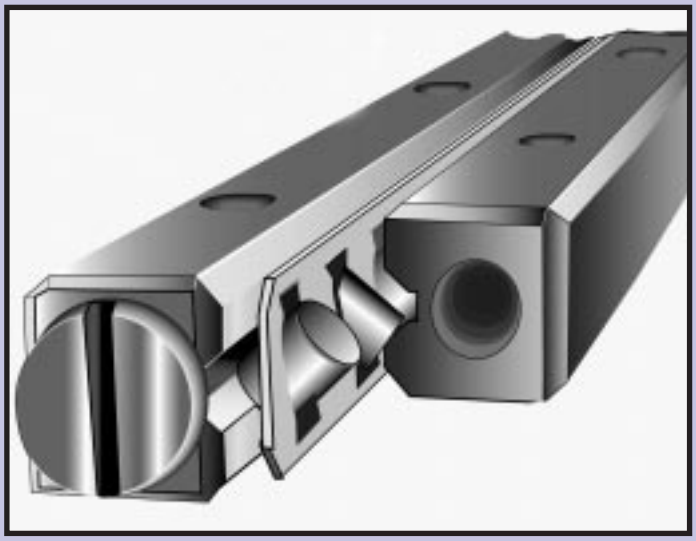
Cross Roller Rail Sets



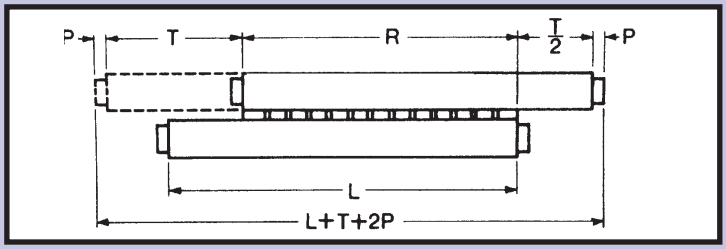
Crossed Roller Advantages

1. Very sensitive movement (friction co-efficient of 0,003)
2. Lack of start-up 'stiction'
3. Minimum wear
4. High load capacity
5. Maximised Precision
6. Most Models Ex-stock

R type linear bearings can utilise either crossed roller or balls as rolling elements. The two will differ substantially in load ratings. The ratio is approximately 10 to 1 in favour of rollers, depending upon the dimension under consideration. Balls are more advantageous in the case of presence of impurities, dust etc. and or misalignment as it happens when the structure, which rails are secured, is not sturdy enough to support them.

The rails are made of special alloy steel and through-hardened to a hardness value of 60±2HRC. The precision relative to the parallelism between the race ways and the reference surface are dependent upon the quality selected (10 micron/1700 mm. for the 'standard' quality, 5 micron/1700 m.m. for the 'selected' quality). It is important to state that all the elements are individually checked during all manufacturing phases before the final inspection. Also, a non-destructive check is performed to assure the absence of internal cracks which may have been generated during heat treatment. Such micro-cracks could drastically affect both the precision and the life of the rails.

There is a full range of standard cross-roller tables with lengths ranging from 25-1010 mm. and widths of 29.6 to 145 mm; with load ratings from 25kg. to 2900kg. The tables are made of cast iron (G25), naturaly aged. Also available a range of Aluminium tables, their light mass makes it possible to reduce inertial forces. Cast iron slides can be nickel plated and the aluminium tables provided anodised.



The formula below provides the basic parameter on which to make a rail length selection. Based upon the rail length selected the remaining calculations provide a determination as to the maximum weight capable of being handled. Assume Travel (T) is 127mm and Max. Load is 180 kg.

1. Calculation of Rail Length (L)

Rail Length (L) is to be in range 1.5 to 2.0 that of travel length

L= T x 1.5 to T 2.0

127 x 1.5 = 190.5 mm

127 x 2.0 = 254 mm

Intially selected standard rail rail size R3225 from stocklisting rail length is 225 mm.

2. Calculation of Crossed Roller Retainer Length (R)

Retainer Length (R) = Rail Length (L). Minus one-half of Total Travel.

$R = L - \frac{T}{2}$

$R = 225 - \frac{127}{2}$

R = 161.5 mm

3. Calculation of Number of Rollers (N_0) For each Roller Retainer

Retainer Length (R) divided by pitch of roller spacings

$N_0 = \frac{R}{Pitch}$

$N_0 = \frac{161.5}{5}$ = 32 Rollers

4. Calculation of Number of Load Carrying (Y)

Due to cross roller design only everyother roller takes the load

$Y = 2 \text{ Roller Retainers} \times \frac{N_0}{2}$

$Y = 2 \times \frac{32}{2}$

Y = 32 Load Carrying Rollers

5. Total Load Capacity (W)

Number of load carrying Rollers (Y) x Load carrying capacity of one roller (C)

Load carrying capacity for one roller

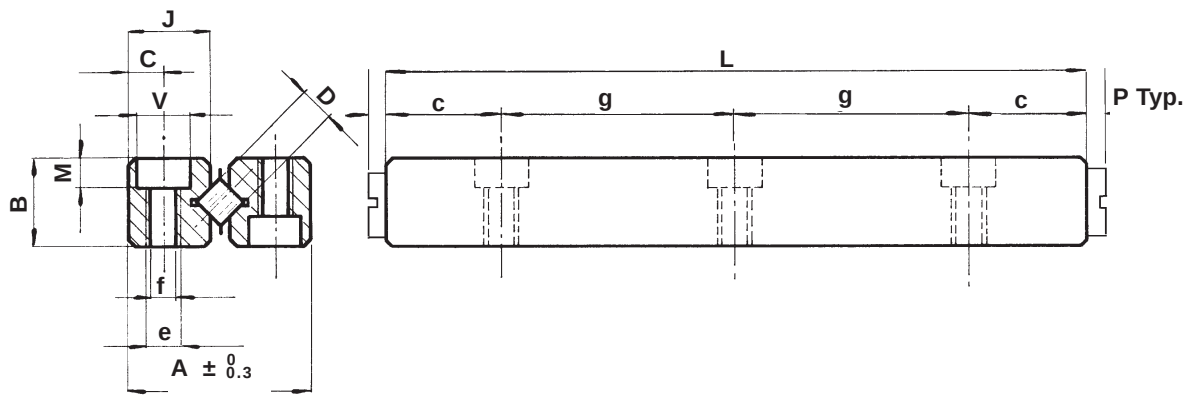
Diameter	Load (Kg)
1	4
2	6
3	10
6	40
9	100
12	175
15	315
18	550

W = Y x C

W = 32 x 10

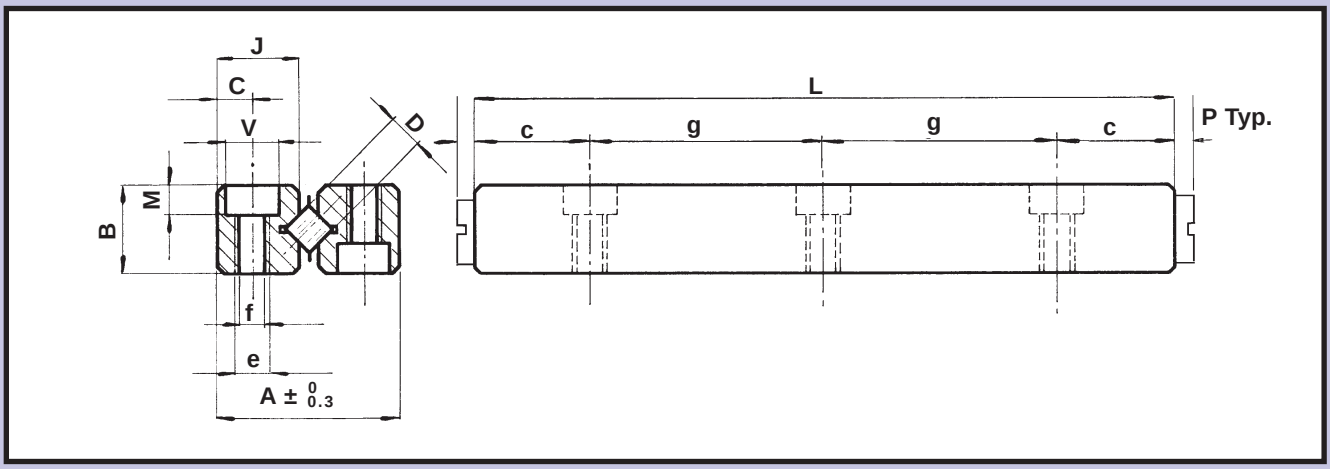
W = 320 Kg

In this example the weight carrying capacity of the cross roller rail set R-3225 exceeded the requirements of the application



Designation	Rail Type	Rail Weight (gr)	L	g	c	D	A	B	J	C	e	f	V	M	P
R1	R1–020	2	20	1x10	5	1.5	8.5	4	3.9	1.8	M2	1.65	3	1.4	1.5
	R1–030	3	30	2x10											
	R1–040	4	40	3x10											
	R1–050	5	50	4x10											
	R1–060	6	60	5x10											
	R1–070	7	70	6x10											
	R1–080	8	80	7x10											
	R1–090	9	90	8x10											
	R1–100	10	100	8x10											
	R1–120	12	120	11x10											
	R1–140	14	140	13x10											
R2	R2–030	6	30	1x15	7.5	2	12	6	5.5	2.5	M3	2.5	4.4	2.0	2
	R2–045	9	45	2x15											
	R2–060	12	60	3x15											
	R2–075	15	75	4x15											
	R2–090	18	90	5x15											
	R2–105	22	105	6x15											
	R2–120	25	120	7x15											
	R2–135	28	135	8x15											
	R2–150	31	150	9x15											
	R2–180	37	180	11x15											
	R2–210	44	210	13x15											
R3	R3–050	23	50	1x25	12.5	3	18	8	8.2	3.5	M4	3.3	6	3.2	2
	R3–075	34	75	2x25											
	R3–100	45	100	3x25											
	R3–125	56	125	4x25											
	R3–150	67	150	5x25											
	R3–175	78	175	6x25											
	R3–200	89	200	7x25											
	R3–225	100	225	8x25											
	R3–250	111	250	9x25											
	R3–275	122	275	10x25											
	R3–300	133	300	11x25											
R4	R4–080	145	80	1x40	20	4	22	11	10.2	4.5	M5	4.3	8	4.2	2
	R4–120	220	120	2x40											
	R4–160	295	160	3x40											
	R4–200	370	200	4x40											
	R4–240	445	240	5x40											
	R4–280	520	280	6x40											
	R4–320	595	320	7x40											
	R4–360	670	360	8x40											
	R4–400	745	400	9x40											
	R4–440	815	440	10x40											
	R4–480	885	480	11x40											

Cross Roller Rail Sets



Designation	Rail Type	Rail Weight (gr)	L	g	c	D	A	B	J	C	e	f	V	M	P
R6	R6–100	145	100	1x50	25	6	31	15	13.9	6	M6	5.2	9.5	5.2	3
	R6–150	220	150	2x50											
	R6–200	295	200	3x50											
	R6–250	370	250	4x50											
	R6–300	445	300	5x50											
	R6–350	520	350	6x50											
	R6–400	595	400	7x50											
	R6–450	670	450	8x50											
	R6–500	745	500	9x50											
	R6–550	815	550	10x50											
	R6–600	885	600	11x50											
R9	R9–200	630	200	1x100	50	9	44	22	19.7	9	M8	6.8	10.5	6.2	3
	R9–300	945	300	2x100											
	R9–400	1260	400	3x100											
	R9–500	1575	500	4x100											
	R9–600	1890	600	5x100											
	R9–700	2205	700	6x100											
	R9–800	2520	800	7x100											
	R9–900	2835	900	8x100											
	R9–1000	3150	1000	9x100											
	R9–1100	3465	1100	11x100											
	R9–1200	3780	1200	13x100											
R12	R12–200	1040	200	1x100	50	12	58	28	25.9	12	M10	8.5	13.5	8.2	3
	R12–300	1565	300	2x100											
	R12–400	2090	400	3x100											
	R12–500	2615	500	4x100											
	R12–600	3140	600	5x100											
	R12–700	3665	700	6x100											
	R12–800	4190	800	7x100											
	R12–900	4715	900	8x100											
	R12–1000	5240	1000	9x100											
	R12–1100	5765	1100	10x100											
	R12–1200	6290	1200	11x100											

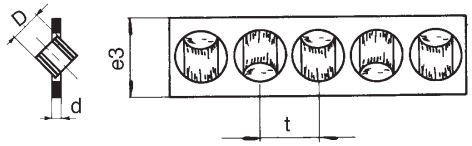
Crossed Roller Rail Sets and Slide Tables- Phone for your Quote NOW

EX-STOCK

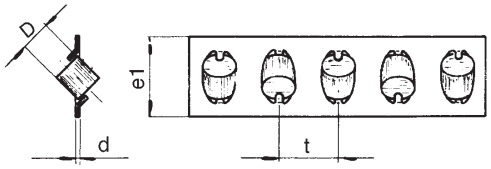
★All sets available in St. steel add —SS to basic part number

Cages

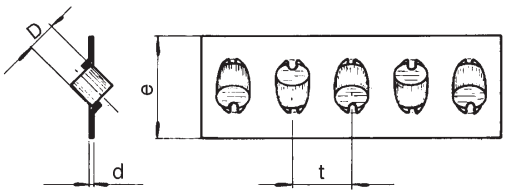
Type CC
Non captive crossroller cage for horizontal and vertical Applications fo rails R1-R2; only standard pitch; cage material: Brass.



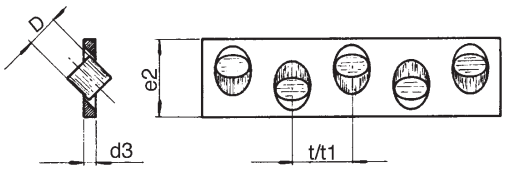
Type AA
Cross roller cage for horizontal application. Sizes 3-12; only standard pitch; captive rollers; cage material: Steel.



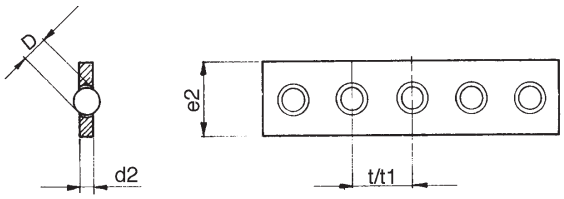
Type BB
Cross roller cage for horizontal and vertical applications with rails of different length with low speed. sizes 3-12; only standard pitch; captive rollers; cage material: Steel.



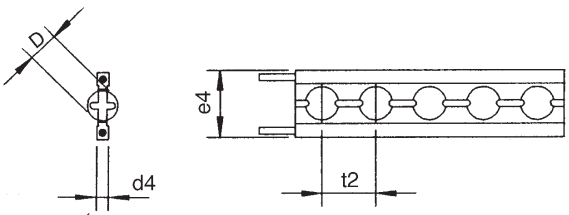
Type DD
Cross roller cage for horizontal and vertical applications with high acceleration.
Size 3 (only standard pitch) 12 (only reduced pitch); non-captive rollers; cage material: 6–9 (standard and reduced pitch) Brass.



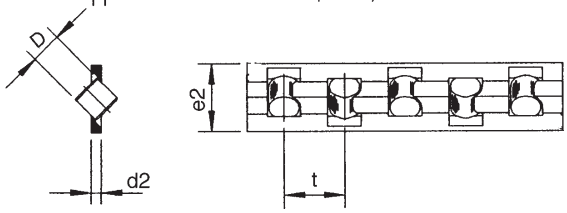
Type JJ
Non-captive ball cages for R1-R3 rails for horizontal and vertical applications; only standard pitch; cage material Brass. Captive ball cage for R9 only, t1 pitch; cage material: Brass.



Type PS
Captive ball cages for R1-R12 rails for horizontal and vertical applications; only t2 pitch;
cage material: Polyamide. PS6-PS12 reinforced with Steel.



Type PR
Captive cross roller cages for R1-R3 rails for horizontal and vertical applications; only t pitch;
cage material: Polymide.



Type	D	t	t1	t2	d	d2	d3	d4	f*	e	e1	e2	e3	e4	G*	Dynamic Load (kg.) P/roller	Dynamic Load (kg.) P/ball	Static load (kg.) P/roller	Static load (kg.) P/Ball
R1	1.5	3.0	–	2.2	0.5	0.5	–	0.45	–	–	–	3.8	3.5	3.5	–	4.0	0.5	5.2	0.6
R2	2.0	4.0	–	4.0	0.8	0.8	–	0.75	–	–	–	5.5	5.5	5.0	–	6.0	1.6	7.5	2.1
R3	3.0	5.0	–	4.2	0.5	1.0	1.0	1.0	1.0	12.0	7.5	7.0	–	7.0	13.0	10.0	2.2	13.0	3.1
R6	6.0	12.0	9.0	9.0	0.8	2.7	2.7	2.5	1.5	20.0	14.0	15.0	–	14.0	21.0	40.0	6.0	52.0	7.8
R9	9.0	18.0	14.0	14.0	1.0	4.0	3.0	3.5	2.0	30.0	19.5	20.0	_	20.0	32.0	100.0	10.0	130.0	13.0
R12	12.0	22.0	18.0	15.5	1.2	4.0	4.0	4.0	2.5	35.0	25.0	25.0	–	20.0	37.0	175.0	15.0	227.0	19.0