

SERIE SA

Automatic top sanding machines for lines



Series SA - Main Technical data & layout

Main technical data

Useful working widths	1350	[mm]
Longitudinal sanding belt dimensions	1380 x 2620	[mm]
Standard machine opening	3 ÷ 160	[mm]
Feed speed	5 ± 25	[m/min]

Compressed air requirement

For each working unit [6 bar]	50	[Nl/min]
Air jet blowers for Longitudinal unit [5 bar]	663	[Nl/min]
Air jet blowers for Cross belt unit [5 bar]	357	[Nl/min]
Air jet blowers for Panel cleaning [5 bar]	816	[Nl/min]
Air jet blowers for Feed belt cleaning [5 bar]	442	[Nl/min]

Air volume required for each unit

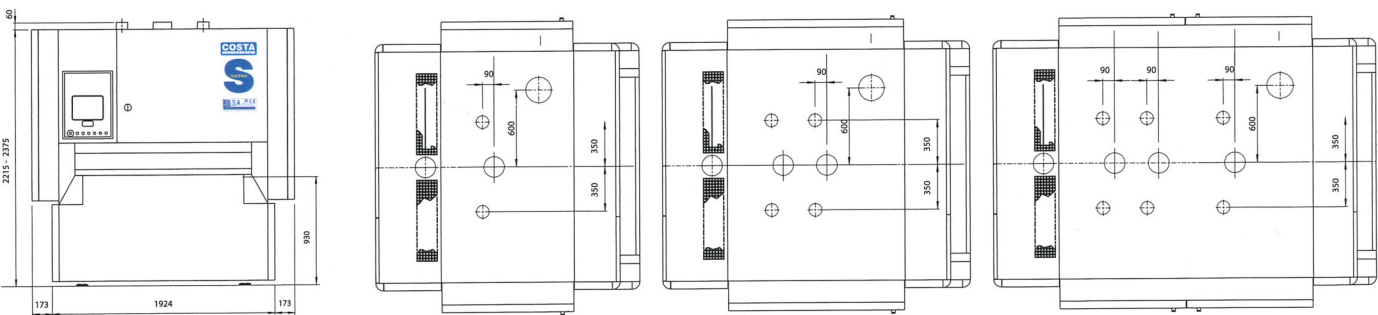
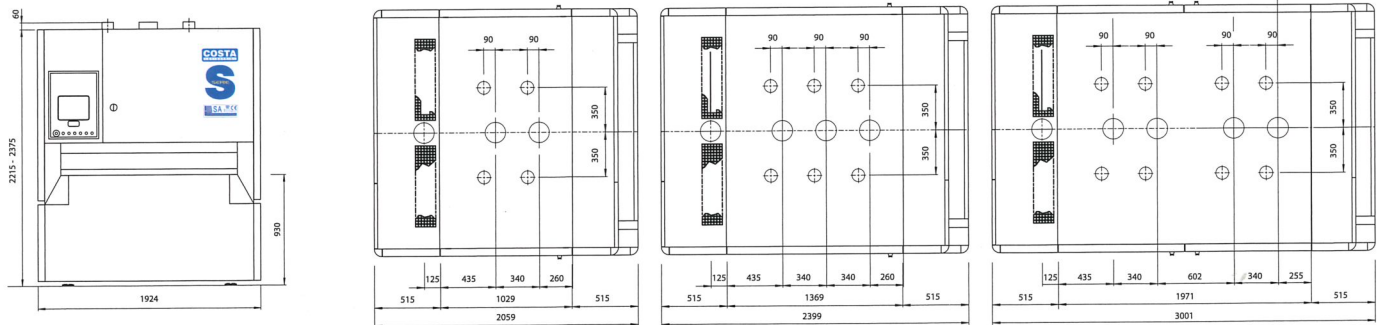
	ø outlet	20	25	[m³/h]
Each longitudinal working unit	160 [mm]	2577		
Each brush unit - FB 250/350 - S 180/250 - SB 180/250	160 [mm]	1447		
Cross belt unit - TR7 - TR9	200 [mm]	2261		

Air volume required - some examples

	20 [m/s]	24 [m/s]	28 [m/s]	[m³/h]
CT / 1350	5154	6186	7216	
TR TT / 1350	7415	8898	10381	
TR CTT / 1350	9992	11990	13988	

Size & Weight

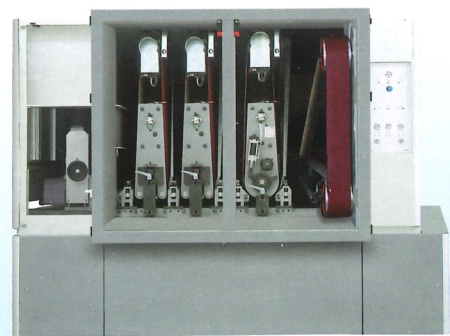
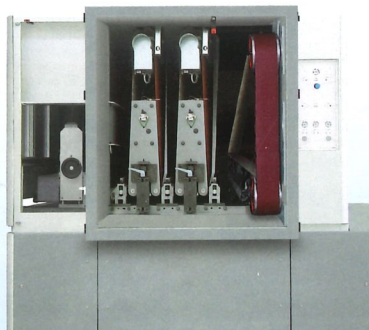
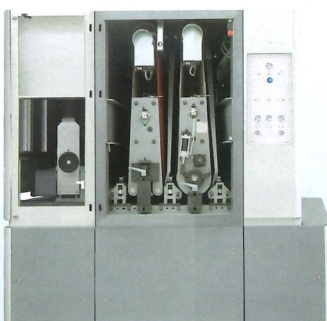
2 Longitudinal working units	1924 (+346) x 2059 x 2215 (2375) [mm]	~ 3200	[kg]
3 Longitudinal working units	1924 (+346) x 2399 x 2215 (2375) [mm]	~ 4000	[kg]
4 Longitudinal working units	1924 (+346) x 3001 x 2215 (2375) [mm]	~ 5600	[kg]



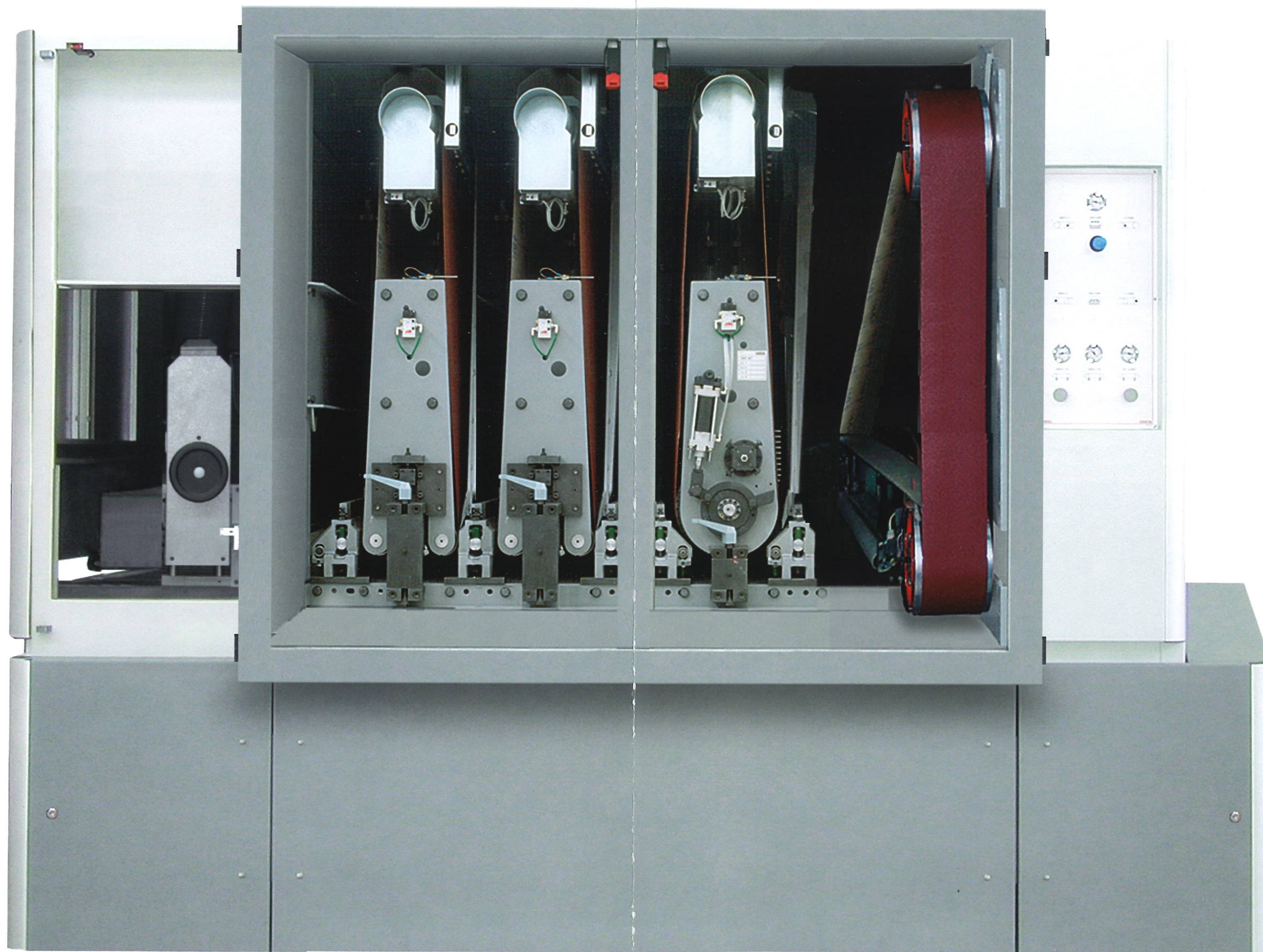
SA CT

SA TR TT

SA TR CTT

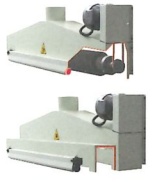


An example of “multi purpose” machine, with cross belt unit in first position, one cylinder for heavy sanding operations, two electronic sectioned pads for surface finishing.



Examples of machine configurations

a flexible system of composition to satisfy all requirements



S 180 / SB 180 / SR

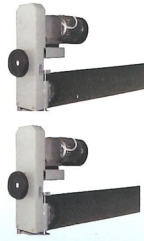
Cleaning units

E position



FT3

Flextrim™ brushes



S 180 / SB 180

Brush units



CK

Combi units



C330

Cylinder units



TP 16



TP 32

Pad units



T 1



C200

Cylinder units



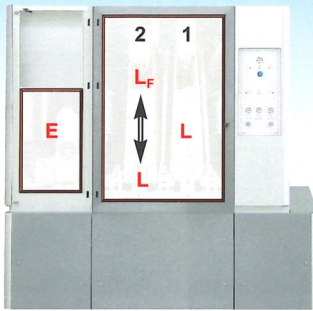
C250

Cylinder units

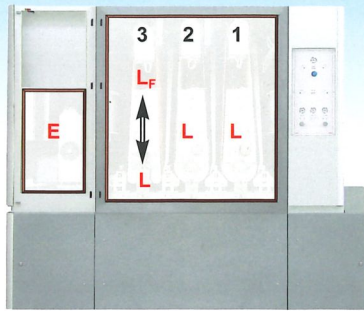


TRI

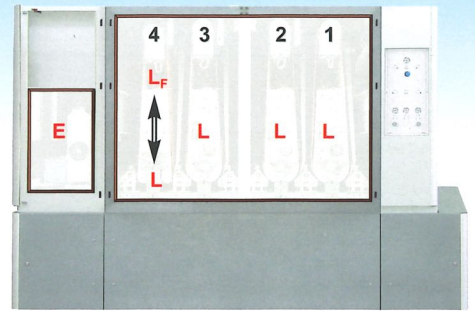
Cross units



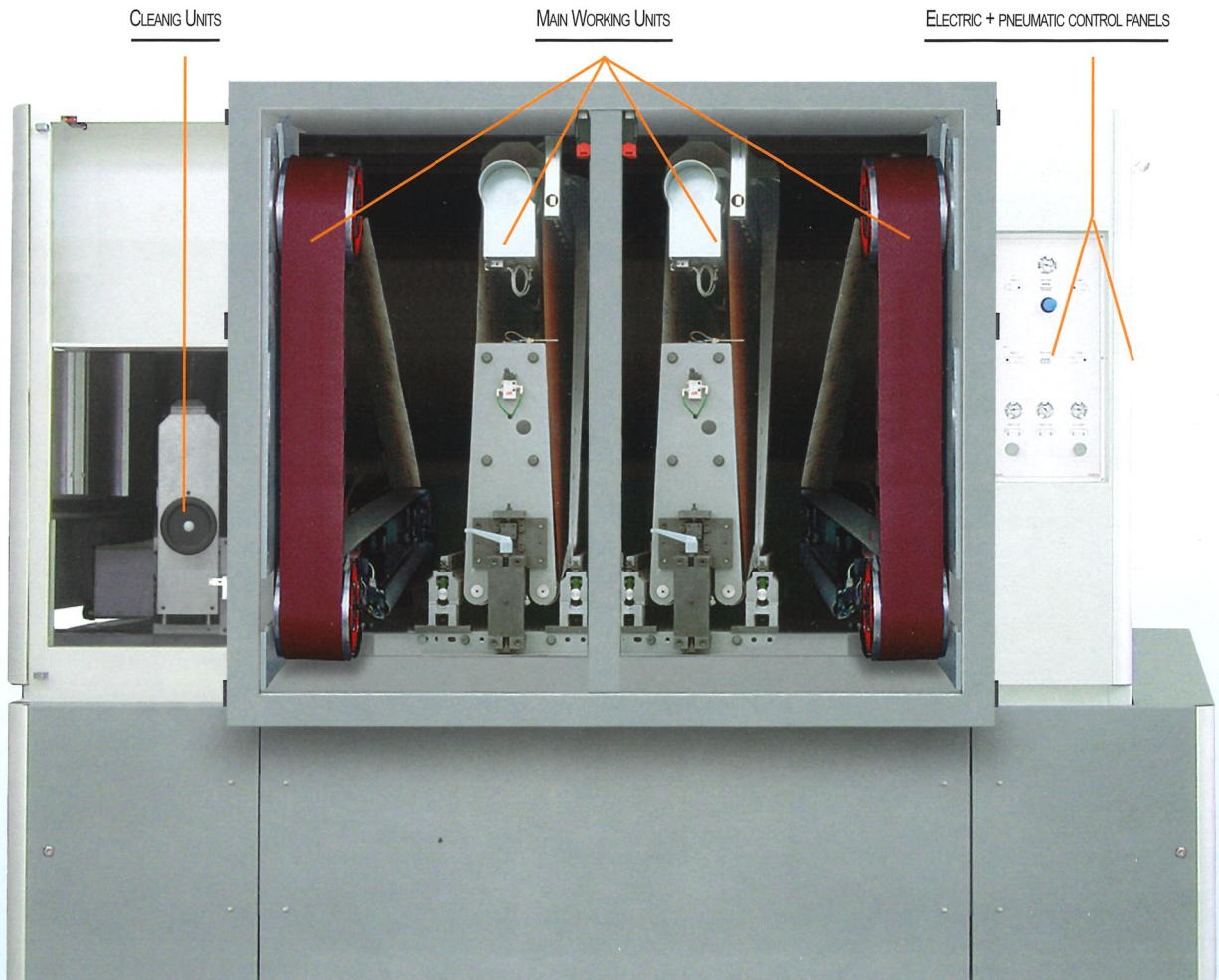
Machine with 2 working units



Machine with 3 working units

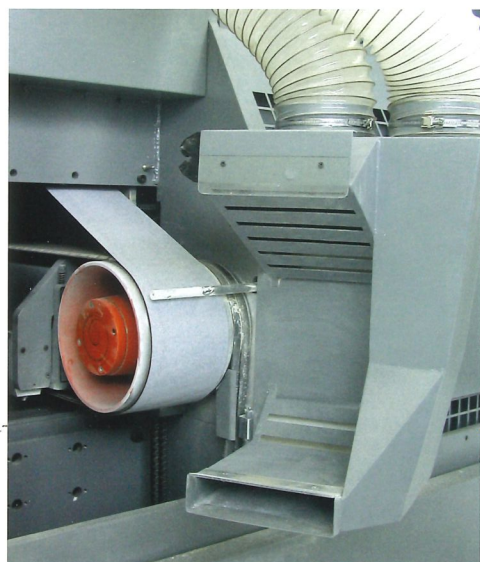


Machine with 4 working units



Cross belt working units

A sanding belt runs across the surface of the work pieces;
 a sectioned pad transfers the working pressure on the sanding belt;
 the lamellar belt runs between the sanding belt and the pad elements to increase the working performances.
 These units are normally utilized to smooth the grain of the veneer with a sanding action across the surface and to finish panels with cross veneer.
 In case of lacquered surfaces it is a good solution for both smoothing as well as finishing purposes.

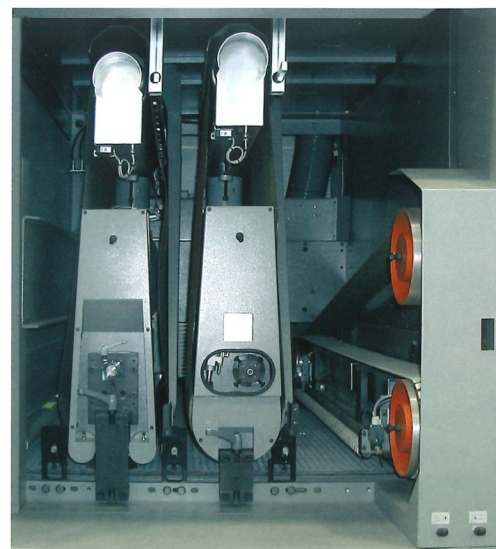


Length of sanding belt 5650 mm x 150 mm wide
 Lamellar belt length 4515 mm x 150 mm wide.

Dust hood in opposite side of internal cross belt unit (TRI),turnable 90° to easy the change of sanding belt.



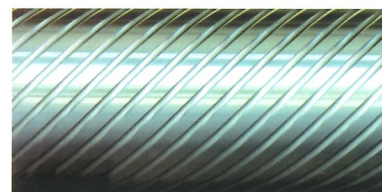
View of a working units sequence in first position **Cross belt units**, second position calibrating or sanding **Cylinder**, third position finishing **Pad**.



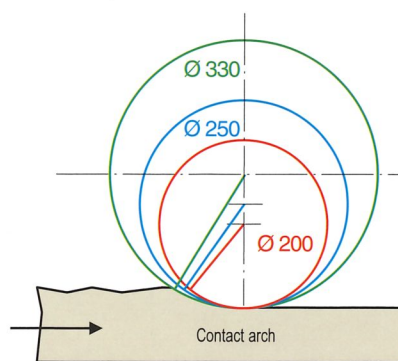
Cylinder units

A wide abrasive belt runs on a rubber covered (or steel surface) cylinder.
 The rubber harnesses determines the level of adaptation of the sanding action of the cylinder on the panel surface in white-wood/lacquer operations; a soft rubber covered cylinder has more adaptability to the unevenness of the surface therefore is better for veneer-lacquer sanding operations, while a hard rubber cylinder has less or no adaptability to the surface (thus better for calibrating operations).

The main feature of the cylinder unit is the higher capacity to "take away" with same sanding belt grit, compared to any other sanding media.



Special type of helicoïdal grooves on the surface of the cylinders for cooling and for air discharge



The **Grit-Set** - Pneumatic or Electronic- is very useful to visualize the working height and to position with accuracy the cylinder at a correct level in all working operations.

GSE Electronic Grit-Set - centesimal positioning of the working level of the cylinder unit.
 Exclusion of cylinder in emergency (stand-by) (opt).

GSP Pneumatic Grit-Set - to position by pre-set steps the working level of the cylinder unit.
 Exclusion of cylinder in emergency (stand-by) (opt).



For **calibrating** a smaller diameter cylinder is more aggressive, the angle of contact is more open, the surface of contact is narrower, this means less friction and more take away.

For **sanding** a bigger diameter means more surface of contact, more quantity of rubber (longer lasting time).

Combined unit (cylinder+pad)

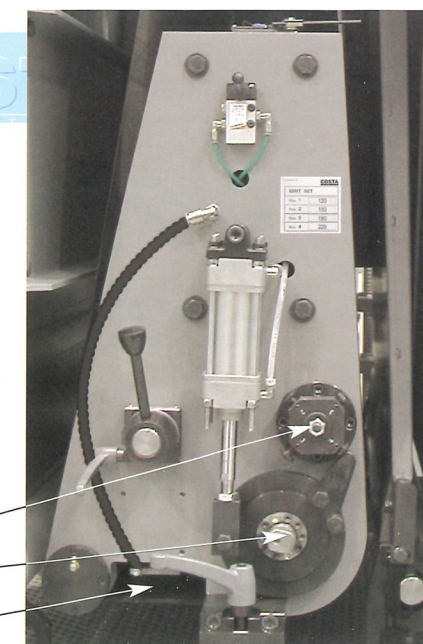
A cylinder C200 is inserted together with a pad T1 in the same abrasive belt unit, with the possibility to use either one or the other or both at same time.

- **C200** cylinder ø 200 mm rubber covered (hardness 20 + 90 shore) or steel, with in-out positioning of the cylinder (optional grit-set electronic or pneumatic).
- **T1** pneumatic pad unit with electronic time-entry control (optional are the electronic controlled sectioned pads TP16 and TP32).

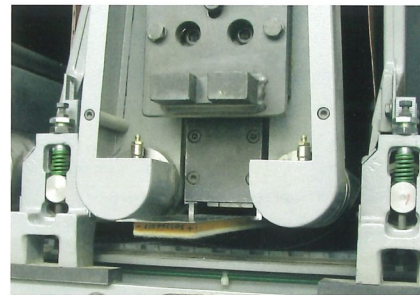
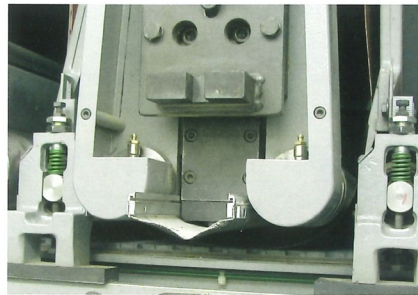
Support on a revolving turret at 4 preset positions

Pneumatic Grit set

T1 pneumatic pad

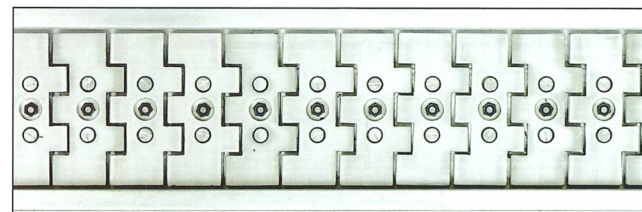


This is the classic sanding unit for finishing the surface, as they are able to compensate thickness and planarity differences of the panels. In this unit the sanding belt is pressed down to the panel surface by a number of contact elements at variable intensity of pressure. The wide surface of contact of the pad unit gives a flat look to the panel surface. For an ideal protection of edges and corners of panels we recommend the sectioned pads with electronic control of the timing of intervention and of the pressures of utilization.

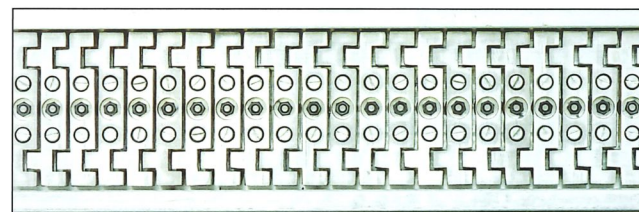


Quick - easy change of graphite cloth and inspection of the felt-rubber and the steel blade inserts

TP32 - TP16 Electronic controlled sectioned pad



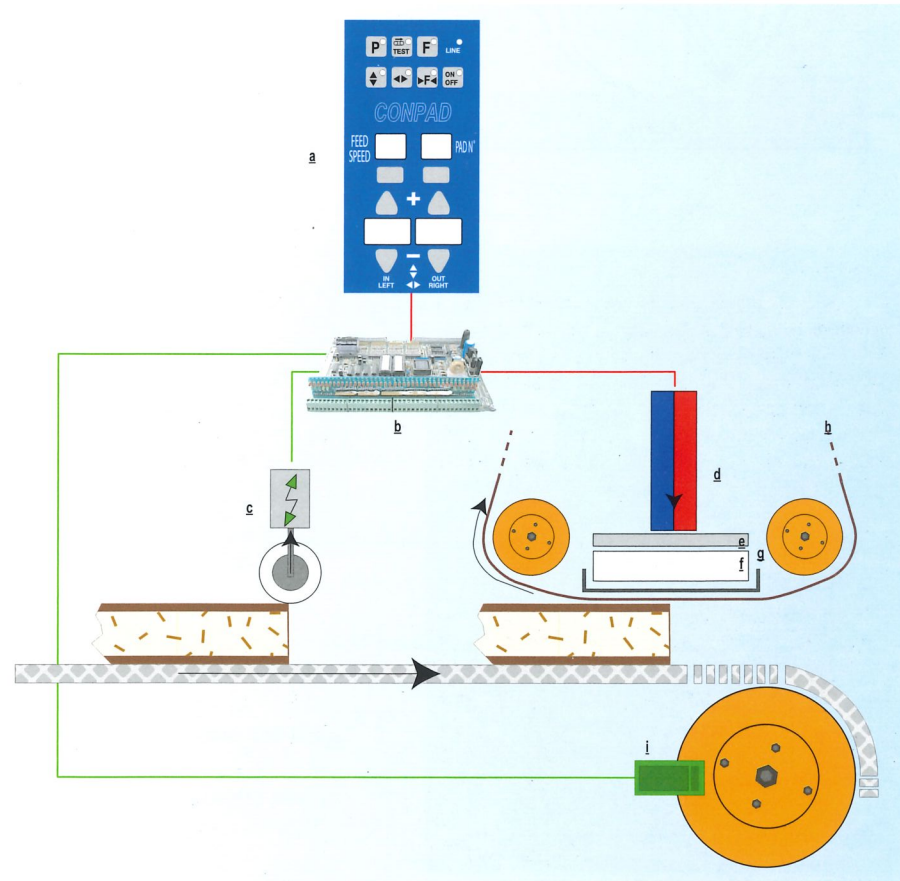
TP32 • pitch of sections 32 mm
n° 42 sections with a working width of 1350 mm



TP16 • pitch of sections 16 mm
n° 84 sections with a working width of 1350 mm

The electronic controlled sectioned pad system of sanding requires all its elements to operate in absolute coordination and to be of the highest quality to obtain the best finish result on the panels surface. The following scheme visualizes all its components, all fully interconnected to form one only working system, where each item must correspond perfectly to the general functionality to obtain the best sanding result.

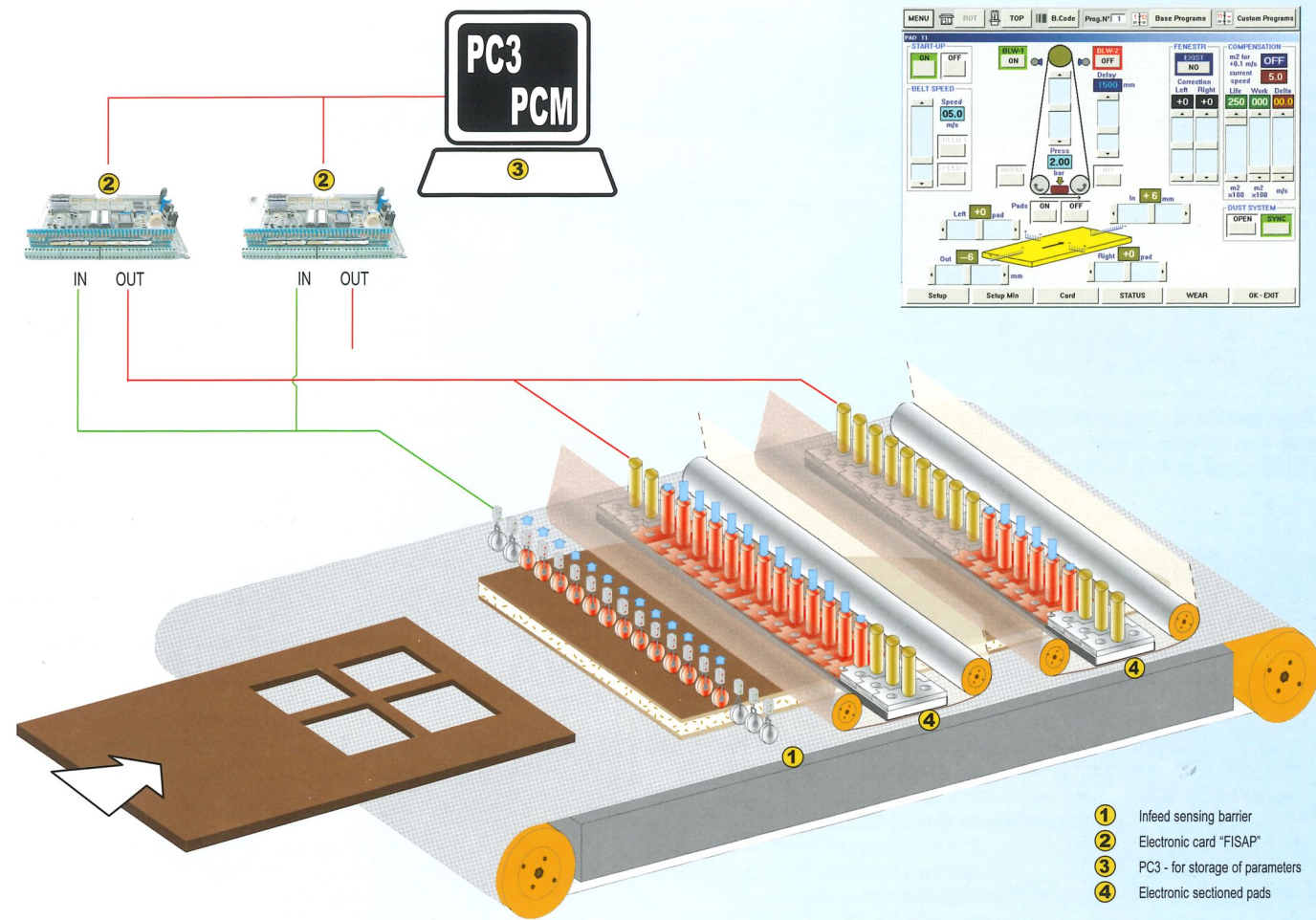
- a manual pad control panel; enable the variation of electronic parameters
- b electronic card for pad control
- c infeed sensing bar with rubber covered wheels and inductive sensors, to detect form and size of work-pieces
- d pressing system - acting on each-one section with pneumatic or electromagnetic pressure
- e metal pad section, spreading the pressure of the upper element on the underneath layers of felt / graphite / sanding belt
- f felt / rubber / foam intermediate contact element that is adapting on the panel surface and is changeable depending on operations required
- g graphite cloth - a sliding surface working on the back side of abrasive belt, changeable depending on wear
- h sanding belt
- i encoder on feed drive unit to give a signal every 1 mm



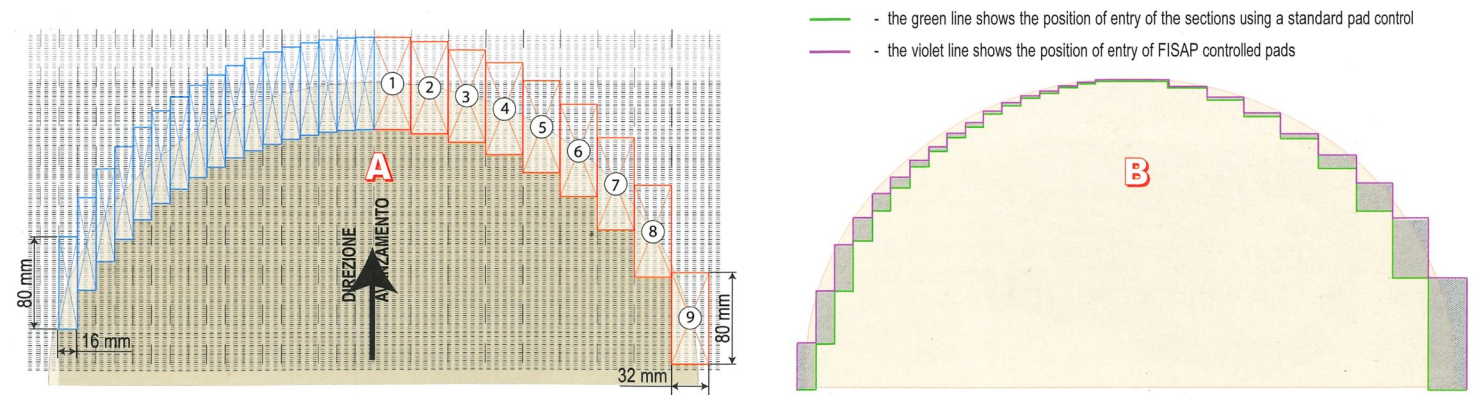
FISAP is the newest and most advanced program for the "automatic identification of form & size of panels, with automatic acquisition of proper parameters of sanding in real-time". This system becomes a very big help for the Operators, as it makes unnecessary any intervention for correcting the parameters to adapt the electronic (pad) settings to the form of work-pieces. As soon as the in-feed sensing bar detects the form of work-pieces to process, FISAP chooses in real-time the most appropriate settings for the intervention of the pad units:

- by setting proper time entry of pad sections (with accuracy intervention of 0,008");
- by re-setting the actual position of contact of the sanding belt in relation to the angle of impact of the incoming form, for each section;
- by varying the sanding pressures on the edges to meet the requirement of the form to sand.

FISAP require a PC or PCM to store the parameters of automatic intervention.

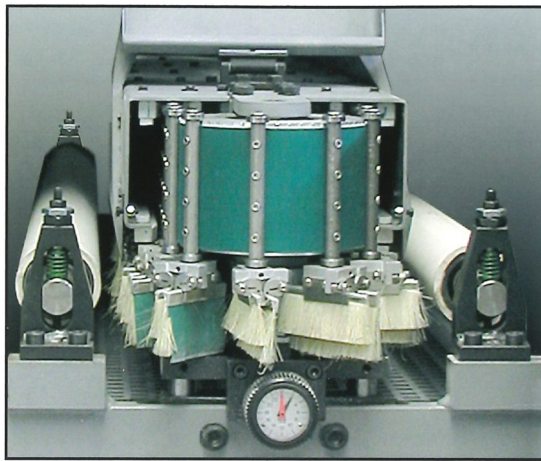


RESOLUTION :
the drawing **A** shows what is "visualized" by the electronic card, that is a net with 1 mm of height (in the sense of the feed direction, data coming from the encoder) and in width dimension of the pitch of the pads, in our case 16 or 32 mm. This is the level of accuracy of the pads in relation to the dimension and effective form of panels. We all notice how by diminishing the width of the pads the resolution of entry in angled panels get better, improving the sanding result in the edges of panels. The shaded colour in the edges (on figure A) shows the normal entry position of a sectioned pad without any correction. Figure **B** shows how in the same situation, the utilization of FISAP electronic control on pads is improving the finishing on the edges of panels, by automatically varying the individual time-position of entry of the individual sections in relation to the angle of contact on the panel.



XL

Bilateral cross brushing units

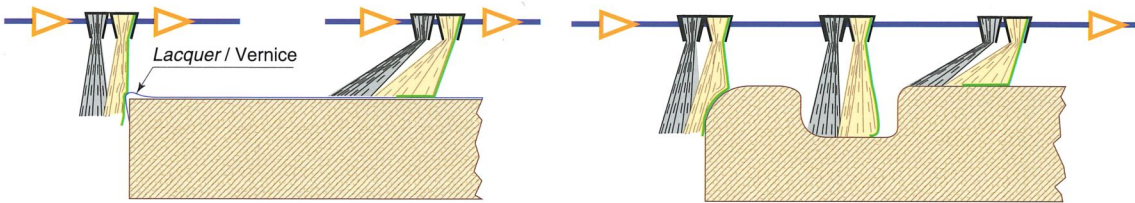
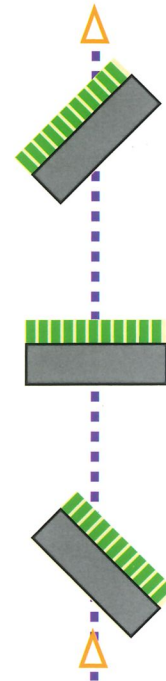


The XLS unit consists of a rotating belt that is supporting a series of pads with the abrasive paper inserts. During the rotation of the belt, the pads with the supported abrasive strips are brushing the work pieces from both sides, therefore this unit is processing all 4 edges and the top surface of the panels in the same pass.

XLS is equipped with:

- micrometrical setting of the working pre-load;
- motor power 2,2 kW controlled by inverter for variation of brushing speed range from 1 to 4 m/s;
- two dust hood collectors for proper cleaning of elements;
- quick change of abrasive inserts from the service side, abrasive inserts that can be prepared by the utilizers themselves.

The sanding pads are inclinable of +/- 45° in respect of the feed direction.



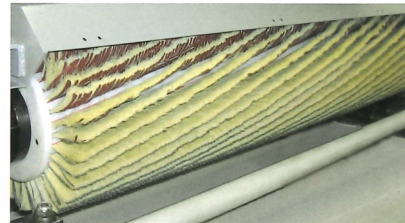
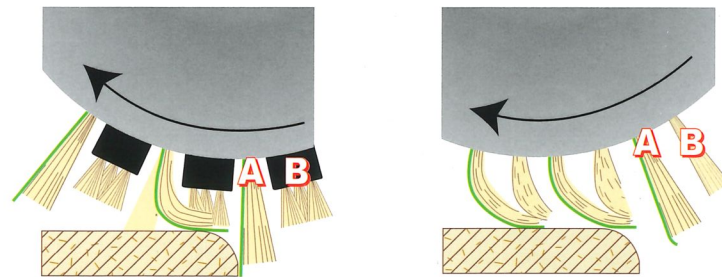
The brush-sanding working system is constituted by an inclinable pad in which are inserted a sanding strip (abrasive grit variable) followed by one first back-up element (variable stiffness) followed by a second element to further support the sanding action. Depending on the working height of the system, we can work only on the edges or also penetrate in the surface and inside the grooves of the panels surface.

FT2-3

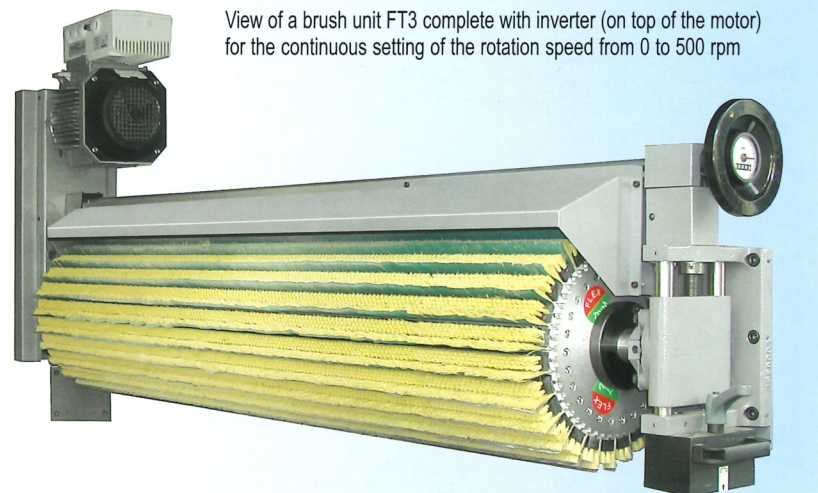
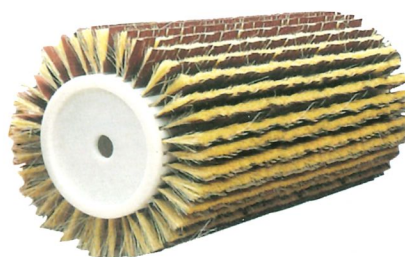
Longitudinal brush working units

The increasing utilization of water-soluble lacquers leads to the elimination of the wood fibres raised after the application of water-based stain and lacquers, in order to reach a good finishing degree. The utilization of Flextrim™ brushes or similar types allow the elimination of raising wood fibres thus solving the problem.

This wide adaptability is given by the possibility of inserting sanding strips with different abrasive paper grit-hardness - A - in the same roller (ex. 120 + 220 + 260), with the ability to change the back supports - B - also with different flexibility to increase or lower the brushing action on the work pieces.



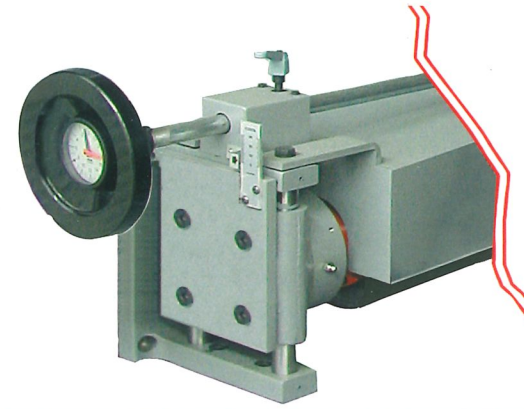
The machine allows the installation of different systems or Brands of brush-sanding units, to follow our Customer preferences.



View of a brush unit FT3 complete with inverter (on top of the motor) for the continuous setting of the rotation speed from 0 to 500 rpm

SB180-250

Scotch-brite™ units

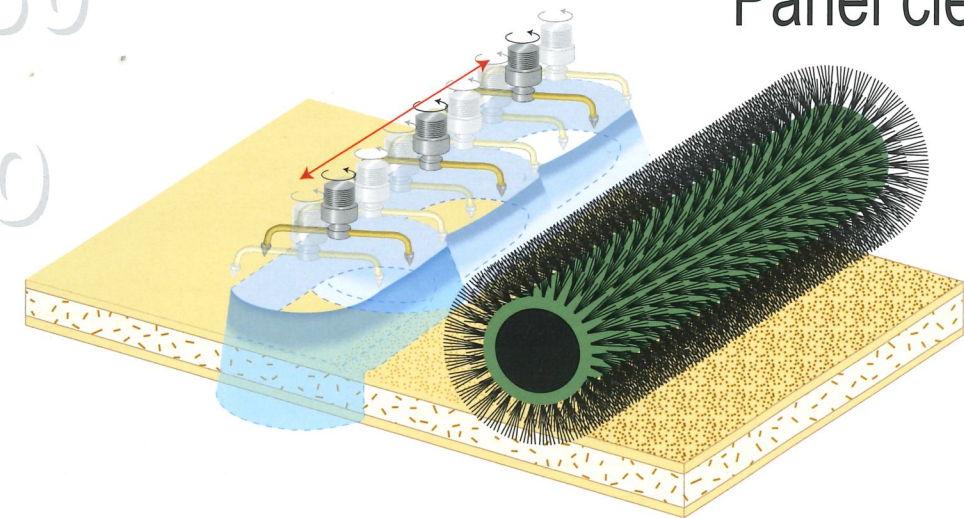


These working units are utilized to improve the sanding and to finish the lacquer surfaces.

The scotch-brite brush has a structure of non-woven synthetic fibres impregnated with abrasive grain of aluminium oxide or silicon carbide, the rollers are available in variable grit (80+1000) and various density.

S180 SR SRO SJ SL AB

Panel cleaning units



Very often the sanding machine is integrated in complete working lines (lacquer lines) therefore it is very important that the panels are perfectly cleaned. In the rear side of the machines we can install different "panel cleaning units":

- the scotch-brite brush is an aggressive and effective unit to clean the lacquered surfaces from the fine dust generated by sanding with very fine sanding belts;
- the normal brush is cleaning the heavier dust with bristles either in nylon or vegetal fibres or even with horse-hair bristles to diminish the build up of static electricity;
- the rotary blowers are helping to blow away the very fine dust from the surface as well as from the sides of the panels;
- a new version of rotary blowers with lateral oscillation system are fitted with jet blowers with special nozzles that can blow away more effectively the dust from inside the holes of the panels;
- antistatic bars help lowering the static electricity from the panels.



S180 / S250	• Brush unit Ø 180 / 250 mm made in nylon or vegetal fibers
SB180 / SB250	• Scotch-Brite™ unit Ø 180 / 250 mm Scotch-Brite rollers™ of various density
SR	• Stationary rotary blowers
SRO	• Rotary blowers with lateral oscillation of the blowing units
SJ	• Blowing ionizing bar to lower the static electricity accumulated during working process
SJ1 / SJ2	• Single and double antistatic bars
SL	• Linear oscillating blowers



Feed belt cleaning blowers

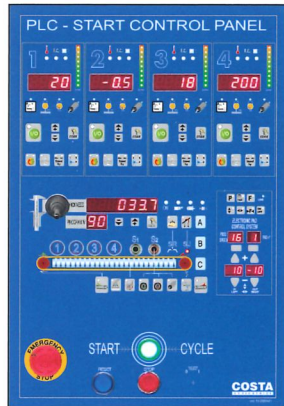
To clean the feed belt, we position in the bottom side the "oscillating cleaning blowers" (OPTIONAL). Connected to a timed entry system, they are blowing a moisture of air + water to increase the level of grip to the feed belt. A dust hood complete the unit.



Electromechanical Panel

Control panel positioned in front of the machine, with push-buttons for all motors and amp-meter readers of power utilization of the working units.
 Digital positioner with read-out of the thickness adjustment with decimal accuracy.
 Emergency stop and reset
 Range change switch for the variation of the feed speed
 Diagnostic leds of electric-pneumatic-safety problems

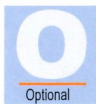
1



START - PLC control panel with global visualization of functions

START is a plc control system, with digital board positioned in machine front side equipped with:
 push buttons and amp-meter read-out of the power utilization for each working unit;
 read-out of the position of each grit-set (for cylinder units) and setting of parameters of pad working units;
 automatic setting of the panel thickness with decimal accuracy and digital read-out.
 All machine functions are visualized and memorized in the START plc.
 The initial configuration and eventual modifications are inserted manually and they can always be recalled by a code; these data are automatically transferred, in a pre-defined sequence, to the machine starters by a single pressure of the Start cycle button.
 The START panel can store up to 9 complete working programmes in its plc.

2



PCM - Computer control with monitor on board of machine

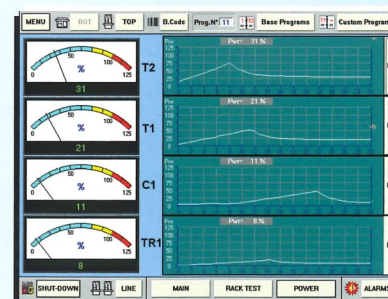
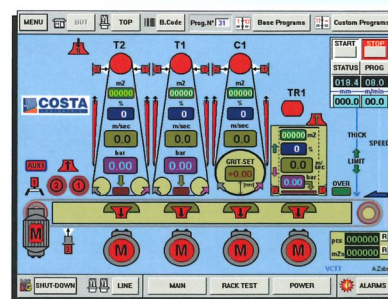
"Easy" Personal Computer System, operating with Windows, is complete with a Costa Sanding Manager, the standard programme for total machine control.
 It's possible to choose between "TOUCH SCREEN" and "FINGER MOUSE".

3

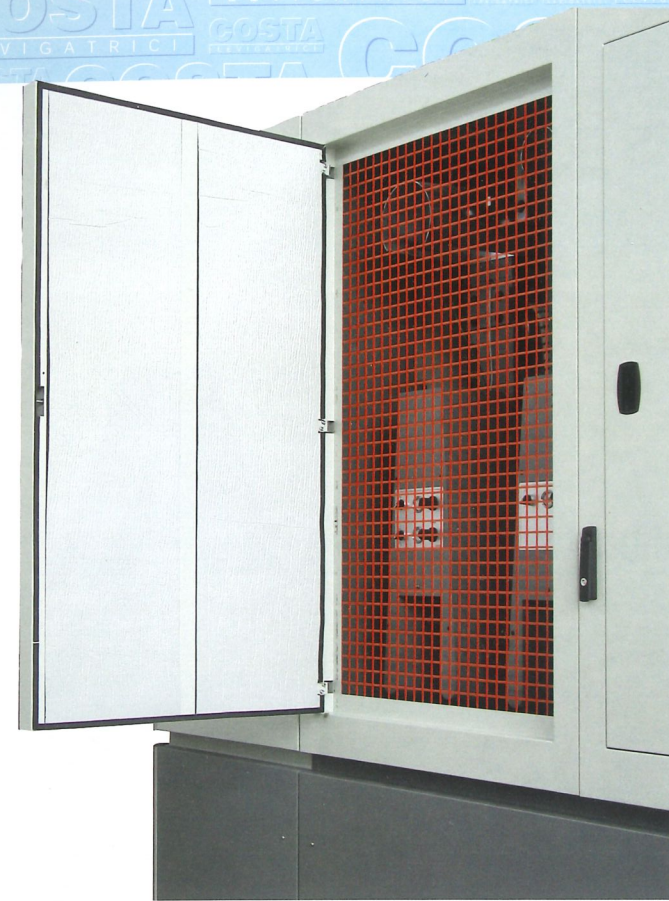


PC3 - Computer control with interconnecting possibilities

Computer controlled machine, with monitor and keyboard positioned in a separate column
 This is a PC working position integrated in the company network.
 The PC control system allows to pre-set all the working programs; besides the usual controls of the machine, it can also supply complete production data such: number of pieces processed, working time per each code, square meter produced, compressed air, volume of dust extraction, electric power consumption, etc..
 Through a modem we have the possibility to connect directly Costa Service for help and service



4



Double doors, the external with noise protection layers and the inside made with a net, with emergency safety stop when opening the inside. (OPTIONAL)

The inverters are enclosed in the frame, in a ventilated space in the rear side of the machine. They are reachable through the inspection doors



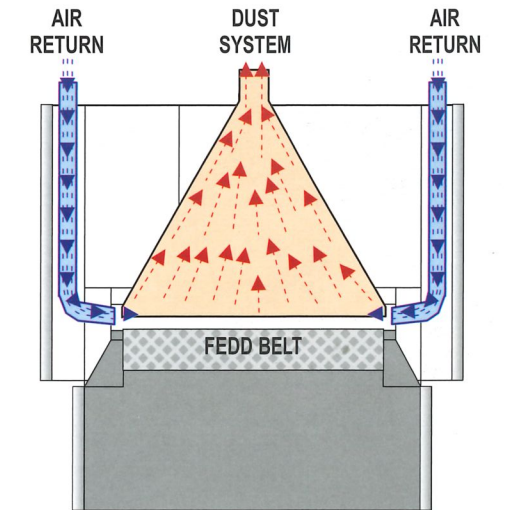
Machine outfeed view with driven roller for line connection (OPTIONAL)



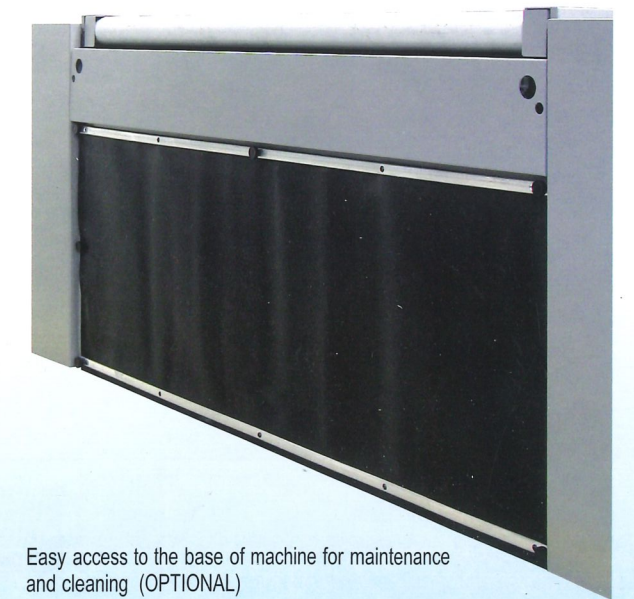
Air return system (STANDARD in machines with cross belt unit), in order to assure the proper dust flow together with the sound protection.

Possibility to have an inclinable panel board to 45° very useful for machines positioned in line. (OPTIONAL)

The pneumatic panel is mounted



Machine infeed view with driven roller for line connection. (OPTIONAL)



Easy access to the base of machine for maintenance and cleaning (OPTIONAL)

The other lines in our range of products:



Universal Sanding-Calibrating Machines



Sanding Machines



Sanding-Calibrating Machines

- Top Machines
- Bottom Machines
- Top+Bottom Machines



We reserve the right to change features without any notice



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