

Design with clamping system 'B1'

## Technical Data

### Travel ranges and speeds

A axis	
Vmax	60° s <sup>-1</sup>
Travel speed	simultaneous with other axes
Travel range with clamping system 'B1'	-22° to +28° <sup>3)</sup>
Travel range with clamping system 'B3'	-22° to +67° <sup>3)</sup>
Resolution of the measuring system	0.0003°

B axis	
Vmax	500° s <sup>-1</sup>
Travel speed (programmable)	0.1 - 60° s <sup>-1</sup>
Travel range	∞
Resolution of the measuring system	0.0003°

C axis	
Vmax	90° s <sup>-1</sup>
Travel speed (programmable)	0.1 - 100° s <sup>-1</sup>
Swiveling range	-100° to +110° <sup>3) *)</sup>

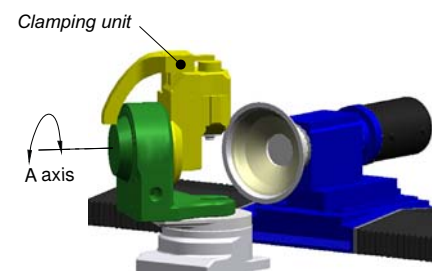
<sup>3)</sup> Swiveling range from machine 201

<sup>\*)</sup> The indicated travel and swiveling ranges are maximum values and can vary in accordance with the application (grinding geometry).

Resolution of the measuring system	0.0001°
------------------------------------	---------

X axis	
Vmax	160 mm s <sup>-1</sup>
Travel speed (programmable)	0.06 - 60 mm s <sup>-1</sup>
Travel range	140 mm <sup>3)</sup>
Resolution of the measuring system	0.1 µm

Y axis	
Vmax	0.5 m s <sup>-1</sup>
Travel speed (programmable)	0.06 - 4800 mm s <sup>-1</sup>
Travel range	max. 539 mm <sup>3)</sup>
Resolution of the measuring system	0.1 µm
Oscillation speed	max. 63 mm s <sup>-1</sup>
Oscillation frequency	0 - 2 Hz
Oscillation amplitude	max. ±10 mm



Design with clamping system 'B3'

Connection data	
Electrical connection	3x400/220/460/500 V P/E (+/- 10%) 50/60Hz (+/- 1Hz)
Power consumption (without coolant cleaning unit)	23 KVA
Ambient temperature	5 - 40°
Humidity	30% to 95%
All specifications in accordance with Standard EN 60204-1	

Air pressure	
Required air pressure	5 - 6 bar
Compressed air consumption (with 5bar air pressure)	approx. 25 m <sup>3</sup> h <sup>-1</sup>

Compressed air quality (accordance DIN/ISO 8573-1/ ≤ Class 5)	
Solid impurities, particle size	max. 50 µm
Quantity of particles	max. 0.020 g m <sup>-3</sup>
Water contents	max. 10 g m <sup>-3</sup>
Oil contents	max. 0.025 g m <sup>-3</sup>

Grinding spindle	
Grinding wheel diameter	400 mm
Max. grinding wheel speed	3000 min <sup>-1</sup>
Motor power	7.5 kW
Max. grinding wheel speed	63 m s <sup>-1</sup>

Workpiece dimensions (clamping system B1)	
Smallest insert inscribed circle	4.0 mm
(inscribed circle 3.75mm with restrictions)	
Largest insert circumscribed circle (with measuring probe)	50 mm

Workpiece clamping system B1	
Clamping pressure	2000 - 11000 N
Clamping range	max. 29 mm

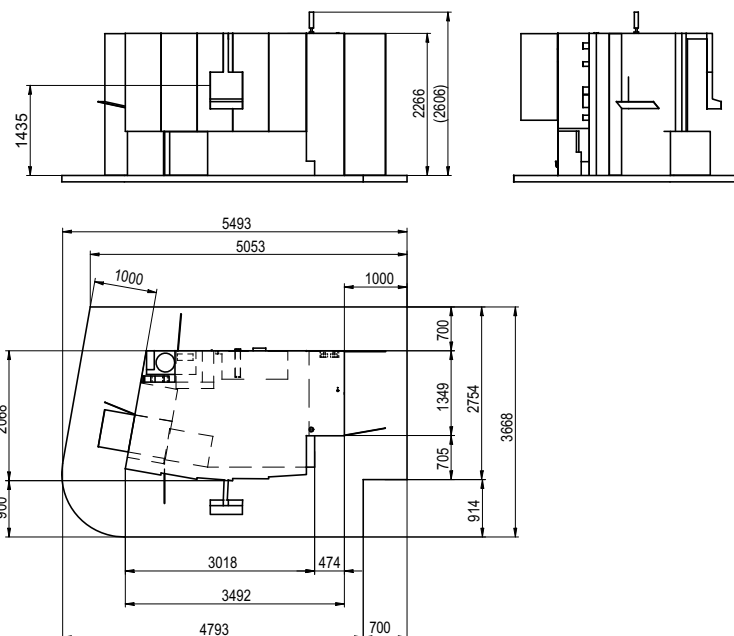
Inscribed circle measurement DX	
Measuring range	max. 45 mm
Measurement resolution	0.2 µm

Thickness measurement DT (clamping system B1)	
Measuring range	max. 29 mm (total clamping range)
Measurement resolution	0.5 µm

Dimensions		W x D x H	
Machine (approx. dimensions)	3500 x 2100 x 2700 mm		
Coolant cleaning unit (optional)	1500 x 1000 x 1600 mm		
Coolant mist collector unit (optional)	690 x 532 x 595 mm		

Weights		Net	
Machine	approx. 6500 kg		
Coolant cleaning unit (optional)	approx. 650 kg		
Coolant mist collector unit (optional)	approx. 75 kg		

### Machine Layout / Floor Plan

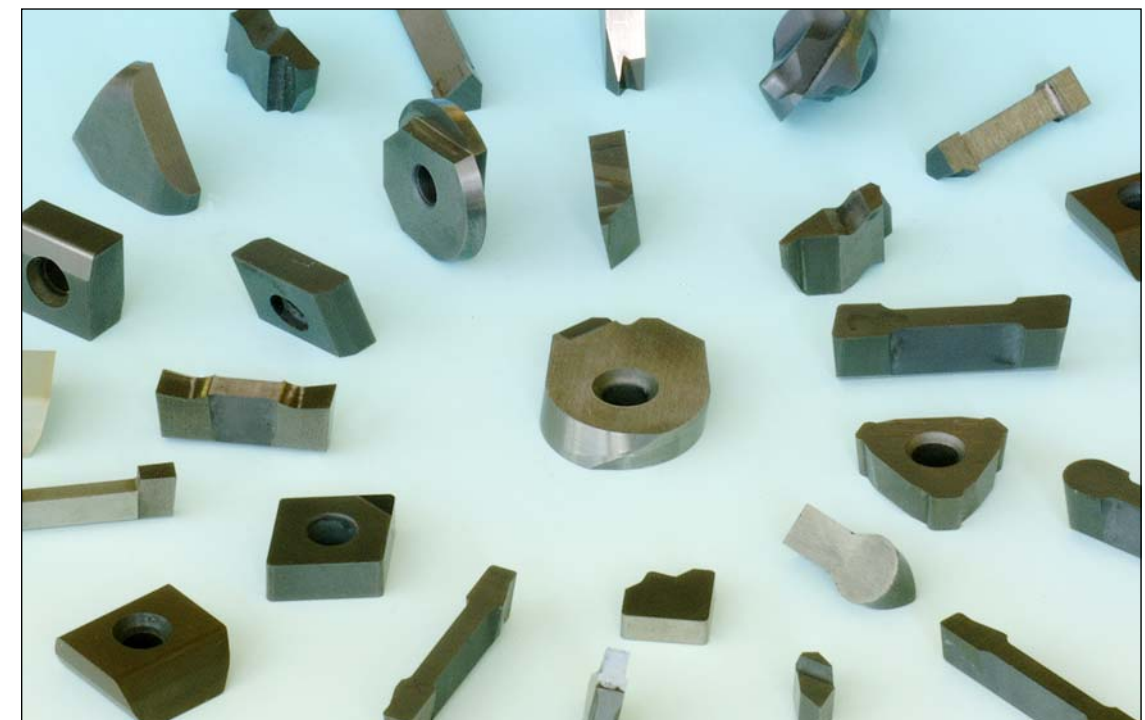


WSP 5001.2 / Date: 09.04.08 / Subject to technical modifications

# 400 PENTA

innovative

5-axes grinding center for the manufacturing of grooving threading inserts including chip breakers



*flexible*



400 PENTA (front view)

*compact*



400 PENTA (rear view)



Robot control and Stacking system



Fully automatic cleaning system TwinPur (option)

**Fully protective hood**

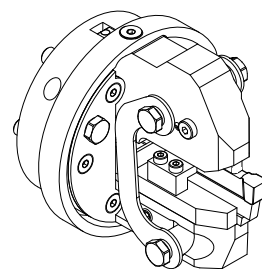
Four sliding doors on the front and one sliding door on the side of the machine provide easy access to the grinding area. A large (service) door is located at the back of the machine that provides unrestricted access to the grinding spindle head and to the entire rear section of the machine. A fully automatic sliding door separates the robot from the grinding area. The machine monitors and controls the door operations. The machine enclosure complies with the latest CE safety regulations.

**Digital drives**

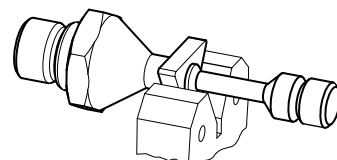
- FireWire (IEEE 1394) to control the digital drives.
- High dynamics (acceleration and speed) therefore high productivity.
- High accuracy and resolution also for extended travel ranges.

**Flexible clamping systems**

**Clamping with clamping system 'B3'**  
The workpiece is clamped in a customer-specific tool holder.

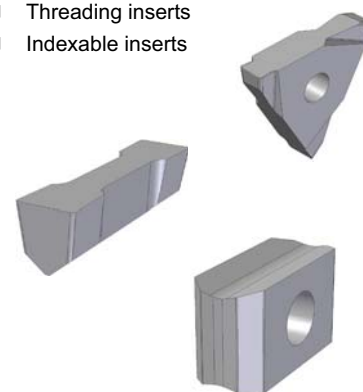


**Clamping with clamping system 'B1'**  
The workpiece is clamped between drive and clamping anvils.



**Extended workpiece range**

- Grooving inserts
- Ballnose milling inserts
- Threading inserts
- Indexable inserts



**Innovative dressing methods**

- In-Process cleaning
- Off-Process profiling
- In-Process sharpening with EcoDress

**AGATHON-Software AGC+**

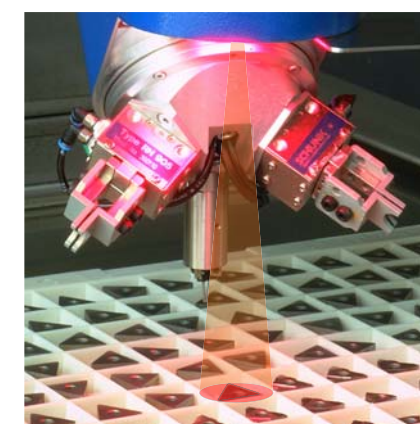
Proven software by AGATHON stands out for its short, precise and very flexible syntax compared to other competitive products. The process know-how, compared to other standard controls, is in favour to the machine user and not of the machine supplier. In the long run this will be definitely an advantage in today's competitive market.

**Teleservice via Internet**

Using the Teleservice via Modem or Internet, AGATHON offer customers the shortest possible reaction times if expert advice is required.

- Fast and reliable diagnostics
- Error analysis
- Quick programming support
- Cost savings

**Handling- and Robot System**



- Gripper head can be equipped with magnet, vacuum, bore or regular grippers
- Vision system with integrated flash installed in the gripper head (optional)
- Diascopic light (optional)
- Any type of pallet (horizontal, vertical) can be used
- Elevator/Stacking system for up to 15 pallet carriers

**Automatic transfer movements**

When grinding a workpiece, the machine uses different virtual models. These models are three-dimensional replicas of the workpiece geometry and clamping elements that the AGATHON-Software AGC+ generates. The virtual models are used to monitor as well as to avoid collisions between grinding wheel and workpiece and/or clamping elements. This provides the machine with safety and efficiency. The intensive time consuming calculations of transfer movements are no longer needed. The operator can fully concentrate on programming the workpiece.

**External programming station**

The external programming station (optional) is used to write grinding programs on a stand-alone PC.