PHK 非攻

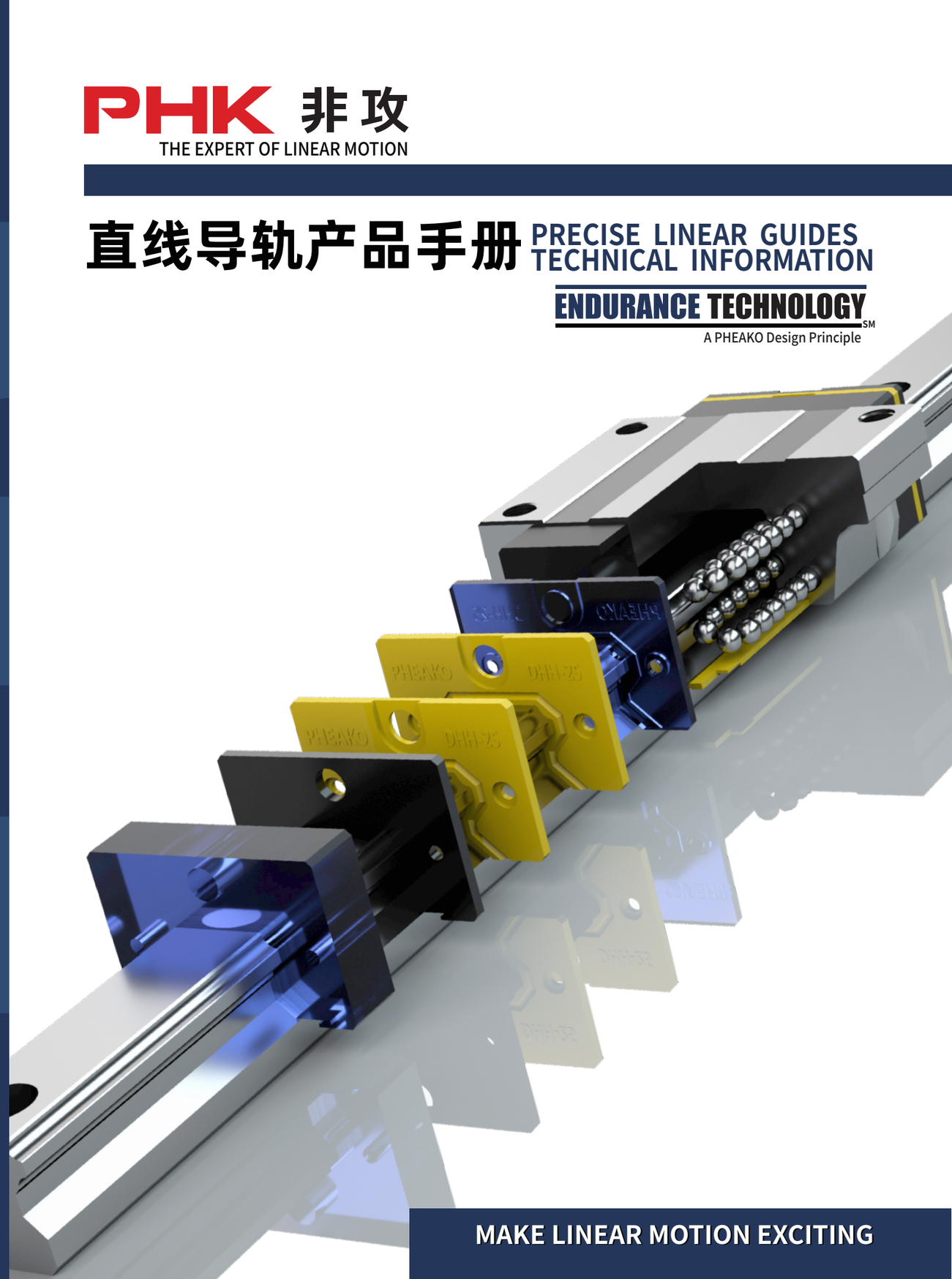
THE EXPERT OF LINEAR MOTION

直线导轨产品手册

PRECISE LINEAR GUIDES TECHNICAL INFORMATION

ENDURANCE TECHNOLOGYSM

A PHEAKO Design Principle



MAKE LINEAR MOTION EXCITING

PHK 非攻

浙江非攻机械有限公司

ZHEJIANG PHEAKO MACHINERY Co., Ltd.

上海研发中心

上海市临港科技城智联广场49号楼

义乌制造基地

义乌市上溪镇岩湖路25号4栋

诸暨制造基地

诸暨市千禧路9号G栋

0579-85266861 / 400-116-2015

www.pheako.com

官方网站　抖音号　微信公众号

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THE ENTERPRISE

科技推动创新 Science and Technology Promotes Innovation

关于非攻 About PHEAKO

非攻（PHEAKO）是一家专注于线性传动产品研发、制造及销售的中日合资企业，主要产品包括直线导轨、滚珠丝杠、行星滚柱丝杠和直线模组等高精密直线传动元件，广泛应用于各种机械设备中，如数控机床、自动化生产线、机器人、半导体设备、激光设备、橡塑设备、航空航天设备、医疗器械、3D 打印、精密仪器等领域。

公司先后荣获国家高新技术企业、国家科技型中小企业、市研发中心；公司先后通过质量管理体系ISO9001 认证、知识产权管理体系认证；公司建立博士后工作站。

匠心铸就未来。公司将始终坚持 “兼爱非攻”的价值观，秉承 “以市场为导向、以客户为中心 、以品质为基石、以技术为驱动、以诚信为根本”的经营理念，致力成为线性传动行业标杆。

PHEAKO is a Sino-Japanese joint venture focusing on the R&D, manufacturing and sales of linear transmission products. Its main products include high-precision linear transmission components such as linear guides, ball screws, planetary roller screws and linear modules. Used in various mechanical equipment, such as CNC machine tools, automated production lines, robots, semiconductor equipment, laser equipment, rubber and plastic equipment, aerospace equipment, medical devices, 3Dprinting, precision instruments and other fields.

PHEAKO has successively won the titles of National High-tech Enterprise, National Scientific and Technological Middle-and-small Enterprise, and Municipal R&D Center; the company has obtained ISO9001 quality management system certification and intellectual property management system certification; the company has established a postdoctoral workstation.

Ingenuity casts the future. PHEAKO will always insist on the value of " Universal love and non-aggression", adhering to the business philosophy of " Market-oriented, customer-centric, quality based, technology driven, and integrity based ", committed to becoming a benchmark in the linear transmission industry.

企业篇 The enterprise
关于非攻 About PHEAKO
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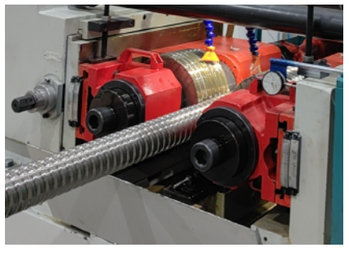
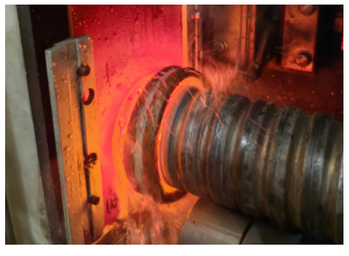
荣誉资质 Honor and Qualification
生产与技术 Honor and Qualification
技术服务与时效 Technical Service And Timeliness
产品篇 Products&Solutions
使用篇 Applications





全球布局 Global Footprints

企业篇 The enterprise
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上海研发中心
直线导轨研发 | 滚珠丝杠研发 | 行星滚柱丝杠研发

Shanghai R&D Center
Linear guide development | Ball screw development
Planetary roller screw development

义乌制造工厂
智能 | 测试 | 品质

Yiwu Manufacturing Factory
Intelligent | testing | quality

诸暨制造工厂
智能 | 热处理 | 品质

Yiwu Manufacturing Factory
Intelligent | heat treatment | quality

北京事务所
面向华北区域客户服务

Beijing Office
Customer service for the North China region

深圳事务所
面向华南区域客户服务

Shenzhen Office
Customer service for the South China region

成都事务所
面向西南区域客户服务

Chengdu Office
Customer service for the Southwest region

日本事务所
面向日本客户服务

Japan Office
Serving Japanese customers

新加坡事务所
面向东南亚客户服务

Singapore Office
Serving Southeast Asian customers

荣誉资质 Honor and Qualification

国家高新技术企业
Nation High-Tech Enterprise

国家科技型中小企业
National technology-based small and medium-sized enterprises

浙江省专精特新中小企业
Zhejiang Province specialized in special new small and medium-sized enterprises

浙江省博士后工作站
Zhejiang Province Postdoctoral Workstation

市级研发中心
City level research and development center

浙江自动化学会
Zhejiang Automation Society

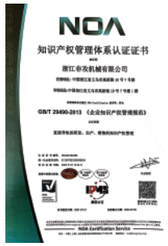
浙师大MBA企业实践基地
Zhejiang Normal University MBA Enterprise Practice Base

浙工大产学研究合作基地
Zhejiang University of Technology Industry University Research Cooperation Base

ISO9001认证证书
Iso9001 Certification Certificate

知识产权管理体系认证证书
Intellectual Property Management System Certification

知识产权管理体系评价证书
Intellectual Property Management System Evaluation Certificate



研发团队实力雄厚，荣获五十余项专利证书

生产与技术 Production And Technology

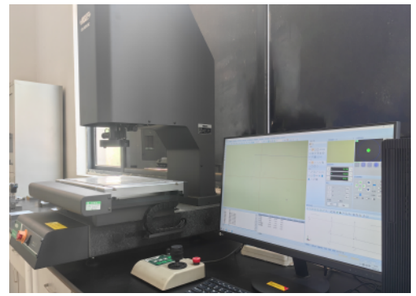
自主创新 Innovation

发掘市场需求，引领技术创新和行业应用

不断开发和制造技术先进、超越客户期待的产品，是非攻一贯的追求；核心部件和核心技术拥有完全自主知识产权、不断增加产品新价值，用新技术为行业寻求最佳解决方案。

Exploring market demand、leading technological innovation and industry applications

Continuously developing and manufacturing products that are technologically advanced and exceed customer expectations is PHEAKO 's consistent pursuit; core components and core technologies have completely independent intellectual property rights, constantly adding new value to products, and using new technologies to seek the best solutions for the industry.



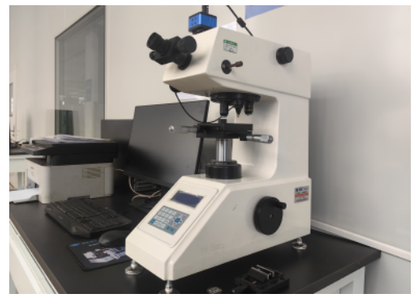
品质管控 Quality

选择“PHEAKO”就是选择“放心”

高性能、高品质是非攻一以贯之的坚持；多年来，非攻对品质的要求和管控，使得客户相信选择了“非攻”就等同选择了“放心”。

Choosing "PHEAKO" means choosing "rest assured"

High performance and high quality are PHEAKO 's consistent insistence; over the years, PHEAKO 's quality requirements and control have made customers believe that choosing " PHEAKO " is equivalent to choosing "rest assured".



客户响应 Response

倾听客户的声音，想客户之所想

永远把客户放在第一位考虑，倾听客户的声音，解决客户的问题，始终贯彻“更好地传递动力和价值”这个使命。

Listening to the customers and thinking about what customers think

Always put customers first, listen to customers, solve the problems, and always implement the mission of " Deliver motivation and value better".

技术服务与时效 Technical Service And Timeliness

全程“一对一”技术支持 One for one support

有专业技术工程师协助客户对选型、设计、校核、安装、调试、维护进行全程“一对一”的专业技术支持。

Continuously developing and manufacturing products that are technologically advanced and exceed customer expectations is PHEAKO 's consistent pursuit; core components and core technologies have completely independent intellectual property rights, constantly adding new value to products, and using new technologies to seek the best solutions for the industry.

免费设计与校核工具 Calculation and verification tools

为客户提供负载、速度、加速度、容许力矩、作动周期、工作寿命等参数的计算和校核小工具。

Provide customers with calculation and verification tools for parameters such as load, speed, acceleration, allowable torque, actuation cycle, and working life.

特殊检测报告 Special testing report

可为客户提供特殊环境或特殊要求场合下使用时对产品性能和产品验证报告。

We can provide customers with product performance and product verification reports when used in special environments or occasions with special requirements.

终身维修与保养 Lifetime service and maintenance

对全系列产品推行全生命周期内终身维修和检测。即使质保期外，也仅收取基本的配件费用和人工费用。

Implement lifelong maintenance and testing throughout the entire life cycle of all products. Even if the warranty period is out, only the cost of essential parts and labor will be charged.

品质保证 Quality assurance

导入2次元及3次元检测设备，滑台工作状态噪音检测，激光干涉仪量测，上母线、侧母线直线度，以及重复定位精度，确保超越行业水平的产品品质。

The introduction of 2D and 3D inspection equipment, noise detection of the sliding table working status, laser interferometer measurement, straightness of the upper busbar and side busbar, and repeat positioning accuracy ensure product quality that exceeds the industry level.

标准品7天交货 Delivery lead time:7days

标准品常备大量原材料及半成品库存，保证7个工作日交货。

We have a large inventory of raw materials and semi-finished products for standard products, ensuring delivery within 7 working days.

产品篇 02
PRODUCTS & SOLUTIONS

科技成就品质 Science and Technology Improves Quality

精密直线导轨的构造特点

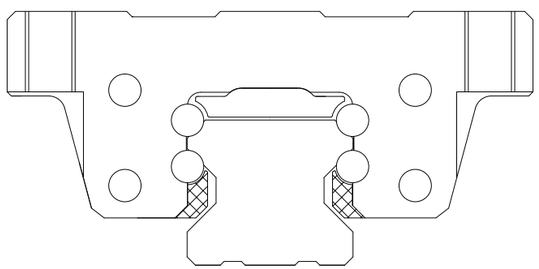
Structural Characteristics of Precise Linear Guides

为实现机械构造系统中工作平台等高精度运行，可采用 PHEAKO 开发的精密直线导轨系列引导直线运动，精密直线导轨由精密直线轨道（Linear rail），直线运动滑块（Slider），介于轨道与滑块之间的滚珠（Ball）及具有引导滚珠循环功能的端盖（Circulating end plate）等构成，降低了轨道的磨损，延长了使用寿命，实现了高精度的机械运动。

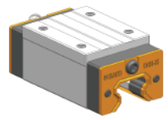
为了进一步降低滑块与轨道之间的摩擦，可以在滑块的滚珠和轨道之间注入润滑油或油脂。而滑块端板上配备注油嘴，使得润滑油或油脂可以直接通过油嘴及滑块内部的润滑结构附着在滚珠上，实现了自动润滑。

In order to realize the high-precision operation of the working platform in the mechanical construction system, the precise linear guide series developed by PHEAKO can be used to guide the linear motion. Precise linear guides are composed of precise linear rails, linear motion sliders, balls between the rails and the sliders, and circulating end plate with the function of guiding the ball circulation, which reduces the wear of the rail, prolongs the service life and realizes high-precision mechanical motion.

Lubricating oil or grease can be injected among the balls, sliders and rails. The end plate of the slider is equipped with an oil injection nozzle, so that lubricating oil or grease can be directly attached to the balls through the oil nozzle and the lubrication structure inside the slider, thus realizing automatic lubrication.



产品一览表 List of Products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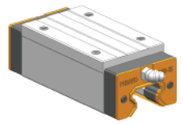
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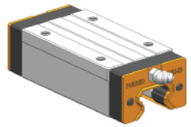
DHH-S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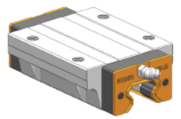
DHH-F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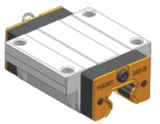
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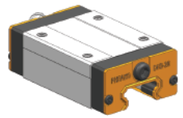
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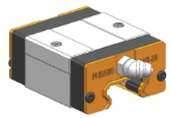
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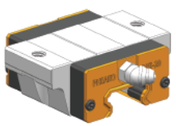
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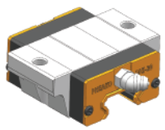
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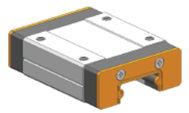
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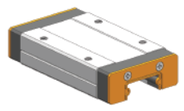
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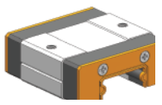
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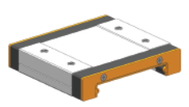
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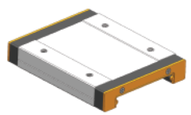
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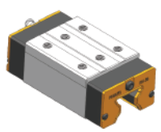
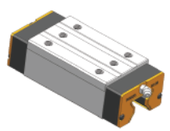

RH-U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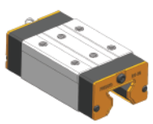
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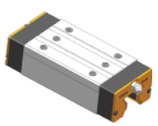
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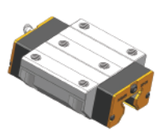
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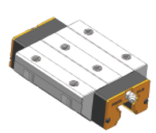
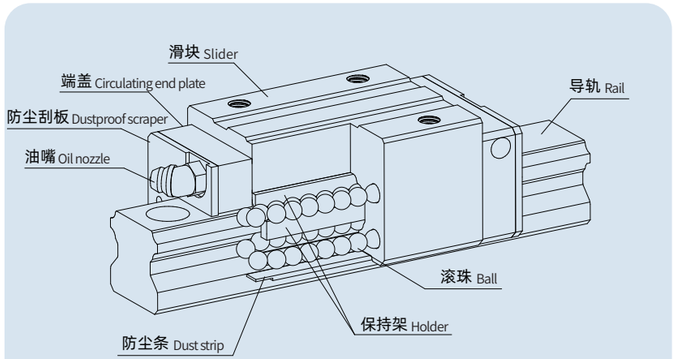

RH-FL

DHH系列滚珠式标准型直线导轨

Structural Characteristics of Precise Linear Guides

DHH 系列直线导轨， 是四列式等负载设计直线导轨， 滚珠与滑块以及导轨之间为 4 点 45°角接触设计， 各方向的负载能力相等， 具有较高的刚性和负载承受能力。DHH 系列直线导轨还具有自动调心能力，可吸收安装面一定的装配误差，得到较高的运行精度。

DHH linear guide is a four-row linear guide with equal load design. The balls, sliders and rails are designed with 4 points and 45° contact. The load capacity in all directions is equal, and it has high rigidity and load bearing capacity. DHH linear guide also has the ability of automatic alignment, which can absorb certain assembly errors on the mounting surface and obtain higher running precision.



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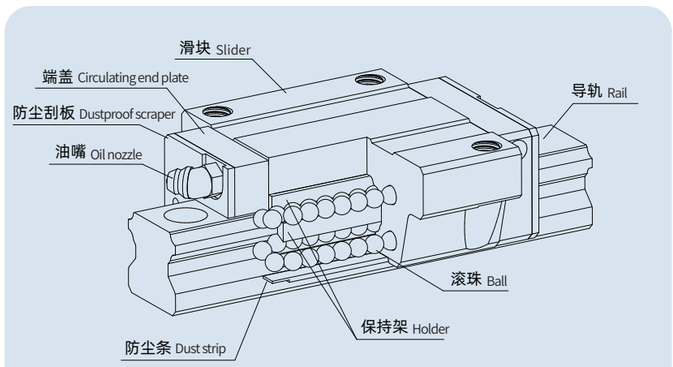
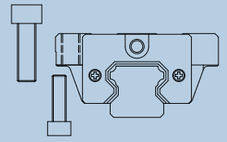
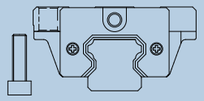
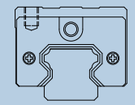
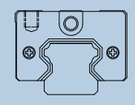


DHH-F

DHH系列产品型号说明

Structural Characteristics of Precise Linear Guides

样式 Type	型号 Model	图例 Legend	说明 Description	组装高尺寸 (mm) Assembly height	导轨长度 (mm) Rail length	应用领域 Application fields
法兰型 Flange-type	DHH-FL（L加长型）(L Lengthened type) DHH-F（标准型）(Standard type)		法兰型滑块，安装孔为螺纹孔，上下方向均可安装。 Flange-type slider; the installation hole is threaded hole, and the screws can be installed in both upper and lower directions.	24 ↓ 90	100 ↓ 4000	加工中心 磨床 铣床 车床 冲床 钻床 放电加工机 测量仪器 自动化设备 运输装置 Machining centers Grinding machines Milling machines Lathes Punching machines Drilling machines Electrical discharge machining machines Measuring instruments Automation equipment Transporter
	DHH-TL（L加长型）(L Lengthened type) DHH-T（标准型）(Standard type)		法兰型滑块 ,安装孔为通孔，螺丝仅可向上安装。 Flange-type slider. The installation hole is through hole, and the screws can only be installed upwards.	24 ↓ 90	100 ↓ 4000	
四方型 Square-type	DHH-UL（L加长型）(L Lengthened type) DHH-U（标准型）(Standard type)		相比于 DHH-F，DHH-U缩小了滑块的宽度。可以从滑块的顶部进行安装。 Compared with DHH-F, DHH-U reduces the width of slider. It can be installed from the top of the slider.	28 ↓ 90	100 ↓ 4000	
	DHH-SL（L加长型）(L Lengthened type) DHH-S（标准型）(Standard type)		相比于 DHH-U，DHH-S降低了滑块的高度。可以从滑块的顶部进行安装。 Compared with DHH-U, DHH-S reduces the height of slider. It can be installed from the top of the slider.	24 ↓ 70	100 ↓ 4000	

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直线导轨副产品型号说明
Linear guide by-product model description

DHH 20 U 2 G1 - L1000 P II+MS/OB/SNB

- 系列:DHH高组装系列 Series: DHH High-assembly
- 规格: Specification 15/20/25/30/35/45/55/65
- 滑块类型: Slider type
  - U 四方型 Square type
  - UL 四方长型 Long-square type
  - S 四方低组型 Square lowassembly type
  - SL 四方低组长型 Long-square lowassembly type
  - F 法兰型 Flange-type
  - FL 法兰长型 Long flange-type
  - T 法兰型下锁式 Flange-type lower lock
  - TL 法兰下锁式长型 Long flange-type lower lock
- 单根导轨组装的滑块个数 Number of sliders assembled for single rail
- 预压等级: Preloading grade
  - G0 无预压 No precompression
  - G1 轻预压 Light preloading
  - G2 中预压 Medium preloading
  - G3 重预压 Heavy preloading
- 导轨长度（mm） Rail length (mm)
- 精密等级: Precision grade
  - C 普通级 Common Grade C
  - H 高级 High Grade H
  - P 精密级 Precise Grade P
  - SP 超精密级 Ultra-precise Grade SP
  - UP 超高精密级 Super-ultra-precise Grade UP
- 同平面所使用的导轨数: Number of rails used in the same plane
  - 单根无记号 Single rail unmarked
  - II :2根 II : 2 rails
  - ...
- 防尘配件标记: Mark of dustproof fittings
  - 无标记 标准防尘（防尘刮板+防尘条） Standard dustproof (dustproof scraper + dustproof strip) Unmarked
  - MS 防尘刮板+金属刮板+防尘条 Dustproof scraper + metal scraper + dustproof strip MS
  - DS 双防尘刮板+防尘条 Double dustproof scraper + dustproof strip DS
  - DM 双防尘刮板+金属刮板+防尘条 Double dustproof scraper + metal scraper + dustproof strip DM
- 其他配件标记: Other accessories mark
  - OB 自润滑油盒 Lubricating oil box
  - SNB 陶瓷滚珠 Ceramic ball

注：1.若有其他配件要求，请与PHEAKO联系
2.滑块类型为S的是四方U型滑块的低组式滑块，其组装高度与同规格法兰F型滑块一致。

Notes: 1. If you have other parts requirements, please contact PHEAKO;
2. The sliding block type S is a low group sliding block of the square U-shaped sliding block, and its assembly height is consistent with the flange F-type sliding block of the same specification.

单出滑块产品型号说明
Single slider product model description

DHH 20 U G1 H + MS/OB

- 系列:DHH 高组装系列 Series: DHH High-assembly
- 规格: Specification 15/20/25/30/35/45/55/65
- 滑块类型: Slider type
  - U 四方型 Square type
  - UL 四方长型 Long-square type
  - S 四方低组型 Square lowassembly type
  - SL 四方低组长型 Long-square lowassembly type
  - F 法兰型 Flange-type
  - FL 法兰长型 Long flange-type
  - T 法兰型下锁式 Flange-type lower lock
  - TL 法兰下锁式长型 Long flange-type lower lock
- 预压等级: Preloading grade
  - G0 无预压 No precompression
  - G1 轻预压 Light preloading
  - G2 中预压 Medium preloading
- 精密等级: Precision grade
  - C 普通级 Common Grade C
  - H 高级 High Grade H
- MS:防尘刮板+金属刮板+防尘条 Dustproof scraper + metal scraper + dustproof strip MS
- OB:自润滑油盒 Lubricating oil box

单出导轨产品型号说明
Single guide rail product model description

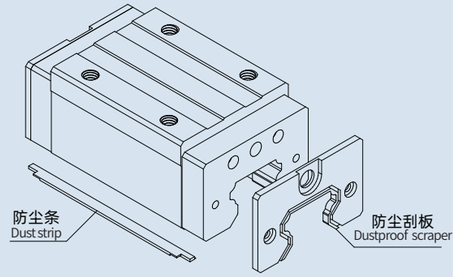
DHH 20 R - L1000 H +SE/HC

- 系列:DHH 高组装系列 Series: DHH High-assembly
- 规格: Specification 15/20/25/30/35/45/55/65
- 单出导轨 Single exit guide
- 精密等级: Precision grade
  - C 普通级 Common Grade C
  - H 高级 High Grade H
- 导轨长度（mm） Length of guide
- SE:铜制螺栓盖 Copper bolt cover
- HC:导轨镀硬铬 Hard chrome plated rail

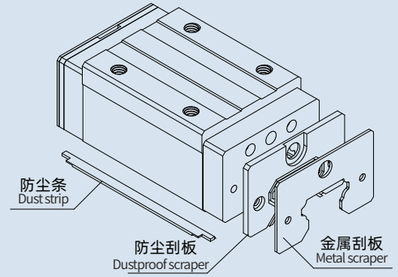
DHH系列防尘配件说明
Description of DHH Series Dustproof Fittings

若有下列防尘配件需求时，请于产品型号后面加注相应代码。

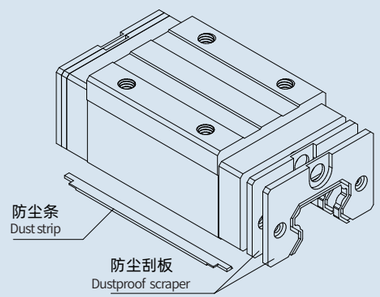
If the following dust-proof accessories are required, please add the corresponding code after the product model.



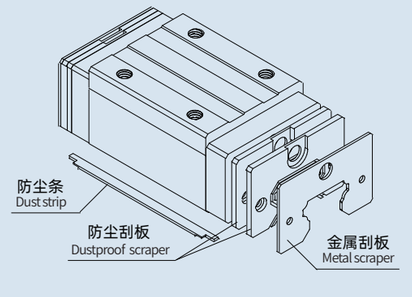
无标记为标准防尘（防尘条 + 防尘刮板）
Unmarked as standard dustproof (dustproof strip + dustproof scraper)



MS(防尘条 + 防尘刮板+金属刮板)
MS (dustproof strip + dustproof scraper + metal scraper)



DS(防尘条 + 双层防尘刮板)
DS (dustproof strip + double dustproof scraper)



DM(防尘条 + 双层防尘刮板+金属刮板)
DM (dustproof strip + double dustproof scraper + metal scraper)

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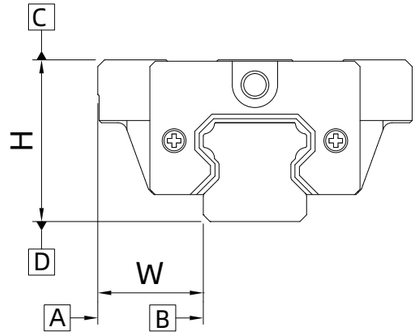
DHH系列直线导轨精度等级

Precision Grade of DHH Series



组合件精度表 Assembly Precision Table 单位 Unit：mm

型号 Model	DHH-15,20				
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)	超精密级 Ultra-precise Grade (SP)	超高精密级 Super-ultra-precise Grade (UP)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.1	±0.03	0 - 0.03	0 - 0.015	0 - 0.008
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.1	±0.03	0 - 0.03	0 - 0.015	0 - 0.008
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.02	0.01	0.006	0.004	0.003
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders					
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B	（见行走平行度精度表） (See Motion Parallelism Precision Table)				
滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D					

型号 Model	DHH-25,30,35				
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)	超精密级 Ultra-precise Grade (SP)	超高精密级 Super-ultra-precise Grade (UP)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.1	±0.04	0 - 0.04	0 - 0.02	0 - 0.01
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.1	±0.04	0 - 0.04	0 - 0.02	0 - 0.01
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.02	0.015	0.007	0.005	0.003
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders	0.03	0.015	0.007	0.005	0.003
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B	（见行走平行度精度表） (See Motion Parallelism Precision Table)				
滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D					

型号 Model	DHH-45,55				
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)	超精密级 Ultra-precise Grade (SP)	超高精密级 Super-ultra-precise Grade (UP)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.1	±0.05	0 - 0.05	0 - 0.03	0 - 0.02
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.1	±0.05	0 - 0.05	0 - 0.03	0 - 0.02
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.03	0.015	0.007	0.005	0.003
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders	0.03	0.02	0.01	0.007	0.005
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B	（见行走平行度精度表） (See Motion Parallelism Precision Table)				
滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D					

型号 Model	DHH-65				
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)	超精密级 Ultra-precise Grade (SP)	超高精密级 Super-ultra-precise Grade (UP)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.1	±0.07	0 - 0.07	0 - 0.05	0 - 0.03
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.1	±0.07	0 - 0.07	0 - 0.05	0 - 0.03
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.03	0.02	0.01	0.007	0.005
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders	0.03	0.025	0.015	0.01	0.007
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B	（见行走平行度精度表） (See Motion Parallelism Precision Table)				
滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D					

行走平行度精度表 Motion Parallelism Precision Table

导轨长度（mm） Rail length	精度等级 Precision grade（μm）				
	C	H	P	SP	UP
~100	10	7	3	2	2
100~200	12	8	4	2	2
200~300	14	9	5	2	2
300~500	16	10	6	3	2
500~700	18	12	7	3	3
700~900	20	14	8	4	3
900~1100	22	16	9	4	3
1100~1500	24	18	11	6	4
1500~1900	26	20	13	6	4
1900~2500	28	22	15	8	5
2500~3100	30	24	17	10	6
3100~3600	33	26	19	12	6
3600~4000	36	28	21	14	7

预压力 Preloading force

预压力是通过改变装填钢球的直径来控制钢球和沟道之间的间隙变化从而得到的滑块预负载。增加钢球的直径， 能消除直线导轨的间隙， 提高其刚性， 但过重的预压也会降低直线导轨的使用寿命， 所以请根据实际应用情况选择合适预压。

Preloading force is the slider preloading by changing the diameter of the loaded steel ball to control the clearance between the steel ball and the channel. Increasing the diameter of steel ball can eliminate the clearance of linear guide and improve its rigidity, but too heavy preloading will also reduce the service life of linear guide, so please choose appropriate preloading according to actual application.

预压等级表 List of Preloading Grade

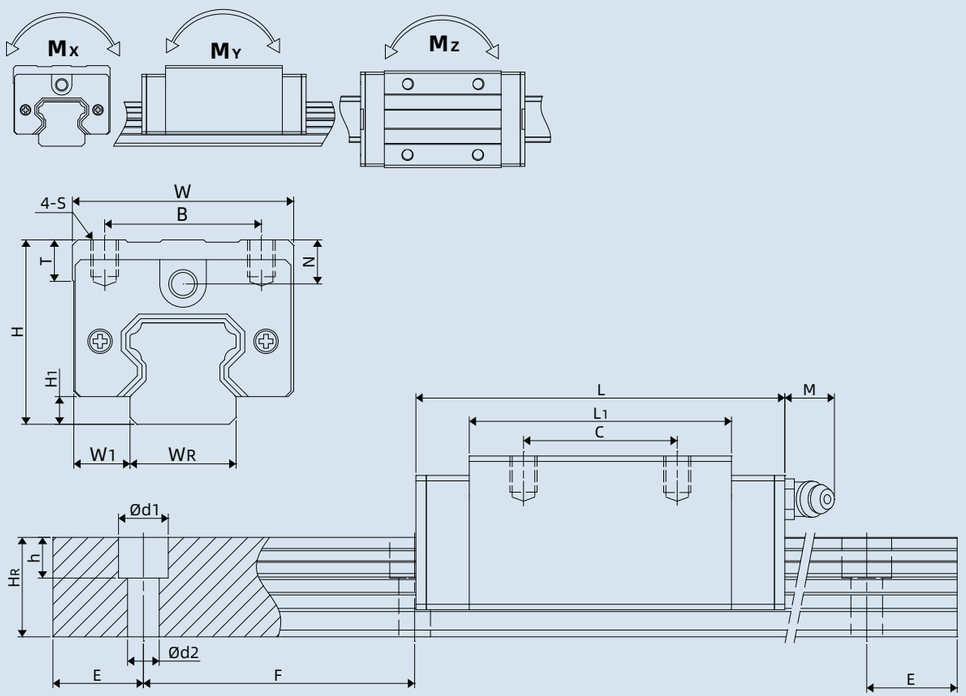
预压等级 Preloading grade	标记 Marking	预压力 Preloading force	使用条件 Service conditions
无预压 No preloading	G0	0~0.02C	负载方向固定且冲击力小，精度要求低 Fixed load direction, small impact force and low precision requirement
轻预压 Light preloading	G1	0.03~0.05C	轻负载，高精度 Light load, high precision
中预压 Medium preloading	G2	0.06~0.08C	刚性要求高，且受振动、冲击 High rigidity requirements, and subject to vibration and impact
重预压 Heavy preloading	G3	0.09~0.12C	刚性要求高，且受强振动、冲击 High rigidity requirements, and subject to strong vibration and impact

注：预压力中C为基本动额定负荷

DHH系列标准型直线导轨尺寸表

Dimension Table of DHH Standard Linear Guide

DHH-U/DHH-UL

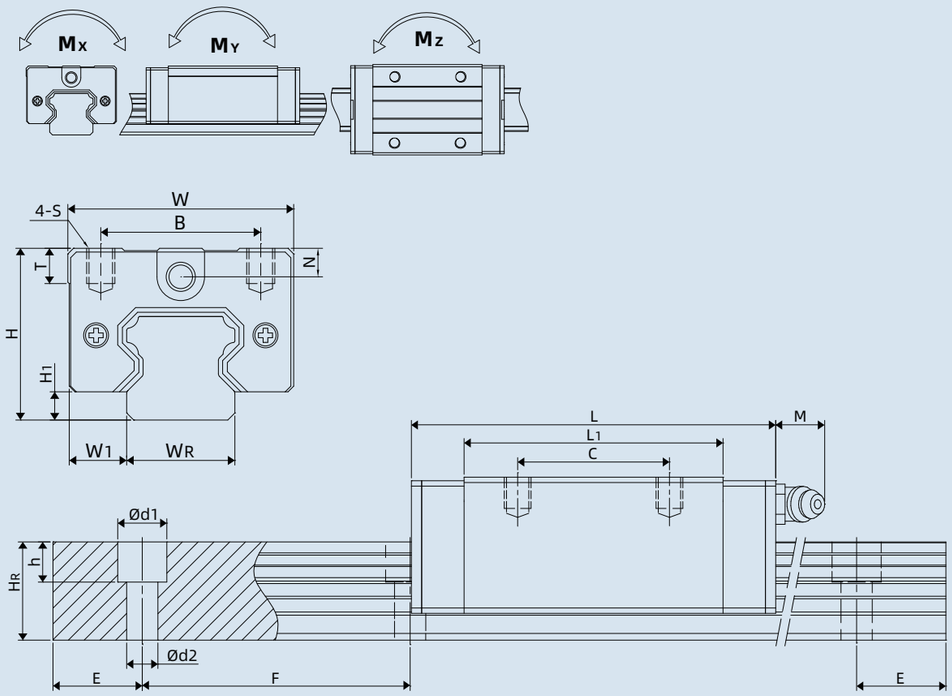


型号 Model	组装尺寸 Assembly dimensions H	H1	W1	滑块尺寸 Slider dimensions W	B	C	L1	L	T	M	N	S	导轨尺寸 Rail dimensions HR	WR	F	d1×d2×h	导轨固定螺栓尺寸 Dimensions of rail fixing bolts (mm)	基本动额定负荷 Basic rated dynamic load C kN	基本静额定负荷 Basic rated static load C0 kN	静态容许力矩 Static allowable moment kN·m Mx	My	Mz	质量 Mass 滑块 Slider kg	直线导轨 Linear guide kg/m
DHH 15U	28	4.3	9.5	34	26	26	39.5	61.1	6	6	8	M4×5	15	15	60	7.5×4.5×5.3	M4×16	14.7	23.47	0.12	0.1	0.1	0.18	1.45
DHH 20U DHH 20UL	30	4.6	12	44	32	36 50	50.5 65.2	76.1 90.8	8	12	6	M5×6	17.5	20	60	9.5×6×8.5	M5×16	27.1 32.7	36.68 47.96	0.27 0.35	0.2 0.35	0.2 0.35	0.3 0.39	2.21
DHH 25U DHH 25UL	40	5.5	12.5	48	35	35 50	58 78.6	83 103.6	8	12	10	M6×8	22	23	60	11×7×9	M6×20	34.9 42.2	52.82 69.07	0.42 0.56	0.33 0.56	0.33 0.56	0.51 0.7	3.21
DHH 30U DHH 30UL	45	6	16	60	40	40 60	70.1 93	96.5 119.4	8.5	12	9.5	M8×10	26	28	80	14×9×12	M8×25	48.5 58.6	71.87 93.99	0.66 0.88	0.53 0.9	0.53 0.9	0.88 1.16	4.47
DHH 35U DHH 35UL	55	7.5	18	70	50	50 72	80.1 105.8	112.3 138	10.2	12	16	M8×12	29	34	80	14×9×12	M8×25	64.6 77.9	93.88 122.8	1.16 1.54	0.8 1.4	0.8 1.4	1.45 1.9	6.3
DHH 45U DHH 45UL	70	9.5	20.5	86	60	60 80	97.2 128.8	133.6 165.2	16	13	18.5	M10×17	38	45	105	20×14×17	M12×35	103.8 125.3	146.7 191.9	1.98 2.63	1.55 2.68	1.55 2.68	2.73 3.6	10.41
DHH 55U DHH 55UL	80	13	23.5	100	75	75 95	118.1 155.8	160.3 198	17.5	13	22	M12×18	44	53	120	23×16×20	M14×45	153.2 184.9	211.2 276.2	3.69 4.88	2.64 4.57	2.64 4.57	4.17 5.5	15.08
DHH 65U DHH 65UL	90	15	31.5	126	76	70 120	144.2 203.6	200.2 259.6	25	13	15	M16×20	53	63	150	26×18×22	M16×50	213.2 277.8	287.5 420.2	6.65 9.38	4.27 7.38	4.27 7.38	7 9.8	21.18

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

DHH-S / DHH-SL

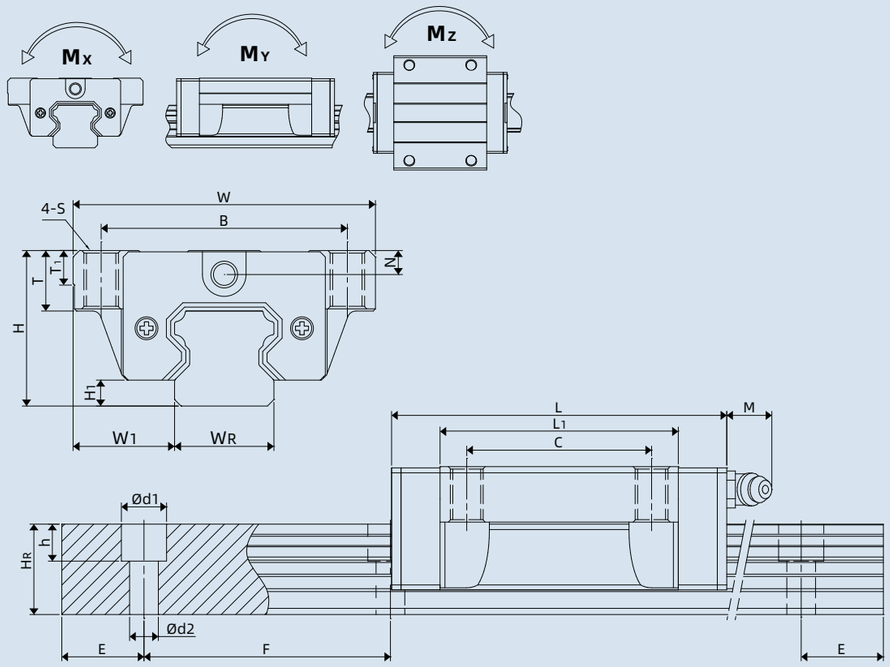


型号 Model	组装尺寸 Assembly dimensions H	H1	W1	滑块尺寸 Slider dimensions W	B	C	L1	L	T	M	N	S	导轨尺寸 Rail dimensions HR	WR	F	d1×d2×h	导轨固定螺栓尺寸 Dimensions of rail fixing bolts (mm)	基本动额定负荷 Basic rated dynamic load C kN	基本静额定负荷 Basic rated static load C0 kN	静态容许力矩 Static allowable moment kN·m Mx	My	Mz	质量 Mass 滑块 Slider kg	直线导轨 Linear guide kg/m
DHH 15S	24	4.3	9.5	34	26	26	39.5	61.1	6	6	4	M4×4	15	15	60	7.5×4.5×5.3	M4×16	14.7	23.47	0.12	0.1	0.1	0.14	1.45
DHH 25S DHH 25SL	36	5.5	12.5	48	35	35 50	58 78.6	83 103.6	8	12	6	M6×6	22	23	60	11×7×9	M6×20	34.9 42.2	52.85 69.07	0.42 0.56	0.33 0.56	0.33 0.56	0.42 0.57	3.21
DHH 30S DHH 30SL	42	6	16	60	40	40 60	70.1 93	96.5 119.4	8.5	12	6.5	M8×10	26	28	80	14×9×12	M8×25	48.5 58.6	71.87 93.99	0.66 0.88	0.53 0.9	0.53 0.9	0.78 1.03	4.47
DHH 35S DHH 35SL	48	7.5	18	70	50	50 72	80.1 105.8	112.3 138	10.2	12	9	M8×12	29	34	80	14×9×12	M8×25	64.6 77.9	93.88 122.8	1.16 1.54	0.8 1.4	0.8 1.4	1.14 1.52	6.3
DHH 45S DHH 45SL	60	9.5	20.5	86	60	60 80	97.2 128.8	133.6 165.2	16	13	8.5	M10×17	38	45	105	20×14×17	M12×35	103.8 125.3	146.7 191.9	1.98 2.63	1.55 2.68	1.55 2.68	2.08 2.75	10.41
DHH 55S DHH 55SL	70	13	23.5	100	75	75 95	118.1 155.8	160.3 198	17.5	13	12	M12×18	44	53	120	23×16×20	M14×45	153.2 184.9	211.2 276.2	3.69 4.88	2.64 4.57	2.64 4.57	3.25 4.27	15.08

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

DHH-F/ DHH-FL

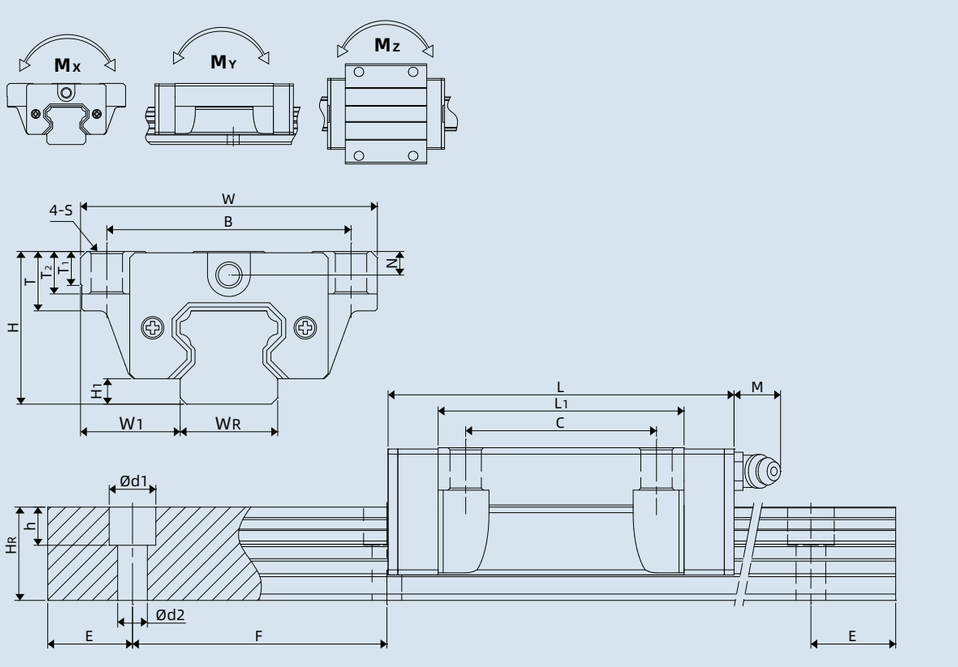


组装尺寸 Assembly dimensions				滑块尺寸 Slider dimensions									导轨尺寸 Rail dimensions				导轨固定螺栓尺寸 Dimensions of rail fixing bolts	基本动额定负荷 Basic rated dynamic load	基本静额定负荷 Basic rated static load	静态容许力矩 Static allowable moment kN·m			质量 Mass	
型号 Model	H	H1	W1	W	B	C	L1	L	T	T1	M	N	S	HR	WR	F	d1×d2×h	(mm)	C kN	C0 kN	MX	MY	MZ	滑块 Slider kg	直线导轨 Linear guide kg/m
DHH 15F	24	4.3	16	47	38	30	39.5	61.1	9	6	6	4	M5	15	15	60	7.5×4.5×5.3	M4×16	14.7	23.47	0.12	0.1	0.1	0.17	1.45
DHH 20F DHH 20FL	30	4.6	21.5	63	53	40	50.5 65.2	76.1 90.8	10	8	12	6	M6	17.5	20	60	9.5×6×8.5	M5×16	27.1 32.7	36.68 47.96	0.27 0.35	0.2 0.35	0.2 0.35	0.4 0.52	2.21
DHH 25F DHH 25FL	36	5.5	23.5	70	57	45	58 78.6	83 103.6	14	8	12	6	M8	22	23	60	11×7×9	M6×20	34.9 42.2	52.82 69.07	0.42 0.56	0.33 0.56	0.33 0.56	0.59 0.8	3.21
DHH 30F DHH 30FL	42	6	31	90	72	52	70.1 93	96.5 119.4	16	8.5	12	6.5	M10	26	28	80	14×9×12	M8×25	48.5 58.6	71.87 93.99	0.66 0.88	0.53 0.9	0.53 0.9	1.1 1.44	4.47
DHH 35F DHH 35FL	48	7.5	33	100	82	62	80.1 105.8	112.3 138	18	10	12	9	M10	29	34	80	14×9×12	M8×25	64.6 77.9	93.88 122.8	1.16 1.54	0.8 1.4	0.8 1.4	1.56 2.06	6.3
DHH 45F DHH 45FL	60	9.5	37.5	120	100	80	97.2 128.8	133.6 165.2	22	15	13	8.5	M12	38	45	105	20×14×17	M12×35	103.8 125.3	146.7 191.9	1.98 2.63	1.55 2.68	1.55 2.68	2.8 3.69	10.41
DHH 55F DHH 55FL	70	13	43.5	140	116	95	118.1 155.8	160.3 198	26.5	17.5	13	12	M14	44	53	120	23×16×20	M14×45	153.2 184.9	211.2 276.2	3.69 4.88	2.64 4.57	2.64 4.57	4.52 5.96	15.08
DHH 65F DHH 65FL	90	15	53.5	170	142	110	144.2 203.6	200.2 259.6	37.5	25	13	15	M16	53	63	150	26×18×22	M16×50	213.2 277.8	287.5 420.2	6.65 9.38	4.27 7.38	4.27 7.38	9.17 12.9	21.18

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

DHH-T / DHH-TL



组装尺寸 Assembly dimensions				滑块尺寸 Slider dimensions										导轨尺寸 Rail dimensions				导轨固定螺栓尺寸 Dimensions	基本动额定负荷 Basic rated dynamic load	基本静额定负荷 Basic rated static load	静态容许力矩 Static allowable moment kN·m			质量 Mass	
型号 Model	H	H1	W1	W	B	C	L1	L	T	T1	T2	M	N	S	HR	WR	F	d1×d2×h	(mm)	C kN	C0 kN	MX	MY	MZ	滑块 Slider kg	直线导轨 Linear guide kg/m
DHH 15T	24	4.3	16	47	38	30	39.5	61.1	9	6	7	6	4	ϕ4.5	15	15	60	7.5×4.5×5.3	M4×16	14.7	23.47	0.12	0.1	0.1	0.17	1.45
DHH 20T DHH 20TL	30	4.6	21.5	63	53	40	50.5 65.2	76.1 90.8	10	8	9.5	12	6	ϕ6	17.5	20	60	9.5×6×8.5	M5×16	27.1 32.7	36.68 47.96	0.27 0.35	0.2 0.35	0.2 0.35	0.4 0.52	2.21
DHH 25T DHH 25TL	36	5.5	23.5	70	57	45	58 78.6	83 103.6	14	8	10	12	6	ϕ7	22	23	60	11×7×9	M6×20	34.9 42.2	52.82 69.07	0.42 0.56	0.33 0.56	0.33 0.56	0.59 0.8	3.21
DHH 30T DHH 30TL	42	6	31	90	72	52	70.1 93	96.5 119.4	16	8.5	10	12	6.5	ϕ9	26	28	80	14×9×12	M8×25	48.5 58.6	71.87 93.99	0.66 0.88	0.53 0.9	0.53 0.9	1.1 1.44	4.47
DHH 35T DHH 35TL	48	7.5	33	100	82	62	80.1 105.8	112.3 138	18	10	13	12	9	ϕ9	29	34	80	14×9×12	M8×25	64.6 77.9	93.88 122.77	1.16 1.54	0.8 1.4	0.8 1.4	1.56 2.06	6.3
DHH 45T DHH 45TL	60	9.5	37.5	120	100	80	97.2 128.8	133.6 165.2	22	15	15	13	8.5	ϕ11	38	45	105	20×14×17	M12×35	103.8 125.3	146.71 191.85	1.98 2.63	1.55 2.68	1.55 2.68	2.8 3.69	10.41
DHH 55T DHH 55TL	70	13	43.5	140	116	95	118.1 155.8	160.3 198	26.5	17	17	13	12	ϕ14	44	53	120	23×16×20	M14×45	153.2 184.9	211.23 276.23	3.69 4.88	2.64 4.57	2.64 4.57	4.52 5.96	15.08
DHH 65T DHH 65TL	90	15	53.5	170	142	110	144.2 203.6	200.2 259.6	37.5	25	25	13	15	ϕ16	53	63	150	26×18×22	M16×50	213.2 277.8	287.48 420.17	6.65 9.38	4.27 7.38	4.27 7.38	9.17 12.9	21.18

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

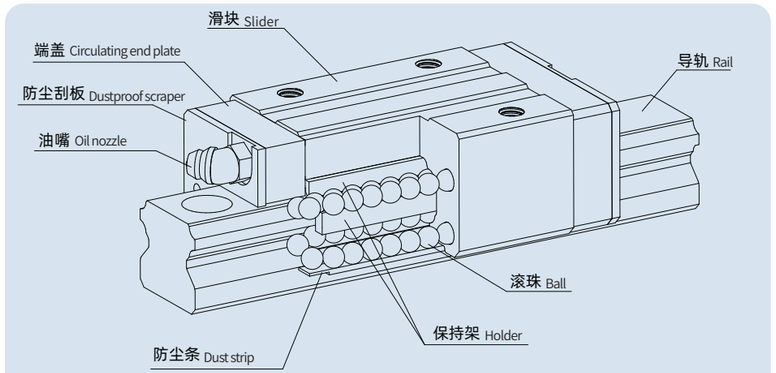
DHI系列滚珠式低组装型直线导轨

DHI Ball-type Low-assembly Linear Guide

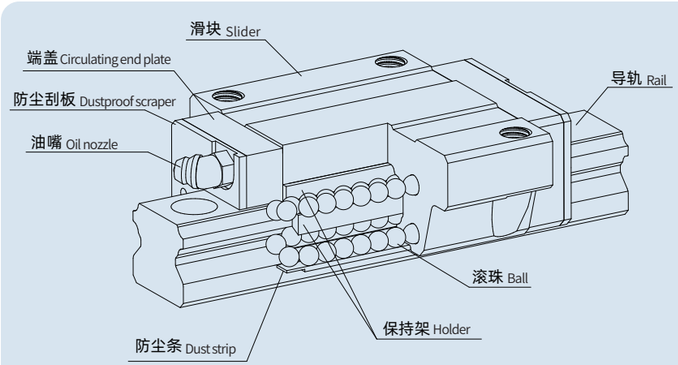
DHI 系列直线导轨， 是四列式等负载设计直线导轨， 各方向的负载能力相等， 具有较高的刚性和负载承受能力。DHI 系列直线导轨具有自动调心能力， 可吸收安装面一定的装配误差， 得到较高的运行精度。与 DHH 系列相比， 降低了其组合高度， 缩短了滑块长度， 更适用于高速自动化产业以及对空间设计有要求的小型设备。

DHI linear guide is a four-row linear guide with equal load design, which has equal load capacity in all directions, high rigidity and load bearing capacity. DHI linear guide has the ability of automatic alignment, which can absorb certain assembly errors on the mounting surface and obtain higher running precision. Compared with DHH series, it reduces the combined height and shortens the slider length, and is more suitable for high-speed automation industry and small equipment with space design requirements.

DHI系列直线导轨结构图例 Legend of DHI Linear Guide Structure



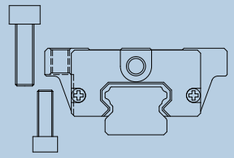
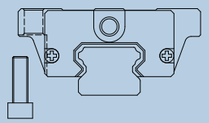
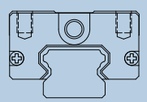
DHI-U



DHI-F

DHI系列产品型号说明

Model Description of DHI Series

样式 Type	型号 Model	图例 Legend	说明 Description	组装高尺寸 (mm) Assembly height	导轨长度 (mm) Rail length	应用领域 Application fields
法兰型 Flange-type	DHI-F（标准型）(Standard type) DHI-FS（S短型）(S Short type)		低组装法兰型，相较于 DHH-F型，组装高度更低。在滑块的法兰部实施了螺纹孔加工，上下部均可安装。 Low-assembly flange-type, lower in assembly height compared with DHH-F type. Threaded holes are processed in the flange part of the slider, and the screws can be installed in both upper and lower directions.	24 ↓ 48	100 ↓ 4000	自动化设备 高速运输装置 精密测量仪 半导体设备 Automation equipment Transporter Precision measuring instrument Semiconductor device
	DHI-T（标准型）(Standard type) DHI-TS（S短型）(S Short type)		低组装法兰型，在滑块的法兰部实施了通孔加工，仅能从下部安装。 Low-assembly flange-type. Through holes are processed in the flange part of the slider, and the screws can only be installed in lower direction.	24 ↓ 48	100 ↓ 4000	
四方型 Square-type	DHI-U（标准型）(Standard type) DHI-US（S短型）(S Short type)		相比于 DHI-F滑块，四方形缩小了滑块的宽度。可以从滑块的顶部进行安装。 Compared with DHI-F slider, square shape reduces the width of slider. It can be installed from the top of the slider.	24 ↓ 48	100 ↓ 4000	

直线导轨副产品型号说明
Linear guide by-product model description

DHI 20 U 2 G1 - L1000 P II+MS/OB/SNB

- 系列:DHI 低组装系列 Series: DHI Low Assembly series
- 规格: Specification 15/20/25/30/35
- 滑块类型: Slider type
  - U 四方型 U Square type
  - US 四方短型 US Square short type
  - F 法兰型 F Flange type
  - FS 法兰短型 FS Flange short type
  - T 法兰型下锁式 T Flange underlock type
  - TS 法兰下锁式短型 TS Flange underlock short type
- 单根导轨组装的滑块个数 Number of sliders assembled for single rail
- 预压等级: Preloading grade
  - G0 无预压 No precompression
  - G1 轻预压 Light preloading
  - G2 中预压 Medium preloading
- 导轨长度（mm） Rail length (mm)
- 精密等级: Precision grade
  - C 普通级 Common Grade C
  - H 高级 High Grade H
  - P 精密级 Precise Grade P
  - SP 超精密级 Ultra-precise Grade SP
  - UP 超高精密级 Super-ultra-precise Grade UP
- 同平面所使用的导轨数: Number of rails used in the same plane
  - 单根无记号 Single rail unmarked
  - II :2根 II : 2 rails
  - ...
- 防尘配件标记: Mark of dustproof fittings
  - 无标记 标准防尘（防尘刮板+防尘条） Standard dustproof (dustproof scraper + dustproof strip) Unmarked
  - MS 防尘刮板+金属刮板+防尘条 Dustproof scraper + metal scraper + dustproof strip MS
  - DS 双防尘刮板+防尘条 Double dustproof scraper + dustproof strip DS
  - DM 双防尘刮板+金属刮板+防尘条 Double dustproof scraper + metal scraper + dustproof strip DM
- 其他配件标记: Other accessories mark
  - OB 自润滑油盒 Lubricating oil box
  - SNB 陶瓷滚珠 Ceramic ball

注：若有其他配件要求，请与PHEAKO联系。
Notes: If you have other parts requirements, please contact PHEAKO.

单出滑块产品型号说明
Single slider product model description

DHI 20 U G1 H + MS/OB

- 系列:DHI 低组装系列 Series: DHI Low Assembly series
- 规格: Specification 15/20/25/30/35
- 滑块类型: Slider type
  - U 四方型 U Square type
  - US 四方短型 US Square short type
  - F 法兰型 F Flange type
  - FS 法兰短型 FS Flange short type
  - T 法兰型下锁式 T Flange underlock type
  - TS 法兰下锁式短型 TS Flange underlock short type
- 预压等级: Preloading grade
  - G0 无预压 No precompression
  - G1 轻预压 Light preloading
  - G2 中预压 Medium preloading
- 精密等级: Precision grade
  - C 普通级 Common Grade C
  - H 高级 High Grade H
- MS 防尘刮板+金属刮板+防尘条 Dustproof scraper + metal scraper + dustproof strip MS
- OB 自润滑油盒 Lubricating oil box

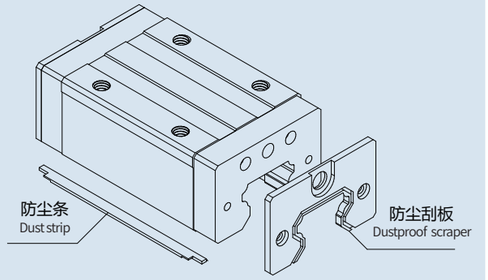
单出导轨产品型号说明
Single guide rail product model description

DHI 20 R - L1000 H +SE/HC

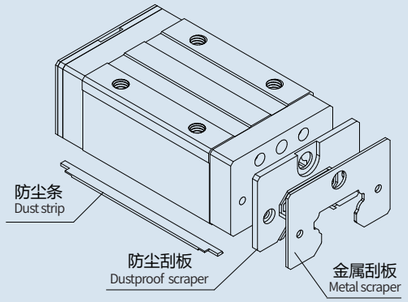
- 系列:DHI 低组装系列 Series: DHI Low Assembly series
- 规格: Specification 15/20/25/30/35
- 单出导轨 Single exit guide
- 精密等级: Precision grade
  - C 普通级 Common Grade C
  - H 高级 High Grade H
- 导轨长度（mm） Length of guide
- SE:铜制螺栓盖 Copper bolt cover
- HC:导轨镀硬铬 Hard chrome plated rail

DHI系列防尘配件说明
Description of DHI Series Dustproof Fittings

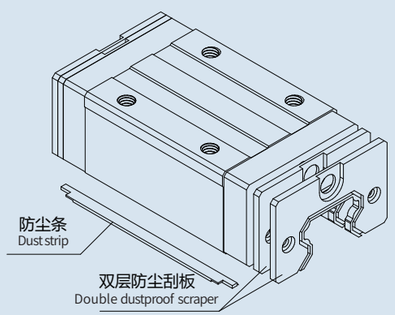
若有下列防尘配件需求时，请于产品型号后面加注相应代码。
If the following dust-proof accessories are required, please add the corresponding code after the product model.



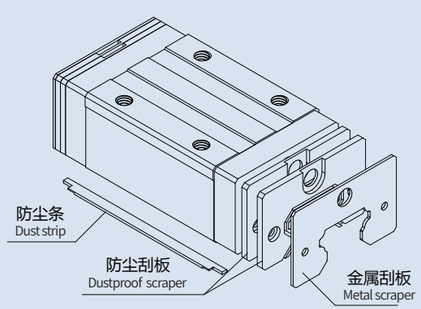
无标记为标准防尘（防尘条+防尘刮板）
Unmarked as standard dustproof (dustproof strip + dustproof scraper)



MS(防尘条+防尘刮板+金属刮板)
MS (dustproof strip + dustproof scraper + metal scraper)



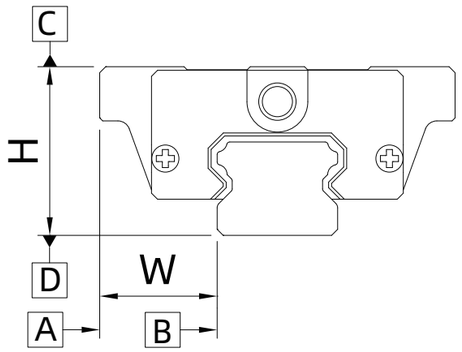
DS(防尘条+双层防尘刮板)
DS (dustproof strip + double dustproof scraper)



DM(防尘条+双层防尘刮板+金属刮板)
DM (dustproof strip + dustproof scraper + metal scraper)

DHI系列直线导轨精度等级

Precision Grade of DHI Series



组合件精度表 Assembly Precision Table 单位 Unit：mm

型号 Model	DHI-15,20				
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)	超精密级 Ultra-precise Grade (SP)	超高精密级 Super-ultra-precise Grade (UP)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.1	±0.03	0 - 0.03	0 - 0.015	0 - 0.008
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.1	±0.03	0 - 0.03	0 - 0.015	0 - 0.008
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.02	0.01	0.006	0.004	0.003
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders	0.02	0.01	0.006	0.004	0.003
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B	（见行走平行度精度表） (See Motion Parallelism Precision Table)				
滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D					

型号 Model	DHI-25,30,35				
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)	超精密级 Ultra-precise Grade (SP)	超高精密级 Super-ultra-precise Grade (UP)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.1	±0.04	0 - 0.04	0 - 0.02	0 - 0.01
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.1	±0.04	0 - 0.04	0 - 0.02	0 - 0.01
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.02	0.015	0.007	0.005	0.003
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders	0.03	0.015	0.007	0.005	0.003
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B	（见行走平行度精度表） (See Motion Parallelism Precision Table)				
滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D					

行走平行度精度表 Motion Parallelism Precision Table

导轨长度（mm） Rail length	精度等级 Precision grade（μm）				
	C	H	P	SP	UP
~100	10	7	3	2	2
100~200	12	8	4	2	2
200~300	14	9	5	2	2
300~500	16	10	6	3	2
500~700	18	12	7	3	3
700~900	20	14	8	4	3
900~1100	22	16	9	4	3
1100~1500	24	18	11	6	4
1500~1900	26	20	13	6	4
1900~2500	28	22	15	8	5
2500~3100	30	24	17	10	6
3100~3600	33	26	19	12	6
3600~4000	36	28	21	14	7

预压力 Preloading force

预压力是通过改变装填钢球的直径来控制钢球和沟道之间的间隙变化从而得到的滑块预负载。增加钢球的直径，能消除直线导轨的间隙，提高其刚性，但过重的预压也会降低直线导轨的使用寿命，所以请根据实际应用情况选择合适预压。

Preloading force is the slider preloading by changing the diameter of the loaded steel ball to control the clearance between the steel ball and the channel. Increasing the diameter of steel ball can eliminate the clearance of linear guide and improve its rigidity, but too heavy preloading will also reduce the service life of linear guide, so please choose appropriate preloading according to actual application.

预压等级表 List of Preloading Grade

预压等级 Preloading grade	标记 Marking	预压力 Preloading force	使用条件 Service conditions
无预压 No preloading	G0	0~0.02C	负载方向固定且冲击力小，精度要求低 Fixed load direction, small impact force and low precision requirement
轻预压 Light preloading	G1	0.03~0.05C	轻负载，高精度 Light load, high precision
中预压 Medium preloading	G2	0.06~0.08C	刚性要求高，且受振动、冲击 High rigidity requirements, and subject to vibration and impact

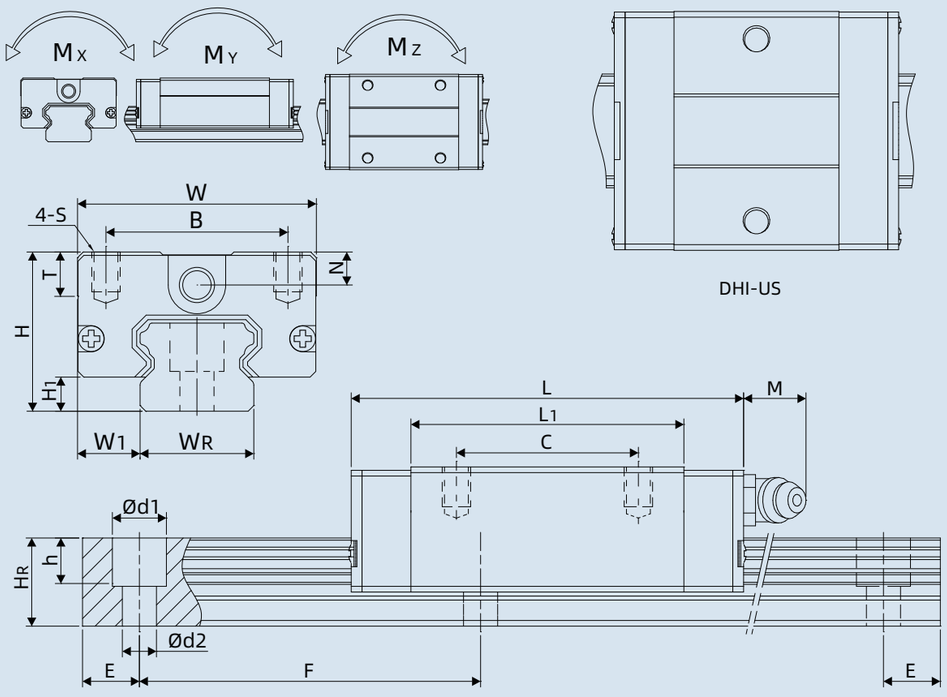
注：预压力中C为基本动额定负荷

Notes: In the preloading force, C is the basic rated dynamic load.

DHI系列直线导轨尺寸表

Structural Characteristics of Precise Linear Guides

DHI-U/ DHI-US

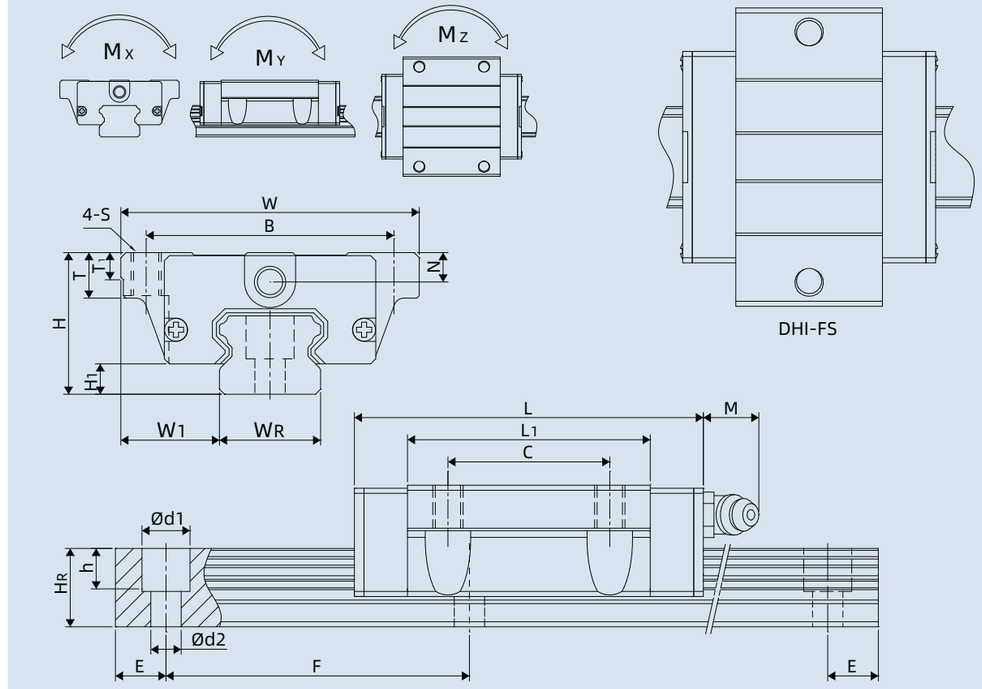


型号 Model	组装尺寸 Assembly dimensions H	H1	W1	滑块尺寸 Slider dimensions W	B	C	L1	L	T	M	N	S	导轨尺寸 Rail dimensions HR	WR	F	d1×d2×h	导轨固定螺栓尺寸 Dimensions of rail fixing bolts (mm)	基本动额定负荷 Basic rated dynamic load C kN	基本静额定负荷 Basic rated static load C0 kN	静态容许力矩 Static allowable moment kN·m MX	MY	MZ	质量 Mass 滑块 Slider kg	直线导轨 Linear guide kg/m
DHI 15US	24	4.5	9.5	34	26	-	23.1	40.3	6	6	5.5	M4×6	12.5	15	60	7.5×4.5×5.3	M4×16	5.35	9.4	0.08	0.04	0.04	0.09	1.25
DHI 15U						26	39.9	57.1										7.83	16.19	0.13	0.1	0.1	0.15	
DHI 20US	28	6	11	42	32	-	29	50.6	7.5	12	6	M5×7	15.5	20	60	9.5×6×8.5	M5×16	7.23	12.74	0.13	0.06	0.06	0.15	2.08
DHI 20U						32	49	70.6										10.31	21.13	0.22	0.16	0.16	0.24	
DHI 25US	33	7	12.5	48	35	-	35.5	59.5	8	12	8	M6×9	18	23	60	11×7×9	M6×20	11.4	19.5	0.23	0.12	0.12	0.25	2.67
DHI 25U						35	59.1	83.1										16.27	32.4	0.38	0.32	0.32	0.41	
DHI 30US	42	10	16	60	40	-	41.5	69.5	9	12	8	M8×12	23	28	80	14×9×12	M8×25	16.42	28.1	0.4	0.21	0.21	0.45	4.35
DHI 30U						40	70.1	98.1										23.7	47.46	0.68	0.55	0.55	0.76	
DHI 35US	48	11	18	70	50	-	45	75	10	12	8.5	M8×12	27.5	34	80	14×9×12	M8×25	22.66	37.38	0.56	0.31	0.31	0.74	6.14
DHI 35U						50	78	108										33.35	64.84	0.98	0.69	0.69	1.1	

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

DHI-F / DHI-FS

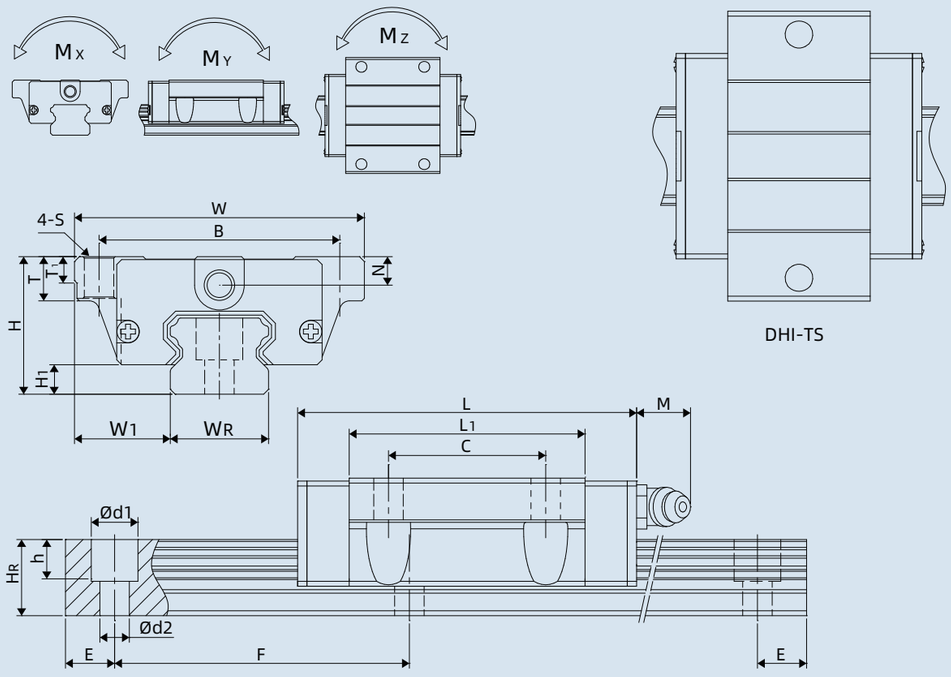


型号 Model	组装尺寸 Assembly dimensions H	H1	W1	滑块尺寸 Slider dimensions W	B	C	L1	L	T	T1	M	N	S	导轨尺寸 Rail dimensions HR	WR	F	d1×d2×h	导轨固定螺栓尺寸 Dimensions of rail fixing bolts (mm)	基本动额定负荷 Basic rated dynamic load C kN	基本静额定负荷 Basic rated static load C0 kN	静态容许力矩 Static allowable moment kN·m MX	MY	MZ	质量 Mass 滑块 Slider kg	直线导轨 Linear guide kg/m
DHI 15FS	24	4.5	18.5	52	41	-	23.1	40.3	7	5	6	5.5	M5	12.5	15	60	7.5×4.5×5.3	M4×16	5.35	9.4	0.08	0.04	0.04	0.12	1.25
DHI 15F						26	39.9	57.1											7.83	16.19	0.13	0.1	0.1	0.21	
DHI 20FS	28	6	19.5	59	49	-	29	50.6	9	7	12	6	M6	15.5	20	60	9.5×6×8.5	M5×16	7.23	12.74	0.13	0.06	0.06	0.19	2.08
DHI 20F						32	49	70.6											10.31	21.13	0.22	0.16	0.16	0.32	
DHI 25FS	33	7	25	73	60	-	35.5	59.5	10	7.5	12	8	M8	18	23	60	11×7×9	M6×20	11.4	19.5	0.23	0.12	0.12	0.35	2.67
DHI 25F						35	59.1	83.1											16.27	32.4	0.38	0.32	0.32	0.59	
DHI 30FS	42	10	31	90	72	-	41.5	69.5	10	7	12	8	M10	23	28	80	14×9×12	M8×25	16.42	28.1	0.4	0.21	0.21	0.62	4.35
DHI 30F						40	70.1	98.1											23.7	47.46	0.68	0.55	0.55	1.04	
DHI 35FS	48	11	33	100	82	-	45	75	13	10	12	8.5	M10	27.5	34	80	14×9×12	M8×25	22.66	37.3	0.56	0.31	0.31	0.84	6.14
DHI 35F						50	78	108											33.35	64.84	0.98	0.69	0.69	1.45	

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

DHI-T/ DHI-TS



型号 Model	组装尺寸 Assembly dimensions H	H1	W1	滑块尺寸 Slider dimensions W	B	C	L1	L	T	T1	M	N	S	导轨尺寸 Rail dimensions HR	WR	F	d1×d2×h	导轨固定螺栓尺寸 Dimensions (mm)	基本动额定负荷 Basic rated C kN	基本静额定负荷 Basic rated C0 kN	静态容许力矩 Static allowable moment kN·m Mx	My	Mz	质量 Mass 滑块 Slider kg	直线导轨 Linear guide kg/m
DHI 15TS	24	4.5	18.5	52	41	-	23.1	40.3	7	5	6	5.5	ϕ4.5	12.5	15	60	7.5×4.5×5.3	M4×16	5.35	9.4	0.08	0.04	0.04	0.12	1.25
DHI 15T						26	39.9	57.1											7.83	16.19	0.13	0.1	0.1	0.21	
DHI 20TS	28	6	19.5	59	49	-	29	50.6	9	7	12	6	ϕ5.5	15.5	20	60	9.5×6×8.5	M5×16	7.23	12.74	0.13	0.06	0.06	0.19	2.08
DHI 20T						32	49	70.6											10.31	21.13	0.22	0.16	0.16	0.32	
DHI 25TS	33	7	25	73	60	-	35.5	59.5	10	7.5	12	8	ϕ7	18	23	60	11×7×9	M6×20	11.4	19.5	0.23	0.12	0.12	0.35	2.67
DHI 25T						35	59.1	83.1											16.27	32.4	0.38	0.32	0.32	0.59	
DHI 30TS	42	10	31	90	72	-	41.5	69.5	10	7	12	8	ϕ9	23	28	80	14×9×12	M8×25	16.42	28.1	0.4	0.21	0.21	0.62	4.35
DHI 30T						40	70.1	98.1											23.7	47.46	0.68	0.55	0.55	1.04	
DHI 35TS	48	11	33	100	82	-	45	75	13	10	12	8.5	ϕ9	27.5	34	80	14×9×12	M8×25	22.66	37.38	0.56	0.31	0.31	0.84	6.14
DHI 35T						50	78	108											33.35	64.84	0.98	0.69	0.69	1.45	

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

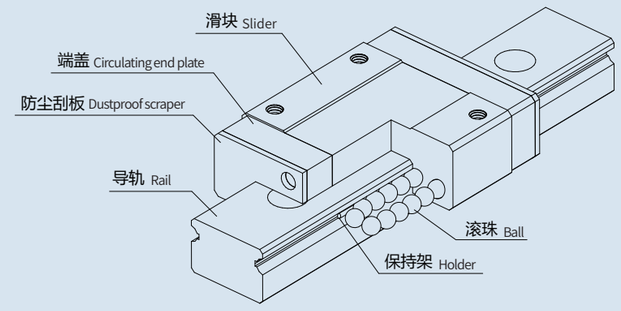
MHS/MHW系列滚珠式微型直线导轨

MHS/MHW Ball Microtype Linear Guide

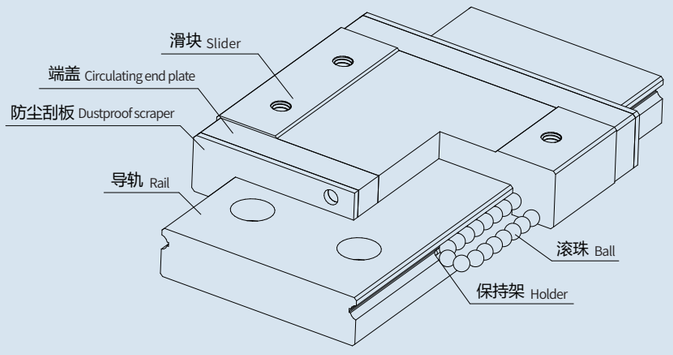
MHS/MHW 系列微型滚珠直线导轨采用两列滚珠哥德式四点接触设计， 可承受各个方向的负载，刚性强，精度高，而且滑块体积小、轻量化，适用于各种小型化设备。

MHS/MHW series adopts Gothic four-point contact design with two rows of balls, which can bear loads in all directions, has strong rigidity and high precision, and the slider is small and lightweight, which is suitable for various miniaturized equipment.

MHS/MHW系列直线导轨结构图例 MHS/MHW Linear Guide Structure Legend



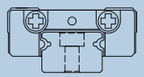
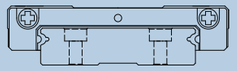
MHS-U



MHW-U

MHS/MHW系列产品型号说明

Model Description of MHS/MHW Series

样式 Type	型号 Model	图例 Legend	说明 Description	组装高尺寸 (mm) Assembly height	导轨长度 (mm) Rail length	应用领域 Application fields
四方型 Square type	MHS-UL（加长型）(Lengthened type) MHS-U（标准型）(Standard type) MHS-US（短型）(Short type)		微型四方型，体积小，轻量化，适用于小型化设备使用。滑块滑轨皆使用不锈钢材质，具有耐腐蚀的特性。 Low-assembly flange-type, lower in assembly height compared with DHH-F type. Threaded holes are processed in the flange part of the slider, and the screws can be installed in both upper and lower directions.	6 ↓ 16	100 ↓ 2000	3D打印 机械手臂 电子仪器设备 半导体设备 3D printing Robotic arm Electronic instruments and equipment Semiconductor device
宽型 Broad type	MHW-UL（加长型）(Lengthened type) MHW-U（标准型）(Standard type)		微型四方宽幅型，相较于MHS-U型，加宽了导轨设计，大幅提高了产品承载负荷能力。滑块导轨皆使用不锈钢材质，具有耐腐蚀的特性。 Micro square type with widened rails (compared with MHS-U type), greatly improving the load bearing capacity of products. Sliders and rails are made of stainless steel, which has corrosion resistance.	6.5 ↓ 16	100 ↓ 2000	

直线导轨副产品型号说明

Linear guide by-product model description

MHS 15 U 2 G1 - L1000 P II

- 系列：MHS 微型标准 Series: MHS Micro standard；MHW 微型宽型 MHW miniature wide type
- 规格：Specification — MHS 5/7/9/12/15；MHW 5/7/9/12/15
- 滑块类型：Slider type — US 四方短型 US Square lengthened type；U 四方型 U Square type；UL 四方长型 UL Square short type
- 单根导轨组装的滑块个数 Number of sliders assembled for single rail
- 同平面所使用的导轨数：Number of rails used in the same plane — 单根无记号 Single rail unmarked；II：2根 II：2 rails；…
- 精密等级：Precision grade — C 普通级 Common Grade C；H 高级 High Grade H；P 精密级 Precise Grade P
- 导轨长度(mm) Rail length(mm)
- 预压等级：Preloading grade — （无标记） 有间隙 (unmarked) with gaps；G0 无预压 No precompression；G1 轻预压 Light preloading

单出滑块产品型号说明

Single slider product model description

MHS 15 U G1 H

- 系列：MHS 微型标准 Series: MHS Micro standard；MHW 微型宽型 MHW miniature wide type
- 规格：Specification — MHS 5/7/9/12/15；MHW 5/7/9/12/15
- 滑块类型：Slider type — US 四方短型 US Square lengthened type；U 四方型 U Square type；UL 四方长型 UL Square short type
- 精密等级：Precision grade — C 普通级 Common Grade C；H 高级 High Grade H
- 预压等级：Preloading grade — （无标记） 有间隙 (unmarked) with gaps；G0 无预压 No precompression；G1 轻预压 Light preloading

单出导轨产品型号说明

Single guide rail product model description

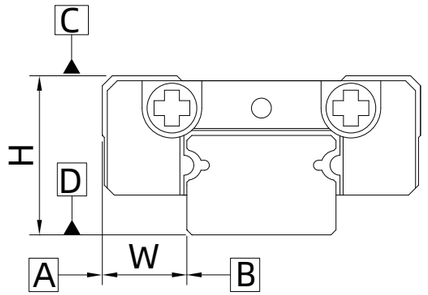
MHS 15 R - L1000 H

- 系列：MHS 微型标准 Series: MHS Micro standard；MHW 微型宽型 MHW miniature wide type
- 规格：Specification — MHS 5/7/9/12/15；MHW 5/7/9/12/15
- 单出导轨 Single guide rail product
- 精密等级：Precision grade — C 普通级 Common Grade C；H 高级 High Grade H
- 导轨长度(mm) Rail length(mm)

企业篇 The enterprise
产品篇 Products&Solutions
构造特点 Structural Characteristics
产品一览 List of Products
DHH系列 DHH Series
DHI系列 DHI Series
MHS/MHW系列 MHS/MHW Series
RH系列 RH Series
使用篇 Applications

MHS/MHW系列直线导轨精度等级

Instance Specification of MHS/MHW Series



组合件精度表 Assembly Precision Table 单位 Unit：mm

型号 Model	MHS/MHW-5, 7, 9, 12, 15		
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.04	±0.02	±0.01
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.04	±0.025	±0.015
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.03	0.015	0.007
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders	0.03	0.02	0.01
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B 滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D	（见行走平行度精度表） (See Motion Parallelism Precision Table)		

行走平行度精度表 Motion Parallelism Precision Table

导轨长度（mm） Rail length	精度等级 Precision grade（μm）			导轨长度（mm） Rail length	精度等级 Precision grade（μm）		
	C	H	P		C	H	P
~50	12	6	2	800~1000	23	16	9
50~100	13	7	3	1000~1200	24	17	11
100~150	14	8	3	1200~1300	25	18	11
150~200	15	9	4	1300~1400	26	19	12
200~250	16	10	5	1400~1500	27	19	12
250~330	17	11	5	1500~1600	28	20	13
330~400	18	11	6	1600~1700	29	20	14
400~500	19	12	6	1700~1800	30	21	14
500~650	20	13	7	1800~1900	30	21	15
650~800	21	14	8	1900~2000	31	22	15

预压力 Preloading force

MHS/MHW系列提供有间隙、无预压、轻预压三种预压力选择，具体选择如下表所示。

MHS/MHW series offers three options of preloading force: clearance, no preloading and light preloading, as shown in the following table.

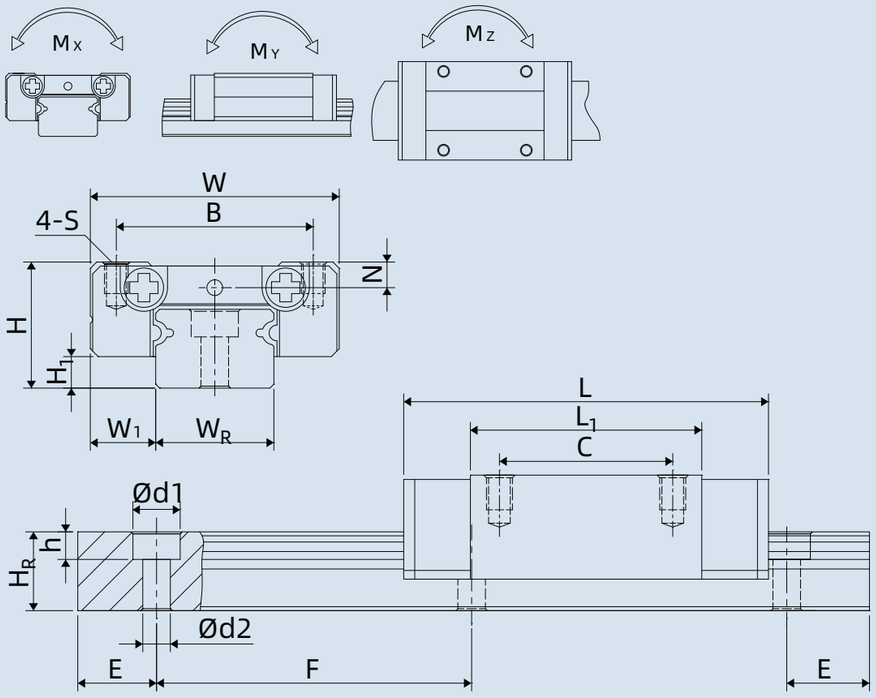
预压等级表 List of Preloading Grade

预压等级 Preloading grade	标记 Marking	预压力 Preloading force	适用精度 Applicable precision
有间隙 With clearance	无标记 Unmarked	间隙4~10μm Clearance 4-10μm	C
无预压 No preloading	G0	0	C~P
轻预压 Light preloading	G1	0.02C	C~P

注：预压力中C为基本动额定负荷 Notes: In the preloading force, C is the basic rated dynamic load.

MHS/MHW系列直线导轨尺寸表

MHS-U/ MHS-UL/MHS-US

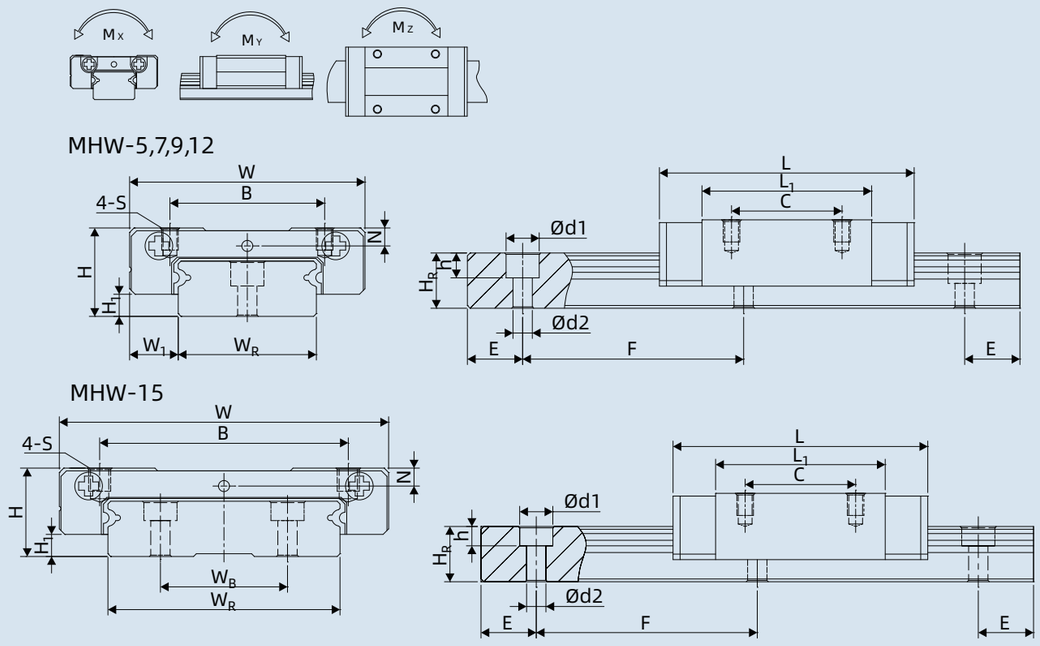


型号 Model	组装尺寸 Assembly dimensions			滑块尺寸 Slider dimensions						导轨尺寸 Rail dimensions				导轨固定螺栓尺寸 Dimensions of rail fixing bolts	基本动额定负荷 Basic rated dynamic load	基本静额定负荷 Basic rated static load	静态容许力矩 Static allowable moment kN·m			质量 Mass	
	H	H1	W1	W	B	C	L1	L	N	S	HR	WR	F	d1×d2×h	（mm）	C kN	C0 kN	MX	MY	MZ	滑块 Slider kg	直线导轨 Linear guide kg/m
MHS 5U	6	1	3.5	12	8	-	9.6	16	1	M2×1.5	3.7	5	15	3.6×2.4×0.8	M2×6	0.33	0.57	1.67	0.98	0.98	0.008	0.15
MHS 5UL							12.6	19								0.47	0.9	2.35	2.06	2.06	0.01	
MHS 7US						-	9.6	19								0.94	1.14	4.12	1.77	1.47	0.009	
MHS 7U	8	1.5	5	17	12	8	14.3	23.5	1.85	M2×2.5	5	7	15	4.2×2.4×2.6	M2×6	0.98	1.25	4.71	2.84	2.84	0.01	0.22
MHS 7UL						13	21.6	31								1.37	1.96	7.65	4.81	4.81	0.015	
MHS 9US						-	11.9	21.5								1.18	1.48	6.87	2.94	2.35	0.012	
MHS 9U	10	2	5.5	20	15	10	20.8	30	2.65	M3×3	6	9	20	6×3.5×3.5	M3×8	1.86	2.55	11.77	7.36	7.36	0.016	0.38
MHS 9UL						16	30.9	40.5								2.55	4.02	19.62	18.64	18.64	0.026	
MHS 12US						-	13	25								2.21	2.38	14.72	5.2	4.51	0.014	
MHS 12U	13	3	7.5	27	20	15	21.6	34	2.8	M3×3.5	8	12	25	6×3.5×4.5	M3×8	2.85	3.92	25.51	13.73	13.73	0.034	0.65
MHS 12UL						20	32	44								3.73	5.89	38.26	36.3	36.3	0.054	
MHS 15US						-	17.7	32								3.49	3.89	30.38	11.76	9.8	0.035	
MHS 15U	16	4	8.5	32	25	20	27.9	42	3.2	M3×4	10	15	40	6.5×3.5×4.5	M3×10	4.61	5.59	45.08	21.56	21.56	0.059	1.06
MHS 15UL						25	42.8	57								6.38	9.12	73.5	57.82	57.82	0.092	

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

MHW-U/ MHW-UL



组装尺寸 Assembly dimensions				滑块尺寸 Slider dimensions						导轨尺寸 Rail dimensions					导轨固定螺栓尺寸 Dimensions	基本动额定负荷 Basic rated	基本静额定负荷 Basic rated	静态容许力矩 Static allowable moment kN·m			质量 Mass	
型号 Model	H	H1	W1	W	B	C	L1	L	N	S	HR	WR	WB	F	d1×d2×h	(mm)	C kN	C0 kN	MX	MY	MZ	滑块 Slider kg	直线导轨 Linear guide kg/m
MHW 5U	6.5	1.5	3.5	17	13	-	13.6	20.5	1	M2.5×1.5	4	10	-	20	4.8×2.9×1.6	M2.5×7	0.47	0.9	4.61	2.16	2.16	0.016	0.34
MHW 5UL							17.6	24.5									0.62	1.31	6.86	4.12	4.12		
MHW 7U	9	2	5.5	25	19	10	22	31.5	1.8	M3×3	5.5	14	-	30	6×3.5×3.2	M3×8	1.37	2.06	15.7	7.16	7.16	0.02	0.51
MHW 7UL						19	32.5	42									1.77	3.14	23.45	15.5	15.5	0.029	
MHW 9U	12	3	6	30	21	12	28.6	38.5	2.4	M3×3	7	18	-	30	6×3.5×4.5	M3×8	2.75	4.12	40.12	18.93	18.93	0.04	0.91
MHW 9UL						23	40.4	50.3									3.43	5.89	54.54	34.04	34.04	0.057	
MHW 12U	14	3	8	40	28	15	31	44	2.8	M3×3.5	8	24	-	40	8×4.5×4.5	M4×10	3.92	5.59	70.34	27.76	27.76	0.071	1.49
MHW 12UL						28	46.3	59.3									5.1	8.24	102.71	57.39	57.39	0.103	
MHW 15U	16	4	9	60	45	20	39.4	55	3.2	M4×4.5	10	42	23	40	8×4.5×4.5	M4×12	6.77	9.22	199.34	56.7	56.7	0.143	2.86
MHW 15UL						35	58.7	74.3									8.93	13.83	299.01	122.6	122.6	0.215	

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

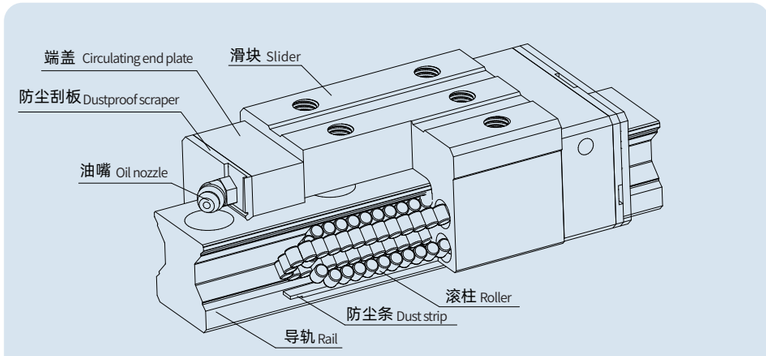
RH系列滚柱式标准型直线导轨

RH Roller-type Standard Linear Guide

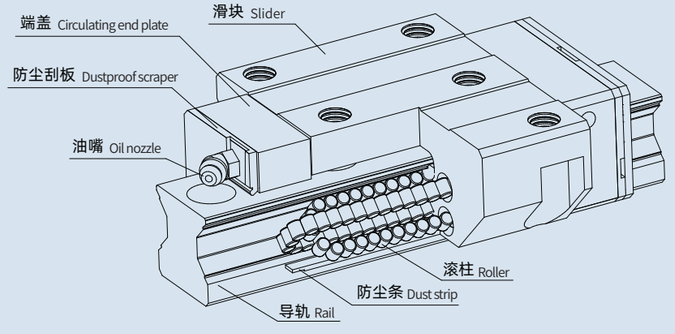
RH 系列直线导轨为了实现超高刚性以及超重负荷能力， 使用滚柱滚动体线接触的方式代替普通的钢球滚动体点接触的方式。 滚柱滚动体在承受高负载的时候仅仅只会造成微量的弹性形变， 滚动体与导轨滑块间 45°的接触角设计， 让直线导轨滑块得到四方向等高刚性、 高负荷的能力， 延长了直线导轨的使用寿命， 适用于高速自动化产业机械以及高刚性需求的设备。

In order to achieve ultra-high rigidity and overload capacity, RH series uses the way of roller rolling body line contact instead of the ordinary way of steel ball rolling body point contact. When the roller bears high load, it will only cause a small amount of elastic deformation. The contact angle design between the roller and the rail slider is 45°, so that the rail slider can obtain the capacity of high rigidity and high load such as square, and prolong the service life of the linear guide. It is suitable for high-speed automatic industrial machinery and equipment with high rigidity requirements.

RH系列直线导轨结构图例 Legend of RH Linear Guide Structure



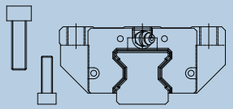
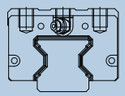
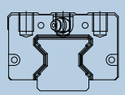
RH-U



RH-F

RH系列产品型号说明

Model Description of RH Series

样式 Type	型号 Model	图例 Legend	说明 Description	组装高尺寸 (mm) Assembly height	导轨长度 (mm) Rail length	应用领域 Application fields
法兰型 Flange-type	RH-FL（加长型）(Lengthened type) RH-F（标准型）(Standard type)		法兰型滑块，安装孔为螺纹孔，上下方向均可安装。 Flange-type slider; the installation hole is threaded hole, and the screws can be installed in both upper and lower directions.	36 ↓ 90	100 ↓ 4000	自动化设备 重型传送装置 加工中心 磨床 放电加工机 大型龙门机床 Automation equipment Heavy duty conveyor Machining centers Grinding machines Electrical discharge machining machines Large gantry machine tools
四方型 Square-type	RH-UL（加长型）(Lengthened type) RH-U（标准型）(Standard type)		四方形缩小了滑块的宽度。可以从滑块的顶部进行安装。 The square reduces the width of the slider. It can be installed from the top of the slider.	40 ↓ 90	100 ↓ 4000	
	RH-SL（加长型）(Lengthened type) RH-S（标准型）(Standard type)		相比于RH-U，RH-S降低了滑块的高度。可以从滑块的顶部进行安装。 Compared with RH-U, RH-S reduces the height of slider. It can be installed from the top of the slider.	36 ↓ 70	100 ↓ 4000	

直线导轨副产品型号说明

Linear guide by-product model description

RH 30 U 2 G1 - L1000 P II+MS/OB/HC

- 系列:RH 滚柱系列 Series: RH roller series
- 规格: Specification 25/30/35/45/55/65
- 滑块类型: Slider type
  - U 四方型 Square type
  - UL 四方长型 Square lengthened type
  - S 四方低组型 Square low assembly type
  - SL 四方低组长型 Square low assembly lengthened typee
  - F 法兰型 Flange type
  - FL 法兰长型 Flange lengthened type
- 单根导轨组装的滑块个数 Number of sliders assembled for single rail
- 预压等级: Preloading grade
  - G0 无预压 No precompression
  - G1 轻预压 Light preloading
  - G2 中预压 Medium preloading
  - G3 重预压 Heavy precompression
- 导轨长度（mm）Rail length (mm)
- 防尘配件标记: Mark of dustproof fittings
  - 无标记 标准防尘（防尘刮板+防尘条） Standard dustproof (dustproof scraper + dustproof strip) Unmarked
  - MS 防尘刮板+金属刮板+防尘条 Dustproof scraper + metal scraper + dustproof strip MS
  - DS 双防尘刮板+防尘条 Double dustproof scraper + dustproof strip DS
  - DM 双防尘刮板+金属刮板+防尘条 Double dustproof scraper + metal scraper + dustproof strip DM
- 其他配件标记: Other accessories mark
  - OB 自润滑油盒 Lubricating oil box
  - HC 导轨镀硬铬 Hard chrome plated rail
- 同平面所使用的导轨数: Number of rails used in the same plane
  - 单根无记号 Single rail unmarked
  - II:2根 II: 2 rails
  - …
- 精密等级: Precision grade
  - C 普通级 Common Grade C
  - H 高级 High Grade H
  - P 精密级 Precise Grade P
  - SP 超精密级 Ultra-precise Grade SP
  - UP 超高精密级 Super-ultra-precise Grade UP

注：1.若有其他配件要求，请与PHEAKO联系
2.滑块类型为S的是四方U型滑块的低组式滑块，其组装高度与同规格法兰F型滑块一致。

Notes: 1. If you have other parts requirements, please contact PHEAKO;
2. The sliding block type S is a low group sliding block of the square U-shaped sliding block, and its assembly height is consistent with the flange F-type sliding block of the same specification.

单出滑块产品型号说明

Single slider product model description

RH 30 U G1 H + MS/OB

- 系列:RH 滚柱系列 Series: RH roller series
- 规格: Specification 25/30/35/45/55/65
- 滑块类型: Slider type
  - U 四方型 Square type
  - UL 四方长型 Square lengthened type
  - S 四方低组型 Square low assembly type
  - SL 四方低组长型 Square low assembly lengthened typee
  - F 法兰型 Flange type
  - FL 法兰长型 Flange lengthened type
- MS 防尘刮板+金属刮板+防尘条 Dustproof scraper + metal scraper + dustproof strip MS
- OB 自润滑油盒 Lubricating oil box
- 精密等级: Precision grade
  - C 普通级 Common Grade C
  - H 高级 High Grade H
- 预压等级: Preloading grade
  - G0 无预压 No precompression
  - G1 轻预压 Light preloading
  - G2 中预压 Medium preloading

单出导轨产品型号说明

Single guide rail product model description

RH 30 R - L1000 H +SE/HC

- 系列:RH 滚柱系列 Series: RH roller series
- 规格: Specification 25/30/35/45/55/65
- 单出导轨 Single exit guide
- SE:铜制螺栓盖 Copper bolt cover
- HC:导轨镀硬铬 Hard chrome plated rail
- 精密等级: Precision grade
  - C 普通级 Common Grade C
  - H 高级 High Grade H
- 导轨长度（mm）Rail length (mm)

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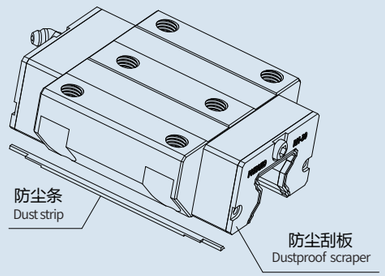
RH系列防尘配件说明

Instance Specification of RH Series

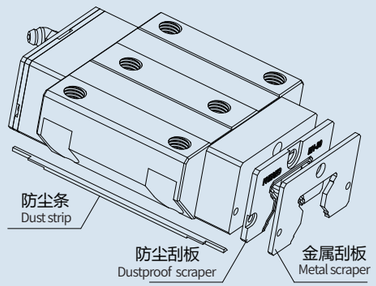
若有下列防尘配件需求时，请于产品型号后面加注相应代码。

If the following dust-proof accessories are required, please add the corresponding code after the product model.



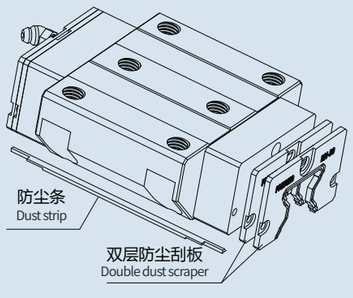
无标记为标准防尘（防尘条＋防尘刮板）

Unmarked as standard dustproof (dustproof strip + dustproof scraper)



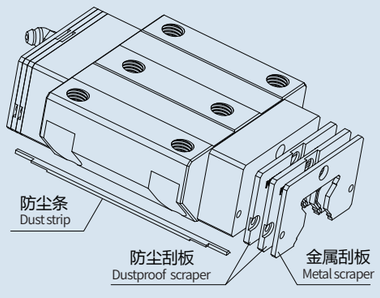
MS(防尘条＋防尘刮板+金属刮板)

MS (dustproof strip + dustproof scraper + metal scraper)



DS(防尘条＋双层防尘刮板)

DS (dustproof strip + double dustproof scraper)

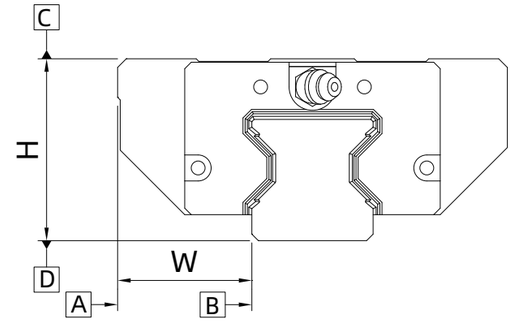


DM(防尘条+双层防尘刮板+金属刮板)

DM (dustproof strip + dustproof scraper + metal scraper)

RH系列直线导轨精度等级

Precision Grade of RH Series



组合件精度表 Assembly Precision Table　　**单位 Unit：mm**

型号 Model	RH-25,30,35				
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)	超精密级 Ultra-precise Grade (SP)	超高精密级 Super-ultra-precise Grade (UP)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.1	±0.04	0 - 0.04	0 - 0.02	0 - 0.01
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.1	±0.04	0 - 0.04	0 - 0.02	0 - 0.01
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.03	0.015	0.007	0.005	0.003
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders	0.03	0.015	0.007	0.005	0.003
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B	（见行走平行度精度表） (See Motion Parallelism Precision Table)				
滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D					

型号 Model	RH-45,55				
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)	超精密级 Ultra-precise Grade (SP)	超高精密级 Super-ultra-precise Grade (UP)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.1	±0.05	0 - 0.05	0 - 0.03	0 - 0.02
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.1	±0.05	0 - 0.05	0 - 0.03	0 - 0.02
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.03	0.015	0.007	0.005	0.003
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders	0.03	0.02	0.01	0.007	0.005
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B	（见行走平行度精度表） (See Motion Parallelism Precision Table)				
滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D					

型号 Model	RH-65				
精度等级 Precision grade	普通级 Precision grade (C)	高级 High Grade (H)	精密级 Precise Grade (P)	超精密级 Ultra-precise Grade (SP)	超高精密级 Super-ultra-precise Grade (UP)
高度H的容许尺寸误差 Allowable dimensional error of Height (H)	±0.1	±0.07	0 - 0.07	0 - 0.05	0 - 0.03
宽度W的容许尺寸误差 Allowable dimensional error of Width (W)	±0.1	±0.07	0 - 0.07	0 - 0.05	0 - 0.03
成对滑块高度H的相互误差 Mutual error of Height (H) of paired sliders	0.03	0.02	0.01	0.007	0.005
成对滑块宽度W的相互误差 Mutual error of Width (W) of paired sliders	0.03	0.025	0.015	0.01	0.007
滑块A面对轨道B面的行走平行度 Motion parallelism of slider A facing rail B	（见行走平行度精度表） (See Motion Parallelism Precision Table)				
滑块C面对轨道D面的行走平行度 Motion parallelism of slider C facing rail D					

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行走平行度精度表 Motion Parallelism Precision Table

导轨长度（mm） Rail length	精度等级 Precision grade（μm）				
	C	H	P	SP	UP
~100	10	7	3	2	2
100~200	12	8	4	2	2
200~300	14	9	5	2	2
300~500	16	10	6	3	2
500~700	18	12	7	3	3
700~900	20	14	8	4	3
900~1100	22	16	9	4	3
1100~1500	24	18	11	6	4
1500~1900	26	20	13	6	4
1900~2500	28	22	15	8	5
2500~3100	30	24	17	10	6
3100~3600	33	26	19	12	6
3600~4000	36	28	21	14	7

预压力 Preloading force

预压力是通过增加滚柱的直径，消除直线导轨与滑块的间隙，提高其刚性，从而得到滑块的预负载。请根据实际应用情况选择合适预压。

Preloading force is to increase the diameter of the roller, eliminate the clearance between the linear guide and the slider, and improve its rigidity, thus obtaining the preloading of the slider. Please select the appropriate preloading force according to the actual application.

预压等级表

预压等级 Preloading grade	标记 Marking	预压力 Preloading force	使用条件 Service conditions
轻预压 Light preloading	G1	0.02~0.04C	负载方向固定且冲击小，精度要求低 Fixed load direction, small impact force and low precision requirement
中预压 Medium preloading	G2	0.07~0.09C	负载要求小但是有一定的刚性需求，精度要求高 Small load requirements, but with certain rigidity requirement and high precision requirement
重预压 Heavy preloading	G3	0.12~0.14C	刚性要求高，且受强振动、冲击 High rigidity requirements, and subject to vibration and impact

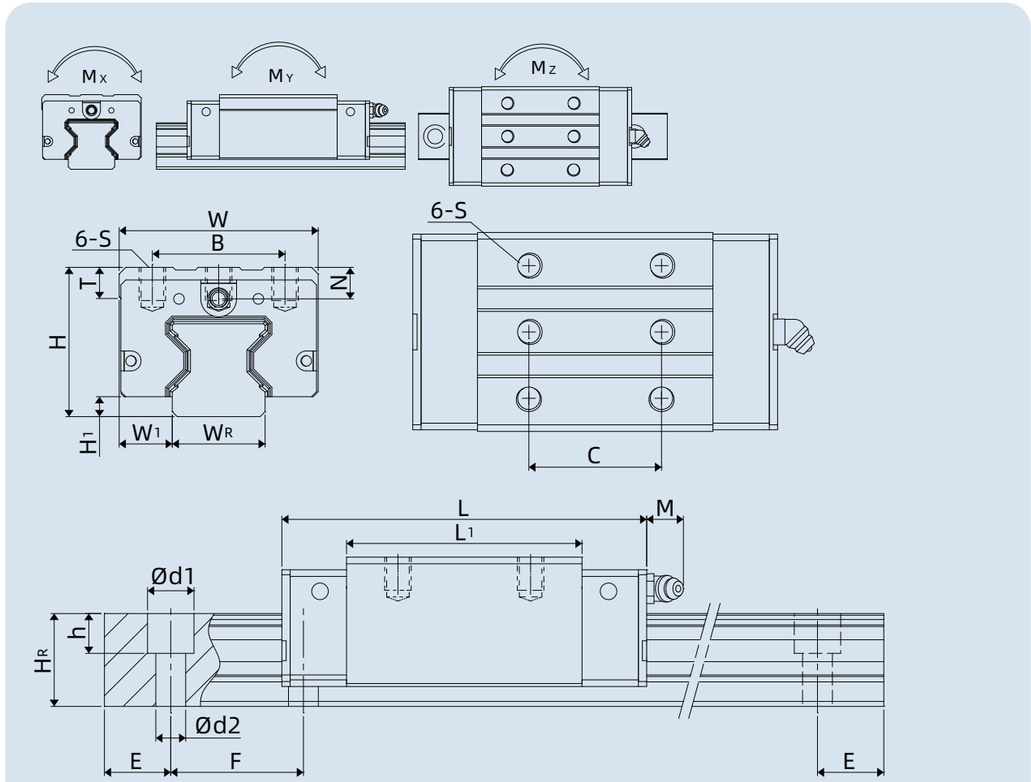
注：预压力中C为基本动额定负荷

Notes: In the preloading force, C is the basic rated dynamic load.

RH系列直线导轨尺寸表

Dimension Table of RH Series

RH-U/RH-UL



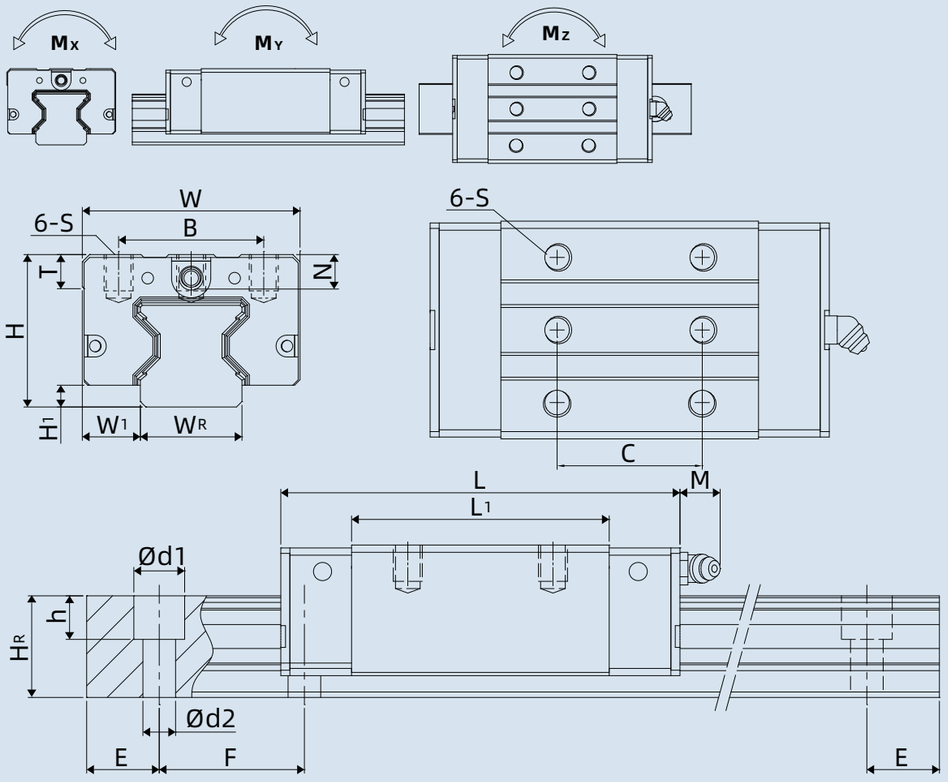
型号 Model	组装尺寸 Assembly dimensions			滑块尺寸 Slider dimensions								导轨尺寸 Rail dimensions				导轨固定螺栓尺寸 Dimensions of rail fixing bolts	基本动额定负荷 Basic rated dynamic load	基本静额定负荷 Basic rated static load	静态容许力矩 Static allowable moment kN·m			质量 Mass	
	H	H1	W1	W	B	C	L1	L	T	M	N	S	HR	WR	F	d1×d2×h	（mm）	C kN	C0 kN	Mx	My	Mz	滑块 kg	直线导轨 kg/m
RH 25U	40	5.5	12.5	48	35	35	64.5	97.9	9.5	12	10	M6×8	23.6	23	30	11×7×9	M6×20	27.7	57.1	0.76	0.61	0.61	0.61	3.08
RH 25UL						50	81	114.4										33.9	73.4	0.98	0.99	0.99	0.75	
RH 30U	45	6	16	60	40	40	71	109.8	9.5	12	9.5	M8×10	28	28	40	14×9×12	M8×25	39.1	82.1	1.45	1.06	1.06	0.9	4.41
RH 30UL						60	93	131.8										48.1	105	1.85	1.71	1.71	1.16	
RH 35U	55	6.5	18	70	50	50	79	124	12	12	16	M8×12	30.2	34	40	14×9×12	M8×25	57.9	105.2	2.17	1.44	1.44	1.57	6.06
RH 35UL						72	106.5	151.5										73.1	142	2.93	2.6	2.6	2.06	
RH 45U	70	8	20.5	86	60	60	106	153.2	16	13	20	M10×17	38	45	52.5	20×14×17	M12×35	92.6	178.8	4.52	3.05	3.05	3.18	9.97
RH 45UL						80	139.8	187										116	230.9	6.33	5.47	5.47	4.13	
RH 55U	80	10	23.5	100	75	75	125.5	183.7	17.5	13	22	M12×18	44	53	60	23×16×20	M14×45	130.5	252	8.01	5.4	5.4	4.89	13.98
RH 55UL						95	173.8	232										167.8	348	11.15	10.25	10.25	6.68	
RH 65U	90	12	31.5	126	76	70	160	232	25	13	15	M16×20	53	63	75	26×18×22	M16×50	213	411.6	16.2	11.6	11.6	8.89	20.22
RH 65UL						120	223	295										275.3	572.7	22.55	22.17	22.17	12.13	

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

企业篇 The enterprise
产品篇 Products&Solutions
构造特点 Structural Characteristics
产品一览 List of Products
DHH系列 DHH Series
DHI系列 DHI Series
MHS/MHW系列 MHS/MHW Series
RH系列 RH Series
使用篇 Applications

RH-S/RH-SL

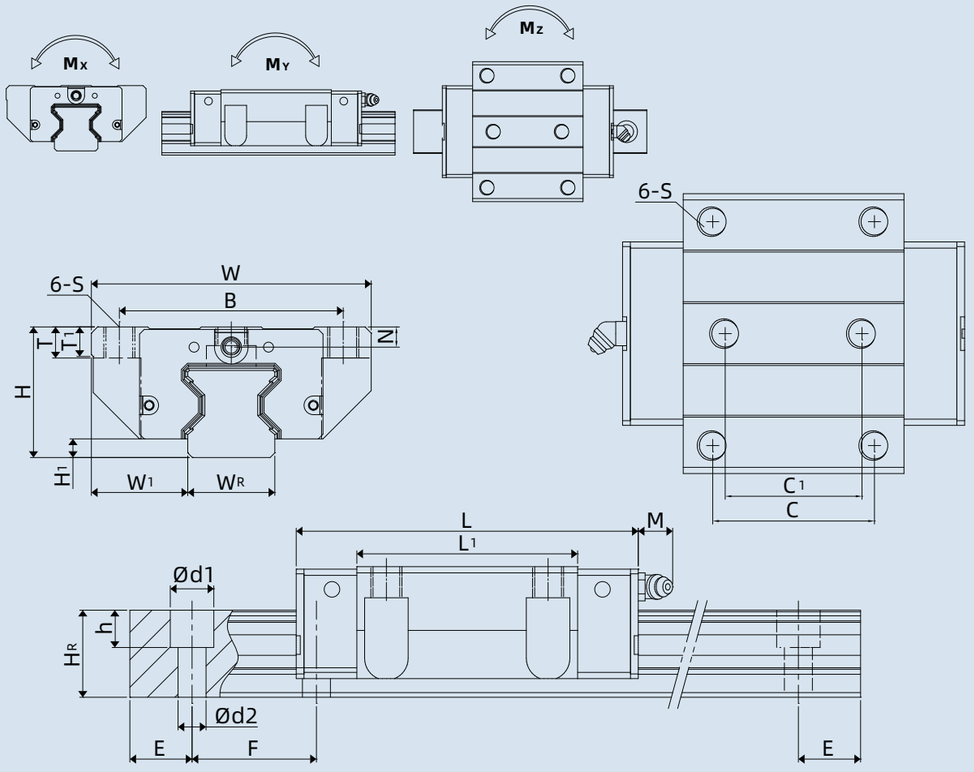


型号 Model	H	H1	W1	W	B	C	L1	L	T	M	N	S	HR	WR	F	d1×d2×h	(mm)	C kN	C0 kN	MX	MY	MZ	滑块 Slider kg	直线导轨 Linear guide kg/m
RH 25S	36	5.5	12.5	48	35	35	64.5	97.9	9.5	12	6	M6×8	23.6	23	30	11×7×9	M6×20	27.7	57.1	0.76	0.61	0.61	0.51	3.08
RH 25SL						50	81	114.4										33.9	73.4	0.98	0.99	0.99	0.63	
RH 30S	42	6	16	60	40	40	71	109.8	9.5	12	6.5	M8×10	28	28	40	14×9×12	M8×25	39.1	82.1	1.45	1.06	1.06	0.8	4.41
RH 30SL						60	93	131.8										48.1	105	1.85	1.71	1.71	1.03	
RH 35S	48	6.5	18	70	50	50	79	124	12	12	9	M8×12	30.2	34	40	14×9×12	M8×25	57.9	105.2	2.17	1.44	1.44	1.27	6.06
RH 35SL						72	106.5	151.5										73.1	142	2.93	2.6	2.6	1.65	
RH 45S	60	8	20.5	86	60	60	106	153.2	16	13	10	M10×17	38	45	52.5	20×14×17	M12×35	92.6	178.8	4.52	3.05	3.05	2.5	9.97
RH 45SL						80	139.8	187										116	230.9	6.33	5.47	5.47	3.2	
RH 55S	70	10	23.5	100	75	75	125.5	183.7	17.5	13	12	M12×18	44	53	60	23×16×20	M14×45	130.5	252	8.01	5.4	5.4	3.91	13.98
RH 55SL						95	173.8	232										167.8	348	11.15	10.25	10.25	5.32	

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

RH-F/RH-FL



型号 Model	H	H1	W1	W	B	C	C1	L1	L	T	T1	M	N	S	HR	WR	F	d1×d2×h	(mm)	C kN	C0 kN	MX	MY	MZ	滑块 Slider kg	直线导轨 Linear guide kg/m
RH 25F	36	5.5	23.5	70	57	45	40	64.5	97.9	10	9.5	12	6	M8	23.6	23	30	11×7×9	M6×20	27.7	57.1	0.76	0.61	0.61	0.72	3.08
RH 25FL								81	114.4											33.9	73.4	0.98	0.99	0.99	0.91	
RH 30F	42	6	31	90	72	52	44	71	109.8	10	9.5	12	6.5	M10	28	28	40	14×9×12	M8×25	39.1	82.1	1.45	1.06	1.06	1.16	4.41
RH 30FL								93	131.8											48.1	105	1.85	1.71	1.71	1.52	
RH 35F	48	6.5	33	100	82	62	52	79	124	13	12	12	9	M10	30.2	34	40	14×9×12	M8×25	57.9	105.2	2.17	1.44	1.44	1.75	6.06
RH 35FL								106.5	151.5											73.1	142	2.93	2.6	2.6	2.4	
RH 45F	60	8	37.5	120	100	80	60	106	153.2	15	14	13	10	M12	38	45	52.5	20×14×17	M12×35	92.6	178.8	4.52	3.05	3.05	3.43	9.97
RH 45FL								139.8	187											116	230.9	6.33	5.47	5.47	4.57	
RH 55F	70	10	43.5	140	116	95	70	125.5	183.7	17	16	13	12	M14	44	53	60	23×16×20	M14×45	130.5	252	8.01	5.4	5.4	5.43	13.98
RH 55FL								173.8	232											167.8	348	11.15	10.25	10.25	7.6	
RH 65F	90	12	53.5	170	142	110	82	160	232	23	22	13	15	M16	53	63	75	26×18×22	M16×50	213	411.6	16.2	11.6	11.6	11.63	20.22
RH 65FL								223	295											275.3	572.7	22.55	22.17	22.17	16.58	

注：E为导轨安装孔端距，具体数值以实际导轨长度为准，表格内不予体现

Notes: E is the end distance of the rail installation hole. The specific value is subject to the actual rail length, which is not reflected in the table.

使用篇
APPLICATIONS
03

科技改变生活 Science and Technology Changes Life

选型规则 Selection Rules

开始选择 Start selection

1.设定使用条件 Set conditions for use

- ○ 使用设备 Equipment used
- ○ 安装要求 Installation requirements
- ○ 精度要求 Precision requirements
- ○ 刚性要求 Rigidity requirements
- ○ 负荷要求 Load requirements
- ○ 内部空间要求 Internal space requirements
- ○ 使用环境 Service environment
- ○ 行程要求 Stroke requirements
- ○ 速度、加速度要求 Velocity and acceleration requirements
- ○ 使用频率 Usage frequency
- ○ 寿命要求 Service life requirements

2.产品类型选择 Select product type

- ○ DHH系列（普通型） 可应用于磨床、铣床、车床、钻床、加工中心、放电加工机、搪床、线切割机、精密量测仪器、运送装置。
  DHH Series (General) can be used in grinding machines, milling machines, lathes, drilling machines, machining centers, electrical discharge machining machines, cylinder boring machines, wire cutting machines, precision measuring instruments, transport devices, etc.
- ○ DHI 系列（小型） 可应用于轻型自动化装置，如注塑机、3D打印机、半导体设备等。
  DHI Series (Small) can be used in lightweight automation devices, such as injection molding machines, 3D printers, and semiconductor equipment.
- ○ MHS/MHW 系列（微型） 可应用于机械手臂、电子仪器设备、半导体设备等。
  MHS/MHW Series (Microtype) can be used in mechanical arm, electronic equipment, semiconductor equipment, etc.
- ○ RH 系列（滚柱型） 可应用于CNC加工中心、放电加工机、切割机、大型龙门机床等重型设备。
  RH Series (Roller-type) can be used in CNC machining centers, electrical discharge machining machines, cutting machines, large gantry machines and other heavy equipment.

3.产品精度选择 Select product precision

- ○ C（普通级） C (Ordinary Grade)
- ○ H（高级） H (High Grade)
- ○ P（精密级） P (Precise Grade)
- ○ SP（超精密级） SP (Ultra-precise Grade)
- ○ UP（超高精密级） UP (Super-ultra-precise Grade)

4.滑块尺寸及数目的选择 Select the slider size and number

- ○ 根据用途选择 Select according to the purpose
- ○ 根据负载选择 Select according to load

5.计算滑块的最大负荷 Calculate the maximum load of sliders

- ○ 参照负荷计算公式计算单个滑块的最大等效负荷
  Calculate the maximum equivalent load of a single slider with reference to the load calculation formula.

6.产品刚性选择 Select the product rigidity

- ○ 确定间隙 Determine the clearance
- ○ 确定预压 Determined the preloading
- ○ 确定固定方式 Determine the fixing mode

7.计算产品寿命 Calculate the service life

- ○ 根据使用速度、频率计算出产品使用寿命
  Calculate the service life of the product according to the service speed and frequency

8.产品润滑 Select the product lubrication

- ○ 润滑剂种类的选用
  Selection of lubricant type

完成选型 Finish model selection

技术参数 Technical Parameters

基本额定负荷 Basic rated load

（1）基本静额定负荷 C_0 Basic rated static load C_0

直线导轨副处于静止或运行状态下，如果承受过重的负载或遭受过大的冲击负载后，滚珠与接触面轨道的接触部分将会发生局部永久变形。当局部永久变形量超出某一极限，将会影响直线导轨副的运行精度及寿命。基本静额定负荷便是达到这个永久变形量时的极限负荷。滚珠与滚珠接触面的永久变形之和达到滚珠直径的10^{-4}倍时的负载为基本静额定负荷。此值详列在各滑块规格尺寸表中。

When the linear guide is in static or running state, the contact part between the balls and the contact surface rail will undergo local permanent deformation if it bears too heavy load or too large impact load. If the local permanent deformation exceeds a certain limit, the running accuracy and service life of linear guide will be affected. The basic rated static load is the ultimate load when this permanent deformation is reached. When the sum of permanent deformation of balls and ball contact surface reaches 10^{-4}times of ball diameter, the load is the basic rated static load. This value is detailed in the dimension table of each slider.

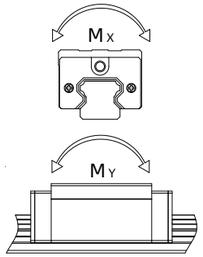
（2）容许静力矩 M_0 Allowable static torque M_0

当直线导轨运动系统受到外力的作用时，力在滑块内部的滚珠上分布不均匀，两端滚珠会承受更大的负载。

当滑块中受到最大应力的滚珠达到静额定负荷时， 滑块所承受的力矩为容许静额定力矩。在直线导轨系统中，容许静力矩用 M_X、M_Y、M_Z 这三个方向来表示。

When the linear guide motion system is subjected to external force, the force is not evenly distributed on the balls inside the slider, and the balls at both ends will bear greater load.

When the ball subjected to the maximum stress in the slider reaches the rated static load, the torque borne by the slider is the allowable rated static torque. In the linear guide system, the allowable static torque is expressed in M_X, M_Y and M_Z.



（3）静安全系数 F_S Static safety coefficient Fs

当直线导轨副处于运行或静止状态时，可能受到因震动、冲击、停启等预想不到的外力作用。因此， 需要考虑其静安全系数。静安全系数为基本静额定负荷（C_0）与直线导轨最大工作负荷的比值，这个比值反应了直线导轨的使用可靠性。

静安全系数的计算： $F_S=F_C\cdot\frac{C_0}{P}$　$F_S=F_C\cdot\frac{M_0}{M}$

When the linear guide is in a running or static state, it may be subjected to unexpected external forces such as vibration, impact, stop and start. Therefore, it is necessary to consider its static safety coefficient. The static safety coefficient is the ratio of the basic rated static load (C_0) to the maximum working load of the linear guide, which reflects the service reliability of the linear guide.

Calculation of static safety coefficient: $F_S=F_C\cdot\frac{C_0}{P}$　$F_S=F_C\cdot\frac{M_0}{M}$

F_S	静安全系数 Static safety coefficient
F_C	接触系数 Contact coefficient
C_0	基本静额定负荷（ kN ） Basic rated static load (kN)
M_0	容许静力矩（ kN·m ） Allowable static torque (kN·m)
P	工作负载（ kN ） Workload (kN)
M	等效负载（ kN·m ） Equivalent load (kN·m)

运行条件 Operating conditions	负荷情况 Load condition	F_S 下限值 F_S lower limit (ML)
正常静止状况下 Under normal static conditions	轻冲击和偏移 Light impact and offset	1.0~1.3
	重冲击和扭转 Heavy impact and torsion	2.0~3.0
正常运行状况下 Under normal operating conditions	轻冲击和偏移 Light impact and offset	1.0~1.5
	重冲击和扭转 Heavy impact and torsion	2.5~5.0

（4）基本动额定负荷 C Basic rated dynamic load C

基本动额定负荷（C）对应于直线导轨运行时的许容负荷及运动寿命计算。其定义是在负荷的方向和大小不变的状态下， 直线导轨副寿命在 50KM（滚柱型直线导轨副为 100KM）时的最大负载， 此值详列在各规格尺寸表中。

The basic rated dynamic load (C) corresponds to the calculation of allowable load and motion life when the linear guide is running. It is defined as the maximum load when the life of linear guide is 50KM (roller-type linear guide is 100KM) under unchanged load direction and size. This value is detailed in the dimension table of each specification.

直线导轨寿命的计算 Calculation of life of linear guide

当直线导轨承受负载运动时，滚珠表面和与轨道接触面因不断地受到循环疲劳应力作用，一旦到达滚动疲劳的临界点， 接触表面就会发生薄片脱落的现象， 称之为表面剥离。直线导轨副发生表面剥离现象后的运行距离称为寿命。直线导轨的寿命具有很大的分散性， 符合 WEIBULL 分布。根据直线导轨寿命的定义， 以额定寿命为基准， 即一批同样的直线导轨，每个在相同的条件下运行，其中 90% 未发生表面剥离现象所达到的运行距离称为额定寿命。

直线导轨的使用寿命可依据直线导轨的基本动额定负荷及工作负荷计算出来。

若考虑直线导轨使用的环境因素，其寿命会随着运动的状态、滚珠和轨道表面硬度及系统温度而有所变化。

When the linear guide moves under load, the surface of the balls and the contact surface with the rail are constantly subjected to cyclic fatigue stress. Once the critical point of rolling fatigue is reached, thin flakes will detach from the contact surface, which is referred to as surface peeling. The running distance of linear guide after surface peeling is called life. The life of linear guide has great dispersion and accords with WEIBULL distribution. According to the definition of linear guide life, the rated life is taken as the benchmark, that is, the rated life is the running distance reached by a batch of the same linear guide, each running under the same conditions, in which 90% of them do not have surface peeling phenomenon.

The service life of linear guide can be calculated according to the basic rated dynamic load and working load of linear guide.

If the environmental factors of linear guide are considered, its life will change with the state of motion, the surface hardness of balls and rails and the system temperature.

寿命的计算式：

Calculation formula of life:

滚珠导轨寿命 $L=\left(\frac{f_h\cdot f_t\cdot f_c}{f_w}\cdot\frac{C}{P}\right)^3\cdot 50km$

$\left(\frac{f_h\cdot f_t\cdot f_c}{f_w}\cdot\frac{C}{P}\right)^3\cdot 50km$

滚柱导轨寿命 $=\left(\frac{f_h\cdot f_t\cdot f_c}{f_w}\cdot\frac{C}{P}\right)^{\frac{10}{3}}\cdot 100km$

Roller rail life$=\left(\frac{f_h\cdot f_t\cdot f_c}{f_w}\cdot\frac{C}{P}\right)^{\frac{10}{3}}\cdot 100km$

C：基本动额定负荷 Basic rated dynamic load

P：工作负载 Workload

f_h：硬度系数 Hardness coefficient

f_t：温度系数 Temperature coefficient

f_c：接触系数 Contact coefficient

f_w：负载系数 Load coefficient

（1）摩擦力F Friction F

直线导轨借助滚珠做滚动摩擦，因此摩擦阻力与作滑动摩擦的导轨相比，可小至其数值的 1/40。做滚动摩擦的直线导轨由静止到开始移动所需要的力非常小，空转现象不容易产生。

直线导轨的摩擦力随着其设计、预压力、润滑剂的黏度阻力、负载而产生变化。一般情况下，直线导轨的摩擦系数约为 0.01。

The linear guide makes rolling friction with balls, so the friction resistance can be as small as 1/40 of its value compared with the sliding rail. The force required for the linear guide to move from standstill to start is very small, and idling phenomenon is not easy to occur.

The friction force of linear guide varies with its design, preloading force, viscosity resistance of lubricant and load. In general, the friction coefficient of linear guide is about 0.01.

摩擦力的计算式：$F=\mu\cdot W+f$　Formula for calculating friction force: $F=\mu\cdot W+f$

F：摩擦力 Friction

W：运动垂直方向负荷 Load in vertical direction of motion

μ：摩擦力系数 Friction coefficient

f：防尘件摩擦力 Friction force of dustproof fittings

（2）接触系数fc Contact coefficient fc

滑块紧靠使用时，受力矩或者安装精度的影响，通常较难获得均匀的负载分布。因此，多个滑块紧靠使用时，必须考虑接触系数（fC），如下表所示。

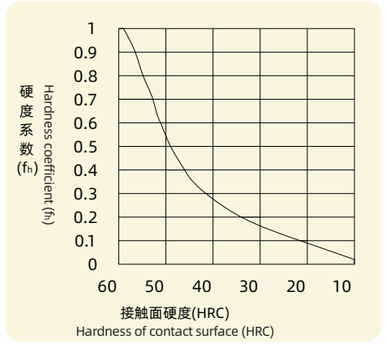
When sliders are used close to each other, it is usually difficult to obtain uniform load distribution due to the influence of torque or installation accuracy. Therefore, the contact coefficient (fc) must be considered when multiple sliders are used in close proximity, as shown in the following table.

紧靠使用时滑块数量 Number of sliders in close proximity	接触系数Fc Contact coefficient Fc
无紧靠 Not in close proximity	1
2	0.81
3	0.72
4	0.66
5	0.61

（3）硬度系数fh Hardness coefficient fn

为了充分发挥直线导轨的负载能力， 接触面的硬度最好保持在 HRC58~64， 若接触面的硬度比 HRC58 低时，计算安全系数以及直线导轨寿命时就必须考虑硬度系数（fh）。

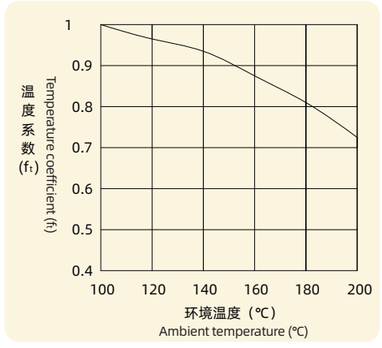
In order to give full play to the load capacity of the linear guide, the hardness of the contact surface should be kept at HRC58-64. If the hardness of the contact surface is lower than HRC58, the hardness coefficient (f_h) must be considered when calculating the safety factor and the life of the linear guide.



（4）温度系数ft Temperature coefficient ft

直线导轨的使用环境温度超过 100℃， 考虑高温的不良影响，就需要在计算时考虑温度系数（ft）。

When the ambient temperature of linear guide is over 100°C, the adverse effects of high temperature should be considered, and it is necessary to consider the temperature coefficient (f_t) in the calculation.



注：环境温度超过80℃就需将防尘件、端板等材质换为耐高温材料。

Notes: When the ambient temperature exceeds 80°C, it is necessary to use dustproof fittings, end plates and others with high-temperature resistant materials.

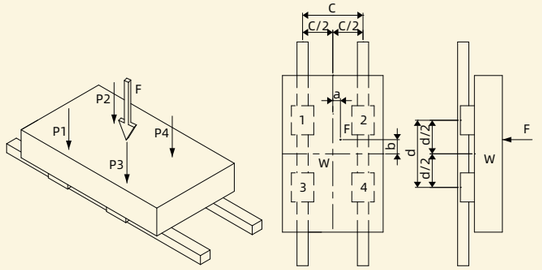
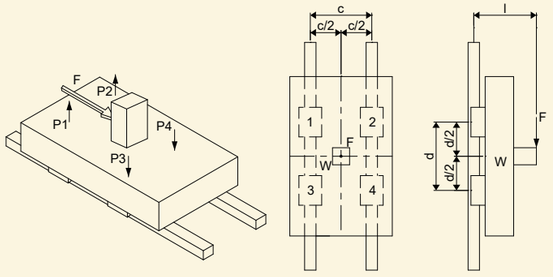
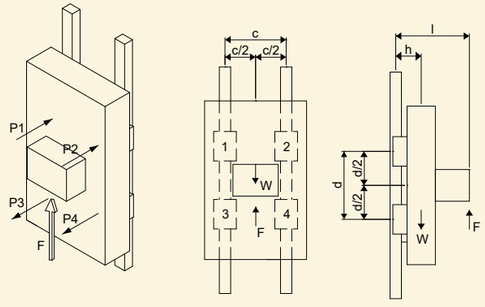
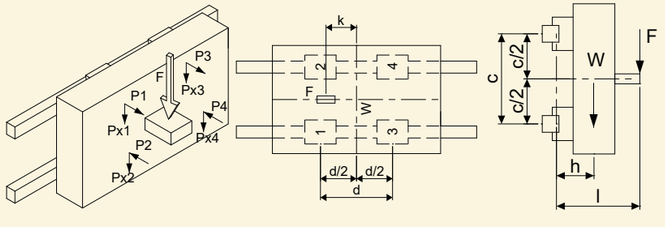
（5）负载系数 fw Load coefficient fw

直线导轨往复运动容易产生振动或冲击， 尤其是高速运转时产生的振动或经常启动停止产生惯性冲击， 要计算出合理的负载，难度较大。 所以在速度振动影响很大时，可参考负载系数（fw）来考虑导轨寿命。

The reciprocating motion of linear guide is easy to produce vibration or impact, especially the vibration produced when running at high speed or inertia impact produced when starting and stopping frequently, so it is difficult to calculate the reasonable load. Therefore, when the influence of velocity vibration is great, the rail life can be considered with reference to the load coefficient (f_w).

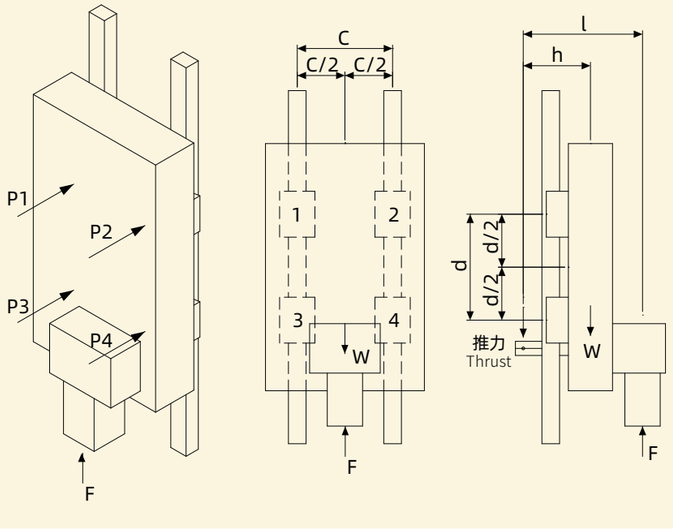
振动、冲击 Vibration and shock	速度（V） Speed (V)	振动（G） Vibration (G)	fw
微 Micro	V≤15 m/min	G≤0.5	1~1.5
小 Small	15 < V≤60 m/min	0.5 < G≤1.0	1.5~2.0
大 Large	V>60 m/min	1.0 < G≤2.0	2.0~3.5

单滑块负载计算示例 Single Slider Load Calculation Example

直线导轨受力分布图 Force Distribution Diagram of Linear Guide	滑块负载计算公式 Calculation Formula of Slider Load
	$P_1=\frac{W}{4}+\frac{F}{4}-\frac{F\cdot a}{2c}+\frac{F\cdot b}{2d}$ $P_2=\frac{W}{4}+\frac{F}{4}+\frac{F\cdot a}{2c}+\frac{F\cdot b}{2d}$ $P_1=\frac{W}{4}+\frac{F}{4}-\frac{F\cdot a}{2c}-\frac{F\cdot b}{2d}$ $P_4=\frac{W}{4}+\frac{F}{4}+\frac{F\cdot a}{2c}-\frac{F\cdot b}{2d}$
	$P_1=P_2=\frac{W}{4}-\frac{F\cdot l}{2d}$ $P_2=P_4=\frac{W}{4}+\frac{F\cdot l}{2d}$
	$P_1\sim P_4=\frac{F\cdot l}{2d}-\frac{W\cdot h}{2d}$
	$P_1\sim P_4=\frac{W\cdot h}{2c}-\frac{F\cdot l}{2c}$ $P_{x1}=P_{x2}=\frac{W}{4}+\frac{F}{4}+\frac{F\cdot k}{2d}$ $P_{x3}=P_{x4}=\frac{W}{4}+\frac{F}{4}-\frac{F\cdot k}{2d}$

寿命计算示例 Example of Life Calculation

直线导轨规格 Specification of linear guide	工作台尺寸 Size of workbench	加工条件 Processing conditions
型号MODEL：DHH25U	d：700MM	工作台总重Total table weight （W）：10kN
C：19.65kN	c：500MM	反作用力Counterforce（F）：1kN
C0：35.89KN	h：200MM	环境温度Ambient temperatur：常温Room temperature
预压PRELOADING：无NO	l：250MM	普通负荷状态Normal load state



滑块负载计算 Slider load calculation

$$P_{总}=P_1\sim P_4\ \frac{W\times h}{2d}-\frac{F\times l}{2d}=\frac{10\times 200}{2\times 700}-\frac{1\times 250}{2\times 700}=1.25kN$$

因无预压，所以滑块承受总最大负载为1.25kN The total maximum load on the slider is 1.25kN for no preloading

寿命计算 Life calculation

$$L=\left(\frac{f_h\times f_t\times C}{f_W\times P_{总}}\right)^3\times 50=\left(\frac{1\times 1\times 19.65}{2\times 1.25}\right)^3\times 50=24279(km)$$

润滑 Lubrication

当使用精密直线导轨时， 必须提供良好的润滑环境。若在没有润滑的情况下使用精密直线导轨时， 轨道面将会快速的磨损，这将导致精密直线导轨系统的寿命大大缩短。

相较于无润滑环境，精密直线导轨在使用润滑油的情况下能得到如下改善：

1、减少滚动摩擦，降低磨损。

2、在滚动面之间形成油膜，可延长使用寿命。

3、防止生锈。

为充分发挥出精密直线导轨系统的功能， 请根据实际的使用条件使用不同的润滑方式， 并在一定的间隔周期内补充润滑油脂。

When using precise linear guides, a good lubrication environment must be provided. If the precise linear guide is used without lubrication, the rail surface will wear quickly, which will lead to the life of the precise linear guide system greatly shortened. Compared with the non-lubricated environment, the precise linear guide can be improved as follows when using lubricating oil:

1. Reduce rolling friction and wear.

2. Form oil film between rolling surfaces to prolong service life.

3. Take antirust measures

In order to give full play to the function of precise linear guide system, please use different lubrication methods according to actual use conditions, and supplement lubricating oil grease in a certain interval.

直线导轨的安装与维护 Installation and maintenance of linear guide

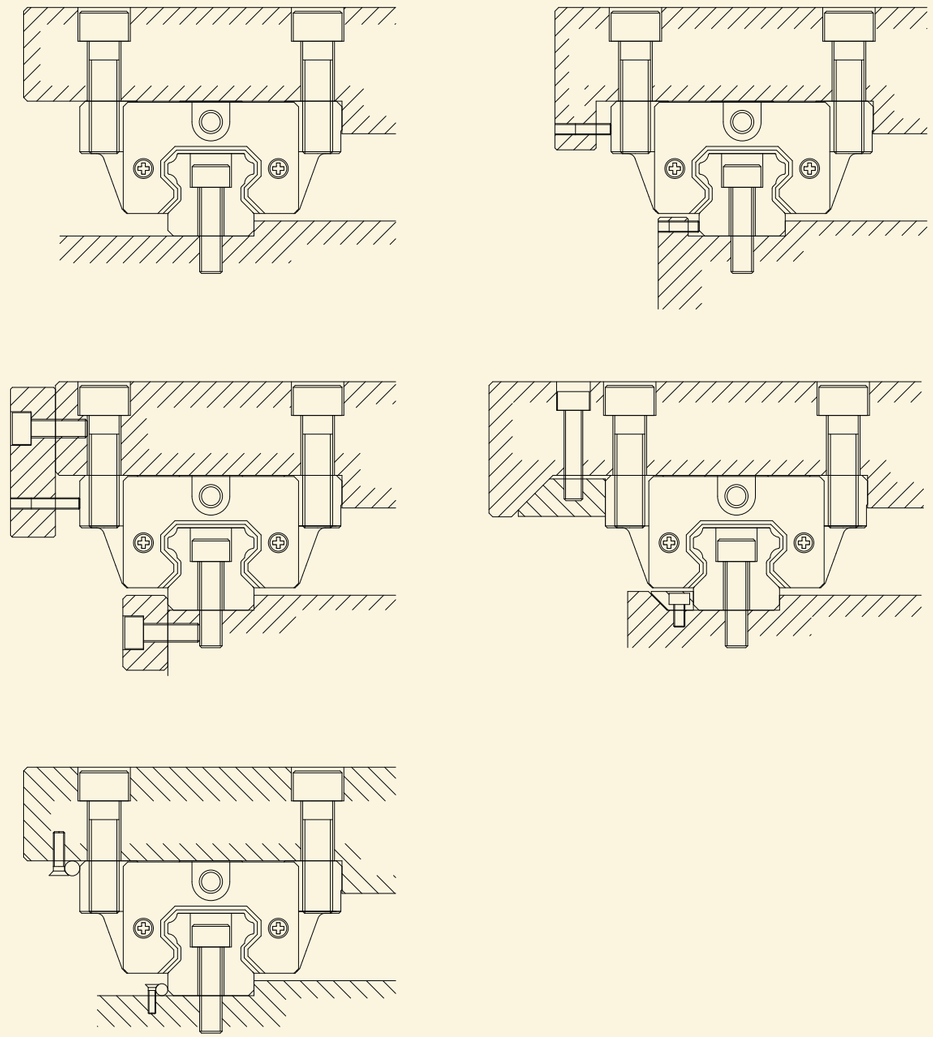
直线导轨必须根据机床的使用情况，如受震动、冲击力的程度、要求的精密度及机床的限制来设定其安装方法。

The installation method of linear guide must be set according to the service condition of the machine tool, such as the degree of vibration and impact force, the required precision and the limitation of the machine tool.

（1）固定方式 Fixing mode

当机床受到震动或冲击力的作用时， 导轨及滑块很可能偏离原来的固定位置， 从而影响机床的精度。为避免发生类似的状况，需要精确地对导轨系统加以固定，以确保机床的运行精密度。如下图所示为几种推荐安装实例。

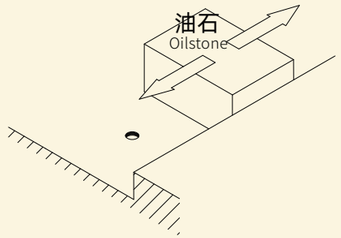
When the machine tool is subjected to vibration or impact force, the rail and slider may deviate from the original fixed position, thus affecting the precision of the machine tool. In order to avoid similar situations, it is necessary to fix the rail system accurately to ensure the running precision of the machine tool. The following figure shows several recommended installation examples.

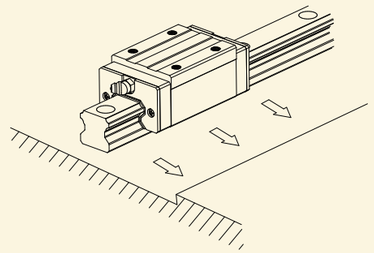


（2）导轨安装步骤 Installation steps of rail

1. 使用油石清除工作台装配表面的毛刺或粗糙处，然后用稀释剂或挥发性液体清洗安装表面。

1. Use whetstone to remove burrs or roughness on the assembly surface of the workbench, and then clean the installation surface with diluent or volatile liquid.



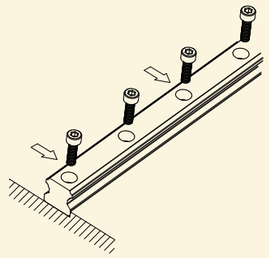


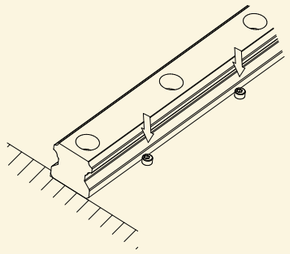
2. 将直线导轨平稳的放在平面上， 并让导轨侧边基准面靠上工作台装配面。

2. Put the linear guide evenly on the plane, and let the side reference plane of the rail lean against the assembly surface of the workbench.

3. 试拧装配螺丝以确认螺栓孔的间隙。

3. Test-tighten assembly screws to confirm bolt hole clearance.



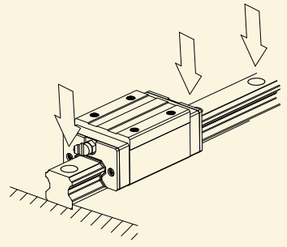


4. 使用偏心螺丝， 按顺序将导轨侧边基准面逼紧工作台侧边装配面，精确定位，以期达到安装精度。

4. Use eccentric screws to press the side reference plane of the rail against the side assembly surface of the worktable in sequence, and accurately position it in order to achieve the installation precision.

5. 使用扭力扳手，以给定扭力按顺序拧紧螺丝。

5. Tighten the screws in sequence with a given torque using a torque wrench.



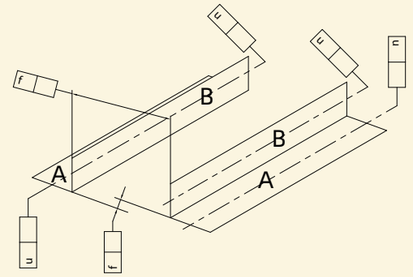
（3）成对导轨安装注意事项 Precautions for installation of paired guides

工作台安装面设计如图，“A” 作为导轨底面，” B” 作为导轨靠面。

其线性和平行度用如下方式测量。

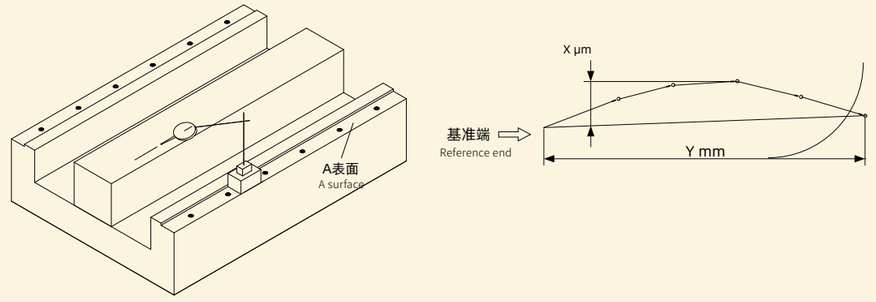
The installation surface of the workbench is designed as shown in the figure, with "A" as the bottom surface of the guide and "B" as the leaning surface of the rail.

Its linearity and parallelism are measured as follows.



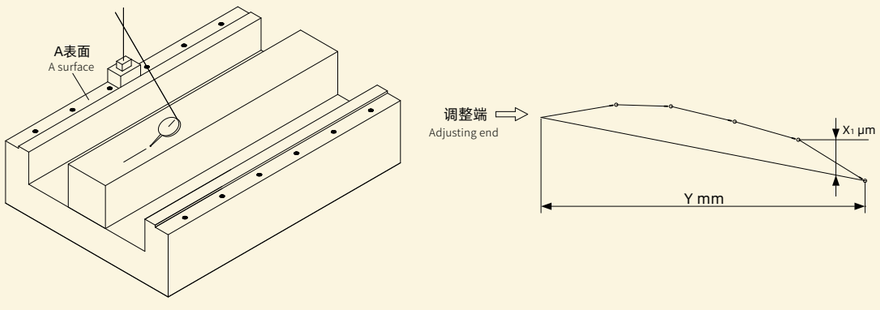
测量每个 A 表面的直线度： 把一个合适大小的测量块放在 A 表面上， 并把千分表的测量头放在平行于 A 表面的测量平尺上，测量块紧贴 B 表面。沿着 A 表面按滑动至各固定点位，记录各点位测量数据。

Measure the straightness of each A surface: Place a measuring block of suitable size on A surface, and place the measuring head of the dial indicator on the levelling ruler parallel to A surface, with the measuring block close to surface B. Slide it along A surface to each fixed point, and record the measurement data of each point.



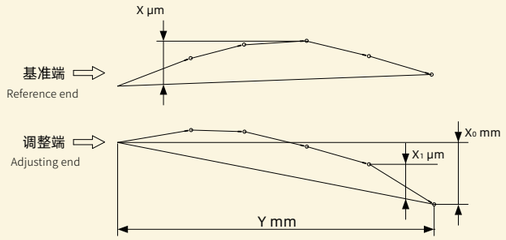
接下来对另一个 A 表面的直线度进行测量， 重复上述操作。当进行上述操作测量时， 要注意不能移动测量平尺。

Next, repeat the above steps to measure the straightness of the other A surface. When carrying out the above measurement, pay attention not to move the levelling ruler.



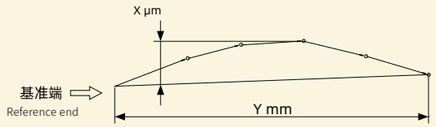
从这两个 A 表面的测量数据来确定他们的平行度。

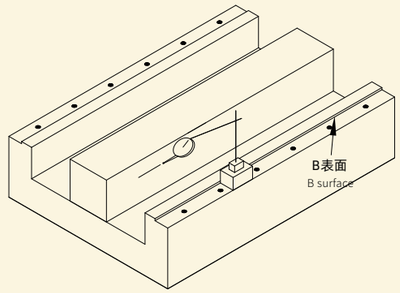
Determine the parallelism of these two A surfaces from the measured data.



测量工作台两个 B 表面的直线度， 方法与测量 A 表面类似，不过需要注意千分表的测量头需要贴紧测量平尺。

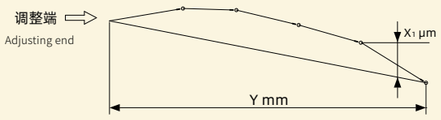
Measure the straightness of the two B surfaces of the worktable in a similar way to that of the A surface, but pay attention to the fact that the measuring head of the dial indicator needs to be closely attached to the levelling ruler.

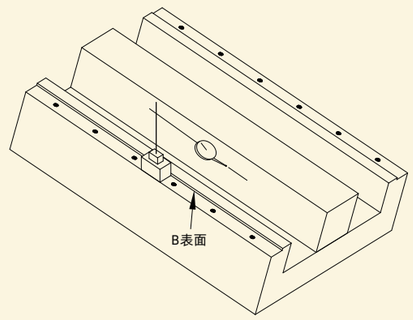




请注意，此时测量平尺不能移动，否则需要重新进行测量。另一个 B 表面重复上述测量步骤。

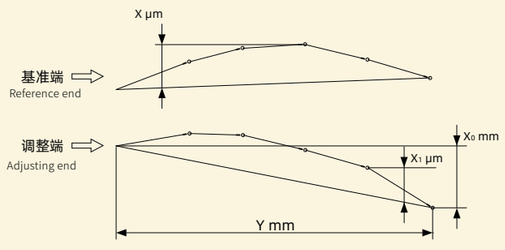
Please note that the levelling ruler cannot be moved at this time, otherwise it is necessary to re-measure. Repeat the above measurement steps on the other B surface.





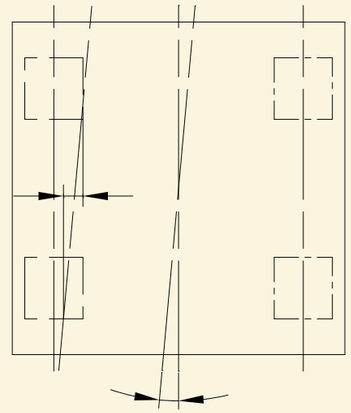
从两个 B 表面的测量数据中可以确定他们之间的平行度。

Determine the parallelism between two B surfaces from the measured data.



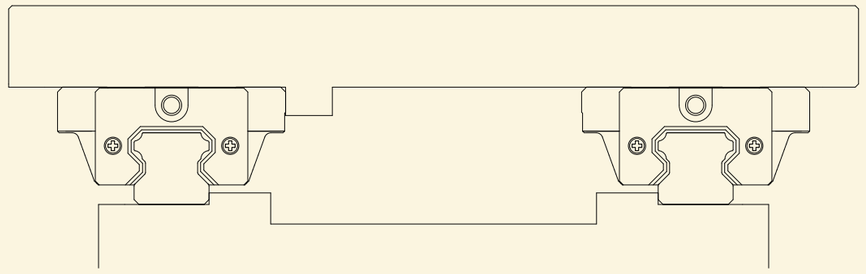
成对导轨之间虽然看起来相似， 但是一根是基准导轨， 其基准面对应于滑块基准面， 可以控制尺寸变化，同时与工作台上的基准面相互配合。如果其他滑块靠着工作台基准面安装，那么工作台可能会歪斜，如图所示。这种情况下，不能获得精准的两轴方形。

Although the paired guides look similar, one is a reference rail, and its reference face should be on the reference plane of the slider, which can control the dimensional change and cooperate with the reference plane on the workbench. If other sliders are installed against the reference plane of the workbench, the workbench may be skewed, as shown in the figure. In this case, an accurate two-axis square cannot be obtained.



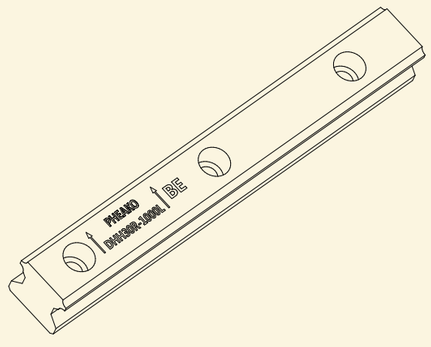
通常情况下， 工作台上没有为非基准导轨明确参考安装表面， 因此导轨表面的变化不会受到严格的控制。这根导轨叫做 “可调整导轨”。

Normally, there is no explicit reference mounting surface on the workbench for non-reference rails, so the change of rail surface is not strictly controlled. This rail is called "adjustable rail".



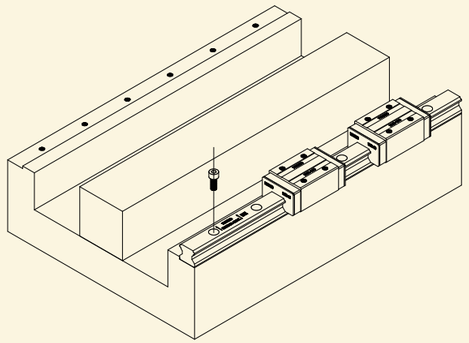
在导轨表面的刻有 “BE” 标志的就是基准轨。

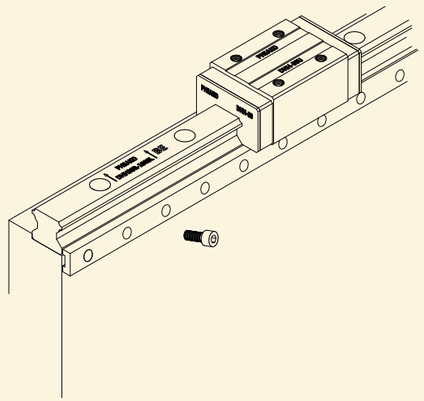
The reference rail is engraved with "BE" sign on the surface.



导轨在出厂前均涂抹有适量防锈油， 安装前需先将防锈油擦拭干净。将要安装的导轨放置在工作台上，将导轨的固定螺栓旋入但不拧紧，使导轨底面紧贴工作台面。

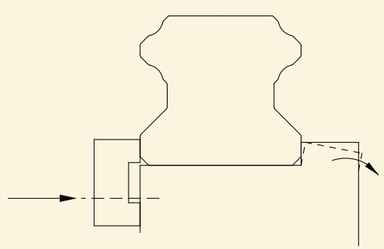
Rails are coated with proper amount of antirust oil before leaving the factory, and the antirust oil should be wiped clean before installation. Place the rail to be installed on the workbench, screw in the fixing bolts of the rail but not tighten it, so that the bottom surface of the rail is close to the workbench surface.





然后用横压板将导轨压紧至侧基准面， 将螺栓拧紧。拧转扭矩与机器的刚性有关。对于刚性较高的情况，拧紧螺栓时需要用到特殊的扭矩。

Then, press the rail to the side reference plane with the transverse pressing plate and tighten the bolts. The twisting torque is related to the rigidity of the machine. If the rigidity requirement is high, special torque is needed when tightening bolts.



假如设备要求的刚性不高， 首先暂时将横压板的螺栓拧上， 使导轨与工作台的基准面精密贴合。将导轨上的紧固螺栓重新拧紧后， 再将横压板上的螺栓拧紧。即使导轨有轻微程度的弯曲， 螺栓都可以不必拧的过紧。

横压板的作用是避免导轨在意外或其他情况发生时被破坏。因此， 拧紧导轨的紧固螺栓后再拧紧横压板的螺栓。

If the rigidity required by the equipment is not high, first screw the bolts of the transverse pressing plate temporarily, so that the rail and the reference plane of the workbench are accurately attached. After tightening the fastening bolts on the rail again, tighten the bolts on the transverse pressure plate. The bolts may not be tightened too tightly, even if the rail is slightly bent.

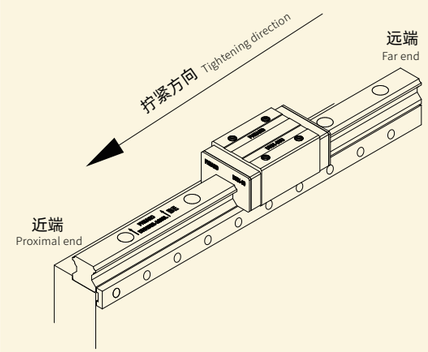
The function of the transverse pressure plate is to prevent the rail from being damaged in case of accident or other circumstances. Therefore, tighten the fastening bolts of the rail before tightening the bolts of the transverse pressure plate.

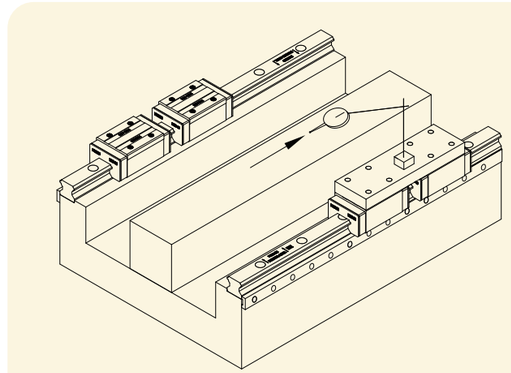
直线导轨的安装孔是在热处理后精密加工的， 其孔距精度高， 能满足设备安装要求。 当在有安装基准面或者在一个平面上安装而没有横压板的情况下， 假如随意从导轨中间开始安装， 导轨可能会有轻微的弯曲。

推荐的方法是： 保持要安装的平面在安装者的左侧， 由远端向近端顺序安装。 这样的方法可以是螺栓的旋转力侧向产生一个压向基准面的力， 使导轨和基准面充分贴紧。

The installation hole of linear guide is precisely machined after heat treatment, so it has high hole spacing precision, which can meet the requirements of equipment installation. The rail may be slightly bent if it is installed from the middle of the rail at will when it is installed on a reference plane or on a flat surface without a transverse pressure plate

Recommended methods: Keep the plane to be installed on the left side of the installer, and install it sequentially from far end to proximal end. In this way, the rotating force of the bolt laterally generates a force pressing against the reference plane, so that the rail and the reference plane are fully attached.



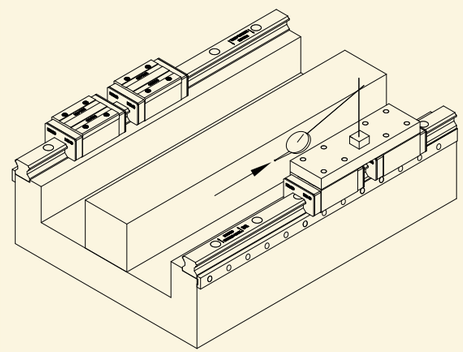


按上述步骤安装好导轨之后， 将金属台板装在一根导轨的两个滑块上， 用与测量工作台面的基准相同的方法测量导轨滑块的垂直方向上的跳动。

After installing the rail according to the above steps, install the metal platform plate on the two sliders of one rail, and measure the runout of the rail sliders in the vertical direction in the same method as measuring the workbench surface.

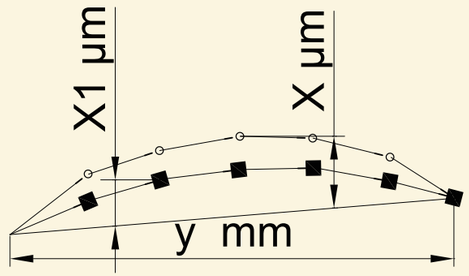
通过相同的方法测量导轨滑块横向方向跳动。然后与之前测量工作台面的数据进行比较， 分析导轨安装时产生的误差。

Measure the horizontal runout of the rail sliders by the same method. Then, compare with the data of workbench surface, and analyze the error produced when the rail is installed.



导轨会随着工作台面的起伏而变形。例如， 台面有凹陷处时， 装配好的导轨也会随之下陷。所以，测量时要小心， 设备或者其他地面的振动会对导轨的精度测量产生影响。

The rail will deform with the ups and downs of the workbench surface. For example, when the workbench surface has a depression, the assembled rail will also sink. Therefore, when measuring, pay attention to the workbench surface, as well as the vibration of equipment or other ground surfaces, which also affects the precision measurement of rail.

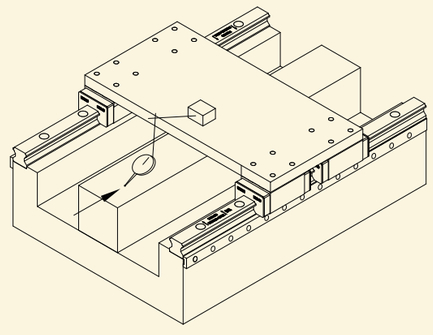


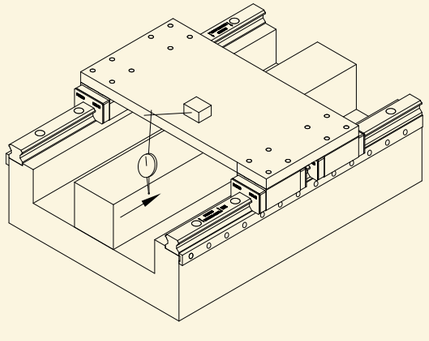
最后， 安装好工作台板， 千分表座， 然后检查整机的精度。

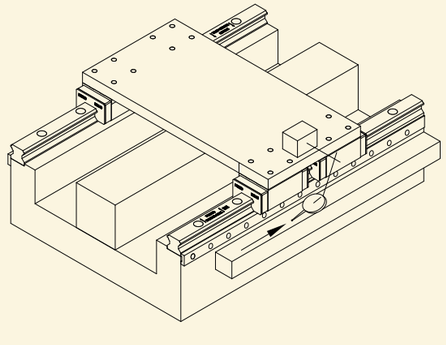
正常情况下， 装配完成后的整机精度会比单独的滑块导轨精度高。

Finally, install the workbench plate and dial indicator seat, and then check the precision of the whole machine.

Under normal circumstances, the precision of the whole machine after assembly will be higher than that of the slider and rail alone.







直线导轨的安装如果误差过大， 滑块运行摩擦力增大， 会直接影响到滑块导轨的使用寿命。但若严格按上述操作进行，不需要进行严格培训也能完成直线导轨的安装。

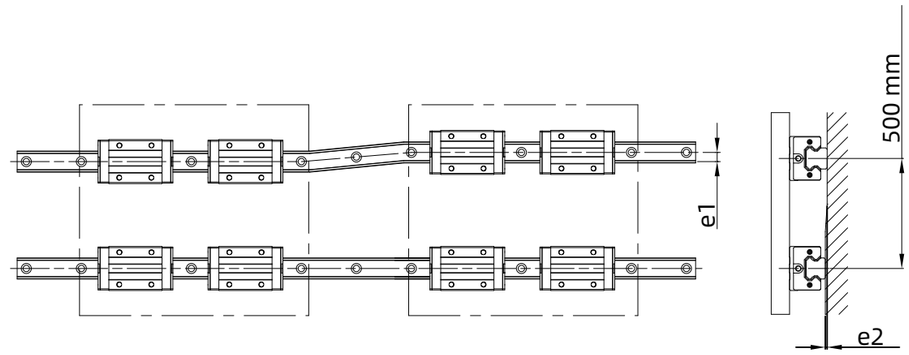
对于 DHH 系列的直线导轨的安装误差，以安装允许误差值来进行说明。

关于导轨在安装时的误差，可分为两轴的平行度误差允许值 e1 和两轴的高度误差允许值 e2 这两种。

If the installation error of linear guide is too large, the running friction of slider will increase, which will directly affect the service life of slider rail. However, if the above operation is strictly followed, the installation of linear guide can be completed without strict training.

For installation errors of DHH linear guide, the allowable values are used to explain.

Installation errors can be divided into two kinds: the allowable parallelism error of the two axes (e1) and the allowable height error of the two axes (e2).



DHH系列导轨安装误差的允许值（最大）
Allowable Values of Installation Errors of DHH Linear Guide (maximum)

单位Unit：μm

项目 Item	预压 Preloading	型号 Model					
		DHH25	DHH30	DHH35	DHH45	DHH55	DHH65
两轴的平行度误差允许值e1 Allowable parallelism error of the two axes (e1)	G2	15	17	20	25	30	40
	G3	13	15	17	20	25	30
两轴的高度误差允许值e2 Allowable height error of the two axes (e2)		185/500mm					

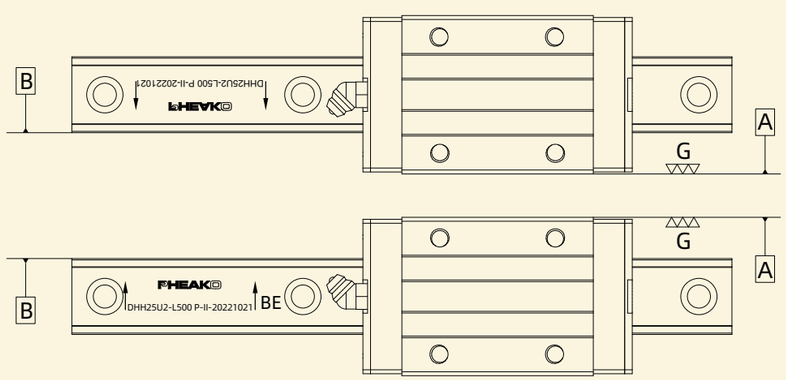
（4）直线导轨安装注意事项 Selection Rules

1. 产品在出货前，均涂抹有适量的防锈油，安装使用前请先擦净导轨的防锈油，才可移动滑块。

2. 确认安装基本面： 导轨基准面为 PHEAKO 字样下方侧边平面 B； 而滑块基准面则为经过研磨的光滑表面 A 如图，请确认导轨基准面 B 和滑块基准面 A 在同一侧边。

1. The products are coated with proper amount of antirust oil before shipment. Before installation and use, please wipe the antirust oil on the rail before moving the slider.

2. Confirm the installation reference planes: The rail reference plane (B) is the side plane below the word PHEAKO; while the slider reference plane (A) is a smooth surface after grinding as shown in the figure. Please make sure that the rail reference plane B and the slider reference plane A are on the same side.



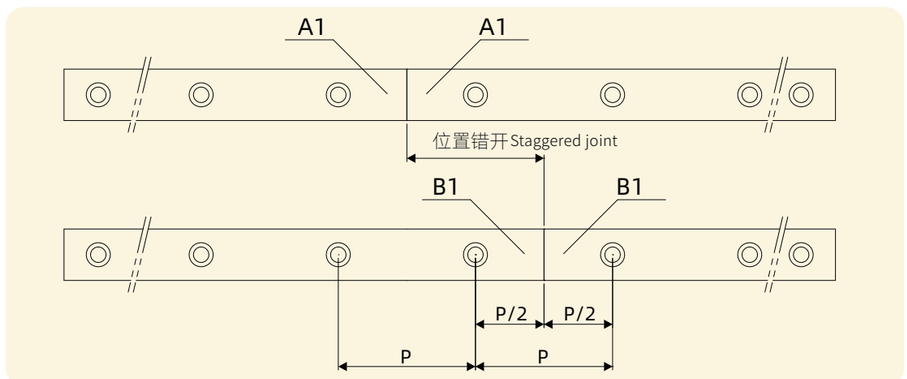
3. 安装直线导轨时， 请使用扭力扳手， 并依照本公司的推荐扭力， 按照顺序锁紧螺栓以保证导轨平行度。推荐扭力如下表所示。

3. When installing the linear guide, please use a torque wrench and lock the bolts in sequence according to the recommended torques to ensure the parallelism of the rail. Recommended torques are shown in the following table.

螺丝规格 Screw specification	锁紧推荐扭力 （N·m） Recommended torques for locking (N • m)		
	钢件 Steel piece	铸铁 Cast iron	铝合金 Aluminum alloy
M2	0.6	0.4	0.3
M2.5	1.2	0.8	0.6
M3	1.9	1.3	1
M4	4	2.8	2.1
M5	8.8	5.8	4.5
M6	13.7	9.2	6.8
M8	30	20	14.7
M12	118	78	58
M14	157	105	78
M16	196	131	98

4. 安装拼接导轨时必须按照导轨上的标识， 对应拼接安装， 以确保直线导轨的精度。对于配对使用的多根拼接导轨的拼接位置建议错开设计，以免设备在运行至拼接位置时因导轨之间的差异而造成精度不良。

4. Splicing rails must be spliced and installed according to the marks on the rails to ensure the accuracy of linear guide. It is recommended to stagger the splicing position of multiple splicing rails used in pairs, so as to avoid poor precision caused by the difference between the rails when the equipment runs to the splicing position.



（5）精密直线导轨的维护注意事项 Precautions for maintaining precise linear guides

1. 直线导轨副产品在出货前就已将优质的润滑剂封入滑块内，在正式运转之前，请再次向滑块内部注入润滑剂，润滑时请使用相同的润滑剂。

2. 直线导轨在出货前，导轨表面均已涂抹防锈油； 若在安装时清洗导轨，请于机床设备安装前，再次将导轨表面涂抹适当的润滑油（请使用推荐的润滑剂）。

3. 搬运 15KG 以上的产品时，请由 2 人以上搬运或者使用搬运器具进行搬运，避免发生事故导致产品损伤。

4. 因为直线导轨滑块包含塑胶材质的零配件，清洗时请避免有机溶剂接触或浸泡这些零件，以免造成产品损坏。

5. 请勿任意拆解产品各部分，否则可能会导致产品故障或损伤。

6. 为避免不当的倾斜直线导轨导致滑块因自重滑出导轨，请在移动直线导轨副时保持水平。

7. 直线导轨产品会因摔落或撞击而造成损伤，请避免让直线导轨产品产生不当的摔落或撞击。

8. 接触产品时，请穿戴好合适的防护手套、安全鞋等防护用具，确保安全。

9. 在有切屑、水、冷却液、腐蚀性溶液等环境下使用时，请采取伸缩护罩或其他防护措施防止异物进入产品内部。

10. 除特殊耐热规格的产品以外，请避免在高温（超过 80℃）下使用。

11. 若将直线导轨使用于特殊环境，请使用适当的表面处理或与 Pheako 联络。

12. 如有疑问或使用上的问题，请与 Pheako 联络。

1. High-quality lubricant has been sealed into the slider before the shipment of each linear guide. Please inject lubricant into the slider again before formal operation, and use the same lubricant when lubricating.

2. Before the linear guide is shipped, its surface has been coated with antirust oil. If the linear guide is cleaned during installation, apply proper lubricating oil to the surface of the linear guide again before installation of the machine tool (please use recommended lubricant).

3. When transporting products above 15KG, please carry them by more than 2 people or use handling equipment to avoid product damage caused by accidents.

4. Because the linear guide slider contains plastic parts, please avoid organic solvent contacting or soaking these parts during cleaning, to avoid product damage.

5. Do not disassemble any part of the product at will, otherwise it may lead to product failure or damage.

6. To avoid improper tilting of the linear guide causing the slider to slide out of the rail due to its own weight, please keep the linear guide horizontal when moving.

7. Linear guide products will be damaged due to falling or impact. Please avoid improper falling or impact of linear guide products.

8. When touching products, please wear suitable protective gloves, safety shoes and other protective equipment to ensure safety.

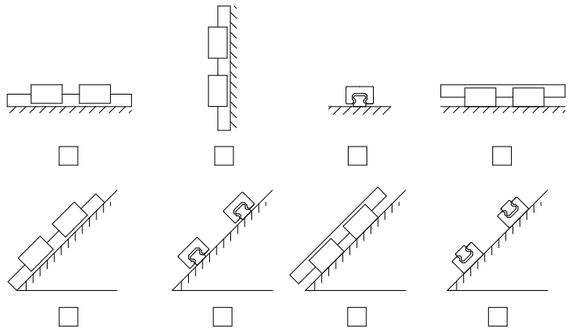
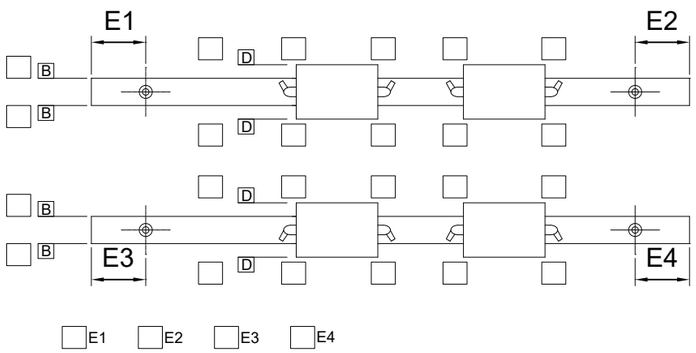
9. When using in the environment with chips, water, coolant and corrosive solution, please take telescopic shield or other protective measures to prevent foreign matter from entering the product.

10. Except for products with special heat resistance specifications, please avoid using at high temperature (over 80℃).

11. If the linear guide is used in a special environment, please use appropriate surface treatment or contact PHEAKO.

12. If you have any questions or use problems, please contact PHEAKO.

PHEAKO直线导轨选用需求表 Demand Table for PHEAKO Linear Guide Selection

客户名称Client：		年Y 月M 日D
联系方式Contact：	邮箱Email：	联系人Contacts：
应用设备机型Application equipment model：		客户图号Customer drawing No.：
安装轴向Axial mounting	□X □Y □Z □其他Others _____	
安装状态 Installation status		
滑块规格型号 Slider specification and model		
导轨类型 Rail type	□上锁式 Upper lock □下锁式 Lower lock	
导轨长度 Rail length	长度Length_____mm 拼接 Splicing： □是Yes □否No	
精度等级 Precision grade	□C普通级 Common Grade □H高级 High Grade □P精密级 Precise Grade □SP超精密级 Ultra-precise Grade □UP 超高精密级 Super-ultra-precise Grade	
配对导轨数 Number of paired rails	□1根（I） □2根（II） □3根（III） □其他Others _____	
润滑方式 Lubricating mode	□油嘴Oil nozzle □注油管 Oil filling pipe □其他Others _____	
基准面要求及 注油方向 Reference plane requirements and oil injection direction		

附录