



# SLIDE WAY

The NB slide way is a non-recirculating linear motion bearing utilizing precision rollers. It is used primarily in optical and measurement equipment where high precision movement is required.

## STRUCTURE AND ADVANTAGES

The NB slide way consists of precision ground track bases and caged rollers. Precision rollers are used as the rotating element. Since they do not recirculate, there is less frictional resistance fluctuation. Additionally, there is little or no difference between the static and dynamic frictional resistances.

### Suitable for Minute Motion:

Because the frictional resistance is extremely small and there is little or no difference between the static and dynamic frictional resistances, the NB slide way is well suited for minute motion. It can follow minute motion accurately, resulting in highly accurate linear movement.

### Low-Speed Stability:

Since the frictional resistance fluctuation is small even under low-load conditions, stable motion is obtained from low to high speeds.

### High Rigidity and High Load Capacity:

Since the rollers provide a larger contact area compared with ball elements, there is less elastic deformation. Additionally, since the rollers do not recirculate, the effective number of rotating elements is large, resulting in high rigidity and high load capacity.

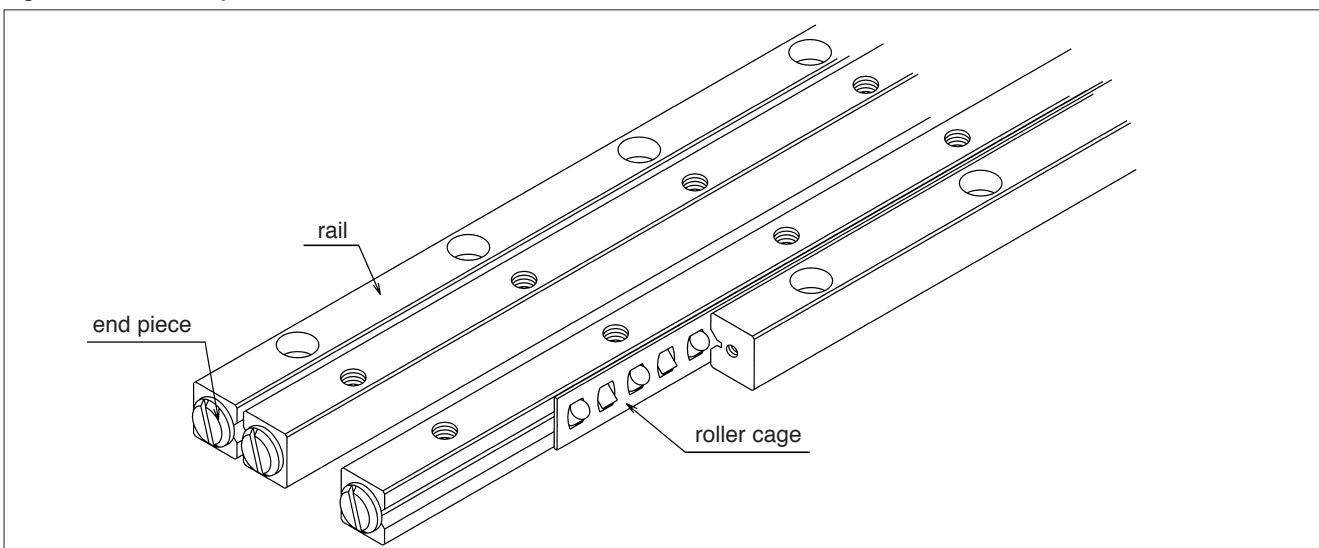
### Low Noise:

The use of a roller cage prevents noise from being generated by contact between the rotating elements, resulting in quiet operation.

### All Stainless Steel Type Available:

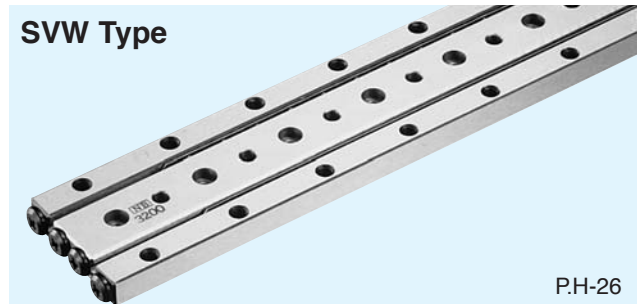
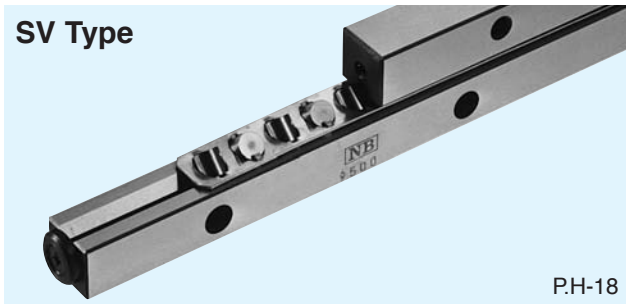
The anti-corrosion SVS/SVWS slide ways have all stainless-steel components, making them ideal for use in clean room applications.

Figure H-14 Slide Way Structure





## TYPE



The SV type slide way consists of two R type roller cages, which have precision rollers in a cross arrangement and four rails having V-shaped raceway surfaces. The all stainless-steel optional feature makes it suitable for use in corrosive environments.

The SVW type slide way consists of two R type roller cages, two SV-type rails, and one W type rail with V-shaped grooves on both sides. The use of a W-type rail results in a compact design. The SVWS type is also available with all stainless steel components.

## ACCURACY AND RATED LIFE

### Accuracy:

The accuracy of a slide way is measured along its entire length, as illustrated in Figure H-16, and expressed in terms of parallelism. It is categorized into three levels: high grade (no suffix), precision grade (P), and ultra precision grade (UP).

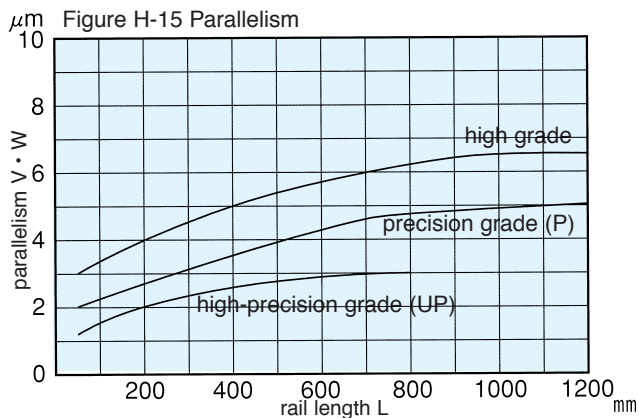
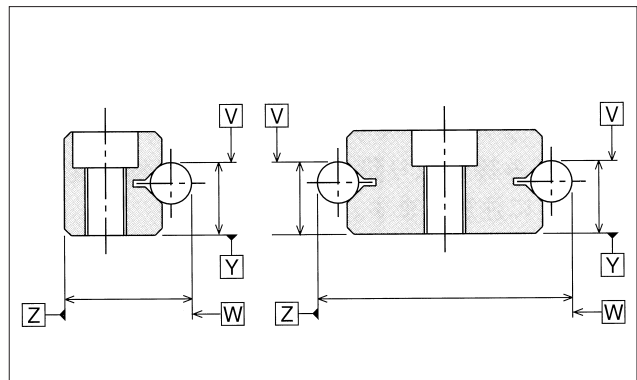


Figure H-16 Accuracy Measurement Method



Ultra precision grade is available for size 1-9

### Rated Life:

The life of a slide way is calculated using the following equation:

Travel life:

$$L = \left( \frac{f_T}{f_W} \cdot \frac{C}{P} \right)^{10/3} \cdot 50$$

L : travel life (km)  $f_T$  : temperature coefficient  
 $f_W$  : load coefficient C : basic dynamic rated load (N)  
P : load (N)

※ Refer to page Eng. 5 for coefficients.

Life time:

$$L_H = \frac{L \cdot 10^3}{2 \cdot \ell \cdot s \cdot n_1 \cdot 60}$$

$L_H$  : life time (hr)  $\ell$  : stroke length (m)  
 $n_1$  : number of strokes per minute (cpm)

## MOUNTING

### Example:

Figure H-17 SV Type Slide Way

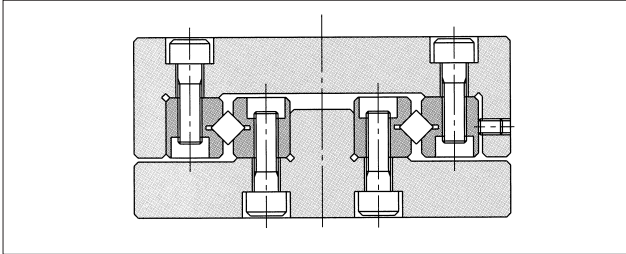
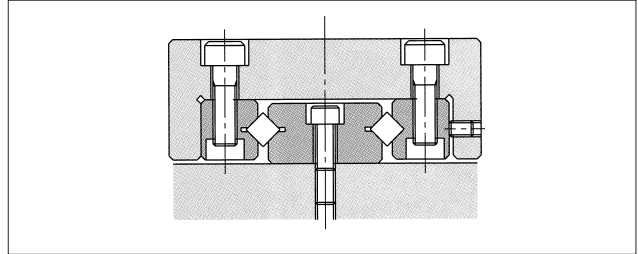


Figure H-18 SVW Type Slide Way

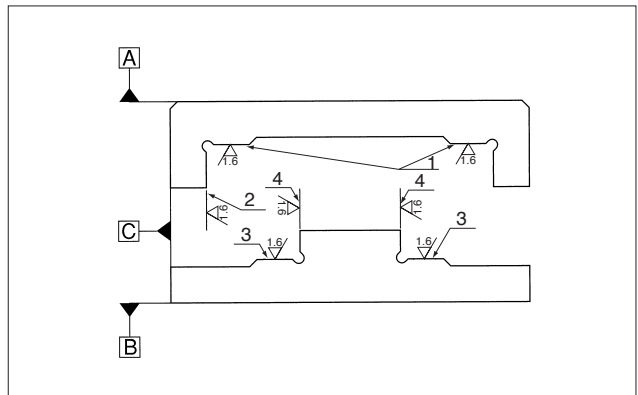


### Accuracy:

The accuracy of the mounting surface must be equal to or better than that of the slide way to ensure good performance.

- Parallelism of surface 1 relative to surface A
- Perpendicularity of surface 2 relative to surface A
- Parallelism of surface 3 relative to surface B
- Perpendicularity of surface 4 relative to surface B
- Parallelism of surface 2 relative to surface C
- Parallelism of surface 4 relative to surface C

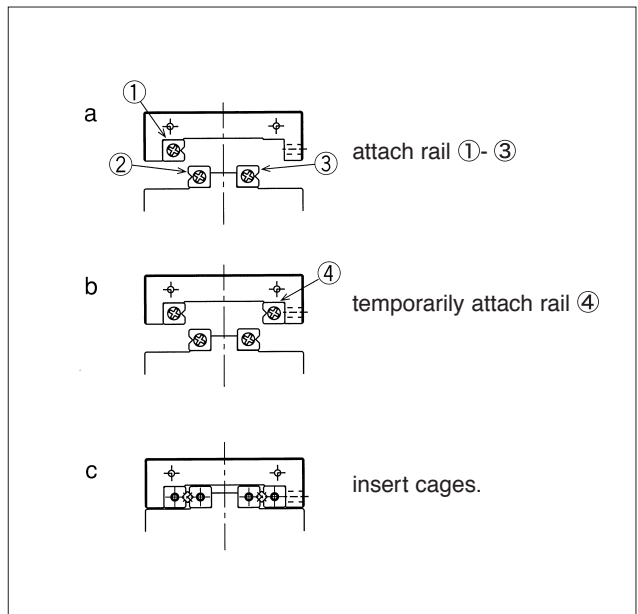
Figure H-19 Accuracy of Mounting Surfaces



### Procedure (refer to Figures H-20 and -21):

- (1) Remove burrs, dirt, dust, etc. from mounting surfaces to prevent contamination during assembly.
- (2) Apply low-viscosity oil to contact surfaces. Attach rail ①-③ by tightening bolts to specified torque values (Table H-6, Figure H-20a).
- (3) Temporarily attach adjustable side of rail ④ (Figure H-20b).
- (4) Remove one end-piece. Carefully insert roller cages between rails (Figure H-20c).
- (5) Re-attach end-pieces.

Figure H-20 Installation Method (1)





(6) Move table slowly to the right and left (in the direction of the stroke) to position roller cage at the center of the rail.

(7) Set indicators at the center and the side (reference surface) of the table (Figure H-21d).

(8) Move table to one of the stroke ends. Lightly tighten adjustment screw on roller cage (Figure H-21e).

(9) Move table to the other stroke end. Similarly lightly tighten adjustment screw on roller cage (Figure H-21f).

(10) Move table to the center and lightly tighten center adjustment screw (Figure H-21g).

(11) Repeat steps (8) ~ (10) until there is no clearance around the table. When there is no clearance, the indicator will show a minimum fluctuation value when the table is moved to the right and left. Exercise care not to apply an excessive pre-load.

(12) Make final adjustment of pre-load. Repeat steps (8) ~ (10) and tighten the adjustment screws to the torque values listed in Table H-5.

(13) Fix the rail ④. As done for the adjustment screws, tighten the mounting bolts by moving the table.

Figure H-21 Installation Method (2)

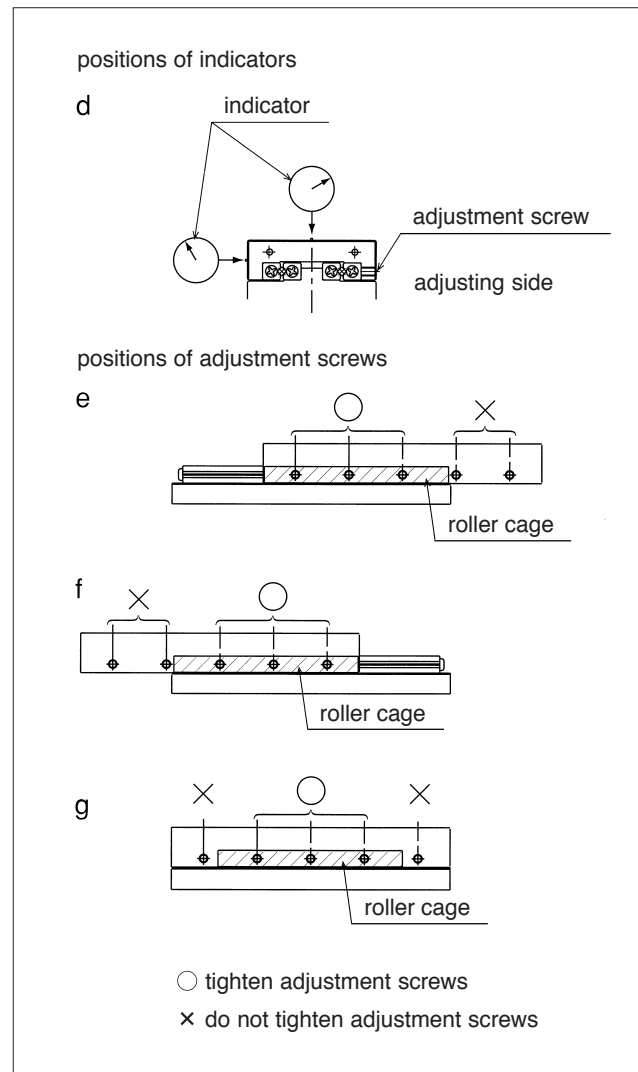


Table H-5 Recommended Torque for Adjustment Screw Unit/N·m

Part Number	Size	Torque
SV1	M2	0.008
SV2	M3	0.012
SV3	M4	0.05
SV4	M4	0.08
SV6	M5	0.20
SV9	M6	0.40

Table H-6 Recommended Torque for Mounting Bolt Unit/N·m

Part number	Size	Torque
SV1	M2	0.4
SV2	M3	1.4
SV3	M4	3.2
SV4	M5	6.6
SV6	M6	11.2
SV9	M8	27.6

## SPECIAL BOLT (BT type)

BT type special bolts should be used when using the clearance holes to install a slide way.

Figure H-22 BT type Special Bolt

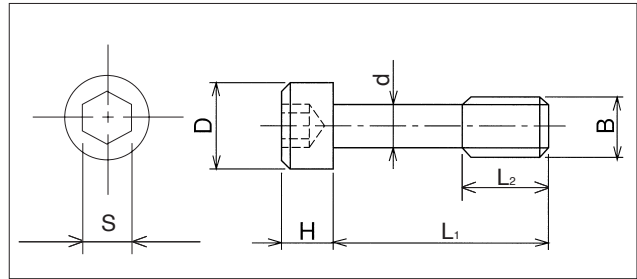


Table H-7 BT type Special Bolt Specifications

Part number	B	d	D	H	L <sub>1</sub>	L <sub>2</sub>	S	Applicable tracking base
		mm	mm	mm	mm	mm	mm	
<b>BT 3</b>	M 3	2.3	5	3	12	5	2.5	<b>SV 3</b>
<b>BT 4</b>	M 4	3.1	5.8	4	15	7	3	<b>SV 4</b>
<b>BT 6</b>	M 5	3.9	8	5	20	8	4	<b>SV 6</b>
<b>BT 9</b>	M 6	4.6	8.5	6	30	12	5	<b>SV 9</b>
<b>BT12</b>	M 8	6.25	11.3	8	40	17	6	<b>SV12</b>

## LUBRICATION AND DUST PREVENTION

### Lubrication:

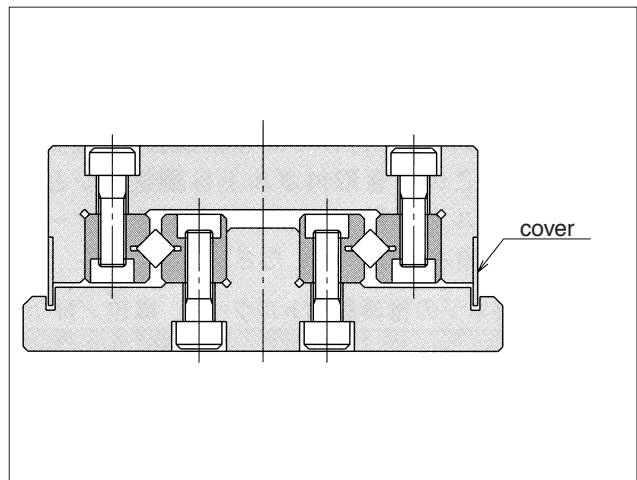
NB slide ways are lubricated using lithium soap grease prior to shipment, so they can be used immediately. Periodic application of a similar type grease is recommended depending on the operating conditions.

NB can also provide special grease for low dust generation requirements. Please refer to page Eng-20 for further details.

### Dust Prevention:

Dust and dirt can affect the accuracy and life of a slide way. A slide way used in a hostile environment should be protected with a cover (Figure H-23).

Figure H-23 Use of Cover to Prevent Dust





## NOTES ON OPERATION

### Pre-load Adjustment:

Inaccurate pre-load adjustment may reduce the motion accuracy, resulting in skewing and shortening of slide way life. The pre-load should be adjusted carefully.

### Cage Slippage:

When used under high-speed, unbalanced-load, or vibrational conditions, cage slippage may occur. The stroke distance should be determined with sufficient margin, and an excessive pre-load should not be applied.

### End Pieces:

End pieces are attached to each end of the slide way to prevent removal of the cage. Do not use them as a mechanical stopper.

### Knock Pin Hole:

When using SVW type knock pin holes to attach a slide way, the holes on the mounting surface should be machined after attaching the W type rail. After machining, remove the chips completely and wash as required.

### Careful Handling:

Dropping a slide way may result in scratches or dents on the raceway surface, preventing smooth motion and affecting accuracy. Care should be exercised in handling.

### Use as a Set:

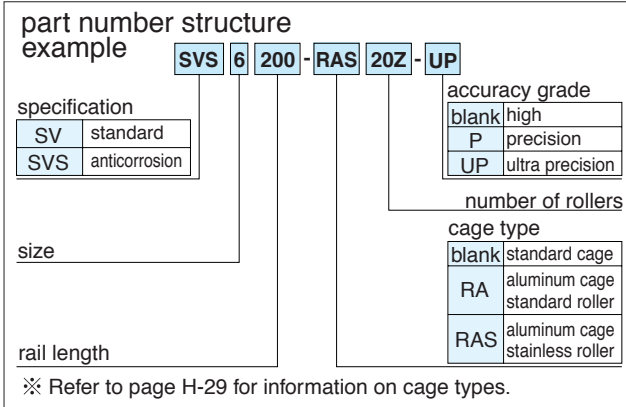
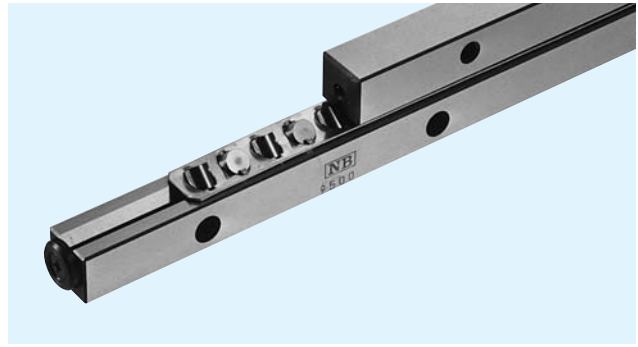
The accuracy tolerance of a slide way is designed to be adjusted within a particular set of components. If components from different sets are used, accuracy may be affected.

### Allowable Load

The allowable load is a load under which the sum of elastic deformation of the rolling element and the raceway in the contact area subject to the maximum contact stress is small enough to guarantee smooth rolling movement. Where very smooth and highly accurate liner motion is required, make sure to use the product within the allowable load values.

# SV TYPE

— SV1/SV2 —



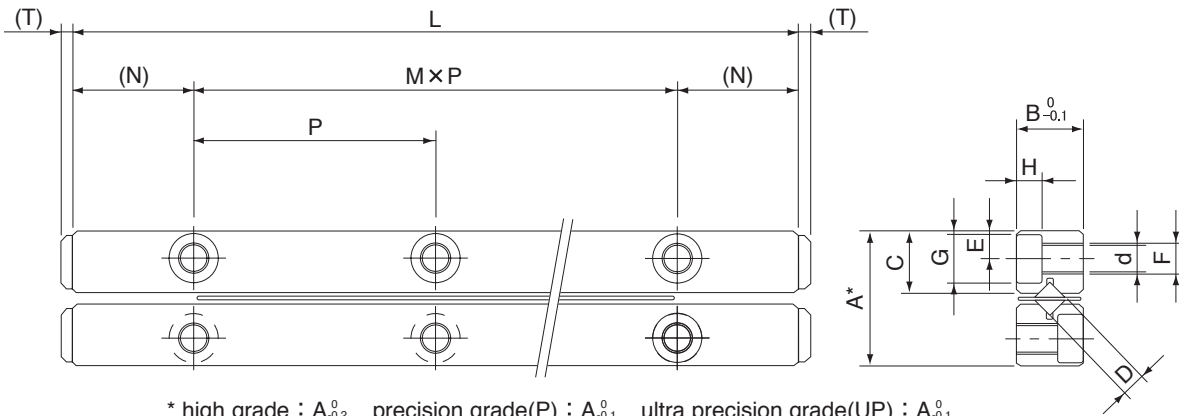
part number		stroke mm	roller diameter D mm	number of rollers Z	L	A	B	C
standard	anticorrosion				mm	mm	mm	mm
<b>SV1020-5Z</b>	<b>SVS1020-5Z</b>	12	1.5	5	20	8.5	4	3.8
<b>1030-7Z</b>	<b>1030-7Z</b>	20		7	30			
<b>1040-10Z</b>	<b>1040-10Z</b>	27		10	40			
<b>1050-13Z</b>	<b>1050-13Z</b>	32		13	50			
<b>1060-16Z</b>	<b>1060-16Z</b>	37		16	60			
<b>1070-19Z</b>	<b>1070-19Z</b>	42		19	70			
<b>1080-21Z</b>	<b>1080-21Z</b>	50		21	80			
<b>SV2030-5Z</b>	<b>SVS2030-5Z</b>	18		2	5			
<b>2045-8Z</b>	<b>2045-8Z</b>	24	8		45			
<b>2060-11Z</b>	<b>2060-11Z</b>	30	11		60			
<b>2075-13Z</b>	<b>2075-13Z</b>	44	13		75			
<b>2090-16Z</b>	<b>2090-16Z</b>	50	16		90			
<b>2105-18Z</b>	<b>2105-18Z</b>	64	18		105			
<b>2120-21Z</b>	<b>2120-21Z</b>	70	21		120			
<b>2135-23Z</b>	<b>2135-23Z</b>	84	23		135			
<b>2150-26Z</b>	<b>2150-26Z</b>	90	26		150			
<b>2165-29Z</b>	<b>2165-29Z</b>	95	29		165			
<b>2180-32Z</b>	<b>2180-32Z</b>	100	32		180			

Maximum Rail Length (SV type only)

part number	Max.length
SV1	200mm
SV2	450mm

Please contact NB for further details.





\* high grade :  $A_{0.2}$  precision grade(P) :  $A_{0.1}$  ultra precision grade(UP) :  $A_{0.1}$

One set of components consists of 2 roller cages, 4 rails, and 8 end-pieces.

major dimensions								basic load rating		allowable	mass	size
M×P	N	E	F	d	G	H	T	dynamic C	static Co	load F	g	
mm	mm	mm		mm	mm	mm	mm	N	N	N		
1×10								464	476	158	11	<b>1020</b>
2×10								641	714	237	14	<b>1030</b>
3×10								959	1,190	396	18	<b>1040</b>
4×10	5	1.8	M2	1.65	3	1.4	0.8	1,100	1,420	475	22	<b>1050</b>
5×10								1,380	1,900	633	26	<b>1060</b>
6×10								1,510	2,140	712	30	<b>1070</b>
7×10								1,650	2,380	792	34	<b>1080</b>
1×15								1,090	1,170	390	28	<b>2030</b>
2×15								1,900	2,340	780	42	<b>2045</b>
3×15								2,270	2,930	976	55	<b>2060</b>
4×15								2,620	3,510	1,170	69	<b>2075</b>
5×15								3,280	4,680	1,560	83	<b>2090</b>
6×15	7.5	2.5	M3	2.55	4.4	2	2	3,590	5,270	1,750	96	<b>2105</b>
7×15								3,900	5,860	1,950	110	<b>2120</b>
8×15								4,210	6,440	2,140	123	<b>2135</b>
9×15								4,790	7,610	2,530	137	<b>2150</b>
10×15								5,080	8,200	2,730	151	<b>2165</b>
11×15								5,640	9,370	3,120	165	<b>2180</b>

1N≒0.102kgf

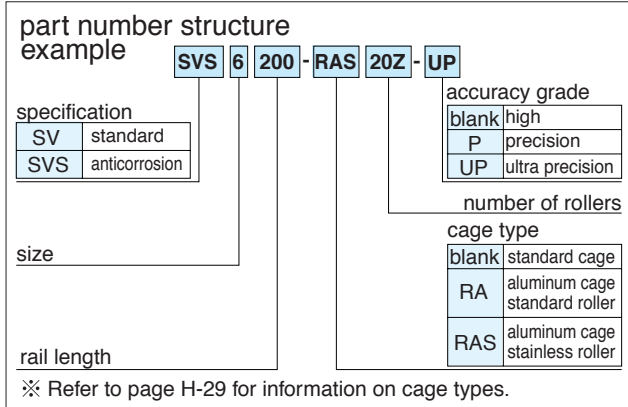
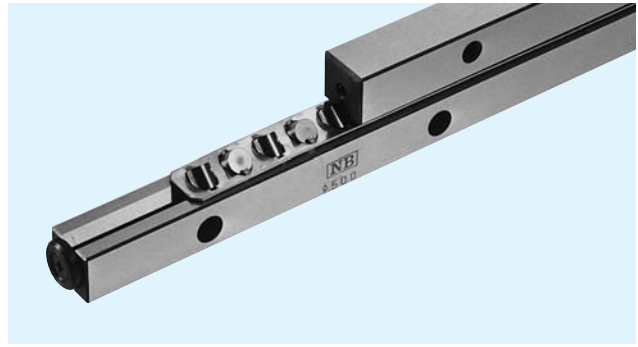






# SV TYPE

— SV3/SV4 —

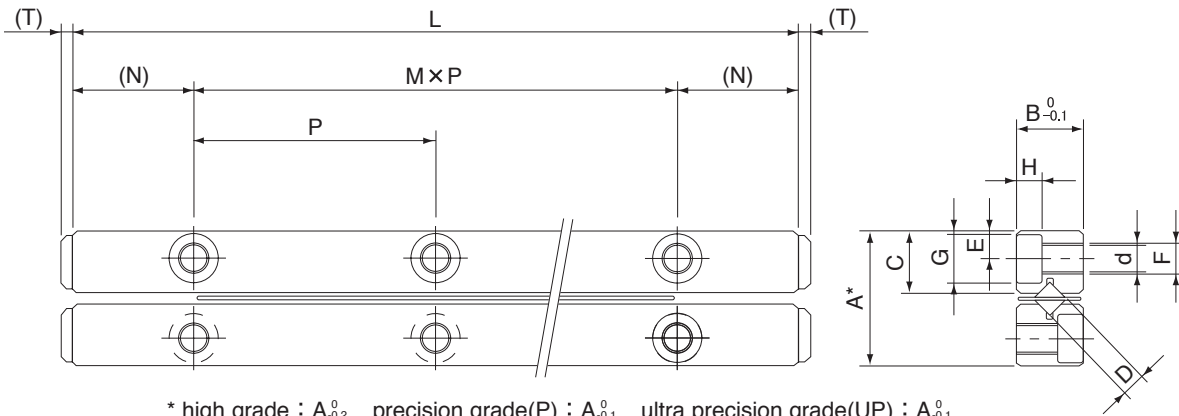


part number		stroke mm	roller diameter D mm	number of rollers Z	L mm	A mm	B mm	C mm
standard	anticorrosion							
<b>SV3050-7Z</b>	<b>SVS3050-7Z</b>	28	3	7	50	18	8	8.3
<b>3075-10Z</b>	<b>3075-10Z</b>	48		10				
<b>3100-14Z</b>	<b>3100-14Z</b>	58		14				
<b>3125-17Z</b>	<b>3125-17Z</b>	78		17				
<b>3150-21Z</b>	<b>3150-21Z</b>	88		21				
<b>3175-24Z</b>	<b>3175-24Z</b>	105		24				
<b>3200-28Z</b>	<b>3200-28Z</b>	115		28				
<b>3225-31Z</b>	<b>3225-31Z</b>	135		31				
<b>3250-35Z</b>	<b>3250-35Z</b>	145		35				
<b>3275-38Z</b>	<b>3275-38Z</b>	165		38				
<b>3300-42Z</b>	<b>3300-42Z</b>	175		42				
<b>3325-45Z</b>	<b>3325-45Z</b>	195		45				
<b>3350-49Z</b>	<b>3350-49Z</b>	205		49				
<b>SV4080-7Z</b>	<b>SVS4080-7Z</b>	58	4	7	80	22	11	10.2
<b>4120-11Z</b>	<b>4120-11Z</b>	82		11				
<b>4160-15Z</b>	<b>4160-15Z</b>	105		15				
<b>4200-19Z</b>	<b>4200-19Z</b>	130		19				
<b>4240-23Z</b>	<b>4240-23Z</b>	150		23				
<b>4280-27Z</b>	<b>4280-27Z</b>	175		27				
<b>4320-31Z</b>	<b>4320-31Z</b>	200		31				
<b>4360-35Z</b>	<b>4360-35Z</b>	225		35				
<b>4400-39Z</b>	<b>4400-39Z</b>	250		39				
<b>4440-43Z</b>	<b>4440-43Z</b>	270		43				
<b>4480-47Z</b>	<b>4480-47Z</b>	295		47				

Maximum Rail Length (SV type only)

part number	Max.length
SV3	700mm
SV4	700mm

Please contact NB for further details.



\* high grade : A<sub>0.2</sub><sup>0</sup> precision grade(P) : A<sub>0.1</sub><sup>0</sup> ultra precision grade(UP) : A<sub>0.1</sub><sup>0</sup>

One set of components consists of 2 roller cages, 4 rails, and 8 end-pieces.

major dimensions								basic load rating		allowable load F N	mass g	size
M×P mm	N mm	E mm	F	d mm	G mm	H mm	T mm	dynamic C N	static Co N			
1×25								3,490	3,890	1,290	94	<b>3050</b>
2×25								5,230	6,490	2,160	135	<b>3075</b>
3×25								6,810	9,080	3,020	187	<b>3100</b>
4×25								7,560	10,300	3,450	234	<b>3125</b>
5×25								9,000	12,900	4,320	281	<b>3150</b>
6×25								10,300	15,500	5,180	327	<b>3175</b>
7×25	12.5	3.5	M4	3.3	6	3.1	2	11,700	18,100	6,040	374	<b>3200</b>
8×25								12,300	19,400	6,480	421	<b>3225</b>
9×25								13,600	22,000	7,340	468	<b>3250</b>
10×25								14,800	24,600	8,200	514	<b>3275</b>
11×25								16,000	27,200	9,070	561	<b>3300</b>
12×25								16,600	28,500	9,500	608	<b>3325</b>
13×25								17,800	31,100	10,300	655	<b>3350</b>
1×40								7,110	7,920	2,640	255	<b>4080</b>
2×40								10,600	13,200	4,400	385	<b>4120</b>
3×40								13,800	18,400	6,160	510	<b>4160</b>
4×40								16,800	23,700	7,920	635	<b>4200</b>
5×40								19,700	29,000	9,680	770	<b>4240</b>
6×40	20	4.5	M5	4.3	8	4.2	2	22,400	34,300	11,400	905	<b>4280</b>
7×40								25,100	39,600	13,200	1,020	<b>4320</b>
8×40								27,600	44,800	14,900	1,160	<b>4360</b>
9×40								30,200	50,100	16,700	1,280	<b>4400</b>
10×40								32,600	55,400	18,400	1,410	<b>4440</b>
11×40								35,000	60,700	20,200	1,540	<b>4480</b>

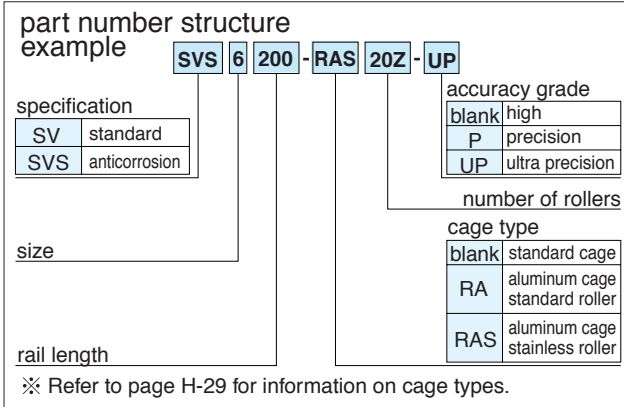
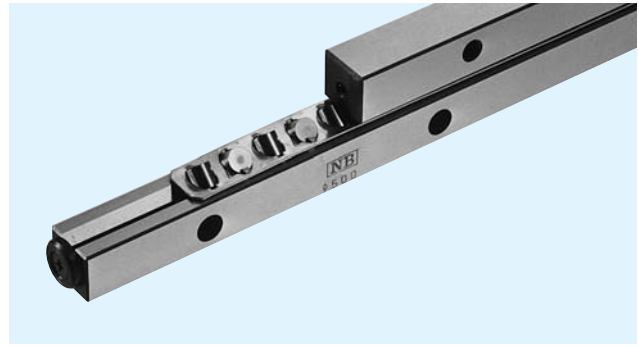
1N≒0.102kgf



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# SV TYPE

— SV6/SV9 —



part number		stroke mm	roller diameter D mm	number of rollers Z	L	A	B	C
standard	anticorrosion				mm	mm	mm	mm
<b>SV6100-8Z</b>	<b>SVS6100-8Z</b>	55	6	8	100	31	15	14.2
<b>6150-12Z</b>	<b>6150-12Z</b>	85		12	150			
<b>6200-16Z</b>	<b>6200-16Z</b>	120		16	200			
<b>6250-20Z</b>	<b>6250-20Z</b>	150		20	250			
<b>6300-24Z</b>	<b>6300-24Z</b>	185		24	300			
<b>6350-28Z</b>	<b>6350-28Z</b>	215		28	350			
<b>6400-32Z</b>	<b>6400-32Z</b>	245		32	400			
<b>6450-36Z</b>	<b>6450-36Z</b>	280		36	450			
<b>6500-40Z</b>	<b>6500-40Z</b>	310		40	500			
<b>6600-49Z</b>	<b>6600-49Z</b>	360		49	600			
<b>SV9200-10Z</b>	—	115		9	10			
<b>9300-15Z</b>	—	175	15		300			
<b>9400-20Z</b>	—	235	20		400			
<b>9500-25Z</b>	—	295	25		500			
<b>9600-30Z</b>	—	355	30		600			
<b>9700-35Z</b>	—	415	35		700			
<b>9800-40Z</b>	—	475	40		800			
<b>9900-45Z</b>	—	535	45		900			
<b>91000-50Z</b>	—	595	50		1,000			

Maximum Rail Length (SV type only)

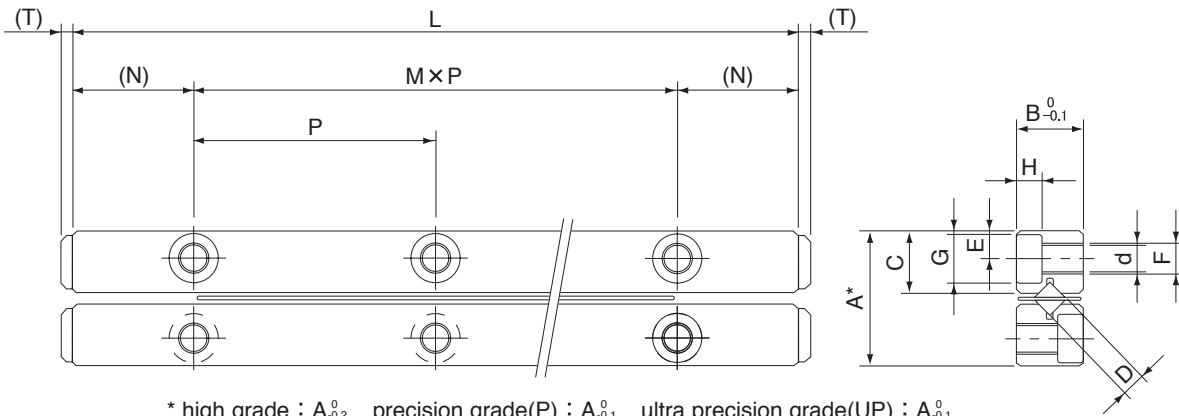
part number	Max.length
SV6	1000mm

Please contact NB for further details.



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\* high grade :  $A_{0.2}^0$  precision grade(P) :  $A_{0.1}^0$  ultra precision grade(UP) :  $A_{0.1}^0$

One set of components consists of 2 roller cages, 4 rails, and 8 end-pieces.

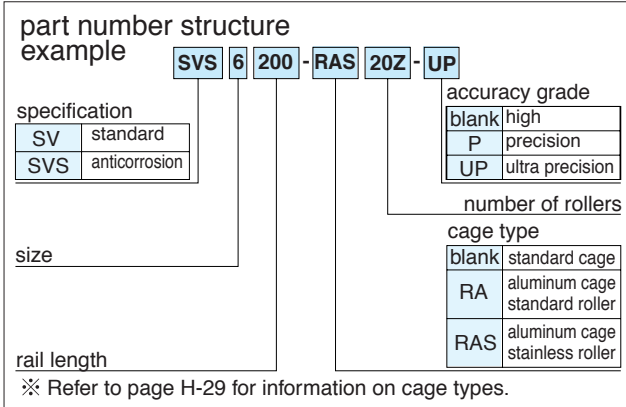
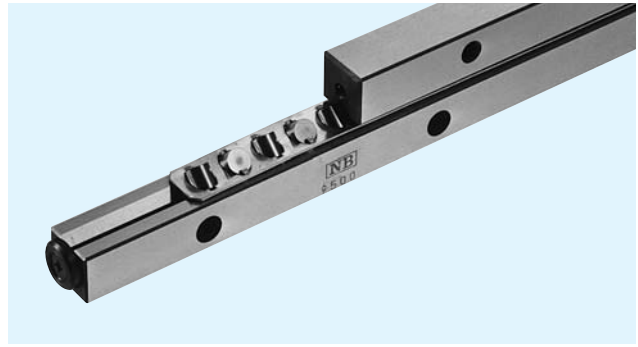
major dimensions								basic load rating		allowable	mass	size
M×P	N	E	F	d	G	H	T	dynamic C	static Co	load F		
mm	mm	mm		mm	mm	mm	mm	N	N	N	g	
1×50								20,700	23,600	7,880	628	<b>6100</b>
2×50								28,500	35,500	11,800	942	<b>6150</b>
3×50								35,700	47,300	15,700	1,260	<b>6200</b>
4×50								42,500	59,200	19,700	1,570	<b>6250</b>
5×50	25	6	M6	5.2	9.5	5.2	3	49,000	71,000	13,600	1,880	<b>6300</b>
6×50								55,300	82,800	27,600	2,200	<b>6350</b>
7×50								61,400	94,700	31,500	2,510	<b>6400</b>
8×50								67,300	106,000	35,400	2,830	<b>6450</b>
9×50								73,100	118,000	39,400	3,140	<b>6500</b>
11×50								84,200	142,000	47,300	3,770	<b>6600</b>
1×100								60,900	70,700	23,500	2,720	<b>9200</b>
2×100								79,300	98,900	32,900	4,030	<b>9300</b>
3×100								104,000	141,000	47,000	5,380	<b>9400</b>
4×100								120,000	169,000	56,400	6,700	<b>9500</b>
5×100	50	9	M8	6.8	10.5	6.2	4	143,000	212,000	70,500	8,050	<b>9600</b>
6×100								158,000	240,000	79,900	9,230	<b>9700</b>
7×100								180,000	282,000	94,000	10,500	<b>9800</b>
8×100								193,000	311,000	103,000	11,900	<b>9900</b>
9×100								214,000	353,000	117,000	13,000	<b>91000</b>

1N≒0.102kgf



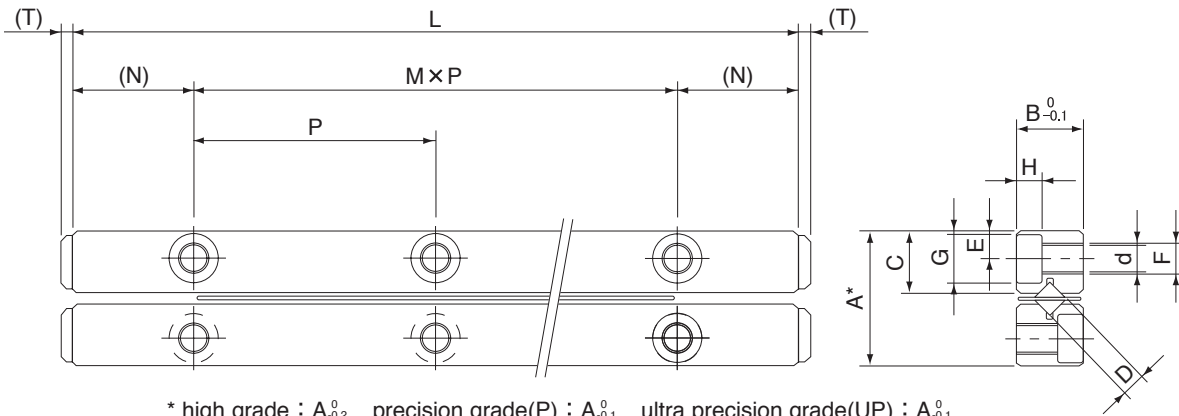
# SV TYPE

— SV12 —



part number		stroke mm	roller diameter D mm	number of rollers Z	L	A	B	C
standard	anticorrosion				mm	mm	mm	mm
<b>SV12300-10Z</b>	—	200	12	10	300	58	28	27
<b>12400-14Z</b>	—	240		14	400			
<b>12500-17Z</b>	—	320		17	500			
<b>12600-21Z</b>	—	360		21	600			
<b>12700-24Z</b>	—	440		24	700			
<b>12800-28Z</b>	—	480		28	800			
<b>12900-31Z</b>	—	560		31	900			
<b>121000-34Z</b>	—	640		34	1,000			
<b>121100-38Z</b>	—	680		38	1,100			
<b>121200-42Z</b>	—	720		42	1,200			





\* high grade :  $A_{0.2}^0$  precision grade(P) :  $A_{0.1}^0$  ultra precision grade(UP) :  $A_{0.1}^0$

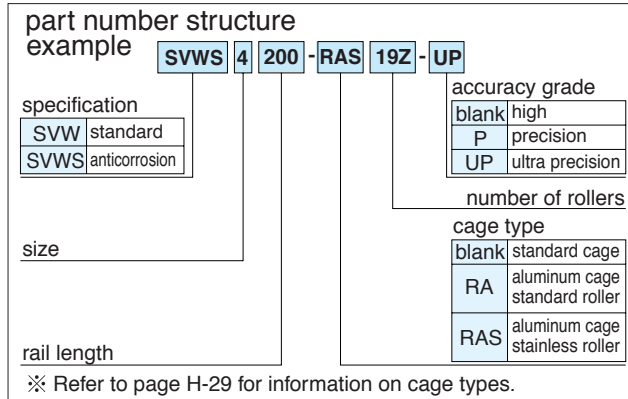
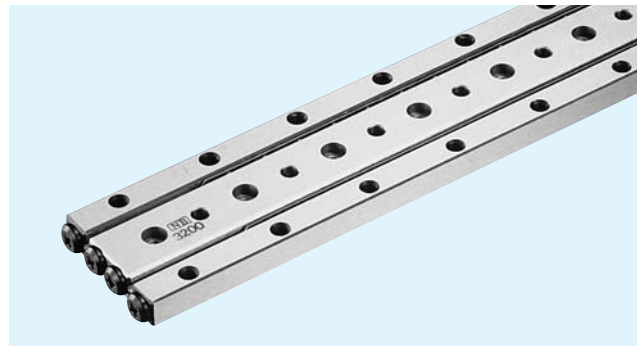
One set of components consists of 2 roller cages, 4 rails, and 8 end-pieces.

major dimensions								basic load rating		allowable	mass	size
M×P	N	E	F	d	G	H	T	dynamic C N	static Co N	load F N	g	
mm	mm	mm		mm	mm	mm	mm					
2×100								124,000	145,000	48,300	6,880	<b>12300</b>
3×100								162,000	203,000	67,600	9,090	<b>12400</b>
4×100								180,000	232,000	77,200	11,400	<b>12500</b>
5×100								214,000	290,000	96,600	13,700	<b>12600</b>
6×100	50	12	M10	8.5	13.5	8.2	4	247,000	348,000	115,000	15,800	<b>12700</b>
7×100								279,000	406,000	135,000	18,200	<b>12800</b>
8×100								294,000	435,000	144,000	20,500	<b>12900</b>
9×100								324,000	493,000	164,000	22,800	<b>121000</b>
10×100								354,000	551,000	183,000	25,000	<b>121100</b>
11×100								382,000	609,000	202,000	27,300	<b>121200</b>

1N≒0.102kgf

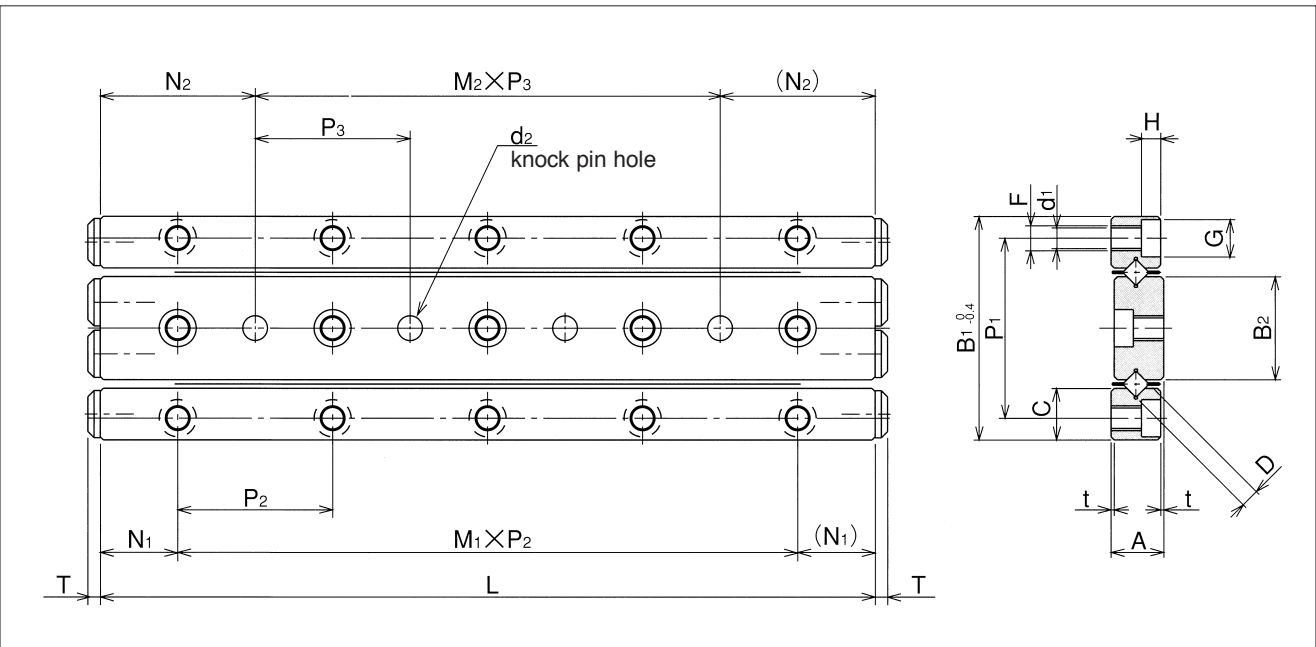


# SVW TYPE



part number		stroke mm	roller diameter D mm	number of rollers Z	L mm	A mm	t mm	B <sub>1</sub> mm	B <sub>2</sub> mm	C mm	P <sub>1</sub> mm	M <sub>1</sub> ×P <sub>2</sub> mm
standard	anticorrosion											
<b>SVW1020- 5Z</b>	<b>SVWS1020- 5Z</b>	12		5	20							1×10
<b>1030- 7Z</b>	<b>1030- 7Z</b>	20		7	30							2×10
<b>1040-10Z</b>	<b>1040-10Z</b>	27		10	40							3×10
<b>1050-13Z</b>	<b>1050-13Z</b>	32	1.5	13	50	4.5	0.5	17	7.6	3.8	13.4	4×10
<b>1060-16Z</b>	<b>1060-16Z</b>	37		16	60							5×10
<b>1070-19Z</b>	<b>1070-19Z</b>	42		19	70							6×10
<b>1080-21Z</b>	<b>1080-21Z</b>	50		21	80							7×10
<b>SVW2030- 5Z</b>	<b>SVWS2030- 5Z</b>	18		5	30							1×15
<b>2045- 8Z</b>	<b>2045- 8Z</b>	24		8	45							2×15
<b>2060-11Z</b>	<b>2060-11Z</b>	30		11	60							3×15
<b>2075-13Z</b>	<b>2075-13Z</b>	44	2	13	75	6.5	0.5	24	11	5.5	19	4×15
<b>2090-16Z</b>	<b>2090-16Z</b>	50		16	90							5×15
<b>2105-18Z</b>	<b>2105-18Z</b>	64		18	105							6×15
<b>2120-21Z</b>	<b>2120-21Z</b>	70		21	120							7×15
<b>SVW3050- 7Z</b>	<b>SVWS3050- 7Z</b>	28		7	50							1×25
<b>3075-10Z</b>	<b>3075-10Z</b>	48		10	75							2×25
<b>3100-14Z</b>	<b>3100-14Z</b>	58		14	100							3×25
<b>3125-17Z</b>	<b>3125-17Z</b>	78	3	17	125	8.5	0.5	36	16.6	8.3	29	4×25
<b>3150-21Z</b>	<b>3150-21Z</b>	88		21	150							5×25
<b>3175-24Z</b>	<b>3175-24Z</b>	105		24	175							6×25
<b>3200-28Z</b>	<b>3200-28Z</b>	115		28	200							7×25
<b>SVW4080- 7Z</b>	<b>SVWS4080- 7Z</b>	58		7	80							1×40
<b>4120-11Z</b>	<b>4120-11Z</b>	82		11	120							2×40
<b>4160-15Z</b>	<b>4160-15Z</b>	105	4	15	160	11.5	0.5	44	20.4	10.2	35	3×40
<b>4200-19Z</b>	<b>4200-19Z</b>	130		19	200							4×40
<b>4240-23Z</b>	<b>4240-23Z</b>	150		23	240							5×40
<b>4280-27Z</b>	<b>4280-27Z</b>	175		27	280							6×40





major dimensions									basic load rating		allowable load F N	mass g	size
N <sub>1</sub> mm	F	d <sub>1</sub> mm	G mm	H mm	M <sub>2</sub> ×P <sub>3</sub> mm	N <sub>2</sub> mm	d <sub>2</sub> mm	T mm	dynamic C N	static C <sub>0</sub> N			
5	M2	1.65	3	1.4	—	10	2	1	464	476	158	11	1020
					1×10				641	714	237	14	1030
					2×10				959	1,190	396	18	1040
					3×10				1,100	1,420	475	22	1050
					4×10				1,380	1,900	633	26	1060
					5×10				1,510	2,140	712	30	1070
7.5	M3	2.55	4.4	2	—	15	3	2	1,090	1,170	390	28	2030
					1×15				1,900	2,340	780	42	2045
					2×15				2,270	2,930	976	55	2060
					3×15				2,620	3,510	1,170	69	2075
					4×15				3,280	4,680	1,560	83	2090
					5×15				3,590	5,270	1,750	96	2105
12.5	M4	3.3	6	3.1	—	25	4	2	3,490	3,890	1,290	94	3050
					1×25				5,230	6,490	2,160	135	3075
					2×25				6,810	9,080	3,020	187	3100
					3×25				7,560	10,300	3,450	234	3125
					4×25				9,000	12,900	4,320	281	3150
					5×25				10,300	15,500	5,180	327	3175
20	M5	4.3	8	4.2	—	40	5	2	11,700	18,100	6,040	374	3200
					1×40				7,110	7,920	2,640	255	4080
					2×40				10,600	13,200	4,400	385	4120
					3×40				13,800	18,400	6,160	510	4160
					4×40				16,800	23,700	7,920	635	4200
					5×40				19,700	29,000	9,680	770	4240
									22,400	34,300	11,400	905	4280





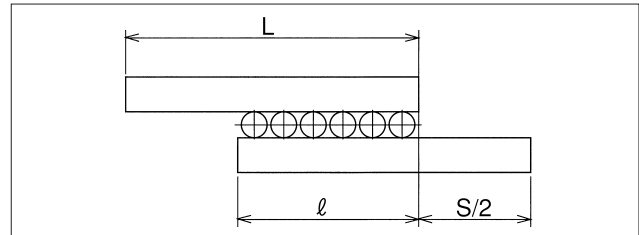
## STROKE AND RATED LOAD

When the stroke is changed, the new stroke distance must be determined and the rated load must be re-estimated as follows.

### Stroke:

When the slide way moves along the tracking base, the cage moves half the distance traveled by the slide way in the same direction. Therefore, although the applied load may be fixed on the table, the distance between the load center and cage center will change. To achieve stable accuracy, determine the stroke distance and length of the tracking base as follows:

Figure H-24 Travel Distance



Rail length (L)

When the stroke is 400mm or over

$$S \leq L / 1.5$$

When the stroke is less than 400 mm,

$$S \leq L$$

Cage length (ℓ)

$$\ell \leq L - \frac{S}{2}$$

Number of rollers (Z)

$$Z = \frac{\ell - 2a}{p} + 1$$

S : stroke (mm) L : rail length (mm)

a,P : Refer to roller cage dimensions (Page H-29)

### Allowable Load

The allowable load is a load under which the sum of elastic deformation of the rolling element and the raceway in the contact area subject to the maximum contact stress is small enough to guarantee smooth rolling movement. Where very smooth and highly accurate liner motion is required, make sure to use the product within the allowable load values.

### Rated Load:

The rated load for the slide way is obtained using the equations listed in Table H-8.

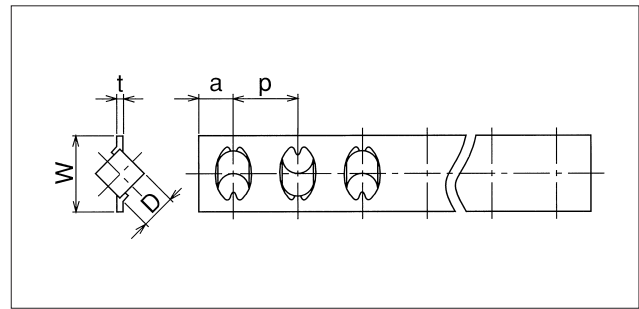
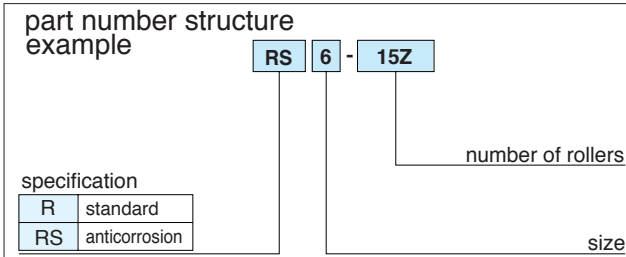
Table H-8 Rated Load

condition	single-rail usage	single-rail vertical usage	double-rail parallel usage
direction of load			
basic dynamic load rating C	$C = \left(\frac{Z}{2}\right)^{3/4} \cdot C_1$	$C = \left(\frac{Z}{2}\right)^{3/4} \cdot C_1 \cdot 2^{7/9}$	
basic static load rating Co	$Co = \frac{Z}{2} \cdot Co_1$	$Co = \frac{Z}{2} \cdot Co_1 \cdot 2$	
allowable load F	$F = \frac{Z}{2} \cdot F_1$	$F = \frac{Z}{2} \cdot F_1 \cdot 2$	

C : basic dynamic load rating (N) Co : basic static load rating (N) F : allowable load (N) C<sub>1</sub> : basic dynamic load rating per roller (N)  
Co<sub>1</sub> : basic static load rating per roller (N) F<sub>1</sub> : allowable load per roller (N) Z : number of rollers per cage  
Z / 2 : effective roller number (round down to whole number)

# R/RS TYPE

— Roller Cage —

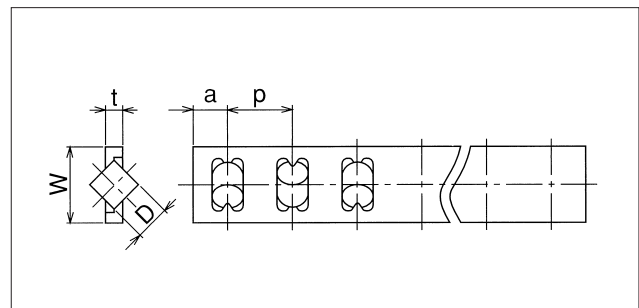
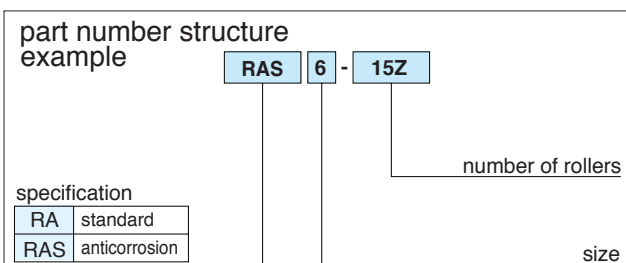


part number		D mm	t mm	W mm	p mm	a mm	C <sub>1</sub> N	Co <sub>1</sub> N	F <sub>1</sub> N
standard	anticorrosion								
R 1	RS1	1.5	0.2	3.8	2.5	2	154	119	39.8
R 2	RS2	2	0.3	5.6	4	2.5	360	293	97.8
R 3	RS3	3	0.4	7.6	5	3	824	649	216
R 4	RS4	4	0.4	10.4	7	4.5	1,660	1,320	442
R 6	RS6	6	0.7	14	8.5	5.5	3,840	2,690	987
R 9	—	9	0.7	19	14	7.5	9,330	7,070	2,350
R12	—	12	1.0	25	20	10	18,900	14,500	4,840

cage material : stainless steel C<sub>1</sub> : dynamic load rating per roller Co<sub>1</sub> : static load rating per roller F<sub>1</sub> : allowable load per roller (N)

# RA/RAS TYPE

— Aluminum Roller Cage —



part number		D mm	t mm	W mm	p mm	a mm	C <sub>1</sub> N	Co <sub>1</sub> N	F <sub>1</sub> N
standard	anticorrosion								
RA3	RAS3	3	1.2	7.6	5	3	824	649	216
RA4	RAS4	4	1.4	10.4	7	4.5	1,660	1,320	442
RA6	RAS6	6	2.1	14	8.5	5.5	3,840	2,960	987
RA9	—	9	3.0	20	14	7.5	9,330	7,070	2,350

cage material : aluminum C<sub>1</sub> : dynamic load rating per roller Co<sub>1</sub> : static load rating per roller F<sub>1</sub> : allowable load per roller (N)