



# ROUTRONIC

**Numerical control**

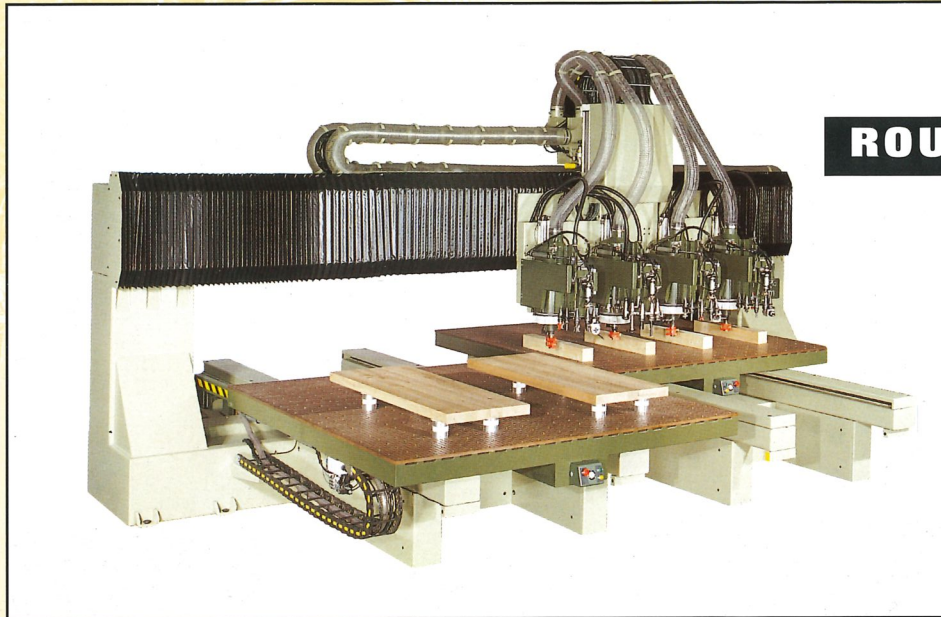
**Machining Centres**

 **scm**

# ROUTRONIC



**A complete range for  
all your woodworking needs**

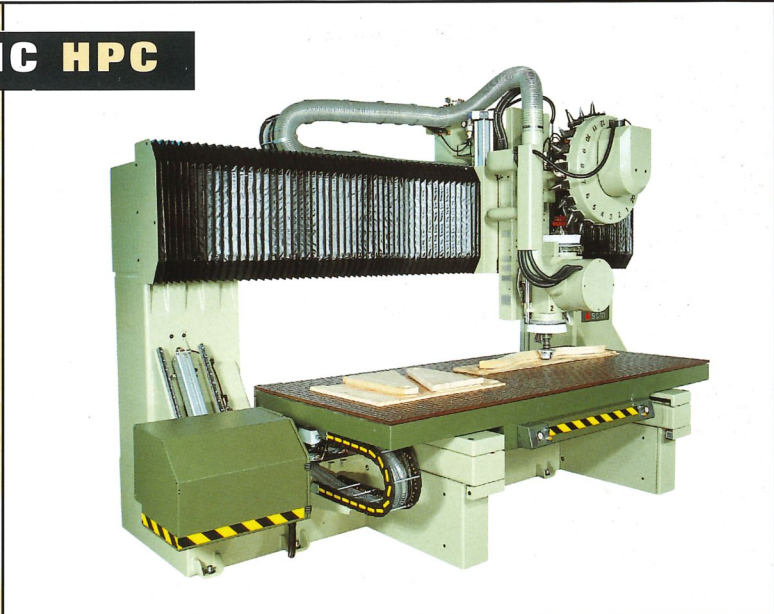


**ROUTRONIC P-CU**

The maximum  
productivity and  
flexibility.

**ROUTRONIC HPC**

The maximum  
power and  
versatility.



**ROUTRONIC TWIN**

The maximum  
productivity,  
flexibility  
and safety.

ROUTRONIC  
scm

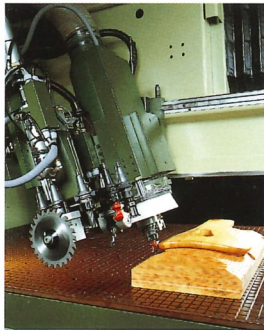


Spindles up to 15 HP.

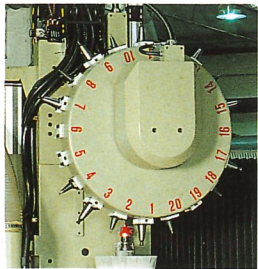
# ROUTRONIC



Parallel heads with or without tool changers

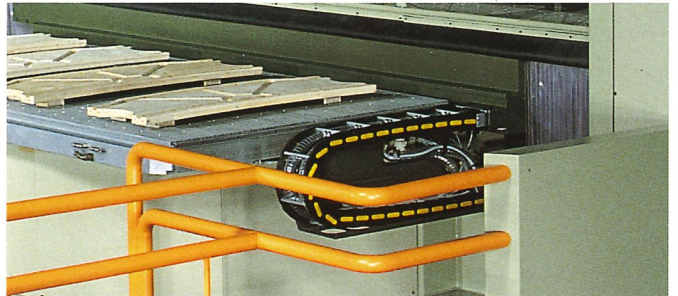


TILTING  
Rotary axis



20-position  
tool magazine

ROUTRONIC is a complete range of gantry machining centres with mobile work tables. Machines able to satisfy a broad range of production requirements - for the company working small, highly varied series to the large series producer who wants high productivity. Each model offers a different technical approach; fitting optional units makes it possible to create an almost infinite number of machine configurations.



Rotary work table (Twin system)



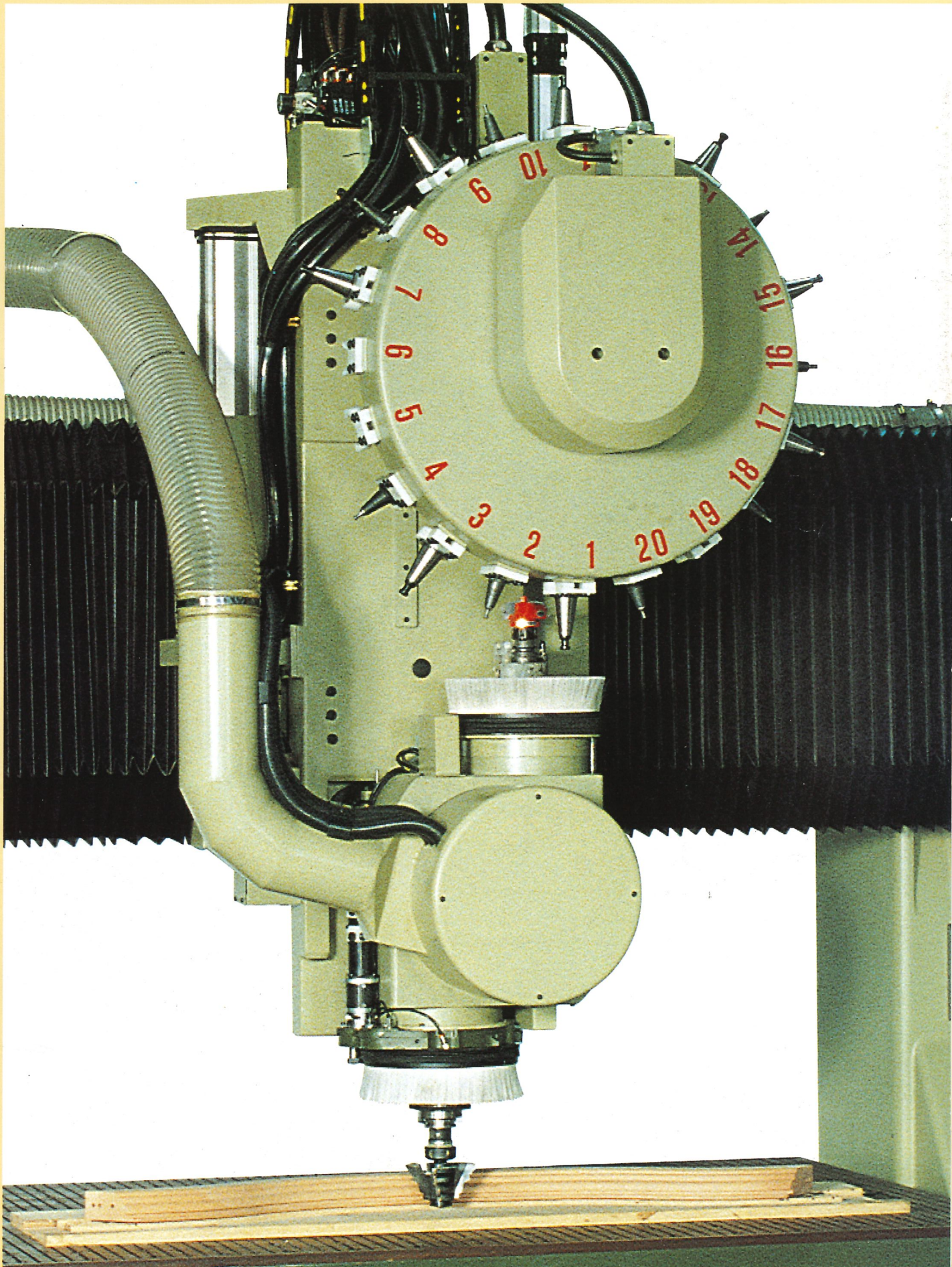
Single or double work table



VECTOR rotary axis



**Numerical control  
machining centres**

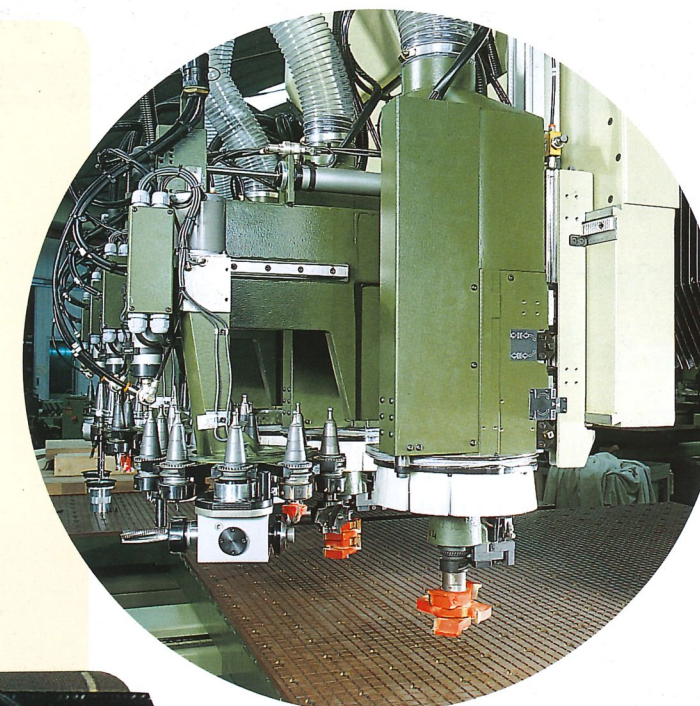


# ROUTRONIC P-CU

## The maximum productivity and flexibility

Only the experience and innovative skills of a great company like SCM could have changed the generally accepted rule that says productivity and flexibility are not compatible in production systems. Productivity and flexibility have been optimized by combining

advanced technological developments such as the automatic tool changer with the parallel head system. ROUTRONIC P-CU combines the ability to machine small batches of high variety of components with the high production rates typical of parallel head systems.

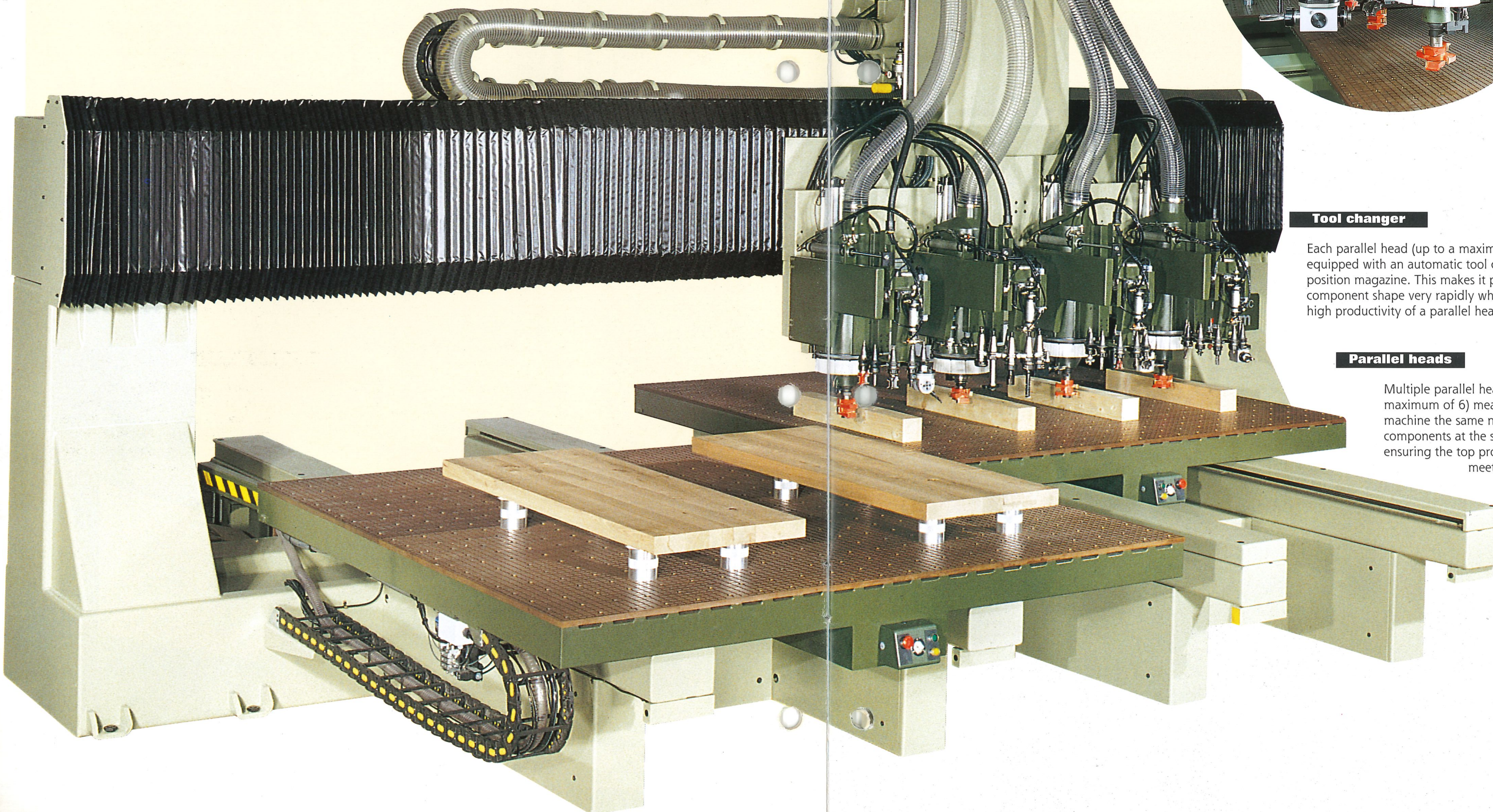


### Tool changer

Each parallel head (up to a maximum of 4) can be equipped with an automatic tool changer with a 10-position magazine. This makes it possible to change component shape very rapidly while maintaining the high productivity of a parallel head machine.

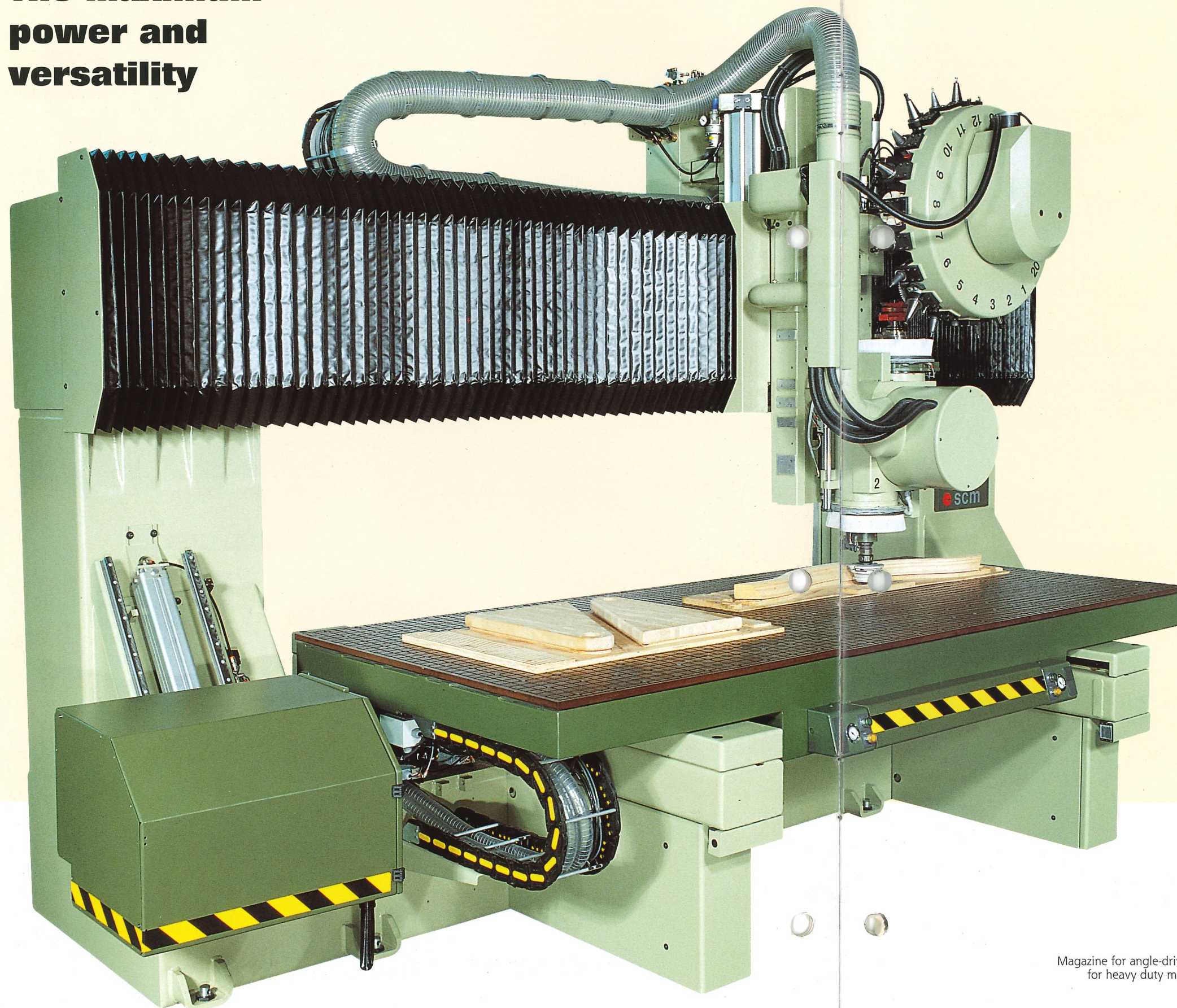
### Parallel heads

Multiple parallel heads (up to a maximum of 6) means that you can machine the same number of identical components at the same time thus ensuring the top productivity needed to meet production deadlines.



# ROUTRONIC HPC

**The maximum  
power and  
versatility**



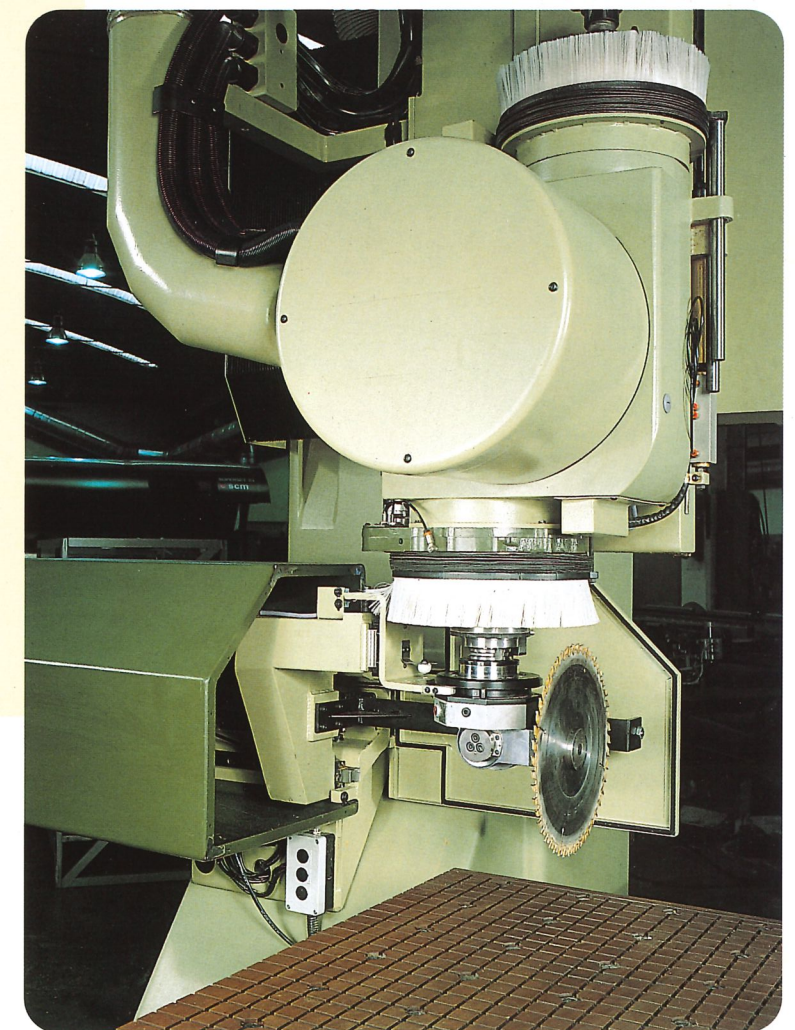
Magazine for angle-drive heads  
for heavy duty machining

ROUTRONIC HPC overcomes the limitations of the current generation of routers. Very thick components, heavy stock removal, deep moulding, none of these present a problem thanks to the high rigidity of the machining heads and the high power electro-spindles. Spindles can be fitted with 15 HP drive and have strong, quick-release tool tapers (up to ISO 40) which will take large tools.

Tools are ready for use at all times in the high-capacity 20-position magazine, a feature which guarantees the maximum versatility while reducing set-up times to the minimum.

The HPC is available with a wide range of angle-drive heads. These can be fitted with large tools and will perform any operation on the horizontal axis. The angle-drives will take router cutters up to 150 mm in diameter, 250 mm blades and drill bits up to 180 mm long.

Thanks to the exclusive HPC head system, with side-by-side and opposing spindles, tools can be changed during machining thus eliminating down-time. There is also no risk of any machining interference between two successive tools, a problem common on other systems.



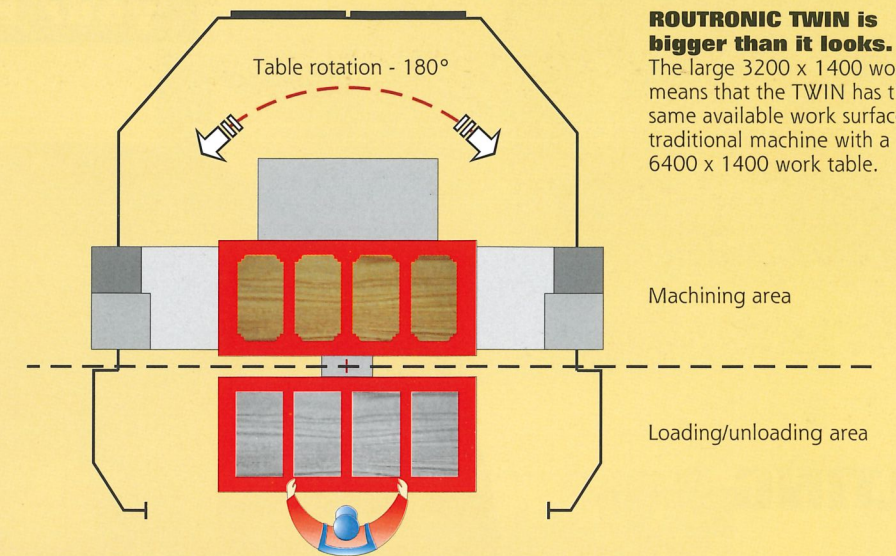
# ROUTRONIC TWIN

## The maximum productivity, flexibility and safety

ROUTRONIC TWIN has the definitive answer to productivity and safety problems. The exclusive Twin system has automatic, rotary work table changeover. This

eliminates, at source, all the ergonomic and safety problems which arise during component loading and unloading in masked time. While one table is totally enclosed in the safety cabin for machining, the other table is outside in a perfectly safe and accessible position ready for loading

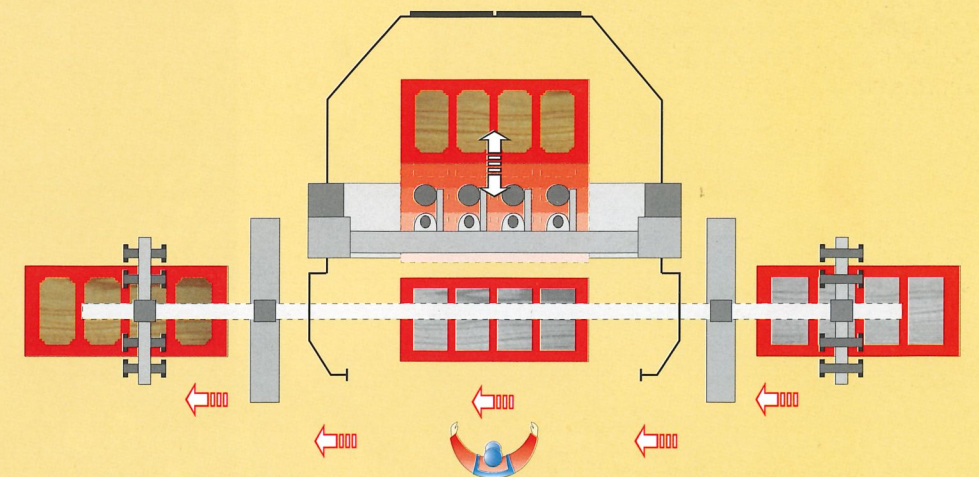
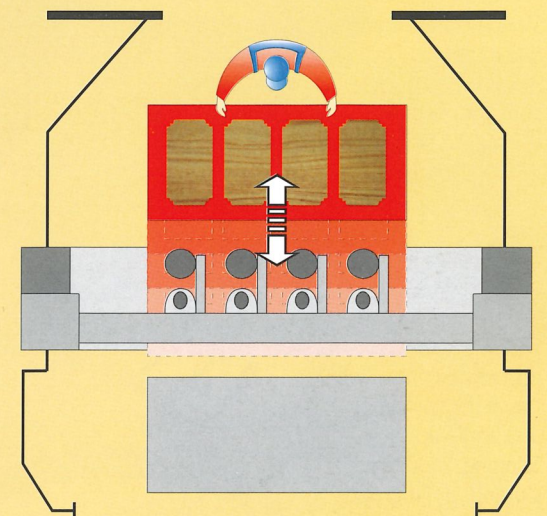
and unloading. With the Twin system there is only one loading/unloading position (conventional systems require two, one for each table) making this system truly ergonomic. The table changeover cycle is extremely rapid and takes place during tool changeover time - another productivity boosting feature on the ROUTRONIC TWIN.



**ROUTRONIC TWIN is bigger than it looks.** The large 3200 x 1400 worktable means that the TWIN has the same available work surface as a traditional machine with a 6400 x 1400 work table.

### ROUTRONIC TWIN is easy to retool and can be used like a traditional machine

All tooling, set-up and machining of test pieces, prototypes and samples can be easily carried out by the operator in complete safety. The operator simply moves into the area opposite the working area and proceeds with these operations as if the machine were a standard machining centre with a single table.



### ROUTRONIC TWIN.

Fitting a standard automatic loader above the worktable turns the ROUTRONIC TWIN into an automatic machining cell. Where required the machine can still be loaded manually. The front of the machine remains free and accessible so that the operator can perform all operations with ease and in complete safety.





**A solution to all  
your requirements**

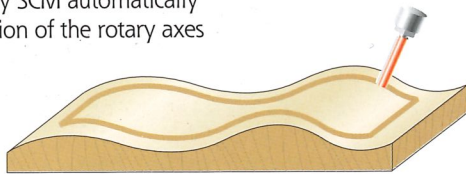
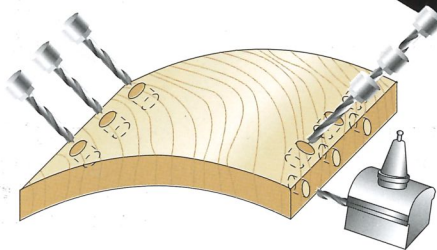


## TILTING

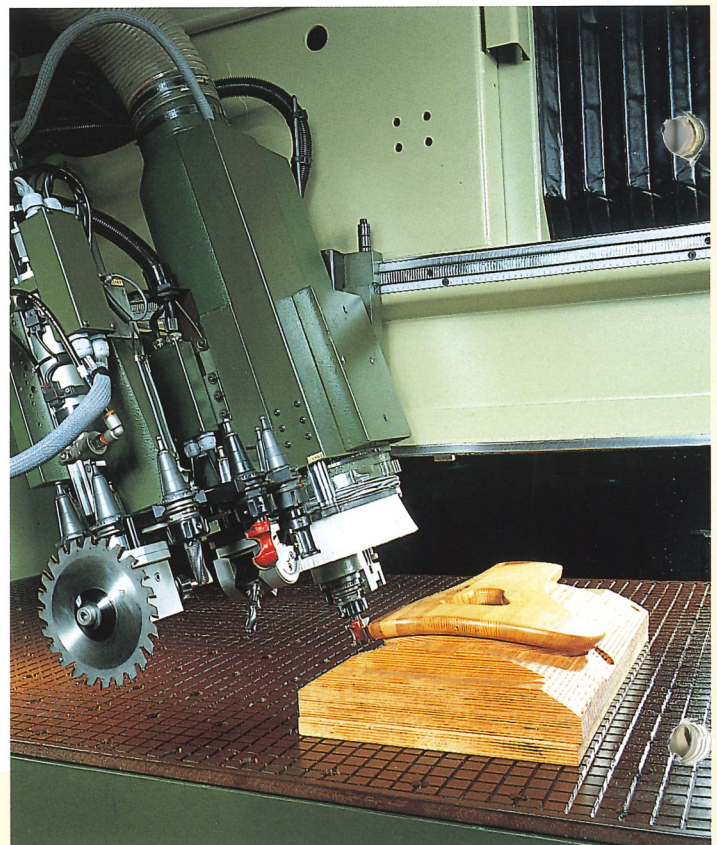
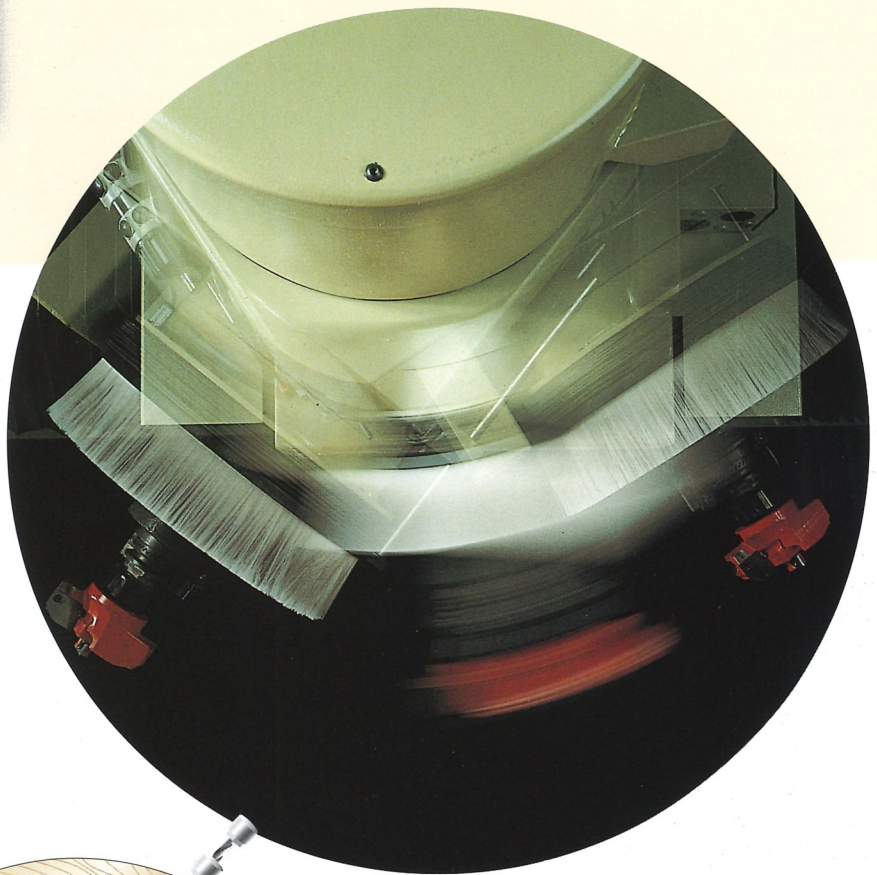
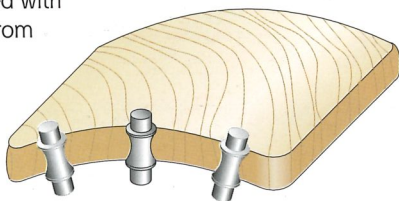
### A modern solution for producing curved components

Standard machining centres have one big disadvantage: complex curved pieces (i.e. chair components) or items with concave or convex surfaces require the tool to tilt to follow the required profile.

With the optional SCM TILTING unit the numerical control will move the spindle to any angle up to  $\pm 45^\circ$ . Shaping, moulding, slotting, drilling and sanding of any curved component can be programmed and executed with the same ease as straight work. A dedicated software program developed by SCM automatically handles the interpolation of the rotary axes with the straight axes.



The TILTING unit can be mounted on the HPC and on all the ROUNTRONIC versions with parallel heads. The unit can be used with all the angle-drive heads from SCM's vast range.

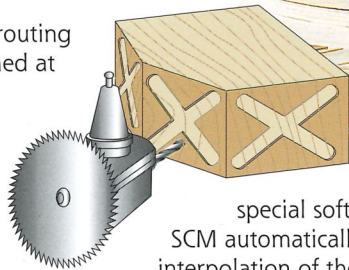


# VECTOR

**For any machining operation  
on a surface at 360°**

SCM developed the VECTOR unit for all those machining cycles where the angle-drive head has to operate at a variety of angles on the same component.

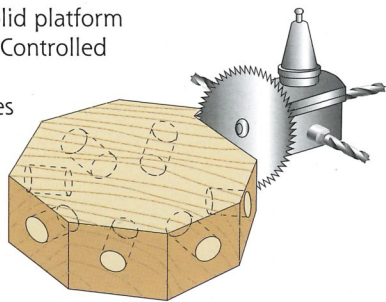
With Vector drilling, cutting, routing and mortising can be performed at any angle on any component without having to interrupt work or change head. Before Vector this would have required as many tool heads as there were machining angles.



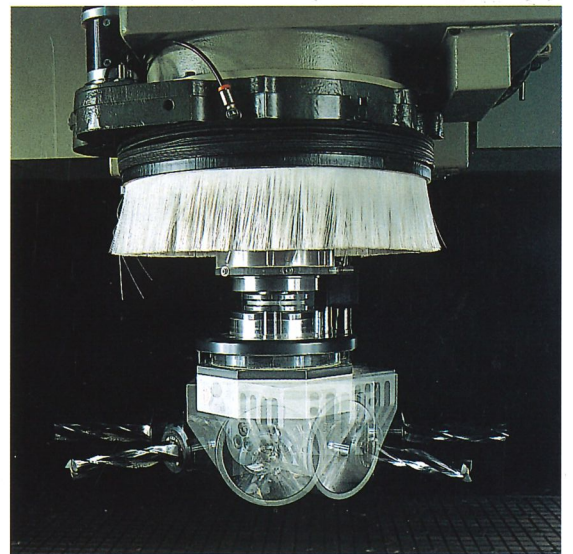
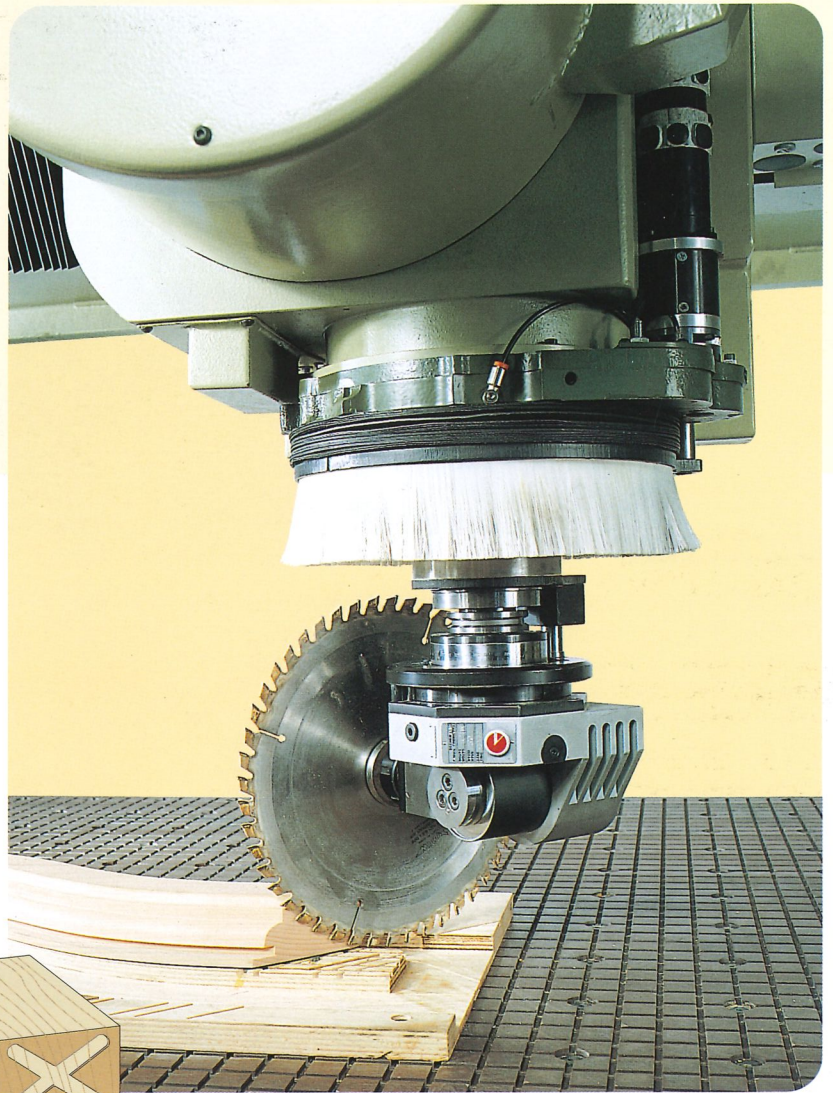
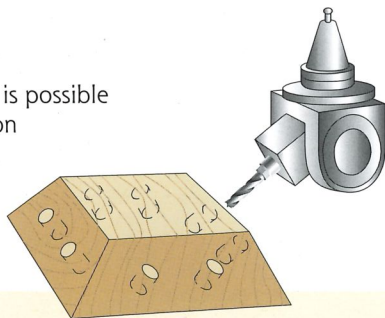
special software developed by SCM automatically handles the interpolation of the axes.

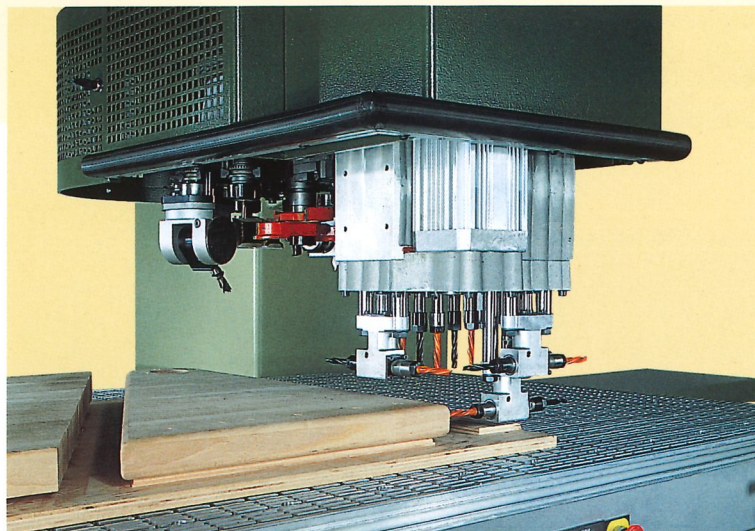
Combining VECTOR with TILTING and an automatic tool changer turns the ROUTRONIC into a machining centre with unbeatable versatility.

VECTOR consists of a solid platform rotating through 360°. Controlled by the Numeric Control unit, the platform carries a spindle which in turn holds an angle-drive head which can be turned to any angle with a high degree of precision (1/10th of a degree).



VECTOR interpolates so that it is possible to shape curved components on the horizontal axis by programming them as normal, straight pieces;

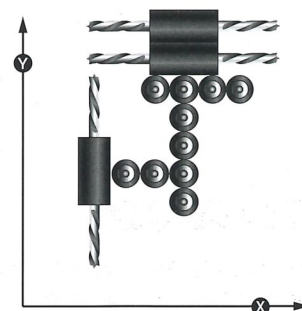




### Drilling unit

Drilling unit with vertical and horizontal independent spindles and a rigid structure designed specifically for drilling solid wood.

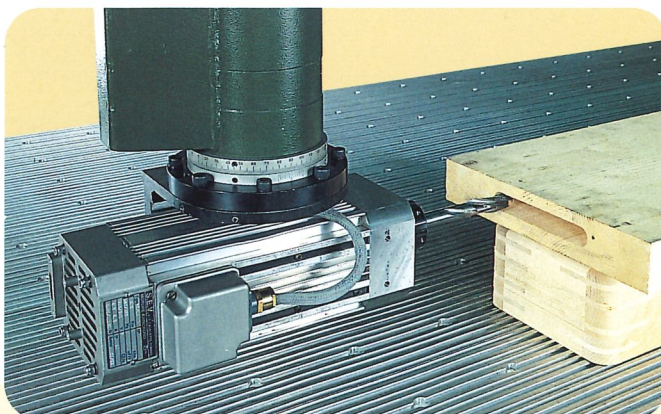
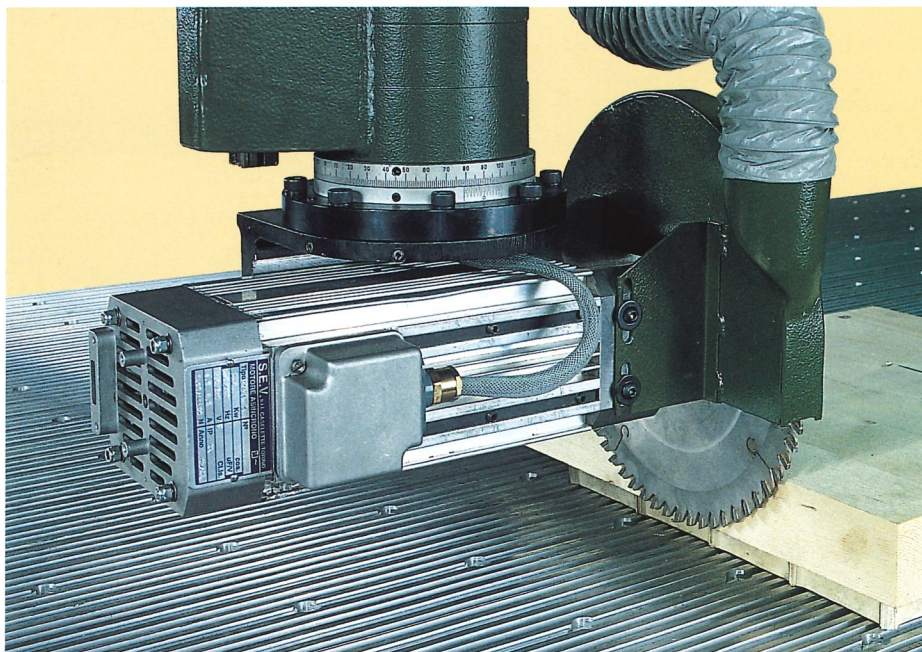
- Centre distance between vertical and horizontal spindles: 32 mm.
- N. 10 vertical spindles
- N. 1 + 1/2 + 2 horizontal spindles
- M 10 attachment for bits. Diameter 11 mm.
- Possibility to drill in masked time (during tool changing)

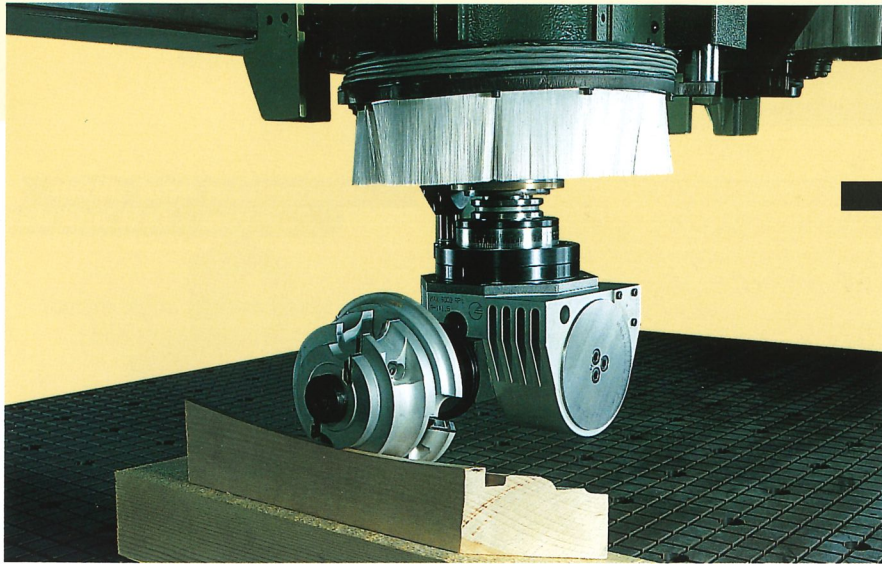


### Universal

Special operating unit on horizontal axis with single or double outlet for sawblades or router cutters for:

- Execution of holes and slots for hinges, locks and fitting on doors and windows.
- Moulding with horizontal axis on cornices, components for furniture, chairs etc.
- Cutting with sawblade on solid wood, chipboard and MDF of components for stairs, chairs, furniture, tops, tables, etc.
- Horizontal boring up to 150 mm depth.
- Collets for tool with shank diameter 3-20mm.
- Equipment to take sawblade with bore of 45 mm. (Max blade diameter 250 mm)
- Motor power up to 7.5 HP.
- Programmable variable speed 900-18000 Rpm.
- Option of rotary vector axis two positions 0-90° pneumatic two positions 0-180° pneumatic
- Programmable angular setting 0°-270° from CNC



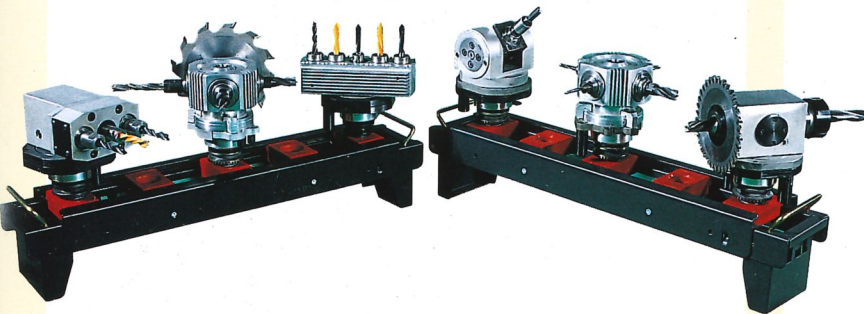


### Angle-drive head

Angle-drive head. High-power handled by the tool changer. This can be fitted with large diameter router cutters or sawblade for heavy duty work on the horizontal axis.

### Special heads

Special heads. For horizontal and vertical drilling, sawing, mortising and a whole range of other operations.



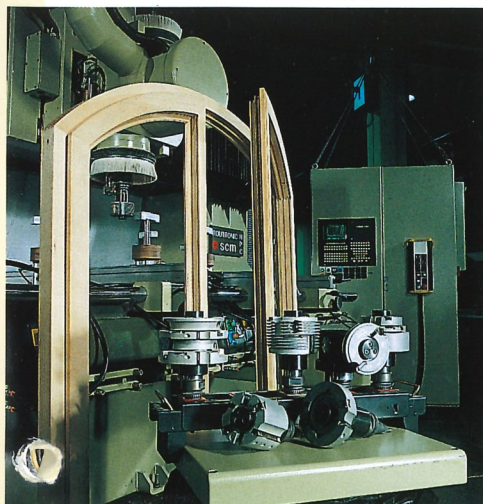
### Sanding tool

Sanding tool for mould sanding in a single operation.



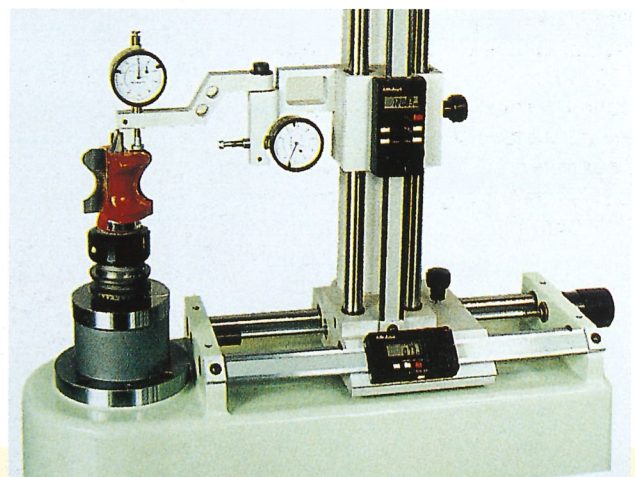
### Special tooling

Special tooling for arched, trapezoidal and custom-shaped windows.

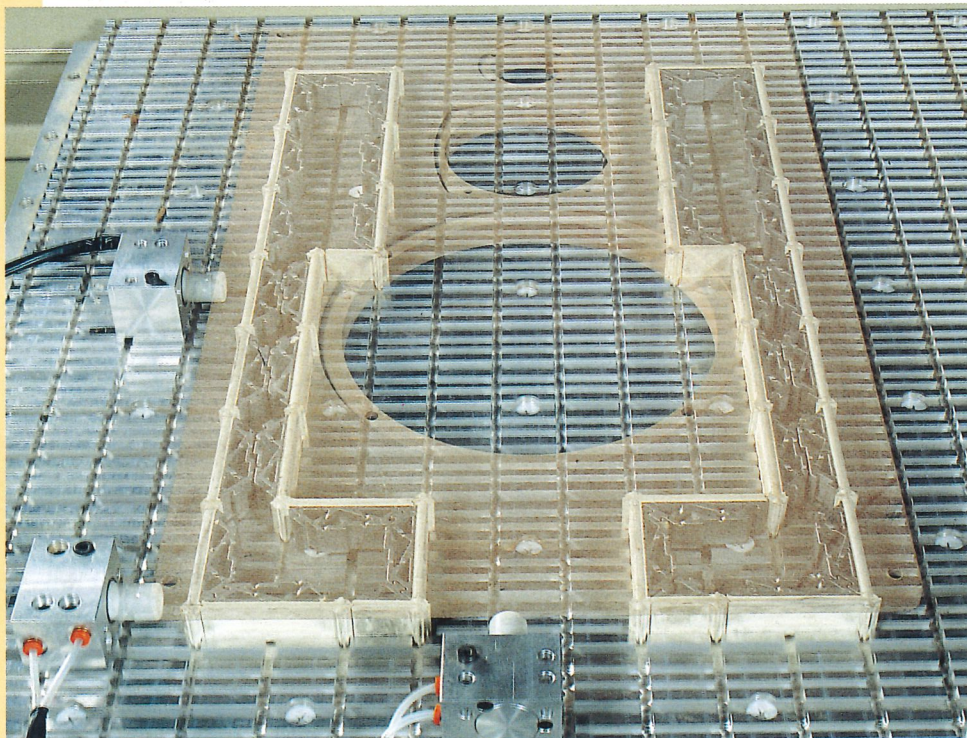
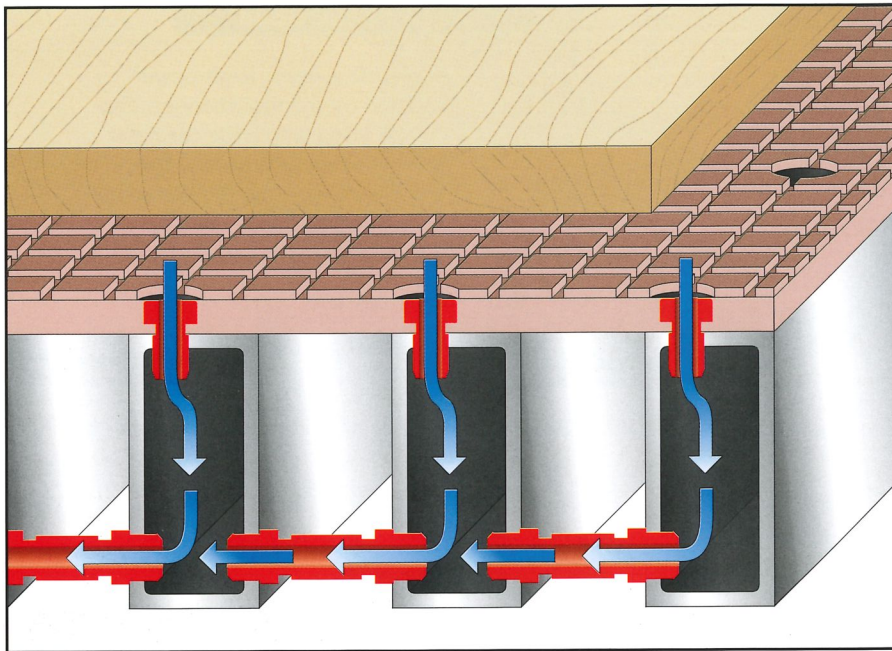


### Preset 14

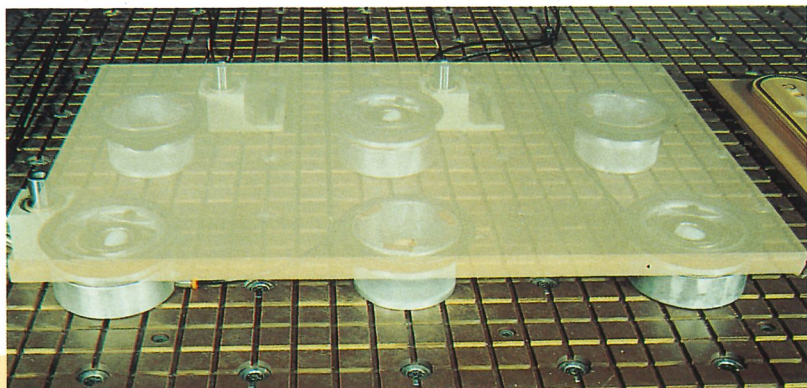
Preset 14 measures the tool outside the machine to eliminate set-up time.



# Multi-purpose work table



Quick-fit cylindrical suction cups with direct connection to vacuum system. No need for connector hoses.

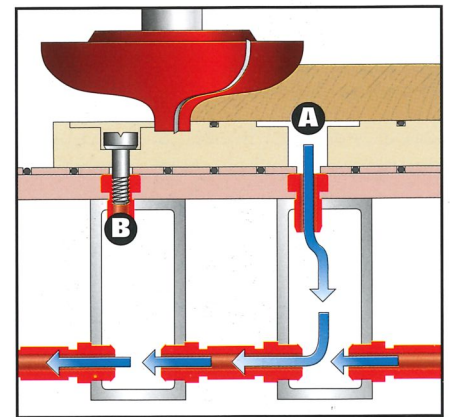


## The universal hold-down system - fast and easy.

The work table has right-angle milled slots for the insertion of seals and vacuum hold-down modules.

Vacuum circuit built into the work table.

- A** Direct connection to vacuum hold-down - just remove a screw.



- B** Tooling and jigs can be attached directly to the threaded hole in the worktable. No need for brackets or fixtures.

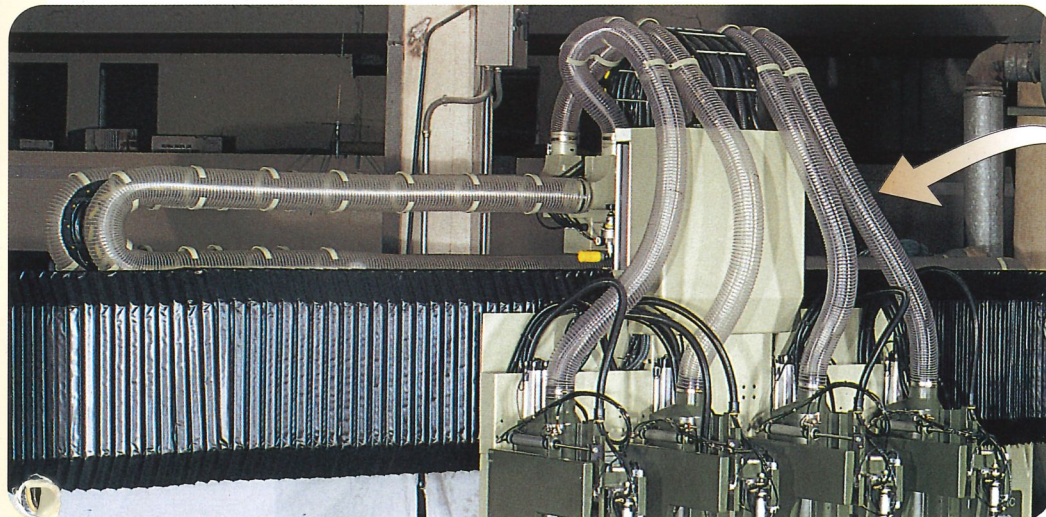
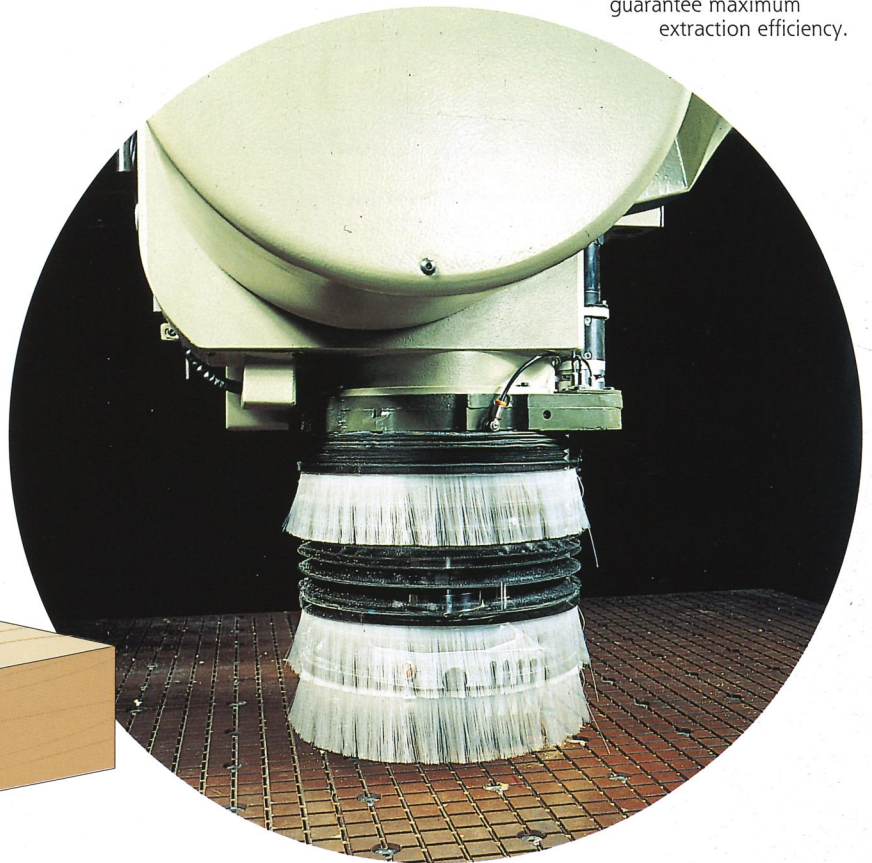
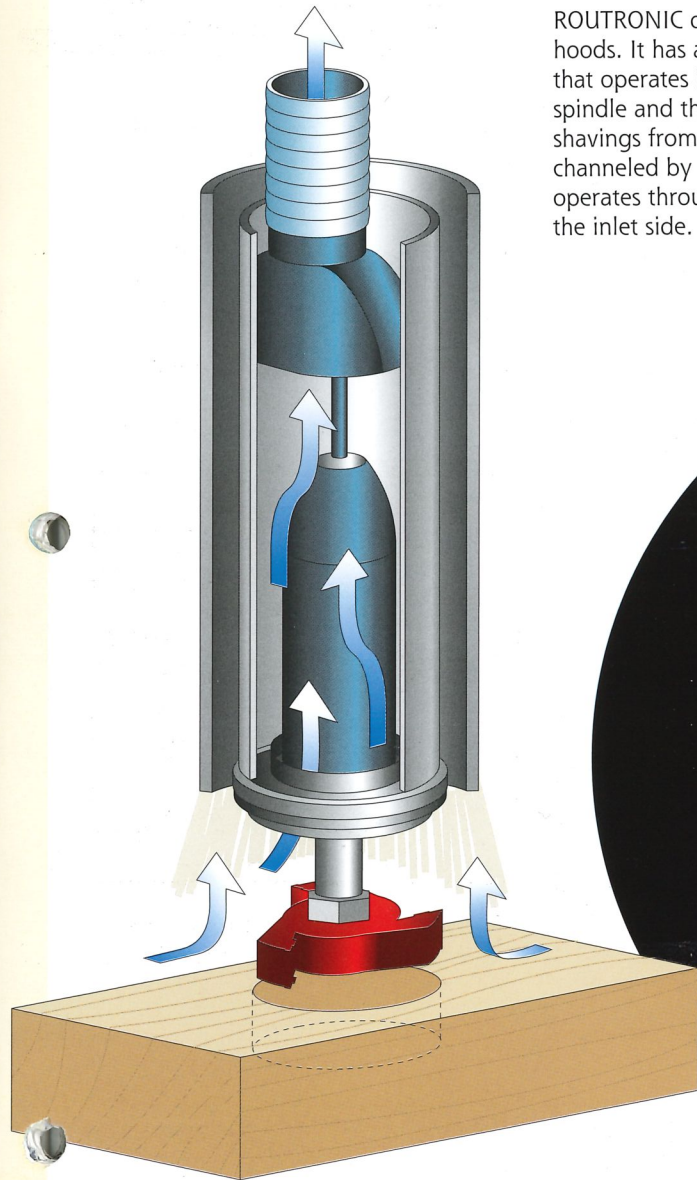
SCM vacuum modules. To follow the geometric shape of the component to be clamped.

Unit for automatically handling the hold-down systems or the pneumatic reference stops.

## Co-axial central shaving extraction

ROUTRONIC does not have extraction hoods. It has a built in extraction system that operates in the cavity between the spindle and the head. This ensures that shavings from all directions are channeled by the upward current which operates through 360° and not just on the inlet side.

The height of the shaving extraction brushes is adjusted by the program in accordance with the tool length in order to guarantee maximum extraction efficiency.



The outlet manifolds are grouped together in a fixed position for connection to the mains extraction system.

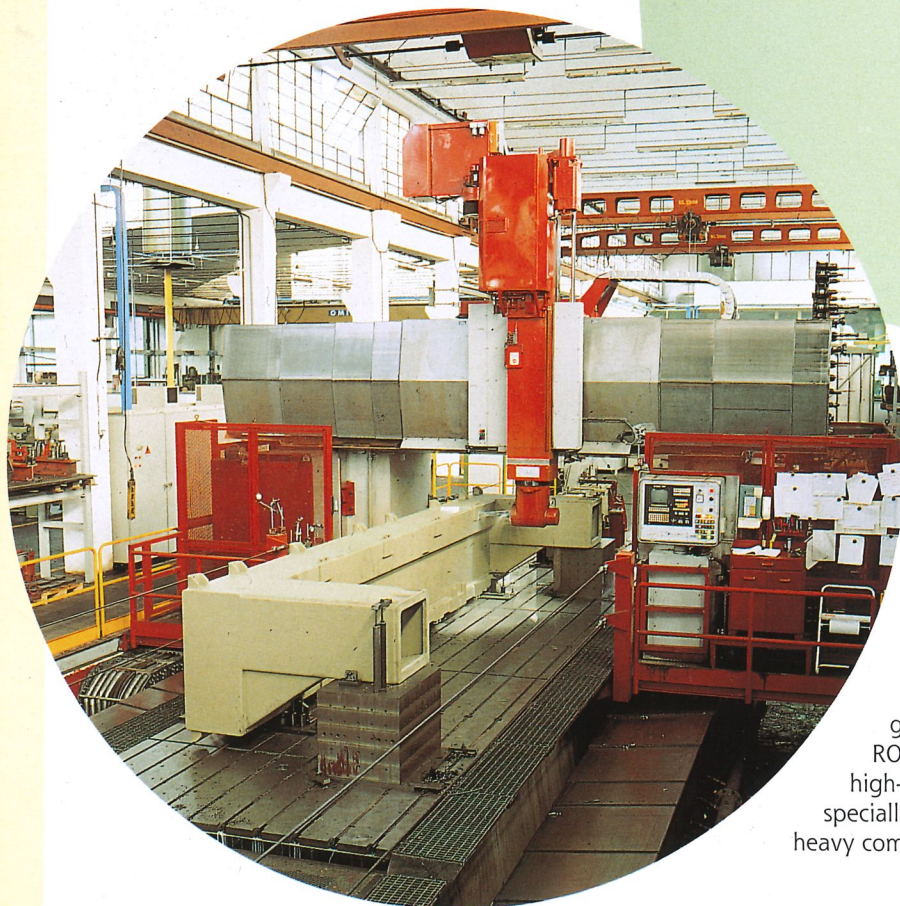
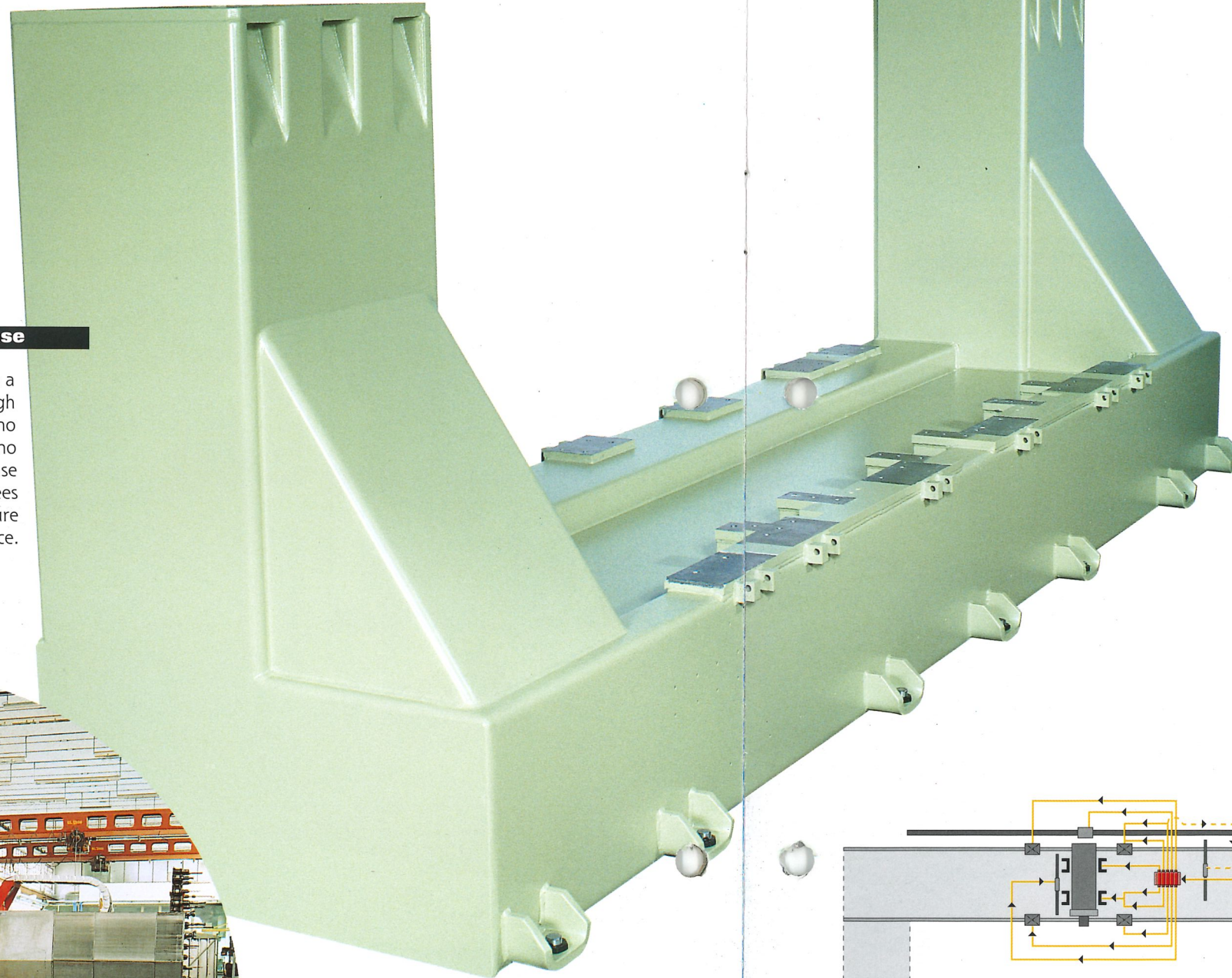
## A solid base for guaranteed success

The heavy stresses caused by mobile equipment and the need to ensure high traversing speeds and a high-quality precision finish means that a machining centre must have a very rigid base structure.

The high performance guaranteed by ROUTRONIC is the direct result of the thorough structural analysis that lead to the adoption of innovative technology.

### Monobloc machine base

The ROUTRONIC machine base is a single piece able to withstand high mechanical stresses. The base has no sub-assemblies and there is therefore no risk of base failure. From the base upwards ROUTRONIC guarantees maximum structural rigidity to ensure top performance.



Producing a monobloc machine base is a complex manufacturing task. To guarantee the high rigidity of the ROUTRONIC base, SCM invested in a high-precision, large scale machining centre specially designed for machining large-size, heavy components such as machine beds.

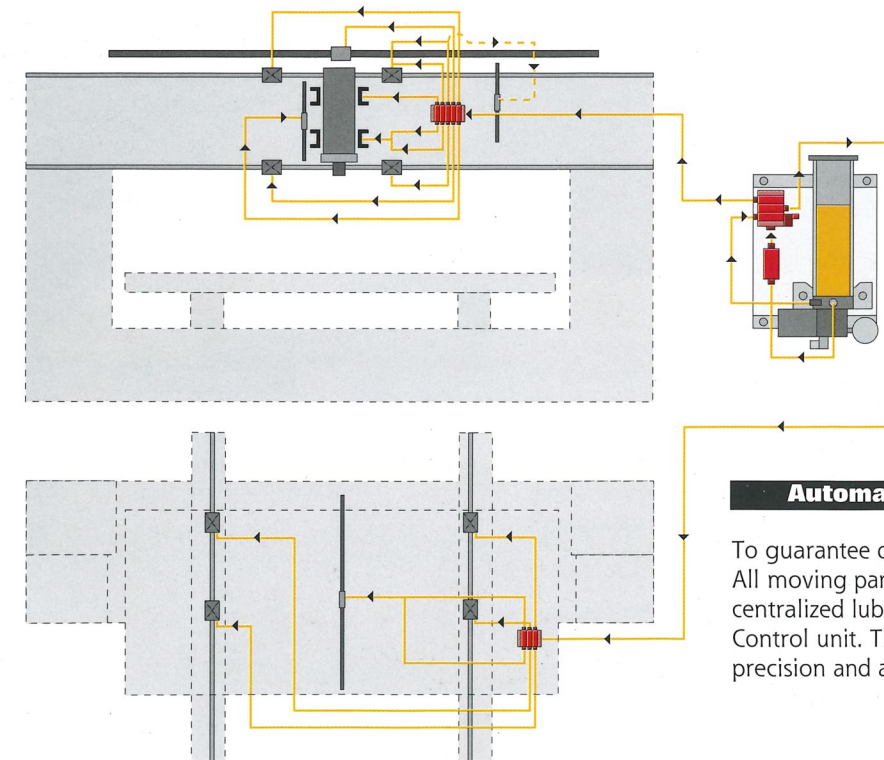
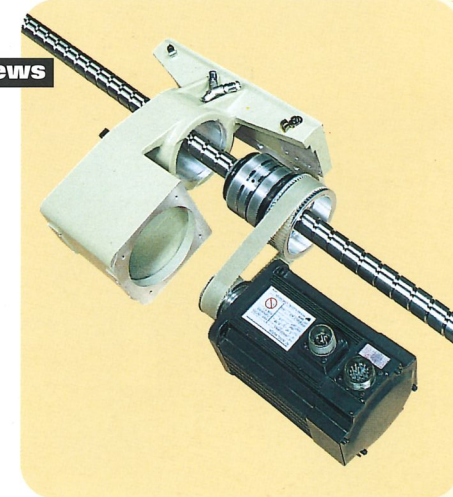


### Prism guides

Prism guides with sliders running on pre-loaded recirculating ball screws to ensure the maximum rigidity and smooth operation required for a high grade finish in all operating conditions.

### Fixed lead screws

Fixed lead screws, locked at both ends, with rotary lead nuts connected to the motor by a direct drive, ensure vibration free movements, rapid acceleration during path changes and the maximum precision.

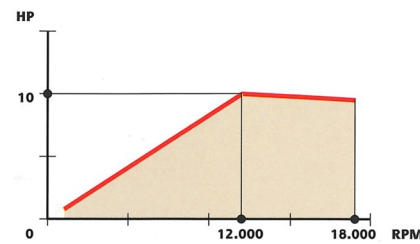


### Automatic lubrication

To guarantee durability. All moving parts are kept constantly lubricated by a centralized lubrication system controlled by the Numerical Control unit. This eliminates wear and ensures long-life precision and accuracy.

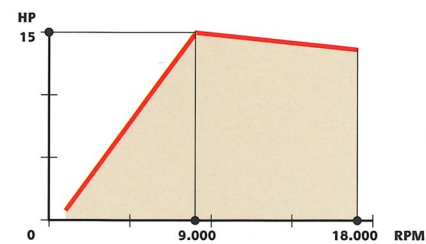
## SCM electro-spindle: a quality choice

The electro-spindle is the strategic component in the machining centre because it is the part most subject to stress and wear. This is why SCM has invested heavily in its design and development and manufactures electro-spindles under strict quality control conditions in its own manufacturing facilities.



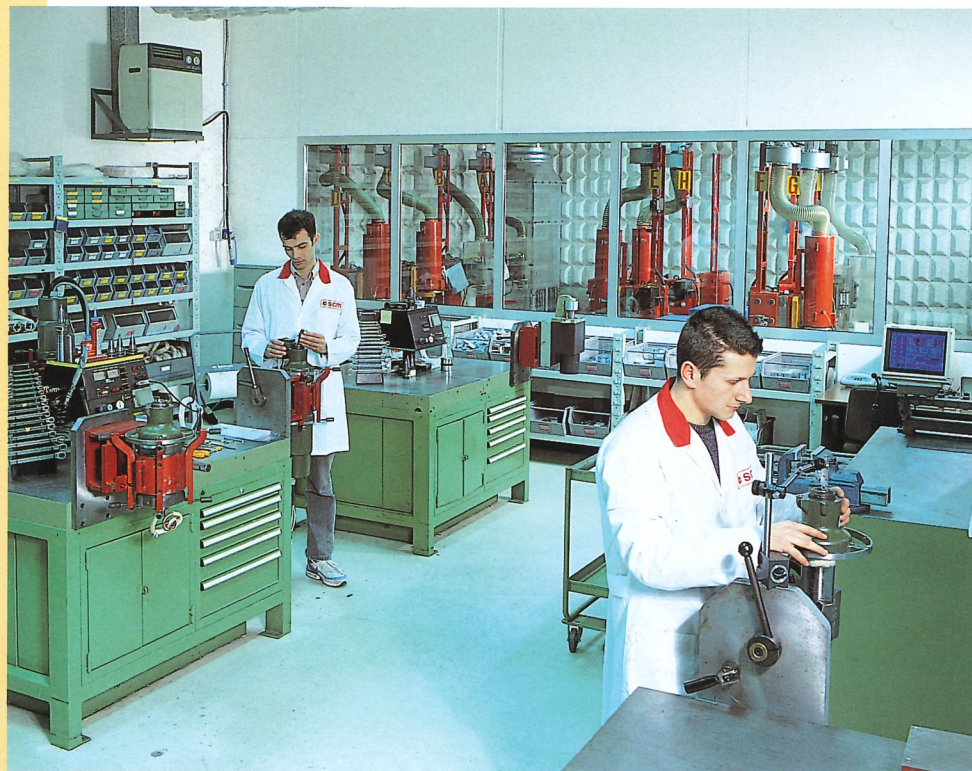
### High power

High power even at low speeds thanks to the optimum sizing of electrical equipment and the use of static inverters.



### Maximum rigidity and precision

Maximum rigidity and precision guaranteed by high-precision bearings with ceramic components, pre-loaded and mounted in pairs.



Design engineers and technicians in SCM's Research & Discovery department study and test the latest technological innovations, often revolutionizing the state of the art in the woodworking industry. The automatic tool changer is a case in point. SCM was the first company to introduce automatic tool changers onto the market.

All electro-spindles are mounted on test benches which reproduce real operating conditions. The test cycle constantly monitors the temperature, the vibration, the power absorbed and the noise level of the electro-spindle.

This data is immediately processed by a computerised system which records any anomalies found.

**Only electro-spindles which meet the specifications of this exacting test routine enter production.**



### Maximum strength

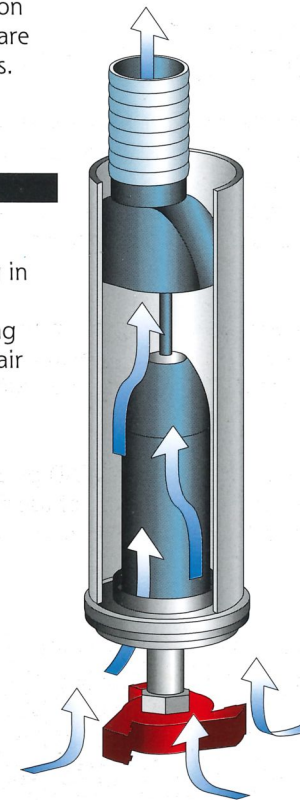
Maximum strength from a structure in hardened, stabilized cast-iron.

### Absolute silence

Absolute silence during operation because there are no cooling fans.

### Perfect cooling

Perfect cooling in all operating conditions using the extraction air flow.



## Programming systems

### ASTROCAD

**Is a innovative, powerful CAD-CAM program with drawing, calculating, self-teach and programming functions.**

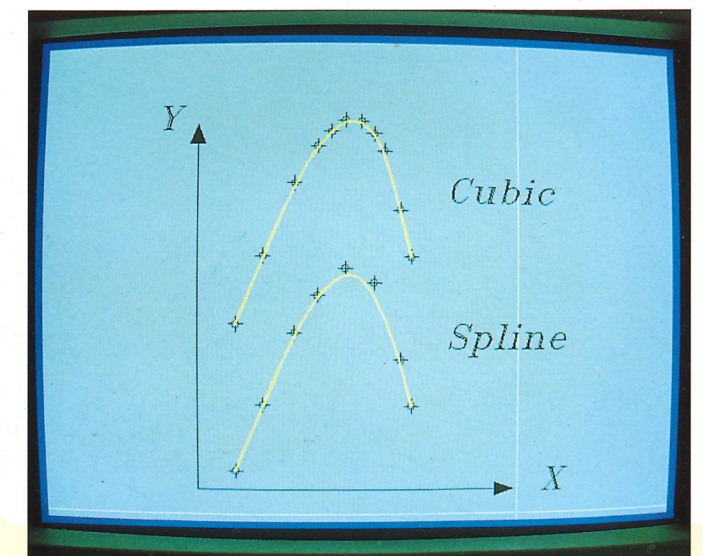
ASTROCAD offers top performance and features.

- Components drawing with simultaneous assignment of all machining operations.
- The CNC program is generated directly while the component is being drawn.
- Astrocad rapidly executes parametric drawings with respective CNC programs.
- Astrocad automatically executes pockets, recesses, cycles and pre-configured sub-programs.
- Drawings can be modified; the CNC program will be updated automatically with any drawing modifications.
- Astrocad simulates tool paths and work cycles making it possible to test a program before it is run.
- Astrocad calculates machining times.
- Astrocad calculates the cost of machined components.
- Astrocad will load part geometry in the self-teach mode using masters or scale drawings with graphics tablets or digitizers.

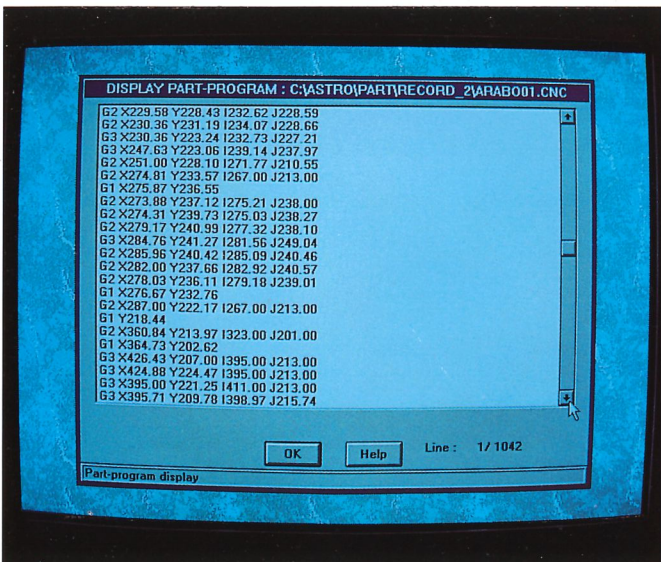
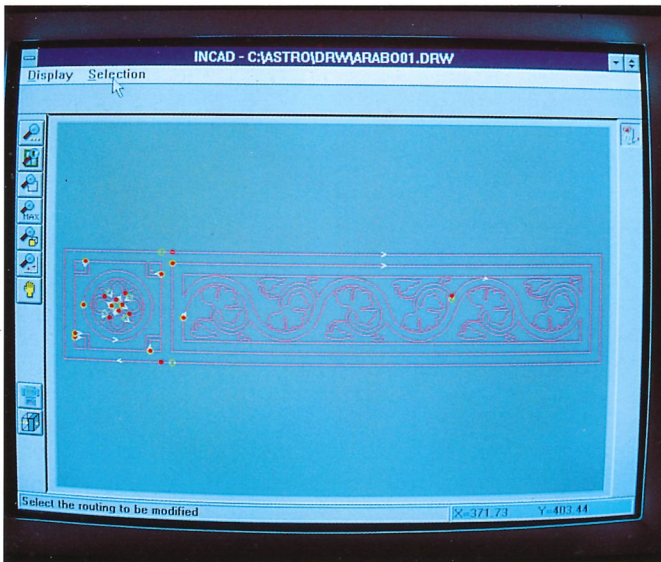
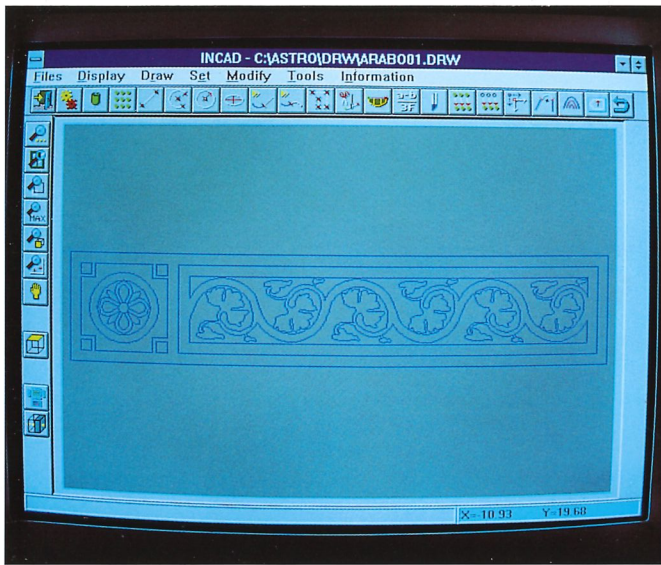
ASTROCAD can be used with AUTOCAD® to provide total integration between your design and manufacturing departments.

ASTROCAD is part of the machine. Once the drawing stage has been completed, the program is generated immediately without any further information because ASTROCAD "knows" the codes for the machine, having already stored the machine configuration to memory.

ASTROCAD is easy to use. All functions are menu-guided with windows and icons. All you need is a Personal Computer of the type now widely available. (The PC is not supplied by SCM).







# ROUTOLINK

## Simple, guided operator-machine dialogue

**ROUTOLINK** is the SCM-designed interface incorporated in the CNC unit to ensure easy machine operation and programming without the need to know codes.

The screen interface uses windows and icons to guide the operator in logical steps through the selection of machine functions.

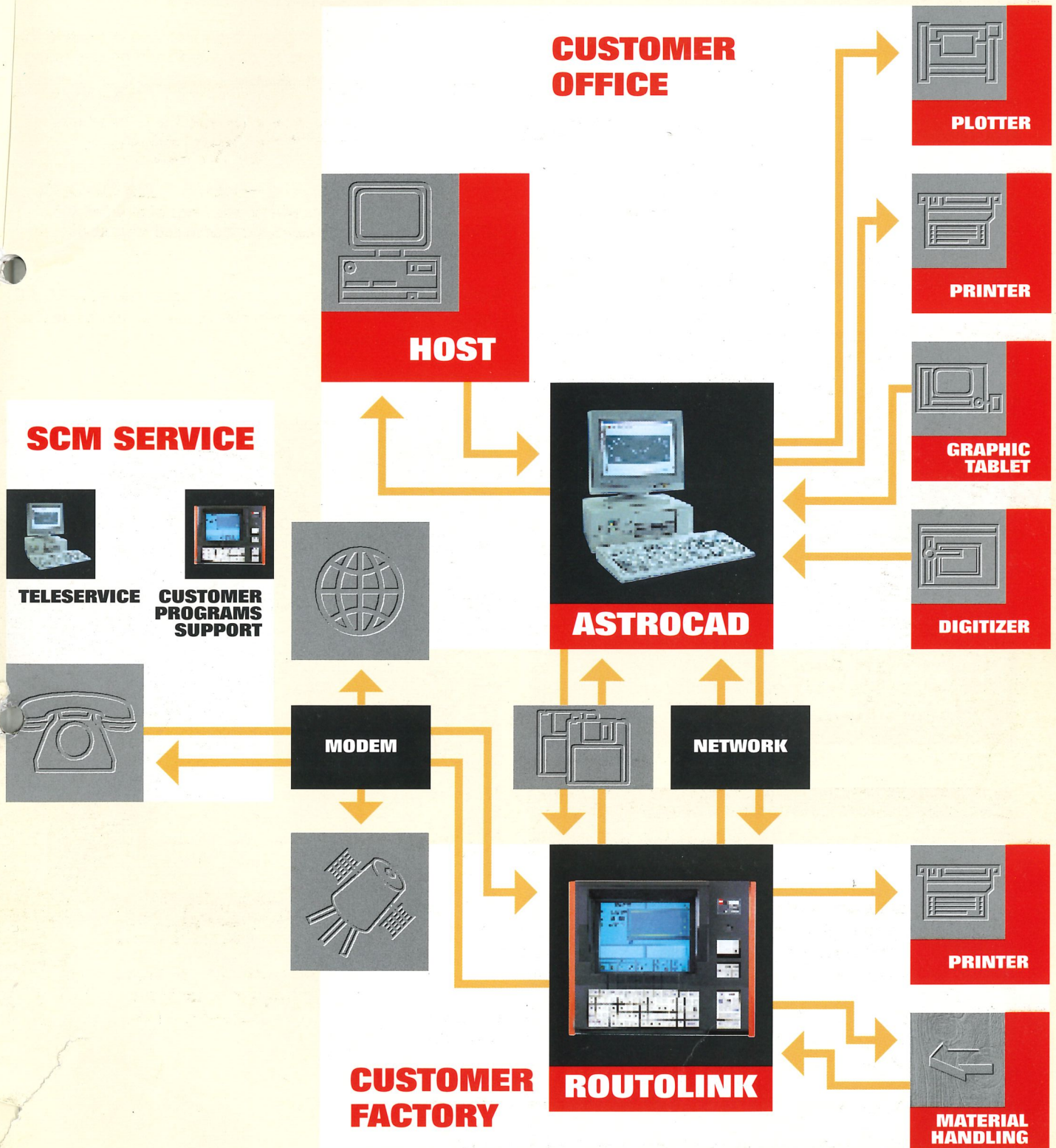
**ROUTOLINK** can also generate simple programs directly on the machine without the need for pre-programming in the office. This gives the machine operator a high degree of independence.

**ROUTOLINK** combined with ASTROCAD gives the ROUNTRONIC the performance, versatility and ease of use that has made this machine a benchmark for other CNC machining centres.

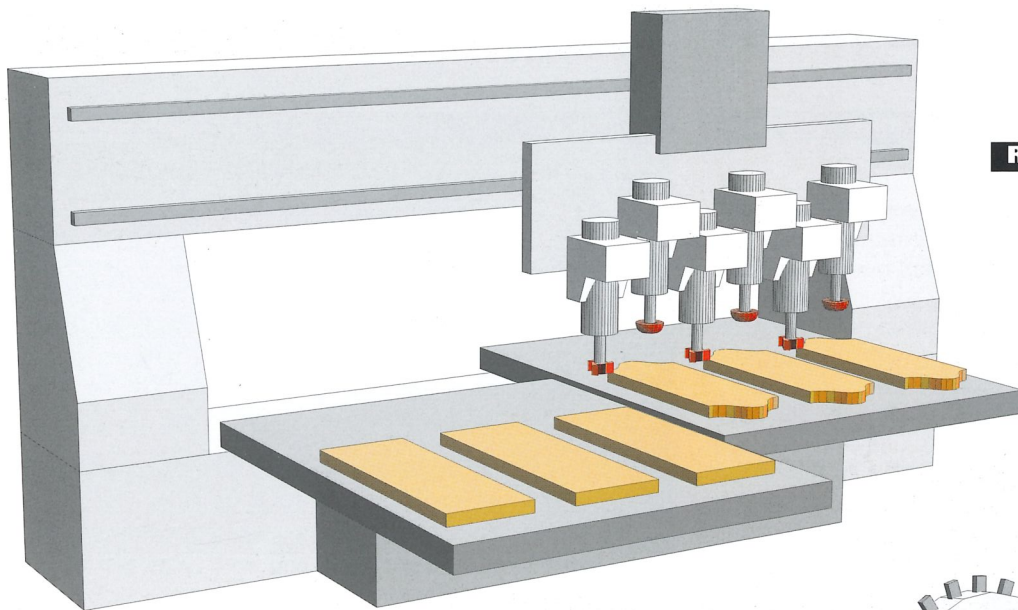


# ROUTRONIC

An advanced system  
for the company  
that looks to the future



## Some example configurations

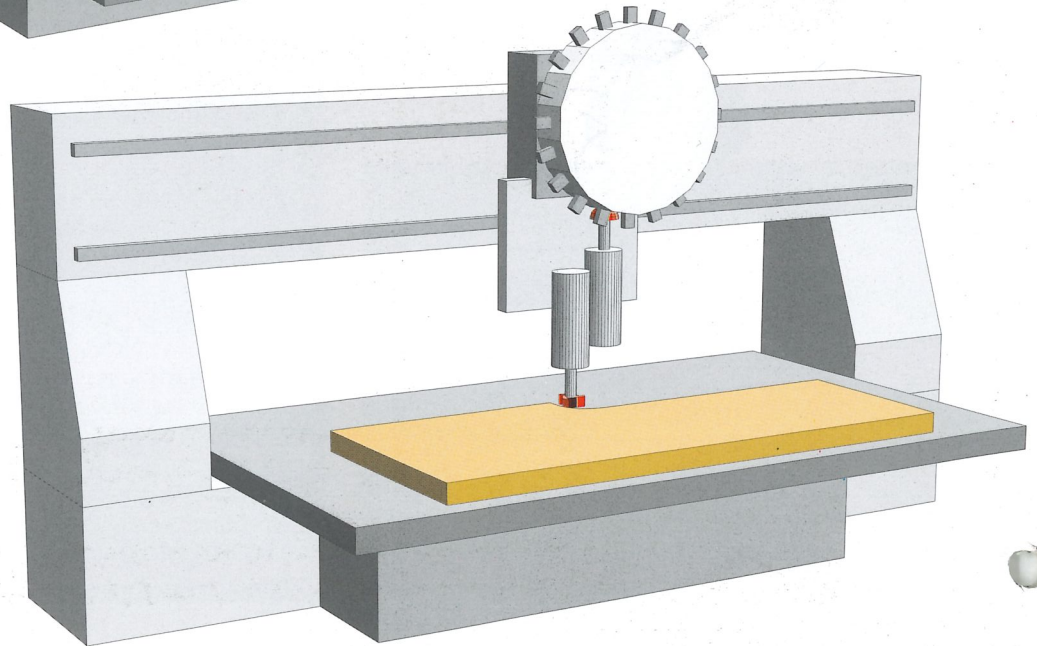


### **ROUTRONIC 2P6**

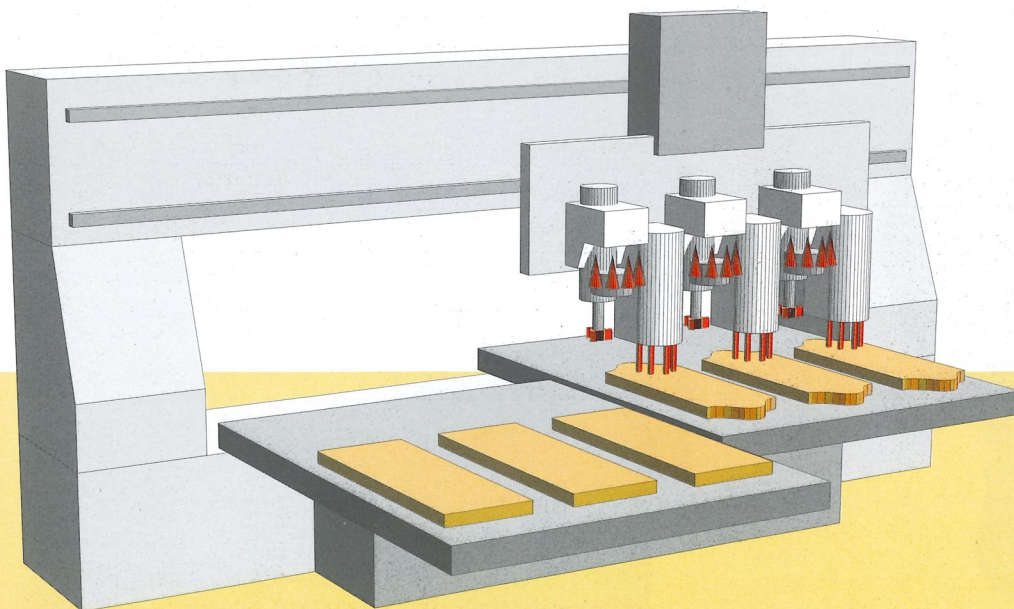
Version with 2 worktables and 6 parallel heads

### **ROUTRONIC 1 HPC**

Version with 1 worktable and HPC system unit

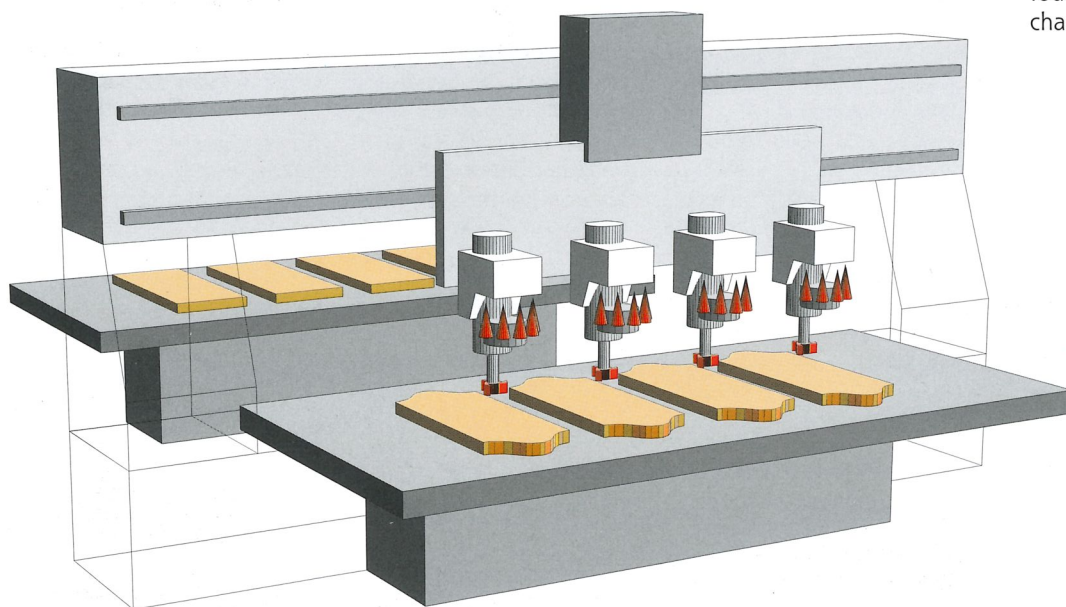


Version with 2 worktables, 3 parallel heads with tool changer and 3 drilling units



## ROUTRONIC TWIN P4 CU

Version with Twin system rotary table changeover and four parallel heads with tool changer



## Technical data

### TECHNICAL DATA FOR ROUTRONIC RANGE

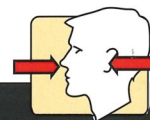
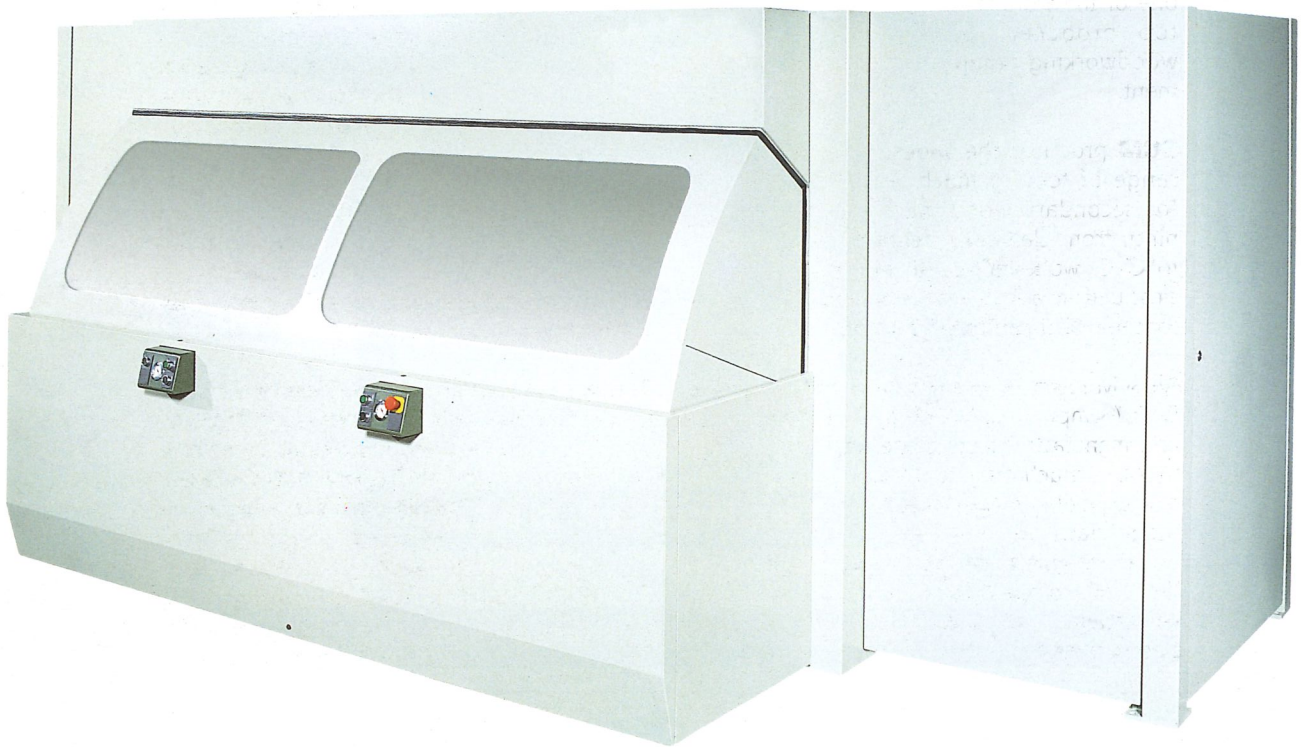
Worktable dimensions, axis stroke	from 3200x1400 to 5300x2600
Spindle speed:	
Right to left rotation	rpm 900 ÷ 18000
Spindles cooled by extractor air flow	
Motor power at 12,000 rpm	up to Hp 15
Workpiece vacuum hold-down system, complete with: vacuum pump	
Twin circuit for pendulum working	
Min. centre-to-centre between two adjacent heads	mm 250
Min. centre-to-centre between two adjacent heads with tool changer	mm 420
Max. centre-to-centre between two outer heads	mm 2000
Max. feed speed (machining mode)	n/min 20
Max. feed speed (rapid mode)	n/min 30
Numerical Control unit:	NUM 1060
Program memory	Kb 164
14" colour graphics monitor	
Weight	Kg 9000 ÷ 12000



# Safety, what you should expect

Where required, the machine is supplied with the following parts complying with the CE safety regulations

- Safety and warning messages and labels on the machine
- Instruction and maintenance manual
- Electrical emergency devices
- Electrical warning devices and visual warning devices
- Guards for moving parts
- Component ejection guard
- Interlocks and safety devices to prevent accidental or unauthorised access to hazardous areas.



NOISE/DUST			
Model	Noise level to ISO/DIS 7960 standard		Dust level to DIN 33893 standard
	Operator position LAeq [dB (A)]		[mg/m <sup>3</sup> ]
	Idle machine	Machining	1,1
<b>ROUTRONIC</b>	76,2      84,5		

# SCM



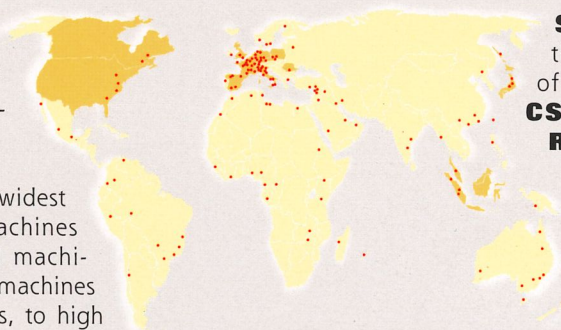
**SCM** has been an active force in the woodworking machinery sector for more than 40 years and represents the nucleus of SCM Group which now has a total of 2300 employees, 27 associate companies, 16 factories and an export which accounts for 70% of its production.

customers because full use is made of a system of remote computerised diagnostics and of a network of peripheral spare parts warehouses. SCM's customers can moreover rely upon the Customer Satisfaction Service recently installed as a reference point covering all their requirements.

All this makes SCM one of the world's top producers of woodworking equipment.

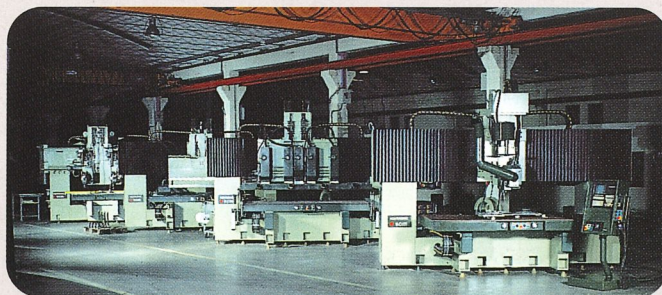
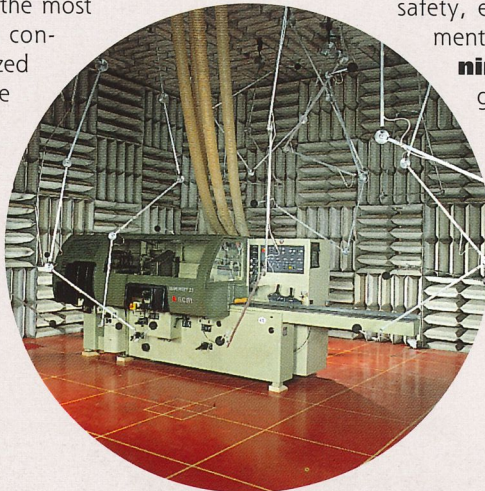
**SCM** produces the widest range of tooling machines for secondary wood machining, from classical machines to CNC work centres, to high production automated systems for the machining of solid wood.

All SCM machines are designed with the aid of CAD (computer aided design) systems and manufactured using the most modern machining and control technology. Specialized technicians all over the world are able to supply the most comprehensive technical assistance and services for SCM



**SCM** can also utilize the internal structures of SCM Group such as **CSR - Study and Research Consortium** and CSR Training Centre. CSR - Study and Research Consortium uses advanced experimental and an acoustic instrumentation laboratory fitted with a semi-anechoic room.

This ensures that all machines satisfy the strictest international standards in terms of safety, ergonomics and environmental hygiene. **CSR - Training Centre**, a highly regarded training school prepares qualified operators for woodworking machinery from all over the world.





SCM spa  
Via Emilia, 77  
47037 Rimini (FO) - Italia  
Tel. 0541/700111  
Fax 0541/742406