

Mikron

HEM 500U

HEM 700U



Swiss design and quality

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Flexibility, a compact, simple design, and high user-friendliness distinguish the new five-axis milling machine from GF Machining Solutions

The universal Mikron HEM 500U and HEM 700U are especially suitable for the processing of complex parts for aerospace technology as well as automotive and mechanical engineering.

Applications



Milling head

X8CrNiS18-9 (1.4305)

Stainless steel

Tool industry

- + Multiple tools in use
- + Processing in "3+2" positioning mode
- + High accuracy of the swivel plate seats



Motorcycle brake catches

C45E (Ck45)

Unalloyed, tempered steel

Automotive industry

- + Multiple tools in use
- + Processing in "3+2" positioning mode

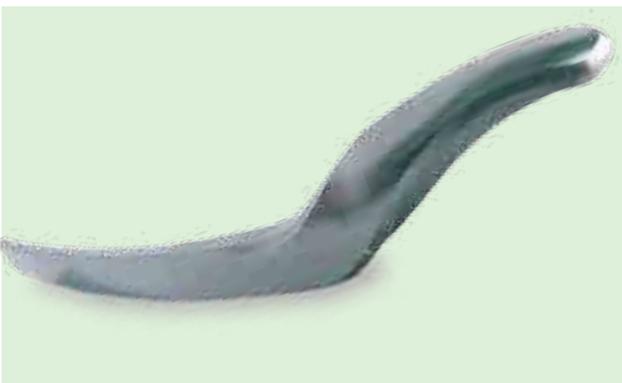


Surgical instrument

Steel alloy

Medical technology

- + Small tools
- + High surface quality, no subsequent polishing
- + Optimized machine base
- + Stable Spindle



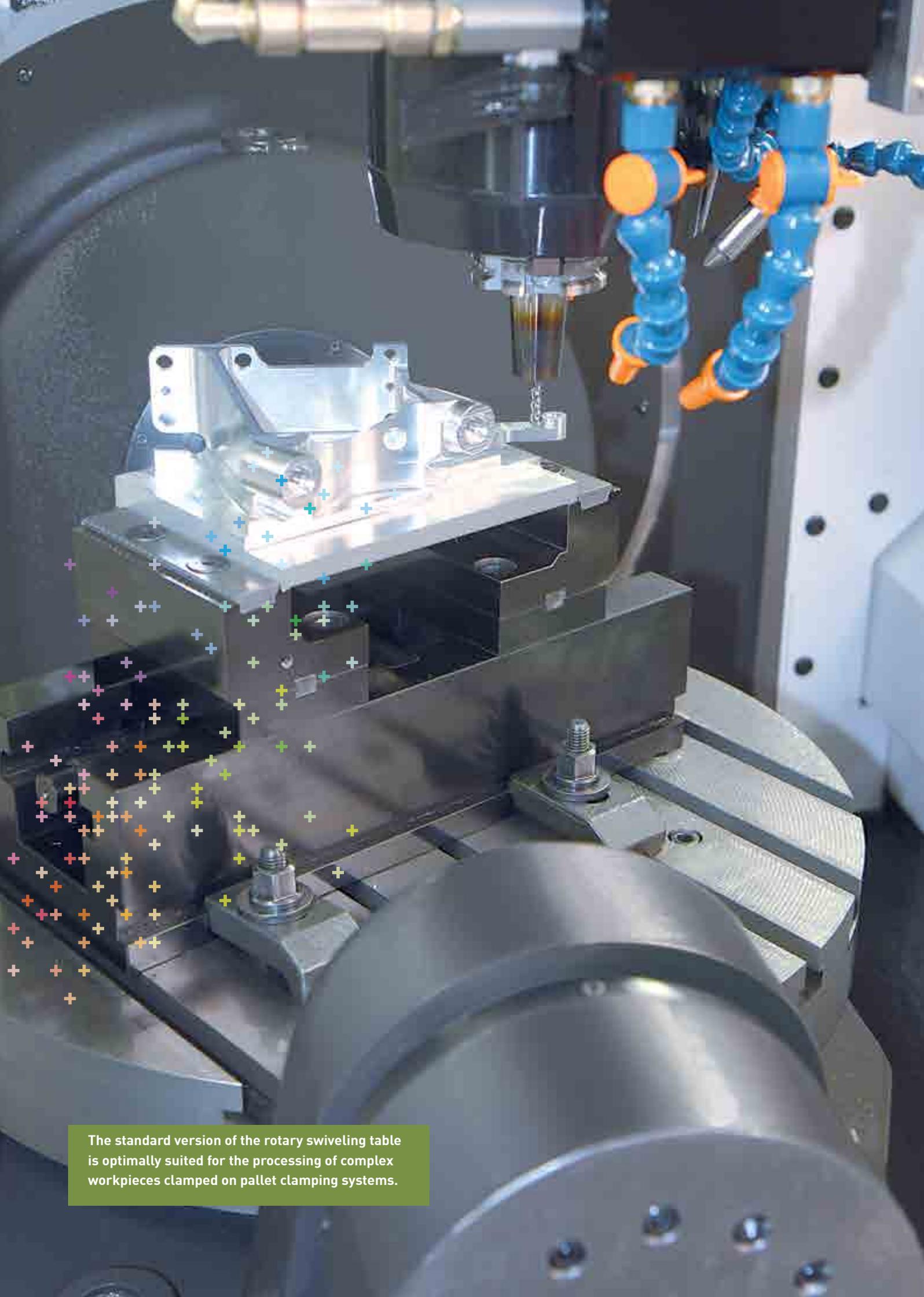
Bone plate

Steel alloy

Medical technology

- + High surface quality on high-strength alloys





The standard version of the rotary swiveling table is optimally suited for the processing of complex workpieces clamped on pallet clamping systems.

Highlights

Best price/performance ratio. Efficient processing without a high investment

A GF Machining Solutions product (developed in Switzerland).
One of the most significant development objectives is to guarantee maximum reliability and availability.

Excellent accessibility and ergonomics.
Advantage: optimally suited for job shops and parts production in small to medium-sized batches.

Simple and safe processing thanks to clearly laid out arrangement of the axes.

Advantage: increased flexibility.

Ergonomic, easy access to the workpiece with integrated Automation. The Automation system loads the machine from the side. The front access to the workspace remains unobstructed.



Compact positioning footprint.
Advantage: also fits in small job shops.

Heavy workpiece can be loaded and unloaded without a crane, using a forklift.

Unique, integrated and upgradable automation system.

Advantage: the degree of autonomy can be flexibly adjusted to the requirements.



smart machine modules – for efficient and safe work processes.



Loading of heavy workpieces made easy

The Mikron HEM 500U/HEM 700U offers excellent access to the workpiece. Even heavy parts can be loaded easily. With its accessibility and inspection windows, the new HEM U line makes the most valuable capital - the employees - of every company even more effective.

- + Ergonomic, easily accessible, clearly structured
- + Persuasive concept: ergonomic protection cabin with large windows ensures strong incident light and optimal viewing during processing
- + Easy crane loading for heavy workpieces

Tried and tested - proven quality:

Heidenhain iTNC 530 HSCI FS

The latest generation digital Heidenhain iTNC 530 HSCI FS control and a clearly structured control panel make the Mikron HEM 500U/HEM 700U a process-reliable and user-friendly processing center:

- + Process reliability including short instruction time and safe operation of pre-defined work cycles
- + Ethernet connection for fast CAM data flow
- + Simple dialogue-controlled programming
- + Parallel programming, free contour programming, freely definable sub-programming
- + The handwheel (optional) can bring you close to the processing point, if required



Mikron HEM 500U



Efficient and reliable chip disposal

In the workspace, any accumulation of chips is consistently avoided.

With a sophisticated, detailed construction, any chip accumulation is avoided, if possible, before the accumulating chips are reliably and economically separated from the cooling agent and disposed of.

- + Wide ascending conveyor
- + Overload protection with automatic return flow function in case of chip jam
- + Simple cleaning of the equipment
- + Interior cooling agent feed with belt filter up to 20 bar (optional)

Machine concept

Focus on efficiency

Strong and thermally stable Spindle

The broadly supported and robustly arranged Spindle housing permits demanding, rough Milling and drilling operations. A closed internal cooling circuit stabilizes the Spindle temperature and reduces temperature-related drift.

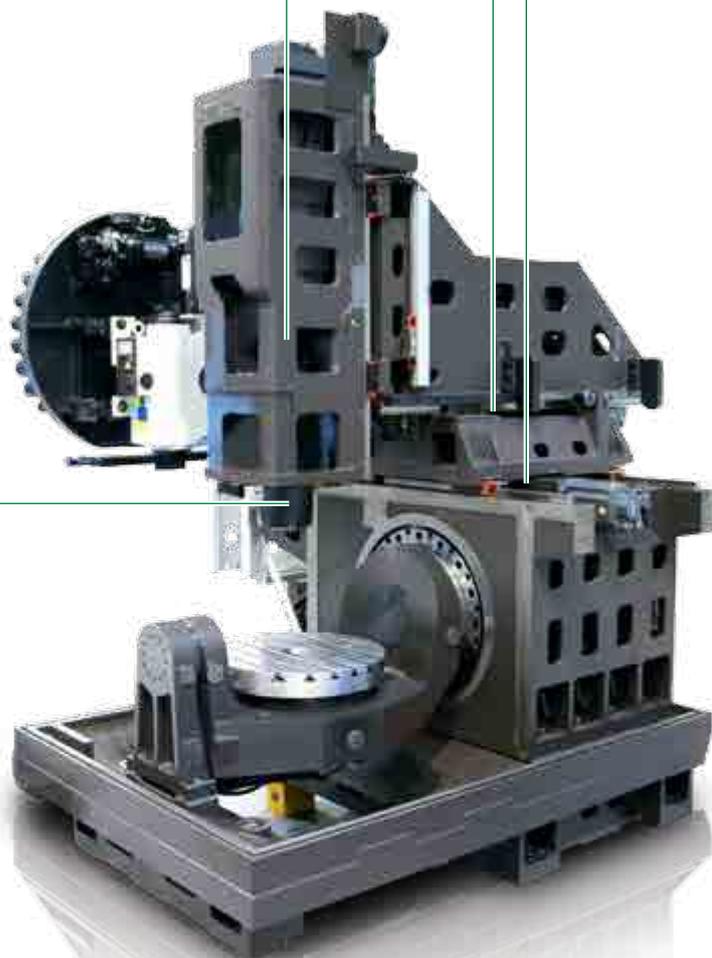
Solid Spindle head

The well-supported and solidly constructed Spindle head makes high-performance Milling and drilling on the Z axis possible.

Precise linear axes

Pre-clamped ballscrews with double bearing ensure the best dynamic behavior, an important prerequisite for high processing precision. Stable linear guides with high load-bearing capacity ensure smooth handling on all axes. The high processing efficiency of the Mikron HEM 500U/HEM 700U is a product of geometric accuracy and surface quality on the workpiece.

The central oil lubrication guarantees stable treatment processes.



The machine base was designed and optimised with state-of-the-art simulation and calculation procedures. The generously dimensioned mold construction is distinguished by excellent attenuation and great rigidity and stability even under maximum loads. The result is stable and easy Milling behavior.

Workspace

Rigid and flexible rotary table

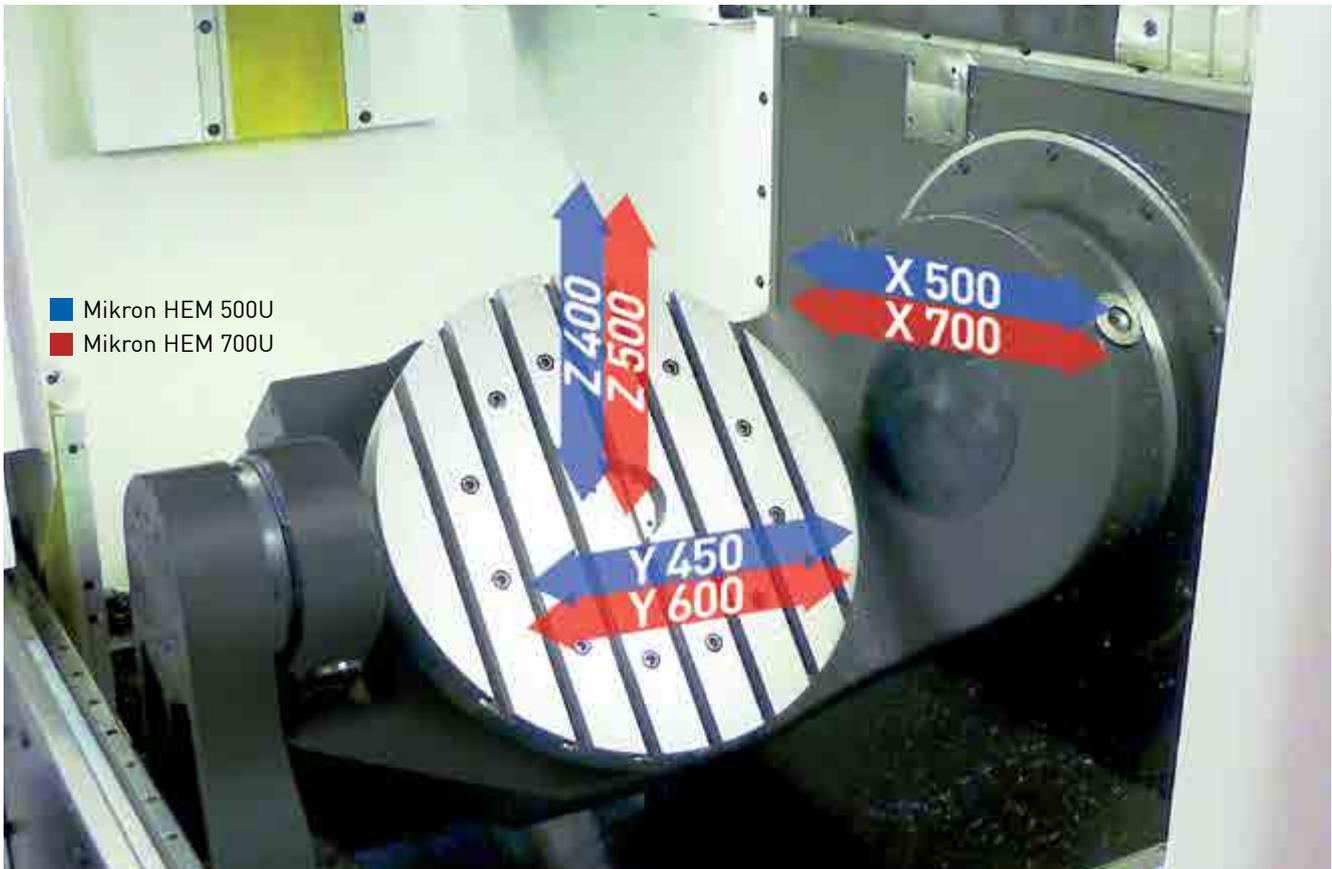
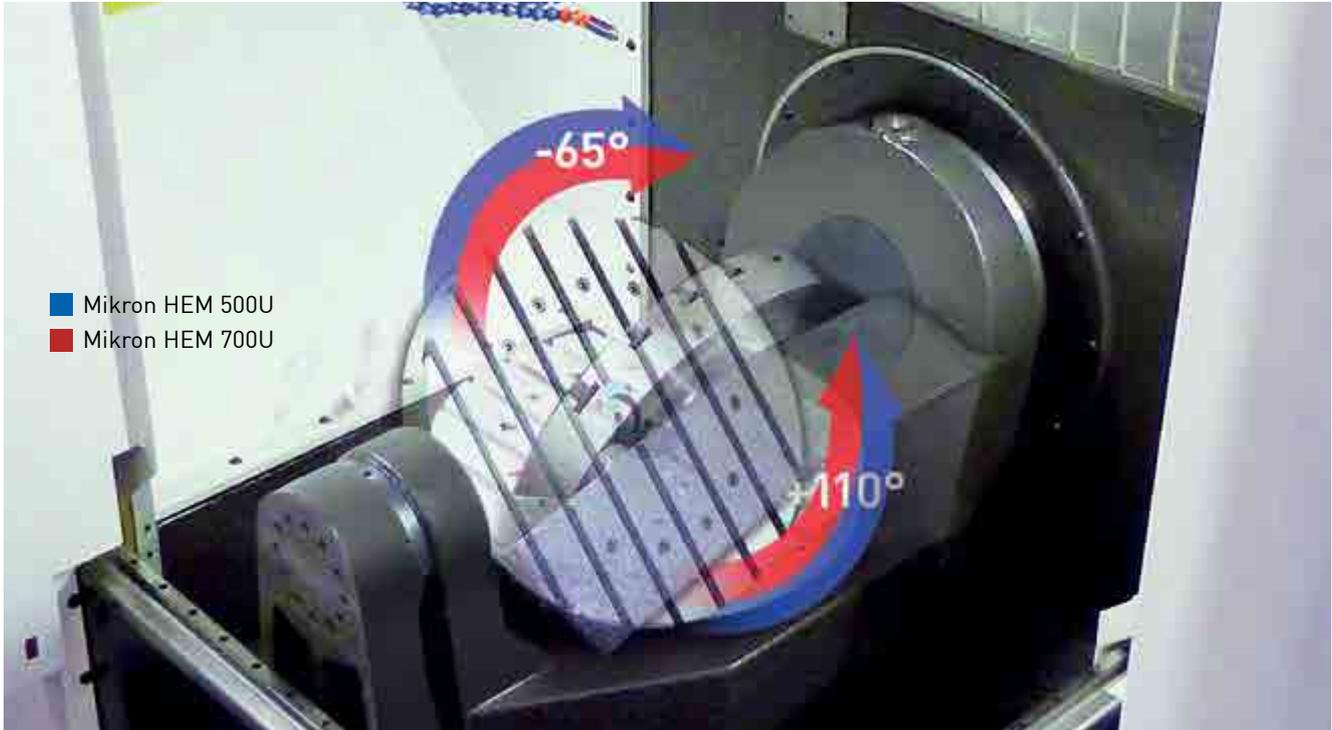




Table variations

Strong and precise clamping

Five-sided processing in a clamping

Five-axis processing offers significant advantages for large and small components. Using five-axis technology, it is possible to process different shapes and surfaces in a clamping device.

- + Rotary swiveling table available as a pallet version: System 3R (Dynafix/Delphin)
- + Rotary swiveling table available as a generously dimensioned tabletop version (Ø 500 / 630 mm with parallel T-grooves)
- + Cartesian (right-angled) arrangement of the axes results in easily understood tool/workpiece movements during the Milling process
- + Direct measurement on the B and C axes
- + Machine available as "3+2" or "five-axis simultaneous" version



Rotary table with Dynafix pallet Automation



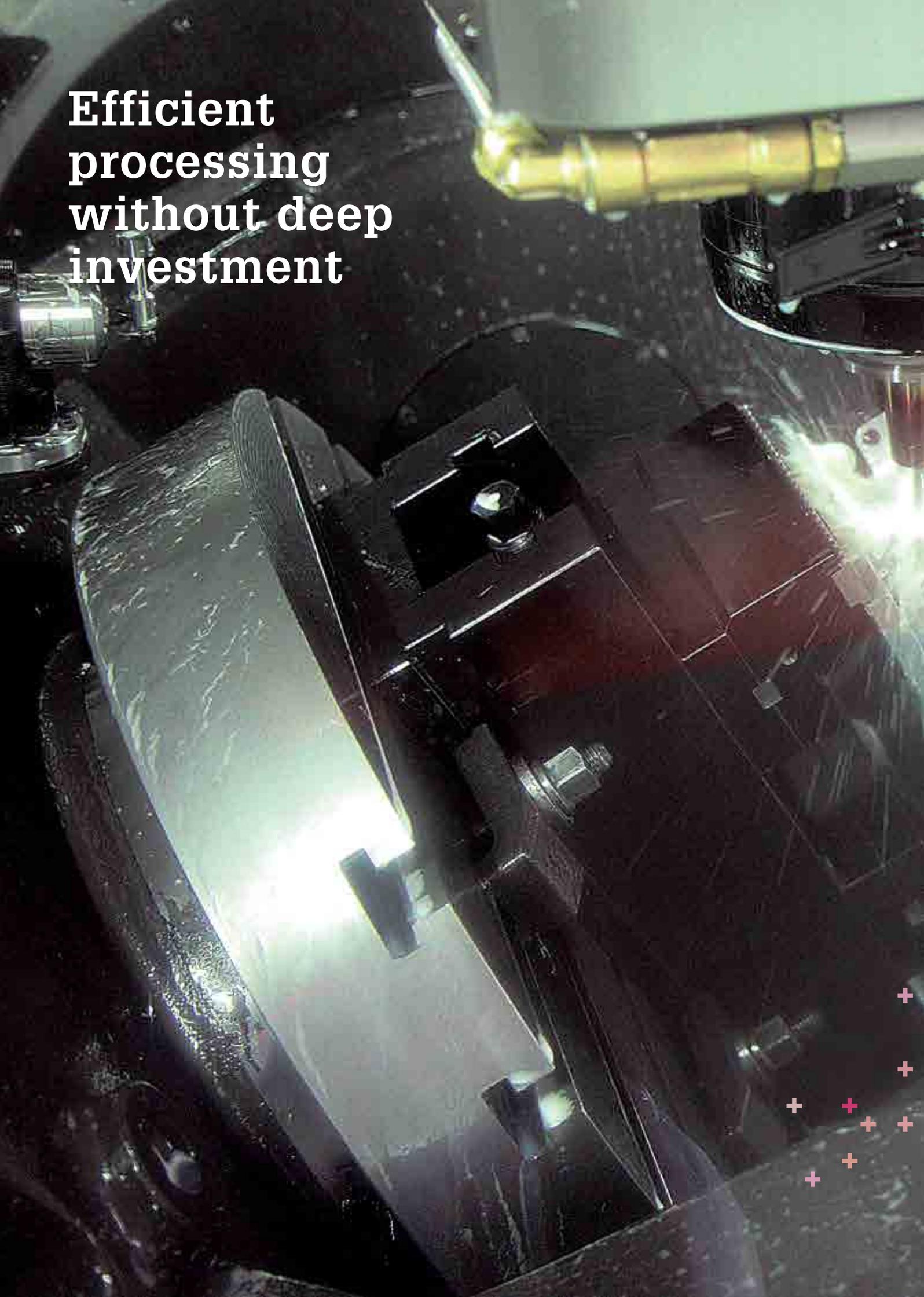
Rotary swiveling table Delphin



Rotary swiveling table with parallel grooves



**Efficient
processing
without deep
investment**





Robust tool Spindle

For effective processing

Powerful Spindles for demanding tasks

Sufficient performance and power for all kinds of applications. The ball bearings, which are lubricated for life, are effectively protected against incoming dirt with an air purge system.

The tool is held by a spring and is released through a hydraulic cylinder.

12'000 min⁻¹

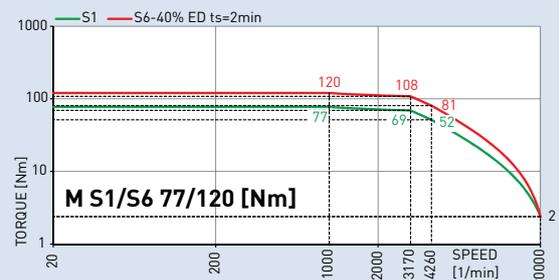
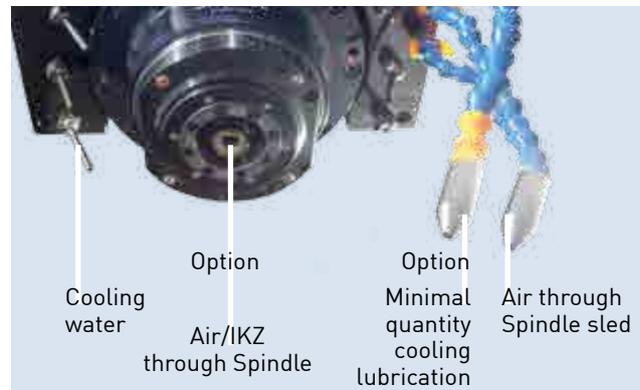
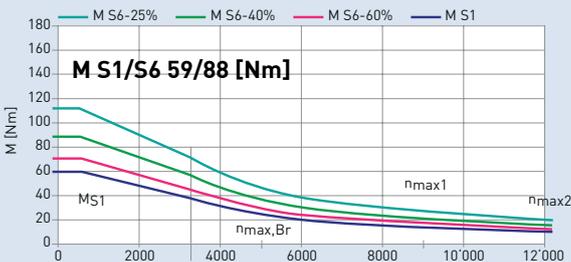
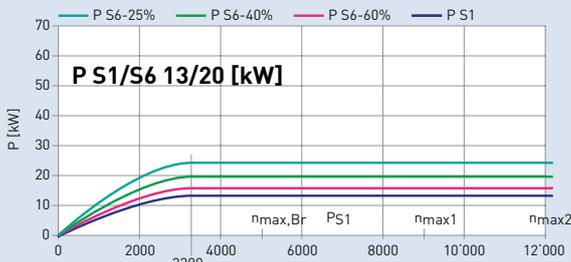
For conventional tool technologies and programming:

- + Spindle cone BT/ISO/CAT 40
- + Infinitely variable rotation speed range—no loss of performance
- + Prepared with internal cooling agent feed for production use (optional)

20'000 min⁻¹

For the processing of light metals and workpieces with a higher requirement for accuracy and surface quality.

- + Spindle cone HSK-A63
- + Excellent properties for universal Milling in different materials
- + Best conditions for different tool technologies



Increases production efficiency

The tool magazines

Two different tool magazines are available:
A vertically installed drum magazine with a capacity of up to 30 workpieces and a large chain magazine for up to 60 workpieces.

The integrated pallet Automation

For the Mikron HEM 500U/HEM 700U, we developed a completely new pallet Automation solution.

On the Mikron HEM 500U/HEM 700U, the automatic manufacture is ensured through cost-effective integration of the pallet magazine. Supplemented with the modular tool magazine, the compact milling center becomes a highly productive and flexible production cell.

- + Repetitive processing tasks are handled in multi-layered operation without interruption
- + Increases the cost-effectiveness of the machine with correspondingly higher profits
- + Option: Interface for outside Automation (robots)



We recommend Remote Notification System (RNS). This and additional smart machine modules ensure even more flexibility and process reliability in the production of high-grade components.

Options

Tailor-made equipment



Belt filter system IKZ 20bar



Mist extraction



Oil tank



Pallets



Beacon



Infrared measuring probe



Workpiece measuring system



Rotating inspection window



Operation mode 3



Air through Spindle/
Spindle sled



Chip conveyor

APS
CAMplete
Econowatt
SIGMA FMC
ITC
ITC 5X
ITM
OSS
OSS extended
OSS extreme
PPF
RNS
SPS
 smart machine



Control system FANUC

Reliable and cost-performance CNC with high-end features like NANO interpolation and AI contour control

Performance and reliability

The Fanuc 0i-MD features an ultra-compact design using limited cabling to ensure highest reliability and provide easy maintenance.

Coupled with the latest Fanuc drive technology, the FANUC 0i-MD ensures smooth machined surfaces by using a much finer resolution for position commands.

Additional options:

- + Extended warranty
- + Linear glass measuring rods
- + Laser measuring system
- + Minimal quantity lubrication

smart machine

The new dimension in modern production

Bringing intelligence into the milling process is the intended aim of “smart machine”.

This includes a range of modules that are collectively referred to under the generic term “smart machine” and that fulfil various functions. In order to make the milling process “intelligent”, various requirements have to be implemented.

First of all, establishing comprehensive communication between man and machine, which makes precise information that the operator requires to assess the milling process available to him. Secondly, supporting the operator in the optimisation of the process, which considerably improves the performance. Thirdly, the machine optimises the milling process, which improves the process safety and the quality of the workpiece - above all in unmanned operation.

The facts

- + Greater accuracy in shorter machining times
- + Increase in the workpiece surface quality as well as the surface and shape accuracy
- + Recognition of critical machining strategies
- + Improvement in the process safety
- + Reduction of the machine set due to longer service life
- + Higher availability
- + Better operating comfort
- + Considerable increase in reliability in unmanned operation

smart machine construction kit system

Each of the modules fulfils a specific task. Just like in a construction kit, the user can select the modules that seem to him to be the best option for improving his process.

Your benefit

Producing the workpieces in a process-secure and precise manner, increasing the reliability in unmanned operation, increasing the service life of the machine and significantly reducing production costs.



Saving energy



Protection



Precision



Productivity

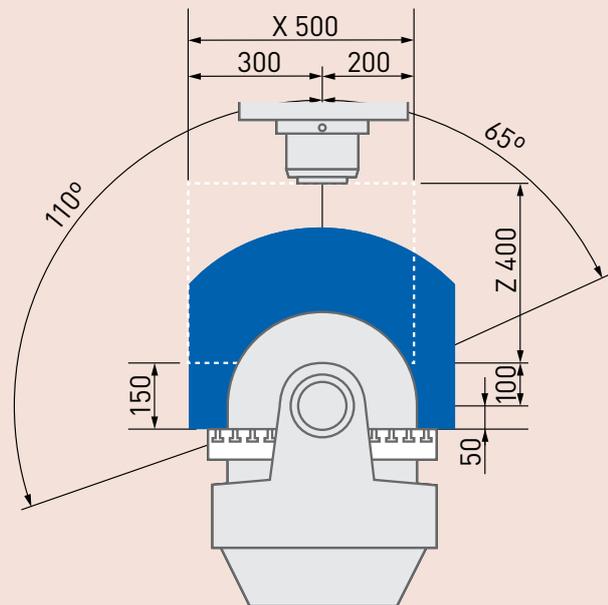
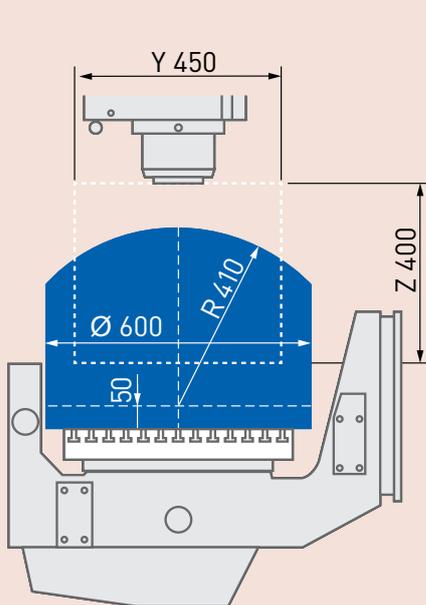
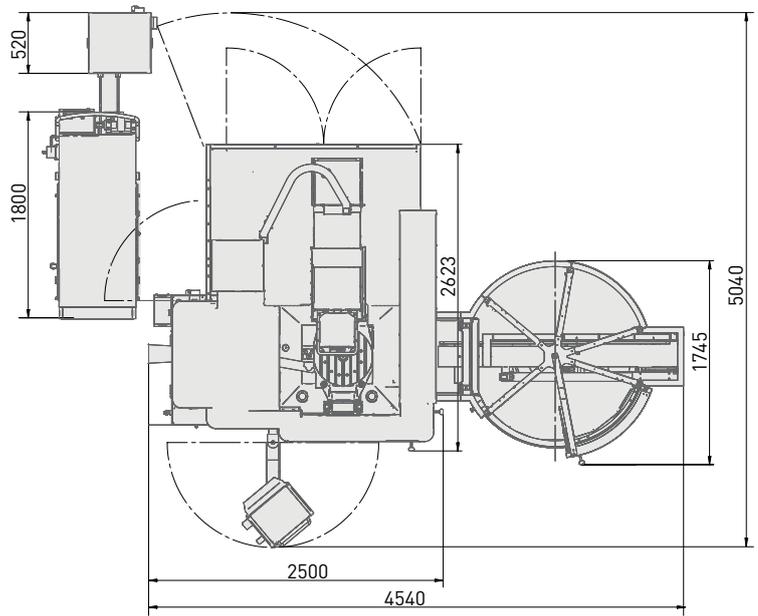
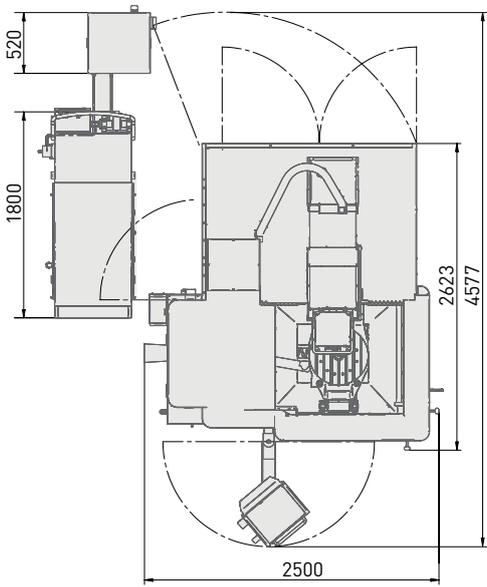
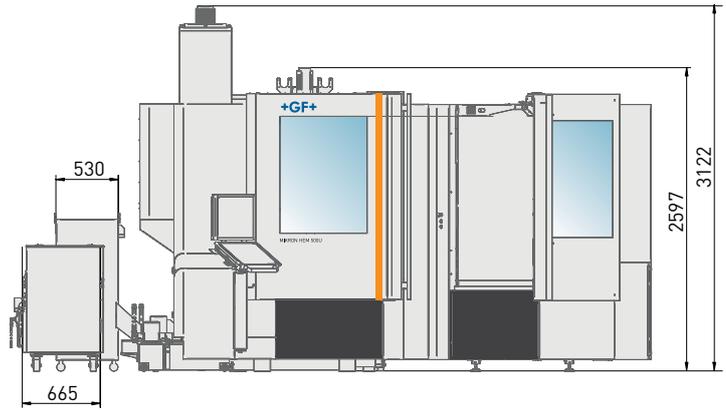
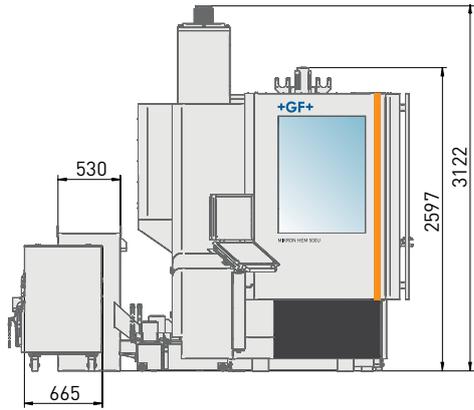
The smart machine is constantly being further developed.
The currently available modules can be found at
www.gfms.com

Technical data

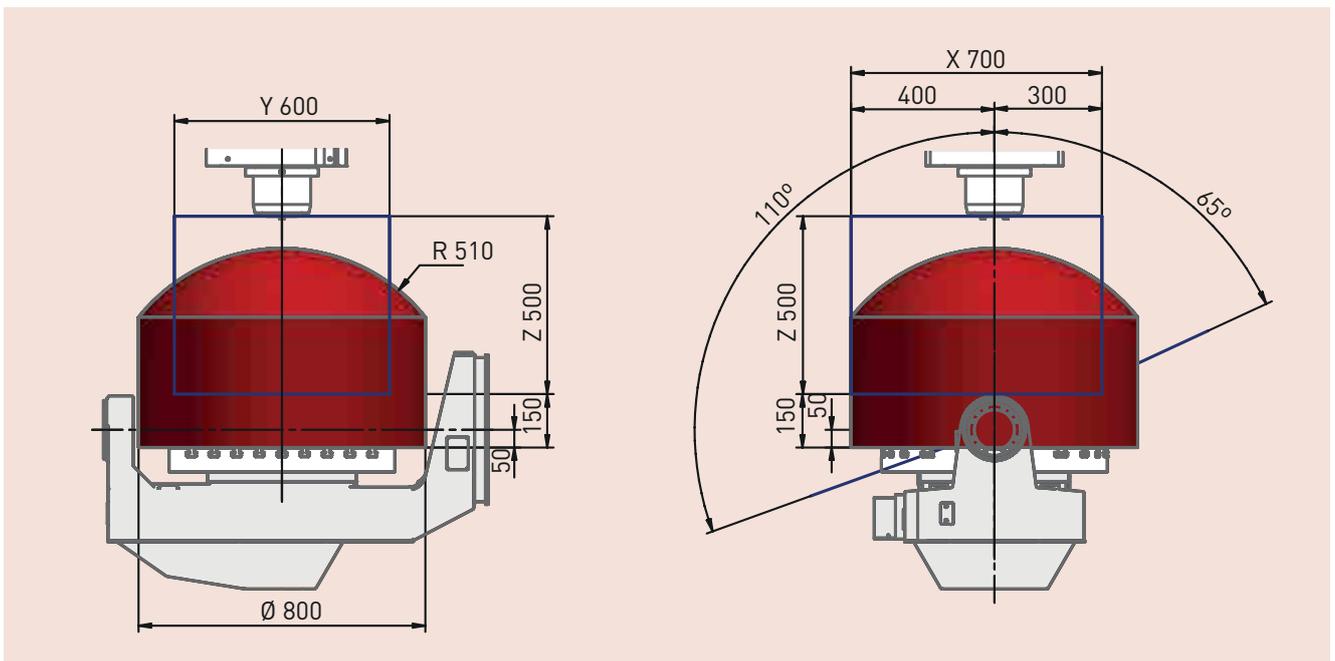
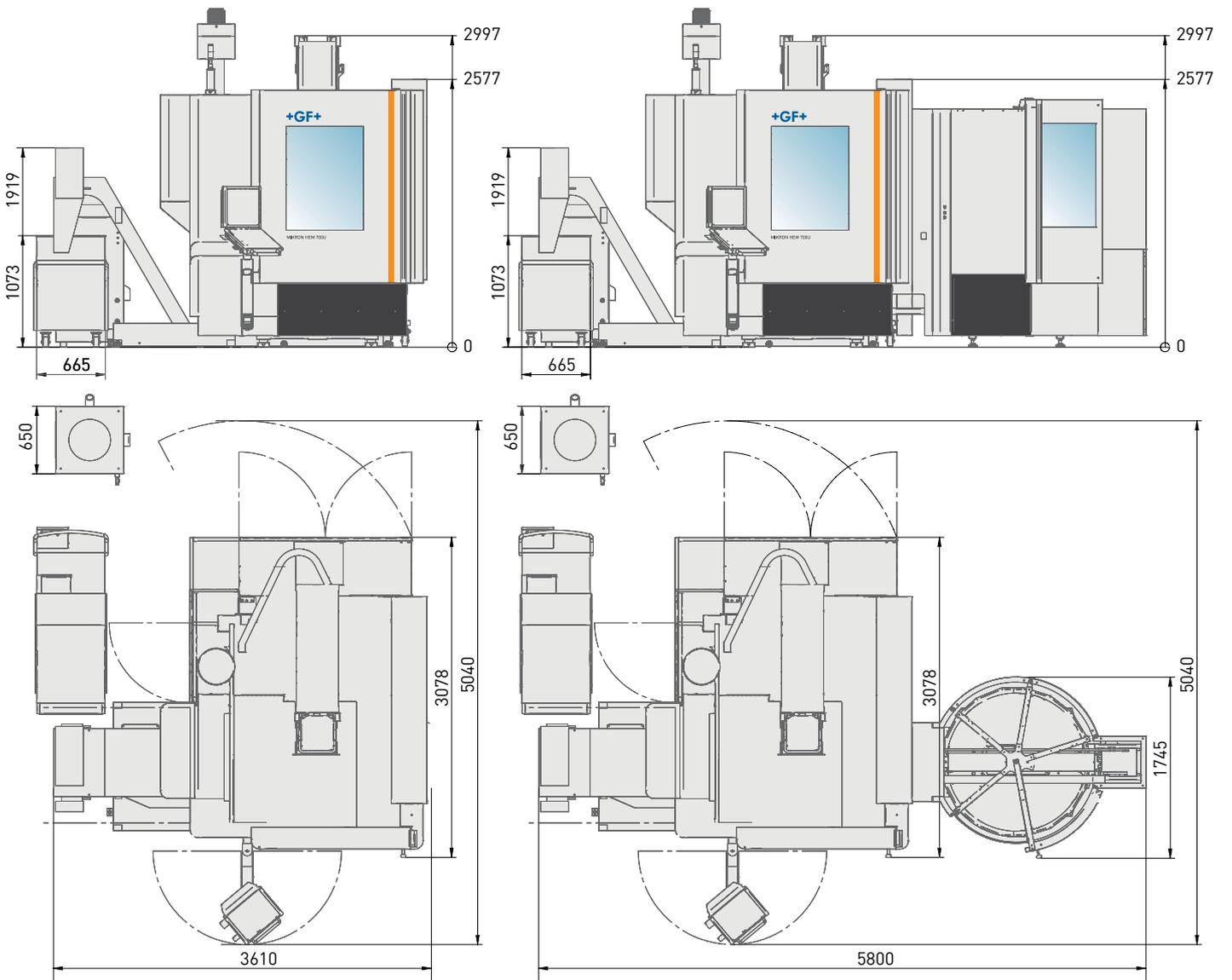


Machine			Mikron HEM 500U RTT 3+2	Mikron HEM 500U RTT Simultan	Mikron HEM 700U RTT 3+2	Mikron HEM 700U RTT Simultan		
Axis travel								
Lengthwise	X	mm	500	500	700	700		
Crosswise	Y	mm	450	450	600	600		
Vertical	Z	mm	400	400	500	500		
Swivel axis		°	-65 / +110	-65 / +110	-65 / +110	-65 / +110		
Rotation axis		°	n x 360	n x 360	n x 360	n x 360		
Axes			3+2	Five-axis simultaneous	3+2	Five-axis simultaneous		
Spindle								
Spindle type			In-line	Motor	In-line	Motor	In-line	Motor
Max. rotations	min ⁻¹		12'000	20'000	12'000	20'000	12'000	20'000
Max. torque	kW/Nm		20/88	36/120	20/88	36/120	20/88	36/120
Tool interface			ISO 40 BT 40 CAT 40	HSK-A63	ISO 40 BT 40 CAT 40	HSK-A63	ISO 40 BT 40 CAT 40	HSK-A63
Travel speed								
Rapid traverse	X, Y, Z	m/min	30 / 30 / 30	30 / 30 / 30	30 / 30 / 30	30 / 30 / 30		
Rapid traverse	B, C	min ⁻¹	17 / 28	32 / 112	17 / 28	32 / 112		
Automation								
Tool magazine	unit		DT 30 / CT 60					
Pallet magazine	unit		5 Delphin 400/400 or 5 MTS 400/400 or 7 Dynafix 350/350 or 7 UPC 320/320	5 Delphin 400/400 or 5 MTS 400/400 or 7 Dynafix 350/350 or 7 UPC 320/320	5 Delphin 400/400 or 5 MTS 400/400 or 7 Dynafix 350/350 or 7 UPC 320/320	5 Delphin 400/400 or 5 MTS 400/400 or 7 Dynafix 350/350 or 7 UPC 320/320		
Pallet changing time	sec.		30	30	30	30		
Robot interface			Available	Available	Available	Available		
Rotary swivel table								
T-groove table	mm		500	500	630	630		
Workpiece weight [3/5]	kg		300 / 200	300 / 200	350 / 300	350 / 300		
Control								
Heidenhain	12/20 k		iTNC 530 HSCI FS					
Fanuc	12 k		0i-MD	-	0i-MD	-		

Mikron HEM 500U



Mikron HEM 700U





Swiss design and quality

GF Machining Solutions



Milling

High-Speed and High-Performance Milling Centers. In terms of cutting speed, HSM centers are 10 times faster than conventional milling machines. Greater accuracy and a better surface finish are also achieved. This means that even tempered materials can be machined to a condition where they are largely ready to use. One essential advantage of HSM is that with systematic integration, the process chain can be significantly shortened. HSM has developed alongside EDM into one of the key technologies in mold and tool making.



EDM

Electric Discharge Machines. EDM can be used to machine conductive materials of any hardness (for example steel or titanium) to an accuracy of up to one-thousandth of a millimeter with no mechanical action. By virtue of these properties, EDM is one of the key technologies in mold and tool making. There are two distinct processes — wire-cutting EDM and die-sinking EDM.



Laser

Laser texturing. Laser texturing supplements and extends the technologies offered by GF Machining Solutions. With our laser technology we enable you to produce texturizing, engraving, microstructuring, marking and labeling of 2D geometries right through to complex 3D geometries. Laser texturing, compared to conventional surface treatment using manual etching processes, offers economic, ecological and design advantages.



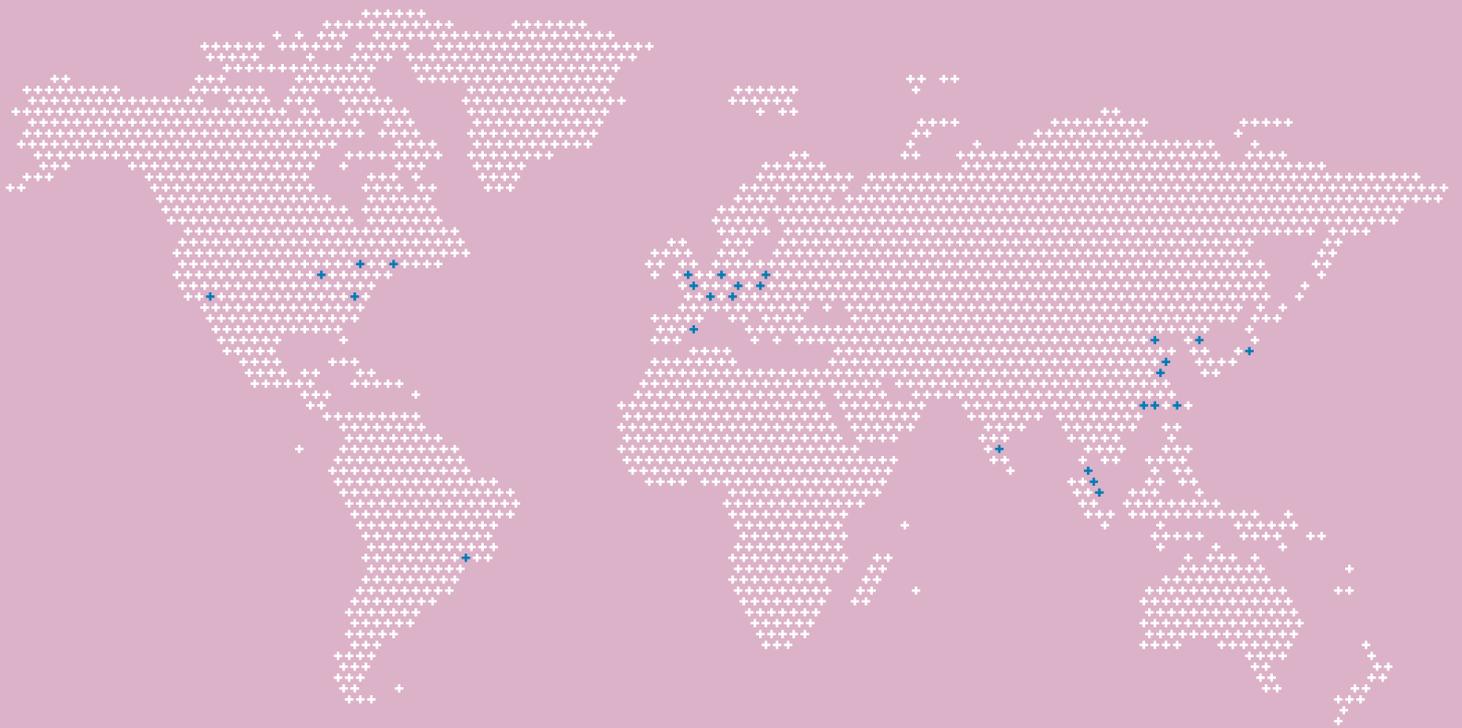
Automation

Tooling, Automation, Software. Tooling for fixing workpieces and tools; automation systems and system software for configuring machine tools and recording and exchanging data with the various system components and design advantages.



Customer Services

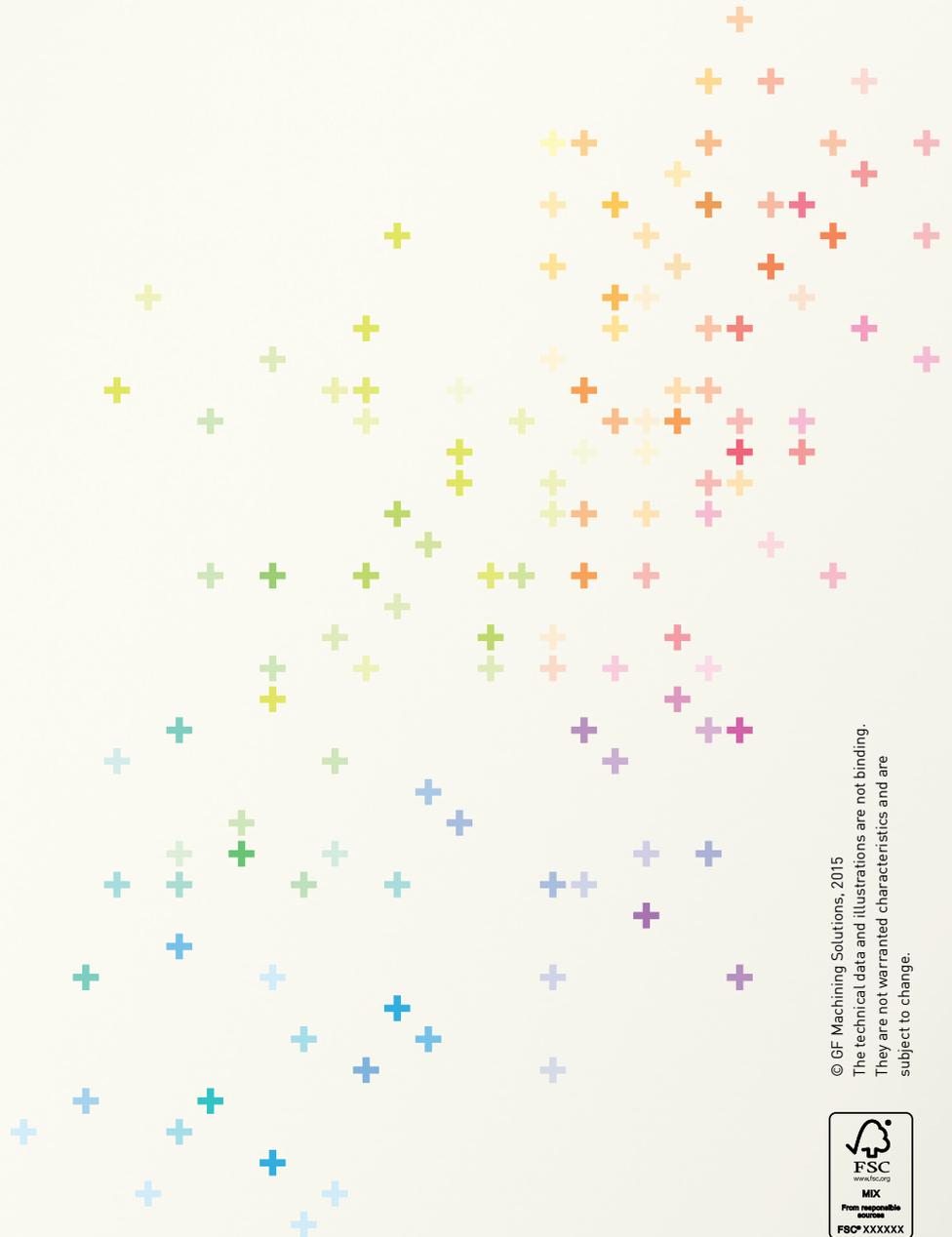
Operations, Machine and Business Support. Customer Services provides with three levels of support all kind of services for GF Machining Solutions machines. Operations Support offers the complete range of original wear parts and certified consumables including wires, filters, electrodes, resin and many other materials. Machine Support contains all services connected with spare parts, technical support and preventive services. Business Support offers business solutions tailored to the customer's specific needs.



At a glance

We enable our customers to run their businesses efficiently and effectively by offering innovative Milling, EDM, Laser and Automation solutions. A comprehensive package of Customer Services completes our proposition.

www.gfms.com



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