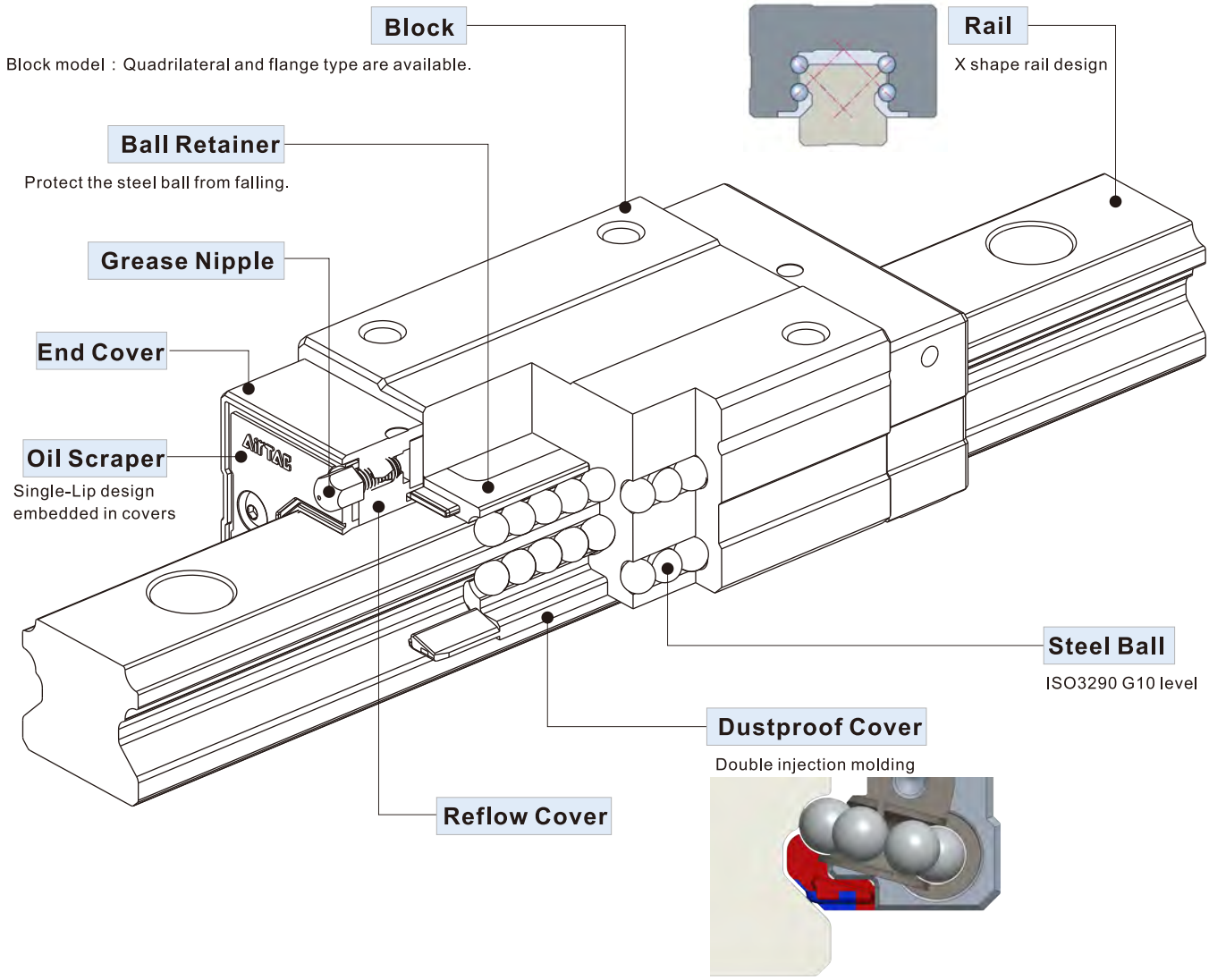
## Product Introduction




## Product Features

**1. With self-adjustment ability**

X-shaped (45°-45°) of curved groove on cross section design makes it self-aligning. Even small misalignment exists on the mounting surface, this design can help absorb it and maintain high precision, smooth and stable linear motion.

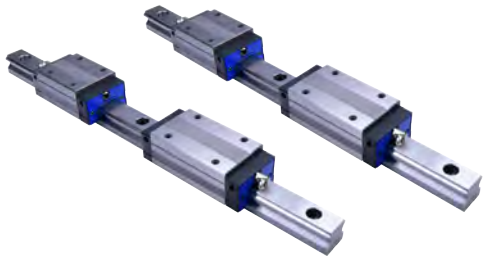
**2. High rigidity, equal load on four direction design**

The 45-degree contact angle design of the four rows of steel balls and the raceway allow the steel balls to achieve the ideal two-point contact, and can withstand the action and reaction force from the radial and lateral direction. Meanwhile, pre-load can be applied to increase extra rigidity if necessary.

**3. Interchangeable**

Because of the strict control on manufacturing process, the dimensional accuracy is stable and within the set tolerance. Besides the ball retainer design can prevent steel balls from falling out. Therefore when assembling, blocks are interchangeable within the same spec and still maintain consistency of pre-load and accuracy.

## LSH Series



## Order Information(Combined)

LSH 15 H N 1 X220 S20 A H - AM6 - B

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

| | |
|---|---|
| ①Model Code | LSH:Standard Type Linear Guide |
| ②Rail Width | 15:15mm 20:20mm 25:23mm 30:28mm 35:34mm |
| ③Block Style | H: Square type F1: Flange type, Mounting from top<br>F2: Flange type, Mounting from bottom |
| ④Block type | N: Standard L: Long [w/o 15 series] |
| ⑤Number of Block | 1: One 2: Two [Note: Amount of block on a single set of linear guide] |
| ⑥Length of Rail | 220:220mm .....[Defined by customer] |
| ⑦Position of first mounting hole | S□ : Distance from end of rail to the center of first mounting hole<br>(It is recommended to be greater than minimum margin)<br>[Standard margin pitch is 20mm] |
| ⑧Preload | A: Standard clearance B: Light Preload C: Medium Preload |
| ⑨Accuracy | N : Normal H : High P : Precision |
| ⑩Nipple/adapter type | 15: M4 M4 Nipple; AM6 M4 to M6 I type; LM6 M4 to M6 L type<br>20 25 30 35: M6 M6 Nipple; A01 M6 to PT1/8 I type; AM8 M6 to M8; L01 M6 to PT1/8 L type; LM8 M6 to M8; SM6 M6 Nipple |
| ⑪Packing type | Blank: the block and rail are assembled<br>B: block and rail are put separately |

Standard margin pitch is 20mm, Customer can define a non-standard margin pitch.

## Butt-jointed Order Information

LSH15 H N 1X3920 T 3900 T 3920 A H–AM6–B

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

Note: Number of joints cannot be more than 2 times(three rails at most).
For LSH15/20/25, maximum length of jointed rail is 11800mm. For LSH30/35, it's 11880.
Customization is needed for joint times more than standard.

| | |
|---|---|
| ①Model Code | LSH:Standard Type Linear Guide |
| ②Rail Width | 15:15mm 20:20mm 25:23mm 30:28mm 35:34mm |
| ③Block Style | H: Square type F1: Flange type, Mounting from top<br>F2: Flange type, Mounting from bottom |
| ④Block type | N: Standard L: Long [ W/O15 series ] |
| ⑤Number of Block | 1: One 2: Two [Note: Amount of block on a single set of linear guide] |
| ⑥Length of first Rail | 3920:3920mm .....[Defined by the customer] |
| ⑦Butt-jointed mark | T: Rail Butt-jointed mark<br>(Butt-jointed end margin:1/2P) [P is the standard hole distance] |
| ⑧Length of secont Rail | 3900:3900mm .....[Defined by the customer] |
| ⑨Butt-jointed mark | Blank: two rails joint T: Rail Butt-jointed mark<br>(Butt-jointed end margin:1/2P) [P is the standard hole distance] |
| ⑩Length of third Rail | Blank: two rails joint 3920:3920mm.....[Defined by customer] |
| ⑪Preload | A: Standard clearance B: Light Preload C: Medium Preload |
| ⑫Accuracy | N : Normal H : High P : Precision |
| ⑬Nipple/adapter type | 15: M4 M4 Nipple; AM6 M4 to M6 I type; LM6 M4 to M6 L type<br>20 25 30 35: M6 M6 Nipple; A01 M6 to PT1/8 I type; AM8 M6 to M8; L01 M6 to PT1/8 L type; LM8 M6 to M8; SM6 M6 Nipple |
| ⑭Packing type | Blank: the block and rail are assembled<br>B: block and rail are put separately |

Butt-jointed end margin:1/2P , Position of the first and last hole is defined by customer.

## LSH Series

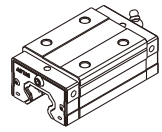
### 1. Block Order Information

**LSH 15 BK - H N - H - E - AM6**

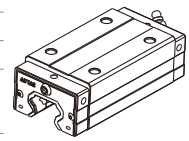
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Notes: When selecting rails and bearings, the different pairing codes can change the uints preload. details see"preload pairing chart".

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ①Model Code | LSH:Standard Type Linear Guide | | | | | | | |
| ②Rail Width | 15:15mm | 20:20mm | 25:23mm | 30:28mm | 35:34mm | | | |
| ③Block Code | BK: Block | | | | | | | |
| ④Block Style | H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom | | | | | | | |
| ⑤Block type | N: Standard L: Long [w/o 15 series] | | | | | | | |
| ⑥Accuracy | N : Normal H : High | | | | | | | |
| ⑦Group code | SA C E [Note] | | | | | | | |
| ⑧Nipple /adapter type | 15 | M4 | M4 Nipple | | 20 25 30 35 | M6 | M6 Nipple | |
| | | AM6 | M4 to M6 | I type | | A01 | M6 to PT1/8 | I type |
| | | | | | | AM8 | M6 to M8 | |
| | | LM6 | M4 to M6 | L type | | L01 | M6 to PT1/8 | L type |
| | | | | | | LM8 | M6 to M8 | |
| | | | | | | SM6 | M6 Nipple | |



N: Standard



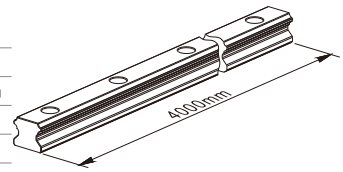
L: Long

### 2. Rail(4m) Order Information

**LSH 15 RL X 4000-H - E**

① ② ③ ④ ⑤ ⑥

| | |
|---|---|
| ①Model Code | LSH:Standard Type Linear Guide |
| ②Rail Width | 15:15mm 20:20mm 25:23mm 30:28mm 35:34mm |
| ③Rail Code | RL: Rail |
| ④Rail Length | 4000 : 4000mm |
| ⑤Accuracy | N : Normal H : High |
| ⑥Group code | E [Note] |



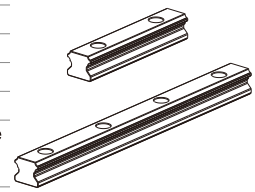

Note: ●Standard length of LSH rail is four meters.
●For LSH15/20/25, both margin pitch of rail are 20mm.
●For LSH30/35, one side of margin pitch is 20mm, the other side is 60mm.
●When selecting rails and bearings, the different pairing codes can change the uints preload. details see "preload pairing chart".

### 3. Rail Order Information

**LSH 15 RL X 220-S20 -H- E**

① ② ③ ④ ⑤ ⑥ ⑦

| | |
|---|---|
| ①Model Code | LSH:Standard Type Linear Guide |
| ②Rail Width | 15:15mm 20:20mm 25:23mm 30:28mm 35:34mm |
| ③Rail Code | RL: Rail |
| ④Rail Length | 220:220mm .....[Defined by the customer] |
| ⑤Position of first mounting hole | S□ : Distance from end of rail to the center of first mounting hole (It is recommended to be greater than minimum margin) [Standard margin pitch is 20mm] |
| ⑥Accuracy | N : Normal H : High |
| ⑦Group code | E [Note] |



Standard margin pitch is 20mm, Customer can define a non-standard margin pitch.

Note: When selecting rails and bearings, the different pairing codes can change the uints preload. details see "preload pairing chart".

### 4. Rail/Block preload pairing chart

When customer orders rail/block, please choose the pairing code of rail/block in accordance with the needed preload of linear guide(combined). Details please refer to the "preload pairing chart".

| Preload pairing chart | | |
|---|---|---|
| Preload grade | | Rail pairing code |
| | | E |
| Block pairing code | SA | Medium preload |
| | C | Light preload |
| | E | Standard clearance |

## LSH Series

### Accessory Order Code

**L - P - AM6**

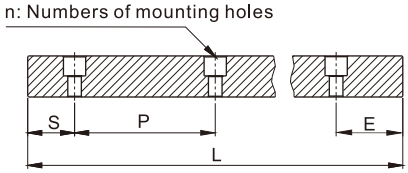
(1) (2) (3)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ①Accessory Code | L: Linear Guide Accessory | | | | | | | | |
| ②Nipple/adapter Code | P: Nipple/adapter | | | | | | | | |
| ③Nipple/adapter type | 15 | M4 | M4 Nipple | | 20<br>25<br>30<br>35 | M6 | M6 Nipple | | |
| | | AM6 | M4 to M6 | I type | | A01 | M6 to PT1/8 | I type | |
| | | | | | | AM8 | M6 to M8 | | |
| | | LM6 | M4 to M6 | L type | | L01 | M6 to PT1/8 | L type | |
| | | | | | | LM8 | M6 to M8 | | |
| | | | | | | SM6 | M6 Nipple | | |

### Rail Specification

The edge pitch of first mounting hole (S) and last mounting hole (E) should not be greater than 1/2P. Overlong edge may induce unstable installation and affect the accuracy.

n: Numbers of mounting holes




L=(n-1)×P+S+E

L: Total length of rail(mm)

n: Numbers of mounting holes on rail

P: Distance between bolt holes(mm)

S: Edge of first mounting hole(mm)

E: Edge of last mounting hole(mm)

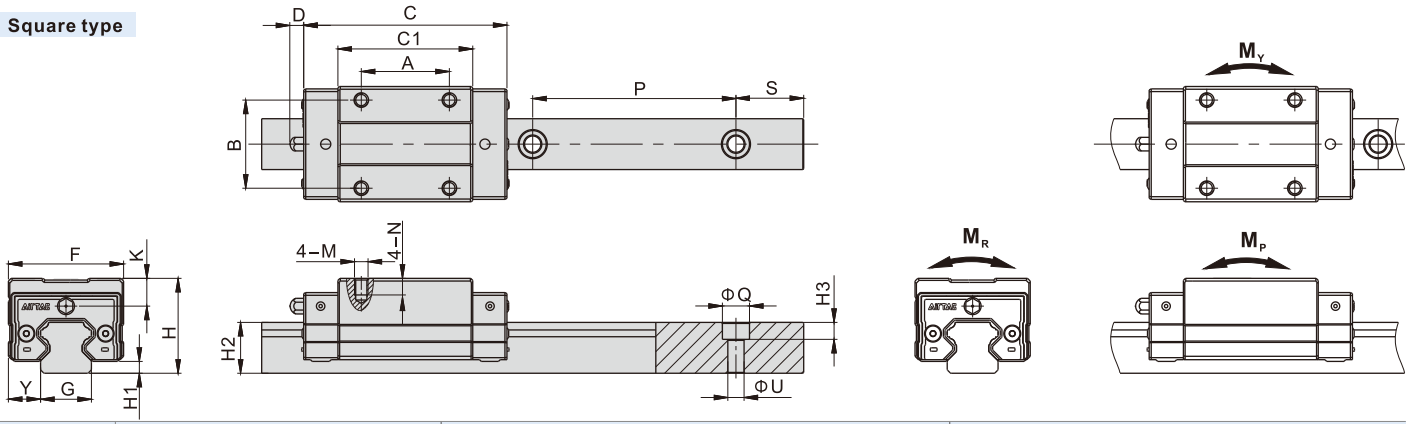
| Model | LSH15 | LSH20 | LSH25 | LSH30 | LSH35 |
|---|---|---|---|---|---|
| Pitch(P) | 60 | 60 | 60 | 80 | 80 |
| Standard Edge Pitch(S) | 20 | 20 | 20 | 20 | 20 |
| Min. Edge Pitch(S/E min) | 5 | 6 | 7 | 8 | 8 |
| Max. Edge Pitch(S/E max) | 55 | 54 | 53 | 72 | 72 |
| Maximum length of rail for standard edge | 4000 | 4000 | 4000 | 3960 | 3960 |
| Maximum length(Lmax) | 4000 | 4000 | 4000 | 4000 | 4000 |

Note:

- Joint rail must be chosen if length of rail exceeds the maximum.
- When deciding edge pitch, it should be within the range of above table. There would be risk of broken hole if pitch is out of range.
- Maximum length of rail for standard' means the maximum length of rail can be chosen when both sides of edge pitches are standard.

### Specifications and Dimensions

Square type

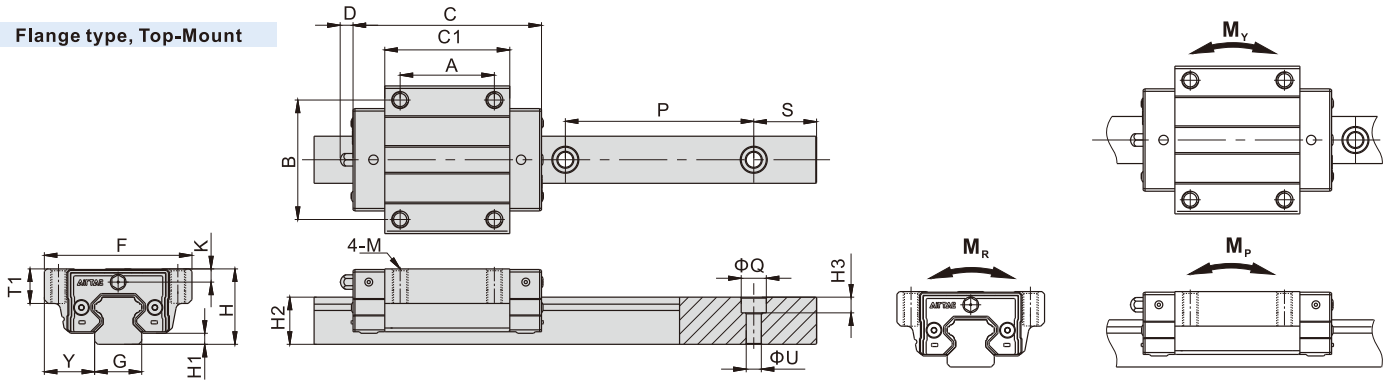



| Model\Item | External Dimension ( mm ) | | | | | Block Dimension ( mm ) | | | | | | | Rail Dimension ( mm ) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | H1 | F | Y | C | C1 | A | B | K | D | M | N | G | H2 | P | S | ΦQ | ΦU | H3 |
| LSH15HN | 28 | 3.5 | 34 | 9.5 | 60 | 40 | 26 | 26 | 8.3 | 6 | M4X0.7 | 5 | 15 | 15 | 60 | 20 | 8 | 4.8 | 5.3 |
| LSH20HN | 30 | 4.3 | 44 | 12 | 76.5 | 52 | 36 | 32 | 6.5 | 12.5 | M5X0.8 | 6 | 20 | 17.5 | 60 | 20 | 9.5 | 5.8 | 8.5 |
| LSH20HL | 30 | 4.3 | 44 | 12 | 90.5 | 66 | 50 | 32 | 6.5 | 12.5 | M5X0.8 | 6 | 20 | 17.5 | 60 | 20 | 9.5 | 5.8 | 8.5 |
| LSH25HN | 40 | 6.5 | 48 | 12.5 | 83.5 | 58.5 | 35 | 35 | 10.9 | 12.5 | M6X1.0 | 8 | 23 | 22 | 60 | 20 | 11.2 | 7 | 9 |
| LSH25HL | 40 | 6.5 | 48 | 12.5 | 105 | 80 | 50 | 35 | 10.9 | 12.5 | M6X1.0 | 8 | 23 | 22 | 60 | 20 | 11.2 | 7 | 9 |
| LSH30HN | 45 | 6.5 | 60 | 16 | 95.5 | 70.5 | 40 | 40 | 11 | 13 | M8X1.25 | 10 | 28 | 26 | 80 | 20 | 14.2 | 9 | 12 |
| LSH30HL | 45 | 6.5 | 60 | 16 | 118 | 93 | 60 | 40 | 11 | 13 | M8X1.25 | 10 | 28 | 26 | 80 | 20 | 14.2 | 9 | 12 |
| LSH35HN | 55 | 7 | 70 | 18 | 109 | 80 | 50 | 50 | 16.2 | 12.5 | M8X1.25 | 12 | 34 | 29 | 80 | 20 | 14.2 | 9 | 12 |
| LSH35HL | 55 | 7 | 70 | 18 | 134.5 | 105.5 | 72 | 50 | 16.2 | 12.5 | M8X1.25 | 12 | 34 | 29 | 80 | 20 | 14.2 | 9 | 12 |

| Model\Item | Mounting Screw | Dynamic Load Rating(kN) | Static Load Rating(kN) | Static Rated Moment (kN.m) | | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | | C | $C_0$ | $M_R$ | $M_P$ | $M_Y$ | Block(kg) | Rail(kg/m) |
| LSH15HN | M4 | 11.3 | 17.9 | 0.12 | 0.12 | 0.12 | 0.2 | 1.43 |
| LSH20HN | M5 | 18.6 | 28.6 | 0.27 | 0.25 | 0.25 | 0.33 | 2.23 |
| LSH20HL | M5 | 22.2 | 37.6 | 0.35 | 0.34 | 0.34 | 0.41 | 2.23 |
| LSH25HN | M6 | 26.9 | 39.4 | 0.44 | 0.38 | 0.38 | 0.53 | 3.32 |
| LSH25HL | M6 | 32.9 | 53.0 | 0.58 | 0.57 | 0.57 | 0.7 | 3.32 |
| LSH30HN | M8 | 37.4 | 55.0 | 0.66 | 0.67 | 0.67 | 0.91 | 4.5 |
| LSH30HL | M8 | 45.7 | 73.1 | 0.88 | 0.91 | 0.91 | 1.17 | 4.5 |
| LSH35HN | M8 | 50.8 | 72.3 | 1.05 | 0.92 | 0.92 | 1.26 | 6.37 |
| LSH35HL | M8 | 61.9 | 96.1 | 1.52 | 1.45 | 1.45 | 1.68 | 6.37 |

## LSH Series

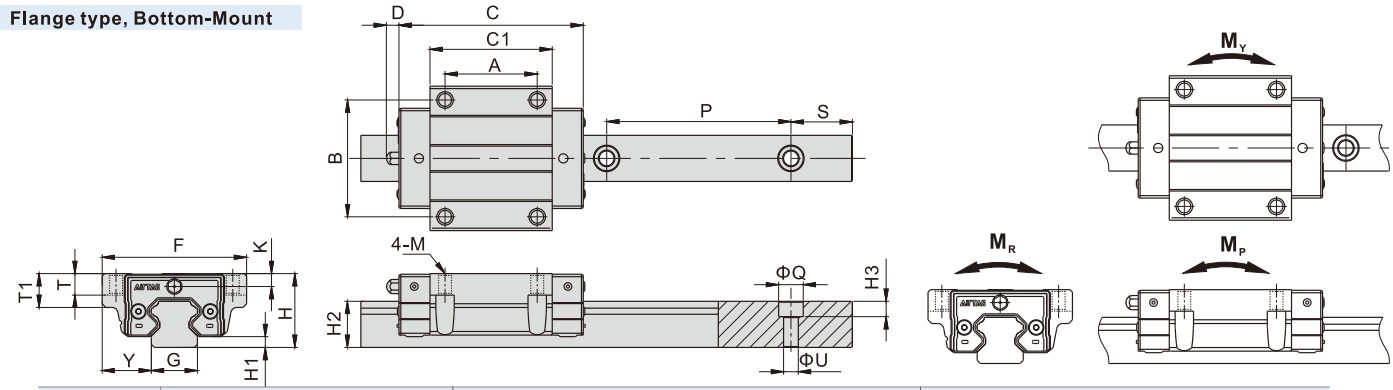
### Flange type, Top-Mount




| Model\Item | External Dimension ( mm ) | | | | | Block Dimension ( mm ) | | | | | | | Rail Dimension ( mm ) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | H1 | F | Y | C | C1 | A | B | K | D | M | T1 | G | H2 | P | S | ΦQ | ΦU | H3 |
| LSH15F1N | 24 | 3.5 | 47 | 16 | 60 | 40 | 30 | 38 | 4.3 | 6 | M5X0.8 | 11 | 15 | 15 | 60 | 20 | 8 | 4.8 | 5.3 |
| LSH20F1N | 30 | 4.3 | 63 | 21.5 | 76.5 | 52 | 40 | 53 | 6.5 | 12.5 | M6X1.0 | 10 | 20 | 17.5 | 60 | 20 | 9.5 | 5.8 | 8.5 |
| LSH20F1L | 30 | 4.3 | 63 | 21.5 | 90.5 | 66 | 40 | 53 | 6.5 | 12.5 | M6X1.0 | 10 | 20 | 17.5 | 60 | 20 | 9.5 | 5.8 | 8.5 |
| LSH25F1N | 36 | 6.5 | 70 | 23.5 | 83.5 | 58.5 | 45 | 57 | 6.9 | 12.5 | M8X1.25 | 16 | 23 | 22 | 60 | 20 | 11.2 | 7 | 9 |
| LSH25F1L | 36 | 6.5 | 70 | 23.5 | 105 | 80 | 45 | 57 | 6.9 | 12.5 | M8X1.25 | 16 | 23 | 22 | 60 | 20 | 11.2 | 7 | 9 |
| LSH30F1N | 42 | 6.5 | 90 | 31 | 95.5 | 70.5 | 52 | 72 | 8 | 13 | M10X1.5 | 18 | 28 | 26 | 80 | 20 | 14.2 | 9 | 12 |
| LSH30F1L | 42 | 6.5 | 90 | 31 | 118 | 93 | 52 | 72 | 8 | 13 | M10X1.5 | 18 | 28 | 26 | 80 | 20 | 14.2 | 9 | 12 |
| LSH35F1N | 48 | 7 | 100 | 33 | 109 | 80 | 62 | 82 | 9.2 | 12.5 | M10X1.5 | 21 | 34 | 29 | 80 | 20 | 14.2 | 9 | 12 |
| LSH35F1L | 48 | 7 | 100 | 33 | 134.5 | 105.5 | 62 | 82 | 9.2 | 12.5 | M10X1.5 | 21 | 34 | 29 | 80 | 20 | 14.2 | 9 | 12 |

| Model\Item | Mounting Screw | Dynamic Load Rating(kN) | Static Load Rating(kN) | Static Rated Moment (kN.m) | | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | | C | $C_0$ | $M_R$ | $M_P$ | $M_Y$ | Block(kg) | Rail(kg/m) |
| LSH15F1N | M4 | 11.3 | 17.9 | 0.12 | 0.12 | 0.12 | 0.2 | 1.43 |
| LSH20F1N | M5 | 18.6 | 28.6 | 0.27 | 0.25 | 0.25 | 0.40 | 2.23 |
| LSH20F1L | M5 | 22.2 | 37.6 | 0.35 | 0.34 | 0.34 | 0.8 | 2.23 |
| LSH25F1N | M6 | 26.9 | 39.4 | 0.44 | 0.38 | 0.38 | 0.59 | 3.32 |
| LSH25F1L | M6 | 32.9 | 53.0 | 0.58 | 0.57 | 0.57 | 0.85 | 3.32 |
| LSH30F1N | M8 | 37.4 | 55.0 | 0.66 | 0.67 | 0.67 | 1.09 | 4.5 |
| LSH30F1L | M8 | 45.7 | 73.1 | 0.88 | 0.91 | 0.91 | 1.38 | 4.5 |
| LSH35F1N | M8 | 50.8 | 72.3 | 1.05 | 0.92 | 0.92 | 1.32 | 6.37 |
| LSH35F1L | M8 | 61.9 | 96.1 | 1.52 | 1.45 | 1.45 | 1.8 | 6.37 |

### Flange type, Bottom-Mount

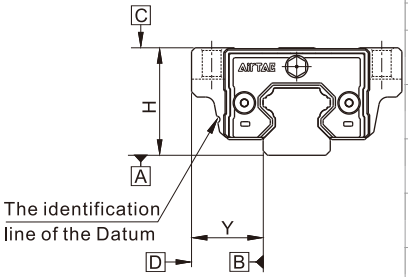



| Model\Item | External Dimension ( mm ) | | | | | Block Dimension ( mm ) | | | | | | | | Rail Dimension ( mm ) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | H1 | F | Y | C | C1 | A | B | K | D | M | T | T1 | G | H2 | P | S | ΦQ | ΦU | H3 |
| LSH15F2N | 24 | 3.5 | 47 | 16 | 60 | 40 | 30 | 38 | 4.3 | 6 | Φ4.5 | 7 | 11 | 15 | 15 | 60 | 20 | 8 | 4.8 | 5.3 |
| LSH20F2N | 30 | 4.3 | 63 | 21.5 | 76.5 | 52 | 40 | 53 | 6.5 | 12.5 | Φ5.7 | 9.5 | 10 | 20 | 17.5 | 60 | 20 | 9.5 | 5.8 | 8.5 |
| LSH20F2L | 30 | 4.3 | 63 | 21.5 | 90.5 | 66 | 40 | 53 | 6.5 | 12.5 | Φ5.7 | 9.5 | 10 | 20 | 17.5 | 60 | 20 | 9.5 | 5.8 | 8.5 |
| LSH25F2N | 36 | 6.5 | 70 | 23.5 | 83.5 | 58.5 | 45 | 57 | 6.9 | 12.5 | Φ6.8 | 10 | 16 | 23 | 22 | 60 | 20 | 11.2 | 7 | 9 |
| LSH25F2L | 36 | 6.5 | 70 | 23.5 | 105 | 80 | 45 | 57 | 6.9 | 12.5 | Φ6.8 | 10 | 16 | 23 | 22 | 60 | 20 | 11.2 | 7 | 9 |
| LSH30F2N | 42 | 6.5 | 90 | 31 | 95.5 | 70.5 | 52 | 72 | 8 | 13 | Φ9 | 10 | 18 | 28 | 26 | 80 | 20 | 14.2 | 9 | 12 |
| LSH30F2L | 42 | 6.5 | 90 | 31 | 118 | 93 | 52 | 72 | 8 | 13 | Φ9 | 10 | 18 | 28 | 26 | 80 | 20 | 14.2 | 9 | 12 |
| LSH35F2N | 48 | 7 | 100 | 33 | 109 | 80 | 62 | 82 | 9.2 | 12.5 | Φ9 | 13 | 21 | 34 | 29 | 80 | 20 | 14.2 | 9 | 12 |
| LSH35F2L | 48 | 7 | 100 | 33 | 134.5 | 105.5 | 62 | 82 | 9.2 | 12.5 | Φ9 | 13 | 21 | 34 | 29 | 80 | 20 | 14.2 | 9 | 12 |

| Model\Item | Mounting Screw | Dynamic Load Rating(kN) | Static Load Rating(kN) | Static Rated Moment (kN.m) | | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | | C | $C_0$ | $M_R$ | $M_P$ | $M_Y$ | Block(kg) | Rail(kg/m) |
| LSH15F2N | M4 | 11.3 | 17.9 | 0.12 | 0.12 | 0.12 | 0.2 | 1.43 |
| LSH20F2N | M5 | 18.6 | 28.6 | 0.27 | 0.25 | 0.25 | 0.40 | 2.23 |
| LSH20F2L | M5 | 22.2 | 37.6 | 0.35 | 0.34 | 0.34 | 0.8 | 2.23 |
| LSH25F2N | M6 | 26.9 | 39.4 | 0.44 | 0.38 | 0.38 | 0.59 | 3.32 |
| LSH25F2L | M6 | 32.9 | 53.0 | 0.58 | 0.57 | 0.57 | 0.85 | 3.32 |
| LSH30F2N | M8 | 37.4 | 55.0 | 0.66 | 0.67 | 0.67 | 1.09 | 4.5 |
| LSH30F2L | M8 | 45.7 | 73.1 | 0.88 | 0.91 | 0.91 | 1.38 | 4.5 |
| LSH35F2N | M8 | 50.8 | 72.3 | 1.05 | 0.92 | 0.92 | 1.32 | 6.37 |
| LSH35F2L | M8 | 61.9 | 96.1 | 1.52 | 1.45 | 1.45 | 1.8 | 6.37 |

## Accuracy

LSH standard type linear guide comes with 3 accuracy levels.




| Accuracy Standards (mm) | | | | | | |
|---|---|---|---|---|---|---|
| Accuracy | N : Normal | | H: High | | P:Precision | |
| Model | 15/20 | 25/30/35 | 15/20 | 25/30/35 | 15/20 | 25/30/35 |
| Tolerance of height H | ±0.1 | | ±0.03 | ±0.04 | ±0.015 | ±0.02 |
| Variation of height ΔH | 0.02 | 0.025 | 0.01 | 0.015 | 0.006 | 0.007 |
| Tolerance of width Y | ±0.1 | | ±0.03 | ±0.04 | ±0.015 | ±0.02 |
| Variation of width ΔY | 0.02 | 0.03 | 0.01 | 0.015 | 0.006 | 0.007 |
| Parallelism of C-surface relative to A-surface | Parallelism of raceway (Refer to Table 1) | | | | | |
| Parallelism of D-surface relative to B-surface | Parallelism of raceway (Refer to Table 1) | | | | | |

Table 1 : Parallelism of the raceway

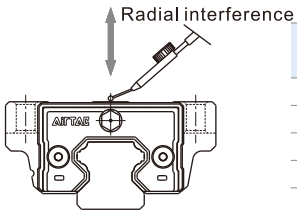
| Accuracy / Rail Length(mm) | Parallelism of the raceway(μm) | | |
|---|---|---|---|
| | N | H | P |
| 100 under | 12 | 7 | 3 |
| 100~200 | 14 | 9 | 4 |
| 200~300 | 15 | 10 | 5 |
| 300~500 | 17 | 12 | 6 |
| 500~700 | 20 | 13 | 7 |
| 700~900 | 22 | 15 | 8 |
| 900~1100 | 24 | 16 | 9 |
| 1100~1500 | 26 | 18 | 11 |
| 1500~1900 | 28 | 20 | 13 |
| 1900~2500 | 31 | 22 | 15 |
| 2500~3100 | 33 | 25 | 18 |
| 3100~3600 | 36 | 27 | 20 |
| 3600~4000 | 37 | 28 | 21 |

## Preload Level

### 1. Preload interference

The LSH standard type Linear Guide has three preload categories: A ,B and C.

Choosing suitable preload level will enhance rigidity, precision and torsion resistant performace of the linear guide.




| Model | Radial interference(μm) | | |
|---|---|---|---|
| | Standard clearance(A) | Light Preload(B) | Medium Preload(C) |
| LSH15 | −4~+2 | −12~−4 | −22~−14 |
| LSH20 | −5~+2 | −13~−5 | −23~−15 |
| LSH25 | −6~+2 | −14~−6 | −24~−16 |
| LSH30 | −7~+2 | −16~−7 | −26~−17 |
| LSH35 | −8~+2 | −18~−8 | −28~−18 |

### 2. Common Application

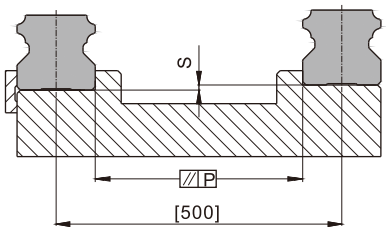
Refer to following table for suitable application of different preload grade:

| Preload grade | Requirement | Common Application |
|---|---|---|
| Standard clearance(A) | One axial movement, small vibration and impact, accuracy requirement is low | Conveyor Machine, Semiconductor Equipment, Stage Equipment, Press Machine, Welding Machine and other light movement equipments |
| Light Preload(B) | Equipment that requires light-load and high-precision. | Z-axis movement for industrial use, NC lathe, EDM, Precision XY platform, Vertical machine center, measurement instrument, material feeder or industrial robot |
| Medium Preload(C) | Equipment that requires high rigidity, large vibration and shock. | Machining centers, NC lathes, grinders, vertical or horizontal milling machines, boring machines, tool guides, heavy cutting machines. |

## Installation Illustration

### 1. Allowable tolerance of mounting surface

LSH series is an arc-shape, two-point contact design of linear guide. Its self-centering feature allows some tolerance on mounting surface without affecting the smoothness of linear motion. The allowable tolerance is indicated in following table:

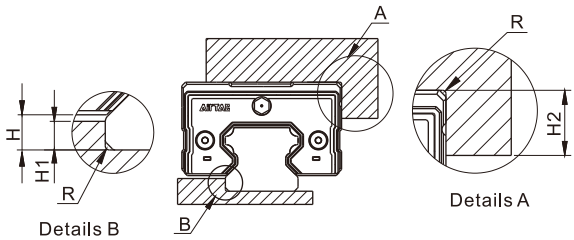



| Model | Allowable tolerance of parallelism P(μm) | | | Allowable tolerance of top and bottom S (μm) | | |
|---|---|---|---|---|---|---|
| | Standard clearance(A) | Light Preload(B) | Medium Preload(C) | Standard clearance(A) | Light Preload(B) | Medium Preload(C) |
| LSH15 | 25 | 18 | 13 | 130 | 85 | 35 |
| LSH20 | 25 | 20 | 18 | 130 | 85 | 50 |
| LSH25 | 30 | 22 | 20 | 130 | 85 | 70 |
| LSH30 | 40 | 30 | 27 | 170 | 110 | 90 |
| LSH35 | 50 | 35 | 30 | 210 | 150 | 120 |

Note: The value in the table is the allowable value when the distance between the two linear guides is 500mm, and the allowable value is proportional to the distance between the two linear guides.

### 2. Height and Chamfer of Reference Edge

In order to ensure accurate installation of LSH Linear Guide, the contact space should not exceed the given figures in following table.




Unit : mm

| Model | H | H1 | H2 | R(Max) |
|---|---|---|---|---|
| LSH15 | 3.5 | 3 | 4 | 0.5 |
| LSH20 | 4.3 | 3.5 | 5 | 0.5 |
| LSH25 | 6.5 | 5 | 5 | 1 |
| LSH30 | 6.5 | 5 | 5 | 1 |
| LSH35 | 7 | 6 | 6 | 1 |

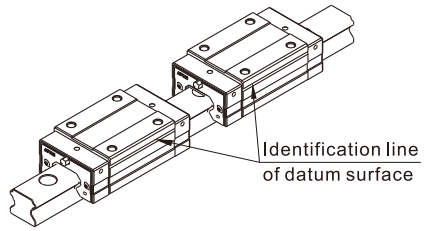
### 3. Screw Tighten Torque

When installing linear guide, whether the screws are well tighten and surface is well contacted will affect accuracy significantly. Please refer to following table for tightening force to ensure a perfect installation.

| Model | Screw size | Tighten Torque(N.cm) | | |
|---|---|---|---|---|
| | | Iron | Casting | Aluminum alloy |
| LSH15 | M4 | 412 | 274 | 206 |
| LSH20 | M5 | 882 | 588 | 441 |
| LSH25 | M6 | 1370 | 921 | 686 |
| LSH30 | M8 | 3040 | 2010 | 1470 |
| LSH35 | M8 | 3040 | 2010 | 1470 |

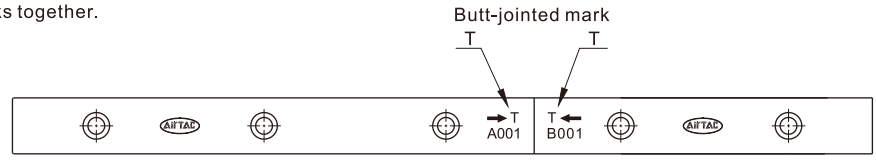
### 4. Datum plane

- Datum plane for installation must be ground or finely milled to ensure accuracy.
- Both sides of Rail can be used as the datum plane.
- For multi-blocks on a rail, identification line on blocks should be put on the same side to ensure moving accuracy.

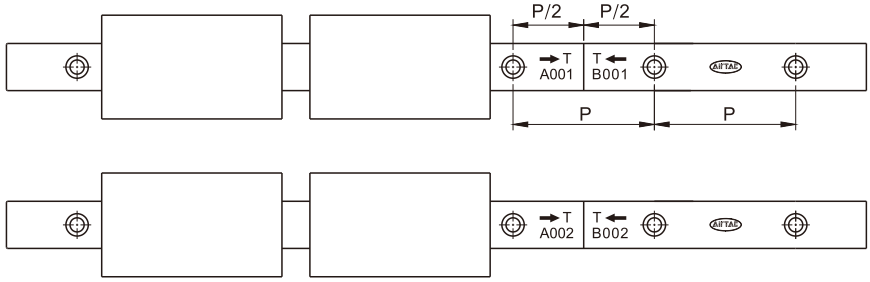



## Rail Butt-jointed

- When jointing rails, it must follow group marks on rail to ensure the accuracy of linear guide. These marks are located on the top surface at joint side. Please put the same group marks together.




- Be aware serial number of group mark when assemble. A001 and B001 are in a group, so as to A002 and B002 and so on.
- Be aware the installation direction while assembly, the serial numbers are not upside down and arrows point to each other.



## Lubrication method

When a linear guide is well lubricated, it can reduce wear and increase lifespan significantly. Lubrication has the following benefits :

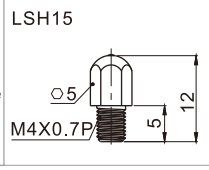
- Reduces friction of the rollers and raceway to minimize wear.
- The grease film between contact surface can prevent roller fatigue.
- Prevent rust.

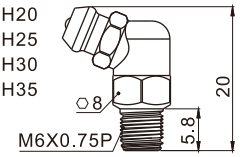
### 1. Lubrication Grease

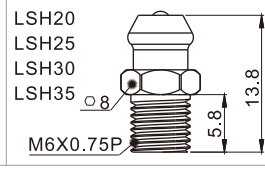
Use the correct grade of lubrication. While lubricating, a grease gun can be used to pump grease into slider through the grease nipple on it.
The suitable condition for lube is when working speed is under 60 m/min and not in cooling process.

**•Nipple type**

| | L-P-M4 | L-P-M6 | L-P-SM6 |
|---|---|---|---|
| Grease nipple type | LSH15 | LSH20<br>LSH25<br>LSH30<br>LSH35 | LSH20<br>LSH25<br>LSH30<br>LSH35 |




**•Grease amount**

LSH series linear guide is well lubricated with 'Shell Alvania grease S2' in factory. Customers are recommended to use identical or the same grade of lubricant. After lubrication, block needs to be moved back and forth at least three times for the length of three blocks and repeat at least twice.
Check if the surface of rail is well covered by grease film.

| Model | Grease amount for the first lubrication($cm^3$) | | Replenishment amount($cm^3$) | |
|---|---|---|---|---|
| | Standard type | Long type | Standard type | Long type |
| LSH15 | 0.9 | - | 0.3 | - |
| LSH20 | 1.8 | 2.7 | 0.6 | 0.9 |
| LSH25 | 3.6 | 4.5 | 1.1 | 1.4 |
| LSH30 | 5.4 | 7.2 | 1.7 | 2.2 |
| LSH35 | 8.1 | 10 | 2.5 | 3 |

**•Lubrication frequency**

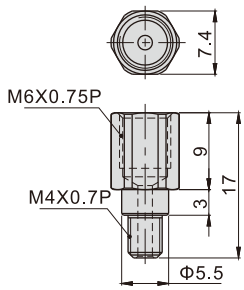
Although the linear guides are well lubricated at the factory and retains grease well, frequent lubrication is still necessary to avoid undesirable wear.
Recommended lubrication period is every 100km of movement or every 3~6 months.
(Refer to table on the top for suggested amount)

### 2. Lubricating oil

Recommended oil viscosity for lubrication use is about 30 to 150 cst.
Lubrication oil is suitable for all kinds of load and impact application, but not for high temperature use due to its tendency of vaporization.

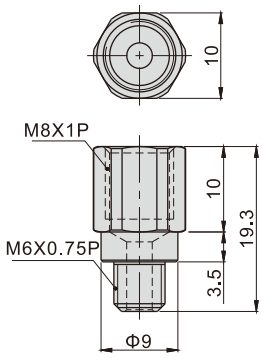
**•Adaptor**

**L-P-AM6**



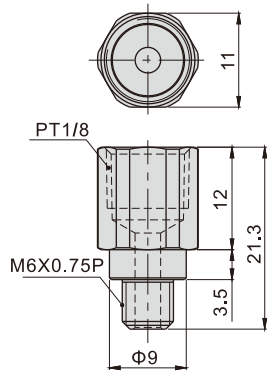

LSH15

**L-P-AM8**



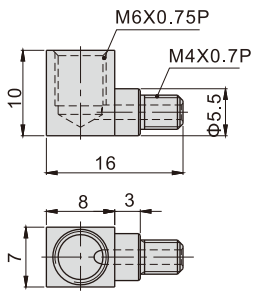

LSH35
LSH30
LSH25
LSH20

**L-P-A01**



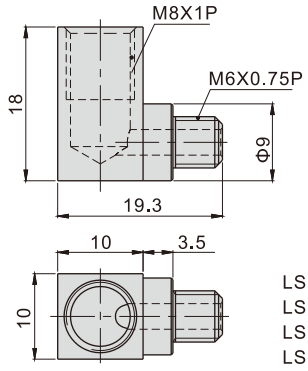

LSH35
LSH30
LSH25
LSH20

**L-P-LM6**



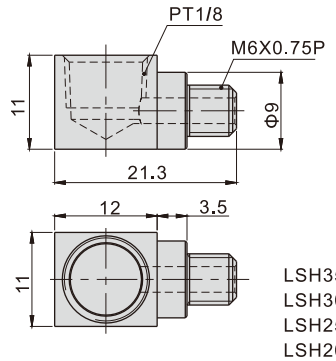

LSH15

**L-P-LM8**




LSH35
LSH30
LSH25
LSH20

**L-P-L01**




LSH35
LSH30
LSH25
LSH20

Note: After installation, the top surface of adaptor may be higher than block. Be careful about the interference while moving.

## Lubrication method

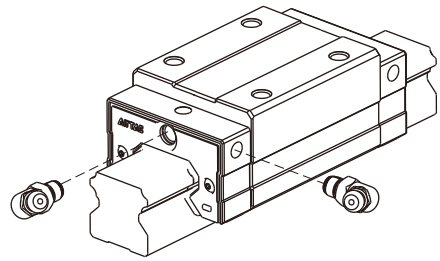
**•Oil supply rate**

Loss of lubrication oil is faster than lubrication grease. Pay attention to sufficiency of oil while using.

| Model | Oil amount for the first lubrication($cm^3$) | Feeding Speed($cm^3$/hr) |
|---|---|---|
| LSH15 | 0.6 | 0.2 |
| LSH20 | 0.6 | 0.2 |
| LSH25 | 0.9 | 0.3 |
| LSH30 | 0.9 | 0.3 |
| LSH35 | 0.9 | 0.3 |

### 3. Grease nipple/adaptor installation

- Grease nipple or adaptor can be installed in the two sides of block for manual or automatic lubrication based on customer's requirement.
- There are a secondary set of lubricating ports on the side of the block. When using, it is not recommended to use the side with datum line unless necessary.
- Lateral nipple installation is not recommended for flange type blocks. (The grease / oil nipple may interfere with block)
- If lateral lubrication is needed for above spec, please contact us for customization.

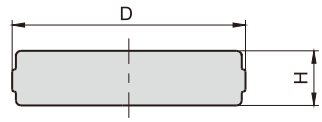


## Bolt hole plug

### 1. Plug type

In order to prevent metal swarf or external objects from entering blocks and affecting precision and lifespan, customers must put plugs into holes during installation. Every rail is equipped with default plugs.

| Model | Bolt | Diameter(D)(mm) | Thickness(H)(mm) |
|---|---|---|---|
| LSH15 | M4 | 8.15 | 1.1 |
| LSH20 | M5 | 9.65 | 2.5 |
| LSH25 | M6 | 11.4 | 2.5 |
| LSH30 | M8 | 14.4 | 3.5 |
| LSH35 | M8 | 14.4 | 3.5 |

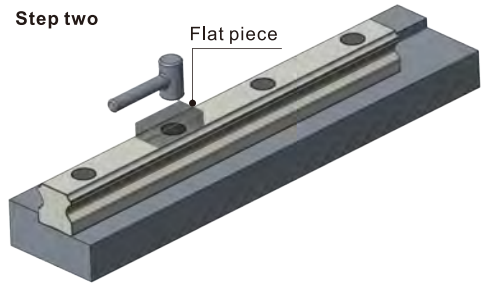



### 2. Plug installation Steps

**Step one**


Place the plug in counterbore.

**Step two**




Place the flat piece on mounting hole, hit the piece vertically with a plastic hammer and fix the plug into counterbore.

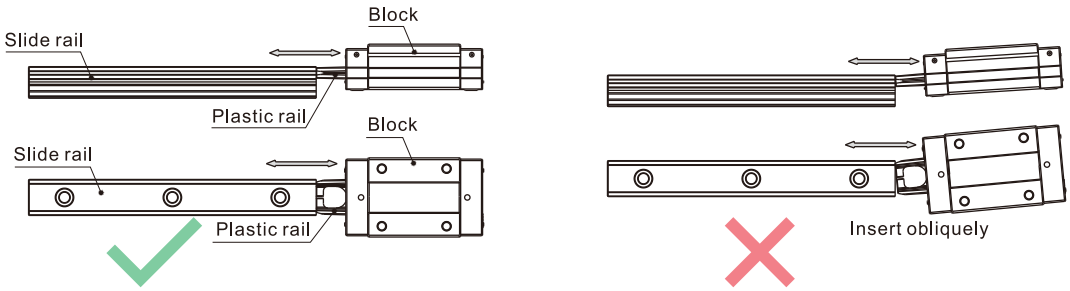
Note：

- Please make sure the plugs do not protrude the rail surface.
- After installation, please clean the surface before use.

## Precautions on use

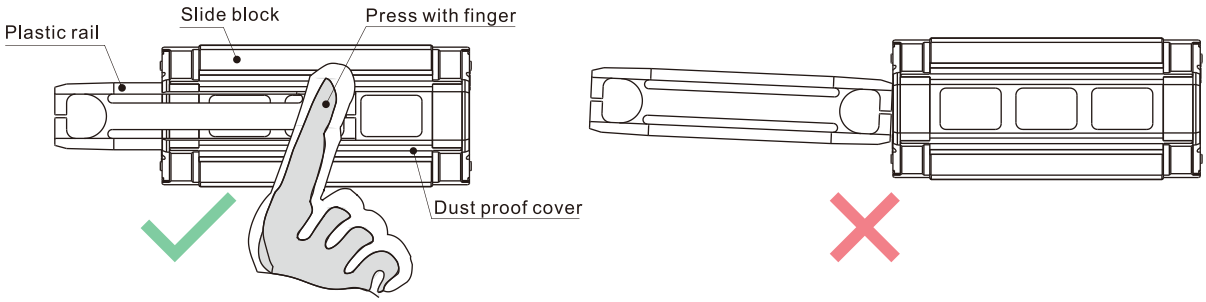
### 1. Block disassembly

With ball retainers and a dustproof cover, normally the balls are prevented from falling out when block is removed from rail.
However, if obliquely insert rail into blocks or quickly assembled or disassembled, there is a risk for balls of falling out.
Please carefully assemble the linear guide or use plastic rails to assist.




### 2. Plastic rail installation

A plastic rail is equipped for individual block set. Please do not remove plastic rail whenever it is not necessary.
If plastic rail falls out and needs to be reinstalled, press the dustproof covers with fingers and install slowly to prevent balls from falling out due to misalignment of plastic rail.




Press the dust-proof covers and insert plastic rail in alignment.

Without pressing dust-proof covers or insert plastic rail obliquely.

### 3. Caution

- Parts may slide out if linear guide is put unevenly. Please be careful.
- Hitting or dropping linear guide could have huge effect on accuracy and lifespan even though appearance may remain intact. Please be careful.
- Do not dissemble linear guide as external objects may enter blocks and cause accuracy problem.

### 4. Lubrication

- Linear guide have been treated with anti-rust oil during production. Before use, wipe the rail and treat it with lubrication.
- Do not mix lubricating oil (grease) with different properties.
- After lubrication, move block back and forth for the length of three blocks long and repeat at least 2 times to ensure there is a grease file on rail.

### 5. Use

- The operating environment temperature should not exceed 80℃, and the maximum temperature should not exceed 100℃.
- Do not separate blocks from rail whenever it is not necessary. If you need to separate them, please use plastic rails to prevent steel balls from falling out.

### 6. Storage

- When storing blocks, rails or linear guide set, please be sure that anti-rust oil is well applied and product is well sealed as well as placed horizontally. Avoid humidity and high temperatures environment.