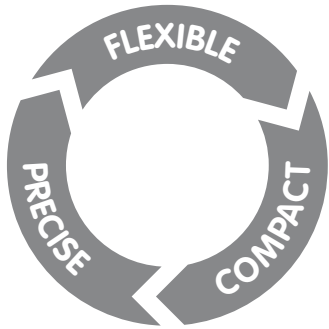


Milling /drilling machine

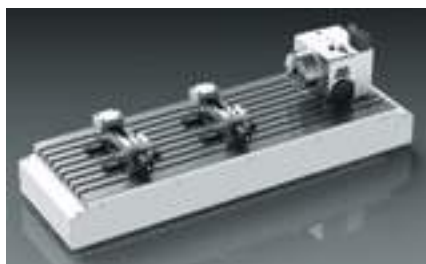
PICOMAX® 56 **TOP**

PICOMAX® 56 L **TOP**

The universal milling machine for  
manual and CNC operations.



PICOMAX® 56 **TOP**



— FEHLMANN —

# PICOMAX® 56 **TOP** PICOMAX® 56 L **TOP**

The manual and CNC operation concept:  
Time savings.

PICOMAX 56 TOP has been designed for all users looking for a genuine 3-axis CNC machine which can also be operated manually in next to no time, if required.

We have designed the TOP (Touch Or Program) function especially for this application.



With its TOP functions, the PICOMAX 56 can be operated just like a manual machine. Fast and easy – ideal for simple parts and single operations.

# TOP



- 3 **PICOMAX 56 TOP**
- 4 **PICOMAX 56 L TOP**
- 5 **Versions / possibilities**
- 6 **Working with the TOP function**
- 8 **Working in CNC mode**
- 10 **Everything from a single source**
- 11 **Laser measurement**
- 12 **Versatile options**
- 14 **Technical data**



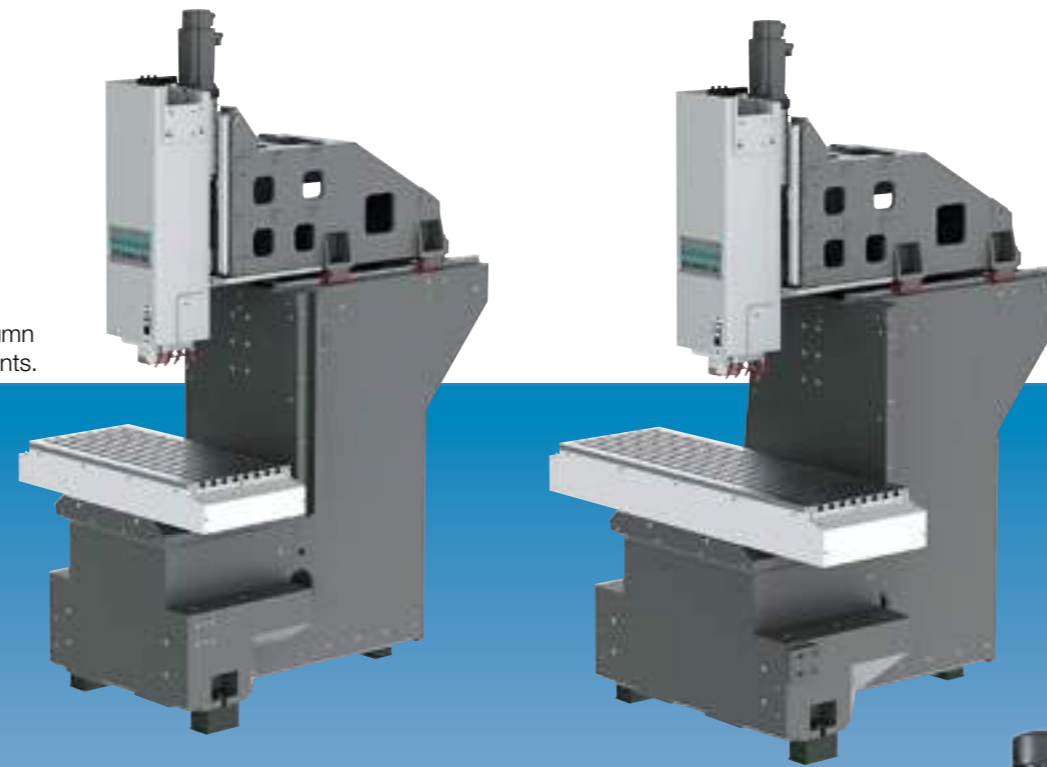
In CNC mode, batch production parts and complex 3-axis machining tasks can be realized fast and in a fully automated manner using the Heidenhain CNC controls.

# CNC

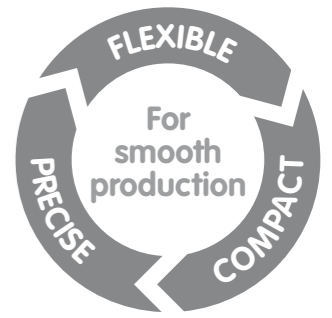


**PICOMAX® 56 TOP.**  
**PICOMAX® 56 L TOP.**  
**Fundamentally user-oriented.**

The solid column rests on 3 points.



**Compact, space saving and clear design.**  
 Available with TOP functions, as full-valued substitute for conventional milling machines, as well as with electronic handwheel for easy and dynamic machining. These machines fit in any workshop and can be even dismantled for complex positioning.



# PICOMAX® 56 **TOP**.

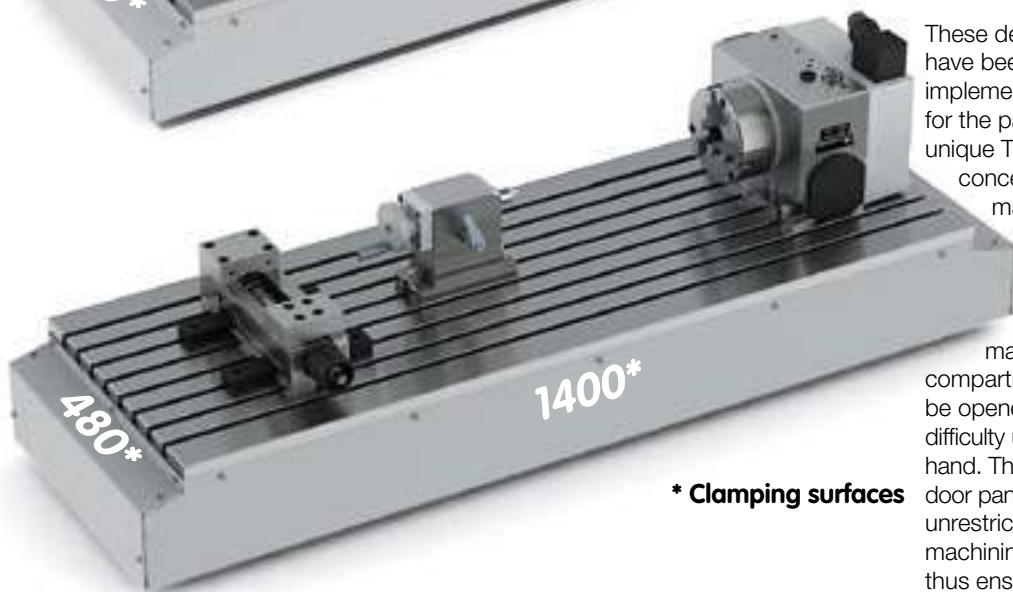
## Small footprint, vast possibilities.

## And even more flexible in L-version.



Thanks to the amply dimensioned clamping table, multifunctional machining is enabled without long production interruptions.

The fourth axis is fully controlled by CNC and can be installed on a manual high-precision swivelling attachment, if required.



**\* Clamping surfaces**

With the PICOMAX 56 TOP, FEHLMANN is able to offer an economical machine for

- small batches
- single parts
- simple 3D machining tasks.

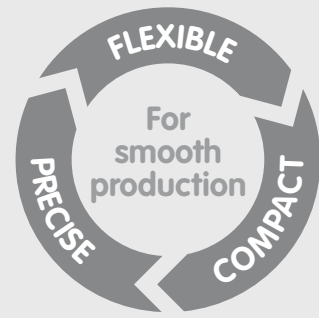
These demands have been rigorously implemented both for the patented and unique TOP operating concept and for the machine structure.

The sliding door of the machining compartment can be opened without difficulty using one hand. The large safety door pane enables the unrestricted view to the machining area and thus ensures safe and efficient operation – with or without cooling lubricant. The clamping surface is located at a perfect handling height, i.e. workpieces and fixtures are always easily accessible.

The amply dimensioned clamping surface enables multiple clamping and makes it easy to position bulky workpieces. Idle times are drastically reduced as e.g. various fixtures/devices may remain on the machine simultaneously, i.e. time-consuming re-clamping is avoided.



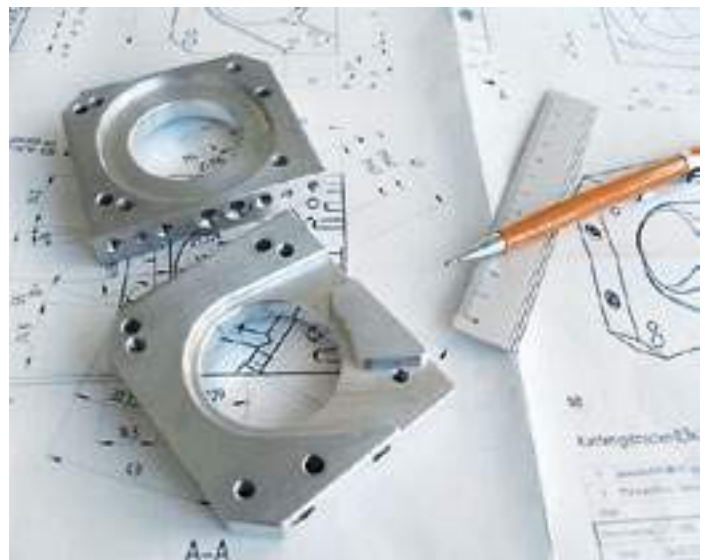
# **TOP** functions: Direct machining without time-consuming programming.



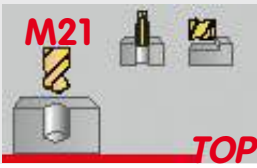
Removing residual material by milling, drilling some holes and threads or easy and fast machining of fixtures, all based on a CNC program: With its TOP functions, the PICOMAX 56 offers both the advantages of a manual machine and those of a CNC machine. Manual operation at touch of a button.

The TOP package consists of

- TOP software
- Mechanical Z drilling lever
- X/Y hand wheels
- Load cell for detecting the Z zero point with the spindle at standstill.

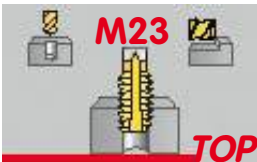


# TOP



## Manual drilling:

Uncomplicated and efficient – with or without manual axis feed. With the drilling lever, chips can be removed precisely and quickly. The drilling depth can be monitored on the screen and can be set using an electronic bit stop as quickly and accurately as with a mechanical stop.



## Manual thread cutting:

During thread cutting, feed rate and speed are synchronized. Expensive floating chucks are not needed and even the smallest threads can be cut without any difficulty in hard or soft material. The operator does not need to waste his time with extensive programming.



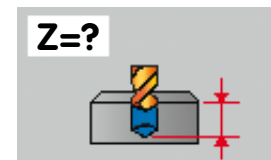
## Manual milling:

The hand wheels have been adopted from our well-proven manual machines. They are operated in the same way. Simple milling tasks can thus be performed easily and without wasting time. The milling depth can be fixed at any position either manually or using an electronic limit stop.



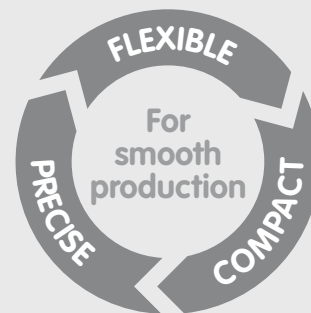
## Manual tool change

Fast and easy – at any time.



TOP functions – for resetting to zero, entering the depth and manual drilling, without any CNC programming.

# The PICOMAX® 56 and PICOMAX® 56 L: as a full-fledged CNC machine.



## When machining in CNC mode, you can count on all capabilities of a 3/4-axis CNC machine.

The shop-oriented and digital Heidenhain TNC 620 control unit 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.).

The integrated 3D graphic simulation function enables even complex programs to be checked fast and easily.

## Precise holes and hole pitches.

Using the boring and helical milling functions, such jobs can be performed precisely and economically even in stainless steel.



## CAM program interfaces.

Needless to say that even programs created by CAM can be transmitted directly to the control unit via one of three standard interfaces (USB / Ethernet RJ45 or RS 232).

The operating panel can be pivoted and rotated to the desired position, be it in front of or next to the operator.



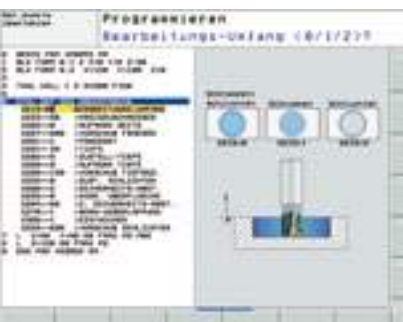
The large sliding door allows quick access and facilitates cleaning. Moreover, perfect operator safety is ensured.

# CNC



## Clean, safe and efficient

Speed and torque sequence have been designed for state-of-the-art milling and drilling tools and the enclosure guarantees a clean, safe and comfortable working environment.



Quick and logical programming with graphically supported machining cycles.



The optional tool changer turns the PICOMAX 56 into a small machining centre. Batch production can thus be realized with the highest efficiency.

## Robust and versatile

The machine concept enables the application of various tools and technologies, such as trochoidal milling.



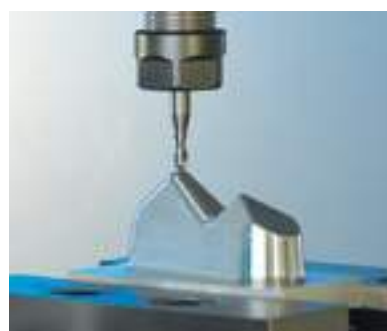
## Tapping

Axis feed and spindle rotation are synchronized on this machine (Z-S interpolation).



## Thread milling

Various cycles with graphic support functions are available for milling threads.



## 3D milling

Digital drive technology and internal memory for optimum results with 3D machining.



## Low-vibration rotation of the motor spindle

This ensures both optimum surface quality and micro-precision machining.

**We are committed to high quality standards.  
You can count on “Made in Switzerland” even after the  
purchase of the machine.**

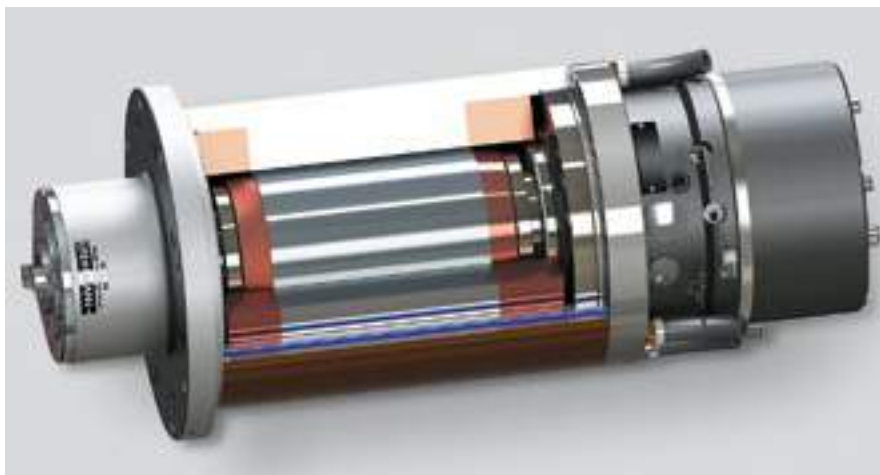
- Design
  - Production
  - Assembly
  - Training
  - Service
- At FEHLMANN,  
you will receive  
everything from  
a single source!**

FEHLMANN is your complete partner. Consistent in-house manufacturing ensures not only high quality but also long-term availability of spare parts. The assembled machines are processed and inspected according to the most stringent quality standards.



#### **FEHLMANN motor spindle**

Due to the direct drive, the state-of-the-art standard motor spindle with cooling function guarantees low-vibration and high-torque operation.





### Laser measurement

Before they are delivered to the customer, all machines are measured using a laser interferometer and other state-of-the-art measuring methods.

### All axes are equipped with a standard direct position measuring system.

This ensures:

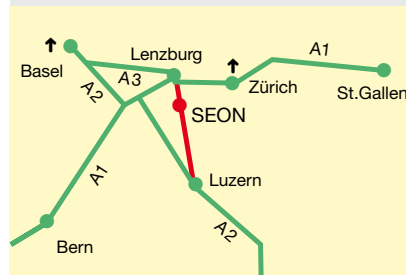
- High precision of hole pitches
- Optimum contour accuracy for milling (3D machining tasks)
- Reduced thermal effects on mechanical components
- Backlash-free circular milling
- Long-term precision



### 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.*

*As a partner of the Blue Competence sustainability initiative and as an ISO 14001 certified company, FEHLMANN strives to integrate sustainability into all aspects of the company. Our focus in this regard is on the entire life cycle of our machines, from their inception to their environmentally sound disposal. FEHLMANN already ensures minimal CO<sub>2</sub> emissions during the production process, as energy consumption is also considered during product development. FEHLMANN also participates in the renowned Switzerland-wide EnAW (Energy Agency for Industry) model for energy optimization.*

*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.®**

# Optional equipment decisively enhances the machining capabilities.

Even the standard machine comprises numerous details with regard to precision. Suitable options are available for each customer demand.



## AT 100

Compact dividing unit with a centre height of 100mm for 4-axis positioning or simultaneous milling. Can also be mounted on a manual swivelling attachment to achieve a 5th manual axis.



## AT 125

Dividing unit with a centre height of 125mm for 4-axis positioning or simultaneous milling. Thanks to its hydropneumatic clamping function, it is ideal for machining off the centre of rotation.



## 3D probe

To measure the zero points in a fast and precise manner. The signals are transferred via cable or infrared.



## 3D probe with infrared transmission



## Drawer cabinet

The drawer cabinet has been incorporated into the machine in a space-saving manner. Tools and instruction manuals can be stored in it to be close at hand. Lateral casing also available with window.

## Storage desk

Optimum storage for measuring instruments, drawings and hand tools which must be at hand while working.

## Chip drawer

(Standard) The chips fall into a drawer which can easily be cleaned and emptied. In addition, the cooling water can optionally be filtered with a bag filter.



## External programming station

For Heidenhain TNC 620. Ideal for training purposes and for concentrated programming in the office. This programming station is used just as if you were standing in front of the machine. Be it Heidenhain or ISO programming, the programs can be transmitted to the machine at any time. The external programming station can be installed on a commercially available PC or connected via USB interface. (minimal technical requirements must be fulfilled)



## Table probe

The tools are automatically measured or inspected for breakage. The control unit automatically records the detected values in the tool table.



## Laser system

Non-contact tool measurement and breakage detection directly on the machine.

## Automatic tool change.



### Automatic tool changer

The machine can be equipped with or without automatic tool changer – according to customer's requirements. The tool changers are integrated into the machine such that the external machine dimensions are not affected. The tools are automatically removed and inserted using a twin gripper. The additional door with inspection window enables optimum tool inspection and maintenance.



20-tool version.



30-tool version.

### Tool holders

Fehlmann offers a wide range of original Fehlmann ISO 30 holders. These tool holders have been perfectly tailored to the high speeds of FEHLMANN machines. Thus ensuring optimum results and spindle working life.

## Useful working aids.



### Spray and air gun

For easy and efficient machine and workpiece cleaning. An additional coolant pump is installed to supply the spray gun. The air gun is mounted on the operating panel to ensure that it is always at hand and that there are no disturbing hoses nearby.

### USB keyboard

With integrated mouse function incl. telescopic drawer on the operator's station for easy input of alphanumeric characters and DIN/ISO programming.



# Technical data

## PICOMAX® 56 TOP

## PICOMAX® 56 L TOP

		56 TOP	56 L TOP
<b>Travels</b>			
X travel	mm	500	800
Y travel	mm	400	
Z travel	mm	400	
<b>Table/work area</b>			
Clamping surface (length x width)	mm	908x480	1400x480
T-slots: (width / spacing / number)		12-H8 / 50 / 8	
Distance between table and spindle nose	mm	120 - 520	
Max. table load	kg	250	350
<b>Spindle</b>			
Tool adapter		ISO / SK30	
Repeat accuracy	mm	0.002	
Speed range	min <sup>-1</sup>	50 - 12000	
Spindle power at S1 (100% ED)	kW	7.1	
Spindle power at S6 (40% ED)	kW	9.5	
Max. spindle torque at S6 (40% ED)	Nm	60	
Rated speed	min <sup>-1</sup>	1530	
<b>Tool changer (option)</b>			
Magazine capacity	-	20 / 30	
Max. tool diameter without empty pockets	mm	Ø63	
Max. tool diameter with empty pockets	mm	Ø130	
Max. tool length (from spindle nose)	mm	240	
Max. tool weight	kg	3	
Tool changing time	sec	approx. 3	
Mean chip-to-chip time	sec	approx. 8	
<b>Feed rates</b>			
Feed rate X	mm/min	1 - 20'000	1 - 30'000
Feed rate Y	mm/min	1 - 20'000	
Feed rate Z	mm/min	1 - 20'000	

### Positioning tolerances according to ISO 230-2 resp. VDI/DGQ 3441

Position tolerance A	mm	0.006
Positioning range PR	mm	0.004

### Measuring system / Resolution

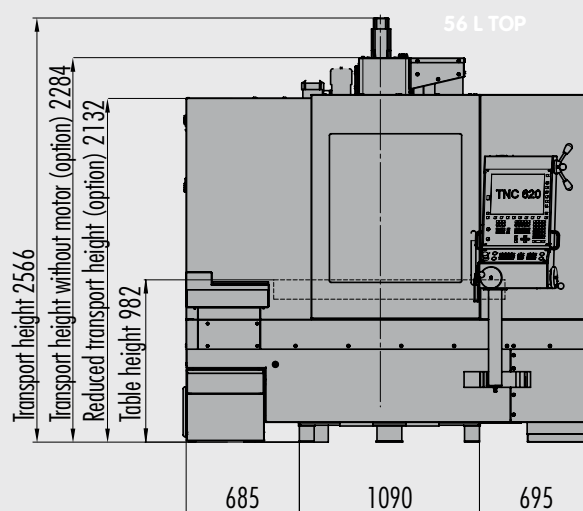
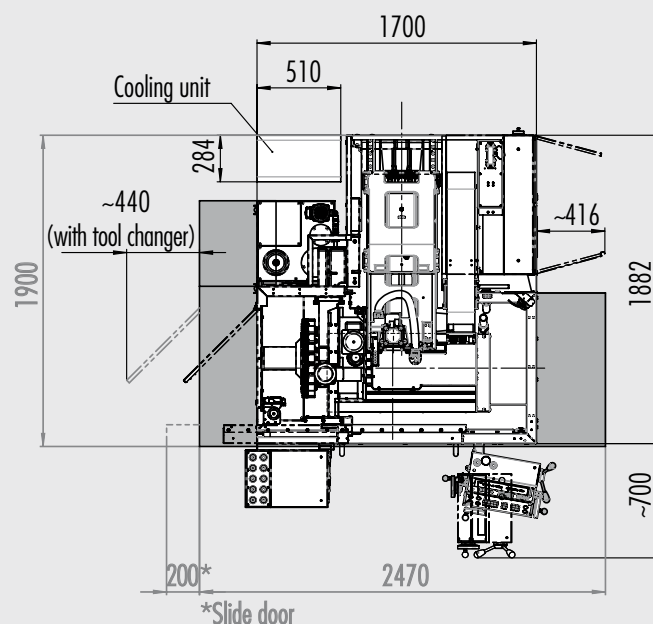
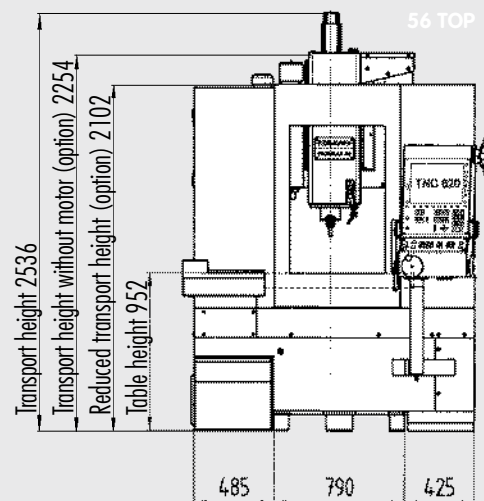
Direct measuring system with linear scale		
Resolution in X / Y / Z	mm	0.001

### Connections

Operating voltage and frequency	V / Hz	3x400 / 50
Full load current	A	19
Maximum pre-fusing	A	32
Recommended pre-fusing	A	25
Operating pressure of pneumatic system	bar	6
Base load for compressed air consumption at operating pressure	l/min	40

### Weight of machine tool (excluding coolant)

Weight without tool changer	kg	approx.3050	3750
Weight with tool changer 20 pockets	kg	approx.3250	4000
Weight with tool changer 30 pockets	kg	approx.3350	4050



## 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

Protective equipment  
 may have been removed  
 for better illustration.  
 Subject to technical  
 modifications.

Made in Switzerland

# FEHLMANN