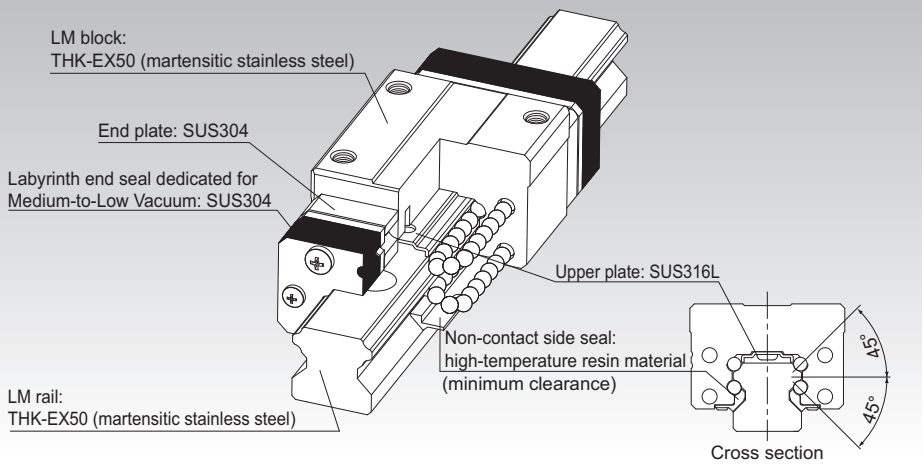
HSR-M1VV

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



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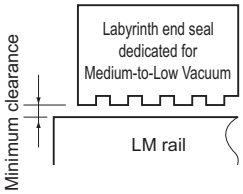
Structure and Features

[Features]

- Operable in various environments at pressure between atmospheric pressure and vacuum (10^{-3} [Pa]).
- Capable of withstanding baking temperature up to 200℃*
- 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°C, multiply the basic load rating with the temperature coefficient.

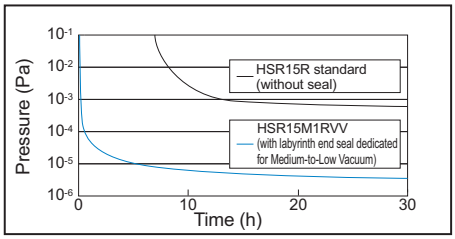
Structure of the labyrinth end seal dedicated for Medium-to-Low Vacuum
The labyrinth end seal dedicated for Medium-to-Low Vacuum forms a multi-stage space as shown in the figure on the right to minimize the pressure difference between adjacent stages. This reduces the out-flow velocity of the oil inside 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.

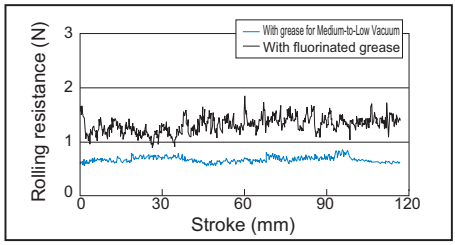
[Test conditions] Temperature: 25℃ (±5℃)

	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℃ (±5℃)
Pressure: atmospheric pressure



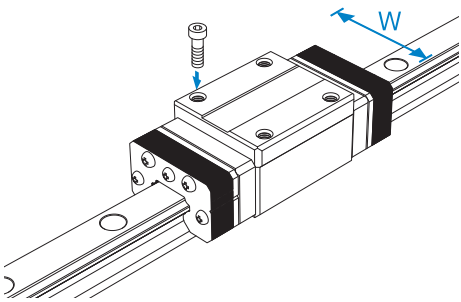
Rolling resistance fluctuation

Types and Features

Model HSR-M1RVV

Specification Table⇒A1-380

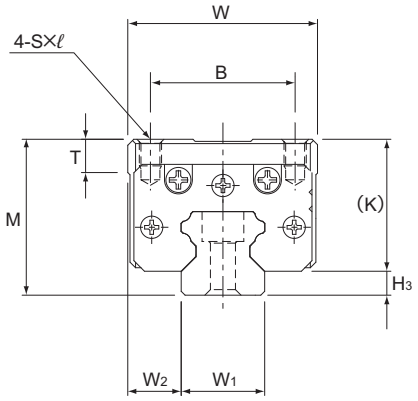
With this type, the LM block has a smaller width (W) and tapped holes. Used in places where the space for table width is limited.



Precautions on Design

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_1	T	K	H_3
HSR15M1R-VV	28	34	75	26	26	M4×5	38.8	6	23.7	4.3

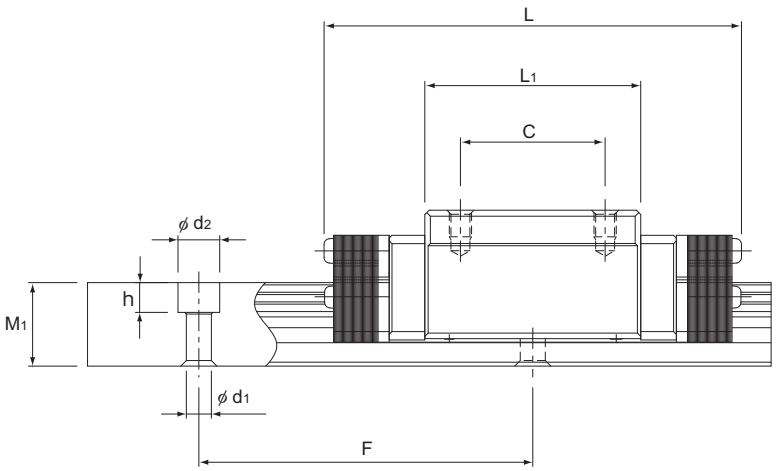
Model number coding

HSR15M1R 1 VV C1 +400L P -II

- HSR15M1R: Model No.
- 1: No. of LM blocks used on the same rail
- VV: Labyrinth seal symbol (*2)
- C1: Radial clearance symbol (*1)
- +400L: LM rail length (in mm)
- P: Accuracy symbol (*3)
- -II: Symbol for No. of rails used on the same plane (*4)

(*1) See A1-71. (*2) See A1-377. (*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_0	M_A		M_B		M_C	LM block	LM rail
	W_1 ±0.05	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
	15	9.5	15	60	4.5×7.5×5.3	1240	10.9	15.7	0.0945	0.527	0.0945	0.527	0.0998	0.27	1.5

Note) The maximum length under "Length*" indicates the standard maximum length of an LM rail. (See **A1-382**.)
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.

Options⇒A1-457

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.

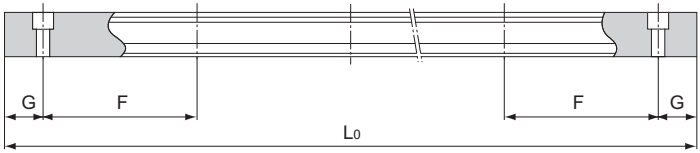


Table1 Standard Length and Maximum Length of the LM Rail for Model HSR-M1VV

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.