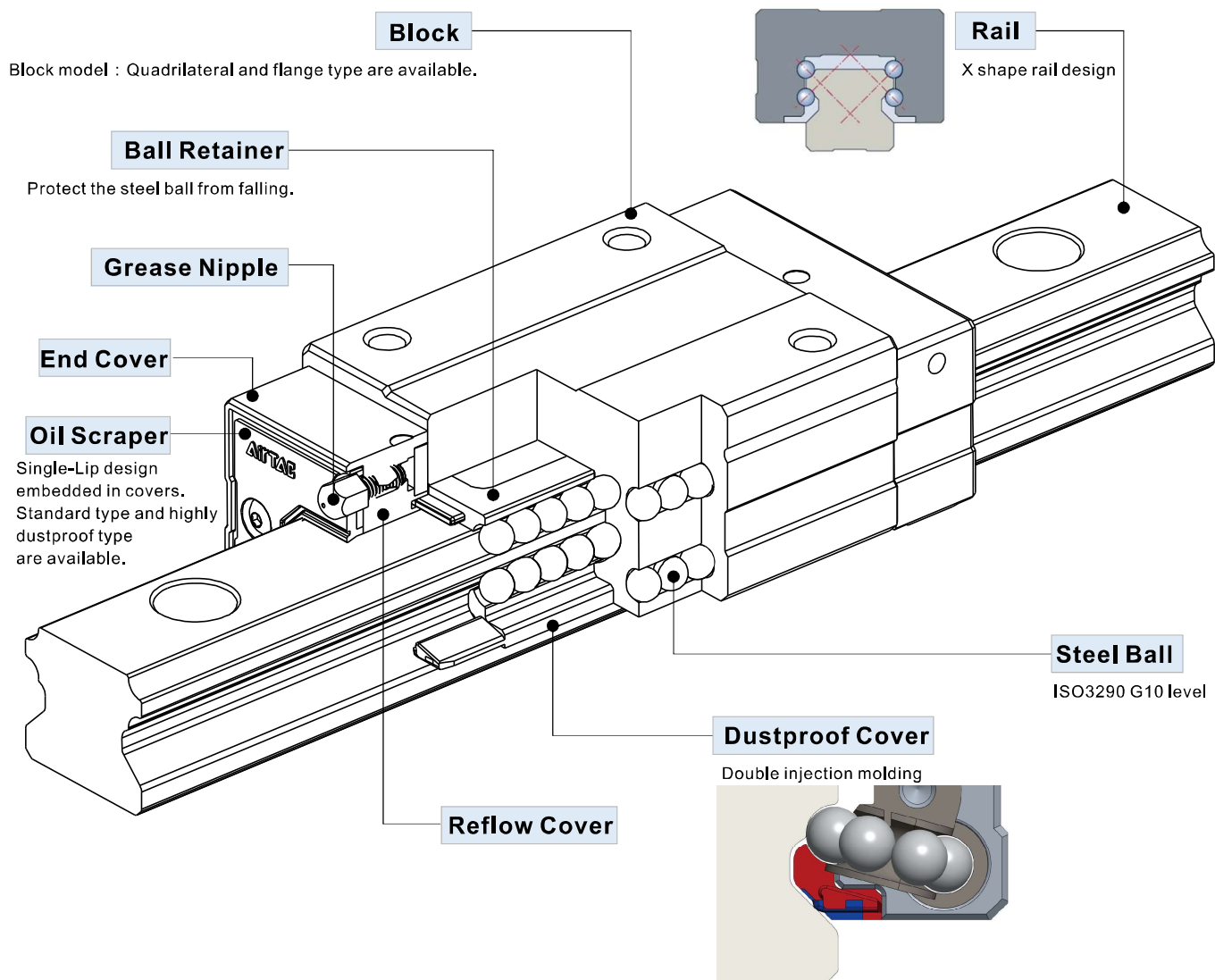




LSH Series Standard Type Linear Guide

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.

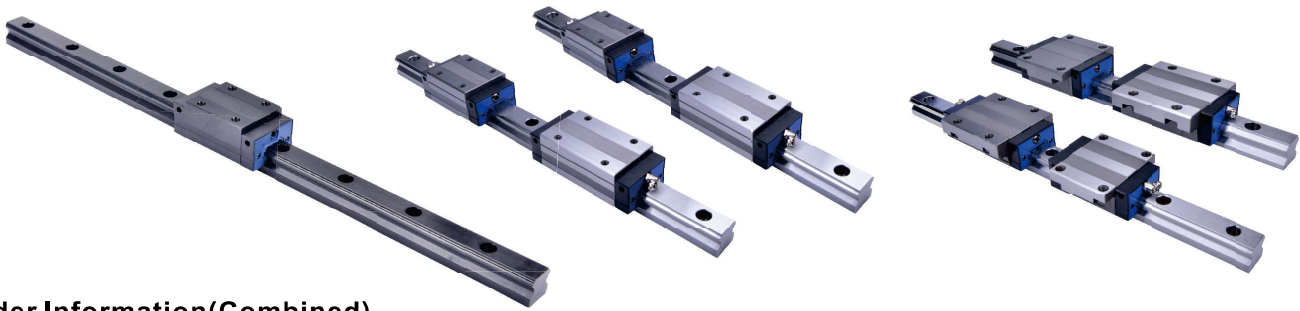
3. Interchangeable

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.



Standard Type Linear Guide

LSH Series



Order Information(Combined)

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

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

①Model Code	LSH:Standard Type Linear Guide											
②Rail&Block surface treatment	Blank: without additional coating. (natural color) ★BB : Block and rail coated with black chrome											
③Rail Width	15: 15mm 20: 20mm 25: 23mm 30: 28mm 35: 34mm 45: 45mm											
④Block Style	H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom F3: Flange type, Mounting from top or bottom											
⑤Block type	N: Standard L: Long [w/o 15 series]											
⑥Number of Block	1: One 2: Two [Note: Amount of block on a single set of linear guide]											
⑦Length of Rail	220:220mm [Defined by customer]											
⑧Position 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)											
⑨Preload	A: Standard clearance B: Light Preload C: Medium Preload D: Heavy Preload											
⑩Accuracy	N : Normal H : High P : Precision											
⑪Nipple /adapter type	15	M4: M4 Nipple		20 25 30 35	M6: M6 Nipple		45	P01: PT1/8 Nipple				
		AM6: M4 to M6	I type 		A01: M6 to PT1/8	I type 		A01: PT1/8 to PT1/8	I type 			
		LM6: M4 to M6	L type 		AM8: M6 to M8			AM8: PT1/8 to M8				
			L type 		L01: M6 to PT1/8	L type 		L01: PT1/8 to PT1/8	L type 			
					LM8: M6 to M8			LM8: PT1/8 to M8				
					SM6: M6 Nipple			SP01: PT1/8 Nipple				
⑫Packing type	Blank: the block and rail are assembled B: block and rail are put separately											
⑬Rail type	Blank: Top-mount T: Bottom-mount											

★ [Note 1] Dustproof standard type please refer to Pg. 28. for more detail.

★ [Note 2] Self-lubricator standard type please refer to Pg. 32. for more detail.

[Note 3] For LSH-BB series, standard length of a rail is 3 m.

Please contact with our company if length of rail exceeds the maximum.

Add: Heavy preload is available for LSH25/30/35/45 only.

Standard Type Linear Guide

LSH Series

Butt-jointed Order Information

LSH □ 15 H N 1X2970 T 2940 T 2970 A H - AM6-B - T

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

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

①Model Code	LSH:Standard Type Linear Guide								
②Rail&Block surface treatment	Blank: without additional coating. (natural color) ★BB : Block and rail coated with black chrome								
③Rail Width	15: 15mm 20: 20mm 25: 23mm 30: 28mm 35: 34mm 45: 45mm								
④Block Style	H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom F3: Flange type, Mounting from top or bottom								
⑤Block type	N: Standard L: Long [w/o 15 series]								
⑥Number of Block	1: One 2: Two [Note: Amount of block on a single set of linear guide]								
⑦Length of first Rail	2970:2970mm [Defined by customer]								
⑧Butt-jointed mark	T: Rail Butt-jointed mark (Butt-jointed end margin:1/2P) [P is the standard hole distance]								
⑨Length of second Rail	2940:2940mm [Defined by customer]								
⑩Butt-jointed mark	Blank: two rails joint T: Rail Butt-jointed mark (Butt-jointed end margin:1/2P) [P is the standard hole distance]								
⑪Length of third Rail	Blank: two rails joint 2970:2970mm.....[Defined by customer]								
⑫Preload	A: Standard clearance B: Light Preload C: Medium Preload D: Heavy Preload								
⑬Accuracy	N : Normal H : High								
⑭Nipple /adapter type	15	M4: M4 Nipple		20 25 30 35	M6: M6 Nipple		45	P01: PT1/8 Nipple	
		I type	A01: M6 to PT1/8		I type	A01: PT1/8 to PT1/8		I type	
		AM6: M4 to M6			AM8: M6 to M8			AM8: PT1/8 to M8	
		L type	L01: M6 to PT1/8		L type	L01: PT1/8 to PT1/8		L type	
		LM6: M4 to M6			LM8: M6 to M8			LM8: PT1/8 to M8	
			SM6: M6 Nipple					SP01: PT1/8 Nipple	
⑮Packing type	Blank: the block and rail are assembled B: block and rail are put separately								
⑯Rail type	Blank: Top-mount T: Bottom-mount								

★ [Note 1] Dustproof standard type please refer to Pg. 28. for more detail.

★ [Note 2] Self-lubricator standard type please refer to Pg. 32. for more detail.

[Note 3] For LSH-BB series, standard length of a rail is 3 m.

Maximum length of two-joint rail is 6 m.

Maximum length of three-joint rail is 9 m.

Please contact with our company

if length of rail exceeds the maximum.

Add1: Number of joints cannot be more than 2 times(three rails at most).

For LSH15/20/25, maximum length of jointed rail is 12080mm.

For LSH30/35, it's 12030. For LSH45, it's 12000.

Customization is needed for joint times more than standard.

Add2: Heavy preload is available for LSH25/30/35/45 only.

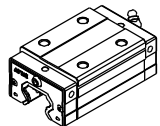
Standard Type Linear Guide

LSH Series

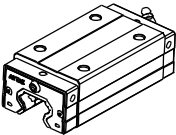
1. Block Order Information

LSH □ 15 BK-H N-H-E-AM6

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨



N: Standard



L: Long

① ModelCode	LSH:Standard Type Linear Guide									
② Coating on block	Blank: Block without additional coating. (natural color) ★B: Block coated with black chrome									
③ Rail Width	15: 15mm 20: 20mm 25: 23mm 30: 28mm 35: 34mm 45: 45mm									
④ Block Code	BK: Block									
⑤ Block Style	H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom F3: Flange type, Mounting from top or bottom									
⑥ Block type	N: Standard L: Long [w/o 15 series]									
⑦ Accuracy	N : Normal H : High									
⑧ Group code	SA SB SC SE SF B C E [Note1]									
⑨ Nipple /adapter type	15	M4: M4 Nipple		20 25 30 35	M6:M6 Nipple		45	P01:PT1/8 Nipple		
		AM6: M4 to M6	I type 		A01:M6 to PT1/8	I type 		A01:PT1/8 to PT1/8	I type 	
		L type 	AM8:M6 to M8			AM8:PT1/8 to M8				
			L01:M6 to PT1/8		L type 	L01:PT1/8 to PT1/8		L type 		
			LM6: M4 to M6			LM8:M6 to M8			LM8:PT1/8 to M8	
			SM6:M6 Nipple			SP01:PT1/8 Nipple				

★ [Note 1] Dustproof standard type please refer to Pg. 28. for more detail.

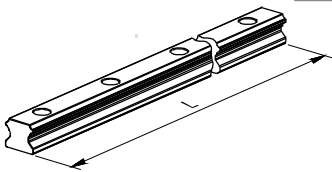
★ [Note 2] Self-lubricator standard type please refer to Pg. 32. for more detail.

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

2. Rail Order Information

LSH 15 RL X 4000-H-E-T

① ② ③ ④ ⑤ ⑥ ⑦



① Model Code	LSH: Standard Type Linear Guide					
② Rail Width	15: 15mm 20: 20mm 25: 23mm 30: 28mm 35: 34mm 45: 45mm					
③ Rail Code	RL: Rail					
④ Rail Length	15: 4040mm 20: 4040mm 25: 4040mm 30: 4030mm 35: 4030mm 45: 4020mm					
⑤ Accuracy	N: Normal H: High					
⑥ Group code	E [Note]					
⑦ Rail type	Blank: Top-mount T: Bottom-mount					

Note: ● For LSH15/20/25, both margin pitch of rail are 40mm.

● For LSH30/35, both margin pitch of rail are 55mm.

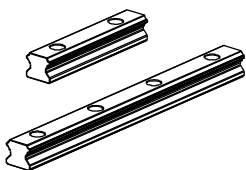
● For LSH45, both margin pitch of rail are 67.5mm.

● 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-E-T

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨



① Model Code	LSH: Standard Type Linear Guide				
② Coating on rail	Blank: Rail without additional coating. (natural color) ★ B: Rail coated with black chrome				
③ Rail Width	15: 15mm 20: 20mm 25: 23mm 30: 28mm 35: 34mm 45: 45mm				
④ Rail Code	RL: Rail				
⑤ Rail Length	220: 220mm [Defined by the customer]				
⑥ 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)				
⑦ Accuracy	N: Normal H: High				
⑧ Group code	E [Note]				
⑨ Rail type	Blank: Top-mount T: Bottom-mount				

Note: 1. When selecting rails and bearings, the different pairing codes can change the units preload. details see "preload pairing chart".

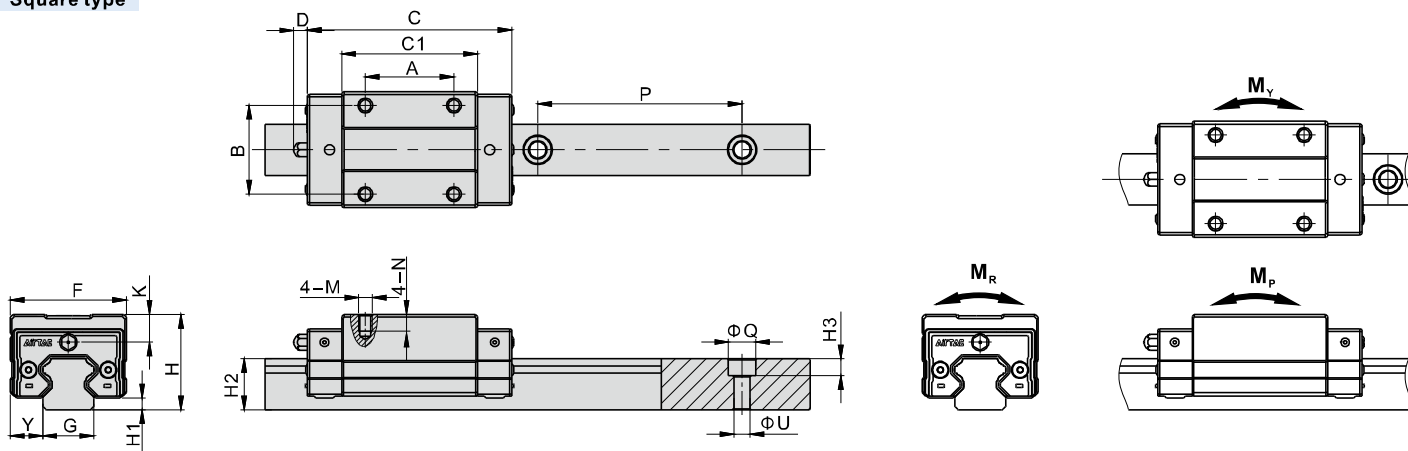
2. For LSH-B series, standard length of a rail is 3 m.

Standard Type Linear Guide

LSH Series

Specifications and Dimensions

Square type



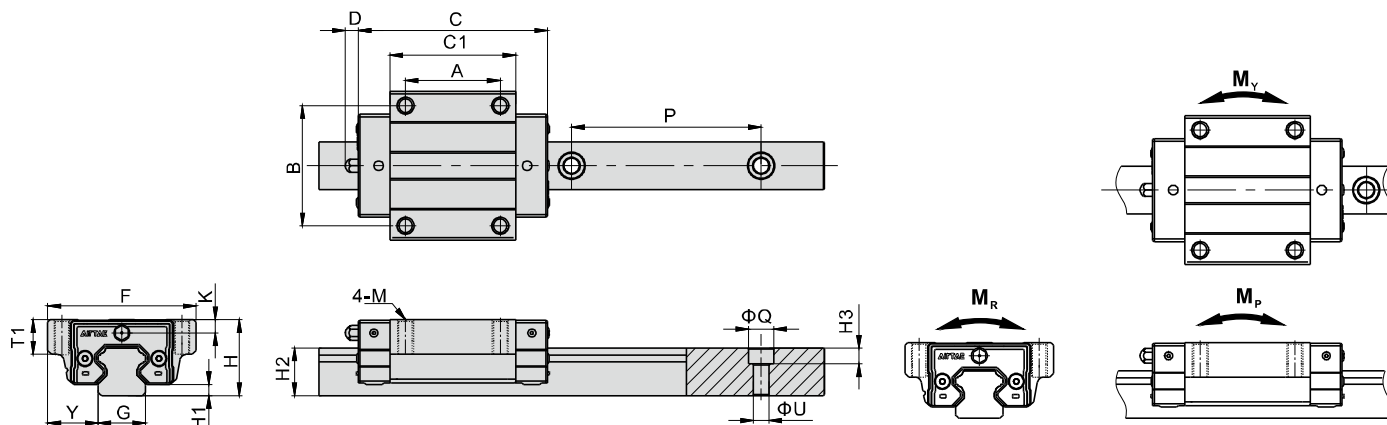
Model\Item	External Dimension (mm)							Block Dimension (mm)							Rail Dimension (mm)						
	H	H1	F	Y	C			C1	A	B	K	D	M	N	G	H2	P	ΦQ	ΦU	H3	
					Standard (Blank)	Double oil scrapers(DD)	Oil scraper+Metal scraper(ZZ)														
LSH15HN	28	3,5	34	9,5	60	67	64,5	40	26	26	8,3	6	M4X0,7	5	15	15	60	8	4,8	5,3	
LSH20HN	30	4,3	44	12	76,5	84,5	81	52	36	32	6,5	12,5	M5X0,8	6	20	17,5	60	9,5	6	8,5	
LSH20HL	30	4,3	44	12	90,5	98,5	95	66	50	32	6,5	12,5	M5X0,8	6	20	17,5	60	9,5	6	8,5	
LSH25HN	40	6,5	48	12,5	83,5	91,5	88	58,5	35	35	10,9	12,5	M6X1,0	8	23	22	60	11,2	7	9	
LSH25HL	40	6,5	48	12,5	105	113	109,5	80	50	35	10,9	12,5	M6X1,0	8	23	22	60	11,2	7	9	
LSH30HN	45	6,5	60	16	95,5	103,5	100,5	70,5	40	40	11	13	M8X1,25	10	28	26	80	14,2	9	12	
LSH30HL	45	6,5	60	16	118	126	123	93	60	40	11	13	M8X1,25	10	28	26	80	14,2	9	12	
LSH35HN	55	7	70	18	109	118	114	80	50	50	16,2	12,5	M8X1,25	12	34	29	80	14,2	9	12	
LSH35HL	55	7	70	18	134,5	143,5	139,5	105,5	72	50	16,2	12,5	M8X1,25	12	34	29	80	14,2	9	12	
LSH45HN	70	10	86	20,5	132	141	137	98	60	60	20	16	M10X1,5	17	45	38	105	20	14	17	
LSH45HL	70	10	86	20,5	164	173	169	130	80	60	20	16	M10X1,5	17	45	38	105	20	14	17	

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
LSH45HN	M12	80.7	110.3	1.95	1.62	1.62	2.72	10.7
LSH45HL	M12	98.5	146.9	2.59	2.92	2.92	3.60	10.7

Standard Type Linear Guide

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	ΦQ	ΦU	H3	
					Standard (Blank)	Double oil scrapers(DD)	Oil scraper+Metal scraper(ZZ)														
LSH15F1N	24	3.5	47	16	60	67	64.5	40	30	38	4.3	6	M5X0.8	11	15	15	60	8	4.8	5.3	
LSH20F1N	30	4.3	63	21.5	76.5	84.5	81	52	40	53	6.5	12.5	M6X1.0	10	20	17.5	60	9.5	6	8.5	
LSH20F1L	30	4.3	63	21.5	90.5	98.5	95	66	40	53	6.5	12.5	M6X1.0	10	20	17.5	60	9.5	6	8.5	
LSH25F1N	36	6.5	70	23.5	83.5	91.5	88	58.5	45	57	6.9	12.5	M8X1.25	16	23	22	60	11.2	7	9	
LSH25F1L	36	6.5	70	23.5	105	113	109.5	80	45	57	6.9	12.5	M8X1.25	16	23	22	60	11.2	7	9	
LSH30F1N	42	6.5	90	31	95.5	103.5	100.5	70.5	52	72	8	13	M10X1.5	18	28	26	80	14.2	9	12	
LSH30F1L	42	6.5	90	31	118	126	123	93	52	72	8	13	M10X1.5	18	28	26	80	14.2	9	12	
LSH35F1N	48	7	100	33	109	118	114	80	62	82	9.2	12.5	M10X1.5	21	34	29	80	14.2	9	12	
LSH35F1L	48	7	100	33	134.5	143.5	139.5	105.5	62	82	9.2	12.5	M10X1.5	21	34	29	80	14.2	9	12	
LSH45F1N	60	10	120	37.5	132	141	137	98	80	100	10	16	M12X1.75	22	45	38	105	20	14	17	
LSH45F1L	60	10	120	37.5	164	173	169	130	80	100	10	16	M12X1.75	22	45	38	105	20	14	17	

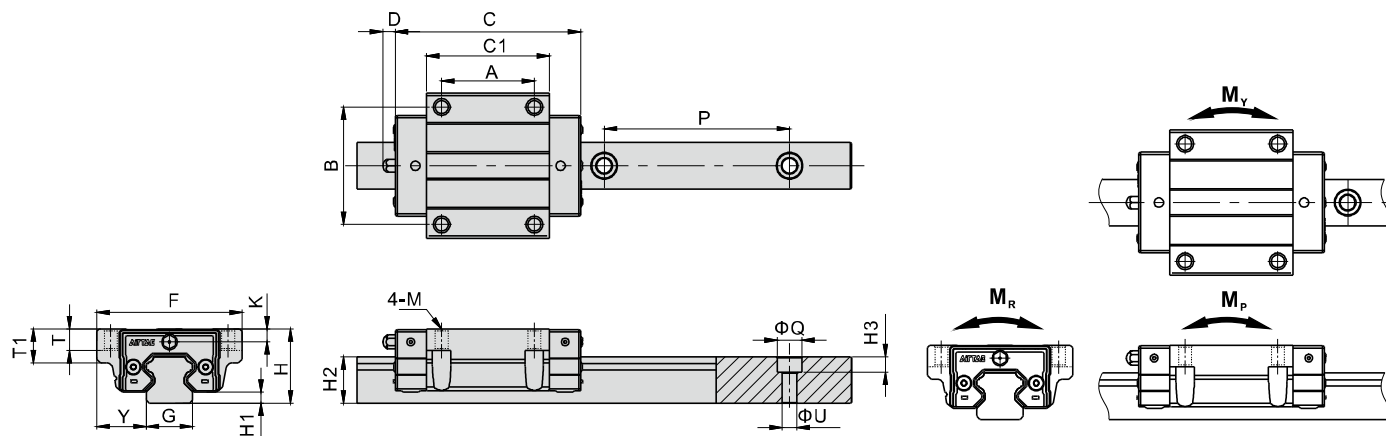
Model\Item	Mounting Screw	Dynamic Load Rating(kN)	Static Load Rating(kN)	Static Rated Moment (kN.m)			Weight	
		C	C ₀	M _R	M _P	M _V	Block(kg)	Rail(kg/m)
LSH15F1N	M4	11.3	17.9	0.12	0.12	0.12	0.2	1.43
LSH20F1N	M5	18.6	28.6	0.27	0.25	0.25	0.40	2.23
LSH20F1L	M5	22.2	37.6	0.35	0.34	0.34	0.8	2.23
LSH25F1N	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
LSH45F1N	M12	80.7	110.3	1.95	1.62	1.62	2.77	10.7
LSH45F1L	M12	98.5	146.9	2.59	2.92	2.92	3.67	10.7

Standard Type Linear Guide

LSH Series

Flange type, Bottom-Mount

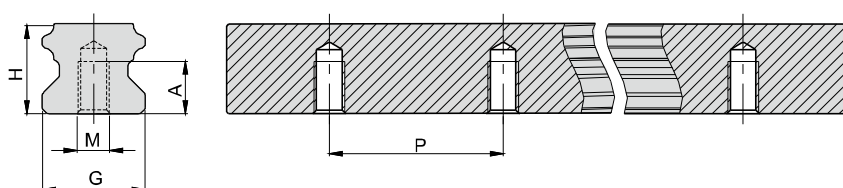
Flange type, Top or Bottom-Mount



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	ΦQ	ΦU	H3	
					Standard (Blank)	Double oil scrapers(DD)	Oil scraper+Metal scraper(ZZ)						Bottom -Mount	Top or Bottom -Mount									
LSH15F2(F3)N	24	3.5	47	16	60	67	64.5	40	30	38	4.3	6	Φ4.5	M5X0.8	7	11	15	15	60	8	4.8	5.3	
LSH20F2(F3)N	30	4.3	63	21.5	76.5	84.5	81	52	40	53	6.5	12.5	Φ5.7	M6X1.0	9.5	10	20	17.5	60	9.5	6	8.5	
LSH20F2(F3)L	30	4.3	63	21.5	90.5	98.5	95	66	40	53	6.5	12.5	Φ5.7	M6X1.0	9.5	10	20	17.5	60	9.5	6	8.5	
LSH25F2(F3)N	36	6.5	70	23.5	83.5	91.5	88	58.5	45	57	6.9	12.5	Φ6.8	M8X1.25	10	16	23	22	60	11.2	7	9	
LSH25F2(F3)L	36	6.5	70	23.5	105	113	109.5	80	45	57	6.9	12.5	Φ6.8	M8X1.25	10	16	23	22	60	11.2	7	9	
LSH30F2(F3)N	42	6.5	90	31	95.5	103.5	100.5	70.5	52	72	8	13	Φ9	M10X1.5	10	18	28	26	80	14.2	9	12	
LSH30F2(F3)L	42	6.5	90	31	118	126	123	93	52	72	8	13	Φ9	M10X1.5	10	18	28	26	80	14.2	9	12	
LSH35F2(F3)N	48	7	100	33	109	118	114	80	62	82	9.2	12.5	Φ9	M10X1.5	13	21	34	29	80	14.2	9	12	
LSH35F2(F3)L	48	7	100	33	134.5	143.5	139.5	105.5	62	82	9.2	12.5	Φ9	M10X1.5	13	21	34	29	80	14.2	9	12	
LSH45F2(F3)N	60	10	120	37.5	132	141	137	98	80	100	10	16	Φ11	M12X1.75	15	22	45	38	105	20	14	17	
LSH45F2(F3)L	60	10	120	37.5	164	173	169	130	80	100	10	16	Φ11	M12X1.75	15	22	45	38	105	20	14	17	

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)
LSH15F2(F3)N	M4	11.3	17.9	0.12	0.12	0.12	0.2	1.43
LSH20F2(F3)N	M5	18.6	28.6	0.27	0.25	0.25	0.40	2.23
LSH20F2(F3)L	M5	22.2	37.6	0.35	0.34	0.34	0.8	2.23
LSH25F2(F3)N	M6	26.9	39.4	0.44	0.38	0.38	0.59	3.32
LSH25F2(F3)L	M6	32.9	53.0	0.58	0.57	0.57	0.85	3.32
LSH30F2(F3)N	M8	37.4	55.0	0.66	0.67	0.67	1.09	4.5
LSH30F2(F3)L	M8	45.7	73.1	0.88	0.91	0.91	1.38	4.5
LSH35F2(F3)N	M8	50.8	72.3	1.05	0.92	0.92	1.32	6.37
LSH35F2(F3)L	M8	61.9	96.1	1.52	1.45	1.45	1.8	6.37
LSH45F2(F3)N	M12	80.7	110.3	1.95	1.62	1.62	2.77	10.7
LSH45F2(F3)L	M12	98.5	146.9	2.59	2.92	2.92	3.67	10.7

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
LSH45T	45	38	M12X1.75	24	105

Standard Type Linear Guide

LSH Series

Accuracy

LSH standard type linear guide comes with 3 accuracy levels.

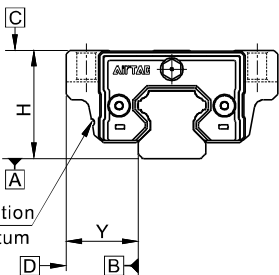
 The identification line of the Datum	Accuracy Standards (mm)									
	Accuracy	N : Normal			H: High			P: Precision		
	Model	15/20	25/30/35	45	15/20	25/30/35	45	15/20	25/30/35	45
	Tolerance of height H	±0.1			±0.03	±0.04	±0.05	±0.015	±0.02	±0.025
	Variation of height ΔH	0.02	0.025	0.03	0.01	0.015		0.006	0.007	
	Tolerance of width Y	±0.1			±0.03	±0.04	±0.05	±0.015	±0.02	±0.025
	Variation of width ΔY	0.02	0.03		0.01	0.015	0.02	0.006	0.007	0.01
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

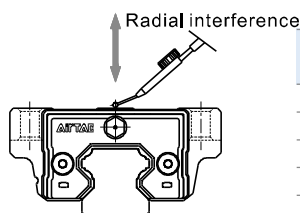
Rail Length(mm) Accuracy		100 under	100~200	200~300	300~500	500~700	700~900	900~1100	1100~1500	1500~1900	1900~2500	2500~3100	3100~3600	3600~4000
Parallelism of the raceway(μm)	N	12	14	15	17	20	22	24	26	28	31	33	36	37
	H	5	6	7	9	11	12	14	15	17	18	21	23	23
	P	3	3	4	5	7	7	8	9	10	12	14	16	16

Preload Level

1. Preload interference

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

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)	Heavy Preload(D)
LSH15	-4~+2	-12~-4	-22~-14	-
LSH20	-5~+2	-13~-5	-23~-15	-
LSH25	-6~+2	-14~-6	-24~-16	-33~-25
LSH30	-7~+2	-16~-7	-29~-20	-38~-29
LSH35	-8~+2	-21~-11	-34~-24	-43~-33
LSH45	-9~+2	-25~-16	-38~-27	-47~-36

2. Common Application

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

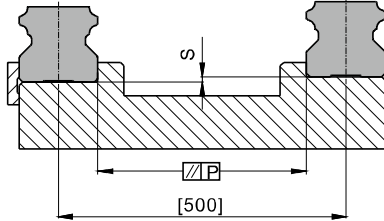
Preload grade	Requirement	Common Application
Standard clearance(A)	One axial movement, small vibration and impact, accuracy requirement is low	Conveyor Machine, Semiconductor Equipment, Stage Equipment, Press Machine, Welding Machine and other light movement equipments
Light Preload(B)	Equipment that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

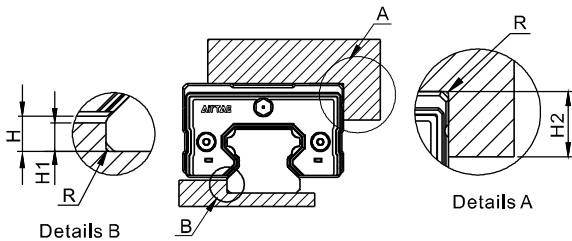


Model	Allowable tolerance of parallelism P(μm)			Allowable tolerance of top and bottom S (μm)		
	Standard clearance(A)	Light Preload(B)	Medium Preload(C)	Standard clearance(A)	Light Preload(B)	Medium Preload(C)
LSH15	25	18	13	130	85	35
LSH20	25	20	18	130	85	50
LSH25	30	22	20	130	85	70
LSH30	40	30	27	170	110	90
LSH35	50	35	30	210	150	120
LSH45	60	40	35	250	170	140

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
LSH45	10	8	8	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
LSH45	M12	11800	7840	5880

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

	L-P-M4	L-P-M6	L-P-SM6	L-P-P01	L-P-SP01
Grease nipple type	LSH15 M4X0.7P 12 5	LSH20 LSH25 LSH30 LSH35 M6X0.75P 20 5.8	LSH20 LSH25 LSH30 LSH35 M6X0.75P 14.8 5.8	LSH45 PT1/8 21.5 7.5	LSH45 PT1/8 16.5 7.5

•Grease amount

LSH series linear guide is well lubricated with 'Mobilux EP2' 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
LSH45	8.4	10.4	2.8	3.5

•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

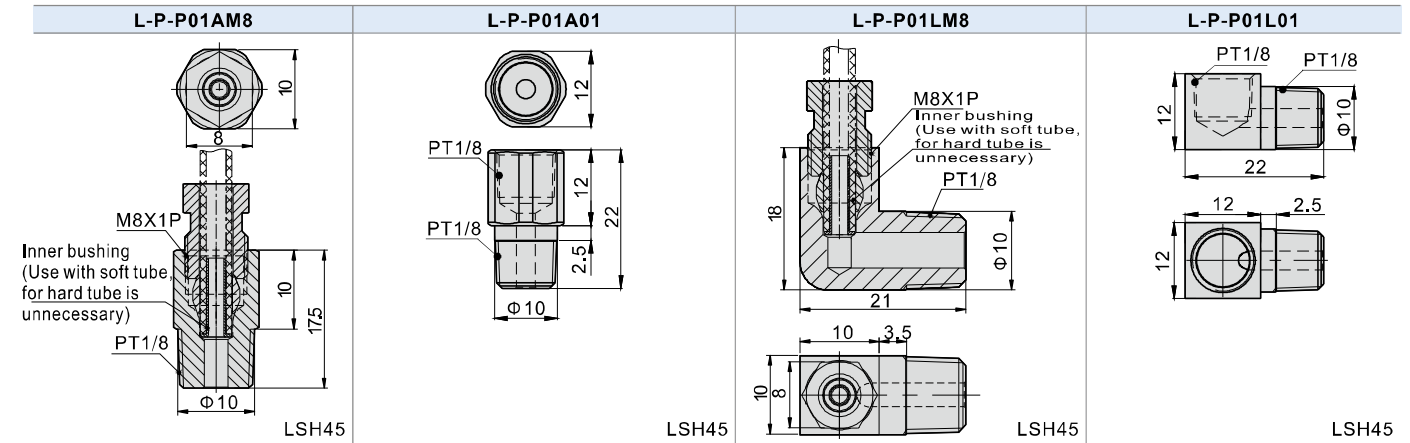
Recommended oil viscosity for lubrication use is about 30 to 150 cst.

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	L-P-AM8	L-P-A01
M6X0.75P M4X0.7P 17 9 3 Φ5.5 LSH15	M8X1P Inner bushing (Use with soft tube, for hard tube is unnecessary) M6X0.75P 19.3 10 3.5 Φ9 LSH35 LSH30 LSH25 LSH20	PT1/8 M6X0.75P 21.3 12 3.5 Φ9 LSH35 LSH30 LSH25 LSH20
L-P-LM6	L-P-LM8	L-P-L01
M6X0.75P M4X0.7P 16 10 8 3 7 Φ5.5 LSH15	M8X1P Inner bushing (Use with soft tube, for hard tube is unnecessary) M6X0.75P 19.3 10 3.5 Φ9 LSH35 LSH30 LSH25 LSH20	PT1/8 M6X0.75P 21.3 12 3.5 Φ9 LSH35 LSH30 LSH25 LSH20

LSH Series



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

Lubrication method

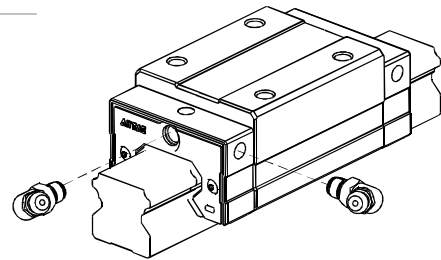
Oil supply rate

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
LSH45	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.

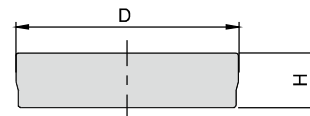


Bolt hole plug

1. Plug type

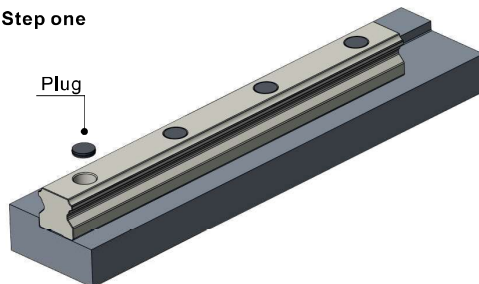
In order to prevent metal swarf or external objects from entering blocks and affecting precision and lifespan, customers must put plugs into holes during installation. Every rail is equipped with default plugs.

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
LSH45	M12	20.2	4.5



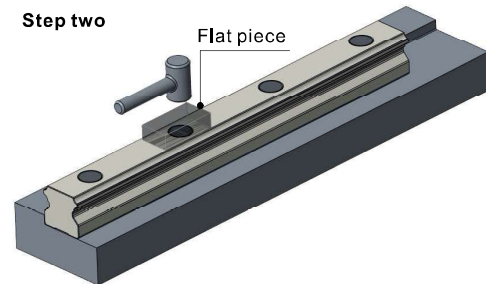
2. Plug installation Steps

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.

Dustproof standard type linear guide

LSH Series



Order Information(Combined)

LSH □ 15 H N 1 X220 S20 A H – AM6 – B – T – DD

1 2 3 4 5 6 7 8 9 10 11 12 13 14

①Model Code	LSH:Dustproof standard type linear guide											
②Rail&Block surface treatment	Blank: without additional coating. (natural color) ★BB : Block and rail coated with black chrome											
③Rail Width	15: 15mm 20: 20mm 25: 23mm 30: 28mm 35: 34mm 45: 45mm											
④Block Style	H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom F3: Flange type, Mounting from top or bottom											
⑤Block type	N: Standard L: Long [w/o 15 series]											
⑥Number of Block	1: One 2: Two [Note: Amount of block on a single set of linear guide]											
⑦Length of Rail	220:220mm [Defined by customer]											
⑧Position 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)											
⑨Preload	A: Standard clearance B: Light Preload C: Medium Preload D: Heavy Preload											
⑩Accuracy	N : Normal H : High P : Precision											
⑪Nipple /adapter type	M4: M4 Nipple			M6: M6 Nipple			P01: PT1/8 Nipple					
	AM6: M4 to M6		I type 	A01: M6 to PT1/8		I type 	A01: PT1/8 to PT1/8		I type 			
	LM6: M4 to M6		L type 	L01: M6 to PT1/8		L type 	L01: PT1/8 to PT1/8		L type 			
				LM8: M6 to M8			LM8: PT1/8 to M8					
				SM6: M6 Nipple			SP01: PT1/8 Nipple					
⑫Packing type	Blank: the block and rail are assembled B: block and rail are put separately											
⑬Rail type	Blank: Top-mount T: Bottom-mount											
⑭Dust proof	DD: Double oil scrapers ZZ: Oil scraper + metal scraper											

[Note 1] For LSH-BB series, standard length of a rail is 3 m.

Please contact with our company if length of rail exceeds the maximum.

Add: Heavy preload is available for LSH25/30/35/45 only.

Dustproof standard type linear guide

LSH Series

Butt-jointed Order Information

LSH □ 15 H N 1X2970 T 2940 T 2970 A H-AM6-B-T-DD

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

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

①Model Code	LSH:Dustproof standard type linear guide						
②Rail&Block surface treatment	Blank: without additional coating. (natural color) ★BB : Block and rail coated with black chrome						
③Rail Width	15: 15mm 20: 20mm 25: 23mm 30: 28mm 35: 34mm 45: 45mm						
④Block Style	H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom F3: Flange type, Mounting from top or bottom						
⑤Block type	N: Standard L: Long [w/o 15 series]						
⑥Number of Block	1: One 2: Two [Note: Amount of block on a single set of linear guide]						
⑦Length of first Rail	2970:2970mm [Defined by customer]						
⑧Butt-jointed mark	T: Rail Butt-jointed mark (Butt-jointed end margin:1/2P) [P is the standard hole distance]						
⑨Length of second Rail	2940:2940mm [Defined by customer]						
⑩Butt-jointed mark	Blank: two rails joint T: Rail Butt-jointed mark (Butt-jointed end margin:1/2P) [P is the standard hole distance]						
⑪Length of third Rail	Blank: two rails joint 2970:2970mm.....[Defined by customer]						
⑫Preload	A: Standard clearance B: Light Preload C: Medium Preload D: Heavy Preload						
⑬Accuracy	N : Normal H : High						
⑭Nipple /adapter type	15	M4: M4 Nipple		M6: M6 Nipple		P01: PT1/8 Nipple	
		AM6: M4 to M6		A01: M6 to PT1/8		A01: PT1/8 to PT1/8	
			L type	AM8: M6 to M8		AM8: PT1/8 to M8	
		LM6: M4 to M6		L01: M6 to PT1/8		L01: PT1/8 to PT1/8	
				LM8: M6 to M8		LM8: PT1/8 to M8	
				SM6: M6 Nipple		SP01: PT1/8 Nipple	
⑮Packing type	Blank: the block and rail are assembled B: block and rail are put separately						
⑯Rail type	Blank: Top-mount T: Bottom-mount						
⑰Dust proof	DD: Double oil scrapers ZZ: Oil scraper + metal scraper						

[Note1] For LSH-BB series, standard length of a rail is 3 m.

Maximum length of two-joint rail is 6 m. Maximum length of three-joint rail is 9 m.

Please contact with our company if length of rail exceeds the maximum.

Add1: Number of joints cannot be more than 2 times(three rails at most).

For LSH15/20/25, maximum length of jointed rail is 12080mm.

For LSH30/35, it's 12030. For LSH45, it's 12000.

Customization is needed for joint times more than standard.

Add2: Heavy preload is available for LSH25/30/35/45 only.

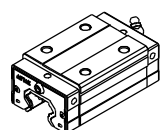
Dustproof standard type linear guide

LSH Series

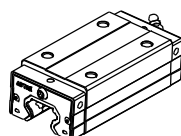
1. Block Order Information

LSH □ 15 BK-H N-H-E-AM6-DD

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩



N: Standard



L: Long

① Model Code	LSH:Dustproof standard type linear guide									
② Coating on block	Blank: Block without additional coating, (natural color) ★B: Block coated with black chrome									
③ Rail Width	15: 15mm 20: 20mm 25: 23mm 30: 28mm 35: 34mm 45: 45mm									
④ Block Code	BK: Block									
⑤ Block Style	H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom F3: Flange type, Mounting from top or bottom									
⑥ Block type	N: Standard L: Long [w/o 15 series]									
⑦ Accuracy	N : Normal H : High									
⑧ Group code	SA SB SC SE SF B C E[Note1]									
⑨ Nipple /adapter type	15	M4: M4 Nipple		20 25 30 35	M6:M6 Nipple		45	P01:PT1/8 Nipple		
		AM6: M4 to M6	I type 		A01:M6 to PT1/8	I type 		A01:PT1/8 to PT1/8	I type 	
		LM6: M4 to M6	L type 		AM8:M6 to M8			AM8:PT1/8 to M8		
					L01:M6 to PT1/8	L type 		L01:PT1/8 to PT1/8	L type 	
					LM8:M6 to M8			LM8:PT1/8 to M8		
					SM6:M6 Nipple			SP01:PT1/8 Nipple		
⑩ Dust proof	DD: Double oil scrapers ZZ: Oil scraper + metal scraper									

[Note1]: When selecting rails and bearings, the different pairing codes can change the units preload, details see "preload pairing chart".

LSH Series

Dust prevention illustration

1. Code and structure

AirTAC provides the following dust prevention accessories for the linear guides working in dusty environment, if the following accessories are demanded, please add the corresponding code when ordering.

Code	Blank: Standard	DD: Double oil scrapers	ZZ: Metal scraper + Oil scraper
Structure	Top seal Side seal Oil scraper	Top seal Side seal (Enhanced) Double oil scrapers (Double lips, enhanced)	Top seal Side seal (Enhanced) oil scrapers (Double lips, enhanced) Metal scraper

2. Test for high dust prevention

2.1. Test item

Test medium	Wood chip	Iron filing	Gravel
Running distance	500km	500km	500km

2.2. Test equipment

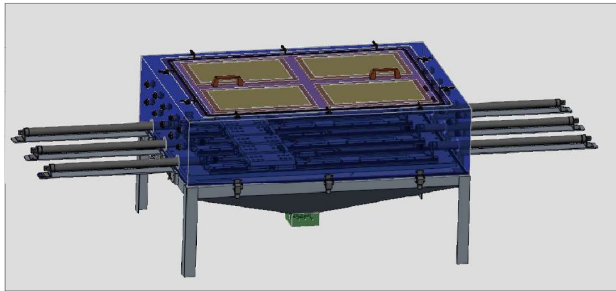


Figure1: Dust tester (Appearance)



Figure2: Dust tester (Inside)

2.3. Test condition

AirTAC adopts the industry's first dust tester (Figure 1) to simulate real working conditions, 360° without dead angles, all-round dust invasion (Figure 2). The dustproof test simulates multiple application scenarios, fully fill the air with wood chips, iron filings and gravels and are strictly tested to ensure the quality and dustproof effect of each block.

2.4. Test result

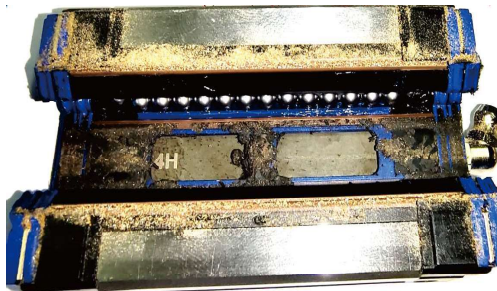


Figure3: Steel balls



Figure4: Steel balls

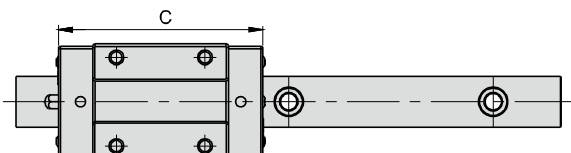
Result: It can be seen from the Figure 3 and 4 that little amount of dust enters the inside of the block after testing, and the steel ball surface is still smooth, the block still runs smoothly and the performance is not affected.

Note: The above test results are obtained from AirTAC lab.

3. Dimensions

Highly dustproof type blocks have different length compared with the standard blocks (only dimension C is different from the standard, the others keep same), see the table on the right for details.

Please refer to P21-23 for the detailed dimension.



Model	Type	Length C(mm)		
		Standard (Blank)	Double oil scrapers(DD)	Oil scraper+Metal scraper(ZZ)
LSH15□N	Standard	60	67	64.5
LSH20□N	Standard	76.5	84.5	81
LSH20□L	Long	90.5	98.5	95
LSH25□N	Standard	83.5	91.5	88
LSH25□L	Long	105	113	109.5
LSH30□N	Standard	95.5	103.5	100.5
LSH30□L	Long	118	126	123
LSH35□N	Standard	109	118	114
LSH35□L	Long	134.5	143.5	139.5
LSH45□N	Standard	132	141	137
LSH45□L	Long	164	173	169

Self-lubricator Standard Linear Guide

LSH Series



Order Information(Combined)

LSH □ 15 H N 1 X220 S20 A H – AM6 – B – T – E

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

① Model Code	LSH:Self-lubricator Standard Linear Guide									
② Rail&Block surface treatment	Blank: without additional coating. (natural color) ★BB : Block and rail coated with black chrome									
③ Rail Width	15: 15mm	20: 20mm	25: 23mm	30: 28mm	35: 34mm	45: 45mm				
④ Block Style	H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom F3: Flange type, Mounting from top or bottom									
⑤ Block type	N: Standard L: Long [w/o 15 series]									
⑥ Number of Block	1: One 2: Two [Note: Amount of block on a single set of linear guide]									
⑦ Length of Rail	220:220mm[Defined by customer]									
⑧ 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)									
⑨ Preload	A: Standard clearance B: Light Preload C: Medium Preload D: Heavy Preload									
⑩ Accuracy	N : Normal H : High P : Precision									
⑪ Nipple /adapter type	M4: M4 Nipple			M6: M6 Nipple			P01: PT1/8 Nipple			
	AM6: M4 to M6		20	A01: M6 to PT1/8		45	A01: PT1/8 to PT1/8			
			25	AM8: M6 to M8			AM8: PT1/8 to M8			
		L type	30	L01: M6 to PT1/8			L01: PT1/8 to PT1/8			
	LM6: M4 to M6		35	LM8: M6 to M8			LM8: PT1/8 to M8			
				SM6: M6 Nipple			SP01: PT1/8 Nipple			
⑫ Packing type	Blank: the block and rail are assembled B: block and rail are put separately									
⑬ Rail type	Blank: Top-mount T: Bottom-mount									
⑭ Self-lubricator Standard Type	E: Self-lubricator Standard Type									

[Note1] For LSH-BB series, standard length of a rail is 3 m.

Please contact with our company if length of rail exceeds the maximum.

Add: Heavy preload is available for LSH25/30/35/45 only.

Self-lubricator Standard Linear Guide

LSH Series

Butt-jointed Order Information

LSH □ 15 H N 1X2970 T 2940 T 2970 A H-AM6-B - T - E

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

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

① Model Code	LSH:Self-lubricator Standard Linear Guide					
② Rail&Block surface treatment	Blank: without additional coating. (natural color) ★BB : Block and rail coated with black chrome					
③ Rail Width	15: 15mm 20: 20mm 25: 23mm 30: 28mm 35: 34mm 45: 45mm					
④ Block Style	H: Square type F1: Flange type, Mounting from top F2: Flange type, Mounting from bottom F3: Flange type, Mounting from top or bottom					
⑤ Block type	N: Standard L: Long [w/o 15 series]					
⑥ Number of Block	1: One 2: Two [Note: Amount of block on a single set of linear guide]					
⑦ Length of first Rail	2970:2970mm[Defined by customer]					
⑧ Butt-jointed mark	T: Rail Butt-jointed mark (Butt-jointed end margin:1/2P) [P is the standard hole distance]					
⑨ Length of second Rail	2940:2940mm[Defined by customer]					
⑩ Butt-jointed mark	Blank: two rails joint T: Rail Butt-jointed mark (Butt-jointed end margin:1/2P) [P is the standard hole distance]					
⑪ Length of third Rail	Blank: two rails joint 2970:2970mm.....[Defined by customer]					
⑫ Preload	A: Standard clearance B: Light Preload C: Medium Preload D: Heavy Preload					
⑬ Accuracy	N : Normal H : High					
⑭ Nipple /adapter type	M4: M4 Nipple  AM6: M4 to M6  LM6: M4 to M6 		M6: M6 Nipple  A01: M6 to PT1/8  L01: M6 to PT1/8  LM8: M6 to M8  SM6: M6 Nipple 		P01: PT1/8 Nipple  A01: PT1/8 to PT1/8  L01: PT1/8 to PT1/8  LM8: PT1/8 to M8  SP01: PT1/8 Nipple 	
⑮ Packing type	Blank: the block and rail are assembled B: block and rail are put separately					
⑯ Rail type	Blank: Top-mount T: Bottom-mount					
⑰ Self-lubricator Standard Type	E: Self-lubricator Standard Type					

[Note1] For LSH-BB series, standard length of a rail is 3 m.

Maximum length of two-joint rail is 6 m. Maximum length of three-joint rail is 9 m.

Please contact with our company if length of rail exceeds the maximum.

Add1: Number of joints cannot be more than 2 times(three rails at most).

For LSH15/20/25, maximum length of jointed rail is 12080mm.

For LSH30/35, it's 12030. For LSH45, it's 12000.

Customization is needed for joint times more than standard.

Add2: Heavy preload is available for LSH25/30/35/45 only.

AirTAC

1. Block Order Information

1 2 3 4 5 6 7 8 9 10

N: Standard

L: Long



LSH Series

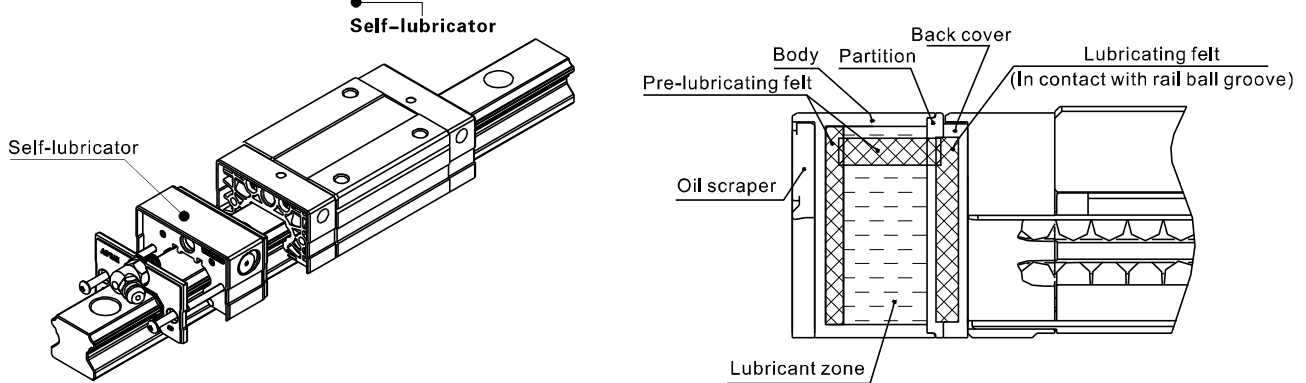
Self-lubricator illustration

1.Code and structure

AirTAC provides self-lubricator for applications e.g. limited spaces, or where grease maintenance is challenging.

If needed, please add the code "E" after the product model.

E.g. LSH15HN1X220S20AH-AM6 - B - T - E



Product Features

- 1.Easy Maintenance and Long-Term Maintenance-Free Operation:** In normal applications, basically no additional grease maintenance is required throughout lifespan of linear guide.
- 2.Cost Savings:** No additional lubrication is needed for the block, reducing labor and material costs.
- 3.Flexible Use in Specific Environments:** Equipped with a high-capacity grease tank, allowing the use of specific lubricants for specific environments.
- 4.Dustproof Design:** Built-in dustproof structure extends lifespan.
- 5.Flexible in usage and installation:** the assembling and disassembling of self-lubricator in integrity structure is convenient, can have it according to different working condition.

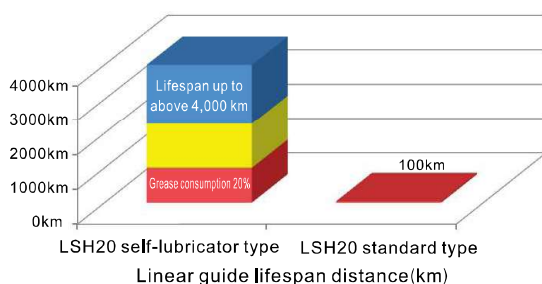
[Note] Self-lubricator type block is not applicable for ultra-smooth application, as the higher viscosity of the lubricant in self-lubricator will increases friction by approximately 5–7N.

Durability test of self-lubricator

Test specification	Test specification	Model	Speed	Stroke	Lubricant type
	Lubricating effect	LSH20	30m/min	1200mm	ISO VG680 high-quality extreme pressure lubricant

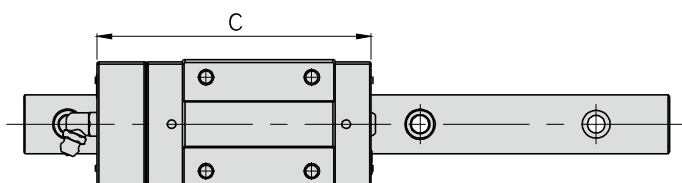
Test result

Test result shows that after running 1,000 km, only 20% of the grease is consumed, and the linear guide remains lubricated. The expected service life can possibly exceed 4,000 km.



When comparing each sub-series with the self-lubricator and the standard model, the length of block will change. Please refer to the table below for details.

- Block dimension comparison (only dimension C is different from the standard, the rest remains the same)



Model	Type	Length C(mm)	
		Standard (Blank)	Self-lubricator Standard Type
LSH15□N	Standard	60	75.5
LSH20□N	Standard	76.5	93.5
LSH20□L	Long	90.5	107.5
LSH25□N	Standard	83.5	100.5
LSH25□L	Long	105	122
LSH30□N	Standard	95.5	112.5
LSH30□L	Long	118	135
LSH35□N	Standard	109	126
LSH35□L	Long	134.5	151.5
LSH45□N	Standard	132	152.5
LSH45□L	Long	164	184.5