

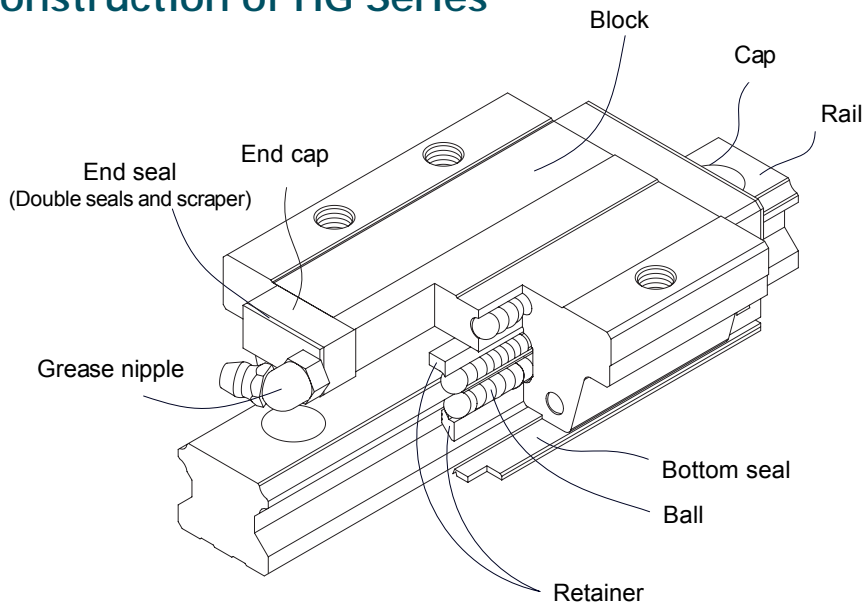
2. HG Series Linear Guideway Four-row Super Heavy Load

2-1 Features of the HG Series Linear Guideway

HG series linear guideway are designed with load capacity and rigidity over 30% higher than other similar products with circular-arc groove and structure optimization. Furthermore, the optimized design of circulating system makes the movement smooth.

The retainer is designed to avoid the balls from falling out even when the blocks are removed from the rail during installation.

2-2 Construction of HG Series

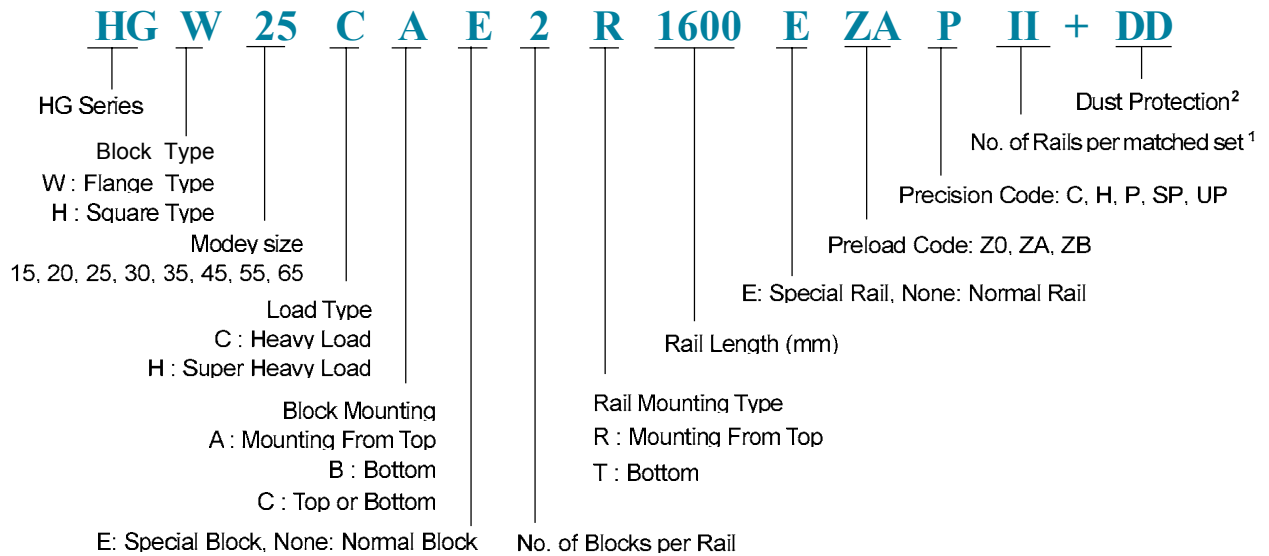


- ▶ Rolling Circulation System: Block, Rail, End plate and Retainer
- ▶ Lubrication System: Grease Nipple and piping joint
- ▶ Dust Protection System: End seal, Bottom seal, Cap, Double Seals and Scraper

2-3 Model Number of HG Series

HG series guideway can be classified into non-interchangeable and interchangeable types. The size of two types are identical. The only difference between two types are that the interchangeable type of blocks and rails can be freely exchanged, and their accuracy can reach up to P class. Because of precision dimensional control, the interchangeable type of linear guideway is a wise choice for customer. The model number of HG series contains the size, type, accuracy class, preload class, etc..

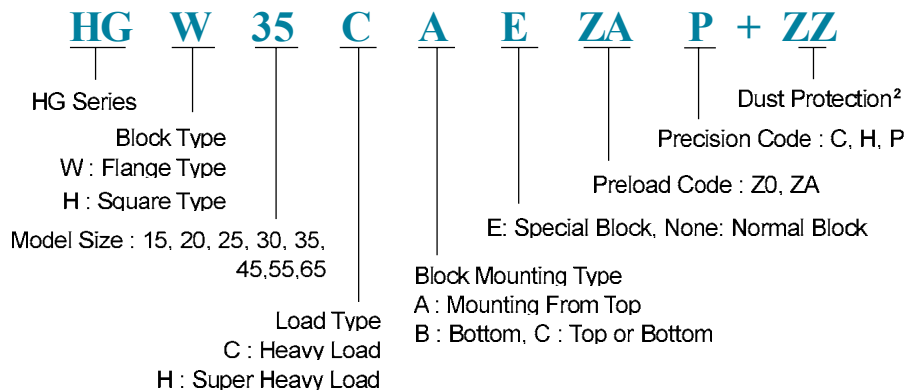
2-3-1 Non-interchangeable type



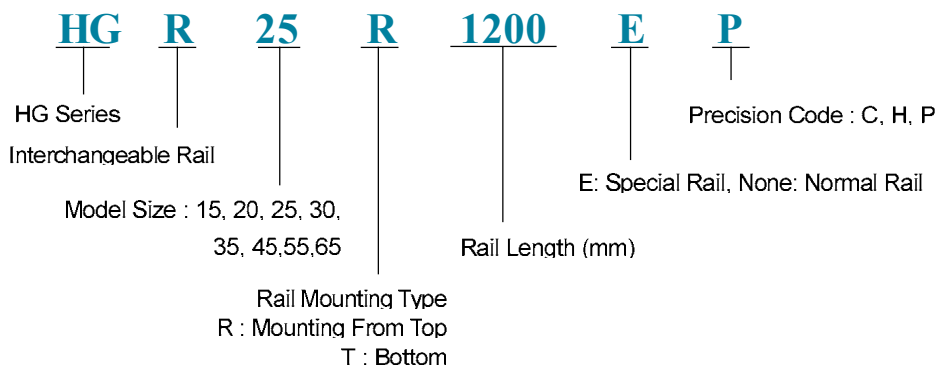
- Note: 1. The roman numerals used to express a matched set of rails.
 2. For dust protection, it is no symbol if it is standard(end seal and bottom seal).
 ZZ : End seal, bottom seal and scraper
 KK: Double seals, bottom seal and scraper.
 DD: Double seals and bottom seal

2-3-2 Interchangeable type

► Model Number of HG Block



► Model Number of HG Rail

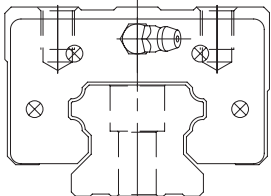
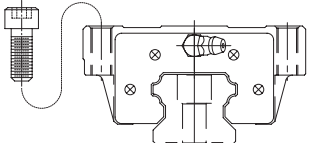
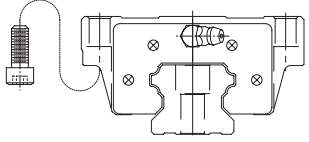
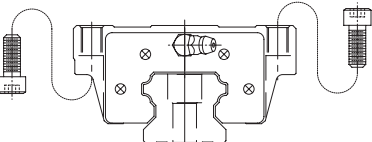


2-4 Types

2-4-1 Block types

HIWIN offers two types of linear guideway which are flange and square types. Because of the low assembly height and larger mounting surface, the flange type is good for heavy moment load application.

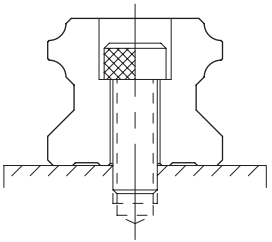
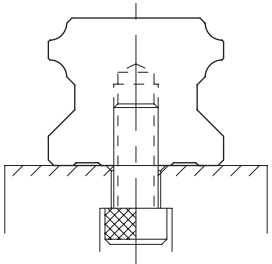
Table 2.1 Block Types

Type	Model	Shape	Height (mm)	Rail Length (mm)	Main Application
Square	HGH-CA HGH-HA		26 ↓ 76	100 ↓ 4000	<ul style="list-style-type: none"> • Machine Center • NC Lathe • Grinding Machine • Precision Machining Machine • Heavy Cutting Machine • Automation Device • Transportation Equipment • Measuring Equipment • Devices Required High Positional Accuracy
Flange	HGW-CA HGW-HA		24 ↓ 90	100 ↓ 4000	
	HGW-CB HGW-HB		24 ↓ 90	100 ↓ 4000	
	HGW-CC HGW-HC		24 ↓ 90	100 ↓ 4000	

2-4-2 Rail types

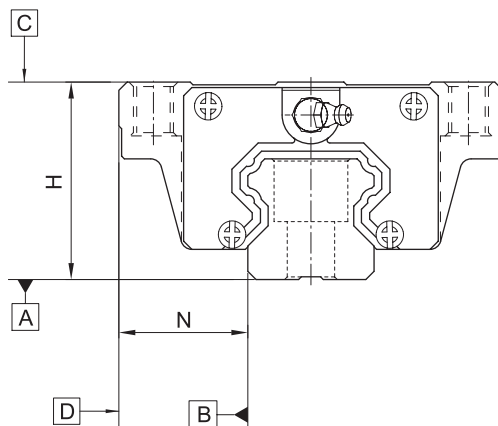
Besides the standard top mounting type, HIWIN also offers the bottom mounting type of rails to customers.

Table 2.2 Rail Types

Mounting from Above	Mounting from below
	

2-5 Accuracy Classes

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



2-5-1 Accuracy of non-interchangeable

Table 2.3 Accuracy Standards

Unit: mm

Item	HG - 15, 20				
	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimension tolerance of height H	± 0.1	± 0.03	0 - 0.03	0 - 0.015	0 - 0.008
Dimension 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 2-5				
Running parallelism of block surface D to surface B	See Table 2-5				

Item	HG - 25, 30, 35				
	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimension tolerance of height H	± 0.1	± 0.04	0 - 0.04	0 - 0.02	0 - 0.01
Dimension 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 2-5				
Running parallelism of block surface D to surface B	See Table 2-5				

Item	HG - 45, 55				
Accuracy Classes	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimension tolerance of height H	± 0.1	± 0.05	0 - 0.05	0 - 0.03	0 - 0.02
Dimension 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 2-5				
Running parallelism of block surface D to surface B	See Table 2-5				

Item	HG - 65				
Accuracy Classes	Normal (C)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
Dimension tolerance of height H	± 0.1	± 0.07	0 - 0.07	0 - 0.05	0 - 0.03
Dimension tolerance of width N	± 0.1	± 0.07	0 - 0.07	0 - 0.05	0 - 0.03
Variation of height H	0.03	0.02	0.01	0.007	0.005
Variation of width N	0.03	0.025	0.015	0.01	0.007
Running parallelism of block surface C to surface A	See Table 2-5				
Running parallelism of block surface D to surface B	See Table 2-5				

2-5-2 Accuracy of interchangeable

Table 2.4 Accuracy Standards

Unit: mm

Item	HG - 15, 20		
Accuracy Classes	Normal(C)	High(H)	Precision(P)
Dimension tolerance of height H	± 0.1	± 0.03	± 0.015
Dimension 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 2-5		
Running parallelism of block surface D to surface B	See Table 2-5		

Item	HG - 25, 30, 35		
Accuracy Classes	Normal(C)	High(H)	Precision(P)
Dimension tolerance of height H	± 0.1	± 0.04	± 0.02
Dimension 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 2-5		
Running parallelism of block surface D to surface B	See Table 2-5		

Item	HG - 45, 55		
Accuracy Classes	Normal(C)	High(H)	Precision(P)
Dimension tolerance of height H	± 0.1	± 0.05	± 0.025
Dimension 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 2-5		
Running parallelism of block surface D to surface B	See Table 2-5		

Item	HG - 65		
Accuracy Classes	Normal(C)	High(H)	Precision(P)
Dimension tolerance of height H	± 0.1	± 0.07	± 0.035
Dimension tolerance of width N	± 0.1	± 0.07	± 0.035
Variation of height H	0.03	0.02	0.01
Variation of width N	0.03	0.025	0.015
Running parallelism of block surface C to surface A	See Table 2-5		
Running parallelism of block surface D to surface B	See Table 2-5		

2-5-3 Accuracy of running parallelism

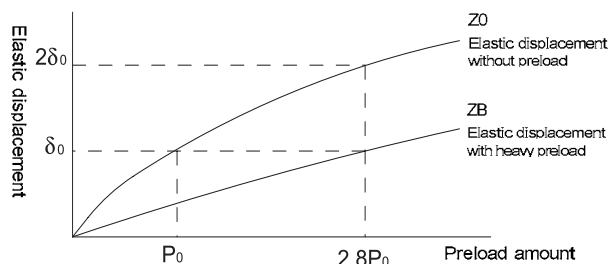
Table 2.5 Accuracy of Running Parallelism

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

2-6 Preload

2-6-1 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 at the point where the load is multiplied by the preload, the rigidity is doubled and the deflection is reduced by one half. The preload not larger than ZA would be recommended for the model size under HG20 to avoid over-preload affecting the guideway's life.



2-6-2 Preload classes

HIWIN offers six standard preloads for various applications and conditions.

Table 2.6 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	0.05~0.07C	High precision required	Machining centers, Z axis for general industrial machines, EDM, NC lathes, Precision X-Y tables, measuring equipment
Heavy Preload	ZB	over 0.10C	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

Note : 1. The C in preload column means basic dynamic load rating.

2. Preload Classes of Interchangeable Guideway: Z0, ZA, Preload Classes of Non-Interchangeable Guideway: Z0, ZA, ZB

2-7 Stiffness

To determine if the rigidity will affect the accuracy, Check the value of rigidity corresponding to the preload amount.

$$\delta = \frac{P}{k} \mu\text{m} \quad \text{Eq. 2.1}$$

δ : Deflection

P : Working load (kN)

k : Value of rigidity

Table 2.7 Value of Rigidity

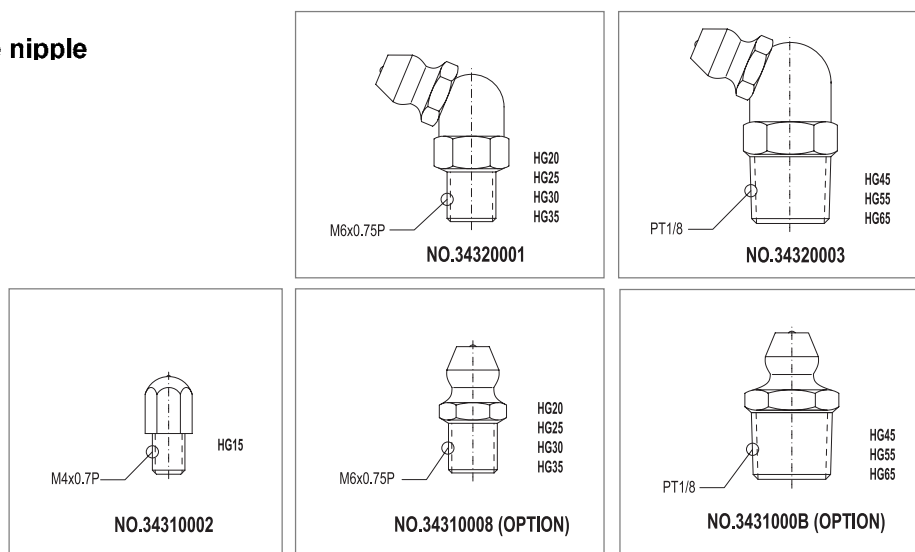
Type	Size	Z0 kN/ μm	ZA kN/ μm	ZB kN/ μm
Heavy load	HG 15C	0.38	0.46	0.51
	HG 20C	0.46	0.54	0.62
	HG 25C	0.52	0.63	0.73
	HG 30C	0.63	0.77	0.90
	HG 35C	0.68	0.83	0.98
	HG 45C	0.80	0.94	1.09
	HG 55C	0.95	1.08	1.23
	HG 65C	1.08	1.21	1.34
Super heavy load	HG 20H	0.56	0.67	0.77
	HG 25H	0.67	0.81	0.95
	HG 30H	0.80	0.97	1.15
	HG 35H	0.86	1.06	1.26
	HG 45H	1.02	1.20	1.40
	HG 55H	1.21	1.38	1.57
	HG 65H	1.46	1.62	1.80

Note: 1kqf = 9.81N

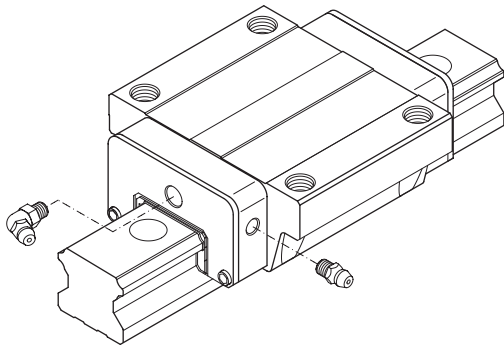
2-8 Lubrication

2-8-1 Grease

(1) Grease nipple



(2) Mounting location



The standard location of the grease fitting is at both ends of the block, but the nipple can be mounted in the side of block.

As for the lateral installation, we recommend that the nipple be mounted at the non-reference side, otherwise please contact us.

It is possible to carry out the lubrication by using the oil-piping joint.

(3) The oil amount for a block full with grease

Table 2.8 The Oil Amount for a Block Full with Grease

Size	Heavy load (cm ³)	Super heavy load (cm ³)	Size	Heavy load (cm ³)	Super heavy load (cm ³)
HG 15	1	-	HG 35	10	12
HG 20	2	3	HG 45	17	21
HG 25	5	6	HG 55	26	33
HG 30	7	8	HG 65	50	61

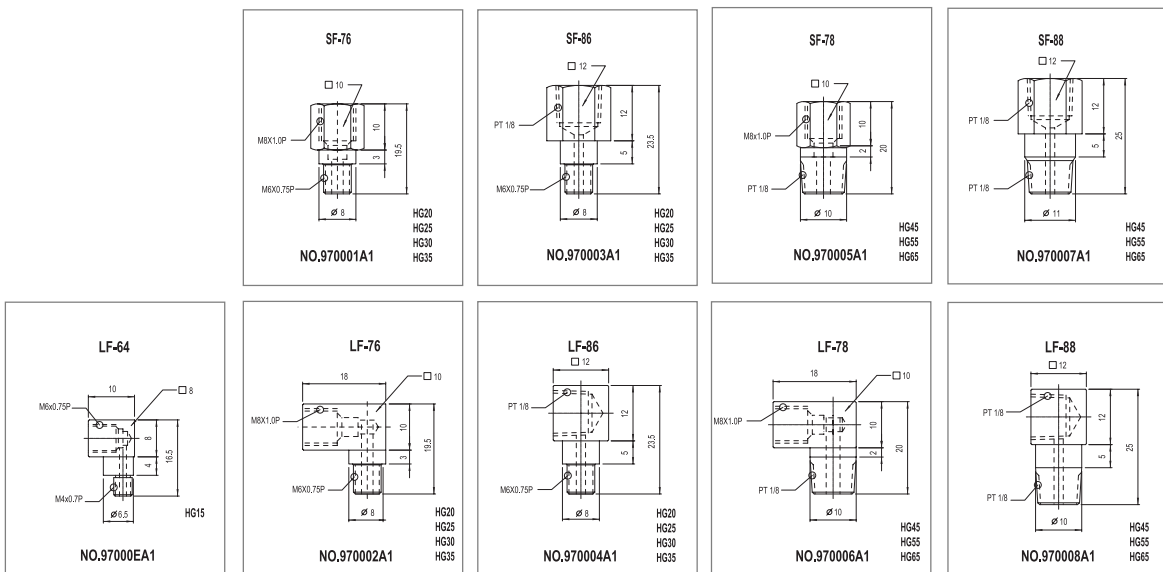
(4) Frequency of replenishment

Replenishing the oil every 100km.

2-8-2 Oil

The recommended viscosity of oil is about 30~150cst. If customers need to use the oil-type lubrication, please inform us, the block will not be prelubricated with grease before shipment.

(1) Types of oil piping joint



(2) Oil feeding rate

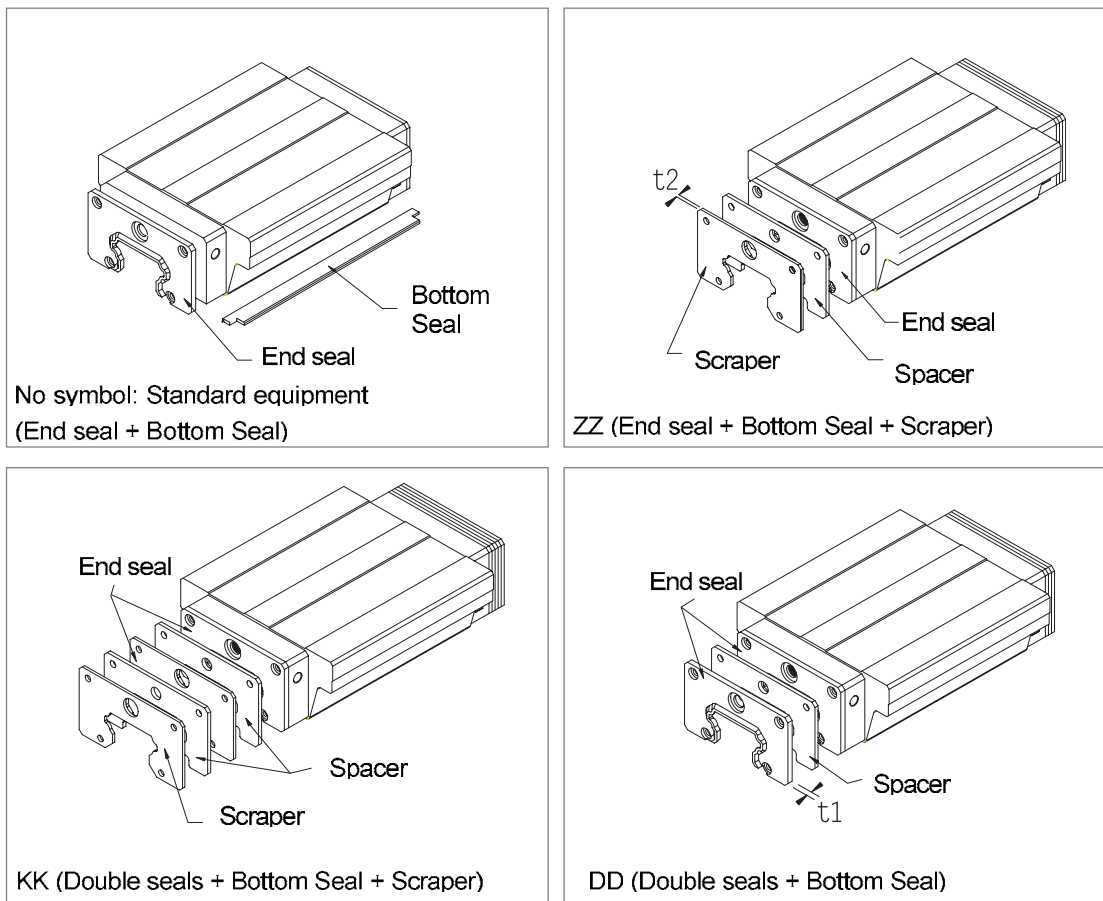
Table 2.9

Size	Feeding rate (cm ³ /hr)	Size	Feeding rate (cm ³ /hr)
HG15	0.2	HG35	0.3
HG20	0.2	HG45	0.4
HG25	0.3	HG55	0.5
HG30	0.3	HG65	0.6

2-9 Dust Protection Equipment

2-9-1 Code of equipment

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



2-9-2 End seal and bottom seal

To prevent the life reduction due to the groove surface damaged by iron chips or dust entering the block.

2-9-3 Double seals

Enhancing the wiping effect, the foreign matters can be completely wiped out of block.

Table 2.10 Order Number of End Seal

Size	Part No.	Thickness (t1) mm	Size	Part No.	Thickness (t1) mm
HG15	920019A1	3	HG35	920015A1	3.2
HG20	920018A1	3	HG45	92001AA1	4.5
HG25	920017A1	3	HG55	92001BA1	5
HG30	920016A1	3.2	HG65	92001CA1	5

2-9-4 Scraper

The scraper has the ability of isolating the high-temp. iron chips and removing the big foreign objects.

Table 2.11 Order Number of Scraper

Size	Part No.	Thickness (t2) mm	Size	Part No.	Thickness (t2) mm
HG15	98000HA1	1.5	HG35	98000LA1	1.5
HG20	98000IA1	1.5	HG45	98000MA1	1.5
HG25	98000JA1	1.5	HG55	98000NA1	1.7
HG30	98000KA1	1.5	HG65	98000PA1	1.7

2-9-5 Caps for rail mounting holes

The caps are used to cover the mounting holes to prevent chips or other foreign objects from entering the holes. The caps will be enclosed in each rail packing

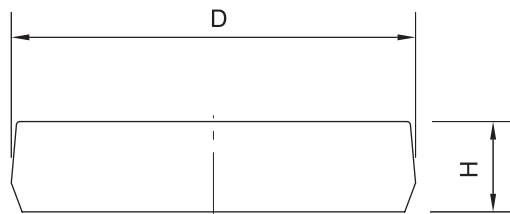


Table 2.12 Caps for Rail Mounting Holes

Rail size	Bolt size	Part No.	Diameter(D) mm	Thickness(H) mm
HGR15	M4	950002C1	7.7	1.1
HGR20	M5	950003C1	9.7	2.2
HGR25	M6	950004C1	11.3	2.5
HGR30	M8	950005C1	14.3	3.3
HGR35	M8	950005C1	14.3	3.3
HGR45	M12	950007C1	20.3	4.6
HGR55	M14	950008A1	23.5	5.5
HGR65	M16	950009A1	26.6	5.5

2-10 Friction

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

Table 2.13 Seal Resistance

Size	Resistance (kgf)	Size	Resistance (kgf)
HG 15	0.12	HG 35	0.31
HG 20	0.16	HG 45	0.39
HG 25	0.20	HG 55	0.47
HG 30	0.27	HG 65	0.59

2-11 The Accuracy Tolerance of Mounting Surface

(1) The accuracy tolerance of rail-mounting surface

Because of the Circular-arc contact design, the HG linear guideway can stand the surface-error of installation and obtain smooth linear motion.

As long as following the accuracy requirements of mounting surface, the high accuracy and rigidity of linear motion guideway should be obtained without any difficulty. In order to satisfy the needs of fast installation and smooth movement, HIWIN offers the normal clearance type of preload to customers for its high absorption ability for the deviation of mounting surface accuracy.

(2) The parallelism tolerance of reference surface (P)

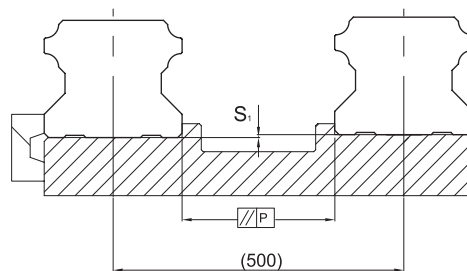


Table 2.14 Max. Parallelism Tolerance (P)

unit: μm

Size	Preload classes		
	Z0	ZA	ZB
HG 15	25	18	-
HG 20	25	20	18
HG 25	30	22	20
HG 30	40	30	27
HG 35	50	35	30
HG 45	60	40	35
HG 55	70	50	45
HG 65	80	60	55

(3) The accuracy tolerance of reference surface height

Table 2.15 Max. Tolerance of Reference Surface Height (S_1)

Size	Preload classes		
	Z0	ZA	ZB
HG 15	130	85	-
HG 20	130	85	50
HG 25	130	85	70
HG 30	170	110	90
HG 35	210	150	120
HG 45	250	170	140
HG 55	300	210	170
HG 65	350	250	200

unit: μm

2-12 Cautions for Installation

2-12-1 Shoulder heights and fillets

The improper shoulder heights and fillets of mounting surfaces will cause the deviation of accuracy and the interference with the chamfered part of the rail or block.

As long as the recommended shoulder heights and fillets are followed, the accuracy problem of installation should be eliminated.

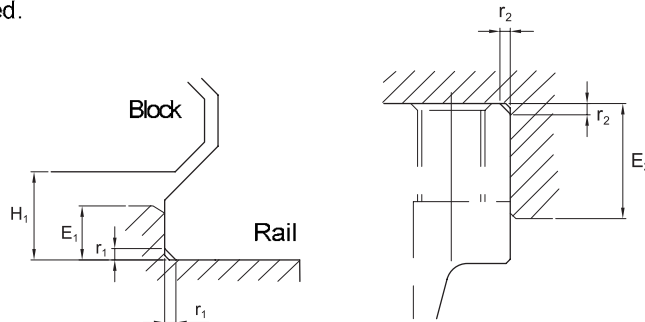


Table 2.16 Shoulder Heights and Fillets

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)
HG15	0.5	0.5	3	4	4.3
HG20	0.5	0.5	3.5	5	4.6
HG25	1.0	1	5	5	5.5
HG30	1.0	1	5	5	6
HG35	1.0	1	6	6	7.5
HG45	1.0	1	8	8	9.5
HG55	1.5	1.5	10	10	13
HG65	1.5	1.5	10	10	15

2-12-2 Tightening Torque of Bolts for Installation

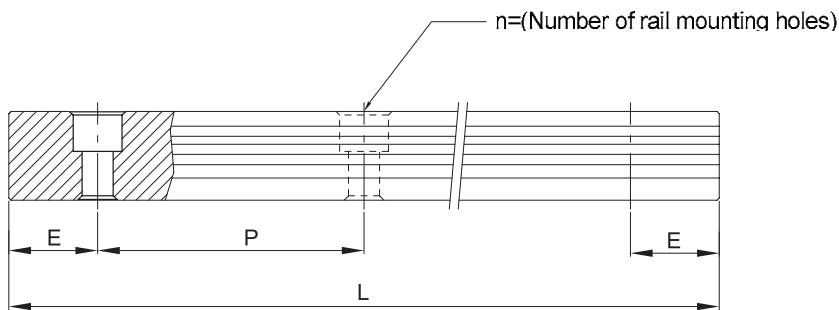
The improper tightening of bolts will influence the accuracy of Linear Guideway seriously, so that the following tightening torque for different sizes of bolt is recommended.

Table 2.17 Mounting Torque

Size	Bolt size	Torque N-cm (kgf-cm)	Size	Bolt size	Torque N-cm (kgf-cm)
HG 15	M4 x 0.7P x 16L	392(40)	HG 35	M8 x 1.25P x 25L	3,041(310)
HG 20	M5 x 0.8P x 16L	883(90)	HG 45	M12 x 1.75P x 35L	11,772(1,200)
HG 25	M6 x 1P x 20L	1373(140)	HG 55	M14 x 2P x 45L	15,696(1,600)
HG 30	M8 x 1.25P x 25L	3041(310)	HG 65	M16 x 2P x 50L	19,620(2,000)

2-13 Standard Length and Max. Length of Rail

HIWIN has offered the standard length of rails for customer needs. As for the non-standard E value, to avoid the unstable end part of rail, it is recommended the E value should not be over 1/2 of pitch (P). On the other hand, the E value should not be less than the E_{min} due to the breaking of mounting hole.



$$L = (n - 1) \times P + 2 \times E \quad \text{Eq. 2.2}$$

L : Total length of rail (mm)

n : Number of mounting holes

P : Distance between any two holes (mm)

E : Distance from the center of the last hole to the edge (mm)

Table 2.18 Rail Standard Length and Max. Length

Unit : mm

Item	HG15	HG20	HG25	HG30	HG35	HG45	HG55	HG65
Standard Length L(n)	160(3)	220(4)	220(4)	280(4)	280(4)	570(6)	780(7)	1,270(9)
	220(4)	280(5)	280(5)	440(6)	440(6)	885(9)	1,020(9)	1,570(11)
	280(5)	340(6)	340(6)	600(8)	600(8)	1,200(12)	1,260(11)	2,020(14)
	340(6)	460(8)	460(8)	760(10)	760(10)	1,620(16)	1,500(13)	2,620(18)
	460(8)	640(11)	640(11)	1,000(13)	1,000(13)	2,040(20)	1,980(17)	
	640(11)	820(14)	820(14)	1,640(21)	1,640(21)	2,460(24)	2,580(22)	
	820(14)	1,000(17)	1,000(17)	2,040(26)	2,040(26)	2,985(29)	2,940(25)	
		1,240(21)	1,240(21)	2,520(32)	2,520(32)			
		1,600(27)	3,000(38)	3,000(38)				
Pitch(P)	60	60	60	80	80	105	120	150
Distance to End (E _s)	20	20	20	20	20	22.5	30	35
Max. Standard Length	1,960(33)	4,000(67)	4,000(67)	3,960(50)	3,960(50)	3,930(38)	3,900(32)	3,970(26)
Max. Length	2,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000

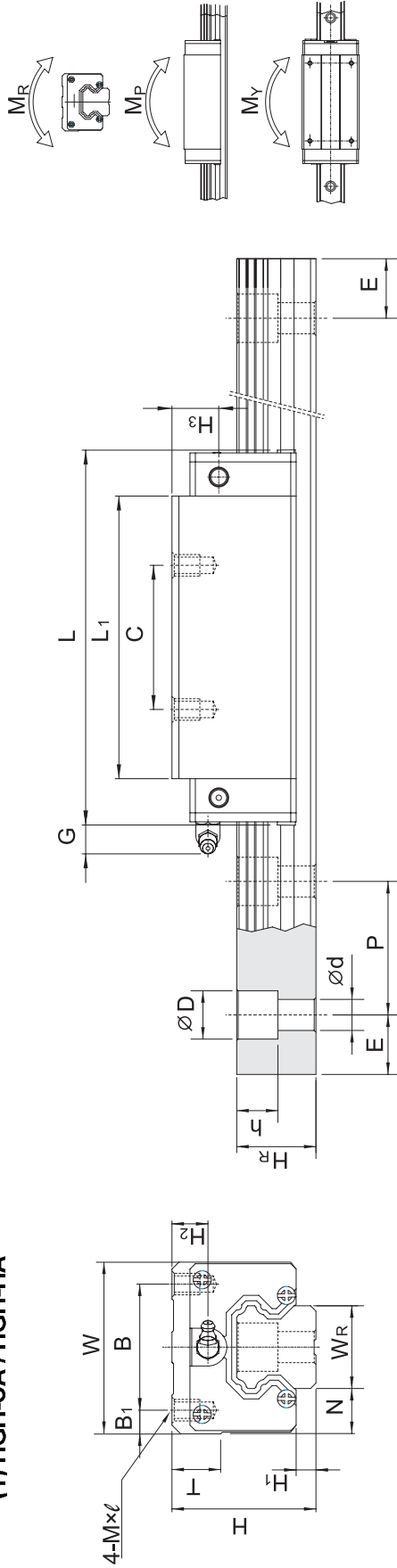
Note : 1. Tolerance of E value for standard rail is 0.5~0.5 mm. Tolerance of E value for butt-joint is 0~0.3 mm.

2. Maximum standard length means the max. rail length with standard E value on both end.

3. If different E value is needed, please contact HIWIN.

2-14 Dimensions for HG Series

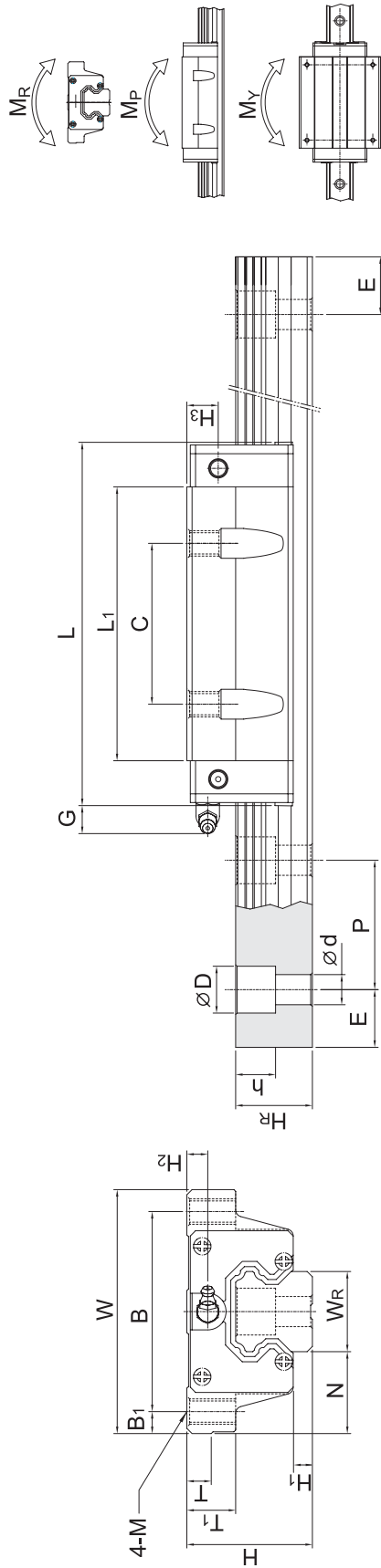
(1) HGH-CA / HGH-HA



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 C ₀ (kN)	Static Rated Moment			Weight			
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	M x 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)
HGH 15CA	28	4.3	9.5	34	26	4	26	39.4	61.4	5.3	M4x5	6	8.5	9.5	15	7.5	5.3	4.5	60	20	M4x16	11.38	25.31	0.17	0.15	0.15	0.18	1.45	
HGH 20CA	30	4.6	12	44	32	6	36	50.5	75.6	12	M5x6	8	6	7	20	9.5	8.5	6	60	20	M5x16	17.75	37.84	0.38	0.27	0.27	0.30	2.21	
HGH 20HA	30	4.6	12	44	32	6	50	65.2	90.3	12	M5x6	8	6	7	20	9.5	8.5	6	60	20	M5x16	21.18	48.84	0.48	0.47	0.47	0.39		
HGH 25CA	40	5.5	12.5	48	35	6.5	35	58	83	12	M6x8	8	10	13	23	11	9	7	60	20	M6x20	26.48	56.19	0.64	0.51	0.51	0.51	3.21	
HGH 25HA	40	5.5	12.5	48	35	6.5	50	78.6	103.6	12	M6x8	8	10	13	23	11	9	7	60	20	M6x20	32.75	76.00	0.87	0.88	0.88	0.69		
HGH 30CA	45	6	16	60	40	10	40	70	97.4	12	M8x10	8.5	9.5	13.8	28	14	12	9	80	20	M8x25	38.74	83.06	1.06	0.85	0.85	0.88	4.47	
HGH 30HA	45	6	16	60	40	10	60	93	120.4	12	M8x10	8.5	9.5	13.8	28	14	12	9	80	20	M8x25	47.27	110.13	1.40	1.47	1.47	1.16		
HGH 35CA	55	7.5	18	70	50	10	50	80	112.4	12	M8x12	10.2	16	19.6	34	14	12	9	80	20	M8x25	49.52	102.87	1.73	1.20	1.20	1.45	6.30	
HGH 35HA	55	7.5	18	70	50	10	72	105.8	138.2	12	M8x12	10.2	16	19.6	34	14	12	9	80	20	M8x25	60.21	136.31	2.29	2.08	2.08	1.92		
HGH 45CA	70	9.5	20.5	86	60	13	60	97	138	12.9	M10x17	16	18.5	30.5	45	38	20	17	105	22.5	M12x35	77.57	155.93	3.01	2.35	2.35	2.73	10.41	
HGH 45HA	70	9.5	20.5	86	60	13	80	128.8	169.8	12.9	M10x17	16	18.5	30.5	45	38	20	17	105	22.5	M12x35	94.54	207.12	4.00	4.07	4.07	3.61		
HGH 55CA	80	13	23.5	100	75	12.5	75	117.7	165.7	12.9	M12x18	17.5	22	29	53	44	23	20	16	120	30	M14x45	114.44	227.81	5.66	4.06	4.06	4.17	15.08
HGH 55HA	80	13	23.5	100	75	12.5	95	155.8	203.8	12.9	M12x18	17.5	22	29	53	44	23	20	16	120	30	M14x45	139.35	301.26	7.49	7.01	7.01	5.49	
HGH 65CA	90	15	31.5	126	76	25	70	144.2	198.2	12.9	M16x20	25	15	15	63	53	26	22	18	150	35	M16x50	163.63	324.71	10.02	6.44	6.44	7.00	21.18
HGH 65HA	90	15	31.5	126	76	25	120	203.6	257.6	12.9	M16x20	25	15	15	63	53	26	22	18	150	35	M16x50	208.36	457.15	14.15	11.12	11.12	9.82	

Note : 1 kgf = 9.81 N

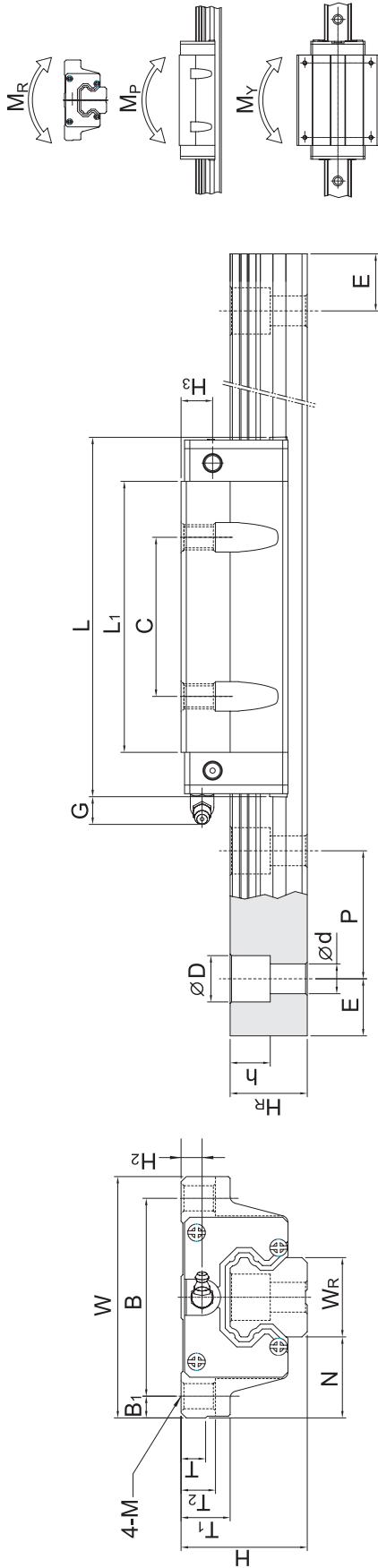
(2) HGW-CA / HGW-HA



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 C ₀ (kN)	Static Rated Moment			Weight			
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	M	T	T ₁	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)						
HGW 15CA	24	4.3	16	47	38	4.5	30	39.4	61.4	5.3	M5	6	8.9	4.5	5.5	15	15	7.5	5.3	4.5	60	20	M4x16	11.38	25.31	0.17	0.15	0.15	0.17	0.15	0.15	0.17	1.45	1.45		
HGW 20CA	30	4.6	21.5	63	53	5	40	50.5	75.6	6	M6	8	10	6	7	20	17.5	9.5	8.5	6	60	20	M5x16	17.75	37.84	0.38	0.27	0.27	0.27	0.27	0.27	0.27	0.40	2.21		
HGW 20HA								65.2	90.3																											
HGW 25CA	36	5.5	23.5	70	57	6.5	45	58	83	12	M8	8	14	6	9	23	22	11	9	7	60	20	M6x20	26.48	56.19	0.64	0.51	0.51	0.51	0.51	0.51	0.59	3.21	3.21		
HGW 25HA								78.6	103.6																											
HGW 30CA	42	6	31	90	72	9	52	70	97.4	12	M10	8.5	16	6.5	10.8	28	26	14	12	9	80	20	M8x25	38.74	83.06	1.06	0.85	0.85	0.85	0.85	1.09	4.47	4.47			
HGW 30HA								93	120.4																											
HGW 35CA	48	7.5	33	100	82	9	62	80	112.4	12	M10	10.1	18	9	12.6	34	29	14	12	9	80	20	M8x25	49.52	102.87	1.73	1.20	1.20	1.20	1.20	1.56	6.30	6.30			
HGW 35HA								105.8	138.2																											
HGW 45CA	60	9.5	37.5	120	100	10	80	97	138	12.9	M12	15.1	22	8.5	20.5	45	38	20	17	14	105	22.5	M12x35	77.57	155.93	3.01	2.35	2.35	2.35	2.35	2.79	10.41	10.41			
HGW 45HA								128.8	169.8																											
HGW 55CA	70	13	43.5	140	116	12	95	117.7	165.7	12.9	M14	17.5	26.5	12	19	53	44	23	20	16	120	30	M14x45	114.44	227.81	5.66	4.06	4.06	4.06	4.06	4.52	15.08	15.08			
HGW 55HA								155.8	203.8																											
HGW 65CA	90	15	53.5	170	142	14	110	144.2	198.2	12.9	M16	25	37.5	15	15	63	53	26	22	18	150	35	M16x50	163.63	324.71	10.02	6.44	6.44	6.44	6.44	9.17	21.18	21.18			
HGW 65HA								203.6	257.6																											

Note : 1 kqf = 9.81 N

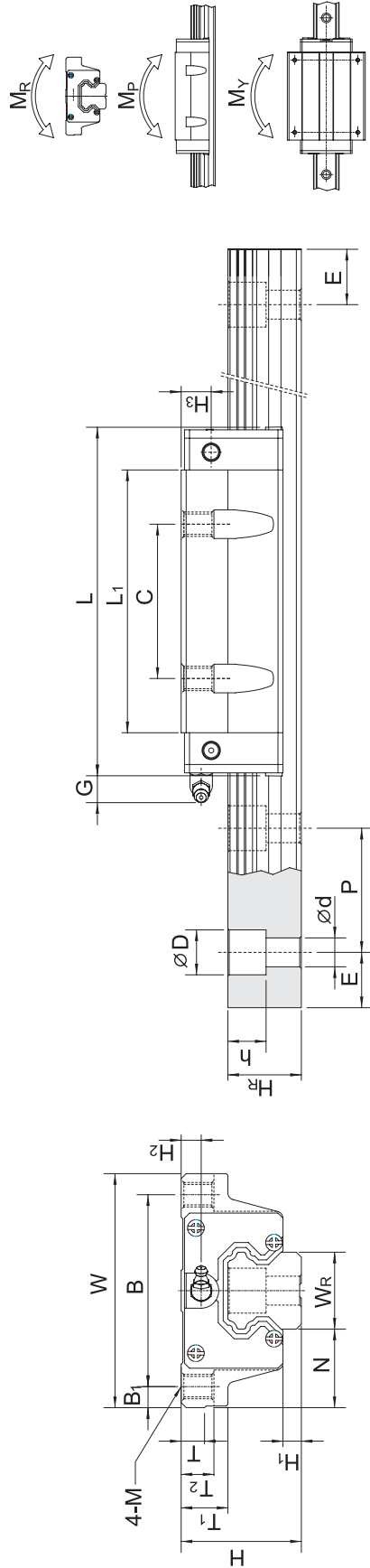
(3) HGW-CB / HGW-HB



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 Rating C ₀ (kN)	Static Rated Moment			Weight	
	H	H ₁	N	W	B	B ₁	C	L	L ₁	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 _V (kN-m)				Block (kg)	Rail (kg/m)			
HGW 15CB	24	4.3	16	47	38	4.5	30	39.4	61.4	5.3	Ø4.5	6	8.9	6.95	4.5	5.5	15	15	7.5	5.3	4.5	60	20	M4x16	11.38	25.31	0.17	0.15	0.15	0.17	1.45	1.45		
HGW 20CB	30	4.6	21.5	63	53	5	40	50.5	75.6	12	Ø6	8	10	9.5	6	7	20	17.5	9.5	8.5	6	60	20	M5x16	17.75	37.84	0.38	0.27	0.27	0.38	2.21	2.21		
HGW 20HB								65.2	90.3																									
HGW 25CB	36	5.5	23.5	70	57	6.5	45	58	83	12	Ø7	8	14	10	6	9	23	22	11	9	7	60	20	M6x20	26.48	56.19	0.64	0.51	0.51	0.64	3.21	3.21		
HGW 25HB								78.6	103.6																									
HGW 30CB	42	6	31	90	72	9	52	70	97.4	12	Ø9	8.5	16	10	6.5	10.8	28	26	14	12	9	80	20	M8x25	38.74	83.06	1.06	0.85	0.85	1.06	4.47	4.47		
HGW 30HB								93	120.4																									
HGW 35CB	48	7.5	33	100	82	9	62	80	112.4	12	Ø9	10.1	18	13	9	12.6	34	29	14	12	9	80	20	M8x25	49.52	102.87	1.73	1.20	1.20	1.73	6.30	6.30		
HGW 35HB								105.8	138.2																									
HGW 45CB	60	9.5	37.5	120	100	10	80	97	138	12.9	Ø11	15.1	22	15	8.5	20.5	45	38	20	17	14	105	22.5	M12x35	77.57	155.93	3.01	2.35	2.35	3.01	10.41	10.41		
HGW 45HB								128.8	169.8																									
HGW 55CB	70	13	43.5	140	116	12	95	117.7	165.7	12.9	Ø14	17.5	26.5	17	12	19	53	44	23	20	16	120	30	M14x45	114.44	227.81	5.66	4.06	4.06	5.66	15.08	15.08		
HGW 55HB								155.8	203.8																									
HGW 65CB	90	15	53.5	170	142	14	110	144.2	198.2	12.9	Ø16	25	37.5	23	15	15	63	53	26	22	18	150	35	M16x50	163.63	324.71	10.02	6.44	6.44	10.02	21.18	21.18		
HGW 65HB								203.6	257.6																									

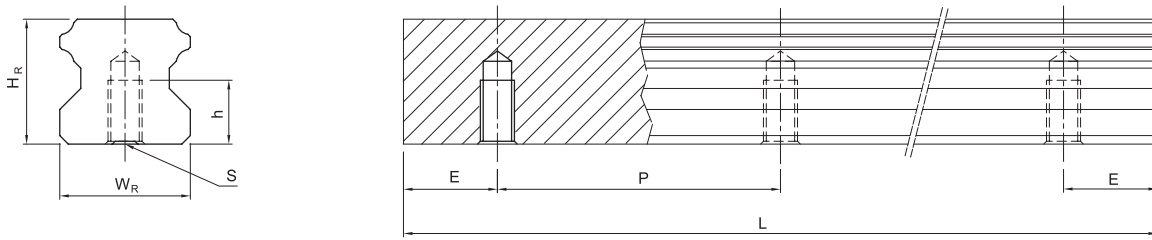
Note : 1 kqf = 9.81 N

(4) HGW-CC / HGW-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 Co (kN)	Static Rated Moment			Weight
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	M	T	T ₁	T ₂	H ₂	H ₃	W _R	H _R	D	h	d	P	E	M _R	M _P	M _Y	Block (kg)	Rail (kg/m)							
HGW 15CC	24	4.3	16	47	38	4.5	30	39.4	61.4	5.3	M5	6	8.9	6.95	4.5	5.5	15	15	7.5	5.3	4.5	60	20	M4x16	11.38	25.31	0.17	0.15	0.15	0.17	0.17	1.45			
HGW 20CC	30	4.6	21.5	63	53	5	40	50.5	75.6	12	M6	8	10	9.5	6	7	20	20	17.5	9.5	8.5	60	20	M5x16	17.75	37.84	0.38	0.27	0.27	0.38	0.40	2.21			
HGW 20HC								65.2	90.3																										
HGW 25CC	36	5.5	23.5	70	57	6.5	45	58	83	12	M8	8	14	10	6	9	23	22	11	9	7	60	20	M6x20	26.48	56.19	0.64	0.51	0.51	0.64	0.59	3.21			
HGW 25HC								78.6	103.6																										
HGW 30CC	42	6	31	90	72	9	52	70	97.4	12	M10	8.5	16	10	6.5	10.8	28	26	14	12	9	80	20	M8x25	38.74	83.06	1.06	0.85	0.85	1.06	1.09	4.47			
HGW 30HC								93	120.4																										
HGW 35CC	48	7.5	33	100	82	9	62	80	112.4	12	M10	10.1	18	13	9	12.6	34	29	14	12	9	80	20	M8x25	49.52	102.87	1.73	1.20	1.20	1.73	1.56	6.30			
HGW 35HC								105.8	138.2																										
HGW 45CC	60	9.5	37.5	120	100	10	80	97	138	12.9	M12	15.1	22	15	8.5	20.5	45	38	20	17	14	105	22.5	M12x35	77.57	155.93	3.01	2.35	2.35	3.01	2.79	10.41			
HGW 45HC								128.8	169.8																										
HGW 55CC	70	13	43.5	140	116	12	95	117.7	165.7	12.9	M14	17.5	26.5	17	12	19	53	44	23	20	16	120	30	M14x45	114.44	227.81	5.66	4.06	4.06	5.66	4.52	15.08			
HGW 55HC								155.8	203.8																										
HGW 65CC	90	15	53.5	170	142	14	110	144.2	198.2	12.9	M16	25	37.5	23	15	15	63	53	26	22	18	150	35	M16x50	163.63	324.71	10.02	6.44	6.44	10.02	6.44	9.17	21.18		
HGW 65HC								203.6	257.6																										

Note : 1 kqf = 9.81 N

(5) Dimensions for HGR-T (Rail Mounting from Below)


Model No.	Dimensions of Rail (mm)						Weight (kg/m)
	W_R	H_R	S	h	P	E	
HGR15T	15	15	M5 x 0.8P	8	60	20	1.48
HGR20T	20	17.5	M6 x 1P	10	60	20	2.29
HGR25T	23	22	M6 x 1P	12	60	20	3.35
HGR30T	28	26	M8 x 1.25P	15	80	20	4.67
HGR35T	34	29	M8x1.25P	17	80	20	6.51
HGR45T	45	38	M12 x 1.75P	24	105	22.5	10.87
HGR55T	53	44	M14 x 2P	24	120	30	15.67
HGR65T	63	53	M20 x 2.5P	30	150	35	21.73