MILL P 800 U



MIKRON MILL

A member of UNITED MACHINING SOLUTIONS

THE MACHINE THAT GROWS WITH YOUR NEEDS

The MIKRON MILL P 800 U delivers intelligent productivity to help mold and die manufacturers overcome their daily challenges. Rapid market developments and future-changing innovations challenge mold and die manufacturers' ability to adapt to change. MIKRON MILL provides these manufacturers its MIKRON MILL P 800 U five-axis, simultaneous Milling machines. The MIKRON MILL P 800 U is a very robust, stable and accurate machine center in a gantry-type design with limitless automation possibilities. This 5-axis Milling solution is designed for high-performance machining applications. For best accuracy and surface finish by simultaneous operation, the machine has water-cooled direct drives in the rotary and swiveling axes. Thanks to its unique compact concept and its modularity, the machine ensures precise machining applications in both single item and fast, productive serial production.



PROCESS RELIABILITY	DYNAMIC MACHINING	HIGHER PRODUCTIVITY	MACHINE AVAILABILITY
±2µ/24	365 days	250%	100%



The perfect fit for perfectionist and modern shop

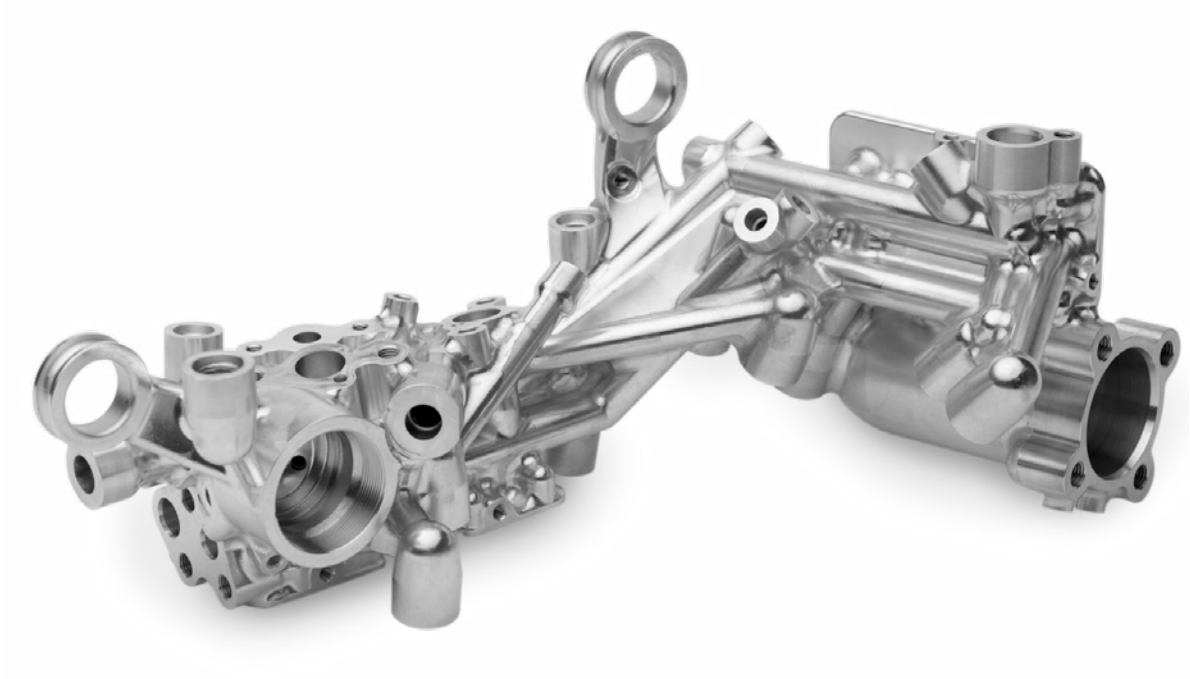
ROBUST, MODULAR AND 24/7 PERFORMER

Backlash-free motion for micro finishes
Precision machining 365 days a year
Achieve high material removal during roughing, high precision on big, heavy parts and the tightest tolerances after your finishing process.

Best surface finishes on light or heavy parts
Show off your mold-making capabilities and make a great first impression with the shiny surfaces this solution delivers on your high-value molds.

Highly flexible part production
Master a wide range of part-production challenges – including constantly changing part sizes, weights, batches and materials – with a flexible solution to all of them.

- Excellent 24-hour thermal stability
- Water cooling for key components
- STEP TEC spindle with 36 kW of power and 120 Nm of torque
- Tool magazine with up to 220 positions
- Best-in-class automation footprint
- Payload up to 1000 kg
- Highly dynamic machining – 1.7 g acceleration
- Ergonomic, accessible design
- Machine Spindle Protection (MSP)
- Simultaneous Turning option
- Advanced smart-machine modules
- Siemens or Heidenhain numerical control





Create accurate parts
with dynamic performance

THE BENCHMARK OF PRECISION MACHINING AND AGILE PRODUCTIVITY

Lower your production costs with a reliable, dynamic machine on a best-in-class footprint

±2µ/24

PROCESS RELIABILITY

Secure your milling process with a water-cooled system and automated machine calibration (AMC) on a robust, stiff, stable, symmetrical gantry design.

365 DAYS

DYNAMIC MACHINING

Ensure best-in-class dynamic productivity with 1.7 g axis acceleration, 61 m/min axis feed rate and a 36 kW/120 Nm STEP TEC spindle.

250%

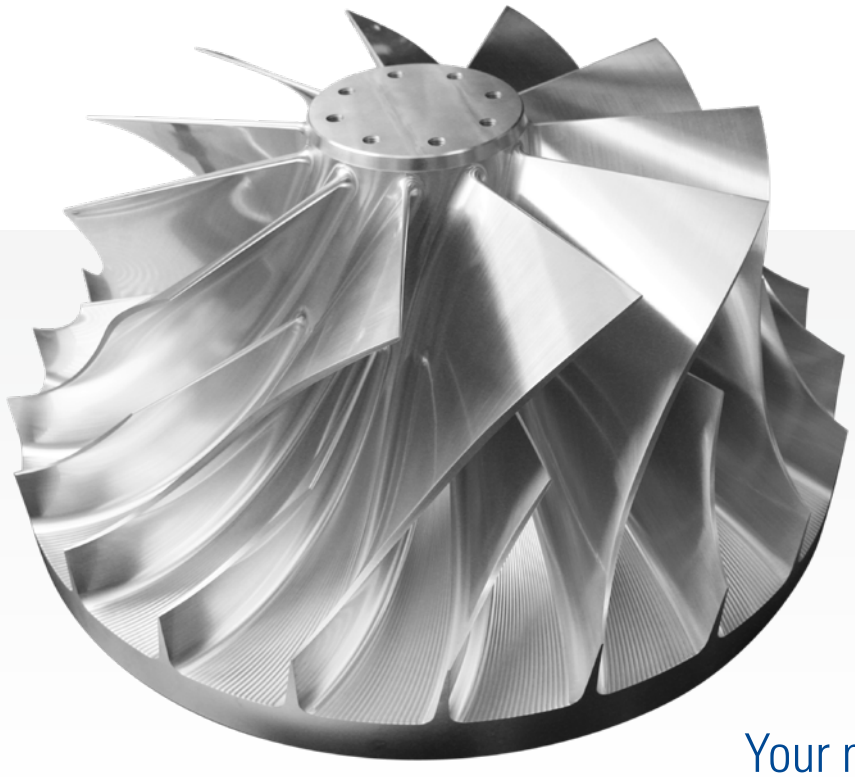
HIGHER PRODUCTIVITY

Increase manufacturing flexibility with a scalable solution that offers limitless automation possibilities in a best-in-class footprint.

100%

MACHINE AVAILABILITY

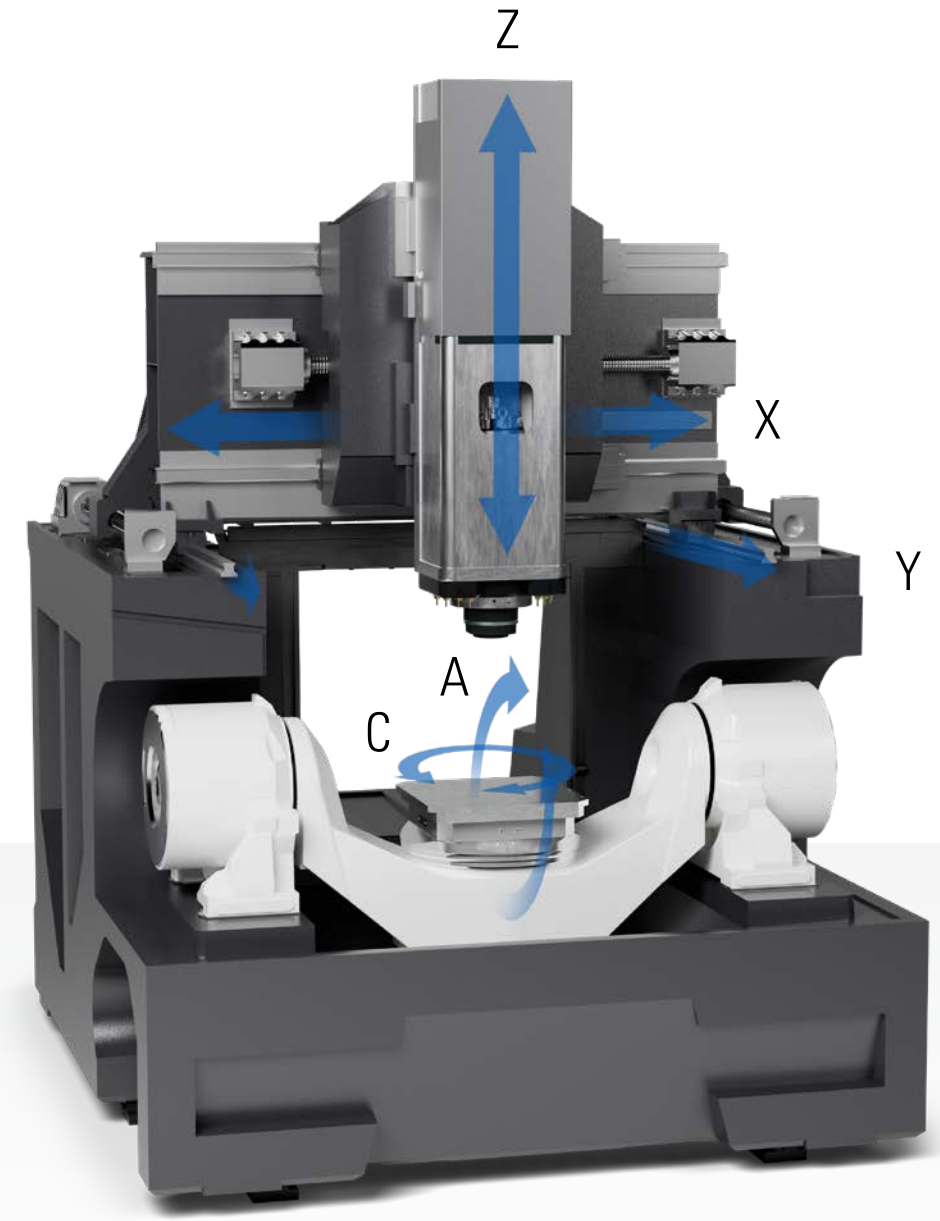
Prevent machine downtime with Machine Spindle Protection (MSP) for risk-free machining.



Your most competitive machining center

X axis	Y axis	Z axis
800 mm	800 mm	550 mm
61 m/min	61 m/min	61 m/min

A axis	C axis
+91/-121°	N x 360°
50 rpm	60 rpm



Load parts up to 1,000 kg

HOW TO ACHIEVE SUCCESSFUL RESULTS

To make great parts, you need flexible machine versatility based on deep technical knowledge. The MIKRON MILL P 800 U takes advantage of all of MIKRON MILL's expertise to deliver successful results. Maintain your machine in top condition to achieve lasting productivity with assistance from our Customer Service specialists.



Mill dynamically around the clock with a well-designed table and ergonomic work area. Dual table support and water-cooled direct torque motors unleash dynamic tilting and rotation to mill precise parts up to 1,000 kg.

- Ensure high performance and precision throughout milling operations, including heavy roughing and fine finishing. With a symmetrical gantry design and a water-cooled system for critical machine components, this machine is built for results.
- Secure your processes, speed up production and reach higher levels of accuracy on your most challenging applications. The MIKRON MILL P 800 U uses a polymer concrete material bed with greater rigidity and damping behavior than cast iron for enhanced precision and performance.
- Ensure smooth dynamic milling with less heat than a conventional gearbox-driven table. Direct torque motors on the tilting and rotating table of the MIKRON MILL P 800 U create precise results.
- Only a truly stiff, rigid, stable machine can handle parts that weigh up to 1,000 kg. The MIKRON MILL P 800 U easily creates these big, heavy parts with precise dynamic milling.

AUTOMATED MACHINE CALIBRATION (AMC)

Because precision is not an option at MIKRON MILL, we offer AMC as a standard.

All-in-one, ready-to-use package

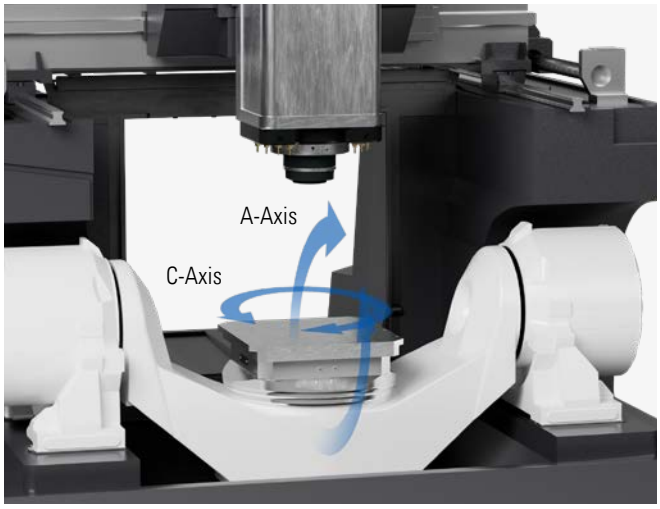
- AMC software: cycle for Heidenhain and Siemens
- AMC hardware: pallet calibration (with steel square and calibration ball)
- AMC interface: ergonomic interface for easy, fast use

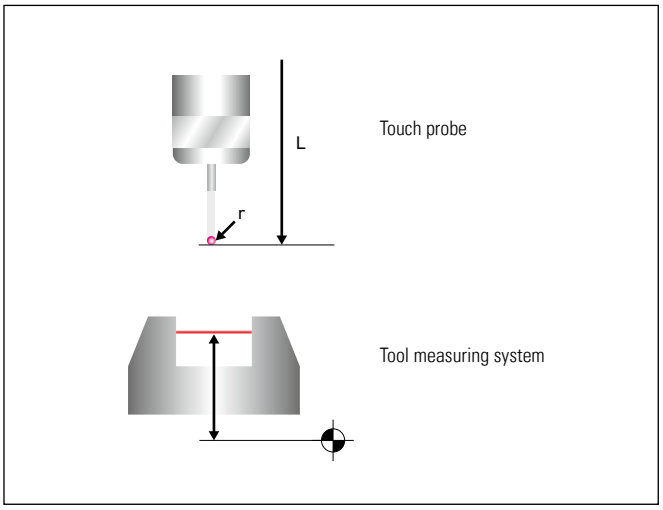
AMC highlights

- Dialogue-guided software for easy and fast handling
- Get a consistent calibration process.
- Recover overall machine precision—every time
- Increase operator availability.
- Reduce human error in data management.



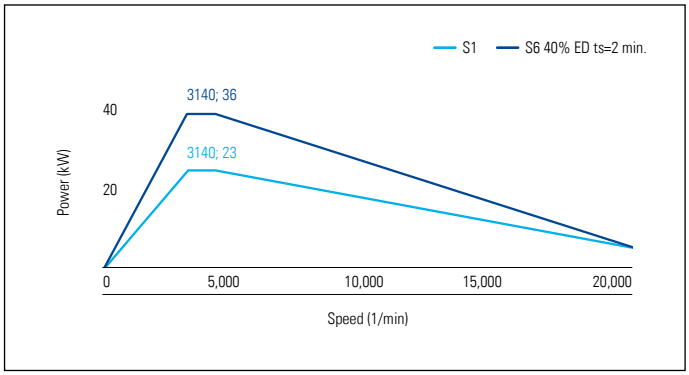
Get your machine ready for the next task!
Overall precision before and after the AMC recalibration process

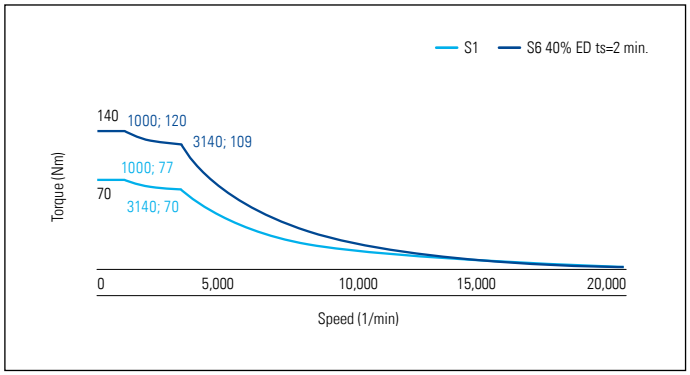




365 DAYS OF DYNAMIC MACHINING

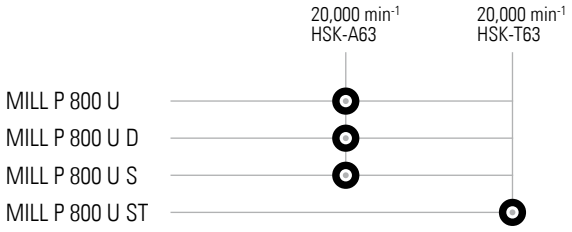
Since 1995, STEP TEC has developed, manufactured, sold and repaired motor-driven spindles for leading manufacturers of machining centers for milling, drilling and turning applications. STEP TEC manufactures fast, precise, high-performance integrated-motor spindles. These high-quality motor-driven spindles dramatically reduce machining times to achieve optimal workpiece quality.





20,000 min^{-1} / HSK-A63

- Precise high-performance
- Available with or without internal coolant supply
- Compressed air blow through Spindle

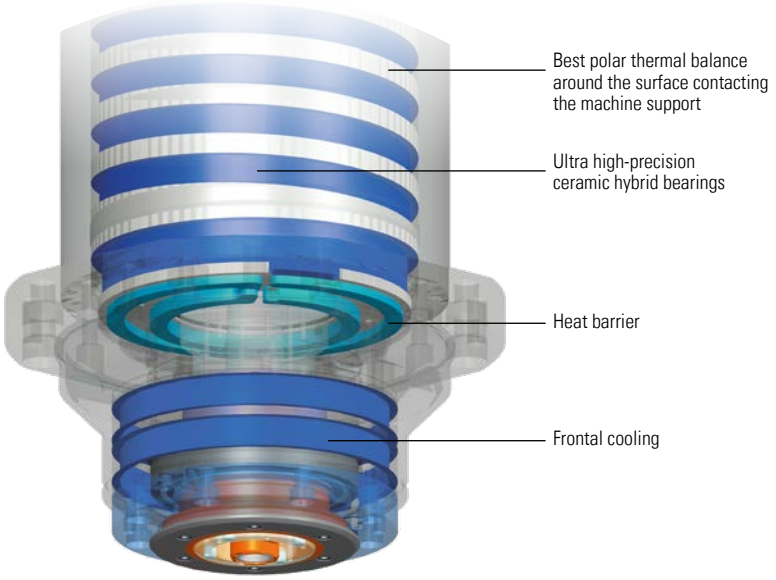


OptiCool

STEP TEC's OptiCool Spindle series ensures not only that the Spindle remains thermally stable, but that natural heat transfer to the Spindle support (e.g., Z-Axis) is limited to the lowest amount possible, in order to preserve the machine's geometry.

- Highest precision due to optimized thermal balance of the entire machining head
- Satisfies the toughest requirements in surface finish, repeatability and reliability

Stator cooling circuit



DEDICATED SPINDLE SERVICES









Spindle Exchange Program

Exchange your defective standard motor spindle for a refurbished or new spindle at a fixed price.

Available within 24 hours,
full warranty conditions apply

Warranty extension

Based on your machine's specific usage, we offer a tailored warranty extension for your spindle, helping you avoid unexpected costs.

(1) As a standalone option focused exclusively on the spindle. (2) Included in the Gold Success Pack*, for up to 5 years after commissioning.

Spindle diagnosis

Our experts assess your spindle's condition by performing preventive maintenance between 3,000 and 5,000 operating hours to prevent leakage and fluid ingress.

Included in the Silver and Gold Success Packs*.

* The Gold Success Pack offers comprehensive coverage for the entire machine, including parts and labor.
Alternatively, you can opt for the Spindle Warranty Extension, which provides spindle-only coverage (parts only).
For more information, please contact your Sales Representative. More details on page 23.

250% HIGHER PRODUCTIVITY

We designed the MIKRON MILL P 800 U to adapt to customer and workshop needs. Load a range of tool magazines and automation solutions from the back to preserve full access to the front of the machine for operators and maintenance. Customer Service helps you keep your machine in top condition for years of high productivity.

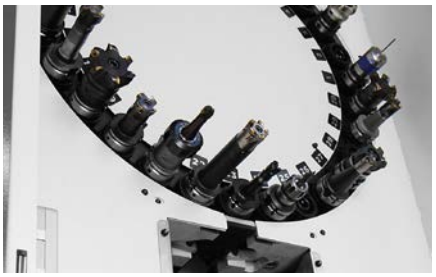
TOOL MAGAZINE CAPACITIES



120/170/215 positions (HSK-A63)

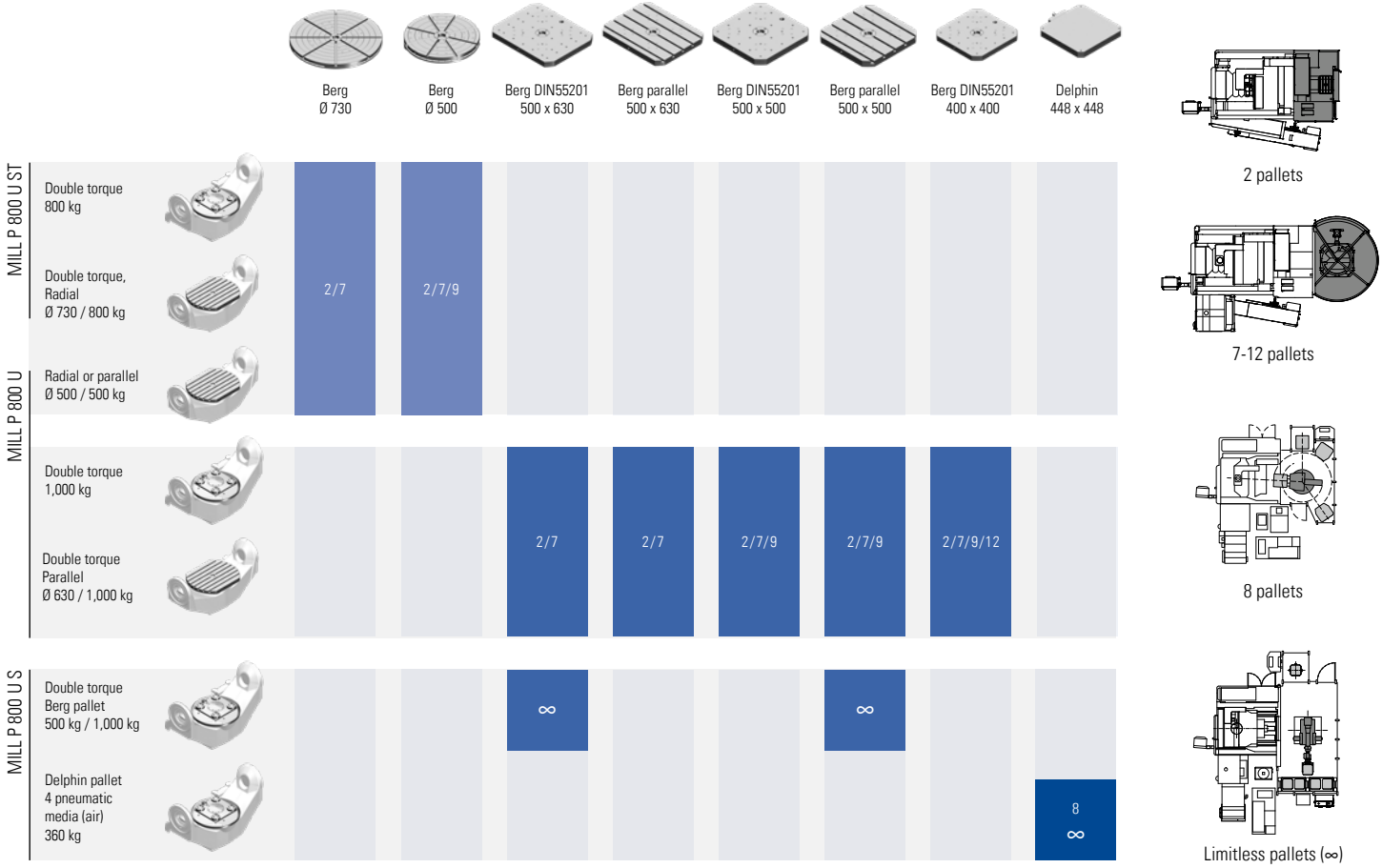


60 positions

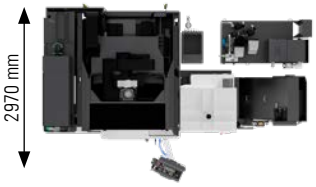


30 positions

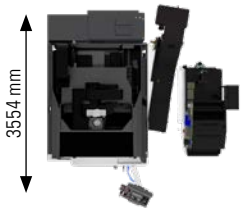
FLEXIBILITY FOR PRODUCTIVITY



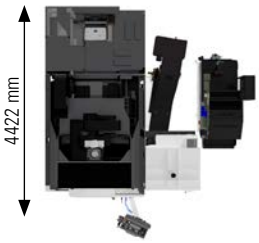
SHORT AND SCALABLE AUTOMATED SOLUTIONS



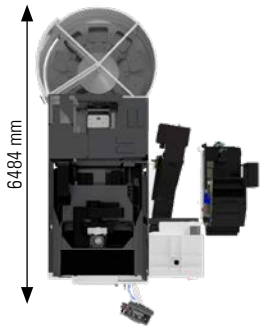
MILL P 800 U S
with robot interface



MILL P 800 U
with robot interface



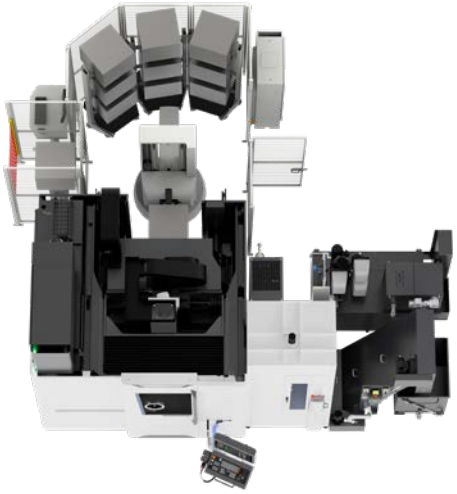
MILL P 800 U
with dual pallet changer



MILL P 800 U
with pallet magazine

TRANSFORMER 3 OR 6-AXIS WITH OPTIMIZED CAPACITY

The MIKRON MILL P 800 U S offers the best complete automation solution per square meter in its class. Quickly and easily connect a second machine to increase your workshop's productivity.



LINEAR CELL FOR MULTIPLE MACHINES

Easily scale the compact MIKRON MILL P 800 U S with automation, connect two or more machines and achieve the best productivity per square meter in this machine class.



BENEFITS AND ADVANTAGES WITH PALLETS AND ROBOTS

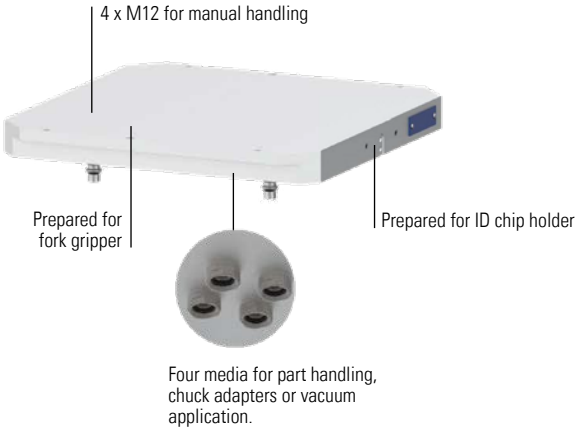
TOOLING

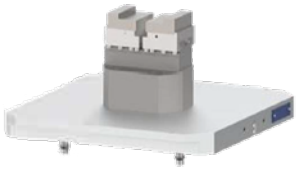
1 minute set-up time
Fit all your machines with the same reference system so you can move workpieces among them without realignment and rechecking.

Step into 24/7 automation
Add an unattended shift for 24/7 productivity.

Repeatability within 0.003
Highest repeatability for the highest quality.

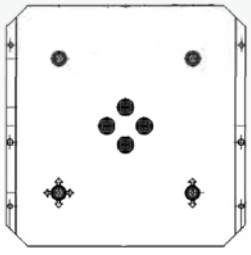
60,000 N clamping force
Achieve the highest process reliability with the greatest clamping force, smart monitoring, high-quality products and easy management systems.



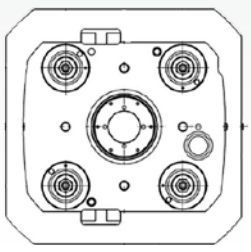

Part clamping


Electrode production


Vacuum clamping



Pallets Delphin, 2154.04/05
- Media: 4
- Material: Aluminum



Pallets Berg, 2154.04/03
- Media: No
- Material: Steel

AUTOMATION

600 kg
From lightweight to maximum capacity

Milling automation portfolio covers all applicable workpiece weights and dimensions.

1 to 20 machines
Automation solutions for small or large cells

Feed a single machine with a WPC robot or put it on a rail to feed up to 20 machines in a line.

Software
Autonomy and flexibility with WorkShopManager

Manage complete functionality of a single machine or a complex cell.

Mix tech
Build your component from raw material to finished part

Manage all machines and technologies as one cell through a single screen.

SOLUTION WITH TRANSFORMER

	6-AXIS	3-AXIS
Load	up to 500 kg	up to 600 kg
Pallets in the cell	9-100	6-100
Number of machines	1-20	1-20



T6-360



T3-600

NOTE: The load includes workpiece, pallet and gripping equipment.

Ask our Automation Specialists and Sales Support for a complete review of any job.

MANAGE YOUR SHOP

JobToolManager
1 machine with WPC: Use touchscreen to assign jobs to pallets, check tools and time, change priorities, monitor alarms and production.

EasyCellManager
1-4 milling machines with System 3R robot: Assign jobs to pallets, check tools and time, change priorities, monitor alarms and production.

WorkShopManager
1-20 mixed machines with System 3R robot: Identify pallet IDs, check tools and time, change priorities, monitor alarms, import/export data for MPS/ERP.



MACHINE AND SPINDLE PROTECTION (MSP)



The world's only spindle protection that works in all directions

Spindle collisions typically occur when you first execute a new computer numerical control (CNC) program. Give your machine ideal protection with MSP.

How it works

When tool force during a collision would cause damage, MSP deflects the spindle and gives axis drives room for automatic emergency braking. This allows for damage-free braking up to 12 m/min (depending on travel speed). MSP works in every direction and with no impact on machining speed in most materials. Keep the machine within safe speed limits for the first run of a program with function M304, up to 12 m/min. along X, Y and Z linear axes, up to 2,250°/min. along the A- resp. and 3,150°/min along the C-rotary axis. Disable the fast feed rate limitation with M305 after the program runs successfully.

With the M304 function active, the spindle remains undamaged through tool or toolholder collisions and all crash events. The CNC records all M304/M305 events.

MSP protection is always active and efficient at speeds lower than 12 m/min. This maintenance-free system operates without wear.

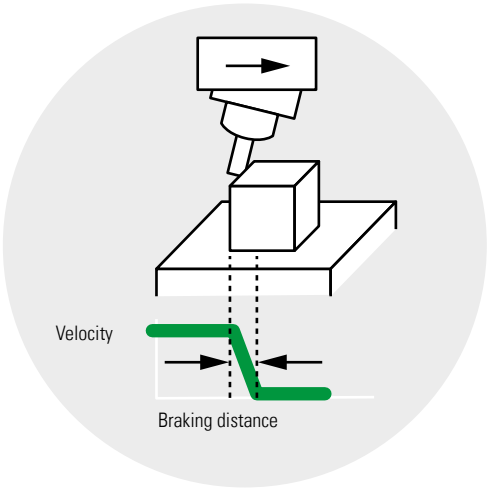
Customer benefits

- Protect machine geometry
- Reduce machine downtime
- Gain full cost control
- Reduce machine-damage insurance premiums
- Restart after a crash with only a 10-minute pause in production

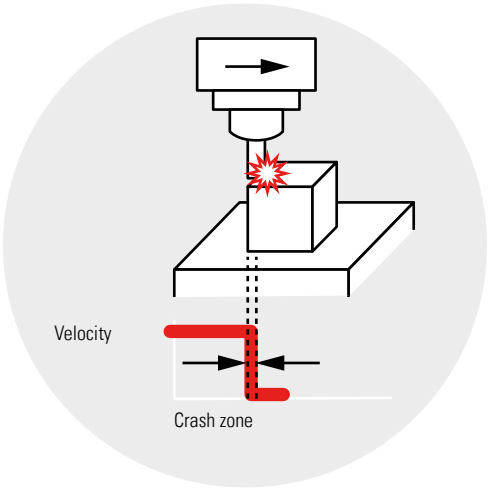
Facts

- Always-on protection
- Available on 20,000 min^{-1} spindle
- Unlimited roughing performance
- M304/305 safety speed limit
  - X/Y/Z axes up to 12 m/min (472 in/min)
  - C axis up to 3,150°/min (8.75 min^{-1})
  - A axis up to 2,250°/min (6.25 min^{-1})

MSP CRASH PROTECTION:
100% MACHINE AVAILABILITY



- Software-supported tool retraction
- Verify geometric accuracy with AMC
- Preserve your spindle with no need for repairs
- Eliminate machine realignment
- Eliminate machine downtime



- Spindle crash with no braking
- Damaged spindle
- Misaligned machine geometry
- Machine downtime
- Expensive repairs

TESTIMONIALS

FINANCE DEPARTMENT
" Every machine experiences an average of 2-3 spindle crashes."

INSURANCE COMPANY
" MSP pays for itself with one spindle crash."

OPERATORS
" What a relief. It really works."



This part was machined after 200 crashes

TURNING. ROUGHING. FINISHING. ONE CLAMPING OPERATION.

Quick and precise
Complete machining on the MIKRON MILL P 800 U ST eliminates unnecessary rechucking to reduce runout, increase precision, speed up production and reduce setup time.

Most-compact design
Reduce investment and operating costs with a complete, space-saving machining center.

Optimized automation
Choose from multiple automation options that integrate with the MIKRON MILL P 800 U series from the front or the back of the machine.

High-precision output
Constantly position the tool perpendicular to the workpiece with simultaneous turning. This ideal cutting position ensures precise parts and surface finishes.

Productivity
The pallet changer passes through the machine for automated pallet handling with unrestricted access to the work area.

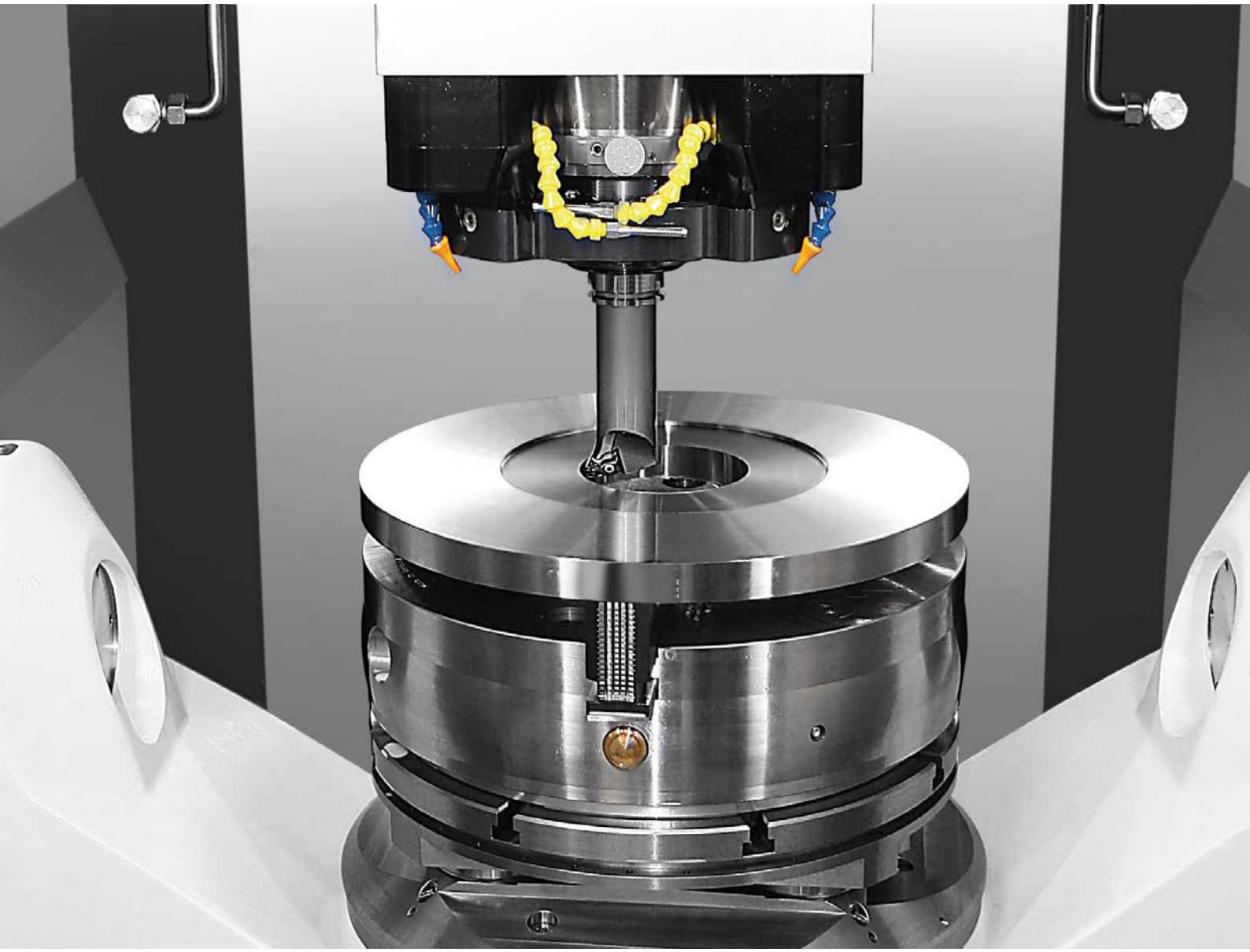
Complete and automated simultaneous machining in one setup

- Reduce setup time by 50% and regain billable production time, even with challenging parts.
- Cut roughing time and tool costs by a ratio of 1/100 when you rough while you turn.
- Achieve uncompromised process productivity and precision with unimpeded 1.7 g axis motion within a safe enclosure.

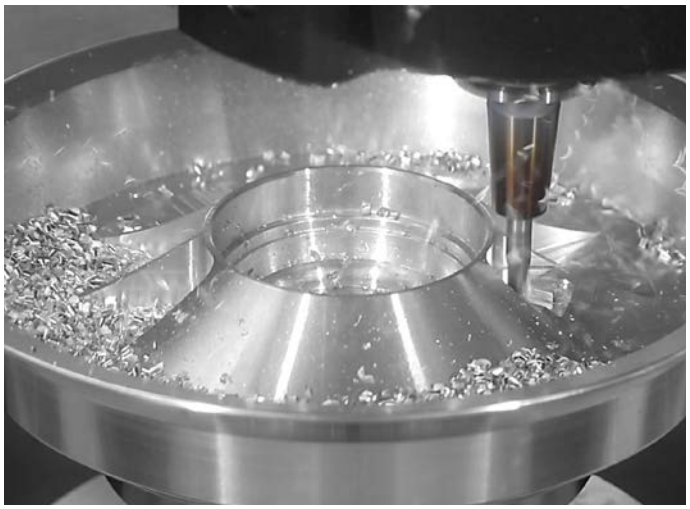
Production service packages
Ask us about specific service and maintenance options to provide safe, continuous operation of this machine.

Visit our website: www.machining.com









SMART MACHINE, SIMPLY BETTER RESULTS

Enhance your process beyond program and machine setup

Smart-machine modules fulfill various functions within an intelligent milling process, which must

... Establish comprehensive communication between operator and machine to provide precise information for assessment of the milling process.
... Help the operator optimize the process for measurable performance improvement.
... Optimize milling to achieve the process safety and workpiece quality for unattended operations.

Customer benefits

- Produce workpieces with process security and precision
- Increase reliable unattended operations
- Lengthen the operating life of the machine
- Cut production costs significantly

Facts

- Increase accuracy and shorten cycle times
- Increase surface finish quality along with accurate part topography and geometry
- Support critical machining strategies
- Improve process safety
- Increase machine availability
- Increase operator comfort
- Ramp up the reliability of unattended operations



Heidenhain control options

- Power Fail Protection (PFP)
- Adaptive Feed Control (AFC)
- DXF file import
- DNC remote network access on the control

SMART MACHINE CONSTRUCTION KIT SYSTEM

Select task-specific modules that best suit your workflow and improve your process.

Saving energy
Cut energy use up to 50% for environmentally friendly economic advantages.

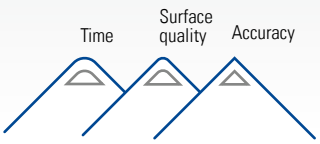
Time
Boost your output up to 24% while you improve surface finish and accuracy with OSS, OSS Extreme, ISM and software tools, including My rConnect.

Precision
Achieve part precision down to 2 µm with base support of your machining center through ITC, OSS and AMC.

Protection
Protect and extend the lifetime of your machine and your tools with MSP, PFP and ISM.

OSS

Operator Support System
The intelligent system adjusts the dynamic behavior exactly as necessary for the workpiece.



PFP

Power Fail Protection
Protects against power failures and voltage drops. Safety through a controlled process.



AMC

Automated Machine Calibration
Take your machine to the highest precision—anytime.



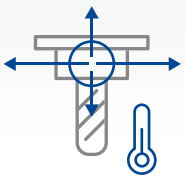
MSP

Machine and Spindle Protection
The world's only Spindle protection that works in all directions.



ITC

Intelligent Thermal Control
With ITC the machine has the thermal process knowledge. Automatic recalibration.



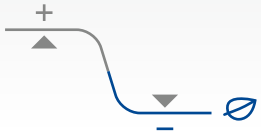
ISM

Intelligent Spindle Monitoring
3D Spindle vibration monitoring system. React adequately to the given situation.



ECONOWATT

Econowatt
Saving energy: an ecological necessity and an economic advantage.



SERVICE + SUCCESS

Our Service + Success experts deliver end-to-end support with proactive expertise, digital tools, and hands-on service to ensure your machines perform at their best throughout their life cycle.



Secure your sustainable machining success
A huge network of highly-trained experts delivering preventive maintenance and advanced support

Grow your people skills
Performance oriented training academy with a human-centric and hands-on approach of knowledge transfer

Realize the full potential of your equipment
Advanced diagnostics, certification, upgrades, training, and financial solutions

My rConnect

Digital services for all your UNITED MACHINING machines, anytime, anywhere
My rConnect is your gateway to advanced digital assistance. Enjoy simple navigation and direct access to UNITED MACHINING support, for all connected and unconnected machines, regardless of their age.

Free standard features
- Asset overview
- Service case management
- Conferencing and communication
- Machine documentation

On-demand features
- Remote access
- Live data



SUCCESS PACKS: TAILORED SERVICE SOLUTIONS FOR EVERY NEED

Success Packs are three annual subscription levels designed to support your machines throughout their life cycle. Whether you aim to reduce downtime, prevent issues, or avoid unexpected repair costs, there's a plan to match your needs.

BRONZE

For full responsiveness
Fast reply services to ensure machines are swiftly back up and running

SILVER

For peak performance
Periodic maintenance services to keep your machines in optimal condition

GOLD

For guaranteed peace of mind
Extended warranty coverage to mitigate financial risks and focus on your core business



CHOOSE YOUR PACK

	BRONZE	SILVER	GOLD
Speedy access Fast track for support	✓	✓	✓
Extended remote support 24/5 expert support through My rConnect	✓	✓	✓
Certified preventive maintenance Annual machine service performed under UNITED MACHINING standards		✓	✓
Core components diagnosis Annual checkup on the core machine components		✓	✓
Discounts Preferred prices for parts and labor		✓	✓
Extended warranty For up to five years			✓

TECHNICAL SPECIFICATIONS

			MILL P 800 U (D)	MILL P 800 U ST	MILL P 800 U S
WORKING RANGE					
Length/Width/Height X x Y x Z		mm	800 x 800 x 550	800 x 800 x 550	800 x 800 x 550
		in	31.50 x 31.50 x 21.65	31.50 x 31.50 x 21.65	31.50 x 31.50 x 21.65
A Axis		°	+91/-121°	+91/-121°	+91/-121°
C Axis		°	n x 360°	n x 360°	n x 360°
Number of simultaneous axes		pce.	5/5 simultaneous	5/5 simultaneous	5/5 simultaneous
FEED DRIVES					
Rapid traverse X, Y, Z		m/min	45 (61)	61	61
		in/min	1771.65 (2362.20)	2362.20	2362.20
A, C		rpm	25 (50), 35 (60)	50, 800	50, 60
WORKING SPINDLE (40% ED, S6)					
20,000 min^{-1}, HSK-A63 / HSK-T63		kW/Nm	36/120	36/120	36/120
ACCURACY XYZ ISO 230-2(97)					
Accuracy	A	µ	8	8	8
Repeatability	R	µ	5	5	5
WORK TABLE					
Clamping surface Ø		mm	500/631	550/730	500/631
		in	19.69/24.84	21.65/28.74	19.69/24.84
Peak torque (C axis)		Nm	-	1,750	-
Max. workpiece weight		kg	500/1,000	800	500/1,000
		lbs	1,102/2,204	1,764	1,102/2,204
AUTOMATION					
Tool magazine		Positions	30, 60, 120, 170, 215	30, 60, 120, 170, 215	30, 60, 120, 170, 215
Laser tool measurement			Option	Option	Option
Infrared touch probe			Option	Option	Option
Pallets (see page 12/13)		pce.	2, 7, 9, 12	2, 7, 9, 12	2, 7, 9, 12
WEIGHT					
Machine weight (60 tools)		kg	15,500	16,500	15,500
		lbs	34171.61	36376.23	34171.61
CONTROL UNIT					
Heidenhain TNC 640			√	√	-
Heidenhain TNC 7			-	-	√
Siemens SINUMERIK ONE					√

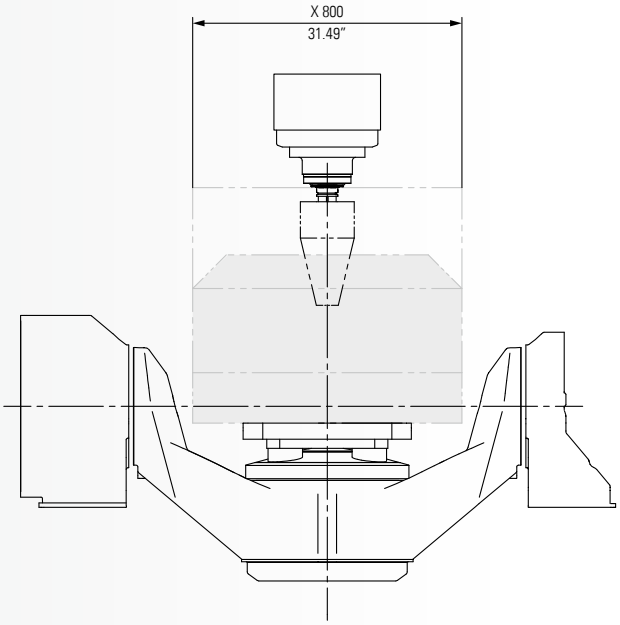
OPTIONS

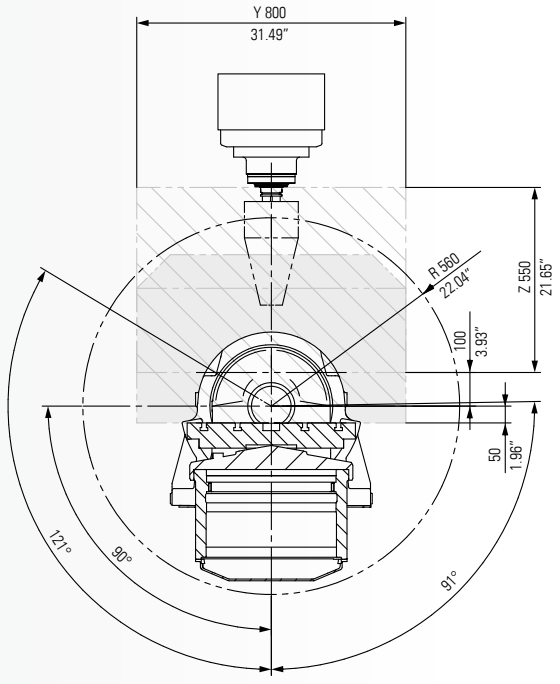
- Machine and Spindle Protection (MSP)
- Coolant unit, chip conveyor
- Minimum-quantity cooling lubrication
- Mist extraction unit, etc.
- Compressed air blow spindle

ANCILLARY SERVICES

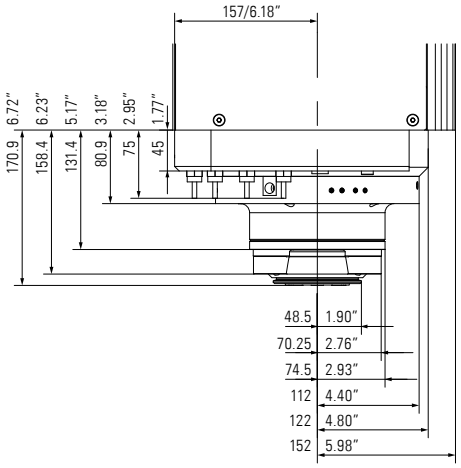
- Programming courses
- Technology courses
- Service training courses

WORKSPACE

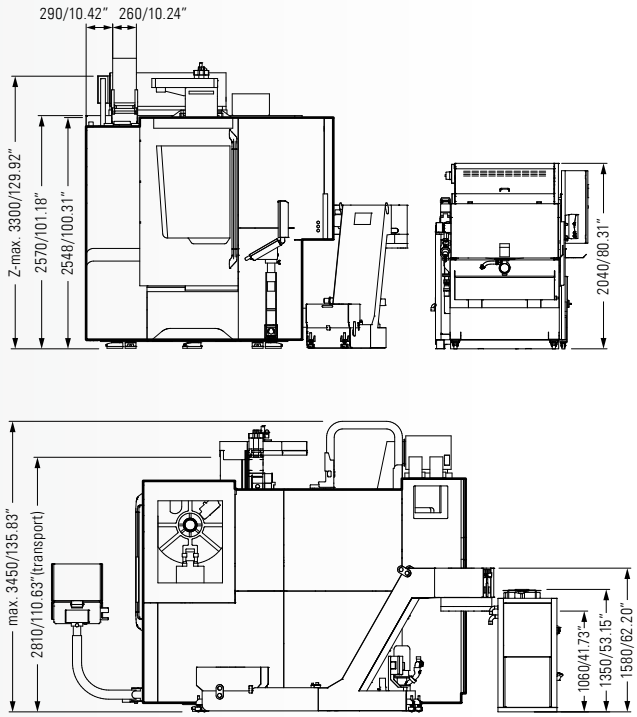


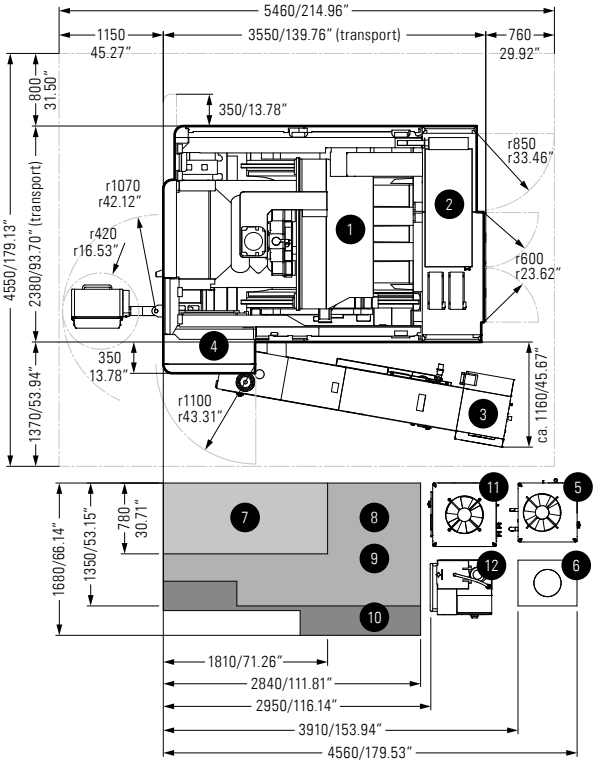


SPINDLES

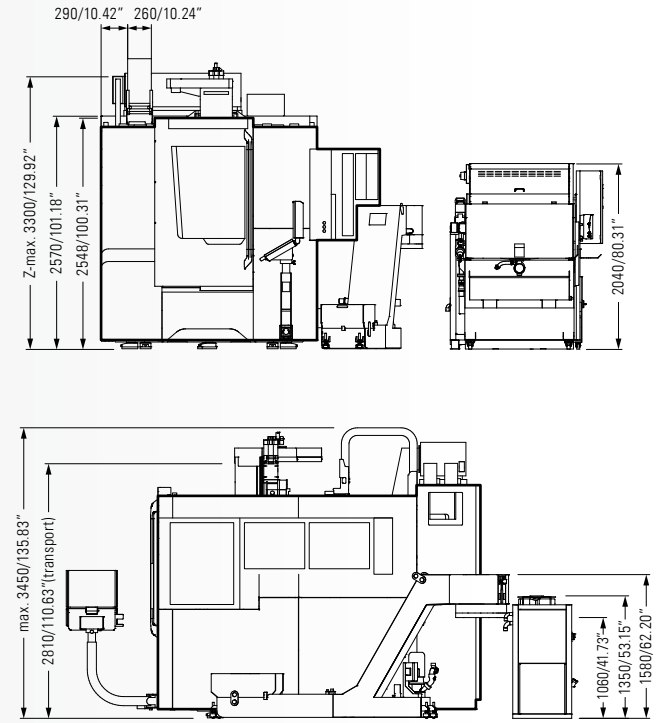


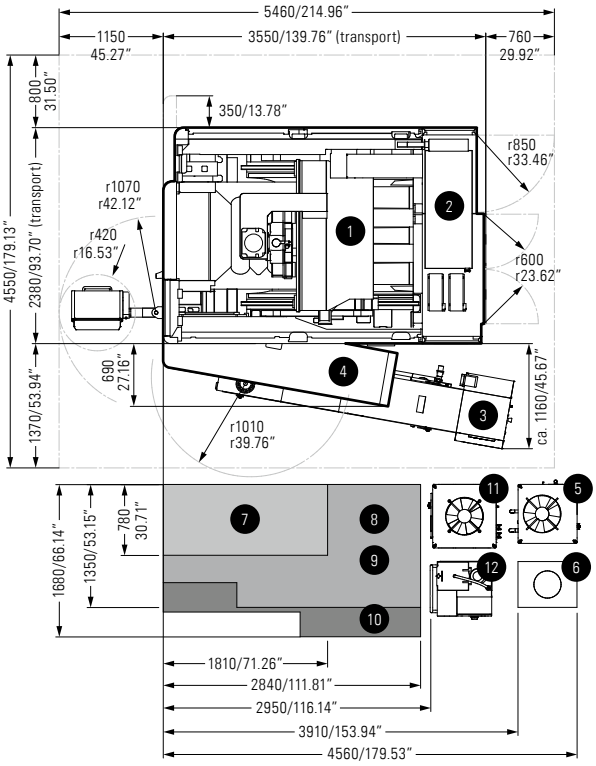
MILL P 800 U, 30 TOOLS





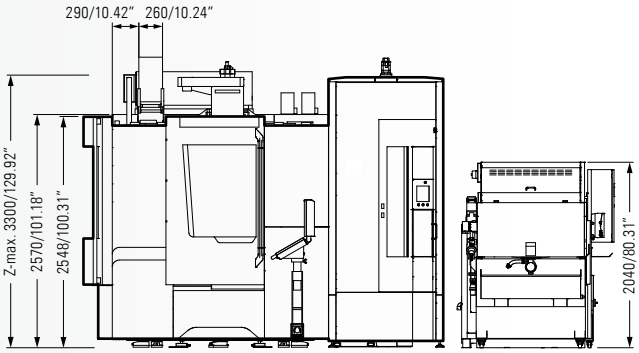
MILL P 800 U, 60 TOOLS

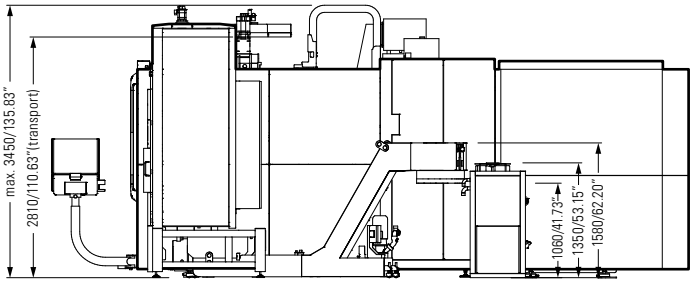


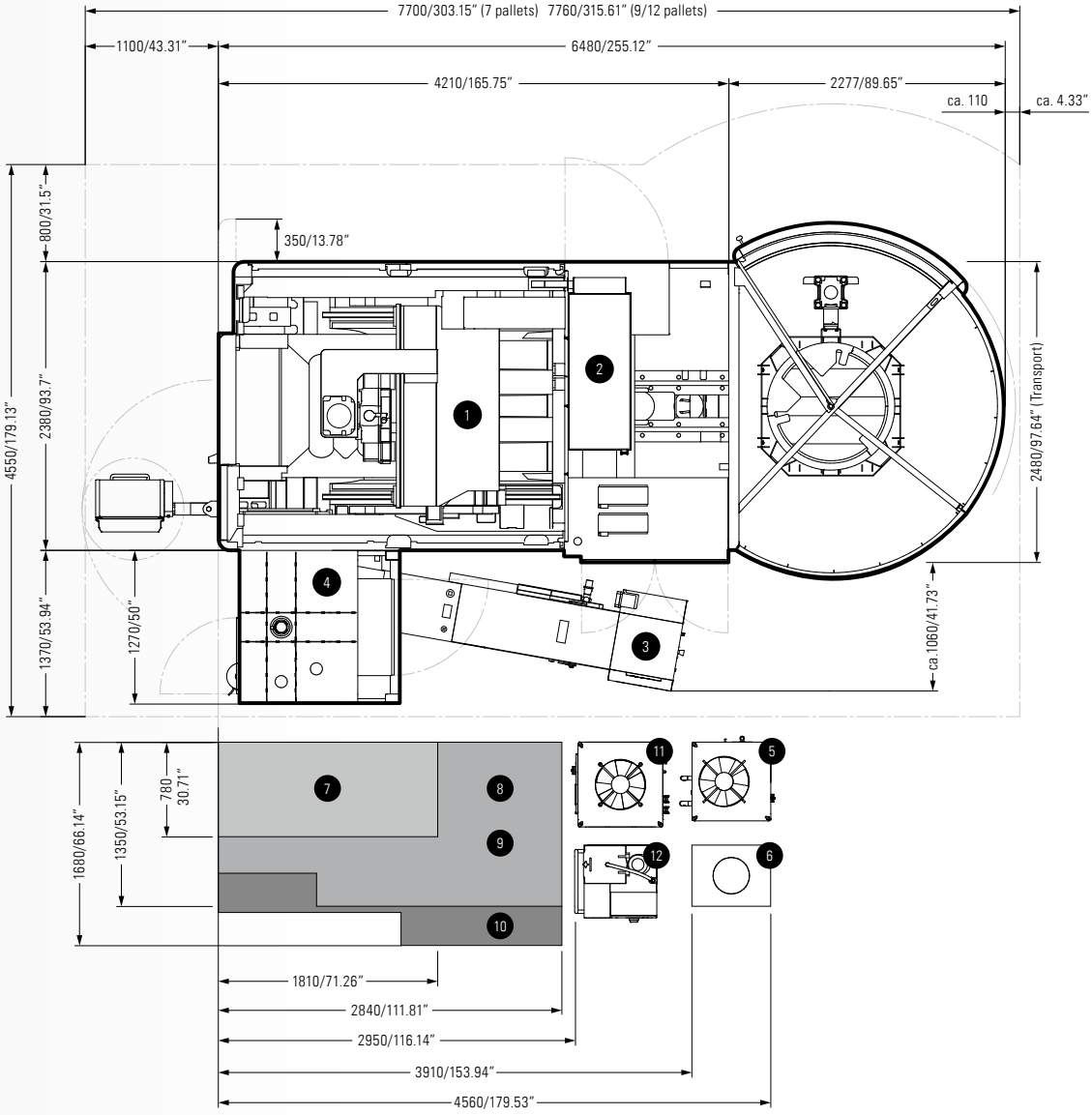


1. Machine
2. Mist extraction unit
3. Lift-up chip conveyor
4. Tool magazine
5. Cooling unit
6. CoolCore cooling unit
7. Basket filter system (450 liters)
8. Band filter system (950 liters)
9. Endless belt filter system (950 liters)
10. Endless belt filter system (1850 liters)
11. Coolant thermal control
12. Centrifuge wet graphite

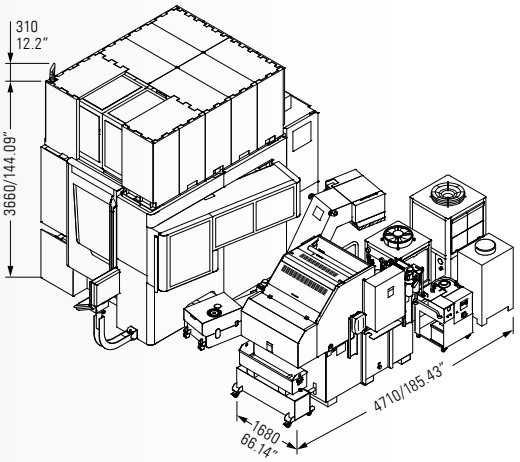
MILL P 800 U, 120-215 TOOLS, 7-12 PALLETS

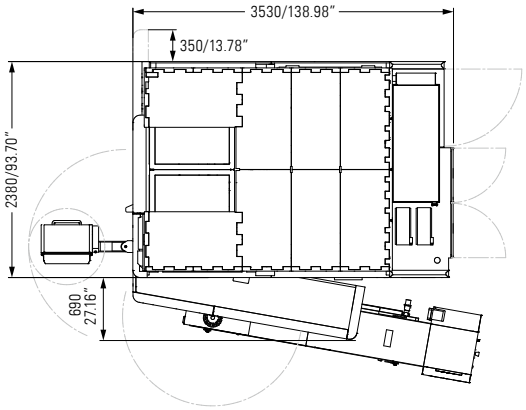




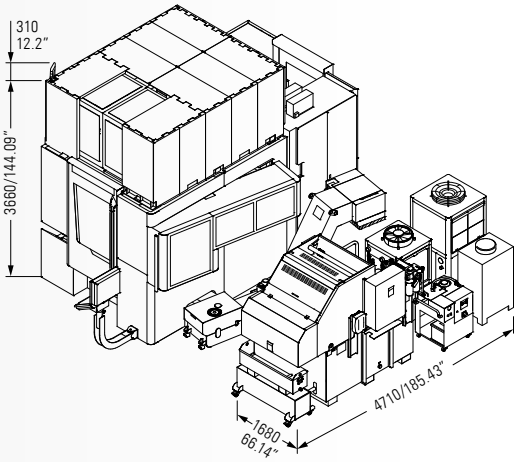


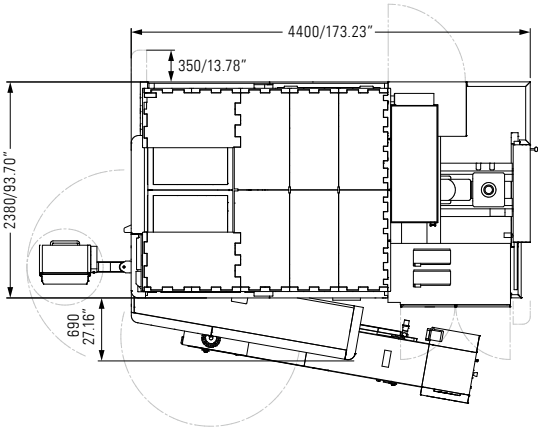
MILL P 800 U ST, 60 TOOLS



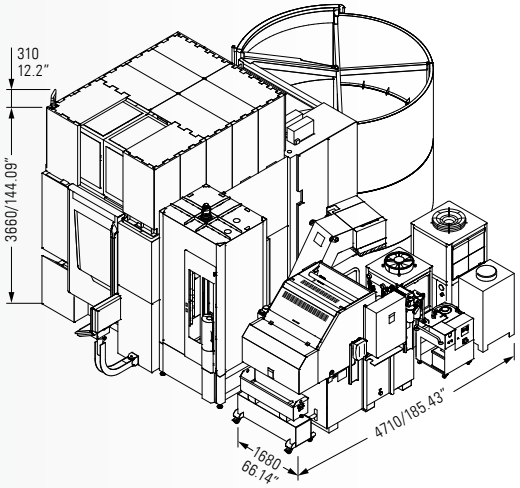


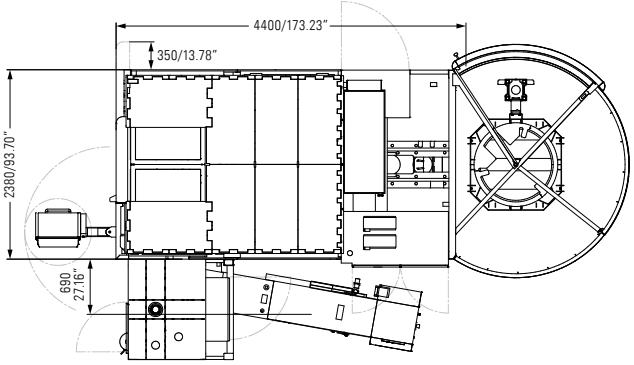
MILL P 800 U ST, 60 TOOLS, 2 PALLETS



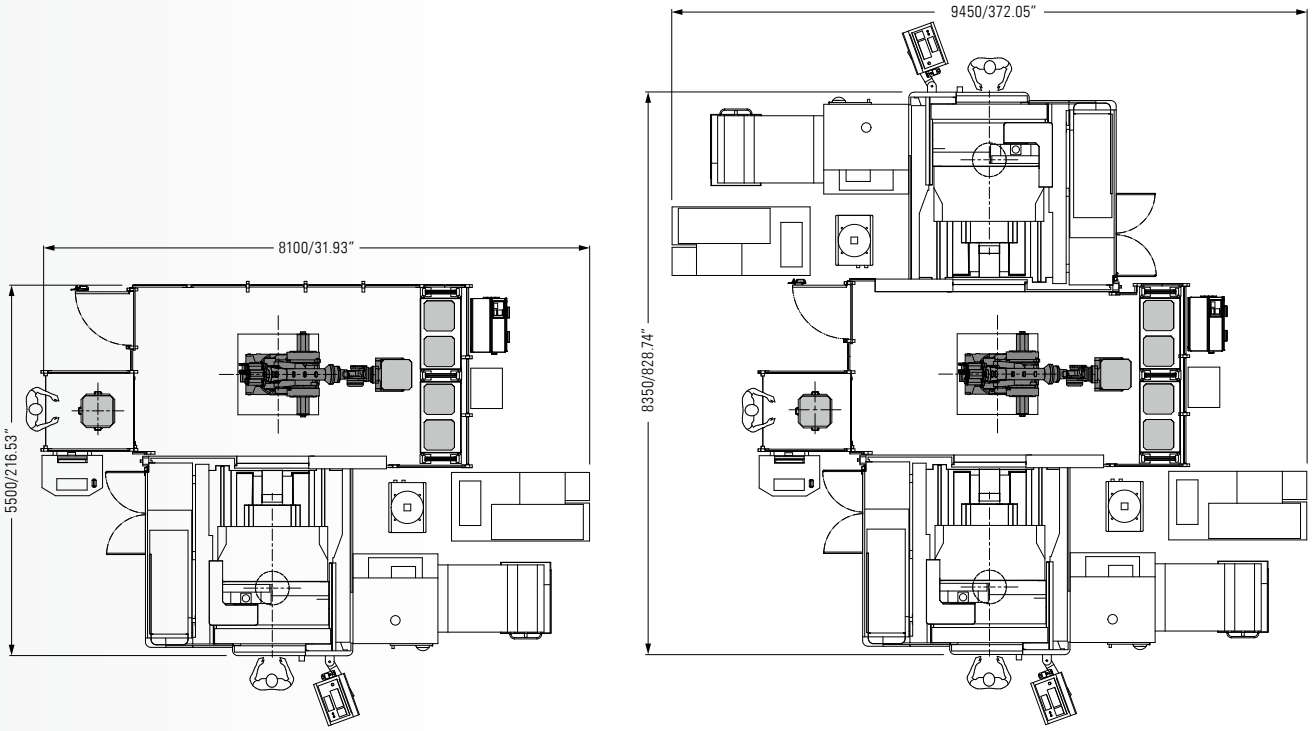


MILL P 800 U ST, 120–215 TOOLS, PALLET MAGAZINE WITH 7–9 PALLETS

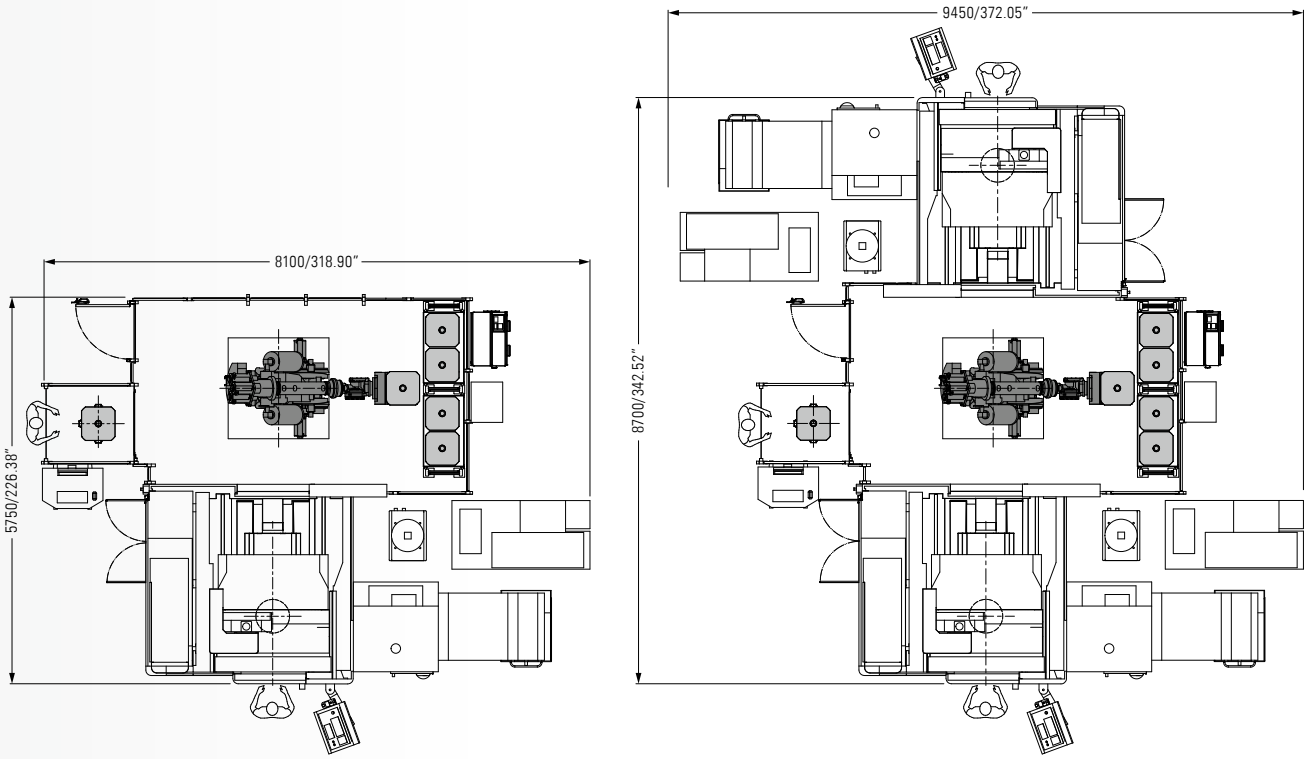




MILL P 800 U S, TRANSFORMER 6-AXIS 360 WITH DELPHIN 448 X 448 MM



MILL P 800 U S, TRANSFORMER 6-AXIS 700 WITH BERG 500 X 500 MM



MIKRON MILL

MIKRON MILL is a global expert in vertical milling and the inventor of high-speed milling. Renowned for dynamic precision and free-form accuracy, our automation-ready machines deliver top performance in complex applications. MIKRON MILL stands for innovation, agility, and lasting value.

Year of foundation 1908
Head office Biel, Switzerland

Dynamic precision and ergonomic automation define the MIKRON MILL DNA. Frictionless torque motors enable ultra-smooth 5-axis movement for outstanding surface finishes.

Customers seeking fast ROI benefit from the efficient and affordable MILL E series. The MILL P machines deliver above-average productivity with high performance and automation. Our iconic MILL S/X series represents the peak of high-speed milling, offering unmatched surface finish, precision, and cycle time for complex parts. Optional grinding functionality expands application possibilities. Smart features like OSS, Automated Machine Calibration (AMC), and Econowatt make complex part production easier, even for skilled operators.



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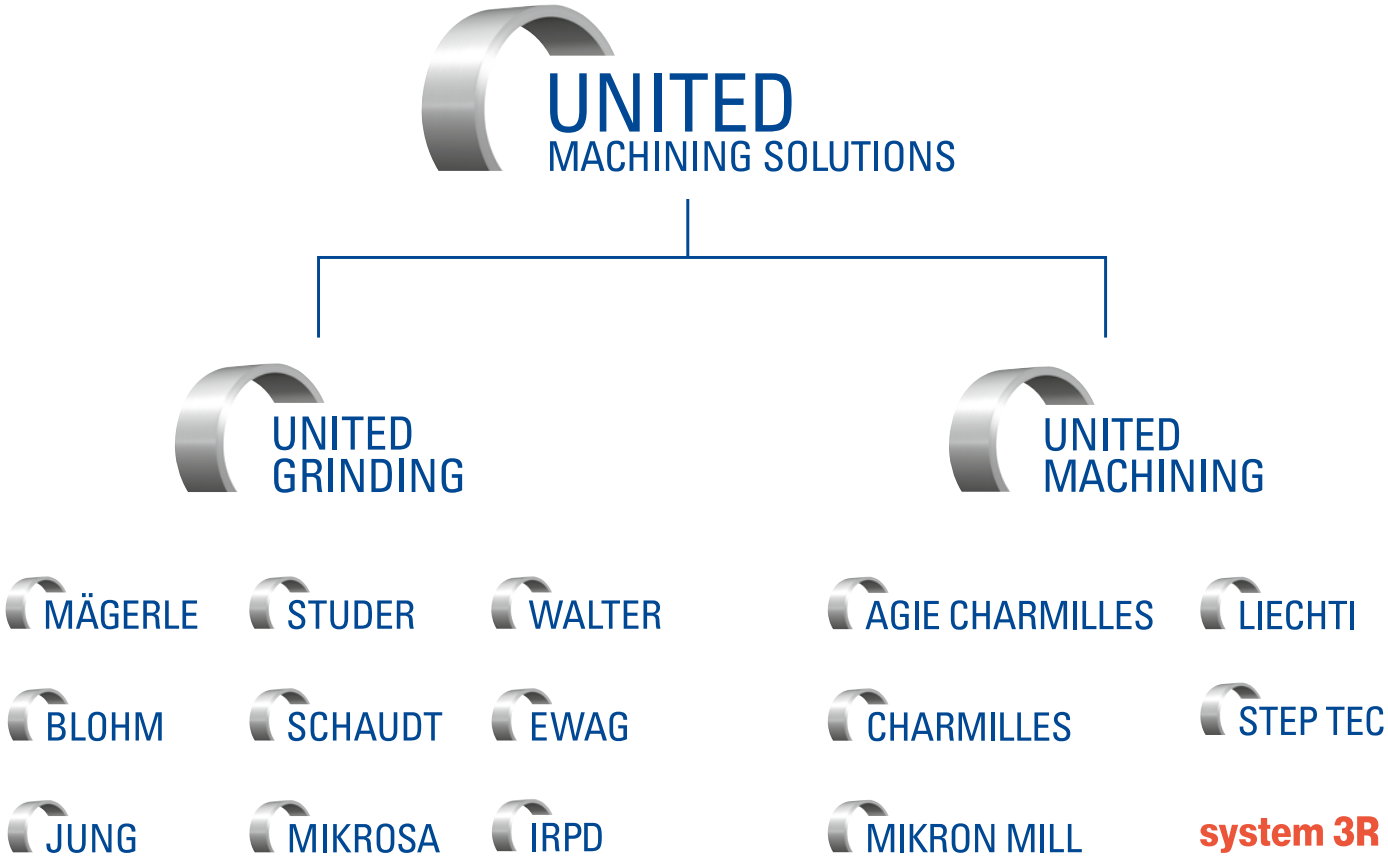
UNITED MACHINING SOLUTIONS

UNITED MACHINING SOLUTIONS is one of the largest machine tool manufacturers in the world. With around 5,000 employees at over 50 global production, service and sales locations, UNITED MACHINING SOLUTIONS is close to its customers and highly efficient. The group is organized into two divisions: UNITED GRINDING and UNITED MACHINING.

UNITED GRINDING includes the brands MÄGERLE, BLOHM, JUNG, STUDER, SCHAUDT, MIKROSA, WALTER, EWAG and IRPD. Its technologies include surface and profile grinding machines, cylindrical grinding machines, machines for tool machining and machine tools for additive manufacturing.

The UNITED MACHINING division includes the brands AGIE CHARMILLES, CHARMILLES, MIKRON MILL, LIECHTI, STEP TEC and SYSTEM 3R. It includes machines for EDM (Electrical Discharge Machining), high-speed milling and laser technology as well as spindle production and automation solutions.

«We want to make our customers even more successful»



MIKRON MILL

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