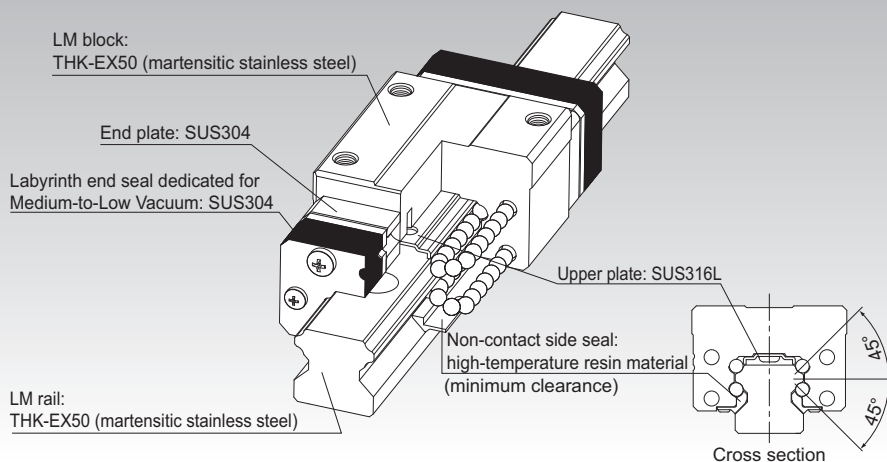


# HSR-M1VV

## LM Guide Medium-to-low Vacuum Type Model HSR-M1VV



**Point of Selection** **A1-10**

**Point of Design** **A1-436**

**Options** **A1-459**

**Model No.** **A1-524**

**Precautions on Use** **A1-532**

**Accessories for Lubrication** **A24-1**

**Mounting Procedure and Maintenance** **B1-89**

Equivalent moment factor **A1-43**

Rated Loads in All Directions **A1-58**

Equivalent factor in each direction **A1-60**

Radial Clearance **A1-71**

Accuracy Standards **A1-76**

Shoulder Height of the Mounting Base and the Corner Radius **A1-447**

Permissible Error of the Mounting Surface **A1-452**

Flatness of the Mounting Surface **A1-454**

Dimensions of Each Model with an Option Attached **A1-472**

## Structure and Features

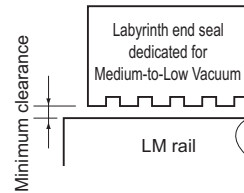
### [Features]

- Operable in various environments at pressure between atmospheric pressure and vacuum ( $10^{-3}$  [Pa]).
- Capable of withstanding baking temperature up to  $200^{\circ}\text{C}^*$
- Use of a newly developed labyrinth end seal dedicated for Medium-to-Low Vacuum increases grease retention and allows extended use in vacuum.
- Use of grease designed for Medium-to-Low Vacuum achieves a stable rolling resistance.

\* If the baking temperature exceeds  $100^{\circ}\text{C}$ , multiply the basic load rating with the temperature coefficient.

### Structure of the labyrinth end seal dedicated for Medium-to-Low Vacuum

The labyrinth end seal dedicated for Medium-to-Low Vacuum forms a multi-stage space as shown in the figure on the right to minimize the pressure difference between adjacent stages. This reduces the out-flow velocity of the oil inside the LM block to a minimum. In addition, the seal will not affect the rolling resistance since it does not contact the LM rail.

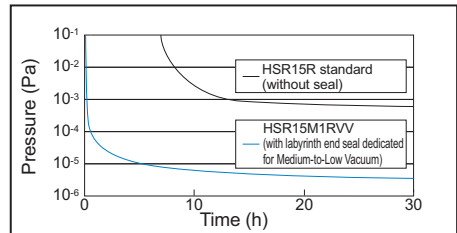


### [Achievable vacuum level]

The LM Guide for Medium-to-Low Vacuum demonstrates an excellent achievable vacuum level.

[Test conditions] Temperature:  $25^{\circ}\text{C}$  ( $\pm 5^{\circ}\text{C}$ )

	HSR15M1RVV	HSR15R (for reference)
Grease	Grease for Medium-to-Low Vacuum	AFB-LF Grease
Seal	Labyrinth end seal dedicated for Medium-to-Low Vacuum	None
Endplate	Stainless steel	Resin



Achievable vacuum level

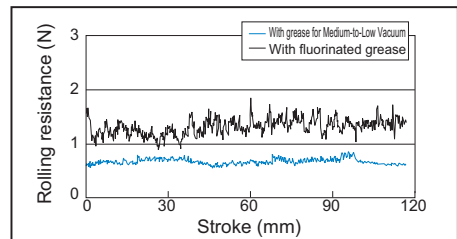
### [Rolling resistance]

The grease used in the LM Guide for Medium-to-Low Vacuum has a smaller rolling resistance than conventional fluorine grease and ensures stable rolling motion.

Specimen: HSR15M1RVV

Temperature:  $25^{\circ}\text{C}$  ( $\pm 5^{\circ}\text{C}$ )

Pressure: atmospheric pressure



Rolling resistance fluctuation

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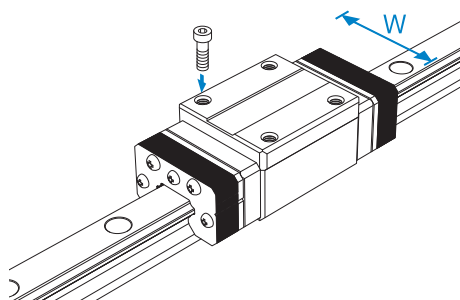
## Types and Features

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### Model HSR-M1RVV

With this type, the LM block has a smaller width (W) and tapped holes. Used in places where the space for table width is limited.

Specification Table⇒ **A1-382**



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## Precautions on Design

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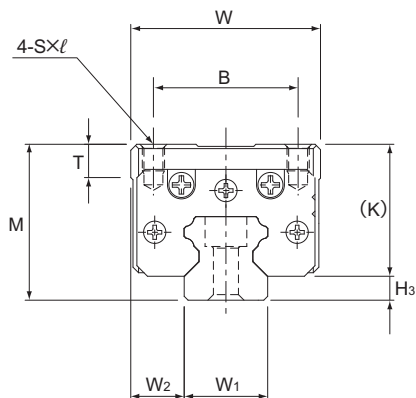
If a large moment is applied to a system consisting of one block on one axis, the labyrinth end seal may contact the rail, and it may affect the motion.

If a moment is applied, we recommend using two axes with two blocks per axis.

Contact THK for details.



# Model HSR-M1VV



Model No.	Outer dimensions			LM block dimensions						
	Height	Width	Length							
	M	W	L	B	C	S×ℓ	L <sub>1</sub>	T	K	H <sub>3</sub>
HSR15M1R-VV	28	34	75	26	26	M4×5	38.8	6	23.7	4.3

## Model number coding

**HSR15M1R 1 VV C1 +400L P -II**

Model No.

Radial clearance  
symbol<sup>(\*1)</sup>

Labyrinth seal  
symbol<sup>(\*2)</sup>

Accuracy  
symbol<sup>(\*3)</sup>

Symbol for  
No. of rails used on the  
same plane<sup>(\*4)</sup>

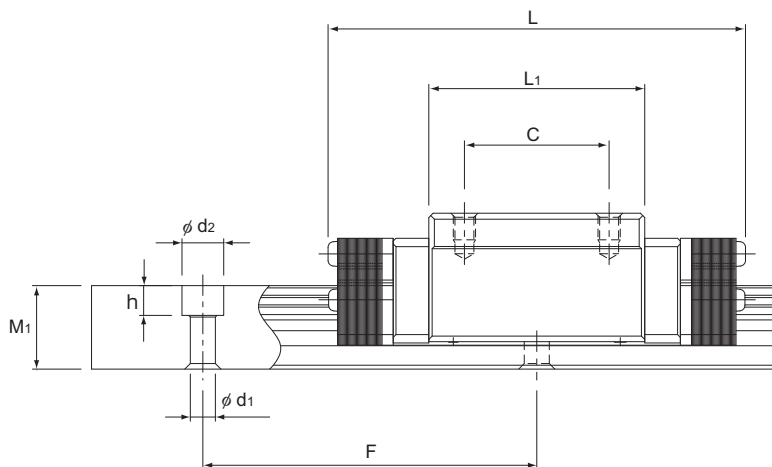
No. of LM blocks  
used on the same rail

LM rail length  
(in mm)

(\*1) See **A1-71**. (\*2) See **A1-379**. (\*3) See **A1-76**. (\*4) See **A1-13**.

Note1) The radial clearance, maximum LM rail length and accuracy class are equal to that of model HSR.

Note2) With this model, a single-rail unit constitutes one set (i.e., the required number of sets when 2 rails are used in parallel is 2).



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	kg	kg/m
15	9.5	15	60	4.5 × 7.5 × 5.3	1240	8.33	13.5	0.0805	0.457	0.0805	0.457	0.0844	0.27	1.5

Note) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See **A1-384**.)

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

If a large moment is applied to a system consisting of one block on one axis, the labyrinth end seal may contact the rail, and it may affect the motion.

If a moment is applied, we recommend using two axes with two blocks per axis.

Contact THK for details.

## Standard Length and Maximum Length of the LM Rail

Table1 shows the standard lengths and the maximum lengths of model HSR-M1VV 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.

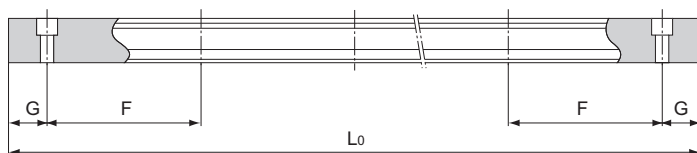


Table1 Standard Length and Maximum Length of the LM Rail for Model HSR-M1VV

Unit: mm

Model No.	HSR15M1R-VV
LM rail standard length ( $L_0$ )	160
	220
	280
	340
	400
	460
	520
	580
	640
	700
	760
	820
	940
	1000
1060	
1120	
1180	
1240	
Standard pitch F	60
G	20
Max length	1240

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.

