



**Morbidelli M600 F**  
5' X 12' CNC Nesting Cell  
(S000104)

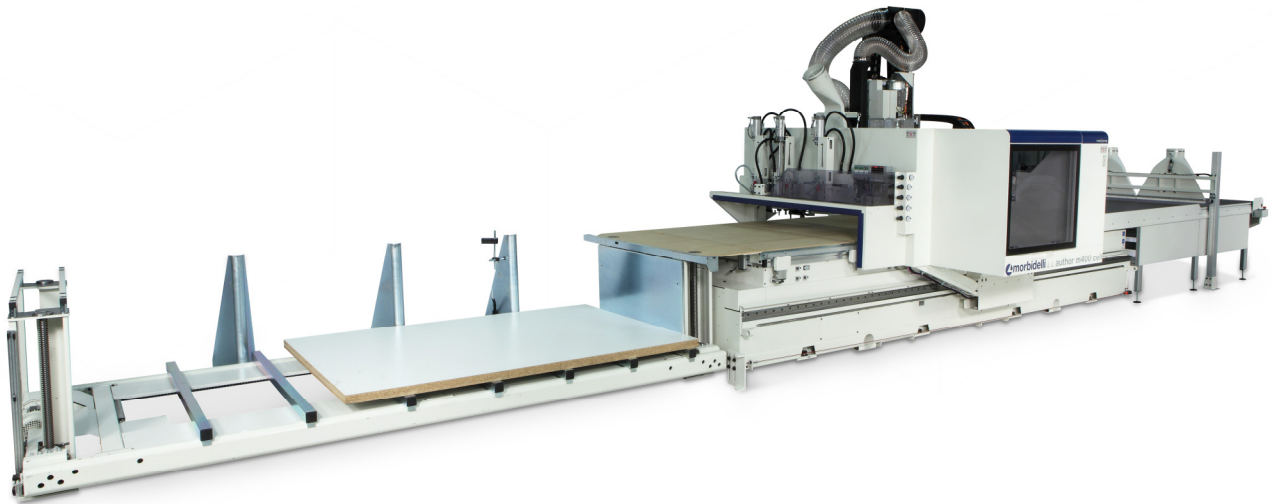


Photo may include optional equipment

**QUOTE:**

**DATE:**

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## About SCM GROUP

Founded in 1952 in Rimini, Italy, SCM Group S.p.A is the leading designer, manufacturer and distributor of innovative and technologically advanced solutions for woodworking, glass, stone, plastic, metals and composite materials. SCM Group's line of products range from the "Classic" entry-level manual equipment to the turnkey fully-automated "Industrial" solution, and all products use the best Italian components possessing the renowned "Made in Italy" high level of quality and control. With headquarters in Rimini, SCM Group operates through 18 production facilities located throughout Italy and 19 foreign subsidiaries with a total workforce of 3.100 employees. Using an extensive distribution network, SCM Group exports over 80% of its production, covering 120 countries through subsidiaries, distributors and agents.



## MORBIDELLI M600 F – CNC Nesting Cell

### CONCEPT

Numeric control machining center, with mobile gantry and fixed worktable for the processing of solid wood and various types of materials: chipboard, MDF, plastics and light alloys.

### (R2.35.60) Base Design and Construction

Designed using the best three-dimensional solid modeling systems, the structure is composed of a machine bed and a mobile gantry made of electro-welded steel. All the machining of mechanical components are performed on high quality CNC machining centers utilizing a single positioning operation guaranteeing the highest accuracy and quality.



### High Precision, High Load Prismatic Bearing Guides

SCM uses prismatic guides for support in all axes. Due to their added weight load capability (approximately 4 times that of conventional round guides), prismatic type guides can permit accurate head positioning at high speeds.

### A.C. Servo Motors X,Y & Z Axes

A.C. servomotors, or A.C. brushless motors as they are sometimes called, are the latest in electronic linear motion technology. A.C. servomotors use less power and produce a more even output (drive) throughout the power band. The ability to maintain a constant torque setting when going from an idle setting into a heavy rout produces cleaner cuts and longer tool life. These motors are controlled by digital supply cards that offer the reliability and precision fine tuning associated with solid state electronics.

### Solid State Inverter Controls Router RPM

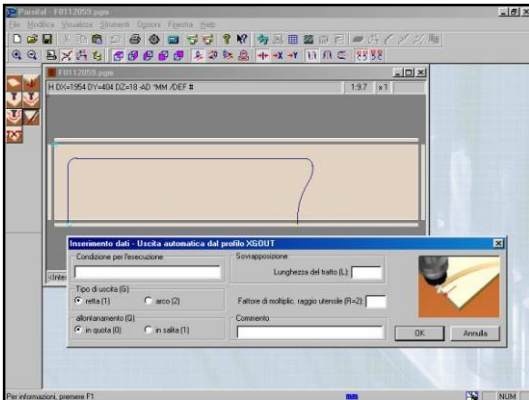
Solid State frequency inverters support the programmable router spindle speeds (S functions). By utilizing digital inverter technology, the programmer can select the correct cutter RPM and match it to the correct linear/rotational feed speed for the specific application and/or material being cut. This will give optimum quality of cut while greatly extending tool life. The inverter also acts as an electronic brake, stopping the router spindle motor in microseconds if an emergency signal is given.

## Software:

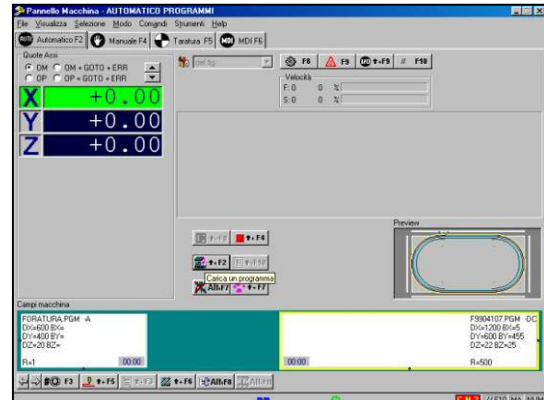
### General features of the Machine Panel and Xilog Plus Programming software

XILOG PLUS is the SCM workstation management software developed as a highly flexible, powerful and user-friendly programming system.

- The beginner will immediately find himself at ease in front of the intuitive XILOG PLUS interface. There are many graphic aids that eliminate the need to learn particular instructions or programming language.
- The more experienced computer user will also find himself at ease in a Windows® based operating environment, including all the features that this implies (i.e., cut and paste, multiple opening of files, etc.).
- Those already familiar with previous SCM programs will be able to choose whether to manage the machine in the new graphic environment or to continue with the traditional input of programming instructions with the alphanumeric keyboard. Moving quickly from one environment to the other is very simple.



*Graphic programming interface*



*Machine operation interface*

XILOG PLUS has two applications – to aid in programming and to allow operation of the machine.

#### Graphic programming interface

This application is a powerful graphic/text editor that aids in programming. It manages program file as well as tooling information. Especially helpful are the built-in macros, shortcuts that are used in performing repetitive tasks (routing arcs, drilling shelf holes, etc.). Users can also customize macros for their own particular needs.

#### Machine Operation Interface

This application allows the operator to recall programs and run them on the machine. It tells the operator basic information about the program such as the working field, part size, etc. It also has a very powerful machine diagnostic section with photos and troubleshooting aids.

#### Additional XILOG PLUS features:

- Controlled acceleration and deceleration
- Linear and circular interpolation
- Self-diagnostics through error messages
- Dynamic tool correction via PLC due to active wear concerning space and time.
- Subroutine programming (canned cycle) with library
- Specular programming: Allows writing of programs two different multiple reference points. For example the Left or Right corner of a panel.
- Parametric scaling of programs through use of template type programs that the operator creates and stores in memory. Part programs can then be proportionally scaled up or down in size without the need to re-write the entire program.
- Programs can be viewed from all 5 faces
- Built in macros for simple, widely used programs
- On board cycle optimization

## Configuration

- Machining Head graphic configuration;
- double override which allows to adjust the operating unit positioning speed;
- Machining Speed selection;
- SCM CNC - JERK function management for dynamic control of acceleration/deceleration.

## AlphaCAM Ultimate (1 license)



CAD Import: DXF/DWG , IGES (surfaces only, versions later than IGES 3.0 and up to and including IGES 5.3), STL. Machining: User defined tool library, tool direction settings (include inside, outside, left and right), vertical rough and finish machining, contour/linear/spiral pocketing with unlimited islands, 3D engraving, drill/peck/tap/bore holes, automatic lead-in/lead-out, G41/42 tool compensation, automatic calculation of speeds and feeds, cut corner options include straight/roll round/loop, add/remove support tags, adjust feed rate around corners, operation and tool path editing, automatic tool path update upon geometry modification (associative machining), machining styles. Nesting: Automatic rectangular and true shape nesting of geometries and/or tool paths picked from the screen and manual nesting. Also Includes: CAD to CAM, Multidrug, Convert Raster to Vector, AutoStyles. Shading or wireframe mode, 3D view, ghost tools, single steps, rapids, all zoom functions. Wire frame simulation.

Design: 3D Geometry and surface creation/manipulation and workplanes CAD Importing: Rhino 3D (\*.3dm) CAD utilities: move dimensions. Editing functionality: Auto/2D/3D editing mode, set geometry Z levels, 3D project (3-axis), wrap onto surface (3- axis), and reverse tool side on surface. Viewing options: material/fixture as solids, drawing surfaces in layer color, and multiple windows/view ports. Machining: Cut spline or polyline (3-axis), auto-Z routing/pocketing/drilling, routing/pocking using sloping sides, routine/pocketing using profiled sides, residual routing (take account previous machining), vertical sawing, vertical sawing around arcs, 3D surface machining (parallel 3-axis, Z contour roughing), user defined code, set start point(s) on pockets, edit feed rate at point along tool path, edit Z point by point along tool path, and definable clamps/fixtures. Nesting: nest list creation, nesting form a nest list, sheet database, and area estimate from part or sheet. Also Includes: Solid simulation.

CAD utilities, fold/unfold, develop to flat, join parts with bridge, link adjacent circles, and magnify, define new Alphacam fonts, and geometry macro recorder, draw material/fixture as solids, drawing surfaces in layer color, and multiple windows/view ports. CAD Importing: DXF/DWG, IGES, Rhino IGES (as solids), CADL, VDA, ANVIL, 3D XYZ Points, ACIS, Autodesk Inventor, Parasolid, Solid Edge, SolidWorks, Unigraphics, STL, Part Modeler CAD files. Machining: overlap on open elements, machining or pocketing of holes, sawing at definable tilt angle, 3D lead-in/out, 3D approach moves, enhanced 3D surface machining options, 3D solid machining (3-axis, Z contour roughing), tool axis conversion (3-axis), and convert 3D tool path to helical arcs, and movable clamps/fixtures. Also Includes: definable machine configuration and full machine simulation, VBA editor, solid model feature extraction utilities, and parametric constraints.

Editing: 3D project (4/5-axis) and 3D wrap onto surface (4/5-axis). Machining: 4 and 5 axis simultaneous machining support., 4/5 Axis spline/polyline machining, Cut between 2 geometries, 4 Axis (XZ/YZ) rotary, 5 Axis Machine Surface with tool side (SWARF Machining), Normal to Point, Through Point, Through Axis Machining: Cut spline or polyline (4/5-axis), 3D surface machining (4/5-axis), 3D solid machining (4/5-axis), edit 5-axis tool path, tool axis conversion (4/5-axis), and smooth 5-axis tool path.

## Xilog Plus & AlphaCAM Training Course prior to Install (2 Basic Carson, CA and 3 Days Onsite Advanced)

- This course is intended for designers, programmers or other individuals who are responsible for the programming of parts on a CNC Router or Machining Center utilizing the Xilog Plus User Interface with AlphaCAM software. It is designed specifically to teach the basic information necessary to design and produce programs for a SCM Group CNC Router.
- This course is a classroom-based in Carson, CA or Duluth, GA, interactive workshop that includes theory, practice and hands-on application. Attendees will learn about basic G-Code commands and how to utilize G-Codes within the Xilog Plus User Interface. They will also gain a good conceptual understanding of AlphaCAM Software and the ability to create and modify 2D drawings. Exercises focus on drawing, tool definition and machining methods such as Rough/Finish. Additional subjects include pocketing, engraving, drilling and nesting. Course good for one year from installation.

### Office PC Based Controller

The Morbidelli M600F uses an office PC for the operator interface. This Windows 7 based platform utilizes a CN unit to communicate with the machine



### (52.37.67) Additional Pushbutton

Positioned on the LEFT side of the loading area. It allows:

- – Program start
- – With Pro Speed machine version : Reset of the maximum movement speed when the operator goes out from the loading area

### Electric cabinet with Air Conditioning Device

It maintains temperature of approx. 65°F inside the electric cabinet.



### (63.03.73) Remote Control Pendant

This remote control pendant allows the operator to freely move around the machine and control the machines functions without being restricted to the computer console.



**(52.36.20) 20.5 HP (S6) Electrospindle Routing Unit**

The routing unit is equipped with a power electro spindle and automatic tool changer. The unit is mounted directly to the machine mobile upright.

It includes:

- HSK F 63 quick release tool-holder
- 1500-24.000 rpm spindle speed
- (S1/S6) 13 /15 kW (18/20,5hp) constant motor power from 12.000 to 18.000 rpm
- Right and left rotation
- Static inverter for continuous speed and rapid shut down of rotation
- Liquid cooling
- Exhaust hood around whole perimeter

**Liquid Cooling Group**

It allows to maintain a constant liquid temperature for the electrospindle cooling, avoiding the overheating.

It includes:

- Liquid pump
  - Liquid-cooling radiator
- N.B. Only for electrospindles with liquid cooling*

**(63.03.03) Air Tool Blower**

- Keep the tool cooler, thus increasing the life of the cutter.
- Helps to remove the sawdust from the cutting grooves in the nest.

**(52.22.86) Measuring device for tool length**

It allows to measure directly on the machine the length of the tool.



**(52.22.90) Rapid 12 On Board**

Tool room made of a mechanical support installed directly on the operating unit and able to hold up to 12 tools. Placed in the back of the motor, it allows the automatic replacement of the tools in masked time while the machine is processing other operations.

Features:

- Number of tools on board 12 (max)
- Center-to-center distance between the stations 80 mm
- Max tool diameter 230 mm
- Max weight for each station 8 Kg
- Max tools weight on the magazine 36 Kg
- Positioned on the machining unit, allows tool changes in masked time

**Operating Unit with 2 Independent Z axes:**

Dual Z axis allow for hidden tool change times and reduced cycle times from one working operation to the next. Dual Inverters allow one unit to begin without waiting for the previous unit to completely stop.

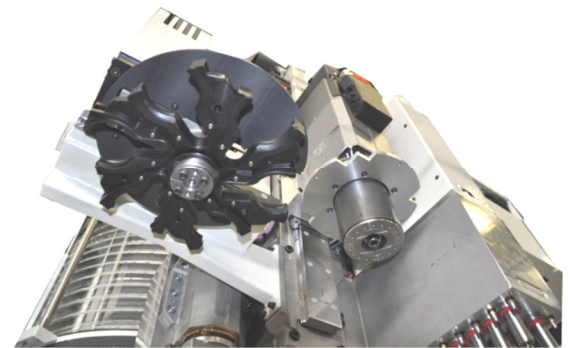
**(52.21.96) 20.5 HP (S6) Electrospindle Routing Unit PBTC – Pos3 - Routing Unit PB1 + Rapid 6**

Technical specifications:

- HSK F 63 quick release tool-holder
- 1500-24000 rpm spindle speed
- (S1/S6) 13 /15 kW (18/20.5hp) constant motor power from 12000 to 18.000 rpm
- Right and left rotation
- Static inverter for continuous speed and rapid shutdown of rotation
- Liquid cooling

**Tool Changer 6 Positions (Only 3 Axis Router)**

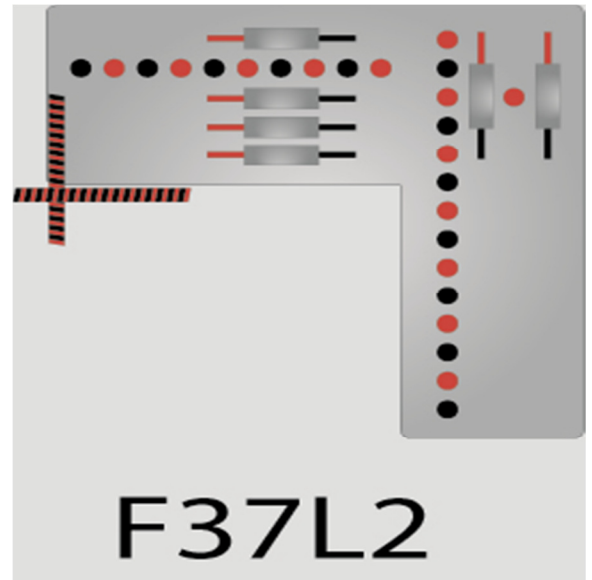
In working position on Morbidelli M600 with tool 180 mm length..



**(52.34.79) F37L2 boring head (25+8+4+blade in X-Y)**

This drill unit features:

- No. 25 independent vertical spindles (12 right and 13 left)
- No. 6 horizontal double drilling heads (1+1), 4 along X direction and 2 along Y direction
- Attachment for bits: 10 mm diameter
- Rapid bits locking with 1 screw
- 32 mm center-to-center distance between axes
- Rotation speed: 4.500 rpm, with inverter 8000 rpm maximum
- No. 1 integrated blade with 0-90° automatic rotation (160 mm max. diameter)
- Rotation speed: 3.500 rpm, with inverter 6.500 rpm maximum
- 3.6 kW motor power
- Vertical pneumatic ON/OFF stroke of each vertical spindle: 60 mm
- Vertical pneumatic ON/OFF stroke of each horizontal head: 75 mm





**MORBIDELLI M600 F, Aluminum Table 3650 x 1600 (143" x 62.9")**

Multi-functional worktable designed and engineered by SCM for maximum flexibility and holding power. It is made entirely of extruded aluminum and it is fixed directly to the machine base to ensure rigidity and prevent any vibrations. The special grooves pattern and the grid of threaded holes, spaced every 120mm (4.72"), allow maximum distribution of the vacuum in every part of the table.

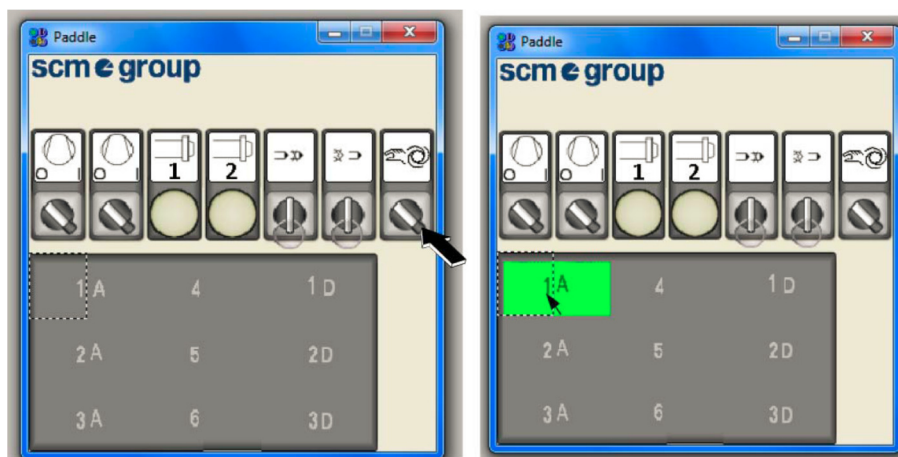
Technical specifications:

- Drilled and tapped holes spaced 120x120 mm (4.72"x4.72") for vacuum connection and equipment fastening.
- Groove pattern spaced 40 mm (1.57") for suction cups or rubber seals
- Max. dimension to work in Y direction = 1665mm (65.5")

Rails and no. 4 side stops

It includes:

- No. 2 front and rear rails for the containment of the unloading workpieces and the reference of the manually loaded work pieces
- No. 2 side left stops for the manual reference of the work pieces
- No. 2 side right stops for the manual reference of the work pieces

**(52.36.33) 9 Vacuum Zones**

Work-table divided in 9 independent vacuum areas selectable from program of the piece, in order to concentrate the vacuum in a specific area of the table.

**(52.39.89 & 52.39.90) Qty 2 – 360 M3/HR Vacuum pumps (Total 720 M3/HR)  
High Efficiency Claw Vacuum**

Low consumption and no maintenance dry vacuum pump which guarantees a high head even with high extraction air volumes.

Technical features:

- - nominal pumping speed: 360m<sup>3</sup>/h a 60Hz
- - ultimate pressure: 150mbar
- - motor rating 6,5kW 60Hz



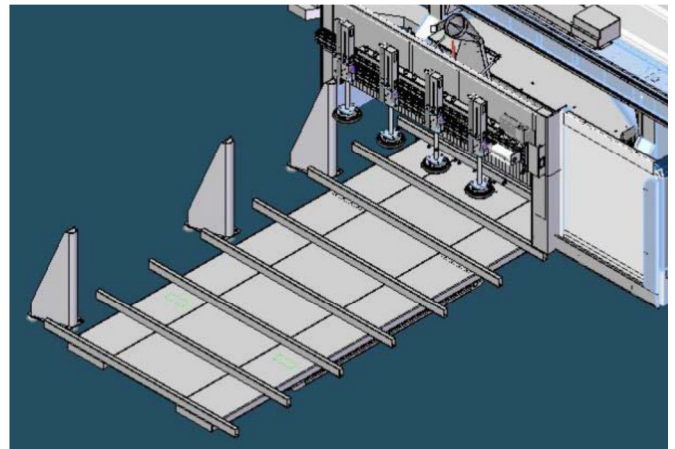
**MATERIAL HANDLING SYSTEM FOR NESTING CELL (LEFT TO RIGHT)**

**(52.29.77) Platform for Automatic panel loading**

It is capable to lift the panel stack up to the machine worktable height, allowing the suction cups to grip the upper panel. This function also foresses the peripheral safety enclosures length, including the lifting stack positioning on the relevant stops grants the correct position in X & Y.

Panel Stack features:

- Max. panel stack height: 700 mm
- Max. panel stack weight: 2800 kg
- Max. panel stack misalignment: X=30mm, Y=5mm



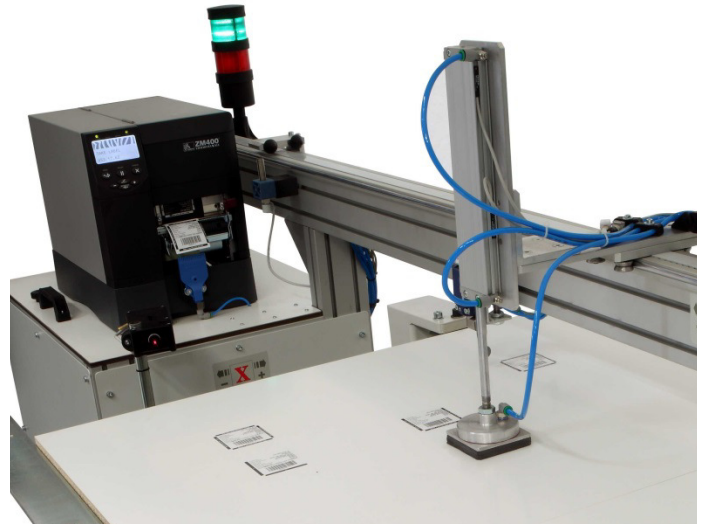
### (52.35.40) Automatic labeling system

Automatic labeling system, CN managed in X, Y direction.

Located on the automatic loading station, it allows applying labels on the single shapes that will be cut from the panel before entering the working station.

#### SPECIFICATIONS

- Average labeling cycle time: 6 secs
- Maximum labeling cycle time: 12 secs
- Minimum positioning accuracy: +/- 5 mm
- Minimum positioning repeatability: +/- 5 mm
- Maximum speed, X direction: 60 m/min
- Maximum speed, Y direction: 120 m/min
- Brushless drive motors
- Aluminum framework
- Rack-pinion driving system
- Pick-and-place pneumatic labeler
- Full integrated electrical cabinet



#### SOFTWARE

- Machine managing and driving software
- Label managing software
- Customer database import and integration

#### LABEL PRINTER

- Industrial printer connected to the general supervisor
- Steel welded framework
- Sense of direction: left side or right side
- Printing drivers for Microsoft® Windows XP / Vista
- Maximum printing area: 100 x 100
- Resolution: 8 dot/mm (203 dpi)
- Maximum printing speed: 203 mm/sec

#### SUPPORTS

- Label and support width: 16 mm up to 114 mm
- Tape width: 25.4 mm up to 108 mm

#### LABELS

- Support thickness (label and support): 0,148 mm up to 0,254 mm
- Types of support: Continuous / Pre-cut

#### TAPES

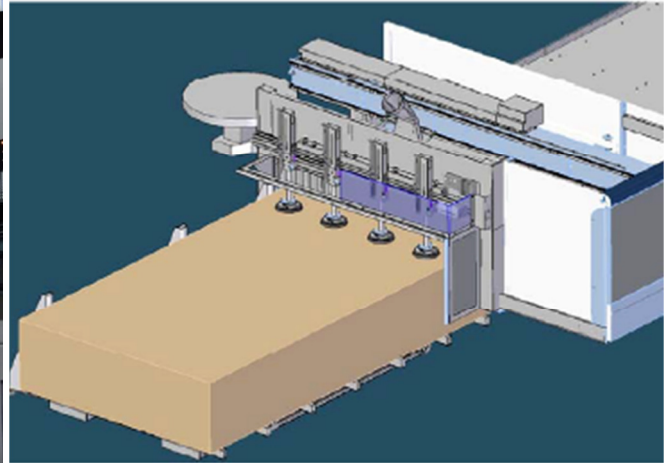
- Roll maximum dimensions: 101.6 mm external diameter
- Standard length: up to 900 m
- Tape type: ink on external side



**(52.29.80) Loading Pieces Unit with Vacuum Cup**

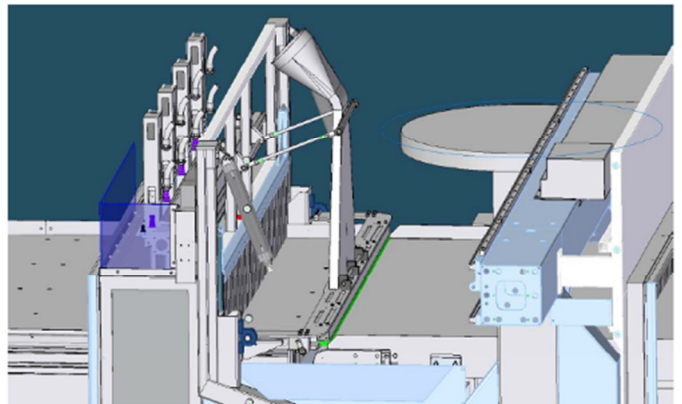
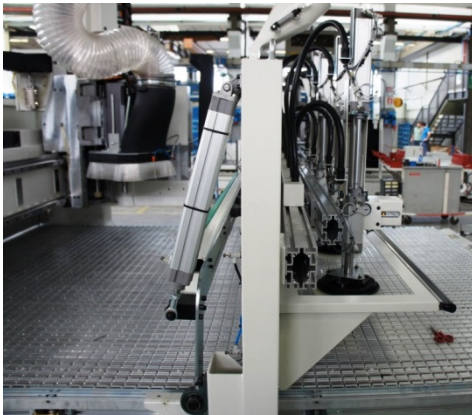
Device mounted on the machine upright with suction cups able to grip the upper panel of the stack on the machine right side and move it up to the machine table support stops. This device includes a detecting system positioned on the machine table left end for a correct panel positioning during loading operation.

- Max. weight of single workpiece to be loaded without lifting table: 200 kg
- Max. weight of single workpiece to be loaded with lifting table: 150 kg
- Panel thickness: 8 mm min., 40 mm max.
- No. 3 loading suction cups
- Minimum workpiece to be loaded: 700x1600 mm

**(52.29.82) Automatic Unloading**

Device mounted on the machine upright that moves the workpieces towards the unloading area on the machine right side. This device cleans the spoil board while it unloads the components. The off loading system is equipped with automatic valves which are opened during the cleaning operation.

- Exhaust outlet diameter: 200 mm (7.87")



**(52.29.84) Outfeed Belt**

Powered belt capable of moving components from the machine table to the unloading position. This position is equipped with photocell automatic detecting system for the belt start/stop and pushbutton for the belt manual speed. (1)-200mm Opening from the bottom. (2) -200mm Openings from the Top

**(52.36.28) Exhaust outlet positioned upper the unloading belt**

**Exhaust outlet positioned between the work table and the unloading belt**

**Exhaust outlet positioned at the end of the unloading belt**

**(52.36.81) Safety Regulations**

All versions are delivered with the "pro-speed" version with bumpers and photocells.

The customer can also select the installation of the machine with the "pro-space" version without front photocells - in this case the speed of the X axis is limited to 25 m/min due to the reduced crosswise overall dimension.

**Central Optimized Dust Collection System**

It provides a single dust collection point for the electrospindle and Drilling unit allowing in this way to use the Dust Collection system more efficiently. Inside the main dust collector there are pneumatic cylinders that control automatically the opening/closing of each exhaust outlet when the operating unit is switched on/off. 250mm (9.84").

**Automatic Central Lube System**

The correct amount of grease is applied to lubricate moving parts on the machine. This is applied automatically with minimal maintenance for the operator.

**(63.03.43) Multi-voltage autotransformer**

- Available Voltage connections: 208/230/460

## Technical Specifications

Worktable dimensions: Length Width	3650 mm (143.7") 1600 mm (62.9")
Electrospindle	Main - 18 HP S1 Duty / 20.5HP S6 Duty PB - 18 HP S1 Duty / 20.5HP S6 Duty Liquid Cooled
Tool Changer Positions  Attachment	Main - 12 position – Rapid Onboard Tool Changer PBTC - 6 Position – Rapid Onboard Tool Changer HSK 63
Drilling Unit No. of vertical spindles No. of horizontal spindles Grooving Saw	10 in X-axis , 14 in Y-axis (1 Additional) 4+4 in X & 2+2 in Y 0-90 (X or Y)
Maximum linear vectorial positioning speeds: X & Y axis Z axis	127 meters/minute (416 feet/minute) 30 meters/minute (98 feet/minute)
Panel passage	250 mm (9.84")
Dust extraction required Working Units Safety Rake System Upper Belt Lower Between Table and Belt Lower End of Belt	250 mm (9.8") 2455 CFM 100 mm (3.9") 395 CFM 200mm (7.9") 1570 CFM 200mm X (2) (7.9" each) 1570 CFM each 200 mm (7.9") 1570 CFM 200 mm (7.9") 1570 CFM
Electrics:	208/230/460 volts, 3-phase balanced, 60 cycles
PC Specifications: Operating system Monitor	Windows 10 17" Display

**PRICE****Machine Price:****Promotional Machine Price:****Delivery:****Tooling:****OPTIONS:****(63.04.28) 16.5 HP (S6) "Prisma 5" KT 5-axes****Routing Unit in Lieu of 16.5 HP 3 Axis**

It Includes:

- HSK F 63 quick release tool-holder
- 1500 - 20000 rpm spindle speed
- (S1/S6) 11/12 kW (15/16,5 Hp) motor power from 9000 rpm
- Right and left rotation
- Static inverter for continuous speed and rapid shutdown of rotation
- B axis limits:  $\pm 185^\circ$
- C axis limits:  $\pm 320^\circ$
- C axis locking with TTS system (Total Torque System, SCM patent)
- Liquid cooling
- Exhaust hood around whole perimeter with pneumatic exclusion
- Positioning speed of B and C axes: 7000 °/min

**Liquid Cooling Unit for "Prisma 5"**

It allows to maintain a constant water temperature for the electrospindle cooling, avoiding overheating.

It includes:

- Liquid pump
- Liquid-cooling radiator

**(52.38.46) Automatic Alignment Kit for 5-Axis Group**

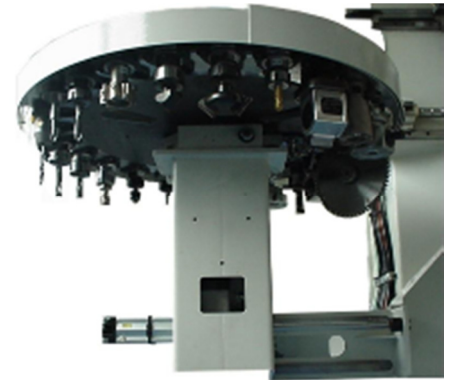
Automatic reset system of the 5-axis group (RTCP), that allows to bring the possible 5-axis group mis-alignments back to the factory settings, without the necessity of a technician's intervention. Furthermore the system includes also particular machine settings, that are necessary for application in the plastic sector.

**(52.34.92) Rear 24 Position Tool Changer****In Lieu in of 16 Position**

Tool room with circular shape anchored to the mobile support.

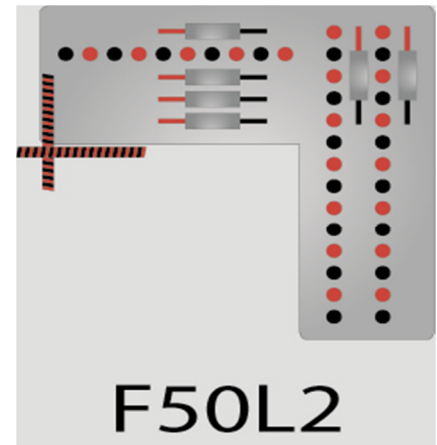
Features:

Number of tools on board	24 (max)
Center to center distance between the positions	104 mm
Single tool weight on board	8 kg (max)
Total weight tools installed	48 kg (max)

**(52.34.80) F50L2 boring head (38+8+4+blade in X-Y)**

This drill unit features:

- No. 38 independent vertical spindles (19 right and 19 left)
- No. 6 horizontal double drilling heads (1+1), 4 along X direction and 2 along Y direction
- Attachment for bits: 10 mm diameter
- Rapid bits locking with 1 screw
- Center to-center distance between axes: 32 mm
- Rotation speed: 4.500 rpm, with inverter 8000 rpm maximum
- No. 1 integrated blade with 0-90° automatic rotation (160 mm max. diameter)
- Blade rotation speed: 3.500 rpm, with inverter 6.500 rpm maximum
- 3,6 kW (S6) motor power
- vertical pneumatic ON/OFF stroke of each vertical spindle: 60 mm
- Vertical pneumatic ON/OFF stroke of each horizontal spindle: 75 mm

**Wireless TecPad**

Wireless Remote Pendant

**(52.25.82) Closed cable-holder chain**

The mobile gantry cables are placed inside a chain enclosed on all sides for preventing any possible damage caused by sharp shavings.

**(63.04.25) Guides protections, X-Y axes**

By means of dedicated cleaning and protection system, it allows the machining also on abrasive materials.