Mikron

MILL P

900
Passion for Precision

GF Machining Solutions: all about you
When all you need is everything, it’s good to know that there is one company that you can count on to deliver complete solutions and services. From world-class electrical discharge machines (EDM), Laser texturing and Additive Manufacturing through to first-class Milling and Spindles, Tooling, Automation and software systems — all backed by unrivalled customer service and support — we, through our AgieCharmilles, Microlution, Mikron Mill, Liechti, Step-Tec and System 3R technologies, help you raise your game and increase your competitive edge.

+ We are Mikron Mill.
We are GF Machining Solutions.
The vertical, three-axis Mikron MILL P 900 is designed in a robust, portal structure with high static stiffness. It guarantees high quality parts for mold-makers in information and communications technology (ICT), automotive, home appliances and consumer goods, with the benefit of real roughing and finishing performance on the same machine.
Market segments and applications

Typical 3-Axis applications

- **Electronic components**
- **Information and communications technology (ICT)**
- **Packaging**
- **Automotive**
- **Home appliances**
- **General machinery**
Dynamic and stable
Technology

High-performance Milling triggers your success

+ Best surface finish
+ Accuracy
+ High chip removal
+ Outstanding efficiency
Solutions

The right solution— for you

- Polymer concrete machine base for best damping characteristics
- Thermostabilized machine body
- Renowned and stable Fanuc control
- High-performance Spindle
- Ergonomic accessibility
- Easy to automate

Performant, stable and precise process thanks to a symmetrical portal architecture allowing roughing and finishing in one machine setup.

Integrated Automation and chip management to accelerate your productivity and efficiency.

Best surface quality and high positioning and contour accuracy, thanks to this high-performance machine’s polymer concrete base, thermal management and direct measuring on all axes.
Robust and precise

**MILL P 900**

core components

+ **Robust construction**

With its robust portal structure featuring high dynamic stiffness, this solution is especially designed for mold and die and part producers looking for best surface quality and very high positioning and contour accuracy.

+ **Power at your fingertip**

Experience the power of real roughing and finishing performance on a single machine. This machine range’s one-touch process puts them both at your fingertip.
Stable accuracy

Experience the high precision that comes from long-term stability and robustness—even in hard Milling. This machine’s symmetrical portal design, polymer concrete structure and high thermostability are your foundation for precision.

• Thermostabilized body
• Cooling system for Spindle
• Thermal-controlled drive motors
• Temperature-controlled coolant
• Cooling loop inside table

Fifty-year legacy of machine design expertise
smart machine

The new dimension in modern production

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

1st Establishing comprehensive communication between man and machine, which makes available precise information that the operator requires to assess the Milling process.

2nd Supporting the operator in the optimization of the process, which considerably improves the performance.

3rd The machine optimizing the Milling process, which improves process safety and workpiece quality - especially important in unmanned operation.

smart machine construction kit system

Each of the modules fulfills 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.

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
+ Improved process safety
+ Higher availability
+ Better operating comfort
+ Considerable increase in reliability in unmanned operation

Saving energy

smart machine modules like Econowatt are an ecological necessity with an interesting economic advantage.

Precision

smart machine modules like ITC, ITM, OSS and Kinematic opt support the precise base of your machining center to reach an even more precise final part for your customers.

Protection

smart machine modules like PFP and APS protect your machine and process.

Time

smart machine modules like OSS, APS or software tools like rConncet or CAMplete will boost your productivity.

Saving energy

smart machine modules like Econowatt are an ecological necessity with an interesting economic advantage.

The facts

• Produce your workpieces in a process-secure and precise manner
• Increase reliability in unmanned operation
• Boost the service life of the machine
• Significantly reduce production costs
High-tech motor Spindles

Best surface finish for both roughing and finishing

The high-performance Spindles from Step-Tec are designed to do heavy roughing and Milling to best surface finish all in one. With a bearing design with three preloaded hybrid ball bearings in the front and a thermally robust hybrid cylindrical roller bearing on the back, you are guaranteed a super-rigid rotating system that enables Milling with extra-long tools reaching into deep cavities. Ramp up your chip removal, thanks the feed rates made possible by this solution’s absorption of high Milling forces at the tool tip.

Incorporated into the HPC190 line is the well-proven OptiCool principle that keeps the front bearing area cool while the extra heat barrier cooling loop keeps the motor heat away from the Spindle nose. That results in a thermally balanced Spindle thus assuring a high level of precision, repeatability and surface finish.

The 36,000 rpm HVC150 Spindle is the optimum solution for mold and die machining. It reaches a superb surface finish thanks to its great axial stability. Due to the specially chosen bearing arrangement with two hybrid ball bearings in the rear instead of the common roller bearing system, this Spindle stands out with very low dynamic axial growth. This precision bearing arrangement offers the best in repeatability for machining operations.
Space for performance
Tool magazines

Choice of solutions to meet your needs

**Tool magazine for every need**
- Disc-type or chain magazine
- Capacity of up to 60 tools with a magazine internal to the machine’s standard footprint
- Touch probe orientation

**60 tools**

**Ergonomic and user friendly**
- Ensure productivity and process reliability
- Parallel machining and tool loading
- Easy tool loading possibilities thanks to an ergonomic tool loading door

**30 tools**
Chip management

Wet or dry – clean machining

Customer benefits
- Optimum chip flow to steep and smooth cabin walls
- Wash-down nozzles for all corners to prevent chip accumulation
- Large and strong chip augers to transport high volume of chips

Adapted chip management

- Solution for high-volume aluminum Milling chips with slat band lift-up chip conveyor and coolant unit with fine filtration
- Solution for high-volume steel Milling chips with scraper lift-up chip conveyor and coolant filtration unit

Options
- Through-Spindle coolant
- Wash-down system
- Coolant thermal control
- Oil skimmer
Automation with pallet magazine

Lower your costs, increase productivity with Automation

Take your productivity to new levels while reducing your costs with our superior Automation solution. The Pallet Magazine generously dimensioned door allows optimum pallet access for loading light parts by hand and heavy parts by crane. Larger windows allow a good view into the pallet area, and pallets are managed by using the machine control.

Configuration as System 3R

<table>
<thead>
<tr>
<th>Pallet Automation</th>
<th>5 Delphin 400 x 400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallet changing time</td>
<td>30 sec</td>
</tr>
<tr>
<td>Max payload</td>
<td>200 kg</td>
</tr>
</tbody>
</table>

Ergonomic door design for easy loading of parts up to 200 kg
Automation from the back, full access on the front
Options

Multiple options to drive your success

- Infrared touch probe
- Laser measuring system
- Through-Spindle cooling
- External coolant supply
- Wash-down system
- Band filter system
- Rotary viewing window
- Machine and Spindle Protection (MSP)
- MSP) smart machine
Customer Services

New digital service possibilities

GF Machining Solutions Customer Services continues to push technological boundaries to deliver the future of services to you—today.

rConnect is the digital services platform available for all GF Machining Solutions technologies. Following a modular approach, rConnect comprises a range of services that empower you to increase your manufacturing productivity. Certified with the TÜViT Trusted Product Certificate.

rConnect Messenger, we deliver machine data to your mobile device to keep you constantly informed about your production. You can supervise your workshop from your smartphone.

rConnect Live Remote Assistance (LRA), our expert engineers rapidly respond to your service requests. LRA allows effective face-to-face assistance using audio, video, chat and many more functionalities.
### Technical data

#### Mikron MILL P 900

<table>
<thead>
<tr>
<th><strong>Axis travel</strong></th>
<th><strong>mm (in)</strong></th>
<th><strong>mm (in)</strong></th>
<th><strong>mm (in)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal X</td>
<td>900 (35.43)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral Y</td>
<td>600 (23.62)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical Z</td>
<td>450 (17.71)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Travel speed</strong></th>
<th><strong>m/min (ipm)</strong></th>
<th><strong>m/min (ipm)</strong></th>
<th><strong>m/min (ipm)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid traverse X</td>
<td>30 (1181)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid traverse Y</td>
<td>30 (1181)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid traverse Z</td>
<td>30 (1181)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tool Spindle (40% ED, S6)</strong></th>
<th><strong>kW / Nm</strong></th>
<th><strong>kW / Nm</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>20,000 min⁻¹, HSK-A63 S6</td>
<td>36 / 120</td>
<td></td>
</tr>
<tr>
<td>36,000 min⁻¹, HSK-E50 S6</td>
<td>33 / 21.3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Work table</strong></th>
<th><strong>mm (in)</strong></th>
<th><strong>kg (lbs)</strong></th>
<th><strong>Chuck Delphin</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallet/clamping surface</td>
<td></td>
<td></td>
<td>400 x 400 (15.75 x 15.75)</td>
</tr>
<tr>
<td>Max. table load</td>
<td>1000 (2204)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tool magazine</strong></th>
<th><strong>mm (in)</strong></th>
<th><strong>kg (lbs)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>HSK-A63 tool holder</td>
<td>DT 30 / CT 60</td>
<td></td>
</tr>
<tr>
<td>HSK-E50 tool holder</td>
<td>DT 30 / CT 60</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Automation</strong></th>
<th><strong>mm / piece (in / piece)</strong></th>
<th><strong>Delphin 400 x 400 / 5 (Delphin 15.75 x 15.75 / 5)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallet size / Number</td>
<td></td>
<td>200 (441)</td>
</tr>
<tr>
<td>Maximum additional load</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Weight</strong></th>
<th><strong>kg (lbs)</strong></th>
<th><strong>12 000 (26 455) with CT60</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pallet changer</td>
<td></td>
<td>1455 (3207)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Control</strong></th>
<th><strong>Fanuc 31i-B</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fanuc</td>
<td></td>
</tr>
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</table>
About GF Machining Solutions

Multi–technology solutions provider

Our commitment to you and your specific applications is proven by the value-adding intelligence, productivity and quality delivered by our multi-technology solutions. Your success is our chief motivator. That’s why we are continuously advancing our legendary technical expertise. Wherever you are, whatever your market segment and whatever the size of your operation, we have the complete solutions and the customer-centric commitment to accelerate your success—today.

Wire-cutting EDM

GF Machining Solutions’ wire-cutting EDM is fast, precise and increasingly energy efficient. From ultraprecise machining of miniaturized components down to 0.02 mm to powerful solutions for demanding high-speed machining with respect to surface accuracy, our wire EDM solutions position you for success.

Die-sinking EDM

GF Machining Solutions is revolutionizing die-sinking EDM with features like iGAP technology to dramatically boost machining speed and reduce electrode wear. All of our die-sinking systems offer fast removal and deliver mirror finishes of Ra 0.1 μm (4 μin).

Hole-drilling EDM

GF Machining Solutions’ robust hole-drilling EDM solutions enable you to drill holes in electrically conductive materials at a very high speed—and with a five-axis configuration, at any angle on a workpiece with an inclined surface.

Milling

Precision tool and mold manufacturers enjoy a competitive edge with our Mikron MILL 5 solutions’ fast and precise machining. The Mikron MILL P machines achieve above-average productivity thanks to their high performance and Automation. Customers seeking fastest return on investment benefit from the affordable efficiency of our MILL E solutions.

High Performance Airfoil Machining

Our Liechti turnkey solutions enable the highly dynamic manufacturing of precision airfoils. Thanks to their unique performance and our expertise in airfoil machining, you increase productivity by producing at the lowest cost per part.

Laser texturing

Aesthetic and functional texturing is easy and infinitely repeatable with our digitized Laser technology. Even complex 3D geometries, including precision parts, are textured, engraved, microstructured, marked and labeled.

Laser micromachining

GF Machining Solutions offers the industry’s most complete line of Laser micromachining platforms optimized for small, high-precision features to meet the increasing need for smaller, smarter parts to support today’s leading-edge products.

Laser Additive Manufacturing (AM)

GF Machining Solutions and 3D Systems, a leading global provider of additive manufacturing solutions and the pioneer of 3D printing, have partnered to introduce new metal 3D printing solutions that enable manufacturers to produce complex metal parts more efficiently.

Tooling

Our customers experience complete autonomy while maintaining extreme accuracy, thanks to our highly accurate System 3R reference systems for holding and positioning electrodes and work pieces. All types of machines can easily be linked, which reduces set-up times and enables a seamless transfer of workpieces between different operations.

Automation

Together with System 3R, we also provide scalable and cost-effective Automation solutions for simple, single machine cells or complex, multi-process cells, tailored to your needs.

Digitalization solutions

To drive its digital transformation, GF Machining Solutions acquired symmedia GmbH, a company specialized in software for machine connectivity. Together, we offer a complete range of Industry 4.0 solutions across all industries. The future requires the agility to adapt quickly to continual digital processes. Our intelligent manufacturing offers embedded expertise, optimized production processes, and workshop Automation: solutions for smart and connected machines.

Worldwide for you

Ensuring the best performance throughout the lifetime of our customers’ equipment is the goal of our three levels of support. Operations Support offers the complete range of original wear parts and certified consumables. Machine Support includes spare parts, technical support, and a range of preventive services to maximize machine uptime. Business Support offers customer-specific business solutions.
At a glance

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

www.gfms.com