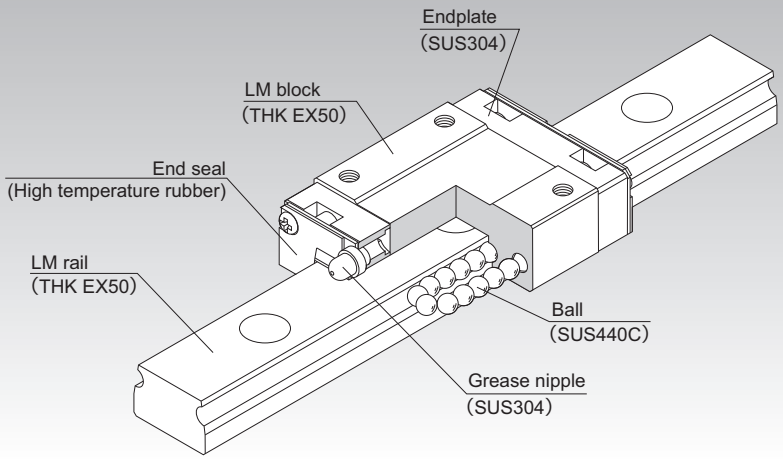
RSR-M1

LM Guide High Temperature Type Model RSR-M1



Structure and Features

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℃ thanks to THK's unique technologies in material, heat treatment and lubrication.

[Maximum Service Temperature: 150℃]
Use of stainless steel in the endplates and high temperature rubber in the end seals achieves the maximum service temperature of 150℃.

[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.

Thermal Characteristics of LM Rail and LM Block Materials

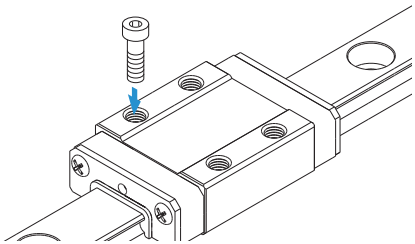
- Specific heat capacity: 0.481 J/(g•K)
- Thermal conductivity: 20.67 W/(m•K)
- Average coefficient of linear expansion: 11.8×10^{-6}/℃

Types and Features

Models RSR-M1, RSR-M1K, M1V

Specification Table⇒A1-364

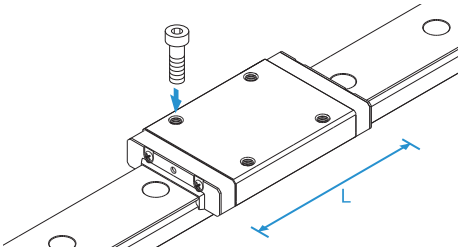
This model is a standard type.



Model RSR-M1N

Specification Table⇒A1-364

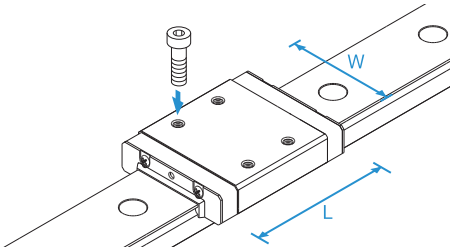
It has a longer overall LM block length (L) and a greater rated load than standard types.



Models RSR-M1W, M1WV

Specification Table⇒A1-366

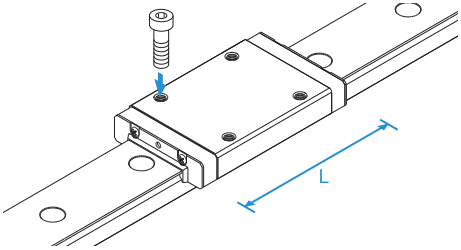
These models have greater overall LM block lengths (L), broader widths (W) and greater rated loads and permissible moments than standard types.



Model RSR-M1WN

Specification Table⇒A1-366

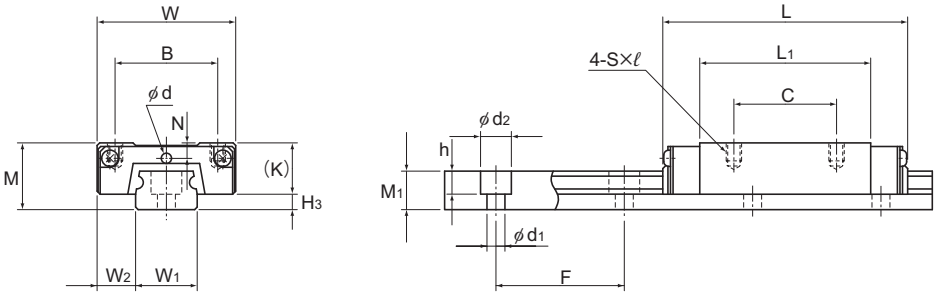
It has a longer overall LM block length (L), a greater rated load than standard types. Achieves the greatest load capacity among the high temperature type miniature LM Guide models.



Service Life

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										Grease nipple	H_3
	Height M	Width W	Length L	B	C	S×ℓ	L_1	T	K	N	E	Greasing hole 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

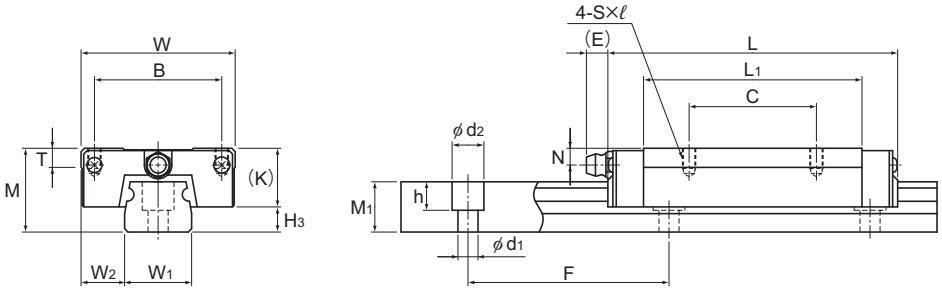
Model number coding

2 RSR15 M1 V UU C1 +230L P T -II

- **2**: No. of LM blocks used on the same rail
- **RSR15**: Model number
- **M1**: Symbol for high temperature type LM Guide
- **V**: Type of LM block
- **UU**: Contamination protection accessory symbol (*1)
- **C1**: Radial clearance symbol (*2) — Normal (No symbol), Light preload (C1)
- **+230L**: LM rail length (in mm)
- **P**: Accuracy symbol (*3) — Normal grade (No Symbol)/High accuracy grade (H), Precision grade (P)
- **T**: Symbol for LM rail jointed use
- **-II**: Symbol for No. of rails used on the same plane (*4)

(*1) See contamination protection accessory on **A1-494**. (*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

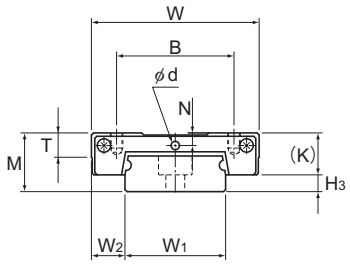
Unit: mm

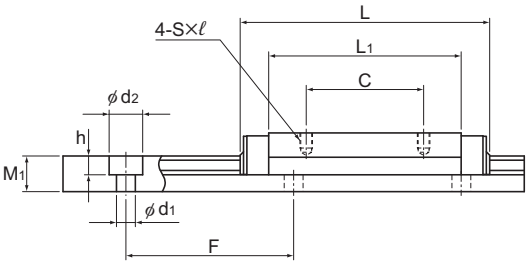
LM rail dimensions							Basic load rating		Static permissible moment N-m*						Mass	
Width			Height	Pitch		Length*	C	C_0	M_A		M_B		M_C		LM block	LM rail
W_1		W_2	M_1	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	Double blocks	1 block	Double blocks	1 block		kg	kg/m
9	0 −0.02	5.5	5.5	20	3.5×6×3.3	1240	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	0 −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	0 −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	0 −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 **A1-368**.)
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

Options⇒A1-457

Models RSR-M1WV and RSR-M1WN





Models RSR9 and 12M1WV/M1WN

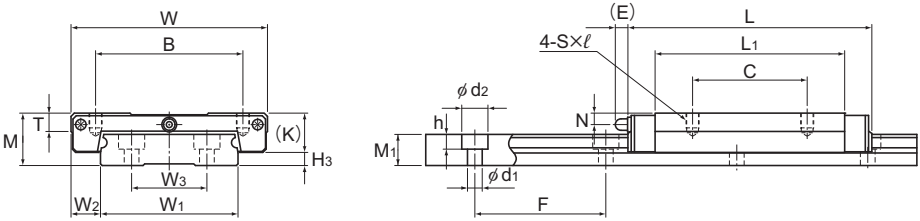
Model No.	Outer dimensions			LM block dimensions										H_3
	Height M	Width W	Length L	B	C	S×ℓ	L_1	T	K	N	E	Greasing hole d	Grease nipple	
RSR 9M1WV RSR 9M1WN	12	30	39 50.7	21 23	12 24	M2.6×3 M3×3	27 38.7	—	7.8	2	—	1.6	—	4.2
RSR 12M1WV RSR 12M1WN	14	40	44.5 59.5	28	15 28	M3×3.5	30.9 45.9	4.5	10	3	—	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: No. of LM blocks used on the same rail
- RSR12: Model number
- M1: Symbol for high temperature type LM Guide
- WN: Type of LM block
- UU: Contamination protection accessory symbol (*1)
- C1: Radial clearance symbol (*2) — Normal (No symbol), Light preload (C1)
- +310L: LM rail length (in mm)
- P: Accuracy symbol (*3) — Normal grade (No Symbol)/High accuracy grade (H), Precision grade (P)
- T: Symbol for LM rail jointed use

(*1) See contamination protection accessory on A1-494. (*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_0	M_A		M_B		M_C		LM block	LM rail
W_1		W_2	W_3	M_1	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	Double blocks	1 block	Double blocks	1 block		kg	kg/m
18	0 −0.05	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	0 −0.05	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	0 −0.05	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 A1-368.)
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

Options⇒A1-457

Standard Length and Maximum Length of the LM Rail

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

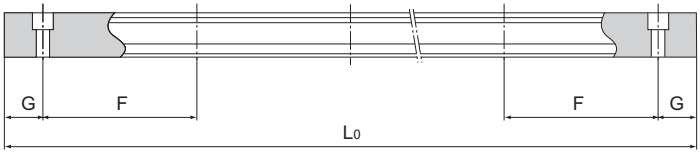


Table1 Standard Length and Maximum Length of the LM Rail for Model RSR-M1

Unit: mm

Model No.	RSR 9M1	RSR 12M1	RSR 15M1	RSR 20M1	RSR 9M1W	RSR 12M1W	RSR 15M1W
LM rail standard length (L_o)	55 75 95 115 135 155 175 195 275 375	70 95 120 145 170 195 220 245 270 320 370 470 570	70 110 150 190 230 270 310 350 390 430 470 550 670 870	220 280 340 460 640 880 1000	50 80 110 140 170 200 260 290 320	70 110 150 190 230 270 310 390 470 550	110 150 190 230 270 310 430 550 670 790
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.

Prevention of LM block from falling off of LM rail

In models RSR-M1/RSR-M1W, the balls fall out if the LM block comes off the LM rail.
For this reason, LM Guide assemblies are delivered with a part which prevents the LM block from coming off the rail. If you remove this part when using the product, please take precautions to avoid overrunning the blocks off of the rail.