

FERMAT



SPECIALIZING IN PRECISION

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FERMAT



WRF 160 Heavy CNC

for D&S Machine Service Inc., USA

Parameters: X=27 000 (1 062.99") | Y=5 000 (196.85") | Z=1 500 (59.05") | W=1 000 (39.37") | Rotary Table=T 50, 3 500 x 3 500 (137.79 x 137.79")
CTS=20 | ATC=60 | UHAmi30 | PHA 37/2,5 st

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Fermat Fast Facts

650

Number of employees



2

largest consumer of Heidenhain and Fanuc in local market



78€ mil.

Annual sales in 2016

1901

Oldest member of FERMAT Group (Lucas)

8

Branches in Czech Republic



100+

Annual production/sold machines



1

Micron (1 μm) is the most accurate production machine in our machining shop



5

Soccer fields would fit in the floor space of FERMAT Production facilities



About Fermat

FERMAT Company is a renowned Czech manufacturer of machine tools with a focus on Horizontal Boring and Milling machines. The history of the oldest Fermat member in the Czech Republic dates back to 1902 when Mr. Frantisek Wawerka started his first business and built a new factory specializing in the production of lathes & drilling machines. Over a one hundred year long tradition in machine tool production places the company among dominant Machine Tool Manufacturers in the European as well as the worldwide market.

Fermat horizontal boring machines allow CNC machining with a spindle diameter from 100 to 160 mm. Thanks to our modular production system we supply our customers with reliable and flexible machines. Our components and accessories are produced directly within Fermat or delivered by world-renowned companies (SKF, Thyssen Krupp, Siemens, Rittall etc.). This kind of production provides our customers with better service, fast delivery time and high quality.

Production

FERMAT has won a leading position for itself in the European market of manufacturers of these machines during the last decade, in which its dynamic growth occurred. The average production of FERMAT is around 100 machines a year. Thanks to this number we do guarantee customers reliable, convenient and the most standardized design table or floor boring machines with fast delivery. The modular system of production, along with experienced engineers and technicians, allows Fermat to supply machines according to our customer's needs whether in standard or special design. This flexibility and innovation is our guarantee for future success!

Production Facilities

Fermat occupies 33 200 m² production and assembly halls. The most important centers are situated in Brno, Prague and Lipnik (Brno 12 100 m²; Prague 5 300 m²; Lipnik 10 000 m²). The company sales soared despite the recent economic crisis. In the same period Fermat acquired several traditional manufacturers like Pressl Company in Pilsen and Strojtos Lipnik to increase the production facilities.

Worldwide Sales and Distribution

Based in the heart of Europe, Fermat is one of the leading suppliers of machine tools – horizontal boring machines (both table/floor type machines) in Central Europe. The company celebrated achievements not only in European markets, but also in Canada, USA, Russia, India, China and South America, exporting to more than 40 countries worldwide. Fermat is constantly growing and increasing its market share and participates in main International Fairs around the world including EMO- the leading International Trade Fair for the machine tool industry and IMTS – the largest machine tool exhibition for the North American market.



Lipnik Plant 1920



Brno Plant



Fermat Assembly Shop



Prague Machining Shop

Fermat Production Plants

Czech Republic





Prague-Brno 2hrs 🚗
Brno-Lipnik 1hr 🚗
Prague-Liberec 1hr 🚗
Prague-Rokycany 1hr 🚗



PRAGUE



BRNO



LIPNIK



LIBEREC



ROKYCANY

Customer Service



Machine Remote Diagnostic

All FERMAT machines are equipped with machine remote diagnostics. This feature provides customers with quick on-line problem solving analysis of their machine by skilled FERMAT Service Technicians. Machine problems such as programming difficulties, electronic and mechanical error messages can be diagnosed and in most cases solved. Main advantages of remote diagnostics are:

- The quickest possible way to detect a failure at the machine
- Very short time between the message about a failure and the first on-line contact with the customer
- Immediate consultation with the customer whether a spare part is necessary
- Efficiency of PLC problem solution is approx 80%
- Machine data backup, statistics are later used to improve the Customer Service.

Service Policies

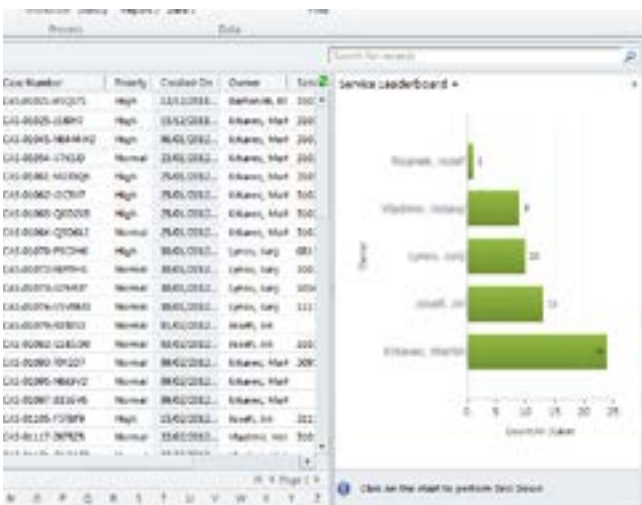
First-class customer service is one of our most significant company qualities. People in Fermat know that the quality of maintenance services significantly affects customer satisfaction. Therefore, the Service Center continuously tries to improve the services and information management of service cases. For this purpose we instituted the following service policies:

- Overview and quick reaction times
- Automatic registration of all service cases
- Remote diagnostics
- Linguistic diversity of employees at the Customer Service Center
- Large stock of spare parts in EU, U.S., Canada, India, China
- Library of solutions for Frequently Asked Questions or problems
- Classification, Monitoring and analysis of all service cases

These are the main advantages of the service system at Fermat. After reporting a new service case our service support will automatically process its administration. Responsible service workers are immediately assigned to the individual service request.

Customer Service Hours

With Fermat, you can connect with customer service during hours Mon-Fri 7.30 a.m – 4.30 p.m. EST.



Microsoft Service Data Preview

Microsoft Dynamics System Supports Customer Service

A step forward, according to Service Manager for Germany, Mr. Josefi, was an implementation of Microsoft Dynamics Information System. All service cases are automatically registered in the service database together with the time schedule of the particular case and a responsible person. This system allows better management and communication with the customers. "As soon as the case gets recorded under the system, we immediately send our responsible technician with the necessary equipment or spare parts to the customer", says Mr. Krkavec, the Head of Fermat Service Center. Fermat has large stocks of spare parts in Europe, U.S., Canada, India and China so our customers do not have extended waiting times. After resolving a service case, a final report is sent to the customer and feedback monitoring is saved to be helpful for our internal statistics.



U.S. service team

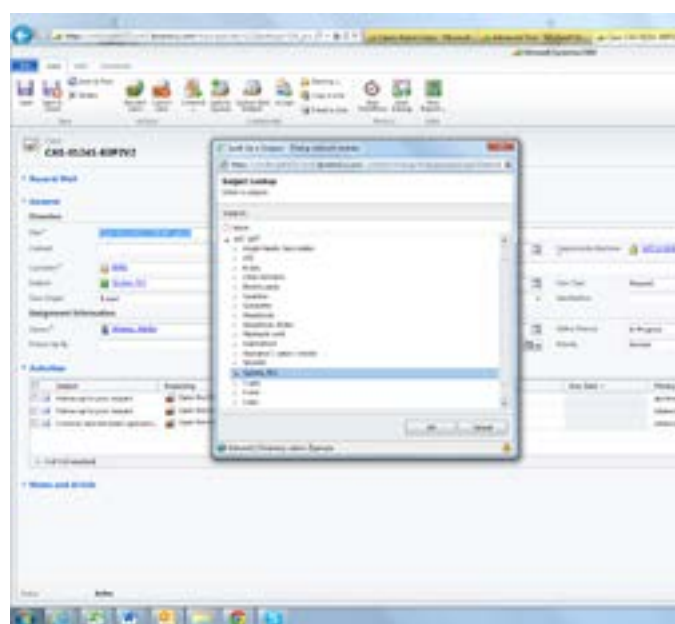
Library Service and Monitoring

Documented service events are regularly reported to Production and Design Departments. These statistics are used to improve the design of machines.

Our knowledge database is well maintained and every new problem leads to solution entries.



International service team



Classification of service problems



FERMAT Stock – spare parts

Table Type Horizontal Boring Mills

"There are many features of the FERMAT machine that allowed us to improve our efficiency. Value for the money was an important consideration and Fermat machines are excellent value for the money. The features of the machine, for example: large box ways, planetary gear boxes between the servo motor and each of the ball screws, choice of CNC controls and well known, high quality purchased components all influenced my decision to purchase Fermat WFT 13 CNC machine. Sales support from the Fermat Factory as well as from the local dealer was excellent, the company responded with information quickly any time it was needed."

*Jerry Decker,
President of Precision Boring Company, USA*

Horizontal Boring and Milling Machines – Table Type

WFC 10, WFT 11, WFT 13 and WRFT 130 represent the table type of horizontal boring mills. Chief machine characteristics are a powerful milling and drilling chip removal rate (even with top Y-axis stroke) and higher precision than other machines available on the market. A modular concept allows great operational variability in configurations, built according to the client's requirements. Modern control systems provide very easy operation of the machine and many useful functions for the user. Horizontal Boring Mills WRFT offer 5 linear axes travel (X, Y, Z, V, W) and 1 rotary axis (B) while WFT and WFC adopt the movement on 5 total axes. Given additional optional accessories, it is possible to increase number of controlled axes. During the metal processing, the column of the machine adopts Z-axis movement (with the exception of the WFC model) and the workpieces are clamped on a rotary table that travels in the X-axis.



Our Products



WFT 13 CNC

See page 12



WFT 11 CNC

See page 18



WRFT 160 CNC

See page 20



WFC 10 CNC

See page 24

WFT 13 CNC / WFT 15 CNC

Horizontal Boring Mill WFT 13 CNC represents the newest technology and concept of table type horizontal borers that are currently on the market. Thanks to the powerful headstock, high axial forces and the most precise table in its category, Fermat's WFT 13 can fulfill the needs of the most demanding customers.

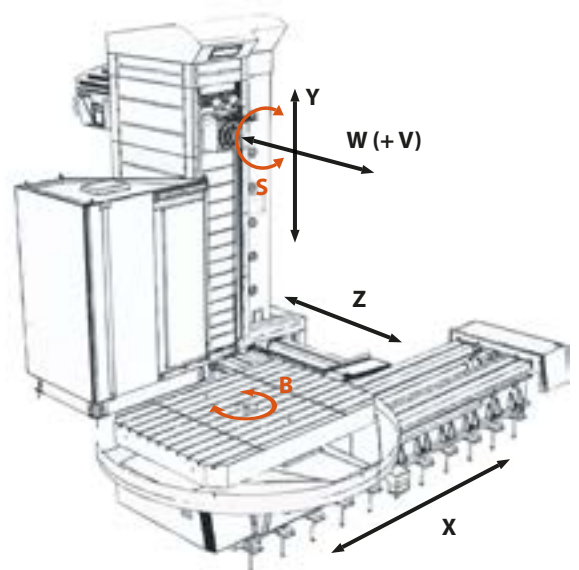
The accuracy and reliability of this machine type is proven by years of use and hundreds of installed machines. Annually, over 80 pieces of FERMAT WFT 13 are sold worldwide. The machine allows efficient processing of large and heavy workpieces while utilizing high precision and quality of operation.

WFT 13 CNC is optionally equipped with the Automatic Tool Changer (ATC) or the Automatic Pallet Changer System (APC) and with different kinds of Manual or Automatic Milling Heads.



Machine Configurations

- WFT 13 Basic machine on box guideways
- WFT 13 R Machine on box guideways with ram travel 700 mm
- WFT 13 Linear Machine on linear guideways
- WFT 15 R Machine on box guideways with ram travel 700 mm, 150 mm spindle diameter



Technical parameters		WFT 13	WFT 13R	WFT 15R-730	WFT 15-1000
Diameter of Spindle	mm	130	130	150	150*
Taper of Spindle		ISO50 / BT50 / CAT50/ HSK 100/ BIG PLUS			
Range of Spindle Speed	rpm	3 000* (4 080)			2 800*
Main Power CNC Heidenhain or SIEMENS CNC	kW	41 / 61,5			58 / 88*
Max. Torque CNC Heidenhain or SIEMENS CNC	Nm	2 099 / 3 149			2 625 / 3 990
Main Power CNC FANUC CNC**	kW	37 / 45*			60 / 75*
Max. Torque CNC FANUC CNC**	Nm	2 362 / 2 873			2 263 / 2 829
X cross travel of table	mm	2 000 / 3 000 / 4 000 / 5 000			
Y vertical travel of headstock	mm	2 000 / 2 500 / 3 000 / 3 500*			
Z longitudinal travel of column	mm	1 500 / 2 000*			2 100 / 3 300*
W spindle travel	mm	730*			1 000
V ram travel	mm	x	700		x
Rapid feed X	mm/min ⁻¹	12 000 (15 000 for L version 28 000 for L HS version**)			
Rapid feed Y	mm/min ⁻¹	12 000 (15 000 for L version 28 000 for HS version**)			
Rapid feed Z	mm/min ⁻¹	8 500 (15 000 for L version; 28 000 for L HS version**)			15 000
Rapid feed W	mm/min ⁻¹	10 000			
Rapid feed V	mm/min ⁻¹	x	12 000		x
Rapid feed B	rpm	2*			
Max. Table Load	kg	20 000			
Table size	mm	1 600 x 1 800 / 1 800 x 2 200 / 1 800 x 2 600 / 2 000 x 2 400 / 2 500 x 2 500 / 2 000 x 3 000			



WFT 13 CNC



Drives

Digitally controlled AC servomotors for all CNCs can control 5 or more axes position data of the machine at the same time. The motors are directly linked to the ball screws, which limits backlash and a higher rigidity between the drive and the ball screw is reached. Therefore it is possible to achieve very precise linear, circular and spiral interpolation. The drives on the machine are supplied by renowned manufacturers such as Heidenhain, Siemens, Fanuc, Fagor, Harmonic Drive, Stöber etc.

Column

The column is made of grey cast iron. Maximum rigidity and firmness of the column is achieved through the process of annealing which also leads to precision and rigidity in metal-working procedures in production.





Rotary Table

The rotary table has outstanding positioning precision (4" arc i.e. 0.010 mm / 1 000 mm radius). There is no slip-stick during the positioning of the table. Due to a simple design and assembled components, FERMAT tables require minimum maintenance and adjustments during their lifetime.

The rotary table consists of three main parts – bed, slide and rotary clamping plate. The clamping plate is fitted to a cross roller bearing that secures high load capacity with minimal passive resistance.

The rotary movement is achieved through two pinions, each of them having its own servomotor. The principle of its operation is often described as a Master-Slave Function. As a standard, the rotary table operates as a continuous 4th axis.



Beds

The longitudinal and transversal bed of the machine is made of grey cast iron which is stabilized through annealing. It was designed in order to absorb the maximum amount of vibrations that are created during cutting.

Ram

Optional ram travel
700 mm



Pallet System

The automatic pallet system has 2 to 5 pallet shuttle system. For more details see page 53.



WFT 13 CNC

Robotic Tool Changer – WFT 13 R CNC

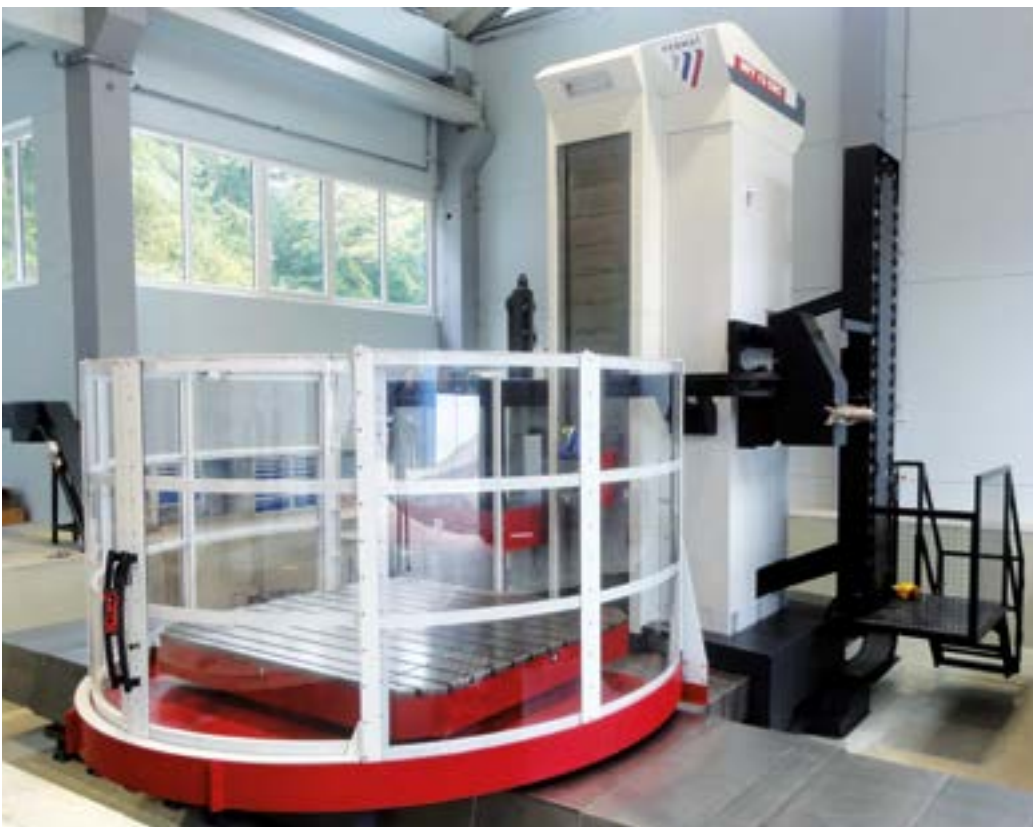


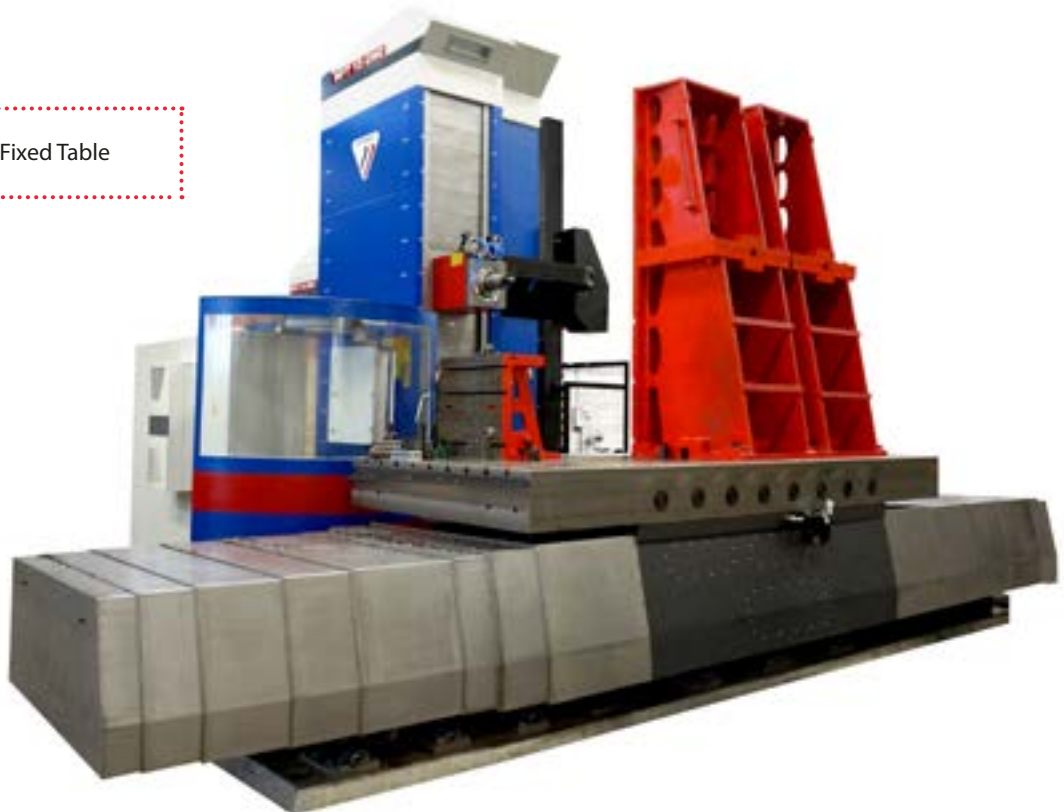
Illustration photo
WFT 13 CNC
with Table Cover

WFT 13 CNC

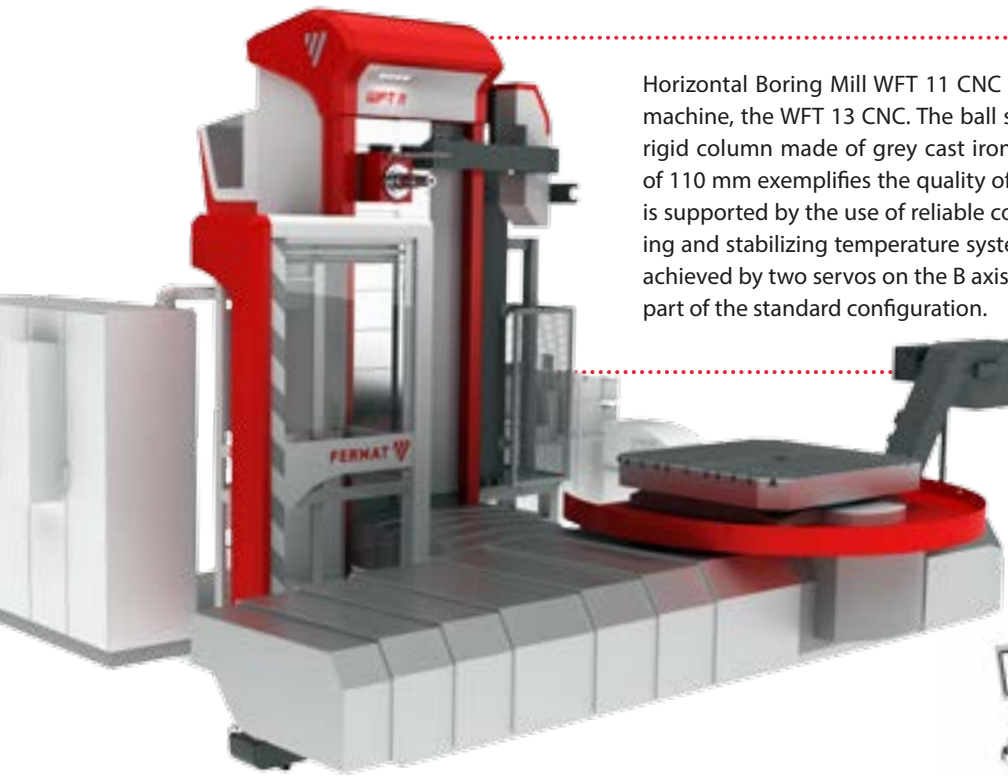
WFT 13 CNC with KUKA Robot and new Pickup Station for Milling Heads



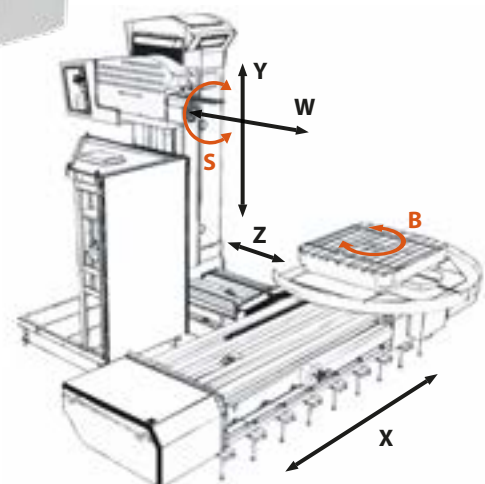
WFT 13 CNC with Fixed Table



WFT 11 CNC



Horizontal Boring Mill WFT 11 CNC is a smaller version of Ferma's bestselling machine, the WFT 13 CNC. The ball screw of the Y Axis (diameter of 63 mm), its rigid column made of grey cast iron, and its powerful spindle with a diameter of 110 mm exemplifies the quality of this machine. The high accuracy of WFT 11 is supported by the use of reliable components such as linear scales or monitoring and stabilizing temperature systems. Moreover high positioning precision is achieved by two servos on the B axis that prevent backlash of the rotary table as part of the standard configuration.



Machine Configuration

- WFT 11 – basic machine on box guideways

Technical parameters		WFT 11 CNC		WFT HS CNC
Diameter of Spindle	mm	100	110	x
Taper of Spindle		ISO50 / BT50 / CAT50		x
Range of Spindle Speed	rpm	3 000* (option 4 000)*		5 500
Main Power CNC Heidenhain or SIEMENS CNC**	kW	19,5 / 29,3	31 / 46,5	41 / 61,5
Max. Torque CNC Heidenhain or SIEMENS CNC**	Nm	951 / 1 426	1 416 / 2 124	1 230 / 1 846
Main Power CNC FANUC CNC**	kW	22 / 26	30 / 37	on request
Max. Torque CNC FANUC CNC**	Nm	823 / 971	1 370 / 1 692	on request
X cross travel of table	mm	2 000 / 3 000		
Y vertical travel of headstock	mm	1 250 / 1 700 / 2 000		
Z longitudinal travel of column	mm	1 250 / 1 700		
W spindle travel	mm	730*		x
V ram travel	mm	x		
Rapid feed X, Y, Z, W box guideways	mm/min ⁻¹	8 000 / 8 000 / 8 000 / 8 000 (option 14 000 / 14 000 / 14 000 / 8 000)		x
Rapid feed B	rpm	2* (option 4)		
Max. Table Load	kg	10 000		
Table size	mm	1 200 x 1 200 / 1 200 x 1 400 / 1 400 x 1 600 / 1 600 x 1 600 / 1 400 x 1 800		

WFT 11 CNC

WFT 11 with Robotic Tool
Changer&Table Cover



WRFT 160 CNC



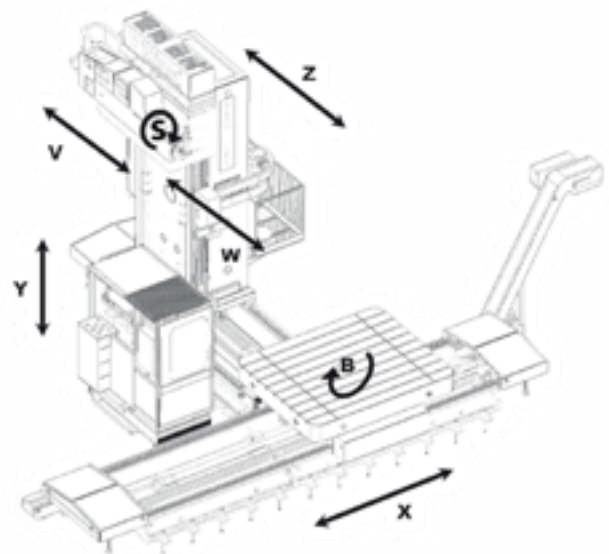
The horizontal milling and boring machines WRFT represent the newest technology and concept of large table type horizontal borers with ram travel and movable spindle. WRFT machines are being used mostly during powerful machining of big and heavy workpieces up to 50 000 kg.

WRFT construction is based on incorporation of components from the WRF Floor Type Series but with the placement of beds in a "T" configuration resulting in a table-type machine with horizontal table travel (X-Axis), CNC rotary table (B-Axis) and longitudinal column travel (Z-Axis). On the guideways of the column, the headstock travels vertically (Y-Axis) with its horizontal ram travel (V-Axis) and movable spindle (W-Axis).

Machine configuration:

- basic machine on linear guideways with spindle diameter 130 mm and ram travel 900 mm / spindle travel 730.

WRFT 130 is optionally equipped with the Automatic Tool Changer (ATC) or the Automatic Pallet Changer System (APC) and with different kinds of Manual or Automatic Milling Heads.



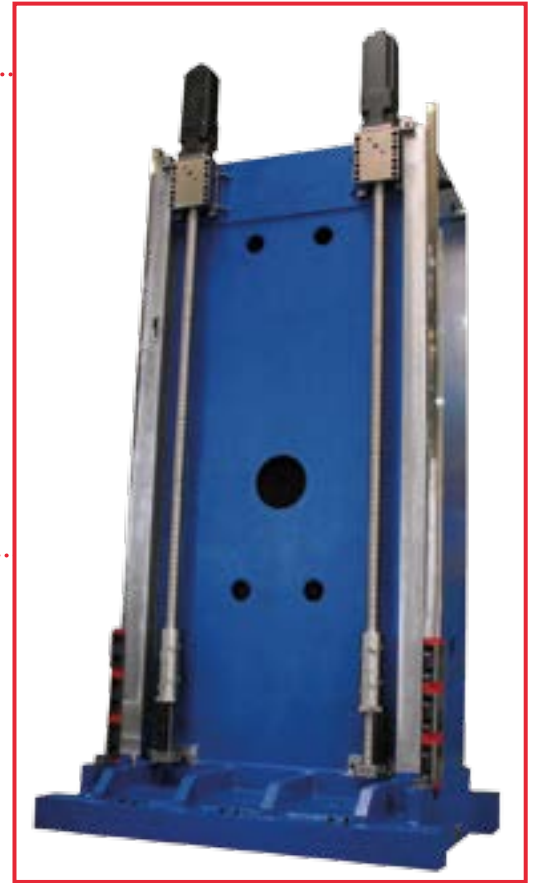
Technical parameters		WRFT 130 CNC	WRFT 150 CNC	WRFT 160 CNC
Diameter of Spindle	mm	130	150*	160
Taper of Spindle		ISO50 / BT50 / CAT50/ HSK 100/ BIG PLUS		
Range of Spindle Speed	rpm	3 000 (option 4 000* ¹)	2 800 (option 3 500* ²)	2 500 (option 3 200* ³)
Main Power CNC Heidenhain or SIEMENS CNC**	kW	41 / 61,5 (option 53 / 77,9)	58 / 88 (option 41 / 61,5 74 / 91)	58 / 88 (option 74 / 91)
Max. Torque CNC Heidenhain or SIEMENS CNC**	Nm	41 kW (2 099 / 3 149) 53 kW (2 713 / 3 989)	2 625 / 3 990 58 kW (3 281 / 4 988) 74 kW (3 349 / 4 120)	
Main Power CNC FANUC CNC**	kW	37 / 45*	60 / 75*	60 / 75*
Max. Torque CNC FANUC CNC**	Nm	2 362 / 2 873	2 263 / 2 829	2 263 / 2 829
X cross travel of table	mm	2 400 – 9 500		
Y vertical travel of headstock	mm	2 000 / 2 500 / 3 000 / 3 500 / 4 000 / 4 500 / 5 000		
Z longitudinal travel of column	mm	2 100 / 3 300*		
W spindle travel	mm	730	1 000	
V ram travel	mm	900*	1 000 (option 1 200)	
Rapid feed X, Y, Z, W, V	mm/min ⁻¹	15 000 / 15 000 / 15 000 / 10 000 / 10 000		
Rapid feed B	rpm	1,8		
Max. Table Load	kg	T25 – 25 000 / T40 – 40 000 / T50 – 50 000 / T80 – 8 000		
Table size	mm	2 000 x 2 000 – 4 000 x 4 000 and special 2 500 x 5 000		



WRFT 160 CNC

Column (Y-axis)

FERMAT developed a unique construction of the column with a single piece design of the column and the slide, two or three ball screws for 130 mm spindle diameter or three for 150 mm and 160 mm spindle diameter, and no counterweight. Maximum rigidity and firmness of such a union is achieved through the process of thermal stabilization, which ultimately leads to increased precision and rigidity during metal-working procedures.



WRFT 130 CNC

Ram (V-axis)

To achieve the best properties of the ductile iron ram, a complex process of annealing methods have been applied. Higher accuracy of the ram axis is achieved by two ball screws and two Linear Positioning Scales. Thanks to this, maximum "safety" with high precision and quality production can be consistently ensured.

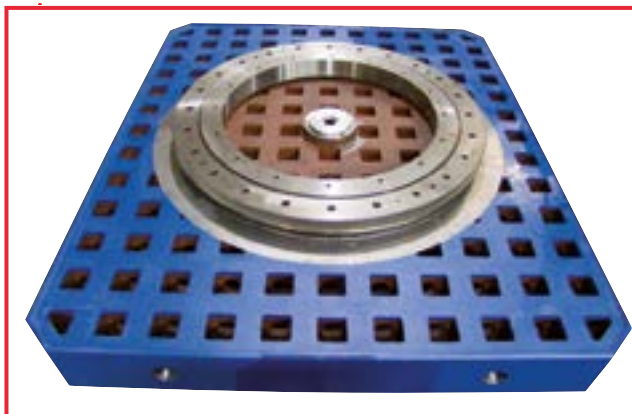


Rotary Table

The rotary table has outstanding positioning precision ($4''$ arc sec i.e. $0.010\text{ mm}/1\ 000\text{ mm}$ radius). There is no slip-stick during the positioning of the table. Due to simple "design" and assembled components, FERMAT tables require minimum maintenance and adjustments during their lifetime.

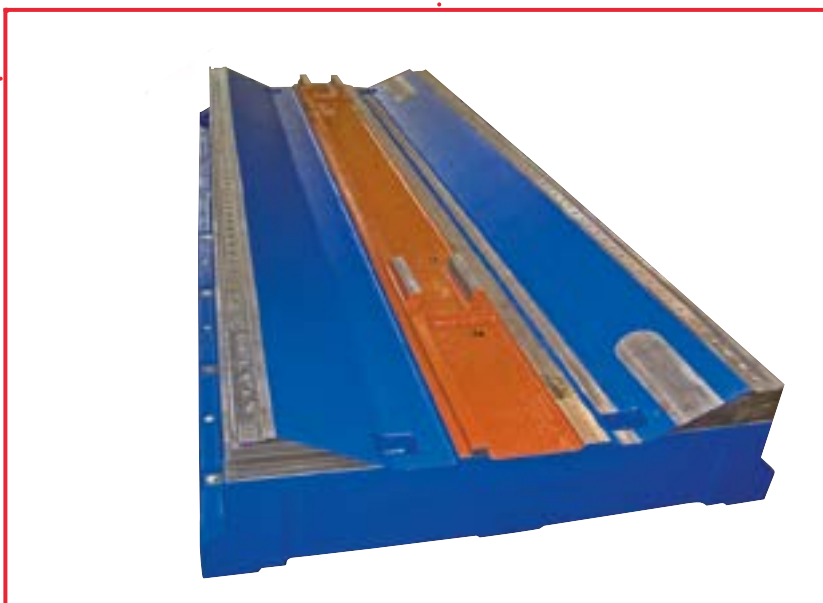
The table consists of three main parts – slide, bed and rotary clamping plate. The clamping plate is fitted onto a cross roller bearing that secures high load capacity with minimal passive resistance.

The rotary movement is achieved through two pinions, each of them having its own servomotor. The principle of its operation is often described as a Master-Slave Function. As Standard, the rotary table operates as a continuous 4th axis.



Beds

The longitudinal and transversal bed of the machine is made of grey cast iron which is stabilized through annealing. It was constructed in order to absorb the maximum amount of vibrations that are created during cutting.



WFC 10 CNC



The WFC 10 CNC machine is a model of horizontal boring mill equipped with a spindle diameter of 100 mm. It is the smallest horizontal boring machine from the Fermat production suitable for machining of smaller and medium sized work pieces up to 5 000 kg.

WFC 10 CNC is built in a standard configuration with a fixed column, movable spindle and crosswise movable rotary table. The combination of operator friendly, high cutting performance and lower cost makes the WFC 10 CNC very popular among our clients.

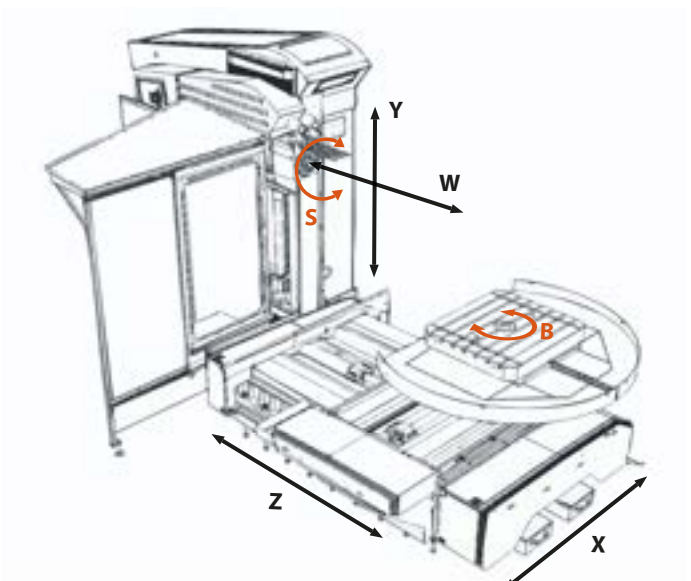
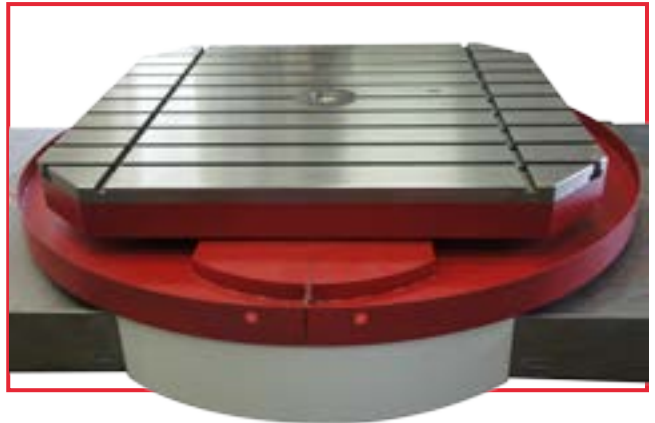
WFC 10 CNC is optionally equipped with the Automatic Tool Changer (ATC), Coolant Through Spindle, Chip Conveyor or Automatic Pallet Changer System (APC).

Machine configuration:

- WFC 10 CNC – Basic machine on box guideways with a spindle diameter of 100mm
- WF10 L CNC Machine on linear guideways

Technical parameters		WFC 10		WFC HS CNC
Diameter of Spindle	mm	100	110	x
Taper of Spindle		ISO50 / BT50 / CAT50		
Range of Spindle Speed	rpm	3 000* (option 4 000*)		5 500
Main Power CNC Heidenhain or SIEMENS CNC**	kW	19,5 / 29,3	31 / 46,5	41 / 61,5
Max. Torque CNC Heidenhain or SIEMENS CNC**	Nm	951 / 1 426	1 416 / 2 124	1 230 / 1 846
Main Power CNC FANUC CNC**	kW	22 / 26	30 / 37	41 / 61,5
Max. Torque CNC FANUC CNC**	Nm	823 / 971	1 370 / 1 692	on request
X cross travel of table	mm	1 250 / 2 000		
Y vertical travel of headstock	mm	1 250 / 1 700 / 2 000		
Z longitudinal travel of column	mm	1 250		
W spindle travel	mm	730*		x
V ram travel	mm	x		
Rapid feed X, Y, Z – box guideways	mm/min ⁻¹	8 000 / 8 000 / 8 000 (option 14 000 / 14 000 / 14 000)		x
Rapid feed X, Y, Z – linear guideways	mm/min ⁻¹	8 000 / 8 000 / 8 000 (option 30 000 / 20 000 / 30 000)		30 000 / 20 000 / 30 000
Rapid Travel W	mm/min ⁻¹	8 000		x
Rapid feed B	rpm	2 (option 4)		
Max. Table Load	kg	T3 – 3 000 / T5 – 5 000		
Table size	mm	1 000 x 1 120 / 1 250 x 1 400 / 1 400 x 1 600 / 1 250 x 1 800		

* customizable, must be discussed



Floor Type Horizontal Boring Mills

Though at Nordmark, we use over 23 large, new European CNC boring and milling machines, in the past 7 years we have equipped our plants exclusively with FERMAT CNC boring mills. We own 14 machines, and we have found them to be excellent and price effective. In the few instances when we have had to call FERMAT's service department, they have responded quickly and professionally, and FERMAT's technicians have always helped in designing smart, cost-saving solutions.

Over the years, FERMAT has developed many special technologies for powerful, high-precision machining of heavy components, many of which we currently use in our windmill production, such as a tilting ram and a tilting table, an automatic universal micro-indexing head, an automatic right-angle head, and a robotic tool changer.

*Michael Jacobsen,
President of Nordmark Maskinfabrik A/S,
Denmark*

Horizontal Boring and Milling Machines – Floor Type

One of the main characteristics of the FERMAT floor type horizontal boring and milling machines is their powerful milling and drilling chip removal (even at the top of the Y axis stroke) and higher precision than is offered by other machines available on the market. The large variation of selectable parameters is combined with its broad range of operating functions. The main feature is a modular concept that allows greater production variables and rapid set-up through the use of peripheral tools and accessories.

The machine moves in 3 or 4 different axes (X, Y, Z and W for borers). An additional B and/or V-axis is added when the machine is equipped with a CNC rotary table. Several clamping plates can be joined together, or in combination with a rotary table to achieve specialized configurations easily and quickly.

Work pieces can be clamped either on the additional CNC rotary table, on the clamping plates, or using both these possibilities.

The main working purpose of the machines is chip removal from large and heavy steel, cast steel, or cast iron work pieces. The machine's technology allows a wide utilization in milling, boring, reaming, and threading processes. FERMAT machines stand out thanks to their capacity to achieve higher precision than their competitors.



Our Products



WRF CNC
See page 28



WRF 160
Heavy CNC
See page 32

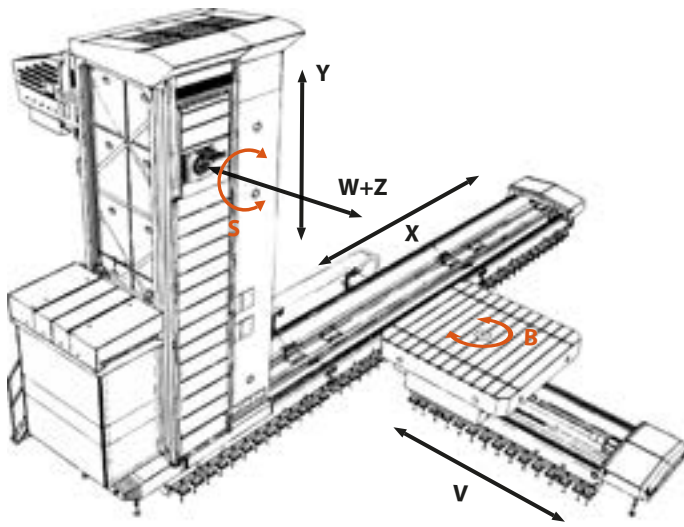


WRF 130 CNC
Portable
See page 31



WF 13R CNC
See page 34

Horizontal Boring Machines WRF Series



Horizontal Boring Machines WRF are the biggest representatives of FERMAT boring mill production. They are used mainly for precise and powerful machining of big and heavy work pieces from iron, cast steel and steel. Our machines are usually intended for machining of large energy parts, crane or ship parts, oil and gas equipment and similar applications.

WRF 130, 150, 160 CNC are equipped with a horizontally and vertically movable operator's cabin. Machines can be delivered with a wide range of accessories that enhance the high technology provided.

Machine configurations:

- WRF 130, 150, 160 – Basic configuration
- WRF 150 TR – Machines with tilting headstock
- WRF 130 PORTABLE
- WRF 160 Heavy Z = 1 500, headstock with ram stroke of 1 500 mm and spindle extension of 1 000 mm*.
- WRF 160 Heavy Z = 1 600, machine design with special double column, ram stroke of 1 600 mm and spindle extension of 1 000 mm*.
- WRF Mill, headstock with ram stroke of 1 550 mm, designed to mill with milling heads.

* Option hydrostatic X Axis



Technical parameters		WRF 130 CNC	WRF 150 CNC	WRF 160 CNC	WRF MILL CNC
Diameter of Spindle	mm	130	150	160	x
Taper of Spindle		ISO50 / BT50 / CAT50			
Range of Spindle Speed	rpm	3 000 (option 4 000*1)	2 800 (option 3 500*2)	2 500 (option 3 200*3)	5 000
Main Power CNC Heidenhain or SIEMENS CNC**	kW	41/61,5 (option 53/77,9)	58 / 88 (option 41/61,5 or 74/91)	58/88 (option 74/91)	41/61,5 53/73,9 (option 74/91)
Max. Torque CNC Heidenhain or SIEMENS CNC**	Nm	2 099 / 3 149	3 281 / 4 988		1 230 / 1 846 1 591 / 2 338
Main Power CNC FANUC CNC**	kW	37 / 45	60 / 75		37 / 45
Max. Torque CNC FANUC CNC**	Nm	2 210 / 2 687	2 829 / 3 536		1 296 / 1 575
X cross travel of column	mm	1 800 – 27 500			
Y vertical travel of headstock	mm	2 000 / 2 500 / 3 000 / 3 500 / 4 000 / 4 500 / 5 000 / 5 500 / 6 000			
Z ram travel	mm	900 / 1 000	1 000 (option 1 200)		1 550
W spindle travel	mm	730 / 800	1 000		x
Rapid feed X, Y	mm/min ⁻¹	20 000/ 15 000			
Rapid feed Z, W	mm/min ⁻¹	10 000, 8 000	10 000, 10 000		20 000
Rotary table – optional accessory					
Max. Table Load	kg	T 15 – 15 000 / T20 – 20 000 / T25 – 25 000 / T40 – 40 000 / T50 – 50 000 / T80 – 80 000 / T100 – 100 000			
Table size	mm	see page 49 / option tilting tables with 0-8°			

* customizable, must be discussed

*1 Headstock with hybrid bearings, only for motor 41 kW

*2 Headstock with hybrid bearings, only for motors 41 kW and 58 kW

*3 Headstock with hybrid bearings, only for motor 58 kW



WRF Series

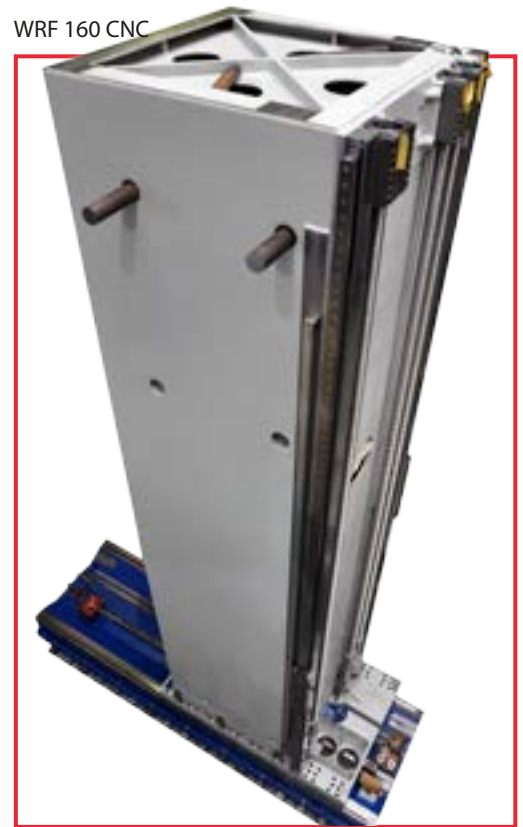
WRF 160 CNC

Ram (Z-axis)

To achieve the best features of the ductile iron ram, a complex process of annealing methods have been applied. Higher accuracy of the ram axis is achieved by two ball screws and two linear positioning scales. Thanks to this, maximum safety with high precision and quality production can be consistently ensured.

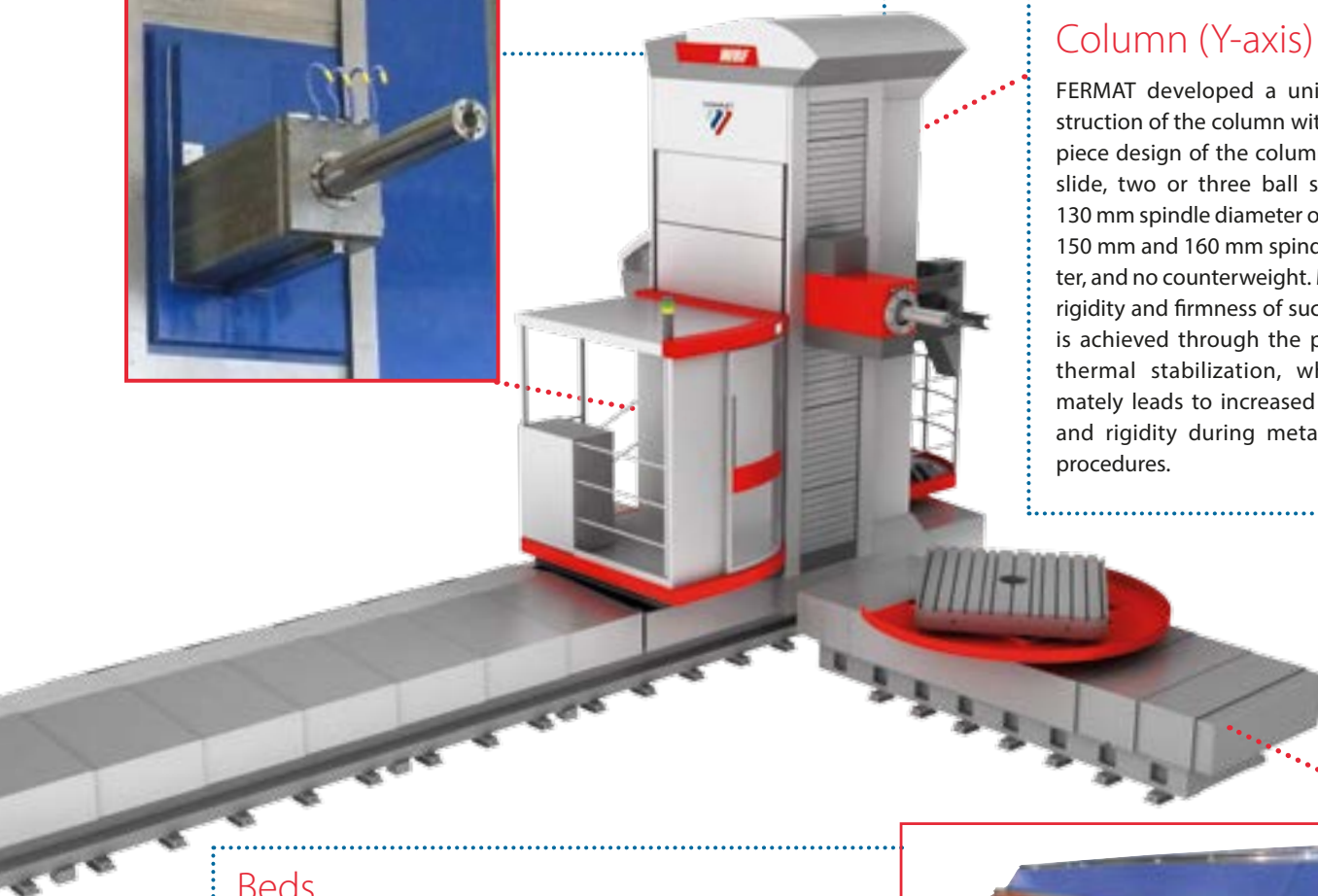
Headstock

The headstock is comprised of a ram travel drive, a live spindle and a two-speed gearbox, which is shifted automatically by spindle rpm. A modern AC spindle motor is used to provide the torque, horsepower and maintain the correct rpm. The casting is made from special ductile iron.



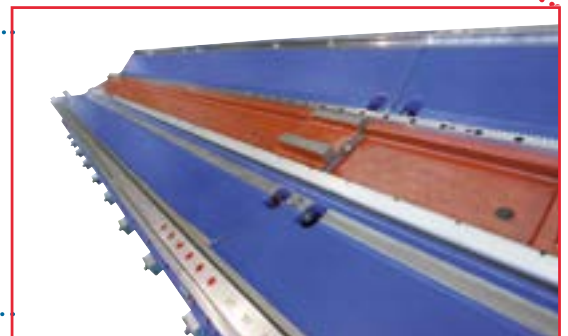
Column (Y-axis)

FERMAT developed a unique construction of the column with a single piece design of the column and the slide, two or three ball screws for 130 mm spindle diameter or three for 150 mm and 160 mm spindle diameter, and no counterweight. Maximum rigidity and firmness of such a union is achieved through the process of thermal stabilization, which ultimately leads to increased precision and rigidity during metal-working procedures.



Beds

The bed of the machine is made of grey cast iron and is stabilized through annealing. It was designed in order to absorb the maximum amount of vibrations which are created during the cutting process. It features heavy duty linear guideways further contributing to the precision and rigidity of the machine.



WRF 160 CNC



WRF 130 CNC Portable



The portable horizontal boring WRF 130 CNC allows an easy transfer of the machine outside a permanent base to the desired location. This is used while machining large parts, which cannot be transferred easily, such as parts for the construction of large energy parts, ships, etc. In this design the column has a supporting/lifting rod at the top for moving the machine within the plant. The power cables and coolant hoses are equipped with couplings for easy re-connection. Similarly, anchoring and balancing the machine is designed to facilitate the alignment geometry in place. WRF 130 portable is equipped with a horizontally and vertically movable operator's enclosure. Technological possibilities of the machine can be further enhanced by accessories offered with all WRF 130 CNC machines.

WRF 160 Heavy / z 1500



Heavy duty execution of floor type boring mill with ram stroke 1 500 mm, 1 000 mm spindle stroke with 160 mm spindle diameter represents the newest technology and concept of floor-type horizontal boring mills that are currently on the global marketplace. The powerful closed designed headstock consists of a movable slide ram (Z-Axis) and a movable live spindle (W-Axis).

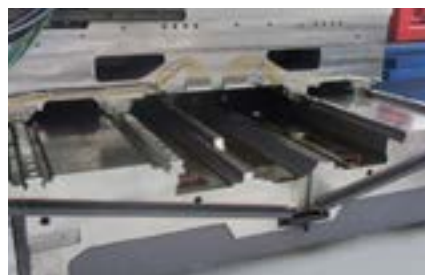
Technical parameters		WRF 160 (Heavy) Z 1500
Diameter of Spindle	mm	160
Taper of Spindle		ISO50 / BT50 / CAT50
Range of Spindle Speed	rpm	2 500*
Main Power CNC Heidenhain or SIEMENS CNC** S1/S6	kW	74 / 91*
Max. Torque CNC Heidenhain or SIEMENS CNC** S1/S6	Nm	3 349 / 4 120
Main Power CNC FANUC CNC**	kW	x
Max. Torque CNC FANUC CNC**	Nm	x
X cross travel of column	mm	2 400 – 28 100
Y vertical travel of headstock	mm	2 000 – 5 000
Z ram travel	mm	1 500
W spindle travel	mm	1 000
Rapid feed X, Y	mm/min ⁻¹	20 000, 15 000
Rapid feed Z, W	mm/min ⁻¹	10 000, 8 000
Rotary table – optional accessory **		
Max. Table Load	kg	T25–T40–T50 / T80 / special T60
Table size	mm	2 000 x 2 000 – 3 500 x 3 500 / 4 000 x 4 000 / special tilting with 0-8°
V longitudinal travel of ttable	mm	2 000 – 5 000 / 2 400 – 9 500 and special
Rapid feed V axes	mm/min ⁻¹	20 000
Rapid feed B axes	rpm	1,7

* customizable, must be discussed

** smaller tables (T10|T20) please see page 49



X-Axis Hydrostatic guideways



X- Axis – 4x Linear roller guideways

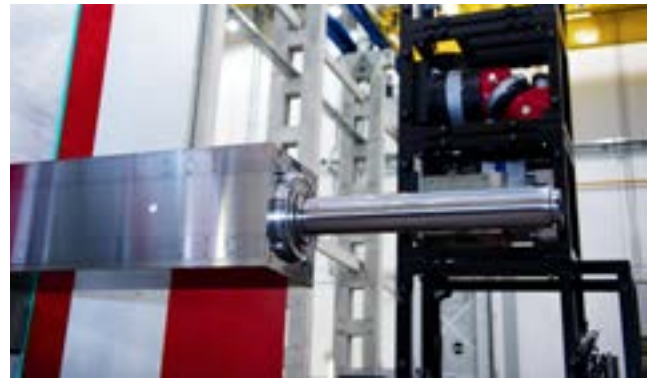


Rotary table – 4x Linear roller guideways

WRF 160 Heavy / z 1600



Our WRF 160 heavy duty floor-type boring mill with ram travel of 1 600 mm, spindle travel of 1 000 mm, and spindle diameter of 160 mm represents the newest technological concept in floor-type horizontal boring mills on the global market. Its powerful, closed-designed headstock provides excellent machining potential of large workpieces with its extendable ram (Z axis) and extendable live spindle (W axis). The 1 600 mm ram is fully-enclosed between two columns, giving it maximum geometric stability, precision and power. The vertical travel of the headstock can be from 6 000 to 10 000 mm.



Technical parameters		WRF 160 Heavy Z 1600
Diameter of Spindle	mm	160
Taper of Spindle		ISO50 / BT50 / CAT50
Range of Spindle Speed	rpm	2 500*
Main Power CNC Heidenhain or SIEMENS CNC**	kW	74 / 91*
Max. Torque CNC Heidenhain or SIEMENS CNC**	Nm	3 349 / 4 120
Main Power CNC FANUC CNC**	kW	x
Max. Torque CNC FANUC CNC**	Nm	x
X cross travel of column	mm	2 400 – 28 100
Y vertical travel of headstock	mm	2 000 – 10 000
Z ram travel	mm	1 600
W spindle travel	mm	1 000
Rapid feed X, Y	mm/min ⁻¹	20 000, 15 000
Rapid feed Z, W	mm/min ⁻¹	10 000, 8 000
Rotary table – optional accessory**		
Max. Table Load	kg	T25–T40–T50 / T80 / special T60
Table size	mm	2 000 x 2 000 – 3 500 x 3 500 / 4 000 x 4 000 / special tilting with 0-8°
V longitudinal travel of ttable	mm	2 400 – 9 500 and special
Rapid feed V axes	mm/min ⁻¹	20 000
Rapid feed B axes	rpm	1,7

* customizable, must be discussed

** smaller tables (T10|T20) please see page 49

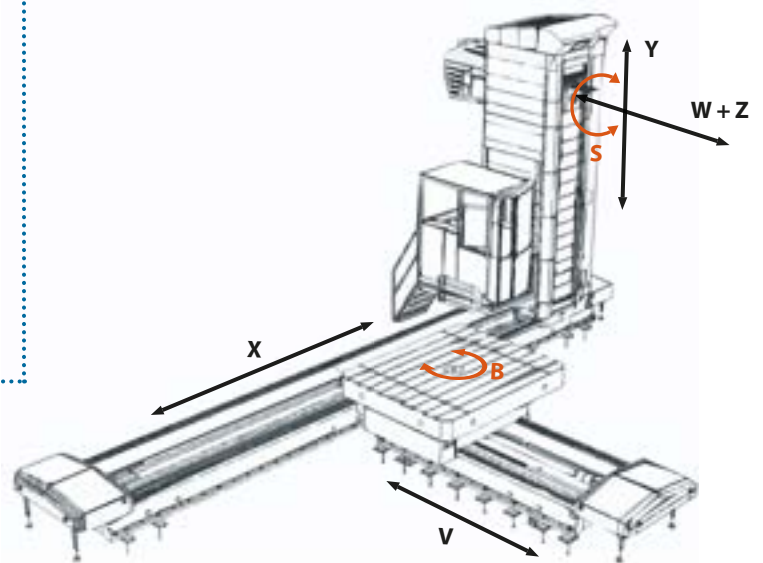
WF 13R CNC



A Floor type horizontal boring mill WF type is designed for precise and highly efficient coordinate boring, drilling, milling, and cutting of threads of big and heavy work pieces up from cast iron, cast steel and steel. The machine can be equipped with floor plates and/or rotary table(s) according to machining requirements. As with all Fermat Boring Mills a wide range of accessories can be added that considerably enhance the machine's versatility.

Machine Configurations:

- WF 13 R Machine with ram travel 700 mm
- WF 15 R Machine with ram travel 700 mm and spindle diameter 150 mm



Technical parameters		WF 13R	WF 15R
Diameter of Spindle	mm	130	150
Taper of Spindle		ISO50 / BT50 / CAT50	
Range of Spindle Speed	rpm	3 000* (option 4 000)	2 800*
Main Power CNC Heidenhain or SIEMENS CNC**	kW	41 / 61,5*	
Max. Torque CNC Heidenhain or SIEMENS CNC**	Nm	2 099 / 3 149	
Main Power CNC FANUC CNC**	kW	37 / 45*	
Max. Torque CNC FANUC CNC**	Nm	2 362 / 2 873	
X cross travel of column	mm	4 000 – 22 000	
Y vertical travel of headstock	mm	2 000 / 2 500 / 3 000 / 3 500	
Z ram travel	mm	700	
W spindle travel	mm	730*	
Rapid feed X, Y	mm/min ⁻¹	20 000, 12 000	
Rapid feed Z, W	mm/min ⁻¹	10 000	
Rotary table – optional accessory**			
table max. load	kg	T20	
Table size	mm	1 600 x 1 800 / 1 800 x 2 200 / 1 800 x 2 600 / 2 000 x 2 400	
V longitudinal travel of ttable	mm	2 000 – 3 000	
Rapid feed V axes	mm/min ⁻¹	12 000	
Rapid feed B axes	rpm	2	

* customizable, must be discussed

** for bigger Tables (T25|T40) please see page 49

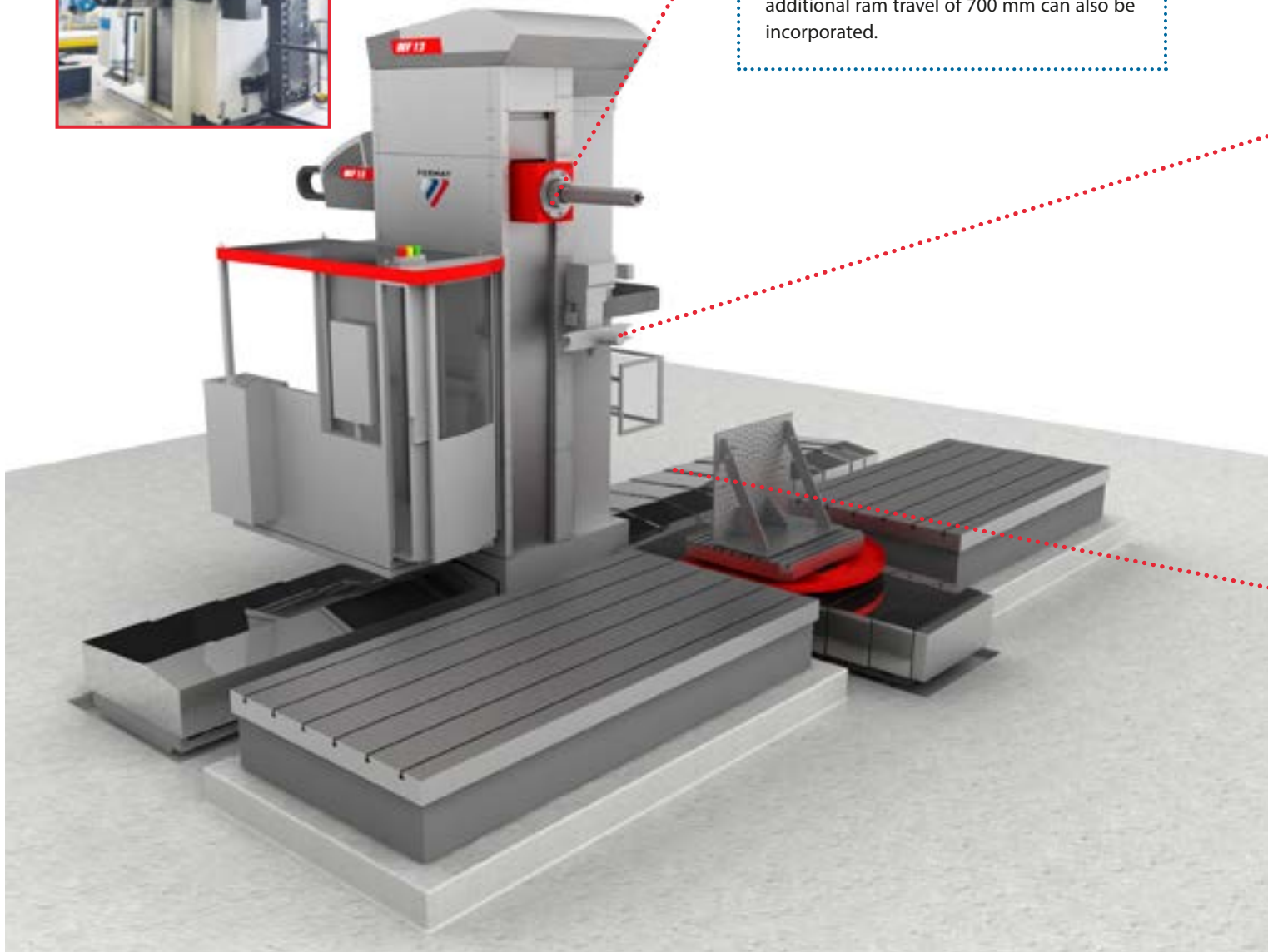


WF 13R CNC



Headstock

The headstock of WF 13 CNC is equipped with a live spindle with travel 730 mm and additional ram travel of 700 mm can also be incorporated.





Column

The column is made of grey cast iron. Maximum rigidity and firmness of the column is achieved through the process of annealing, which maximizes highest precision and machining results. Box guideways are hardened.

Beds

The bed of the machine is made of grey cast iron which is stabilized through annealing. It was designed in order to absorb the maximum amount of vibrations that are created during cutting. It features heavy duty linear guideways.

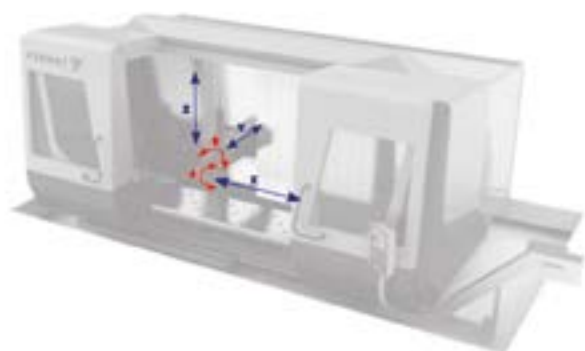
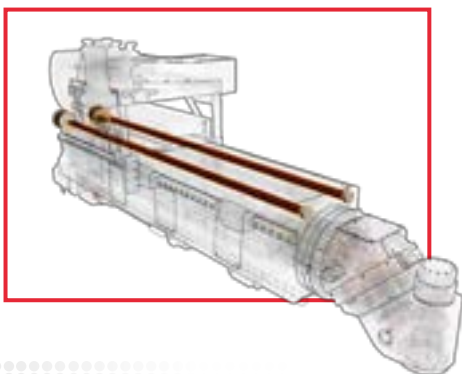


FFC 100



FERMAT's horizontal milling center FFC is a highly-efficient machine allowing powerful and precise machining at every angle thanks to its stepless UHAmi milling head. Due to its modular form of construction, you can choose additional accessories like rotary or turning tables that enhance machining possibilities with turning operations or machining the workpiece from 5 sides. FFC is equipped with Heidenhain or Fagor absolute linear scales on the X, Y and Z axes. Smooth movement is ensured by linear guideways and ball screws on all linear axes. Excellent machining precision is also guaranteed with the ram's automatic compensation system. The machine's complete modern enclosure enables the operator to have a clean workspace free of chips and coolant. Because it's connected with the newest control systems, the machine offers fast and smooth onsite programming.

Technical parameters		
Taper of Spindle		ISO50 / BT50 / CAT50 / HSK 100 / BIG PLUS
Range of Spindle Speed	rpm	10 – 5 000
Main Power CNC Heidenhain or SIEMENS CNC	kW	41 / 61,5 53 / 77,9
Max. Torque CNC Heidenhain or SIEMENS CNC	Nm	41 kW (1 230 / 1 846) 53 kW (1 591 / 2 338)
X cross travel of column	mm	3 000 / 4 000 / 5 000
Y longitudinal travel of Ram	mm	1 000 / 1 200
Z vertical travel of headstock	mm	1 200 / 1 600 / 2 000
Rapid feed X, Y, Z	mm/min ⁻¹	30 000
Max. Table Load	kg/m ²	4 000
Clamping plate dimensions	mm	3 200 / 4 200 / 5 200 x 1 000 / 1 200

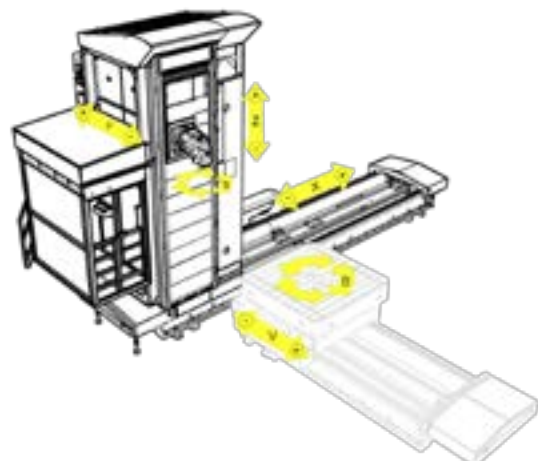
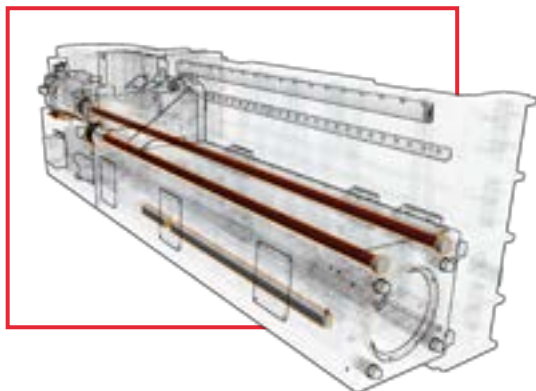


WRF MILL



WRF Mill is a floor-type milling machine with a 1 550 mm ram stroke. It comes equipped either with an stepless universal automatic milling head (UHAmi) or a 2.5° automatic milling head and allows for heavy chip removal thanks to its powerful headstock and robust column. WRF Mill can be outfitted with a rotary table of various sizes and load capacity or floor plates.

Technical parameters		
Taper of Spindle		ISO50 / BT50 / CAT50 / HSK 100 / BIG PLUS
Range of Spindle Speed	rpm	5 000
Main Power CNC Heidenhain or SIEMENS CNC**	kW	41/61,5 53/77,9 (option 74/91)
Max. Torque CNC Heidenhain or SIEMENS CNC**	Nm	41 kW (1 230 / 1 846) 53 kW (1 591 / 2 338)
Main Power CNC FANUC CNC**	kW	37/45
Max. Torque CNC FANUC CNC**	Nm	1 296 / 1 575
X cross travel of column	mm	3 600 – 28 100
Y longitudinal travel of Ram	mm	1 550
Z vertical travel of headstock	mm	2 000 – 6 000
V ram travel	mm	1 550
Rapid feed X, Y, Z	mm/min ⁻¹	20 000, 20 000, 15 000



Bridge and Gantry Mills

Our Products



Gantry Multitask
Center

See page 41

Bridge Type Milling
Machine MC5AXES

See page 42



Gantry Multitask Center

The innovative Fermat Gantry Multitask Center is designed for multiple operations and machining of large work pieces in one setup.

All vertical surfaces are machined by a powerful 160mm spindle with a stroke of 1 000mm. In addition the ram will stroke 1 600mm and has a massive 74 kW | 99 hp spindle motor.

Horizontal machining is performed by a heavy duty automatic head with 60kW/80hp and 2 500 Nm. The head does continuous milling or may be positioned and hydraulically clamped. All head changes are accomplished automatically.

A Rotary table can be incorporated into the main table as a live axis with rotary positioning for OD and ID turning.

The following options are available with the Multitask Center:

- Powerful grinding heads for way grinding with an advanced coolant flushing system.
- High Speed CNC continuous head with up to 15,000 rpm, commonly used for machining of aluminum or composite materials.
- Laser hardening
- Robotic ATC
- High Speed automatic grinding head for OD and ID grinding



Technical parameters		GANTRY MULTITASK CENTER
Diameter of Spindle	mm	160
Taper of Spindle		ISO-50 / BT-50
Range of Spindle speed	rpm	max. 2 500
Rated Power of Main Engine S1	kW	74
Longitudinal Travel X	mm	10 000 – 50 000
Cross Travel Y	mm	4 300 / 5 300 / 6 300 / 7 300
Width between COLUMNS	mm	3 200 / 4 200 / 5 200 / 6 200
Longitudinal Travel Z	mm	1 600
Travel W	mm	1 000
Rapid Traverse X, Y	mm/min ⁻¹	40 000

Bridge Type Milling Machine MC5AXES

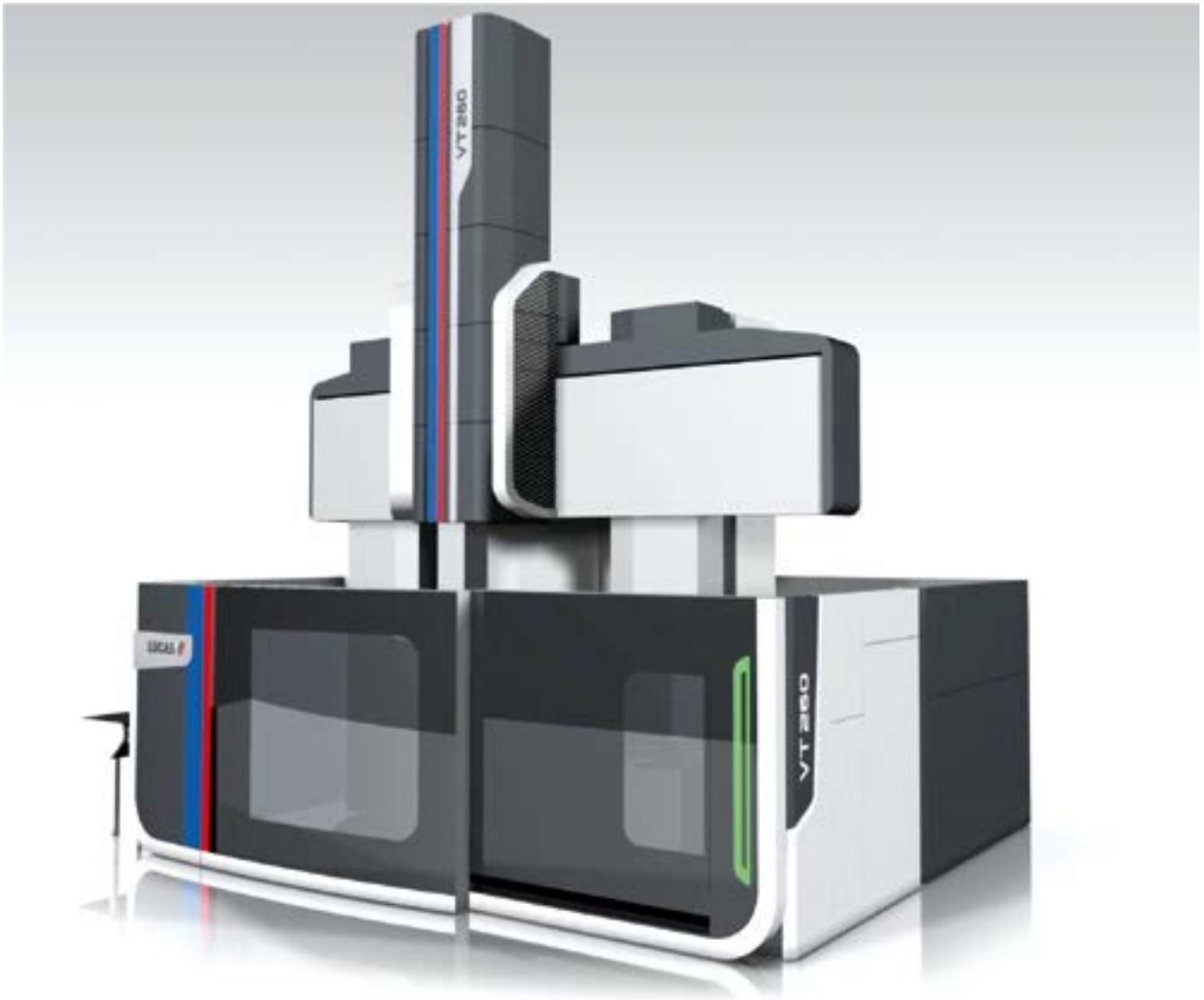
EMILL is a table-type bridge mill, adjustable according to the dimensions of the workpiece. Its design guarantees maximum rigidity at the lowest possible price. Though it doesn't have a transverse crossbeam, it has ram travel up to 1,500 mm. This table-type concept provides greater precision when machining plane surfaces compared to a gantry. The machine's frame is made from robust GG30 cast iron. The machine is built with linear guideways, with the axes driven by ball screws powered by motors via planetary gearboxes. The cross section of the headstock, which moves on linear

guideways, is 420 x 450 mm, which ensuring extremely high rigidity. The spindle drive is inside the ram, which facilitates a more compact headstock. The machine can be equipped with a 5-axis milling head, either permanently mounted or interchangeable. The control system is either HEIDENHAIN, SIEMENS or FANUC. EMILL can be equipped with various accessories such as through spindle coolant, alternate milling heads, and a tool changer, including a robot tool changer. Thanks to its modular concept, the machine can be configured exactly to the customer's demands, including the reworking the dimensions of the machine, constructed quickly, and delivered without delay to the factory floor.



Technical parameters		MC5AXES
Taper of Spindle		ISO-50 / BT-50 / CAT-50
Range of Spindle Speed	rpm	10 – 3 000
Main Power CNC Heidenhain or SIEMENS CNC	kW	41
Max. Torque CNC Heidenhain or SIEMENS CNC	Nm	1 230
Main Power CNC FANUC CNC	kW	37
Max. Torque CNC FANUC CNC	Nm	1 298
Longitudinal travel X-axis	mm	5 200
Cross Travel Y-axis	mm	3 900
Ram travel Z-axis	mm	1 550
Width between columns	mm	3 490
Rapid feed X, Y, Z	mm/min ⁻¹	12 000

VT – Vertical Turning machine



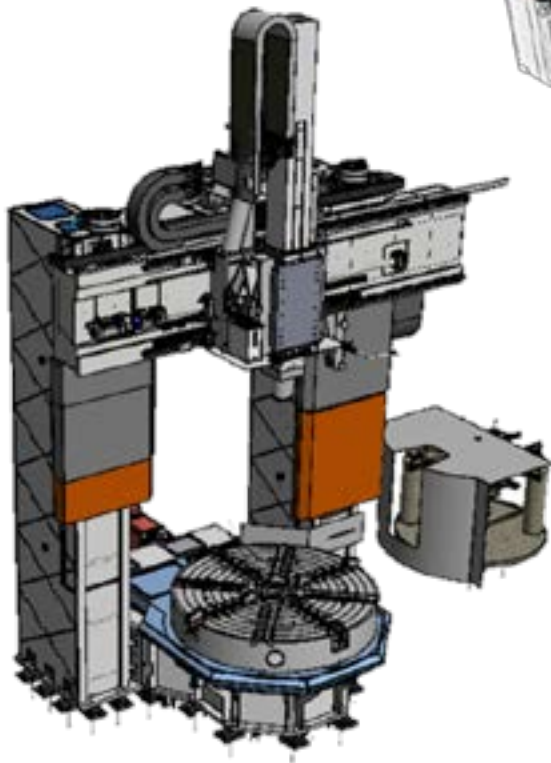
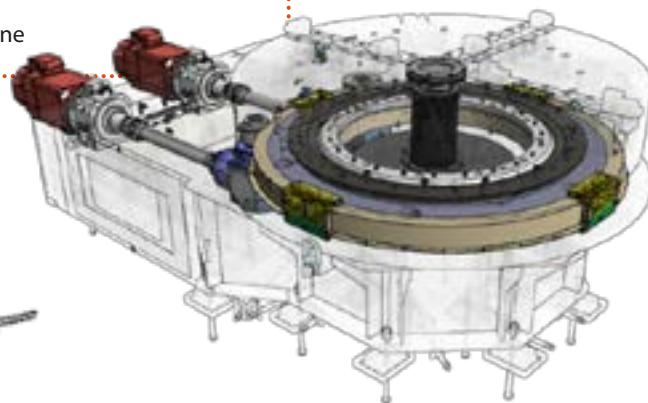
FERMAT's vertical turning machine VT is a continuously-controlled vertical turning lathe with vertical ram travel in the Z axis and horizontal ram travel along the X axis for highly-efficient, powerful and precise machining of the large or heavy workpieces fixed to a clamping plate. VT's main components are made from composite materials, the benefit of which are seen with higher rigidity, vibration reduction, and a shorter production time. Its main framework (the two columns, traverse and table bed) are built of composite materials—a steel welded frame filled with a specially designed concrete. The components

move on combination on linear motion guideways and roller guideways. The ram stroke along the Z axis regulates the height of the turning performed on the workpiece. The ram moves along box guideways with eight roller carriages; its position is measured and ensured by absolute linear scales. In addition to the turning motion on the C axis, there can be an additional working S axis. With it, there is a drive consisting of a servomotor, gear-box and shaft, connected with rotary head, inside the ram. Thanks to this, it's also possible to drill, mill, and cut threads.

VT – Vertical Turning machine

		VT 160	VT 200	VT 250	VT 300	VT 400	VT 500
Diameter of Clamping plate	mm	1 250	1 600	2 000	2 500	3 000	4 000
Max. Diameter of a workpiece	mm	1 600	2 000	2 500	3 000	4 000	5 000
Max. height of a workpiece	mm	1 600	2 000	2 500	3 000	4 000	5 000
Max. weight of a workpiece	tons	9	14	25	30	40	50
Power of axis C	kW	2 x 22	2 x 31	2 x 31	2 x 58	2 x 58	2 x 58
		2 x 31	2 x 37	2 x 37	2 x 71	2 x 71	2 x 71
		2 x 37	2 x 58	2 x 58	x	x	2 x 100
Power of rotary tool	kW	35			51		
Ram stroke (Z axis)	mm	1 800			2 500		
Ram cross-section	mm	320 x 320			400 x 400		
Horizontal headstock travel (X axis)	mm	2 000	2 500	3 000	3 500	4 500	5 500
Table speed	rpm	500	400	315	250	200	150
Speed of rotary tool	rpm	3 000					
Speed of X axis	m/min	20					
Speed of ram stroke	m/min	20					
Floor area (approx.)	m ²	58	65	80	105	116	130

Turning table concept – VT machine



System of Axis – VT machine

The turning table represents the main working axis. C axis of turning table is controlled by two motors with two-step planetary gear-boxes. The motors are connected with two pinions through two additional axial gear-boxes and drive shafts. The gear change is controlled automatically by programmed revolutions of the table. These pinions work in MASTER-SLAVE pre-loading and thus ensure exceptional accuracy with zero backlash. In addition, the table is equipped with four hydraulic brakes for reinforcement of C-axis. Plate of the table rotates on massive cross-bearing. Bed of the table is made of composite material steel-concrete.



HEIDENHAIN



TNC 640 – High-End Control for Milling and Turning Operations

The TNC 640 from HEIDENHAIN: for the first time, milling and turning are combined in one TNC. Now users can switch as desired between milling and turning—within the same NC program. Switchover is independent of the machine kinematics. It automatically takes the respective operating mode into account and without any additional action. This new simplicity is complemented by dialog-guided plain language programming, the optimized user interface, powerful programming aids as well as comprehensive cycle packets taken from amply field-proven HEIDENHAIN controls into the TNC 640.

HEIDENHAIN s.r.o. 10200 Prague 10, Czech Republic Phone +420 272 658 131 www.heidenhain.cz

Angle Encoders + Linear Encoders + Contouring Controls + Position Displays + Length Gauges + Rotary Encoders

Universal Cylindrical Grinding machines BHC/ BHCR



BHC / BHCR cylindrical grinding machines are designed for grinding of external or internal workpieces clamped between centers or by flying-mode into the chuck (special equipment) with the drive headstock and the possibility of sequential longitudinal grinding, plunge-cut grinding with a moving table, as well as plunge-cut grinding with a fixed or oscillating table. BHC / BHCR grinding machines can be of use particularly in the piece and small-lot production for grinding workpieces weighing up to 4 000 (5 000) kg. It grinds in precision accuracy 4µm. The machines are fitted with control system SINUMERIK 840 D sl. The machines meet

CE standards and are supplied with basic equipment and a guarantee of 1 year. BHCR grinding machines are equipped by CNC controlled B axis – grinding wheel head, that can be fitted with up to three tools, what significantly expands the technological possibilities of the grinding machine.

The machine is additionally equipped and designed according to specific needs of the customer and taking into account the materials to be ground or the selected machining technology.

Technical parameters		BHC/BHC HD	BHCR/BHCR HD
Swing Ø	mm	630 / 850 / 1 000	
Distance between centers	mm	2 000 / 3 000 / 4 000 / 5 000 / 6 000	
Max. weight of workpiece in centres	kg	4 000 / 5 000*	
Max. weight of workpiece flying (incl. clamp)	kg	300 / 400*	
Maximum speed of X, Z axis	mm/min ⁻¹	10	
Grinding wheel dimensions (Ø x width x Ø bore)	mm	Ø 750 x 100 x Ø 305	
Grinding wheel circumferential speed	m/s	10–50	
Wheel head swivel	°	+30 / -30	-
Wheel head swivel – B axis	°	-	+45 / -225
Maximum number of spindles	-	1 + 1	3
Wheel head motor power	kW	18,5	
Work head swivel	°	0–90 / 0*	
Work head spindle taper bore	-	Morse 6 ISO 296-1991	
Work head spindle nose	-	A 2-6 ISO 702-1-1992	
Tailstock barrel taper bore	-	Morse 6 ISO 296-1991	
Cross motion of tailstock centre – cylindricity correction	mm	± 0,8	
Machine length	mm	8 500 / 10 600 / 13 000 / 15 500 / 18 000	
Machine width	mm	4 400	
Machine height	mm	2 550	
Machine weight	kg	17 000 / 20 000 / 23 700 / 26 000 / 28 000	
Control system	-	Siemens 840D sl / 828D sl	Siemens 840D sl

* HD option

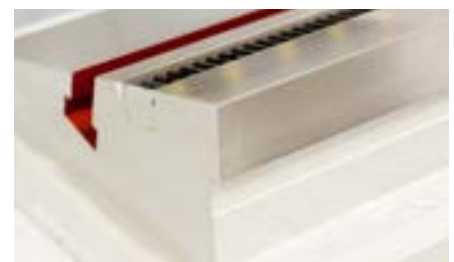
Universal Cylindrical Grinding machines BHM/ BHMR

BHM / BHMR cylindrical grinding machines are designed for grinding of external or internal workpieces clamped between centers or by flying-mode into the chuck (special equipment) with the drive headstock and the possibility of sequential longitudinal grinding, plunge-cut grinding with a moving table, as well as plunge-cut grinding with a fixed or oscillating table. BHM / BHMR grinding machines can be of use particularly in the piece and small-lot production for grinding workpieces weighing up to 1 000 kg. It grinds in precision accuracy 4µm. The machines are fitted with control

system SINUMERIK 840 D sl The machines meet CE standards and are supplied with basic equipment and a guarantee of 1 year. BHMR grinding machines are equipped by CNC controlled B axis – grinding wheel head, that can be fitted with up to three tools, what significantly expands the technological possibilities of the grinding machine.

The machine is additionally equipped and designed according to specific needs of the customer and taking into account the materials to be ground or the selected machining technology.

Technical parameters		BHM	BHMR
Swing diameter	mm	500	
Distance between centers	mm	1 500 / 2 000 / 3 000	
Max. weight of the workpiece between centers (in rests)	kg	850 (1 000)	
Max. weight of the workpiece with live spindle	kg	120	
Max. speed X, Z	mm/min ⁻¹	8	
Grinding wheel dimensions	mm	Ø 500 x 80 x Ø 203	
Grinding wheel peripheral speed	m/s	10–50	
Wheel head swivel	°	+15 / -180	-
Wheel head swivel – B axis	°	-	+45 / -225
Max. number of tools	-	1 + 1	3
Wheel head motor power	kW	11	
Work head swivel	°	0–90	
Work head spindle taper bore	-	Morse 5 ISO 296-1991	
Work head spindle nose	-	A 2-6 ISO 702-1-1992	
Tailstock barrel taper bore	-	Morse 5 ISO 296-1991	
Cross motion of tailstock center – cylindrical correction	mm	± 0,8	
Length of machine	mm	7 400 / 8 300 / 10 000	
Width of machine	mm	3 900	
Height of machine	mm	2 400	
Weight of machine	kg	10 000 / 12 000 / 14 000	
Control System	-	Siemens 840D sl / 828D sl	Siemens 840D sl



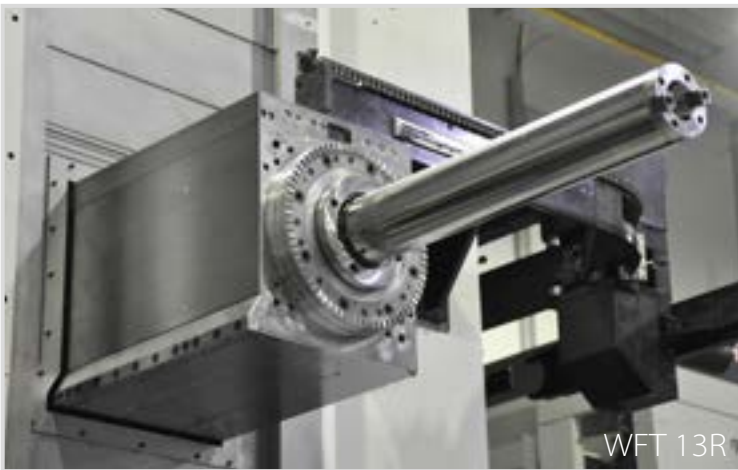
Machine Components

Headstock 100,110,130,150,160

The WRF, WF, WFT, WFC and WRFT series are equipped with a standard boring mill live spindle. The headstock provides an adjustable mounting platform for a variety of attachments such as CNC angle heads, manual angle heads, support spindle sleeves, etc. The headstock is driven by a servo drive. The two-speed automatic gearbox gives enough torque for heavy metal chip removal and for powerful high-speed drilling. FERMAT machines are also capable of high-performance manufacturing due to



WRF 160

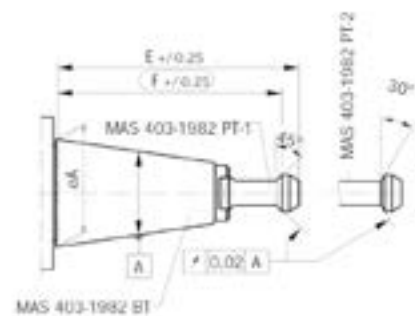
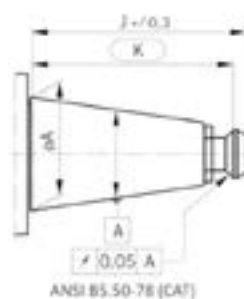
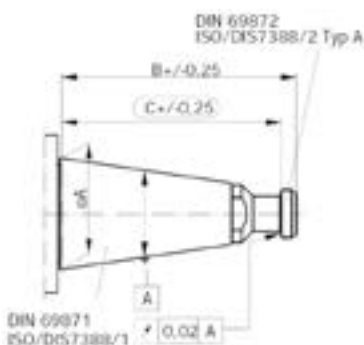


WFT 13R

the spindle axial force of 40,000 Nm. In WRF and WRFT series, two Y-axis ball screws with two scales control slide ram deflections. The third ballscrew in the torque position that is constantly pushing the headstock body upwards is added for 150 and 160 mm headstock. The upper part features heavy duty INA roller linear guide-ways, further contributing to the precision and rigidity of the machine.

Tool Standard SK (ISO)

Tool Standard ISO	A	B +/- 0,25	C +/- 0,25	Tool Standard CAT	A	J +/- 0,3	K +/- 0,3	Tool Standard BT	A	E +/- 0,25	F +/- 0,25
SK 40	44,45	94,5	88,25	SK 40	44,45	84,50	79,25	SK 40	44,45	100,35	93,35
SK 50	69,85	135,60	126,60	SK 50	69,85	127,00	119,40	SK 50	69,85	146,75	136,75
SK 60	107,95	201,65	191,65	SK 60	107,95	199,95	189,45	SK 60	-	-	-



Rotary Table

All the tables have outstanding positioning precision (4 arc sec. 0.010 mm / 1 000 mm radius). There is no slip-stick during the positioning of the table. Due to simple design and assembled components, FERMAT tables require minimum maintenance and adjustments during their lifetime.

The rotary table consists of bed, slide, and rotary clamping plate. The slide enables the rotary clamping plate to move in the V-axis. The clamping plate is fitted onto a cross roller bearing

that secures high load capacity with minimal passive resistance. In order to achieve precision in work pieces, the rotary table is hydraulically clamped at eight points (T25, T40, T50) or four points (T10, T20) to avoid rotation during the working process.

The table is governed by the control system of the machine, and there is a rotary encoder in the centre of the table that facilitates the automatic positioning in increments of 0.001°. As a standard, the rotary table operates as a continuous 4th axis.

	T8 / T10
Clamping Plate Size (mm)	1 250 x 1 400, 1 400 x 1 600, 1 600 x 1 600, 1 600 x 1 800
Maximum Table Load (kg)	10 000
Table Travel (mm)	2 000 / 3 000
T-Slots-Size	22H8
Operation Travel V-Axis (mm min)	1 – 8 000
Operation Travel B-Axis (RPM)	0 – 2

	T15 / T20
Clamping Plate Size (mm)	1 600 x 1 800, 1 800 x 2 200, 1 800 x 2 600, 2 000 x 2 400, 2 000 x 3 000
Maximum Table Load (kg)	20 000
Table Travel (mm)	2 000 – 5 000 78,74 – 196,85
T-Slots-Size	22H8
Operation Travel V-Axis (mm min)	1 – 8 000
Operation Travel B-Axis (RPM)	0 -2

	T25 / T40 / T50	T80 / T100
Clamping Plate Size (mm)	2 000 x 2 000, 2 000 x 2 500, 2 500 x 2 500, 2 500 x 3 000, 3 000 x 3 000, 3 000 x 3 500, 3 500 x 3 500	3 000 x 3 000, 3 000 x 3 500, 3 000 x 4 000, 4 000 x 4 000
Maximum Table Load (kg)	25 000, 40 000, 50 000	36 800
Table Travel (mm)	1 200 – 9 500	
T-Slots-Size	28H8	
Operation Travel V-Axis (mm min)	1 – 10 000	
Operation Travel B-Axis (RPM)	0 – 1,7	
Tilting angle (degrees)	0 – 10°	

Special Options
Fixed Table
Other Sizes of Clamping Plate
Table Cover (different heights)
Automatical Pallet Changer (APC) System
Alternative Pallet Change using Zero Point System



Zero point system



Tilting Table



Zero point system extra pallet

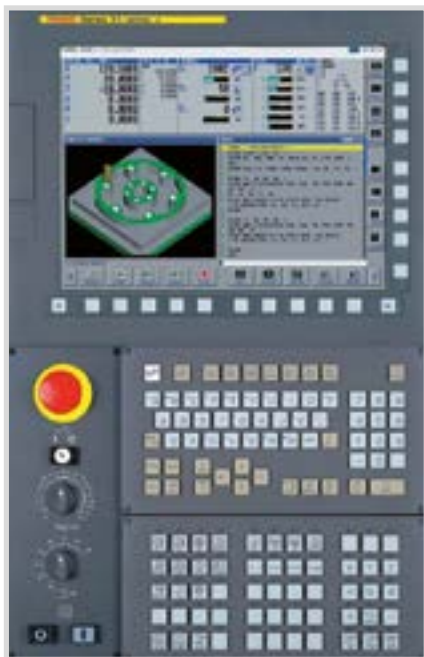
Control Systems

FERMAT machines are offered with Heidenhain iTNC 530, Fanuc 31i, Siemens Sinumerik 840D SL equipped with a 15" LCD display, an operating panel with a keyboard, and an electronic hand-wheel. As an option, our machines can be supplied with Fanuc 0i MD or Heidenhain 620 TNC with 10" LCD display.

The control system coordinates the continuity of all the axes, and also when peripheral tools are attached, such as a rotary table or a milling head.



HT2



Standard



Homp



I-pendant



HR 410



HR 520



HR 550

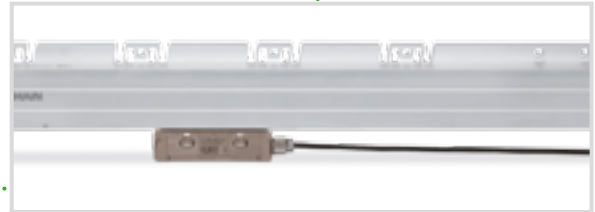
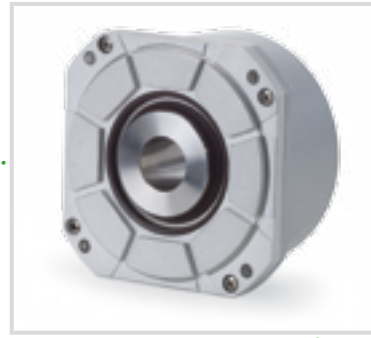


Electrical | Hydraulic | Lubrication Units

Linear Scales Heidenhain / Fagor

The X, Y, Z and V axes are equipped with linear scales that ensure the accuracy of the machine. The W-axis is measured directly from the servomotor encoder or optionally by a Heidenhain / Fagor linear scale.

Measurement of spindle revolutions is performed by the direct rotary encoder that allows for the desired positioning of the spindle. All final positions of the particular axes are secured by a limit switch.



Switchboard

Electrical devices are mostly located in the switchboard. It includes the basic unit of the control system, components for motor drive of the axis and spindle, and other electrical features made by renowned manufacturers such as Schneider, Telemecanique and Siemens. The switchboard (UL + CSA Standard) is being cooled by a unit built in the door of the switchboard made by Rittal.



Hydraulic Aggregate

An integral part of the machine is a Hydraulic aggregate used for unclamping of a tool from the spindle. On the front side, there is a liquid level gauge, with a thermometer, for visual level and temperature checks of oil in the tank.

Lubrication Unit

Lubrication of linear guideways and ball screws (X, Y, and Z-axis) is performed by a special lubrication unit. The Central Lubrication System is designed with progressive dividers that distribute specific amounts of lubricant.



Other Components

Ball Screws

X, Y, Z, and W-axis movement is facilitated by ball screws with the favorable characteristic of very low friction. Thanks to the precision tolerances between the nut and the screw, high rigidity and accuracy is achieved.



Rack

Horizontal movement on X-axis longer than 6 m is accomplished by a rack with two pinions that are in a Master-Slave relationship.



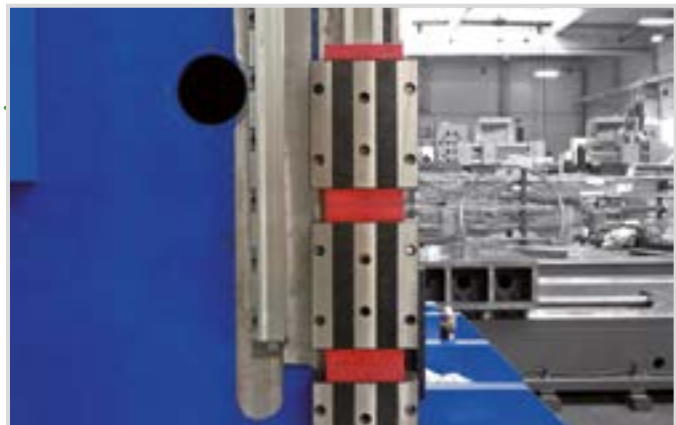
Telescopic Covers

Guiding surfaces are covered lengthwise and crosswise with telescopic covers.



Linear Guideways

Roller linear guideways enable a higher speed of movement and a smaller force needed for the machine's movement. This results in higher accuracy of positioning with smaller energy consumption, and longer operating life for components such as ball screws, servomotors, etc. This solution requires minimum maintenance and simplified, quicker eventual repairs.



Accessories

Automatic Pallet Changer System:



APC

The Automatic Pallet Changer System on the machine reduces unproductive time during machining. Machining can be carried out on one pallet, while the others can be used for preparation (cleaning of table, set up of workpiece, etc). The APC system consists of two or more pallets (according to customer requirements).

Pallet Dimension:

- 1 600 x 1 800 mm – maximum load 15 t*
- 1 800 x 2 200 mm – maximum load 15 t*
- 1 200 x 1 200 mm – maximum load 5 t**
- 1 200 x 1 400 mm – maximum load 5 t**
- 1 400 x 1 600 mm – maximum load 5 t**

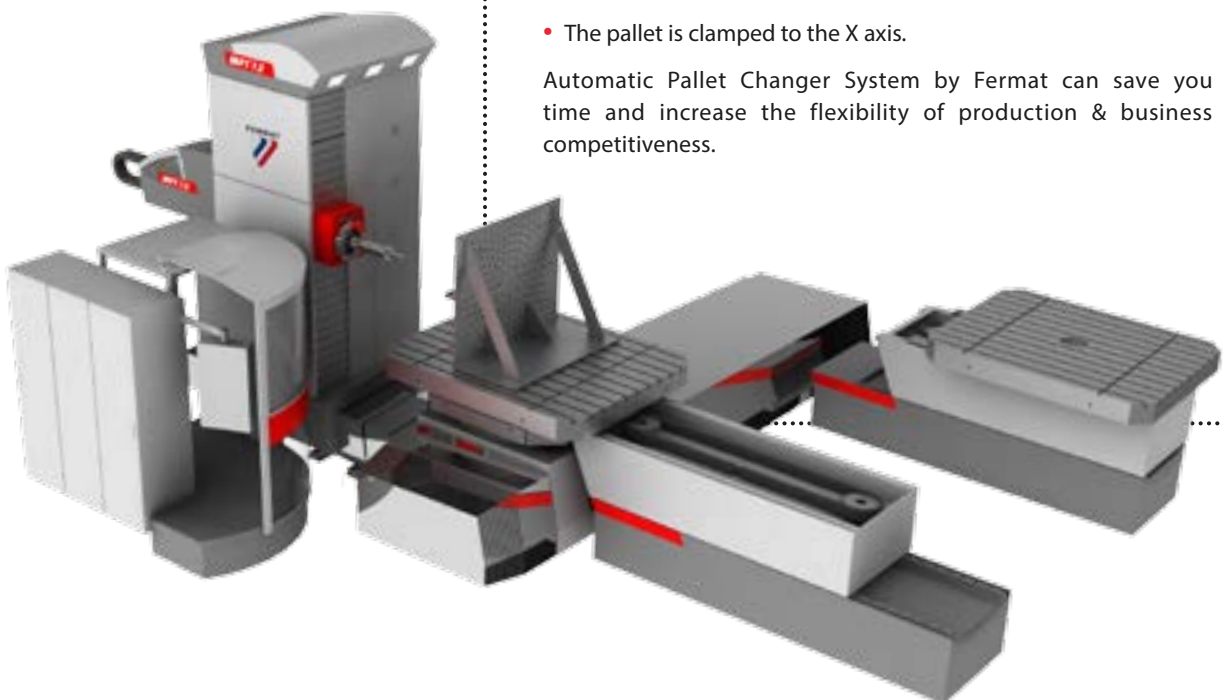
*available with 2 pallets, **available with 2 to 5 pallets

Description of Pallet Change

The pallet exchange process is performed in five phases:

- The pallet is unclamped from the X axis. The shifting slide is connected to the rotation slide on the X-axis by pins inserted into the lock.
- The pallet itself is moved by a chain, where it is pulled by the pin up to the clamping position.
- The X axis slides moves in front of the next pallet with the workpiece loaded.
- The new pallet is shifted to X axis slides, then the shifting slide retracts.
- The pallet is clamped to the X axis.

Automatic Pallet Changer System by Fermat can save you time and increase the flexibility of production & business competitiveness.



Automatic Tool Changer ATC, Robots



Automatic Tool Changer for 20, 32, 40, 60, 90 or 120 tools

Automatic tool change is accomplished by a chain (for 20, 32, 40, 60, 90, or 120 tools). Tool changer can exchange tools into the live spindle as well as into automatic heads.

Robots

Fermat is always adapting to new requirements of the market and wishes of its customers. One of the important innovations is that our company was the first producer of Horizontal Boring Mills who substituted Automatic Tool Changers with 6-axis high tech German robots (Standard Automatic Tool Changer will still exist as an option for consumer request).

The advantage is that the robot can change tools directly into several positions, for example into milling heads, spindle support sleeves, etc. Furthermore, another benefit is low maintenance requirements or the possibility of higher weight of the tools. For example a robot has a capacity to hold the tool with weight about 75 kg|165 lb. Generally the robot is meant to bring to the consumer the luxury of fast, precise and effective tool exchange.



WFT 13 with Robotic Tool Changer (105 tools)



Robotic Tool Changer
- Max. Capacity 210 tools

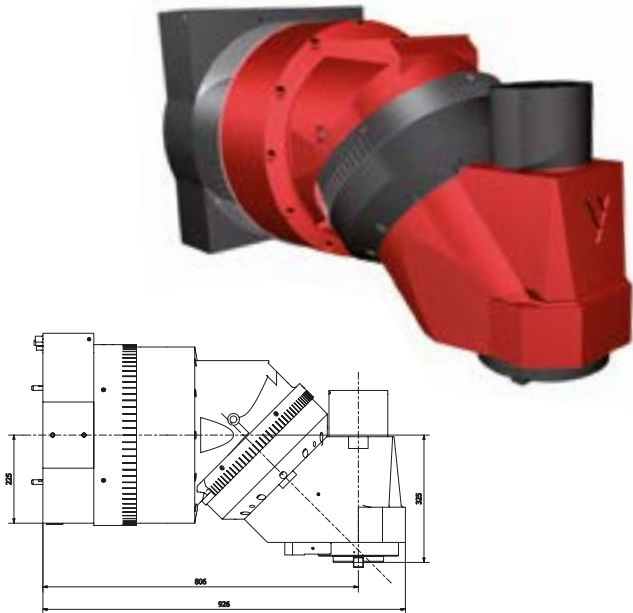


Tool Changer ATC 60



Milling and Facing Heads

Universal micro-indexing milling head – UHA 0.001



Speed: 10 – 4 000 rpm
Power: 53 kW
Torque: 1 600 Nm
Indexing: 0,001° / 0,001°
Clamping torque: A-Axis 3 800 Nm, C-Axis 6 500 Nm

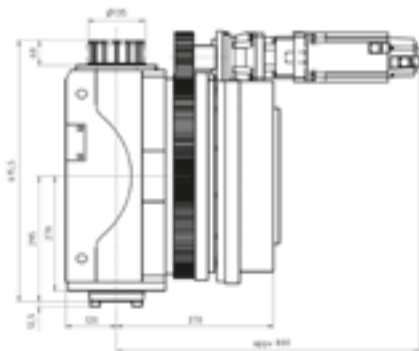
- Spindle Taper SK 50 (DIN, ANSI, MAS)
- Hydraulic tool clamping / unclamping
- Tool clamping force 20 kN
- Highly precise spindle bearings, 3 rows of bearings placed at the front and one row at the back
- Ground gears
- Coolant Through Spindle
- External tool cooling
- Rotary encoder at both axes
- Taper air-jet
- A axis range $\pm 180^\circ$, C1 $\pm 180^\circ$

Right angle micro-indexing automatic milling head- PHA 0.001



Speed: 10 – 1 700 rpm
Power: 74 kW
Torque: 2 500 Nm
Indexing: 0,001°
Clamping torque: C axis 10 000 Nm

- Spindle Taper SK 50 (DIN, ANSI, MAS)
- Hydraulic tool clamping / unclamping
- Tool clamping force 25 ± 15 % kN
- Ground gears
- Coolant Through Spindle / External tool cooling
- Taper air-jet
- C axis range $\pm 180^\circ$
- Automatic gear greasing
- Quick head positioning
- 2 servomotors and gearboxes (Master-Slave system) for head positioning
- Cross roller bearing on C axis



Spindle Support Sleeves



250 mm



380 mm



555 mm

UHM 30

Universal Manual Head UHM 30

Manually attached to the headstock, manual positioning, automatic tool clamping and unclamping.

Revolutions: 3 000 rpm

Maximum Power: 30 kW (40 HP)

Maximum Torque (150 RPM): 1 600 Nm

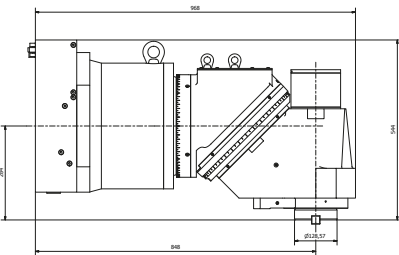
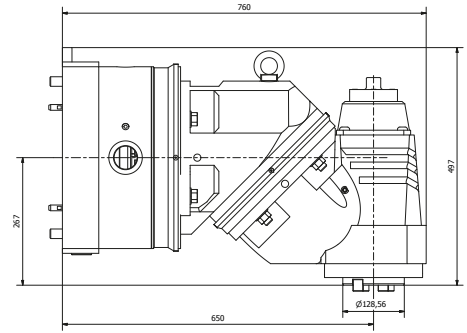
Tool: ISO 50 – DIN 69871

Pull Stud: DIN 69872

Turning: any degree (2,5°/ 2,5° (1°/ 1°))

Coolant Through Spindle: Optional

For machines with spindle diameter 130/150/160 mm



UHA 2,5°

Universal Automatic Head UHA 2,5°

Automatically attached to the headstock, automatic positioning, automatic tool clamping and unclamping.

Revolutions: 3 000 rpm

Maximum Power: 26 kW (35 HP)

Maximum Torque (150 RPM): 1 370 Nm

Tool: ISO 50 – DIN 69871

Pull Stud: DIN 69872

Turning: 2,5°/ 2,5° (1°/ 1°)

Coolant Through Spindle: Standard

For machines with spindle diameter 130/150/160 mm

PHM 37

Right Angle Manual Head PHM 37

Manually attached to the headstock, manual positioning, automatic tool clamping and unclamping.

Revolutions: 3 000 rpm

Maximum Power: 37 kW

Maximum Torque (150 RPM): 2 000 Nm

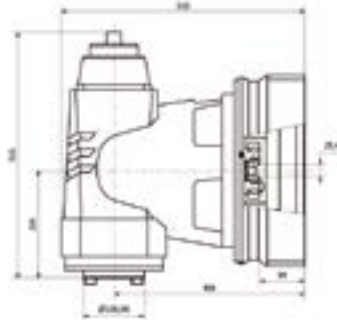
Tool: ISO 50 – DIN 69871

Pull Stud: DIN 69872

Turning: any degree, 2,5° (1°)

Coolant Through Spindle: Option

For machines with spindle diameter 130/150/160 mm



PHA 37

Right Angle Automatic Head PHA 37

Automatically attached to the headstock, automatic positioning, automatic tool clamping and unclamping.

Revolutions: 3 000 rpm

Maximum Power: 37 kW

Maximum Torque (187 RPM): 2 000 Nm

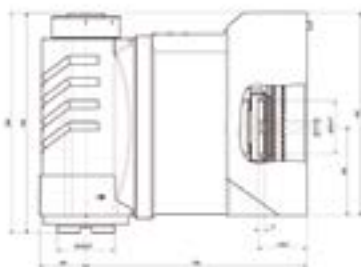
Tool: ISO 50 – DIN 69871

Pull Stud: DIN 69872

Turning: 2,5° (1°)

Coolant Through Spindle: Standard

For machines with spindle diameter 130/150/160 mm



Milling and Facing Heads

Alberti T90 – 10

Right Angle Milling Head

Manually attached to the headstock, manual positioning, manual tool clamping and unclamping.

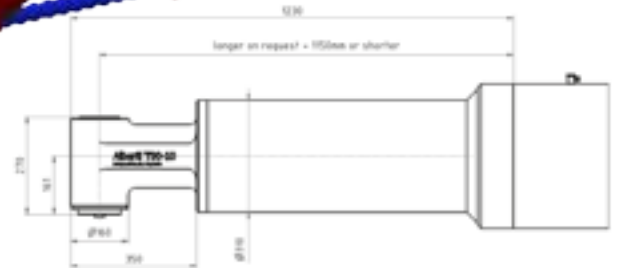
Revolutions: 10 – 3 000 rpm

Maximum Torque (150 RPM): 250 Nm

Tool: ISO 50

Turning: 0° – 360°

Coolant Through Spindle: Option (12 bar)



OMG TA 26

Right Angle Milling Head

Manually attached to the headstock, manual positioning, manual tool clamping and unclamping.

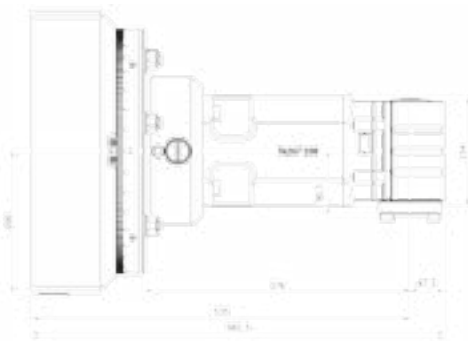
Revolutions: 1 – 2 500 rpm max.

Maximum Power: 55 kW (74 HP)

Maximum Torque (150 RPM): 2 600 Nm

Tool: SK 40 (DIN, ANSI, MAS)

Coolant Through Spindle: Not Possible



SH Ø 230/590

Two Axis Orthogonal Milling Head

Straight SH Ø 230/590 head for use on Fermat horizontal and vertical milling machines. Automatic tool clamping and unclamping. Various lengths.

Revolutions: 10 – 5 000 rpm

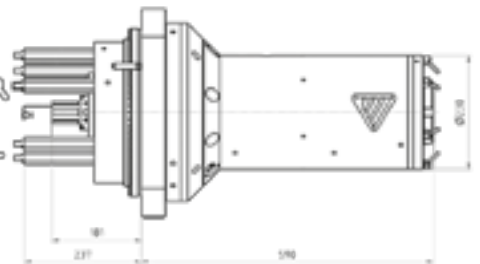
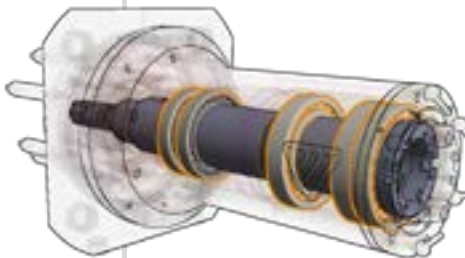
Maximum Power: 53 kW

Maximum Torque (150 RPM): 1 591 Nm

Tool: SK 40 (DIN, ANSI, MAS)

Cooling through spindle: option

Outside cooling of tools: standard



E-PHAmi

Automatically or manually attached to the headstock, automatic tool clamping and unclamping.

Revolutions: 12–15.000 rpm

Maximum Power: 40,5 kW (S1)

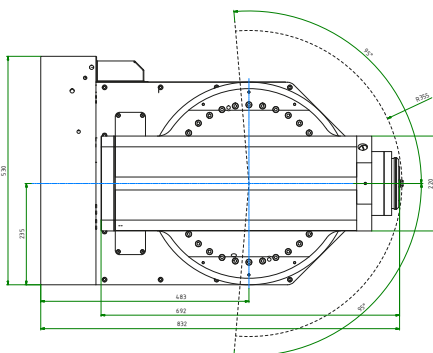
Maximum Torque: 128,9Nm (S1)

Tool: SK 40 / SK 50

Turning: +/- 95°

Outside Coolant: Standard

For machines with spindle diameter 130/150/160 mm



UHM 20

Two Axis Universal Manual Milling Head

Manually attached to the headstock, manual positioning, manual tool clamping and unclamping

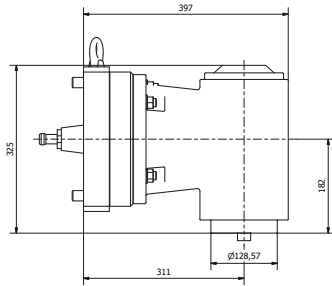
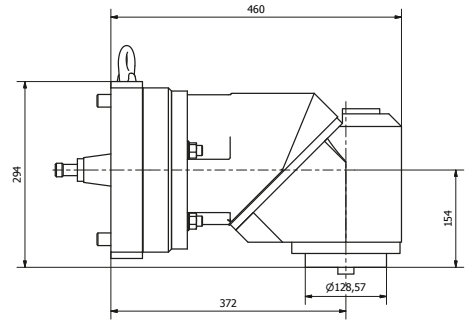
Revolutions: 2 000 rpm

Maximum Power: 20 kW

Tool: SK 50 (DIN, MAS, ANSI)

Cooling Through Spindle: Not Possible

For machines with spindle diameter 100/110/130 mm



PHM 20

Right Angle Manual Milling Head

Manually attached to the headstock, manual positioning, manual tool clamping and unclamping.

Revolutions: 2 000 rpm

Maximum Power: 20 kW (27HP)

Tool: SK 50 (DIN, MAS, ANSI)

Cooling Through Spindle: Not Possible

For machines with spindle diameter 100/110/130 mm



OHM 20

Two Axis Orthogonal Manual Milling Head

Manually attached to the headstock, manual positioning, manual tool clamping and unclamping.

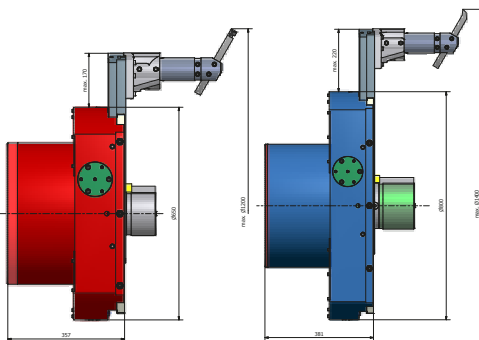
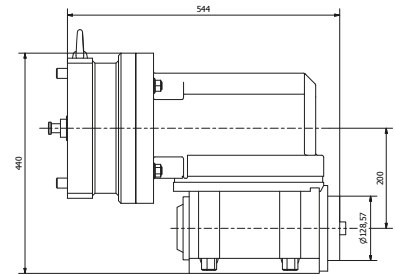
Revolutions: 2 000 rpm

Maximum Power: 20 kW (27HP)

Tool: SK 50 (DIN, MAS, ANSI)

Cooling Through Spindle: Not Possible

For machines with spindle diameter 100/110/130 mm



Automatic Facing Head FH 65/80

Plate Diameter: 650/800 mm

Positioning: Automatic

Boring Accuracy: 0,05 mm

Radial Traverse: 170/220 mm

Maximum Boring Diameter: 1 200/1 400 mm

Coolant Through Spindle: Not Possible

For machines with spindle diameter 130 (FH65) a 150/160 (FH80) mm

D'Andrea Facing Head UT 5-500 S(UT 5-630, UT5-800)

Plate Diameter: 500/600/800 mm

Positioning: Automatic

Boring Accuracy: 0,01 mm

Radial Traverse: 160/200/250 mm

Maximum Boring Diameter: 1 000/1 250/1 440 mm

Coolant Through Spindle: Standard

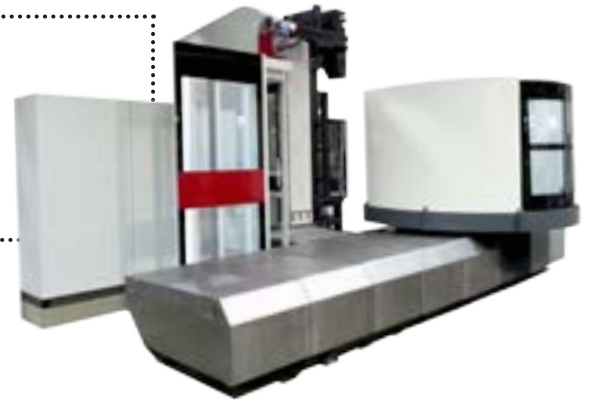
For machines with spindle diameter 130/150/160 mm



Operator's Shields & Platforms

Operator's Safety Screen (Shield)

The operator shield has a safety glass door protecting the Operator against flying chips and coolant splash. The door is monitored by electromagnetic switches.



Operator Movable Platform

Inside the cabin, there is a main Control Panel and a prepared storage area for machine tools. The platform is equipped with suitable protection covers and a lockable door, which is monitored by electromagnetic switches. Operator's platform on floor type machines is standardly equipped with a horizontal and vertical adjustment. For table type series, the platform is either fixed or movable in vertical and horizontal direction.



Vertical move [mm]	Horizontal move [mm]
1 300	550
1 600	
1 600	750
1 600	1 500
2 300	
2 300	750
2 300	1 500



Table & Workplace Enclosures



Workspace enclosure



C type cover



Plexi table cover

Other Accessories



Pick Up Station for Milling and Facing Heads

A Pick-up Station is an accessory for automatic loading CNC milling heads and facing heads. It provides multiple stations for loading and storing the attachments for automatic pick up by the machine according to the customer's needs.



Coolant System

The standard configuration of the machine contains flood coolant for tool cooling by outside supply of the coolant liquid at 4 – 6 bars. It is also possible to choose through the spindle coolant 10, 20, 30 and 50 bars. The coolant system can be equipped with oil skimmer.





HEIDENHAIN



+ All-Around Protected Touch Probe

The TS 460 touch probe from HEIDENHAIN helps you in workpiece setup and measurement in the machine tool's working space. One innovation is the mechanical collision protection between the touch probe and taper shank: in the event of a light collision of the TS with the workpiece, the adapter allows the touch probe to yield. At the same time, the control stops the probing process. Neither the probe nor the machine suffers damage. At the same time, the collision protection adapter also functions as a thermal decoupler, protecting the touch probe from excessive heating through the spindle during very long or intensive probing processes.

HEIDENHAIN s.r.o. 10200 Prague 10, Czech Republic Phone +420 272 658 131 www.heidenhain.cz

Angle Encoders + Linear Encoders + Contouring Controls + Position Displays + Touch Probes + Rotary Encoders

Work Piece / Tool Touch
Probe, Heidenhain
or Renishaw



Coolant Through
Spindle 10-50 bar



Angular Clamping Plates

Clamping Plates



3 200 x 1 885 x 400 mm
4 000 x 1 885 x 400 mm
4 800 x 1 885 x 400 mm
5 600 x 1 885 x 400 mm
6 400 x 1 885 x 400 mm
7 200 x 1 885 x 400 mm
8 000 x 1 885 x 400 mm

Chip Conveyor

Upon customer request, it is possible to equip the machine with a belt type chip conveyor. Its length and height can be adjusted upon customer's demand, including the movable collecting reservoir.



References

Canada	
TIGERCAT INDUSTRIES INC.	
WFT 13 CNC (5 pcs)	
X=3 000 mm	
Y=3 500 / 3 000 mm	
Z=1 500 mm	
W=730 mm	
Rotary Table 1 600x1 800 mm/2 000x 2 400 mm	
CTS 20 bar	
ATC 40	
New design operators movable cabin	



OTHER FERMAT MACHINES
 WFT 13 R CNC | X=3 000 mm | Y=3 500 mm | Z=1 500 mm | W=730 mm | Rotary Table
 2 000 x 2 400 mm | CTS 20 bar | ATC 60
 WFC 10 CNC | X=2 000 mm | Y=1 700 mm | Z=1 250 mm | W=730 mm | Rotary Table
 1 250 x 1 400 mm | CTS 20 bar | ATC 20



Belgium	
VANHOUTTE	
WFT 13 CNC	
X=4 000 mm	
Y=3 500 mm	
Z=2 500 mm	
W=730 mm	
Rotary Table 1 800 x 2 200 mm	
CTS 30 bar	
ATC 40	
Milling Heads OHM 20, UHAmi 30, Face plate FH 65, Robotic Tool Change, Pick up Station	

Mexico	
HYMSA HYDRAULICA Y MECANICA, S.A. de C.V.	
WFT 13 CNC (4 pcs)	
X=3 000 mm/3 500 mm	
Y=2 000 mm/2 500 mm	
Z=1 700 mm	
W=730 mm	
Rotary Table 1 800x2 200 mm	
ATC 40 (60)	





3 xFermat
Machines

USA
PRECISION BORING
COMPANY

WFT 13 CNC

X=3 500 mm

Y=2 000 mm

Z=1 700mm

W=730 mm

Rotary Table 1 800x2 200mm

CTS 20 bar

ATC 40

OTHER FERMAT MACHINES

WFT 13 L CNC HIGHSPEED | X=2 500 mm | Y=2 000 mm | Z=1 500 mm | W=730 mm
| Rotary Table 1 600x1 800 mm | CTS 20 bar | ATC 40, BUC E 85/4000 CNC



14 xFermat
Machines

Denmark
NORDMARK, MASKINFABRIK A/S

2x WRF 160 HEAVY CNC

X=17 000 mm

Y=8 000 mm

Z=1 500 mm

W=1 000 mm

Rotary Table 3 000x4 000 mm,
3 000x3 000 mm tilting

CTS 50 bar

ATC 105

Milling Head PHAmi 60, PHA 37,
Automatic pick up

OTHER FERMAT MACHINES

2x WRF 160 CNC | X=13 500 / 8 600 mm
| Y=4 100 / 5 000 mm | Z=1 100 / 1 000 mm
| W=1 000 mm | Rotary Table 2 500x3 500 mm
| CTS 30 / 50 bar | ATC 60 / ATC Robotic 105
| PHA 37, 2,5°

WRF 160 CNC HEAVY | X= 8 900 mm
| Y= 7 300 mm | Z=1 500 mm | W=1 000 mm
| Rotary Table 3 000x4 000 mm | CTS 50 bar
| ATC Robotic 90 | UHAmi 30 | PHA 37, PHAmi 60

2x WRF 150 CNC | X= 10 500 / 6 200 mm
| Y= 5 000 / 4 000 mm | Z=1 200 mm
| W=1 000 mm, Rotary Table 2 500x2 500
/ 3 000x3 000 mm | CTS 30 bar | ATC 90
| UHAmi 30, UHA 30 | 1x Tilting Headstock
| PHA 37, PHAmi 60



2 xFermat
Machines

Belorussia
BelAZ

WRF 130 DUO CNC

X=2x 10 500 mm

Y=2x 2 500 mm

Z=2x 900 mm

W=2x 730 mm

Rotary Table Ø 2 000

2x CTS 50 bar

2x ATC 40

2x UHA 30

OTHER FERMAT MACHINES

WFT 13 R CNC, APC | X=2 000 mm | Y=2 000 mm | Z=1 500 mm | W=730 mm
Rotary Table 1 600x1 800 mm | CTS 50 bar | ATC 60 | D'Andrea UT 5/5000S

Germany HYDREMA A/S
WFT 15 CNC
X=3 000 mm
Y=2 000 mm
Z=2 400 mm
W=730 mm
Rotary Table 1 800 x 2 200 mm, Speed clamp system
CTS 20 bar
ATC 60

2 xFermat
Machines



3 xFermat
Machines

Czech Republic
HOPAX s.r.o.

WRF 130 CNC
X=12 900 mm
Y=3 500 mm
Z=900 mm
W=730 mm
Turning Table Ø 2 000 mm
CTS 4 bar
UHM 30

OTHER FERMAT MACHINES

WFT 13 L CNC | X=3 000 mm | Y=2 500 mm | Z=1 200 mm | W=730 mm | Rotary Table 2 000x2 400 mm | CTS 20 bar | PHM 37
WRF 160 CNC | X=14 100mm | Y=6 000 mm | Z=1 200mm | W= 1 000mm | Floor plates | CTS 30 bar | UHM 30

Slovenia
KOLDING d.o.o.

WFC 10 CNC
X=2 000 mm
Y=1 250 mm
Z=1 250 mm
W=730 mm
Rotary Table 1 200x1 400 mm
CTS 50 bar

2xFermat
Machines



OTHER FERMAT MACHINES

WFT 13 CNC (2pcs) | X=4 000 mm | Y=2 500 mm | Z=1 700 mm | W=730 mm | Rotary Table 1 800x2 200 mm
| CTS 20 bar, ATC 32, UHM, Angular Clamping Plate 800 x 1 000 x 2 150, 2 servomotors



USA
CMI HEAVY INDUSTRIES

WFT 13 CNC
 X=4 000 mm
 Y=3 000 mm
 Z=1 500 mm
 W=730 mm
 Rotary Table 1 800 x 2 200 mm
 CTS 20 bar
 ATC 40

Brazil
FAY IND.

WRF 160 CNC
 X=8 600 mm
 Y=5 000 mm
 Z=1 200 mm
 W=1 000 mm
 Rotary Table 3 000x3 000 mm
 CTS 50 bar
 VGCI, FH 80, IFW 1B



Netherlands
DE WAAL BV

WFT 13 R CNC
 X=3 000 mm
 Y=2 000 mm
 Z=2 000 mm
 W=730 mm
 Rotary Table 1 800x2 200 mm
 CTS 20 bar
 ATC 32
 ram 600mm, UHM 30

Slovakia
STROJE A MECHANIZMY a.s.

WRF 160 CNC
X=8 000 mm
Y=5 000 mm
Z=1 200 mm
W=1 000 mm
V=2 400 mm
Rotary Table 2 500 x3 500 mm
CTS 50 bar
ATC 60
UHM 30
Floor plates 4 000x1 885x400 mm



Switzerland
BRUHIN AND DIETHELM AG

WFT 13R CNC
X=3 000 mm
Y=2 000 mm
Z=3 000 mm
W=600 mm
Rotary Table 1 600x1 800 mm
CTS 50 bar
UHA 30
Robotic Tool Changer 180

OTHER FERMAT MACHINES
WRF 130 CNC | X=4 900 mm | Y=3 000 mm | Z=900 mm | W=730 mm | Rotary Table 2 500x3 000 mm
| CTS 40 bar | ATC 90 | VGCI, Pick up, Spindle Support Sleeve 380, 550mm

India
VEEKAY ENGINEERING

WFT 13 CNC
X=4 000 mm
Y=2 500 mm
Z=1 700 mm
W=730 mm
Rotary Table 1 600x1 800 mm
ATC 32
UHM, D'Andrea UT 5-500



Morocco PROMINOX S.A
WRF 160 CNC
X=11 700 mm
Y=6 000 mm
Z=1 200 mm
W=1 000 mm
Rotary Table 2 500x3 000 mm
CTS 50 bar
ATC 60
UHM 30



China TIANJIN ZHONGZHONG SCIENCE & TECHNOLOGY CO. LTD.
WFT 13 CNC
X=3 000 mm
Y=2 000 mm
Z=1 700/1 200 mm
W=730 mm
Rotary Table 1 800x2 200 mm

France FAURE PERE ET FILS
WRF 130 CNC
X=6 200 mm
Y=3 000 mm
Z=900 mm
W=730 mm
Rotary Table 2 000x2 400 mm
CTS 20 bar
UHM 30 with automatic clamping



**2 x Fermat
Machines**

OTHER FERMAT MACHINES
WRF 160 CNC | X=12 300 mm | Y=6 000 mm
| Z=1 200 mm | W=1 000 mm | Rotary Table
2 500x3 500 mm | CTS 20 | UHM 30 with
automatic clamping



USA
D&S Machine Service Inc

- WRF 160 Heavy CNC
- X=27 000 mm
- Y=5 000 mm
- Z=1 500mm
- W=1 000 mm
- Rotary Table T 50, 3 500 x 3 500
- CTS 20 bar
- ATC 60
- UHAmi30
- PHA 37

Austria
Ressenig Fahrzeugbau GmbH

- WFT 13 CNC
- X=5 000 mm
- Y=3 000 mm
- Z=2 000 mm
- W= 730 mm
- Rotary Table 2 000 x 2 400 mm
- ATC 60
- UHM 30



Germany
BMA AG

- WFT 11 CNC
- X=2 000 mm
- Y=1 700 mm
- Z=1 250 mm
- W= 730 mm
- Rotary Table 1 400 x 1 600 mm
- CTS 20 bar
- Robotic Tool Change
- OHM 20



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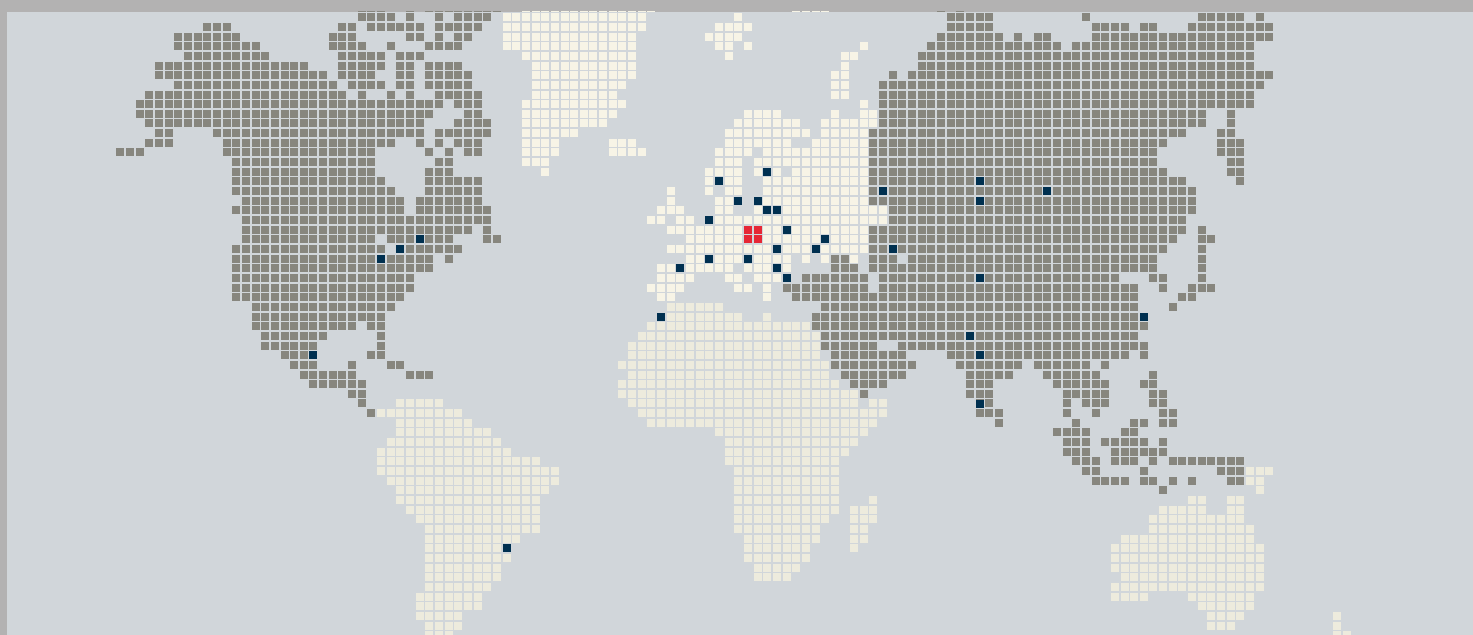
WFT 13 CNC

for RAVEN, a.s., Slovakia



Parameters: X=5 000 mm (196.85") | Y=2 500 mm (98.43") | Z=2 000 (78.74"), W=730 (28.74") | Rotary Table = 1 800 x 2 600 (70.87x102.36")
CTS 4+20 | ATC 32 | PHM 20

FERMAT



■ Production Site

■ Distributors and Service Centers

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