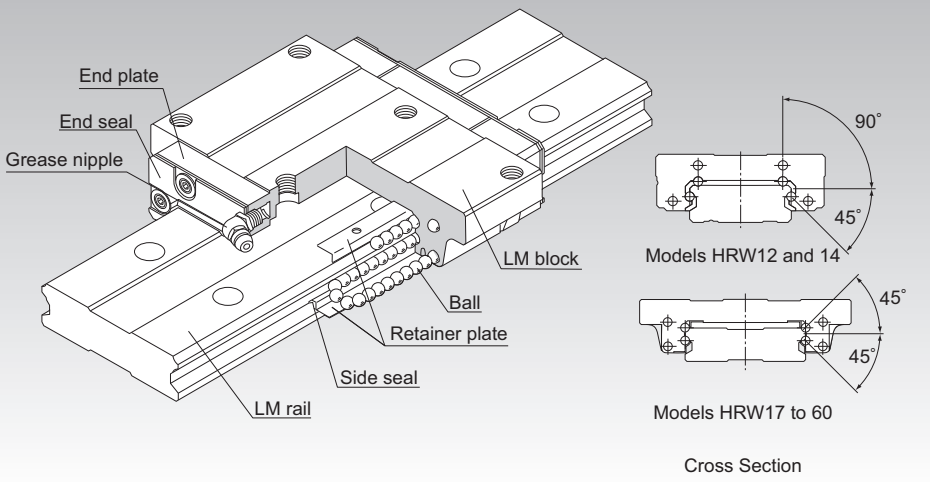
HRW

Wide-Rail LM Guide Model HRW



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Structure and Features

Balls roll in four 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 retainer plates hold the balls, they will not fall out even if the LM block is removed from the LM rail (except models HRW 12 and 14LR).
Each row of balls is placed at a contact angle of 45° so that the load ratings applied to the LM block are uniform in the four directions (radial, reverse-radial, and lateral directions), enabling the LM Guide to be used in all orientations. In addition, the LM block can receive a well-balanced preload, increasing the rigidity in the four directions while maintaining a constantly low friction coefficient. The LM rail is wide and has a low center of gravity with a low overall height, so it can be used as a single axis in locations where space is limited or where high rigidity is required due to moment loads.

Compact with Large Load Capacity

Because of the large number of load-bearing balls, this model is highly rigid in all directions. The LM rail is wide and sufficient to receive a moment load even in a single rail configuration.
Additionally, since the secondary cross-sectional moment of inertia of the LM rail is large, the rigidity in the lateral directions is also high. Accordingly, it does not need reinforcement such as a side support.

Self-Adjustment Capability

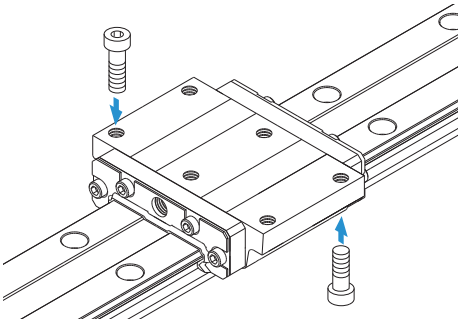
The self-adjustment capability of the front-to-front configuration of THK's unique circular-arc grooves (DF set) enables mounting error to be absorbed even under a preload, thus achieving highly accurate and smooth linear motion.

Types and Features

Model HRW-CA

Dimensional Table⇒A1-252

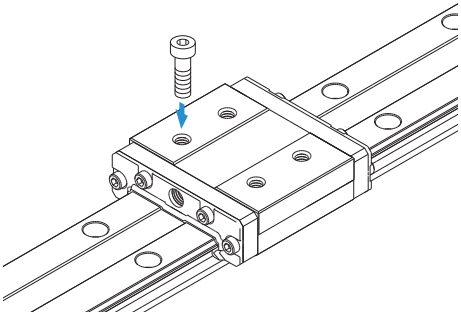
The flange of the LM block has tapped holes.
It can be mounted from the top or the bottom.



Model HRW-CR

Dimensional Table⇒A1-254

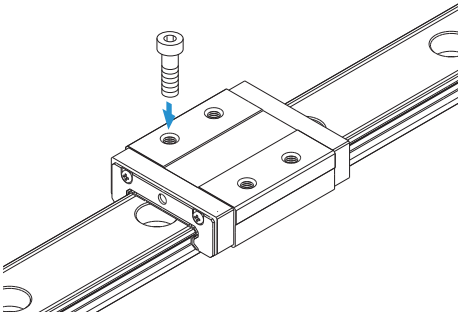
Models HRW17/21CR have four tapped holes in the LM block. Models HRW27/35/50CR have six tapped holes in the LM block.



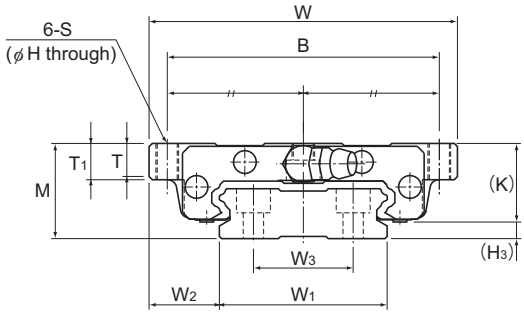
Miniature Model HRW-LRM

Dimensional Table⇒A1-254

The LM block has tapped holes.



Models HRW-CA and HRW-CAM



Model No.	Outer dimensions			LM block dimensions											Grease nipple	H_3
	Height M	Width W	Length[1] L	B	C	H	S	L_1	T	T_1	K	N	E			
HRW 17CA HRW 17CAM	17	60	50.8	53	26	3.3	M4	33.6	5.5	6	14.5	4	2		PB107	2.5
HRW 21CA HRW 21CAM	21	68	58.8	60	29	4.4	M5	40	7.3	8	18	4.5	12		B-M6F	3
HRW 27CA HRW 27CAM	27	80	72.8	70	40	5.3	M6	51.8	9.5	10	24	6	12		B-M6F	3
HRW 35CA HRW 35CAM	35	120	106.6	107	60	6.8	M8	77.6	13	14	31	8	12		B-M6F	4
HRW 50CA	50	162	140.5	144	80	8.6	M10	103.5	16.5	18	46.6	14	16		B-PT1/8	3.4
HRW 60CA	60	200	158.9	180	80	10.5	M12	117.5	23.5	25	53.5	15	16		B-PT1/8	6.5

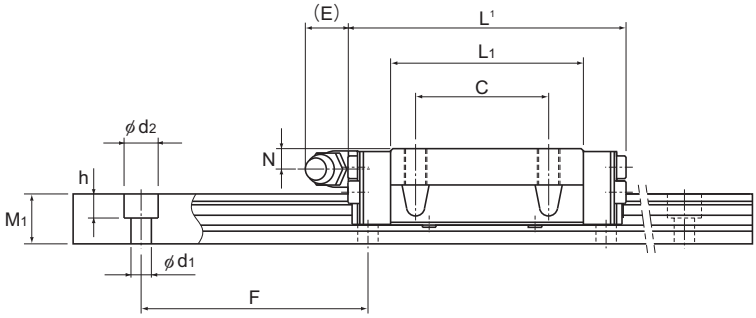
Model number coding

HRW35 CA 2 UU C1 M +1000L P T M

- HRW35: Model number
- CA: Type of LM block
- 2: No. of LM blocks used on the same rail
- UU: Contamination protection accessory symbol
- C1: Radial clearance symbol
  - Normal (No symbol)
  - Light preload (C1)
  - Medium preload (C0)
- M: Stainless steel LM block
- +1000L: LM rail length (in mm)
- P: Accuracy symbol
  - Normal grade (No Symbol)/High accuracy grade (H)
  - Precision grade (P)/Super precision grade (SP)
  - Ultra precision grade (UP)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail

Notes: See contamination protection accessories on **A1-547**. See **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol.

Download data from the THK Online Services website. https://www.thk.com/



Unit: mm

	LM rail dimensions							Basic load rating		Static permissible moment kN·m[3]					Mass	
	Width			Height	Pitch		Length[2]	C	C_0	M_A		M_B		M_C	LM block	LM rail
	W_1 ±0.05	W_2	W_3	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
	33	13.5	18	9	40	4.5×7.5×5.3	1900 (800)	5.53	9.1	0.0464	0.272	0.0464	0.272	0.144	0.15	2.1
	37	15.5	22	11	50	4.5×7.5×5.3	3000 (1000)	8.02	12.9	0.0784	0.445	0.0784	0.445	0.219	0.25	2.9
	42	19	24	15	60	4.5×7.5×5.3	3000 (1200)	14.2	21.6	0.166	0.923	0.166	0.923	0.423	0.5	4.3
	69	25.5	40	19	80	7×11×9	3000 (2120)	33.8	48.6	0.559	3.03	0.559	3.03	1.59	1.4	9.9
	90	36	60	24	80	9×14×12	3000	62.4	86.3	1.32	7.08	1.32	7.08	3.67	4	14.6
	120	40	80	31	105	11×17.5×14	3000	80.3	109	1.88	10.1	1.88	10.1	6.17	5.7	27.8

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS. If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See A1-521 or A1-543)

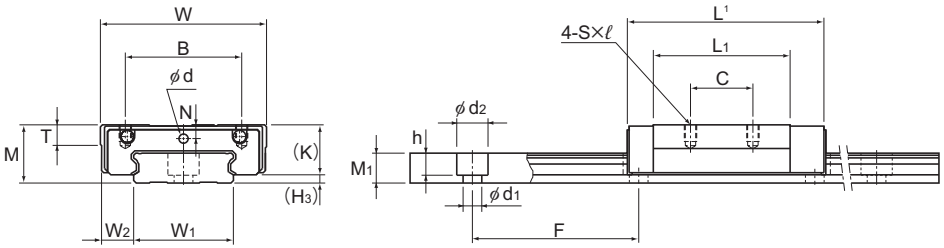
[2] The maximum length indicates the standard maximum length of an LM rail. (See A1-256.)

[3] 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: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel. The stainless steel provides excellent corrosion and environmental resistance.

Options⇒A1-507

Models HRW-CR, HRW-CRM, and HRW-LRM



Models HRW12 and 14LRM

Model No.	Outer dimensions			LM block dimensions										
	Height	Width	Length[1]									Lubrication hole	Grease nipple	
	M	W	L	B	C	S×ℓ	L_1	T	K	N	E	d		H_3
HRW 12LRM	12	30	37	21	12	M3×3.5	27	4	10	2.8	—	2.2	—	2
HRW 14LRM	14	40	45.5	28	15	M3×4	32.9	5	12	3.3	—	2.2	—	2
HRW 17CR HRW 17CRM	17	50	50.8	29	15	M4×5	33.6	6	14.5	4	2	—	PB107	2.5
HRW 21CR HRW 21CRM	21	54	58.8	31	19	M5×6	40	8	18	4.5	12	—	B-M6F	3
HRW 27CR HRW 27CRM	27	62	72.8	46	32	M6×6	51.8	10	24	6	12	—	B-M6F	3
HRW 35CR HRW 35CRM	35	100	106.6	76	50	M8×8	77.6	14	31	8	12	—	B-M6F	4
HRW 50 CR	50	130	140.5	100	65	M10×15	103.5	18	46.6	14	16	—	B-PT1/8	3.4

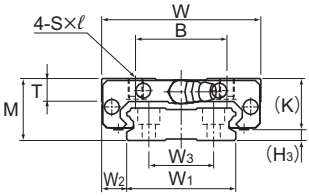
Model number coding

HRW27 CR 2 UU C1 M +820L P T M

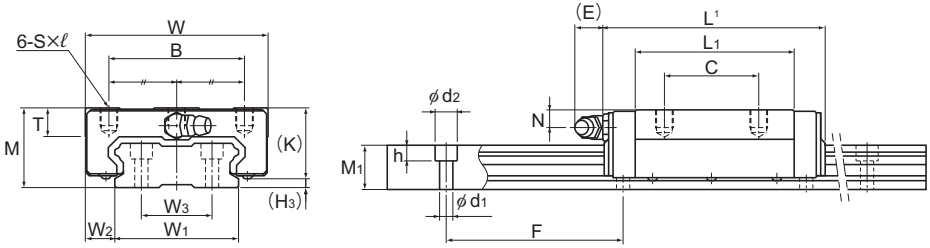
- HRW27: Model number
- CR: Type of LM block
- 2: No. of LM blocks used on the same rail
- UU: Contamination protection accessory symbol
- C1: Radial clearance symbol — Normal (No symbol), Light preload (C1), Medium preload (C0)
- M: Stainless steel LM block
- +820L: LM rail length (in mm)
- P: Symbol for LM rail jointed use
- T: Accuracy symbol — Normal grade (No Symbol)/High accuracy grade (H), Precision grade (P)/Super precision grade (SP), Ultra precision grade (UP)
- M: Stainless steel LM rail

Notes: See contamination protection accessories on **A1-547**. See **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol.

Download data from the THK Online Services website. https://www.thk.com/



Models HRW17 and 21CR/CRM



Models HRW27, 35CR/CRM, and HRW50CR

Unit: mm

	LM rail dimensions							Basic load rating[3]		Static permissible moment kN·m [4]					Mass	
	Width			Height	Pitch		Length[2]	C	C_0	M_A		M_B		M_C	LM block	LM rail
	W_1 ±0.05	W_2	W_3	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
	18	6	—	6.5	40	4.5×8×4.5	(1000)	3.29	7.16	0.0262	0.138	0.013	0.069	0.051	0.045	0.79
	24	8	—	7.2	40	4.5×7.5×5.3	(1430)	5.38	11.4	0.0499	0.273	0.025	0.137	0.112	0.08	1.2
	33	8.5	18	9	40	4.5×7.5×5.3	1900 (800)	5.53	9.1	0.0464	0.272	0.0464	0.272	0.144	0.12	2.1
	37	8.5	22	11	50	4.5×7.5×5.3	3000 (1000)	8.02	12.9	0.0784	0.445	0.0784	0.445	0.219	0.19	2.9
	42	10	24	15	60	4.5×7.5×5.3	3000 (1200)	14.2	21.6	0.166	0.923	0.166	0.923	0.423	0.37	4.3
	69	15.5	40	19	80	7×11×9	3000 (2120)	33.8	48.6	0.559	3.03	0.559	3.03	1.59	1.2	9.9
	90	20	60	24	80	9×14×12	3000	62.4	86.3	1.32	7.08	1.32	7.08	3.67	3.2	14.6

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

[2] The maximum length indicates the standard maximum length of an LM rail. (See **A1-256**.)

[3] 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.

[4] 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: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.
The stainless steel provides excellent corrosion and environmental resistance.

Options⇒A1-507

Standard Lengths and Maximum Lengths of LM Rails

Table 1 shows the standard and maximum lengths of the HRW model rail. If a rail length longer than the listed max length is required, rails may be jointed to meet the overall length. Contact THK for details.
For special rail lengths, it is recommended to use a value corresponding to the G and g dimensions from the table. As the G and g dimensions increase, this portion becomes less stable, and the accuracy performance is severely impacted.

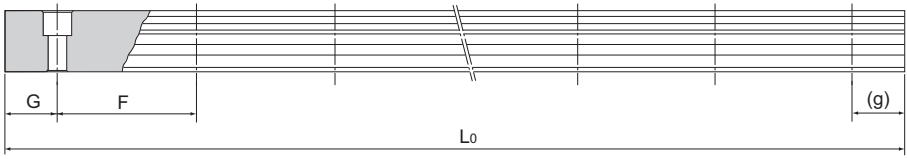


Table 1: Standard Lengths and Maximum Lengths of LM Rails for Model HRW

Unit: mm

Model No.	HRW 12	HRW 14	HRW 17	HRW 21	HRW 27	HRW 35	HRW 50	HRW 60
LM rail standard lengths (L_0)	70 110 150 190 230 270 310 390 470	70 110 150 190 230 270 310 390 470 550 670	110 190 310 470 550	130 230 380 480 580 780	160 280 340 460 640 820	280 440 760 1000 1240 1560	280 440 760 1000 1240 1640 2040	570 885 1200 1620 2040 2460
Standard pitch F	40	40	40	50	60	80	80	105
G, g	15	15	15	15	20	20	20	22.5
Max length	(1000)	(1430)	1900 (800)	3000 (1000)	3000 (1200)	3000 (2120)	3000	3000

Notes: The maximum length varies with accuracy grades. Contact THK for details.
If jointed rails are not allowed and a greater length than the maximum values above is required, contact THK.
The figures in the parentheses indicate the maximum lengths of stainless steel made models.

Preventing the LM Block from Falling off of the LM Rail

In miniature model HRW, 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.