

山东赛尔机械导轨有限公司

SHANDONG SAIR MECHANICAL GUIDE CO., LTD

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# 公司简介 Company profile

赛尔公司位于美丽的江北水城、著名的书画之乡，高唐人和工业园区内，南邻308国道，西邻105国道，北邻青银高速，地理位置十分优越，是国内主要生产直线导轨大型厂家之一。

公司总投资一个亿，占地46000平方米，建筑面积10000平方米，拥有先进生产设备350余台套，可以达到年产直线导轨300万米。直线导轨属于高技术、高精度产品，广泛应用于数控机床，输送机械，精密测量仪器，工业自动化机械，电子半导体机械，机械手臂，包装机械，汽车制造等多个领域。

本公司拥有现代化的生产车间流水线及办公设施，现有高级工程师4人，工程师8人，大中专学历以上各种人才60多人，另有各类技工200多人。并拥有一支科技人员、销售人员为一体组成的营销队伍，可以为客户提供完善的技术和售后服务。公司拥有完备的机加工设备和质量保证监督体系，为用户提供质量一流的产品。

自公司创立以来，我们与客户、行业精英共同成长、共同推动中国机械功能配件的发展，我们将每一天都作为“赛尔机械”发展的新开端，以高品质的产品和优质的服务升华企业信誉。

公司拥有雄厚的技术力量，先进的生产设备，高素质的员工队伍和完善的售后服务，公司集研发、制造、销售、服务为一体的精密机械专业制造商，公司的产品成熟、质量上乘，不仅畅销国内，而且还出口到东南亚、欧洲等国家，创造了大量的优良业绩，深受广大用户的青睐与信任。从而奠定了公司在行业里的牢固地位。

山东赛尔机械导轨有限公司经营方式灵活，本着互惠互利，共同发展的准则，愿与广大朋友携手共创辉煌！我们将以科学创新、开拓、诚信的宗旨塑造“赛尔”品牌，始终以饱满的热情，真诚的合作态度，双赢的经营理念，热忱欢迎海内外用户光临惠顾。

Shandong Sair Mechanical Guide Co., Ltd is located at Renhe Industrial Zone Gaotang County which is the beautiful Jiangbei Water City and the famous painting and calligraphy village. The south is 308 National Road, the west is the 105 National Highway, the north is Qingdao-Yinchuan Highway, the position is very superior. It is one of the biggest linear guide manufactures in China.

With the total investment of 16 million USD, our company covers 46,000 square meters and the building area is 10,000 square meters. The advanced production equipments are more than 350 sets, which could achieve annual output of linear guide 300,000 meters. Linear guide belongs to high technology and high precision product, and it is widely used in CNC machine tool, conveying machinery, precision measuring instruments, industrial automation machinery, electronic semiconductor machinery, mechanical arm, packaging machinery, automobile manufacturing and other fields.

Our company has modern production workshop assembly line and office facilities. There are 4 senior engineers, 8 engineers, college degree or above talents more than 60, and all kinds of technicians of more than 200. Meanwhile there is marketing team consists of scientific and technological personnel as well as marketing personnel, which could provide perfect after-sale service for the customers. Moreover, our company has the complete machining equipment and quality assurance supervision system, which could provide first-class quality products for the users.

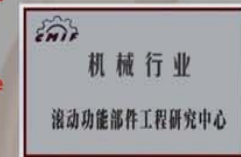
Since the company was established, we have grown up together with our customers and the industry elites, jointly promoted the development of Chinese mechanical function parts. We see each day as the new beginning of "Sair Machinery" development, sublimating enterprise honor by the high quality product and high quality service.

With strong technical strength, advanced production equipments, high-quality staff team and perfect after-sales services, our company is the precision machinery manufacturer with research and development, manufacturing, sales, service all in one. The products are mature with high quality. They are not only sold well all over the country, but also exported to Southeast Asia, Europe and other countries. They have excellent marketing performance, highly appreciated and trusted by the vast number of customers, thereby laying the foundation for the company in a strong position among the industry.

With flexible mode of operation, in the spirit of mutual reciprocity and mutual benefit, in the principle of common development, Shandong Sair Mechanical guide Co., LTD is willing to join hands with the vast number of friends to create brilliant success!

We will shape "Sair" Brand with the principle of scientific innovation, development and good faith. Always with full enthusiasm, sincere cooperation attitude and win-win business philosophy, we warmly welcome customers at home and abroad.

# 资质证书 Qualification certificate



- ▶ **企业宗旨: 追求卓越, 体现价值**  
Enterprise Tenet: Strive for excellence, reflect value
- ▶ **企业口号: 科技创造未来**  
Enterprise Slogan: Science and Technology creates the future
- ▶ **企业精神: 开拓创新, 团结奉献**  
Enterprise Spirit: Pioneering and innovation, unity and dedication
- ▶ **服务理念: 技术领先, 质量第一, 精诚服务, 客户至上**  
Service Philosophy: Leading technology, quality first, sincere service, customer first



## 滚动直线导轨副 LINEAR ROLLING GUIDE

## 介绍 INTRODUCTION

滚动直线导轨副是一种精密的直线导向零部件，具有精度高、载荷大、刚性好、运行平稳等优良特性，已经越来越多的在数控机床、自动化生产线等领域应用。SER-GD系列滚动直线导轨副，是滚动功能部件专业化制造商赛尔公司的主导产品之一：

Linear rolling guide is precise linear guide part. With high precision, large load, good rigidity and smooth operation as its good characteristics, it has been widely used in CNC machinery, automation line as well as other fields. SER-GD series linear rolling guide, is one of the main products belonging to Sair who is a professional manufacturer in producing rolling functional components.

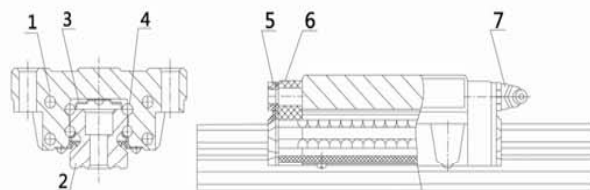


## 一、结构特征

## STRUCTURE CHARACTERISTICS

滚动直线导轨副由导轨、滑块、滚动体（滚珠或滚柱）、返向器、保持架、端密封等组成。当导轨与滑块作相对运动时，滚动体（滚珠或滚柱）在四条呈45度接触角、对称布置的滚道（圆弧或平面）上，通过滚道（圆弧或平面）及滑块两端面的返向器作无限循环运动，实现直线运动，滑块两端的端密封装置，可有效地防止和带走灰尘、油污、铁屑等杂物，防止进入滑块内部，保证了导轨副的使用精度及寿命。（附图）

Linear rolling guide consists of slider, guide rail, rolling element( ball or roller), reverser, holder and end seal. When the guide rail and the slider move relatively, the rolling element( ball or roller) ,in four raceways (circular or plane) which are 45 degree angle of contact and in symmetrical arrangement, make infinite loop movement through raceways(circular or plane) and reverser at both ends of the slider, to achieve linear motion. End seal device at both ends of the slider, could effectively prevent and take away the dust, oil, iron and other debris, and prevent them from coming into the internal of the slider, therefore it has ensured accuracy and service life of the guide pair.(attached picture)



1. 滑块 Slider
2. 导轨 Guide Rail
3. 保持架 Holder
4. 滚动体 Rolling Element
5. 端密封 End Seal
6. 返向器 Reverser
7. 油杯 Oil Cup

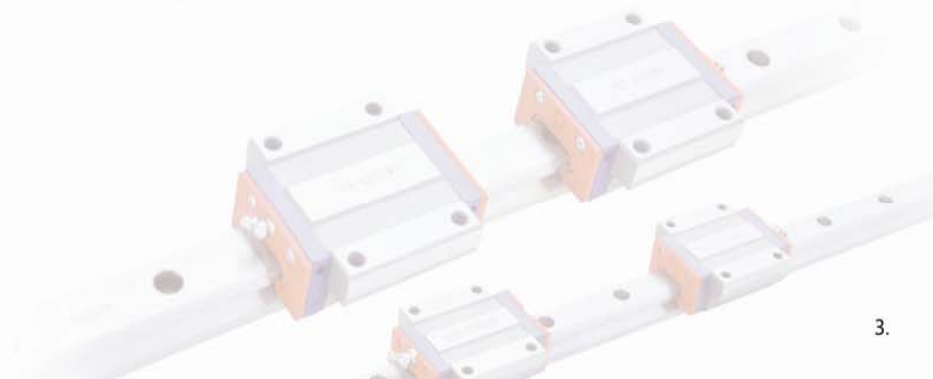
2.

二、优点  
ADVANTAGES

滚动直线导轨副通过在导轨和滑块滚道（圆弧或平面）间放入适当的滚动体（滚珠或滚柱），使导轨和滑块间的滑动摩擦转变为滚动摩擦，极小的运动摩擦阻力，极大的提高了机械效率，获得了um级的运动精度和定位精度。

Linear rolling guide, changes the sliding friction into rolling friction by putting appropriate rolling element (ball or roller) between the guide rail and the slide raceway(circular or plane), as a result, It has minimal movement friction resistance, and has greatly improved the mechanical efficiency and won motion accuracy and positioning accuracy of um level.

- A. 极小的动、静摩擦阻力差，有利于提高数控系统的响应速度及灵敏度；
- A. Dynamic and static friction resistance difference is small, which is helpful to improve the response speed and sensitivity of CNC system;
- B. 很小的驱动效率，降低了能耗；
- B. The driving power is small, which reduces the energy consumption;
- C. 高的定位精度和重复定位精度；
- C. High positioning accuracy and high repeat positioning accuracy;
- D. 通过施加预负荷，刚性大大增强；
- D. By increasing preload, the rigidity is greatly increased;
- E. 使用成对导轨副，起到均化误差的效果；
- E. Using paired guide rails, it has the effect of homogenizing error;
- F. 可承受上、下、左、右方向的载荷；
- F. Can withstand the load from up and down or so;
- G. 滑块端面、侧面均可通过油杯进行手动或自动润滑；
- G. The end and side of the slider can be manually or automatically lubricated by oil cup;
- H. 简化了机械结构的设计和制造，降低了制造成本。
- H. It has simplified the design and manufacture of mechanical structure, therefore reduced the manufacturing cost.

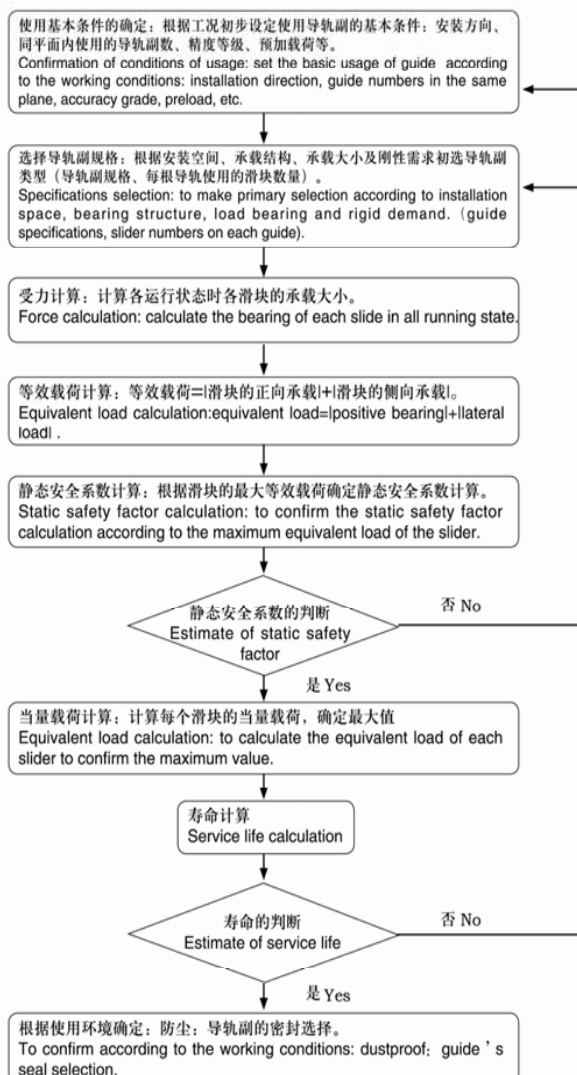


3.



## 三、滚动直线导轨副选型流程图

## THE SELECTION FLOW CHART OF LINEAR ROLLING GUIDE



4.



## 四、静态安全系数的计算

## CALCULATION OF STATIC SAFETY FACTOR

计算导轨副上滑块的承载时，最先要确定导轨能够承受的最大冲击载荷，特别是在启动和停止、冲击较强、大切削负重以及因较大悬臂而引起的导轨副承载较高的场合，此时有可能会在某些瞬间对导轨副造成较大的负荷冲击。因而在选择导轨副时，首先要考虑静态安全系数 $f_s$ 的选择。（静态安全系数的参考值如表-1）

When calculating the slider bearing on the guide, first, we should make sure the maximum impact load the guide could withstand, especially at the start and stop, strong impact, large cutting load and high guide bearing occasions caused by large cantilever. This is likely to cause bigger impact load on the guide rail in some moments. Therefore, in the selection of guide rail, the first consideration is the static safety factor  $f_s$ . (reference value of static safety factor shown in table 1)

$$f_s = \frac{f_r \times f_c \times f_n \times C_0}{P_{max}}$$

$f_r$  — 硬度系数 Hardness Factor  
 $f_c$  — 温度系数（见表-2） Temperature Coefficient (Shown in table2)  
 $f_n$  — 接触系数（见表-3） Contact Coefficient (Shown in table-3)  
 $C_0$  — 额定静载荷 Rated Static Load  
 $P_{max}$  — 滑块的最大等效载荷 Maximum equivalent load of the slider

表-1 Table-1

机床 Machine Tool	工况 Working Condition	安全系数 $f_s$ Safety Factor $f_s$
一般机床 General machine tools	无振动或冲击 No vibration or shock	1—1.5
	有振动或冲击 Vibration or shock	2—3
要求较高机床 High requirements machine tools	无振动或冲击 No vibration or shock	1—1.8
	有振动或冲击 Vibration or shock	2.5—7

表-2 温度系数  $f_c$   
Table-2 Temperature Coefficient  $f_c$ 

工作温度 (°C) Operating temperature	≤100	>100-150	>150-200	>200-250
$f_c$	1.00	0.90	0.73	0.60

5.

表-3 接触系数  $f_n$   
Table-3 Contact Coefficient  $f_n$ 

每根导轨上的滑块数 The slide numbers on each guide	1	2	3	4	5
$f_n$	1.00	0.81	0.73	0.65	0.6

表-4 精度系数  $f_a$   
Table-4 Accuracy Coefficient  $f_a$ 

精度等级 Accuracy Grade	1	2	3	4	5
$f_a$	1.0	1.0	1.0	0.9	0.9

注：1、技术要求：硬度不小于HRC58，通常取 $f_r=1$

Technical requirement: Hardness is not less than HRC58,  
usually take  $f_r=1$

2、 $C_0$ (额定静载荷)见【滚动导轨副尺寸规格】

$C_0$ (Rated Static Load) see 【Linear rolling guide dimensions】

### 预加载荷 Preload

#### (1) 预加载荷定义 Preload Definition

预加载荷是预先给予滚动体负荷力，亦即加大滚动体直径，利用滚动体与滚道之间负向间隙给予预紧，此举能提高滚动直线导轨副的刚性及消除间隙；提高预加载荷可增加滚动直线导轨副刚性。但小规格建议选用轻预紧以下预紧，以避免因预紧选用过重降低其使用寿命。

Preload is to give rolling element load force in advance, that is to say, to increase the diameter of the rolling element, by using the negative space between the rolling element and the raceway to give pre-tightening. It could improve the rigidity of the linear rolling guide and eliminate the gap; to improve preload could increase rigidity of the linear rolling guide. But as for small specifications we suggest using light preload and below, in order to avoid reducing its service life caused by overweight preload.

#### 预加载荷等级 Preload Level

SER-GD、SER-GC系列滚动直线导轨副提供三种标准预加载荷，可依据用途选择适当预加载荷。

SER-GD, SER-GC series linear rolling guide provide three standard preload types, you can choose the proper preload according to purpose.

表-5 Table-5

预加载荷等级 Preload level	标记 Mark	预加载荷 Preload	使用条件 Conditions of use	适用范围Range of application
无预加载荷 No Preload	Z0	0-0.02C	负荷方向固定，精度要求低 Fixed load direction, low precision requirements	传送装置，自动包装机械，自动化产业机械，一般工业机械的XY轴，焊接机械。 Transmission device, automatic packaging machinery, automatic industrial machinery, XY axis of general industrial machinery, welding machinery.
中预加载荷 Moderate Preload	Z1	0.04-0.06C	轻负荷且要求高精度 Light load and require high precision	电加工机械，NC车床，精密XY平台，机械加工中心，立式加工中心，工业用机器人，自动涂装机，各种高速材料供给装置。 Electric processing machine, NC lathe, precision XY platform, machining center, industrial robots, automatic painting machine, various high-speed material supply device.
重预加载荷 Heavy Preload	Z2	0.09-0.11C	刚性要求高，且有振动的使用环境 Rigid requirement is high, and in vibration environment	机械加工中心，磨床，NC车床，立式或卧式铣床，机床的Z轴，重切削加工机。 Machining center, grinder, NC lathes, vertical or horizontal milling machine, Z axis of machine tool, heavy cutting machine.

注：C（额定动载荷）见【滚动导轨副尺寸规格】

Notes: C (Rated Dynamic Load) shown in 【the dimensions of the linear rolling guide】



## 五、当量载荷的计算

### CALCULATION OF EQUIVALENT LOAD



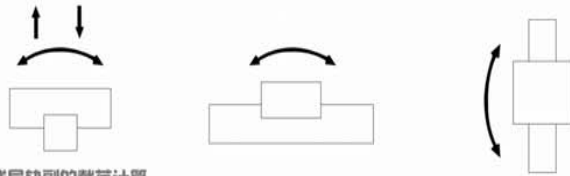
#### 滚动直线导轨副的载荷特点

Load characteristics of linear rolling guide

由于滚动直线导轨副的特殊结构，使其具有垂直向上、向下和左右水平四方向额定载荷相等的功能（见下图），且额定载荷大，刚性好，刚度高，三个方向抗颠覆力矩能力大，适用于各种载荷机床。

Due to the special structure of the linear rolling guide(see picture below), it has the function of equal rated load of vertical up and down and left and right four directions. Moreover, large rated load, good rigidity, high stiffness, large capacity of three directions against overturning moment, make the guide suitable for various loading machine.





**滚动直线导轨副的载荷计算**  
Load calculation of linear rolling guide pair

直线运动滚动支承系统所承受的负荷，受下列各种因素的影响：配置形式（水平、垂直、横向等），移动件的重心和受力点位置，导轨上移动件牵引力的作用点，启动及停止时的惯性力，以及运动阻力等。

The load of the linear motion rolling bearing system, is affected by the following factors: configuration form (level, vertical, transverse etc), center of gravity and the force point position of the moving parts, action point of traction force of moving parts on the guide, inertial force when start and stop, motion resistance, etc.

按照力学公式可求出每个滑块承受的载荷，便于选用合适的导轨副规格。例如表-6，滑块移动的卧式导轨副，W为作用于同一平面内若干套滚动直线导轨副的总载荷：

According to the mechanics formula we could calculate the load of each slider, and it is convenient for us to choose proper guide specifications. For instance table-6, horizontal guide rail of the moving slider, W is the total load of several sets of linear rolling guide on the same plane:

对于全行程变化的载荷，应算出其计算载荷 $P_c$ 。

For whole stroke change in load, we should calculate the  $P_c$  its calculated load

**载荷分段变化的计算载荷 The calculated load of segment change**

$$P_c = \sqrt[3]{(P_1^3 L_1 + P_2^3 L_2 \dots P_n^3 L_n) / L}$$

$P_n$ — 对应行程 $L_n$ 内的载荷 (KN) Load within corresponding stroke  $L_n$ (KN)

$L_n$ — 分段行程 (km) Segmented stroke (km)

$L$ — 全行程，等于 $\sum L_n$  (km) Total stroke, is equal to  $\sum L_n$ (km)

**同时承受垂向载荷 $P_v$ 和水平载荷 $P_h$ 时的计算载荷**

The calculated load under vertical load  $P_v$  and horizontal load  $P_h$  at the same time:

$$P_c = P_v + P_h \text{ (KN)}$$

**载荷呈半波正弦曲线变化的计算载荷:**

The calculated load of half-wave sine curve changing load:

$$P_c = 0.75 P_{max} \text{ (KN)}$$

**载荷呈线性变化的计算载荷:**

The calculated load of linear changing load:

$$P_c = (P_{min} + 2P_{max}) / 3 \text{ (KN)}$$

**同时承受扭矩M和外载 $P_0$ 时的计算载荷:**

The calculated load under torque M and external load  $P_0$  at the same time:

$$P_c = P_0 + C_0 \cdot \frac{M}{M_1} \text{ (KN)}$$

$P_0$ — 外载 External Load

$M$ — 外载扭矩 External Load Torque

**载荷呈全波正弦曲线变化的计算载荷:**

The calculated load of full-wave sine curve changing load:

$$P_c = 0.65 P_{max} \text{ (KN)}$$

$C_0$ — 额定静载荷 Rated Static Load

$M_1$ — 额定扭矩 Rated Torque

表-6 Table-6

图示 Graphical Representation	计算公式 Calculation Formula
	$P_1 = \frac{W + F}{4} + \frac{W \cdot Y_0 + F \cdot Y_1}{2L_2} + \frac{W \cdot X_0 + F \cdot X_1}{2L_1}$ $P_2 = \frac{W + F}{4} + \frac{W \cdot Y_0 + F \cdot Y_1}{2L_2} - \frac{W \cdot X_0 + F \cdot X_1}{2L_1}$ $P_3 = \frac{W + F}{4} - \frac{W \cdot Y_0 + F \cdot Y_1}{2L_2} - \frac{W \cdot X_0 + F \cdot X_1}{2L_1}$ $P_4 = \frac{W + F}{4} - \frac{W \cdot Y_0 + F \cdot Y_1}{2L_2} + \frac{W \cdot X_0 + F \cdot X_1}{2L_1}$
	$P_1 = \frac{W}{4} + \frac{W \cdot X_0 + F \cdot Z_1}{2L_1} + \frac{W \cdot Y_0}{2L_2}$ $P_2 = \frac{W}{4} - \frac{W \cdot X_0 + F \cdot Z_1}{2L_1} + \frac{W \cdot Y_0}{2L_2}$ $P_3 = \frac{W}{4} + \frac{W \cdot X_0 + F \cdot Z_1}{2L_1} - \frac{W \cdot Y_0}{2L_2}$ $P_4 = \frac{W}{4} - \frac{W \cdot X_0 + F \cdot Z_1}{2L_1} - \frac{W \cdot Y_0}{2L_2}$ $P_{1s} = P_{3s} = \frac{W \cdot Y_0}{2L_1}$ $P_{2s} = P_{4s} = -\frac{F Y_1}{2L_1}$

图示 Graphical Representation	计算公式 Calculation Formula
	<p>匀加速 (0-t<sub>1</sub>) Uniform velocity (t<sub>1</sub>-t<sub>2</sub>)</p> $P_1 = P_3 = \frac{W}{4} - \frac{L_3}{2L_1} \cdot \frac{V}{g \cdot t_1} \cdot W$ $P_2 = P_4 = \frac{W}{4} + \frac{L_3}{2L_1} \cdot \frac{V}{g \cdot t_1} \cdot W$ <p>其中: g: 重力加速度 Acceleration of gravity v: 速度 Velocity L<sub>3</sub>: 滚珠丝杠轴线与 F 之间的距离; 匀加速运动时 (t<sub>1</sub>-t<sub>2</sub>): The distance between ball screw axis and the F; when it is the uniform motion (t<sub>1</sub>-t<sub>2</sub>):</p> $P_1 = P_2 = P_3 = P_4 = \frac{W}{4}$
	$P_1 = \frac{W}{4} + \frac{W \cdot X_0}{2L_1} + \frac{W \cdot Y_0 + F \cdot Z_1}{2L_2}$ $P_2 = \frac{W}{4} - \frac{W \cdot X_0}{2L_1} + \frac{W \cdot Y_0 - F \cdot Z_1}{2L_2}$ $P_3 = \frac{W}{4} + \frac{W \cdot X_0}{2L_1} - \frac{W \cdot Y_0 - F \cdot Z_1}{2L_2}$ $P_4 = \frac{W}{4} - \frac{W \cdot X_0}{2L_1} - \frac{W \cdot Y_0 + F \cdot Z_1}{2L_2}$ $P_{1s} = P_{3s} = \frac{W}{4} + \frac{F \cdot X_1}{2L_1}$ $P_{2s} = P_{4s} = \frac{W}{4} - \frac{F \cdot X_1}{2L_1}$

图示 Graphical Representation	计算公式 Calculation Formula
	$P_1 = P_2 = \frac{F \cdot Y_1 - W \cdot Y_0}{2L_2}$ $P_3 = P_4 = -\frac{F \cdot Y_1 - W \cdot Y_0}{2L_2}$ $P_{1s} = P_{2s} = P_{3s} = P_{4s} = \frac{W - F}{4}$
	$P_{1s} = P_{3s} = \frac{F \cdot X_1 - W \cdot Y_0}{2L_1}$ $P_{2s} = P_{4s} = -\frac{F \cdot X_1 - W \cdot Y_0}{2L_1}$ $P_{1s} = P_{3s} = \frac{F X_1 - W Y_0}{2L_1}$ $P_{2s} = P_{4s} = -\frac{F X_1 - W Y_0}{2L_1}$

图示 Graphical Representation	计算公式 Calculation Formula
	$P_1 = \frac{W \cdot \cos \theta}{4} + \frac{W \cdot \cos \theta \cdot X_0}{2L_1} + \frac{W \cdot \cos \theta \cdot Y_0}{2L_2} + \frac{W \cdot \sin \theta \cdot Z_1}{2L_2}$ $P_2 = \frac{W \cdot \cos \theta}{4} + \frac{W \cdot \cos \theta \cdot X_0}{2L_1} + \frac{W \cdot \cos \theta \cdot Y_0}{2L_2} + \frac{W \cdot \sin \theta \cdot Z_1}{2L_2}$ $P_3 = \frac{W \cdot \cos \theta}{4} + \frac{W \cdot \cos \theta \cdot X_0}{2L_1} + \frac{W \cdot \cos \theta \cdot Y_0}{2L_2} + \frac{W \cdot \sin \theta \cdot Z_1}{2L_2}$ $P_4 = \frac{W \cdot \cos \theta}{4} + \frac{W \cdot \cos \theta \cdot X_0}{2L_1} + \frac{W \cdot \cos \theta \cdot Y_0}{2L_2} + \frac{W \cdot \sin \theta \cdot Z_1}{2L_2}$ $P_{1i} = P_{4i} = \frac{W \cdot \sin \theta}{4} + \frac{W \cdot X_1 \cdot \sin \theta}{2L_1}$ $P_{2i} = P_{3i} = \frac{W \cdot \sin \theta}{4} + \frac{W \cdot X_1 \cdot \sin \theta}{2L_1}$
	$P_1 = \frac{W \cdot \cos \theta}{4} + \frac{W \cdot \cos \theta \cdot X_0}{2L_1} + \frac{W \cdot \cos \theta \cdot Y_0}{2L_2} + \frac{W \cdot \sin \theta \cdot Z_1}{2L_2}$ $P_2 = \frac{W \cdot \cos \theta}{4} + \frac{W \cdot \cos \theta \cdot X_0}{2L_1} + \frac{W \cdot \cos \theta \cdot Y_0}{2L_2} + \frac{W \cdot \sin \theta \cdot Z_1}{2L_2}$ $P_3 = \frac{W \cdot \cos \theta}{4} + \frac{W \cdot \cos \theta \cdot X_0}{2L_1} + \frac{W \cdot \cos \theta \cdot Y_0}{2L_2} + \frac{W \cdot \sin \theta \cdot Z_1}{2L_2}$ $P_4 = \frac{W \cdot \cos \theta}{4} + \frac{W \cdot \cos \theta \cdot X_0}{2L_1} + \frac{W \cdot \cos \theta \cdot Y_0}{2L_2} + \frac{W \cdot \sin \theta \cdot Z_1}{2L_2}$ $P_{1i} = P_{4i} = \frac{W \cdot Y_0 \cdot \sin \theta}{2L_1}$ $P_{2i} = P_{3i} = \frac{W \cdot Y_0 \cdot \sin \theta}{2L_1}$



## 六、当量载荷的计算 THE CALCULATION OF EQUIVALENT LOAD



### 额定寿命的计算 The calculation of Rated Lifetime

额定寿命是指：一批相同规格的滚动直线导轨副，在相同的条件下逐个运动时，其中的90%未产生表面剥落而所能达到的总运行距离。

Rated lifetime refers to a batch of linear rolling guides of the same specifications, under the same condition moving one by one, the total running distance achieved by 90% of the guides not flaking.

滚动直线导轨副滚动体分为滚珠型和滚柱，其额定寿命（L）是根据基本额定动载荷（C）和当量载荷（P<sub>c</sub>）按下式计算：

Linear rolling guide is divided into rolling ball type and roller type, and the rated lifetime (L) is based on the basic rated dynamic load (C) and equivalent load (P<sub>c</sub>) using the following formula



### 滚动体为滚珠的导轨副额定寿命 Rated lifetime of the guide whose rolling element is rolling ball.

$$L = 50 \left( \frac{f_r f_n f_c f_a}{f_w} \cdot \frac{C}{P_c} \right)^3 (\text{Km})$$

- L — 额定寿命 Rated Lifetime      f<sub>n</sub> — 接触系数（见表3）Contact Coefficient (Shown In Table-3)
- f<sub>r</sub> — 硬度系数 Hardness Factor      f<sub>c</sub> — 温度系数（见表2）Temperature Coefficient (Shown In Table-2)
- C — 额定动载荷 Rated Dynamic Load      f<sub>a</sub> — 精度系数（见表4）Accuracy Coefficient (Shown in Table-4)
- P<sub>c</sub> — 当量载荷 (KN) Equivalent Load      f<sub>w</sub> — 载荷系数（见表7）Loading Coefficient (Shown in Table-7)



### 寿命时间的计算 The calculation of the lifetime

当行程的长度已定，以小时为单位的额定寿命：

When the length of stroke is fixed, the rated lifetime in hour unit:

$$L_h = \frac{L \times 10^3}{2 \times l \times n \times 60} \approx \frac{8.3L}{l \times n} (\text{h})$$

式中 Among the formula:

- l — 行程长度（米）Stroke Length (Meter)
- n — 每分钟往复次数 Round-Stroke Times Per Minute
- L — 额定寿命 Rated Lifetime



表-7 载荷系数  $f_w$   
Table-7 Loading Coefficient  $f_w$ 

工作条件 Operating conditions	无外部冲击或震动的低速运动场合速度 In the low-speed occasions speed without an external shock or vibration $\leq 15\text{m/min}$	无明显冲击或震动的中速运动场合速度 Medium speed movement speed without significant impact or vibration $15 < V < 60\text{m/min}$	有外部冲击或震动的高速运动场合速度 High-speed movement occasions speed with external shock or vibration. $V > 60\text{m/min}$
$f_w$	1 ~ 1.3	1.3 ~ 1.8	1.8 ~ 3.5



## 七、滚动直线导轨副的安装使用说明

## INSTALLATION INSTRUCTIONS FOR LINEAR ROLLING GUIDE



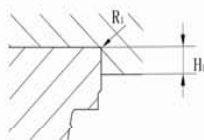
## 安装基准面的基准台高度及倒角 (见下图)

Benchmark platform height for installation datum and chamfer (see pictures below)



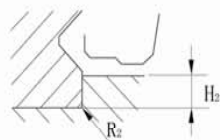
## 滑块基准面安装

The installation for the slider datum



## 导轨基准面安装

The installation for the guide datum



当滑块和导轨安装在床身或工作台上时,为使滑块和导轨不与基准台发生干涉,应按下表中的数值加工。

When the sliding block and guide rail are installed on the lathe bed or work bench, in order to make the slider and the guide rail are not interfering with the benchmark, we should install according to numerical values shown in the table below.

规格 Specification	倒角 $R_1$ Chamfer $R_1$	基面台高 ( $H_1$ ) Base station height ( $H_1$ )	倒角 $R_2$ Chamfer $R_2$	基面台高(不大于 $H_2$ ) Base station height (not more than $H_2$ )
GD14	$\leq 0.6$	3.5	$\leq 0.6$	2.5
GD15	$\leq 0.6$	3.5	$\leq 0.6$	3
GD19	$\leq 0.6$	3.5	$\leq 0.6$	3
GD20	$\leq 0.6$	4	$\leq 0.6$	3.5
GD25	$\leq 1.0$	5	$\leq 0.6$	5
GD30	$\leq 1.0$	4.5	$\leq 1.0$	5
GD35	$\leq 1.0$	7	$\leq 1.0$	7.5
GD45	$\leq 1.5$	8	$\leq 1.0$	9
GD55	$\leq 1.5$	10	$\leq 1.5$	11



## 滚动直线导轨副的安装调整

Installation adjustment for the linear rolling guide



## 安装与使用 Installation and Use

滚动直线导轨副是精密零部件,请小心轻拿轻放,避免磕碰以影响导轨副的精度。不允许擅自将滑块拆离导轨。若因安装困难,需要拆下滑块,可用我公司提供的辅助导轨。(辅助导轨是一种装配辅助工具,其实际尺寸比导轨小。需要时,可将导轨与辅助导轨的端头对接,把滑块从导轨推到辅助导轨上,当导轨安装好后,再将滑块从辅助导轨推到导轨上,并保证滑块导轨基准方向的一致。)

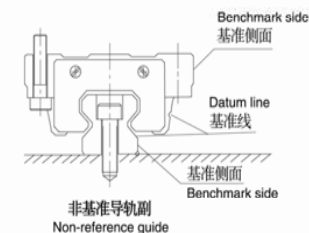
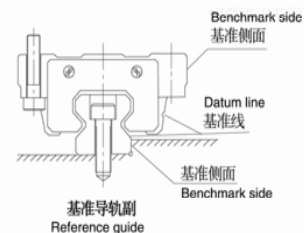
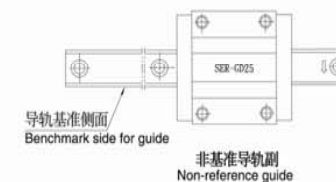
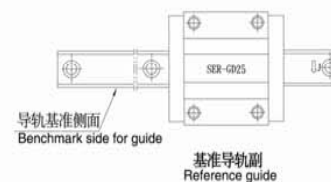
Linear rolling guide is precise part, please handle with care, avoid knocking against so as not to influence the precision of the guide rail. If there is some difficulty in installation so as to remove the slider, auxiliary guide can be provided by our company. The auxiliary guide is an assembly auxiliary tool, whose actual size is much smaller than that of the guide. If necessary, we could join the end heads of the guide rail and the auxiliary guide rail, then push the slider from the guide onto the auxiliary guide rail. When the rail is installed, we could push the slider from the auxiliary guide onto the guide rail, and ensure that the reference direction must be consistent between slider and guide.



## 安装注意事项 Installation Precautions

首先正确区分基准导轨副与非基准导轨副,箭头指向导轨基准侧面,滑块的基准侧面有基准线。其次认清导轨安装时所需的基准侧面(见图)

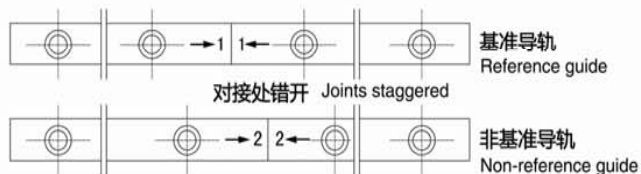
First, we should distinguish reference guide from non-reference guide. Arrow points to the guide rail benchmark side, the benchmark side of the slider has a datum line. Second, we need to recognize the reference side required for the guide installation (shown in the picture)



### 导轨的安装使用说明 Installation instructions for guide rail

当多件导轨副接长在一起时，需要对连接处加以注明。如下图：

When pieces of guide rail are joint together, signs need to be noted on the joint. As shown below:



### 导轨用紧固螺钉扭矩值 Torque value of fastening screw for guide use

表-8

Table-8

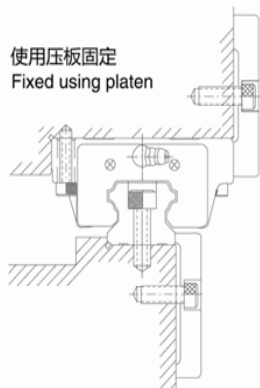
单位Unit: N.m

螺钉规格 Screw specifications	M4	M5	M6	M8	M12	M14
扭矩值 Torque value	3.5	7	13.5	30	110	150

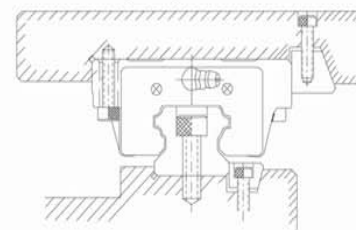
### 导轨副安装固定方式 Installation fastening way for the guide pair

当床台受到振动、衡力的作用时，导轨与滑块很可能偏离原来的固定位置，而影响精度。为避免发生类似的状况，建议使用下图所列的四种固定方式固定导轨及滑块，以确保机台的运行精度。

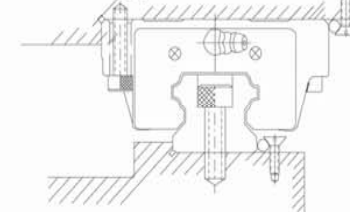
When the bed table is under vibration force and lateral force, guide rail and slider are likely to deviate from the original fixed position, and influence the accuracy. To avoid similar situations, four fixed methods fixing guide rail and slider are recommended as listed below, in order to ensure the operation precision of the machine.

使用压板固定  
Fixed using platen使用固定螺钉固定  
Fixed using retaining screw

### 使用楔块固定 Fixed using wedge

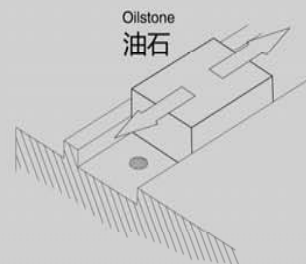
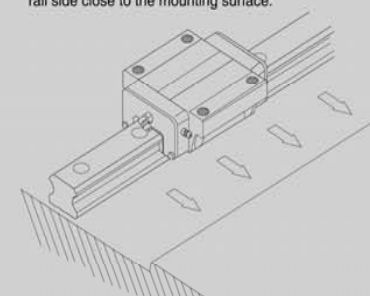


### 使用滚柱固定 Fixed using pin roller

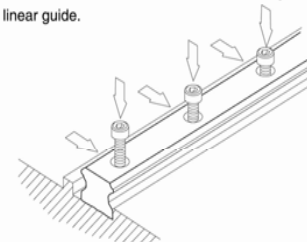


1. 清除装配面的污物。  
Clear away the dirt on the mounting surface.

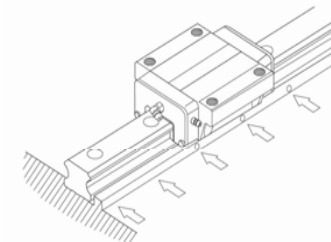
2. 将滚动直线导轨副平稳的放在装配面上，并让直线导轨侧基准面靠紧装配面。  
Put the linear rolling guide on the mounting surface stably, and keep the benchmark side of the linear guide rail side close to the mounting surface.

Oilstone  
油石

3. 试锁装配螺钉以确认螺栓孔是否吻合，并将直线导轨底基准面与底部装配面预锁紧。  
Try to lock assembly screws to confirm the bolt is consistent or not, and lock in advance the bottom reference surface and the bottom assembly surface of linear guide.



4. 使用侧向固定螺钉，按直线导轨侧基准面靠近侧装配面。  
Using lateral fixed screws, keep the linear guide rail lateral reference surface close to the side mounting surface.

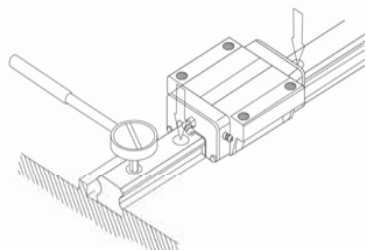


5. 使用扭力扳手，以特定扭力按顺序锁紧装配螺钉，将直线导轨底部基准面与装配面连接。

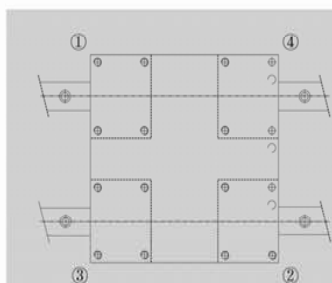
Using the torque wrench, lock assembly screws in order in specified torque, connect bottom datum and assembly mounting surface of the linear guide.

6. 依步骤1至5安装其余配对直线导轨。

Install the rest matched linear guide according to step1 to 5.



### 滑块安装 The installation of the slider

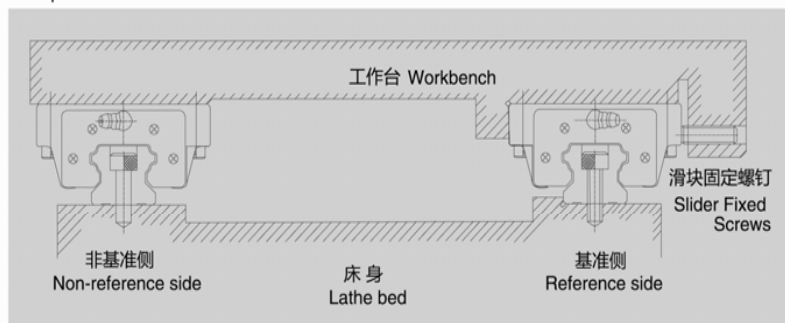


- ▶ 使用装配螺钉将承载平台固定于滑块上  
Fix the bearing platform to the slider block using the assembly screws.
- ▶ 使用固定螺钉，将滑块基准面紧固于平台侧装配面上，以确定滑块位置。  
Using fixed screws, fasten the reference surface of the slider to the platform side assembly datum plane in order to determine the position of the slider.
- ▶ 锁紧装配螺钉按左图顺序紧固于滑块上。  
Lock the assembly screws and fasten them on the slider according to the order shown on the left picture.

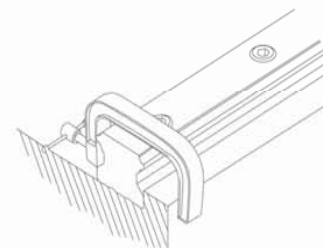
### 滑块无侧向固定螺钉的安装 Slide installation for no lateral screws

在无固定螺钉的安装例中，为确保非基准侧直线导轨与基准侧直线导轨间的平行度，直线导轨可依下列所示安装，而滑块的安装则与前述范例相同。

In the installation cases where there is no fixed screws, to ensure the parallelism between the non-reference side linear guide and the reference side linear guide, linear guide can be installed according to the shown in the following and the installation of the slide block is the same as the previous example.

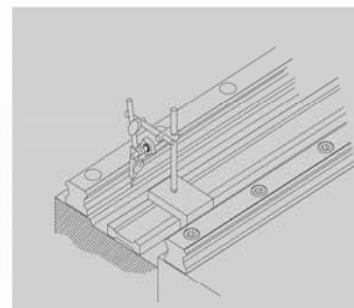


### (1) 基准侧导轨的安装 Installation of reference side guide



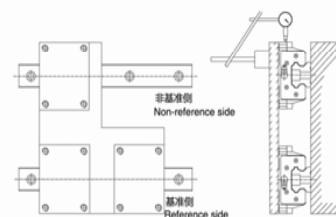
- ▶ 虎钳夹紧法 Vice clamp method  
先使用装配螺钉将直线导轨底基准面预固定于机床装配面，再用虎钳将直线导轨侧基准面紧靠机床装配侧面，以确定直线导轨位置后，使用扭力扳手，以一定的扭力按顺序锁紧固定螺丝。  
First we use the assembly screws to fix the bottom base surface of the linear guide to machine assembly surface, and then use vice to keep linear guide rail side datum plane close to the machine tool assembly side, in order to determine the linear guide position. After that, use the torque wrench to lock the fastening screws in order at a certain torque.

### (2) 从动侧滑轨的安装 Slide installation from the movable side

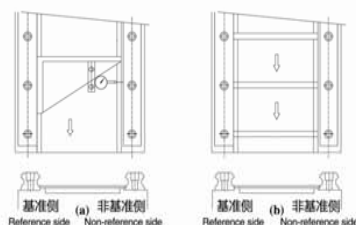
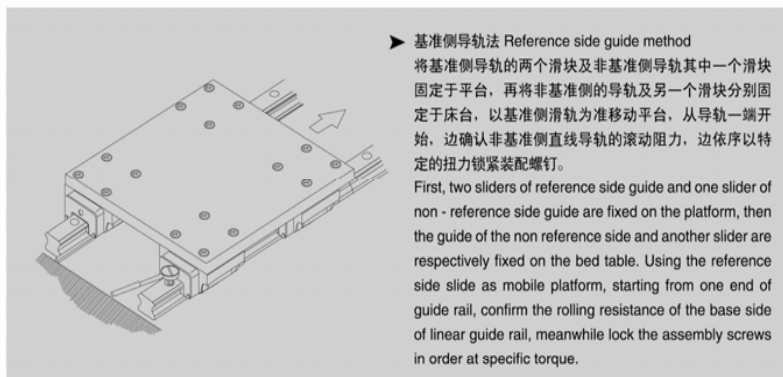


- ▶ 块规法 Block gauge method  
将块规置于两只导轨间，使用千分表校准块规，使之与基准导轨的侧基准面平行，在依块规校准非基准侧导轨，从导轨的一端开始校准依顺序以特定的扭力锁紧装配螺钉。  
Put block gauge between the two guide rails, then use the dial gauge correct gauge block to make it parallel to the lateral side of reference guide. After that, use the block gauge to correct the non reference guide starting from one end of the guide rail, then lock the assembly screws in order at specific torque.

- ▶ 平台法 Platform method  
将基准侧两个导轨固定在一个测定平台上，非基准侧只装一个滑块，其导轨与滑块都尚未紧定于床台与平台，使用非基准侧滑块顶面的千分表，测量非基准侧滑块的侧基准面，从导轨的一端开始校准并依序以特定的扭力锁紧装配螺钉。  
The reference side of two guide rails are fixed on the same testing platform, non reference side is only provided with one slider, of which the slider and guide rail have not been tightly fixed on bed table and platform. Then use the dial gauge of top surface of non-reference side slider to measure lateral reference surface of non-reference side slider, starting from one end of the guide rail, then lock the assembly screws in order at specific torque.







### 滑轨与侧向定位装配面的安装

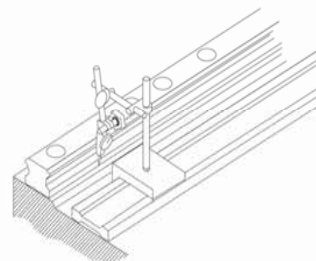
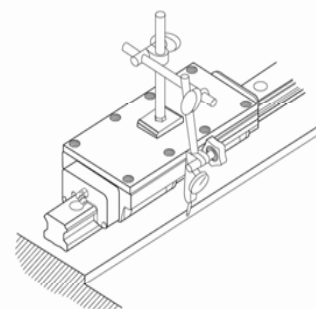
Installation for the slide and the lateral position assembly surface

在无侧向定位装配面的安装例中，为确保非基准侧导轨与基准侧滑轨间的平行度，导轨可依下列图示安装，而滑块的安装则与前述范例相同。

In the assembly case where there is no lateral positioning assembly surface, in order to ensure the parallelism between the reference side guide and non-reference side slide, the guide could install according to the following picture, and the installation of the slider is the same as the previous example.



### (1) 基准侧滑轨的安装 Installation of reference side slide



### (2) 非基准侧导轨的安装 Installation of non-reference side guide

与无侧向固定螺钉安装例所列的方法相同。

The installation method is the same as no lateral fixed screw mounting method



## 八、滚动直线导轨副精度

THE ACCURACY OF THE LINEAR ROLLING GUIDE

滚动直线导轨副的精度及检验方法按中华人民共和国机械行业标准JB/T7175.4-2006《滚动直线导轨副验收技术条件》制定。

1.非互换性滚动直线导轨副分五个精度等级，即1、2、3、4、5级，1级精度最高，依次逐级降低，精度分为运动精度和综合精度。

1.Non interchangeable linear rolling guides is classified to five accuracy grade, that is grade 1,2,3,4,5, of which the accuracy grade 1 is the highest, and reduces step by step in turn. The accuracy is divided into kinematic accuracy and comprehensive accuracy.

运动精度 KINEMATIC ACCURACY	简图 Sketch 	检验项目 Inspection Items 滑块移动对导轨基准的平行度: The parallelism of the moving of the slider to the guide datum a) 对导轨底面基准A的平行度 Parallelism to the bottom benchmark A b) 对导轨侧面基准B的平行度 Parallelism to the side benchmark B	允差 Tolerance				
			精度等级 Accuracy Grade				
导轨长度 Guide length mm			μm				
		≤500	1	2	3	4	5
		>500-1000	2	4	8	14	20
		>1000-1500	3	6	10	17	25
		>1500-2000	4	8	13	20	30
		>2000-2500	5	9	15	22	32
		>2500-3000	6	11	17	24	34
		>3000-3500	7	12	18	26	36
		>3500-4000	8	13	20	28	38
			9	15	22	30	40

综合精度 COMPREHENSIVE ACCURACY	简图 Sketch 	检验项目 Inspection Items 滑块顶面与导轨基准底面高度H的尺寸偏差 Size deviation of slider top surface and guide base surface height H 同一平面上配对导轨的多个滑块顶面高度H的变动量 Variation of top surface height H of pieces of slider on matched guide on the same plane 与导轨侧面基准同侧的滑块侧面与导轨侧面基准间距离W的尺寸偏差 (只适用于基准导轨) Size deviation of slide side of the same reference side of the guide and rail side reference distance W(only applicable to reference guide) 同一导轨上多个滑块侧面与导轨侧面基准W的变动量 (只适用基准导轨) Variation of pieces of slider side on the same guide and guide side datum W( only applicable to reference guide)	精度等级 Accuracy Grade				
			μm				
			1	2	3	4	5
			±5	±12	±25	±50	±100
			1	2	3	4	5
			3	5	7	20	40
			1	2	3	4	5
			±8	±15	±30	±60	±150
			1	2	3	4	5
			5	7	10	25	70

2.互换性导轨副分二个精度等级，即5、6级。

2.The interchangeable guide railway consists of two accuracy grade, that is grade 5 and grade 6.

运动精度 KINEMATIC ACCURACY	简图 Sketch 	检验项目 Inspection Items 滑块移动对导轨基准的平行度: The parallelism of the moving of the slider to the guide datum a) 对导轨底面基准A的平行度 Parallelism to the bottom benchmark A b) 对导轨侧面基准B的平行度 Parallelism to the side benchmark B	允差 Tolerance	
			导轨长度 Guide length mm	精度等级 Accuracy Grade
			5	6
			≤500	20
			>500-1000	28
			>1000-1500	34
			>1500-2000	40
			>2000-2500	46
			>2500-3000	54
			>3000-3500	62
			>3500-4000	70
			40	80

综合精度 COMPREHENSIVE ACCURACY	简图 Sketch 	检验项目 Inspection Items 滑块顶面与导轨基准底面高度H的尺寸偏差 Size deviation of slider top surface and guide base surface height H 同一平面上配对导轨的多个滑块顶面高度H的变动量 Variation of top surface height H of pieces of slider on matched guide on the same plane 与导轨侧面基准同侧的滑块侧面与导轨侧面基准间距离W的尺寸偏差 (只适用于基准导轨) Size deviation of slide side of the same reference side of the guide and rail side reference distance W(only applicable to reference guide) 同一导轨上多个滑块侧面与导轨侧面基准W的变动量 (只适用基准导轨) Variation of pieces of slider side on the same guide and guide side datum W( only applicable to reference guide)	精度等级 Accuracy Grade	
			μm	
			5	6
			±100	±200
			5	6
			40	60
			5	6
			±150	±240
			5	6
			70	100

注: Notes:

1.由于导轨的滚道是在专用夹具上精磨的，在自由状态下可能会存在弯曲，因此精度检验时应将导轨用螺栓固定在专用平台上检测;

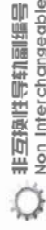
1.Because the raceway of the guide is accurately grinded on the special fixture, and it may exists bending in the free state, therefore in the accuracy test we should bolt the guide on the special platform.

2.当基准导轨副上使用滑块数超过二件时，除首尾两件滑块外，中间滑块中的W值不检测，但中间滑块的W值应小于首尾两滑块的W值。

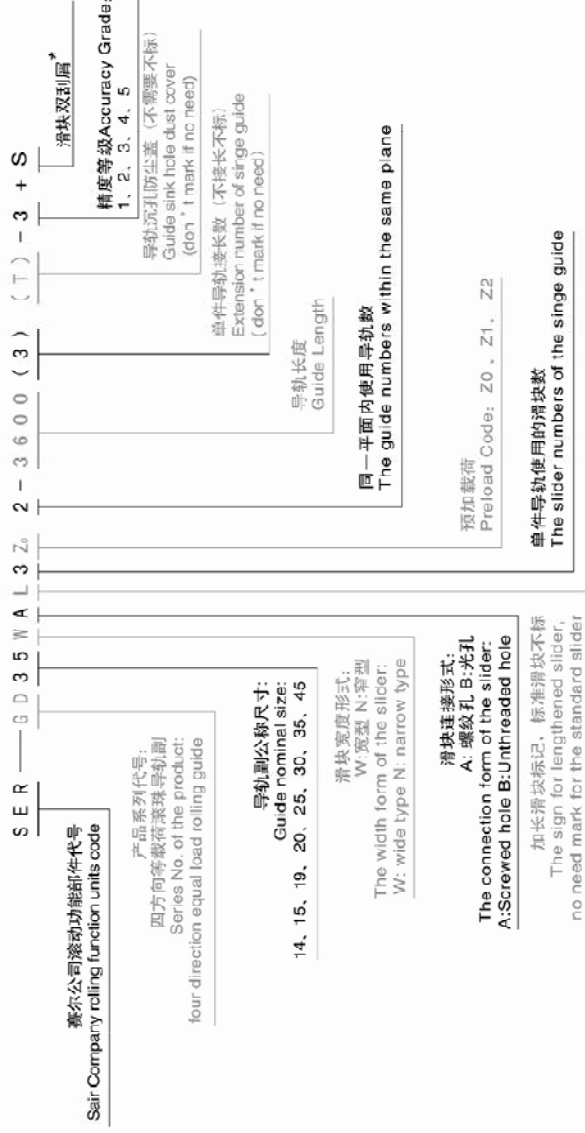
2.When the slider blocks using on the guide are more than two pieces, the W values of the middle sliders are not detected in addition to the fore and aft sliders. However, the W values in the middle should be less than those of the fore and aft sliders.



### 九. SER-GD系列滚动直线导轨副的编号使用说明 INSTRUCTIONS OF THE SERIES NUMBER FOR THE LINEAR ROLLING GUIDE



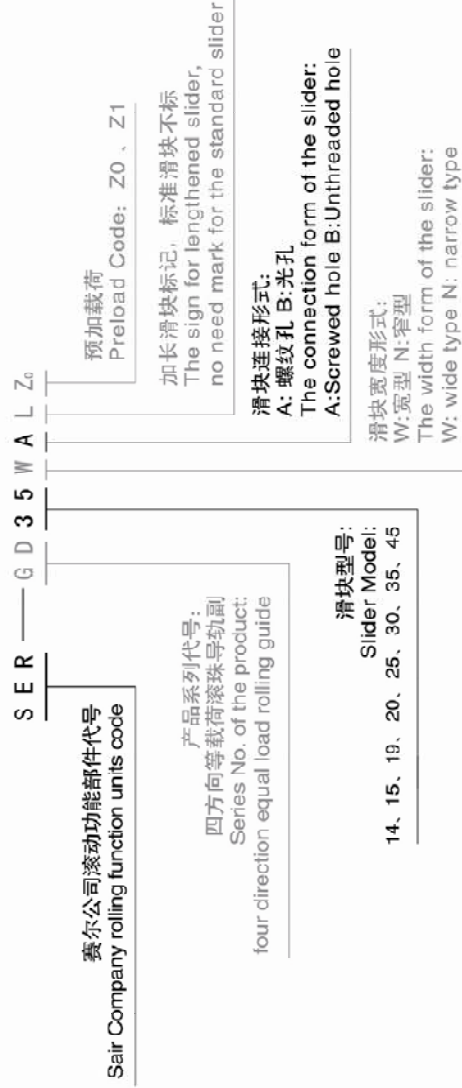
**非互换性导轨副编号**  
Non Interchangeable Guideways Number



\* 滑块双刮屑装置, 目前仅19、20规格, 滑块总长度增加10.5



**互换性滑块编号**  
Interchangeable Block Number





S E R — G D 3 5 — 3 6 0 0 ( T ) — 5

赛尔公司滚动功能部件代号  
Sair Company rolling function units code

产品系列代号:  
四方向等载荷滚珠导轨副  
Series No. of the product:  
four direction equal load rolling guide

导轨型号:  
Guides Model:  
14, 15, 19, 20, 25, 30, 35, 45

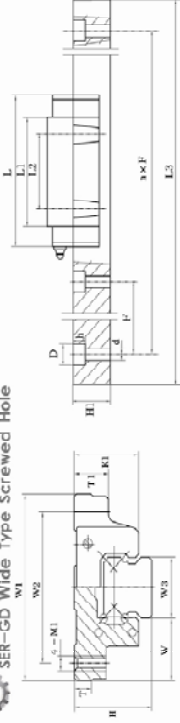
精度等级  
Accuracy Grade: 5, 6

导轨沉孔防尘盖 (不需要不标)  
Guide sink hole dust cover  
(don't mark if no need)

导轨长度  
Guide Length

十. SER-GD系列滚直导轨副尺寸规格  
THE SER - GD SERIES ROLLING LINEAR GUIDE PAIR OF SIZE

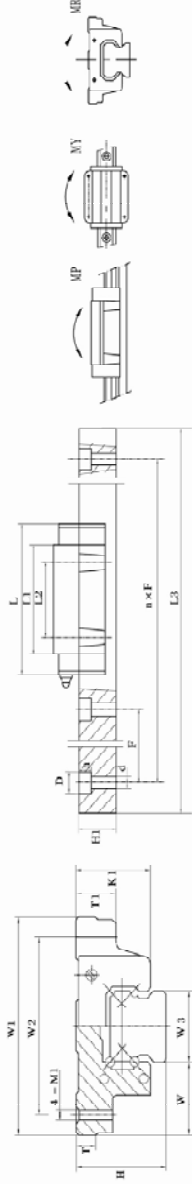
SER-GD宽型螺孔  
SER-GD Wide Type Screwed Hole



型号 Model No.	导轨副尺寸①										滑块尺寸 The Dimensions of the Slider Block					导轨尺寸 The Dimensions of the Guide Rail			额定载荷/额定静载荷 ②		额定力矩 Rated Moment					
	H	W	K	W <sub>1</sub>	L <sub>1</sub>	W <sub>2</sub>	L <sub>2</sub>	M	T	L	W <sub>3</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	d	D	X	h	F	单根重量 Weight Kgs	C (KN)	C <sub>0</sub> (KN)	M <sub>0</sub> (N.m)	M <sub>0</sub> (N.m)	M <sub>0</sub> (N.m)	
SER-GD14WA	22	16	19.3	47	38.8	38	30	M5	7	11	57.8	15	13	Φ4.5	Φ7.5	5.3	60	2500	8.51	13.33	7.0	70	100	70	70	100
SER-GD15WA	24	16	19.3	47	38.8	38	30	M5	7	11	57.8	15	15	Φ4.5	Φ7.5	5.3	60	2500	8.51	13.33	70	70	100	70	100	
SER-GD19WA	28	21.5	24	63	66	49	32	M6	7	10	86	20	16	Φ5	Φ9.5	8.5	60	3500	13.7	19.27	160	160	230	160	230	
SER-GD20WA	30	21.5	24	63	66	50	30	M6	7	10	86	20	18	Φ5	Φ9.5	8.5	60	3500	13.7	19.27	160	160	230	160	230	
SER-GD25WA	36	23.5	28.8	70	78	59	45	M8	11	16	102	23	22	Φ7	Φ11	9	60	4000	20.19	28.93	260	260	390	260	390	
SER-GD30WA	42	31	35	90	92	72	52	M10	18	26	120	28	26	Φ8	Φ14	12	80	4000	27.17	40.63	450	450	500	450	500	
SER-GD30WAL	42	31	35	90	92	72	52	M10	18	26	120	28	26	Φ8	Φ14	12	80	4000	27.17	40.63	450	450	500	450	500	
SER-GD35WA	48	33	38	100	105	80	52	M10	14	21	110	34	29	Φ9	Φ14	12	80	4000	34.97	56.53	510	510	610	510	610	
SER-GD35WAL	48	33	38	100	105	80	52	M10	14	21	110	34	29	Φ9	Φ14	12	80	4000	34.97	56.53	510	510	610	510	610	
SER-GD45WA	60	37.5	49	120	131	100	80	M12	15	23	134	45	38	Φ14	Φ20	16	105	4000	50.14	94.57	1290	1290	1450	1290	1450	
SER-GD45WAL	60	37.5	49	120	131	100	80	M12	15	23	134	45	38	Φ14	Φ20	16	105	4000	50.14	94.57	1290	1290	1450	1290	1450	
SER-GD55WA	70	43.5	57	140	156	118	95	M14	20	28	161	53	44	Φ16	Φ23	20	120	4000	92.62	137.57	2180	2180	2450	2180	2450	
SER-GD55WAL	70	43.5	57	140	156	118	95	M14	20	28	161	53	44	Φ16	Φ23	20	120	4000	92.62	137.57	2180	2180	2450	2180	2450	

注: ①The Dimensions of the Guide Pair ②Rated Dynamic Load ③Rated Static Load ④The Maximum Length of the Single Guide

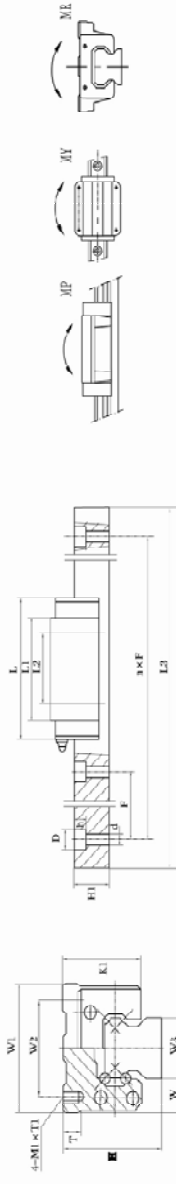
**SER-GD宽型光孔**  
SER-GD Wide Type Unthreaded Hole



型号 Model No.	导轨副尺寸①			滑块尺寸 The Dimensions of the Slider Block							导轨尺寸 The Dimensions of the Guide Rail				额定载荷 Rated Load		额定力矩 Rated Moment				
	H	W	K <sub>1</sub>	W <sub>1</sub>	L <sub>1</sub>	W <sub>2</sub>	L <sub>2</sub>	M <sub>1</sub>	T <sub>1</sub>	L	T <sub>1</sub>	L	W <sub>1</sub>	H <sub>1</sub>	d×D×h	F	C (KN)	C <sub>0</sub> (KN)	M <sub>0</sub> (N.m)	M <sub>0</sub> (N.m)	M <sub>R</sub> (N.m)
SER-GD14WB	22	16	19.3	47	38.8	38	30	ø45	7	11	57.8	15	13	ø4.5×ø7.5×5.3	60	2500	8.51	13.38	70	70	100
SER-GD15WB	24	16	19.3	47	38.8	38	30	ø45	7	11	57.8	15	15	ø4.5×ø7.5×5.3	60	2500	8.51	13.38	70	70	100
SER-GD19WB	28	21.5	24	63	50	49	32	ø6	7	10	86	20	16	ø3×ø9.5×8.5	60	3500	13.7	19.27	160	160	230
SER-GD19WB-L					66												18.43	26.50	260	260	310
SER-GD20WB	30	21.5	24	63	50	53	40	ø6	7	10	86	20	18	ø3×ø9.5×8.5	60	3500	13.7	19.27	160	160	230
SER-GD20WB-L					66												18.43	26.50	260	260	310
SER-GD25WB	36	23.5	28.8	70	78	57	45	ø8	11	16	102	23	22	ø7×ø11×9	60	4000	20.19	29.98	260	260	390
SER-GD25WB-L					105												27.17	40.58	450	450	500
SER-GD30WB	42	31	35	90	92	69	72	ø9	10	18	120	28	26	ø9×ø14×12	80	4000	28.08	46.33	430	430	650
SER-GD30WB-L					118												37.77	61.77	720	720	870
SER-GD35WB	48	33	38	100	105	82	82	ø9	14	21	135	34	29	ø9×ø14×12	80	4000	34.97	58.53	610	610	1030
SER-GD35WB-L					156												46.43	76.54	1030	1030	1380
SER-GD45WB	60	37.5	49	120	131	100	100	ø11	15	23	165	45	38	ø14×ø20×16	105	4000	60.14	84.57	1290	1290	2100
SER-GD45WB-L					181												80.83	126.09	2080	2080	2750
SER-GD55WB	70	43.5	57	140	156	118	118	ø14	20	28	199	53	44	ø16×ø23×20	120	4000	92.62	137.57	2180	2180	3640
SER-GD55WB-L					219												126.51	187.60	3650	3650	4860

注：①The Dimensions of the Guide Pair ②Rated Dynamic Load ③Rated Static Load ④The Maximum Length of the Single Guide

**SER-GD窄型螺孔**  
SER-GD Narrow Type Screwed Hole



型号 Model No.	导轨副尺寸①			滑块尺寸 The Dimensions of the Slider Block							导轨尺寸 The Dimensions of the Guide Rail				额定载荷 Rated Load		额定力矩 Rated Moment				
	H	W	K <sub>1</sub>	W <sub>1</sub>	L <sub>1</sub>	W <sub>2</sub>	L <sub>2</sub>	M <sub>1</sub>	T <sub>1</sub>	L	T <sub>1</sub>	L	W <sub>1</sub>	H <sub>1</sub>	d×D×h	F	C (KN)	C <sub>0</sub> (KN)	M <sub>0</sub> (N.m)	M <sub>0</sub> (N.m)	M <sub>R</sub> (N.m)
SER-GD18NA	24	9.5	23.3	34	38.8	26	26	M4	5	6	57.8	15	13	ø4.5×ø7.5×5.3	60	2500	8.51	13.38	70	70	100
SER-GD18NA-L					66												13.7	19.27	160	160	230
SER-GD19NA	28	12	24	44	50	32	32	M5	5	8	86	20	16	ø6×ø9.5×8.5	60	3500	13.7	19.27	160	160	230
SER-GD19NA-L					66												18.43	26.50	260	260	310
SER-GD20NA	30	12	24	44	50	32	36	M5	5	8	86	20	18	ø6×ø9.5×8.5	60	3500	13.7	19.27	160	160	230
SER-GD20NA-L					66												18.43	26.50	260	260	310
SER-GD25NA	40	12.5	32.8	48	78	50	50	M6	8	10	102	23	22	ø7×ø11×9	60	4000	20.19	29.98	260	260	390
SER-GD25NA-L					105												27.17	40.58	450	450	500
SER-GD30NA	45	16	38	50	92	60	60	M8	8	10	120	28	26	ø9×ø14×12	80	4000	28.08	46.33	430	430	650
SER-GD30NA-L					118												37.77	61.77	720	720	870
SER-GD35NA	55	18	45	70	105	72	72	M8	12	10	135	34	29	ø9×ø14×12	80	4000	34.97	58.53	610	610	1030
SER-GD35NA-L					156												46.43	76.54	1030	1030	1380
SER-GD45NA	70	20.5	59	86	131	60	60	M10	16	15	184	45	38	ø14×ø20×16	105	4000	60.14	84.57	1290	1290	2100
SER-GD45NA-L					219												80.83	126.09	2080	2080	2790
SER-GD55NA	80	23.5	67	100	156	75	75	M12	16	20	199	53	44	ø16×ø23×20	120	4000	92.62	137.57	2180	2180	3640
SER-GD55NA-L					219												126.51	187.60	3650	3650	4860

注：①The Dimensions of The Guide Pair ②Rated Dynamic Load ③Rated Static Load ④The Maximum Length of the Single Guide



### 十一、SER-GC系列十字导轨副 SER - GC CROSS GUIDE SERIES



#### SER-GC系列十字导轨副概述 Brief introduction of SER-GC series cross guide

SER-GC十字导轨副，由两支相互交叉垂直且平行的导轨，与一件滑块装配在一起而组成。滑块上下两面有两个相互交叉垂直且平行的导轨装配槽，槽内有四列圆弧槽，通过滚珠体及两端滚珠罩与导轨装配在一起，即可实现导轨与滑块间的相互移动。

SER-GC十字导轨副，抛弃了传统的中间连接板连接，极大的节省了安装空间，使轴承器的小型化得以实现；一体化垂直两方向的安装，提高了机床的刚性；特殊的滚珠加工工艺，保证了滑块精度，为机床精度的长期稳定性提供了保障。

SER-GC十字导轨副，垂直度、平行度的运动精度达到0.005/300。

SER-GD cross guide, is made up by two mutually vertical and parallel cross rail and one slider. There are two mutually vertical and parallel cross rail mounting grooves on the upper and lower sides of slider with four rows of circular arc grooves on it. It can realize mutual moving between guide rail and the slider by the rolling body and both ends of reverser and the guide rail assembly together.

SER-GC cross guide abandoned the traditional middle connection board, which greatly saved the installation space, and realized the miniaturization of multi-axis machine; the installation of one of the slider with two vertical directions, improved the rigidity of machine tool; the special process of slider, ensured the accuracy of the slider, and guaranteed for the long-term stability of machine tool accuracy.

SER-GD cross guide, the motion accuracy of parallelism and perpendicularity is up to 0.005/300.



#### SER-GC系列十字导轨副编号说明 SER - GC SERIES GUIDE CODE INSTRUCTIONS

赛尔公司滚动功能部件代号  
Sair Company rolling function units code

产品系列代号：十字滚珠导轨副  
Series No. of the product: The ball bearing guide

导轨副公称尺寸：  
Guide nominal size:  
25、30、35

滑块个数  
Number of slider

SER - GC 35 - 2 Z<sub>0</sub> - 600 / 800 - 3

精度等级Accuracy Grade:  
1、2、3、4、5

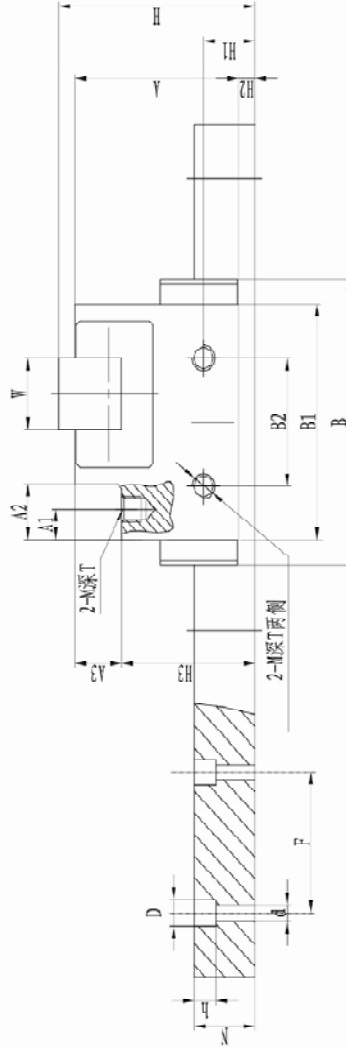
下面使用导轨长度  
Using the guide rail length

上面使用导轨长度  
The use of guide rail length

预加载荷  
Preload Code: Z<sub>0</sub>、Z<sub>1</sub>、Z<sub>2</sub>



SE<sub>R</sub>-GC系列十字导轨副安装连接尺寸表  
INSTALLATION SIZE TABLE



型号 model No.	导轨副尺寸 Guide size			滑块尺寸 The Dimensions of the Slider Block						导轨尺寸 Guide rail size				允许力矩 Allow the increment MO(N.m)						
	H	H1	H2	A	A1	A2	A3	B	B1	B2	M	T	W		N	d	x	D	x	h
SER-GC25	72	19.5	7.5	49.5	8	18	15	102	78	40	M8	10	23	22	φ7X	φ11X9	60	4000	450	
SER-GC30	84	22	7	57	12	25	20	120	92	50	M10	12	28	26	φ9X	φ14X12	80	4000	720	
SER-GC35	96	25	10	66	12	25	20	135	105	60	M10	12	34	29	φ9X	φ14X12	80	4000	1030	

### SE<sub>R</sub>系列滚动直线导轨副订购信息表

The Order Information Table of SE<sub>R</sub> series linear rolling guide

1、客户名称 The Name of the Customer:

\_\_\_\_\_;

2、客户机型名称 Machine Type:

\_\_\_\_\_;

3、赛尔公司滚动直线导轨副型号 Model No. of linear rolling guide of Sair company:

\_\_\_\_\_;

4、使用机床: 机床类; 木工、焊接、包装、传输机械等;

Machine tool: Machine tool; Woodwork, welding, packing, transmission machinery, etc;

其它Other: \_\_\_\_\_;

(在使用类型前勾选) (please check before your required type)

5、安装轴向 Axial installation: \_\_\_X; \_\_\_Y; \_\_\_Z; \_\_\_其它Other

(在使用轴向前勾选) (Please check before your required axial)

6、特殊使用要求 Special usage requirement:

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