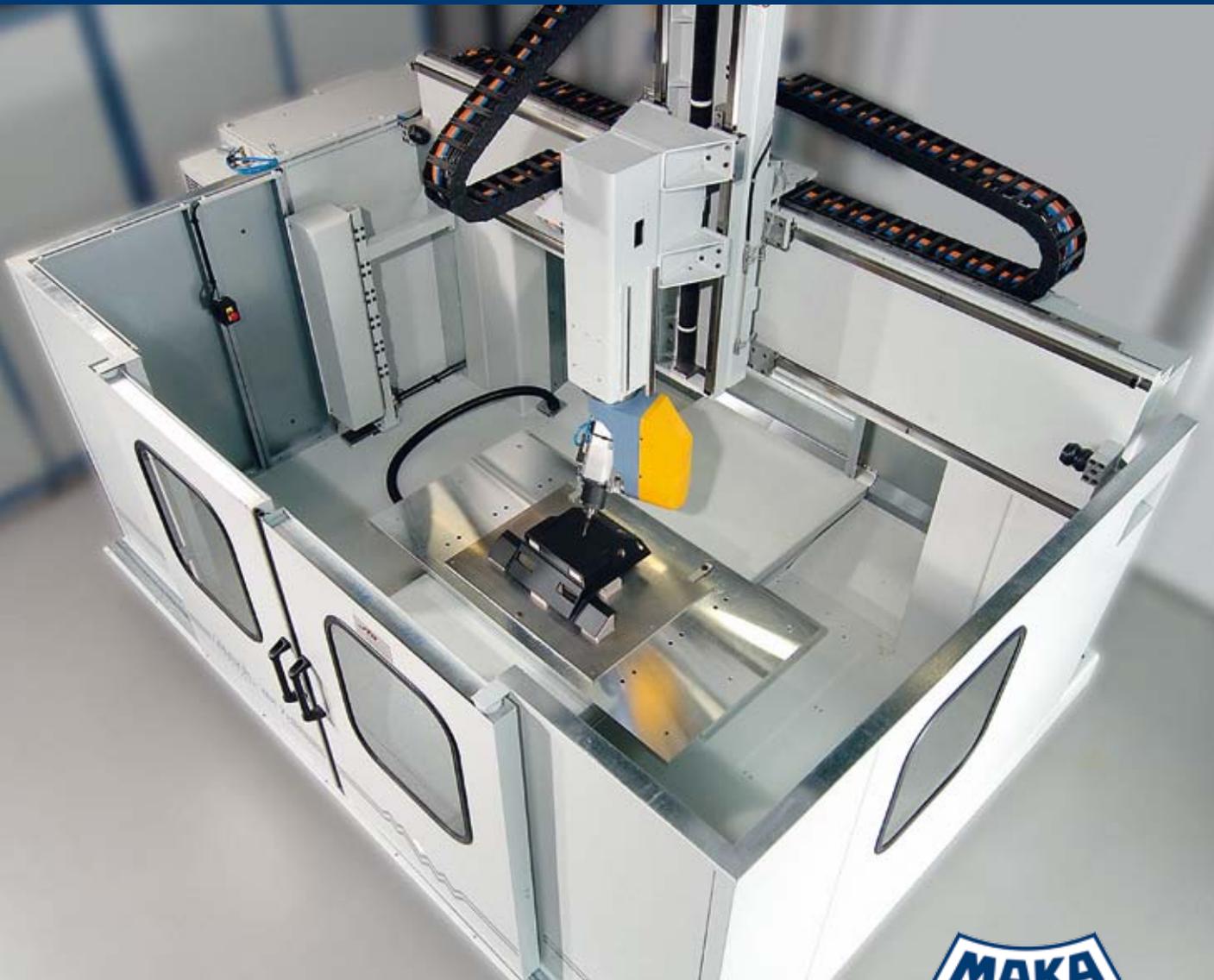


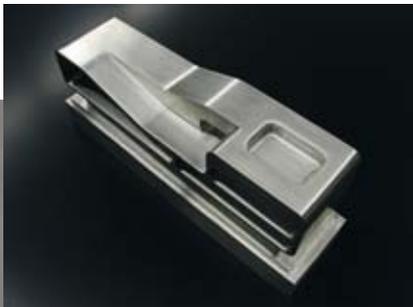
MAKA

MK 7

5-axis CNC
machining centre
for plastics,
aluminium and wood



CNC Spezialmaschinen





THE MK7 PUTS ALL THE TRUMPS IN YOUR HAND

The MK 7 compact 5-axis CNC machining centre is the world's proven all-rounder in the MAKa machine range. Whatever material you have to machine – the MK7 is always the right choice. The stationary gantry machine offers ideal preconditions in particular for the high-precision machining of small and medium-sized workpieces. The MK7 is equally popular as an entry-level machine and as an additional machine for special machining applications. Users from the wood, plastics/composites and aluminium/light alloy machining sectors value both the sturdy character and the dependability of the machine. Thanks to its compact design, the MK7 requires a minimum of space for installation. It can be moved from one location to another simply by fork-lift truck.

Outstanding quality

The compact, rigid design of the MK7 ensures a high dynamic load-bearing capacity. Outstanding machining precision is guaranteed even with high feed rates. The combination with a high-performance unit such as the MAKAspindle, in particular, ensures first-class milling results and excellent repeat accuracy. The renowned MAKAs product quality is your assurance of high availability and long value retention of the machine.

High comfort and safety

The table of the MK7 is accessible from the front and can be easily loaded by the operating personnel. It is also easy to clean and service. The BWO control system with which the machine can be equipped as an alternative to the Siemens Sinumerik is a familiar feature, especially for long-standing MAKAs customers. The standard configuration with Ethernet interface enables remote machine diagnoses via the Internet. When it comes to safety, the MK7 scores particularly with the covered guides that protect against flying chips. Dust extraction system and encapsulation of the machine satisfy the highest standards.

Individual machine configuration

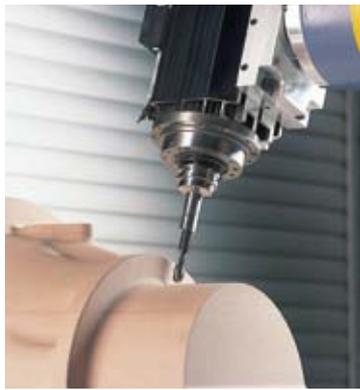
MAKAs has vast competence in the CNC machining of a wide range of different materials. We can therefore give you concrete configuration recommendations for the MK7 for your orientation. But as experts for special machines, we also know that every customer's application is different. We therefore analyse your specific requirements together with you in order to identify the best possible and most cost-effective solution.

The flexible MAKAs modular system of industry-specific components, options and extensions allows the machine to be tailored exactly to your needs in every detail. A wide variety of table versions are available, for example, as well as a large number of units, tool magazines and software solutions. For the material handling, too, we can offer several solutions geared to the needs of the particular material. The same applies to the critical area of chips and dusts. The integration of customised MAKAs automation systems into the system architecture ensures optimum cost-effectiveness of the machine.

Maximum resource efficiency

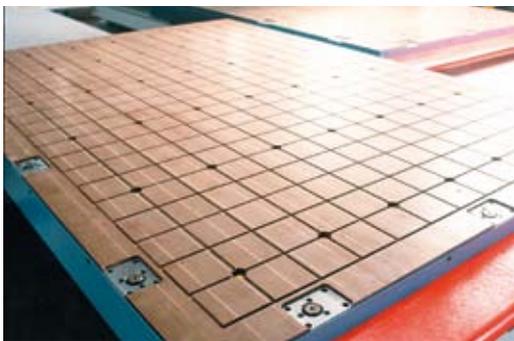
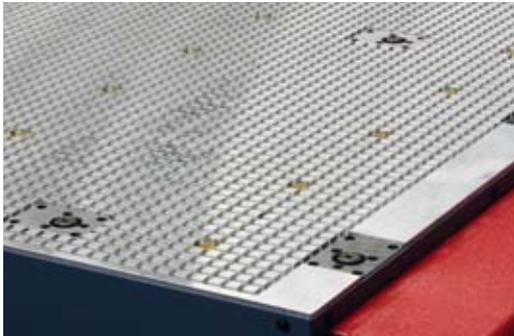
MAKAs has even received the Environmental Prize of the Federation of German Industries (BDI). Energy efficiency also played an important role in the development of the MK7. The result are innovative electronic systems such as the variable-frequency vacuum pump and special MAKAs energy saving solutions. The modern control engineering with its intelligent stand-by concept also makes an important contribution here. Our resource-conserving engineering is generally geared to dependability and a long service life of the machine. Upgrades and modifications to modernise the energy savings possibilities are also possible at any time.





A MAKA is the decision in favour of high availability and long-lasting quality.

Equipment Options



Aluminium flat surface table, fine-milled surface

recommended for wood, plastics/composites, aluminium/light alloy machining
Configuration of the table with grid drillings for simple positioning or with threaded bushes for individual clamping of the workpiece using the customer's clamping devices is possible.

Optionally:

- Double-acting vacuum cups for reliable clamping and releasing of workpieces with delicate surfaces
- Pneumatic clamping circuits for clamping of pneumatic clamping units and/or for operation of other pneumatically controlled components
- Additional T-grooves for clamping

Table versions

Various table versions and workpiece clamping facilities are available for the MK 7, allowing you to tailor the material handling exactly to the needs of your production. Whether rough sawn wood or smooth, delicate lightweight material surfaces – at MAKAL you will always find the right solution. All table variants can be combined with the MAKAL clamping systems such as vacuum supports, vacuum cups and pneumatic clamps as well as the standard clamping systems used in the industry. Customised templates and devices can be easily clamped to the table and connected to the table vacuum. For the aluminium flat surface table, a waste/chip management solution is available in the form of a chip waste conveyor.

Aluminium grid table

recommended for wood and aluminium machining
Configuration with milled slots for insertion of sealing cords according to the workpiece contour to be machined or the customer's device to be clamped to the table. Grid size min. 30 x 30 mm.

Phenol resin grid table

recommended for wood machining
Configuration with milled slots for insertion of sealing cords according to the workpiece contour to be machined or the customer's device to be clamped to the table. Grid size min. 30 x 30 mm.



MTB System

Unit variants

Maximum machining quality is a central MAKА promise. That is why we have our own in-house milling spindle production shop. The MAKА high-performance spindle can be employed as a variant to the two standard HSD milling spindles. It offers a high torque even at low spindle speeds. All three milling spindle variants have an HSK interface that ensures quick and very precise tool changing. The MTB (MAKA Tool Blower System) allows you to prolong the service life of your tools. The coolant nozzles are arranged so that they support the chip discharge in the contact area of the tool in every machining position and achieve an optimum cooling result.

Chips and dusts often demand special solutions for the different materials. Particularly for aluminium machining, MAKА recommends the use of the coolant spraying system with minimum quantity fine

atomisation. The ionising blowing air nozzle is perfect for removing statically charged plastic chips and for preventing them from becoming deposited and melted on the workpiece. The product range also includes an NC height-adjustable extraction hood with lamella curtain for extraction of dusts and chips directly at the unit. The portfolio is completed by the MAKА connection system for indoor air extraction.

Our spindle recommendations for the different materials can be found in the table.

	5-axis unit	
Milling spindle	50°gimbal-mounted inclined head A axis 196° / swivel axis ± 98° C axis 540° / rotational axis ± 270°	90° angled head A axis 270° / swivel axis ± 135° C axis 540° / rotational axis ± 270°
Milling spindle 10 or 15 kW HSK-63F Spindle speed 2,000 to 24,000 rpm, infinitely variable, optionally equipped with encoder, water-cooled	Recommended for aluminium and hardwood machining	Recommended for plastics / composites / wood machining
High-speed milling spindle 6.5 kW HSK-E40 Spindle speed 2,000 to 36,000 rpm, infinitely variable, water-cooled	Recommended for plastics / composites / wood machining	Recommended for plastics machining
Milling spindle 6 kW with 2 shaft outputs ER16 Spindle speed 2,000 to 27,000 rpm, infinitely variable; 2 shaft outputs ER16; water-cooled	----	Recommended for plastics machining
MAKA milling spindle 12/16 kW HSK F63 Spindle speed 1,000 to 24,000 rpm, infinitely variable; water-cooled; thread cutting possible	Recommended for aluminium machining	Recommended for aluminium machining



Tool changer

Short non-productive times are an important factor in ensuring high productivity. These can be significantly influenced by the capacity of the tool magazine and the performance of the tool changer. We offer you three different systems for the MK 7. The range of possibilities extends from 6 to 20 tool places. You can choose between one stationary linear magazine and two different turntable magazines. The travelling variant allows particularly short changing times. Alternatively, a stationary magazine with a higher capacity is available that can be filled from the outside during machining.

Linear tool magazine

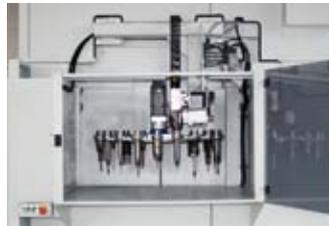
with 6 tool places, stationary

Turntable tool magazine

with 10 tool places, travelling

Turntable tool magazine

with 20 tool places, stationary



Control systems & software

The MK7 is equipped with the latest Sinumerik 840D sl controller generation from Siemens that is highlighted by an open and modular system character. A BWO controller is also available as an alternative. Our goal is to make you as efficient as possible with minimum effort. That is why our services always include a communication interface for integrating the machine into the company's IT network. And the interfacing of the machine to your CAD system via post-processors goes without saying. We also offer, for example, the integration of an energy management system or telemaintenance system as options.



Siemens SINUMERIK 840D sl

with NCU 710 or NCU 720 (with or without PC)

BWO with XCPU

32 bit or 64 bit (with or without PC)

Full Service

Dependable advice and services over the whole service life of your machine

The MAKA direct hotline - a passion for your needs

When the MAKA hotline phone rings, time is generally of the essence. Your production needs to be up and running again fast. That is why – when you need us – you are immediately connected to one of our excellently qualified staff. In this way we are also happy to inform you about other services, or to get a quotation or an order out to you as quickly as possible. And that with a commitment that will make you forget all your experiences with bad hotlines.

MAKA Field Service – maximum safety for you

MAKA customers value the high availability of their machine. And there's a system behind that – the MAKA system. Thanks to the vast stock of spare parts and the large team of specialists, standstills can generally be remedied within 24 hours. More than 25 experienced MAKA field service technicians are on the road for you. When it comes to safety, we offer a complete system of services. From telemaintenance through maintenance contract right up to logbook.

Keep up-to-date with a RETROFIT

Constant change is a hallmark of our time. RETROFIT keeps you up to the state-of-the-art at all times. Our clever concept brings older MAKA machines and systems that are still in operation up to the performance level of modern production systems – from individual mechanical components through to the electronics. Your RETROFIT benefits: Significantly increased productivity, lower investment costs compared with a new machine, higher resource efficiency.

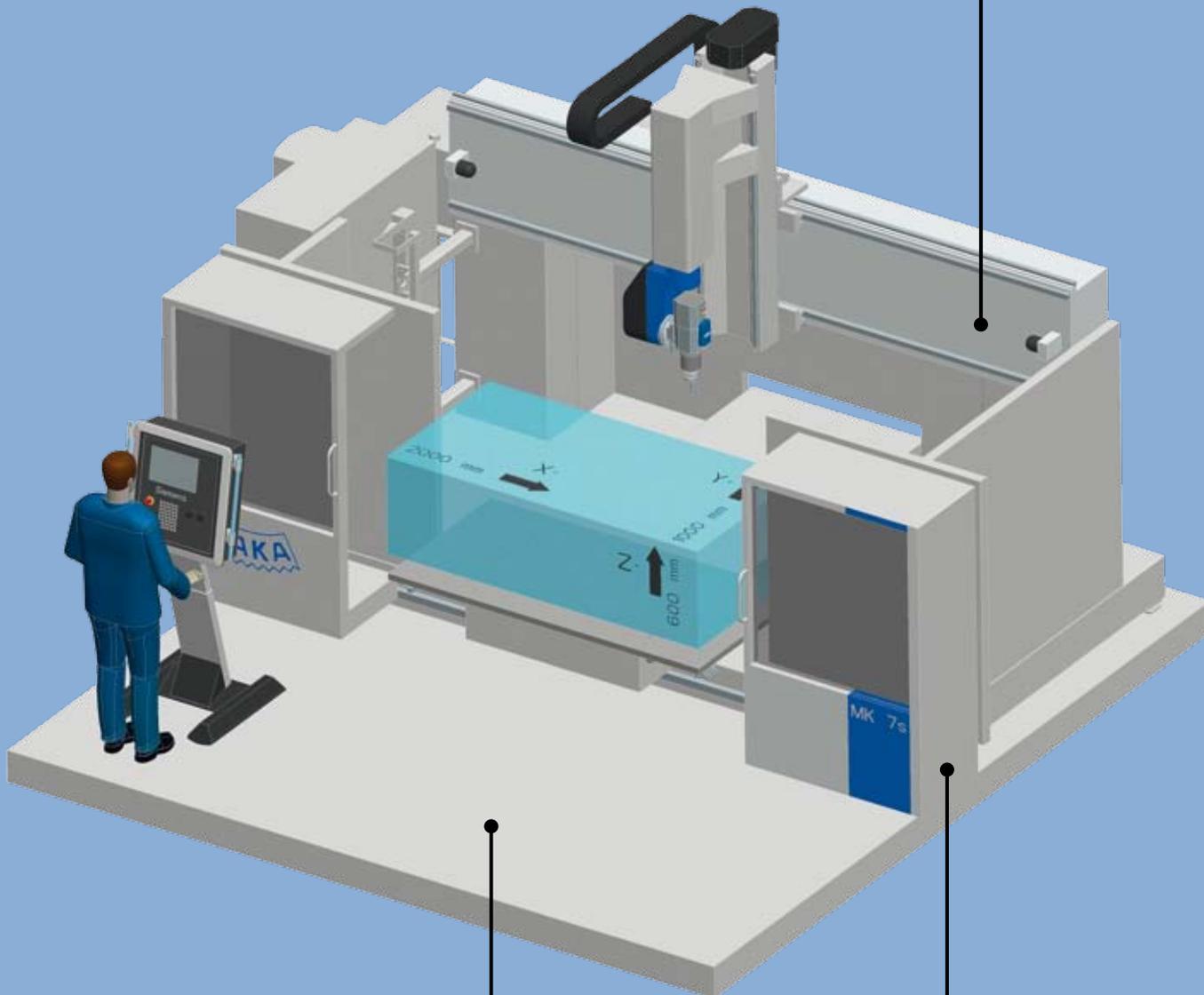
All the MAKA services at a glance:

- Comprehensive advice by our experts right from the first contact with the customer.
- Tailored maintenance contracts and spare part packages.
- Warranty renewals.
- Reminder service in the case of maintenance contracts.
- High availability of the technical hotline.
- Immediate machine diagnostics via VPN or Internet.
- Spindle service for all milling spindles (replacement spindle immediately available from stock).
- High availability of OEM spare parts.
- Spare parts shipment within 24 hours.
- Field service staff on site within 24 hours (in Europe).
- Modernisation of existing machines and systems through RETROFIT updates.

Technical Data

Control system	Siemens SINUMERIK 840D sl with NCU 710 or NCU 720 (with or without PC) or BWO with XCPU 32 or 64 bit (with or without PC)		
Milling spindle	Our spindle recommendations for the different materials can be found in the table on page 9		
Axis drives	X axis: Rack drive Y and Z axis: Recirculating ball drive A/C axis: Hollow shaft drive		
Machine table	Aluminium flat surface table Aluminium grid table Phenol resin grid table		
Maximum loading capacity	500 kg (with uniform distribution)		
Machining range in 5-axis mode *	Table version 1	Table version 2	
	X direction:	1,000 mm	2,000 mm
	Y direction:	1,000 mm	1,000 mm
	Z direction:	600 mm	600 mm
	* with milling tool dimensions: 130 x 60 mm dia. or sawblade: dia. 175 mm		
Rapid traverse	X and Y axis: 60 m/min Z axis: 45 m/min A/C axis: 10,000°/min		
Acceleration	X / Y / Z axis 3 m/sec ²		
Positioning accuracy per axis	± 0.1 mm/m		
Repeat accuracy per axis	± 0.05 mm/m		
Tool changer	6-place linear tool magazine, stationary 10-place drum-type tool magazine, travelling 20-place drum-type tool magazine, stationary		
Guards	Safety hood, opening upwards; sliding doors for manual opening and closing		
Installation conditions	Table version 1	Table version 2	
	Footprint (W x L x H):	5,400 x 3,400 x 3,400 mm	6,400 x 3,400 x 3,400 mm
	Machine weight:	approx. 7,000 kg	approx. 8,500 kg
	Connection ratings:	19 kW / 43 A / 400 V	
	Compressed air:	6-8 bar	
	Foundation thickness:	load-bearing strength 1,500 kg/m ² / 200 mm foundation	
Anchoring:	floor anchors		

Working range Z	Machine height
600 mm	3,400 mm



Working range X	Machine width
1,000 mm	5,400 mm
2,000 mm	6,400 mm

Working range Y	Machine length
1,000 mm	3,400 mm

The overall machine width and total length includes all the required safety equipment for the machine to comply with CE requirements. The machine has a CE mark. With the delivery, the extensive machine documentation is also accompanied by a CE certificate of conformity.

What is the alternative to a MAKA? A MAKA!

The broad MAKA product portfolio comprises further machines with similar demand profiles to the MK 7.

If a larger work area is required for medium-sized to large workpieces, then our MM 7 machining centre is worth consideration. In the event that performance has priority, then the CM 27 would be your right choice. The tandem version offers even greater flexibility with the MM 7 and CM 27, as the two tables can be used alternately alone or can be coupled.



MAKA MM 7



MAKA MM7

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MAKA CM 27



CNC Spezialmaschinen

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