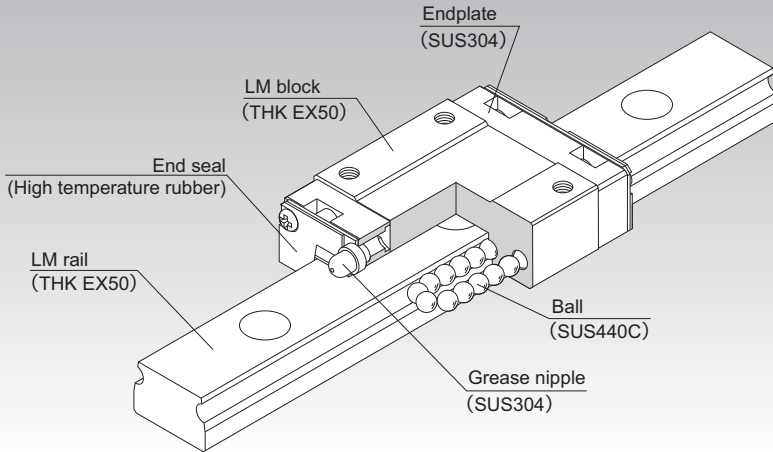


# RSR-M1

## LM Guide High Temperature Type Model RSR-M1



<b>Point of Selection</b>	<b>A1-10</b>
<b>Point of Design</b>	<b>A1-436</b>
<b>Options</b>	<b>A1-459</b>
<b>Model No.</b>	<b>A1-524</b>
<b>Precautions on Use</b>	<b>A1-530</b>
<b>Accessories for Lubrication</b>	<b>A24-1</b>
<b>Mounting Procedure and Maintenance</b>	<b>B1-89</b>
Equivalent moment factor	<b>A1-43</b>
Rated Loads in All Directions	<b>A1-58</b>
Equivalent factor in each direction	<b>A1-60</b>
Radial Clearance	<b>A1-71</b>
Accuracy Standards	<b>A1-82</b>
Shoulder Height of the Mounting Base and the Corner Radius	<b>A1-451</b>
Permissible Error of the Mounting Surface	<b>A1-453</b>
Flatness of the Mounting Surface	<b>A1-454</b>
Dimensions of Each Model with an Option Attached	<b>A1-472</b>

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## Structure and Features

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

High temperature type miniature LM Guide model RSR-M1 is capable of being used at service temperature up to 150°C thanks to THK's unique technologies in material, heat treatment and lubrication.

### [Maximum Service Temperature: 150°C]

Use of stainless steel in the endplates and high temperature rubber in the end seals achieves the maximum service temperature of 150°C.

### [Dimensional Stability]

Since it is dimensionally stabilized, it demonstrates superb dimensional stability after being heated or cooled (note that it shows linear expansion at high temperature).

### [Highly Corrosion Resistant]

Since the LM block, LM rail and balls use stainless steel, which is highly corrosion resistant, this model is optimal for clean room applications.

### [High Temperature Grease]

This model uses high temperature grease that shows little grease-based fluctuation in rolling resistance even if temperature changes from low to high levels.

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## Thermal Characteristics of LM Rail and LM Block Materials

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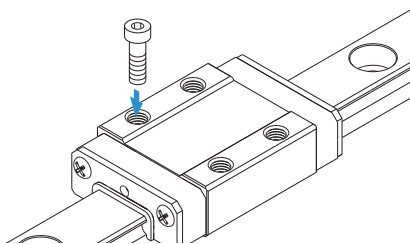
- Specific heat capacity: 0.481 J/(g•K)
- Thermal conductivity: 20.67 W/(m•K)
- Average coefficient of linear expansion:  $11.8 \times 10^{-6}/^{\circ}\text{C}$

## Types and Features

### Models RSR-M1, RSR-M1K, M1V

Specification Table⇒ **A1-366**

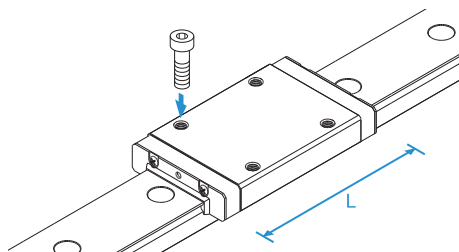
This model is a standard type.



### Model RSR-M1N

Specification Table⇒ **A1-366**

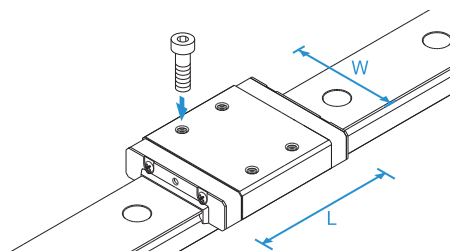
It has a longer overall LM block length (L) and a greater rated load than standard types.



### Models RSR-M1W, M1WV

Specification Table⇒ **A1-368**

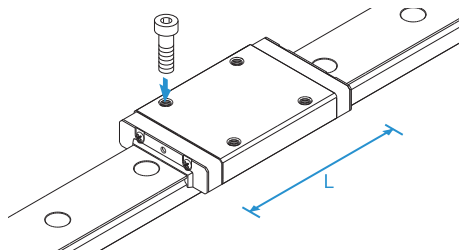
These models have greater overall LM block lengths (L), broader widths (W) and greater rated loads and permissible moments than standard types.



### Model RSR-M1WN

Specification Table⇒ **A1-368**

It has a longer overall LM block length (L), a greater rated load than standard types. Achieves the greatest load capacity among the high temperature type miniature LM Guide models.



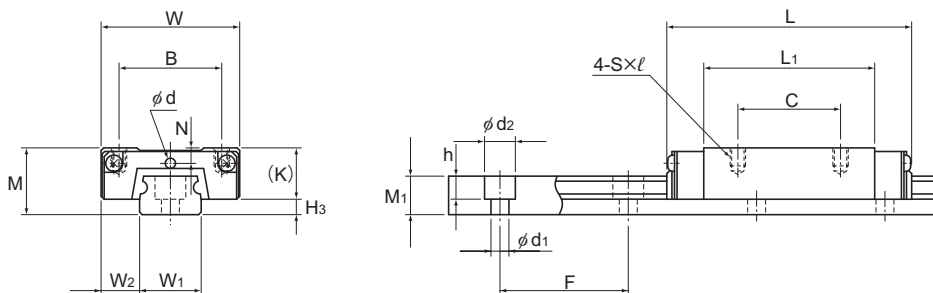
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## Service Life

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When using this product in temperatures higher than 100°C, always multiply the basic dynamic load rating by the temperature coefficient when calculating the rated service life. See **A1-64** for details.

## Models RSR-M1K, RSR-M1V and RSR-M1N



Models RSR9M1K/9M1N and RSR12M1V/M1N

Model No.	Outer dimensions			LM block dimensions										H <sub>3</sub>
	Height	Width	Length	B	C	S × l	L <sub>1</sub>	T	K	N	E	Greasing hole	Grease nipple	
	M	W	L									d		
RSR 9M1K RSR 9M1N	10	20	30.8 41	15	10 16	M3 × 3	19.8 29.8	—	7.8	—	—	—	—	2.2
RSR 12M1V RSR 12M1N	13	27	35 47.7	20	15 20	M3 × 3.5	20.6 33.3	—	10	3	—	2	—	3
RSR 15M1V RSR 15M1N	16	32	43 61	25	20 25	M3 × 4	25.7 43.5	—	12	3.5	3.6 3.7	—	PB107	4
RSR 20M1V RSR 20M1N	25	46	66.5 86.3	38	38	M4 × 6	45.2 65	5.7	17.5	5	6.4	—	A-M6F	7.5

### Model number coding

**2 RSR15 M1 V UU C1 +230L P 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 (\*4)

No. of LM blocks used on the same rail

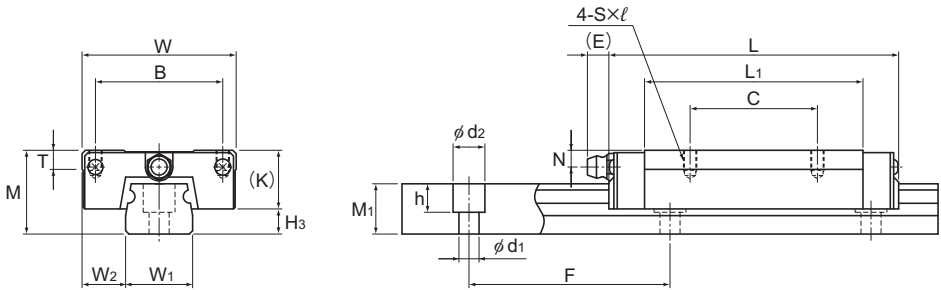
Symbol for high temperature type LM Guide

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

Accuracy symbol (\*3)  
Normal grade (No Symbol)/High accuracy grade (H)  
Precision grade (P)

(\*1) See contamination protection accessory on **A1-496**. (\*2) See **A1-71**. (\*3) See **A1-82**. (\*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.)



Models RSR15 and 20M1V/M1N

Unit: mm

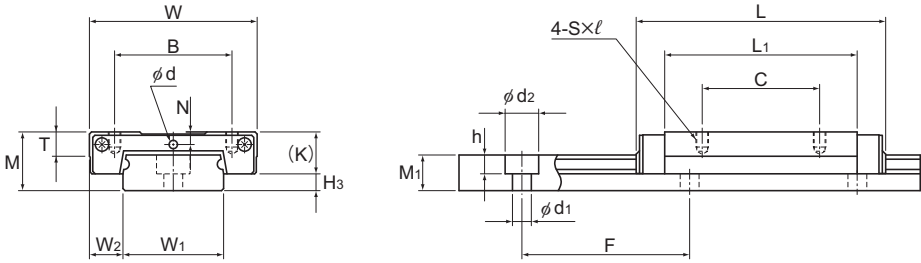
	LM rail dimensions						Basic load rating		Static permissible moment N-m*						Mass	
	Width		Height		Pitch	Length* Max	C kN	C <sub>0</sub> kN	M <sub>A</sub>		M <sub>B</sub>		M <sub>C</sub>	LM block kg	LM rail kg/m	
	W <sub>1</sub>	W <sub>2</sub>	M <sub>1</sub>	F	d <sub>1</sub> × d <sub>2</sub> × h				1 block	Double blocks	1 block	Double blocks	1 block			
9 <sup>0</sup> -0.02	5.5	5.5	20	3.5 × 6 × 3.3	1240	1.47 2.6	2.25 3.96	7.34 18.4	43.3 97	7.34 18.4	43.3 97	10.4 18.4	0.018 0.027	0.32		
12 <sup>0</sup> -0.025	7.5	7.5	25	3.5 × 6 × 4.5	1430	2.65 4.3	4.02 6.65	11.4 28.9	74.9 163	10.1 25.5	67.7 145	19.2 31.8	0.037 0.055	0.58		
15 <sup>0</sup> -0.025	8.5	9.5	40	3.5 × 6 × 4.5	1600	4.41 7.16	6.57 10.7	23.7 63.1	149 330	21.1 55.6	135 293	38.8 63	0.069 0.093	0.925		
20 <sup>0</sup> -0.03	13	15	60	6 × 9.5 × 8.5	1800	8.82 14.2	12.7 20.6	75.4 171	435 897	66.7 151	389 795	96.6 157	0.245 0.337	1.95		

Note) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See **A1-370**.)

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 RSR-M1WV and RSR-M1WN



Models RSR9 and 12M1WV/M1WN

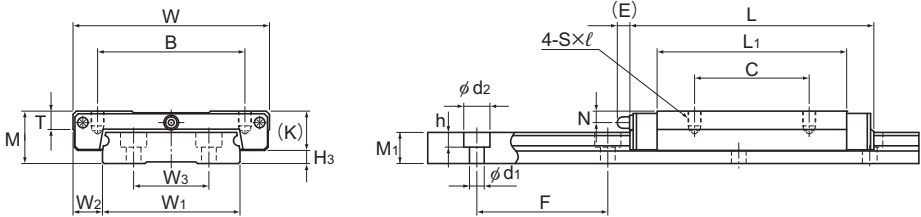
Model No.	Outer dimensions			LM block dimensions										H <sub>3</sub>
	Height	Width	Length	B	C	S × ℓ	L <sub>1</sub>	T	K	N	E	Greasing hole d	Grease nipple	
	M	W	L	B	C	S × ℓ	L <sub>1</sub>	T	K	N	E	d		H <sub>3</sub>
RSR 9M1WV RSR 9M1WN	12	30	39 50.7	21 23	12 24	M2.6×3 M3×3	27 38.7	—	7.8	2	—	1.6	—	4.2
RSR 12M1WV RSR 12M1WN	14	40	44.5 59.5	28	15 28	M3×3.5	30.9 45.9	4.5	10	3	—	2	—	4
RSR 15M1WV RSR 15M1WN	16	60	55.5 74.5	45	20 35	M4×4.5	38.9 57.9	5.6	12	3.5	3	—	PB107	4

### Model number coding

**2 RSR12 M1 WN UU C1 +310L P T**

2	RSR12	M1	WN	UU	C1	+310L	P	T
No. of LM blocks used on the same rail	Model number	Symbol for high temperature type LM Guide	Type of LM block	Contamination protection accessory symbol (*1)	Radial clearance symbol (*2) Normal (No symbol) Light preload (C1)	LM rail length (in mm)	Symbol for LM rail jointed use	Accuracy symbol (*3) Normal grade (No Symbol)/High accuracy grade (H) Precision grade (P)

(\*1) See contamination protection accessory on **A1-496**. (\*2) See **A1-71**. (\*3) See **A1-82**.



Models RSR15M1WV/M1WN

Unit: mm

	LM rail dimensions							Basic load rating		Static permissible moment N·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>						1 block	Double blocks	1 block	Double blocks	1 block				
	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</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	1 block	kg	kg/m
18	<sup>0</sup> <sub>-0.05</sub>	6	—	7.5	30	3.5 × 6 × 4.5	1430	2.45 3.52	3.92 5.37	16 31	92.9 161	16 31	92.9 161	36 49.4	0.035 0.051	1.08
24	<sup>0</sup> <sub>-0.05</sub>	8	—	8.5	40	4.5 × 8 × 4.5	1600	4.02 5.96	6.08 9.21	24.5 53.9	138 274	21.7 47.3	123 242	59.5 90.1	0.075 0.101	1.5
42	<sup>0</sup> <sub>-0.05</sub>	9	23	9.5	40	4.5 × 8 × 4.5	1800	6.66 9.91	9.8 14.9	50.3 110	278 555	44.4 97.3	248 490	168 255	0.17 0.21	3

Note) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See **A1-370**.)

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



## Standard Length and Maximum Length of the LM Rail

Table1 shows the standard and maximum lengths of the RSR M1 model rail.

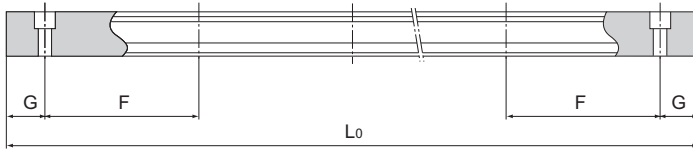


Table1 Standard Length and Maximum Length of the LM Rail for Model RSR-M1

Unit: mm

Model No.	RSR 9M1	RSR 12M1	RSR 15M1	RSR 20M1	RSR 9M1W	RSR 12M1W	RSR 15M1W	
LM rail standard length ( $L_0$ )	55	70	70	220	50	70	110	
	75	95	110	280	80	110	150	
	95	120	150	340	110	150	190	
	115	145	190	460	140	190	230	
	135	170	230	640	170	230	270	
	155	195	270	880	200	270	310	
	175	220	310	1000	260	310	430	
	195	245	350		290	390	550	
	275	270	390		320	470	670	
	375	320	430			550	790	
			370	470				
			470	550				
			570	670				
			870					
Standard pitch F	20	25	40	60	30	40	40	
G	7.5	10	15	20	10	15	15	
Max length	1240	1430	1600	1800	1430	1600	1800	

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

## Stopper

In models RSR-M1/RSR-M1W, the balls fall out if the LM block comes off the LM rail.

For this reason, they are delivered with a stopper fitted to prevent the LM block coming off the rail. If you remove the stopper when using the product, take care to ensure that overrun does not occur.

Table2 Model RSR-M1/RSR-M1W stopper (C type)  
specification table

Unit: mm

Model No.	A	B	C
9	13	6	9.5
12	16	7	12.5
15	19	7	14.5
20	25	7	20.0
9W	23	7	11.5
12W	29	7	13.5
15W	46	7	14.5

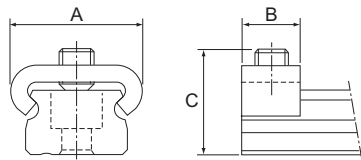


Fig.1 Model RSR-M1/RSR-M1W stopper (C type)

