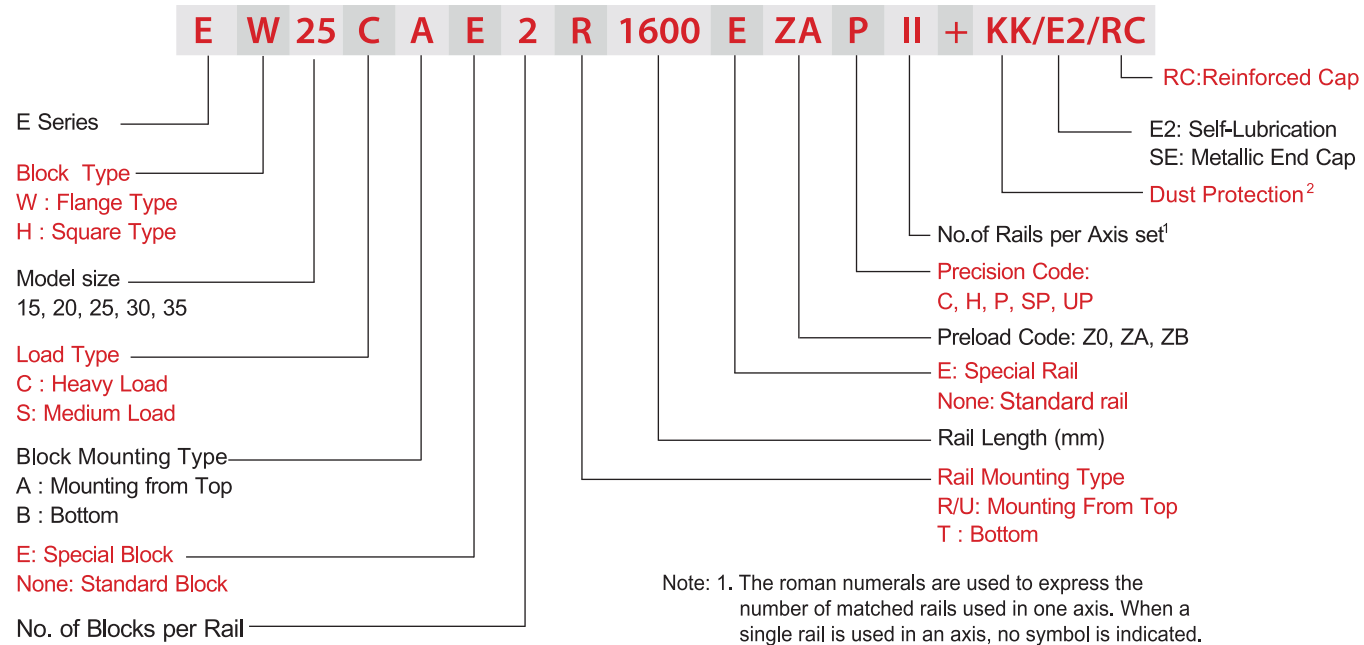
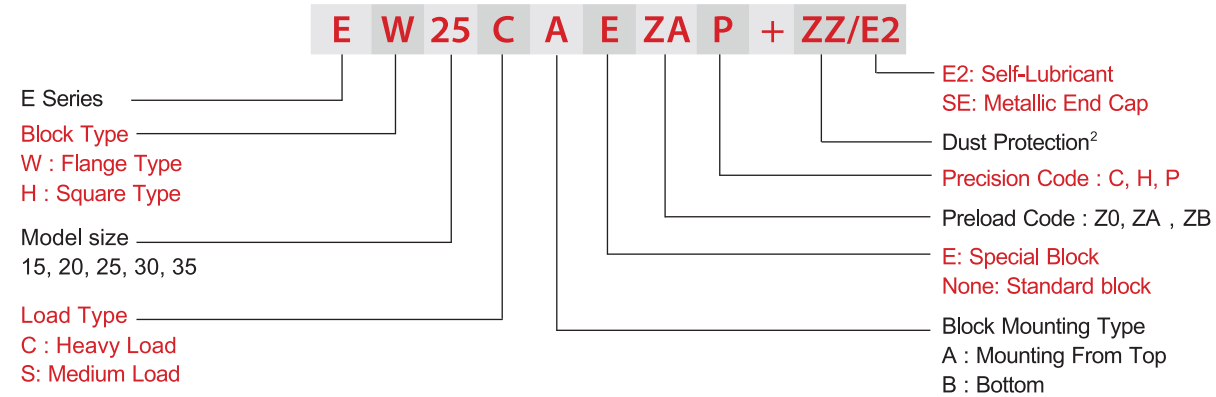


(1) Non-interchangeable type

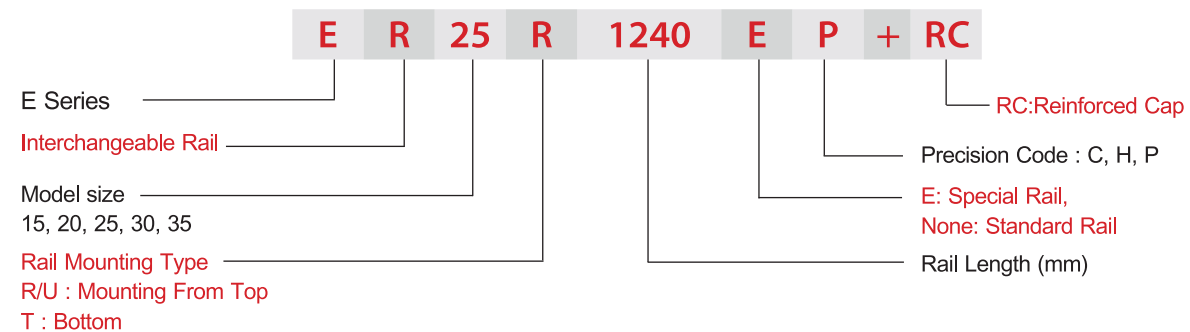


(2) Interchangeable type

□ Model Number of E Block



□ Model Number of E Rail



2-2-4 Types

(1) Block types

LIMON offers two types of linear guideways, flange and square types.

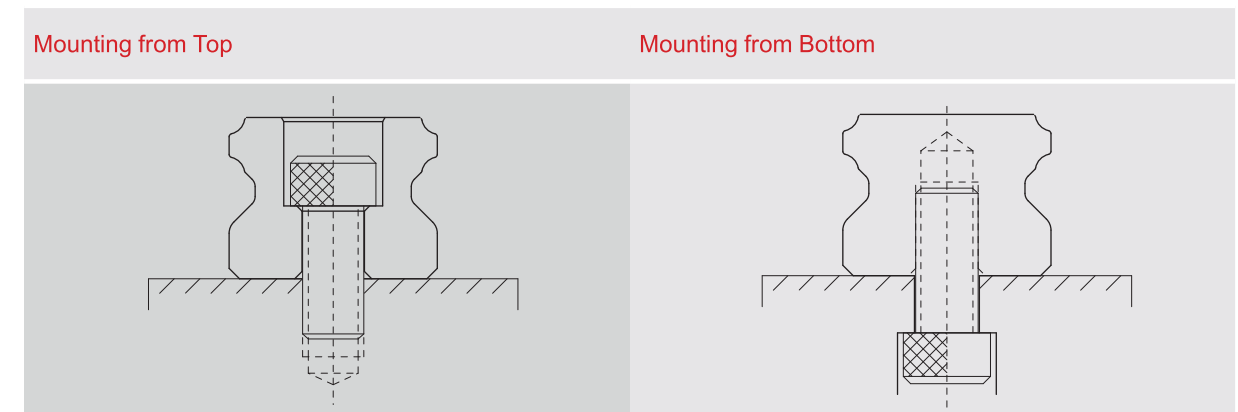
Table 2-2-1 Block Types

Type	Model	Shape	Height (mm)	Rail Length (mm)	Main Applications
Square	EH-SA EH-CA		24	100	<ul style="list-style-type: none"> Automation devices High-speed transportation equipment Precision measuring equipment Semiconductor manufacturing equipment
			48	4000	
Flange	EW-SA EW-CA		24	100	
			48	4000	
Flange	EW-SB EW-CB		24	100	
			48	4000	

(2) Rail types

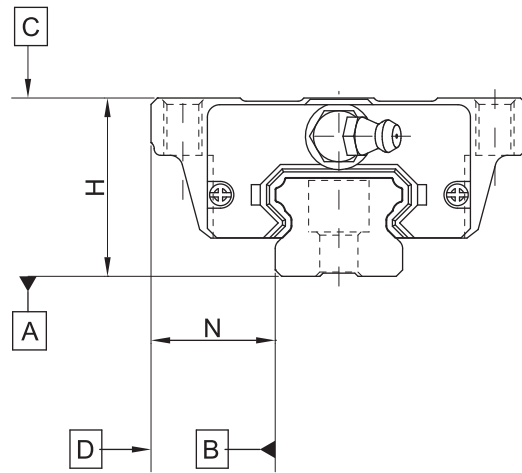
Besides the standard top mounting type, LIMON also offers bottom mounting type rails.

Table 2-2-2 Rail Types



2-2-5 Accuracy

The accuracy of the E series can be classified into 5 classes: normal(C), high(H), precision(P), super precision(SP), and ultra precision(UP). Choose the class by referencing the accuracy of selected equipment.



(1) Accuracy of non-interchangeable guideways

Table 2-2-3 Accuracy Standards

Unit: mm

Item	E - 15, 20				
	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimensional tolerance of height H	± 0.1	± 0.03	0 -0.03	0 -0.015	0 -0.008
Dimensional tolerance of width N	± 0.1	± 0.03	0 -0.03	0 -0.015	0 -0.008
Variation of height H	0.02	0.01	0.006	0.004	0.003
Variation of width N	0.02	0.01	0.006	0.004	0.003
Running parallelism of block surface C to surface A	See Table 2-2-7				
Running parallelism of block surface D to surface B	See Table 2-2-7				

Table 2-2-4 Accuracy Standards

Unit: mm

Item	E - 25, 30, 35				
	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimensional tolerance of height H	± 0.1	± 0.04	0 -0.04	0 -0.02	0 -0.01
Dimensional tolerance of width N	± 0.1	± 0.04	0 -0.04	0 -0.02	0 -0.01
Variation of height H	0.02	0.015	0.007	0.005	0.003
Variation of width N	0.03	0.015	0.007	0.005	0.003
Running parallelism of block surface C to surface A	See Table 2-2-7				
Running parallelism of block surface D to surface B	See Table 2-2-7				

(2) Accuracy of interchangeable guideways

Table 2-2-5 Accuracy Standards

Unit: mm

Item	E - 15, 20		
	Normal (C)	High (H)	Precision (P)
Dimensional tolerance of height H	± 0.1	± 0.03	± 0.015
Dimensional tolerance of width N	± 0.1	± 0.03	± 0.015
Variation of height H	0.02	0.01	0.006
Variation of width N	0.02	0.01	0.006
Running parallelism of block surface C to surface A	See Table 2-2-7		
Running parallelism of block surface D to surface B	See Table 2-2-7		

Table 2-2-6 Accuracy Standards

Unit: mm

Item	E - 25, 30, 35		
	Normal (C)	High (H)	Precision (P)
Dimensional tolerance of height H	± 0.1	± 0.04	± 0.02
Dimensional tolerance of width N	± 0.1	± 0.04	± 0.02
Variation of height H	0.02	0.015	0.007
Variation of width N	0.03	0.015	0.007
Running parallelism of block surface C to surface A	See Table 2-2-7		
Running parallelism of block surface D to surface B	See Table 2-2-7		

(3) Accuracy of running parallelism

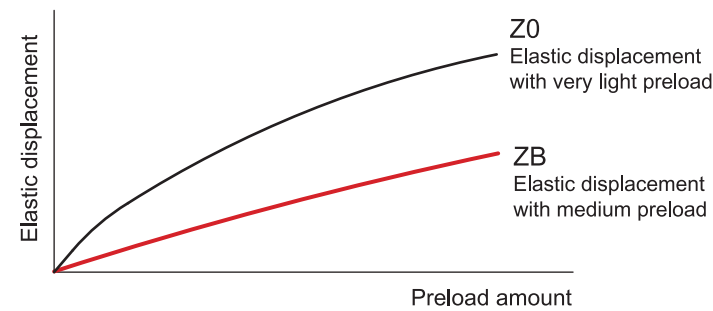
Table 2-2-7 Accuracy of Running Parallelism

Rail Length (mm)	Accuracy (μm)				
	C	H	P	SP	UP
~ 100	12	7	3	2	2
100 ~ 200	14	9	4	2	2
200 ~ 300	15	10	5	3	2
300 ~ 500	17	12	6	3	2
500 ~ 700	20	13	7	4	2
700 ~ 900	22	15	8	5	3
900 ~ 1,100	24	16	9	6	3
1,100 ~ 1,500	26	18	11	7	4
1,500 ~ 1,900	28	20	13	8	4
1,900 ~ 2,500	31	22	15	10	5
2,500 ~ 3,100	33	25	18	11	6
3,100 ~ 3,600	36	27	20	14	7
3,600 ~ 4,000	37	28	21	15	7

2-2-6 Preload

(1) Definition

A preload can be applied to each guideway. Generally, a linear motion guideway has a negative clearance between the groove and balls in order to improve stiffness and maintain high precision. The figure shows that adding a preload can improve stiffness of the linear guideway. A preload no greater than ZA would be recommended for model sizes smaller than E20. This will avoid an over-loaded condition that would affect guideway life.



(2) Preload classes

LIMON offers three standard preloads for various applications and conditions.

Table 2-2-8 Preload Classes

Class	Code	Preload	Condition
Very Light Preload	Z0	0~ 0.02C	Certain load direction, low impact, low precision required
Light Preload	ZA	0.03C~0.05C	low load and high precision required
Medium Preload	ZB	0.06C~ 0.08C	High rigidity required, with vibration and impact

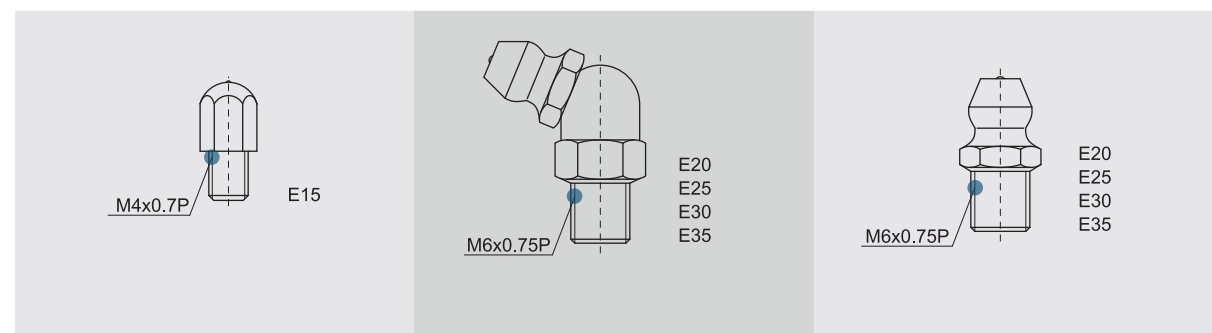
Class	Interchangeable Guideway	Non-Interchangeable Guideway
Preload classes	Z0, ZA	Z0, ZA, ZB

Note: The "C" in the preload column denotes basic dynamic load rating.

2-2-7 Lubrication

(1) Grease

□ Grease nipple



□ Mounting location

The standard location of the grease fitting is at both ends of the block, the nipple may be mounted in the side or top of the block. For lateral installation, we recommend that the nipple be mounted to the non-reference side, otherwise please contact us. When lubricating from above, in the recess for the O-ring, a smaller, preformed recess can be found. Preheat the 0.8 mm diameter metal tip. Carefully open the small recess with the metal tip and pierce through it. Insert a round sealing ring into the recess. (The round sealing ring is not supplied with the block) Do not open the small recess with a drill bit this may introduce the danger of contamination. It is possible to carry out the lubrication by using the oil-piping joint.

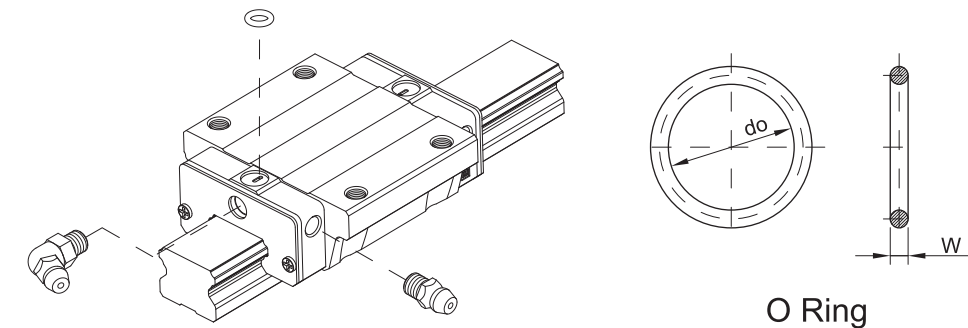


Table 2-2-9 O-Ring size and max. permissible depth for piercing

Size	O-Ring		Lube hole at top: max. permissible depth for piercing
	do(mm)	W (mm)	T _{max} (mm)
E15	2.5 ± 0.15	1.5 ± 0.15	6.9
E20	4.5 ± 0.15	1.5 ± 0.15	8.4
E25	4.5 ± 0.15	1.5 ± 0.15	10.4
E30	4.5 ± 0.15	1.5 ± 0.15	10.4
E35	4.5 ± 0.15	1.5 ± 0.15	10.8

□ The oil amount for a block filled with grease

Table 2-2-10 The oil amount for a block filled with grease

Size	Medium Load (cm ³)	Heavy Load (cm ³)
E15	0.8	1.4
E20	1.5	2.4
E25	2.8	4.6
E30	3.7	6.3
E35	5.6	6.6

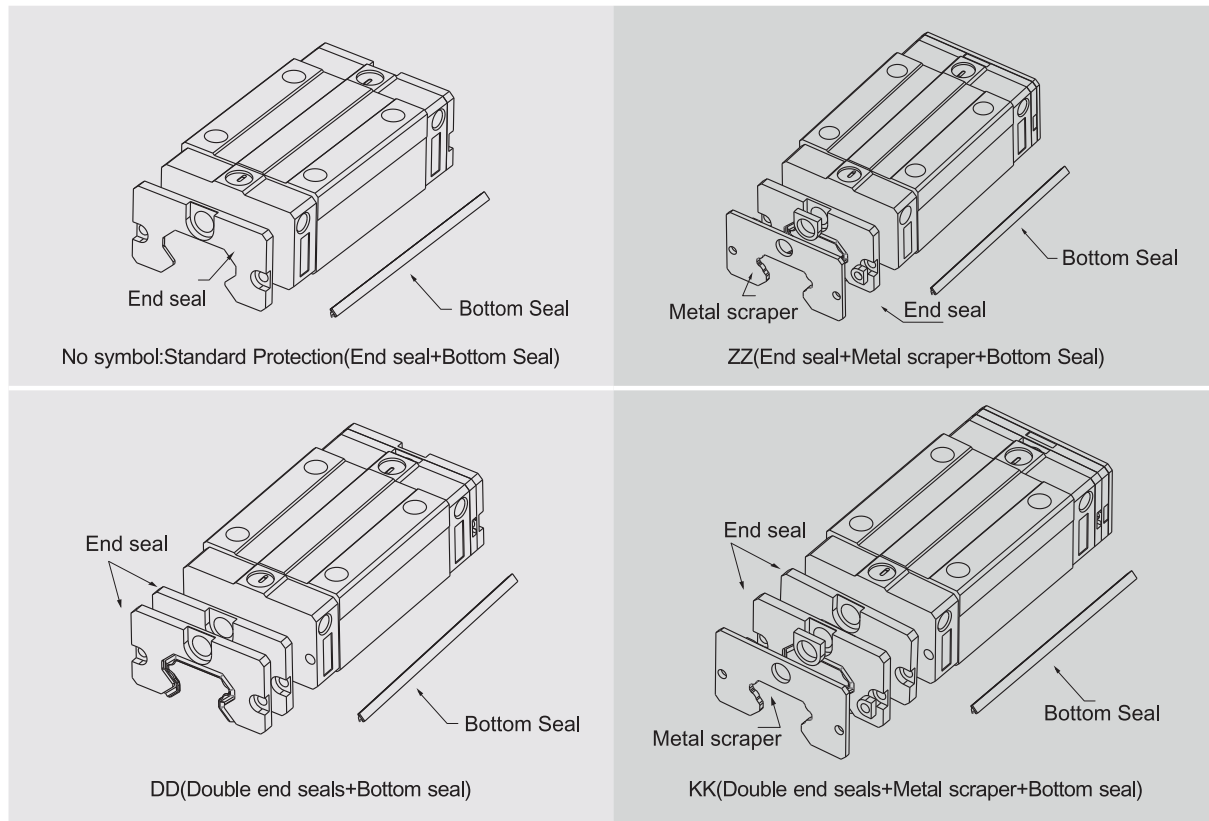
Frequency of replenishment

Check the grease every 100 km, or every 3-6 months.

2-2-8 Dust Proof Accessories

(1) Codes of accessories

If the following accessories is needed, please indicate the code followed by the model number.



(2) End seal and bottom seal

Protects against contaminants entering the block. Reduces potential for groove damage resulting in a reduction of life ratings.

(3) Double seals

Removing foreign matters from the rail to prevent contaminants from entering the block.

Table 2-2-11 Dimensions of end seal

Size	Thickness (t1) (mm)
E15 ES	2
E20 ES	2
E25 ES	2
E30 ES	2
E35 ES	2

(4) Scraper

Clears larger contaminants, such as weld spatter and metal cuttings, from the rail. Metal scraper protects end seals from excessive damage.

Table 2-2-12 Dimensions of Scraper

Size	Thickness (t2) (mm)
E 15 SC	0.8
E 20 SC	0.8
E 25 SC	1
E 30 SC	1
E 35 SC	1.5

(5) Bolt caps for rail mounting holes

Rail mounting hole caps prevent foreign matter from accumulating in the mounting holes. Caps are included with the rail package.



Table 2-2-13 Dimensions of Bolt Caps for Rail Mounting Holes

Rail size	Bolt size	Diameter(D) (mm)	Thickness(H) (mm)
ER15R	M3	6.15	1.2
ER20R	M5	9.65	2.5
ER25R	M6	11.15	2.5
ER30R	M6	11.15	2.5
ER35R	M8	14.20	3.5
ER15U	M4	7.65	1.1
ER30U	M8	14.20	3.5

(6) Dimensions of block equipped with the dustproof parts

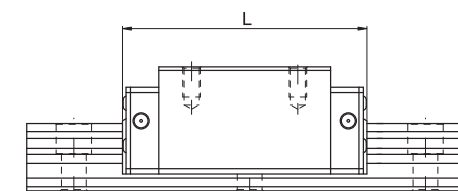


Table 2-2-14 Overall block length

Unit: mm

Size	Overall block length (L)			
	SS	ZZ	DD	KK
E15S	41.1	43.7	46.1	48.7
E15C	57.8	60.4	62.8	65.4
E20S	51.2	53.8	56.4	59
E20C	70.3	72.9	75.5	78.1
E25S	59.7	62.3	65.7	68.3
E25C	85.2	87.8	91.2	93.8
E30S	71.9	74.5	78.1	80.7
E30C	100.4	103	106.6	109.2
E35S	76	79	80	83
E35C	108	111	112	115

2-2-9 Friction

The maximum value of resistance per end seal are as shown in the table.

Table 2-2-15 Seal Resistance

Size	Resistance N (kgf)
E15	1 (0.1)
E20	1.2 (0.17)
E25	2 (0.2)
E30	2.6 (0.27)
E35	3.5 (0.36)

Note: 1kgf=9.81N

2-2-10 The Accuracy Tolerance of Mounting Surface

Because of the circular-arc contact design, the E linear guideway can withstand surface-error installation and deliver smooth linear motion. When the mounting surface meets the accuracy requirements of the installation, the high accuracy and rigidity of the guideway will be obtained without any difficulty. For faster installation and smoother movement, LIMON offers a preload with normal clearance because of its ability to absorb higher deviations in mounting surface inaccuracies.

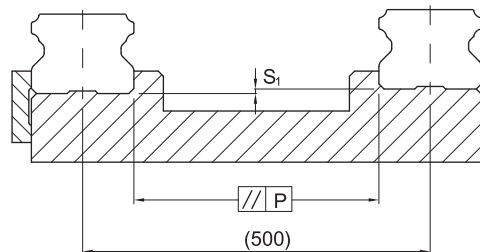


Table 2-2-16 Max. Parallelism Tolerance (P)

Size	Preload classes		
	Z0	ZA	ZB
E15	25	18	-
E20	25	20	18
E25	30	22	20
E30	40	30	27
E35	50	35	30

unit: μm

Table 2-2-17 Max. Tolerance of Reference Surface Height (S_1)

Size	Preload classes		
	Z0	ZA	ZB
E15	130	85	-
E20	130	85	50
E25	130	85	70
E30	170	110	90
E35	210	150	120

unit: μm

2-2-11 Cautions for Installation

(1) Shoulder heights and chamfers

Improper shoulder heights and chamfers of mounting surfaces will cause deviations in accuracy and rail or block interference with the chamfered part.

When recommended shoulder heights and chamfers are used, problems with installation accuracy should be eliminated.

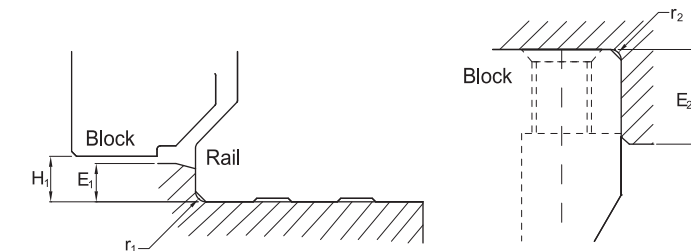


Table 2-2-18 Shoulder Heights and Chamfers

unit: mm

Size	Max. radius of fillets r_1 (mm)	Max. radius of fillets r_2 (mm)	Shoulder height of the rail E_1 (mm)	Shoulder height of the block E_2 (mm)	Clearance under block H_1 (mm)
E15	0.5	0.5	2.7	5.0	4.5
E20	0.5	0.5	5.0	7.0	6.0
E25	1.0	1.0	5.0	7.5	7.0
E30	1.0	1.0	7.0	7.0	10.0
E35	1.0	1.0	7.5	9.5	11.0

(2) Tightening Torque of Bolts for Installation

Improperly tightened mounting bolts will seriously affect the accuracy of linear guide installations. The following tightening torques for different sizes of bolts are recommended.

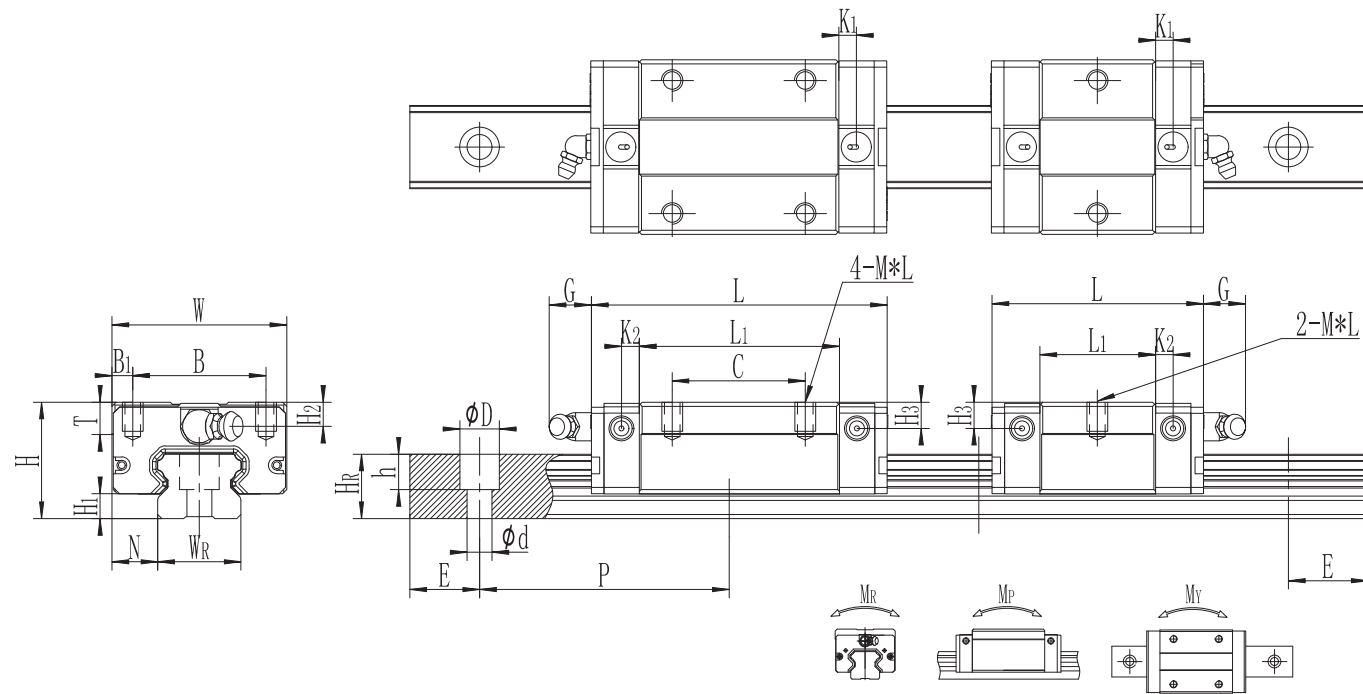
Table 2-2-19 Tightening Torque

Size	Bolt size	Torque N-cm(kgf-cm)		
		Iron	Casting	Aluminum
E15	M3×0.5P×16L	186 (19)	127 (13)	98 (10)
E20	M5×0.8P×16L	883 (90)	588 (60)	441 (45)
E25	M6×1P×20L	1373 (140)	921 (94)	686 (70)
E30	M6×1P×25L	1373 (140)	921 (94)	686 (70)
E35	M8×1.25P×25L	3041 (310)	2010 (205)	1470 (150)

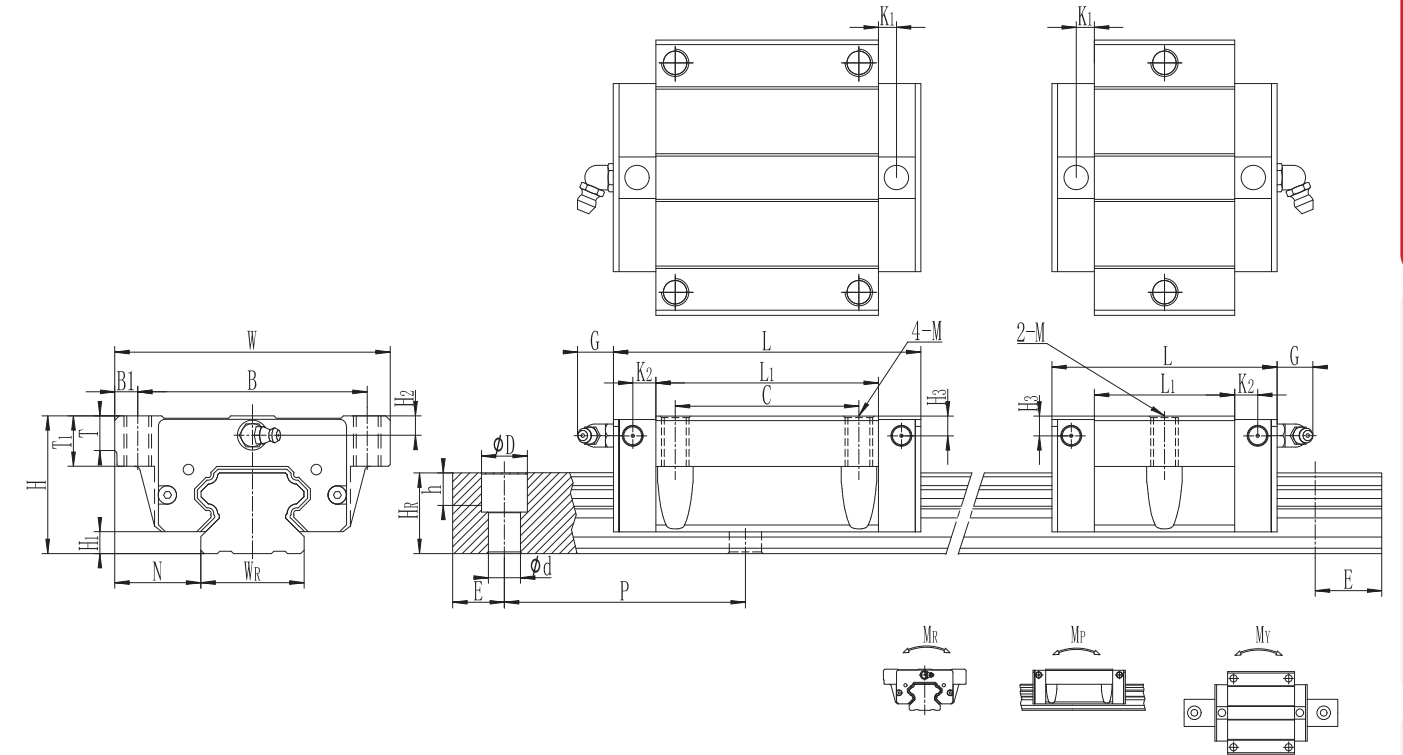
Note: 1 kgf = 9.81 N

2-2-12 Dimensions for E Series

(1) EH-SA / EH-CA



(2) EW-SA / EW-CA



Linear Guideways

Ball Screw

Support

Linear Bushing

Linear Guideways

Ball Screw

Support

Linear Bushing

Model No.	Dimensions of Assembly (mm)		Dimensions of Block(mm)														Dimensions of Rail (mm)										Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight	
	H	H1	N	W	B	B1	C	L1	L	K1	K2	G	M*L	T	H2	H3	WR	Hr	D	h	d	P	E	Mr	Mp	My				Block kg	Rail kg/m			
EH15SA	24	4.4	9.5	34	26	4	-	23.1	41.1	3.4	3.4	5.5	M4×6	6	5.8	5.8	15	12.5	6	4.5	3.5	60	20	M3×16	5.1	8.94	0.06	0.03	0.03	0.12	1.26			
EH15CA							26	39.8	57.8																									
EH15SA	24	4.4	9.5	34	26	4	-	23.1	41.1	3.4	3.4	5.5	M4×6	6	5.8	5.8	15	12.5	7.5	5.3	4.5	60	20	M4×16	5.1	8.94	0.06	0.03	0.03	0.12	1.26			
EH15CA							26	39.8	57.8																									
EH20SA	28	6	11	42	32	5	-	29	50	4.2	4.2	12	M5×7	7.5	5.8	6.3	20	15.5	9.5	8.5	6	60	20	M5×16	6.54	10.75	0.1	0.50	0.50	0.16	2.09			
EH20CA							32	48.1	69.1																									
EH25SA	33	6.2	12.5	48	35	6.5	-	35.5	59.7	5	5	12	M6×9	8	7.4	7.4	23	18	11	9	7	60	20	M6×20	10.2	17.6	0.2	0.09	0.09	0.26	2.69			
EH25CA							35	59	85																									
EH30SA	42	10	16	60	40	10	-	41.5	71.5	6	6	12	M8×12	9	9	9	28	23	11	9	7	80	20	M6×25	15.32	26.28	0.3	0.15	0.15	0.46	4.26			
EH30CA							40	70	100																									
EH30SA	42	10	16	60	40	10	-	41.5	71.5	6	6	12	M8×12	9	9	9	28	23	14	12	9	80	20	M8×25	15.32	26.28	0.3	0.15	0.15	0.46	4.26			
EH30CA							40	70	100																									
EH35SA	48	11	18	70	50	10	-	45	75	7	7	12	M8×12	10	8.5	8.5	34	27.5	14	12	9	80	20	M8×25	20.65	35.58	0.46	0.2	0.2	0.75	6.11			
EH35CA							50	78	108																									

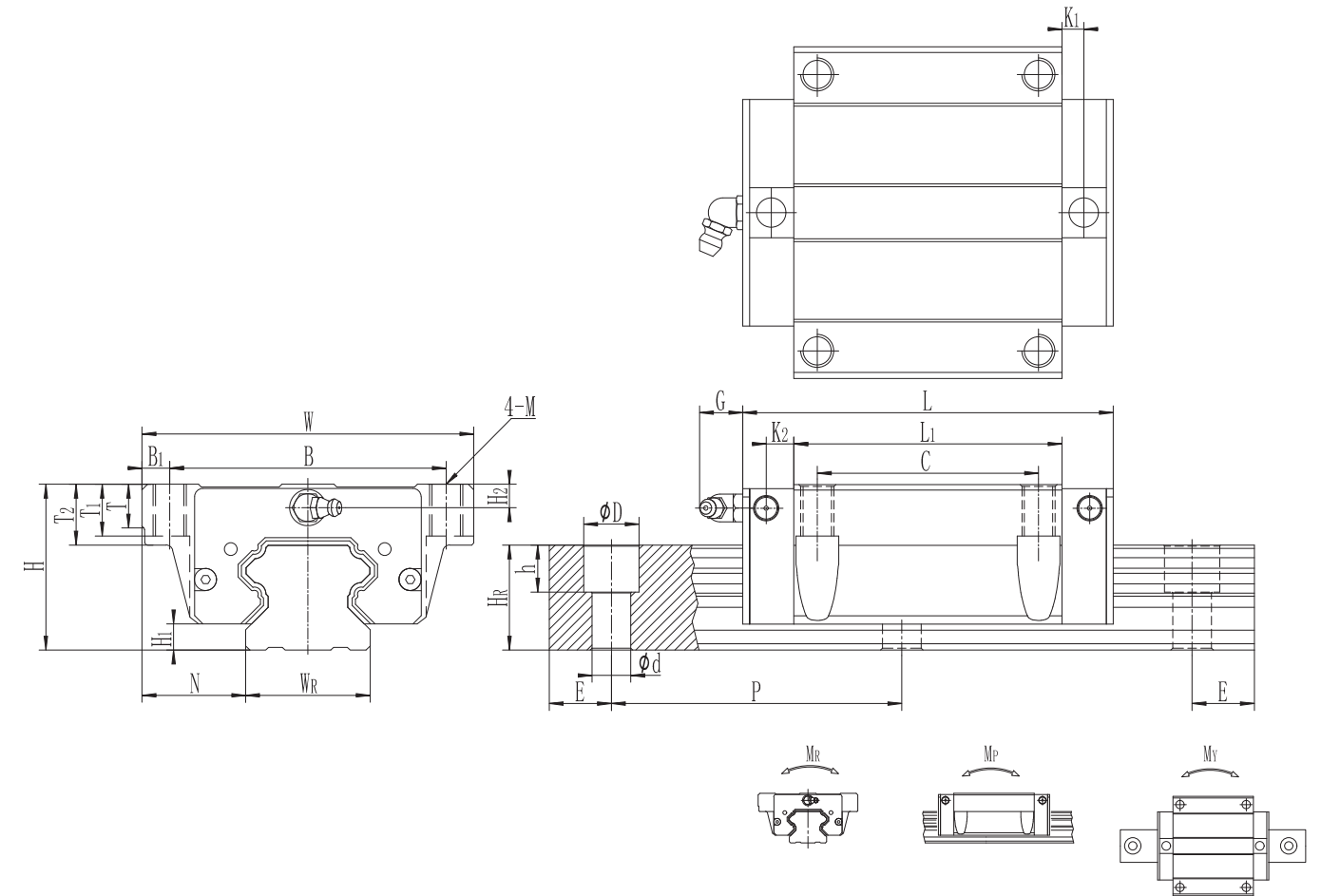
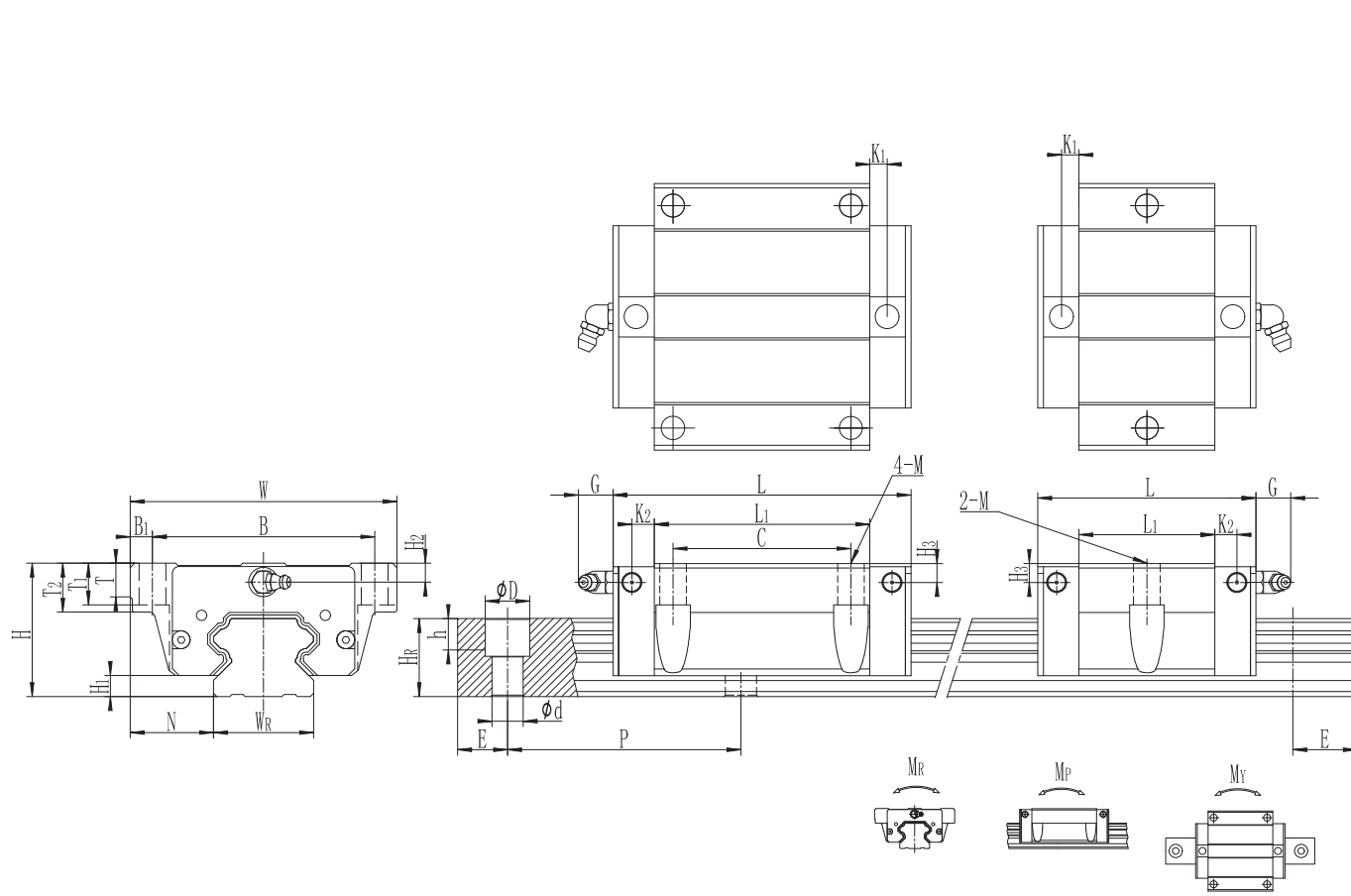
Note : 1 kgf = 9.81 N
Model with "*" means guide rail with new installation hole, pls not the requirement when placing the order.

Model No.	Dimensions of Assembly (mm)		Dimensions of Block(mm)														Dimensions of Rail (mm)										Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight	
	H	H1	N	W	B	B1	C	L1	L	K1	K2	G	M	T	T1	H2	H3	WR	Hr	D	h	d	P	E	Mr	Mp				My	Block kg	Rail kg/m		
EW15SA	24	4.4	18.5	52	41	5.5	-	23.1	41.1	3.4	3.4	5.5	M5	5	7.8	5.8	5.8	15	12.5	6	4.5	3.5	60	20	M3×16	5.1	8.94	0.06	0.03	0.03	0.12	1.26		
EW15CA							26	39.8	57.8																									
EW15SA	24	4.4	18.5	52	41	5.5	-	23.1	41.1	3.4	3.4	5.5	M5	5	7.8	5.8	5.8	15	12.5	7.5	5.3	4.5	60	20	M4×16	5.1	8.94	0.06	0.03	0.03	0.12	1.26		
EW15CA							26	39.8	57.8																									
EW20SA	28	6	19.5	59	49	5	-	29	50	4.2	4.2	12	M6	7	9	5.8	6.3	20	15.5	9.5	8.5	6	60	20	M5×16	6.54	10.75	0.1	0.50	0.50	0.16	2.09		
EW20CA							32	48.1	69.1																									
EW25SA	33	6.2	25	73	60	6.5	-	35.5	59.7	5	5	12	M8	7.5	10	7.4	7.4	23	18	11	9	7	60	20	M6×20	10.2	17.6	0.2	0.09	0.09	0.26	2.69		
EW25CA							35	59	85																									
EW30SA	42	10	31	90	72	9	-	41.5	71.5	6	6	12	M10	7	10	9	9	28	23	11	9	7	80	20	M6×25	15.32	26.28	0.3	0.15	0.15	0.46	4.26		
EW30CA							40	70	100																									
EW30SA	42	10	31	90	72	9	-	41.5	71.5	6	6	12	M10	7	10	9	9	28	23	14	12	9	80	20	M8×25	15.32	26.28	0.3	0.15	0.15	0.46	4.26		
EW30CA							40	70	100																									
EW35SA	48	11	33	100	82	9	-	45	75	7	7	12	M10	10	13	8.5	8.5	34	27.5	14	12	9	80	20	M8×25	20.65	35.58	0.46	0.2	0.2	0.75	6.11		
EW35CA							50	78	108																									

Note : 1 kgf = 9.81 N
Model with "*" means guide rail with new installation hole, pls not the requirement when placing the order.

(3) EW-SB / EW-CB

(4)EW- SC/EW-CC



Linear Guideways

Ball Screw

Support

Linear Bushing

Linear Guideways

Ball Screw

Support

Linear Bushing

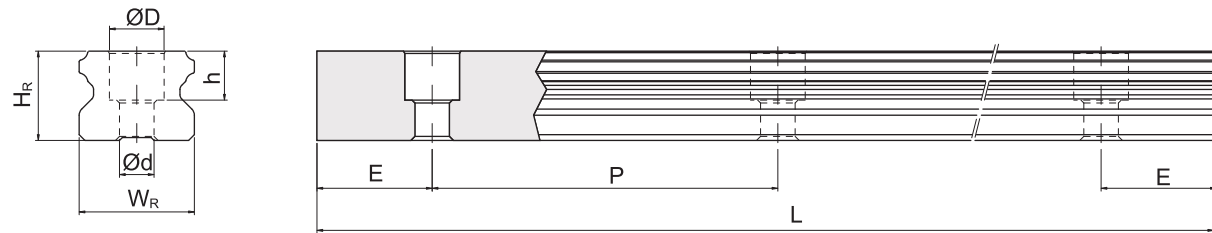
Model No.	Dimensions of Assembly (mm)		Dimensions of Block(mm)													Dimensions of Rail (mm)										Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight				
	H	H1	N	W	B	B1	C	L1	L	K1	K2	G	M	T	T1	T2	H2	H3	WR	HR	D	h	d	P	E				MR	MP	MY	Block kg	Rail kg/m			
EW15SB	24	4.4	18.5	52	41	5.5	-	23.1	41.1	3.4	3.4	5.5	φ4.5	5	7	7.8	5.8	5.8	15	12.5	6	4.5	3.5	60	20	M3×16	5.1	8.94	0.06	0.03	0.03	0.12	1.26			
EW15CB							26	39.8	57.8																											
EW15SB	24	4.4	18.5	52	41	5.5	-	23.1	41.1	3.4	3.4	5.5	φ4.5	5	7	7.8	5.8	5.8	15	12.5	7.5	5.3	4.5	60	20	M4×16	5.1	8.94	0.06	0.03	0.03	0.12	1.26			
EW15CB							26	39.8	57.8																											
EW20SB	28	6	19.5	59	49	5	-	29	50	4.2	4.2	12	φ5.5	7	7	9	5.8	6.3	20	15.5	9.5	8.5	6	60	20	M5×16	6.54	10.75	0.1	0.50	0.50	0.16	2.09			
EW20CB							32	48.1	69.1																											
EW25SB	33	6.2	25	73	60	6.5	-	35.5	59.7	5	5	12	φ7	7.5	10	10	7.4	7.4	23	18	11	9	7	60	20	M6×20	10.2	17.6	0.2	0.09	0.09	0.26	2.69			
EW25CB							35	59	85																											
EW30SB	42	10	31	90	72	9	-	41.5	71.5	6	6	12	φ9	7	10	10	9	9	28	23	11	9	7	80	20	M6×25	15.32	26.28	0.3	0.15	0.15	0.46	4.26			
EW30CB							40	70	100																											
EW30SB	42	10	31	90	72	9	-	41.5	71.5	6	6	12	φ9	7	10	10	9	9	28	23	14	12	9	80	20	M8×25	15.32	26.28	0.3	0.15	0.15	0.46	4.26			
EW30CB							40	70	100																											
EW35SB	48	11	33	100	82	9	-	45	75	7	7	12	φ9	10	13	13	8.5	8.5	34	27.5	14	12	9	80	20	M8×25	20.65	35.58	0.46	0.2	0.2	0.75	6.11			
EW35CB							50	78	108																											

Note : 1 kgf = 9.81 N
Model with "" means guide rail with new installation hole, pls not the requirement when placing the order.

Model No.	Dimensions of Assembly (mm)		Dimensions of Block(mm)													Dimensions of Rail (mm)										Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight					
	H	H1	N	W	B	B1	C	L1	L	K1	K2	G	M	T	T1	T2	H2	H3	WR	HR	D	h	d	P	E				MR	MP	MY	Block kg	Rail kg/m				
EW15SC	24	4.4	18.5	52	41	5.5	-	23.1	41.1	3.4	3.4	5.5	M5	5	7	7.8	5.8	5.8	15	12.5	6	4.5	3.5	60	20	M3×16	5.1	8.94	0.06	0.03	0.03	0.12	1.26				
EW15CC							26	39.8	57.8																												
EW15SC	24	4.4	18.5	52	41	5.5	-	23.1	41.1	3.4	3.4	5.5	M5	5	7	7.8	5.8	5.8	15	12.5	7.5	5.3	4.5	60	20	M4×16	5.1	8.94	0.06	0.03	0.03	0.12	1.26				
EW15CC							26	39.8	57.8																												
EW20SC	28	6	19.5	59	49	5	-	29	50	4.2	4.2	12	M6	7	7	9	5.8	6.3	20	15.5	9.5	8.5	6	60	20	M5×16	6.54	10.75	0.1	0.50	0.50	0.16	2.09				
EW20CC							32	48.1	69.1																												
EW25SC	33	6.2	25	73	60	6.5	-	35.5	59.7	5	5	12	M8	7.5	10	10	7.4	7.4	23	18	11	9	7	60	20	M6×20	10.2	17.6	0.2	0.09	0.09	0.26	2.69				
EW25CC							35	59	85																												
EW30SC	42	10	31	90	72	9	-	41.5	71.5	6	6	12	M10	7	10	10	9	9	28	23	11	9	7	80	20	M6×25	15.32	26.28	0.3	0.15	0.15	0.46	4.26				
EW30CC							40	70	100																												
EW30SC	42	10	31	90	72	9	-	41.5	71.5	6	6	12	M10	7	10	10	9	9	28	23	14	12	9	80	20	M8×25	15.32	26.28	0.3	0.15	0.15	0.46	4.26				
EW30CC							40	70	100																												
EW35SC	48	11	33	100	82	9	-	45	75	7	7	12	M10	10	13	13	8.5	8.5	34	27.5	14	12	9	80	20	M8×25	20.65	35.58	0.46	0.2	0.2	0.75	6.11				
EW35CC							50	78	108																												

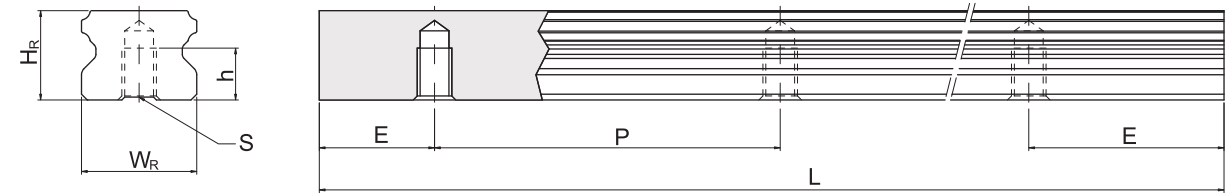
Note : 1 kgf = 9.81 N
Model with "" means guide rail with new installation hole, pls not the requirement when placing the order.

(4) Dimensions for ER-U (large mounting hole, rail mounting from top)



Model No.	Mounting Bolt for Rail(mm)	Dimensions of Rail (mm)							Weight (kg/m)
		W_R	H_R	D	h	d	P	E	
ER15U	M4x16	15	12.5	7.5	5.3	4.5	60	20	1.23
ER30U	M8x25	28	23	14	12	9	80	20	4.23

(5) Dimensions for ER-T (rail mounting from bottom)



Model No.	Dimensions of Rail (mm)						Weight (kg/m)
	W_R	H_R	S	h	P	E	
ER15T	15	12.5	M5 x 0.8P	7	60	20	1.26
ER20T	20	15.5	M6 x 1P	9	60	20	2.15
ER25T	23	18	M6 x 1P	10	60	20	2.79
ER30T	28	23	M8 x 1.25P	14	80	20	4.42
ER35T	34	27.5	M8 x 1.25P	17	80	20	6.34

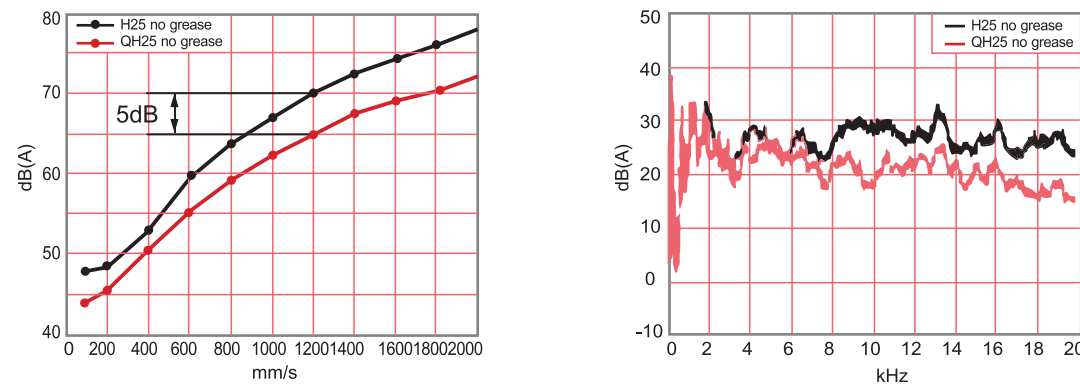
2-3 QH Series – Quiet Linear Guideway, with SynchMotion™ Technology

The development of LIMON-QH linear guideway is based on a four-row circular-arc contact. The LIMON-QH series linear guideway with SynchMotion™ Technology offers smooth movement, superior lubrication, quieter operation and longer running life. Therefore the LIMON-QH linear guideway has broad industrial applicability. In the high-tech industry where high speed, low noise, and reduced dust generation is required, the LIMON-QH series is interchangeable with the LIMON-H series.

2-3-1 Features of QH Series

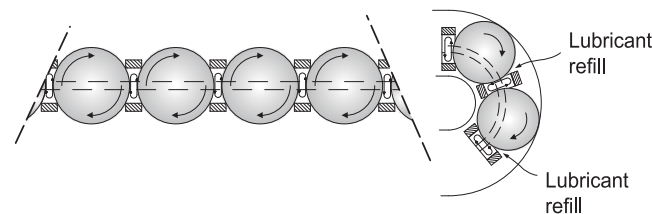
(1) Low Noise Design

With SynchMotion™ technology, rolling elements are interposed between the partitions of SynchMotion™ to provide improved circulation. Due to the elimination of contact between the rolling elements, collision noise and sound levels are drastically reduced.



(2) Self-Lubricant Design

The partition is a grouping of hollow ring-like structures formed with a through hole to facilitate circulation of the lubricant. Because of the special lubrication path design, the lubricant of the partition storage space can be refilled. Therefore, the frequency of lubricant refilling can be decreased. The QH-series linear guideway is pre-lubricated. Performance testing at a 0.2C (basic dynamic load) shows that after running 4,000km no damage was apparent to either the rolling elements or the raceway.

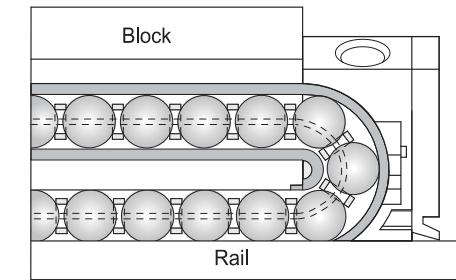


(3) Smooth Movement

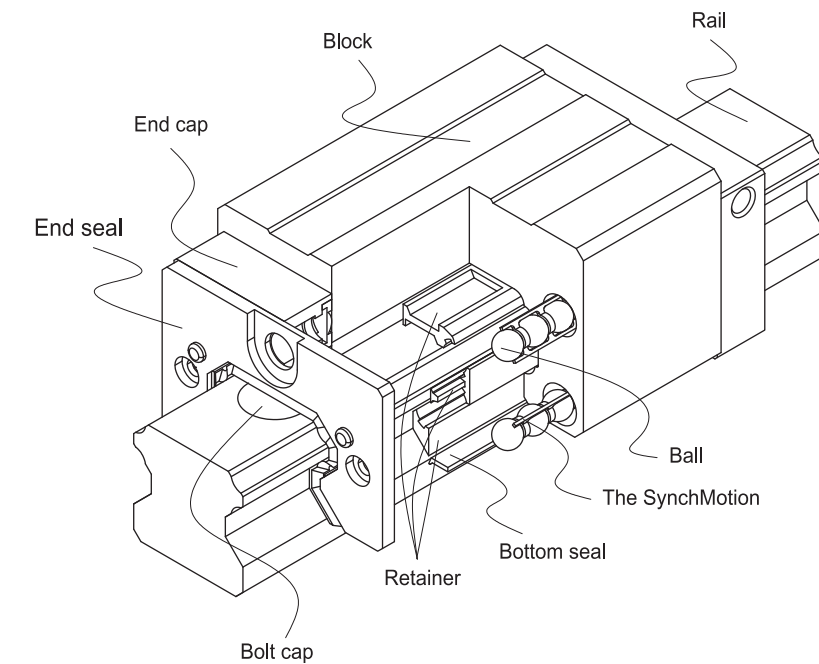
In standard linear guideways, rolling elements on the load side of the guide block begin rolling and push their way through the raceway. When they contact other rolling elements they create counter-rotational friction. This results in a great variation of rolling resistance. The QH linear guideway, with SynchMotion™ technology prevents this condition. As the block starts to move, the rolling elements begin rolling consecutively and remain separated to prevent contact with one another thus keeping the element's kinetic energy extremely stable in order to effectively reduce fluctuations in rolling resistance.

(4) High Speed Performance

The LIMON-QH series offers excellent high-speed performance due to the partitions of the SynchMotion™ structure. They are employed to separate the adjacent balls thereby resulting in low rolling traction and the metallic friction between adjacent balls is eliminated.



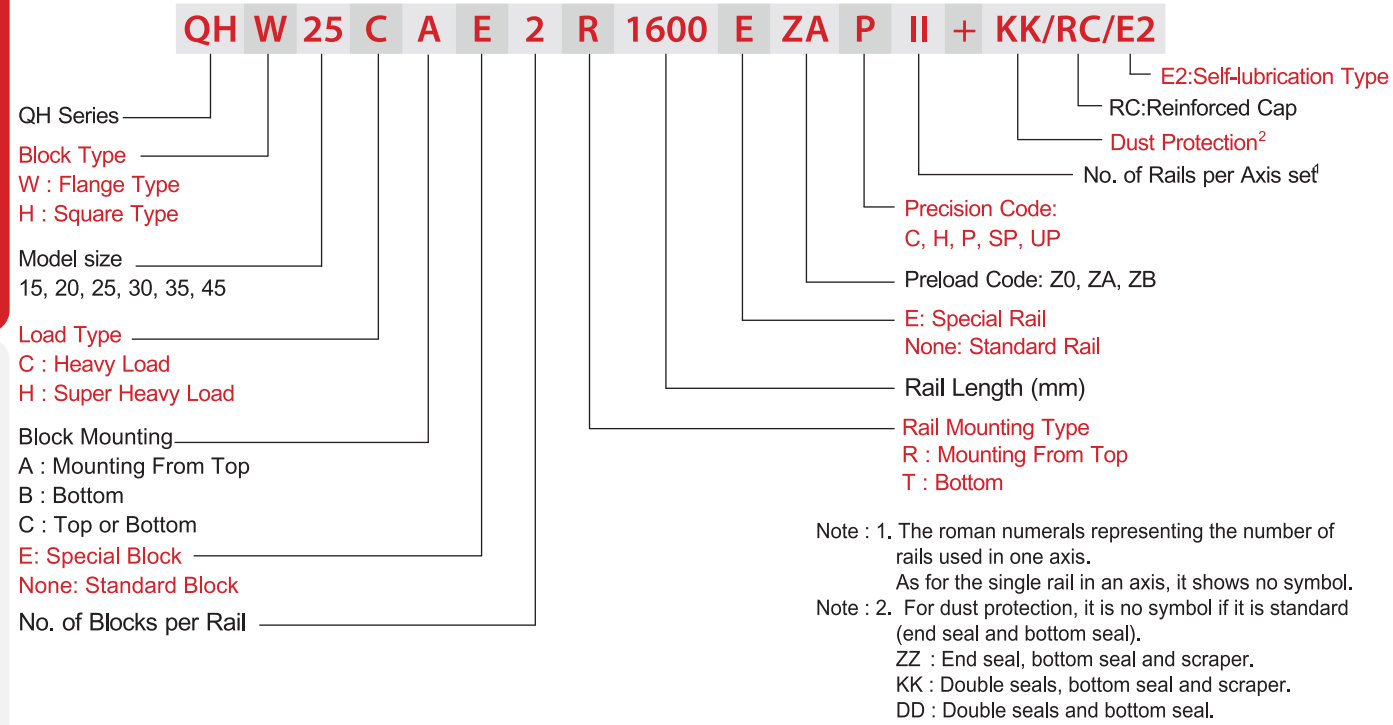
2-3-2 Construction of QH Series



2-3-3 Model Number of QH Series

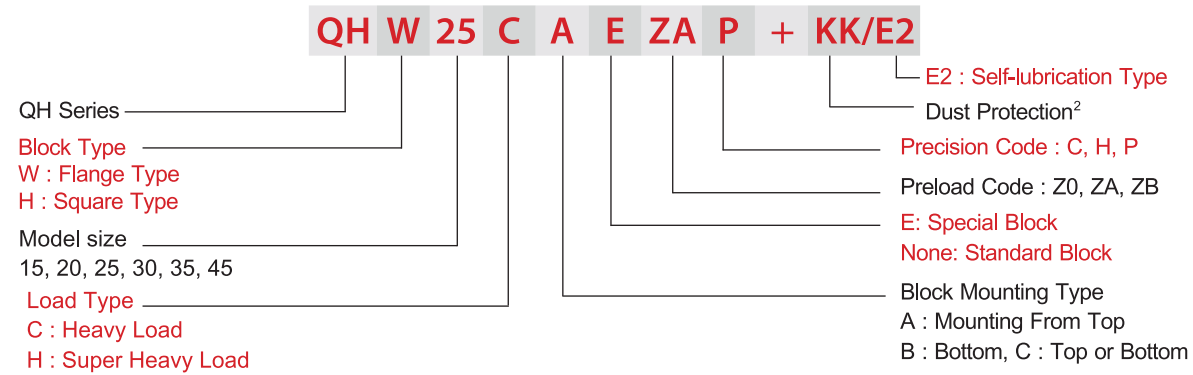
LIMON-QH series guideway can be classified into non-interchangeable and interchangeable types. The sizes are identical. The main difference is that the interchangeable blocks and rails can be freely exchanged. Because of dimensional control, the interchangeable type linear guideway is a perfect choice for the client when rails do not need to be paired for an axis. And since the QH and H share the identical rails, the customer does not need to redesign when choosing the QH series. Therefore the LIMON-QH linear guideway has increased applicability.

(1) Non-interchangeable type

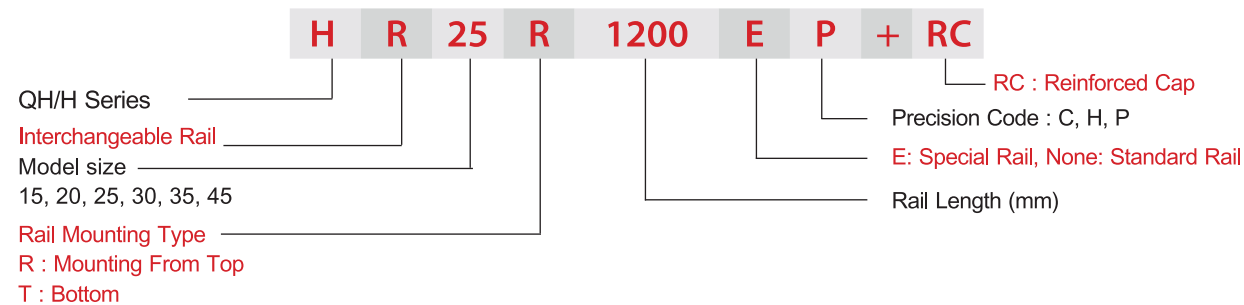


(2) Interchangeable type

□ Model Number of QH Block



□ Model Number of QH Rail (QH and H share the identical rails)



2-3-4 Types

(1) Block types

LIMON offers two types of linear guideways, flange and square types.

Table 2-3-1 Block Types

Type	Model	Shape	Height (mm)	Rail Length (mm)	Main Applications
Square	QHH-CA QHH-HA		28	100	<input type="checkbox"/> Automation devices <input type="checkbox"/> High-speed transportation equipment <input type="checkbox"/> Precision measuring equipment <input type="checkbox"/> Semiconductor manufacturing equipment
			70	4000	
Flange	QHW-CA QHW-HA		24	100	
			60	4000	
			24	100	
			60	4000	
Flange	QHW-CB QHW-HB		24	100	
			60	4000	
Flange	QHW-CC QHW-HC		24	100	
			60	4000	

(2) Rail types

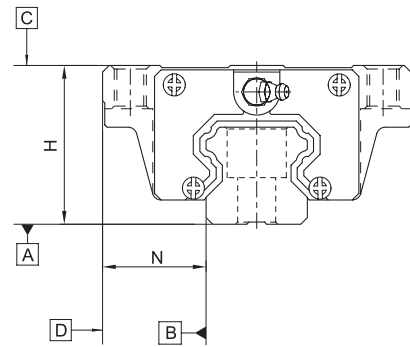
Besides the standard top mounting type, the bottom mounting type is also available.

Table 2-3-2 Rail Types



2-3-5 Accuracy

The accuracy of QH series can be classified into normal (C), high (H), precision (P), super precision (SP), ultra precision (UP), five classes. Please choose the class by referring the accuracy of applied equipment.



(1) Accuracy of non-interchangeable

Table 2-3-3 Accuracy Standards

Unit: mm

Item	QH - 15, 20				
	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimensional tolerance of height H	± 0.1	± 0.03	0 -0.03	0 -0.015	0 -0.008
Dimensional tolerance of width N	± 0.1	± 0.03	0 -0.03	0 -0.015	0 -0.008
Variation of height H	0.02	0.01	0.006	0.004	0.003
Variation of width N	0.02	0.01	0.006	0.004	0.003
Running parallelism of block surface C to surface A	See Table 2-3-9				
Running parallelism of block surface D to surface B	See Table 2-3-9				

Table 2-3-4 Accuracy Standards

Unit: mm

Item	QH - 25, 30, 35				
	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimensional tolerance of height H	± 0.1	± 0.04	0 -0.04	0 -0.02	0 -0.01
Dimensional tolerance of width N	± 0.1	± 0.04	0 -0.04	0 -0.02	0 -0.01
Variation of height H	0.02	0.015	0.007	0.005	0.003
Variation of width N	0.03	0.015	0.007	0.005	0.003
Running parallelism of block surface C to surface A	See Table 2-3-9				
Running parallelism of block surface D to surface B	See Table 2-3-9				

Table 2-3-5 Accuracy Standards

Unit: mm

Item	QH - 45				
	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimensional tolerance of height H	± 0.1	± 0.05	0 -0.05	0 -0.03	0 -0.02
Dimensional tolerance of width N	± 0.1	± 0.05	0 -0.05	0 -0.03	0 -0.02
Variation of height H	0.03	0.015	0.007	0.005	0.003
Variation of width N	0.03	0.02	0.01	0.007	0.005
Running parallelism of block surface C to surface A	See Table 2-3-9				
Running parallelism of block surface D to surface B	See Table 2-3-9				

(2) Accuracy of interchangeable

Table 2-3-6 Accuracy Standards

Unit: mm

Item	QH - 15, 20		
	Normal (C)	High (H)	Precision (P)
Dimensional tolerance of height H	± 0.1	± 0.03	± 0.015
Dimensional tolerance of width N	± 0.1	± 0.03	± 0.015
Variation of height H	0.02	0.01	0.006
Variation of width N	0.02	0.01	0.006
Running parallelism of block surface C to surface A	See Table 2-3-9		
Running parallelism of block surface D to surface B	See Table 2-3-9		

Table 2-3-7 Accuracy Standards

Unit: mm

Item	QH - 25, 30, 35		
	Normal (C)	High (H)	Precision (P)
Dimensional tolerance of height H	± 0.1	± 0.04	± 0.02
Dimensional tolerance of width N	± 0.1	± 0.04	± 0.02
Variation of height H	0.02	0.015	0.007
Variation of width N	0.03	0.015	0.007
Running parallelism of block surface C to surface A	See Table 2-3-9		
Running parallelism of block surface D to surface B	See Table 2-3-9		

Table 2-3-8 Accuracy Standards

Unit: mm

Item	QH - 45		
	Normal (C)	High (H)	Precision (P)
Dimensional tolerance of height H	± 0.1	± 0.05	± 0.025
Dimensional tolerance of width N	± 0.1	± 0.05	± 0.025
Variation of height H	0.03	0.015	0.007
Variation of width N	0.03	0.02	0.01
Running parallelism of block surface C to surface A	See Table 2-3-9		
Running parallelism of block surface D to surface B	See Table 2-3-9		

(3) Accuracy of running parallelism

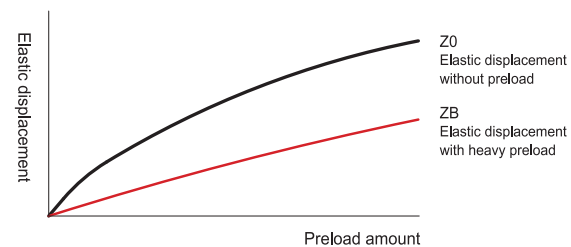
Table 2-3-9 Accuracy of Running Parallelism

Rail Length (mm)	Accuracy (μm)				
	C	H	P	SP	UP
~ 100	12	7	3	2	2
100 ~ 200	14	9	4	2	2
200 ~ 300	15	10	5	3	2
300 ~ 500	17	12	6	3	2
500 ~ 700	20	13	7	4	2
700 ~ 900	22	15	8	5	3
900 ~ 1,100	24	16	9	6	3
1,100 ~ 1,500	26	18	11	7	4
1,500 ~ 1,900	28	20	13	8	4
1,900 ~ 2,500	31	22	15	10	5
2,500 ~ 3,100	33	25	18	11	6
3,100 ~ 3,600	36	27	20	14	7
3,600 ~ 4,000	37	28	21	15	7

2-3-6 Preload

(1) Definition

A preload can be applied to each guideway. Oversized balls are used. Generally, a linear motion guideway has a negative clearance between groove and balls in order to improve stiffness and maintain high precision. The figure shows the load is multiplied by the preload, the rigidity is doubled and the deflection is reduced by one half. The preload no larger than ZA would be recommended for the model size under QH20 to avoid an over-preload affecting the guideway's life.



(2) Preload classes

LIMON offers three classes of standard preload for various applications and conditions.

Table 2-3-10 Preload Classes

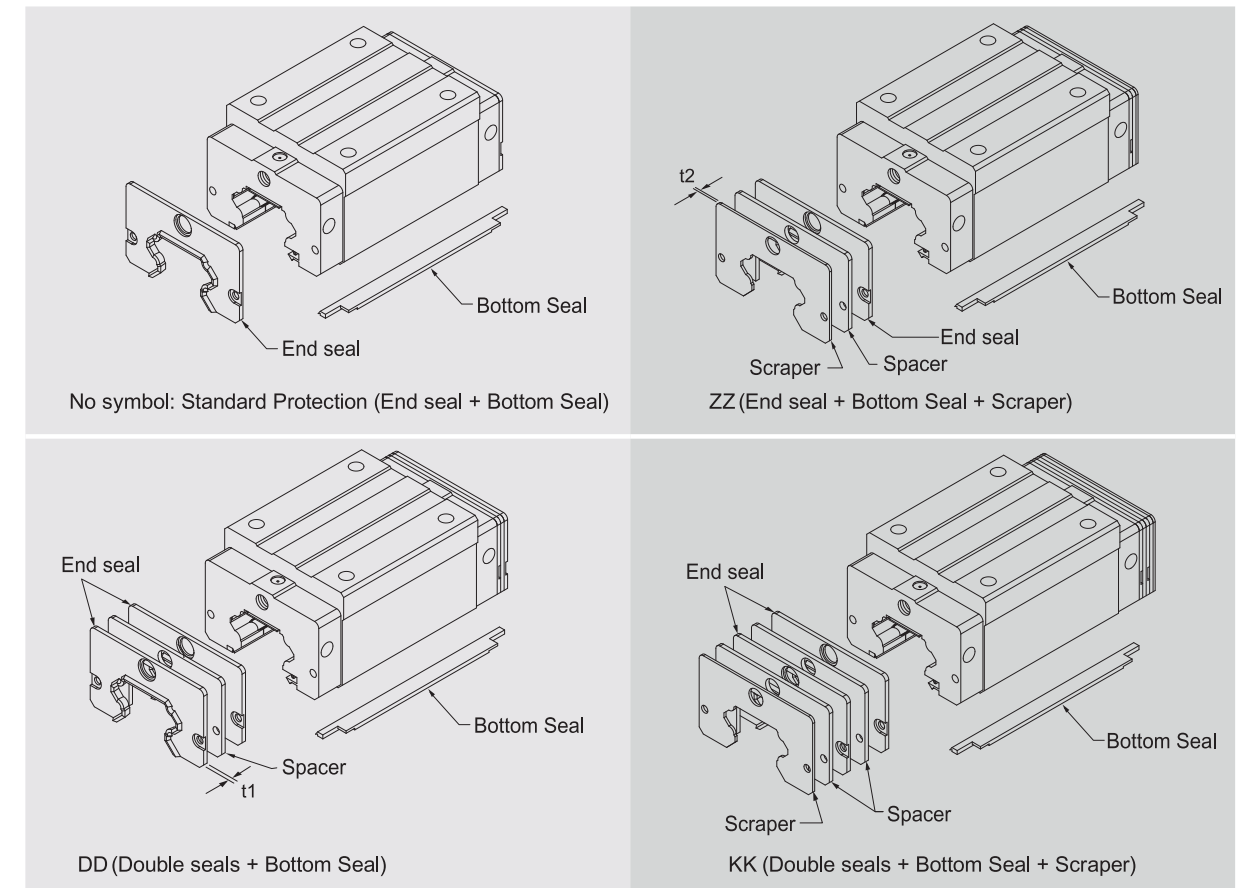
Class	Code	Preload	Condition	Examples of Application
Light Preload	Z0	0~ 0.02C	Certain load direction, low impact, low precision required	Transportation devices, auto-packing machines, X-Y axis for general industrial machines, welding machines, welders
Medium Preload	ZA	0.05C~0.07C	High precision required	Machining centers, Z axis for general industrial machines, EDM, NC lathes, Precision X-Y tables, measuring equipment
Heavy Preload	ZB	0.10C~ 0.12C	High rigidity required, with vibration and impact	Machining centers, grinding machines, NC lathes, horizontal and vertical milling machines, Z axis of machine tools, Heavy cutting machines
Class	Interchangeable Guideway		Non-Interchangeable Guideway	
Preload classes	Z0, ZA		Z0, ZA, ZB	

Note: The "C" in the preload column denotes basic dynamic load rating.

2-3-7 Dust Proof Accessories

(1) Codes of accessories

If the following accessories are needed, please add the code followed by the model number.



(2) End seal and bottom seal

To prevent life reduction caused by iron chips or dust entering the block.

(3) Double seals

Enhances the wiping effect, foreign matter can be completely wiped off.

Table 2-3-11 Dimensions of end seal

Size	Thickness (t1) (mm)	Size	Thickness (t1) (mm)
QH15 ES	3	QH30 ES	3.2
QH20 ES	2.5	QH35 ES	2.5
QH25 ES	2.5	QH45 ES	3.6

(4) Scraper

The scraper removes high-temperature iron chips and larger foreign objects.

Table 2-3-12 Dimensions of scraper

Size	Thickness (t2) (mm)	Size	Thickness (t2) (mm)
QH15 SC	1.5	QH30 SC	1.5
QH20 SC	1.5	QH35 SC	1.5
QH25 SC	1.5	QH45 SC	1.5

(5) Dimensions of block equipped with the dustproof parts

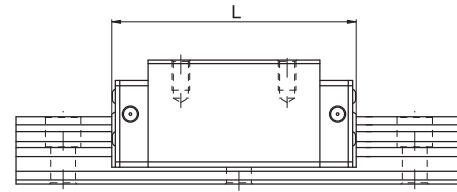


Table 2-3-13 Overall block length

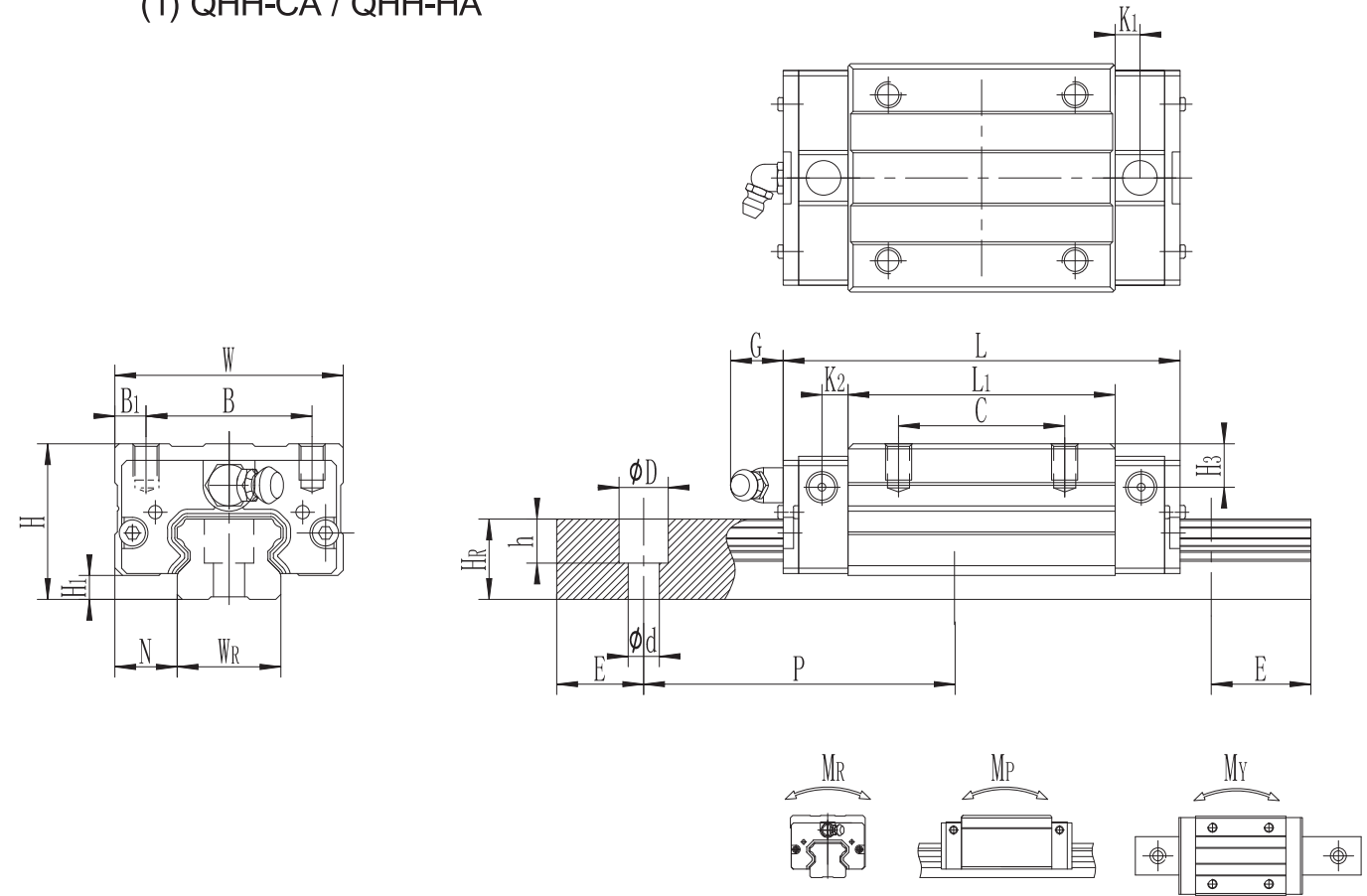
unit: mm

Size	Overall block length (L)			
	SS	ZZ	DD	KK
QH15C	60.5	64.1	65.5	69.1
QH20C	76.7	80.3	82.5	86.1
QH20H	91.4	95	97.2	100.8
QH25C	84	87.6	90	93.6
QH25H	104.6	108.2	110.6	114.2
QH30C	98.4	102	104.6	108.2
QH30H	121.4	125	127.6	131.2
QH35C	112.4	116	118.8	122.4
QH35H	138.2	141.8	144.6	148.2
QH45C	137.4	141	145.4	149
QH45H	169.2	172.8	177.2	180.8

Note : The marking of "()" denotes the maximum block length with screws, lips of end seals, etc.

2-3-8 Dimensions for QH Series

(1) QHH-CA / QHH-HA

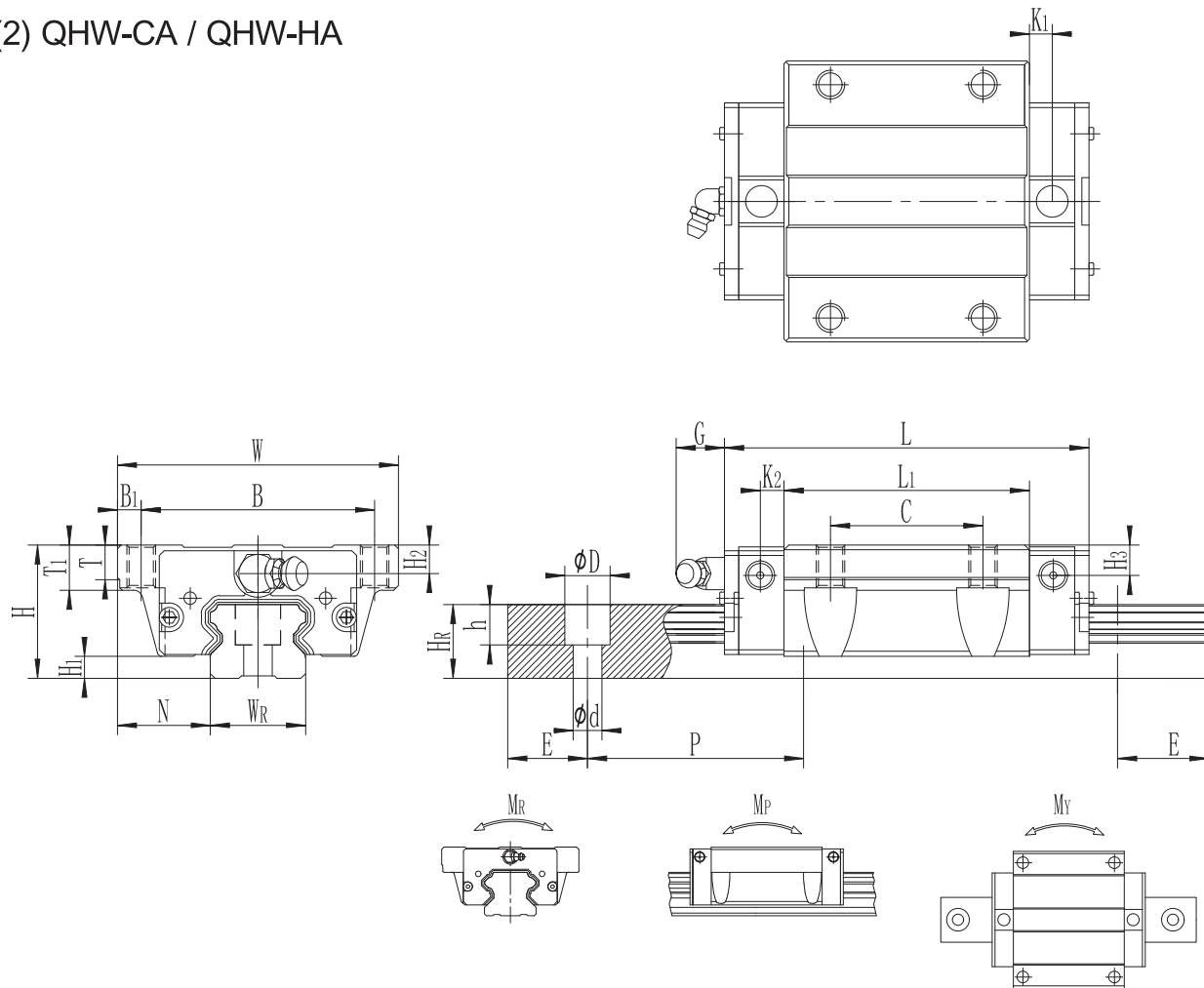


Model No.	Dimensions of Assembly (mm)		Dimensions of Block(mm)																Dimensions of Rail (mm)				Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight		
	H	H1	N	W	B	B1	C	L1	L	K1	K2	G	M*L	T	H2	H3	WR	HR	D	h	d	P				E	MR KN-m	MP KN-m	MY KN-m	Block kg	Rail kg/m
★ QHH15CA	28	3.2	9.5	34	26	4	26	39.8	62.2	3.5	3.5	5.5	M4X7	6	9.5	9	15	12.5	6	4.5	3.5	60	20	M3×16	11.96	14.46	0.08	0.06	0.06	0.21	1.26
QH15CA	28	3.2	9.5	34	26	4	26	39.8	62.2	3.5	3.5	5.5	M4X7	6	9.5	9	15	12.5	7.5	5.3	4.5	60	20	M4×16	11.96	14.46	0.08	0.06	0.06	0.21	1.26
QH20CA	30	4.6	12	44	32	6	36	51.5	76.5	4.75	5	12	M5X7	8	8	8.5	20	15.5	9.5	8.5	6	60	20	M5×16	17.46	21.59	0.22	0.15	0.15	0.32	2.09
QH20HA	30	4.6	12	44	32	6	50	69.5	94.5	4.75	5	12	M5X7	8	8	8.5	20	15.5	9.5	8.5	6	60	20	M5×16	21.14	28.33	0.28	0.25	0.25	0.4	2.09
QH25CA	40	4.5	12.5	48	35	6.5	35	59.5	82.5	4.75	5	12	M6X8	8	13	13	23	18	11	9	7	60	20	M6×20	25.65	29.52	0.35	0.25	0.25	0.55	2.69
QH25HA	40	4.5	12.5	48	35	6.5	50	81.5	104.5	4.75	5	12	M6X8	8	13	13	23	18	11	9	7	60	20	M6×20	32.88	42.17	0.48	0.42	0.42	0.72	2.69
QH30CA	45	7	16	60	40	10	40	70	98	6	5	12	M8X10	8.5	11	11	28	23	11	9	7	80	20	M6×25	42.17	45.22	0.52	0.45	0.45	0.9	4.26
QH30HA	45	7	16	60	40	10	60	93.5	121.5	6	5	12	M8X10	8.5	11	11	28	23	11	9	7	80	20	M6×25	52.09	62.13	0.8	0.85	0.85	1.18	4.26
QH35CA	45	7	16	60	40	10	40	70	98	6	5	12	M8X10	8.5	11	11	28	23	14	12	9	80	20	M8×25	42.17	45.22	0.52	0.45	0.45	0.9	4.26
QH35HA	45	7	16	60	40	10	60	93.5	121.5	6	5	12	M8X10	8.5	11	11	28	23	14	12	9	80	20	M8×25	52.09	62.13	0.8	0.85	0.85	1.18	4.26

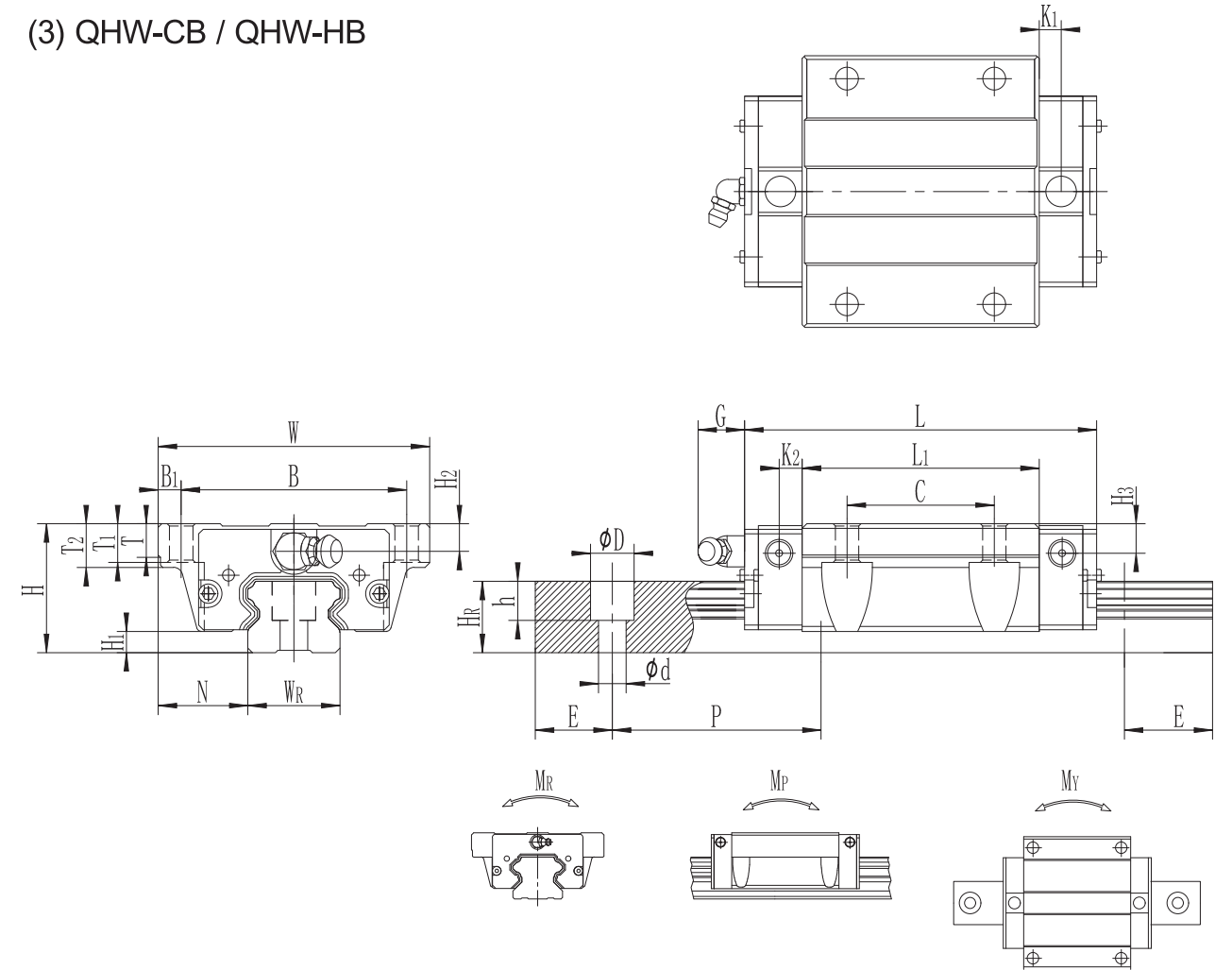
Note : 1 kgf = 9.81 N

Model with "*" means guide rail with new installation hole, pls not the requirement when placing the order.

(2) QHW-CA / QHW-HA



(3) QHW-CB / QHW-HB



Model No.	Dimensions of Assembly (mm)		Dimensions of Block(mm)														Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight									
	H	H1	N	W	B	B1	C	L1	L	K1	K2	G	M	T	T1	T2				H2	H3	WR	Hr	D	h	d	P	E	MR	MP	MY	Block kg
★ QHW15CA	24	4	16	47	38	4.5	30	39.8	62.2	3.35	4.75	5.5	M5	6	7	5.5	5	15	12.5	6	4.5	3.5	60	20	M3×16	11.96	14.46	0.08	0.06	0.06	0.21	1.26
QHW15CA	24	4	16	47	38	4.5	30	39.8	62.2	3.35	4.75	5.5	M5	6	7	5.5	5	15	12.5	7.5	5.3	4.5	60	20	M4×16	11.96	14.46	0.08	0.06	0.06	0.21	1.26
QHW20CA	30	4.6	21.5	63	53	5	40	51.5	76.5	4.75	5	12	M6	8	9	8	8.5	20	15.5	9.5	8.5	6	60	20	M5×16	17.46	21.59	0.22	0.15	0.15	0.32	2.09
QHW20HA																																
QHW25CA	36	4.5	23.5	70	57	6.5	45	59.5	82.5	4.75	5	12	M8	8	10	9	9	23	18	11	9	7	60	20	M6×20	25.65	29.52	0.35	0.25	0.25	0.55	2.69
QHW25HA																																
★ QHW30CA	42	7	31	90	72	9	52	70	98	6	5	12	M10	8	10	8	8	28	23	11	9	7	80	20	M6×25	42.17	45.22	0.52	0.45	0.45	0.9	4.26
QHW30HA																																
QHW30CA	42	7	31	90	72	9	52	70	98	6	5	12	M10	8	10	8	8	28	23	14	12	9	80	20	M8×25	42.17	45.22	0.52	0.45	0.45	0.9	4.26
QHW30HA																																

Note : 1 kgf = 9.81 N

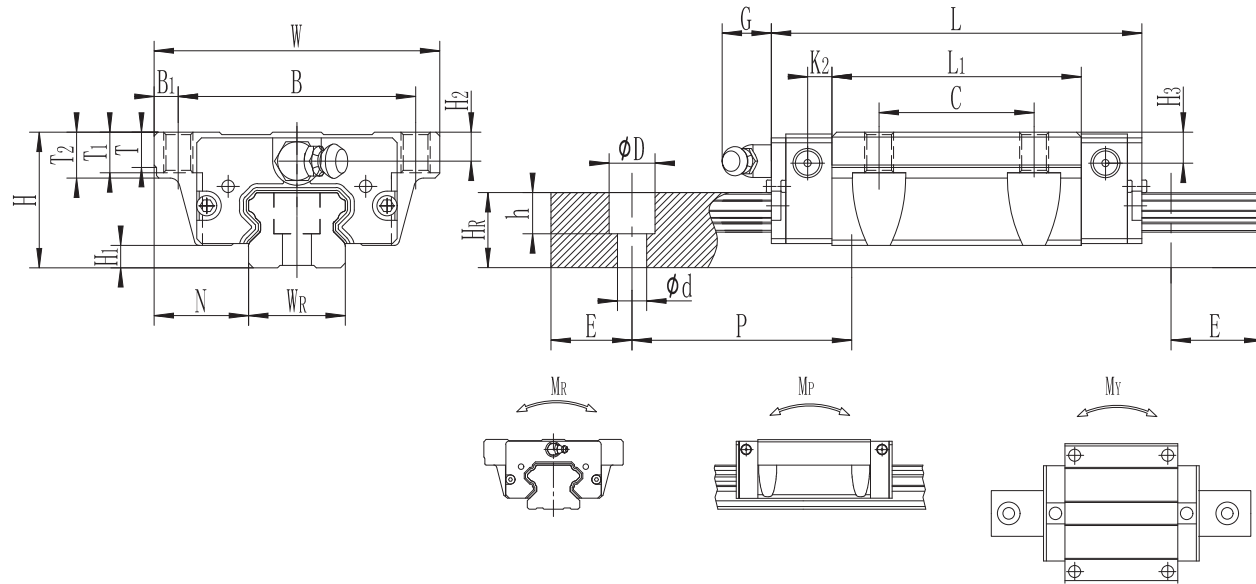
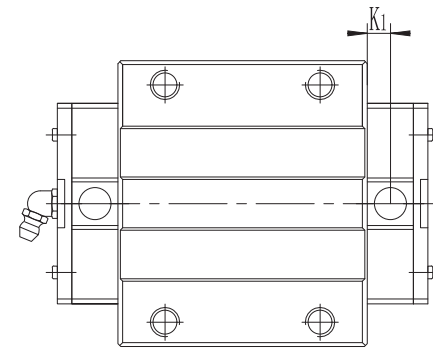
Model with "*" means guide rail with new installation hole, pls not the requirement when placing the order.

Model No.	Dimensions of Assembly (mm)		Dimensions of Block(mm)														Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight										
	H	H1	N	W	B	B1	C	L1	L	K1	K2	G	M	T	T1	T2				H2	H3	WR	Hr	D	h	d	P	E	MR	MP	MY	Block kg	Rail kg/m
★ QHW15CB	24	4	16	47	38	4.5	30	39.8	62.2	3.35	4.75	5.5	φ4.5	6	7	8.9	5.5	5	15	12.5	6	4.5	3.5	60	20	M3×16	11.96	14.46	0.08	0.06	0.06	0.21	1.26
QHW15CB	24	4	16	47	38	4.5	30	39.8	62.2	3.35	4.75	5.5	φ4.5	6	7	8.9	5.5	5	15	12.5	7.5	5.3	4.5	60	20	M4×16	11.96	14.46	0.08	0.06	0.06	0.21	1.26
QHW20CB	30	4.6	21.5	63	53	5	40	51.5	76.5	4.75	5	12	φ6	8	9	10	8	8.5	20	15.5	9.5	8.5	6	60	20	M5×16	17.46	21.59	0.22	0.15	0.15	0.32	2.09
QHW20HB																																	
QHW25CB	36	4.5	23.5	70	57	6.5	45	59.5	82.5	4.75	5	12	φ7	8	10	14	9	9	23	18	11	9	7	60	20	M6×20	25.65	29.52	0.35	0.25	0.25	0.55	2.69
QHW25HB																																	
★ QHW30CB	42	7	31	90	72	9	52	70	98	6	5	12	φ9	8.5	10	16	8	8	28	23	11	9	7	80	20	M6×25	42.17	45.22	0.52	0.45	0.45	0.9	4.26
QHW30HB																																	
QHW30CB	42	7	31	90	72	9	52	70	98	6	5	12	φ9	8.5	10	16	8	8	28	23	14	12	9	80	20	M8×25	42.17	45.22	0.52	0.45	0.45	0.9	4.26
QHW30HB																																	

Note : 1 kgf = 9.81 N

Model with "*" means guide rail with new installation hole, pls not the requirement when placing the order.

(4) QHW-CC / QHW-HC



Model No.	Dimensions of Assembly (mm)			Dimensions of Block(mm)														Dimensions of Rail (mm)				Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight					
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	M	T	T ₁	T ₂	H ₂	H ₃	W _R	H _R	D				h	d	P	E	M _R KN-m	M _P KN-m	M _Y KN-m	Block kg	Rail kg/m
★ QHW15CC	24	4	16	47	38	4.5	30	39.8	62.2	3.35	4.75	5.5	M5	6	6.95	8.9	5.5	5	15	12.5	6	4.5	3.5	60	20	M3×16	11.96	14.46	0.08	0.06	0.06	0.21	1.26
QHW15CC	24	4	16	47	38	4.5	30	39.8	62.2	3.35	4.75	5.5	M5	6	6.95	8.9	5.5	5	15	12.5	7.5	5.3	4.5	60	20	M4×16	11.96	14.46	0.08	0.06	0.06	0.21	1.26
QHW20CC	30	4.6	21.5	63	53	5	40	51.5	76.5	4.75	5	12	M6	8	9	10	8	8.5	20	15.5	9.5	8.5	6	60	20	M5×16	17.46	21.59	0.22	0.15	0.15	0.32	2.09
QHW20HC	30	4.6	21.5	63	53	5	40	69.5	94.5	4.75	5	12	M6	8	9	10	8	8.5	20	15.5	9.5	8.5	6	60	20	M5×16	21.14	28.33	0.28	0.25	0.25	0.4	2.09
QHW25CC	36	4.5	23.5	70	57	6.5	45	59.5	82.5	4.75	5	12	M8	8	10	14	9	9	23	18	11	9	7	60	20	M6×20	25.65	29.52	0.35	0.25	0.25	0.55	2.69
QHW25HC	36	4.5	23.5	70	57	6.5	45	81.5	104.5	4.75	5	12	M8	8	10	14	9	9	23	18	11	9	7	60	20	M6×20	32.88	42.17	0.48	0.42	0.42	0.72	2.69
★ QHW30CC	42	7	31	90	72	9	52	70	98	6	5	12	M10	8.5	10	16	8	8	28	23	11	9	7	80	20	M6×25	42.17	45.22	0.52	0.45	0.45	0.9	4.26
QHW30HC	42	7	31	90	72	9	52	93.5	121.5	6	5	12	M10	8.5	10	16	8	8	28	23	11	9	7	80	20	M6×25	52.09	62.13	0.8	0.85	0.85	1.18	4.26
★ QHW30CC	42	7	31	90	72	9	52	70	98	6	5	12	M10	8.5	10	16	8	8	28	23	14	12	9	80	20	M8×25	42.17	45.22	0.52	0.45	0.45	0.9	4.26
QHW30HC	42	7	31	90	72	9	52	93.5	121.5	6	5	12	M10	8.5	10	16	8	8	28	23	14	12	9	80	20	M8×25	52.09	62.13	0.8	0.85	0.85	1.18	4.26

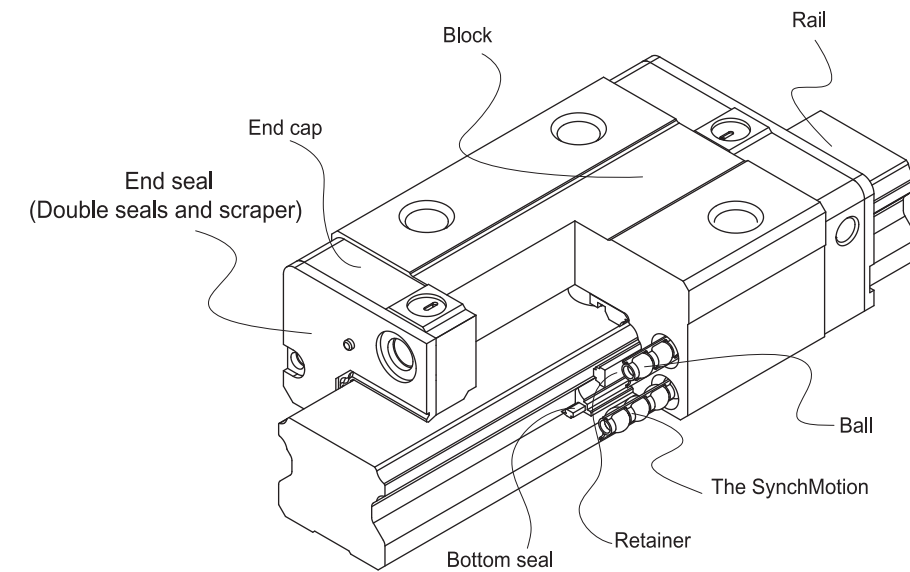
Note : 1 kgf = 9.81 N

Model with "*" means guide rail with new installation hole, pls not the requirement when placing the order.

2-4 QE Series – Low Profile Linear Guideway, with SynchMotion™ Technology

The development of LIMON-QE linear guideway is based on a four-row circular-arc contact. The LIMON-QE series linear guideway with SynchMotion™ Technology offers smooth movement, superior lubrication, quieter operation and longer running life. Therefore the LIMON-QE linear guideway has broad industrial applicability. In the high-tech industry where high speed, low noise, and reduced dust generation is required, the LIMON-QE series is interchangeable with the LIMON-E series.

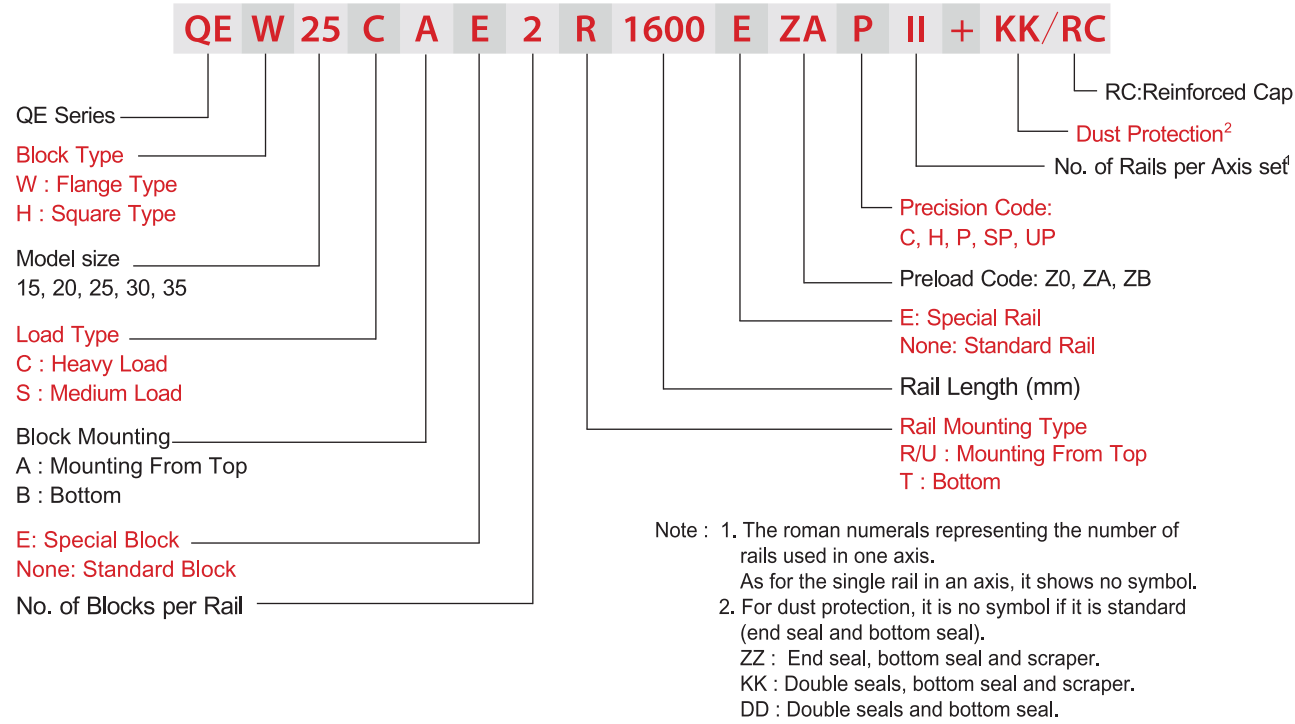
2-4-1 Construction of QE Series



2-4-2 Model Number of QE Series

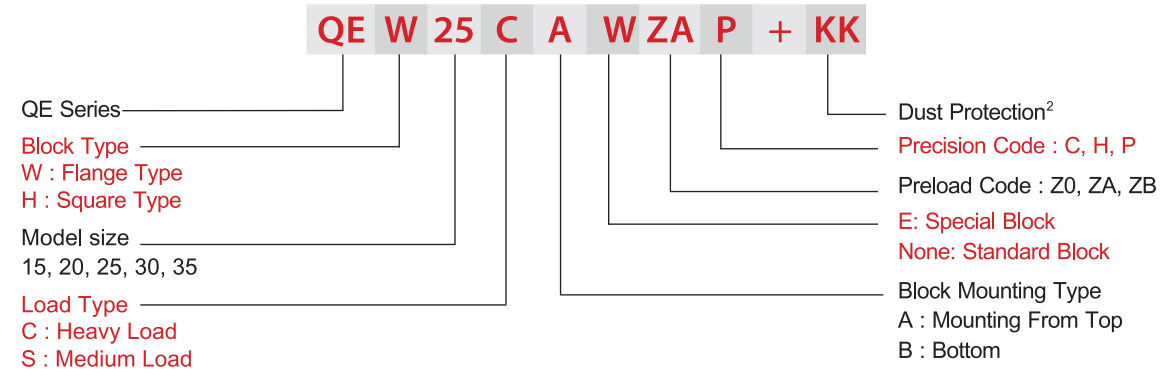
LIMON-QE series guideway can be classified into non-interchangeable and interchangeable types. The sizes are identical. The main difference is that the interchangeable blocks and rails can be freely exchanged. Because of dimensional control, the interchangeable type linear guideway is a perfect choice for the client when rails do not need to be paired for an axis. And since the QE and E share the identical rails, the customer does not need to redesign when choosing the QE series. Therefore the LIMON-QE linear guideway has increased applicability.

(1) Non-interchangeable type

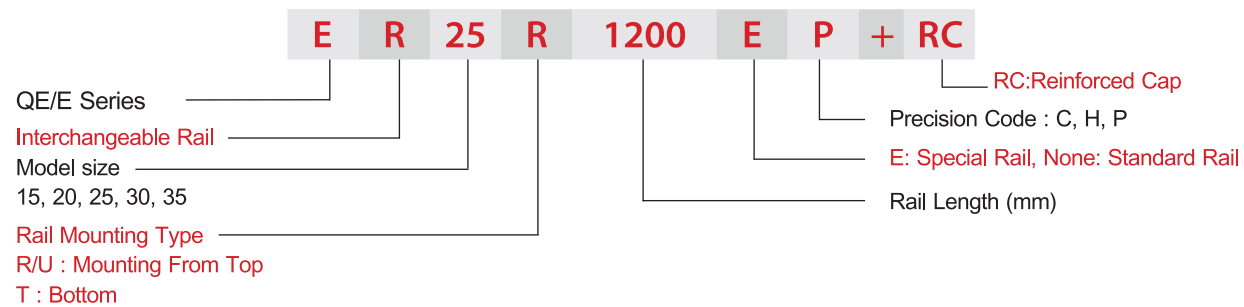


(2) Interchangeable type

□ Model Number of QE Block



□ Model Number of QE Rail (QE and E share the identical rails)



2-4-3 Types

(1) Block types

LIMON offers two types of linear guideways, flange and square types.

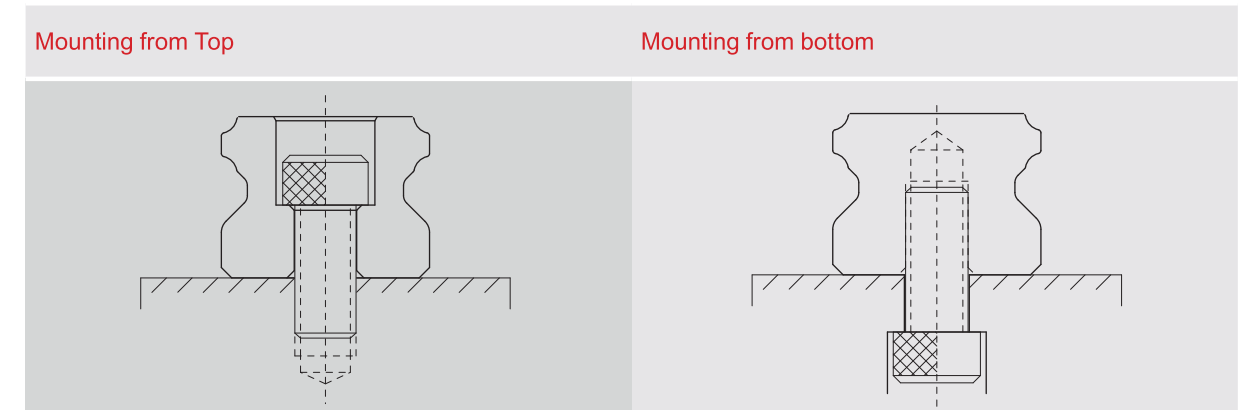
Table 2-4-1 Block Type

Type	Model	Shape	Height (mm)	Rail Length (mm)	Main Applications
Square	QEH-SA QEH-CA		24	100	<input type="checkbox"/> Automation devices <input type="checkbox"/> High-speed transportation equipment <input type="checkbox"/> Precision measuring equipment <input type="checkbox"/> Semiconductor manufacturing equipment
			↓	↓	
Flange	QEW-SA QEW-CA		24	100	
			↓	↓	
Flange	QEW-SB QEW-CB		24	100	
			↓	↓	
Flange	QEW-SB QEW-CB		48	4000	
			↓	↓	

(2) Rail types

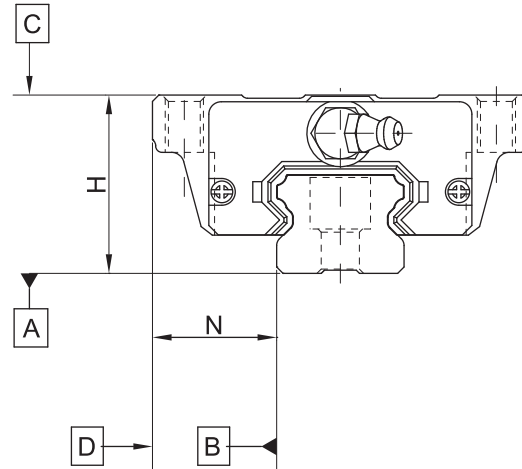
Besides the standard top mounting type, the bottom mounting type is also available.

Table 2-4-2 Rail Types



2-4-4 Accuracy

The accuracy of the QE series can be classified into 5 classes: normal(C), high(H), precision(P), super precision(SP), and ultra precision(UP). Choose the class by referencing the accuracy of selected equipment.



(1) Accuracy of non-interchangeable guideways

Table 2-4-3 Accuracy Standards

Item	QE - 15, 20				
	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimensional tolerance of height H	± 0.1	± 0.03	0 -0.03	0 -0.015	0 -0.008
Dimensional tolerance of width N	± 0.1	± 0.03	0 -0.03	0 -0.015	0 -0.008
Variation of height H	0.02	0.01	0.006	0.004	0.003
Variation of width N	0.02	0.01	0.006	0.004	0.003
Running parallelism of block surface C to surface A	See Table 2-4-7				
Running parallelism of block surface D to surface B	See Table 2-4-7				

Table 2-4-4 Accuracy Standards

Item	QE - 25, 30, 35				
	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimensional tolerance of height H	± 0.1	± 0.04	0 -0.04	0 -0.02	0 -0.01
Dimensional tolerance of width N	± 0.1	± 0.04	0 -0.04	0 -0.02	0 -0.01
Variation of height H	0.02	0.015	0.007	0.005	0.003
Variation of width N	0.03	0.015	0.007	0.005	0.003
Running parallelism of block surface C to surface A	See Table 2-4-7				
Running parallelism of block surface D to surface B	See Table 2-4-7				

(2) Accuracy of interchangeable guideways

Table 2-4-5 Accuracy Standards

Item	QE - 15, 20		
	Normal (C)	High (H)	Precision (P)
Dimensional tolerance of height H	± 0.1	± 0.03	± 0.015
Dimensional tolerance of width N	± 0.1	± 0.03	± 0.015
Variation of height H	0.02	0.01	0.006
Variation of width N	0.02	0.01	0.006
Running parallelism of block surface C to surface A	See Table 2-4-7		
Running parallelism of block surface D to surface B	See Table 2-4-7		

Table 2-4-6 Accuracy Standards

Item	QE - 25, 30, 35		
	Normal (C)	High (H)	Precision (P)
Dimensional tolerance of height H	± 0.1	± 0.04	± 0.02
Dimensional tolerance of width N	± 0.1	± 0.04	± 0.02
Variation of height H	0.02	0.015	0.007
Variation of width N	0.03	0.015	0.007
Running parallelism of block surface C to surface A	See Table 2-4-7		
Running parallelism of block surface D to surface B	See Table 2-4-7		

(3) Accuracy of running parallelism

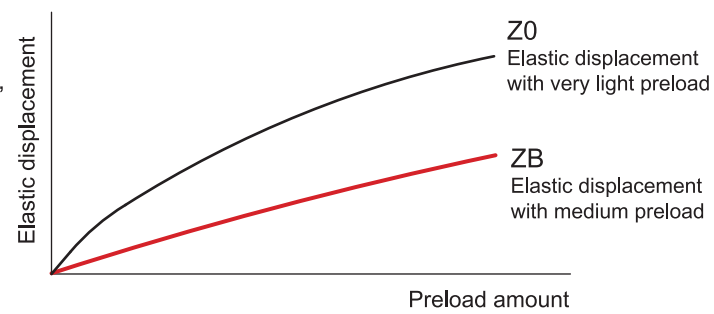
Table 2-4-7 Accuracy of Running Parallelism

Rail Length (mm)	Accuracy (μm)				
	C	H	P	SP	UP
~ 100	12	7	3	2	2
100 ~ 200	14	9	4	2	2
200 ~ 300	15	10	5	3	2
300 ~ 500	17	12	6	3	2
500 ~ 700	20	13	7	4	2
700 ~ 900	22	15	8	5	3
900 ~ 1,100	24	16	9	6	3
1,100 ~ 1,500	26	18	11	7	4
1,500 ~ 1,900	28	20	13	8	4
1,900 ~ 2,500	31	22	15	10	5
2,500 ~ 3,100	33	25	18	11	6
3,100 ~ 3,600	36	27	20	14	7
3,600 ~ 4,000	37	28	21	15	7

2-4-5 Preload

(1) Definition

A preload can be applied to each guideway. Generally, a linear motion guideway has a negative clearance between the groove and balls in order to improve stiffness and maintain high precision. The figure shows that adding a preload can improve stiffness of the linear guideway. A preload no greater than ZA would be recommended for model sizes smaller than QE20. This will avoid an over-loaded condition that would affect guideway life.



(2) Preload classes

LIMON offers three standard preloads for various applications and conditions.

Table 2-4-8 Preload Classes

Class	Code	Preload	Condition
Very Light Preload	Z0	0~ 0.02C	Certain load direction, low impact, low precision required
Light Preload	ZA	0.03C~0.05C	low load and high precision required
Medium Preload	ZB	0.06C~ 0.08C	High rigidity required, with vibration and impact

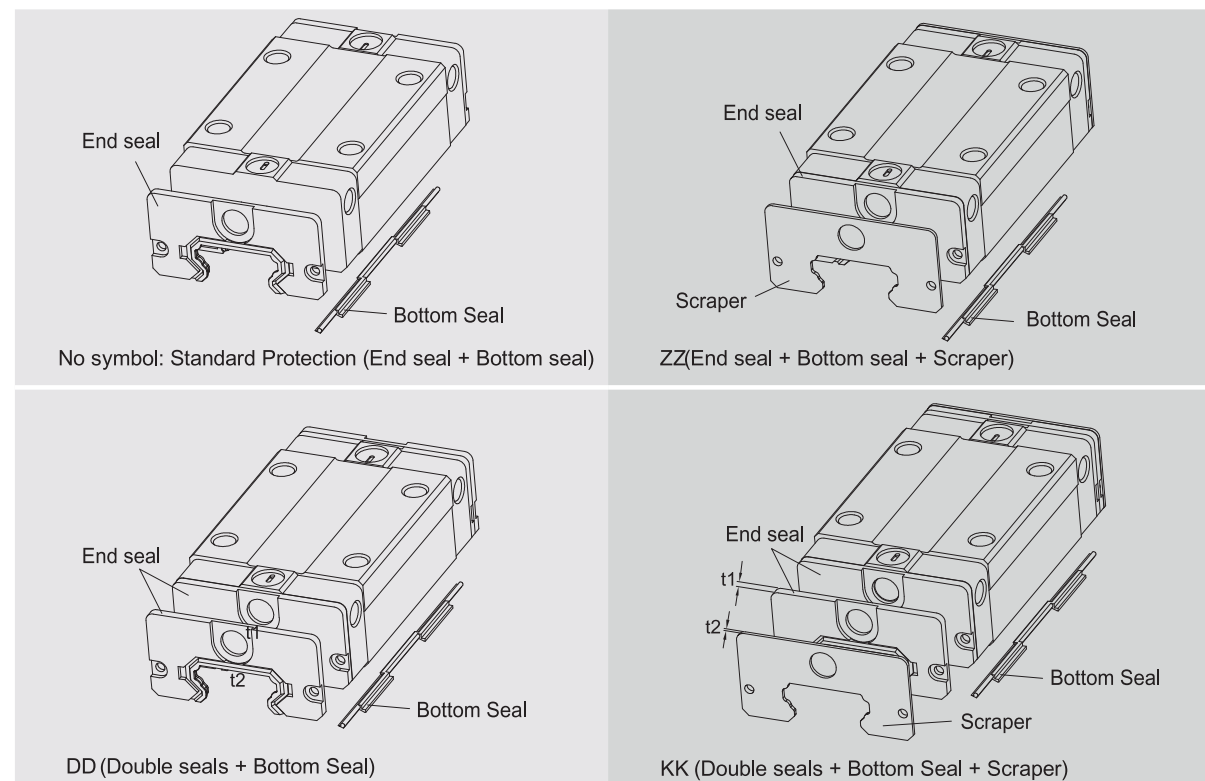
Class	Interchangeable Guideway	Non-Interchangeable Guideway
Preload classes	Z0, ZA	Z0, ZA, ZB

Note: The "C" in the preload column denotes basic dynamic load rating.

2-4-6 Dust Proof Accessories

(1) Codes of accessories

If the following accessories is needed, please indicate the code followed by the model number.



(2) End seal and bottom seal

To prevent life reduction caused by iron chips or dust entering the block

(3) Double seals

Removes foreign matter from the rail preventing contaminants from entering the block.

Table 2-4-9 Dimensions of end seal

Size	Thickness (t1) (mm)	Size	Thickness (t1) (mm)
QE15 ES	2	QE30 ES	2.5
QE20 ES	2	QE35 ES	2
QE25 ES	2.5		

(4) Scraper

Clears larger contaminants, such as weld spatter and metal cuttings, from the rail. Metal scraper protects end seals from excessive damage.

Table 2-4-10 Dimensions of Scraper

Size	Thickness (t2) (mm)
QE15 SC	1
QE20 SC	1
QE25 SC	1
QE30 SC	1
QE35 SC	1.5

(5) Dimensions of block equipped with the dustproof parts

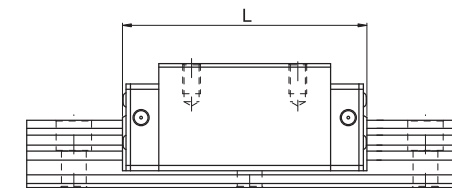


Table 2-4-11 Overall block length

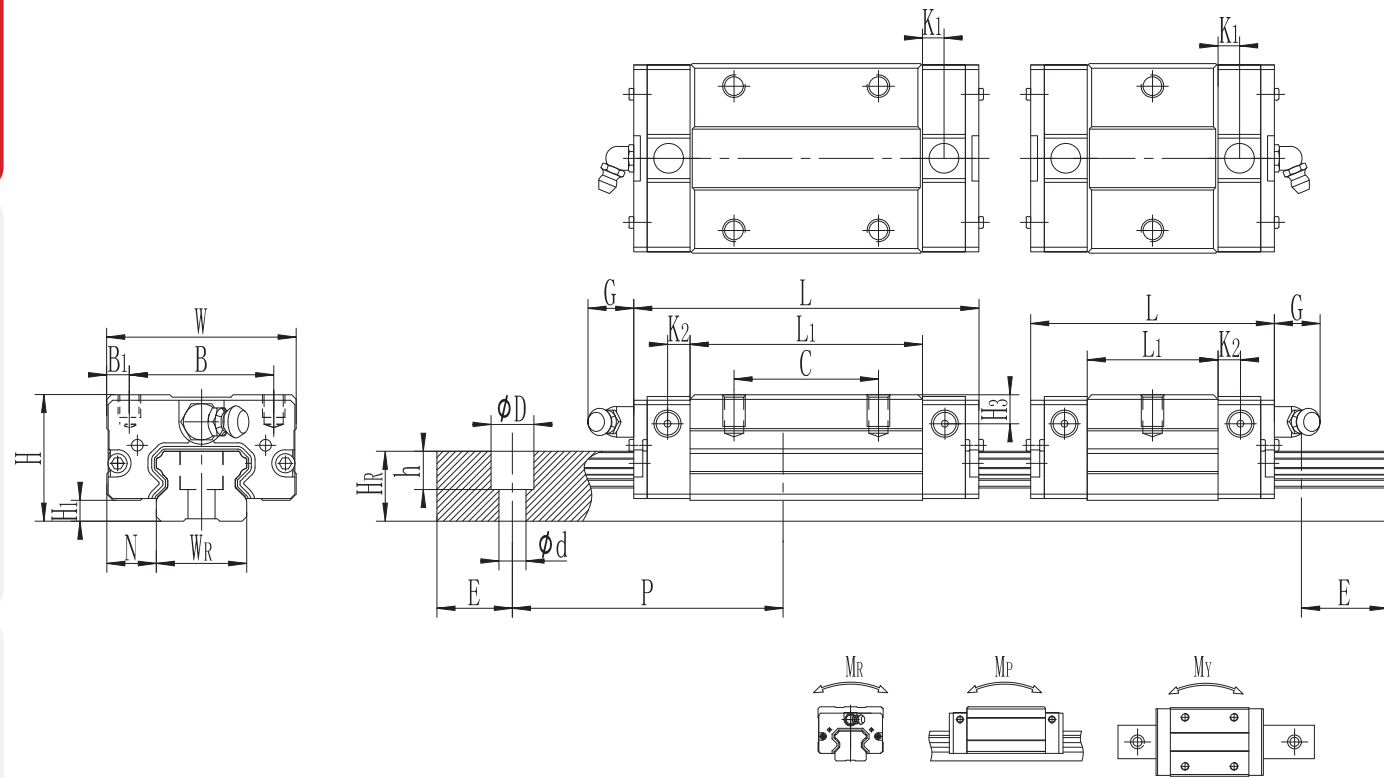
unit: mm

Size	Overall block length (L)			
	SS	ZZ	DD	KK
QE15S	41.1	42.1	44.1	46.1
QE15C	56.8	57.8	60.8	62.8
QE20S	50	51.2	54	56
QE20C	69.1	71.1	73.1	75.1
QE25S	60.1	62.1	65.1	67.1
QE25C	83.6	85.6	88.6	90.6
QE30S	67.5	69.5	72.5	74.5
QE30C	96.1	98.1	101.1	103.1
QE35S	76	79	80	83
QE35C	108	111	112	115

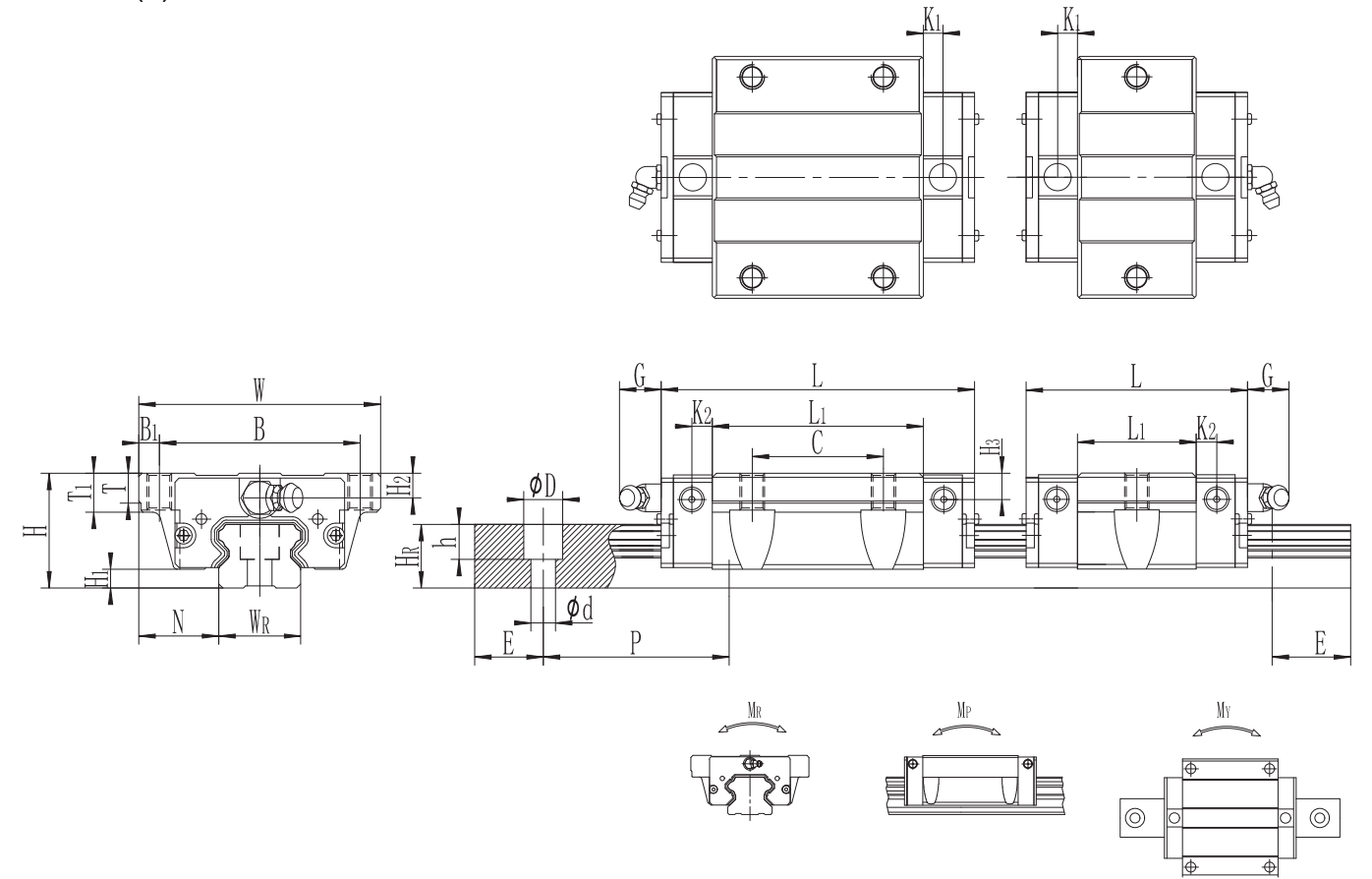
Note : The marking of "()" denotes the maximum block length with screws, lips of end seals, etc.

2-4-7 Dimensions for QE Series

(1) QEH-CA / QEH-SA



(2) QEW-CA / QEW-SA



Linear Guideways

Ball Screw

Support

Linear Bushing

Linear Guideways

Ball Screw

Support

Linear Bushing

Model No.	Dimensions of Assembly (mm)		Dimensions of Block(mm)													Dimensions of Rail (mm)					Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight				
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	M*L	T	H ₂	H ₃	W _R	H _R	D	h				d	P	E	M _R KN-m	M _P KN-m	M _Y KN-m	Block kg	Rail kg/m
QEH15SA	24	3.2	9.5	34	26	4	-	23.1	45.5	3.5	3.5	5.5	M4X5	5	5.5	5	15	12.5	6	4.5	3.5	60	20	M3×16	8.09	8.26	0.06	0.02	0.02	0.14	1.26
QEH15CA	24	3.2	9.5	34	26	4	-	23.1	45.5	3.5	3.5	5.5	M4X5	5	5.5	5	15	12.5	6	4.5	3.5	60	20	M3×16	11.96	14.46	0.11	0.08	0.08	0.25	1.26
QEH15SA	24	3.2	9.5	34	26	4	-	23.1	45.5	3.5	3.5	5.5	M4X5	5	5.5	5	15	12.5	7.5	5.3	4.5	60	20	M4×16	8.09	8.26	0.06	0.02	0.02	0.14	1.26
QEH15CA	24	3.2	9.5	34	26	4	-	23.1	45.5	3.5	3.5	5.5	M4X5	5	5.5	5	15	12.5	7.5	5.3	4.5	60	20	M4×16	11.96	14.46	0.11	0.08	0.08	0.25	1.26
QEH20SA	28	4.6	11	42	32	5	-	29	54	4.75	5	12	M5+6	7	6	6.5	20	15.5	9.5	8.5	6	60	20	M5×16	11.46	12.14	0.11	0.04	0.04	0.21	2.09
QEH20CA	28	4.6	11	42	32	5	-	29	54	4.75	5	12	M5+6	7	6	6.5	20	15.5	9.5	8.5	6	60	20	M5×16	17.46	21.59	0.19	0.13	0.13	0.35	2.09
QEH25SA	33	4.5	12.5	48	35	6.5	-	37.5	60.5	4.75	5	12	M6+8	7.5	6	6	23	18	11	9	7	60	20	M6×20	18.81	18.98	0.2	0.09	0.09	0.37	2.69
QEH25CA	33	4.5	12.5	48	35	6.5	-	37.5	60.5	4.75	5	12	M6+8	7.5	6	6	23	18	11	9	7	60	20	M6×20	25.65	29.52	0.35	0.27	0.27	0.65	2.69
QEH30SA	42	7	16	60	40	10	-	41.5	69.5	6	5	12	M8+9	7	8	8	28	23	11	9	7	80	20	M6×25	24.88	25.96	0.36	0.15	0.15	0.64	4.26
QEH30CA	42	7	16	60	40	10	-	41.5	69.5	6	5	12	M8+9	7	8	8	28	23	11	9	7	80	20	M6×25	36.54	45.12	0.35	0.45	0.45	1.09	4.26
QEH30SA	42	7	16	60	40	10	-	41.5	69.5	6	5	12	M8+9	7	8	8	28	23	14	12	9	80	20	M8×25	24.88	25.96	0.36	0.15	0.15	0.64	4.26
QEH30CA	42	7	16	60	40	10	-	41.5	69.5	6	5	12	M8+9	7	8	8	28	23	14	12	9	80	20	M8×25	36.54	45.12	0.35	0.45	0.45	1.09	4.26

Note : 1 kgf = 9.81 N

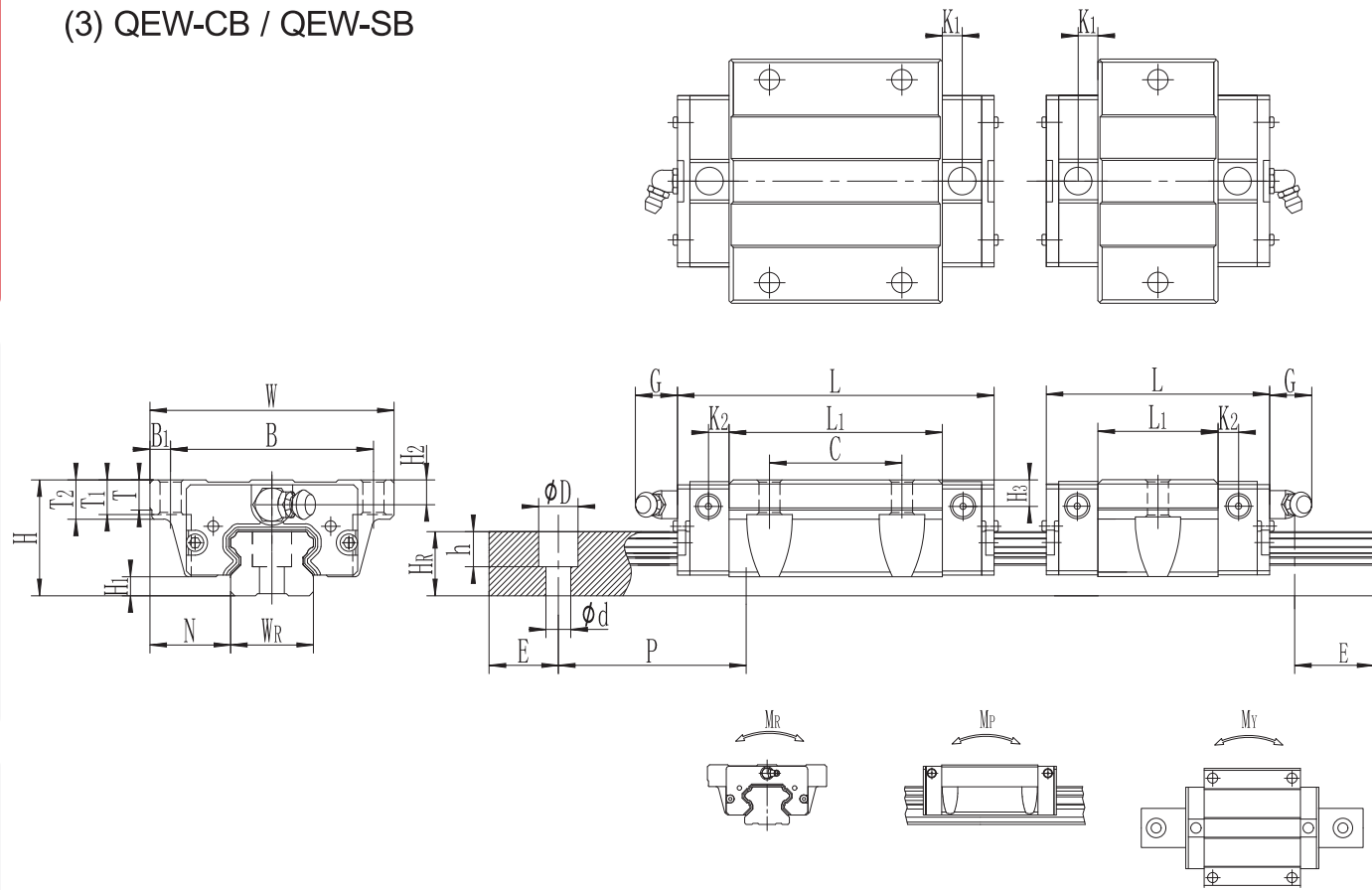
Model with "" means guide rail with new installation hole, pls not the requirement when placing the order.

Model No.	Dimensions of Assembly (mm)		Dimensions of Block(mm)													Dimensions of Rail (mm)					Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Weight					
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	M*L	T	T1	H ₂	H ₃	W _R	H _R	D				h	d	P	E	M _R KN-m	M _P KN-m	M _Y KN-m	Block kg	Rail kg/m
QEW15SA	24	3.2	18.5	52	41	5.5	-	23.1	45.5	3.5	3.5	5.5	M5	5	7	5.5	5	15	12.5	6	4.5	3.5	60	20	M3×16	8.09	8.26	0.06	0.02	0.02	0.14	1.26
QEW15CA	24	3.2	18.5	52	41	5.5	-	23.1	45.5	3.5	3.5	5.5	M5	5	7	5.5	5	15	12.5	6	4.5	3.5	60	20	M3×16	11.96	14.46	0.11	0.08	0.08	0.25	1.26
QEW15SA	24	3.2	18.5	52	41	5.5	-	23.1	45.5	3.5	3.5	5.5	M5	5	7	5.5	5	15	12.5	7.5	5.3	4.5	60	20	M4×16	8.09	8.26	0.06	0.02	0.02	0.14	1.26
QEW15CA	24	3.2	18.5	52	41	5.5	-	23.1	45.5	3.5	3.5	5.5	M5	5	7	5.5	5	15	12.5	7.5	5.3	4.5	60	20	M4×16	11.96	14.46	0.11	0.08	0.08	0.25	1.26
QEW20SA	28	4.6	19.5	59	49	5	-	29	54	4.75	5	12	M6	7	9	6	6.5	20	15.5	9.5	8.5	6	60	20	M5×16	11.46	12.14	0.11	0.04	0.04	0.21	2.09
QEW20CA	28	4.6	19.5	59	49	5	-	29	54	4.75	5	12	M6	7	9	6	6.5	20	15.5	9.5	8.5	6	60	20	M5×16	17.46	21.59	0.19	0.13	0.13	0.35	2.09
QEW25SA	33	4.5	25	73	60	6.5	-	37.5	60.5	4.75	5	12	M8	7.5	10	6	6	23	18	11	9	7	60	20	M6×20	18.81	18.98	0.2	0.09	0.09	0.37	2.69
QEW25CA	33	4.5	25	73	60	6.5	-	37.5	60.5	4.75	5	12	M8	7.5	10	6	6	23	18	11	9	7	60	20	M6×20	25.65	29.52	0.35	0.27	0.27	0.65	2.69
QEW30SA	42	7	31	90	72	9	-	41.5	69.5	6	5	12	M10	7	10	8	8	28	23	11	9	7	80	20	M6×25	24.88	25.96	0.36	0.15	0.15	0.64	4.26
QEW30CA	42	7	31	90	72	9	-	41.5	69.5	6	5	12	M10	7	10	8	8	28	23	11	9	7	80	20	M6×25	36.54	45.12	0.35	0.45	0.45	1.09	4.26
QEW30SA	42	7	31	90	72	9	-	41.5	69.5	6	5	12	M10	7	10	8	8	28	23	14	12	9	80	20	M8×25	24.88	25.96	0.36	0.15	0.15	0.64	4.26
QEW30CA	42	7	31	90	72	9	-	41.5	69.5	6	5	12	M10	7	10	8	8	28	23	14	12	9	80	20	M8×25	36.54	45.12	0.35	0.45	0.45	1.09	4.26

Note : 1 kgf = 9.81 N

Model with "" means guide rail with new installation hole, pls not the requirement when placing the order.

(3) QEW-CB / QEW-SB



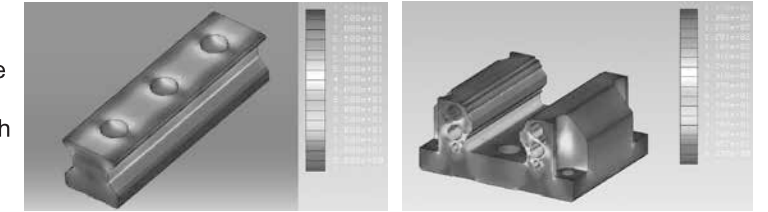
2-5 R Series – High Rigidity Roller Type Linear Guideway

2-5-1 Advantages and Features of R Series

The new R series from LIMON features a roller as the rolling element instead of steel balls. The roller series offers super high rigidity and very high load capacities. The R series is designed with a 45-degree angle of contact. Elastic deformation of the linear contact surface, during load, is greatly reduced thereby offering greater rigidity and higher load capacities in all 4 load directions. The R series linear guideway offers high performance for high-precision manufacturing and achieving longer service life.

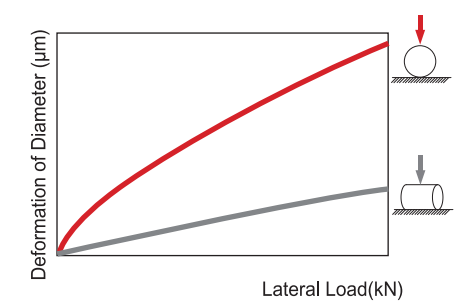
(1) Optimal design

FEM analysis was performed to determine the optimal structure of the block and the rail. The unique design of the circulation path allows the R series linear guideway to offer smoother linear motion.



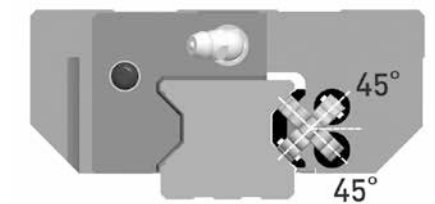
(2) Super high rigidity

The R series is a type of linear guideway that uses rollers as the rolling elements. Rollers have a greater contact area than balls so that the roller guideway features higher load capacity and greater rigidity. The figure shows the rigidity of a roller and a ball with equal volume.



(3) Super high load capacity

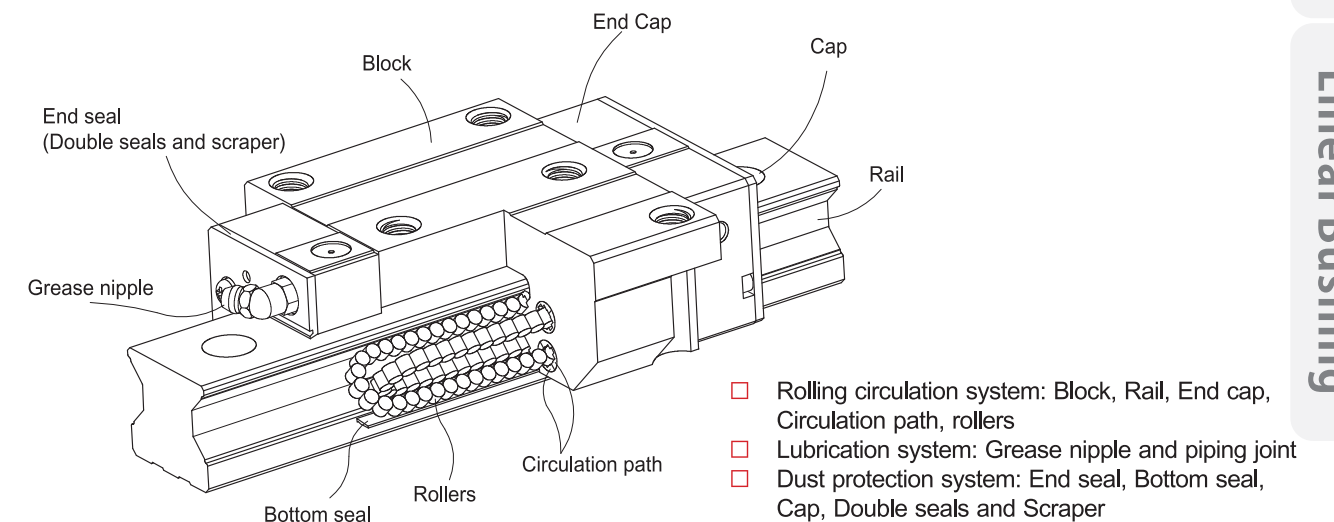
With the four rows of rollers arranged at a contact angle of 45-degrees, the R series linear guideway has equal load ratings in the radial, reverse radial and lateral directions. The R series has a higher load capacity in a smaller size than conventional, ball-type linear guideways.



(4) Operating life increased

Compare with the ball element, the contact pressure of rolling element is distributed on the line region. Therefore, stress concentration was reduced significantly and the R series offers longer running life. The nominal life of R series can be calculated by using Eq.

2-5-2 Construction of R Series



Model No.	Dimensions of Assembly (mm)				Dimensions of Block(mm)												Dimensions of Rail (mm)										Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(KN)	Basic Static Load Rating C0(KN)	Static Rated Moment			Block kg	Rail kg/m			
	H	H1	N	W	B	B1	C	L1	L	K1	K2	G	M*L	T	T1	T2	H2	H3	Wr	Hr	D	h	d	P	E	Mr KN-m				Mp KN-m	My KN-m						
★ QEW15SB	24	3.2	18.5	52	41	5.5	-	23.1	45.5	3.5	3.5	5.5	ϕ4.5	5	7	7.8	5.5	5	15	12.5	6	4.5	3.5	60	20	M3×16	8.09	8.26	0.06	0.02	0.02	0.14	1.26				
QEW15CB							26	39.8	62.2																												
QEW15SB	24	3.2	18.5	52	41	5.5	-	23.1	45.5	3.5	3.5	5.5	ϕ4.5	5	7	7.8	5.5	5	15	12.5	7.5	5.3	4.5	60	20	M4×16	8.09	8.26	0.06	0.02	0.02	0.14	1.26				
QEW15CB							26	39.8	62.2																												
QEW20SB	28	4.6	19.5	59	49	5	-	29	54	4.75	5	12	ϕ5.5	7	7	9	6	6.5	20	15.5	9.5	8.5	6	60	20	M5×16	11.46	12.14	0.11	0.04	0.04	0.21	2.09				
QEW20CB							32	51.5	76.5																												
QEW25SB	33	4.5	25	73	60	6.5	-	37.5	60.5	4.75	5	12	ϕ7	7.5	10	10	6	6	23	18	11	9	7	60	20	M6×20	18.81	18.98	0.2	0.09	0.09	0.37	2.69				
QEW25CB							35	59.5	82.5																												
★ QEW30SB	42	7	31	90	72	9	-	41.5	69.5	6	5	12	ϕ9	7	10	10	8	8	28	23	11	9	7	80	20	M6×25	24.88	25.96	0.36	0.15	0.15	0.64	4.26				
QEW30CB							40	70	98																												
QEW30SB	42	7	31	90	72	9	-	41.5	69.5	6	5	12	ϕ9	7	10	10	8	8	28	23	14	12	9	80	20	M8×25	24.88	25.96	0.36	0.15	0.15	0.64	4.26				
QEW30CB							40	70	98																												

Note : 1 kgf = 9.81 N
Model with "*" means guide rail with new installation hole, pls not the requirement when placing the order.