

SLIDE GUIDE SGW Type

The NB slide guide SGW type is a linear motion bearing utilizing the rotational 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.

Anti-Corrosion Specification

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

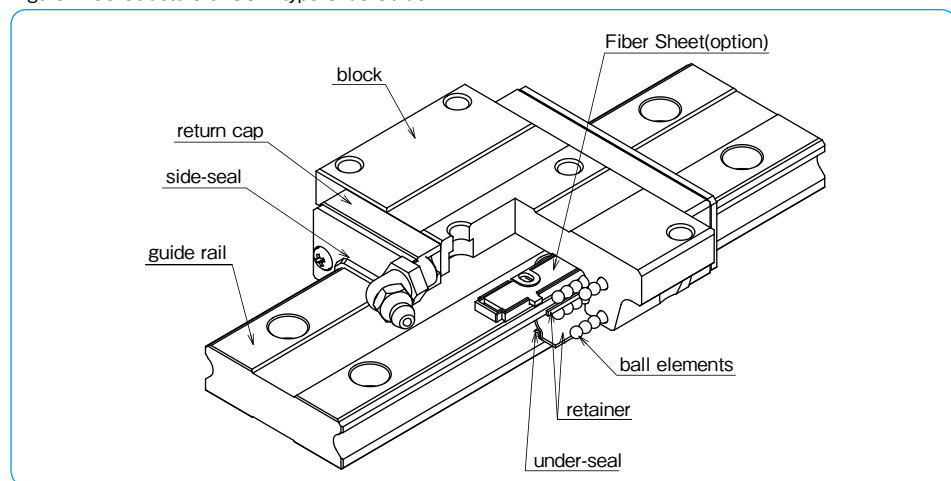
Dust Prevention

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

Extension of Relubrication Period by Fiber Sheet

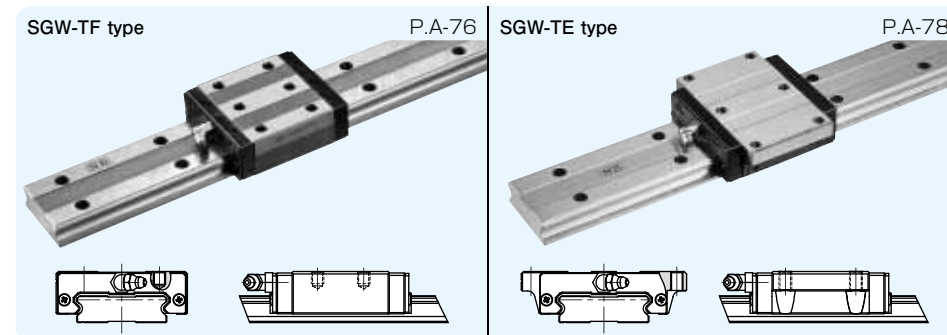
A lubricant-containing Fiber Sheet incorporated in the block supplies appropriate amount of lubricant to the raceway grooves, which significantly extends the lubricant replenishment interval. (refer to page A-16)

Figure A-60 Structure of SGW type Slide Guide



BLOCK TYPES

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



ACCURACY

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

Table A-29 Accuracy unit/mm

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

Figure A-61 Motion Accuracy

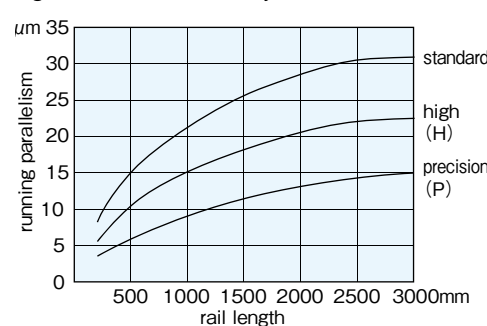
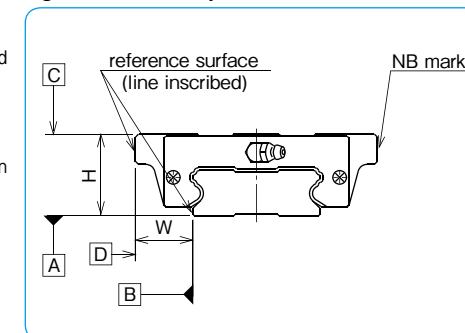


Figure A-62 Accuracy



PRELOAD

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

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

Table A-31 Operating Conditions and Preload

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

RAIL LENGTH

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

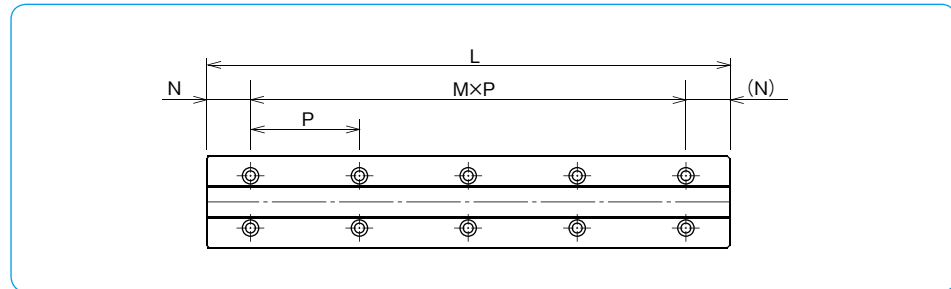
$$L = M \cdot P + 2N$$

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

Table A-32 N Dimension unit/mm

| part number | N | | L max. |
|-------------|----------|-----------|--------|
| | and over | less than | |
| SGW17 | 8 | 28 | 2,000 |
| SGW21 | | 33 | |
| SGW27 | | 38 | |
| SGW35 | 12 | 52 | 3,000 |

Figure A-63 Rail



MOUNTING

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

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

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

| size | M4 | M6 |
|--------------------|-----|------|
| recommended torque | 3.2 | 11.2 |

(for alloy steel screw)

Figure A-64 Mounting Reference Surface Profile

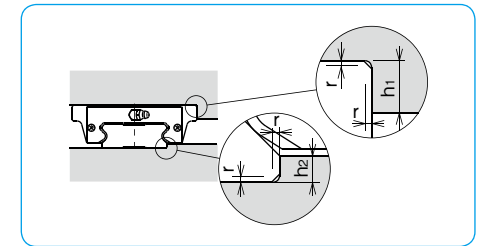


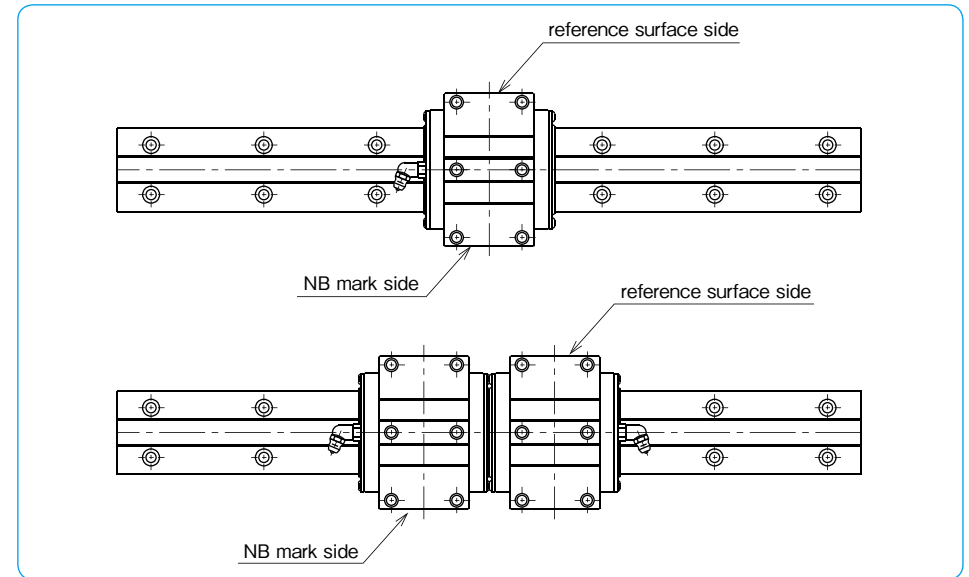
Table A-34 Shoulder Height and Radius Dimensions unit/mm

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

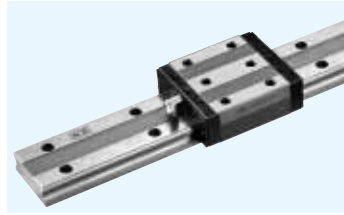
GREASE FITTING

A grease fitting is attached to the return cap of SGW type guide block for lubrication purposes. Unless otherwise specified, the orientation of the grease fitting is as shown in Figure A-65. When more than 2 blocks are used on one rail, please specify the grease fitting orientation.

Figure A-65 Grease Fitting Orientation



SGW-TF TYPE



part number structure

example **SGW21TFB2T1-589P/W2FSLBFKGL**

| | | | | | | | | | | | |
|----------|---------|--|------------------|--|----------------------|--|------------------------------|---|------------------|--|--|
| SGW type | TF type | B | 2 | T1 | 589 | P | W2 | FS | LB | F | KGL |
| size | TF type | seal | number of blocks | preload symbol | total length of rail | accuracy grade | with rail mounting hole caps | with low temperature black chrome treatment | with Fiber Sheet | symbol for grease | symbol for number of axes |
| | | blank: with side-seals B: with side-seals + under-seals | | blank: standard T1: light T2: medium | | blank: standard H: high P: precision | | | | blank: standard grease KGL: lithium-based grease KGLU: urea-based grease KGF: anti-fretting grease GK: K-grease refer to page Eng-39~ | blank: single axis W2: 2 parallel axes W3: 3 parallel axes |

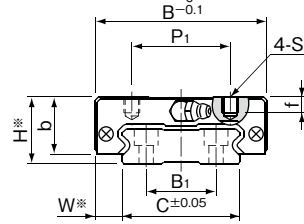
*The symbol for the number of axes does not mean the number of rails ordered.

| part number | assembly dimensions | | block dimensions | | | | | | | | | | | grease fitting |
|----------------|---------------------|------|------------------|-------|------|----|----|----|----|----|------|-----|-----|-----------------|
| | H | W | B | L1 | L2 | P1 | P2 | S | f | T | b | E | T1 | |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| SGW17TF | 17 | 8.5 | 50 | 51 | 33.6 | 29 | 15 | M4 | 4 | — | 14.5 | 2.5 | 4 | pressed fitting |
| SGW21TF | 21 | 8.5 | 54 | 58 | 40 | 31 | 19 | M5 | 5 | — | 18 | 12 | 4.5 | B-M6F |
| SGW27TF | 27 | 10 | 62 | 71.8 | 51.8 | 46 | 32 | M6 | 6 | 10 | 24 | | 6 | |
| SGW35TF | 35 | 15.5 | 100 | 106.6 | 77.6 | 76 | 50 | M8 | 8 | 14 | 31 | | 8 | |

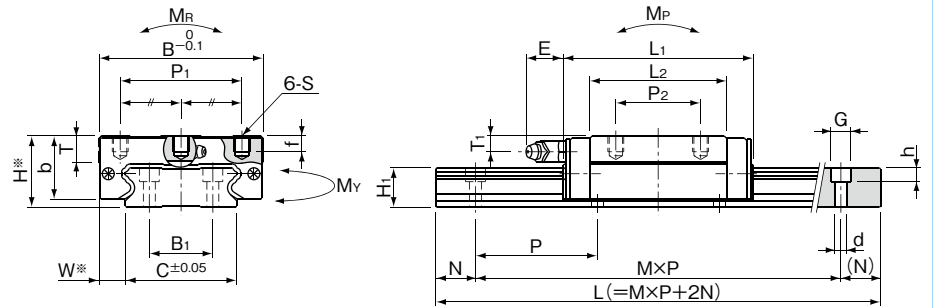
| part number | standard rail length L mm | | | | | | | | | | |
|--------------|---------------------------|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|
| SGW17 | 110 | 150 | 190 | 230 | 270 | 310 | 350 | 390 | 430 | 510 | 590 |
| SGW21 | 130 | 180 | 230 | 280 | 330 | 380 | 430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

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

SGW17·21TF



SGW27·35TF



*Please refer to page A-73 for accuracy.

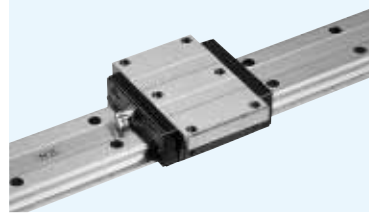
M: number of pitches

| H1 | C | B1 | guide rail dimensions d×G×h mm | N | P | basic load rating | | allowable static moment | | | mass | | block size |
|----|----|----|--------------------------------------|----|--------|--------------------|--------------------|-------------------------|--------------|--------------|-------------|--------------------|------------|
| | | | | | | dynamic C kN | static Co kN | Mp N·m | My N·m | Mr N·m | block kg | guide rail kg/m | |
| 9 | 33 | 18 | 4.5×7.5×5.3 | 15 | 40 | 4.82 | 8.56 | 42.8 261 | 42.8 261 | 160 | 0.13 | 2.05 | 17 |
| 11 | 37 | 22 | | | 50 | 7.01 | 12.1 | 72.3 418 | 72.3 418 | 253 | 0.20 | 2.84 | 21 |
| 15 | 42 | 24 | | 20 | 60 | 12.9 | 21.5 | 171 931 | 171 931 | 496 | 0.38 | 4.43 | 27 |
| 19 | 69 | 40 | | | 7×11×9 | 80 | 30.6 | 48.5 | 578 3,100 | 578 3,100 | 1,850 | 1.16 | 9.32 |

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

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

SGW-TE TYPE



part number structure

example **SGW21TEB2T1-589P/W2FSLB F-KGL**

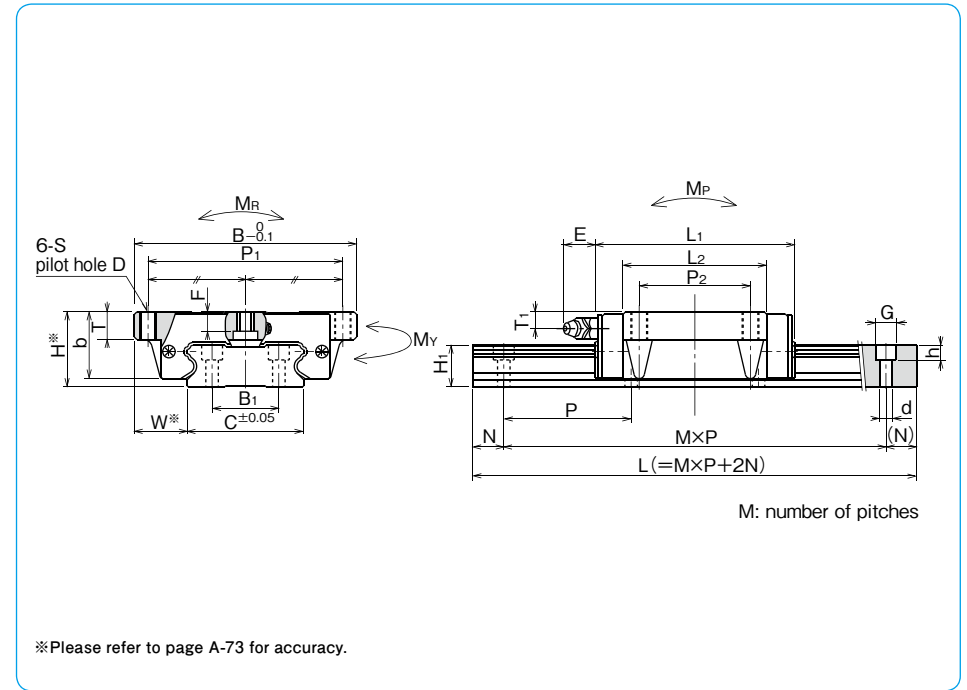
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|------|--------------|---------------------------|------------------------|----------------------------------|---------------------------------------|----------------|-----------------|-----------|------------|----------------------|----------------|-----------------|---------|--------------|-------------------|------------------------|---------------------------|------------------------|---------------------------|--------------|-----------------------|------------------------------|---|------------------|----------------------------|--------------------|---------------------|---------------------|
| SGW type | size | TE typeblock | seal (refer to page A-14) | blank: with side-seals | B: with side-seals + under-seals | number of blocks attached to one rail | preload symbol | 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~ | with rail mounting hole caps | with low temperature black chrome treatment | with Fiber Sheet | symbol for number of axes* | blank: single axis | W2: 2 parallel axes | W3: 3 parallel axes |
|----------|------|--------------|---------------------------|------------------------|----------------------------------|---------------------------------------|----------------|-----------------|-----------|------------|----------------------|----------------|-----------------|---------|--------------|-------------------|------------------------|---------------------------|------------------------|---------------------------|--------------|-----------------------|------------------------------|---|------------------|----------------------------|--------------------|---------------------|---------------------|

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

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

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

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



*Please refer to page A-73 for accuracy.

| H ₁ | C | B ₁ | guide rail dimensions d×G×h mm | N | P | basic load rating | | allowable static moment | | | mass | | block size |
|----------------|----|----------------|--------------------------------------|----|----|--------------------|--------------------------------|-------------------------|-----------------------|-----------------------|-------------|--------------------|------------|
| | | | | | | dynamic C kN | static C ₀ kN | M _P N·m | M _Y N·m | M _R N·m | block kg | guide rail kg/m | |
| 9 | 33 | 18 | 4.5×7.5×5.3 | 15 | 40 | 4.82 | 8.56 | 42.8 261 | 42.8 261 | 160 | 0.14 | 2.05 | 17 |
| 11 | 37 | 22 | | | 50 | 7.01 | 12.1 | 72.3 418 | 72.3 418 | 253 | 0.23 | 2.84 | 21 |
| 15 | 42 | 24 | | | 60 | 12.9 | 21.5 | 171 931 | 171 931 | 496 | 0.46 | 4.43 | 27 |
| 19 | 69 | 40 | 7×11×9 | 20 | 80 | 30.6 | 48.5 | 578 3,100 | 578 3,100 | 1,850 | 1.35 | 9.32 | 35 |

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

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