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德国设计
German Design

欧洲品质
European Quality

中国智造
Built in China



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苏州哈勒智能制造有限公司
Suzhou Haller Intelligent Manufacturing Co., Ltd.

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公司简介



苏州哈勒智能制造有限公司是一家从事5轴数控智能设备设计、研发与生产的公司。2014年成立之初，哈勒智能引进德国高端5轴数控装备技术，在中国组装消化吸收，智能更迭，升级换代，以适应中国本土化方式为用户提供工具磨削整体解决方案。随着公司的不断发展与业务增长，研发设计与生产装配工艺日趋成熟，以及国家对依赖进口的高端卡脖子设备的扶持，哈勒智能开始涉足于工具磨削设备、医疗机械、传动机械、辅助配套设备以及相关应用软件领域的自主研发与制造。现有成熟5轴数控磨床PG系列和M系列以及医疗、传动等多个领域的系列产品，并已获得多项国内专利。哈勒智能不仅为客户提供多元化的解决方案，专业的应用培训，优质的售后服务，更能帮助客户解决产品加工难点，全方位满足客户定制化需求。

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Company Profile



Suzhou Haller Intelligent Manufacturing Co., Ltd. is a company engaged in the design, R&D and manufacturing of 5-axis CNC intelligent equipment. Since its establishment in 2014, Haller brought in high level 5-axis CNC machine technology from Germany, doing machine assembly in China, upgrading and optimizing to provide local customers with complete tool grinding solutions. As the company developing, business growing, R&D and assembly technology getting mature and government encouraging policy of high level import-dependent machines, Haller has started the innovative development and manufacturing of tool grinding machine, medical machine, transmission machine, auxiliary equipment and programming of application software. Haller now has mature 5 axis grinding machine PG series and M series as well as series products in multi-fields like medical and transmission with domestic patents obtained. Haller not only provides customers with diverse solutions, professional application training, excellent after-sales service, but also can help customers solve production difficulties to satisfy all-round customized demands.



目录

CONTENTS

PG3 外部概览 Outside Overview	01
PG3 内部概览 Inside Overview	02
PG3 技术参数 Technical Data	03
PG3 应用 Application	04
PG6 外部概览 Outside Overview	05
PG6 内部概览 Inside Overview	06
PG6 技术参数 Technical Data	07
PG6 应用 Application	08
PG6-plus: PG6的升级加长丝杆版 Upgraded Extesntion of PG6	09
PG6-plus 配置优化 Configuration Optimization	10
PG6-plus 应用优势 Application Advantage	11
PG6-plus & PG6 技术参数对比 Technical Data Comparison	12
五轴专利结构 5-axis Patent Structure	13
NUM控制系统/ NUMROTOplus® 软件 NUM Control/ NUMROTOplus® Software	14
夹紧系统 Clamping System	15
自动上下料 Automatic Pick-up Loading System	16
抛光机 Polisher	17
支撑 Support	18

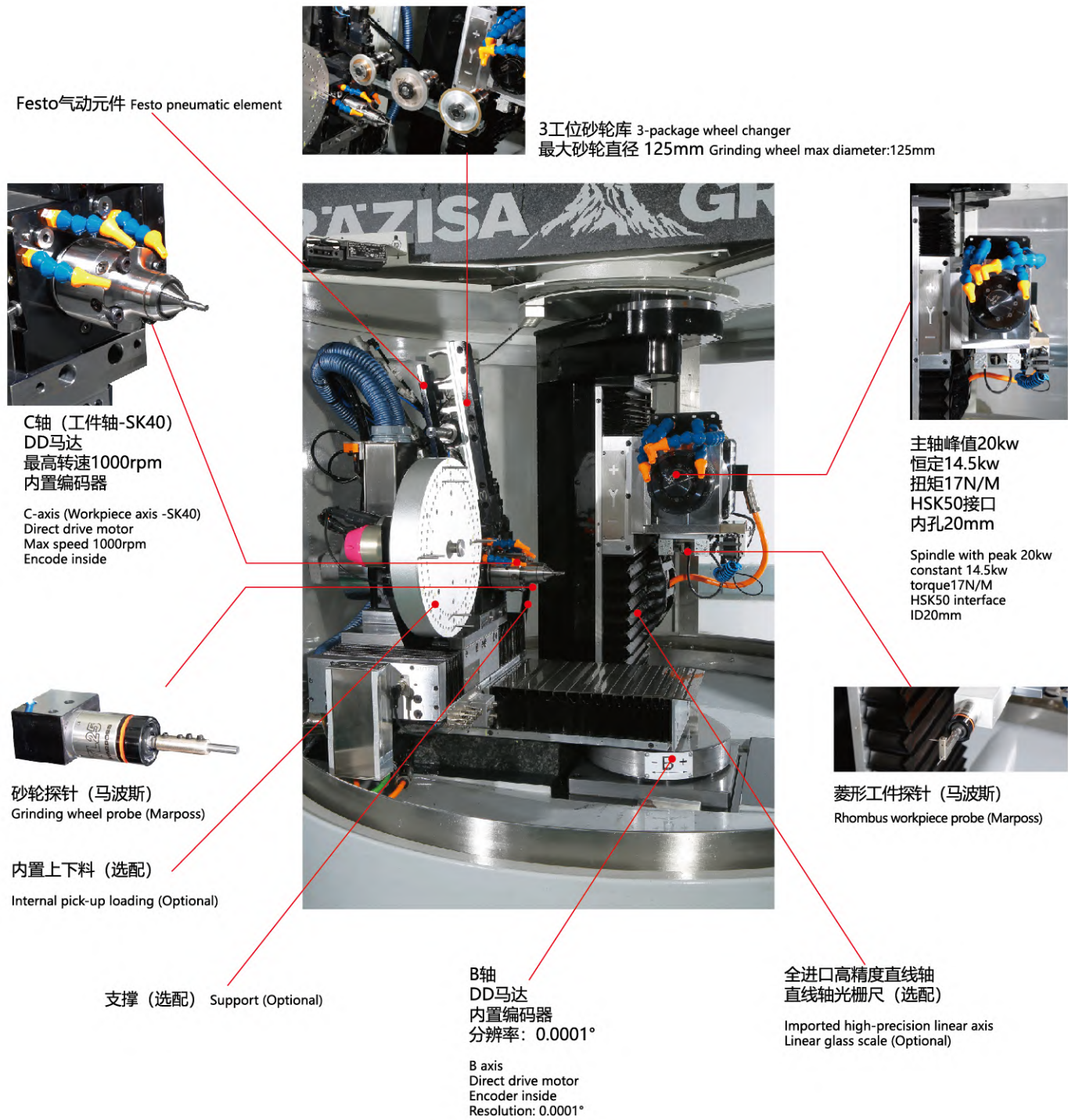
PG3 外部概览 PG3 Outside Overview



- 床身本体采用“矿物铸件”。吸振性强，阻尼特性是铸铁的10倍以上，且对于高、中、低频的震动都能吸收，随着主轴转速的提高，磨床镜面加工更易实现。热传导慢，是金属材料的1/24，从而大大提高了机床的稳定性。
- 天然花岗岩框架结构的CNC数控磨床，力学性能指标优秀，特别是硬度和线胀系数吸水率。
- 热机时间短，中途停机不影响加工精度。
- 双列轴承，高精度，高刚性。
- 恒定14.5KW的电主轴，独立冷却系统，恒定扭矩17N/M。
- 直线轴光栅尺，分辨率可达到0.0001mm。
- 加工程序短，优化的运行节拍，可节约加工时间，降低生产成本
- 工件、砂轮双自动在线测量系统高效准确，保证了加工刀具的稳定性。
- 全球领先的NUM-Flexium⁶⁸控制系统及NUMROTOplus®磨削软件操作灵活易学。
- 广泛应用加工3C刀具、牙科刀具、医疗工具、标准刀具及修磨业务。
- 加工直径范围 D0.5-12mm。

- Machine body use “mineral castings”. It has strong vibration absorption ability with the damping property 10 times more than cast iron. Being able to absorb high, medium and low frequency vibration, as the spindle speed increases, machine mirror processing is easier to be achieved. Slow heat conduction with only 1/24 of metal material, largely improve the machine stability.
- CNC grinding machine with natural granite structure, excellent mechanical properties indicator, especially hardness and linear expansion coefficient of water absorption.
- Short-time machine warm-up, no effect on machining precision in case of machine stop.
- Double bearings, high precision, high rigidity.
- Constant 14.5KW spindle, separate cooling system, constant torque 17N/M.
- Linear axis glass scale could reach the max resolution of 0.0001mm.
- Short travel paths, optimal operating cycle to save time and cost down.
- Auto tool measurement and grinding wheel measurement guarantee the stabilization of tool grinding.
- Global leading control system NUM-Flexium⁶⁸ and NUMROTOplus® software ,easy to learn and operate.
- Popularly applied in machining 3C tools, dental tools, medical tools, standard tools and regrinding.
- Tool diameter range: D0.5-12mm.

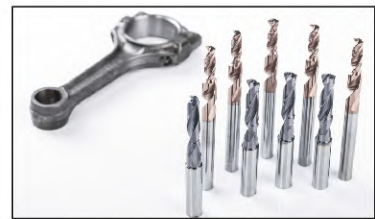
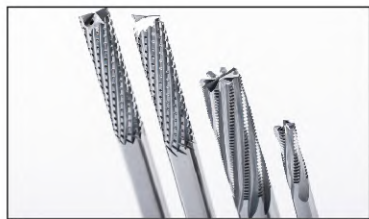
PG3 内部概览 PG3 Inside Overview



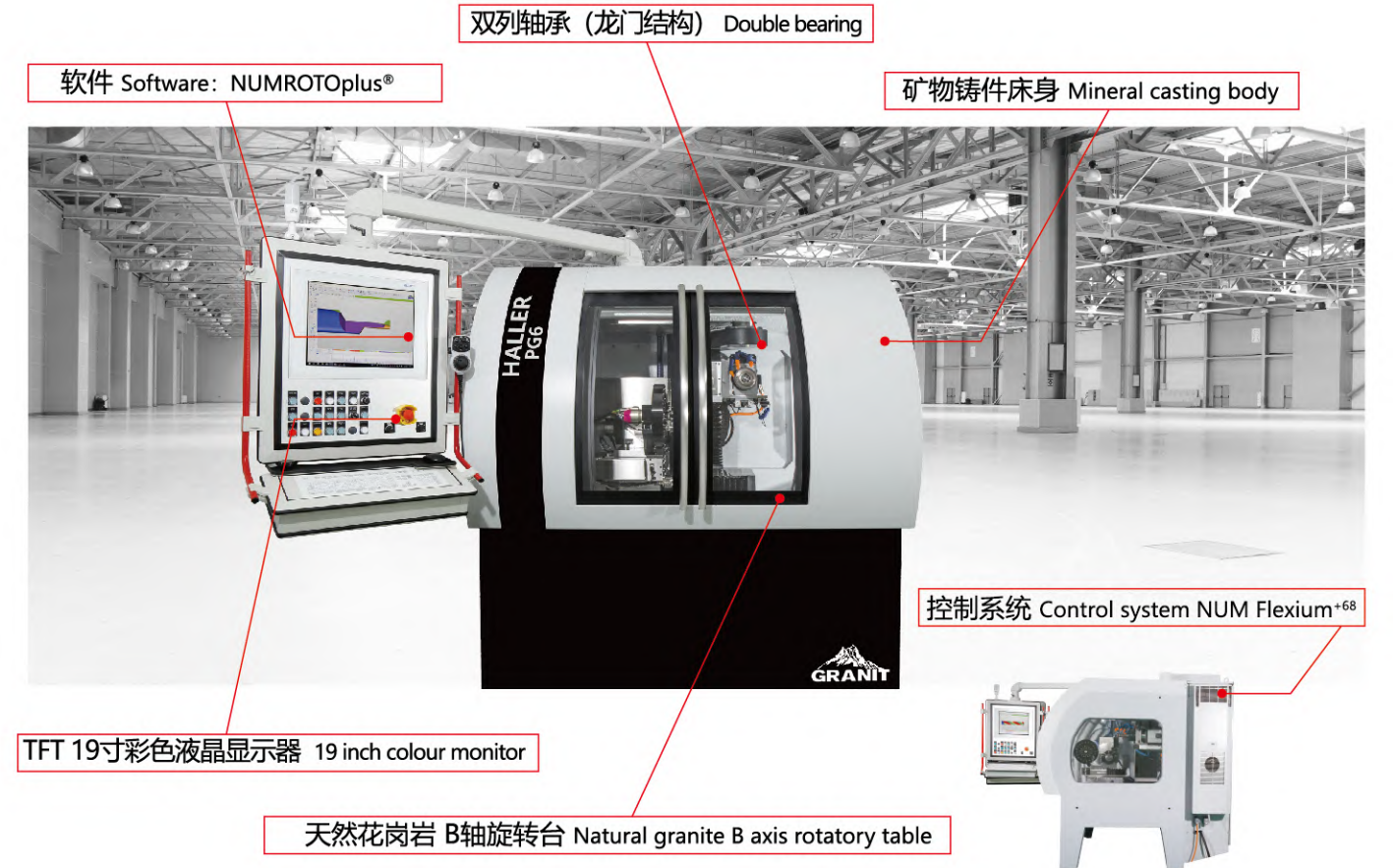
PG3 技术参数 PG3 Technical Data

机床尺寸(含电柜)			Machine dimensions (cabinet incl.)		
长度/宽度/高度			Length/Width/Height		
2250mm/2600mm/2060mm			2250mm/2600mm/2060mm		
重量			Weight		
约 4800kg			About 4800kg		
电源			Power supply		
3×400V-50HZ/40A			3×400V-50HZ/40A		
功率输入			Power input		
21kw			21kw		
压缩空气			Air Supply		
≥6bar			≥6bar		
颜色			Colour		
RAL9002灰白色			RAL9002 Light grey		
测量系统			Measurement system		
刀具测量 标配			Tool measurement (standard)		
3-D 探针 (马波斯)			3-D measurement probe (Marposs)		
砂轮测量 标配			Grinding wheel measurement (standard)		
3-D 探针 (马波斯)			3-D measurement probe (Marposs)		
高精度磨机电机			High precision grinding spindle motor		
0-10000rpm			0-10000rpm		
电机直驱HSK50气动/自动砂轮夹紧系统			Direct drive motor HSK50 pneumatic/automatic grinding wheel clamping system		
峰值20kw, 满载恒定14.5kw/17N/M			Peak 20kw , full-load constant 14.5kw/17N/M		
砂轮			Grinding wheels		
最大直径			Max diameter		
125mm			125mm		
每个砂轮连杆可装			Grinding wheels per clamping arbour		
1-4片砂轮			1-4 wheels		
冷却阀 程序控制			Cooling via cooling valve Program-controlled		
3组			3 valves		
砂轮夹紧系统 高精度			Grinding wheels clamping system High precision		
HSK50			HSK50		
3工位砂轮库(标配)			3-package wheel changer(standard)		
HSK50			for wheel max. Φ125mm		
C轴 (工件轴)			C-axis (Workpiece holder)		
标准C轴 锥度			Standard C-axis Spindle taper		
SK40			SK40		
夹紧系统 标配			Clamping system Standard		
手动			Manual		
夹紧系统 选配			Clamping system Optional		
自动			Automatic		
驱动形式 直驱			Drive Direct drive		
力矩电机最大1000rpm			Torque motor max 1000rpm		
分辨率			Resolution		
0.0001°			0.0001°		
内置上下料系统 (选配)			Internal loading system (Optional)		
Harmonic 电机无反向间隙			Backlash-free Harmonic drive system		
控制部分			Control unit		
CNC 控制部分			CNC Control unit		
NUM-Flexium®68			NUM-Flexium®68		
TFT彩色液晶显示器			TFT colour monitor		
19寸			19-inch		
用户软件			User software		
NUMROTOplus® 铣刀, 钻头, 非标刀具, 3D模拟软件			NUMROTOplus® Milling cutters, drills, special tools, 3-D simulation, 3-D collision monitoring Milling cutters,drills, special tools, 3-D simulation, 3-D collision monitoring		
冷却方式			Cooling		
工件轴及主轴			Workpiece axis and spindle		
独立油冷			Separate oil cooling		
油雾吸收装置			Oil mist exhaust unit		
静电式			Electrostatic		
接口			Interface		
Φ150mm			Φ150mm		
轴行程			Axis travel		
纵向 X轴			Longitudinal X axis		
310mm			310mm		
横向 Z轴			Lateral Z axis		
190mm			190mm		
垂直 Y轴			Vertical Y axis		
220mm			220mm		
分辨率 X-Y-Z轴			Resolution X-Y-Z axis		
0.0001mm			0.0001mm		
速度 X-Y-Z轴			Speed X-Y-Z axis		
15m/min旋转运动			15m/min rotational movement		
工件旋转轴 C轴			Rotational movement C axis		
360°			360°		
分辨率 C轴			Resolution C axis		
0.0001°			0.0001°		
速度 C轴			Speed C axis		
1000rpm			1000 rpm		
旋转轴 B轴			Rotation axis B axis		
195°			195°		
速度 B轴			Speed B axis		
112°/秒			112°/sec		
分辨率 B轴			Resolution B axis		
0.0001°			0.0001°		
轴驱动			Axis drives		
高扭矩输出NUM伺服电机			High-torque output NUM servo motors		

PG3 应用 PG3 Application



PG6 外部概览 PG6 Outside overview



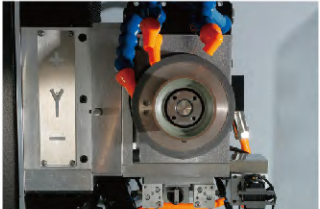
- 床身本体采用“矿物铸件”。吸振性强，阻尼特性是铸铁的10倍以上，且对于高、中、低频的震动都能吸收，随着主轴转速的提高，磨床镜面加工更易实现。热传导慢，是金属材料的1/24，从而大大提高了机床的稳定性。
- 天然花岗岩框架结构的CNC数控磨床，力学性能指标优秀，特别是硬度和线胀系数吸水率。
- 热机时间短，中途停机不影响加工精度。
- 双列轴承，高精度，高刚性。
- 恒定14.5KW的电主轴，独立冷却系统，恒定扭矩17N/M。
- 直线轴光栅尺，分辨率可达到0.0001mm。
- 加工行程短，优化的运行节拍，可节约加工时间，降低生产成本
- 工件、砂轮双自动在线测量系统高效准确，保证了加工刀具的稳定性。
- 全球领先的NUM-Flexium^{®68}控制系统及NUMROTOplus[®]磨削软件操作灵活易学。
- 广泛应用于加工航空刀具、医疗骨科、各类非标成型刀具。
- 加工直径范围D3-20mm。

- Machine body use “mineral castings”. It has strong vibration absorption ability with the damping property 10 times more than cast iron. Being able to absorb high, medium and low frequency vibration, as the spindle speed increases, machine mirror processing is easier to be achieved. Slow heat conduction with only 1/24 of metal material, largely improve the machine stability.
- CNC grinding machine with natural granite structure, excellent mechanical properties indicator, especially hardness and linear expansion coefficient of water absorption.
- Short-time machine warm-up, no effect on machining precision in case of machine stop.
- Double bearings, high precision, high rigidity.
- Constant 14.5KW spindle, separate cooling system, constant torque 17N/M.
- Linear axis glass scale could reach the max resolution of 0.0001mm.
- Short travel paths, optimal operating cycle to save time and cost down.
- Auto tool measurement and grinding wheel measurement guarantee the stabilization of tool grinding.
- Global leading control system NUM-Flexium^{®68} and NUMROTOplus[®] software, easy to learn and operate.
- Popularly applied in machining aviation tools, medical bone tools, various special form tools.
- Tool diameter range: D3-20mm.

PG6 内部概览 PG6 Inside Overview

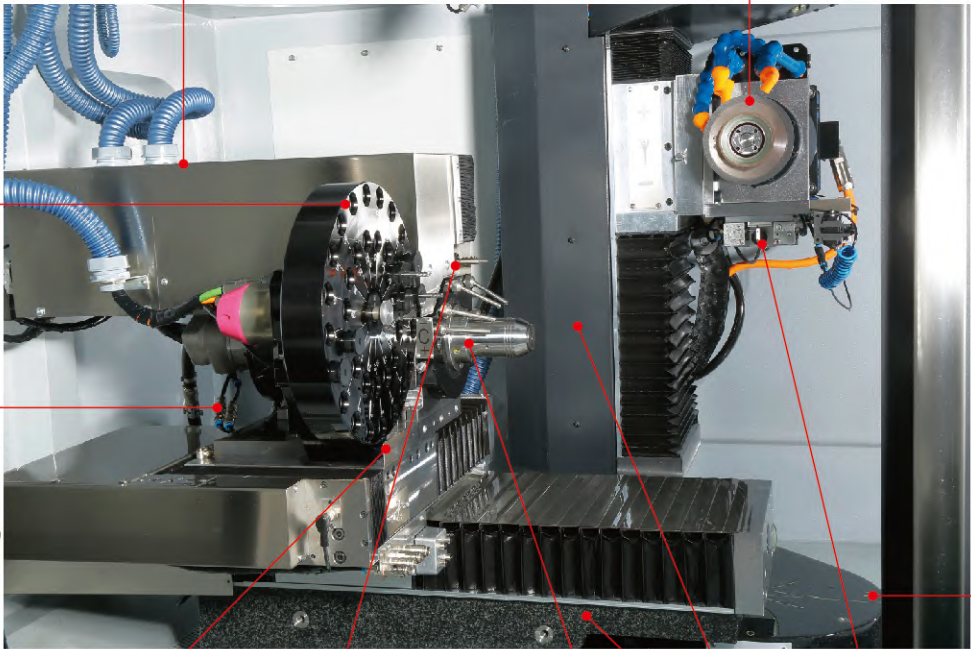


抽屉式3工位砂轮库 Drawer 3-package wheel changer
最大砂轮直径 125mm Grinding wheel max diameter:125mm



主轴峰值20kw
恒定14.5kw
扭矩17N/M
HSK50接口
内孔20mm

Spindle with peak 20kw
constant 14.5kw
torque17N/M
HSK50 interface
ID20mm



Festo气动元件
Festo Pneumatic Element

内置上下料 (选配)
Internal pick-up loading (Optional)

B轴
DD马达
内置编码器
分辨率: 0.0001°

B axis
Direct drive motor
Encoder inside
Resolution: 0.0001°



砂轮探针 (马波斯)
Grinding wheel probe (Marposs)



C轴 (工件轴-SK50)
DD马达
力矩电机1000rpm
内置编码器

C-axis (Workpiece axis -SK50)
Direct drive motor
Motor speed 1000rpm
Encode inside

高精度天然大理石
X轴、Y轴底座

High-precision natural
granite X-axis, Y-axis
foundation



菱形工件探针 (马波斯)
Rhombus workpiece probe (Marposs)

PG6 技术参数 PG6 Technical Data

机床尺寸(含电柜)		
长度/宽度/高度		2960mm/2390mm/2260mm
重量		约 5500kg
电源		3×400V-50HZ/64A
功率输入		27kw
压缩空气		≥6bar
颜色		RAL7035灰白色
测量系统		
刀具测量 标配		3-D 探针 (马波斯)
砂轮测量 标配		3-D 探针 (马波斯)
高精度磨轴电机		0-10000rpm
电机直驱HSK50气动/自动砂轮夹紧系统		峰值20kw, 满载恒定14.5kw/17N/M
砂轮		
最大直径		125mm
每个砂轮连杆可装		1-4片砂轮
冷却阀	程序控制	3组
砂轮夹紧系统	高精度	HSK50
3工位砂轮库	HSK50	最大直径 Φ125mm
可选6工位砂轮库	HSK50	最大直径 Φ125mm
C轴 (工件轴)		
标准C轴	锥度	SK50
夹紧系统	标配	手动
夹紧系统	选配	自动
驱动形式	直驱	力矩电机1000rpm
分辨率		0.0001°
内置上下料系统 (选配)		Harmonic 电机无反向间隙
控制部分		
CNC 控制部分		NUM-Flexium ^{®68}
TFT彩色液晶显示器		19寸
用户软件		
NUMROTOplus [®] 铣刀, 钻头, 非标刀具, 3D模拟软件		
冷却方式		
工件轴及主轴		独立油冷
油雾吸收装置		静电式
接口		Φ150mm
轴行程		
纵向	X轴	350mm
横向	Z轴	230mm
垂直	Y轴	230mm
分辨率	X-Y-Z轴	0.0001mm
速度	X-Y-Z轴	15m/min旋转运动
工件旋转轴	C轴	360°
分辨率	C轴	0.0001°
速度	C轴	1000rpm
旋转轴	B轴	195°
速度	B轴	112°/秒
分辨率	B轴	0.0001°
轴驱动		高扭矩输出NUM伺服电机

Machine dimensions (cabinet incl.)		
Length/Width/Height		2960mm/2390mm/2260mm
Weight		About 5500kg
Power supply		3×400V-50HZ/64A
Power input		27kw
Air Supply		≥6bar
Colour		RAL7035 Light grey
Measurement system		
Tool measurement (standard)		3-D measurement probe (Marposs)
Grinding wheel measurement (standard)		3-D measurement probe (Marposs)
High precision grinding spindle motor		0-10000rpm
Direct drive motor HSK50 pneumatic/automatic grinding wheel clamping system		Peak 20kw , full-load constant 14.5kw/17N/M
Grinding wheels		
Max diameter		125mm
Grinding wheels per clamping arbour		1-4 wheels
Cooling via cooling valve	Program-controlled	3 valves
Grinding wheels clamping system	High precision	HSK50
3-package wheel changer	HSK50	for wheel max. Φ125mm
Optional 6-package wheel changer HSK50		for wheel max.Φ125mm
C-axis (Workpiece holder)		
Standard C-axis	Spindle taper	SK50
Clamping system	Standard	Manual
Clamping system	Optional	Automatic
Drive	Direct drive	Torque Motor 1000rpm
Resolution		0.0001°
Internal loading system (Optional)		Backlash-free Harmonic drive system
Control unit		
CNC Control unit		NUM-Flexium ^{®68}
TFT colour monitor		19-inch
User software		
NUMROTOplus [®] Milling cutters, drills, special tools, 3-D simulation, 3-D collision monitoring		
Milling cutters,drills, special tools, 3-D simulation, 3-D collision monitoring		
Cooling		
Workpiece axis and spindle		Separate oil cooling
Oil mist exhaust unit		Electrostatic
Interface		Φ150mm
Axis travel		
Longitudinal	X axis	350mm
Lateral	Z axis	230mm
Vertical	Y axis	230mm
Resolution	X-Y-Z axis	0.0001mm
Speed	X-Y-Z axis	15m/min rotational movement
Rotational movement	C axis	360°
Resolution	C axis	0.0001°
Speed	C axis	1000 rpm
Rotation axis	B axis	195°
Speed	B axis	112°/sec
Resolution	B axis	0.0001°
Axis drives		High-torque output NUM servo motors

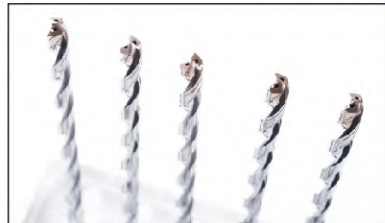
PG6 应用 PG6 Application



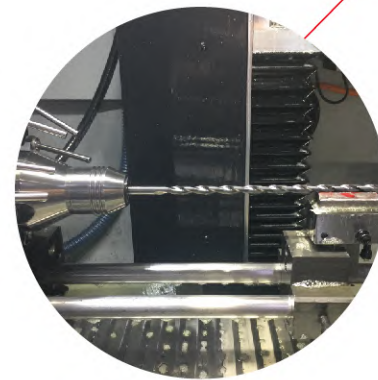
哈勒智能



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PG6-plus: PG6的升级加长丝杆版 Upgraded Extension of PG6



技术特点:

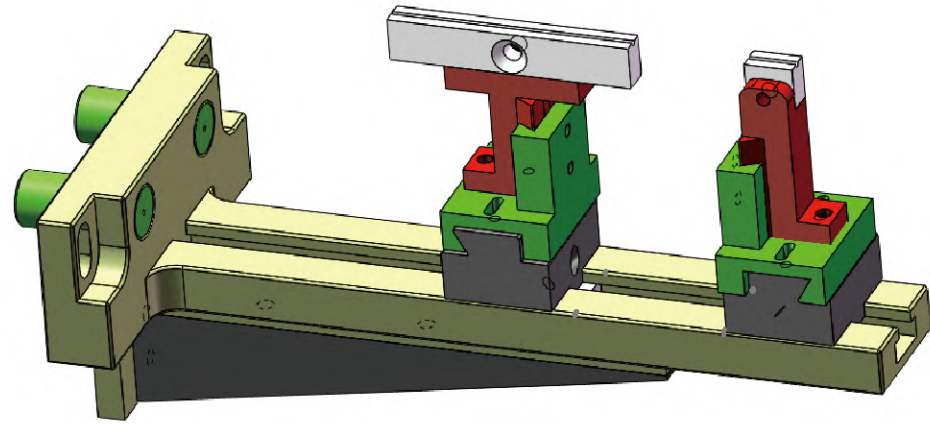
在PG6 的基础上, PG6-plus 的三轴丝杆导轨加粗, 尤其是X轴行程加长, 完整加工长度实现360mm. 其余技术参数与PG6相同。

Technical characteristic:

Based on PG6, PG6-plus has bigger ball screw and guideline, especially X-axis travel path is longer, can realize the full machining length of 360mm. Other technical data are the same as PG6.

PG6-plus 配置优化 Configuration Optimization

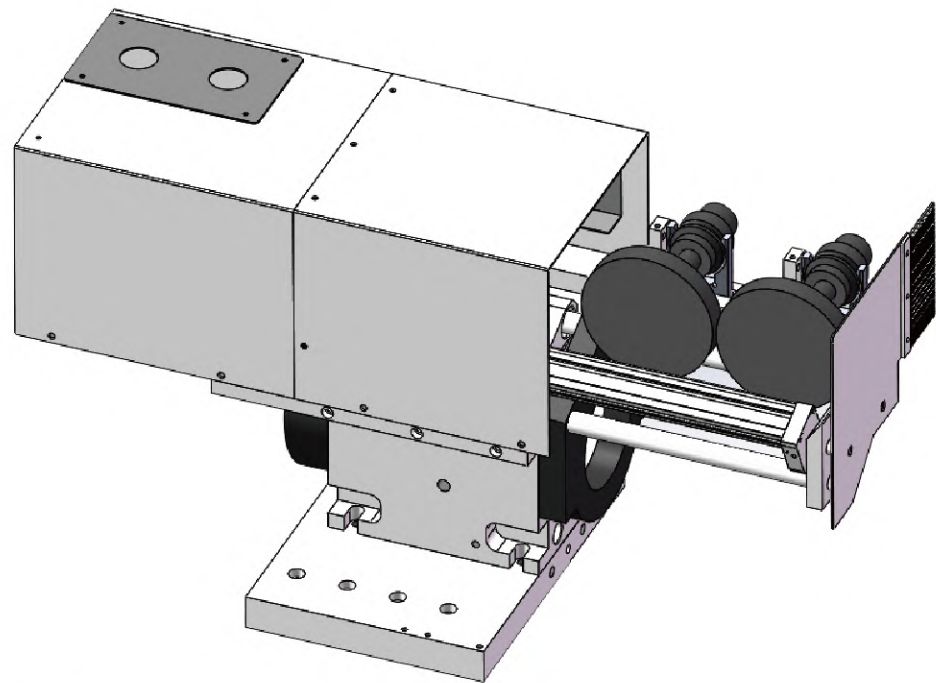
L/2型固定支撑 L/2 Type Fixed Support



配置L/2型固定支撑，支撑块直径范围可根据工件直径定制，为刀具加工提供固定支撑，优化刀具同心度，避免出现让刀情况。

Matched with L/2 type fixed support, supporting cup diameter range can be customized according to workpiece diameter, making tool machining more stable through the fixed support, optimizing tool concentricity, avoiding tool loose.

2工位砂轮库 2-Package Wheel Changer

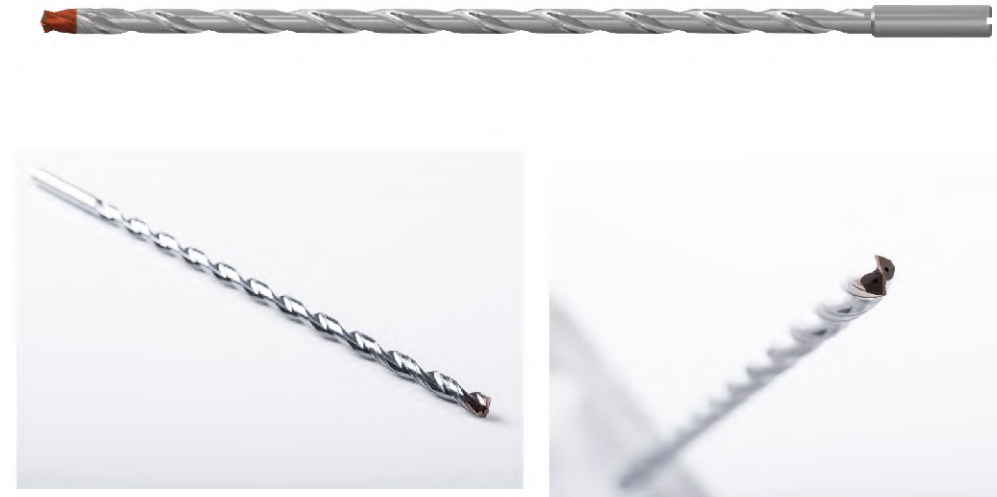


配置2工位砂轮库以适应PG6-plus 加长行程

Matched with 2-package wheel changer to adapt the longer travel path of PG6-plus.

PG6-plus 应用优势 Application Advantage

优秀表现于加工深孔钻 Excellent for Machining Deep Hole Drill



深孔钻用于加工曲轴 Deep Hole Drill Applied for Crankshaft



PG6-plus & PG6 技术参数对比 Technical Data Comparison

PG6			PG6-plus		
轴行程			轴行程		
纵向	X轴	350mm	纵向	X轴	460mm
横向	Z轴	230mm	横向	Z轴	230mm
垂直	Y轴	230mm	垂直	Y轴	230mm
分辨率	X-Y-Z	0.0001mm	分辨率	X-Y-Z	0.0001mm
速度	X-Y-Z	15m/min旋转运动	速度	X-Y-Z	15m/min旋转运动
工件旋转轴	C轴	360°	工件旋转轴	C轴	360°
分辨率	C轴	0.0001°	分辨率	C轴	0.0001°
速度	C轴	1000rpm	速度	C轴	1000rpm
旋转轴	B轴	195°	旋转轴	B轴	195°
速度	B轴	112°/秒	速度	B轴	112°/秒
分辨率	B轴	0.0001°	分辨率	B轴	0.0001°
轴驱动	高扭矩输出NUM伺服电机		轴驱动	高扭矩输出NUM伺服电机	
完整加工长度	270mm		完整加工长度	360mm	

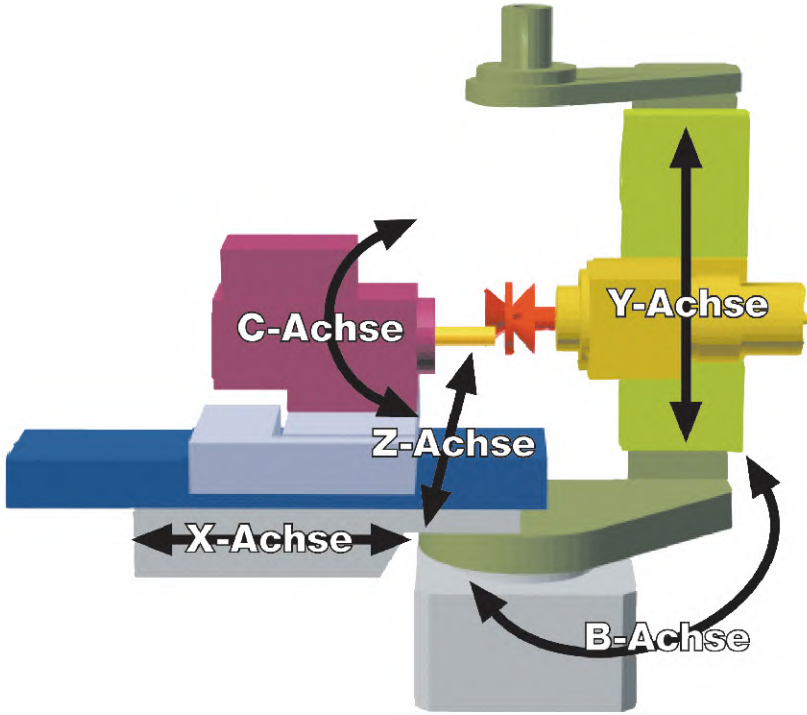
PG6			PG6-plus		
Axis Travel			Axis Travel		
Longitudinal	X axis	350mm	Longitudinal	X axis	460mm
Lateral	Z axis	230mm	Lateral	Z axis	230mm
Vertical	Y axis	230mm	Vertical	Y axis	230mm
Resolution	X-Y-Z axis	0.0001mm	Resolution	X-Y-Z axis	0.0001mm
Speed	X-Y-Z axis	15m/min rotational movement	Speed	X-Y-Z axis	15m/min rotational movement
Rotational movement	C axis	360°	Rotational movement	C axis	360°
Resolution	C axis	0.0001°	Resolution	C axis	0.0001°
Speed	C axis	1000rpm	Speed	C axis	1000rpm
Rotation axis	B axis	195°	Rotation axis	B axis	195°
Speed	B axis	112°/sec	Speed	B axis	112°/sec
Resolution	B axis	0.0001°	Resolution	B axis	0.0001°
Axis drives	High-torque output NUM servo motors		Axis drives	High-torque output NUM servo motors	
Full machining length	270mm		Full machining length	360mm	



德国设计 German Design

五轴专利结构
5-axis Patent Structure

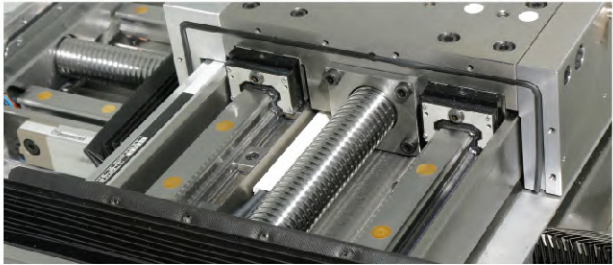
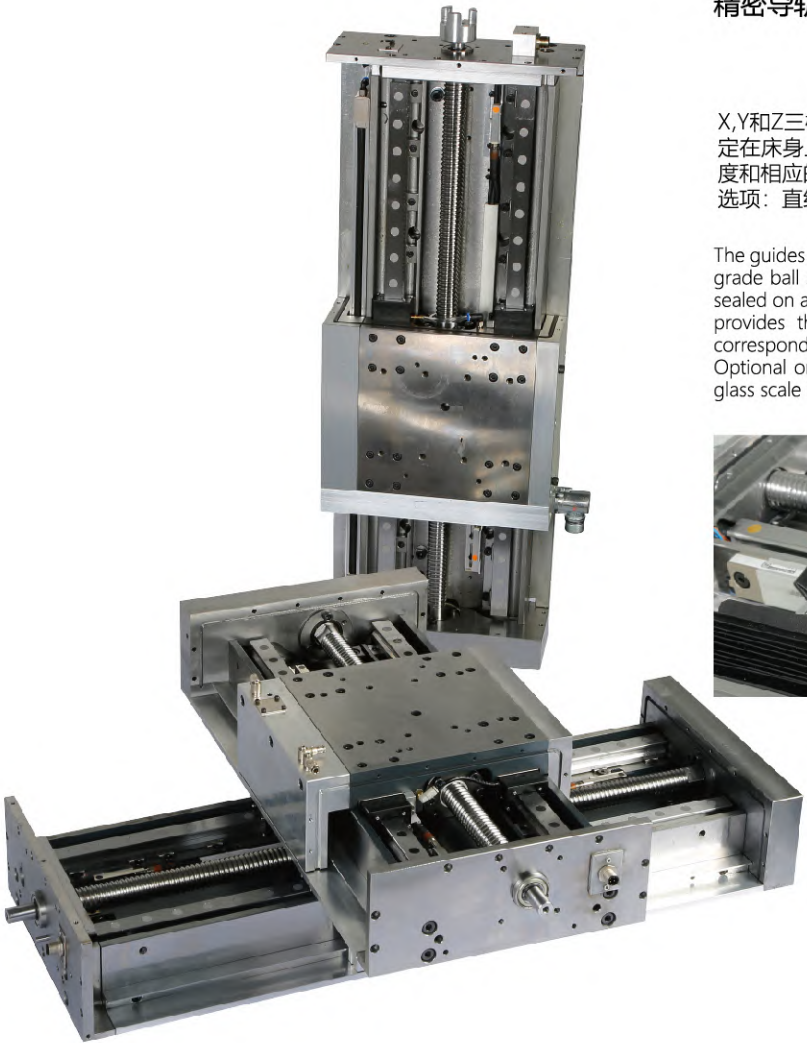
- 短路径
- 理想的旋转次数
- 极佳的切削设备
- 紧凑的设计
- 积木式结构
- 高刚性
- 最高精度
- Short travel paths
- Optimal cycle times
- Excellent grinding facilities
- Compact design
- Modular construction
- High rigidity
- Highest precision



精密导轨 Precision Guides

X,Y和Z三根直线轴采用最高等级SP级THK导轨，C2级丝杆导轨固定在床身上，由防护罩保护。设计高度稳定，为机床提供最高精度和相应的承载能力。
选项：直线轴光栅尺精度0.002mm，所有轴的光栅尺均可选装

The guides used in the X-, Y-and Z-axis are highest-grade SP THK and C2 grade ball screw integrated in the slide carriages, which are completely sealed on all sides. The new design of these highly stable guide elements provides the machine with both a maximum of precision and the corresponding load capacity.
Optional on request: Linear glass scale with precision 0.002mm, linear glass scale is optional in all axes.



瑞士品质 Swiss Quality



控制系统 Control System



NUM-Flexium⁺⁶⁸

- 新一代NUM-Flexium⁺⁶⁸数控轴系统
- 高分辨率直驱电机
- 19寸TFT彩色显示屏与功能键盘
- 优化设计的电器柜易于修理
- 通过光纤链接的可旋转操作面板方便操作
- 直接安装在机床电器柜里的电脑为今后的维护、更换、升级提供了便利从而节省了费用

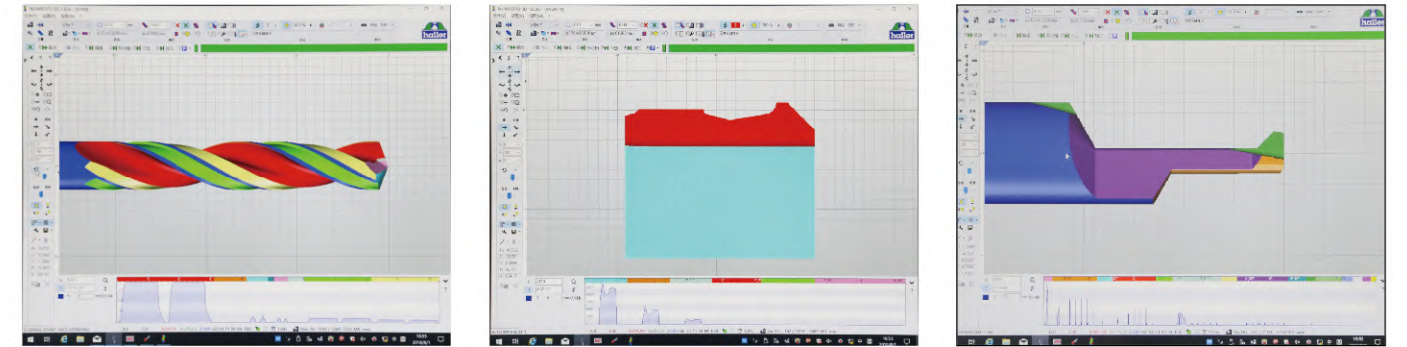
NUM-Flexium⁺⁶⁸

- Digital CNC control unit for highest requirement
- High resolution direct drive motor
- 19-inch TFT colour display with touch screen function
- Electrical cabinet with optimal arrangement and accessibility for easy servicing
- Swivelling service panel connected via Ether-cut simple for simple operation
- An office PC can easily be integrated in the electrical cabinet to promote maintainance, rapid replacement and updates without high investment costs.

numroto
Total solution for tool grinding

NUMROTOplus®

全球领先的用户软件 The worldwide leading user software



旋转锉：圆柱/圆锥/弧形/球形/圆弧倒角/DXF图形导入

轮廓刀具：设计你自己所有类型的轮廓刀具。适用于各类带柄刀具，刀片或自由编程。

客户支持：您可以通过线上线下多种方式获取支持，注册NUMROTOplus®软件用户，共享并获得更多更详细的信息资料。

特殊刀具的软件定制

Burrs: cylindrical/ conical/arc/ball-end/DXF form with flat end,ball/corner radius

Profile tools: design your own profile of all types. All profiles on shank type tools or form plates. Free programming.

Customer support: software support through tele-service via PC anywhere and modem. You can request extensive informative material on the complete NUMROTOplus® user software (CD+brochures)

Special tools software on request

- | | |
|--------------------------|---|
| ■ 铣刀软件包 | ■ Milling cutter software package |
| ■ 圆柱和圆锥平头铣刀 | ■ Cylindrical and conical end mills with straight front |
| ■ 倒角铣刀 | ■ Corner chamfer |
| ■ 圆柱、圆锥球头和圆角铣刀 | ■ Full radius end mills and corner radius for cylindrical and conical tools |
| ■ 钻头软件包 | ■ Drill software package |
| ■ 多达14种钻尖形式 | ■ Up to 14 different drill points |
| ■ 阶梯钻可包含10阶梯 | ■ Step drill with up to 10 steps |
| ■ 阶梯钻头预磨外圆 | ■ Form step drills/ cylindrical grinding |
| ■ NUM-Flexium+68控制系统用户PC | ■ USER PC |
| ■ 不断适应最新的PC技术 | ■ Continuous adaptation to latest PC technology |
| ■ 最新Windows 系统软件 | ■ System software: latest Windows generation |
| ■ 可连接网络 | ■ Network connection possible |
| ■ 可选远程软件维护及软件备份 | ■ Optional remote maintainance software, backup-software |

夹紧系统 Clamping System

- 气动夹紧系统
- Pneumatic clamping system

雄克刀柄 SCHUNK Chuck

- 雄克手动刀柄SK40/SK50
- 雄克自动液压刀柄SK40/SK50
- SCHUNK manual chuck SK40/SK50
- SCHUNK automatic hydraulic chuck SK40/SK50



GEWEFA 刀柄 GEWEFA Chuck

- GEWEFA手动刀柄
- GEWEFA自动液压刀柄
- GEWEFA manual chuck SK40/SK50
- GEWEFA automatic hydraulic chuck SK40/SK50

肖布林 SCHAUBLIN

W15/W20/W25可选 Optional W15/W20/W25

- 转接头 ■ Adapter(Interface)



- 刀柄 ■ SRS(Chuck)



- 拉杆 ■ Drawbar



- 筒夹 ■ Collet



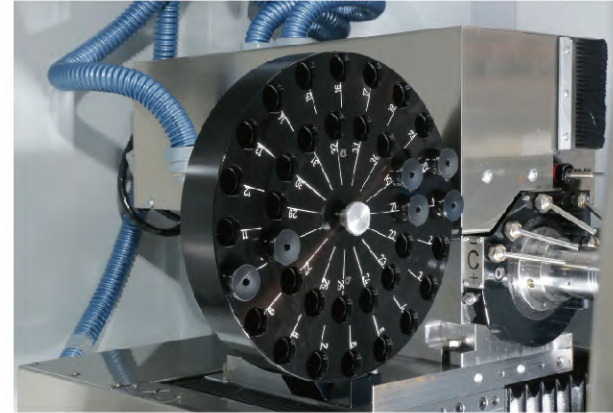
HSK 50砂轮连接杆 Grinding wheel adaptor HSK 50

长度Length 50 x 20 x 90 mm

长度Length 50 x 20 x 120mm



自动上下料 Automatic Pick-up Loading System

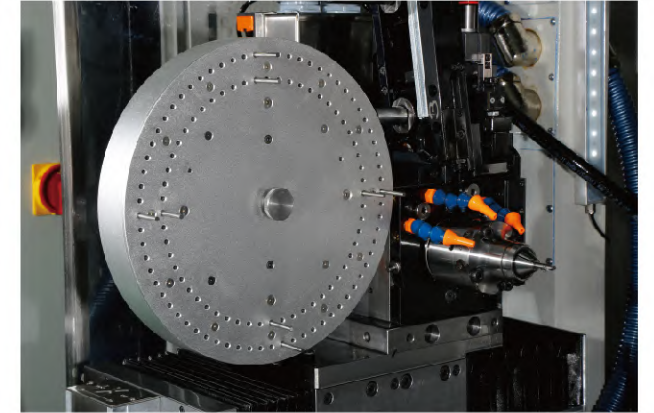


内置式自动上下料盘：筒夹式

Internal pick-up loader plate with collets

- 筒夹式料盘 Plate with collets:

- ILS R35(D22)-D4/D6/D8/D10/D12/D14/D16/D18
- ILS R66(D14)-D4/D6/D8/D10
- ILS R66(D14)- D12 (材质特制 special material)



内置式自动上下料盘：棒料式

Internal pick-up loader plate with bar-loading

- 棒料式料盘 Plate with bar-loading:

- ILS P124-D4mm
- ILS P121-D6mm
- ILS P106-D8mm
- ILS P100-D10mm

外置式机械手自动上下料系统 External pick-up loader robot

- 一流的高速性能
- 自由且紧凑的安装条件
- 巧妙的电缆布线

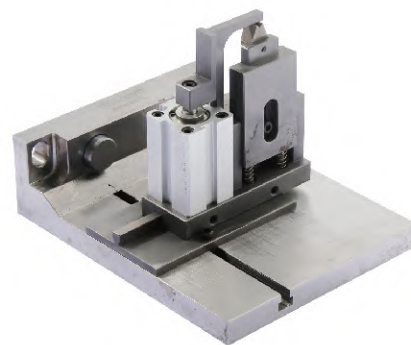
- Good high speed function
- Free and compact installation condition
- Excellent cable lay-out



支撑 Support

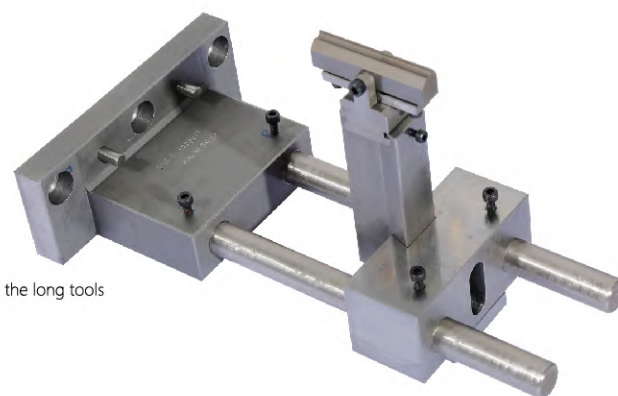
1. 支撑E型 Support Type E

- 支撑刀具柄部，适用于细短型刀具
- Support the tool shank, applied to short and thin tools



2. 支撑L型 Support Type L

- 在刀具加工时支撑刀具刃部，适用于长形刀具
- Support the tool cutting edge when grinding the tool, applied to the long tools



3. 支撑A型 Support Type A

- 可在使用自动上下料时，为刀具提供支撑
- Give support to the tools when using automatic pick-up loader

