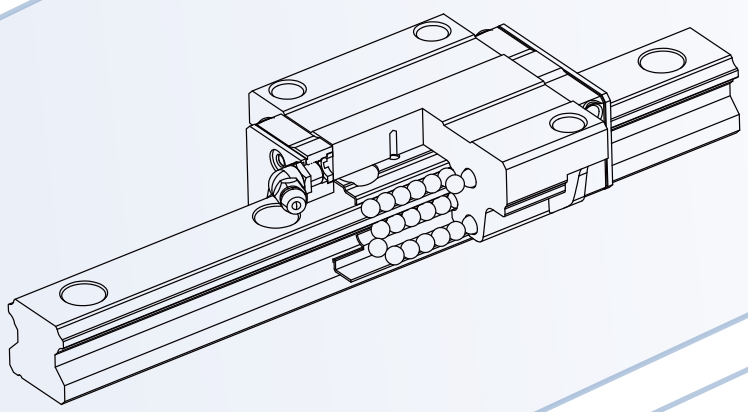
Hengli®

World standard · Ball type rolling guide

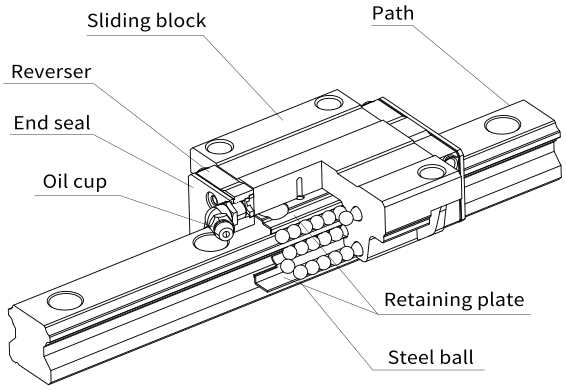
HLQ series

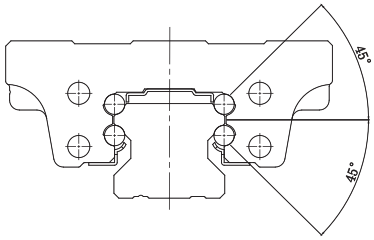


江苏恒立精密工业有限公司

JIANGSU HENGLI PRECISION INDUSTRY CO.,LTD.

Structure and specialty,application field





■ Structure and Features of Ball Type Rolling Guide

The steel balls roll along four rows of precisely ground rolling surfaces on the rail and the slide block, and the steel ball rows move circularly through a returner assembled on the slide block. The steel ball is held by the holding plate of the sliding block, so that the steel ball will not fall off even if the sliding block is pulled out of the track. Each rolling surface is designed with a contact angle of 45 ° to achieve the same rated load in the four directions of action (radial, anti-radial and lateral) on the slider, so it can be used regardless of the installation posture, and because it can apply an equal preload, it can maintain a lowThe friction coefficient improves the rigidity in four directions. At the same time, due to the low section height and the high rigidity design of the slider, stable and high-precision linear motion can be obtained.

- World standards · ISO dimensional specifications

- Equal load in four directions

  Each rolling surface of the HLQ type is designed with a contact angle of 45 ° to achieve the same load rating in the four directions of action on the slider (radial, anti-radial and lateral), so it can be used in any installation posture and has a wide range of applications.

- Self-aligning capability

  Due to the adoption of the DF single circular arc structure design, the invention has the capability of automatically adjusting the center, can absorb the installation error, and further obtains the high-precision stable linear motion.

- Excellent durability

  By adopting the single-arc structure design, the differential sliding amount of the steel ball is reduced, and the high precision and long-term wear resistance can be maintained even if a product with eccentric load or preload exists.

■ Field of application

ATC, car door, wire cutting machine, gantry milling machine, semiconductor manufacturing, handling device, automation device, etc.

Safety factor

■ Static load rating definition

When the linear motion system is at rest or in motion, if it bears too heavy load or too large impact load, local permanent deformation will occur between the rolling element and the rolling surface. If the load exceeds a certain limit, it will lead to permanent deformation, thus affecting the smooth operation of the linear guide.The basic static rated load is a static load with a fixed direction and magnitude that causes the sum of the permanent deformation of the rolling element and the permanent deformation of the rolling surface to reach 0.0001 times the diameter of the rolling element at the contact part bearing the maximum stress. The basic static load rating of a linear motion system is defined in terms of the radial load, which is used to calculate the static safety factor with respect to the applied load.

■ Calculate the static safety factor

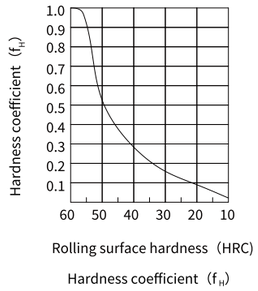
In the process of using the rolling guide, when there is vibration, impact or violent start-stop, heavy cutting force, moment generated by eccentric load or unknown external force, the rolling guide will bear greater load. In this case, the static safety factor of the rolling guide needs to be given priority. The static safety factor fs is the basic static load rating Co according to the rolling guide. Expressed as a multiple of the load acting on the rolling guide. As shown in that follow formula.

When the load in radial direction is large	$\frac{f_H \cdot f_T \cdot f_C \cdot C_o}{P_R} \geqslant fs$
When the load in the reverse radial direction is large	$\frac{f_H \cdot f_T \cdot f_C \cdot C_{oL}}{P_L} \geqslant fs$
When the side load is large	$\frac{f_H \cdot f_T \cdot f_C \cdot C_{oT}}{P_T} \geqslant fs$

fs : Static safety factor
C_o : Basic static rated load (radial direction) (N)
C_{oL} : Basic static rated load (reverse radial direction) (N)
C_{oT} : Basic Static Rated Load (Lateral) (N)
P_R : Calculated load value (radial direction) (N)
P_L : Calculated value of load (reverse radial direction) (N)
P_T : Calculated Load (Lateral) (N)
f_H : Hardness coefficient
f_T : Temperature coefficient
f_C : Contact coefficient

[f_H: Hardness factor]

In order to give full play to the load capacity of the rolling guide, the hardness of the rolling surface should be between 58 and 64 HRC. If the hardness is below this range, both the basic dynamic and static load ratings are reduced. Therefore, it is necessary to multiply each rating by its respective hardness factor (f_H). Since the rolling guide ensures sufficient stiffness, the f_H value of the rolling guide is typically 1.0 unless otherwise specified.

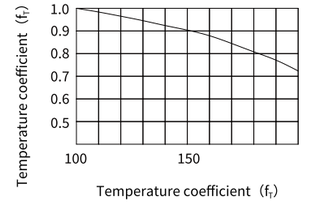


Safety factor

[f_T: Temperature coefficient]

If the ambient temperature of the guideway exceeds 100 °C, the adverse effect of high temperature shall be considered, and the basic rated load shall be multiplied by the temperature coefficient shown in Figure 9. At the same time, please note that it is necessary to select the rolling guide corresponding to the high temperature environment.

Note) Except for high temperature resistant rolling guide rails, other products shall be used below 80 °C.



[f_C: Contact factor]

When the sliders are used in a close contact state, it is difficult to obtain a uniform load distribution due to the influence of the torque or the accuracy of the mounting surface. Therefore, when multiple sliders are used in close proximity, the basic load rating (C or C_o) Multiply the contact factor from Table 6.

Note) In large installations where uneven load distribution is expected, consider the contact factors in the table.

Contact coefficient (f_C)

Number of sliders in close proximity	Contact coefficient fc
2	0.81
3	0.72
4	0.66
5	0.61
6 or more	0.6
Commonly used	1

The following table shows the reference values for the static factors of safety

Reference value of static safety factor (f_S)

Use machinery	Load conditions	Lower bound on fs
General industrial machinery	Without vibration or shock	1.0~3.5
	In case of vibration or impact	2.0~5.0
Machine tool industry	Without vibration or shock	1.0~4.0
	In case of vibration or impact	2.5~7.0

■ Dynamic Load Rating Definition

The basic dynamic load rating (C) is the rated life (L_{10}) of the linear motion system using balls (L_{10} = 50 km) and rollers (L_{10} = 100 km),when a batch of identical linear motion system units are operated separately under certain identical conditions. This load condition of constant direction and magnitude is called the basic dynamic load rating, which is used to calculate the service life of the linear motion system when it is operated under load.

Calculation of rated life

■ Calculated rated life

The service life of rolling guides varies even under the same manufacturing and operating conditions. Therefore, in order to determine the service life of the rolling guide, the rated life defined below is generally used.
The rated life refers to the total running distance that can be achieved when 90% of a batch of rolling straight lines of the same specification are operated separately under the same conditions without surface spalling (scaly spalling of the metal surface).

Calculated rated life

The rated life (L_{10}) can be calculated from the basic rated dynamic load (C) and the calculated load (P_C) acting on the rolling guide by the following formula. The rated life is calculated using the dynamic load rating of the rolling guide of the ball. In the case of rails, the basic dynamic load rating with a rated life of 50 km shall be used to calculate the rated life, and in the case of rolling guides with rollers, the basic dynamic load rating with a rated life of 100 km shall be used.

● When using rolling guides with steel balls (using basic dynamic load rating with a rated life of 50 km)

$$L_{10}=\left(\frac{C}{P_C}\right)^3\times 50 \cdots\cdots\cdots\cdots \quad (1)$$

L_{10} : Rated life (km)
C : Basic dynamic load rating (N)
P_C : Calculated load value (N)

When comparing the rated life (L_{10}), it is necessary to consider whether the basic dynamic load rating is defined by 50 km or 100 km, and to convert the basic dynamic load rating to ISO 14728 -1 as required.

Basic dynamic load rating conversion formula specified in ISO

● When the rolling guide of steel ball is used

$$C_{100}=\frac{C_{50}}{1.26}$$

C_{50} : Basic dynamic load rating for a rated life of 50 km
C_{100} : Basic dynamic load rating with a rated life of 100km

■ Life calculation under actual service condition

In actual use, due to the existence of vibration and impact in the process of movement, the load acting on the guide rail is constantly changing, so it is difficult to accurately grasp. In addition, the service life of the guide rail will be affected by the use environment of the guide rail, the hardness of the rolling channel surface, the number of sliders, and whether they are close to each other. Take this factor into account. It can be calculated by the following formula.

Rated life considering service conditions L_{10m}

$$L_{10m}=\left(\frac{f_H\cdot f_T\cdot f_C\cdot C}{f_W\cdot P_C}\right)^3\times 50$$

f_H : Hardness factor
f_T : Temperature coefficient
f_C : Contact coefficient
L_{10m} : Rated life considering service conditions (km)
C : Basic rated power (N)
f_W : Load factor
p_C : Load calculation value (N)

After the rated life (L_{10}) has been obtained,if the stroke length and the number of round trips are fixed,the life calculation is performed using the following formula.

$$L_h=\frac{L_{10}\times 10^6}{2\times l_s\times n_1\times 60}$$

L_h : Working life time (h)
l_s : Stroke length (mm)
n_1 : Round trips per minute (min^{-1})

Radial clearance、Precision specification

■ Radial clearance

Because the radial clearance of the rolling guide can greatly affect the walking accuracy, load bearing capacity and rigidity of the rolling guide, it is very important to select the appropriate clearance according to the use. In general, the selection of a negative clearance (i.e., the application of a preload *), taking into account the vibrations and shocks that may be generated by the reciprocating motion, has a good effect on the service life and accuracy. The clearance of the rolling guide rail of the HLQ series model is adjusted according to the regulations before delivery, so they do not need to be pre-pressed and adjusted.

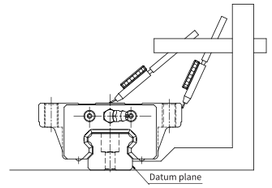
* Pre-compression (pre-load) refers to the internal load applied to rolling elements (steel balls, rollers) in advance to improve the rigidity of the slider.

Radial clearance of HLQ type

Unit: μm

Applicable model	Normal precompression(Z1)	Light precompression(Z2)	Heavy precompression(Z3)
HLQ15	−4 ～ +2	−12 ～ -4	-
HLQ20	−5 ～ +2	−14 ～ -5	−23 ～ -14
HLQ25	−6 ～ +3	−16 ～ -6	−26 ～ -16
HLQ30	−7 ～ +4	−19 ～ -7	−31 ～ -19
HLQ35	−8 ～ +4	−22 ～ -8	−35 ～ -22
HLQ45	−10 ～ +5	−25 ～ -10	−40 ～ -25
HLQ55	−12 ～ +5	−29 ～ -12	−46 ～ -29
HLQ65	−14 ～ +7	−32 ～ -14	−50 ～ -32

■ Precision specification



Running parallelism

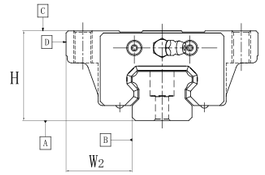


Table1 Track length and running parallelism classified by precision class specification

Unit: μm

Track length (mm)		The value of walking parallelism				
Above	Below	Common level	Advanced	Fine grade	Ultra-precision	Super,super precision
—	50	5	3	2	1.5	1
50	80	5	3	2	1.5	1
80	125	5	3	2	1.5	1
125	200	5	3.5	2	1.5	1
200	250	6	4	2.5	1.5	1
250	315	7	4.5	3	1.5	1
315	400	8	5	3.5	2	1.5
400	500	9	6	4.5	2.5	1.5
500	630	11	7	5	3	2
630	800	12	8.5	6	3.5	2
800	1000	13	9	6.5	4	2.5
1000	1250	15	11	7.5	4.5	3
1250	1600	16	12	8	5	4
1600	2000	18	13	8.5	5.5	4.5
2000	2500	20	14	9.5	6	5
2500	3090	21	16	11	6.5	5.5

Precision specification

Precision specification of HLQ type

Unit：mm

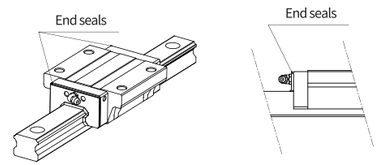
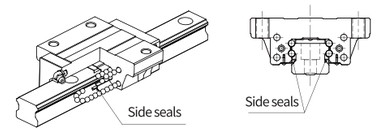
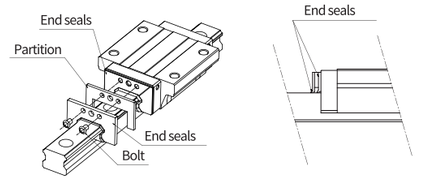
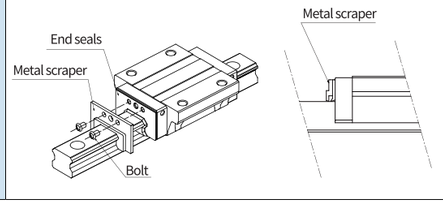
Model number	Precision specification	Common level	Advanced	Fine grade	Ultra-precision	Super,super precision
	Item	No marks	H	P	SP	UP
15 20	Allowable dimensional tolerance for height H	±0.07	±0.03	0 -0.03	0 -0.015	0 -0.008
	Group mutual tolerance for height H	0.02	0.01	0.006	0.004	0.003
	Permissible dimensional tolerance for width W_2	±0.06	±0.03	0 -0.02	0 -0.015	0 -0.008
	Group mutual tolerance for height W_2	0.02	0.01	0.006	0.004	0.003
	Parallelism relative to plane A on plane C	ΔC (Refer to Table 1)				
	Parallelism relative to plane B on plane D	ΔD (Refer to Table 1)				
25 30 35	Allowable dimensional tolerance for height H	±0.08	±0.04	0 -0.04	0 -0.02	0 -0.01
	Group mutual tolerance for height H	0.02	0.015	0.007	0.005	0.003
	Permissible dimensional tolerance for width W_2	±0.07	±0.03	0 -0.03	0 -0.015	0 -0.01
	Group mutual tolerance for height W_2	0.025	0.015	0.007	0.005	0.003
	Parallelism relative to plane A on plane C	ΔC (Refer to Table 1)				
	Parallelism relative to plane B on plane D	ΔD (Refer to Table 1)				
45 55	Allowable dimensional tolerance for height H	±0.08	±0.04	0 -0.05	0 -0.03	0 -0.015
	Group mutual tolerance for height H	0.025	0.015	0.007	0.005	0.003
	Permissible dimensional tolerance for width W_2	±0.07	±0.04	0 -0.04	0 -0.025	0 -0.015
	Group mutual tolerance for height W_2	0.03	0.015	0.007	0.005	0.003
	Parallelism relative to plane A on plane C	ΔC (Refer to Table 1)				
	Parallelism relative to plane B on plane D	ΔD (Refer to Table 1)				
65	Allowable dimensional tolerance for height H	±0.08	±0.04	0 -0.05	0 -0.04	0 -0.03
	Group mutual tolerance for height H	0.03	0.02	0.01	0.007	0.005
	Permissible dimensional tolerance for width W_2	±0.08	±0.04	0 -0.05	0 -0.04	0 -0.03
	Group mutual tolerance for height W_2	0.03	0.02	0.01	0.007	0.005
	Parallelism relative to plane A on plane C	ΔC (Refer to Table 1)				
	Parallelism relative to plane B on plane D	ΔD (Refer to Table 1)				

■ Maximun track length and G dimensions

The maximum track length, standard hole spacing, and G, g dimensions of the HLQ are shown in the table below

Model number	HLQ15	HLQ20	HLQ25	HLQ30	HLQ35	HLQ45	HLQ55	HLQ65
Maximum length	3000	3000	3000	3000	3000	3090	3060	3000
Standard hole spacing	60	60	60	80	80	105	120	150
G,g size	20	20	20	20	20	22.5	30	35

Seals and metal scrapers

Name	Installation position	Use occasion
End seals		Places exposed to dustLocations where dust.
Side seals		Dust is easy to enter the place of the slide from the side or bottom. (e.g. vertical, horizontal, and reverse use installations)
Double end seals		Places exposed to a lot of dust or chips
Metal scraper (non-contact)		Places where welding slag and the like may adhere to the rail

Sealing form			
None	No seal	H	End seal + side seal + self-lubricating device
S	End seal + side seal + inner seal	J	Double end seal + side seal + self-lubricating device
D	Double end seal + side seal + inner seal	L	End seal + side seal + metal scraper + self-lubricating device
G	End seal + side seal + metal scraper + inner seal	M	Double end seal + side seal + metal scraper + self-lubricating device
K	Double end seal + side seal + metal scraper + inner seal	N	End seal + side seal + self-lubricating device + multi-layer cleaning device
A	End seal + side seal + multi-layer cleaning device	P	Double end seal + side seal + self-lubricating device + multi-layer cleaning device
B	Double end seal + side seal + multi-layer cleaning device	Q	End seal + side seal + metal scraper + self-lubricating device + multi-layer cleaning device
C	End seal + side seal + metal scraper + multi-layer cleaning device	R	Double end seal + side seal + metal scraper + self-lubricating device + multi-layer cleaning device
F	Double End Seal + Side Seal + Metal Scraper + Multi-Layer Cleaning Device		

Note: Please consult Hengli personnel for the specific sealing type of the product.

Seal fitting resistance value

The following are the maximum resistance values for the seal fittings of a single slider. Please refer to the table below.

Seal fitting resistance value

Unit: N

Model and specification		Type of seal	
		End seal resistance value	Resistance of side seal (Max.)
HLQ15	R/C	1.0~2.0	3.0
	LR/LC		4.0
HLQ20	R/C	1.3~2.6	4.0
	LR/LC		5.0
HLQ25	R/C	2.0~3.9	5.0
	LR/LC		6.0
HLQ30	R/C	4.1~7.7	6.0
	LR/LC		7.0
HLQ35	R/C	6.1~11.5	7.0
	LR/LC		8.0
HLQ45	R/C	6.8~12.8	8.0
	LR/LC		9.0
HLQ55	R/C	19.6 MAX	9.0
	LR/LC		10.0
HLQ65	R/C	34.3 MAX	10.0
	LR/LC		12.0

Standard lubrication fittings

Model	Oil Cup		Oil pipe joint	
	Front	Side	Front	Side
HLQ15	LGM4	Not corresponding	LOM4M6	Not corresponding
HLQ20	LGM6	SGD3	LOM6T8 LOM6M8	
HLQ25				
HLQ30		SGM6		SOM6T8 SOM6M8
HLQ35				
HLQ35				
HLQ45	LGM8		LOM8T8 LOM8M8	
HLQ55				
HLQ65				

Lubrication sealing amount of single slide block

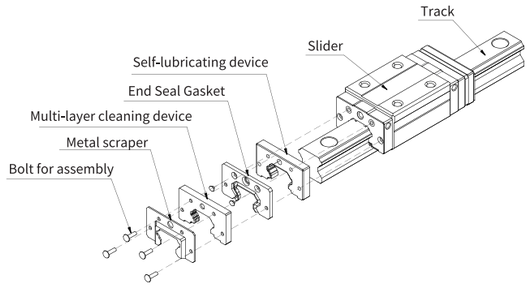
Unit: CC

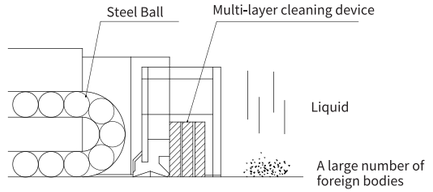
Model and specification	Slider type	
	C/R	LC/LR
HLQ15	0.5	0.7
HLQ20	1.0	1.2
HLQ25	1.7	2.1
HLQ30	2.6	3.3
HLQ35	3.5	4.4
HLQ45	6.7	8.4
HLQ55	10.9	13.7
HLQ65	20.5	27.4

Multi-layer cleaning device, self-lubricating device

■ Multi-layer cleaning device

Multi-layer cleaning devices are also provided in places where the environment is harsh. Through the laminated contact structure (3-layer scraper), the tiny foreign matters attached to the rail can be removed by stages, and the foreign matters can be prevented from entering the slider.

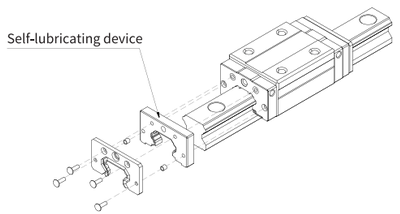


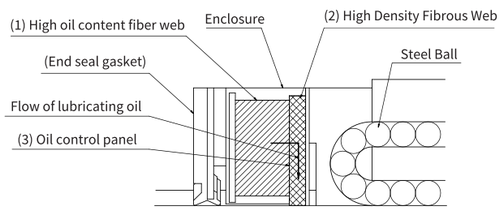


Specialty:
Excellent ability to remove tiny foreign objects due to the full contact of the 3 layers of shims with the rail;Low friction resistance is achieved due to the use of oil-impregnated foamed synthetic rubber with self-lubricating function.

■ White lubricating device

The self-lubricating device delivers a proper amount of lubricant to the rolling surface of the track, and an oil film is continuously formed between the rolling body and the rolling surface, so that the interval time of lubrication and maintenance can be greatly prolonged.
The structure of the self-lubricating device consists of three main parts: (1) a high oil content fiber web (function is to store lubricant); (2) a high density fiber web (function is to apply lubricant on the rolling surface); and (3) an oil control plate (function is to adjust the flow of oil). Lubricating oil in self-lubricating devices is transported using the basic principle of capillarity, which is also used in felt pens and many other products.



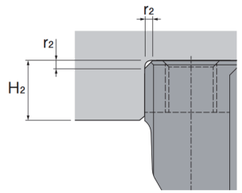


Specialty:
Since it replenishes the oil loss, the interval of lubrication maintenance can be greatly extended.
Because it delivers a proper amount of lubricating oil to the rolling surface of the steel ball, it will not pollute the surrounding area, so it is an environmentally friendly lubricating system.

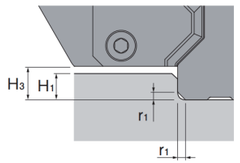
Mounting surface

■ Structural design reference for mounting surfaces

For the convenience of installation and high-precision positioning, a shoulder surface is usually provided on the side of the rail and the slider. Therefore, for the occasion with shoulder surface design, the design dimensions of the slider and rail shoulder surface will vary with different specifications. For details, please refer to the following.
In addition, the sharp corner of the shoulder surface shall be designed as a structure with a process groove, or as a fillet with a small radius R to prevent interference with the chamfer of the rail or slider. The fillet radius R varies with different specifications. Please refer to the following table for details.



Slider shoulder surface design



Rail shoulder surface design

Shoulder height and fillet radius of the shoulder face

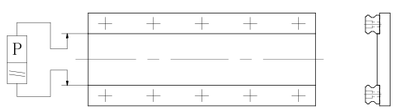
Unit：mm

Model and specification	Fillet radius		Shoulder height		H3
	Rail portion r_{1max}	Slider part r_{2max}	Track part H_{1max}	Slider part H_{2max}	
HLQ15	0.5	0.5	3.0	4.0	4.7
HLQ20	0.5	0.5	3.5	5.0	4.0
HLQ25	1.0	1.0	5.0	5.0	5.5
HLQ30	1.0	1.0	5.0	5.0	7.0
HLQ35	1.0	1.0	6.0	6.0	7.5
HLQ45	1.0	1.0	8.0	8.0	10.0
HLQ55	1.5	1.5	10.0	10.0	13.0
HLQ65	1.5	1.5	10.0	10.0	14.0

■ Allowable error value of mounting surface

● Allowable value of parallelism error of axis 2

The installation surface error of the rolling guide may affect the service life. The following table shows the reference of the allowable value (P) of the 2-axis parallelism error for each model in normal use.



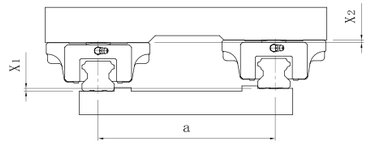
Model and specification	Grade of preloading		
	Normal precompression(Z1)	Light precompression(Z2)	Heavy precompression(Z3)
HLQ15	0.025	0.018	-
HLQ20	0.025	0.020	0.018
HLQ25	0.030	0.022	0.020
HLQ30	0.040	0.030	0.027
HLQ35	0.050	0.035	0.030
HLQ45	0.060	0.040	0.035
HLQ55	0.070	0.050	0.045
HLQ65	0.080	0.060	0.055

HLQ series World standard·Ball type rolling guide

Mounting surface

● Allowable value of vertical direction error of axis 2

The installation surface error of the rolling guide may affect the service life. The values in the table represent the upper and lower error reference values (X) of the 2 axes for each track span (a) in normal use, proportional to the track span (a).



$X = X_1 + X_2$

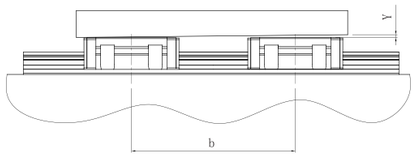
X_1: Level difference of rail installation surface
X_2: Level difference of sliding block installation surface

Calculation example　Ordinary preloading
Track spacing　a=500mm
Allowable error value of mounting surface　0.0006×500=0.3

Model and specification	Grade of preloading		
	Normal precompression(Z1)	Light precompression(Z2)	Heavy precompression(Z3)
HLQ15	0.0006a	0.0005a	—
HLQ20	0.0006a	0.0005a	0.0004a
HLQ25	0.0006a	0.0005a	0.0004a
HLQ30	0.0006a	0.0005a	0.0004a
HLQ35	0.0006a	0.0005a	0.0004a
HLQ45	0.0006a	0.0005a	0.0004a
HLQ55	0.0006a	0.0005a	0.0004a
HLQ65	0.0006a	0.0005a	0.0004a

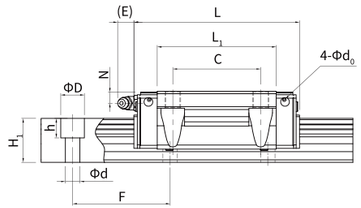
● Allowable value of horizontal error in the axial direction

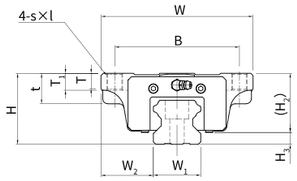
The error of the mounting surface of the guide rail may affect the service life. The values in the table represent the axial horizontal error tolerance (Y) for each slide span (B) and are proportional to the slide span (B).



Model and specification	Grade of preloading		
	Normal precompression(Z1)	Light precompression(Z2)	Heavy precompression(Z3)
HLQ15	0.00012b	0.0001b	—
HLQ20	0.00012b	0.0001b	0.00008b
HLQ25	0.00012b	0.0001b	0.00008b
HLQ30	0.00012b	0.0001b	0.00008b
HLQ35	0.00012b	0.0001b	0.00008b
HLQ45	0.00012b	0.0001b	0.00008b
HLQ55	0.00012b	0.0001b	0.00008b
HLQ65	0.00012b	0.0001b	0.00008b

Composition example and dimension table of nominal model





HLQ-C、HLQ-LC World standard·Ball type rolling guide

Composition example and dimension table of nominal model

Composition example of nominal model

HLQ 25 C 2 S Z1 - 1000 P II

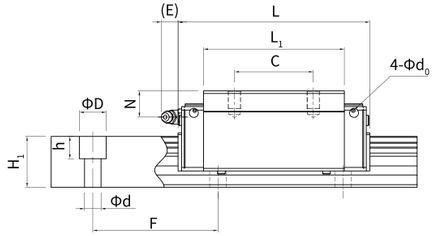
Series	Specification size	Slider type	Number of sliders	Sealing fittings	Type of preloading	Guide rail length	Accuracy class	Number of same-plane orbital pairing
HLQ	25	C	2	S	Z1	1000	P	II

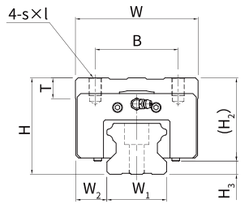
Unit: mm

Model	Overall dimensions					Slider size							Lubricate the connection dimensions					Guide rail dimensions				Basic load rating		Rated static torque kN ▪ m					Weight	
	H	W_2	W	L	H_3	B	C	Mounting hole S×l	L_1	T	T_1	H_2	Oil cup	E	N	side oil cup spare hole d_0		Φd×ΦD×h	F	H_1	W_1 ±0.05	Dynamic load C kN	Static load C_0 kN	M_A Single slider	M_A Double slide block abutting	M_B Single slider	M_B Double slide block abutting	M_C Single slider	Slider (kg)	Guide rail (kg/m)
HLQ15C	24	16	47	56.7	4.7	38	30	M5×7	38.9	7	7	19.3	M4×0.5	5.5	4.3	3		4.5×7.5×5.3	60	15	15	11.2	16.4	0.099	0.550	0.099	0.550	0.104	0.2	1.5
HLQ15LC				74.7					56.9													14.6	23.9	0.203	1.027	0.203	1.027	0.151	0.29	
HLQ20C	30	21.5	63	74.1	4	53	40	M6×10	50.9	9.5	10	26	M6×0.75	12	5	3		6×9.5×8.5	60	18	20	20.4	28.6	0.228	1.253	0.228	1.253	0.245	0.35	2.3
HLQ20LC				90.1					66.9													24.6	37.4	0.379	1.952	0.379	1.952	0.321	0.47	
HLQ25C	36	23.5	70	83.2	5.5	57	45	M8×10	59.6	11	10	30.5	M6×0.75	12	6	3		7×11×9	60	22	23	28.4	38.0	0.338	1.879	0.338	1.879	0.382	0.59	3.3
HLQ25LC				102.3					78.7													36.2	53.9	0.655	3.174	0.655	3.174	0.541	0.75	
HLQ30C	42	31	90	98.1	7	72	52	M10×10	70.5	9	10	35	M6×0.75	12	7	5.2		9×14×12	80	26	28	41.7	56.1	0.625	3.236	0.625	3.236	0.681	1.1	4.8
HLQ30LC				120.7					93.1													50.4	73.3	1.039	5.105	1.039	5.105	0.889	1.3	
HLQ35C	48	33	100	109.5	7.5	82	62	M10×13	80.5	12	13	40.5	M6×0.75	12	8	5.2		9×14×12	80	29	34	55.5	73.3	0.934	4.708	0.934	4.708	1.096	1.6	6.6
HLQ35LC				134.9					105.9													66.9	95.7	1.556	7.444	1.556	7.444	1.430	2	
HLQ45C	60	37.5	120	139.1	10	100	80	M12×15	98.1	13	15	50	M8×1	16	10	5.2		14×20×17	105	38	45	84.6	105.4	1.566	8.738	1.566	8.738	2.025	2.8	11
HLQ45LC				170.9					129.9													103.0	140.9	2.704	13.989	2.704	13.989	2.714	3.3	
HLQ55C	70	43.5	140	163.1	13	116	95	M14×17	118.1	13.5	17	57	M8×1	16	11	5.2		16×23×20	120	44	53	124.6	152.4	2.714	14.720	2.714	14.720	3.581	4.5	15.1
HLQ55LC				201.2					156.2													152.4	202.5	4.656	23.698	4.656	23.698	4.761	5.7	
HLQ65C	90	53.5	170	190.6	14	142	110	M16×23	138.6	21.5	23	76	M8×1	16	19	5.2		18×26×22	150	53	63	200.8	238.0	5.303	26.100	5.303	26.100	6.473	8.5	22.5
HLQ65LC				250.1					198.1													256.4	337.2	10.241	47.606	10.241	47.606	9.177	10.7	

Note: ① The total length L of the sliding block recorded in the dimension table is the dimension when the mark for dust prevention is S. If other accessories for dust protection or lubrication devices are installed, the total length L of the slide will be increased.② The bottom hole for the oil cup on the returner side is not drilled through. If the oil cup needs to be processed and installed, please specify.

Composition example and dimension table of nominal model





Unit: mm

Model	Overall dimensions					Slider size						Lubricate the connection dimensions					Guide rail dimensions				Basic load rating		Rated static torque kN·m					Weight	
	H	W_2	W	L	H_3	B	C	Mounting hole s×l	L_1	T	H_2	Oil cup	E	N	side oil cup spare hole d_0		Φd×ΦD×h	F	H_1	W_1 ±0.05	Dynamic load C kN	Static load C_0 kN	M_A Single slider	M_A Double slide block abutting	M_B Single slider	M_B Double slide block abutting	M_C Single slider	Slider (kg)	Guide rail (kg/m)
HLQ15R	28	9.5	34	56.7	4.7	26	26	M4×5	38.9	6	23.3	M4×0.5	5.5	8.3	3		4.5×7.5×5.3	60	15	15	11.2	16.4	0.099	0.550	0.099	0.550	0.104	0.18	1.5
HLQ15LR				74.7			34		56.9												14.6	23.9	0.203	1.027	0.203	1.027	0.151	0.26	
HLQ20R	30	12	44	74.1	4	32	36	M5×6	50.9	8	26	M6×0.75	12	5	3		6×9.5×8.5	60	18	20	20.4	28.6	0.228	1.253	0.228	1.253	0.245	0.25	2.3
HLQ20LR				90.1			50		66.9												24.6	37.4	0.379	1.952	0.379	1.952	0.321	0.35	
HLQ25R	40	12.5	48	83.2	5.5	35	35	M6×8	59.6	9	34.5	M6×0.75	12	10	3		7×11×9	60	22	23	28.4	38.0	0.338	1.879	0.338	1.879	0.382	0.54	3.3
HLQ25LR				102.3			50		78.7												36.2	53.9	0.655	3.174	0.655	3.174	0.541	0.67	
HLQ30R	45	16	60	98.1	7	40	40	M8×10	70.5	9	38	M6×0.75	12	10	5.2		9×14×12	80	26	28	41.7	56.1	0.625	3.236	0.625	3.236	0.681	0.9	4.8
HLQ30LR				120.7			60		93.1												50.4	73.3	1.039	5.105	1.039	5.105	0.889	1.1	
HLQ35R	55	18	70	109.5	7.5	50	50	M8×12	80.5	11.7	47.5	M6×0.75	12	15	5.2		9×14×12	80	29	34	55.5	73.3	0.934	4.708	0.934	4.708	1.096	1.5	6.6
HLQ35LR				134.9			72		105.9												66.9	95.7	1.556	7.444	1.556	7.444	1.430	2	
HLQ45R	70	20.5	86	139.1	10	60	60	M10×17	98.1	15	60	M8×1	16	20	5.2		14×20×17	105	38	45	84.6	105.4	1.566	8.738	1.566	8.738	2.025	2.6	11
HLQ45LR				170.9			80		129.9												103.0	140.9	2.704	13.989	2.704	13.989	2.714	3.1	
HLQ55R	80	23.5	100	163.1	13	75	75	M12×18	118.1	20.5	67	M8×1	16	21	5.2		16×23×20	120	44	53	124.6	152.4	2.714	14.720	2.714	14.720	3.581	4.3	15.1
HLQ55LR				201.2			95		156.2												152.4	202.5	4.656	23.698	4.656	23.698	4.761	5.4	
HLQ65R	90	31.5	126	190.6	14	76	70	M16×20	138.6	23	76	M8×1	16	19	5.2		18×26×22	150	53	63	200.8	238.0	5.303	26.100	5.303	26.100	6.473	7.3	22.5
HLQ65LR				250.1			120		198.1												256.4	337.2	10.241	47.606	10.241	47.606	9.177	9.7	

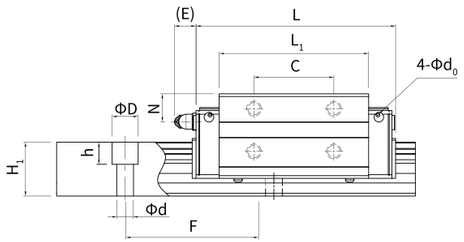
Note: ① The total length L of the sliding block recorded in the dimension table is the dimension when the mark for dust prevention is S. If other accessories for dust protection or lubrication devices are installed, the total length L of the slide will be increased.② The bottom hole for the oil cup on the returner side is not drilled through. If the oil cup needs to be processed and installed, please specify.

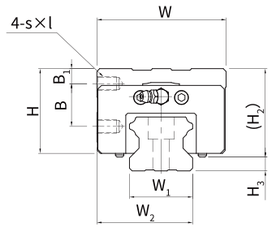
HLQ-R、HLQ-LR 世界标准·滚珠型滚动导轨

Composition example and dimension table of nominal model

Composition example of nominal model

HLQ	30	R	2	R	Z3	-	1200	P	II
Series	Specification size	Slider type	Number of sliders	Sealing fittings	Type of preloading		Guide rail length	Accuracy class	Number of same-plane orbital pairing





HLQ-YR 世界标准·滚珠型滚动导轨

Composition example and dimension table of nominal model

Composition example of nominal model

HLQ	25	YR	2	J	Z2	-	1000	P	II
Series	Specification size	Slider type	Number of sliders	Sealing fittings	Type of preloading		Guide rail length	Accuracy class	Number of same-plane orbital pairing

Unit: mm

Model	Overall dimensions					Slider size						Lubricate the connection dimensions					Guide rail dimensions				Basic load rating		Rated static torque kN ▪ m					Weight	
	H	W_2	W	L	H_3	B_1	B	C	Mounting hole s×l	L_1	H_2	Oil cup	E	N	side oil cup spare hole d_0		Φd×ΦD×h	F	H_1	W_1 ±0.05	Dynamic load C kN	Static load C_0 kN	M_A Single slider	M_A Double slide block abutting	M_B Single slider	M_B Double slide block abutting	M_C Single slider	Slider (kg)	Guide rail (kg/m)
HLQ15YR	28	24	33.5	56.7	4.7	4.3	11.5	18	M4×5	38.9	23.3	M4×0.5	5.5	8.3	3		4.5×7.5×5.3	60	15	15	11.2	16.4	0.099	0.550	0.099	0.550	0.104	0.18	1.5
HLQ20YR	30	31.5	43.5	74.1	4	4	11.5	25	M5×6	50.9	26	M6×0.75	12	5	3		6×9.5×8.5	60	18	20	20.4	28.6	0.228	1.253	0.228	1.253	0.245	0.25	2.3
HLQ25YR	40	35	47.5	83.2	5.5	6	16	30	M6×6	59.6	34.5	M6×0.75	12	10	3		7×11×9	60	22	23	28.4	38.0	0.338	1.879	0.338	1.879	0.382	0.54	3.3
HLQ30YR	45	43.5	59.5	98.1	7	8	16	40	M6×9	70.5	38	M6×0.75	12	10	5.2		9×14×12	80	26	28	41.7	56.1	0.625	3.236	0.625	3.236	0.681	0.9	4.8
HLQ35YR	55	51.5	69.5	109.5	7.5	8	23	43	M8×10	80.5	47.5	M6×0.75	12	15	5.2		9×14×12	80	29	34	55.5	73.3	0.934	4.708	0.934	4.708	1.096	1.5	6.6
HLQ45YR	70	65	85.5	139.1	10	10	30	55	M10×14	98.1	60	M8×1	16	20	5.2		14×20×17	105	38	45	84.6	105.4	1.566	8.738	1.566	8.738	2.025	2.6	11
HLQ55YR	80	76	99.5	163.1	13	12	32	70	M12×15	118.1	67	M8×1	16	21	5.2		16×23×20	120	44	53	124.6	152.4	2.714	14.720	2.714	14.720	3.581	4.3	15.1
HLQ65YR	90	93	124.5	190.6	14	12	35	85	M16×18	138.6	76	M8×1	16	19	5.2		18×26×22	150	53	63	200.8	238.0	5.303	26.100	5.303	26.100	6.473	7.3	22.5

Note: ① The total length L of the sliding block recorded in the dimension table is the dimension when the mark for dust prevention is S. If other accessories for dust protection or lubrication devices are installed, the total length L of the slide will be increased.② The bottom hole for the oil cup on the returner side is not drilled through. If the oil cup needs to be processed and installed, please specify.

Precautions for use of rolling guide

【Use】

(1) When handling products with a weight of more than 20 kg, please handle them by more than two people or with the help of handling tools. Failure to do so may result in personal injury and product damage.
(2) Do not disassemble the linear guide. Failure to do so may result in loss of product functionality.
(3) When handling or placing, if the slider and rail are inclined, they may fall down due to their own weight, please pay attention.
(4) Please prevent the guide rail from falling or being knocked. Otherwise, it may cause personal injury and product damage. In addition, when impacted, even if the appearance of the product is intact,It is possible that the interior of the product has been damaged and the function has been lost.
(5) Please note that if you put your hand into the rail mounting hole, it may be caught between the mounting hole and the slider, causing injury.
(6) When touching the product, please use protective gloves, safety shoes and other protective equipment as required to ensure safety.

【Precautions for use】

(1) Please pay attention to prevent foreign matters such as chips and coolant from being mixed. Failure to do so may result in product damage.
(2) When the product is used in an environment where chips, coolant, corrosive solvent, water, etc. may be mixed inside, please use a telescopic shield or a protective cover to reduce or prevent them from mixing inside the product, thus affecting the function of the product.
(3) Please avoid using it under the condition of exceeding the temperature. If the temperature exceeds the temperature, it may cause deformation or damage to resin and rubber parts.
(4) When foreign matters such as chips are attached, please seal the lubricant again after cleaning.
(5) During micro stroke, it is difficult to form an oil film on the contact surface between the rolling raceway and the rolling element, which may cause fretting wear. Please use grease with excellent fretting wear resistance. In addition, it is recommended to push the slider back and forth for several times within the stroke of about five times the total length of the slider each time the grease is replenished, so that the grease is evenly distributed inside the slider and an oil film is formed between the rolling channel and the rolling body.
(6) Do not force the positioning parts (pins, keys, etc.) into the product. Failure to do so may result in indentation of the rolling surface, resulting in loss of function.
(7) When the slider must be removed from the rail during the operation, please use the special clamp for disassembly/assembly. (The special fixture for disassembly/installation is not a standard part. Please consult Hengli's relevant personnel when it is needed.)
(8) When using the dismounting/mounting fixture, the end face of the rail shall be close to the end face of the dismounting/mounting fixture. Please insert the rail in parallel with the dismounting/mounting fixture.
(9) If the slider is installed in an inclined state, foreign matters may enter, resulting in damage to internal components and falling of rolling elements.
(10) If the sliding block is inserted into the track for use when the rolling element falls off, the product may be damaged prematurely.
(11) If the rolling element falls from the slider, please do not continue to use this product, and contact the relevant personnel of Hengli Precision.
(12) When the guide rail is damaged due to accidents, the sliding block may fall off from the track. For the sake of safety, please take countermeasures such as shutdown immediately.
(13) When the rigidity and accuracy of the installation components are insufficient, the product will be subject to internal forces, which will significantly reduce the performance of the product. Therefore, please fully discuss the rigidity and accuracy of the mounting structure.
(14) When the slider is disassembled from the rail and reassembled, the assembly will be easier if the slider mounting/dismounting jig is used. For details, please consult the relevant personnel of Hengli Precision.

【Lubrication】

(1) Please wipe the anti-rust oil carefully and seal the lubricant before use.
(2) Avoid mixing different lubricants. Even if a grease with the same thickener is used, there may be adverse effects on each other due to differences in additives and the like.
(3) When it is used in special environments such as places where vibration often occurs, dust-free rooms, vacuum, low temperature or high temperature, please use grease that conforms to the environment.
(4) When lubricating the product without oil nozzle and oil hole, please apply the lubricant directly to the rolling surface, and make the grease enter the product after several times of running-in with the stroke length as the unit.
(5) The consistency of grease varies with temperature. Please note that the sliding resistance of the rolling guide varies with the consistency.
(6) The mixing resistance of grease after greasing may increase the sliding resistance of the guide rail. Be sure to run in and fully pre-lubricate with grease before running the machine.
(7) After the completion of greasing, the excess grease may splash around, please wipe it as required.
(8) With the increase of service time, the properties of lubricating grease are deteriorated and the lubricating performance is reduced, so it is necessary to check and supplement the lubricating grease according to the frequency of use.
(9) The fatliquoring interval is different according to different service conditions and environments. Please fatliquidate every 100km (2 ~ 3 months). Please set the final fatliquoring interval and fatliquoring amount on the actual equipment.
(10) When the installation method is other than horizontal installation, the lubricating oil may not reach the sliding block and the inside of the guide rail when oil lubrication is used. For details, please consult the relevant personnel of Hengli Precision in advance.

【Storage and disposal】

(1) When storing the guide rail, please keep the factory packaging and state of Hengli Precision, store it horizontally indoors, and avoid high temperature, low temperature and high humidity environment.
(2) The lubricant inside the product stored for a long time may deteriorate with time. Please add the lubricant again before use.
(3) Please dispose of the product properly as industrial waste.

Stock code：601100

Contact us,looking forward to work with you!

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