PMI AMT LINEARWAYS

Ball Retainer Type Linear Guideway

SME series

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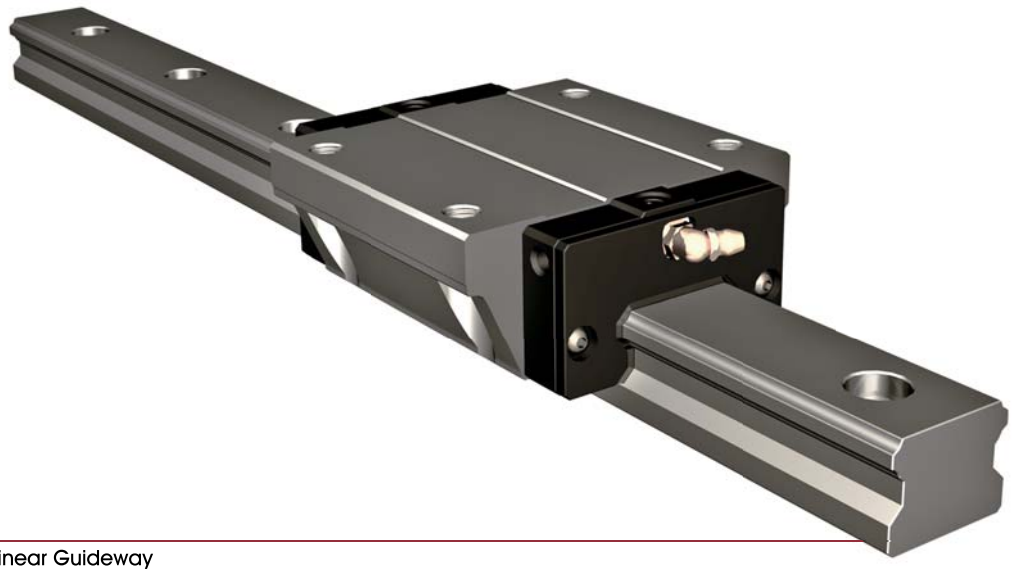
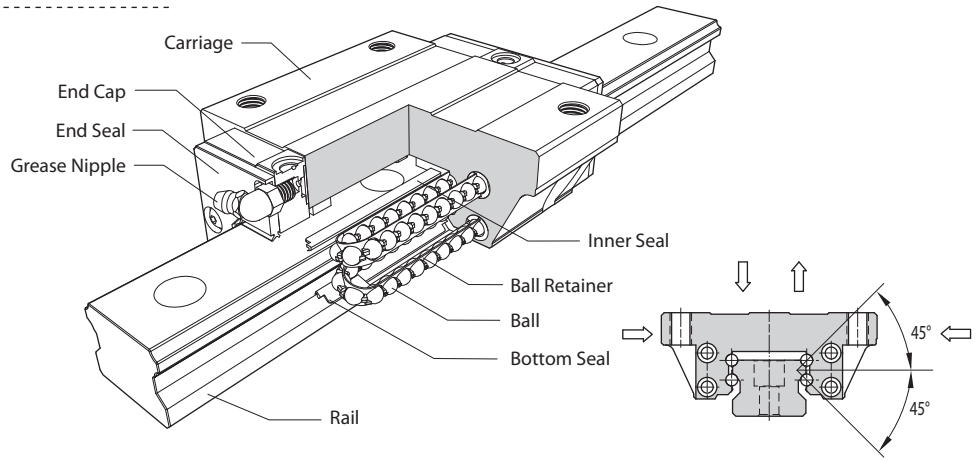
Content



Ball Retainer Type Linear Guideway
SME series

1 Construction



2 Characteristics

The ball retainer type linear guideway, SME series, equip with the patent of ball retainer design can make the movement smooth and stability, especially suit for the requests of high speed, high accuracy.

The Optimization Design of Direction Load

Through the structure stress analysis, SME series have four trains of balls are designed to a circular contact angle of 45° and the section design for high rigidity. Except for bearing heavier loads in radial, reversed radial and lateral directions, a sufficient preload can be achieved to increase rigidity, and this makes it suitable for any kind of installation.

Self Alignment Capability

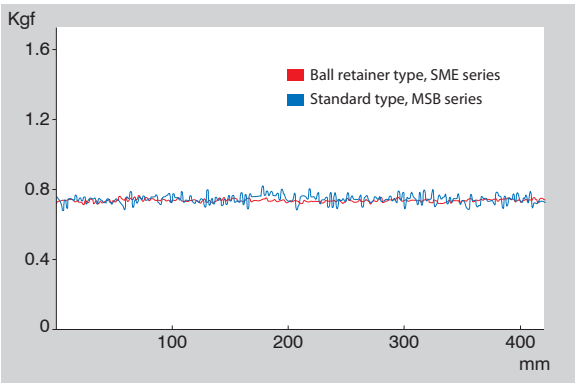
The self adjustment is performed spontaneously as the design of face-face (DF) circular arc groove. Therefore, the installation error could be compensated even under a preload, and which results in precise and smooth linear motion.

Ball Retainer Design, Smooth Movement

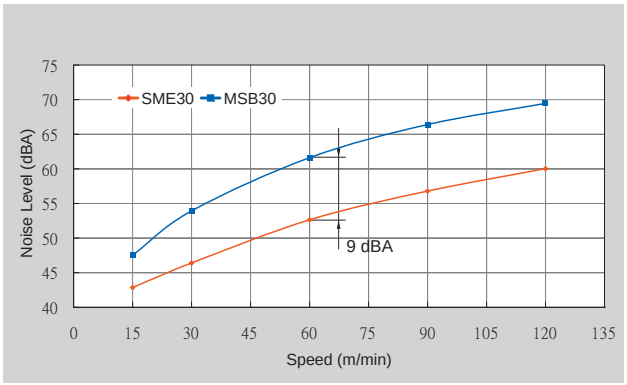
The concise and smooth design of circulating system with strengthened synthetic resin accessories and cooperating with the ball retainer, these can avoid interference between balls and make the balls more stability during passing in and out the load district. Besides, the ball retainer can keep the ball move in a line and improve the movement most smooth substantially.

Low Noise, Good Lubricant Effect

The ball retainer design avoids interference between balls, lowers the operating noise, and can keep the lubricant between the balls and ball retainer effectively. Moreover, improve the movement smooth and service life of the whole, can meet high accuracy, high reliability and smooth and stability.



Rolling resistance test

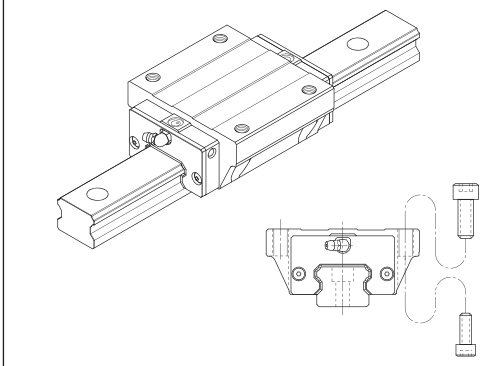


Noise level comparison test

3 Carriage Type

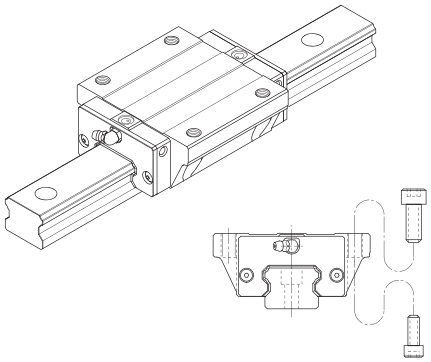
Heavy Load

SME-EA Type



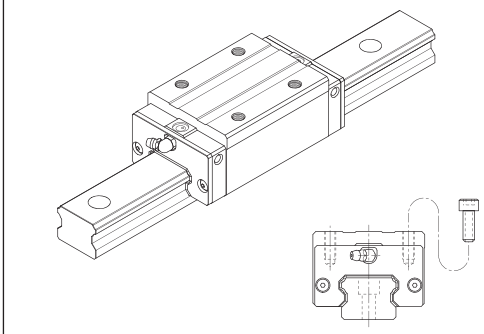
This type offers the installation either from top or bottom side of carriage.

SME-EB Type



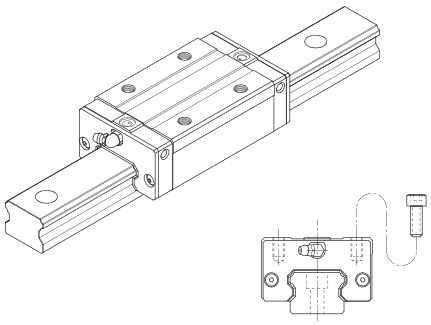
All dimensions are same as SME-EA except the height is lower, which do not change the basic loading rating.

SME-SA Type



Square type with smaller width and can be installed from top side of carriage.

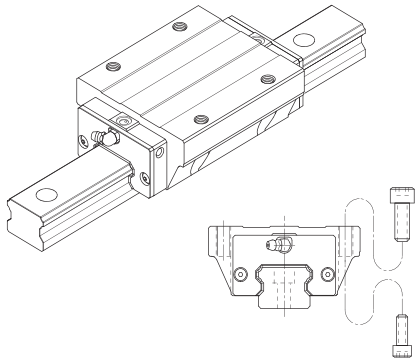
SME-SB / SME-SV Type



All dimensions are same as SME-SA except the height is lower, which do not change the basic loading rating.

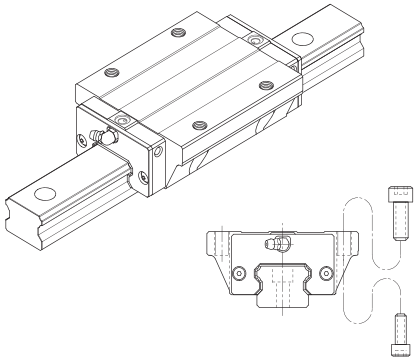
Ultra Heavy Load

SME-LEA Type



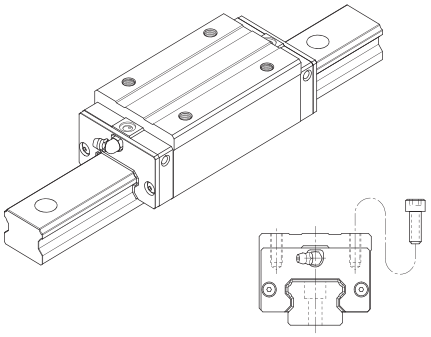
All dimensions are same as SME-EA except the length is longer, which makes it more rigid.

SME-LEB Type



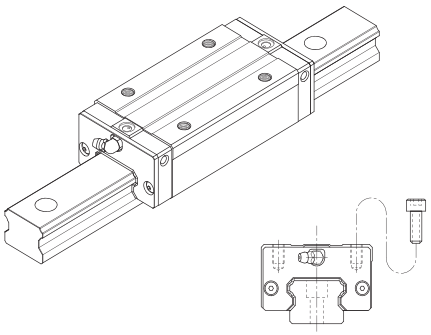
All dimensions are same as SME-EB except the length is longer, which makes it more rigid.

SME-LSA Type



All dimensions are same as SME-SA except the length is longer, which makes it more rigid.

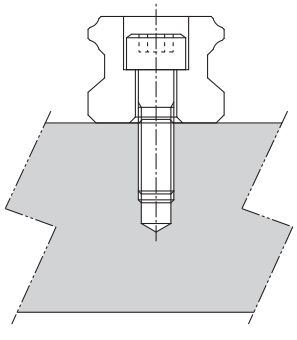
SME-LSB / SME-LSV Type



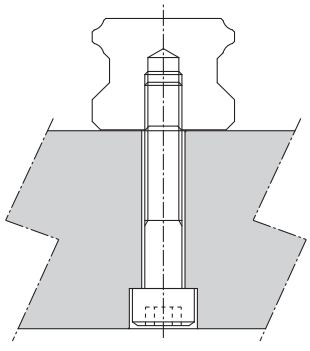
All dimensions are same as SME-SB and SME-SV except the length is longer, which makes it more rigid.

4 Rail Type

Counter-bore(R type)



Tapped-Hole(T type)



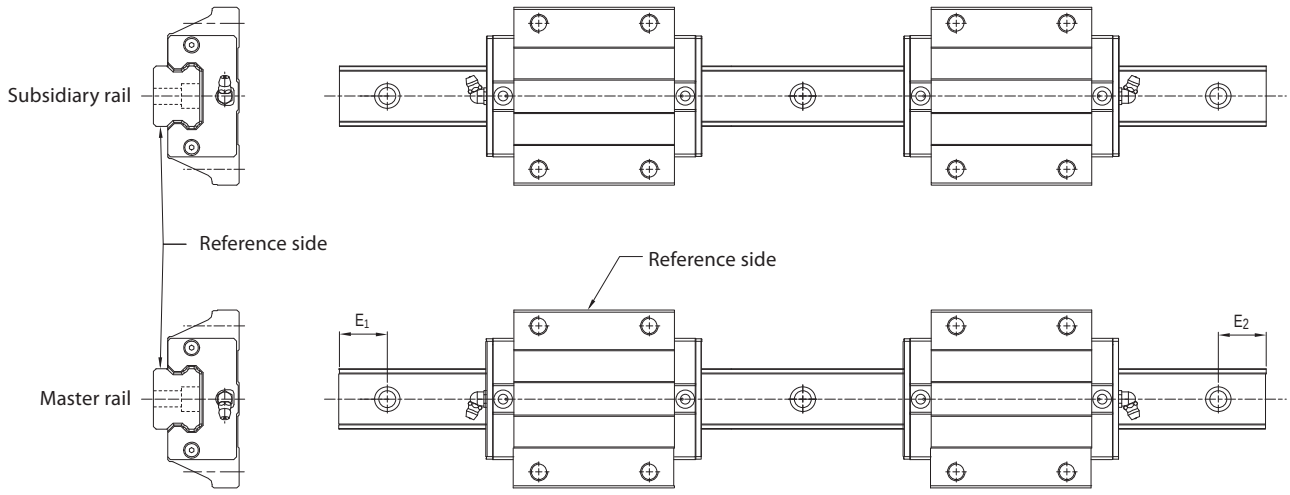
5 Description of Specification

(1) Non-interchangeable Type

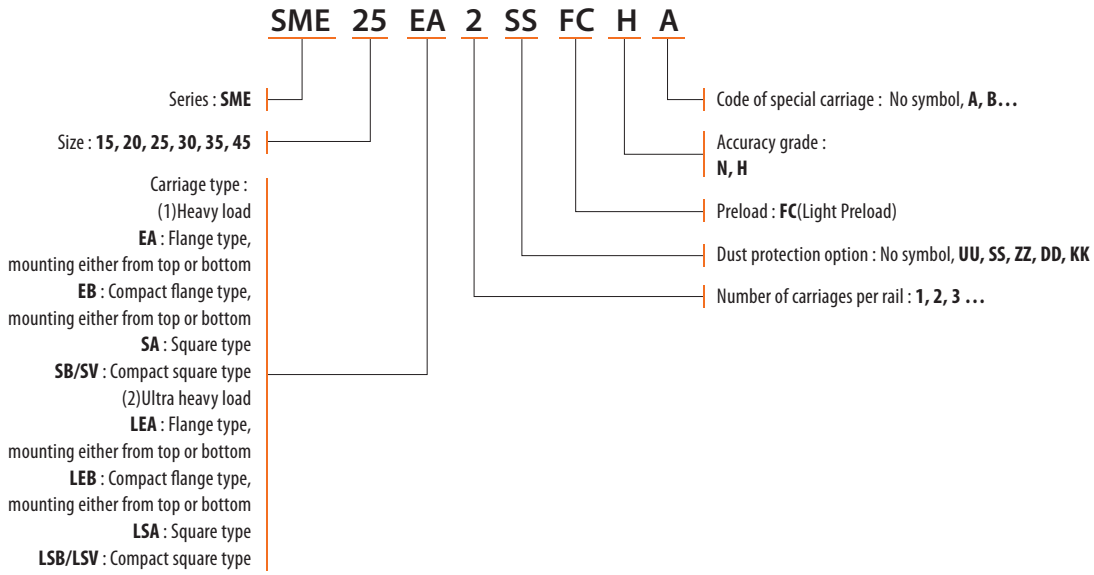
SME 25 EA 2 SS F0 A +R 1000 -20 /20 P A /CC II

- Series : **SME**
- Size : **15, 20, 25, 30, 35, 45**
- Carriage type :
  (1)Heavy load
  EA : Flange type, mounting either from top or bottom
  EB : Compact flange type, mounting either from top or bottom
  SA : Square type
  SB/SV : Compact square type
  (2)Ultra heavy load
  LEA : Flange type, mounting either from top or bottom
  LEB : Compact flange type, mounting either from top or bottom
  LSA : Square type
  LSB/LSV : Compact square type
- Number of carriages per rail : **1, 2, 3 ...**
- Dust protection option :
  No symbol, **UU, SS, ZZ, DD, KK**
- Preload :
  FC(Light Preload),
  F0 (Medium preload),
  F1 (Heavy preload)
- Code of special carriage :
  No symbol, **A, B...**
- Rail type :
  R (Counter-bore type),
  T (Tapped hole type)
- Rail length (mm)
- Rail hole pitch from start side (E_1, see Fig.1)
- Rail hole pitch to the end side (E_2, see Fig.1)
- Accuracy grade : **N, H, P, SP, UP**
- Code of special rail :
  No symbol, **A, B...**
- Dust protection option :
  No symbol, **/CC, /MC**
- Number of rails per axis :
  No symbol, **II, III, IV ...**

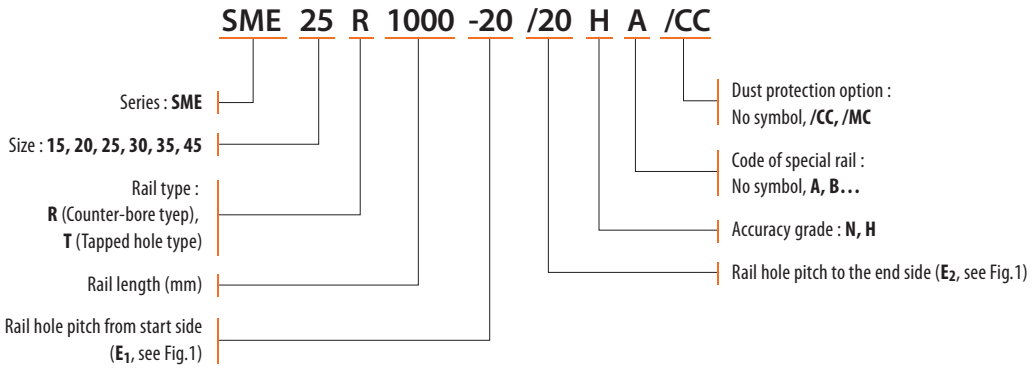
Fig.1



(2) Interchangeable Carriage Type



(3) Interchangeable Rail Type



6 Accuracy

The accuracy of SME series is divided into 5 classes, Normal (N), high (H), precision (P), super precision (SP), and ultra precision (UP), as shown in Table 1.

Accuracy Grade

Unit: mm

Model No.	Item	Accuracy Grade				
		Normal H	High H	Precision P	Super Precision SP	Ultra Precision UP
SME 15 SME 20	Tolerance for height H	±0.1	±0.03	0 - 0.03	0 - 0.015	0 - 0.008
	Height difference (ΔH)	0.02	0.01	0.006	0.004	0.003
	Tolerance for distance W_2	±0.1	±0.03	0 - 0.03	0 - 0.015	0 - 0.008
	Difference in distance W_2 (ΔW_2)	0.02	0.01	0.006	0.004	0.003
	Running parallelism of surface **C** with surface **A**	ΔC (see Fig.2)				
	Running parallelism of surface **D** with surface **B**	ΔD (see Fig.2)				
SME 25 SME 30 SME 35	Tolerance for height H	±0.1	±0.04	0 - 0.04	0 - 0.02	0 - 0.01
	Height difference (ΔH)	0.02	0.015	0.007	0.005	0.003
	Tolerance for distance W_2	±0.1	±0.04	0 - 0.04	0 - 0.02	0 - 0.01
	Difference in distance W_2 (ΔW_2)	0.03	0.015	0.007	0.005	0.003
	Running parallelism of surface **C** with surface **A**	ΔC (see Fig.2)				
	Running parallelism of surface **D** with surface **B**	ΔD (see Fig.2)				
SME 45	Tolerance for height H	±0.1	±0.05	0 - 0.05	0 - 0.03	0 - 0.02
	Height difference (ΔH)	0.03	0.015	0.007	0.005	0.003
	Tolerance for distance W_2	±0.1	±0.05	0 - 0.05	0 - 0.03	0 - 0.02
	Difference in distance W_2 (ΔW_2)	0.03	0.02	0.01	0.007	0.005
	Running parallelism of surface **C** with surface **A**	ΔC (see Fig.2)				
	Running parallelism of surface **D** with surface **B**	ΔD (see Fig.2)				

■ Table 1

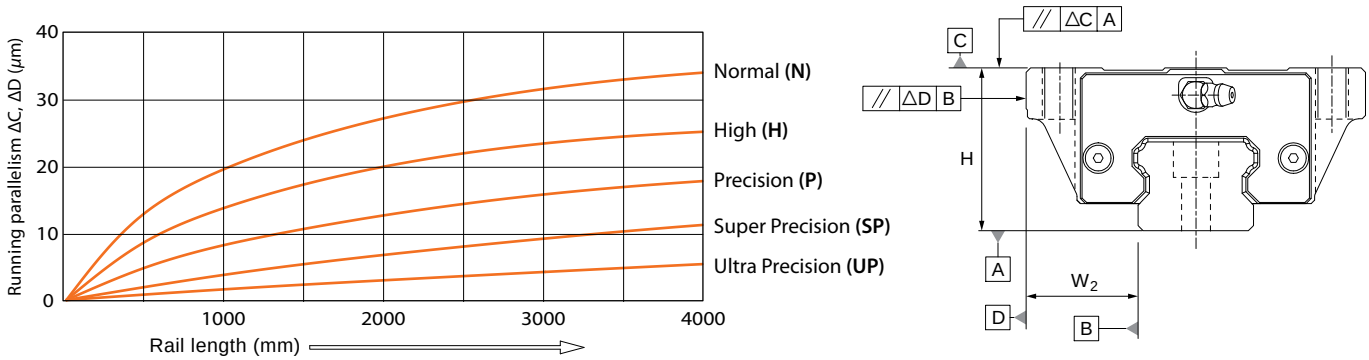


Fig.2 Running Parallelism of Carriage

7 Preload

By increasing preload of SME series can enhance the rigidity, and the preload is divided into three grade, light (FC), medium (F0), heavy (F1), as shown in Table 2.

Preload grade

Preload grade	Symbol	Preload
Light	FC	0.02C
Medium	F0	0.05C
Heavy	F1	0.08C

Table 2

8 Dust Proof

The codes for selection of dust protection accessory are shown as Table 3 and Table 4.
The increment to be added to the length of carriage with different applications of dust protection accessory is shown as Table 5.

Code of contamination protection for Carriage

Code	Contamination Protection
No Symbol	Scraper (both ends)
UU	Bidirectional end seal (both ends)
SS	Bidirectional end seal + Bottom seal + Inner seal
ZZ	SS + Scraper
DD	Double bidiredtional end Seal + Bottom seal + Inner seal
KK	DD + Scraper

Table 3

Code of contamination protection for Rail

Code	Contamination Protection
/CC	Cover strip
/MC	Metallic bolt cap

Table 4

Types of seal to the increment to the carriage overall length

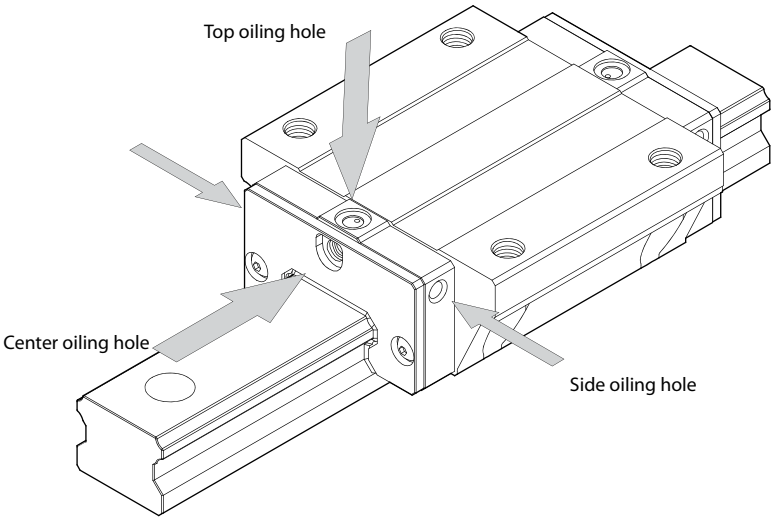
Unit: mm

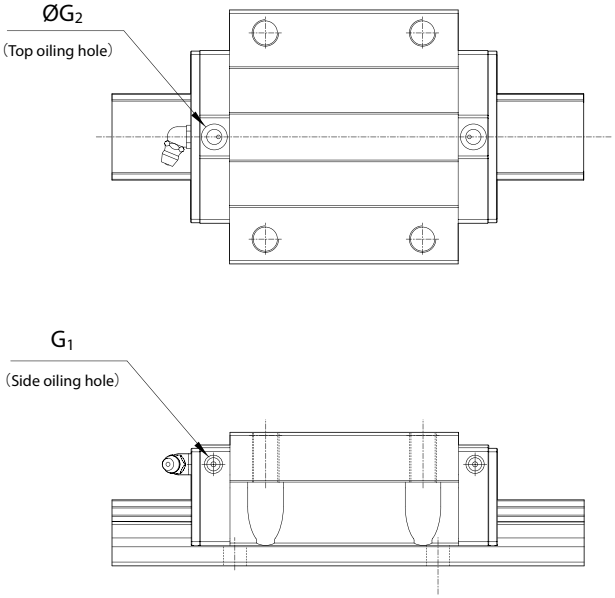
Code	No symbol	UU	SS	ZZ	DD	KK
SME 15	0.4	-	-	6	5.6	11.6
SME 20	1	-	-	7	6	13
SME 25	1	-	-	7	6	13
SME 30	1.4	-	-	7	5.6	12.6
SME 35	1	-	-	7.8	6.8	14.6
SME 45	0.6	-	-	7.8	7.2	15

Table 5

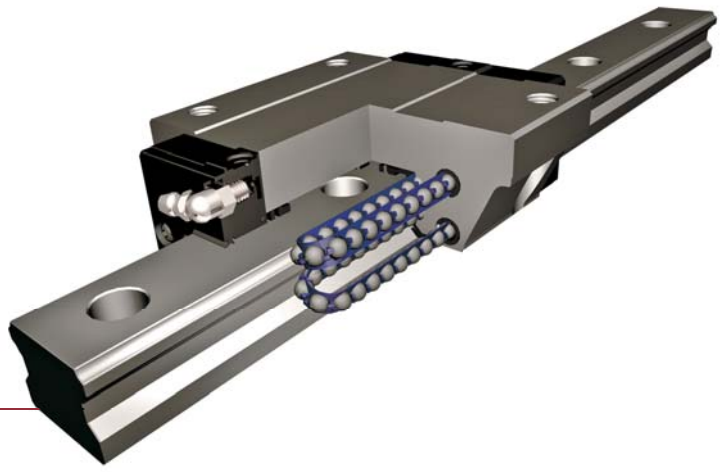
9 Lubrication

The standard oiling hole of carriage is at the center of both ends. As for side or top application, please specify when ordering.
The types and sizes of grease nipple are shown as below:



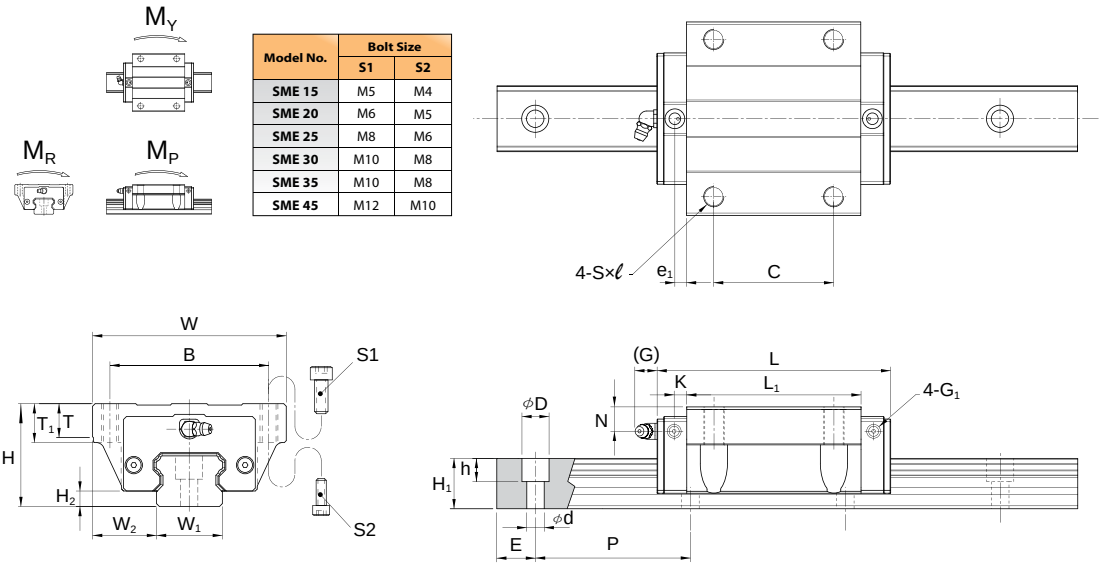


Model No.	Center	Side		Top	
	Nipple	G_1	Nipple	G_2	O-ring
SME 15	G-M4	M4 x 0.7P	G-M4	-	-
SME 20	G-M6	M4 x 0.7P	G-M4	-	-
SME 25	G-M6	M4 x 0.7P	G-M4	-	-
SME 30	G-M6	M6 x 0.75P	G-M6	10.2	P7
SME 35	G-M6	M6 x 0.75P	G-M6	10.2	P7
SME 45	G-PT1/8	M6 x 0.75P	G-M6	10.2	P7



10 Dimensions of SME Series

Dimensions of SME-EA/SME-LEA



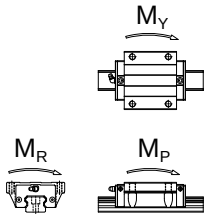
Model No.	Bolt Size	
	S1	S2
SME 15	M5	M4
SME 20	M6	M5
SME 25	M8	M6
SME 30	M10	M8
SME 35	M10	M8
SME 45	M12	M10

Unit: mm

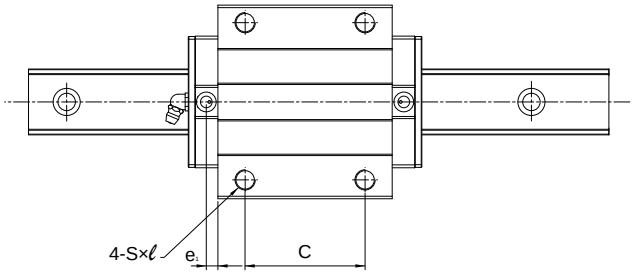
Model No.	External dimension					Carriage dimension											
	Height H	Width W	Length L	W_2	H_2	B	C	Sxℓ	L1	T	T_1	N	G	K	e_1	G_1	Grease Nipple
SME 15 EA	24	47	64.4	16	3.5	38	30	M5x8	48	5.5	8	5	5.4	2.7	-	M4	G-M4
SME 15 LEA			79.4						63								
SME 20 EA	30	63	78.5	21.5	4.7	53	40	M6x10	58.3	7.0	10	8	12	3.7	-	M4	G-M6
SME 20 LEA			97.5						77.3								
SME 25 EA	36	70	92	23.5	5.8	57	45	M8X13	71	7.0	13	10	12	4.7	-	M4	G-M6
SME 25 LEA			109						88								
SME 30 EA	42	90	107.6	31	7.5	72	52	M10X15	80	12.0	15	8	12	4.5	5.4	M6	G-M6
SME 30 LEA			132.6						105								
SME 35 EA	48	100	120.6	33	8	82	62	M10X15	90	12.0	15	8	12	5.4	6	M6	G-M6
SME 35 LEA			150.6						120								
SME 45 EA	60	120	140	37.5	10	100	80	M12x18	106	12.0	18	10	13.5	4.9	6.1	M6	G PT 1/8
SME 45 LEA			174.5						140.5								

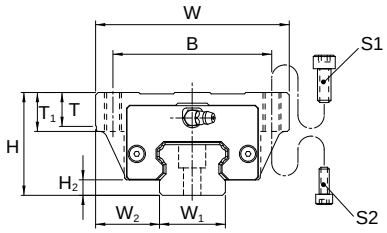
Model No.	Rail dimension					Basic load rating		Static moment rating			Weight	
	Width W_1	Height H_1	Pitch P	E std.	D x h x d	Dynamic C kN	Static C_0 kN	M_P kN-m	M_Y kN-m	M_R kN-m	Carriage kg	Rail kg/m
SME 15 EA	15	13	60	20	7.5x5.8x4.5	12.5	20.2	0.14	0.14	0.16	0.22	1.4
SME 15 LEA						15.4	27.5	0.25	0.25	0.21	0.29	
SME 20 EA	20	15.5	60	20	9.5x8.5x6	20.4	32.1	0.27	0.27	0.33	0.42	2.3
SME 20 LEA						25.3	43.6	0.49	0.49	0.44	0.62	
SME 25 EA	23	18	60	20	11x9x7	28.3	44.3	0.45	0.45	0.52	0.67	3.2
SME 25 LEA						33.0	56.1	0.71	0.71	0.66	0.89	
SME 30 EA	28	23	80	20	14x12x9	39.4	59.5	0.68	0.68	0.83	1.18	4.5
SME 30 LEA						47.0	76.5	1.11	1.11	1.07	1.54	
SME 35 EA	34	26	80	20	14x12x9	54.7	81.0	1.07	1.07	1.41	1.74	6.2
SME 35 LEA						67.6	109.9	1.92	1.92	1.91	2.28	
SME 45 EA	45	32	105	22.5	20x17x14	72.7	105.8	1.61	1.61	2.41	3.22	10.5
SME 45 LEA						90.0	143.6	2.88	2.88	3.27	4.21	

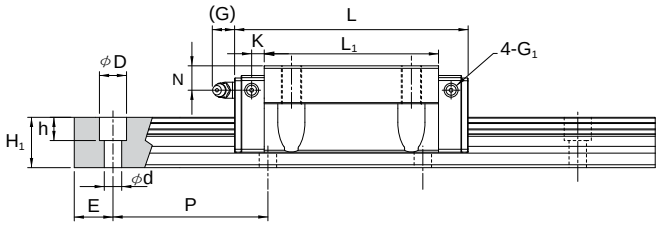
Dimensions of SME-EB/SME-LEB



Model No.	Bolt Size	
	S1	S2
SME 15	M5	M4
SME 20	M6	M5
SME 25	M8	M6





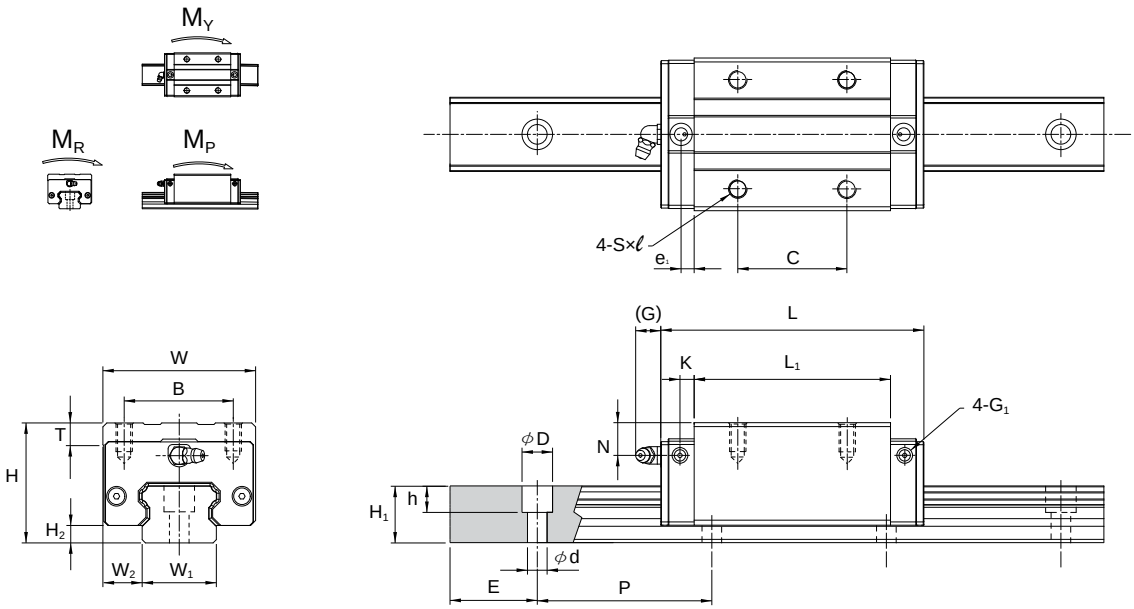


Unit: mm

Model No.	External dimension					Carriage dimension											
	Height H	Width W	Length L	W_2	H_2	B	C	S×ℓ	L1	T	T_1	N	G	K	e_1	G_1	Grease Nipple
SME 15 EB	24	52	64.4	18.5	3.5	41	26	M5x8	48	5.5	8	5.4	5.5	2.7	-	M4	G-M4
SME 15 LEB			79.4				36		63								
SME 20 EB	28	59	78.5	19.5	4.7	49	32	M6x8	58.3	7.0	8	6.0	12	3.7	-	M4	G-M6
SME 20 LEB			97.5				45		77.3								
SME 25 EB	33	73	92	25	5.8	60	35	M8X10	71	7.0	10	7.0	12	4.7	-	M4	G-M6
SME 25 LEB			109				50		88								

Model No.	Rail dimension					Basic load rating		Static moment rating			Weight	
	Width W_1	Height H_1	Pitch P	E std.	D x h x d	Dynamic C kN	Static C_0 kN	M_P kN-m	M_Y kN-m	M_R kN-m	Carriage kg	Rail kg/m
SME 15 EB	15	13	60	20	7.5x5.8x4.5	12.5	20.2	0.14	0.14	0.16	0.21	1.4
SME 15 LEB						15.4	27.5	0.25	0.25	0.21	0.27	
SME 20 EB	20	15.5	60	20	9.5x8.5x6	20.4	32.1	0.27	0.27	0.33	0.39	2.3
SME 20 LEB						25.3	43.6	0.49	0.49	0.44	0.55	
SME 25 EB	23	18	60	20	11x9x7	28.3	44.3	0.45	0.45	0.52	0.42	3.2
SME 25 LEB						33.0	56.1	0.71	0.71	0.66	0.65	

Dimensions of SME-SA/SME-LSA

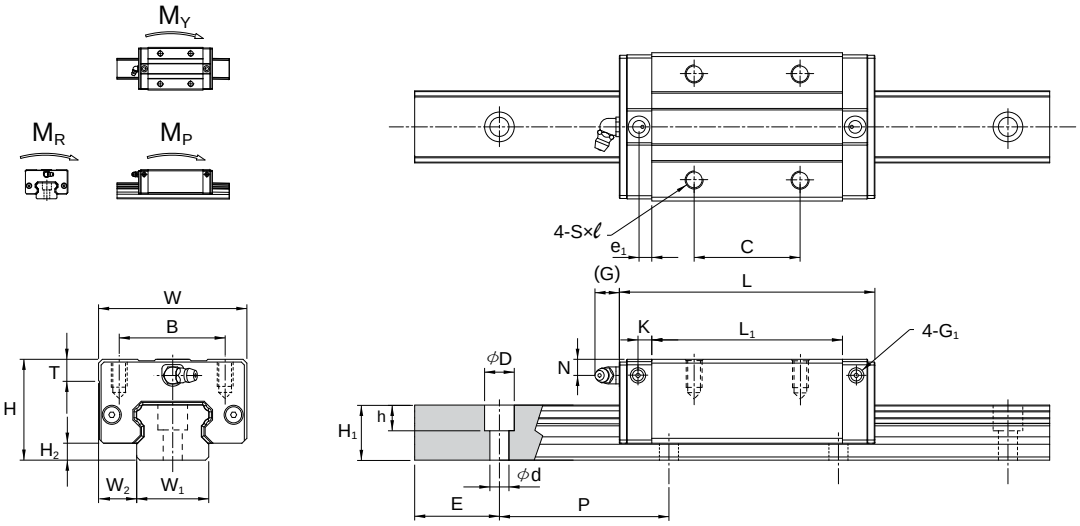


Unit: mm

Model No.	External dimension					Carriage dimension										
	Height H	Width W	Length L	W_2	H_2	B	C	Sxℓ	L1	T	N	G	K	e_1	G_1	Grease Nipple
SME 15 SA	28	34	64.4	9.5	3.5	26	26	M4x7.5	48	6	9	5.5	2.7	-	M4	G-M4
SME 15 LSA			79.4						63							
SME 20 SA	30	44	78.5	12	4.7	32	36	M5x7	58.3	6	8	12	3.7	-	M4	G-M6
SME 20 LSA			97.5				50		77.3							
SME 25 SA	40	48	92	12.5	5.8	35	35	M6X12	71	8	14	12	4.7	-	M4	G-M6
SME 25 LSA			109				50		88							
SME 30 SA	45	60	107.6	16	7.5	40	40	M8x12	80	8	11	12	4.5	5.4	M6	G-M6
SME 30 LSA			132.6				60		105							
SME 35 SA	55	70	120.6	18	8	50	50	M8X14	90	11	15	12	5.4	6	M6	G-M6
SME 35 LSA			150.6				72		120							
SME 45 SA	70	86	140	20.5	10	60	60	M10x20	106	16	20	13.5	4.9	6.1	M6	G PT 1/8
SME 45 LSA			174.5				80		140.5							

Model No.	Rail dimension					Basic load rating		Static moment rating			Weight	
	Width W_1	Height H_1	Pitch P	E std.	D x h x d	Dynamic C kN	Static C_0 kN	M_P kN-m	M_Y kN-m	M_R kN-m	Carriage kg	Rail kg/m
SME 15 SA	15	13	60	20	7.5x5.8x4.5	12.5	20.2	0.14	0.14	0.16	0.22	1.4
SME 15 LSA						15.4	27.5	0.25	0.25	0.21	0.25	
SME 20 SA	20	15.5	60	20	9.5x8.5x6	20.4	32.1	0.27	0.27	0.33	0.30	2.3
SME 20 LSA						25.3	43.6	0.49	0.49	0.44	0.39	
SME 25 SA	23	18	60	20	11x9x7	28.3	44.3	0.45	0.45	0.52	0.56	3.2
SME 25 LSA						33.0	56.1	0.71	0.71	0.66	0.73	
SME 30 SA	28	23	80	20	14x12x9	39.4	59.5	0.68	0.68	0.83	0.93	4.5
SME 30 LSA						47.0	76.5	1.11	1.11	1.07	1.21	
SME 35 SA	34	26	80	20	14x12x9	54.7	81.0	1.07	1.07	1.41	1.57	6.2
SME 35 LSA						67.6	109.9	1.92	1.92	1.91	2.05	
SME 45 SA	45	32	105	22.5	20x17x14	72.7	105.8	1.61	1.61	2.41	3.06	10.5
SME 45 LSA						90.0	143.6	2.88	2.88	3.27	4.00	

Dimensions of SME-SB/SME-LSB-SME-SV/SME-LSV



Unit: mm

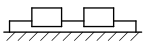
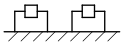
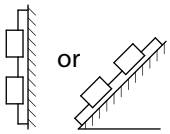
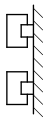
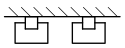
Model No.	External dimension					Carriage dimension										
	Height H	Width W	Length L	W_2	H_2	B	C	S×ℓ	L1	T	N	G	K	e_1	G_1	Grease Nipple
SME15 SB	24	34	64.4	9.5	3.5	26	26	M4x5	48	6	5	5.5	2.7	-	M4	G-M4
SME15 LSB			79.4				36		63							
SME20 SB	28	42	78.5	11	4.7	32	32	M5x5.5	58.3	6	6	12	3.7	-	M4	G-M6
SME20 LSB			97.5				45		77.3							
SME25 SB	33	48	92	12.5	5.8	35	35	M6X7	71	8	7	12	4.7	-	M4	G-M6
SME25 LSB			109				50		88							
SME25 SV	36	48	92	12.5	5.8	35	35	M6X9	71	8	10	12	4.7	-	M4	G-M6
SME25 LSV			109				50		88							
SME30 SB	42	60	107.6	16	7.5	40	40	M8X10	80	8	8	12	4.5	5.4	M6	G-M6
SME30 LSB			132.6				60		105							
SME35 SB	48	70	120.6	18	8	50	50	M8x11	90	11	8	12	5.4	6	M6	G-M6
SME35 LSB			150.6				72		120							
SME45 SB	60	86	140	20.5	10	60	60	M10x16	106	16	10	13.5	4.9	6.1	M6	G PT 1/8
SME45 LSB			174.5				80		140.5							

Model No.	Rail dimension					Basic load rating		Static moment rating			Weight	
	Width W_1	Height H_1	Pitch P	E std.	D x h x d	Dynamic C kN	Static C_0 kN	M_P kN-m	M_Y kN-m	M_R kN-m	Carriage kg	Rail kg/m
SME15 SB	15	13	60	20	7.5x5.8x4.5	12.5	20.2	0.14	0.14	0.16	0.19	1.4
SME15 LSB						15.4	27.5	0.25	0.25	0.21	0.22	
SME20 SB	20	15.5	60	20	9.5x8.5x6	20.4	32.1	0.27	0.27	0.33	0.26	2.3
SME20 LSB						25.3	43.6	0.49	0.49	0.44	0.35	
SME25 SB	23	18	60	20	11x9x7	28.3	44.3	0.45	0.45	0.52	0.31	3.2
SME25 LSB						33.0	56.1	0.71	0.71	0.66	0.49	
SME25 SV	23	18	60	20	11x9x7	28.3	44.3	0.45	0.45	0.52	0.44	3.2
SME25 LSV						33.0	56.1	0.71	0.71	0.66	0.62	
SME30 SB	28	23	80	20	14x12x9	39.4	59.5	0.68	0.68	0.83	0.85	4.5
SME30 LSB						47.0	76.5	1.11	1.11	1.07	1.10	
SME35 SB	34	26	80	20	14x12x9	54.7	81.0	1.07	1.07	1.41	1.22	6.2
SME35 LSB						67.6	109.9	1.92	1.92	1.91	1.61	
SME45 SB	45	32	105	22.5	20x17x14	72.7	105.8	1.61	1.61	2.41	1.22	10.5
SME45 LSB						90.0	143.6	2.88	2.88	3.27	1.61	

AMT Linear Guideway Request Form

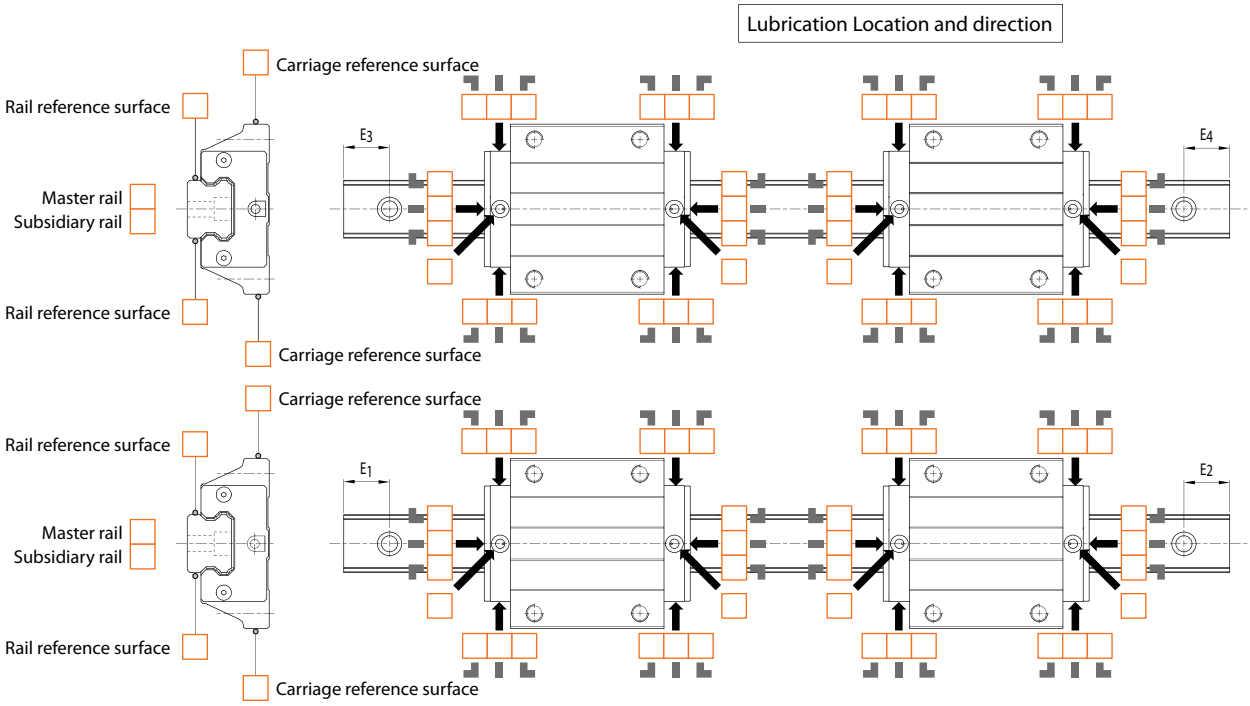
Date :

Customer Name :	**Address** :
Tel :	
Fax :	**Machine Type** :
Contact Person :	**Drawing No.** :

Installation Direction	 ☐ **H** type	 ☐ **R** type	 ☐ **V** type	 ☐ **K** type	 ☐ **T** type	 ☐ **RV** type	☐ Others	

Carriage Type	**SME** - ☐ EA ☐ LEA ☐ EB ☐ LEB ☐ SA ☐ LSA ☐ SB ☐ LSB ☐ SV ☐ LSV
Size	☐ 15 ☐ 20 ☐ 25 ☐ 30 ☐ 35 ☐ 45
No. of Carriage	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ Others :
Dust Protection for Carriage	☐ No Symbol ☐ UU ☐ SS ☐ ZZ ☐ DD ☐ KK
Dust Protection for Rail	☐ No Symbol ☐ CC ☐ MC
Preload Grade	☐ FC ☐ F0 ☐ F1
Rail Type	☐ Counter-bore (**R** type) ☐ Tapped hole (**T** type)
Rail Length & Pitch	Length : E1 : E2 : E3 : E4 :
Accuracy Grade	☐ N ☐ H ☐ P ☐ SP ☐ UP
Rail per Axis	☐ 1 ☐ 2 ☐ 3 ☐ Others :
Lubrication Type	☐ Grease ☐ Oil
Lubrication Fitting	☐ Grease nipple (Code :) ☐ Oil piping joint (Code :)
Full Code of Specification	
Required Quantity	

Reference surface & Lubrication Location



* Nonspecified cases followed by ***AMT*** standards. For other special requirements, please contact us.

PMI

ADVANCED MOTION TECHNOLOGIES CORP.
No.73, Lane 20, Dafu Road, Shen Kang Hsiang,
Taichung Hsien 42946, Taiwan
TEL: +886-4-25282984 FAX: +886-4-25121027
E-mail: amt.info@pmi-amt.com.tw