

NB

NEW ITEM

SLIDE GUIDE

SEBS-B type

**Miniature Slide Guide Series with Retained Ball now
Offers Complete Selection**



Certificate No.958188



NIPPON BEARING CO., LTD.

Expanded Selection for Miniature Slide Guide Series

Full Selection Available for Retained Ball Type

Wide type of Miniature Slide Guide, providing greater allowable moment, is now available with retained ball structure. Due to this addition, full selection has been completed allowing for freedom of choice for the right component in your application.

STRUCTURE AND ADVANTAGES

NB's slide guide SEB type consists of a block and a guide rail, both of which have two precision ground raceway grooves. The block consists of a main body, balls, and return caps. This retained ball type has a retainer which prevents ball bearings from escaping when block is removed from rail.

Retained Balls

With the retained balls, the guide block may be removed from the rail without the balls falling out. This makes dis-assembly and re-assembly work easier.

All Stainless Steel Type (SEBS-BM/BYM Type)

All components are made of stainless steel. The return caps are now metallic and this increases usage versatility under special environments such as high temperature, clean room, or vacuum.

Compact Design

The two raceway and four-point contact structure of the SEB types minimize its height and give further advantage installation with limited space and reduces overall height.

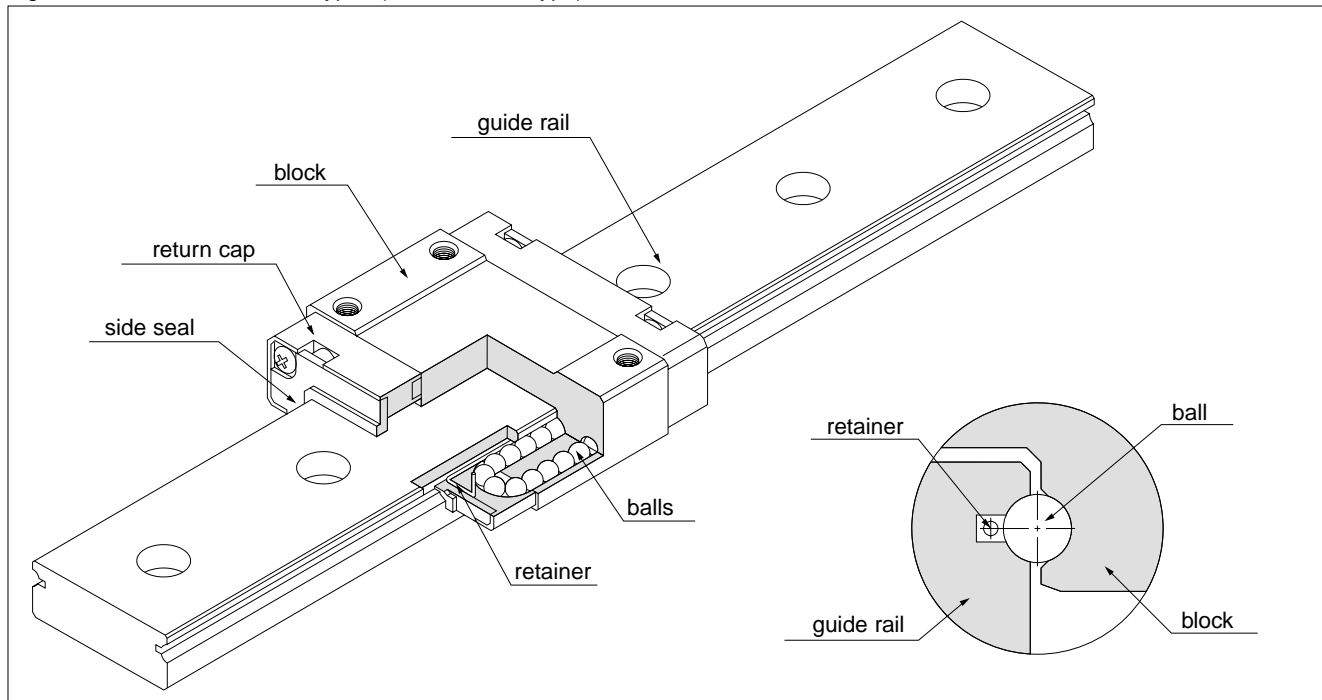
High Moment Loads

With the wide and long types an increase of moment capacity is realized. This permits for the use of "single" block designs possible.

Tapped-Hole Rail Types ("-N")

Slide guides with counter bore holes are standard and the tapped holes ("-N") are available upon request.

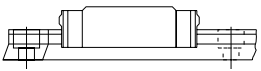
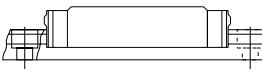
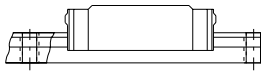
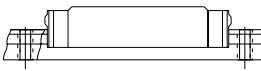
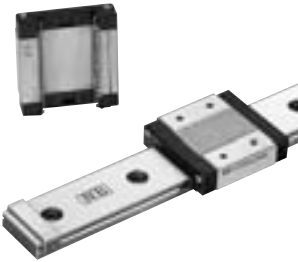



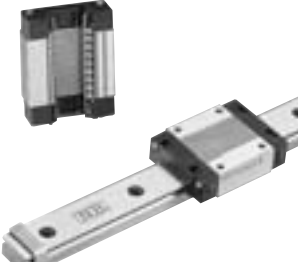
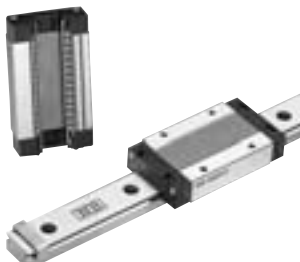
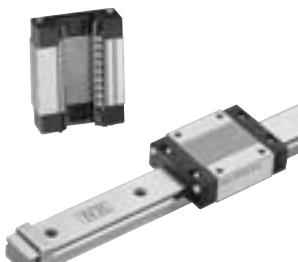

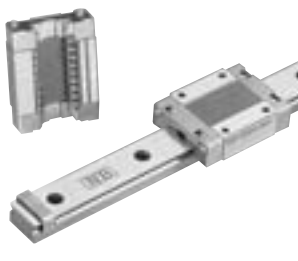
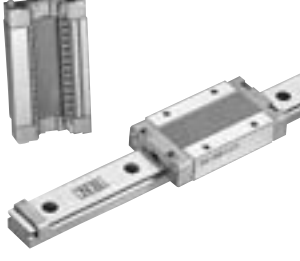
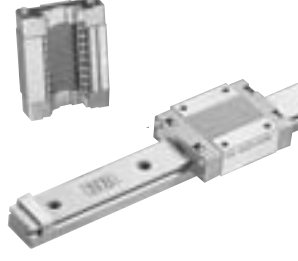
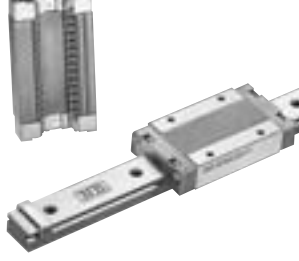
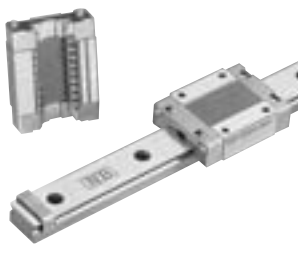
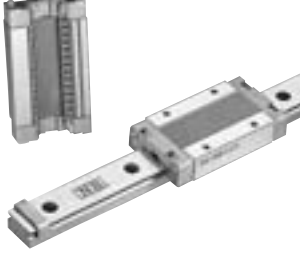
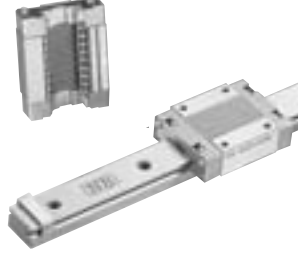
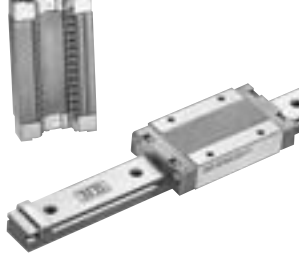
Figure 1 Structure of SEBS-B Types (Retained Ball Type)



TYPES

NB Miniature Slide Guide (SEB Type) series is categorized according to the width and length of block, the material of block and rail, the material of return cap and the rail installation method as shown in Table 1. Each type can be also offered with or without Side Seals.

Table 1 Types

| | | standard block standard rail (w/counter bore) | long type block standard rail (w/counter bore) | standard block N type rail (w/tapped hole) | long type block N type rail (w/tapped hole) |
|---------------------|----------------------|---|--|--|--|
| | |  |  |  |  |
| wide type (p.7) | regin return cap | SEBS-WB type NEW  | SEBS-WBY type NEW  | SEBS-WB-N type NEW  | SEBS-WBY-N type NEW  |
| | regin return cap | SEBS-B type  | SEBS-BY type  | SEBS-B-N type  | SEBS-BY-N type  |
| standard type (p.9) | regin return cap | SEBS-BM type  | SEBS-BYM type  | SEBS-BM-N type  | SEBS-BYM-N type  |
| | stainless return cap | SEBS-BM type  | SEBS-BYM type  | SEBS-BM-N type  | SEBS-BYM-N type  |

ACCURACY

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

Table 2 Accuracy unit/mm

| accuracy grade | high | precision |
|---|--------------------|-------------|
| accuracy symbol | none | P |
| allowable dimensional difference in height H | ± 0.020 | ± 0.010 |
| paired difference for height H | 0.015 | 0.007 |
| allowable dimensional difference in width W | ± 0.025 | ± 0.015 |
| paired difference for width W | 0.020 | 0.010 |
| Running parallelism of surface C to surface A | Refer to Fig.2 & 3 | |
| Running parallelism of surface D to surface B | | |

The difference of above pairs are applied to multiple number of blocks on the same rail. When the difference of height (H) of a pair on different rails is required, please indicate the number of rails in the part number. (Please refer to the "Part Number Structure" for further details.)

Figure 2 Accuracy

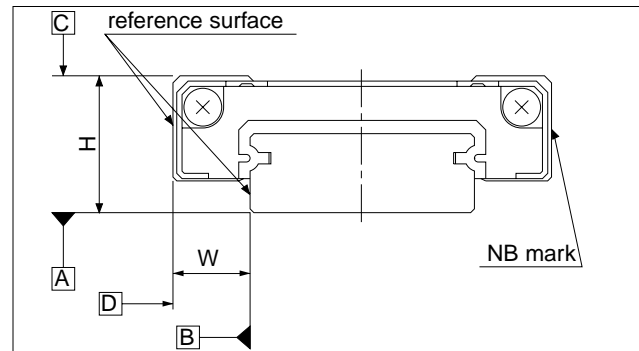
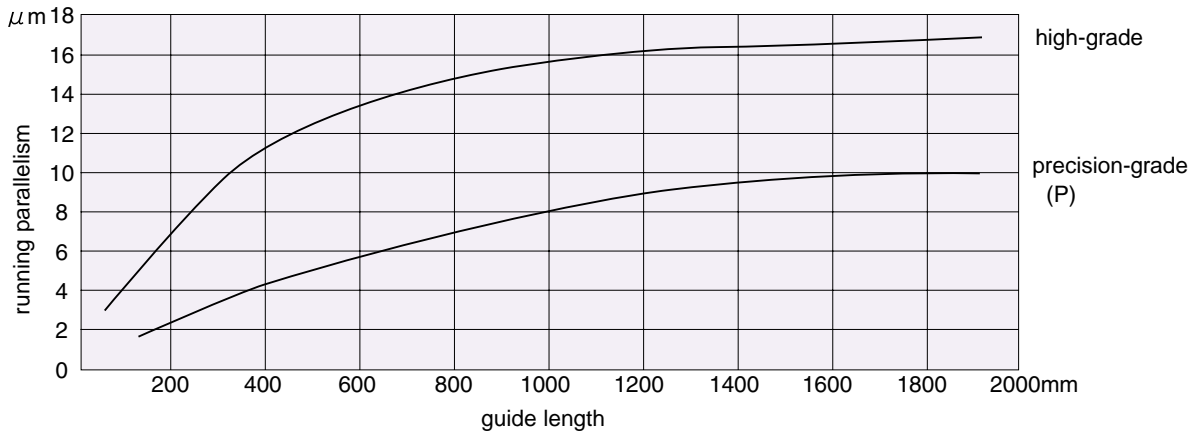


Figure 3 Motion Accuracy



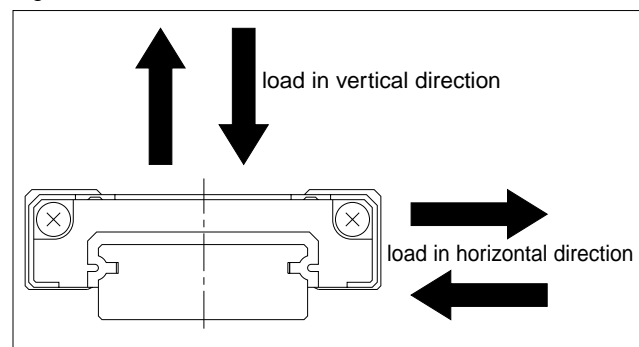
RATED LOAD

The load rating for SEB Type slide guides depends upon the direction of load.

Table 3 Load Rating

| | | retained ball types | standard types |
|---------------------------|------------|---------------------|------------------|
| basic dynamic load rating | vertical | $1.00 \times C$ | $1.00 \times C$ |
| | horizontal | $0.89 \times C$ | $1.13 \times C$ |
| basic static load rating | vertical | $1.00 \times Co$ | $1.00 \times Co$ |
| | horizontal | $0.84 \times Co$ | $1.19 \times Co$ |

Figure 4 Direction of Load



PRE-LOAD

SEB slide guides are available with a standard pre-load (no suffix), light pre-load (T1), and a positive-clearance (T0).

Table 4 Pre-Load Symbol and Radial Clearance unit/ μm

| size | type of pre-load and its symbol | | |
|------|---------------------------------|--------------|---------|
| | clearance | standard | light |
| 5W | T0 +1~+3 | none -1~0 | T1 - |
| 7W | +3~+6 | -3~0 | -4~-2 |
| 9W | | | |
| 12W | +4~+8 | -3~0 | -7~-3 |
| 15W | | | |
| 5 | +1~+3 | -1~0 | - |
| 7 | +3~+6 | -3~0 | -4~-2 |
| 9 | | | |
| 12 | +4~+8 | -3~0 | -7~-3 |
| 15 | | | |
| 20 | | | |

Table 5 Operating Conditions and Pre-Load

| pre-load | symbol | operating conditions |
|-----------|--------|---|
| clearance | T0 | Smooth movement is crucial. The installation tolerance is to be absorbed. |
| standard | none | Minute vibration is applied. High-precision movement is required. A moment in a given direction is applied. |
| light | T1 | Light vibration is applied. A slight torque is applied. When moment is applied. |

RAIL LENGTH

Slide guides with most commonly used lengths are available as standard. Unless otherwise specified, the distance to the first mounting hole (N) from one end of the rail will be located within the ranges listed in Table 6 for slide guides with non-standard lengths satisfying the following equation.

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

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

Figure 5 Rail

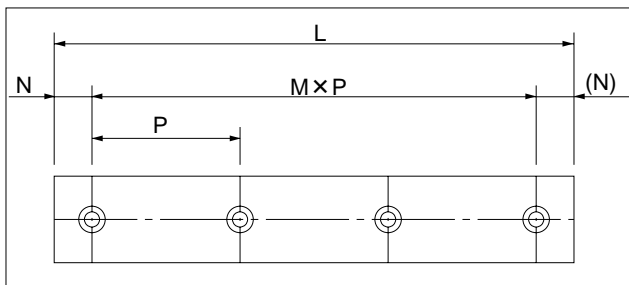


Table 6 Range of N dimension

unit/mm

| size | N | |
|------|------|------|
| | more | less |
| 5W | 3 | 10 |
| 7W | 4 | 19 |
| 9W | | |
| 12W | 5 | 25 |
| 15W | | |
| 5 | 3 | 10.5 |
| 7 | | |
| 9 | 4 | 14 |
| 12 | | 16.5 |
| 15 | | 24 |
| 20 | 6 | 36 |

INSTALLATION

Shapes of mounting planes

Slide Guides are generally mounted by pushing the reference surface of the rail and block against the shoulder of the mounting surface.

An escape groove should be provided at the corner of the shoulder in order to avoid interference with the corner of the rail or block.

Figure 6 Mounting Reference Surface Shapes-1

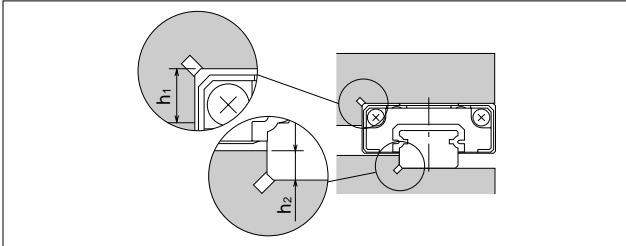


Figure 7 Mounting Reference Surface Shapes-2

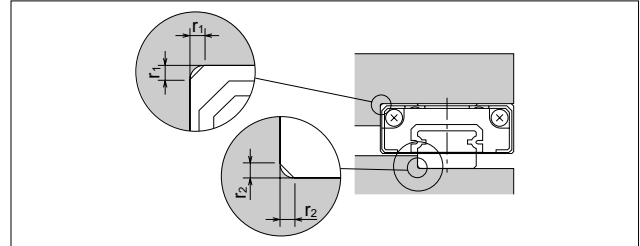


Table 7 Shoulder height of mounting unit:mm

| part number | h ₁ | h ₂ |
|-------------|----------------|----------------|
| 5W | 2 | 1 |
| 7W | 3 | 1.5 |
| 9W | | 2.5 |
| 12W | 4 | |
| 15W | | |
| 5 | 2 | 1 |
| 7 | 2.5 | |
| 9 | 3 | 1.5 |
| 12 | 4 | 2 |
| 15 | 5 | 3.5 |
| 20 | | 5 |

Table 8 Maximum corner radius unit:mm

| part number | r ₁ | r ₂ |
|-------------|----------------|----------------|
| 5W | 0.3 | 0.3 |
| 7W | | |
| 9W | | |
| 12W | | |
| 15W | 0.3 | 0.3 |
| 5 | | |
| 7 | | |
| 9 | | |
| 12 | | |
| 15 | 0.5 | 0.5 |
| 20 | | |

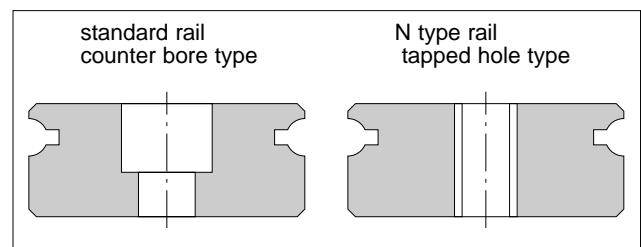
Recommended tightening torque

The bolts used to secure the rail should be tightened using a torque wrench. The recommended torque values are given in Table 9.

Table 9 Recommended Tightning Torque unit/N · m

| size | standard rail | | N type rail | |
|------|---------------|--------------------|-------------|--------------------|
| | bolt size | recommended torque | bolt size | recommended torque |
| 5W | M2.6 | 0.6 | M3 | 1.0 |
| 7W | M3 | 1.0 | M4 | 2.3 |
| 9W | | | | |
| 12W | M4 | 2.3 | M5 | 4.6 |
| 15W | | | | |
| 5 | M2 | 0.3 | M2.6 | 0.6 |
| 7 | | | M3 | 1.0 |
| 9 | M3 | 1.0 | M4 | 2.3 |
| 12 | | | M5 | 4.6 |
| 15 | | | M6 | 10.0 |
| 20 | M5 | 4.6 | M6 | 10.0 |

Figure 8 Shapes of Rail



MOUNTING BOLTS

Small bolts for the SEB type are available from NB.

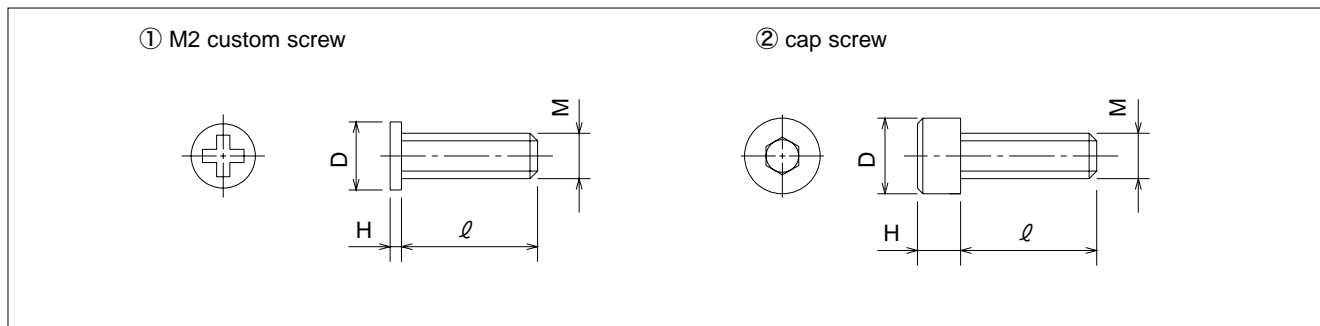
Table 10 Mounting Bolt (stainless steel)

unit/mm

| type | type | bolt size | D mm | H mm | pitch mm | length ℓ mm |
|--------------|----------|-----------|------|------|----------|------------------|
| custom screw | fig.9- ① | M2 | 3 | 0.6 | 0.4 | 6 |
| cap screw | fig.9- ② | M2 | 3.8 | 2 | 0.4 | 4,5,6,8,10 |
| | | M2.6 | 4.5 | 2.6 | 0.45 | 4,5,6,8,10 |

Custom screws for SEBS5A rails come with the rail.

Figure 9 Mounting Bolts (Sizes 5 & 7 only)



LUBRICATION

NB Slide Guides contain a quality lithium soap-based grease before they are shipped, and can be used as delivered. As use continues, lubricate them as required depending on operating conditions.

Under special use environments like clean room or vacuum, NB Slide Guides are available without grease or with special instructed grease applied upon request.

SEB Slide Guides retained ball type may be lubricated with ease as shown in Fig.10 (NB patented feature). NB offers two standard types of grease in syringe type applicators as shown in Table 11.



Figure 10 Greasing Method.

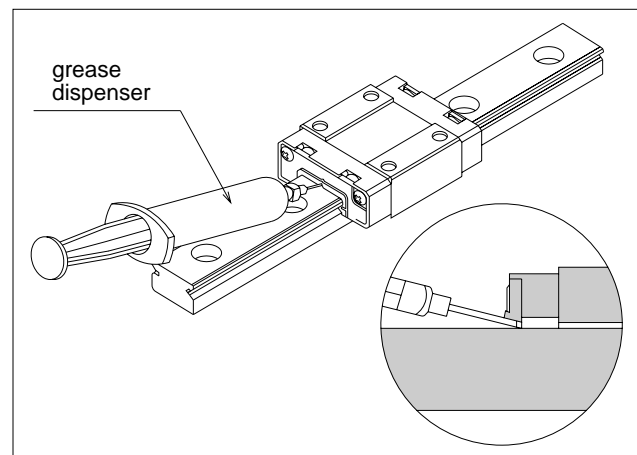


Table 11 Type of Grease

| use | name of grease | contents |
|----------|-------------------------------|----------|
| general | Multemp PS No.2 (Kyodo Yushi) | 10g |
| low dust | K grease (NB) | 10g |

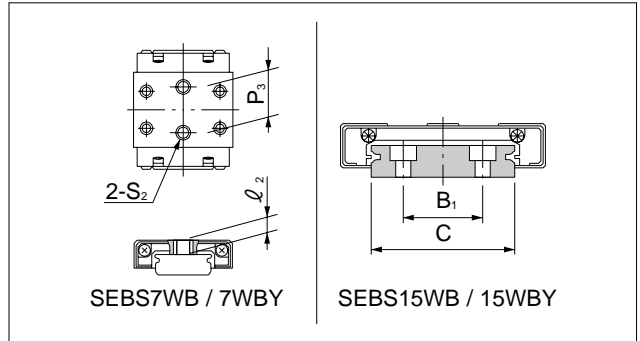
SEBS-WB/SEBS-WBY Type

part number structure

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

| | | | | | | | | | |
|--------------------------|------------------|-----------------|------------------------|--|---------------------|----------------------------|---------------------------------|-----------------------|--------------------------------|
| SEBS: anticorrosion size | 15WB: block size | Y: long | UU: seals on both ends | 2: number of blocks attached to one rail | T1: pre-load symbol | -589: total length of rail | P: accuracy grade | N: rail mounting hole | W2: symbol for number of rails |
| blank: without seal | blank: standard | blank: standard | blank: without seal | blank: standard | blank: standard | blank: high | blank: counter-bore tapped hole | blank: single rail | W2: double rails |
| UU: seals on both ends | Y: long | blank: standard | blank: without seal | blank: standard | blank: standard | P: precision | N: counter-bore tapped hole | W3: triple rails | blank: single rail |
| blank: without seal | blank: standard | blank: standard | blank: without seal | blank: standard | blank: standard | blank: high | blank: counter-bore tapped hole | blank: single rail | W2: double rails |
| UU: seals on both ends | Y: long | blank: standard | blank: without seal | blank: standard | blank: standard | P: precision | N: counter-bore tapped hole | W3: triple rails | blank: single rail |

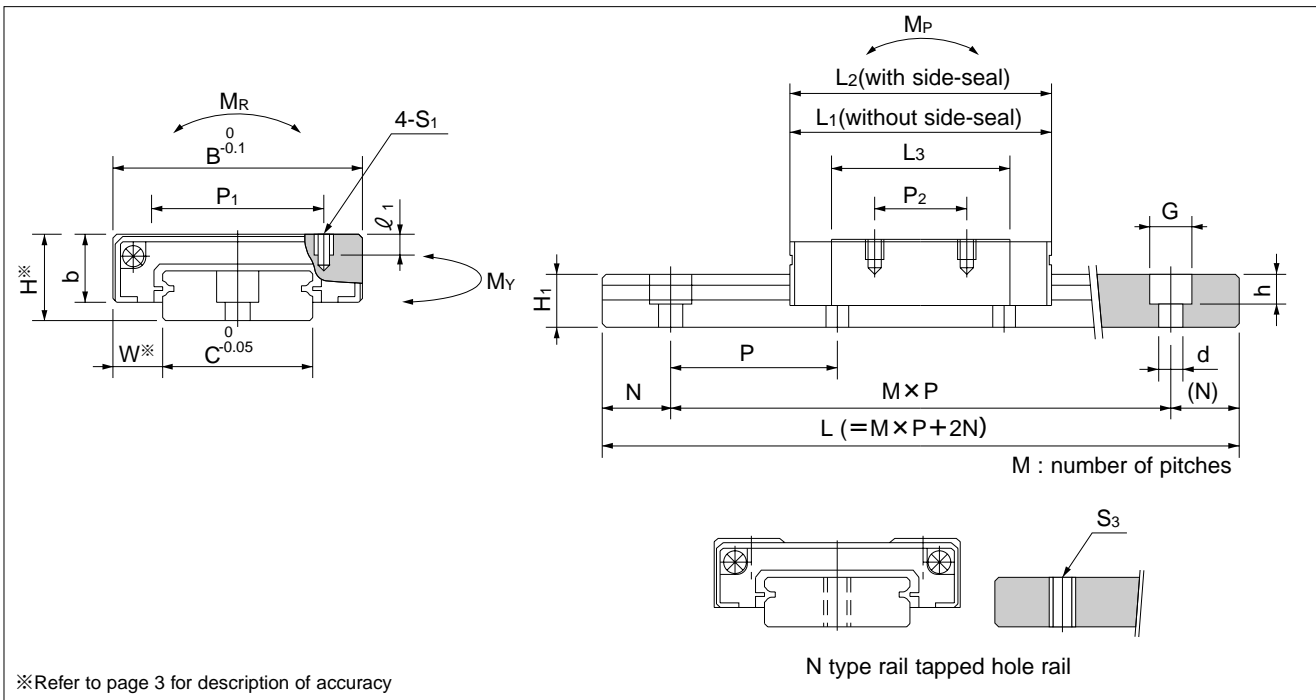
Note: The symbol for the number of rails does not mean the number of rails ordered.



| part number | assembly dimensions | | block dimensions | | | | | | | | | | | | |
|-------------|---------------------|-----|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|
| | H | W | B | L ₁ | L ₂ | P ₁ | P ₂ | S ₁ | ∅ ₁ | L ₃ | P ₃ | S ₂ | l ₂ | b | |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| SEBS 5WB | 6.5 | 3.5 | 17 | 21.3 | 21.7 | - | 6.5 | M3 | 2.3 | 14.3 | - | - | - | 5 | |
| SEBS 5WB Y | | | | 27.3 | 27.7 | | 11 | | | 20.3 | | | | | |
| SEBS 7WB | 9 | 5.5 | 25 | 31.4 | 31.4 | 19 | 10 | | 2.8 | 20.2 | 12 | M4 | 3.5 | 7 | |
| SEBS 7WB Y | | | | 40.1 | 40.1 | | 19 | | | 28.9 | 18 | | | | |
| SEBS 9WB | 12 | 6 | 30 | 38.5 | 38.5 | 21 | 12 | | 3 | 26.3 | - | - | - | 9 | |
| SEBS 9WB Y | | | | 50.5 | 50.5 | | 23 | | | 38.3 | | | | | |
| SEBS 12WB | 14 | 8 | 40 | 42.6 | 43 | 28 | 15 | | 3.6 | 29 | - | - | - | 11 | |
| SEBS 12WB Y | | | | 58.1 | 58.5 | | 28 | | | 44.5 | | | | | |
| SEBS 15WB | 16 | 9 | 60 | 54.2 | 54.6 | 45 | 20 | | M4 | 4.5 | 38.8 | - | - | - | 13 |
| SEBS 15WB Y | | | | 73.3 | 73.7 | | 35 | | | | 57.9 | | | | |

| part number | standard rail length | | | | | | | | | | |
|-------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | L | | | | | | | | | | |
| | mm | | | | | | | | | | |
| SEBS 5WB | 50 | 70 | 90 | 110 | 130 | 150 | 170 | 190 | | | |
| SEBS 7WB | 50 | 80 | 110 | 140 | 170 | 200 | 230 | 260 | 290 | 350 | 410 |
| SEBS 9WB | 50 | 80 | 110 | 140 | 170 | 200 | 230 | 260 | 290 | 350 | 410 |
| SEBS 12WB | 70 | 110 | 150 | 190 | 230 | 270 | 310 | 350 | 390 | 430 | 470 |
| SEBS 15WB | 70 | 110 | 150 | 190 | 230 | 270 | 310 | 350 | 390 | 430 | 470 |

Contact NB for rail length exceeds the maximum standard length listed in the dimensional tables.



| guide-rail dimensions | | | | | | | basic load rating | | allowable static moment | | | mass | | block size |
|-----------------------|----|----------------|---------------|----------------|----|----|-------------------|--------|-------------------------|----------------|----------------|-------|------------|-------------------|
| H ₁ | C | B ₁ | d × G × h | S ₃ | N | P | dynamic | static | M _P | M _Y | M _R | block | guide rail | |
| mm | mm | mm | mm | | mm | mm | kN | kN | N · m | N · m | N · m | g | g/100mm | |
| 4 | 10 | — | 3 × 5.5 × 3 | M3 | 5 | 20 | 0.61 | 1.02 | 2.4 | 2.0 | 5.2 | 7 | 26 | 5WB |
| | | | | | | | 0.88 | 1.47 | 4.9 | 4.1 | 7.4 | | | 5WB _Y |
| 5.2 | 14 | — | 3.5 × 6 × 3.2 | M4 | 10 | 30 | 1.59 | 2.57 | 9.1 | 7.7 | 18.3 | 20 | 51 | 7WB |
| | | | | | | | 2.38 | 3.86 | 18.7 | 15.7 | 27.5 | | | 7WB _Y |
| 7.5 | 18 | — | 3.5 × 6 × 4.5 | M4 | 10 | 30 | 2.31 | 3.85 | 17.0 | 14.3 | 35.6 | 37 | 96 | 9WB |
| | | | | | | | 3.38 | 5.63 | 36.2 | 30.4 | 52.1 | | | 9WB _Y |
| 8 | 24 | — | 4.5 × 8 × 4.5 | M5 | 15 | 40 | 3.02 | 5.04 | 24.7 | 20.7 | 61.7 | 71 | 137 | 12WB |
| | | | | | | | 4.54 | 7.56 | 58.2 | 48.8 | 92.6 | | | 12WB _Y |
| 9.5 | 42 | 23 | 4.5 × 8 × 4.5 | M5 | 15 | 40 | 5.38 | 8.96 | 59.0 | 49.5 | 190.4 | 148 | 286 | 15WB |
| | | | | | | | 8.07 | 13.45 | 131.4 | 110.3 | 285.7 | | | 15WB _Y |

1kN ≅ 102kgf 1N · m ≅ 0.102kgf · m

| | | | | |
|-----|-----|-----|-----|-----|
| 470 | | | | |
| 470 | 530 | | | |
| 550 | 630 | 710 | | |
| 550 | 630 | 710 | 790 | 870 |

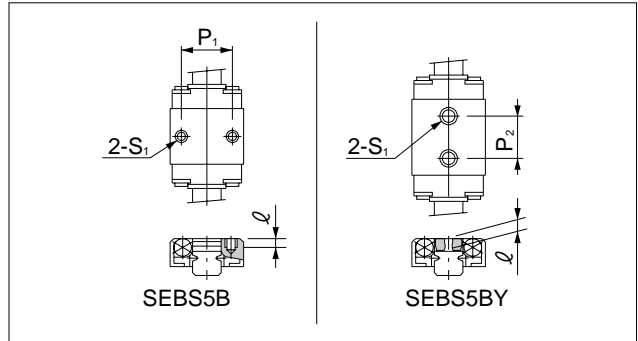
SEBS-B/SEBS-BY Type SEBS-BM/SEBS-BYM Type

part number structure

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

| | | | | | | | | | | |
|---------------------|----------|------------|-----------------|--------------|---------------------------------------|----------------------------|--------------------|----------------|----------------------|-----------------|
| SEBS: anticorrosion | size | block size | return cap | seal | number of blocks attached to one rail | symbol for number of rails | rail mounting hole | accuracy grade | total length of rail | pre-load symbol |
| blank | standard | blank | blank | blank | UU | blank | blank | blank | blank | blank |
| Y | long | M | M | blank | 2 | W2 | N | P | T1 | T1 |
| | | | stainless steel | without seal | | double rails | counter-bored hole | precision | seals on both ends | light pre-load |

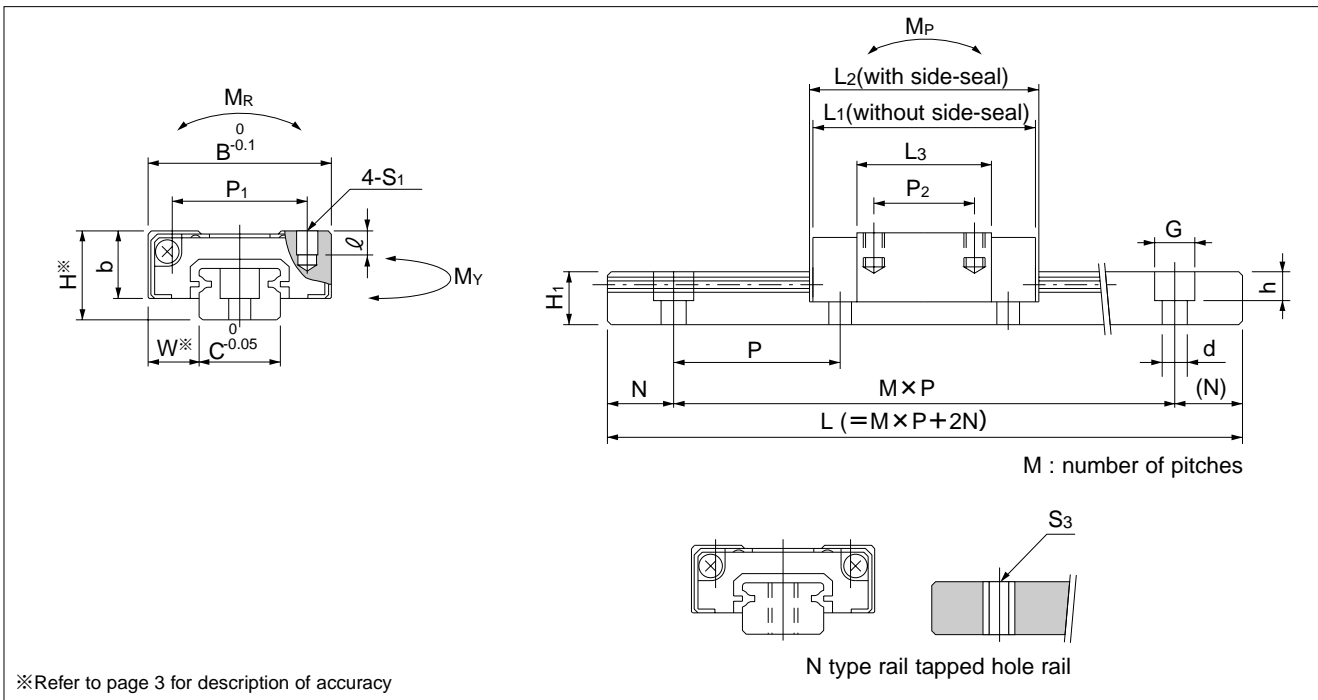
Note: The symbol for the number of rails does not mean the number of rails ordered.



| part number | | assembly dimensions | | block dimensions | | | | | | | | |
|------------------|----------------------|---------------------|-----|------------------|----------------|----------------|----------------|----------------|----------------|-----|----------------|------|
| | | H | W | B | L ₁ | L ₂ | P ₁ | P ₂ | S ₁ | ℓ | L ₃ | b |
| resin return cap | stainless return cap | mm | mm | mm | mm | mm | mm | mm | | mm | mm | mm |
| SEBS 5B | SEBS 5BM | 6 | 3.5 | 12 | 16.3 | 16.7 | 8 | — | M2 | 1.5 | 9.3 | 4.5 |
| SEBS 5BY | SEBS 5BYM | | | | 19.3 | 19.7 | — | 7 | M2.6 | 1.8 | 12.3 | |
| SEBS 7B | SEBS 7BM | 8 | 5 | 17 | 23 | 23 | 12 | 8 | M2 | 2.5 | 12.8 | 6.5 |
| SEBS 7BY | SEBS 7BYM | | | | 32.5 | 32.5 | | 13 | | | 22.3 | |
| SEBS 9B | SEBS 9BM | 10 | 5.5 | 20 | 30.8 | 30.8 | 15 | 10 | M3 | 3 | 19.6 | 7.8 |
| SEBS 9BY | SEBS 9BYM | | | | 40.3 | 40.3 | | 16 | | | 29.1 | |
| SEBS 12B | SEBS 12BM | 13 | 7.5 | 27 | 33.8 | 34.2 | 20 | 15 | M3 | 3.5 | 20.2 | 10 |
| SEBS 12BY | SEBS 12BYM | | | | 45.7 | 46.1 | | 20 | | | 32.1 | |
| SEBS 15B | SEBS 15BM | 16 | 8.5 | 32 | 41.6 | 42 | 25 | 20 | M3 | 4 | 26.6 | 12 |
| SEBS 15BY | SEBS 15BYM | | | | 57.5 | 57.9 | | 25 | | | 42.5 | |
| SEBS 20B | SEBS 20BM | 25 | 13 | 46 | 65.9 | 65.9 | 38 | 38 | M4 | 6 | 44.7 | 17.5 |
| SEBS 20BY | SEBS 20BYM | | | | 85.7 | 85.7 | | 38 | | | 64.5 | |

| part number | standard rail length | | | | | | | | | | |
|-------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| | L | | | | | | | | | | |
| | mm | | | | | | | | | | |
| SEBS 5B | 40 | 55 | 70 | 85 | 100 | 130 | 160 | | | | |
| SEBS 7B | 40 | 55 | 70 | 85 | 100 | 130 | 160 | 190 | 220 | 250 | 280 |
| SEBS 9B | 55 | 75 | 95 | 115 | 135 | 155 | 175 | 195 | 235 | 275 | 315 |
| SEBS 12B | 70 | 95 | 120 | 145 | 170 | 195 | 220 | 245 | 270 | 295 | 320 |
| SEBS 15B | 70 | 110 | 150 | 190 | 230 | 270 | 310 | 350 | 390 | 430 | 470 |
| SEBS 20B | 220 | 280 | 340 | 400 | 460 | 520 | 580 | 640 | 760 | 880 | 1,000 |

Contact NB for rail length exceeds the maximum standard length listed in the dimensional tables.



※Refer to page 3 for description of accuracy

| guide-rail dimensions | | | | | | basic load rating | | allowable static moment | | | mass | | size | | |
|-----------------------|----|-----------------|----------------|-----|----|-------------------|----------------|-------------------------|----------------|----------------|---------------------|-------------------------|------|-----------------------|------|
| H ₁ | C | d × G × h | S ₃ | N | P | dynamic | static | | | | block g | | | | |
| mm | mm | mm | | mm | mm | C | C ₀ | M _P | M _Y | M _R | resin return cap | stainless return cap | | guide-rail g/100mm | |
| 4 | 5 | 2.4 × 3.5 × 0.8 | M2.6 | 5 | 15 | 0.39 | 0.66 | 0.9 | 0.8 | 1.7 | 3 | 4 | 13 | 5B | |
| | | | | | | 0.52 | 0.88 | 1.7 | 1.4 | 2.2 | 4 | 5 | | 5BY | |
| 4.7 | 7 | 2.4 × 4.2 × 2.3 | M3 | | | 1.10 | 1.70 | 3.5 | 3.0 | 6.2 | 9 | 12 | 21 | 7B | |
| | | | | | | 1.93 | 2.98 | 11.0 | 9.3 | 10.8 | 15 | 18 | | 7BY | |
| 5.5 | 9 | 3.5 × 6 × 3.5 | M4 | 7.5 | 20 | 1.67 | 2.47 | 7.8 | 6.6 | 11.5 | 18 | 22 | 31 | 9B | |
| | | | | | | 2.47 | 3.70 | 17.6 | 14.9 | 17.2 | 27 | 31 | | 9BY | |
| 7.5 | 12 | 3.5 × 6 × 4.5 | | M4 | 10 | 25 | 2.55 | 3.70 | 11.7 | 9.9 | 23.1 | 35 | 44 | 59 | 12B |
| | | | | | | | 4.15 | 6.02 | 31.0 | 26.3 | 37.6 | 53 | 62 | | 12BY |
| 9.5 | 15 | 3.5 × 6 × 4.5 | M5 | 15 | 40 | 4.26 | 6.36 | 26.9 | 22.8 | 49.2 | 64 | 77 | 97 | 15B | |
| | | | | | | 6.92 | 10.3 | 71.1 | 60.2 | 80.1 | 98 | 110 | | 15BY | |
| 15 | 20 | 6 × 9.5 × 8.5 | | M6 | 20 | 60 | 8.91 | 12.7 | 92.7 | 78.5 | 130 | 228 | 266 | 205 | 20B |
| | | | | | | | 12.9 | 18.5 | 195 | 165 | 189 | 323 | 360 | | 20BY |

1kN ≒ 102kgf 1N · m ≒ 0.102kgf · m

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| 310 | | | | | | |
| 355 | 395 | 435 | 475 | | | |
| 345 | 370 | 395 | 420 | 445 | 470 | 495 |
| 510 | 550 | 590 | 630 | 670 | | |

