

TSK Cross Roller Slides

TSK Cross Roller Slide is a compact, high accurate linear motion guide which is heat-treated and precisely ground under strict quality control. The needs and purposes of cross roller slide are expanding for precision equipments such as optical instruments, measuring machines and precision processing equipments. We wish all customers to designate TSK cross roller slide manufactured by wealthy heat treatment and precision grinding techniques for long years.



In TSK cross roller slide TCR series, super precision rollers are alternately arranged in between precisely ground V-shaped raceway and tracking base. This enables it to receive loads in any direction and to have high rigidity, very precise, smooth linear motion. This is the most suited linear motion product where high accurate linear motion is required.

Features

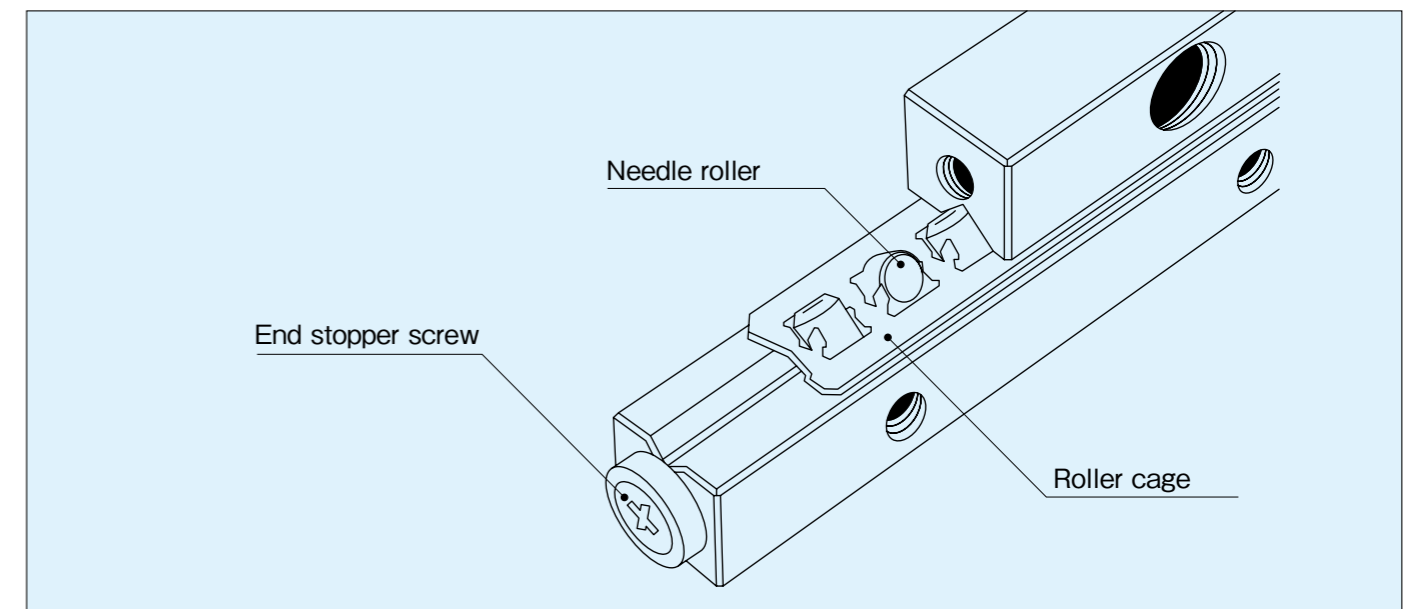
● High Rigidity

In TSK cross roller slide, super precision rollers are alternately placed in roller cage which is installed in between two V-shaped raceways. This structure enables the contact length of rollers to be greater comparing with steel balls, thus, TSK cross roller slide can keep smooth and precise linear motion without deformation under high load application.

● Smooth Linear Motion

The rollers are held separately in a cage, and retained rollers in the cage contact the surface of V-shaped raceways making a grease pocket that improves retention of lubricant. Therefore, it keeps the wear to a minimum and achieves smooth linear motion for a long time.

Structure

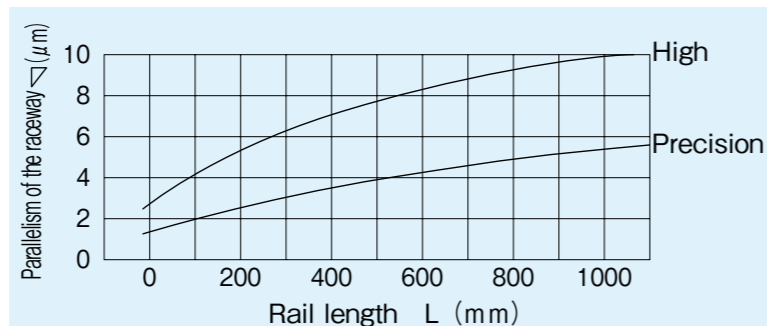
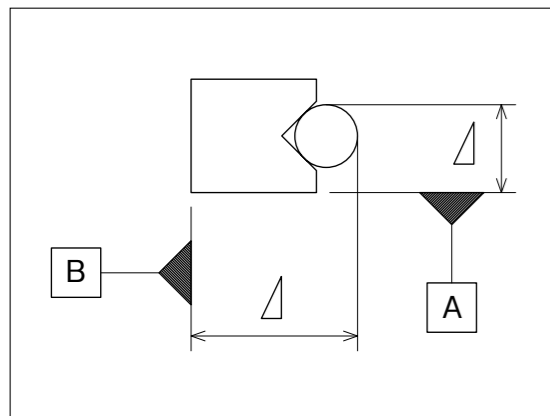


Code Name

TCR	2	120	-	21Z	-	P
Model #	Size	Track rail overall length		Number of rollers		Accuracy grade H = High P = Precision

Accuracy Grade

The accuracy of the rail of TSK cross roller slide is classified into high grade and precision grade as shown in figures below.



Load rating

Direction of load	Basic load ratings	Calculation formula
	Basic dynamic load rating C (N)	$C = \left[\frac{Z}{2} \right]^{3/4} \times C_v$
	Basic static load rating Co (N)	$C_o = \left[\frac{Z}{2} \right] \times C_{ov}$

Z : Number of roller bearings used within the effective load range
 Cv : Basic dynamic load rating per one roller (N)
 Cov : Basic static load rating per one roller (N)

Nominal Life

The rated life of TSK cross roller slide is calculated using the following formulae.

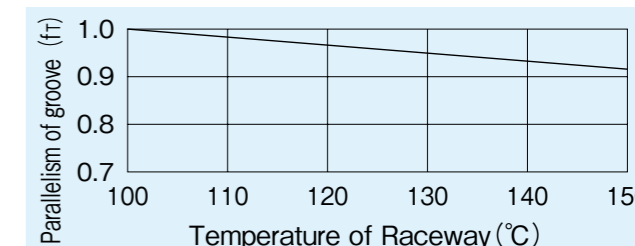
● Rated Life

$$L = \left[\frac{f_T}{f_w} \cdot \frac{C}{P_c} \right]^{3/10} \times 100$$

L : Nominal life (km)
 fT : Temperature factor (Fig.1)
 P : Applied load (N)
 fw : Load factor (Table2)
 C : Basic dynamic load rating (N)

fT : Temperature Factor

If the cross roller is used in where the operating temperature exceeds 100°C, the service life of the product is adversely affected by the high temperature. It is necessary to consider multiplying the temperature factor as shown below.



fw : Load Factor

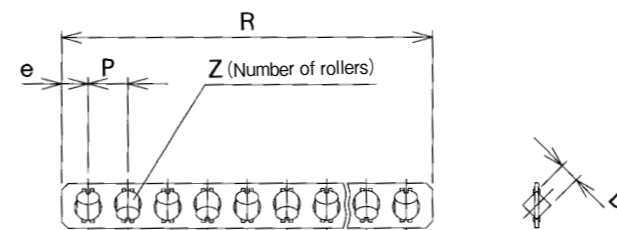
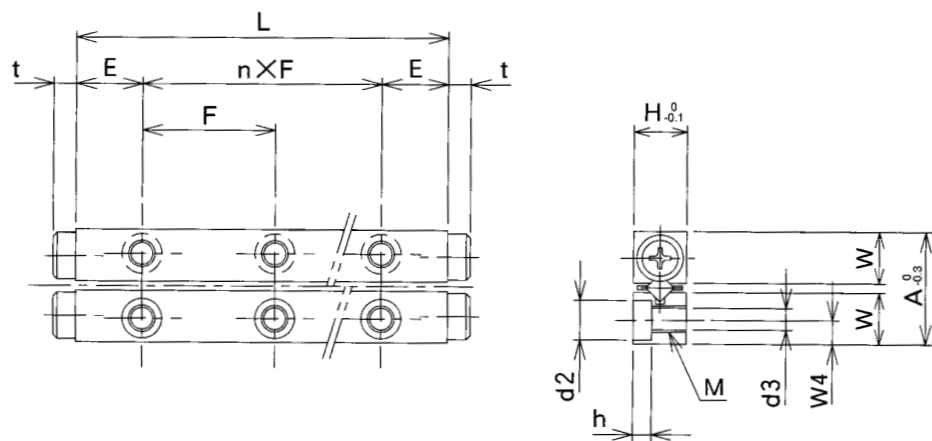
Operating condition	fw
Normal condition	1.0~1.5
Running with impact	2.0~3.0

● Service Life Time

$$L_h = \frac{L \times 10^3}{2 \times l_s \times n_1 \times 60}$$

Lh : Service life time (Hr)
 ls : Stroke length (m)
 n1 : Cycles per minute (rpm)

TSK Cross Roller Slide TCR1

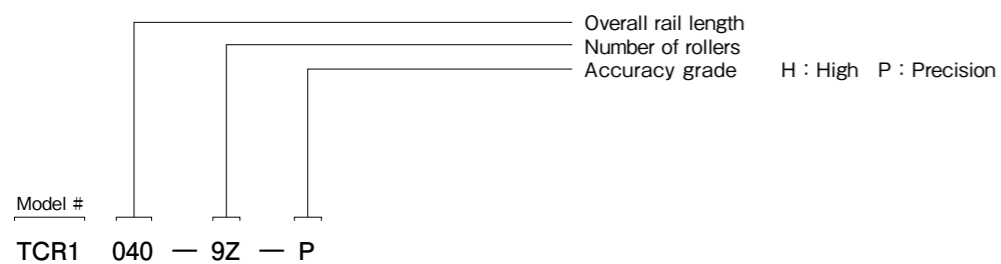


Model #	Stroke (mm)	No. of rollers (pcs.)	Main							
			ST	Z	A	H	L	n×F	E	Da
TCR1020- 5Z	13	5	8.5	4	20	1×10	5	1.5	15.8	3
TCR1030- 7Z	21	7	8.5	4	30	2×10	5	1.5	21.8	
TCR1040- 9Z	29	9	8.5	4	40	3×10	5	1.5	27.8	
TCR1050-11Z	37	11	8.5	4	50	4×10	5	1.5	33.8	
TCR1060-13Z	45	13	8.5	4	60	5×10	5	1.5	39.8	
TCR1070-15Z	53	15	8.5	4	70	6×10	5	1.5	45.8	
TCR1080-17Z	61	17	8.5	4	80	7×10	5	1.5	51.8	

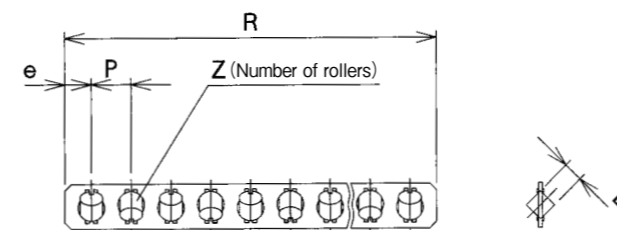
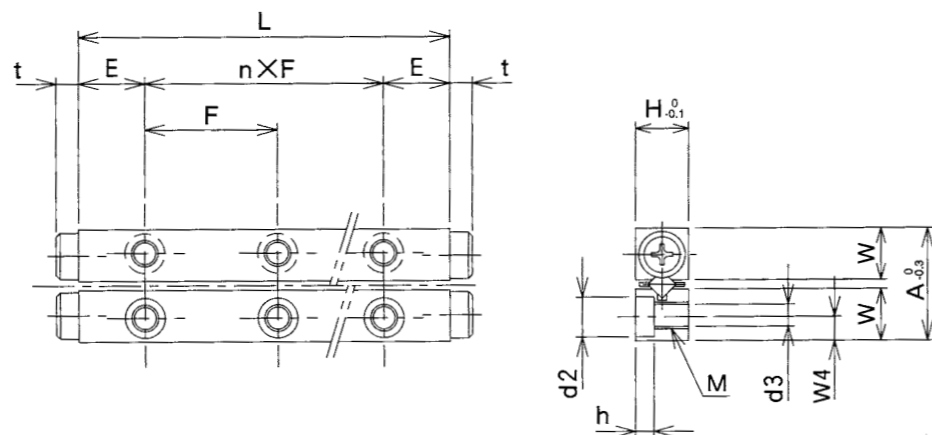
dimensions (mm)								Basic load rating (N) *		Model #
e	W	W4	M	d3	d2	h	t	Dynamic	Static	
								C	Co	
1.9	3.9	1.8	M2	1.65	3	1.4	0.5	125	144	TCR1020- 5Z
		1.8	M2	1.65	3	1.4				TCR1030- 7Z
		1.8	M2	1.65	3	1.4				TCR1040- 9Z
		1.8	M2	1.65	3	1.4				TCR1050-11Z
		1.8	M2	1.65	3	1.4				TCR1060-13Z
		1.8	M2	1.65	3	1.4				TCR1070-15Z
		1.8	M2	1.65	3	1.4				TCR1080-17Z

Note : This number means the load capacity per needle roller.

Code Name



TSK Cross Roller Slide TCR2

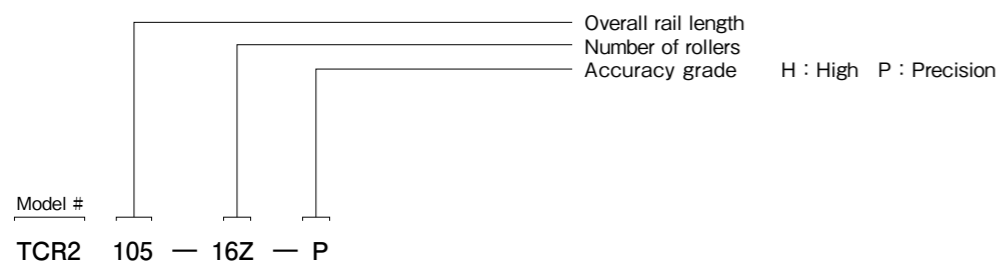


Model #	Stroke (mm)	No. of rollers (pcs.)	Main							
			ST	Z	A	H	L	n x F	E	Da
TCR2030- 5Z	24	5	12	6	30	1 x 15	7.5	2	21.6	4
TCR2045- 8Z	30	8	12	6	45	2 x 15	7.5	2	33.6	
TCR2060-10Z	44	10	12	6	60	3 x 15	7.5	2	41.6	
TCR2075-12Z	58	12	12	6	75	4 x 15	7.5	2	49.6	
TCR2090-14Z	72	14	12	6	90	5 x 15	7.5	2	57.6	
TCR2105-16Z	86	16	12	6	105	6 x 15	7.5	2	65.6	
TCR2120-18Z	100	18	12	6	120	7 x 15	7.5	2	73.6	
TCR2135-21Z	106	21	12	6	135	8 x 15	7.5	2	85.6	
TCR2150-23Z	120	23	12	6	150	9 x 15	7.5	2	93.6	
TCR2165-25Z	134	25	12	6	165	10 x 15	7.5	2	101.6	
TCR2180-27Z	148	27	12	6	180	11 x 15	7.5	2	109.6	

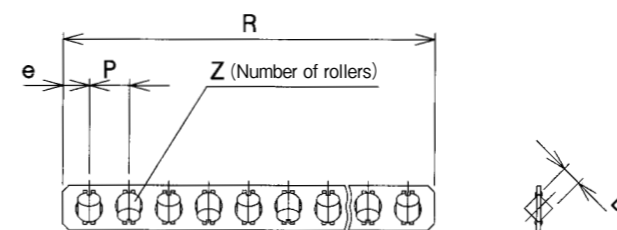
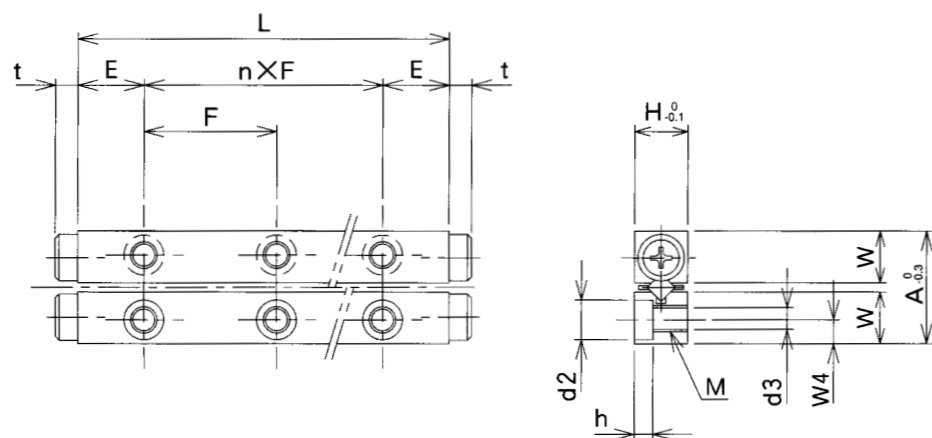
dimensions (mm)								Basic load rating (N) *		Model #
e	W	W4	M	d3	d2	h	t	Dynamic	Static	
								C	Co	
2.8	5.5	2.5	M3	2.55	4.4	2	0.8	293	292	TCR2030- 5Z
		2.5	M3	2.55	4.4	2				TCR2045- 8Z
		2.5	M3	2.55	4.4	2				TCR2060-10Z
		2.5	M3	2.55	4.4	2				TCR2075-12Z
		2.5	M3	2.55	4.4	2				TCR2090-14Z
		2.5	M3	2.55	4.4	2				TCR2105-16Z
		2.5	M3	2.55	4.4	2				TCR2120-18Z
		2.5	M3	2.55	4.4	2				TCR2135-21Z
		2.5	M3	2.55	4.4	2				TCR2150-23Z
		2.5	M3	2.55	4.4	2				TCR2165-25Z
		2.5	M3	2.55	4.4	2				TCR2180-27Z

Note : This number means the load capacity per needle roller.

Code Name



TSK Cross Roller Slide TCR3

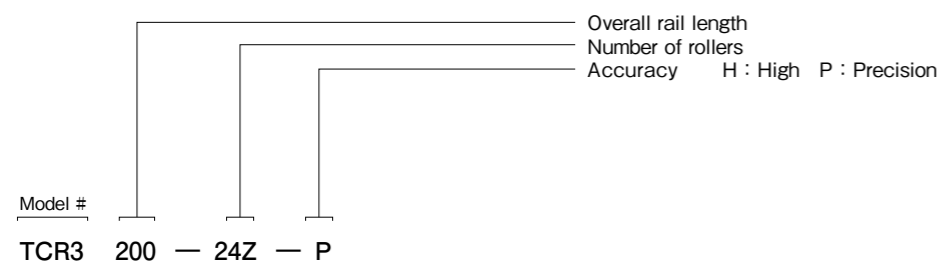


Model #	Stroke (mm)	No. of rollers (pcs.)	Main							p
			A	H	L	n×F	E	Da	R	
TCR3050- 7Z	34	7	18	8	50	1×25	12.5	3	36.4	5
TCR3075-10Z	54	10	18	8	75	2×25	12.5	3	51.4	
TCR3100-13Z	74	13	18	8	100	3×25	12.5	3	66.4	
TCR3125-15Z	104	15	18	8	125	4×25	12.5	3	76.4	
TCR3150-18Z	124	18	18	8	150	5×25	12.5	3	91.4	
TCR3175-21Z	144	21	18	8	175	6×25	12.5	3	106.4	
TCR3200-24Z	164	24	18	8	200	7×25	12.5	3	121.4	
TCR3225-27Z	184	27	18	8	225	8×25	12.5	3	136.4	
TCR3250-30Z	204	30	18	8	250	9×25	12.5	3	151.4	
TCR3275-33Z	224	33	18	8	275	10×25	12.5	3	166.4	
TCR3300-36Z	244	36	18	8	300	11×25	12.5	3	181.4	

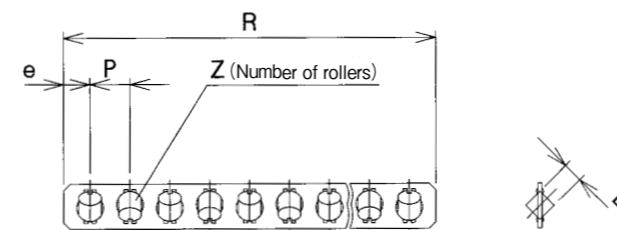
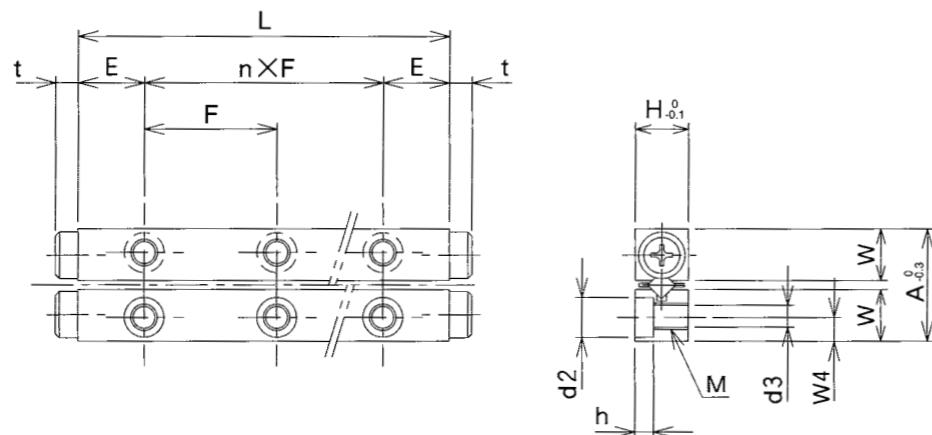
dimensions (mm)								Basic load rating (N) *		Model #
e	W	W4	M	d3	d2	h	t	Dynamic	Static	
								C	Co	
3.2	8.3	3.5	M4	3.3	6	3.1	2	638	761	TCR3050- 7Z
		3.5	M4	3.3	6	3.1				TCR3075-10Z
		3.5	M4	3.3	6	3.1				TCR3100-13Z
		3.5	M4	3.3	6	3.1				TCR3125-15Z
		3.5	M4	3.3	6	3.1				TCR3150-18Z
		3.5	M4	3.3	6	3.1				TCR3175-21Z
		3.5	M4	3.3	6	3.1				TCR3200-24Z
		3.5	M4	3.3	6	3.1				TCR3225-27Z
		3.5	M4	3.3	6	3.1				TCR3250-30Z
		3.5	M4	3.3	6	3.1				TCR3275-33Z
		3.5	M4	3.3	6	3.1				TCR3300-36Z

Note : This number means the load capacity per needle roller.

Code Name



TSK Cross Roller Slide TCR4

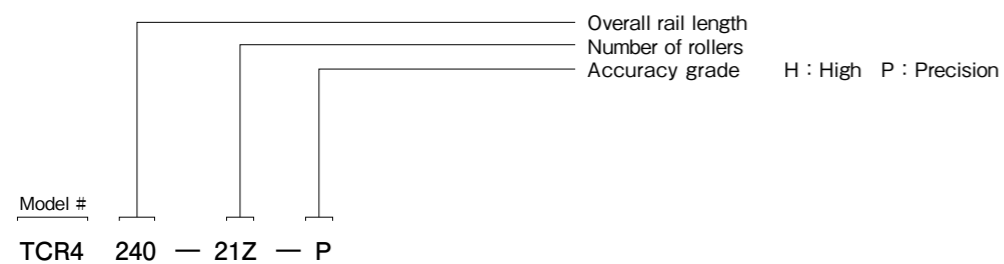


Model #	Stroke (mm)	No. of rollers (pcs.)	Main							
			ST	Z	A	H	L	n×F	E	Da
TCR4080-8Z	54	8	22	11	80	1×40	20	4	57.6	7
TCR4120-11Z	92	11	22	11	120	2×40	20	4	78.6	
TCR4160-14Z	130	14	22	11	160	3×40	20	4	99.6	
TCR4200-18Z	154	18	22	11	200	4×40	20	4	127.6	
TCR4240-21Z	192	21	22	11	240	5×40	20	4	148.6	
TCR4280-24Z	230	24	22	11	280	6×40	20	4	169.6	
TCR4320-28Z	254	28	22	11	320	7×40	20	4	197.6	
TCR4360-31Z	292	31	22	11	360	8×40	20	4	218.6	
TCR4400-34Z	330	34	22	11	400	9×40	20	4	239.6	
TCR4440-38Z	354	38	22	11	440	10×40	20	4	267.6	
TCR4480-41Z	392	41	22	11	480	11×40	20	4	288.6	

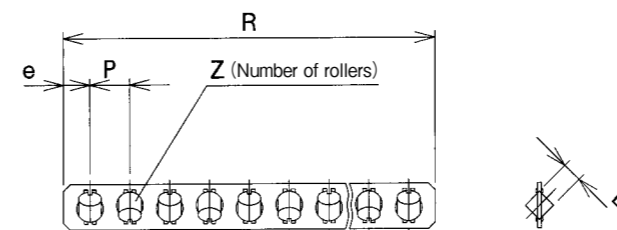
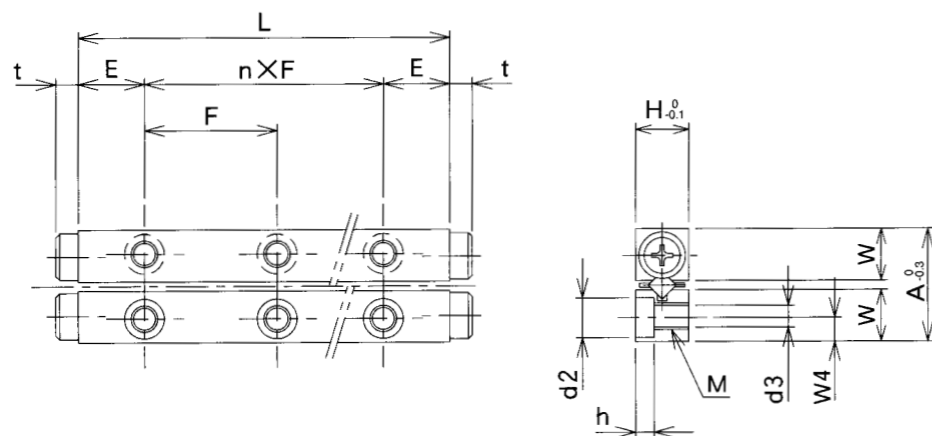
dimensions (mm)								Basic load rating (N) *		Model #
e	W	W4	M	d3	d2	h	t	Dynamic	Static	
								C	Co	
4.3	10	4.5	M5	4.3	7.5	4.1	1	1,230	1,170	TCR4080-8Z
		4.5	M5	4.3						TCR4120-11Z
		4.5	M5	4.3						TCR4160-14Z
		4.5	M5	4.3						TCR4200-18Z
		4.5	M5	4.3						TCR4240-21Z
		4.5	M5	4.3						TCR4280-24Z
		4.5	M5	4.3						TCR4320-28Z
		4.5	M5	4.3						TCR4360-31Z
		4.5	M5	4.3						TCR4400-34Z
		4.5	M5	4.3						TCR4440-38Z
		4.5	M5	4.3						TCR4480-41Z

Note : This number means the load capacity per needle roller.

Code Name



TSK Cross Roller Slide TCR6



Model #	Stroke (mm)	No. of rollers (pcs.)	Main							Da	R	p
			A	H	L	n x F	E	t				
TCR6100-7Z	80	7	31	15	100	1 x 50	25	6	64.8	9		
TCR6150-11Z	108	11	31	15	150	2 x 50	25	6	100.8			
TCR6200-14Z	154	14	31	15	200	3 x 50	25	6	127.8			
TCR6250-17Z	200	17	31	15	250	4 x 50	25	6	154.8			
TCR6300-20Z	246	20	31	15	300	5 x 50	25	6	181.8			
TCR6350-24Z	274	24	31	15	350	6 x 50	25	6	217.8			
TCR6400-27Z	320	27	31	15	400	7 x 50	25	6	244.8			
TCR6450-30Z	366	30	31	15	450	8 x 50	25	6	271.8			
TCR6500-33Z	412	33	31	15	500	9 x 50	25	6	298.8			
TCR6500-36Z	458	36	31	15	550	10 x 50	25	6	325.8			
TCR6600-40Z	486	40	31	15	600	11 x 50	25	6	361.8			

dimensions (mm)								Basic load rating (N) *		Model #
e	W	W4	M	d3	d2	h	t	Dynamic	Static	
								C	Co	
5.4	14	6	M6	5.3	9.5	5.2	3	2,570	2,632	TCR6100-7Z
		6	M6		9.5	5.2				TCR6150-11Z
		6	M6		9.5	5.2				TCR6200-14Z
		6	M6		9.5	5.2				TCR6250-17Z
		6	M6		9.5	5.2				TCR6300-20Z
		6	M6		9.5	5.2				TCR6350-24Z
		6	M6		9.5	5.2				TCR6400-27Z
		6	M6		9.5	5.2				TCR6450-30Z
		6	M6		9.5	5.2				TCR6500-33Z
		6	M6		9.5	5.2				TCR6550-36Z
		6	M6		9.5	5.2				TCR6600-40Z

Note : This number means the load capacity per needle roller.

Code Name

