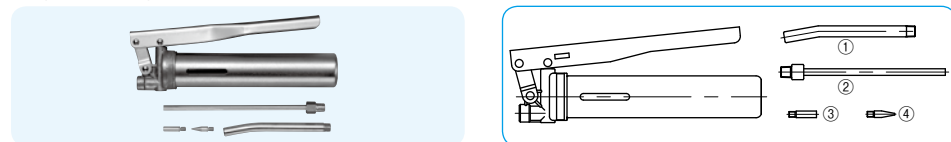


NB MAINTENANCE KIT

There are two types of maintenance kit available at NB.

1. Grease Gun Set: GG1

Different types of nozzles are adaptable to a variety of products including Actuators and products with grease-fitting.

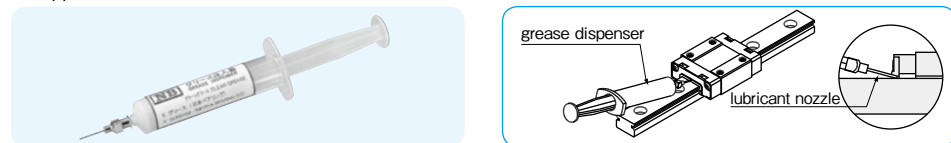


- ① Lubricant Nozzle (φ10)
Slide Guide SGL, SGW (except for #17)
Actuator BG (#46 or larger)
Slide Bush SM, TR
- ②+Lubricant Nozzle ③ (φ5)
Slide Guide SGW (#17 only)
Actuator BG (#33 or smaller)
Others
- ②+Lubricant Nozzle ④
Ball Screw
Products with Oil Hole

In the case of difficulty in pumping, due to internal grease adhesion or shape of the bearing, please use nozzle ④ to apply grease directly onto running grooves.

2. Grease Dispenser: TU1

Syringe dispenser is recommended for miniature guide (SEBS-B type) and for limited space applications.



- ① Lubricant Nozzle (19G)
Needle Diameter : φ1.00
Needle Inner Diameter : φ0.67 (for KGF Grease)
- ② Lubricant Nozzle (17G)
Needle Diameter : φ1.50
Needle Inner Diameter : φ1.03 (for KGLA・KGU Grease)

PRECAUTIONS FOR HANDLING AND USE

Please follow the instructions below to maintain the accuracy of NB linear system as a precision part and for a safety use.

⚠ (1) Notes on Handling

- ① Any shock load caused by rough handling (such as dropping or hitting with hammer) may cause a scar or dent on the raceway which will hinder smooth movement and shorten expected travel life. Also be aware that such impact may damage the resin parts.
- ② Never try to disassemble the product. Doing so may cause an entry of contamination or deterioration of assembly accuracy.
- ③ The blocks or the outer cylinders may move just by tilting the rail or the shaft. Be careful not to let them fall off from the rail or the shaft by mistake.
- ④ The accuracy on the mounting surface and parallelism of the rails or the shafts after assembly are important factors to optimize the performance of the linear system. Exercise adequate care for mounting accuracy.

⚠ (2) Notes on Use

- ① Be careful not to let dust or foreign particles enter the linear system during use.
- ② When using the linear system under an environment where dust or coolant may scatter, protect the system with a cover or bellows.
- ③ When the NB linear system is used in a manner that its rail is fixed to the ceiling and downward load is applied to the block (s) or the outer cylinder (s), if the block or the outer cylinder breaks, it may fall off from the rail and drop to the floor. Provide additional measures for preventing dropping of the block or the outer cylinder, such as a safety catch.

⚠ (3) Instructions in considering the "Life Time" of a Linear System

- ① When the load applied to a block or an outer cylinder exceeds 0.5 time of the basic dynamic load rating ($P > 0.5C$), the actual life of the system may become shorter than a calculated life time. Therefore, it is recommended to use the system with 0.5C or lower.
- ② In the repetition of very minute stroke, where the rolling element, a steel ball or a cylindrical roller, makes only less than a half turn, early wear called fretting occurs at the contact points between the rolling elements and the raceway. There is no perfect measure to avoid this, but the life of the system can be extended by using anti-fretting grease and moving the blocks or the outer cylinders for the full stroke length once in a few thousand times of use.
Anti-fretting grease is available as an option. Please select it for applications with very minute stroke length.

SLIDE GUIDE

SLIDE GUIDE

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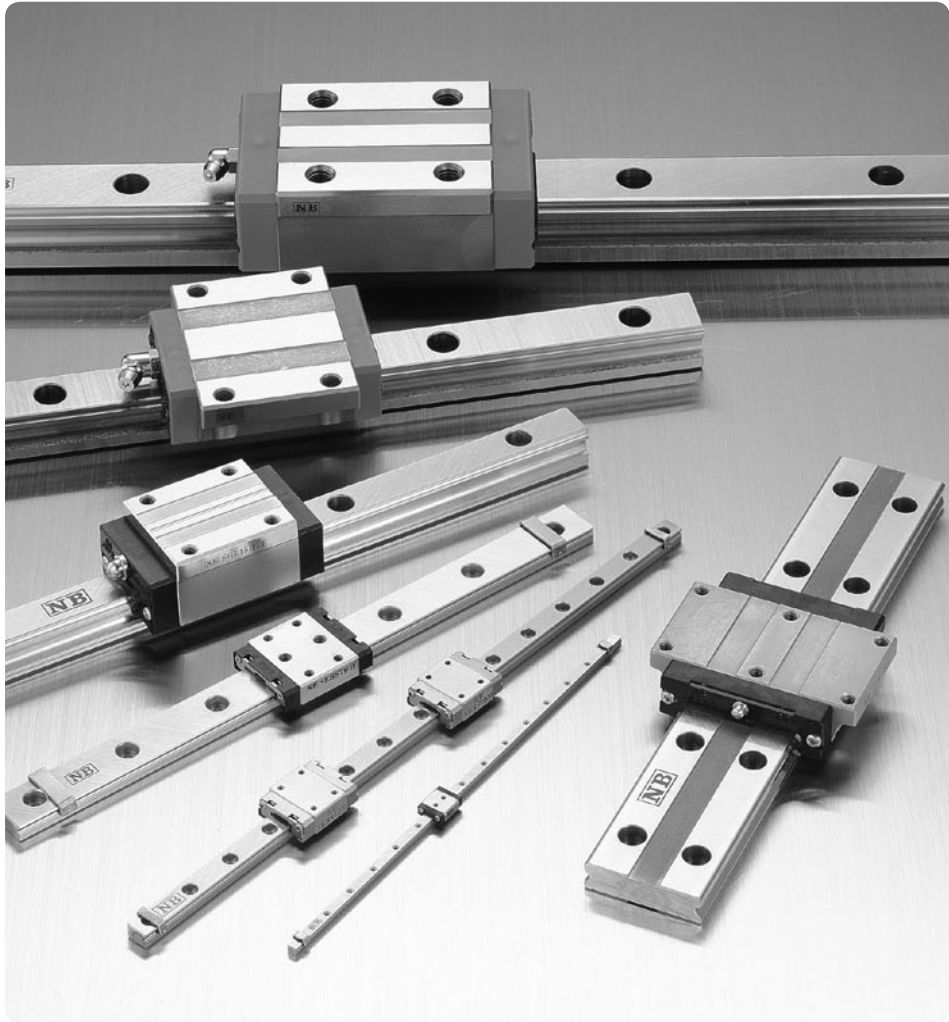
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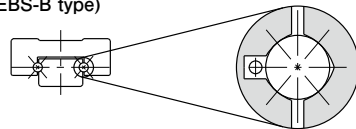
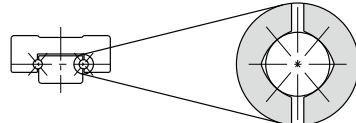
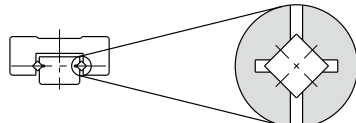
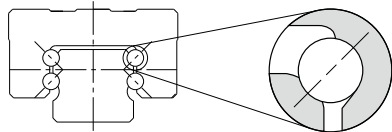
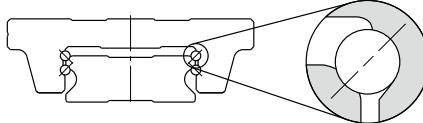
SLIDE GUIDE

NB slide guides are high-precision and high-rigidity linear bearings designed to utilize the motion of rolling elements. They have numerous advantageous characteristics including low friction, no stick-slip, and smooth linear motion even under high load conditions. Since they can maintain their high-efficiency and high-functionality characteristics for an extended period of time, they meet a wide range of needs, from general industrial to precision machinery.



TYPES

Table A-1 Types

rolling element	cross section and contact structure	advantages	page	
miniature type	ball	<p>retained ball, 2-row, 4-point contact (SEBS-B type)</p> 	<ul style="list-style-type: none">● retained ball type● available with all stainless steel components● 2-row, compact● small, light, cost effective	P.A-20
	ball	<p>2-row, 4-point contact (SEB-A type)</p> 	<ul style="list-style-type: none">● 2-row, compact● small, light, cost effective● available in various types● available in stainless steel	P.A-20
	roller	<p>cross roller (SER type)</p> 	<ul style="list-style-type: none">● miniature roller guide● cross roller, high precision● available with all stainless steel components	P.A-42
high-rigidity type	ball	<p>4-row, 2-point contact (SGL type)</p> 	<ul style="list-style-type: none">● high self-centering characteristics● high load capacity due to relatively large ball elements● high dust preventive control with side-seals and under-seals● available in stainless steel	P.A-50
	ball	<p>4-row, 2-point contact (SGW type)</p> 	<ul style="list-style-type: none">● high-moment resistant● low-height design● smooth motion due to large number of effective balls● high dust preventive control with side-seals and under-seals	P.A-72

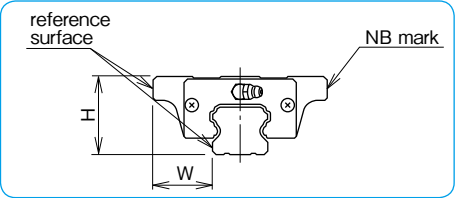
ACCURACY MEASUREMENT METHOD

The accuracy of slide guides is measured by fixing the rail to the reference base. The accuracy is expressed in terms of the average value at the center portion.

Dimensional Tolerance and Paired Difference

The accuracy of the slide guide is obtained by measuring the height H, and width W, as shown in Figure A-1. The dimensional tolerance is measured for each of the blocks attached to the rail and is expressed in terms of the deviation from the basic dimension. The paired difference is obtained by measuring the blocks attached to the rail and is expressed in terms of the difference between the maximum and minimum values.

Figure A-1 Accuracy Measurement

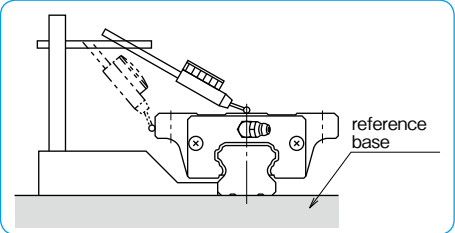


Motion Accuracy

The rail is first fixed to the reference base. The motion accuracy is obtained by measuring the difference in the indicator readings when the block is moved along the entire span of the rail.

Note: Gauge head is placed on the center of the block reference surface.

Figure A-2 Measurement Method for Motion Accuracy



Notation for Number of Axes and Paired Difference

When more than one rail is used in parallel, the dimensional difference must be measured on more than one block on more than one rail. For measuring the paired difference for height H, please specify the number of axes (W2, W3) as the part number example shows. For measuring the paired difference for width W, please contact NB.

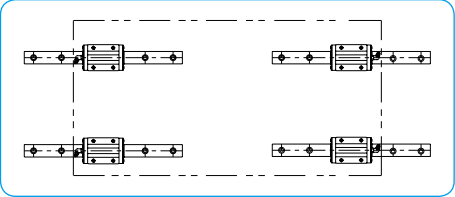
Note : When four rails are used as illustrated in Figure A-3, W4 should be specified in the part number. Please indicate the number of axes when ordering.

part number example

SGL25TF2-350/W2

symbol for number of axes
W2: 2 parallel axes
W3: 3 parallel axes

Figure A-3 4 Parallel Axes



RIGIDITY AND PRELOAD

The rolling elements of the slide guide deform elastically due to the applied load. The amount of deformation depends on the type of rolling element. It is proportional to the 2/3 power for ball elements. For rollers, it is proportional to the 9/10 power. In either case, the rate of deformation decreases as the applied load increases. Greater rigidity is achieved by applying a preload.

A preload causes internal stress within the slide guide block, resulting in some reduction in lifetime. However, when the guide is used under shock or vibration loading conditions, a preload will absorb the load and will actually help lengthen the life time. Because the preload causes elastic deformation of the rolling elements, it becomes less tolerable to the installation dimensional errors. Extreme care should be exercised in machining the installation surface.

Four levels of preload are available: clearance, standard, light, and medium. This allows the user to select the appropriate level for the application.

Figure A-4 Elastic Deformation of Rolling Elements

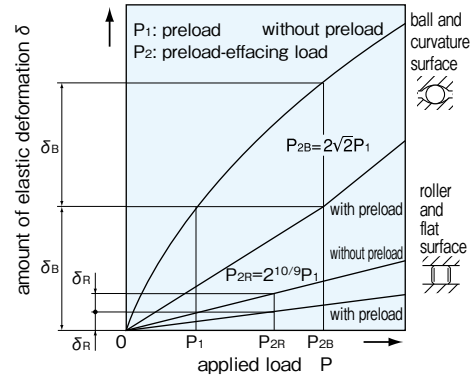


Table A-2 Level of Preload

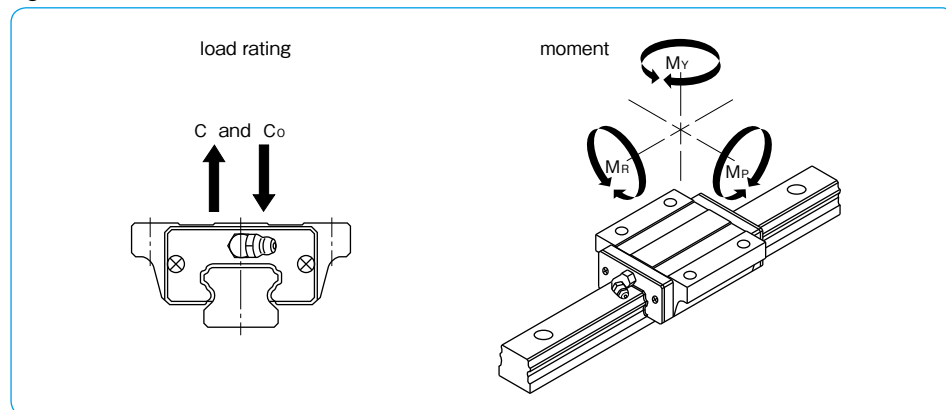
preload	symbol	effect of preload					operating conditions	applicable part number
		vibration absorption ability	self-aligning ability	lifetime	rigidity	frictional resistance		
clearance	T0	increases	reduces	reduces	increases	increases	light motion is required. installation errors to be absorbed.	SEB
standard	blank	increases	reduces	reduces	increases	increases	minute vibration is applied. accurate motion is required. moment is applied in a given direction.	SEB,SGL SGW
light	T1	increases	reduces	reduces	increases	increases	light vibration is applied. light torsional load is applied. moment is applied.	SEB,SGL SGW
medium	T2	increases	reduces	reduces	increases	increases	shock and vibration are applied. over-hang load is applied. torsional load is applied.	SGL,SGW

LOAD RATING AND RATED LIFE

Loading Direction and Load Rating

A slide guide experiences load and moment, as shown in Figure A-5. For each load and moment, the basic load ratings and allowable static moments are defined.

Figure A-5 Direction of Load



Rated Life Calculation

Two types of rolling elements are used in NB slide guides: ball and roller elements. There is a different equation for calculating the rated life of each type.

For ball elements (SEB, SGL, and SGW types), the equation is

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

For roller elements (SER type), the equation is

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

L: rated life (km) f_c : contact coefficient
 f_T : temperature coefficient f_w : applied load coefficient
 C: basic dynamic load rating (N) P: applied load (N)
 ※ Refer to page Eng-5 for the coefficients.
 ※ The contact coefficient is applied when two or more blocks are used in close contact.

If the stroke length and cycles are constant, life can be expressed in terms of time, the equation is

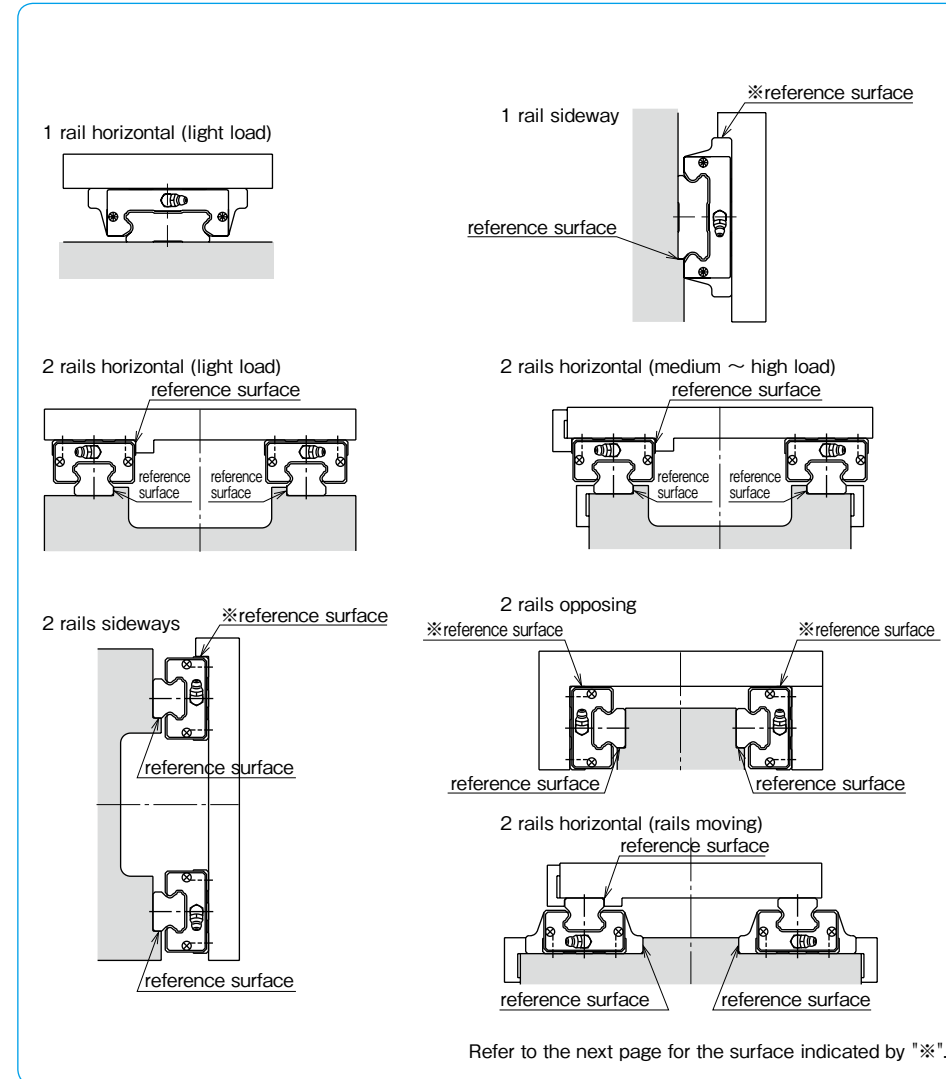
$$L_h = \frac{L \cdot 10^3}{2 \cdot \ell \cdot n \cdot 60}$$

L_h : life time (hr) ℓ : stroke length (m)
 L: rated life (km) n: number of cycles per minute (cpm)

MOUNTING

Slide guides have high load ratings in spite of their compact size. They can be used in various types of machinery and other equipment in various configurations. Figure A-6 shows some typical slide guide arrangements.

Figure A-6 Slide Guide Arrangements



Mounting Surface and Accuracy

NB slide guides are designed and fabricated to achieve high accuracy after mounting them to a machined mounting base. One typical way is to provide a shoulder on the mounting surface and align the reference surface of the rail or block against the shoulder (Figure A-7). To avoid corner interference, an undercut should be provided at the shoulder corner. Alternatively, the radius of the shoulder corner should be smaller than the radius of the slide guide block/rail corner.

The accuracy of the rail mounting surface affects the accuracy of the machinery or equipment along with the slide guide motion accuracy.

The accuracy of the mounting surface should be equivalent to that of the slide guide motion accuracy. The specified preload may not be achieved due to deformation of the block, for example, the mounted block surface is not flat (Figure A-8). Careful attention should therefore be given to achieve the specified flatness.

Note: Please contact NB for the rail straightness in case the mounting shoulder cannot be provided or the rigidity of the mounting surface is not enough.

Figure A-7 Profile of Mounting Reference Surface

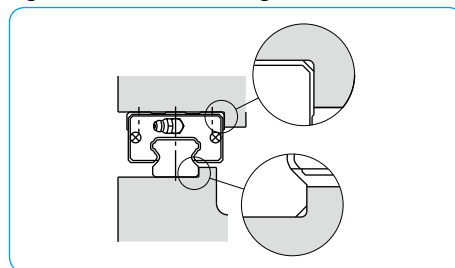


Figure A-8 Effect of Flatness

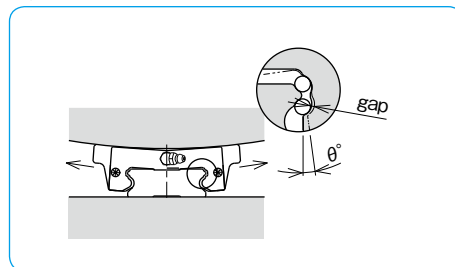
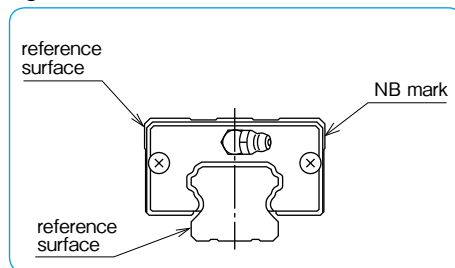


Figure A-9 Reference Surface



Reference Surface Indication

Reference surfaces are provided to enable accurate and simplified mounting. They are located on the same side, as shown in Figure A-9, opposite to the NB mark.

Depending on the mounting arrangement, the standard reference surface may not ensure mounting accuracy (for example, 1 rail sideways or 2 rails opposing, Figure A-6, page A-7). In such cases, NB can provide a reference surface on the opposite side. Please specify the side when ordering.

Mounting

In general, slide guides are used with 2 rails in parallel. In that case, one rail is on the so-called reference side and the other is on the so-called adjustable side.

- Applications where shock/vibration and high load are involved/high accuracy is required. The effect of shock and vibration on accuracy is eliminated by using side pieces such as side plates (Figure A-10), tightening set screws (Figure A-11), or tapered gibs (Figure A-12).

Figure A-11 Using Tightening Set Screw

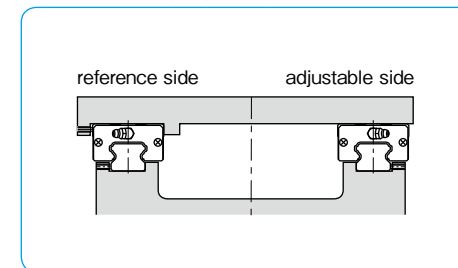


Figure A-10 Using Side Plate

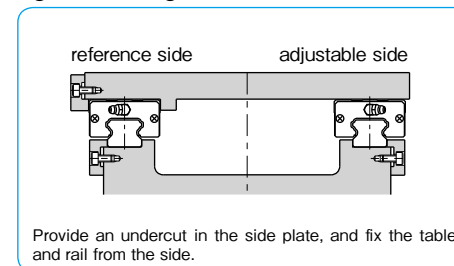
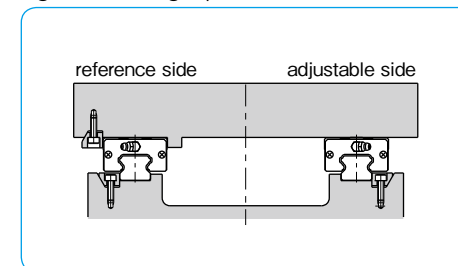


Figure A-12 Using Tapered Gib



- Applications where light load and low speed are involved.

Figures A-13~15 show the mounting methods when high accuracy is not required or the load capacity of the slide guide is sufficient due to a light load or low speed. In these cases, side pieces or reference surface may not be required.

Figure A-14 No Reference Surface on Adjustable Side

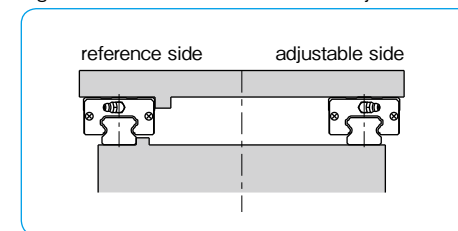


Figure A-13 Without Side Piece

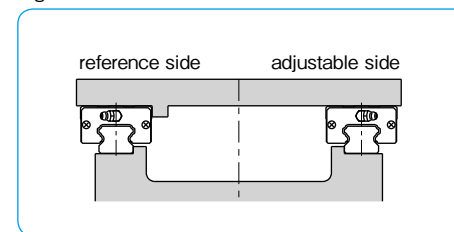
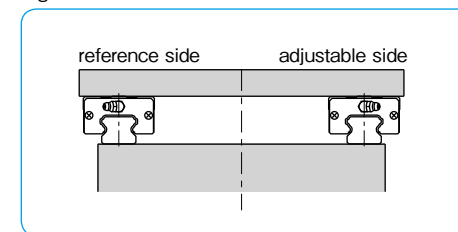


Figure A-15 Without Reference Surface



Mounting Procedure

When reference surfaces are provided for both the table and the base, please follow the following procedure to mount the slide guide.

1. Remove burrs, scratches, dust, etc. from the base and table. Apply a low viscosity oil to the base and the table. Place the slide guide on the base carefully. Temporarily fix the rail mounting screws. (Figure A-16a)

2. Tighten the screw for the side piece so that the installation reference surface and the rail reference surface are in close contact. (Figure A-16b) If a side piece is not provided, use a C clamp to position the mounting reference surface and the rail reference surface so that they contact each other. (Figure A-16d)

3. Tighten the mounting screws to the specified torque, and complete the mounting of the rail. The rail is designed so that its accuracy is optimum when the screws are tightened to the specified value. Please refer to the recommended torque table for each product type. (Figure A-16c)

4. Repeat steps 2 and 3 for the rail on the adjustable side.

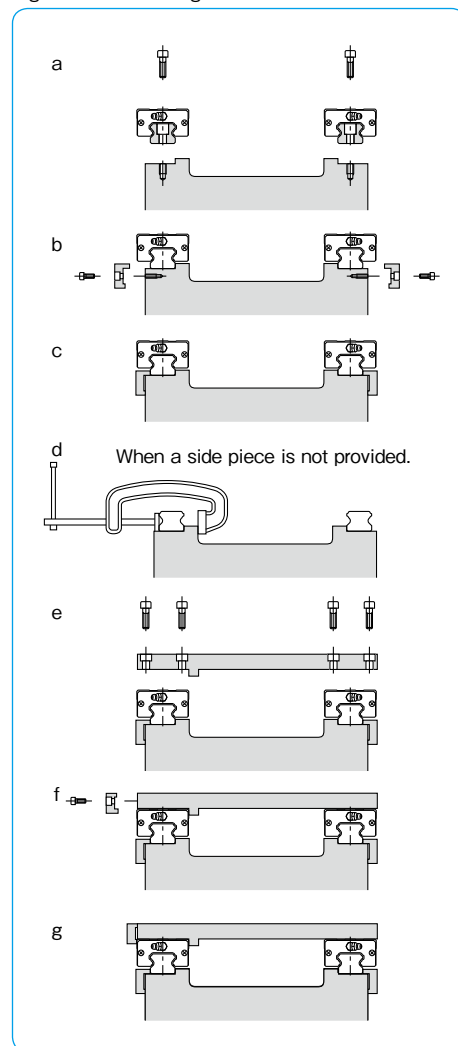
5. Move the blocks at the mounting location of the table, and place the table gently. Then slightly tighten the screws. (Figure A-16e)

6. Fix the reference surface of the block against the table by the side piece. Tighten the mounting screws in a diagonal sequence. (Figure A-16f)

7. In the same manner, tighten the mounting screws for the blocks on the adjustable side. (Figure A-16g)

8. Finally, move the table through the stroke length to check if thrust is even. Please repeat 5 and 6 (2 to 6 when necessary) if thrust is not even. If thrust is even, please do a final tightening of the screws.

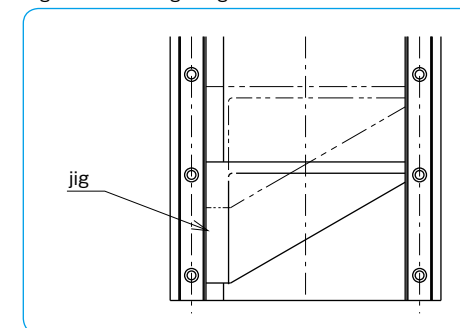
Figure A-16 Mounting Method



When the Reference Surface is Not Provided on the Adjustable Side

When a reference surface is not provided on the adjustable side, mount the 2 rails in parallel by using a jig, as mounted in Figure A-17. After mounting the reference-side guide, install the adjustable-side guide by moving the table to achieve parallelism.

Figure A-17 Using a Jig



When the Reference Surface is Not Provided on the Reference Side

When a reference surface is not provided on the reference side, mount the 2 rails by using a reference surface close to the slide guide.

Temporarily fix the slide guide to the base, and mount an indicator on a measurement plate. Please fix the measurement plate on two or more blocks. (Figure A-18)

Place the indicator against the reference surface of the base. Tighten the screws from one end of the rail to ensure straightness.

If there is no reference surface close-by, use a straight edge to achieve straightness. (Figure A-19)

Figure A-18 Using Base Reference Surface

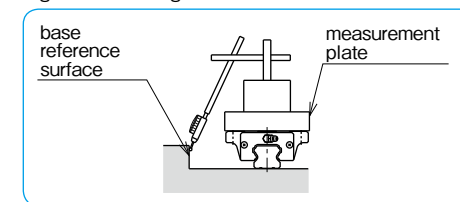
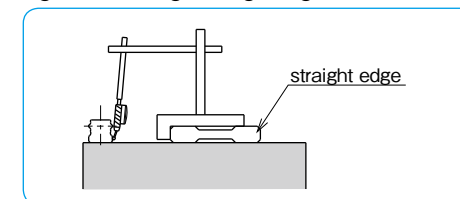


Figure A-19 Using a Straight Edge

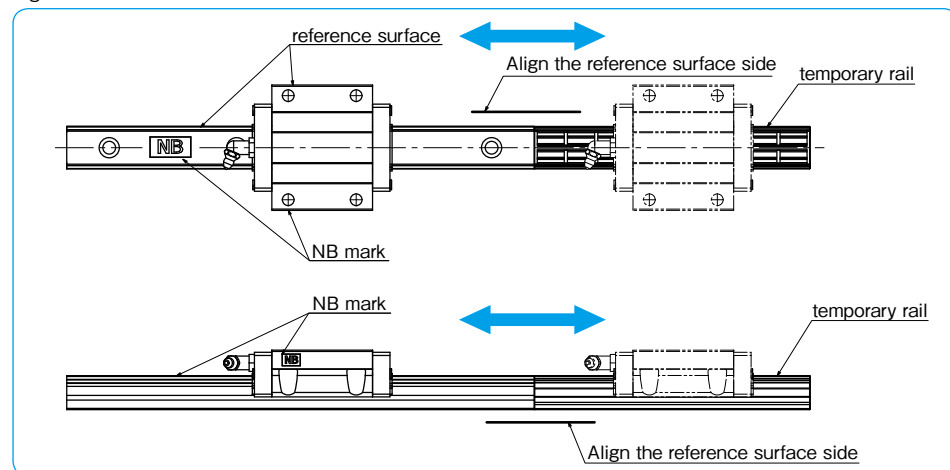


USE AND HANDLING PRECAUTIONS

NB Slide Guides are accurately tuned precision components. Please pay special attention to the following notes.

- Please install the Slide Guide as a set. It is not recommended to remove the block for installation.
- When block removal is necessary, please use a temporary (plastic dummy) rail to prevent balls from dropping out.
- To put a guide block on the rail, as the pictures below show, align the reference surface and the height between the rail and a temporary rail. It is very important to maintain the original combination of block(s) and rail.

Figure A-20 How to Put Guide Block on



- Please do not turn around a block on the rail to change the grease-fitting orientation. Relocate fitting to the opposite end by removing red plug, and re-insert red plug to where fitting was originally.
- Never try to disassemble the block. This will most assuredly void warranty of the product.
- Please remove burrs, dust, or any other debris from the base and table before installation.
- Slide Guides are pre-lubricated for immediate use. Please relubricate with a similar type of grease regularly. Special lubricants must be matched with the same type of grease to prevent contamination.
- The SEB(S) and SER(S) Slide Guides have metal clip stoppers (picture below) to avoid a block fall-out during shipment and assembly. Please remove the stoppers only after installation is finished with a screwdriver as these clips should not be used as 'mechanical' stoppers.

JOINT RAILS

Rails can be joined together to obtain a length which exceeds the maximum length. There are two ways to do this.

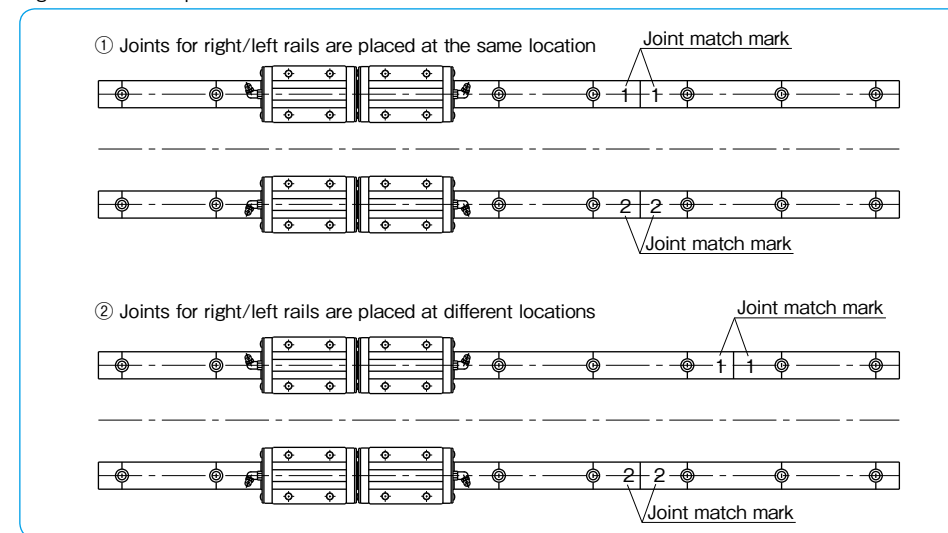
- Place the joints at the same location for the right and left rails so as to make the design and maintenance simple (Figure A-21 ①).
- Place the joints for the right and left rails at different locations so that the block does not move over the two joints at the same time so as to minimize the effect of the joint on accuracy (Figure A-21 ②).

Please keep the following points in mind when using joint rails.

- To avoid dislocation at joints due to shock loading, provide a shoulder at the joint on the installation side.
- If a shoulder cannot be provided, make sure that any excess load does not change the rail position.
- Use the joint marks provided for installation.
- Tightly butt the rails to be joined so that there is no gap between them.
- Make sure the reference surface side of the joint rails to be aligned.

Note: Joined rails are available for SGL and SGW series with standard grade, high grade, and with standard preload. For joined rails on SEB series, please contact NB. Joined rails are not available for SER series.

Figure A-21 Examples of Joined Guide Rails



DUST PREVENTION

Seals

Side-Seal

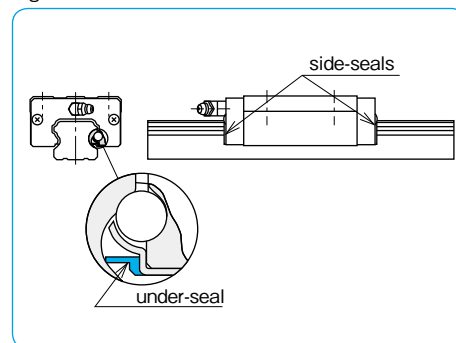
(Series: SEB, SER, SGL, and SGW)

The side-seals prevent foreign particles and dust from entering the guide block in order to retain the motion accuracy, resulting in a long lifetime.

Under-Seal (Series: SGL and SGW)

Slide guides with side and under-seals are used in harsh environments or to prevent dust entering from below.

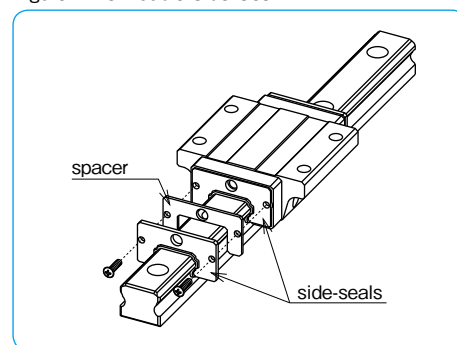
Figure A-22 Side-Seal and Under-Seal



Double Side-Seal Option (Series: SGL)

With this option, the prevention against dust is greatly improved. This option is ideal for use in applications where bellows or covers are not able to be fitted over the slide guide system.

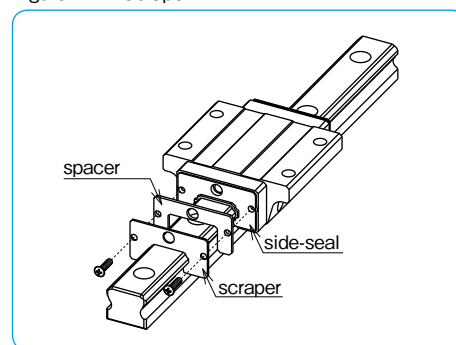
Figure A-23 Double Side-Seal



Scraper Option (Series: SGL)

When the application environment has unfavorable foreign matter or debris such as welding splatter or cutting debris, the scraper option provides an effective protective measure for the slide guide system.

Figure A-24 Scraper



No Side-Seal (Series: SEB and SER)

When the presence of dust or debris is extremely low and only minor motion resistance is desired, a no side-seal option is available. Be aware that, with this option, dust prevention can not be expected.

Double Side-Seal + Scraper Option (Series: SGL)

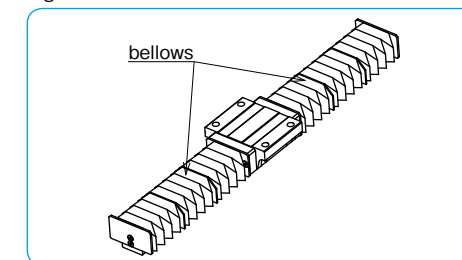
Double side-seal plus scraper is available.

Please contact NB for details.

Bellows Option (Series: SGL)

This option fully covers the guide rail preventing dust, debris, and other foreign particles from disrupting the smooth linear motion. (Refer to page A-18 for further details)

Figure A-25 Bellows



Special Rail Mounting Caps

For SGL and SGW guides, special rail mounting caps are available to prevent dust from entering the mounting holes.

These caps are installed, after the rail is fixed to the base, by using a jig and slowly inserting them into the holes until their top surface is flush with the rail surface.

Figure A-26 Special Cap

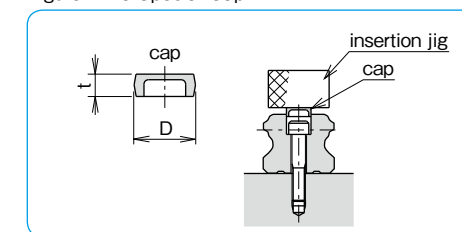


Table A-3 Special Cap

part number	dimensions			applicable part number		
	size	D mm	t mm	SGL-F,E, TF,TE	SGL-HTF,HYF HTE,HYE,HTEX	SGW
F 3	M 3	6	1.3	15	—	—
F 4	M 4	7.5	1.25	15D	15	17,21,27
F 5	M 5	9.5	2.5	20	20	—
F 6	M 6	11	2.7	25,30	25	35
F 8	M 8	14	3.65	30D,35	30,35	—
F12	M12	20	4.65	—	45	—

ANTI-CORROSION

For anti-corrosion, the SEB/SER series and SGL-F/TF types are available in stainless steel material. Low temperature black chrome treatment can be specified for the SGL and SGW series. This treatment (LB) is suitable for applications where corrosion resistance is a requirement.

LUBRICATION

Lithium soap based grease is applied to NB slide guides prior to shipment for immediate use. Please relubricate with a similar type of grease periodically depending on the operating conditions.

The **Fiber Sheet** and Reverse-Seal are available which significantly extends relubrication period (refer to page A-16, A-17).

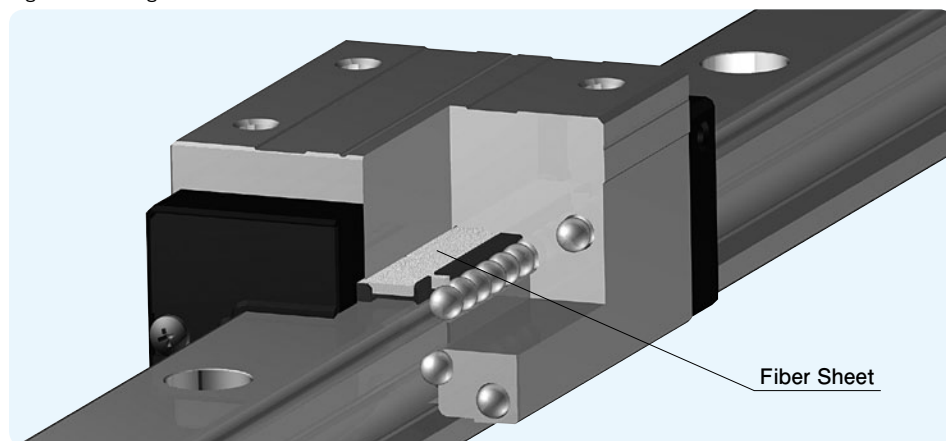
For use in clean rooms or vacuum environments, slide guides without grease or slide guides with customer specified grease are also available. Please contact NB.

NB also provides low dust generation grease. Please refer to page Eng-40 for details.

FIBER SHEET

The Fiber Sheet for the SGL and SGW types, significantly extends lubricant replenishment intervals and has an excellent durability even under harsh conditions with dust and debris that absorb lubricant. Embedded in a block body, as shown in Figure A-27, it does not change the length of the block. In addition, the Fiber Sheet does not require any change in mounting dimensions, which allows replacement with existing products without a design change.

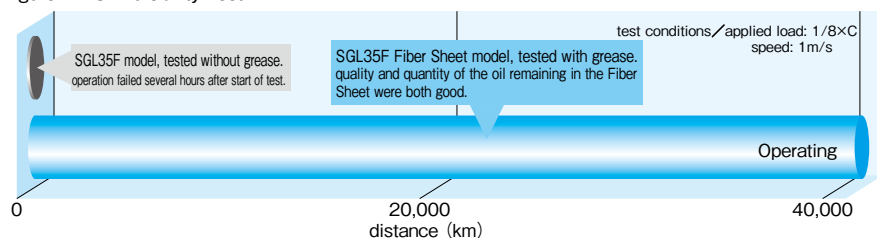
Figure A-27 Magnified View of the Fiber Sheet



Simplified Lubrication Management

NB's Fiber Sheet is a fiber material with a porous structure containing the lubricant oil. The oil is supplied to the ball elements at the proper time and with the proper amount by the principle of capillarity, greatly increasing the relubrication period.

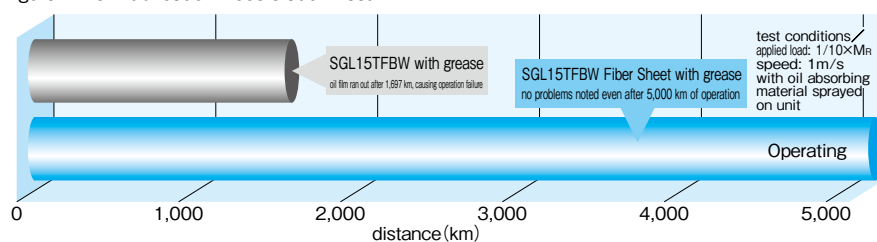
Figure A-28 Durability Test



Outstanding Durability Even Under Poor Operating Conditions

An acceleration test was performed with oil absorbing material sprayed on the units to validate the SGL type's lubrication performance and durability even under poor operating conditions.

Figure A-29 Lubrication Acceleration Test

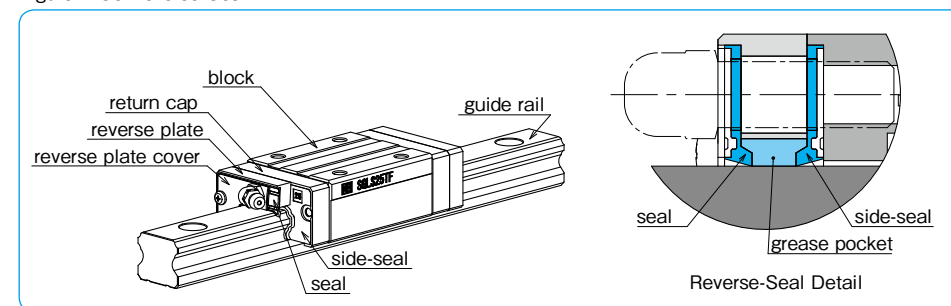


REVERSE-SEAL

NB's Reverse-Seal is a seal unit that consists of reverse plate, seal, and cover.

This seal unit has another side-seal in the reverse orientation to the block, which achieves maintenance free by reducing grease loss.

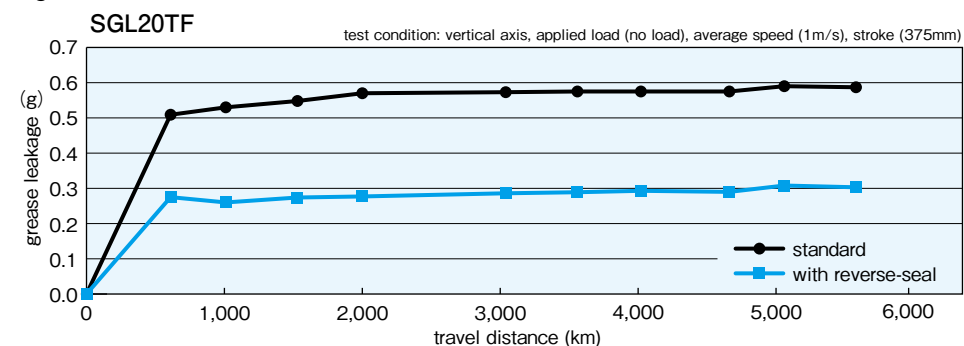
Figure A-30 Reverse-Seal



Reducing Grease Leakage

The space between two seals holds grease to minimize a grease leakage from the block.

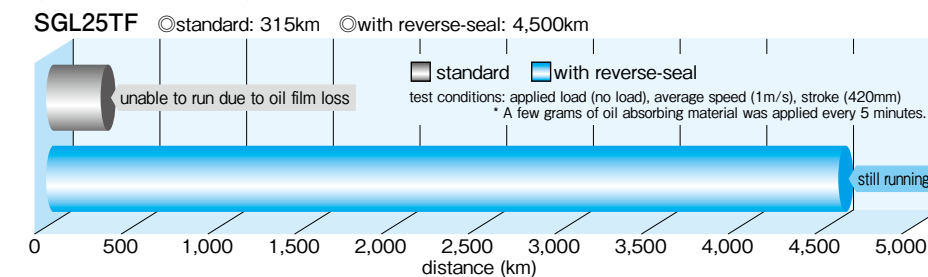
Figure A-31 Grease-leak Test Data



Maintenance Free

Reverse-seal makes a "grease pocket" between two seals that realizes maintenance free by reducing grease leakage and loss.

Figure A-32 Grease Dry-up Test Data



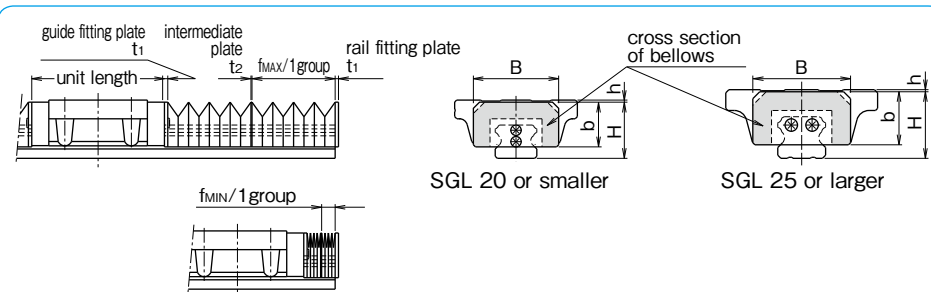
Applicable Part Number

Reverse-Seal (BR option) is available on SGL Type.

BELLOWS

By protecting the entire length of the guide rail, dust prevention is greatly enhanced.
Please refer to Figure A-33 for dimensions. External dimensions and the stroke length of slide guide will change with use of bellows.

Figure A-33 Dimensions of Slide Guide with Bellows



Note: Please do not unfasten the guide fitting plate screws. The slide guide becomes unfunctional if the guide fitting plate is removed.

part number	unit length					B	H	h	b	t1	t2	fMAX / 1group	fMIN / 1group
	symbol: B side-seals +under-seals	symbol: BW double-seals +under-seals	symbol: BS side-seals +under-seals +scraper	symbol: BR side-seals +under-seals +reverse-seals	symbol: BWS double-seals +under-seals +scraper								
SGL15	F TF E TE	L1-2	L3-2	L4-3.4	L5-3.4	33	23	1	19			32	
	HTF HYF							5					
	HTE HYE HTEX							1					
SGL20	F TF E TE	L1-2	L3-2	L4-3.4	L5-3.4	41	27	1	21.5			40	
	HTF HYF							3					
	HTE HYE HTEX							3					
SGL25	F TF E TE	L1-2.2	L3-2.2	L4-4	L5-4	47	32	1	25.5	1.5		44	6.5
	HTF HYF							8					
	HTE HYE HTEX							4					
SGL30	F TF E TE	L1-3	L3-3	L4-4	L5-4	58	40	2	31			56	
	HTF HYF							5					
	HTE HYE HTEX							2					
SGL35	F TF E TE	L1-3	L3-3	L4-4	L5-4	68	46	2	37			68	
	HTF HYF							9					
	HTE HYE HTEX							2					
SGL45	HTF HYF	L1-3	L3-3	L4-5.5	L5-5.5	84	59	11	50	2		72	
	HTE HYE HTEX							1					

Note: 1 group indicates the minimum unit of bellows. Please specify the required stroke length.
When bellows are fitted to the guide block, the grease fitting cannot be installed.
The allowable temperature is up to 60°C if the system has a bellows option.
Please contact NB for details on the installation of bellows, as well as for special application usage.

Calculation Method of Length of Bellows and Slide Guide Rail

Example: In this case, one(1) piece of SGL15TE guide block is mounted on a rail with bellows; the required stroke is 440mm.

Number of groups required for a stroke of 440mm is calculated as follows.

$$\frac{\text{Stroke}}{f_{\text{MAX}} - f_{\text{MIN}}} = \frac{440}{32 - 6.5} = 17.2 \div 18 \text{ groups (round up)}$$

When 18 groups of bellows are fitted, the minimum length f is calculated:

$$f = \text{guide fitting plate} + 1 \text{ group } f_{\text{MIN}} \times \text{number of groups} + \text{intermediate plate} \times (\text{number of groups} - 1) \\ = 1.5 + 6.5 \times 18 + 1.0 \times (18 - 1) = 135.5$$

With these calculation results, length of the guide rail needed (L) is obtained as follows:

$$L = 2 \times f + \text{the required stroke} + \text{unit length} \\ = 2 \times 135.5 + 440 + (56.5 - 2) = 765.5 \div 766 \text{ (round up)}$$

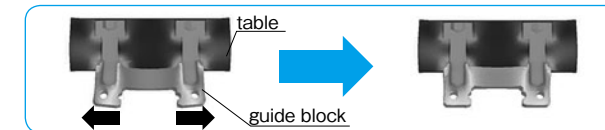
Figure A-34 External Diagram of Slide Guide with Bellows Attached



SEB TYPE AD PROFILE (Anti-Deforming)

The AD profile guide block can dissipate possible deformation by improved installation plane profile.

Figure A-35 SEB type AD profile



Note:

When NB's unique AD Profile type miniature guide block is selected, the following precautions should be taken into consideration to perform to its utmost advantage.

- To obtain maximum AD (Anti-Deforming) effect, flatness of the mounting surface should be finished the same as motion accuracy of the slide guide.
- When the table is designed with one guide block on one guide rail, the utmost AD effect is anticipated.
- All screws on the slide guide block should be tightened to the equal torque value.
- The AD profile type guide block is available only with standard preload.
- AD profile type guide blocks are available only with following part numbers of slide guide block.

Applicable Part Number

Table A-4 AD profile Applicable Part Number

part number			
SEBS 7B	SEBS 7BM	—	SEBS 7A
SEBS 7BY	SEBS 7BYM		SEBS 7AY
SEBS 9B	SEBS 9BM	SEB 9A	SEBS 9A
SEBS 9BY	SEBS 9BYM	SEB 9AY	SEBS 9AY
SEBS12B	SEBS12BM	SEB12A	SEBS12A
SEBS12BY	SEBS12BYM	SEB12AY	SEBS12AY
SEBS15B	SEBS15BM	SEB15A	SEBS15A
SEBS15BY	SEBS15BYM	SEB15AY	SEBS15AY
SEBS20B	SEBS20BM	SEB20A	SEBS20A
SEBS20BY	SEBS20BYM	SEB20AY	SEBS20AY

part number structure

SEBS 15B UU 2-589 N P AD

AD profile

※Please contact NB for details.

SLIDE GUIDE Miniature SEB Type

The NB slide guide SEB type is a linear motion bearing in which the ball elements roll along two raceway grooves. This is the smallest and lightest slide guide series offered by Nippon Bearing. The compact design allows for the size and weight of machinery and other equipment to be reduced.

STRUCTURE AND ADVANTAGES

The SEB type slide guide consists of a rail with precisely machined raceway grooves and a block assembly consisting of the main body, return caps and ball elements.

Retained Ball

Because of the ball retainers, the SEBS-B type is able to be removed from the guide rail, simplifying its installation and resulting in lower assembly costs.

All Stainless Steel Type

By using stainless steel for the return caps, the SEBS-BM type is made from all stainless steel components, making it the ideal choice for special environments such as high temperature, clean room, or vacuum applications.

Moment Resistant

A wide block (WB/WA) type, a long block (BY/AY) type, and a wide/long block (WBY/WAY) type are moment resistant slide guide types. The most

suitable type can be selected for any demanding operating condition.

Tapped Hole Rail Type

For the SEB rails, counterbore (standard) and optional tapped hole (N) types are available enabling various installation methods.

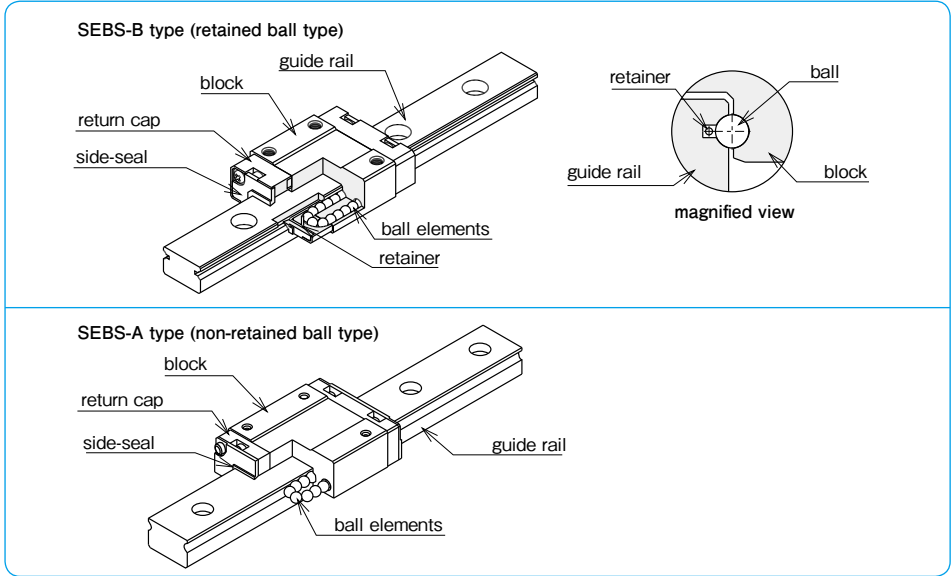
Compact Design

SEB type has a 2-row, 4-point contact structure. This structure minimizes the installation height, which contributes to light-weight and miniaturization of machinery and equipment.

AD Profile

AD profile dissipates guide block deformation caused by installation. (refer to page A-19)

Figure A-36 Structure of SEB type Slide Guide



TYPES

The SEB(S) type slide guides are categorized according to their block shape and the rail installation method.

Table A-5 Type ※All the SEB blocks are made of stainless steel (SEBS marking).

		short block standard type rail(counterbore) N type rail(tapped hole)	standard block standard type rail(counterbore) N type rail(tapped hole)	long block standard type rail(counterbore) N type rail(tapped hole)
retained ball type	all stainless steel	SEBS-BS type SEBS-BS-N type P.A-26~	SEBS-B type SEBS-B-N type P.A-26~	SEBS-BY type SEBS-BY-N type P.A-26~
		SEBS-BSM type SEBS-BSM-N type P.A-26~	SEBS-BM type SEBS-BM-N type P.A-26~	SEBS-BYM type SEBS-BYM-N type P.A-26~
		SEBS-WBS type SEBS-WBS-N type P.A-30~	SEBS-WB type SEBS-WB-N type P.A-30~	SEBS-WBY type SEBS-WBY-N type P.A-30~
	wide type			
non-retained ball type	wide type		SEB-A type SEB-A-N type P.A-34~	SEB-AY type SEB-AY-N type P.A-34~
			SEB-WA type SEB-WA-N type P.A-38~	SEB-WAY type SEB-WAY-N type P.A-38~

ACCURACY

The SEB(S) slide guides are available in two grades of accuracy: high grade and precision grade (P).

Table A-6 Accuracy unit : mm

accuracy grade	high	precision
accuracy symbol	blank	P
allowable dimensional difference in height H	± 0.020	± 0.010
paired difference for height H	0.015	0.007
allowable dimensional difference in width W	± 0.025	± 0.015
paired difference for width W	0.020	0.010
running parallelism of surface C to surface A	refer to figure A-39,40	
running parallelism of surface D to surface B		

Figure A-37 Accuracy

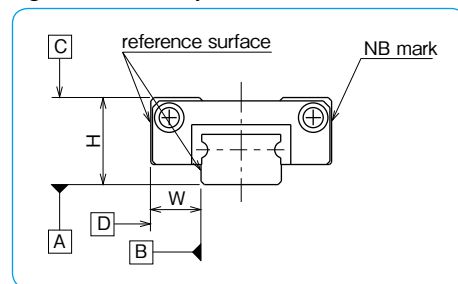
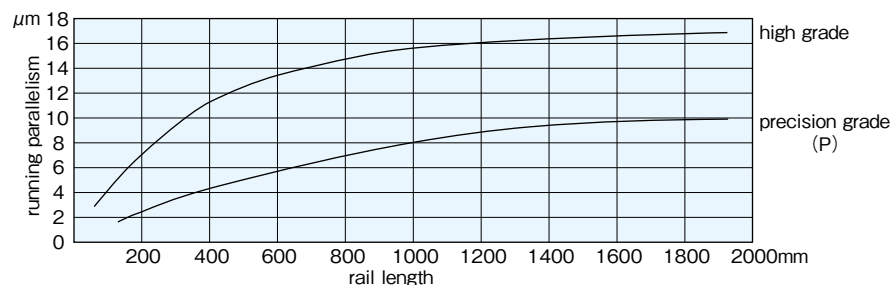


Figure A-38 Motion Accuracy



PRELOAD

SEB(S) slide guides are available with a standard preload (blank), light preload (T1), and a positive-clearance (T0).

Table A-7 Preload Symbol and Radial Clearance unit : μm

size	preload and symbol		
	clearance T0	standard blank	light* T1
2	+1~+3	—	—
3			
5			
7	+3~+6	-3~0	-4~-2
9			
12			
15	+4~+8	-3~0	-7~-3
20			
3W	+1~+3	—	—
5W		-1~0	—
7W	+3~+6	-3~0	-4~-2
9W			
12W			
15W	+4~+8		-7~-3

Table A-8 Operating Conditions and Preload

preload	symbol	operating conditions
clearance	T0	light motion is required. installation errors to be absorbed.
standard	blank	minute vibration is applied. accurate motion is required. moment is applied in a given direction.
light*	T1	light vibration is applied. light torsional load is applied. moment is applied.

* Frictional resistance may be affected by preload.

LOAD RATING

The load rating for SEB(S) slide guides depends on the direction of load.

Table A-9 Load Rating

		retained ball type	non-retained ball type
basic dynamic	vertical	$1.00 \times C$	$1.00 \times C$
load rating	horizontal	$0.89 \times C$	$1.13 \times C$
basic static	vertical	$1.00 \times C_0$	$1.00 \times C_0$
load rating	horizontal	$0.84 \times C_0$	$1.19 \times C_0$

EQUIVALENT LOAD

For a guide to which vertical load and horizontal load are applied at the same time, calculate its static equivalent load using the following equation.

$$P = P_a + X \cdot P_s$$

P: equivalent load P_a : vertical load P_s : horizontal load
X: 0.84 for SEB-A type; 1.19 for SEBS-B type

RAIL LENGTH

Slide guides with most commonly used lengths are available as standard. For slide guides with a non-standard length, unless otherwise specified, the distance from one end of the rail to the first hole center (N) will be within the ranges listed in Tables A-10 and A-11, satisfying the following equation.

$$L = M \cdot P + 2N$$

L: length (mm) M: number of pitches P: hole pitch (mm)
N: distance from the end of the rail to the first hole center (mm)

Table A-10 N Dimension (standard type) unit : mm

size	N	
	and over	less than
2	3	7
3		8
5		10.5
7		14
9	4	16.5
12		24
15		36
20		

Figure A-39 Direction of Load

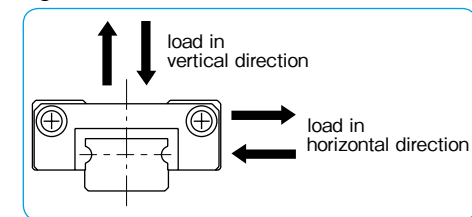


Figure A-40 Rail

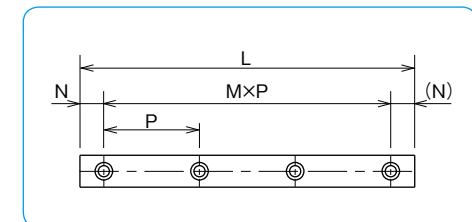


Table A-11 N Dimension (wide type) unit : mm

size	N	
	and over	less than
3W	3	10.5
5W		14
7W		19
9W	4	25
12W		
15W		

MOUNTING

Mounting Surface Profile

Slide guides are mounted by pushing the reference surface of the rail and the block against the shoulder provided on the mounting surface. An undercut or a radius corner should be provided at the corner of the shoulder to prevent interference. The recommended shoulder height values on the mounting reference surface are shown in Table A-12. (Table A-13 for corner radius)

Figure A-41 Mounting Surface Profile-1

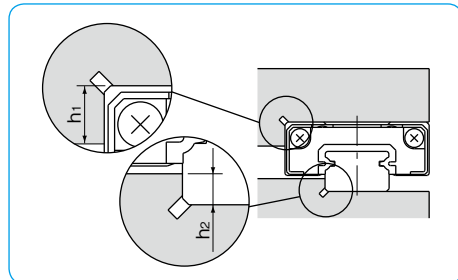


Figure A-42 Mounting Surface Profile-2

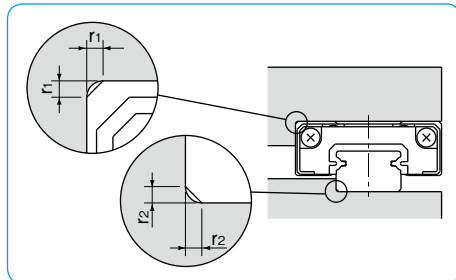


Table A-12 Shoulder Height on the Mounting Reference Surface

size	shoulder height on the block side h ₁	shoulder height on the rail side h ₂
2	1	0.5
3	1.2	0.8
5	2	1
7	2.5	
9	3	1.5
12	4	2
15	5	3.5
20		5
3W	1.5	0.8
5W	2	1
7W	3	1.5
9W	4	2.5
12W		
15W		

Table A-13 Maximum Corner Radius Values

size	block mounting part r ₁	rail mounting part r ₂
2	0.1	0.1
3	0.15	
5	0.3	0.3
7		
9		
12		
15		
20		0.5
3W	0.15	0.1
5W	0.3	0.3
7W		
9W		
12W		
15W		

Recommended Torque Values

The screws to fasten the rail should be tightened to an equal torque using a torque wrench in order to secure the motion accuracy. The recommended torque values are given in Table A-14. Please adjust the torque depending on the operating conditions.

size	M1	M1.4	M1.6	M2	M2.6	M3	M4	M5	M6
recommended torque	0.03	0.10	0.15	0.3	0.65	1.0	2.3	4.7	8.0

(when using stainless steel screw A2-70)

MOUNTING SCREW

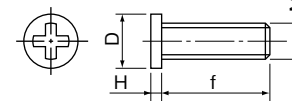
Extremely small custom screws are available from NB.

Table A-15 Mounting Screw (stainless steel)

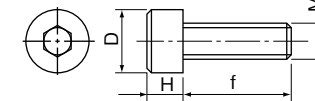
type	shape	size	D mm	H mm	pitch mm	f mm
custom screw	Figure A-43①	M1	1.8	0.45	0.25	3, 4, 5
		M1.4	2.5	0.8	0.3	2.5, 3, 4
		M1.6	2.3	0.5	0.35	4, 5, 6
		M2	3	0.6	0.4	6
cap screw	Figure A-43②	M2	3.8	2	0.4	4, 5, 6, 8, 10
		M2.6	4.5	2.6	0.45	4, 5, 6, 8, 10

Figure A-43 Mounting Screw

① custom screw



② cap screw



LUBRICATION

A high grade lithium soap based grease is applied to the NB slide guides prior to shipment for immediate use.

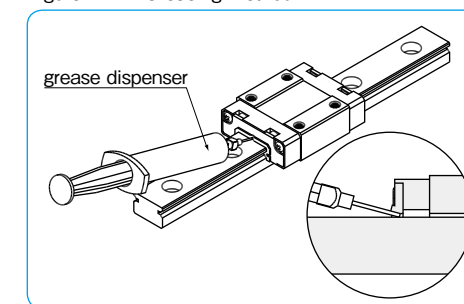
Please relubricate with a similar type of grease periodically depending on the operating conditions. For use in clean rooms or vacuum environments, NB slide guides without grease are available upon request.

Please contact NB for customer specified grease types.

A special syringe lubricant dispenser (refer to Figure A-44) is available from NB as an option. In particular, the SEBS-B retained ball type has a special structure that allows the user to replenish lubricant easily (refer to page Eng-43), as the magnified view of Figure A-44 shows.

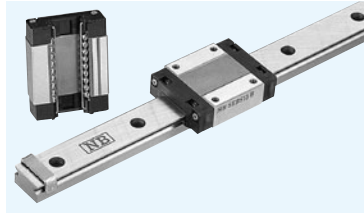
Please refer to page Eng-40 for details on the low dust generation grease.

Figure A-44 Greasing Method



SEBS-BS/B/BY TYPE SEBS-BSM/BM/BYM TYPE

— Retained Ball Type —



part number structure

example **SEBS 7B Y M UU 2 T1 -289 N P/W2**

SEBS: anti-corrosion

size

block

S: short

blank: standard

Y: long

return cap

blank: resin

M: stainless steel

seal

blank: without side-seal

UU: with side-seals

number of blocks attached to one rail

preload symbol (refer to page A-22)

TO: clearance

blank: standard

T1: light

symbol for
number of axes*
blank: single axis
W2: 2 parallel axes
W3: 3 parallel axes

accuracy grade
(refer to page A-22)
blank: high
P: precision

rail mounting hole
blank: counterbore
N: tapped hole

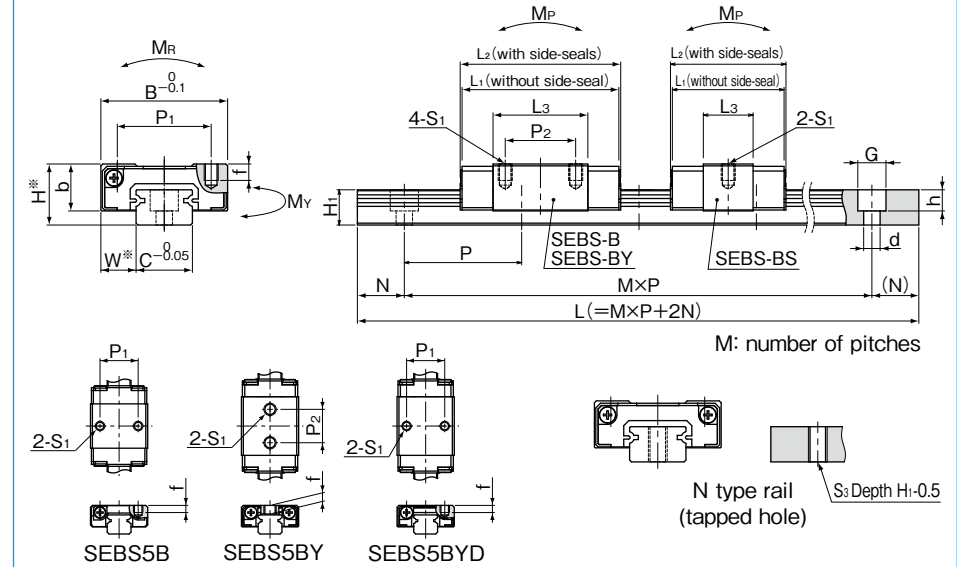
total length of rail

※ The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions								
resin return cap	stainless return cap	H mm	W mm	B mm	L ₁ mm	L ₂ mm	P ₁ mm	P ₂ mm	S ₁	f mm	L ₃ mm	b mm
SEBS 5B	SEBS 5BM	6	3.5	12	16.5	16.9	8	—	M2	1.5	9.3	4.5
SEBS 5BY	SEBS 5BYM				19.5	19.9	—	7	M2.6	1.8	12.3	
SEBS 5BYD	SEBS 5BYDM						8	—	M2	1.5		
SEBS 7BS	SEBS 7BSM	8	5	17	18.2	19	12	—	M2	2.5	8.8	6.5
SEBS 7B	SEBS 7BM				22.2	23		8			12.8	
SEBS 7BY	SEBS 7BYM				31.7	32.5		13			22.3	
SEBS 9BS	SEBS 9BSM	10	5.5	20	20.5	21.3	15	—	M3	3	10.1	7.8
SEBS 9B	SEBS 9BM				30	30.8		10			19.6	
SEBS 9BY	SEBS 9BYM				39.5	40.3		16			29.1	

part number	standard rail length L mm														
SEBS 5B	40	55	70	85	100	115	130	145	160						
SEBS 7B	40	55	70	85	100	115	130	145	160	175	190	205	220	235	265
SEBS 9B	55	75	95	115	135	155	175	195	215	235	255	275	295	315	355

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



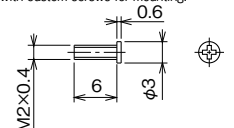
※ Please refer to page A-22 for accuracy.

guide rail dimensions						basic load rating		allowable static moment		mass		guide rail		block size
H ₁ mm	C mm	d × G × h mm	S ₃	N mm	P mm	dynamic C kN	static Co kN	M _{P2} N · m	M _{Y2} N · m	M _R N · m	block g resin return cap	block g stainless return cap	g/100mm	
4	5	2.4 × 3.5 × 0.8	M2.6	5	15	0.52	0.75	1.13 7.86	0.95 6.59	1.96	3	4	13	5B
						0.64	1.00	1.94 12.0	1.63 10.0	2.62	4	5		5BY 5BYD
4.7	7	2.4 × 4.2 × 2.3	M3	5	15	0.92	1.05	1.57 13.6	1.32 11.4	3.86	7	10		7BS
						1.28	1.69	3.66 25.4	3.07 21.3	6.18	9	12	21	7B
						1.90	2.95	10.4 59.1	8.74 49.6	10.8	15	18		7BY
5.5	9	3.5 × 6 × 3.5	M4	7.5	20	1.05	1.26	2.17 18.2	1.82 15.2	5.90	11	15		9BS
						1.70	2.53	7.78 48.2	6.53 40.4	11.8	18	22	31	9B
						2.26	3.80	16.8 91.7	14.1 77.0	17.7	27	31		9BY

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN ≒ 102kgf 1N · m ≒ 0.102kgf · m

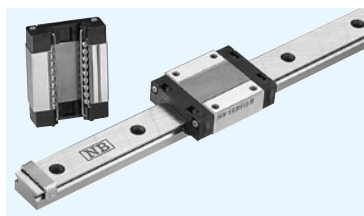
						maximum length mm	
						counterbore	tapped hole (N type)
						600	300
280	295	310				1,300	700
375	395	415	435	455	475	1,480	1,000

SEBS5 rail mounting screw
SEBS5 counterbore type rails are provided with custom screws for mounting.



SEBS-BS/B/BY TYPE SEBS-BSM/BM/BYM TYPE

— Retained Ball Type —



part number structure

example **SEBS 15B Y M UU 2 T1 - 589 N P/W2**

SEBS: anti-corrosion

size

block

S: short

blank: standard

Y: long

return cap

blank: resin

M: stainless steel

seal

blank: without side-seal

UU: with side-seals

number of blocks attached to one rail

preload symbol (refer to page A-22)

TO: clearance

blank: standard

T1: light

symbol for

number of axes*

blank: single axis

W2: 2 parallel axes

W3: 3 parallel axes

accuracy grade

(refer to page A-22)

blank: high

P: precision

rail mounting hole

blank: counterbore

N: tapped hole

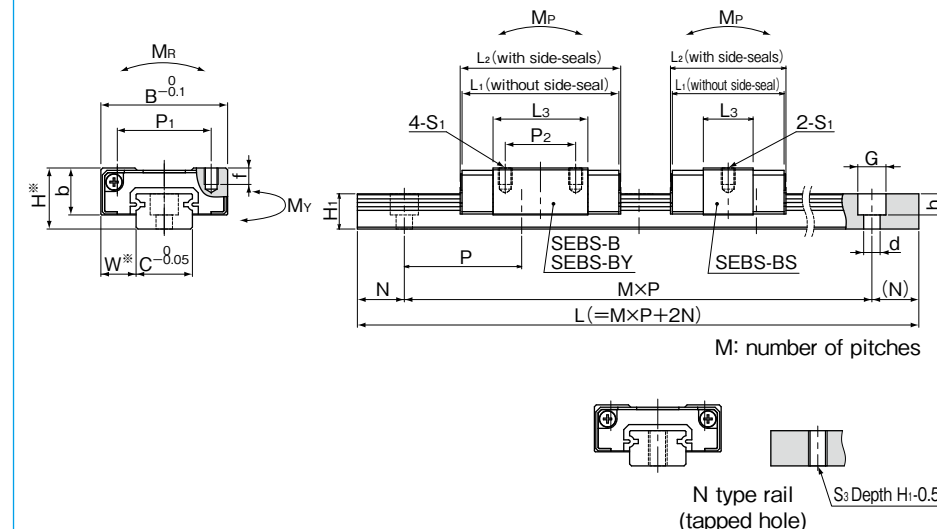
total length of rail

※ The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions								
resin return cap	stainless return cap	H mm	W mm	B mm	L ₁ mm	L ₂ mm	P ₁ mm	P ₂ mm	S ₁	f mm	L ₃ mm	b mm
SEBS12BS	SEBS12BSM	13	7.5	27	24.2	24.6	20	—	M3	3.5	10.6	10
SEBS12B	SEBS12BM				33.8	34.2		15			20.2	
SEBS12BY	SEBS12BYM				45.7	46.1		20			32.1	
SEBS15BS	SEBS15BSM	16	8.5	32	30	30.4	25	—	M3	4	15	12
SEBS15B	SEBS15BM				42.6	43		20			27.6	
SEBS15BY	SEBS15BYM				58.6	59		25			43.6	
SEBS20B	SEBS20BM	25	13	46	65.9	65.9	38	38	M4	6	44.7	17.5
SEBS20BY	SEBS20BYM				85.7	85.7					64.5	

part number	standard rail length L mm													
SEBS12B	70	95	120	145	170	195	220	245	270	295	320	345	370	395
SEBS15B	70	110	150	190	230	270	310	350	390	430	470	510	550	590
SEBS20B	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



※ Please refer to page A-22 for accuracy.

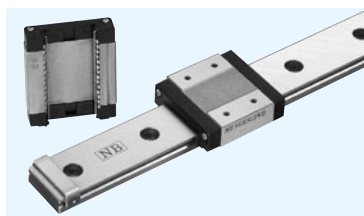
guide rail dimensions						basic load rating		allowable static moment			mass		guide	block
H ₁ mm	C mm	d × G × h mm	S ₃	N mm	P mm	dynamic C kN	static Co kN	M _{P2} N · m	M _{V2} N · m	M _R N · m	resin return cap	stainless return cap	g/100mm	size
7.5	12	3.5 × 6 × 4.5	M4	10	25	1.90	1.91	3.63 32.4	3.04 27.2	11.9	21	30	59	12BS
						3.09	3.82	12.4 81.3	10.4 68.2	23.9	35	44		12B
						4.34	6.21	30.7 170	25.7 143	38.8	53	62		12BY
9.5	15	3.5 × 6 × 4.5	M5	15	40	3.49	3.38	8.56 67.5	7.18 56.6	26.2	40	53	97	15BS
						5.65	6.76	29.2 175	24.5 147	52.4	64	77		15B
						7.93	10.9	72.4 379	60.7 318	85.1	98	110		15BY
15	20	6 × 9.5 × 8.5	M6	20	60	11.4	14.5	103 591	87.0 496	149	228	266	205	20B
						14.8	21.2	210 1,080	176 914	217	323	360		20BY

M_{P2} and M_{V2} are allowable static moments when two blocks are used in close contact. 1kN ≒ 102kgf 1N · m ≒ 0.102kgf · m

		maximum length mm	
		counterbore	tapped hole (N type)
470	495	1,480	1,000

SEBS-WBS/WB/WBY TYPE

— Retained Ball • Wide Type —



part number structure

example **SEBS 7WB Y UU 2 T1 - 289 N P / W2**

SEBS: anti-corrosion

size

block

S: short

blank: standard

Y: long

seal

blank: without side-seal

UU: with side-seals

number of blocks attached to one rail

preload symbol (refer to page A-22)

blank: clearance

blank: standard

T1: light

symbol for

number of axes*

blank: single axis

W2: 2 parallel axes

W3: 3 parallel axes

accuracy grade

(refer to page A-22)

blank: high

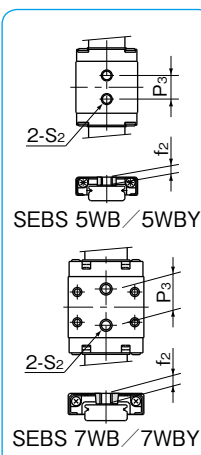
P: precision

rail mounting hole

blank: counterbore

N: tapped hole

total length of rail



SEBS 5WB / 5WBY

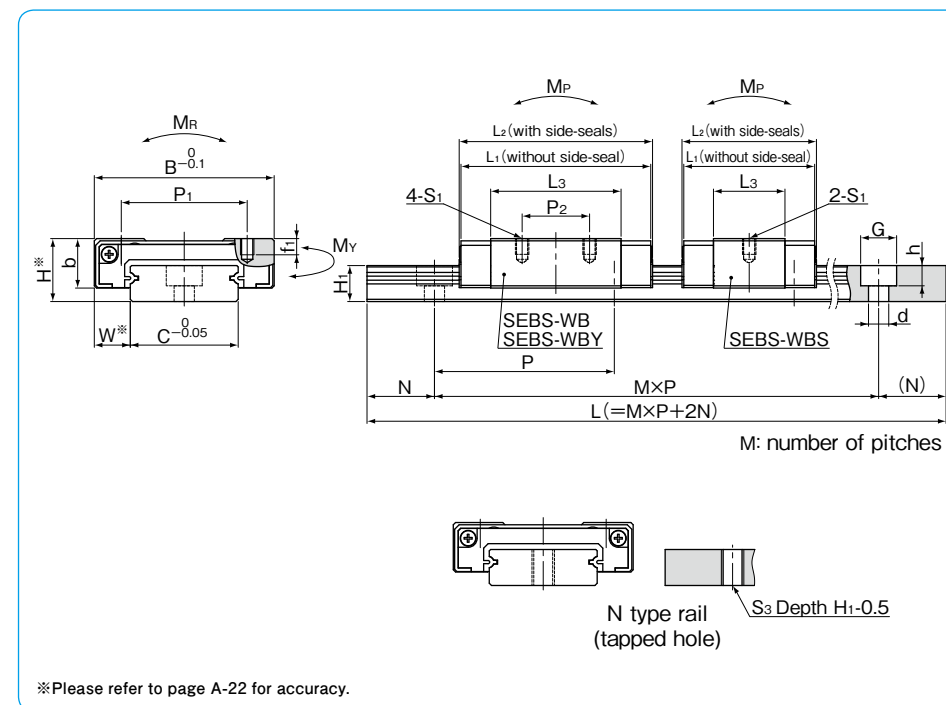
SEBS 7WB / 7WBY

※ The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions		block dimensions											
	H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	f ₁	L ₃	P ₃	S ₂	f ₂	b
	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm		mm	mm
SEBS 5WB	6.5	3.5	17	21.5	21.9	—	—	—	—	14.3	6.5	M3	2.3	5
SEBS 5WBY				27.5	27.9					20.3	11			
SEBS 7WBS	9	5.5	25	21.1	21.9	19	—	M3	2.8	10.7	—	—	—	7
SEBS 7WB				30.6	31.4		10			20.2	12	M4	3.5	
SEBS 7WBY				39.3	40.1		19			28.9	18			
SEBS 9WBS	12	6	30	24.2	25	21	—	M3		13	—	—	—	9
SEBS 9WB				37.5	38.3		12			26.3				
SEBS 9WBY				49.5	50.3	23	24			3				

part number	standard rail length L mm														
SEBS 5WB	50	70	90	110	130	150	170	190							
SEBS 7WB	50	80	110	140	170	200	230	260	290	320	350	380	410	440	470
SEBS 9WB	50	80	110	140	170	200	230	260	290	320	350	380	410	440	470

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.
The minimum standard rail can not be used for SEBS 9 WBY.

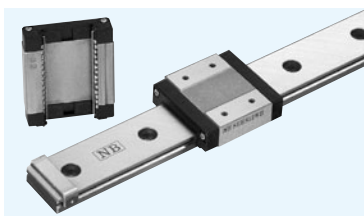


guide rail dimensions							basic load rating		allowable static moment			mass		block size
H ₁	C	B ₁	d × G × h	S ₃	N	P	dynamic C	static C ₀	M _P	M _Y	M _R	block	guide rail	
mm	mm	mm	mm		mm	mm	kN	kN	M _{P2}	M _{Y2}	N · m	g	g/100mm	
4	10	—	3 × 5.5 × 3	M3	5	20	0.71	1.17	2.60	2.18	5.99	7	26	5WB
							0.91	1.68	5.16	4.33	8.56	10		5WBY
5.2	14	—	3.5 × 6 × 3.2	M4	10	30	1.05	1.26	2.17	1.82	9.07	12	51	7WBS
							1.71	2.53	7.78	6.53	18.1	20		7WB
							2.26	3.80	16.8	14.1	27.2	28		7WBY
7.5	18	—	3.5 × 6 × 4.5	M4	10	30	1.73	2.01	4.35	3.65	18.6	21	96	9WBS
							2.96	4.36	18.1	15.2	40.4	37		9WB
							3.87	6.38	37.4	31.4	59.0	52		9WBY

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN ≒ 102kgf 1N · m ≒ 0.102kgf · m

		maximum length mm
		counterbore
		600
		1,300
500	530	1,480
		1,000

— Retained Ball • Wide Type —



example **SEBS 15WB Y UU 2 T1 -589 N P/W2**

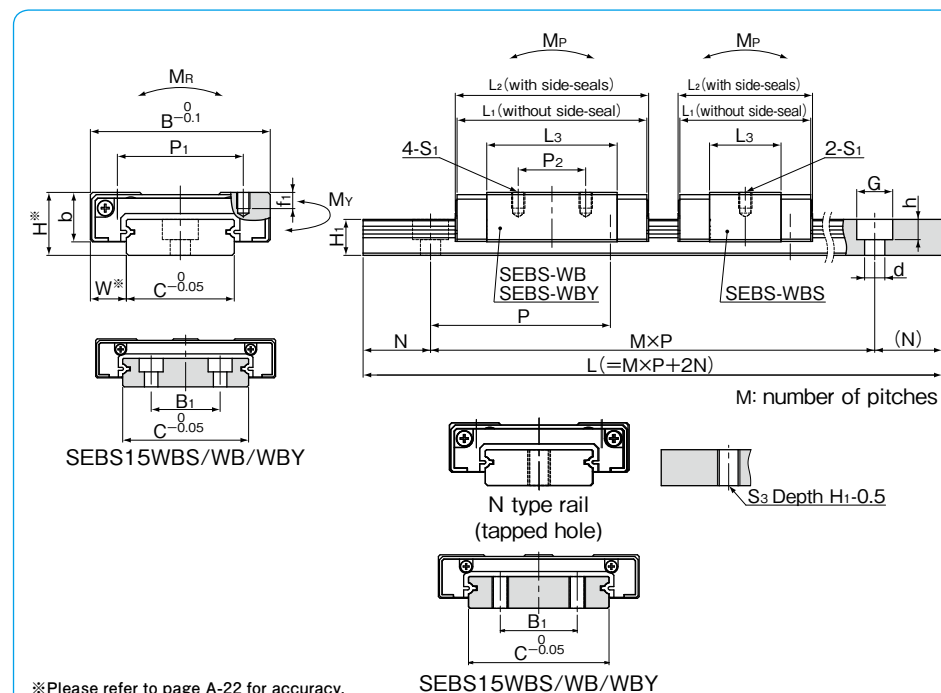
total length of rail

※ The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions		block dimensions											
	H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	f ₁	L ₃	P ₃	S ₂	f ₂	b
	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm		mm	mm
SEBS12WBS	14	8	40	29.7	30.1	28	—	M3	3.5	15.9	—	—	—	11
SEBS12WB				42.8	43.2		15			29				
SEBS12WBY				58.3	58.7		28			44.5				
SEBS15WBS	16	9	60	39.4	39.8	45	—	M4	4.5	24	—	—	—	13
SEBS15WB				54.2	54.6		20			38.8				
SEBS15WBY				73.3	73.7		35			57.9				

part number	standard rail length L mm														
SEBS12WB	70	110	150	190	230	270	310	350	390	430	470	510	550	590	630
SEBS15WB	70	110	150	190	230	270	310	350	390	430	470	510	550	590	630

A-32



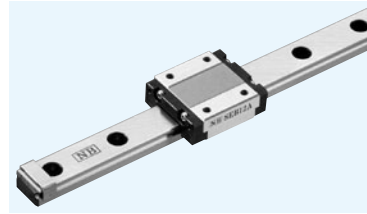
guide rail dimensions							basic load rating		allowable static moment			mass		block size
H ₁	C	B ₁	d×G×h	S ₃	N	P	dynamic C	static C ₀	M _P M _{P2}	M _Y M _{Y2}	M _R	block	guide rail g/100mm	
mm	mm	mm	mm		mm	mm	kN	kN	N · m	N · m	N · m	g		
8	24	—	4.5×8×4.5	M5	15	40	2.53	2.86	7.38 54.3	6.19 45.6	35.1	43	137	12WB
							4.10	5.73	26.4 150	22.1 126	70.2	71		12WB
							5.45	8.60	57.1 292	47.9 245	105	106		12WB
9.5	42	23					5.15	5.91	22.9 146	19.2 122	125	98	286	15WB
							7.49	10.1	62.2 335	52.2 281	215	148		15WB
							9.95	15.2	134 663	113 556	323	216		15WB

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. $1\text{ kN} \doteq 102\text{ kgf}$ $1\text{ N} \cdot \text{m} \doteq 0.102\text{ kgf} \cdot \text{m}$

						maximum counterbore	length mm flapped hole (N type)
670	710					1,480	1,000
670	710	750	790	830	870		

A-33

SEB-A/AY TYPE



part number structure

example **SEBS 7A Y UU 2 T1 - 289 N P / W2**

specification
SEB: standard
SEBS: anti-corrosion

size

block
blank: standard
Y: long

seal
blank: without side-seal
UU: with side-seals

number of blocks attached to one rail

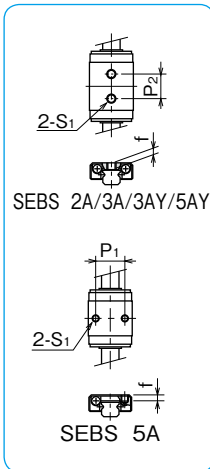
preload symbol (refer to page A-22)
T0: clearance
blank: standard
T1: light

symbol for number of axes*
blank: single axis
W2: 2 parallel axes
W3: 3 parallel axes

accuracy grade
 (refer to page A-22)
blank: high
P: precision

rail mounting hole
blank: counterbore
N: tapped hole

total length of rail

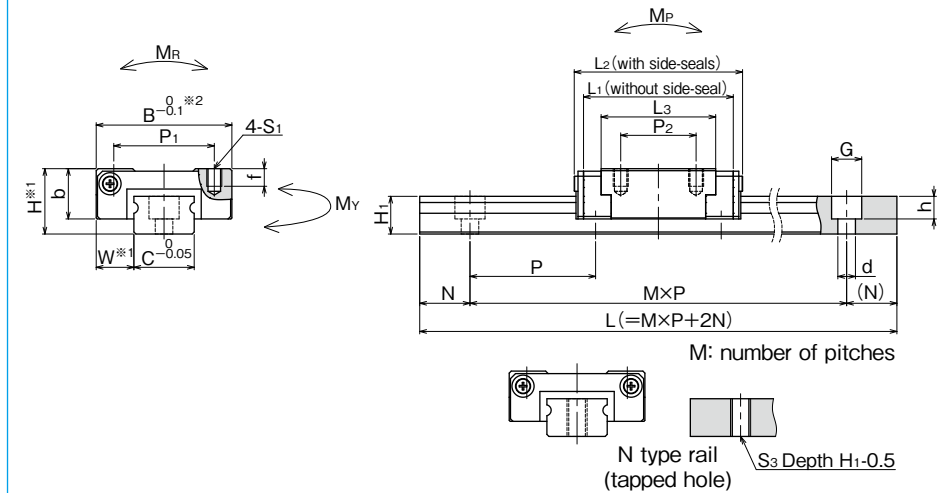


※ The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions									
standard	anti-corrosion	H mm	W mm	B mm	L1 mm	L2 mm	P1 mm	P2 mm	S1 mm	f mm	L3 mm	b mm	
—	SEBS 2A	3.2	2	6	12.9	14.3	—	4	M1.4	1.05	9.3	2.5	
—	SEBS 3A	4	2.5	8	10.5	11.8	—	3.5	M1.6	1.3	6.5	3	
	SEBS 3AY				14.5	15.8	—	5.5	M2		10.5		
—	SEBS 5A	6	3.5	12	15.6	17	8	—	M2	1.5	9.8	4.5	
	SEBS 5AY				19.2	20.6	—	7	M2.6	1.8	13.4		
—	SEBS 7A	8	5	17	21.9	24	12	8	M2	2.5	15.1	6.5	
	SEBS 7AY				31	33	—	13			24.6		

part number		standard rail length L mm													
standard	anti-corrosion														
—	SEBS 2A	32	40	56	80	104									
—	SEBS 3A	30	40	60	80	100									
—	SEBS 5A	40	55	70	85	100	115	130	145	160					
—	SEBS 7A	40	55	70	85	100	115	130	145	160	175	190	205	220	235

Joint rails are used when the required length exceeds the maximum standard length listed in the dimension tables.
 Please contact NB for details. Only N type rail is available for SEBS 2A and SEBS 3A.



※1 Please refer to page A-22 for accuracy.

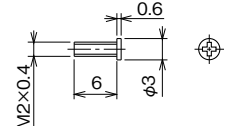
※2 B^{-0.1} only for SEBS 2A, 3A and 3AY.

guide rail dimensions						basic load rating		allowable static moment			mass		block size
H ₁	C	d×G×h	S ₃	N	P	dynamic C kN	static C _o kN	M _P M _{P2} N · m	M _y M _{y2} N · m	M _R N · m	block g	guide rail g/100mm	
mm	mm	mm		mm	mm								
2	2	—	M1	4	8	0.21	0.38	0.53 2.77	0.64 3.30	0.41	0.8	2.8	2A
2.6	3	—	M1.6	5	10	0.25	0.36	0.39 2.42	0.46 2.88	0.57	1	5	3A
						0.35	0.58	0.97 5.18	1.16 6.18	0.93	2		3AY
4	5	2.4×3.5×1	M2.6	15	15	0.59	0.81	1.32 8.05	1.58 9.60	2.11	4	13	5A
						0.74	1.11	2.39 13.2	2.86 15.7	2.90	5		5AY
4.7	7	2.4×4.2×2.3	M3	21	15	1.08	1.41	3.07 18.9	3.66 22.6	5.18	11	21	7A
						1.59	2.48	8.74 45.1	10.4 53.8	9.07	16		7AY

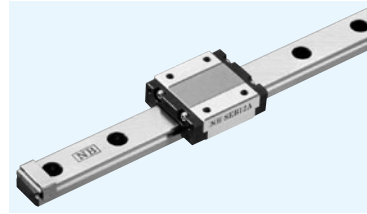
Mp2 and My2 are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

		maximum counterbore		length mm	
		standard	anti-corrosion	standard	anti-corrosion
		—	—	—	150
		—	—	—	150
		—	600	—	300
265	280	295	310	—	1,300

SEBS5 rail mounting screw
 SEBS5 counterbore type rails are provided with custom screws for mounting.



SEB-A/AY TYPE



part number structure

example **SEBS 15A Y UU 2 T1 -589 N P/W2**

specification
SEB: standard
SEBS: anti-corrosion

size

block
blank: standard
Y: long

seal
blank: without side-seal
UU: with side-seals

number of blocks attached to one rail

preload symbol (refer to page A-22)
T0: clearance
blank: standard
T1: light

symbol for number of axes*
blank: single axis
W2: 2 parallel axes
W3: 3 parallel axes

accuracy grade
 (refer to page A-22)
blank: high
P: precision

rail mounting hole
blank: counterbore
N: tapped hole

total length of rail

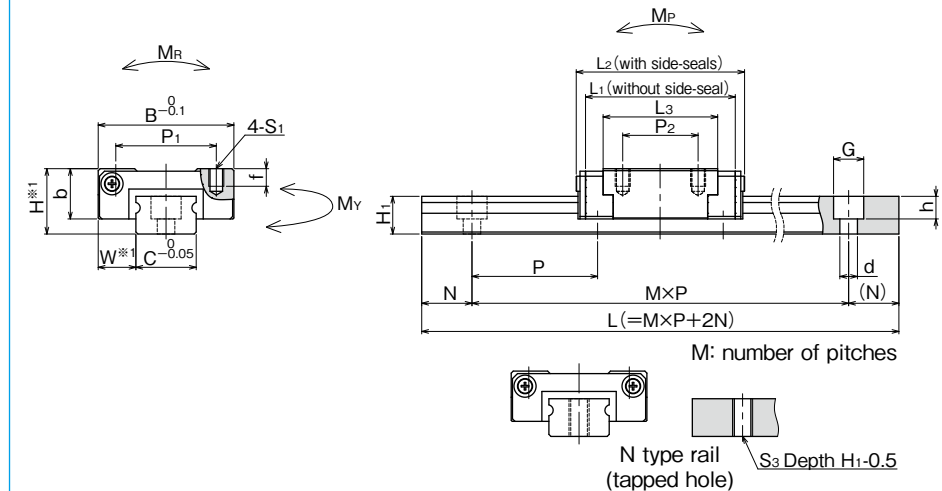
※ The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions								
standard	anti-corrosion	H mm	W mm	B mm	L ₁ mm	L ₂ mm	P ₁ mm	P ₂ mm	S ₁	f mm	L ₃ mm	b mm
SEB 9A	SEBS 9A	10	5.5	20	28.1	29.5	15	10	M3	3	20.4	7.8
SEB 9AY	SEBS 9AY				38.1	40		16			30.4	
SEB12A	SEBS12A	13	7.5	27	30	33.5	20	15		3.5	22.8	10
SEB12AY	SEBS12AY				42	45.5		20			34.7	
SEB15A	SEBS15A	16	8.5	32	38.5	42	25	20		4	29.5	12
SEB15AY	SEBS15AY				54.5	58		25			45.4	
SEB20A	SEBS20A	25	13	46	55.7	61	38	38	M4	6	45.7	17.8
SEB20AY	SEBS20AY				79.5	85		38			69.5	

All the SEB blocks are made of stainless steel (SEBS marking).

part number		standard rail length															
standard	anti-corrosion	L mm															
SEB 9A	SEBS 9A	55	75	95	115	135	155	175	195	215	235	255	275	295	315	335	
SEB12A	SEBS12A	70	95	120	145	170	195	220	245	270	295	320	345	370	395	420	
SEB15A	SEBS15A	70	110	150	190	230	270	310	350	390	430	470	510	550	590	630	
SEB20A	SEBS20A	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000		

Joint rails are used when the required length exceeds the maximum standard length listed in the dimension tables.



※Please refer to page A-22 for accuracy.

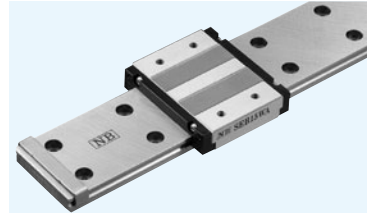
guide rail dimensions						basic load rating		allowable static moment			mass		block size
H ₁	C	d×G×h	S ₃	N	P	dynamic C	static C ₀	M _P	M _Y	M _R	block	guide rail	
mm	mm	mm		mm	mm	kN	Co kN	M _{P2} N · m	M _{Y2} N · m	N · m	g	g/100mm	
5.5	9	3.5×6×3.5	M4	7.5	20	1.92	2.53	7.64 43.1	9.11 51.3	11.5	19	30	9A
						2.62	3.94	17.5 88.5	20.8 105	17.9	28		9AY
7.5	12	3.5×6×4.5		10	25	2.60	3.20	10.4 57.0	12.4 68.0	20.0	37	60	12A
						3.65	5.21	25.7 127	30.7 151	32.6	55		12AY
9.5	15		M5	15	40	4.74	5.67	24.5 131	29.2 157	43.9	68	100	15A
						6.65	9.22	60.7 295	72.4 351	71.4	101		15AY
15	20	6×9.5×8.5		20	60	8.99	11.1	72.7 367	86.7 437	114	226	209	20A
						12.4	17.8	176 823	210 981	182	338		20AY

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

							maximum length mm			
							counterbore		tapped hole (N type)	
							standard	anti-corrosion	standard	anti-corrosion
355	375	395	415	435	455	475	500		500	
445	470	495					1,480		1,000	
670						1,900				1,900

SEB-WA/WAY TYPE

— Wide block —



part number structure

example **SEBS 9WA Y UU 2 T1 - 289 N P / W2**

specification
SEB: standard
SEBS: anti-corrosion

size

block
blank: standard
Y: long

seal
blank: without side-seal
UU: with side-seals

number of blocks attached to one rail

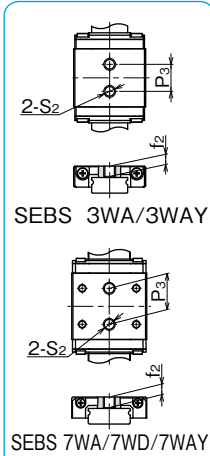
preload symbol (refer to page A-22)
T0: clearance
blank: standard
T1: light

symbol for number of axes*
blank: single axis
W2: 2 parallel axes
W3: 3 parallel axes

accuracy grade
 (refer to page A-22)
blank: high
P: precision

rail mounting hole
blank: counterbore
N: tapped hole

total length of rail



SEBS 3WA/3WAY

SEBS 7WA/7WD/7WAY

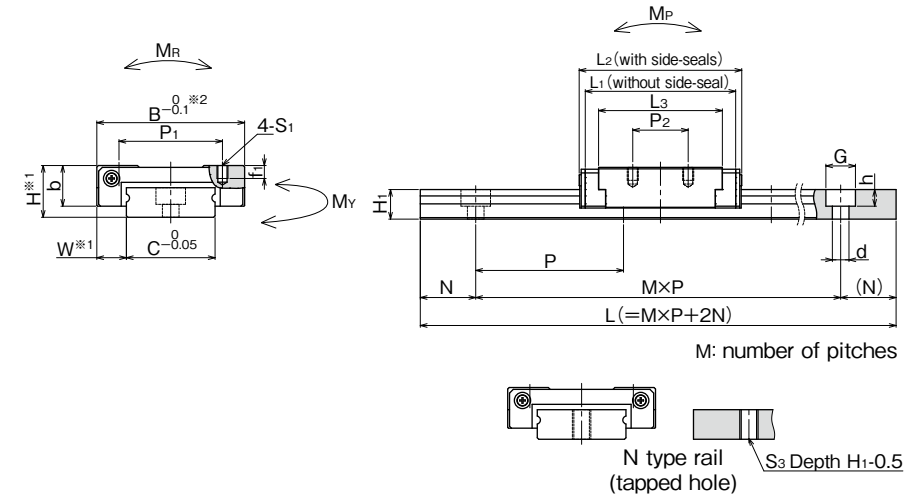
※ The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions											
standard	anti-corrosion	H mm	W mm	B mm	L1 mm	L2 mm	P1 mm	P2 mm	S1 mm	f1 mm	L3 mm	P3 mm	S2 mm	f2 mm	b mm
—	SEBS 3WA	4.5	3	12	14.2	15	—	—	—	—	9.7	4.5	M2	1.7	3.5
	SEBS 3WAY				19	19.8					14.5	8			
—	SEBS 7WA	9	5.5	25	30.1	32	18	12	M2.6	2.5	22.1	12	M4	3.5	7
	SEBS 7WD				39.6	41	19	10	M3	2.8					
	SEBS 7WAY						19	M3	2.8	31.6	18				
SEB 9WA	SEBS 9WA	12	6	30	35.9	38	21	12	M2.6	3	28.4	—	—	—	9
SEB 9WD	SEBS 9WD				48	50	23	24	M3	2.8					
SEB 9WAY	SEBS 9WAY									3	40.4				

All the SEB blocks are made of stainless steel (SEBS marking).

part number		standard rail length L mm													
standard	anti-corrosion														
—	SEBS 3WA	40	55	70	85	100									
—	SEBS 7WA	50	80	110	140	170	200	230	260	290	320	350	380	410	470
SEB 9WA	SEBS 9WA	50	80	110	140	170	200	230	260	290	320	350	380	410	470

Joint rails are used when the required length exceeds the maximum standard length listed in the dimension tables.
 Please contact NB for details. SEB9WAY block lengths exceed the minimum standard rail length.



M: number of pitches

N type rail (tapped hole) S3 Depth H1-0.5

※1 Please refer to page A-22 for accuracy.

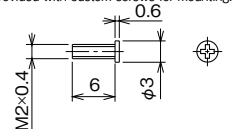
※2 B^{-0.1} only for SEBS 3WA and 3WAY

guide rail dimensions							basic load rating		allowable static moment			mass		block size
H1 mm	C mm	B1 mm	d×G×h mm	S3 mm	N mm	P mm	dynamic C kN	static Co kN	MP N·m	MY N·m	MR N·m	block g	guide rail g/100mm	
2.6	6	—	2.4×4×1.5	M3	5	15	0.33	0.54	0.83 4.74	0.99 5.65	1.67	3	10	3WA
							0.44	0.81	1.81 9.24	2.15 11.0	2.51	4		3WAY
5.2	14	—	3.5×6×3.2	M4	10	30	1.43	2.12	6.53 38.2	7.78 45.6	15.2	21	51	7WA
							1.90	3.19	14.1 73.8	16.8 87.9	22.8	30		7WD
							3.25	5.35	31.4 149	37.4 178	49.5	55		7WAY
7.5	18	—	3.5×6×4.5				2.49	3.66	15.2 77.6	18.1 92.5	33.9	38	96	9WA
														9WD
														9WAY

MP2 and MY2 are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

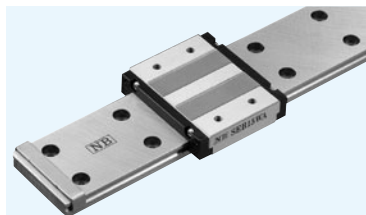
maximum counterbore		length mm	
standard	anti-corrosion	standard	anti-corrosion
—	500	—	150
—	1,300	—	700
500 530	1,900	1,480	1,900

SEBS3WA/3WAY rail mounting screw
 SEBS3WA/3WAY counterbore type rails are
 provided with custom screws for mounting.



SEB-WA/WAY TYPE

— Wide block —



part number structure

example **SEBS 15WA Y UU 2 T1 -589 N P /W2**

specification

SEB: standard

SEBS: anti-corrosion

size

block

blank: standard

Y: long

seal

blank: without side-seal

UU: with side-seals

number of blocks attached to one rail

preload symbol (refer to page A-22)

TO: clearance

blank: standard

T1: light

symbol for

number of axes*

blank: single axis

W2: 2 parallel axes

W3: 3 parallel axes

accuracy grade

(refer to page A-22)

blank: high

P: precision

rail mounting hole

blank: counterbore

N: tapped hole

total length of rail

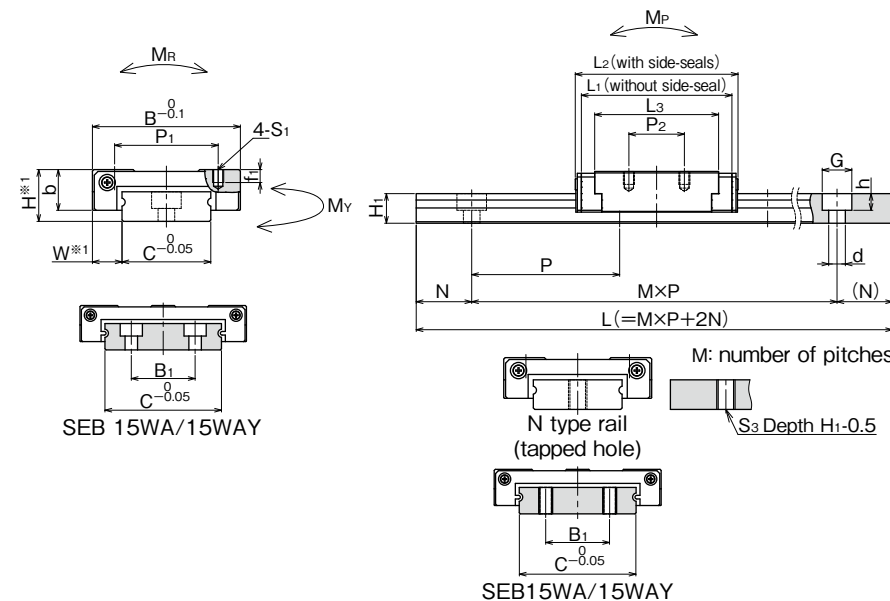
※ The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions											
standard	anti-corrosion	H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	f ₁	L ₃	P ₃	S ₂	f ₂	b
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
SEB12WA	SEBS12WA	14	8	40	40.7	44	28	15	M3	3.5	33.5	—	—	—	11
SEB12WAY	SEBS12WAY				55	58.5		28			47.8				
SEB15WA	SEBS15WA	16	9	60	51.2	55	45	20	M4	4.5	42	—	—	—	13
SEB15WAY	SEBS15WAY				70.5	74		35			61.1				

All the SEB blocks are made of stainless steel (SEBS marking).

part number		standard rail length													
standard	anti-corrosion	L													
mm	mm	mm													
SEB12WA	SEBS12WA	70	110	150	190	230	270	310	350	390	430	470	510	550	630
SEB15WA	SEBS15WA	70	110	150	190	230	270	310	350	390	430	470	510	550	630

Joint rails are used when the required length exceeds the maximum standard length listed in the dimension tables. Please contact NB for details. SEB15WAY block lengths exceed the minimum standard rail length.



※Please refer to page A-22 for accuracy.

guide rail dimensions							basic load rating		allowable static moment			mass		block size
H ₁	C	B ₁	d×G×h	S ₃	N	P	dynamic C	static Co	M _P M _{P2}	M _Y M _{Y2}	M _R N · m	block g	guide rail g/100mm	
mm	mm	mm	mm		mm	mm	kN	kN	N · m	N · m	N · m			
8	24	—	4.5×8×4.5	M5	15	40	3.64	5.21	25.7 126	30.7 150	63.8	77	138	12WA
							4.75	7.62	53.2 245	63.4 292	93.3	109		12WAY
9.5	42	23					6.29	8.51	52.2 258	62.2 307	180	154	294	15WA
							8.35	12.7	113 525	134 625	271	222		15WAY

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

						maximum counterbore		length mm	
						standard	anti-corrosion	tapped hole (N type) standard	tapped hole (N type) anti-corrosion
670	710					1,900	1,480	1,900	1,000
670	710	750	790	830	870				

SLIDE GUIDE Miniature SER Type

The NB slide guide SER type is a linear motion bearing utilizing the rolling motion of precision rollers placed in two rows. Despite its compactness, it can be used in various applications requiring high load capacity.

STRUCTURE AND ADVANTAGES

The SER type slide guide consists of a rail with two precision-machined raceway grooves and a block assembly. The block assembly consists of the main body, rollers, and bottom retainers. All of these components are made out of metallic materials.

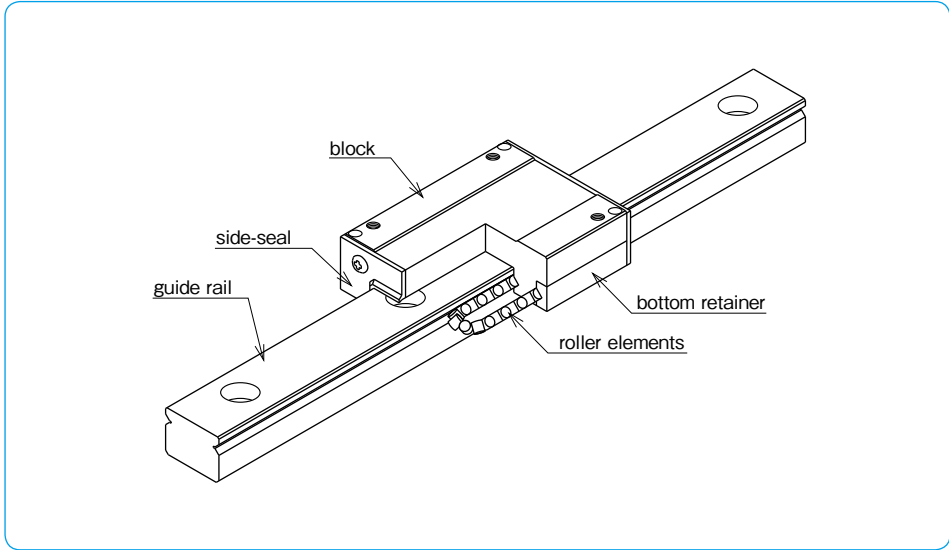
High Load Capacity and Long Life

Since roller elements are used, the contact surface is large which provides a high load capacity and a long travel life.

Compactness

Since a cross roller method is utilized, only two raceway grooves are necessary and presents a very compact package.

Figure A-45 Structure of SER type Slide Guide



Moment Resistant Type

The wide block design (WA type) has an extremely high moment loading capacity. This will allow for single guide designs in the most demanding and compact applications.

Tapped Hole Rail Type

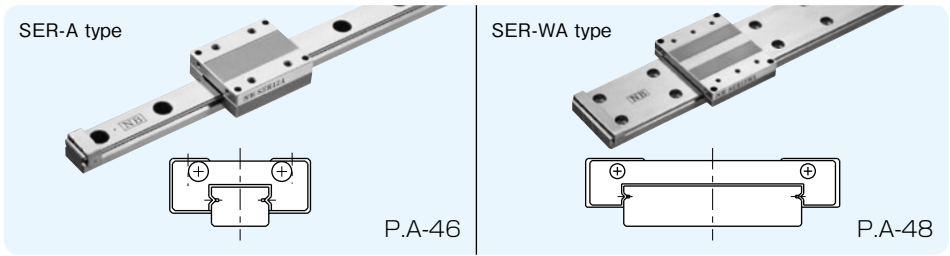
For the SER rails, counterbore (standard) and optional tapped hole (N) types are available enabling various installation methods.

All Stainless Steel Type

The SERS type slide guide is made from all stainless steel components, making it ideal for high temperature, clean room or vacuum applications.

TYPES

The SER type slide guides are available with a standard block or a wide block (WA) configuration. Each type can be selected with standard rails of counterbore holes or the optional N-Type rails of tapped holes. For anti-corrosion, all stainless steel type is also available with all stainless steel components.



ACCURACY

The SER-type slide guides are available with high grade accuracy (blank) or precision grade accuracy (P).

Table A-16 Accuracy unit : mm		
accuracy grade	high	precision
accuracy symbol	blank	P
allowable dimensional difference in height H	±0.015	±0.008
paired difference for height H	0.015	0.007
allowable dimensional difference in width W	±0.020	±0.010
paired difference for width W	0.020	0.010
Running parallelism of surface C to surface A	refer to Figure A-48,49	
Running parallelism of surface D to surface B		

Figure A-46 Accuracy

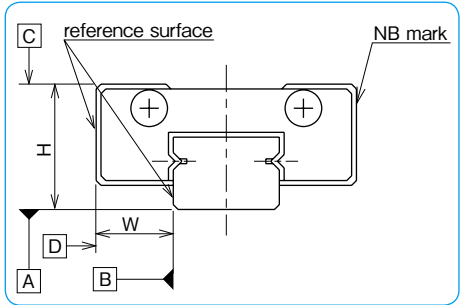
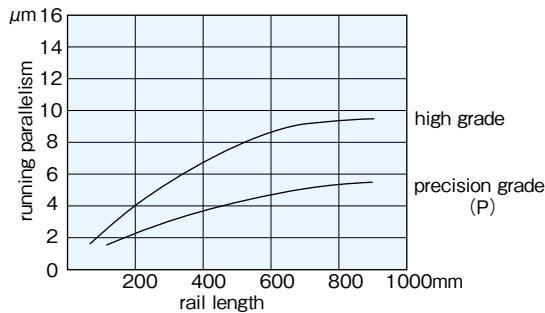


Figure A-47 Motion Accuracy



PRELOAD

The SER(S) type slide guides are available only with a standard (0 to minimal preload) preload.

RAIL LENGTH

Slide guides with most commonly used lengths are available as standard. For slide guides with a non-standard length, unless otherwise specified, the distance from one end of the rail to the first hole center (N) will be within the ranges listed in Tables A-17 and A-18, satisfying the following equation.

$$L = M \cdot P + 2N$$

L: total length of rail (mm)
N: distance from the end of the rail to the first hole center (mm)
P: hole pitch (mm) M: number of pitches

Table A-17 N Dimension (standard type) unit : mm

part number		N	
standard	anti-corrosion	and over	less than
SER 9A	SERS 9A	4	14
SER12A	SERS12A		16.5
SER15A	SERS15A		24
SER20A	SERS20A	6	36

Figure A-48 Rail

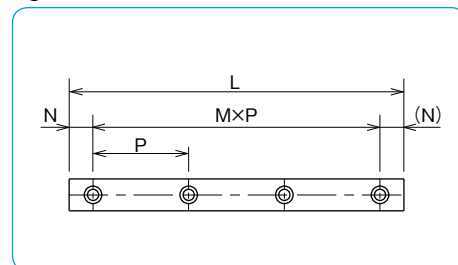


Table A-18 N Dimension (wide type) unit : mm

part number		N	
standard	anti-corrosion	and over	less than
SER 9WA	SERS 9WA	4	19
SER12WA	SERS12WA	5	25
SER15WA	SERS15WA		

MOUNTING

Mounting Surface Profile

Slide guides are mounted by pushing the reference surface of the rail and the block against the shoulder provided on the mounting surface. An undercut or a radius corner should be provided at the corner of the shoulder, as shown in Figures A-49 and A-50, to prevent interference. The recommended shoulder height and corner radius are shown in Table A-19 and Table A-20 respectively.

Figure A-49 Mounting Reference Surface Profile-1

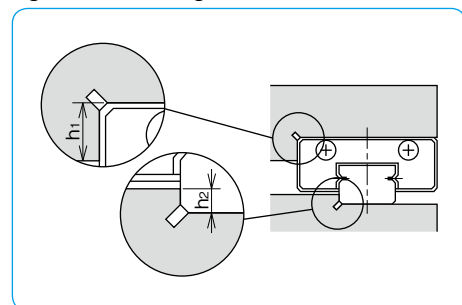
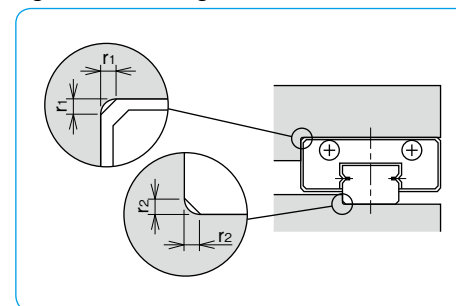


Table A-19 Shoulder Height Dimensions unit : mm

size	shoulder height on the block side h ₁	shoulder height on the rail side h ₂
SER 9A	3	1.5
SER12A	4	2
SER15A	5	3.5
SER20A		5
SER 9WA	3	2.5
SER12WA	4	
SER15WA	5	

Figure A-50 Mounting Reference Surface Profile-2



Recommended Torque Values

The screws to fasten the rail should be tightened to an equal torque using a torque wrench in order to secure the motion accuracy. The recommended torque values are given in Table A-21. Please adjust the torque depending on the operating conditions.

Table A-20 Maximum Corner Radius Values unit : mm

size	block mounting part r ₁	rail mounting part r ₂
SER 9A	0.3	0.1
SER12A		0.3
SER15A		
SER20A		0.5
SER 9WA		0.3
SER12WA		
SER15WA		

Table A-21 Recommended Torque unit : N·m

size	M2	M3	M4	M5	M6
recommended torque	0.3	1.0	2.3	4.7	8.0

(for stainless steel screw A2-70)

MOUNTING SCREW

Small screws for the SER(S) type slide guide are available from NB.

Table A-22 unit : mm

size	pitch	length f	application
M2	0.4	4,5,6,8,10	SER 9A

(stainless steel)

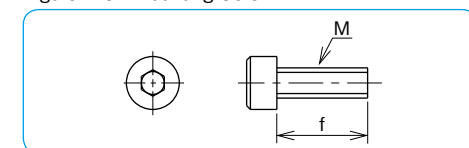
LUBRICATION

A high grade lithium soap based grease is applied to the NB slide guides prior to shipment for immediate use. Please relubricate with a similar type of grease periodically depending on the operating conditions. For use in clean rooms or vacuum environments, NB slide guides without grease are available upon request. Please contact NB for customer specified grease types.

Please refer to page Eng-40 for details on the low dust generation grease.

A special syringe lubricant dispenser is available from NB as an option (refer to page Eng-43).

Figure A-51 Mounting Screw



SER-A TYPE

part number structure

example **SERS 15A UU 2 -589 N P /W2**

specification
SER: standard
SERS: anti-corrosion

size

seal
blank: without side-seal
UU: with side-seals

number of blocks attached to one rail

symbol for number of axes*
blank: single axis
W2: 2 parallel axes
W3: 3 parallel axes

accuracy grade
(refer to page A-43)
blank: high
P: precision

rail mounting hole
blank: counterbore
N: tapped hole

total length of rail

※ The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions							
standard	anti-corrosion	H mm	W mm	B mm	L ₁ mm	L ₂ mm	P ₁ mm	P ₂ mm	S ₁	f mm	b mm
SER 9A	SERS 9A	10	5.7	20	28	32	15	13	M2	2.5	7.8
SER12A	SERS12A	13	8	27	32	36	20	15	M3	3	10.5
SER15A	SERS15A	16	8.5	32	40	44	25	20		4	11.5
SER20A	SERS20A	25	13	46	60	66	38	38	M4	6	17.5

part number		standard rail length							maximum length
standard	anti-corrosion	L mm							mm
SER 9A	SERS 9A	55	75	95	115	155	195	275	275
SER12A	SERS12A	120	170	220	270	320	370	470	470
SER15A	SERS15A	150	230	310	430	550	670		670
SER20A	SERS20A	220	280	340	460	640	880		880



M: number of pitches

N type rail (tapped hole)
S₂ depth H₁-0.5

※Please refer to page A-43 for accuracy.

guide rail dimensions						basic load rating		allowable static moment			mass		block size
H ₁ mm	C mm	S ₂	d×G×h mm	N mm	P mm	dynamic C kN	static C ₀ kN	M _P N·m	M _Y N·m	M _R N·m	block g	guide rail g/100mm	
5.5	8.6	M4	2.6×4.5×3	7.5	20	2.65	2.94	11.8	13.7	19.6	25	35	9A
7.5	11		3.5×6×4.5	10	25	3.43	3.92	15.7	17.6	29.4	51	55	12A
9.5	15	M5		15	40	4.70	5.78	29.0	32.3	54.9	82	100	15A
15	20	M6	6×9.5×8.5	20	60	8.82	9.80	59.0	66.6	151	280	230	20A

1kN≒102kgf 1N·m≒0.102kgf·m

SER-WA TYPE
— Wide Type —

part number structure

example **SERS 15WA UU 2 -589 N P /W2**

specification
SER: standard
SERS: anti-corrosion

size

seal
blank: without side-seal
UU: with side-seals

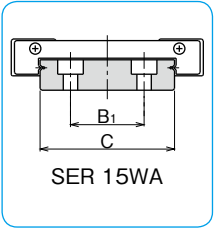
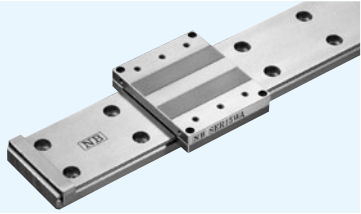
number of blocks attached to one rail

symbol for number of axes*
blank: single axis
W2: 2 parallel axes
W3: 3 parallel axes

accuracy grade (refer to page A-43)
blank: high
P: precision

rail mounting hole
blank: counterbore
N: tapped hole

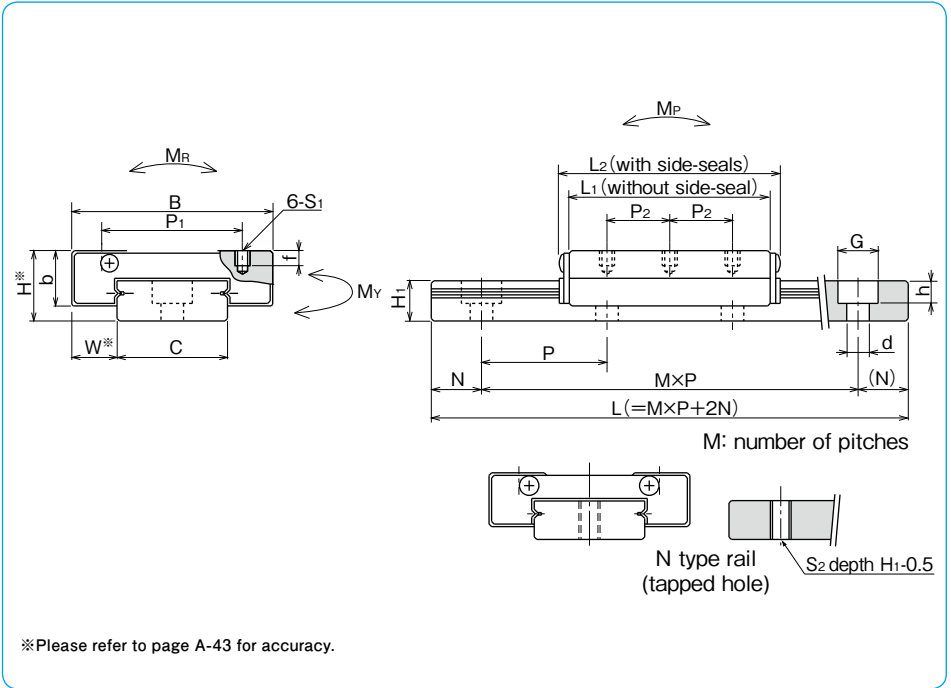
total length of rail



※ The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions								
standard	anti-corrosion	H mm	W mm	B mm	L ₁ mm	L ₂ mm	P ₁ mm	P ₂ mm	S ₁	f mm	b mm	
SER 9WA	SERS 9WA	12	6.5	30	35	39	21	10	M3	3	8.8	
SER12WA	SERS12WA	14	9	40	40	44	28	12.5			11	
SER15WA	SERS15WA	16		60	50	54	45	15	M4	4.5	11.5	

part number		standard rail length							maximum length mm
standard	anti-corrosion	L mm							
SER 9WA	SERS 9WA	80	110	140	170	200	260	290	290
SER12WA	SERS12WA	110	150	190	230	310	390	470	470
SER15WA	SERS15WA	150	230	310	430	550	670		670



		guide rail dimensions					basic load rating		allowable static moment			mass		block size
H ₁	C	B ₁	S ₂	d×G×h	N	P	dynamic C kN	static C ₀ kN	M _P N·m	M _Y N·m	M _R N·m	block g	guide rail g/100mm	
7.5	17	—	M4	3.5×6×4.5	10	30	3.43	3.72	24.5	27.4	51.9	46	90	9WA
8	22	—	M5	4.5×8×4.5	15	40	4.41	5.00	35.3	39.2	85.3	92	122	12WA
9.5	42	23					7.35	8.92	55.9	61.7	215.0	165	280	15WA

1kN≒102kgf 1N·m≒0.102kgf·m

SLIDE GUIDE SGL TYPE

The NB slide guide SGL type is a linear motion bearing utilizing the rolling motion of ball elements along four rows of raceway grooves. It can be used in various applications due to its compactness and high load capacity.

STRUCTURE AND ADVANTAGES

The NB slide guide SGL type consists of a rail with 4 rows of precisely machined raceway grooves and a block assembly. The block assembly consists of the main body, ball elements, retainers, and return caps.

High Load Capacity and Long Life

The use of relatively large ball elements and raceway grooves machined to a radius close to that of the ball elements increases the contact area resulting in a high load capacity and a long travel life.

Low Friction

Because a 4-row/2-point contact design is used, low friction and stable motion characteristics are achieved even under a preloaded conditions.

Omni-Directional Load Capacity

The ball elements are positioned at 45° contact angle so that the load capacity is equal in four directions (above, below, right and left).

Absorption of Mounting Dimensional Error

Because the ball elements are positioned to increase their self-aligning characteristics, the dimensional error caused during installation is absorbed.

Anti-corrosion Specification

The rail and block assembly can be treated with low temperature black chrome treatment to increase the

corrosion resistance. This treatment is standardized with the symbol "LB". Stainless steel SGLS type is suitable for use in clean room application.

Dust Prevention

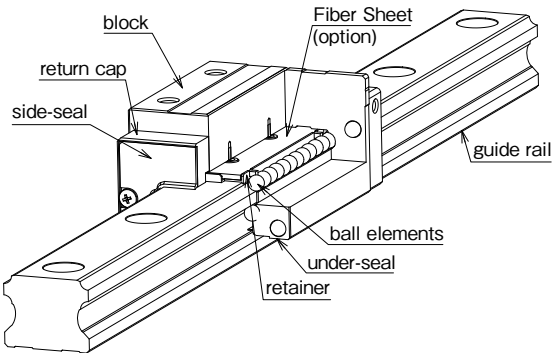
Side-seals are provided as a standard. To improve the dust prevention characteristics, under-seals, double-seals, scrapers, bellows and special rail mounting caps are also available.

Fiber Sheet Extends Lubricant Replenishment Intervals

A lubricant-containing Fiber Sheet incorporated in the block supplies appropriate amount of lubricant to the raceway grooves at appropriate intervals, which can significantly extend the lubricant replenishment interval. (refer to page A-16)

REVERSE-SEAL

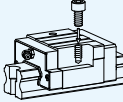
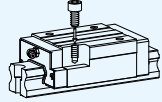
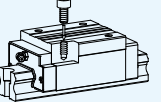
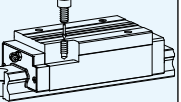
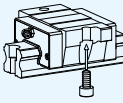
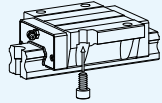
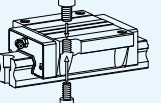
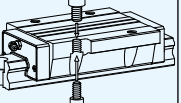
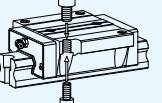
NB Reverse-seal realizes maintenance free by reducing grease leakage and loss. (refer to page A-17)



A-50

BLOCK TYPES

Eleven SGL block types are available depending on the material and mounting method.

SGL-F type P.A-54 SGLS-F type P.A-54	SGL-TF type P.A-56 SGLS-TF type P.A-56	SGL-HTF type P.A-58	SGL-HYF type P.A-60	
				
high-rigidity short type	high-rigidity	high-rigidity	high-rigidity long type	
SGL-E type P.A-62	SGL-TE type P.A-64	SGL-HTE type P.A-66	SGL-HYE type P.A-68	SGL-HTEX type P.A-70
				
high-rigidity short flange type	high-rigidity flange type	high-rigidity flange type	high-rigidity long flange type	high-rigidity six holes flange type

ACCURACY

Three accuracy grades are available: standard grade (blank), high grade (H), and precision grade (P).

Table A-23 Accuracy unit : mm									
part number	SGL15,20			SGL25,30,35			SGL45		
accuracy grade	standard	high	precision	standard	high	precision	standard	high	precision
accuracy symbol	blank	H	P	blank	H	P	blank	H	P
allowable dimensional tolerance for height H	±0.1	±0.03	-0.03~0	±0.1	±0.04	-0.04~0	±0.1	±0.05	-0.05~0
paired difference for height H	0.02	0.01	0.006	0.02	0.015	0.007	0.03	0.015	0.007
allowable dimensional tolerance for width W	±0.1	±0.03	-0.03~0	±0.1	±0.04	-0.04~0	±0.1	±0.05	-0.05~0
paired difference for width W	0.02	0.01	0.006	0.03	0.015	0.007	0.03	0.02	0.01
Running parallelism of surface C to surface A	refer to Figure A-53, 54								
Running parallelism of surface D to surface B									

Figure A-53 Motion Accuracy

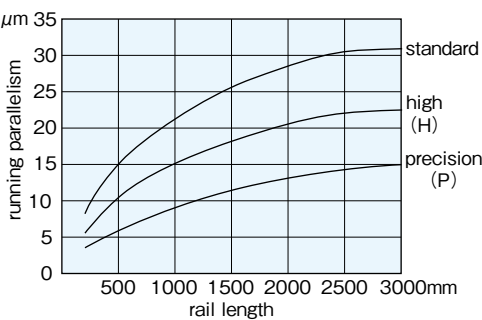
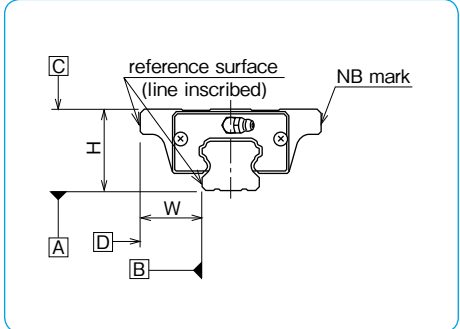


Figure A-54 Accuracy



A-51

PRELOAD

SGL type slide guides are available with a standard preload (blank), light preload (T1), and medium preload (T2).

Table A-24 Preload Symbol and Radial Clearance unit : μm

preload	standard	light	medium*
preload symbol	blank	T1	T2
SGL15	- 4~+2	-12~- 4	-
SGL20	- 5~+2	-14~- 5	-23~-14
SGL25	- 6~+3	-16~- 6	-26~-16
SGL30	- 7~+4	-19~- 7	-31~-19
SGL35	- 8~+4	-22~- 8	-35~-22
SGL45	-10~+5	-25~-10	-40~-25

Table A-25 Operating Conditions and Preload

preload	symbol	operating conditions
standard	blank	minute vibration is applied. accurate motion is required. moment is applied in a given direction.
light	T1	light vibration is applied. light torsional load is applied. moment is applied.
medium*	T2	shock and vibration are applied. over-hang load is applied. torsional load is applied.

* Frictional resistance may be affected by preload.

RAIL LENGTH

Slide guides with most commonly used lengths are available as standard. For slide guides with a non-standard length, unless otherwise specified, the distance from one end of the rail to the first hole center (N) will be within the range listed in Table A-26, satisfying the following equation.

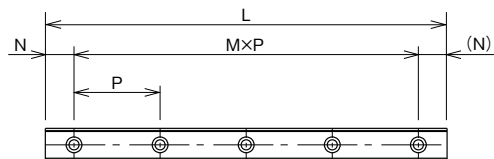
$$L = M \cdot P + 2N$$

L: length (mm) M: number of pitches P: hole pitch (mm)
N: distance from the end of the rail to the first hole center (mm)

Table A-26 N Dimension unit : mm

part number	N	
	and over	less than
SGL15	6	36
SGL20	10	40
SGL25	11	41
SGL30	12	52
SGL35	16	56
SGL45	20	72.5

Figure A-55 Rail



MOUNTING

Slide guides are generally mounted by pushing the reference surface of the rail and block against the shoulder of the mounting surface. An undercut should be provided at the corner of the shoulder in order to avoid interference with the corner of the rail or block. The recommended shoulder height values are shown in Table A-28.

The screws to fasten the rail should be tightened equally using a torque wrench in order to secure the motion accuracy. The recommended torque values are listed in Table A-27. Please adjust the torque depending on the operating conditions.

Figure A-56 Mounting Reference Surface Profile

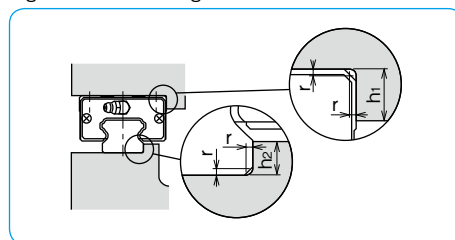


Table A-27 Recommended Torque unit : N·m

size	M3	M4	M5	M6	M8	M12
recommended torque	1.4	3.2	6.6	11.2	27.6	96.4

(for steel alloy screws)

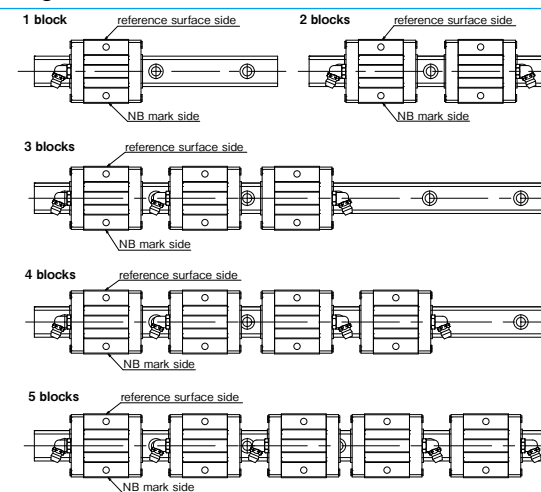
Table A-28 Shoulder Height Dimensions unit : mm

part number	h1	h2	rmax.
SGL15	4	3.5	0.5
SGL20	5	5	0.5
SGL25	5	5.5	1
SGL30	6	7.5	1
SGL35	6	8	1
SGL45	8	8	1

GREASE FITTING

A grease fitting is attached to the return cap of SGL type guide blocks for lubrication purposes. Unless otherwise specified, the orientation of the grease fitting is as shown in Figure A-57. When more than 6 blocks are used on one rail, the orientation of the grease fitting is same as the orientation of 3 to 5 block used on one rail.

Figure A-57 Grease Fitting Orientation

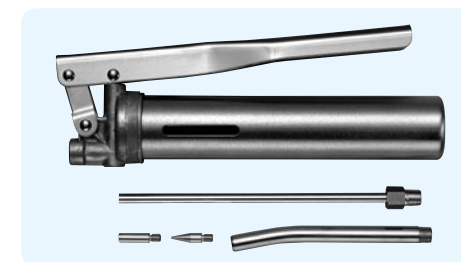


LUBRICATION

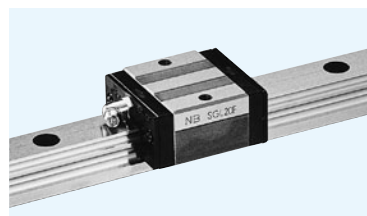
A high grade lithium soap based grease is applied to the NB slide guides prior to shipment for immediate use. Please relubricate with a similar type of grease periodically depending on the operating conditions. For use in clean rooms or vacuum environments, NB slide guides without grease are available upon request. Please contact NB for customer specified grease types.

Please refer to page Eng-40 for details on the low dust generation grease.

A Grease Gun Set is available as a maintenance kit (refer to page Eng-43).



SGL-F TYPE



part number structure

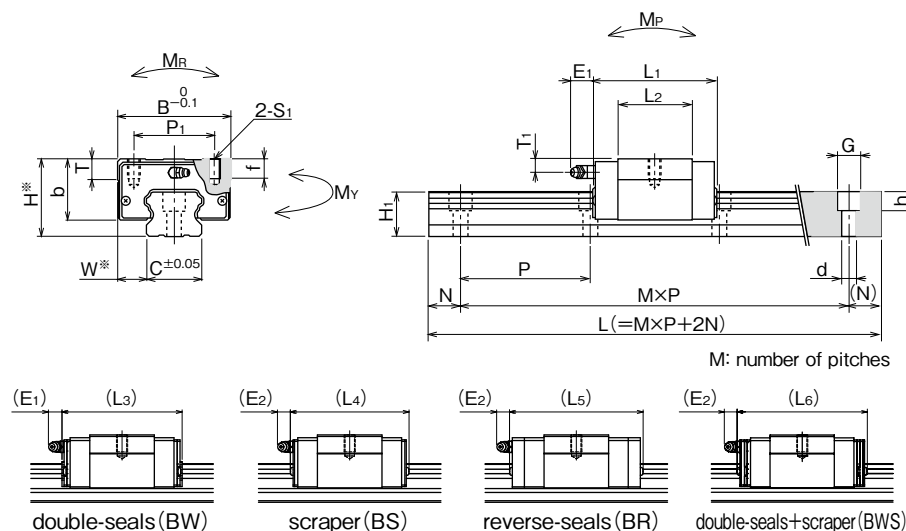
example	SGL 15 F B 2 T1 -589 D P/W2 FS LB F J -KGL	
specification	SGL : standard	
	SGLS : anti-corrosion	
size	15	
block style	F	
seal (refer to page A-14)	B	
blank : with side-seals		
B : with side-seals + under-seals		
BW : with double-seals + under-seals		
BS : B + scraper		
BR : B + reverse-seals		
BWS : BW + scraper		
number of blocks attached to one rail	2	
preload symbol (refer to page A-52)	T1	
blank : standard		
T1 : light		
T2 : medium		
total length of rail	-589	
size of rail installation hole (D type rail is available only for SGL 15 and 30)	D	
	P	
	W2	
	FS	
	LB	
	F	
	J	
	KGL	
	symbol for grease	
	blank : standard grease	
	KGLA : lithium-based grease	
	KGU : urea-based grease	
	KGF : anti-fretting grease	
	refer to page Eng-40~	
	with bellows (refer to page A-18)	
	with rail mounting hole caps	
	with low temperature black chrome treatment	
	with Fiber Sheet (refer to page A-16)	
	symbol for number of axes*	
	blank : single axis	
	W2 : 2 parallel axes	
	W3 : 3 parallel axes	
	accuracy grade (refer to page A-51)	
	blank : standard	
	H : high	
	P : precision	

*The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions												
standard	anti-corrosion	H	W	B	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	P ₁	S ₁	f	T	b	E ₁
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm
SGL15F	SGLS15F	24	9.5	34	40.7	22.7	46.9	47.3	54.3	53.5	26	M4	7	6	19.5	12
SGL15F-D	SGLS15F-D															
SGL20F	SGLS20F	28	11	42	47.9	29.5	54.1	54.5	65.5	60.7	32	M5	8	7.5	22	
SGL25F	SGLS25F	33	12.5	48	58.7	37.7	65.1	65.9	76.9	72.1	35	M6	9	8	26	
SGL30F	—	42	16	60	68	40	76.6	75.6	86.2	84.2	40	M8	12	9	32.5	
SGL30F-D																
SGL35F	—	48	18	70	77	46	85.6	84.6	95.2	93.2	50			13	38	

part number		standard rail length															
standard	anti-corrosion	L															
mm	mm	mm															
SGL15	SGLS15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	
SGL20	SGLS20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	
SGL25	SGLS25	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	
SGL30	—	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	
SGL35	—	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



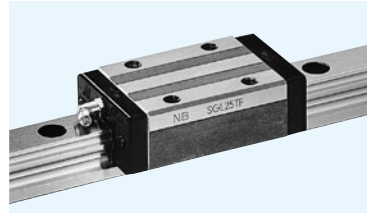
*Please refer to page A-51 for accuracy.

E ₂		T ₁		grease fitting		H ₁		guide rail dimensions		basic load rating		allowable static moment		mass		block size
mm	mm	mm	mm	mm	mm	mm	mm	C	d × G × h	dynamic C	static Co	M _{P2}	M _{Y2}	M _R	block kg	
								mm	mm	kN	kN	N · m	N · m	N · m	kg	
5.4	5	pressed fitting	13.5	15	3.5 × 6 × 4.5					7.29	9.45	36.7	36.7	73.9	0.1	15
					4.5 × 7.5 × 5.3							252	252			
	6		16	20	6 × 9.5 × 8.5					11.9	14.8	71.9	71.9	159	0.2	20
												447	447			
	6.5		20	23	7 × 11 × 9					17.0	21.1	123	123	254	0.3	25
												751	751			
	9		24	28	7 × 11 × 9					23.0	28.7	195	195	417	0.5	30
					9 × 14 × 12							1,260	1,260			
	8.5		27.5	34	9 × 14 × 12					32.0	37.8	293	293	693	0.8	35
												1,870	1,870			

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN ≒ 102kgf 1N · m ≒ 0.102kgf · m

										maximum length	
										mm	
										standard	anti-corrosion
1,120	1,240	1,360	1,480							2,000	1,480
1,240	1,360	1,480	1,600	1,660	1,720	1,840	1,960			3,000	1,480
1,240	1,360	1,480	1,600	1,660	1,720	1,840	1,960			3,000	1,480
1,480	1,640	1,720	1,800	1,880	1,960					3,000	—
1,480	1,640	1,720	1,800	1,880	1,960					3,000	—

SGL-TF TYPE



part number structure

example **SGL 15 TF B 2 T1 -589 D P/W2 FS LB F J -KGL**

specification

SGL: standard
SGLS: anti-corrosion

size

block style

seal (refer to page A-14)

blank: with side-seals

B: with side-seals + under-seals

BW: with double-seals + under-seals

BS: B + scraper

BR: B + reverse-seals

BWS: BW + scraper

number of blocks attached to one rail

preload symbol (refer to page A-52)

blank: standard

T1: light

T2: medium

total length of rail

size of rail installation hole (D type rail is available only for SGL 15 and 30)

symbol for grease
blank: standard grease
KGLA: lithium-based grease
KGU: urea-based grease
KGF: anti-fretting grease
refer to page Eng-40~

with bellows (refer to page A-18)

with rail mounting hole caps

with low temperature black chrome treatment

with Fiber Sheet (refer to page A-16)

symbol for number of axes*

blank: single axis

W2: 2 parallel axes

W3: 3 parallel axes

accuracy grade (refer to page A-51)

blank: standard

H: high

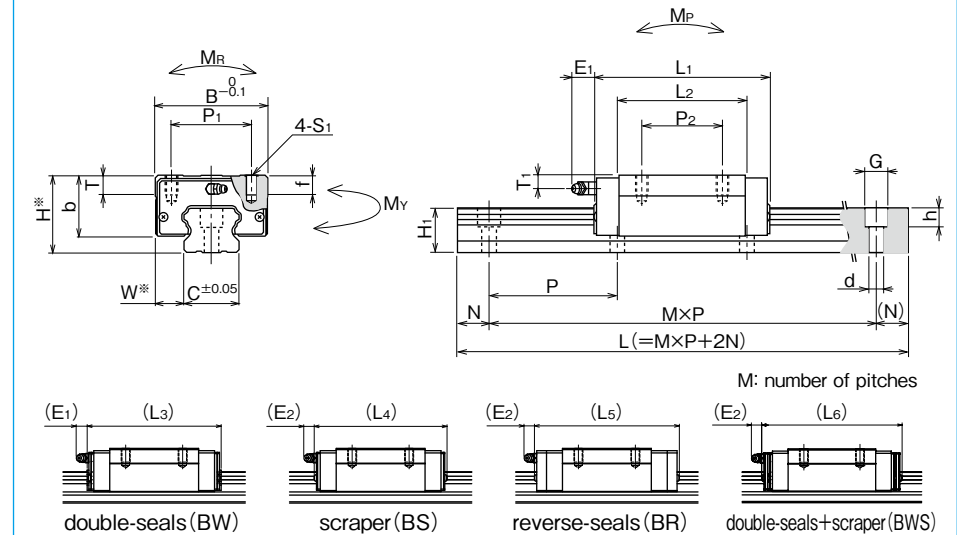
P: precision

*The symbol for the number of axes does not mean the number of rails ordered.

part number		assembly dimensions		block dimensions													
standard	anti-corrosion	H	W	B	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	P ₁	P ₂	S ₁	f	T	b	E ₁
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
SGL15TF	SGLS15TF	24	9.5	34	56.5	38.5	62.7	63.1	70.1	69.3	26	26	M4	7	6	19.5	6
SGL15TF-D	SGLS15TF-D																
SGL20TF	SGLS20TF	28	11	42	65.8	47.4	72	72.4	83.4	78.6	32	32	M5	8	7.5	22	
SGL25TF	SGLS25TF	33	12.5	48	80	59	86.4	87.2	98.2	93.4	35	35	M6	9	8	26	12
SGL30TF	—	42	16	60	95.7	67.7	104.3	103.3	113.9	111.9	40	40	M8	12	9	32.5	
SGL30TF-D																	
SGL35TF	—	48	18	70	109	78	117.6	116.6	127.2	125.2	50	50			13	38	

part number		standard rail length													
standard	anti-corrosion	L mm													
SGL15	SGLS15	160	220	280	340	400	460	520	580	640	700	760	820	880	1,000
SGL20	SGLS20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000
SGL25	SGLS25	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000
SGL30	—	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,400
SGL35	—	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,400

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



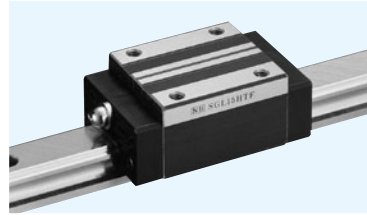
*Please refer to page A-51 for accuracy.

			guide rail dimensions					basic load rating		allowable static moment			mass		block size
E ₂	T ₁	grease fitting	H ₁	C	d×G×h	N	P	dynamic C	static Co	M _P	M _Y	M _R	block	guide rail	
mm	mm		mm	mm	mm	mm	mm	kN	kN	N·m	N·m	N·m	kg	kg/m	
5.4	5	pressed fitting	13.5	15	3.5×6×4.5 4.5×7.5×5.3		60	10.6	16.2	99.5 565	99.5 565	126	0.2	1.3	15
11	6	B-M6F	16	20	6×9.5×8.5	20		16.3	23.2	165 897	165 897	250	0.3	2.1	20
	6.5		20	23	7×11×9			24.7	36.3	334 1,740	334 1,740	437	0.4	3.0	25
	9		24	28	7×11×9 9×14×12		33.6	49.2	528 2,880	528 2,880	716	0.8	4.6	30	
	8.5		27.5	34	9×14×12		46.6	64.8	796 4,290	796 4,290	1,180	1.3	6.2	35	

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN ≒ 102kgf 1N · m ≒ 0.102kgf · m

		maximum length	
standard	anti-corrosion	mm	mm
1,120	1,240	1,360	1,480
1,240	1,360	1,480	1,600
1,360	1,480	1,600	1,720
1,480	1,600	1,720	1,840
1,600	1,720	1,840	1,960
1,720	1,840	1,960	2,080
1,840	1,960	2,080	2,200
1,960	2,080	2,200	2,320
2,080	2,200	2,320	2,440
2,200	2,320	2,440	2,560
2,320	2,440	2,560	2,680
2,440	2,560	2,680	2,800
2,560	2,680	2,800	2,920
2,680	2,800	2,920	3,040
2,800	2,920	3,040	3,160
2,920	3,040	3,160	3,280
3,040	3,160	3,280	3,400
3,160	3,280	3,400	3,520
3,280	3,400	3,520	3,640
3,400	3,520	3,640	3,760
3,520	3,640	3,760	3,880
3,640	3,760	3,880	4,000
3,760	3,880	4,000	4,120
3,880	4,000	4,120	4,240
4,000	4,120	4,240	4,360
4,120	4,240	4,360	4,480
4,240	4,360	4,480	4,600
4,360	4,480	4,600	4,720
4,480	4,600	4,720	4,840
4,600	4,720	4,840	4,960
4,720	4,840	4,960	5,080
4,840	4,960	5,080	5,200
4,960	5,080	5,200	5,320
5,080	5,200	5,320	5,440
5,200	5,320	5,440	5,560
5,320	5,440	5,560	5,680
5,440	5,560	5,680	5,800
5,560	5,680	5,800	5,920
5,680	5,800	5,920	6,040
5,800	5,920	6,040	6,160
5,920	6,040	6,160	6,280
6,040	6,160	6,280	6,400
6,160	6,280	6,400	6,520
6,280	6,400	6,520	6,640
6,400	6,520	6,640	6,760
6,520	6,640	6,760	6,880
6,640	6,760	6,880	7,000
6,760	6,880	7,000	7,120
6,880	7,000	7,120	7,240
7,000	7,120	7,240	7,360
7,120	7,240	7,360	7,480
7,240	7,360	7,480	7,600
7,360	7,480	7,600	7,720
7,480	7,600	7,720	7,840
7,600	7,720	7,840	7,960
7,720	7,840	7,960	8,080
7,840	7,960	8,080	8,200
7,960	8,080	8,200	8,320
8,080	8,200	8,320	8,440
8,200	8,320	8,440	8,560
8,320	8,440	8,560	8,680
8,440	8,560	8,680	8,800
8,560	8,680	8,800	8,920
8,680	8,800	8,920	9,040
8,800	8,920	9,040	9,160
8,920	9,040	9,160	9,280
9,040	9,160	9,280	9,400
9,160	9,280	9,400	9,520
9,280	9,400	9,520	9,640
9,400	9,520	9,640	9,760
9,520	9,640	9,760	9,880
9,640	9,760	9,880	10,000

SGL-HTF TYPE



part number structure

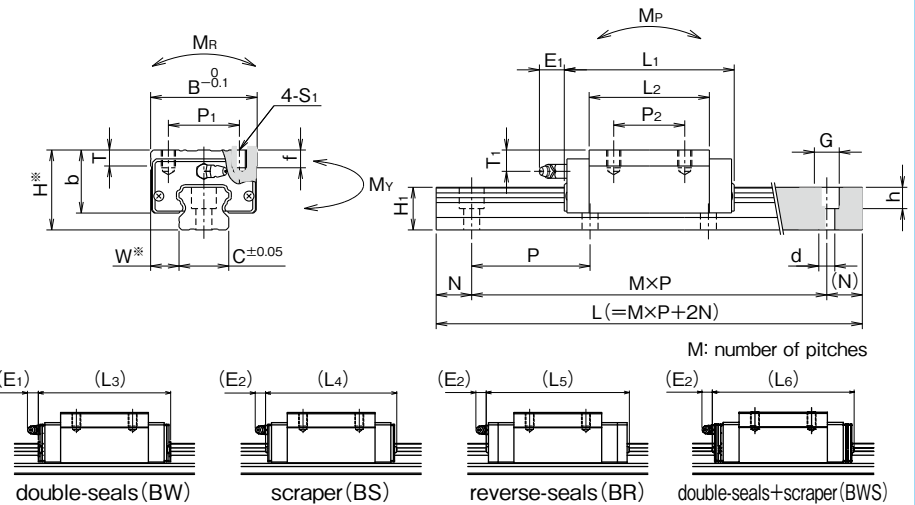
example	SGL 15 HTF B 2 T1 -589 P/W2 FS LB F J -KGL	
SGL type		symbol for grease blank: standard grease KGLA: lithium-based grease KGU: urea-based grease KGF: anti-fretting grease refer to page Eng-40~
size		with bellows (refer to page A-18)
block style		with rail mounting hole caps
seal (refer to page A-14)		with low temperature black chrome treatment
blank: with side-seals		with Fiber Sheet (refer to page A-16)
B: with side-seals + under-seals		symbol for number of axes*
BW: with double-seals + under-seals		blank: single axis
BS: B + scraper		W2: 2 parallel axes
BR: B + reverse-seals		W3: 3 parallel axes
BWS: BW + scraper		accuracy grade (refer to page A-51)
number of blocks attached to one rail		blank: standard
preload symbol (refer to page A-52)		H: high
blank: standard		P: precision
T1: light		
T2: medium		
total length of rail		

*The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions		block dimensions														
	H	W	B	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	P ₁	P ₂	S ₁	f	T	b	E ₁	E ₂
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm	mm
SGL15HTF	28	9.5	34	56.5	38.5	62.7	63.1	70.1	69.3	26	26	M4	5	6	23.7	6	5.4
SGL20HTF	30	12	44	71.6	53.2	77.8	78.2	89.2	84.4	32	36	M5	6	9.5	24	12	11
SGL25HTF	40	12.5	48	80	59	86.4	87.2	98.2	93.4	35	35	M6	8	9	33		
SGL30HTF	45	16	60	95.7	67.7	104.3	103.3	113.9	111.9	40	40	M8	10		35.5		
SGL35HTF	55	18	70	109	78	117.6	116.6	127.2	125.2	50	50				12		
SGL45HTF	70	20.5	86	139	102	147.5	148	158.7	156.6	60	60	M10	17	15	60	15	15

part number	standard rail length L mm																
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240	
SGL25	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240	
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480	
SGL35	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480	
SGL45	570	675	780	885	990	1,095	1,200	1,305	1,410	1,515	1,620	1,725	1,830	1,935	2,040	2,145	

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



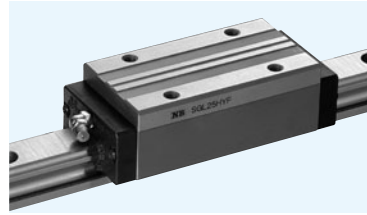
※Please refer to page A-51 for accuracy.

T ₁	grease fitting	guide rail dimensions					basic load rating		allowable static moment			mass		block size
		H ₁	C	d×G×h	N	P	dynamic C	static Co	M _{P2}	M _{Y2}	M _R	block	guide rail	
mm		mm	mm	mm	mm	mm	kN	kN	N·m	N·m	N·m	kg	kg/m	
9	pressed fitting	13.5	15	4.5×7.5×5.3	20	60	10.6	16.2	99.5 565	99.5 565	126	0.2	1.3	15
8	B-M6F	16	20	6×9.5×8.5			18.3	27.5	226 1,180	226 1,180	296	0.4	2.1	20
13.5		20	23	7×11×9			24.7	36.3	334 1,740	334 1,740	437	0.6	3.0	25
12		24	28	9×14×12		33.6	49.2	528 2,880	528 2,880	716	0.9	4.6	30	
15.5		27.5	34			46.6	64.8	796 4,290	796 4,290	1,180	1.5	6.2	35	
20	B-PT1/8	36.5	45	14×20×17	22.5	105	74.7	101	1,550 8,250	1,550 8,250	2,310	3.1	10.5	45

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

	maximum length mm
1,240 1,360 1,480	2,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
2,250 2,355 2,460 2,565 2,670 2,775 2,880 2,985	3,000

SGL-HYF TYPE



part number structure

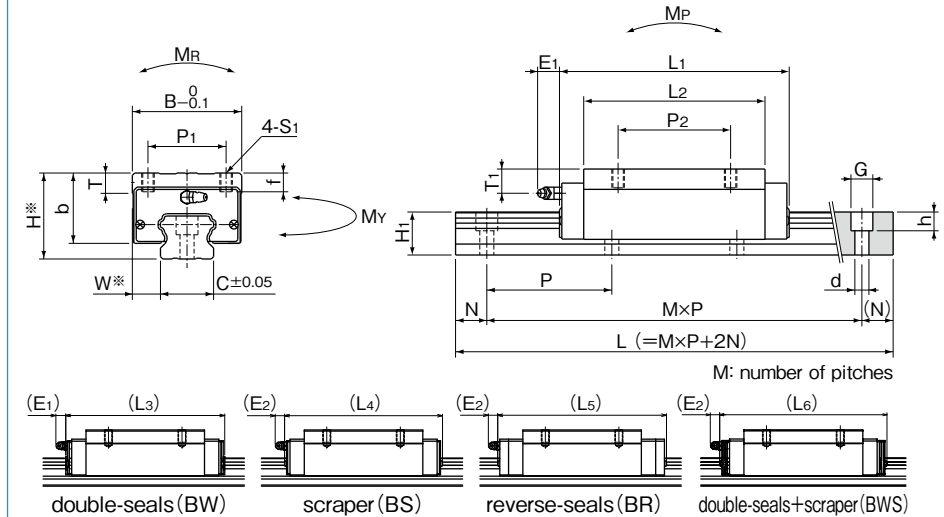
example	SGL 15 HYF B 2 T1 -589 P/W2 FS LB F J -KGL	
SGL type		symbol for grease blank: standard grease KGLA: lithium-based grease KGU: urea-based grease KGF: anti-fretting grease refer to page Eng-40~
size		
block style		with bellows (refer to page A-18)
seal (refer to page A-14)		with rail mounting hole caps
blank: with side-seals		with low temperature black chrome treatment
B: with side-seals + under-seals		with Fiber Sheet (refer to page A-16)
BW: with double-seals + under-seals		symbol for number of axes*
BS: B + scraper		blank: single axis
BR: B + reverse-seals		W2: 2 parallel axes
BWS: BW + scraper		W3: 3 parallel axes
number of blocks attached to one rail		accuracy grade (refer to page A-51)
preload symbol (refer to page A-52)		blank: standard
T1: light		H: high
T2: medium		P: precision
total length of rail		

*The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions		block dimensions															E ₁	E ₂
	H	W	B	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	P ₁	P ₂	S ₁	f	T	b				
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm			
SGL15HYF	28	9.5	34	79	61	85.2	85.6	92.6	91.8	26	26	M4	5	6	23.7	6	5.4		
SGL20HYF	30	12	44	96	77.6	102.2	102.6	113.6	108.8	32	50	M5	6	9.5	24	12	11		
SGL25HYF	40	12.5	48	109	88	115.4	116.2	127.2	122.4	35		M6	8	9	33				
SGL30HYF	45	16	60	129	101	137.6	136.6	147.2	145.2	40	60	M8	10		35.5				
SGL35HYF	55	18	70	147	116	155.6	154.6	165.2	163.2	50	72			12	13			45	
SGL45HYF	70	20.5	86	171	134	179.5	180	190.7	188.6	60	80	M10	17	15	60	15	15		

part number	standard rail length L mm																
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240	
SGL25	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240	
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480	
SGL35	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480	
SGL45	570	675	780	885	990	1,095	1,200	1,305	1,410	1,515	1,620	1,725	1,830	1,935	2,040	2,145	

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



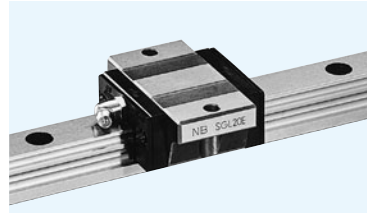
※Please refer to page A-51 for accuracy.

T ₁	grease fitting	H ₁	C	d×G×h	N	P	basic load rating dynamic C kN	allowable static moment static Co kN	M _{P2} N·m	M _{Y2} N·m	M _R N·m	mass block kg	mass guide rail kg/m	block size
9	pressed fitting	13.5	15	4.5×7.5×5.3	20	60	14.6	25.6	238 1,200	238 1,200	200	0.3	1.3	15
8	B-M6F	16	20	6×9.5×8.5			23.9	40.2	467 2,250	467 2,250	432	0.5	2.1	20
13.5		20	23	7×11×9			32.8	54.5	723 3,480	723 3,480	655	0.9	3.0	25
12		24	28	9×14×12		44.6	73.8	1,140 5,680	1,140 5,680	1,070	1.3	4.6	30	
15.5		27.5	34			61.9	97.2	1,720 8,480	1,720 8,480	1,780	2.2	6.2	35	
20	B-PT1/8	36.5	45	14×20×17	22.5	105	91.4	134	2,680 13,300	2,680 13,300	3,080	4.0	10.5	45

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

	maximum length mm
1,240 1,360 1,480	2,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
2,250 2,355 2,460 2,565 2,670 2,775 2,880 2,985	3,000

SGL-E TYPE



part number structure

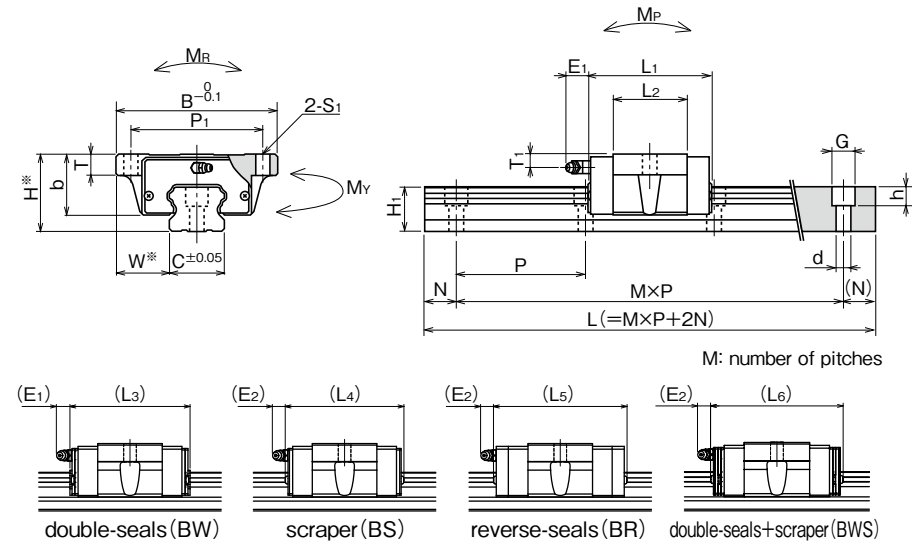
example	SGL15EB2T1-589DP/W2FSLB FJ-KGL	
SGL type	SGL	symbol for grease blank: standard grease KGLA: lithium-based grease KGU: urea-based grease KGF: anti-fretting grease refer to page Eng-40~
size	15	
block style	E	with bellows (refer to page A-18)
seal (refer to page A-14)	B	with rail mounting hole caps
blank: with side-seals		with low temperature black chrome treatment
B: with side-seals + under-seals		with Fiber Sheet (refer to page A-16)
BW: with double-seals + under-seals		symbol for number of axes*
BS: B + scraper		blank: single axis
BR: B + reverse-seals		W2: 2 parallel axes
BWS: BW + scraper		W3: 3 parallel axes
number of blocks attached to one rail	2	accuracy grade (refer to page A-51)
preload symbol (refer to page A-52)	T1	blank: standard
blank: standard		H: high
T1: light		P: precision
T2: medium		
total length of rail	589	
size of rail installation hole (D type rail is available only for SGL 15 and 30)	D	
	P	
	W2	
	FS	
	LB	
	F	
	J	
	KGL	

*The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions		block dimensions												
	H	W	B	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	P ₁	S ₁	T	b	E ₁	E ₂
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
SGL15E SGL15E-D	24	18.5	52	40.7	22.7	46.9	47.3	54.3	53.5	41	4.5	7	19.5	6	5.4
SGL20E	28	19.5	59	47.9	29.5	54.1	54.5	65.5	60.7	49	5.5	9	22	12	11
SGL25E	33	25	73	58.7	37.7	65.1	65.9	76.9	72.1	60	7	10	26		
SGL30E SGL30E-D	42	31	90	68	40	76.6	75.6	86.2	84.2	72	9		32.5		
SGL35E	48	33	100	77	46	85.6	84.6	95.2	93.2	82			13		

part number	standard rail length L mm														
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120
SGL25	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400
SGL35	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



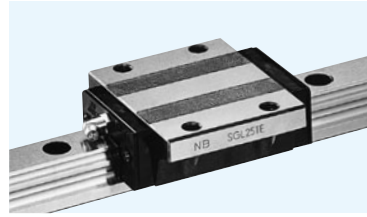
*Please refer to page A-51 for accuracy.

T ₁	grease fitting	guide rail dimensions					basic load rating		allowable static moment			mass		block size
		H ₁	C	d×G×h	N	P	dynamic C	static C ₀	M _P M _{P2}	M _Y M _{Y2}	M _R	block	guide rail	
mm		mm	mm	mm	mm	mm	kN	kN	N·m	N·m	N·m	kg	kg/m	
5	pressed fitting	13.5	15	3.5×6×4.5 4.5×7.5×5.3	20	60	7.29	9.45	36.7 252	36.7 252	73.9	0.1	1.3	15
6	B-M6F	16	20	6×9.5×8.5			11.9	14.8	71.9 447	71.9 447	159	0.2	2.1	20
6.5		20	23	7×11×9			17.0	21.1	123 751	123 751	254	0.4	3.0	25
9		24	28	7×11×9 9×14×12		23.0	28.7	195 1,260	195 1,260	417	0.6	4.6	30	
8.5		27.5	34	9×14×12		32.0	37.8	293 1,870	293 1,870	693	0.9	6.2	35	

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN ≒ 102kgf 1N · m ≒ 0.102kgf · m

	maximum length mm
1,240 1,360 1,480	2,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000

SGL-TE TYPE



part number structure

example **SGL 15 TE B 2 T1 -589 D P/W2 FS LB F J -KGL**

SGL type

size

block style

seal (refer to page A-14)

blank: with side-seals

B: with side-seals + under-seals

BW: with double-seals + under-seals

BS: B + scraper

BR: B + reverse-seals

BWS: BW + scraper

number of blocks attached to one rail

preload symbol (refer to page A-52)

blank: standard

T1: light

T2: medium

total length of rail

size of rail installation hole (D type rail is available only for SGL 15 and 30)

symbol for grease
blank: standard grease
KGLA: lithium-based grease
KGU: urea-based grease
KGF: anti-fretting grease
 refer to page Eng-40~

with bellows (refer to page A-18)

with rail mounting hole caps

with low temperature black chrome treatment

with Fiber Sheet (refer to page A-16)

symbol for number of axes*

blank: single axis

W2: 2 parallel axes

W3: 3 parallel axes

accuracy grade (refer to page A-51)

blank: standard

H: high

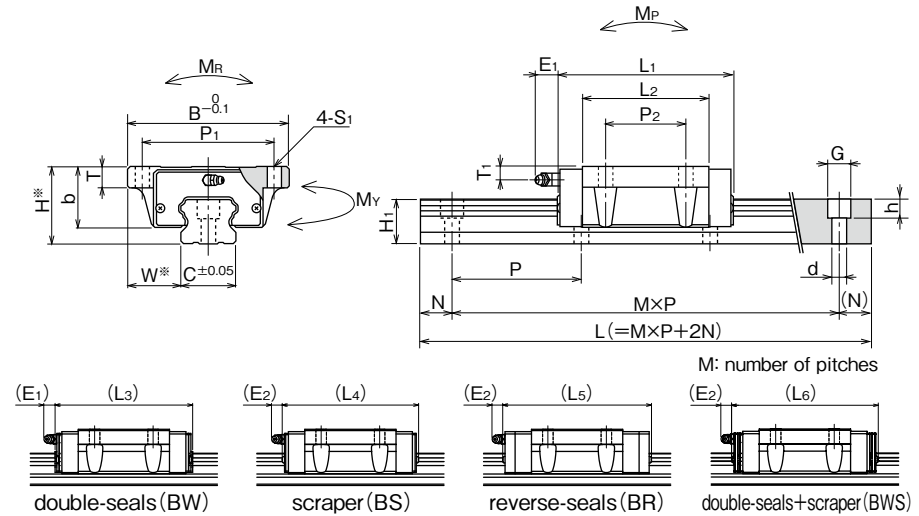
P: precision

*The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions		block dimensions														
	H	W	B	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	P ₁	P ₂	S ₁	T	b	E ₁	E ₂	
SGL15TE SGL15TE-D	24	18.5	52	56.5	38.5	62.7	63.1	70.1	69.3	41	26	4.5	7	19.5	6	5.4	
SGL20TE	28	19.5	59	65.8	47.4	72	72.4	83.4	78.6	49	32	5.5	9	22	12	11	
SGL25TE	33	25	73	80	59	86.4	87.2	98.2	93.4	60	35	7	10	26			
SGL30TE SGL30TE-D	42	31	90	95.7	67.7	104.3	103.3	113.9	111.9	72	40	9		32.5			
SGL35TE	48	33	100	109	78	117.6	116.6	127.2	125.2	82	50		13	38			

part number	standard rail length L mm															
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240
SGL25	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480
SGL35	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



*Please refer to page A-51 for accuracy.

T ₁	grease fitting	guide rail dimensions				N	P	basic load rating		allowable static moment			mass		block size
		H ₁	C	d×G×h				dynamic C	static Co	M _{P2}	M _{Y2}	M _R	block kg	guide rail kg/m	
5	pressed fitting	13.5	15	3.5×6×4.5 4.5×7.5×5.3				10.6	16.2	99.5 565	99.5 565	126	0.2	1.3	15
6		16	20	6×9.5×8.5			60	16.3	23.2	165 897	165 897	250	0.3	2.1	20
6.5		20	23	7×11×9	20			24.7	36.3	334 1,740	334 1,740	437	0.6	3.0	25
9		24	28	7×11×9 9×14×12			80	33.6	49.2	528 2,880	528 2,880	716	1.0	4.6	30
8.5		27.5	34	9×14×12				46.6	64.8	796 4,290	796 4,290	1,180	1.5	6.2	35

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

	maximum length mm
1,240 1,360 1,480	2,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000

example **SGL 15 HTE B 2 T1 -589 P/W2 FS LB F J -KGL**

symbol for grease
blank: standard grease
KGLA: lithium-based grease
KGU: urea-based grease
KGF: anti-fretting grease
 refer to page Eng-40~

bellows (refer to page A-18)
 with rail mounting hole caps

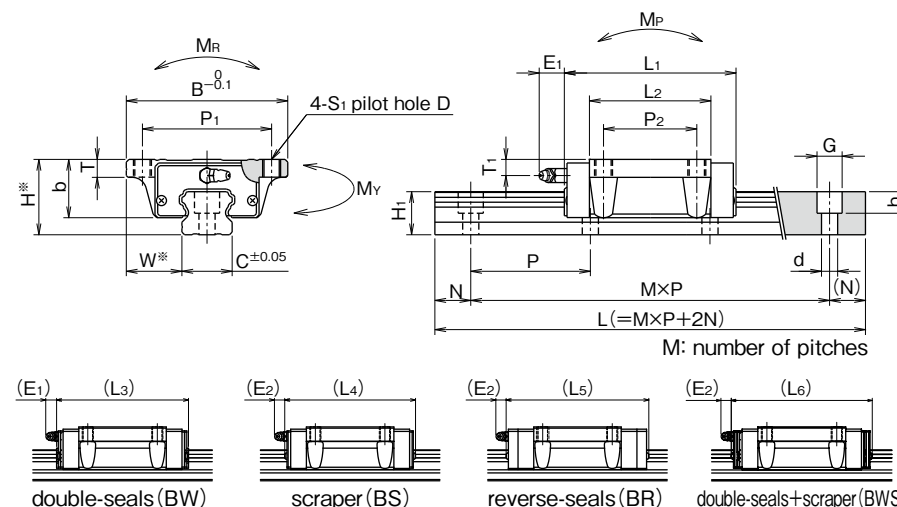
temperature black chrome treatment

er Sheet (refer to page A-16)

symbol for number of axes*
blank: single axis
W2: 2 parallel axes
W3: 3 parallel axes

cy grade (refer to page A-51)
 standard

sion



※Please refer to page A-51 for accuracy.

part number	H	W	block dimensions														
	mm	mm	B	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	P ₁	P ₂	S ₁	D	T	b	E ₁	E ₂
SGL15HTE	24	16	47	56.5	38.5	62.7	63.1	70.1	69.3	38	30	M5	4.4	7.5	19.7	6	5.4
SGL20HTE	30	21.5	63	71.6	53.2	77.8	78.2	89.2	84.4	53	40	M6	5.4	10.5	24	12	11
SGL25HTE	36	23.5	70	80	59	86.4	87.2	98.2	93.4	57	45	M8	6.8	12.5	29		
SGL30HTE	42	31	90	95.7	67.7	104.3	103.3	113.9	111.9	72	52	M10	8.5	10	32.5		
SGL35HTE	48	33	100	109	78	117.6	116.6	127.2	125.2	82	62			13	38		
SGL45HTE	60	37.5	120	139	102	147.5	148	158.7	156.6	100	80			M12	10.5		

part number	standard rail length L mm															
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240
SGL25	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480
SGL35	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480
SGL45	570	675	780	885	990	1,095	1,200	1,305	1,410	1,515	1,620	1,725	1,830	1,935	2,040	2,145

A-66

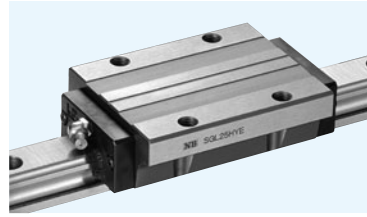
T ₁	grease fitting	H ₁	C	d×G×h	N	P	basic load rating dynamic C	static Co	allowable static moment M _{P2} N·m	M _Y M _{Y2} N·m	M _R	mass block	guide rail kg/m	block size
mm		mm	mm	mm	mm	mm	kN	kN			N·m	kg		
5	pressed fitting	13.5	15	4.5×7.5×5.3	20	60	10.6	16.2	99.5 565	99.5 565	126	0.2	1.3	15
8	B-M6F	16	20	6×9.5×8.5			18.3	27.5	226 1,180	226 1,180	296	0.4	2.1	20
9.5		20	23	7×11×9			24.7	36.3	334 1,740	334 1,740	437	0.6	3.0	25
9		24	28	9×14×12		33.6	49.2	528 2,880	528 2,880	716	1.0	4.6	30	
8.5		27.5	34			46.6	64.8	796 4,290	796 4,290	1,180	1.5	6.2	35	
10	B-PT1/8	36.5	45	14×20×17	22.5	105	74.7	101	1,550 8,250	1,550 8,250	2,310	3.1	10.5	45

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. $1\text{ kN} \doteq 102\text{ kgf}$ $1\text{ N} \cdot \text{m} \doteq 0.102\text{ kgf} \cdot \text{m}$

	maximum length mm
1,240 1,360 1,480	2,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
2,250 2,355 2,460 2,565 2,670 2,775 2,880 2,985	3,000

A-67

SGL-HYE TYPE



part number structure

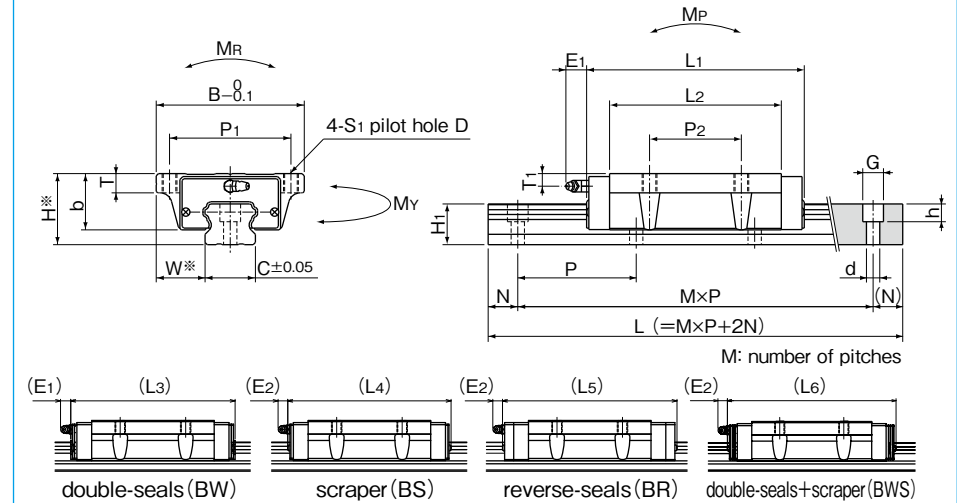
example	SGL 15 HYE B 2 T1 -589 P/W2 FS LB F J -KGL														
SGL type															
size															
block style															
seal (refer to page A-14)															
blank: with side-seals															
B: with side-seals + under-seals															
BW: with double-seals + under-seals															
BS: B + scraper															
BR: B + reverse-seals															
BWS: BW + scraper															
number of blocks attached to one rail															
preload symbol (refer to page A-52)															
blank: standard															
T1: light															
T2: medium															
total length of rail															
	symbol for grease blank: standard grease KGLA: lithium-based grease KGU: urea-based grease KGF: anti-fretting grease refer to page Eng-40~														
	with bellows (refer to page A-18)														
	with rail mounting hole caps														
	with low temperature black chrome treatment														
	with Fiber Sheet (refer to page A-16)														
	symbol for number of axes*														
	blank: single axis														
	W2: 2 parallel axes														
	W3: 3 parallel axes														
	accuracy grade (refer to page A-51)														
	blank: standard														
	H: high														
	P: precision														

*The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions			block dimensions													
	H	W	B	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	P ₁	P ₂	S ₁	D	T	b	E ₁	E ₂
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
SGL15HYE	24	16	47	79	61	85.2	85.6	92.6	91.8	38	30	M5	4.4	7.5	19.7	6	5.4
SGL20HYE	30	21.5	63	96	77.6	102.2	102.6	113.6	108.8	53	40	M6	5.4	10.5	24	12	11
SGL25HYE	36	23.5	70	109	88	115.4	116.2	127.2	122.4	57	45	M8	6.8	12.5	29		
SGL30HYE	42	31	90	129	101	137.6	136.6	147.2	145.2	72	52	M10	8.5	10	32.5		
SGL35HYE	48	33	100	147	116	155.6	154.6	165.2	163.2	82	62			13	38		
SGL45HYE	60	37.5	120	171	134	179.5	180	190.7	188.6	100	80	M12	10.5	15	50	15	15

part number	standard rail length																
	L mm																
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240	
SGL25	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240	
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480	
SGL35	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480	
SGL45	570	675	780	885	990	1,095	1,200	1,305	1,410	1,515	1,620	1,725	1,830	1,935	2,040	2,145	

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



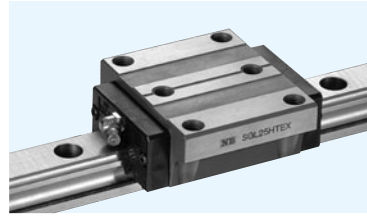
※Please refer to page A-51 for accuracy.

T ₁	grease fitting	guide rail dimensions				N	P	basic load rating		allowable static moment			mass		block size
		H ₁	C	d×G×h				dynamic C	static Co	M _P	M _Y	M _R	block kg	guide rail kg/m	
		mm	mm	mm		mm	mm	kN	kN	N·m	N·m	N·m			
5	pressed fitting	13.5	15	4.5×7.5×5.3	20	60		14.6	25.6	238 1,200	238 1,200	200	0.3	1.3	15
8	B-M6F	16	20	6×9.5×8.5				23.9	40.2	467 2,250	467 2,250	432	0.7	2.1	20
9.5		20	23	7×11×9				32.8	54.5	723 3,480	723 3,480	655	1.0	3.0	25
9		24	28	9×14×12	80			44.6	73.8	1,140 5,680	1,140 5,680	1,070	1.5	4.6	30
8.5		27.5	34					61.9	97.2	1,720 8,480	1,720 8,480	1,780	2.2	6.2	35
10	B-PT1/8	36.5	45	14×20×17	22.5	105		91.4	134	2,680 13,300	2,680 13,300	3,080	4.0	10.5	45

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

	maximum length mm
1,240 1,360 1,480	2,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
2,250 2,355 2,460 2,565 2,670 2,775 2,880 2,985	3,000

SGL-HTEX TYPE



part number structure

example **SGL 15 HTEX B 2 T1 -589 P/W2 FS LB F J -KGL**

SGL type

size

block style

seal (refer to page A-14)

blank: with side-seals

B: with side-seals + under-seals

BW: with double-seals + under-seals

BS: B + scraper

BR: B + reverse-seals

BWS: BW + scraper

number of blocks attached to one rail

preload symbol (refer to page A-52)

blank: standard

T1: light

T2: medium

total length of rail

symbol for grease
blank: standard grease
KGLA: lithium-based grease
KGU: urea-based grease
KGF: anti-fretting grease
 refer to page Eng-40~

with bellows (refer to page A-18)

with rail mounting hole caps

with low temperature black chrome treatment

with Fiber Sheet (refer to page A-16)

symbol for number of axes*

blank: single axis

W2: 2 parallel axes

W3: 3 parallel axes

accuracy grade (refer to page A-51)

blank: standard

H: high

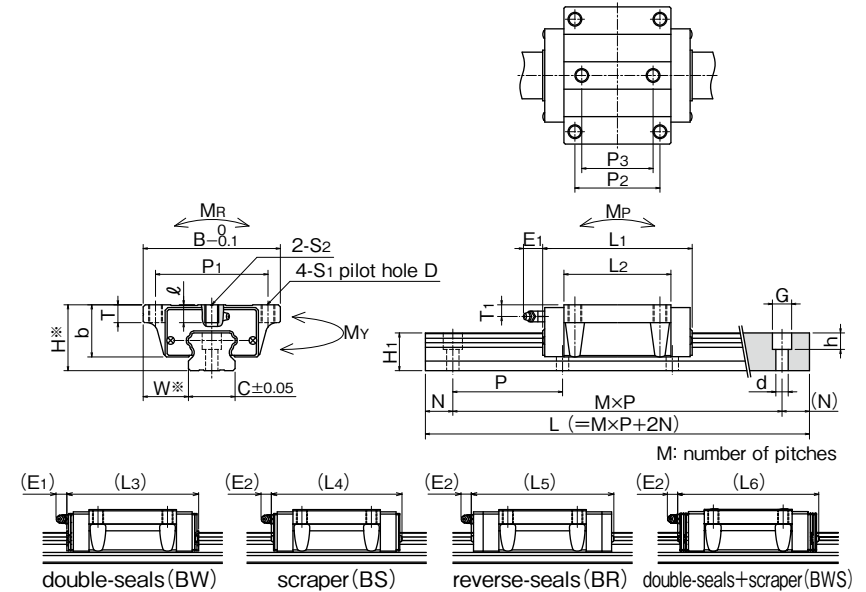
P: precision

*The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions		block dimensions															
	H	W	B	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	P ₁	P ₂	S ₁	D	T	P ₃	S ₂	f	b
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm		mm	mm
SGL15HTEX	24	16	47	56.5	38.5	62.7	63.1	70.1	69.3	38	30	M5	4.4	7.5	26	M5	6	19.7
SGL20HTEX	30	21.5	63	71.6	53.2	77.8	78.2	89.2	84.4	53	40	M6	5.4	10.5	35	M6	8	24
SGL25HTEX	36	23.5	70	80	59	86.4	87.2	98.2	93.4	57	45	M8	6.8	12.5	40	M8	10	29
SGL30HTEX	42	31	90	95.7	67.7	104.3	103.3	113.9	111.9	72	52	M10	8.5	10	44	M10		32.5
SGL35HTEX	48	33	100	109	78	117.6	116.6	127.2	125.2	82	62			13	52		13	38
SGL45HTEX	60	37.5	120	139	102	147.5	148	158.7	156.6	100	80	M12	10.5	15	60	M12	14	50

part number	standard rail length L mm																	
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120		
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240		
SGL25	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120	1,240		
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480		
SGL35	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400	1,480		
SGL45	570	675	780	885	990	1,095	1,200	1,305	1,410	1,515	1,620	1,725	1,830	1,935	2,040	2,145		

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



※Please refer to page A-51 for accuracy.

				guide rail dimensions						basic load rating		allowable static moment			mass		block size
E ₁	E ₂	T ₁	grease fitting	H ₁	C	d×G×h	N	P	dynamic C	static Co	M _P	M _Y	M _R	block	guide rail		
mm	mm	mm		mm	mm	mm	mm	mm	kN	kN	M _{PP2}	M _{Y2}	N·m	kg	kg/m		
6	5.4	5	pressed fitting	13.5	15	4.5×7.5×5.3	20	60	10.6	16.2	99.5 565	99.5 565	126	0.2	1.3	15	
12	11	8	B-M6F	16	20	6×9.5×8.5			18.3	27.5	226 1,180	226 1,180	296	0.4	2.1	20	
		9.5		20	23	7×11×9			24.7	36.3	334 1,740	334 1,740	437	0.6	3.0	25	
		9		24	28	9×14×12		33.6	49.2	528 2,880	528 2,880	716	1.0	4.6	30		
		8.5		27.5	34			46.6	64.8	796 4,290	796 4,290	1,180	1.5	6.2	35		
15	15	10	B-PT1/8	36.5	45	14×20×17	22.5	105	74.7	101	1,550 8,250	1,550 8,250	2,310	3.1	10.5	45	

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

	maximum length mm
1,240 1,360 1,480	2,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,360 1,480 1,600 1,660 1,720 1,840 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
1,640 1,720 1,800 1,880 1,960	3,000
2,250 2,355 2,460 2,565 2,670 2,775 2,880 2,985	3,000

SLIDE GUIDE SGW Type

The NB slide guide SGW type is a linear motion bearing utilizing the rolling motion of ball elements along four rows of raceway grooves. Its low height and wide profile makes it suitable for single-rail applications.

STRUCTURE AND ADVANTAGES

The NB slide guide SGW type consists of a rail with four precisely machined raceway grooves and a block assembly. The block assembly consists of the main body, ball elements, retainers, and return caps.

High Load Capacity and Long Life

The raceway grooves are machined to a radius close to that of the ball elements. The larger contact area resulting in a high load capacity and a long travel life.

High Allowable Moment

Its wide profile enables it to sustain high moment loads, making it suitable for single-rail applications.

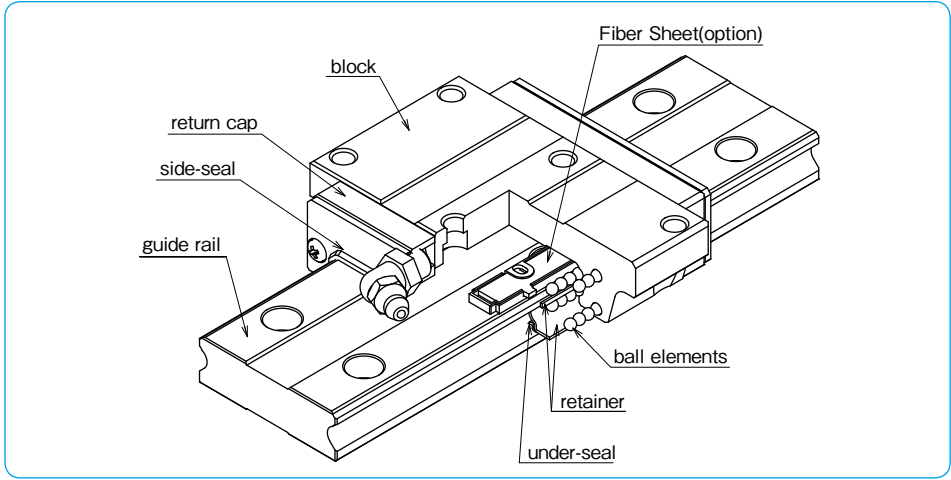
Omni-Directional Load Capacity

The ball elements are positioned at 45° contact angle so that the load capacity is equal in four directions (above, below, right and left).

Smooth Motion

The large number of effective ball elements produce a smooth rolling motion.

Figure A-58 Structure of SGW type Slide Guide



Anti-Corrosion Specification

The rail and block assembly can be treated with low temperature black chrome treatment to increase the corrosion resistance. This treatment is standardized with the symbol "LB", and suitable for use in clean room applications.

Dust Prevention

Side-seals are provided as standard. To improve the dust prevention characteristics, under-seals and rail mounting caps are also available.

Extension of Relubrication Period by Fiber Sheet

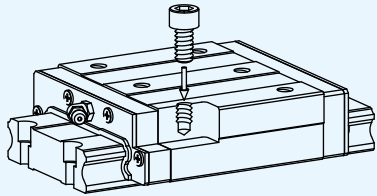
A lubricant-containing Fiber Sheet incorporated in the block supplies appropriate amount of lubricant to the raceway grooves, which significantly extends the lubricant replenishment interval. (refer to page A-16)

BLOCK TYPES

Two SGW block types are available depending on the mounting space and desired mounting method.

SGW-TF type

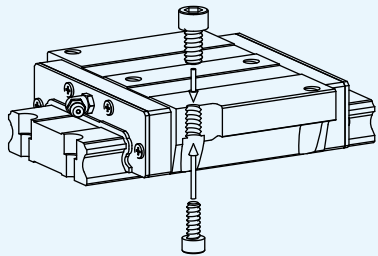
P.A-76



high-rigidity wide type

SGW-TE type

P.A-78



high-rigidity wide flange type

ACCURACY

Three accuracy grades are available: standard grade (blank), high grade (H), and precision grade (P).

Table A-29 Accuracy

unit : mm

part number	SGW17,21			SGW27,35		
accuracy grade	standard	high	precision	standard	high	precision
accuracy symbol	blank	H	P	blank	H	P
allowable dimensional tolerance for height H	±0.1	±0.03	−0.03~0	±0.1	±0.04	−0.04~0
paired difference for height H	0.02	0.01	0.006	0.02	0.015	0.007
allowable dimensional tolerance for width W	±0.1	±0.03	−0.03~0	±0.1	±0.04	−0.04~0
paired difference for width W	0.02	0.01	0.006	0.03	0.015	0.007
Running parallelism of surface C to surface A	refer to Figure A-61,62					
Running parallelism of surface D to surface B						

Figure A-59 Motion Accuracy

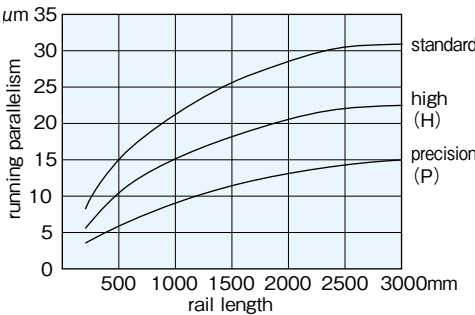
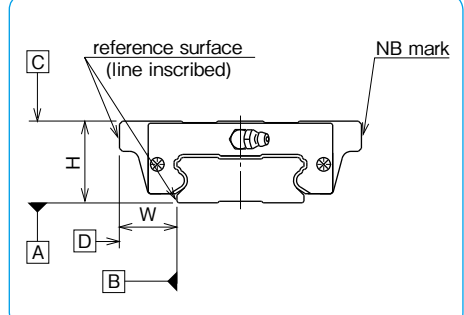


Figure A-60 Accuracy



PRELOAD

Three levels of preload are available for SGW slide guides: standard (blank), light (T1), and medium (T2).

Table A-30 Preload symbol and Radial Clearance unit: μm

preload	standard	light	medium*
symbol	blank	T1	T2
SGW17	-3~+2	- 7~-3	-
SGW21	-4~+2	- 8~-4	-
SGW27	-5~+2	-11~-5	-
SGW35	-8~+4	-18~-8	-28~-18

Table A-31 Operating Conditions and Preload

preload	symbol	operating conditions
standard	blank	minute vibration is applied. accurate motion is required. moment is applied in a given direction.
light	T1	light vibration is applied. light torsional load is applied. moment is applied.
medium*	T2	shock and vibration are applied. over-hang load is applied. torsional load is applied.

* Frictional resistance may be affected by preload.

RAIL LENGTH

Slide guides with most commonly used lengths are available as standard. For slide guides with a non-standard length, unless otherwise specified, the distance from one end of the rail to the first hole center (N) will be within the range listed in Table A-32, satisfying the following equation.

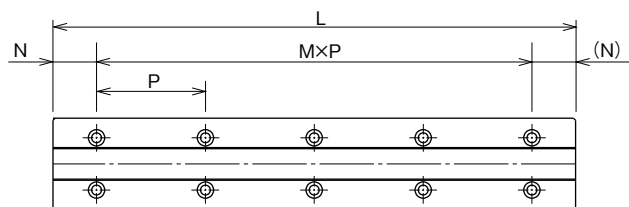
$$L = M \cdot P + 2N$$

L: length (mm) M: number of pitches P: hole pitch (mm)
N: distance from the end of the rail to the first hole center (mm)

Table A-32 N Dimension unit: mm

part number	and over	N
SGW17		less than
SGW21	8	28
SGW27		33
SGW35	12	38
		52

Figure A-61 Rail



MOUNTING

Slide guides are generally mounted by pushing the reference surface of the rail and block against the shoulder of the mounting surface. To avoid interference between the shoulder and the corner of the rail or block, the recommended dimensions are listed in Table A-34.

The screws to fasten the rail should be tightened to an equal torque using a torque wrench in order to secure the motion accuracy. The recommended torque values are given in Table A-33. Please adjust the torque depending on the operating conditions.

Table A-33 Recommended Torque unit: $\text{N} \cdot \text{m}$

size	M4	M6
recommended torque	3.2	11.2

(for alloy steel screw)

Figure A-62 Mounting Reference Surface Profile

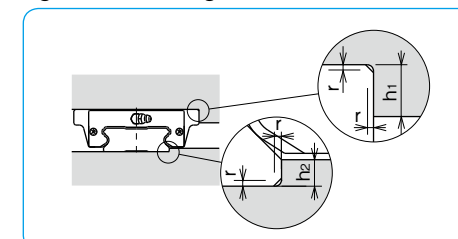


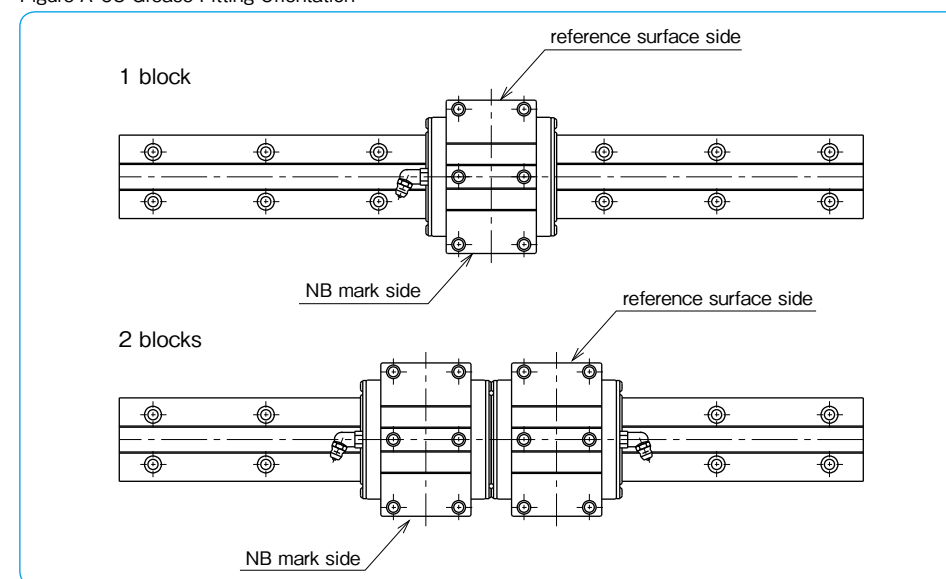
Table A-34 Shoulder Height and Radius Dimensions unit: mm

part number	h1	h2	rmax.
SGW17	4	2	
SGW21		2.5	0.4
SGW27	5		
SGW35		3.5	0.8

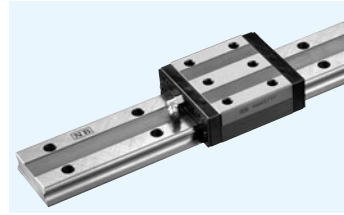
GREASE FITTING

A grease fitting is attached to the return cap of SGW type guide block for lubrication purposes. Unless otherwise specified, the orientation of the grease fitting is as shown in Figure A-63. When more than 2 blocks are used on one rail, please specify the grease fitting orientation.

Figure A-63 Grease Fitting Orientation



SGW-TF TYPE



part number structure

example **SGW 21 TF B 2 T1 -589 P/W2 FS LB F-KGL**

SGW type

size

TF typeblock

seal (refer to page A-14)

blank: with side-seals

B: with side-seals + under-seals

number of blocks attached to one rail

preload symbol (refer to page A-74)

blank: standard

T1: light

T2: medium

total length of rail

accuracy grade (refer to page A-73)

blank: standard

H: high

P: precision

symbol for grease

blank: standard grease

KGLA: lithium-based grease

KGU: urea-based grease

KGF: anti-fretting grease

refer to page Eng-40~

with rail mounting hole caps

with low temperature black chrome treatment

with Fiber Sheet (refer to page A-16)

symbol for number of axes*

blank: single axis

W2: 2 parallel axes

W3: 3 parallel axes

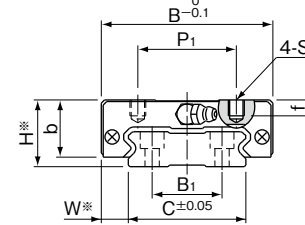
※The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions		block dimensions											grease fitting
	H	W	B	L ₁	L ₂	P ₁	P ₂	S	f	T	b	E	T ₁	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
SGW17TF	17	8.5	50	51	33.6	29	15	M4	4	—	14.5	2.5	4	pressed fitting
SGW21TF	21	8.5	54	58	40	31	19	M5	5	—	18	12	4.5	B-M6F
SGW27TF	27	10	62	71.8	51.8	46	32	M6	6	10	24		6	
SGW35TF	35	15.5	100	106.6	77.6	76	50	M8	8	14	31		8	

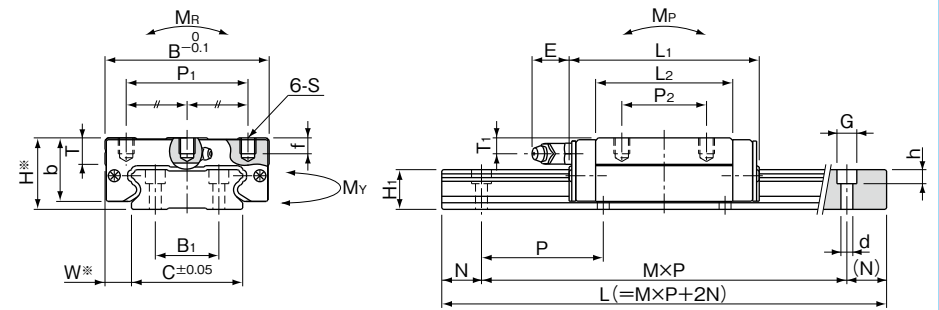
part number	standard rail length L mm										
SGW17	110	150	190	230	270	310	350	390	430	510	590
SGW21	130	180	230	280	330	380	430	480	530	630	730
SGW27	160	220	280	340	400	460	520	640	760	880	1,000
SGW35	280	360	440	520	600	680	760	920	1,080	1,240	1,400

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.

SGW17·21TF



SGW27·35TF



※Please refer to page A-73 for accuracy.

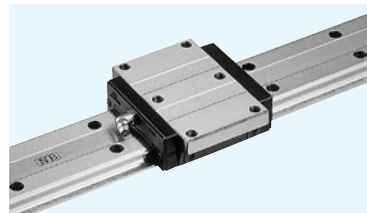
M: number of pitches

guide rail dimensions						basic load rating		allowable static moment			mass		block size
H ₁	C	B ₁	d×G×h	N	P	dynamic C	static C ₀	M _{P2}	M _{Y2}	M _R	block kg	guide rail kg/m	
mm	mm	mm	mm	mm	mm	kN	kN	N·m	N·m	N·m			
9	33	18	4.5×7.5×5.3	15	40	4.82	8.56	42.8 261	42.8 261	160	0.13	2.05	17
11	37	22			50	7.01	12.1	72.3 418	72.3 418	253	0.20	2.84	21
15	42	24	7×11×9	20	60	12.9	21.5	171 931	171 931	496	0.38	4.43	27
19	69	40			80	30.6	48.5	578 3,100	578 3,100	1,850	1.16	9.32	35

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

								maximum length mm
670	750	830	950	1,070	1,190	1,310		2,000
830	930	1,030	1,180	1,330	1,480			2,000
1,180	1,360	1,540	1,720	1,900				3,000
1,640	1,880	2,120						3,000

SGW-TE TYPE



part number structure

example **SGW 21 TE B 2 T1 -589 P/W2 FS LB F-KGL**

SGW type

size

TE typeblock

seal (refer to page A-14)

blank: with side-seals

B: with side-seals + under-seals

number of blocks attached to one rail

preload symbol (refer to page A-74)

blank: standard

T1: light

T2: medium

total length of rail

accuracy grade (refer to page A-73)

blank: standard

H: high

P: precision

symbol for grease

blank: standard grease

KGLA: lithium-based grease

KGU: urea-based grease

KGF: anti-fretting grease

refer to page Eng-40~

with rail mounting hole caps

with low temperature black chrome treatment

with Fiber Sheet (refer to page A-16)

symbol for number of axes*

blank: single axis

W2: 2 parallel axes

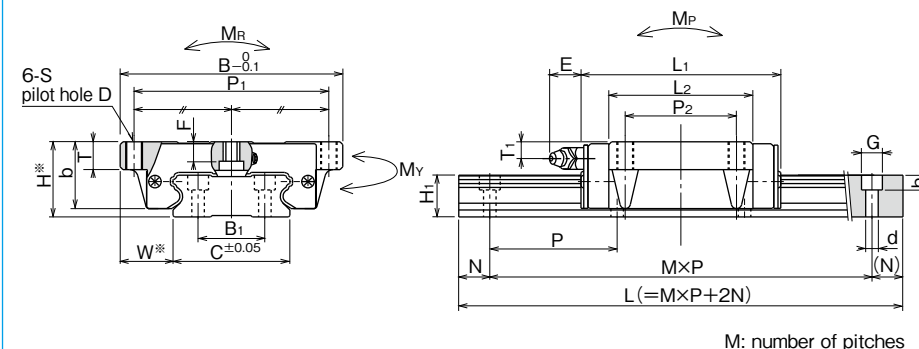
W3: 3 parallel axes

*The symbol for the number of axes does not mean the number of rails ordered.

part number	assembly dimensions		block dimensions												grease fitting
	H	W	B	L ₁	L ₂	P ₁	P ₂	S	D	F	T	b	E	T ₁	
	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	
SGW17TE	17	13.5	60	51	33.6	53	26	M4	3.3	3.2	6	14.5	2.5	4	pressed fitting
SGW21TE	21	15.5	68	58	40	60	29	M5	4.4	3.7	8	18		4.5	B-M6F
SGW27TE	27	19	80	71.8	51.8	70	40	M6	5.3	6	10	24	12	6	
SGW35TE	35	25.5	120	106.6	77.6	107	60	M8	6.8	8	14	31		8	

part number	standard rail length L mm										
SGW17	110	150	190	230	270	310	350	390	430	510	590
SGW21	130	180	230	280	330	380	430	480	530	630	730
SGW27	160	220	280	340	400	460	520	640	760	880	1,000
SGW35	280	360	440	520	600	680	760	920	1,080	1,240	1,400

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.



*Please refer to page A-73 for accuracy.

guide rail dimensions						basic load rating		allowable static moment			mass		block size	
H ₁	C	B ₁	d×G×h	N	P	dynamic C	static Co	M _P M _{P2}	M _Y M _{Y2}	M _R	block	guide rail		
mm	mm	mm	mm	mm	mm	kN	kN	N·m	N·m	N·m	kg	kg/m		
9	33	18	4.5×7.5×5.3	15	40	4.82	8.56	42.8 261	42.8 261	160	0.14	2.05	17	
11	37	22			50	7.01	12.1	72.3 418	72.3 418	253	0.23	2.84	21	
15	42	24		20	60	12.9	21.5	171 931	171 931	496	0.46	4.43	27	
19	69	40	7×11×9			80	30.6	48.5	578 3,100	578 3,100	1,850	1.35	9.32	35

M_{P2} and M_{Y2} are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N·m≒0.102kgf·m

								maximum length mm
670	750	830	950	1,070	1,190	1,310		2,000
830	930	1,030	1,180	1,330	1,480			2,000
1,180	1,360	1,540	1,720	1,900				3,000
1,640	1,880	2,120						3,000