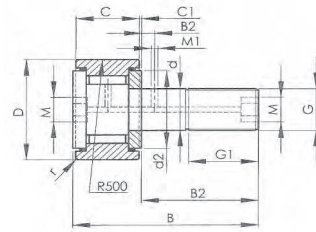


crowned roller diameter  
 KR: cage type  
 KRV: full complemented  
 PP: sealed on both sides  
 SK: hex hole



Designation	Dimensions											
	D	d	C	r	B	B <sub>1</sub>	B <sub>2</sub>	G	G <sub>1</sub>	M	M <sub>1</sub>	C <sub>1</sub>
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
KR 13 PPSK-ASK	13	5	10,2	0,3	23	13	-	M 5x0,8	7,5	3*	-	0,5
KR 16 PPSK-ASK	16	6	11	0,3	28	16	-	M 6x1	8	4*	-	0,6
KRV 16 PPSK-ASK	16	6	11	0,3	28	16	-	M 6x1	8	4*	-	0,6
KR 19 PPSK-ASK	19	8	11	0,6	32	20	-	M 8x1,25	10	4*	-	0,6
KRV 19 PPSK-ASK	19	8	11	0,6	32	20	-	M 8x1,25	10	4*	-	0,6
KR 22 PPSK-ASK	22	10	12	0,3	36	23	-	M 10x1	12	5*	-	0,6
KRV 22 PPSK-ASK	22	10	12	0,3	36	23	-	M 10x1	12	5	-	0,6
KR 26 PPSK-ASK	26	10	12	0,3	36	23	-	M 10x1	12	5*	-	0,6
KRV 26 PPSK-ASK	26	10	12	0,3	36	23	-	M 10x1	12	5	-	0,6
KR 30 PPSK-ASK	30	12	14	0,6	40	25	6	M 12x1,5	13	6	3	0,6
KRV 30 PPSK-ASK	30	12	14	0,6	40	25	6	M 12x1,5	13	6	3	0,6
KR 32 PPSK-ASK	32	12	14	0,6	40	25	6	M 12x1,5	13	6	3	0,6
KRV 32 PPSK-ASK	32	12	14	0,6	40	25	6	M 12x1,5	13	6	3	0,6
KR 35 PPSK-ASK	35	16	18	0,6	52	32,5	8	M 16x1,5	17	6	3	0,8
KRV 40 PPSK-ASK	40	18	20	1	58	36,5	8	M 18x1,5	19	6	3	0,8
KRV 47 PPSK-ASK	47	20	24	1	66	40,5	9	M 20x1,5	21	8	4	0,8
KRV 52 PPSK-ASK	52	20	24	1	66	40,5	9	M 20x1,5	21	8	4	0,8
KRV 62 PPSK-ASK	62	24	29	1	80	49,5	11	M 24x1,5	25	8	4	0,8
KRV 80 PPSK-ASK	80	30	35	1,1	100	63	15	M 30x1,5	32	8	4	1,0
KRV 90 PPSK-ASK	90	30	35	1,1	100	63	15	M 30x1,5	32	8	4	1,0

\*) hex hole only at the flange-side end face

**Relubrication possibility:**

For sizes 13, 16 and 19 relubrication is not possible.

The types KR 22 and KR 26 have a relubrication bore at the flange-side end face.

The types KR 30 and KR 32 have an end to end lubrication bore and an additional hex hole at the stud end.

The version KRV beginning with size 22 has an end to end lubrication bore and an additional hex hole at the stud end.

d <sub>2</sub>	Clamping torque	Load ratings basic	as track roller		Limiting speed grease		Weight
	M <sub>A</sub>	stat. C <sub>0</sub>	dyn. C	stat. C <sub>0</sub>	dyn. C	n <sub>0</sub>	
	Nm	kN	kN	kN	kN	min <sup>-1</sup>	
10	2,2	2,03	2,20	1,49	1,85	17000	16
12	3,0	3,71	3,70	2,12	3,09	14000	18
12	3,0	7,51	6,26	2,12	5,21	3800	20
14	8,0	4,50	4,06	3,73	3,36	11000	28
14	8,0	9,44	7,23	4,59	6,00	3100	32
17	15,0	6,54	5,66	5,45	4,68	8000	44
17	15,0	11,13	8,47	9,36	7,07	2600	45
17	15,0	6,54	5,66	5,45	4,68	8000	58
17	15,0	11,13	8,47	9,36	7,07	2600	61
23	22,0	8,74	7,42	7,25	6,18	5500	87
23	22,0	16,33	11,92	13,77	9,97	2100	89
23	22,0	8,74	7,42	7,25	6,18	5500	98
23	22,0	16,33	11,92	13,77	9,97	2100	100
27	58,0	30,72	18,27	25,65	15,27	3400	172
32	87,0	34,69	20,92	28,98	17,48	2900	249
37	120,0	51,90	27,71	42,03	23,12	2600	394
37	120,0	51,90	27,71	42,03	23,12	2600	456
44	220,0	83,41	41,93	58,86	34,96	2200	811
53	450,0	143,87	69,29	92,07	57,73	1800	1644
53	450,0	143,87	69,29	92,07	57,73	1700	2004

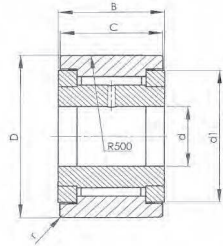
**Supplies include:**

Size 13 up to 19: nut

Sizes 22 up to 32: nut, plug, grease nipple



crowned roller diameter  
 NATR: cage type  
 NATV: full complement  
 PP: sealed on both sides



### Dimensions

Designation	d	D	C	B	d <sub>1</sub>	r
	mm	mm	mm	mm	mm	mm
NATR 5 PP-ASK	5	16	11	12	12,5	0,15
NATV 5 PP-ASK	5	16	11	12	12,5	0,15
NATR 6 PP-ASK	6	19	11	12	14,6	0,60
NATV 6 PP-ASK	6	19	11	12	14,6	0,60
NATR 8 PP-ASK	8	24	14	15	19,0	0,30
NATV 8 PP-ASK	8	24	14	15	19,0	0,30
NATR 10 PP-ASK	10	30	14	15	23,0	0,60
NATV 10 PP-ASK	10	30	14	15	23,0	0,60
NATR 12 PP-ASK	12	32	14	15	25,0	0,60
NATV 12 PP-ASK	12	32	14	15	25,0	0,60
NATR 15 PP-ASK	15	35	18	19	27,6	0,60
NATV 15 PP-ASK	15	35	18	19	27,6	0,60
NATR 17 PP-ASK	17	40	20	21	32,0	1,00
NATV 17 PP-ASK	17	40	20	21	32,0	1,00
NATR 20 PP-ASK	20	47	24	25	37,0	1,00
NATV 25 PP-ASK	25	52	24	25	42,0	1,00
NATR 25 PP-ASK	25	52	24	25	42,0	1,00
NATR 30 PP-ASK	30	62	28	29	51,0	1,00

### Load ratings

basic		as track roller		Limiting speed grease	
stat. C <sub>0</sub>	dyn. C	stat. C <sub>0</sub>	dyn. C	n <sub>D</sub>	Weight
kN	kN	kN	kN	min <sup>-1</sup>	g
3,71	3,71	3,04	3,09	14000	14
7,47	6,26	6,21	5,21	3800	15
4,50	4,06	3,68	3,36	11000	20
9,44	7,24	7,88	6,01	3100	21
6,98	6,17	5,81	5,21	7500	41
13,68	10,32	11,34	8,65	2500	42
8,74	7,42	7,25	6,17	5500	64
16,42	12,00	13,77	9,97	2100	65
9,80	7,86	8,21	6,54	4500	71
18,80	12,98	15,66	10,85	1800	72
17,13	11,74	14,31	9,80	3600	103
30,72	18,27	25,65	15,27	3400	105
21,36	14,39	17,73	12,01	2900	144
34,69	20,92	28,98	17,48	1400	152
51,91	27,71	43,20	23,12	1300	254
37,61	20,66	31,41	17,21	3600	274
63,37	30,72	52,83	25,60	1000	285
97,29	44,75	80,10	37,33	850	481



## Load ratings

The Basic Load Rating or Basic Dynamic Rating, as defined by ABMA and ISO, is that calculated, constant radial load which 90% of a group of apparently identical bearings with stationary outer ring can theoretically endure for a rating life of 1.000.000 revolutions (33<sup>1</sup>/<sub>3</sub> rpm for 500 hours). The Basic Load Rating is a reference value only, the base value of 1.000.000 revolutions chosen for ease of calculation. The dimensional tables list the Basic Dynamic (C) and Basic Static (Co) Load Ratings as calculated by the ISO and AFBMA Standards. Also listed are the Dynamic and Static Ratings for the CAMROL bearings operating as track rollers. These dynamic and static ratings are less than those calculated by the basic load rating formulas (C and Co) and account for the additional bending stressed present because the outer ring is unsupported. The load applied on the bearing while it is operating dynamically should not exceed 50% of the Dynamic Rating as a Track Roller.

## Bearing life

Statistical L<sub>10</sub> bearing fatigue life can be calculated according to the following formula:

$$L_{10} \text{ Life in Hours} = \frac{16666}{N} \times \left(\frac{BDR}{P}\right)^{\frac{10}{3}}$$

BDR = Basic Dynamic Rating (Newtons)  
 P = Radial Load (Newtons)  
 N = Speed (RPM)  
 L<sub>10</sub> = Fatigue Life (Hours)

To determine the Basic Dynamic Rating required for a given application, use the following formula:  
 $BDR = 0.054 \times P \times (L_{10} \times N)^{0.3}$

## Mounting

The following should be considered in mounting CAMROL bearings:

- The housing that supports the cam follower stud (or the shaft on which the cam yoke roller is mounted) should be of sufficient strength to resist excessive deformation and bending under the expected applied load.
- The face of the housing should be flat and square with the housing bore, and must have a diameter of at least that listed in the dimensional tables for proper support of the bearing endplate.
- In order to obtain the best support for the CAMROL bearing, the chamfer on the housing bore should not exceed 0.5 mm x 45 °.
- When mounting Stud Type CAMROL bearings in a machine member, the radial lubrication hole (it is in line with the McGill name) should be located in the unloaded portion of the raceway.
- Any pressure required for installation should be applied against the solid center portion of the flanged inner stud (not on the flange perimeter), and the cam follower should be drawn up tightly by the nut so the bearing endplate is securely backed up.
- Precaution should be taken to avoid excessive torque when tightening the clamping nut; otherwise undue stress may be set up in the stud.
- The clamping nut should not be tightened beyond the maximum clamping torque listed in the dimensional table.
- Yoke Type CAMROL bearings should be mounted with the lubrication hole in the unloaded portion of the raceway and according to the recommended shaft dimensions listed in the tabular data.
- When a tight fit of the bearing on a shaft is desired, an ISO j6 shaft tolerance should be employed.

- For heavily loaded applications, the bearing should be clamped endwise and mounted on a high strength shaft with an ISO j6 tolerance.
- If the bearing cannot be clamped endwise, it is essential to have a close axial fit in the yoke in which the bearing is mounted to prevent axial displacement of the endplates under load.

## Provision for relubrication – stud type

Stud type CAMROL bearings have provision for relubrication either through the end of the inner stud or through a cross drilled hole in the stud shank. The drilled hole is located above the "G" of the McGill marking.

Sizes up through 19 mm OD do not have an axial hole from the threaded end, and no cross drill hole is present in the stud shank on sizes through 26 mm OD. The counterbored ends of the axial holes are designed to accept a press-fitted type metric lubrication fitting. Closing plugs are supplied so that the unused axial hole or holes can be sealed. If the cross drilled hole is not used for relubrication, it should be covered by the housing; therefore, no plug is supplied for this hole.

## Provision for relubrication – yoke type

Yoke Type CAMROL bearings have a lubrication hole in the inner ring bore so relubrication can be accomplished through a cross-drilled hole in the supporting shaft if desired.

## Track design

Since cam followers or cam yoke rollers are merely one component of a two-piece bearing construction, along with the track or cam on which it operates, proper selection of the track or cam material must be considered. This selection has a direct effect upon ultimate life and performance of the cam roll application.

Where bearings are used as support or guide rollers, it is often difficult to obtain high hardness and tensile strength values for the machine members against which the bearings operate. In the interest of economy, relatively soft structural materials can be applied in most applications where dimensional accuracy is not extremely critical. The work hardening of ferrous, low carbon track materials, accompanied by relatively small amounts of wear-in of the bearing into the track surface, generally results in satisfactory bearing performance. In the application of cam follower or cam yoke roller bearings (lift truck mast rollers, for instance), it is common to employ formed structural steel sections as bearing track support members, and the wearing-in and work hardening of the track surface generally results in a satisfactory bearing application, providing loads are not excessive.

## Cam design

Cam applications are similar in many respects to track or support roller applications, except that bearing speeds are higher due to the multiplication of cam revolutions per minute by the ratio of the cam OD to the cam follower OD. Because of these higher speeds, oil lubrication is preferred, but where such lubrication methods are not possible, grease should be replaced frequently.

In the application of box or drum cams, it is possible to obtain differential rotation of the cam follower outer race as well as associated load reversals. This may result in excessive wear of cams or cam followers unless proper cam hardness and materials are employed, as well as ample lubrication. In box cams of this nature, the cam rise and cam fall should be watched closely, since the load reversal encountered can cause shock loads in excess of the capacity of the stud or bearing.

The same precaution applies to ordinary circular cams. Instantaneous loads due to rapid cam rise should be carefully calculated and kept below the ultimate strength of the follower and the stud.

In ordinary cam design it is possible to employ the most efficient materials for best resistance to fatigue and brinelling, and attainment of high track surface hardnesses associated with good wear resistance is quite feasible. The same general precautions concerning tensile strength, as listed under track design above, should be followed for cam design; applications involving high marginal bearing or cam loading should be referred to the McGill Engineering Department.

## Track capacity

Track capacity of all cam follower and cam yoke roller bearings is the load which a steel track of a given tensile strength will withstand continuously without deformation or brinelling. Table II lists track capacities for steel tracks for the standard crowned roller outside diameter versions. For the straight cylindrical roller outside diameter versions ("-X" suffix), multiply by 1.25 to obtain the track capacity ratings.

To obtain track capacities for track hardnesses other than Rockwell "C" scale 40 (tensile strength 1242 MPa), multiply track capacity by track capacity factor listed in Table I. Regardless of track capacity, dynamic load should not exceed 50% of basic dynamic rating as a track roller and static load should not exceed maximum static rating as a track roller.



**Table 1 – Track Tensile Strength**

MPa	Track hardness Rockwell “C”	Track capacity Factor
828	26	0.445
966	32	0.667
1104	36	0.792
1242	40	1.000
1380	44	1.237
1518	47	1.495
1656	50	1.775
1794	53	2.090
1932	56	2.420
2070	58	2.780

**Table 2 – Track Capacities**

Basic bearing number	Track capacity Newton
MCFR 13	1910
MCFR 16	2940
MCYRR 5	2940
MCFR 19	3490
MCYRR 6	3490
MCFR 22	4270
MCYRR 8	5500
MCFR 26	5050
MCFR 30	6350
MCYRR 10	6350
MCFR 32	6780
MCYRR 12	6780
MCFR 35	9840
MCYRR 15	9840
MCFD 35	9840
MCYRD 15	9840
MCFR 40	12000
MCYRR 17	12000
MCFD 40	12000
MCYRD 17	12000
MCFR 47	17400
MCYRR 20	17400
MCFD 47	17400
MCYRD 20	17400
MCFR 52	19200
MCYRR 25	19200
MCFD 25	19200
MCYRD 25	19200
MCFR 62	28400
MCYRR 30	27400
MCFD 62	28400
MCYRD 30	27400
MCFR 72	31800
MCYRR 35	30500
MCFD 72	31800
MCYRD 35	30500
MCFR 80	43800
MCYRR 40	36700
MCFD 80	43800
MCYRD 40	36700
MCFR 85	46400
MCYRR 45	39000
MCYRD 45	39000
MCFR 90	49200
MCYRR 50	41300
MCFD 90	49200
MCYRD 50	41300

## Tolerance limits

### Stud type MCF series

#### Cylindrical Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	18	0	-0.008
18	30	0	-0.009
30	50	0	-0.011
50	80	0	-0.013
80	120	0	-0.015

### Stud type MCFD series

#### Cylindrical Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
30	50	0	-0.011
50	80	0	-0.013
80	120	0	-0.015

#### Crowned Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	120	0	-0.050

#### Crowned Roller Dia. "RD"

SD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
30	120	0	-0.050

#### Stud Dia. "SD"

SD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
2	6	0	-0.012
6	10	0	-0.015
10	18	0	-0.018
18	30	0	-0.021

#### Stud Dia. "SD"

SD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
10	18	0	-0.018
18	30	0	-0.021

### Yoke type MCYR series

#### Cylindrical Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	18	0	-0.008
18	30	0	-0.009
30	50	0	-0.011
50	80	0	-0.013
80	120	0	-0.015

### Yoke type MCYRD series

#### Cylindrical Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	18	0	-0.008
18	30	0	-0.009
30	50	0	-0.011
50	80	0	-0.013
80	120	0	-0.015

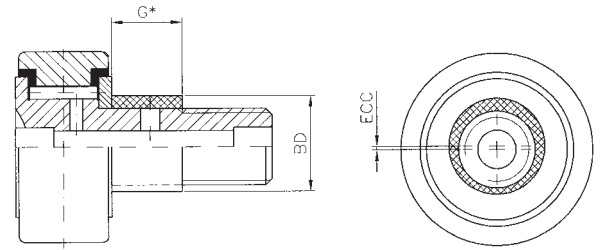
#### Crowned Roller Dia. "RD"

RD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	120	0	-0.050

#### Crowned Roller Dia "RD"

SD (NOM.) over mm	incl. mm	Tolerance MAX. mm	MIN. mm
6	120	0	-0.050





## Stude type with eccentric collar

Basic bearing number	G*		BD		Ecc. Eccentricity	Recommended housing bore dia.
	+ 0.05	- 0.15	mm			
	mm	MIN.	MAX.		mm	mm
16	7	8.964	9.000	0.5	9.050	
19	9	10.957	11.000	0.5	11.050	
22	10	12.957	13.000	0.5	13.050	
22A	10	12.957	13.000	0.5	13.050	
26	10	12.957	13.000	0.5	13.050	
26A	10	12.957	13.000	0.5	13.050	
30	11	14.957	15.000	0.5	15.050	
32	11	14.957	15.000	0.5	15.050	
35	14	19.948	20.000	1.0	20.050	
40	16	21.948	22.000	1.0	22.050	
40A	16	21.948	22.000	1.0	22.050	
47	18	23.948	24.000	1.0	24.050	
47A	18	23.948	24.000	1.0	24.050	
52	18	23.948	24.000	1.0	24.050	
52A	18	23.948	24.000	1.0	24.050	
62	22	27.948	28.000	1.0	28.050	
62A	22	27.948	28.000	1.0	28.050	
72	22	27.948	28.000	1.0	28.050	
72A	22	27.948	28.000	1.0	28.050	
80	29	34.938	35.000	1.5	35.050	
85	29	34.938	35.000	1.5	35.050	
90	29	34.938	35.000	1.5	35.050	

\* For positive clamping. housing thickness should be 0.3 mm greater than G dimension.

## Interchangeability charts

### Unsealed metric CAMROL bearings stude type

McGill		INA	SKF	NTN		IKO	THK
cage	full complement	cage			full complement	cage	full complement
MCFR 13	-	-			-	CF 5	-
MCFR 16	MCF 16	KR-16			KRV-16	CF 6 R	CF 6 VR
MCFR 19	MCF 19	KR-19			KRV-19	CF 8 R	CF 8 VR
MCFR 22	MCF 22	KR-22			KRV-22	-	-
MCFR 26	MCF 26	KR-26			KRV-26	-	-
MCFR 30	MCF 30	KR-30			KRV-30	CF 12 R	CF 12 VR
MCFR 32	MCF 32	KR-32			KRV-32	CF 12-1 R	CF 12-1 VR
MCFR 35	MCF 35	KR-35			KRV-35	CF 16 R	CF 16 VR
MCFR 40	MCF 40	KR-40			KRV-40	-	-
MCFR 47	MCF 47	KR-47			KRV-47	-	-
MCFR 52	MCF 52	KR-52			KRV-52	-	-
MCFR 62	MCF 62	KR-62			KRV-62	-	-
MCFR 72	MCF 72	KR-72			KRV-72	-	-
MCFR 80	MCF 80	KR-80			KRV-80	CF 30 R	CF 30 VR
MCFR 85	MCF 85	KR-85			-	CF 30-1 R	CF 30-1 VR
MCFR 90	MCF 90	KR-90			KRV-90	CF 30-2 R	CF 30-2 VR

### Unsealed metric CAMROL bearings yoke type

McGill		INA	SKF	NTN		IKO	THK
cage	full complement	cage			full complement	cage	full complement
MCYRR 5	MCYR 5	NATR-5			NATV-5	NART-5R	NART-5VR
MCYRR 6	MCYR 6	NATR-6			NATV-6	NART-6R	NART-6VR
MCYRR 8	MCYR 8	NATR-8			NATV-8	NART-8R	NART-8VR
MCYRR 10	MCYR 10	NATR-10			NATV-10	NART-10R	NART-10VR
MCYRR 12	MCYR 12	NATR-12			NATV-12	NART-12R	NART-12VR
MCYRR 15	MCYR 15	NATR-15			NATV-15	NART-15R	NART-15VR
MCYRR 17	MCYR 17	NATR-17			NATV-17	NART-17R	NART-17VR
MCYRR 20	MCYR 20	NATR-20			NATV-20	NART-20R	NART-20VR
MCYRR 25	MCYR 25	NATR-25			NATV-25	NART-25R	NART-25VR
MCYRR 30	MCYR 30	NATR-30			NATV-30	NART-30R	NART-30VR
MCYRR 35	MCYR 35	NATR-35			NATV-35	NART-35R	NART-35VR
MCYRR 40	MCYR 40	NATR-40			NATV-40	NART-40R	NART-40VR
MCYRR 45	MCYR 45	NATR-45			-	NART-45R	NART-45VR
MCYRR 50	MCYR 50	NATR-50			NATV-50	NART-50R	NART-50VR

### Metric CAMROL bearings stude type, full complement

McGill	INA	FAG	NTN
MCFD 35	NUKR-35		
MCFD 40	NUKR-40		
MCFD 47	NUKR-47		
MCFD 52	NUKR-52		
MCFD 62	NUKR-62		
MCFD 72	NUKR-72		
MCFD 80	NUKR-80		
MCFD 90	NUKR-90		

### Metric CAMROL bearings yoke type, full complement

McGill	INA	FAG	NTN
MCYRD 15	NUTR-15		NUTR-202
MCYRD 17	NUTR-17		NUTR-203
MCYRD 20	NUTR-20		NUTR-204
MCYRD 25	NUTR-25		NUTR-205
MCYRD 30	NUTR-30		NUTR-206
MCYRD 35	NUTR-35		NUTR-207
MCYRD 40	NUTR-40		NUTR-208
MCYRD 45	NUTR-45		NUTR-209
MCYRD 50	NUTR-50		NUTR-210

### Coding for Other Cam Follower and Yoke Roller Types

Optional features	McGill	INA	SKF	IKO	NTN	THK
Seals	-S	-PP		-UU	-LL	-UU
Cylindrical OD	-X	-X		ohne R	-X	ohne R
Hexagonal Hole *	-B	-SK		-B	-H	-A
Eccentric Collar *	E	E		E	-	-

\*) Not applicable for yoke roller types

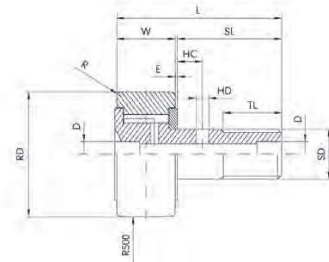




MCF Series - full complement, crowned roller diameter  
 Serie MCFR - cage type, crowned roller diameter

For other versions add following suffix:

- S: sealing
  - B: broach slot <sup>(5)</sup>
  - X: cylindrical roller diameter
  - E: eccentric collar design
- (All features are to combine together)



Designation	RD	W	SD	SL	L	E	M	TL	HC	HD	D	R
	+0.00 -0.12											
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
MCFR 13	13	9	5	13.0	23	0.6	M 5x0.8	7.5	-	-	3.1	0.3
MCF 16	16	11	6	16.0	28	0.6	M 6x1	9.0	-	-	4.0	0.3
MCFR 16	16	11	6	16.0	28	0.6	M 6x1	9.0	-	-	4.0	0.3
MCF 19	19	11	8	20.0	32	0.6	M 8x1.25	11.0	-	-	4.0	0.3
MCFR 19	19	11	8	20.0	32	0.6	M 8x1.25	11.0	-	-	4.0	0.3
MCF 22	22	12	10	23.0	36	0.6	M 10x1	12.0	-	-	4.0	0.5
MCFR 22	22	12	10	23.0	36	0.6	M 10x1	12.0	-	-	4.0	0.5
MCF 26	26	12	10	23.0	36	0.6	M 10x1	12.0	-	-	4.0	0.5
MCFR 26	26	12	10	23.0	36	0.6	M 10x1	12.0	-	-	4.0	0.5
MCF 30	30	14	12	25.0	40	0.6	M 12x1.5	14.0	6	3	6.0	1.0
MCFR 30	30	14	12	25.0	40	0.6	M 12x1.5	14.0	6	3	6.0	1.0
MCF 32	32	14	12	25.0	40	0.6	M 12x1.5	14.0	6	3	6.0	1.0
MCFR 32	32	14	12	25.0	40	0.6	M 12x1.5	14.0	6	3	6.0	1.0
MCF 35	35	18	16	32.5	52	0.8	M 16x1.5	18.0	8	3	6.0	1.0
MCFR 35	35	18	16	32.5	52	0.8	M 16x1.5	18.0	8	3	6.0	1.0
MCF 40	40	20	18	36.5	58	0.8	M 18x1.5	19.0	8	3	6.0	1.5
MCFR 40	40	20	18	36.5	58	0.8	M 18x1.5	19.0	8	3	6.0	1.5
MCF 47	47	24	20	40.5	66	0.8	M 20x1.5	21.0	9	4	8.0	1.5
MCFR 47	47	24	20	40.5	66	0.8	M 20x1.5	21.0	9	4	8.0	1.5
MCF 52	52	24	20	40.5	66	0.8	M 20x1.5	21.0	9	4	8.0	1.5
MCFR 52	52	24	20	40.5	66	0.8	M 20x1.5	21.0	9	4	8.0	1.5
MCF 62	62	29	24	49.5	80	0.8	M 24x1.5	25.0	11	4	8.0	1.5
MCFR 62	62	29	24	49.5	80	0.8	M 24x1.5	25.0	11	4	8.0	1.5
MCF 72	72	29	24	49.5	80	0.8	M 24x1.5	25.0	11	4	8.0	2.0
MCFR 72	72	29	24	49.5	80	0.8	M 24x1.5	25.0	11	4	8.0	2.0
MCF 80	80	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCFR 80	80	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCF 85	85	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCFR 85	85	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCF 90	90	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0
MCFR 90	90	35	30	63.0	100	1.0	M 30x1.5	32.0	15	4	8.0	2.0

- (1) Clamping torque is based on dry threads. If threads are lubricated, use half of value shown.
- (2) Since load, lubrication method, temperature and other factors affect the maximum operating speed, it is impossible to determine precise limiting speed. The listed limiting speeds are based on lightly loaded bearings having adequate lubrication and are listed only as a design guide. More frequent relubrication is required when operating at higher speeds. Actual bearing testing in the specific application should be conducted if the anticipated operating speed approaches the listed limiting speed.
- (3) Dynamic load should not exceed 50% of Dynamic Rating as a track roller.
- (4) Static load rating is based on stud strength or on internal rolling element load distribution stresses.
- (5) In this modification, relubrication through the flange end of the stud is not possible.
  - Sizes marked have no lube holes in threaded end of stud.

Clamping dia min	Clamping torque max (1) Nm	Limiting speed grease (4) min <sup>-1</sup>	Limiting speed oil (4) min <sup>-1</sup>	Housing bore dia min mm	Housing bore dia max mm	Load ratings		Track roller load ratings dynamic C <sub>0</sub> (3) N	Track roller load ratings static C <sub>0</sub> (3) N	Weight kg
						dynamic C	static C <sub>0</sub>			
9	2.2	20000	30000	5	5.012	2450	2260	2060	1650	0.010
11	3.0	13000	17000	6	6.012	6960	8340	5790	2350	0.019
11	3.0	19500	25000	6	6.012	4120	4120	3430	2350	0.028
13	8.0	10500	13500	8	8.015	8040	10490	6670	5100	0.029
13	8.0	15500	20000	8	8.015	4510	5000	3730	4140	0.028
15	15.0	9000	11500	10	10.015	9410	12360	7850	10400	0.044
15	15.0	13500	17500	10	10.015	6280	7260	5200	6050	0.043
15	15.0	9000	11500	10	10.015	9410	12360	7850	10400	0.056
15	15.0	13500	17500	10	10.015	6280	7260	5200	6050	0.055
19	22.0	6400	8300	12	12.018	13240	18140	11080	15300	0.089
19	22.0	9600	12500	12	12.018	8240	9710	6860	8050	0.087
19	22.0	6400	8300	12	12.018	13240	18140	11080	15300	0.099
19	22.0	9600	12500	12	12.018	8240	9710	6860	8050	0.096
24	57.0	4200	5500	16	16.018	20300	34130	16970	28500	0.171
24	57.0	6300	8000	16	16.018	13040	19030	10890	15900	0.166
27	85.0	3300	4300	18	18.018	23240	38540	19420	32200	0.248
27	85.0	5000	6400	18	18.018	15990	23730	13340	19800	0.245
30	118.0	2600	3400	20	20.021	30790	57670	25690	46700	0.393
30	118.0	3900	5000	20	20.021	21280	35700	17750	29800	0.387
30	118.0	2600	3400	20	20.021	30790	57670	25690	46700	0.455
30	118.0	3900	5000	20	20.021	21280	35700	17750	29800	0.453
38	216.0	2100	2700	24	24.021	46580	92680	38840	65400	0.810
38	216.0	3100	4100	24	24.021	31680	55700	26830	46300	0.801
38	216.0	2100	2700	24	24.021	46580	92680	38840	65400	1.048
38	216.0	3100	4100	24	24.021	31680	55700	26830	46300	1.039
51	441.0	1500	2000	30	30.021	76980	159850	64140	102300	1.642
51	441.0	2200	2900	30	30.021	56000	105030	46680	87600	1.621
51	441.0	1500	2000	30	30.021	76980	159850	64140	102300	1.814
51	441.0	2200	2900	30	30.021	56000	105030	46680	87600	1.793
51	441.0	1500	2000	30	30.021	76980	159850	64140	102300	2.002
51	441.0	2200	2900	30	30.021	56000	105030	46680	87600	1.981



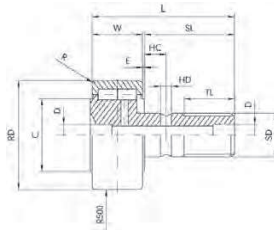
Serie MCFD - full complement of cylindrical rollers, shielded, crowned roller diameter

For other versions add following suffix:

-B: broach slot <sup>(5)</sup>

-X: cylindrical roller diameter

(All features are to combine together)



Designation	RD	W	SD	SL	L	E	M	TL	HC	HD	D	R
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
MCFD 35	35	18	16	32.5	52	0.8	M 16x1.5	17	8	3	6	0.6
MCFD 40	40	20	18	26.5	58	0.8	M 18x1.5	19	8	3	6	1.0
MCFD 47	47	24	20	40.5	66	0.8	M 20x1.5	21	9	4	8	1.0
MCFD 52	52	24	20	40.5	66	0.8	M 20x1.5	21	9	4	8	1.0
MCFD 62	62	29	24	49.5	80	0.8	M 24x1.5	25	11	4	8	1.0
MCFD 72	72	29	24	49.5	80	0.8	M 24x1.5	25	11	4	8	1.1
MCFD 80	80	35	30	63.0	100	1.0	M 30x1.5	32	15	4	8	1.1
MCFD 90	90	35	30	63.0	100	1.0	M 30x1.5	32	15	4	8	1.1

(1) Clamping torque is based on dry threads. If threads are lubricated, use half of value shown.

(2) Since load, lubrication method, temperature and other factors affect the maximum operating speed, it is impossible to determine precise limiting speed. The listed limiting speeds are based on lightly loaded bearings having adequate lubrication and are listed only as a design guide. More frequent relubrication is required when operating at higher speeds. Actual bearing testing in the specific application should be conducted if the anticipated operating speed approaches the listed limiting speed.

(3) Dynamic load should not exceed 50% of Dynamic Rating as a track roller.

(4) Static load rating is based on stud strength or on internal rolling element load distribution stresses.

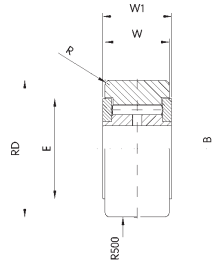
(5) In this modification, relubrication through the flange end of the stud is not possible.

C	Clamping torque max (1) Nm	Limiting speed grease (2) min <sup>-1</sup>	Limiting speed oil (2) min <sup>-1</sup>	Housing bore dia min mm	Housing bore dia max mm	Load ratings dynamisch C <sub>d</sub> N	Load ratings statisch C <sub>0</sub> N	Track roller dynamisch C <sub>d</sub> (3) N	Load ratings statisch C <sub>0</sub> (3) N	Weight kg
21	57	6500	8500	16	16.018	23000	27000	16000	18000	0.165
23	85	5500	7200	18	18.018	25000	31000	18000	22000	0.242
27	118	4200	5500	20	20.021	38000	48000	27000	32000	0.380
21	118	3400	4400	20	20.021	42000	57000	30000	35000	0.450
38	216	2600	3400	24	24.021	58000	76000	41000	48000	0.795
44	216	2100	2700	24	24.021	64000	89000	46000	57000	1.010
47	441	1800	2300	30	30.021	94000	129000	67000	91000	1.540
47	441	1800	2300	30	30.021	94000	129000	67000	101000	1.960



Serie MCYR - full complement, crowned roller diameter  
Serie MCYRR - cage type, crowned roller diameter

For other versions add following suffix:  
-S: sealing  
-X: cylindrical roller dia.  
(All features are to combine together)



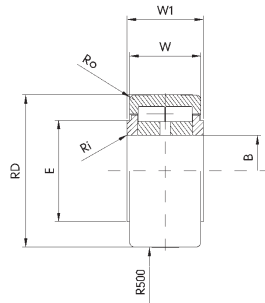
Designation	B max	B min	RD	W +0,00 -0,12	W1 max	W1 min	R	G6 max. (1)	G6 min. (1)	h6 max. (1)	h6 min. (1)	Clamping dia E min.	Limiting speed grease (2)	Limiting speed oil (2)	Load ratings dynamic C	static C0	Track roller dynamic C (3)	load ratings static C0	Weight kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	min-1	min-1	N	N	N	N	kg
MCYR 5	5	4.992	16	11	12	11.82	0.3	4.996	4.988	5	4.992	11	13000	17000	6960	8340	5790	6900	0.014
MCYRR 5	5	4.992	16	11	12	11.82	0.3	4.996	4.988	5	4.992	11	19500	25000	4120	4120	3430	3380	0.011
MCYR 6	6	5.992	19	11	12	11.82	0.3	5.996	5.988	6	5.992	13	10500	13500	8040	10490	6670	8760	0.021
MCYRR 6	6	5.992	19	11	12	11.82	0.3	5.996	5.988	6	5.992	13	15500	20000	4510	5000	3730	4090	0.018
MCYR 8	8	7.992	24	14	15	14.82	0.5	7.995	7.986	8	7.991	16	8400	11000	11470	15200	9610	12600	0.043
MCYRR 8	8	7.992	24	14	15	14.82	0.5	7.995	7.986	8	7.991	16	12500	16000	6860	7750	5690	6450	0.040
MCYR 10	10	9.992	30	14	15	14.82	1.0	9.995	9.986	10	9.991	19	6400	8300	13340	18240	11080	15300	0.062
MCYRR 10	10	9.992	30	14	15	14.82	1.0	9.995	9.986	10	9.991	19	9600	12500	8240	9710	6860	8050	0.060
MCYR 12	12	11.992	32	14	15	14.82	1.0	11.994	11.983	12	11.989	21	5400	7000	14420	20890	12060	17400	0.099
MCYRR 12	12	11.992	32	14	15	14.82	1.0	11.994	11.983	12	11.989	21	8100	10500	8730	10890	7260	9120	0.067
MCYR 15	15	14.992	35	18	19	18.79	1.0	14.994	14.983	15	14.989	24	4200	5400	20300	34130	16970	28500	0.105
MCYRR 15	15	14.992	35	18	19	18.79	1.0	14.994	14.983	15	14.989	24	6300	8200	13040	19030	10890	15900	0.102
MCYR 17	17	16.992	40	20	21	20.79	1.5	16.994	16.983	17	16.989	27	3300	4300	23240	38540	19420	32200	0.153
MCYRR 17	17	16.992	40	20	21	20.79	1.5	16.994	16.983	17	16.989	27	4900	6400	15990	23730	13340	19700	0.150
MCYR 20	20	19.990	47	24	25	24.79	1.5	19.993	19.980	20	19.987	30	2600	3400	30790	57670	25690	48000	0.255
MCYRR 20	20	19.990	47	24	25	24.79	1.5	19.993	19.980	20	19.987	30	3900	5000	21280	35700	17750	29800	0.252
MCYR 25	25	24.990	52	24	25	24.79	1.5	24.993	24.980	25	24.987	36	2200	2900	34130	70410	28440	58700	0.284
MCYRR 25	25	24.990	52	24	25	24.79	1.5	24.993	24.980	25	24.987	36	3300	4300	22950	41780	19120	34900	0.278
MCYR 30	30	29.990	62	28	29	28.79	1.5	29.993	29.980	30	29.987	44	1700	2200	49720	107290	41480	89000	0.476
MCYRR 30	30	29.990	62	28	29	28.79	1.5	29.993	29.980	30	29.987	44	2500	3200	34040	65120	28430	54300	0.465
MCYR 35	35	34.988	72	28	29	28.79	2.0	34.991	34.975	35	34.984	52	1500	1900	56880	120230	47370	100000	0.649
MCYRR 35	35	34.988	72	28	29	28.79	2.0	34.991	34.975	35	34.984	52	2200	2800	38930	72960	32460	60900	0.636
MCYR 40	40	39.988	80	30	32	31.75	2.0	39.991	39.975	40	39.984	58	1300	1700	70020	147990	58350	123000	0.845
MCYRR 40	40	39.988	80	30	32	31.75	2.0	39.991	39.975	40	39.984	58	1900	2400	49720	94440	41480	787000	0.825
MCYR 45	45	44.988	85	30	32	31.75	2.0	44.991	44.975	45	44.984	63	1200	1500	73750	163190	61490	136000	0.924
MCYRR 45	45	44.988	85	30	32	31.75	2.0	44.991	44.975	45	44.984	63	1800	2300	51190	101010	42760	84100	0.901
MCYR 50	50	49.988	90	30	32	31.75	2.0	44.991	49.975	50	49.984	68	1100	1400	77180	178390	64330	148000	0.948
MCYRR 50	50	49.988	90	30	32	31.75	2.0	44.991	49.975	50	49.984	68	1600	2000	54720	113570	45600	94800	0.960

- For loose fit for light loads, use tolerance g6.  
For light transition fit for medium loads, use tolerance h6.  
For a tight fit and heavy loads, use ISO tolerance j6.
- Since load, lubrication method, temperature and other factors affect the maximum operating speed, it is impossible to determine precise limiting speed. The listed limiting speeds are based on lightly loaded bearings having adequate lubrication and are listed only as a design guide. More frequent relubrication is required when operating at higher speeds. Actual bearing testing in the specific application should be conducted if the anticipated operating speed approaches the listed limiting speed.
- Dynamic load should not exceed 50% of Dynamic Rating as a track roller.



Serie MCYRD - full complement of cylindrical rollers, shielded, crowned roller diameter

For other versions add following suffix:  
-X: cylindrical roller diameter



Designation	B max	B min	RD	W +0.00 -0.12	W <sub>1</sub> max	W <sub>1</sub> min	Ro	Ri
	mm	mm	mm	mm	mm	mm	mm	mm
MCYRD 15	15	14.992	35	18	19	18.79	0.6	0.3
MCYRD 17	17	16.992	40	20	21	20.79	1.0	0.3
MCYRD 20	20	19.990	47	24	25	24.79	1.0	0.3
MCYRD 25	25	24.990	52	24	25	24.79	1.0	0.3
MCYRD 30	30	29.990	62	28	29	28.79	1.0	0.3
MCYRD 35	35	34.988	72	28	29	28.79	1.1	0.6
MCYRD 40	40	39.988	80	30	32	31.75	1.1	0.6
MCYRD 45	45	44.988	85	30	32	31.72	1.1	0.6
MCYRD 50	50	49.988	90	30	32	31.75	1.1	0.6

E	Load ratings dynamic C	static C <sub>0</sub>	Track roller dynamic C (a)	load ratings static C <sub>0</sub>	Limiting speed (1)	Weight
mm	N	N	N	N	min <sup>-1</sup>	kg
20	23000	27000	16000	18000	6500	0.099
22	25000	31000	18000	22000	5500	0.147
27	38000	48000	27000	32000	4200	0.245
31	42000	57000	30000	35000	3400	0.281
38	58000	76000	41000	47000	2600	0.465
44	64000	89000	46000	57000	2100	0.630
51	89000	130000	64000	71000	1600	0.816
55	94000	143000	67000	72000	1400	0.883
60	99000	156000	71000	77000	1300	0.950

- (1) Dynamic load should not exceed 50% of Dynamic Rating as a track roller.
- (2) Since load, lubrication method, temperature and other factors affect the maximum operating speed, it is impossible to determine precise limiting speed. The listed limiting speeds are based on lightly loaded bearings having adequate lubrication and are listed only as a design guide. More frequent relubrication is required when operating at higher speeds. Actual bearing testing in the specific application should be conducted if the anticipated operating speed approaches the listed limiting speed.

