

Radial - and axial needle roller and cage assemblies

Axial bearing washers



Type series KKBF
Type series AXK
Type series ASS
Type series KEBF
Type series ASXK
Type series SKE

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For reasons of further developments, we reserve the right to modify our products.



Radial - needle roller and cage assemblies

Type KKBF



Radial - needle roller and cage assembly KKBF



Description of construction

Radial needle roller and cage assemblies consist of plastic cage strips for needle rollers, produced as yardgoods and filled with rollers.

Seven types of needle roller sizes between 1,5 mm diam. to 12 mm diam. are available, and are either offered spooled as yardgoods or cut to required length ready for installation. The needle rollers (NRB) are contained and guided in the roller pockets and are in accordance with DIN 5402 / ISA 3096.

Cutting to the required diameter for use can be done according to the built-in length with normal cutting equipment, such as pliers, shears etc. The cage end play recommended by the manufacturer should be noted when deciding on the built-in length.

The joint produced in assembly remains open. There is no adverse effect on the operation of the radial needle roller ring and cage assembly due to the open joint. Radial needle roller rings are independent of the diameter, ie: they have no maximum limit, while observing the minimum area of use (see table of dimensions).

Installation

Shaft and housing openings should preferably be made as bearing tracks. The given load figures in the table of dimensions correspond to this bearing track and are based on the following preconditions:

- Hardness of running track 670 + 170 HV (58 + 7 HRC)
- Surface quality max. Ra 0,8
- Dimensions according to table of dimensions
- Tolerances (shaft) tolerance range f6
- Tolerances (opening) tolerance range H7

Accuracy

The needle and roller rings are equipped with rollers of sort G2 (0,002 mm). The diametral deviation is therefore a maximum of 0,002 mm. Only rollers of one sort are used per needle roller and cage assembly or roller ring.

Temperature:

The temperature limits of the radial needle roller and cage assembly rings in the standard version in continuous operation are -40°C and +100°C, in short-term operation the upper limit is +120°C.

Example of order:

Type KKBF 3020 for cutting by customer, delivered as yardgoods.

Designation : KKBF 3020

Quantity : 20 metres

Type KKBF 3020 cut by the manufacturer ready for installation, delivered with a fixed length.

Designation : KKBF 3020

Straight length : 545 mm

Quantity : 100 off.

Radial needle roller and cage assembly

Type KKBF

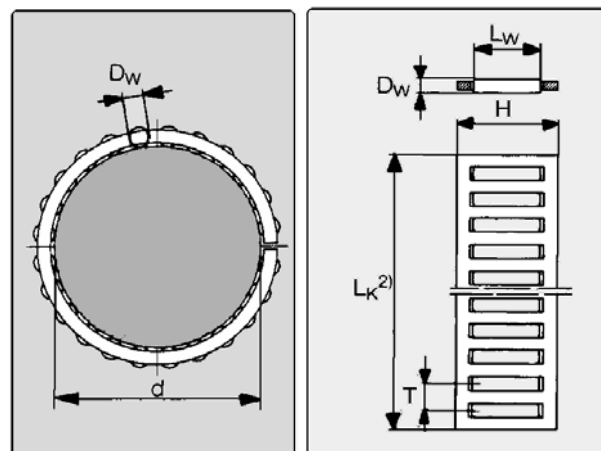
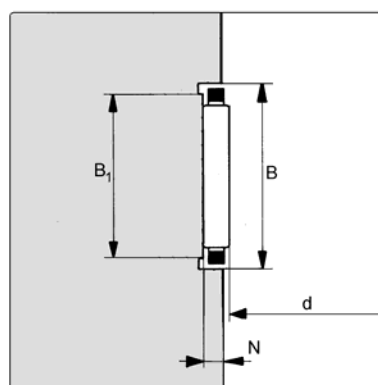


Table of dimensions [dimensions in mm]

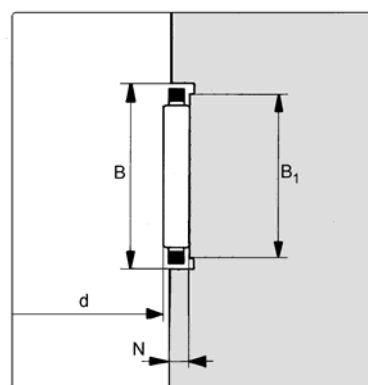
KMF-type	Needle roller		Range of use shaft diameter		Cage dimension		Load capacity		Fitted dimensions		
	Dw	Lw	d min.	d max.	H	T	dyn. C [kN]	stat. Co [kN]	B	B1 min.	N
KKBF 1510	1,5	7,8	20	∞ 1)	10	2,9	$1,54 \cdot \sqrt{d}$	$0,50 \cdot d$	10,3+0,2	8,0	1,3-0,2
KKBF 2518	2,5	13,8	50	∞ 1)	18	4,8	$3,26 \cdot \sqrt{d}$	$0,94 \cdot d$	18,4+0,2	14,0	2,2-0,2
KKBF 3020	3,0	15,8	100	∞ 1)	20	5,2	$4,33 \cdot \sqrt{d}$	$1,20 \cdot d$	20,4+0,2	16,0	2,7-0,2
KKBF 4030	4,0	23,8	200	∞ 1)	30	7,0	$7,04 \cdot \sqrt{d}$	$1,81 \cdot d$	30,5+0,3	24,0	3,6-0,2
KKBF 5023	5,0	15,0	200	∞ 1)	23	8,0	$5,87 \cdot \sqrt{d}$	$1,24 \cdot d$	23,4+0,2	15,2	4,6-0,2
KKBF 5035	5,0	27,8	200	∞ 1)	35	9,0	$8,86 \cdot \sqrt{d}$	$2,07 \cdot d$	35,5+0,3	28,0	4,6-0,2
KKBF 12040	12,0	30,0	300	∞ 1)	40	16,0	$19,11 \cdot \sqrt{d}$	$3,00 \cdot d$	40,7+0,3	33,0	11,0-0,2

1) All types of cages can be supplied rolled in metre lengths

2) Installed length $L_k = (d + D_w) \cdot \pi$



Dimensions of housing



Dimensions of shaft

Radial roller and cage assembly KKBF



Description of construction

Radial roller and cage assemblies are produced in compound construction. Stable precision steel wire rings, so-called supports, are completed by a plastic roller cage strip to form a radial roller and cage assembly and are filled with cylindrical rollers.

The supports are made as a closed ring exactly to the running circle diameter (D_L). The supports can optionally be provided with a joint, so that the radial roller and cage assembly can also be fitted in a deep running track.

The cylindrical rollers (ZRB) according to DIN 5402 / ISO 3096 are contained and guided in the roller pockets.

5 types with roller sizes between 4 mm diam. and 18 mm diam. are available.

The area of use includes shaft diameters between 100 and about 1800 mm.

Installation

Shaft and housing openings should preferably be made as bearing tracks. The given load figures in the table of dimensions correspond to this bearing track and are based on the following preconditions:

- Hardness of running track 670 + 170 HV (58 + 7 HRC)
- Surface quality max. Ra 0,8
- Dimensions according to table of dimensions
- Tolerances (shaft) tolerance range f6
- Tolerances (opening) tolerance range H7

Accuracy

The needle and roller rings are equipped with rollers of sort G2 (0,002 mm). The diametral deviation is therefore a maximum of 0,002 mm.

Only rollers of one sort are used per needle roller or roller and cage assembly.

Temperature:

The temperature limits of the radial needle rings in the standard version in continuous operation are between -40°C and $+100^{\circ}\text{C}$, in short-term operation the upper limit is $+120^{\circ}\text{C}$.

Example of order:

Type KKBF 7025 delivered state produced by the manufacturer ready to install on pitch diameter.

Designation : KKBF 7025

Pitch diameter D_L : 1.000 mm

Quantity : 10 off

Radial roller and cage assembly

Type KKBF

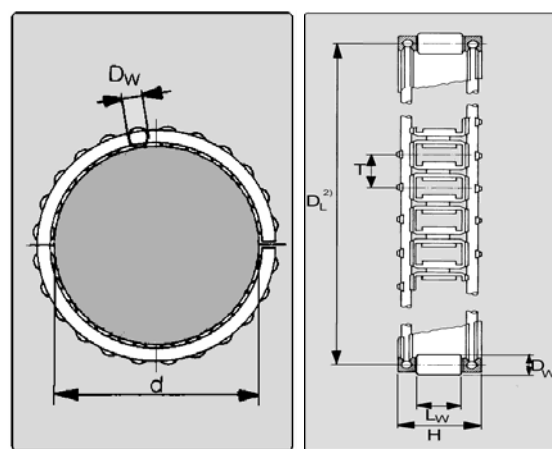
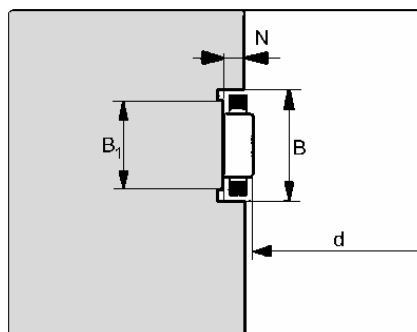


Table of dimensions [dimensions in mm]

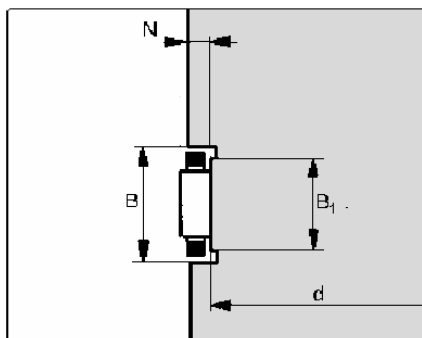
KMF-type	Cyl.-roller		Range of use shaft diameter		Cage dimension		Load capacity		Fitted dimensions		
	Dw	Lw	d min.	d max.	H	T	dyn. C [kN]	stat. Co [kN]	B	B1 min.	N
KKBF 4015	4,0	8,0	100	~ 1000	15	7,5	$2,65 \cdot \sqrt{d}$	$0,53 \cdot d$	$15,4+0,2$	8,5	$3,6-0,2$
KKBF 5015	5,0	8,0	100	~ 1000	15	8,0	$3,30 \cdot \sqrt{d}$	$0,60 \cdot d$	$15,4+0,2$	8,5	$4,6-0,2$
KKBF 5020	5,0	15,0	120	~ 1000	20	8,0	$5,87 \cdot \sqrt{d}$	$1,24 \cdot d$	$20,4+0,2$	17,5	$4,6-0,2$
KKBF 7025	7,0	14,0	150	~ 1200	25	11,0	$6,70 \cdot \sqrt{d}$	$1,15 \cdot d$	$25,5+0,3$	15,0	$6,5-0,2$
KKBF 18036	18,0	18,0	200	~ 1800	36	23,0	$15,80 \cdot \sqrt{d}$	$1,75 \cdot d$	$36,5+0,3$	20,0	$17,0-0,2$

1) This series of cages can be supplied by the manufacturer as yardgoods.

2) Pitch diameter $D_L = d + D_w$



Dimensions of housing



Dimensions of shaft

Radial roller and cage assembly

Type KKBF 5015 (preferred series)

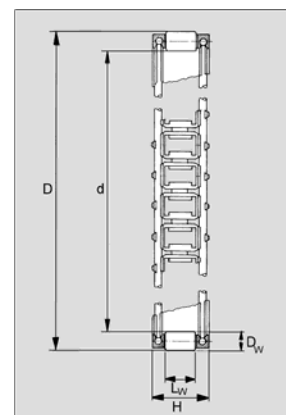


Table of dimensions [dimensions in mm]

KMF-type 1)	Cylindrical roller		Weight [kg]	No. of rollers Z [pcs.]	Cage dimension			Load capacity		Speed limit 2) n_G min. ⁻¹
	Dw	Lw			d	D	H	dyn. C [kN]	stat. C ₀ [kN]	
KKBF 5015 0125	5,0	8,0	0,083	49	120	130	15	36	72	990
KKBF 5015 0135	5,0	8,0	0,090	52	130	140	15	38	78	910
KKBF 5015 0145	5,0	8,0	0,096	56	140	150	15	39	84	850
KKBF 5015 0155	5,0	8,0	0,103	60	150	160	15	40	90	800
KKBF 5015 0165	5,0	8,0	0,110	64	160	170	15	42	96	750
KKBF 5015 0175	5,0	8,0	0,116	68	170	180	15	43	102	710
KKBF 5015 0185	5,0	8,0	0,123	72	180	190	15	44	108	670
KKBF 5015 0195	5,0	8,0	0,130	76	190	200	15	45	114	630
KKBF 5015 0205	5,0	8,0	0,136	80	200	210	15	47	120	600
KKBF 5015 0215	5,0	8,0	0,143	84	210	220	15	48	126	570
KKBF 5015 0225	5,0	8,0	0,149	88	220	230	15	49	132	550
KKBF 5015 0235	5,0	8,0	0,156	92	230	240	15	50	138	530
KKBF 5015 0245	5,0	8,0	0,163	96	240	250	15	51	144	500
KKBF 5015 0255	5,0	8,0	0,169	100	250	260	15	52	150	480

1) Other dimensions on request

2) Speed limit for grease lubrication

Example of order:

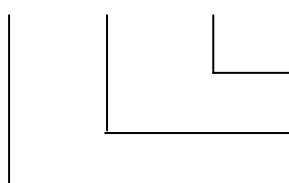
Type KKBF 5015 0195 delivered state produced by manufacturer ready to install for pitch diameter.

Designation :

KKBF 5015 0195

Quantity :

50 off



pitch diam. D_L (195 mm)

cage size

type

Radial roller and cage assembly (two row)

Type KKBF 5015 (preferred series)

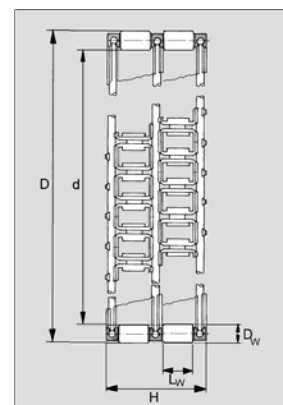


Table of dimensions [dimensions in mm]

KMF-type 1)	Cylindrical roller		Weight [kg]	No. of rollers Z [pcs.]	Cage dimension			Load figure		Speed limit 2) n _G min. ⁻¹
	Dw	Lw			d	D	H	dyn. C [kN]	stat. C ₀ [kN]	
KKBF 5015 0125 ZW	5,0	8,0	0,158	98	120	130	27	58	144	990
KKBF 5015 0135 ZW	5,0	8,0	0,170	104	130	140	27	62	156	910
KKBF 5015 0145 ZW	5,0	8,0	0,183	112	140	150	27	63	168	850
KKBF 5015 0155 ZW	5,0	8,0	0,195	120	150	160	27	65	180	800
KKBF 5015 0165 ZW	5,0	8,0	0,208	128	160	170	27	68	192	750
KKBF 5015 0175 ZW	5,0	8,0	0,221	136	170	180	27	70	204	710
KKBF 5015 0185 ZW	5,0	8,0	0,233	144	180	190	27	71	216	670
KKBF 5015 0195 ZW	5,0	8,0	0,246	152	190	200	27	73	228	630
KKBF 5015 0205 ZW	5,0	8,0	0,258	160	200	210	27	76	240	600
KKBF 5015 0215 ZW	5,0	8,0	0,271	168	210	220	27	78	252	570
KKBF 5015 0225 ZW	5,0	8,0	0,284	176	220	230	27	79	264	550
KKBF 5015 0235 ZW	5,0	8,0	0,296	184	230	240	27	81	276	530
KKBF 5015 0245 ZW	5,0	8,0	0,309	192	240	250	27	83	288	500
KKBF 5015 0255 ZW	5,0	8,0	0,321	200	250	260	27	84	300	480

1) Other dimensions on request

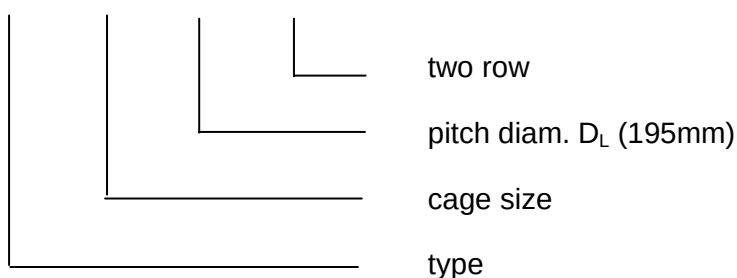
2) Speed limit with grease lubrication

Example of order:

Type KKBF 5015 0195 delivered state produced by manufacturer ready to install for pitch diameter.

Designation : **KKBF 5015 0195 ZW**

Quantity : **50 off**



Radial roller and cage assembly

Type KKBF 5020 (preferred series)

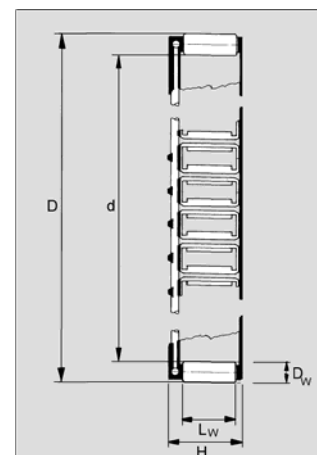


Table of dimensions [dimensions in mm]

KMF-type 1)	Cylindrical roller		Weight [kg]	No. of rollers Z [pcs.]	Cage dimension			Load figure		Speed limit 2) n _G min. ⁻¹
	Dw	Lw			d	D	H	dyn. C [kN]	stat. C ₀ [kN]	
KKBF 5020 0125	5,0	15,0	0,126	49	120	130	20	64	149	990
KKBF 5020 0135	5,0	15,0	0,136	52	130	140	20	67	161	910
KKBF 5020 0145	5,0	15,0	0,146	56	140	150	20	69	174	850
KKBF 5020 0155	5,0	15,0	0,157	60	150	160	20	72	186	800
KKBF 5020 0165	5,0	15,0	0,167	64	160	170	20	74	198	750
KKBF 5020 0175	5,0	15,0	0,177	68	170	180	20	77	211	710
KKBF 5020 0185	5,0	15,0	0,187	72	180	190	20	79	223	670
KKBF 5020 0195	5,0	15,0	0,197	76	190	200	20	81	236	630
KKBF 5020 0205	5,0	15,0	0,207	80	200	210	20	83	248	600
KKBF 5020 0215	5,0	15,0	0,217	84	210	220	20	85	260	570
KKBF 5020 0225	5,0	15,0	0,227	88	220	230	20	87	273	550
KKBF 5020 0235	5,0	15,0	0,237	92	230	240	20	89	285	530
KKBF 5020 0245	5,0	15,0	0,247	96	240	250	20	91	298	500
KKBF 5020 0255	5,0	15,0	0,258	100	250	260	20	93	310	480

1) Other dimensions on request

2) Speed limit for grease lubrication

Example of order:

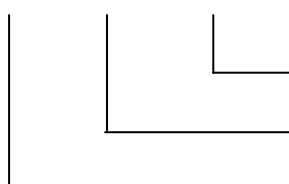
Type KKBF 5020 0205 delivered state produced by manufacturer ready to install for pitch diameter.

Designation :

KKBF 5020 0205

Quantity :

100 off



pitch diam. D_L (205 mm)

cage size

type

Radial roller and cage assembly (two row)

Type KKBF 5020 (preferred series)

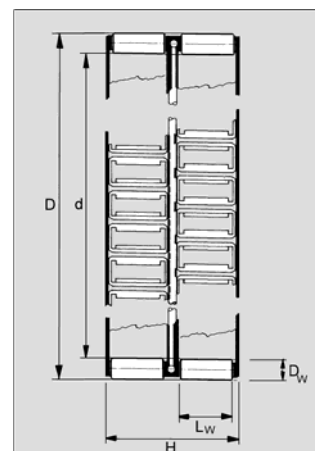


Table of dimensions [dimensions in mm]

KMF-type 1)	Cylindrical roller		Weight [kg]	No. of rollers Z [pcs.]	Cage dimension			Load figure		Speed limit 2) n_G min. ⁻¹
	Dw	Lw			d	D	H	dyn. C [kN]	stat. C ₀ [kN]	
KKBF 5020 0125 ZW	5,0	15,0	0,242	98	120	130	37	104	298	990
KKBF 5020 0135 ZW	5,0	15,0	0,262	104	130	140	37	109	322	910
KKBF 5020 0145 ZW	5,0	15,0	0,281	112	140	150	37	112	348	850
KKBF 5020 0155 ZW	5,0	15,0	0,300	120	150	160	37	117	372	800
KKBF 5020 0165 ZW	5,0	15,0	0,320	128	160	170	37	120	396	750
KKBF 5020 0175 ZW	5,0	15,0	0,339	136	170	180	37	125	422	710
KKBF 5020 0185 ZW	5,0	15,0	0,358	144	180	190	37	128	446	670
KKBF 5020 0195 ZW	5,0	15,0	0,378	152	190	200	37	131	472	630
KKBF 5020 0205 ZW	5,0	15,0	0,397	160	200	210	37	134	496	600
KKBF 5020 0215 ZW	5,0	15,0	0,417	168	210	220	37	138	520	570
KKBF 5020 0225 ZW	5,0	15,0	0,436	176	220	230	37	141	546	550
KKBF 5020 0235 ZW	5,0	15,0	0,455	184	230	240	37	144	570	530
KKBF 5020 0245 ZW	5,0	15,0	0,475	192	240	250	37	147	596	500
KKBF 5020 0255 ZW	5,0	15,0	0,494	200	250	260	37	151	620	480

1) Other dimensions on request

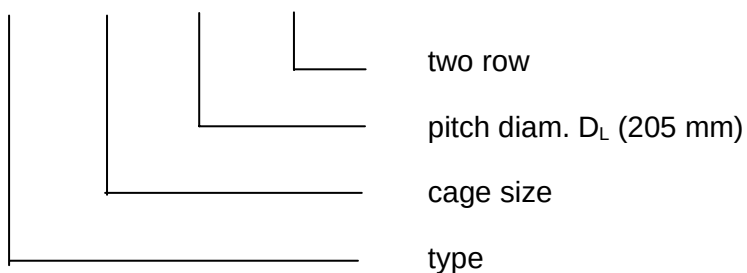
2) Speed limit for grease lubrication

Example of order:

Type KKBF 5020 0205 delivered state produced by manufacturer ready to install on pitch.

Designation : **KKBF 5020 0205 ZW**

Quantity : **100 off**



Special roller and cage assembly



The special shape of the cage strips for the radial roller and cage assembly of type KKBF and the axial needle and cage assembly AXK (except for type KKBF 18 036) make it possible to produce a large number of special cages for cylindrical roller bearings.

With a constant cage width, any number of roller series can be added in the range over the wires, so that, for example, a radial roller and cage assembly with several rows is produced.

Table of dimensions [dimensions mm]

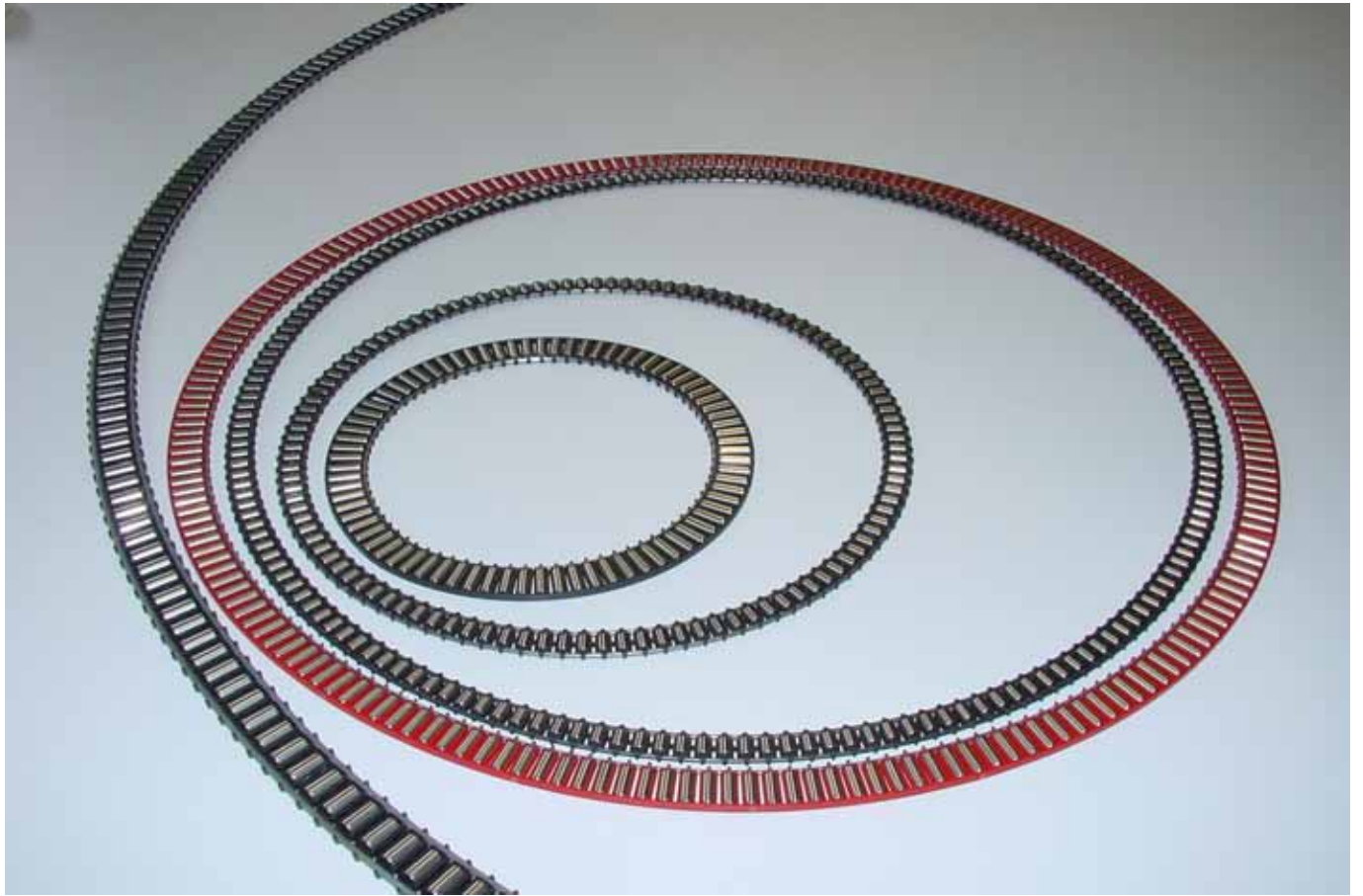
KMF-type	Height of cage		
	2-rows H_2	3-rows H_3	4-rows H_4
KKBF 4015	27,0	39,0	51,0
KKBF 5015	27,0	39,0	51,0
KKBF 5020	37,0	-----	-----
KKBF 7025	45,5	65,5	85,5



Simple bending parts (wire rings) made of circular wire, always adapted to the fitted situation, act as stable supports for the cage strip equipped with cylindrical rollers.

If, for example, one changes the diameter of one of the closed wire rings of the axial roller and cage assembly of type AXK, one obtains an angular roller cage with any desired angle of inclination.

Special roller and cage assembly can be produced for any pitch diameter.



Axial roller and cage assemblies

Type AXK



Axial roller and cage assemblies AXK



Description of construction

Axial roller and cage assemblies are produced in compound construction. Stable precision steel wire rings, so-called supports, are completed with a plastic roller cage strip to create an axial roller and cage assembly and equipped with cylindrical rollers.

The supports are manufactured as a closed ring exactly to the required inner and outer diameter. The supports can optionally be provided with a joint.

The cylindrical rollers (ZRB) are contained and guided in the roller pockets in accordance with DIN 5402 / ISO 3096.

Five types with roller sizes between 4 mm diam. and 18 mm diam. are available. The range of use includes shaft diameters between 100 and about 1800 mm.

Installation

The surface of the running tracks should preferably be made as bearing running tracks. The stated load capacity in the table of measurements correspond to this bearing running track and are based on the following preconditions:

- Hardness of running track 670 + 170 HV (58 + 7 HRC)
- Surface quality max. Ra 0,8
- Dimensions according to table of dimensions

The axial roller and cage assemblies must be guided on the shaft. In order to achieve a guide with little wear on the axial roller rings, the guide surface should be polished. The tolerance h10 applies for the guide surface on the shaft.

Accuracy

The roller rings are equipped with rollers of sort G2 (0,002 mm).
The diametral deviation is therefore a maximum of 0,002 mm.

Only rollers of one sort are used per axial roller and cage assembly.

If the adjoining structure is not suitable for providing running tracks, axial roller and cage assemblies can be combined with axial bearing washers type ASS.

Temperature

The temperature limit of the axial roller and cage assemblies in the standard version in continuous operation are -40°C and +100°C, in short term operation the maximum is +120°C.

Example of order:

Type AXK 5015 delivered state produced by the manufacturer ready to install for inside diameter

Designation : AXK 5015 Inner diameter d : 0400 mm Quantity : 30 off

Axial roller and cage assemblies

Type AXK

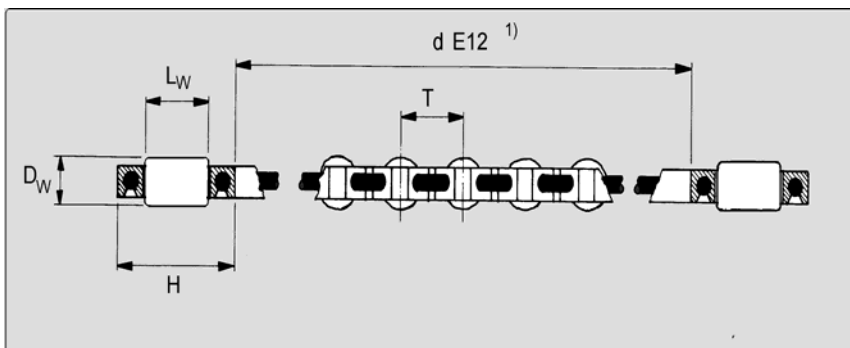
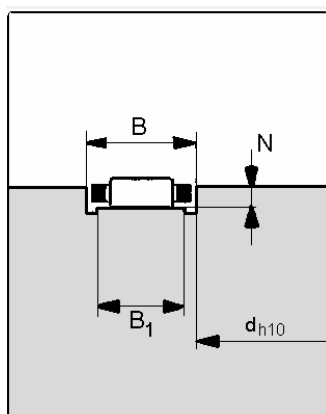


Table of dimensions [dimensions in mm]

KMF-type	Cyl.-roller		Range of use shaft diameter		Cage dimension		Load capacity		Fitted dimensions		
	Dw	Lw	d min.	d max.	H	T	dyn. C [kN]	stat. C ₀ [kN]	B	B ₁ min.	N
AXK 4015	4,0	8,0	100	~ 1000	15	7,5	$5,73 \cdot \sqrt{d}$	$2,9 \cdot d$	16,0+0,2	9,0	3,2-0,2
AXK 5015	5,0	8,0	100	~ 1000	15	8,0	$7,15 \cdot \sqrt{d}$	$3,3 \cdot d$	16,0+0,2	9,0	4,2-0,2
AXK 5020	5,0	15,0	120	~ 1200	20	8,0	$12,65 \cdot \sqrt{d}$	$7,1 \cdot d$	21,0+0,2	18,0	4,2-0,2
AXK 7025	7,0	14,0	350	~ 1200	25	11,0	$14,25 \cdot \sqrt{d}$	$5,9 \cdot d$	26,0+0,3	16,0	6,0-0,2
AXK 18036	18,0	18,0	400	~ 1800	36	23,0	$33,00 \cdot \sqrt{d}$	$9,2 \cdot d$	37,0+0,3	20,0	17,0-0,2

1) This series of cages can be supplied by the manufacturer as yardgoods.

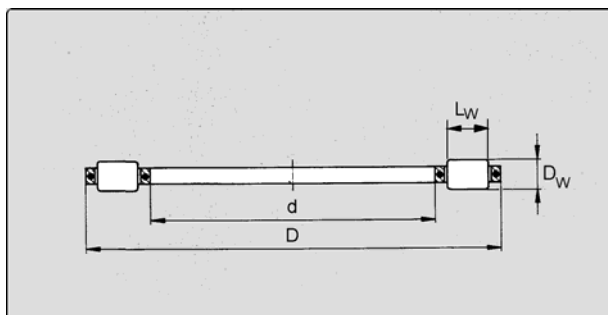
2) Cage outer diameter $D=d+2H$



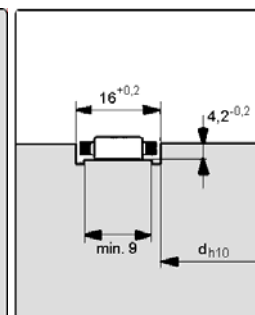
Fitted dimensions

Axial roller and cage assemblies

Type AXK 5015 (preferred series)



Cage dimensions



Fitted dimensions

Table of dimensions [dimensions in mm]

KMF-type 1)	Cylindrical roller		Weight [kg]	No. of rollers Z [pcs.]	Cage dimension			Load capacity		Speed limit 2) n _G min. ⁻¹
	Dw	Lw			d E12	D	H	dyn. C [kN]	stat. C ₀ [kN]	
AXK 5015 0108	5,0	8,0	0,08	48	108	138	5	74,3	356	530
AXK 5015 0120	5,0	8,0	0,09	53	120	150	5	78,3	396	480
AXK 5015 0145	5,0	8,0	0,11	62	145	175	5	86,1	478	395
AXK 5015 0160	5,0	8,0	0,12	68	160	190	5	90,4	528	360
AXK 5015 0170	5,0	8,0	0,12	72	170	200	5	93,2	561	340
AXK 5015 0173	5,0	8,0	0,13	73	173	203	5	94,0	570	330
AXK 5015 0180	5,0	8,0	0,13	76	180	210	5	95,9	594	320
AXK 5015 0190	5,0	8,0	0,14	80	190	220	5	98,6	627	300
AXK 5015 0200	5,0	8,0	0,15	84	200	230	5	101,1	660	290
AXK 5015 0220	5,0	8,0	0,16	92	220	250	5	106,0	726	260
AXK 5015 0240	5,0	8,0	0,17	100	240	270	5	110,8	792	240
AXK 5015 0250	5,0	8,0	0,18	104	250	280	5	113,1	825	230
AXK 5015 0260	5,0	8,0	0,19	108	260	290	5	115,3	858	220
AXK 5015 0270	5,0	8,0	0,20	111	270	300	5	117,5	891	210
AXK 5015 0280	5,0	8,0	0,21	115	280	310	5	119,6	924	205
AXK 5015 0300	5,0	8,0	0,22	123	300	330	5	123,8	990	190
AXK 5015 0328	5,0	8,0	0,24	134	328	358	5	129,5	1082	175
AXK 5015 0340	5,0	8,0	0,25	139	340	370	5	131,8	1122	170
AXK 5015 0360	5,0	8,0	0,26	147	360	390	5	135,7	1188	160
AXK 5015 0370	5,0	8,0	0,27	151	370	400	5	137,5	1221	155
AXK 5015 0400	5,0	8,0	0,29	162	400	430	5	143,0	1320	145
AXK 5015 0440	5,0	8,0	0,32	178	440	470	5	150,0	1452	130
AXK 5015 0460	5,0	8,0	0,33	186	460	490	5	153,4	1518	125
AXK 5015 0494	5,0	8,0	0,36	199	494	524	5	158,9	1630	115
AXK 5015 0506	5,0	8,0	0,37	204	506	536	5	160,8	1669	110
AXK 5015 0670	5,0	8,0	0,49	268	670	700	5	185,1	2211	85
AXK 5015 0930	5,0	8,0	0,68	371	930	960	5	218,0	3069	60

1) Other dimensions on request

2) Speed limit for grease lubrication

Axial roller and cage assemblies

Type AXK 5020 (preferred series)

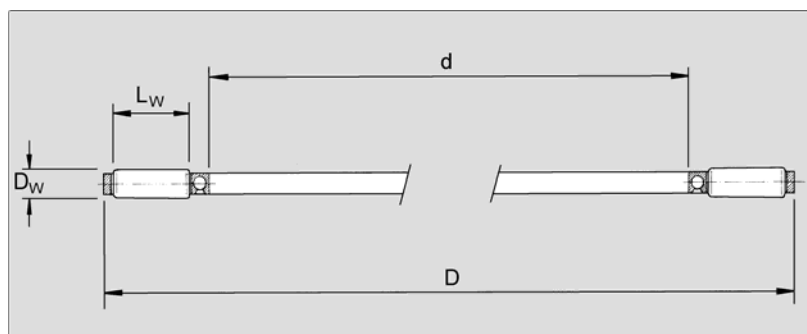
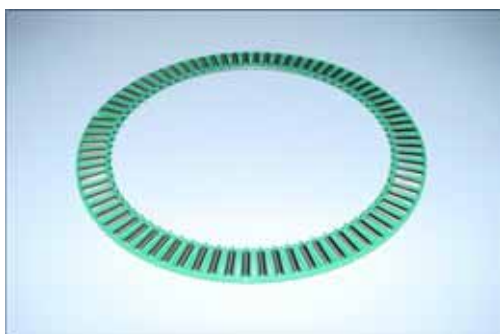


Table of dimensions [dimensions in mm]

KMF-type 1)	Cylindrical roller		Weight [kg]	No. of rollers Z [pcs.]	Cage dimension			Load capacity		Speed Limit 2) n _G min. ⁻¹
	D _w	L _w			d E12	D	H	dyn. C [kN]	stat. C ₀ [kN]	
AXK 5020 0120	5,0	15,0	0,15	56	120	160	5	138	847	530
AXK 5020 0130	5,0	15,0	0,16	59	130	170	5	144	918	490
AXK 5020 0140	5,0	15,0	0,18	63	140	180	5	150	988	460
AXK 5020 0150	5,0	15,0	0,19	67	150	190	5	155	1059	430
AXK 5020 0160	5,0	15,0	0,20	71	160	200	5	160	1130	400
AXK 5020 0170	5,0	15,0	0,21	75	170	210	5	165	1200	380
AXK 5020 0180	5,0	15,0	0,22	79	180	220	5	170	1270	360
AXK 5020 0190	5,0	15,0	0,24	83	190	230	5	174	1340	340
AXK 5020 0200	5,0	15,0	0,25	87	200	240	5	179	1410	320
AXK 5020 0210	5,0	15,0	0,26	91	210	250	5	183	1480	300
AXK 5020 0220	5,0	15,0	0,28	95	220	260	5	187	1550	290
AXK 5020 0230	5,0	15,0	0,29	99	230	270	5	192	1620	280
AXK 5020 0500	5,0	15,0	0,63	204	500	540	5	283	3530	130
AXK 5020 0560	5,0	15,0	0,70	228	560	600	5	300	3950	115
AXK 5020 0630	5,0	15,0	0,79	255	630	670	5	315	4450	100
AXK 5020 1000	5,0	15,0	1,25	401	1000	1040	5	400	7060	65
AXK 5020 1156	5,0	15,0	1,45	462	1156	1196	5	430	8160	55

1) Other dimensions on request

2) Speed limit for grease lubrication

Example of order:

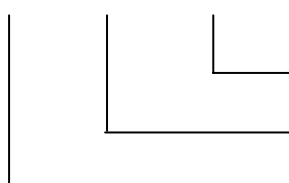
Type AXK 5020 0160 delivered state produced by manufacturer ready to install for inner diameter.

Designation :

AXK 5020 0160

Quantity :

30 off



inner diameter (160 mm)

cage size

type



Special axial roller and cage assemblies of small dimensions, especially in a corrosion-resistant version, on request.



Axial bearing washers

Type ASS



Axial bearing washers ASS



Description of construction

If the used adjacent surfaces cannot be hardened, but have very precise shape and sufficient stiffness, axial bearing washers can be used.

KMF offer three types of axial bearing washers.

Type ASS 1015	lasered version, no joint
Type ASS 2315	rolled version with joint
Type ASS 2322	rolled version with joint

These axial bearing washers complement the KMF axial roller and cage assembly of type AXK.

Due to the manufacture, the joint of axial bearing washers of types ASS 2315 und 2322, is inclined and guarantees smooth and quiet rolling of the rollers.

Installation

The axial bearing washers ASS are centred on the shaft diameter. Axial bearing washers of type ASS 2315 are manufactured so that bore extends over the centring shaft diameter of the adjoining part.

The material of the axial bearing washers is hardened CK 65 steel.

Running track hardness ASS 1015	510 to 550 HV [50 to 52 HRC]
Running track hardness ASS 2315 / ASS 2322	510 to 620 HV [50 to 56 HRC]

Fitted dimensions	according to table of dimensions
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Accuracy

The running tracks of the axial bearing washers are polished and / or ground.

Surface quality	max. Ra 0,8
Even thickness	≤ 0,01 to 0,02 mm (depending on axial bearing washers diameter)

Example of order:

Type ASS 2315 delivered state produced by the manufacturer ready to install for shaft diameter.

Designation : ASS 2315 Inner diameter d : 0400 mm Quantity : 15 off

Axial bearing washers

Type ASS 1015 (preferred series)

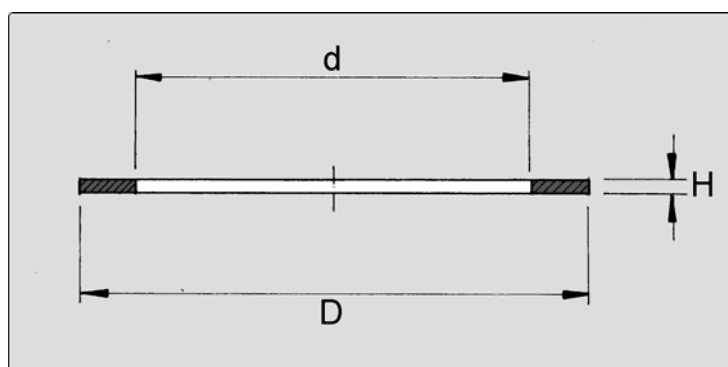
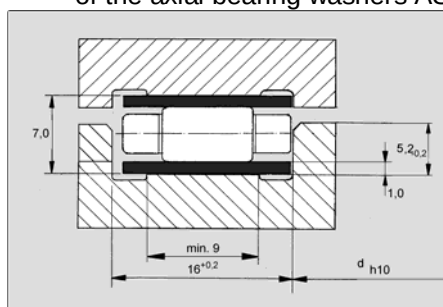


Table of dimensions [dimensions in mm]

KMF-type 1)	Weight [kg]	Washer dimensions			Load capacity 2)	
		d +0,05 +0,10	D e13	H	dyn. C [kN]	stat. C ₀ [kN]
ASS 1015 0120	0,047	120	150	1,0	47,0	364,8
ASS 1015 0160	0,063	160	190	1,0	54,3	486,4
ASS 1015 0170	0,067	170	200	1,0	55,9	516,8
ASS 1015 0180	0,071	180	210	1,0	57,6	547,2
ASS 1015 0190	0,075	190	220	1,0	59,1	577,6
ASS 1015 0200	0,079	200	230	1,0	60,7	608,0
ASS 1015 0220	0,087	220	250	1,0	63,6	668,8
ASS 1015 0250	0,098	250	280	1,0	67,8	760,0
ASS 1015 0260	0,102	260	290	1,0	69,2	790,4
ASS 1015 0270	0,106	270	300	1,0	70,5	820,8
ASS 1015 0300	0,118	300	330	1,0	74,3	912,0
ASS 1015 0328	0,129	328	358	1,0	77,7	997,1
ASS 1015 0340	0,134	340	370	1,0	79,1	1033,6

- 1) Other dimensions on request.
- 2) Reduced load capacities refer to the lower hardness of the axial bearing washers ASS (hardness for calculations 540 HV).



Fitted dimensions

Axial bearing washers

Type ASS 2315 (preferred series)

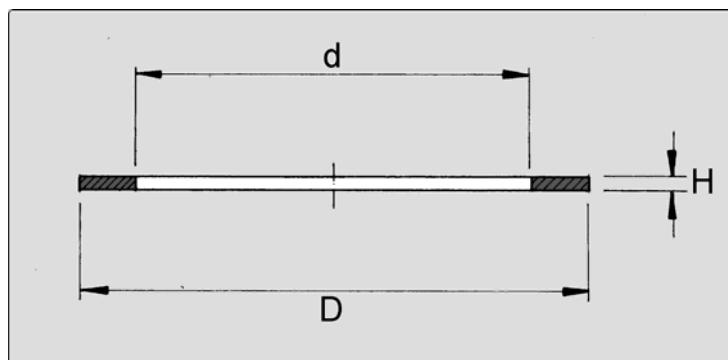
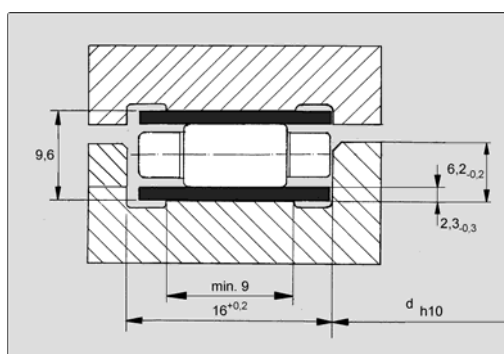


Table of dimensions [dimensions in mm]

KMF-type 1)	Weight [kg]	Washer dimensions			Load capacity 2)	
		d	D	H	dyn. C [kN]	stat. C ₀ [kN]
ASS 2315 0190	0,18	190	220	2,3 – 0,3	76,9	613,7
ASS 2315 0220	0,20	220	250	2,3 – 0,3	82,8	710,6
ASS 2315 0240	0,22	240	270	2,3 – 0,3	86,4	775,2
ASS 2315 0260	0,24	260	290	2,3 – 0,3	90,9	839,8
ASS 2315 0280	0,26	280	310	2,3 – 0,3	93,4	904,4
ASS 2315 0300	0,28	300	330	2,3 – 0,3	96,6	969,0
ASS 2315 0360	0,33	360	390	2,3 – 0,3	105,9	1162,8
ASS 2315 0400	0,37	400	430	2,3 – 0,3	111,6	1292,0
ASS 2315 0460	0,42	460	490	2,3 – 0,3	119,7	1485,8
ASS 2315 0494	0,46	494	524	2,3 – 0,3	124,0	1595,6
ASS 2315 0506	0,47	506	536	2,3 – 0,3	125,5	1634,4
ASS 2315 0670	0,62	670	700	2,3 – 0,3	144,4	2164,1
ASS 2315 0930	0,86	930	960	2,3 – 0,3	170,2	3003,9

1) Other dimensions on request.

2) Reduced load capacities refer to the lower hardness of the axial bearing washers ASS (hardness for calculations 600 HV).



Fitted dimensions

Axial bearing washers

Type ASS 2322 (preferred series)

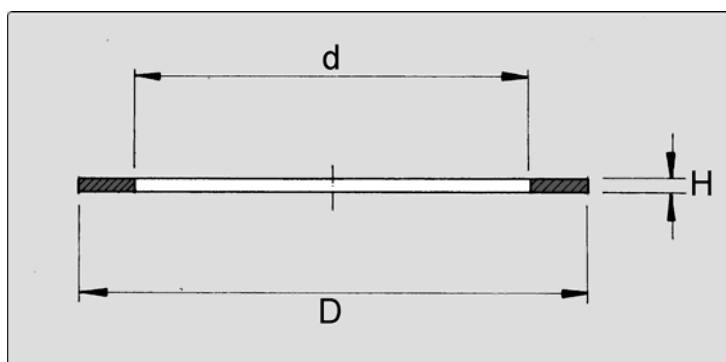
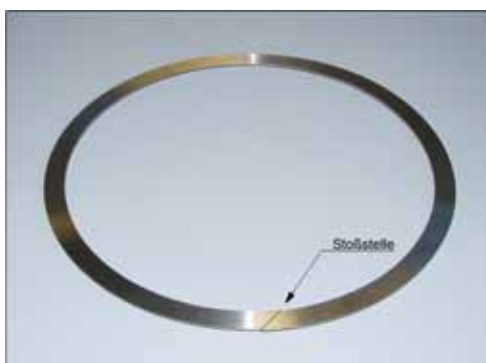
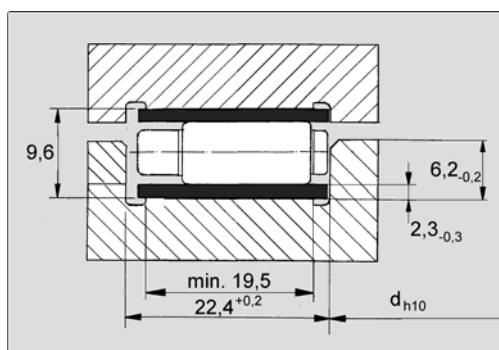


Table of dimensions [dimensions in mm]

KMF-type 1)	Weight [kg]	Washer dimensions			Load capacity 2)	
		d	D	H	dyn. C [kN]	stat. C ₀ [kN]
ASS 2322 0500	0,62	500	544	2,3 – 0,3	220	3460
ASS 2322 0560	0,69	560	604	2,3 – 0,3	234	3870
ASS 2322 0630	0,78	630	674	2,3 – 0,3	246	4360
ASS 2322 1000	1,24	1000	1044	2,3 – 0,3	312	6920
ASS 2322 1156	1,43	1156	1200	2,3 – 0,3	335	7990

- 1) Other dimensions on request.
- 2) Reduced load capacities refer to the lower hardness of the axial bearing washers ASS (hardness for calculations 600 HV).



Fitted dimensions



Special axial bearing washers of small dimensions on request.



Needle roller bearing

Type KEBF



Radial roller bearing KEBF



Description of construction

Radial roller bearings of type KEBF consist of radial needle roller or radial roller and cage assembly of type KKBF, each in a hardened inner or outer running track.

Five preferred types with spaces for installation of 15 x 8,8 mm to 40,4 x 16 mm are available. By selecting the needle roller or roller and cage assemblies and the dimensions of the running rings, one obtains a needle roller bearing of very small bearing cross-section with high load capacities.

Due to the manufacture, the joint of the running rings is inclined and guarantees smooth and quiet rolling of the rollers.

The running tracks of the running rings are polished. KEBF's with only one running ring (inner or outer running ring) can be supplied on request.

Installation

To make assembly easier, the running rings are made as shaft fits and housing fits. The material of the running rings is hardened CK 65 steel.

Hardness of running track	510 to 620 HV (50 to 56 HRC)
Fitted dimensions	according to table of dimensions

Temperature:

The temperature limits of the radial needle bearing built-in units in the standard version in continuous operation are -40°C and $+100^{\circ}\text{C}$, in short-term operation the upper limit is $+120^{\circ}\text{C}$.

Example of order:

Type KEBF 3020 delivered state produced by the manufacturer ready to install.

Designation : KEBF 3020

Pitch D_L : 0853 mm

Quantity : 5 off

Needle roller bearing

Type KEBF

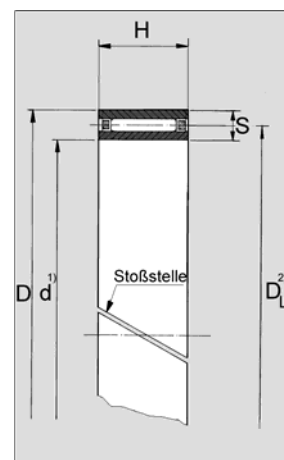


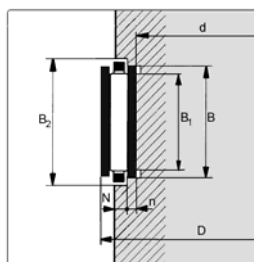
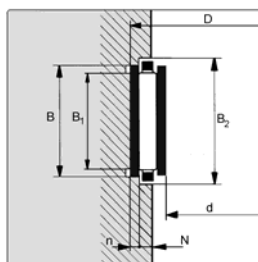
Table of dimensions [dimensions in mm]

KMF-type	Needle roller		Range of use shaft diameter		Bearing dimension			Load capacity 3)	
	Dw	Lw	d min.	d max.	D	H	S	dyn. C [kN]	stat. C ₀ [kN]
KEBF 4015	4,0	8,0	100	~ 1000	d + 17,6	15,0	8,8 ± 0,1	1,59 • √d	0,49 • d
KEBF 5015	5,0	8,0	100	~ 1000	d + 19,6	15,0	9,8 ± 0,1	1,98 • √d	0,55 • d
KEBF 3020	3,0	15,8	150	~ 1500	d + 14,0	21,5	7,0 ± 0,1	2,60 • √d	1,10 • d
KEBF 5023	5,0	15,0	200	~ 1800	d + 20,0	23,0	10,0 ± 0,15	3,52 • √d	1,14 • d
KEBF 12040	12,0	30,0	300	~ 2000	d + 32,0	40,4	16,0 ± 0,15	11,47 • √d	2,74 • d

1) d = shaft diameter

2) Pitch diameter $D_L = d + S$

3) Reduced load capacities refer to the lower hardness of the running rings (hardness for calculations 540 HV)



Dimensions of housing

Dimensions of shaft

Table of dimensions [dimensions in mm]

KMF-type	Fitted dimensions / tolerances						
	D	d	B	B1 min.	B2	N	n
KEBF 4015	4) +0,09 +0,03	4) -0,10 -0,16	15,2 + 0,2	9,0	16,0+0,2	3,0	2,4
KEBF 5015			15,2 + 0,2	9,0	16,0+0,2	4,0	2,4
KEBF 3020			21,6 + 0,2	17,0	-----	2,0	2,0
KEBF 5023			20,4 + 0,2	16,0	23,4+0,2	4,0	2,5
KEBF 12040			40,7 + 0,3	33,0	-----	11,0	2,0

4) Tolerane recommendation for shaft and housing opening

Needle roller bearing

Type KEBF



Type 3040



Type 4040

Table of dimensions [dimensions in mm]										
KMF-type	Needle rollers		Range of use shaft diameter		Bearing dimensions			Cage dimensions		
	D _w	L _w	d min.	d max.	D	H	S	K _H	K _S	R _T
KEBF 3040	3,0	2 x 15,8	200	~ 1500	d + 14,0	40,4	7,0 ± 0,10	40,0	2,5	5,2
KEBF 4040	4,0	3 x 8,0	200	~ 1500	d + 16,0		8,0 ± 0,10	39,0	3,0	7,5
KEBF 5040	5,0	3 x 8,0	200	~ 1500	d + 18,0		9,0 ± 0,10	39,0	3,5	8,0
KEBF 12040	12,0	1 x 30,0	200	~ 2000	d + 32,0		16,0 ± 0,15	40,0	6,0	16,0

1) d = shaft diameter

2) Pitch diameter D_L = d + s

R_T = roller division

Das individuelle Lagerprogramm mit Radial-Nadellager-Einbauelementen wird mit weiteren 4 Vorzugstypen abgerundet.

Diese Typenreihe zeichnet sich durch extrem breite Innen- bzw. Außenlaufringe aus, die vorteilhaft mit teilweise mehrreihigen Nadel- bzw. Rollenkränzen versehen sind.

Durch Einsatz von mehrreihigen Nadel- bzw. Rollenkränzen können die breiten Laufflächen zur Übertragung hoher Radialbelastungen optimal genutzt werden.

Bei einer ständig gleichbleibenden Laufbahnbreite (H) von 40,4 mm, läßt sich je nach Wahl der Vorzugstypen KEBF 3040, KEBF 4040, KEBF 5040 oder KEBF 12040 der Einbauraum in der Dicke (S) mit 7, 8, 9 oder 16 mm bestimmen.

Eine überaus große Konstruktionsfreiheit über den gesamten Durchmesserbereich von 200 bis ca. 2000 mm ist mit dieser Typenreihe gegeben.

Needle roller bearing

Type KEBF



Type 5040



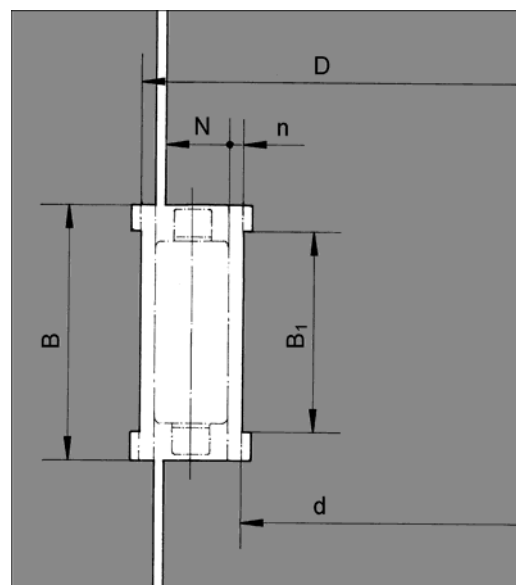
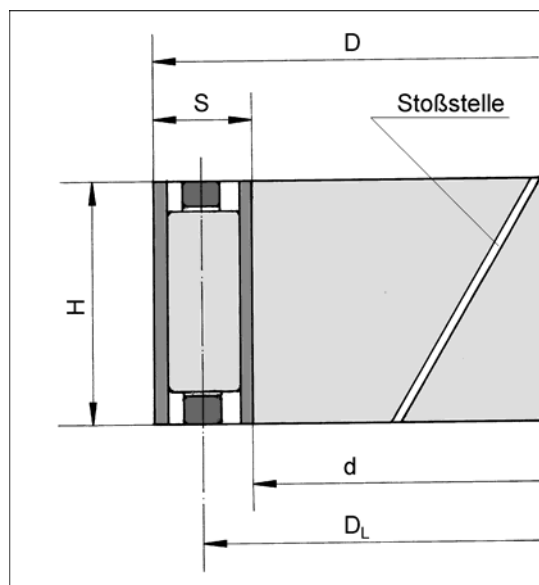
Type 12040

Table of dimensions [dimensions in mm]

KMF-type	Load capacity 1)		Fitted dimensions / tolerances						Cage-type 2)
	dyn. C [kN]	stat. C ₀ [kN]	D	d	B	B ₁ min.	N	n	
KEBF 3040	$4,22 \cdot \sqrt{d}$	$2,21 \cdot d$	+ 0,09 + 0,03	- 0,10 - 0,16	40,7 + 0,3	36,0	2,0	2,0	KKBF 3020
KEBF 4040	$3,43 \cdot \sqrt{d}$	$1,46 \cdot d$					3,0		KKBF 4015
KEBF 5040	$4,28 \cdot \sqrt{d}$	$1,66 \cdot d$					4,0		KKBF 5015
KEBF 12040	$11,47 \cdot \sqrt{d}$	$2,74 \cdot d$					11,0		KKBF 12040

1) Reduced load capacities refer to the lower hardness of the running rings (hardness for calculations 540 HV)

2) see catalog WLK 100



Fitted dimensions

Needle roller bearing

Type KEBF 3020 (preferred series)

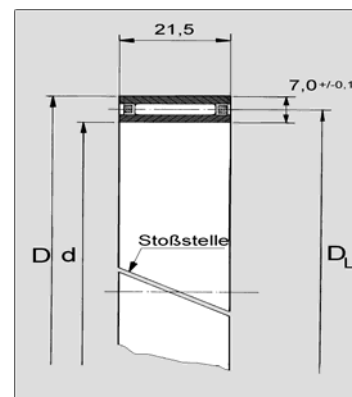


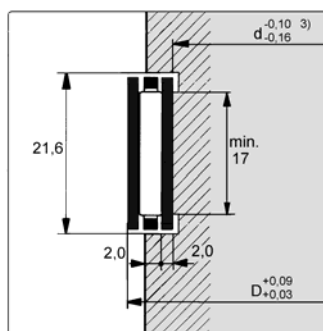
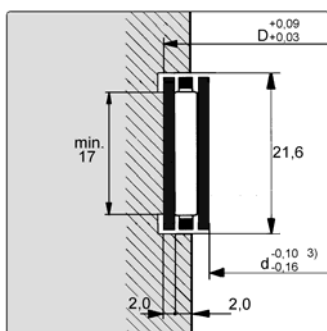
Table of dimensions [dimensions in mm]

KMF-type 1)	Weight [kg]	Bearing dimension			Load capacity 2)	
		d	D	DL	dyn. C [kN]	stat. C ₀ [kN]
KEBF 3020 0167	0,42	160	174	167	32,9	176,0
KEBF 3020 0190	0,48	183	197	190	35,2	201,3
KEBF 3020 0213	0,54	206	220	213	37,3	226,6
KEBF 3020 0217	0,55	210	224	217	37,7	231,0
KEBF 3020 0245	0,62	238	252	245	40,1	261,8
KEBF 3020 0315	0,80	308	322	315	45,6	338,8
KEBF 3020 0327	0,83	320	334	327	46,5	352,0
KEBF 3020 0497	1,26	490	504	497	57,6	539,0
KEBF 3020 0520	1,32	513	527	520	58,9	564,3
KEBF 3020 0653	1,66	646	660	653	66,1	710,6
KEBF 3020 0677	1,72	670	684	677	67,3	737,0
KEBF 3020 0723	1,83	716	730	723	69,6	787,6
KEBF 3020 0823	2,09	816	830	823	74,3	897,6
KEBF 3020 0853	2,16	846	860	853	75,6	930,6
KEBF 3020 0857	2,17	850	864	857	75,8	935,0
KEBF 3020 0923	2,34	916	930	923	78,7	1007,6
KEBF 3020 1023	2,59	1016	1030	1023	82,9	1117,6
KEBF 3020 1177	2,98	1170	1184	1177	88,9	1287,0

1) Other dimensions on request.

2) Reduced load capacities refer to the lower hardness of the running rings (hardness for calculations 540 HV).

3) d = shaft diameter



Dimensions of housing

Dimensions of shaft

Tolerance recommendation for shaft and housing opening



Axial thrust roller bearing
Type ASXK



Axial thrust roller bearing ASXK



Description of construction

Axial thrust roller bearing of type ASXK are composed of axial roller and cage assembly of type AXK and two axial bearing washers of type ASS.

Three preferred types with fitted sizes of 7 x 15 mm, 9,6 x 15 mm and 9,6 x 22 mm are available. By selecting the axial roller and cage assemblies and dimensions of the axial bearing washers, an axial thrust roller bearing with very small bearing cross-section and high load capacity can be produced.

Due to the manufacture, the joint of the axial bearing washers Type ASS 2315 and ASS 2322 is made inclined and guarantees smooth and quiet rolling of the rollers.

The running tracks of the axial bearing washers are polished and / or ground. The material of the axial bearing washers is hardened CK 65 or similar.

Hardness of running track 510 to 620 HV (50 to 56 HRC)

ASXK's with only one axial bearing washers can also be supplied on request.

Installation

The accuracy (quality) of the axial thrust roller bearings depends mainly on the stiffness of the adjoining structure.

Flatness of adjoining surfaces, guide value 0,01 mm.

Fitted dimensions according to table of dimensions.

Temperature:

The temperature limit of the axial thrust roller bearing in the standard version in continuous operation are -40°C and +100°C, in short-term operation the upper limit is +120°C.

Example of order:

Type ASXK 9615 delivered state produced by the manufacturer ready to install.

Designation : ASXK 9615

Inside diameter d : 0400 mm

Quantity : 10 off

Axial thrust roller bearing

Type ASXK 7015 (preferred series)

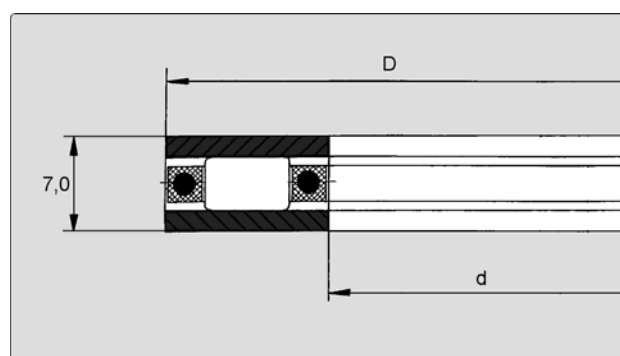


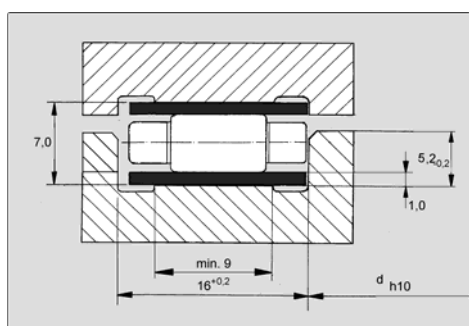
Table of dimensions [dimensions in mm]

KMF-type 1)	Weight [kg]	Bearing dimension		Load capacity 2)		Speed limit 3) n_G min^{-1}	Consisting of	
		d	D	dyn. C [kN]	Stat. C_0 [kN]		axial roller ring	axial bearing washers
ASXK 7015 0120	0,18	120	150	47,0	364,8	480	AXK 5015 0120	ASS 1015 0120
ASXK 7015 0160	0,22	160	190	54,3	486,4	360	AXK 5015 0160	ASS 1015 0160
ASXK 7015 0170	0,25	170	200	55,9	516,8	340	AXK 5015 0170	ASS 1015 0170
ASXK 7015 0180	0,27	180	210	57,6	547,2	320	AXK 5015 0180	ASS 1015 0180
ASXK 7015 0190	0,29	190	220	59,1	577,6	300	AXK 5015 0190	ASS 1015 0190
ASXK 7015 0200	0,31	200	230	60,7	608,0	290	AXK 5015 0200	ASS 1015 0200
ASXK 7015 0220	0,33	220	250	63,6	668,8	260	AXK 5015 0220	ASS 1015 0220
ASXK 7015 0250	0,38	250	280	67,8	760,0	230	AXK 5015 0250	ASS 1015 0250
ASXK 7015 0260	0,40	260	290	69,2	790,4	220	AXK 5015 0260	ASS 1015 0260
ASXK 7015 0270	0,41	270	300	70,5	820,8	210	AXK 5015 0270	ASS 1015 0270
ASXK 7015 0300	0,46	300	330	74,3	912,0	190	AXK 5015 0300	ASS 1015 0300
ASXK 7015 0328	0,50	328	358	77,7	997,1	175	AXK 5015 0328	ASS 1015 0328
ASXK 7015 0340	0,52	340	370	79,1	1033,6	170	AXK 5015 0340	ASS 1015 0340

1) Other dimensions on request.

2) Reduced load capacities refer to the lower hardness of the axial bearing washers ASS (hardness for calculations 540 HV).

3) Speed limit for grease lubrication.



Fitted dimensions

Axial thrust roller bearing

Type ASXK 9615 (preferred series)

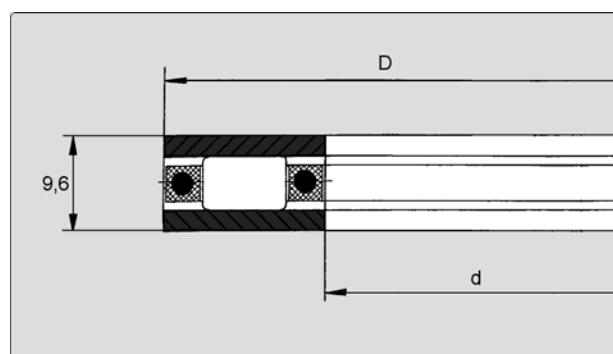
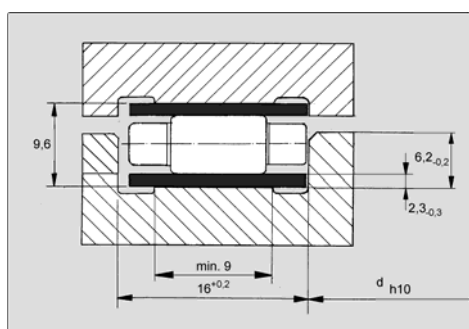


Table of dimensions [dimensions in mm]

KMF-type 1)	Weight [kg]	Bearing dimension		Load capacity 2)		Speed limit 3) n_G min^{-1}	Consisting of	
		d	D	dyn. C [kN]	stat. C ₀ [kN]		axial roller ring	axial bearing washers
ASXK 9615 0190	0,50	190	220	76,9	613,7	300	AXK 5015 0190	ASS 2315 0190
ASXK 9615 0220	0,56	220	250	82,8	710,6	260	AXK 5015 0220	ASS 2315 0220
ASXK 9615 0240	0,61	240	270	86,4	775,2	240	AXK 5015 0240	ASS 2315 0240
ASXK 9615 0260	0,67	260	290	90,9	839,8	220	AXK 5015 0260	ASS 2315 0260
ASXK 9615 0280	0,72	280	310	93,4	904,4	205	AXK 5015 0280	ASS 2315 0280
ASXK 9615 0300	0,78	300	330	96,6	969,0	190	AXK 5015 0300	ASS 2315 0300
ASXK 9615 0360	0,92	360	390	105,9	1162,8	160	AXK 5015 0360	ASS 2315 0360
ASXK 9615 0400	1,03	400	430	111,6	1292,0	145	AXK 5015 0400	ASS 2315 0400
ASXK 9615 0460	1,17	460	490	119,7	1485,8	125	AXK 5015 0460	ASS 2315 0460
ASXK 9615 0494	1,28	494	524	124,0	1595,6	115	AXK 5015 0494	ASS 2315 0494
ASXK 9615 0506	1,31	506	536	125,5	1634,4	110	AXK 5015 0506	ASS 2315 0506
ASXK 9615 0670	1,73	670	700	144,5	2164,1	85	AXK 5015 0670	ASS 2315 0670
ASXK 9615 0930	2,40	930	960	170,2	3003,9	60	AXK 5015 0930	ASS 2315 0930

- 1) Other dimensions on request.
- 2) Reduced load capacities refer to the lower hardness of the axial bearing washers ASS (hardness for calculations 600 HV).
- 3) Speed limit for grease lubrication.



Fitted dimensions

Axial thrust roller bearing

Type ASXK 9622 (preferred series)

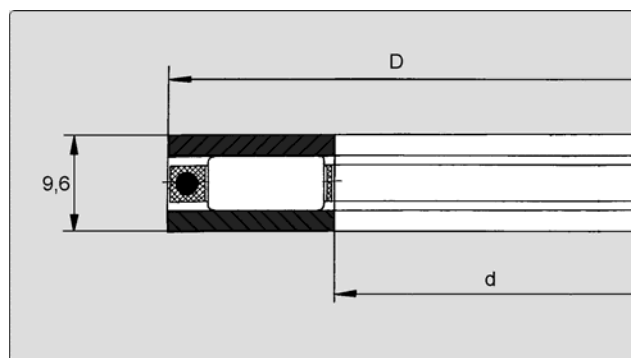
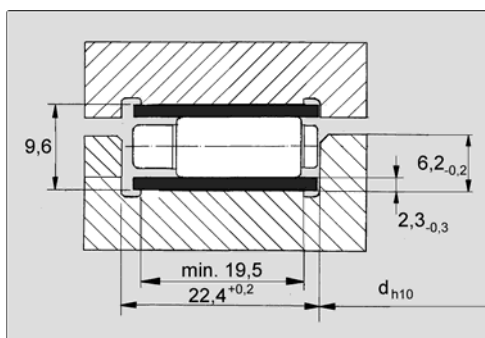


Table of dimensions [dimensions in mm]

KMF-type 1)	Weight [kg]	Bearing dimension		Load capacity 2)		Speed limit 3) n_G min^{-1}	Consisting of	
		d	D	dyn. C [kN]	stat. C ₀ [kN]		axial roller ring	axial bearing washers
ASXK 9622 0500	1,85	500	544	220	3460	130	AXK 5020 0500	ASS 2322 0500
ASXK 9622 0560	2,07	560	604	234	3870	115	AXK 5020 0560	ASS 2322 0560
ASXK 9622 0630	2,33	630	674	246	4360	100	AXK 5020 0630	ASS 2322 0630
ASXK 9622 1000	3,70	1000	1044	312	6920	65	AXK 5020 1000	ASS 2322 1000
ASXK 9622 1156	4,28	1156	1200	335	7990	55	AXK 5020 1156	ASS 2322 1156

- 1) Other dimensions on request.
- 2) Reduced load capacities refer to the lower hardness of the axial bearing washers ASS (hardness for calculations 600 HV).
- 3) Speed limit for grease lubrication.



Fitted dimensions

Special axial thrust roller bearing



Special axial thrust roller bearings of small dimensions, especially in a corrosion-resistant version, on request.



Angular contact ball bearing
Type SKE



KMF angular contact ball bearings of the SKE type are low friction, ready to install units of high accuracy for high speeds, with high axial and radial load capacity and high tilting stiffness. SKE built-in units have running tracks inclined at an angle of 45° to the bearing axis. The bearing rings are splitted.

The KMF angular contact ball bearing SKE consists of two hardened ball track rings with ground or turned running tracks and (closed) ball cage with guided and contained balls.

The bearing temperature limits in continuous operation are -40°C and $+100^{\circ}\text{C}$, for short period operation the maximum is $+120^{\circ}\text{C}$.

Ball running rings made of hardened roller bearing steel	hardness 60-63 HRC
Ball cage (compound construction)	polyamide PA 12 with steel support
Balls DIN 5401 hardened roller bearing steel	100 Cr6 hardness 59 ÷ 65 HRC / grade 10

Inclined angular contact ball bearing Type: SKE 12 0243

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Angular contact ball bearing

Type SKE 12 (preferred series)

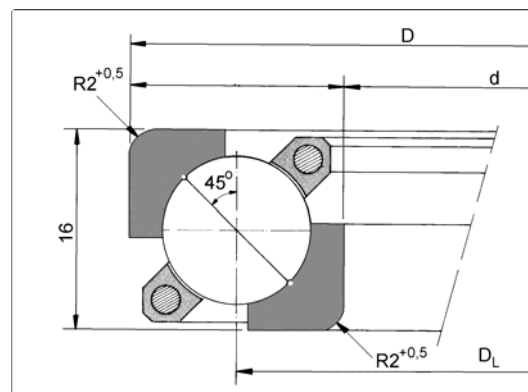
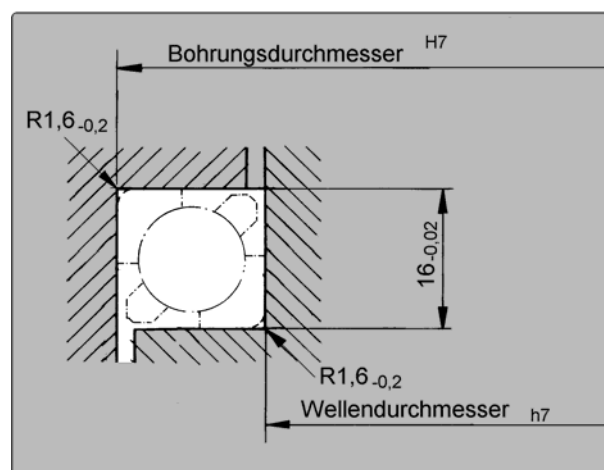


Table of dimensions [dimensions in mm]

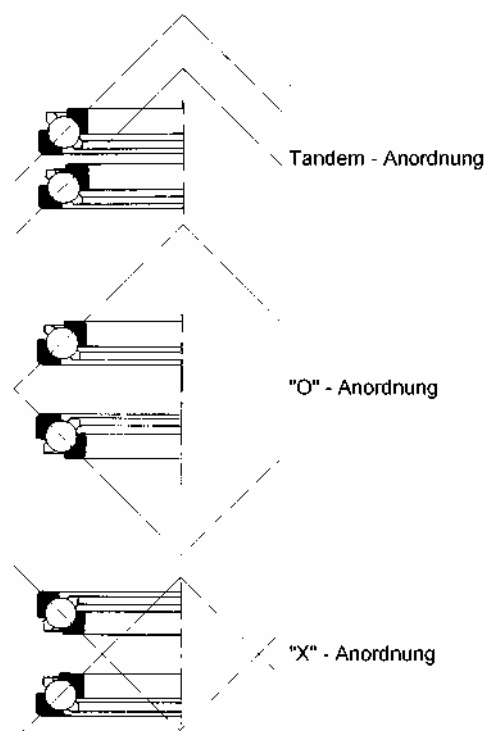
KMF-type 1)	Bearing dimension		Load capacity				Weight kg
	d	D	dyn. C_a [kN]	stat. C_{0a} [kN]	dyn. C_r [kN]	stat. C_{0r} [kN]	
SKE 12 0143	126	160	68	233	36	44	0,49
SKE 12 0183	166	200	71	286	42	59	0,63
SKE 12 0203	186	220	73	313	45	67	0,70
SKE 12 0243	226	260	77	375	47	80	0,83
SKE 12 0263	246	280	86	429	47	80	0,90
SKE 12 0283	266	300	88	437	50	94	0,97

1.) Other dimensions on request



Fitted dimensions

Einbaumöglichkeiten



Accessories

Sealing profiles

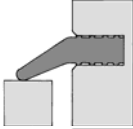
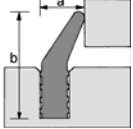
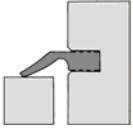
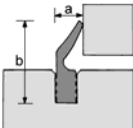
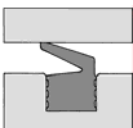
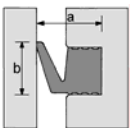
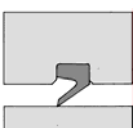
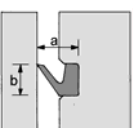
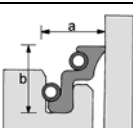
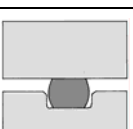
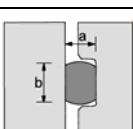


Sealing:

One can seal to the adjacent structure with KMF sealing profiles, depending on the requirements and the type of pollution.

We have developed some sealing profiles as **yardgoods** for this purpose, which meet different requirements. For infinite purposes, the interfaces must be flat and free of grease. A cyan acrylate glue can be used as the glue. One must take care that there is no displacement when join the interfaces.

The standard material of the sealing profile is NBR 70 (Shore hardness of 70), which has proved successful due to its resistance to oil and grease and its good resistance to wear. The sealing profiles can be used at working temperatures of -40°C to +80°C.

Sealing profile (selection)							
Profile crossection		Abbr.	Required space (guide)		Diameter range D		Characteristics
axial seal	radial seal		a	b	axial	radial	
		S8	7	17	$\geq \varnothing 400$	$\geq \varnothing 400$	Robust seal increased friction
		S4	5	13	$\geq \varnothing 200$	$\geq \varnothing 200$	Normal seal low friction
		S5	11	9	$\geq \varnothing 400$	$\geq \varnothing 400$	Protected bearing gap seal
		S7	7	5	$\geq \varnothing 200$	$\geq \varnothing 200$	Protected bearing gap seal low space requirement
		S6	9	10		$\geq \varnothing 200$	High pressure due to Spring-loaded sealing lip, preferred for oscillating operation
		R2 R3 R4	1,5 2,3 3,1	2,7 4,0 5,4	$\geq \varnothing 200$	$\geq \varnothing 200$	Static seal

Installation drawings are available for the individual seal profiles. Please ask for them.

Accessories

Accessories, spacers type series ABL

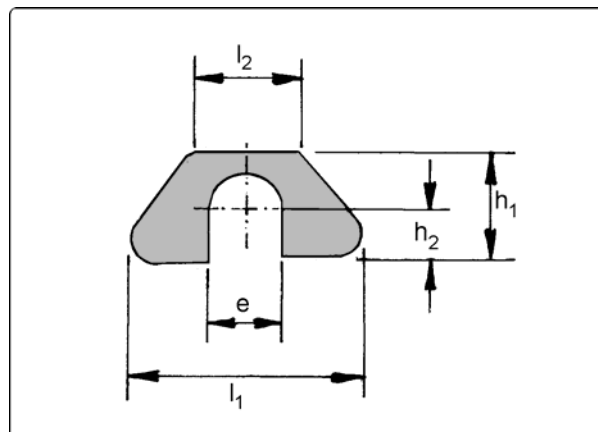
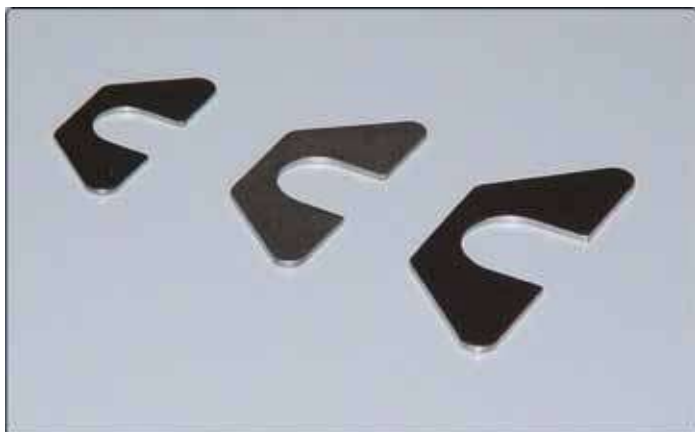


Table of dimensions [Dimensions in mm]

KMF-type 1)	For screw	e	h ₁	h ₂	l ₁	l ₂
ABL 6	M6	7	11,0	5	24,0	11,0
ABL 8	M8	9	13,5	6	34,0	14,7
ABL 10	M10	11	16,0	7	43,0	16,4
ABL 12	M12	13	18,0	8	45,0	20,3
ABL 16	M16	17	24,0	11	54,0	25,4

1) Material corrosion-resistant steel

1 set of spacers consists of:

No. off	Thickness
1	1,0 mm
1	0,5 mm
1	0,3 mm
1	0,25 mm
1	0,2 mm
1	0,15 mm
1	0,1 mm
1	0,025 mm

Spacers for setting the play can be supplied in the required thickness or as a set

Example of order:

500 off spacers for M10 screws with a thickness of 0.25 mm or complete set.

Description : ABL 10 - 0,25

Quantity : 500 off

Description : ABL 10

Quantity : 500 sets