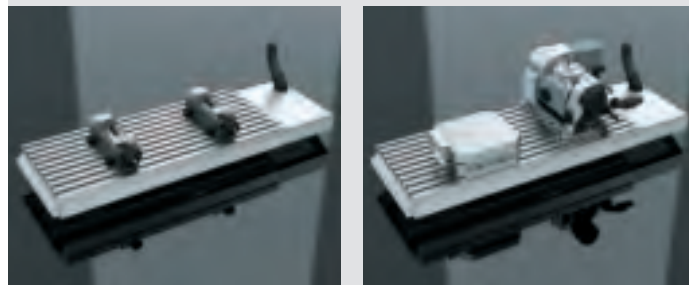


PICOMAX® 75 Redefining 3 to 5-axis precision machining.



PICOMAX® 75

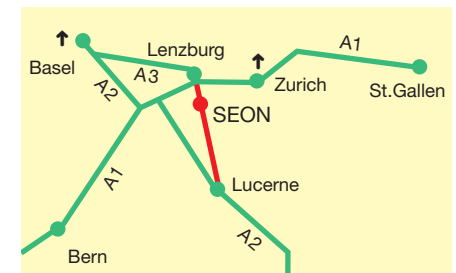


FEHLMANN: The Brand.



Precision “Made in Switzerland” since 1930.

Whether design, manufacturing, training, delivery, commissioning, or service and maintenance: FEHLMANN customers receive everything from a single source. Each FEHLMANN product reflects the high quality standards applied to the entire production process. Energy consumption is taken into account early in the development process and the company's production is characterized by its sparing use of resources and lowest possible CO₂- emissions.



FEHLMANN is renowned in the industry for its superior precision, ergonomics, handling ease and reliability. FEHLMANN's understanding of quality also means developing machines that satisfy today's workshop requirements.

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

— FEHLMANN —

PICOMAX® 75.

Efficiency is our top priority.

The compact and precise PICOMAX 75 is the machine of choice when it comes to flexible and efficient precision parts manufacturing. From 5-axis high precision machining of small cubic parts to universal 3-axis milling with multiple clamping, the versatile PICOMAX 75 makes it all possible – and all of this with FEHLMANN's proverbial reliability. The robust PICOMAX 75 increases efficiency wherever highest precision, best surface quality and highest machining performance are required: whether in the medical, aerospace, optical and electronics industries, or in mould and fixture construction.

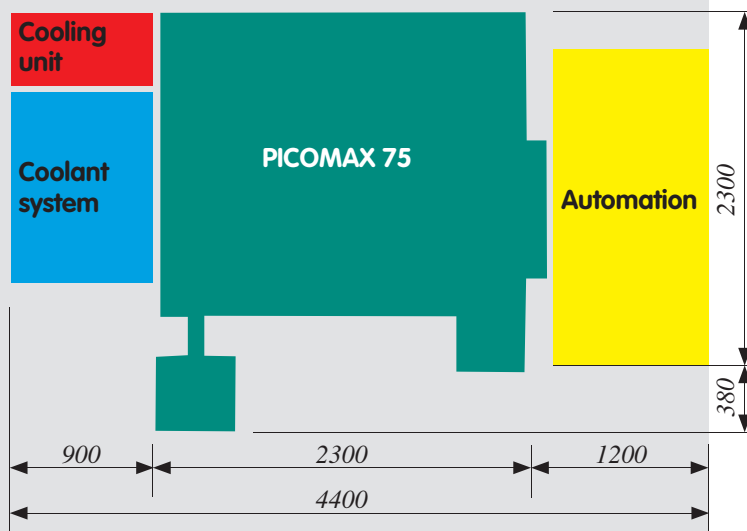
- 3 Design and concept
- 4 Scraped geometry and high rigidity
- 5 Top spindle technology
- 6 Compact and ergonomic
- 7 Maximum flexibility and performance
- 8 Control and software
- 9 Tool changer for up to 80 tools
- 10 Chip flow and cooling
- 11 Installation plan, technical data
- 12 Automation



The concept at a glance

- 5, 4 and 3-axis precision machining with perfect accessibility.
- Loading from the front during machining.
- Automation from two sides without restricting operation.
- Compact design with small footprint.

PICOMAX 75 - unrivalled performance and quality. High spindle speeds and strong torque, a faster tool changer with up to 80 tools and the possibility of automation and multiple clamping tasks make the **PICOMAX 75** a highly efficient production machine. Stiffness-optimized machine structure, scraped machine geometry and high thermal stability enable highest precision and lead to parts with immaculate surfaces.



Example with high pressure coolant and pallet changer.

Compact and perfectly accessible.

PICOMAX 75's sophisticated concept is very space-saving and allows easy access to the spacious machining area - from the front and, for crane loading, from above. With lateral automation, the machine is easy to operate at any time without access restriction.

Machine design for 5-axis precision machining.

Geometry and travel ranges are designed for 5-axis machining with the automatic dividing/swivelling unit FEHLMANN ATS 200. The machine is, of course, also perfect for simple 3-axis machining - the dividing/swivelling unit for 5-axis machining can be easily retrofitted at any time.



PICOMAX 75 turns work into fun.

PICOMAX 75 sets standards in ergonomic operation. The machine is perfectly accessible from the front - even with automatic workpiece feed. With its intuitive operation, easy cleaning and maintenance, as well as low noise level, working with PICOMAX 75 is a real pleasure - while energy consumption is kept at a minimum.

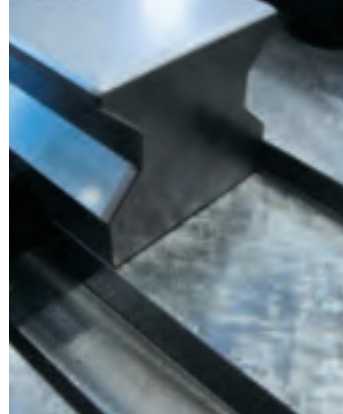
**Scraped geometry and high rigidity
for maximum precision
with immaculate surfaces.**



Dynamic and high-precision.

PICOMAX 75 is uncompromisingly designed for perfect results:

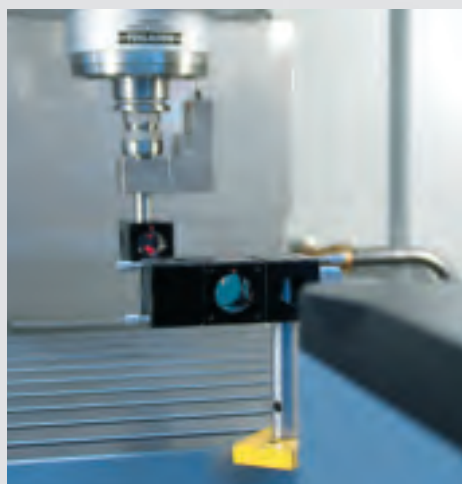
- The fully digital drive technology enables highest dynamics and productivity.
- Achieve dimensional stability within tightest tolerances with the stiffness-optimized structure and scraped machine geometry.
- Precision glass scales with purging air in all axes ensure high-precision positioning of tools.
- Large profile rail guides increase long-term accuracy.



*Working area with
the ATS 200.*

**Flexible 3 to 5-axis
precision machining.**

The automatic FEHLMANN dividing/swivelling units give you all the flexibility you need. The machine design and geometry of PICOMAX 75 with its generous Z travel provide perfect conditions for this versatility.



Laser measurement.

All machines are measured and optimized before delivery by means of laser and other state-of-the-art methods.



Cutting edge spindle technology for the most demanding applications.

Spindles for optimal results.

FEHLMANN spindles that are perfectly attuned to the machines allow you to achieve the precise quality you want – and which your customers expect from you.

- Best surfaces and highest tool life through low vibration and precise concentricity.
 - High flexibility and low programming costs: The mechanical structure and torque of the spindles enable machining with conventional tools and cutting data.
 - For best thermal stability, all spindles are equipped with an active and energy-saving cooling system as well as temperature compensation.
- **12000 rpm (ISO/SK 30)**
The robust spindle for most applications.
 - **20000 rpm (ISO/SK 30)**
Thanks to the ideal blend of speed, torque and quiet low-vibration operation, ideal for all work, from roughing to fine finishing.
 - **30000 rpm (HSK-E50)**
The high rpm of this spindle allows the use of smallest tools and high feed rates. You can rely on stability and precision at peak performance levels.

The right spindle for each application.

Depending on requirement and customer, the machines are available with a variety of FEHLMANN motor spindles. For short power-up times, all spindles are provided with high spindle acceleration.

Depending on spindle type, position correction of the main spindle is included via a direct measurement system.



PICOMAX® 75 – compact, flexible, ergonomic.

The compact and well-thought-out design of PICOMAX 75 saves space while providing perfect accessibility and best operating ergonomics - allowing versatile and flexible machining with three to five axes.



Perfect accessibility and ergonomics.

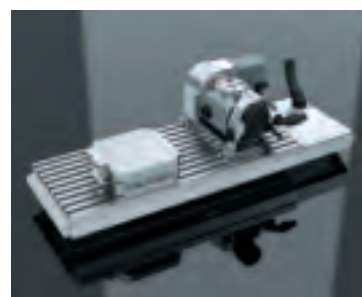
- Perfect access to the machining area from the front and, for crane loading, from above.
- Comfortable, flexible, fast and safe operation.
- With automatic tool loading from the side, the machine is perfectly accessible from the front.



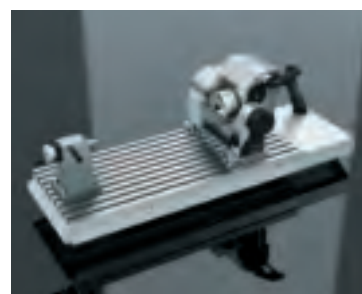
Multiple clamping.



ATS 200 and bench vice.



*ATS 200 and EROWA UPC
320 x 320mm.*



ATS 200 and tailstock.



AT 125 and bench vice.

The sophisticated concept guarantees perfect accessibility and ease of use in 3, 4 or 5-axis milling - with minimum space requirements.

Highest flexibility and performance in 5-axis milling.



The PICOMAX 75 has been designed from the ground up for proper 5-axis machining with the dividing/swivelling unit ATS 200. This allows an optimal processing of cubic 5-axis parts without accessibility problems. Plates and devices can be easily attached directly to the table next to the ATS 200.

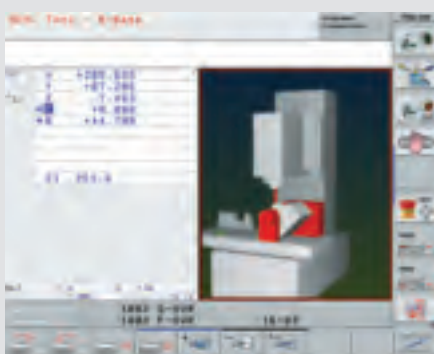
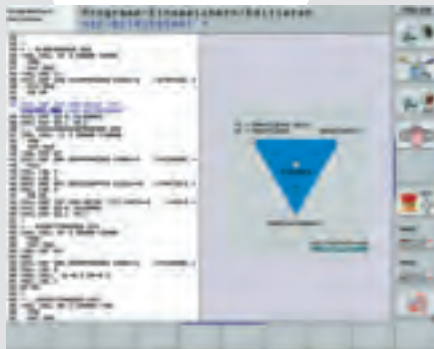
The FEHLMANN dividing/swivelling unit ATS 200 is equipped with direct travel measuring systems in the swivelling and dividing axes. It allows for interpolated mode and provides for positioning function with backlash-free, clamped axes. Cooled drives and minimum distance between workpiece and swivelling axis ensure outstanding precision. Through the use of a tailstock, ATS 200 can be used for 4-axis machining of long workpieces.



Control system and software: Fast and intuitive to use.

The fully digital HEIDENHAIN control unit meets all workshop requirements. It is suitable for processing simple mechanical parts that are programmed directly on the machine up to the complex 5-axis CAD/CAM program applications. Thanks to various built-in machining cycles developed by FEHLMANN, the proven and widely-used control unit is perfectly attuned to PICOMAX 75.

Request the detailed control unit brochure!



- Features for 5-axis machining and rapid HSC milling are included as standard.
- Functions such as Tool Warm-up and an alignment cycle for the dividing head contribute to the high precision.
- Special control strategies and optimized path control with continuous movements ensure flawless surfaces and increased service life of the tools.
- Time-savings through short block processing times.
- Time-savings through short block processing times.
- Electronic hand-wheel for direct operation.
- Graphic support with contextual images and simulations enables faster and reliable programming.
- PDF documents and images can be easily viewed on the 19" control screen display.

Perfect adjustment of the axis in each processing step.

The FEHLMANN-developed HSC-SETUP cycle for dynamically optimizing digital axis drive settings. For each tool, the focus can be placed either on processing speed, surface quality or accuracy.

Minimize the risk of collision.

Active collision detection (optional) helps operators avoid collisions due to manipulation and programming interventions. Tools and clamping aids are stored in the control unit. If the control unit detects a possible collision, the feed is slowed down or even stopped.

Automatic detection of rotation centres.

In combination with the separately available tailstock, the FEHLMANN alignment cycle (optional) easily detects the rotation centres of the ATS dividing unit, with an accuracy of one thousandth of a millimetre. The cycle requires an alignment pallet or inspection cylinder.

3D probe system.

With infrared signal transmission to the workpiece zero point and for workpiece measurements. Automatic mis-alignment compensation thanks to 360° coverage.



Always within reach.

The hand-control box with the electronic handwheel and compressed air gun are fitted as standard on the control panel with 19" screen.



Advanced power saving features.

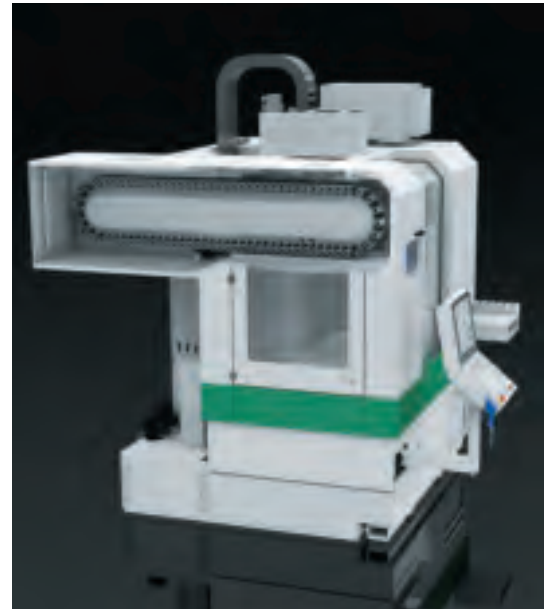
The machine drives are automatically switched to hibernation mode after the processing of NC programs. With this option, the system can be automatically restarted at a programmed time, enabling unattended warm-up of spindles and axes.

**Short set-up times
thanks to tool magazines
with up to 80 tools.**



**Quick, efficient
and accurate tool
measurement.**

Non-contact tool measurement and breakage detection directly on the machine. Tools with diameters between 0.3 mm and 80 mm can be measured contact-free, in standstill or while rotating. The measured values are stored directly in the central tool file of the machine control unit. With the integrated nozzles, the tool is cleaned prior to each measurement. A mechanical switch can also be used instead of laser scanning.



High productivity is also achieved through shorter set-up times. The FEHLMANN automatic tool changer can be loaded during processing times and provides a magazine with 50 tool pockets, optionally even with 80 pockets.

Tools can now be changed faster than ever. A double gripper snatches the tool from the chain in a flash and quickly puts it back again after use. The tools can be checked or replaced at any time during machining. The desired tool is selected on the control unit and brought to the loading door via the chain.

In order to reduce setup times, tool changer and work table are loaded from the same side.





Chip flow and cooling - tailored to your requirements.

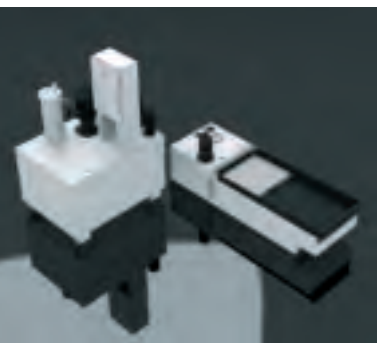
Cooling and chip management.

To meet your requirements, FEHLMANN provides a wide range of solutions for coolant supply and chip removal.



Standard coolant system.

The chips are flushed through machine bed into a drawer that can be easily and conveniently emptied by hand. A bag filter is optionally available to remove fine shavings from the coolant.



Coolant system with auxiliary tank.

To keep the coolant temperature low even with high production output, an additional tank with 650 liter capacity is used. Consistent coolant quality is ensured through automatically actuated circulation system after two hours of inactivity. A high pressure pump (40 or 80 bar) allows the use of internally cooled tools.



Coolant system with chip conveyor.

The use of a coolant system (capacity 700 l) with chip conveyors is recommended for large amounts of chips, enabling larger batches to be processed without interruption. A high pressure pump for internally cooled tools is available with 40 or 80 bar.



Coolant system with chip conveyor and belt conveyor.

The band filter enables longer periods of machine operation without stops to empty the filter. The high pressure pump with 80 bar for use of internally cooled tools is included in delivery. Tank capacity 1400 l.



Minimal lubrication system.

This efficient lubrication system is perfect for processing materials such as aluminum, copper and hardened steels.

Oil mist extraction.

When working with high speeds, an oil fog is created that spreads inside the machining space and settles on surfaces. Thanks to an efficient extraction system, the interior of the machine is kept clean and temperature-stable.



Machining of graphite, ceramics and hardened steels.

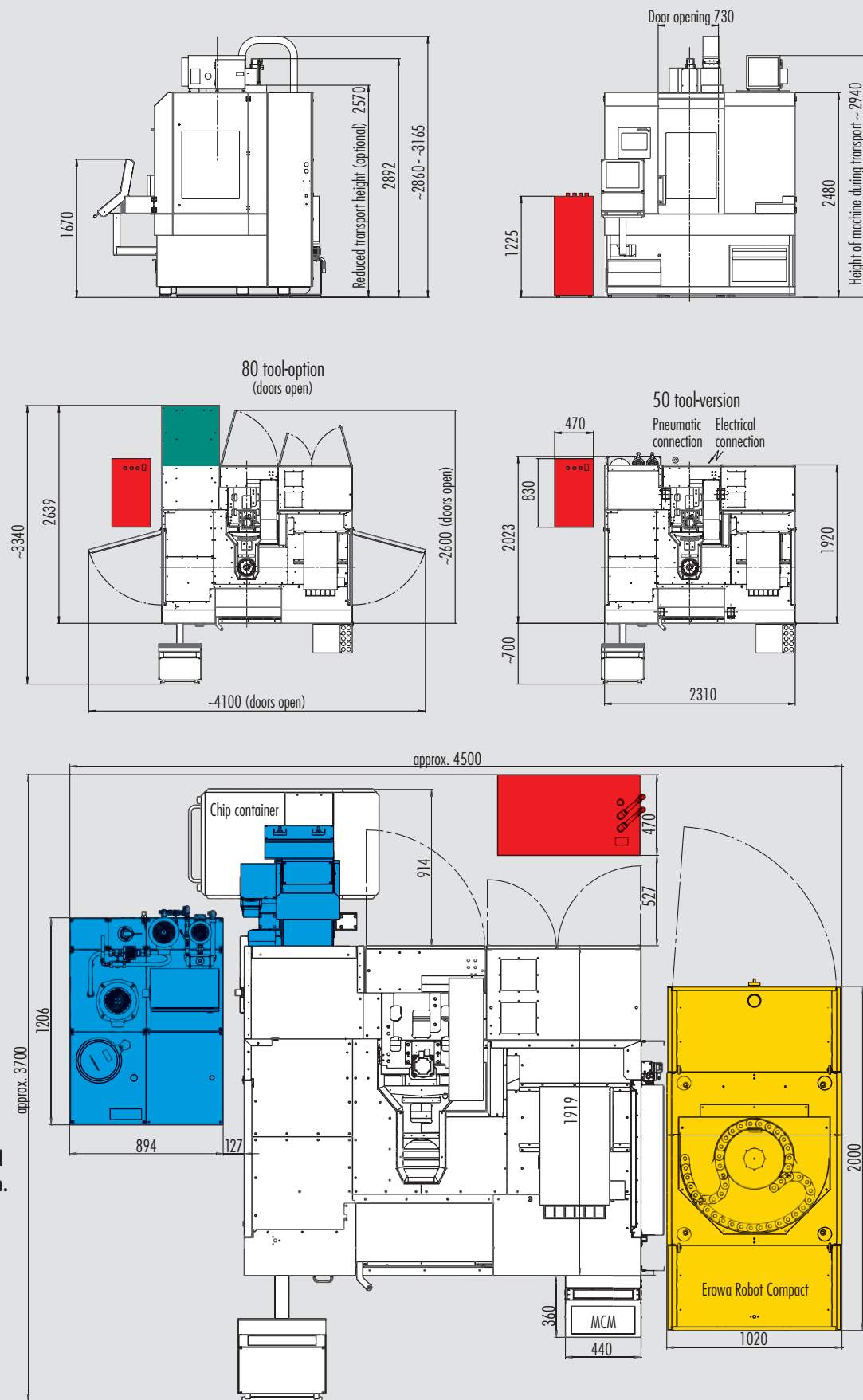
In the GRAPHITE option, dust is sucked dry. Linear guideways and ball screw spindles are provided with special scrapers and the switchgear cabinet is equipped with a closed cooling system.

Coolant nozzle for manual cleaning.

The coolant gun for manual cleaning of the machine is attached to the casing, within easy reach of the operator and is supplied as standard.



- Coolant units
- Automation
- Spindle cooling unit
- Tool changer extension



Example:
Machining
cell with EROWA
ROBOT COMPACT and
80 bar coolant system.

Technical Data PICOMAX® 75

Travel		
X travel	mm	600
Y travel	mm	400
Z travel	mm	610
Dividing axis C (ATS 200)	Degrees	0 - 360°
Swivel axis B (ATS 200)	Degrees	-10° / +120°

Table / work area		
Clamping surface (length x width)	mm	1160x475
T slots (width/distance/number)		12 H8 / 50 / 8
Distance between table and spindle nose	mm	125 - 735
Max. permissible table load	kg	400

Tool changer		
Magazine pockets standard		50
optional		80
Maximum tool diameter without free spaces	mm	Ø 50
Maximum tool diameter with free spaces	mm	Ø 100
Max. tool length (from spindle nose)	mm	270
Tool change time	sec	2
Mean chip-to-chip time	sec	8
Max. tool weight	kg	3 (option 5)

Feed rates		
X / Y / Z axis	mm/min	1 - 30000

Position accuracies VDI/DGQ 3441		
Position tolerance P		
X / Y / Z	mm	0.005 (option 0.003)
Position variation range Ps		
X / Y / Z	mm	0.003 (option 0.002)

Measurement systems		
Direct measuring system in all axes		
Pressurization		incl.

Connection data		
Operating voltage and frequency	V/Hz	3x400/50
Recommended pre-fusing	A	40AT
Pneumatics, operating pressure	bar	6

Weight		
Machine tool (excl. cooling medium)	kg	~5300 / 50 tools ~5500 / 80 tools

PICOMAX® 75

Subject to technical modifications.

Spindles

Speed range	rpm	50-12000
Tool holder		ISO/SK 30
Repeatability	mm	0.002
Output at S1 (100% d.c.)	kW	7.1
Output at S6 (40% d.c.)	kW	9.5
Max. torque at S6		
and rated speed	Nm	61
Nominal rated speed	rpm	1480

Speed range	rpm	50-20000
Tool holder		ISO/SK 30
Repeatability	mm	0.002
Output at S1 (100% ED)	kW	8.3
Output at S6 (40% ED)	kW	10.5
Max. torque at S6		
and rated speed	Nm	74
Nominal rated speed	rpm	1350

Speed range	rpm	50-30000
Tool holder		HSK-E50
Repeatability	mm	0.002
Output at S1 (100% ED)	kW	11.5
Output at S6 (40% ED)	kW	15
Max. torque at S6		
and rated speed	Nm	33
Nominal rated speed	rpm	4360

PICOMAX[®] 75

Subject to technical modifications.

Vertical Machining Centre

Even more productive thanks to automation –
can be retrofitted at any time.

Well-thought-out
and tailored to your
needs.

Achieve greater productivity with FEHLMANN automation solutions. The amount and design of the axes as well as number of pallet spaces can be configured precisely to your requirements.

The PICOMAX 75 is designed so that it can be easily adapted to a variety of automation concepts – tuned and tested for full performance from the very first day. Whether as a single-machine solution, automation for two machines or as a linear system - automation can be easily retrofitted at a later date.



Simple and intuitive
control.

Depending on the number of pallets and parts, the system is controlled and monitored either by the flexible FEHLMANN Milling Centre Manager (MCM) or via an integrated pallet management file.

Request our detailed
automation brochure!



Your Precision Advantage.[®]

FEHLMANN AG
MASCHINENFABRIK, BIRREN 1, 5703 SEON / SWITZERLAND
TELEFON +41 62 769 11 11, FAX +41 62 769 11 90
mail@fehlmann.com www.fehlmann.com

Safety devices may have
been removed for better
illustration.
Subject to technical
modifications.

Made in Switzerland

