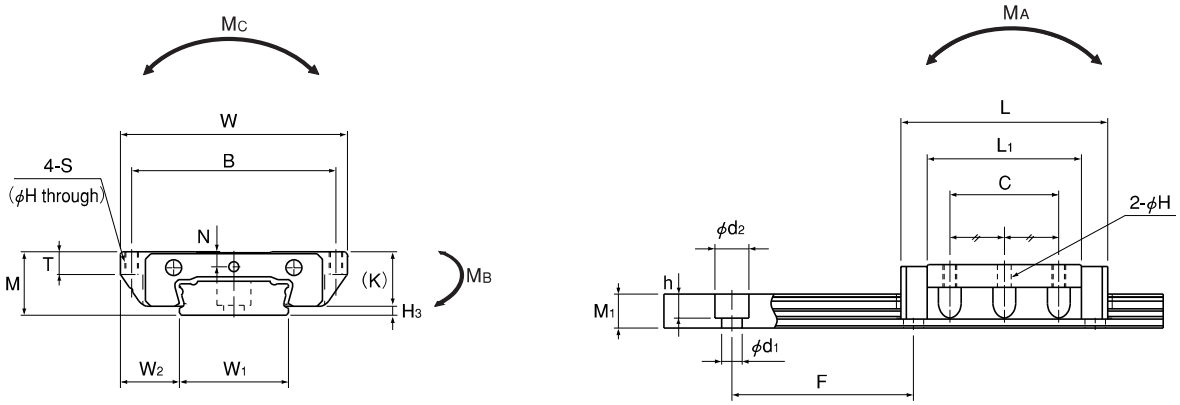
Model SHW-CA

Dimensional Table for Model SHW-CA



Models SHW12CAM and SHW14CAM

Model No.	Outer dimensions			LM block dimensions								
	Height	Width	Length									
	M	W	L	B	C	S	H	L_1	T	K	N	H_3
SHW 12CAM	12	40	37	35	18	M 3	2.5	27	4	10	2.8	2
SHW 14CAM	14	50	45.5	45	24	M 3	2.5	34	5	12	3.3	2
SHW 17CAM	17	60	51	53	26	M 4	3.3	38	6	14.5	4	2.5
SHW 21CA	21	68	59	60	29	M 5	4.4	43.6	8	17.7	5	3
SHW 27CA	27	80	72.8	70	40	M 6	5.3	56.6	10	23.5	6	3
SHW 35CA	35	120	107	107	60	M 8	6.8	83	14	31	7.6	4
SHW 50CA	50	162	141	144	80	M10	8.6	107	18	46	14	3.4

Note Symbol M indicates that stainless steel is used in the LM block, LM rail and balls. Those models marked with this symbol are therefore highly resistant to corrosion and environment.

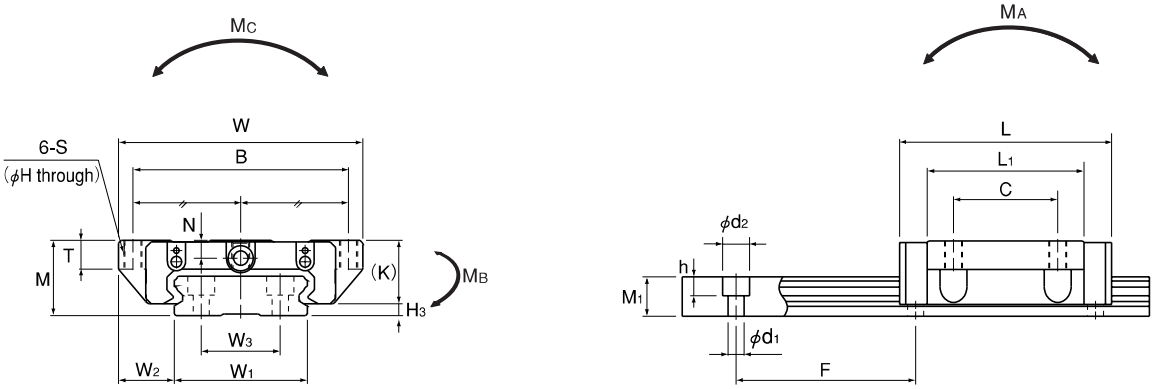
Example of model number coding

SHW17 CA 2 QZ UU C1 M +580L P M - II

1 2 3 4 5 6 7 8 9 10 11

1 Model number 2 Type of LM block 3 No. of LM blocks used on the same rail 4 With QZ Lubricator
5 Contamination protection accessory symbol (see page 15) 6 Radial clearance symbol (see page 6) 7 LM block is made of stainless steel
8 LM rail length (in mm) 9 Accuracy symbol (see page 7) 10 LM rail is made of stainless steel 11 No. of rails used on the same plane

Note This model number indicates that an LM block and an LM rail constitute one set (i.e., the required number of sets when 2 rails are used in parallel is 2).
Those models equipped with QZ Lubricator cannot have a grease nipple.



Models SHW17CAM and SHW21 to 50CA

Unit: mm

	LM rail dimensions							Basic load rating		Static permissible moment [kN-m]*2						Mass	
	Width			Height	Pitch		Length	C	C_0	M_A		M_B		M_C		LM block	LM rail
	W_1	W_2	W_3	M_1	F	$d_1 \times d_2 \times h$	Max*1	[kN]	[kN]	1 block	2 blocks in close contact	1 block	2 blocks in close contact	1 block		[kg]	[kg/m]
	18	11	—	6.6	40	4.5×7.5×5.3	1000	4.31	5.66	0.0228	0.12	0.0228	0.12	0.0405		0.05	0.8
	24	13	—	7.5	40	4.5×7.5×5.3	1430	7.05	8.98	0.0466	0.236	0.0466	0.236	0.0904		0.1	1.23
	33	13.5	18	8.6	40	4.5×7.5×5.3	1800	7.65	10.18	0.0591	0.298	0.0591	0.298	0.164		0.15	1.9
	37	15.5	22	11	50	4.5×7.5×5.3	1900	8.24	12.8	0.0806	0.434	0.0806	0.434	0.229		0.24	2.9
	42	19	24	15	60	4.5×7.5×5.3	3000	16	22.7	0.187	0.949	0.187	0.949	0.455		0.47	4.5
	69	25.5	40	19	80	7×11×9	3000	35.5	49.2	0.603	3	0.603	3	1.63		1.4	9.6
	90	36	60	24	80	9×14×12	3000	70.2	91.4	1.46	7.37	1.46	7.37	3.97		3.7	15

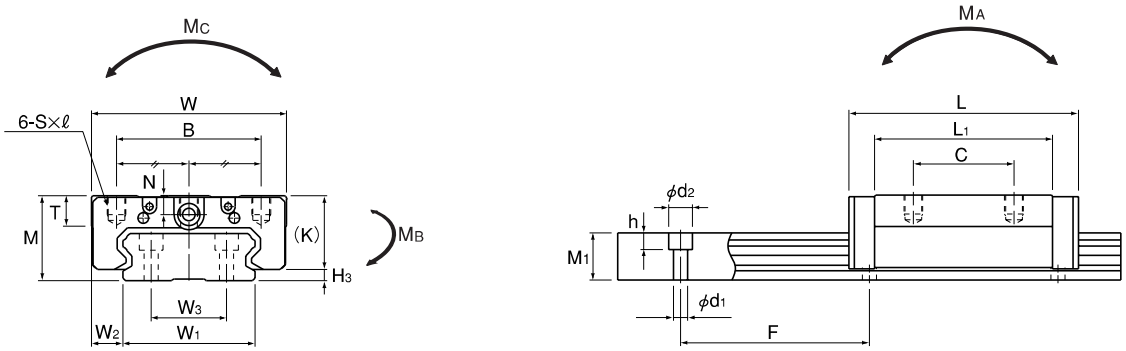
Note If a grease nipple is required, indicate "with grease nipple;" if a greasing hole is required, indicate "with a tapped hole for greasing."

∗1 The maximum length under "Length" indicates the standard maximum length of an LM rail.

∗2 Static permissible moment: 1 block: static permissible moment value with 1 LM block
Double blocks: static permissible moment value with 2 blocks closely contacting with each other

Models SHW-CR/SHW-HR

Dimensional Table for Models SHW-CR/SHW-HR



Models SHW27 to 50CR

Model No.	Outer dimensions			LM block dimensions							
	Height M	Width W	Length L	B	C	S×ℓ	L_1	T	K	N	H_3
SHW 12CRM	12	30	37	21	12	M3×3.5	27	4	10	2.8	2
SHW 12HRM	12	30	50.4	21	24	M3×3.5	40.4	4	10	2.8	2
SHW 14CRM	14	40	45.5	28	15	M3×4	34	5	12	3.3	2
SHW 17CRM	17	50	51	29	15	M4×5	38	6	14.5	4	2.5
SHW 21CR	21	54	59	31	19	M5×6	43.6	8	17.7	5	3
SHW 27CR	27	62	72.8	46	32	M6×6	56.6	10	23.5	6	3
SHW 35CR	35	100	107	76	50	M8×8	83	14	31	7.6	4
SHW 50CR	50	130	141	100	65	M10×15	107	18	46	14	3.4

Note Symbol M indicates that stainless steel is used in the LM block, LM rail and balls. Those models marked with this symbol are therefore highly resistant to corrosion and environment.

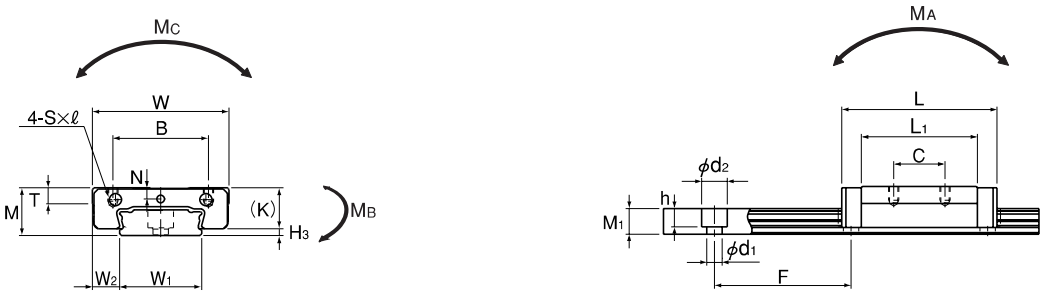
Example of model number coding

SHW17 CR 2 QZ KKHH C1 M +820L P M - II

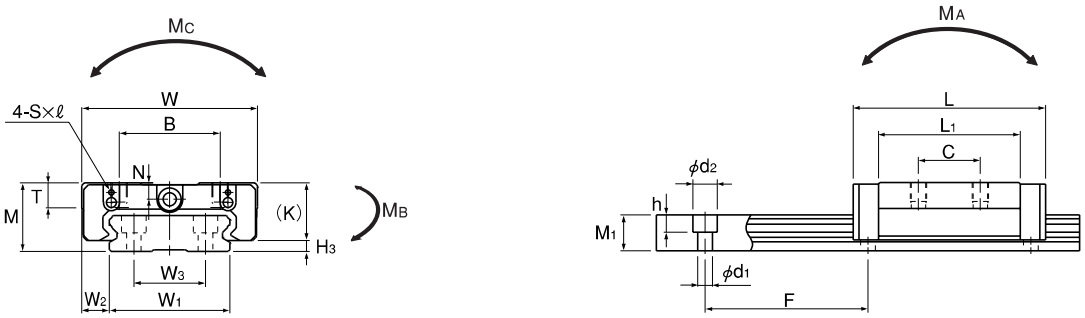
1 2 3 4 5 6 7 8 9 10 11

1 Model number 2 Type of LM block 3 No. of LM blocks used on the same rail 4 With QZ Lubricator
5 Contamination protection accessory symbol (see page 15) 6 Radial clearance symbol (see page 6) 7 LM block is made of stainless steel
8 LM rail length (in mm) 9 Accuracy symbol (see page 7) 10 LM rail is made of stainless steel 11 No. of rails used on the same plane

Note This model number indicates that an LM block and an LM rail constitute one set (i.e., the required number of sets when 2 rails are used in parallel is 2).
Those models equipped with QZ Lubricator cannot have a grease nipple.



Models SHW12CRM, SHW12HRM and SHW14CRM



Models SHW17CRM and SHW21CR

Unit: mm

	LM rail dimensions							Basic load rating		Static permissible moment [kN-m]*2						Mass	
	Width			Height	Pitch		Length	C	C_0	M_A		M_B		M_C		LM block	LM rail
	W_1	W_2	W_3	M_1	F	$d_1 \times d_2 \times h$	Max*1	[kN]	[kN]	1 block	2 blocks in close contact	1 block	2 blocks in close contact	1 block		[kg]	[kg/m]
	18	6	—	6.6	40	4.5×7.5×5.3	1000	4.31	5.66	0.0228	0.12	0.0228	0.12	0.0405		0.04	0.8
	18	6	—	6.6	40	4.5×7.5×5.3	1000	5.56	8.68	0.0511	0.246	0.0511	0.246	0.0621		0.06	0.8
	24	8	—	7.5	40	4.5×7.5×5.3	1430	7.05	8.98	0.0466	0.236	0.0466	0.236	0.0904		0.08	1.23
	33	8.5	18	8.6	40	4.5×7.5×5.3	1800	7.65	10.18	0.0591	0.298	0.0591	0.298	0.164		0.13	1.9
	37	8.5	22	11	50	4.5×7.5×5.3	1900	8.24	12.8	0.0806	0.434	0.0806	0.434	0.229		0.19	2.9
	42	10	24	15	60	4.5×7.5×5.3	3000	16	22.7	0.187	0.949	0.187	0.949	0.455		0.36	4.5
	69	15.5	40	19	80	7×11×9	3000	35.5	49.2	0.603	3	0.603	3	1.63		1.2	9.6
	90	20	60	24	80	9×14×12	3000	70.2	91.4	1.46	7.37	1.46	7.37	3.97		3	15

Note If a grease nipple is required, indicate "with grease nipple;" if a greasing hole is required, indicate "with a tapped hole for greasing."

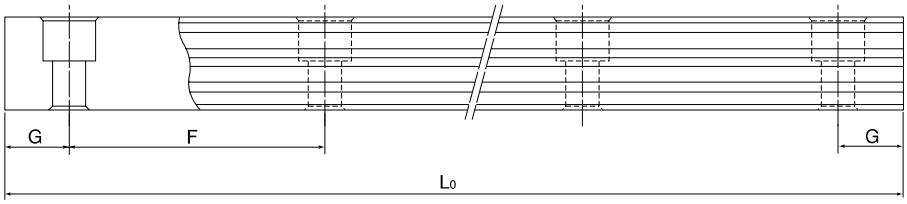
*1 The maximum length under "Length" indicates the standard maximum length of an LM rail.

*2 Static permissible moment: 1 block: static permissible moment value with 1 LM block
Double blocks: static permissible moment value with 2 blocks closely contacting with each other

SHW

Standard Length and Maximum Length of the LM Rail

The table below shows the standard LM rail lengths and the maximum lengths of model SHW variations. If the maximum length of the desired LM rail exceeds them, connected rails will be used. Contact THK for details.
For the G dimension when a special length is required, we recommend selecting the corresponding G value from the table. The longer the G dimension is, the less stable the G area may become after installation, thus adversely affecting accuracy.

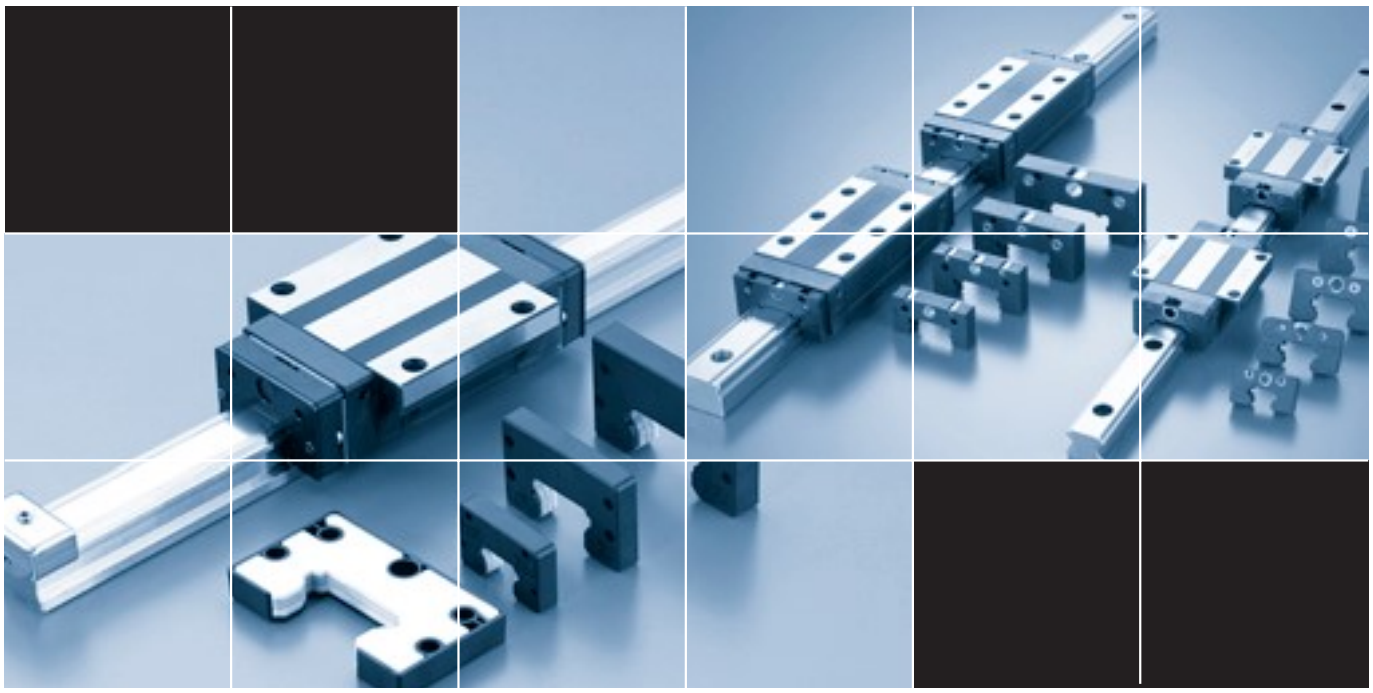


Standard Length and Maximum Length of the LM Rail for Model SHW

Unit: mm

Model No.	SHW 12	SHW 14	SHW 17	SHW 21	SHW 27	SHW 35	SHW 50
Standard LM rail length (L_0)	70	70	110	130	160	280	280
	110	110	190	230	280	440	440
	150	150	310	380	340	760	760
	190	190	470	480	460	1000	1000
	230	230	550	580	640	1240	1240
	270	270		780	820	1560	1640
	310	310					2040
	390	390					
	470	470					
		550					
		670					
Standard pitch F	40	40	40	50	60	80	80
G	15	15	15	15	20	20	20
Max length	1000	1430	1800	1900	3000	3000	3000

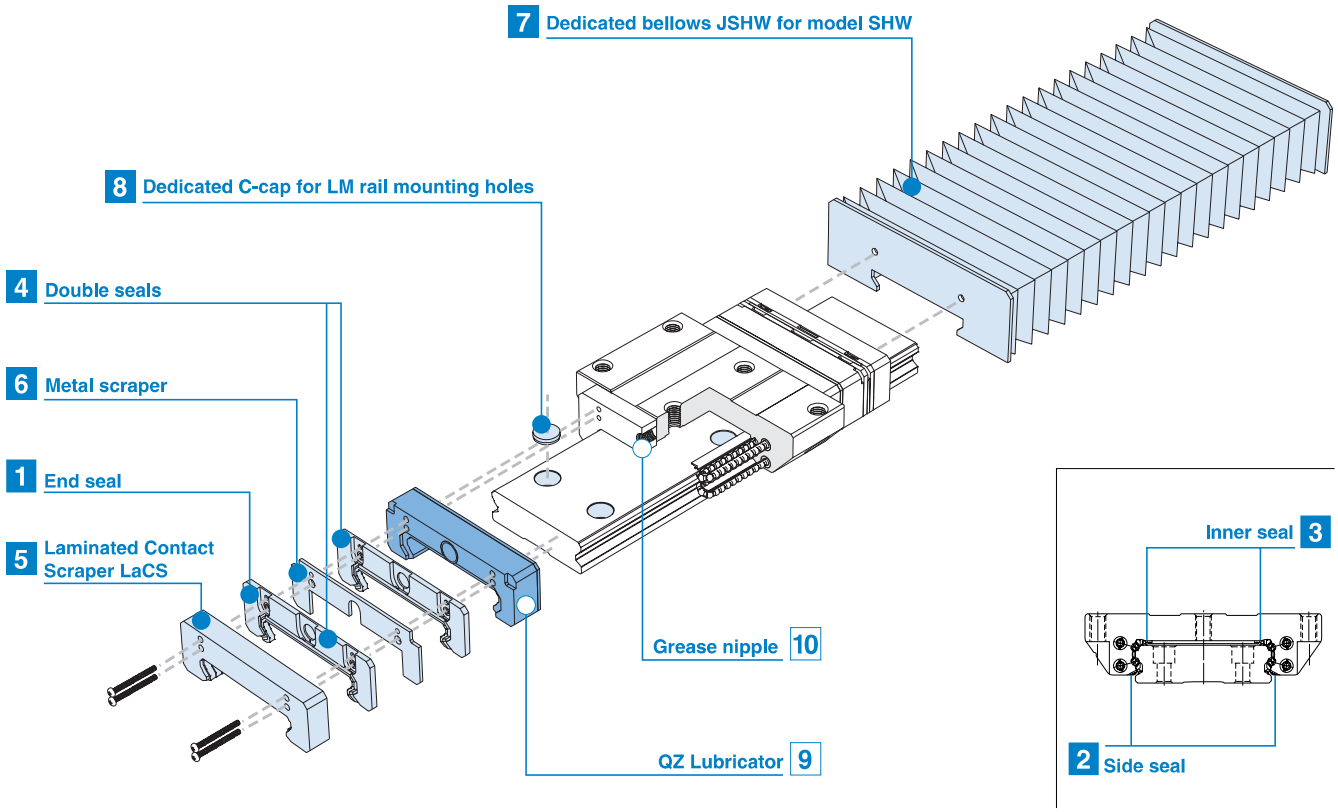
Note 1: The maximum length varies with accuracy grades. Contact THK for details.
Note 2: If connected rails are not allowed and a greater length than the maximum values above is required, contact THK.
Note 3: Models SHW12, 14 and 17 are made of stainless steel.



SHW OPTIONS

Options

For model SHW, contamination protection and lubrication accessories are available. Make a selection according to the application and the installation site.

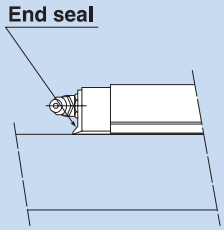


Contamination Protection Accessories

When foreign matter enters an LM system, it will cause abnormal wear or shorten the service life. It is necessary to prevent foreign matter from entering the system. Therefore, when possible entrance of foreign matter is predicted, it is important to select an effective sealing device or contamination protection device that meets the working conditions.

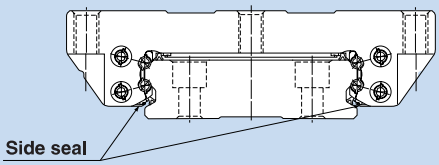
1 End seal

Used in locations exposed to dust.



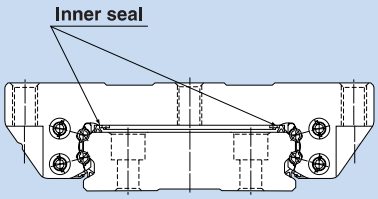
2 Side seal

Used in locations where dust may enter the LM block from the side or bottom surface, such as vertical, horizontal and inverted mounts.



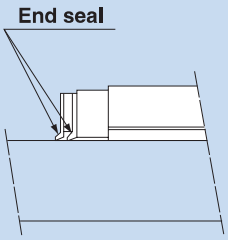
3 Inner seal

Used in locations severely exposed to dust or cutting chips.



4 Double seals

Used in locations exposed to much dust or many cutting chips.



Seals and Scrapers

1 to 4 Seals

Highly wear-resistant end seals made of special resin rubber and side seals for increased contamination protection effect are available.

If desiring a contamination protection accessory, specify it with the corresponding symbol indicated in table 3.
For the supported model numbers for contamination protection accessories and the overall LM block length with a contamination protection accessory attached (dimension L), see table 4.

Seal resistance value

For the maximum seal resistance value per LM block when a lubricant is applied on seals SHW ··· UU/SS, refer to the corresponding value provided in table 1.

Table 1 Maximum Seal Resistance Value of Seals SHW ··· UU/SS Unit: N

Model No.	Seal resistance value	
	UU	SS
12CA/CR	1.0	1.4
12HR	1.0	1.8
14	1.2	1.8
17	1.4	2.2
21	4.9	6.9
27	4.9	8.9
35	9.8	15.8
50	14.7	22.7

5 6 Scrapers

Laminated Contact Scraper LaCS®

For locations with an even more adverse working conditions, the Laminated Contact Scraper LaCS is available. LaCS prevents minute foreign matter from entering the LM block by removing such foreign matter adhering to the LM rail in multiple stages through a laminated contact structure (3-layered scraper).

Features

- Since the 3 layers of scrapers fully contact the LM rail, LaCS is highly capable of removing minute foreign matter.
- Since it uses oil-impregnated, foam synthetic rubber with a self-lubricating function, low friction resistance is achieved.

Basic Specifications of LaCS

① Service temperature range of LaCS: -20°C to +80°C
② Resistance of LaCS: indicated in table 2

*Note that LaCS is not sold alone.

Table 2 Resistance of LaCS Unit: N

Model No.	Resistance of LaCS
21	3.9
27	6.5
35	13.0
50	19.5

Note 1: Each resistance value in the table only consists of that of LaCS, and does not include sliding resistances of seals and other accessories.
Note 2: For the maximum service speed of LaCS, contact THK.

Table 3 Symbols of Contamination Protection Accessories for Model SHW

Symbol	Contamination protection accessory
UU	With end seal
SS	With end seal + side seal + inner seal
DD	With double seals + side seal + inner seal
ZZ	With end seal + side seal + inner seal + metal scraper
KK	With double seals + side seal + inner seal + metal scraper
SSHH	With end seal + side seal + inner seal + LaCS
DDHH	With double seals + side seal + inner seal + LaCS
ZZHH	With end seal + side seal + inner seal + metal scraper + LaCS
KKHH	With double seals + side seal + inner seal + metal scraper + LaCS

Note: The inner seal and LaCS are not available for models SHW12, 14 and 17.

Table 4 Overall LM Block Length (Dimension L) of Model SHW with a Contamination Protection Accessory Attached

Unit: mm

Model No.	UU	SS	DD	ZZ	KK	SSHH	DDHH	ZZHH	KKHH
12 CAM/CRM	37	37	—	—	—	48	—	—	—
12 HRM	50.4	50.4	—	—	—	61.4	—	—	—
14 CAM/CRM	45.5	45.5	—	—	—	60.7	—	—	—
17 CAM/CRM	51	51	54	53.4	56.4	66.2	69.2	67.4	70.4
21 CA/CR	59	59	64	63.2	68.2	75.6	80.6	77.2	82.2
27 CA/CR	72.8	72.8	78.6	77.8	83.6	89.4	95.2	91.8	97.6
35 CA/CR	107	107	114.4	112	119.4	129	136.4	131.4	138.8
50 CA/CR	141	141	149.2	147.4	155.6	166	174.2	168.4	176.6

Note: "—" indicates not available.

7 Dedicated Bellows JSHW for Model SHW

For locations with an even more adverse working conditions, dedicated bellows are available. The dimensions of the dedicated bellows are provided below. When placing an order, specify the desired bellows type with the corresponding bellows model number indicated below.

Dimensional Table for JSHW

Model No.	Main dimensions(mm)									Supported model
	W	H	H_1	P_1	P_2	b_1	t_1	b_2	t_2	
JSHW 17	68	22	23	15	15.4	39	2.6	18	6	SHW 17
JSHW 21	75	25	26	17	17	35.8	2.9	22	7	SHW 21
JSHW 27	85	33.5	33.5	20	20	25	3.5	20	10	SHW 27
JSHW 35	120	35	35	20	20	75	7.5	40	13	SHW 35
JSHW 50	164	42	42	20	20	89.4	14	50	16	SHW 50

Model No.	Other dimensions(mm)					A $\left(\frac{\text{Lmax}}{\text{Lmin}}\right)$
	Mounting bolt		a	b		
	S*	S_1		Type CA	Type CR	
JSHW 17	M2 × 4ℓ	M3×6ℓ	8	4	9	5
JSHW 21	M2 × 5ℓ	M3×6ℓ	8	3.5	10.5	6
JSHW 27	M2.6× 6ℓ	M3×6ℓ	10	2.5	11.5	7
JSHW 35	M3 × 8ℓ	M3×6ℓ	6	0	10	7
JSHW 50	M4 ×12ℓ	M4×8ℓ	—	1	17	7

Note 1: When desiring to use the dedicated bellows other than in horizontal mount (i.e., vertical, wall and inverted mount), or when desiring a heat-resistant type of bellows, contact THK.

Note 2: For lubrication when using the dedicated bellows, contact THK.

Note 3: For the mounting bolts marked with "*", use tapping screws.

Note 4: When using the dedicated bellows, the LM block and LM rail need to be machined so that the bellows can be mounted. Be sure to indicate that the dedicated bellows is required when ordering SHS.

Example of model number coding

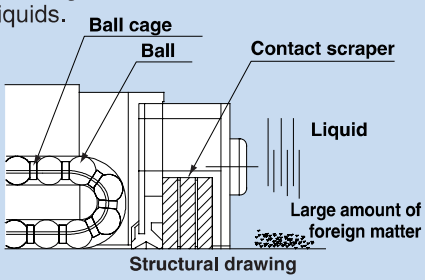
JSHW21-60/360

1 2

1 Model number ··· bellows for SHW21
2 Bellows dimensions (length when compressed / length when extended)

LaCS 5

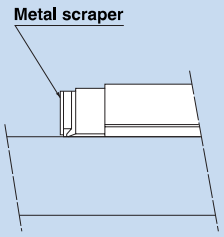
Used in harsh environments exposed to foreign matter such as fine dust and liquids.



Structural drawing

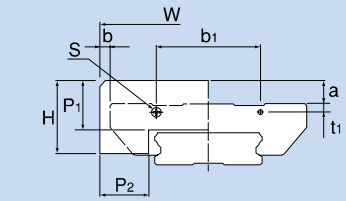
Metal scraper 6

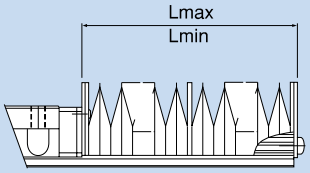
Used in locations where welding spatter may adhere to the LM rail.

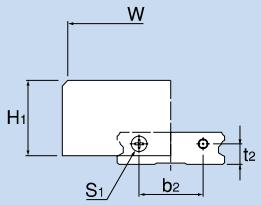


Dedicated bellows JSHW for model SHW 7

Used in locations exposed to dust or cutting chips.







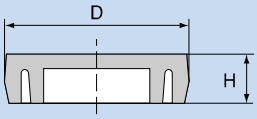
Note: The length of the bellows is calculated as follows.

$$\text{Lmin} = \frac{S}{(A-1)}$$ S: Stroke length (mm)

Lmax = Lmin·A A: Extension rate

8 Dedicated C-cap

It prevents cutting chips from entering the LM rail mounting holes.



8 Dedicated C-cap for LM Rail Mounting Holes

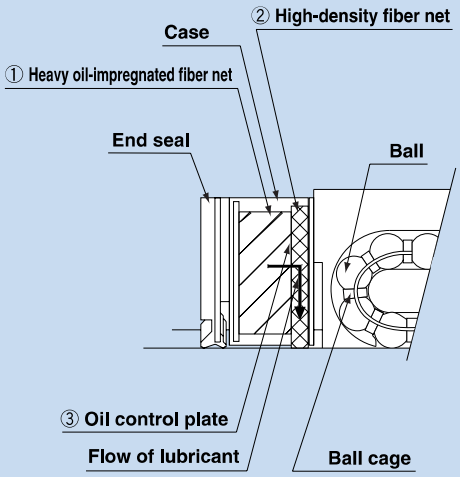
If any of the LM rail mounting holes of an LM Guide is filled with cutting chips or foreign matter, they may enter the LM block structure. Entrance of such foreign matter can be prevented by covering each LM rail mounting hole with the dedicated cap so that the top of the mounting holes are on the same level as the LM rail top face.

The dedicated C-cap for LM rail mounting holes is highly durable since it uses a special synthetic resin with high oil resistance and high wear resistance. When placing an order, specify the desired cap type with the corresponding cap number indicated in the table on the right.

Model No.	C-cap model No.	Bolt used	Main dimensions mm	
			D	H
12	C4	M4	7.8	1.0
14	C4	M4	7.8	1.0
17	C4	M4	7.8	1.0
21	C4	M4	7.8	1.0
27	C4	M4	7.8	1.0
35	C6	M6	11.4	2.7
50	C8	M8	14.4	3.7

Lubrication Accessories

9 QZ Lubricator



9 QZ Lubricator™

The QZ Lubricator feeds the right amount of lubricant to the ball raceway on the LM rail. This allows an oil film to continuously be formed between the balls and the raceway, and drastically extends the lubrication and maintenance intervals.

When the QZ Lubricator is required, specify the desired type with the corresponding symbol indicated in table 1. For supported LM Guide model numbers for the QZ Lubricator and overall LM block length with the QZ Lubricator attached (dimension L), see table 2.

Features

- Supplements lost oil to drastically extend the lubrication/maintenance interval.
- Eco-friendly lubrication system that does not contaminate the surrounding area since it feeds the right amount of lubricant to the ball raceway.
- The user can select a type of lubricant that meets the intended use.

Significant Extension of the Maintenance Interval

Attaching the QZ Lubricator helps extend the maintenance interval throughout the whole load range from the light-load area to the heavy-load area.

*Note that the QZ Lubricator is not sold alone.
*Those models equipped with the QZ Lubricator cannot have a grease nipple. When desiring both the QZ Lubricator and a grease nipple to be attached, contact THK .

Table 1 Parts Symbols for Model SHW with the QZ Lubricator Attached

Symbol	Contamination protection accessories for LM Guide with QZ Lubricator attached
QZUU	With end seal + QZ Lubricator
QZSS	With end seal + side seal + inner seal + QZ Lubricator
QZDD	With double seals + side seal + inner seal + QZ Lubricator
QZZZ	With end seal + side seal + inner seal + metal scraper + QZ Lubricator
QZKK	With double seals + side seal + inner seal + metal scraper + QZ Lubricator
QZSSHH	With end seal + side seal + inner seal + LaCS + QZ Lubricator
QZDDHH	With double seals + side seal + inner seal + LaCS + QZ Lubricator
QZZZHH	With end seal + side seal + inner seal + metal scraper + LaCS + QZ Lubricator
QZKKHH	With double seals + side seal + inner seal + metal scraper + LaCS + QZ Lubricator

Note: The inner seal and LaCS are not available for models SHW12, 14 and 17.

Table 2 Overall LM Block Length (Dimension L) of Model SHW with the QZ Lubricator Attached

Unit: mm

Model No.	QZUU	QZSS	QZDD	QZZZ	QZKK	QZSSHH	QZDDHH	QZZZHH	QZKKHH
12 CAM/CRM	47	47	—	—	—	58	—	—	—
12 HRM	60.4	60.4	—	—	—	71.4	—	—	—
14 CAM/CRM	55.5	55.5	—	—	—	70.7	—	—	—
17 CAM/CRM	63	63	66	65.4	68.4	78.2	81.2	79.4	82.4
21 CA/CR	75	75	80	78.6	83.6	91.6	96.6	93.2	98.2
27 CA/CR	92.8	92.8	98.6	97.2	103	109.4	115.2	111.8	117.6
35 CA/CR	127	127	134.4	132	139.4	149	156.4	151.4	158.8
50 CA/CR	161	161	169.2	167.4	175.6	186	194.2	188.4	196.6

Note: "—" indicates not available.

The structure of the QZ Lubricator consists of three major components:
① a heavy oil-impregnated fiber net (functions to store lubricant).
② a high-density fiber net (functions to apply lubricant to the raceway).
③ an oil-control plate (functions to adjust oil flow).
The lubricant contained in the QZ Lubricator is fed by the capillary phenomenon, which is used also in felt pens and many other products, as the fundamental principle.

10 Grease Nipple and Greasing Hole

Model SHW does not have a grease nipple as standard. For the location for attaching the grease nipple, see Fig. 1. Note that attaching the grease nipple will increase the overall LM rail length. The installation of a grease nipple and the drilling of a greasing hole are performed at THK. When ordering SHW, indicate that the desired model requires a grease nipple or greasing hole (for greasing hole dimensions, supported LM Guide model numbers for grease nipples and incremental dimensions, see table 1).

Note 1: The grease nipple is not available for models SHW12, 14 and 17. They can have a greasing hole.
Note 2: Using a greasing hole other than for greasing may cause damage.

■When Contamination Protection Accessories SSHH, DDHH, ZZHH or KKHH are Attached

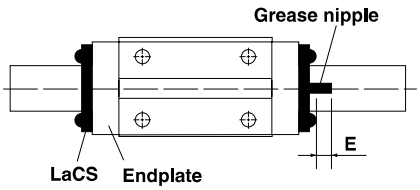
When contamination protection accessories SSHH, DDHH, ZZHH or KKHH are attached, the grease nipple is in the location indicated in Fig. on the right. Table 2 shows incremental dimensions with the grease nipple.

■When Contaminaion Protection Accessories UU or SS are Attached

For the incremental dimension of the grease nipple when contamination protection accessories UU or SS are attached, see table 1.

■When Contamination Protection Accessories DD, ZZ or KK are Attached

For the mounting location of the grease nipple and its incremental dimension when contamination protection accessories DD, ZZ or KK are attached, contact THK.



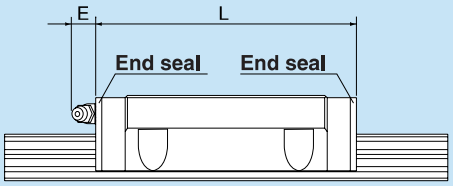
Note: When desiring the mounting location for the grease nipple other than the one indicated in Fig. above, contact THK.

Table 2 Incremental Dimension with Grease Nipple

Unit: mm

Model No.	Incremental dimension with grease nipple E	Nipple type
21CA/CR	4.2	PB1021B
27CA/CR	10.7	B-M6F
35CA/CR	10.0	B-M6F
50CA/CR	21.0	B-PT1/8

Grease nipple 10



Note: For the dimension L, see the corresponding dimension table (pages 9 to 12).

Fig.1 Location for mounting the grease nipple

Table 1 Table of Grease Nipple and Greasing Hole Dimensions

Unit: mm

Model No.	E	Grease nipple or greasing hole
12	—	ϕ2.2 drilled hole
14	—	ϕ2.2 drilled hole
17	5	PB107
21	5.5	PB1021B
27	12	B-M6F
35	12	B-M6F
50	16	B-PT1/8