SLIDE WAY

SLIDE TABLE

MINIATURE SLIDE

GONIO WAY

SLIDE WAY

STUDROLLER system
NV type/NVT type

NB's Slide Way NV and NVT types incorporate STUDROLLER, which has been developed based upon a new concept. By completely eliminating slippage between the roller and track surfaces, these new Slide Ways possess the smoothest and most accurate linear movement in the world.

STRUCTURE AND ADVANTAGES

NB's Slide Way NV and NVT types consist of precisely ground tracking bases and R-retainers with built-in stud-rollers. To smooth the STUDROLLER, the tracking rail is optimally designed and the R-retainer incorporates the STUDROLLER and the precise roller. These ideas will enable slip-free operation between the raceway surface and the roller, resulting in motion with minimal frictional resistance.

Non-slip STUDROLLER System

The built-in STUDROLLER system, based on the new concept, completely eliminates slip inside the product, covering various applications including super-high acceleration/deceleration applications.

Compatibility with conventional types

The same dimensions and the same stroke as the Slide Way SV type enable complete compatibility between the two series.

Smooth movement

The optimally designed roller raceway section and the R-retainer ensure smooth, noiseless movement.

Space and Cost Saving

Increased load capacity allows for down-sizing and lowering costs of the component, thus enabling space and cost saving. (comparing with conventional SV type.)

High rigidity and high-loading capacity

Based on the new tracking base design, the contact length of the roller and the raceway surface is increased by 42 to 58%, and narrowing the roller pitch increases the number of roller units to be connected. Accordingly, the load rating is 1.4 to 2.3 times greater when compared to the conventional SV type.

Figure H-1 detailed roller contact image

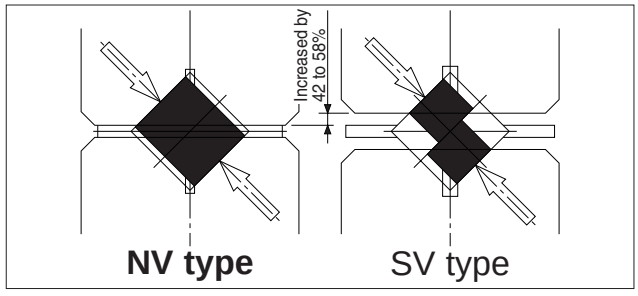


Figure H-2 STUDROLLER system

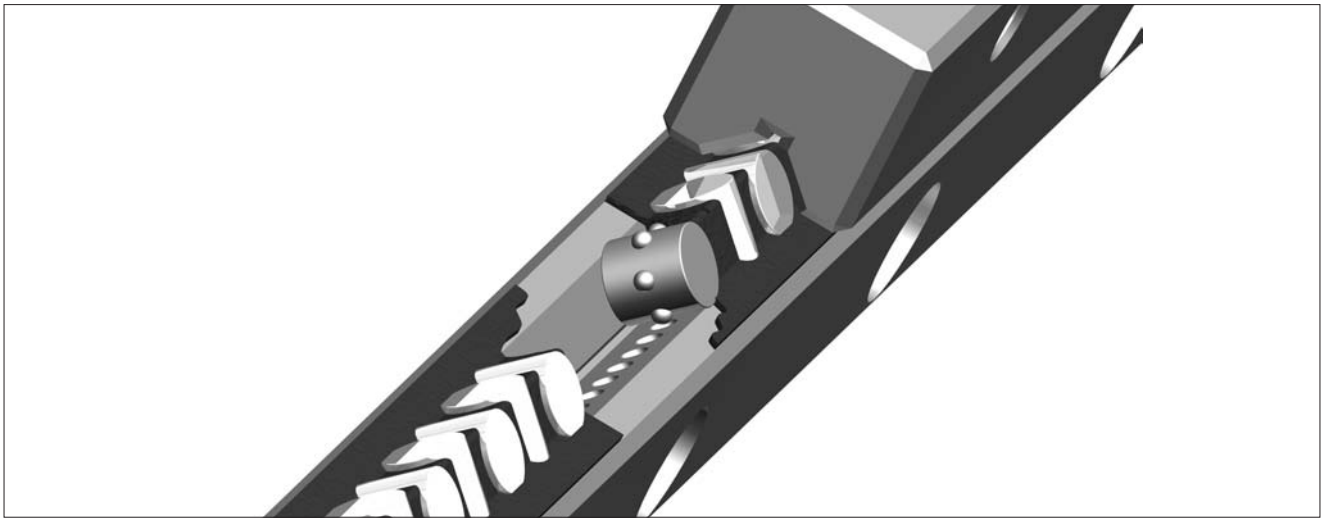


Figure H-3 Structure of NV type

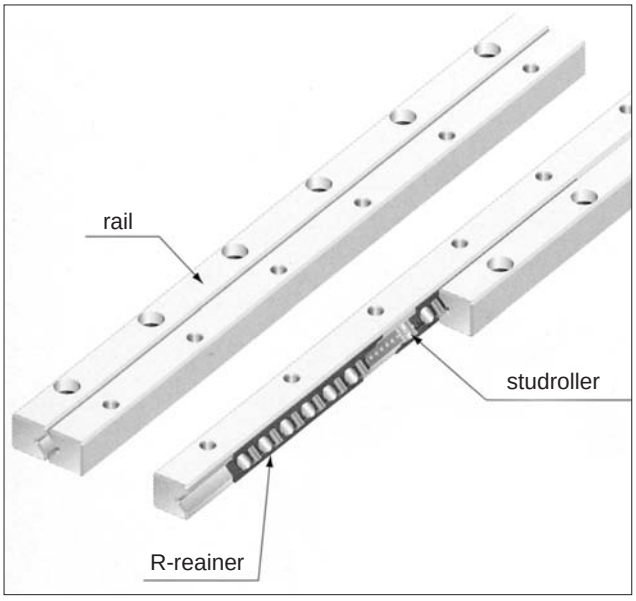
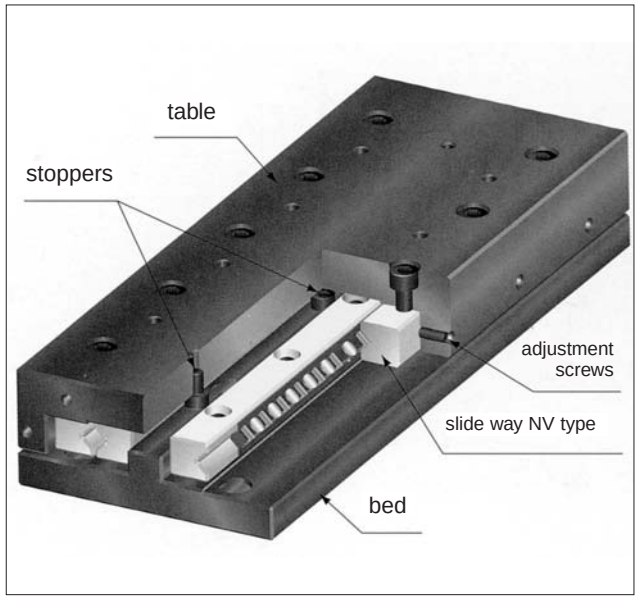
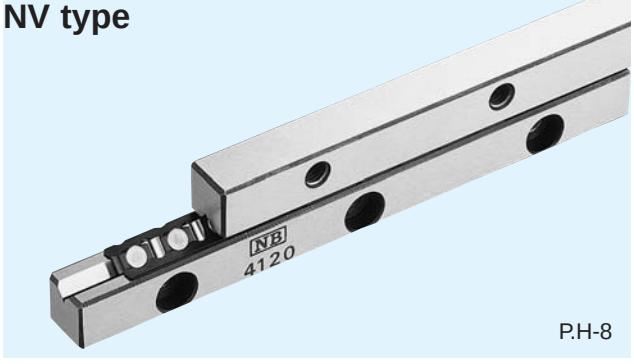


Figure H-4 Structure of NVT type



TYPE

NV type

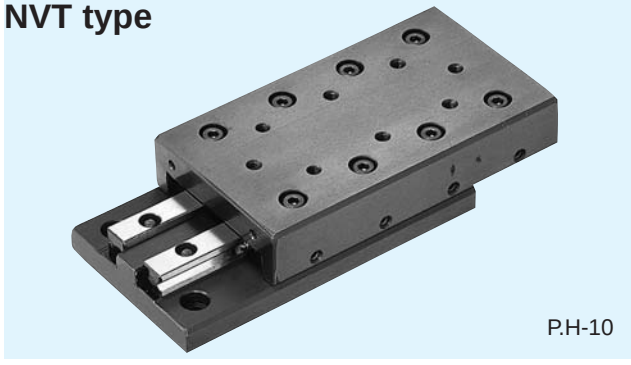


P.H-8

NV type

This consists of a set of four track rails and two R-retainers. Flexible table design allows for a wide range of applications best suited to your purpose.

NVT type



P.H-10

NVT type

A slide table incorporates the NV type. The precisely machined table and bed ensure great accuracy. This table may be used as received without any troublesome accuracy or preload adjustments.

ACCURACY

NV type

The accuracy of the Slide Way NV type is represented as parallelism obtained from full-length measurement as shown in Figure H-5. It is classified into three grades: High (no symbol), Precision (P) and Ultra Precision (UP). The Slide Way NV type is available for special accuracy. Please contact NB for details.

Figure H-5, Parallelism

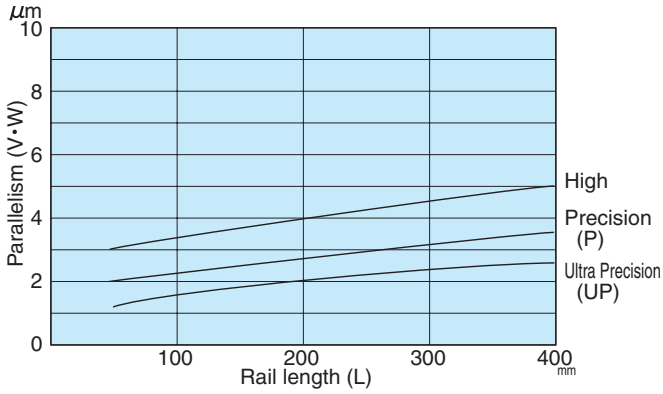
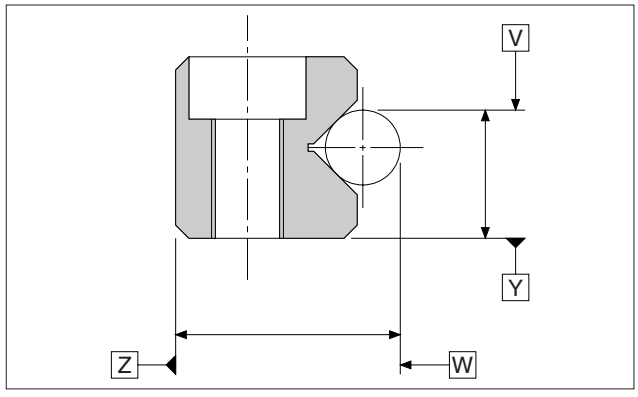


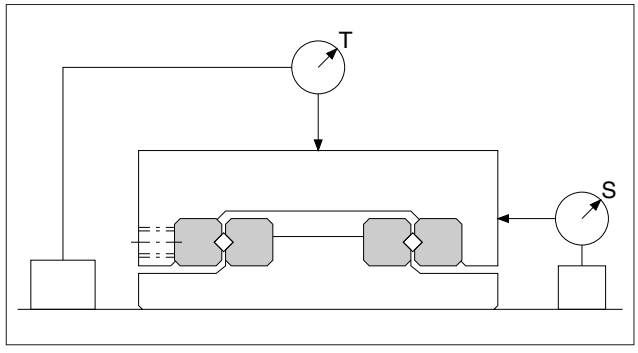
Figure H-6, Accuracy Measurement



NVT type

The motion accuracy of the slide table NVT type is represented as deviation on the dial indicators attached to the center of the top and side of the table, when the table runs full stroke without load.

Figure H-7, Accuracy Measurement



LOAD RATING

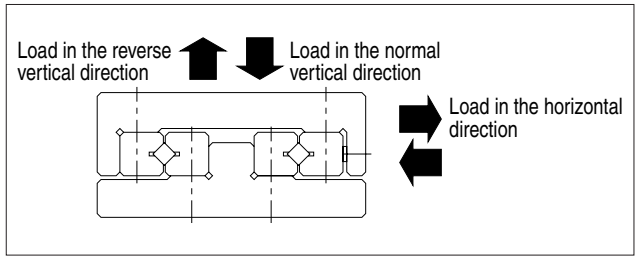
The load rating of the Slide Way NV and NVT type varies depending on the direction of load.

Table H-1 Load Rating

Basic dynamic load rating	Normal vertical direction	1.0×C
	Horizontal direction	0.9×C
	Reverse vertical direction	0.8×C
Basic static load rating	Normal vertical direction	1.0×Co
	Horizontal direction	0.9×Co
	Reverse vertical direction	0.8×Co

※The lord rating ratio above may be different for particular sizes. Please contact NB for further details.

Figure H-8 Direction of Load



RATED LIFE

The life of the Slide Way and Slide Table are calculated using the following equation:

Rated life

$$L=\left(\frac{1}{fw}\cdot\frac{C}{P}\right)^{10/3}\cdot 50$$

L: rated life, fw: load coefficient, C: basic dynamic load rating (N), P: load (N).
※For each coefficient, please refer to page Eng.-5

Life Time

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

L_h: life time (hours), ℓs: stroke (m), n_1: number of cycles per minute (cpm)

MOUNTING NV TYPE

Accuracy of mounting surface

To maximize the performance of the NB Slide Way, it is recommended that accuracy of the mounting surface should be finished to be equal to or greater than the parallelism level of the Slide Way.

Parallelism of surface 1 against surface A
Perpendicularity of surface 2 against surface A
Parallelism of surface 3 against surface B
Perpendicularity of surface 4 against surface B
Parallelism of surface 2 against surface C
Parallelism of surface 4 against surface C

Installation Procedure

(1) Remove burrs, stains, and dust from the surface of the track rail of tables and beds to prevent contamination during assembly.
(2) Apply low-viscosity oil to contact surfaces, and attach the tables to the beds (Figure H-11a).
(3) Set the reference surface shown in Figure H-6 onto the mounting surface with the track rail assembled. Tighten adjusting screws lightly so that almost no gap is left while the table is set in the center (Figure H-11b).
(4) Keep table in the center, tighten track rail mounting bolts lightly and peel the connection seal from both edges.
(5) While maintaining the conditions in (4), tighten the adjusting screw on the R-retainer with the recommended torque shown in Table H-2 (Figure H-11c).
(6) Move the table to one stroke end gently then, tighten the adjusting screw on the R-retainer in the same manner as in (5) (Figure H-11d).
(7) Move the table to the opposite stroke end and tighten the adjusting screw in the same manner as in (5) (Figure H-11e).
(8) Tighten the mounting bolts on track rail 1, 2 and 3 with the recommended torque shown in Table H-3 (Figure. H-11f).
(9) Set the dial indicators to the top and the side of the reference surface of the table (Figure H-11g).
(10) Make final adjust of pre-load. Repeat steps (5) to (7) until the indicator will show a minimum deviation.
(11) Finally, tighten the bolt on track rail ④ with the recommended torque. Be sure to tighten the mounting bolts on the R retainer sequentially while moving the table as when tightening the adjusting screws.

Table H-2 Recommended Torque for Adjusting Screw Unit/N・m

Part number	Size of screws	Torque
NV3	M4	0.05
NV4	M4	0.08
NV6	M5	0.20

Table H-3 Recommended Torque for Mounting Bolts Unit/N・m

Size of screws	Torque
M3	1.4
M4	3.2
M5	6.6
M6	11.2

Figure H-9 Accuracy of Mounting Surface

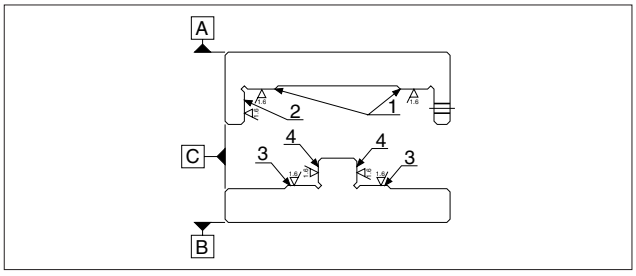


Figure H-10 Example of Mounting

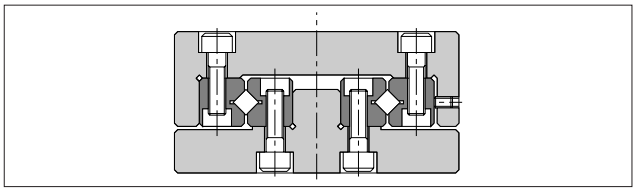
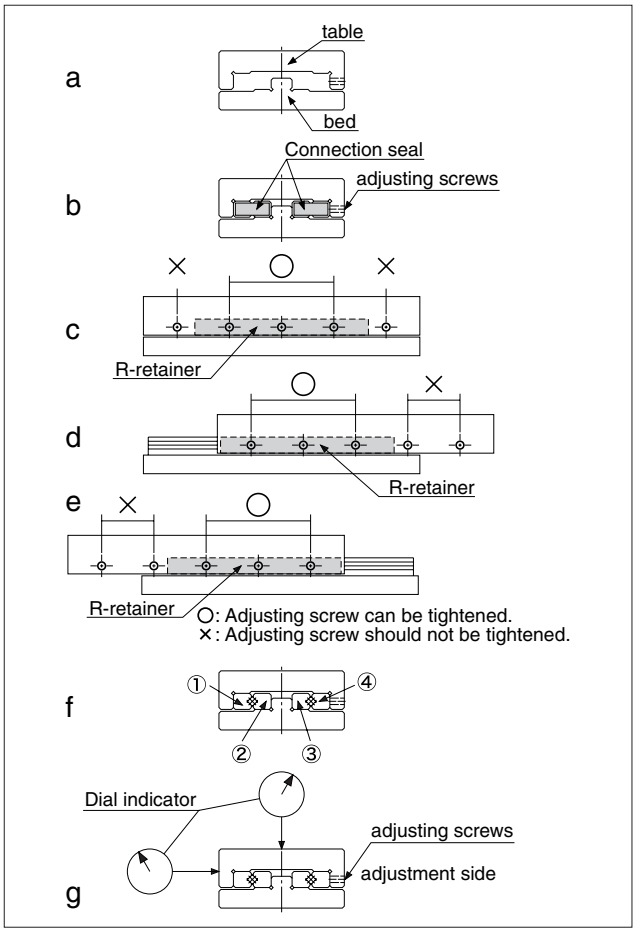


Figure H-11 Installation Method



SPECIAL MOUNTING BOLT BT TYPE

To install the Slide Way using its counter bore, use of the special mounting bolt BT type is recommended.

Figure H-12 Special Mounting Bolt

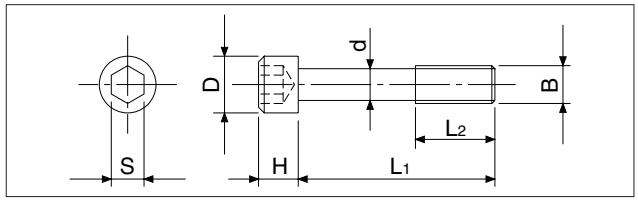


Table H-4 Special Mounting Bolt

Part number	B	d mm	D mm	H mm	L_1 mm	L_2 mm	S mm	Applicable track rail
BT 3	M3	2.3	5	3	12	5	2.5	**NV 3**
BT 4	M4	3.1	5.8	4	15	7	3	**NV 4**
BT 6	M5	3.9	8	5	20	8	4	**NV 6**

LUBRICATION AND DUST PREVENTION

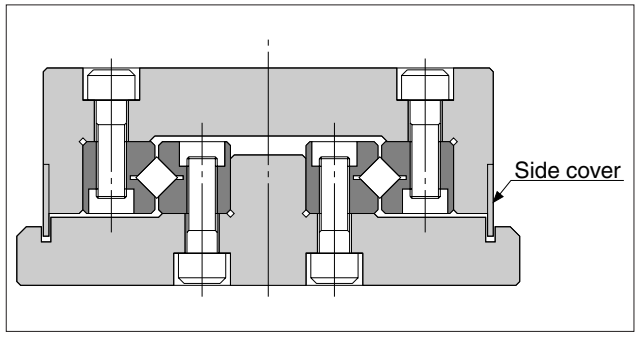
Lubrication

The NB Slide Way is pre-lubricated using lithium soap-based grease prior to shipment and is therefore ready for immediate use. Make sure to lubricate with a similar type of grease periodically according to the operating conditions.
NB also provides grease for low-dust linear systems. Please refer to page Eng-20 for further details.

Dust prevention

When dust and dirt enter the NB Slide Way, the accuracy and operating life may deteriorate. It is advisable to install an additional protective cover to protect the unit in a harsh environment (Figure H-13).

Figure H-13 Example of Dust Prevention Mechanism



PRECAUTIONS FOR USE

Careful handling

NV type is packaged with the track rail and R retainer in one piece. Do not separate or disassemble these components until installation/assembly is completed. Dropping the NB Slide Way may cause the rolling elements to make dents on the raceway surface. This will prevent smooth motion and will also affect accuracy. Make sure to handle the product with care.

Stopper

Over-stroke may cause the raceway surface of the track rail to be damaged and the performance of the STUDROLLER to drastically deteriorate. Be sure to provide an external mechanical stopper and use the product within the maximum allowable stroke.

Adjustment

Using the product without mounting surface accuracy or before adjusting the pre-load will affect the life and motion accuracy of the product. Make sure to install and adjust the product with care.

Operating temperature

NV type contains resin parts. When using the product in high-temperature environments, the temperature must be lower than 80˚C.

Use as a set

The mutual accuracy in the track rails is adjusted within a particular set. Note that the accuracy may be affected when the track rails of different sets are used together in combination.

Adjusting screws

Accuracy and pre-load of the Slide Table NVT type is factory-adjusted to the optimal level. Do not touch adjusting screws and mounting screws.

NV TYPE

part number structure

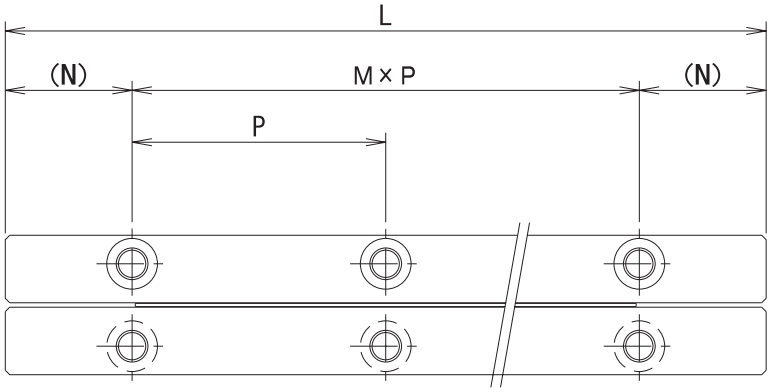
example **NV 6 200 - 19Z - UP**

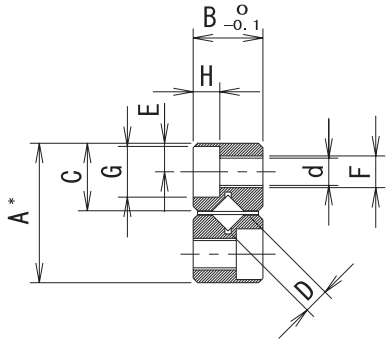
- NV type
- size
- track rail full length
- number of rollers
- accuracy grade

No symbol	High
P	precision
UP	ultra precision

part number	stroke ST mm	roller diameter D mm	number of rollers Z	L mm	A mm	B mm	C mm	M×P mm
NV3050- 9Z	25	3	9	50	18	8	8.65	1×25
NV3075-13Z	48		13	75				2×25
NV3100-19Z	60		19	100				3×25
NV3125-23Z	83		23	125				4×25
NV3150-29Z	90		29	150				5×25
NV3175-35Z	103		35	175				6×25
NV3200-41Z	113		41	200				7×25
NV4080- 9Z	60	4	9	80	22	11	10.65	1×40
NV4120-17Z	75		17	120				2×40
NV4160-23Z	105		23	160				3×40
NV4200-29Z	130		29	200				4×40
NV4240-37Z	143		37	240				5×40
NV6100- 9Z	63	6	9	100	31	15	15.15	1×50
NV6150-15Z	85		15	150				2×50
NV6200-19Z	135		19	200				3×50
NV6250-25Z	158		25	250				4×50
NV6300-31Z	180		31	300				5×50

The basic static load rating represents a value at the center of stroke.





*High grade: A-$_{8.2}$, precision grade (P): A-$_{8.1}$, ultra precision grade (UP): A-$_{8.1}$
A set consists of 4 track rails and 2 R-retainers.

major dimensions						basic load rating		allowable	mass	size
N mm	E mm	F	d mm	G mm	H mm	dynamic C N	static Co N	load F N	 g	
12.5	3.5	M4	3.3	6	3.1	6,150	8,060	2,680	97	**3050**
						8,440	12,100	4,030	140	**3075**
						12,500	20,100	6,720	192	**3100**
						14,400	24,200	8,060	245	**3125**
						16,300	28,200	9,410	290	**3150**
						19,800	36,300	12,100	337	**3175**
						21,500	40,300	13,400	385	**3200**
20	4.5	M5	4.3	8	4.2	12,100	15,700	5,250	265	**4080**
						20,700	31,500	10,500	400	**4120**
						28,500	47,200	15,700	530	**4160**
						32,000	55,100	18,300	660	**4200**
						39,000	70,900	23,600	800	**4240**
25	6	M6	5.2	9.5	5.2	29,600	37,500	12,500	650	**6100**
						50,900	75,100	25,000	970	**6150**
						60,600	93,900	31,300	1,300	**6200**
						69,800	112,000	37,500	1,620	**6250**
						87,400	150,000	50,100	1,940	**6300**

1kN≒0.102kgf

NVT TYPE

part number structure

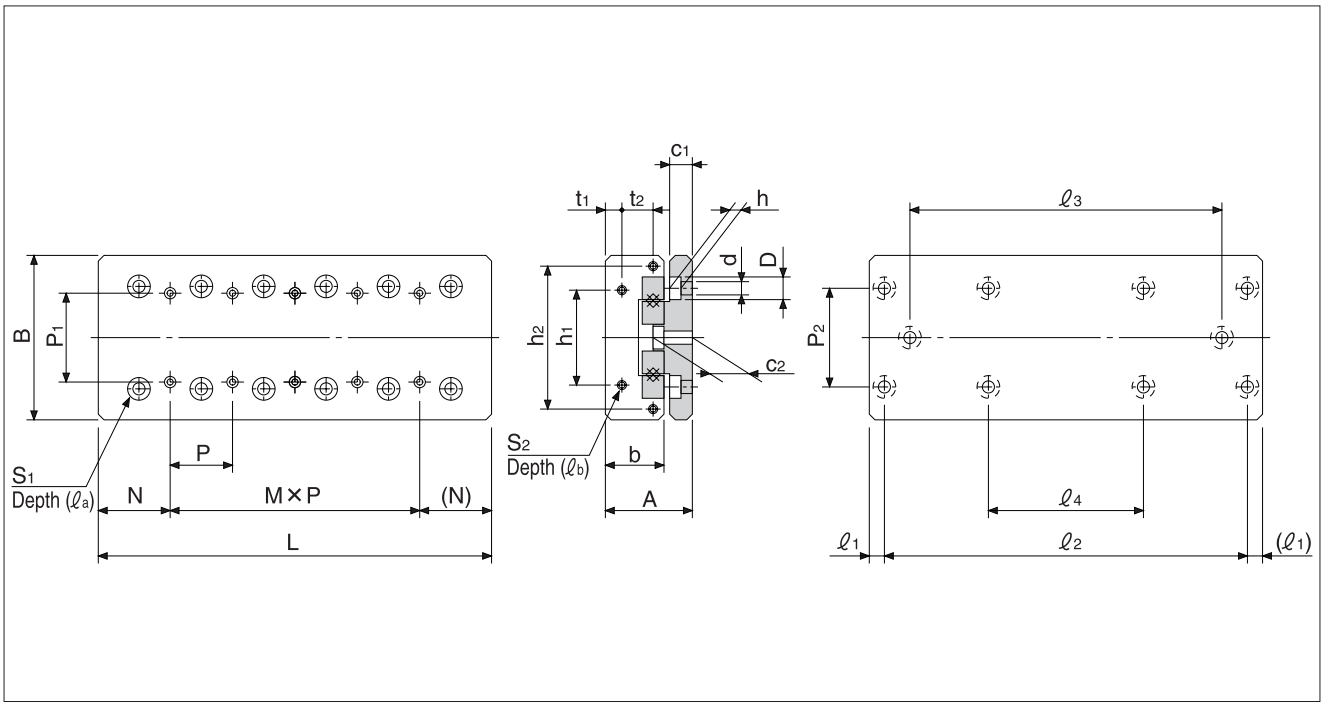
example

NVT | 6 | 210

- 210 — table full length
- 6 — size
- NVT — NVT type

part number	stroke ST mm	dimensions A mm	B mm	L mm	b mm	table-top mounting-hole dimensions P_1 mm	S_1	ℓ_a mm	N mm	M×P mm	table-end mounting-hole dimensions h_1 mm	h_2 mm	t_1 mm	t_2 mm	S_2	ℓ_b mm
NVT3055	30	$28^{\pm0.1}$	$60^{\pm0.1}$	55	18.5	25	M4	8	27.5	—	40	—	5.5	—	M3	6
NVT3080	45			80						1×25						
NVT3105	60			105						2×25						
NVT3130	75			130						3×25						
NVT3155	90			155						4×25						
NVT3180	105			180						5×25						
NVT3205	130			205						6×25						
NVT4085	50	$35^{\pm0.1}$	$80^{\pm0.1}$	85	24	40	M5	10	42.5	—	55	—	6.5	—	M3	6
NVT4125	75			125						1×40						
NVT4165	105			165						2×40						
NVT4205	130			205						3×40						
NVT4245	155			245						4×40						
NVT6110	60	$45^{\pm0.1}$	$100^{\pm0.1}$	110	31	50	M6	12	55	—	60	92	8	15	M4	8
NVT6160	95			160						1×50						
NVT6210	130			210						2×50						
NVT6260	165			260						3×50						
NVT6310	200			310						4×50						

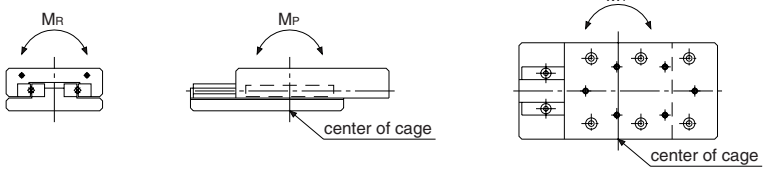
The basic static load rating represents a value at the center of stroke.



bed-surface mounting-hole dimensions								motion accuracy*		basic load rating		allowable load	allowable static moment			mass	size
										dynamic	static						
P_2	d×D×h	c_1	c_2	ℓ_1	ℓ_2	ℓ_3	ℓ_4	T	S	C	Co	F	M_P	M_Y	M_R		
mm	mm	mm	mm	mm	mm	mm	mm	μm	μm	N	N	N	N•m	N•m	N•m	g	
40	4.5×8×4.5	9	15	10	35	—	—	2	5	6,150	8,060	2,680	20.0	23.3	55.9	643	**3055**
					60	—	—	2	5	8,440	12,090	4,030	48.9	54.3	82.8	960	**3080**
					85	—	—	3	6	12,500	20,150	6,720	107.0	99.7	110.6	1,260	**3105**
					110	—	—	3	6	14,400	24,190	8,060	166.0	157.1	138.0	1,580	**3130**
					135	85	—	3	6	16,300	28,220	9,410	204.9	217.2	173.1	1,860	**3155**
					160	110	—	3	7	18,100	36,280	10,700	326.5	341.9	229.9	2,160	**3180**
					185	135	85	3	7	19,800	40,310	12,100	357.2	371.6	231.6	2,460	**3205**
55	5.5×10×5.4	10.5	18	10	65	—	—	2	5	11,680	15,050	5,250	76.2	68.4	125.5	1,710	**4085**
					105	—	—	3	6	20,050	30,100	10,500	214.6	198.7	257.2	2,520	**4125**
					145	—	—	3	7	27,500	45,150	15,700	306.7	330.8	377.3	3,320	**4165**
					185	105	—	3	7	31,010	52,680	18,300	498.7	527.9	476.8	4,130	**4205**
					225	145	—	3	7	37,710	67,730	23,600	786.3	822.8	613.3	4,930	**4245**
60	7×11.5×7	13	23	10	90	—	—	3	6	29,660	37,580	12,500	271.9	244.7	414.7	3,300	**6110**
					140	—	—	3	6	50,950	75,160	18,700	665.6	614.7	740.2	4,850	**6160**
					190	90	—	3	7	60,640	93,950	31,300	1,097.4	1,033.6	957.9	6,310	**6210**
					240	140	—	3	7	69,890	112,740	37,500	1,855.0	1,771.3	1,333.0	7,790	**6260**
					290	190	—	3	7	87,440	150,320	43,800	2,731.7	2,638.8	1,665.0	9,260	**6310**

*For accuracy T and S, see page H-4.

1kN≒102kgf 1N•m≒0.102kgf•m



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.

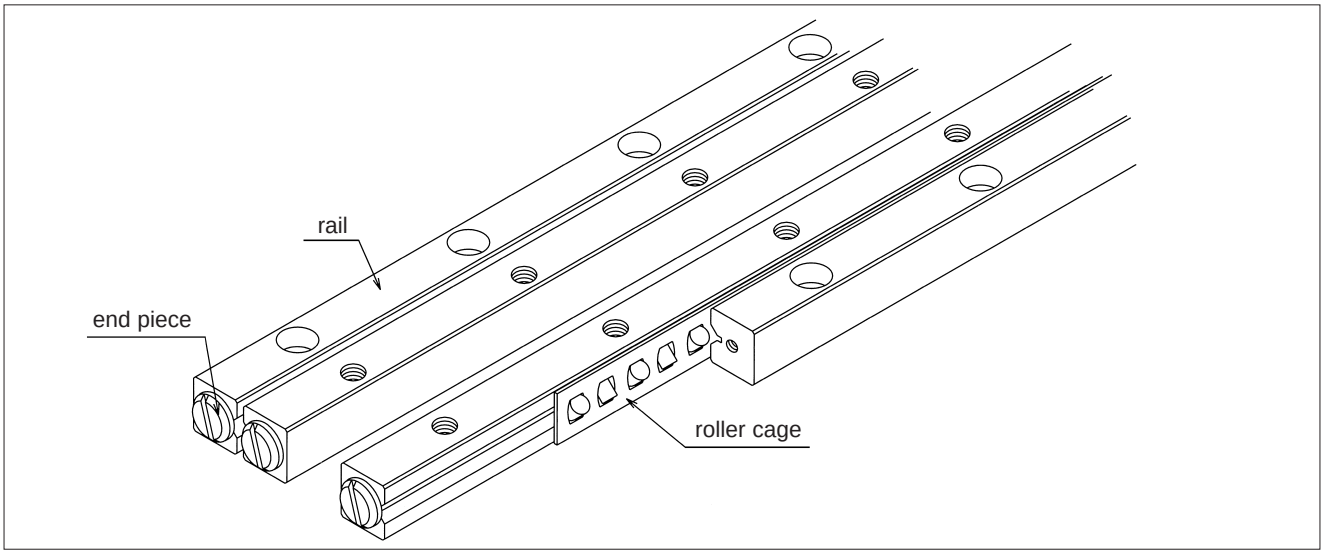
Low Noise:

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:

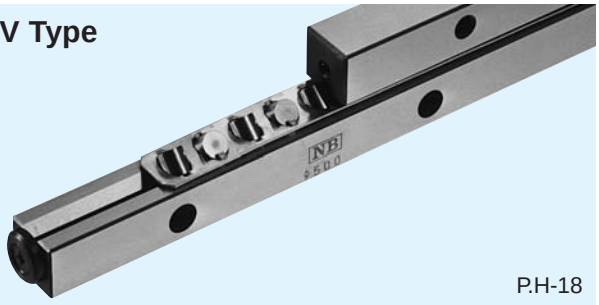
The anti-corrosion SVS/SVWS slide ways have all stainless-steel components, making them ideal for use in clean room applications.

Figure H-14 Slide Way Structure



TYPE

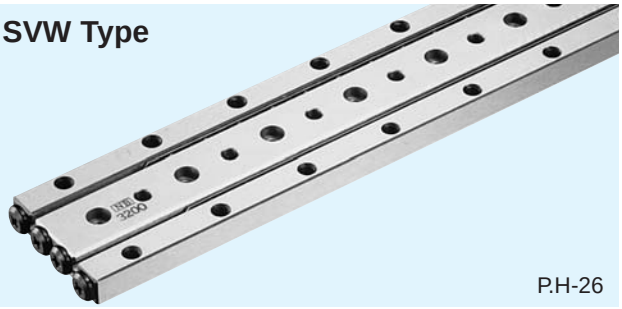
SV Type



P.H-18

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.

SVW Type



P.H-26

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-15 Parallelism

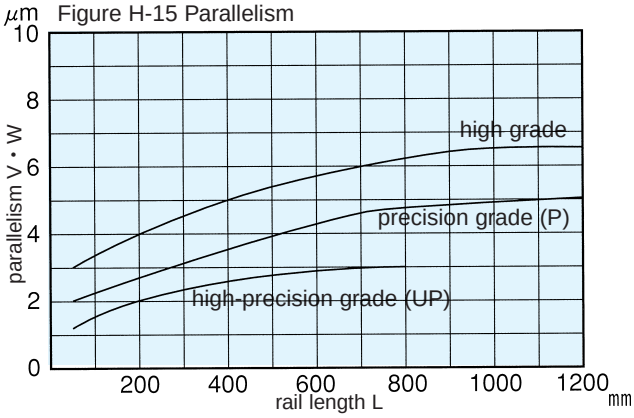
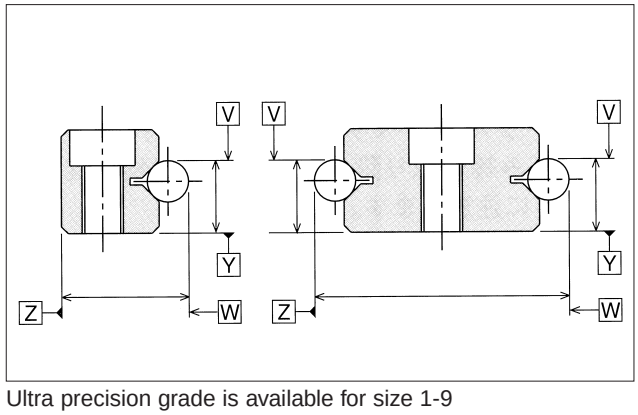


Figure H-16 Accuracy Measurement Method



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:

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

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

MOUNTING

Example:

Figure H-17 SV Type Slide Way

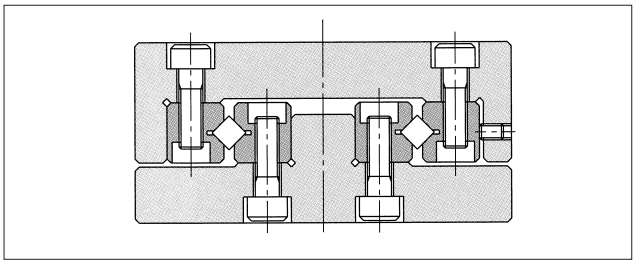
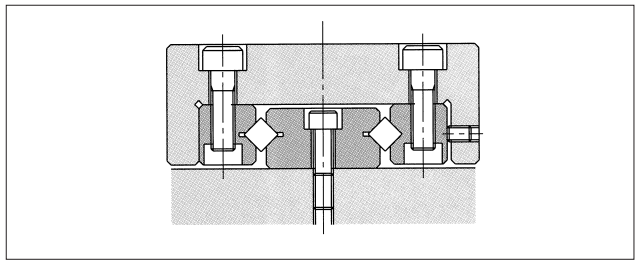


Figure H-18 SVW Type Slide Way

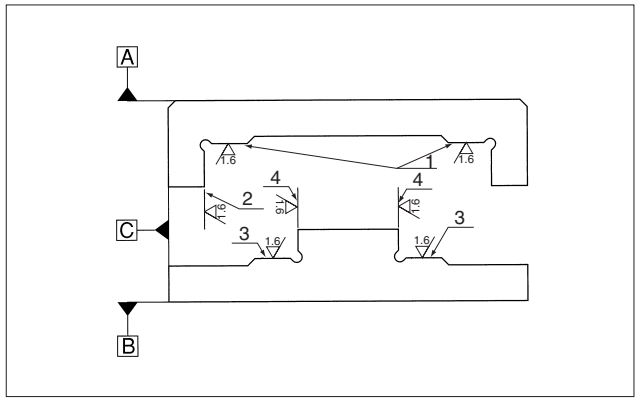


Accuracy:

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.

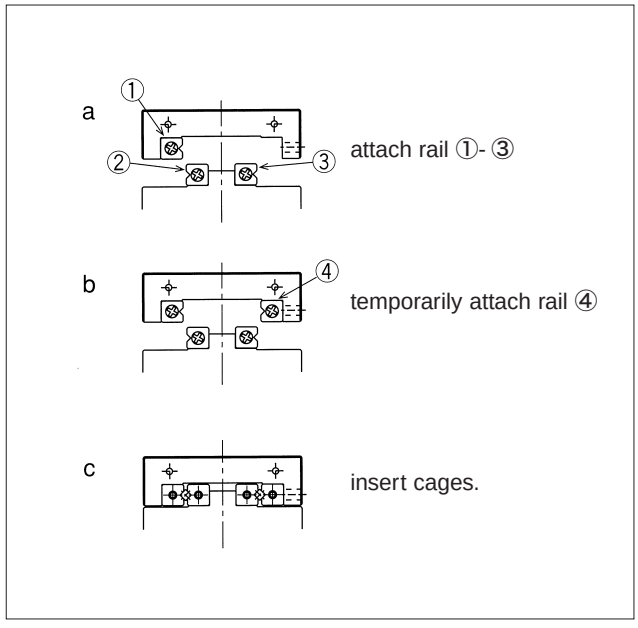
(2) Apply low-viscosity oil to contact surfaces. Attach rail ①- ③ by tightening bolts to specified torque values (Table H-6, Figure H-20a).

(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)

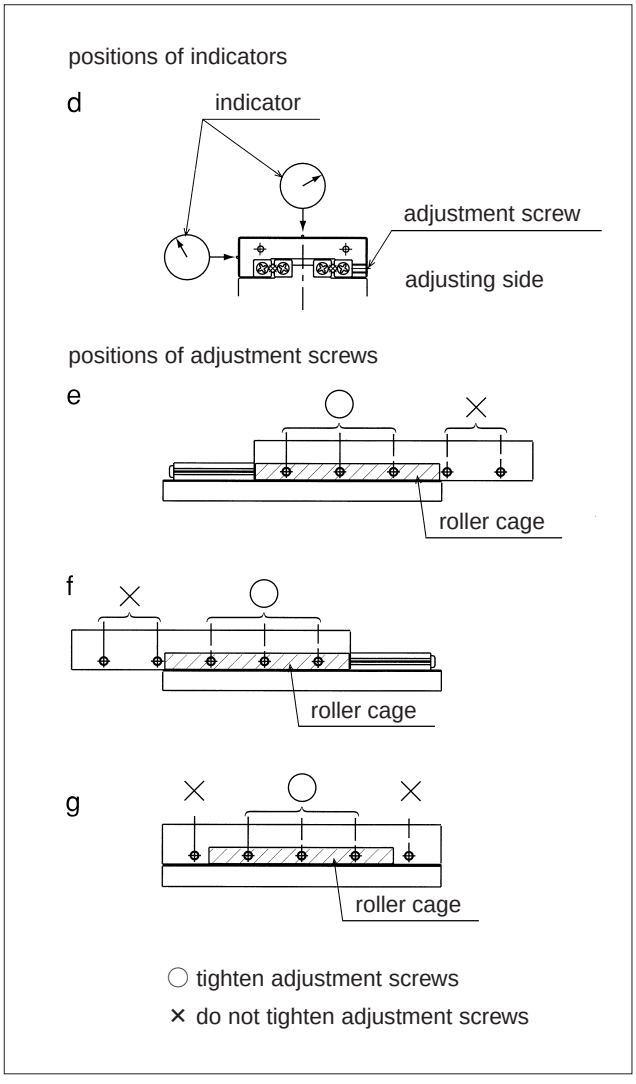


Table H-5 Recommended Torque for Adjustment Screw Unit/N-m

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

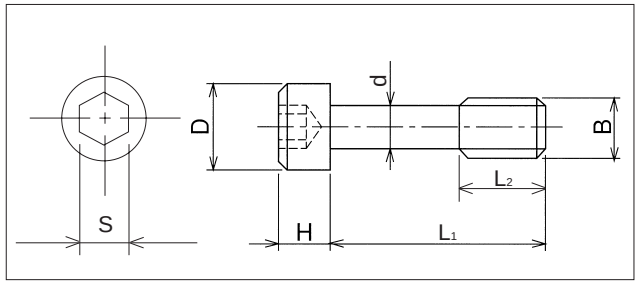


Table H-7 BT type Special Bolt Specifications

Part number	B	d mm	D mm	H mm	L_1 mm	L_2 mm	S mm	Applicable tracking base
BT 3	M 3	2.3	5	3	12	5	2.5	**SV 3**
BT 4	M 4	3.1	5.8	4	15	7	3	**SV 4**
BT 6	M 5	3.9	8	5	20	8	4	**SV 6**
BT 9	M 6	4.6	8.5	6	30	12	5	**SV 9**
BT12	M 8	6.25	11.3	8	40	17	6	**SV12**

LUBRICATION AND DUST PREVENTION

Lubrication:

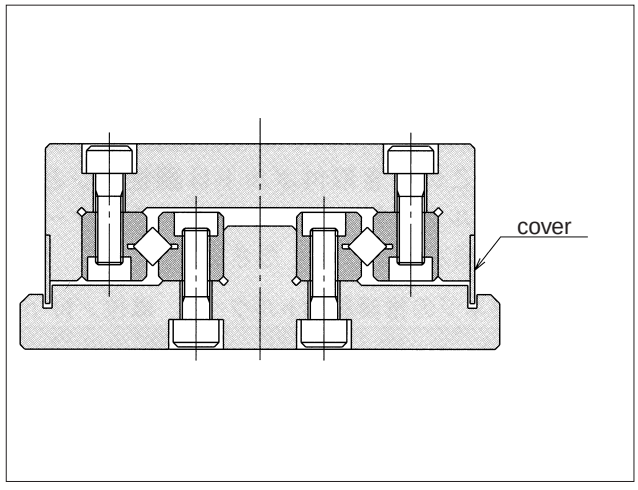
NB slide ways are lubricated using lithium soap grease prior to shipment, so they can be used immediately. Periodic application of a similar type grease is recommended depending on the operating conditions.

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:

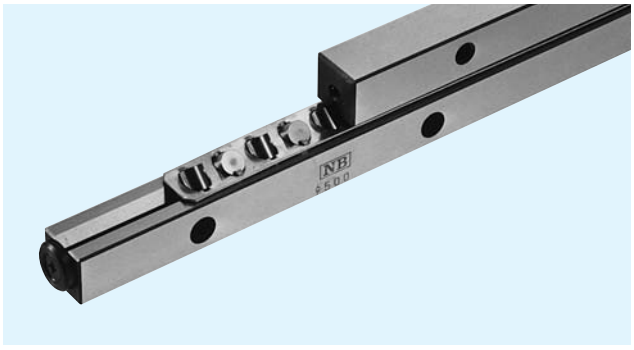
The accuracy tolerance of a slide way is designed to be adjusted within a particular set of components. If components from different sets are used, accuracy may be affected.

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 structure example

SVS | 6 | 200 | - | RAS | 20Z | - | UP

specification

SV	standard
SVS	anticorrosion

size

rail length

accuracy grade

blank	high
P	precision
UP	ultra precision

number of rollers

cage type

blank	standard cage
RA	aluminum cage standard roller
RAS	aluminum cage stainless roller

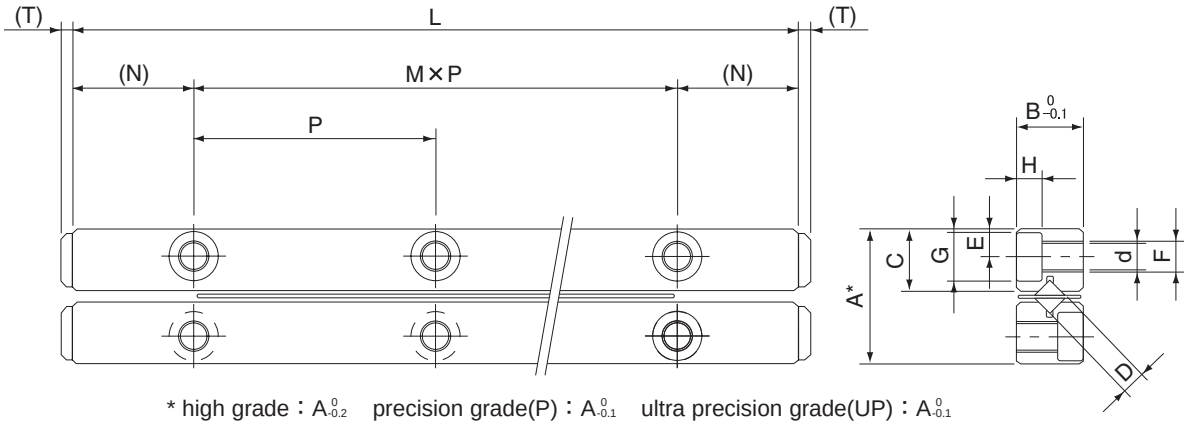
※ Refer to page H-29 for information on cage types.

part number		stroke	roller diameter	number of rollers				
standard	anticorrosion	mm	D mm	Z	L mm	A mm	B mm	C mm
SV1020-5Z	**SVS1020-5Z**	12		5	20			
1030-7Z	**1030-7Z**	20		7	30			
1040-10Z	**1040-10Z**	27		10	40			
1050-13Z	**1050-13Z**	32	1.5	13	50	8.5	4	3.8
1060-16Z	**1060-16Z**	37		16	60			
1070-19Z	**1070-19Z**	42		19	70			
1080-21Z	**1080-21Z**	50		21	80			
SV2030-5Z	**SVS2030-5Z**	18		5	30			
2045-8Z	**2045-8Z**	24		8	45			
2060-11Z	**2060-11Z**	30		11	60			
2075-13Z	**2075-13Z**	44		13	75			
2090-16Z	**2090-16Z**	50		16	90			
2105-18Z	**2105-18Z**	64	2	18	105	12	6	5.5
2120-21Z	**2120-21Z**	70		21	120			
2135-23Z	**2135-23Z**	84		23	135			
2150-26Z	**2150-26Z**	90		26	150			
2165-29Z	**2165-29Z**	95		29	165			
2180-32Z	**2180-32Z**	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 : $A^{0}_{-0.2}$ precision grade(P) : $A^{0}_{-0.1}$ ultra precision grade(UP) : $A^{0}_{-0.1}$

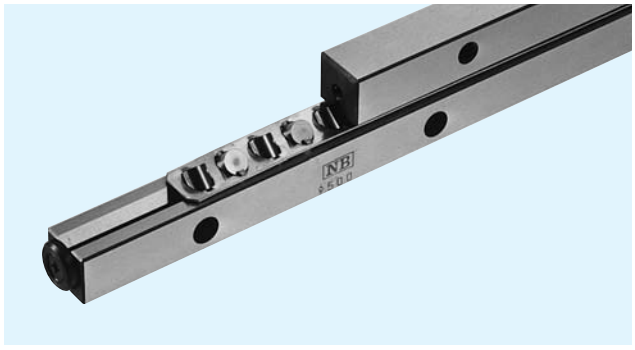
One set of components consists of 2 roller cages, 4 rails, and 8 end-pieces.

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

1N≒0.102kgf

SV TYPE

– SV3/SV4 –



part number structure example

SVS 6 200 - RAS 20Z - UP

specification

SV	standard
SVS	anticorrosion

size

rail length

accuracy grade

blank	high
P	precision
UP	ultra precision

number of rollers

cage type

blank	standard cage
RA	aluminum cage standard roller
RAS	aluminum cage stainless roller

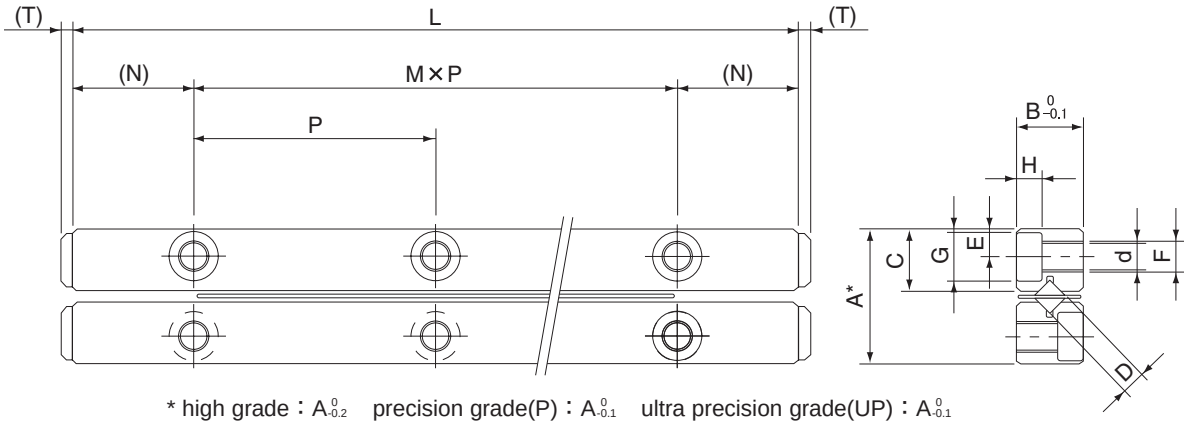
※ Refer to page H-29 for information on cage types.

part number		stroke	roller diameter	number of rollers				
standard	anticorrosion	mm	D mm	Z	L mm	A mm	B mm	C mm
SV3050-7Z	**SVS3050-7Z**	28		7	50			
3075-10Z	**3075-10Z**	48		10	75			
3100-14Z	**3100-14Z**	58		14	100			
3125-17Z	**3125-17Z**	78		17	125			
3150-21Z	**3150-21Z**	88		21	150			
3175-24Z	**3175-24Z**	105		24	175			
3200-28Z	**3200-28Z**	115	3	28	200	18	8	8.3
3225-31Z	**3225-31Z**	135		31	225			
3250-35Z	**3250-35Z**	145		35	250			
3275-38Z	**3275-38Z**	165		38	275			
3300-42Z	**3300-42Z**	175		42	300			
3325-45Z	**3325-45Z**	195		45	325			
3350-49Z	**3350-49Z**	205		49	350			
SV4080-7Z	**SVS4080-7Z**	58		7	80			
4120-11Z	**4120-11Z**	82		11	120			
4160-15Z	**4160-15Z**	105		15	160			
4200-19Z	**4200-19Z**	130		19	200			
4240-23Z	**4240-23Z**	150		23	240			
4280-27Z	**4280-27Z**	175	4	27	280	22	11	10.2
4320-31Z	**4320-31Z**	200		31	320			
4360-35Z	**4360-35Z**	225		35	360			
4400-39Z	**4400-39Z**	250		39	400			
4440-43Z	**4440-43Z**	270		43	440			
4480-47Z	**4480-47Z**	295		47	480			

Maximum Rail Length (SV type only)

part number	Max.length
SV3	700mm
SV4	700mm

Please contact NB for further details.



* high grade : $A^{0}_{-0.2}$ precision grade(P) : $A^{0}_{-0.1}$ ultra precision grade(UP) : $A^{0}_{-0.1}$

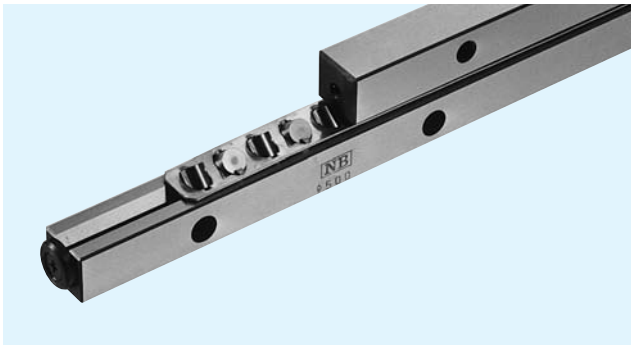
One set of components consists of 2 roller cages, 4 rails, and 8 end-pieces.

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

1N≒0.102kgf

SV TYPE

– SV6/SV9 –



part number structure example

SVS | 6 | 200 | - | RAS | 20Z | - | UP

specification

SV	standard
SVS	anticorrosion

size

rail length

accuracy grade

blank	high
P	precision
UP	ultra precision

number of rollers

cage type

blank	standard cage
RA	aluminum cage standard roller
RAS	aluminum cage stainless roller

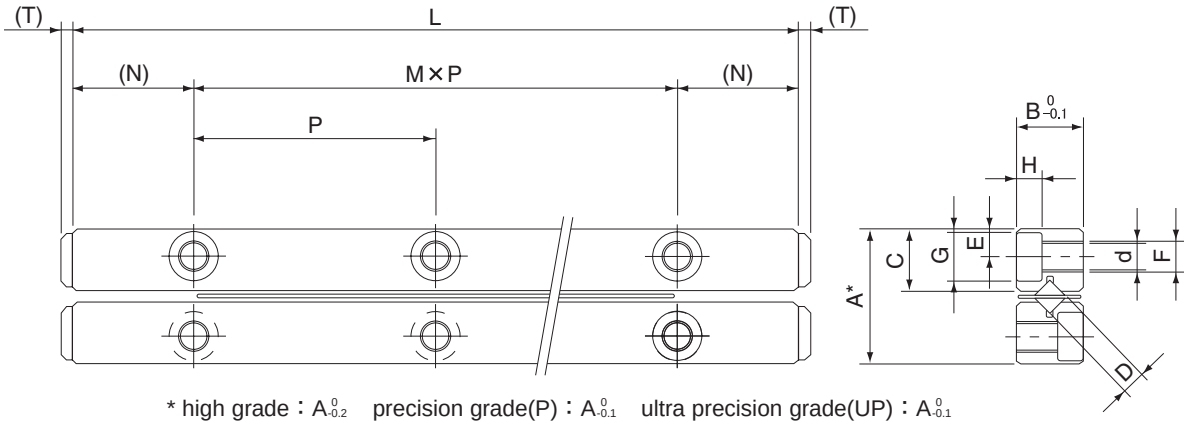
※ Refer to page H-29 for information on cage types.

part number		stroke	roller diameter	number of rollers				
standard	anticorrosion	mm	D mm	Z	L mm	A mm	B mm	C mm
SV6100-8Z	**SVS6100-8Z**	55	6	8	100	31	15	14.2
6150-12Z	**6150-12Z**	85		12	150			
6200-16Z	**6200-16Z**	120		16	200			
6250-20Z	**6250-20Z**	150		20	250			
6300-24Z	**6300-24Z**	185		24	300			
6350-28Z	**6350-28Z**	215		28	350			
6400-32Z	**6400-32Z**	245		32	400			
6450-36Z	**6450-36Z**	280		36	450			
6500-40Z	**6500-40Z**	310		40	500			
6600-49Z	**6600-49Z**	360		49	600			
SV9200-10Z	–	115	9	10	200	44	22	20.2
9300-15Z	–	175		15	300			
9400-20Z	–	235		20	400			
9500-25Z	–	295		25	500			
9600-30Z	–	355		30	600			
9700-35Z	–	415		35	700			
9800-40Z	–	475		40	800			
9900-45Z	–	535		45	900			
91000-50Z	–	595		50	1,000			

Maximum Rail Length (SV type only)

part number	Max.length
SV6	1000mm

Please contact NB for further details.



* high grade : $A^{0}_{-0.2}$ precision grade(P) : $A^{0}_{-0.1}$ ultra precision grade(UP) : $A^{0}_{-0.1}$

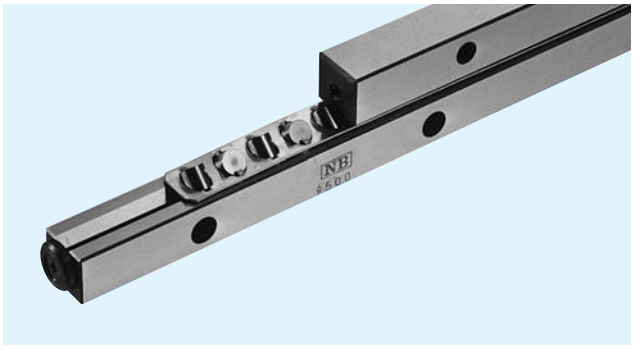
One set of components consists of 2 roller cages, 4 rails, and 8 end-pieces.

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

1N≒0.102kgf

SV TYPE

– SV12 –



part number structure example

SVS 6 200 - RAS 20Z - UP

specification

SV	standard
SVS	anticorrosion

size

rail length

accuracy grade

blank	high
P	precision
UP	ultra precision

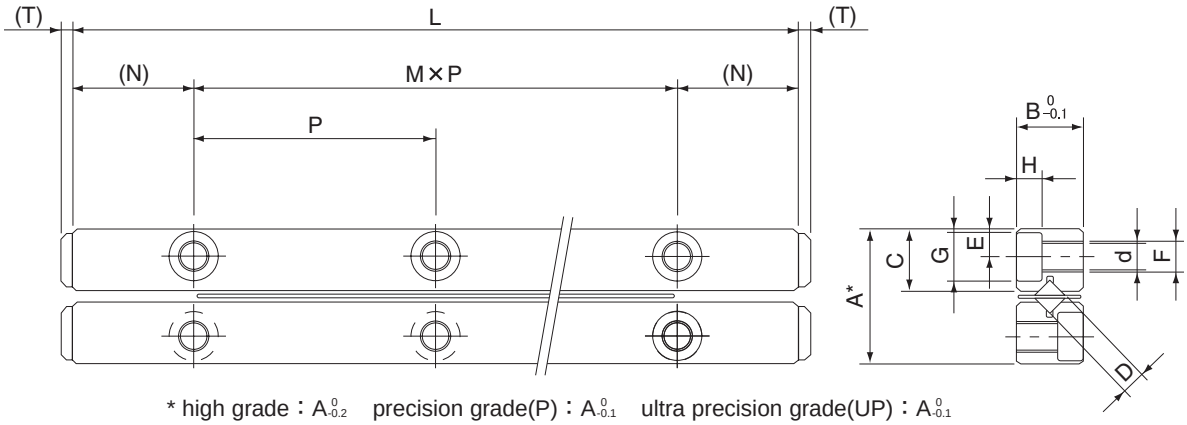
number of rollers

cage type

blank	standard cage
RA	aluminum cage standard roller
RAS	aluminum cage stainless roller

※ Refer to page H-29 for information on cage types.

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



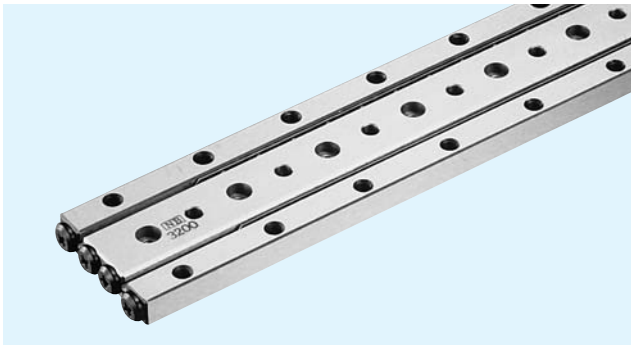
* high grade : $A^{0}_{-0.2}$ precision grade(P) : $A^{0}_{-0.1}$ ultra precision grade(UP) : $A^{0}_{-0.1}$

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

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

1N≒0.102kgf

SVW TYPE



part number structure example

SVWS | 4 | 200 | - | RAS | 19Z | - | UP

specification

SVW	standard
SVWS	anticorrosion

size

rail length

accuracy grade

blank	high
P	precision
UP	ultra precision

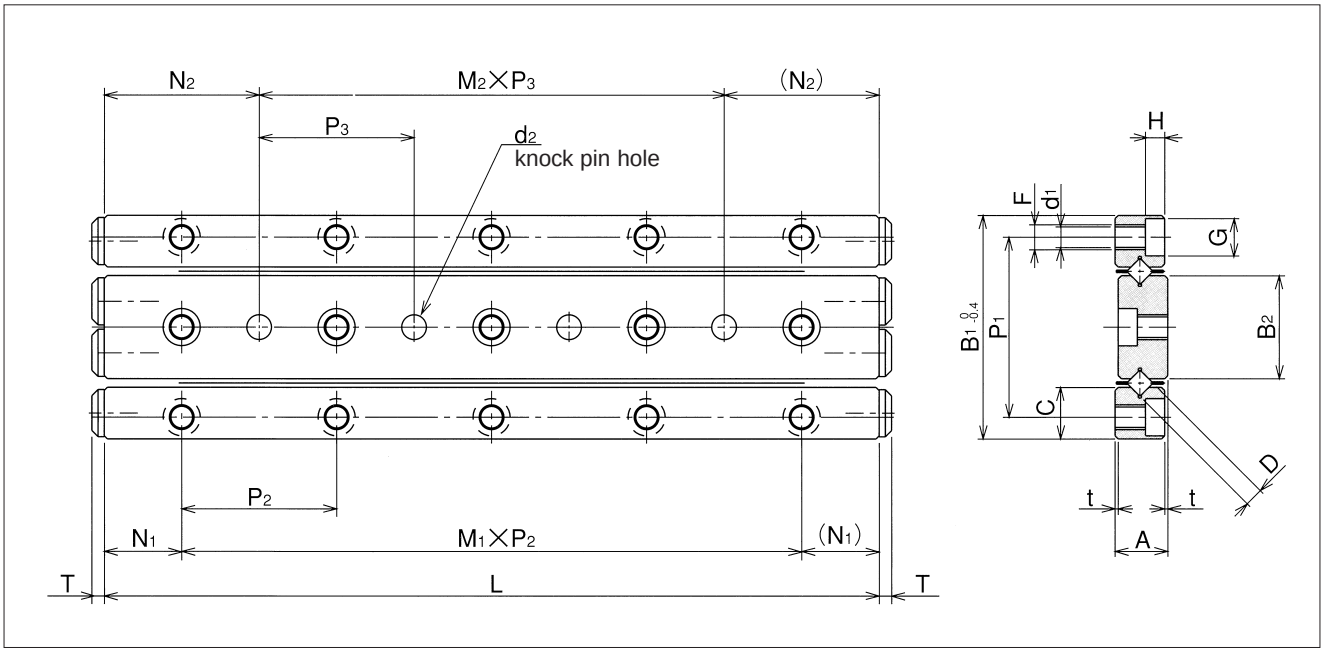
number of rollers

cage type

blank	standard cage
RA	aluminum cage standard roller
RAS	aluminum cage stainless roller

※ Refer to page H-29 for information on cage types.

part number		stroke	roller diameter	number of rollers								
standard	anticorrosion	mm	D mm	Z	L mm	A mm	t mm	B_1 mm	B_2 mm	C mm	P_1 mm	$M_1 \times P_2$ mm
SVW1020- 5Z	**SVWS1020- 5Z**	12		5	20							1×10
1030- 7Z	**1030- 7Z**	20		7	30							2×10
1040-10Z	**1040-10Z**	27		10	40							3×10
1050-13Z	**1050-13Z**	32	1.5	13	50	4.5	0.5	17	7.6	3.8	13.4	4×10
1060-16Z	**1060-16Z**	37		16	60							5×10
1070-19Z	**1070-19Z**	42		19	70							6×10
1080-21Z	**1080-21Z**	50		21	80							7×10
SVW2030- 5Z	**SVWS2030- 5Z**	18		5	30							1×15
2045- 8Z	**2045- 8Z**	24		8	45							2×15
2060-11Z	**2060-11Z**	30		11	60							3×15
2075-13Z	**2075-13Z**	44	2	13	75	6.5	0.5	24	11	5.5	19	4×15
2090-16Z	**2090-16Z**	50		16	90							5×15
2105-18Z	**2105-18Z**	64		18	105							6×15
2120-21Z	**2120-21Z**	70		21	120							7×15
SVW3050- 7Z	**SVWS3050- 7Z**	28		7	50							1×25
3075-10Z	**3075-10Z**	48		10	75							2×25
3100-14Z	**3100-14Z**	58		14	100							3×25
3125-17Z	**3125-17Z**	78	3	17	125	8.5	0.5	36	16.6	8.3	29	4×25
3150-21Z	**3150-21Z**	88		21	150							5×25
3175-24Z	**3175-24Z**	105		24	175							6×25
3200-28Z	**3200-28Z**	115		28	200							7×25
SVW4080- 7Z	**SVWS4080- 7Z**	58		7	80							1×40
4120-11Z	**4120-11Z**	82		11	120							2×40
4160-15Z	**4160-15Z**	105	4	15	160	11.5	0.5	44	20.4	10.2	35	3×40
4200-19Z	**4200-19Z**	130		19	200							4×40
4240-23Z	**4240-23Z**	150		23	240							5×40
4280-27Z	**4280-27Z**	175		27	280							6×40



major dimensions									basic load rating		allowable	mass	size
N_1 mm	F	d_1 mm	G mm	H mm	$M_2 \times P_3$ mm	N_2 mm	d_2 mm	T mm	dynamic C N	static Co N	load F N	g	
					—				464	476	158	11	**1020**
					1×10				641	714	237	14	**1030**
					2×10				959	1,190	396	18	**1040**
5	M2	1.65	3	1.4	3×10	10	2	1	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**
					6×10				1,650	2,380	792	34	**1080**
					—				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**
7.5	M3	2.55	4.4	2	3×15	15	3	2	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**
					6×15				3,900	5,860	1,950	110	**2120**
					—				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**
12.5	M4	3.3	6	3.1	3×25	25	4	2	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**
					6×25				11,700	18,100	6,040	374	**3200**
					—				7,110	7,920	2,640	255	**4080**
					1×40				10,600	13,200	4,400	385	**4120**
					2×40				13,800	18,400	6,160	510	**4160**
20	M5	4.3	8	4.2	3×40	40	5	2	16,800	23,700	7,920	635	**4200**
					4×40				19,700	29,000	9,680	770	**4240**
					5×40				22,400	34,300	11,400	905	**4280**

1N≒0.102kgf

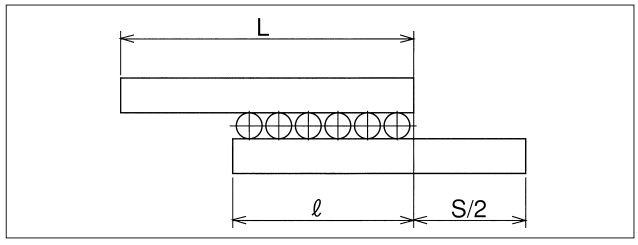
STROKE AND RATED LOAD

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

$$S \leqq L / 1.5$$

When the stroke is less than 400 mm,

$$S \leqq L$$

Cage length (ℓ)

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

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)

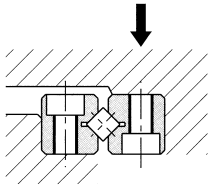
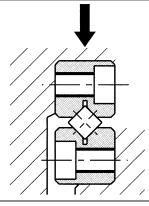
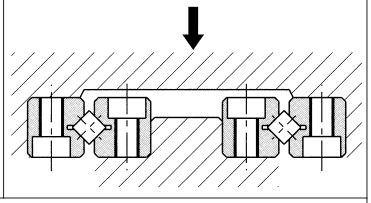
Allowable Load

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.

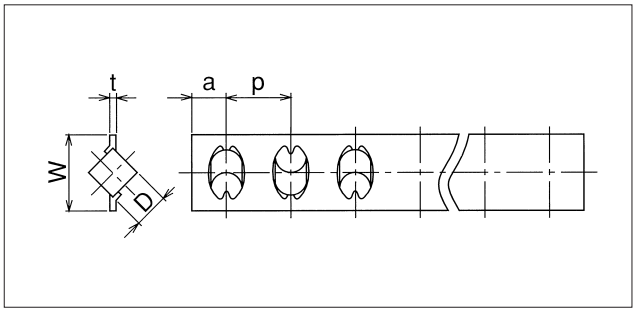
Table H-8 Rated Load

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_1 : basic dynamic load rating per roller (N)
Co_1 : basic static load rating per roller (N) F_1 : 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 structure example

RS 6 - 15Z

specification

R	standard
RS	anticorrosion

6: size

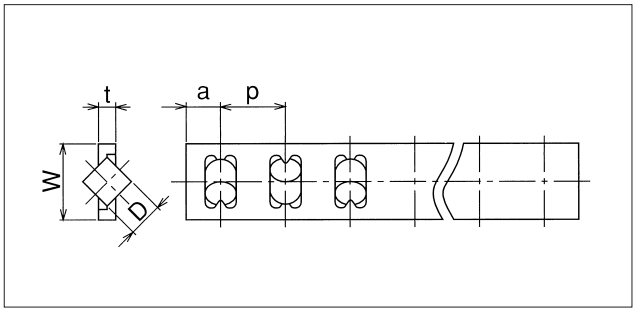
15Z: number of rollers

part number		D	t	W	p	a	C_1	Co_1	F_1
standard	anticorrosion	mm	mm	mm	mm	mm	N	N	N
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_1: dynamic load rating per roller Co_1: static load rating per roller F_1: allowable load per roller (N)

RA/RAS TYPE

– Aluminum Roller Cage –



part number structure example

RAS 6 - 15Z

specification

RA	standard
RAS	anticorrosion

6: size

15Z: number of rollers

part number		D	t	W	p	a	C_1	Co_1	F_1
standard	anticorrosion	mm	mm	mm	mm	mm	N	N	N
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_1: dynamic load rating per roller Co_1: static load rating per roller F_1: allowable load per roller (N)

SLIDE TABLE

The NB slide table is a precision table equipped with a slide way. Its high-precision and low-friction characteristics make it well suited for use in electronics automatic-assembly machines and optical measurement devices.

STRUCTURE AND ADVANTAGES

The NB slide table consists of a slide way sandwiched between an accurately machined table and a bed. Stopper is provided within the table.

High Accuracy:

The mounting surfaces of the table and bed are precision finished to ensure high-precision linear motion, resulting in a high-performance slide way.

Low Friction:

Its non-recirculating mechanism provides stable motion from low to high speeds.

Compact and High Rigidity:

Being designed compactly, the NB slide table holds the high load capacity and high-rigidity characteristics.

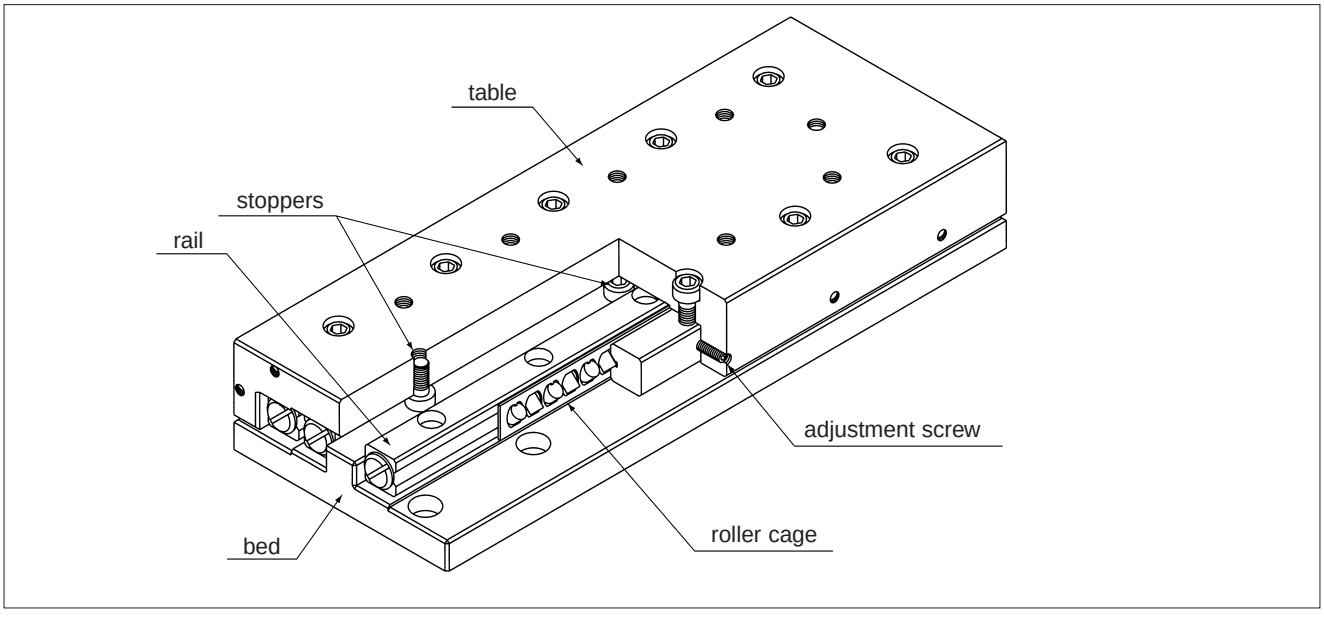
No Need for Adjustment:

The table is carefully assembled so that the accuracy and pre-load are optimized, so it can be used immediately without any further adjustment.

Ease of Mounting:

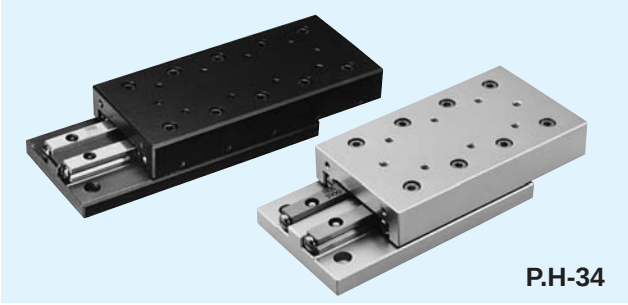
Standardized mounting holes are provided in the table and bed. High-precision linear motion can be achieved simply by mounting.

Figure H-25 Structure of SVT Type Slide Table



TYPE

SVT・SVTS Type



P.H-34

In the SVT type slide table, the slide way is sandwiched between an accurately machined steel tabletop and bed. In the SVTS type, an anti-corrosion SVS type slide way is sandwiched between an accurately machined aluminum tabletop and bed.

SYT・SYTS Type

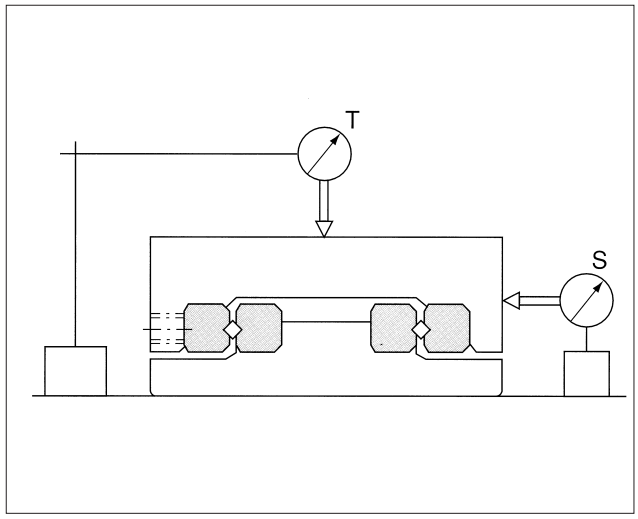
P.H-40

The SYT/SYTS type is a thin, compact slide table. Either tapped or counterbore type is available. The anti-corrosion SYTS type slide table is fabricated with all stainless steel components, making it suitable for use in clean rooms.

ACCURACY

The motion accuracy of a slide table is measured by placing indicators at the centers of the top and side surfaces of the table, as illustrated in Figure H-26. It is expressed in terms of the indicator diflections when the table is moved to the right and left under no-load conditions.

Figure H-26 Accuracy Measurement Method



RATED LIFE

The life of an NB slide table is calculated using the following equations.

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
※ Refer to page Eng. 5 for the coefficients.

Life time :

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

L_h : life time (hr) ℓs : stroke length (m)
n_1 : number of strokes per minute (cpm)

NOTES ON OPERATION

Careful Handling:

Dropping a table may result in scratches or dents on the raceway surface, preventing smooth motion and reducing the life. Care should be exercised when handling a table.

Dust Prevention:

Dust and foreign particles can affect the accuracy and lifetime of a slide table. A slide table used in a hostile environment should be protected with a cover.

Lubrication:

Lithium soap lubrication is applied prior to shipment, so a table can be used immediately upon delivery. Periodic application of a similar lubricant should be necessary depending on the operating conditions.

Cage Slippage:

The cage can slip under high-speed motion, unbalanced-loading, and vibrating conditions. The motion speed of a slide table should be kept under 30 m/min.

Adjustment/Installation Screws:

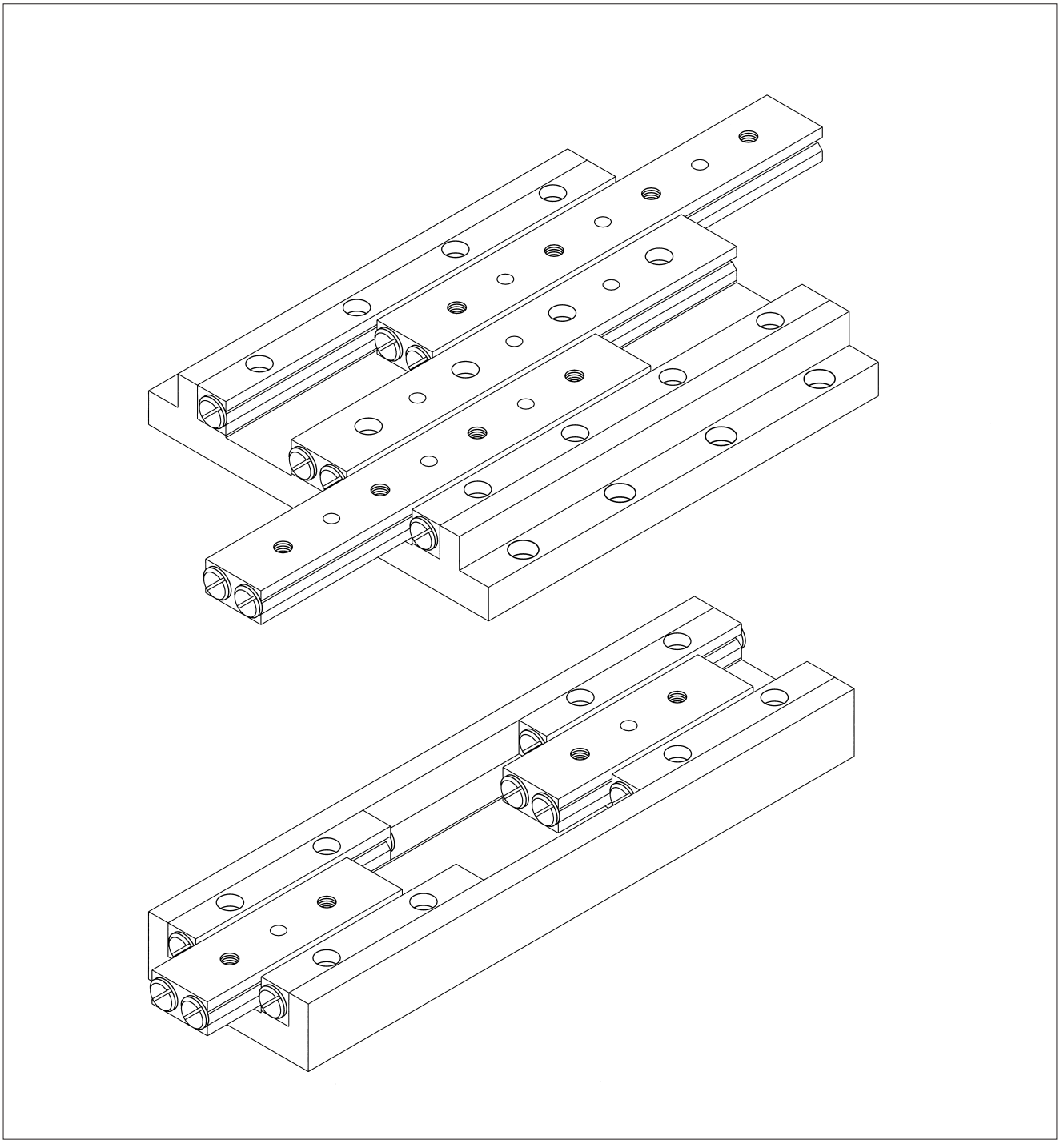
The NB slide table is adjusted to achieve optimum accuracy and pre-load. The adjustment screw and tracking-bed installation screws should not be changed.

Allowable Load

The allowable load is a load under which the sum of elastic deformations of the rolling element and the raceways 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.

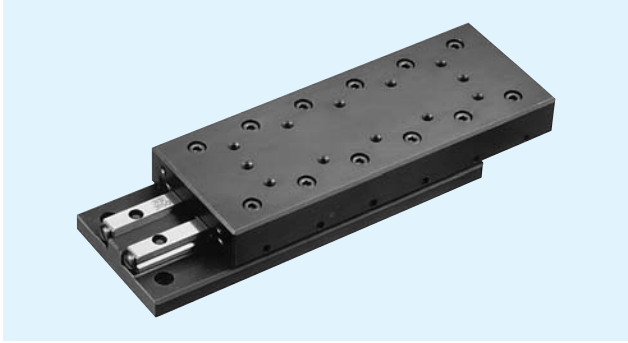
SPECIAL REQUIREMENTS

NB can fabricate tables to meet special requirements, including tables with a micrometer head and tables for projectors. Contact NB for further information.



SVT TYPE

– SVT1/SVT2 –



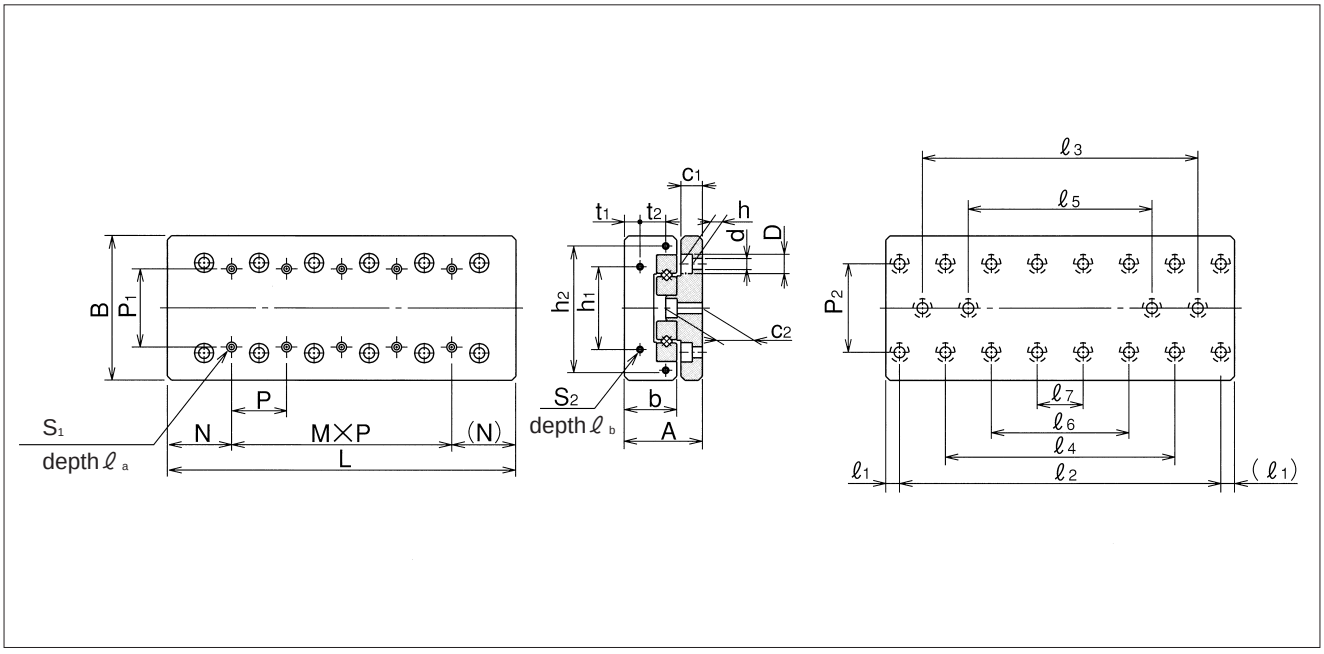
part number structure example

SVTS 6 210

- SVTS: specification
- 6: size
- 210: over-all length

specification	
SVT	standard
SVTS	anticorrosion

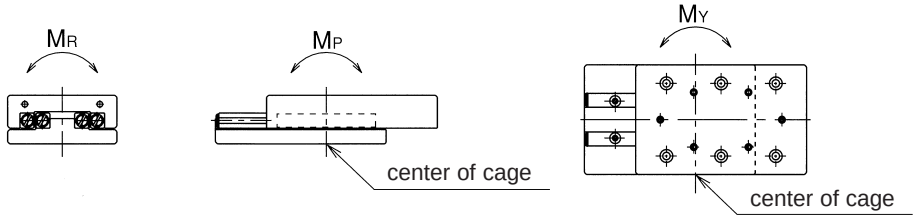
part number		stroke	major dimensions				table-top mounting-hole dimensions					table-end mounting-hole dimensions						
standard	anticorrosion	mm	A mm	B mm	L mm	b mm	P_1 mm	S_1	ℓ_a mm	N mm	M×P mm	h_1 mm	h_2 mm	t_1 mm	t_2 mm	S_2	ℓ_b mm	P_2 mm
SVT1025	**SVTS1025**	12			25						—							
1035	**1035**	18			35						1×10							
1045	**1045**	25			45						2×10							
1055	**1055**	32	$17^{\pm 0.1}$	$30^{-0.2}_{-0.4}$	55	11	10	M2	4	12.5	3×10	12	–	2.5	–	M2	6	22
1065	**1065**	40			65						4×10							
1075	**1075**	45			75						5×10							
1085	**1085**	50			85						6×10							
SVT2035	**SVTS2035**	18			35						—							
2050	**2050**	30			50						1×15							
2065	**2065**	40			65						2×15							
2080	**2080**	50			80						3×15							
2095	**2095**	60			95						4×15							
2110	**2110**	70	$21^{\pm 0.1}$	$40^{-0.2}_{-0.4}$	110	14	15	M3	6	17.5	5×15	16	–	3.4	–	M2	6	30
2125	**2125**	80			125						6×15							
2140	**2140**	90			140						7×15							
2155	**2155**	100			155						8×15							
2170	**2170**	110			170						9×15							
2185	**2185**	120			185						10×15							



bed-surface mounting-hole dimensions										accuracy※		basic load rating		allowable load	allowable static moment			mass		size
												dynamic	static					SVT	SVTS	
d×D×h	c1	c2	ℓ1	ℓ2	ℓ3	ℓ4	ℓ5	ℓ6	ℓ7	T	S	C	Co	F	MP	MY	MR			
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	μm	μm	N	N	N	N·m	N·m	N·m	g	g	
2.5×4.5×2.5	5.5	9	3.5	18	—	—	—	—	—	2	4	464	476	158	1.79	1.47	3.22	82	36	**1025**
				28	—	—	—	—	—	2	4	805	952	316	3.08	3.5	6.45	120	50	**1035**
				38	—	—	—	—	—	2	4	959	1,190	396	6.98	6.4	8.06	158	69	**1045**
				48	—	28	—	—	—	2	5	1,100	1,420	475	9.53	8.81	9.68	190	83	**1055**
				58	—	38	—	—	—	2	5	1,240	1,660	554	12.4	11.6	11.2	225	98	**1065**
				68	—	48	—	—	—	2	5	1,510	2,140	712	19.3	18.3	14.5	260	113	**1075**
				78	—	58	—	—	—	2	5	1,650	2,380	792	23.4	22.3	16.1	295	128	**1085**
3.5×6.5×3.5	6.5	10.9	5	25	—	—	—	—	—	2	4	1,090	1,170	390	7.04	5.78	10.5	195	90	**2035**
				40	—	—	—	—	—	2	4	1,510	1,750	585	12.1	10.7	15.8	280	133	**2050**
				55	—	—	—	—	—	2	5	1,900	2,340	780	19.1	17.1	21.1	370	175	**2065**
				70	—	40	—	—	—	2	5	2,620	3,510	1,170	27.4	29.6	31.6	450	220	**2080**
				85	—	55	—	—	—	2	5	2,950	4,100	1,360	37.4	39.9	36.9	540	250	**2095**
				100	—	70	—	—	—	3	6	3,280	4,680	1,560	61.7	58.1	42.2	630	285	**2110**
				115	—	85	—	—	—	3	6	3,590	5,270	1,750	76.1	72.1	47.5	720	330	**2125**
				130	—	100	—	70	—	3	6	4,210	6,440	2,140	92	95.9	58.1	800	360	**2140**
				145	—	115	—	85	—	3	6	4,500	7,030	2,340	109	113	63.3	880	400	**2155**
				160	—	130	—	100	—	3	7	4,790	7,610	2,530	148	143	68.6	970	440	**2170**
				175	—	145	—	115	85	3	7	5,080	8,200	2,730	170	164	73.9	1,060	480	**2185**

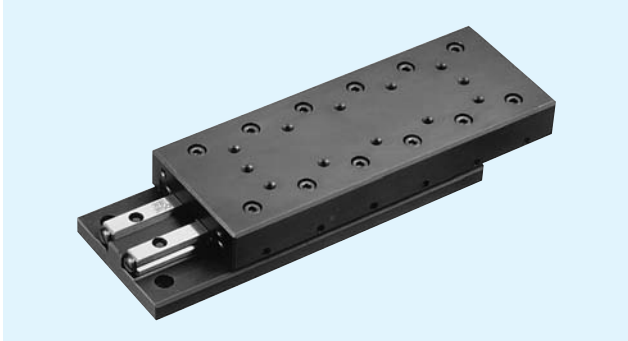
※ Refer to Figure H-26 (page H-31) for accuracy T and S.

1N≒0.102kgf 1N·m≒0.102kgf·m



SVT TYPE

– SVT3/SVT4 –



part number structure example

SVTS 6 210

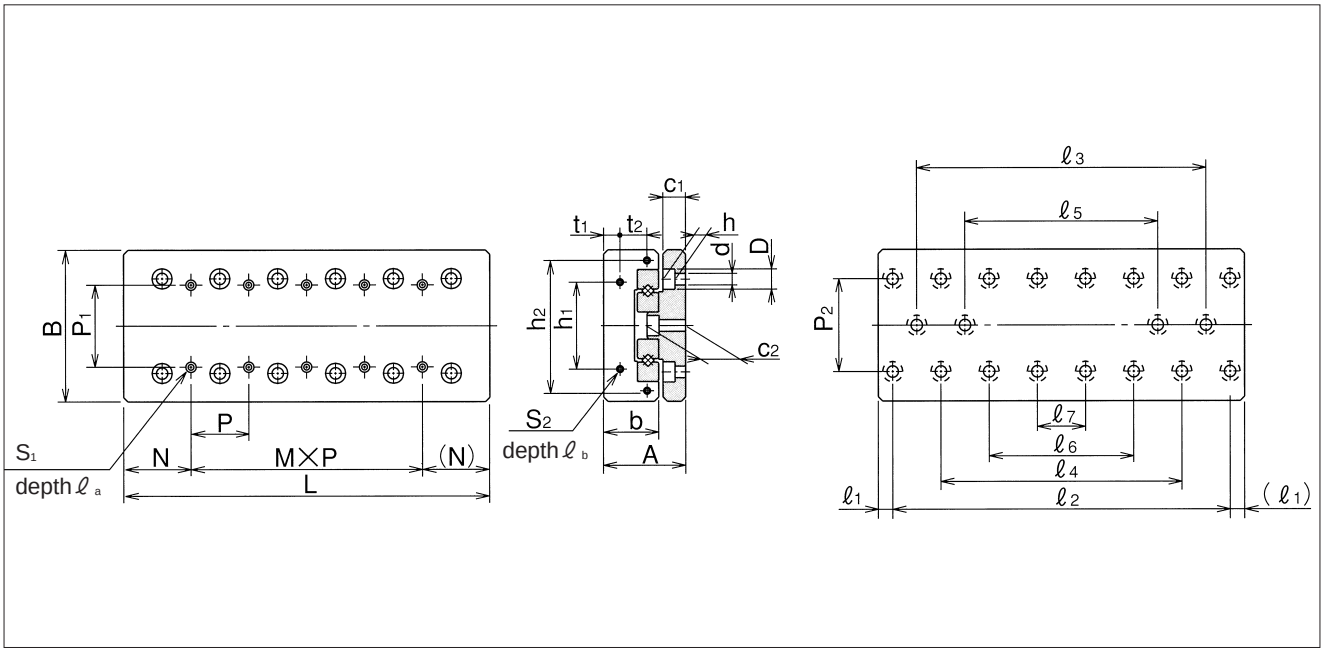
over-all length

size

specification

SVT	standard
SVTS	anticorrosion

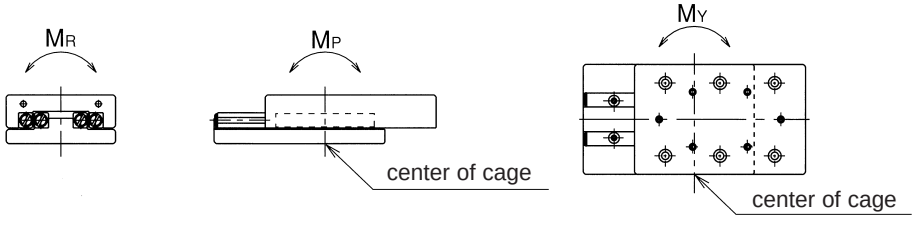
part number		stroke	major dimensions				table-top mounting-hole dimensions					table-end mounting-hole dimensions						
standard	anticorrosion	mm	A mm	B mm	L mm	b mm	P_1 mm	S_1	ℓ_a mm	N mm	M×P mm	h_1 mm	h_2 mm	t_1 mm	t_2 mm	S_2	ℓ_b mm	P_2 mm
SVT3055	**SVTS3055**	30			55						–							
3080	**3080**	45			80						1×25							
3105	**3105**	60			105						2×25							
3130	**3130**	75			130						3×25							
3155	**3155**	90			155						4×25							
3180	**3180**	105	$28^{\pm0.1}$	$60^{\pm0.1}$	180	18.5	25	M4	8	27.5	5×25	40	–	5.5	–	M3	6	40
3205	**3205**	130			205						6×25							
3230	**3230**	155			230						7×25							
3255	**3255**	180			255						8×25							
3280	**3280**	205			280						9×25							
3305	**3305**	230			305						10×25							
SVT4085	**SVTS4085**	50			85						–							
4125	**4125**	75			125						1×40							
4165	**4165**	105			165						2×40							
4205	**4205**	130			205						3×40							
4245	**4245**	155	$35^{\pm0.1}$	$80^{\pm0.1}$	245	24	40	M5	10	42.5	4×40	55	–	6.5	–	M3	6	55
4285	**4285**	185			285						5×40							
4325	**4325**	210			325						6×40							
4365	**4365**	235			365						7×40							
4405	**4405**	265			405						8×40							



bed-surface mounting-hole dimensions											accuracy※		basic load rating		allowable load	allowable static moment			mass		size
													dynamic	static					SVT	SVTS	
d×D×h	c1	c2	ℓ1	ℓ2	ℓ3	ℓ4	ℓ5	ℓ6	ℓ7		T	S	C	Co	F	MP	MY	MR			
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		μm	μm	N	N	N	N·m	N·m	N·m	g	g	
				35	–	–	–	–	–		2	5	3,490	3,890	1,290	19.4	22.2	54.5	640	300	3055
				60	–	–	–	–	–		2	5	5,230	6,490	2,160	53.0	58.0	90.9	955	440	3080
				85	–	–	–	–	–		3	6	6,030	7,780	2,590	103	95.7	109	1,250	580	3105
				110	–	–	–	–	–		3	6	7,560	10,300	3,450	170	160	145	1,570	715	3130
				135	85	–	–	–	–		3	6	9,000	12,900	4,320	210	220	181	1,850	850	3135
4.5×8×4.5	9	15	10	160	110	–	–	–	–		3	7	10,300	15,500	5,180	302	314	218	2,150	990	3180
				185	135	85	–	–	–		3	7	11,000	16,800	5,610	355	367	236	2,450	1,130	3205
				210	160	110	–	–	–		3	7	11,700	18,100	6,040	472	455	254	2,740	1,270	3230
				235	185	135	–	–	–		3	7	12,900	20,700	6,910	537	552	290	3,040	1,410	3255
				260	210	160	110	–	–		3	7	13,600	22,000	7,340	606	622	309	3,360	1,540	3280
				285	235	185	135	–	–		3	7	14,200	23,300	7,770	757	735	372	3,660	1,680	3305
				65	–	–	–	–	–		2	5	7,110	7,920	2,640	96.0	84.9	159	1,700	780	4085
				105	–	–	–	–	–		3	6	10,600	13,200	4,400	217	199	265	2,500	1,140	4125
				145	–	–	–	–	–		3	7	13,800	18,400	6,160	296	316	371	3,300	1,510	4165
				185	105	–	–	–	–		3	7	16,800	23,700	7,920	488	513	477	4,100	1,870	4205
5.5×10×5.4	10.5	18	10	225	145	–	–	–	–		3	7	19,700	29,000	9,680	729	759	584	4,900	2,240	4245
				265	185	–	–	–	–		3	7	22,400	34,300	11,400	1,010	1,050	690	5,700	2,600	4285
				305	225	145	–	–	–		4	8	25,100	39,600	13,200	1,350	1,390	796	6,500	3,000	4325
				345	265	185	–	–	–		4	8	27,600	44,800	14,900	1,730	1,780	902	7,300	3,300	4365
				385	305	225	–	–	–		4	8	28,900	47,500	15,800	2,160	2,100	955	8,100	3,700	4405

※ Refer to Figure H-26 (page H-31) for accuracy T and S.

1N≒0.102kgf 1N·m≒0.102kgf·m



SVT TYPE

– SVT6/SVT9 –

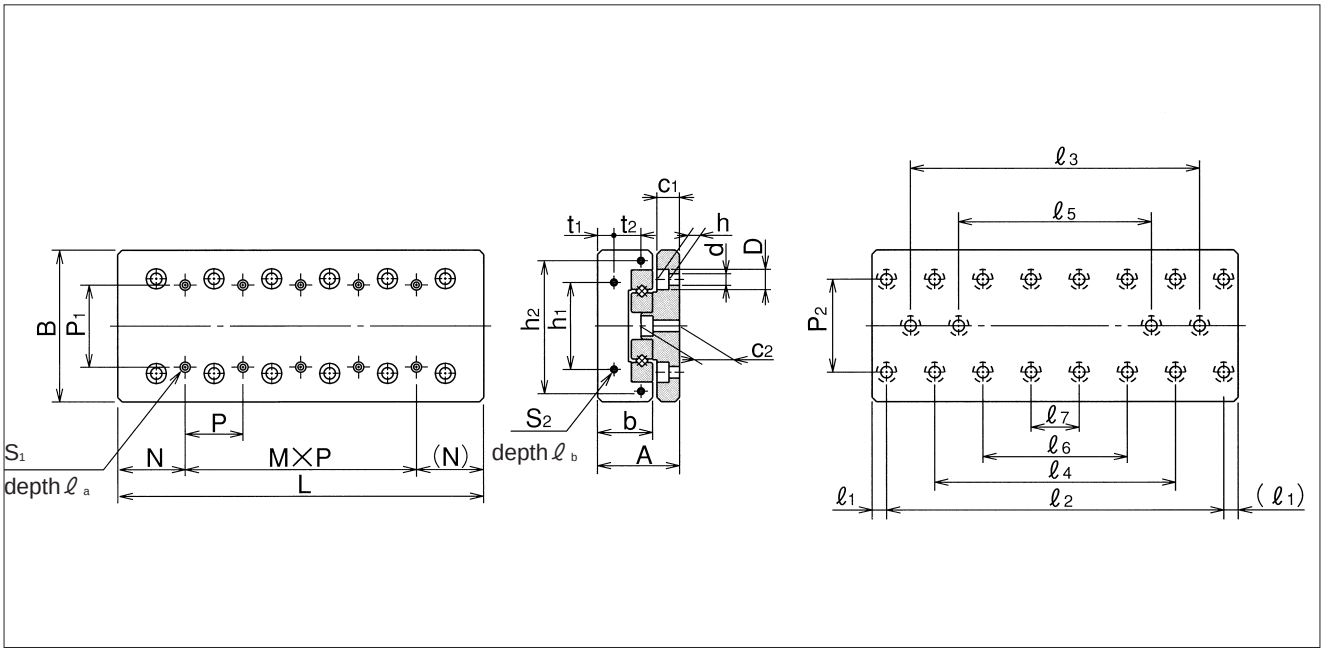
part number structure example

SVTS | 6 | 210

- SVTS: specification
- 6: size
- 210: over-all length

specification	
SVT	standard
SVTS	anticorrosion

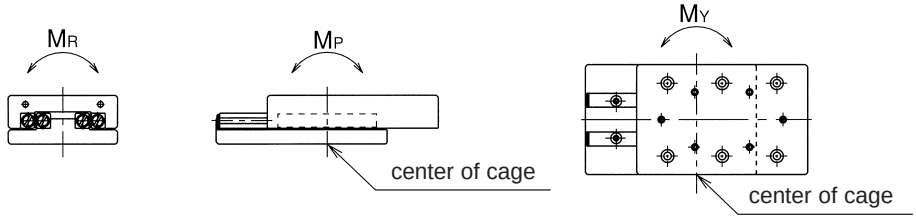
part number		stroke	major dimensions				table-top mounting-hole dimensions					table-end mounting-hole dimensions						
standard	anticorrosion	mm	A mm	B mm	L mm	b mm	P_1 mm	S_1	ℓ_a mm	N mm	M×P mm	h_1 mm	h_2 mm	t_1 mm	t_2 mm	S_2	ℓ_b mm	P_2 mm
SVT6110	**SVTS6110**	60			110						–							
6160	**6160**	95			160						1×50							
6210	**6210**	130			210						2×50							
6260	**6260**	165			260						3×50							
6310	**6310**	200	$45^{\pm0.1}$	$100^{\pm0.1}$	310	31	50	M6	12	55	4×50	60	92	8	15	M4	8	60
6360	**6360**	235			360						5×50							
6410	**6410**	265			410						6×50							
6460	**6460**	300			460						7×50							
6510	**6510**	335			510						8×50							
SVT9210	–	130			210						–							
9310	–	180			310						1×100							
9410	–	350			410						2×100							
9510	–	450			510						3×100							
9610	–	550	$60^{\pm0.1}$	$145^{\pm0.2}$	610	43	85	M8	16	105	4×100	90	135	11	20	M4	8	90
9710	–	650			710						5×100							
9810	–	750			810						6×100							
9910	–	850			910						7×100							
91010	–	950			1,010						8×100							



bed-surface mounting-hole dimensions											accuracy※		basic load rating		allowable load	allowable static moment			mass		size
													dynamic	static					SVT	SVTS	
d×D×h	c1	c2	ℓ1	ℓ2	ℓ3	ℓ4	ℓ5	ℓ6	ℓ7		T	S	C	Co	F	MP	MY	MR			
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		μm	μm	N	N	N	N·m	N·m	N·m	g	g	
				90	—	—	—	—	—		3	6	16,500	17,700	5,910	260	230	400	3,280	1,705	**6110**
				140	—	—	—	—	—		3	6	24,700	29,600	9,860	588	539	666	4,820	2,480	**6160**
				190	90	—	—	—	—		3	7	32,200	41,400	13,800	1,040	978	933	6,270	3,255	**6210**
				240	140	—	—	—	—		3	7	39,200	53,200	17,700	1,630	1,540	1,200	7,740	4,030	**6260**
7×11.5×7	13	23	10	290	190	—	—	—	—		3	7	45,800	65,100	21,600	2,340	2,240	1,460	9,200	4,805	**6310**
				340	240	140	—	—	—		4	8	52,200	76,900	25,600	2,750	2,850	1,730	10,740	5,580	**6360**
				390	290	190	—	—	—		4	8	58,400	88,800	29,500	3,660	3,770	2,000	12,190	6,355	**6410**
				440	340	240	—	—	—		4	8	64,400	100,000	33,500	4,700	4,830	2,260	13,800	7,130	**6460**
				490	390	290	190	—	—		4	8	70,200	112,000	37,400	5,870	6,010	2,530	15,300	7,905	**6510**
				100	—	—	—	—	—		3	7	51,100	56,500	18,800	1,610	1,440	2,030	12,520	—	**9210**
				200	—	—	—	—	—		3	7	79,300	98,900	32,900	3,150	3,360	3,560	17,950	—	**9310**
				300	100	—	—	—	—		4	8	79,300	98,900	32,900	4,110	3,840	3,560	23,950	—	**9410**
				400	200	—	—	—	—		4	8	96,600	127,000	42,300	6,420	6,080	4,580	30,090	—	**9510**
9×14×9	16	29	55	500	300	100	—	—	—		4	9	112,000	155,000	51,700	7,760	8,090	5,600	35,990	—	**9610**
				600	400	200	—	—	—		4	9	128,000	183,000	61,100	10,800	11,200	6,620	41,890	—	**9710**
				700	500	300	100	—	—		5	10	136,000	197,000	65,800	14,400	13,900	7,130	47,790	—	**9810**
				800	600	400	200	—	—		5	10	151,000	226,000	75,200	18,500	17,900	8,140	53,690	—	**9910**
				900	700	500	300	100	—		5	10	165,000	254,000	84,600	23,100	22,400	9,160	59,590	—	**91010**

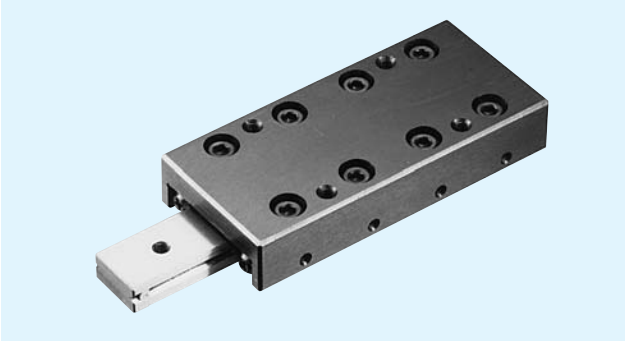
※ Refer to Figure H-26 (page H-31) for accuracy T and S.

1N≒0.102kgf 1N·m≒0.102kgf·m



SYT TYPE

– SYT1/SYT2 –



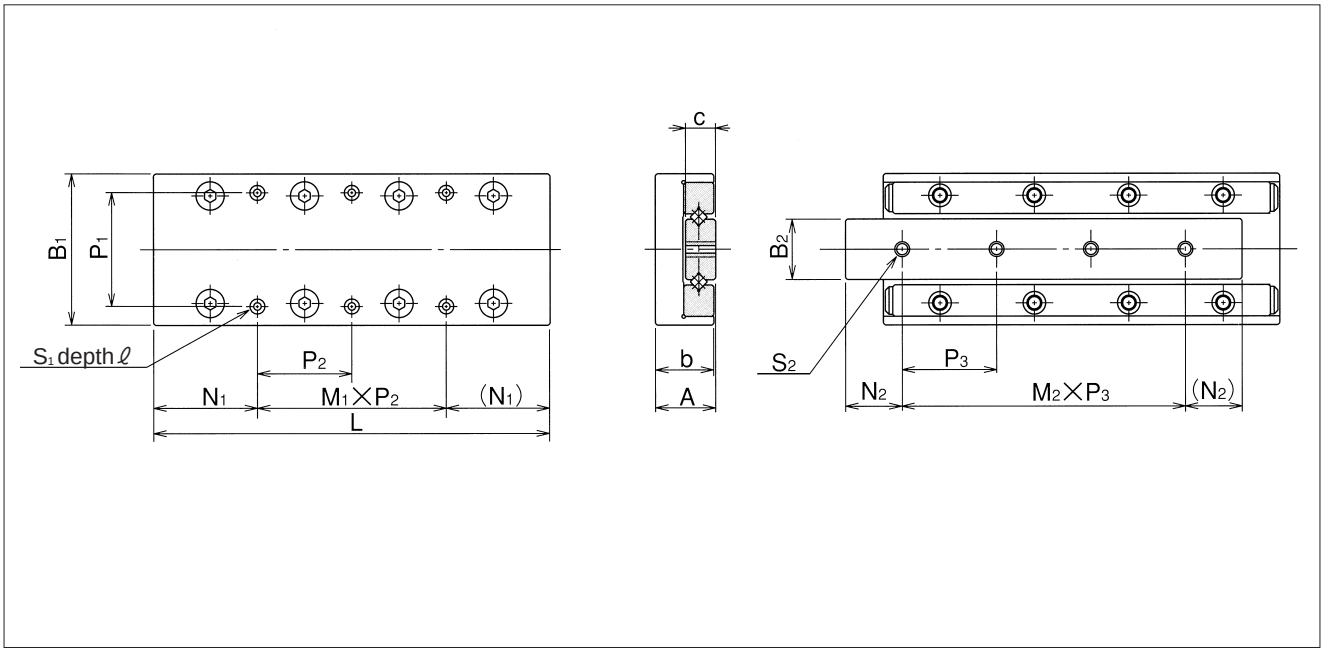
part number structure example

SYTS | 3 | 155

- SYTS: specification
- 3: size
- 155: over-all length

specification	
SYT	standard
SYTS	anticorrosion

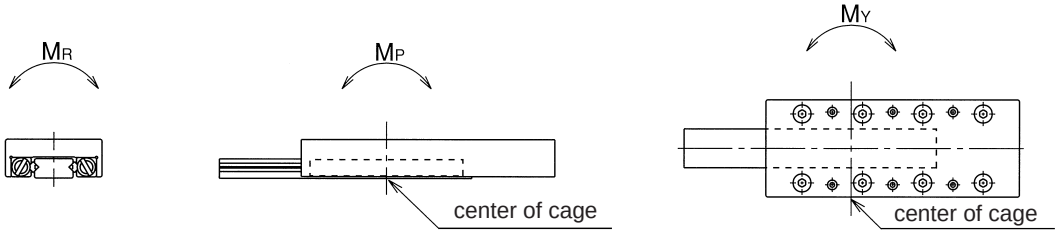
part number		stroke	major dimensions						table-top mounting-hole dimensions		
standard	anticorrosion	mm	A mm	B_1 mm	L mm	b mm	B_2 mm	c mm	P_1 mm	S_1	ℓ mm
SYT1025	**SYTS1025**	12			25						
1035	**1035**	18			35						
1045	**1045**	25			45						
1055	**1055**	32	$8^{\pm 0.1}$	$20^{\pm 0.1}$	55	7.5	6.6	4	14	M2.6	3.5
1065	**1065**	40			65						
1075	**1075**	45			75						
1085	**1085**	50			85						
SYT2035	**SYTS2035**	18			35						
2050	**2050**	30			50						
2065	**2065**	40			65						
2080	**2080**	50	$12^{\pm 0.1}$	$30^{\pm 0.1}$	80	11.5	12	6	22	M3	5.5
2095	**2095**	60			95						
2110	**2110**	70			110						
2125	**2125**	80			125						



		center rail mounting-hole dimensions			accuracy※		basic load rating		allowable load	allowable static moment			mass	size
							dynamic	static						
N_1	$M_1 \times P_2$	S_2	N_2	$M_2 \times P_3$	T	S	C	Co	F	M_P	M_Y	M_R		
mm	mm		mm	mm	μm	μm	N	N	N	N·m	N·m	N·m	g	
3.5	1×18		5	2×7.5	2	4	464	476	158	1.79	1.47	1.79	22	**1025**
3.5	1×28		7.5	2×10	2	4	805	952	316	3.08	3.50	3.58	33	**1035**
12.5	1×20		7.5	3×10	2	5	959	1,190	396	6.98	6.40	4.48	42	**1045**
12.5	1×30	M2.6	7.5	4×10	2	5	1,100	1,420	475	9.53	8.81	5.37	52	**1055**
12.5	2×20		7.5	5×10	2	5	1,240	1,660	554	12.4	11.6	6.27	63	**1065**
22.5	1×30		7.5	6×10	2	5	1,510	2,140	712	19.3	18.3	8.06	72	**1075**
12.5	2×30		7.5	7×10	2	5	1,650	2,380	792	23.4	22.3	8.96	83	**1085**
3.5	1×28		7.5	1×20	2	4	1,090	1,170	390	7.04	5.78	7.63	79	**2035**
3.5	1×43		10	2×15	2	4	1,510	1,750	585	12.1	10.7	11.4	113	**2050**
17.5	1×30		10	3×15	2	5	1,900	2,340	780	19.1	17.1	15.2	150	**2065**
17.5	1×45	M3	10	4×15	2	5	2,620	3,510	1,170	27.4	29.6	22.8	185	**2080**
17.5	2×30		10	5×15	2	5	2,950	4,100	1,360	37.4	39.9	26.7	215	**2095**
32.5	1×45		10	6×15	2	5	3,280	4,680	1,560	61.7	58.1	30.5	255	**2110**
17.5	2×45		10	7×15	2	5	3,590	5,270	1,750	76.1	72.1	34.3	295	**2125**

※ Refer to Figure H-26 (page H-31) for accuracy T and S.

1N≒0.102kgf 1N·m≒0.102kgf·m



SYT TYPE

– SYT3 –

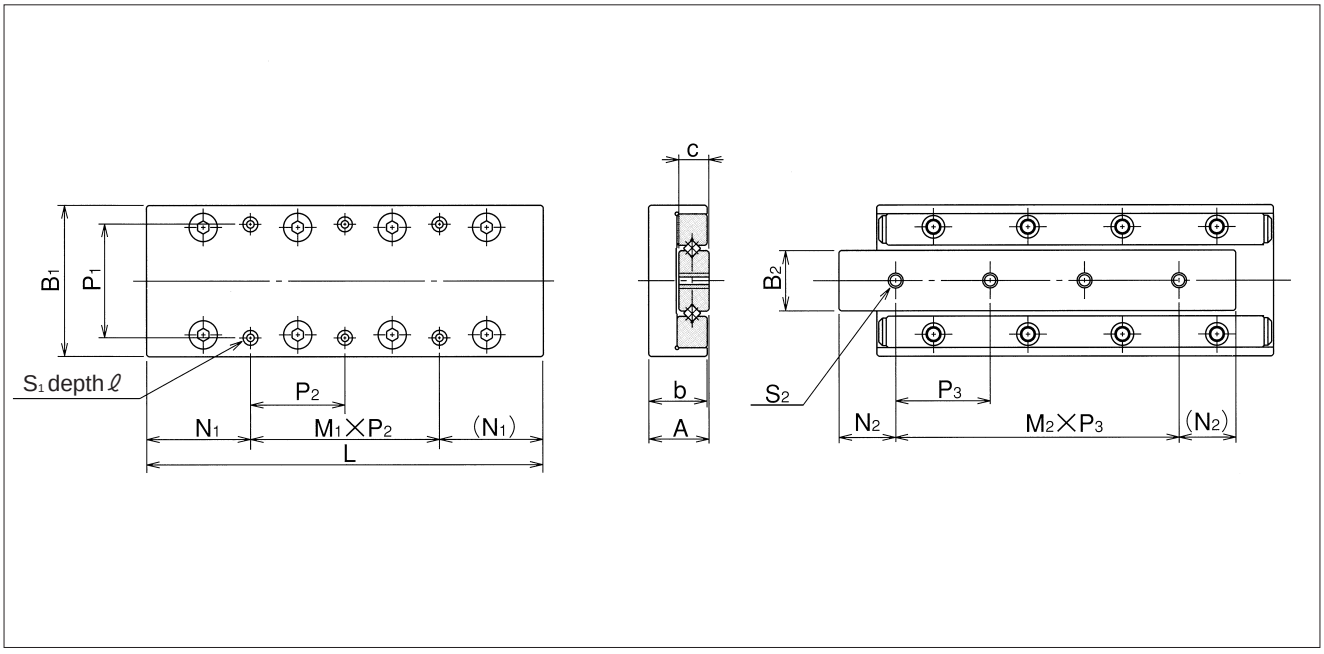
part number structure example

SYTS | 3 | 155

- SYTS: specification
- 3: size
- 155: over-all length

specification	
SYT	standard
SYTS	anticorrosion

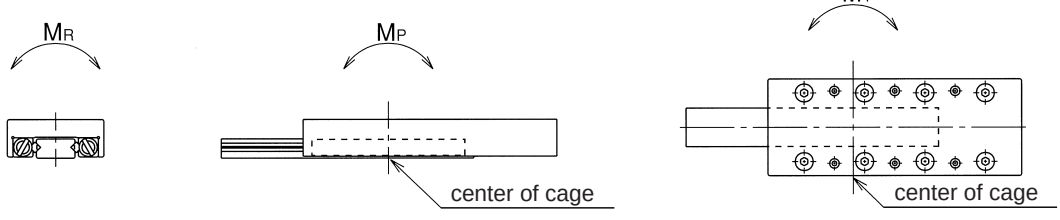
part number		stroke	major dimensions						table-top mounting-hole dimensions		
standard	anticorrosion	mm	A mm	B_1 mm	L mm	b mm	B_2 mm	c mm	P_1 mm	S_1	ℓ mm
SYT3055	**SYTS3055**	30			55						
3080	**3080**	45			80						
3105	**3105**	60			105						
3130	**3130**	75	$16^{\pm 0.1}$	$40^{\pm 0.1}$	130	15.5	16	8	30	M4	7.5
3155	**3155**	90			155						
3180	**3180**	105			180						
3205	**3205**	130			205						



		center rail mounting-hole dimensions			accuracy※		basic load rating		allowable load	allowable static moment			mass	size
							dynamic	static						
N_1	$M_1 \times P_2$	S_2	N_2	$M_2 \times P_3$	T	S	C	Co	F	M_P	M_Y	M_R		
mm	mm		mm	mm	μm	μm	N	N	N	N·m	N·m	N·m	g	
7.5	1×40		10	1×35	2	5	3,490	3,890	1,290	19.4	22.2	33.8	225	**3055**
7.5	1×65		15	2×25	2	5	5,230	6,490	2,160	53.0	58.0	56.4	340	**3080**
27.5	1×50		15	3×25	3	5	6,030	7,790	2,590	103	95.7	67.7	440	**3105**
27.5	1×75	M4	15	4×25	3	5	7,560	10,300	3,450	170	160	90.3	560	**3130**
27.5	2×50		15	5×25	3	5	9,000	12,900	4,320	210	220	112	655	**3155**
52.5	1×75		15	6×25	3	5	10,300	15,500	5,180	302	314	135	770	**3180**
27.5	2×75		15	7×25	3	5	11,000	16,800	5,610	355	367	146	880	**3205**

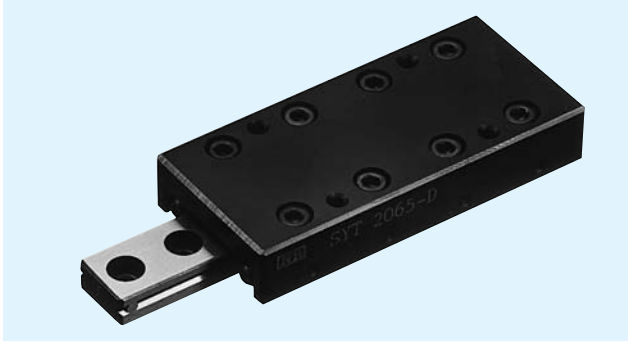
※ Refer to Figure H-26 (page H-31) for accuracy T and S.

1N≒0.102kgf 1N·m≒0.102kgf·m



SYT-D TYPE

– SYT1/SYT2 –



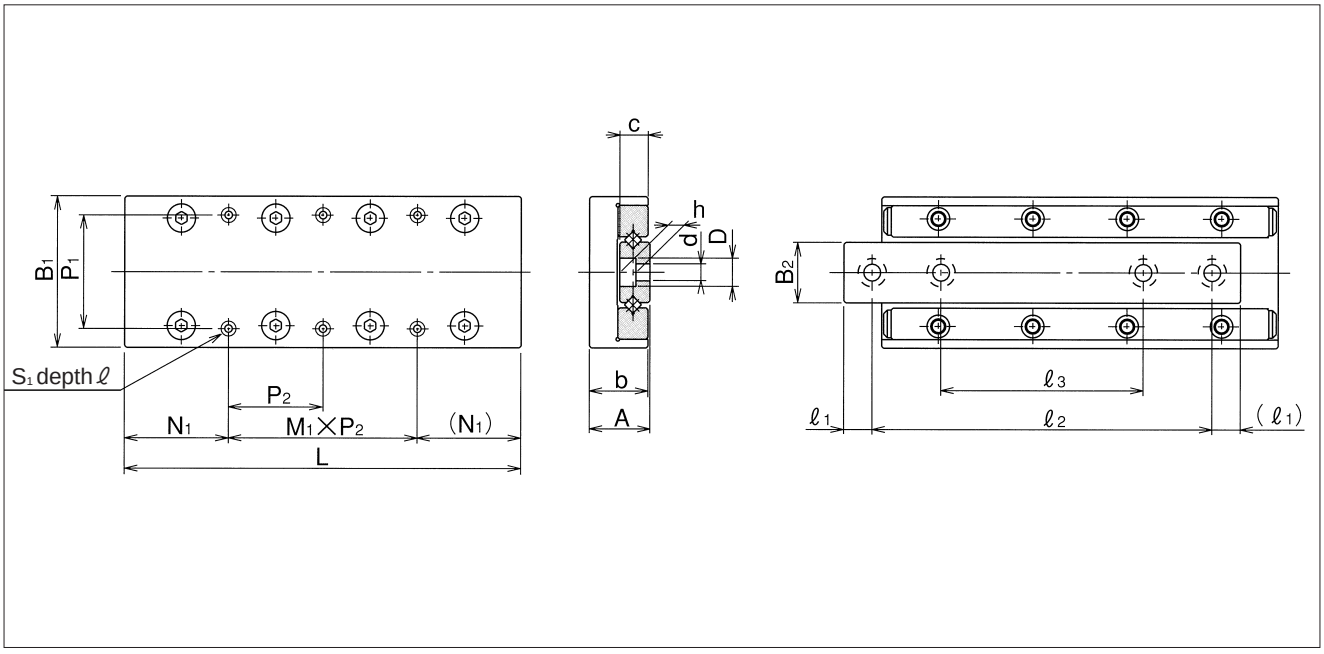
part number structure example

SYTS | 3 | 155 - D

- D: with counterbore
- 155: overall length
- 3: size
- SYTS: specification

specification	
SYT	standard
SYTS	anticorrosion

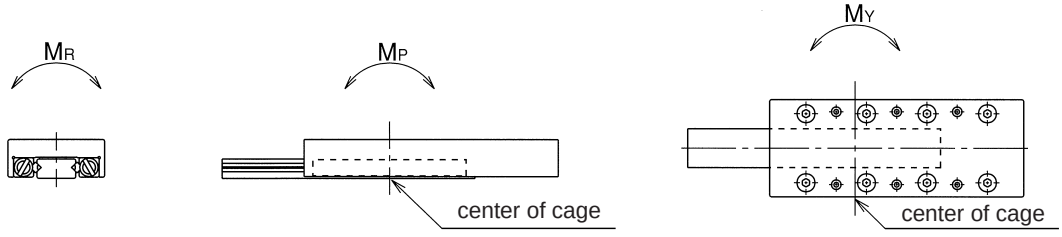
part number		stroke	major dimensions						table-top mounting-hole dimensions			
standard	anticorrosion	mm	A mm	B_1 mm	L mm	b mm	B_2 mm	c mm	P_1 mm	S_1	ℓ mm	N_1 mm
SYT1025-D	**SYTS1025-D**	12			25							3.5
1035-D	**1035-D**	18			35							3.5
1045-D	**1045-D**	25			45							12.5
1055-D	**1055-D**	32	$8^{\pm 0.1}$	$20^{\pm 0.1}$	55	7.5	6.6	4	14	M2.6	3.5	12.5
1065-D	**1065-D**	40			65							12.5
1075-D	**1075-D**	45			75							22.5
1085-D	**1085-D**	50			85							12.5
SYT2035-D	**SYTS2035-D**	18			35							3.5
2050-D	**2050-D**	30			50							3.5
2065-D	**2065-D**	40			65							17.5
2080-D	**2080-D**	50	$12^{\pm 0.1}$	$30^{\pm 0.1}$	80	11.5	12.0	6	22	M3	5.5	17.5
2095-D	**2095-D**	60			95							17.5
2110-D	**2110-D**	70			110							32.5
2125-D	**2125-D**	80			125							17.5



	center rail mounting-hole dimensions				accuracy※		basic load rating		allowable load	allowable static moment			mass	size
							dynamic	static						
$M_1 \times P_2$	d×D×h	ℓ_1	ℓ_2	ℓ_3	T	S	C	Co	F	M_P	M_Y	M_R		
mm	mm	mm	mm	mm	μm	μm	N	N	N	N·m	N·m	N·m	g	
1×18		3.5	18	—	2	4	464	476	158	1.79	1.47	1.79	22	**1025**
1×28		5	25	—	2	4	805	952	316	3.08	3.50	3.58	33	**1035**
1×20		3.5	38	25	2	5	959	1,190	396	6.98	6.40	4.48	42	**1045**
1×30	2.5×4.1×2.2	3.5	48	29	2	5	1,100	1,420	475	9.53	8.81	5.37	52	**1055**
2×20		5	55	31	2	5	1,240	1,660	554	12.4	11.6	6.27	63	**1065**
1×30		5	65	35	2	5	1,510	2,140	712	19.3	18.3	8.06	72	**1075**
2×30		5	75	40	2	5	1,650	2,380	792	23.4	22.3	8.96	83	**1085**
1×28		5	25	—	2	4	1,090	1,170	390	7.04	5.78	7.63	79	**2035**
1×43		7.5	35	—	2	4	1,510	1,750	585	12.1	10.7	11.4	113	**2050**
1×30		5	55	33	2	5	1,900	2,340	780	19.1	17.1	15.2	150	**2065**
1×45	3.5×6×3.3	5	70	40	2	5	2,620	3,510	1,170	27.4	29.6	22.8	185	**2080**
2×30		5	85	45	2	5	2,950	4,100	1,360	37.4	39.9	26.7	215	**2095**
1×45		7.5	95	50	2	5	3,280	4,680	1,560	61.7	58.1	30.5	255	**2110**
2×45		7.5	110	55	2	5	3,590	5,270	1,750	76.1	72.1	34.3	295	**2125**

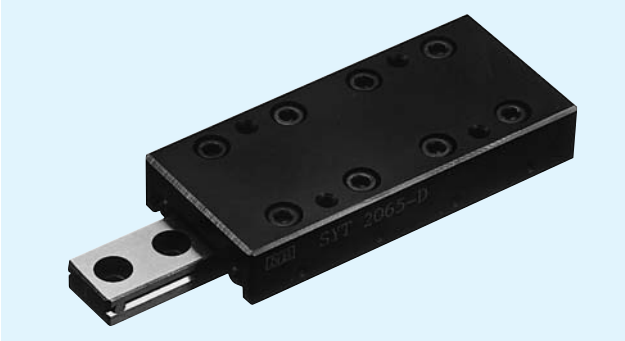
※ Refer to Figure H-26 (page H-31) for accuracy T and S.

1N≒0.102kgf 1N·m≒0.102kgf·m



SYT-D TYPE

– SYT3 –



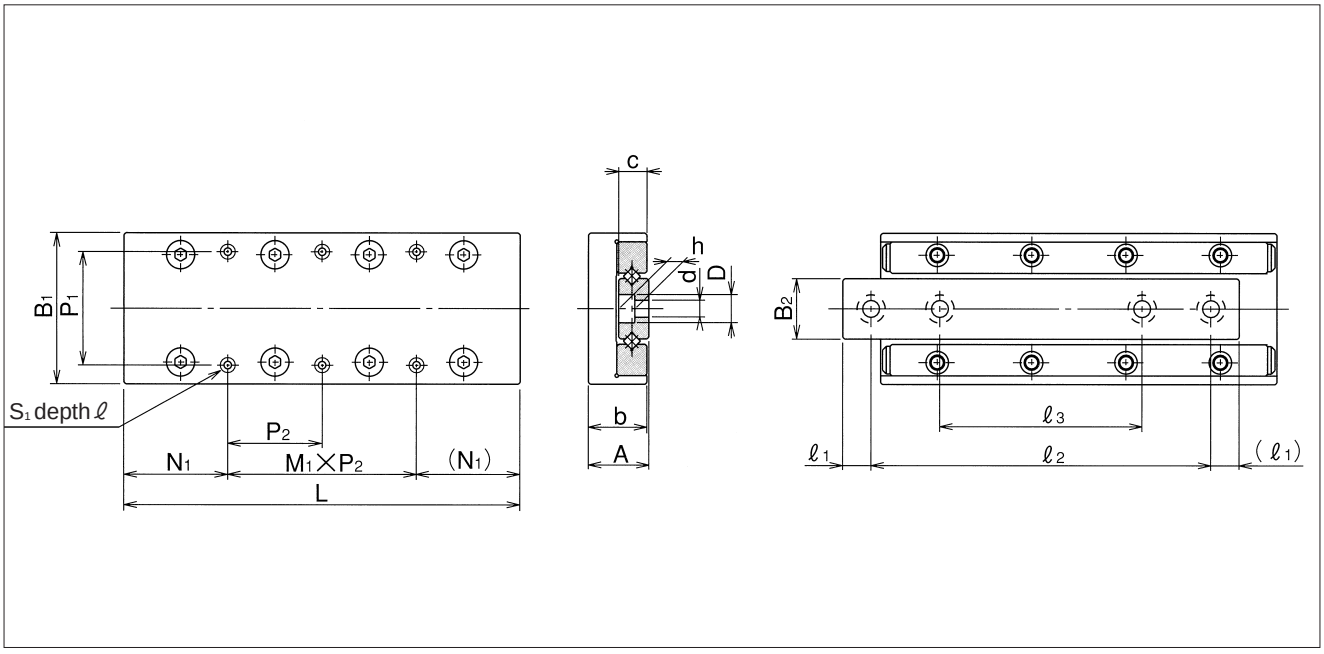
part number structure example

SYTS | 3 | 155 | - | D

- D: with counterbore
- 155: overall length
- 3: size
- SYTS: specification

specification	
SYT	standard
SYTS	anticorrosion

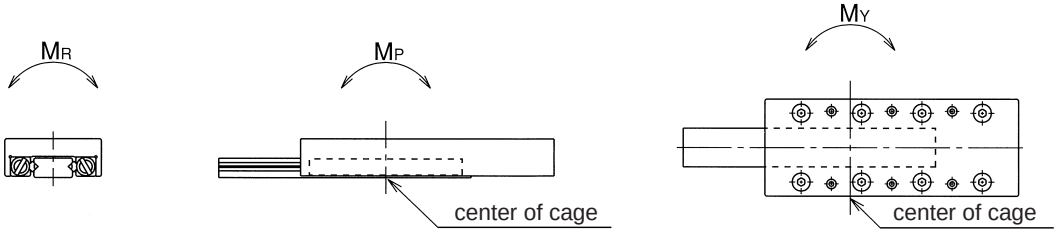
part number		stroke	major dimensions						table-top mounting-hole dimensions			
standard	anticorrosion	mm	A mm	B_1 mm	L mm	b mm	B_2 mm	c mm	P_1 mm	S_1	ℓ mm	N_1 mm
SYT3055-D	**SYTS3055-D**	30			55							7.5
3080-D	**3080-D**	45			80							7.5
3105-D	**3105-D**	60			105							27.5
3130-D	**3130-D**	75	$16^{\pm 0.1}$	$40^{\pm 0.1}$	130	15.5	16	8	30	M4	7.5	27.5
3155-D	**3155-D**	90			155							27.5
3180-D	**3180-D**	105			180							52.5
3205-D	**3205-D**	130			205							27.5



	center rail mounting-hole dimensions				accuracy※		basic load rating		allowable load	allowable static moment			mass	size
							dynamic	static						
$M_1 \times P_2$	d×D×h	ℓ_1	ℓ_2	ℓ_3	T	S	C	Co	F	M_P	M_Y	M_R		
mm	mm	mm	mm	mm	μm	μm	N	N	N	N·m	N·m	N·m	g	
1×40		7.5	40	–	2	5	3,490	3,890	1,290	19.4	22.2	33.8	225	**3055**
1×65		6	68	43	2	5	5,230	6,490	2,160	53.0	58.0	56.4	340	**3080**
1×50		7.5	90	55	3	5	6,030	7,780	2,590	103	95.7	67.7	440	**3105**
1×75	4.5×7.5×4.3	7.5	115	65	3	5	7,560	10,300	3,450	170	160	90.3	560	**3130**
2×50		7.5	140	95	3	5	9,000	12,900	4,320	210	220	112	655	**3155**
1×75		7.5	165	85	3	5	10,300	15,500	5,180	302	314	135	770	**3180**
2×75		7.5	190	95	3	5	11,000	16,800	5,610	355	367	146	880	**3205**

※ Refer to Figure H-26 (page H-31) for accuracy T and S.

1N≒0.102kgf 1N·m≒0.102kgf·m



Miniature Slide Table SYBS Type

The NB miniature slide table SYBS type is a limited stroke slide with the most compact envelope dimensions, featuring two ball raceway grooves. The SYBS type utilizes ball as the rolling elements. The ultra compact design contributes greatly to the creation of smaller and lighter industrial machinery and equipment of all types.

Structure and Advantages

NB's miniature slide table incorporates a unique integrated ball cage between the table and bed. All components have been produced with high precision machining technologies.

Ultra Compact Design

The table height of the SYBS type is 3.2 ~ 4.5mm and the width is 6 ~ 12mm. This compact envelope when compared with conventional slide tables helps to realize the miniaturization of machinery and equipment.

Low Friction - Low Noise

Since the rolling ball elements do not re-circulate, the frictional resistance will not vary significantly resulting in smooth operation reliable high precision.

Additionally, the caged balls greatly reduce the contact noise of the rolling elements bringing about a low-noise operation.

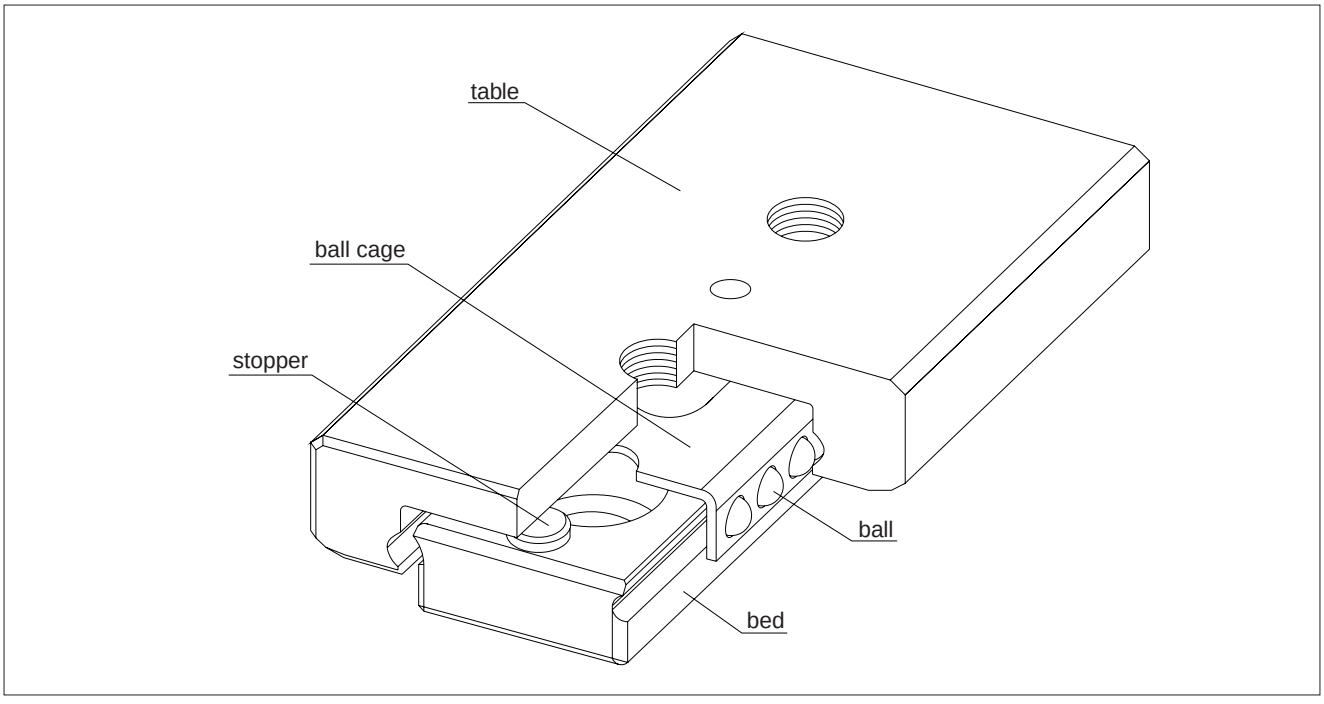
High Accuracy

The ball raceway grooves of the bed and table are processed through simultaneous precision machining resulting in minimal processing errors, and bringing about extremely smooth, precision linear movement.

Stainless Steel Structure

The SYBS type slide table is constructed from only stainless steel materials. This allows for use in corrosive or high temperature applications. The SYBS is a perfect component for vacuum or clean room type environments.

Figure H-27 Structure of SYBS Type Slide Table



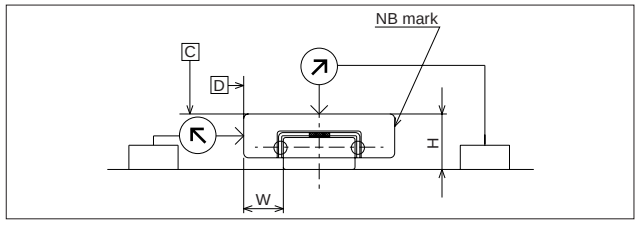
Accuracy

Table H-9 reflects the measured accuracies of the SYBS Miniature Slide Table. The deviation is measured as Figure H-28 illustrates. Dial indicators are placed to the centers of the table's top and side (opposite side from the NB mark) and then the table is moved the full travel distance without any load.

Table H-9 Accuracy Unit: mm

Item	Tolerance and Acceptable Values
Height (H)	±0.020
Width (W)	±0.025
Deviation from Center of Surface C	0.004
Deviation from Center of Surface D	0.006

Figure H-28 Accuracy Measurement Method



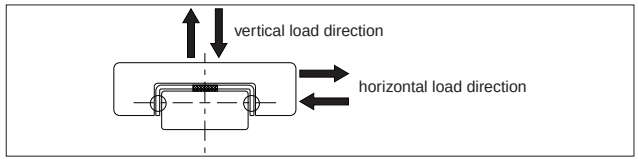
Load Rating

The load capacity of the Miniature Slide Table varies depending upon the direction of the applied load.

Table H-10 Variation of Load Rating vs. Direction of Load

Basic Dynamic Rated Load	Vertical Direction	1.00 x C
	Horizontal Direction	1.13 x C
Basic Static Rated Load	Vertical Direction	1.00 x C_0
	Horizontal Direction	1.19 x C_0

Figure H-29 Direction of Load



Rated Life

The life of an NB miniature slide table can be calculated using the following equations:

Travel life:

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

L: travel life (km) f_T : temperature coefficient fw: load coefficient
C: basic dynamic load (N) P: applied load (N)
※Refer to page Eng-5 for the coefficiens

Life Time:

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

L_h: life time (hr) s: stroke length (m)
n_1: number of strokes per minute (cpm)

Mounting

Shape of Mounting Surface

In most general installations, the Miniature Slide Table is mounted by pushing the reference planes of the bed and table against a shoulder that is set up on the mounting surface. Machined escape grooves should be used in the corners of the shoulder (as illustrated in Figure H-30) so that the corners will not interfere with the reference corners of the bed and/or table. Table H-11 lists the recommended shoulder heights of the mounting reference planes for the opposing sides.

When installing the Miniature Slide Table without providing machined escape grooves, the corner radius may be realigned as illustrated in Figure H-31. Table H-12 list the values of the corner radius of the mounting surfaces.

Figure H-30 Shape of Mounting Surface -1

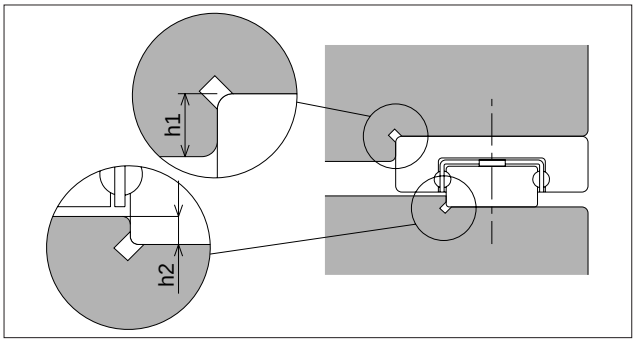


Table H-11 Shoulder Height of Mounting Reference Surfaces Unit: mm

Part Number	Shoulder Height of Table h1	Shoulder Height of Bed h2
SYBS 6	1.0	0.5
SYBS 8	1.2	0.8
SYBS 12	1.5	0.8

Figure H-31 Shape of Mounting Surface -2

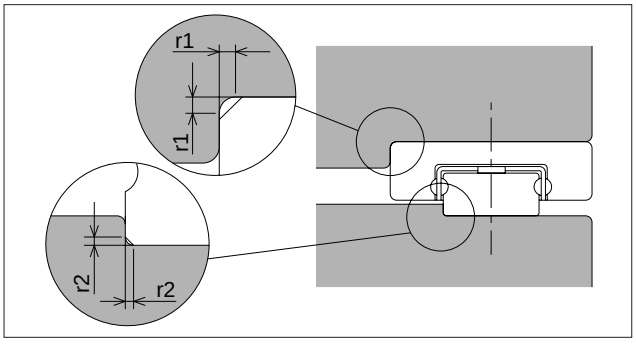


Table H-12 Maximum Corner Radius Unit: mm

Part Number	Mounting Surface of Table	Mounting Surface of Bed
	r1	r2
SYBS 6	0.1	0.05
SYBS 8	0.15	0.1
SYBS 12	0.15	0.1

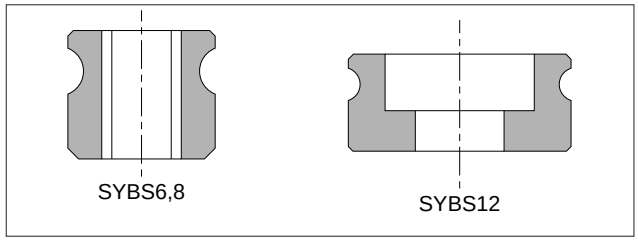
Recommended Torque Values

The bed should be tightened with a consistent torque by using a torque wrench. Table H-13 lists the recommended tightening torque values:

Table H-13 Recommended Torque Value Unit: N・m

Part Number	Nominal Bolt	Recommended Torque
SYBS 6	M1	0.03
SYBS 8	M1.6	0.15
SYBS 12	M2	0.31

Figure H-32 Shape of SYBS Bed



Precautions for Use

Mounting Example and Mounting Screws

All taps used for mounting the SYBS are fully through-hole. Mount the SYBS type as illustrated in Figure H-33 only after considering the size of mounting screw, the maximum penetration depth, and the height of the bed. Make certain that the mounting screws do not interfere with the ball cage; otherwise, the accuracy and travel life of this table will be affected adversely. Special bolts are designed for SYBS type and are available from NB. Please refer to Table H-14 for dimensions of these special mounting screws.

Figure H-33 Mounting Example

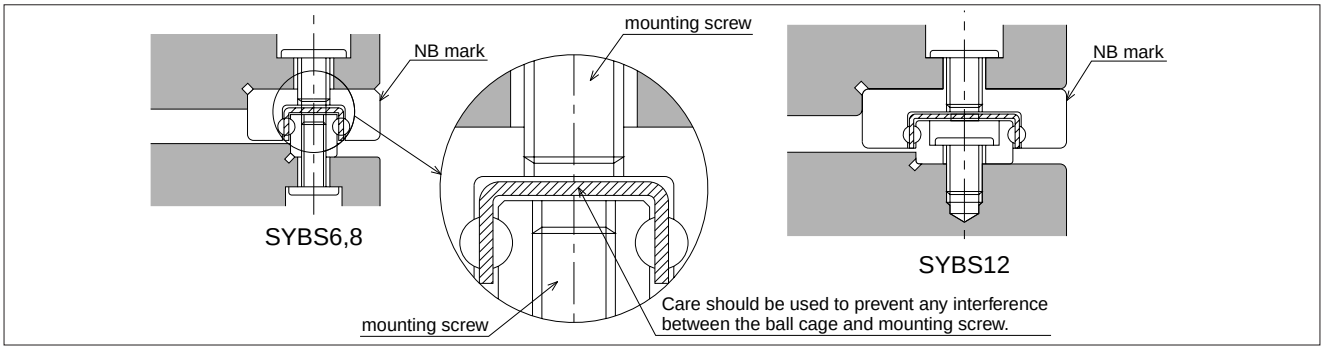
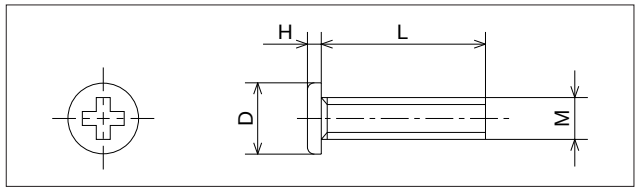


Table H-14 Mounting Screws (Material: Stainless Steel) Unit: mm

M (Nominal Bolt)	D	H	Pitch	L
M1	1.8	0.5	0.25	5
M1.4	2.5	0.5	0.3	6
M1.6	2.3	0.5	0.35	4,5,6
M2	3	0.6	0.4	6

Figure H-34 Mounting Screw



Stopper

On both ends of the SYBS Miniature Slide Table bed section, stopper screws have been attached to prevent the ball cage from escaping. Please note that the screws are designed only to prevent the ball cage from escaping and are not intended for the use as a mechanical stopper. The ball cage may become deformed on contact with the stopper and this will result in a negative affect of the accuracy and rated life of the table.

Lubrication

NB's Miniature Slide Table SYBS Type is supplied with an initial application of lithium soap grease and therefore is ready for immediate use. Periodic application of a similar lubricant should be necessary depending on the operating conditions. For use in clean rooms or vacuum environments, miniature slide tables without grease or with customer specified grease are available. NB also provides low dust generation lubricant. Please refer to page Eng-20 for further details.

Ball Cage Displacement

When a miniature slide table is operated at high speeds; when offset loads or vibrations are present, the ball cage may deviate from the nomal position. In general operating conditions this is normal and it is recommended that the table be cycled to perform maximum full stroke travel several times during operation. This will allow the ball cage to be returned to its normal central position.

Pre-Load

The SYBS Minearture Slide Table is prepared with only a slight positive-clearance.

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.

SYBS TYPE

part number structure example

SYBS | 8 – 31

SYBS TYPE

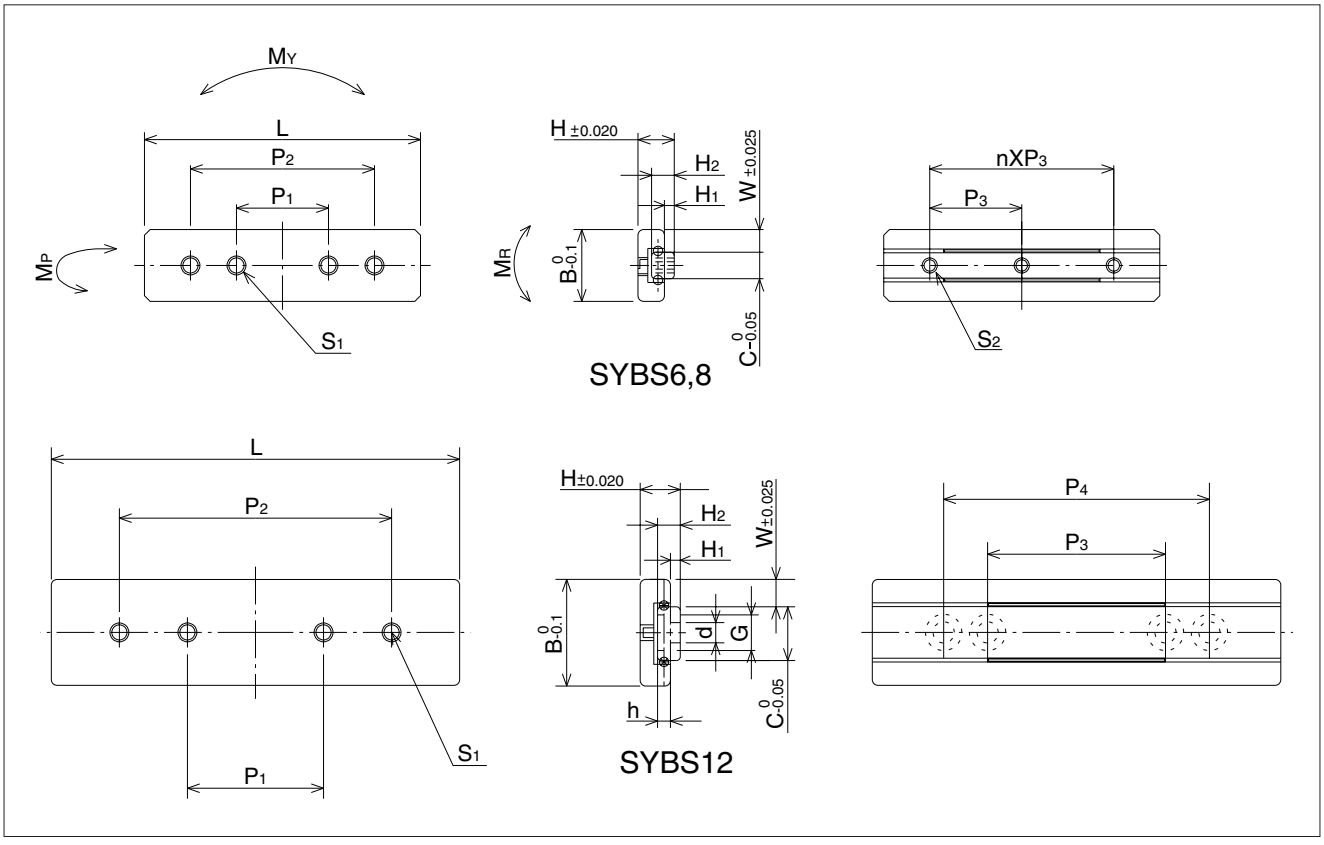
size

over-all length

part number	major dimensions				table-top mounting-hole dimensions					
	H mm	W mm	H_1 mm	stroke mm	B mm	L mm	P_1 mm	P_2 mm	S_1	maximum screw penetration depth mm
SYBS 6−13	3.2	2	0.7	5	6	13	6.0	−	M1.4	0.5
SYBS 6−21				12		21	10.0	−		
SYBS 8−11	4	2.5	1	4	8	11	5.5	−	M2	0.7
SYBS 8−21				12		21	10.0	−		
SYBS 8−31				18		31	10.0	21		
SYBS 12−23	4.5	3	1	12	12	23	8.0	−		1.2
SYBS 12−31				18		31	15.0	−		
SYBS 12−46				28		46	15.0	31		

※1:Exclusive mounting screws are provided with the SYBS-12 type only.

Other various sizes are also available. (Please refer to page H-51)



bed-surface mounting-hole dimensions							basic load rating		allowable load	allowable static moment			mass	size
H_2	C	d×G×h	S_2	P_3	n	P_4	dynamic C	static C_0	F	M_P	M_Y	M_R		
mm	mm	mm		mm		mm	N	N	N	N・m	N・m	N・m	g	
2.0	2	–	M1	7	1	–	154	180	60.1	0.21	0.25	0.21	1.4	**6－13**
				7	2	–	229	315	105	0.57	0.698	0.37	2.2	**6－21**
2.6	3	–	M1.6	5	1	–	201	211	70.4	0.23	0.28	0.35	2.0	**8－11**
				10	1	–	368	493	164	1.02	1.22	0.83	3.7	**8－21**
				10	2	–	473	704	234	1.97	2.35	1.19	5.5	**8－31**
2.6	6	※1 2.4×4×1.5	–	15	1	–	404	563	187	1.30	1.55	1.80	7.6	**12－23**
				15	1	–	473	704	234	1.97	2.35	2.25	10.2	**12－31**
				20	–	30	658	1,120	375	4.80	5.72	3.60	15.2	**12－46**

GONIO WAY RVF type

Nippon Bearing's Gonio Way family has adopted the RVF type with a flat installation surface for easy processing of tables and beds.
NB Gonio Way (RVF type) is a low-friction, non-recirculating curved motion bearing utilizing precision cross-rollers. The RVF type is ideal for changing the gradient or for obtaining an accurate gradient angle without changing the center of rotation. This component is used mainly in optical equipment and measuring devices where high precision is required.

Structure and Advantages

The NB Gonio Way RVF type consists of curved tracking bases with precisely ground V-grooves and flat installation surfaces, as well as a curved roller cage in which cross rollers are fitted. Precision rollers are employed as the rolling elements. Since the rolling elements do not recirculate, the frictional resistance will not vary significantly, providing curved movement with extremely low frictional resistance.

Flat Installation Surface

The flat installation surfaces of the RVF type do not require complicated machining of tables and beds when installing the product. As a result, machining costs can be reduced greatly.

Same Rotation Center

The curved V-grooves, which are finished with a precise grinding process, provide an accurate center of rotation.
Furthermore, the products are composed to provide identical rotation centers when products of each size are installed to two axes. (Refer to Table H-17.)

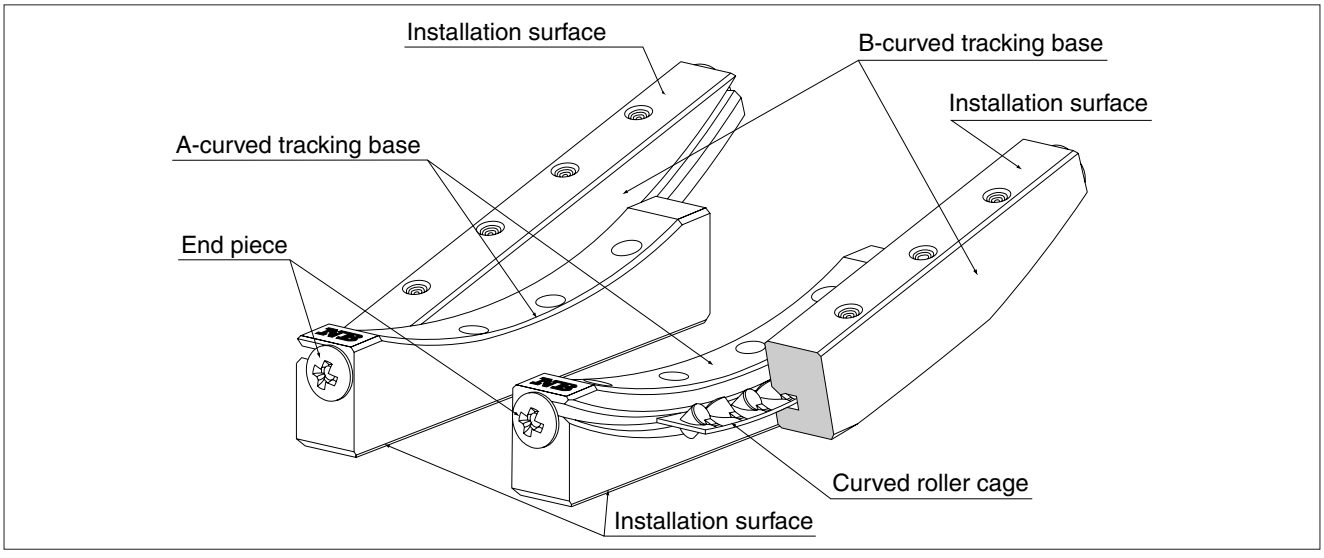
Low Frictional Resistance and Minute Motion

The precision grinding work and curved roller cage allow for extremely low frictional resistance. The negligible difference between starting and dynamic frictions allows the RVF type to follow minute movements accurately, realizing curved movement of high accuracy.

Low Noise

Since NB Gonio Way employs a non-recirculating design, noise will not be generated at the circulating area. In addition, the curved roller cage realizes quiet operation without contact noise between the rolling elements.

Figure H-35 Structure of RVF Type Gonio Way



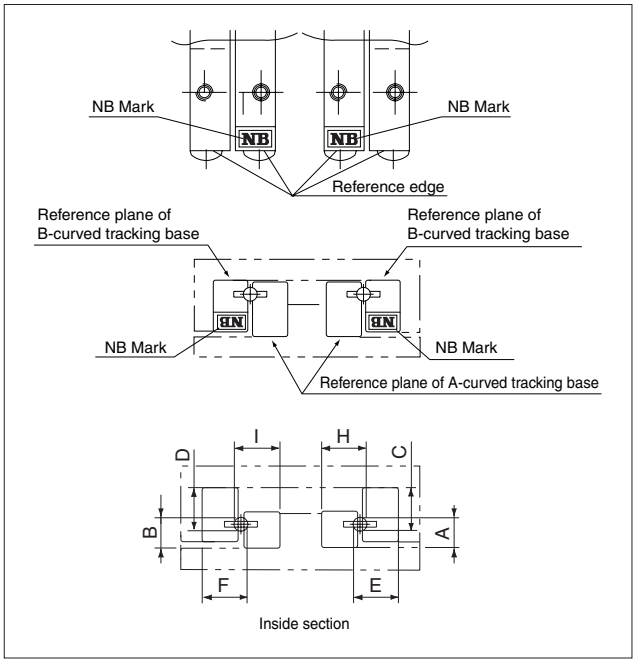
ACCURACY

The accuracies of the Gonio Way RVF type are represented by mutual dimensional errors of four units, which are measured along the overall length using the procedure as shown in Figure H-36.

Table H-15 Accuracy

Part Number	Mutual Error between A and B Mutual Error between C and D	Mutual Error between E and F Mutual Error between H and I
RVF2050- 70	10	10
RVF2050- 87		
RVF2050-103		
RVF2050-120		
RVF3070- 85		
RVF3070-110		
RVF3100-125		
RVF3100-160		

Figure H-36 Measuring Method of Accuracy



LIFE CALCULATION

The life of an NB miniature slide table can be calculated using the following equations:

Travel life:

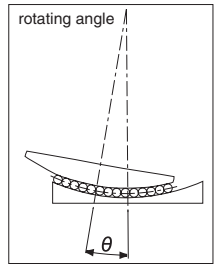
$$L = \frac{90}{\theta} \cdot \left(\frac{f_T}{f_W} \cdot \frac{C}{P} \right)^{\frac{10}{3}}$$

L: travel life (106round trips) θ :rotating angle (degree)
f_T : temperature coefficient fw: load coefficient
C: basic dynamic load (N) P: applied load (N)
※Refer to page Eng-5 for the coeffieients.

Life Time:

$$L_h = \frac{L \cdot 10^6}{60 \cdot n}$$

L_h: life time (hr) s: stroke length (m)
n_1: number of strokes per minute (cpm)

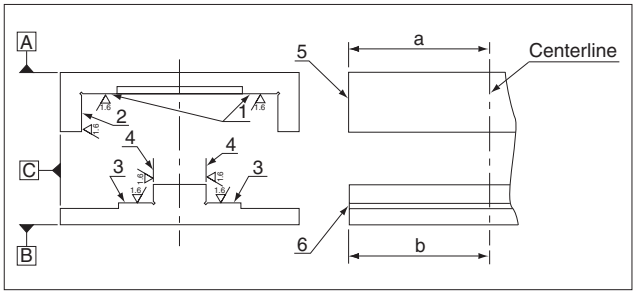


ACCURACY OF MOUNTING SURFACE

To maximize the performance of NB's Gonio Way RVF type, it is important to finish the installation surface with high accuracies.

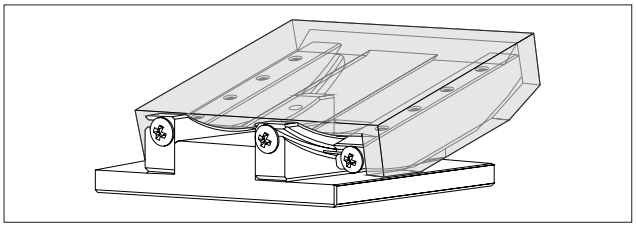
Parallelism of plane 1 against plane A
Perpendicularity of plane 2 against plane A
Perpendicularity of plane 5 against plane A
Parallelism of plane 3 against plane B
Perpendicularity of plane 4 against plane B
Perpendicularity of plane 6 against plane B
Parallelism of plane 2 against plane C
Parallelism of plane 4 against plane C
Mutual error between the size of a and b

Figure H-37 Accuracy of installation surface



INSTALLATION

Figure H-38. Installation Example



Installation Procedure

Setting the curved tracking bases temporarily

(1) Remove burrs, stains, and dust from the installation surface of the curved tracking bases of tables and beds. Foreign objects must be kept out of the assembly work as well.

(2) Apply oil of low viscosity to contact surfaces, check the reference edges of an A-curved tracking base and bed, and then tighten the bolts temporarily. (Figure H-39)

(3) Align the reference edges (NB mark side) of a B-curved tracking base and an A-curved tracking base to the same orientation. Then, insert the curved roller cage between the curved tracking bases at the center area. Make sure that the curved roller cage will not interfere with the curved raceway grooves of the curved roller tracking bases. (Figure H-39b)

(4) Check the reference edge of the table, set the table over the B-curved tracking base, and then secure the table temporarily. (Figure H-39c)

Setting four curved tracking bases in parallel position

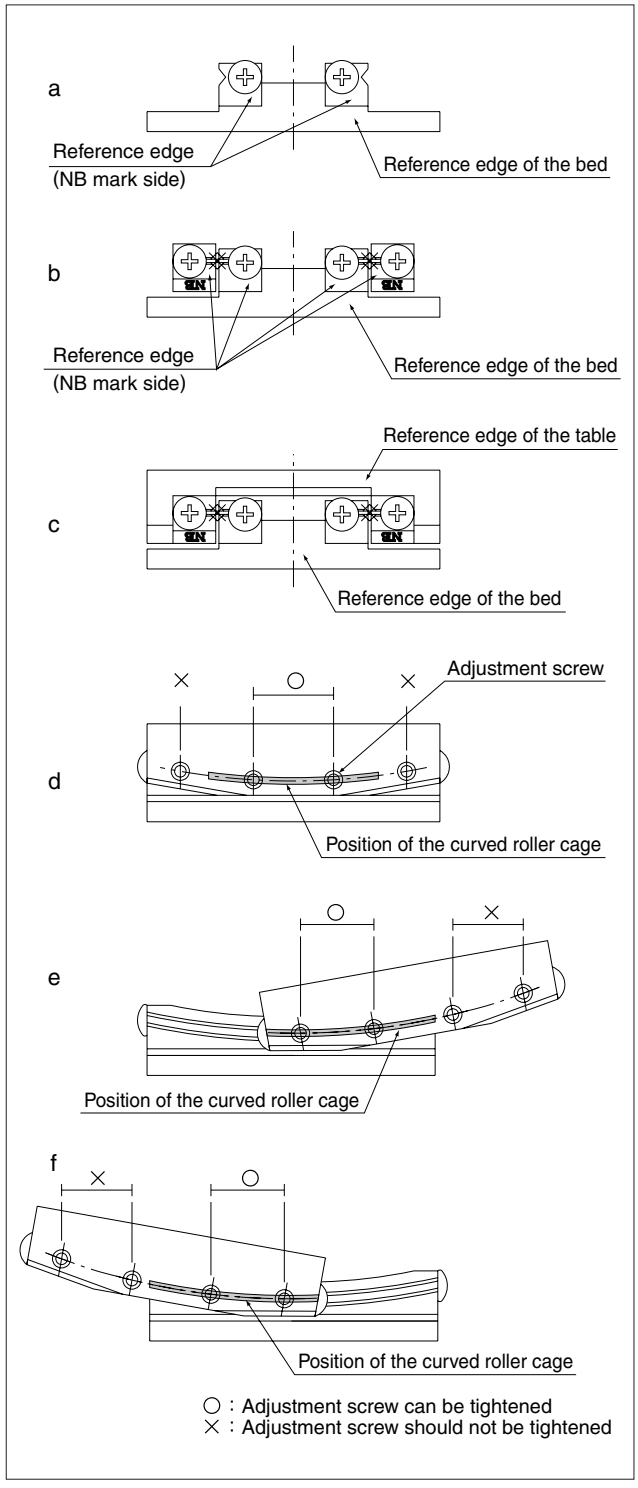
(5) Move the table to the maximum stroke ends of both sides and adjust the setting so that the curved roller cage is positioned at the center of the curved tracking base.

(6) Move the table to the center position and tighten the adjustment screw with slightly strong torque * by using a torque wrench. (Figure H-39d)

* "Slightly strong torque" here means slightly stronger than the torque at which the oscillation of the test indicator is stabilized at the minimum value when the table is moved right and left, or when pressure is applied to the rolling direction while the test indicator is attached to the side face (reference side) of the table. (Figure H-40i)

(7) Move the table to the maximum stroke end of one side and tighten the regulating screw on the curved roller cage with the same torque as in step (6). (Figure H-39e)

Figure H-39. Installation Procedure (1)



(8) Move the table to the maximum stroke end of the other side and tighten the adjustment screw with a torque wrench by repeating the procedure above. (Figure H-39f)

Securing the curved tracking bases

(9) Mount an edge reference plate between the reference edge of the A-curved tracking base and end piece, press it against the reference edge of the bed, and then tighten only the mounting bolt in the middle. (Figure H-40g)

(10) Repeat the procedure above to mount an edge reference plate between the reference edge of the B-curved tracking base and the end piece. Press it against the reference edge of the bed, and then tighten only the mounting bolt in the middle. (Figure H-40h) In order to maintain parallelism of curved tracking bases, do not cycle the table during this process and make sure that there is no clearance between the edge of the table and the edge reference plate.

(11) Secure the rest of the mounting bolts on the curved roller cage one by one while moving the table as instructed in steps (7) and (8).

Adjusting the preload

(12) Move the table to the right and left with the test indicator attached to the side face of the table (reference side). Or, apply pressure in the rolling direction and confirm that the oscillation of the attached indicator is stabilized at the minimum level. (Figure H-40i)

(13) Return the mounting bolt on the B-curved tracking base at the adjustment screw side to the temporary setting.

(14) Return the table to the center position, slightly loosen the adjustment screw in the middle, and then gradually loosen the adjustment screws on the curved roller cage while moving the table as instructed in steps (7) and (8). Make sure not to reduce the preload too much.

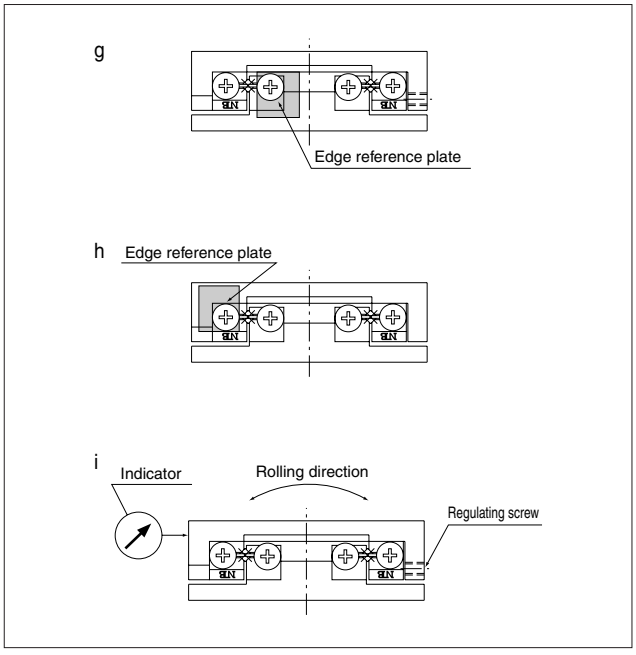
(15) Finally, secure the B-curved tracking base at the adjustment screw side, which has been installed temporarily. Secure the mounting bolts on the curved roller cage one by one while moving the table as instructed above.

Table H-16 Recommended Tightening Torque for Mounting Bolts Unit/N・m

Nominal Designation of Screw	Tightening Torque
M2.5	0.5
M3	1.1

(When using stainless-steel screw A2-70 on aluminum seating for tightening)

Figure H-40 Installation Procedure (2)



2-AXES AND CUSTOM SPECIFICATIONS

When incorporating RVF type units onto two axes as illustrated in Figure H-41, adjust the height of one lifting axis as instructed in Table H-17. Then, adjust dimension b (the height of the installation surface of the A-curved tracking base) in Figure H-41 to the same dimension in order to obtain the identical rotation center for the two axes. In addition, requests can be made for custom specifications including table units fitted for two axes, non-standard lengths for curved tracking bases, the radius of rotation, the rotation range, and the number of rollers. Contact NB for further information and arrangements.

Figure H-41 Two-Axes Specifications

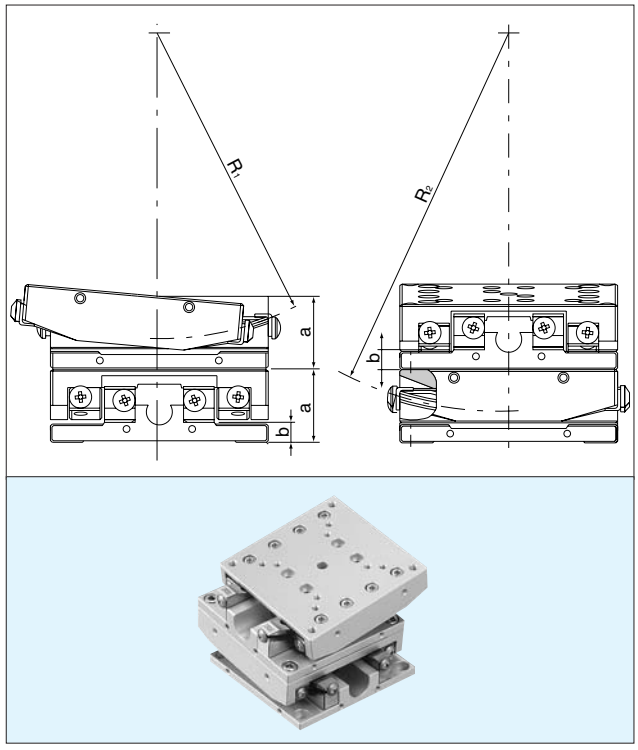


Table H-17 Two-Axes Specifications Unit/mm

Model Number Combinations	a	R_1	R_2
RVF2050- 70 RVF2050- 87	17	70	87
RVF2050-103 RVF2050-120	17	103	120
RVF3070- 85 RVF3070-110	25	85	110
RVF3100-125 RVF3100-160	35	125	160

PRECAUTIONS FOR USE

Lubrication:
NB gonio 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 also provides low dust generation grease for the linear system. Please refer to page Eng-20 for further details.

Dust Prevention:
If a foreign matter, such as dust and dirt, enters the inside of the NB gonio way, it may deteriorate the accuracy and life of the system. A gonio way used in a hostile environment should be protected with a cover.

Use Environment:
The recommended operating temperature range of the NB gonio way is -20˚C to 110˚C.

Adjustment:
Inaccurate adjustment of the accuracy on the mounting surface or pre-load may reduce the motion accuracy, resulting in skewing and shortening of gonio way life. The adjustment should be carried out 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 NB gonio way to prevent removal of the curved roller cage. Do not use as a mechanical stopper.

Careful Handling:
Dropping a NB gonio 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 gonio 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.

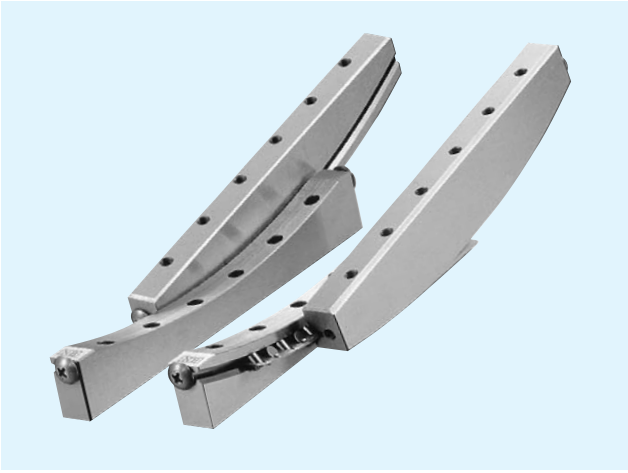
RVF TYPE

− SVT6/SVT9 −

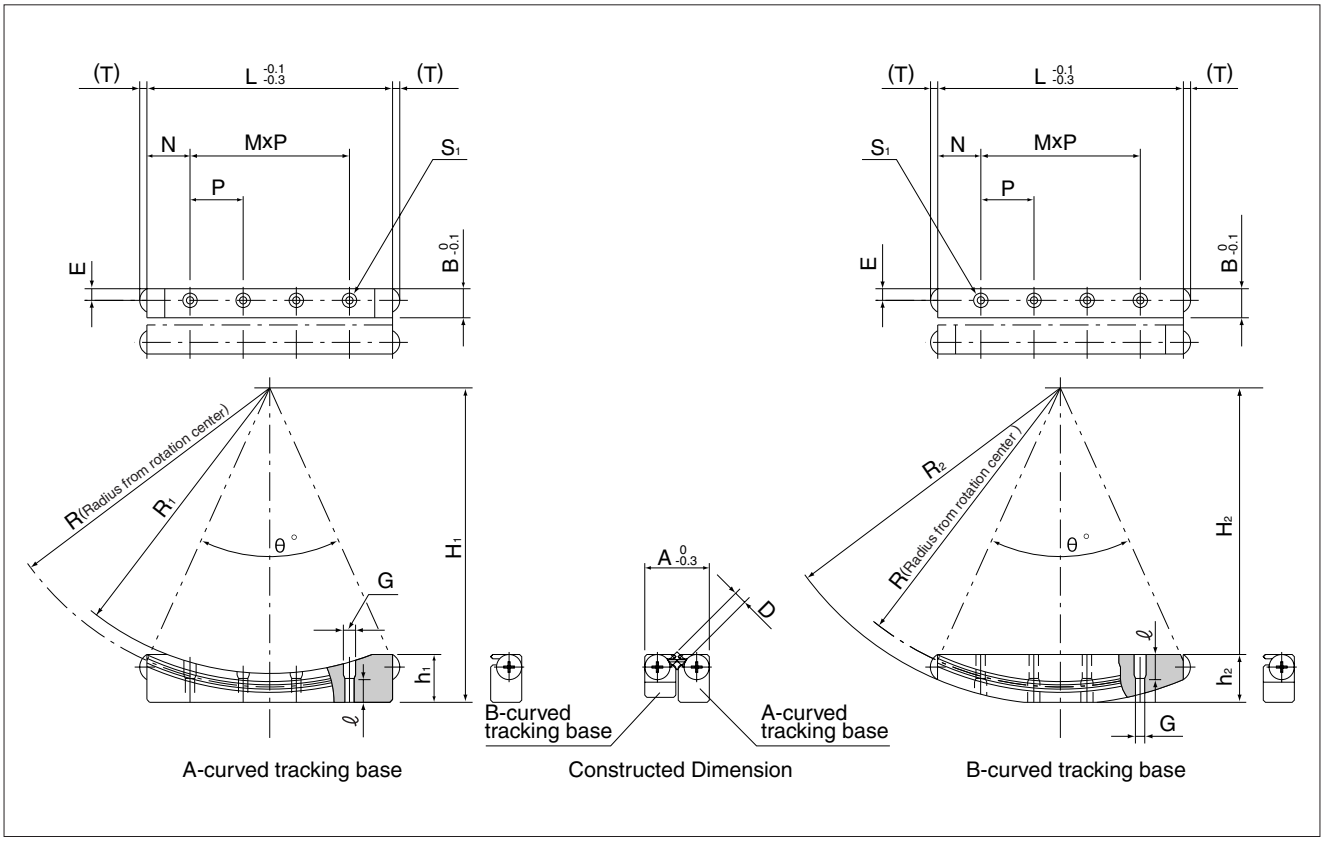
Part number configuration
Example) **RVF 3 100 - 125 - 16Z**

- RVF Type
- Size
- Total length of curved tracking base
- Radius from rotation center
- Number of rollers

※ Refer to page H-68 for infomation on cage types.



Part Number	Rotation Range	Roller Diameter D mm	Number of Rollers Z	Major Dimensions							
				L mm	R mm	R_1 mm	R_2 mm	H_1 mm	H_2 mm	h_1 mm	h_2 mm
RVF2050- 70-11Z	±5°	2	10	50	70	67	73	72.5	64.5	7.5	7.5
RVF2050- 87-10Z			10		87	84	89.5	89.5	81.5	7.5	7.5
RVF2050-103-10Z			10		103	100	106	105.5	97.5	7.5	8
RVF2050-120- 9Z			9		120	117	123	122.5	114.5	7.5	8
RVF3070- 85-11Z	±10°	3	10	70	85	81	89	89.5	75.5	14	12.5
RVF3070-110-10Z			10		110	106	114	114.5	100.5	12.8	12.5
RVF3100-125-16Z			16	100	125	121	129	129.5	110.5	17.5	18
RVF3100-160-14Z			14		160	156	164	164.5	145.5	15	18



(One set includes A-curved tracking bases (2), B-curved tracking bases (2), curved roller cages (2), end pieces (8), and installation referense plate (2).)

										allowable	Basic Load Rating		Weight	size
A	B	M×P	N	E	S_1	ℓ	G	T	θ°	load F	Dynamic C	Static Co		
mm	mm	mm	mm	mm		mm	mm	mm		N	N	N	g	
15	7.25	3×12.5	6.25	2.5	M2.5	4	3	2.1	41.8°	800	1,179	1,468	66	**2050- 70-10z**
									33.3°	810	1,179	1,468	70	**2050- 87-10z**
		3×13	5.5					2.1	28.0°	815	1,179	1,468	70	**2050-103-10z**
									24.0°	657	997	1,174	70	**2050-120- 9z**
18	8.5	3×15	12.5	3	M3	7	3.5	1.9	48.6°	1,840	2,631	3,515	182	**3070- 85-10z**
									37.1°	1,870	2,631	3,515	182	**3070-110-10z**
	8.5	5×15	12.5	3	M3	7	3.5	1.9	47.1°	2,950	3,745	5,626	327	**3100-125-16z**
									36.4°	2,630	3,387	4,921	323	**3100-160-14z**

GONIO WAY RV type

The NB Gonio way is a curved SV type slide way. It is a curved motion bearing utilizing low-friction, non-recirculating, precision cross-rollers. It is used when there is a need to change the gradient or obtain an accurate gradient angle without changing the center of rotation in high-precision optical and measurement equipment.

STRUCTURE AND ADVANTAGES

The NB Gonio way consists of hardened curved tracking bases with precisely machined V-grooves and a curved roller cage with cross-rollers. High-precision rollers are used as the rotating elements. Since the rotational elements do not recirculate, there is less friction fluctuation, resulting in a low-frictional curved motion.

Suitable for Minute Motion:

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

High Rigidity and High Load Capacity:

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

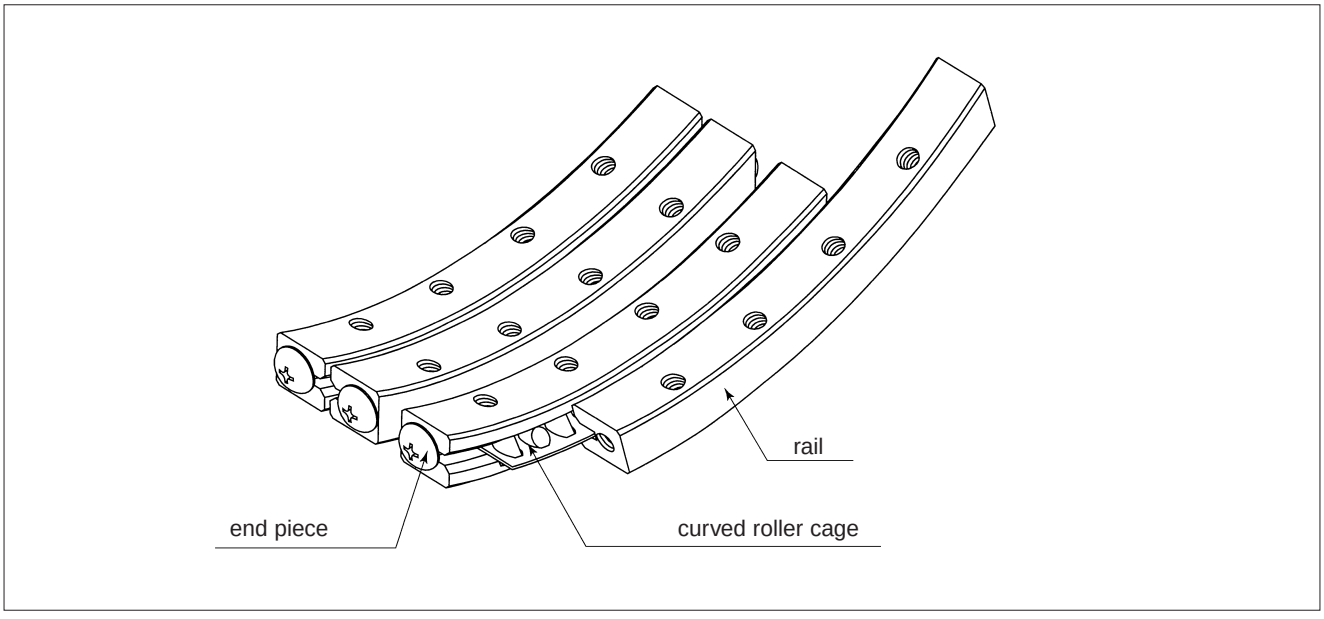
Ease of Assembly and Installation:

The rollers are retained inside a curved roller cage, allowing assembly, installation, and the handling of components simplified. A set of components consists of 4 curved tracking bases, 2 curved roller cages, and 8 end pieces. It can be assembled immediately.

Low Noise:

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

Figure H-42 Structure of RV Type Gonio Way



ACCURACY

The accuracy of a Gonio way is measured along its over all length, as shown in Figure H-43.

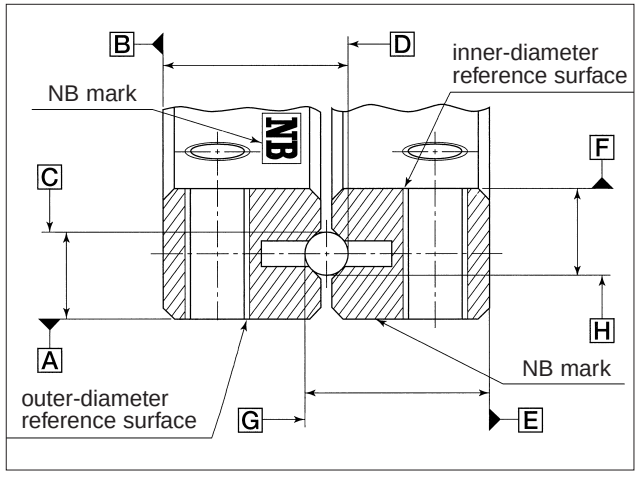
Table H-18 Accuracy unit/μm

part number	accuracy
RV2040- 50	10
RV2060- 60	
RV3070- 90	
RV3070-110	
RV3100-160	

The reference surfaces are located on the opposite side of the "NB" mark.

There are inner reference plane and outer reference planes in one set of RV.

Figure H-43 Accuracy Measurement



LIFE CALCULATION

The life of a Gonio way is obtained using the following equations.

Travel life:

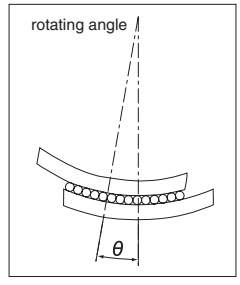
$$L = \left(\frac{90}{\theta}\right) \cdot \left(\frac{f_T}{f_W} \cdot \frac{C}{P}\right)^{\frac{10}{3}}$$

L : travel life (10^6 round trips) θ : rotating angle (degree)
f_T : temperature coefficient f_W : load coefficient
C : basic dynamic load rating (N) P : applied load (N)
※ Refer to page Eng. 5 for the coefficients.

Life time:

$$L_h = \frac{L \cdot 10^6}{60 \cdot n}$$

L_h : life time (hr)
n : strokes ferquency per min. (cpm)

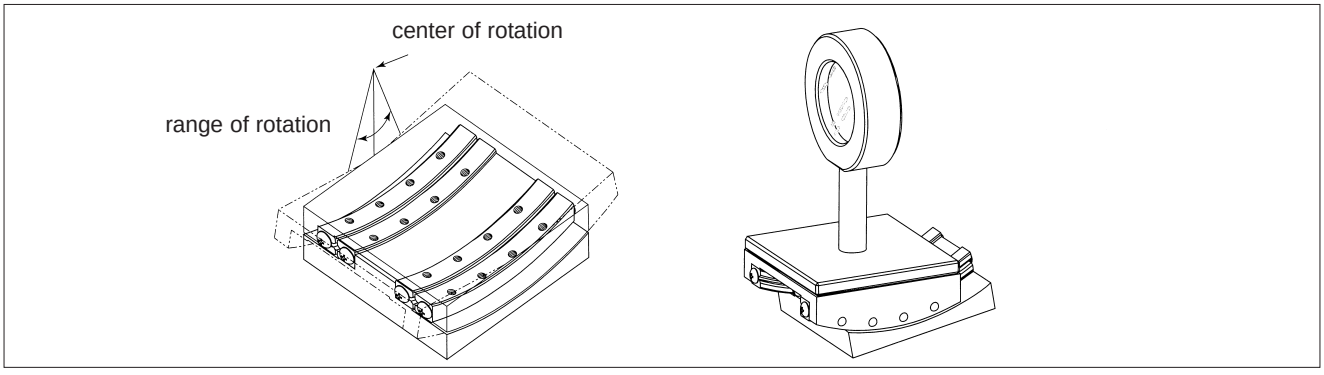


SPECIAL REQUIREMENTS

NB can fabricate Gonio slide ways to meet special requirements, including slide ways with non-standard roller sizes, curved tracking base lengths, rotation center diameters, rotation ranges, and number of rollers. Contact NB for further information.

MOUNTING

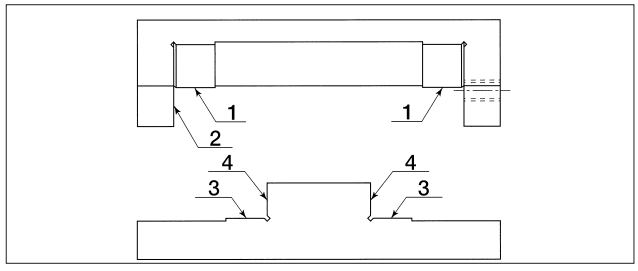
Figure H-44 Example of Mounting



Accuracy of Mounting Surfaces:

The accuracy of the mounting should be maintained as needed for the operation. The accuracy of surfaces 1, 2, 3, and 4 (Figure H-45) directly affect the motion accuracy. They should be sufficient for the intended operation.

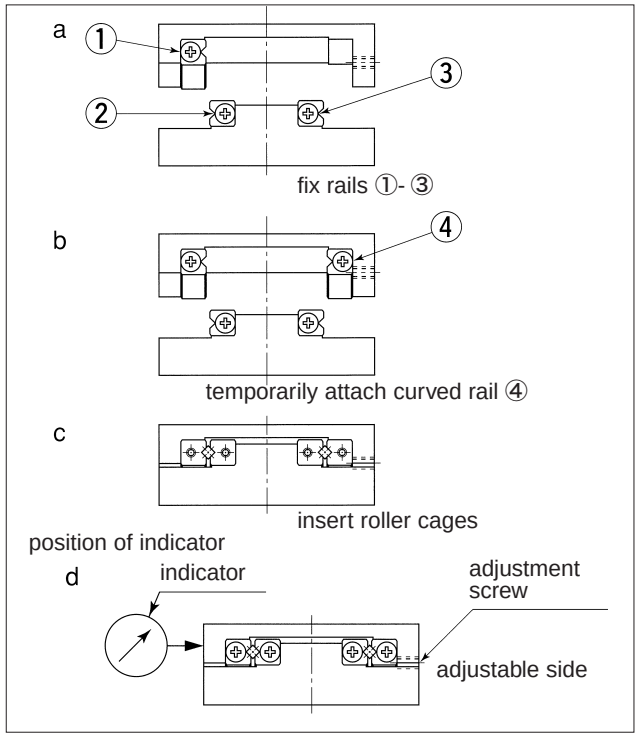
Figure H-45 Accuracy of Installation Surfaces



Procedure:

(1) Remove burrs, dirt, dust, etc. from the table and the installation surfaces of the bed.
(2) Apply a low viscosity oil to contact surfaces. Fix the rail ①② and ③ by tightening bolts to specified torque values (Table H-19, Figure H-46a).
(3) Temporarily attach the rail ④ on curved tracking base to the adjustment side (Figure H-46b).
(4) Remove the end pieces on one side of the rails and insert roller cages to the center (Figure H-46c).
(5) Re-attach end-pieces.
(6) Move table to the right and left (in the direction of the stroke) to position roller cages at the center of the curved rails.
(7) Set an indicator at the side of the table on the reference surface (Figure H-46d).
(8) Move table to one of the stroke ends and tighten the adjustment screws slightly. Figure H-47e).

Figure H-46 Mounting Method (1)



(9) Move table fully to the other stroke end and tighten the adjustment screws slightly. (Figure H-47f).

(10) Move the table to the center and lightly tighten adjustment screws (Figure H-47g).

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

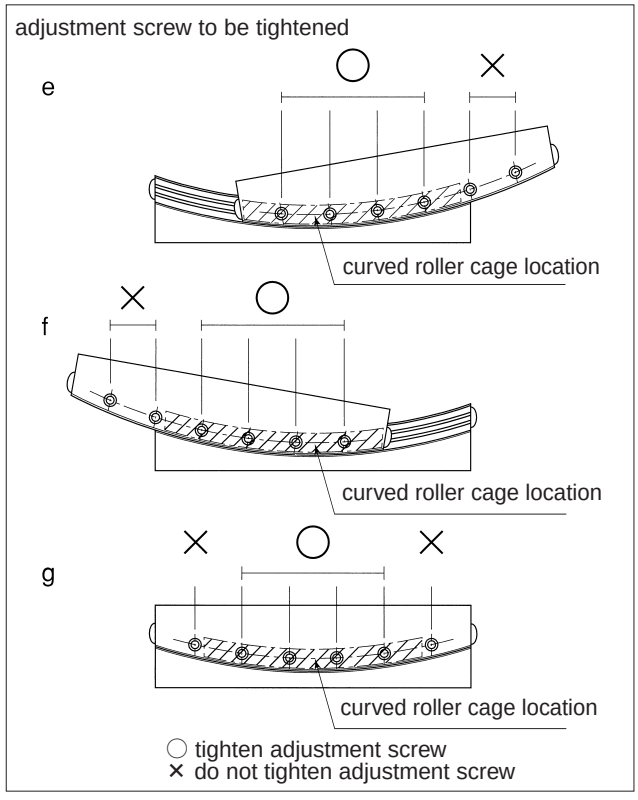
(12) Repeat steps (8) ～(10) and tighten the adjustment screws uniformly.

(13) Fix the rail ④. Tighten the roller cage bolts sequentially by moving the table in the same manner as for tightening the adjustment screws.

Table H-19 Recommended Torque for Installation Bolts unit/N・m

bolt size	torque
M3	1

Figure H-47 Mounting Method (2)



NOTES ON INSTALLATION

Lubrication:
NB Gonio slide ways are pre-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.

Dust Prevention:
Dust and foreign particles can affect the accuracy and life of a Gonio slide way. A table used in a hostile environment should be protected with a cover.

Operating Temperature:
The operating temperature should be kept between -20°C and 110°C.

Pre-load Adjustment:
Inaccurate pre-load adjustment will reduce the motion accuracy, resulting in skewing and shortening life. Careful adjustment is a requirement.

Cage Slippage:
When used under high speeds, or unbalanced loads, or when vibration condition are present, the roller cage slippage may occur. The rotation range should be determined with a sufficient margin, and an excessive pre-load should not be applied.

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

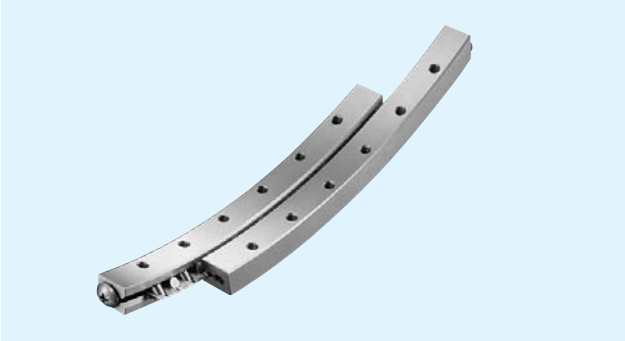
Careful Handling:
Dropping a Gonio slide way may result in scratches or dents on the raceway surfaces, preventing smooth motion and affecting accuracy. Care should be exercised in handling.

Use as a Set:
The accuracy tolerance of a Gonio slide way is designed to be adjusted within a particular set of components. If components from different sets are used, the 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.

RV TYPE

– Gonio Way –

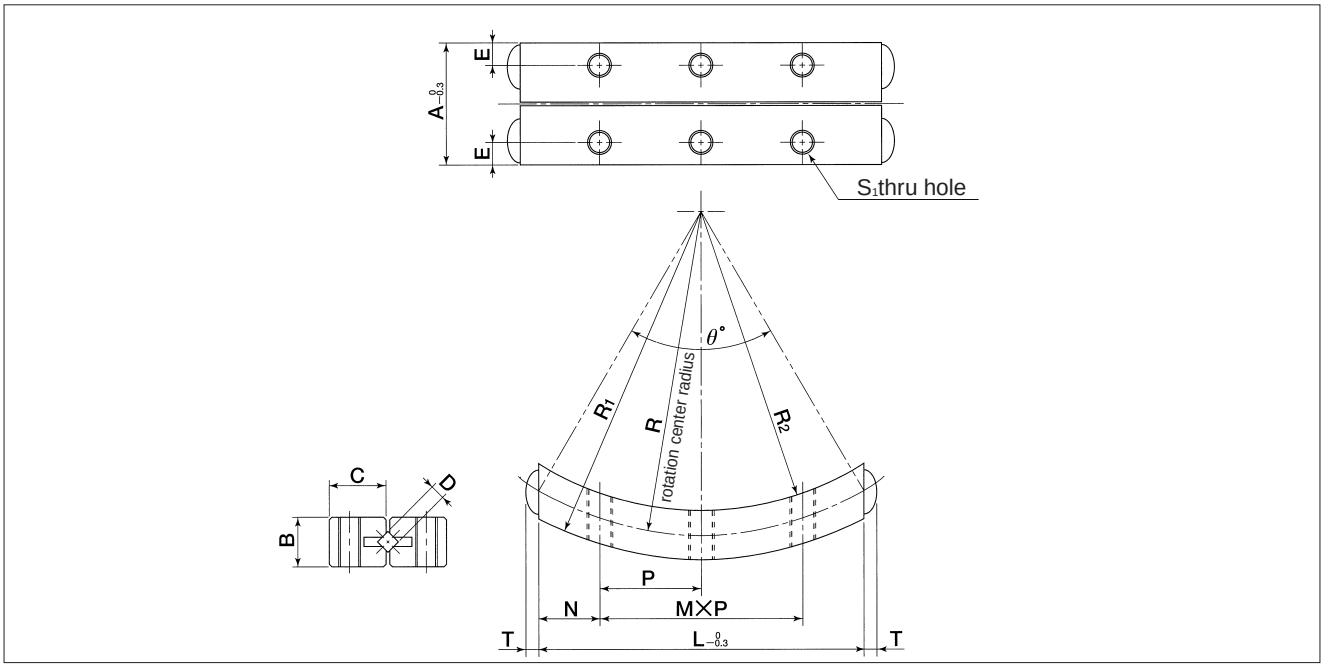


part number structure example

RV 3 070 - 110 - 10Z

- RV: RV type
- 3: size
- 070: length
- 110: center radius
- 10Z: number of rollers

part number	rotation range	roller diameter D mm	No. of rollers Z	major dimensions L mm	R mm	R_1 mm	R_2 mm	A mm	B mm	C mm
RV2040- 50- 7Z	±10°	2	7	40	50	53	47	15	6	7.25
RV2060- 60-12Z			12	60	60	63	57			
RV3070- 90-11Z	±10°	3	11	70	90	94	86	18	8	8.5
RV3070-110-10Z			10	70	110	114	106			
RV3100-160-14Z			14	100	160	164	156			



※ One set consists of 4 curved rails, 2 curved roller cages, and 8 end pieces.

						basic load rating		allowable	mass	
M×P	N	E	S_1	T	θ	dynamic C	static Co	load F		part number
mm	mm	mm		mm		N	N	N	g	
2×12.5	7.5	2.5	M3	1.5	47.2°	820	1,440	482	49	**2040- 50- 7Z**
3×12.5	11.25				60.0°	1,490	2,800	936	75	**2060- 60-12Z**
3×15	12.5	3	M3	1.9	45.8°	2,640	5,550	1,850	137	**3070- 90-11Z**
3×15					37.1°	2,440	5,620	1,870	135	**3070-110-10Z**
5×15					36.4°	2,860	7,890	2,630	193	**3100-160-14Z**

CR TYPE

(Standard Curved Roller Cage)

– CR2/CR3 –

part number structure example

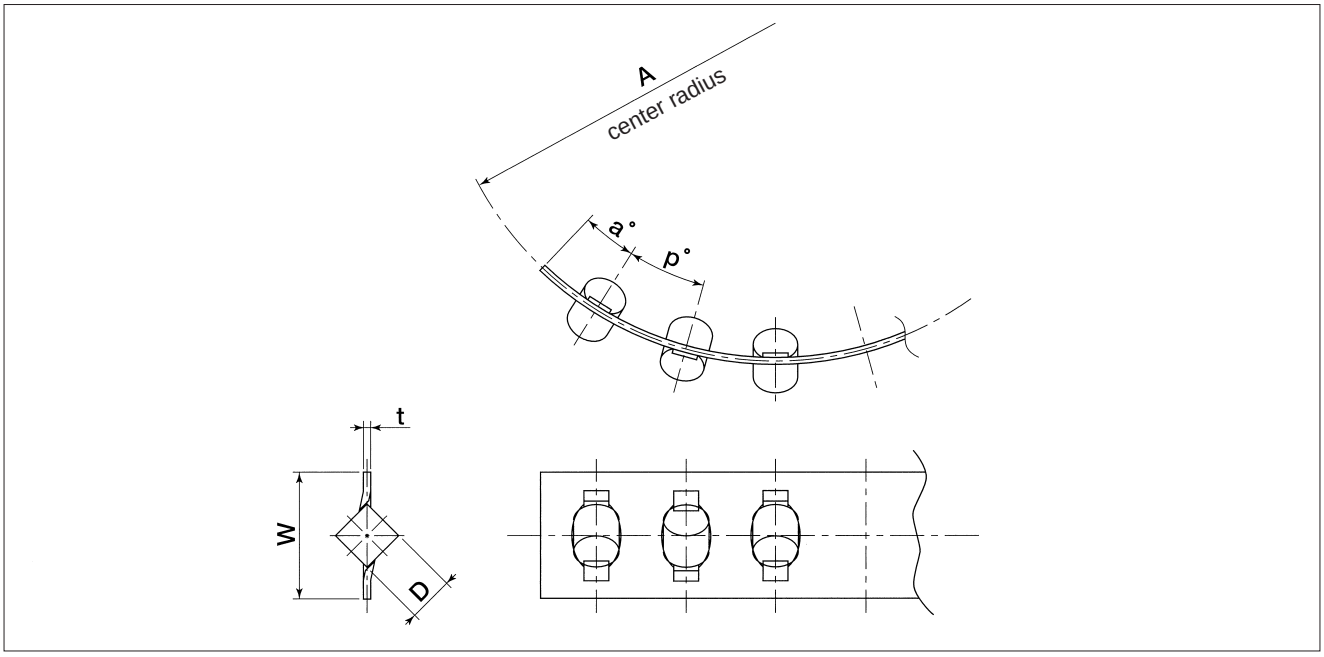
CR | 3 - 110 - 10Z

CR type

size

center radius

number of rollers



part number	roller diameter D mm	center radius A mm	t mm	w mm	p	a	
CR2- 50- 7Z	2	50	0.3	5.6	4.6°	2.9°	RV type
CR2- 60-12Z		60			3.8°	2.4°	RV type
CR2- 70-10Z		70			3.3°	2.0°	RVF type
CR2- 87-10Z		87			2.6°	1.6°	RVF type
CR2- 103-10Z		103			2.2°	1.4°	RVF type
CR2- 120- 9Z		120			1.9°	1.2°	RVF type
CR3- 85-10Z	3	85	0.4	7.2	3.4°	2.9°	RVF type
CR3- 90-11Z		90			3.2°	1.9°	RV type
CR3-110-10Z		110			2.6°	1.5°	RV type,RVF type
CR3-125-16Z		125			2.3°	1.3°	RVF type
CR3-160-14Z		160			1.8°	1.1°	RV type,RVF type