**Shipping Date**

The shipping date indicates when the product will ship if ordered now.
Contact THK through Omni THK's inquiry form if you need a product sooner or if you need a large quantity.

**Set Item/Standalone Items**

<table>
<thead>
<tr>
<th>Set item</th>
<th>Standalone block</th>
<th>Standalone rail</th>
</tr>
</thead>
</table>

**Series**

**LM Guide**

The LM Guide is a linear motion guide that uses balls as a rolling element. THK offers various series that have been optimized for applications ranging from miniature LM Guides to large ones used in machine tools, and from linear motion to curved motion.

**Roller Guide**

The roller guide is a linear motion guide that uses rollers as a rolling element. The use of rollers helps achieve ultra-high rigidity.
## LM Guide

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Cross Section</th>
<th>Load Capacity Diagram</th>
<th>Features</th>
<th>Classification</th>
<th>Recommended Machine Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHS</td>
<td></td>
<td></td>
<td>4-Way Equal Load</td>
<td>Caged Ball</td>
<td>The solution to all-purpose needs. General industrial machinery, machine tools, IT industry, medical equipment, automotive manufacturing equipment, consumer applications, etc.</td>
</tr>
<tr>
<td>HSR</td>
<td></td>
<td></td>
<td>Radial Type</td>
<td>Full-ball</td>
<td></td>
</tr>
<tr>
<td>SSR</td>
<td></td>
<td></td>
<td>Caged Ball</td>
<td>High error-absorbing capability. General industrial machinery, IT industry, medical equipment, automotive manufacturing equipment, consumer applications, etc.</td>
<td></td>
</tr>
<tr>
<td>SR</td>
<td></td>
<td></td>
<td>Radial Type</td>
<td>Full-ball</td>
<td></td>
</tr>
<tr>
<td>SHW</td>
<td></td>
<td></td>
<td>4-Way Equal Load</td>
<td>Caged Ball</td>
<td>Especially effective for single-axis specifications. General industrial machinery, machine tools, automotive manufacturing equipment, consumer applications, etc.</td>
</tr>
<tr>
<td>SRS</td>
<td></td>
<td></td>
<td>4-Way Equal Load</td>
<td>Caged Ball</td>
<td>Allows for compact designs. General industrial machinery, IT industry, medical equipment, etc.</td>
</tr>
<tr>
<td>SRS-G</td>
<td></td>
<td></td>
<td>4-Way Equal Load</td>
<td>Miniature</td>
<td></td>
</tr>
<tr>
<td>SRG</td>
<td></td>
<td></td>
<td>4-Way Equal Load</td>
<td>Caged Roller</td>
<td>Ultra-high rigidity. Machining centers, NC lathes, etc.</td>
</tr>
</tbody>
</table>
Rail Length

You can specify the length in increments of 1 mm.

Size

Access the THK catalog from Omni THK’s catalog button for more information.

Caged Ball LM Guide Miniature

2SRS12MUU+120LM

You may specify the product with rail length less than 120mm. Please specify the rail length close to your needs.
### LM Guide

#### Block Types

**SHS**

**C Type**

The flange of the LM block has tapped holes. This type can be mounted from the top or the bottom. It is used in places where the table cannot have through holes for mounting bolts.

**V Type**

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

**R Type**

The LM block has a smaller width (W), and the mounting holes are tapped. It has the same height dimension as the full-ball type LM Guide HSR-R.

**LC Type**

The LM block has the same cross-sectional shape as the Model SHS-C, but it has a longer overall LM block length (L) and a greater rated load.

**LV Type**

The LM block has the same cross-sectional shape as the Model SHS-V, but it has a longer overall LM block length (L) and a greater rated load.

**LR Type**

The LM block has the same cross-sectional shape as the R Type, but it has a longer overall LM block length (L) and a greater rated load.
**Block Types**

**HSR**

**A Type**
The flange of this LM block has tapped holes.

**B Type**
The flange of the LM block has through holes. It is used in places where the table cannot have through holes for mounting bolts.

**R Type**
Having a smaller LM block width (W) and tapped holes, this model is optimal for compact designs.

**LA Type**
The LM block has the same cross-sectional shape as the Model HSR-A, but it has a longer overall LM block length (L) and a greater rated load.

**LB Type**
The LM block has the same cross-sectional shape as the Model HSR-B, but it has a longer overall LM block length (L) and a greater rated load.

**LR Type**
The LM block has the same cross-sectional shape as the Model HSR-R, but it has a longer overall LM block length (L) and a greater rated load.
When using two conventional LM Guides facing each other, it took a long time to machine the table, and it was difficult to achieve the desired accuracy and adjust the clearance. With the Model HSR-YR, the tapped holes on the side of the LM block simplify the structure, which drastically reduces labor time and increases accuracy.

This type has six tapped holes on the LM block.

The LM block has the same cross-sectional shape as the Model HSR-CA, but it has a longer overall LM block length (L) and a greater rated load.

6-bolt type
The LM block has six through holes. It is used in places where the table cannot have through holes for mounting bolts.

The LM block has the same cross-sectional shape as the Model HSR-CB, but it has a longer overall LM block length (L) and a greater rated load.

When using two conventional LM Guides facing each other, it took a long time to machine the table, and it was difficult to achieve the desired accuracy and adjust the clearance. With the Model HSR-YR, the tapped holes on the side of the LM block simplify the structure, which drastically reduces labor time and increases accuracy.
**Block Types**

**SSR**

**XW Type**

With this type, the LM block has a smaller width (W) and tapped holes.

**XV Type**

This type has the same cross-sectional shape as the Model SSR-XW, but it has a shorter overall LM block length (L).

**XTB Type**

Since the LM block can be mounted from the bottom, this type is optimal for applications where through holes for mounting bolts cannot be drilled into the table.
With this type, the LM block has a smaller width (W) and tapped holes.

This compact type has the same cross-sectional shape as the Model SR-TB, but it has a smaller overall LM block length (L).

The LM block has the same height as the Model SR-W and can be mounted from the bottom.
Block Types

**SHW**

**CA Type**

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

**CR Type**

The LM block has tapped holes.
**Block Types**

**SRS**

**M Type**
A standard type of SRS.

**N Type**
This type has a longer overall LM block length (L) and a higher load rating and permissible moment than the Model SRS-M.

**S Type**
This type has a shorter overall LM block length (L) than the Model SRS-M.

**WM Type**
This type has a longer overall LM block length (L), a greater width (W), and a larger rated load and permissible moment than the Model SRS-M.

**WN Type**
This type has a longer overall LM block length (L) and a higher load rating and permissible moment than the Model SRS-WM.

**WS Type**
This type has a longer overall LM block length (L), a greater width (W), and a larger rated load and permissible moment than the Model SRS-S.
## Block Types

### SRS-G

The Model SRS-G is a cageless, full-ball type version of the Model SRS. As a result, it has a lower dynamic load rating than the Model SRS.

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M Type</strong></td>
<td>The standard type for the Model SRS-G.</td>
</tr>
<tr>
<td><strong>N Type</strong></td>
<td>This type has a longer overall LM block length (L) and a higher load rating and permissible moment than the Model SRS-GM.</td>
</tr>
<tr>
<td><strong>S Type</strong></td>
<td>This type has a shorter overall LM block length (L) than the Model SRS-GM.</td>
</tr>
<tr>
<td><strong>WM Type</strong></td>
<td>This type has a longer overall LM block length (L), a greater width (W), and a larger rated load and permissible moment than the Model SRS-GM.</td>
</tr>
<tr>
<td><strong>WN Type</strong></td>
<td>This type has a longer overall LM block length (L) and a higher load rating and permissible moment than the Model SRS-GWM.</td>
</tr>
<tr>
<td><strong>WS Type</strong></td>
<td>This type has a longer overall LM block length (L), a greater width (W), and a larger rated load and permissible moment than the Model SRS-GS.</td>
</tr>
</tbody>
</table>
Block Types

SRG

A Type

The flange of the LM block has tapped holes.

C Type

The flange of the LM block has tapped holes. This type can be mounted from the top or the bottom. It is used in places where the table cannot have through holes for mounting bolts.

R Type

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

LA Type

The LM block has the same cross-sectional shape as the Model SRG-A, but it has a longer overall LM block length (L) and a greater rated load.

LC Type

The LM block has the same cross-sectional shape as the Model SRG-C, but it has a longer overall LM block length (L) and a greater rated load.

LR Type

The LM block has the same cross-sectional shape as the Model SRG-R, but it has a longer overall LM block length (L) and a greater rated load.
**Number of Blocks**

**Single Block**

**Double Blocks**

You can select more than two blocks.
Seal Options

No symbol  No seals
UU       End seals
SS       End seals + side seals + inner seals
DD       Double seals + side seals + inner seals
ZZ       End seals + side seals + inner seals + metal scrapers
KK       Double seals + side seals + inner seals + metal scrapers

End Seals  Used in locations exposed to dust

Side Seals  Used in locations where dust may enter the LM block from the side or bottom surface

Inner Seals  Used in locations exposed to extremely large amounts of dust or cutting chips

Double Seals  Used in locations exposed to large amounts of dust or cutting chips

Metal Scrapers  Used in locations where welding spatter may adhere to the LM rail

(Non-Contact)
Lubricator

The QZ Lubricator feeds the right amount of lubricant to the LM rail raceway. This allows an oil film to continuously be formed between the rolling element and the raceway, and it extends the lubrication and maintenance intervals. Lubricant is supplied using the basic principle of capillary action, as used in felt-tip pens.

Grease Nipple

THK provides the grease nipples needed for the lubrication of LM systems.
Radial Clearance (Preload)

By eliminating the internal clearance between the LM block and LM rail (providing a preload), it is possible to reduce the amount of deformation under a load (increasing the rigidity).

**Inserting a ball the exact size of the internal clearance**

<table>
<thead>
<tr>
<th>Load</th>
<th>Force acts to return it to its original position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inserting a ball slightly larger than the internal clearance</td>
</tr>
</tbody>
</table>

**Normal Clearance**
- The loading direction is fixed, impacts and vibrations are minimal, and two rails are installed in parallel.
- Very high precision is not required, and the sliding resistance must be as low as possible.

**Clearance C1 (Light Preload)**
- An overhang load or moment load is applied.
- The LM Guide is used in a single-rail configuration.
- High accuracy with a light load is required.

**Clearance C0 (Medium Preload)**
- High rigidity is required, and vibrations and impacts occur.
- Heavy-cutting machine tools, etc.

<table>
<thead>
<tr>
<th>Usage Conditions</th>
<th>Normal Clearance</th>
<th>Clearance C1 (Light Preload)</th>
<th>Clearance C0 (Medium Preload)</th>
</tr>
</thead>
</table>
| **Examples of Applications** | • Beam-welding machines  
• Book-binding machines  
• Automatic wrapping machines  
• XY axes of general industrial machinery  
• Automatic sash-manufacturing machines  
• Welding machines  
• Flame cutting machines  
• Tool changers  
• Various kinds of material feeders | • Grinding machine table feed axes  
• Automatic coating machines  
• Industrial robots  
• Various kinds of high-speed material feeders  
• NC drilling machines  
• Vertical axes of general industrial machinery  
• Printed circuit board drilling machines  
• Electric discharge machines  
• Measuring instruments  
• Precision XY tables | • Machining centers  
• NC lathes  
• Grinding stone feed axes of grinding machines  
• Milling machines  
• Vertical/horizontal boring machines  
• Tool rest guides  
• Vertical axes of machine tools |

**Load**

**Usage Conditions**
- The loading direction is fixed, impacts and vibrations are minimal, and two rails are installed in parallel.
- Very high precision is not required, and the sliding resistance must be as low as possible.
- An overhang load or moment load is applied.
- The LM Guide is used in a single-rail configuration.
- High accuracy with a light load is required.
- High rigidity is required, and vibrations and impacts occur.
- Heavy-cutting machine tools, etc.

**Examples of Applications**
- Beam-welding machines
- Book-binding machines
- Automatic wrapping machines
- XY axes of general industrial machinery
- Automatic sash-manufacturing machines
- Welding machines
- Flame cutting machines
- Tool changers
- Various kinds of material feeders

- Grinding machine table feed axes
- Automatic coating machines
- Industrial robots
- Various kinds of high-speed material feeders
- NC drilling machines
- Vertical axes of general industrial machinery
- Printed circuit board drilling machines
- Electric discharge machines
- Measuring instruments
- Precision XY tables

- Machining centers
- NC lathes
- Grinding stone feed axes of grinding machines
- Milling machines
- Vertical/horizontal boring machines
- Tool rest guides
- Vertical axes of machine tools
Accuracy

The accuracy of the LM Guide is specified in terms of running parallelism, 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, or when two or more rails are mounted on the same plane. See “Accuracy Standard for Each Model” in THK’s “Linear Motion Systems” general catalog for more information.

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

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.

Difference in Width W2
The difference in width W2 indicates the difference between the minimum and maximum values of the width (W2) between an LM rail and each of the LM blocks mounted together on the LM rail.

Note 1) When two or more rails are used on the same plane in parallel, only the width (W2) variation and dimensional tolerance of the master rail apply. Master LM rails will have a printed serial number on them that ends with "KB." However, this is not the case for normal grade products.

Note 2) Accuracy measurements each represent the average value of the central point or the central area of the LM block.
Note 3) If it is mounted on a less rigid base, such as an aluminum base, the curve of the rail will affect the accuracy of the machine. Therefore, it is necessary to specify the straightness of the rail in advance.
# Accuracy

These tables show guidelines for selecting the accuracy grade of the LM Guide according to the machine type.

<table>
<thead>
<tr>
<th>Type of Machine</th>
<th>Accuracy Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>H</td>
</tr>
<tr>
<td>Machining center</td>
<td>●</td>
</tr>
<tr>
<td>Lathe</td>
<td>●</td>
</tr>
<tr>
<td>Milling machine</td>
<td>●</td>
</tr>
<tr>
<td>Boring machine</td>
<td>●</td>
</tr>
<tr>
<td>Jig borer</td>
<td>●</td>
</tr>
<tr>
<td>Grinding machine</td>
<td>●</td>
</tr>
<tr>
<td>Electric discharge machine</td>
<td>●</td>
</tr>
<tr>
<td>Punching press</td>
<td>●</td>
</tr>
<tr>
<td>Laser beam machine</td>
<td>●</td>
</tr>
<tr>
<td>Woodworking machine</td>
<td>●</td>
</tr>
<tr>
<td>NC drilling machine</td>
<td>●</td>
</tr>
<tr>
<td>Tapping center</td>
<td>●</td>
</tr>
<tr>
<td>Palette changer</td>
<td>●</td>
</tr>
<tr>
<td>ATC</td>
<td>●</td>
</tr>
<tr>
<td>Wire cutting machine</td>
<td>●</td>
</tr>
<tr>
<td>Dressing machine</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Machine</th>
<th>Accuracy Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>H</td>
</tr>
<tr>
<td>Cartesian coordinate</td>
<td>●</td>
</tr>
<tr>
<td>Cylindrical coordinate</td>
<td>●</td>
</tr>
<tr>
<td>Wire bonding machine</td>
<td>●</td>
</tr>
<tr>
<td>Prober</td>
<td>●</td>
</tr>
<tr>
<td>Electronic component inserter</td>
<td>●</td>
</tr>
<tr>
<td>Printed circuit board drilling machine</td>
<td>●</td>
</tr>
<tr>
<td>Injection molding machine</td>
<td>●</td>
</tr>
<tr>
<td>3D measuring instrument</td>
<td>●</td>
</tr>
<tr>
<td>Office equipment</td>
<td>●</td>
</tr>
<tr>
<td>Conveyance system</td>
<td>●</td>
</tr>
<tr>
<td>XY table</td>
<td>●</td>
</tr>
<tr>
<td>Coating machine</td>
<td>●</td>
</tr>
<tr>
<td>Welding machine</td>
<td>●</td>
</tr>
<tr>
<td>Medical equipment</td>
<td>●</td>
</tr>
<tr>
<td>Digitizer</td>
<td>●</td>
</tr>
<tr>
<td>Inspection equipment</td>
<td>●</td>
</tr>
</tbody>
</table>

Normal: Normal grade, H: High accuracy grade, P: Precision grade, SP: Super precision grade, UP: Ultra precision grade
Surface Treatment

The surfaces of the rails and shafts of LM systems can be treated for anti-corrosive or aesthetic purposes. THK offers THK-AP treatment, which is the optimum surface treatment for LM systems. Please contact THK if surface treatment is required.

**AP-C Treatment**
Industrial black chrome plating

**AP-HC Treatment**
Industrial hard chrome plating
Film hardness: 750 HV or higher

**AP-CF Treatment**
Industrial black chrome plating
Special fluorocarbon resin coating
**Grease**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Standard Grease</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHS</td>
<td>7 to 65 AFB-LF</td>
<td>AFB-LF is a general-purpose grease using a lithium-based consistency enhancer with refined mineral oil as the base oil. It excels in extreme pressure resistance and mechanical stability.</td>
</tr>
<tr>
<td>HSR</td>
<td>8 to 12 AFF</td>
<td>AFF Grease uses a high-grade synthetic oil, a lithium-based consistency enhancer, and a special additive. It achieves stable rolling resistance, low dust generation, and high fretting resistance at a level that conventional vacuum greases or low dust-generating greases have not.</td>
</tr>
<tr>
<td>SSR</td>
<td>15 to 35 AFB-LF</td>
<td>AFB-LF is a general-purpose grease using a lithium-based consistency enhancer with refined mineral oil as the base oil. It excels in extreme pressure resistance and mechanical stability.</td>
</tr>
<tr>
<td>SR</td>
<td>15 to 35 AFB-LF</td>
<td>AFF Grease uses a high-grade synthetic oil, a lithium-based consistency enhancer, and a special additive. It achieves stable rolling resistance, low dust generation, and high fretting resistance at a level that conventional vacuum greases or low dust-generating greases have not.</td>
</tr>
<tr>
<td>SHW</td>
<td>12 to 17 AFF</td>
<td>AFF Grease uses a high-grade synthetic oil, a lithium-based consistency enhancer, and a special additive. It achieves stable rolling resistance, low dust generation, and high fretting resistance at a level that conventional vacuum greases or low dust-generating greases have not.</td>
</tr>
<tr>
<td>SRS</td>
<td>5 to 15 AFF</td>
<td>AFF Grease uses a high-grade synthetic oil, a lithium-based consistency enhancer, and a special additive. It achieves stable rolling resistance, low dust generation, and high fretting resistance at a level that conventional vacuum greases or low dust-generating greases have not.</td>
</tr>
<tr>
<td>SRS-G</td>
<td>5 to 15 AFF</td>
<td>AFF Grease uses a high-grade synthetic oil, a lithium-based consistency enhancer, and a special additive. It achieves stable rolling resistance, low dust generation, and high fretting resistance at a level that conventional vacuum greases or low dust-generating greases have not.</td>
</tr>
<tr>
<td>SRG</td>
<td>15 to 65 AFB-LF</td>
<td>AFB-LF is a general-purpose grease using a lithium-based consistency enhancer with refined mineral oil as the base oil. It excels in extreme pressure resistance and mechanical stability.</td>
</tr>
</tbody>
</table>
Symbol for Number of Axes

If two or more LM Guides are used together in parallel on the same plane, specify the number of LM rails in advance.
*Please order quantities in multiples of the required number of axes. (For two axes, order 2, 4, etc. For three axes, order 3, 6, etc.)

Model Number Coding

**SHS25C2SSCO+1000LP - II**

Model No. **Symbol for Number of Axes**

Indicates 2 axes used in parallel. For 1 axis, no symbol is used.

Symbol for number of axes III
(Required number of axes: 3)

Symbol for number of axes IV
(Required number of axes: 4)

Symbol for number of axes II
(Required number of axes: 2)

Other
(Required number of axes: 2)
Anti-Rust Oil

Products are coated with anti-rust oil to prevent rust.
Model Number Coding Example

**SHS25 LC 2 QZ SS C1 +1200L P - II**

- **Model No.**
- **LM block type**
- **Number of LM blocks used on a single rail**
- **With QZ lubricator**
- **Contamination protection accessory symbol**
- **Radial clearance symbol**
- **LM rail length (in mm)**
- **Symbol for number of rails used on the same plane**
- **Accuracy symbol**
- **Normal grade (no symbol)/High grade (H)/Precision grade (P)/Super precision grade (SP)/Ultra precision grade (UP)**

**2 SRS20 M QZ UU C1 +220L P M - II**

- **Model No.**
- **LM block type**
- **Number of LM blocks used on a single rail**
- **With QZ lubricator**
- **Contamination protection accessory symbol**
- **Radial clearance symbol**
- **LM rail length (in mm)**
- **Symbol for number of rails used on the same plane**
- **Stainless steel LM rail**
- **Accuracy symbol**
- **Normal grade (no symbol)/High grade (H)/Precision grade (P)/Super precision grade (SP)/Ultra precision grade (UP)**