[CM27]

CNC machining centre
with 5-axis technology

by MAKA

[CM 27s]

Technical specifications

5-axis CNC machining centre CM 27

For HSC machining of large workpieces of various materials

Applications

The CM 27 machining centre is the ideal choice for high-performance machining, such as prototype construction, automotive and railway vehicle manufacturing, mould making and the manufacture of large-scale wooden mouldings or patterns.

On this machine, pattern and mould-making materials, wood, derived wood products, aluminium, plastics and composites etc. can be successfully machined.

The CM 27 combines industry-specific requirements and represents the transition to a true “machine tool” with an emphasis on high flexibility: Milling, cutting, drilling, thread milling and thread cutting can be carried out at virtually any angle. By using the CM 27t tandem table version with alternating operation, auxiliary process times for loading and unloading of the work-pieces are minimised. In addition, the two tables can be coupled to process larger workpieces.

Latest technology

High-tech supporting higher efficiency and the environment

- The machining centre CM 27 with dynamic-rigid construction similar to “machine tools” is designed for highest machining requirements
- By moving the working unit in the X-axis and the table in the Y-axis, high dynamics are achieved, as only relatively small masses actually need to be moved
- High-performance milling unit with high speeds and high operation feeds
- Tool magazine with up to 51 tool places offering a variety of machining possibilities
- Tool shuttle system minimises tool changing times
- Technically optimised components and excellent mechanics, electronics and low-maintenance units guarantee process safety and economic efficiency

Green technology:

- Innovative electronic systems such as a frequency-controlled vacuum pump and MAKA’s energy-saving concepts contribute to low energy consumption
- MAKA was granted the Environmental Award of the Federation of German Industries (BDI)


A 380 © Aircabin


Hanse 630 © HanseYachts


© Lieb Speed


© PP Mobler


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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/sec²
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/sec²
Z-axis	1,400/1,600 mm	1,000/1,250 mm	45/60*** m/min	3/5*** m/sec²
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 a diameter of 160 mm. *** For high-speed version.

Voltage	Voltage deviation	Installed power	Ambient temperature	Pneum. working pressure
400 V	+/- 5 % max.	approx. 23 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** (coupled operation is possible)
- ¬ **Aluminium flat surface table**
  Precision milled surface, table permits individual workpiece clamping using customer‘s clamping devices and double suction vacuum pods
  This ensures the highest flexibility even for the clamping of large and complex workpieces
- ¬ **Steel flat surface table**
  Can be provided with drilling bushes, threaded bushes or zero-point clamping systems, permitting individual workpiece clamping using customer‘s clamping devices
  The stability of this table and the design of the drives enable loading of several tons
  This is why this table ensures highest flexibility even when clamping large and complex components
- ¬ **Drilling bush/threaded bush in machine table**
- ¬ **Double suction vacuum clamping unit**
- ¬ **Pneumatically lowerable longitudinal and lateral workpiece stop**
- ¬ **SCHUNK zero-point 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 with 50° inclined milling head or 90° angle head and torque controlled tool change milling spindle

- ¬ **Milling spindles, HSK F63, 16 kW or 26 kW**
  Speed up from 2,000 to 24,000 1/min, infinitely variable, water-cooled, thread cutting up to M16
  Other manufacturers upon request
- ¬ **Suction hood**
- ¬ **Chip collection system vertically adjustable by NC** with strip curtain
- ¬ **Blow nozzle**
- ¬ **Laser distance measurement sensor at milling spindle**
- ¬ **Minimum quantity lubrication** coolant spraying unit with minimum quantity atomization
- ¬ **MAKA Tool Blower System (MTB System)**
  Coolant module for air, air/water or oil/air cooling
- ¬ **Direct linear measuring system for all main axes**

Tool changer

- ¬ **Chain-type magazine with 16, 32, 33 or 51 tool places,** optionally encapsulated
- ¬ **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** with NCU 720 or NCU 730
- ¬ **Siemens OP 15 A** (with and without PC)
- ¬ **Siemens OP 19 PCU** (with PC)
- ¬ **Siemens HT 8** (without PC), hand operating panel with 7.5“ touch screen
- ¬ **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), hand operating panel with 6.5“ touch screen
- ¬ **Preparation for remote maintenance** (via VPN or Internet portal)
- ¬ **Network ready**

Peripheral equipment / extensions

- ¬ **3D measuring probe** with radio transmission
- ¬ **Barcode scanner**
- ¬ **Measurement and test system for 5-axis head**
- ¬ **Tracing spindle** for ornament milling and machining of edges
- ¬ **Cable drag chains for X and Y** in closed version
- ¬ **Tool presetter** for tool measurement
- ¬ **Tool measurement and tool breaking control system**
- ¬ **Thermal shrinking device** for tool shafts made of steel
- ¬ **Tool presetter** for tool measurement

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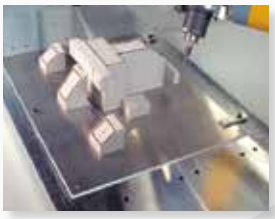
CNC - Spezialmaschinen

Table designs



Aluminium flat surface table

Steel flat surface table

Working units

Milling spindle, HSK F63, 16 kW

Milling spindle, HSK F63, 26 kW

NC-adjustable chip collecting system

MTB System

Minimum quantity lubrication, cooling nozzle at working unitt

Tool magazine

Chain-type magazine with max. 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 interfaced with CAD via post-processors.

Peripheral devices

Measuring probe

Barcode scanner

Cable drag chains, closed version

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