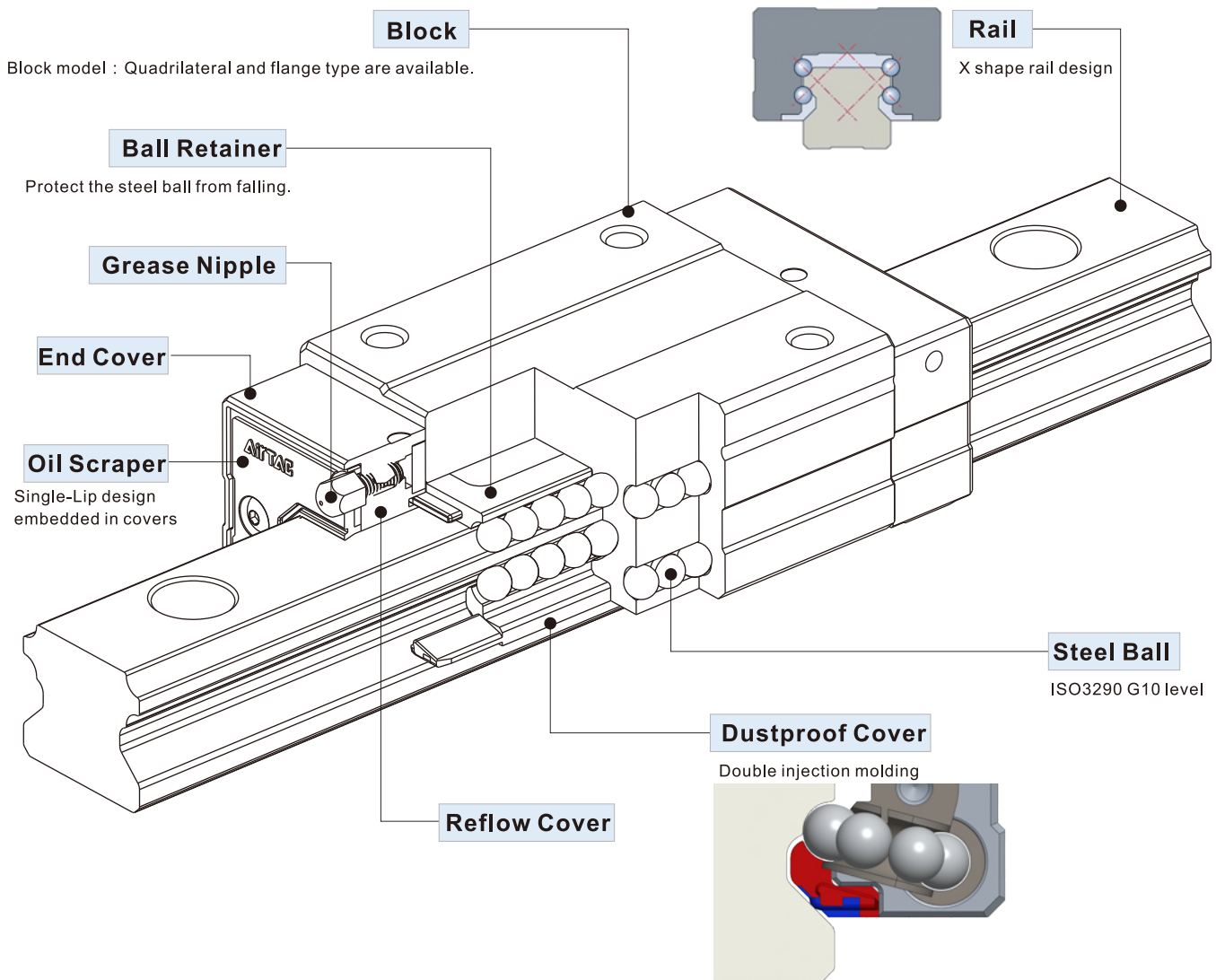




# LSH Series Standard Type Linear Guide

## Product Introduction



## Product Features

### 1. With self-adjustment ability

X-shaped ( $45^{\circ}$ - $45^{\circ}$ ) 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

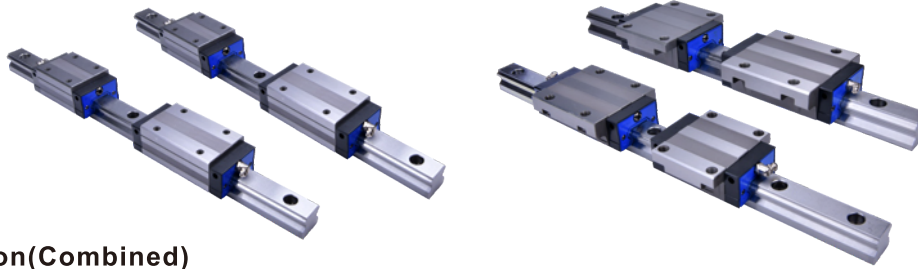
Because of the strict control on manufacturing process, the dimensional accuracy is stable and within the set tolerance. Besides the ball retainer design can prevent steel balls from falling out. Therefore when assembling, blocks are interchangeable within the same spec and still maintain consistency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



# Standard Type Linear Guide



## LSH Series



### Order Information(Combined)

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

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

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

① Model Code	LSH:Standard Type Linear Guide			
② Rail Width	15:15mm	20:20mm	25:23mm 30:28mm 35:34mm	
③ Block Style	H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom			
④ Block type	N: Standard L: Long [w/o 15 series]			
⑤ Number of Block	1: One 2: Two [Note: Amount of block on a single set of linear guide]			
⑥ Length of Rail	220:220mm .....[Defined by customer]			
⑦ Position 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]			
⑧ Preload	A: Standard clearance B: Light Preload C: Medium Preload			
⑨ Accuracy	N : Normal H : High P : Precision			
⑩ Nipple/adaptor type	15	M4 M4 Nipple		
		AM6 M4 to M6 I type		
		LM6 M4 to M6 L type		
		M6 M6 Nipple		
		20	A01 M6 to PT1/8 I type	
		25	AM8 M6 to M8	
		30	L01 M6 to PT1/8 L type	
		35	LM8 M6 to M8	
			SM6 M6 Nipple	
⑪ Packing type	Blank: the block and rail are assembled B: block and rail are put separately			
⑫ Rail type	Blank: Top-mount T: Bottom-mount			

### Butt-jointed Order Information

LSH15 H N 1X3920T3900T3920 A H-AM6-B-T

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

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

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.

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



# Standard Type Linear Guide



## LSH Series

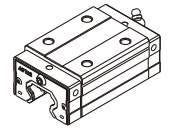
### 1. Block Order Information

#### LSH 15 BK - H N - H - D - AM6

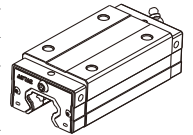


Notes: When selecting rails and bearings, the different pairing codes can change the units preload. details see "preload pairing chart".

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



N: Standard



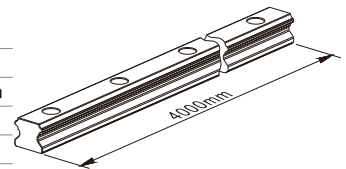
L: Long

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

#### LSH 15 RL X 4000-H - D - T



① Model Code	LSH:Standard Type Linear Guide				
② Rail Width	15:15mm	20:20mm	25:23mm	30:28mm	35:34mm
③ Rail Code	RL: Rail				
④ Rail Length	4000 : 4000mm				
⑤ Accuracy	N : Normal H : High				
⑥ Group code	D [Note]				
⑦ Rail type	Blank: Top-mount T: Bottom-mount				



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.

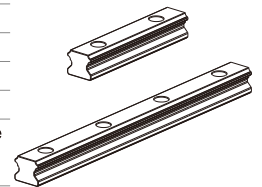
•When selecting rails and bearings, the different pairing codes can change the units preload. details see "preload pairing chart".

### 3. Rail Order Information

#### LSH 15 RL X 220-S20 -H- D - T



① Model Code	LSH:Standard Type Linear Guide				
② Rail Width	15:15mm	20:20mm	25:23mm	30:28mm	35:34mm
③ Rail Code	RL: Rail				
④ Rail Length	220:220mm .....[Defined by the customer]				
⑤ Position 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]				
⑥ Accuracy	N : Normal H : High				
⑦ Group code	D [Note]				
⑧ Rail type	Blank: Top-mount T: Bottom-mount				



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 units 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
		D
Block pairing code	SB	Medium preload
	B	Light preload
	D	Standard clearance



# Standard Type Linear Guide



## LSH Series

### Accessory Order Code

L - P - AM6

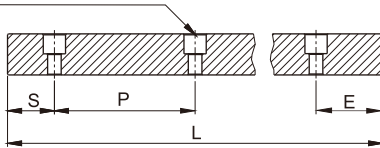


①Accessory Code		L: Linear Guide Accessory								
②Nipple/adaptor Code		P: Nipple/adaptor								
③Nipple/adaptor type	15	M4	M4 Nipple		M6	M6 Nipple				
		AM6	M4 to M6	I type		20	A01	M6 to PT1/8	I type	
		LM6	M4 to M6	L type		25 30 35	AM8	M6 to M8	L type	
						LM8	M6 to M8			
						SM6	M6 Nipple			

### 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



$$L = (n-1) \times P + S + E$$

P: Distance between bolt holes(mm)

L: Total length of rail(mm)

S: Edge of first mounting hole(mm)

n: Numbers of mounting holes on rail E: Edge of last mounting hole(mm)

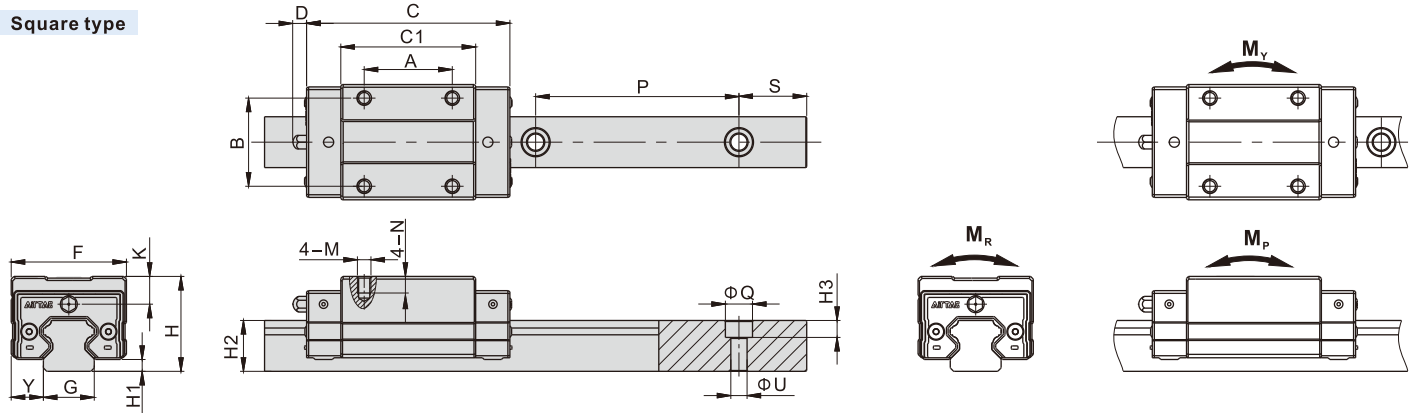
Model	LSH15	LSH20	LSH25	LSH30	LSH35
Pitch(P)	60	60	60	80	80
Standard Edge Pitch(S)	20	20	20	20	20
Min. Edge Pitch(S/E min)	5	6	7	8	8
Max. Edge Pitch(S/E max)	55	54	53	72	72
Maximum length of rail for standard edge	4000	4000	4000	3960	3960
Maximum length(Lmax)	4000	4000	4000	4000	4000

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



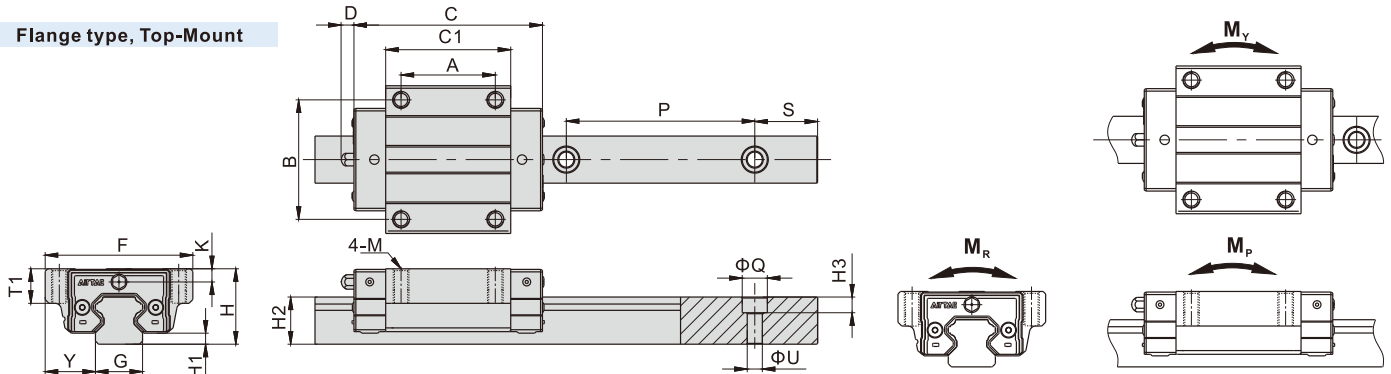
Model/Item	External Dimension ( mm )					Block Dimension ( mm )							Rail Dimension ( mm )						
	H	H1	F	Y	C	C1	A	B	K	D	M	N	G	H2	P	S	ΦQ	ΦU	H3
LSH15HN	28	3.5	34	9.5	60	40	26	26	8.3	6	M4X0.7	5	15	15	60	20	8	4.8	5.3
LSH20HN	30	4.3	44	12	76.5	52	36	32	6.5	12.5	M5X0.8	6	20	17.5	60	20	9.5	5.8	8.5
LSH20HL	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 <sub>0</sub>	M <sub>r</sub>	M <sub>p</sub>	M <sub>y</sub>	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

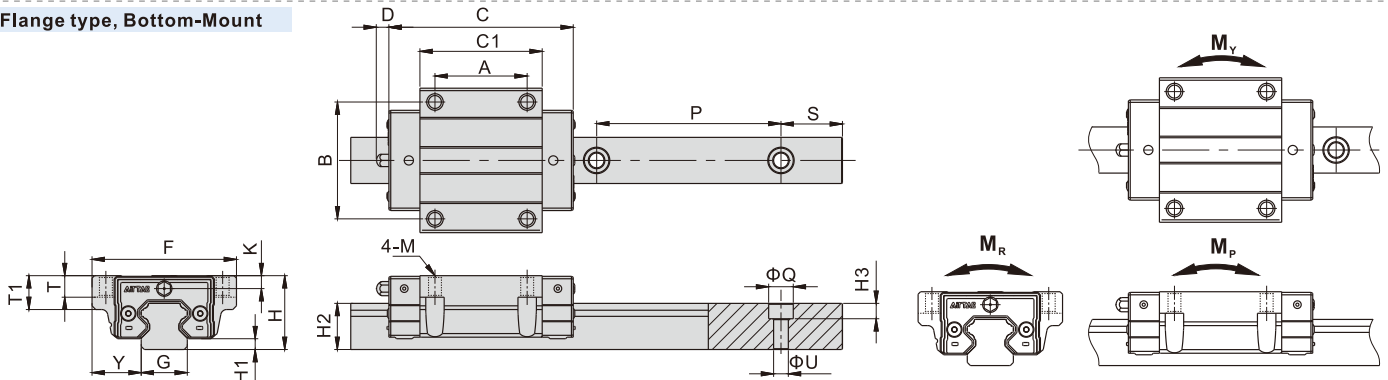
Flange type, Top-Mount



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 <sub>0</sub>	C <sub>0</sub>	C <sub>0</sub>	M <sub>R</sub>	M <sub>P</sub>	M <sub>V</sub>	Block(kg)	Rail(kg/m)
LSH15F1N	M4	11.3	17.9	0.12	0.12	0.12	0.12	0.12	0.2	1.43
LSH20F1N	M5	18.6	28.6	0.27	0.25	0.25	0.25	0.25	0.40	2.23
LSH20F1L	M5	22.2	37.6	0.35	0.34	0.34	0.34	0.34	0.8	2.23
LSH25F1N	M6	26.9	39.4	0.44	0.38	0.38	0.38	0.38	0.59	3.32
LSH25F1L	M6	32.9	53.0	0.58	0.57	0.57	0.57	0.57	0.85	3.32
LSH30F1N	M8	37.4	55.0	0.66	0.67	0.67	0.67	0.67	1.09	4.5
LSH30F1L	M8	45.7	73.1	0.88	0.91	0.91	0.91	0.91	1.38	4.5
LSH35F1N	M8	50.8	72.3	1.05	0.92	0.92	0.92	0.92	1.32	6.37
LSH35F1L	M8	61.9	96.1	1.52	1.45	1.45	1.45	1.45	1.8	6.37

Flange type, Bottom-Mount

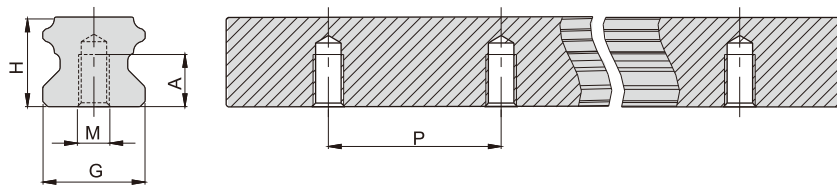


Model/Item	External Dimension (mm)				Block Dimension (mm)							Rail Dimension (mm)								
	H	H1	F	Y	C	C1	A	B	K	D	M	T	T1	G	H2	P	S	ΦQ	ΦU	H3
LSH15F2N	24	3.5	47	16	60	40	30	38	4.3	6		7	11	15	15	60	20	8	4.8	5.3
LSH20F2N	30	4.3	63	21.5	76.5	52	40	53	6.5	12.5	Φ5.7	9.5	10	20	17.5	60	20	9.5	5.8	8.5
LSH20F2L	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 <sub>0</sub>	C <sub>0</sub>	C <sub>0</sub>	M <sub>R</sub>	M <sub>P</sub>	M <sub>V</sub>	Block(kg)	Rail(kg/m)
LSH15F2N	M4	11.3	17.9	0.12	0.12	0.12	0.12	0.12	0.2	1.43
LSH20F2N	M5	18.6	28.6	0.27	0.25	0.25	0.25	0.25	0.40	2.23
LSH20F2L	M5	22.2	37.6	0.35	0.34	0.34	0.34	0.34	0.8	2.23
LSH25F2N	M6	26.9	39.4	0.44	0.38	0.38	0.38	0.38	0.59	3.32
LSH25F2L	M6	32.9	53.0	0.58	0.57	0.57	0.57	0.57	0.85	3.32
LSH30F2N	M8	37.4	55.0	0.66	0.67	0.67	0.67	0.67	1.09	4.5
LSH30F2L	M8	45.7	73.1	0.88	0.91	0.91	0.91	0.91	1.38	4.5
LSH35F2N	M8	50.8	72.3	1.05	0.92	0.92	0.92	0.92	1.32	6.37
LSH35F2L	M8	61.9	96.1	1.52	1.45	1.45	1.45	1.45	1.8	6.37

## LSH Series

### Dimension of bottom-mount type rail



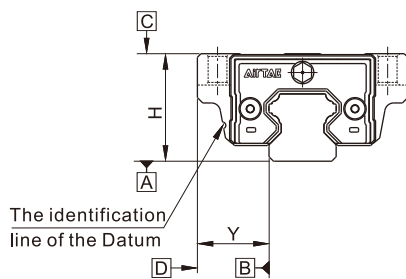
Model/Item	G	H	M	A	P
LSH15T	15	15	M5X0.8	8	60
LSH20T	20	17.5	M6X1.0	10	60
LSH25T	23	22	M6X1.0	12	60
LSH30T	28	26	M8X1.25	15	80
LSH35T	34	29	M8X1.25	17	80

## Accuracy

LSH standard type linear guide comes with 3 accuracy levels.

Table 1 : Parallelism of the raceway

	Accuracy Standards (mm)						Accuracy Rail Length(mm)	Parallelism of the raceway(μm)				
	Accuracy		N : Normal		H: High			P: Precision		N	H	P
	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)											



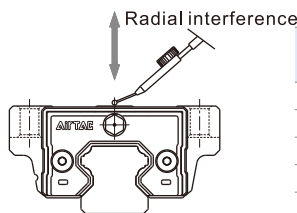
Accuracy Rail Length(mm)	Parallelism of the raceway(μm)		
	N	H	P
	100 under	12	7
100~200	14	9	4
200~300	15	10	5
300~500	17	12	6
500~700	20	13	7
700~900	22	15	8
900~1100	24	16	9
1100~1500	26	18	11
1500~1900	28	20	13
1900~2500	31	22	15
2500~3100	33	25	18
3100~3600	36	27	20
3600~4000	37	28	21

## 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 performance 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:

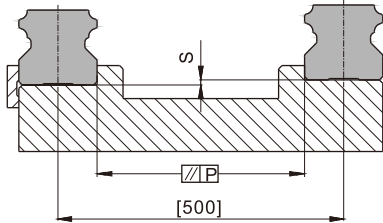
Preload grade	Requirement	Common Application
Standard clearance(A)	One axial movement, small vibration and impact, accuracy requirement is low	Conveyor Machine, Semiconductor Equipment, Stage Equipment, Press Machine, Welding Machine and other light movement equipments
Light Preload(B)	Equipment that 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.

## LSH Series

### 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:

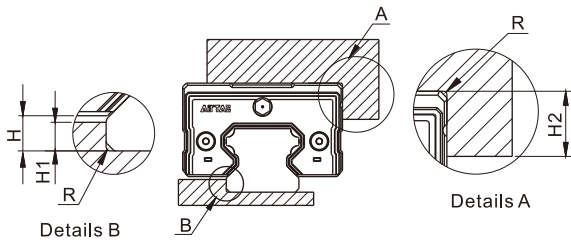


Model	Allowable tolerance of parallelism P(μm)			Allowable tolerance of top and bottom S(μm)		
	Standard clearance(A)	Light Preload(B)	Medium Preload(C)	Standard clearance(A)	Light Preload(B)	Medium Preload(C)
LSH15	25	18	13	130	85	35
LSH20	25	20	18	130	85	50
LSH25	30	22	20	130	85	70
LSH30	40	30	27	170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

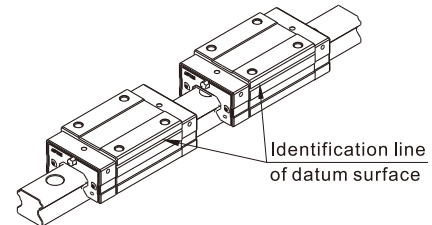
#### 3. Screw Tighten Torque

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

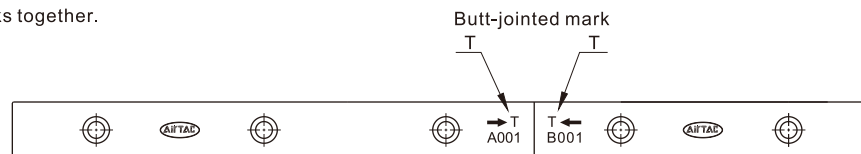
#### 4. Datum plane

- 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.

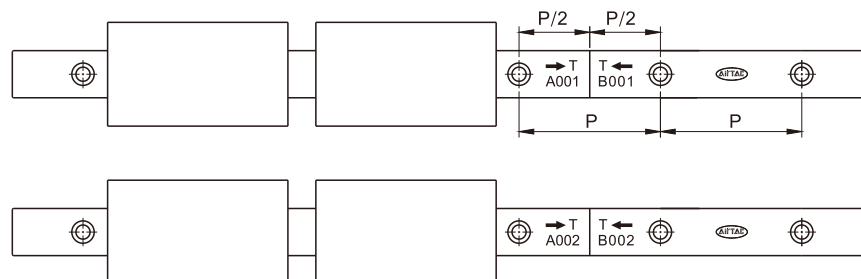


### Rail Butt-jointed

- 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.



## LSH Series

### Lubrication method

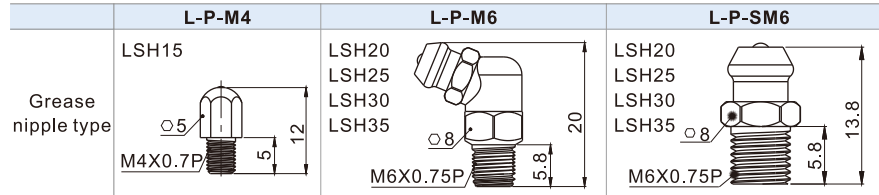
When a linear guide is well lubricated, it can reduce wear and increase lifespan significantly. Lubrication has the following benefits :

- 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



##### •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 <sup>3</sup> )		Replenishment amount(cm <sup>3</sup> )	
	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

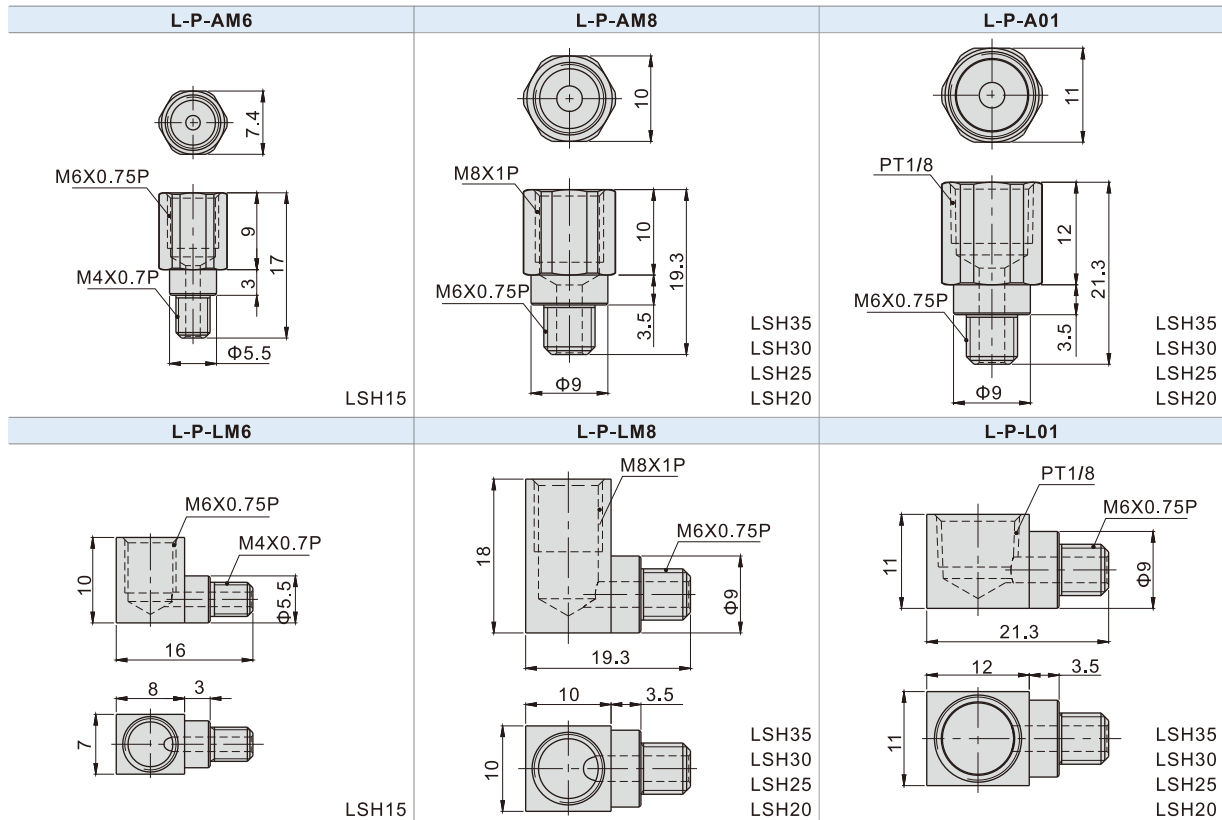
Although the linear guides are well lubricated at the factory and retains grease well, frequent lubrication is still necessary to avoid undesirable wear. Recommended lubrication period is every 100km of movement or every 3~6 months. (Refer to table on the top for suggested amount)

#### 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



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



## LSH Series

### Lubrication method

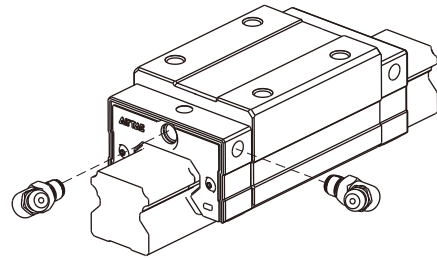
#### •Oil supply rate

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 <sup>3</sup> )	Feeding Speed(cm <sup>3</sup> /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.

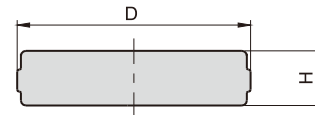


### Bolt hole plug

#### 1. Plug type

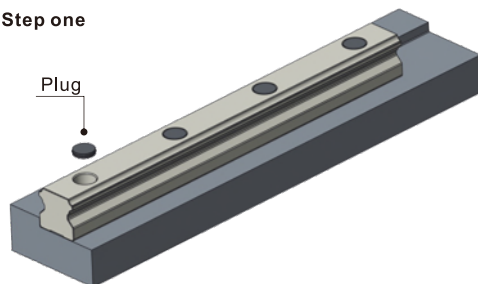
In order to prevent metal swarf or external objects from entering blocks and affecting precision and lifespan, customers must put plugs into holes during installation. Every rail is equipped with default plugs.

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



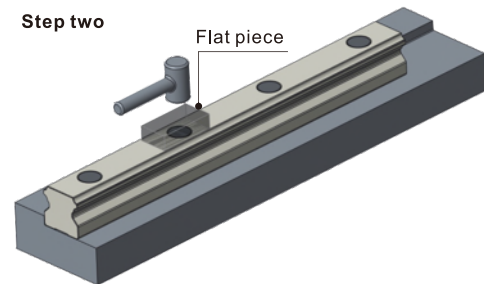
#### 2. Plug installation Steps

##### 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.

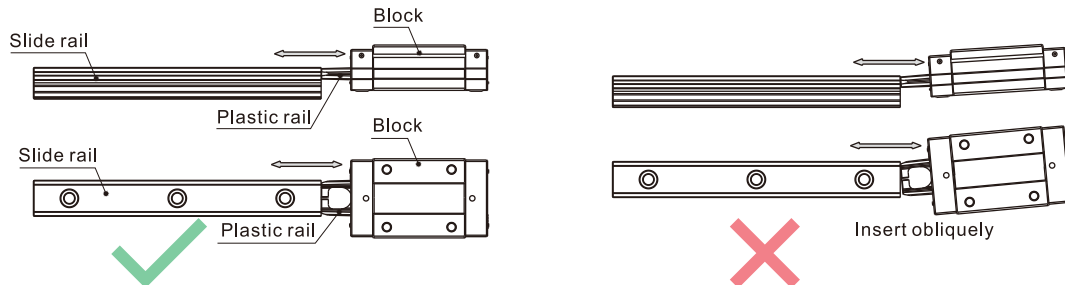
Note :

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

### Precautions on use

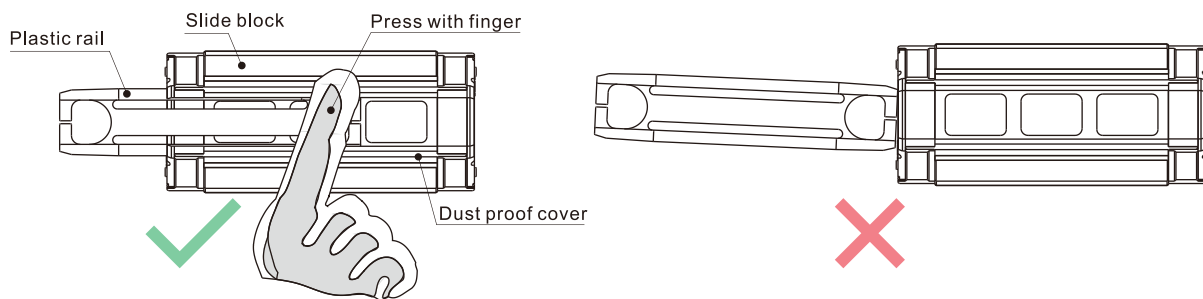
#### 1. Block disassembly

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 disassemble 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°C, and the maximum temperature should not exceed 100°C.
- 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.