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 do not fall off even if the LM rail is pulled out (except models HSR 8, 10 and 12).

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 the four directions while maintaining a constant, low friction coefficient. With the low sectional height and the high rigidity design of the LM block, this model achieves highly accurate and stable linear motion.

4-way equal load

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 and in extensive applications.

High-rigidity type

Since balls are arranged in four rows in a well-balanced manner, a large preload can be applied and the rigidity in four directions can easily be increased.

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 linear motion.
High durability
Even under a preload or biased load, differential slip of balls does not occur. As a result, smooth motion, high wear resistance, and long-term maintenance of accuracy are achieved.

Stainless steel type also available
A special type whose LM block, LM rail and balls are made of stainless steel is also available.

Types and Features

**Model HSR-A**
The flange of the LM block has tapped holes.

**Model HSR-B**
The flange of the LM block has through holes. Used in places where the table cannot have through holes for mounting bolts.

**Model HSR-R**
Having a smaller LM block width (W) and tapped holes, this model is optimal for compact design.

**Model HSR-YR**
When using two units of LM Guide facing each other, the previous model required much time in machining the table and had difficulty achieving the desired accuracy and adjusting the clearance. Since Model HSR-YR has tapped holes on the side of the LM block, a simpler structure is gained and significant man-hour cutting and accuracy increase can be achieved.

Fig. 2 Conventional Structure

Fig. 3 Mounting Structure for Model HSR-YR
**Model HSR-LA**
The LM block has the same sectional shape as model HSR-A, but has a longer overall LM block length (L) and a greater rated load.

---

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

---

**Model HSR-LR**
The LM block has the same sectional shape as model HSR-R, but has a longer overall LM block length (L) and a greater rated load.

---

**Model HSR-CA**
Has six tapped holes on the LM block.

---

**Model HSR-CB**
Six-bolt type. The LM block has six through holes. Used in places where the table cannot have through holes for mounting bolts.

---

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

---

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

---

**Models HSR 100/120/150 HA/HB/HR**
Large types of model HSR that can be used in large-scale machine tools and building structures.
Rated Loads in All Directions

Model HSR is capable of receiving loads in all four directions: radial, reverse-radial and lateral directions.
The basic load ratings are uniform in the four directions (radial, reverse-radial and lateral directions), and their actual values are provided in the dimensional table for HSR.

Equivalent Load

When the LM block of model HSR receives loads in the reverse-radial and lateral directions simultaneously, the equivalent load is obtained from the equation below.

\[ P_E = P_R (P_L) + P_T \]

where

- \( P_E \): Equivalent load (N)
- \( P_R \): Radial load (N)
- \( P_L \): Reverse-radial load (N)
- \( P_T \): Lateral load (N)
**Options**

**Dust Prevention Accessories**

THK offers various dust prevention accessories for model HSR.

When a dust prevention accessory is required, specify the desired item with the corresponding symbol provided in table 1 (for details of dust prevention accessories, see pages a-24 and a-25).

For supported model numbers for dust prevention accessories and overall LM block length with dust prevention accessories attached (dimension L), see page a-306.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Dust prevention accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>UU</td>
<td>With end seal</td>
</tr>
<tr>
<td>SS</td>
<td>With end seal + side seal</td>
</tr>
<tr>
<td>DD</td>
<td>With double seals + side seal</td>
</tr>
<tr>
<td>ZZ</td>
<td>With end seal + side seal + metal scraper</td>
</tr>
<tr>
<td>KK</td>
<td>With double seals + side seal + metal scraper</td>
</tr>
<tr>
<td>LL</td>
<td>With low-resistance end seal</td>
</tr>
<tr>
<td>RR</td>
<td>With LL seal + side seal</td>
</tr>
<tr>
<td>SSHH</td>
<td>With end seal + side seal + LaCS</td>
</tr>
<tr>
<td>DDHH</td>
<td>With double seals + side seal + LaCS</td>
</tr>
<tr>
<td>ZZHH</td>
<td>With end seal + side seal + metal scraper + LaCS</td>
</tr>
<tr>
<td>KKH</td>
<td>With double seals + side seal + metal scraper + LaCS</td>
</tr>
</tbody>
</table>

**Seal resistance value**

For the maximum seal resistance value per LM block when a lubricant is applied on seals HSR … UU, refer to the corresponding value provided in table 2.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Seal resistance value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSR 8</td>
<td>0.5</td>
</tr>
<tr>
<td>HSR 10</td>
<td>0.8</td>
</tr>
<tr>
<td>HSR 12</td>
<td>1.2</td>
</tr>
<tr>
<td>HSR 15</td>
<td>2.0</td>
</tr>
<tr>
<td>HSR 20</td>
<td>2.5</td>
</tr>
<tr>
<td>HSR 25</td>
<td>3.9</td>
</tr>
<tr>
<td>HSR 30</td>
<td>7.8</td>
</tr>
<tr>
<td>HSR 35</td>
<td>11.8</td>
</tr>
<tr>
<td>HSR 45</td>
<td>19.6</td>
</tr>
<tr>
<td>HSR 55</td>
<td>19.6</td>
</tr>
<tr>
<td>HSR 65</td>
<td>34.3</td>
</tr>
<tr>
<td>HSR 85</td>
<td>34.3</td>
</tr>
</tbody>
</table>
Dedicated Bellows JH for Model HSR

The table below shows the dimensions of dedicated bellows JH for model HSR. Specify the corresponding model number of the desired bellows from the table.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Major dimensions</th>
<th>Mounting bolt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>W</td>
<td>H</td>
</tr>
<tr>
<td>JH 15</td>
<td>55</td>
<td>27</td>
</tr>
<tr>
<td>JH 20</td>
<td>66</td>
<td>32</td>
</tr>
<tr>
<td>JH 25</td>
<td>78</td>
<td>38</td>
</tr>
<tr>
<td>JH 30</td>
<td>84</td>
<td>42</td>
</tr>
<tr>
<td>JH 35</td>
<td>88</td>
<td>43</td>
</tr>
<tr>
<td>JH 45</td>
<td>100</td>
<td>51</td>
</tr>
<tr>
<td>JH 55</td>
<td>108</td>
<td>54</td>
</tr>
<tr>
<td>JH 65</td>
<td>132</td>
<td>68</td>
</tr>
<tr>
<td>JH 85</td>
<td>170</td>
<td>88</td>
</tr>
</tbody>
</table>

Note 1: For model JH15's location marked with "*", mounting bolts are used only on the LM rail side while the LM block side uses M2 × 5 (nominal) tapped pins.

Note 2: When desiring to use the dedicated bellows other than in horizontal mount (i.e., vertical, wall and inverted mount), or when desiring a heat-resistant type of bellows, contact THK.

Note 3: For lubrication when using the dedicated bellows, contact THK.

Note 4: When using the dedicated bellows, the LM block and LM rail need to be machined so that the bellows can be mounted. Be sure to indicate that the dedicated bellows is required when ordering the LM Guide.

Model number coding

<table>
<thead>
<tr>
<th>1</th>
<th>JH25-60/420</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Model number --- bellows for HSR25</td>
</tr>
<tr>
<td>2</td>
<td>Bellows dimensions (length when compressed / length when extended)</td>
</tr>
</tbody>
</table>

Note: The length of the bellows is calculated as follows.

\[ L_{\text{min}} = \frac{S}{(A-1)} \quad S: \text{Stroke length (mm)} \]

\[ L_{\text{max}} = L_{\text{min}} \cdot A \quad A: \text{Extension rate} \]
● Dedicated Bellows DH for Model HSR

For models HSR15, 20 and 25, bellows DH, which has the following features, is also available other than the dedicated bellows JH. When desiring bellows DH, specify the corresponding model number from the table below.

Features

1. Has a width and height smaller than the conventional product so that any part of the bellows does not stick out of the top face of the LM block. The extension rate is equal to or greater than that of the conventional type.
2. Has an intermediate plate for each crest so that it will not easily lift and the bellows can be used with vertical mount, wall mount and slant mount.
3. Operable at high speed, at up to 120 m/min.
4. Since a Velcro tape can be used to install the bellows, a regular-size model can be cut to the desired length, or two or more regular-size bellows can be taped together.
5. Can be installed using screws just as bellows JH.

In this case, a plate (thickness: 1.6 mm) must be placed between the bellows and the LM block. Contact THK for details.

![Diagram of Dedicated Bellows DH for Model HSR]

Unit: mm

<table>
<thead>
<tr>
<th>Model No.</th>
<th>W</th>
<th>H</th>
<th>P</th>
<th>b1</th>
<th>t1</th>
<th>t2</th>
<th>t3</th>
<th>d</th>
<th>a</th>
<th>b1</th>
<th>t1</th>
<th>Type A/B</th>
<th>Type A/B</th>
<th>Type R</th>
<th>Type R</th>
<th>Type R</th>
<th>l max</th>
<th>l min</th>
<th>Expansion ratio k</th>
<th>Factor E</th>
<th>Supported model</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH 15</td>
<td>35</td>
<td>19.5</td>
<td>8.5</td>
<td>25</td>
<td>2.5</td>
<td>6.5</td>
<td>10</td>
<td>10</td>
<td>3.5</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>13</td>
<td>2.5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>DH 20</td>
<td>45</td>
<td>25</td>
<td>10</td>
<td>34</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>13</td>
<td>2.5</td>
<td>5</td>
</tr>
<tr>
<td>DH 25</td>
<td>52</td>
<td>29.5</td>
<td>12</td>
<td>30</td>
<td>7</td>
<td>11</td>
<td>10</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>9</td>
<td>2</td>
<td>15</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

Note 1: For lubrication when using the dedicated bellows, contact THK.

Note 2: When using the dedicated bellows, the LM block and LM rail need to be machined so that the bellows can be mounted. Be sure to indicate that the dedicated bellows is required when ordering the LM Guide.

Model number coding: **DH20-50/250**

1. Model number indicates bellows for HSR20
2. Bellows dimensions (length when compressed / length when extended)

Note: The maximum length of the bellows itself is calculated as follows.

\[ L_{max} - (L_{min}) = \ell_{max} \cdot (\ell_{min}) \times 200 \]

Example of calculating bellows dimensions:

When the stroke of model SR20 is: \( \ell = 530 \text{ mm} \)

\[ L_{min} = \frac{\ell \cdot s}{(A-1)} = \frac{530}{4} = 132.5 \div 135 \]

\[ L_{max} = A \cdot L_{min} = 5 \times 135 = 675 \]

Number of required crests \( n \)

\[ n = \frac{L_{max}}{P \cdot k} = \frac{675}{10 \times 1.3} = 51.9 \div 52 \text{ crests} \]

\[ L_{min} = n \cdot \ell \text{ min} + E = 52 \times 2.5 + 2 = 132 \]

(E indicates the plate thickness of 2)

Therefore, the model number of the required bellows is DH20-132/675.

---

[Diagram showing Bellows DH with measurements and labels]
Dedicated LM Cover TPH for Model HSR

The tables below show the dimensions of dedicated LM cover TPH for model HSR. Specify the corresponding model number of the desired bellows from the table.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>W</th>
<th>D (max)</th>
<th>H</th>
<th>b1</th>
<th>t1</th>
<th>b2</th>
<th>t2</th>
<th>t3</th>
<th>t4</th>
<th>Mounting bolt</th>
<th>Supported model</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPH 25</td>
<td>55</td>
<td>42</td>
<td>28</td>
<td>30</td>
<td>7</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>10</td>
<td>8</td>
<td>M3× 6 ℓ</td>
</tr>
<tr>
<td>TPH 30</td>
<td>60</td>
<td>48</td>
<td>34</td>
<td>40</td>
<td>8</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>11</td>
<td>10</td>
<td>M4× 8 ℓ</td>
</tr>
<tr>
<td>TPH 35</td>
<td>70</td>
<td>55</td>
<td>38</td>
<td>40</td>
<td>9</td>
<td>14</td>
<td>23</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>M4× 8 ℓ</td>
</tr>
<tr>
<td>TPH 45</td>
<td>90</td>
<td>75</td>
<td>48</td>
<td>58</td>
<td>10</td>
<td>20</td>
<td>29</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>M5×10 ℓ</td>
</tr>
<tr>
<td>TPH 55</td>
<td>100</td>
<td>88</td>
<td>55</td>
<td>66</td>
<td>11</td>
<td>26</td>
<td>35</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>M5×10 ℓ</td>
</tr>
</tbody>
</table>

Unit: mm

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Stage</th>
<th>L min</th>
<th>L max</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPH 25</td>
<td>3</td>
<td>200</td>
<td>530</td>
<td>330</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>150</td>
<td>380</td>
<td>230</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>100</td>
<td>230</td>
<td>130</td>
</tr>
<tr>
<td>TPH 30</td>
<td>3</td>
<td>250</td>
<td>680</td>
<td>430</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>200</td>
<td>530</td>
<td>330</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>150</td>
<td>380</td>
<td>230</td>
</tr>
<tr>
<td>TPH 35</td>
<td>3</td>
<td>300</td>
<td>830</td>
<td>530</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>250</td>
<td>680</td>
<td>430</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>200</td>
<td>530</td>
<td>330</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>150</td>
<td>380</td>
<td>230</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Stage</th>
<th>L min</th>
<th>L max</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPH 45</td>
<td>3</td>
<td>350</td>
<td>980</td>
<td>630</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>300</td>
<td>830</td>
<td>530</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>250</td>
<td>680</td>
<td>430</td>
</tr>
<tr>
<td>TPH 55</td>
<td>4</td>
<td>400</td>
<td>1460</td>
<td>1060</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>350</td>
<td>1330</td>
<td>980</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>300</td>
<td>1060</td>
<td>760</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>250</td>
<td>860</td>
<td>610</td>
</tr>
</tbody>
</table>

Unit: mm

Note 1: For lubrication when using the dedicated LM cover, contact THK.

Note 2: When using the dedicated LM cover, the LM block and LM rail need to be machined so that the bellows can be mounted. Be sure to indicate that the dedicated bellows is required when ordering the LM Guide.

Model number coding: TPH55-400/1460

1 Model number  ... LM cover for HSR55
2 Lmin(cover length when contracted)
3 Lmax(cover length when extended)
Dedicated Cap C for LM Rail Mounting Holes

If any of the LM rail mounting holes of an LM Guide is filled with cutting chips or foreign matter, they may enter the LM block structure. Entrance of such foreign matter can be prevented by covering each LM rail mounting hole with the dedicated cap so that the top of the mounting holes is on the same level as the LM rail top face.

Since the dedicated cap C for LM rail mounting holes uses a special synthetic resin with high oil resistance and high wear resistance, it is highly durable.

When placing an order, specify the desired cap type with the corresponding cap number indicated in table 3.

For the procedure for mounting the cap, see page a-22.

QZ Lubricator™

When QZ Lubricator is required, specify the desired type with the corresponding symbol indicated in table 4 (for details of QZ Lubricator, see pages a-19 and a-20).

For supported LM Guide model numbers for QZ Lubricator and overall LM block length with QZ Lubricator attached (dimension L), see page a-307.

Table 3 Major Dimensions of Dedicated Cap C

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Cap C model No.</th>
<th>Bolt used</th>
<th>Major dimensions mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSR 12</td>
<td>C 3</td>
<td>M 3</td>
<td>6.3  1.2</td>
</tr>
<tr>
<td>HSR 15</td>
<td>C 4</td>
<td>M 4</td>
<td>7.8  1.0</td>
</tr>
<tr>
<td>HSR 20</td>
<td>C 5</td>
<td>M 5</td>
<td>9.8  2.4</td>
</tr>
<tr>
<td>HSR 25</td>
<td>C 6</td>
<td>M 6</td>
<td>11.4 2.7</td>
</tr>
<tr>
<td>HSR 30</td>
<td>C 8</td>
<td>M 8</td>
<td>14.4 3.7</td>
</tr>
<tr>
<td>HSR 35</td>
<td>C 8</td>
<td>M 8</td>
<td>14.4 3.7</td>
</tr>
<tr>
<td>HSR 45</td>
<td>C12</td>
<td>M12</td>
<td>20.5 4.7</td>
</tr>
<tr>
<td>HSR 55</td>
<td>C14</td>
<td>M14</td>
<td>23.5 5.7</td>
</tr>
<tr>
<td>HSR 65</td>
<td>C16</td>
<td>M16</td>
<td>26.5 5.7</td>
</tr>
<tr>
<td>HSR 85</td>
<td>C22</td>
<td>M22</td>
<td>35.5 5.7</td>
</tr>
</tbody>
</table>

![Dedicated Cap C Diagram]

Table 4 Parts Symbols for Model HSR with QZ Lubricator Attached

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Dust prevention accessories for LM Guide with QZ Lubricator attached</th>
</tr>
</thead>
<tbody>
<tr>
<td>QZUU</td>
<td>With end seal</td>
</tr>
<tr>
<td>QZSS</td>
<td>With end seal + side seal</td>
</tr>
<tr>
<td>QZDD</td>
<td>With double seals + side seal</td>
</tr>
<tr>
<td>QZZZ</td>
<td>With end seal + side seal + metal scraper + QZ</td>
</tr>
<tr>
<td>QZKK</td>
<td>With double seals + side seal + metal scraper + QZ</td>
</tr>
<tr>
<td>QZSSSSH</td>
<td>With end seal + side seal + LaCS + QZ</td>
</tr>
<tr>
<td>QZDSSH</td>
<td>With double seals + side seal + LaCS + QZ</td>
</tr>
<tr>
<td>QZZZSH</td>
<td>With end seal + side seal + metal scraper + LaCS + QZ</td>
</tr>
<tr>
<td>QZKSSH</td>
<td>With double seals + side seal + metal scraper + LaCS + QZ</td>
</tr>
</tbody>
</table>
**Stopper**

With miniature LM Guide models HSR8, 10 and 12, balls will fall off if the LM block is removed from the LM rail. To prevent the LM block from being pulled out, end pieces are mounted before shipment. If removing the stopper when using the LM Guide, be sure that the LM block will not overrun.

<table>
<thead>
<tr>
<th>Model No.</th>
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<th>B</th>
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<td>HSR 12</td>
<td>18.5</td>
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</table>

**Semi-standard Greasing Hole**

For model HSR, a semi-standard greasing hole is available. Specify the appropriate model number according to the application.

Contact THK for details.
**Tapped LM Rail Type of Model HSR**

The model HSR variations include a type with its LM rail bottom tapped. This type is useful when desiring to mount the LM Guide from the bottom of the base and when desiring to increase the dust prevention effect.

1. Determine the bolt length so that a clearance of 2 to 5 mm is secured between the bolt end and the bottom of the tap (effective tap depth) (see figure above).
2. A tapped LM rail type is available also for model HSR-YR.
3. For standard pitches of the taps, see table 6 on page a-289.

### Table 5 Dimensions of the LM Rail Tap

<table>
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<th>Model No.</th>
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<th>Effective tap depth $\ell_1$</th>
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**Model number coding**

| HSR30 A2UU+1000LH K |

**Symbol for tapped LM rail type**
### Standard Length and Maximum Length of the LM Rail

Table 6 shows the standard lengths and the maximum lengths of model HSR variations. If the maximum length of the desired LM rail exceeds them, connected 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.

![Diagram of LM Rail Dimensions](image_url)

#### Table 6 Standard Length and Maximum Length of the LM Rail for Model HSR  
**Unit: mm**

<table>
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<th>HSR 10</th>
<th>HSR 12</th>
<th>HSR 15</th>
<th>HSR 20</th>
<th>HSR 25</th>
<th>HSR 30</th>
<th>HSR 35</th>
<th>HSR 45</th>
<th>HSR 55</th>
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</table>

**Note 1:** The maximum length varies with accuracy grades. Contact THK for details.

**Note 2:** If connected rails are not allowed and a greater length than the maximum values above is required, contact THK.

**Note 3:** The figures in the parentheses indicate the maximum lengths of stainless steel made models.
Models HSR-A  |  HSR-AM  |  HSR-LA  |  HSR-LAM

Models HSR15 to 35A/AM/LAM

Models HSR45 to 85A/LA

---

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<th>Model No.</th>
<th>External dimensions Width/Height</th>
<th>LM block dimensions</th>
<th>Grease nipple</th>
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<td>HSR 20AM 70 70 28.6 45 48 54</td>
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<td>HSR 25A</td>
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<td>HSR 25AM 70 70 28.6 45 48 54</td>
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**Model number coding**

- **Model number**
- **Type of LM block**
- **No. of LM blocks used on the same rail**
- **With QZ Lubricator**
- **Dust prevention accessory symbol (see page a-282)**
- **Radial clearance symbol (see page a-33)**
- **LM block is made of stainless steel**
- **LM rail length (mm)**
- **Accuracy symbol (see page a-23)**
- **LM rail made of stainless steel**
- **No. of rails used on the same plane**

**Note**

This model number indicates that a single-rail unit constitutes one set (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum). Those models equipped with QZ Lubricator cannot have a grease nipple.

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**a. Dimensions of the LM Guides**

**2011 LM Guide Model HSR**

**Standard Length and Maximum Length of the LM Rail**

**Selecting a Model Number**

Refer to the "THK General Catalog - Technical Descriptions of the Products," provided separately.
Models HSR-B | HSR-BM | HSR-LB | HSR-LBM

### Standard Length and Maximum Length of the LM Rail

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<th>LM block dimensions</th>
<th>LM rail dimensions</th>
<th>Basic load rating</th>
<th>Static permissible moment kN-m*</th>
<th>Mass LM block kg</th>
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#### Model number coding

- **HSR25 B 2 QZ UU CO M +1200L P M- II**
- **Model number**
- **Type of LM block**
- **No. of LM blocks used on the same rail**
- **With QZ Lubricator**
- **Dust prevention accessory symbol (see page a-282)**
- **Radial clearance symbol (see page a-33)**
- **LM block is made of stainless steel**
- **LM rail length (in mm)**
- **Accuracy symbol (see page a-38)**
- **LM rail is made of stainless steel**
- **No. of rails used on the same plane**

#### Note

- **Symbol M indicates that stainless steel is used in the LM block, LM rail and balls. Those models marked with this symbol are therefore highly resistant to corrosion and environment.**
- **Static permissible moment** 1 block: static permissible moment value with 1 LM block
- 2 blocks: static permissible moment value with 2 blocks closely contacting with each other

---

**Selecting a Model Number**

Refer to the "THK General Catalog - Technical Descriptions of the Products," provided separately

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**Unit: mm**

- **W** Width, **H** Height, **L** Length, **B** Pitch, **T** Tolerance, **K** Accuracy, **E** Efficiency
- **C** Basic load rating, **C1** Basic load rating
- **M1** Static permissible moment (1 block), **M2** Static permissible moment (2 blocks)
- **M3** Static permissible moment (3 blocks)

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**THK a-289**

**Standard Length and Maximum Length of the LM Rail**

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**THK a-293**

**283 LM Guide Model HSR**
### Model HSR-RM

#### Models HSR8RM and 10RM

#### Model HSR12RM

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<th>Model No.</th>
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<th>Greased nipple</th>
<th>LM rail dimensions</th>
<th>Basic load rating</th>
<th>Static permissible moment kN-m*</th>
<th>Mass</th>
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### Note

- Stainless steel is used in the LM block, LM rail and balls. Those models are marked with this symbol are therefore highly resistant to corrosion and environment.
- Static permissible moment* 1 block: static permissible moment value with 1 LM block
- 2 blocks: static permissible moment value with 2 blocks closely contacting with each other

#### Model number coding

- HSR12 R 2 UU C1 M +670L H M- II

#### Standard Length and Maximum Length of the LM Rail

P. a-289

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Figure showing dimensions of the LM Guides.
Models HSR-R | HSR-LR | HSR-RM | HSR-LRM

Standard Length and Maximum Length of the LM Rail  

Model number coding  

<table>
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<th>LM rail dimensions</th>
<th>Basic load rating</th>
<th>Static permissible moment</th>
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Note: This model number indicates that a single-rail unit constitutes one set (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum). Those models equipped with QZ Lubricator cannot have a grease nipple.

Symbol M indicates that stainless steel is used in the LM block, LM rail and balls. Those models marked with this symbol are therefore highly resistant to corrosion and environment.

Static permissible moment: 1 block: static permissible moment value with 1 LM block 2 blocks: static permissible moment value with 2 blocks closely contacting with each other.

Selecting a Model Number Refer to the "THK General Catalog: Technical Descriptions of the Products," provided separately.
Models HSR-YR | HSR-YRM

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<th>Model No.</th>
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<th>LM block dimensions</th>
<th>LM rail dimensions</th>
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<th>Mass</th>
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**Model number coding**

- HSR25 YR 2 UU C0 M +1200L P M- II

**Note**

- Symbol M indicates that stainless steel is used in the LM block, LM rail and balls. Those models marked with this symbol are therefore highly resistant to corrosion and environment.
- Static permissible moment* 1 block: static permissible moment value with 1 LM block
  2 blocks: static permissible moment value with 2 blocks closely contacting with each other

**Model number**

- 1: Model number
- 2: Type of LM block
- 3: No. of LM blocks used on the same rail
- 4: Dust prevention accessory symbol (see page a-282)
- 5: Radial clearance symbol (see page a-33)
- 6: LM block is made of stainless steel
- 7: LM rail length (in mm)
- 8: Accuracy symbol (see page a-38)
- 9: LM rail is made of stainless steel
- 10: No. of rails used on the same plane
- 11: This model number indicates that a single-rail unit constitutes one set (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum).
Selecting a Model Number

Refer to the "THK General Catalog - Technical Descriptions of the Products," provided separately.

Models HSR-CA | HSR-CAM
Models HSR-HA | HSR-HAM

Models HSR20 to 35CA/HA/CAM/HAM
Models HSR45 to 85CA/HA

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<th>T1</th>
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<th>E</th>
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**Model number coding**
- HSR25 HA 2 QZ KKH 3 C0 M +1300L P M+ II

**Note**
- Symbol M indicates that stainless steel is used in the LM block, LM rail and balls. Those models marked with this symbol are therefore highly resistant to corrosion and environment.
- Static permissible moment: 1 block: static permissible moment value with 1 LM block
- 2 blocks: static permissible moment value with 2 blocks closely contacting with each other

**Model number indicates that a single-rail unit constitutes one set (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum). Those models equipped with QZ Lubricator cannot have a grease nipple.**
Models HSR-CB | HSR-CBM
Models HSR-HB | HSR-HBM

### Table: Dimensions of the LM Guides

<table>
<thead>
<tr>
<th>Model No.</th>
<th>External dimensions</th>
<th>LM block dimensions</th>
<th>LM rail dimensions</th>
<th>Basic load rating</th>
<th>Static permissible moment kN·m²</th>
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<th>Unit: mm</th>
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**Note:**
- Symbol M indicates that stainless steel is used in the LM block, LM rail and balls. Those models marked with this symbol are therefore highly resistant to corrosion and environment.
- Static permissible moment* 1 block: static permissible moment value with 1 LM block
- 2 blocks: static permissible moment value with 2 blocks closely contacting with each other

---

**Model number coding:**
- HSR35 CB 2 QZ ZZHH C0 M +14000L P M-
- Type of block
- No. of LM blocks used on the same rail
- With QZ Lubricator
- Dust prevention accessory symbol (see page a-282)
- Radial clearance symbol (see page a-33)
- LM block made of stainless steel
- LM block length (in mm)
- Accuracy symbol (see page a-28)
- LM rail made of stainless steel
- No. of rails used on the same plane

**Model note:** This model number indicates that a single-rail unit constitutes one set (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum). Those models equipped with QZ Lubricator cannot have a grease nipple.

---

**a. Dimensions of the LM Guides**

**a.303 LM Guide Model HSR**

**a.304 Standard Length and Maximum Length of the LM Rail**
### Models HSR100 to 150 HA

<table>
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<th>LM block dimensions</th>
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**Note**: **<sup>**</sup> indicates a through hole.

**Note**: Static permissible moment<sup>*</sup> 1 block: static permissible moment value with 1 LM block 2 blocks: static permissible moment value with 2 blocks closely contacting with each other.

### Model number coding

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**Model number**: 1<br>**Type of LM block**: 2<br>**No. of LM blocks used on the same rail**: 3<br>**Dust prevention accessory symbol (see page a-282)**: 4<br>**Radial clearance symbol (see page a-33)**: 5<br>**LM rail length (in mm)**: 6<br>**Accuracy symbol (see page a-38)**: 7

**Note**: This model number indicates that a single-rail unit constitutes one set (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum).
### Overall LM Block Length with Options

#### Overall LM Block Length (Dimension L) of Model HSR with a Dust Prevention Accessory Attached

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Note: "—" indicates not available.

"*" indicates available, but not support a grease nipple. Contact THK for details.
## Overall LM Block Length (Dimension L) of Model HSR with QZ Lubricator Attached

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<td>286.1</td>
<td>298.5</td>
<td>304.4</td>
<td>310.5</td>
<td>316.8</td>
<td>323.1</td>
</tr>
</tbody>
</table>

---

### Basic Specifications of LaCS®

1. **Service temperature range of LaCS:** -20°C to +80°C
2. **Resistance of LaCS:** indicated in table 7

#### Table 7 Resistance of LaCS

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Resistance of LaCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSR 15</td>
<td>3.8</td>
</tr>
<tr>
<td>HSR 20</td>
<td>5.6</td>
</tr>
<tr>
<td>HSR 25</td>
<td>7.5</td>
</tr>
<tr>
<td>HSR 30</td>
<td>14.9</td>
</tr>
<tr>
<td>HSR 35</td>
<td>22.4</td>
</tr>
</tbody>
</table>

**Note 1:** Each resistance value in the table only consists of that of LaCS, and does not include sliding resistances of seals and other accessories.

**Note 2:** For the maximum service speed of LaCS, contact THK.
Grease Nipple

Those LM Guide models without QZ Lubricator are equipped with a grease nipple. Fig. 7 shows the mounting location for the grease nipple. Please note that attaching the grease nipple increases the LM block width.

For LM Guide Models with Dust Prevention Accessories SSHH, DDHH, ZZHH or KKHH

LM Guide models with dust prevention accessories SSHH, DDHH, ZZHH or KKHH have the grease nipple in the location indicated in Fig. 7. Table 8 shows incremental dimensions with the grease nipple.

![Grease nipple mounting location for model HSR](image)

Table 8

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Incremental dimension with grease nipple E (mm)</th>
<th>Nipple type</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSR 15A/B/R/YR</td>
<td>2.9</td>
<td>PB1021B</td>
</tr>
<tr>
<td>HSR 20A/B/R/CA/CB/YR</td>
<td>9.4</td>
<td>B-M6F</td>
</tr>
<tr>
<td>HSR 20LA/LB/LR/H/HB</td>
<td>9.4</td>
<td>B-M6F</td>
</tr>
<tr>
<td>HSR 25A/B/R/CA/CB/YR</td>
<td>9.0</td>
<td>B-M6F</td>
</tr>
<tr>
<td>HSR 25LA/LB/LR/H/HB</td>
<td>9.0</td>
<td>B-M6F</td>
</tr>
<tr>
<td>HSR 30A/B/R/CA/CB/YR</td>
<td>8.0</td>
<td>B-M6F</td>
</tr>
<tr>
<td>HSR 30LA/LB/LR/H/HB</td>
<td>8.0</td>
<td>B-M6F</td>
</tr>
</tbody>
</table>

Note: When desiring the mounting location for the grease nipple other than the one indicated in Fig. 7, contact THK.

For LM Guide Models with Dust Prevention Accessories UU or SS

For the mounting location of the grease nipple (N) and its incremental dimension (E) when dust prevention accessories UU or SS are attached, see the corresponding tables of dimensions on pages a-290 to a-305.

For LM Guide Models with Dust Prevention Accessories DD, ZZ or KK

For the mounting location of the grease nipple and its incremental dimension when dust prevention accessories DD, ZZ or KK are attached, contact THK.

Model number coding

<table>
<thead>
<tr>
<th>HSR25 A 2 QZ KKHH C1 +760L P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 LM Guide model number</td>
</tr>
<tr>
<td>2 QZ: with QZ Lubricator, without grease nipple  No symbol: without QZ Lubricator (note 2)</td>
</tr>
<tr>
<td>3 Dust prevention accessory symbol (see page a-282)</td>
</tr>
</tbody>
</table>

Note 1: QZ Lubricator and LaCS are not sold alone.
Note 2: Those models equipped with QZ Lubricator cannot have a grease nipple. When desiring both QZ Lubricator and the grease nipple to be attached, contact THK.
Precautions on Use

Laminated Contact Scraper LaCS for THK LM Guides

Service environment

- Be sure the service temperature range of Laminated Contact Scraper LaCS is between -20°C and +80°C, and do not clean LaCS in an organic solvent or white kerosene, or leave it unpacked.

Impregnating oil

- The lubricant impregnated into Laminated Contact Scraper LaCS is used to increase the sliding capability of LaCS itself. For lubrication of the LM Guide, attach QZ Lubricator or the grease nipple.

Function

- The intended role of Laminated Contact Scraper LaCS is to remove foreign matter or liquids. To seal oils, end seals are needed.

Design

- When using Laminated Contact Scraper LaCS, be sure to use the dedicated cap C for LM rail mounting holes or an appropriate form of cover.

QZ Lubricator for THK LM Guides

Handling

- Dropping or hitting this product may damage it. Take much care when handling it.
- Do not clean it with an organic solvent or white kerosene.
- Do not leave it unpacked for a long period of time.
- Do not block the air vent with grease or the like.

Service temperature range

- Be sure the service temperature of this product is between -10°C and +50°C. When using it beyond the service temperature range, contact THK.

Use in a special environment

- When using it in a special environment, contact THK.

Precaution on selection

- Be sure the stroke is longer than the overall length of the LM block length attached with QZ Lubricator.

Corrosion prevention of LM Guides

- QZ Lubricator is a lubricating device designed to feed a minimum amount of oil to the ball raceway of LM rails, and does not provide corrosion prevention to the whole LM Guide. When using it in an environment subject to a coolant or the like, we strongly recommend applying grease or other anti-corrosion agent to the mounting base surface and the LM rail end surfaces of the LM Guide as an anti-corrosion measure.