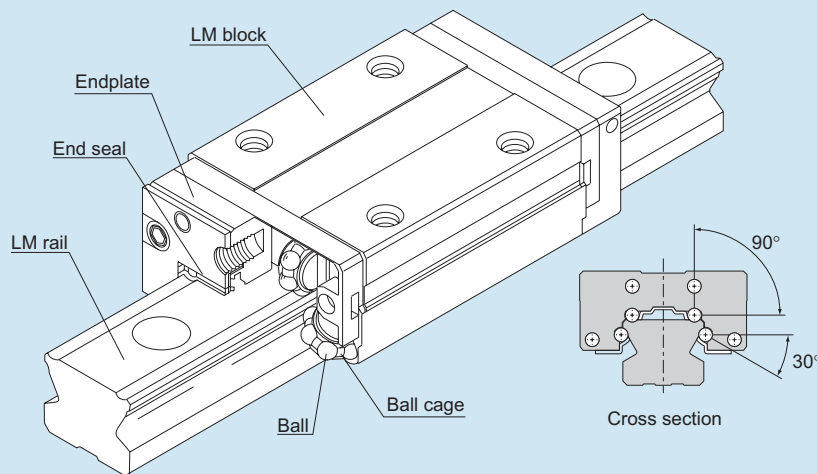


# SSR



## Caged Ball LM Guide Radial Type Model SSR



\* For the ball cage, see A-130.

<b>Structure and Features</b>	▶▶▶ A-143
<b>Types and Features</b>	▶▶▶ A-144
<b>Rated Loads in All Directions</b>	▶▶▶ A-145
<b>Equivalent Load</b>	▶▶▶ A-145
<b>Service Life</b>	▶▶▶ A-100
<b>Radial Clearance Standard</b>	▶▶▶ A-113
<b>Accuracy Standards</b>	▶▶▶ A-119
<b>Shoulder Height of the Mounting Base and the Corner Radius</b>	▶▶▶ A-330
<b>Error Allowance in the Parallelism between Two Rails</b>	▶▶▶ A-333
<b>Error Allowance in Vertical Level between Two Rails</b>	▶▶▶ A-336
<b>Dimensional Drawing, Dimensional Table, Example of Model Number Coding</b>	▶▶▶ B-16
<b>Standard Length and Maximum Length of the LM Rail</b>	▶▶▶ B-22
<b>Tapped-hole LM Rail Type of Model SSR</b>	▶▶▶ B-23

---

## Structure and Features

---

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.

Use of the ball cage eliminates friction between balls and increases grease retention, thus to achieve low noise, high speed and long-term maintenance-free operation.

**[Compact, Radial Type]**

The compact design with a low sectional height and the ball contact structure at 90° make SSR an optimal model for horizontal guides.

**[Superb Planar Running Accuracy]**

Use of a ball contact structure at 90° in the radial direction reduces displacement in the radial direction under a radial load and achieves highly accurate, smooth straight motion.

**[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.

**[Stainless Steel Type also Available as Standard]**

A stainless steel type with its LM block, LM rail and balls all made of stainless steel, which is superbly corrosion resistant, is also available as standard.



---

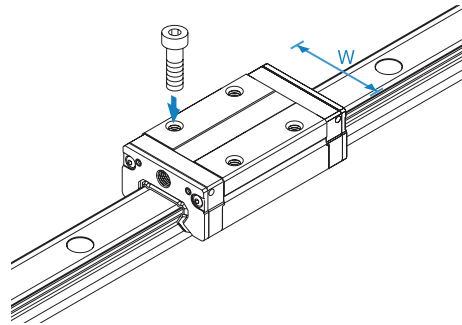
## Types and Features

---

### Model SSR-XW

With this type, the LM block has a smaller width (W) and tapped holes.

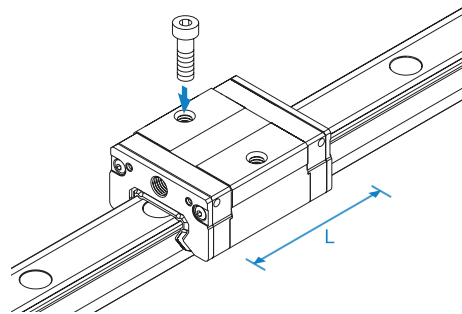
Specification Table⇒B-16



### Model SSR-XV

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

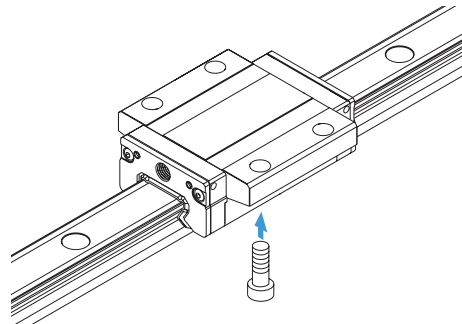
Specification Table⇒B-18



### Model SSR-XTB

Since the LM block can be mounted from the bottom, this type is optimal for applications where through holes for mounting bolts cannot be drilled on the table.

Specification Table⇒B-20



## Features of Each Model

### Radial Type Model SSR

## Rated Loads in All Directions

Model SSR is capable of receiving loads in four directions: radial, reverse radial and lateral directions.

Its basic dynamic load rating is represented by the symbol in the radial direction indicated in Fig.1, and the actual value is provided in the specification table for SSR. The values in the reverse radial and lateral directions are obtained from Table1 below.

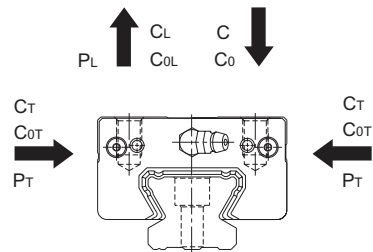


Fig.1

Table1 Rated Load of Model SSR in All Directions

Direction	Basic dynamic load rating	Basic static load rating
Radial direction	C	C <sub>0</sub>
Reverse radial direction	C <sub>L</sub> =0.50C	C <sub>0L</sub> =0.50C <sub>0</sub>
Lateral directions	C <sub>T</sub> =0.53C	C <sub>0T</sub> =0.43C <sub>0</sub>

## Equivalent Load

When the LM block of model SSR receives a reverse radial direction and a lateral direction simultaneously, the equivalent load is obtained in the equation below.

$$P_E = X \cdot P_L + Y \cdot P_T$$

P<sub>E</sub> : Equivalent load (N)

: Reverse radial direction

: Lateral direction

P<sub>L</sub> : Reverse radial load (N)

P<sub>T</sub> : Lateral load (N)

X, Y : Equivalent factor (see Table2)

Table2 Equivalent Factor of Model SSR

P <sub>E</sub>	X	Y
Equivalent load in reverse radial direction	1	1.155
Equivalent load in lateral direction	0.866	1

LM Guide

---

## **Service Life**

---

For details,see A-100.

---

## **Radial Clearance Standard**

---

For details,see A-113.

---

## **Accuracy Standards**

---

For details,see A-119.

---

## **Shoulder Height of the Mounting Base and the Corner Radius**

---

For details,see A-330.

---

## **Error Allowance in the Parallelism between Two Rails**

---

For details,see A-333.

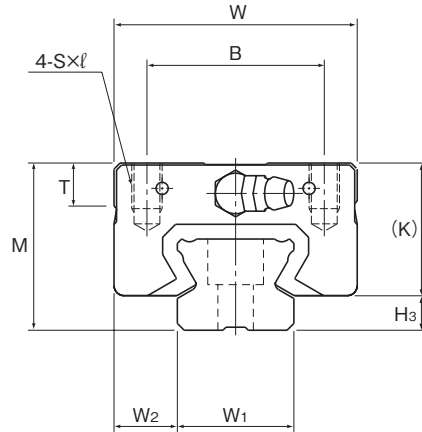
---

## **Error Allowance in Vertical Level between Two Rails**

---

For details,see A-336.

## Models SSR-XW and SSR-XWM



Model No.	Outer dimensions			LM block dimensions												Grease nipple	H <sub>3</sub>
	Height	Width	Length	B	C	S × ℓ	L <sub>1</sub>	T	K	N	E	f <sub>0</sub>	e <sub>0</sub>	D <sub>0</sub>			
	M	W	L	B	C	S × ℓ	L <sub>1</sub>	T	K	N	E	f <sub>0</sub>	e <sub>0</sub>	D <sub>0</sub>			
SSR 15XWY SSR 15XWMY	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	2.8	5.2	3	B-M6F	6	
SSR 25XWY SSR 25XWMY	33	48	83	35	35	M6 × 9	59.8	8.4	26.2	6	12	3.3	7	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) 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.

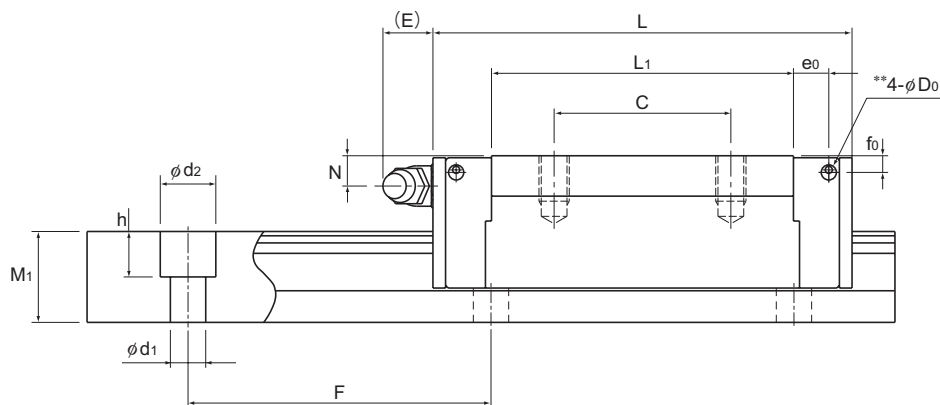
### Model number coding

**SSR25X W 2 UU C1 M +1200L Y P T M -II**

Model number	Type of LM block	Contamination 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 plane (*4)						
SSR	25	W	2	UU	C1	M	+1200L	Y	P	T	M	-II
	No. of LM blocks used on the same rail	Radial clearance symbol (*2) Normal (No symbol) Light preload (C1) Medium preload (C0)	Applied to only 15 and 25	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							

(\*1) See contamination protection accessory on A-368. (\*2) See A-113. (\*3) See A-119. (\*4) See A-59.

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.)



LM Guide

Unit: mm

	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> ±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	Double blocks	1 block	Double blocks
	15	9.5	12.5	60	4.5 × 7.5 × 5.3	2500 (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) Pilot holes for side nipples\*\* are not drilled through in order to prevent foreign material from entering the product. THK will mount grease nipples per your request. Therefore, do not use the side nipple pilot holes\*\* for purposes other than mounting a grease nipple.

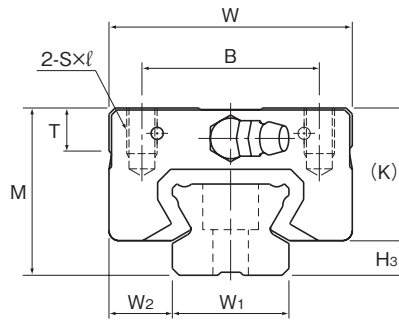
The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See B-22.)

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

Note2) The LM rail mounting hole of SSR15X is drilled for M4 screws as standard (with Y indication). If you order the hole to be drilled for M3 screws (without Y indication), contact THK. When replacing this model with model SR, pay attention to the dimension of the rail mounting hole.

## Models SSR-XV and SSR-XVM



Model No.	Outer dimensions			LM block dimensions											Grease nipple	H <sub>3</sub>
	Height	Width	Length	B	S×ℓ	L <sub>1</sub>	T	K	N	E	f <sub>0</sub>	e <sub>0</sub>	D <sub>0</sub>			
	M	W	L	B	S×ℓ	L <sub>1</sub>	T	K	N	E	f <sub>0</sub>	e <sub>0</sub>	D <sub>0</sub>			
SSR 15XVY SSR 15XVMY	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	2.8	5.2	3	B-M6F	6	
SSR 25XVY SSR 25XVMY	33	48	60	35	M6×9	36.8	8.4	26.2	6	12	3.3	7	3	B-M6F	6.8	

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.

### Model number coding

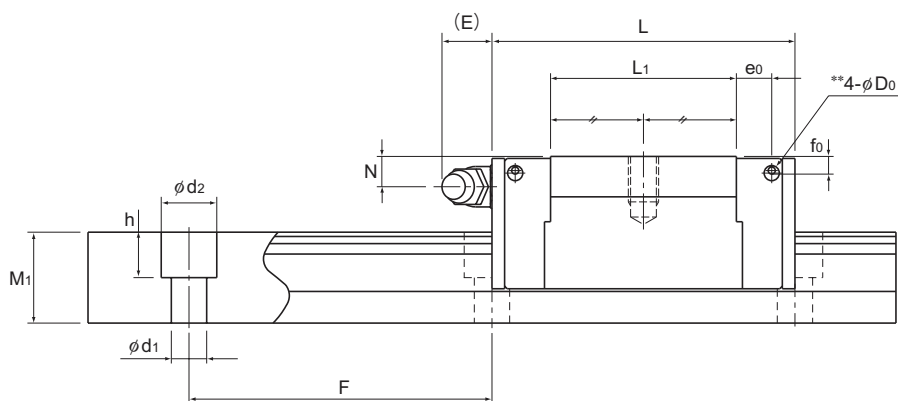
**SSR25X V 2 UU C1 M +1200L Y P T M -III**

Model number	Type of LM block	Contamination protection accessory symbol (*1)	Stainless steel LM block	LM rail length (in mm)	Accuracy symbol (*3)	Stainless steel LM rail	Symbol for No. of rails used on the same plane (*4)
SSR25X	V	2	UU	C1	M	+1200L	Y P T M -III
	No. of LM blocks used on the same rail	Radial clearance symbol (*2) Normal (No symbol) Light preload (C1) Medium preload (C0)		Applied to only 15 and 25	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	

(\*1) See contamination protection accessory on A-368. (\*2) See A-113. (\*3) See A-119. (\*4) See A-59.

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.)





LM Guide

Unit: mm

	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> ±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	Double blocks	1 block	Double blocks
	15	9.5	12.5	60	4.5 × 7.5 × 5.3	2500 (1240)	9.1	9.7	0.0303	0.192	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

Note1) Pilot holes for side nipples\*\* are not drilled through in order to prevent foreign material from entering the product. THK will mount grease nipples per your request. Therefore, do not use the side nipple pilot holes\*\* for purposes other than mounting a grease nipple.

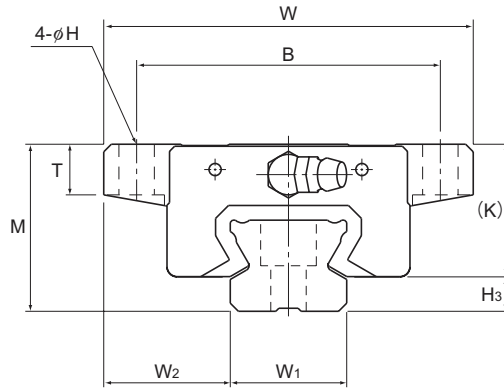
The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See B-22.)

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

Note2) The LM rail mounting hole of SSR15X is drilled for M4 screws as standard (with Y indication). If you order the hole to be drilled for M3 screws (without Y indication), contact THK. When replacing this model with model SR, pay attention to the dimension of the rail mounting hole.

## Model SSR-XTB



Model No.	Outer dimensions			LM block dimensions													Grease nipple	H <sub>3</sub>
	Height	Width	Length	B	C	H	L <sub>1</sub>	T	K	N	E	f <sub>0</sub>	e <sub>0</sub>	D <sub>0</sub>				
	M	W	L	B	C	H	L <sub>1</sub>	T	K	N	E	f <sub>0</sub>	e <sub>0</sub>	D <sub>0</sub>				
SSR 15XTBY	24	52	56.9	41	26	4.5	39.9	6.1	20	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	2.8	5.2	3	B-M6F	6		
SSR 25XTBY	33	73	83	60	35	7	59.8	10	26.2	6	12	3.3	7	3	B-M6F	6.8		

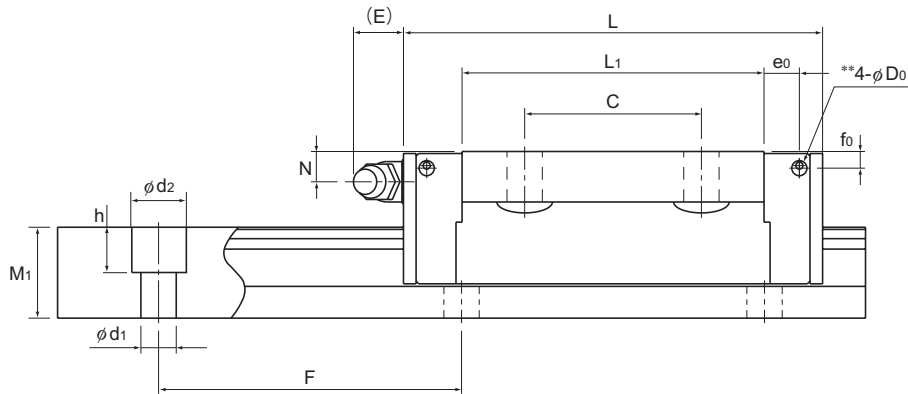
### Model number coding

**SSR15X TB 2 SS C1 +820L Y T -II**

Model number	Type of LM block	Contamination protection accessory symbol (*1)	LM rail length (in mm)	Symbol for LM rail jointed use	Symbol for No. of rails used on the same plane (*3)
	No. of LM blocks used on the same rail	Radial clearance symbol (*2) Normal (No symbol) Light preload (C1) Medium preload (C0)		Applied to only 15 and 25	

(\*1) See contamination protection accessory on A-368. (\*2) See A-113. (\*3) See A-59.

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.)



LM Guide

Unit: mm

	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> ±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	Double blocks	1 block	Double blocks
	15	18.5	12.5	60	4.5 × 7.5 × 5.3	2500 (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

Note1) Pilot holes for side nipples\*\* are not drilled through in order to prevent foreign material from entering the product. THK will mount grease nipples per your request. Therefore, do not use the side nipple pilot holes\*\* for purposes other than mounting a grease nipple.  
 The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See B-22.)  
 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

Note2) The LM rail mounting hole of SSR15X is drilled for M4 screws as standard (with Y indication). If you order the hole to be drilled for M3 screws (without Y indication), contact THK. When replacing this model with model SR, pay attention to the dimension of the rail mounting hole.

## Standard Length and Maximum Length of the LM Rail

Table1 shows the standard lengths and the maximum lengths of model SSR variations. If the maximum length of the desired LM rail exceeds them, jointed 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 causing an adverse impact to accuracy.

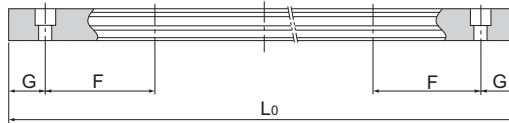


Table1 Standard Length and Maximum Length of the LM Rail

Unit: mm

Model No.	SSR 15X	SSR 20X	SSR 25X	SSR 30X	SSR 35X
LM rail standard length (L <sub>0</sub> )	160	220	220	280	280
	220	280	280	360	360
	280	340	340	440	440
	340	400	400	520	520
	400	460	460	600	600
	460	520	520	680	680
	520	580	580	760	760
	580	640	640	840	840
	640	700	700	920	920
	700	760	760	1000	1000
	760	820	820	1080	1080
	820	940	940	1160	1160
	940	1000	1000	1240	1240
	1000	1060	1060	1320	1320
	1060	1120	1120	1400	1400
	1120	1180	1240	1480	1480
	1180	1240	1300	1640	1640
	1240	1300	1360	1720	1720
	1300	1360	1420	1800	1800
	1360	1420	1480	1880	1880
	1420	1480	1540	1960	1960
	1480	1540	1600	2040	2040
	1540	1600	1660	2120	2120
		1660	1720	2200	2200
		1720	1780	2280	2280
	1780	1840	2360	2360	
	1840	1900	2440	2440	
	1900	1960	2520	2520	
	1960	2020	2600	2600	
	2020	2080	2680	2680	
	2080	2140	2760	2760	
	2140	2200	2840	2840	
		2260	2920	2920	
		2320			
		2380			
		2440			
Standard pitch F	60	60	60	80	80
G	20	20	20	20	20
Max length	2500 (1240)	3000 (1480)	3000 (2020)	3000 (2520)	3000

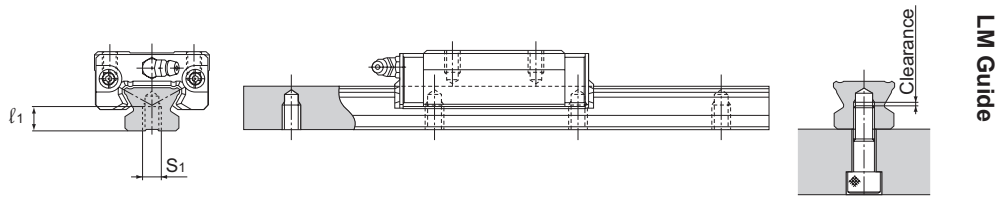
Note1) The maximum length varies with accuracy grades. Contact THK for details.

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

Note3) The values in the parentheses indicate the maximum lengths of stainless steel types.

## Tapped-hole LM Rail Type of Model SSR

The model SSR variations include a type with its LM rail bottom tapped. This type is useful when desiring to mount the LM Guide from the bottom of the base and when desiring to increase the contamination protection effect.



- (1) A tapped-hole LM rail type is available only for high accuracy or lower grades.
- (2) Determine the bolt length so that a clearance of 2 to 5 mm is secured between the bolt end and the bottom of the tap (effective tap depth). (See figure above.)
- (3) For standard pitches of the taps, see Table1 on B-22.

Table2 Dimensions of the LM Rail Tap

Unit: mm

Model No.	S <sub>1</sub>	Effective tap depth $l_1$
SSR 15X	M5	7
SSR 20X	M6	9
SSR 25X	M6	10
SSR 30X	M8	14
SSR 35X	M8	16

### Model number coding

**SSR20X W2UU +1200LH K**

Symbol for  
tapped-hole LM rail type