

Linear bearing cages KKNK 104

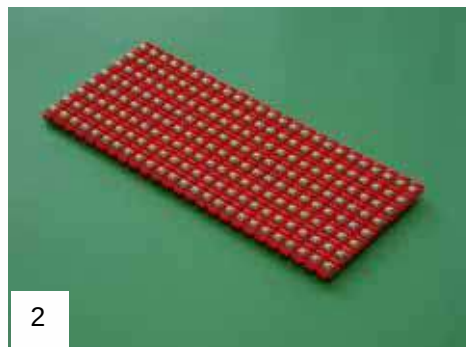
Series KKNK 104, ball network



Shapes (examples)



1



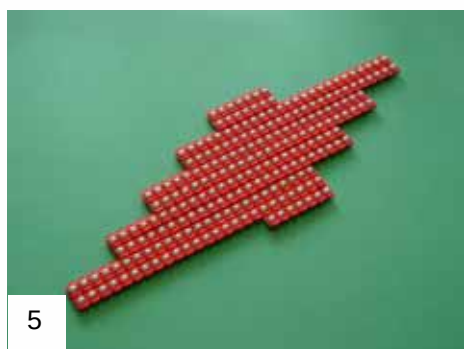
2



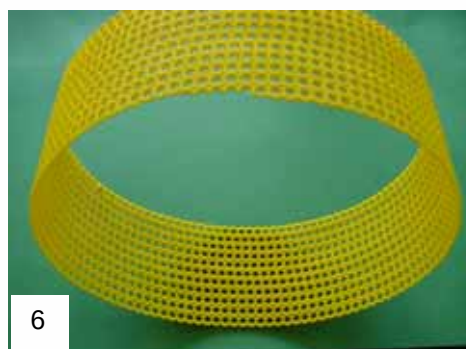
3



4



5



6

Fig. 1 Ball mesh of curved shape as ball box for simultaneous linear and rotary movement, diameter from about 50 mm

Fig. 2 Ball mesh of rectangular or square shape for linear longitudinal and lateral movement

Bild 3 Ball mesh of circular shape for circular and linear movement

Fig. 4, 5 and 6 Special shapes according to the application.

Linear bearing cages KKXL-01 / 02

Series KKXL-01/02, cross roller cages

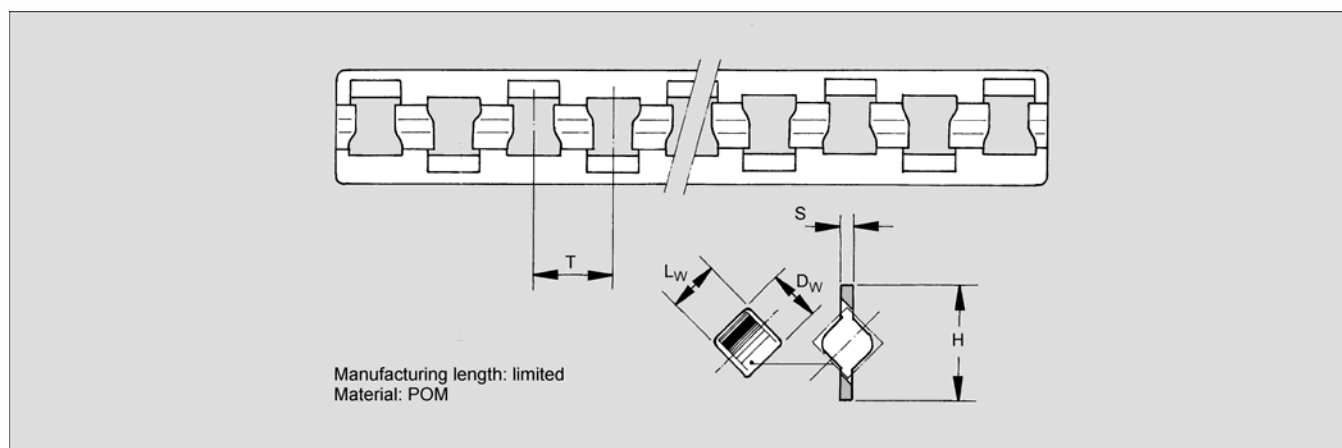


Table of dimensions [dimensions in mm]						
KMF-type 1)	roller Ø D _w x L _w	H	S	T	HLG	No. of rollers each
KKXL-01	1,5 x 1,4	3,8	0,5	3	75	24
KKXL-02	2,0 x 1,8	5,5	0,7	4	100	24

1) Other dimensions on request

Linear cross roller cages of series KKXL-01/02 are plastic cages. The roller pockets have a roller support. The cages are produced with a limited manufacturing length (HLG) and therefore cannot be obtained in metre lengths. They are supplied without rollers and with a minimum quantity of 100 off. The rollers can be supplied separately. For other details of cylindrical rollers type KZR 110 see page 26 (rollers).

Linear bearing cages with limited manufacturing length are made of the material POM (polyacetalene). The most important thermal properties are keeping its shape up to 105°C and a linear thermal coefficient of expansion of $10,4 \times 10^{-5}$ in a temperature range of -40°C to 30°C. The complete material data of mechanical, thermal and electrical properties can be supplied on request.



Example of order / inquiry

KKXL-01	/	200 off
type for roller Ø 1,5		quantity
without rollers		

associated cylindrical rollers (see page 26 – rollers)

KZR 110-15	/	4.800 off
roller Ø 1,5 x 1,4		quantity

Linear bearing cages KKXL-03 / 06 / 09

Series KKXL-03 / 06 / 09, cross roller tape

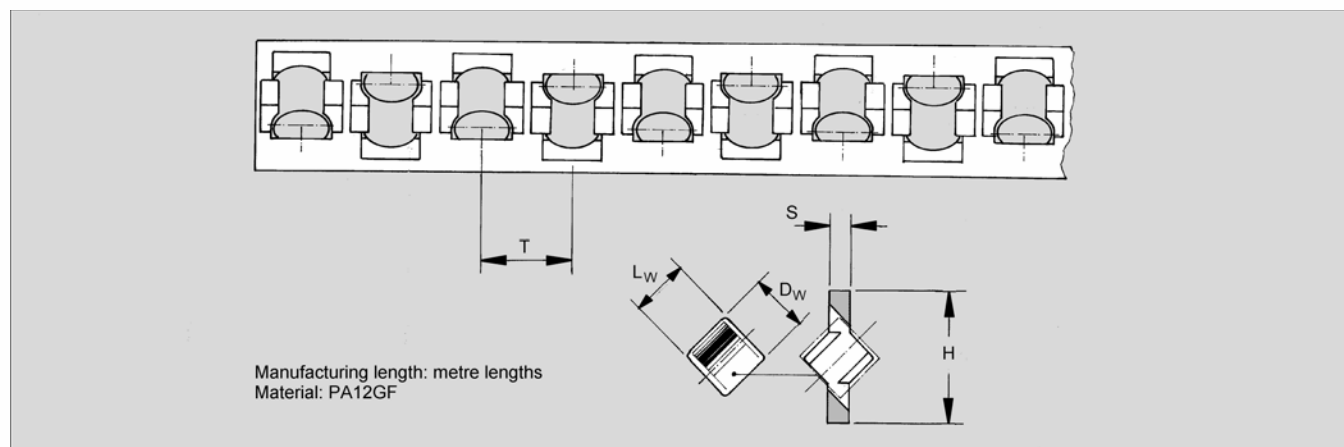


Table of dimensions [dimensions in mm]

KMF-type 1) without rollers	KMF-type with rollers	roller Ø D _w x L _w	H	S	T	No. of rollers per metre
KKXL 030	KKXL-03	3 x 2,8	7	1	5,0	200
KKXL 060	KKXL-06	6 x 5,8	14	2	8,5	118
KKXL 090	KKXL-09	9 x 8,8	20	3	14,0	71

1) Other dimensions on request

Linear bearing cages of series KKXL-03 / 06 / 09 are plastic cage tapes for cylindrical rollers in cross arrangement (cross rollers). They are produced in metre lengths, where the standard lengths are 1000mm.

The cross roller cage tapes are filled with rollers and offered without rollers. The rollers can be supplied separately. For further details of cylindrical rollers see page 26 (rollers).

- Possibilities of supply
- metre lengths without rollers, minimum quantity KKXL 030 – 250 m / KKXL 060 – 100 m / KKXL 090 – 50 m
 - ready to fit, filled with rollers (no minimum limit)
 - metre lengths with roller, to cut up oneself (no minimum limit)



Example of order / inquiry

KKXL 030	/	250 off
type without rollers		quantity or metres (1m = 1 off)
KKXL-03	/ 18	30 off
type incl. rollers	no off roller pockets	quantity no. off ready to fit
KKXL-03		100 metres
type incl. rollers		quantity metres or no. off for cutting off oneself (1m = 1 off)

Linear bearing cages KLBF

Series KLBF, flat roller cage

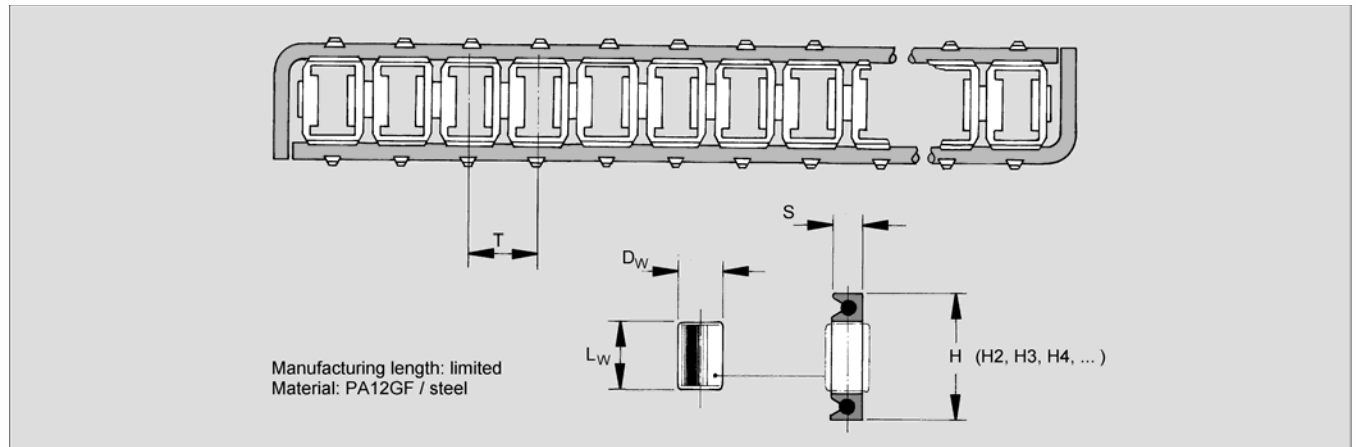


Table of dimensions [dimensions in mm]

KMF-type 1)	roller Ø D _w x L _w	H	S	T	cage height 2)		
					2 row H2	3 row H3	4 row H4
KLBF 4015	4 x 8	15	3,0	7,5	27,0	39,0	51,0
KLBF 5015	5 x 8	15	3,5	8,0	27,0	39,0	51,0
KLBF 7025	7 x 14	25	5,0	11,0	45,5	65,5	85,5
KLBF 18036 3)	18 x 18	36	10,0	23,0	---	---	---

- 1) Other dimensions on request
- 2) Any number of rows of rollers can be added
- 3) Not suitable for multi-rows

Linear bearing cages of series KLBF are guided and held flat roller cages. The cages are so-called combination cages and consist of precision steel wires (supports), which are made into flat roller cages by clipped on cage tapes. Using curved supports, it is possible to produce roller segment cages, eg: for curved guides with restricted range. Combination shapes are also suitable for producing multi-row versions. The steel supports ensure the necessary stiffening of the flat roller cage and improve the running in vertical operation. The cages are produced individually for the required length and supplied filled with rollers. The ends of the cage can be configured differently (see example of variants).

Example of order / inquiry

While referring to type KLBF, the order or inquiry should be made with as much details as possible. Apart from stating the type, for making a tender the planned length of cage, number off and the required end closure variant are required.

Linear bearing cages KLBF

Series KLBF / examples of variants



Variant example / longitudinal closure



Variant example / multi-row cages



Variant example / cage segments



Linear bearing cage KLBF 5020 / KLBF 5020 ZW

Series KLBF 5020/ KLBF 5020... ZW flat roller cage

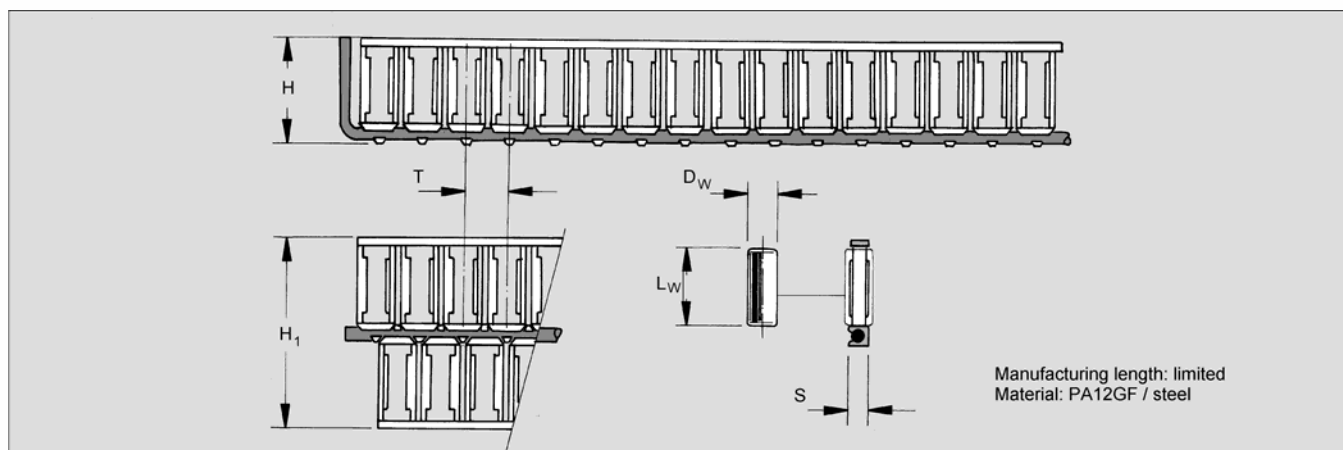


Table of dimensions [dimensions in mm]

KMF-type 1)	roller Ø $D_W \times L_W$	H	S	T	No. of rollers per metre
KLBF 5020	5,0 x 15,0	20	3,5	8	125

Table of dimensions [dimensions in mm]

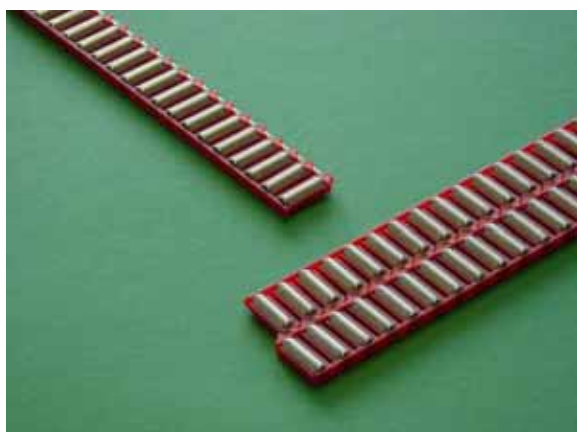
KMF-type 1)	roller Ø $D_W \times L_W$	H ₁	S	T	No. of rollers per metre
KLBF 5020 ZW	5,0 x 15,0	37	3,5	8	250

1) Other dimensions on request

Linear bearing cages of series KLBF 5020 and KLBF 5020 ZW are guided and held flat roller cages. The cages are combination cages and consist of a precision steel wire together with a roller cage tape to form a single row flat cage.

The cage can be expanded into a two row flat roller cage (ZW) by connecting another row. Other possible combinations are only possible together with type KLBF 5015, see also example of variant on page 19.

The cages are supplied to the customer's data ready to fit, including cylindrical rollers.



Example of order / inquiry

While referring to type KLBF 5020 (ZW), the inquiry should contain as much detail as possible. We recommend that you consult us about further possible combinations.

Linear bearing cage KKFF

Series KKFF needle roller- / flat roller cage

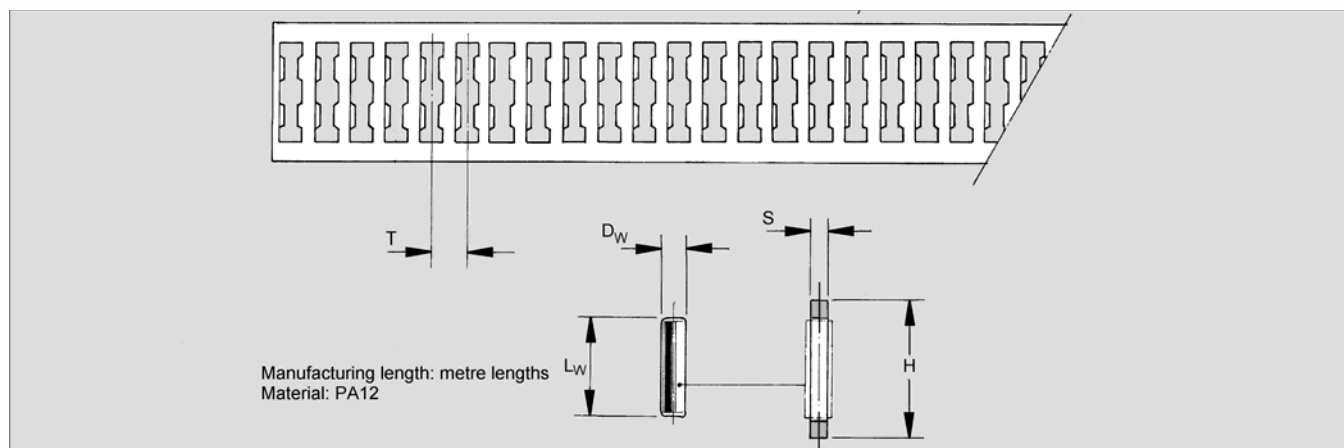


Table of dimensions [dimensions in mm]

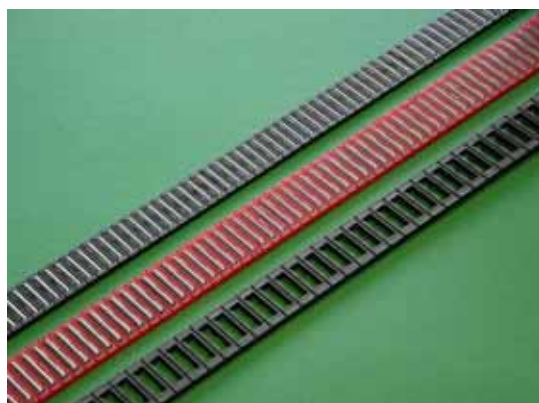
KMF-type 1)	needle roller Ø D _w x L _w	H	S	T	no. of needle rollers per metre
KKFF 1510	1,5 x 7,8	10	1,1	2,9	344
KKFF 2518	2,5 x 13,8	18	2,0	4,8	208
KKFF 3020	3,0 x 15,8	20	2,5	5,2	192
KKFF 4030	4,0 x 23,8	30	3,0	7,0	142
KKFF 5023	5,0 x 15,0	23	3,5	8,0	125
KKFF 5035	5,0 x 27,8	35	3,5	9,0	111
KKFF 10016	10,0 x 10,0	16	2,5	13,0	77
KKFF 12040	12,0 x 30,0	40	6,0	16,0	62
KKFF 16028	16,0 x 16,0	28	4,0	22,0	45

1) Other dimensions on request

Linear bearing cages of series KKFF are one row plastic cage tapes for rollers or needle rollers. The cage tapes are made in metre lengths and have roller supports.

Possibilities of supply

- ready to fit, cut, filled with rollers / needle rollers (no minimum quantity limit)
- metre lengths filled with rollers, for cutting up oneself (no minimum quantity limit)



Example of order / inquiry

KKFF 3020	/	100 metres
type incl. needle rollers		quantity in metres for cutting up oneself
KKFF 3020	/	0490
type incl. needle rollers	length of cage 490 mm	quantity ready to fit
		20 off

Linear bearing cage KKHW

Series KKHW, angled flat cage

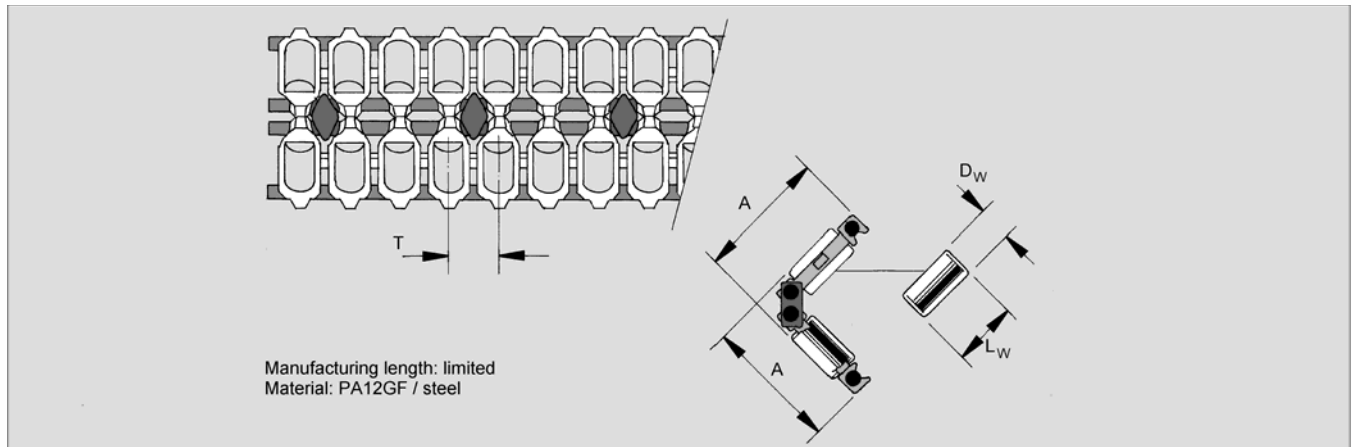


Table of dimensions [dimensions in mm]

KMF-type 1)	roller $\varnothing$ $D_w \times L_w$	A	T	No. of rollers per metre
KKHW 7030	7 x 14	30	11	180

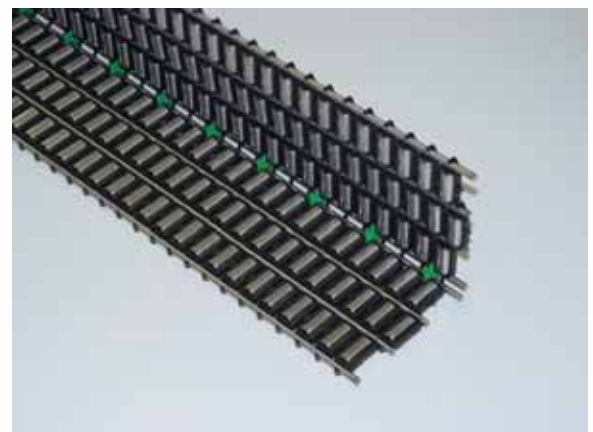
1) Other dimensions on request

Linear bearing cages of series KKHW are single row flat roller cages which are made into angled flat cages by a special support element with fixings. The angle is preferably 90°, but can set to any desired angle.

The shank lengths A with a spacing of 20 mm can be expanded so several row angled flat cages. Angled flat cages are manufactured according to the customers requirements and are supplied ready to fit including rollers.



two row flat cage angled as angled flat cage



mult-row angled flat cage with spacing of 20 mm can be expanded in any number of rows.

Special linear bearing cage KKLR

Series KKLR, angled flat cage



Linear cage type KKLR are two row needle flat cages made of plastic. The cage tapes are made in metre lengths and have roller supports. The shanks of the two rows can easily be bent to any angle (preferably 90°) by the special shaping of the middle part. One can produce one row flat cages in metre lengths by separating the two rows.



The angled flat cages shown are KMF developments for certain customers. They are therefore not contained in the standard range and are protected for the customers

KMF will state where to obtain the cages and possible alternatives, on request.

Special linear bearing cages KKVR

Series KKVR, angled flat cage



Linear bearing cages types KKVR are two row angled flat cages with combined materials of steel / plastic. They are made in metre lengths by a special compound technique. The basic supports are angled, corrosion-resistant steel strips with punched out openings. The openings are made so that the injected plastic pockets can be separated anywhere. Any length can therefore be produced, without any waste.

The linear bearing cages have a rigid angled shank (preferably 90°) and are suitable for vertical use in this version.



The angled flat cages shown are KMF developments for certain customers. They are therefore not contained in the standard range and are protected for the customers.

KMF will state where to obtain the cages and possible alternatives, on request.

Special linear bearing cage KXV

Series KXV, cross roller cage



Linear bearing cages type KXV consist of two identical cage tapes, which are made compounded of steel / plastic. The two identical cage halves have a special shape, which makes it possible to produce a cross roller cage of unlimited length by snapping them together.

The steel inserts act to stiffen the glass fibre reinforced plastic basic material and therefore permit running in vertical operation.

The shape permits surrounding the cross cylindrical rollers, so that absolute guidance and support is provided. It is not possible to release the rollers from the cage without destroying it.



horizontally divided cross roller cage
and the two identical halves with rollers



vertically divided cross roller cage and the
two identical halves with rollers

The cross roller cages type KXV and KMF developments for certain customers. They are therefore not contained in the standard range and are protected for the customers.

KMF will state where they can be obtained and possible alternatives, on request.

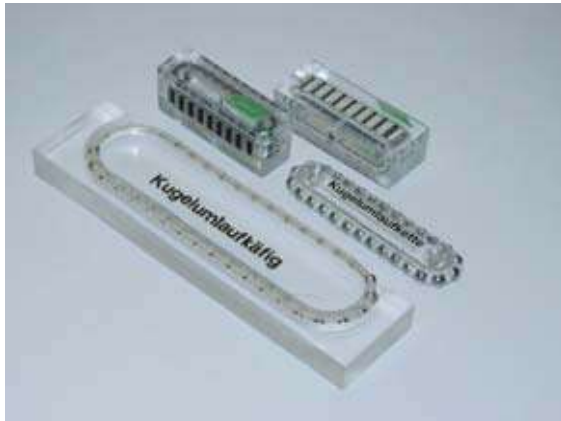
Special linear bearing cages KKUK, KKUX, KKU

Enclosed cages



Enclosed cages for balls (KKUK), cross rollers (KKUX) or rollers (KKUR) are originally spacers that hold the rollers spaced and which are combined into ball or roller chains.

The ball and roller chains prevent the opposite rotation of the rollers at the point of contact (contact friction) and contribute considerably to lower noise of the enclosed unit. They reduce wear and permit higher running speeds.



Special linear bearing cages

Further examples



Linear cross roller cage
Arrangement of rollers 2:1
(2 support rollers / 1 holding roller)



Ball surround bush
closed and open

Rollers

Balls, rollers, needle rollers, special rollers



Cylindrical rollers KZR 110

Cross rollers of series KZR 110 are mainly used for cross roller flat guides. They are cylindrical rollers, whose length (LW) is slightly less than their diameter (DW). Cross rollers are used in KMF standard linear cross roller cages of quality G1 (assortment 0,001 mm). These rollers can be obtained separately according to the following table.

Table of dimensions [dimensions in mm]					
KMF-type 1)	Diameter Ø D _w	Length L _w	Circularity	Assortment	Minimum quantity off
KZR 110-1,5	1,5	1,4	≤ 0,0005	0,001	2000
KZR 110-2,0	2,0	1,8	≤ 0,0005	0,001	2000
KZR 110-3,0	3,0	2,8	≤ 0,0005	0,001	5000
KZR 110-6,0	6,0	5,8	≤ 0,0010	0,001	5000
KZR 110-9,0	9,0	8,8	≤ 0,0010	0,001	1500
KZR 110-12,0	12,0	11,8	≤ 0,0010	0,001	600

1) Other dimensions on request

Standard material 100Cr6 (1.3505) hardness 58-65 HRc and corrosion-resistant steel X46Cr13 (1.4034)

KUG balls

All precision steel balls according to DIN, ISO and AFBMA can be supplied. The ball quality according to DIN 5401 / Grade 15 (Class 2) with 100Cr6 material (hardness 60-66 HRc) is used as standard for KMF linear cages, eg: series KKLK or KKVK. Different qualities from the standard (material, quality, etc) on request.

NRB needle rollers

All needle rollers according to DIN, ISO and AFBMA can be supplied. The needle roller quality according to DIN 5402 / Grade 2 with 100Cr6 material, hardness 59-65 HRc is used as standard for KMF needle roller cages, eg: series KKFF or KLBF. Needle rollers type NRB have a flat ends of so-called B shape.

Other needle rollers with different qualities and materials are available.



Special rollers

Rollers of special shapes are made to customer's specifications. These rollers are also made in small quantities.

This offer is used for producing new running track systems or with special material requirements.