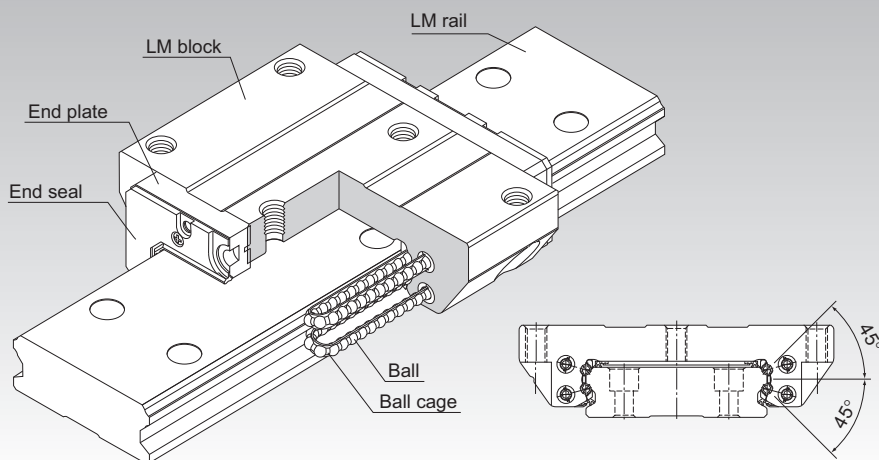


# SHW



## Wide-Rail Caged Ball LM Guide Model SHW



Note: For the ball cage, see **A1-90**.

**Selection Criteria** **A1-10**

**Design Highlights** **A1-482**

**Options** **A1-507**

**Model No.** **A1-577**

**Handling Precautions** **A1-583**

**Accessories for Lubrication** **A24-1**

**Mounting Procedure** **B1-89**

Equivalent Moment Factor **A1-43**

Rated Loads in All Directions **A1-61**

Equivalent Factor in Each Direction **A1-63**

Radial Clearance **A1-73**

Accuracy Standards **A1-79**

Shoulder Height of the Mounting Base and the Corner Radius **A1-495**

Reference Error Tolerance for the Mounting Surface **A1-499**

Dimensions of Each Model with Options Attached **A1-521**

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## Structure and Features

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Balls roll in four rows of raceways precision-ground on the LM rail and LM block and are circulated by ball cages and end plates incorporated in the LM block.

This is a wide and highly rigid LM Guide that uses ball cages to achieve low noise, long-term maintenance free operation, and high speed.

### Wide with a Low Center of Gravity

The Model SHW, which has a wide LM rail and a low center of gravity, is optimal for locations requiring compactness and a large  $M_c$  moment rigidity.

### 4-Way Equal Load

Each row of balls is placed at a contact angle of  $45^\circ$  so that the rated loads applied to the LM block are uniform in the four directions (radial, reverse-radial, and lateral directions), enabling the LM Guide to be used in all orientations and in extensive applications.

### Self-Adjustment Capability

The self-adjustment capability of the front-to-front configuration of THK's unique circular-arc grooves (DF set) enables mounting error to be absorbed even under a preload, thus achieving highly accurate, smooth linear motion.

### Low Dust Generation

Use of ball cages eliminates friction between balls and retains lubricant, thus achieving low dust generation.

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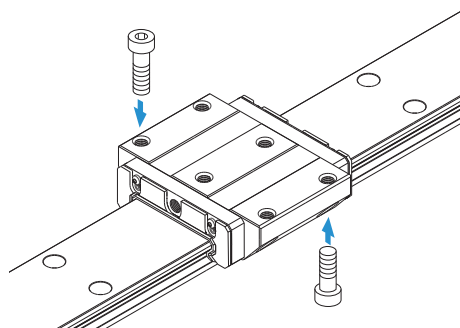
## Types and Features

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### Model SHW-CA

The flange of the LM block has tapped holes.  
It can be mounted from the top or the bottom.

Dimensional Table⇒ [A1-144](#)

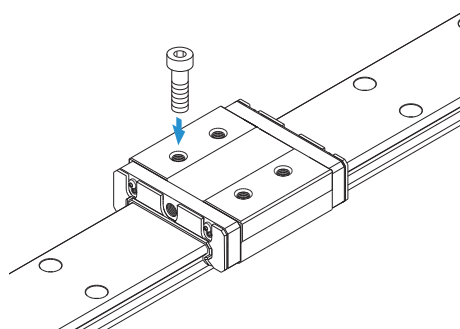


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### Models SHW-CR/HR

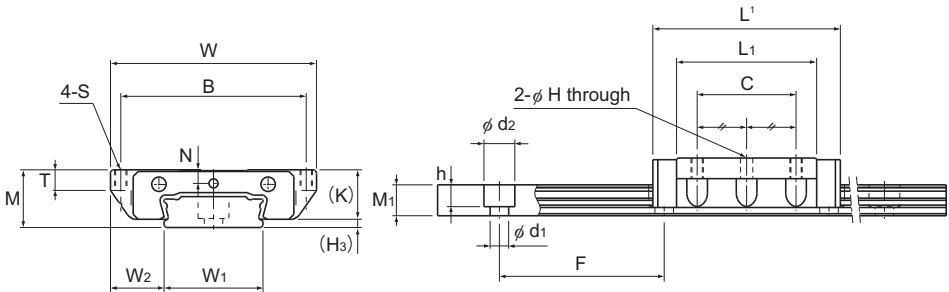
The LM block has tapped holes.

Dimensional Table⇒ [A1-146](#)





# Model SHW-CA



Models SHW12 and SHW14CAM

Model No.	Outer dimensions			LM block dimensions								
	Height	Width	Length <sup>1</sup>	B	C	S	H	L <sub>1</sub>	T	K	N	H <sub>3</sub>
	M	W	L									
SHW 12CAM	12	40	37	35	18	M3	2.5	27	4	10	2.8	2
SHW 14CAM	14	50	45.5	45	24	M3	2.5	34	5	12	3.3	2
SHW 17CAM	17	60	51	53	26	M4	3.3	38	6	14.5	4	2.5
SHW 21CA	21	68	59	60	29	M5	4.4	43.6	8	17.7	5	3.3
SHW 27CA	27	80	72.8	70	40	M6	5.3	56.6	10	23.5	6	3.5
SHW 35CA	35	120	107	107	60	M8	6.8	83	14	31	7.6	4
SHW 50CA	50	162	141	144	80	M10	8.6	107	18	46	14	4

## Model number coding

**SHW17 CA 2 QZ UU C1 M +550L P M -II**

Model number

Type of LM block

With QZ Lubricator

Contamination protection accessory symbol

Stainless steel LM block

LM rail length (in mm)

Stainless steel LM rail

Symbol for No. of rails used on the same plane

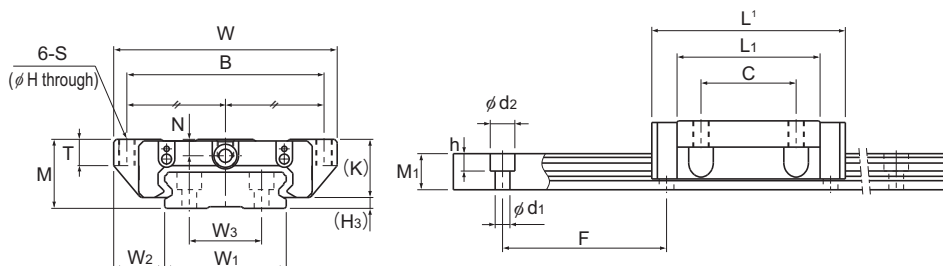
No. of LM blocks used on the same rail

Radial clearance symbol  
Normal (No symbol)  
Light preload (C1)  
Medium preload (C0)

Accuracy symbol  
Normal grade (No Symbol)/High accuracy grade (H)  
Precision grade (P)/Super precision grade (SP)  
Ultra precision grade (JP)

Notes: This model number indicates that a single-rail unit constitutes one set (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum).

Grease nipples are not installed when there is a QZ Lubricator. Contact THK if you want to use a grease nipple for a model with a QZ. See **A1-547** for contamination protection accessories, see **A1-73** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.



Models SHW17CAM and SHW21 to 50CA

Unit: mm

LM rail dimensions							Basic load rating		Static permissible moment kN·m <sup>3</sup>					Mass	
Width  W <sub>1</sub> 0 -0.05	W <sub>2</sub>	W <sub>3</sub>	Height M <sub>1</sub>	Pitch F	Length <sup>2</sup> d <sub>1</sub> ×d <sub>2</sub> ×h Max	C kN	C <sub>0</sub> kN	M <sub>A</sub> 		M <sub>B</sub> 		M <sub>C</sub> 	LM block kg	LM rail kg/m	
								1 block	2 blocks	1 block	2 blocks	1 block			
18	11	—	6.6	40	4.5×7.5×5.3	1230	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	3000	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

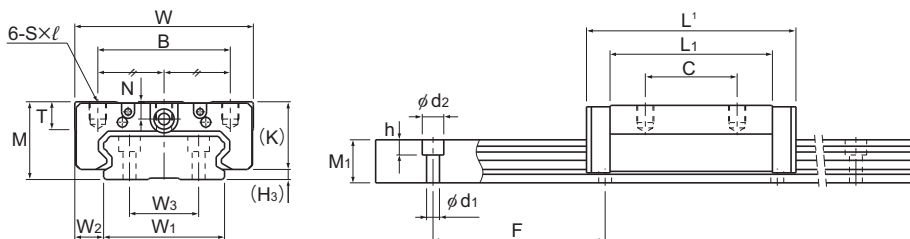
<sup>1</sup> Length L shown in the table is the length with the contamination protection accessories, code UU or SS.  
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

<sup>2</sup> The maximum length indicates the standard maximum length of an LM rail. (See **A1-148**.)

<sup>3</sup> Static permissible moment    1 block: the static permissible moment with one LM block  
    2 blocks: the static permissible moment with two LM blocks in close contact with each other

Notes: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.  
The stainless steel provides excellent corrosion and environmental resistance.

## Models SHW-CR and SHW-HR



Models SHW27 to 50CR

Model No.	Outer dimensions			LM block dimensions							H <sub>3</sub>
	Height	Width	Length <sup>1</sup>	B	C	S×ℓ	L <sub>1</sub>	T	K	N	
	M	W	L								
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	3.3
SHW 27CR	27	62	72.8	46	32	M6×6	56.6	10	23.5	6	3.5
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	4

### Model number coding

**SHW17 CR 2 QZ KKH C1 M +550L P M -II**

Model number

Type of LM block

With QZ Lubricator

Contamination protection accessory symbol

Stainless steel LM block

LM rail length (in mm)

LM rail is made of stainless steel

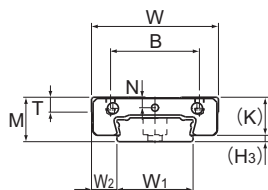
Symbol for No. of rails used on the same plane

No. of LM blocks used on the same rail

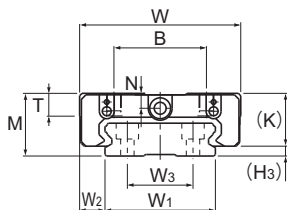
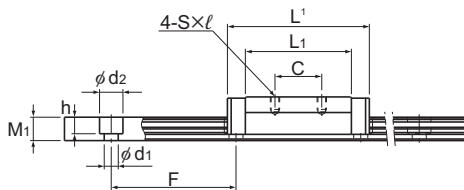
Radial clearance symbol  
Normal (No symbol)  
Light preload (C1)  
Medium preload (C0)

Accuracy symbol  
Normal grade (No Symbol)  
High accuracy grade (H)/Precision grade (P)  
Super precision grade (SP)/Ultra precision grade (UP)

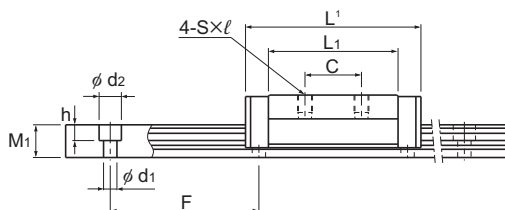
Notes: Grease nipples are not installed when there is a QZ Lubricator. Contact THK if you want to use a grease nipple for a model with a QZ. See [A1-547](#) for contamination protection accessories, see [A1-73](#) for radial clearance symbol. See [A1-79](#) for accuracy symbol. See [A1-13](#) for symbol for number of rails used on the same plane.



Models SHW12CRM, SHW12HRM, and SHW14CRM



Models SHW17CRM and SHW21CRM



Unit: mm

	LM rail dimensions							Basic load rating		Static permissible moment kN·m <sup>3</sup>					Mass	
	Width		Height	Pitch		Length <sup>2</sup>	C	C <sub>0</sub>	M <sub>A</sub>		M <sub>B</sub>		M <sub>C</sub>	LM block	LM rail	
	W <sub>1</sub> 0 -0.05	W <sub>2</sub>	M <sub>1</sub>	F	d <sub>1</sub> × d <sub>2</sub> × h	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block	kg	kg/m	
	18	6	—	6.6	40	4.5 × 7.5 × 5.3	1230	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	1230	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	3000	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

<sup>1</sup> Length L shown in the table is the length with the contamination protection accessories, code UU or SS.

If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

<sup>2</sup> The maximum length indicates the standard maximum length of an LM rail. (See **A1-148**.)

<sup>3</sup> Static permissible moment 1 block: the static permissible moment with one LM block

2 blocks: the static permissible moment with two LM blocks in close contact with each other

Notes: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.

The stainless steel provides excellent corrosion and environmental resistance.

## Standard Lengths and Maximum Lengths of LM Rails

Table 1 shows the standard lengths and the maximum lengths of model SHW variations. If the maximum length of the desired LM rail exceeds these values, jointed rails will be used. Contact THK for details.

For special rail lengths, it is recommended to use a value corresponding to the G and g dimensions from the table. As the G and g dimensions increase, this portion becomes less stable, and the accuracy performance is severely impacted.

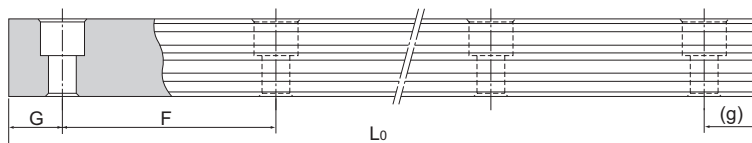


Table 1: Standard Lengths and Maximum Lengths of LM Rails for Model SHW

Unit: mm

Model No.	SHW 12	SHW 14	SHW 17	SHW 21	SHW 27	SHW 35	SHW 50
LM rail standard lengths ( $L_0$ )	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, g	15	15	15	15	20	20	20
Max length	1230	1430	1800	3000	3000	3000	3000

Notes: The maximum length varies with accuracy grades. Contact THK for details.

If jointed rails are not allowed and a greater length than the maximum values above is required, contact THK.

Models SHW12, 14 and 17 are made of stainless steel.

## Lubrication Hole

### Grease Nipple and Lubrication Hole for Model SHW

Model SHW does not have a grease nipple as standard. Installation of a grease nipple and the drilling of a lubrication hole is performed at THK. When ordering SHW, indicate that the desired model requires a grease nipple or lubrication hole. (For lubrication hole dimensions and supported grease nipple types and dimensions, see Table 2).

When using SHW under harsh conditions, use QZ Lubricator (optional) or Laminated Contact Scraper LaCS (optional).

Notes: Grease nipple is not available for models SHW12 and SHW14. They can have a lubrication hole.

Using a lubrication hole other than for greasing may cause damage.

For QZ Lubricator, see **A1-540**. For Laminated Contact Scraper LaCS, see **A1-514**.

When desiring a grease nipple for a model attached with QZ Lubricator, contact THK.

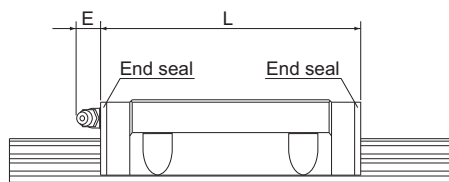


Fig. 1: Dimensions of the Grease Nipple for Model SHW

Note) For the L dimension, see the corresponding specification table.

Table 2: Table of Grease Nipple and Lubrication Hole Dimensions

Unit: mm

Model No.	E	Grease nipple or lubrication hole
SHW	12	—
	14	—
	17	5
	21	5.5
	27	12
	35	12
	50	16