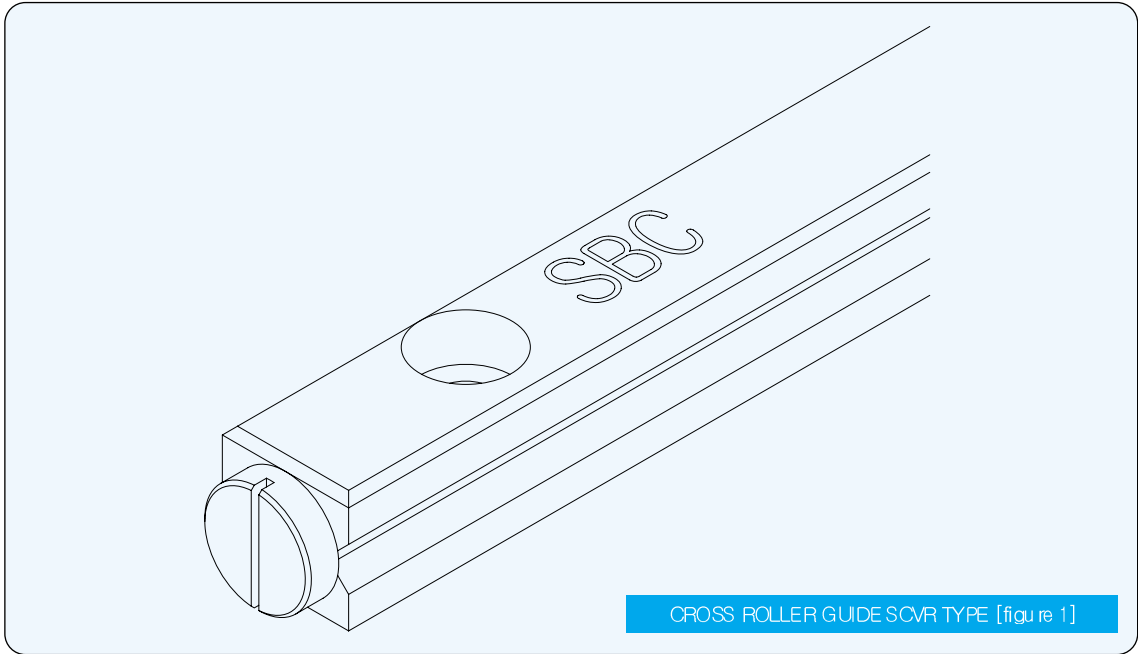


Cross Roller Guide

Cross Roller Guide



SBC cross roller guide type SCVR is linear guide instrument, in which the ball cage is assembled to between two dedicated rails with V grooved raceway. Since the rollers are incorporated at right angles to one another, it can bear loads in all directions and it is a highly rigid, high-precision, compact finite linear motion system.

The cross roller guide can be applied accordingly: OA equipment, Measuring instruments, Optical instrument etc.

High Rigidity and High Load Capacity

It has no clearance because the preload can be applied easily, in resulting it can get high load capacity. Also, it can get high rigidity due to roller's longer contact length.

Smooth movement

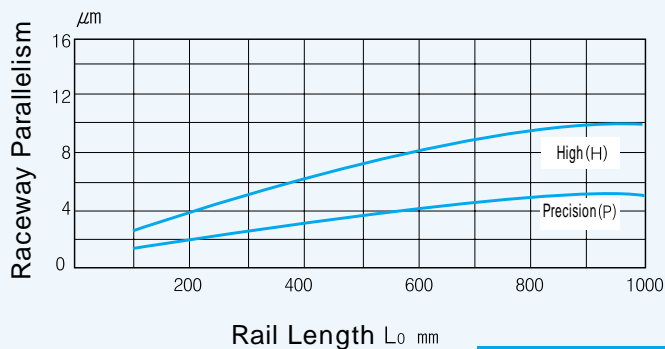
SBC cross roller guide type SCVR has high-precision raceway, in which precision rollers are assembled to cage and maintained. Thus, the guide can have smooth movement without stick slip with low friction.

Easy mounting

Since mounting holes in raceway have counter and tap, it make possible to fix to the tap on machine, equipment and to fix by bolt from machine, equipment.

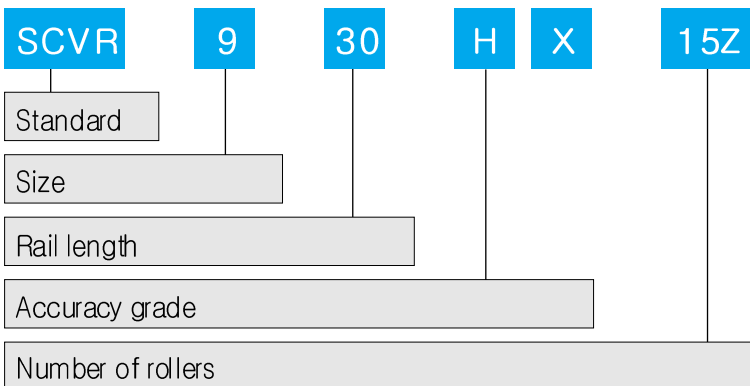
Accuracy

SBC cross roller guide accuracy is defined as following figure.



Rail length and raceway parallelism [figure 2]

Ordering Example



Life

The nominal life can be calculated using following equation

$$L = \left(\frac{f_T}{f_W} \cdot \frac{C}{P_C} \right)^{\frac{10}{3}} \times 100$$

L : Nominal Life (km)

C : Basic dynamic load rating (kN)

P_C : Calculated load (kN)

f_T : Temperature factor

f_W : Load factor

Once nominal life is obtained, Below equation is used for Life Time calculation.

$$L_h = \frac{L \times 10^6}{2 \times l_s \times n_1 \times 60}$$

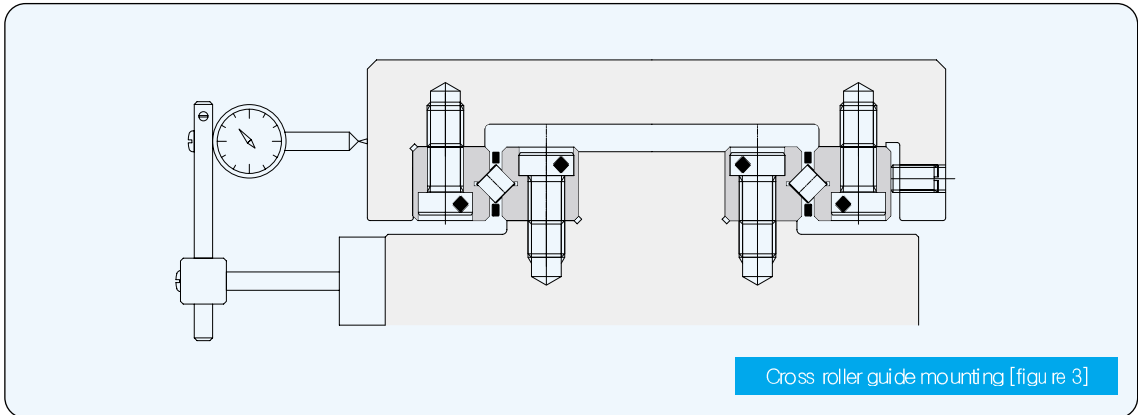
L_h : Service life in hours (h), l_s : Stroke length (mm),

n_1 : Number of reciprocal operations per minute (min^{-1})

f_T : Temperature factor

MOUNTING METHOD

- In case of using clearance adjusting bolt

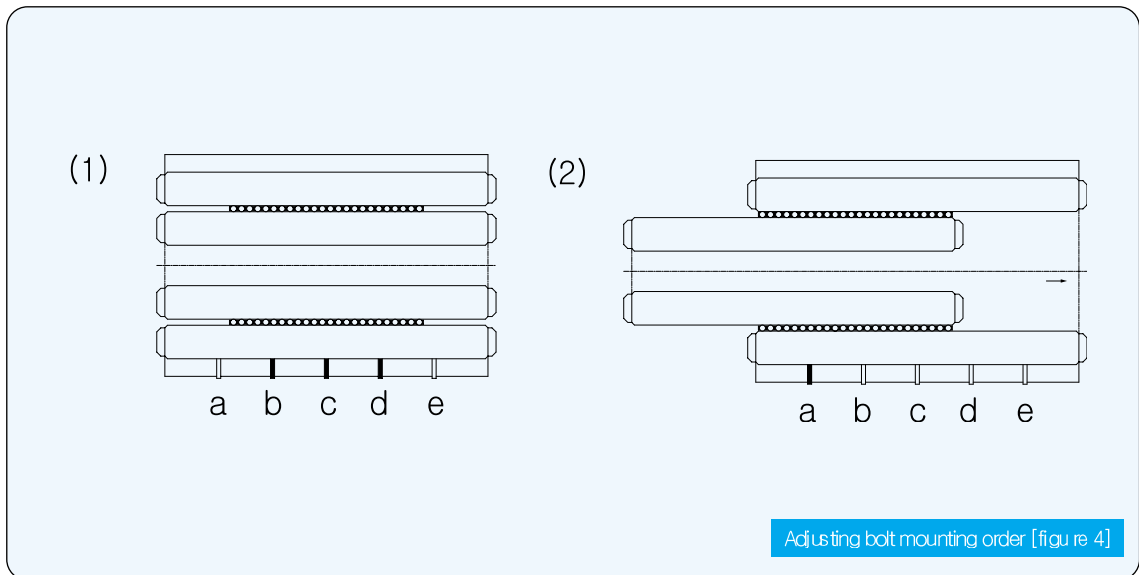


- In case of using clearance adjusting bolt

- ① Install the rail 2, 3 to base and Rail 1 to table. Tighten the rail-mounting bolt.
- ② Temporarily mount the rail 4 to the table

※ When you design the system. Please consider that the rail-mounting bolt can be mounted after assembly.

- ③ Set the base and table according to figure 6 and insert the roller cage. In case the cage can't be inserted due to non clearance, move the rail 4 to adjusting bolt and do it again.
- ④ Set the dial gauge like figure 6. While moving table slowly to right and left, set all adjusting bolts until there is no slack.
- ⑤ Install stoppers to the ends of rails.



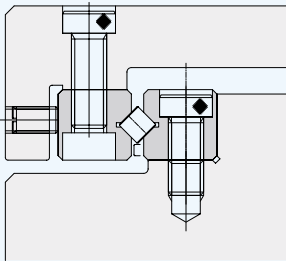
- ⑥ Reset the cage position to get demanded stroke while moving table.
- ⑦ Position roller cage at the center of rail like figure 7 No.1 . Mount the adjusting bolt b, c, d evenly by torque wrench within the area of roller until dial gauge shows desired value.

※ The value of dial gauge is same as the preload of one roller.

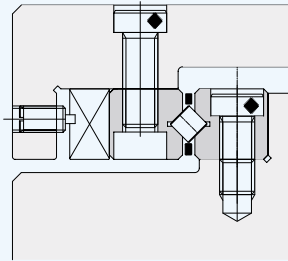
- ⑧ Move table like figure 7 No.2 and mount the rest of adjusting bolt a, e same as adjusting bolt b, c, d.

Example of Clearance adjusting

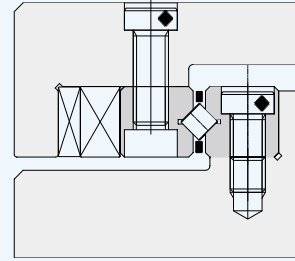
Please design adjusting bolt and roller to press same way.



Generally, adjusting bolts push the rail.



In case accuracy and rigidity needed, use pressing plate.



In case high accuracy and high rigidity needed, use tapered gibs 1 and 2.

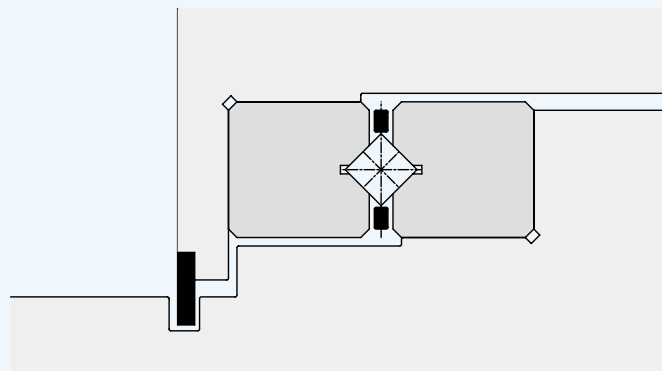
Example of clearance adjusting [figure 5]

CAGE SLIPPAGE

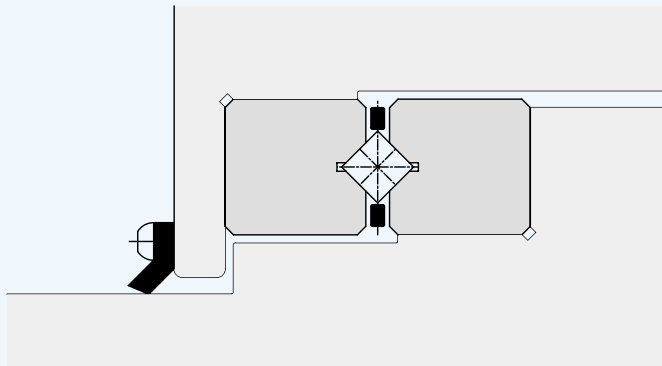
When used under high-speed, unbalanced-load, or machine vibration conditions, cage slippage may occur. To prevent this problem, please install the stopper to the end of rails.

DUST PROTECTION

To prevent cross roller guide from impurity or alien material infiltrating, side dust-protections as shown in figure 9 are available. For the other part of guide, consider using bellows or telescopic cover.



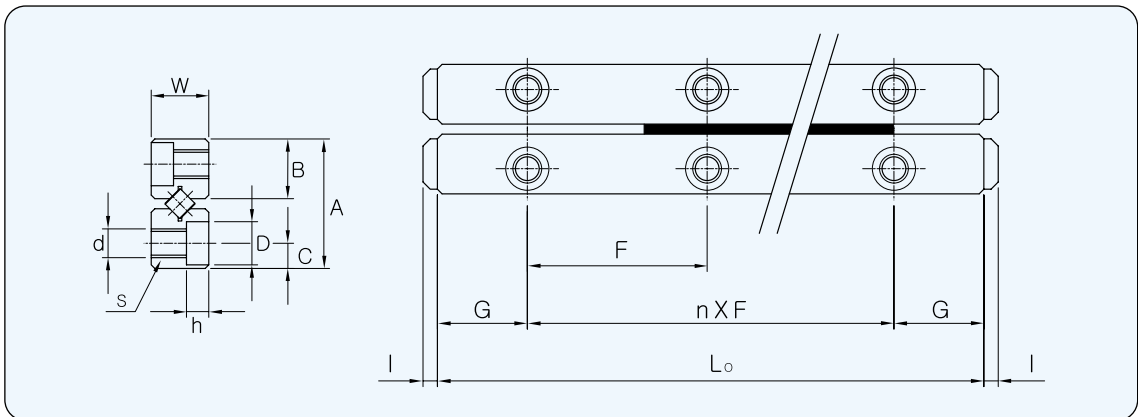
Labyrinth cover



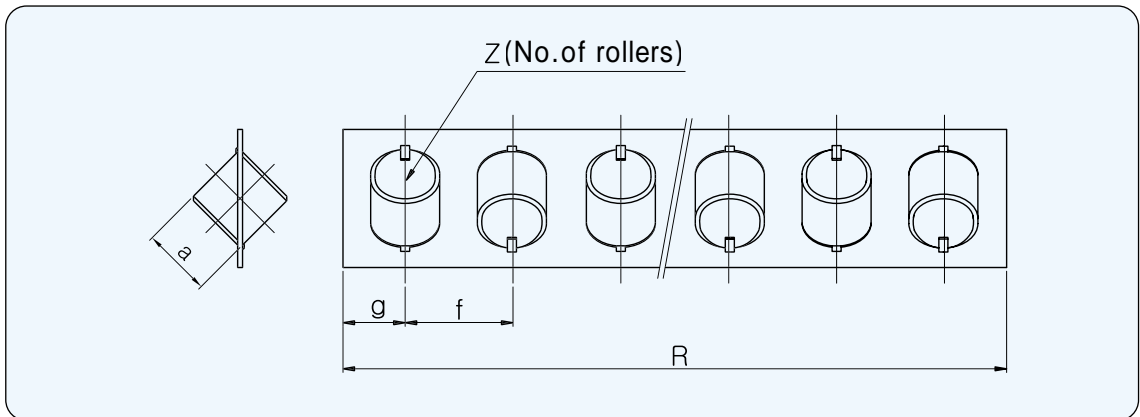
Wiper seal

DUST PROTECTION [figure 6]

SCVR 2



Model NO	Max stroke	Major Dimensions								
		Combined dimension			Assembled dimensions					
		A	W	L ₀	n × F	G	B	C	S	d
SCVR 2-30×5 Z	18			30	1 × 15					
SCVR 2-45×8 Z	24			45	2 × 15					
SCVR 2-60×11 Z	30			60	3 × 15					
SCVR 2-75×13 Z	44			75	4 × 15					
SCVR 2-90×16 Z	50			90	5 × 15					
SCVR 2-105×18 Z	64	12	6	105	6 × 15	7.5	5.6	2.5	M3 × 0.5	2.55
SCVR 2-120×21 Z	70			120	7 × 15					
SCVR 2-135×23 Z	84			135	8 × 15					
SCVR 2-150×26 Z	90			150	9 × 15					
SCVR 2-165×29 Z	96			165	10 × 15					
SCVR 2-180×32 Z	102			180	11 × 15					



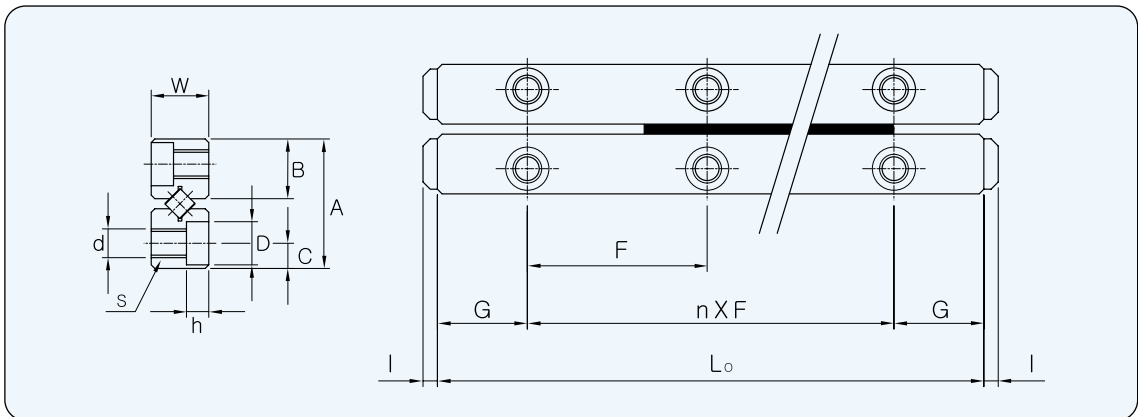
Unit:mm

Major Dimensions								Permissible preload δ μm	Basic load rating (per roller)		Mass (rail) kg/m
D	h	l	Da	R	g	f	No. of rollers Z		C_z kN	C_{oz} kN	
4.4	2	2	2	21	2.5	4	5	-3	0.176	0.127	0.23
				33			8				
				45			11				
				53			13				
				65			16				
				73			18				
				85			21				
				93			23				
				105			26				
				117			29				
129	32										

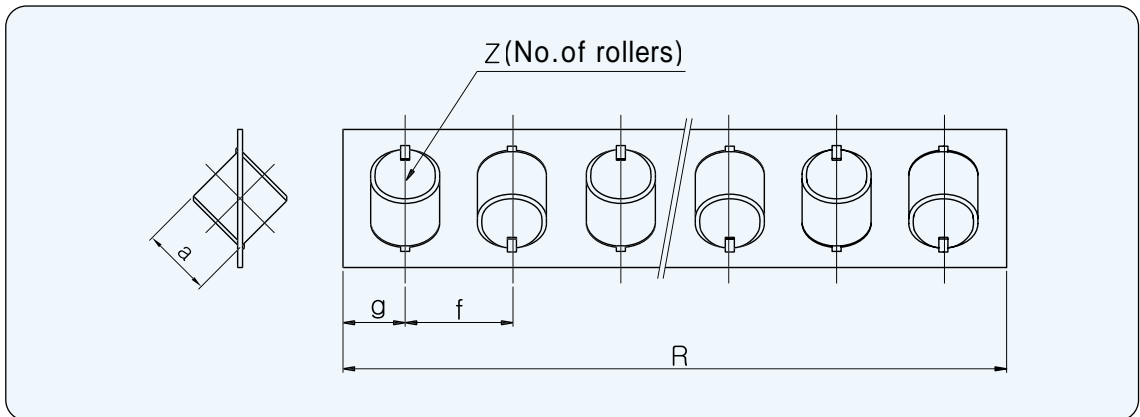
Note) "Mass" in this dimension is the value per meter of a rail

1kN \approx 102kgf

SCVR 3



Model NO	Max stroke	Major Dimensions								
		Combined dimension			Assembled dimensions					
		A	W	L ₀	n × F	G	B	C	S	d
SCVR 3-50 × 7 Z	28			50	1 × 25					
SCVR 3-75 × 10 Z	48			75	2 × 25					
SCVR 3-100 × 14 Z	58			100	3 × 25					
SCVR 3-125 × 17 Z	78			125	4 × 25					
SCVR 3-150 × 21 Z	88			150	5 × 25					
SCVR 3-175 × 24 Z	108	18	8	175	6 × 25	12.5	8.3	3.52	M4	3.3
SCVR 3-200 × 28 Z	118			200	7 × 25				×	
SCVR 3-225 × 31 Z	138			225	8 × 25				0.7	
SCVR 3-250 × 35 Z	148			250	9 × 25					
SCVR 3-275 × 38 Z	168			275	10 × 25					
SCVR 3-300 × 42 Z	178			300	11 × 25					



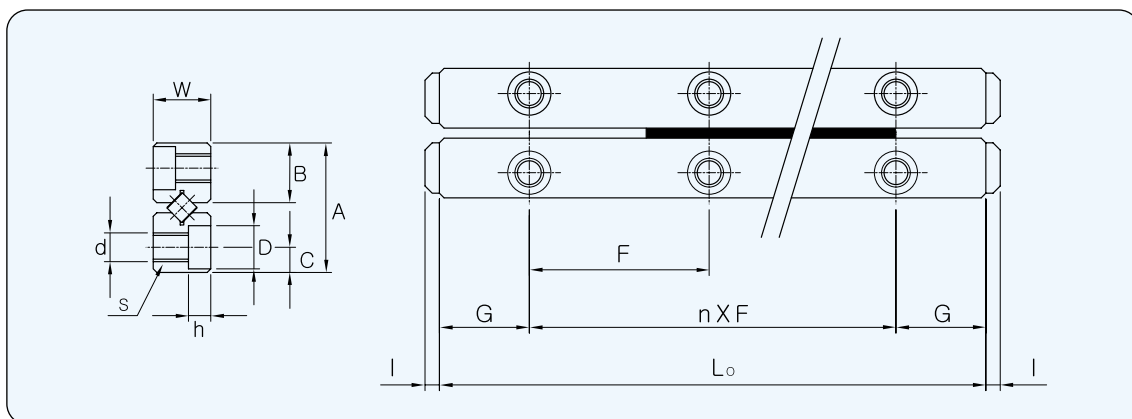
Unit: mm

Major Dimensions								Permissible load δ μm	Basic load rating (per roller)		Mass (rail) kg/m
D	h	l	Da	R	g	f	No. of rollers Z		C_z kN	C_{oz} kN	
6	3.1	2.5	3	36	3	5	7	-4	0.363	0.275	0.45
				51			10				
				71			14				
				86			17				
				106			21				
				121			24				
				141			28				
				156			31				
176	35										
				191			38				

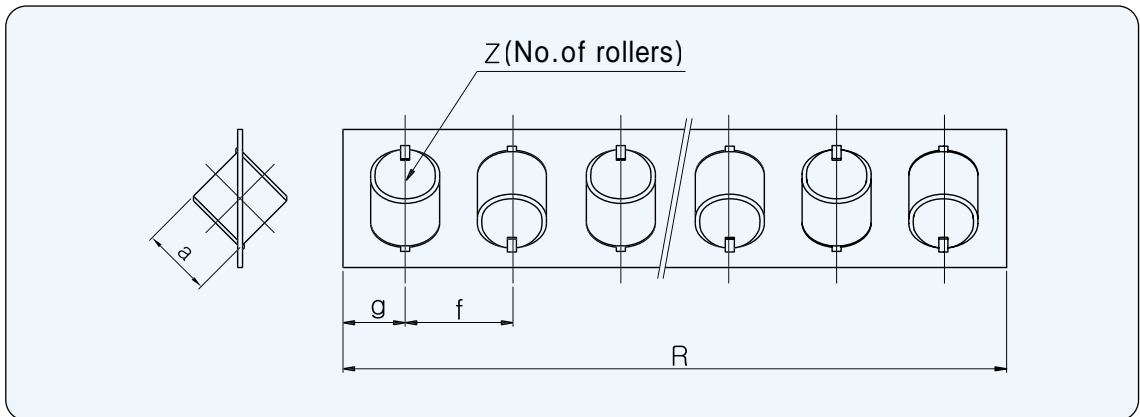
Note) "Mass" in this dimension is the value per meter of a rail

1kN \approx 102kgf

SCVR 4



Model NO	Max stroke	Major Dimensions								
		Combined dimension			Assembled dimensions					
		A	W	L ₀	n × F	G	B	C	S	d
SCVR 4-80×7 Z	58			80	1×40					
SCVR 4-120×11 Z	82			120	2×40					
SCVR 4-160×15 Z	106			160	3×40					
SCVR 4-200×19 Z	130			200	4×40					
SCVR 4-240×23 Z	154			240	5×40					
SCVR 4-280×27 Z	178	22	11	280	6×40	20	10.2	4.5	M5	4.3
SCVR 4-320×31 Z	202			320	7×40				×0.8	
SCVR 4-360×35 Z	226			360	8×40					
SCVR 4-400×39 Z	250			400	9×40					
SCVR 4-440×43 Z	274			440	10×40					
SCVR 4-480×47 Z	298			480	11×40					

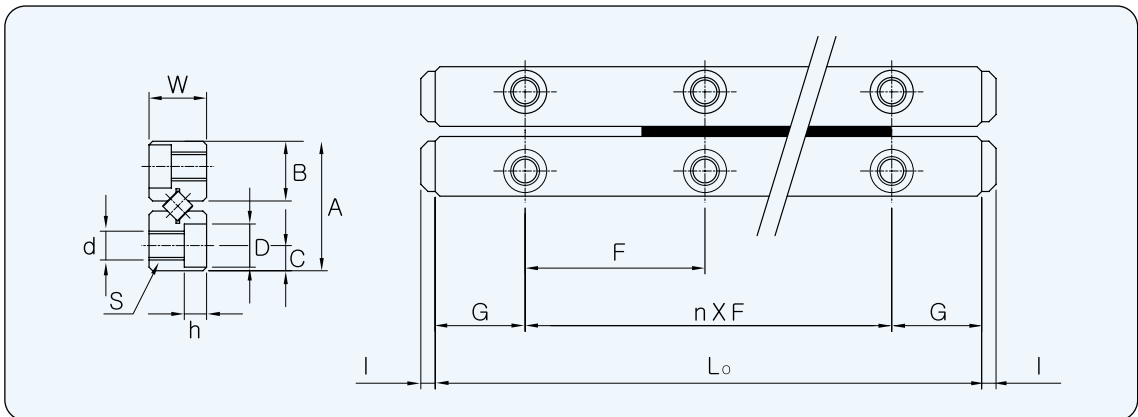


Unit:mm

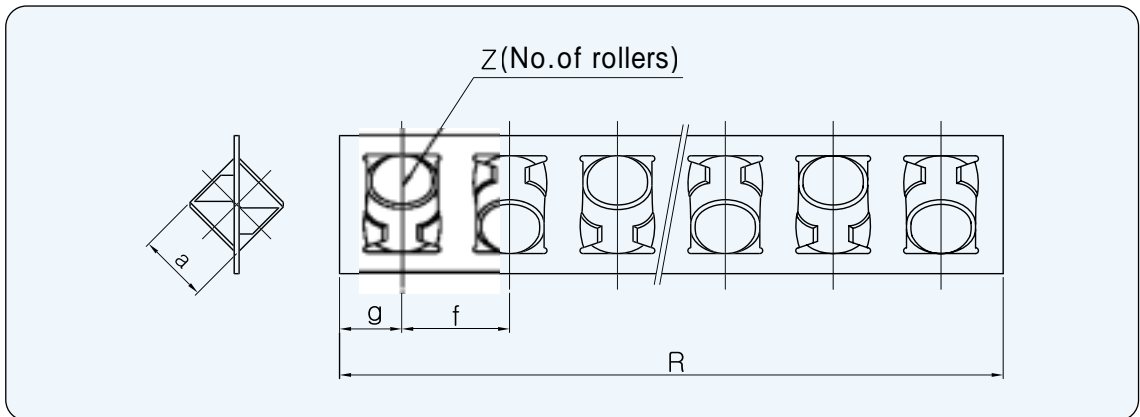
Major Dimensions								Permissible preload δ μm	Basic load rating (per roller)		Mass (rail) kg/m
D	h	l	Da	R	g	f	No. of rollers Z		C_z kN	C_{oz} kN	
8	4.2	2.5	4	51	4.5	7	7	-5	0.764	0.637	0.8
				79			11				
				107			15				
				135			19				
				163			23				
				191			27				
				219			31				
				247			35				
				275			39				
303	43										

1kN \approx 102kgf

SCVR 6



Model NO	Max stroke	Major Dimensions								
		Combined dimension			Assembled dimensions					
		A	W	L ₀	n × F	G	B	C	S	d
SCVR 6-100 × 7 Z	56			100	1 × 50					
SCVR 6-150 × 10 Z	96			150	2 × 50					
SCVR 6-200 × 13 Z	136			200	3 × 50					
SCVR 6-250 × 17 Z	156			250	4 × 50					
SCVR 6-300 × 20 Z	196			300	5 × 50					
SCVR 6-350 × 24 Z	216	30	15	350	6 × 50	25	14.4	6	M6	5.2
SCVR 6-400 × 27 Z	256			400	7 × 50				×	
SCVR 6-450 × 31 Z	276			450	8 × 50				1.0	
SCVR 6-500 × 34 Z	316			500	9 × 50					
SCVR 6-550 × 38 Z	336			550	10 × 50					
SCVR 6-600 × 41 Z	376			600	11 × 50					

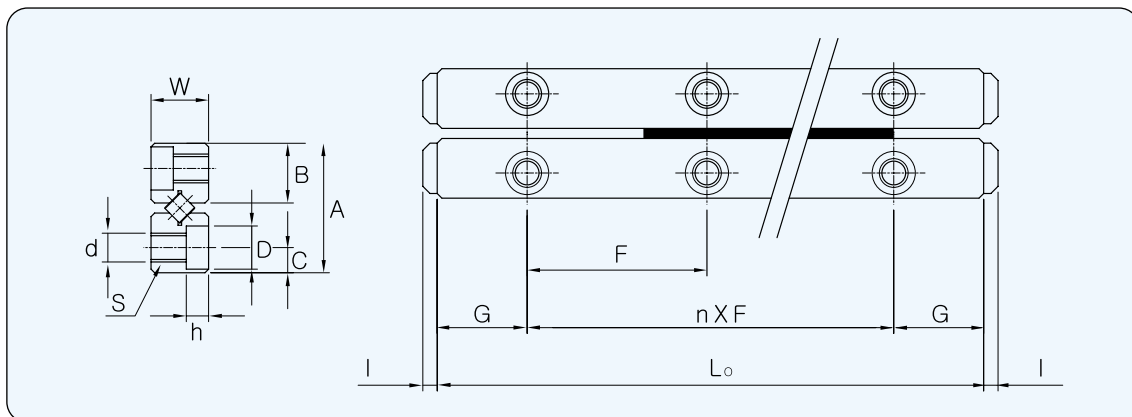


Unit: mm

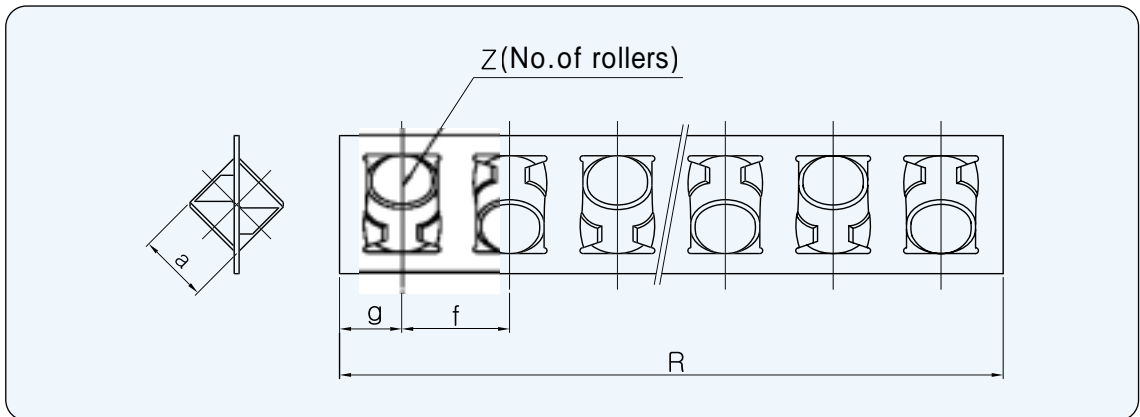
Major Dimensions								Permissible preload δ μm	Basic load rating (per roller)		Weight (Rail) kg/m
D	h	l	Da	R	g	f	No. of rollers Z		C_z kN	C_{oz} kN	
9.5	5.2	3	6	72	6	10	7	-7	1.91	1.76	1.5
				102			10				
				132			13				
				172			17				
				202			20				
				242			24				
				272			27				
				312			31				
				342			34				
				382			38				
412	41										

1kN \approx 102kgf

SCVR 9



Model NO	Max stroke	Major Dimensions								
		Combined dimension			Assembled dimensions					
		A	W	L ₀	n × F	G	B	C	S	d
SCVR 9-200 × 10 Z	118			200	1 × 100					
SCVR 9-300 × 15 Z	178			300	2 × 100					
SCVR 9-400 × 20 Z	238			400	3 × 100					
SCVR 9-500 × 25 Z	298			500	4 × 100					
SCVR 9-600 × 30 Z	358			600	5 × 100					
SCVR 9-700 × 35 Z	418			700	6 × 100	50	19.2	8	M8	6.8
SCVR 9-800 × 40 Z	478			800	7 × 100				×	
SCVR 9-900 × 45 Z	538			900	8 × 100				1.25	
SCVR 9-1000 × 50 Z	598			1000	9 × 100					
SCVR 9-1100 × 55 Z	658			1100	10 × 100					
SCVR 9-1200 × 60 Z	718			1200	11 × 100					



Major Dimensions								Permissible preload δ μm	Basic load rating (per roller)		Weight (Rail) kg/m
D	h	l	Da	R	g	f	No. of rollers Z		C_z kN	C_{oz} kN	
10.5	6.2	4	9	141	7.5	14	10	-10	4.31	4.36	3.2
				211			15				
				281			20				
				351			25				
				421			30				
				491			35				
				561			40				
				631			45				
				701			50				
				771			55				
841	60										

1kN \approx 102kgf