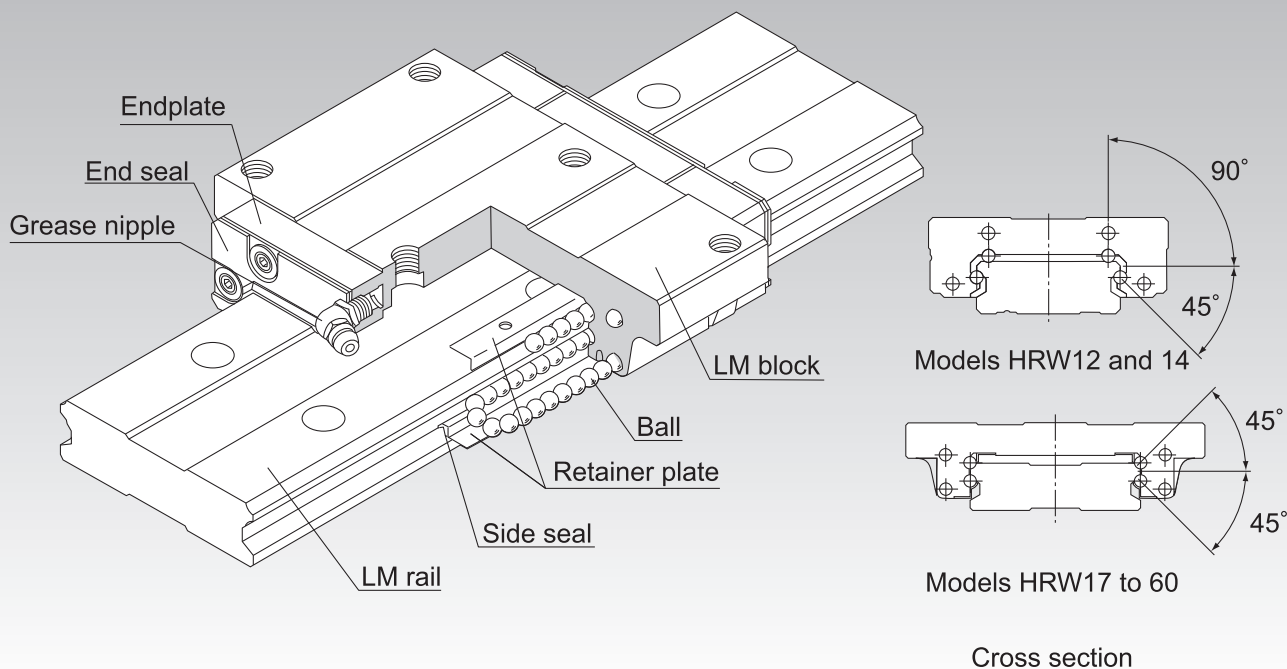


HRW

LM Guide Wide Rail Model HRW



Point of Selection **A1-10**

Point of Design **A1-460**

Options **A1-485**

Model No. **A1-551**

Precautions on Use **A1-557**

Accessories for Lubrication **A24-1**

Mounting Procedure and Maintenance **B1-89**

Equivalent Moment Factor **A1-43**

Rated Loads in All Directions **A1-60**

Equivalent Factor in Each Direction **A1-62**

Radial Clearance **A1-73**

Accuracy Standards **A1-78**

Shoulder Height of the Mounting Base and the Corner Radius **A1-473**

Reference Error Tolerance for the Mounting Surface **A1-477**

Dimensions of Each Model with Options Attached **A1-499**

Structure and Features

Balls roll in four 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.

Since retainer plates hold the balls, they do not fall off even if the LM rail is pulled out. (except models HRW 12 and 14LR).

Each row of balls is placed at a contact angle of 45° so that the rated loads 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 four directions while maintaining a constant, low friction coefficient. In a low center of gravity structure with a large rail width and a low overall height, this model can be used in places where space saving is required or high rigidity against a moment is required even in a single axis configuration.

[Compact, Heavy Load]

Since the number of effective balls is large, this model is highly rigid in all directions. It can adequately receive a moment even in a single rail configuration.

Additionally, since the second moment of inertia of the 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]

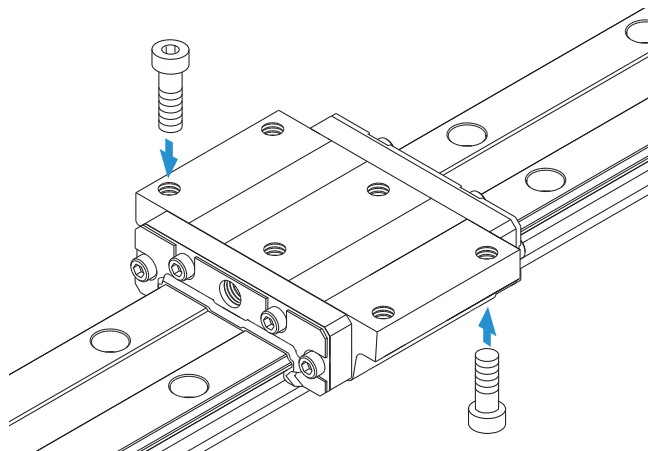
The self-adjustment capability through front-to-front configuration of THK's unique circular-arc grooves (DF set) enables a mounting error to be absorbed even under a preload, thus to achieve highly accurate, smooth straight motion.

Types and Features

Model HRW-CA

Specification Table⇒ **A1-248**

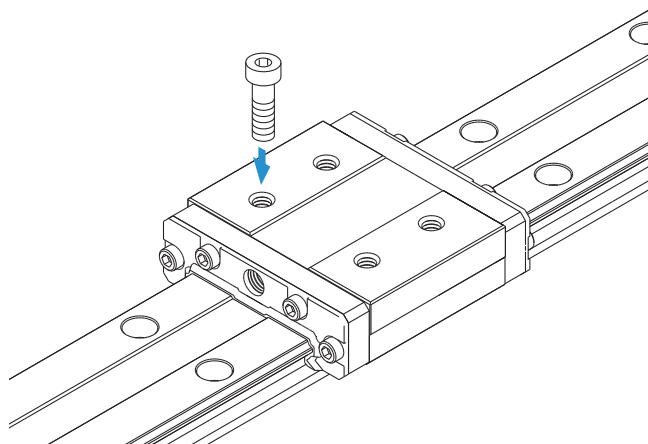
The flange of this LM block has tapped holes.
Can be mounted from the top or the bottom.



Model HRW-CR

Specification Table⇒ **A1-250**

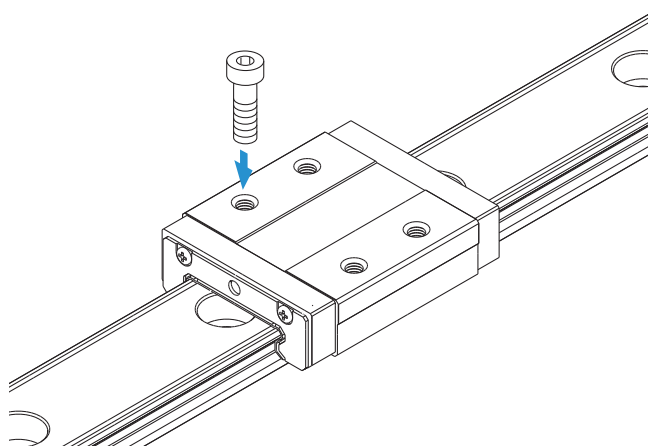
Models HRW17/21CR have four tapped holes in the LM block. Models HRW27/35/50CR have six tapped holes in the LM block.



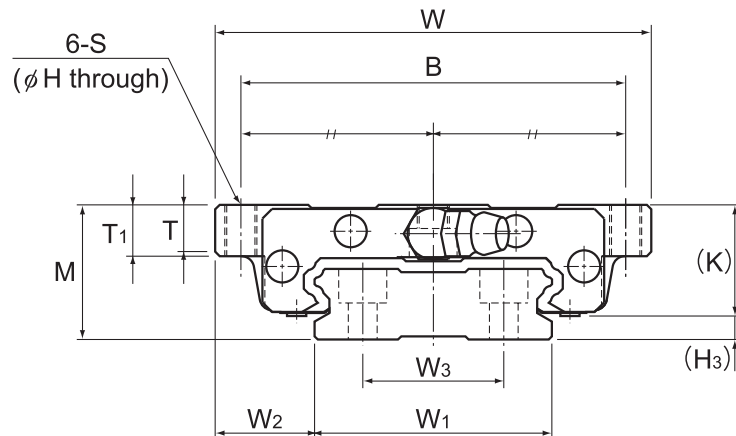
Miniature Type Model HRW-LRM

Specification Table⇒ **A1-250**

The LM block has tapped holes.



Models HRW-CA and HRW-CAM



| Model No. | Outer dimensions | | | LM block dimensions | | | | | | | | | | | Grease nipple | H ₃ |
|-----------------------|------------------|-------|--------|---------------------|----|------|-----|----------------|------|----------------|------|-----|----|---------|----------------|----------------|
| | Height | Width | Length | B | C | H | S | L ₁ | T | T ₁ | K | N | E | | | |
| | M | W | L | B | C | H | S | L ₁ | T | T ₁ | K | N | E | | H ₃ | |
| 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

Model number

Type of LM block

Contamination protection accessory symbol (*1)

Stainless steel LM block

LM rail length (in mm)

Symbol for LM rail jointed use

Stainless steel LM rail

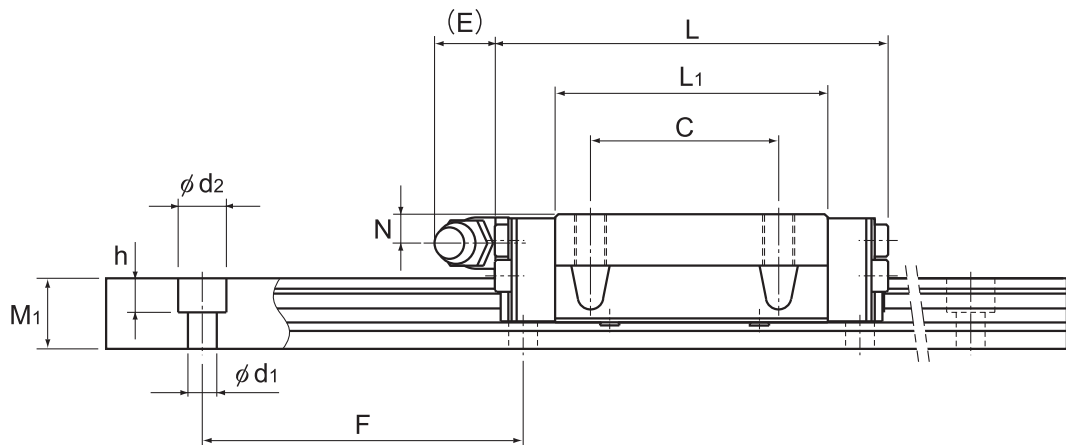
No. of LM blocks used on the same rail

Radial clearance symbol (*2)
Normal (No symbol)
Light preload (C1)
Medium preload (C0)

Accuracy symbol (*3)

Normal grade (No Symbol)/High accuracy grade (H)
Precision grade (P)/Super precision grade (SP)
Ultra precision grade (UP)

(*1) See contamination protection accessory on **A1-524**. (*2) See **A1-73**. (*3) See **A1-78**.



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 | | | | | | W ₃ | M ₁ | F | d ₁ × d ₂ × h | Max | | | kN | kN |
| | 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 |

Note) The maximum length under "Length*" indicates the standard maximum length of an LM rail. (See **A1-252**.)

Static permissible moment* 1 block: the static permissible moment with one LM block

Double blocks: static permissible moment when two LM blocks are in close contact with each other

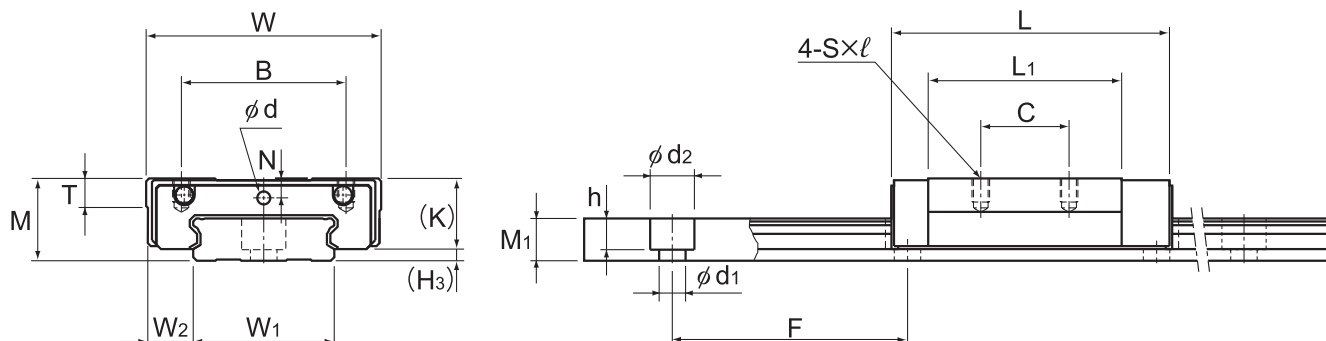
Total block length L : The total block length L shown in the table is the length with the dust proof parts, code UU or SS. If other contamination protection accessories or lubricant equipment are installed, the total block length will increase.

(See **A1-499** or **A1-520**)

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.

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



Models HRW12 and 14LRM

| Model No. | Outer dimensions | | | LM block dimensions | | | | | | | | | | Greasing hole | Grease nipple | H ₃ |
|-----------------------|------------------|-------|--------|---------------------|----|--------|----------------|----|------|-----|----|-----|---------|----------------|---------------|----------------|
| | Height | Width | Length | B | C | S×ℓ | L ₁ | T | K | N | E | d | | | | |
| | 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

Model number

Type of LM block

Contamination protection accessory symbol (*1)

Stainless steel LM block

LM rail length (in mm)

Symbol for LM rail jointed use

Stainless steel LM rail

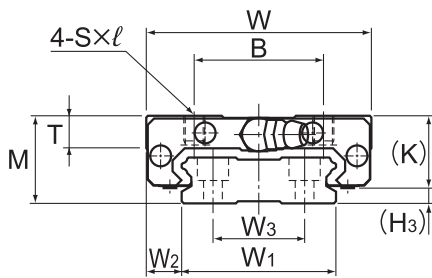
No. of LM blocks used on the same rail

Radial clearance symbol (*2)
Normal (No symbol)
Light preload (C1)
Medium preload (C0)

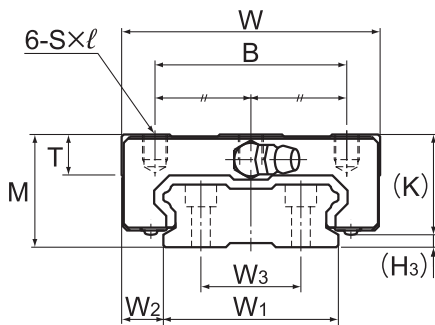
Accuracy symbol (*3)

Normal grade (No Symbol)/High accuracy grade (H)
Precision grade (P)/Super precision grade (SP)
Ultra precision grade (UP)

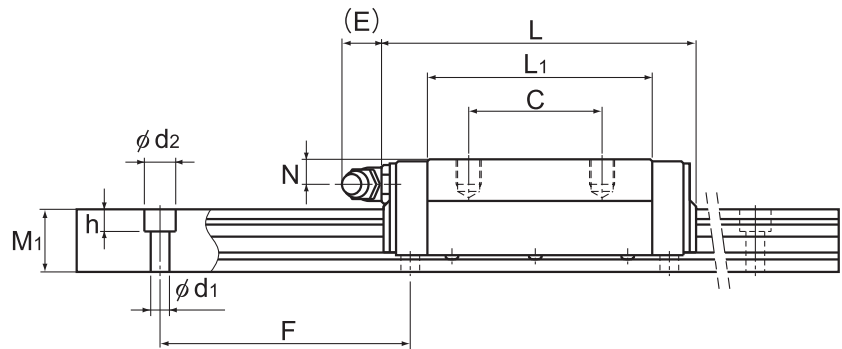
(*1) See contamination protection accessory on **A1-524**. (*2) See **A1-73**. (*3) See **A1-78**.



Models HRW17 and 21CR/CRM



Models HRW27, 35CR/CRM and HRW50CR



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 | W ₃ | M ₁ | F | d ₁ × d ₂ × h | Max | kN | kN | 1 block | | Double 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 |

Note1) The maximum length under "Length*" indicates the standard maximum length of an LM rail. (See **A1-252**.)

Static permissible moment* 1 block: the static permissible moment with one LM block

Double blocks: static permissible moment when two LM blocks are in close contact with each other

Total block length L

: The total block length L shown in the table is the length with the dust proof parts, code UU or SS. If other contamination protection accessories or lubricant equipment are installed, the total block length will increase.

(See **A1-499** or **A1-520**)

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.

Note2) The basic load rating in the dimension table is for a load in the radial direction. Use Table7 on **A1-60** to calculate the load rating for loads in the reverse radial direction or lateral direction for models 12 and 14, as those values are different.

Standard Length and Maximum Length of the LM Rail

Table1 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,g dimension from the table. As the G,g dimension increases, this portion becomes less stable, and the accuracy performance is severely impacted.

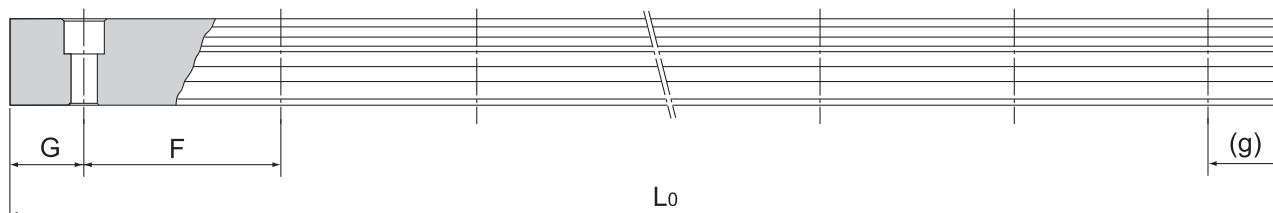


Table1 Standard Length and Maximum Length of the LM Rail for Model HRW

Unit: mm

| Model No. | HRW 12 | HRW 14 | HRW 17 | HRW 21 | HRW 27 | HRW 35 | HRW 50 | HRW 60 |
|---|--------|--------|---------------|----------------|----------------|----------------|--------|--------|
| LM rail standard length (L ₀) | 70 | 70 | 110 | 130 | 160 | 280 | 280 | 570 |
| | 110 | 110 | 190 | 230 | 280 | 440 | 440 | 885 |
| | 150 | 150 | 310 | 380 | 340 | 760 | 760 | 1200 |
| | 190 | 190 | 470 | 480 | 460 | 1000 | 1000 | 1620 |
| | 230 | 230 | 550 | 580 | 640 | 1240 | 1240 | 2040 |
| | 270 | 270 | | 780 | 820 | 1560 | 1640 | 2460 |
| | 310 | 310 | | | | | 2040 | |
| | 390 | 390 | | | | | | |
| | 470 | 470 | | | | | | |
| | | | 550 | | | | | |
| | | 670 | | | | | | |
| 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 |

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.

Note3) The figures in the parentheses indicate the maximum lengths of stainless steel made models.

Prevention of LM block from falling off of 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.

