

[MM7]

CNC machining centre
with 5-axis technology

by **MAKA**



[MM7s]



Technical specifications



5-axis CNC machining centre MM 7

For universal use in the machining of wood, plastics/composites and aluminium/light alloys

Applications

The stationary gantry machine MM 7 is a machine for high machining requirements and is preferred by manufacturers in the wood, plastics/composites and aluminium/light alloys machining sectors.

This full-featured 5-axis machining centre, which is also available as a tandem table version, is based on a proven concept. The rigid construction of this stationary gantry machine combined with a high-performance working unit ensures first-class milling results and excellent repeatability whilst permitting high dynamics of movement.

The extending table is easily accessible and the operators can easily load, clean and maintain the table. Guideways are covered to protect against flying chips. Machining of various materials is supported by state-of-the-art technology. This includes tool magazines with up to 51 tool places, the most modern chip suction systems, a tight encapsulation of the machining area in addition to blow nozzles and spray nozzles to prevent excessive heat build-up at the working unit. Use of the tandem table version with alternating operation minimises the auxiliary process times for loading and unloading of the workpieces. The two tables can also be coupled to process larger workpieces. With twin working unit equipment, in-parallel 5-axis machining is possible.

Latest technology

High-tech supporting higher efficiency and the environment

→ The monoblock design offers the best conditions for ultimate machining quality at maximum operation feeds

→ The machine is equipped with rack and pinion drives for the X-axis, ball screw spindles for the Y- and Z-axes and hollow shaft drives for the A-/C-axes

→ We configure and equip the machine to customer specifications. The technically optimised components you can choose from are geared to real-world needs. This includes the table design and configuration, machining units, tool magazines, accompanying tool shuttle and machine controls. The MM 7's excellent mechanics, electronics and low-maintenance components ensure process safety and economic efficiency

Green technology:

→ Innovative electronic systems such as a frequency-controlled vacuum pump and MAKAs energy-saving concepts contribute to low energy consumption

→ MAKAs was granted the Environmental Award of the Federation of German Industries (BDI)



A 380 © Alrcablin



Hanse 630 © Hanse Yachts



© Lieb Speed



© Sabine Viemo



© PP Mobler

Technical data

	Size*	Working range*/**	Speed	Acceleration
X-axis	1,500/2,000/2,500/3,000 mm	1,500/2,000/2,500/3,000 mm	60/100*** m/min	3/5*** m/sec ²
Y-axis	1,500/2,000/2,500/3,000 mm	1,500/2,000/2,500/3,000 mm	60/100*** m/min	3/5*** m/sec ²
Z-axis	1,000/1,400 mm	650/1,000 mm	45/90*** m/min	3/5*** m/sec ²
A-axis	196° and/or 270°		10,000 °/min	
C-axis	540°		10,000 °/min	

*For tandem version two X-axes each. ** For a total tool length of 160 mm and with diameter of 160 mm. *** For high-speed version.

Voltage	Voltage deviation	Installed power	Ambient temperature	Pneum. working pressure
400 V	+/- 5 % max.	approx. 20-40 kW	10-35° C	6-8 bar

Additional optional features

Table designs

- Single version features a flat surface table
- Tandem version comes with 2 sliding tables also permitting coupled operation. Centre aisle between the two tables, table loading possible from 3 sides
- Aluminium flat surface table, precision milled surface, clamping devices and double suction vacuum pods Highest flexibility, also when clamping large and complex components
- Phenolic resin grid table with milled slots 30 x 30 mm grid size. Highest flexibility and secure fixation, also when clamping large components
- Drilling bush in machine table
- Double suction vacuum clamping unit
- Pneumatically lowerable longitudinal and lateral workpiece stop
- SCHMALZ-Innospann vacuum clamping system
- Pneumatic clamping circuit
- Vacuum clamping circuit
- Double vacuum clamping circuit
- Rotary vane vacuum pump
- Rotary vane vacuum pump with vacuum tank

Working units

- Universal working units for 5-axis milling, infinitely variable speed, water-cooled
- Milling spindles HSK F63, 10 kW or 15 kW With 50° inclined head (for Z=650) or 90° milling head and tool change milling spindle 2,000 to 24,000 1/min
 - High-speed milling spindle HSK E40, 6.5 kW With 90° milling head and high-speed tool change milling spindle, 2,000 to 36,000 1/min
 - 4 kW milling spindle with two ER16 collet outputs (only for Z=650) with 90° milling head, 2,000 to 27,000 1/min
 - Suction hood
 - Chip collection system vertically adjustable by NC with strip curtain
 - Blow nozzle
 - Laser distance measurement sensor at milling spindle
 - Minimum quantity lubrication (MTB system)
 - Linear measuring system for Z-axis

Tool changer

- Drum-type magazine with 10 or 20 tool places
- Chain-type magazine with 16, 32, 33 or 51 tool places
- Saw blade pick-up location
- Tool shuttle

Occupational health and safety

- Sheet metal housing
- Standard or acoustic enclosure
- Sliding doors (manual or automatic)

Control system

- Siemens SINUMERIK 840D sl
- Siemens OP 15 A (with and without PC)
- Siemens OP 19 PCU (with PC)
- Siemens HT 8 (without PC)
- SINUMERIK Ctrl-Energy
- BWO with XCPU 32 Bit or 64 Bit
- BWO CNC 920 (without PC)
- BWO CNC 930 (with PC)
- BWO RC 910 (without PC)

Peripheral devices

- 1D measuring probe
- Free M function
- 3D measuring probe with radio transmission
- Barcode scanner
- MAKAL contour laser projection system
- Measurement and test system for 5-axis head
- Tracing spindle for ornament milling or machining of edges
- Cable drag chains for X and Y in closed version

35 years of CNC competence

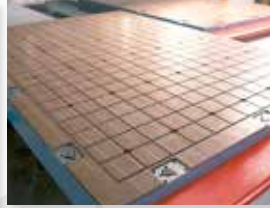
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CNC - Spezialmaschinen

Table designs



Aluminium flat surface table Phenolic resin grid table

Working units



4 kW DFM milling spindle



High-speed milling spindle,
 HSK E40, 6.5 kW



Milling spindle, HSK F63,
 10 kW or 15 kW



NC-adjustable chip
 collecting system



MTB System

Tool magazine



Drum-type magazine with
 10 tool places



Drum-type magazine with
 20 tool places



Chain-type magazine with
 16 or 32 tool places



Chain-type magazine with
 33 or 51 tool places



Tool shuttle for rapid tool
 change

Control systems



Siemens HT8



Siemens OP 19 A TCU /
 Siemens OP 19 A PCU



BWO 910 RC



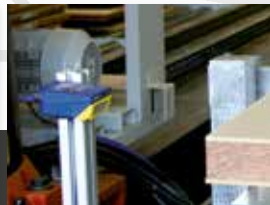
BWO CNC 920 /
 BWO CNC 930

State-of-the-art control
 system technology
 by Siemens or BWO.
 Machine can be inter-
 faced with CAD via post-
 processors.

Peripheral devices



Measuring probe



Barcode scanner



Cable drag chains,
 closed version

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