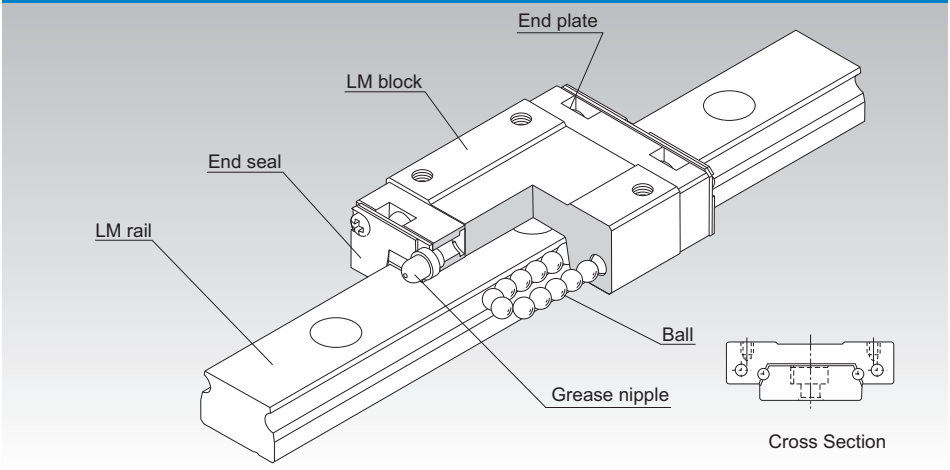
RSR

Miniature LM Guide Model RSR



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Structure and Features

Balls roll in two rows of raceways precision-ground on an LM rail and an LM block, and end plates incorporated in the LM block allow the balls to circulate.
Since balls circulate in a compact structure, the LM Block is able to provide infinite linear motion and thus infinite stroke.
The LM block is designed to have high rigidity in a limited space, and in combination with large-diameter balls, it demonstrates high rigidity in all directions.

Super Compact

This model is a highly reliable LM System because it is not susceptible to cage displacement, a problem common in cross-roller guides, ball slides, and other products with finite stroke.

Capable of Receiving a Load in Any Direction

This model is capable of receiving loads in all directions, and a single-rail guide can adequately operate under a small moment load. Model RSR-W, in particular, has a greater number of load-bearing balls and a broader LM rail to increase its rigidity against a moment. This allows it to achieve linear motion with a more compact structure and greater durability than a pair of parallel linear bushes.

Corrosion Prevention

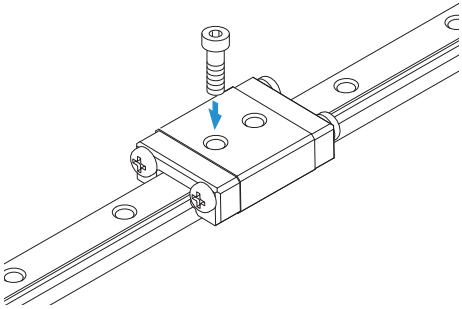
The LM rail, LM block, and balls are made of stainless steel, which has high corrosion resistance.

Types and Features

Model RSR-M

Dimensional Table⇒A1-274

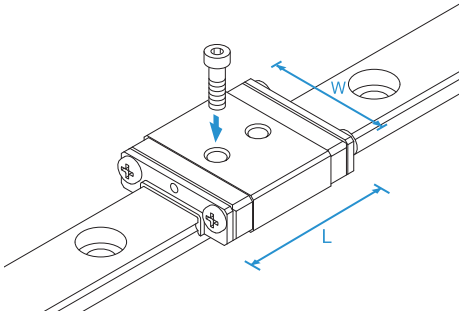
This model is the standard type.



Model RSR-WM

Dimensional Table⇒A1-274

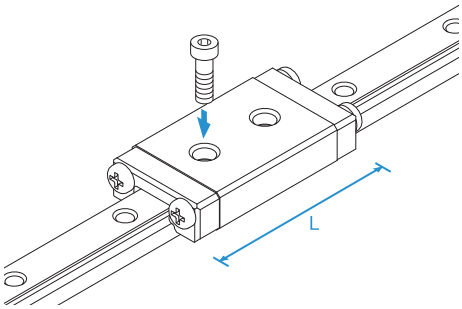
This model has a broader width (W), greater overall length (L), and greater load rating and permissible moment than the Model RSR-M.



Model RSR-N

Dimensional Table⇒A1-274

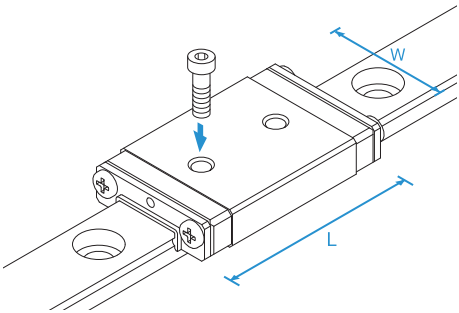
This model has a longer overall LM block length (L) and a greater load rating.



Model RSR-WN

Dimensional Table⇒A1-274

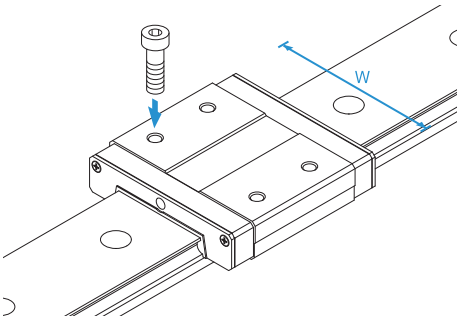
This model has a broader width (W), greater overall length (L), and greater load rating and permissible moment than the Model RSR-N.



Model RSR14WVM

Dimensional Table⇒A1-274

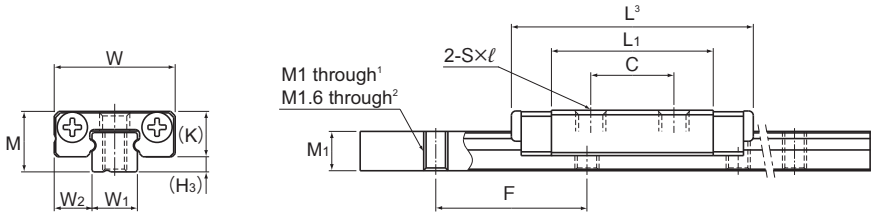
This model has a greater overall LM block width (W) and a greater permissible moment.



Accuracy of the Mounting Surface

Model RSR uses Gothic-arch grooves in the ball raceways. When two rails of RSR are used in parallel, any error in accuracy of the mounting surface may increase rolling resistance and negatively affect the smooth motion of the guide. For specific accuracy of the mounting surface, see Flatness of the Mounting Surface on **A1-500**.

Models RSR-M, RSR-N, RSR-WM, RSR-WN, and RSR-WVM



Models RSR2N and RSR3M/N

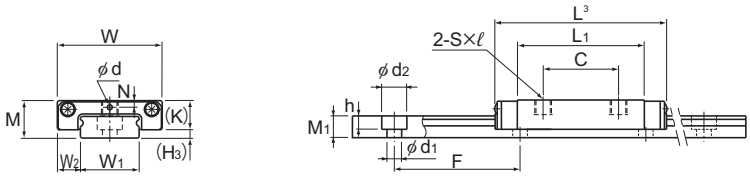
Model No.	Outer dimensions			LM block dimensions										H_3
	Height	Width	Length[3]									Lubrication hole	Grease nipple	
	M	W	L	B	C	S×ℓ	L_1	T	K	N	E	d		
RSR 2N RSR 2WN	3.2 4	6 10	12.4 16.7	—	4 6.5	M1.4 through M2 through	8.84 11.9	—	2.5 3	—	—	—	—	0.7 1
RSR 3M RSR 3N	4	8	12 16	—	3.5 5.5	M1.6 through M2 through	6.7 10.7	—	3	—	—	—	—	1
RSR 3WM RSR 3WN	4.5	12	14.9 19.9	—	4.5 8	M2 through	8.5 13.3	—	3.5	0.8	—	0.8	—	1
RSR 14WVM	15	50	50	35	18	M4×4.5	34.3	6	11.5	3	4	—	PB107	3.5

Model number coding

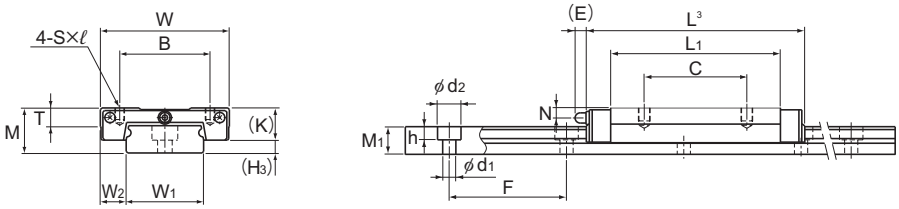
2 RSR3W M UU C1 +70L P M -II

- **2**: No. of LM blocks used on the same rail
- **RSR3W M**: Model number
- **UU**: Contamination protection accessory symbol
- **C1**: Radial clearance symbol — Normal (No symbol), Light preload (C1)
- **+70L**: LM rail length (in mm)
- **P**: Accuracy symbol — Normal grade (No Symbol)/Precision grade (P)
- **M**: Stainless steel LM rail
- **-II**: Symbol for No. of rails used on the same plane

Notes: 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).
No symbol for single LM block. See **A1-547** for contamination protection accessories. See **A1-74** for radial clearance symbol. See **A1-85** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.



Models RSR2WN and RSR3WM/WN



Model RSR14WVM

Unit: mm

	LM rail dimensions						Basic load rating[5]		Static permissible moment N·m [6]					Mass	
	Width		Height	Pitch		Length[4]	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	2 blocks	1 block	2 blocks	1 block	kg	kg/m
	2 0 4 −0.03	2 3	2 2.6	8 10	See figure above[1] 1.8×2.8×0.75	200	0.214 0.395	0.384 0.682	0.564 1.336	2.994 7.32	0.564 1.336	2.994 7.32	0.442 1.501	0.0008 0.0020	0.029 0.075
	3 0 −0.02	2.5	2.6	10	See figure above[2]	220	0.18 0.3	0.27 0.44	0.293 0.726	2.11 4.33	0.293 0.726	2.11 4.33	0.45 0.73	0.0011 0.0016	0.055
	6 0 −0.02	3	2.6	15	2.4×4×1.5	335	0.25 0.39	0.47 0.75	0.668 1.57	4.44 9.06	0.668 1.57	4.44 90.6	1.48 2.36	0.002 0.003	0.12
	30 0 −0.05	10	9	40	4.5×7.5×5.3	1800	6.01	9.08	43.2	233	38.2	208	110	0.096	2

[3] Length L shown in the table is the length with the contamination protection accessories (code: UU).
[4] The maximum length indicates the standard maximum length of an LM rail. (See **A1-276**.)
[5] The basic load rating is for a load in the radial direction.
Use **A1-61** on Table 7 to calculate the load rating for loads in the reverse-radial direction or lateral direction.
[6] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

Notes: Since stainless steel is used in the LM block, LM rail, and balls, these models are highly resistant to corrosion and environment.
Please be aware that the balls will fall out of the LM block if it is removed from the LM rail.
Models RSR2N/WN and RSR3M/N do not have lubrication holes. When lubricating them, apply a lubricant directly to the LM rail raceways.
Models RSR2N/WN and RSR3M/N do not have contamination protection seals.

Options⇒A1-507

Standard Lengths and Maximum Lengths of LM Rails

Table 1 shows the standard and maximum lengths of the RSR model rail.

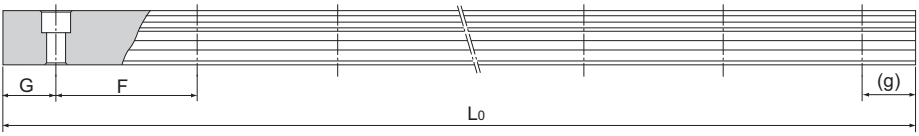


Table 1: Standard Lengths and Maximum Lengths of LM Rails for Model RSR/RSR-W

Unit: mm

Model No.	RSR2N	RSR2WN	RSR3	RSR3W	RSR14W
LM rail standard lengths (L_o)	32 40 56 80 104	40 60 70 80 100 180	30 40 60 80 100	40 55 70	110 150 190 230 270 310 430 550 670 790
Standard pitch F	8	10	10	15	40
G, g	4	5	5	5	15
Max length	200	200	220	335	1800

Notes: The maximum length varies with accuracy grades. Contact THK for details.
The LM rail mounting hole of model RSR3 is an M1.6 through hole.

Preventing the LM Block from Falling off of the LM Rail

In model RSR/RSR-W, 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.

Recommended bolt tightening torques when mounting the LM block and LM rail

Recommended bolt tightening torques when mounting the LM block and LM rail of Model RSR are shown in Table 2.

Table 2: Recommended Tightening Torques of Mounting Bolts

Model No.	Recommended tightening torque (N·m)		Notes
	block	rail	Applicable bolt
RSR 2N	0.09	0.03	Flathead machine screw designed for use with precision equipment
RSR 2WN	0.28	0.138	
RSR 3M	0.09	0.09	Austenitic stainless steel hexagonal-socket-head type bolts
RSR 3N	0.19	0.09	
RSR 3WM/WN	0.19	—	
	—	0.25	Cross-recessed head screws for precision equipment (No. 0 pan head screw, class 1)