49/32	
	—	LRTZ 324021	72.5	32	40	21	0.6	36	39	RNA 49/32 UU	
	LRT 324036	—	123	32	40	36	0.6	36	39	RNA 69/32	
	—	LRTZ 324037	130	32	40	37	0.6	36	39	RNA 69/32 UU	

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

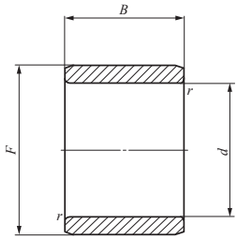
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

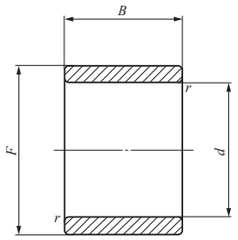
Inner Rings for General Usage



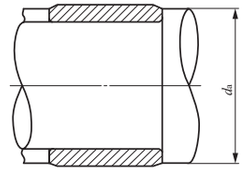




LRT



LRTZ



Shaft dia. 35 — 50mm

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings
35	LRT 354017	—	39	35	40	17	0.3	37	39	RNAF 405017
	LRT 354020	—	46	35	40	20	0.3	37	39	TAF 405020 RNAF 405520 NAX 4032 NBX 4032
	—	LRTZ 354020	46	35	40	20.5	0.6	39	39.5	GTR 405520
	LRT 354030	—	67	35	40	30	0.3	37	39	TAF 405030
	LRT 354034	—	78	35	40	34	0.3	37	39	RNAFW 405034
	LRT 354040	—	95	35	40	40	0.3	37	39	RNAFW 405540
	LRT 354220	—	65	35	42	20	0.6	39	41	RNA 4907
	—	LRTZ 354221	67	35	42	21	0.6	39	41	RNA 4907 UU
	LRT 354230	—	97	35	42	30.5	0.6	39	41	TR 425630
	—	LRTZ 354230	100	35	42	30.5	0.6	39	41	GTR 425630
	LRT 354236	—	120	35	42	36	0.6	39	41	RNA 6907
	—	LRTZ 354237	120	35	42	37	0.6	39	41	RNA 6907 UU
38	LRT 384320	—	47.5	38	43	20	0.3	40	42	TAF 435320
	LRT 384330	—	72	38	43	30	0.3	40	42	TAF 435330
40	LRT 404517	—	44.5	40	45	17	0.3	42	44	RNAF 455517
	LRT 404520	—	51	40	45	20	0.3	42	44	TAF 455520 RNAF 456220 NAX 4532 NBX 4532
	LRT 404530	—	77	40	45	30	0.3	42	44	TAF 455530
	LRT 404530-1	—	77	40	45	30.5	0.6	44	44.5	TR 455930
	—	LRTZ 404530	77	40	45	30.5	0.6	44	44.5	GTR 455930
	LRT 404534	—	88	40	45	34	0.3	42	44	RNAFW 455534
	LRT 404540	—	105	40	45	40	0.3	42	44	RNAFW 456240
	LRT 404822	—	93	40	48	22	0.6	44	47	RNA 4908
	—	LRTZ 404823	95	40	48	23	0.6	44	47	RNA 4908 UU
	LRT 404840	—	165	40	48	40	0.6	44	47	RNA 6908
	—	LRTZ 404841	170	40	48	41	0.6	44	47	RNA 6908 UU
42	LRT 424720	—	54	42	47	20	0.3	44	46	TAF 475720
	LRT 424730	—	81	42	47	30	0.3	44	46	TAF 475730
	LRT 424830	—	100	42	48	30.5	0.6	46	47	TR 486230
	—	LRTZ 424830	100	42	48	30.5	0.6	46	47	GTR 486230
45	LRT 455020	—	58	45	50	20	0.3	47	49	RNAF 506220
	LRT 455025	—	71	45	50	25	0.3	47	49	TAF 506225 NAX 5035 NBX 5035
	LRT 455030	—	90	45	50	30.5	0.6	49	49.5	TR 506430
	—	LRTZ 455030	90	45	50	30.5	0.6	49	49.5	GTR 506430
	LRT 455035	—	95	45	50	35	0.3	47	49	TAF 506235
	LRT 455040	—	115	45	50	40	0.3	47	49	RNAFW 506240
	LRT 455222	—	88	45	52	22	0.6	49	51	RNA 4909
	—	LRTZ 455223	93	45	52	23	0.6	49	51	RNA 4909 UU
	LRT 455240	—	165	45	52	40	0.6	49	51	RNA 6909
	—	LRTZ 455241	170	45	52	41	0.6	49	51	RNA 6909 UU
	LRT 455520	—	120	45	55	20	1	50	54	RNAF 557220
	LRT 455540	—	245	45	55	40	1	50	54	RNAFW 557240
50	LRT 505520	—	63	50	55	20	0.3	52	54	RNAF 556820
	LRT 505525	—	77	50	55	25	0.3	52	54	TAF 556825
	LRT 505535	—	110	50	55	35	0.3	52	54	TAF 556835
	LRT 505540	—	130	50	55	40	0.3	52	54	RNAFW 556840
	LRT 505822	—	116	50	58	22	0.6	54	57	RNA 4910
	—	LRTZ 505823	118	50	58	23	0.6	54	57	RNA 4910 UU
	LRT 505840	—	210	50	58	40	0.6	54	57	RNA 6910
	—	LRTZ 505841	215	50	58	41	0.6	54	57	RNA 6910 UU
	LRT 505845	—	235	50	58	45.5	1	55	57	TR 587745
	—	LRTZ 505845	235	50	58	45.5	1	55	57	GTR 587745
	LRT 506020	—	135	50	60	20	1	55	59	RNAF 607820

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

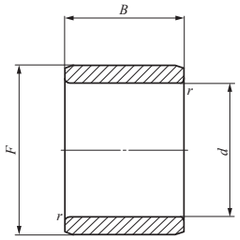
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

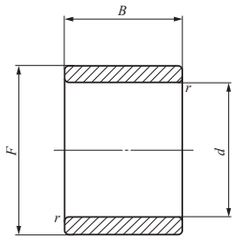
Inner Rings for General Usage



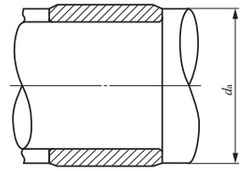




LRT



LRTZ



Shaft dia. 50 — 80mm

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings
50	LRT 506025	—	165	50	60	25.5	1	55	59	NAX 6040 NBX 6040
	LRT 506040	—	265	50	60	40	1	55	59	RNAFW 607840
55	LRT 556025	—	88	55	60	25	0.3	57	59	TAF 607225
	LRT 556035	—	120	55	60	35	0.3	57	59	TAF 607235
	LRT 556238	—	190	55	62	38.5	1	60	60.5	TR 628138
	—	LRTZ 556238	190	55	62	38.5	1	60	60.5	GTR 628138
	LRT 556325	—	145	55	63	25	1	60	61	RNA 4911
	—	LRTZ 556326	150	55	63	26	1	60	61	RNA 4911 UU
	LRT 556345	—	255	55	63	45	1	60	61	RNA 6911
	—	LRTZ 556346	260	55	63	46	1	60	61	RNA 6911 UU
	LRT 556530	—	220	55	65	30	1.5	63	63.5	RNAF 658530
	LRT 556560	—	435	55	65	60	1.5	63	63.5	RNAFW 658560
60	LRT 606825	—	150	60	68	25	0.6	64	66	TAF 688225
	LRT 606825-1	—	150	60	68	25	1	65	66	RNA 4912
	—	LRTZ 606826	160	60	68	26	1	65	66	RNA 4912 UU
	LRT 606835	—	210	60	68	35	0.6	64	66	TAF 688235
	LRT 606845	—	275	60	68	45	1	65	66	RNA 6912
	—	LRTZ 606846	280	60	68	46	1	65	66	RNA 6912 UU
	LRT 607025	—	195	60	70	25.5	1	65	68	NAX 7040
	LRT 607030	—	240	60	70	30	1.5	68	68.5	RNAF 709030
	LRT 607045	—	355	60	70	45.5	1	65	68	TR 708945
	—	LRTZ 607045	360	60	70	45.5	1	65	68	GTR 708945
	LRT 607060	—	480	60	70	60	1.5	68	68.5	RNAFW 709060
65	LRT 657225	—	145	65	72	25	1	70	70.5	RNA 4913
	—	LRTZ 657226	150	65	72	26	1	70	70.5	RNA 4913 UU
	LRT 657245	—	255	65	72	45	1	70	70.5	RNA 6913
	—	LRTZ 657246	265	65	72	46	1	70	70.5	RNA 6913 UU
	LRT 657335	—	235	65	73	35	1	70	71	TAF 739035

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings
65	LRT 657530	—	260	65	75	30	1.5	73	73.5	RNAF 759530
	LRT 657560	—	520	65	75	60	1.5	73	73.5	RNAFW 759560
70	LRT 708025	—	225	70	80	25	1	75	78	TAF 809525
	LRT 708030	—	275	70	80	30	1	75	78	RNA 4914
	LRT 708030-1	—	275	70	80	30	1.5	78	78.5	RNAF 8010030
	—	LRTZ 708031	275	70	80	31	1	75	78	RNA 4914 UU
	LRT 708035	—	310	70	80	35	1	75	78	TAF 809535
	LRT 708054	—	490	70	80	54	1	75	78	RNA 6914
	—	LRTZ 708055	500	70	80	55	1	75	78	RNA 6914 UU
	LRT 708060	—	560	70	80	60	1.5	78	78.5	RNAFW 8010060
75	LRT 758345	—	350	75	83	45.5	1	80	81	TR 8310845
	—	LRTZ 758345	350	75	83	45.5	1	80	81	GTR 8310845
	LRT 758525	—	240	75	85	25	1	80	83	TAF 8510525
	LRT 758530	—	290	75	85	30	1	80	83	RNA 4915
	LRT 758530-1	—	290	75	85	30	1.5	83	83.5	RNAF 8510530
	—	LRTZ 758531	300	75	85	31	1	80	83	RNA 4915 UU
	LRT 758535	—	335	75	85	35	1	80	83	TAF 8510535
	LRT 758554	—	520	75	85	54	1	80	83	RNA 6915
	—	LRTZ 758555	530	75	85	55	1	80	83	RNA 6915 UU
80	LRT 809025	—	255	80	90	25	1	85	88	TAF 9011025
	LRT 809030	—	310	80	90	30	1	85	88	RNA 4916
	LRT 809030-1	—	310	80	90	30	1.5	88	88.5	RNAF 9011030
	—	LRTZ 809031	315	80	90	31	1	85	88	RNA 4916 UU
	LRT 809035	—	355	80	90	35	1	85	88	TAF 9011035
	LRT 809054	—	550	80	90	54	1	85	88	RNA 6916
	—	LRTZ 809055	560	80	90	55	1	85	88	RNA 6916 UU

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

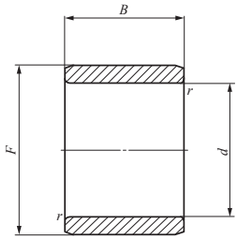
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

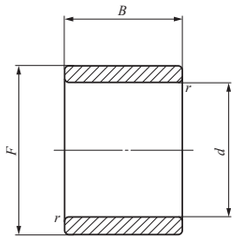
Inner Rings for General Usage



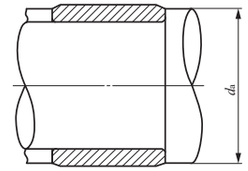




LRT



LRTZ



Shaft dia. 85 — 140mm

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	(1) $r_{s\,min}$	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings
85	LRT 859350	—	440	85	93	50.5	1	90	91	TR 9311850
	—	LRTZ 859350	440	85	93	50.5	1	90	91	GTR 9311850
	LRT 859526	—	280	85	95	26	1	90	93	TAF 9511526
	LRT 859530	—	330	85	95	30	1.5	93	93.5	RNAF 9511530
	LRT 859536	—	390	85	95	36	1	90	93	TAF 9511536
	LRT 859545	—	490	85	95	45.5	1.5	93	93.5	TR 9512045
	—	LRTZ 859545	490	85	95	45.5	1.5	93	93.5	GTR 9512045
	LRT 8510035	—	575	85	100	35	1.1	91.5	98	RNA 4917
	—	LRTZ 8510036	605	85	100	36	1.1	91.5	98	RNA 4917 UU
	LRT 8510063	—	1 040	85	100	63	1.1	91.5	98	RNA 6917
	—	LRTZ 8510064	1 060	85	100	64	1.1	91.5	98	RNA 6917 UU
90	LRT 9010026	—	295	90	100	26	1	95	98	TAF 10012026
	LRT 9010030	—	355	90	100	30	1.5	98	98.5	RNAF 10012030
	LRT 9010036	—	415	90	100	36	1	95	98	TAF 10012036
	LRT 9010050	—	580	90	100	50.5	1.5	98	98.5	TR 10012550
	—	LRTZ 9010050	580	90	100	50.5	1.5	98	98.5	GTR 10012550
	LRT 9010535	—	610	90	105	35	1.1	96.5	103	RNA 4918
	—	LRTZ 9010536	630	90	105	36	1.1	96.5	103	RNA 4918 UU
	LRT 9010563	—	1 100	90	105	63	1.1	96.5	103	RNA 6918
	—	LRTZ 9010564	1 120	90	105	64	1.1	96.5	103	RNA 6918 UU
95	LRT 9510526	—	315	95	105	26	1	100	103	TAF 10512526
	LRT 9510536	—	430	95	105	36	1	100	103	TAF 10512536
	LRT 9511035	—	650	95	110	35	1.1	101.5	108	RNA 4919
	—	LRTZ 9511036	660	95	110	36	1.1	101.5	108	RNA 4919 UU
	LRT 9511063	—	1 160	95	110	63	1.1	101.5	108	RNA 6919
	—	LRTZ 9511064	1 180	95	110	64	1.1	101.5	108	RNA 6919 UU

Note(1) Minimum allowable value of chamfer dimension *r*
Remark No oil hole is provided.

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	(1) $r_{s\,min}$	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings
100	LRT 10011030	—	380	100	110	30	1	105	108	TAF 11013030
	LRT 10011040	—	500	100	110	40	1	105	108	TAF 11013040
	LRT 10011050	—	640	100	110	50.5	1.5	108	108.5	TR 11013550
	—	LRTZ 10011050	640	100	110	50.5	1.5	108	108.5	GTR 11013550
	LRT 10011540	—	770	100	115	40	1.1	106.5	113	RNA 4920
	—	LRTZ 10011541	780	100	115	41	1.1	106.5	113	RNA 4920 UU
105	LRT 10511550	—	670	105	115	50.5	1.5	113	113.5	TR 11515350
	—	LRTZ 10511550	670	105	115	50.5	1.5	113	113.5	GTR 11515350
110	LRT 11012030	—	410	110	120	30	1	115	118	RNA 4822
	LRT 11012540	—	840	110	125	40	1.1	116.5	123	RNA 4922
	—	LRTZ 11012541	870	110	125	41	1.1	116.5	123	RNA 4922 UU
120	LRT 12013030	—	450	120	130	30	1	125	128	RNA 4824
	LRT 12013545	—	1 030	120	135	45	1.1	126.5	133	RNA 4924
	—	LRTZ 12013546	1 050	120	135	46	1.1	126.5	133	RNA 4924 UU
125	LRT 12514060	—	1 460	125	140	60.5	1.5	133	138	TR 14017860
	—	LRTZ 12514060	1 460	125	140	60.5	1.5	133	138	GTR 14017860
130	LRT 13014535	—	860	130	145	35	1.1	136.5	143	RNA 4826
	LRT 13015050	—	1 670	130	150	50	1.5	138	148	RNA 4926
	—	LRTZ 13015051	1 720	130	150	51	1.5	138	148	RNA 4926 UU
135	LRT 13515060	—	1 560	135	150	60.5	1.5	143	148	TR 15018860
	—	LRTZ 13515060	1 560	135	150	60.5	1.5	143	148	GTR 15018860
140	LRT 14015535	—	930	140	155	35	1.1	146.5	153	RNA 4828
	LRT 14016050	—	1 790	140	160	50	1.5	148	158	RNA 4928
	—	LRTZ 14016051	1 830	140	160	51	1.5	148	158	RNA 4928 UU

Note(1) Minimum allowable value of chamfer dimension *r*
Remark No oil hole is provided.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

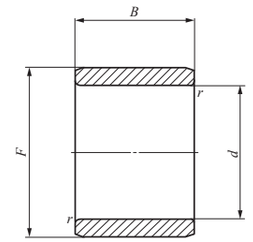
Inner Rings for General Usage

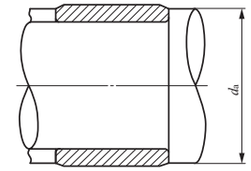


Shaft dia. 150 — 440mm

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings
150	LRT 15016540	—	1 130	150	165	40	1.1	156.5	163	RNA 4830
	LRT 15017060	—	2 290	150	170	60	2	159	168	RNA 4930
160	LRT 16017540	—	1 200	160	175	40	1.1	166.5	173	RNA 4832
	LRT 16018060	—	2 440	160	180	60	2	169	178	RNA 4932
170	LRT 17018545	—	1 420	170	185	45	1.1	176.5	183	RNA 4834
	LRT 17019060	—	2 580	170	190	60	2	179	188	RNA 4934
180	LRT 18019545	—	1 500	180	195	45	1.1	186.5	193	RNA 4836
	LRT 18020569	—	3 950	180	205	69	2	189	203	RNA 4936
190	LRT 19021050	—	2 380	190	210	50	1.5	198	208	RNA 4838
	LRT 19021569	—	4 200	190	215	69	2	199	213	RNA 4938
200	LRT 20022050	—	2 520	200	220	50	1.5	208	218	RNA 4840
	LRT 20022580	—	5 000	200	225	80	2.1	211	223	RNA 4940
220	LRT 22024050	—	2 750	220	240	50	1.5	228	238	RNA 4844
	LRT 22024580	—	5 500	220	245	80	2.1	231	243	RNA 4944
240	LRT 24026560	—	4 530	240	265	60	2	249	262	RNA 4848
	LRT 24026580	—	6 000	240	265	80	2.1	251	262	RNA 4948
260	LRT 26028560	—	4 930	260	285	60	2	269	282	RNA 4852
	LRT 260290100	—	9 900	260	290	100	2.1	271	287	RNA 4952
280	LRT 28030569	—	6 050	280	305	69	2	289	302	RNA 4856
	LRT 280310100	—	10 600	280	310	100	2.1	291	307	RNA 4956
300	LRT 30033080	—	9 100	300	330	80	2.1	311	327	RNA 4860
	LRT 300340118	—	18 000	300	340	118	3	313	337	RNA 4960
320	LRT 32035080	—	9 600	320	350	80	2.1	331	347	RNA 4864
	LRT 320360118	—	19 200	320	360	118	3	333	357	RNA 4964

Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.





LRT

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm d	F	B	$r_{s\,min}$ (1)	Standard mounting dimension mm d_a Min.	Max.	Assembled bearings
340	LRT 34037080	—	10 200	340	370	80	2.1	351	367	RNA 4868
	LRT 340380118	—	20 300	340	380	118	3	353	377	RNA 4968
360	LRT 36039080	—	10 800	360	390	80	2.1	371	387	RNA 4872
	LRT 360400118	—	21 500	360	400	118	3	373	397	RNA 4972
380	LRT 380415100	—	16 700	380	415	100	2.1	391	412	RNA 4876
	LRT 380430140	—	33 900	380	430	140	4	396	427	RNA 4976
400	LRT 400450140	—	35 600	400	450	140	4	416	447	RNA 4980
420	LRT 420470140	—	37 300	420	470	140	4	436	467	RNA 4984
440	LRT 440490160	—	44 100	440	490	160	4	456	487	RNA 4988

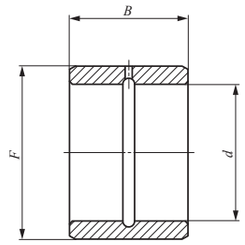
Note(1) Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

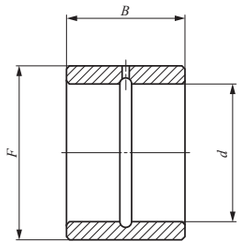
INNER RINGS

Inner Rings for General Usage Inch Series

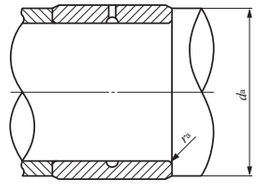




LRB



LRBZ···B



Shaft dia. 9.525 — 22.225mm

Shaft dia. mm (inch)	Identification number		Mass (Ref.) g	Boundary dimensions mm(inch) d	F	B	Standard mounting dimensions mm d_a Min.	d_a Max.	$r_{as\,max}$ (1) Max.	Assembled bearings
9.525 (3/8)	LRB 61012	—	18.5	9.525 (3/8)	15.875 (5/8)	19.300	14	14.5	0.6	BR 101812
	—	LRBZ 61016 B	25	9.525 (3/8)	15.875 (5/8)	25.650	14	14.5	0.6	BR 101816UU
12.700 (1/2)	LRB 81212	—	23.5	12.700 (1/2)	19.050 (3/4)	19.300	17.5	18	1	BR 122012
	LRB 81216	—	31	12.700 (1/2)	19.050 (3/4)	25.650	17.5	18	1	BR 122016
	—	LRBZ 81216 B	31	12.700 (1/2)	19.050 (3/4)	25.650	17.5	18	0.6	BR 122016UU
15.875 (5/8)	LRB 101412	—	28	15.875 (5/8)	22.225 (7/8)	19.300	21	21.2	1	BR 142212
	LRB 101416	—	37.5	15.875 (5/8)	22.225 (7/8)	25.650	21	21.2	1	BR 142216
	—	LRBZ 101416 B	37.5	15.875 (5/8)	22.225 (7/8)	25.650	21	21.2	0.6	BR 142216UU
19.050 (3/4)	LRB 121612	—	33	19.050 (3/4)	25.400 (1)	19.300	24	24.4	1	BR 162412
	LRB 121616	—	44	19.050 (3/4)	25.400 (1)	25.650	24	24.4	1	BR 162416
	—	LRBZ 121616 B	44	19.050 (3/4)	25.400 (1)	25.650	24	24.4	0.6	BR 162416UU
22.225 (7/8)	LRB 141816	—	50	22.225 (7/8)	28.575 (1 1/8)	25.650	27	27.5	1	BR 182616
	LRB 141820	—	62	22.225 (7/8)	28.575 (1 1/8)	32.000	27	27.5	1	BR 182620
	—	LRBZ 141820 B	62	22.225 (7/8)	28.575 (1 1/8)	32.000	27	27.5	0.6	BR 182620UU

Note(1) Maximum allowable fillet corner radius of shaft
Remark LRB and LRBZ··B are provided with an oil groove and an oil hole.

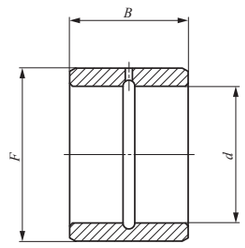
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

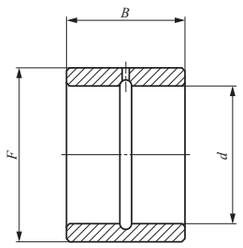
Inner Rings for General Usage Inch Series



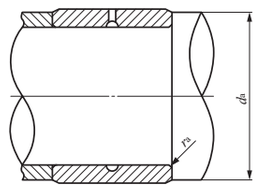




LRB



LRBZ···B



Shaft dia. 25.400 — 38.100mm

Shaft dia. mm (inch)	Identification number		Mass (Ref.) g	Boundary dimensions mm(inch) d	F	B	Standard mounting dimensions mm d_a Min.	d_a Max.	$r_{as\ max}$ (1) Max.	Assembled bearings
25.400 (1)	LRB 162016	—	56	25.400 (1)	31.750 (1 1/4)	25.650	30.5	30.7	1	BR 202816
	LRB 162020	—	72	25.400 (1)	31.750 (1 1/4)	32.000	30.5	30.7	1	BR 202820
	—	LRBZ 162020 B	72	25.400 (1)	31.750 (1 1/4)	32.000	30.5	30.7	0.6	BR 202820UU
28.575 (1 1/8)	LRB 182216	—	63	28.575 (1 1/8)	34.925 (1 3/8)	25.650	33.5	33.9	1	BR 223016
	LRB 182220	—	77	28.575 (1 1/8)	34.925 (1 3/8)	32.000	33.5	33.9	1	BR 223020
	—	LRBZ 182220 B	77	28.575 (1 1/8)	34.925 (1 3/8)	32.000	33.5	33.9	0.6	BR 223020UU
31.750 (1 1/4)	LRB 202416	—	71	31.750 (1 1/4)	38.100 (1 1/2)	25.650	37	37.1	1.5	BR 243316
	LRB 202420	—	86	31.750 (1 1/4)	38.100 (1 1/2)	32.000	37	37.1	1.5	BR 243320
	—	LRBZ 202420 B	86	31.750 (1 1/4)	38.100 (1 1/2)	32.000	37	37.1	0.6	BR 243320UU
34.925 (1 3/8)	LRB 222616	—	77	34.925 (1 3/8)	41.275 (1 5/8)	25.650	40.2	40.2	1.5	BR 263516
	LRB 222620	—	96	34.925 (1 3/8)	41.275 (1 5/8)	32.000	40.2	40.2	1.5	BR 263520
	—	LRBZ 222620 B	96	34.925 (1 3/8)	41.275 (1 5/8)	32.000	40.2	40.2	0.6	BR 263520UU
38.100 (1 1/2)	LRB 242816	—	80	38.100 (1 1/2)	44.450 (1 3/4)	25.650	43.3	43.4	1.5	BR 283716
	LRB 242820	—	100	38.100 (1 1/2)	44.450 (1 3/4)	32.000	43.3	43.4	1.5	BR 283720 BR 283820
	LRB 243020	—	155	38.100 (1 1/2)	47.625 (1 7/8)	32.000	43.3	45	1.5	BR 303920
	—	LRBZ 242820 B	100	38.100 (1 1/2)	44.450 (1 3/4)	32.000	43.3	43.4	0.6	BR 283720UU
	—	LRBZ 243020 B	160	38.100 (1 1/2)	47.625 (1 7/8)	32.000	43.3	45	1	BR 303920UU

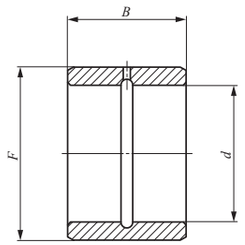
Note(1) Maximum allowable fillet corner radius of shaft
Remark LRB and LRBZ···B are provided with an oil groove and an oil hole.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

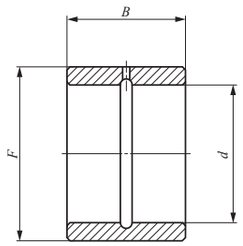
INNER RINGS

Inner Rings for General Usage Inch Series

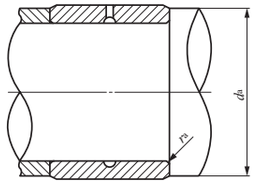




LRB



LRBZ···B



Shaft dia. 41.275 — 63.500mm

Shaft dia. mm (inch)	Identification number		Mass (Ref.) g	Boundary dimensions mm(inch) d	F	B	Standard mounting dimensions mm d_a Min.	d_a Max.	$r_{as\,max}$ (1) Max.	Assembled bearings
41.275 (1 5/8)	LRB 263216	—	135	41.275 (1 5/8)	50.800 (2)	25.650	48	49	1.5	BR 324116
	LRB 263220	—	170	41.275 (1 5/8)	50.800 (2)	32.000	48	49	1.5	BR 324120
	—	LRBZ 263220 B	170	41.275 (1 5/8)	50.800 (2)	32.000	48	49	1	BR 324120UU
44.450 (1 3/4)	LRB 283624	—	300	44.450 (1 3/4)	57.150 (2 1/4)	38.350	52.5	55	1.5	BR 364824
	LRB 283628	—	345	44.450 (1 3/4)	57.150 (2 1/4)	44.700	52.5	55	1.5	BR 364828
	—	LRBZ 283628 B	345	44.450 (1 3/4)	57.150 (2 1/4)	44.700	52.5	55	1.5	BR 364828UU
50.800 (2)	LRB 324024	—	335	50.800 (2)	63.500 (2 1/2)	38.350	58	61	2	BR 405224
	LRB 324028	—	390	50.800 (2)	63.500 (2 1/2)	44.700	58	61	2	BR 405228
	—	LRBZ 324028 B	390	50.800 (2)	63.500 (2 1/2)	44.700	58	61	1.5	BR 405228UU
57.150 (2 1/4)	LRB 364424	—	375	57.150 (2 1/4)	69.850 (2 3/4)	38.350	65	67	2	BR 445624
	LRB 364428	—	440	57.150 (2 1/4)	69.850 (2 3/4)	44.700	65	67	2	BR 445628
	—	LRBZ 364428 B	440	57.150 (2 1/4)	69.850 (2 3/4)	44.700	65	67	1.5	BR 445628UU
63.500 (2 1/2)	LRB 404824	—	410	63.500 (2 1/2)	76.200 (3)	38.350	71	73	2	BR 486024
	LRB 404828	—	480	63.500 (2 1/2)	76.200 (3)	44.700	71	73	2	BR 486028
	—	LRBZ 404828 B	480	63.500 (2 1/2)	76.200 (3)	44.700	71	73	1.5	BR 486028UU

Note(1) Maximum allowable fillet corner radius of shaft
Remark LRB and LRBZ···B are provided with an oil groove and an oil hole.

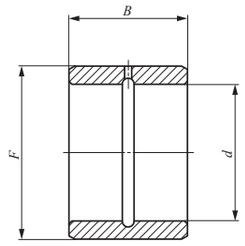
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

INNER RINGS

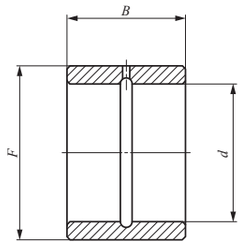
Inner Rings for General Usage Inch Series



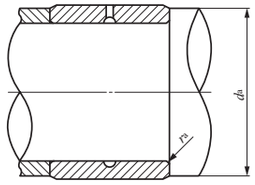




LRB



LRBZ···B



Shaft dia. 69.850 — 88.900mm

Shaft dia. mm (inch)	Identification number		Mass (Ref.) g	Boundary dimensions mm(inch) d	F	B	Standard mounting dimensions mm d_a Min.	d_a Max.	$r_{as\,max}$ (1) Max.	Assembled bearings
69.850 (2 3/4)	**LRB 445228**	—	530	69.850 (2 3/4)	82.550 (3 1/4)	44.700	77	79	2	**BR 526828**
	LRB 445232	—	600	69.850 (2 3/4)	82.550 (3 1/4)	51.050	77	79	2	**BR 526832**
	—	**LRBZ 445228 B**	530	69.850 (2 3/4)	82.550 (3 1/4)	44.700	77	79	1.5	**BR 526828UU**
76.200 (3)	**LRB 485632**	—	640	76.200 (3)	88.900 (3 1/2)	51.050	83.5	86	2	**BR 567232**
	—	**LRBZ 485632 B**	640	76.200 (3)	88.900 (3 1/2)	51.050	83.5	86	1.5	**BR 567232UU**
82.550 (3 1/4)	**LRB 526032**	—	690	82.550 (3 1/4)	95.250 (3 3/4)	51.050	91	93	2.5	**BR 607632**
	—	**LRBZ 526032 B**	690	82.550 (3 1/4)	95.250 (3 3/4)	51.050	91	93	1.5	**BR 607632UU**
88.900 (3 1/2)	**LRB 566432**	—	750	88.900 (3 1/2)	101.600 (4)	51.050	97	99	2.5	**BR 648032**

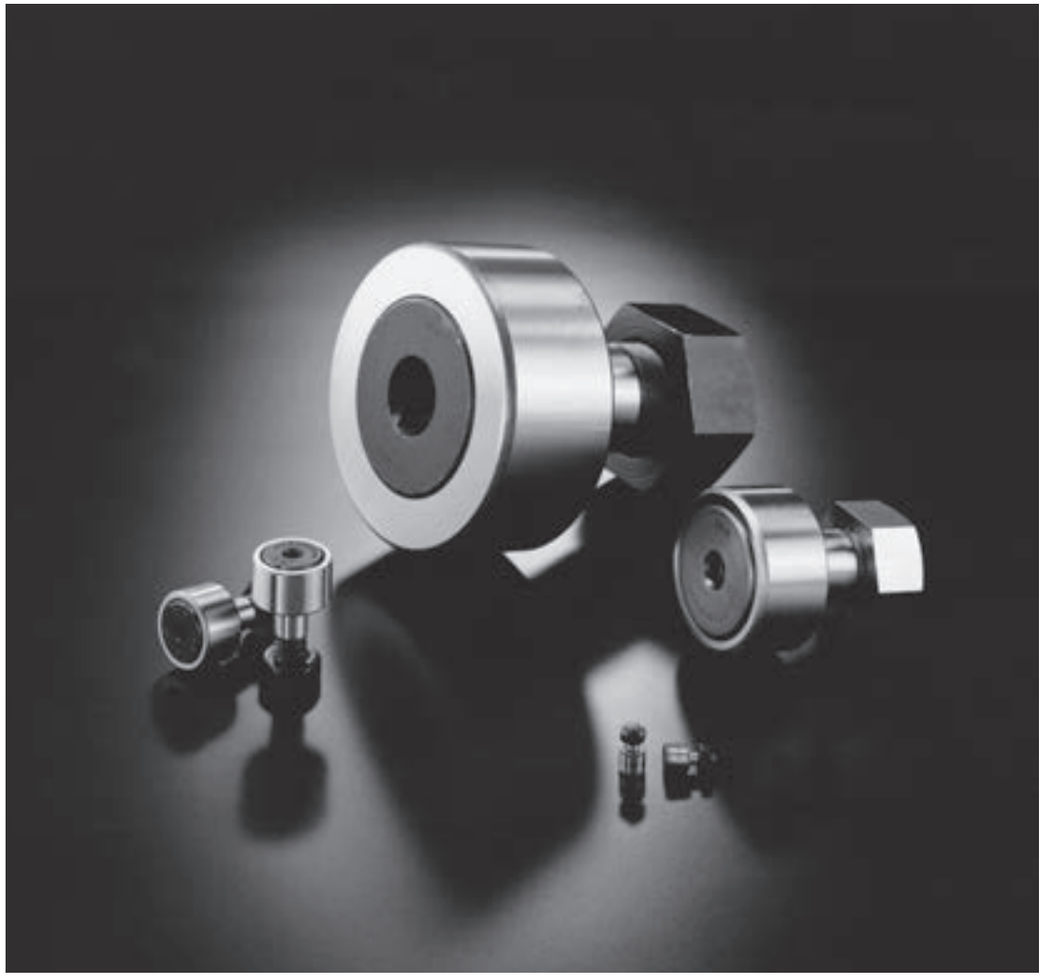
Note(1) Maximum allowable fillet corner radius of shaft

Remark LRB with inner ring bore diameter d of 76.200 mm or less and LRBZ···B are provided with an oil groove and an oil hole. Other models are provided with an oil groove and two oil holes.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

- Standard Type Cam Followers
- Stainless Steel Made Cam Followers
- Eccentric Type Cam Followers
- Solid Eccentric Stud Type Cam Followers
- Thrust Disk Type Cam Followers
- Centralized Lubrication Type Cam Followers
- Easy Mounting Type Cam Followers
- Cam Follower G
- C-Lube Cam Followers
- Short Stud Type Cam Followers
- Miniature Type Cam Followers
- Stainless Steel Made Miniature Cam Followers
- Thrust Disk Type Miniature Cam Followers
- Cylindrical Roller Cam Followers
- Inch series Cam Followers

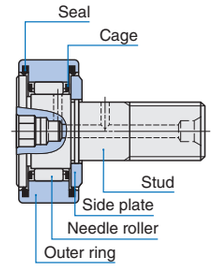


Structure and Features

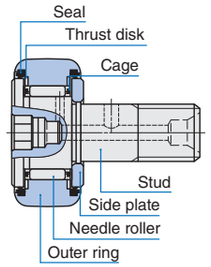
IKO Cam Followers are bearings with a stud incorporating needle rollers in a thick walled outer ring. These bearings are designed for outer ring rotation, and have superior rotational performance with a small coefficient of friction and high load capacity.
As studs already have threads or steps, they are easy to mount.
Cam Followers are follower bearings for cam mechanisms and linear motions and have high rigidity and high accuracy. They are, therefore, used widely for machine tools, industrial robots, electronic devices, and OA equipment.
Stainless steel made Cam Followers are superior in corrosion resistance and suitable for applications in environments where oil cannot be used or water splashed, and in clean rooms.

Structure of Cam Followers

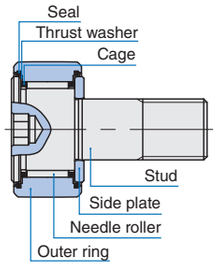
Standard Type Cam Follower(1) CF···BUU



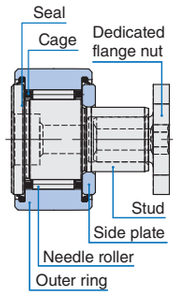
Thrust Disk Type Cam Follower CF···WBUUR



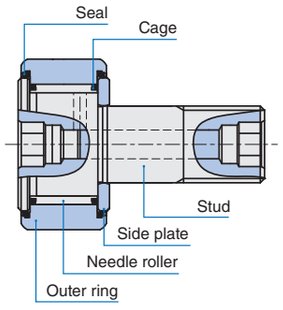
C-Lube Cam Followers(1) CF···WBUUR/SG



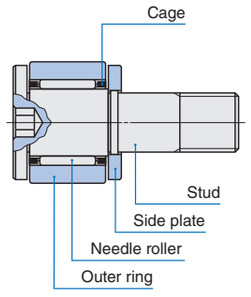
Short Stud Type Cam Followers CFC···BUUR



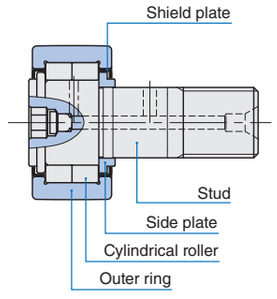
Standard Type Cam Follower CFKR CFKR···UU



Miniature Type Cam Follower CFS



Cylindrical Roller Cam Follower NUCF···BR



Note(1) Thermosetting solid-type lubricant C-Lube fills inner space of the bearing.

Types

For Cam Followers, the types shown in Table 1 are available.

Table 1 Type of Cam Followers

Bearing Model \ Item				With cage		Full complement	
				Crowned outer ring	Cylindrical outer ring	Crowned outer ring	Cylindrical outer ring
Standard Type Cam Follower CF···B CFKR	High carbon steel made	Stud Head Hex Hole	Shield type	CF ··· B R	CF ··· B	CF ···V B R	CF ··· V B
			Sealed type	CF ··· B UU R	CF ··· B UU	CF ···V B UU R	CF ··· V B UU
	Stainless steel made		Shield type	CF ···F B R	CF ···F B	—	—
			Sealed type	CF ···F B UU R	CF ···F B UU	—	—
	High carbon steel made	Double Hex Hole	Shield type	CFKR··· R	CFKR	CFKR···V R	CFKR··· V
			Sealed type	CFKR··· UU R	CFKR ··· UU	CFKR···V UU R	CFKR··· V UU
Eccentric Type Cam Followers CFE···B CFKRE	High carbon steel made	Stud Head Hex Hole	Shield type	CFE ··· B R	CFE ··· B	CFE ···V B R	CFE ··· V B
			Sealed type	CFE ··· B UU R	CFE ··· B UU	CFE ···V B UU R	CFE ··· V B UU
		Double Hex Hole	Shield type	CFKRE ··· R	CFKRE	CFKRE···V R	CFKRE··· V
			Sealed type	CFKRE ··· UU R	CFKRE ··· UU	CFKRE···V UU R	CFKRE··· V UU
Solid Eccentric Stud Type Cam Followers CFES···B	High carbon steel made	With hexagon hole	Shield type	CFES··· B R	CFES··· B	—	—
			Sealed type	CFES··· B UU R	CFES··· B UU	—	—
Thrust Disk Type Cam Followers CF···WB	High carbon steel made	With hexagon hole	Shield type	CF ··· WB R	—	—	—
			Sealed type	CF ··· WB UU R	—	—	—
	Stainless steel made		Shield type	CF ···F WB R	—	—	—
			Sealed type	CF ···F WB UU R	—	—	—
Centralized Lubrication Type Cam Followers CF-RU1, CF-FU1	High carbon steel made	With screwdriver slot	Sealed type	CF-RU1	CF-FU1	—	—
Easy Mounting Type Cam Followers CF-SFU···B	High carbon steel made	With hexagon hole	Sealed type	—	CF-SFU··· B	—	—
Cam Follower G CF···G	High carbon steel made	With hexagon hole	Shield type	—	CF ···G	—	—
C-Lube Cam Followers CF···WB···/SG	High carbon steel made	With hexagon hole	Sealed type	CF ···WB···/SG	—	—	—
Short Stud Type Cam Followers CFC···B	High carbon steel made	Hexagon socket head bolt included Hexagon socket head flange nut included	Sealed type	CF ··· B UU R	—	CFC ···V B UU R	—
Miniature Type Cam Followers CFS	High carbon steel made	With hexagon hole	Shield type	—	CFS	—	CFS ··· V
	Stainless steel made			—	CFS ···F	—	CFS ···F V
Thrust Disk Type Miniature Cam Followers CFS···W	High carbon steel made	With hexagon hole	Shield type	—	CFS ··· W	—	CFS ···W V
	Stainless steel made			—	CFS ···F W	—	—
Cylindrical Roller Cam Followers NUCF···B	High carbon steel made	With hexagon hole	Shield type	—	—	NUCF··· B R	—
Inch series Cam Followers CR	High carbon steel made	With hexagon hole	Shield type	CR ··· B R	CR ···B	CR ···V B R	CR ··· V B
			Sealed type	CR ··· B UU R	CR ···B UU	CR ···V B UU R	CR ··· V B UU
			Sealed type with ThrustDisk Seals	—	—	CR ···V B S R	CR ··· V B S
		With screwdriver slot	Shield type	CR ··· R	CR	CR ···V R	CR ··· V
			Sealed type	CR ··· UU R	CR ··· UU	CR ···V UU R	CR ··· V UU
Inch series Cam Followers CRH···B	High carbon steel made	With hexagon hole	Shield type	—	—	CRH···V B R	CRH··· V B
			Sealed type	—	—	CRH···V B UU R	CRH··· V B UU

Standard Type Cam Followers

These are the basic type bearings in IKO Cam Follower series. Standard Type Cam Followers CF···B with stud diameters ranging from 3 mm to 30 mm are available, and are suitable for a wide range of applications.
Standard Type Cam Followers CFKR have sockets with hexagon holes on both stud ends, which allow mounting with a hexagon wrench from either side.

Eccentric Type Cam Followers

The eccentric stud can be rotated to create a uniform line, enabling easy adjustment for even load distribution across the outer ring outer surface.
Eccentricity is 0.4 (CFE) ～ 1.5 mm.

Solid Eccentric Stud Type Cam Followers

The eccentric stud can be rotated to create a uniform line, enabling easy adjustment for even load distribution across the outer ring outer surface.
These are eccentric cam followers with an integrated stud that can be mounted in the same mounting holes as those for Standard Type Cam Followers.
Eccentricity is from 0.25 mm to 0.6 mm.

Thrust Disk Type Cam Followers

The thrust disk seal, made of special synthetic resin with excellent abrasion and heat resistance, is incorporated in the sliding contact area between the shoulders of the outer ring and the stud head and side plate. This prevents friction and abrasion inside the bearing due to axial loads caused by mounting errors.

Centralized Lubrication Type Cam Followers

These bearings have one or two pipe-threaded holes in the stud. Thus, this series is suitable when centralized lubrication is required.

Easy Mounting Type Cam Followers

These bearings have a stepped tapered portion on the stud. When mounting the Cam Follower, it is easy to fix its location by tightening a set screw to the stepped portion. Thus, this type is suitable when a large number of Cam Followers are used in a machine such as a pallet changer.

C-Lube Cam Followers

These bearings are lubricated with a newly developed thermosetting solid-type lubricant which fills the inner space of the bearing. This lubricant provides long-term maintenance free.

Short Stud Type Cam Followers

These Cam Followers feature a more compact size and easier mounting structure than standard-type Cam Followers and require significantly less mounting space while maintaining the same level of performance. This allows for greater design freedom, which contributes to reducing machine size and improving production efficiency.

Miniature Type Cam Followers

These are compactly designed bearings, incorporating very thin needle rollers in an outer ring with a small outside diameter. They are used in electronic devices, OA equipment, small index devices, etc.

Cylindrical Roller Cam Followers

These bearings are full complement type bearings incorporating double rows of full complement cylindrical rollers in the outer ring, and can withstand large radial loads.
Additionally, the outer ring is guided by the outer ring shoulder and the end face of cylindrical rollers to the axial direction.

Inch series Cam Followers

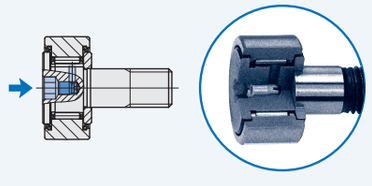
Two types, CR and CRH, are available in the Inch series Cam Followers. Black oxide film treatment is made on CRH models. CR with ThrustDisk Seals prevents the ingress of foreign substances as well as friction and abrasion on the interior of the bearing caused by axial load generated due to mounting errors.

Lubrication method of Hex Head Cam Followers

〈Types〉**Standard Type, Eccentric Type, Solid Eccentric Stud Type, Thrust Disk Type, Easy Mounting Type, Cylindrical Roller Type.**

1 Way

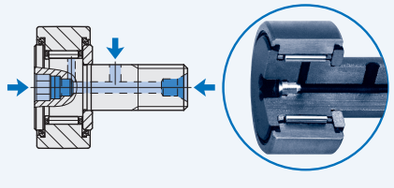
Stud dia. 5～10mm (1)



Re-greasing fitting is incorporated in the stud head.

3 Ways

Stud dia. 12～30mm



Grease nipple is incorporated in the stud head.

Remark : All Easy Mounting Type have a 1way port.
Note (1) CFKR and CFKRE can be lubricated from both head part and thread side. Also, a grease nipple is built into the stud head.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Internal Structures and Shapes

The Cam Follower series has various types, such as high carbon steel type, stainless steel type, caged type, full complement type, shield type, sealed type, type with crowned outer ring, type with cylindrical outer ring, etc.

Type of material

In addition to high carbon steel products, stainless steel products are also available. Stainless steel products are suited for applications where oil cannot be used or where water splashes, and in cleanrooms.

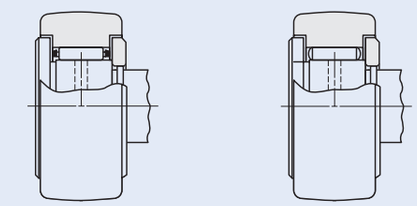
《High carbon steel made》 《Stainless steel made》



Roller guide method

Cam Followers include the caged type and the full complement type . The caged type has a small coefficient of friction and is suitable for high speed rotations, while the full complement type is suitable for heavy loads at low speed rotations.

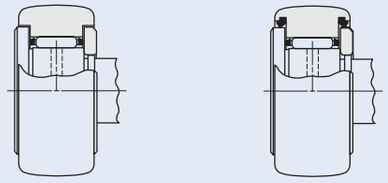
《With cage》 《Full complement》



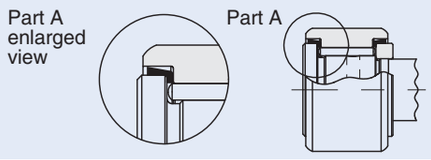
Seal structure

Available Cam Followers include the shield type, the sealed type, and type with ThrustDisk Seals. In the shield type, labyrinths are formed by the narrow clearances between the outer ring and the stud flange, and between the outer ring and the side plate. The sealed type incorporates seals in the narrow clearances (the shield type labyrinths) to prevent the ingress of foreign substances. The sealed type with ThrustDisk Seals prevents grease leakage and the ingress of foreign substances into the bearing interior. It also prevents friction and abrasion on the interior of the bearing caused by axial load generated due to mounting errors.

《Shield type》 《Sealed type》



《Sealed type with ThrustDisk Seals》(1)

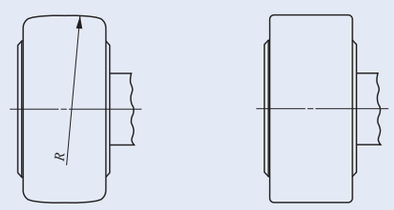


Notes(1) Applicable only to Inch Series Cam Followers CR (Stud Head Hex Hole)

Shape of outer ring outside surface

The outside surface of the outer ring of Cam Followers, which makes direct contact with the mating cam guide surface, is either crowned or cylindrical. The crowned outer rings are effective in moderating the edge load due to mounting errors. The cylindrical outer rings have a large contact area with the mating cam guide surface, and are suitable for applications in which the applied load is large or the cam guide surface hardness is low.

《Crowned outer ring》 《Cylindrical outer ring》



Identification number

Some examples of the identification number of Cam Followers are shown below. For applicable material symbol, roller guide method, seal structure and shape of outer ring outside surface, refer dimension table of each series.

Examples of identification number

Example 1	CF	10			V	B	UU	R	
Example 2	CF	10	W			B		R	
Example 3	CF	8	W			B	UU	R	/SG
Example 4	CFS	3	F		V				P6

Model code	
CF···B	Standard Type Cam Follower(Stud Head Hex Hole)
CFKR	Standard Type Cam Follower(Double Hex Hole)
CFE···B	Eccentric Type Cam Followers(Stud Head Hex Hole)
CFKRE	Eccentric Type Cam Followers(Double Hex Hole)
CFES···B	Solid Eccentric Stud Type Cam Followers
CF···WB	Thrust Disk Type Cam Followers
CF-RU1	Centralized Lubrication Type Cam Followers(Crowned outer ring)
CF-FU1	Centralized Lubrication Type Cam Followers(Cylindrical outer ring)
CF-SFU···B	Easy Mounting Type Cam Followers
CF···G	Cam Follower G
CF···WB···/SG	C-Lube Cam Followers
CFC···B	Short Stud Type Cam Followers
CFS	Miniature Type Cam Followers
CFS···W	Thrust Disk Type Miniature Cam Followers
NUCF···B	Cylindrical Roller Cam Followers
CR	Inch series Cam Followers(With screwdriver slot)
CR···B	Inch series Cam Followers(Stud Head Hex Hole)
CRH···B	Inch series Cam Followers(Stud Head Hex Hole)

Size
The value indicates a stud diameter. (unit: mm) For Double Hex Hole Cam Followers, the outside diameter of the outer ring is indicated. In the inch series, the outside diameter of the outerring in units of 1/16 inch is indicated.

Material	
No symbol	High carbon steel made
F	Stainless steel made

Roller guide method	
No symbol	With cage type
V	Full complement type

Seal structure	
No symbol	Shield type
UU	Sealed type
S(1)	Sealed type with ThrustDisk Seals

Notes(1) Applicable only to Inch Series Cam Followers CR (Stud Head Hex Hole)

Shape of outer ring outside surface	
R	With crowned outer ring
No symbol	With cylindrical outer ring

Classification symbol		
No symbol	Class 0	
P6	Class 6	Applicable to Miniature CFS series
P5	Class 5	
P4	Class 4	

Accuracy

The accuracy of Cam Followers is shown in Table 2, Table 3.1, Table 3.2 and Table 3.3. Cam Followers with special accuracy are also available. When they are required, please contact IKO.

Table 2 Tolerances

unit: μm

Dimensions and symbols \ Series	Metric CF (1)		Miniature series CF	Inch series CF	
	Crowned outer ring	Cylindrical outer ring		Crowned outer ring	Cylindrical outer ring
Outside dia. of outer ring D	0 -50	See Table 3.1	See Table 3.2	0 -50	See Table 3.3
Stud dia. d_1	h7		h6	+25 0	
Width of outer ring C	0 -120		0 -120	0 -130	

Note(1) Applicable to Cam Followers other than Miniature Type Cam Followers and Inch Series Cam Followers.

Table 3.1 Tolerances and allowable values of outer rings (Metric CF cylindrical outer rings(1))

unit: μm

D Nominal outside dia. of outer ring mm		Δ_{Dmp} Single plane mean outside dia. deviation		V_{Dsp} Outside dia. variation in a single radial plane (Max.)	V_{Dmp} Mean outside dia. variation (Max.)	K_{ea} Radial runout of assembled bearing outer ring (Max.)
Over	Incl.	High	Low			
6	18	0	- 8	10	6	15
18	30	0	- 9	12	7	15
30	50	0	-11	14	8	20
50	80	0	-13	16	10	25
80	120	0	-15	19	11	35

Note(1) Applicable to Cam Followers other than Miniature Type Cam Followers and Inch Series Cam Followers.

Table 3.2 Tolerances and allowable values of outer rings (Miniature series CF)

unit: μm

Δ_{Dmp} Single plane mean outside dia. deviation								K_{ea} Radial runout of assembled bearing outer ring (Max.)			
Class 0		Class 6		Class 5		Class 4		Class 0	Class 6	Class 5	Class 4
High	Low	High	Low	High	Low	High	Low				
0	-8	0	-7	0	-5	0	-4	15	8	5	4

Table 3.3 Tolerances and allowable values of outer rings (Inch series CF cylindrical outer ring)

unit: μm

D Nominal outside dia. of outer ring mm		Δ_{Dmp} Single plane mean outside dia. deviation		V_{Dsp} Outside dia. variation in a single radial plane (Max.)	V_{Dmp} Mean outside dia. variation (Max.)	K_{ea} Radial runout of assembled bearing outer ring (Max.)
Over	Incl.	High	Low			
6	18	0	-25	10	6	15
18	30			12	7	15
30	50			14	8	20
50	80			16	10	25
80	120			19	11	35

Clearance

The radial internal clearances of Cam Followers are shown in Table 4.

Table 4 Radial internal clearance

unit: μm

Identification number (1)				Radial internal clearance	
Metric CF series (2)	Miniature CFS series CF (3)	Cylindrical Roller Cam Followers NUCF···B	Inch series CF	Min.	Max.
CF 3～CF 5	CFS1.4 ～CFS5	—	CR 8, CR 8-1, CRH 8-1, CRH 9	3	17
CF 6	CFS6	—	CR10, CR10-1, CRH10-1, CRH11	5	20
CF 8～CF12-1 CFKR22～CFKR32	—	—	CR12～CR22, CRH12～CRH22	5	25
CF16～CF20-1 CFKR35～CFKR52	—	—	CR24～CR36, CRH24～CRH36	10	30
CF24～CF30-2 CFKR62～CFKR90	—	—	CR48, CRH40～CRH56	10	40
—	—	—	CRH64	15	50
—	—	NUCF10 R～NUCF24 R	—	20	45
—	—	NUCF24-1R～NUCF30-2R	—	25	50

Note(1) Also applicable to full complement type, type with crowned outer ring, sealed type, and type with hexagon hole.
(2) Applicable to all Cam Followers other than Miniature Type Cam Followers, Cylindrical Roller Cam Followers and Inch Series Cam Followers.
(3) Applicable to all Miniature Type Cam Followers.

Fit

Tables 5 and 6 show recommended tolerances of mounting holes for Cam Follower studs. Since the Cam Follower is supported in a cantilever position, the mounting hole diameter should be prepared without play between the stud and the hole especially when heavy shock loads are applied.

Table 5 Recommended fit

Type	Tolerance class of mounting hole for stud
Metric CF	H7
Miniature series CF	H6
Cylindrical Roller Cam Followers	H7
Inch series CF	F7

Table 6 Dimensional tolerances of mounting hole

unit: μm

Nominal outside dia. of stud mm		F7		H6		H7	
Over	Incl.	Over	Incl.	Over	Incl.	Over	Incl.
—	3	+16	+ 6	+ 6	0	+10	0
3	6	+22	+10	+ 8	0	+12	0
6	10	+28	+13	+ 9	0	+15	0
10	18	+34	+16	+11	0	+18	0
18	30	+41	+20	+13	0	+21	0
30	50	+50	+25	+16	0	+25	0

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Maximum Allowable Static Load

The applicable load on Cam Followers is, in some cases, limited by the bending strength and shear strength of the stud and the strength of the outer ring instead of the load rating of the needle roller bearing. Therefore, the maximum allowable static load that is limited by these strengths is specified.

Track Capacity

Track capacity is defined as the load which can be continuously applied on a Cam Follower placed on a steel cam guide surface without causing deformation or indentation on the cam guide surface when the outer ring of the Cam Follower makes contact with the mating cam guide surface (plane). The track capacities shown in Tables 7.1 and 7.2 are applicable when the hardness of the mating cam guide surface is 40HRC (Tensile strength 1250N/mm^2). When the hardness of the mating cam guide surface differs from 40HRC, the track capacity is obtained by multiplying the value by the track capacity factor shown in Table 8.

If lubrication between the outer ring and the mating cam guide surface is insufficient, seizure and/or wear may occur depending on the application. Therefore, attention must be paid to lubrication and surface roughness of the mating cam guide especially for high-speed rotations such as cam mechanisms.

For lubrication between the outer ring and the mating cam guide surface, C-Lube Unit for Cam Followers is recommended. (See page I20.)

Table 7.1 Track load capacity

unit: N

Type of bearing	Identification number with crowned outer ring	Track capacity	Identification number with cylindrical outer ring	Track capacity
Metric CF(1)	CF 3 R	542	CF 3	1 360
	CF 4 R	712	CF 4	1 790
	CF 5 R	794	CF 5	2 210
	CF 6 R	1 040	CF 6	3 400
	CF 8 R	1 330	CF 8	4 040
	CF10 R・CFKR22R	1 610	CF10 ・CFKR22	4 680
	CF10-1R・CFKR26R	2 030	CF10-1・CFKR26	5 530
	CF12 R・CFKR30R	2 470	CF12 ・CFKR30	7 010
	CF12-1R・CFKR32R	2 710	CF12-1・CFKR32	7 480
	CF16 R・CFKR35R	3 060	CF16 ・CFKR35	11 200
	CF18 R・CFKR40R	3 660	CF18 ・CFKR40	14 500
	CF20 R・CFKR52R	5 190	CF20 ・CFKR52	23 200
	CF20-1R・CFKR47R	4 530	CF20-1・CFKR47	21 000
	CF24 R・CFKR62R	6 580	CF24 ・CFKR62	34 300
	CF24-1R・CFKR72R	8 020	CF24-1・CFKR72	39 800
	CF30 R・CFKR80R	9 220	CF30 ・CFKR80	52 700
	CF30-1R・CFKR85R	9 990	CF30-1・CFKR85	56 000
	CF30-2R・CFKR90R	10 800	CF30-2・CFKR90	59 300
Miniature series CF(2)	—	—	CFS1.4	128
	—	—	CFS2	220
	—	—	CFS2.5	298
	—	—	CFS3	485
	—	—	CFS4	799
	—	—	CFS5	1 210
	—	—	CFS6	1 680

Notes(1) Applicable to Cam Followers other than Miniature Type Cam Followers and Inch Series Cam Followers.
(2) This table is applicable to all Miniature Type Cam Followers.

Table 7.2 Track capacity

unit: N

Type of bearing	Identification number with crowned outer ring	Track capacity	Identification number with cylindrical outer ring	Track capacity	Identification number with crowned outer ring	Track capacity	Identification number with cylindrical outer ring	Track capacity
Inch series CF(1)	CR 8 R	770	CR 8	2 140	—	—	—	—
	CR 8-1R	770	CR 8-1	2 360	CRH 8-1R	401	CRH 8-1	2 360
	—	—	—	—	CRH 9 R	469	CRH 9	2 650
	CR10 R	1 030	CR10	3 210	—	—	—	—
	CR10-1R	1 030	CR10-1	3 480	CRH10-1R	579	CRH10-1	3 480
	—	—	—	—	CRH11 R	658	CRH11	3 830
	CR12 R	1 340	CR12	4 500	CRH12 R	853	CRH12	4 500
	CR14 R	1 630	CR14	5 250	CRH14 R	1 050	CRH14	5 250
	CR16 R	1 970	CR16	7 280	CRH16 R	1 420	CRH16	7 280
	CR18 R	2 300	CR18	7 710	CRH18 R	1 660	CRH18	7 710
	CR20 R	2 680	CR20	10 700	CRH20 R	2 160	CRH20	10 700
	CR22 R	3 050	CR22	11 800	CRH22 R	2 450	CRH22	11 800
	CR24 R	3 410	CR24	15 400	CRH24 R	3 410	CRH24	15 400
	CR26 R	3 820	CR26	16 700	CRH26 R	3 820	CRH26	16 700
	CR28 R	4 210	CR28	21 000	CRH28 R	4 210	CRH28	21 000
	CR30 R	4 610	CR30	22 500	CRH30 R	4 610	CRH30	22 500
	CR32 R	5 050	CR32	30 900	CRH32 R	5 690	CRH32	30 900
	CR36 R	5 900	CR36	34 700	CRH36 R	6 640	CRH36	34 700
	—	—	—	—	CRH40 R	8 970	CRH40	45 000
	—	—	—	—	CRH44 R	10 200	CRH44	49 500
	—	—	CR48	64 300	CRH48 R	11 400	CRH48	64 300
	—	—	—	—	CRH52 R	12 700	CRH52	69 600
	—	—	—	—	CRH56 R	14 100	CRH56	87 000
	—	—	—	—	CRH64 R	16 800	CRH64	113 000

Notes(1) This table is applicable to all Inch series CF.

Table 8 Track capacity factor

Hardness HRC	Tensile strength N/mm^2	Track capacity factor	
		With crowned outer ring	With cylindrical outer ring
20	760	0.22	0.37
25	840	0.31	0.46
30	950	0.45	0.58
35	1 080	0.65	0.75
38	1 180	0.85	0.89
40	1 250	1.00	1.00
42	1 340	1.23	1.15
44	1 435	1.52	1.32
46	1 530	1.85	1.51
48	1 635	2.27	1.73
50	1 760	2.80	1.99
52	1 880	3.46	2.29
54	2 015	4.21	2.61
56	2 150	5.13	2.97
58	2 290	6.26	3.39

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Allowable Rotational Speed

The allowable rotational speed of Cam Followers is affected by mounting and operating conditions. For d_1n values with only pure radial load applied, use the maximum values in Table 9 or lower as a guideline. Under actual operating conditions, use the recommended d_1n values in Table 9 as a guideline in consideration of the effect of axial loads.
For C-Lube Cam Followers, use a d_1n value of 10,000 or less as a guideline.

Table 9 d_1n values of Cam Followers (1)

Type \ Lubricant	Grease		Oil	
	Maximum	Recommended	Maximum	Recommended
Caged type	84 000	8 400	140 000	14 000
Full complement type	42 000	4 200	70 000	7 000
Cylindrical Roller Cam Follower	66 000	6 600	110 000	11 000
C-Lube Cam Followers	10 000		10 000	

Note(1) d_1n value $= d_1 \times n$
where, d_1(2): Stud diameter mm
n : Rotational speed min^{-1}
(2) For Eccentric Type Cam Followers, thread diameter G as shown in the dimension table is applicable.

Lubrication

Grease-prepacked Cam Followers are shown in Table 10. The lubricating grease prepacked in these bearings is ALVANIA GREASE S2 (Shell Lubricants Japan K.K.).
For Cam Followers without prepacked grease, grease should be packed through the oil hole in the stud for use. If they are used without grease, wear of rolling contact surfaces may take place, leading to a short bearing life.

Table 10 Bearings with prepacked grease

○ : Prepacked × : Not prepacked

Series / Size of stud diameter d_1 (1) mm \ Item			With cage				Full complement
			Shield type		Sealed type		
			With hexagon hole	With screwdriver slot	With hexagon hole	With screwdriver slot	
Standard Type Cam Follower	CF···B CFKR	3～ 5	○	–	○	–	–
Eccentric Type Cam Followers	CFE···B CFKRE	6～ 10					○
Solid Eccentric Stud Type Cam Followers	CFES···B	12～ 30	×				
Thrust Disk Type Cam Followers	CF···WB						
Centralized Lubrication Type Cam Followers	CF-RU1, CF-FU1		–	–	–	○	–
Easy Mounting Type Cam Followers	CF-SFU···B		–	–	○	–	–
Cam Follower G	CF···G		○	–	–	–	–
C-Lube Cam Followers	CF···WB···/SG(2)		–	–	×	–	–
Short Stud Type Cam Followers	CFC···B		–	–	○ (3)	–	○
Miniature Type Cam Followers	CFS CFS···W		○	–	–	–	○
Cylindrical Roller Cam Followers	NUCF···B		–	–	–	–	○
Inch series Cam Followers	CR, CR···B		○	○	○	○	○
	CRH···B		–	–	–	–	○

Notes(1) For Eccentric Type Cam Followers, thread diameter G as shown in the dimension table is applicable.
(2) C-Lube, a thermosetting solid-type lubricant, fills the inner space of the bearing.
(3) Short Stud Cam Followers are supplied with a hexagon socket head bolt and a dedicated flange nut (hexagon socket on head).

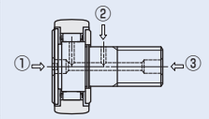
Oil Hole

The position of oil hole is shown in Table 11.
Perform greasing quietly by fitting a lubrication nozzle indicated in Table 12 to a straight type grease gun in JIS B 9808 and pressing the nozzle against the grease nipple or re-greasing fitting.
Due to their structures, lubrication is not possible for sizes 3 and 4 Standard Type Cam Followers CF···B, C-Lube Cam Followers, Cam Followers G, Short Stud Cam Followers CFC, and Miniature CFS series.

Table 11 Position of oil hole

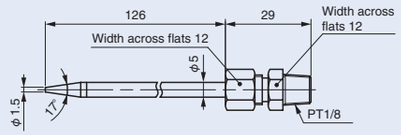
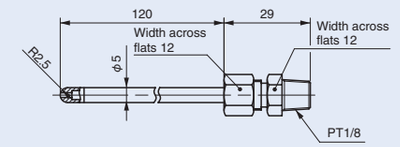
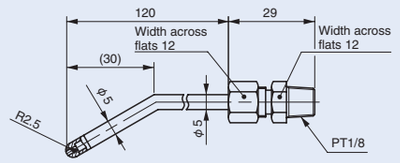
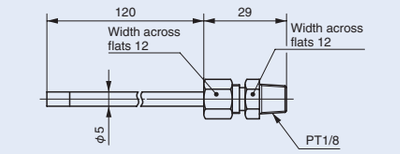
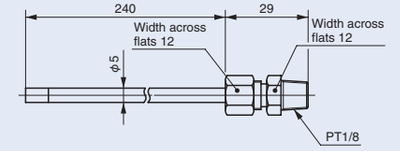
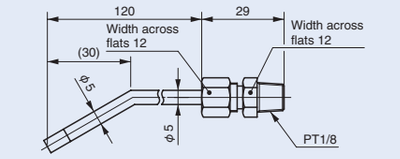
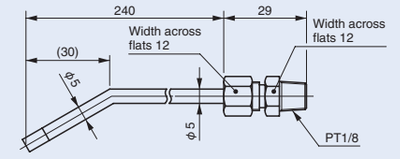
○ : Oil hole is prepared.

Series / Size of stud diameter d_1 (1) mm \ Oil hole position				① Head	② Stud outside surface	③ Stud end
Standard Type Cam Follower Eccentric Type Cam Followers	CF···B CFE···B	$d_1 < 5$		–	–	–
Solid Eccentric Stud Type Cam Followers	CFES···B	$5 \leqq d_1 \leqq 10$		○ (3)	–	–
Thrust Disk Type Cam Followers	CF···WB	$10 < d_1$		○ (2)	○	○
Standard Type Cam Follower	CFKR	$d_1 \leqq 10$		○ (2)	–	○
Eccentric Type Cam Followers	CFKRE	$10 < d_1$		○ (2)	○	○
Centralized Lubrication Type Cam Followers	CF-RU1, CF-FU1(4)	$d_1 \leqq 12$		○	–	–
		$12 < d_1$		○	○	○
Easy Mounting Type Cam Followers	CF-SFU···B	$d_1 \leqq 10$		○ (3)	–	–
		$10 < d_1$		○ (5)	–	–
Cam Follower G	CF···G			–	–	–
C-Lube Cam Followers	CF···WB···/SG			–	–	–
Short Stud Type Cam Followers	CFC···B			–	–	–
Miniature Type Cam Followers	CFS CFS···W			–	–	–
Cylindrical Roller Cam Followers	NUCF···B	$d_1 \leqq 10$		○ (3)	–	–
		$10 < d_1$		○ (2)	○	○
Inch series Cam Followers	CR···B	With hexagon hole	$d_1 \leqq 6.35$	–	–	–
			$6.35 < d_1$	–	○	○
	CR	With screwdriver slot	$d_1 \leqq 6.35$	○	–	–
			$6.35 < d_1$	○	○	○
	CRH···B	With hexagon hole	$d_1 \leqq 7.938$	–	–	–
			$7.938 < d_1$	–	○	○

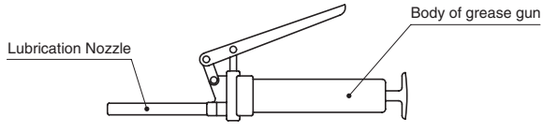


Notes(1) In case of Eccentric Type Cam Followers, thread diameter G shown in the table of dimensions is applicable in place of stud dia. and the oil hole on the outer surface of the stud cannot be used.
(2) Grease nipple is incorporated in the hexagon hole. Re-greasing can be made from the stud head and the stud end by press fitting a supplied grease nipple into the stud end. See page I4.
(3) Re-lubrication can be made from the re-greasing fitting that is inserted into the hexagon hole. See page I4.
(4) Tapped holes for oil connectors are provided at the stud end and hole of the head.
(5) Re-greasing can be made from the grease nipple in the hexagon hole.

Table 12 Type and Dimension of Lubrication Nozzles

Type	Dimension	Applicable grease nipple and re-grease fitting
A-5126T		NPF3(1) NPF6-1(1) Re-grease fitting(1)
A-5120R		NPF4-1(1) NPF6-1(1)
B-5120R		
A-5120V		
A-5240V		NPT4-1 NPT6-1 NPB2 NPB3 NPB3-1 NPB4
B-5120V		
B-5240V		

Note(1) HSP-3(Yamada Corporation)can be used for them.
Remark The above nozzles can be atached on the standard grease gun shown below.
If required, please consult to IKO with type of lubrication nozzle.



Accessories

Cam Follower accessories are shown in Table 13. Grease nipple dimensions are shown in Table 14 and Table 15. Dimensions of plug for unused oil hole and dimensions of plug inserter are shown in Table 16. Nut dimensions are shown in Table 17 and Table 18.

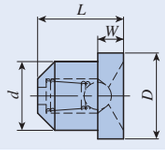
Table 13 Accessories

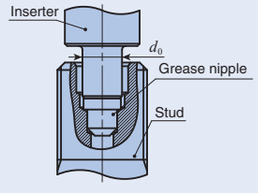
○ : Attached

Series / Size of stud dia. d_1 mm (1) \ Accessories			Grease nipple	Plug	Nut	Spring washer	Hexagon socket head bolt
Standard Type Cam Follower Eccentric Type Cam Followers	CF···B CFE···B	$d_1 \leqq 10$	–	–	○	–(2)	–
Solid Eccentric Stud Type Cam Followers Thrust Disk Type Cam Followers	CFES···B CF···WB	$10 < d_1$	○	–	○	–(2)	–
Standard Type Cam Follower Eccentric Type Cam Followers	CFKR CFKRE		○	–	○	–(2)	–
Centralized Lubrication Type Cam Followers	CF-RU1, CF-FU1		–	–	○	–	–
Easy Mounting Type Cam Followers	CF-SFU···B		–	–	–	–	–
Cam Follower G	CF···G		–	–	○	–	–
C-Lube Cam Followers	CF···WB···/SG		–	–	○	–	–
Short Stud Type Cam Followers	CFC···B		–	–	○(3)	–	○
Miniature Type Cam Followers	CFS, CFS···W		–	–	○	–	–
Cylindrical Roller Cam Followers	NUCF···B	$d_1 \leqq 10$	–	–	○	–	–
		$10 < d_1$	○	–	○	–	–
Inch series Cam Followers	CR···B With hexagon hole	$d_1 \leqq 6.35$	–	–	○	–	–
		$6.35 < d_1$	○	○	○	–	–
	CR With screwdriver slot	–	○	○	○	–	–
	CRH···B With hexagon hole	$d_1 \leqq 7.938$	–	–	○	–	–
		$7.938 < d_1$	○	○	○	–	–

Notes (1) For Eccentric Type Cam Follower, thead diameter G is applied.
(2) Eccentric Type Cam Followers are supplied with spring washers.
(3) Short Stud Cam Followers come with a dedicated flange nut.
Remark: The standard grease nipple (brass) is included in the Stainless Steel Made Cam Follower.
When a stainless steel grease nipple is required, please contact IKO.

Table 14 Dimensions of grease nipple for Standard Type Cam Followers (1)





Identification number	Dimensions of grease nipple mm				Stud diameter d_1 (2) mm	Dimension of inserter mm $d_0{}^{+0.05}_{-0.05}$
	d	D	L	W		
NPF3(3)	3	4	4.5	1.3	10	4.1
NPF4-1	4	5	5	1.5	12～16	5.3
NPF6-1	6	7	8	2	18～30	7.3

Notes (1) Applicable to Cam Followers other than Inch series Cam Followers.
(2) For Eccentric Type Cam Followers, thread diameter G as shown in the dimension table is applicable.
(3) Only applicable to Standard Type Cam Follower CFKR, and Eccentric Type Cam Follower CFKRE sizes 22 and 26.
Remark The same grease nipple as the accessory is integrated in the hexagon hole on the head.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 15 Dimensions of grease nipple for Inch series Cam Followers

Identification number	Dimensions mm						Applicable Cam Followers
	d	D	D_1	L	L_1	W	
NPB2	3.18	7.5	6	9	5.5	1.5	CR8 ～ CR10-1, CRH8-1 ～ CRH11
NPB3	4.76	7.5	6	10	5.5	1.5	CR12 ～ CR22, CRH12 ～ CRH22
NPB3-1	4.76	7.5	6	12.5	5.5	1.55	CR24 ～ CR36, CRH24 ～ CRH44
NPB4	6.35	8	6	13	6	2	CR48, CRH48 ～ CRH64

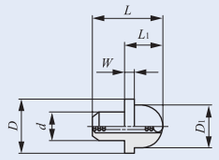
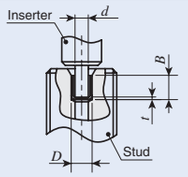


Table 16 Dimensions of plug for Inch series Cam Followers

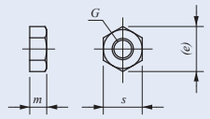
Identification number	Dimensions of plug mm			Dimension of inserter mm	Applicable bearings (1)
	D	t	B	$d\ {}^{0}_{-0.1}$	
USB2F	3.18	0.3	3.3	2.3	CR 8 ～CR10-1
USB3F	4.76	0.4	4.3	3.7	CR12～CR36, CRH12 ～CRH44
USB4F	6.35	0.5	4.8	5.2	CR48, CRH48～CRH64



Note(1) Shows representative types.

Table 17 Metric series nut dimensions(1)

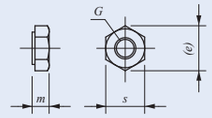
Model of bearing	Stud diameter d_1(2) mm	Nut dimensions mm			
		G	m	s	e
CF CFKR CFES CFE CFKRE CF…W CF-RU1 CF-FU1 CF…G CF…WB…/SG CFS CFS…W NUCF…B	1.4	M 1.4×0.3	1.1	3	3.25
	2	M 2 ×0.4	1.6	4	4.6
	2.5	M 2.5×0.45	2	5	5.8
	3	M 3 ×0.5	2.4	5.5	6.4
	4	M 4 ×0.7	3.2	7	8.1
	5	M 5 ×0.8	4	8	9.2
	6	M 6 ×1	5	10	11.5
	8	M 8 ×1.25	6.5	13	15
	10	M10 ×1.0(3) M10 ×1.25	8	17	19.6
	12	M12 ×1.5	10	19	21.9
	16	M16 ×1.5	13	24	27.7
	18	M18 ×1.5	15	27	31.2
	20	M20 ×1.5	16	30	34.6
	24	M24 ×1.5	19	36	41.6
	30	M30 ×1.5	24	46	53.1



Note(1) See pages I57～I58 for dimensions of the dedicated flange nut included with the Short Stud Cam Follower CFC…B.
(2) For Eccentric Type Cam Followers, thread diameter G as shown in the dimension table is applicable.
(3) Applicable to Standard Type Cam Follower CFKR, and Eccentric Type Cam Follower CFKRE.

Table 18 Inch series nut dimensions

Model of bearing	Stud diameter d_1 (inch)	Nut dimensions mm			
		G UNF	m	s	e
CR CRH	4.826	No.10-32	4	8	9.2
	6.35 (1/4)	1/4-28	5.5	10	11.5
	7.938 (5/16)	5/16-24	6.5	12	13.8
	9.525 (3/8)	3/8-24	8	14	16.2
	11.112 (7/16)	7/16-20	10	17	19.5
	12.7 (1/2)	1/2-20	11	19	21.9
	15.875 (5/8)	5/8-18	14	23	26.5
	19.05 (3/4)	3/4-16	16	26	30
	22.225 (7/8)	7/8-14	19	32	37
	25.4 (1)	1 -14UNS	22	36	41.4
	28.575 (1 1/8)	1 1/8-12	24	41	47.1
	31.75 (1 1/4)	1 1/4-12	27	46	53.5
	38.1 (1 1/2)	1 1/2-12	33	55	63.5
	44.45 (1 3/4)	1 3/4-12UN	38	65	75.1
	50.8 (2)	2 -12UN	44	75	86.6



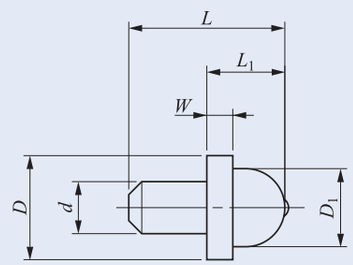
Special Specification

The grease nipple supplied with Metric series Cam Follower with hexagon socket as an accessory may be replaced with the NPT type grease nipple indicated in Table 19 upon your request. If required, please order with supplemental code, "/NP" at the end of identification number.

Example of Identification Number

CF 12 BUU ／ NP

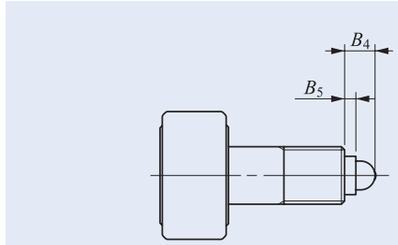
Table 19 Dimension of NPT type grease nipple



Code number	Dimension of grease nipple mm						Size of stud dia. d_1(1) mm
	d	D	D_1	L	L_1	W	
NPT4-1	4	8	6	12	6	2	12 ～ 16
NPT6-1	6	8	6	14	8	4	18 ～ 30

Note(1) For Eccentric Type Cam Follower CFE, thread diameter G is applied.
Remark Not applicable to Standard Type Cam Follower CFKR, and Eccentric Type Cam Follower CFKRE.

Table 20 Dimension of assembled NPT type grease nipple



Code number	Dimension mm		Size of stud dia. d_1(1) mm
	B_4	B_5	
NPT4-1	6	2	12 ～ 16
NPT6-1	8	4	18 ～ 30

Note(1) For Eccentric Type Cam Follower CFE, thread diameter G is applied.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Mounting

❶Make the center axis of the mounting hole perpendicular to the moving direction of the Cam Follower and match the side shoulder accurately with the seating surface indicated by dimension f in the table of dimensions. (See Fig. 1)
The chamfered mounting hole should be as small as possible (C0.5 or so).
When mounting Cam Followers, do not hit the flange head of the Cam Follower directly with a hammer, etc. This may lead to a bearing failure such as irregular rotation or cracking.
If the Cam Follower outer ring is not in good contact with the mating running surface then we recommend use of a crowned outer ring type.

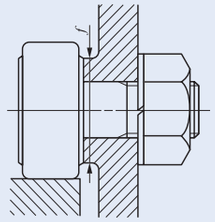


Fig. 1 Seating surface

❷The IKO mark on the flange head of the stud indicates the position of the oil hole on the raceway. Avoid locating the oil hole within the loading zone. This may lead to a short bearing life. (See Fig. 2.) The hole located in the middle part of the stud perpendicular to the stud center axis is used for greasing or locking.

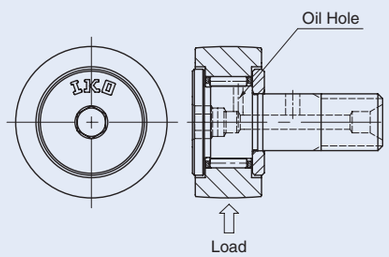


Fig. 2 Oil hole position and loading direction

❸When mounting Cam Followers, fix in place by holding the hexagon hole or screwdriver slot with a hex wrench or slotted screwdriver and use a wrench to tighten on a nut. (See Fig. 3.1)
If mounting by turning the hexagon hole or screwdriver slot itself, the hexagon hole or screwdriver slot of the Cam Follower may become damaged.
When mounting Short Stud Cam Followers, fix the dedicated flange nut as a rotation stopper with a wrench or hex wrench, and then tighten the hexagon socket head bolt by rotating with a hex wrench. (See Fig. 3.2 and Fig. 3.3)

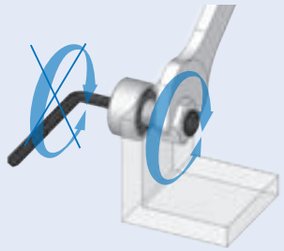


Fig. 3.1 Methods of mounting

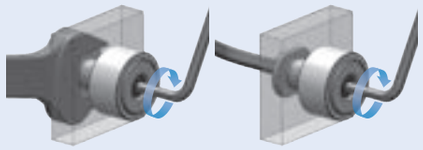


Fig. 3.2
When stopping flange nut rotation with a wrench

Fig. 3.3
When stopping flange nut rotation with a hex wrench

❹When tightening the nut, the tightening torque should not exceed the values shown in the table of dimensions. If the tightening torque is too large, it is possible that the threaded portion of the stud will be broken. When there is a possibility of loosening, a special nut such as a lock nut, spring washer, or self-locking nut should be used.

❺When direct-fixing the Cam Follower without nuts for mounting as shown in Fig. 4, it may be difficult to achieve sufficient tightening torque. If the screw then loosens, stress may concentrate on the thread, causing the stud to break. Such a method is not recommended.

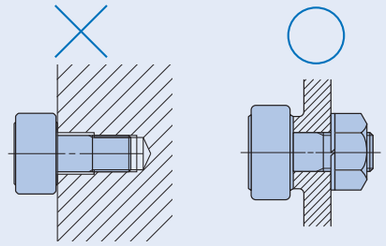


Fig. 4 Methods of mounting

❻Solid Eccentric Stud Type Cam Followers and Eccentric Type Cam Followers, are mounted in reference position where IKO mark on the head of stud is located as Fig.5. The outer ring position can be adjusted appropriately by turning the stud with a screwdriver or hexagon bar wrench using the screwdriver slot or hexagon hole of the stud head. The stud is fixed with a nut and a spring washer, etc. The tightening torque should not exceed the values of maximum tightening torque shown in the table of dimensions.
When shock loads are applied and the adjusted eccentricity has to be ensured, it is recommended to make holes in the housing, stud and eccentric collar, and fix the stud with a dowel pin as shown in Fig. 6. However, when the stud diameter is less than 8 mm (Eccentric collar diameter 11 mm), it is difficult to make a hole in the stud because the stud is through-hardened.

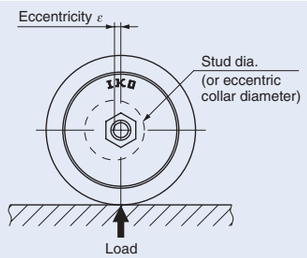


Fig. 5 Reference position for adjusting of Solid Eccentric Stud Type Cam Followers and Eccentric Type Cam Follwers

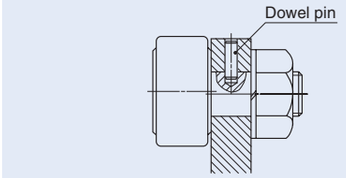


Fig. 6 Mounting example of Solid Eccentric Stud Type Cam Follower

❼For Short Stud Cam Followers, the cam follower mounting member material thickness range (T dimension in the dimension table on pages I57 ～ I58) is determined by the hexagon socket head bolt length. When the designed mounting member material exceeds the tolerance range of the bolt supplied, the customer should use a hexagon socket head bolt (strength division 12.9).
When considering mounting member material with thickness outside the range in Fig. 7, please contact IKO.

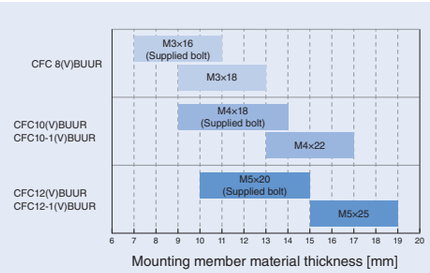


Fig. 7 Hexagon socket head bolt selection chart

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

❽The length of a mounting hole for Eccentric Type Cam Followers must be at least that of the S dimension in Fig. 8.

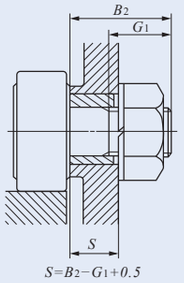
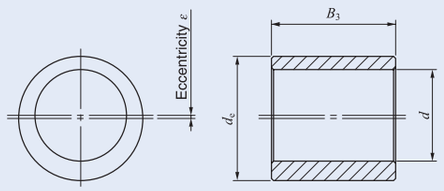


Fig. 8 Length of the mounting hole of Eccentric Type Cam Follower

❾Eccentric callor is available for Inch series Cam Followers.
Cam Followers with Eccentric collars, CRE are also available. If required, please consult with IKO.

Table 20 Eccentric collars for Inch series Cam Followers



unit: mm

Identification number of collar	Outer diameter of collar d_e	Length of collar B_3	Eccentricity ε	Stud dia. d	Applicable Cam Followers
EB 8	6.350 (1/4)	9.525 (3/8)	0.250	4.826	CR 8 CR 8-1 (V)(B)(UU)(R)
EB10	9.525 (3/8)	11.100	0.380	6.350 (1/4)	CR10 CR10-1 (V)(B)(UU)(R)
EB12	12.700 (1/2)	12.700 (1/2)	0.380	9.525 (3/8)	CR12 CR14 (V)(B)(UU)(R)
EB16	15.875 (5/8)	12.700 (1/2)	0.760	11.112 (7/16)	CR16 CR18 (V)(B)(UU)(R)
EB20	17.450	15.875 (5/8)	0.760	12.700 (1/2)	CR20 CR22 (V)(B)(UU)(R)
EB24	22.225 (7/8)	19.050 (3/4)	0.760	15.875 (5/8)	CR24 CR26 (V)(B)(UU)(R)
EB28	25.400 (1)	22.225 (7/8)	0.760	19.050 (3/4)	CR28 CR30 (V)(B)(UU)(R)
EB32	30.150	25.400 (1)	0.760	22.225 (7/8)	CR32 CR36 (V)(B)(UU)(R)
EB48	44.450 (1 3/4)	31.750 (1 1/4)	1.520	31.750 (1 1/4)	CR48 VUU

❿For mounting Easy Mounting Type Cam Followers, it is recommended to fix the fixing screw from the upper side to the stepped portion of the stud. (See Fig. 9.)
While M5 - M6 screws are generally used as fixing screws, adjust the size used depending on the usage criteria.

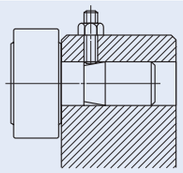


Fig. 9 Mounting example of Easy Mounting Type Cam Follower

Operating Temperature Range

Operating temperature range of Cam Followers is -20°C ~ +120°C. However, note that the maximum allowable temperature varies in models shown in Table 21.

Table 21 Limitation of operating temperature range

Model / Stud diameter d_1 mm		With cage: Shield type	With cage: Sealed type	Full complement: ThrustDisk Seals
Miniature Type Cam Followers CFS Thrust Disk Type Miniature Cam Followers CFS ··· W	$d_1 = 2$	−20°C ~ 110°C(1)	–	–
Standard Type Cam Followers CF ··· B Thrust Disk Type Cam Followers CF ··· WB	$d_1 = 3,4$	−20°C ~ 110°C(1)	−20°C ~ 80°C	–
	$d_1 = 5$	−20°C ~ 120°C		
Standard Type Cam Followers / Stainless Steel Made CF ··· FB Thrust Disk Type Cam Followers / Stainless Steel Made CF ··· FWB	$3 \leqq d_1 \leqq 5$	−20°C ~ 110°C(1)	−20°C ~ 80°C	–
C-Lube Cam Followers CF ··· WB ··· /SG	$5 \leqq d_1 \leqq 20$	–	−15°C ~ 80°C(2)	–
Inch Series Cam Followers ThrustDisk Seals CR ··· VBS	$4.826 \leqq d_1 \leqq 22.225$	–	–	−20°C ~ 80°C

Notes(1) 100°C when used continuously.
(2) Below 60°C is recommended for long use.

Precaution For Use

❶Do not wash C-Lube Cam Followers with organic solvent and/or white kerosene or leave them in contact with these agents because they have the ability to remove grease.

❷To ensure normal rotation of the C-Lube Cam Follower, apply a load of 1% or more of the dynamic load rating at use.

Option Parts

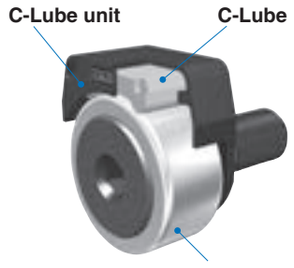
C-Lube Unit for Cam Followers

Structure and features

IKO C-Lube unit for Cam Follower is a lubrication part to be mounted on the Cam Follower and its integral capillary lubricating element has a lot of lubrication oil impregnated in it.
The capillary lubricating element is consecutive porous resin formed by sinter molding of fine resin powder and a lot of lubrication oil is impregnated in it by using the capillary action that occurs within the internal space.

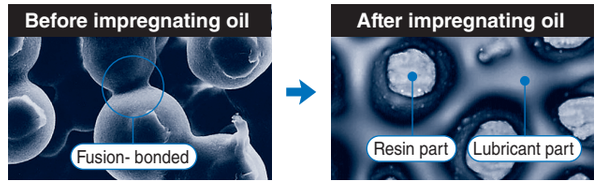
Regular lubrication is not needed as lubrication oil is supplied onto the outside diameter surface of the outer ring and mating guide surface (cam guide surface). The grease is not scattered and contamination of the surrounding environment is prevented.
The combination with IKO C-Lube cam follower (See Page I55) realizes maintenance-free cam follower inside and cam guide surface.

Structure of C-Lube Unit for Cam Followers



IKO C-Lube Cam Follower

Magnified photos of C-Lube

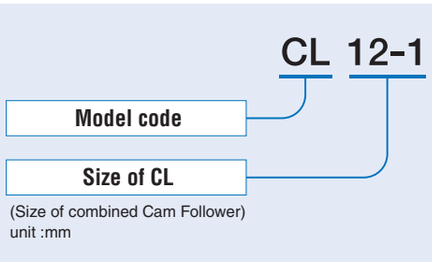


Resin particles are strongly fusion bonded.

Lubricant is retained in cavities amongst resin particles.

Identification number

The identification number example of IKO C-Lube Unit is shown below.



(Size of combined Cam Follower)
unit :mm

Allowable Rotational speed

The Rotational speed of IKO Cam Follower with C-Lube Unit should not exceeded d_1n=10,000 for reference.

$$d_1n = d_1 \times n$$

d_1 : Stud diameter of Cam Follower, mm
n : Rotational speed, min^{-1}

Minimum rotational angle

Lubricating oil is supplied to the whole external diameter surface of the outer ring. Accordingly, use the product in a condition in which the outer ring makes one or more turns.

Operating temperature

Allowable operating temperature range of IKO Cam Follower with C-Lube Unit is -15 to 80˚C.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Mounting

❶Set the C-Lube Unit perpendicularly to the center axis of Cam Follower and fix together with Cam Follower by tightening nut. (See Fig. 10.)

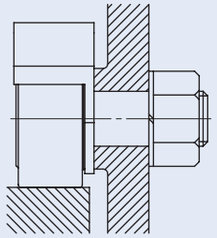


Fig. 10 Mounting of C-Lube Unit

❷Position of C-Lube Unit is adjustable. C-Lube Unit must be positioned avoiding loading direction. (See Fig. 11.)

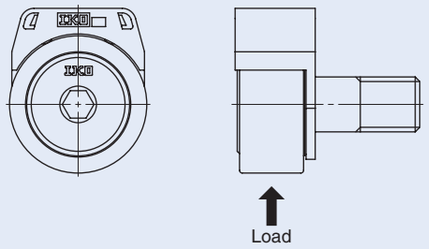


Fig. 11 Load direction of Cam Follwer

❸When tightening the nut, the tightening torque should not be exceeded the value maximum tightening torque on dimension table.
In case loosening of the nut is predicted due to vibration, using lock nut, spring washer and other special washer are recommended.

Precaution for use

❶Do not wash with organic solvent and/or white kerosene, which have the ability of removing fat nor leave them in contact with the above agents.

❷Do not apply a load onto the C-Lube Unit directly.

❸To ensure normal rotation of the Cam Follower, apply a load of 1% or over of the dynamic load rating at use.
Also, the outer ring needs to be rotate over a revolution to supply lubricant on entire outer diameter surface.

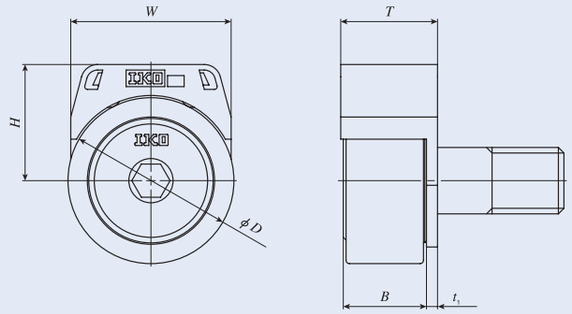
❹The maximum allowable load on IKO Cam Follower with C-Lube Unit is, 80% of the maximum allowable load of the needle bearing.
C-Lube Unit may be damaged and influenced to the smooth rotation and lubricating performance by excessive load.

❺After assembling C-Lube Unit and Cam Followers in the machine, please confirm that C-Lube unit provides oil correctly to the cam guide surface before actual operation.

❻Do not use in the environment which contamination of liquid and/or harmful foreign matter are expected.

❼Replace with new C-Lube Unit when inside oil finishes completely. Re-lubrication is not possible.

Table 21 Dimensions of C-Lube Unit for Cam Followers



Model number	Boundary Dimensions mm				Applicable Cam Followers		
	W	H	T	t_1	Model number (1)	Boundary Dimensions mm D	B
CL 5	12.4	10.7	12.1	1.5	CF 5 B	13	10
CL 6	15.4	12.6	14	1.5	CF 6 B	16	12.2 max
CL 8	18.4	14.2	14	1.5	CF 8 B	19	12.2 max
CL 10	21	17	15.5	2	CF 10 B CFKR 22	22	13.2 max
CL 10-1	21	19.2	15.5	2	CF 10-1 B CFKR 26	26	13.2 max
CL 12	29	21	17.5	2	CF 12 B CFKR 30	30	15.2 max
CL 12-1	29	22	17.5	2	CF 12-1 B CFKR 32	32	15.2 max
CL 16	33.8	27.4	23.4	2.5	CF 16 B CFKR 35	35	19.6 max
CL 18	38.8	30.4	25.4	2.5	CF 18 B CFKR 40	40	21.6 max
CL 20	45.8	38.4	29.9	3	CF 20 B CFKR 52	52	25.6 max
CL 20-1	45.8	35.4	29.9	3	CF 20-1 B CFKR 47	47	25.6 max

Note(1) Only representative identification numbers are shown in the table, but applicable to all Cam Followers other than Miniature Type Cam Followers and Inch Series Cam Followers.
It is recommended to use together with C-Lube Cam Followers in order to make maintenance-free more effective.

Remark Load on the Cam Follower with the C-Lube unit equipped must be up to 80% of the maximum allowable static load of the Cam Follower to be combined. For the maximum allowed static load of each Cam Follower, please see the dimension tables of respective models.

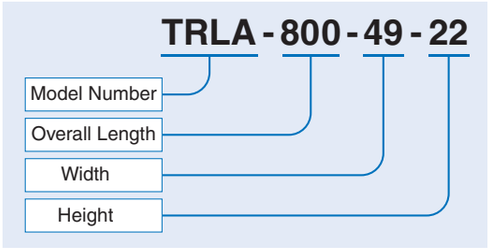
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Option Parts

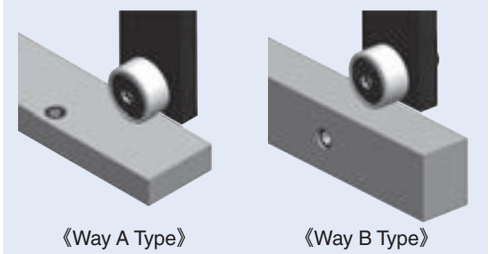
Way for Cam Follower

The accuracy of the mating cam guide that comes in contact with the outer ring of Cam Followers has a large influence on the guide performance of Cam Followers and machinery.
A specially designed high-precision Way for Cam Follower should be used in order to achieve sufficient performance from the Cam Followers. Fixed with bolts for simple assembly and available in 2 models - A type or B type - depending on the mounting direction.

Identification number



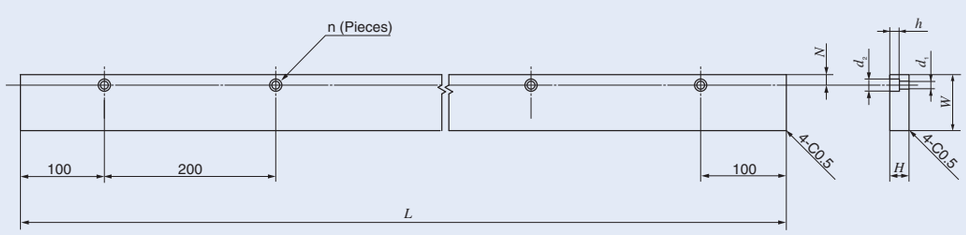
Model Types



《Way A Type》 《Way B Type》

Table of Dimensions

《Way A Type》

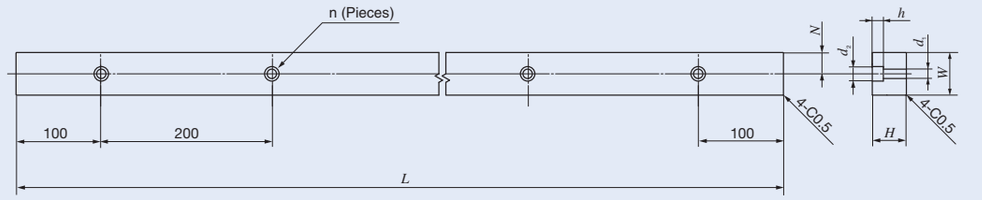


Material: SKS3 equivalent
Surface hardness: 40HRC or more

Identification number	Boundary Dimensions mm							Applicable Cam Followers
	$L_{(n)}$	W	H	N	d_1	d_2	h	
TRLA- 600-40-22	600(3)	40	22	12	9	14	11	Stud dia. 3~ 8mm
TRLA- 800-40-22	800(4)							
TRLA-1000-40-22	1000(5)							
TRLA- 600-49-22	600(3)	49						Stud dia.10~18mm
TRLA- 800-49-22	800(4)							
TRLA-1000-49-22	1000(5)							
TRLA- 600-64-22	600(3)	64						Stud dia.20~30mm
TRLA- 800-64-22	800(4)							
TRLA-1000-64-22	1000(5)							

Remark For other dimensions, please contact IKO.

《Way B Type》



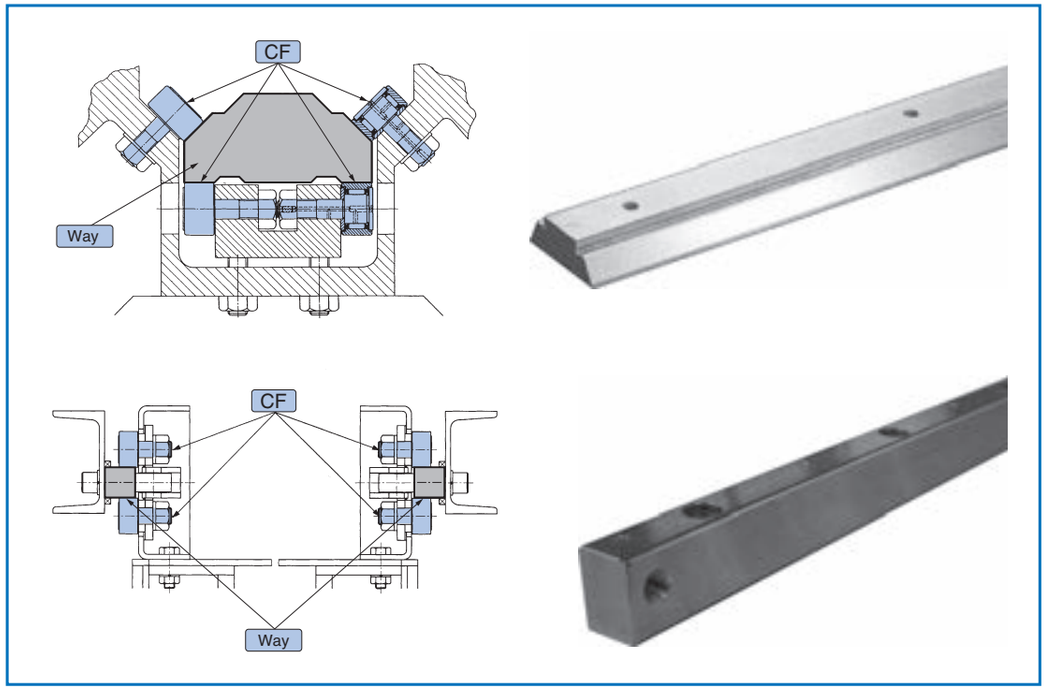
Material: SKS3 equivalent
Surface hardness: 40HRC or more

Identification number	Boundary Dimensions mm							Applicable Cam Followers
	$L_{(n)}$	W	H	N	d_1	d_2	h	
TRLB- 600-34-22	600(3)	34	22	17	9	14	11	Stud dia. 3~12mm
TRLB- 800-34-22	800(4)							
TRLB-1000-34-22	1000(5)							
TRLB- 600-50-40	600(3)	50	40	25	11	17	13	Stud dia.16~30mm
TRLB- 800-50-40	800(4)							
TRLB-1000-50-40	1000(5)							

Remark For other dimensions, please contact IKO.

Introduction of Special Support Examples

Introducing special support examples for Ways for Cam Follower.
A variety of shapes are supported in addition to the special support examples. For details, please contact IKO.

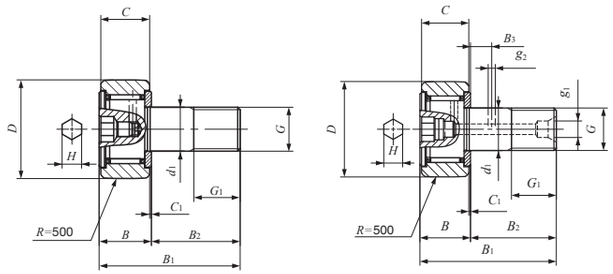


1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Standard Type Cam Followers CF···B With Cage/Stud Head Hex Hole





CF···BR
Stud dia d_1 3-10mm

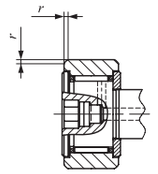
CF···BR
Stud dia d_1 12-30mm

Stud dia. 3—30mm

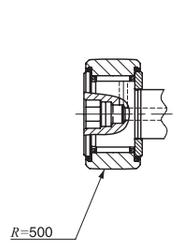
Stud dia. mm	Identification number: Shield type, With crowned outer ring	Shield type, With cylindrical outer ring	Sealed type, With crowned outer ring	Sealed type, With cylindrical outer ring	Mass (Ref.) g(2)	D	C	d_1	G
3	CF 3 BR	CF 3 B	CF 3 BUUR	CF 3 BUU	4.3	10	7	3	M 3×0.5
4	CF 4 BR	CF 4 B	CF 4 BUUR	CF 4 BUU	7.4	12	8	4	M 4×0.7
5	CF 5 BR	CF 5 B	CF 5 BUUR	CF 5 BUU	10.3	13	9	5	M 5×0.8
6	CF 6 BR	CF 6 B	CF 6 BUUR	CF 6 BUU	18.5	16	11	6	M 6×1
8	CF 8 BR	CF 8 B	CF 8 BUUR	CF 8 BUU	28.5	19	11	8	M 8×1.25
	CF 8 BRM	CF 8 BM	CF 8 BUURM	CF 8 BUUM	28.5	19	11	8	M 8×1
10	CF 10 BR	CF 10 B	CF 10 BUUR	CF 10 BUU	45	22	12	10	M10×1.25
	CF 10 BRM	CF 10 BM	CF 10 BUURM	CF 10 BUUM	45	22	12	10	M10×1
	CF 10-1 BR	CF 10-1 B	CF 10-1 BUUR	CF 10-1 BUU	60	26	12	10	M10×1.25
	CF 10-1 BRM	CF 10-1 BM	CF 10-1 BUURM	CF 10-1 BUUM	60	26	12	10	M10×1
12	CF 12 BR	CF 12 B	CF 12 BUUR	CF 12 BUU	95	30	14	12	M12×1.5
	CF 12-1 BR	CF 12-1 B	CF 12-1 BUUR	CF 12-1 BUU	105	32	14	12	M12×1.5
16	CF 16 BR	CF 16 B	CF 16 BUUR	CF 16 BUU	170	35	18	16	M16×1.5
18	CF 18 BR	CF 18 B	CF 18 BUUR	CF 18 BUU	250	40	20	18	M18×1.5
20	CF 20 BR	CF 20 B	CF 20 BUUR	CF 20 BUU	460	52	24	20	M20×1.5
	CF 20-1 BR	CF 20-1 B	CF 20-1 BUUR	CF 20-1 BUU	385	47	24	20	M20×1.5
24	CF 24 BR	CF 24 B	CF 24 BUUR	CF 24 BUU	815	62	29	24	M24×1.5
	CF 24-1 BR	CF 24-1 B	CF 24-1 BUUR	CF 24-1 BUU	1 140	72	29	24	M24×1.5
30	CF 30 BR	CF 30 B	CF 30 BUUR	CF 30 BUU	1 870	80	35	30	M30×1.5
	CF 30-1 BR	CF 30-1 B	CF 30-1 BUUR	CF 30-1 BUU	2 030	85	35	30	M30×1.5
	CF 30-2 BR	CF 30-2 B	CF 30-2 BUUR	CF 30-2 BUU	2 220	90	35	30	M30×1.5

Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CF···BR drawing.
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(3) Minimum allowable value of chamfer dimension r

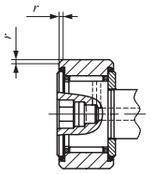
Remarks1. Models with a stud diameter d_1 of 4 mm or less have no oil hole. For models with a stud dia. 5 to 10mm, oil hole (re-greasing fitting) is provided at the head. Other models are provided with an oil hole (grease nipple) at the head and an oil hole each on the outside surface and end surface of the stud.
2. Shield type models with a stud diameter d_1 of 10mm or less and the sealed type models are provided with prepacked grease. Other models are not provided with prepacked grease. Perform proper lubrication for use.



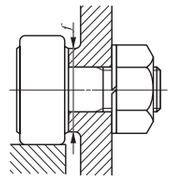
CF···B(1)



CF···BUUR(1)



CF···BUU(1)



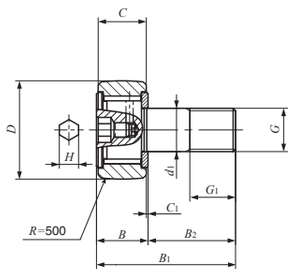
Boundary dimensions mm: G_1	B	B_1	B_2	B_3	C_1	g_1	g_2	H	$r_{s\,min}$ (3)	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
5	8	17	9	—	0.5	—	—	2	0.2	6.8	0.34	1 500	1 020	384
6	9	20	11	—	0.5	—	—	2.5	0.3	8.3	0.78	2 070	1 590	834
7.5	10	23	13	—	0.5	—	—	3	0.3	9.3	1.6	2 520	2 140	1 260
8	12.2max	28.2max	16	—	0.6	—	—	3	0.3	11	2.7	3 660	3 650	1 950
10	12.2max	32.2max	20	—	0.6	—	—	4	0.3	13	6.5	4 250	4 740	4 620
10	12.2max	32.2max	20	—	0.6	—	—	4	0.3	13	7.1	4 250	4 740	4 620
12	13.2max	36.2max	23	—	0.6	—	—	4	0.3	16	13.8	5 430	6 890	6 890
12	13.2max	36.2max	23	—	0.6	—	—	4	0.3	16	14.7	5 430	6 890	6 890
12	13.2max	36.2max	23	—	0.6	—	—	4	0.3	16	13.8	5 430	6 890	6 890
12	13.2max	36.2max	23	—	0.6	—	—	4	0.3	16	14.7	5 430	6 890	6 890
13	15.2max	40.2max	25	6	0.6	4	3	6	0.6	21	21.9	7 910	9 790	9 790
13	15.2max	40.2max	25	6	0.6	4	3	6	0.6	21	21.9	7 910	9 790	9 790
17	19.6max	52.1max	32.5	8	0.8	4	3	6	0.6	26	58.5	12 000	18 300	18 300
19	21.6max	58.1max	36.5	8	0.8	6	3	8	1	29	86.2	14 800	25 200	25 200
21	25.6max	66.1max	40.5	9	0.8	6	4	8	1	34	119	20 700	34 600	34 600
21	25.6max	66.1max	40.5	9	0.8	6	4	8	1	34	119	20 700	34 600	34 600
25	30.6max	80.1max	49.5	11	0.8	6	4	12	1	40	215	30 500	52 600	52 000
25	30.6max	80.1max	49.5	11	0.8	6	4	12	1	40	215	30 500	52 600	52 000
32	37 max	100 max	63	15	1	6	4	17	1	49	438	45 400	85 100	85 100
32	37 max	100 max	63	15	1	6	4	17	1	49	438	45 400	85 100	85 100
32	37 max	100 max	63	15	1	6	4	17	1	49	438	45 400	85 100	85 100

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

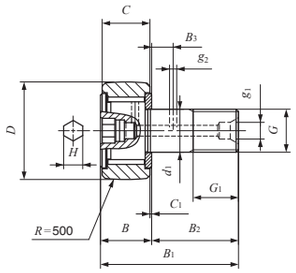
CAM FOLLOWERS

Standard Type Cam Followers CF···B Full Complement Type/Stud Head Hex Hole





CF···VBR
Stud dia. d_1 6-10mm



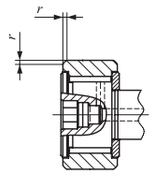
CF···VBR
Stud dia. d_1 12-30mm

Stud dia. 6—30mm

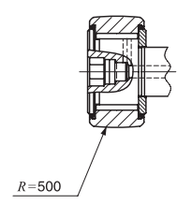
Stud dia. mm	Identification number: Shield type, With crowned outer ring	Shield type, With cylindrical outer ring	Sealed type, With crowned outer ring	Sealed type, With cylindrical outer ring	Mass (Ref.) g(2)	D	C	d_1
6	CF 6 VBR	CF 6 VB	CF 6 VBUUR	CF 6 VBUU	19	16	11	6
8	CF 8 VBR	CF 8 VB	CF 8 VBUUR	CF 8 VBUU	29	19	11	8
	CF 8 VBRM	CF 8 VBM	CF 8 VBUURM	CF 8 VBUUM	29	19	11	8
10	CF 10 VBR	CF 10 VB	CF 10 VBUUR	CF 10 VBUU	46	22	12	10
	CF 10 VBRM	CF 10 VBM	CF 10 VBUURM	CF 10 VBUUM	46	22	12	10
	CF 10-1 VBR	CF 10-1 VB	CF 10-1 VBUUR	CF 10-1 VBUU	61	26	12	10
	CF 10-1 VBRM	CF 10-1 VBM	CF 10-1 VBUURM	CF 10-1 VBUUM	61	26	12	10
12	CF 12 VBR	CF 12 VB	CF 12 VBUUR	CF 12 VBUU	97	30	14	12
	CF 12-1 VBR	CF 12-1 VB	CF 12-1 VBUUR	CF 12-1 VBUU	107	32	14	12
16	CF 16 VBR	CF 16 VB	CF 16 VBUUR	CF 16 VBUU	173	35	18	16
18	CF 18 VBR	CF 18 VB	CF 18 VBUUR	CF 18 VBUU	255	40	20	18
20	CF 20 VBR	CF 20 VB	CF 20 VBUUR	CF 20 VBUU	465	52	24	20
	CF 20-1 VBR	CF 20-1 VB	CF 20-1 VBUUR	CF 20-1 VBUU	390	47	24	20
24	CF 24 VBR	CF 24 VB	CF 24 VBUUR	CF 24 VBUU	820	62	29	24
	CF 24-1 VBR	CF 24-1 VB	CF 24-1 VBUUR	CF 24-1 VBUU	1 140	72	29	24
30	CF 30 VBR	CF 30 VB	CF 30 VBUUR	CF 30 VBUU	1 870	80	35	30
	CF 30-1 VBR	CF 30-1 VB	CF 30-1 VBUUR	CF 30-1 VBUU	2 030	85	35	30
	CF 30-2 VBR	CF 30-2 VB	CF 30-2 VBUUR	CF 30-2 VBUU	2 220	90	35	30

Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CF···VBR drawing.
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(3) Minimum allowable value of chamfer dimension r

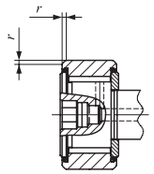
Remarks1. Models with a stud diameter d_1 of 10 mm or less have an oil hole (re-greasing fitting) at the head. Other models are provided with an oil hole (grease nipple) at the head and an oil hole each on the outside surface and end surface of the stud.
2. Provided with prepacked grease.



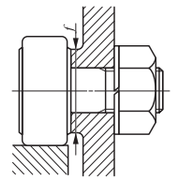
CF···VB(1)



CF···VBUUR(1)



CF···VBUU(1)

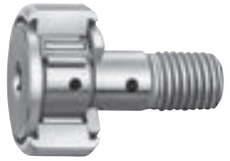


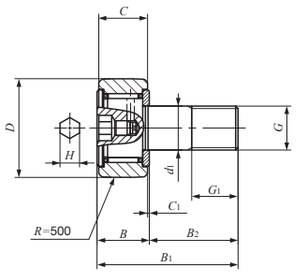
Boundary dimensions mm: G	G_1	B max	B_1 max	B_2	B_3	C_1	g_1	g_2	H	r_{smin} (3)	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
M 6×1	8	12.2	28.2	16	—	0.6	—	—	3	0.3	11	2.7	6 980	8 500	1 950
M 8×1.25	10	12.2	32.2	20	—	0.6	—	—	4	0.3	13	6.5	8 170	11 200	4 620
M 8×1	10	12.2	32.2	20	—	0.6	—	—	4	0.3	13	7.1	8 170	11 200	4 620
M10×1.25	12	13.2	36.2	23	—	0.6	—	—	4	0.3	16	13.8	9 570	14 500	8 650
M10×1	12	13.2	36.2	23	—	0.6	—	—	4	0.3	16	14.7	9 570	14 500	8 650
M10×1.25	12	13.2	36.2	23	—	0.6	—	—	4	0.3	16	13.8	9 570	14 500	8 650
M10×1	12	13.2	36.2	23	—	0.6	—	—	4	0.3	16	14.7	9 570	14 500	8 650
M12×1.5	13	15.2	40.2	25	6	0.6	4	3	6	0.6	21	21.9	13 500	19 700	13 200
M12×1.5	13	15.2	40.2	25	6	0.6	4	3	6	0.6	21	21.9	13 500	19 700	13 200
M16×1.5	17	19.6	52.1	32.5	8	0.8	4	3	6	0.6	26	58.5	20 700	37 600	23 200
M18×1.5	19	21.6	58.1	36.5	8	0.8	6	3	8	1	29	86.2	25 300	51 300	31 100
M20×1.5	21	25.6	66.1	40.5	9	0.8	6	4	8	1	34	119	33 200	64 500	37 500
M20×1.5	21	25.6	66.1	40.5	9	0.8	6	4	8	1	34	119	33 200	64 500	37 500
M24×1.5	25	30.6	80.1	49.5	11	0.8	6	4	12	1	40	215	46 600	92 000	52 000
M24×1.5	25	30.6	80.1	49.5	11	0.8	6	4	12	1	40	215	46 600	92 000	52 000
M30×1.5	32	37	100	63	15	1	6	4	17	1	49	438	67 700	144 000	85 900
M30×1.5	32	37	100	63	15	1	6	4	17	1	49	438	67 700	144 000	85 900
M30×1.5	32	37	100	63	15	1	6	4	17	1	49	438	67 700	144 000	85 900

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

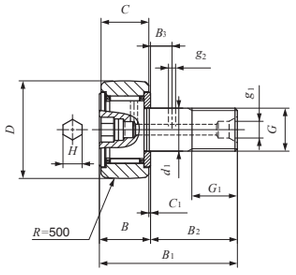
CAM FOLLOWERS

Standard Type Cam Followers CF···B / Stainless Steel Made With Cage/Stud Head Hex Hole





CF···FBR
Stud dia. d_1 3-10mm



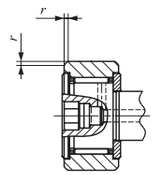
CF···FBR
Stud dia. d_1 12-20mm

Stud dia. 3—20mm

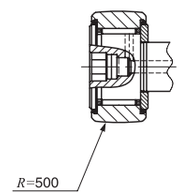
Stud dia. mm	Identification number: Shield type, With crowned outer ring	Identification number: Shield type, With cylindrical outer ring	Identification number: Sealed type, With crowned outer ring	Identification number: Sealed type, With cylindrical outer ring	Mass (Ref.) g(2)	D	C	d_1	G	G_1
3	CF 3 FBR	CF 3 FB	CF 3 FBUUR	CF 3 FBUU	4.3	10	7	3	M 3×0.5	5
4	CF 4 FBR	CF 4 FB	CF 4 FBUUR	CF 4 FBUU	7.4	12	8	4	M 4×0.7	6
5	CF 5 FBR	CF 5 FB	CF 5 FBUUR	CF 5 FBUU	10.3	13	9	5	M 5×0.8	7.5
6	CF 6 FBR	CF 6 FB	CF 6 FBUUR	CF 6 FBUU	18.5	16	11	6	M 6×1	8
8	CF 8 FBR	CF 8 FB	CF 8 FBUUR	CF 8 FBUU	28.5	19	11	8	M 8×1.25	10
10	CF 10 FBR CF 10-1 FBR	CF 10 FB CF 10-1 FB	CF 10 FBUUR CF 10-1 FBUUR	CF 10 FBUU CF 10-1 FBUU	45 60	22 26	12	10	M10×1.25	12
12	CF 12 FBR CF 12-1 FBR	CF 12 FB CF 12-1 FB	CF 12 FBUUR CF 12-1 FBUUR	CF 12 FBUU CF 12-1 FBUU	95 105	30 32	14	12	M12×1.5	13
16	CF 16 FBR	CF 16 FB	CF 16 FBUUR	CF16 FBUU	170	35	18	16	M16×1.5	17
18	CF 18 FBR	CF 18 FB	CF 18 FBUUR	CF18 FBUU	250	40	20	18	M18×1.5	19
20	CF 20 FBR CF 20-1 FBR	CF 20 FB CF 20-1 FB	CF 20 FBUUR CF 20-1 FBUUR	CF 20 FBUU CF 20-1 FBUU	460 385	52 47	24	20	M20×1.5	21

Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CF···FBR drawing.
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(3) Minimum allowable value of chamfer dimension r

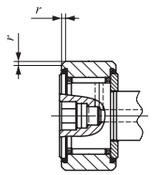
Remarks1. Models with a stud diameter d_1 of 4 mm or less have no oil hole. For models with a stud dia. 5 to 10 mm, oil hole (re-greasing fitting) is provided at the head. Other models are provided with an oil hole (grease nipple) at the head and an oil hole each on the outside surface and end surface of the stud.
2. Shield type models with a stud diameter d_1 of 10 mm or less and the sealed type models are provided with prepacked grease. Other models are not provided with prepacked grease. Perform proper lubrication for use.



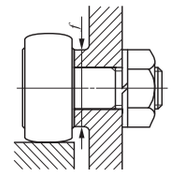
CF···FB(1)



CF···FBUUR(1)



CF···FBUU(1)

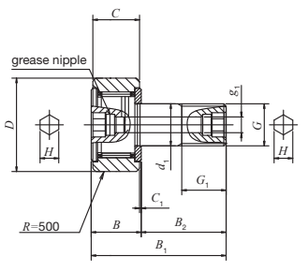


Boundary dimensions mm: B	B_1	B_2	B_3	C_1	g_1	g_2	H	$r_{s\,min}$ (3)	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
8	17	9	—	0.5	—	—	2	0.2	6.8	0.34	1 200	813	384
9	20	11	—	0.5	—	—	2.5	0.3	8.3	0.78	1 650	1 270	834
10	23	13	—	0.5	—	—	3	0.3	9.3	1.6	1 930	1 730	1 260
12.2 max	28.2 max	16	—	0.6	—	—	3	0.3	11	2.7	2 930	2 920	1 950
12.2 max	32.2 max	20	—	0.6	—	—	4	0.3	13	6.5	3 400	3 790	3 790
13.2 max	36.2 max	23	—	0.6	—	—	5	0.3	16	13.8	4 340	5 510	5 510
15.2 max	40.2 max	25	6	0.6	4	3	6	0.6	21	21.9	6 330	7 830	7 830
19.6 max	52.1 max	32.5	8	0.8	4	3	6	0.6	26	58.5	9 620	14 700	14 700
21.6 max	58.1 max	36.5	8	0.8	6	3	8	1	29	86.2	11 800	20 200	20 200
25.6 max	66.1 max	40.5	9	0.8	8	4	8	1	34	119	16 500	27 700	27 700

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Standard Type Cam Followers CFKR With Cage/Double Hex Hole



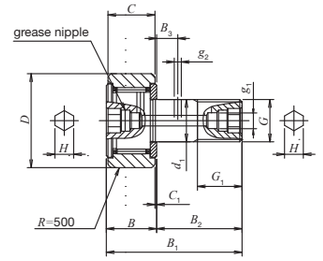


CFKR···R
Outside dia. of outer ring D 22, 26 mm

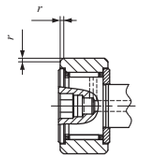
Stud dia. 10—30mm

Stud diameter mm	Identification number(2) Shield type Crowned outer ring	Shield type Cylindrical outer ring	Sealed type Crowned outer ring	Sealed type Cylindrical outer ring	Mass (Ref.) g(3)	D	C	d_1	G	G_1
10	CFKR 22 R CFKR 26 R	CFKR 22 CFKR 26	CFKR 22 UUR CFKR 26 UUR	CFKR 22 UU CFKR 26 UU	43 58	22 26	12	10	M10×1.0	12
12	CFKR 30 R CFKR 32 R	CFKR 30 CFKR 32	CFKR 30 UUR CFKR 32 UUR	CFKR 30 UU CFKR 32 UU	94 104	30 32	14	12	M12×1.5	13
16	CFKR 35 R	CFKR 35	CFKR 35 UUR	CFKR 35 UU	165	35	18	16	M16×1.5	17
18	CFKR 40 R	CFKR 40	CFKR 40 UUR	CFKR 40 UU	248	40	20	18	M18×1.5	19
20	CFKR 47 R CFKR 52 R	CFKR 47 CFKR 52	CFKR 47 UUR CFKR 52 UUR	CFKR 47 UU CFKR 52 UU	378 453	47 52	24	20	M20×1.5	21
24	CFKR 62 R CFKR 72 R	CFKR 62 CFKR 72	CFKR 62 UUR CFKR 72 UUR	CFKR 62 UU CFKR 72 UU	795 1 120	62 72	29	24	M24×1.5	25
30	CFKR 80 R CFKR 85 R CFKR 90 R	CFKR 80 CFKR 85 CFKR 90	CFKR 80 UUR CFKR 85 UUR CFKR 90 UUR	CFKR 80 UU CFKR 85 UU CFKR 90 UU	1 860 2 020 2 210	80 85 90	35	30	M30×1.5	32

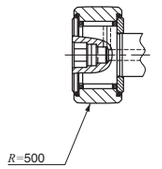
Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CFKR···R drawing.
(2) The identification number indicates the outer ring outside diameter.
(3) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(4) Minimum allowable value of chamfer dimension r.
Remark Grease is pre-packed if the stud diameter d_1 of the shield type is 10 mm or less or if the seal structure is the sealed type. Other models are not provided with pre-packed grease. Perform proper lubrication for use.



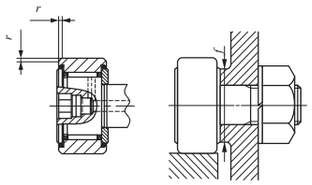
CFKR···R
Outside dia. of outer ring D 30 - 90 mm



CFKR(1)



CFKR···UUR(1)



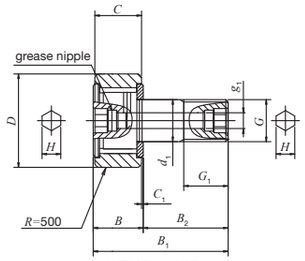
CFKR···UU(1)

Boundary dimensions mm B max	B_1 max	B_2	B_3	C_1	g_1	g_2	H	$r_{s\,min}$(4)	Mounting dimension f Min. mm	Maximum tightening torque N·m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
13.2	36.2	23	—	0.6	3	—	5	0.3	16	13.0	5 430	6 890	6 890
15.2	40.2	25	6	0.6	4	3	6	0.6	21	21.9	7 910	9 790	9 790
19.6	52.1	32.5	8	0.8	4	3	8	0.6	26	58.5	12 000	18 300	18 300
21.6	58.1	36.5	8	0.8	6	3	8	1	29	86.2	14 800	25 200	25 200
25.6	66.1	40.5	9	0.8	6	4	10	1	34	119	20 700	34 600	34 600
30.6	80.1	49.5	11	0.8	6	4	14	1	40	215	30 500	52 600	52 000
37	100	63	15	1	6	4	14	1	49	438	45 400	85 100	85 100

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Standard Type Cam Followers CFKR Full Complement Type/Stud Head Hex Hole



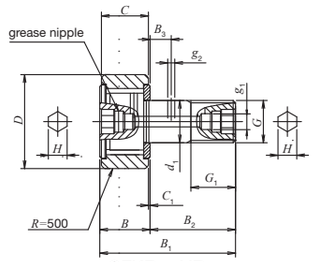


CFKR···VR
Outside dia. of outer ring D 22, 26 mm

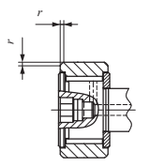
Stud dia.10 — 30mm

Stud diameter	Identification number(2) Shield type Crowned outer ring	Shield type Cylindrical outer ring	Sealed type Crowned outer ring	Sealed type Cylindrical outer ring	Mass (Ref.)	D	C	d_1	G	G_1
mm					g(3)					
10	CFKR 22 VR CFKR 26 VR	CFKR 22 V CFKR 26 V	CFKR 22 VUUR CFKR 26 VUUR	CFKR 22 VUU CFKR 26 VUU	44 59	22 26	12	10	M10×1.0	12
12	CFKR 30 VR CFKR 32 VR	CFKR 30 V CFKR 32 V	CFKR 30 VUUR CFKR 32 VUUR	CFKR 30 VUU CFKR 32 VUU	96 106	30 32	14	12	M12×1.5	13
16	CFKR 35 VR	CFKR 35 V	CFKR 35 VUUR	CFKR 35 VUU	168	35	18	16	M16×1.5	17
18	CFKR 40 VR	CFKR 40 V	CFKR 40 VUUR	CFKR 40 VUU	253	40	20	18	M18×1.5	19
20	CFKR 47 VR CFKR 52 VR	CFKR 47 V CFKR 52 V	CFKR 47 VUUR CFKR 52 VUUR	CFKR 47 VUU CFKR 52 VUU	383 458	47 52	24	20	M20×1.5	21
24	CFKR 62 VR CFKR 72 VR	CFKR 62 V CFKR 72 V	CFKR 62 VUUR CFKR 72 VUUR	CFKR 62 VUU CFKR 72 VUU	800 1 120	62 72	29	24	M24×1.5	25
30	CFKR 80 VR CFKR 85 VR CFKR 90 VR	CFKR 80 V CFKR 85 V CFKR 90 V	CFKR 80 VUUR CFKR 85 VUUR CFKR 90 VUUR	CFKR 80 VUU CFKR 85 VUU CFKR 90 VUU	1 860 2 020 2 210	80 85 90	35	30	M30×1.5	32

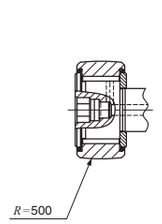
Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CFKR···VR drawing.
(2) The identification number indicates the outer ring outside diameter.
(3) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(4) Minimum allowable value of chamfer dimension r.
Remark Provided with prepacked grease.



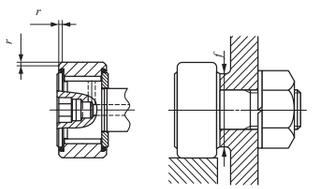
CFKR···VR
Outside dia. of outer ring D 30 - 90 mm



CFKR···V(1)



CFKR···VUUR(1)



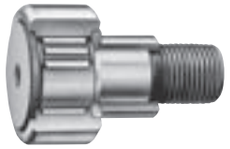
CFKR···VUU(1)

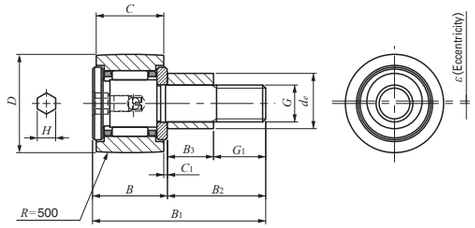
Boundary dimensions mm B max	B_1 max	B_2	B_3	C_1	g_1	g_2	H	$r_{s\,min}$(4)	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
13.2	36.2	23	—	0.6	3	—	5	0.3	16	13.0	9 570	14 500	7 920
15.2	40.2	25	6	0.6	4	3	6	0.6	21	21.9	13 500	19 700	13 200
19.6	52.1	32.5	8	0.8	4	3	8	0.6	26	58.5	20 700	37 600	23 200
21.6	58.1	36.5	8	0.8	6	3	8	1	29	86.2	25 300	51 300	31 100
25.6	66.1	40.5	9	0.8	6	4	10	1	34	119	33 200	64 500	37 500
30.6	80.1	49.5	11	0.8	6	4	14	1	40	215	46 600	92 000	52 000
37	100	63	15	1	6	4	14	1	49	438	67 700	144 000	85 900

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Eccentric Type Cam Followers CFE···B With Cage/Stud Head Hex Hole





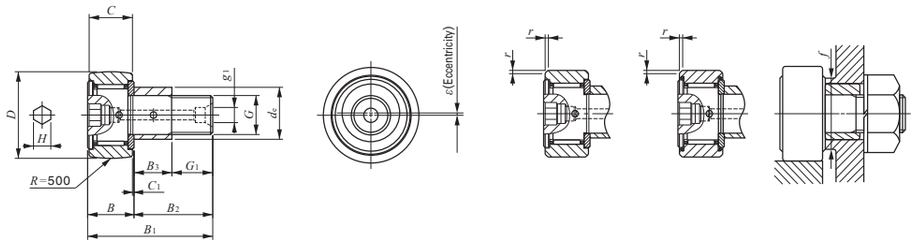
CFE···BR
Outside diameter of eccentric collar d_e 9-13mm

Outside diameter of eccentric collar 9—41mm

Outside diameter of eccentric collar mm	Identification number: Shield type, With crowned outer ring	Shield type, With cylindrical outer ring	Sealed type, With crowned outer ring	Sealed type, With cylindrical outer ring	Mass (Ref.) g(2)	D	C	d_e
9	CFE 6 BR	CFE 6 B	CFE 6 BUUR	CFE 6 BUU	20.5	16	11	9
11	CFE 8 BR	CFE 8 B	CFE 8 BUUR	CFE 8 BUU	32	19	11	11
13	CFE 10 BR	CFE 10 B	CFE 10 BUUR	CFE 10 BUU	49.5	22	12	13
	CFE 10-1 BR	CFE 10-1 B	CFE 10-1 BUUR	CFE 10-1 BUU	65	26	12	13
16	CFE 12 BR	CFE 12 B	CFE 12 BUUR	CFE 12 BUU	105	30	14	16
	CFE 12-1 BR	CFE 12-1 B	CFE 12-1 BUUR	CFE 12-1 BUU	115	32	14	16
22	CFE 16 BR	CFE 16 B	CFE 16 BUUR	CFE 16 BUU	190	35	18	22
24	CFE 18 BR	CFE 18 B	CFE 18 BUUR	CFE 18 BUU	280	40	20	24
27	CFE 20 BR	CFE 20 B	CFE 20 BUUR	CFE 20 BUU	500	52	24	27
	CFE 20-1 BR	CFE 20-1 B	CFE 20-1 BUUR	CFE 20-1 BUU	425	47	24	27
33	CFE 24 BR	CFE 24 B	CFE 24 BUUR	CFE 24 BUU	895	62	29	33
	CFE 24-1 BR	CFE 24-1 B	CFE 24-1 BUUR	CFE 24-1 BUU	1 220	72	29	33
41	CFE 30 BR	CFE 30 B	CFE 30 BUUR	CFE 30 BUU	2 030	80	35	41
	CFE 30-1 BR	CFE 30-1 B	CFE 30-1 BUUR	CFE 30-1 BUU	2 190	85	35	41
	CFE 30-2 BR	CFE 30-2 B	CFE 30-2 BUUR	CFE 30-2 BUU	2 380	90	35	41

Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CFE···BR drawing.
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(3) Minimum allowable value of chamfer dimension r

Remarks1. Models with a thread diameter G of 10 mm or less have an oil hole (re-greasing fitting) at the head. Other models are provided with an oil hole (grease nipple) at the head and an oil hole on the end surface of the stud.
2. Shield type models with a stud thread diameter G of 10 mm or less and the sealed type models are provided with prepacked grease. Other models are not provided with prepacked grease. Perform proper lubrication for use.



CFE···BR(1) CFE···B(1) CFE···BUU(1)
Outside diameter of eccentric collar d_e 16-41mm

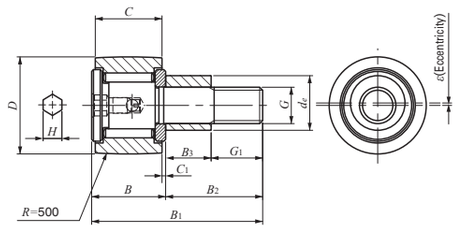
Boundary dimensions mm: G	B_3	B max	B_1 max	B_2	C_1	g_1	G_1	H	$r_{s\,min}$ (3)	Eccentricity ε	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
M 6×1	7.5	12.2	28.2	16	0.6	—	8.5	3	0.3	0.4	11	2.7	3 660	3 650	1 950
M 8×1.25	9.5	12.2	32.2	20	0.6	—	10.5	4	0.3	0.4	13	6.5	4 250	4 740	4 620
M10×1.25	10.5	13.2	36.2	23	0.6	—	12.5	4	0.3	0.4	16	13.8	5 430	6 890	6 890
M10×1.25	10.5	13.2	36.2	23	0.6	—	12.5	4	0.3	0.4	16	13.8	5 430	6 890	6 890
M12×1.5	11.5	15.2	40.2	25	0.6	4	13.5	6	0.6	0.8	21	21.9	7 910	9 790	9 790
M12×1.5	11.5	15.2	40.2	25	0.6	4	13.5	6	0.6	0.8	21	21.9	7 910	9 790	9 790
M16×1.5	15.5	19.6	52.1	32.5	0.8	4	17	6	0.6	0.8	26	58.5	12 000	18 300	18 300
M18×1.5	17.5	21.6	58.1	36.5	0.8	6	19	8	1	0.8	29	86.2	14 800	25 200	25 200
M20×1.5	19.5	25.6	66.1	40.5	0.8	6	21	8	1	0.8	34	119	20 700	34 600	34 600
M20×1.5	19.5	25.6	66.1	40.5	0.8	6	21	8	1	0.8	34	119	20 700	34 600	34 600
M24×1.5	25.5	30.6	80.1	49.5	0.8	6	24	12	1	0.8	40	215	30 500	52 600	52 000
M24×1.5	25.5	30.6	80.1	49.5	0.8	6	24	12	1	0.8	40	215	30 500	52 600	52 000
M30×1.5	32.5	37	100	63	1	6	30.5	17	1	1.5	49	438	45 400	85 100	85 100
M30×1.5	32.5	37	100	63	1	6	30.5	17	1	1.5	49	438	45 400	85 100	85 100
M30×1.5	32.5	37	100	63	1	6	30.5	17	1	1.5	49	438	45 400	85 100	85 100

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Eccentric Type Cam Followers CFE···B Full Complement Type/Stud Head Hex Hole





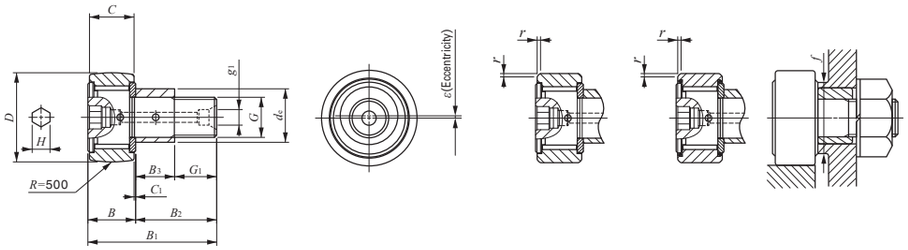
CFE···VBR
Outside diameter of eccentric collar d_e 9-13mm

Outside diameter of eccentric collar 9—41mm

Outside diameter of eccentric collar mm	Identification number Shield type With crowned outer ring	Shield type With cylindrical outer ring	Sealed type With crowned outer ring	Sealed type With cylindrical outer ring	Mass (Ref.) g(2)	D	C	d_e
9	CFE 6 VBR	CFE 6 VB	CFE 6 VBUUR	CFE 6 VBUU	21	16	11	9
11	CFE 8 VBR	CFE 8 VB	CFE 8 VBUUR	CFE 8 VBUU	32.5	19	11	11
13	CFE 10 VBR	CFE 10 VB	CFE 10 VBUUR	CFE 10 VBUU	50.5	22	12	13
	CFE 10-1 VBR	CFE 10-1 VB	CFE 10-1 VBUUR	CFE 10-1 VBUU	66	26	12	13
16	CFE 12 VBR	CFE 12 VB	CFE 12 VBUUR	CFE 12 VBUU	107	30	14	16
	CFE 12-1 VBR	CFE 12-1 VB	CFE 12-1 VBUUR	CFE 12-1 VBUU	117	32	14	16
22	CFE 16 VBR	CFE 16 VB	CFE 16 VBUUR	CFE 16 VBUU	193	35	18	22
24	CFE 18 VBR	CFE 18 VB	CFE 18 VBUUR	CFE 18 VBUU	285	40	20	24
27	CFE 20 VBR	CFE 20 VB	CFE 20 VBUUR	CFE 20 VBUU	505	52	24	27
	CFE 20-1 VBR	CFE 20-1 VB	CFE 20-1 VBUUR	CFE 20-1 VBUU	430	47	24	27
33	CFE 24 VBR	CFE 24 VB	CFE 24 VBUUR	CFE 24 VBUU	900	62	29	33
	CFE 24-1 VBR	CFE 24-1 VB	CFE 24-1 VBUUR	CFE 24-1 VBUU	1 220	72	29	33
41	CFE 30 VBR	CFE 30 VB	CFE 30 VBUUR	CFE 30 VBUU	2 030	80	35	41
	CFE 30-1 VBR	CFE 30-1 VB	CFE 30-1 VBUUR	CFE 30-1 VBUU	2 190	85	35	41
	CFE 30-2 VBR	CFE 30-2 VB	CFE 30-2 VBUUR	CFE 30-2 VBUU	2 380	90	35	41

Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CFE···VBR drawing.
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(3) Minimum allowable value of chamfer dimension r

Remarks1. Models with a thread diameter G of 10 mm or less have an oil hole (re-greasing fitting) at the head. Other models are provided with an oil hole (grease nipple) at the head and an oil hole on the end surface of the stud.
2. Provided with prepacked grease.



CFE···VBR(1) CFE···VB(1) CFE···VBUU(1)
Outside diameter of eccentric collar d_e 16-41mm

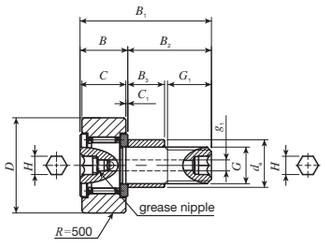
Boundary dimensions mm G	B_3	B max	B_1 max	B_2	C_1	g_1	G_1	H	$r_{s\,min}$ (3)	Eccentricity ε	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
M 6×1	7.5	12.2	28.2	16	0.6	—	8.5	3	0.3	0.4	11	2.7	6 980	8 500	1 950
M 8×1.25	9.5	12.2	32.2	20	0.6	—	10.5	4	0.3	0.4	13	6.5	8 170	11 200	4 620
M10×1.25	10.5	13.2	36.2	23	0.6	—	12.5	4	0.3	0.4	16	13.8	9 570	14 500	8 650
M10×1.25	10.5	13.2	36.2	23	0.6	—	12.5	4	0.3	0.4	16	13.8	9 570	14 500	8 650
M12×1.5	11.5	15.2	40.2	25	0.6	4	13.5	6	0.6	0.8	21	21.9	13 500	19 700	13 200
M12×1.5	11.5	15.2	40.2	25	0.6	4	13.5	6	0.6	0.8	21	21.9	13 500	19 700	13 200
M16×1.5	15.5	19.6	52.1	32.5	0.8	4	17	6	0.6	0.8	26	58.5	20 700	37 600	23 200
M18×1.5	17.5	21.6	58.1	36.5	0.8	6	19	8	1	0.8	29	86.2	25 300	51 300	31 100
M20×1.5	19.5	25.6	66.1	40.5	0.8	6	21	8	1	0.8	34	119	33 200	64 500	37 500
M20×1.5	19.5	25.6	66.1	40.5	0.8	6	21	8	1	0.8	34	119	33 200	64 500	37 500
M24×1.5	25.5	30.6	80.1	49.5	0.8	6	24	12	1	0.8	40	215	46 600	92 000	52 000
M24×1.5	25.5	30.6	80.1	49.5	0.8	6	24	12	1	0.8	40	215	46 600	92 000	52 000
M30×1.5	32.5	37	100	63	1	6	30.5	17	1	1.5	49	438	67 700	144 000	85 900
M30×1.5	32.5	37	100	63	1	6	30.5	17	1	1.5	49	438	67 700	144 000	85 900
M30×1.5	32.5	37	100	63	1	6	30.5	17	1	1.5	49	438	67 700	144 000	85 900

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Eccentric Type Cam Followers CFKRE With Cage/Double Hex Hole



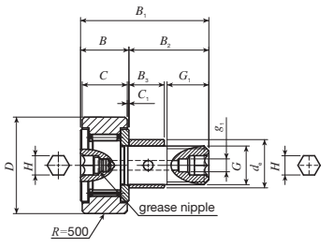


CFKRE···R
Outside diameter of eccentric collar d_e 13mm

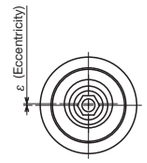
Outside diameter of eccentric collar 13—35mm

Outside diameter of eccentric collar mm	Identification number(2) Shield type Crowned outer ring	Shield type Cylindrical outer ring	Sealed type Crowned outer ring	Sealed type Cylindrical outer ring	Mass (Ref.) g (3)	D	C	d_e
13	CFKRE 22 R CFKRE 26 R	CFKRE 22 CFKRE 26	CFKRE 22 UUR CFKRE 26 UUR	CFKRE 22 UU CFKRE 26 UU	47 62	22 26	12	13
15	CFKRE 30 R CFKRE 32 R	CFKRE 30 CFKRE 32	CFKRE 30 UUR CFKRE 32 UUR	CFKRE 30 UU CFKRE 32 UU	100 110	30 32	14	15
20	CFKRE 35 R	CFKRE 35	CFKRE 35 UUR	CFKRE 35 UU	177	35	18	20
22	CFKRE 40 R	CFKRE 40	CFKRE 40 UUR	CFKRE 40 UU	264	40	20	22
24	CFKRE 47 R CFKRE 52 R	CFKRE 47 CFKRE 52	CFKRE 47 UUR CFKRE 52 UUR	CFKRE 47 UU CFKRE 52 UU	397 472	47 52	24	24
28	CFKRE 62 R CFKRE 72 R	CFKRE 62 CFKRE 72	CFKRE 62 UUR CFKRE 72 UUR	CFKRE 62 UU CFKRE 72 UU	823 1 150	62 72	29	28
35	CFKRE 80 R CFKRE 85 R CFKRE 90 R	CFKRE 80 CFKRE 85 CFKRE 90	CFKRE 80 UUR CFKRE 85 UUR CFKRE 90 UUR	CFKRE 80 UU CFKRE 85 UU CFKRE 90 UU	1 920 2 080 2 270	80 85 90	35	35

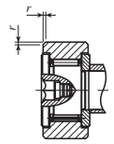
Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CFKRE···R drawing.
(2) The identification number indicates the outer ring outside diameter.
(3) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(4) Minimum allowable value of chamfer dimension r.
Remark Grease is pre-packed if the eccentric collar outer diameter de of the shield type is 13 mm or less or if the seal structure is the sealed type. Other models are not provided with pre-packed grease. Perform proper lubrication for use.



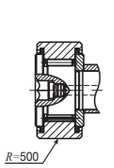
CFKRE···R
Outside diameter of eccentric collar d_e 15～35mm



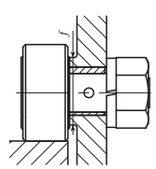
CFKRE(1)



CFKRE···UUR(1)



CFKRE···UU(1)



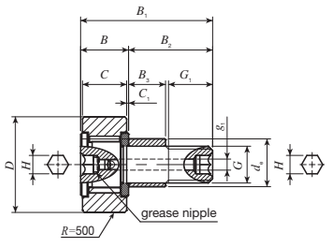
G	Boundary dimensions mm G_1	B max	B_1 max	B_2	B_3	C_1	g_1	H	(4) rs min	Eccentricity ε	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
M10×1.0	12	13.2	36.2	23	10	0.6	3	5	0.3	0.5	16	13.0	5 430	6 890	6 890
M12×1.5	13	15.2	40.2	25	11	0.6	4	6	0.6	0.5	21	21.9	7 910	9 790	9 790
M16×1.5	17	19.6	52.1	32.5	14	0.8	4	8	0.6	1	26	58.5	12 000	18 300	18 300
M18×1.5	19	21.6	58.1	36.5	16	0.8	6	8	1	1	29	86.2	14 800	25 200	25 200
M20×1.5	21	25.6	66.1	40.5	18	0.8	6	10	1	1	34	119	20 700	34 600	34 600
M24×1.5	25	30.6	80.1	49.5	22	0.8	6	14	1	1	40	215	30 500	52 600	52 000
M30×1.5	32	37	100	63	29	1	6	14	1	1.5	49	438	45 400	85 100	85 100

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Eccentric Type Cam Followers CFKRE Full complement/Double Hex Hole



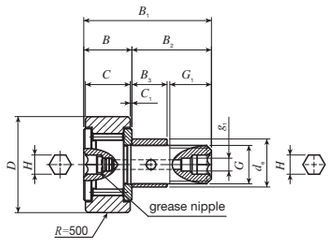


CFKRE···VR
Outside diameter of eccentric collar d_e 13mm

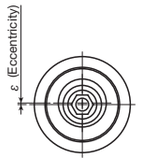
Outside diameter of eccentric collar 13—35mm

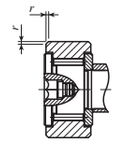
Outside diameter of eccentric collar mm	Identification number(2) Shield type Crowned outer ring	Shield type Cylindrical outer ring	Sealed type Crowned outer ring	Sealed type Cylindrical outer ring	Mass (Ref.) g (3)	D	C	d_e
13	CFKRE 22 VR CFKRE 26 VR	CFKRE 22 V CFKRE 26 V	CFKRE 22 VUUR CFKRE 26 VUUR	CFKRE 22 VUU CFKRE 26 VUU	48 63	22 26	12	13
15	CFKRE 30 VR CFKRE 32 VR	CFKRE 30 V CFKRE 32 V	CFKRE 30 VUUR CFKRE 32 VUUR	CFKRE 30 VUU CFKRE 32 VUU	101 111	30 32	14	15
20	CFKRE 35 VR	CFKRE 35 V	CFKRE 35 VUUR	CFKRE 35 VUU	180	35	18	20
22	CFKRE 40 VR	CFKRE 40 V	CFKRE 40 VUUR	CFKRE 40 VUU	269	40	20	22
24	CFKRE 47 VR CFKRE 52 VR	CFKRE 47 V CFKRE 52 V	CFKRE 47 VUUR CFKRE 52 VUUR	CFKRE 47 VUU CFKRE 52 VUU	402 477	47 52	24	24
28	CFKRE 62 VR CFKRE 72 VR	CFKRE 62 V CFKRE 72 V	CFKRE 62 VUUR CFKRE 72 VUUR	CFKRE 62 VUU CFKRE 72 VUU	828 1 150	62 72	29	28
35	CFKRE 80 VR CFKRE 85 VR CFKRE 90 VR	CFKRE 80 V CFKRE 85 V CFKRE 90 V	CFKRE 80 VUUR CFKRE 85 VUUR CFKRE 90 VUUR	CFKRE 80 VUU CFKRE 85 VUU CFKRE 90 VUU	1 920 2 080 2 270	80 85 90	35	35

Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CFKRE···VR drawing.
(2) The identification number indicates the outer ring outside diameter.
(3) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(4) Minimum allowable value of chamfer dimension r.
Remark Grease is prepacked.

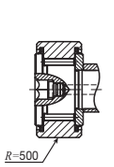


CFKRE···VR
Outside diameter of eccentric collar d_e 15～35mm

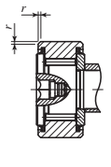




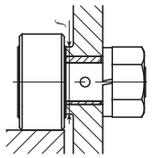
CFKRE···V(1)



CFKRE···VUU(1)



CFKRE···VUUR(1)



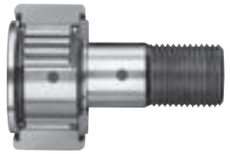
G	Boundary dimensions mm G_1	B max	B_1 max	B_2	B_3	C_1	g_1	H	r smin (4)	Eccentricity ε	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
M10×1.0	12	13.2	36.2	23	10	0.6	3	5	0.3	0.5	16	13.0	9 570	14 500	7 920
M12×1.5	13	15.2	40.2	25	11	0.6	4	6	0.6	0.5	21	21.9	13 500	19 700	13 200
M16×1.5	17	19.6	52.1	32.5	14	0.8	4	8	0.6	1	26	58.5	20 700	37 600	23 200
M18×1.5	19	21.6	58.1	36.5	16	0.8	6	8	1	1	29	86.2	25 300	51 300	31 100
M20×1.5	21	25.6	66.1	40.5	18	0.8	6	10	1	1	34	119	33 200	64 500	37 500
M24×1.5	25	30.6	80.1	49.5	22	0.8	6	14	1	1	40	215	46 600	92 000	52 000
M30×1.5	32	37	100	63	29	1	6	14	1	1.5	49	438	67 700	144 000	85 900

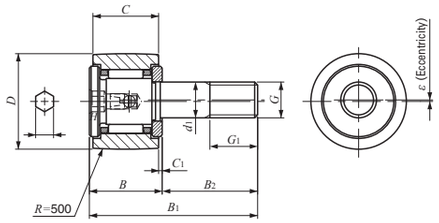
I
CF
CFKR
CFS
NUCF
CR

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Solid Eccentric Stud Type Cam Followers With Cage/Stud Head Hex Hole





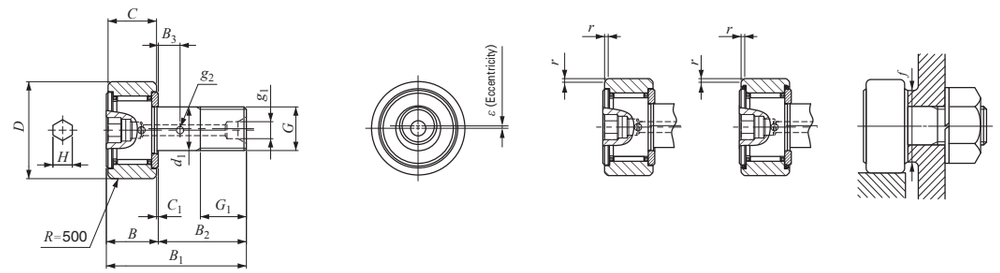
CFES⋯BR
Stud dia. d_1 6-10mm

Stud dia. 6—18mm

Stud dia. mm	Identification number: Shield type, With crowned outer ring	Shield type, With cylindrical outer ring	Sealed type, With crowned outer ring	Sealed type, With cylindrical outer ring	Mass (Ref.) g (2)	D	C	d_1
6	CFES 6 BR	CFES 6 B	CFES 6 BUUR	CFES 6 BUU	18.5	16	11	6
8	CFES 8 BR	CFES 8 B	CFES 8 BUUR	CFES 8 BUU	28.5	19	11	8
10	CFES 10 BR	CFES 10 B	CFES 10 BUUR	CFES 10 BUU	45	22	12	10
	CFES 10-1 BR	CFES 10-1 B	CFES 10-1 BUUR	CFES 10-1 BUU	60	26	12	10
12	CFES 12 BR	CFES 12 B	CFES 12 BUUR	CFES 12 BUU	95	30	14	12
	CFES 12-1 BR	CFES 12-1 B	CFES 12-1 BUUR	CFES 12-1 BUU	105	32	14	12
16	CFES 16 BR	CFES 16 B	CFES 16 BUUR	CFES 16 BUU	170	35	18	16
18	CFES 18 BR	CFES 18 B	CFES 18 BUUR	CFES 18 BUU	250	40	20	18

Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CFES⋯BR drawing.
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(3) Minimum allowable value of chamfer dimension r

Remarks1. Models with a stud diameter d_1 of 10 mm or less have an oil hole (re-greasing fitting) at the head. Other models are provided with an oil hole (grease nipple) at the head and an oil hole each on the outside surface and end surface of the stud.
2. Shield type models with a stud diameter d_1 of 10 mm or less and the sealed type models are provided with prepacked grease. Other models are not provided with prepacked grease. Perform proper lubrication for use.



CFES⋯BR
Stud dia. d_1 12-18mm

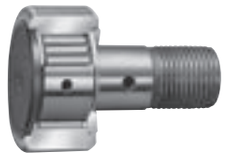
CFES⋯B(1) CFES⋯BUU(1)

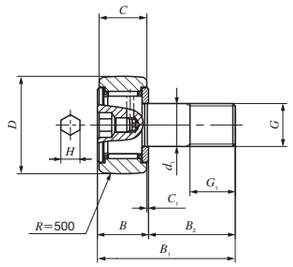
Boundary dimensions mm: G	G_1	B max	B_1 max	B_2	B_3	C_1	g_1	g_2	H	$r_{s\,min}$ (3)	Eccentricity ε	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
M 6×1	8	12.2	28.2	16	—	0.6	—	—	3	0.3	0.25	11	2.7	3 660	3 650	1 980
M 8×1.25	10	12.2	32.2	20	—	0.6	—	—	4	0.3	0.25	13	6.5	4 250	4 740	4 670
M10×1.25	12	13.2	36.2	23	—	0.6	—	—	4	0.3	0.3	16	13.8	5 430	6 890	6 890
M10×1.25	12	13.2	36.2	23	—	0.6	—	—	4	0.3	0.3	16	13.8	5 430	6 890	6 890
M12×1.5	13	15.2	40.2	25	6	0.6	4	3	6	0.6	0.4	21	21.9	7 910	9 790	9 790
M12×1.5	13	15.2	40.2	25	6	0.6	4	3	6	0.6	0.4	21	21.9	7 910	9 790	9 790
M16×1.5	17	19.6	52.1	32.5	8	0.8	4	3	6	0.6	0.5	26	58.5	12 000	18 300	18 300
M18×1.5	19	21.6	58.1	36.5	8	0.8	6	3	8	1	0.6	29	86.2	14 800	25 200	25 200

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

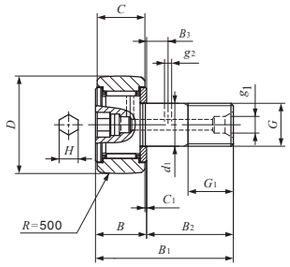
CAM FOLLOWERS

Thrust Disk Type Cam Followers With Cage/Stud Head Hex Hole





CF ··· WBR
Stud dia. d_1 3-10mm



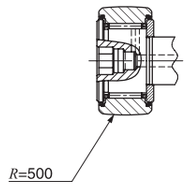
CF ··· WBR
Stud dia. d_1 12-20mm

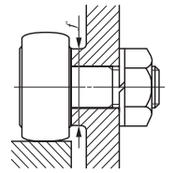
Stud dia. 3 — 20mm

Stud dia. mm	Identification number Shield type	Identification number Sealed type	Mass (Ref.) g(2)	Boundary dimensions mm D	C	d_1	G	G_1
3	CF 3 WBR	CF 3 WBUUR	4.3	10	7	3	M 3×0.5	5
4	CF 4 WBR	CF 4 WBUUR	7.4	12	8	4	M 4×0.7	6
5	CF 5 WBR	CF 5 WBUUR	10.3	13	9	5	M 5×0.8	7.5
6	CF 6 WBR	CF 6 WBUUR	18.5	16	11	6	M 6×1	8
8	CF 8 WBR	CF 8 WBUUR	28.5	19	11	8	M 8×1.25	10
10	CF 10 WBR	CF 10 WBUUR	45	22	12	10	M10×1.25	12
	CF 10-1 WBR	CF 10-1 WBUUR	60	26	12	10	M10×1.25	12
12	CF 12 WBR	CF 12 WBUUR	95	30	14	12	M12×1.5	13
	CF 12-1 WBR	CF 12-1 WBUUR	105	32	14	12	M12×1.5	13
16	CF 16 WBR	CF 16 WBUUR	170	35	18	16	M16×1.5	17
18	CF 18 WBR	CF 18 WBUUR	250	40	20	18	M18×1.5	19
20	CF 20 WBR	CF 20 WBUUR	460	52	24	20	M20×1.5	21
	CF 20-1 WBR	CF 20-1 WBUUR	385	47	24	20	M20×1.5	21

Note(1) For other dimensions, refer to the CF···WBR drawing.
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.

Remarks1. Models with a stud diameter d_1 of 4 mm or less have no oil hole. For Models with a stud dia. 5 to 10 mm, oil hole (re-greasing fitting) is provided at the head. Other models are provided with an oil hole (grease nipple) at the head and an oil hole each on the outside surface and end surface of the stud.
2. Shield type models with a stud diameter d_1 of 10 mm or less and the sealed type models are provided with prepacked grease. Other models are not provided with prepacked grease. Perform proper lubrication for use.





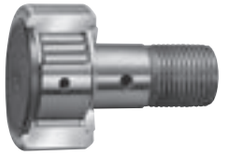
CF ··· WBUUR(1)

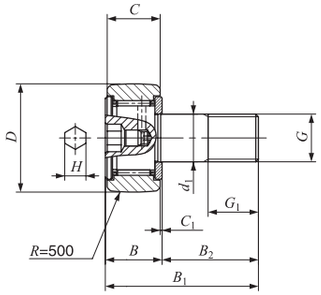
B	B_1	B_2	B_3	C_1	g_1	g_2	H	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
8	17	9	—	0.5	—	—	2	6.8	0.34	1 500	1 020	384
9	20	11	—	0.5	—	—	2.5	8.3	0.78	2 070	1 590	834
10	23	13	—	0.5	—	—	3	9.3	1.6	2 520	2 140	1 260
12.2 max	28.2 max	16	—	0.6	—	—	3	11	2.7	3 660	3 650	1 950
12.2 max	32.2 max	20	—	0.6	—	—	4	13	6.5	4 250	4 740	4 620
13.2 max	36.2 max	23	—	0.6	—	—	4	16	13.8	5 430	6 890	6 890
13.2 max	36.2 max	23	—	0.6	—	—	4	16	13.8	5 430	6 890	6 890
15.2 max	40.2 max	25	6	0.6	4	3	6	21	21.9	7 910	9 790	9 790
15.2 max	40.2 max	25	6	0.6	4	3	6	21	21.9	7 910	9 790	9 790
19.6 max	52.1 max	32.5	8	0.8	4	3	6	26	58.5	12 000	18 300	18 300
21.6 max	58.1 max	36.5	8	0.8	6	3	8	29	86.2	14 800	25 200	25 200
25.6 max	66.1 max	40.5	9	0.8	6	4	8	34	119	20 700	34 600	34 600
25.6 max	66.1 max	40.5	9	0.8	6	4	8	34	119	20 700	34 600	34 600

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Thrust Disk Type Cam Followers / Stainless Steel Made With Cage/Stud Head Hex Hole



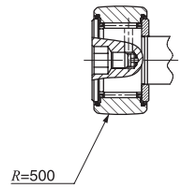


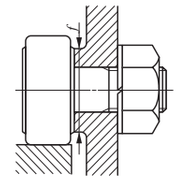
CF⋯FWBR

Stud dia. 3 — 5mm

Stud dia. mm	Identification number Shield type	Identification number Sealed type	Mass (Ref.) g(2)	Boundary dimensions mm D	C	d_1	G	G_1
3	CF 3 FWBR	CF 3 FWBUUR	4.3	10	7	3	M 3×0.5	5
4	CF 4 FWBR	CF 4 FWBUUR	7.4	12	8	4	M 4×0.7	6
5	CF 5 FWBR	CF 5 FWBUUR	10.3	13	9	5	M 5×0.8	7.5

Note(1) For other dimensions, refer to the CF⋯FWBR drawing.
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
Remarks1. Models with a stud diameter d_1 of 4 mm or less have no oil hole. For Models with a stud dia. 5 mm, oil hole (re-greasing fitting) is provided at the head.
2. Provided with prepacked grease.





CF⋯FWBUUR(1)

B	B_1	B_2	B_3	C_1	g_1	g_2	H	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
8	17	9	—	0.5	—	—	2	6.8	0.34	1 200	813	384
9	20	11	—	0.5	—	—	2.5	8.3	0.78	1 650	1 270	834
10	23	13	—	0.5	—	—	3	9.3	1.6	1 930	1 730	1 260

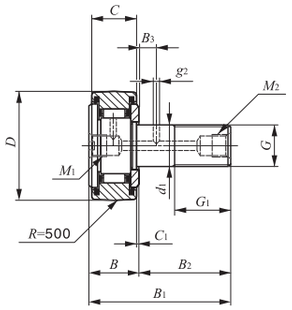
I
CF
CFKR
CFS
NUCF
CR

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Centralized Lubrication Type Cam Followers With Cage/Stud Head Hex Hole

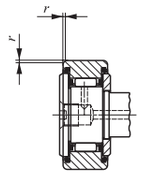


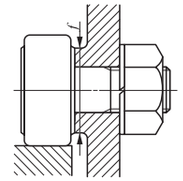


CF-RU1

Stud dia. 6 — 30mm

Stud dia. mm	Identification number: With crowned outer ring	Identification number: With cylindrical outer ring	Mass (Ref.) g (2)	Boundary dimensions mm: D	C	d_1	G	G_1
6	CF-RU1- 6	CF-FU1- 6	18.5	16	11	6	M 6×1	8
8	CF-RU1- 8	CF-FU1- 8	28.5	19	11	8	M 8×1.25	10
10	CF-RU1-10	CF-FU1-10	45	22	12	10	M10×1.25	12
	CF-RU1-10-1	CF-FU1-10-1	60	26	12	10	M10×1.25	12
12	CF-RU1-12	CF-FU1-12	95	30	14	12	M12×1.5	13
	CF-RU1-12-1	CF-FU1-12-1	105	32	14	12	M12×1.5	13
16	CF-RU1-16	CF-FU1-16	170	35	18	16	M16×1.5	17
18	CF-RU1-18	CF-FU1-18	250	40	20	18	M18×1.5	19
20	CF-RU1-20	CF-FU1-20	460	52	24	20	M20×1.5	21
	CF-RU1-20-1	CF-FU1-20-1	385	47	24	20	M20×1.5	21
24	CF-RU1-24	CF-FU1-24	815	62	29	24	M24×1.5	25
	CF-RU1-24-1	CF-FU1-24-1	1 140	72	29	24	M24×1.5	25
30	CF-RU1-30	CF-FU1-30	1 870	80	35	30	M30×1.5	32
	CF-RU1-30-1	CF-FU1-30-1	2 030	85	35	30	M30×1.5	32
	CF-RU1-30-2	CF-FU1-30-2	2 220	90	35	30	M30×1.5	32





CF-FU1(1)

B max	B_1 max	B_2	B_3	C_1	g_2	M_1	M_2	$r_{s\,min}$ (3)	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
12.2	28.2	16	—	0.6	—	M6×0.75	—	0.3	11	2.7	3 660	3 650	1 950
12.2	32.2	20	—	0.6	—			0.3	13	6.5	4 250	4 740	4 620
13.2	36.2	23	—	0.6	—			0.3	16	13.8	5 430	6 890	6 890
13.2	36.2	23	—	0.6	—			0.3	16	13.8	5 430	6 890	6 890
15.2	40.2	25	—	0.6	—			0.6	21	23.9	7 910	9 790	9 790
15.2	40.2	25	—	0.6	—			0.6	21	23.9	7 910	9 790	9 790
19.6	52.1	32.5	8	0.8	3	PT 1/8	PT 1/8	0.6	26	58.5	12 000	18 300	18 300
21.6	58.1	36.5	8	0.8	3			1	29	86.2	14 800	25 200	25 200
25.6	66.1	40.5	9	0.8	4			1	34	119	20 700	34 600	34 600
25.6	66.1	40.5	9	0.8	4			1	34	119	20 700	34 600	34 600
30.6	80.1	49.5	11	0.8	4			1	40	215	30 500	52 600	52 000
30.6	80.1	49.5	11	0.8	4			1	40	215	30 500	52 600	52 000
37	100	63	15	1	4			1	49	438	45 400	85 100	85 100
37	100	63	15	1	4			1	49	438	45 400	85 100	85 100
37	100	63	15	1	4			1	49	438	45 400	85 100	85 100

Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CF-RU1 drawing.
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(3) Minimum allowable value of chamfer dimension r

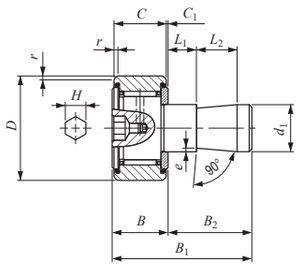
Remarks1. Models with a stud diameter d_1 of 12 mm or less are provided with a lubrication tapped hole on the stud head only. Other models are provided with one lubrication tapped hole each on the head and end surface of the stud.
2. Provided with prepacked grease.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

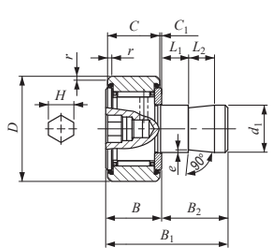
CAM FOLLOWERS

Easy Mounting Type Cam Followers With Cage/Stud Head Hex Hole





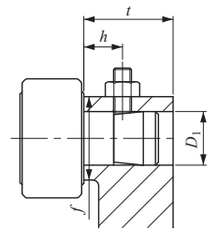
CF-SFU···B
Stud dia. d_1 6-10mm



CF-SFU···B
Stud dia. d_1 12-20mm

Stud dia. 6—20mm

Stud dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm D	C	d_1	B max	B_1 max	B_2	C_1	L_1
6	CF-SFU- 6 B	19.5	16	11	6	12.2	32	19.8	0.6	5
8	CF-SFU- 8 B	29	19	11	8	12.2	32	19.8	0.6	5
10	CF-SFU-10 B	44	22	12	10	13.2	33	19.8	0.6	5
	CF-SFU-10-1 B	59	26	12	10	13.2	33	19.8	0.6	5
12	CF-SFU-12 B	94	30	14	12	15.2	35	19.8	0.6	5
	CF-SFU-12-1 B	104	32	14	12	15.2	35	19.8	0.6	5
16	CF-SFU-16 B	164	35	18	16	19.6	44.5	24.9	0.8	10
18	CF-SFU-18 B	235	40	20	18	21.6	46.5	24.9	0.8	10
20	CF-SFU-20 B	435	52	24	20	25.6	50.5	24.9	0.8	10
	CF-SFU-20-1 B	360	47	24	20	25.6	50.5	24.9	0.8	10



L_2	H	e	$r_{s\,min}$ (1)	Mounting dimensions mm D_1	Tolerance	t Min.	f Min.	h (Ref.)	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
10	3	0.3	0.3	6	+0.012 0	20	11	10	3 660	3 650	1 950
10	4	0.5	0.3	8	+0.015 0	20	13	10	4 250	4 740	4 620
10	4	0.5	0.3	10		20	16	10	5 430	6 890	6 890
10	4	0.5	0.3	10		20	16	10	5 430	6 890	6 890
10	6	1	0.6	12		20	21	10	7 910	9 790	9 790
10	6	1	0.6	12		20	21	10	7 910	9 790	9 790
10	6	1	0.6	16	+0.018 0	25	26	15	12 000	18 300	18 300
10	8	1	1	18		25	29	15	14 800	25 200	25 200
10	8	1	1	20	+0.021 0	25	34	15	20 700	34 600	34 600
10	8	1	1	20		25	34	15	20 700	34 600	34 600

Note(1) Minimum allowable value of chamfer dimension r

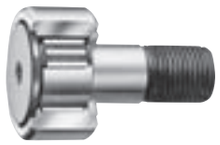
Remarks1. Models with a stud diameter d_1 of 10 mm or less have an oil hole (re-greasing fitting) at the head. Other models are provided with an oil hole (grease nipple) at the head.

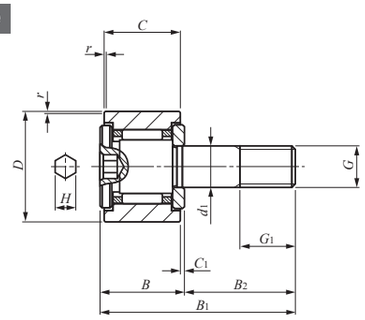
2. Provided with prepacked grease.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Cam Follower G With Cage/Stud Head Hex Hole





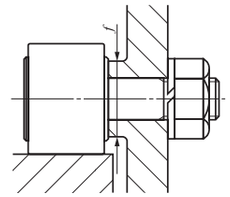
CF ··· G

Stud dia. 6 — 20mm

Stud dia. mm	Identification number	Mass (Ref.) g (1)	Boundary dimensions mm D	C	d_1	G	G_1	B max	B_1 max
6	CF 6 G	19.5	16	11	6	M 6×1	8	12.2	28.2
8	CF 8 G	29.5	19	11	8	M 8×1.25	10	12.2	32.2
10	CF 10 G	47.5	22	12	10	M10×1.25	12	13.2	36.2
	CF 10-1 G	61.5	26	12	10	M10×1.25	12	13.2	36.2
12	CF 12 G	95.0	30	14	12	M12×1.5	13	15.2	40.2
	CF 12-1 G	105	32	14	12	M12×1.5	13	15.2	40.2
16	CF 16 G	175	35	18	16	M16×1.5	17	19.6	52.1
18	CF 18 G	255	40	20	18	M18×1.5	19	21.6	58.1
20	CF 20 G	470	52	24	20	M20×1.5	21	25.6	66.1
	CF 20-1 G	400	47	24	20	M20×1.5	21	25.6	66.1

Note(1) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
(2) Minimum allowable value of chamfer dimension r.

Remarks1. This type of bearings cannot be re-lubricated due to the structure. If the environment requires re-lubrication, please use Standard Type Cam Followers.
2. Provided with prepacked grease.

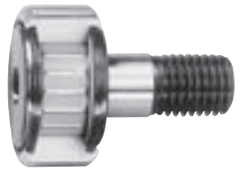


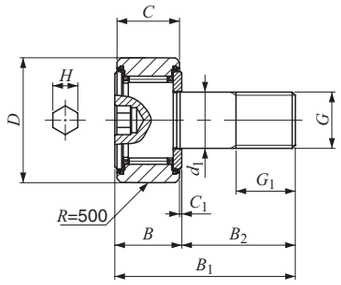
B_2	C_1	H	$r_{s\,min}$ (2)	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
16	0.6	3	0.3	11	2.7	3 660	3 650	1 950
20	0.6	4	0.3	13	6.5	4 250	4 740	4 620
23	0.6	4	0.3	16	13.8	5 430	6 890	6 890
23	0.6	4	0.3	16	13.8	5 430	6 890	6 890
25	0.6	6	0.6	21	23.9	7 910	9 790	9 790
25	0.6	6	0.6	21	23.9	7 910	9 790	9 790
32.5	0.8	6	0.6	26	61.1	12 000	18 300	18 300
36.5	0.8	8	1	29	89.2	14 800	25 200	25 200
40.5	0.8	8	1	34	125	20 700	34 600	34 600
40.5	0.8	8	1	34	125	20 700	34 600	34 600

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

C-Lube Cam Followers With Cage / Stud Head Hex Hole



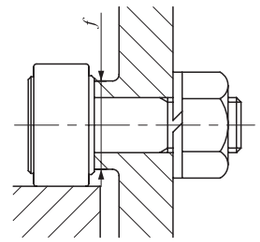


CF ··· WB ··· /SG

Stud dia. 5 — 20mm

Stud dia. mm	Identification number	Mass (Ref.) g(1)	Boundary dimensions mm D	C	d_1	G	G_1	B	B_1
5	CF 5 WBUUR/SG	10.3	13	9	5	M 5×0.8	7.5	10	23
6	CF 6 WBUUR/SG	18.5	16	11	6	M 6×1	8	12.2 max	28.2 max
8	CF 8 WBUUR/SG	28.5	19	11	8	M 8×1.25	10	12.2 max	32.2 max
10	CF 10 WBUUR/SG	45	22	12	10	M10×1.25	12	13.2 max	36.2 max
	CF 10-1 WBUUR/SG	60	26	12	10	M10×1.25	12	13.2 max	36.2 max
12	CF 12 WBUUR/SG	95	30	14	12	M12×1.5	13	15.2 max	40.2 max
	CF 12-1 WBUUR/SG	105	32	14	12	M12×1.5	13	15.2 max	40.2 max
16	CF 16 WBUUR/SG	170	35	18	16	M16×1.5	17	19.6 max	52.1 max
18	CF 18 WBUUR/SG	250	40	20	18	M18×1.5	19	21.6 max	58.1 max
20	CF 20 WBUUR/SG	460	52	24	20	M20×1.5	21	25.6 max	66.1 max
	CF 20-1 WBUUR/SG	385	47	24	20	M20×1.5	21	25.6 max	66.1 max

Note(1) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
Remark This bearing cannot be re-lubricated as thermosetting solid-type lubricant C-Lube fills its inner space.



B_2	C_1	H	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
13	0.5	3	9.3	1.6	2 520	2 140	1 260
16	0.6	3	11	2.7	3 660	3 650	1 950
20	0.6	4	13	6.5	4 250	4 740	4 620
23	0.6	4	16	13.8	5 430	6 890	6 890
23	0.6	4	16	13.8	5 430	6 890	6 890
25	0.6	6	21	21.9	7 910	9 790	9 790
25	0.6	6	21	21.9	7 910	9 790	9 790
32.5	0.8	6	26	58.5	12 000	18 300	18 300
36.5	0.8	8	29	86.2	14 800	25 200	25 200
40.5	0.8	8	34	119	20 700	34 600	34 600
40.5	0.8	8	34	119	20 700	34 600	34 600

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

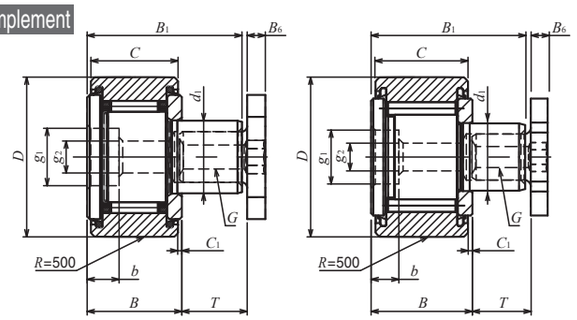
CAM FOLLOWERS

Short Stud Type Cam Followers CFC···B

With cage

Full complement



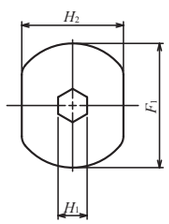


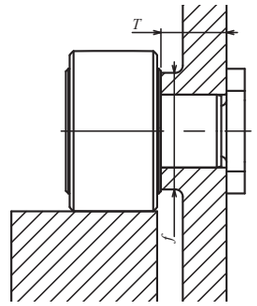
CFC···BUUR　　CFC···VBUUR

Stud dia. 8 — 12mm

Stud dia. mm	Identification number (Sealed type, With crowned outer ring) With cage	Full complement	Mass (Ref.) g	Boundary dimensions mm D	C	d_1	B max	B_1	C_1	T (1)	B_6 max
8	CFC 8 BUUR	—	27	19	11	8	12.2	18.3	0.6	7～11 (13)	2.2
	—	CFC 8 VBUUR	28	19	11	8	12.2	18.3	0.6	7～11 (13)	2.2
10	CFC 10 BUUR	—	42	22	12	10	13.2	21.3	0.6	9～14 (17)	2.7
	—	CFC 10 VBUUR	43	22	12	10	13.2	21.3	0.6	9～14 (17)	2.7
	CFC 10-1 BUUR	—	56	26	12	10	13.2	21.3	0.6	9～14 (17)	2.7
	—	CFC 10-1 VBUUR	57	26	12	10	13.2	21.3	0.6	9～14 (17)	2.7
12	CFC 12 BUUR	—	88	30	14	12	15.2	24.3	0.6	10～15 (19)	3.2
	—	CFC 12 VBUUR	90	30	14	12	15.2	24.3	0.6	10～15 (19)	3.2
	CFC 12-1 BUUR	—	99	32	14	12	15.2	24.3	0.6	10～15 (19)	3.2
	—	CFC 12-1 VBUUR	100	32	14	12	15.2	24.3	0.6	10～15 (19)	3.2

Note(1) This is the mounting range possible with the supplied bolt. Regarding the dimensions in parentheses, the customer should use a separate hexagon socket head bolt (strength division 12.9) referring to Figure 7 on page I18.





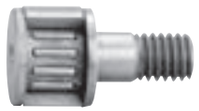
Dedicated flange nut

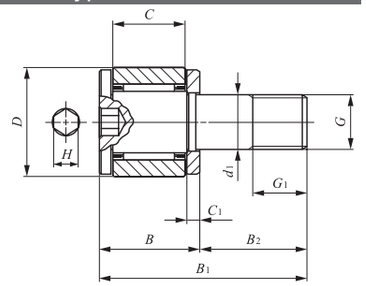
G	b	g_1	g_2	H_1	H_2	F_1	L max mm	Mounting dimension f Min. mm	Maximum tightening torque N・m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
M3×0.5	3.3	6.4	3.3	3	12	13.9	9.2	13	1.7	4 250	4 740	3 860
M3×0.5	3.3	6.4	3.3	3	12	13.9	9.2	13	1.7	8 170	11 200	3 860
M4×0.7	4.4	7.9	4.4	4	14	17.1	12.0	16	4.0	5 430	6 890	6 890
M4×0.7	4.4	7.9	4.4	4	14	17.1	12.0	16	4.0	9 570	14 500	7 060
M4×0.7	4.4	7.9	4.4	4	14	17.1	12.0	16	4.0	5 430	6 890	6 890
M4×0.7	4.4	7.9	4.4	4	14	17.1	12.0	16	4.0	9 570	14 500	7 060
M5×0.8	5.4	9.4	5.4	5	19	22.4	13.6	21	7.9	7 910	9 790	9 790
M5×0.8	5.4	9.4	5.4	5	19	22.4	13.6	21	7.9	13 500	19 700	11300
M5×0.8	5.4	9.4	5.4	5	19	22.4	13.6	21	7.9	7 910	9 790	9 790
M5×0.8	5.4	9.4	5.4	5	19	22.4	13.6	21	7.9	13 500	19 700	11300

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Miniature Type Cam Followers With Cage/Stud Head Hex Hole
Full Complement Type/Stud Head Hex Hole

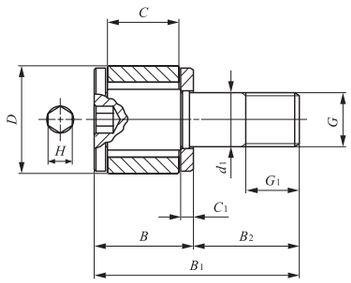




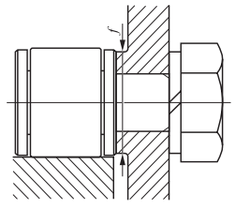
CFS

Stud dia. 2 — 6mm

Stud dia. mm	Identification number: With cage	Identification number: Full complement	Mass (Ref.) g (1)	Boundary dimensions mm: D	C	d_1	G	G_1	B
2	CFS 2	—	0.6	4.5	2.5	2	M2 ×0.4	2	4
	—	CFS 2 V	0.6	4.5	2.5	2	M2 ×0.4	2	4
2.5	CFS 2.5	—	1	5	3	2.5	M2.5 ×0.45	2.5	4.5
	—	CFS 2.5 V	1	5	3	2.5	M2.5 ×0.45	2.5	4.5
3	CFS 3	—	2	6	4	3	M3 ×0.5	3	5.5
	—	CFS 3 V	2	6	4	3	M3 ×0.5	3	5.5
4	CFS 4	—	4	8	5	4	M4 ×0.7	4	7
	—	CFS 4 V	4	8	5	4	M4 ×0.7	4	7
5	CFS 5	—	7	10	6	5	M5 ×0.8	5	8
	—	CFS 5 V	7	10	6	5	M5 ×0.8	5	8
6	CFS 6	—	13	12	7	6	M6 ×1	6	9.5
	—	CFS 6 V	13	12	7	6	M6 ×1	6	9.5



CFS···V



B_1	B_2	C_1	H	Mounting dimension f Min. mm	Maximum tightening torque N-cm	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
8	4	0.7	0.9	4.3	9.1	288	202	202
8	4	0.7	0.9	4.3	9.1	768	734	229
9.5	5	0.7	0.9	4.8	18.7	428	351	351
9.5	5	0.7	0.9	4.8	18.7	1 000	1 080	360
11.5	6	0.7	1.3	5.8	33.5	629	611	484
11.5	6	0.7	1.3	5.8	33.5	1 420	1 790	484
15	8	1.0	1.5	7.7	77.7	1 120	1 120	919
15	8	1.0	1.5	7.7	77.7	2 370	3 000	919
18	10	1.0	2	9.6	158	1 570	1 850	1 570
18	10	1.0	2	9.6	158	3 180	4 700	1 570
21.5	12	1.2	2.5	11.6	268	2 090	2 200	2 150
21.5	12	1.2	2.5	11.6	268	4 610	6 250	2 150

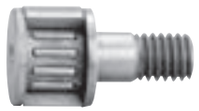
Note(1) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
Remarks1. No oil hole is provided.
2. Provided with prepacked grease.

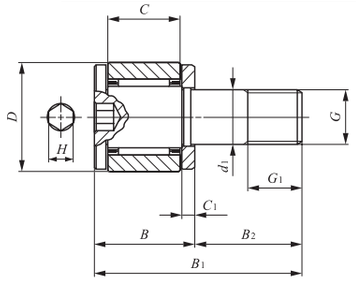
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Miniature Type Cam Followers / Stainless Steel Made **With Cage/Stud Head Hex Hole**

Full Complement Type/Stud Head Hex Hole





CFS···F

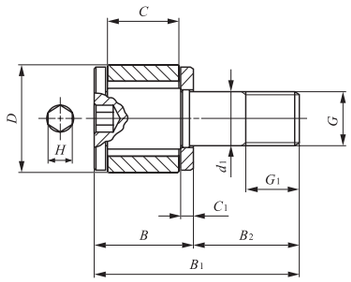
Stud dia. 2—6mm

Stud dia. mm	Identification number: With cage	Identification number: Full complement	Mass (Ref.) g (1)	Boundary dimensions mm: D	C	d_1	G	G_1	B
2	**CFS 2 F**	—	0.6	4.5	2.5	2	M2 ×0.4	2	4
	—	**CFS 2 FV**	0.6	4.5	2.5	2	M2 ×0.4	2	4
2.5	**CFS 2.5 F**	—	1	5	3	2.5	M2.5 ×0.45	2.5	4.5
	—	**CFS 2.5 FV**	1	5	3	2.5	M2.5 ×0.45	2.5	4.5
3	**CFS 3 F**	—	2	6	4	3	M3 ×0.5	3	5.5
	—	**CFS 3 FV**	2	6	4	3	M3 ×0.5	3	5.5
4	**CFS 4 F**	—	4	8	5	4	M4 ×0.7	4	7
	—	**CFS 4 FV**	4	8	5	4	M4 ×0.7	4	7
5	**CFS 5 F**	—	7	10	6	5	M5 ×0.8	5	8
	—	**CFS 5 FV**	7	10	6	5	M5 ×0.8	5	8
6	**CFS 6 F**	—	13	12	7	6	M6 ×1	6	9.5
	—	**CFS 6 FV**	13	12	7	6	M6 ×1	6	9.5

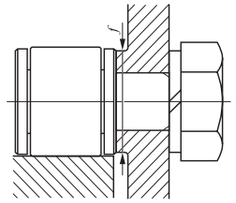
Note(1) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.

Remarks1. No oil hole is provided.

2. Provided with prepacked grease.



CFS···FV



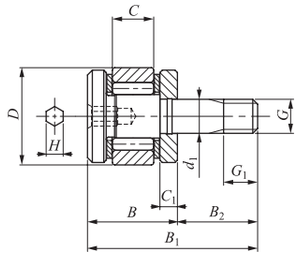
B_1	B_2	C_1	H	Mounting dimension f Min. mm	Maximum tightening torque N-cm	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
8	4	0.7	0.9	4.3	9.1	230	161	161
8	4	0.7	0.9	4.3	9.1	614	587	229
9.5	5	0.7	0.9	4.8	18.7	342	281	281
9.5	5	0.7	0.9	4.8	18.7	800	862	360
11.5	6	0.7	1.3	5.8	33.5	504	488	484
11.5	6	0.7	1.3	5.8	33.5	1 140	1 430	484
15	8	1.0	1.5	7.7	77.7	897	894	894
15	8	1.0	1.5	7.7	77.7	1 900	2 400	919
18	10	1.0	2	9.6	158	1 250	1 480	1 480
18	10	1.0	2	9.6	158	2 540	3 760	1 570
21.5	12	1.2	2.5	11.6	268	1 670	1 760	1 760
21.5	12	1.2	2.5	11.6	268	3 690	5 000	2 150

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

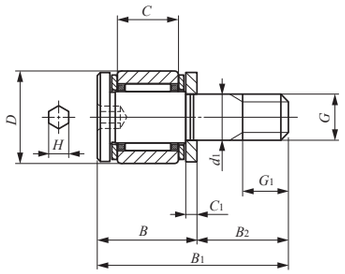
CAM FOLLOWERS

Thrust Disk Type Miniature Cam Followers With Cage/Stud Head Hex Hole Full Complement Type/Stud Head Hex Hole

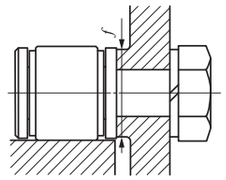




CFS1.4 WV



CFS··· W



Stud dia. 1.4 — 6mm

Stud dia. mm	Identification number With cage	Identification number Full complement	Mass (Ref.) g (1)	Boundary dimensions mm D	C	d_1	G	G_1	B	B_1	B_2	C_1	H	Mounting dimension f Min. mm	Maximum tightening torque N-cm	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
1.4	—	**CFS 1.4 WV**	0.35	4	1.7	1.4	M1.4 ×0.3	1.4	3.7	7	3.3	0.7	0.9	3.8	3.0	481	385	105
2	**CFS 2 W**	—	0.6	4.5	2.5	2	M2 ×0.4	2	4.5	8.5	4	0.7	0.9	4.3	9.1	288	202	194
2.5	**CFS 2.5 W**	—	1	5	3	2.5	M2.5 ×0.45	2.5	5	10	5	0.7	0.9	4.8	18.7	428	351	313
3	**CFS 3 W**	—	2	6	4	3	M3 ×0.5	3	6.5	12.5	6	0.7	1.3	5.8	33.5	629	611	399
4	**CFS 4 W**	—	4	8	5	4	M4 ×0.7	4	8	16	8	1	1.5	7.7	77.7	1120	1120	785
5	**CFS 5 W**	—	7	10	6	5	M5 ×0.8	5	9	19	10	1	2	9.6	158	1570	1850	1370
6	**CFS 6 W**	—	13	12	7	6	M6 ×1	6	10.5	22.5	12	1.2	2.5	11.6	268	2090	2200	1920

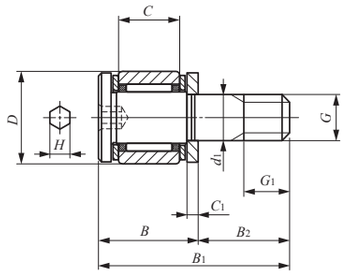
Note(1) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
Remarks1. No oil hole is provided.
2. Provided with prepacked grease.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Thrust Disk Type Miniature Cam Followers·Stainless Steel Made With Cage/Stud Head Hex Hole



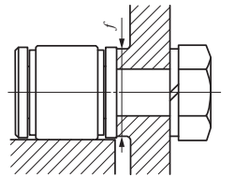


CFS ··· FW

Stud dia. 2 — 6mm

Stud dia. mm	Identification number	Mass (Ref.) g (1)	Boundary dimensions mm D	C	d_1	G	G_1	B
2	CFS 2 FW	0.6	4.5	2.5	2	M2 ×0.4	2	4.5
2.5	CFS 2.5 FW	1	5	3	2.5	M2.5 ×0.45	2.5	5
3	CFS 3 FW	2	6	4	3	M3 ×0.5	3	6.5
4	CFS 4 FW	4	8	5	4	M4 ×0.7	4	8
5	CFS 5 FW	7	10	6	5	M5 ×0.8	5	9
6	CFS 6 FW	13	12	7	6	M6 ×1	6	10.5

Note(1) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
Remarks1. No oil hole is provided.
2. Provided with prepacked grease.

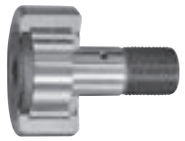


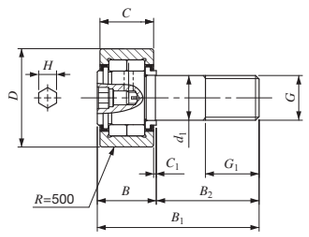
B_1	B_2	C_1	H	Mounting dimension f Min. mm	Maximum tightening torque N-cm	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
8.5	4	0.7	0.9	4.3	9.1	230	161	161
10	5	0.7	0.9	4.8	18.7	342	281	281
12.5	6	0.7	1.3	5.8	33.5	504	488	399
16	8	1.0	1.5	7.7	77.7	897	894	785
19	10	1.0	2	9.6	158	1 250	1 480	1 370
22.5	12	1.2	2.5	11.6	268	1 670	1 760	1 760

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

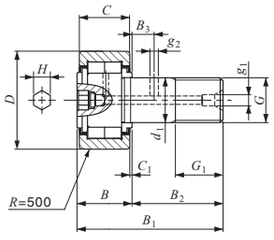
CAM FOLLOWERS

Cylindrical Roller Cam Followers Full Complement Type/Stud Head Hex Hole





NUCF ··· BR
Stud dia. d_1 10mm

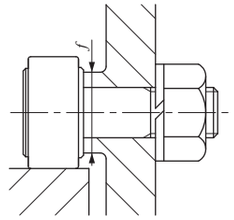


NUCF ··· BR
Stud dia. d_1 12-30mm

Stud dia. 10 — 30mm

Stud dia. mm	Identification number	Mass (Ref.) g (1)	Boundary dimensions mm D	C	d_1	G	G_1	B max	B_1 max	B_2
10	NUCF 10 BR	44	22	12	10	M10 × 1.25	12	13.2	36.2	23
	NUCF 10-1 BR	58	26	12	10	M10 × 1.25	12	13.2	36.2	23
12	NUCF 12 BR	86	30	14	12	M12 × 1.5	13	15.2	40.2	25
	NUCF 12-1 BR	97	32	14	12	M12 × 1.5	13	15.2	40.2	25
16	NUCF 16 BR	167	35	18	16	M16 × 1.5	17	19.6	52.1	32.5
18	NUCF 18 BR	244	40	20	18	M18 × 1.5	19	21.6	58.1	36.5
20	NUCF 20 BR	457	52	24	20	M20 × 1.5	21	25.6	66.1	40.5
	NUCF 20-1 BR	384	47	24	20	M20 × 1.5	21	25.6	66.1	40.5
24	NUCF 24 BR	789	62	29	24	M24 × 1.5	25	30.6	80.1	49.5
	NUCF 24-1 BR	1 020	72	29	24	M24 × 1.5	25	30.6	80.1	49.5
30	NUCF 30 BR	1 600	80	35	30	M30 × 1.5	32	37	100	63
	NUCF 30-2 BR	1 970	90	35	30	M30 × 1.5	32	37	100	63

Note(1) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.
Remarks1. For models with a stud diameter d_1 of 10mm, oil hole (re-greasing fitting) is provided at the head. Other models are provided with an oil hole (grease nipple) at the head and an oil hole each on the outside surface and end surface of the stud.
2. Provided with prepacked grease.

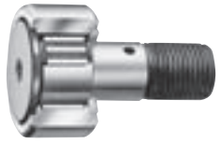


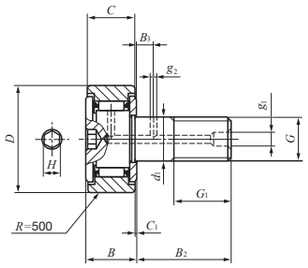
B_3	C_1	g_1	g_2	H	Mounting dimension f Min. mm	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N
—	0.6	—	—	4	12	13.8	10 400	11 500	5 300
—	0.6	—	—	4	12	13.8	10 400	11 500	9 210
6	0.6	4	3	6	17	21.9	14 000	13 400	5 650
6	0.6	4	3	6	17	21.9	14 000	13 400	9 040
8	0.8	4	3	6	20	58.5	23 400	27 300	11 800
8	0.8	6	3	8	22	86.2	25 200	30 900	20 300
9	0.8	6	4	8	31	119	43 100	58 100	30 000
9	0.8	6	4	8	27	119	38 900	49 000	27 200
11	0.8	6	4	12	38	215	58 200	75 300	35 200
11	0.8	6	4	12	44	215	63 900	88 800	57 000
15	1	6	4	17	45	438	90 300	121 000	98 300
15	1	6	4	17	45	438	90 300	121 000	98 300

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Inch Series Cam Followers With Cage/Stud Head Hex Hole





CR···BR

Stud dia. 4.826 — 22.225mm

Stud dia. mm (inch)	Identification number Shield type With crowned outer ring	Shield type With cylindrical outer ring	Sealed type With crowned outer ring	Sealed type With cylindrical outer ring	Mass (Ref.) g(2)	D	C	d_1	G UNF	G_1
4.826	CR 8 BR	CR 8 B	CR 8 BUUR	CR 8 BUU	9	12.700 (1/2)	8.731 (11/32)	4.826	No.10-32	6.350 (1/4)
	CR 8-1 BR	CR 8-1 B	CR 8-1 BUUR	CR 8-1 BUU	10	12.700 (1/2)	9.525 (3/8)	4.826	No.10-32	6.350 (1/4)
6.350 (1/4)	CR 10 BR	CR 10 B	CR 10 BUUR	CR 10 BUU	19	15.875 (5/8)	10.319 (13/32)	6.350 (1/4)	1/4 - 28	7.938 (5/16)
	CR 10-1 BR	CR 10-1 B	CR 10-1 BUUR	CR 10-1 BUU	21	15.875 (5/8)	11.112 (7/16)	6.350 (1/4)	1/4 - 28	7.938 (5/16)
9.525 (3/8)	CR 12 BR	CR 12 B	CR 12 BUUR	CR 12 BUU	35	19.050 (3/4)	12.700 (1/2)	9.525 (3/8)	3/8 - 24	9.525 (3/8)
	CR 14 BR	CR 14 B	CR 14 BUUR	CR 14 BUU	46	22.225 (7/8)	12.700 (1/2)	9.525 (3/8)	3/8 - 24	9.525 (3/8)
11.112 (7/16)	CR 16 BR	CR 16 B	CR 16 BUUR	CR 16 BUU	73	25.400 (1)	15.875 (5/8)	11.112 (7/16)	7/16 - 20	12.700 (1/2)
	CR 18 BR	CR 18 B	CR 18 BUUR	CR 18 BUU	99	28.575 (1 1/8)	15.875 (5/8)	11.112 (7/16)	7/16 - 20	12.700 (1/2)
12.700 (1/2)	CR 20 BR	CR 20 B	CR 20 BUUR	CR 20 BUU	132	31.750 (1 1/4)	19.050 (3/4)	12.700 (1/2)	1/2 - 20	15.875 (5/8)
	CR 22 BR	CR 22 B	CR 22 BUUR	CR 22 BUU	157	34.925 (1 3/8)	19.050 (3/4)	12.700 (1/2)	1/2 - 20	15.875 (5/8)
15.875 (5/8)	CR 24 BR	CR 24 B	CR 24 BUUR	CR 24 BUU	225	38.100 (1 1/2)	22.225 (7/8)	15.875 (5/8)	5/8 - 18	19.050 (3/4)
	CR 26 BR	CR 26 B	CR 26 BUUR	CR 26 BUU	260	41.275 (1 5/8)	22.225 (7/8)	15.875 (5/8)	5/8 - 18	19.050 (3/4)
19.050 (3/4)	CR 28 BR	CR 28 B	CR 28 BUUR	CR 28 BUU	365	44.450 (1 3/4)	25.400 (1)	19.050 (3/4)	3/4 - 16	22.225 (7/8)
	CR 30 BR	CR 30 B	CR 30 BUUR	CR 30 BUU	410	47.625 (1 7/8)	25.400 (1)	19.050 (3/4)	3/4 - 16	22.225 (7/8)
22.225 (7/8)	CR 32 BR	CR 32 B	CR 32 BUUR	CR 32 BUU	615	50.800 (2)	31.750 (1 1/4)	22.225 (7/8)	7/8 - 14	25.400 (1)
	CR 36 BR	CR 36 B	CR 36 BUUR	CR 36 BUU	750	57.150 (2 1/4)	31.750 (1 1/4)	22.225 (7/8)	7/8 - 14	25.400 (1)

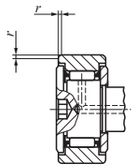
Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CR···BR drawing.

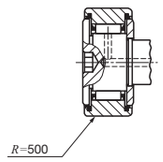
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.

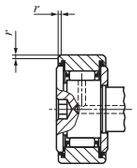
Remarks1. Models with a stud diameter d_1 of 6.35 mm or less have no oil hole. Other models are provided with one oil hole each on the outside surface and end surface of the stud.

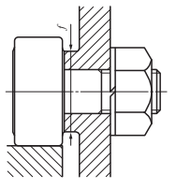
2. Provided with prepacked grease.

3. For the maximum allowable static load, please contact IKO.









CR···B(1) CR···BUUR(1) CR···BUU(1)

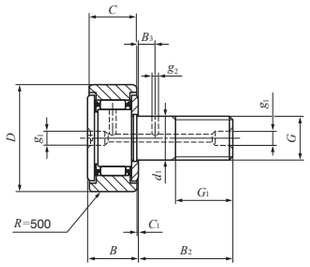
Boundary dimensions mm(inch) B max	B_2	B_3	C_1	g_1	g_2	H	r	Mounting dimension f Min. mm(inch)	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N
10.2 (0.40)	12.700 (1/2)	— (—)	0.794 (1/32)	— (—)	— (—)	3.175 (1/8)	0.397 (1/64)	8.334 (21/64)	1.4	2 520	2 140
10.9 (0.43)	15.875 (5/8)	— (—)	0.794 (1/32)	— (—)	— (—)	3.175 (1/8)	0.397 (1/64)	8.334 (21/64)	1.4	2 520	2 140
11.8 (0.46)	15.875 (5/8)	— (—)	0.794 (1/32)	— (—)	— (—)	3.175 (1/8)	0.397 (1/64)	11.509 (29/64)	3.4	3 650	3 670
12.5 (0.49)	19.050 (3/4)	— (—)	0.794 (1/32)	— (—)	— (—)	3.175 (1/8)	0.397 (1/64)	11.509 (29/64)	3.4	3 650	3 670
14.2 (0.56)	22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	4.762 (3/16)	0.794 (1/32)	13.494 (17/32)	10.8	4 420	5 110
14.2 (0.56)	22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	4.762 (3/16)	0.794 (1/32)	15.081 (19/32)	10.8	4 790	5 810
17.3 (0.68)	25.400 (1)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.191 (3/64)	17.859 (45/64)	17.4	8 810	10 800
17.3 (0.68)	25.400 (1)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.588 (1/16)	19.050 (3/4)	17.4	9 180	11 600
20.4 (0.80)	31.750 (1 1/4)	7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.588 (1/16)	21.828 (35/64)	27.7	14 200	16 000
20.4 (0.80)	31.750 (1 1/4)	7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.588 (1/16)	21.828 (35/64)	27.7	14 200	16 000
23.6 (0.93)	38.100 (1 1/2)	9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	26.196 (1 3/64)	55.7	18 600	24 300
23.6 (0.93)	38.100 (1 1/2)	9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	26.196 (1 3/64)	55.7	18 600	24 300
26.8 (1.06)	44.450 (1 3/4)	11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	32.543 (1 9/32)	100	25 100	38 200
26.8 (1.06)	44.450 (1 3/4)	11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	32.543 (1 9/32)	100	25 100	38 200
33.5 (1.32)	50.800 (2)	12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	11.112 (7/16)	1.588 (1/16)	37.306 (1 15/32)	162	32 500	63 900
33.5 (1.32)	50.800 (2)	12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	11.112 (7/16)	1.588 (1/16)	37.306 (1 15/32)	162	32 500	63 900

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Inch Series Cam Followers With Cage/With Screwdriver Slot





CR ··· R

Stud dia. 4.826 — 22.225mm

Stud dia. mm (inch)	Identification number: Shield type, With crowned outer ring	Identification number: Shield type, With cylindrical outer ring	Identification number: Sealed type, With crowned outer ring	Identification number: Sealed type, With cylindrical outer ring	Mass (Ref.) g(2)	D	C	d_1	G UNF	G_1
4.826	CR 8 R	CR 8	CR 8 UUR	CR 8 UU	9	12.700 (1/2)	8.731 (11/32)	4.826	No.10-32	6.350 (1/4)
	CR 8-1 R	CR 8-1	CR 8-1 UUR	CR 8-1 UU	10	12.700 (1/2)	9.525 (3/8)	4.826	No.10-32	6.350 (1/4)
6.350 (1/4)	CR 10 R	CR 10	CR 10 UUR	CR 10 UU	19	15.875 (5/8)	10.319 (13/32)	6.350 (1/4)	1/4 - 28	7.938 (5/16)
	CR 10-1 R	CR 10-1	CR 10-1 UUR	CR 10-1 UU	21	15.875 (5/8)	11.112 (7/16)	6.350 (1/4)	1/4 - 28	7.938 (5/16)
9.525 (3/8)	CR 12 R	CR 12	CR 12 UUR	CR 12 UU	35	19.050 (3/4)	12.700 (1/2)	9.525 (3/8)	3/8 - 24	9.525 (3/8)
	CR 14 R	CR 14	CR 14 UUR	CR 14 UU	46	22.225 (7/8)	12.700 (1/2)	9.525 (3/8)	3/8 - 24	9.525 (3/8)
11.112 (7/16)	CR 16 R	CR 16	CR 16 UUR	CR 16 UU	73	25.400 (1)	15.875 (5/8)	11.112 (7/16)	7/16 - 20	12.700 (1/2)
	CR 18 R	CR 18	CR 18 UUR	CR 18 UU	99	28.575 (1 1/8)	15.875 (5/8)	11.112 (7/16)	7/16 - 20	12.700 (1/2)
12.700 (1/2)	CR 20 R	CR 20	CR 20 UUR	CR 20 UU	132	31.750 (1 1/4)	19.050 (3/4)	12.700 (1/2)	1/2 - 20	15.875 (5/8)
	CR 22 R	CR 22	CR 22 UUR	CR 22 UU	157	34.925 (1 3/8)	19.050 (3/4)	12.700 (1/2)	1/2 - 20	15.875 (5/8)
15.875 (5/8)	CR 24 R	CR 24	CR 24 UUR	CR 24 UU	225	38.100 (1 1/2)	22.225 (7/8)	15.875 (5/8)	5/8 - 18	19.050 (3/4)
	CR 26 R	CR 26	CR 26 UUR	CR 26 UU	260	41.275 (1 5/8)	22.225 (7/8)	15.875 (5/8)	5/8 - 18	19.050 (3/4)
19.050 (3/4)	CR 28 R	CR 28	CR 28 UUR	CR 28 UU	365	44.450 (1 3/4)	25.400 (1)	19.050 (3/4)	3/4 - 16	22.225 (7/8)
	CR 30 R	CR 30	CR 30 UUR	CR 30 UU	410	47.625 (1 7/8)	25.400 (1)	19.050 (3/4)	3/4 - 16	22.225 (7/8)
22.225 (7/8)	CR 32 R	CR 32	CR 32 UUR	CR 32 UU	615	50.800 (2)	31.750 (1 1/4)	22.225 (7/8)	7/8 - 14	25.400 (1)
	CR 36 R	CR 36	CR 36 UUR	CR 36 UU	750	57.150 (2 1/4)	31.750 (1 1/4)	22.225 (7/8)	7/8 - 14	25.400 (1)

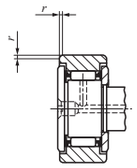
Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CR···R drawing.

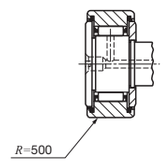
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.

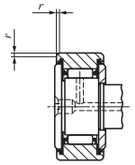
Remarks1. Models with a stud diameter d_1 of 6.35 mm or less (marked *) are provided with an oil hole on the stud head only. Other models are provided with one oil hole each on the head, outside surface and end surface of the stud.

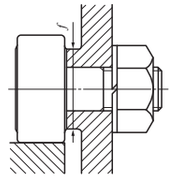
2. Provided with prepacked grease.

3. For the maximum allowable static load, please contact IKO.









CR(1) CR ··· UUR(1) CR ··· UU(1)

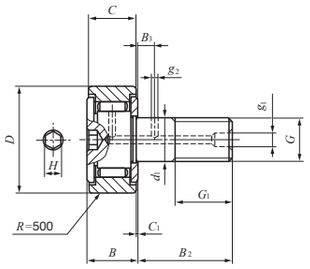
Boundary dimensions mm(inch) B max	B_2	B_3	C_1	g_1	g_2	r	Mounting dimension f Min. mm(inch)	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N
10.2 (0.40)	12.700 (1/2)	— (–)	0.794 (1/32)	*3.175 (1/8)	— (–)	0.397 (1/64)	8.334 (21/64)	1.4	2 520	2 140
10.9 (0.43)	15.875 (5/8)	— (–)	0.794 (1/32)	*3.175 (1/8)	— (–)	0.397 (1/64)	8.334 (21/64)	1.4	2 520	2 140
11.8 (0.46)	15.875 (5/8)	— (–)	0.794 (1/32)	*3.175 (1/8)	— (–)	0.397 (1/64)	11.509 (29/64)	3.4	3 650	3 670
12.5 (0.49)	19.050 (3/4)	— (–)	0.794 (1/32)	*3.175 (1/8)	— (–)	0.397 (1/64)	11.509 (29/64)	3.4	3 650	3 670
14.2 (0.56)	22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	0.794 (1/32)	13.494 (17/32)	10.8	4 420	5 110
14.2 (0.56)	22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	0.794 (1/32)	15.081 (19/32)	10.8	4 790	5 810
17.3 (0.68)	25.400 (1)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	1.191 (3/64)	17.859 (45/64)	17.4	8 810	10 800
17.3 (0.68)	25.400 (1)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	1.588 (1/16)	19.050 (3/4)	17.4	9 180	11 600
20.4 (0.80)	31.750 (1 1/4)	7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	1.588 (1/16)	21.828 (55/64)	27.7	14 200	16 000
20.4 (0.80)	31.750 (1 1/4)	7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	1.588 (1/16)	21.828 (55/64)	27.7	14 200	16 000
23.6 (0.93)	38.100 (1 1/2)	9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	1.588 (1/16)	26.196 (1 3/64)	55.7	18 600	24 300
23.6 (0.93)	38.100 (1 1/2)	9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	1.588 (1/16)	26.196 (1 3/64)	55.7	18 600	24 300
26.8 (1.06)	44.450 (1 3/4)	11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	1.588 (1/16)	32.543 (1 9/32)	100	25 100	38 200
26.8 (1.06)	44.450 (1 3/4)	11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	1.588 (1/16)	32.543 (1 9/32)	100	25 100	38 200
33.5 (1.32)	50.800 (2)	12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	1.588 (1/16)	37.306 (1 15/32)	162	32 500	63 900
33.5 (1.32)	50.800 (2)	12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	1.588 (1/16)	37.306 (1 15/32)	162	32 500	63 900

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Inch Series Cam Followers Full Complement Type/Stud Head Hex Hole





CR···VBR

Stud dia. 4.826 — 22.225mm

Stud dia. mm (inch)	Identification number: Shield type, With crowned outer ring	Shield type, With cylindrical outer ring	Sealed type, With crowned outer ring	Sealed type, With cylindrical outer ring	Mass (Ref.) g(2)	D	C	d_1	G UNF	G_1
4.826	CR 8 VBR	CR 8 VB	CR 8 VBUUR	CR 8 VBUU	9	12.700 (1/2)	8.731 (11/32)	4.826	No.10-32	6.350 (1/4)
	CR 8-1 VBR	CR 8-1VB	CR 8-1 VBUUR	CR 8-1 VBUU	10	12.700 (1/2)	9.525 (3/8)	4.826	No.10-32	6.350 (1/4)
6.350 (1/4)	CR 10 VBR	CR 10 VB	CR 10 VBUUR	CR 10 VBUU	19	15.875 (5/8)	10.319 (13/32)	6.350 (1/4)	1/4 - 28	7.938 (5/16)
	CR 10-1 VBR	CR 10-1VB	CR 10-1 VBUUR	CR 10-1 VBUU	21	15.875 (5/8)	11.112 (7/16)	6.350 (1/4)	1/4 - 28	7.938 (5/16)
9.525 (3/8)	CR 12 VBR	CR 12 VB	CR 12 VBUUR	CR 12 VBUU	36	19.050 (3/4)	12.700 (1/2)	9.525 (3/8)	3/8 - 24	9.525 (3/8)
	CR 14 VBR	CR 14 VB	CR 14 VBUUR	CR 14 VBUU	47	22.225 (7/8)	12.700 (1/2)	9.525 (3/8)	3/8 - 24	9.525 (3/8)
11.112 (7/16)	CR 16 VBR	CR 16 VB	CR 16 VBUUR	CR 16 VBUU	74	25.400 (1)	15.875 (5/8)	11.112 (7/16)	7/16 - 20	12.700 (1/2)
	CR 18 VBR	CR 18 VB	CR 18 VBUUR	CR 18 VBUU	101	28.575 (1 1/8)	15.875 (5/8)	11.112 (7/16)	7/16 - 20	12.700 (1/2)
12.700 (1/2)	CR 20 VBR	CR 20 VB	CR 20 VBUUR	CR 20 VBUU	137	31.750 (1 1/4)	19.050 (3/4)	12.700 (1/2)	1/2 - 20	15.875 (5/8)
	CR 22 VBR	CR 22 VB	CR 22 VBUUR	CR 22 VBUU	160	34.925 (1 3/8)	19.050 (3/4)	12.700 (1/2)	1/2 - 20	15.875 (5/8)
15.875 (5/8)	CR 24 VBR	CR 24 VB	CR 24 VBUUR	CR 24 VBUU	230	38.100 (1 1/2)	22.225 (7/8)	15.875 (5/8)	5/8 - 18	19.050 (3/4)
	CR 26 VBR	CR 26 VB	CR 26 VBUUR	CR 26 VBUU	265	41.275 (1 5/8)	22.225 (7/8)	15.875 (5/8)	5/8 - 18	19.050 (3/4)
19.050 (3/4)	CR 28 VBR	CR 28 VB	CR 28 VBUUR	CR 28 VBUU	372	44.450 (1 3/4)	25.400 (1)	19.050 (3/4)	3/4 - 16	22.225 (7/8)
	CR 30 VBR	CR 30 VB	CR 30 VBUUR	CR 30 VBUU	418	47.625 (1 7/8)	25.400 (1)	19.050 (3/4)	3/4 - 16	22.225 (7/8)
22.225 (7/8)	CR 32 VBR	CR 32 VB	CR 32 VBUUR	CR 32 VBUU	627	50.800 (2)	31.750 (1 1/4)	22.225 (7/8)	7/8 - 14	25.400 (1)
	CR 36 VBR	CR 36 VB	CR 36 VBUUR	CR 36 VBUU	759	57.150 (2 1/4)	31.750 (1 1/4)	22.225 (7/8)	7/8 - 14	25.400 (1)

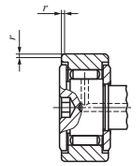
Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CR···VBR drawing.

(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.

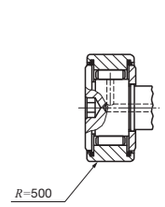
Remarks1. Models with a stud diameter d_1 of 6.35 mm or less have no oil hole. Other models are provided with one oil hole each on the outside surface and end surface of the stud.

2. Provided with prepacked grease.

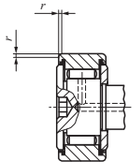
3. For the maximum allowable static load, please contact IKO.



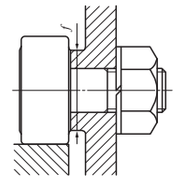
CR···VB(1)



CR···VBUUR(1)



CR···VBUU(1)



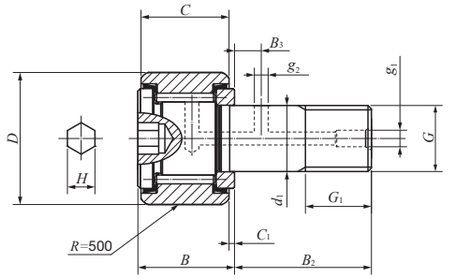
Boundary dimensions mm(inch) B max	B_2	B_3	C_1	g_1	g_2	H	r	Mounting dimension f Min. mm(inch)	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N
10.2 (0.40)	12.700 (1/2)	— (–)	0.794 (1/32)	— (–)	— (–)	3.175 (1/8)	0.397 (1/64)	8.334 (21/64)	1.4	4 260	4 750
10.9 (0.43)	15.875 (5/8)	— (–)	0.794 (1/32)	— (–)	— (–)	3.175 (1/8)	0.397 (1/64)	8.334 (21/64)	1.4	4 710	5 410
11.8 (0.46)	15.875 (5/8)	— (–)	0.794 (1/32)	— (–)	— (–)	3.175 (1/8)	0.397 (1/64)	11.509 (29/64)	3.4	5 830	7 660
12.5 (0.49)	19.050 (3/4)	— (–)	0.794 (1/32)	— (–)	— (–)	3.175 (1/8)	0.397 (1/64)	11.509 (29/64)	3.4	6 340	8 530
14.2 (0.56)	22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	4.762 (3/16)	0.794 (1/32)	13.494 (17/32)	10.8	8 710	12 300
14.2 (0.56)	22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	4.762 (3/16)	0.794 (1/32)	15.081 (19/32)	10.8	8 710	12 300
17.3 (0.68)	25.400 (1)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.191 (3/64)	17.859 (45/64)	17.4	13 100	22 700
17.3 (0.68)	25.400 (1)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.588 (1/16)	19.050 (3/4)	17.4	13 100	22 700
20.4 (0.80)	31.750 (1 1/4)	7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.588 (1/16)	21.828 (55/64)	27.7	23 600	31 700
20.4 (0.80)	31.750 (1 1/4)	7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.588 (1/16)	21.828 (55/64)	27.7	23 600	31 700
23.6 (0.93)	38.100 (1 1/2)	9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	26.196 (1 3/64)	55.7	28 200	40 100
23.6 (0.93)	38.100 (1 1/2)	9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	26.196 (1 3/64)	55.7	28 200	40 100
26.8 (1.06)	44.450 (1 3/4)	11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	32.543 (1 9/32)	100	35 300	55 600
26.8 (1.06)	44.450 (1 3/4)	11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	32.543 (1 9/32)	100	35 300	55 600
33.5 (1.32)	50.800 (2)	12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	11.112 (7/16)	1.588 (1/16)	37.306 (1 15/32)	162	45 700	80 600
33.5 (1.32)	50.800 (2)	12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	11.112 (7/16)	1.588 (1/16)	37.306 (1 15/32)	162	45 700	80 600

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Inch Series Cam Followers Full Complement Type/Stud Head Hex Hole

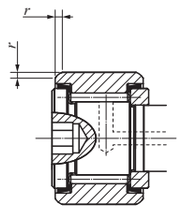


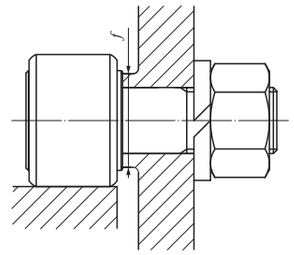


CR···VBSR

Stud dia. 4.826 — 22.225mm

Stud dia. mm (inch)	Identification number: Sealed type with ThrustDisk Seals, With crowned outer ring	Identification number: Sealed type with ThrustDisk Seals, With cylindrical outer ring	Mass (Ref.) g (2)	D	C	d_1	G UNF	G_1	B max	B_2
4.826	CR 8 VBSR	CR 8 VBS	9	12.700 (1/2)	8.731 (11/32)	4.826	No.10-32	6.350 (1/4)	10.2(0.40)	12.700 (1/2)
	CR 8-1 VBSR	CR 8-1 VBS	10	12.700 (1/2)	9.525 (3/8)	4.826	No.10-32	6.350 (1/4)	10.9(0.43)	15.875 (5/8)
6.350 (1/4)	CR 10 VBSR	CR 10 VBS	19	15.875 (5/8)	10.319 (13/32)	6.350 (1/4)	1/4-28	7.938 (5/16)	11.8(0.46)	15.875 (5/8)
	CR 10-1 VBSR	CR 10-1 VBS	21	15.875 (5/8)	11.112 (7/16)	6.350 (1/4)	1/4-28	7.938 (5/16)	12.5(0.49)	19.050 (3/4)
9.525 (3/8)	CR 12 VBSR	CR 12 VBS	34	19.050 (3/4)	12.700 (1/2)	9.525 (3/8)	3/8-24	9.525 (3/8)	14.2(0.56)	22.225 (7/8)
	CR 14 VBSR	CR 14 VBS	45	22.225 (7/8)	12.700 (1/2)	9.525 (3/8)	3/8-24	9.525 (3/8)	14.2(0.56)	22.225 (7/8)
11.112 (7/16)	CR 16 VBSR	CR 16 VBS	73	25.400 (1)	15.875 (5/8)	11.112 (7/16)	7/16-20	12.700 (1/2)	17.3(0.68)	25.400 (1)
	CR 18 VBSR	CR 18 VBS	100	28.575 (1 1/8)	15.875 (5/8)	11.112 (7/16)	7/16-20	12.700 (1/2)	17.3(0.68)	25.400 (1)
12.700 (1/2)	CR 20 VBSR	CR 20 VBS	136	31.750 (1 1/4)	19.050 (3/4)	12.700 (1/2)	1/2-20	15.875 (5/8)	20.4(0.80)	31.750 (1 1/4)
	CR 22 VBSR	CR 22 VBS	159	34.925 (1 3/8)	19.050 (3/4)	12.700 (1/2)	1/2-20	15.875 (5/8)	20.4(0.80)	31.750 (1 1/4)
15.875 (5/8)	CR 24 VBSR	CR 24 VBS	230	38.100 (1 1/2)	22.225 (7/8)	15.875 (5/8)	5/8-18	19.050 (3/4)	23.6(0.93)	38.100 (1 1/2)
	CR 26 VBSR	CR 26 VBS	265	41.275 (1 5/8)	22.225 (7/8)	15.875 (5/8)	5/8-18	19.050 (3/4)	23.6(0.93)	38.100 (1 1/2)
19.050 (3/4)	CR 28 VBSR	CR 28 VBS	368	44.450 (1 3/4)	25.400 (1)	19.050 (3/4)	3/4-16	22.225 (7/8)	26.8(1.06)	44.450 (1 3/4)
	CR 30 VBSR	CR 30 VBS	413	47.625 (1 7/8)	25.400 (1)	19.050 (3/4)	3/4-16	22.225 (7/8)	26.8(1.06)	44.450 (1 3/4)
22.225 (7/8)	CR 32 VBSR	CR 32 VBS	620	50.800 (2)	31.750 (1 1/4)	22.225 (7/8)	7/8-14	25.400 (1)	33.5(1.32)	50.800 (2)
	CR 36 VBSR	CR 36 VBS	753	57.150 (2 1/4)	31.750 (1 1/4)	22.225 (7/8)	7/8-14	25.400 (1)	33.5(1.32)	50.800 (2)





CR···VBS(1)

Boundary dimensions mm(inch) B_3	C_1	g_1	g_2	H	r	Mounting dimension f Min. mm(inch)	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N
— (—)	0.794 (1/32)	— (—)	— (—)	3.175 (1/8)	0.397 (1/64)	8.334 (21/64)	1.4	3 790	4 100
— (—)	0.794 (1/32)	— (—)	— (—)	3.175 (1/8)	0.397 (1/64)	8.334 (21/64)	1.4	4 260	4 750
— (—)	0.794 (1/32)	— (—)	— (—)	3.175 (1/8)	0.397 (1/64)	11.509 (29/64)	3.4	5 310	6 780
— (—)	0.794 (1/32)	— (—)	— (—)	3.175 (1/8)	0.397 (1/64)	11.509 (29/64)	3.4	5 830	7 660
6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	4.762 (3/16)	0.794 (1/32)	13.494 (17/32)	10.8	7 400	11 100
6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	4.762 (3/16)	0.794 (1/32)	15.081 (19/32)	10.8	7 400	11 100
6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.191 (3/64)	17.859 (45/64)	17.4	12,000	20,300
6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.588 (1/16)	19.050 (3/4)	17.4	12,000	20,300
7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.588 (1/16)	21.828 (55/64)	27.7	22,000	29,000
7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	6.350 (1/4)	1.588 (1/16)	21.828 (55/64)	27.7	22,000	29,000
9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	26.196 (1 3/64)	55.7	26,400	36,900
9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	26.196 (1 3/64)	55.7	26,400	36,900
11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	32.543 (1 9/32)	100	32,200	49,500
11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	7.938 (5/16)	1.588 (1/16)	32.543 (1 9/32)	100	32,200	49,500
12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	11.112 (7/16)	1.588 (1/16)	37.306 (1 15/32)	162	42,600	73,700
12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	11.112 (7/16)	1.588 (1/16)	37.306 (1 15/32)	162	42,600	73,700

Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CR…VBSR drawing.

(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.

Remarks1. Models with a stud diameter d_1 of 6.35 mm or less have no oil hole. Other models are provided with one oil hole each on the outside surface and end surface of the stud.

2. Provided with prepacked grease.

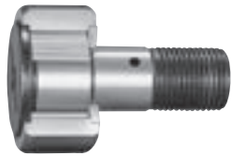
3. For the maximum allowable static load, please contact IKO.

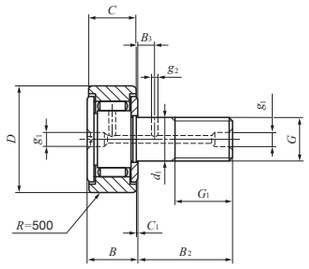
4. If you require a specification with cage or with cage + C-Lube, please contact IKO for more information.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Inch Series Cam Followers Full Complement Type/With Screwdriver Slot





CR ··· VR

Stud dia. 4.826 — 31.750mm

Stud dia. mm (inch)	Identification number Shield type With crowned outer ring	Shield type With cylindrical outer ring	Sealed type With crowned outer ring	Sealed type With cylindrical outer ring	Mass (Ref.) g (2)	D	C	d_1	G UNF	G_1
4.826	CR 8 VR	CR 8 V	CR 8 VUUR	CR 8 VUU	9	12.700 (1/2)	8.731 (11/32)	4.826	No.10-32	6.350 (1/4)
	CR 8-1 VR	CR 8-1 V	CR 8-1 VUUR	CR 8-1 VUU	10	12.700 (1/2)	9.525 (3/8)	4.826	No.10-32	6.350 (1/4)
6.350 (1/4)	CR 10 VR	CR 10 V	CR 10 VUUR	CR 10 VUU	19	15.875 (5/8)	10.319 (13/32)	6.350 (1/4)	1/4 - 28	7.938 (5/16)
	CR 10-1 VR	CR 10-1 V	CR 10-1 VUUR	CR 10-1 VUU	21	15.875 (5/8)	11.112 (7/16)	6.350 (1/4)	1/4 - 28	7.938 (5/16)
9.525 (3/8)	CR 12 VR	CR 12 V	CR 12 VUUR	CR 12 VUU	36	19.050 (3/4)	12.700 (1/2)	9.525 (3/8)	3/8 - 24	9.525 (3/8)
	CR 14 VR	CR 14 V	CR 14 VUUR	CR 14 VUU	47	22.225 (7/8)	12.700 (1/2)	9.525 (3/8)	3/8 - 24	9.525 (3/8)
11.112 (7/16)	CR 16 VR	CR 16 V	CR 16 VUUR	CR 16 VUU	74	25.400 (1)	15.875 (5/8)	11.112 (7/16)	7/16 - 20	12.700 (1/2)
	CR 18 VR	CR 18 V	CR 18 VUUR	CR 18 VUU	101	28.575 (1 1/8)	15.875 (5/8)	11.112 (7/16)	7/16 - 20	12.700 (1/2)
12.700 (1/2)	CR 20 VR	CR 20 V	CR 20 VUUR	CR 20 VUU	137	31.750 (1 1/4)	19.050 (3/4)	12.700 (1/2)	1/2 - 20	15.875 (5/8)
	CR 22 VR	CR 22 V	CR 22 VUUR	CR 22 VUU	160	34.925 (1 3/8)	19.050 (3/4)	12.700 (1/2)	1/2 - 20	15.875 (5/8)
15.875 (5/8)	CR 24 VR	CR 24 V	CR 24 VUUR	CR 24 VUU	230	38.100 (1 1/2)	22.225 (7/8)	15.875 (5/8)	5/8 - 18	19.050 (3/4)
	CR 26 VR	CR 26 V	CR 26 VUUR	CR 26 VUU	265	41.275 (1 5/8)	22.225 (7/8)	15.875 (5/8)	5/8 - 18	19.050 (3/4)
19.050 (3/4)	CR 28 VR	CR 28 V	CR 28 VUUR	CR 28 VUU	372	44.450 (1 3/4)	25.400 (1)	19.050 (3/4)	3/4 - 16	22.225 (7/8)
	CR 30 VR	CR 30 V	CR 30 VUUR	CR 30 VUU	418	47.625 (1 7/8)	25.400 (1)	19.050 (3/4)	3/4 - 16	22.225 (7/8)
22.225 (7/8)	CR 32 VR	CR 32 V	CR 32 VUUR	CR 32 VUU	627	50.800 (2)	31.750 (1 1/4)	22.225 (7/8)	7/8 - 14	25.400 (1)
	CR 36 VR	CR 36 V	CR 36 VUUR	CR 36 VUU	759	57.150 (2 1/4)	31.750 (1 1/4)	22.225 (7/8)	7/8 - 14	25.400 (1)
31.750 (1 1/4)	—	—	—	CR 48 VUU	1 960	76.200 (3)	44.450 (1 3/4)	31.750 (1 1/4)	1 1/4 - 12	31.750 (1 1/4)

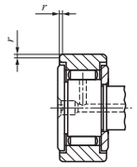
Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CR···VR drawing.

(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.

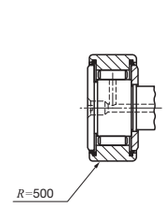
Remarks1. Models with a stud diameter d_1 of 6.35 mm or less (marked *) are provided with an oil hole on the stud head only. Other models are provided with one oil hole each on the head, outside surface and end surface of the stud.

2. Provided with prepacked grease.

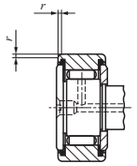
3. For the maximum allowable static load, please contact IKO.



CR ··· V(1)



CR ··· VUUR(1)



CR ··· VUU(1)

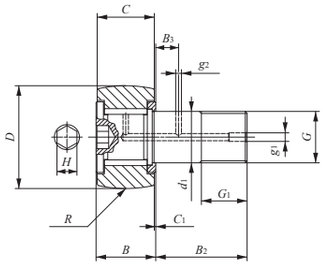
Boundary dimensions mm(inch) B max	B_2	B_3	C_1	g_1	g_2	r	Mounting dimension f Min. mm(inch)	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N
10.2 (0.40)	12.700 (1/2)	— (—)	0.794 (1/32)	*3.175 (1/8)	— (—)	0.397 (1/64)	8.334 (21/64)	1.4	4 260	4 750
10.9 (0.43)	15.875 (5/8)	— (—)	0.794 (1/32)	*3.175 (1/8)	— (—)	0.397 (1/64)	8.334 (21/64)	1.4	4 710	5 410
11.8 (0.46)	15.875 (5/8)	— (—)	0.794 (1/32)	*3.175 (1/8)	— (—)	0.397 (1/64)	11.509 (29/64)	3.4	5 830	7 660
12.5 (0.49)	19.050 (3/4)	— (—)	0.794 (1/32)	*3.175 (1/8)	— (—)	0.397 (1/64)	11.509 (29/64)	3.4	6 340	8 530
14.2 (0.56)	22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	0.794 (1/32)	13.494 (17/32)	10.8	8 710	12 300
14.2 (0.56)	22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	0.794 (1/32)	15.081 (19/32)	10.8	8 710	12 300
17.3 (0.68)	25.400 (1)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	1.191 (3/64)	17.859 (45/64)	17.4	13 100	22 700
17.3 (0.68)	25.400 (1)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	1.588 (1/16)	19.050 (3/4)	17.4	13 100	22 700
20.4 (0.80)	31.750 (1 1/4)	7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	1.588 (1/16)	21.828 (55/64)	27.7	23 600	31 700
20.4 (0.80)	31.750 (1 1/4)	7.938 (5/16)	0.794 (1/32)	4.762 (3/16)	3.175 (1/8)	1.588 (1/16)	21.828 (55/64)	27.7	23 600	31 700
23.6 (0.93)	38.100 (1 1/2)	9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	1.588 (1/16)	26.196 (1 3/64)	55.7	28 200	40 100
23.6 (0.93)	38.100 (1 1/2)	9.525 (3/8)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	1.588 (1/16)	26.196 (1 3/64)	55.7	28 200	40 100
26.8 (1.06)	44.450 (1 3/4)	11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	1.588 (1/16)	32.543 (1 9/32)	100	35 300	55 600
26.8 (1.06)	44.450 (1 3/4)	11.112 (7/16)	0.794 (1/32)	4.762 (3/16)	3.969 (5/32)	1.588 (1/16)	32.543 (1 9/32)	100	35 300	55 600
33.5 (1.32)	50.800 (2)	12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	1.588 (1/16)	37.306 (1 15/32)	162	45 700	80 600
33.5 (1.32)	50.800 (2)	12.700 (1/2)	0.794 (1/32)	4.762 (3/16)	4.762 (3/16)	1.588 (1/16)	37.306 (1 15/32)	162	45 700	80 600
46.4 (1.83)	63.500 (2 1/2)	15.875 (5/8)	1.588 (1/16)	6.350 (1/4)	4.762 (3/16)	2.381 (3/32)	51.991 (2 3/64)	500	77 600	172 000

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

CAM FOLLOWERS

Inch Series Heavy Duty Cam Followers Full Complement Type/Stud Head Hex Hole





CRH ··· VBR

Stud dia. 6.350 — 50.800mm

Stud dia. mm (inch)	Identification number Shield type With crowned outer ring	Identification number Sealed type With crowned outer ring	Mass (Ref.) g(2)	D	C	d_1	G UNF	G_1	B max
6.350 (1/4)	CRH 8-1 VBR	CRH 8-1 VBUUR	12	12.700 (1/2)	9.525 (3/8)	6.350 (1/4)	1/4 - 28	6.350 (1/4)	11.1 (0.44)
	CRH 9 VBR	CRH 9 VBUUR	15	14.288 (9/16)	9.525 (3/8)	6.350 (1/4)	1/4 - 28	6.350 (1/4)	11.1 (0.44)
7.938 (5/16)	CRH 10-1 VBR	CRH 10-1 VBUUR	23	15.875 (5/8)	11.112 (7/16)	7.938 (5/16)	5/16 - 24	7.938 (5/16)	12.8 (0.50)
	CRH 11 VBR	CRH 11 VBUUR	27	17.462 (11/16)	11.112 (7/16)	7.938 (5/16)	5/16 - 24	7.938 (5/16)	12.8 (0.50)
11.112 (7/16)	CRH 12 VBR	CRH 12 VBUUR	39	19.050 (3/4)	12.700 (1/2)	11.112 (7/16)	7/16 - 20	9.525 (3/8)	14.6 (0.57)
	CRH 14 VBR	CRH 14 VBUUR	49	22.225 (7/8)	12.700 (1/2)	11.112 (7/16)	7/16 - 20	9.525 (3/8)	14.6 (0.57)
15.875 (5/8)	CRH 16 VBR	CRH 16 VBUUR	93	25.400 (1)	15.875 (5/8)	15.875 (5/8)	5/8 - 18	12.700 (1/2)	17.9 (0.70)
	CRH 18 VBR	CRH 18 VBUUR	109	28.575 (1 1/8)	15.875 (5/8)	15.875 (5/8)	5/8 - 18	12.700 (1/2)	17.9 (0.70)
19.050 (3/4)	CRH 20 VBR	CRH 20 VBUUR	176	31.750 (1 1/4)	19.050 (3/4)	19.050 (3/4)	3/4 - 16	15.875 (5/8)	21.0 (0.83)
	CRH 22 VBR	CRH 22 VBUUR	200	34.925 (1 3/8)	19.050 (3/4)	19.050 (3/4)	3/4 - 16	15.875 (5/8)	21.0 (0.83)
22.225 (7/8)	CRH 24 VBR	CRH 24 VBUUR	296	38.100 (1 1/2)	22.225 (7/8)	22.225 (7/8)	7/8 - 14	19.050 (3/4)	24.3 (0.96)
	CRH 26 VBR	CRH 26 VBUUR	329	41.275 (1 5/8)	22.225 (7/8)	22.225 (7/8)	7/8 - 14	19.050 (3/4)	24.3 (0.96)
25.400 (1)	CRH 28 VBR	CRH 28 VBUUR	463	44.450 (1 3/4)	25.400 (1)	25.400 (1)	1- 14 UNS	22.225 (7/8)	27.4 (1.08)
	CRH 30 VBR	CRH 30 VBUUR	508	47.625 (1 7/8)	25.400 (1)	25.400 (1)	1- 14 UNS	22.225 (7/8)	27.4 (1.08)
28.575 (1 1/8)	CRH 32 VBR	CRH 32 VBUUR	722	50.800 (2)	31.750 (1 1/4)	28.575 (1 1/8)	1 1/8 - 12	25.400 (1)	34.2 (1.35)
	CRH 36 VBR	CRH 36 VBUUR	858	57.150 (2 1/4)	31.750 (1 1/4)	28.575 (1 1/8)	1 1/8 - 12	25.400 (1)	34.2 (1.35)
31.750 (1 1/4)	CRH 40 VBR	CRH 40 VBUUR	1 260	63.500 (2 1/2)	38.100 (1 1/2)	31.750 (1 1/4)	1 1/4 - 12	28.575 (1 1/8)	40.0 (1.57)
	CRH 44 VBR	CRH 44 VBUUR	1 460	69.850 (2 3/4)	38.100 (1 1/2)	31.750 (1 1/4)	1 1/4 - 12	28.575 (1 1/8)	40.0 (1.57)
38.100 (1 1/2)	CRH 48 VBR	CRH 48 VBUUR	2 100	76.200 (3)	44.450 (1 3/4)	38.100 (1 1/2)	1 1/2 - 12	31.750 (1 1/4)	46.4 (1.83)
	CRH 52 VBR	CRH 52 VBUUR	2 380	82.550 (3 1/4)	44.450 (1 3/4)	38.100 (1 1/2)	1 1/2 - 12	31.750 (1 1/4)	46.4 (1.83)
44.450 (1 3/4)	CRH 56 VBR	CRH 56 VBUUR	3 240	88.900 (3 1/2)	50.800 (2)	44.450 (1 3/4)	1 3/4 - 12UN	34.925 (1 3/8)	52.8 (2.08)
50.800 (2)	CRH 64 VBR	CRH 64 VBUUR	4 960	101.600 (4)	57.150 (2 1/4)	50.800 (2)	2- 12 UN	38.100 (1 1/2)	59.4 (2.34)

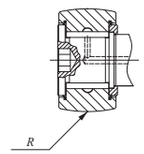
Note(1) For dimensions other than the chamfer dimension (r) and the shape of the outside surface of the outer ring outside surface, refer to the CRH···VBR drawing.

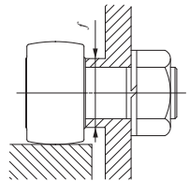
(2) This is the value for the product body only. The values for the accessories shown in Table 13 on page I14 are not included.

Remarks1. Models with a stud diameter d_1 of 7.938 mm or less have no oil hole. Other models are provided with one oil hole each on the outside surface and end surface of the stud.

2. Provided with prepacked grease.

3. For the maximum allowable static load, please contact IKO.





CRH ··· VBUUR(1)

Boundary dimensions mm(inch) B_2	B_3	C_1	g_1	g_2	H	R	Mounting dimension f Min. mm(inch)	Maximum tightening torque N-m	Basic dynamic load rating C N	Basic static load rating C_0 N
15.875 (5/8)	— (–)	0.794 (1/32)	— (–)	— (–)	3.175 (1/8)	180 (7)	8.334 (21/64)	3.4	4 710	5 410
15.875 (5/8)	— (–)	0.794 (1/32)	— (–)	— (–)	3.175 (1/8)	180 (7)	8.334 (21/64)	3.4	4 710	5 410
19.050 (3/4)	— (–)	0.794 (1/32)	— (–)	— (–)	3.175 (1/8)	200 (8)	11.112 (7/16)	6.8	6 340	8 530
19.050 (3/4)	— (–)	0.794 (1/32)	— (–)	— (–)	3.175 (1/8)	200 (8)	11.112 (7/16)	6.8	6 340	8 530
22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	4.762 (3/16)	250 (10)	13.494 (17/32)	17.6	8 710	12 300
22.225 (7/8)	6.350 (1/4)	0.794 (1/32)	4.762 (3/16)	2.381 (3/32)	4.762 (3/16)	250 (10)	13.494 (17/32)	17.6	8 710	12 300
25.400 (1)	6.350 (1/4)	1.588 (1/16)	4.762 (3/16)	2.381 (3/32)	6.350 (1/4)	300 (12)	18.256 (23/32)	57.8	13 100	22 700
25.400 (1)	6.350 (1/4)	1.588 (1/16)	4.762 (3/16)	2.381 (3/32)	6.350 (1/4)	300 (12)	18.256 (23/32)	57.8	13 100	22 700
31.750 (1 1/4)	7.938 (5/16)	1.588 (1/16)	4.762 (3/16)	2.381 (3/32)	6.350 (1/4)	360 (14)	24.209 (61/64)	103	23 600	31 700
31.750 (1 1/4)	7.938 (5/16)	1.588 (1/16)	4.762 (3/16)	2.381 (3/32)	6.350 (1/4)	360 (14)	24.209 (61/64)	103	23 600	31 700
38.100 (1 1/2)	9.525 (3/8)	1.588 (1/16)	4.762 (3/16)	2.381 (3/32)	7.938 (5/16)	500 (20)	26.988 (1 1/16)	162	28 200	40 100
38.100 (1 1/2)	9.525 (3/8)	1.588 (1/16)	4.762 (3/16)	2.381 (3/32)	7.938 (5/16)	500 (20)	26.988 (1 1/16)	162	28 200	40 100
44.450 (1 3/4)	11.112 (7/16)	1.588 (1/16)	4.762 (3/16)	2.381 (3/32)	7.938 (5/16)	500 (20)	32.941 (1 19/64)	258	35 300	55 600
44.450 (1 3/4)	11.112 (7/16)	1.588 (1/16)	4.762 (3/16)	2.381 (3/32)	7.938 (5/16)	500 (20)	32.941 (1 19/64)	258	35 300	55 600
50.800 (2)	12.700 (1/2)	1.588 (1/16)	4.762 (3/16)	3.175 (1/8)	11.112 (7/16)	600 (24)	37.306 (1 15/32)	356	45 700	80 600
50.800 (2)	12.700 (1/2)	1.588 (1/16)	4.762 (3/16)	3.175 (1/8)	11.112 (7/16)	600 (24)	37.306 (1 15/32)	356	45 700	80 600
57.150 (2 1/4)	14.288 (9/16)	1.588 (1/16)	4.762 (3/16)	3.175 (1/8)	12.700 (1/2)	760 (30)	40.878 (1 39/64)	500	61 400	116 000
57.150 (2 1/4)	14.288 (9/16)	1.588 (1/16)	4.762 (3/16)	3.175 (1/8)	12.700 (1/2)	760 (30)	40.878 (1 39/64)	500	61 400	116 000
63.500 (2 1/2)	15.875 (5/8)	1.588 (1/16)	6.350 (1/4)	3.175 (1/8)	19.050 (3/4)	760 (30)	51.991 (2 3/64)	892	77 600	172 000
63.500 (2 1/2)	15.875 (5/8)	1.588 (1/16)	6.350 (1/4)	3.175 (1/8)	19.050 (3/4)	760 (30)	51.991 (2 3/64)	892	77 600	172 000
69.850 (2 3/4)	17.462 (11/16)	1.588 (1/16)	6.350 (1/4)	3.175 (1/8)	19.050 (3/4)	760 (30)	59.928 (2 23/64)	1450	111 000	239 000
88.900 (3 1/2)	19.050 (3/4)	1.588 (1/16)	6.350 (1/4)	3.175 (1/8)	19.050 (3/4)	760 (30)	64.691 (2 35/64)	2190	142 000	317 000

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch