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PF



CMS Worldwide Leader in the Construction of Numerically Controlled Machining Centers for the Woodworking Industry

Since 1969, CMS has built special machines for the woodworking industry. CMS was one of the first companies that applied computerized numerical control systems to woodworking machinery, making greater productivity and flexibility possible.

Over the years, CMS has grown to become a large group comprised of many companies. It has gained international recognition as a leader in manufacturing CNC machining centers, having production and commercial units both in Italy and abroad.

The structural and functional characteristics of CMS machines also make them well suited for machining plastics, composites, light non-ferrous metals, aluminium, marble, and glass.

Innovation and Reliability: A Winning Manufacturing Philosophy

CMS's manufacturing philosophy is based on these simple concepts:

- **A modular designed system:** technology groups designed to be suitable for different types of machines which guarantee that even "custom-tailored" machines have the reliability of widely proven technologies
- **Attention to technological evolution:** technologically advanced and innovative choices using components corresponding to the highest market standards
- **Research to yield performance, corresponding to the client's requirements:** machines designed to provide high productivity, flexibility, and low operating costs; machines built to do complex work, but easy to use and simple to control; machines that are always reliable and safe, complying with international regulations

Over 30 Years of Experience More Than 2,500 Machining Centers Operating All Over the World

Experience and a strong presence in all the most important international markets attest to the high professional ability of CMS. CMS Group is all inclusive, incorporating design, engineering, software development and programming, installation, and full support; all of which are independent of outside companies. Therefore, CMS can quickly answer any customer's specific requirement and guarantee the quality of a total solution. This forms the foundation of CMS's success - a success confirmed by thousands of machining centers installed in many different fields as well as the most diverse applications; a success demonstrated by the complete satisfaction of many CMS customers.



Automation and Software: Integrated Systems

CMS machining centers are driven by numerical controls. These controls represent the best brands available on the market and have been specifically studied for diverse applications. A team of skilled engineers develops and installs the machine



logic (PLC) on different selected controls in cooperation with the customers' specifications. All numerical controls include the following functions:

- Graphic visualization (also available in color) and tool path process simulation
- A large user's memory
- Spiral interpolation
- A serial interface for external communication, including the software to manage it
- Parametric functions
- Guided menu selection
- Tool radius and length compensation
- Brief description of the tool path for the simple generation of part programs

Processing Software Originated at CMS

CMS has its own internal Software Division that has developed different software packages (CAD CAM), providing real support tools for the generation of CNC programs. The software, combined with coordinate measuring machines (digitizing tables, 2D, and 3D), make programming possible for even the most complex profiles. All software takes the utmost advantage of any capability of the CMS machining center by carrying out unique machining requirements and capitalizing

on the customers' technological know-how. Moreover, CMS has created software packages for specific products, such as wooden staircases, kitchen countertops, window and door frames, etc. The Software Division is even able to develop personalized software and post-processors both for CMS machining centers and machinery of other brands.



Personalized Training

CMS, thanks to its technical staff, offers the customers personalized training at any level, from the basic concepts for machine programming and functioning to advanced programming and use of the auxiliary software. Custom-tailored manuals, available to the customers at no charge, enable the user to work independently.



Skilled and Prompt Customer Service

CMS provides free telephone assistance to permit customers to locate and resolve problems immediately. The technical staff will provide prompt assistance to the customer shortly after receiving a service call. Services are also available to permit the transmission of information from any of our assistance points. The CMS warehouse provides spare parts

for all machines on a quick turn around basis. Programming service is also available to provide custom programs for extremely complex parts and to advise the most suitable use of the machines.



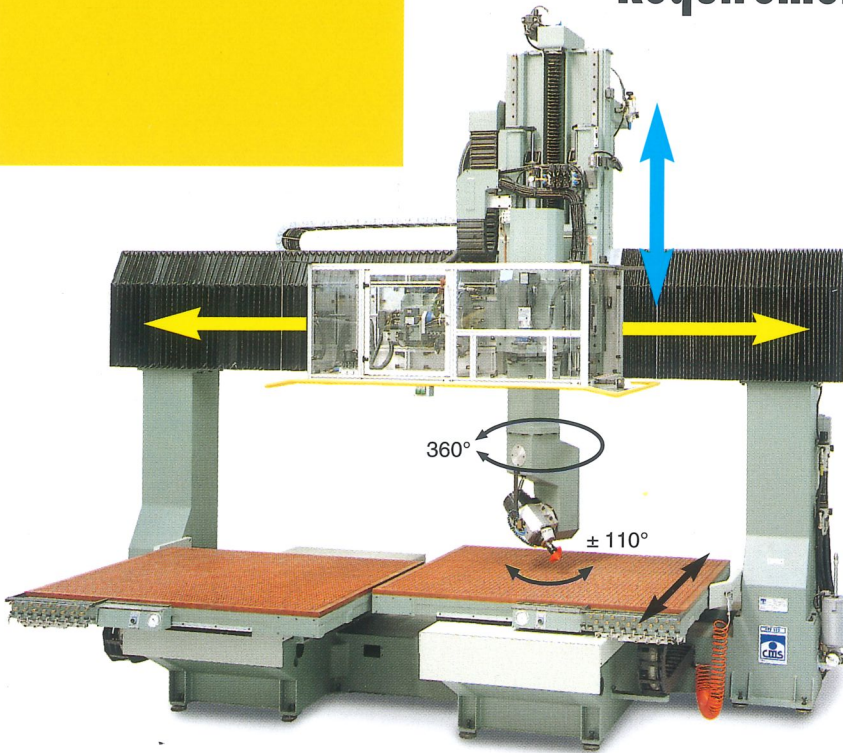
Technological Product Improvement: Quality That Lasts.

CMS's Technical and Automation Departments assist customers in the study and application of new solutions on CMS machines already installed-solutions that

permit technological improvement of a machine to meet new requirements. CMS machines never become obsolete.

PF SERIES

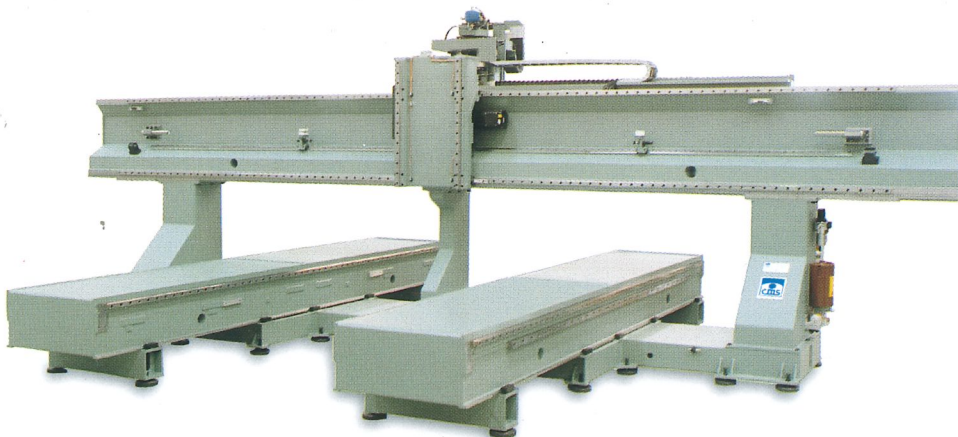
The Solution for Any Requirement



The PF Series machining centers are characterized by a fixed bridge structure. The bridge provides X (longitudinal) and Z, (vertical) axes movements. The Y (transversal) movement is carried out by the work table. All building components of CMS machining centers are designed as modular groups. For this reason, the number of configurations that can be obtained using the fundamental elements are nearly "infinite" (i.e., bases, beams, tables, and working units). All of these factors enable CMS to cover a wide range of requests for special applications. CMS can fully satisfy any customer's needs by designing a completely new machine or by simply designing new individual groups or configurations that use already existing modules. This allows CMS to offer favorable prices and short delivery times.

Steel Structure Absorbs the Highest Vibrations

The rigid and robust machine structure, made of welded and stabilized steel, is able to absorb high vibrations caused from heavy and rapid machining. The single piece axis slideways are hardened, ground, and mounted on recirculating ball bearing blocks, which guarantee optimum movement and precision.



The movement is controlled by AC brushless type servomotors, driving pre-loaded precision recirculating ball screws. The Z axis movement is supported by pneumatic cylinders and has an automatic braking system.

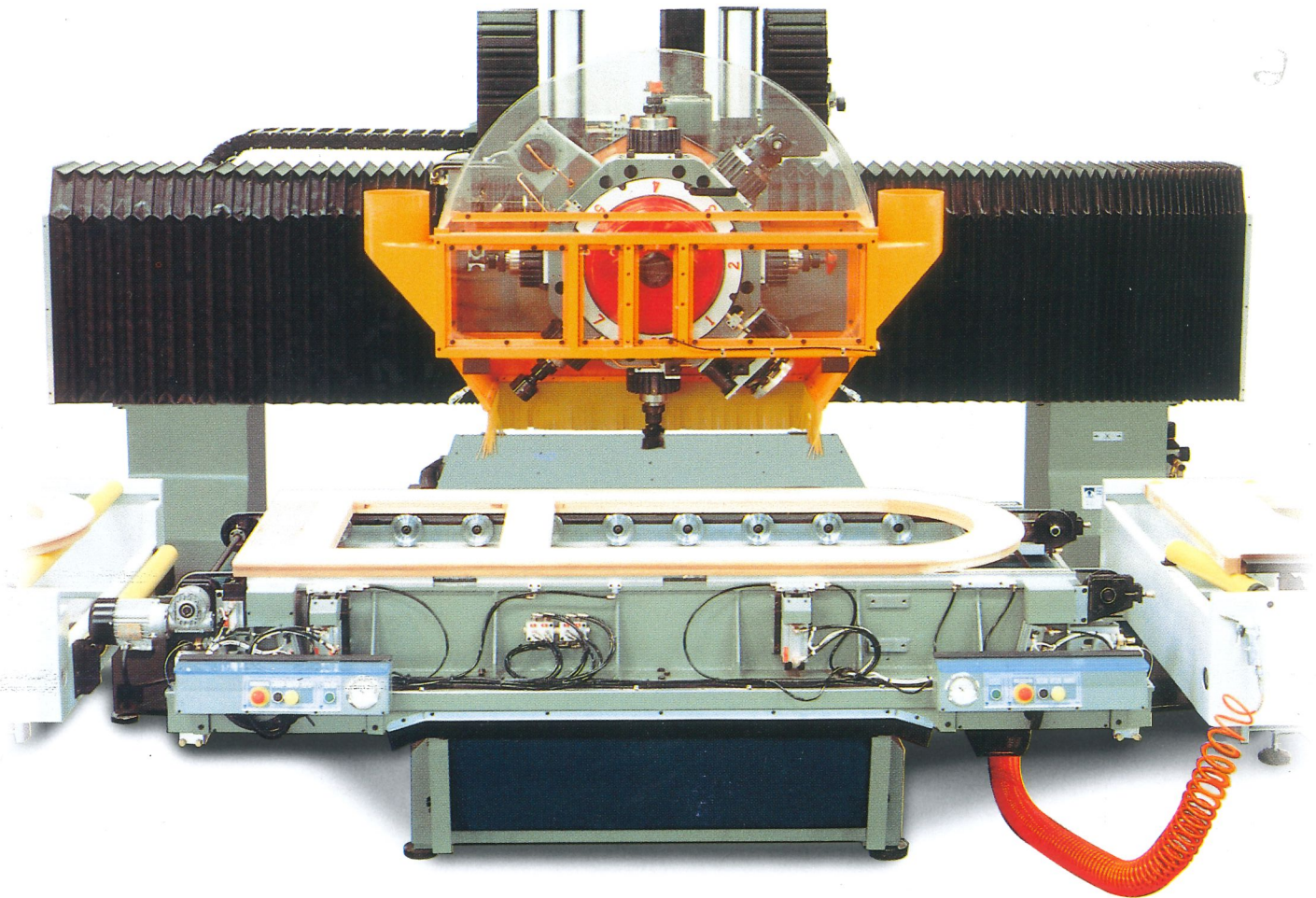
All machines are equipped with:

- A digital static frequency converter which allows for continuous adjustment of the machining spindle rpm; complete with a programming system, which has an incorporated keyboard for the best use of the spindle power.
- An electronic tool control device that can be programmed for the maximum revolution speed of each tool.
- A centralized lubricating system that automatically greases the sliding and ball screw components.
- Vacuum pumps of high capacity and high depression.
- A dust extraction system, tailored to deliver the best extraction of chips.
- A connection for the compressed air, controllable via CNC, for clamping and other functions.

"SPECIAL" IS STANDARD

The "PF" Series is the starting point for the development of personalized solutions that are able to meet all the objectives requested by the customers. Over the years, many machine configurations, born as "special

machining centers", have become "standard" machines due to their ability to fulfill the users' most common requirements.



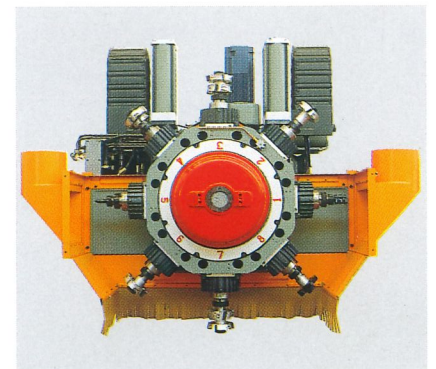
PF R8-DOORS

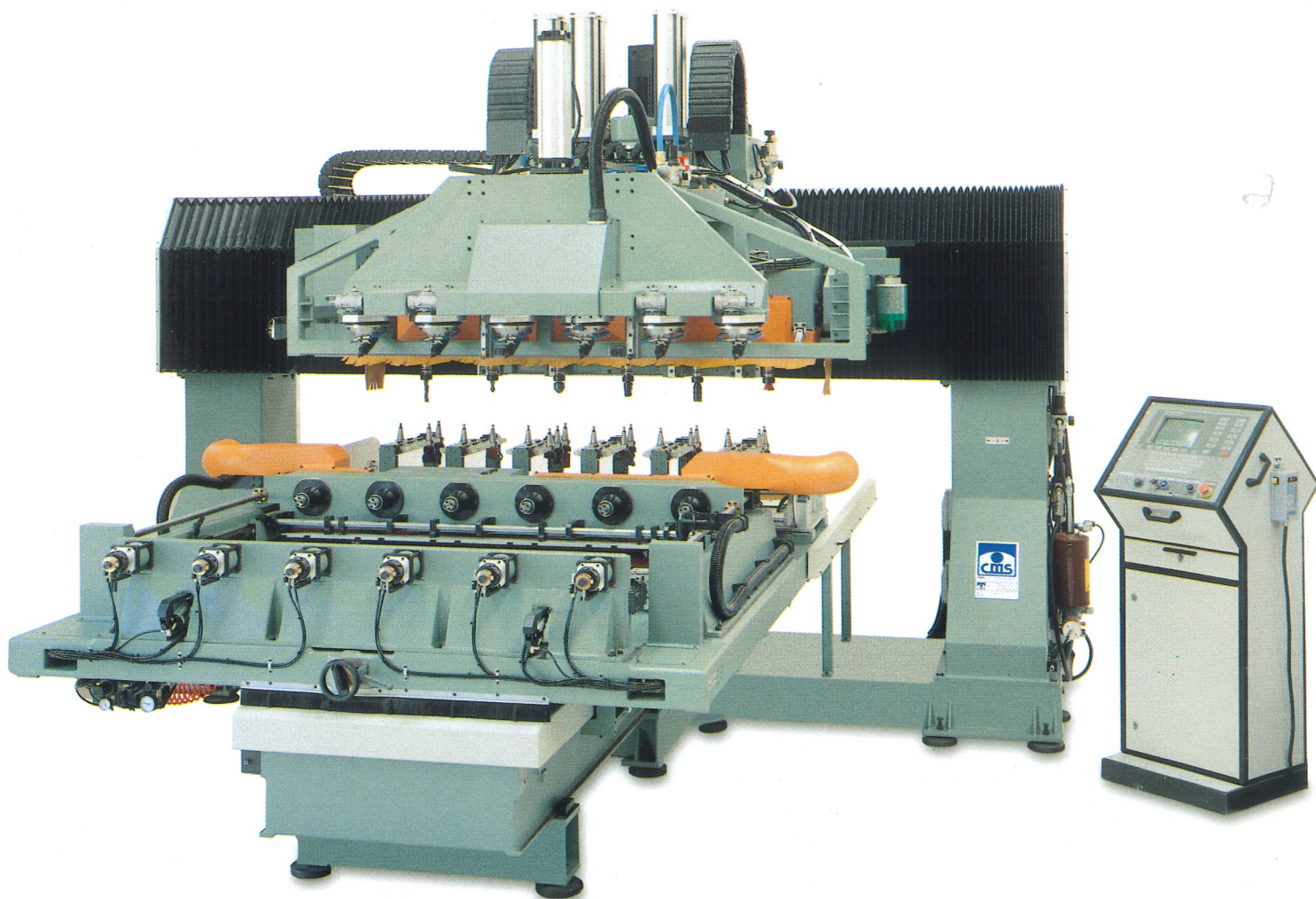
Axes Strokes: x = 2600 mm (102.36 in); y = 1300 mm (51.18 in) ; z = 250 mm (9.84 in)
Useful for Working Pieces: 2500 mm (98.43 in) x 1100 mm (43.31 in)

Revolver: The Fastest Tool Changer

The revolver is a rotating turret with each position equipped with an electrospindle. A revolver is the most rapid, secure, and reliable tool changer available

due to the fact that every tool or aggregate has its own motor with the most suitable power characteristic, torque, and rpm. Moreover, the revolver can have one or more stations with a numerically controlled 4th axis for operating a horizontal unit or vertical copying device.





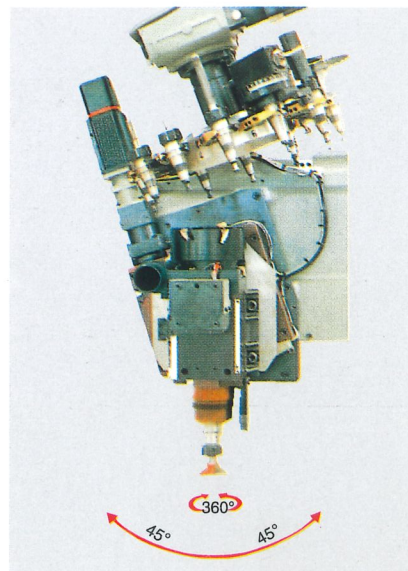
PF3-A4-6MCU

Axes Strokes: x = 2000 mm (78.74 in); y = 2800 mm (110.24 in); z = 400 mm (15.75 in)
 Useful for Working Pieces: six places for parts; max. diam.: 300 mm (11.81 in); max. length: 1200 mm (47.24 in)

Working Units "TRORCU"

An axis controlled by the CNC permits the processing of parts that require an inclination of the tools, (± 45 degrees in the vertical axis). Angular transmissions and aggregates that are fixed or controlled by an additional axis

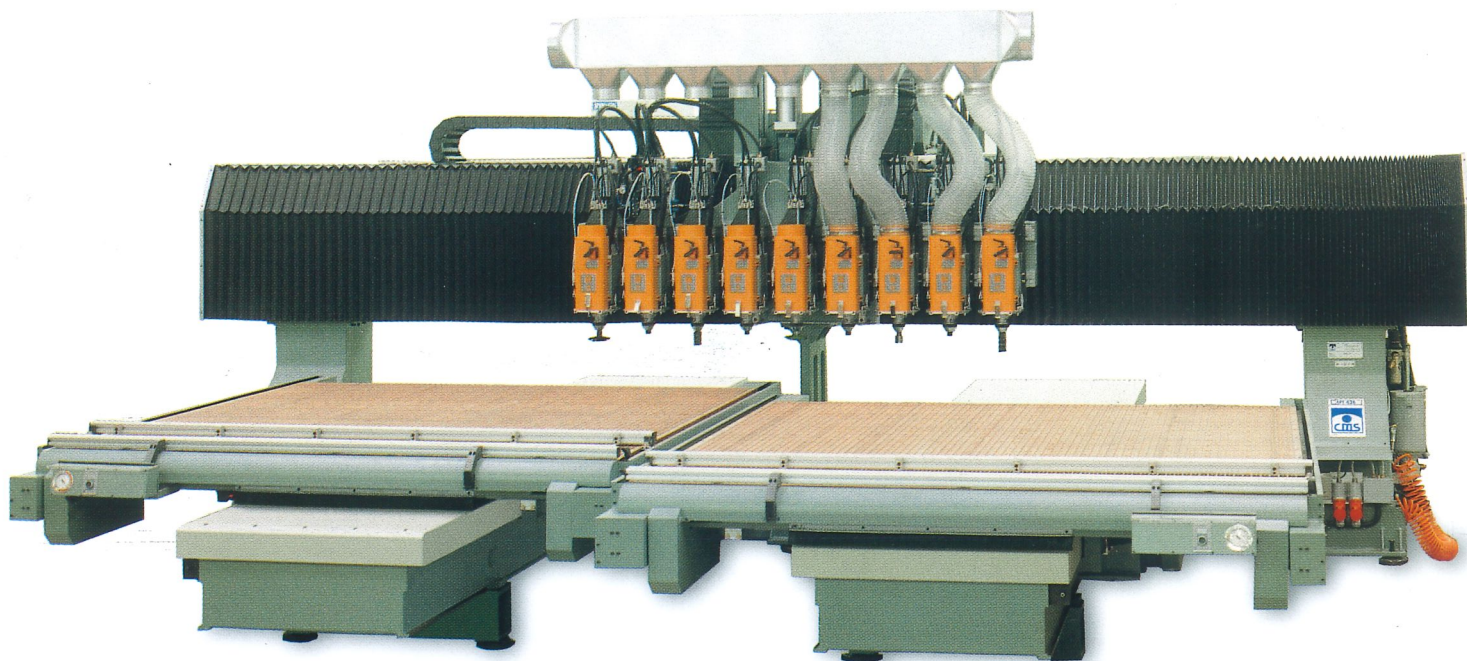
may be mounted to the unit. The combination of these two movements allows 5-axis processing of curved and pre-formed parts. The axis that controls the inclination of the head is also utilized for the tool changing operation. The 12-position, portable tool holder magazine is positioned above the work group.



QUALITY WITHOUT COMPROMISE

All "PF" machines have a rigid and sturdy structure as well as high quality electrical and mechanical components. The quality and precision of processing operations, just like the reliability and dependability of CMS machines, are achieved

through widely proven solutions that address the essential concepts of functionality and solutions where quality comes before economy. The maximum guaranteed performance is achieved well below the working limit conditions.



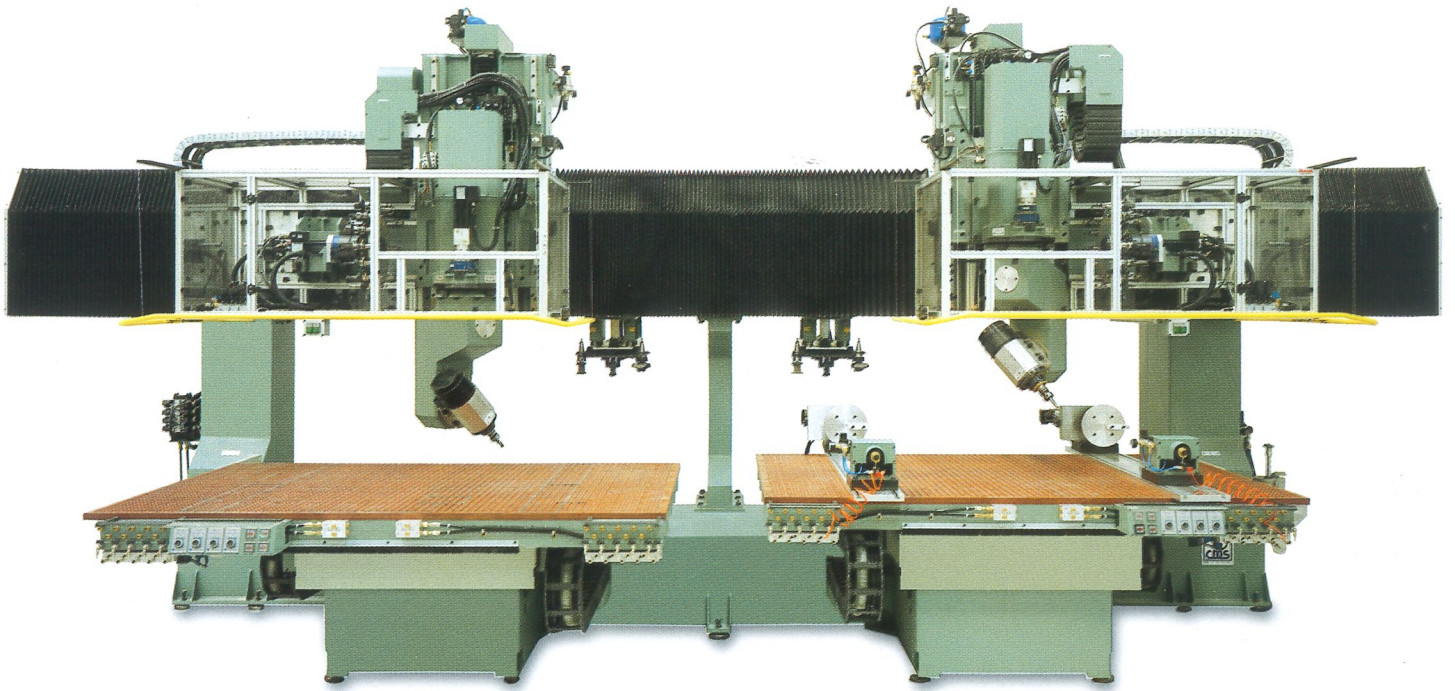
PF5-B2-9T

Axes Strokes: x = 4800 mm (188.98 in) ; y = 3750 mm (147.64 in); z = 250 mm (9.84 in)
Table Sizes: two at 2370 mm (93.31 in) x 2520 mm (99.21 in) each

T 12/18= Productivity

A series of working heads (up to 9) is available to allow the machining of a number of parts at the same time and/or one after the other in combined cycles. Each head has an individual, pneumatically-controlled, insertion movement, micrometric adjustment of the working position, manually-adjustable center distance, and the ability to float.





PF 132-2TUCU

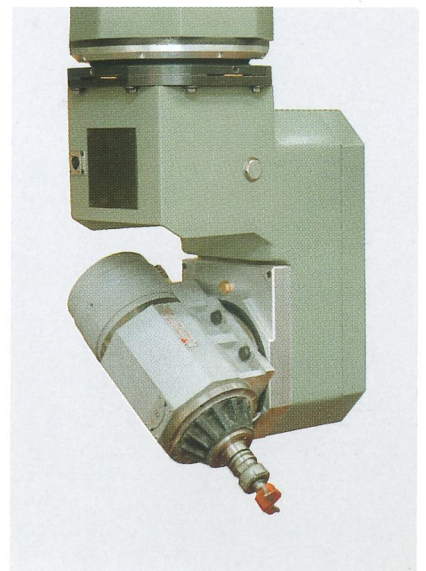
Axes Strokes: x = 4460 mm (175.59 in); y = 1600 mm (62.99 in) ; z = 770 mm (30.31 in)
 Table Sizes: Two at 2160 mm (85.04 in) x 1560 mm (61.42 in) each

Universal Head: Machining Not Limited by Form

The universal head is a working unit having five axes, all simultaneously controlled via CNC, which provides the inclination and orientation of the cutter throughout any direction.

The spindle may come with a double exit or automatic tool changer, complete with a tool holder magazine having

up to 16 positions. This unit is necessary for machining molds, complex shapes, artistic sculptures, etc., when the spindle must provide specific inclinations and be manageable at the extremes.



INTEGRATED SAFETY SYSTEMS

Every machining center is
designed to be safe.
Safety, therefore, becomes
part of the product.
The presence of guards,

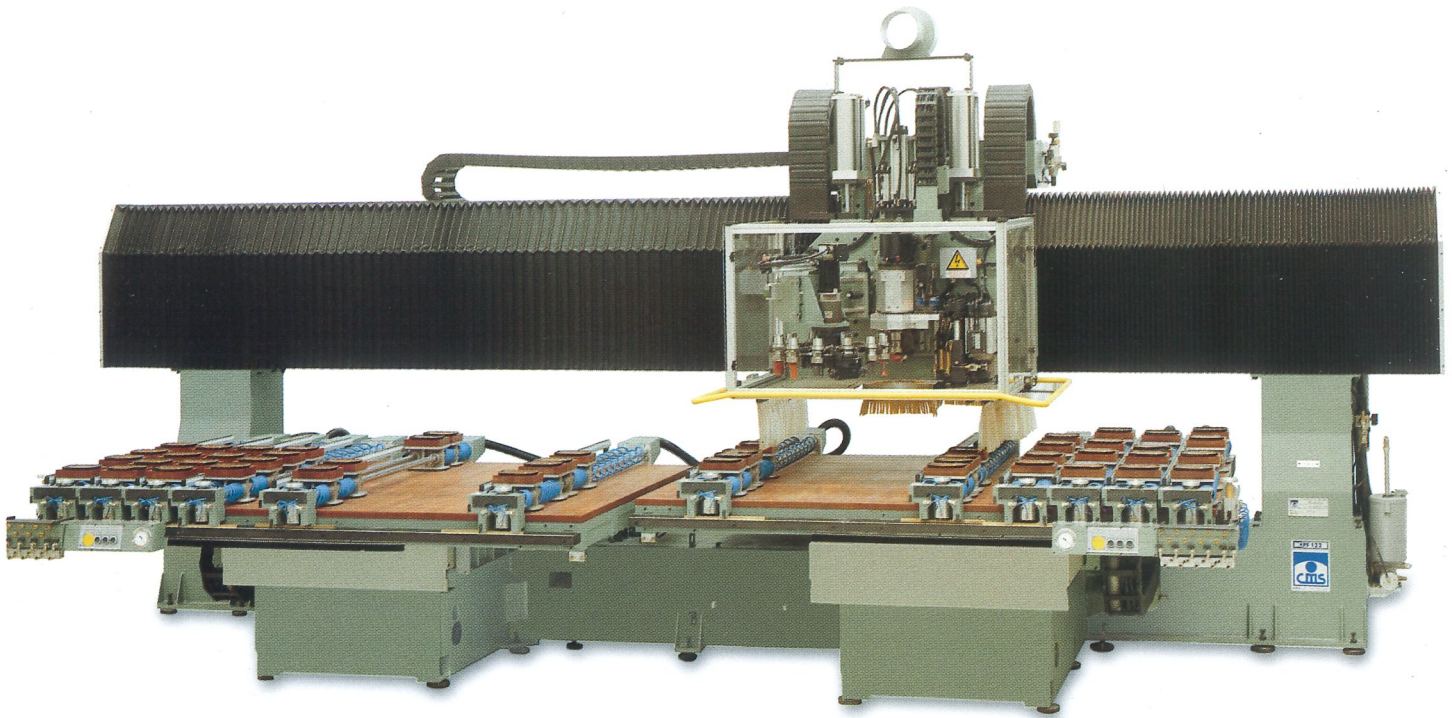
fences, and photocells
complete the equipment,
guaranteeing safe working
conditions for the operator.



PF 122-2R8

Axes Strokes: x = 4800 mm (188.98 in); y = 1600 mm (62.99 in); z = 250 mm (9.84 in)
Table Sizes: Two at 2340 mm (92.13 in) x 1560 mm (61.42 in) each

CONTINUOUS MACHINING AND FLEXIBILITY



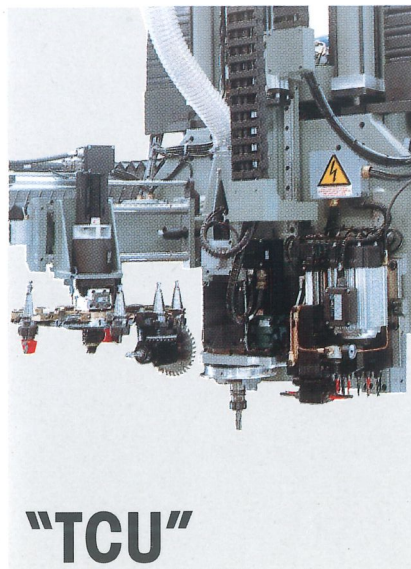
PF 122-TCU

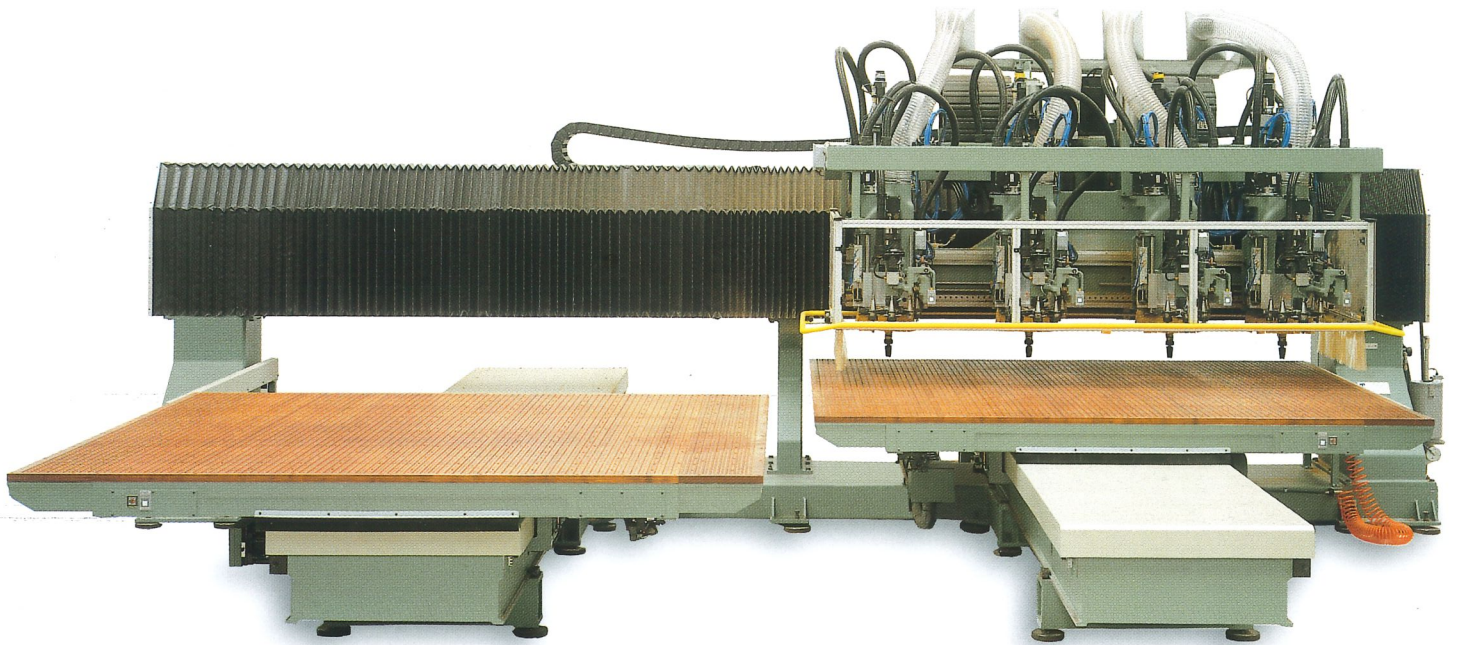
Axes Strokes: x = 4800 mm; y (188.98 in) = 1600 mm (62.99 in); z = 250 mm (9.84 in)
Table Sizes: Two at 2340 mm (92.13 in) x 1560 mm (61.42 in) each

Automatic Tool Changing Heads

A working unit supplied with an electrospindle and an automatic tool changer, complete with a portable tool holder magazine.

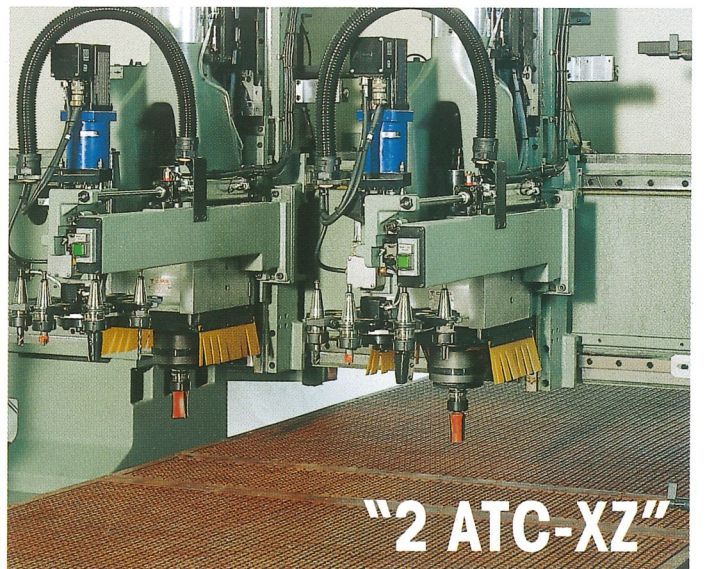
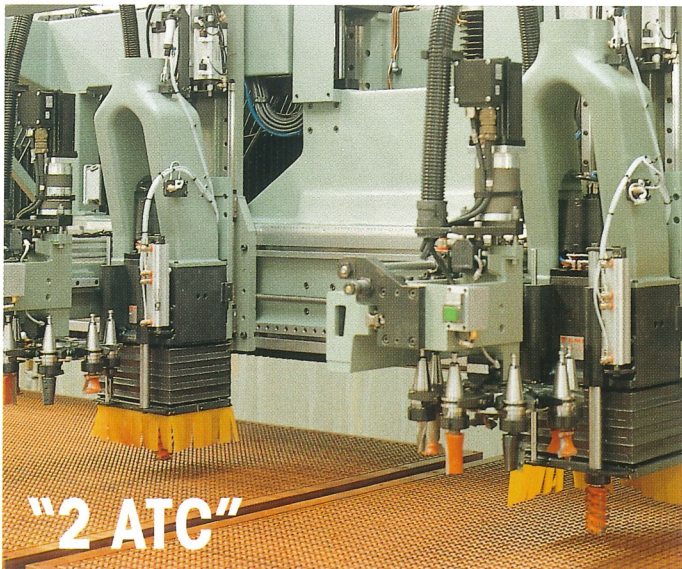
Horizontal transmissions and aggregates may be mounted on the magazine, whether they are fixed or controlled by a supplemental axis, for continuous rotation throughout 360 degrees in the X Y plane.



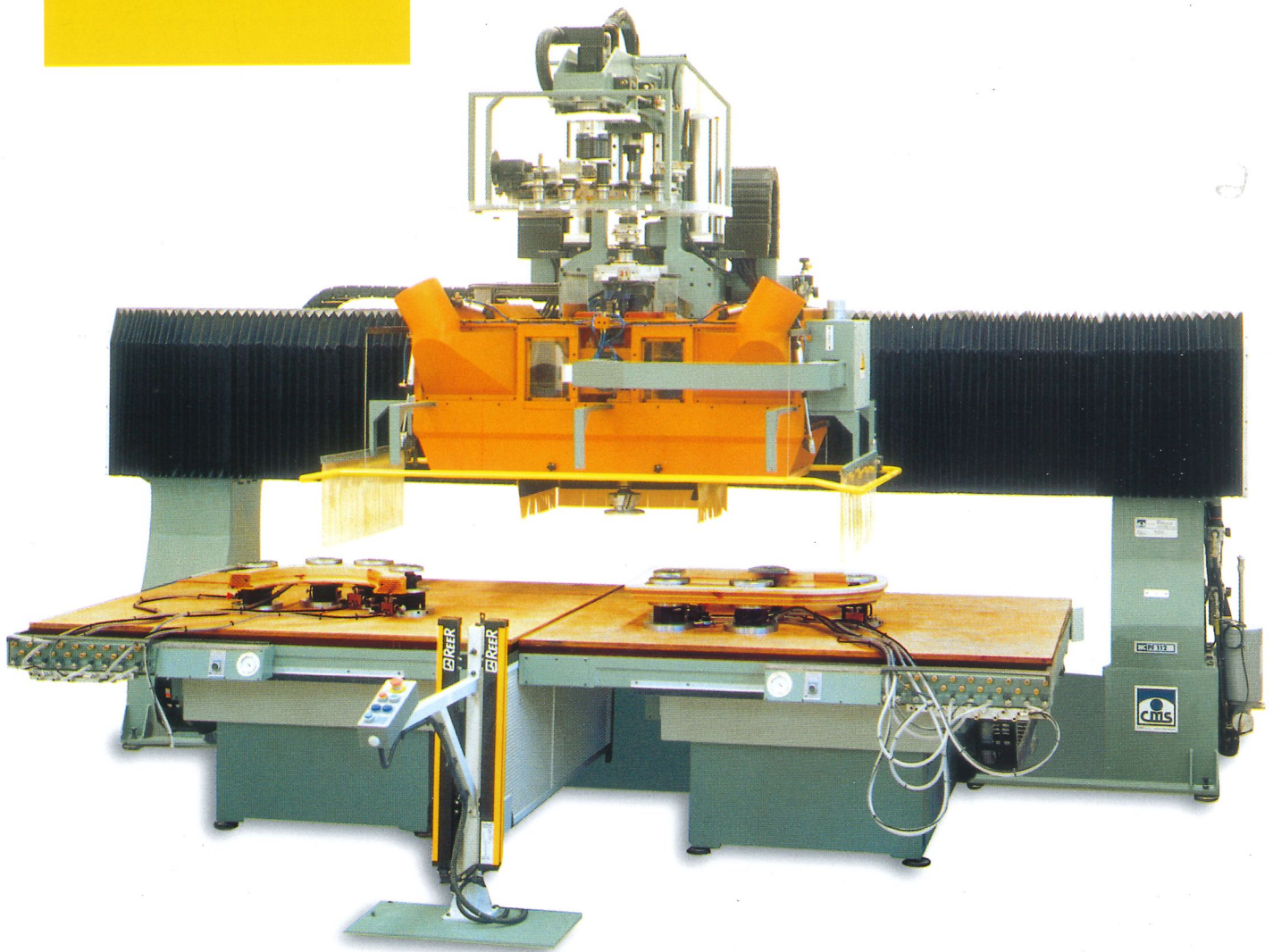


PF6-B2-4ATC

Axes Strokes: x = 4800 mm (188.98 in); y = 3750 mm (147.63 in); z = 250 mm (9.84 in)
Table Sizes: Two at 2670 mm (105.12 in) x 1830 mm (72.05 in) each



A TECHNOLOGICAL TOOL



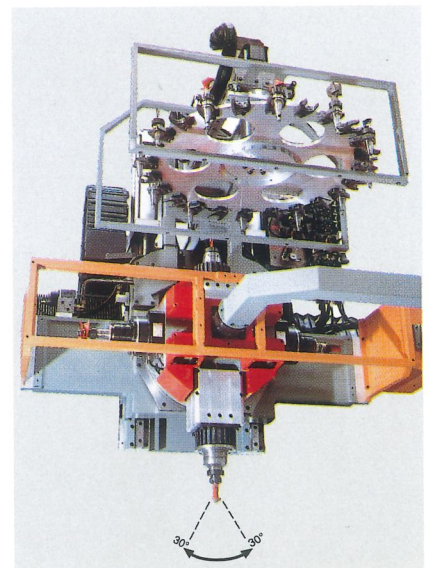
PF 112-R4CU

Axes Strokes: x = 3600 mm (141.73 in) ; y = 1600 mm (62.99 in) ; z = 400 mm (15.75 in)
Table Sizes: Two at 1830 mm (73.23 in) x 1560 mm (61.42 in) each

Revolver "CU": Even More Possibilities

To increase machining capabilities, the revolver group can be equipped with a tool holder magazine having up to 24 places, positioned above the revolver itself. In this case, two electrospindles with the automatic tool changing function are mounted in opposing revolver positions. This permits changing the tool on the top spindle at the same time a part is being machined with the

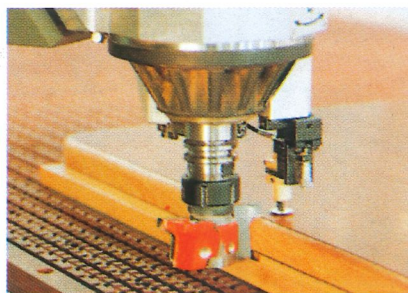
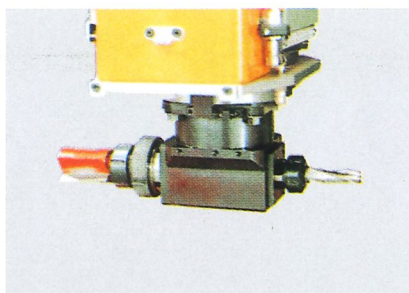
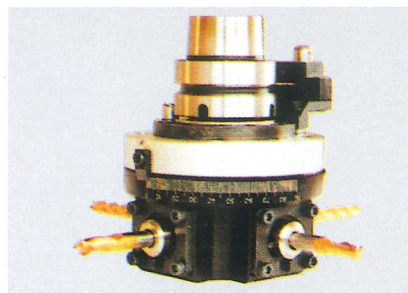
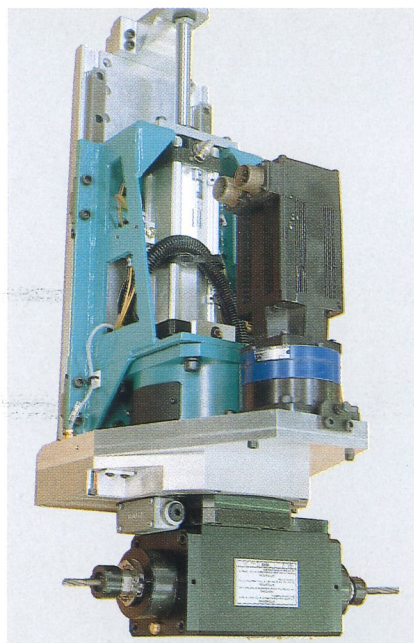
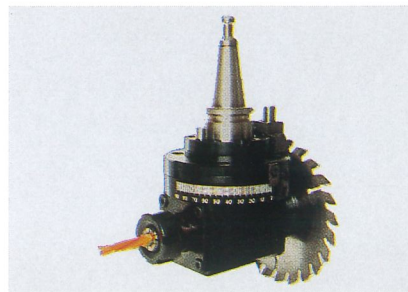
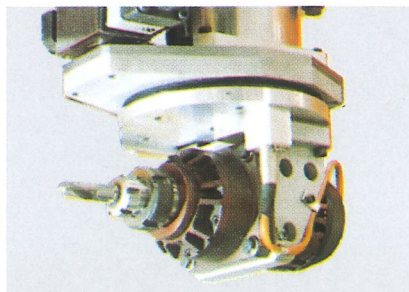
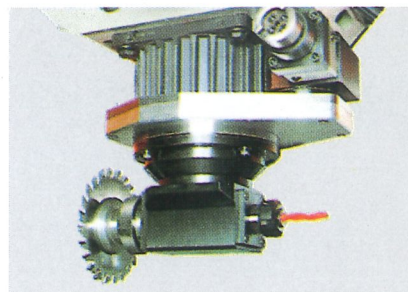
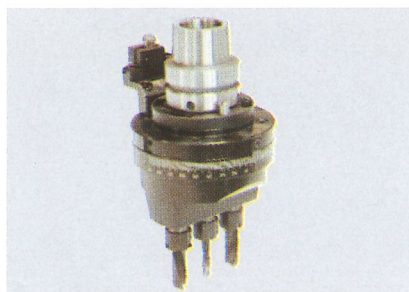
spindle on the bottom. The result is a working unit with an increased number of tools available, reduced unproductive time for tool changing, and the ability to machine with a NC controlled, horizontal, rotating axis. Moreover, all units (including the tool changing units) can be equipped with a 4th axis for running special aggregates by NC. The revolver's rotation can also be controlled by an axis for machining at tool angles of $\pm 30^\circ$.



TOOLING: ENDLESS POSSIBILITIES

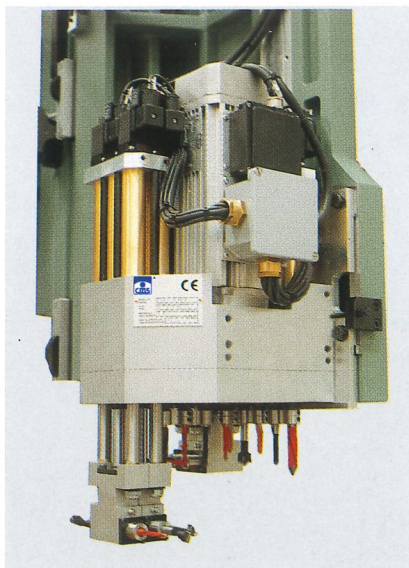
Aggregates

A number of different aggregates are available that broaden the work capabilities of CMS machining centers. The characteristics and number of these aggregates are continually expanding: all new developments are passed on to our customers.



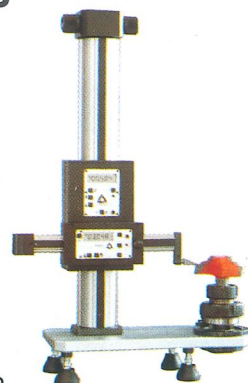
Drilling Group

Various types of drilling groups are available, arranged in line, in "T" form or "L" shape. The individual machining movement of each drill means that vertical and horizontal drilling can be carried out either in multiples or one drill at a time.



Presetting

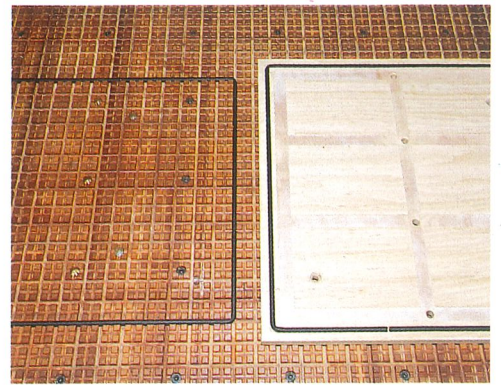
With a digital electronic "presetting" device, it is possible to measure the tool radius and length to a precision of one hundredth of a mm (or one thousandth of an inch).



CAPABLE OF MEETING EVERY CLAMPING REQUIREMENT

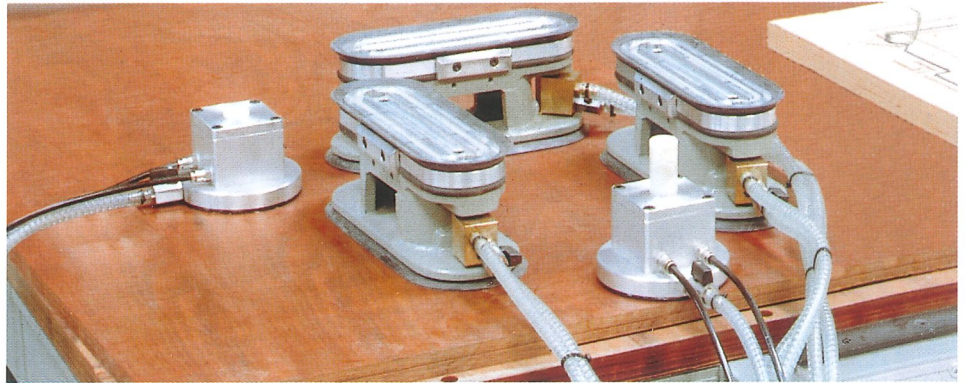
LIGNOSTONE VACUUM TABLE

Lignostone tables can easily and quickly create vacuum zones for clamping work pieces via subpieces.



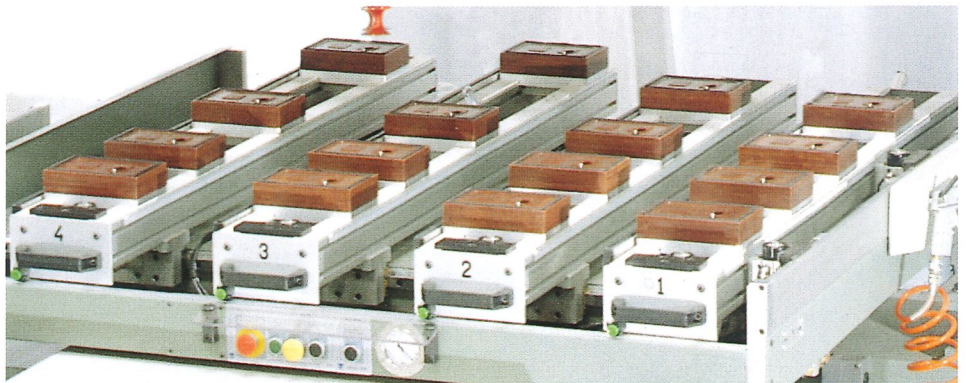
SMOOTH TABLE

The smooth table uses the standard subpiece and locator system, thus doing away with specific fixtures.



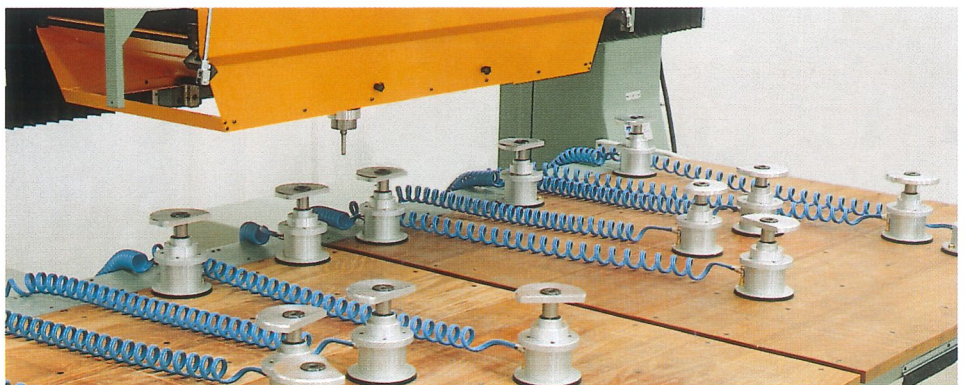
MODULAR TABLE

This work table is made up of mobile modules mounted on prismatic guides with pneumatically controlled clamps. Work pieces are clamped by means of vacuum cups, which can be positioned throughout the entire work area.



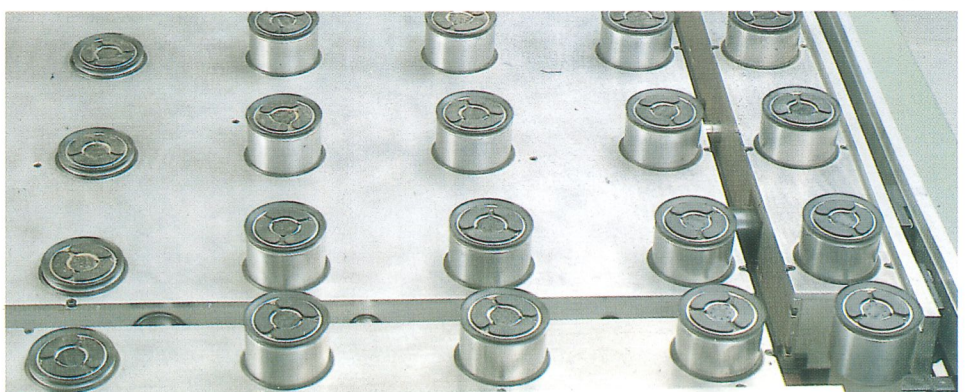
CLAMPING TABLE

This solution was designed for the production of arch window and door frames. Clamps and reference stops are automatically positioned by the machine itself by means of a dedicated software for window and door frames.



VACUUM CUP TABLE

This work table is made up of mobile elements with vacuum cups. The movement of these elements is controlled by NC axes, so that the vacuum cups will be in the best position for clamping the work piece. This system allows the work pieces to be loaded using automatic devices for J.I.T. manufacturing.



**ACCURACY
AND
FLEXIBILITY**





CNC Machining Centres

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