

HALLER



M Series

5-AXIS CNC TOOL
GRINDING MACHINE

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M1



Highly Efficient Tool Grinding

- Natural granite machine bed has a good shock absorption and heat resistance ability ;
- Double-ended grinding spindle, power 13KW(peak value) ;
- HSK40E interface ;
- Exchangeable for 2 sets of grinding wheels, the maximum diameter of the grinding wheel is 125 mm ;
- The robot auto-loading for tools batch production from diameter 0.5 to 10 mm.

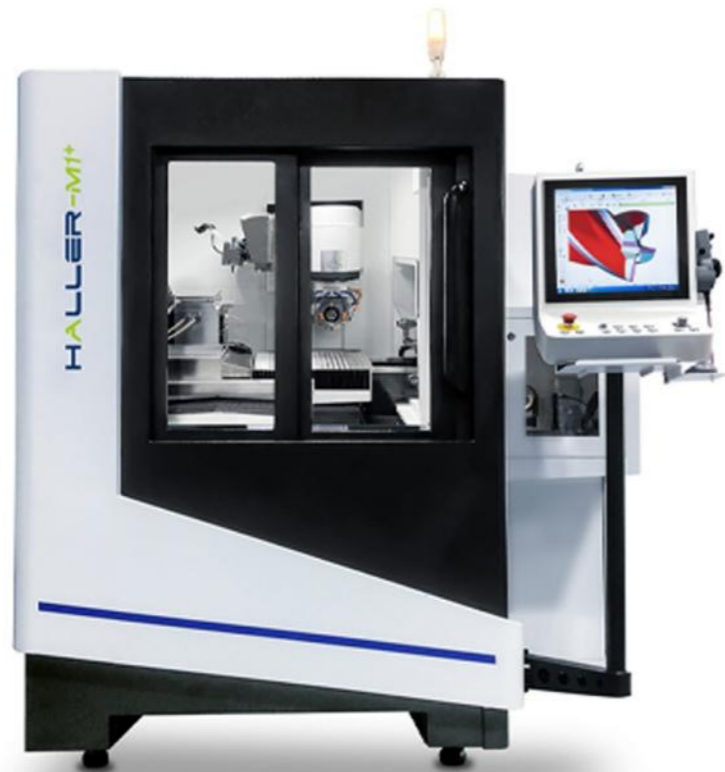
M1C



More Suitable for Small Tools

- A compact grinder, exquisite and space-saving ;
- Same functional performance as M1 ;
- Natural granite machine bed has a good shock absorption and heat resistance ability ;
- Double-ended grinding spindle, power 13KW(peak value) ;
- HSK40E interface ;
- Exchangeable for 2 sets of grinding wheels, the maximum diameter of the grinding wheel is 125 mm.

M1+



Satisfying More Processing Requests

- Natural granite machine bed has a good shock absorption and heat resistance ability ;
- Single-ended grinding spindle, power 15KW(peak value) ;
- HSK50F interface ;
- Equipped with a 3-package wheel changer, automatically change the grinding wheel inside machine ;
- The robot auto-loading for tools batch production from diameter 0.5 to 10 mm, tool production up to 16mm by manual loading.

M3



Suitable for Complex Tools: long drills/hobs/Christmas tree cutters/etc

- Casting machine bed, Rigidity and stability ;
- Single-ended grinding spindle, power 24KW(peak value) ;
- HSK50C interface ;
- Equipped with a 4- package wheel changer , Can meet the needs of Various complex tool machining ;
- Optional Nachi Robot auto-loading system ;
- Optional support bracket system, realise extra-long tool grinding. Maximum processing length up to 340(380)mm.

Application Software

Control System



NUM-Flexium ⁺⁶⁸

- Digital CNC control unit for highest requirement;
- High resolution direct drive motor;
- TFT colour display with uniquely simple operating panel;
- Electrical cabinet with optimal arrangement and accessibility for easy servicing;
- Rotatable panel connected via Ether-cut simple simple operation.

Grinding Software

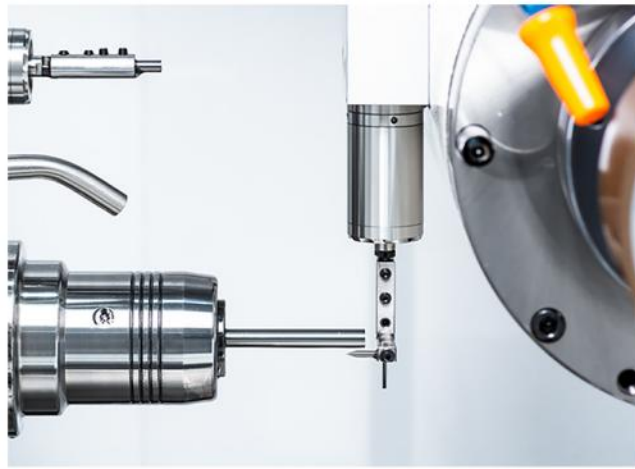


Widely application



Automation Options

Automatic Internal Measuring System



Workpiece measuring system

The workpiece is internally rapid-positioned, and the workpiece parameters are measured and adjusted in the process of tool machining to ensure the tool quality.



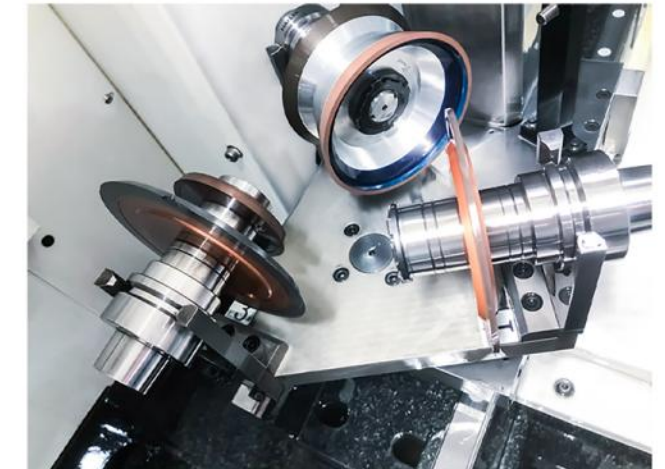
Grinding wheel measuring system

Machine automatic internal measurement of grinding wheel parameters is fast and convenient, to helpfully reduce the measuring time outside the machine, avoid manual checking errors, accurately and efficiently, so as to ensure the stability of the tool machining and efficiency is improved as well.

Automatic wheel changer

3-package

3-package wheel changer, automatically change the grinding wheel inside machine.



4-package

4-package wheel changer, to satisfy the diversified tool processings.



Automation Options

Automatic loading system



Internal robot

Automatic loading system use pneumatic components of SCHUNK grippers. Stable and reliable, high accuracy to have a batch production of tools, saving labor cost. Applicable to M1, M1C, M1+. According to workpiece diameter and length, the plate capacity can be up to 54 pcs / 70 pcs.



Nachi Robot

M3 uses precise and reliable Nachi robot to provide an automatic loading solution for big tools, satisfying diversified tool processing requests.

- D20×35 pcs
- D12×70 pcs
- D10×150 pcs
- D3×345 pcs

Additional options

Support bracket system

The support bracket system helps increase the stability and reduce vibration during the grinding process to improve tool qualification rates and machine efficiency.

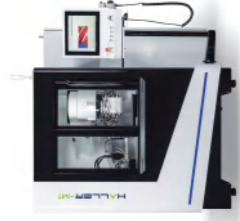


Tailstock

The tailstock can be used to clamp complex tools such as reamers and hobs, reducing vibration and deformation of the workpiece during machining, shortening the clamping time and improving machining efficiency.



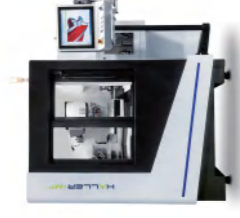
M series compilations



M1



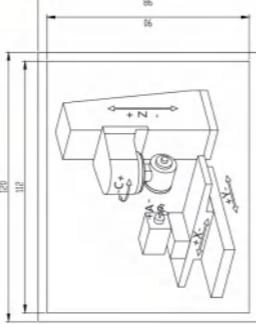
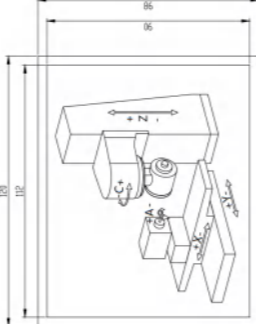
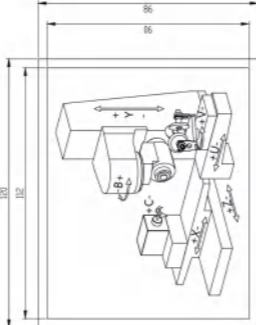
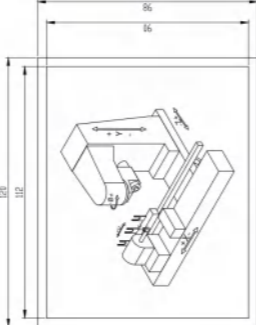
M1C



M1+



M3

Grinding range		0.5-10mm	0.5-10mm	0.5-16mm	1-32mm
Diameter range for tool production		50mm	50mm	50mm	200mm
Max. diameter for tool regrinding		110mm	110mm	180mm	340(380)mm
Max. processing length					
Control system					
CNC control unit		NUM-Flexium+68	NUM-Flexium+68	NUM-Flexium+68	NUM-Flexium+68
Grinding software		NUMROTOplus®	NUMROTOplus®	NUMROTOplus®	NUMROTOplus®
Liquid crystal display		17 inch	17 inch	17 inch	19 inch
Machine structure					
X axis	Linear motor	Linear motor	Linear motor	Linear motor	Linear motor
Y axis	Linear motor	Linear motor	Linear motor	NUM servo motor	Linear motor
Z axis	NUM servo motor	NUM servo motor	NUM servo motor	Linear motor	Linear motor
Axes diagram					
Linear axes parameter					
X axis travel	385mm	385mm	385mm	385mm	450mm
Y axis travel	330mm	330mm	330mm	160mm	205mm
Z axis travel	160mm	160mm	160mm	330mm	340mm
Speed X axis	20m/min	20m/min	20m/min	20m/min	20m/min
Speed Y axis	20m/min	20m/min	20m/min	8m/min	10m/min
Speed Z axis	8m/min	8m/min	8m/min	20m/min	10m/min
Resolution	0.0001 mm	0.0001 mm	0.0001 mm	0.0001 mm	0.0001 mm
HEIDENHAIN glass scale					
X axis	Standard	Standard	Standard	Standard	Standard
Y axis	Standard	Standard	Standard	Optional	Standard
Z axis	Optional	Optional	Optional	Standard	Standard
Spindle					
Spindle type		Double-ended	Double-ended	Single-ended	Single-ended
Drive		Direct drive(DD)	Direct drive(DD)	Direct drive(DD)	Direct drive(DD)
Spindle speed		0-8000rpm	0-8000rpm	0-8000rpm	0-8000rpm
Max. spindle power		13KW	13KW	15KW	24kw
Spindle cooling		Available, optional separate cooler	Available, optional separate cooler	Available, optional separate cooler	Available, standard separate cooler
Grinding wheels					
Max. wheel diameter		125mm	125mm	125mm	150mm
Wheel changer		Not available	Not available	3-package	4-package
Wheels qty per armour		1-3 pcs	1-3 pcs	1-3 pcs	1-3 pcs
Cooling valve (Program-controlled)		2 valves	2 valves	2 valves	3 valves
Grinding wheel interface		HSK40E	HSK40E	HSK50F	HSK50C
Rotary					
Rotary Name		C axis	C axis	B axis	B axis
Drive		Direct drive(DD)	Direct drive(DD)	Direct drive(DD)	Direct drive(DD)
Rotation angle		320°	310°	270°	225°
Resolution		0.0001°	0.0001°	0.0001°	0.0001°
Workpiece axis					
Drive		Direct drive(DD)	Direct drive(DD)	Direct drive(DD)	Direct drive(DD)
Max. speed		1000rpm	1000rpm	1000rpm	1000rpm
Resolution		0.0001°(A axis)	0.0001°(A axis)	0.0001°(A axis)	0.0001°(C axis)
Taper Interface		SK40	SK40	SK40	SK50
Toolholder clamping system		Automatic	Automatic	Automatic	Automatic
Measurement system					
Workpiece measurement		Standard	Standard	Standard	Standard
Wheel measurement		Standard	Standard	Standard	Standard
Auto-loading system					
Type of loading		Internal robot	Internal robot	Internal robot	Nachi robot
Tool capacity		70 pcs	70 pcs	54 pcs	D20×35 pcs D10×150 pcs D12×70 pcs D3×345 pcs
*Actual capacity depends on tool holder type and tool diameter					
Supporting bracket system					
Supporting bracket		Optional, fixed support	Optional, fixed support	Optional, fixed support	Optional, support moving with X axis
Tailstock		Optional	Optional	Optional	Optional
Machine interface					
Machine oil inlet		G3/4"	G3/4"	G3/4"	G1"
Machine oil outlet		Ø108mm	Ø108mm	Ø108mm	Ø108mm
Machine oil mist interface		Ø150mm	Ø150mm	Ø150mm	Ø150mm
Machine specification					
Machine bed		Natural granite	Natural granite	Natural granite	Casting
Machine dimensions (Length/Width/Height)		2000mm*2000mm*2260mm	1820mm*1786mm*2260mm	2000mm*2000mm*2260mm	1900mm*2463mm*2230mm
*Without external robot					
Machine weight		Appr.4200KG	Appr.3800KG	Appr.4200KG	Appr.5200KG
Power supply		3×400V-50HZ/30A	3×400V-50HZ/30A	3×400V-50HZ/30A	3×400V-50HZ/63A
Power input		19KW	19KW	21KW	32 KW
Air supply		≥6bar	≥6bar	≥6bar	≥6bar
Air supply flow		0.3m³/min	0.3m³/min	0.3m³/min	0.4m³/min
Machine inlet oil pressure		≥0.8MPa	≥0.8MPa	≥0.8MPa	≥0.8MPa
Machine inlet oil flow		≥60L/min	≥60L/min	≥60L/min	≥60L/min
Machine colour		RAL9005/RAL9003	RAL9003	RAL9005/RAL9003	RAL7035/RAL9003

