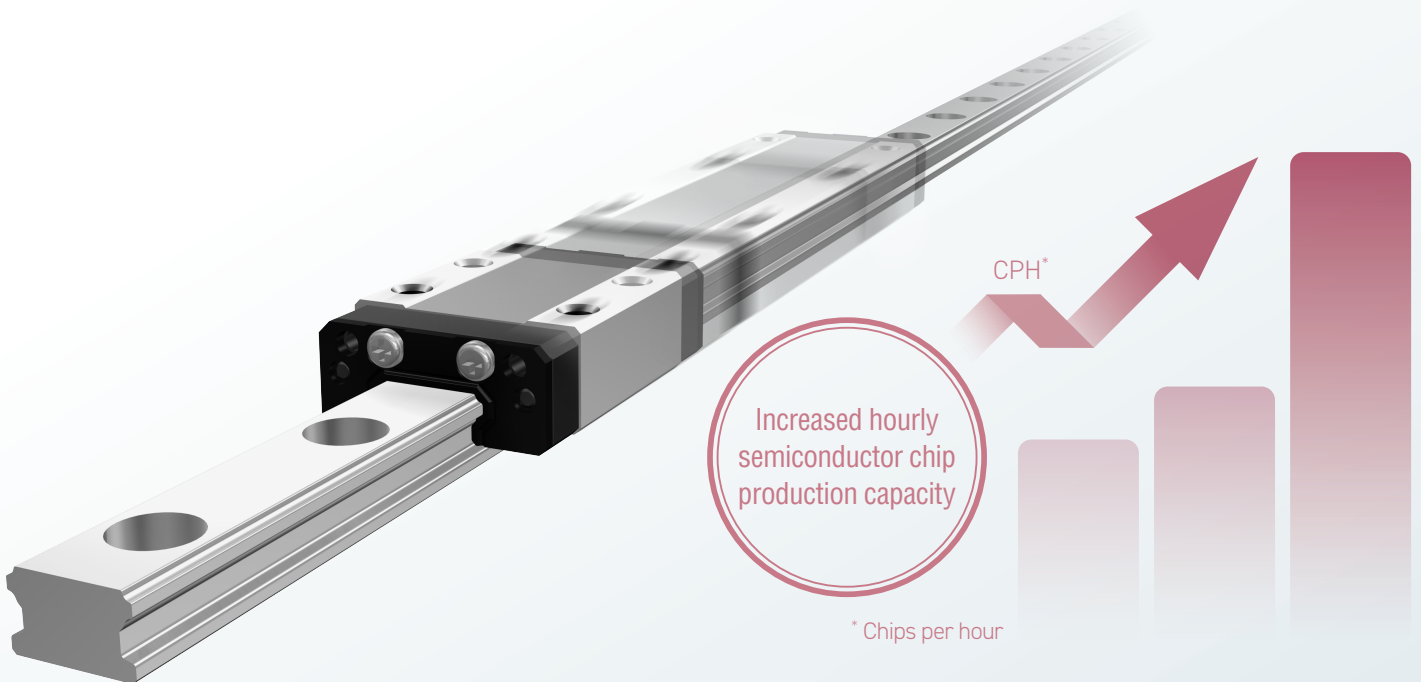
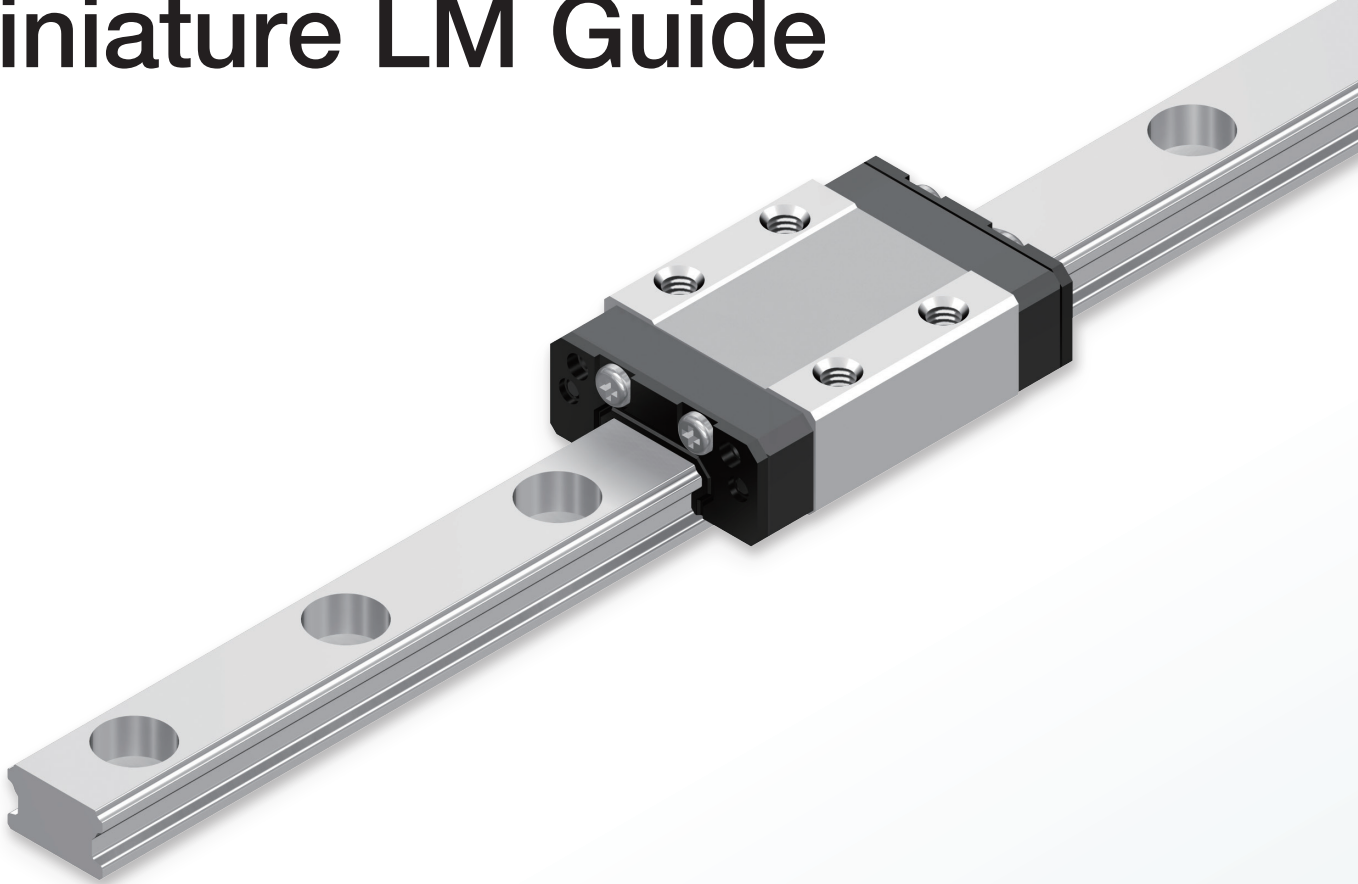




Rapid-Acceleration and Low-Resistance

Miniature LM Guide



Rapid-acceleration performance for increased semiconductor chip production capacity

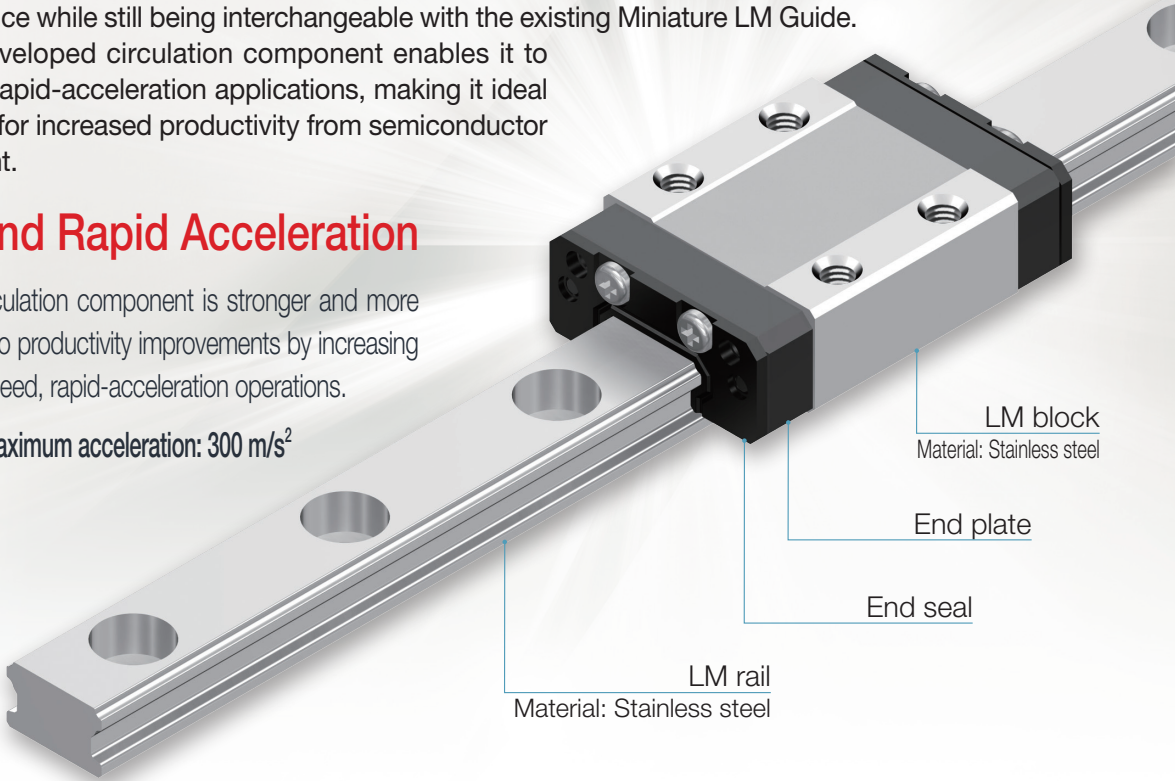
Structure and Features

The Rapid-Acceleration and Low-Resistance Miniature LM Guide utilizes four circular arc grooves to reduce sliding resistance while still being interchangeable with the existing Miniature LM Guide. Additionally, a newly developed circulation component enables it to handle high-speed and rapid-acceleration applications, making it ideal for meeting the demand for increased productivity from semiconductor manufacturing equipment.

High Speed and Rapid Acceleration

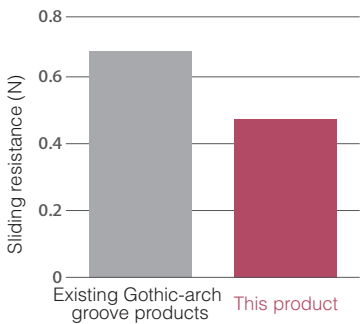
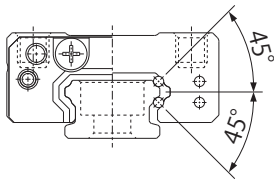
The newly developed circulation component is stronger and more resilient. This contributes to productivity improvements by increasing robustness during high-speed, rapid-acceleration operations.

Maximum speed: 5 m/s, Maximum acceleration: 300 m/s²



Low Sliding Resistance

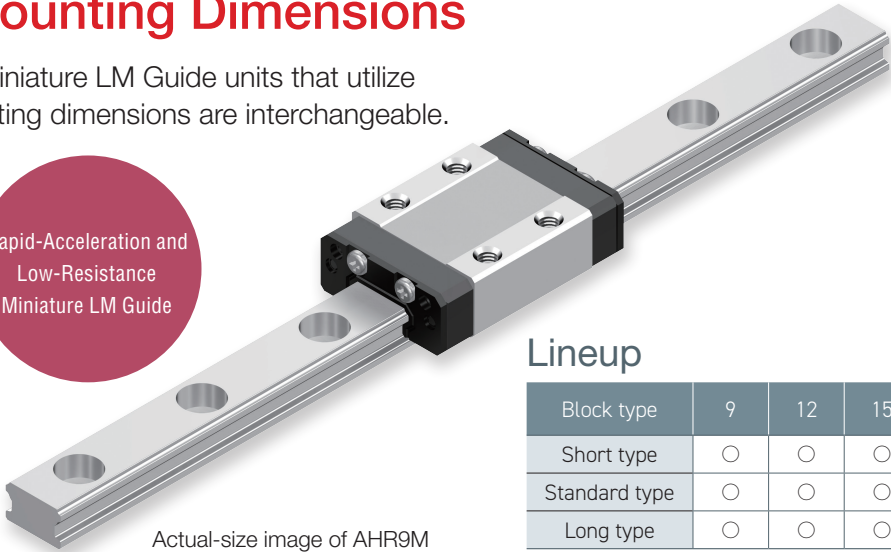
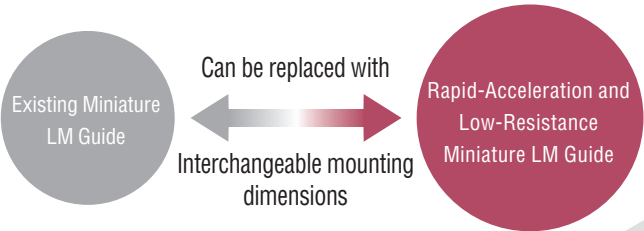
Low resistance is made possible by THK's core technology, the ideal four circular arc grooves and two-point contact structure. This contributes to greater servo control.



| | |
|----------------------|------------|
| Mounting orientation | Horizontal |
| Preload | C1 |
| Lubricant | AFF Grease |

Interchangeable Mounting Dimensions

This product can replace existing Miniature LM Guide units that utilize Gothic-arch grooves, as their mounting dimensions are interchangeable.



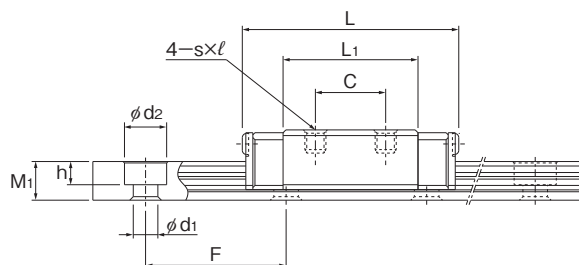
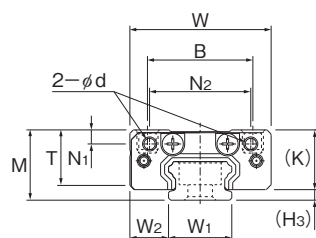
Actual-size image of AHR9M

Lineup

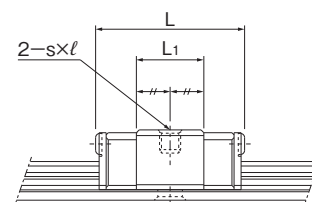
| | | | |
|---------------|---|----|----|
| Block type | 9 | 12 | 15 |
| Short type | ○ | ○ | ○ |
| Standard type | ○ | ○ | ○ |
| Long type | ○ | ○ | ○ |

○: Available

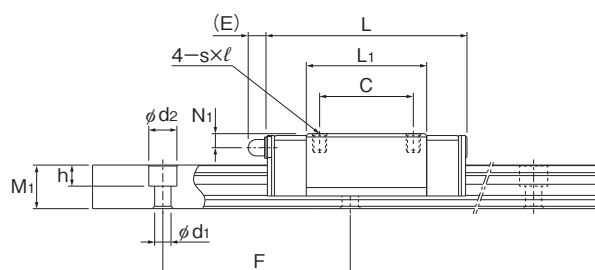
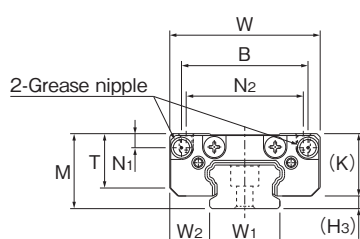
Dimensional Table



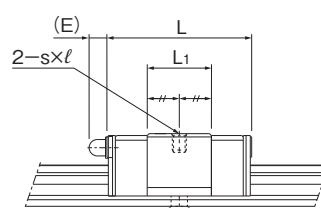
Models AHR9 M/N, AHR12M/N



Models AHR9S and AHR12S



Models AHR15M/N



Model AHR15S

Unit: mm

| Model No. | | Outer dimensions | | | LM block dimensions | | | | | | | | | | | | H ₃ | LM rail dimensions | | | | | Mass | |
|-----------|---|------------------|-------|--------|---------------------|----|----------------------|----------------|------|------|----------------|----------------|-----|-----------------------|---------------|----------------|----------------|--------------------|--------------------------|------------|--|--------------------|----------------|--|
| | | Height | Width | Length | B | C | Mounting hole S×ℓ | L ₁ | T | K | N ₁ | N ₂ | E | Lubrication hole d | Grease nipple | W ₁ | | W ₂ | Height M ₁ | Pitch F | Mounting hole d ₁ ×d ₂ ×h | Block (kg/unit) | Rail (kg/m) | |
| | | M | W | L | | | | | | | | | | | | | | | | | | | | |
| AHR9 | S | 10 | 20 | 21.2 | 15 | 10 | M3×2.8 | 9.6 | 7.9 | 8.5 | 2 | 14.4 | - | 1.6 | - | 1.5 | 9 | 5.5 | 5.5 | 20 | 3.5×6×3.3 | 0.012 | 0.298 | |
| | M | | | 30.8 | | | | 19.2 | | | | | | | | | | | | | | | | |
| | N | | | 40.4 | | | | 28.8 | | | | | | | | | | | | | | | | |
| AHR12 | S | 13 | 27 | 25 | 20 | 15 | M3×3.2 | 11 | 9.2 | 10.9 | 2.4 | 20.4 | - | 2 | - | 2.1 | 12 | 7.5 | 7.3 | 25 | 3.5×6×4.5 | 0.024 | 0.557 | |
| | M | | | 34.6 | | | | 20.6 | | | | | | | | | | | | | | | | |
| | N | | | 47.1 | | | | 33.1 | | | | | | | | | | | | | | | | |
| AHR15 | S | 16 | 32 | 30.9 | 25 | 20 | M3×3.5 | 13.7 | 11.6 | 13.3 | 3 | 27 | 3.8 | - | PB107 | 2.7 | 15 | 8.5 | 9.3 | 40 | 3.5×6×4.5 | 0.040 | 0.936 | |
| | M | | | 42.9 | | | | 25.7 | | | | | | | | | | | | | | | | |
| | N | | | 58.9 | | | | 41.7 | | | | | | | | | | | | | | | | |

Model Number Coding

2

AHR9

M

UU

C1

+1000L

P

M

-II

Number of LM blocks on one rail

Model No.

LM block type
S/M/N

Contamination protection accessory symbol

Radial clearance symbol
C1

LM rail length

Accuracy symbol: Normal grade (No symbol)
High Accuracy grade (H)
Precision grade (P)

Stainless steel LM rail

Symbol for number of rails
used on the same plane

Select an option

Fixed symbol

Accuracy Standards

This product comes in three accuracy grades. Accuracy standards are specified in terms of running parallelism,¹ dimensional tolerance for height and width, and height and width difference between a pair when two or more LM blocks are used on one rail,^{2,3} or when two or more rails are mounted on the same plane.

1. Running parallelism

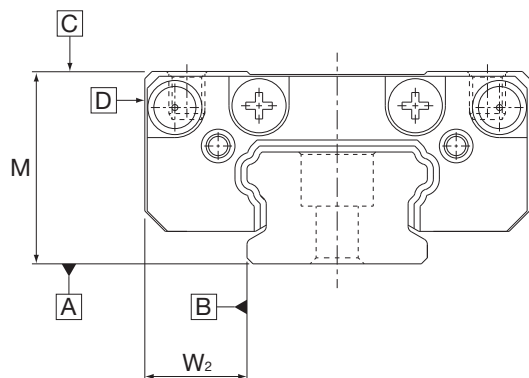
Running parallelism refers to the tolerance for parallelism between the datum surfaces of the LM block and the LM rail when the LM block travels the whole length of the LM rail with the LM rail bolted to a reference surface.

2. Difference in height M

The difference in height M indicates the difference between the minimum and maximum values of the height (M) of each of the LM blocks used together on the same plane.

3. Difference in width W₂

Difference in width W₂ indicates the difference between the minimum and maximum values of the width (W₂) between each of the LM blocks, mounted on one LM rail in combination, and the LM rail.



Accuracy Standards

Unit: mm

| Model No. | Accuracy grade Item | Normal grade | High Accuracy grade | Precision grade |
|--|---|-----------------|---------------------|-----------------|
| | | No symbol | H | P |
| 9 12 15 | Dimensional tolerance in height M | +0.04 | +0.02 | +0.01 |
| | Difference in height M | 0.005 | 0.005 | 0.005 |
| | Dimensional tolerance in width W ₂ | +0.04 | +0.025 | +0.015 |
| | Difference in width W ₂ | 0.03 | 0.02 | 0.01 |
| Running parallelism of surface C against surface A | | See table below | | |
| Running parallelism of surface D against surface B | | See table below | | |

LM Rail Length and Running Parallelism by Accuracy Standard

Unit: μm

| LM rail length (mm) | | Running parallelism value | | |
|---------------------|-------|---------------------------|---------------------|-----------------|
| Above | Up to | Normal grade | High Accuracy grade | Precision grade |
| | | No symbol | H | P |
| - | 40 | 8 | 4 | 1 |
| 40 | 70 | 10 | 4 | 1 |
| 70 | 100 | 11 | 4 | 2 |
| 100 | 130 | 12 | 5 | 2 |
| 130 | 160 | 13 | 6 | 2 |
| 160 | 190 | 14 | 7 | 2 |
| 190 | 220 | 15 | 7 | 3 |
| 220 | 250 | 16 | 8 | 3 |
| 250 | 280 | 17 | 8 | 3 |
| 280 | 310 | 17 | 9 | 3 |
| 310 | 340 | 18 | 9 | 3 |
| 340 | 370 | 18 | 10 | 3 |
| 370 | 400 | 19 | 10 | 3 |
| 400 | 430 | 20 | 11 | 4 |
| 430 | 460 | 20 | 12 | 4 |
| 460 | 520 | 21 | 12 | 4 |
| 520 | 550 | 22 | 12 | 4 |
| 550 | 640 | 22 | 13 | 4 |
| 640 | 670 | 23 | 13 | 4 |
| 670 | 700 | 23 | 13 | 5 |
| 700 | 820 | 23 | 14 | 5 |
| 820 | 850 | 24 | 14 | 5 |
| 850 | 970 | 24 | 15 | 5 |
| 970 | 1030 | 25 | 16 | 5 |
| 1030 | 1150 | 25 | 16 | 6 |
| 1150 | 1330 | 26 | 17 | 6 |
| 1330 | 1420 | 27 | 18 | 6 |
| 1420 | 1510 | 27 | 18 | 7 |
| 1510 | 1830 | 28 | 19 | 7 |
| 1830 | 2000 | 28 | 19 | 8 |

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