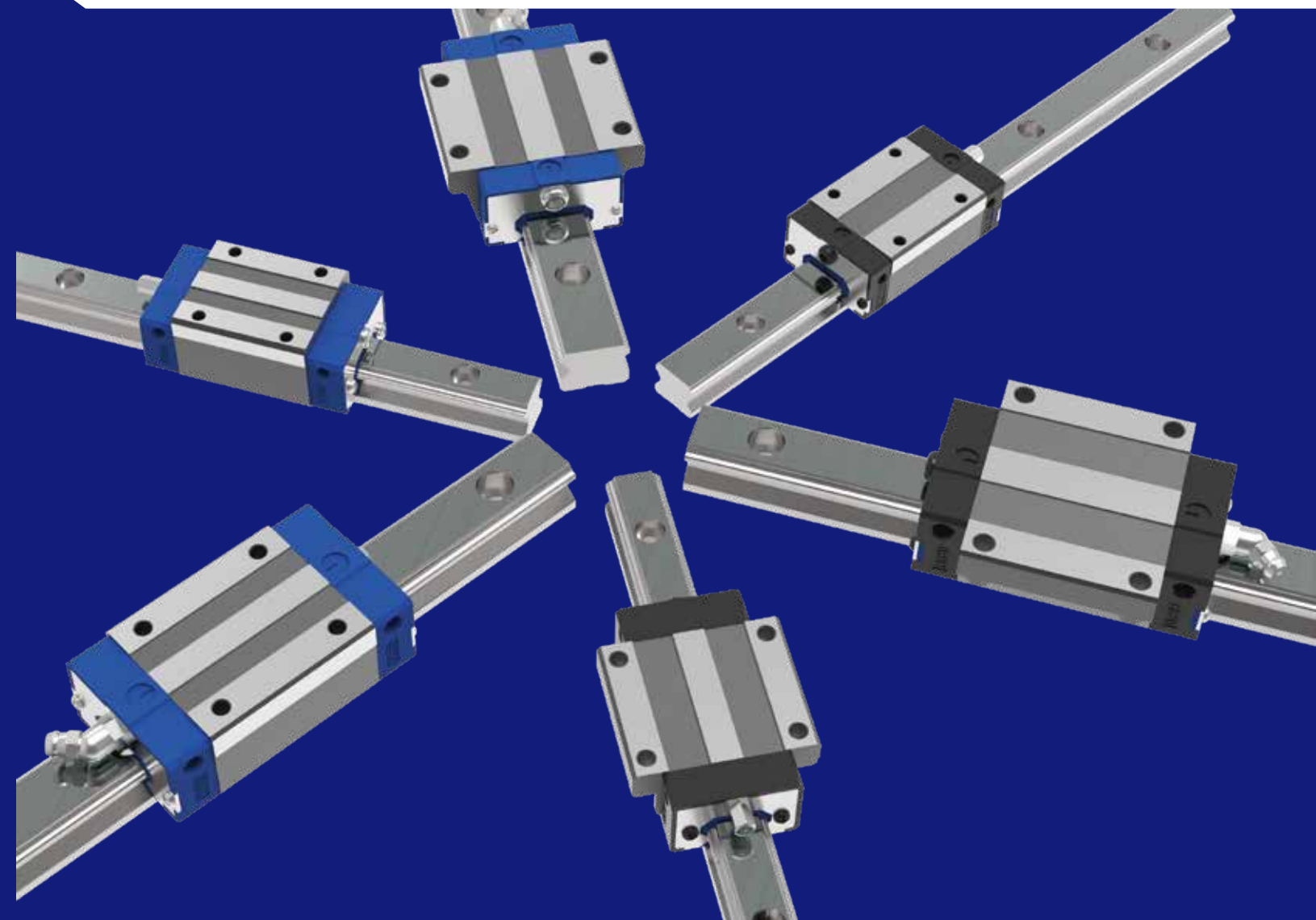




Specializing in the production of linear guide systems



■ Stainless steel linear guide rail

■ Standard linear guide rail



Expert in linear guide systems

Provide you with professional solutions

Professional production Linear guide rail system

④ No. 795, Nanming Road,
Nanmingshan ,Liandu District,
Lishui City, Zhejiang Province

④ Wechat/Tel: +86-13396787925

④ Facebook: jsmdeng

④ E-mail: jsmtransmission@163.com

④ jsmtransmission.com



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ABOUT JINSHANMEN



As a professional company in the field of linear guide slide, Zhejiang JINSHANMEN Transmission Technology Co., Ltd. has been committed to providing customers with high quality and high performance linear guide slide products since its establishment. With years of technological accumulation and innovative development, our products have been widely used in automation equipment, precision instruments, CNC machine tools and other fields, well received by customers.

Our linear sliders have excellent load bearing capacity, high rigidity and low coefficient of friction to provide stable, accurate linear motion for our customers' equipment. In order to ensure product quality, we have adopted advanced production technology and strict quality control system to ensure that every product can meet the needs of customers.

In addition to providing high quality products, we also focus on providing customers with perfect pre-sale, sale and after-sales service. Our professional team will provide you with selection advice, technical support and solutions to ensure you get the best experience during use.

In the future, we will continue to adhere to the "customer first, quality first" business philosophy, and constantly innovate and improve the product line to meet the growing needs of customers. We look forward to working with you to create a better future!

EXQUISITE CRAFTSMANSHIP AND INTELLIGENT MANUFACTURING

We provide innovative design solutions for the special needs of our customers, and new solutions come from innovative thinking.

We persistently develop more advanced connections for our customers.

SITE DISPLAY



SAFETY-ORIENTED
PRODUCTION



STRICTLY IMPLEMENT
STANDARD QUALITY CONTROL



CONTINUOUSLY IMPROVED
PRODUCTION SYSTEM



AT THE FOREFRONT OF THE INDUSTRY, CREATING VALUE AND
UNLIMITED POSSIBILITIES ABOVE CUSTOMER NEEDS.

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The company advocates a working relationship of unity and cooperation. We firmly believe that only by working together and keeping a unified pace can the team move forward courageously. Therefore, excellent cooperation spirit and good communication skills are the top standards for us to choose talents. Our team has a group of vibrant young talents, not only in terms of education and qualifications, but also in terms of performance, which is the source of our vitality.

INTRODUCTION

The linear guide rail is a kind of rolling guide, which is infinite rolling cycle between the slide block and the guide rail by the steel ball, and the load platform can easily move linearly along the guide rail with high precision. Compared with the traditional sliding guidance, the friction coefficient of rolling guidance can be reduced to 1/50 of the original, because the starting friction is greatly reduced, the relative reduction of invalid motion, so it can easily reach the μm level feed and positioning. Coupled with the beam unit design between the slide block and the guide rail, so that the linear guide rail can bear the load in all directions at the same time, the above display characteristics are not comparable to the traditional slide guide, so if the machine can cooperate with the ball screw, the use of linear guide rail for guidance, will be able to greatly improve the accuracy and mechanical efficiency of the equipment.



Basic document 1



1-1 Advantages of the JSM linear guide rail

1. High positioning accuracy

The linear guide rail adopts rolling friction mode with low friction coefficient, which can realize high precision positioning motion and achieve the micron-level positioning accuracy.

2.High stiffness

The linear guide rail uses the ball or rolling steel ball as the rolling element, can withstand multiple directions of the load, with high stiffness, suitable for use in high speed movement or heavy load conditions.

3.Low friction and high efficiency

The rolling friction of the linear guide rail is small, which can reduce the energy loss, improve the transmission efficiency, and reduce the impact and vibration phenomenon of the movement.

4.High-speed sports ability

Linear guide rail is suitable for high-speed movement, which can achieve fast feed speed and improve the production efficiency of the equipment.

5.Long-term life and stability

Linear guide rail adopts high quality materials and precision machining technology, with long service life and stability, and can maintain high precision and reliability.

6.Adjustment

The linear guide rail has the ability of automatic centering, which can automatically absorb the deviation of the mounting surface and achieve a smooth motion with high accuracy.

7.High-load capacity

The linear guide rail can withstand large loads and is suitable for various engineering and mechanical equipment.

8.Dustproof and sealing capacity

The linear guide rail has a good dustproof seal design, which can effectively prevent dust and pollutants from entering the guide rail and prolong the service life.

9.Anti-rust ability

Linear guides can be made of stainless steel or electroplated, which endows them with excellent anti-rust and anti-corrosion capabilities. They are suitable for food processing, medical equipment, clean rooms, etc

1-2 Usage scenario



Machine tool industry



Automated productionline



Electronic equipment



Medical equipment



Transportation

1.Machine tool industry

Linear guide rail is widely used in CNC machine tools, grinding machine, milling machine, lathe and other machine tools, which can provide high precision and stable motion control, improve machining accuracy and efficiency.

2Automatic production line

Linear guide rail plays an important role in the automatic production line, used in material handling, assembly, packaging and other links, which can realize high-speed and accurate motion control and improve production efficiency.

3.Electronic equipment

Linear guide rail is widely used in semiconductor manufacturing equipment, LCD panel production equipment, optical instruments and other electronic equipment, which can provide high precision motion control, to ensure product quality.

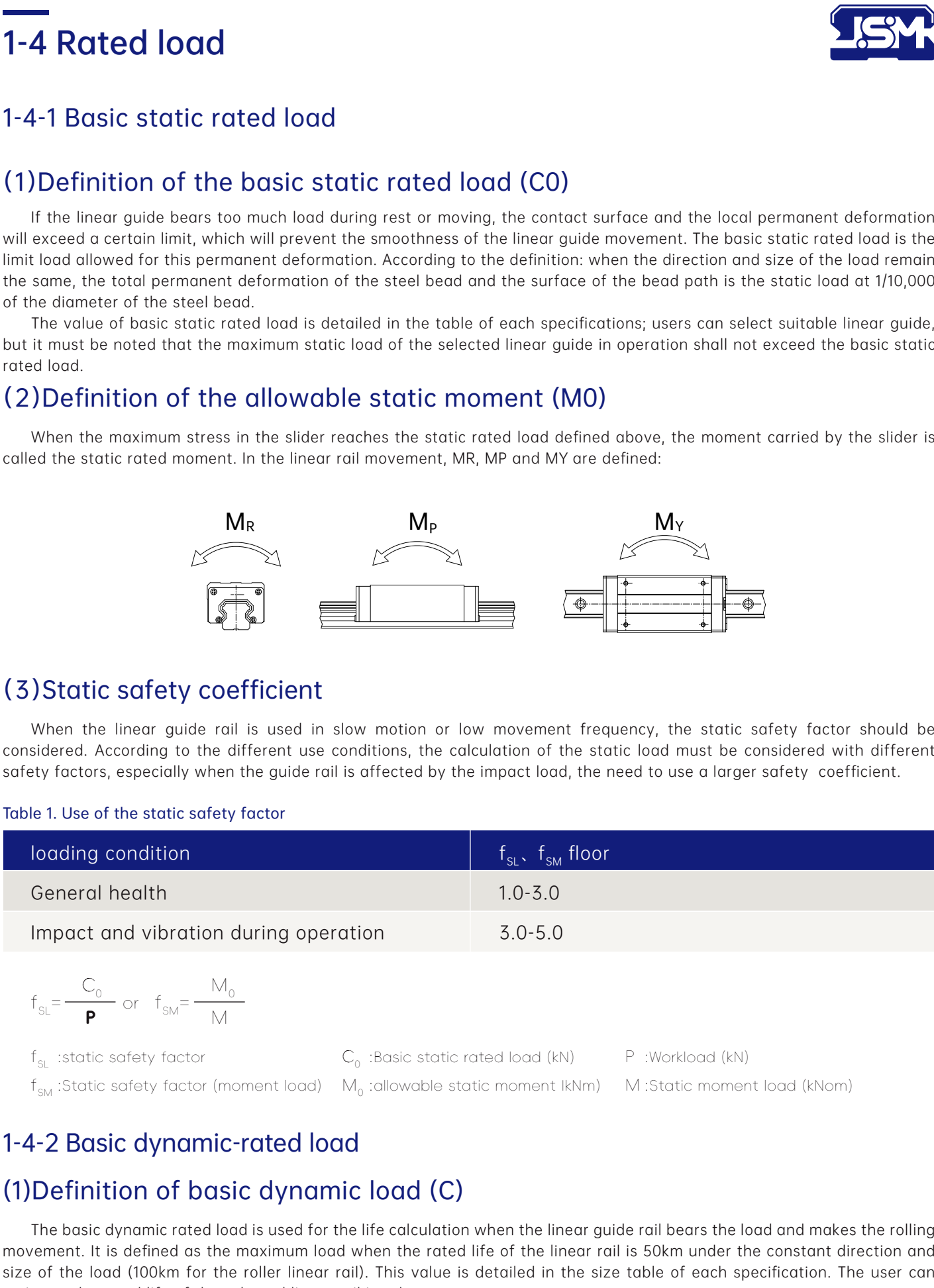
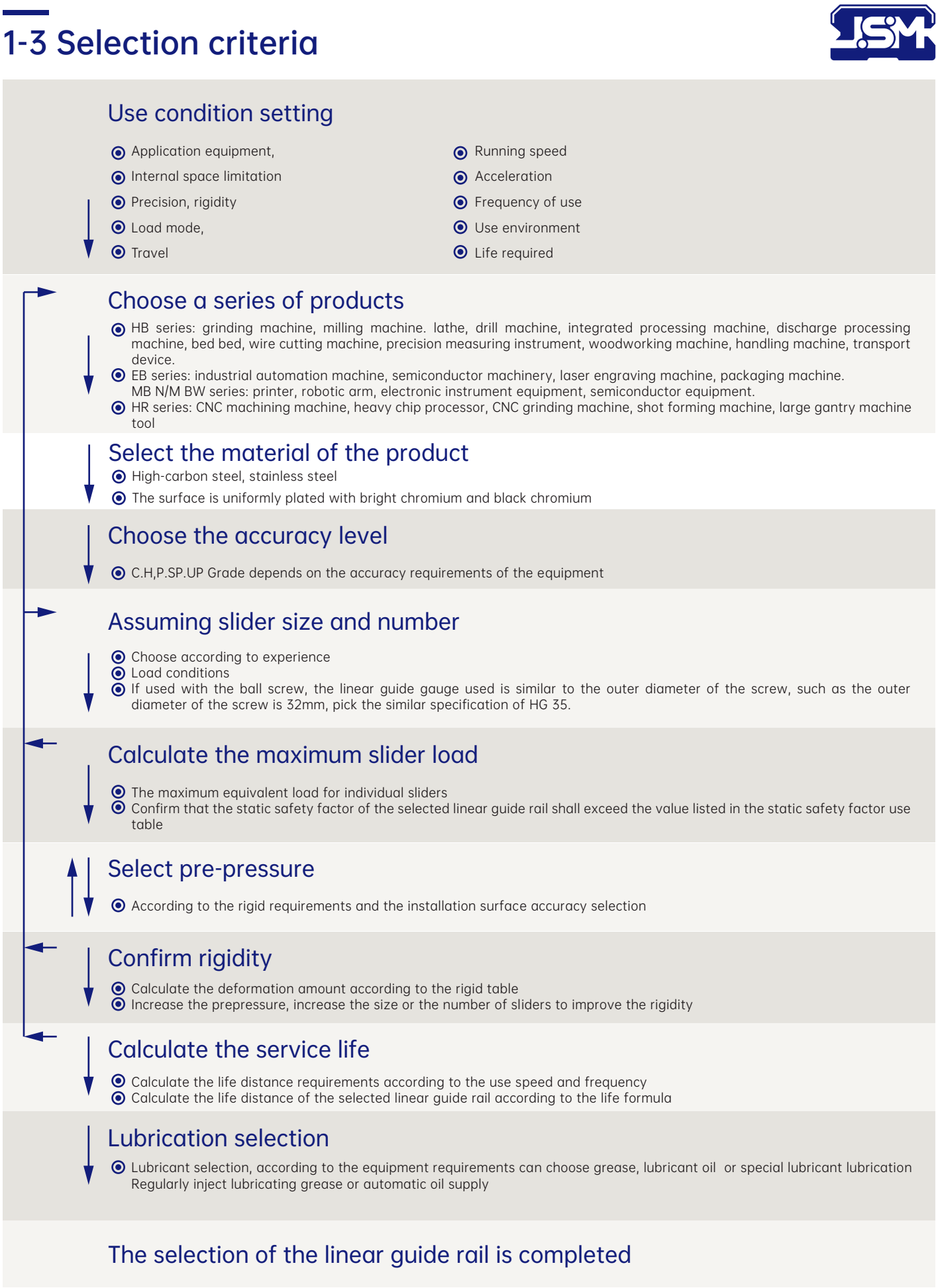
4.Medical equipment

Linear guide rail is widely used in the field of medical equipment, such as surgical robot, CT scanner, medical bed, etc., which can achieve precise positioning and motion control, and improve surgical accuracy and patient comfort.

5.Transportation

Linear guide rail is applied in high-speed rail, subway, tram and other transportation equipment, which can provide smooth movement and accurate positioning, to ensure the safety and comfort of passengers.





1-5 Linear guide rail life



1-5-1 life span

When the linear guide rail bears the load and moves, the surface of the bead path and the steel bead are constantly subjected to the cyclic stress. Once it reaches the critical value of rolling fatigue, the contact surface will begin to produce fatigue damage, and the peeling phenomenon of fish scale sheet occurs on part of the surface. This phenomenon is called surface stripping. Life is defined as the total operating distance between the surface of the bead path and the steel bead due to material fatigue.

1-5-2 Rated life span

The life of the linear guide is very dispersed, even in the same batch; this is mostly attributed to the inherent change in the fatigue characteristics of the material itself. Therefore, to define the life of the linear rail, the rated life is generally used; it is defined as the same products operating under the same conditions and rated load, of which 90% of the total operating distance can be achieved without surface stripping.

1-5-3 Life span calculation

The life of the linear guide rail will vary according to the actual working load, and the service life can be calculated according to the basic dynamic rated load and working load of the selected linear guide rail.

(1)Regardless of environmental factors, the life span calculation is shown below.

$$L=(\frac{C}{P})^3\cdot 50km=(\frac{C}{P})^3\cdot 31mile$$

- L :rated life span
- C :Basic dynamic rated load
- P :working load

(2)If the environmental factors used by the linear guide rail are considered, its life will change with the moving state, the surface hardness of the bead path and the system temperature.

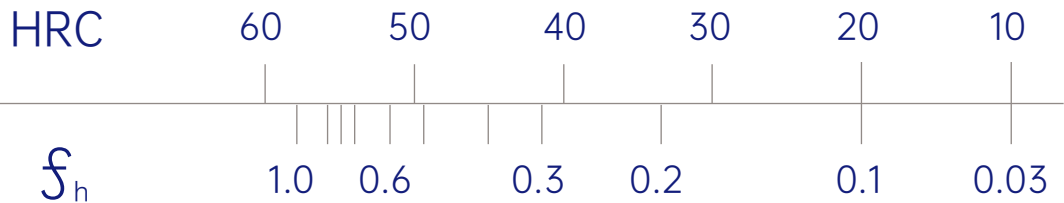
$$L=(\frac{f_h\cdot f_t\cdot C}{f_w\cdot P_c})^3\cdot 50km=(\frac{f_h\cdot f_t\cdot C}{f_w\cdot P_c})^3\cdot 31mile$$

- L :life span
- f_h :Coefficient of hardness
- C :Basic dynamic rated load
- f_t :Temperature coefficient
- P_c :Working load
- f_w Load coefficient

1-5-4 life span coefficient

(1)Hardness coefficient (f_h)

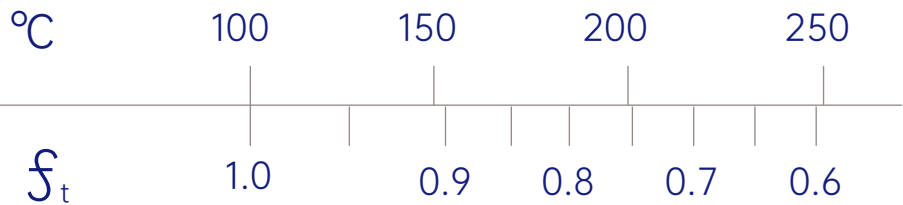
The hardness of the bead path contact surface of the linear rail should be HRC 58~62 at a certain hardening depth. If the hardness value cannot reach the required level, the rated load and service life of the linear rail will be reduced. At this time, the dynamic and static rated load is the size table value and then multiplied by the corresponding hardness coefficient. The hardness of straight rail of JSM is above HRC 58, so fh is 1.



(2)Temperature coefficient (ft)

The temperature of the system will have an impact on the material of the linear rail. When the temperature is higher than 100℃, the rated load and service life of the linear rail will be reduced. At this time, the dynamic and static rated load is the size table and multiplied by the corresponding temperature coefficient. Because some accessories are plastic material is not resistant to high temperature, so it is recommended that the use temperature should be lower than 100℃.

Temperature



(3)Load coefficient (fw)

Function on the linear rail load, in addition to the device itself weight, stop the inertia load and the suspension from the load, and movement with vibration and impact load, this type of load is not easy to calculate, according to the load condition and use speed, it is recommended to calculate the load value multiplied by the corresponding load coefficient.

Table 2 Load coefficient

Load status	The speed of use	f _w
No impact force and smooth	V≤15 m/min	1 ~ 1.2
Small impact	15 m/min <V≤ 60 m/min	1.2 ~ 1.5
Ordinary load force	60 m/min <V≤ 120 m/min	1.5 ~ 2.0
Impact force and vibration	V >120 m/min	2.0 ~ 3.5

1-5-5 Conversion of thelife span

The life distance is converted to the life span according to the service speed and frequency

$$L_h=\frac{L\cdot 10^3}{V_e\cdot 60}=\frac{(\frac{C}{P})^3\cdot 50\cdot 10^3}{V_e\cdot 60}hr$$

- L_h :Life time (hr)
- L :life span(km)
- V_e :Running rate(m/min)
- C/P :turndown ratio

1-6 Workload



1-6-1 Workload calculation

Work load calculation method will change with the actual force distribution situation, such as the position of the center of gravity, the force position, and running start, stop the acceleration of inertia force affect the load calculation, so the use of linear rail must carefully consider all kinds of load condition, to calculate the most correct load value.

(1) Inertial force load

Table 4. Example of inertial force load calculation

Consider the paradigm of acceleration and subtraction	Force sustained by the individual sliders
F : Drive thrust(N) W : installation weight(N) g : acceleration of gravity(9.8m/sec²) P_n : Load (radial, reverse radial)n=1~4 V_c : velocity t_n : When the number n=1~3 c, d, l : distance	- Constant speed $P_1 \sim P_4 = \frac{W}{4}$ - Increase the speed $P_1 = P_3 = \frac{W}{4} + \frac{1}{2} \cdot \frac{W}{g} \cdot \frac{V_c}{t_1} \cdot \frac{l}{d}$ $P_2 = P_4 = \frac{W}{4} + \frac{1}{2} \cdot \frac{W}{g} \cdot \frac{V_c}{t_1} \cdot \frac{l}{d}$ - Reduce the speed $P_1 = P_3 = \frac{W}{4} + \frac{1}{2} \cdot \frac{W}{g} \cdot \frac{V_c}{t_3} \cdot \frac{l}{d}$ $P_2 = P_4 = \frac{W}{4} + \frac{1}{2} \cdot \frac{W}{g} \cdot \frac{V_c}{t_3} \cdot \frac{l}{d}$

(2) A single slider to bear the load



Table 3. Load calculation example

Linear guide configuration diagram	Force distribution map	A single slider load
		$P_1 = \frac{W}{4} + \frac{F}{4} + \frac{F \cdot a}{2c} + \frac{F \cdot b}{2d}$ $P_2 = \frac{W}{4} + \frac{F}{4} + \frac{F \cdot a}{2c} + \frac{F \cdot b}{2d}$ $P_3 = \frac{W}{4} + \frac{F}{4} + \frac{F \cdot a}{2c} + \frac{F \cdot b}{2d}$ $P_4 = \frac{W}{4} + \frac{F}{4} + \frac{F \cdot a}{2c} + \frac{F \cdot b}{2d}$
		$P_1 = \frac{W}{4} + \frac{F}{4} + \frac{F \cdot a}{2c} + \frac{F \cdot b}{2d}$ $P_2 = \frac{W}{4} + \frac{F}{4} + \frac{F \cdot a}{2c} - \frac{F \cdot b}{2d}$ $P_3 = \frac{W}{4} + \frac{F}{4} - \frac{F \cdot a}{2c} + \frac{F \cdot b}{2d}$ $P_4 = \frac{W}{4} + \frac{F}{4} - \frac{F \cdot a}{2c} - \frac{F \cdot b}{2d}$
		$P_1 = P_3 = \frac{W}{4} - \frac{F \cdot l}{2d}$ $P_2 = P_4 = \frac{W}{4} + \frac{F \cdot l}{2d}$
		$P_1 \sim P_4 = -\frac{W \cdot h}{2d} + \frac{F \cdot l}{2d}$
		$P_1 \sim P_4 = -\frac{W \cdot h}{2c} - \frac{F \cdot l}{2c}$ $P_{t1} = P_{t3} = \frac{W}{4} + \frac{F}{4} + \frac{F \cdot k}{2d}$ $P_{t2} = P_{t4} = \frac{W}{4} + \frac{F}{4} - \frac{F \cdot k}{2d}$

Note: W: Weight
F: external force
P_n: Load (slide radial, antiradial)n=1~4
P_{in}: Load (slider side)n=1~4
a,b,k: Distance of the external force to the geometric center
c: Guide rail span
d: Slider span
l: Distance of the external force to the driving source
h: Distance from the center of gravity to the driving source

1-6-2 Mean load calculation

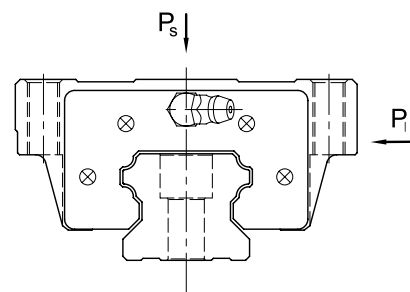
In operation, the load of the slider is sometimes not equal., for example, in the operation of the delivery device, it bears the extra weight of the goods when advancing, and only bears the weight of the device itself when returning. The load presents a step change. Therefore, the average load in operation must be calculated to calculate the life. The average load is defined as an equivalent load value equal to the life under load changes.

Table 5. Exam ple verage load calculation

Type of load change	Average load force
Step change	$P_m = \sqrt[3]{1/L(P_1^3 \cdot L_1 + P_2^3 \cdot L_2 + \dots + P_n^3 \cdot L_n)}$ P_m :Average load P_n :variable load L :total operating distance L_n :operating distance subject to p load
Monotonic change	$P_m = 1/3(P_{min} + 2 \cdot P_{max})$ P_m :Average load P_{min} :minimum load P_{max} :maximum load
Sine type change	$P_m = 0.65 \cdot P_{max}$ P_m :Average load P_{max} :maximum load

1-6-3 Equivalent load calculation in both directions

The linear guide can bear the upper, lower, left and right direction load, so when using the linear guide, it may be both the vertical direction load (P_s) and the side direction load (P_l), so the equivalent load (P_e) can be converted according to the following formula.



$$P_e = P_s + P_l$$

$$\text{When } P_s > P_l \quad P_e = P_s + 0.5 \cdot P_l$$

$$\text{When } P_l > P_s \quad P_e = P_l + 0.5 \cdot P_s$$

1-6-4 Example of service life of linear rail

According to the experience, the type and specifications of the linear guide rail are selected, and then the maximum working load of a single slider is estimated according to the actual use situation, and the load ratio between the dynamic rated load and the working load is calculated to calculate its service life.

Table 6. An example of life

Use specification of the linear guide rail	Equipment size	Processing conditions
Form: HB 30 CA C :38.74kN C.:52.19 kN prepressure: Z0	d: 600 mm c: 400 mm h: 200 mm l : 250 mm	The weight of the device itself Drilling force System temperature: room temperature Load status: normal load
		- Slider bearing load calculation $P_1 \sim P_4 = \frac{W \cdot h}{2d} - \frac{F \cdot l}{2d} = + \frac{15 \times 200}{2 \times 600} - \frac{1 \times 250}{2 \times 600} = 2.29(\text{kN})$ $P_{max} = P_1 \sim P_4 = 2.29(\text{kN})$ - Z0 precompression, therefore $P_c = P_{max} = 2.29(\text{kN})$ Note: A heavier prepressure (ZA, ZB) will increase rigidity, but reduce its service life - Calculation of Life L $L = \left(\frac{f_r \cdot x \cdot f_t \cdot x \cdot C}{f_w \cdot x \cdot P_c} \right)^3 \times 50 = \left(\frac{1 \times 1 \times 38.74}{2 \times 2.29} \right)^3 \times 50 = 30,258(\text{km})$

1-7 Friction force

The linear guide is guided by steel beads, so the friction can be reduced to 1 / 50 of the traditional sliding guide, especially the static friction is very small, and there is no big difference between the dynamic friction, so the phenomenon of idling slip and the micron motion accuracy; generally speaking, the friction coefficient of the linear guide is about 0.004. The resistance of the oil scraper varies according to different specifications, and its value is listed in the friction section of each specification.

$$F = \mu \cdot W + S$$

F :friction force (kN)

S :Scraper resistance(kN)

μ :Friction force coefficient

W :Movement vertical direction load(kN)

1-8 Lubrication



If the linear guide is not properly lubrication, the friction of the rolling part will increase, and long-term use will become the main reason for shortening the life. Lubricant provides the following effects:

- Reduce friction in the rolling part, prevent burns, and reduce wear.
- Oil film is formed between the rolling surface, which can prolong the rolling fatigue life.
- Prevent rust.

1-8-1 Lube oil grease

Each group of straight guide rail should lubricate the bead groove track. Although the lubricating grease is not easy to lose, in order to avoid insufficient lubrication caused by lubrication loss, it is suggested that the lubricating grease is 100 km again. At this time, the oil injection gun can be used by the oil nozzle attached to the slider to push the oil into the slider. Lubricating grease is suitable for situations where the speed does not exceed 60m / min and has no cooling requirement

$$T = \frac{50 \cdot 1000}{V_e \cdot 60} \text{ hr}$$

T : Injection frequency(hour)
V_e : velocity(m/min)

1-8-2 Lubricating oil

It is recommended that the customer use lubricating oil with oil viscosity about 32 ~ 150 cst. JSM can install the tubing connector at the original location of the nozzle as the customer needs, so the customer only needs to connect the preset tubing to the tubing connector. The loss of lubricating oil is faster than that of lubricating oil, and attention must be paid to whether the oil supply is sufficient when using. If the lubrication is insufficient, the abnormal wear of the linear guide rail can reduce its life. It is recommended that the oil drilling frequency is about 0.3cm³ / hr, and customers can use it according to their use conditions. Lubricating oil is suitable for various loads and speed occasions, but it is not suitable for high temperature lubrication.

1-9 Rust prevention

1-9-1 Materials

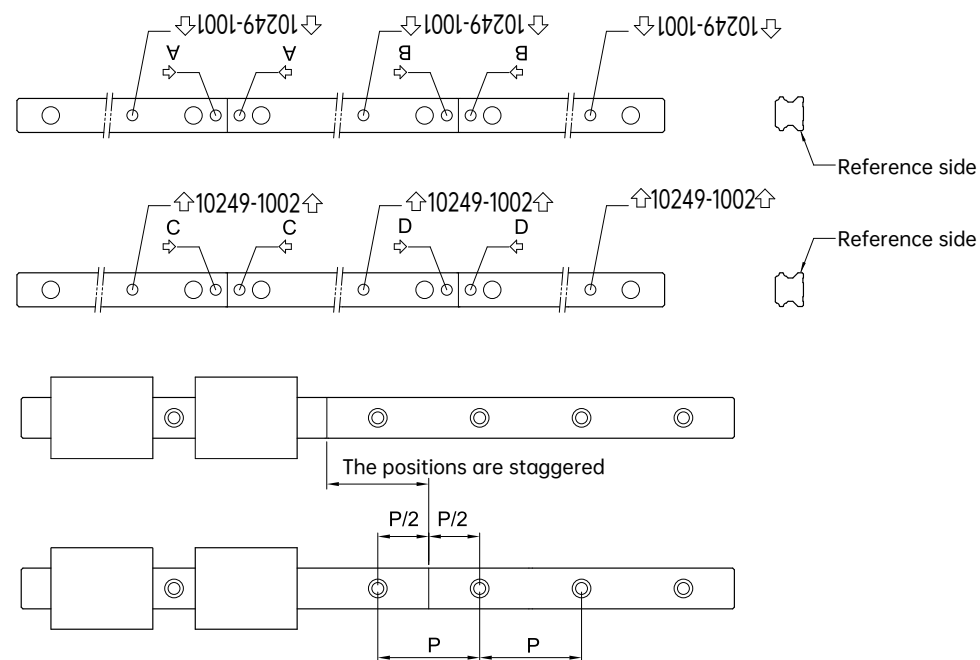
It is necessary for linear motion systems to select materials that can meet the requirements of the usage environment. In order to be used in environments that require corrosion resistance, stainless steel can be used. Stainless steel rails can be used for the following types of linear guides: HBH, HBL, HBW, HBR, EBH, EBW, EBR, MBN, and MBNR types.

1-9-2 Surface treatment

The surfaces of HB, EB, MB guide rails and sliders in linear motion systems can be treated for rust prevention or aesthetic purposes. JSM is the best surface treatment method for linear motion systems. There are roughly two types of treatment methods: bright chromium plating and black chromium plating

1-10 Guide rail connecting tooth piece

The tooth of the guide rail must be installed in accordance with the marked sequence on the guide rail to ensure the accuracy of the linear guide rail, and it is recommended that the tooth position of the paired guide rail should be staggered to avoid the poor accuracy of the bed to the connecting tooth

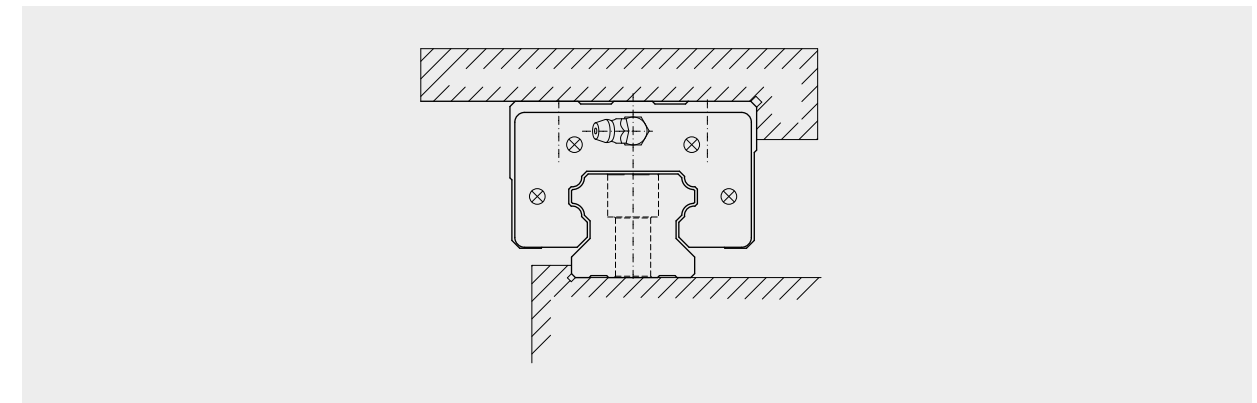


1-11 Configuration of the linear guide rails

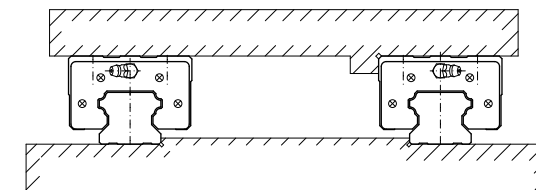


The linear rail can withstand the load in the upper, lower, left and right direction, so the linear rail group can be configured according to the machine structure and working load direction.

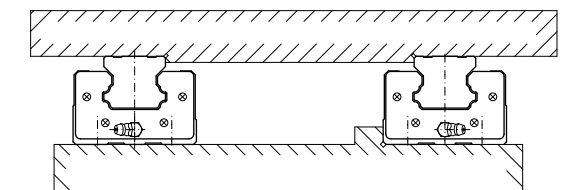
Single guide rail has a bearing surface configuration



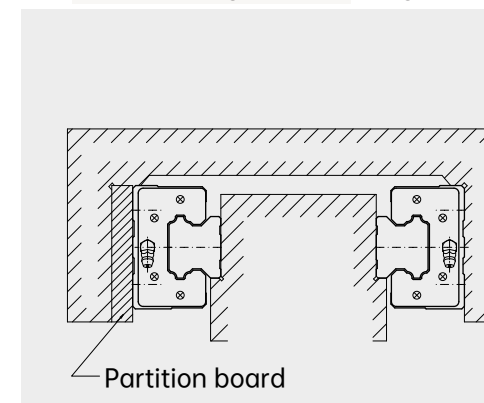
Two guide slide movement configuration



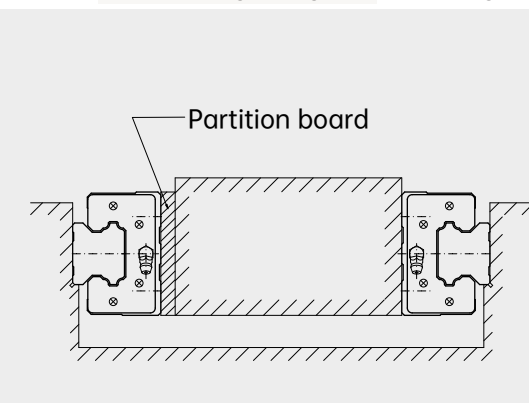
Two guide slide movement configuration



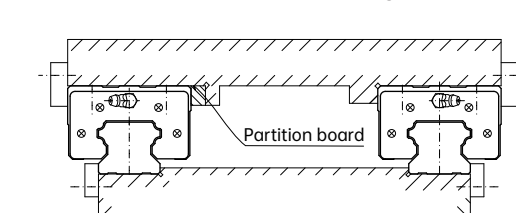
Relative two guide rail configurations



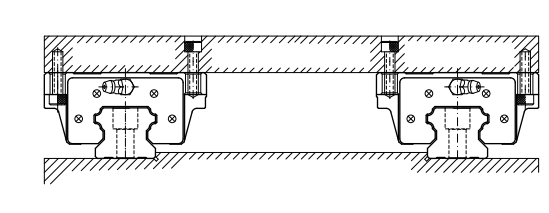
Back-facing two guide rail configuration



Comprehensive fixed configuration



HB slider assembly bolts in different directions



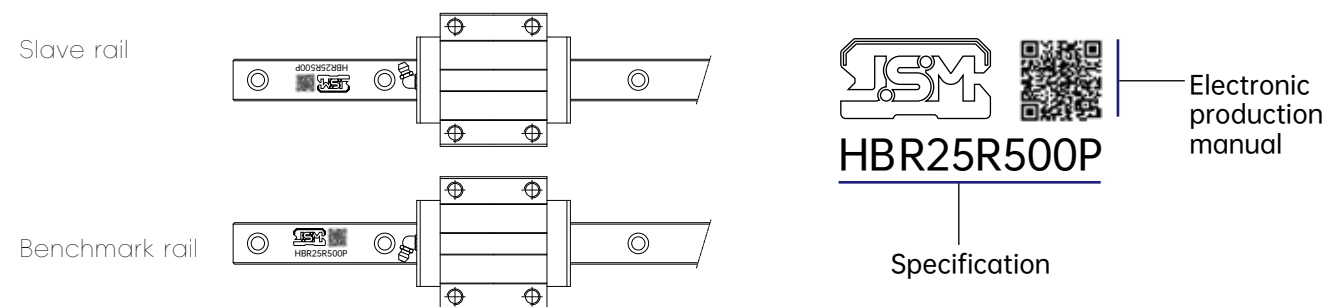
1-12 Installation of the linear guide rails



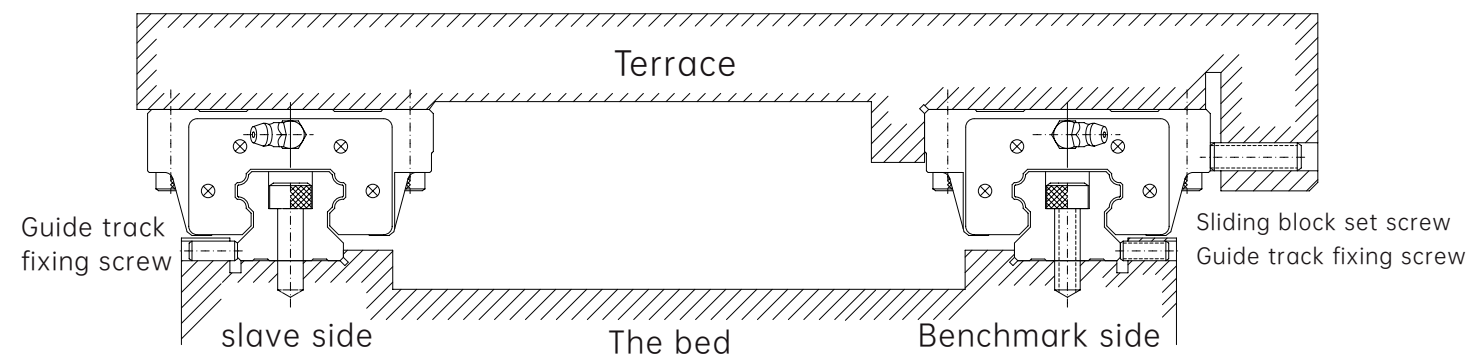
The installation method of the linear guide rail must be set according to the use condition of the machine, such as the degree of vibration and impact force, the required walking accuracy and the limitation of the machine.

1-12-1 Benchmark rail and slave rail

When the non-interchangeable linear guide rail is paired, note the difference between the base rail and the driven rail. The accuracy of the side reference rail is higher than the driven rail, which can be used as the bearing surface of the bed table. The MA marker is engraved on the reference track, as shown in Fig.

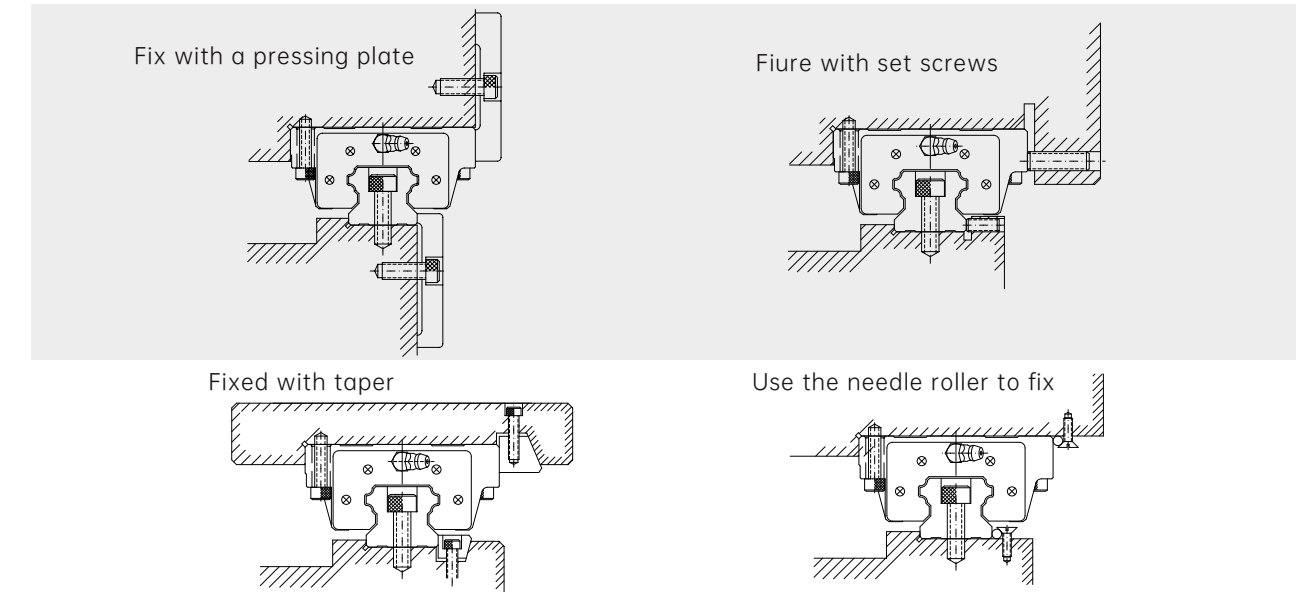


1-12-2 Bed table is subjected to vibration and impact force, and requires high rigidity and high precision installation



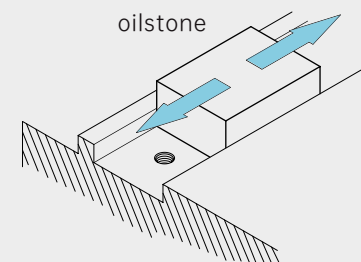
1.Fixed method

When the bed table is affected by the vibration and impact force, the guide rail and the slider are likely to deviate from the original fixed position, and affect the accuracy. In order to avoid similar conditions, it is recommended to fix the guide rail and slide with the four fixed modes listed in the following figure, so as to ensure the operation accuracy of the machine.

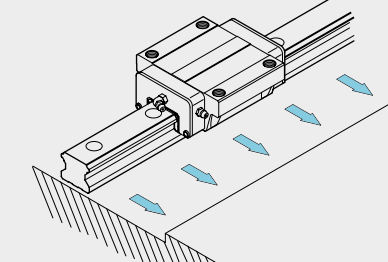


2.Guide rail installation

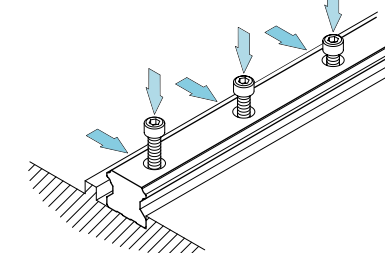
1. Remove the dirt from the bed and table assembly surface.



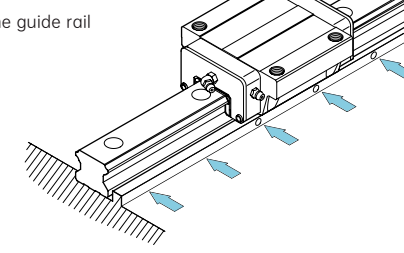
2. Place the linear guide smoothly on the bed and let the guide side, The datum lies on the upper bed



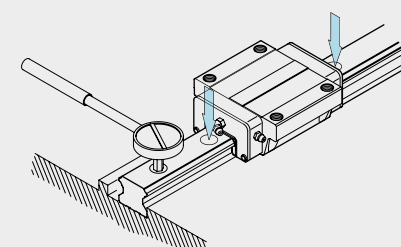
3. Test the screws to confirm that the bolt holes are fit and guide. The bottom base surface of the rail is probably fixed to the bottom assembly surface of the bed table



4. Use the side fixing screw to press the guide rail side base surface to the bed table side assembly surface in order to determine the position of the guide rail

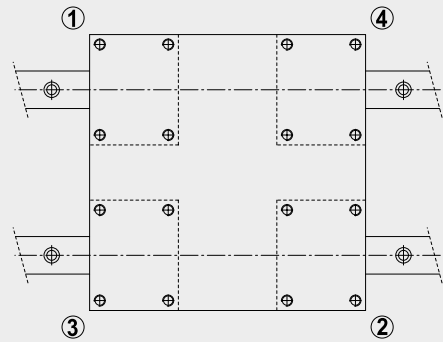


5. Use the torsion plate hand, lock the assembly screw in order with a specific torque, and force the base surface of the bottom of the guide rail to the bottom assembly surface of the bed table



6. Install the remaining paired guides in steps 1 to 5.

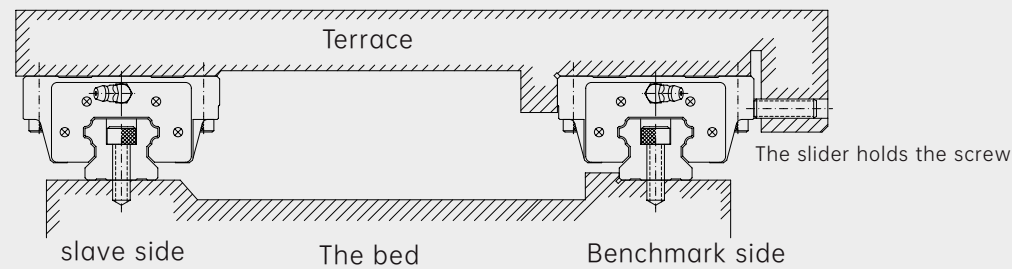
3.Slider installation



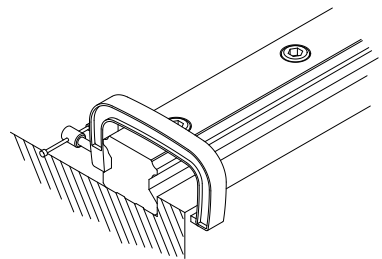
- Use the assembly screw to attach the bearing platform to the slider
- With the fixing screws, tighten the slider side datum to the platform side
- Assembly surface to determine the slide position. The locking assembly screw holds the bearing platform in a 1-4 diagonal order On the slider.

1-12-3 There is no lateral screw mounting on the guide rail

In an installation without fixed screws to ensure parallelism between the driven side guide rail and the reference side guide rail, the guide rail may be installed as indicated below and the slider is the same as in the preceding example.

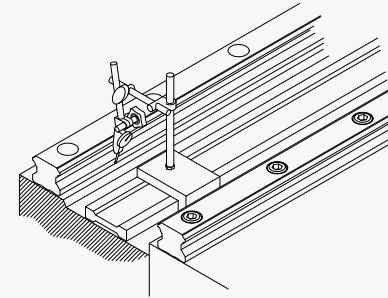


1.Installation of the Benchmark side guide rail

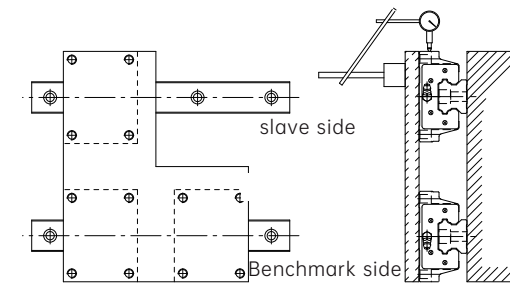


- Tiger clamp tightening method**
First use the assembly screw to fix the base surface of the guide rail at the bottom of the bed table, and then use the vice to press the side base surface of the guide rail to the side of the bed table. After determining the position of the guide rail, use the torsion plate hand, lock the fixed screw in order with a certain torque, and force the base surface of the bottom of the bottom of the bed table.

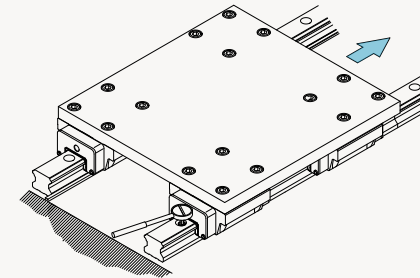
2.Installation of the slave side guide rail



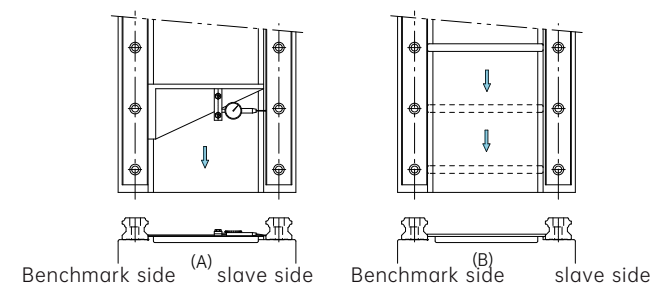
- Straight-line block rules**
Place the linear block gauge between the two guide rails, calibrate the linear block gauge to make the component gauge parallel to the side base plane of the reference side guide rail, calibrate the driven side guide rail according to the linear block gauge, calibrate from one end of the guide rail and lock the assembly screw with specific torsion force in order.



- Mobile platform method**
The two sliders on the base side are fixed on a measuring platform, and only one slider is installed on the driven side, the guide rail and the slider have not been fastened to the bed and platform, using the driven side slide, measuring the side datum of the driven side slide, calibration from the end of the guide and locking the assembly screw in sequence.



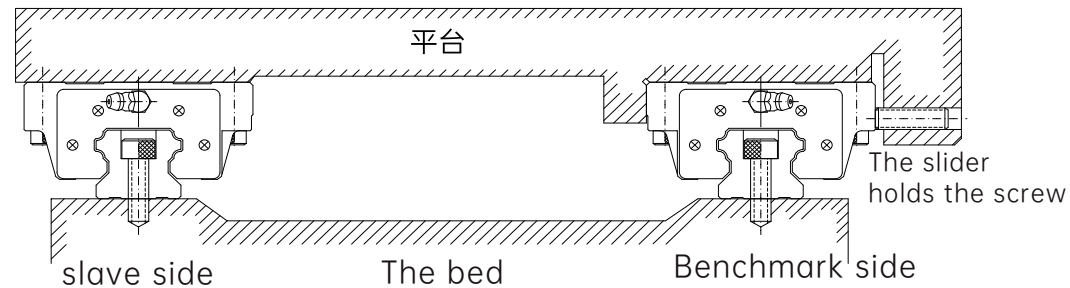
- Reference side guide method**
The two sliders of the base side rail and one of the driven side rail fixed on the platform, then the driven side rail and the bed platform and platform respectively, to the base side of the mobile platform, starting from the rail end, side confirm the driven side straight rail rolling resistance, side to lock the assembly screw with specific torque.



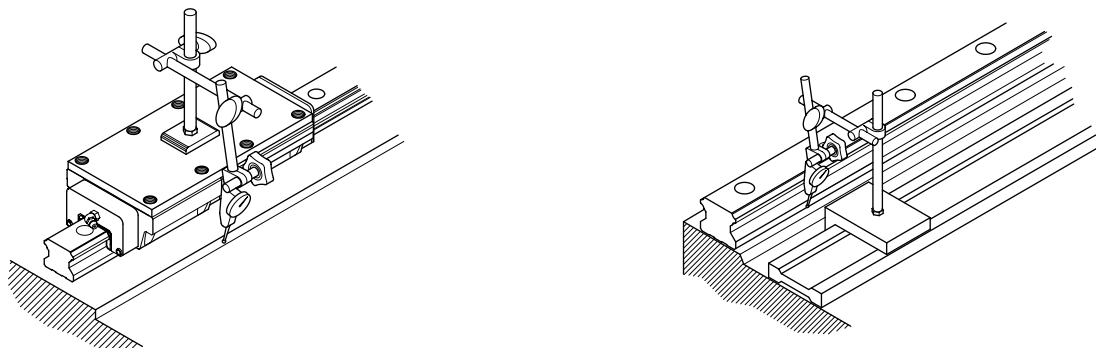
- Special tool method**
Use special tools to determine the position of the driven side rails and lock the assembly screws with specific torque.

1-12-4 Installation of assembly surface

In the installation example without lateral positioning assembly surface, in order to ensure parallelism between the driven side guide rail and the reference side guide rail, the guide rail can be installed as shown below, and the slider is the same as in the preceding example.



1. Installation of the bunchmark side guide rail



- False benchmark surface method
Two sliders are closely joined to fix them to the measuring plate. According to the base plane near the assembly of the bed table guide rail, use the side base plane of the reference side guide rail, start from one end of the guide rail and lock the assembly screw with specific torsion force in order.

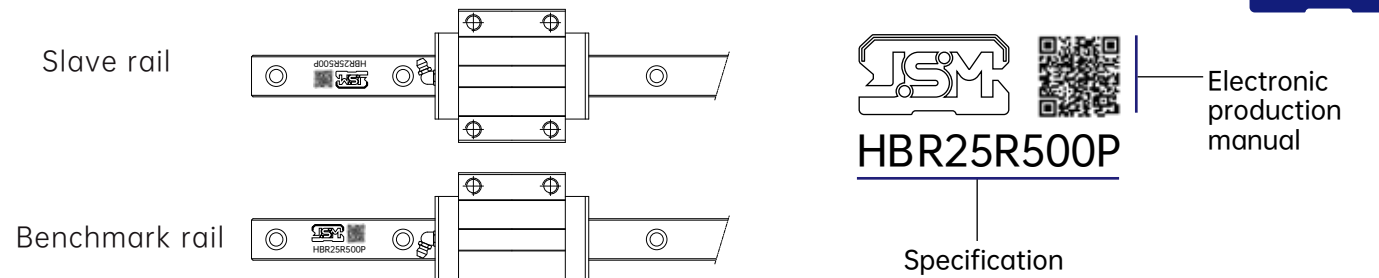
- Straight-line block rules
According to the linear block rule, use the side base of the reference rail, start the calibration from one end of the rail and lock the assembly screw with specific torque in order.

2.Installation of the slave side guide rail

Same method as listed in the no-lateral fixation screw installation example.

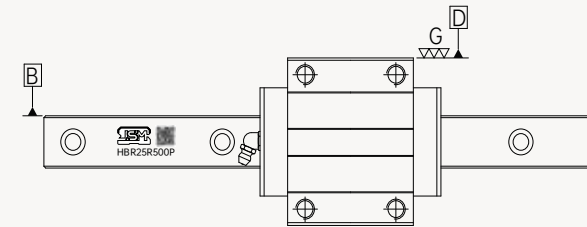
1-12-5 Precautions for linear guide rail installation

- The linear guide rail products should be shipped with appropriate anti-rust oil. Before installation and use, please wipe the anti-rust oil of the guide rail before the slider can be moved.
- Confirm the reference rail and the driven rail: when the non-interchangeable straight guide rail is paired, pay attention to the difference between the reference rail and the driven rail. The accuracy of the side reference rail is higher than the driven rail, which can be used as the bearing surface of the bed table. The MA mark is engraved on the base track. Moreover, when the double track is used, the reference track number is odd, while the guide track number of the driven rail is even. Installation, please follow the symbols (for example, 001 and 002,003 and 004...), as shown in Figure 1. For a multi-track installation, please do this and so on.



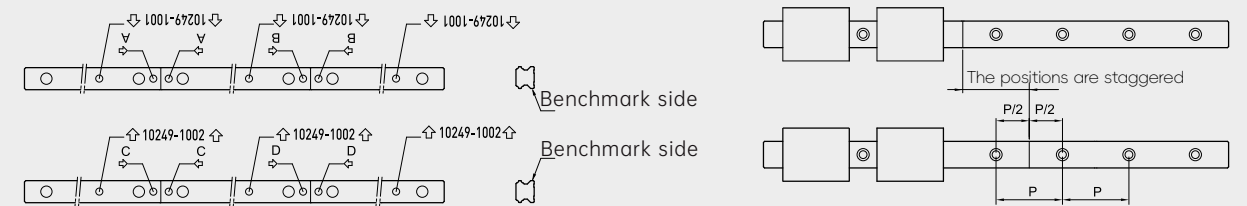
(Figure 1)

- Confirmation of installation datum: the guide rail datum is the side plane (B) indicated by the arrow beside the word JSM, and the slider datum is the ground smooth surface (D).(Figure 2)



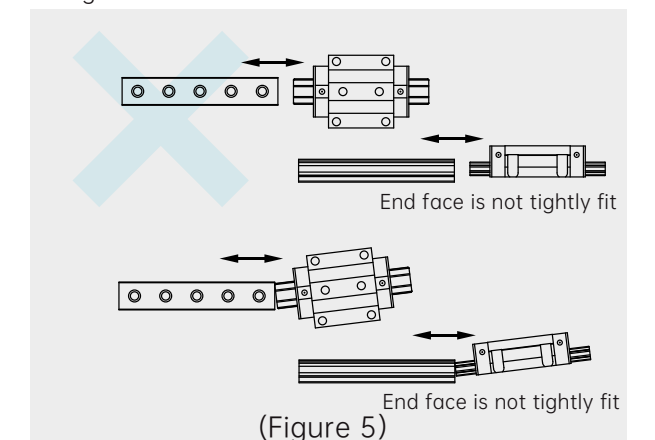
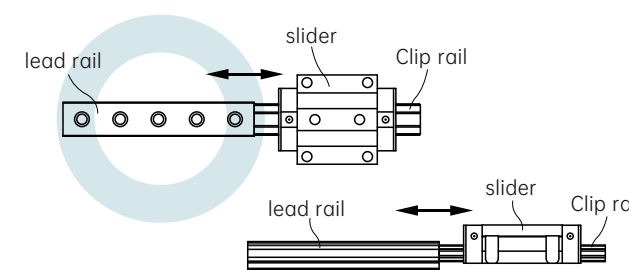
(Figure 2)

- Guide rail tooth piece: the guide rail tooth must be installed in accordance with the sequence marked on the guide rail to ensure the accuracy of the straight guide rail. The tooth mark is on the upper surface of the tooth end. Please connect the two ends of the same tooth mark together, as shown in Figure 3. Moreover, it is suggested that the tooth position of the



(Figure 3)

- When installing the linear guide rail, do not remove the slider unless necessary. If it is necessary to remove or install the slider from the guide rail, please use the attached clip rail as shown in Figure 5.



(Figure 5)

Product line 2



In order to meet customers' demand for product diversity, in addition to HB series suitable for general tool machine industry, we also researched and developed EB series suitable for automation industry; and developed RB series suitable for high rigidity demand industry and MB N/M BW series suitable for small mechanical semiconductor industry;

(1)Series type

Series	Combination height	Load form	Quadrangle	Flange type		
			Up Lock type	Up Lock type	Down Lock type	Upper/ower lock type
HB	High type	Heavy load	HBH-CA	---	---	---
		Overweight load	HBH-HA	---	---	---
	Low type	Heavy load	HLB-CA	HBW-CA	HBW-CB	HBW-CC
		Overweight load	HLB-HA	HBW-HA	HBW-HB	HBW-HC
EB	Low type	Medium load	EBH-SA	EBW-SA	EBW-SB	---
		Heavy load	EBH-CA	EBW-CA	EBW-CB	---
MBN	---	normalized form	MBN-C	---	---	---
		Extended type	MBN-H	---	---	---
MBW	---	normalized form	MBW-C	---	---	---
		Extended type	MBW-H	---	---	---
MBN-O	---	normalized form	MBN-C-0	---	---	---
		Extended type	MBN-H-0	---	---	---
MBW-O	---	normalized form	MBW-C-0	---	---	---
		Extended type	MBW-H-0	---	---	---

(2)Series accuracy level

Series	Non-interchangeable linear guide					Interchangeable linear guide		
	General (C)	High (H)	Precision (P)	Ultra Precision (SP)	Ultra High Precision (UP)	General (C)	High (H)	Precision (P)
HB	●	●	●	●	●	●	●	●
EB	●	●	●	●	●	●	●	●
MBN	●	●	●	---	---	●	●	●
MBW	●	●	●	---	---	●	●	●
MBN-O	●	●	●	---	---	●	●	●
MBW-O	●	●	●	---	---	●	●	●



(3)Series prepressure grade

Series	Non-interchangeable linear guide			Interchangeable linear guide	
	Ordinary clearance(Z0)	Light precompression(ZA)	Intermediate precompression(ZB)	No precompression(Z0)	Light precompression(ZA)
HB	●	●	●	●	●
EB	●	●	●	●	●

Series	Non-interchangeable linear guide			Interchangeable linear guide		
	Ordinary clearance(ZF)	No precompression(Z0)	Light precompression(Z1)	Ordinary clearance(ZF)	No precompression(Z0)	Light precompression(Z1)
MBN	●	●	●	●	●	●
MBW	●	●	●	●	●	●
MBN-O	●	●	●	●	●	●
MBW-O	●	●	●	●	●	●

2-1 HB series-heavy load ball straight guide rail

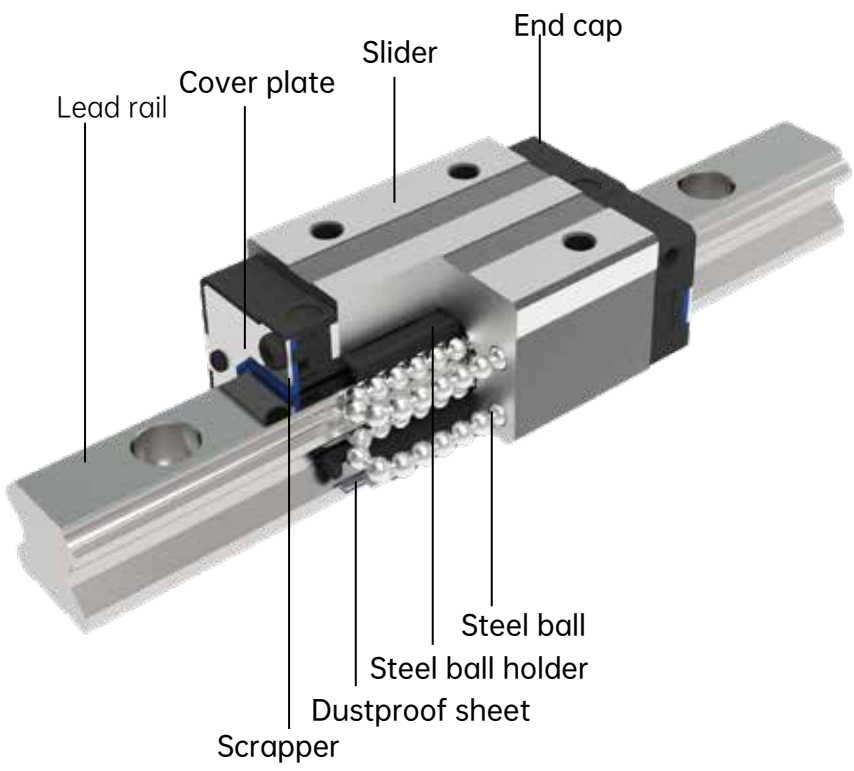


HB series linear rail is a four-column single circular arc tooth contact linear guide, and integrates the best structure design of overweight load precision linear rail, compared with other straight rails, improves the load and rigidity capability, with the function of automatic centering, and obtain high precision demands. The concept of high speed, high load, high rigidity and high precision has become the trend of industrial product development in the world in the future. JSM four-line overweight load linear guide rail is the product developed based on this concept.。

2-1-1 HB series linear guide rail features

- 1. Automatic heart tuning ability
DF (45° -45°) combination from the arc groove, by the elastic deformation of the steel bead and the transfer of contact points, even if the installation surface is somewhat deviation, it can be absorbed by the rail slide, producing the effect of automatic centering ability and get high precision and stable smooth movement.
- 2. Having interchangeability
Due to the strict control of production and manufacturing accuracy, the size of linear guide rail can be maintained within a certain level, and the slider has a holder design to prevent steel beads from falling off, so part of the series accuracy is interchangeability, customers can order the guide rail or slide block, or also store the guide rail and slide separately to reduce the storage space.
- 3. All directions have high rigidity
Using four circular arc groove, with the contact Angle of four steel beads, the steel beads can achieve the ideal two-point contact structure, can withstand the load from up and down and left and right directions; if necessary, prepressure can be applied to improve rigidity.
- 4. Stainless steel type is also available
HBH, HBL, HBW, HBR and steel balls can also be made of stainless steel.

2-1-2 HB body structure



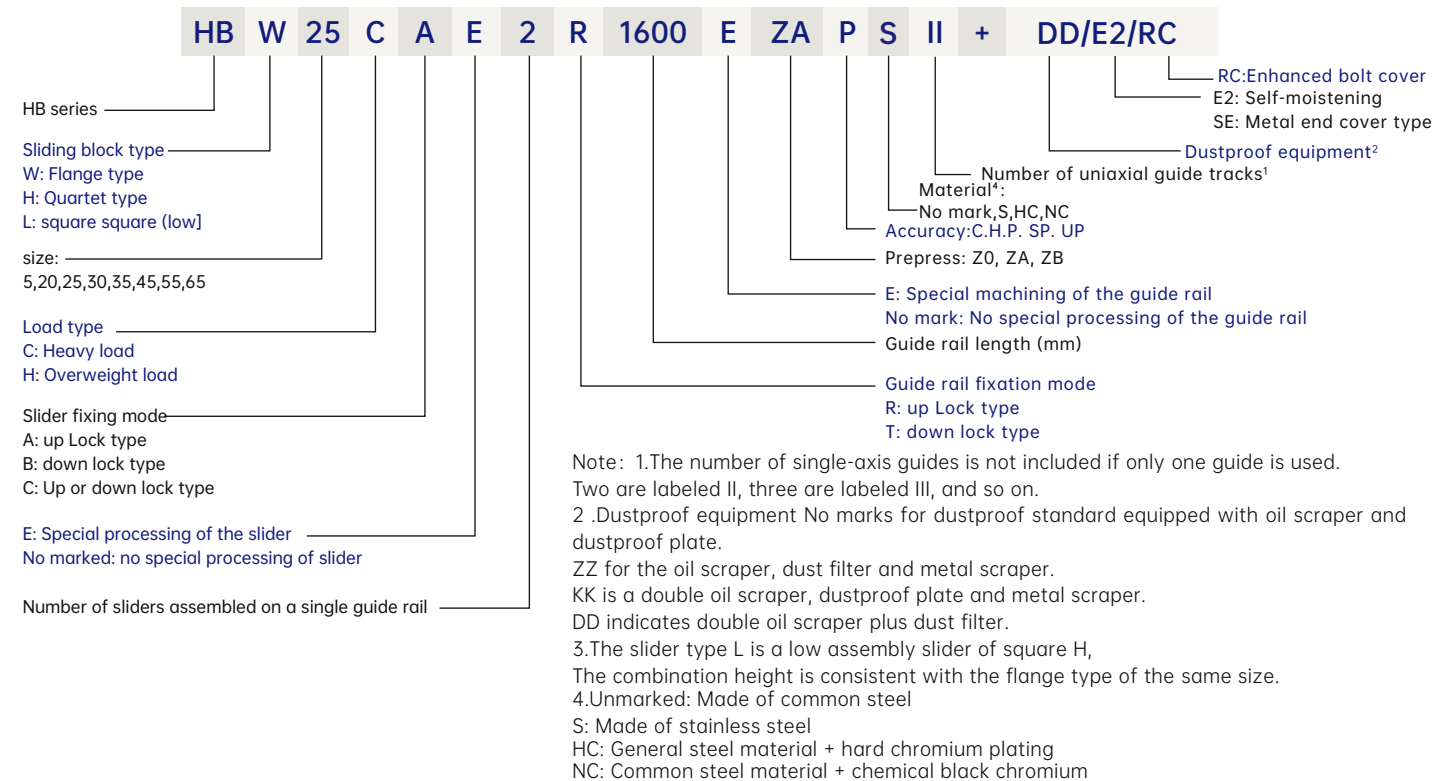
- Rolling cycle system: slide block, guide rail, end cover, steel bead, steel bead holder.
- Lubrication system: oil nozzle, oil pipe joint
- Dust prevention system: oil scraper, bottom dust dust filter, guide rail bolt cover, metal scraper

2-1-3 Product Specifications

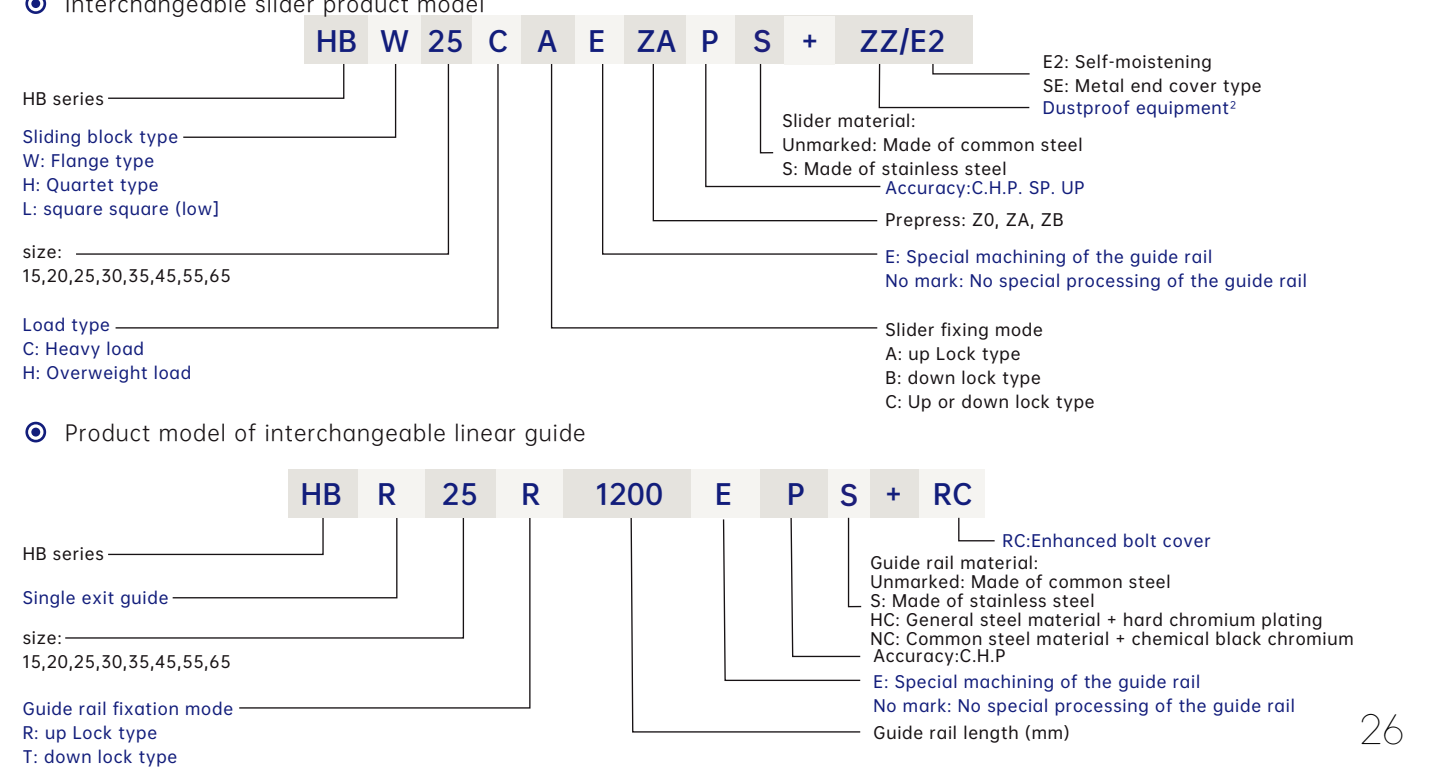


HB series is divided into the interchangeability and interchangeability type two straight rail, the same size, the main difference lies in the interchangeability type of slider, guide rail can be single swap use, more convenient, but the combined precision of the lack of interchangeability type of high precision, but because our company has good size control and strict quality requirements, interchangeability type of combined precision has reached a certain level, for do not need to pair to install straight rail customers, is a good choice. The product specifications and models of the linear guide rail mainly indicate the size, type, accuracy grade, prepressure and other specifications of the linear guide rail, so as to facilitate the product confirmation by both parties when ordering.

(1)Non-interchangeability linear guide rail product model



(2)Product model of interchangeable linear guide rail



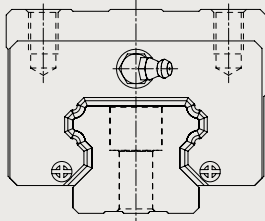
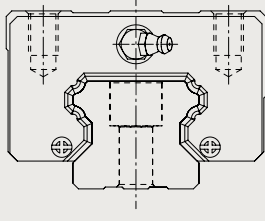
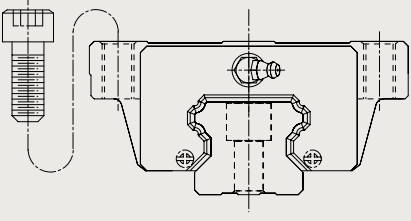
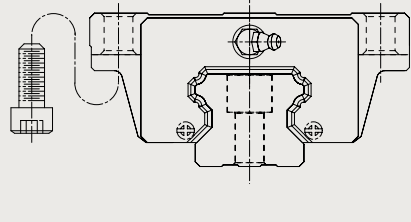
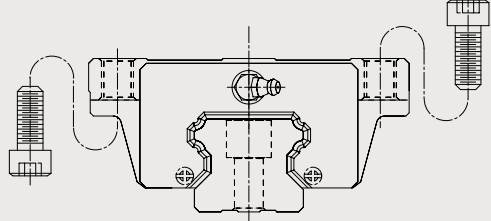


2-1-4 HB series type

(1)Slider type

Our company provides two kinds of linear rails: flange and square, square linear rail is divided into H and L, L is the low assembly linear rail of H, its combination height is consistent with flange linear rail.

Table 2-1-1 Slider type

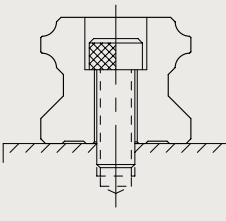
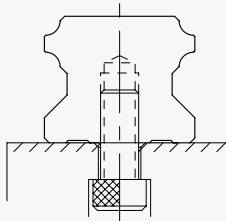
Type	Specifica-tions	Form	Height size (mm)	Guide rail length (mm)	Utility unit
Quartet type	HBH-CA HBH-HA		28 ↓ 90	100 ↓ 6000	- Mechanical processing center - machine tool - Precision machining machine - Heavy cutting machine tool - Marble cutting machine - grinding machine - The shooting machine - punch - Automation device - conveyer - Measurement instrument
	HBL-CA HBL-HA		24 ↓ 70	100 ↓ 6000	
Flange type	HBW-CA HBW-HA		24 ↓ 90	100 ↓ 6000	
	HBW-CB HBW-HB		24 ↓ 90	100 ↓ 6000	
	HBW-CC HBW-HC		24 ↓ 90	100 ↓ 6000	



(2)Guide rail type

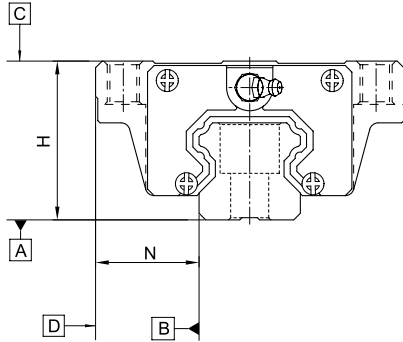
In addition to the general lock type bolt hole guide rail, our company also provides the lower lock type screw hole guide rail, convenient for customers to install and use.

Table 2-1-2 Guide rail form

Up Lock bolt hole	Down lock bolt hole
	

2-1-5 Accuracy level

The accuracy of HB series linear guide rail is divided into five levels: ordinary, high, precision, ultra-precision and ultra-high precision level. Customers can choose the accuracy according to the accuracy requirements of the equipment.



1.Accuracy of non-interchangeable linear rail

Table 2-1-3 Assembly accuracy table

unit: mm

model	HB-15,20				
accuracy class	Common level(C)	High level(H)	Precision level(P)	Super precision level(SP)	Ultra precision level (UP)
Tolerance size error for height H	± 0.1	± 0.03	0 - 0.03	0 - 0.015	0 - 0.008
Tolerance size error for width N	± 0.1	± 0.03	0 - 0.03	0 - 0.015	0 - 0.008
Mutual error of the pairwise height H	0.02	0.01	0.006	0.004	0.003
Mutual error of the pairwise width N	0.02	0.01	0.006	0.004	0.003
Slide C faces the walking parallelism of the guide rail plane A			Walk parallelism See the form2-1-11		
The lide D faces the guide B			Walk parallelism See the form2-1-11		

Table 2-1-4 Assembly accuracy table

unit: mm

model	HB-25,30,35				
accuracy class	Common level(C)	High level(H)	Precision level(P)	Super precision level(SP)	Ultra precision level (UP)
Tolerance size error for height H	± 0.1	± 0.04	0 - 0.04	0 - 0.02	0 - 0.01
Tolerance size error for width N	± 0.1	± 0.04	0 - 0.04	0 - 0.02	0 - 0.01
Mutual error of the pairwise height H	0.02	0.015	0.007	0.005	0.003
Mutual error of the pairwise width N	0.03	0.015	0.007	0.005	0.003
Slide C faces the walking parallelism of the guide rail plane A			Walk parallelism See the form2-1-11		
The lide D faces the guide B			Walk parallelism See the form2-1-11		



Table 2-1-5 assembly accuracy table unit: mm

Model	HB-45,55				
Accuracy class	Common level(C)	High level(H)	Precision level(P)	Super precision level(SP)	Ultra precision level (UP)
Tolerance size error for height H	± 0.1	± 0.05	0 - 0.05	0 - 0.03	0 - 0.02
Tolerance size error for width N	± 0.1	± 0.05	0 - 0.05	0 - 0.03	0 - 0.02
Mutual error of the pairwise height H	0.03	0.015	0.007	0.005	0.003
Mutual error of the pairwise width N	0.03	0.02	0.01	0.007	0.005
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-1-11				
The lide D faces the guide B	Walk parallelism See the form2-1-11				

Table 2-1-6 Assembly accuracy table unit: mm

Model	HB-65				
Accuracy class	Common level(C)	High level(H)	Precision level(P)	Super precision level(SP)	Ultra precision level (UP)
Tolerance size error for height H	± 0.1	± 0.07	0 - 0.07	0 - 0.08	0 - 0.03
Tolerance size error for width N	± 0.1	± 0.07	0 - 0.07	0 - 0.08	0 - 0.03
Mutual error of the pairwise height H	0.03	0.02	0.01	0.007	0.008
Mutual error of the pairwise width N	0.03	0.025	0.015	0.01	0.007
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-1-11				
The lide D faces the guide B	Walk parallelism See the form2-1-11				

2.Exchangeability linear rail accuracy

Table 2-1-7 Accuracy table of single-listed pieces unit: mm

Model	HB-15,20		
Accuracy class	Common level(C)	High level(H)	Precision level(P)
Tolerance size error for height H	± 0.1	± 0.03	± 0.015
Tolerance size error for width N	± 0.1	± 0.03	± 0.015
Mutual error of the pairwise height H	0.02	0.01	0.003
Mutual error of the pairwise width N	0.02	0.01	0.005
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-1-11		
The lide D faces the guide B	Walk parallelism See the form2-1-11		

Table 2-1-8 Single-piece accuracy table unit: mm

Model	HB-25,30,35		
Accuracy class	Common level(C)	High level(H)	Precision level(P)
Tolerance size error for height H	± 0.1	± 0.04	± 0.02
Tolerance size error for width N	± 0.1	± 0.04	± 0.02
Mutual error of the pairwise height H	0.02	0.015	0.007
Mutual error of the pairwise width N	0.03	0.015	0.007
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-1-11		
The lide D faces the guide B	Walk parallelism See the form2-1-11		



Table 2-1-9 Precision table of single pieces unit: mm

Model	HB-45,55		
Accuracy class	Common level(C)	High level(H)	Precision level(P)
Tolerance size error for height H	± 0.1	± 0.05	± 0.025
Tolerance size error for width N	± 0.1	± 0.05	± 0.025
Mutual error of the pairwise height H	0.03	0.015	0.007
Mutual error of the pairwise width N	0.03	0.01	0.01
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-1-11		
The lide D faces the guide B	Walk parallelism See the form2-1-11		

Table 2-1-10 Precision table of single pieces unit: mm

Model	HB-65		
Accuracy class	Common level(C)	High level(H)	Precision level(P)
Tolerance size error for height H	± 0.1	± 0.07	± 0.035
Tolerance size error for width N	± 0.1	± 0.07	± 0.035
Mutual error of the pairwise height H	0.03	0.02	0.01
Mutual error of the pairwise width N	0.03	0.025	0.015
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-1-11		
The lide D faces the guide B	Walk parallelism See the form2-1-11		

3.Walking parallelism accuracy

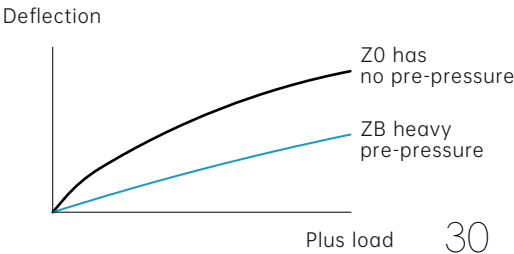
Table 2-1-11 Walking parallelism accuracy

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

2-1-6 Prepressure

(1) Prepressure definition

The prepressure is to advance the steel bead load force, that is, increase the diameter of the steel bead, using the negative clearance between the bead and the prepressure, which can improve the rigidity of the linear rail and eliminate the clearance; In the right picture, increasing the prepressure can increase the rigidity of the linear rail. However, it is recommended to avoid the heavy prepressure to reduce its service life.



(2) Prepressure grade

The HB series linear guide rail provides three standard prepressure, and the appropriate prepressure can be selected according to the use.

Table 2-1-12 Prepressure grade

Prepressure grade	Marking	Prepressure	Condition of use	Scope of application
No prepressure	Z0	0-0.02C	Fixed load direction and small impact, low precision requirements.	Delivery device, automatic packaging machine, automatic industrial machinery, XY shaft of general industrial machinery, welding machine, fuse machine, tool switching device
Light precompression	ZA	0.05C-0.07C	Light load and the high precision is required.	Z axis of general industrial machinery, discharge machining machine, NC lathe, precision XY platform, tester, machining center, vertical machining center, industrial robot, automatic coating installation, a variety of high-speed material supply device
Medium prepress	ZB	0.10C-0.12C	Rigid requirements, always have vibration, impact of the use of the environment	Mechanical center, grinding machine, NC lathe, vertical or horizontal milling machine, Z axis of machine tool, heavy cutting machine

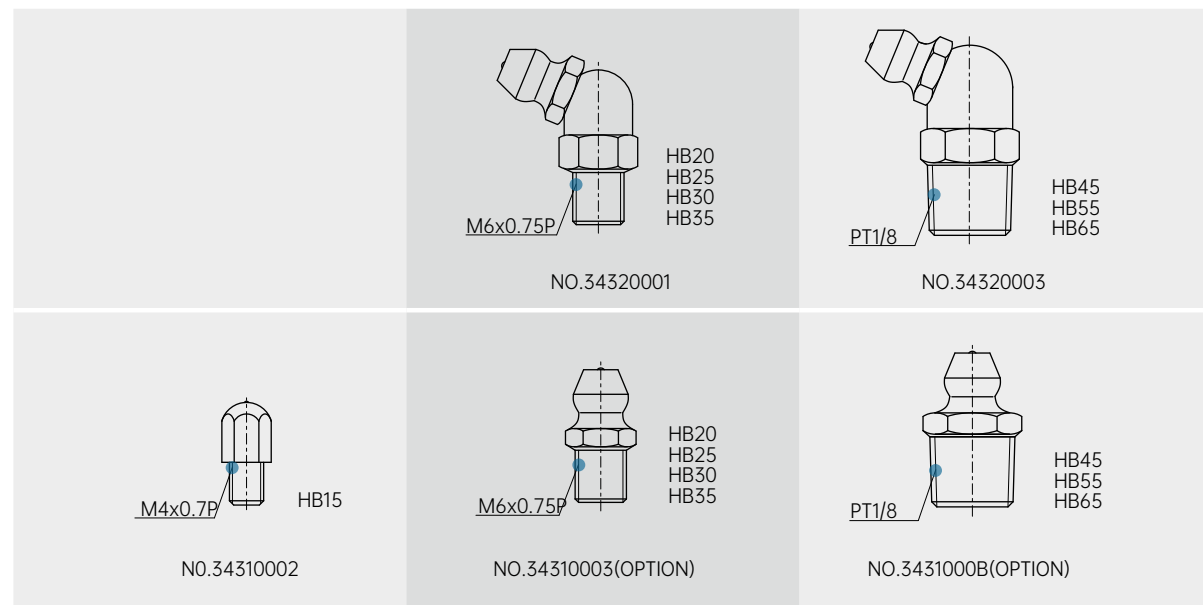
Grade	Interchangeability line rail (single out piece)	Non-interchangeable line rail (assembly)
Pre-pressure grade	Z0	Z0,ZA,ZB

Note: Prepressure C is the dynamic rated load

2-1-7 Lubrication mode

(1)Lubricating grease

⦿ Nozzle type



⦿ The position of the nozzle

According to the customer, install the front or back end of the slider for manual oil drilling. HB series specially sets the side oil hole position on the side of the end cover (generally the straight oil nozzle) to provide side oil drilling. The side oil drilling position is recommended, but it can also be placed on the side base side for special needs. If the customer has the above side oil demand, please contact us. For the linear guide rail that automatically supplies lubricating grease, the tubing joint can be

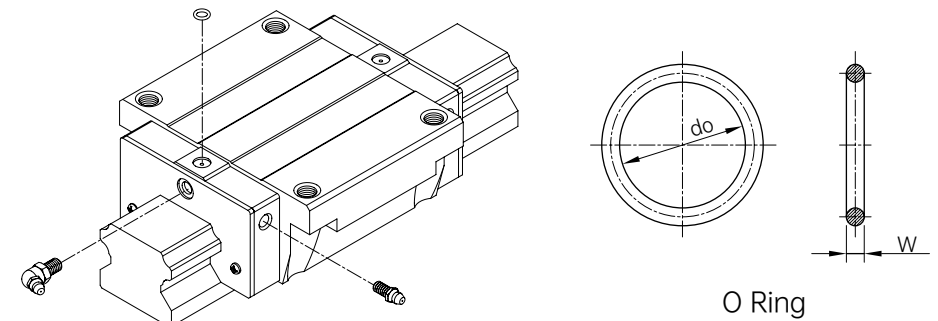


Table 2-1-13 O-Ring Specification and maximum allowable depth of perforation

Specification	O-Ring Specification		Maximum allowable depth of perforation T_{max} (mm)	
	do (mm)	W (mm)		
HB15	2.5±0.15	1.5±0.15	3.75	
HB20	4.5±0.15	1.5±0.15	5.7	
HB25	4.5±0.15	1.5±0.15	5.8	
HB30	4.5±0.15	1.5±0.15	6.3	
HB35	4.5±0.15	1.5±0.15	8.8	
HB45	4.5±0.15	1.5±0.15	8.2	
HB55	4.5±0.15	1.5±0.15	11.8	
HB65	4.5±0.15	1.5±0.15	10.8	

⦿ The single slide shall fill with the amount of lubricating grease

Table 2-1-14 The single slide shall fill with the amount of lubricating grease

Specifications	Heavy load (cm ³)	Super heavy load(cm ³)	Specifications	Heavy load (cm ³)	Super heavy load(cm ³)
HB15	1	—	HB35	10	12
HB20	2	3	HB45	17	21
HB25	5	6	HB55	26	33
HB30	7	8	HB65	50	61

⦿ Lubrication frequency

Every 100km run, or every 3-6 months confirm grease.

⦿ Oil supply rate

Table 2-1-14 Oil supply rate

Specification	Oil supply rate (cm ³ /hr)	Specification	Oil supply rate (cm ³ /hr)
HB15	0.2	HB35	0.3
HB20	0.2	HB45	0.4
HB25	0.3	HB55	0.5
HB30	0.3	HB65	0.6

(2) Lubricating oil

It is recommended to use lubricating oil guide with oil viscosity of about 30 ~ 150 cSt. The customer can explain to us that oil lubrication is needed, and the shipped straight rail will not be sealed in lubricating grease.

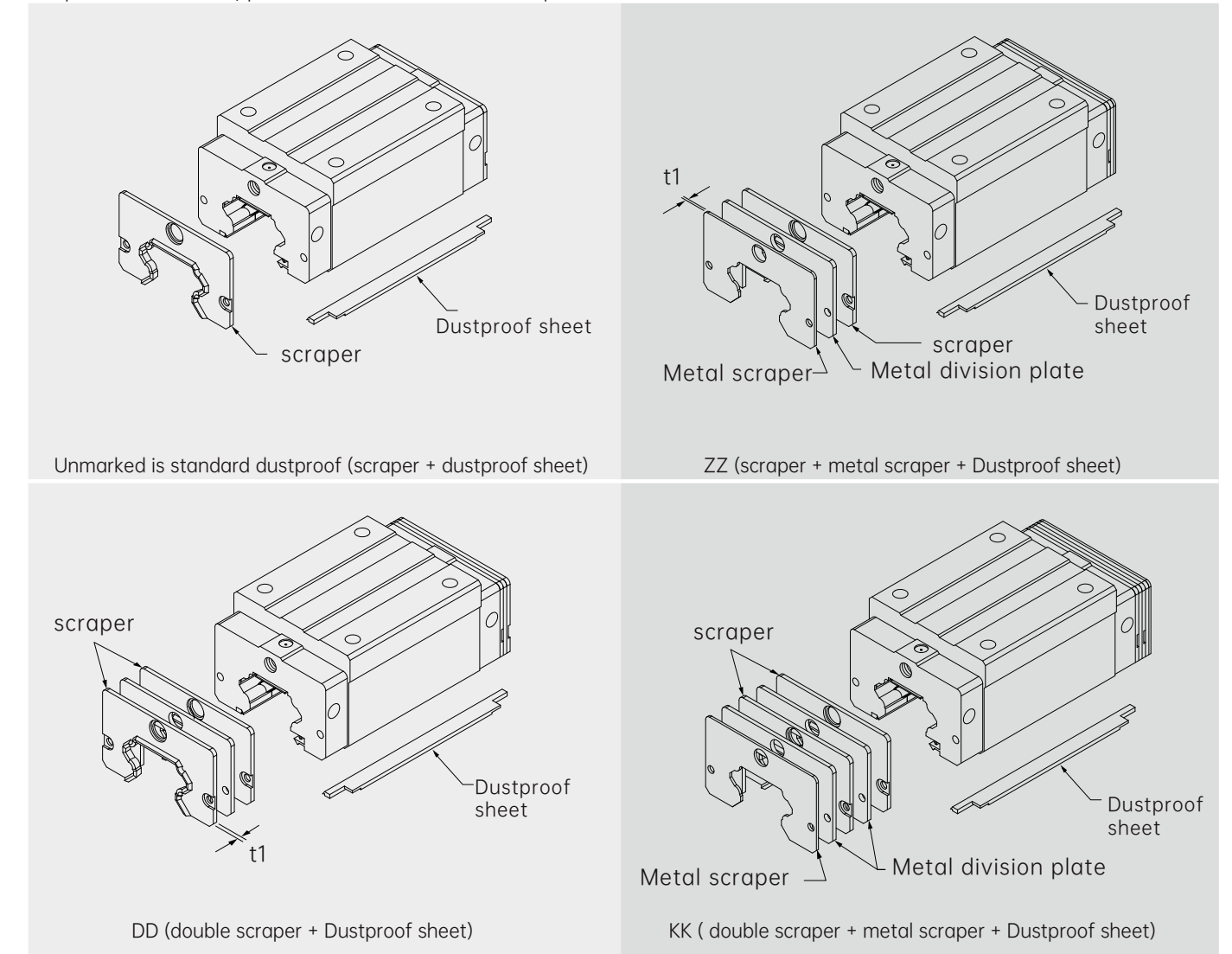
Oil pipe joint type

LF-64 	LF-76 	LF-78
SF-64 	LF-86 	LF-88
	SF-76 	SF-78
	SF-86 	SF-88

2-1-8 Dust-proof accessories

(1) Standard dust-proof equipment code

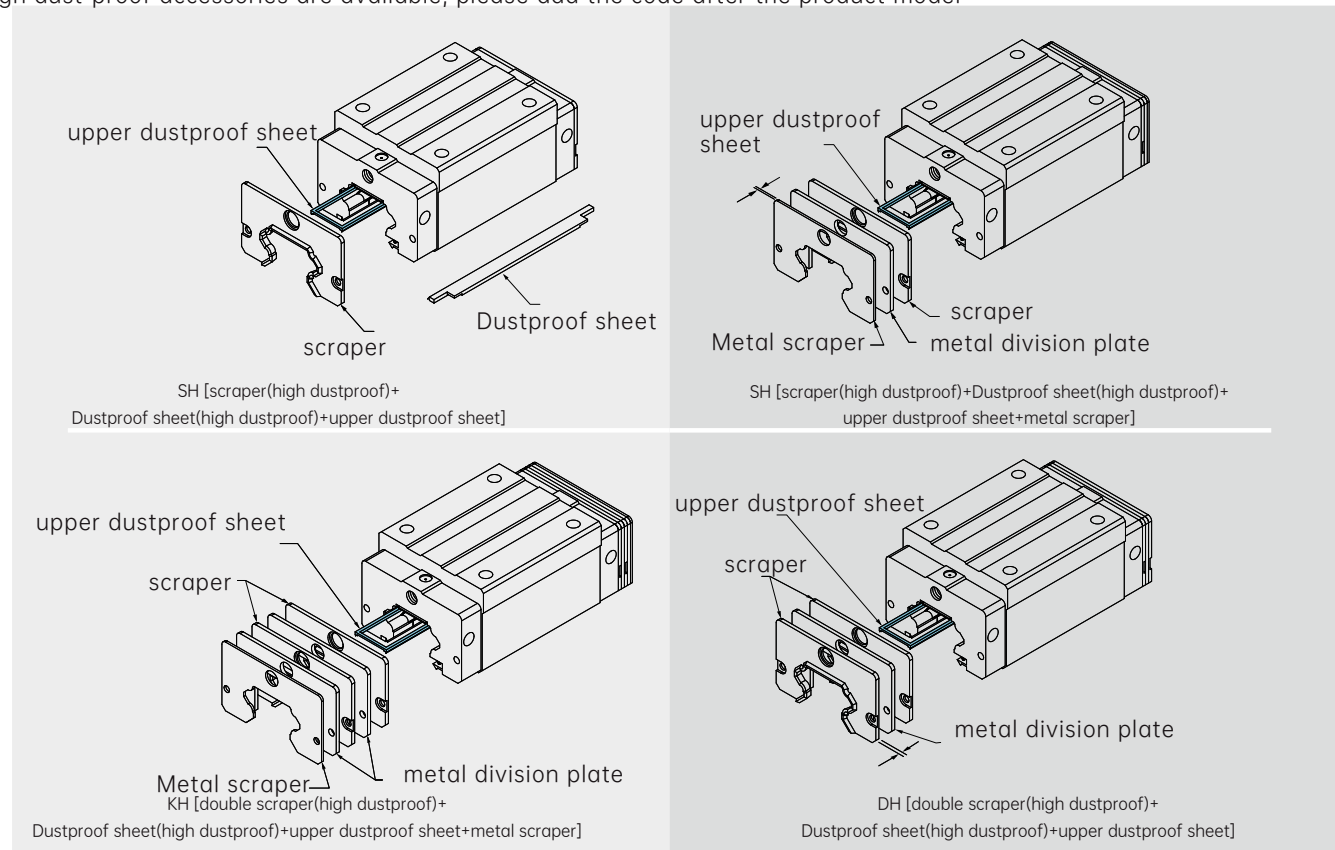
Generally, it is used in the working environment without special requirements. If there are the following requirements for dustproof accessories, please add the code after the product model.



Note: HB20/HB25/HB35 No configuration of the metal partition plate

(2)High Dust-proof accessories code

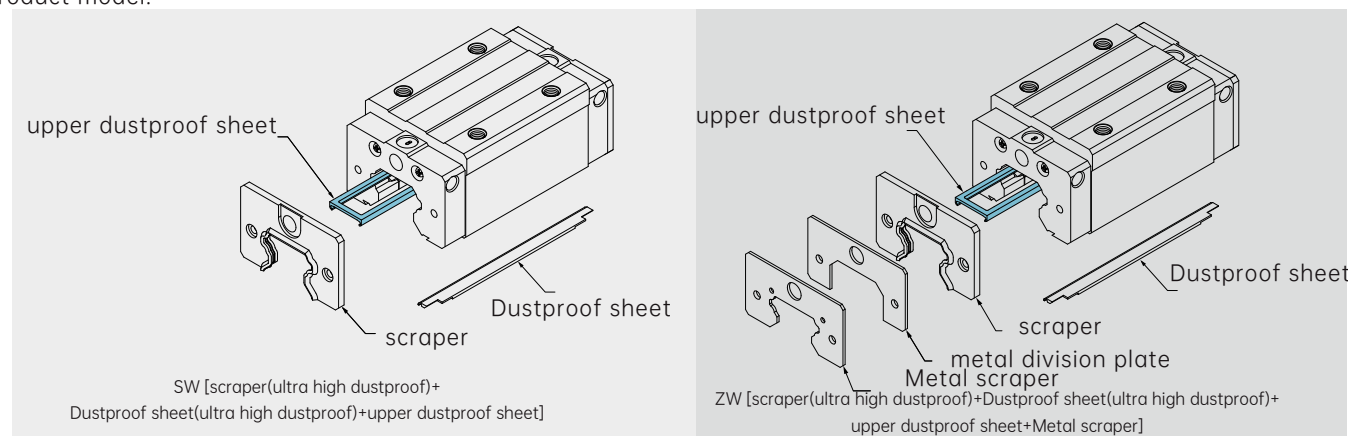
Our company has developed dust-proof accessories with enhanced high dust-proof function. If the following requirements for high dust-proof accessories are available, please add the code after the product model



Note: 1. Currently, high dust proof accessories include HB 20 (C / H), 25 (C / H), 30 (C / H), 35 (C / H) and 45C.
2. The resistance value is about 0.6~1.2 kgf more than the general parts.
3. If the customer has a higher dust prevention function requirements, please contact us.

(3)Ultra high dust proof code

Our company especially for the harsh working environment with dust particles, such as woodworking machinery, glass / graphite processing and other equipment, to develop special accessories with ultra-high dust control function, to achieve ultra-high dust prevention performance. If the following high dustproof accessories are required, please add the code after the product model.



Note: 1. At present, the high dust proof accessories include HB 15 C, HB 20 (C / H), HB 25 (C / H), HB 30 (C / H), HB 35 (C / H) and HB 45 (C / H).
2. The resistance value is about 1.5 ~ 4.0 kgf more than the general parts.
3. HB 15 only oil scraper (ultra high dustproof).

(4)Dust-proof accessories instructions

Oil scraper and bottom dustproof sheet

Prevent processing iron chips or dust particles from entering the slider, destroy the surface of the bead path and reduce the life of the linear guide rail.

Double scraper

Double the scraping effect, even in a heavy cutting environment, the foreign matter is completely excluded from the slide.

Table 2-1-16 Thickness of oil scraper

specification	increase the thickness (t1) (mm)	specification	increase the thickness (t1) (mm)
HB 15 ES	3	HB 35 ES	3.2
HB 20 ES	3.5	HB 45 ES	4.5
HB 25 ES	3.5	HB 55 ES	4.5
HB 30 ES	3.2	HB 65 ES	6

Metal scraper

Can isolate high temperature iron chips or processing sparks, and eliminate large volume impurities.

Table 2-1-17 thickness of metal scraper

specification	increase the thickness (t2) (mm)	specification	increase the thickness (t2) (mm)
HB 15 CS	1.5	HB 35 CS	1.5
HB 20 CS	1.5	HB 45 CS	1.5
HB 25 CS	1.5	HB 55 CS	1.5
HB 30 CS	1.5	HB 65 CS	1.5

Upper dustproof sheet

It can effectively prevent dust from entering the inside of the slide from the upper surface of the guide rail or the bolt hole.

Guide rail bolt cover

In order to prevent the cutting powder or foreign body into the slide through the bolt hole, the customer must insert the bolt cover into the bolt hole when installing the guide rail, and each guide rail is equipped with a bolt cover at the factory. In order to prevent the cutting powder or foreign body into the slide through the bolt hole, the customer must insert the bolt cover into the bolt hole when installing the guide rail, and each guide rail is equipped with a bolt cover at the factory.

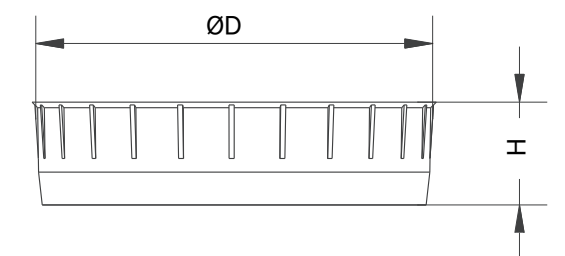


Table 2-1-18 Guide bolt cover

Guide rail specification	Install the screw	diameter(mm)	thickness(H)(mm)	Guide rail specification	Install the screw	diameter(mm)	thickness(H)(mm)
HBR 15	M4	7.65	1.1	HBR 35	M8	14.20	3.5
HBR 20	M5	9.65	2.5	HBR 45	M12	20.25	4.5
HBR 25	M6	11.15	2.5	HBR 55	M14	23.25	5.0
HBR 30	M8	14.20	3.5	HBR 65	M16	26.35	5.0

(5)Total length of slider for dustproof code

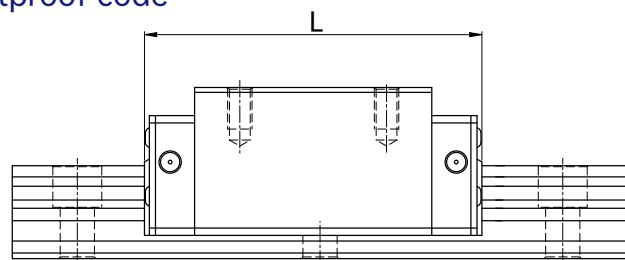


Table 2-1-19 Total length of slider

unit: mm

Spcification	Total length of slider (L)					
	SS/SH	ZZ/ZH	DD/DH	KK/KH	SW	ZW
HB15C	61.4 (61.8)	69.0 (69.4)	68.0 (68.4)	75.6 (76.0)	63.2 (63.2)	71.0 (71.4)
* HB20C	77.5 (79.3)	82.5 (84.5)	82.5 (84.3)	87.5 (89.5)	78.5 (79.3)	86.3 (88.3)
* HB20H	92.2 (94.0)	97.2 (99.2)	97.5 (99.0)	102.2 (104.2)	93.2 (94.0)	101.0 (103.0)
* HB25C	84.0 (85.0)	89.0 (91.0)	89.0 (90.0)	94.0 (96.0)	85.0 (86.0)	92.8 (94.8)
* HB25C	104.6 (105.6)	109.6 (111.6)	109.6 (110.6)	114.6 (116.6)	105.6 (106.6)	113.4 (115.4)
* HB30C	97.4 (99.4)	105.4 (107.4)	104.8 (106.8)	112.8 (110.8)	99.0 (101.0)	107.2 (109.2)
* HB30H	120.4 (122.4)	128.4 (130.4)	127.8 (129.8)	135.8 (133.8)	122.0 (124.0)	130.2 (132.2)
* HB35C	112.4 (114.4)	120.4 (122.4)	119.8 (121.8)	127.8 (129.8)	115.2 (116.0)	123.4 (125.4)
* HB35H	138.2 (140.2)	146.2 (148.2)	145.6 (147.6)	153.6 (155.6)	141.0 (141.8)	149.2 (151.2)
* HB45C	139.4 (139.4)	150.0 (150.0)	149.4 (149.4)	160.0 (160.0)	140.0 (140.0)	148.8 (148.8)
HB45H	171.2 (171.2)	181.8 (181.8)	181.2 (181.2)	191.8 (191.8)	171.8 (171.8)	180.6 (180.6)
HB55C	166.7 (166.7)	177.1 (177.1)	177.1 (177.1)	187.5 (187.5)	---	---
HB55H	204.8 (204.8)	215.2 (215.2)	215.2 (215.2)	225.5 (225.6)	---	---
HB65C	200.2 (200.2)	208.2 (208.2)	209.2 (209.2)	217.2 (217.2)	---	---
HB65H	259.6 (259.6)	267.6 (267.6)	268.6 (268.6)	276.6 (276.6)	---	---

Note: 1. The reporter with * notes said that this specification is provided with / SH, / ZH, / DH, / KH dust-proof equipment.

2. () is the maximum length of the slider, including screws, oil scraper, lip, etc

2-1-9 Friction force

This resistance value is the maximum resistance of a single oil scraper.

Table 2-1-20 HG series scraper resistance

Specifications	Scraper resistance N (kgf)	Specifications	Scraper resistance N (kgf)
HB 15	1.18 (0.12)	HB 35	3.04 (0.31)
HB 20	1.57 (0.16)	HB 45	3.83 (0.39)
HB 25	1.96 (0.2)	HB 55	4.61 (0.47)
HB 30	2.65 (0.27)	HB 65	5.79 (0.59)

Note: 1 kgf = 9.81N

2-1-10 Error in the installation plane

HB series is a circular arc two-point contact linear guide rail, whose automatic centering characteristics can absorb some errors of the mounting surface without affecting the smooth performance of the linear movement; the allowable error value of the installation plane is indicated in the following table

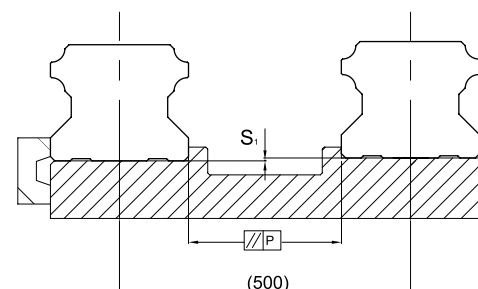


Table 2-1-21 Allow the parallelism error(P)

unit: μm

Specifications	Pre-compaction		
	Z0 pre-compaction	ZA pre-compaction	ZB pre-compaction
HB 15	25	18	13
HB 20	35	20	18
HB 25	30	22	20
HB 30	40	30	27
HB 35	50	35	30
HB 45	60	40	35
HB 55	70	50	45
HB 65	80	60	55

Table 2-1-22 Tolerance of the flatness error of the upper and lower water(S1)

unit: μm

Specifications	Pre-compaction		
	Z0 pre-compaction	ZA pre-compaction	ZB pre-compaction
HB 15	130	85	35
HB 20	130	85	50
HB 25	130	85	70
HB 30	170	110	90
HB 35	210	150	120
HB 45	250	170	140
HB 55	300	210	170
HB 65	350	250	200

Note: The values is proportional to the distance

2-1-11 Notes for installation

(1)Install the face with the shoulder height and chamfer

When installing the linear guide rail, we must pay attention to whether the condition of the shoulder of the installation surface is appropriate. If the chamfering is too large, the protruding place is easy to cause the poor accuracy of the linear guide rail, and if the height is too high, it will interfere with the slider. Therefore, if the surface and shoulder can be installed according to the recommended requirements, the poor installation accuracy can be eliminated.

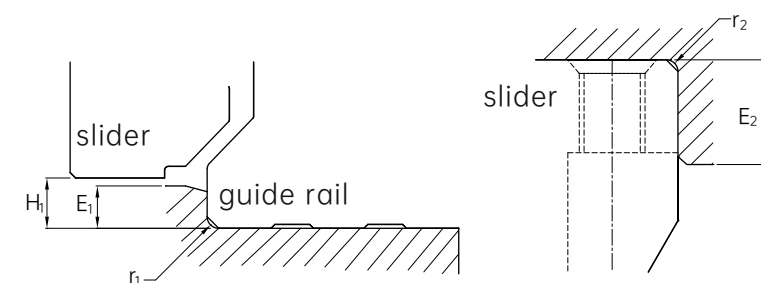


Table 2-1-23 Shoulder height and chamfer

Specifications	Maximum circular radius of rail end r_1 (mm)	Maximum rounded angle radius of the slider end r_2 (mm)	Shoulder height of the guide rail end E_1 (mm)	Sder end shoulder height E_2 (mm)	Running net height of the slider H_1 (mm)
HB 15	0.5	0.5	3.0	4.0	4.3
HB 20	0.5	0.5	3.5	5.0	4.6
HB 25	1.0	1.0	5.0	5.0	5.5
HB 30	1.0	1.0	5.0	5.0	6.0
HB 35	1.0	1.0	6.0	6.0	7.5
HB 45	1.0	1.0	8.0	8.0	9.5
HB 55	1.5	1.5	10.0	10.0	13.0
HB 65	1.5	1.5	10.0	10.0	15.0



(2)Torsion force value of the guide rail assembly screw

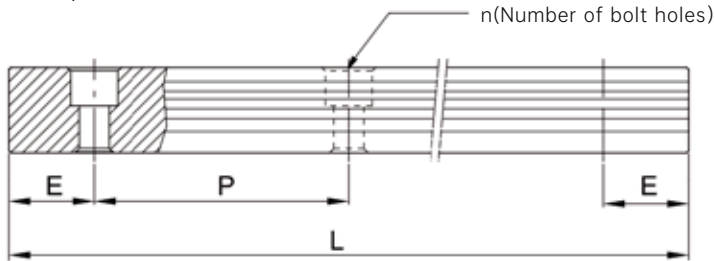
Whether the installation of the guide rail is close to the flat datum affects the accuracy of the straight guide rail, so in order to achieve the purpose of locking each screw, it is recommended to use the following torsion value lock to assemble the screw.

Table 2-1-24 Torsion force

Specifications	Screw specification	Torsional value N-cm (kgf-cm)		
		Iron material	Casting material	Aluminum alloy material
HB15	M4x0.7Px16L	392 (40)	274 (28)	206 (21)
HB20	M5x0.8Px16L	883 (90)	588 (60)	441 (45)
HB25	M6x1Px20L	1373 (140)	921 (94)	686 (70)
HB30	M8x1.25Px25L	3041 (310)	2010 (205)	1470 (150)
HB35	M8x1.25Px25L	3041 (310)	2010 (205)	1470 (150)
HB45	M12x1.75Px35L	11772 (1200)	7840 (800)	5880 (600)
HB55	M14x2Px45L	15696 (1600)	10500 (1100)	7840 (800)
HB65	M16x2Px50L	19620 (2000)	13100 (1350)	9800 (1000)

2-1-12 Standard length and maximum length of a single guide rail

We have a guide rail standard length inventory to supply customer demand. If the customer orders the non-standard length rail, the size of the end face distance E should not be greater than 1 / 2P, so as to prevent the instability of the rear end of the rail assembly and reduce the precision of the linear rail.



$$L=(n-1) \times P+2 \times E$$

L :Guide length (mm)

P :Distance between bolt holes (mm)

n : Number of bolt holes

E :Distance from bolt hole to end face (mm)

Table 2-1-25 Track length

unit: mm

Project	HB15	HB20	HB25	HB30	HB35	HB45	HB55	HB65
full-length L(n)	160 (3)	220 (4)	220 (4)	220 (4)	220 (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 (12)	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)			
GAP (P)	60	60	60	80	80	105	120	150
Standard end distance (E ₃)	20	20	20	20	20	22.5	30	35
Standard end distance to the maximum 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)
extreme length	4,000	4,000	6,000	6,000	6,000	6,000	6,000	6,000

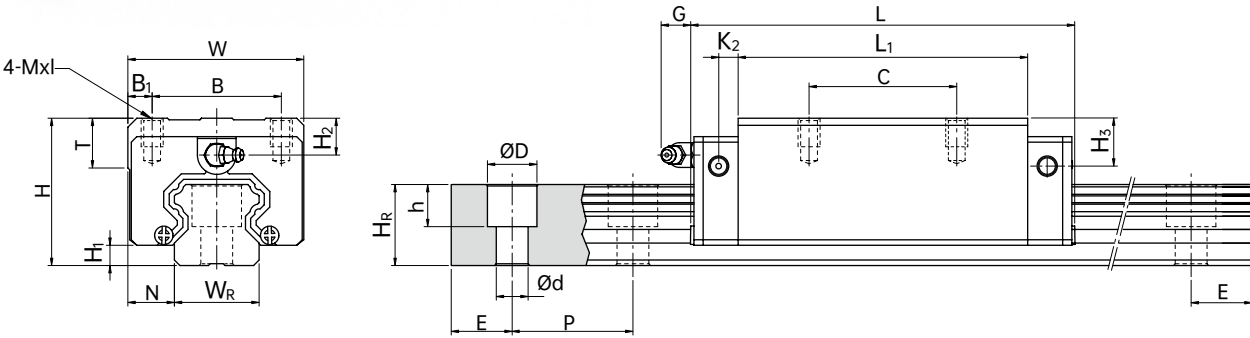
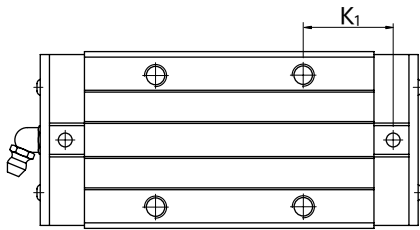
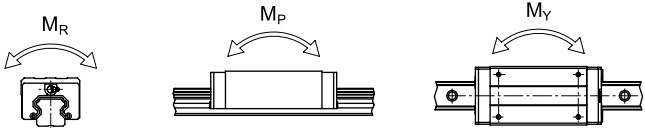
Note: 1. The size tolerance of the general guide E is 0.5~ -0.5 mm, and the dimension tolerance of the guide tooth E is 0~ -0.3 mm.
2. The maximum length of the standard end distance refers to the maximum length of the guide rail with the left and right standard end distance.



HB series
Heavy load type rolling ball linear slide rail

2-1-13 Size Table of the HB series linear guide rail

(1) HBH-CA/HBH-HA

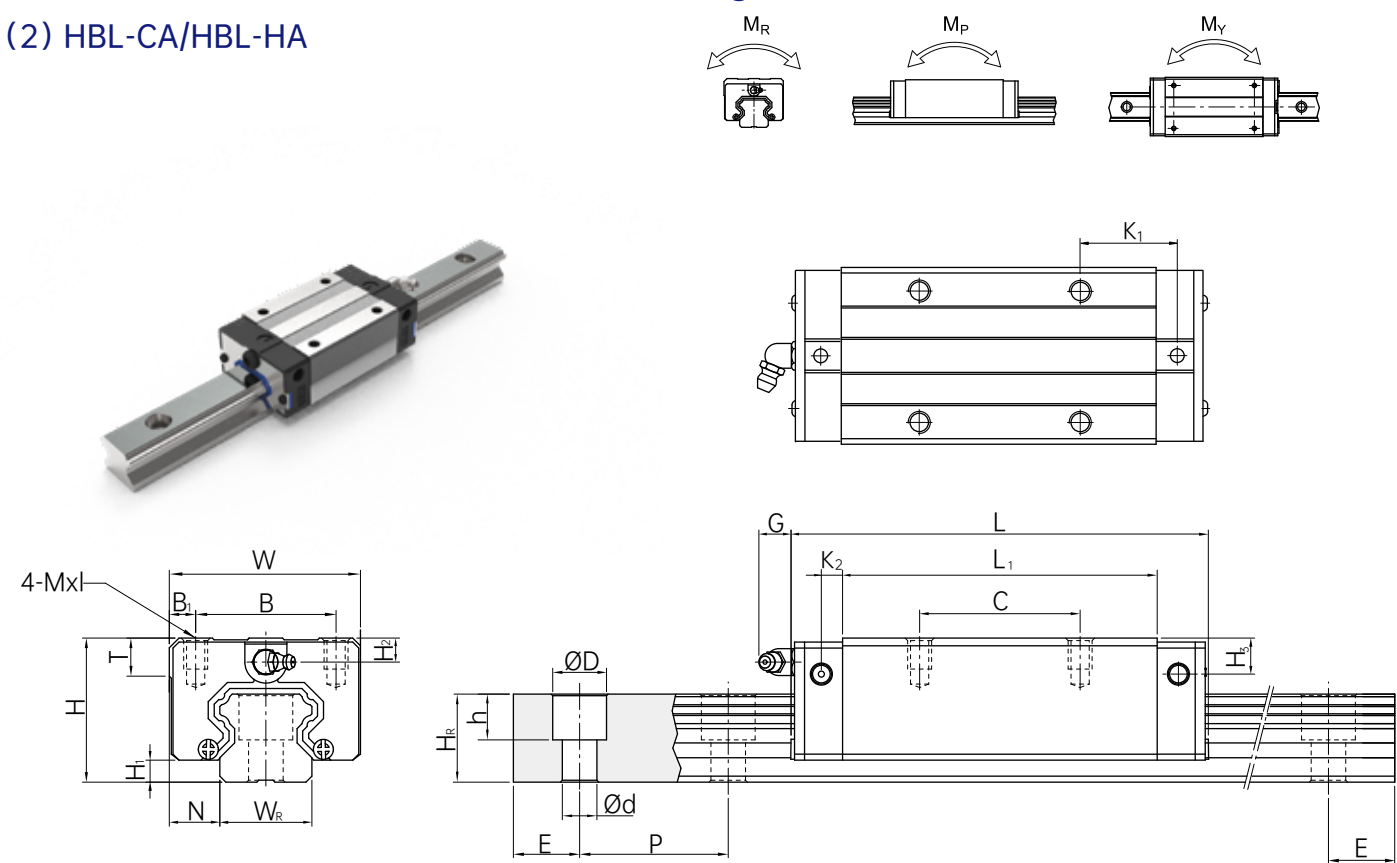


Model	Component size (mm)			Slider size (mm)														Guide rail size (mm)								Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static moment			weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	MxI	T	H ₂	H ₃	W _R	H _R	D	h	d	P	E	(mm)	C(kN)				C ₀ (kN)	M _R kN-m	M _P kN-m	M _V kN-m	slider kg
HBH15CA	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	13.97	22.30	0.11	0.10	0.10	0.18	1.45		
HBH20CA	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	25.75	34.85	0.26	0.19	0.19	0.30	2.21		
HBH20HA							50	65.2	92.2	12.6															50	65.2	92.2	12.6	50	65.2		92.2	12.6
HBH25CA	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	33.16	50.18	0.40	0.31	0.31	0.51	3.21		
HBH25HA							50	78.6	104.6	18.5															50	78.6	104.6	18.5	50	78.6		104.6	18.5
HBH30CA	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	46.08	68.28	0.63	0.50	0.50	0.88	4.47		
HBH30HA							60	93	120.4	21.75															60	93	120.4	21.75	60	93		120.4	21.75
HBH35CA	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	61.37	89.19	1.10	0.77	0.77	1.45	6.30		
HBH35HA							72	105.8	138.2	22.5															72	105.8	138.2	22.5	72	105.8		138.2	22.5
HBH45CA	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	98.61	139.37	1.88	1.47	1.47	2.73	10.41		
HBH45HA							80	128.8	171.2	28.9															80	128.8	171.2	28.9	80	128.8		171.2	28.9
HBH55CA	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	145.54	200.67	3.51	2.51	2.51	4.17	15.08		
HBH55HA							95	155.8	204.8	36.4															95	155.8	204.8	36.4	95	155.8		204.8	36.4
HBH65CA	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	202.54	273.11	6.32	4.06	4.06	7.00	21.18		
HBH65HA							120	203.6	259.6	47.8															120	203.6	259.6	47.8	120	203.6		259.6	47.8

Note: 1kgf=9.81N

2-1-13 Size Table of the HB series linear guide rail

(2) HBL-CA/HBL-HA

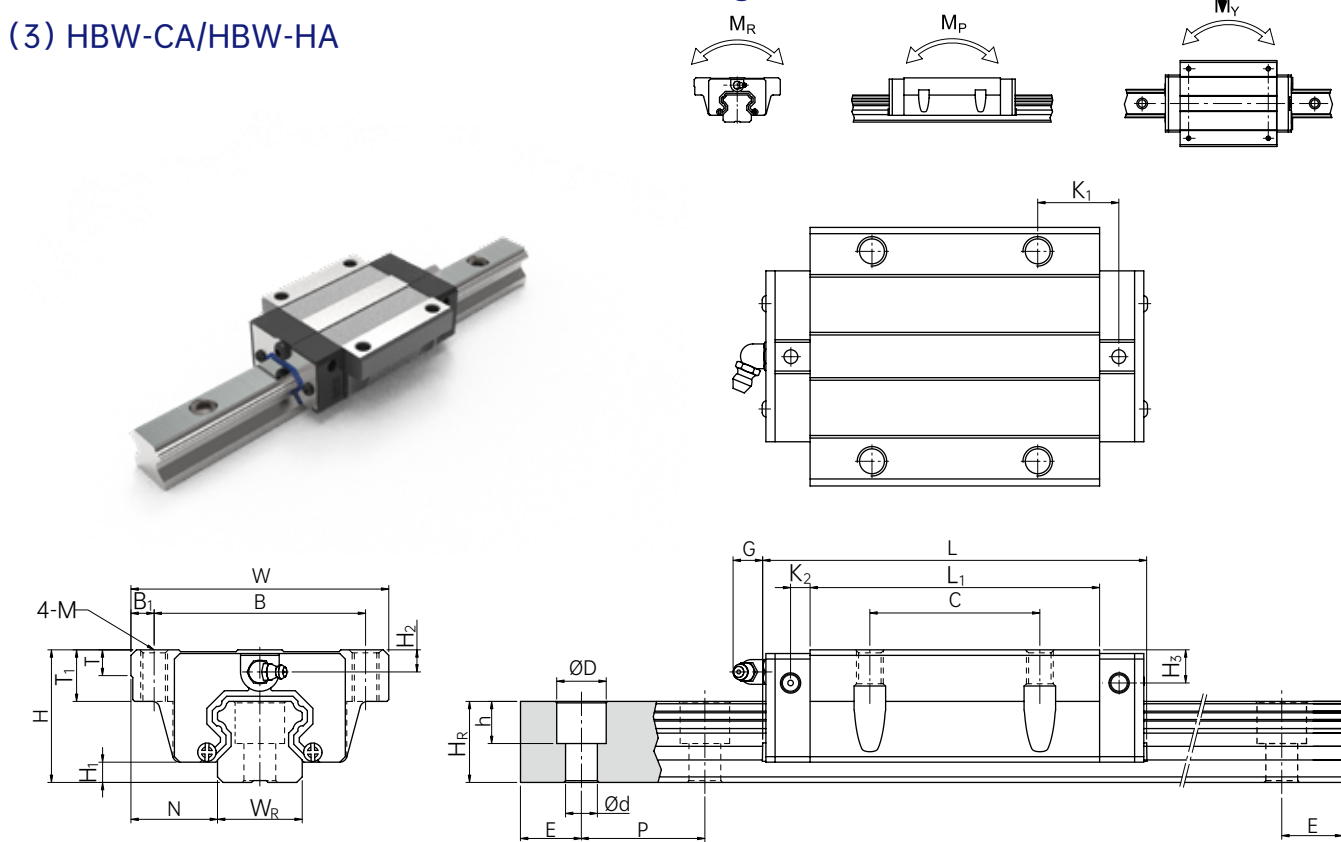


Model	Component size (mm)			Slider size (mm)													Guide rail size (mm)								Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static moment			weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	MxL	T	H ₂	H ₃	W _R	H _R	D	h	d	P	E	(mm)				C(kN)	C ₀ (kN)	M _R kN·m	M _P kN·m	M _V kN·m
HBL15CA	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	13.97	22.30	0.11	0.10	0.10	0.14	1.45	
HBL25CA	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	33.16	50.18	0.40	0.31	0.31	0.42	3.21	
HBL25HA							50	78.6	104.6	18.5															M6x6	8	6	5	23	22		11
HBL30CA	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	46.08	68.28	0.63	0.50	0.50	0.78	4.47	
HBL30HA							60	93	120.4	21.75															M8x10	8.5	6.5	10.8	28	26		14
HBL35CA	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	61.37	89.19	1.10	0.77	0.77	1.14	6.30	
HBL35HA							72	105.8	138.2	22.5															M8x12	10.2	9	12.6	34	29		14
HBL45CA	60	9.5	20.5	86	60	13	60	97	139.4	23	10	12.9	M10x17	8.5	8.5	20.5	45	38	20	17	14	105	22.5	M12x35	98.61	139.37	1.88	1.47	1.47	2.08	10.41	
HBL45HA							80	128.8	171.2	28.9															M10x17	8.5	8.5	20.5	45	38		20
HBL55CA	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	145.54	200.67	3.51	2.51	2.51	3.25	15.08	
HBL55HA							95	155.8	204.8	36.4															M12x18	17.5	12	19	53	44		23

Note: 1kgf=9.81N

2-1-13 Size Table of the HB series linear guide rail

(3) HBW-CA/HBW-HA



Model	Component size (mm)			Slider size (mm)															Guide rail size (mm)								Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static 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	slider kg	Guide rail kg/m		
HBW15CA	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	13.97	22.30	0.11	0.10	0.10	0.17	1.45		
HBW20CA	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	25.75	34.85	0.26	0.19	0.19	0.40	2.21		
HBW20HA								65.2	92.2	17.6																65.2	92.2	17.6	31.07	45.56	0.33		0.33	0.33
HBW25CA	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	33.16	50.18	0.40	0.31	0.31	0.59	3.21		
HBW25HA								78.6	104.6	21																40.09	65.62	0.53	0.54	0.54	0.80			
HBW30CA	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	46.08	68.28	0.63	0.50	0.50	1.09	4.47		
HBW30HA								93	120.4	25.75																55.67	89.29	0.84	0.87	0.87	1.44			
HBW35CA	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	61.37	89.19	1.10	0.77	0.77	1.56	6.30		
HBW35HA								105.8	138.2	27.5																74.01	116.63	1.46	1.33	1.33	2.06			
HBW45CA	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	98.61	139.37	1.88	1.47	1.47	2.79	10.41		
HBW45HA								128.8	171.2	28.9																119.04	182.26	2.50	2.55	2.55	3.69			
HBW55CA	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	145.54	200.67	3.51	2.51	2.51	4.52	15.08		
HBW55HA								155.8	204.8	36.4																175.66	262.42	4.64	4.34	4.34	5.96			
HBW65CA	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	202.54	273.11	6.32	4.06	4.06	9.17	21.18		
HBW65HA								203.6	259.6	52.8																263.91	399.16	8.91	7.01	7.01	12.89			

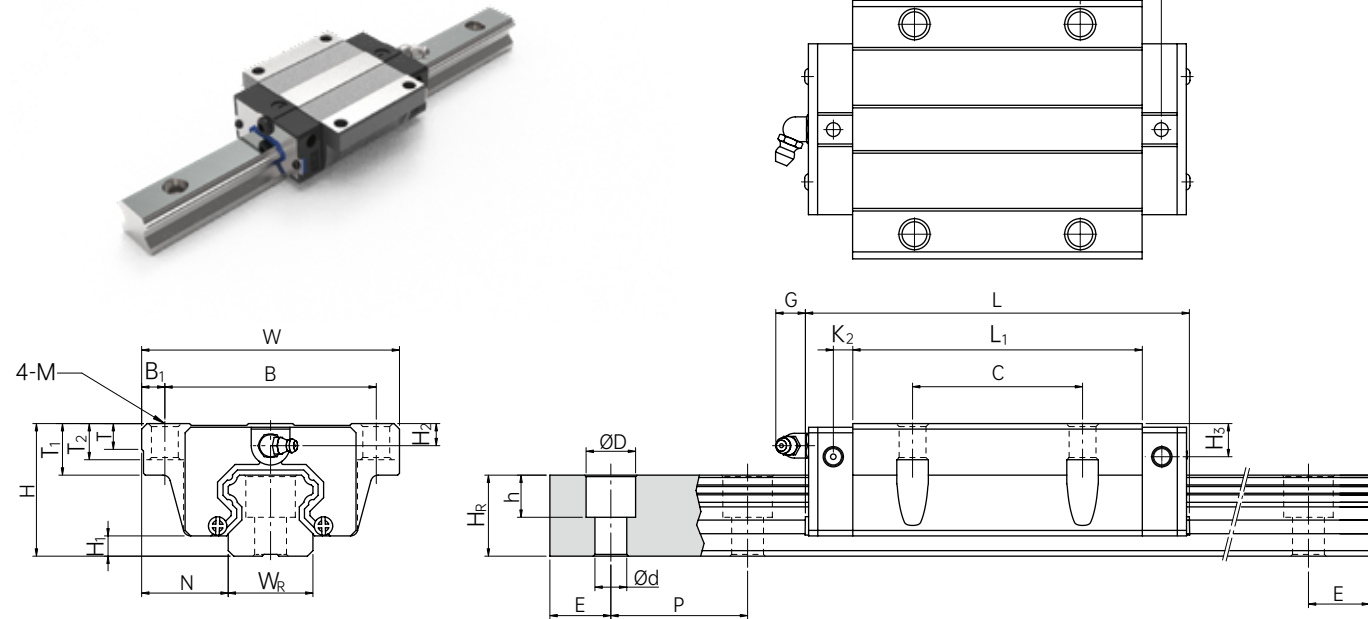
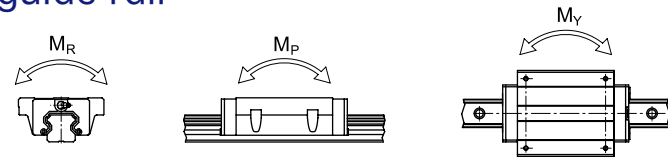
Note: 1kgf=9.81N

Heavy load type rolling ball linear slide rail



2-1-13 Size Table of the HB series linear guide rail

(4) HBW-CB/HBW-HB

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Note: $1\text{kgf}=9.81\text{N}$

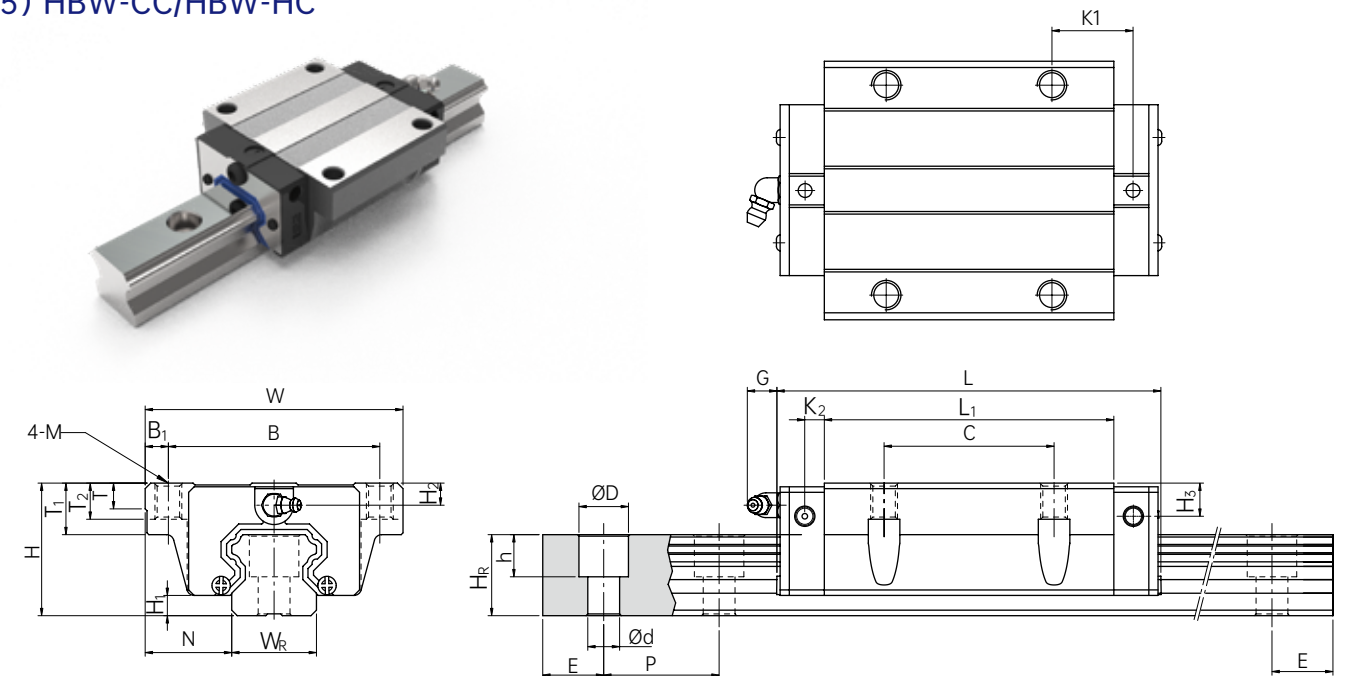
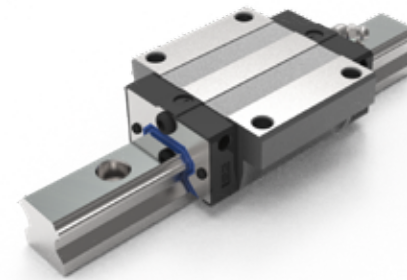
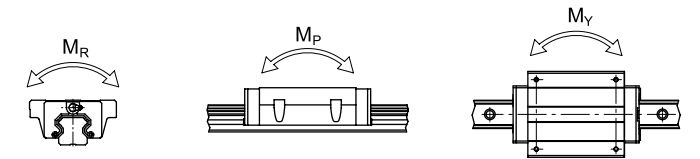
HB series

Heavy load type rolling ball linear slide rail



2-1-13 Size Table of the HB series

linear guide
(5) HBW-CC/HBW-HC



Model	Component size (mm)			Slider size (mm)															Guide rail size (mm)						Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static 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	slider kg	Guide rail kg/m	
HBW15CC	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	13.97	22.30	0.11	0.10	0.10	0.17	1.45				
HBW20CC	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	25.75	34.85	0.26	0.19	0.19	0.40	2.21				
HBW20HC								65.2	92.2	17.6																		M5x16	31.07	45.56	0.33	0.33		0.33	0.52		
HBW25CC	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	33.16	50.18	0.40	0.31	0.31	0.59	3.21				
HBW25HC																																					
HBW30CC	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	46.08	68.28	0.63	0.50	0.50	1.09	4.47				
HBW30HC																																					
HBW35CC	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	61.37	89.19	1.10	0.77	0.77	1.56	6.30				
HBW35HC																																					
HBW45CC	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	98.61	139.37	1.88	1.47	1.47	2.79	10.41				
HBW45HC																																					
HBW55CC	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	145.54	200.67	3.51	2.51	2.51	4.52	15.08				
HBW55HC																																					
HBW65CC	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	202.54	273.11	6.32	4.06	4.06	9.17	21.18				
HBW65HC																																					

Note: $1\text{kgf}=9.81\text{N}$

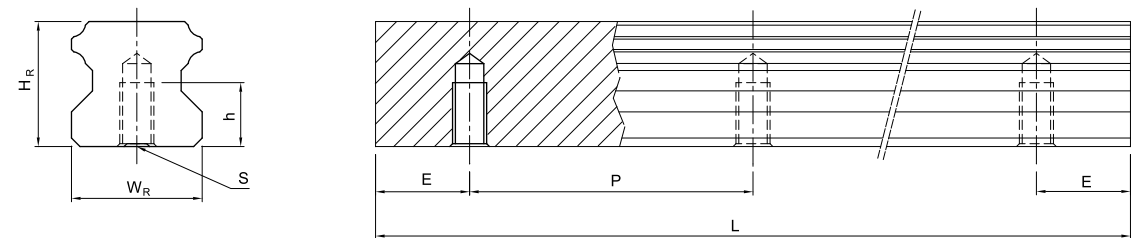
HB series

Heavy load type rolling ball linear slide rail

ISM

2-1-13 Size Table of the HB series linear guide rail

(6) HBR-T down locking type guide rail dimension table



Specification	Guide rail size (mm)						Weight (kg/m)
	W_R	H_R	S	h	P	E	
HBR15T	15	15	M5x0.8P	8	60	20	1.48
HBR20T	20	17.5	M6x1P	10	60	20	2.29
HBR25T	23	22	M6x1P	12	60	20	3.35
HBR30T	28	26	M8x1.25P	15	80	20	4.67
HBR35T	34	29	M8x1.25P	17	80	20	6.51
HBR45T	45	38	M12x1.75P	24	105	22.5	10.87
HBR55T	53	44	M14x2P	24	120	30	15.67
HBR65T	63	53	M20x2.5P	30	150	35	21.73

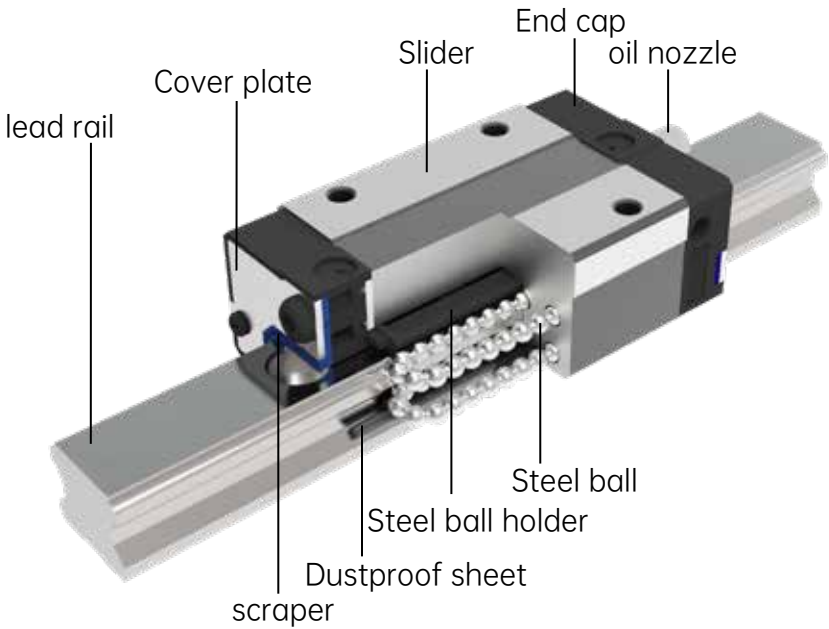
2-2 EB series-low assembled rolling ball linear guide rail

2-2-1 EB series linear guide rail features

ISM

- 1. Self-centering ability**
Due to the DF (45°-45°) combination of the arc grooves, the elastic deformation of the steel balls and the transfer of the contact points, the effect of the self-aligning ability produced can be absorbed by the interior of the guide rail pair even if there is a certain deviation on the installation surface, achieving high-precision, smooth and stable linear motion.
- 2. It has high rigidity in all directions**
The EB type guide rail pair adopts a four-row arc groove design, with the steel balls in each groove having a 45° contact Angle. This design ensures that the four directions applied to the EB slider have the same rated load, and sufficient preload can be applied when necessary to enhance rigidity
- 3. Low assembly design**
Reducing the combination height of the guide rail pair is suitable for high-speed automated equipment and equipment with limited space
- 4. Stainless steel type is also available**
EBH, EBW, EBR and steel balls can also be made of stainless steel.

2-2-2 EB Ontology structure



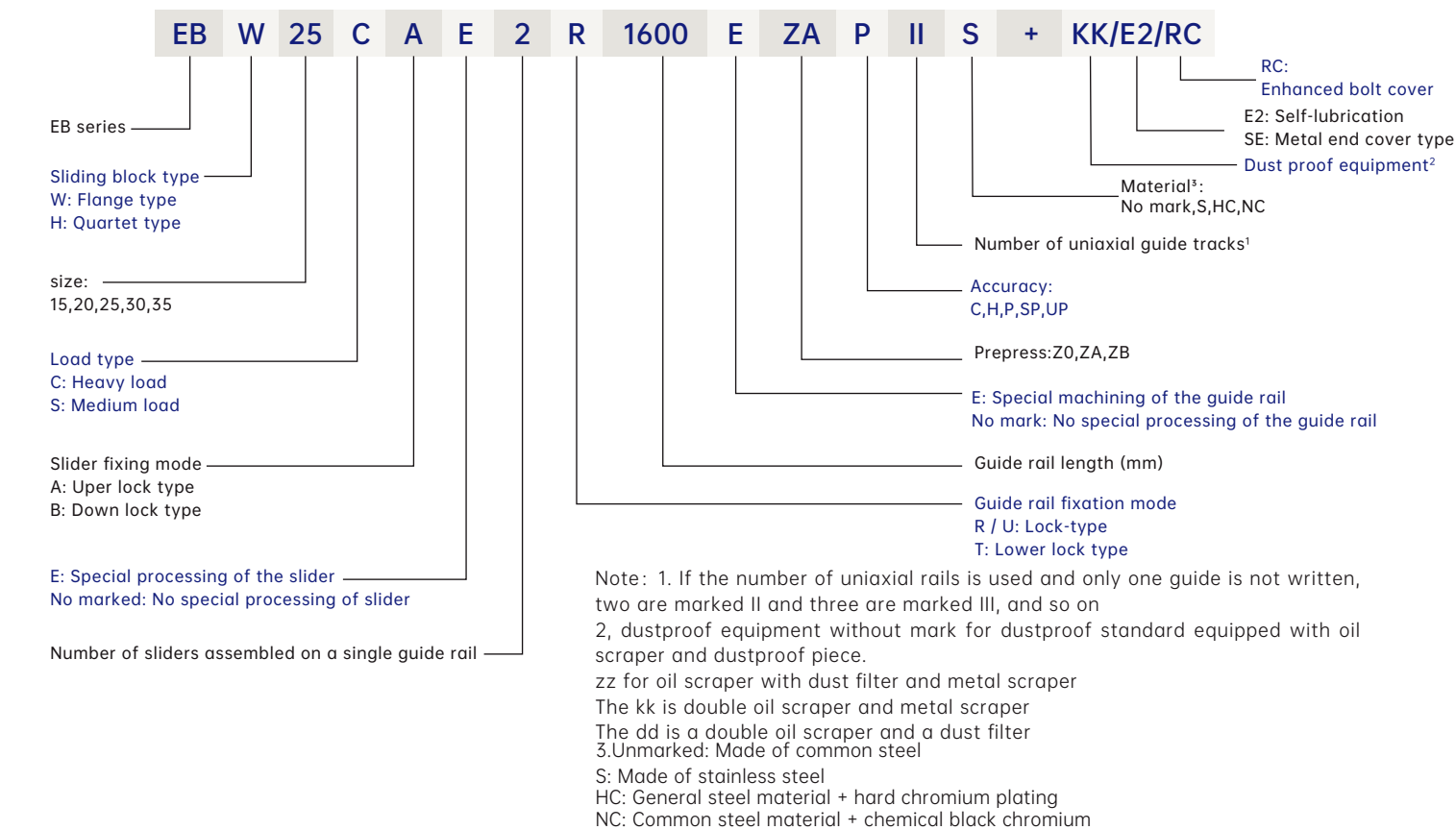
- Rolling cycle system: slider, guide rail, end cover, steel bead, steel bead holder.
- Lubrication system: oil nozzle, oil pipe joint
- Dust prevention system: oil scraper, bottom dustproof sheet, guide rail bolt cover, metal scraper

2-2-3 product requirement specification

EB series is divided into the non-interchangeability and interchangeability type two straight rail, the same size, the main difference lies in the interchangeability type of slider and rail changeable use separately, more convenient, but its combined precision cannot achieve the super precision level, but because of our interchangeability type of combined precision has reached a certain level, for do not need to pair to install straight rail customers, is a convenient choice. The product specifications and models of the linear guide rail mainly indicate the size, type, accuracy grade, prepressure and other specifications of the linear guide rail, so as to facilitate the product confirmation by both parties when ordering.

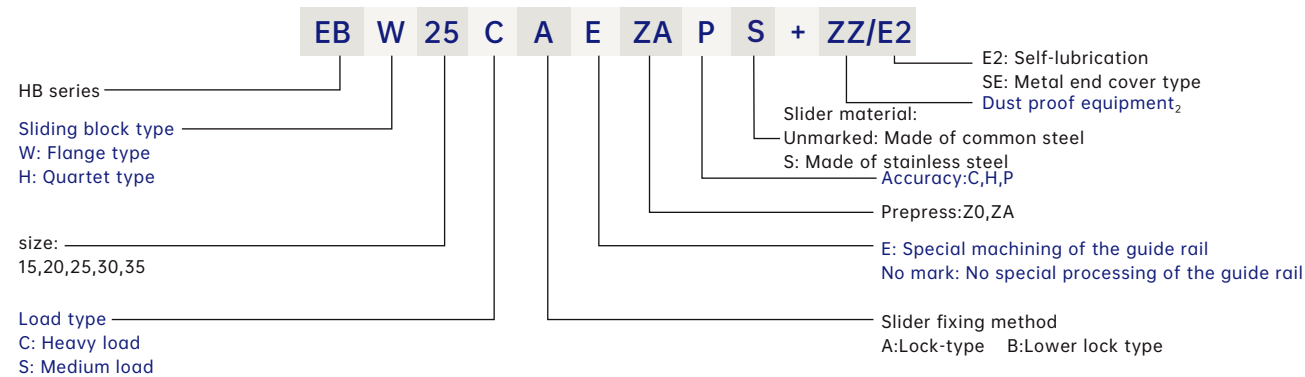


(1)Non-interchangeability linear guide rail product model

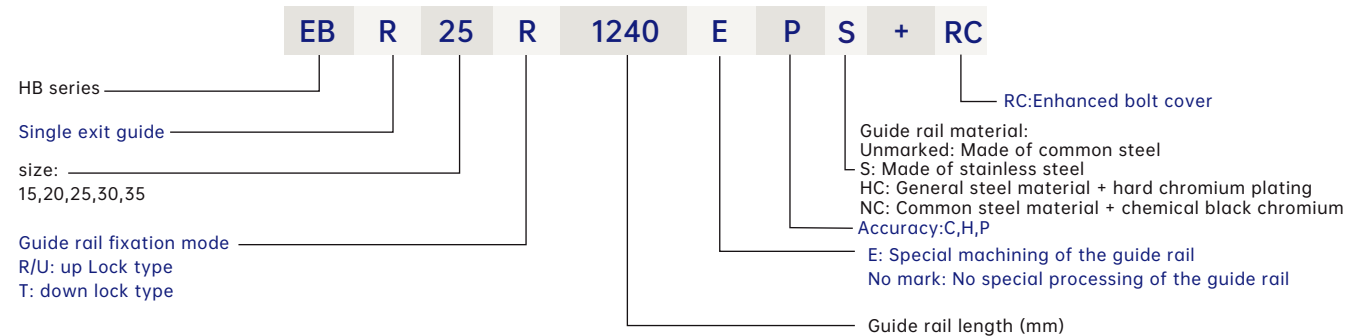


(2)Product model of interchangeable linear guide rail

Interchangeable slider product model



Product model of interchangeable linear guide



2-2-4 EB series type

(1)Slider type

JSM provides two linear guides: flange type and square type.

Table 2-2-1 Slider type

Type	Specifica-tions	Form	Height size (mm)	Guide rail length (mm)	Utility unit
Quartet type	EBH-SA EBH-CA		24 ↓ 48	100 ↓ 4000	- Automatic device - High-speed transport equipment - Precision measuring instruments - Semiconductor equipment
Flange type	EBW-SA EBW-CA		24 ↓ 48	100 ↓ 4000	
	EBW-SB EBW-CB		24 ↓ 48	100 ↓ 4000	

(2)Guide rail type

In addition to the general upper lock bolt hole guide rail, JSM also provides the down lock screw hole guide rail for easy customer installation and use.

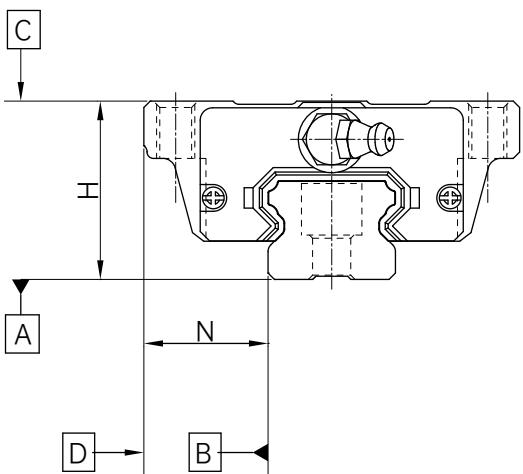
Table 2-2-2 Guide rail type

Upper lock bolt hole	Down lock screw hole



2-2-5 Accuracy class

The accuracy of EB series linear guide rail is divided into five levels: common, high, precision, super precision and ultra precision level. Customers can choose the accuracy according to the accuracy requirements of the equipment.



(1)Accuracy of non-interchangeability linear guide rails

Table 2-2-3 Accuracy table of combine-listed pieces unit: mm

Model	EB-15,20				
Accuracy class	Common level(C)	High level(H)	Precision level(P)	Super precision level(SP)	Ultra precision level (UP)
Tolerance size error for height H	± 0.1	± 0.03	0 - 0.03	0 - 0.015	0 - 0.008
Tolerance size error for width N	± 0.1	± 0.03	0 - 0.03	0 - 0.015	0 - 0.008
Mutual error of the pairwise height H	0.02	0.01	0.006	0.004	0.003
Mutual error of the pairwise width N	0.02	0.01	0.006	0.004	0.003
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-2-7				
The lide D faces the guide B	Walk parallelism See the form2-2-7				

Table 2-2-4 Accuracy table of combine-listed pieces unit: mm

Model	EB-25,30,35				
Accuracy class	Common level(C)	High level(H)	Precision level(P)	Super precision level(SP)	Ultra precision level (UP)
Tolerance size error for height H	± 0.1	± 0.04	0 - 0.04	0 - 0.02	0 - 0.01
Tolerance size error for width N	± 0.1	± 0.04	0 - 0.04	0 - 0.02	0 - 0.01
Mutual error of the pairwise height H	0.02	0.015	0.007	0.005	0.003
Mutual error of the pairwise width N	0.03	0.015	0.007	0.005	0.003
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-2-7				
The lide D faces the guide B	Walk parallelism See the form2-2-7				



(2)Accuracy of interchangeability linear guide rails

Table 2-2-5 Accuracy table of single-listed pieces unit: mm

Model	EB-15,20		
Accuracy class	Common level(C)	High level(H)	Precision level(P)
Tolerance size error for height H	± 0.1	± 0.03	± 0.015
Tolerance size error for width N	± 0.1	± 0.03	± 0.015
Mutual error of the pairwise height H	0.02	0.01	0.003
Mutual error of the pairwise width N	0.02	0.01	0.005
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-2-7		
The lide D faces the guide B	Walk parallelism See the form2-2-7		

Table 2-2-6 Single-piece accuracy table unit: mm

Model	EB-25,30,35		
Accuracy class	Common level(C)	High level(H)	Precision level(P)
Tolerance size error for height H	± 0.1	± 0.04	± 0.02
Tolerance size error for width N	± 0.1	± 0.04	± 0.02
Mutual error of the pairwise height H	0.02	0.015	0.007
Mutual error of the pairwise width N	0.03	0.015	0.007
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form2-2-7		
The lide D faces the guide B	Walk parallelism See the form2-2-7		

(3)Walking parallelism accuracy

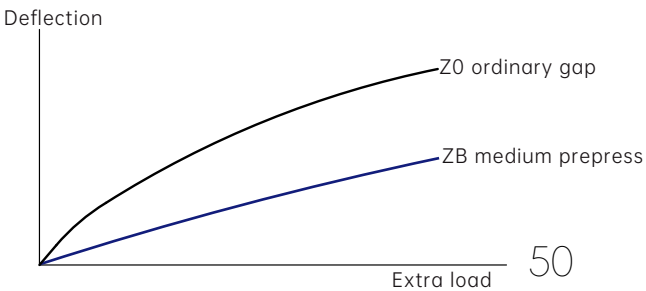
Table 2-2-7 walking parallelism accuracy

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

2-2-6 Prepressure

(1) Prepressure definition

The prepressure is to give the steel bead load force in advance, that is, increase the diameter between the steel bead and the bead, which can improve the rigidity of the linear rail and eliminate the clearance. In the above diagram, improving the prepressure can increase the rigidity of the linear rail. However, it is recommended to avoid the heavy prepressure to reduce its service life.



(2)Prepress level

The EB series linear guide rail provides three standard prepressure, and the appropriate prepressure can be selected according to the use.

Table 2-2-8 Preload rating

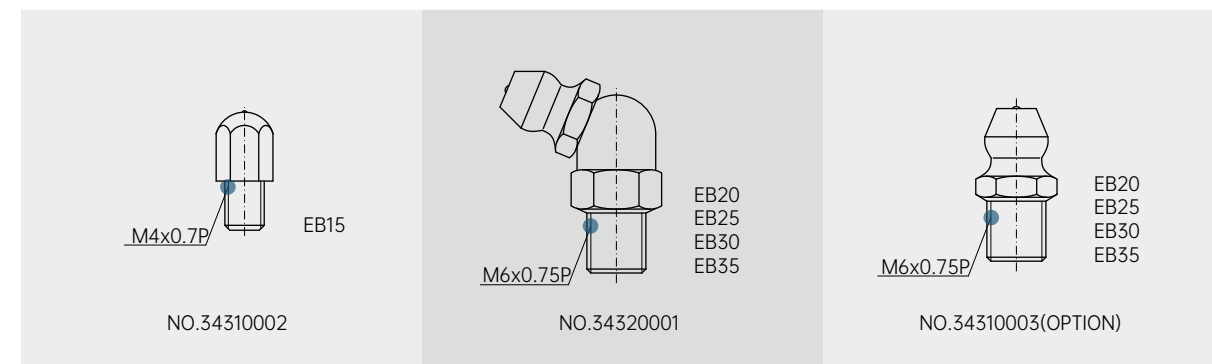
Preload rating	Marking	Prepressure	Conditions of use
No prepressure	Z0	0-0.02C	fixed load direction and small impact, low precision requirements
Light prepressure	ZA	0.03C-0.05C	light load and high precision required
Medium prepressure	ZB	0.06C-0.08C	high rigidity requirements, and vibration, impact of the operating environment

Level	Interchangeable wire rail (single piece)	Non-interchangeable wire rail (assembly piece)
Prepressing level	Z0, ZA	Z0,ZA,ZB

Note: C in the pre-pressure is the dynamic rated load

2-2-7 Lubrication system

(1)Lubricant grease



● Nozzle position

According to the customer, install the front or back end of the slider for manual oil drilling, EB series specially sets the side oil hole on the side of the end cover (generally the straight oil nozzle). Provide the side oil drilling, but it can also be placed on the side base side if there is special need. If the customer has the above side oil demand, please contact us. EB series also reserves an oil hole at the top of the end cover. If the customer wants to supply oil from the top of the end cover, it must use

a metal needle of 0.8mm diameter in order to preheat the oil hole in the designated position, and then install the seal ring in the concave to avoid using the drill hole through the oil hole, and the risk of polluting the oil channel. If the linear guide rail automatically supplies lubricating grease, the oil pipe joint can be installed according to the connecting pipe type.

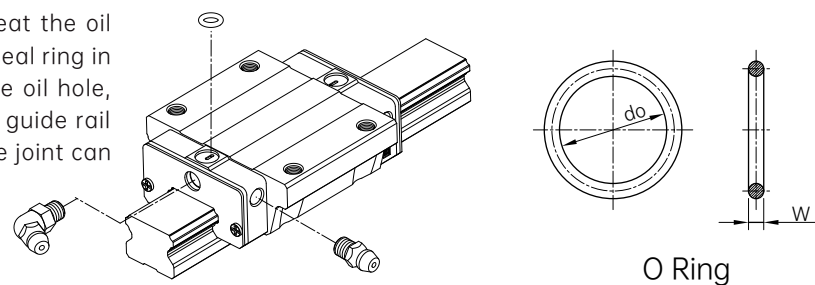
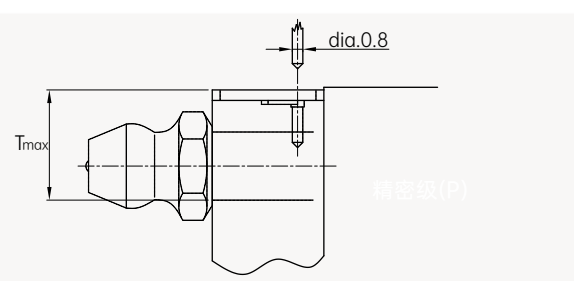


Table 2-2-9 O-Ring Specification and maximum allowable depth of perforation

Specifications	O-Ring Specifications		Maximum allowable depth of perforation T_{max} (mm)
	do (mm)	W (mm)	
EB15	2.5±0.15	1.5±0.15	6.9
EB20	4.5±0.15	1.5±0.15	8.4
EB25	4.5±0.15	1.5±0.15	10.4
EB30	4.5±0.15	1.5±0.15	10.4
EB35	4.5±0.15	1.5±0.15	10.8



● The grease volume of single slider filled with lubrication

Table 2-2-10 The grease volume of single slider filled with lubrication

form	medium load (cm³)	heavy load (cm³)
EB15	0.8	1.4
EB20	1.5	2.4
EB25	2.8	4.6
EB30	3.7	6.3
EB35	5.6	6.6

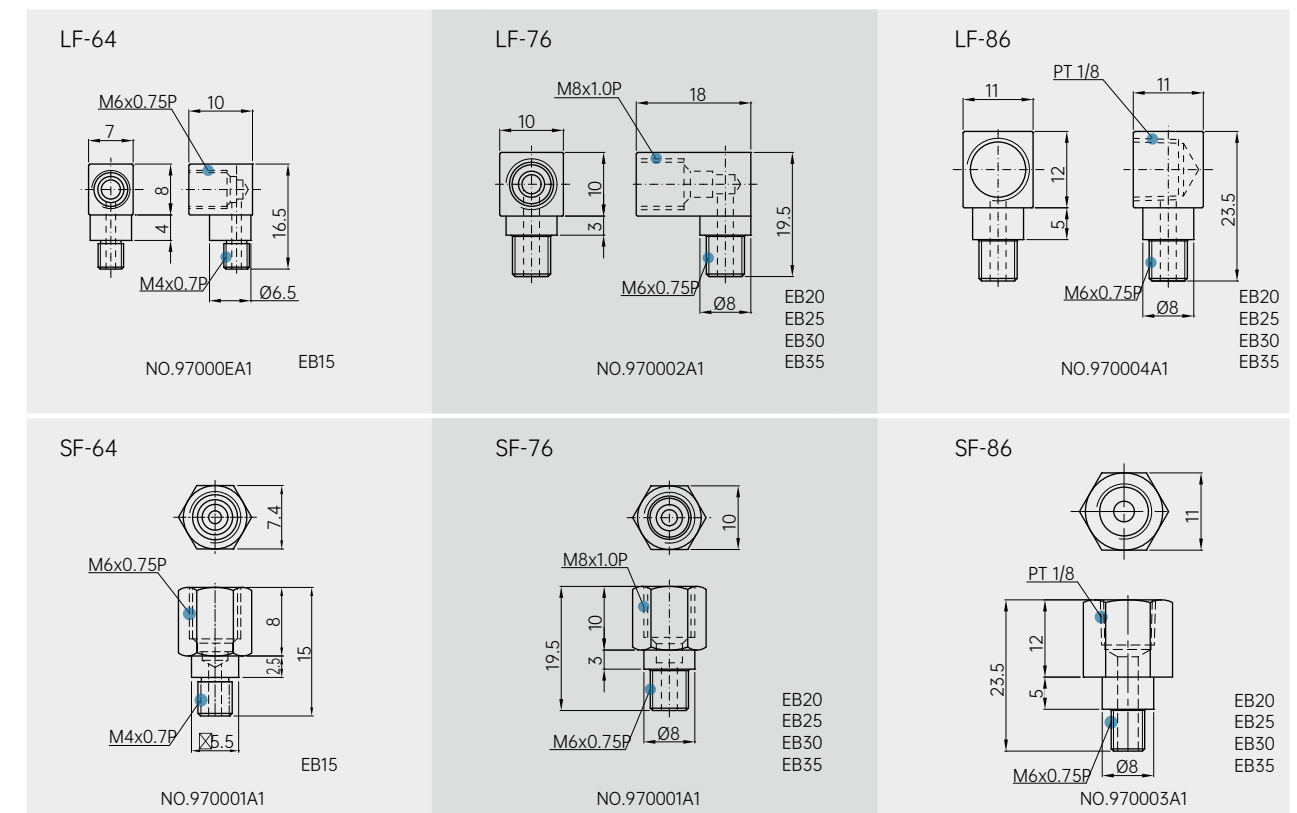
● Lubrication rate

Check the grease for every 100km run, or every 3 to 6 months.

(2)Lubrication oil

It is recommended to use the straight oil lubrication rail of about 32 ~ 150 cSt. The customer can explain to us that oil lubrication is needed, and the shipped straight rail will not be sealed in lubricating grease.

● Form of oil tube joint



● Oil supply rate

Table 2-2-11 oil supply rate

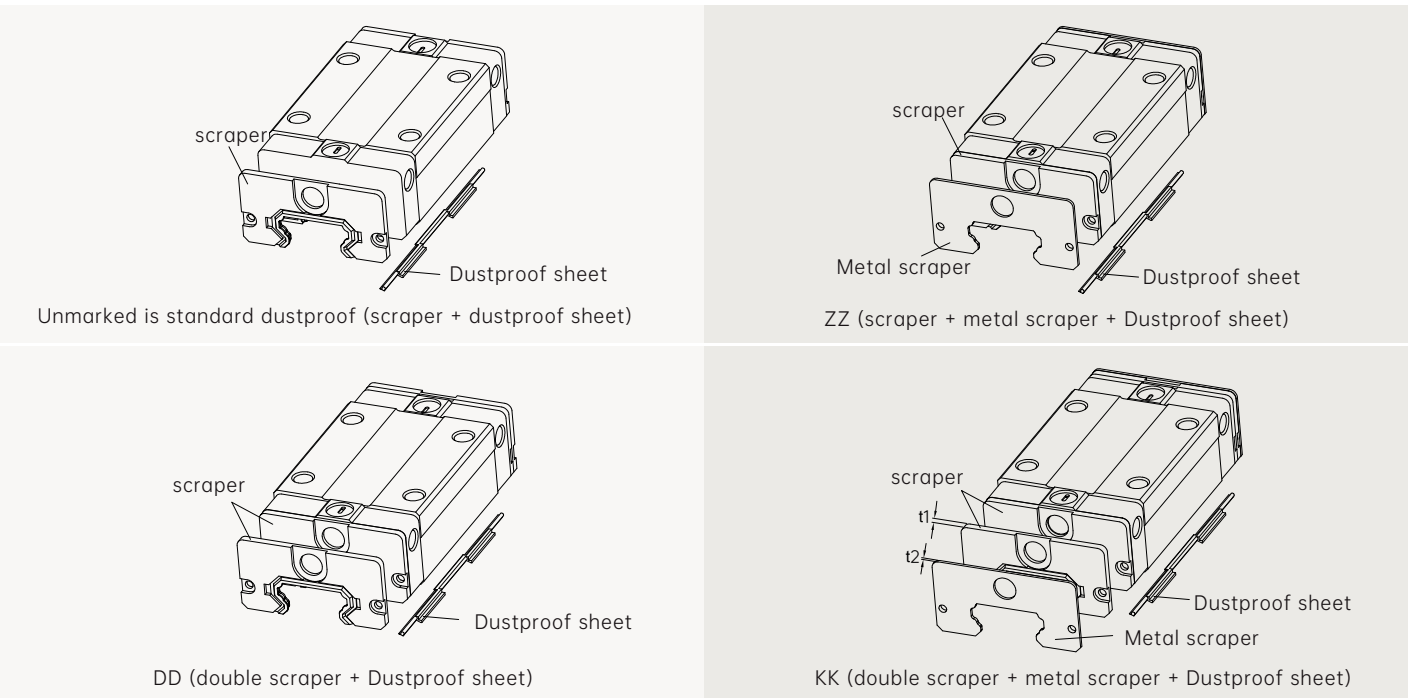
form	oil supply rate (cm³/hr)
EB15	0.1
EB20	0.133
EB25	0.167
EB30	0.2
EB35	0.233

2-2-8 Dust-proof accessories



(1) Dust-proof equipment code

Standard If the following dust proof requirements are available, please add the code after the product model.



(2) Dust-proof equipment instructions

Oil scraper and bottom dustproof sheet

Prevent processing iron chips or dust particles from entering the slider, destroy the surface of the bead path and reduce the life of the linear guide rail.

Double layer scraping sheet

Double the scraping effect, even in the heavy cutting environment, foreign matter are completely excluded from the slide.

Table 2-2-12 Thickness of oil scraper

Specification	Thicknees (t1) (mm)
EB 15 ES	2
EB 20 ES	2
EB 25 ES	2
EB 30 ES	2
EB 35 ES	2

Metal scraper

Can isolate high temperature iron chips or processing sparks, and eliminate large volume impurities.

Table2-2-13 metal scraper

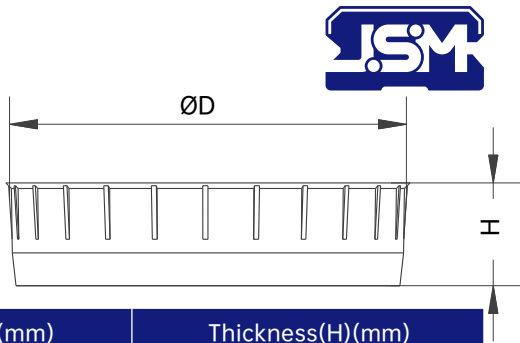
Specification	Thicknees (t2) (mm)
EB 15 SC	0.8
EB 20 SC	0.8
EB 25 SC	1
EB 30 SC	1
EB 35 SC	1.5

Guide rail bolt cover

In order to prevent the cutting powder or foreign body from invading the slide through the bolt hole, the customer must insert the bolt cover into the bolt hole when installing the rail, and each rail is equipped with a bolt cover at the factory.

Table 2-2-14 Guide rail dust-proof cover

Guide specification	Install the screw	Diameter(D)(mm)	Thickness(H)(mm)
EBR 15R	M3	6.15	1.2
EBR 20R	M5	9.65	2.5
EBR 25R	M6	11.15	2.5
EBR 30R	M6	11.15	2.5
EBR 35R	M8	14.20	3.5
EBR 15U	M4	7.65	1.1
EBR 30U	M8	14.20	3.5



(3) Total length of the slider for each dust proof code

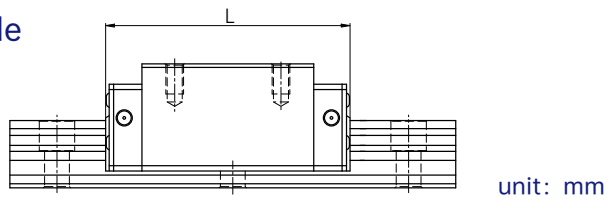


Table 2-2-15 Total length of slider

Specifications	Total length of slider (L)			
	SS	ZZ	DD	KK
EB15S	40.1 (42.5)	41.7 (46.1)	44.1 (46.5)	45.7 (50.1)
EB15C	56.8 (59.2)	58.4 (62.8)	60.8(63.2)	62.4 (66.8)
EB20S	50.0 (54.0)	51.6 (57.6)	54.0 (58.0)	55.6 (61.6)
EB20C	69.1 (73.1)	70.7 (76.7)	73.1 (77.1)	74.7 (80.7)
EB25S	59.1 (63.1)	61.1 (67.1)	63.1 (67.1)	65.1 (71.1)
EB25C	82.6 (86.6)	84.6 (90.6)	86.6 (90.6]	88.6 (94.6)
EB30S	69.5 (73.5)	71.5 (77.5)	73.5 (77.5)	75.5 (81.5)
EB30C	98.1 (102.1)	100.1 (106.1)	102.1 (106.1)	104.1 (110.1)
EB35S	75.0 (79.0)	78.0 (84.0)	79.0 (83.0)	82.0 (88.0)
EB35C	108.0 (112.0)	111.0 (117.0)	112.0 (116.0)	115.0 (121.0)

Note: [] is the maximum length of the slider, including screw, oil scraper lip, etc.

2-2-9 Friction force

EB series is a two-point contact linear guide, whose automatic centering characteristics can absorb some errors of the mounting surface without affecting the smooth performance of linear movement; the allowable error value in the following table:

Table 2-2-16 EB series oil scraper resistance

Specifications	Scrappor resistance N (kgf)
EB 15	0.98 (0.1)
EB 20	0.98 (0.1)
EB 25	0.98 (0.1)
EB 30	1.47 (0.15)
EB 35	1.96 (0.2)

Note: 1 kgf = 9.81N

2-2-10 Install plane error

linear guide, whose automatic centering characteristics can absorb some errors of the mounting surface without affecting the smooth performance of linear movement; the allowable error value in the following table:

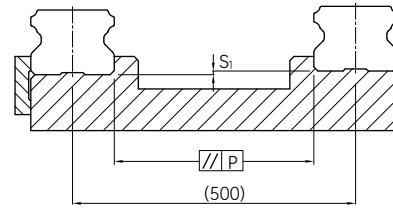


Table 2-2-17 Allow the parallelism error(P)

unit: μm

specifications	Pre-pressure grade		
	Z0 Pre-pressure	ZA Pre-pressure	ZB Pre-pressure
EB 15	25	18	--
EB 20	25	20	18
EB 25	30	22	20
EB 30	40	30	27
EB 35	50	35	30

Table 2-2-18 Tolerance of the flatness error of the upper and lower water levels(S_i)

unit: μm

specifications	Pre-pressure grade		
	Z0 Pre-pressure	ZA Pre-pressure	ZB Pre-pressure
EB 15	130	85	--
EB 20	130	85	50
EB 25	130	85	70
EB 30	170	110	90
EB 35	210	150	120

Note: Tolerance values are proportional to the inter-axis distance

2-2-11 Installation precautions

(1)Shoulder height and chamfer of the mounting surface

When installing the linear guide rail, we must pay attention to whether the condition of the shoulder of the installation surface is appropriate. If the chamfering is too large, the protruding place is easy to cause the poor accuracy of the linear guide rail, and if the height is too high, it will interfere with the slider. Therefore, if the surface and shoulder can be installed according to the recommended requirements, the poor installation accuracy can be eliminated.

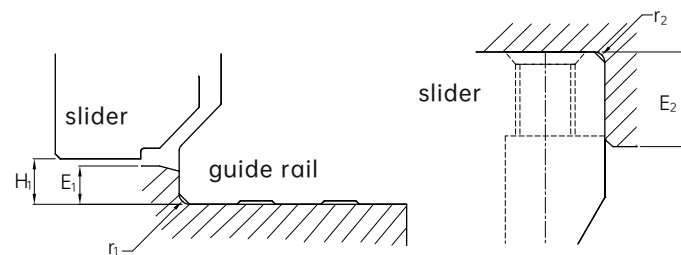


Table 2-2-19 Shoulder height and chamfer

Specifications	Maximum chamfer of the guide rail r_1 (mm)	Maximum chamfer of the slider r_2 (mm)	Shoulder height of the guide rail E_1 (mm)	Shoulder height of the slider E_2 (mm)	Slider running net height H_1 (mm)
EB 15	0.5	0.5	2.7	5.0	4.5
EB 20	0.5	0.5	5.0	7.0	6.0
EB 25	1.0	1.0	5.0	7.5	7.0
EB 30	1.0	1.0	7.0	7.0	10.0
EB 35	1.0	1.0	7.5	9.5	11.0

(2)Torsion force value of the guide rail assembly screw

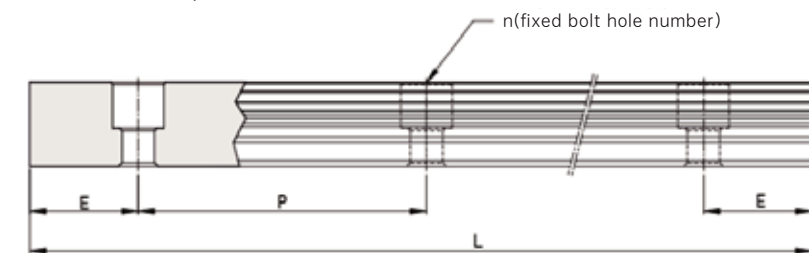
Whether the installation of the guide rail is close to the flat datum affects the accuracy of the straight guide rail, so in order to achieve the purpose of locking each screw, it is recommended to use the following torsion value lock to assemble the screw.

Table 2-2-20 Torsional force value

Specifications	Screw specifications	Torsional force value N-cm (kgf-cm)		
		Iron material	Casting material	Aluminum alloy material
EB15	M3x0.5Px16L	186 (19)	127 (13)	98 (10)
EB20	M5x0.8Px16L	883 (90)	588 (60)	441 (45)
EB25	M6x1Px20L	1373 (140)	921 (94)	686 (70)
EB30	M6x1Px25L	1373 (140)	921 (94)	686 (70)
EB35	M8x1.25Px25L	3041 (310)	2010 (206)	1470 (150)

2-2-12 Standard length and maximum length of a single guide rail

JSM has a guide rail standard length inventory for customer demand. If the customer orders the non-standard length rail, the end surface distance E should not be greater than $1/2P$, so as to prevent the instability of the rear end of the rail assembly due to the large size of E, and reduce the precision of the linear rail.



$$L = (n-1) \times P + 2 \times E$$

L :Guide length (mm) (mm) P :Distance between bolt holes (mm) (mm)
n :Number of bolt holes E :Distance from bolt hole to end face (mm)

Table 2-2-21 length of guide rail

unit: mm

item	EBR15	EBR20	EBR25	EBR30	EBR35
Standard length L(n)	160 (3)	220 (4)	220 (4)	220 (4)	220 (4)
	220 (4)	280 (5)	280 (5)	440 (6)	440 (6)
	280 (5)	340 (6)	340 (6)	600 (8)	600 (8)
	340 (6)	460 (8)	460 (8)	760 (10)	760 (10)
	460 (8)	640 (11)	640 (11)	1,000 (13)	1,000 (13)
	640 (11)	820 (14)	820 (14)	1,640 (21)	1,640 (21)
	820 (14)	1,000 (17)	1,000 (17)	2,040 (26)	2,040 (26)
		1,240 (21)	1,240 (21)	2,520 (32)	2,520 (32)
Spacing (P)	60	60	60	80	80
	20	20	20	20	20
Standard end distance (E_2)	20	20	20	20	20
Maximum length of standard end distance	4,000 (67)	4,000 (67)	4,000 (67)	3,960 (50)	3,960 (50)
Maximum length	4,000	4,000	6,000	6,000	6,000

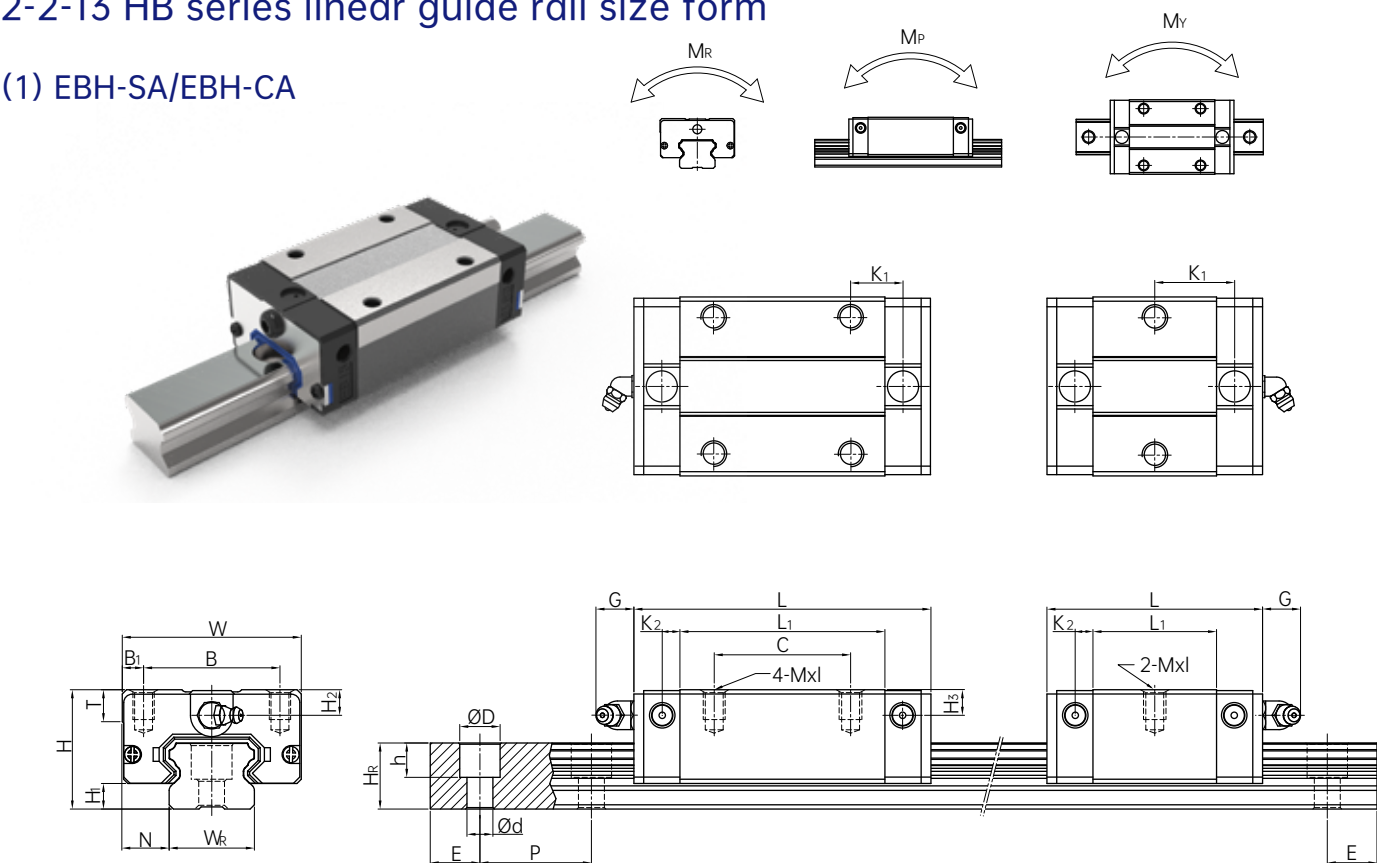
Note: 1. General guide E dimension tolerance is 0.5 ~ -0.5mm,

The dimensional tolerance of the end distance E of the guide rail connector is strictly 0 ~ -0.3mm standard

2. The maximum length of standard end distance refers to the maximum length of the guide rail whose left and right end distance are both standard end distances

2-2-13 HB series linear guide rail size form

(1) EBH-SA/EBH-CA

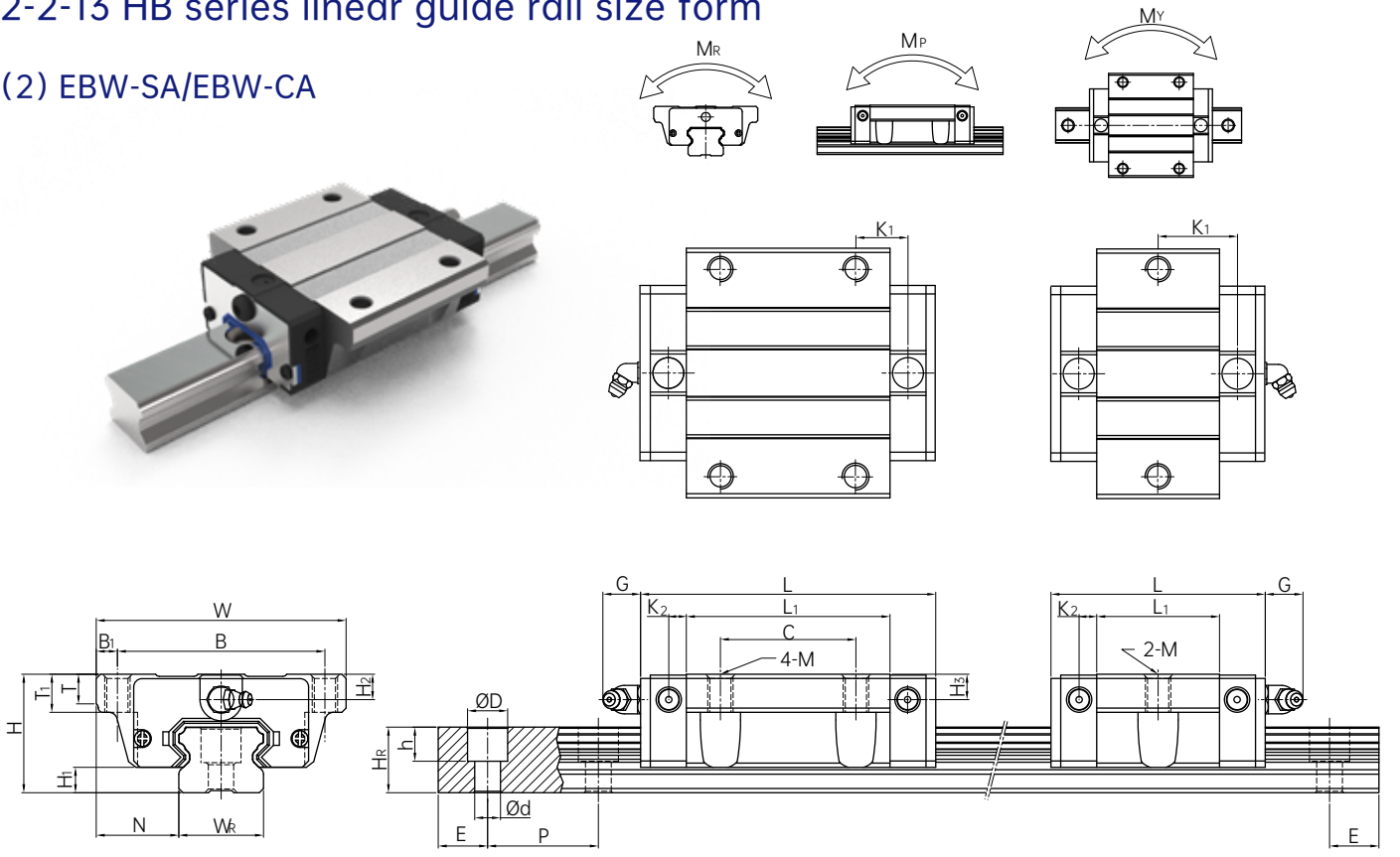


Model	Component size (mm)			Slider size (mm)														Guide track size (mm)								Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static moment			weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	Mx _l	T	H ₂	H ₃	W _R	H _R	D	h	d	P	E	(mm)	C(kN)				C ₀ (kN)	M _R kN·m	M _P kN·m	M _Y kN·m	slider kg
EBH15SA	24	4.5	9.5	34	26	4	-	23.1	40.1	14.8	3.5	5.7	M4x6	6	5.5	6	15	12.5	7.5	5.3	4.5	60	20	M4x16	5.08	8.93	0.08	0.04	0.04	0.09	1.25		
EBH15CA							26	39.8	56.8	10.15																							
EBH20SA	28	6	11	42	32	5	-	29	50	18.75	4.15	12	M5x7	7.5	6	6	20	15.5	9.5	8.5	6	60	20	M5x16	6.87	12.10	0.12	0.06	0.06	0.15	2.08		
EBH20CA							32	48.1	69.1	12.3																							
EBH25SA	33	7	12.5	48	35	6.5	-	35.5	59.1	21.9	4.55	12	M6x9	8	8	8	23	18	11	9	7	60	20	M6x20	10.83	18.53	0.22	0.11	0.11	0.25	2.67		
EBH25CA							35	59	82.6	16.15																							
EBH30SA	42	10	16	60	40	10	-	41.5	69.5	26.75	6	12	M8x12	9	8	9	28	23	14	12	9	80	20	M8x25	15.60	26.70	0.38	0.20	0.20	0.45	4.35		
EBH30CA							40	70.1	98.1	21.05																							
EBH35SA	48	11	18	70	50	10	-	45	75	28.5	7	12	M8x12	10	8.5	8.5	34	27.5	14	12	9	80	20	M8x25	21.53	35.51	0.53	0.29	0.29	0.74	6.14		
EBH35CA							50	78	108	20																							

Note: 1kgf=9.81N

2-2-13 HB series linear guide rail size form

(2) EBW-SA/EBW-CA



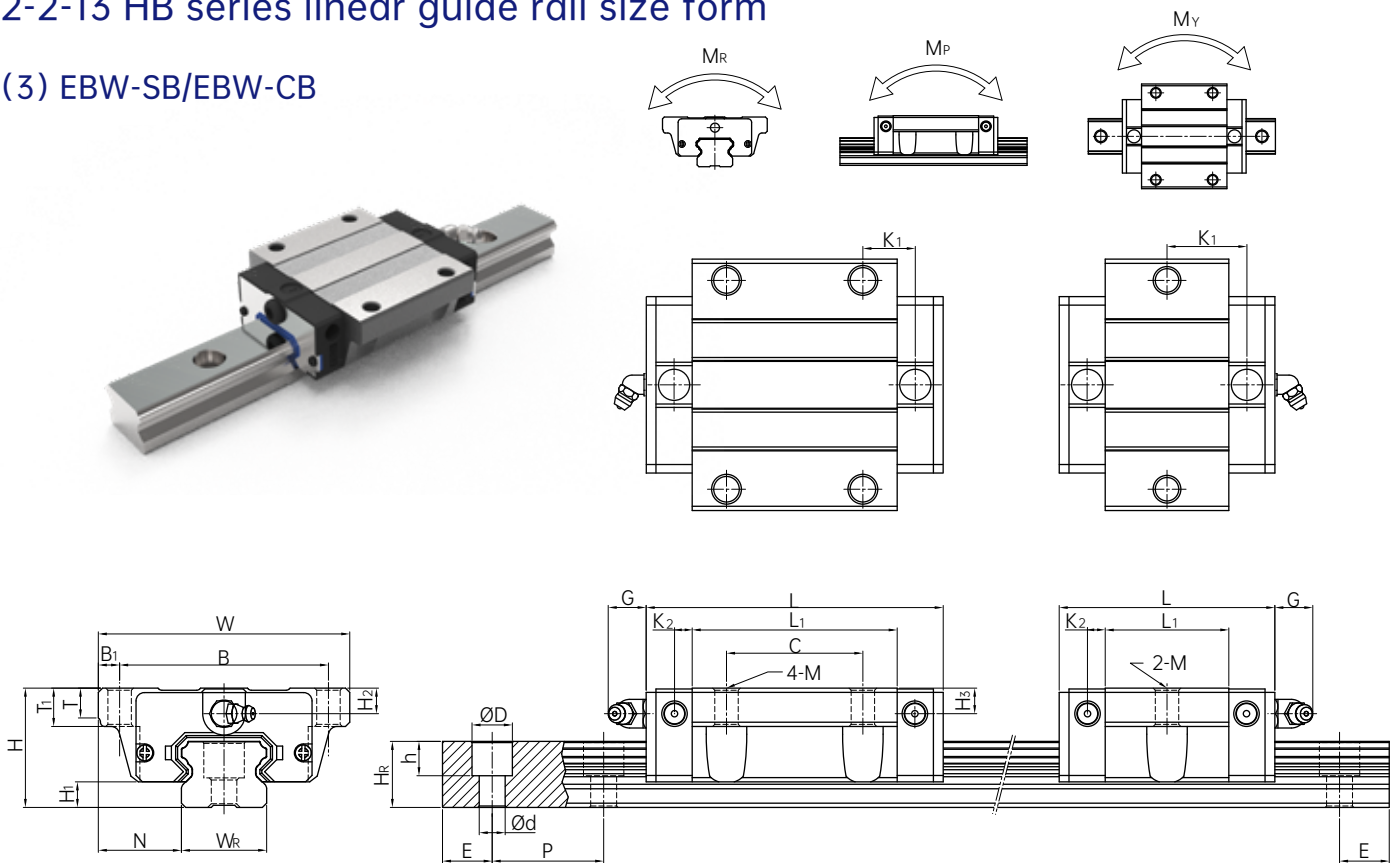
Model	Component size (mm)			Slider size (mm)															Guide track size (mm)							Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static moment			weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	M	T	T ₁	H ₂	H ₃	W _R	H _R	D	h	d	P	E	(mm)				C(kN)	C ₀ (kN)	M _R kN·m	M _P kN·m	M _Y kN·m
EBW15SA	24	4.5	18.5	52	41	5.5	-	23.1	40.1	14.8	3.5	5.7	M5	5	7	5.5	6	15	12.5	7.5	5.3	4.5	60	20	M4x16	5.08	8.93	0.08	0.04	0.04	0.12	1.25	
EBW15CA							26	39.8	56.8	10.15																							
EBW20SA	28	6	19.5	59	49	5	-	29	50	18.75	4.15	12	M6	7	9	6	6	20	15.5	9.5	8.5	6	60	20	M5x16	6.87	12.10	0.12	0.06	0.06	0.19	2.08	
EBW20CA							32	48.1	69.1	12.3																							
EBW25SA	33	7	25	73	60	6.5	-	35.5	59.1	21.9	4.55	12	M8	7.5	10	8	8	23	18	11	9	7	60	20	M6x20	10.83	18.53	0.22	0.11	0.11	0.35	2.67	
EBW25CA							35	59	82.6	16.15																							
EBW30SA	42	10	31	90	72	9	-	41.5	69.5	26.75	6	12	M10	7	10	8	9	28	23	14	12	9	80	20	M8x25	15.60	26.70	0.38	0.20	0.20	0.62	4.35	
EBW30CA							40	70.1	98.1	21.05																							
EBW35SA	48	11	33	100	82	9	-	45	75	28.5	7	12	M10	10	13	8.5	8.5	34	27.5	14	12	9	80	20	M8x25	21.53	35.51	0.53	0.29	0.29	0.84	6.14	
EBW35CA							50	78	108	20																							

注: 1kgf=9.81N

Low-assembly type rolling bead linear

2-2-13 HB series linear guide rail size form

(3) EBW-SB/EBW-CB



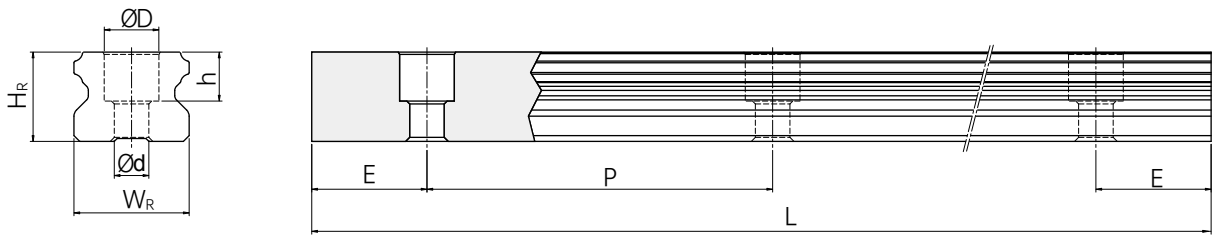
Model	Component size (mm)			Slider size (mm)														Guide track size (mm)						Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static moment			weight		
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	M	T	T ₁	H ₂	H ₃	W _R	H _R	D	h	d	P	E	(mm)	C(kN)	C ₀ (kN)	M _R kN-m	M _P kN-m	M _Y kN-m	slider kg	Guide rail kg/m
EBW15SB	24	4.5	18.5	52	41	5.5	-	23.1	40.1	14.8	3.5	5.7	φ4.5	5	7	5.5	6	15	12.5	7.5	5.3	4.5	60	20	M4x16	5.08	8.93	0.08	0.04	0.04	0.12	1.25
EBW15CB							26	39.8	56.8	10.15																31.6						
EBW20SB	28	6	19.5	59	49	5	-	29	50	18.75	4.15	12	φ5.5	7	9	6	6	20	15.5	9.5	8.5	6	60	20	M5x16	6.87	12.10	0.12	0.06	0.06	0.19	2.08
EBW20CB							32	48.1	69.1	12.3																31.6						
EBW25SB	33	7	25	73	60	6.5	-	35.5	59.1	21.9	4.55	12	φ7	7.5	10	8	8	23	18	11	9	7	60	20	M6x20	10.83	18.53	0.22	0.11	0.11	0.35	2.67
EBW25CB							35	59	82.6	16.15																31.6						
EBW30SB	42	10	31	90	72	9	-	41.5	69.5	26.75	6	12	φ9	7	10	8	9	28	23	14	12	9	80	20	M8x25	15.60	26.70	0.38	0.20	0.20	0.62	4.35
EBW30CB							40	70.1	98.1	21.05																31.6						
EBW35SB	48	11	33	100	82	9	-	45	75	28.5	7	12	φ9	10	13	8.5	8.5	34	27.5	14	12	9	80	20	M8x25	21.53	35.51	0.53	0.29	0.29	0.84	6.14
EBW35CB							50	78	108	20																31.6						

Note: 1kgf=9.81N

Low-assembly type rolling bead linear

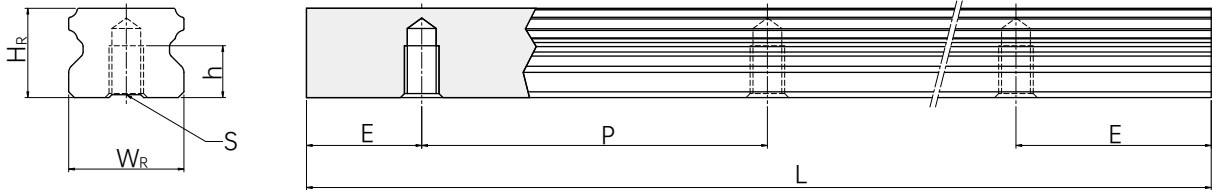
2-2-13 HB series linear guide rail size form

(4) Upper locking type (increased bolt aperture) rail size form



Specification	Dimensions of guide rail fastening bolts (mm)	Guide track size (mm)							Weight (kg/m)
		W _R	H _R	D	h	d	P	E	
EBR15U	M4x16	15	12.5	7.5	5.3	4.5	60	20	1.23
EBR30U	M8x25	28	23	14	12	9	80	20	4.23

(5) down locking type guide rail dimension table



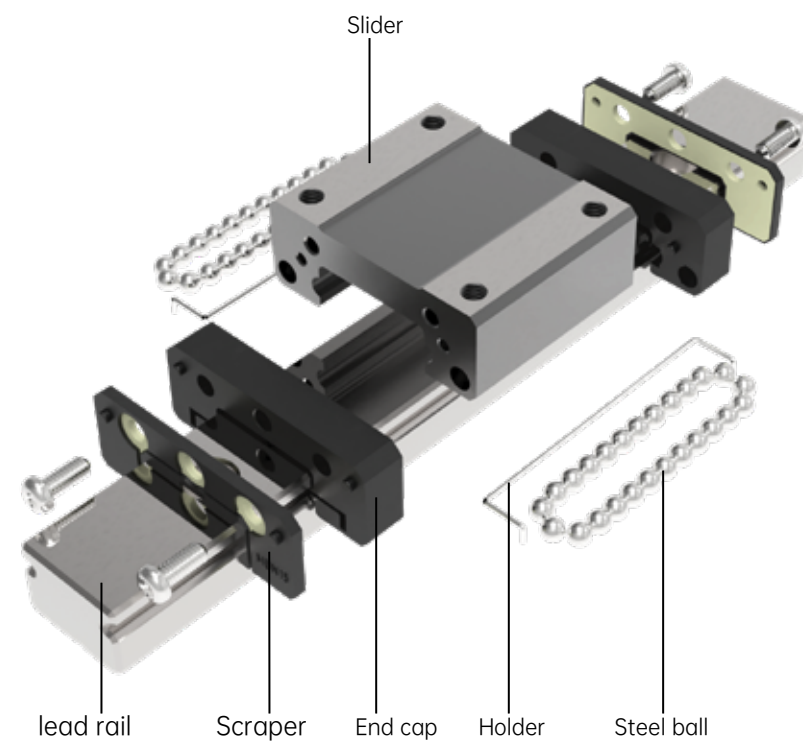
Specification	Guide rail size (mm)						Weight (kg/m)
	W _R	H _R	S	h	P	E	
EBR15T	15	12.5	M5x0.8P	7	60	20	1.26
EBR20T	20	15.5	M6x1P	9	60	20	2.15
EBR25T	23	18	M6x1P	10	60	20	2.79
EBR30T	28	23	M8x1.25P	14	80	20	4.42
EBR35T	34	27.5	M8x1.25P	17	80	20	6.34

2-3 MB series-micro small ball straight guide rail



2-3-1 Features of MBN series small linear rails

1. Small size, lightweight, especially suitable for miniaturization equipment.
2. Adopt the gothic four-point contact design, which can withstand the load in all directions, with strong rigidity and high precision characteristics.
3. Steel bead holder design, with interchangeability with accuracy allowed.
4. Stainless steel type is available. MBN sliders, MBNR guide rails and steel balls can also be made of stainless steel.



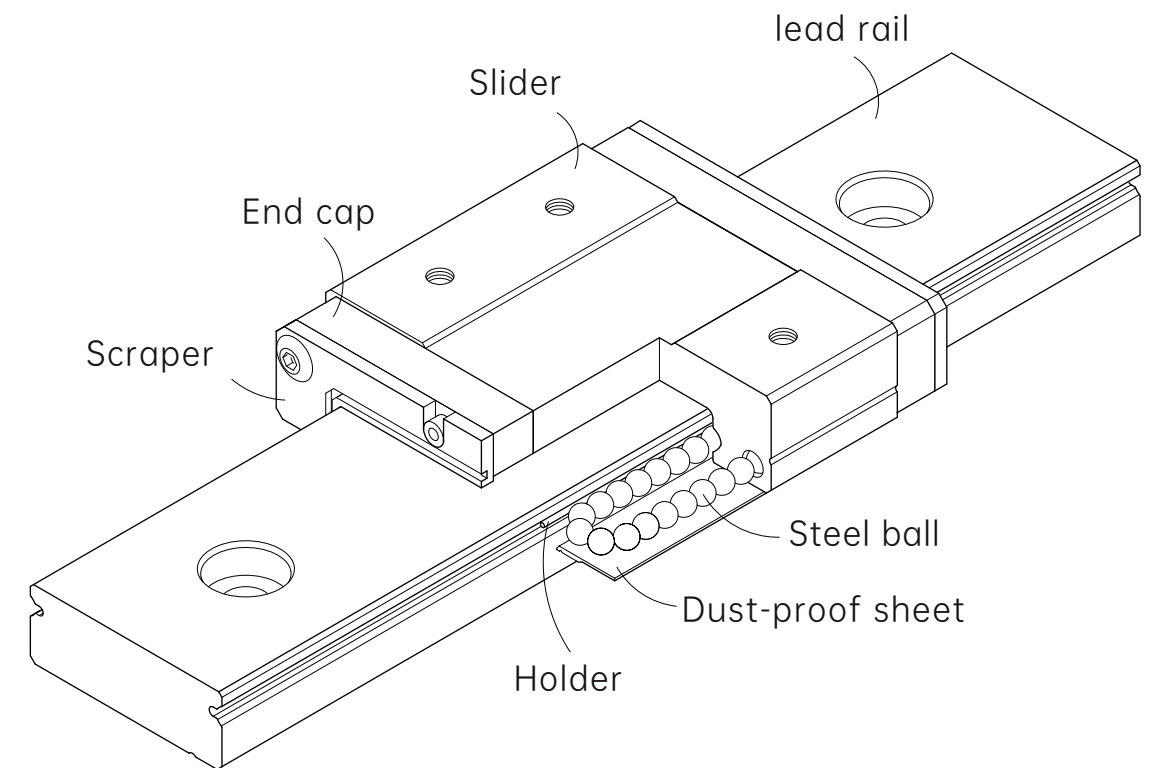
2-3-2 The MBN series ontology structure

- Rolling cycle system: slide block, guide rail, end cover, steel bead, and holder
- Lubrication system: MBN15 has oil nozzle to the side, while MBN 7,9,12 reserve oil holes to the side to drive oil or grease into the slider for lubrication.
- Dust proof system: oil scraper, dust proof (9,12,15 optional), bolt cover (12,15).



2-3-3 Characteristics of MBW small wide-linear guide rail

1. The design of the widened guide rail greatly improves the torque load capacity, which can be used in a single axis.
2. Gothic four-point contact design can withstand loads in various directions and has high rigidity.
3. The slider is equipped with a small steel wire, and the steel ball of the slide block will not fall off.
4. Stainless steel type is available. MBW sliders, MBWR guide rails and steel balls can also be made of stainless steel.



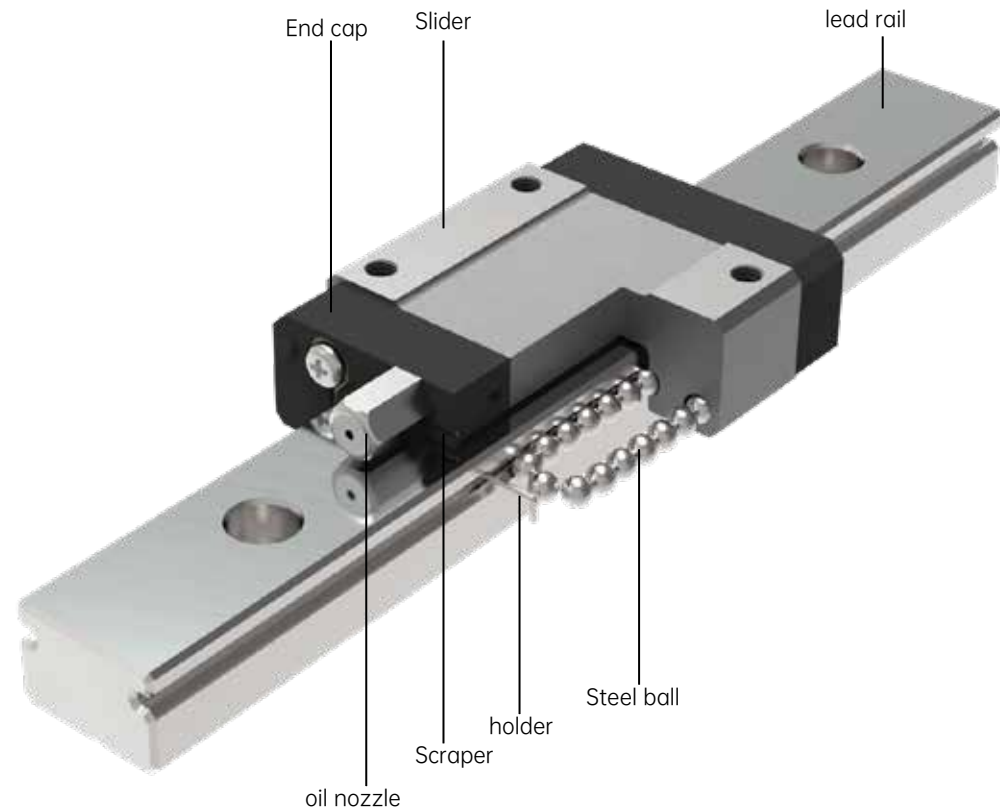
2-3-4 The MBW series ontology structure

- Rolling cycle system: slide block, guide rail, end cover, steel bead, and holder.
- Lubrication system: MBW 15 end cover with a nozzle to fill the customer, while MBW 7,9,12 reserve oil holes on the end cover side to drive oil or grease into the slider for lubrication.
- Dust proof system: oil scraper, dust proof (9,12,15 optional), bolt cover (12,15).



2-3-5 Features of MBN-O series small linear guide rail

1. Small and lightweight, the main part of the slider is made of resin material, reducing the weight by about 20%.
2. Adopt the Gothic type four-point contact design, which can withstand the load in all directions, with strong rigidity and high precision characteristics.
3. Steel bead holder design, with interchangeability with accuracy allowed.
4. Modular reflux system design.
5. Stainless steel type is available. MBN-O sliders, MBNR guide rails and steel balls can also be made of stainless steel.



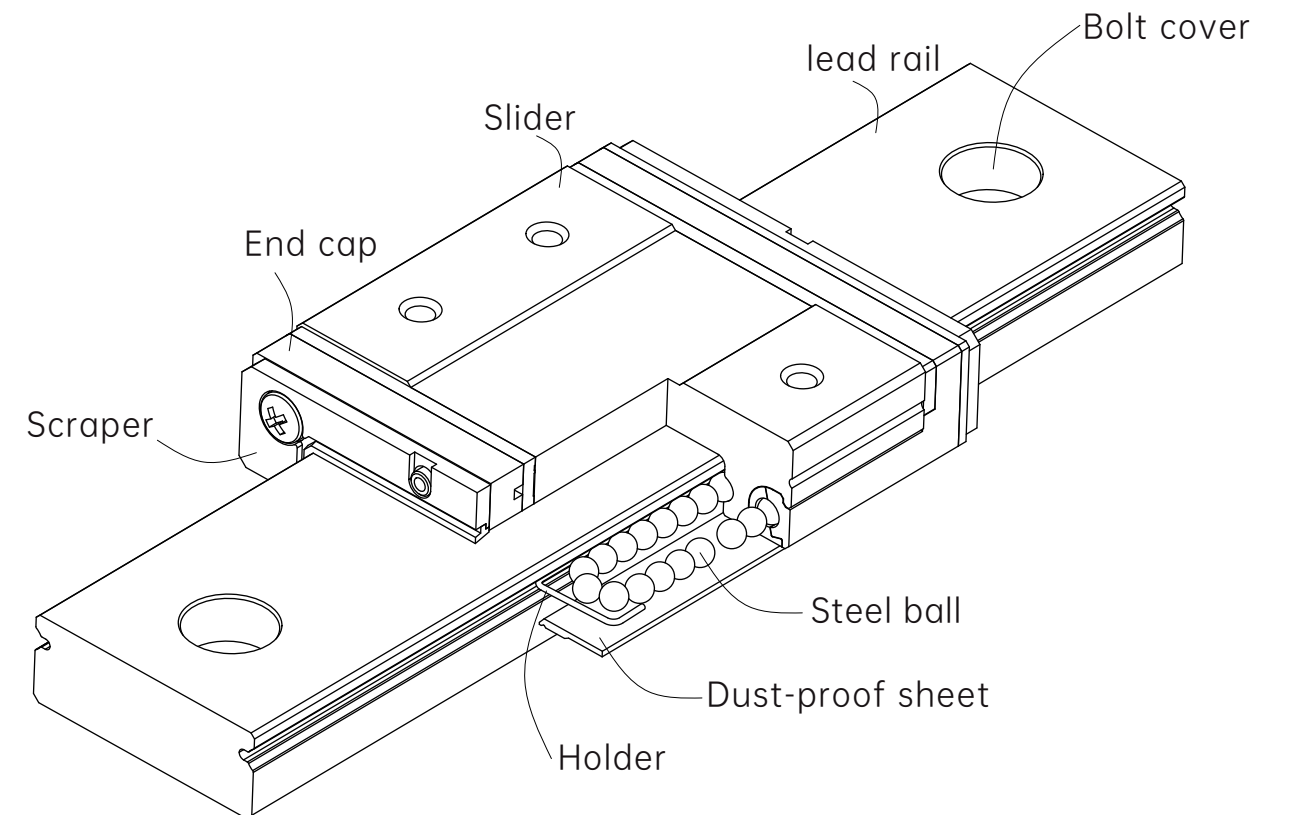
2-3-6 The MBN-O series ontology structure

- ④ Rolling cycle system: slide block, guide rail, end cover, steel bead, and holder
- ④ Lubrication system: MBN15-O end cover side to provide the customer for oil injection, while MBN 5-O, MBN 7-O, MBN 9-O, MBN12-O reserve oil holes on the end cover side to drive oil or oil into the slider for lubrication.
- ④ Dust proof system: oil scraper, dust proof (9,12,15 optional), bolt cover (12,15).



2-3-7 Characteristics of the MBW-O small and wide-width linear guide rail

1. The design of the widened guide rail greatly improves the torque load capacity, which can be used in a single axis.
2. Gothic four-point contact design can withstand loads in various directions and has high rigidity.
3. The slider is equipped with a small steel wire, and the steel beads of the slide block will not fall off.
4. Modular reflux system design, using resin material, weight reduced by about 20%
5. Stainless steel type is available. MBW-O sliders, MBWR guide rails and steel balls can also be made of stainless steel.



2-3-8 The MBW-O series ontology structure

- ④ Rolling cycle system: slide block, guide rail, end cover, steel bead, and holder
- ④ Lubrication system: MBW 15-O has a nozzle on the side to supply oil, while MBW 5-O, MBW 7-O, MBW 9-O, MBW 12-O reserve oil holes on the end cover to drive the oil or oil into the slider for lubrication.
- ④ Dust control system: oil scraper, dust filter (9,12,15 specification optional), bolt cover (12,15 specification)

2-3-9 Application range

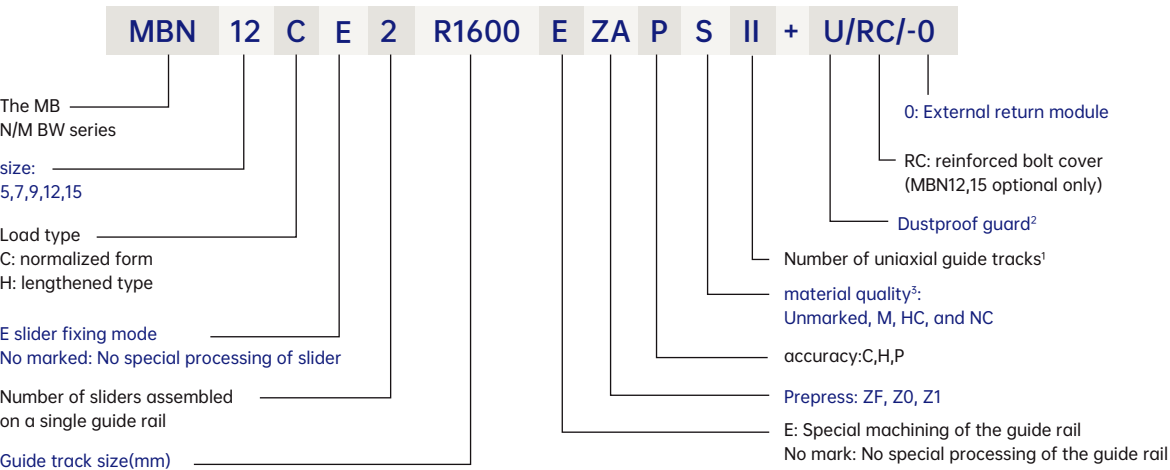
The MB N/M BW series of applications include: semiconductor manufacturing equipment, printed circuit board IC assembly equipment, medical equipment, robotic arm, precision measuring instruments, office automation equipment, and other small linear sliding devices.



2-3-10 Product specifications and models

interchangeability and interchangeability type two straight rail, the same size, the main difference lies in the interchangeability type of slider, rail can be single swap use, more convenient, but its combined precision cannot reach the interchangeability precision requirements, but because of the JSM in manufacturing good size control and strict quality requirements, interchangeability type of combination precision has reached a certain level, does not need to pair install straight rail customers, is a good choice. The product model mainly indicates the series, size, type, accuracy grade, prepressure and other specifications, as well as the product confirmation of both parties when ordering.

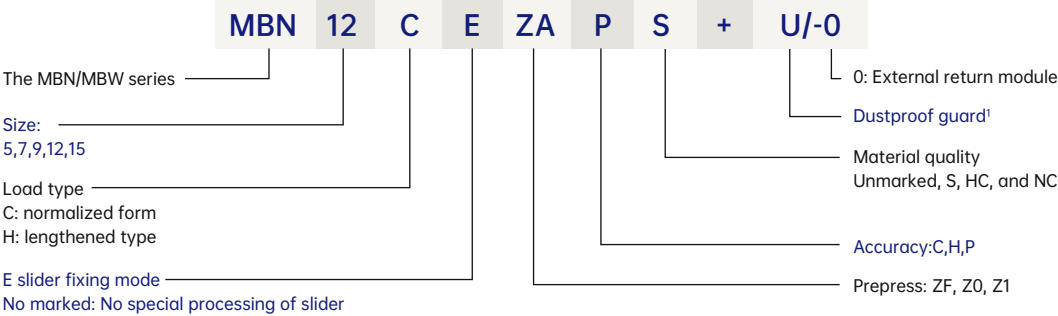
(1)Non-interchangeability linear guide rail product model



Note: 1. Not the number of uniaxial guide if only one guide is used,Two branches are labeled II, three branches are labeled III, and so on.
2. MBN, MBW 9,12,15, dust proof
3. No mark: general steel quality S: of stainless steel I material
HC: general steel quality + hard chromium plating NV: general steel quality + chemical black chromium

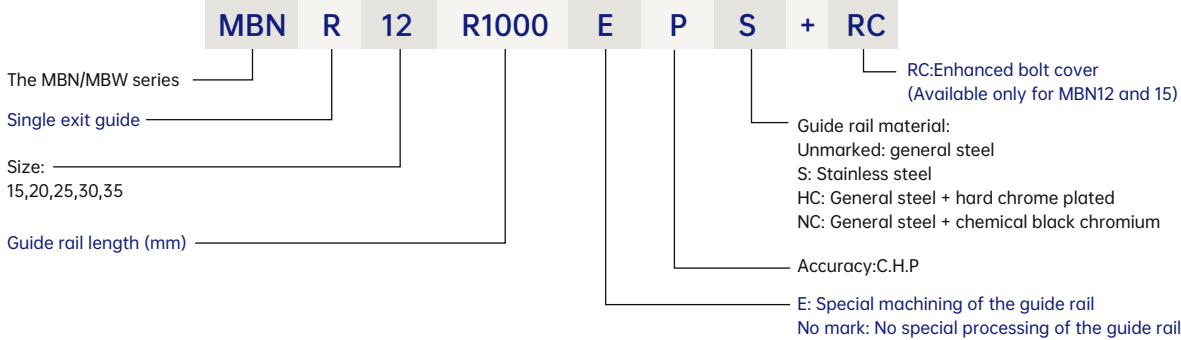
(2)Product model of interchangeability linear guide rail

Single-issue slider product model



Note: 1.MBN, MBW 9,12,15, dust proof
2.MB5 only has external reflux module design

Single-issue guide rail product model



2-3-11 MB series type

(1)Slider type

JSM provides standard type and wide type two straight rail, convenient for customers to choose and use.

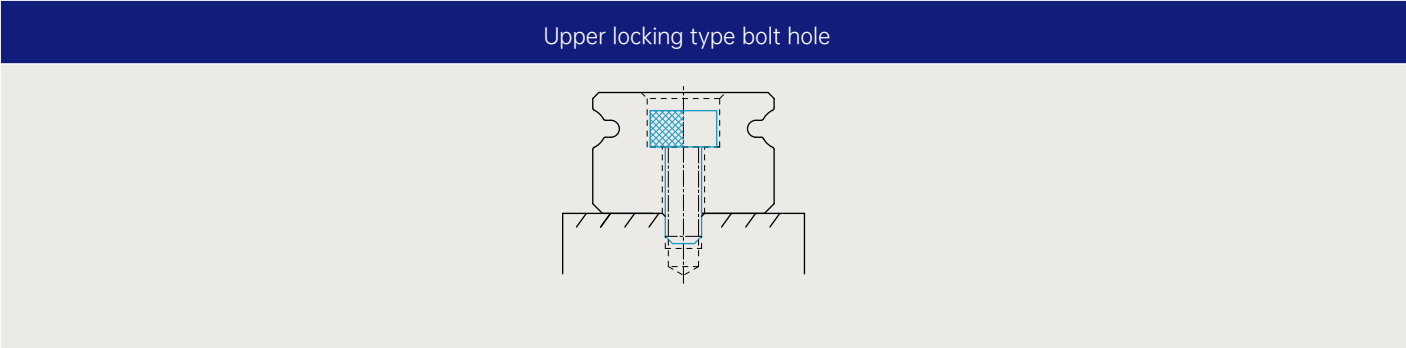
Table 2-4-1 Slider type

Form	Specifications	Shape	Height size (Mm)	Guide rail length (Mm)	Utility unit
Normalized Form	MBN-C MBN-H		8	100	- Printer - Machine arm - Electronic instruments and equipment - Semiconductor device
			16	2000	
Wide type	MBW-C MBW-H		9	100	
			16	2000	

(2)Guide rail type

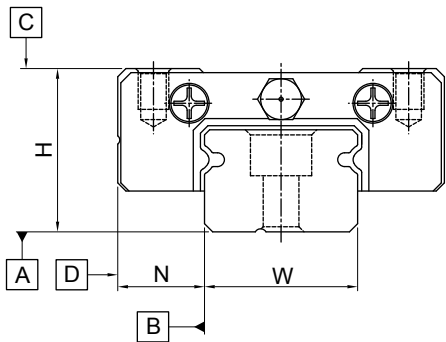
JSM provides locked-type screw hole guide rail for easy customer installation and use.

Table 2-4-2 guide rail type



2-3-12 Accuracy level

The accuracy of MBN and MBW series small guide rail is divided into three levels: common, high and precision level. Customers can choose suitable accuracy according to the accuracy requirements of the equipment.





(1)Non-interchangeability linear guide rail accuracy

The combined height H measurement is based on the center position of the upper datum of the slider, and the combined width N measurement is based on the center position of the datum of the slider.

Table 2-4-3 Precision table unit: mm

Accuracy class	Common level(C)	High level(H)	Precision level(P)
Tolerance size error for height H	± 0.04	± 0.02	± 0.01
Tolerance size error for width N	± 0.04	± 0.025	± 0.015
Mutual error of the pairwise height H	0.03	0.015	0.007
Mutual error of pairwise widths N (reference rail)	0.03	0.02	0.01
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form 2-4-5		
The lide D faces the guide B	Walk parallelism See the form 2-4-5		

(2)Exchangeability linear guide rail accuracy

Interchangeability linear rail accuracy in slider assembly in a single rail pair of high and width accuracy, with the interchangeability linear rail accuracy, but if assembled in different branch rail, because of the rail height error, the pair of high and width accuracy, than the exchangeability linear rail accuracy slightly inferior, while the parallelism accuracy with the exchangeability linear rail precision.

Table 2-4-4 Accuracy table of exchangeability linear guide rail unit: mm

Accuracy class	Common level(C)	High level(H)	Precision level(P)
Tolerance size error for height H	± 0.04	± 0.02	± 0.01
Tolerance size error for width N	± 0.04	± 0.025	± 0.015
Single pairs	Mutual error of the pairwise height H	0.015	0.007
	Mutual error of pairwise widths N (reference rail)	0.02	0.01
The mutual error of the plural branched pair height H	0.07	0.04	0.02
Slide C faces the walking parallelism of the guide rail plane A	Walk parallelism See the form 2-4-5		
The lide D faces the guide B	Walk parallelism See the form 2-4-5		

(3)Walking parallelism accuracy

The walking parallelism of the guide rail C pair A and D pair B is related to the accuracy and length of the guide rail, and its values are listed in the following table.

Guide rail length (mm)	Accuracy level (μm) c	Accuracy level (μm) h	Accuracy level (μm) p	Guide rail length (mm)	Accuracy level (μm) c	Accuracy level (μm) h	Accuracy level (μm) p
50以下	12	6	2	1,000~1,200	25	18	11
20~80	13	7	3	1,200~1,300	25	18	11
80~125	14	8	3.5	1,300~1,400	26	19	12
125~200	15	9	4	1,400~1,500	27	19	12
200~250	16	10	5	1,500~1,600	28	20	13
250~315	17	11	5	1,600~1,700	29	20	14
315~400	18	11	6	1,700~1,800	30	21	14
400~500	19	12	6	1,800~1,900	30	21	15
500~630	20	13	7	1,900~2,000	31	22	15
630~800	22	14	8	2,000~	31	22	16
800~1,000	23	16	9				



2-3-13 Prepress

The MB N/M BW series provides three prepressures: common gap, no prepress, and light prepress.

Table 2-4-6 Prepress level

Prepress level	Note	Prepress	Use accuracy
common gap	ZF	Precision clearance 4~10μm	C
no prepress	Z0	0	C~P
light prepress	ZA	0.02C	C~P

Note: C in the pre-pressure is the dynamic rated load

2-3-14 Dustproof equipment

The standard dust-proof slider is equipped with oil scraper to prevent dust or impurities from entering the slider, and affect the life and accuracy of the linear guide rail. The dustproof piece is installed at the bottom of the slider to prevent dust or impurities from entering the inside of the slider from the bottom gap of the slider. If the customer wants to choose the dustproof piece, he can add + U code after the model. Specification 5,7 slider to the bottom of the surface gap (H 1) is very small, does not provide additional dustproof plate, but specifications 9,12 and 15 provide dustproof panel selection. When choosing dustproof tablets, customers should pay attention to the decrease of the slider gap (H 1). When the side bearing surface is used, the height of the side bearing surface should not be greater than the clearance value (H 1), so as to avoid the interference of the slider to the side bearing surface during running.

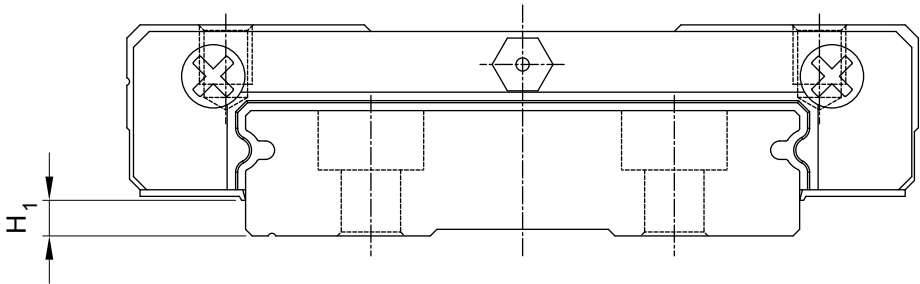


Table 2-4-7 Installation face clearance of dust slislideH1

Model	Dustproof sheet	H ₁ mm	model	Dustproof sheet	H ₁ mm
M B N7	—	—	M B W7	—	—
M B N9	●	1	M B W9	●	1.9
M B N12	●	2	M B W12	●	2.4
M B N15	●	3	M B W15	●	2.4
M B N5-O	—	—	M B W5-O	—	—
M B N7-O	—	—	M B W7-O	—	—
M B N9-O	●	1.2	M B W9-O	●	1.95
M B N12-O	●	2	M B W12-O	●	2.45
M B N15-O	●	3	M B W15-O	●	2.45

2-3-15 Install plane error

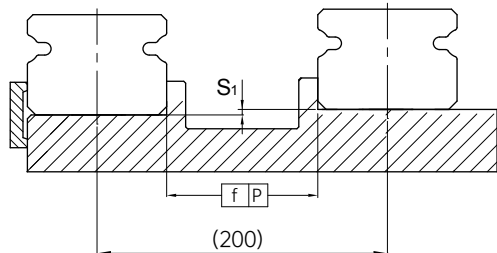


Table 2-4-8 Allow the parallelism error(P)

unit: μm

Specifications	Prepress		
	ZF prepress	ZO prepress	ZA prepress
MB5	2	2	2
MB7	3	3	3
MB9	4	4	3
MB12	9	9	5
MB15	10	10	6

Table 2-4-9 Allow error of the upper and lower parallism(S1)

unit: μm

Specifications	Prepress		
	ZF prepress	ZO prepress	ZA prepress
MB5	20	20	2
MB7	25	25	3
MB9	35	35	6
MB12	50	50	12
MB15	60	60	20

Note: The values is proportional to the distance

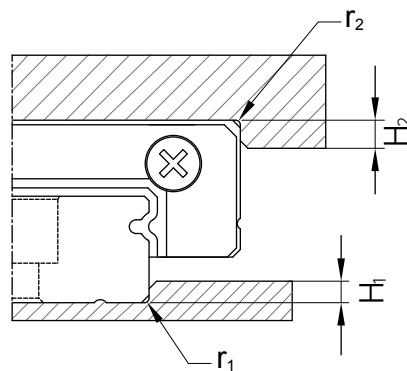
Table 2-4-10 The flatness of the mounting surface

単位: mm

Specifications	Flatness error
MB5	0.015/200
MB7	0.025/200
MB9	0.035/200
MB12	0.050/200
MB15	0.060/200

Note : The above values apply to the prepress level of ZF / ZO. If Z1 grade or more than two guides (including two guides) are used, it is recommended to use less than 50% of the above values.

2-3-16 Installation precautions



② Install the shoulder height and chamfer

Table 2-4-11 Shoulder height and chamfer

Specifications	Maximum chamfer radius of the shoulder r1(mm)	Maximum chamfer radius of the shoulder r2(mm)	Shoulder height of the guide rail end H1(mm)	Sder end shoulder height H2(mm)
MBN5	0.1	0.2	1.2	2
MBN7	0.2	0.2	1.2	3
MBN9	0.2	0.3	1.7	3
MBN12	0.3	0.4	1.7	4
MBN15	0.5	0.5	2.5	5
MBW5	0.1	0.2	1.2	2
MBW7	0.2	0.2	1.7	3
MBW9	0.3	0.3	2.5	3
MBW12	0.4	0.4	3	4
MBW15	0.4	0.8	3	5

② Torsion value of the guide rail assembly screw

Table 2-4-12 Torsional force value

unit: mm

Specifications	Screw specifications	Torsional force value N-cm [kgf-cm]		
		Iron material	Casting material	Aluminum alloy material
MBN5	M2x0.4Px6L	57 (5.9)	39.2 (4)	29.4 (3)
MBN7	M2x0.4Px6L	57 (5.9)	39.2 (4)	29.4 (3)
MBN9	M3x0.5Px8L	186 (19)	127 (13)	98 (10)
MBN12	M3x0.5Px8L	186 (19)	127 (13)	98 (10)
MBN15	M3x0.5Px10L	186 (19)	127 (13)	98 (10)
MBW5	M2.5x0.45Px7L	118 (12)	78.4 (8)	58.8 (6)
MBW7	M3x0.5Px6L	186 (19)	127 (13)	98 (10)
MBW9	M3x0.5Px8L	186 (19)	127 (13)	98 (10)
MBW12	M4x0.7Px8L	392 (40)	274 (28)	206 (21)
MBW15	M4x0.7Px10L	392 (40)	274 (28)	206 (21)

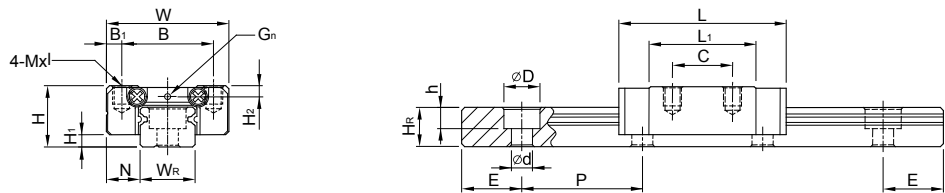
Note: 1 kgf = 9.81N

Micro small rolling bead linear slide rail

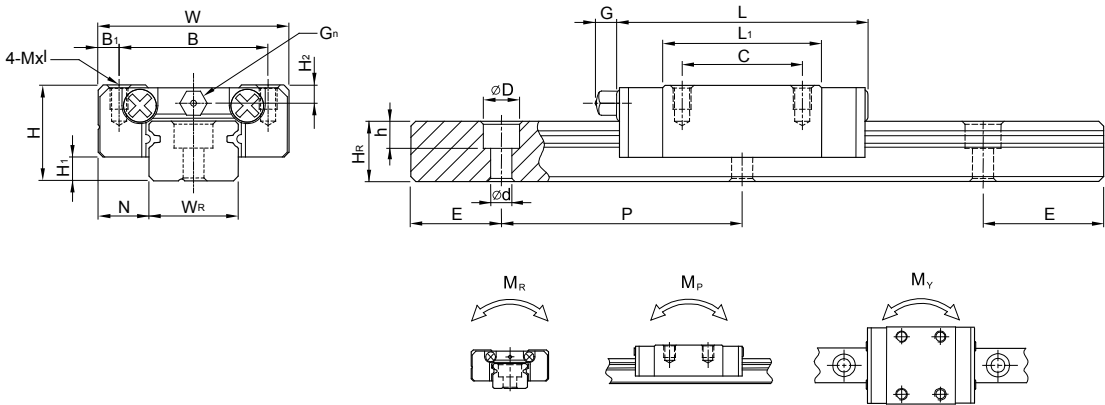
2-3-17 MBN/MBW series linear guide rail size form

(1) MBN-C/MBN-H

MBN7, MBN9,MAN12



MBN15



Model	Component size (mm)			Slider size (mm)										Guide track size (mm)								Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static moment			Weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	G _n	MxI	H ₂	W _R	H _R	D	h	d	P	E	(mm)	C(kN)	C ₀ (kN)	M _R N-m	M _P N-m	M _V N-m	Slider kg	Guide rail kg/m	
MBN7C	8	1.5	5	17	12	2.5	8	13.5	22.5	--	φ1.2	M2x2.5	1.5	7	4.8	4.2	2.3	2.4	15	5	M2x6	0.93	1.18	4.47	2.70	2.70	0.010	0.22	
MBN7H							13	21.8	30.8			M3x3	1.8									9	6.5	6	3.5	3.5	20		
MBN9C	10	2	5.5	20	15	2.5	10	18.9	28.9	--	φ1.4	M3x3	1.8	9	6.5	6	3.5	3.5	20	7.5	M3x8	1.77	2.42	11.17	6.98	6.98	0.016	0.38	
MBN9H							16	29.9	39.9			M3x3.5	2.5									12	8	6	4.5	3.5	25		
MBN12C	13	3	7.5	27	20	3.5	15	21.7	34.7	--	φ3	M3x3.5	2.5	12	8	6	4.5	3.5	25	10	M3x8	2.70	3.72	24.21	13.03	13.03	0.034	0.65	
MBN12H							20	32.4	45.4			M3x4	3									15	10	6	4.5	3.5	40		
MBN15C	16	4	8.5	32	25	3.5	20	26.7	42.1	4.5	M3	M3x4	3	15	10	6	4.5	3.5	40	15	M3x10	4.38	5.31	42.83	20.48	20.48	0.059	1.06	
MBN15H							25	43.4	58.8			M3x4	3									15	10	6	4.5	3.5	40		

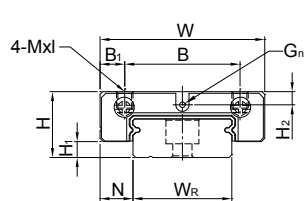
Note: 1kgf=9.81N

Micro small rolling bead linear slide rail

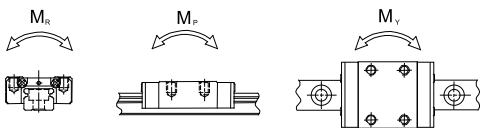
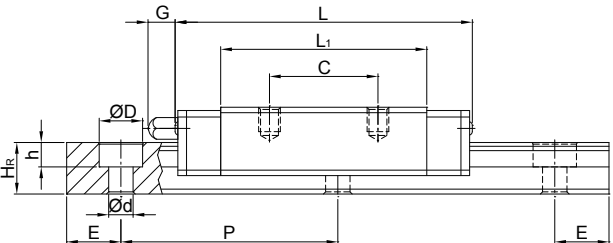
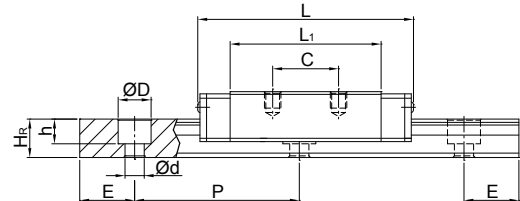
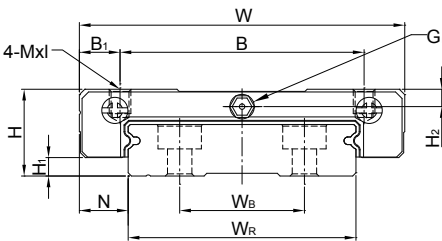
2-3-17 MBN/MBW series linear guide rail size form

(2) MBW-C/MBW-H

MBW7, MBW9,MAW12



MBW15



Model	Component size (mm)			Slider size (mm)										Guide track size (mm)										Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static moment			Weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	G _n	MxI	H ₂	W _R	W _B	H _R	D	h	d	P	E	(mm)	C(kN)				C ₀ (kN)	M _R N-m	M _P N-m	M _Y N-m	Slider kg
MBW7C	9	1.9	5.5	25	19	3	10	21	31.2	--	φ1.2	M3x3	1.85	14	--	5.2	6	3.2	3.5	30	10	M3x6	1.30	1.96	14.92	6.78	6.78	0.020	0.51		
MBW7H							19	30.8	41														1.68	2.98	22.28	14.75	14.75	0.029			
MBW9C	12	2.9	6	30	21	4.5	12	27.5	39.3	--	φ1.2	M3x3	2.4	18	--	7	6	4.5	3.5	30	10	M3x8	2.61	3.91	38.11	18.01	18.01	0.040	0.91		
MBW9H							23	35	24														38.5	50.7	3.26	5.60	51.81	32.30			32.30
MBW12C	14	3.4	8	40	28	6	15	31.3	46.1	--	φ1.2	M3x3.6	2.8	24	--	8.5	8	4.5	4.5	40	15	M4x8	3.72	5.31	66.82	26.41	26.41	0.071	1.49		
MBW12H							28	45.6	60.4														4.85	7.83	97.57	54.50	54.50	0.103			
MBW15C	16	3.4	9	60	45	7.5	20	38	54.8	5.2	M3	M4x4.2	3.2	42	23	9.5	8	4.5	4.5	40	15	M4x10	6.43	8.76	189.37	53.83	53.83	0.143	2.86		
MBW15H							35	57	73.8														8.48	12.71	284.06	116.47	116.47	0.215			

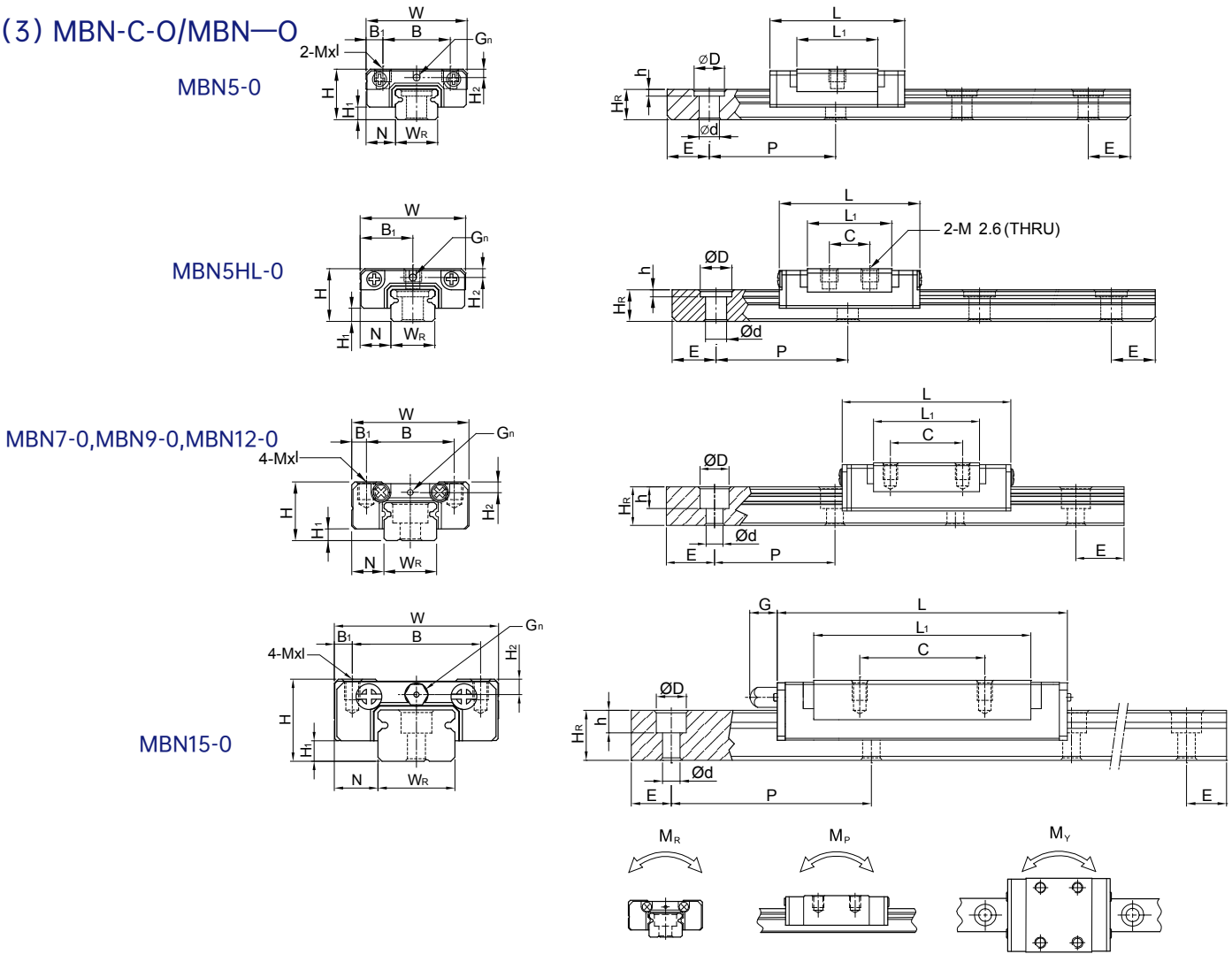
Note: 1kgf=9.81N

MB series

Micro small rolling bead linear slide rail

2-3-17 MBN/MBW series linear guide rail size form

(3) MBN-C-O/MBN—O



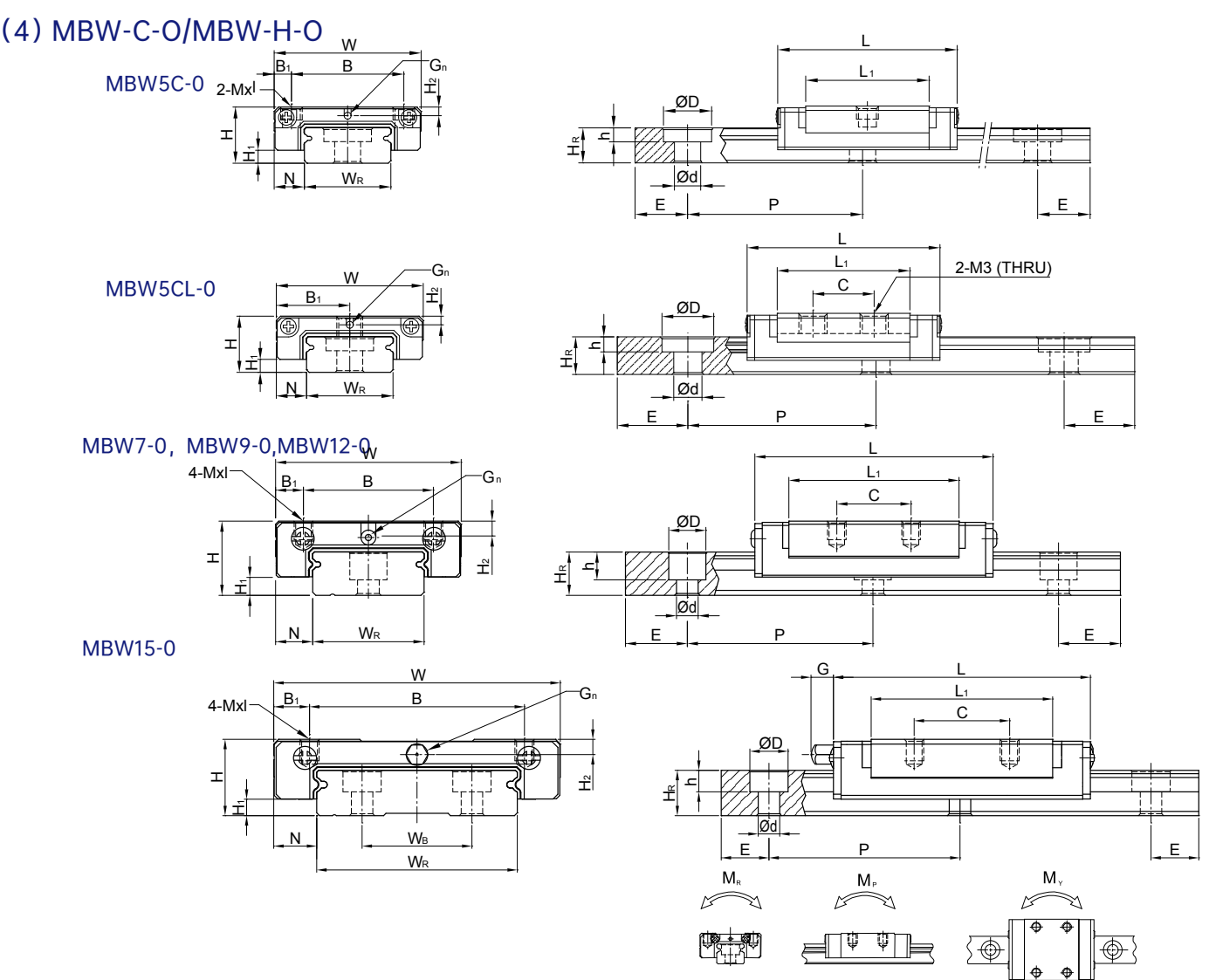
Model	Component size (mm)			Slider size (mm)										Guide track size (mm)								Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static moment			Weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	G _n	MxI	H ₂	W _R	H _R	D	h	d	P	E	(mm)	C(kN)	C ₀ (kN)	M _R N·m	M _P N·m	M _V N·m	Slider kg	Guide rail kg/m	
MBN5C-0	6	1.5	3.5	12	8	2	--	9.6	16	--	φ0.8	M2x1.5	1	5	3.6	3.6	0.8	2.4	15	5	M2x6	0.51	0.80	1.90	1.24	1.24	0.003	0.15	
MBN5H-0					M2x1.5	0.64	1.03	2.47	2.19			2.19										0.004							
MBN5HL-0					M2.6-THRU	0.64	1.03	2.47	2.19			2.19										0.004							
MBN7C-0	8	1.5	5	17	12	2.5	8	13.5	22.5	--	φ1.2	M2x2.5	1.5	7	4.8	4.2	2.3	2.4	15	5	M2x6	0.93	1.18	4.47	2.70	2.70	0.008	0.22	
MBN7H-0					M2x2.5	1.30	1.86	7.26	4.56			4.56										0.012							
MBN9C-0					M3x3	1.91	2.70	12.40	8.52			8.52										0.012							
MBN9H-0	10	2.2	5.5	20	15	2.5	16	29.3	39.9	--	φ1.4	M3x3	1.8	9	6.5	6	3.5	3.5	20	7.5	M3x8	2.38	3.73	18.72	20.40	20.40	0.02	0.38	
MBN12C-0					M3x3.5	2.70	3.72	24.21	13.03			13.03										0.025							
MBN12H-0					M3x3.5	4.06	5.61	36.48	35.62			35.62										0.047							
MBN15C-0	16	4	8.5	32	25	3.5	20	26.7	41.3	4.50	M3	M3x4	3	15	10	6	4.5	3.5	40	15	M3x10	4.38	5.31	42.83	20.48	20.48	0.057	1.06	
MBN15H-0					M3x4	6.05	8.65	69.83	54.93			54.93										0.088							

MB series

Micro small rolling bead linear slide rail

2-3-18 MBN/MBW series linear guide rail size form

(4) MBW-C-O/MBW-H-O

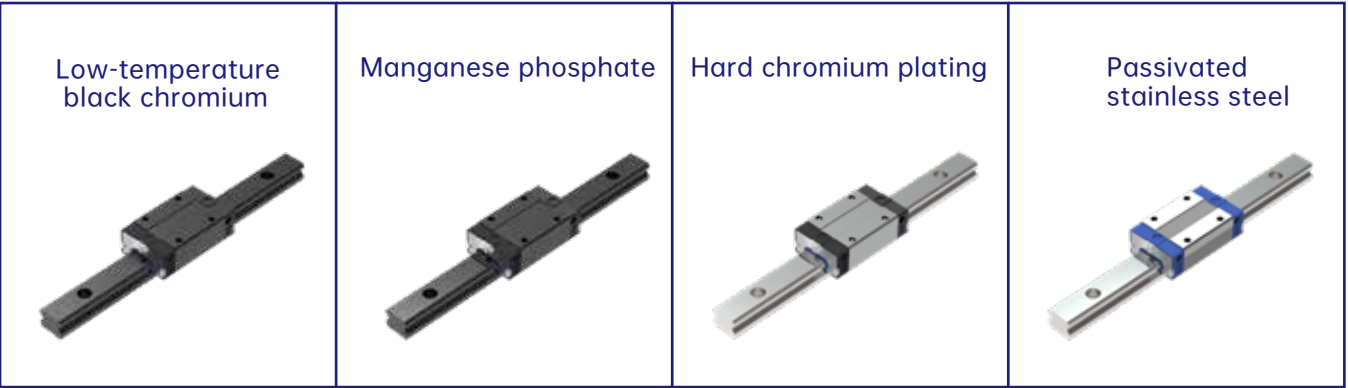


Model	Component size (mm)			Slider size (mm)										Guide track size (mm)										Fixed bolt size of the guide rail	Basic dynamic rated load	Basic static rated load	Allow the static moment			Weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	G _n	MxI	H ₂	W _R	W _B	H _R	D	h	d	P	E	(mm)	C(kN)				C ₀ (kN)	M _R N-m	M _P N-m	M _V N-m	Slider kg
MBW5V-0	6.5	1.5	3.5	17	13	2	--	14.1	20.5	--	φ0.8	M25x1.5	1	10	--	4	5.5	1.6	3	20	5	M25x7	0.65	1.12	5.23	2.57	2.57	0.006	0.34		
MBW5CL-0					--	8.5	6.5	14.1	20.5			M3-THRU											0.65	1.12	5.23	2.57	2.57	0.006			
MBN7C-0	9	1.9	5.5	25	19	3	10	21	31.2	--	φ1.2	M3x3	1.85	14	--	5.2	6	3.2	3.5	30	10	M3x6	1.30	1.96	14.92	6.78	6.78	0.018	0.51		
MBN7H-0					19	3	19	30.8	41			M3x3											1.68	2.98	22.28	14.75	14.75	0.026			
MBN9C-0	12	2.95	6	30	21	4.5	12	27.5	39.7	--	φ1.2	M3x3	2.65	18	--	7	6	4.5	3.5	30	10	M3x8	2.61	3.91	38.11	18.01	18.01	0.038	0.91		
MBN9H-0					23	3.5	24	38.5	50.7			M3x3											3.26	5.60	51.81	32.30	32.30	0.053			
MBN12C-0	14	3.45	8	40	28	6	15	31.3	45.1	--	φ1.2	M3x3.6	2.8	24	--	8.5	8	4.5	4.5	40	15	M4x8	3.72	5.31	66.82	26.41	26.41	0.066	1.49		
MBN12H-0					28	6	28	45.6	59.4			M3x3.6											4.85	7.83	97.57	54.50	54.50	0.093			
MBN15C-0	16	3.45	9	60	45	7.5	20	38	53.8	5.2	M3	M4x4.2	3.2	42	23	9.5	8	4.5	4.5	40	15	M4x10	6.43	8.76	189.37	53.83	53.83	0.138	2.86		
MBN15H-0					M4x4.2	8.48	12.71	284.06	116.47			116.47											0.200								

2-5 Anti-corrosion series



2-5-1 Surface-treated linear guide rails



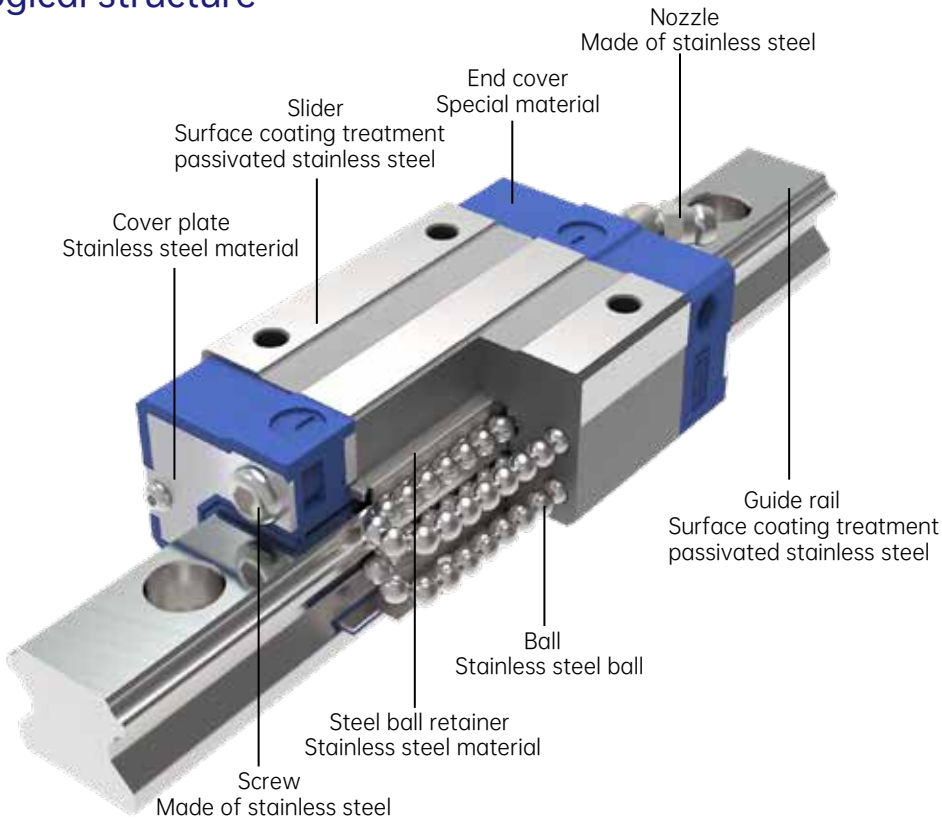
2-5-2 Product Features

- Enhance the corrosion resistance without affecting the accuracy of the linear guide rail or changing its appearance.

2-5-3 Applicable field

- Chemical industry, automation industry, testing and experimental environment, foggy or humid environment

2-5-4 Ontological structure



- Anti-corrosion system: Surface-coated guide rails, surface-coated sliders, stainless steel nozzles, stainless steel balls, stainless steel retainers
- Surface treatment models: Compatible with sizes 15,20,25,30,35, and 45

2-5-5 Features of stainless steel linear guide rails

- The same characteristics as standard linear guides
Rigidity, hardness, service life and size remain unchanged
- It is applicable to specific extreme environments
It can be used in conjunction with metal parts and is suitable for both low vacuum and medium vacuum environments
- Extremely strong corrosion resistance
The slider, guide rail, steel ball, grease nozzle, screw and steel ball retainer are all made of stainless steel

note: 1. Currently, we can provide HB15 to HB35 and EB15 to EB25
2. The maximum length of the guide rail can reach 4000mm
3. Add "S" after the specification of the linear guide rail
For example: HBW25CA2R1600ZAPS

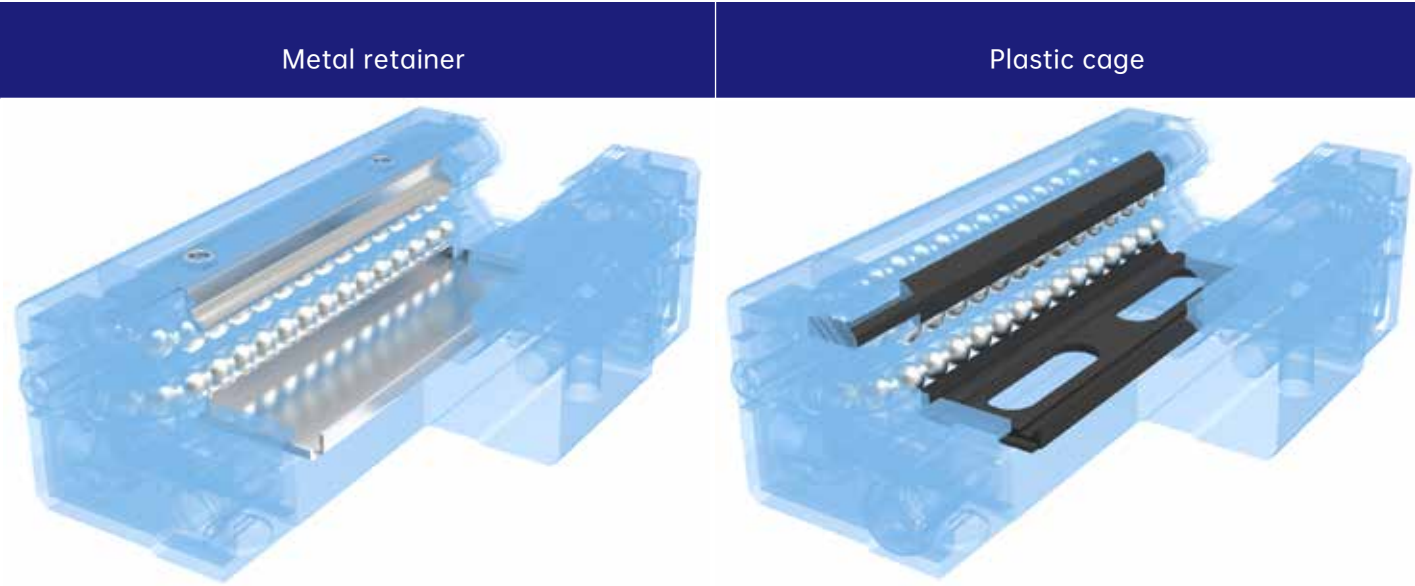
2-5-6 Applicable field

- Medical equipment, food and beverage processing, semiconductor manufacturing, chemical industry

2-5-7 Chemical composition

Brand number	Chemical composition (mass fraction)/%								
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo
SCM440	0.38-0.43	0.15-0.35	0.60-0.85	≤0.03	≤0.03	≤0.30	≤0.25	0.90-1.20	0.15-0.30

2-5-8 Ontological structure differences



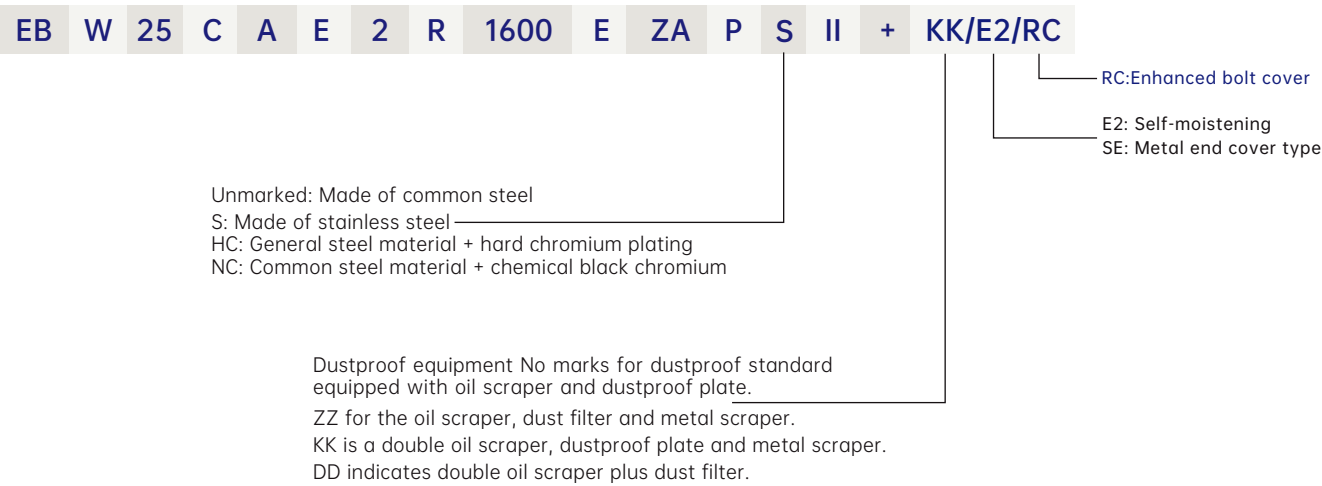
- Anti-corrosion system: Stainless steel guide rails, stainless steel sliders, stainless steel nozzles, stainless steel balls, stainless steel retainers
- Stainless steel model: Suitable for HB15 to HB35, EB15 to EB25 sizes

2-5 Anti-corrosion series



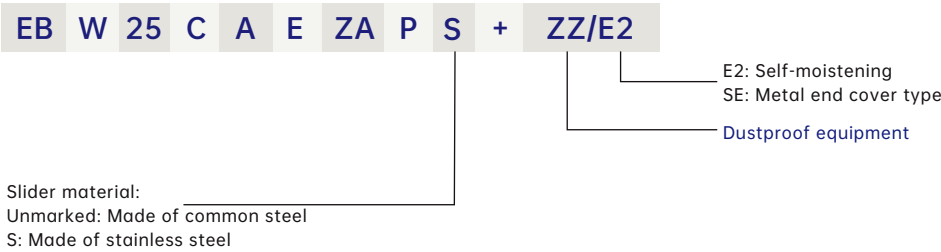
2-5-7 Specifications and models of anti-corrosion series products

(1)Non-interchangeable linear guide model

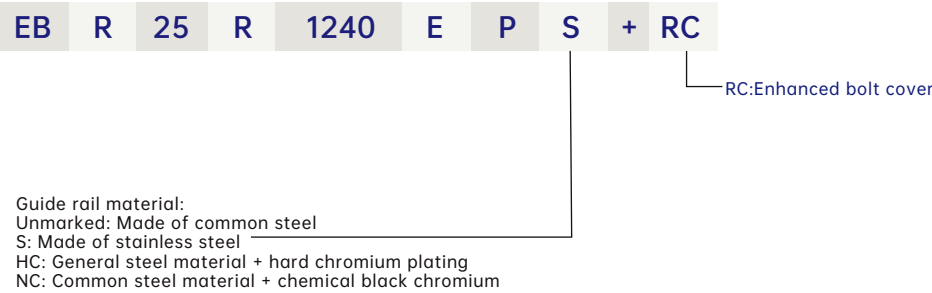


(2)Interchangeable linear guide rail product models

Interchangeable slider product model



Interchangeable linear guide rail product models



2-5-8 Salt spray test

	24h	96h
Stainless steel		
Low-temperature black chromium		
Hard chromium plating		
High carbon steel		

Project	Narrative
Spray liquid	5%NaCl solutiou
Laboratory temperature	35°C±2°C
Compressed air pressure	1kg/cm²
Spray volume	1.0~2.0ml/80cm²/hr
Relative humidity	95%~98%

note: The experiment was conducted in accordance with ISO9227:1990 "Corrosion Test in Artificial Atmosphere - Salt Spray Test".

2-5 Anti-corrosion series



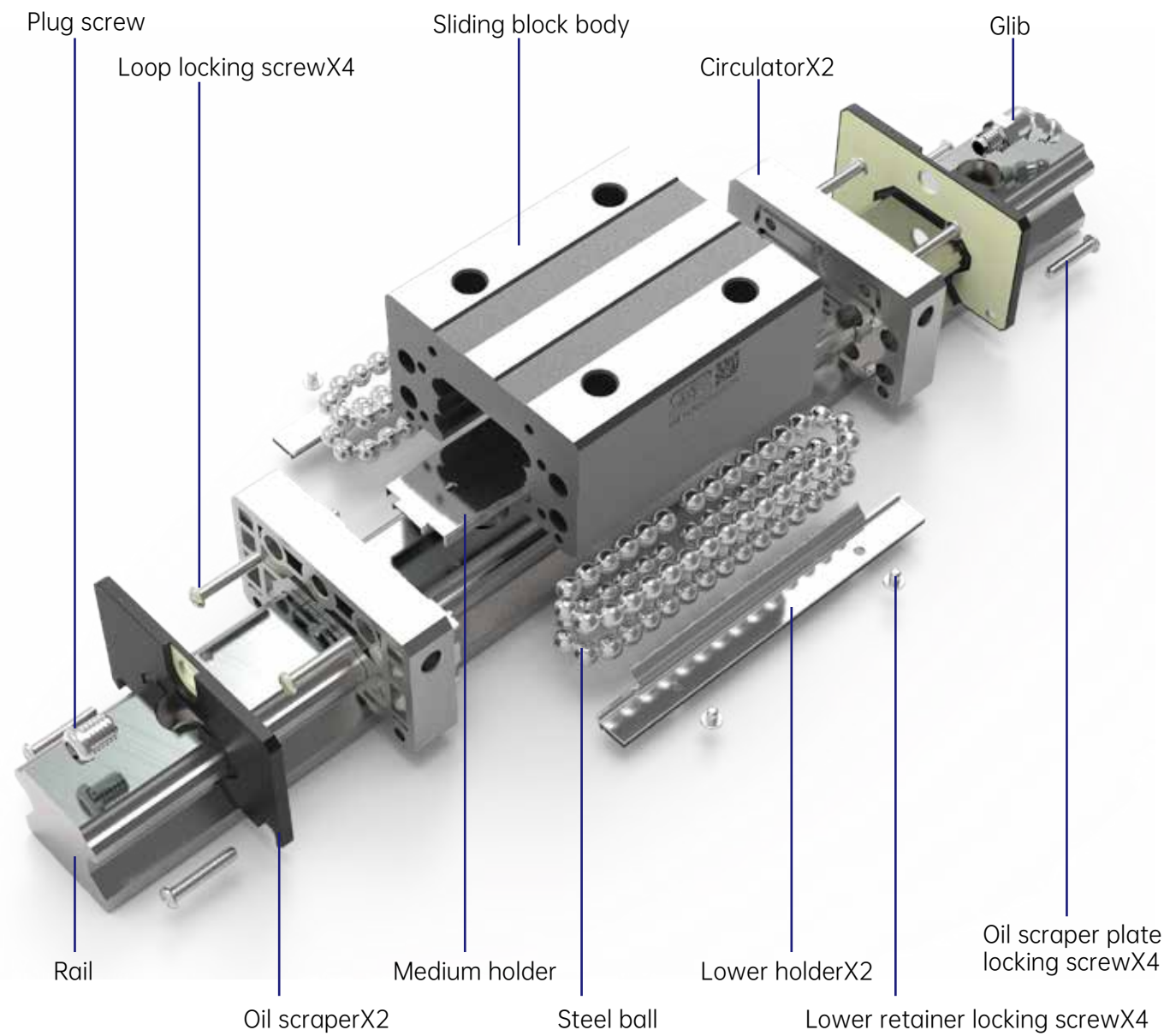
2-5-9 Characteristics of metal end cover type linear guide rails

- 1.All accessories are made of metal parts (if an oil scraper is needed, high-temperature resistant rubber material can be selected).
- 2. It can withstand high temperatures, with a heat resistance temperature of nearly 150°C.

note: 1. Currently, we can provide HB15 to HB35 and EB15 to EB35
2. The maximum length of the guide rail can reach 4000mm
3. Add "SE" after the specification of the linear guide rail
For example: HBW25CA2R1600ZAPSE

2-5-10 Applicable field

- Semiconductor manufacturing equipment such as diffusion furnaces and welding machines.
- Heat treatment equipment.
- Vacuum environment application (no gas release from plastic, rubber and other products).



iii. Selection Requirements Table



Customer:		Date:
Tel.	Fax.	Confirm by:
Machine Type:		Drawing No.
Axis	☐ X ☐ Y ☐ Z ☐ Other()	
Install Position		
Model No.		
Rail Mounting	☐ R (from top) ☐ T (from bottom) ☐ U (from top with bolt hole enlarged)	
Dust Protection	☐ Double end seal + Bottom seal (DD) ☐ Double end seal + Scraper + Bottom seal (KK) ☐ End seal + Scraper + Bottom seal (ZZ) ☐ End seal + Bottom seal (U)	
Special Option	☐ Steel end cap (SE) ☐ Self Lubrication(E2)	
Lubrication	☐ Grease nipple (Grease) ☐ Piping joint (Oil) ☐ Other	
Butt-joint	☐ No ☐ Yes	
No. of Rail Per Axis	☐ I (1) ☐ II (2) ☐ III (3) ☐ Other	
Reference Surface and Grease Nipple Orientation	Please mark "X" in the ☐ to indicate the grease nipple orientation ☐ E1 ☐ E2 ☐ E3 ☐ E4	