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.

<table>
<thead>
<tr>
<th>TYPES</th>
<th>Cross Section and Contact Structure</th>
<th>Advantages</th>
<th>Page</th>
</tr>
</thead>
</table>
| miniatures type | retained ball, 2-row, 4-point contact (SEBS-B type) | ● retained ball type  
● available with all stainless steel components  
● 2-row, compact  
● small, light, cost effective | P.A-20 |
| roller | 2-row, 4-point contact (SEB-A type) | ● 2-row, compact  
● small, light, cost effective  
● available in various types  
● available in stainless steel | P.A-20 |
| roller | cross roller (SER type) | ● miniature roller guide  
● cross roller, high precision  
● available with all stainless steel components | P.A-42 |
| high-rigidity type | 4-row, 2-point contact (SGL type) | ● 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 | 4-row, 2-point contact (SGW type) | ● 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 |
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.

**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.

**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 (\(W_2\), \(W_3\)) 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, \(W_4\) should be specified in the part number. Please indicate the number of axes when ordering.

---

**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.

<table>
<thead>
<tr>
<th>Preload</th>
<th>Symbol</th>
<th>Vibration absorption ability</th>
<th>Self-aligning ability</th>
<th>Lifetime</th>
<th>Rigidity</th>
<th>Frictional resistance</th>
<th>Operating conditions</th>
<th>Applicable part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearance</td>
<td>T0</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>SEB</td>
</tr>
<tr>
<td>Standard</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>SEB, SGL</td>
</tr>
<tr>
<td>Light</td>
<td>T1</td>
<td>Increases</td>
<td>Reduces</td>
<td>Reduces</td>
<td>Increases</td>
<td>Increases</td>
<td>Shock and vibration are applied, over-hang load is applied, torsional load is applied.</td>
<td>SEB, SGL</td>
</tr>
<tr>
<td>Medium</td>
<td>T2</td>
<td>Increases</td>
<td>Reduces</td>
<td>Reduces</td>
<td>Increases</td>
<td>Increases</td>
<td></td>
<td>SGL, SGW</td>
</tr>
</tbody>
</table>

---

**Figure A-1 Accuracy Measurement**

**Figure A-2 Measurement Method for Motion Accuracy**

**Figure A-3 4 Parallel Axes**

**Figure A-4 Elastic Deformation of Rolling Elements**
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

\[ L = \left( \frac{f_c \cdot f_r}{C} \right)^3 \cdot \frac{C}{P} \cdot 50 \]

For roller elements (SER type), the equation is

\[ L = \left( \frac{f_c \cdot f_r}{C} \right)^{10/3} \cdot \frac{C}{P} \cdot 50 \]

Where:
- \( C \): basic dynamic load rating (N)
- \( P \): applied load (N)
- \( f_c \): contact coefficient
- \( f_r \): temperature coefficient
- \( f_w \): applied load coefficient

L: rated life (km)

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

\[ L_h = \frac{L \cdot 10^3}{2 \cdot \ell \cdot \ell_s \cdot n_1 \cdot 60} \]

Where:
- \( L_h \): life time (hr)
- \( \ell \): stroke length (m)
- \( n_1 \): number of cycles per minute (cpm)

Refer to page Eng-5 for the coefficients.

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

Refer to the next page for the surface indicated by "※".
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.

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 sideway 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).

- 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.
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.

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.

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)
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

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 fallout 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.
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.

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.

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.

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 also optional. 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)

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.

Table A-3 Special Cap

<table>
<thead>
<tr>
<th>part number</th>
<th>dimensions</th>
<th>applicable part number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D (mm)</td>
<td>t (mm)</td>
</tr>
<tr>
<td>F 3</td>
<td>6.1</td>
<td>1.3</td>
</tr>
<tr>
<td>F 4</td>
<td>7.6</td>
<td>1.1</td>
</tr>
<tr>
<td>F 5</td>
<td>9.7</td>
<td>2.5</td>
</tr>
<tr>
<td>F 6</td>
<td>11.2</td>
<td>2.7</td>
</tr>
<tr>
<td>F 8</td>
<td>14.3</td>
<td>3.65</td>
</tr>
<tr>
<td>F12</td>
<td>20.3</td>
<td>4.65</td>
</tr>
</tbody>
</table>

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-39 for details.
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

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 SGL15, 20, and 25.

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

Reverse-Seal Detail

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

---

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

- When 18 groups of bellows are fitted, the maximum length $f_1$ is calculated:
  
  $f_1 = $guide fitting plate + 1 group $f_{\text{MAX}} + $number of groups + $intermediate plate $× (number of groups - 1)
  
  $= 1.5 + 32 \times 18 + 1.0 \times (18 - 1) = 594.5$

- When 18 groups of bellows are fitted, the minimum length $f_2$ is calculated:
  
  $f_2 = $guide fitting plate + 1 group $f_{\text{MIN}} + $number of groups + $intermediate plate $× (number of groups - 1)
  
  $= 1.5 + 6.5 \times 18 + 1.0 \times (18 - 1) = 135.5$

- With these calculation results, stroke limit (S) and length of the guide rail needed (L) are obtained as follows:
  
  $S = f_1 - f_2 = 594.5 - 135.5 = 459$
  
  $L = f_1 + f_2 + $SGL15TE block $= 594.5 + 135.5 + 56.5 = 786.5 ≈ 787$ (round up)

---

**Note:**

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

---

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

---

<table>
<thead>
<tr>
<th>Applicable Part Number</th>
<th>part number structure</th>
<th>part number</th>
<th>AD profile</th>
</tr>
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<tbody>
<tr>
<td>SEBS 15B</td>
<td>SEBS15B</td>
<td>SEBS15BM</td>
<td>SEBS15A</td>
</tr>
<tr>
<td>SEBS 7B</td>
<td>SEBS7B</td>
<td>SEBS7BM</td>
<td>SEBS7A</td>
</tr>
<tr>
<td>SEBS 9B</td>
<td>SEBS9B</td>
<td>SEBS9BM</td>
<td>SEBS9A</td>
</tr>
<tr>
<td>SEBS12B</td>
<td>SEBS12B</td>
<td>SEBS12BM</td>
<td>SEBS12A</td>
</tr>
<tr>
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<td>SEBS15B</td>
<td>SEBS15BM</td>
<td>SEBS15A</td>
</tr>
<tr>
<td>SEBS20B</td>
<td>SEBS20B</td>
<td>SEBS20BM</td>
<td>SEBS20A</td>
</tr>
</tbody>
</table>

※Please contact NB for details.
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
**ACCURACY**

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

Table A-6 Accuracy

<table>
<thead>
<tr>
<th>accuracy grade</th>
<th>high</th>
<th>precision</th>
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</thead>
<tbody>
<tr>
<td>accuracy symbol</td>
<td>blank</td>
<td>P</td>
</tr>
<tr>
<td>allowable dimensional difference in height H</td>
<td>±0.020</td>
<td>±0.010</td>
</tr>
<tr>
<td>paired difference for height H</td>
<td>0.015</td>
<td>0.007</td>
</tr>
<tr>
<td>allowable dimensional difference in width W</td>
<td>±0.025</td>
<td>±0.015</td>
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<tr>
<td>paired difference for width W</td>
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<td>0.010</td>
</tr>
<tr>
<td>running parallelism of surface C to surface A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>running parallelism of surface D to surface B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

refer to figure A-39,40

Figure A-37 Accuracy

**LOAD RATING**

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

Table A-9 Load Rating

<table>
<thead>
<tr>
<th>load type</th>
<th>retained ball type</th>
<th>non-retained ball type</th>
</tr>
</thead>
<tbody>
<tr>
<td>basic dynamic</td>
<td>vertical</td>
<td>1.00 × C</td>
</tr>
<tr>
<td>load rating</td>
<td>horizontal</td>
<td>0.89 × C</td>
</tr>
<tr>
<td>basic static</td>
<td>vertical</td>
<td>1.00 × C0</td>
</tr>
<tr>
<td>load rating</td>
<td>horizontal</td>
<td>0.84 × C0</td>
</tr>
</tbody>
</table>

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

**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

<table>
<thead>
<tr>
<th>size</th>
<th>preload and symbol</th>
<th>clearance T0</th>
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<th>light¹ T1</th>
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<tbody>
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<td></td>
<td>+1~+3</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>−1~0</td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>+3~+6</td>
<td>−3~0</td>
<td>−4~−2</td>
</tr>
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<td>7</td>
<td></td>
<td>−3~0</td>
<td>−4~−2</td>
<td></td>
</tr>
<tr>
<td>9</td>
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<td>+4~+8</td>
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<td>12</td>
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<td>+1~+3</td>
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<td></td>
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<tr>
<td>15</td>
<td></td>
<td>−1~0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>+3~+6</td>
<td>−3~0</td>
<td>−4~−2</td>
</tr>
<tr>
<td>3W</td>
<td></td>
<td>−3~0</td>
<td>−4~−2</td>
<td></td>
</tr>
<tr>
<td>5W</td>
<td></td>
<td>−3~0</td>
<td>−4~−2</td>
<td></td>
</tr>
<tr>
<td>7W</td>
<td></td>
<td>−3~0</td>
<td>−4~−2</td>
<td></td>
</tr>
<tr>
<td>9W</td>
<td></td>
<td>−3~0</td>
<td>−4~−2</td>
<td></td>
</tr>
<tr>
<td>12W</td>
<td></td>
<td>−3~0</td>
<td>−4~−2</td>
<td></td>
</tr>
<tr>
<td>15W</td>
<td></td>
<td>−3~0</td>
<td>−4~−2</td>
<td></td>
</tr>
</tbody>
</table>

¹ 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 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)

<table>
<thead>
<tr>
<th>size</th>
<th>and over</th>
<th>N</th>
<th>less than</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>10.5</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>36</td>
<td>20</td>
</tr>
</tbody>
</table>

Table A-11 N Dimension (wide type)

<table>
<thead>
<tr>
<th>size</th>
<th>and over</th>
<th>N</th>
<th>less than</th>
</tr>
</thead>
<tbody>
<tr>
<td>3W</td>
<td></td>
<td>10.5</td>
<td>3W</td>
</tr>
<tr>
<td>5W</td>
<td></td>
<td>14</td>
<td>5W</td>
</tr>
<tr>
<td>7W</td>
<td></td>
<td>19</td>
<td>7W</td>
</tr>
<tr>
<td>9W</td>
<td></td>
<td>25</td>
<td>9W</td>
</tr>
<tr>
<td>12W</td>
<td></td>
<td>36</td>
<td>12W</td>
</tr>
<tr>
<td>15W</td>
<td></td>
<td>46</td>
<td>15W</td>
</tr>
</tbody>
</table>
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)

Table A-12 Shoulder Height on the Mounting Reference Surface unit: ㎜
<table>
<thead>
<tr>
<th>size</th>
<th>h1 (shoulder height on the block side)</th>
<th>h2 (shoulder height on the rail side)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>3</td>
<td>1.2</td>
<td>0.8</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>2.5</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>5</td>
<td>3.5</td>
</tr>
<tr>
<td>20</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3W</td>
<td>1.5</td>
<td>0.8</td>
</tr>
<tr>
<td>5W</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7W</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>9W</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>12W</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>15W</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Table A-13 Maximum Corner Radius Values unit: ㎜
<table>
<thead>
<tr>
<th>size</th>
<th>r1 (block mounting part)</th>
<th>r2 (rail mounting part)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>3</td>
<td>0.15</td>
<td>0.1</td>
</tr>
<tr>
<td>5</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>7</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>9</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>12</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>15</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>3W</td>
<td>0.15</td>
<td>0.1</td>
</tr>
<tr>
<td>5W</td>
<td>0.15</td>
<td>0.1</td>
</tr>
<tr>
<td>7W</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>9W</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>12W</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>15W</td>
<td>0.3</td>
<td>0.3</td>
</tr>
</tbody>
</table>

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.

Table A-14 Recommended Torque unit: N・m
<table>
<thead>
<tr>
<th>size</th>
<th>M1</th>
<th>M1.4</th>
<th>M1.6</th>
<th>M2</th>
<th>M2.6</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
</tr>
</thead>
<tbody>
<tr>
<td>torque (for stainless steel screw A2-70)</td>
<td>0.03</td>
<td>0.10</td>
<td>0.15</td>
<td>0.3</td>
<td>0.65</td>
<td>1.0</td>
<td>2.3</td>
<td>4.7</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Mounting Screw
Extremely small custom screws are available from NB.

Table A-15 Mounting Screw (stainless steel)

<table>
<thead>
<tr>
<th>type</th>
<th>shape</th>
<th>size</th>
<th>D (mm)</th>
<th>H (mm)</th>
<th>pitch (mm)</th>
<th>f (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>custom screw</td>
<td>Figure A-43①</td>
<td>M1</td>
<td>1.8</td>
<td>0.45</td>
<td>0.25</td>
<td>3, 4, 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M1.4</td>
<td>2.5</td>
<td>0.8</td>
<td>0.3</td>
<td>2.5, 3, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M1.6</td>
<td>2.3</td>
<td>0.5</td>
<td>0.35</td>
<td>4, 5, 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M2</td>
<td>3</td>
<td>0.6</td>
<td>0.4</td>
<td>6</td>
</tr>
<tr>
<td>cap screw</td>
<td>Figure A-43②</td>
<td>M2</td>
<td>3.8</td>
<td>2</td>
<td>0.4</td>
<td>4, 5, 6, 8, 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M2.6</td>
<td>4.5</td>
<td>2.6</td>
<td>0.45</td>
<td>4, 5, 6, 8, 10</td>
</tr>
</tbody>
</table>

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 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-42), as the magnified view of Figure A-44 shows. Please refer to page Eng-39 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
- 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:
  blank: return cap
- T0: clearance
- T1: light

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

<table>
<thead>
<tr>
<th>part number</th>
<th>resin</th>
<th>return cap</th>
<th>stainless</th>
<th>basic load rating</th>
<th>allowable static moment</th>
<th>mass</th>
<th>guide rail size</th>
<th>block size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS 5B</td>
<td>SEBS 5BM</td>
<td>6</td>
<td>3.5</td>
<td>12</td>
<td>H</td>
<td>W</td>
<td>B</td>
<td>L1</td>
</tr>
<tr>
<td>SEBS 5BY</td>
<td>SEBS 5BYM</td>
<td>19.5</td>
<td>19.9</td>
<td>—</td>
<td>7</td>
<td>—</td>
<td>M2</td>
<td>6</td>
</tr>
<tr>
<td>SEBS 5BYD</td>
<td>SEBS 5BYDM</td>
<td>19.5</td>
<td>19.9</td>
<td>—</td>
<td>7</td>
<td>—</td>
<td>M2</td>
<td>6</td>
</tr>
<tr>
<td>SEBS 7BS</td>
<td>SEBS 7BSM</td>
<td>18.2</td>
<td>19</td>
<td>—</td>
<td>M2</td>
<td>6</td>
<td>1.8</td>
<td>12.3</td>
</tr>
<tr>
<td>SEBS 7B</td>
<td>SEBS 7BM</td>
<td>22.2</td>
<td>23</td>
<td>12</td>
<td>8</td>
<td>M2</td>
<td>6</td>
<td>1.8</td>
</tr>
<tr>
<td>SEBS 7BY</td>
<td>SEBS 7BYM</td>
<td>31.7</td>
<td>32.5</td>
<td>13</td>
<td>M2</td>
<td>6</td>
<td>1.8</td>
<td>12.3</td>
</tr>
<tr>
<td>SEBS 9BS</td>
<td>SEBS 9BSM</td>
<td>20.5</td>
<td>21.3</td>
<td>—</td>
<td>M3</td>
<td>3</td>
<td>19.6</td>
<td>7.8</td>
</tr>
<tr>
<td>SEBS 9B</td>
<td>SEBS 9BM</td>
<td>30</td>
<td>30.8</td>
<td>15</td>
<td>10</td>
<td>M3</td>
<td>3</td>
<td>19.6</td>
</tr>
<tr>
<td>SEBS 9BY</td>
<td>SEBS 9BYM</td>
<td>39.5</td>
<td>40.3</td>
<td>16</td>
<td>M3</td>
<td>3</td>
<td>19.6</td>
<td>7.8</td>
</tr>
</tbody>
</table>

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.
SEBS-BS/B/BY TYPE
SEBS-BSM/BM/BYM TYPE
— Retained Ball Type —

part number structure

example: SEBS 15BS MYU 2 T1 - 589 N P / W2

- SEBS: anti-corrosion
  size
- block: 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
  TO: clearance
  blank: standard
- T1: light

symbol for:
- number of axes:
  blank: single axis
- W2: 2 parallel axes
- W3: 3 parallel axes
- accuracy grade:
  blank: high
  P: precision
rail mounting hole
  blank: counterbore
  N: tapped hole

total length of rail

※ Please refer to page A-22 for accuracy.

<table>
<thead>
<tr>
<th>part number</th>
<th>assembly dimensions</th>
<th>block dimensions</th>
<th>guide rail dimensions</th>
<th>basic load rating</th>
<th>allowable static moment</th>
<th>mass block g</th>
<th>guide rail size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS15BS</td>
<td>15BS</td>
<td>H (mm) W (mm)</td>
<td>B (mm) L1 (mm) L2 (mm) P1 (mm) P2 (mm) S1 (mm) f (mm) L3 (mm) b (mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEBS12B</td>
<td>12B</td>
<td>13 7.5 27</td>
<td>24.2 24.6 10 3 306.4 22 7.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEBS12BMY</td>
<td>12B MY</td>
<td>13 7.5 27</td>
<td>45.7 46.1 20 3 306.4 22 7.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEBS15BS</td>
<td>15BS</td>
<td>16 8.5 32</td>
<td>42.6 43 25 4 27.6 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEBS15BMY</td>
<td>15B MY</td>
<td>16 8.5 32</td>
<td>58.6 59 25 4 43.6</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SEBS20B</td>
<td>20B</td>
<td>25 13 46</td>
<td>65.9 65.9 38 38 M4 6 44.7 17.5</td>
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<td></td>
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</tr>
<tr>
<td>SEBS20BMY</td>
<td>20B MY</td>
<td>25 13 46</td>
<td>85.7 85.7 38 38 M4 6 44.7 17.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>part number</th>
<th>standard rail length</th>
<th>maximum length mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS12B</td>
<td>70 96 120 145 179 195 220 245 270 295 320 345 370 395 420 445</td>
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</tr>
<tr>
<td>SEBS15B</td>
<td>70 110 150 190 230 270 310 350 390 430 470 500 550 590 630 670</td>
<td></td>
</tr>
<tr>
<td>SEBS20B</td>
<td>220 280 340 400 460 520 580 640 700 760 820 880 940 1,000</td>
<td></td>
</tr>
</tbody>
</table>

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.
SEBS-WBS/WB/WBY TYPE
— Retained Ball • Wide Type —

part number structure

elementary dimensions

block dimensions

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

accuracy grade
blank: high
P: precision

rail mounting hole
blank: counterbore
N: tapped hole

total length of rail

rail guide dimensions

guide rail dimensions

block dimensions

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

part number

SEBS 5WB
SEBS 5WBY
SEBS 7WB
SEBS 7WBY
SEBS 9WB
SEBS 9WBY

<table>
<thead>
<tr>
<th>part number</th>
<th>H</th>
<th>W</th>
<th>B</th>
<th>L1</th>
<th>L2</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>S1</th>
<th>f1</th>
<th>L3</th>
<th>P3</th>
<th>S3</th>
<th>f2</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS 5WB</td>
<td>6.5</td>
<td>3.5</td>
<td>17</td>
<td>21.5</td>
<td>21.9</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>14.3</td>
<td>6.5</td>
<td>—</td>
<td>M3</td>
<td>2.3</td>
</tr>
<tr>
<td>SEBS 5WBY</td>
<td>27.5</td>
<td>27.9</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>11</td>
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</tr>
<tr>
<td>SEBS 7WB</td>
<td>30.6</td>
<td>31.4</td>
<td>19</td>
<td>10.7</td>
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<td>—</td>
</tr>
<tr>
<td>SEBS 7WBY</td>
<td>39.3</td>
<td>40.1</td>
<td>19</td>
<td>28.9</td>
<td>18</td>
<td>2.8</td>
<td>M3</td>
<td>2.3</td>
<td>5</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SEBS 9WB</td>
<td>24.2</td>
<td>25</td>
<td>37.5</td>
<td>38.3</td>
<td>12</td>
<td>26.3</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>SEBS 9WBY</td>
<td>49.5</td>
<td>50.3</td>
<td>23</td>
<td>38.3</td>
<td>3</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

standard rail length

<table>
<thead>
<tr>
<th>part number</th>
<th>L mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS 5WB</td>
<td>50</td>
</tr>
<tr>
<td>SEBS 7WB</td>
<td>50</td>
</tr>
<tr>
<td>SEBS 9WB</td>
<td>50</td>
</tr>
</tbody>
</table>

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.

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

The minimum standard rail can be used for SEBS 9 WBY.

<table>
<thead>
<tr>
<th>M1 and M2 are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N・m≒0.102kgf・m</th>
<th>500</th>
<th>530</th>
</tr>
</thead>
<tbody>
<tr>
<td>maximum length mm</td>
<td>countereb/l tapped hole</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>1,300</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>1480</td>
<td>1000</td>
<td></td>
</tr>
</tbody>
</table>
SEBS-WBS/WB/WBY TYPE
— Retained Ball • Wide Type —

part number structure

example: SEBS15WB Y UU 2 T1 - 589 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
TO: clearance
blank: standard
T1: light
rail mounting hole
blank: counterbore
N: tapped hole

accuracy grade
blank: high
P: precision

preload symbol
blank: clearance
T0: standard
T1: light

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.

rail dimensions

<table>
<thead>
<tr>
<th>part number</th>
<th>standard rail length L mm</th>
<th>maximum length mm counterbore have it low type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS12WB</td>
<td>70 110 150 190 230 270 310 350 430 470 510 550 590 630</td>
<td>670 710</td>
</tr>
<tr>
<td>SEBS15WB</td>
<td>70 110 150 190 230 270 310 350 430 470 510 550 590 630</td>
<td>670 710 750 790 830 870 1,480 1,000</td>
</tr>
</tbody>
</table>

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 15 WBY.

— Plan view —

<table>
<thead>
<tr>
<th>guide rail dimensions</th>
<th>guide rail size block size</th>
<th>mass block g</th>
<th>allowable static moment Mz N・m</th>
<th>allowable static moment My N・m</th>
<th>basic load rating C dynamic kN</th>
<th>C static kN</th>
<th>dynamic P N・m</th>
<th>g (7/10mm)</th>
<th>static Co kN</th>
<th>static Mp kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS12WB Y UU 2 T1 -</td>
<td>589 N P/W2</td>
<td>43</td>
<td>137</td>
<td>106</td>
<td>54.3</td>
<td>54.3</td>
<td>126</td>
<td>105</td>
<td>46.6</td>
<td>46.6</td>
</tr>
<tr>
<td>SEBS15WB Y UU 2 T1 -</td>
<td>589 N P/W2</td>
<td>98</td>
<td>286</td>
<td>216</td>
<td>22.9</td>
<td>22.9</td>
<td>148</td>
<td>215</td>
<td>125</td>
<td>125</td>
</tr>
</tbody>
</table>

Mz and My are allowable static moments when two blocks are used in close contact. 1kN≒102kgf 1N・m≒0.102kgf・m
### SEB-A/AY Type

#### Part Number Structure

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard</th>
<th>Anti-Corrosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS 2A</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
<tr>
<td>SEBS 3A</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
<tr>
<td>SEBS 3AY</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
<tr>
<td>SEBS 5A</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
<tr>
<td>SEBS 5AY</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
<tr>
<td>SEBS 7A</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
<tr>
<td>SEBS 7AY</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
</tbody>
</table>

#### Assembly Dimensions

<table>
<thead>
<tr>
<th>Block Number</th>
<th>H</th>
<th>W</th>
<th>B</th>
<th>L1</th>
<th>L2</th>
<th>P1</th>
<th>P2</th>
<th>S1</th>
<th>f</th>
<th>L3</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS 2A</td>
<td>3.2</td>
<td>2</td>
<td>6</td>
<td>12.9</td>
<td>14.3</td>
<td>4</td>
<td>M1.4</td>
<td>1.05</td>
<td>9.3</td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td>SEBS 3A</td>
<td>4</td>
<td>2.5</td>
<td>8</td>
<td>10.5</td>
<td>11.8</td>
<td>3.5</td>
<td>M1.6</td>
<td>1.3</td>
<td>6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEBS 5A</td>
<td>6</td>
<td>3.5</td>
<td>12</td>
<td>15.6</td>
<td>17</td>
<td>8</td>
<td>M2</td>
<td>1.5</td>
<td>9.8</td>
<td></td>
<td>4.5</td>
</tr>
<tr>
<td>SEBS 7A</td>
<td>8</td>
<td>5</td>
<td>17</td>
<td>21.9</td>
<td>24</td>
<td>12</td>
<td>M2</td>
<td>2.5</td>
<td>15.1</td>
<td></td>
<td>6.5</td>
</tr>
</tbody>
</table>

#### Rail Dimensions

<table>
<thead>
<tr>
<th>Guide Rail Dimensions</th>
<th>H1</th>
<th>C</th>
<th>d×G×h</th>
<th>S1</th>
<th>N</th>
<th>P</th>
<th>mm</th>
<th>kN</th>
<th>kN</th>
<th>N</th>
<th>m</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS 2A</td>
<td>2</td>
<td>2</td>
<td>—</td>
<td>M1</td>
<td>4</td>
<td>8</td>
<td>0.21</td>
<td>0.38</td>
<td>0.53</td>
<td>0.64</td>
<td>0.41</td>
</tr>
<tr>
<td>SEBS 3A</td>
<td>2.6</td>
<td>3</td>
<td>—</td>
<td>M1.6</td>
<td>10</td>
<td>0.25</td>
<td>0.36</td>
<td>0.39</td>
<td>0.42</td>
<td>0.46</td>
<td>0.57</td>
</tr>
<tr>
<td>SEBS 5A</td>
<td>4</td>
<td>5</td>
<td>2.4×3.5×1</td>
<td>M2.6</td>
<td>5</td>
<td>0.59</td>
<td>0.81</td>
<td>1.32</td>
<td>2.42</td>
<td>1.58</td>
<td>1.56</td>
</tr>
<tr>
<td>SEBS 7A</td>
<td>4.7</td>
<td>7</td>
<td>2.4×4.2×2.3</td>
<td>M3</td>
<td>5</td>
<td>0.74</td>
<td>1.11</td>
<td>2.39</td>
<td>2.86</td>
<td>2.96</td>
<td>2.90</td>
</tr>
</tbody>
</table>

#### Standard Rail Lengths

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard</th>
<th>Anti-Corrosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS 2A</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
<tr>
<td>SEBS 3A</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
<tr>
<td>SEBS 5A</td>
<td>SEBS</td>
<td>SEBS</td>
</tr>
</tbody>
</table>

#### Joint Rails

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.
### SEB-A/AY TYPE

**Part number structure**

- **Example**: SEBS 15A / YU / U / T1 / N / P / W2

<table>
<thead>
<tr>
<th>Block dimensions</th>
<th>Abenity dimension</th>
<th>Part number</th>
<th>standard</th>
<th>anti-corrosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>L2</td>
<td>B</td>
<td>H</td>
<td>W</td>
</tr>
<tr>
<td>SEBS 9A</td>
<td>SEBS 9A</td>
<td>10</td>
<td>5.5</td>
<td>20</td>
</tr>
<tr>
<td>SEBS 9AY</td>
<td>SEBS 9AY</td>
<td>38.1</td>
<td>40</td>
<td>16</td>
</tr>
<tr>
<td>SEBS12A</td>
<td>SEBS12A</td>
<td>13</td>
<td>7.5</td>
<td>27</td>
</tr>
<tr>
<td>SEBS12AY</td>
<td>SEBS12AY</td>
<td>42</td>
<td>45.5</td>
<td>20</td>
</tr>
<tr>
<td>SEBS15A</td>
<td>SEBS15A</td>
<td>16</td>
<td>8.5</td>
<td>32</td>
</tr>
<tr>
<td>SEBS15AY</td>
<td>SEBS15AY</td>
<td>54.5</td>
<td>58</td>
<td>25</td>
</tr>
<tr>
<td>SEBS20A</td>
<td>SEBS20A</td>
<td>25</td>
<td>13</td>
<td>46</td>
</tr>
<tr>
<td>SEBS20AY</td>
<td>SEBS20AY</td>
<td>79.5</td>
<td>85</td>
<td>69.5</td>
</tr>
</tbody>
</table>

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

### Assembly dimensions

- **Block dimensions**
- **Part number**

**Guide rail dimensions**

<table>
<thead>
<tr>
<th>H1</th>
<th>C</th>
<th>guide rail dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>9</td>
<td>3.5×6×3.5</td>
</tr>
<tr>
<td>7.5</td>
<td>12</td>
<td>3.5×6×4.5</td>
</tr>
<tr>
<td>9.5</td>
<td>15</td>
<td>3.5×6×4.5</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
<td>6×9.5×8.5</td>
</tr>
</tbody>
</table>

**Basic load ratings**

<table>
<thead>
<tr>
<th>H1</th>
<th>C</th>
<th>Guide rail dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>9</td>
<td>3.5×6×3.5</td>
</tr>
<tr>
<td>7.5</td>
<td>12</td>
<td>3.5×6×4.5</td>
</tr>
<tr>
<td>9.5</td>
<td>15</td>
<td>3.5×6×4.5</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
<td>6×9.5×8.5</td>
</tr>
</tbody>
</table>

**Maximum length**

<table>
<thead>
<tr>
<th>Maximum length</th>
<th>SEBS series</th>
<th>SEB series</th>
</tr>
</thead>
<tbody>
<tr>
<td>355</td>
<td>375</td>
<td>395</td>
</tr>
<tr>
<td>445</td>
<td>470</td>
<td>495</td>
</tr>
</tbody>
</table>

---

*Please refer to page A-22 for accuracy.*
**SEB-WA/WAY TYPE**

--- Wide block ---

**part number structure**

- **Example:** SEBS 9WAY UU 2 T1 -289 N P/W2
  - **Specification:** SEB standard, SEBS anti-corrosion
  - **Size:**
    - **Block:** standard
    - **Y:** long
  - **Seal:** blank, without side-seal
  - **UU:** with side-seals
  - **Number of blocks attached to one rail:** 2

**rail mounting hole**

<table>
<thead>
<tr>
<th>symbol</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>blank</td>
</tr>
<tr>
<td>T0</td>
<td>preload symbol</td>
</tr>
<tr>
<td>T1</td>
<td>blank</td>
</tr>
<tr>
<td>N</td>
<td>rail mounting hole</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>symbol for number of axes</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2</td>
<td>standard anti-corrosion</td>
</tr>
<tr>
<td>M4</td>
<td>anti-corrosion standard</td>
</tr>
</tbody>
</table>

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

**Example:**

<table>
<thead>
<tr>
<th>part number</th>
<th>block dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS 3WA</td>
<td>9.5 mm x 3 mm x 12 mm</td>
</tr>
<tr>
<td>SEBS 7WAY</td>
<td>9 mm x 5.5 mm x 25 mm</td>
</tr>
<tr>
<td>SEBS 9WAY</td>
<td>9 mm x 6 mm x 30 mm</td>
</tr>
</tbody>
</table>

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

**Joint rails are used when the required length exceeds the minimum standard rail length.**

**Please contact NB for details. SEB9WAY block lengths exceed the minimum standard rail length.**

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

**Maximum and Mv are allowable static moments when two blocks are used in close contact.**

<table>
<thead>
<tr>
<th>S1 (mm)</th>
<th>S2 (mm)</th>
<th>S3 (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.8</td>
<td>5.2</td>
<td>4.8</td>
</tr>
</tbody>
</table>

**SEBS3WA/3WAY rail mounting screw**

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

**Part number structure**

- **Example:** SEBS 9WAY UU 2 T1 -289 N P/W2
  - **Part number:**
    - **SEBS:** standard
    - **U:** anti-corrosion
  - **Size:**
    - **SEBS 3WA:** 9.5 mm x 3 mm x 12 mm
    - **SEBS 7WAY:** 9 mm x 5.5 mm x 25 mm
    - **SEBS 9WAY:** 9 mm x 6 mm x 30 mm

**Standard rail length**

<table>
<thead>
<tr>
<th>length (mm)</th>
<th>500</th>
<th>530</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEBS 3WA</td>
<td>500</td>
<td>530</td>
</tr>
<tr>
<td>SEBS 7WAY</td>
<td>1,000</td>
<td>1,900</td>
</tr>
<tr>
<td>SEBS 9WAY</td>
<td>1,480</td>
<td>1,900</td>
</tr>
</tbody>
</table>

**Note:** The symbol for the number of axes does not mean the number of rails ordered.
**SEB-WA/WAY TYPE**

- Wide block -

### Part Number Structure

**Example:** SEBS15WA Y UU2 T1 N P/W2

- **Specification:** SEB standard, SEBS anti-corrosion
- **Size:**
  - **Block:** standard, Y: long
  - **Seal:** blank: without side-seal, UU: with side-seals
  - **Number of Blocks Attached to One Rail:** blank
  - **Accuracy Grade:** blank: high, P: precision
  - **Rail Mounting Hole:** blank: counterbore, N: tapped hole
- **Number of Axes Symbol:**
  - blank: single axis
  - W2: 2 parallel axes
  - W3: 3 parallel axes
- **Preload Symbol:**
  - TO: clearance
  - blank: standard
  - T1: light

**Symbol for Number of Axes ( ※ )**

- blank: single axis
- W2: 2 parallel axes
- W3: 3 parallel axes

**Rail Mounting Hole (blank):**
- Counterbore
- N: Tapped hole

**Total Length of Rail:**

- blank
- W2

### Specifications and Dimensions

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Size</th>
<th>Block Dimensions</th>
<th>Guide Rail Dimensions</th>
<th>Basic Load Rating</th>
<th>Allowable Static Moment</th>
<th>Mass</th>
<th>Guide Rail Dimensions</th>
<th>Block Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEB12WA SEB12WA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12WA</td>
</tr>
<tr>
<td>SEB12WAY SEB12WAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12WAY</td>
</tr>
<tr>
<td>SEB15WA SEB15WA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15WA</td>
</tr>
<tr>
<td>SEB15WAY SEB15WAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15WAY</td>
</tr>
</tbody>
</table>

- **Basic Load Rating:**
  - Dynamic C: kN
  - Static Co: kN

- **Allowable Static Moment:**
  - Mx: N・m
  - My: N・m

- **Mass (g):**
  - Block: g
  - Guide Rail: kg/10mm

- **Guide Rail Dimensions:**
  - H1: mm
  - C: mm
  - B1: mm
  - d×G×h: mm
  - S3: mm
  - N: mm
  - P: mm

- **Block Size:**
  - 12WA
  - 12WAY
  - 15WA
  - 15WAY

*Please refer to page A-22 for accuracy.*

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

### Rail Lengths

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Rail Length</th>
<th>Maximum Length</th>
<th>Standard</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEB12WA SEB12WA</td>
<td>70 110 150 190 230 270 310 350 390 430 470 510 550 590 630</td>
<td>670 710</td>
<td>1,900 1,480 1,900 1,000</td>
<td></td>
</tr>
<tr>
<td>SEB15WA SEB15WA</td>
<td>70 110 150 190 230 270 310 350 390 430 470 510 550 590 630</td>
<td>670 710 750 830 870</td>
<td>1,900 1,480 1,900 1,000</td>
<td></td>
</tr>
</tbody>
</table>

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.
**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.

**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.

*Figure A-45 Structure of SER type Slide Guide*

---

**TABLE A-16 Accuracy**

<table>
<thead>
<tr>
<th>Accuracy grade</th>
<th>accuracy symbol</th>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>high</td>
<td>blank</td>
<td>±0.015</td>
</tr>
<tr>
<td>precision</td>
<td>P</td>
<td>±0.008</td>
</tr>
</tbody>
</table>

| 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  |

*Refer to Figure A-48, 49*

---

**Figure A-47 Motion Accuracy**

---

**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.

**SER-A type**

**SER-WA type**

---

**Figure A-46 Accuracy**

---

*Figure A-45 Structure of SER type Slide Guide*
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

**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 radii are shown in Table A-19 and Table A-20 respectively.

**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-39 for details on the low dust generation grease.

A special syringe lubricant dispenser is available from NB as an option (refer to page Eng-42).
SER-A TYPE

part number structure

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

- accuracy grade
  - blank: high
  - P: precision

- rail mounting hole
  - blank: counterbore
  - N: tapped hole

- number of blocks attached to one rail
- total length of rail

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

Please refer to page A-43 for accuracy.

<table>
<thead>
<tr>
<th>part number</th>
<th>assembly dimension</th>
<th>block dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>standard</td>
<td>H [mm]</td>
<td>W [mm]</td>
</tr>
<tr>
<td>anti-corrosion</td>
<td>B [mm]</td>
<td>L1 [mm]</td>
</tr>
<tr>
<td></td>
<td>L2 [mm]</td>
<td>Pr [mm]</td>
</tr>
<tr>
<td></td>
<td>P2 [mm]</td>
<td>St [mm]</td>
</tr>
<tr>
<td></td>
<td>f [mm]</td>
<td>b [mm]</td>
</tr>
<tr>
<td>SER 9A</td>
<td>10</td>
<td>5.7</td>
</tr>
<tr>
<td>SERS 9A</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>SER15A</td>
<td>16</td>
<td>8.5</td>
</tr>
<tr>
<td>SERS15A</td>
<td>25</td>
<td>13</td>
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<tr>
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<td>13</td>
</tr>
<tr>
<td>SERS20A</td>
<td>25</td>
<td>13</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>standard rail length</th>
<th>maximum length</th>
</tr>
</thead>
<tbody>
<tr>
<td>L [mm]</td>
<td>[mm]</td>
</tr>
<tr>
<td>SER 9A</td>
<td>55</td>
</tr>
<tr>
<td>SERS 9A</td>
<td>120</td>
</tr>
<tr>
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<td>150</td>
</tr>
<tr>
<td>SERS15A</td>
<td>220</td>
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<tr>
<td>SER20A</td>
<td>280</td>
</tr>
<tr>
<td>SERS20A</td>
<td>340</td>
</tr>
<tr>
<td>2.5</td>
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<td>3</td>
<td>11.5</td>
</tr>
<tr>
<td>4</td>
<td>17.5</td>
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<tr>
<td>5.5</td>
<td>20</td>
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<tr>
<td>7.5</td>
<td>25</td>
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<tr>
<td>9.5</td>
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<tr>
<td>15</td>
<td>60</td>
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<tr>
<td>20</td>
<td>80</td>
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<td>120</td>
<td>550</td>
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<tr>
<td>160</td>
<td>750</td>
</tr>
<tr>
<td>170</td>
<td>800</td>
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<tr>
<td>180</td>
<td>850</td>
</tr>
<tr>
<td>190</td>
<td>900</td>
</tr>
<tr>
<td>200</td>
<td>950</td>
</tr>
<tr>
<td>210</td>
<td>1000</td>
</tr>
</tbody>
</table>

1kN≒102kgf 1N・m≒0.102kgf・m
## SER-WA TYPE

### Wide Type

### Part Number Structure

- **Example:** SERS 15WA UU 2 - 589 N P W 2

  - **Spec:**
    - SER: Standard
    - SERS: Anti-corrosion
  - **Size:**
    - Blank: Without side-seal
    - UU: With side-seals
  - **Seal:**
    - Blank: High P. precision
    - Counterbore N: Tapped hole
  - **Number of Blocks Attached to One Rail:**
    - Blank
  - **Total Length of Rail:**
    - Total

### Note:
- The symbol for the number of axes does not mean the number of rails ordered.

---

### Assembly Dimensions

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Assembly Dim.</th>
<th>Block Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>Anti-corrosion</td>
<td>Standard rail length</td>
</tr>
</tbody>
</table>

### Symbol for Number of Axes

- **Single Axis:** Blank
- **2 Parallel Axes:** W 2
- **3 Parallel Axes:** W 3

### Reference:
- Please refer to page A-43 for accuracy.

---

### Guide Rail Dimensions

<table>
<thead>
<tr>
<th>Guide Rail Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 mm</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>7.5</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9.5</td>
</tr>
</tbody>
</table>

### Notes:
- 1kN = 102kgf
- 1N・m = 102kgf・m

---

### Specifications

- SER: Standard
- SERS: Anti-corrosion
- Seal: Without side-seal UU
- Number of Blocks: Single axis

---

### Notes and Measurements

- B1 mm
- C mm
- S2 mm
- d x G x h mm
- L mm
- Mm N・m
- P mm
- Mm N・m
- Mass g
- Guide Rail L/mm

---

**Part Number:**
- SER 9WA
- SER 12WA
- SER 15WA

**Seal:**
- Blank
- UU

**Standard Rail Length:**
- 80 mm
- 110 mm
- 150 mm
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.

**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)

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.

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

<table>
<thead>
<tr>
<th>Block Types</th>
<th>SGL-F type</th>
<th>SGLS-F type</th>
<th>SGL-TF type</th>
<th>SGLS-TF type</th>
<th>SGL-HTF type</th>
<th>SGLS-HTF type</th>
</tr>
</thead>
</table>

**accuracy symbol**

<table>
<thead>
<tr>
<th>accuracy symbol</th>
<th>standard</th>
<th>high</th>
<th>precision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
</tbody>
</table>

**accurate dimensional tolerance for height H**

<table>
<thead>
<tr>
<th>part number</th>
<th>±0.1</th>
<th>±0.03</th>
<th>±0.03~0</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15,20</td>
<td>±0.1</td>
<td>±0.03</td>
<td>±0.03~0</td>
</tr>
<tr>
<td>SGL25,30,35</td>
<td>±0.1</td>
<td>±0.04</td>
<td>±0.04~0</td>
</tr>
<tr>
<td>SGL45</td>
<td>±0.1</td>
<td>±0.05</td>
<td>±0.05~0</td>
</tr>
</tbody>
</table>

**paired difference for height H**

<table>
<thead>
<tr>
<th>part number</th>
<th>±0.02</th>
<th>±0.01</th>
<th>±0.006</th>
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</thead>
<tbody>
<tr>
<td>SGL15,20</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
</tr>
<tr>
<td>SGL25,30,35</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
</tr>
<tr>
<td>SGL45</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
</tr>
</tbody>
</table>

**accurate dimensional tolerance for width W**

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<th>±0.03</th>
<th>±0.03~0</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15,20</td>
<td>±0.1</td>
<td>±0.03</td>
<td>±0.03~0</td>
</tr>
<tr>
<td>SGL25,30,35</td>
<td>±0.1</td>
<td>±0.04</td>
<td>±0.04~0</td>
</tr>
<tr>
<td>SGL45</td>
<td>±0.1</td>
<td>±0.05</td>
<td>±0.05~0</td>
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</tbody>
</table>

**paired difference for width W**

<table>
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<th>±0.01</th>
<th>±0.006</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15,20</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
</tr>
<tr>
<td>SGL25,30,35</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
</tr>
<tr>
<td>SGL45</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
</tr>
</tbody>
</table>

**Running parallelism of surface C to surface A**

<table>
<thead>
<tr>
<th>part number</th>
<th>±0.03</th>
<th>±0.015</th>
<th>±0.007</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15,20</td>
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<td>±0.015</td>
<td>±0.007</td>
</tr>
<tr>
<td>SGL25,30,35</td>
<td>±0.03</td>
<td>±0.015</td>
<td>±0.007</td>
</tr>
<tr>
<td>SGL45</td>
<td>±0.03</td>
<td>±0.015</td>
<td>±0.007</td>
</tr>
</tbody>
</table>

**Running parallelism of surface D to surface B**

<table>
<thead>
<tr>
<th>part number</th>
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<th>±0.01</th>
<th>±0.006</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15,20</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
</tr>
<tr>
<td>SGL25,30,35</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
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<td>SGL45</td>
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<td>±0.01</td>
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</table>

**Precision grade**

Table A-23 Accuracy

<table>
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<tr>
<th>part number</th>
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</thead>
<tbody>
<tr>
<td>SGL15,20</td>
<td>±0.03</td>
<td>±0.015</td>
<td>±0.007</td>
</tr>
<tr>
<td>SGL25,30,35</td>
<td>±0.03</td>
<td>±0.015</td>
<td>±0.007</td>
</tr>
<tr>
<td>SGL45</td>
<td>±0.03</td>
<td>±0.015</td>
<td>±0.007</td>
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**Precision grade**

<table>
<thead>
<tr>
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<th>±0.01</th>
<th>±0.006</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15,20</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
</tr>
<tr>
<td>SGL25,30,35</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
</tr>
<tr>
<td>SGL45</td>
<td>±0.02</td>
<td>±0.01</td>
<td>±0.006</td>
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</tbody>
</table>

**Table A-23 Accuracy**

<table>
<thead>
<tr>
<th>part number</th>
<th>±0.03</th>
<th>±0.015</th>
<th>±0.007</th>
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</thead>
<tbody>
<tr>
<td>SGL15,20</td>
<td>±0.03</td>
<td>±0.015</td>
<td>±0.007</td>
</tr>
<tr>
<td>SGL25,30,35</td>
<td>±0.03</td>
<td>±0.015</td>
<td>±0.007</td>
</tr>
<tr>
<td>SGL45</td>
<td>±0.03</td>
<td>±0.015</td>
<td>±0.007</td>
</tr>
</tbody>
</table>

**Figure A-52 Structure of SGL type Slide Guide**

Figure A-53 Motion Accuracy
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

<table>
<thead>
<tr>
<th>preload symbol</th>
<th>standard</th>
<th>light</th>
<th>medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15</td>
<td>−4~+2</td>
<td>−12~4</td>
<td>−</td>
</tr>
<tr>
<td>SGL20</td>
<td>−5~+2</td>
<td>−14~5</td>
<td>−23~14</td>
</tr>
<tr>
<td>SGL25</td>
<td>−6~+3</td>
<td>−16~6</td>
<td>−26~16</td>
</tr>
<tr>
<td>SGL30</td>
<td>−7~+4</td>
<td>−19~7</td>
<td>−31~19</td>
</tr>
<tr>
<td>SGL35</td>
<td>−8~+4</td>
<td>−22~8</td>
<td>−35~22</td>
</tr>
<tr>
<td>SGL45</td>
<td>−10~+5</td>
<td>−25~10</td>
<td>−40~25</td>
</tr>
</tbody>
</table>

Table A-25 Preload Symbol and Operating Conditions  unit : μm

<table>
<thead>
<tr>
<th>preload symbol</th>
<th>operating conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>standard blank</td>
<td>minute vibration is applied. accurate motion is required. moment is applied in a given direction.</td>
</tr>
<tr>
<td>light T1</td>
<td>light vibration is applied. light torsional load is applied. moment is applied.</td>
</tr>
<tr>
<td>medium T2</td>
<td>shock and vibration are applied. over-hang load is applied. torsional load is applied.</td>
</tr>
</tbody>
</table>

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.

\[ L = M \cdot P + 2N \]

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

Table A-26 N Dimension  unit : mm

<table>
<thead>
<tr>
<th>part number</th>
<th>and over 36</th>
<th>36 and over 72.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>SGL20</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>SGL25</td>
<td>11</td>
<td>41</td>
</tr>
<tr>
<td>SGL30</td>
<td>12</td>
<td>52</td>
</tr>
<tr>
<td>SGL35</td>
<td>16</td>
<td>56</td>
</tr>
<tr>
<td>SGL45</td>
<td>20</td>
<td>72.5</td>
</tr>
</tbody>
</table>

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.

### 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

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-39 for details on the low dust generation grease.

A Grease Gun Set is available as a maintenance kit (refer to page Eng-42).
### SGL-F TYPE

#### part number structure

<table>
<thead>
<tr>
<th>SGL standard</th>
<th>anti-corrosion</th>
<th>example</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15</td>
<td>F</td>
<td>SGL15F</td>
</tr>
<tr>
<td>SGL15D</td>
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<td>SGL15D</td>
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<tr>
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<td>S</td>
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</tr>
<tr>
<td>SGL35F</td>
<td>—</td>
<td>SGL35F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>symbol for grease</th>
</tr>
</thead>
<tbody>
<tr>
<td>blank: standard grease</td>
</tr>
<tr>
<td>KGL: lithium-based grease</td>
</tr>
<tr>
<td>KGU: urea-based grease</td>
</tr>
<tr>
<td>KGF: anti-fretting grease</td>
</tr>
<tr>
<td>GK: grease</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>part number</th>
<th>number of axes</th>
<th>accuracy grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15F</td>
<td>standard grease</td>
<td></td>
</tr>
<tr>
<td>SGL15D</td>
<td>high</td>
<td></td>
</tr>
<tr>
<td>SGL20F</td>
<td>precision</td>
<td></td>
</tr>
<tr>
<td>SGL25F</td>
<td>high</td>
<td></td>
</tr>
<tr>
<td>SGL20F-D</td>
<td>precision</td>
<td></td>
</tr>
<tr>
<td>SGL35F</td>
<td>precision</td>
<td></td>
</tr>
</tbody>
</table>

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

### Assembly dimensions

<table>
<thead>
<tr>
<th>part number</th>
<th>standard rail length L (mm)</th>
<th>maximum length mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15</td>
<td>160</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL20</td>
<td>220</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL25</td>
<td>220</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL30</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL35</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
</tr>
</tbody>
</table>

### Table 1: SGL15F, SGL15D, SGL20F, SGL25F, SGL20F-D, SGL35F

<table>
<thead>
<tr>
<th>part number</th>
<th>standard rail length L (mm)</th>
<th>maximum length mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15</td>
<td>160</td>
<td>1,240, 1,360, 1,480</td>
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<tr>
<td>SGL20</td>
<td>220</td>
<td>1,240, 1,360, 1,480</td>
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<td>SGL25</td>
<td>220</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL30</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL35</td>
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<td>1,240, 1,360, 1,480</td>
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### Table 2: SGL15F, SGL15D, SGL20F, SGL25F, SGL20F-D, SGL35F

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<thead>
<tr>
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<th>maximum length mm</th>
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</thead>
<tbody>
<tr>
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<tr>
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<td>220</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL25</td>
<td>220</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL30</td>
<td>280</td>
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</tr>
<tr>
<td>SGL35</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
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</table>

### Table 3: SGL15F, SGL15D, SGL20F, SGL25F, SGL20F-D, SGL35F

<table>
<thead>
<tr>
<th>part number</th>
<th>standard rail length L (mm)</th>
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<tbody>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>SGL30</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
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<tr>
<td>SGL35</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
</tr>
</tbody>
</table>

### Table 4: SGL15F, SGL15D, SGL20F, SGL25F, SGL20F-D, SGL35F

<table>
<thead>
<tr>
<th>part number</th>
<th>standard rail length L (mm)</th>
<th>maximum length mm</th>
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</thead>
<tbody>
<tr>
<td>SGL15</td>
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<tr>
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</tr>
<tr>
<td>SGL25</td>
<td>220</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL30</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL35</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
</tr>
</tbody>
</table>

### Table 5: SGL15F, SGL15D, SGL20F, SGL25F, SGL20F-D, SGL35F

<table>
<thead>
<tr>
<th>part number</th>
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<th>maximum length mm</th>
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<tbody>
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<tr>
<td>SGL20</td>
<td>220</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL25</td>
<td>220</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL30</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
</tr>
<tr>
<td>SGL35</td>
<td>280</td>
<td>1,240, 1,360, 1,480</td>
</tr>
</tbody>
</table>
## SGL-TF TYPE

### Part Number Structure

**Example specification**
- **SGL standard**
- **SGLS anti-corrosion**

#### Standard Rail Length

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Rail Length (L mm)</th>
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</thead>
<tbody>
<tr>
<td>SGL15</td>
<td>160 220 280 340 400 460 520 580 640 700 760 820 880 940 1,000</td>
</tr>
<tr>
<td>SGL20</td>
<td>220 280 340 400 460 520 580 640 700 760 820 880 940 1,000 1,120</td>
</tr>
<tr>
<td>SGL25</td>
<td>220 280 340 400 460 520 580 640 700 760 820 880 940 1,000 1,120</td>
</tr>
<tr>
<td>SGL30</td>
<td>280 360 440 520 600 680 760 840 920 1,000 1,080 1,160 1,240 1,320 1,400</td>
</tr>
<tr>
<td>SGL35</td>
<td>280 360 440 520 600 680 760 840 920 1,000 1,080 1,160 1,240 1,320 1,400</td>
</tr>
</tbody>
</table>

### Rail Installation Hole

- **T1**: light
- **T2**: medium

### Number of Blocks Attached to One Rail

- **B**: scraper
- **BS**: blank

### Maximum Length

- **1,120**: 1,240 1,360 1,480
- **2,000**: 1,480
- **3,000**: 1,480
- **4,000**: 1,480
- **6,000**: 3,000
- **10,000**: 3,000

### Mass per Block

- **kg/m**: 1
- **1N.m=102kgf**: 1

### Symbol for Grease

- **Blank**: standard grease
- **KGL**: lithium-based grease
- **KGLU**: urea-based grease
- **KGF**: anti-fretting grease
- **GK**: grease anti-corrosion with low temperature black chrome treatment

### Preload Symbol

- **T1**: standard anti-corrosion
- **T2**: medium anti-corrosion

### Assembly Dimensions

- **W**: 340 mm
- **H**: 1,099 mm
- **L**: 1,176 mm
- **N**: 50 mm

### Guide Rail Dimensions

- **Ez**: 3.5 x 6.9 x 6.7
- **C**: 6.9 x 6.9 x 6.7
- **d**: 6.9 x 6.9 x 6.7
- **h**: 6.9 x 6.9 x 6.7

### Basic Load Rating

- **C kn**: 10.6
- **K**: 16.2
- **N**: 17.3
- **M**: 24.1
- **N**: 25.2

### Allowable Static Moment

- **N**: 12.6
- **M**: 13.7
- **N**: 14.8
- **M**: 15.9

### Mass Block per Kg/m

- **15**: 20
- **25**: 30
- **35**: 40

### Notes

- Please refer to page A-51 for accuracy.
- Please refer to page A-18 for bellows.
- Please refer to page A-14 for seals.
- Please refer to page A-39 for preload symbols.
- Please refer to page A-18 for rail mounting hole caps.

---

**SLIDE GUIDE**
SGL-HTF TYPE

part number structure

| example: SGL 15 HTF | B-2 | T1 | 589 | P/W | F | S/L | J-KGL |

Symbol for grease:
blank: standard grease
KGL: lithium-based grease
KGL: urea-based grease
KGF: anti-fretting grease
GK: K-grease

with bellows (refer to page A-18)
with rail mounting hole caps
with low temperature block chrome treatment
with Fiber Sheet
symbol for number of axes:
blank: single axis
W: 2 parallel axes
W: 3 parallel axes

number of blocks attached to one rail:
preload symbol:
blank: standard
T1: light
T2: medium

total length of rail:

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

<table>
<thead>
<tr>
<th>part number</th>
<th>L (mm)</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>B (mm)</th>
<th>L1 (mm)</th>
<th>L2 (mm)</th>
<th>L3 (mm)</th>
<th>L4 (mm)</th>
<th>L5 (mm)</th>
<th>P1 (mm)</th>
<th>P2 (mm)</th>
<th>P3 (mm)</th>
<th>S1 (mm)</th>
<th>f (mm)</th>
<th>T (mm)</th>
<th>b (mm)</th>
<th>E1 (mm)</th>
<th>E2 (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15HTF</td>
<td>28</td>
<td>9.5</td>
<td>34</td>
<td>56.5</td>
<td>38.5</td>
<td>62.7</td>
<td>63.1</td>
<td>70.1</td>
<td>26</td>
<td>26</td>
<td>M4</td>
<td>5</td>
<td>6</td>
<td>23.7</td>
<td>6</td>
<td>5.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL20HTF</td>
<td>30</td>
<td>12</td>
<td>44</td>
<td>71.6</td>
<td>53.2</td>
<td>77.8</td>
<td>89.2</td>
<td>32</td>
<td>36</td>
<td>M5</td>
<td>6</td>
<td>9</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SGL25HTF</td>
<td>40</td>
<td>12.5</td>
<td>48</td>
<td>80</td>
<td>59</td>
<td>86.4</td>
<td>98.2</td>
<td>35</td>
<td>35</td>
<td>M6</td>
<td>8</td>
<td>9</td>
<td>33</td>
<td>12</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL30HTF</td>
<td>45</td>
<td>16</td>
<td>60</td>
<td>95.7</td>
<td>67.7</td>
<td>104.3</td>
<td>103.3</td>
<td>40</td>
<td>40</td>
<td>M8</td>
<td>10</td>
<td>35.5</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SGL35HTF</td>
<td>55</td>
<td>18</td>
<td>70</td>
<td>109</td>
<td>78</td>
<td>117.6</td>
<td>116.6</td>
<td>50</td>
<td>50</td>
<td>M10</td>
<td>12</td>
<td>13</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SGL45HTF</td>
<td>70</td>
<td>20.5</td>
<td>86</td>
<td>139</td>
<td>102</td>
<td>147.5</td>
<td>148</td>
<td>60</td>
<td>60</td>
<td>M10</td>
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<td>15</td>
<td>60</td>
<td>15</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

guide rail dimensions

<table>
<thead>
<tr>
<th>part number</th>
<th>standard rail length</th>
<th>L (mm)</th>
<th>H1 (mm)</th>
<th>C (mm)</th>
<th>d<em>G</em>X*h (mm)</th>
<th>N (N)</th>
<th>P (N)</th>
<th>basic load rating</th>
<th>static</th>
<th>allowable static moment</th>
<th>block</th>
<th>mass</th>
<th>block size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15</td>
<td>160</td>
<td>220</td>
<td>280</td>
<td>340</td>
<td>400</td>
<td>450</td>
<td>520</td>
<td>580</td>
<td>640</td>
<td>700</td>
<td>1,000</td>
<td>1,120</td>
<td>M12 × 120</td>
</tr>
<tr>
<td>SGL20</td>
<td>220</td>
<td>280</td>
<td>340</td>
<td>400</td>
<td>520</td>
<td>580</td>
<td>640</td>
<td>700</td>
<td>820</td>
<td>880</td>
<td>1,000</td>
<td>1,120</td>
<td>M12 × 120</td>
</tr>
<tr>
<td>SGL25</td>
<td>220</td>
<td>280</td>
<td>340</td>
<td>400</td>
<td>520</td>
<td>580</td>
<td>640</td>
<td>700</td>
<td>820</td>
<td>880</td>
<td>1,000</td>
<td>1,120</td>
<td>M12 × 120</td>
</tr>
<tr>
<td>SGL30</td>
<td>280</td>
<td>360</td>
<td>440</td>
<td>520</td>
<td>600</td>
<td>680</td>
<td>760</td>
<td>840</td>
<td>920</td>
<td>1,080</td>
<td>1,240</td>
<td>1,480</td>
<td>M12 × 120</td>
</tr>
<tr>
<td>SGL35</td>
<td>280</td>
<td>360</td>
<td>440</td>
<td>520</td>
<td>600</td>
<td>680</td>
<td>760</td>
<td>840</td>
<td>920</td>
<td>1,080</td>
<td>1,240</td>
<td>1,480</td>
<td>M12 × 120</td>
</tr>
<tr>
<td>SGL45</td>
<td>570</td>
<td>675</td>
<td>780</td>
<td>885</td>
<td>990</td>
<td>1,095</td>
<td>1,200</td>
<td>1,305</td>
<td>1,410</td>
<td>1,515</td>
<td>1,620</td>
<td>1,850</td>
<td>M12 × 120</td>
</tr>
</tbody>
</table>

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

MP2 and MY2 are allowable static moments when two blocks are used in close contact.

1kN = 102 kgf
1N・m = 102 kgf・m

| M10 and M20 are allowable static moments when two blocks are used in close contact. |

Refer to page Eng-39 for accuracy.
**SGL-HYF TYPE**

### Part Number Structure

- **Example:** SGL15HYF B1, SGL20HYF B1, SGL25HYF B1, SGL30HYF B1, SGL35HYF B1, SGL45HYF B1, KGL

#### Symbol for grease
- blank: standard grease
- KGL: lithium-based grease
- KGF: urea-based grease
- KGF*: anti-fretting grease
- GK: K-grease

- with bellows (refer to page A-1B)
- with rail mounting hole caps
- with Fiber Sheet

#### Part Number
- **SGL**
  - part number size: with side-seals + under-seals
  - SGL45, SGL35, SGL30, SGL25, SGL20, SGL15

#### Assembly Dimensions
- **BL** mm:
  - H: 20.5, 26, 30, 45
  - W: 120, 120, 120, 120

- **BS** mm:
  - H: 20.5, 26, 30, 45
  - W: 120, 120, 120, 120

- **BW** mm:
  - H: 20.5, 26, 30, 45
  - W: 120, 120, 120, 120

### Guide Rail Dimensions

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Guide Rail Dimensions</th>
<th>Basic Load Rating</th>
<th>Allowable Static Moment</th>
<th>Mass of Block</th>
<th>Guiding Rail Kg/m</th>
<th>Block Size</th>
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<tbody>
<tr>
<td>SGL15HYF</td>
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<tr>
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</tbody>
</table>

### Notes
- The symbol for the number of axes does not mean the number of rails ordered.
- Please refer to page A-51 for accuracy.

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**SLIDE GUIDE**

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*A-60*

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*A-61*
Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.

<table>
<thead>
<tr>
<th>SGL type</th>
<th>size</th>
<th>blank</th>
<th>accuracy grade</th>
<th>block style</th>
<th>number of blocks attached to one rail</th>
<th>with bellows (refer to page A-18)</th>
<th>with rail mounting hole caps with low temperature black chrome treatment with Fiber Sheet symbol for number of axes ※ with double-seals + under-seals</th>
<th>symbol for grease blank: standard blank: high</th>
<th>part number</th>
<th>preload symbol</th>
<th>↳ symbol for the number of axes does not mean the number of rails ordered.</th>
<th>total length of rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL 15E</td>
<td>B2</td>
<td>T1</td>
<td>589 D</td>
<td>P/W2</td>
<td>FS</td>
<td>L/B</td>
<td>J</td>
<td>KGL</td>
<td>16</td>
<td>2</td>
<td>T</td>
<td>15</td>
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<tr>
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<td>24</td>
<td>18.5</td>
<td>52</td>
<td>40.7</td>
<td>22.7</td>
<td>46.9</td>
<td>47.3</td>
<td>54.3</td>
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<td>4.5</td>
<td>7</td>
<td>19.5</td>
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<td>59</td>
<td>47.9</td>
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<td>65.5</td>
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<td>5.5</td>
<td>9</td>
<td>22</td>
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<td>25</td>
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<td>58.7</td>
<td>37.7</td>
<td>65.1</td>
<td>65.9</td>
<td>76.9</td>
<td>60</td>
<td>7</td>
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<td>26</td>
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<tr>
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<td>68</td>
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<td>76.6</td>
<td>75.6</td>
<td>80.6</td>
<td>72</td>
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<td>32.5</td>
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<td>33</td>
<td>100</td>
<td>77</td>
<td>46</td>
<td>85.6</td>
<td>84.6</td>
<td>82</td>
<td>13.5</td>
<td>38</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>part number</th>
<th>assembly dimensions</th>
<th>block dimensions</th>
<th>standard rail length</th>
<th>L mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL 15</td>
<td>160</td>
<td>220</td>
<td>280</td>
<td>340</td>
</tr>
<tr>
<td>SGL 20</td>
<td>160</td>
<td>220</td>
<td>280</td>
<td>340</td>
</tr>
<tr>
<td>SGL 25</td>
<td>160</td>
<td>220</td>
<td>280</td>
<td>340</td>
</tr>
<tr>
<td>SGL 30</td>
<td>160</td>
<td>220</td>
<td>280</td>
<td>340</td>
</tr>
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<td>SGL 35</td>
<td>160</td>
<td>220</td>
<td>280</td>
<td>340</td>
</tr>
</tbody>
</table>

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

### SGL-TE TYPE

#### Part Number Structure

<table>
<thead>
<tr>
<th>Example</th>
<th>SGL15 TE</th>
<th>B2</th>
<th>T1-589</th>
<th>D/P</th>
<th>W2</th>
<th>F5</th>
<th>LB</th>
<th>F</th>
<th>J-KGL</th>
</tr>
</thead>
</table>

- **Symbol for grease**
  - blank: standard grease
  - KGL: lithium-based grease
  - KGU: urea-based grease
  - KGF: anti-fretting grease
  - GK: grease refer to page 39—

- **Preload symbol**
  - blank: standard
  - T: light
  - T2: medium

- **Accuracy grade**
  - blank: standard
  - H: high
  - P: precision

- **Number of blocks attached to one rail**

- **Size of rail installation hole (D type rail is available only for SGL 15 and 30)**
  - T1: with double-seals + under-seals
  - T2: with low temperature black chrome treatment

- **Type of Rail**
  - SGL type
  - blank

- **Symbol for the number of axes**
  - blank
  - 3 parallel axes
  - 2 parallel axes
  - 1 parallel axis

#### Assembly Dimensions

<table>
<thead>
<tr>
<th>SGL18TE</th>
<th>24</th>
<th>18.5</th>
<th>52</th>
<th>56.5</th>
<th>38.5</th>
<th>62.7</th>
<th>63.1</th>
<th>70.1</th>
<th>41</th>
<th>26</th>
<th>4.5</th>
<th>7</th>
<th>19.5</th>
<th>6</th>
<th>5.4</th>
</tr>
</thead>
<tbody>
<tr>
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<td>24</td>
<td>18.5</td>
<td>52</td>
<td>56.5</td>
<td>38.5</td>
<td>62.7</td>
<td>63.1</td>
<td>70.1</td>
<td>41</td>
<td>26</td>
<td>4.5</td>
<td>7</td>
<td>19.5</td>
<td>6</td>
<td>5.4</td>
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<tr>
<td>SGL20TE</td>
<td>28</td>
<td>19.5</td>
<td>59</td>
<td>65.8</td>
<td>47.4</td>
<td>72</td>
<td>72.4</td>
<td>83.4</td>
<td>49</td>
<td>32</td>
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<td>9</td>
<td>22</td>
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<td>SGL25TE</td>
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<td>25</td>
<td>73</td>
<td>80</td>
<td>59</td>
<td>86.4</td>
<td>87.2</td>
<td>98.2</td>
<td>60</td>
<td>35</td>
<td>7</td>
<td>10</td>
<td>26</td>
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</tr>
<tr>
<td>SGL30TE</td>
<td>42</td>
<td>31</td>
<td>90</td>
<td>95.7</td>
<td>67.7</td>
<td>104.3</td>
<td>103.3</td>
<td>137</td>
<td>103</td>
<td>62</td>
<td>40</td>
<td>9</td>
<td>32.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL35TE</td>
<td>48</td>
<td>33</td>
<td>100</td>
<td>109</td>
<td>78</td>
<td>117.6</td>
<td>116.6</td>
<td>144</td>
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<td>50</td>
<td>13</td>
<td>36</td>
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</tbody>
</table>

#### Standard Rail Length

<table>
<thead>
<tr>
<th>Part Number</th>
<th>SGL15</th>
<th>SGL20</th>
<th>SGL25</th>
<th>SGL30</th>
<th>SGL35</th>
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</thead>
<tbody>
<tr>
<td>L (mm)</td>
<td>160</td>
<td>220</td>
<td>220</td>
<td>280</td>
<td>280</td>
</tr>
<tr>
<td>L (mm)</td>
<td>220</td>
<td>280</td>
<td>280</td>
<td>340</td>
<td>340</td>
</tr>
<tr>
<td>L (mm)</td>
<td>240</td>
<td>300</td>
<td>300</td>
<td>360</td>
<td>360</td>
</tr>
<tr>
<td>L (mm)</td>
<td>440</td>
<td>520</td>
<td>520</td>
<td>580</td>
<td>580</td>
</tr>
<tr>
<td>L (mm)</td>
<td>640</td>
<td>640</td>
<td>680</td>
<td>680</td>
<td>680</td>
</tr>
<tr>
<td>L (mm)</td>
<td>620</td>
<td>700</td>
<td>700</td>
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</tr>
<tr>
<td>L (mm)</td>
<td>640</td>
<td>700</td>
<td>800</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>L (mm)</td>
<td>800</td>
<td>800</td>
<td>900</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>L (mm)</td>
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<td>900</td>
<td>900</td>
<td>900</td>
<td>900</td>
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<tr>
<td>L (mm)</td>
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<td>900</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>L (mm)</td>
<td>800</td>
<td>900</td>
<td>900</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>L (mm)</td>
<td>800</td>
<td>900</td>
<td>900</td>
<td>900</td>
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<tr>
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<td>800</td>
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<td>900</td>
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<td>900</td>
</tr>
<tr>
<td>L (mm)</td>
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<td>900</td>
<td>900</td>
</tr>
<tr>
<td>L (mm)</td>
<td>800</td>
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<tr>
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<td>900</td>
</tr>
<tr>
<td>L (mm)</td>
<td>800</td>
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<td>900</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>L (mm)</td>
<td>800</td>
<td>900</td>
<td>900</td>
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<tr>
<td>L (mm)</td>
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<td>L (mm)</td>
<td>800</td>
<td>900</td>
<td>900</td>
<td>900</td>
<td>900</td>
</tr>
</tbody>
</table>

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.
**SGL-HTE TYPE**

part number structure

- **example**: SGL 15 HTE B T1 - 589 P / W2 FS LB F J - KGL
- **Symbol for grease**
  - blank: standard grease
  - KGL: lithium-based grease
  - KGU: urea-based grease
  - KGF: anti-fretting grease
- **with bellows** (refer to page A-1B)
- **with rail mounting hole caps**
- **with low temperature black chrome treatment**
- **number of blocks attached to one rail**
- **preload symbol**
  - blank: standard
  - T1: light
  - T2: medium
- **total length of rail**

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

<table>
<thead>
<tr>
<th>part number</th>
<th>rail materials</th>
<th>block dimensions</th>
<th>guide rail dimensions</th>
<th>basic load rating</th>
<th>allowable static moment</th>
<th>mass</th>
<th>block size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15HTE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL20HTE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>SGL25HTE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL30HTE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL35HTE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL45HTE</td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>part number</th>
<th>standard rail length</th>
<th>L mm</th>
<th></th>
<th></th>
<th></th>
<th>basic load rating</th>
<th>allowable static moment</th>
<th>mass</th>
<th>block size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15</td>
<td>160 220 280 340 400 460 520 580 640 700 760 820 880 940 1,000 1,120</td>
<td></td>
<td></td>
<td></td>
<td>1,240 1,360 1,480</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL20</td>
<td>220 280 340 400 460 520 580 640 700 760 820 880 940 1,000 1,120</td>
<td></td>
<td></td>
<td></td>
<td>1,240 1,360 1,480</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL25</td>
<td>220 280 340 400 460 520 580 640 700 760 820 880 940 1,000 1,120</td>
<td></td>
<td></td>
<td></td>
<td>1,240 1,360 1,480</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL30</td>
<td>280 360 440 520 600 680 760 840 920 1,000 1,080 1,160 1,240 1,320 1,400</td>
<td></td>
<td></td>
<td></td>
<td>1,240 1,360 1,480</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL35</td>
<td>280 360 440 520 600 680 760 840 920 1,000 1,080 1,160 1,240 1,320 1,400</td>
<td></td>
<td></td>
<td></td>
<td>1,240 1,360 1,480</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGL45</td>
<td>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</td>
<td></td>
<td></td>
<td></td>
<td>1,240 1,360 1,480</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td>1,360 1,480 1,600 1,160 1,720 1,840 1,960</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NBF for assistance.
Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.
### SGL-HTEX TYPE

#### Part Number Structure

**Example**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>SGL15HTEX</th>
<th>B2T1-589P/W2FSLB/FJ-KGL</th>
</tr>
</thead>
</table>

- **Symbol for grease**  
  - blank: standard grease  
  - KGL: lithium-based grease  
  - KGU: urea-based grease  
  - KGF: anti-fretting grease  
  - GC: grease  
  - refer to page A-39—
  
- **Symbol for number of axes**  
  - blank: single axis  
  - B: 2 parallel axes  
  - W: 3 parallel axes

- **Number of blocks attached to one rail**
- **Preload symbol**
- **Blank:** standard
- **T1:** light
- **T2:** medium
- **Total length of rail**

---

### Guide Rail Dimensions

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Guide Rail Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15HTEX</td>
<td>150×1000, 1120</td>
</tr>
<tr>
<td>SGL20HTEX</td>
<td>200×1000, 1240</td>
</tr>
<tr>
<td>SGL25HTEX</td>
<td>250×1000, 1240</td>
</tr>
<tr>
<td>SGL30HTEX</td>
<td>300×1000, 1240</td>
</tr>
<tr>
<td>SGL35HTEX</td>
<td>350×1000, 1240</td>
</tr>
<tr>
<td>SGL45HTEX</td>
<td>450×1000, 1240</td>
</tr>
</tbody>
</table>

### Guide Rail Dimensions (Continued)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Standard Rail Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGL15</td>
<td>150×1000, 1120</td>
</tr>
<tr>
<td>SGL20</td>
<td>200×1000, 1240</td>
</tr>
<tr>
<td>SGL25</td>
<td>250×1000, 1240</td>
</tr>
<tr>
<td>SGL30</td>
<td>300×1000, 1240</td>
</tr>
<tr>
<td>SGL35</td>
<td>350×1000, 1240</td>
</tr>
<tr>
<td>SGL45</td>
<td>450×1000, 1240</td>
</tr>
</tbody>
</table>

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

---

### Guide Rail Dimensions (Continued)

- **Guide rail dimensions**
  - H: 50, 60, 70, 80
  - C: 50, 60, 70, 80
  - d × h: 12 × 17, 14 × 20, 16 × 24
  - N: 10, 20, 30
  - P: 5, 10, 15
  - M: 150, 250

- **Basic load rating** (dynamic)
  - Co<sub>kN</sub>: 52, 105, 200

- **Allowable static moment**
  - M<sub>r</sub>: 52, 105

- **Mass of guide rail**
  - kg: 1, 2, 3

---

### Note

1. Rails exceeding the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.
2. The symbol for the number of axes does not mean the number of rails ordered.
3. Please refer to page A-51 for accuracy.

---

**NB:** only the maximum specified length may be fabricated if joints are used. Please contact NB for assistance.
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.

**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)

**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.

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

<table>
<thead>
<tr>
<th>part number</th>
<th>SGW17,21</th>
<th>SGW27,35</th>
</tr>
</thead>
<tbody>
<tr>
<td>accuracy grade</td>
<td>standard</td>
<td>high</td>
</tr>
<tr>
<td>accuracy symbol</td>
<td>blank</td>
<td>H</td>
</tr>
<tr>
<td>allowable dimensional tolerance for height</td>
<td>±0.1</td>
<td>±0.03</td>
</tr>
<tr>
<td>paired difference for height</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>allowable dimensional tolerance for width</td>
<td>±0.1</td>
<td>±0.03</td>
</tr>
<tr>
<td>paired difference for width</td>
<td>0.02</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Refer to Figure A-61,62

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

- **SGW-TF type** (P.A-76)
- **SGW-TE type** (P.A-78)

<table>
<thead>
<tr>
<th>SGW-TF type</th>
<th>SGW-TE type</th>
</tr>
</thead>
<tbody>
<tr>
<td>high-rigidity wide type</td>
<td>high-rigidity wide flange type</td>
</tr>
</tbody>
</table>

**Figure A-58 Structure of SGW type Slide Guide**

**Figure A-59 Motion Accuracy**

**Figure A-60 Accuracy**

**Figure A-60 Accuracy**
Three levels of preload are available for SGW slide guides: standard (blank), light (T1), and medium (T2).

Table A-30 Preload Call Out and Radial Clearance unit: μm

<table>
<thead>
<tr>
<th>part number</th>
<th>preload</th>
<th>symbol</th>
<th>standard</th>
<th>light</th>
<th>medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGW17</td>
<td>−3~+2</td>
<td>blank</td>
<td>−7~−3</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>SGW21</td>
<td>−4~+2</td>
<td>T1</td>
<td>−8~−4</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>SGW27</td>
<td>−5~+2</td>
<td>T2</td>
<td>−11~−5</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>SGW35</td>
<td>−8~+4</td>
<td>T1</td>
<td>−18~−8</td>
<td>−28~−18</td>
<td>−</td>
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</tbody>
</table>

Table A-31 Operating Conditions and Preload

<table>
<thead>
<tr>
<th>preload</th>
<th>symbol</th>
<th>operating conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>standard</td>
<td>blank</td>
<td>minute vibration is applied. accurate motion is required.</td>
</tr>
<tr>
<td></td>
<td>light</td>
<td>light vibration is applied. light torsional load is applied. moment is applied.</td>
</tr>
<tr>
<td></td>
<td>medium</td>
<td>shock and vibration are applied. over-hang load is applied. torsional load is applied.</td>
</tr>
</tbody>
</table>

Table A-32 N Dimension unit: ㎜

<table>
<thead>
<tr>
<th>part number</th>
<th>N and over</th>
<th>less than</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGW17</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>SGW21</td>
<td>8</td>
<td>33</td>
</tr>
<tr>
<td>SGW27</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>SGW35</td>
<td>12</td>
<td>52</td>
</tr>
</tbody>
</table>

L = M・P + 2N
L: length (㎜)  M: number of pitches  P: hole pitch (㎜)  N: distance from the end of the rail to the first hole center (㎜)

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: N・m

<table>
<thead>
<tr>
<th>size</th>
<th>M4</th>
<th>M6</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td></td>
<td>11.2</td>
</tr>
</tbody>
</table>

(for alloy steel screw)

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**: SGW21TF B2 T1 T5 L9 P/W2 FS LB F KGL

- **SGW type**: T1: light
- **TF typeblock**: T2: medium
- **preload symbol**: blank: standard, T1: light, T2: medium
- **total length of rail**: with low temperature black chrome treatment
- **number of blocks attached to one rail**: with rail mounting hole caps
- **accuracy grade**: blank: standard, P: precision
- **symbol for grease**: blank: standard grease, KGL: lithium-based grease, KGU: urea-based grease, KGF: anti-fretting grease
- **symbol for number of axes**: blank: single axis, B: 2 parallel axes, W: 3 parallel axes

<table>
<thead>
<tr>
<th>part number</th>
<th>assebly dimensions</th>
<th>block dimensions</th>
<th>grease fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGW21TF</td>
<td>21, 8.5, 54, 58, 40, 31, 19, M5, 5, 18, 4.5</td>
<td>B-M6F</td>
<td></td>
</tr>
<tr>
<td>SGW27TF</td>
<td>27, 10, 62, 71.8, 51.8, 46, 32, 6, 10, 24, 12, 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGW35TF</td>
<td>35, 15.5, 100, 106.6, 77.6, 76, 50, M8, 8, 14, 31, 8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H</th>
<th>C</th>
<th>Br</th>
<th>d×h</th>
<th>N</th>
<th>P</th>
<th>basic load rating</th>
<th>allowable static moment</th>
<th>mass</th>
<th>block size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>C kN</td>
<td>Co kN</td>
<td>N N-m</td>
<td>N N-m</td>
</tr>
<tr>
<td>---</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td>-----</td>
<td>-----</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>SGW17</td>
<td>9</td>
<td>33</td>
<td>18</td>
<td>40</td>
<td>4.82</td>
<td>8.56</td>
<td>42.8</td>
<td>261</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>37</td>
<td>22</td>
<td>50</td>
<td>7.01</td>
<td>12.1</td>
<td>72.3</td>
<td>418</td>
<td>253</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>42</td>
<td>24</td>
<td>60</td>
<td>12.9</td>
<td>21.5</td>
<td>171</td>
<td>931</td>
<td>496</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>69</td>
<td>40</td>
<td>80</td>
<td>30.6</td>
<td>48.5</td>
<td>578</td>
<td>1,010</td>
<td>1,850</td>
</tr>
</tbody>
</table>

- Mρ2 and Mρ2 are allowable static moments when two blocks are used in close contact. 1kN=m0.1021kgf 1N-m=m0.1021kgf-m

---

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

part number structure

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

SGW type
size
TE type
block
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
blank：standard
T1：light
T2：medium
total length of rail
accuracy grade
blank：standard
H：high
P：precision

symbol for grease
blank：standard grease
KGL：lithium-based grease
KGU：urea-based grease
KGF：anti-fretting grease
GK：K-grease
refer to page Eng-39～

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.

<table>
<thead>
<tr>
<th>part number</th>
<th>assemblly dimensions</th>
<th>block dimensions</th>
<th>grease fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>W</td>
<td>B</td>
</tr>
<tr>
<td>SGW 17TE</td>
<td>17</td>
<td>13.5</td>
<td>60</td>
</tr>
<tr>
<td>SGW 21TE</td>
<td>21</td>
<td>15.5</td>
<td>68</td>
</tr>
<tr>
<td>SGW 27TE</td>
<td>27</td>
<td>19</td>
<td>80</td>
</tr>
<tr>
<td>SGW 35TE</td>
<td>35</td>
<td>25.5</td>
<td>120</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>guide rail dimensions</th>
<th>N</th>
<th>P</th>
<th>basic load rating</th>
<th>allowable static moment</th>
<th>mass</th>
<th>block size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm</td>
<td>mm</td>
<td>dynamic (C) kN</td>
<td>static (C) kN</td>
<td>Mrz (N・m)</td>
<td>Mrz (N・m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HG17</td>
<td>15</td>
<td>40</td>
<td>4.82</td>
<td>8.56</td>
<td>42.8</td>
<td>261</td>
</tr>
<tr>
<td>HG17</td>
<td>11</td>
<td>50</td>
<td>7.01</td>
<td>12.1</td>
<td>72.3</td>
<td>418</td>
</tr>
<tr>
<td>HG21</td>
<td>15</td>
<td>60</td>
<td>12.9</td>
<td>21.5</td>
<td>171</td>
<td>931</td>
</tr>
<tr>
<td>HG21</td>
<td>19</td>
<td>80</td>
<td>30.6</td>
<td>48.5</td>
<td>576</td>
<td>1,100</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>part number</th>
<th>standard rail length L mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGW 17</td>
<td>110 150 190 230 270 310 350 390 430 510 590</td>
</tr>
<tr>
<td>SGW 21</td>
<td>130 180 230 280 330 380 430 480 530 630 730</td>
</tr>
<tr>
<td>SGW 27</td>
<td>160 220 280 340 400 460 520 640 760 880 1,000</td>
</tr>
<tr>
<td>SGW 35</td>
<td>280 360 440 520 600 680 760 920 1,080 1,240 1,400</td>
</tr>
</tbody>
</table>

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