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*In our showroom you can learn more about all the
"Advantages" of our machine program.*

Your Precision Advantage.®

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been removed for better
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modifications.*

Made in Switzerland

—FEHLMANN—

—FEHLMANN—

FEHLMANN AG.

Precision from Seetal, Aargau,

«Made in Switzerland».

Committed to precision for more than 80 years.
FEHLMANN AG machine works was founded in 1930 and is still based in the Seetal (Lake Valley) in Aargau/Switzerland. Development, production and assembly are carried out exclusively at the main works at Seon, Switzerland, by more than 180 employees. The well-balanced high quality spectrum of products ranges from manual milling/drilling machines to high performance machining centres and HSC milling machines. In addition, we also offer a complete range of machine accessories.

Areas of application.
Each day, throughout the world, thousands of these robust machine tools are used for machining complex and precise single parts, small to medium lot sizes in tool and mould production, precision fixture and prototype work, in apprentices' workshops, laboratories, etc.

Energy efficiency and sustainability.
As a company which is both rich in tradition and future oriented, we have always been sticklers for quality and sustainability. Our guiding principle has been "quality" and our main task has been the development of machines that meet current requirements for highest precision, ergonomics, handiness and reliability. We always consider energy consumption in the development of new machines. Not only consumption at peak loads, but also permanent consumption during setup and retooling operations are important parameters for us when selecting available technologies.

Conservation of resources and CO₂ emissions
At the early stage of company building planning, Fehlmann already paid attention to energy-saving architectural design principles:

- Optimum insulation as well as optimally oriented windows for best temperature control and light exposure
- Deliberate multi-level solutions, ensuring resource-efficient and economic utilization of building land
- ...and much more.

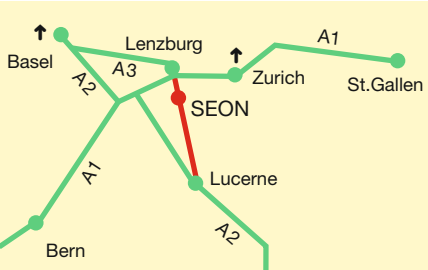
Last but not least, FEHLMANN's high degree of in-house production and centrally located production site are important factors for environmental conservation, ensuring that transportation routes are as short as possible.

With FEHLMANN, customers will get everything from a single source! Development, design, construction, manufacturing, assembly as well as training and service!

With FEHLMANN you stay always one step ahead of the competition!
Your Precision Advantage.®



FEHLMANN AG is easily accessible. Seon is located in close proximity of the main traffic arteries A1, A2 and A3, in the picturesque Seetal (Hallwilersee) of the canton Aargau.



Our machine models are organised into three groups:

Machining centres in portal design

Machining centres

Milling / Drilling machines

Perfect infrastructure and very latest means of production are the foundation of quality.

FEHLMANN AG practices a high level of vertical integration. This factor has measurable benefits in the medium to long term: On the one hand, consistent quality and precision; on the other hand, short lead times, quick routes and increased availability of service as well as added value and resource conservation.

Equipment and production machines are renewed extensively and continuously adapted to ever advancing technologies.

In-house production manufactures according to the quality standard ISO 9001. Modern production and measuring methods guarantee high quality during installation.



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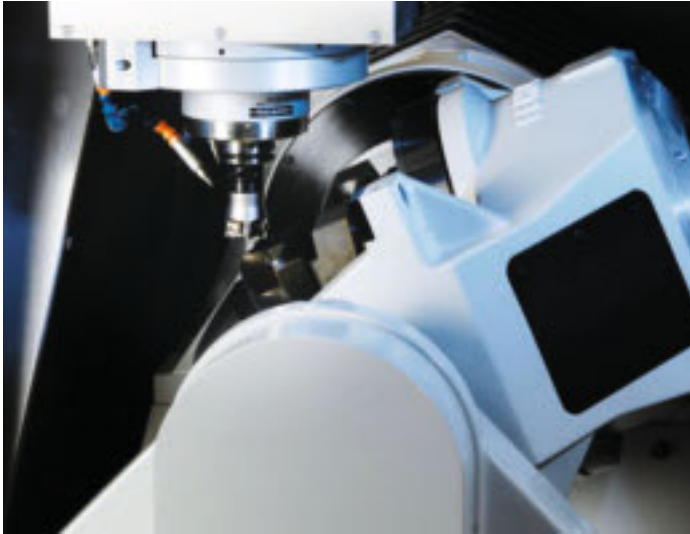
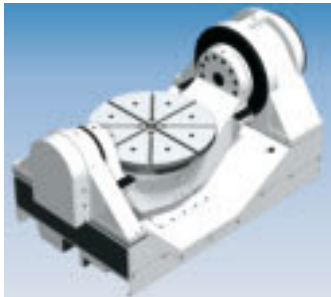


VERSA® 825 or VERSA® 823.
Dynamics and performance at highest level.
Ergonomic, compact and flexible.



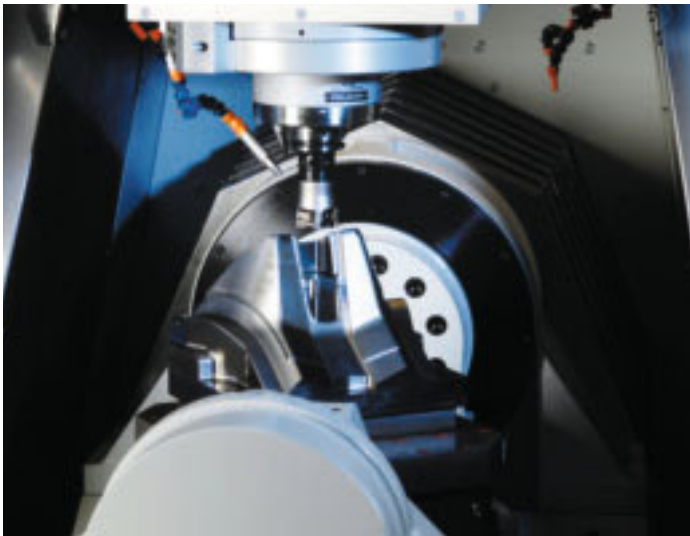
- Areas of application:**
- Milling of complex titanium and aluminium components, e.g. in aerospace industry.
 - Milling of hardened tool steel in tool and mould building.
 - Machining of stainless steel in medical industry.
 - Challenging work pieces in mechanical engineering and automotive construction industries.

VERSA® 825.
High precision 5-axis-milling.



For 5-axis machining of work pieces with pallet size 400 x 400 mm or up to a max. diameter of 560 mm. Ideally suited for dynamic HSC milling as well as for machining hard-to-mill materials. Typically for FEHLMANN, table and tool changer can be operated from the same side. Automation can be retrofitted at any time, thus in no way constraining access to working area.

Whether loaded manually or automatically by robot, perfect ergonomics are always granted.



Direct-driven dividing, swivelling table.

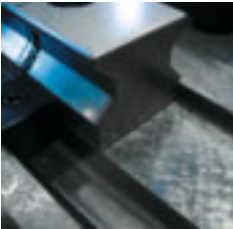
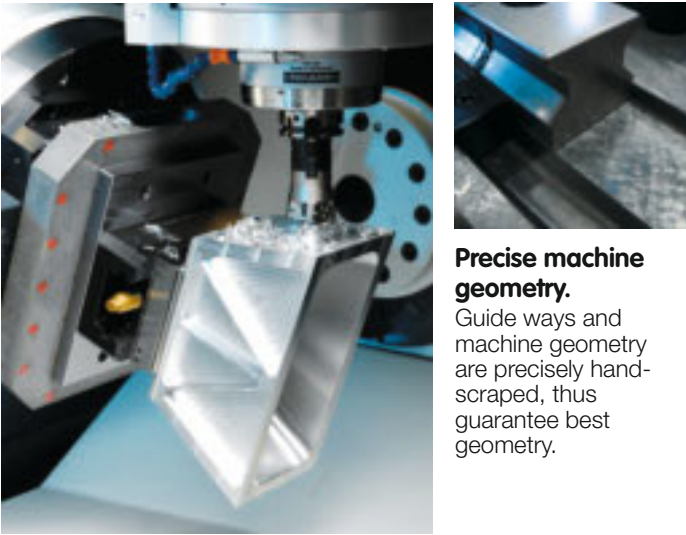
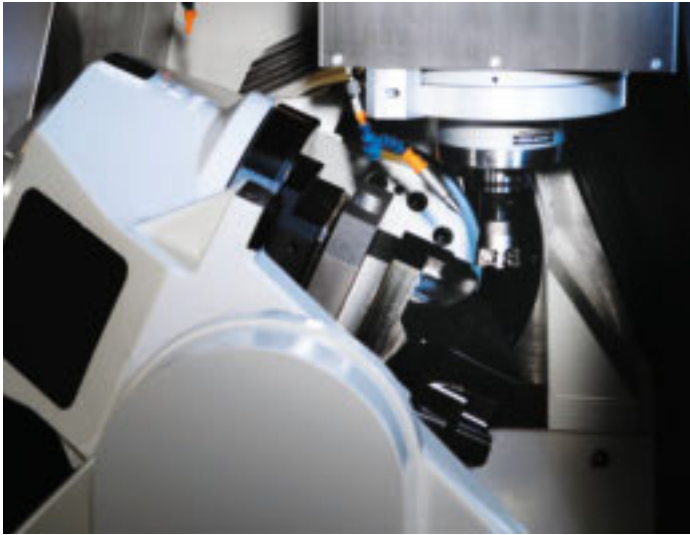
Is able to symmetrically swivel work pieces on two sides. Thanks to the smart layout of the operating panel, the operator never loses track of any operation.

Dynamic and robust.

The cooled torque drives of the dividing, swivelling table are specially designed for fast 5-axis simultaneous milling as well as for high-precision 5-axis milling with positioning.

Highest geometric precision and stability.

Long years of experience in high accuracy 5-axis milling have had a significant impact on the development of this swivel bridge. The double support prevents the table from sagging at the front.



Precise machine geometry.

Guide ways and machine geometry are precisely hand-scraped, thus guarantee best geometry.

VERSA® 823. **3-axis model for** **work pieces up to 1,000 kg.**



Perfectly suited for machining of high-precision machine components and mould bases.

The VERSA 823, 3-axis model, allows for precise and dynamic high-performance machining of large work pieces. The table supports weights up to 1000 kg and the large table surface measures 1,200 x 750 mm.

High-precision 3-axis machining.

Like the swivel bridge, the table also plunges into the portal during machining process. This concept has been particularly designed for complex and/or high-precision 3-axis machining tasks with optimized surface finish.



Ample space.

A large table surface of 1,200 x 750 mm is available to the operator. This also allows machining applications with multi-part clamping.



4-axis design possible.

As an option, dividing units in different sizes are available for the VERSA 823 (option).

Facts **VERSA®** **825** **823**

Traverses

X 875 mm
Y 700 (1,270) mm
Z 450 mm
Swivelling axis A: 230° (+/- 115°)
Dividing axis C: 0° up to 360°

Table / Working area

Clamping surface (l x w)
460x460 mm
Max. table load 350 kg
Distance table – spindle nose
120-570 mm

Work spindle

Spindle power at S6 (40%ED)
24 / 15 kW
Speed range up to
14,000/20,000/30,000 rpm

Tool changer

Magazine capacity standard 44
optional 80 / 186 / 218 / 250 / 346

Feed rates

X/Y/Z 1-30,000 mm/min
optional 1-48,000 mm/min

Weight

Machine tool (excl. coolant)
10,500 kg / 44 tools

Control

Heidenhain CNC contouring
control iTNC 530

Traverses

X 875 mm
Y 700 (1,270) mm
Z 450 mm
Option Dividing axis C: 0° up to 360°

Table / Working area

Clamping surface L x w
1,200x750 mm
Max. table load 1,000 kg
Distance table – spindle nose
150-600 mm

Work spindle

Spindle power at S6 (40%ED)
24 / 15 kW
Speed range up to
14,000/20,000/30,000 rpm

Tool changer

Magazine capacity standard 44
optional 80 / 186 / 218 / 250 / 346

Feed rates

X/Y/Z 1-30,000 mm/min
optional 1-48,000 mm/min

Weight

Machine tool (excl. coolant)
10,300 kg / 44 tools

Control

Heidenhain CNC contouring
control iTNC 530

VERSA® 825 or VERSA® 823. **Automation for 24 hour economy.**

Numerous possibilities for tailor-made solutions are provided in order to match the machine to the individual customer's requirements. Typically FEHLMANN, the basic equipment on these machines already provides all necessary features for precision machining and may be retrofitted at any time with an automation system. The FEHLMANN VERSA concept – patent-registered – is not only space saving, it also guarantees the extremely safe and fast operation of the machine and can be easily automated. All important areas of the machine are instantly within the operator's grasp. The rack magazine is designed so that the operator is able to inspect the tools from the outside at any time. Depending on the tool length, up to 346 tools can be loaded using an external loading unit.



Tool magazines:

Between 44 up to 346 tools.

In order to minimize set-up time, tool changer and table can be loaded from the same side.

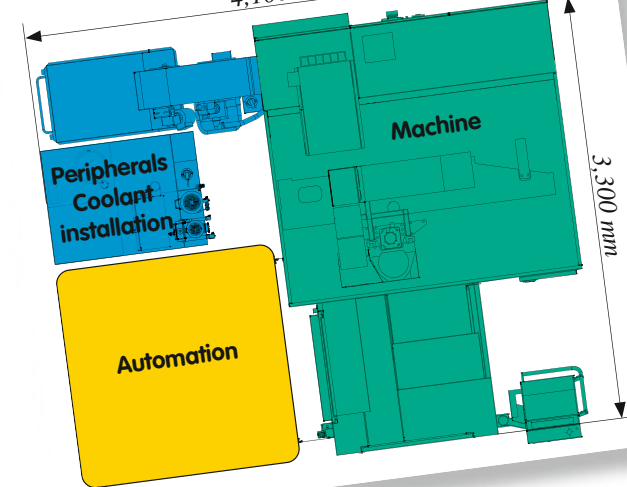
Simple control via MCM™

(Milling Centre Manager) or pallet management file.

Depending on the number of pallets and the variety of parts, the system can be controlled and monitored by a pallet file integrated in the control unit or via the flexible FEHLMANN MCM™.



Extremely compact dimensions.



PICOMAX® 95.

Milling of 5-axis small cubic parts as well as bulky 3-axis workpieces from hard-to-mill materials.



- Areas of application:**
- In mould manufacturing for milling of hardened tooling steel.
 - For production of general machine components of maximum precision.
 - In medical technology for milling of titanium and stainless steels.
 - In aerospace for efficient, high-precision machining of complex titanium and aluminium parts.
 - In tool, jigs & fixtures manufacturing.

The optimized machine structure and the powerful HSK-A63 motor spindle of the PICOMAX 95 unite rigidity, torque and dynamics. This concept is especially designed for 5-axis machining with FEHLMANN dividing units. Of course it can also be applied for pure 3-axis machining. On the generous clamping table a 4th / 5th axis, fully integrated into the controls can be mounted at any time. Sufficient space still remains for machining large parts or utilizing a counter-point. Freely configurable automation can also be retrofitted at any time in order to expand the spectrum of use, without diminishing machine accessibility.

The generous tool changer is equipped with a chain magazine and contains 46 or 72 tools.



The lateral installation of the automation system allows accessibility to the machining area at all times. By using the unmanned night-shift hours, the machine capacity is increased and cycling times are reduced. The FEHLMANN PICOMAX 95 is ideal for automation. The freely configurable automation system can also be retrofitted at any time. Based on requirements, pallets of up to 400x400 mm can be automatically loaded and unloaded.



Facts

- Traverses**
- X 800 mm
 - Y 500 mm
 - Z 610 mm
 - Option: Swivelling axis B -10° up to 120°
 - Dividing axis C 0° up to 360°
- Table / Working area**
- Clamping surface (l x w) 1,600x550 mm
 - Max. table load 600 kg
 - Distance table - spindle nose 160-770 mm
- Work spindle**
- Spindle power at S6 (40%ED) 24 kW
 - Speed range up to 14,000/20,000 rpm
- Tool changer**
- Magazine capacity standard 46 optional 72
- Feed rates**
- X/Y/Z 1-30,000 mm/min
- Weight**
- Machine tool (excl. coolant) 9,100 kg / 46 tools
- Control**
- Heidenhain CNC contouring control iTNC 530

PICOMAX® 75.

5- to 3-axis machining with highest precision and best surfaces.



- Areas of application:
- Medical technology for rational production of prototypes, instruments and implants.
 - Aerospace industry for efficient, high-precision machining of complex titanium and aluminium parts.
 - Optical and electronic industries for flexible production of small and accurate work pieces.
 - Tool and mould making for copper and graphite electrodes as well as for dynamic HSC-milling in hardened steel.
 - For challenging jig manufacturing.
 - For production of general precision machine components.

The PICOMAX 75 impresses with highest precision and cutting capacity, excellent operator ergonomics and optimum energy efficiency.

Compact, elaborate design.

For perfect accessibility and best operator ergonomics for 3-, 4- as well as for 5-axis milling. The generously sized tool magazine is loadable from the front during machining, without downtime.

Latest technology for highest efficiency.

Energy-optimized design and power units for saving energy and operating costs. Power units switch-off automatically when they are not in use. Full digital-drive technology for maximum dynamics and productivity. The mounting surfaces of the machine's structural parts are scraped and, therefore, guarantee best possible geometries. The many advantages the user-friendly fully-digital Heidenhain iTNC 530 controls offer for demanding milling processes are impressive. Space-saving work piece handling systems for unmanned operation and production of large and small series, as well as single pieces. The machine is freely configurable with different pallet systems.

5-axis machining.

The precisely scraped machine geometry has been designed to work with FEHLMANN dividing/swivelling units. Due to the large clamping surface, additional clamping devices can be easily mounted next to the dividing/swivelling unit.



The generously sized tool changer for 50 tools (optional 80) is loadable from the front during machining.



Typically FEHLMANN, this machine can be ideally automated, at any time and without changing the perfect accessibility.

Facts

Traverses

X 600 mm
Y 400 mm
Z 610 mm
Option: Swivelling axis B
-10° up to 120°
Dividing axis C
0° up to 360°

Table / Working area

Clamping surface (l x w)
1,160x475 mm
Max. table load
400 kg
Distance table – spindle nose
125-735 mm

Work spindle

Spindle power at S6 (40%ED)
10.5 / 15 kW
Speed range up to
20,000/30,000 rpm

Tool changer

Magazine capacity
standard 50
optional 80

Feed rates

X/Y/Z 1-30,000 mm/min

Weight

Machine tool (excl. coolant)
5,300 kg / 50 tools

Control

Heidenhain
CNC contouring control
iTNC 530

PICOMAX® 60 -M /-HSC.

A successful linking of a precision milling machine, with the dynamics of a HSC-milling machine.



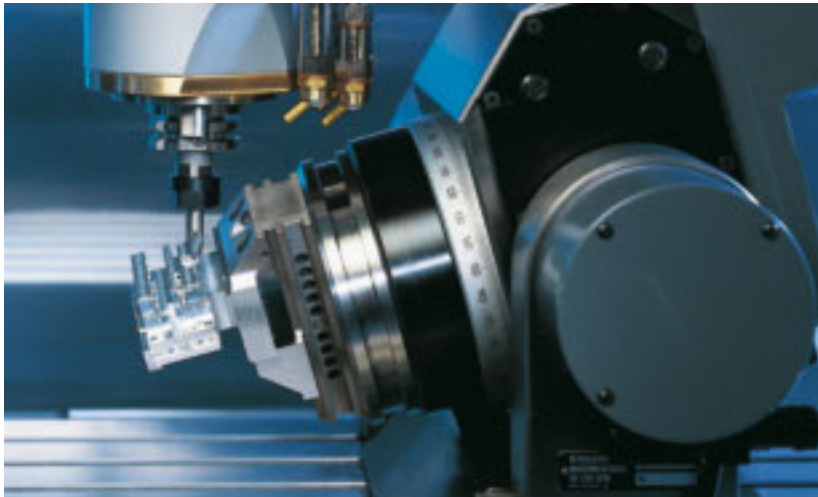
Areas of application:

- 3- or 5-axis machining of complex small cubic parts and electrodes.
- In the -M version - flexible, all-round machine for conventional milling of mechanical parts, as well as for HSC-machining of hardened mould inserts.
- In the -HSC version - high-speed cutting machine for milling of hardened steel, as well as for fast processing of aluminium, copper and graphite.
- Efficient production of complete series down to smallest single pieces.
- Perfect for all who need more speed and are looking for a very compact, universal machine.

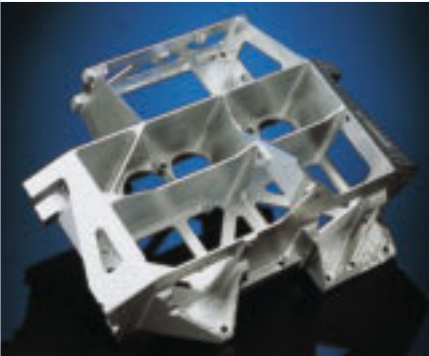
Optimum rigidity and high precision guarantee jig boring quality.

This universal machine is ideally suited for single parts and series production. In the precision moulding and tool manufacturing areas, it is also perfectly suited for the production of copper and graphite electrodes, as well as mould inserts in high-tensile and hardened tool steel. Machining of five faces, as well as with five axes simultaneously, is possible, using the optional available CNC automatic dividing and swivelling unit ATS 160. Optimum accessibility, even when retrofitted with automation at a later stage. The quiet, low vibration machine operation permits machining tasks at high speeds.

Milling operations achieve very high precision and surface accuracies.



Due to its high torque, it is possible to machine with high speed and even so conventionally. It allows for the complete machining of workpieces, i.e. you may execute both HSC milling operations and conventional milling, drilling, boring and threading operations on one and the same workpiece.



Facts

Traverses

X 505 mm
Y 355 mm
Z 610 mm
Optional: Swivelling axis B
-5° up to 108°
Dividing axis C
0° up to 360°

Table / Working area

Clamping surface (l x w)
920x380 mm
Max. table load
250 kg
Distance table – spindle nose
M 84-694 mm
HSC 100-720 mm

Work spindle

Spindle power at S6 (40%ED)
M 8.3 kW
HSC 15 / 17.8 / 17 kW
Speed range up to
M 20,000 rpm
HSC 30,000 / 36,000 /
42,000 rpm

Tool changer

Magazine capacity
M 24 / 32 / 48
HSC 20 / 28 / 42

Feed rates

X/Y/Z
1-20,000 mm/min

Weight

Machine tool (excl. coolant)
approx. 3,350 kg /
24 tools

Control

Heidenhain
CNC contouring control
iTNC 530

PICOMAX® 56 TOP.

The top-milling machine for manual and CNC operation.



TOP-functions
Ready to work, without time-consuming programming.

The PICOMAX® 56 as fully CNC machine.

Facts

Traverses

X 500 mm
Y 400 mm
Z 400 mm

Table / Working area

Clamping surface (l x w)
908x480 mm
Max. table load
250 kg
Distance table – spindle nose
120-520 mm

Work spindle

Spindle power at S6 (40%ED)
9.5 kW
Speed range up to
12,000 rpm

Tool changer

Magazine capacity 20 / 30
(Option)

Feed rates

X/Y/Z 1-20,000 mm/min

Weight

Machine tool (excl. coolant)
approx. 3,200 kg /
20 tools

Control

Heidenhain
CNC contouring control
TNC 620



With innovative FEHLMANN operating concept: easy to handle, quick and economical.

Patented TOP operating concept (Touch Or Program™) allowing the machine to be used both for CNC controlled 3-axis machining, as well as manual operation. Specifically designed to execute milling, drilling and threading tasks on single parts in a quick, reliable and efficient way without any time-consuming programming.

Even in the basic model, PICOMAX 56 offers features of a modern, highly productive milling machine, such as fully digital Heidenhain control, a cooled and high-torque motor spindle for universal milling up to 12,000 rpm, as well as Z/S interpolated thread cutting, 3D milling, boring, etc..



Removing residual material by milling, adding holes and threads or easy and fast machining of fixtures, all based on a CNC program: With its TOP functions, the PICOMAX 56 offers both the advantages of a manual machine and those of a CNC machine. Manual operation at the touch of a button.



When machining in CNC mode, all advantages of a 3-/4-axis CNC machine are offered.

The workshop oriented and digital Heidenhain TNC 620 control can be programmed in conversational mode (Heidenhain plain text) or via DIN ISO. A large number of graphically supported cycles are available for the most common operations (pocket machining, grooving, zero shift, etc.). Of course, programs created by CAM can also be transmitted directly to the control.



Various functional options extend the machining possibilities, such as a 4th axis, a manual precision swivelling unit or the automatic tool changer with 20 or 30 pockets.



- Areas of application:**
- For single parts and small batch production in tool manufacturing and mould making, in test and prototype manufacturing, in laboratories, as well as in apprentice shops (introduction into CNC).
 - Batch production parts and complex machining tasks, 3D milling with 3- to 4-axis can be realized fast and in a fully automated manner using the Heidenhain CNC control.
 - Manual manufacturing of single pieces, finishing by using the TOP-functions (Touch Or Program™) with drilling lever and handwheels.

PICOMAX® 20 / 20-M.

Precision drilling/milling machine, handy and robust, with a wide range of applications.

The PICOMAX 20 and PICOMAX 20-M (with feed table) fulfils even the highest requirements for maximum precision and handiness. Due to its versatility and the possibility of selection of different sizes of coordinate tables, as well as a large range of tool holders and special accessories, this machine provides a complete and modern workplace for each workshop. For enhanced operator friendliness and small lot production, the PICOMAX 20 can be equipped with a feed table (-M version). The attached DC motors allow for positioning the table at rapid traverse or by means of the continuously adjustable feed system. All axes of the table are provided with electric limit switches and ball screw spindles.

An integrated thread-cutting device is standard equipment. The proven quick tool change system SF 32, continuously electronically adjustable speed, as well as the smooth and very accurately guided movement of the vertical drilling head are convenient and timesaving features.

Areas of application:

- Perfect for drilling, threading, boring and milling works in tool making, special machinery, assembly and electrical departments, repair, apprentice/training and test workshops, as well as for vocational schools.
- Especially suited for precise single parts and small lots.
- With a clear concept and simple operation – should be included in the basic equipment of each workshop!

The machine head can be adjusted to different work piece lengths and heights by means of a crank handle. It is mounted on the column and locked against turning so that the original position on the X/Y axis can be repeated with an accuracy of ± 0.01 mm.

Facts

Traverses

X 450 mm
Y 260 mm
Z quill stroke 110 mm
W machine head 450 mm

Working area

Clamping surface (l x w) 770x320 mm
Max. table load 200 kg
Distance table – spindle nose 0-527 mm

Work spindle

Spindle power 2.9 kW
Speed range 50-6,300 rpm

Weight

approx. 850 kg

The comprehensive FEHLMANN accessories range.

Completing the workshop program.

The FEHLMANN accessories program leaves virtually no wishes unfulfilled – an intelligent, versatile range of spindle inserts, chucking devices, dividing units and coordinate tables (also for other machine brands) round out the offer. All products offered are perfectly matched to PICOMAX machines according to their size and precision. With very few exceptions (standard chucking devices), the development, production and quality control of these products, as well, are made by FEHLMANN/ Switzerland.



FEHLMANN spindle inserts.

FEHLMANN dividing and swivelling attachments.

For fully automatic dividing, circular and helical milling processes, etc...very compact and highly precise. The automatic CNC dividing and swivelling attachment ATS 160 CNC (picture below) and the ATS 200 CNC (on the left) with pneumo-hydraulic clamping of both axes, which can be controlled simultaneously or simply used as positioning axes.



Automatic dividing attachment AT 100 CNC (on the left) on the manual swivel device SV 100. The automatic dividing attachment AT 125 CNC (in the middle) as well as the automatic dividing/swivelling attachment ATS 160 CNC (on the right).



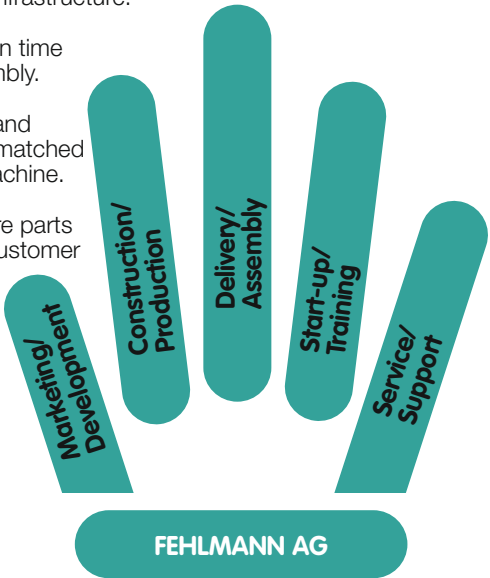
Please ask for the special brochures «FEHLMANN automatic CNC dividing and swivelling attachments» and/or the FEHLMANN accessories!

FEHLMANN complete solutions – everything from a single source.



«Everything from a single source», the key to success of FEHLMANN's philosophy. i.e. we are responsible for everything:

- Development of machines in line with the market trends and with high value-added for our customers.
- Precise construction and production under optimal conditions and with modern infrastructure.
- Professional and on time delivery and assembly.
- Qualified start-up and training, precisely matched to the acquired machine.
- Guarantee on spare parts and reliable, fast customer support in case of machine problems.



**After-Sales.
Start-up and training.
Support and service.**

Following delivery and practice-oriented start-up, the customer will not be left to his own devices.

CNC- 5-axis technology and high-speed machining become more and more a matter of course. The investment's productivity should be maximized in a short amount of time, allowing for quick amortization of the machine. We have met these challenges by offering practice-oriented start-up, a modular training concept and our reliable service.



For machines, software and accessories, the customer needs only one phone number: That of FEHLMANN in Seon/Switzerland. As manufacturer of FEHLMANN machines, we stock an extensive range of spare parts. Express delivery services make it possible to deliver spare parts to customers world-wide very quickly. We are able to delivery from our main plant in Seon/ Switzerland, as well as from our locations in Mönshheim/Germany and Suzhou/China.



FEHLMANN Milling Centre Manager MCM™. To control and monitor the automation systems.

Reduction of non-productive machine-times.

The workshop capabilities of the software excel especially in small and medium lot production, as well as in tool and mould making. As a result, one achieves a reduction of non-productive times. Machining order, zero points, etc. are entered in clearly structured job tables (Windows surface).

The Milling Centre Management System – an in-house development by FEHLMANN – controls both machine and robot. The operating staff can easily change the order or individual parameters of the pending jobs during the system operation. For instance, one can insert a workpiece with an urgent deadline in the process flow with a simple mouse click. This keeps up your flexibility even in automatic operation. Due to the high operator comfort of machine and MCM, the FEHLMANN solutions are not only perfectly suited for series production, but just as well for small lot manufacturing starting from just a few parts. Tool breakage control, NC program error monitoring, logging of the system events and the output of an alarm message on a pre-selected mobile number are just a few functions allowing for night-shift or weekend-shift operation without staff.

Another asset is the “multi-machine skill”. The open system platform, based on a Windows application, allows for easy integration into the company network.

MCM user interface.
Display of a job table.

