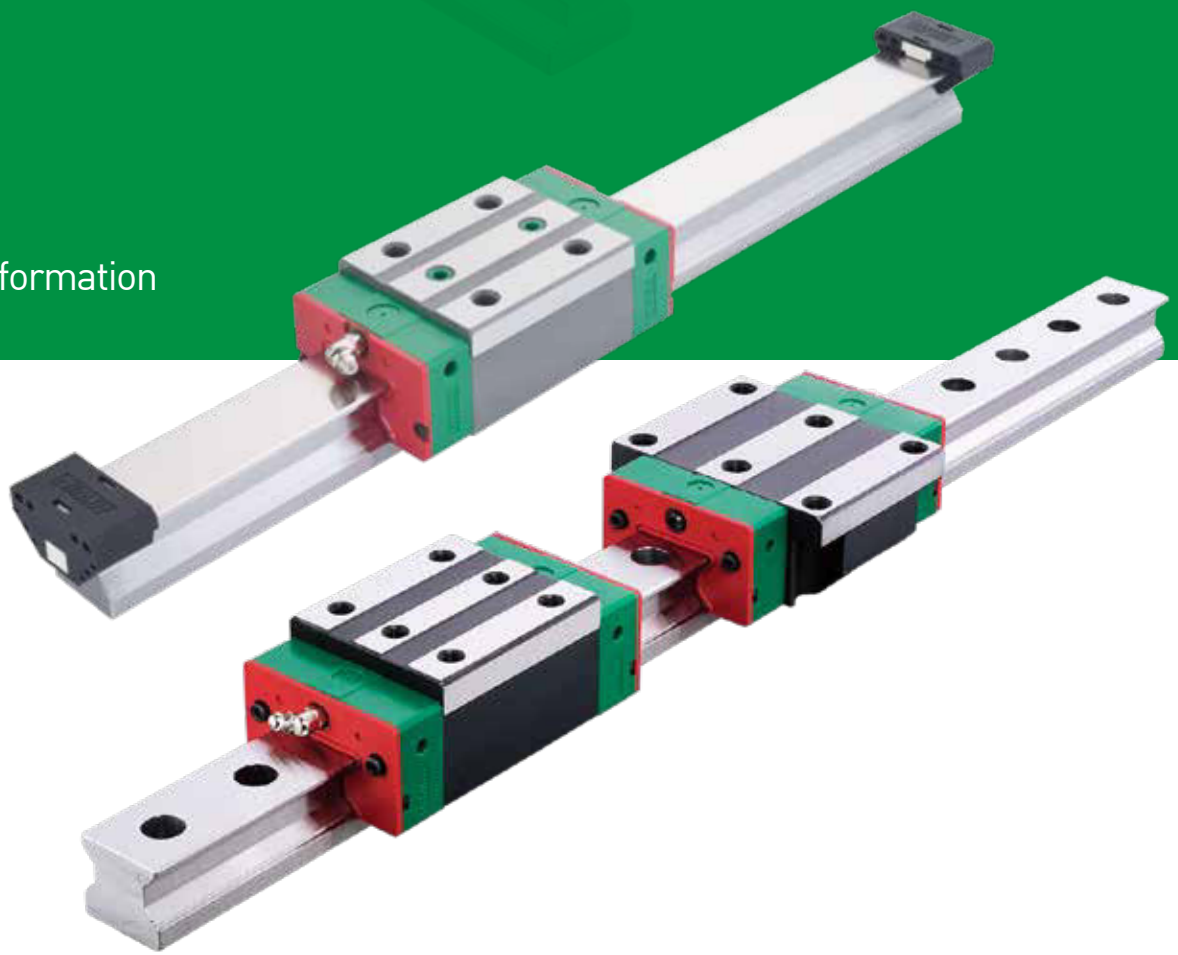
HIWIN®

# Linear Guideway

Technical Information



HIWIN Support

About HIWIN

# HG Series

Heavy Load Ball Type

## 2-1 HG Series - Heavy Load Ball Type Linear Guideway

HG series linear guideways are designed with load capacity and rigidity higher than other similar products with circular-arc groove and structure optimization. It features equal load ratings in the radial, reverse radial and lateral directions, and self-aligning to absorb installation-error. Thus, HIWIN HG series linear guideways can achieve a long life with high speed, high accuracy and smooth linear motion.

### 2-1-1 Features of HG Series

**(1) Self-aligning capability**

By design, the circular-arc groove has contact points at 45 degrees. HG series can absorb most installation errors due to surface irregularities and provide smooth linear motion through the elastic deformation of rolling elements and the shift of contact points. Self-aligning capability, high accuracy and smooth operation can be obtained with an easy installation.

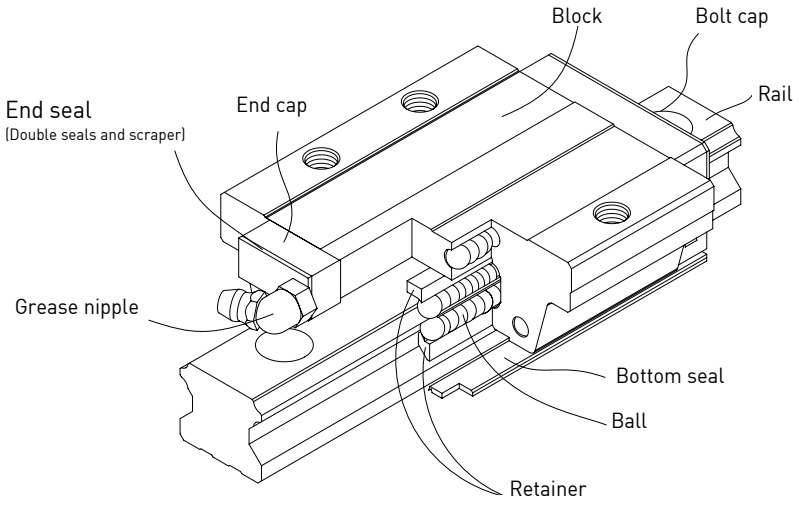
**(2) Interchangeability**

Because of precision dimensional control, the dimensional tolerance of HG series can be kept in a reasonable range, which means that any blocks and any rails in a specific series can be used together while maintaining dimensional tolerance. And a retainer is added to prevent the balls from falling out when the blocks are removed from the rail.

**(3) High rigidity in all four directions**

Because of the four-row design, the HG series linear guideway has equal load ratings in the radial, reverse radial and lateral directions. Furthermore, the circular-arc groove provides a wide-contact width between the balls and the groove raceway allowing large permissible loads and high rigidity.

### 2-1-2 Construction of HG Series

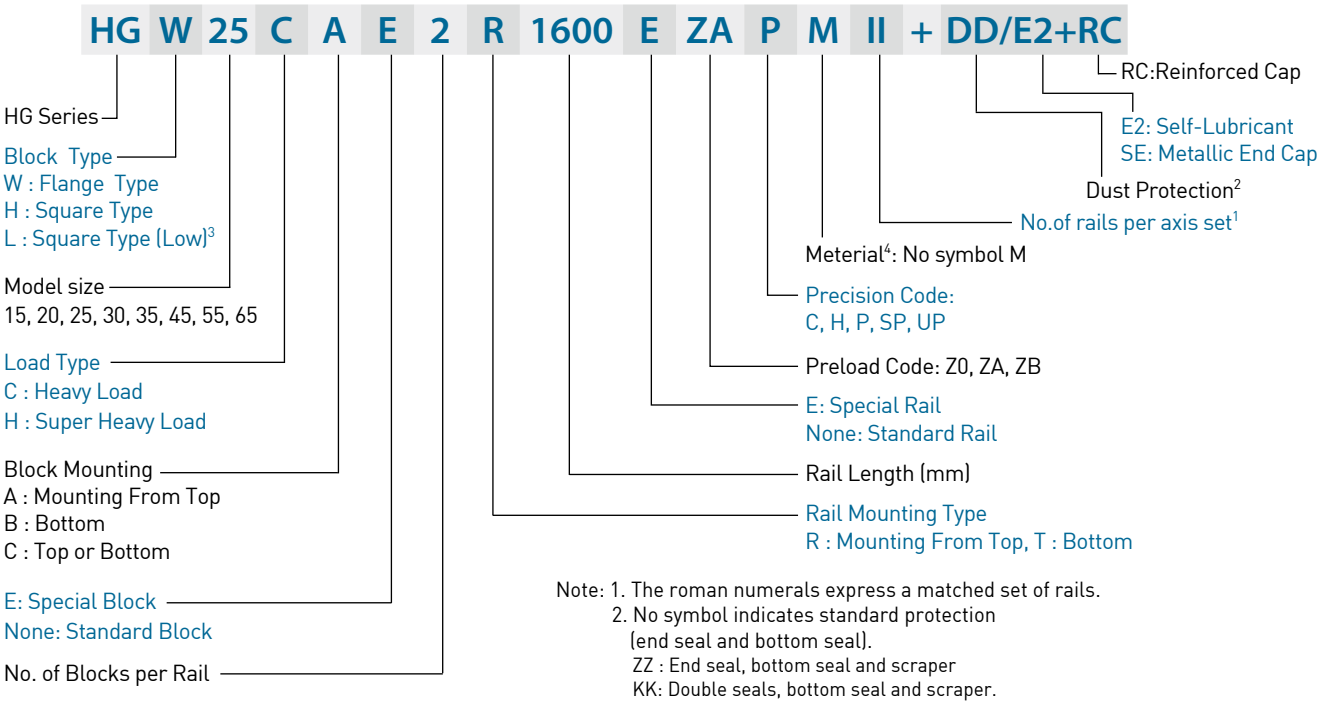



- Rolling circulation system: Block, Rail, End Cap and Retainer
- Lubrication system: Grease Nipple and Piping Joint
- Dust protection system: End seal, Bottom Seal, Bolt Cap, Double Seals and Scraper

### 2-1-3 Model Number of HG Series

HG series guideways can be classified into non-interchangeable and interchangeable types. The sizes are identical. The only difference between the two types is that the interchangeable type of blocks and rails can be freely exchanged, and their accuracy can reach up to P class. The model number of HG series contains the size, type, accuracy class, preload class, etc..

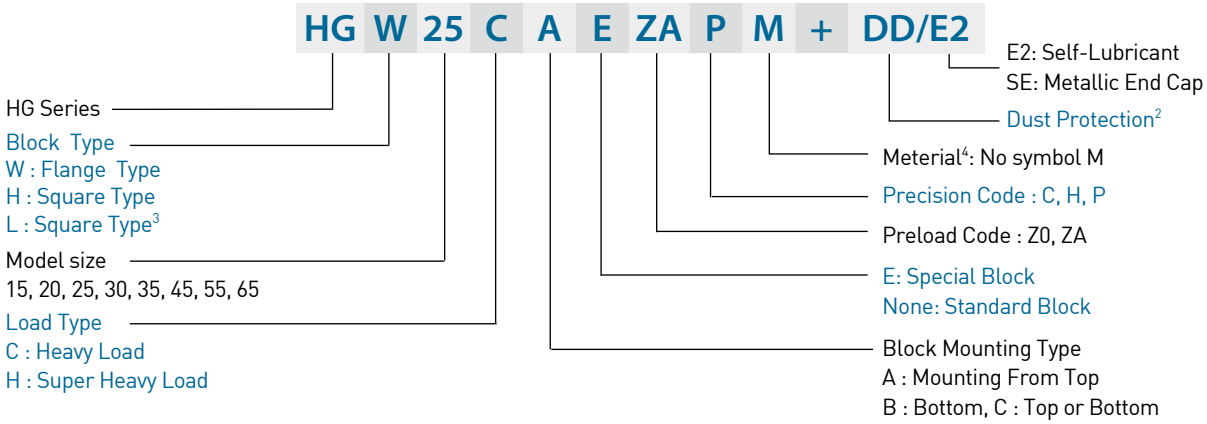
### (1) Non-interchangeable type



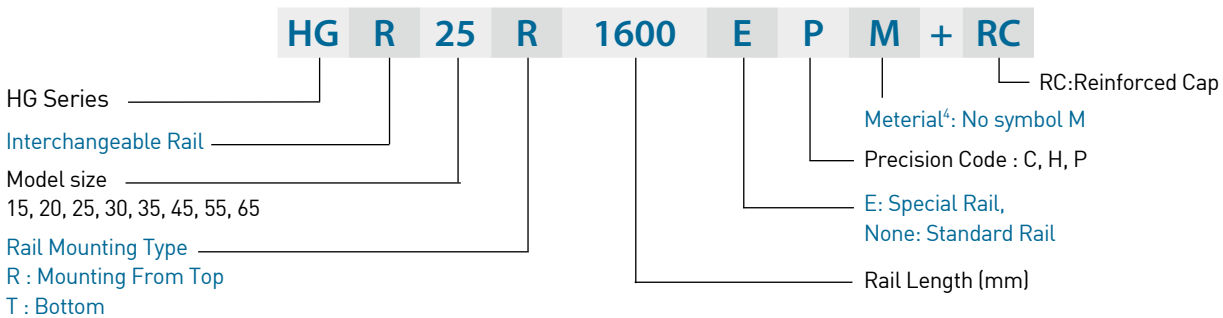

Note: 1. The roman numerals express a matched set of rails.
2. No symbol indicates standard protection
(end seal and bottom seal).
ZZ : End seal, bottom seal and scraper
KK: Double seals, bottom seal and scraper.
DD: Double seals and bottom seal
3. Block type HGL is the low profile design of HGH (square type), the assembled height is same as HGW (flange type) in same size.
4. No symbol: Carbon Steel / M: Stainless Steel
5. The stainless steel is available for HG15C、HG20C、HG25C.

### (2) Interchangeable type

- **Model Number of HG Block**




- **Model Number of HG Rail**



# HG Series

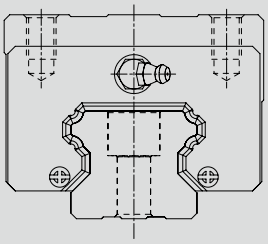
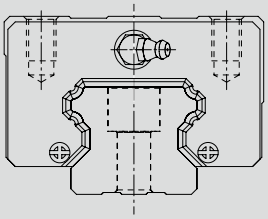
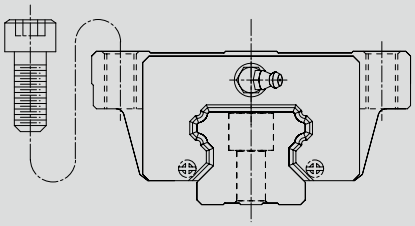
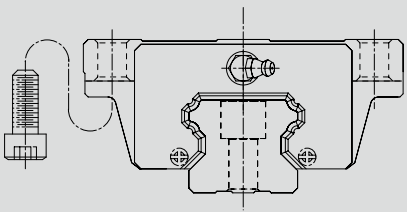
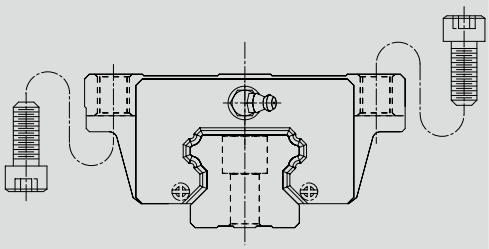
## Heavy Load Ball Type

### 2-1-4 Types

**(1) Block types**

There're two types of blocks:flange and square. The flange type is suitable for heavy moment load application because of the lower assembly height and wider mounting surface.

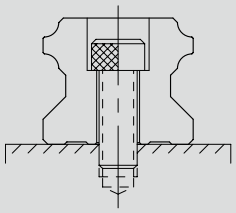
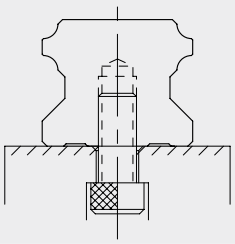
Table 2-1-1 **Block Types**

| Type | Model | Shape | Height (mm) | Rail Length (mm) | Main Application |
|---|---|---|---|---|---|
| Square | HGH-CA<br>HGH-HA |  | 28<br>↓<br>90 | 100<br>↓<br>4000 | ○ Machine Centers<br>○ NC Lathes<br>○ Grinding Machines<br>○ Precision Machining Machines<br>○ Heavy Cutting Machines<br>○ Automation Devices<br>○ Transportation Equipment<br>○ Measuring Equipment<br>○ Devices Requiring High Positional Accuracy |
| | HGL-CA<br>HGL-HA |  | 24<br>↓<br>70 | 100<br>↓<br>4000 | |
| Flange | HGW-CA<br>HGW-HA |  | 24<br>↓<br>90 | 100<br>↓<br>4000 | |
| | HGW-CB<br>HGW-HB |  | 24<br>↓<br>90 | 100<br>↓<br>4000 | |
| | HGW-CC<br>HGW-HC |  | 24<br>↓<br>90 | 100<br>↓<br>4000 | |

### (2) Rail types

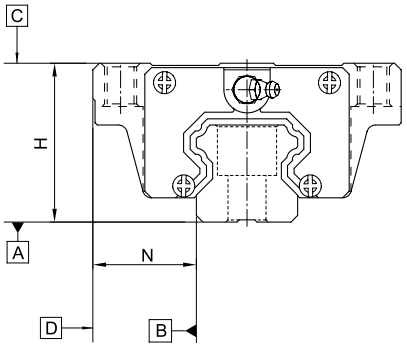
Besides the standard top mounting type, the bottom mounting type is also available.

Table 2-1-2 **Rail Types**

| Mounting from Top | Mounting from bottom |
|---|---|
|  |  |

## 2-1-5 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. Please choose the class by referring the accuracy of applied equipment.




### (1) Accuracy of non-interchangeable guideways

Table 2-1-3 **Accuracy Standards** Unit: mm

| Item | HG - 15, 20 | | | | |
|---|---|---|---|---|---|
| Accuracy Classes | Normal (C) | High (H) | Precision (P) | Super Precision (SP) | Ultra Precision (UP) |
| Dimensional tolerance of height H | ± 0.1 | ± 0.03 | 0<br>- 0.03 | 0<br>- 0.015 | 0<br>- 0.008 |
| Dimensional tolerance of width N | ± 0.1 | ± 0.03 | 0<br>- 0.03 | 0<br>- 0.015 | 0<br>- 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 2-1-11 | | | | |
| Running parallelism of block surface D to surface B | See Table 2-1-11 | | | | |

Table 2-1-4 **Accuracy Standards** Unit: mm

| Item | HG - 25, 30, 35 | | | | |
|---|---|---|---|---|---|
| Accuracy Classes | Normal (C) | High (H) | Precision (P) | Super Precision (SP) | Ultra Precision (UP) |
| Dimensional tolerance of height H | ± 0.1 | ± 0.04 | 0<br>- 0.04 | 0<br>- 0.02 | 0<br>- 0.01 |
| Dimensional tolerance of width N | ± 0.1 | ± 0.04 | 0<br>- 0.04 | 0<br>- 0.02 | 0<br>- 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 2-1-11 | | | | |
| Running parallelism of block surface D to surface B | See Table 2-1-11 | | | | |

# HG Series

## Heavy Load Ball Type

Table 2-1-5 **Accuracy Standards** Unit: mm

| Item | HG - 45, 55 | | | | |
|---|---|---|---|---|---|
| Accuracy Classes | Normal (C) | High (H) | Precision (P) | Super Precision (SP) | Ultra Precision (UP) |
| Dimensional tolerance of height H | ± 0.1 | ± 0.05 | 0<br>- 0.05 | 0<br>- 0.03 | 0<br>- 0.02 |
| Dimensional tolerance of width N | ± 0.1 | ± 0.05 | 0<br>- 0.05 | 0<br>- 0.03 | 0<br>- 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 2-1-11 | | | | |
| Running parallelism of block surface D to surface B | See Table 2-1-11 | | | | |

Table 2-1-6 **Accuracy Standards** Unit: mm

| Item | HG - 65 | | | | |
|---|---|---|---|---|---|
| Accuracy Classes | Normal (C) | High (H) | Precision (P) | Super Precision (SP) | Ultra Precision (UP) |
| Dimensional tolerance of height H | ± 0.1 | ± 0.07 | 0<br>- 0.07 | 0<br>- 0.05 | 0<br>- 0.03 |
| Dimensional tolerance of width N | ± 0.1 | ± 0.07 | 0<br>- 0.07 | 0<br>- 0.05 | 0<br>- 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 2-1-11 | | | | |
| Running parallelism of block surface D to surface B | See Table 2-1-11 | | | | |

### (2) Accuracy of interchangeable guideways

Table 2-1-7 **Accuracy Standards** Unit: mm

| Item | HG - 15, 20 | | |
|---|---|---|---|
| Accuracy Classes | 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 2-1-11 | | |
| Running parallelism of block surface D to surface B | See Table 2-1-11 | | |

Table 2-1-8 **Accuracy Standards** Unit: mm

| Item | HG - 25, 30, 35 | | |
|---|---|---|---|
| Accuracy Classes | 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 2-1-11 | | |
| Running parallelism of block surface D to surface B | See Table 2-1-11 | | |

Table 2-1-9 **Accuracy Standards** Unit: mm

| Item | HG - 45, 55 | | |
|---|---|---|---|
| Accuracy Classes | 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 2-1-11 | | |
| Running parallelism of block surface D to surface B | See Table 2-1-11 | | |

Table 2-1-10 **Accuracy Standards** Unit: mm

| Item | HG - 65 | | |
|---|---|---|---|
| Accuracy Classes | Normal (C) | High (H) | Precision (P) |
| Dimensional tolerance of height H | ± 0.1 | ± 0.07 | ± 0.035 |
| Dimensional 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 2-1-11 | | |
| Running parallelism of block surface D to surface B | See Table 2-1-11 | | |

### (3) Accuracy of running parallelism

Table 2-1-11 **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 |

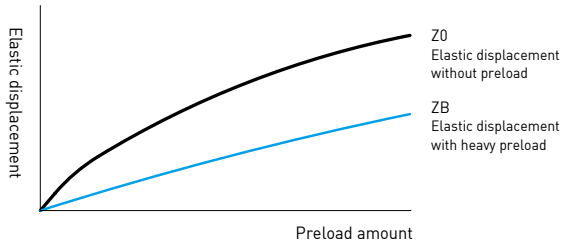
# HG Series

## Heavy Load Ball Type

### 2-1-6 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 HG20 to avoid an over-preload affecting the guideway's life.




#### (2) Preload classes

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

Table 2-1-12 **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.

#### (3) Stiffness performance

Stiffness depends on preload. The following table shows stiffness value of each size.

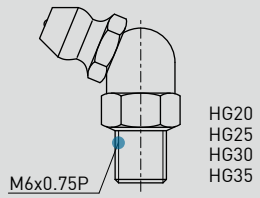
Table 2-1-13 **Radial stiffness for HG Series**

| Load type | Series / Size | Stiffness (N/μm) | | |
|---|---|---|---|---|
| | | Z0 | ZA | ZB |
| Heavy load | HG 15C | 196 | 365 | 483 |
| | HG 20C | 232 | 460 | 678 |
| | HG 25C | 292 | 539 | 705 |
| | HG 30C | 354 | 618 | 823 |
| | HG 35C | 395 | 642 | 865 |
| | HG 45C | 505 | 738 | 980 |
| | HG 55C | 609 | 828 | 1092 |
| | HG 65C | 716 | 918 | 1201 |
| Super heavy load | HG 20H | 300 | 611 | 824 |
| | HG 25H | 378 | 715 | 935 |
| | HG 30H | 453 | 820 | 1093 |
| | HG 35H | 509 | 855 | 1150 |
| | HG 45H | 649 | 970 | 1298 |
| | HG 55H | 789 | 1085 | 1445 |
| | HG 65H | 946 | 1221 | 1599 |

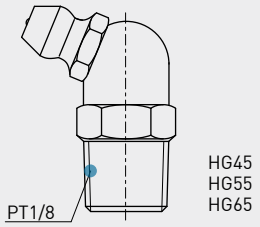
## 2-1-7 Lubrication

### (1) Grease

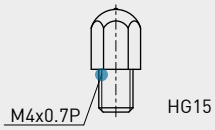
#### Grease nipple



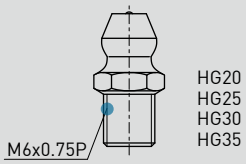

NO.34320001



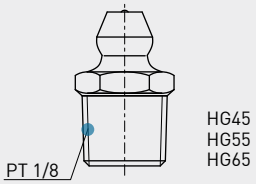

NO.34320003




N0.34310002



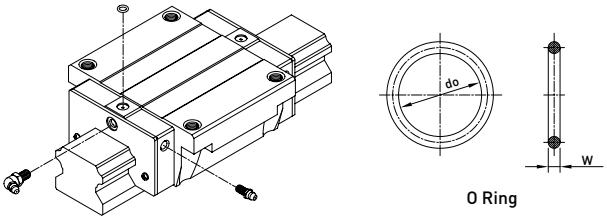

NO. 34310003(OPTION)




NO.3431000B(OPTION)

#### Mounting location

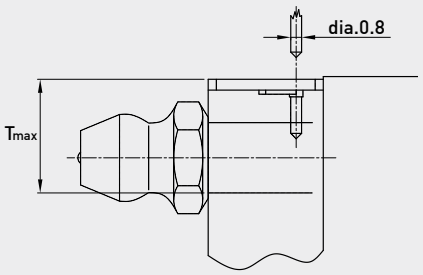
The standard location of the grease fitting is at either end of the block, but the nipple can be mounted at either side of the block instead. For side installation, contact HIWIN to pre-drill the block at the desired location.




O Ring

Table 2-1-14 **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) |
| HG15 | 2.5±0.15 | 1.5±0.15 | 3.75 |
| HG20 | 4.5±0.15 | 1.5±0.15 | 5.7 |
| HG25 | 4.5±0.15 | 1.5±0.15 | 5.8 |
| HG30 | 4.5±0.15 | 1.5±0.15 | 6.3 |
| HG35 | 4.5±0.15 | 1.5±0.15 | 8.8 |
| HG45 | 4.5±0.15 | 1.5±0.15 | 8.2 |
| HG55 | 4.5±0.15 | 1.5±0.15 | 11.8 |
| HG65 | 4.5±0.15 | 1.5±0.15 | 10.8 |




#### The lubricant amount for a block filled with grease

Table 2-1-15 **The lubricant Amount for a Block Filled with Grease**

| Size | Heavy load ($cm^3$) | Super heavy load ($cm^3$) | Size | Heavy load ($cm^3$) | Super heavy load ($cm^3$) |
|---|---|---|---|---|---|
| HG15 | 1 | - | HG35 | 10 | 12 |
| HG20 | 2 | 3 | HG45 | 17 | 21 |
| HG25 | 5 | 6 | HG55 | 26 | 33 |
| HG30 | 7 | 8 | HG65 | 50 | 61 |

#### Frequency of replenishment

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

# HG Series

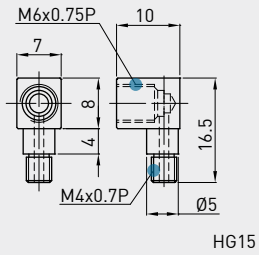
## Heavy Load Ball Type

### (2) Oil

The recommended viscosity of oil is about 30~150cSt. If customers need to use oil-type lubrication, please inform us.

**Types of oil piping joint**

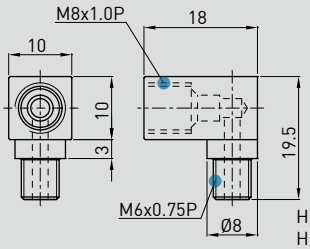
LF-64




HG15

NO.97000EA1

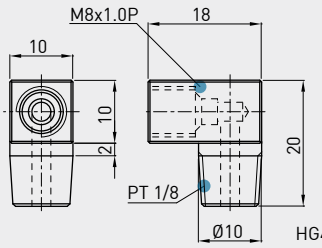
LF-76




HG20
HG25
HG30
HG35

NO.970002A1

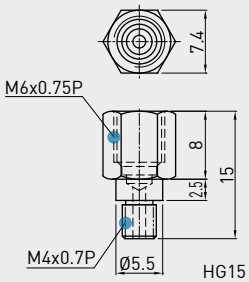
LF-78




HG45
HG55
HG65

NO.970006A1

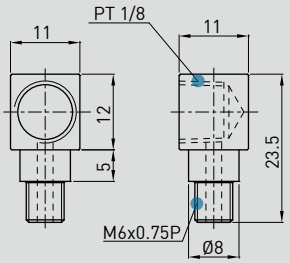
SF-64




HG15

NO.97001TA1

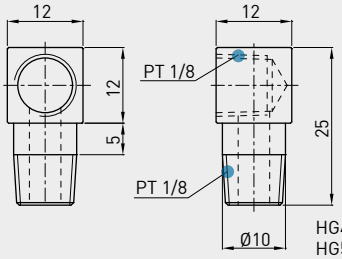
LF-86




HG20
HG25
HG30
HG35

NO.970004A1

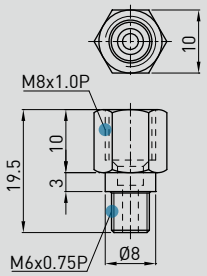
LF-88




HG45
HG55
HG65

NO.970008A1

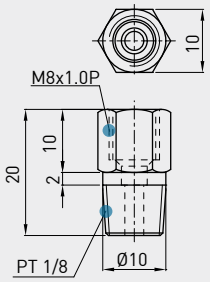
SF-76




HG20
HG25
HG30
HG35

NO.970001A1

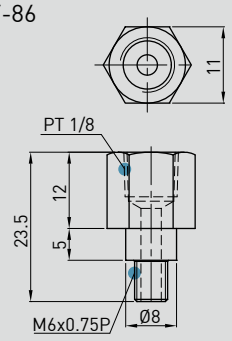
SF-78




HG45
HG55
HG65

NO.970005A1

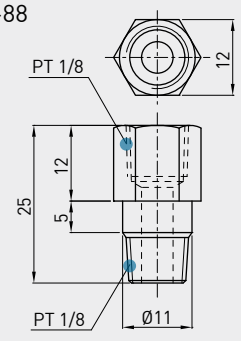
SF-86




HG20
HG25
HG30
HG35

NO.970003A1

SF-88




HG45
HG55
HG65

NO.970007A1

### Oil refilling rate

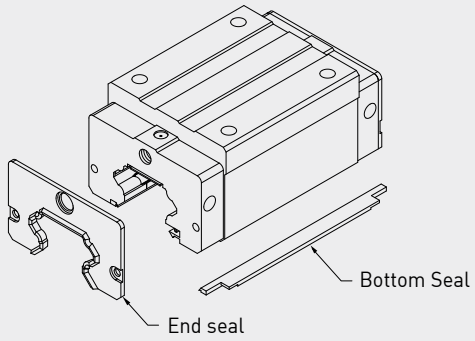
Table 2-1-16

| Size | Refilling rate ($cm^3/hr$) | Size | Refilling 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 |

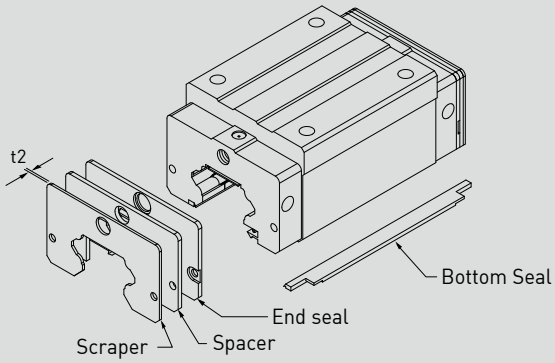
## 2-1-8 Dust Proof Accessories

### (1) Codes of standard dust proof accessories

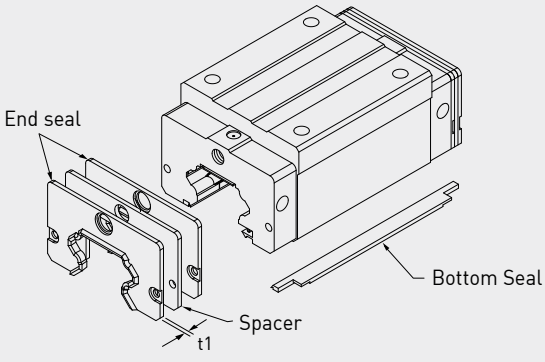
If the following accessories are needed, please add the code followed by the model number.



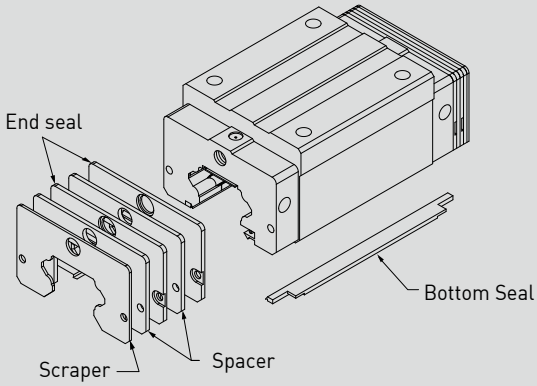

No symbol: Standard Protection (End seal + Bottom Seal)




**ZZ** (End seal + Bottom Seal + Scraper)




**DD** (Double seals + Bottom Seal)




**KK** (Double seals + Bottom Seal + Scraper)

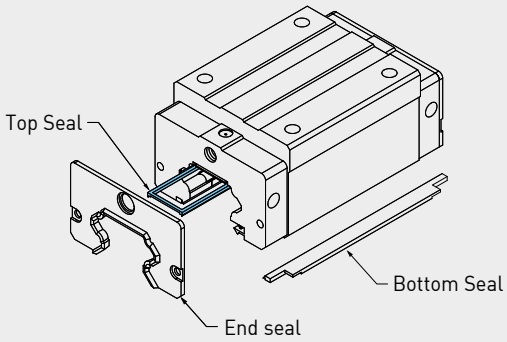
Note: HG20/25/65 are without spacer.

# HG Series

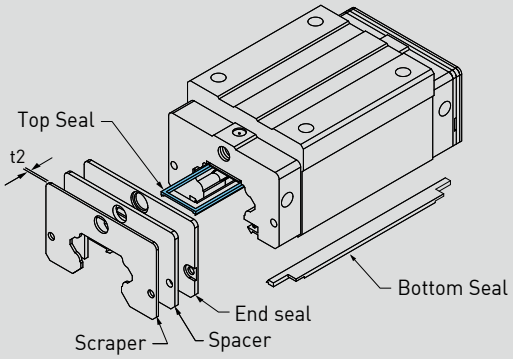
## Heavy Load Ball Type

### (2) Codes of high-dust proof accessories

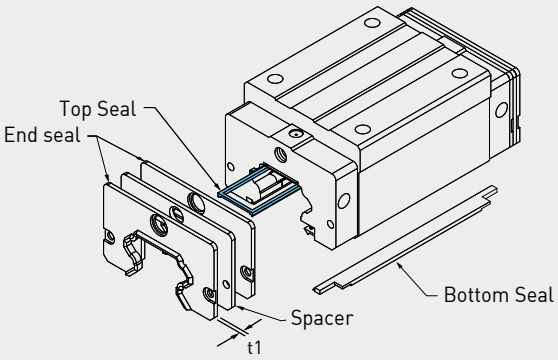
HIWIN develops many kinds of dust proof accessories for different application and working environment to avoid dust or debris. If the following accessories are needed, please add the code followed by the model number.



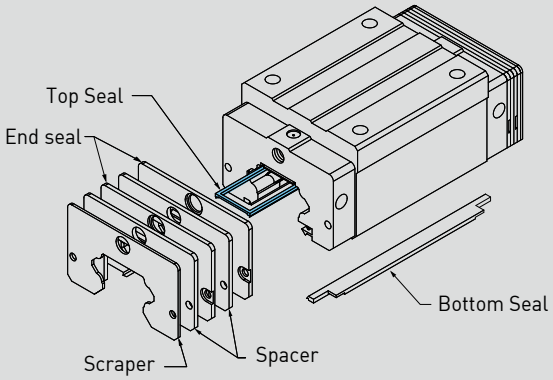

**SH** {End Seal (High-Dust Proof)
+ Bottom Seal (High Dust Proof) + Top Seal}




**ZH** {End Seal (High-Dust Proof)
+Bottom Seal (High Dust Proof) + Top Seal + Spacer}




**DH** {Double End Seal (High Dust Proof)
+Bottom Seal (High Dust Proof) + Top Seal}

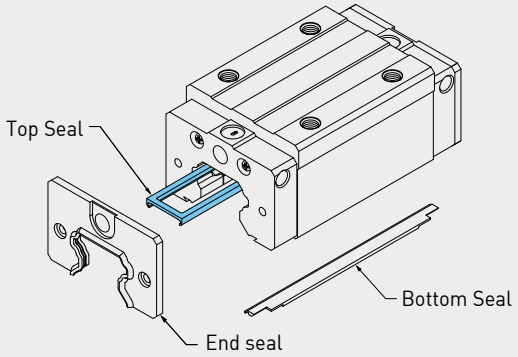



**KH** {Double End Seal (High Dust Proof)
+ Bottom Seal (High Dust Proof) +Top Seal +Scraper}

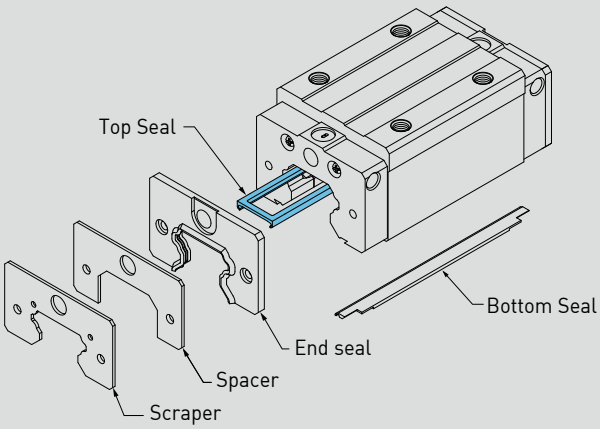
Note: 1. The available size for high dust proof accessories are HG20(C/H), 25(C/H), 30(C/H), 35(C/H) and 45C.
2. The value of fricton force will increase 0.6~1.2 kgf.
3. HG20/25 are without spacer.
4. If higher dust proof accessories is needed , please contact HIWIN.

### (3) Codes of ultra-high dust proof accessories

Hiwin has developed high dust proof accessories which is used for environment that is full of dust and particle, such as wood working machinery and glass/stone machining equipment. These accessories show high performance of dust proof. If accessories are needed, please add the code followed by the model number.




**SW** (End Seal(Ultra-high dustproof) +Bottom Seal(Ultra-high dustproof) +Top Seal)




**ZW** (End Seal(Ultra-high dustproof) +Bottom Seal(Ultra-high dustproof) +Top Seal+Scraper)

Note : 1. The available size for high dust proof accessories are HG15C, HG20(C/H), HG25(C/H), HG30(C/H), HG35(C/H), HG45(C/H).
2. The value of fricton force will increase 1.5~4.0 kgf.
3. MGN5 is only supplied with End Seal (Ultra-high dustproof)

### (4) Fuction of dust proof accessories

#### End seal and bottom seal

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

#### Double seals

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

Table 2-1-17 **Dimensions of end seal**

| Size | Thickness (t1) (mm) | Size | Thickness (t1) (mm) |
|---|---|---|---|
| HG15 ES | 3 | HG35 ES | 3.2 |
| HG20 ES | 3.5 | HG45 ES | 4.5 |
| HG25 ES | 3.5 | HG55 ES | 4.5 |
| HG30 ES | 3.2 | HG65 ES | 6 |

#### Scraper

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

Table 2-1-18 **Dimensions of scraper**

| Size | Thickness (t2) (mm) | Size | Thickness (t2) (mm) |
|---|---|---|---|
| HG15 SC | 1.5 | HG35 SC | 1.5 |
| HG20 SC | 1.5 | HG45 SC | 1.5 |
| HG25 SC | 1.5 | HG55 SC | 1.5 |
| HG30 SC | 1.5 | HG65 SC | 1.5 |

#### Top Seal

Top seal can efficiently avoid dust from the surface of rail or tapping hole getting inside the block.

# HG Series

## Heavy Load Ball Type

### Bolt caps for rail mounting holes

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

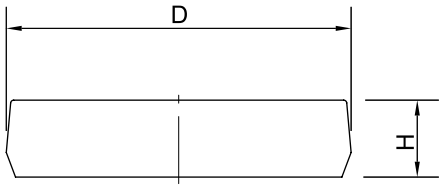



Table 2-1-19 **Dimensions of Bolt Caps for Rail Mounting Holes**

| Rail size | Bolt size | Diameter(D) (mm) | Thickness(H) (mm) | Rail size | Bolt size | Diameter(D) (mm) | Thickness(H) (mm) |
|---|---|---|---|---|---|---|---|
| HGR15 | M4 | 7.65 | 1.1 | HGR35 | M8 | 14.20 | 3.5 |
| HGR20 | M5 | 9.65 | 2.5 | HGR45 | M12 | 20.25 | 4.5 |
| HGR25 | M6 | 11.15 | 2.5 | HGR55 | M14 | 23.25 | 5.0 |
| HGR30 | M8 | 14.20 | 3.5 | HGR65 | M16 | 26.35 | 5.0 |

(5) Dimensions of block equipped with the parts

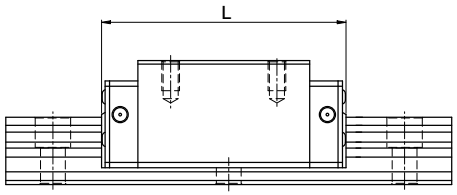



Table 2-1-20 **Overall block length**

unit: mm

| Size | Overall block length (L) | | | | | |
|---|---|---|---|---|---|---|
| | SS/SH | ZZ/ZH | DD/DH | KK/KH | SW | ZW |
| HG15C | 61.4 (61.8) | 69.0 (69.0) | 68.0 (68.4) | 75.6 (75.6) | 63.2 (63.2) | 71.0 (71.0) |
| *HG20C | 77.5 (79.3) | 82.5 (84.5) | 82.5 (84.3) | 87.5 (89.5) | 78.5 (78.5) | 86.3 (87.7) |
| *HG20H | 92.2 (94.0) | 97.2 (99.2) | 97.5 (99.0) | 102.2 (104.2) | 93.2 (93.2) | 101.0 (102.4) |
| *HG25C | 84.0 (85.0) | 89.0 (91.0) | 89.0 (90.0) | 94.0 (96.0) | 85.0 (85.0) | 92.8 (94.8) |
| *HG25H | 104.6 (105.6) | 109.6 (111.6) | 109.6 (110.6) | 114.6 (116.6) | 105.6 (105.6) | 113.4 (115.4) |
| *HG30C | 97.4 (99.4) | 105.4 (107.4) | 104.8 (106.8) | 112.8 (114.8) | 99.0 (100.4) | 107.2 (109.2) |
| *HG30H | 120.4 (122.4) | 128.4 (130.4) | 127.8 (129.8) | 135.8 (137.8) | 122.0 (123.4) | 130.2 (132.2) |
| *HG35C | 112.4 (114.4) | 120.4 (122.4) | 119.8 (121.8) | 127.8 (129.8) | 115.2 (116.0) | 123.4 (125.4) |
| *HG35H | 138.2 (140.2) | 146.2 (148.2) | 145.6 (147.6) | 153.6 (155.6) | 141.0 (141.8) | 149.2 (151.2) |
| *HG45C | 139.4 (139.4) | 150.0 (150.0) | 149.4 (149.4) | 160.0 (160.0) | 140.0 (140.0) | 148.8 (150.2) |
| HG45H | 171.2 (171.2) | 181.8 (181.8) | 181.2 (181.2) | 191.8 (191.8) | 171.8 (171.8) | 180.6 (182.0) |
| HG55C | 166.7 (166.7) | 177.1 (177.1) | 177.1 (177.1) | 187.5 (187.5) | - | - |
| HG55H | 204.8 (204.8) | 215.2 (215.2) | 215.2 (215.2) | 225.6 (225.6) | - | - |
| HG65C | 200.2 (200.2) | 208.2 (208.2) | 209.2 (209.2) | 217.2 (217.2) | - | - |
| HG65H | 259.6 (259.6) | 267.6 (267.6) | 268.6 (268.6) | 276.6 (276.6) | - | - |

Note : 1. For the marking of "*", it means this specification is available for SH/ZH/DH/KH dust proof accessories.
2. The marking of "( )" denotes the maximum block length with screws, lips of end seals, etc.

## 2-1-9 Friction

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

Table 2-1-21 **Seal Resistance**

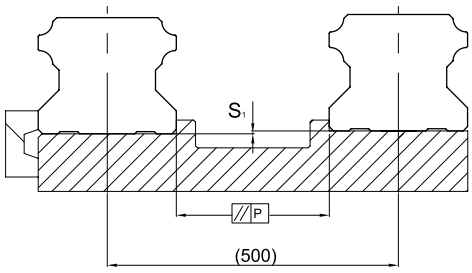
| Size | Resistance N (kgf) | Size | Resistance N (kgf) |
|---|---|---|---|
| HG15 | 2.35 (0.24) | HG35 | 4.91 (0.5) |
| HG20 | 2.75 (0.28) | HG45 | 3.83 (0.39) |
| HG25 | 3.14 (0.32) | HG55 | 4.61 (0.47) |
| HG30 | 3.53 (0.36) | HG65 | 5.79 (0.59) |

Note: 1. 1kgf=9.81N
2. Please inform HIWIN if low friction request is required.

## 2-1-10 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 compensate for some surface-error on installation and still maintain smooth linear motion.
As long as the accuracy requirements for the mounting surface are followed, high accuracy and rigidity of linear motion of the guideway can be obtained without any difficulty. For fast installation and smooth movement ability of the deviation in mounting surface accuracy.




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

Table 2-1-22 **Max. Parallelism Tolerance (P)** unit: μm

| Size | Preload classes | | |
|---|---|---|---|
| | Z0 | ZA | ZB |
| HG15 | 25 | 18 | 13 |
| HG20 | 25 | 20 | 18 |
| HG25 | 30 | 22 | 20 |
| HG30 | 40 | 30 | 27 |
| HG35 | 50 | 35 | 30 |
| HG45 | 60 | 40 | 35 |
| HG55 | 70 | 50 | 45 |
| HG65 | 80 | 60 | 55 |

### (3) The accuracy tolerance of reference surface height

Table 2-1-23 **Max. Tolerance of Reference Surface Height ($S_1$)** unit: μm

| Size | Preload classes | | |
|---|---|---|---|
| | Z0 | ZA | ZB |
| HG15 | 130 | 85 | 35 |
| HG20 | 130 | 85 | 50 |
| HG25 | 130 | 85 | 70 |
| HG30 | 170 | 110 | 90 |
| HG35 | 210 | 150 | 120 |
| HG45 | 250 | 170 | 140 |
| HG55 | 300 | 210 | 170 |
| HG65 | 350 | 250 | 200 |

Note : Permissible value is proportional to the axial distance

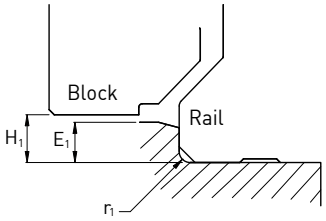
# HG Series

## Heavy Load Ball Type

### 2-1-11 Cautions for Installation

**(1) Shoulder heights and fillets**

Improper shoulder heights and fillets of mounting surfaces will cause a deviation in accuracy and the interference with the rail or block. As long as the recommended shoulder heights and fillets are followed, installation inaccuracies should be eliminated.



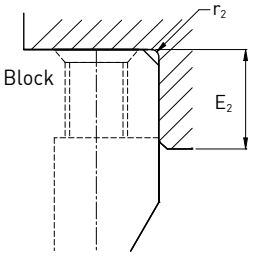




Table 2-1-24 **Shoulder Heights and Fillets**

| Size | Max. radius of fillets $r_1$ (mm) | Max. radius of fillets $r_2$ (mm) | Shoulder height beside the rail $E_1$ (mm) | Shoulder height beside 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) Tightening Torque of Bolts for Installation**

Improper tightening of bolts will seriously influence the accuracy of Linear Guideway installation. The following tightening torques for different sizes of bolts are recommended.

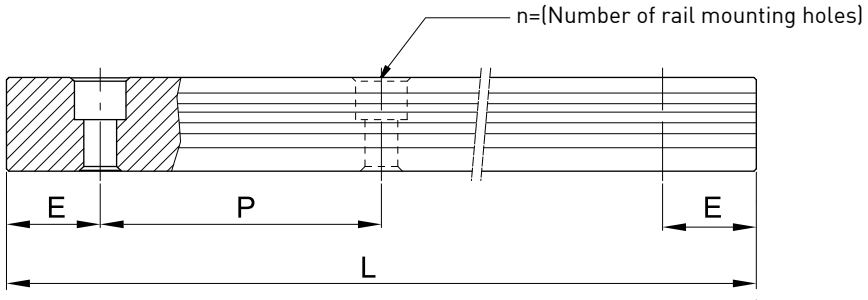
Table 2-1-25 **Mounting Torque**

| Size | Bolt size | Torque N-cm (kgf-cm) | | |
|---|---|---|---|---|
| | | Iron | Casting | Aluminum |
| HG15 | M4×0.7P×16L | 392 (40) | 274 (28) | 206 (21) |
| HG20 | M5×0.8P×16L | 883 (90) | 588 (60) | 441 (45) |
| HG25 | M6×1P×20L | 1373 (140) | 921 (94) | 686 (70) |
| HG30 | M8×1.25P×25L | 3041 (310) | 2010 (205) | 1470 (150) |
| HG35 | M8×1.25P×25L | 3041 (310) | 2010 (205) | 1470 (150) |
| HG45 | M12×1.75P×35L | 11772 (1200) | 7840 (800) | 5880 (600) |
| HG55 | M14×2P×45L | 15696 (1600) | 10500 (1100) | 7840 (800) |
| HG65 | M16×2P×50L | 19620 (2000) | 13100 (1350) | 9800 (1000) |

Note:1 kgf=9.81 N

## 2-1-12 Standard and Maximum Lengths of Rail

HIWIN offers standard rail lengths for customer needs. For non-standard E-values, the recommended dimension should no greater than 1/2 of the pitch (P) dimension. This will prevent an unstable rail end.




$$L = (n-1) \times P + 2 \times E \quad \text{Eq.2.1}$$

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 2-1-26 **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 | 4,000(67) | 4,000 (67) | 4,000 (67) | 3,960 (50) | 3,960 (50) | 3,930 (38) | 3,900 (33) | 3,970 (27) |
| Max. Length | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 |

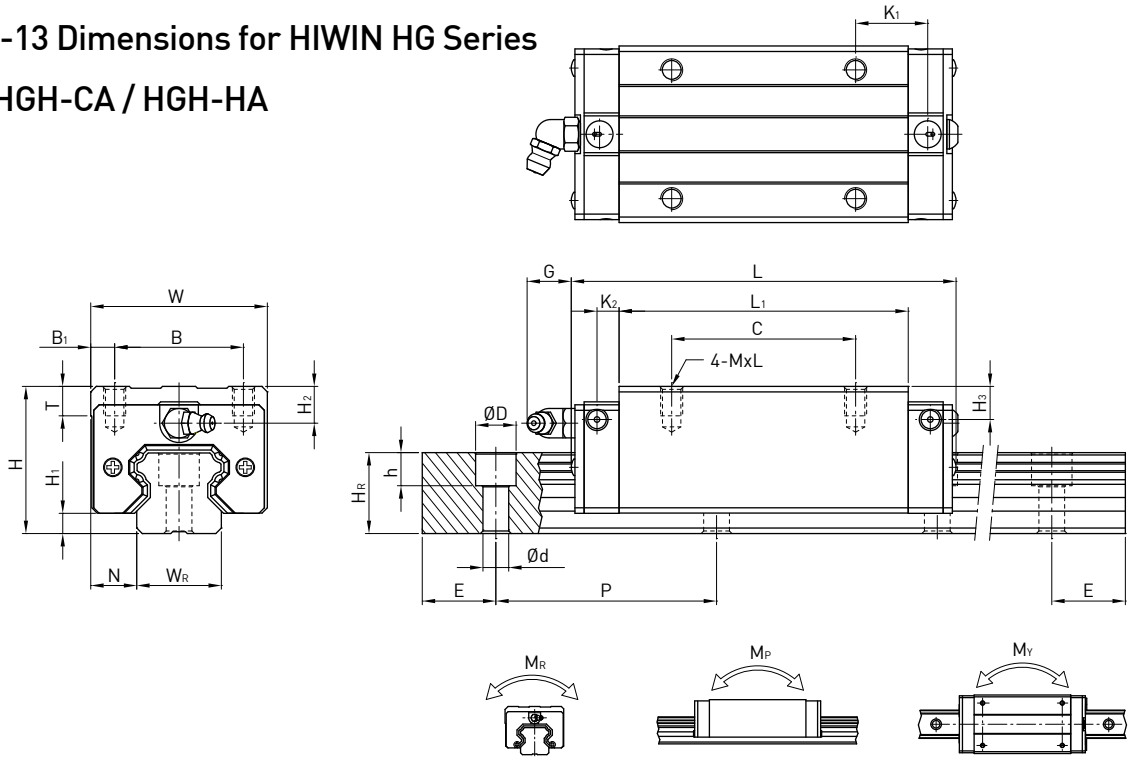
Note : 1. Tolerance of E value for standard rail is 0.5~-0.5 mm. Tolerance of E value for jointed rail is 0~-0.3 mm.
2. Maximum standard length means the max. rail length with standard E value on both sides.
3. If different E value is needed, please contact HIWIN.
4. HGR15/HGR20/HGR25 of stainless steel is supplied with the maximum length of 2000mm.

# HG Series

## Heavy Load Ball Type

### 2-1-13 Dimensions for HIWIN HG Series

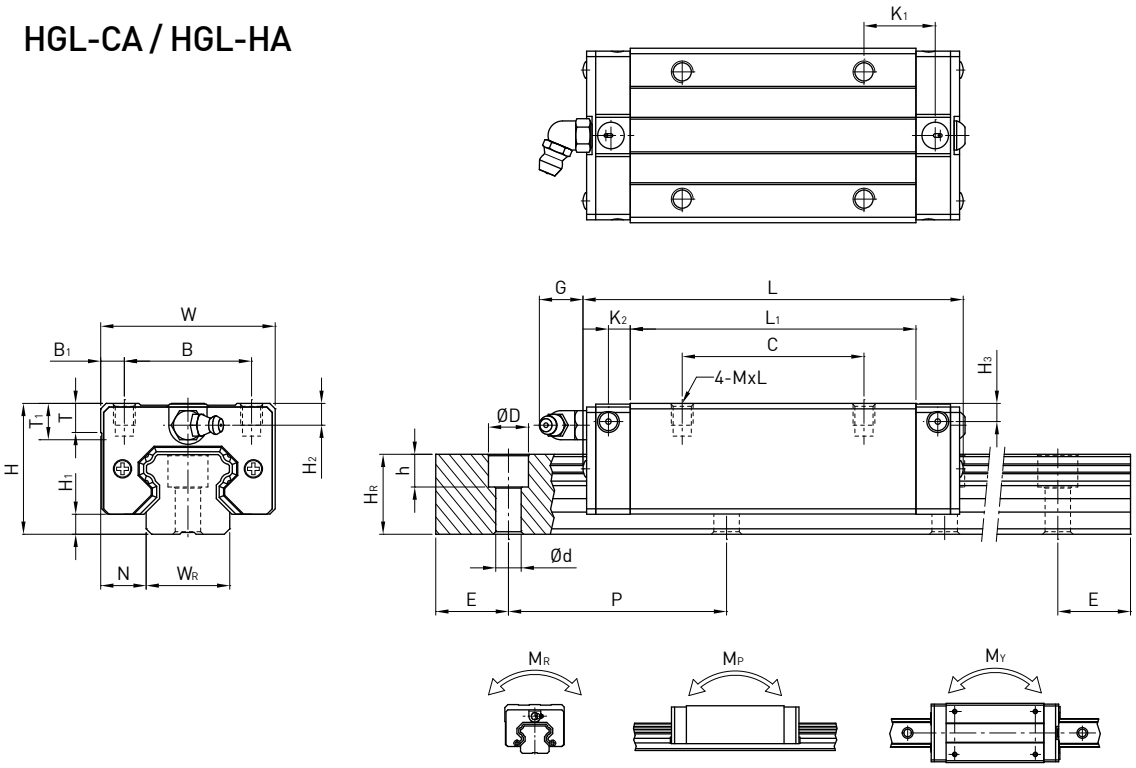
### (1) HGH-CA / HGH-HA




| Model No. | Dimensions of Assembly (mm) | | | Dimensions of Block (mm) | | | | | | | | | | | | | Dimensions of Rail (mm) | | | | | | | Mounting Bolt for Rail | Basic Dynamic Load Rating | Basic Static Load Rating | Static Rated Moment | | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | $H_1$ | N | W | B | $B_1$ | C | $L_1$ | L | $K_1$ | $K_2$ | G | Mxl | T | $H_2$ | $H_3$ | $W_R$ | $H_R$ | D | h | d | P | E | (mm) | C(kN) | $C_0$ (kN) | $M_R$ kN-m | $M_P$ kN-m | $M_Y$ kN-m | Block kg | Rail kg/m |
| HGH15CA | 28 | 4.3 | 9.5 | 34 | 26 | 4 | 26 | 39.4 | 61.4 | 10 | 4.85 | 5.3 | M4x5 | 6 | 7.95 | 7.7 | 15 | 15 | 7.5 | 5.3 | 4.5 | 60 | 20 | M4x16 | 14.7 | 23.47 | 0.12 | 0.10 | 0.10 | 0.18 | 1.45 |
| HGH20CA | 30 | 4.6 | 12 | 44 | 32 | 6 | 36 | 50.5 | 77.5 | 12.25 | 6 | 12 | M5x6 | 8 | 6 | 6 | 20 | 17.5 | 9.5 | 8.5 | 6 | 60 | 20 | M5x16 | 27.1 | 36.68 | 0.27 | 0.20 | 0.20 | 0.30 | 2.21 |
| HGH20HA | | | | | | | 50 | 65.2 | 92.2 | 12.6 | | | | | | | | | | | | | | | 32.7 | 47.96 | 0.35 | 0.35 | 0.35 | 0.39 | |
| HGH25CA | 40 | 5.5 | 12.5 | 48 | 35 | 6.5 | 35 | 58 | 84 | 15.7 | 6 | 12 | M6x8 | 8 | 10 | 9 | 23 | 22 | 11 | 9 | 7 | 60 | 20 | M6x20 | 34.9 | 52.82 | 0.42 | 0.33 | 0.33 | 0.51 | 3.21 |
| HGH25HA | | | | | | | 50 | 78.6 | 104.6 | 18.5 | | | | | | | | | | | | | | | 42.2 | 69.07 | 0.56 | 0.57 | 0.57 | 0.69 | |
| HGH30CA | 45 | 6 | 16 | 60 | 40 | 10 | 40 | 70 | 97.4 | 20.25 | 6 | 12 | M8x10 | 8.5 | 9.5 | 13.8 | 28 | 26 | 14 | 12 | 9 | 80 | 20 | M8x25 | 48.5 | 71.87 | 0.66 | 0.53 | 0.53 | 0.88 | 4.47 |
| HGH30HA | | | | | | | 60 | 93 | 120.4 | 21.75 | | | | | | | | | | | | | | | 58.6 | 93.99 | 0.88 | 0.92 | 0.92 | 1.16 | |
| HGH35CA | 55 | 7.5 | 18 | 70 | 50 | 10 | 50 | 80 | 112.4 | 20.6 | 7 | 12 | M8x12 | 10.2 | 16 | 19.6 | 34 | 29 | 14 | 12 | 9 | 80 | 20 | M8x25 | 64.6 | 93.88 | 1.16 | 0.81 | 0.81 | 1.45 | 6.30 |
| HGH35HA | | | | | | | 72 | 105.8 | 138.2 | 22.5 | | | | | | | | | | | | | | | 77.9 | 122.77 | 1.54 | 1.40 | 1.40 | 1.92 | |
| HGH45CA | 70 | 9.5 | 20.5 | 86 | 60 | 13 | 60 | 97 | 139.4 | 23 | 10 | 12.9 | M10x17 | 16 | 18.5 | 30.5 | 45 | 38 | 20 | 17 | 14 | 105 | 22.5 | M12x35 | 103.8 | 146.71 | 1.98 | 1.55 | 1.55 | 2.73 | 10.41 |
| HGH45HA | | | | | | | 80 | 128.8 | 171.2 | 28.9 | | | | | | | | | | | | | | | 125.3 | 191.85 | 2.63 | 2.68 | 2.68 | 3.61 | |
| HGH55CA | 80 | 13 | 23.5 | 100 | 75 | 12.5 | 75 | 117.7 | 166.7 | 27.35 | 11 | 12.9 | M12x18 | 17.5 | 22 | 29 | 53 | 44 | 23 | 20 | 16 | 120 | 30 | M14x45 | 153.2 | 211.23 | 3.69 | 2.64 | 2.64 | 4.17 | 15.08 |
| HGH55HA | | | | | | | 95 | 155.8 | 204.8 | 36.4 | | | | | | | | | | | | | | | 184.9 | 276.23 | 4.88 | 4.57 | 4.57 | 5.49 | |
| HGH65CA | 90 | 15 | 31.5 | 126 | 76 | 25 | 70 | 144.2 | 200.2 | 43.1 | 14 | 12.9 | M16x20 | 25 | 15 | 15 | 63 | 53 | 26 | 22 | 18 | 150 | 35 | M16x50 | 213.2 | 287.48 | 6.65 | 4.27 | 4.27 | 7.00 | 21.18 |
| HGH65HA | | | | | | | 120 | 203.6 | 259.6 | 47.8 | | | | | | | | | | | | | | | 277.8 | 420.17 | 9.38 | 7.38 | 7.38 | 9.82 | |

Note : 1 kgf = 9.81 N

## (2) HGL-CA / HGL-HA



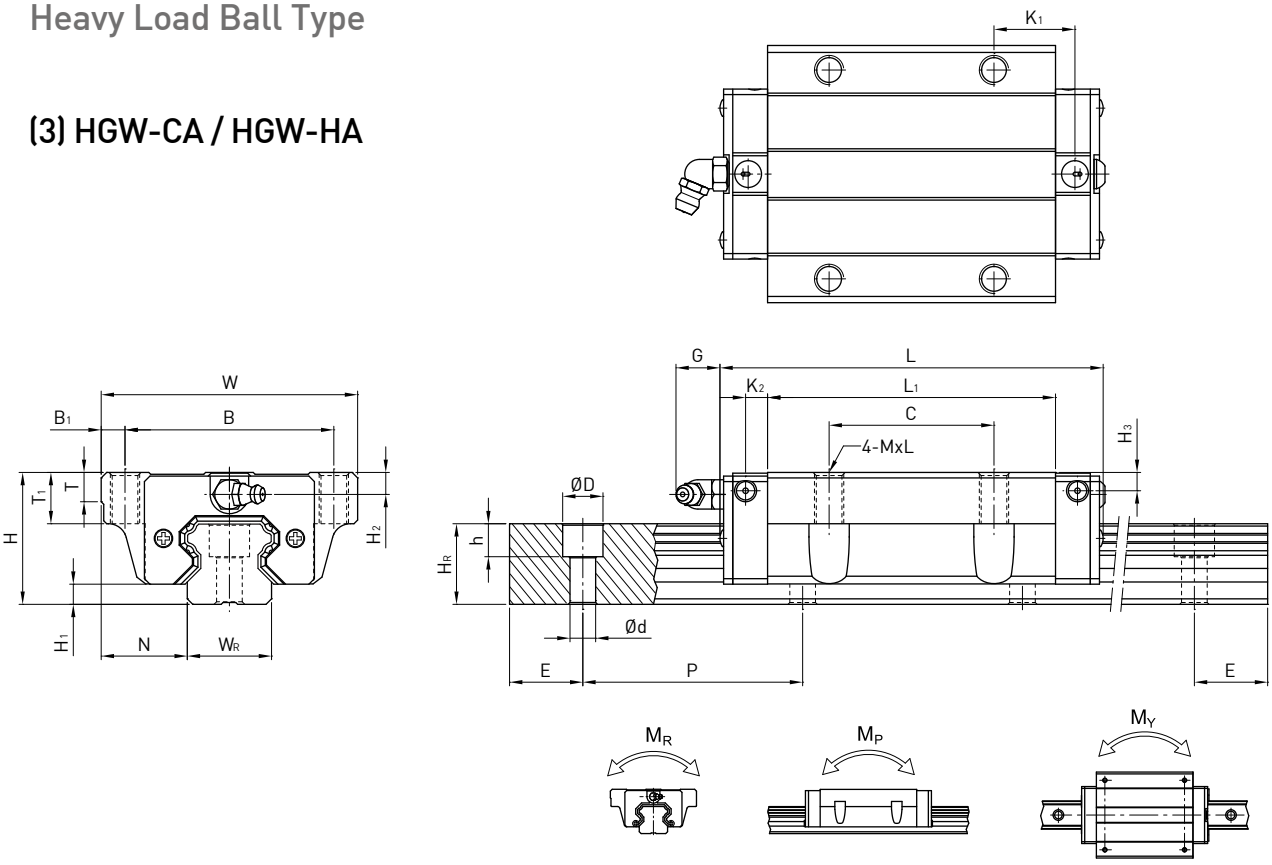

| Model No. | Dimensions of Assembly (mm) | | | Dimensions of Block (mm) | | | | | | | | | | | | | Dimensions of Rail (mm) | | | | | | | Mounting Bolt for Rail | Basic Dynamic Load Rating | Basic Static Load Rating | Static Rated Moment | | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | $H_1$ | N | W | B | $B_1$ | C | $L_1$ | L | $K_1$ | $K_2$ | G | Mxl | T | $H_2$ | $H_3$ | $W_R$ | $H_R$ | D | h | d | P | E | (mm) | C(kN) | $C_0$ (kN) | $M_R$ kN-m | $M_P$ kN-m | $M_Y$ kN-m | Block kg | Rail kg/m |
| **HGL15CA** | 24 | 4.3 | 9.5 | 34 | 26 | 4 | 26 | 39.4 | 61.4 | 10 | 4.85 | 5.3 | M4x4 | 6 | 3.95 | 3.7 | 15 | 15 | 7.5 | 5.3 | 4.5 | 60 | 20 | M4x16 | 14.7 | 23.47 | 0.12 | 0.10 | 0.10 | 0.14 | 1.45 |
| **HGL25CA** | 36 | 5.5 | 12.5 | 48 | 35 | 6.5 | 35 | 58 | 84 | 15.7 | 6 | 12 | M6x6 | 8 | 6 | 5 | 23 | 22 | 11 | 9 | 7 | 60 | 20 | M6x20 | 34.9 | 52.82 | 0.42 | 0.33 | 0.33 | 0.42 | 3.21 |
| **HGL25HA** | | | | | | | 50 | 78.6 | 104.6 | 18.5 | | | | | | | | | | | | | | | 42.2 | 69.07 | 0.56 | 0.57 | 0.57 | 0.57 | |
| **HGL30CA** | 42 | 6 | 16 | 60 | 40 | 10 | 40 | 70 | 97.4 | 20.25 | 6 | 12 | M8x10 | 8.5 | 6.5 | 10.8 | 28 | 26 | 14 | 12 | 9 | 80 | 20 | M8x25 | 48.5 | 71.87 | 0.66 | 0.53 | 0.53 | 0.78 | 4.47 |
| **HGL30HA** | | | | | | | 60 | 93 | 120.4 | 21.75 | | | | | | | | | | | | | | | 58.6 | 93.99 | 0.88 | 0.92 | 0.92 | 1.03 | |
| **HGL35CA** | 48 | 7.5 | 18 | 70 | 50 | 10 | 50 | 80 | 112.4 | 20.6 | 7 | 12 | M8x12 | 10.2 | 9 | 12.6 | 34 | 29 | 14 | 12 | 9 | 80 | 20 | M8x25 | 64.6 | 93.88 | 1.16 | 0.81 | 0.81 | 1.14 | 6.30 |
| **HGL35HA** | | | | | | | 72 | 105.8 | 138.2 | 22.5 | | | | | | | | | | | | | | | 77.9 | 122.77 | 1.54 | 1.40 | 1.40 | 1.52 | |
| **HGL45CA** | 60 | 9.5 | 20.5 | 86 | 60 | 13 | 60 | 97 | 139.4 | 23 | 10 | 12.9 | M10x17 | 16 | 8.5 | 20.5 | 45 | 38 | 20 | 17 | 14 | 105 | 22.5 | M12x35 | 103.8 | 146.71 | 1.98 | 1.55 | 1.55 | 2.08 | 10.41 |
| **HGL45HA** | | | | | | | 80 | 128.8 | 171.2 | 28.9 | | | | | | | | | | | | | | | 125.3 | 191.85 | 2.63 | 2.68 | 2.68 | 2.75 | |
| **HGL55CA** | 70 | 13 | 23.5 | 100 | 75 | 12.5 | 75 | 117.7 | 166.7 | 27.35 | 11 | 12.9 | M12x18 | 17.5 | 12 | 19 | 53 | 44 | 23 | 20 | 16 | 120 | 30 | M14x45 | 153.2 | 211.23 | 3.69 | 2.64 | 2.64 | 3.25 | 15.08 |
| **HGL55HA** | | | | | | | 95 | 155.8 | 204.8 | 36.4 | | | | | | | | | | | | | | | 184.9 | 276.23 | 4.88 | 4.57 | 4.57 | 4.27 | |

Note : 1 kgf = 9.81 N

# HG Series

## Heavy Load Ball Type

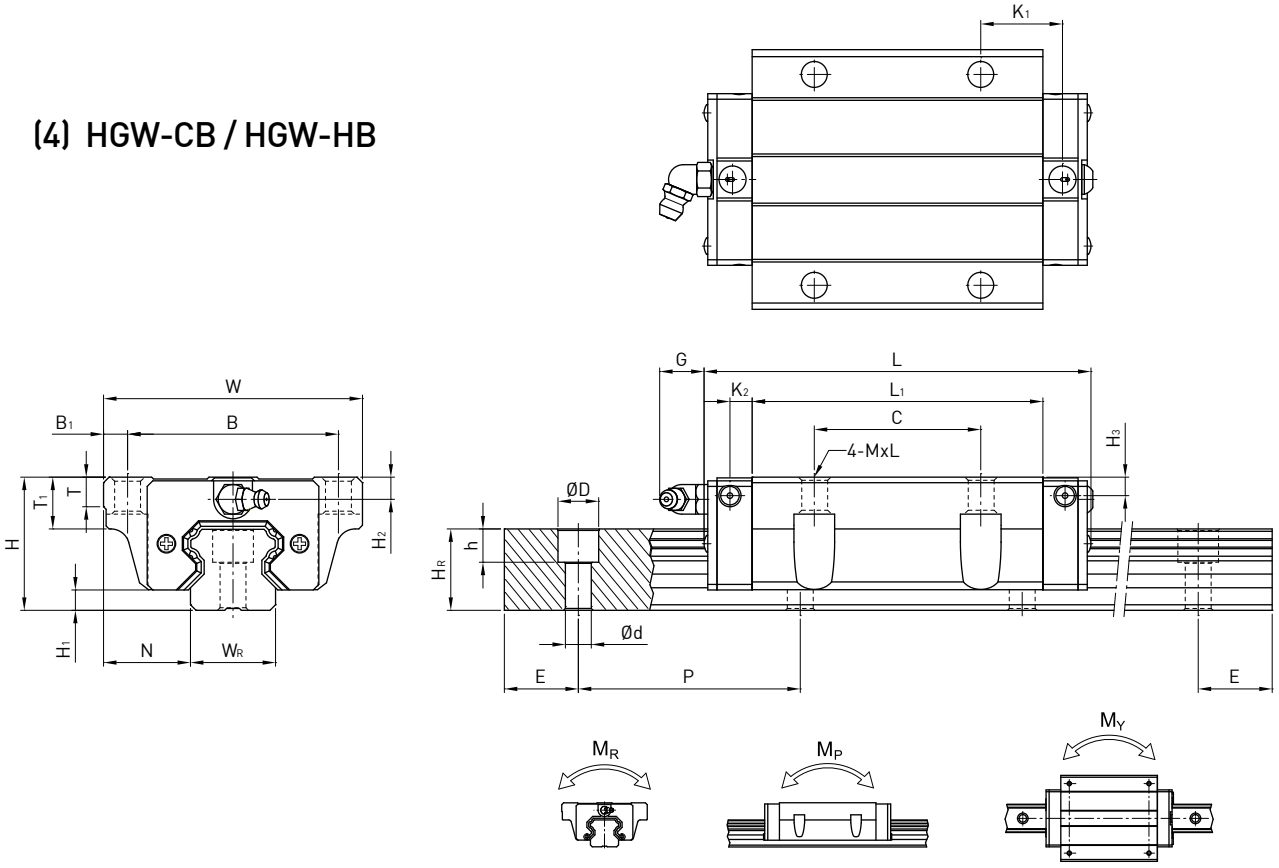
### (3) HGW-CA / HGW-HA




| Model No. | Dimensions of Assembly (mm) | | | Dimensions of Block (mm) | | | | | | | | | | | | | | Dimensions of Rail (mm) | | | | | | | Mounting Bolt for Rail | Basic Dynamic Load Rating | Basic Static Load Rating | Static Rated Moment | | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | $H_1$ | N | W | B | $B_1$ | C | $L_1$ | L | $K_1$ | $K_2$ | G | M | T | $T_1$ | $H_2$ | $H_3$ | $W_R$ | $H_R$ | D | h | d | P | E | (mm) | C(kN) | $C_0$(kN) | $M_R$ kN-m | $M_P$ kN-m | $M_Y$ kN-m | Block kg | Rail kg/m |
| HGW15CA | 24 | 4.3 | 16 | 47 | 38 | 4.5 | 30 | 39.4 | 61.4 | 8 | 4.85 | 5.3 | M5 | 6 | 8.9 | 3.95 | 3.7 | 15 | 15 | 7.5 | 5.3 | 4.5 | 60 | 20 | M4x16 | 14.7 | 23.47 | 0.12 | 0.10 | 0.10 | 0.17 | 1.45 |
| HGW20CA | 30 | 4.6 | 21.5 | 63 | 53 | 5 | 40 | 50.5 | 77.5 | 10.25 | 6 | 12 | M6 | 8 | 10 | 6 | 6 | 20 | 17.5 | 9.5 | 8.5 | 6 | 60 | 20 | M5x16 | 27.1 | 36.68 | 0.27 | 0.20 | 0.20 | 0.40 | 2.21 |
| HGW20HA | | | | | | | | 65.2 | 92.2 | 17.6 | | | | | | | | | | | | | | | | 32.7 | 47.96 | 0.35 | 0.35 | 0.35 | 0.52 | |
| HGW25CA | 36 | 5.5 | 23.5 | 70 | 57 | 6.5 | 45 | 58 | 84 | 10.7 | 6 | 12 | M8 | 8 | 14 | 6 | 5 | 23 | 22 | 11 | 9 | 7 | 60 | 20 | M6x20 | 34.9 | 52.82 | 0.42 | 0.33 | 0.33 | 0.59 | 3.21 |
| HGW25HA | | | | | | | | 78.6 | 104.6 | 21 | | | | | | | | | | | | | | | | 42.2 | 69.07 | 0.56 | 0.57 | 0.57 | 0.80 | |
| HGW30CA | 42 | 6 | 31 | 90 | 72 | 9 | 52 | 70 | 97.4 | 14.25 | 6 | 12 | M10 | 8.5 | 16 | 6.5 | 10.8 | 28 | 26 | 14 | 12 | 9 | 80 | 20 | M8x25 | 48.5 | 71.87 | 0.66 | 0.53 | 0.53 | 1.09 | 4.47 |
| HGW30HA | | | | | | | | 93 | 120.4 | 25.75 | | | | | | | | | | | | | | | | 58.6 | 93.99 | 0.88 | 0.92 | 0.92 | 1.44 | |
| HGW35CA | 48 | 7.5 | 33 | 100 | 82 | 9 | 62 | 80 | 112.4 | 14.6 | 7 | 12 | M10 | 10.1 | 18 | 9 | 12.6 | 34 | 29 | 14 | 12 | 9 | 80 | 20 | M8x25 | 64.6 | 93.88 | 1.16 | 0.81 | 0.81 | 1.56 | 6.30 |
| HGW35HA | | | | | | | | 105.8 | 138.2 | 27.5 | | | | | | | | | | | | | | | | 77.9 | 122.77 | 1.54 | 1.40 | 1.40 | 2.06 | |
| HGW45CA | 60 | 9.5 | 37.5 | 120 | 100 | 10 | 80 | 97 | 139.4 | 13 | 10 | 12.9 | M12 | 15.1 | 22 | 8.5 | 20.5 | 45 | 38 | 20 | 17 | 14 | 105 | 22.5 | M12x35 | 103.8 | 146.71 | 1.98 | 1.55 | 1.55 | 2.79 | 10.41 |
| HGW45HA | | | | | | | | 128.8 | 171.2 | 28.9 | | | | | | | | | | | | | | | | 125.3 | 191.85 | 2.63 | 2.68 | 2.68 | 3.69 | |
| HGW55CA | 70 | 13 | 43.5 | 140 | 116 | 12 | 95 | 117.7 | 166.7 | 17.35 | 11 | 12.9 | M14 | 17.5 | 26.5 | 12 | 19 | 53 | 44 | 23 | 20 | 16 | 120 | 30 | M14x45 | 153.2 | 211.23 | 3.69 | 2.64 | 2.64 | 4.52 | 15.08 |
| HGW55HA | | | | | | | | 155.8 | 204.8 | 36.4 | | | | | | | | | | | | | | | | 184.9 | 276.23 | 4.88 | 4.57 | 4.57 | 5.96 | |
| HGW65CA | 90 | 15 | 53.5 | 170 | 142 | 14 | 110 | 144.2 | 200.2 | 23.1 | 14 | 12.9 | M16 | 25 | 37.5 | 15 | 15 | 63 | 53 | 26 | 22 | 18 | 150 | 35 | M16x50 | 213.2 | 287.48 | 6.65 | 4.27 | 4.27 | 9.17 | 21.18 |
| HGW65HA | | | | | | | | 203.6 | 259.6 | 52.8 | | | | | | | | | | | | | | | | 277.8 | 420.17 | 9.38 | 7.38 | 7.38 | 12.89 | |

Note : 1 kgf = 9.81 N

## (4) HGW-CB / HGW-HB



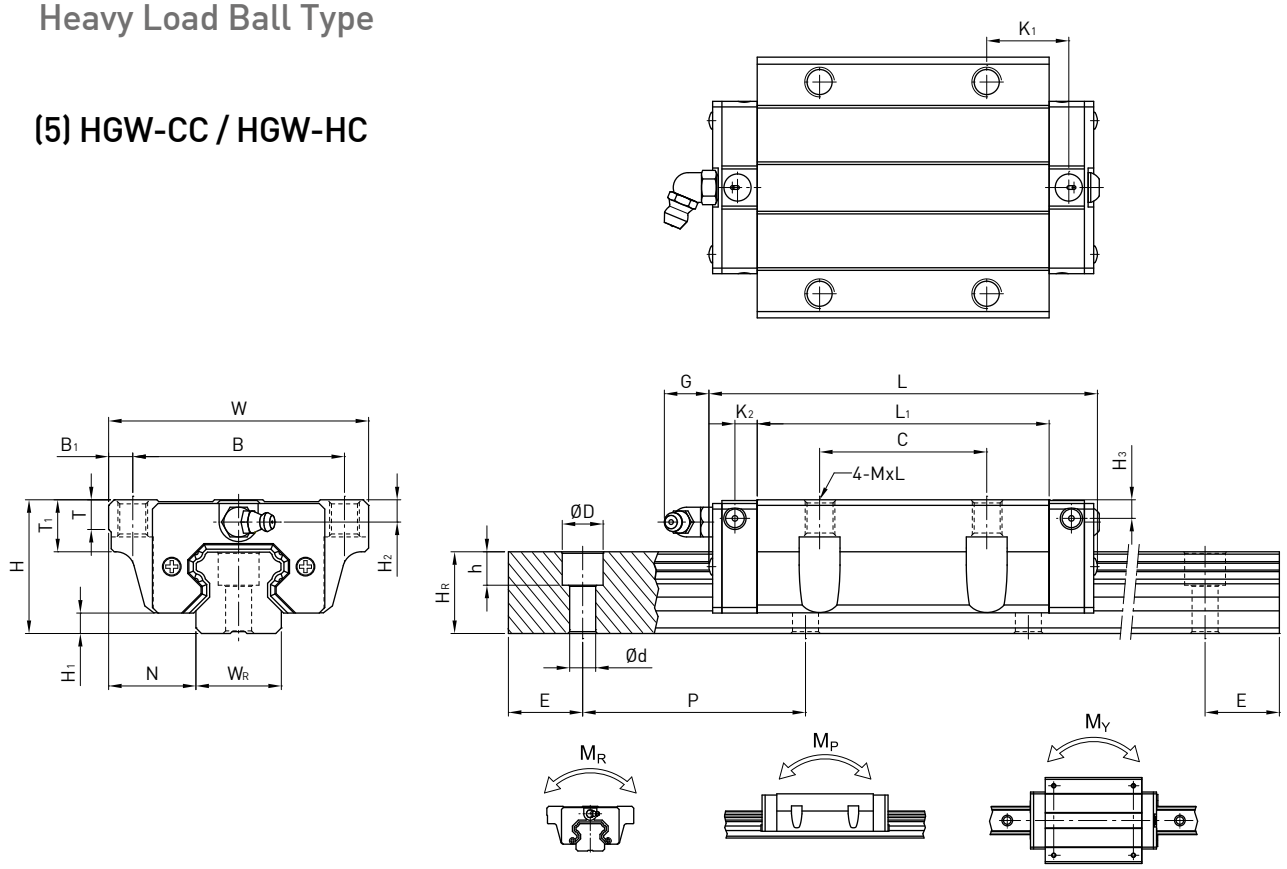

| Model No. | Dimensions of Assembly (mm) | | | Dimensions of Block (mm) | | | | | | | | | | | | | | | Dimensions of Rail (mm) | | | | | | | Mounting Bolt for Rail | Basic Dynamic Load Rating | Basic Static Load Rating | Static Rated Moment | | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | (mm) | C(kN) | $C_0$ (kN) | $M_R$ kN-m | $M_P$ kN-m | $M_Y$ kN-m | Block kg | Rail kg/m |
| HGW15CB | 24 | 4.3 | 16 | 47 | 38 | 4.5 | 30 | 39.4 | 61.4 | 8 | 4.85 | 5.3 | Ø4.5 | 6 | 8.9 | 6.95 | 3.95 | 3.7 | 15 | 15 | 7.5 | 5.3 | 4.5 | 60 | 20 | M4x16 | 14.7 | 23.47 | 0.12 | 0.10 | 0.10 | 0.17 | 1.45 |
| HGW20CB | 30 | 4.6 | 21.5 | 63 | 53 | 5 | 40 | 50.5 | 77.5 | 10.25 | 6 | 12 | Ø6 | 8 | 10 | 9.5 | 6 | 6 | 20 | 17.5 | 9.5 | 8.5 | 6 | 60 | 20 | M5x16 | 27.1 | 36.68 | 0.27 | 0.20 | 0.20 | 0.40 | 2.21 |
| HGW20HB | | | | | | | | 65.2 | 92.2 | 17.6 | | | | | | | | | | | | | | | | | 32.7 | 47.96 | 0.35 | 0.35 | 0.35 | 0.52 | |
| HGW25CB | 36 | 5.5 | 23.5 | 70 | 57 | 6.5 | 45 | 58 | 84 | 10.7 | 6 | 12 | Ø7 | 8 | 14 | 10 | 6 | 5 | 23 | 22 | 11 | 9 | 7 | 60 | 20 | M6x20 | 34.9 | 52.82 | 0.42 | 0.33 | 0.33 | 0.59 | 3.21 |
| HGW25HB | | | | | | | | 78.6 | 104.6 | 21 | | | | | | | | | | | | | | | | | 42.2 | 69.07 | 0.56 | 0.57 | 0.57 | 0.80 | |
| HGW30CB | 42 | 6 | 31 | 90 | 72 | 9 | 52 | 70 | 97.4 | 14.25 | 6 | 12 | Ø9 | 8.5 | 16 | 10 | 6.5 | 10.8 | 28 | 26 | 14 | 12 | 9 | 80 | 20 | M8x25 | 48.5 | 71.87 | 0.66 | 0.53 | 0.53 | 1.09 | 4.47 |
| HGW30HB | | | | | | | | 93 | 120.4 | 25.75 | | | | | | | | | | | | | | | | | 58.6 | 93.99 | 0.88 | 0.92 | 0.92 | 1.44 | |
| HGW35CB | 48 | 7.5 | 33 | 100 | 82 | 9 | 62 | 80 | 112.4 | 14.6 | 7 | 12 | Ø9 | 10.1 | 18 | 13 | 9 | 12.6 | 34 | 29 | 14 | 12 | 9 | 80 | 20 | M8x25 | 64.6 | 93.88 | 1.16 | 0.81 | 0.81 | 1.56 | 6.30 |
| HGW35HB | | | | | | | | 105.8 | 138.2 | 27.5 | | | | | | | | | | | | | | | | | 77.9 | 122.77 | 1.54 | 1.40 | 1.40 | 2.06 | |
| HGW45CB | 60 | 9.5 | 37.5 | 120 | 100 | 10 | 80 | 97 | 139.4 | 13 | 10 | 12.9 | Ø11 | 15.1 | 22 | 15 | 8.5 | 20.5 | 45 | 38 | 20 | 17 | 14 | 105 | 22.5 | M12x35 | 103.8 | 146.71 | 1.98 | 1.55 | 1.55 | 2.79 | 10.41 |
| HGW45HB | | | | | | | | 128.8 | 171.2 | 28.9 | | | | | | | | | | | | | | | | | 125.3 | 191.85 | 2.63 | 2.68 | 2.68 | 3.69 | |
| HGW55CB | 70 | 13 | 43.5 | 140 | 116 | 12 | 95 | 117.7 | 166.7 | 17.35 | 11 | 12.9 | Ø14 | 17.5 | 26.5 | 17 | 12 | 19 | 53 | 44 | 23 | 20 | 16 | 120 | 30 | M14x45 | 153.2 | 211.23 | 3.69 | 2.64 | 2.64 | 4.52 | 15.08 |
| HGW55HB | | | | | | | | 155.8 | 204.8 | 36.4 | | | | | | | | | | | | | | | | | 184.9 | 276.23 | 4.88 | 4.57 | 4.57 | 5.96 | |
| HGW65CB | 90 | 15 | 53.5 | 170 | 142 | 14 | 110 | 144.2 | 200.2 | 23.1 | 14 | 12.9 | Ø16 | 25 | 37.5 | 23 | 15 | 15 | 63 | 53 | 26 | 22 | 18 | 150 | 35 | M16x50 | 213.2 | 287.48 | 6.65 | 4.27 | 4.27 | 9.17 | 21.18 |
| HGW65HB | | | | | | | | 203.6 | 259.6 | 52.8 | | | | | | | | | | | | | | | | | 277.8 | 420.17 | 9.38 | 7.38 | 7.38 | 12.89 | |

Note : 1 kgf = 9.81 N

# HG Series

## Heavy Load Ball Type

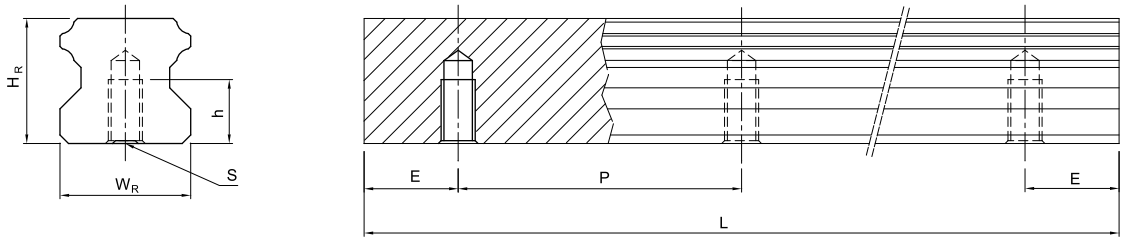
### (5) HGW-CC / HGW-HC




| Model No. | Dimensions of Assembly (mm) | | | Dimensions of Block (mm) | | | | | | | | | | | | | | | Dimensions of Rail (mm) | | | | | | | Mounting Bolt for Rail | Basic Dynamic Load Rating | Basic Static Load Rating | 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 | (mm) | C(kN) | $C_0$ (kN) | $M_R$ kN-m | $M_P$ kN-m | $M_Y$ kN-m | Block kg | Rail kg/m |
| HGW15CC | 24 | 4.3 | 16 | 47 | 38 | 4.5 | 30 | 39.4 | 61.4 | 8 | 4.85 | 5.3 | M5 | 6 | 8.9 | 6.95 | 3.95 | 3.7 | 15 | 15 | 7.5 | 5.3 | 4.5 | 60 | 20 | M4x16 | 14.7 | 23.47 | 0.12 | 0.10 | 0.10 | 0.17 | 1.45 |
| HGW20CC | 30 | 4.6 | 21.5 | 63 | 53 | 5 | 40 | 50.5 | 77.5 | 10.25 | 6 | 12 | M6 | 8 | 10 | 9.5 | 6 | 6 | 20 | 17.5 | 9.5 | 8.5 | 6 | 60 | 20 | M5x16 | 27.1 | 36.68 | 0.27 | 0.20 | 0.20 | 0.40 | 2.21 |
| HGW20HC | | | | | | | | 65.2 | 92.2 | 17.6 | | | | | | | | | | | | | | | | | 32.7 | 47.96 | 0.35 | 0.35 | 0.35 | 0.52 | |
| HGW25CC | 36 | 5.5 | 23.5 | 70 | 57 | 6.5 | 45 | 58 | 84 | 10.7 | 6 | 12 | M8 | 8 | 14 | 10 | 6 | 5 | 23 | 22 | 11 | 9 | 7 | 60 | 20 | M6x20 | 34.9 | 52.82 | 0.42 | 0.33 | 0.33 | 0.59 | 3.21 |
| HGW25HC | | | | | | | | 78.6 | 104.6 | 21 | | | | | | | | | | | | | | | | | 42.2 | 69.07 | 0.56 | 0.57 | 0.57 | 0.80 | |
| HGW30CC | 42 | 6 | 31 | 90 | 72 | 9 | 52 | 70 | 97.4 | 14.25 | 6 | 12 | M10 | 8.5 | 16 | 10 | 6.5 | 10.8 | 28 | 26 | 14 | 12 | 9 | 80 | 20 | M8x25 | 48.5 | 71.87 | 0.66 | 0.53 | 0.53 | 1.09 | 4.47 |
| HGW30HC | | | | | | | | 93 | 120.4 | 25.75 | | | | | | | | | | | | | | | | | 58.6 | 93.99 | 0.88 | 0.92 | 0.92 | 1.44 | |
| HGW35CC | 48 | 7.5 | 33 | 100 | 82 | 9 | 62 | 80 | 112.4 | 14.6 | 7 | 12 | M10 | 10.1 | 18 | 13 | 9 | 12.6 | 34 | 29 | 14 | 12 | 9 | 80 | 20 | M8x25 | 64.6 | 93.88 | 1.16 | 0.81 | 0.81 | 1.56 | 6.30 |
| HGW35HC | | | | | | | | 105.8 | 138.2 | 27.5 | | | | | | | | | | | | | | | | | 77.9 | 122.77 | 1.54 | 1.40 | 1.40 | 2.06 | |
| HGW45CC | 60 | 9.5 | 37.5 | 120 | 100 | 10 | 80 | 97 | 139.4 | 13 | 10 | 12.9 | M12 | 15.1 | 22 | 15 | 8.5 | 20.5 | 45 | 38 | 20 | 17 | 14 | 105 | 22.5 | M12x35 | 103.8 | 146.71 | 1.98 | 1.55 | 1.55 | 2.79 | 10.41 |
| HGW45HC | | | | | | | | 128.8 | 171.2 | 28.9 | | | | | | | | | | | | | | | | | 125.3 | 191.85 | 2.63 | 2.68 | 2.68 | 3.69 | |
| HGW55CC | 70 | 13 | 43.5 | 140 | 116 | 12 | 95 | 117.7 | 166.7 | 17.35 | 11 | 12.9 | M14 | 17.5 | 26.5 | 17 | 12 | 19 | 53 | 44 | 23 | 20 | 16 | 120 | 30 | M14x45 | 153.2 | 211.23 | 3.69 | 2.64 | 2.64 | 4.52 | 15.08 |
| HGW55HC | | | | | | | | 155.8 | 204.8 | 36.4 | | | | | | | | | | | | | | | | | 184.9 | 276.23 | 4.88 | 4.57 | 4.57 | 5.96 | |
| HGW65CC | 90 | 15 | 53.5 | 170 | 142 | 14 | 110 | 144.2 | 200.2 | 23.1 | 14 | 12.9 | M16 | 25 | 37.5 | 23 | 15 | 15 | 63 | 53 | 26 | 22 | 18 | 150 | 35 | M16x50 | 213.2 | 287.48 | 6.65 | 4.27 | 4.27 | 9.17 | 21.18 |
| HGW65HC | | | | | | | | 203.6 | 259.6 | 52.8 | | | | | | | | | | | | | | | | | 277.8 | 420.17 | 9.38 | 7.38 | 7.38 | 12.89 | |

Note : 1 kgf = 9.81 N

## (6) Dimesions for HGR-T (Rail Mounting from Bottom)




| Model No. | Dimensions of Rail (mm) | | | | | | Weight |
|---|---|---|---|---|---|---|---|
| | $W_R$ | $H_R$ | S | h | P | E | (kg/m) |
| 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 |