

## NIPPON BEARING

**SLIDE GUIDE** SGW Type

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

**STRUCTURE AND ADVANTAGES**

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

**High Load Capacity and Long Life**

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

**High Allowable Moment**

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

**Omni-Directional Load Capacity**

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

**Smooth Motion**

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

**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.

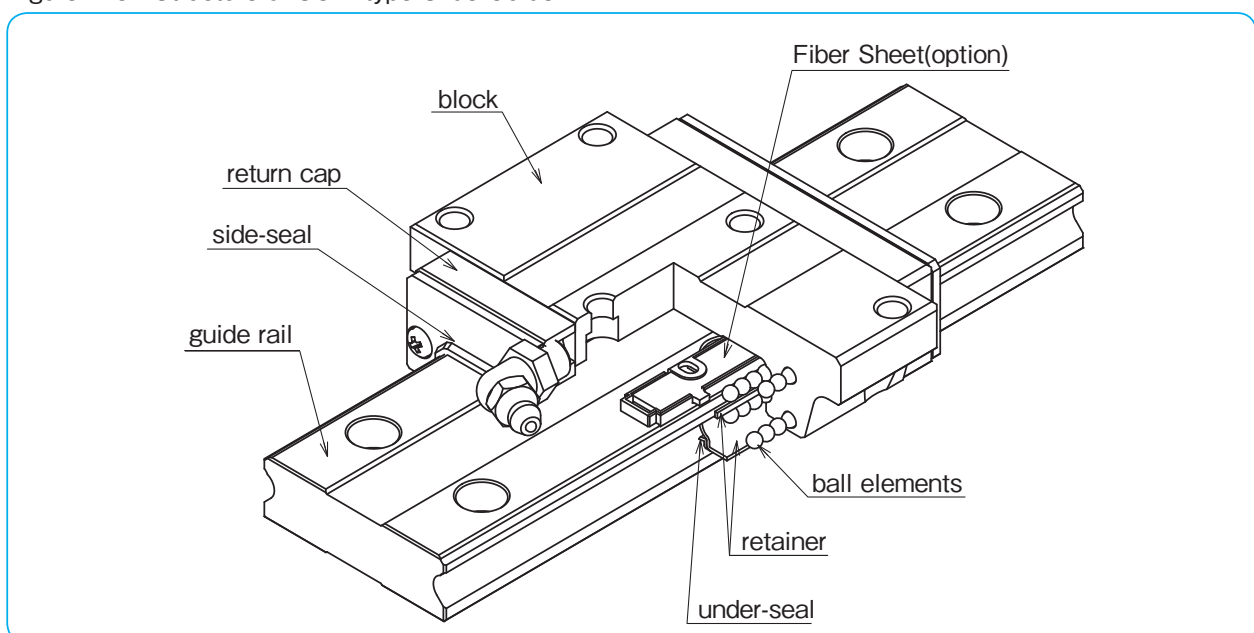
**Dust Prevention**

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-18)

Figure A-61 Structure of SGW type Slide Guide



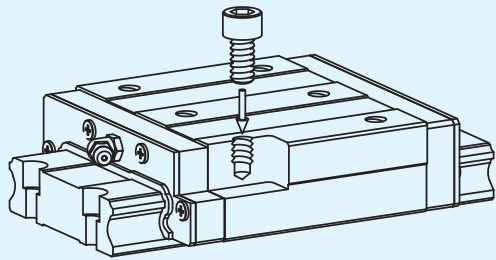
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BLOCK TYPES

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

SGW-TF type

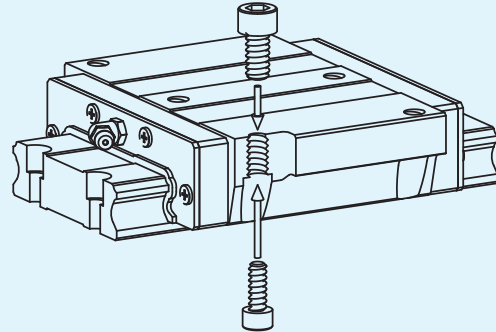
P.A-78



high-rigidity wide type

SGW-TE type

P.A-80



high-rigidity wide flange type

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ACCURACY

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

Table A-31 Accuracy

unit : mm

part number	SGW17,21			SGW27,35		
	standard	high	precision	standard	high	precision
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-62,63					
Running parallelism of surface D to surface B						

Figure A-62 Motion Accuracy

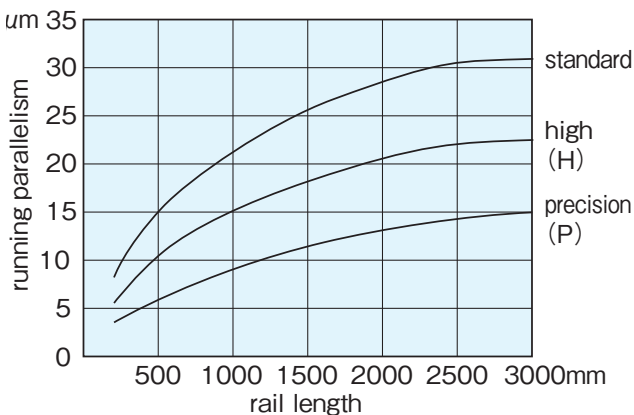
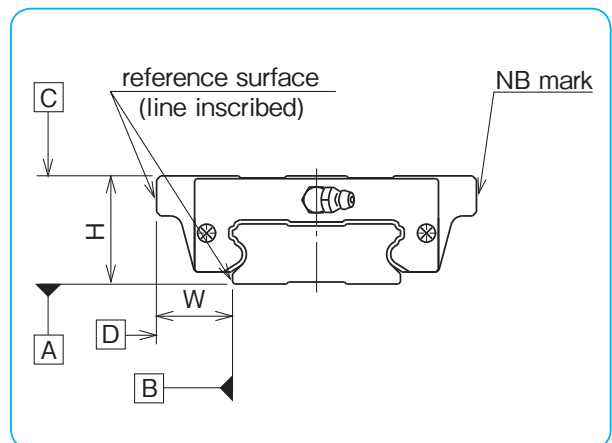


Figure A-63 Accuracy



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PRELOAD

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

Table A-32 Preload symbol and Radial Clearance unit:  $\mu\text{m}$

preload	standard	light	medium <sup>**</sup>
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-33 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 <sup>**</sup>	T2	shock and vibration are applied. over-hang load is applied. torsional load is applied.

※ Frictional resistance may be affected by preload.

RAIL LENGTH

Slide guides with most commonly used lengths are available as standard. For slide guides with a non-standard length, unless otherwise specified, the distance from one end of the rail to the first hole center (N) will be within the range listed in Table A-34, satisfying the following equation.

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

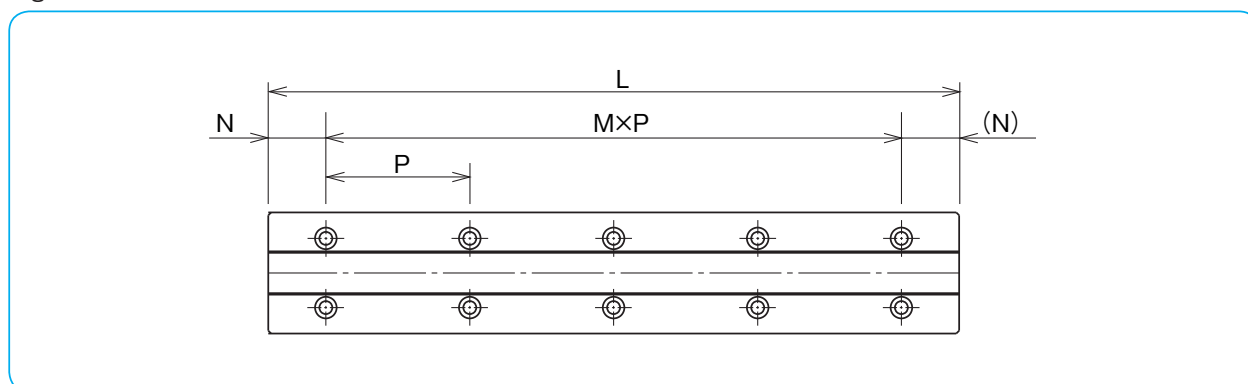
L: length (mm) M: number of pitches P: hole pitch (mm)  
N: distance from the end of the rail to the first hole center (mm)

Table A-34 N Dimension

unit: mm

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

Figure A-64 Rail



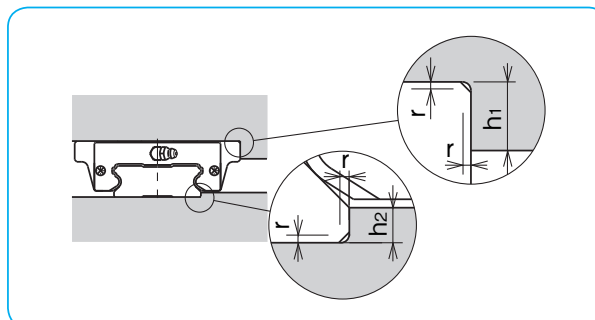
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MOUNTING

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-36.

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-35. Please adjust the torque depending on the operating conditions.

Figure A-65 Mounting Reference Surface Profile



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Table A-35 Recommended Torque unit : N·m

size	M4	M6
recommended torque	3.2	11.2

(for alloy steel screw)

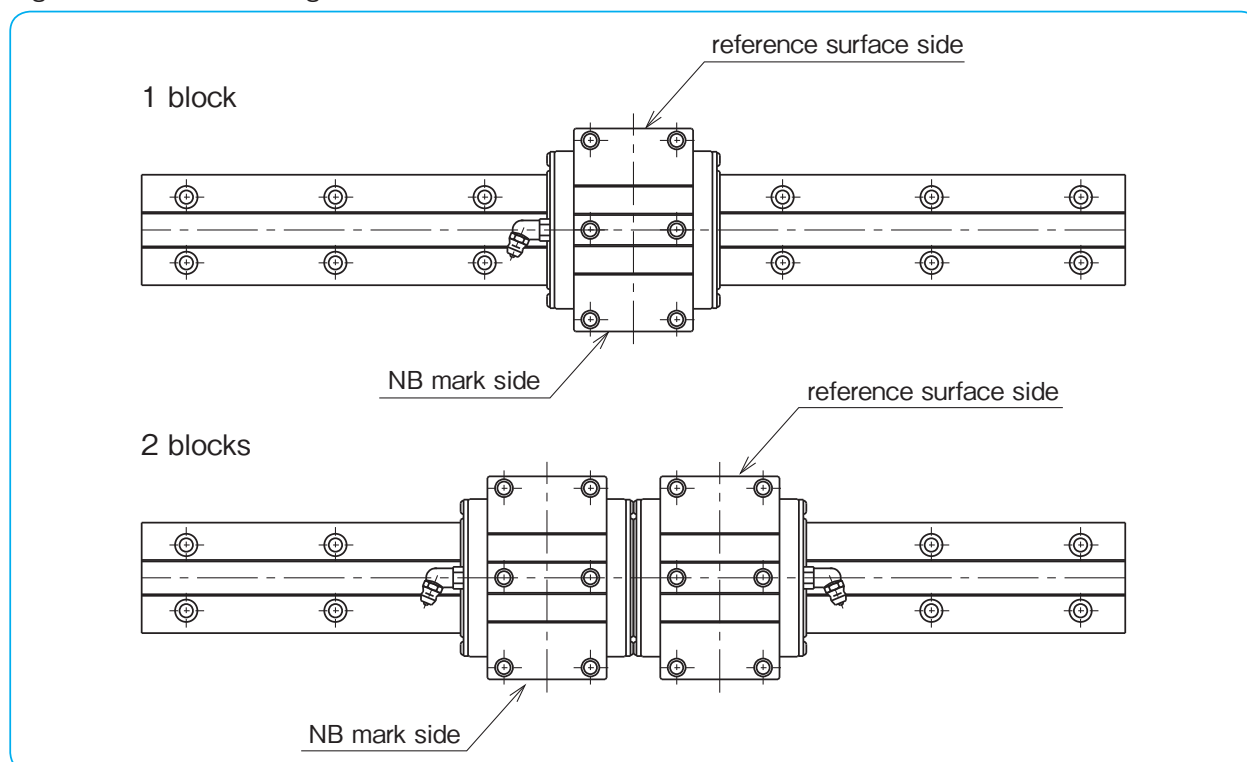
Table A-36 Shoulder Height and Radius Dimensions unit : mm

part number	h <sub>1</sub>	h <sub>2</sub>	r <sub>max.</sub>
SGW17	4	2	0.4
SGW21	5	2.5	
SGW27			3.5
SGW35			

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-66. When more than 2 blocks are used on one rail, please specify the grease fitting orientation.

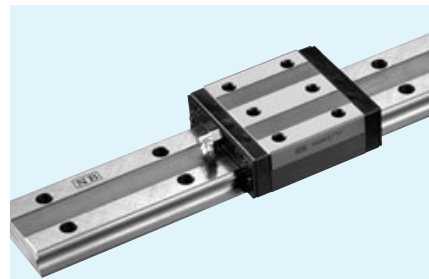
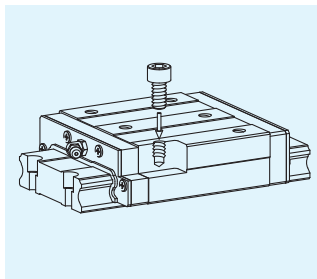
Figure A-66 Grease Fitting Orientation



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SGW-TF TYPE

— High Rigidity Wide Type —



part number structure

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

- SGW type
- size
- TF typeblock
- seal (refer to page A-14)
  - blank: with side-seals
  - B**: with side-seals + under-seals
- number of blocks attached to one rail
- preload symbol (refer to page A-76)
  - blank: standard
  - T1**: light
  - T2**: medium
- total length of rail
- accuracy grade (refer to page A-75)
  - blank: standard
  - H**: high
  - P**: precision
- symbol for grease (refer to page Eng-40~)
  - blank: standard grease
  - KGLA**: lithium-based grease
  - KGU**: urea-based grease
  - KGF**: anti-fretting grease
- with rail mounting hole caps(refer to page A-17)
- with low temperature black chrome treatment
- with Fiber Sheet (refer to page A-18)
- 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 <sub>1</sub>	L <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	S	f	T	b	E	T <sub>1</sub>	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
<b>SGW17TF</b>	17	8.5	50	51	33.6	29	15	M4	4	—	14.5	2.5	4	pressed fitting
<b>SGW21TF</b>	21	8.5	54	58	40	31	19	M5	5	—	18	12	4.5	B-M6F
<b>SGW27TF</b>	27	10	62	71.8	51.8	46	32	M6	6	10	24		6	
<b>SGW35TF</b>	35	15.5	100	106.6	77.6	76	50	M8	8	14	31		8	

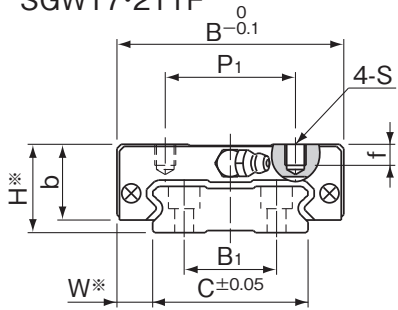
part number	standard rail length L mm											
<b>SGW17</b>	110	150	190	230	270	310	350	390	430	510	590	
<b>SGW21</b>	130	180	230	280	330	380	430	480	530	630	730	
<b>SGW27</b>	160	220	280	340	400	460	520	640	760	880	1,000	
<b>SGW35</b>	280	360	440	520	600	680	760	920	1,080	1,240	1,400	

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

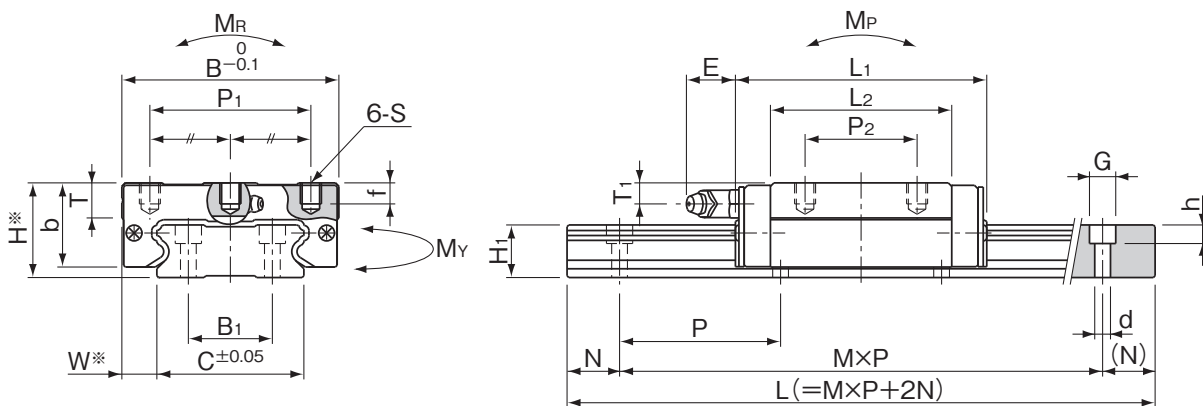
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SGW17·21TF



SGW27·35TF



※Please refer to page A-75 for accuracy.

M: number of pitches

H <sub>1</sub> mm	C mm	guide rail dimensions		N mm	P mm	basic load rating		allowable static moment			mass		block size
		B <sub>1</sub> mm	d×G×h mm			dynamic C kN	static C <sub>0</sub> kN	M <sub>P</sub> M <sub>P2</sub> N·m	M <sub>Y</sub> M <sub>Y2</sub> N·m	M <sub>R</sub> 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	<b>17</b>
11	37	22			50	7.01	12.1	72.3 418	72.3 418	253	0.20	2.84	<b>21</b>
15	42	24		20	60	12.9	21.5	171 931	171 931	496	0.38	4.43	<b>27</b>
19	69	40	7×11×9		80	30.6	48.5	578 3,100	578 3,100	1,850	1.16	9.32	<b>35</b>

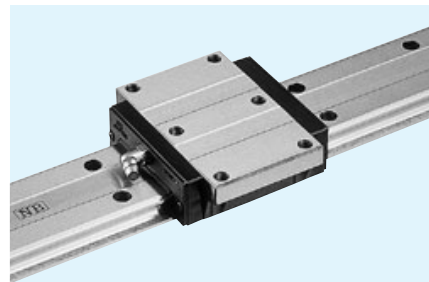
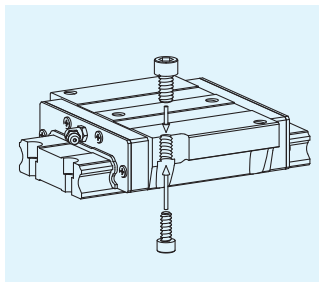
M<sub>P2</sub> and M<sub>Y2</sub> are allowable static moments when two blocks are used in close contact. 1kN≐102kgf 1N·m≐0.102kgf·m

							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

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SGW-TE TYPE

— High Rigidity Wide Type —



part number structure

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

- SGW type
- size
- TE typeblock
- seal (refer to page A-14)
  - blank: with side-seals
  - B**: with side-seals + under-seals
- number of blocks attached to one rail
- preload symbol (refer to page A-76)
  - blank: standard
  - T1**: light
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- total length of rail
- accuracy grade (refer to page A-75)
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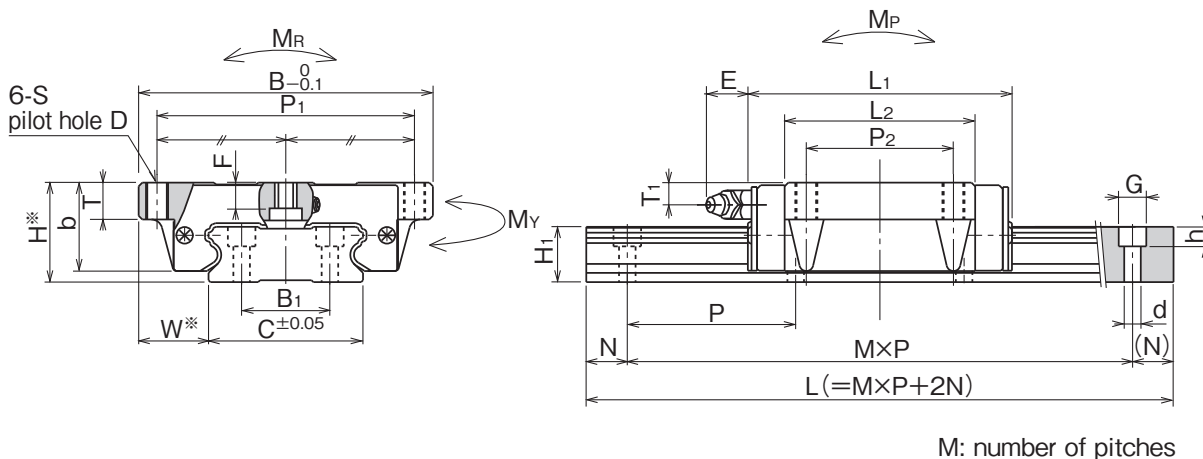
part number	assembly dimensions		block dimensions											grease fitting	
	H	W	B	L <sub>1</sub>	L <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	S	D	F	T	b	E		T <sub>1</sub>
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
<b>SGW17TE</b>	17	13.5	60	51	33.6	53	26	M4	3.3	3.2	6	14.5	2.5	4	pressed fitting
<b>SGW21TE</b>	21	15.5	68	58	40	60	29	M5	4.4	3.7	8	18	12	4.5	B-M6F
<b>SGW27TE</b>	27	19	80	71.8	51.8	70	40	M6	5.3	6	10	24		6	
<b>SGW35TE</b>	35	25.5	120	106.6	77.6	107	60	M8	6.8	8	14	31		8	

part number	standard rail length L mm										
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M: number of pitches

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H <sub>1</sub> mm	C mm	guide rail dimensions		N mm	P mm	basic load rating		allowable static moment			mass		block size
		B <sub>1</sub> mm	d × G × h mm			C kN	C <sub>0</sub> kN	M <sub>P</sub> N · m	M <sub>Y</sub> N · m	M <sub>R</sub> N · m	block kg	guide rail kg/m	
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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