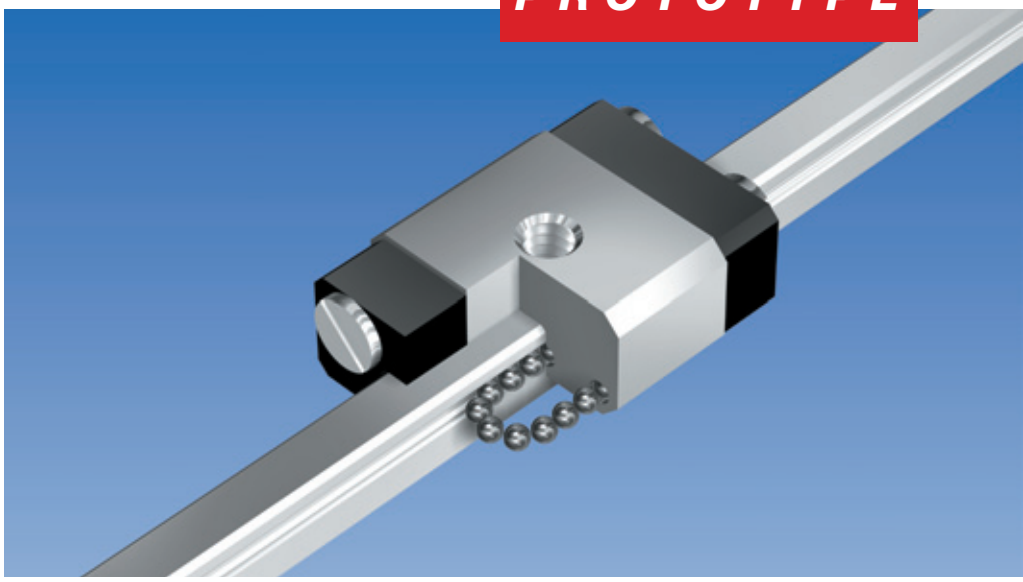
Micro-LM Systems

Micro-LM Guide RSR-M

RSR-M
1 and 2

PROTOTYPE



• Smallest LM Guide worldwide

The micro series of RSR type are miniaturized LM Guides for endless strokes. With the compact design of block and the integrated specific sized balls high rigidity in all load directions is achieved.

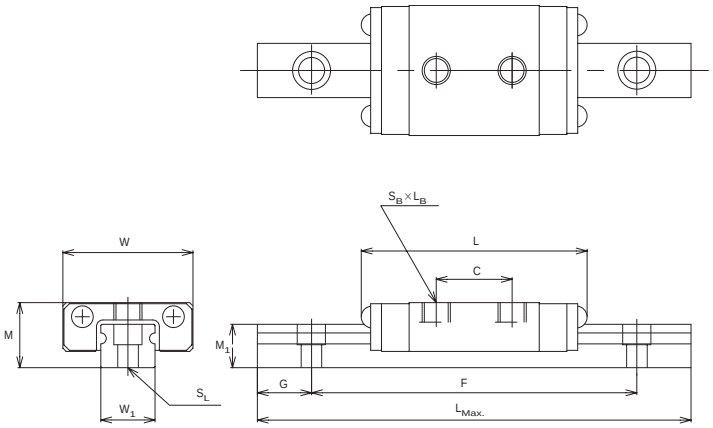
• Capable of receiving loads in all directions

These models are capable of receiving loads in all directions.

• Highly corrosion resistant

Since its LM block, LM rail and balls are made of stainless steel, this model is highly resistant to corrosion and therefore is suitable for applications in clean rooms etc.

• Smooth motion with low rolling resistance



Unit: mm

Model No.	M	W	L	C	W_1	M_1	F	G	$L_{Max.}$	$S_B \times l_B$	S_L	Basic load rating C [N]	Basic load rating C_0 [N]
RSR1M	2.5	4	6.2	–	1	1.4	–	–	100	1-M1×1	–	37	58
RSR1WM	2.5	5	8.3	2.5	2	1.4	5	5	104	2–M1×1	Countersink S0.6	61	94
RSR2N	3.2	6	12.4	4	2	2	8	4	104	2–M1.4×1.1	Through M1	166	245
RSR2WN	4	10	17	6.5	4	2.6	10	5	180	2–M2×1.3	Countersink M1.6	307	435

THK France
Tel. (04) 37 49 14 00
info.lys@thk-france.fr

THK U.K.
Tel. (0 19 08) 30 30 50
info.mks@thk.co.uk

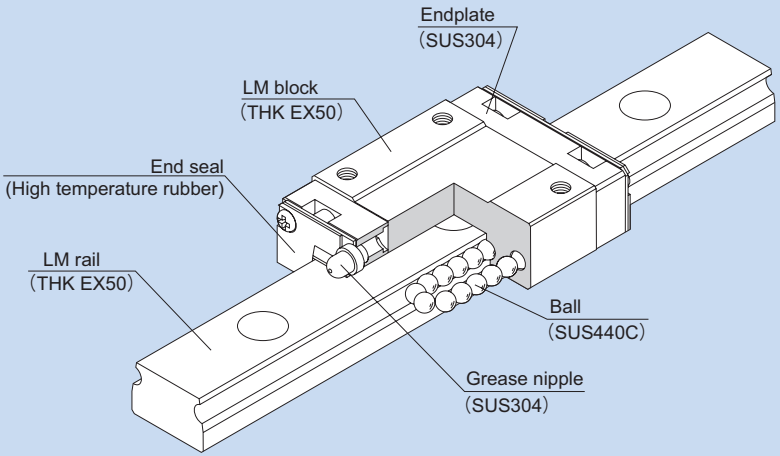
THK Italy
Tel. (0 39) 2 84 20 79
info.mil@thk-italia.it

THK Sweden
Tel. (8) 4 45 76 30
info.sto@thk.se

THK Spain
Tel. (93) 6 52 57 40
info.bcn@thk.de

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.

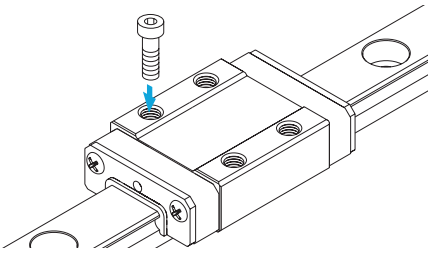
Thermal Characteristics of LM Rail and LM Block Materials

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

Models RSR-M1, RSR-M1K, M1V

Specification Table⇒B-198

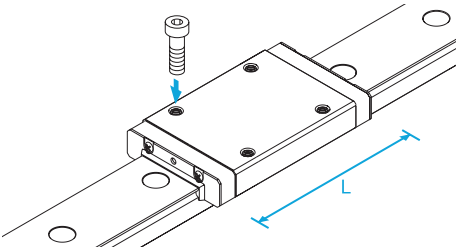
This model is a standard type.



Model RSR-M1N

Specification Table⇒B-198

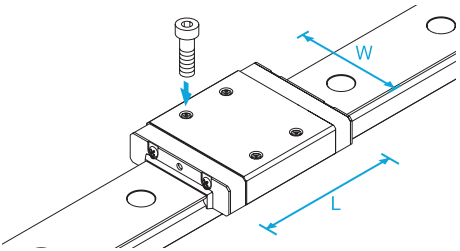
It has a longer overall LM block length (L) and a greater rated load than standard types.



Models RSR-M1W, M1WV

Specification Table⇒B-200

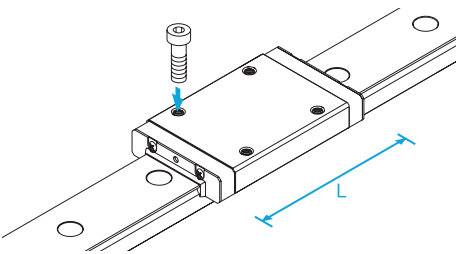
These models have greater overall LM block lengths (L), broader widths (W) and greater rated loads and permissible moments than standard types.



Model RSR-M1WN

Specification Table⇒B-200

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.



Rated Loads in All Directions

Model RSR-M1 is capable of receiving loads in four directions: radial, reverse radial and lateral directions.
The basic load ratings of models RSR9M1/M1W are uniform in the four directions (radial, reverse radial and lateral directions), and their actual values are provided in the specification table for RSR-M1.
The basic load ratings of models RSR12M1 to 20M1 indicate the values in the radial direction in Fig.1, and their actual values are provided in the specification table for RSR-M1. The values in the reverse radial and lateral directions are obtained from Table1 below.

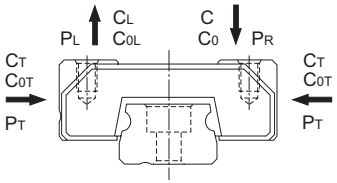


Fig.1

Table1 Basic Load Ratings of Models RSR12M1 to 20M1 in All Directions

Direction	Basic dynamic load rating	Basic static load rating
Radial direction	C	C_0
Reverse radial direction	C_L=0.78C	C_{0L}=0.70C_0
Lateral directions	C_T=0.78C	C_{0T}=0.71C_0

Equivalent Load

When the LM block of models RSR9M1/M1W receives loads in all four directions simultaneously, the equivalent load is obtained from the equation below.

$$P_E = P_R\ (P_L) + P_T$$

P_E : Equivalent load (N)
: Radial direction
: Reverse radial direction
: Lateral direction
P_R : Radial load (N)
P_L : Reverse radial load (N)
P_T : Lateral load (N)

When the LM block of models RSR12M1 to 20M1 receives loads in the radial and lateral directions, or the reverse radial and lateral directions, simultaneously, the equivalent load is obtained from the equation below.

$$P_E = X \cdot P_R\ (P_L) + Y \cdot P_T$$

P_E : Equivalent load (N)
: Radial direction
: Reverse radial direction
: Lateral direction
P_R : Radial load (N)
P_L : Reverse radial load (N)
P_T : Lateral load (N)
X, Y : Equivalent factor
(see Table2 and Table3)

Table2 Equivalent Factor of Models RSR12M1 to 20M1(when radial and lateral loads are applied)

P_E	X	Y
Equivalent load in the radial direction	1	0.83
Equivalent load in lateral direction	1.2	1

Table3 Equivalent Factor of Models RSR12M1 to 20M1 (when reverse radial and lateral loads are applied)

P_E	X	Y
Equivalent load in reverse radial direction	1	0.99
Equivalent load in lateral direction	1.01	1

Service Life

For details,see A-100.

Radial Clearance Standard

For details,see A-114.

Accuracy Standards

For details,see A-126.

Shoulder Height of the Mounting Base and the Corner Radius

For details,see A-332.

Error Allowance in the Parallelism between Two Rails

For details,see A-334.

Error Allowance in Vertical Level between Two Rails

For details,see A-337.