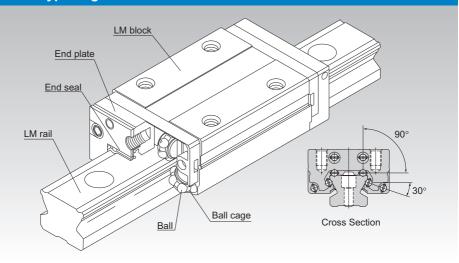
# SSR



# Radial Type Caged Ball LM Guide Model SSR



\*For the hall cage, see A1-90

To the ball cage, see 🖾 1-90.	
Selection Criteria	A1-10
Design Highlights	A1-478
Options	A1-503
Model No.	A1-571
Handling Precautions	A1-577
Accessories for Lubrication	A24-1
Mounting Procedure	<b>■1-89</b>
Equivalent Moment Factor	△1-43
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	<b>△</b> 1-491
Reference Error Tolerance for the Mounting Surface	<b>A</b> 1-494
Dimensions of Each Model with Options Attached	<b>A</b> 1-517

### **Structure and Features**

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.

Use of the ball cage eliminates friction between balls and increases grease retention, thereby achieving low noise, high speeds, and long-term maintenance-free operations.

### Compact, Radial Type

Since it is a compactly designed model with a low cross-sectional height and a ball contact structure that is suited to large loads in the radial direction, this model is optimal for horizontal guide units.

### **Superb Planar Running Accuracy**

Use of a ball contact structure that is suited to large loads in the radial direction minimizes radial displacement under radial loads and allows stable, highly accurate motion.

### **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.

### Stainless Steel Type Also Available

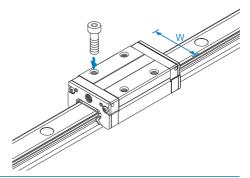
A special type whose LM block, LM rail, and balls are made of stainless steel is also available.

# **Types and Features**

## **Model SSR-XW**

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

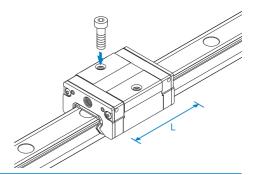
### Dimensional Table⇒A1-110



# **Model SSR-XV**

This type has the same cross-sectional shape as SSR-XW but has a shorter overall LM block length (L).

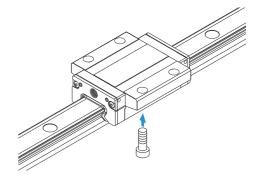
### Dimensional Table⇒A1-112



# **Model SSR-XTB**

The flange of the LM block has through holes. It is used in places where the table cannot have through holes for mounting bolts.

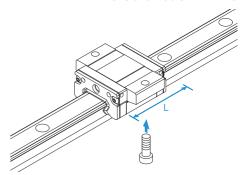
### Dimensional Table⇒A1-114



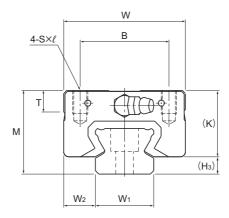
# **Model SSR-XSB**

This type has the same cross-sectional shape as SSR-XTB but has a shorter overall LM block length (L).

### Dimensional Table⇒A1-116



### Models SSR-XW and SSR-XWM



	Oute	r dime	nsions					LM b	lock c	dimen	sions					
Model No.	Height M	Width W	Length	В	С	S×ℓ	L <sub>1</sub>	Т	К	Ν	E	f <sub>o</sub>	e <sub>0</sub>	D <sub>0</sub>	Grease nipple	H₃
SSR 15XW SSR 15XWM	24	34	56.9	26	26	M4×7	39.9	6.5	19.5	4.5	5.5	2.7	4.5	3	PB1021B	4.5
SSR 20XW SSR 20XWM	28	42	66.5	32	32	M5×8	46.6	8.2	22	5.5	12	2.9	5.2	3	B-M6F	6
SSR 25XW SSR 25XWM	33	48	83	35	35	M6×9	59.8	8.4	26.2	6	12	3.3	6.8	3	B-M6F	6.8
SSR 30XW SSR 30XWM	42	60	97	40	40	M8×12	70.7	11.3	32.5	8	12	4.5	7.6	4	B-M6F	9.5
SSR 35XW	48	70	110.9	50	50	M8×12	80.5	13	36.5	8.5	12	4.7	8.8	4	B-M6F	11.5

Note) 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.

### Model number coding

### +1200L SSR25X

Model Type of number LM block With QZ Contamination lubricator protection accessory symbol (\*1)

Stainless steel LM block LM rail length (in mm)

Stainless steel LM rail

Symbol for No. of rails used on the same

No. of LM blocks

Radial clearance symbol (\*2) 15 and 25 Normal (No symbol)

Applied to only

Symbol for LM rail jointed use

plane (\*4)

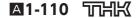
used on the same rail

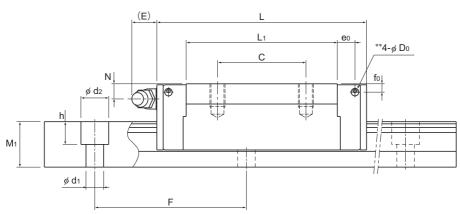
Accuracy symbol (\*3) Light preload (C1)

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

(\*1) See contamination protection accessory on A1-543. (\*2) See A1-73. (\*3) See A1-79. (\*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.





		LM	rail dir	nensions		Basic loa	ad rating	Static	permis	sible m	oment l	kN·m*	Ma	ISS
Width		Height	t Pitch l		Length*	С	Co	2	`			ĕ(j	LM block	LM rail
W₁ ±0.05	W <sub>2</sub>	M₁	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block	kg	kg/m
15	9.5	12.5	60	4.5×7.5×5.3	3000 (1240)	14.7	16.5	0.0792	0.44	0.0486	0.274	0.0962	0.15	1.2
20	11	15.5	60	6×9.5×8.5	3000 (1480)	19.6	23.4	0.138	0.723	0.0847	0.448	0.18	0.25	2.1
23	12.5	18	60	7×11×9	3000 (2020)	31.5	36.4	0.258	1.42	0.158	0.884	0.33	0.4	2.7
28	16	23	80	7×11×9	3000 (2520)	46.5	52.7	0.446	2.4	0.274	1.49	0.571	0.8	4.3
34	18	27.5	80	9×14×12	3000	64.6	71.6	0.711	3.72	0.437	2.31	0.936	1.1	6.4

Note1) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See M1-118.) Static permissible moment\* 1 block: the static permissible moment with one LM block

Total block length L

Double blocks: static permissible moment when two LM blocks are in close contact with each other : 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 **\Delta 1-517** or **\Delta 1-539**)

\*\* 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.

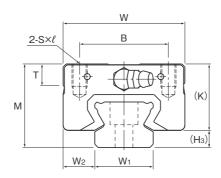
Note2) For models SSR15 and 25, two types of rails with different mounting hole dimensions are offered (see Table 1). When replacing this model with model SR, pay attention to the mounting hole dimension of the LM rail. Contact THK for details.

Note3) The basic load rating in the dimension table is for a load in the radial direction. Use Table 7 on M1-61 to calculate the load rating for loads in the reverse radial direction or lateral direction.

Table 1: Rail Mounting Hole Dimensions

Model No.	Standard rail	Semi-standard rail
SSR 15	For M4 (symbol Y)	For M3 (no symbol)
SSR 25	For M6 (symbol Y)	For M5 (no symbol)

# Models SSR-XV and SSR-XVM



	Oute	dimen	sions					LM bl	ock di	mensi	ons				
Model No.	Height	Width	Length											Grease nipple	
	М	W	L	В	s×ℓ	L <sub>1</sub>	Т	K	N	Е	<b>f</b> o	e <sub>0</sub>	Do	Прріс	Нз
SSR 15XV SSR 15XVM	24	34	40.3	26	M4×7	23.3	6.5	19.5	4.5	5.5	2.7	4.5	3	PB1021B	4.5
SSR 20XV SSR 20XVM	28	42	47.7	32	M5×8	27.8	8.2	22	5.5	12	2.9	5.2	3	B-M6F	6
SSR 25XV SSR 25XVM	33	48	60	35	M6×9	36.8	8.4	26.2	6	12	3.3	6.8	3	B-M6F	6.8
SSR 30XV SSR 30XVM	42	60	66.7	40	M8×12	40.4	11.5	32.5	8	12	4.5	7.6	4	B-M6F	9.5
SSR 35XV	48	70	77.5	50	M8×12	47.1	16.2	36.5	8.5	12	4.7	8.8	4	B-M6F	11.5

Note) 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.

### Model number coding

#### SSR25X +1200L With QZ Contamination Model Stainless LM rail length Symbol for Type of Stainless steel lubricator protection steel (in mm) No. of rails number LM block LM rail accessory symbol (\*1) used LM block on the same Applied to only Symbol for LM rail No. of LM blocks plane (\*4) 15 and 25 jointed use Radial clearance symbol (\*2) used on the same Normal (No symbol) Accuracy symbol (\*3) rail Light preload (C1) Normal grade (No Symbol) High accuracy grade (H)/Precision grade (P)

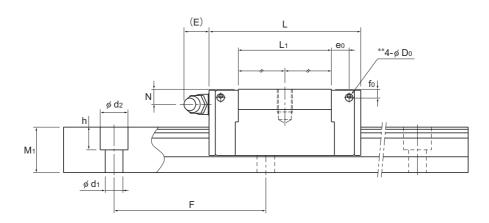
(\*1) See contamination protection accessory on **Δ1-543**. (\*2) See **Δ1-73**. (\*3) See **Δ1-79**. (\*4) See **Δ1-13**.

Note) This model number indicates that a single-rail unit constitutes one set. (i.e., required number of sets when 3 rails are used in parallel is 3 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.



Super precision grade (SP)/Ultra precision grade (UP)



		LM	rail dir	nensions		Basic lo	ad rating	Static	permis	sible m	oment l	κN·m*	Ма	SS
Width		Height	Pitch		Length*	С	C <sub>0</sub>	2	1,	N (	l	M <sub>°</sub>	LM block	LM rail
W₁ ±0.05	W <sub>2</sub>	M <sub>1</sub>	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block	kg	kg/m
15	9.5	12.5	60	4.5×7.5×5.3	3000 (1240)	9.1	9.7	0.0303	0.119	0.0189	0.122	0.0562	0.08	1.2
20	11	15.5	60	6×9.5×8.5	3000 (1480)	13.4	14.4	0.0523	0.336	0.0326	0.213	0.111	0.14	2.1
23	12.5	18	60	7×11×9	3000 (2020)	21.7	22.5	0.104	0.661	0.0652	0.419	0.204	0.23	2.7
28	16	23	80	7×11×9	3000 (2520)	34.8	34.4	0.186	1.12	0.116	0.711	0.376	0.43	4.3
34	18	27.5	80	9×14×12	3000	48.3	46.7	0.295	1.77	0.184	1.12	0.615	0.6	6.4

Note1) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See M1-118.) Static permissible moment\* 1 block: the static permissible moment with one LM block

Total block length L

Double blocks: static permissible moment when two LM blocks are in close contact with each other: 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 **\Delta 1-517** or **\Delta 1-539**)

Note3) The basic load rating in the dimension table is for a load in the radial direction. Use Table 7 on **1-61** to calculate the load rating for loads in the reverse radial direction or lateral direction.

Table 1: Rail Mounting Hole Dimensions

Model No.	Standard rail	Semi-standard rail
SSR 15	For M4 (symbol Y)	For M3 (no symbol)
SSR 25	For M6 (symbol Y)	For M5 (no symbol)

<sup>\*\*</sup> 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.

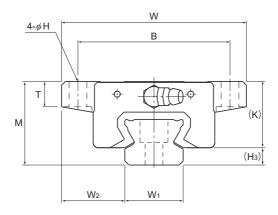
For grease nipple mount machining, contact THK.

Note2) For models SSR15 and 25, two types of rails with different mounting hole dimensions are offered (see Table 1).

When replacing this model with model SR, pay attention to the mounting hole dimension of the LM rail.

Contact THK for details.

# **Model SSR-XTB**



	Oute	r dimen	sions					LI	M bloo	k dim	ensio	ns				
Model No.	Height M	Width	Length L	В	С	Н	L <sub>1</sub>	Т	К	Ν	Е	f <sub>o</sub>	e <sub>0</sub>	D <sub>0</sub>	Grease nipple	H₃
SSR 15XTB	24	52	56.9	41	26	4.5	39.9	7	19.5	4.5	5.5	2.7	4.5	3	PB1021B	4.5
SSR 20XTB	28	59	66.5	49	32	5.5	46.6	9	22	5.5	12	2.9	5.2	3	B-M6F	6
SSR 25XTB	33	73	83	60	35	7	59.8	10	26.2	6	12	3.3	6.8	3	B-M6F	6.8
SSR 30XTB	42	90	97	72	40	9	70.7	10	32.5	8	12	4.5	7.6	4	B-M6F	9.5
SSR 35XTB	48	100	110.9	82	50	9	80.5	13	36.5	8.5	12	4.7	8.8	4	B-M6F	11.5

### Model number coding

# SSR15X TB 2 QZ UU C1 +820L Y P T -II

Model number Type of LM block With QZ lubricator

Contamination protection accessory symbol (\*1)

(

LM rail length (in mm)

Applied to only 15 and 25 sizes

Symbol for LM rail jointed use

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

No. of LM blocks used on the same rail

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

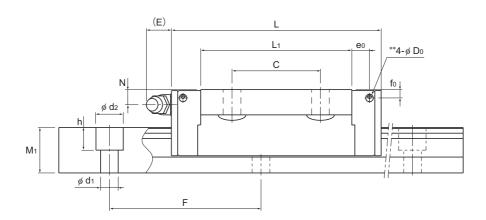
Accuracy symbol (\*3) Normal grade (No Symbol) High accuracy grade (H) Precision grade (P) Super precision grade (SP) Ultra precision grade (UP)

(\*1) See contamination protection accessory on **\( \Delta 1-543**\). (\*2) See **\( \Delta 1-73**\). (\*3) See **\( \Delta 1-79**\). (\*4) See **\( \Delta 1-13**\).

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.





		LM	rail din	mensions		Basic loa	ad rating	Static	permis	sible m	oment l	kN·m*	Ma	ISS
Width		Height	Pitch		Length*		C <sub>0</sub>	2	1 <sub>A</sub>	\   	1 <sub>B</sub>	M <sub>c</sub>	LM block	LM rail
W₁ ±0.05	W <sub>2</sub>	M <sub>1</sub>	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block	kg	kg/m
15	18.5	12.5	60	4.5×7.5×5.3	3000 (1240)	14.7	16.5	0.0792	0.44	0.0486	0.274	0.0962	0.19	1.2
20	19.5	15.5	60	6×9.5×8.5	3000 (1480)	19.6	23.4	0.138	0.723	0.0847	0.448	0.18	0.31	2.1
23	25	18	60	7×11×9	3000 (2020)	31.5	36.4	0.258	1.42	0.158	0.884	0.33	0.53	2.7
28	31	23	80	7×11×9	3000 (2520)	46.5	52.7	0.446	2.4	0.274	1.49	0.571	0.87	4.3
34	33	27.5	80	9×14×12	3000	64.6	71.6	0.711	3.72	0.437	2.31	0.936	1.33	6.4

Note1) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See **A1-118**.) Static permissible moment\* 1 block: the static permissible moment with one LM block

Total block length L

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

Note2) For models SSR15 and 25, two types of rails with different mounting hole dimensions are offered (see Table 1). When replacing this model with model SR, pay attention to the mounting hole dimension of the LM rail. Contact THK for details.

Note3) The basic load rating in the dimension table is for a load in the radial direction. Use Table 7 on M1-61 to calculate the load rating for loads in the reverse radial direction or lateral direction.

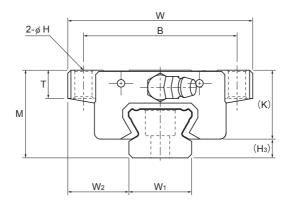
Table 1: Rail Mounting Hole Dimensions

Model No.	Standard rail	Semi-standard rail
SSR 15	For M4 (symbol Y)	For M3 (no symbol)
SSR 25	For M6 (symbol Y)	For M5 (no symbol)

total block length will increase.
(See M1-517 or M1-539)

\*\* 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.

### **Model SSR-XSB**



	Outer	dimer	nsions					LM b	lock c	dimens	sions				
Model No.	Height M	Width W	Length L	В	Н	L <sub>1</sub>	Т	К	N	E	fo	<b>e</b> <sub>0</sub>	Do	Grease nipple	H₃
SSR 15XSB	24	52	40.3	41	4.5	23.3	7	19.5	4.5	5.5	2.7	4.5	3	PB1021B	4.5
SSR 20XSB	28	59	47.7	49	5.5	27.8	9	22	5.5	12	2.8	5.2	3	B-M6F	6
SSR 25XSB	33	73	60	60	7	36.8	10	26.2	6	12	3.3	7	3	B-M6F	6.8
SSR 30XSB	42	90	66.7	72	9	40.4	10	32.5	8	12	4.5	7.6	4	B-M6F	9.5
SSR 35XSB	48	100	77.5	82	9	47.1	13	36.5	8.5	12	4.7	8.8	4	B-M6F	11.5

### Model number coding

# SSR15X SB 2 QZ UU C1 +820L Y P T -II

Model number Type of LM block With QZ lubricator

Contamination protection accessory symbol (\*1)

LM rail length (in mm)

Applied to only 15 and 25 sizes

Symbol for LM rail jointed use

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

No. of LM blocks used on the same rail

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

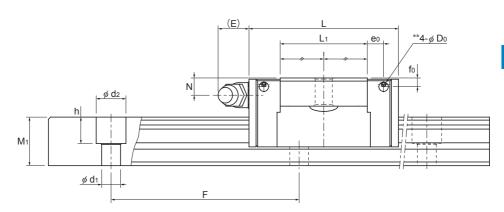
Accuracy symbol (\*3) Normal grade (No Symbol) High accuracy grade (H) Precision grade (P) Super precision grade (SP) Ultra precision grade (UP)

(\*1) See contamination protection accessory on A1-543. (\*2) See A1-73. (\*3) See A1-79. (\*4) See A1-13.

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

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





		LM	rail dir	nensions		Basic loa	ad rating	Static	permis	sible mo	oment k	N·m *	Ma	ISS
Width		Height	Pitch		Length*	С	C <sub>0</sub>	2	14			M° CG	LM block	LM rail
W₁ ±0.05	W <sub>2</sub>	M <sub>1</sub>	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block	kg	kg/m
15	18.5	12.5	60	4.5×7.5×5.3	3000 (1240)	9.1	9.7	0.0303	0.1192	0.0189	0.122	0.0562	0.11	1.2
20	19.5	15.5	60	6×9.5×8.5	3000 (1480)	13.4	14.4	0.0523	0.336	0.0326	0.213	0.111	0.18	2.1
23	25	18	60	7×11×9	3000 (2020)	21.7	22.5	0.104	0.661	0.0652	0.419	0.204	0.31	2.7
28	31	23	80	7×11×9	3000 (2520)	34.8	34.4	0.186	1.12	0.116	0.711	0.376	0.52	4.3
34	33	27.5	80	9×14×12	3000	48.3	46.7	0.295	1.77	0.184	1.12	0.615	0.77	6.4

Note1) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See M1-118.) Static permissible moment\* 1 block: The static permissible moment with one LM block

2 blocks: Static permissible moment when two LM blocks are in close contact with each

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 A1-517 or A1-539)

\*\* 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.

Note2) For models SSR15 and 25, two types of rails with different mounting hole dimensions are offered (see Table 1). When replacing this model with model SR, pay attention to the mounting hole dimension of the LM rail. Contact THK for details.

Note3) The basic load rating in the dimension table is for a load in the radial direction. Use Table 7 on M1-61 to calculate the load rating for loads in the reverse radial direction or lateral direction.

Table 1: Rail Mounting Hole Dimensions

Model No.	Standard rail	Semi-standard rail
SSR 15	For M4 (symbol Y)	For M3 (no symbol)
SSR 25	For M6 (symbol Y)	For M5 (no symbol)

# Standard Lengths and Maximum Lengths of LM Rails

Table 1 shows the standard lengths and the maximum lengths of model SSR variations. If the maximum length of the desired LM rail exceeds these values, joint 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.

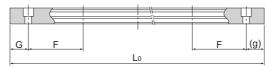


Table 1: Standard Lengths and Maximum Lengths of LM Rails

Unit: mm

Model No.	SSR 15X	SSR 20X	SSR 25X	SSR 30X	SSR 35X
LM rail standard lengths (L <sub>0</sub> )	160 220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1300 1360 1420 1480 1540	220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1300 1360 1420 1480 1540 1600 1660 1720 1780 1780 1840 1900 2020 2080 2140	220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1240 1300 1360 1420 1480 1540 1660 1720 1780 1840 1900 1960 2020 2080 2140 2200 2260 2320 2380 2440	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1640 1720 1800 1880 1960 2040 2120 2200 2280 2360 2440 2520 2600 2680 2760 2840 2920	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1640 1720 1800 1880 1960 2040 2120 2200 2280 2360 2440 2520 2600 2680 2760 2840 2920
Standard pitch F	60	60	60	80	80
G, g					
	20	20	20	20	20

Note1) The maximum length varies with accuracy grades. Contact THK for details.

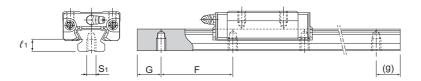
Note2) If jointed rails are not allowed and a greater length than the maximum values above is required, contact THK.

Note3) The figures in the parentheses indicate the maximum lengths of stainless steel made models.



# **Tapped-Hole Type LM Rail**

LM rails with tapped holes machined on the bottom surface are available for the Model SSR. This type is useful when mounting from the bottom of the base and when increased contamination protection is desired.



- A tapped-hole LM rail type is available only for Precision grade or lower grades.
- (2) For standard pitches of the taps and the G and g dimensions, see Table 1 on **A1-118**.

Table 2: Dimensions of the LM Rail Tap Unit: mm

Model No.	S <sub>1</sub>	Effective tap depth $\ell_1$
SSR 15X	M5	7
SSR 20X	M6	9
SSR 25X	M6	10
SSR 30X	M8	14
SSR 35X	M8	16

Model number coding

# SSR20XW2UU+1200LH K



Symbol for tapped-hole LM rail