

control unit NUM-Axium-Power

- digital CNC control unit for highest requirements, NUM-Axium-Power with digitally controlled axis drives
- Direct drive with highest measurement resolution (possible with torque motor)
- 15-inch TFT colour display with function keys
- Electrical cabinet with optimal arrangement and accessibility for easy servicing
- Swivelling service panel connected via fibre optics for simple operation
- An office PC can easily be integrated in the electrical cabinet to promote rapid replacement, even after years of service, including updates to the latest state-of-the-art without high investment costs

USER PC

- Intel Pentium 4 processor, 2.4 GHz, continuous adaptation to latest PC technology
- System software: Windows XP
- Network connection possible
- **Optional** Norton PC Anywhere
- **Optional** modem (analogue or ISDN) for remote maintenance and data transmission



NUMROToPlus®

THE WORLDWIDE LEADING USER SOFTWARE

MILLING CUTTER SOFTWARE PACKAGE

- Cylindrical and conical end mills with straight front
- Corner chamfer
- Full radius end mills and corner radius for cylindrical and conical tools

DRILL SOFTWARE PACKAGE

- Up to 14 different drill points
- Step drill with up to 10 steps
- Form step drills/
cylindrical grinding

BURRS cylindrical | conical | arc | ball-end | DXF form with flat end, ball | corner radius

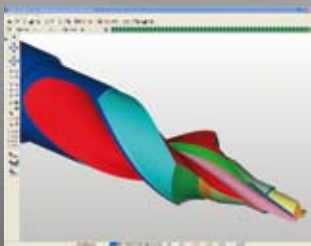
PROFILE TOOLS design your own profile of all types. All profiles on shank type tools or form plates. Free programming.

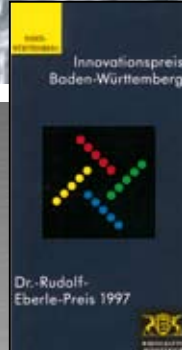
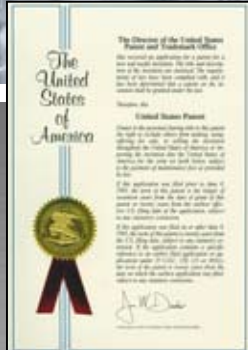
SPECIAL SOFTWARE on request

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).

numroto®
Total solution for tool grinding

www.numroto.com





OVER 400 HAWEMAT CNC TOOL GRINDING MACHINES ARE IN USE IN OVER 20 COUNTRIES THROUGHOUT THE WORLD.

Our grinding solutions have won the confidence of our customers, who include machine tool manufacturers, manufacturing companies in the medical devices, automotive and machine construction industries, and grinding services. HAWEMA accords priority to the human element in all activities. Since the company was founded, satisfying customers in every respect has been the top priority for our employees. In order for us to be able to respond flexibly to the needs of our customers throughout the world, we attach importance to personal contact. This approach is a hallmark of our company in its dealings with business associates at all levels. The HAWEMA philosophy involves reconciling generic solutions and specific requirements.

We guarantee quality and service.



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hawemat 3000

CNC NUM-AXIUM-POWER

Innovative 5-axis technology for tool grinding



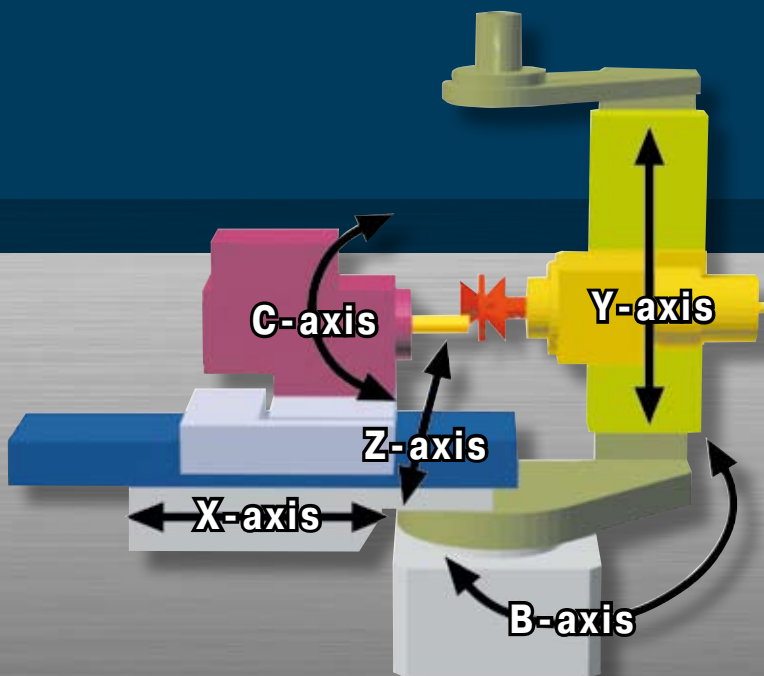
hawema Werkzeugschleifmaschinen GmbH

hawemat 3000 CNC NUM-Axium-Power

- TOOL MANUFACTURE FOR METAL- AND WOODWORKING
- GENERAL METALWORKING PLANTS
- TOOL-GRINDING SERVICE
- MACHINE AND TOOL MANUFACTURE
- MEDICAL TECHNOLOGY
- AUTOMOTIVE INDUSTRY



hawema KINEMATIK
patented worldwide

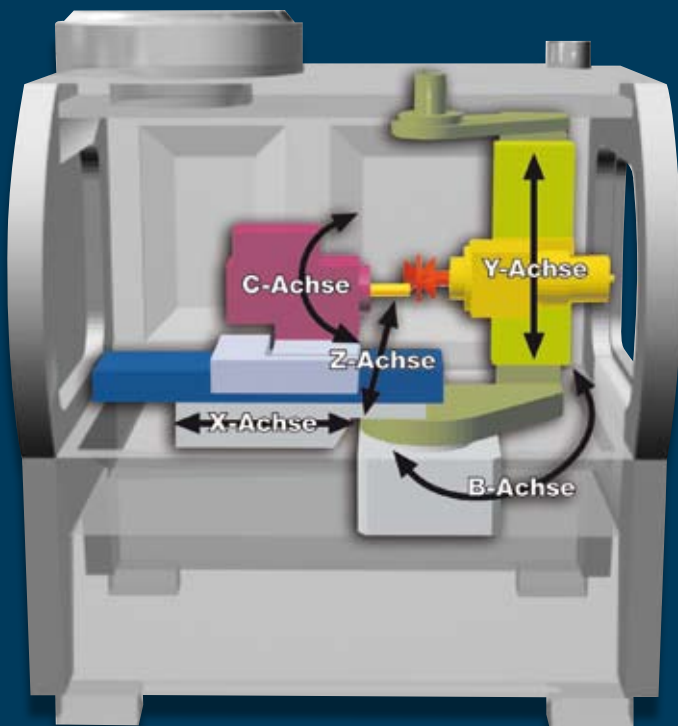


- Short travel paths
- Optimal cycle times
- Compact design
- Modular construction
- High rigidity
- Highest precision
- Excellent grinding facilities

THE HAWEMAT 3000 CNC IS THE FIRST FULL MINERAL COMPOUND BASE CONCEPT WITH INTEGRATED CABIN IN THE FIELD OF GRINDING TECHNOLOGY

This provides the fundamental basis for a broad range of applications, particularly in the manufacture of high-precision tools and other special components. The double bearing of the grinding column (Y- and B-axes) has made it possible to achieve a maximum of rigidity. This guarantees a very high degree of precision throughout the entire rotational movement of the Y-axis in conjunction with the grinding spindle.

- Precision
- High degree of rigidity
- Minimum thermal expansion
- High shock absorption
- Great versatility
- Optimal sealing



DOUBLE BEARING

Grinding column Y-axis combined with B-axis

- Highest precision
- High loading possible due to enormous rigidity
- Great versatility (also milling and drilling)

EXTERNAL LOADING SYSTEMS PLS 7 AND LS 122

Operator-free and low-cost grinding is possible using loading systems PLS 7 with 7 palettes or LS 122 with a chain for up to 122 tools.



PICK-UP LOADER LS 20/35

For automatic changing of either 20 or 35 tools and components. It features a fully-fledged CNC axis permitting chaotic loading in conjunction with hydraulic expandable clamping systems. Sleeves KM 22 Ø/KM 32 Ø. High degree of processing safety due to the controlled CNC axes in the machine. This loading system is an extremely effective and economical solution. Various loading discs can be used for producing small and medium-sized tools enabling fully automatic manufacture.

TECHNICAL DATA

Complete machining max. tool length	300 mm
Complete machining max. diameter	150 mm

Measurement system	tool measurement	3-D measurement probe (Marposs)
Optional	grinding wheels or grinding wheel package	3-D measurement probe (Marposs)

High-precision spindle drive	12 kW	0–10000 rpm
• for optimal performance direct drive with pneumatic/automatic wheel-clamping system HSK 50		
• water cooling		

Grinding wheels

Max. diameter	125 mm	
Grinding wheels per clamping arbour	1–4 wheels	
Cooling via cooling valve	program-controlled	3 valves
Grinding wheel clamp	high-precision	HSK 50 system
2-package wheel changer	HSK 50	for wheel max. 125 mm Ø
Optional 3-package wheel changer	HSK 50	for wheel max. 125 mm Ø

Workpiece holder C-axis

Standard	spindle taper	SK 50
Clamping system	mechanical/manual	
Optional	clamping system	pneumatic/automatic
Optional indexing head ISO 50	direct drive	torque motor 1000 rpm
B-axis (pivot axis)	backlash-free HarmonicDrive system	
Optional	direct drive	(torque motor with brake)

Control unit

CNC control unit	NUM-Axium-Power
TFT colour monitor	15-inch

User software

NUMROTOplus® milling cutters, drills, special tools, 3-D simulation, 3-D collision monitoring

Coolant plant

external

Oil-cleaning units

Two-stage filter system	HAWEMA OC 12
Cartridge filter system	HAWEMA OC 20

Interface

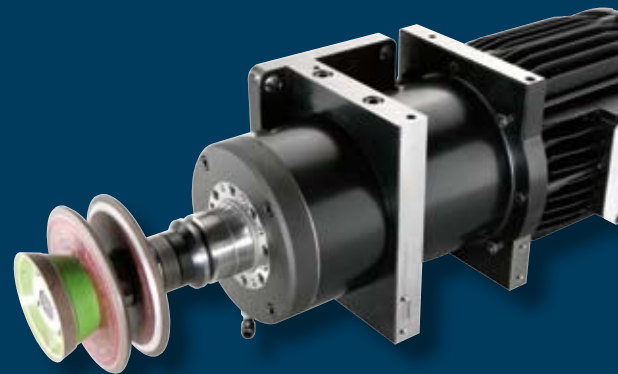
Oil mist exhaust unit	Ø 200 mm
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Axis travel

Longitudinal	X-axis	350 mm— optional 420 mm
Lateral	Z-axis	230 mm
Vertical	Y-axis	230 mm
Resolution	X-Y-Z-axes	0.0003 mm or 0.0001 mm
Speed	X-Y-Z-axes	15 m/min. rotational movement
Rotational movement	C-axis	360°
Resolution	C-axis	0.0001 mm
Speed	C-axis	66 rpm
Axis of rotation	B-axis	195°
Speed	B-axis	112°/sec
Axis drives	high-output AC servo motors NUM servo motors	

FULLY AUTOMATIC 3-PACKAGE WHEEL CHANGER

possible only in combination
with C-axis direct drive



HIGH-PRECISION GRINDING SPINDLE

12 kW, direct drive with automatic
clamping system HSK 50

Machine dimensions

Height width depth	2200 3000 2000 mm
Weight	approx. 5000 kg
Power supply	400 V–50 Hz/64 A
Power input	20 kW
Control voltage	24 V
Air supply	6 bar
Colour	RAL 9002 grey-white

Total space requirement

Height width length	2700 4000 3500 mm
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PRECISION GUIDES

The guides used in the X-, Y- and Z-axes are high-precision equipment (THK) 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: direct measurement system (linear glass scale) and central lubrication in all axes.

