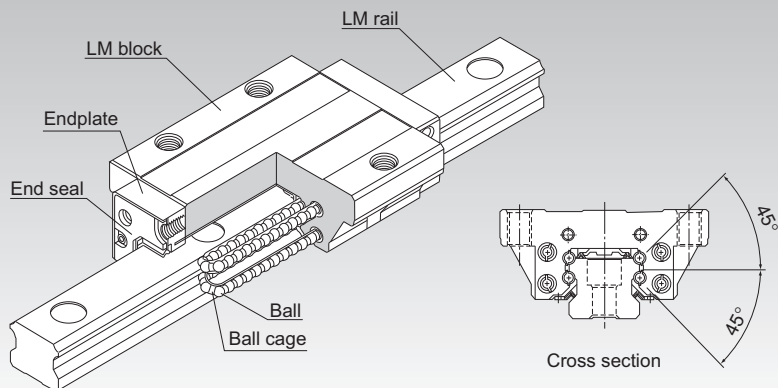


# SHS



## Caged Ball LM Guide Global Standard Size Model SHS



\*For the Ball Cage, see **A1-88**.

**Point of Selection** **A1-10**

**Point of Design** **A1-454**

**Options** **A1-477**

**Model No.** **A1-543**

**Precautions on Use** **A1-549**

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

**Mounting Procedure and Maintenance** **B1-89**

Equivalent moment factor **A1-43**

Rated Loads in All Directions **A1-59**

Equivalent factor in each direction **A1-61**

Radial Clearance **A1-71**

Accuracy Standards **A1-77**

Shoulder Height of the Mounting Base and the Corner Radius **A1-464**

Permissible Error of the Mounting Surface **A1-470**

Dimensions of Each Model with an Option Attached **A1-491**

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## Structure and Features

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Balls roll in four rows of raceways precision-ground on an LM rail and an LM block, and ball cages and endplates incorporated in the LM block allow the balls to circulate.

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. In addition, the LM block can receive a well-balanced preload, increasing the rigidity in the four directions while maintaining a constant, low friction coefficient.

### [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 through front-to-front configuration of THK's unique circular-arc grooves (DF set) enables a mounting error to be absorbed even under a preload, thus to achieve highly accurate, smooth straight motion.

### [Global Standard Size]

SHS is designed to have dimensions almost the same as that of Full Ball LM Guide model HSR, which THK as a pioneer of the linear motion system has developed and is practically a global standard size.

### [Stainless Steel Type also Available]

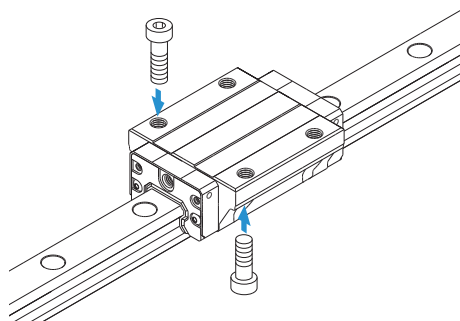
A special type whose LM block, LM rail, and balls are made of stainless steel is also available. Applicable only to models 15 through 25.

## Types and Features

### Model SHS-C

The flange of the LM block has tapped holes.  
Can be mounted from the top or the bottom.  
Used in places where the table cannot have through holes for mounting bolts.

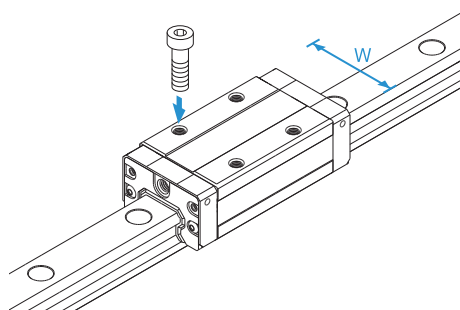
Specification Table⇒ **A1-96**



### Model SHS-V

With this type, the LM block has a smaller width (W) and tapped holes.  
Used in places where the space for table width is limited.

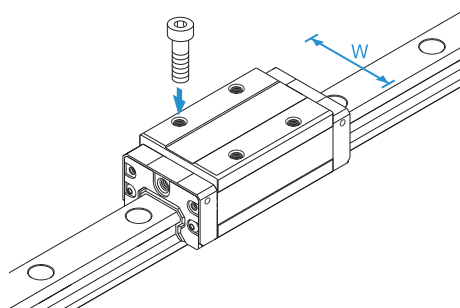
Specification Table⇒ **A1-98**



### Model SHS-R

The LM block has a smaller width (W) and the mounting holes are tapped.  
It exceeds the height dimension of full-ball type LM Guide HSR-R.

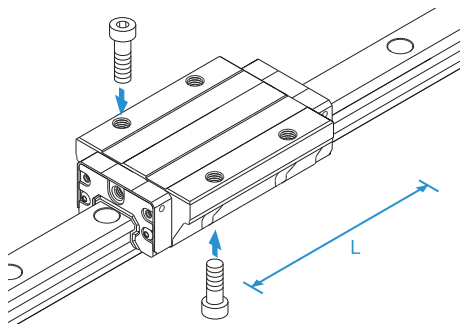
Specification Table⇒ **A1-100**



## Model SHS-LC

The LM block has the same cross-sectional shape as model SHS-C, but has a longer overall LM block length (L) and a greater rated load.

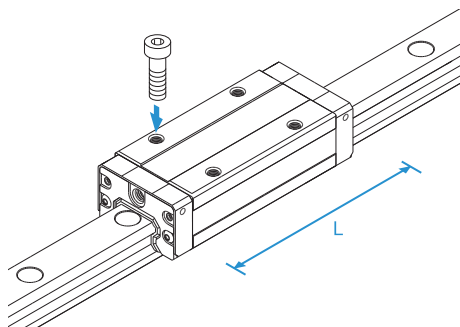
Specification Table⇒ **A1-96**



## Model SHS-LV

The LM block has the same cross-sectional shape as model SHS-V, but has a longer overall LM block length (L) and a greater rated load.

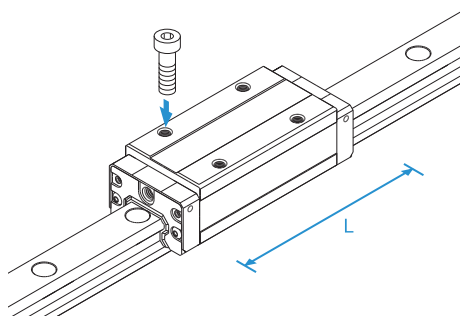
Specification Table⇒ **A1-98**



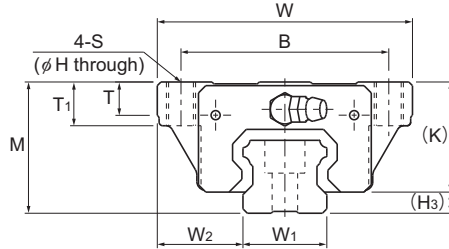
## Model SHS-LR

The LM block has the same cross-sectional shape as model SHS-R, but has a longer overall LM block length (L) and a greater rated load.

Specification Table⇒ **A1-100**



# Models SHS-C, SHS-CM, SHS-LC and SHS-LCM



Model No.	Outer dimensions			LM block dimensions											Pilot hole for side nipple			
	Height	Width	Length												Grease nipple			
	M	W	L	B	C	S	H	L <sub>1</sub>	T	T <sub>1</sub>	K	N	E		e <sub>0</sub>	f <sub>0</sub>	D <sub>0</sub>	
SHS 15C SHS 15CM	24	47	64.4	38	30	M5	4.4	48	5.9	8	21	5.5	5.5	PB1021B	4	4	3	
SHS 15LC SHS 15LCM	24	47	79.4	38	30	M5	4.4	63	5.9	8	21	5.5	5.5	PB1021B	4	4	3	
SHS 20C SHS 20CM	30	63	79	53	40	M6	5.4	59	7.2	10	25.4	6.5	12	B-M6F	4.3	5.3	3	
SHS 20LC SHS 20LCM	30	63	98	53	40	M6	5.4	78	7.2	10	25.4	6.5	12	B-M6F	4.3	5.3	3	
SHS 25C SHS 25CM	36	70	92	57	45	M8	6.8	71	9.1	12	30.2	7.5	12	B-M6F	4.5	5.5	3	
SHS 25LC SHS 25LCM	36	70	109	57	45	M8	6.8	88	9.1	12	30.2	7.5	12	B-M6F	4.5	5.5	3	
SHS 30C SHS 30LC	42	90	106 131	72	52	M10	8.5	80 105	11.5	15	35	8	12	B-M6F	5.8	6	5.2	
SHS 35C SHS 35LC	48	100	122 152	82	62	M10	8.5	93 123	11.5	15	40.5	8	12	B-M6F	6.5	5.5	5.2	
SHS 45C SHS 45LC	60	120	140 174	100	80	M12	10.5	106 140	14.1	18	51.1	10.5	16	B-PT1/8	8	8	5.2	
SHS 55C SHS 55LC	70	140	171 213	116	95	M14	12.5	131 173	16	21	57.3	11	16	B-PT1/8	10	8	5.2	
SHS 65C SHS 65LC	90	170	221 272	142	110	M16	14.5	175 226	18.8	24	71	19	16	B-PT1/8	10	12	5.2	

## Model number coding

**SHS25 LC 2 QZ KKHH C0 M +1240L P Z T M - II**

Model number

Type of LM block

With QZ Lubricator

Contamination protection accessory symbol (\*1)

Stainless steel LM block

LM rail length (in mm)

With steel tape

Stainless steel LM rail

No. of LM blocks used on the same rail

Radial clearance symbol (\*2)  
Normal (No symbol)  
Light preload (C1)  
Medium preload (C0)

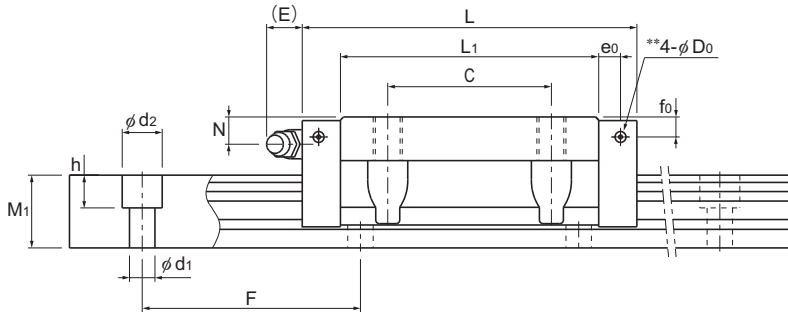
Accuracy symbol (\*3)  
Normal grade (No Symbol)  
High accuracy grade (H)  
Precision grade (P)  
Super precision grade (SP)  
Ultra precision grade (UP)

Symbol for LM rail jointed use  
Symbol for No. of rails used on the same plane (\*4)

(\*1) See contamination protection accessory on **A1-516**. (\*2) See **A1-71**. (\*3) See **A1-77**. (\*4) See **A1-13**.

(Note) 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.)

Those models equipped with QZ Lubricator cannot have a grease nipple. When desiring a grease nipple for a model attached with QZ, contact THK.



Unit: mm

H <sub>3</sub>	LM rail dimensions							Basic load rating		Static permissible moment kN•m*					Mass	
	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	Length* Max	C	C <sub>0</sub>	M <sub>A</sub>		M <sub>B</sub>		M <sub>C</sub>	LM block kg	LM rail kg/m	
									1 block	Double blocks	1 block	Double blocks				
	Note) The maximum length under "Length*" indicates the standard maximum length of an LM rail. (See <b>A1-102</b> .) Static permissible moment* 1 block: the static permissible moment with one LM block Double blocks: static permissible moment when two LM blocks are in close contact with each other Total block length L : The total block length L shown in the table is the length with the dust proof parts, code UU or SS. If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See <b>A1-491</b> or <b>A1-512</b> ) ** A pilot hole for side nipples, when a grease nipple for a model equipped with LaCS or QZ Lubricator is needed. Pilot holes for side nipples are not drilled through for models other than those stated above. For grease nipple mount machining, contact THK.															
3	15	16	13	60	4.5×7.5×5.3	3000 (1240)	14.2	24.2	0.175	0.898	0.175	0.898	0.16	0.23	1.3	
3	15	16	13	60	4.5×7.5×5.3	3000 (1240)	17.2	31.9	0.296	1.43	0.296	1.43	0.212	0.29	1.3	
4.6	20	21.5	16.5	60	6×9.5×8.5	3000 (1480)	22.3	38.4	0.334	1.75	0.334	1.75	0.361	0.46	2.3	
4.6	20	21.5	16.5	60	6×9.5×8.5	3000 (1480)	28.1	50.3	0.568	2.8	0.568	2.8	0.473	0.61	2.3	
5.8	23	23.5	20	60	7×11×9	3000 (2020)	31.7	52.4	0.566	2.75	0.566	2.75	0.563	0.72	3.2	
5.8	23	23.5	20	60	7×11×9	3000 (2020)	36.8	64.7	0.848	3.98	0.848	3.98	0.696	0.89	3.2	
7	28	31	23	80	9×14×12	3000	44.8 54.2	66.6 88.8	0.786 1.36	4.08 6.6	0.786 1.36	4.08 6.6	0.865 1.15	1.34 1.66	4.5	
7.5	34	33	26	80	9×14×12	3000	62.3 72.9	96.6 127	1.38 2.34	6.76 10.9	1.38 2.34	6.76 10.9	1.53 2.01	1.9 2.54	6.2	
8.9	45	37.5	32	105	14×20×17	3090	82.8 100	126 166	2.05 3.46	10.1 16.3	2.05 3.46	10.1 16.3	2.68 3.53	3.24 4.19	10.4	
12.7	53	43.5	38	120	16×23×20	3060	128 161	197 259	3.96 6.68	19.3 31.1	3.96 6.68	19.3 31.1	4.9 6.44	5.35 6.97	14.5	
19	63	53.5	53	150	18×26×22	3000	205 253	320 408	8.26 13.3	40.4 62.6	8.26 13.3	40.4 62.6	9.4 11.9	10.7 13.7	23.7	

Note) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See **A1-102**.)

Static permissible moment\* 1 block: the static permissible moment with one LM block

Double blocks: static permissible moment when two LM blocks are in close contact with each other

Total block length L

: The total block length L shown in the table is the length with the dust proof parts, code UU or SS.

If other contamination protection accessories or lubricant equipment are installed, the total block length will increase.

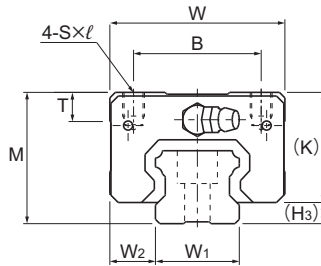
(See **A1-491** or **A1-512**)

\*\* A pilot hole for side nipples, when a grease nipple for a model equipped with LaCS or QZ Lubricator is needed.

Pilot holes for side nipples are not drilled through for models other than those stated above.

For grease nipple mount machining, contact THK.

# Models SHS-V, SHS-VM, SHS-LV and SHS-LVM



Model No.	Outer dimensions			LM block dimensions										Pilot hole for side nipple		
	Height M	Width W	Length L	B	C	S×ℓ	L <sub>1</sub>	T	K	N	E	Grease nipple	e <sub>0</sub>	f <sub>0</sub>	D <sub>0</sub>	
SHS 15V SHS 15VM	24	34	64.4	26	26	M4×4	48	5.9	21	5.5	5.5	PB1021B	4	4	3	
SHS 15LV SHS 15LVM	24	34	79.4	26	34	M4×4	63	5.9	21	5.5	5.5	PB1021B	4	4	3	
SHS 20V SHS 20VM	30	44	79	32	36	M5×5	59	8	25.4	6.5	12	B-M6F	4.3	5.3	3	
SHS 20LV SHS 20LVM	30	44	98	32	50	M5×5	78	8	25.4	6.5	12	B-M6F	4.3	5.3	3	
SHS 25V SHS 25VM	36	48	92	35	35	M6×6.5	71	8	30.2	7.5	12	B-M6F	4.5	5.5	3	
SHS 25LV SHS 25LVM	36	48	109	35	50	M6×6.5	88	8	30.2	7.5	12	B-M6F	4.5	5.5	3	
SHS 30V SHS 30LV	42	60	106 131	40	40 60	M8×8	80 105	8	35	8	12	B-M6F	5.8	6	5.2	
SHS 35V SHS 35LV	48	70	122 152	50	50 72	M8×10	93 123	14.7	40.5	8	12	B-M6F	6.5	5.5	5.2	
SHS 45V SHS 45LV	60	86	140 174	60	60 80	M10×15	106 140	14.9	51.1	10.5	16	B-PT1/8	8	8	5.2	
SHS 55V SHS 55LV	70	100	171 213	75	75 95	M12×15	131 173	19.4	57.3	11	16	B-PT1/8	10	8	5.2	
SHS 65V SHS 65LV	90	126	221 272	76	70 120	M16×20	175 226	19.5	71	19	16	B-PT1/8	10	12	5.2	

## Model number coding

**SHS25 V 2 QZ KKHH C1 M +1240L P Z T M - II**

Model number

Type of LM block

With QZ Lubricator

Contamination protection accessory symbol (\*1)

Stainless steel LM block

LM rail length (in mm)

With steel tape

Stainless steel LM rail

No. of LM blocks used on the same rail

Radial clearance symbol (\*2)  
Normal (No symbol)  
Light preload (C1)  
Medium preload (C0)

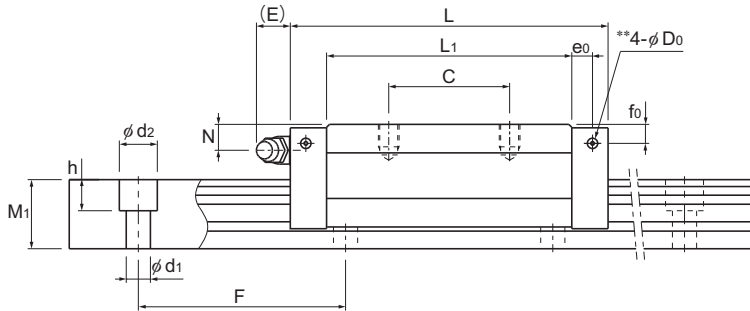
Accuracy symbol (\*3)  
Normal grade (No Symbol)  
High accuracy grade (H)  
Precision grade (P)  
Super precision grade (SP)  
Ultra precision grade (UP)

Symbol for LM rail jointed use  
Symbol for No. of rails used on the same plane (\*4)

(\*1) See contamination protection accessory on **A1-516**. (\*2) See **A1-71**. (\*3) See **A1-77**. (\*4) See **A1-13**.

Note) 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.)

Those models equipped with QZ Lubricator cannot have a grease nipple. When desiring a grease nipple for a model attached with QZ, contact THK.



Unit: mm

H <sub>3</sub>	LM rail dimensions							Basic load rating		Static permissible moment kN*m*					Mass	
	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	Length* Max	C	C <sub>0</sub>	M <sub>A</sub>		M <sub>B</sub>		M <sub>C</sub>	LM block kg	LM rail kg/m	
									1 block	Double blocks	1 block	Double blocks				
3	15	9.5	13	60	4.5 × 7.5 × 5.3	3000 (1240)	14.2	24.2	0.175	0.898	0.175	0.898	0.16	0.19	1.3	
3	15	9.5	13	60	4.5 × 7.5 × 5.3	3000 (1240)	17.2	31.9	0.296	1.43	0.296	1.43	0.212	0.22	1.3	
4.6	20	12	16.5	60	6 × 9.5 × 8.5	3000 (1480)	22.3	38.4	0.334	1.75	0.334	1.75	0.361	0.35	2.3	
4.6	20	12	16.5	60	6 × 9.5 × 8.5	3000 (1480)	28.1	50.3	0.568	2.8	0.568	2.8	0.473	0.46	2.3	
5.8	23	12.5	20	60	7 × 11 × 9	3000 (2020)	31.7	52.4	0.566	2.75	0.566	2.75	0.563	0.54	3.2	
5.8	23	12.5	20	60	7 × 11 × 9	3000 (2020)	36.8	64.7	0.848	3.98	0.848	3.98	0.696	0.67	3.2	
7	28	16	23	80	9 × 14 × 12	3000	44.8 54.2	66.6 88.8	0.786 1.36	4.08 6.6	0.786 1.36	4.08 6.6	0.865 1.15	0.94 1.16	4.5	
7.5	34	18	26	80	9 × 14 × 12	3000	62.3 72.9	96.6 127	1.38 2.34	6.76 10.9	1.38 2.34	6.76 10.9	1.53 2.01	1.4 1.84	6.2	
8.9	45	20.5	32	105	14 × 20 × 17	3090	82.8 100	126 166	2.05 3.46	10.1 16.3	2.05 3.46	10.1 16.3	2.68 3.53	2.54 3.19	10.4	
12.7	53	23.5	38	120	16 × 23 × 20	3060	128 161	197 259	3.96 6.68	19.3 31.1	3.96 6.68	19.3 31.1	4.9 6.44	4.05 5.23	14.5	
19	63	31.5	53	150	18 × 26 × 22	3000	205 253	320 408	8.26 13.3	40.4 62.6	8.26 13.3	40.4 62.6	9.4 11.9	8.41 10.7	23.7	

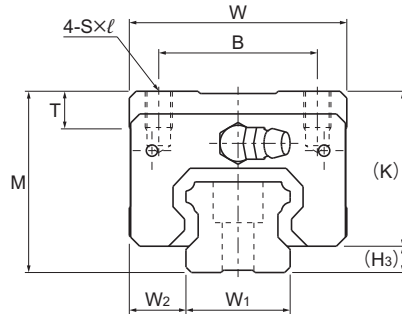
Note) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See **A1-102**.)  
 Static permissible moment\* 1 block: the static permissible moment with one LM block

Double blocks: static permissible moment when two LM blocks are in close contact with each other  
 Total block length L : The total block length L shown in the table is the length with the dust proof parts, code UU or SS.  
 If other contamination protection accessories or lubricant equipment are installed, the total block length will increase.  
 (See **A1-491** or **A1-512**)

\*\* A pilot hole for side nipples, when a grease nipple for a model equipped with LaCS or QZ Lubricator is needed.  
 Pilot holes for side nipples are not drilled through for models other than those stated above.  
 For grease nipple mount machining, contact THK.



# Models SHS-R, SHS-RM, SHS-LR and SHS-LRM



Model No.	Outer dimensions			LM block dimensions										Pilot hole for side nipple		
	Height	Width	Length	B	C	S×ℓ	L <sub>1</sub>	T	K	N	E	Grease nipple	e <sub>o</sub>	f <sub>o</sub>	D <sub>o</sub>	
	M	W	L													
SHS 15R SHS 15RM	28	34	64.4	26	26	M4×5	48	5.9	25	9.5	5.5	PB1021B	4	8	3	
SHS 25R SHS 25RM	40	48	92	35	35	M6×8	71	8	34.2	11.5	12	B-M6F	6	9.5	3	
SHS 25LR SHS 25LRM	40	48	109	35	50	M6×8	88	8	34.2	11.5	12	B-M6F	6	9.5	3	
SHS 30R SHS 30LR	45	60	106 131	40	40 60	M8×10	80 105	8	38	11	12	B-M6F	5.8	9	5.2	
SHS 35R SHS 35LR	55	70	122 152	50	50 72	M8×12	93 123	14.7	47.5	15	12	B-M6F	6.5	12.5	5.2	
SHS 45R SHS 45LR	70	86	140 174	60	60 80	M10×17	106 140	14.9	61.1	20.5	16	B-PT1/8	8	18	5.2	
SHS 55R SHS 55LR	80	100	171 213	75	75 95	M12×18	131 173	19.4	67.3	21	16	B-PT1/8	10	18	5.2	

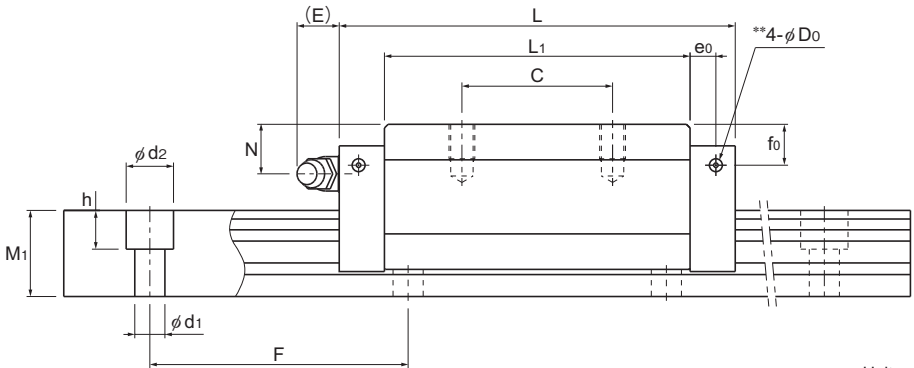
## Model number coding

<b>SHS25</b>	<b>LR</b>	<b>2</b>	<b>QZ</b>	<b>KKHH</b>	<b>C0</b>	<b>M</b>	<b>+1240L</b>	<b>P</b>	<b>T</b>	<b>M</b>	<b>-II</b>								
Model number	Type of LM block	With QZ Lubricator	No. of LM blocks used on the same rail	Contamination protection accessory symbol (*1)	Radial clearance symbol (*2)	Normal (No symbol)	Light preload (C1)	Medium preload (C0)	Stainless steel LM block	LM rail length (in mm)	Accuracy symbol (*3)	Normal grade (No Symbol)	High accuracy grade (H)	Precision grade (P)	Super precision grade (SP)	Ultra precision grade (UP)	Stainless steel LM rail	Symbol for LM rail jointed use	No. of rails used on the same plane (*4)

(\*1) See contamination protection accessory on **A1-516**. (\*2) See **A1-71**. (\*3) See **A1-77**. (\*4) See **A1-13**.

Note) 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.)

Those models equipped with QZ Lubricator cannot have a grease nipple. When desiring a grease nipple for a model attached with QZ, contact THK.



Unit: mm

H <sub>s</sub>	LM rail dimensions							Basic load rating		Static permissible moment kN*m*					Mass	
	Width		Height		Pitch	Length*	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>	W <sub>2</sub>	M <sub>1</sub>	F	d <sub>1</sub> × d <sub>2</sub> × h				1 block	Double blocks	1 block	Double blocks	1 block			kg
3	15	9.5	13	60	4.5 × 7.5 × 5.3	3000 (1240)	14.2	24.2	0.175	0.898	0.175	0.898	0.16	0.22	1.3	
5.8	23	12.5	20	60	7 × 11 × 9	3000 (2020)	31.7	52.4	0.566	2.75	0.566	2.75	0.563	0.66	3.2	
5.8	23	12.5	20	60	7 × 11 × 9	3000 (2020)	36.8	64.7	0.848	3.98	0.848	3.98	0.696	0.8	3.2	
7	28	16	23	80	9 × 14 × 12	3000	44.8 54.2	66.6 88.8	0.786 1.36	4.08 6.6	0.786 1.36	4.08 6.6	0.865 1.15	1.04 1.36	4.5	
7.5	34	18	26	80	9 × 14 × 12	3000	62.3 72.9	96.6 127	1.38 2.34	6.76 10.9	1.38 2.34	6.76 10.9	1.53 2.01	1.8 2.34	6.2	
8.9	45	20.5	32	105	14 × 20 × 17	3090	82.8 100	126 166	2.05 3.46	10.1 16.3	2.05 3.46	10.1 16.3	2.68 3.53	3.24 4.19	10.4	
12.7	53	23.5	38	120	16 × 23 × 20	3060	128 161	197 259	3.96 6.68	19.3 31.1	3.96 6.68	19.3 31.1	4.9 6.44	5.05 6.57	14.5	

Note) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See **A1-102**)

Static permissible moment\* 1 block: the static permissible moment with one LM block

Double blocks: static permissible moment when two LM blocks are in close contact with each other

Total block length L

: The total block length L shown in the table is the length with the dust proof parts, code UU or SS. If other contamination protection accessories or lubricant equipment are installed, the total block length will increase.

(See **A1-491** or **A1-512**)

\*\* A pilot hole for side nipples, when a grease nipple for a model equipped with LaCS or QZ Lubricator is needed.

Pilot holes for side nipples are not drilled through for models other than those stated above.

For grease nipple mount machining, contact THK.