

# Automatic calibrating-sanding machines with modular top units

**SERIE**

Heavy duty universal machine with:

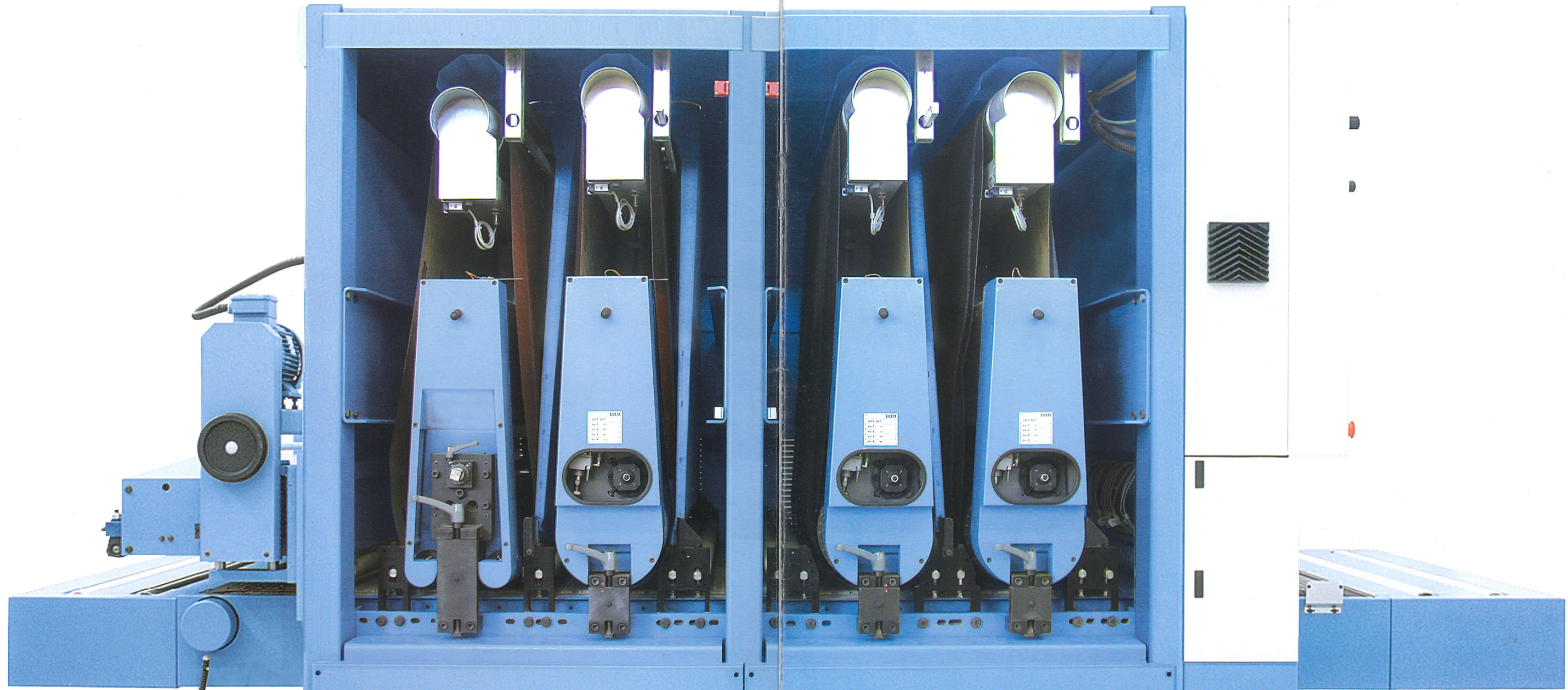
- 2 - 3 - 4 working units
- 2 panel cleaning units



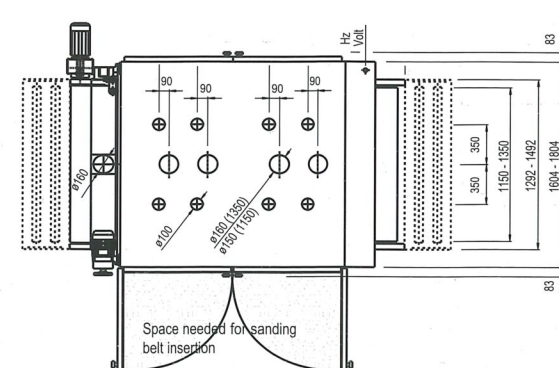
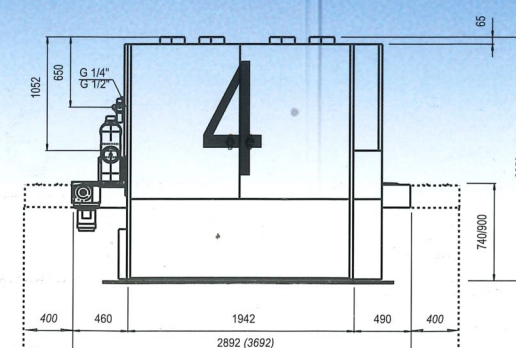
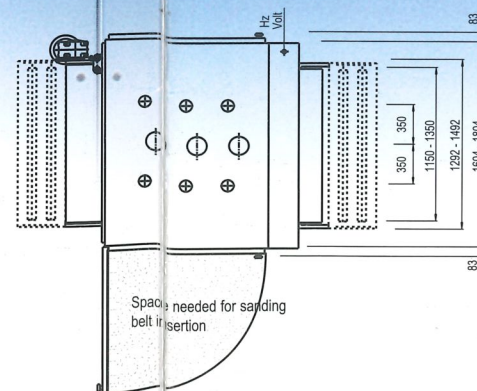
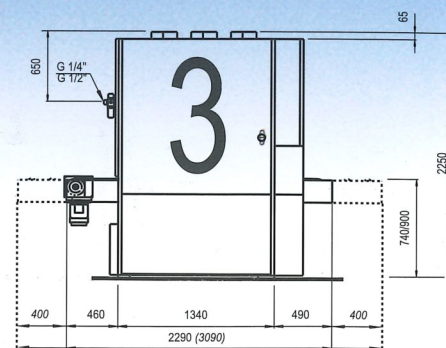
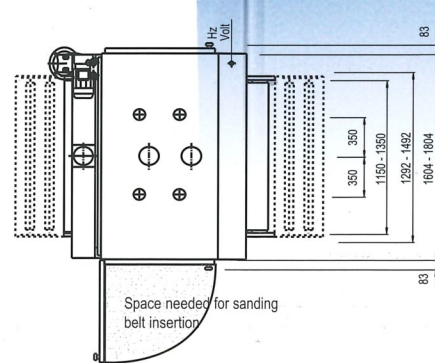
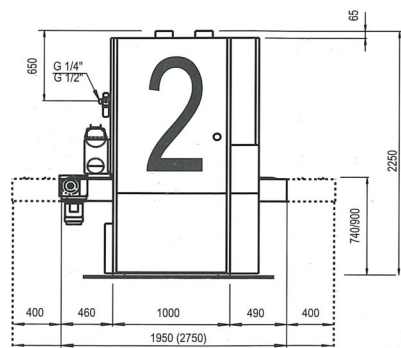
Mod. AKF CCT 1350

 **COSTA**  
LEVIGATRICI

**Series A** - view of Model A1 CCCT / 1350 with 4 working units 3 cylinders and 1 pad, complete with brush and rotary cleaning blowers

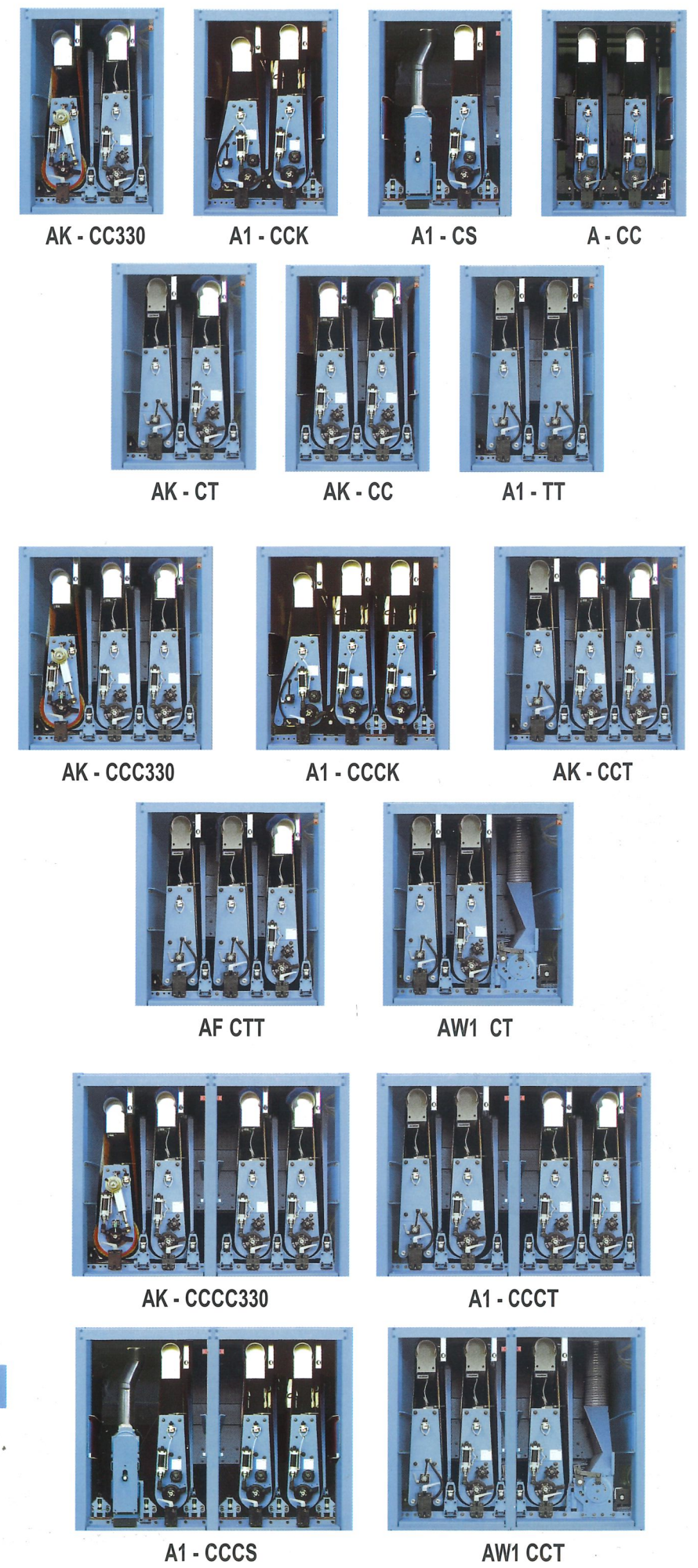
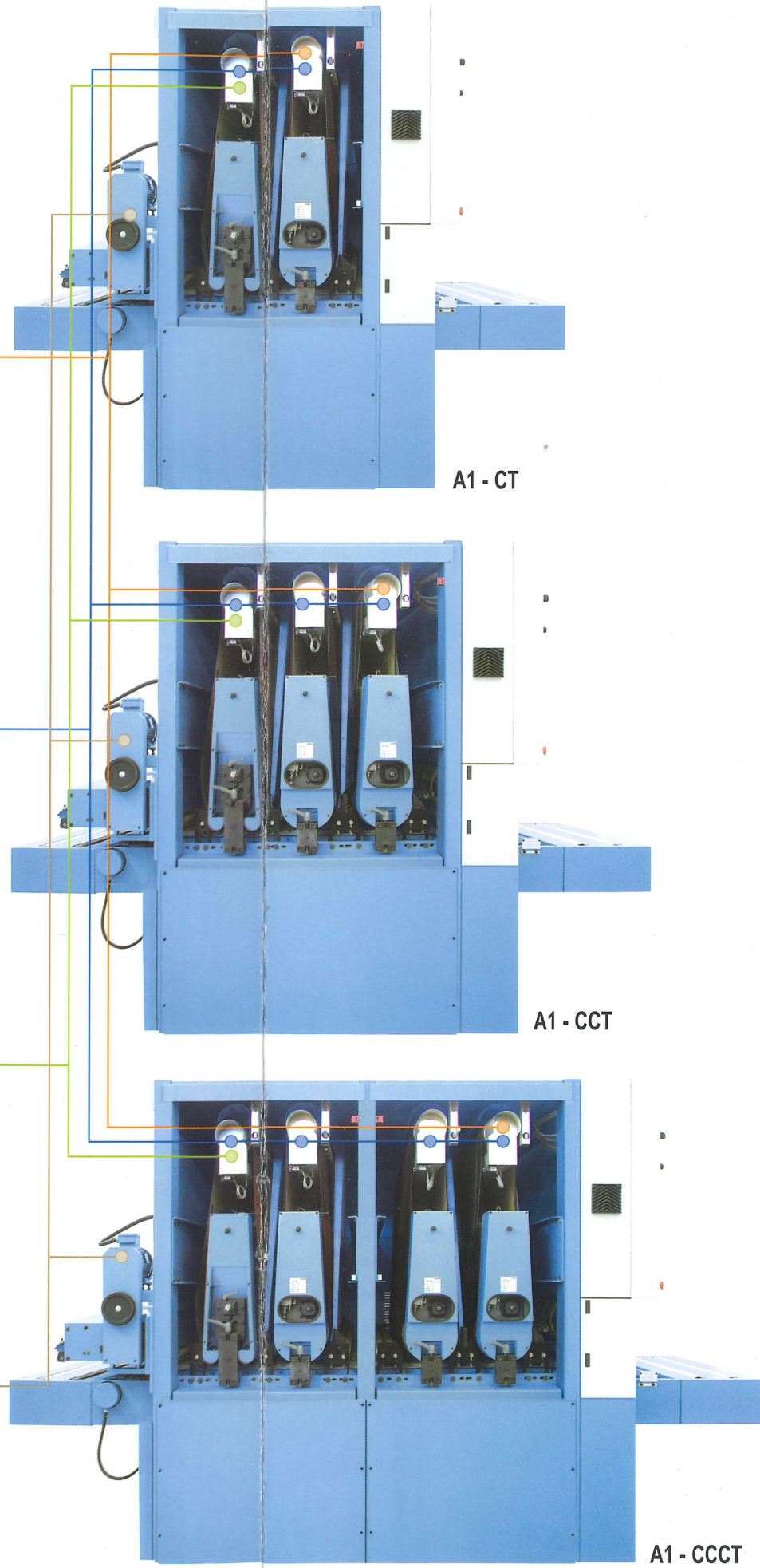
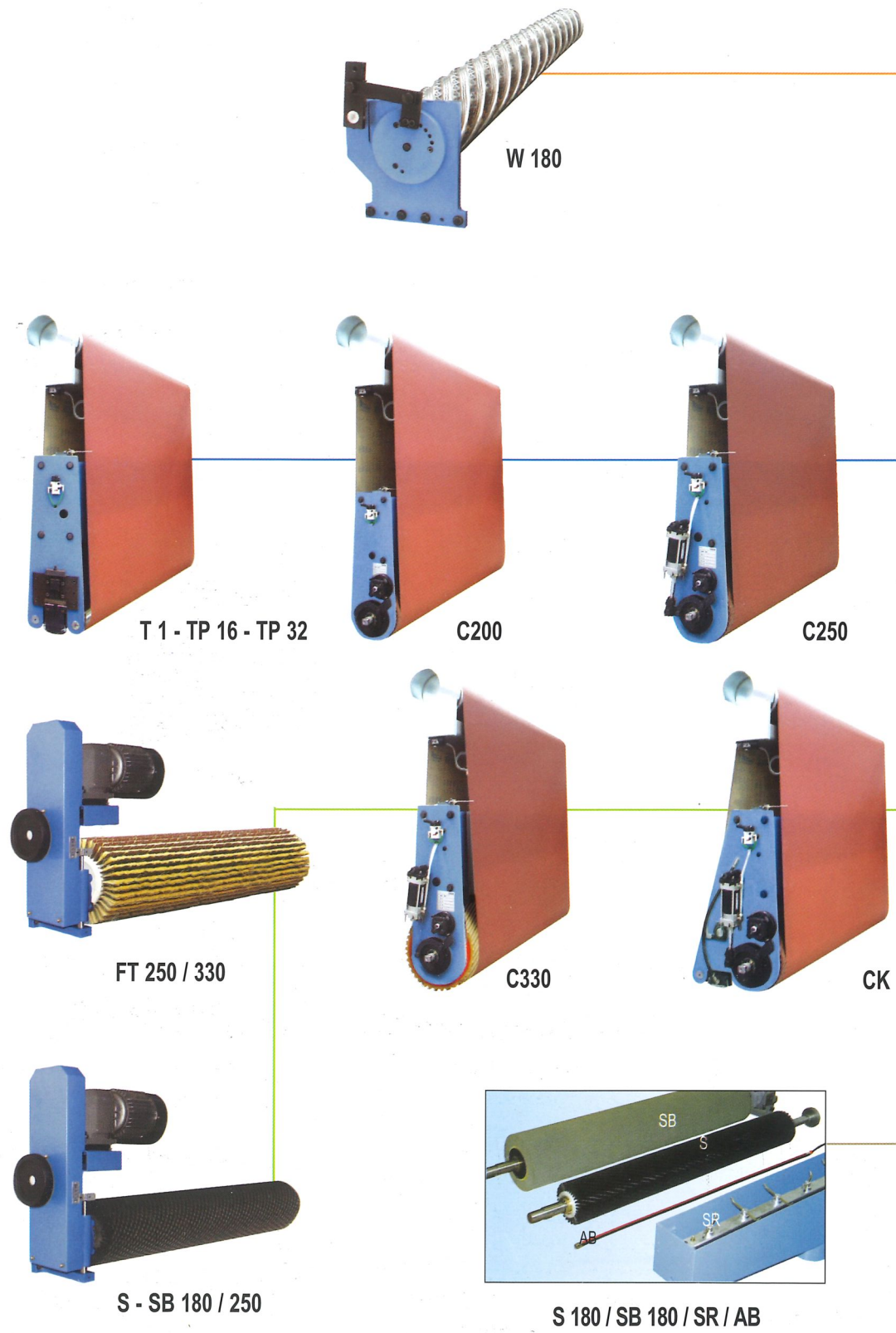


Note the middle column positioned between the working units, to make the frame much more rigid in the version with 4 working units



Series A stand-out in the field of Calibrating-Sanding machines for the high level of **MODULARITY**.

Everyone can compose his machine according to specific require-



# Machine configuration

The view shows the disposition of the machine main elements, all sustained by the 4 columns (6 for the version with 4 working units), with the machine main units, feed table - pressure units - working units - motors, all with adjustment point to allow an easy re-alignment in case of need.

Sanding belt tensioning unit with heavy-duty chromium coated piston, complete with automatic adjustment of parallelism with the working unit

Supporting beam for working units and sanding belt tensioning, adjustable to maintain parallelism

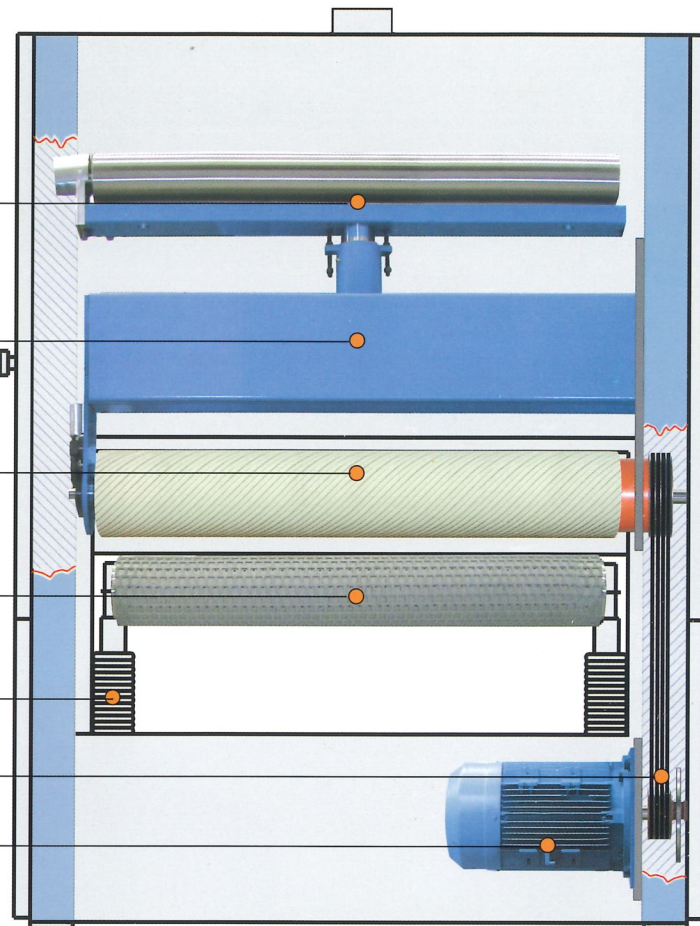
Working unit - totally adjustable in relation to feed table

Feed system at variable height with slideways anchored to the frame; automatic centring of the feed belt

Heavy-duty lifting columns for feed system

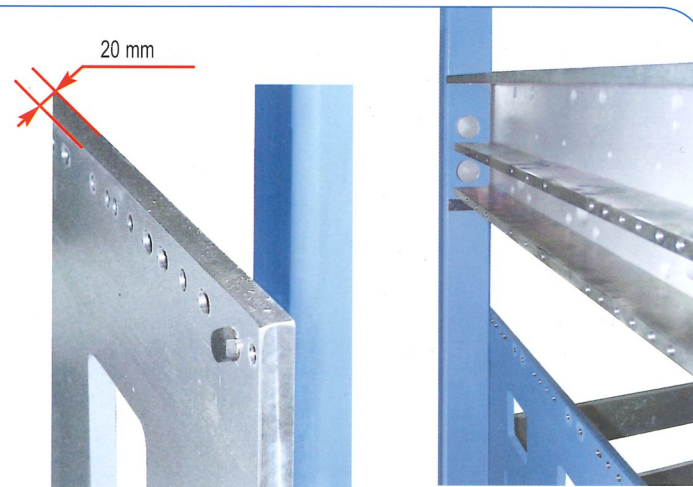
Transmission belts foreseen for high power - with mechanical tensioning system

Working unit motor (up to 30 kW) with disk brake, positioned inside machine frame



# "Heavy duty" machine frame

Series A stand-out from the other calibrating-sanding machines with movable table for the generous sizing of all components of its frame, designed to withstand a round the clock operation at full power. The frame is the same for all versions of Series A, including that with the planer head W180, tested in hundred of units with level of stress much higher than any calibrating-sanding machine.



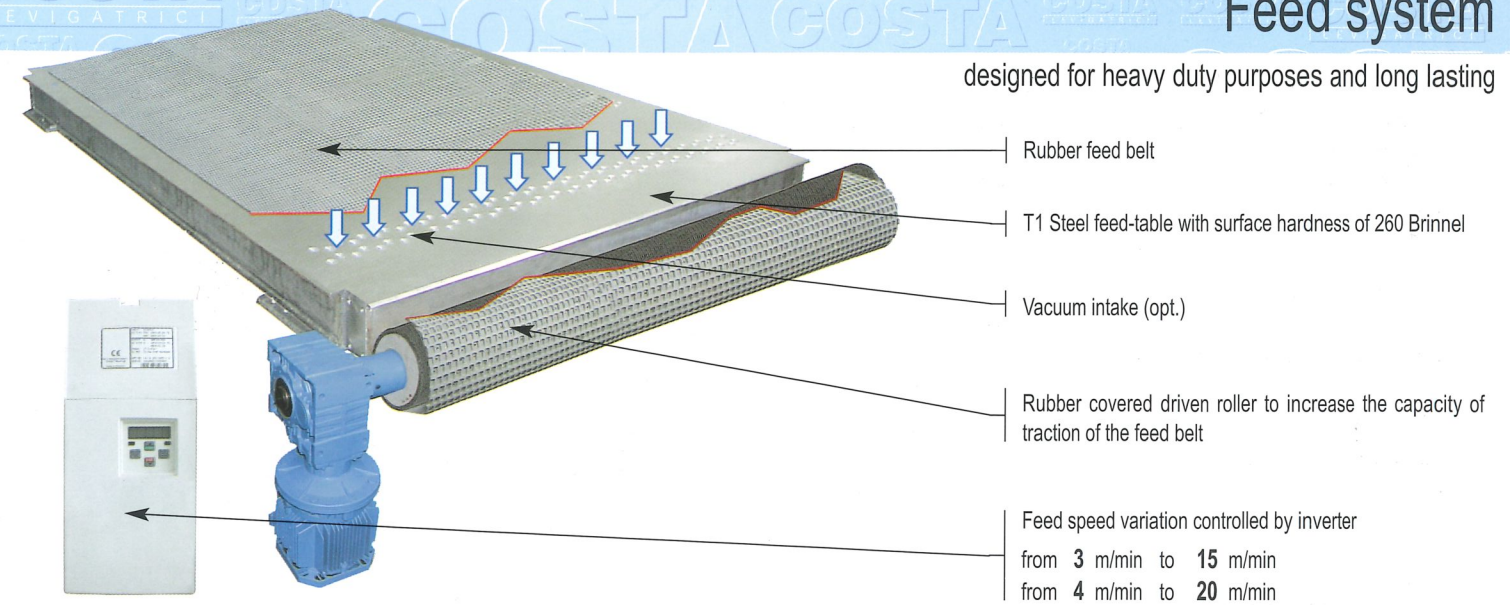
CNC processed steel plates to hold the working units



Thick rectangular extruded steel constitutes the vertical frame work suitable to withstand a total motor power exceeding 100 kW.

# Feed system

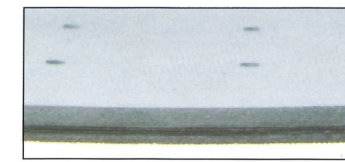
designed for heavy duty purposes and long lasting



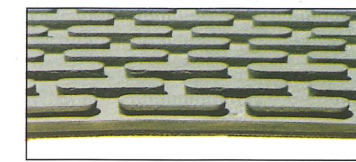
- Rubber feed belt
- T1 Steel feed-table with surface hardness of 260 Brinell
- Vacuum intake (opt.)
- Rubber covered driven roller to increase the capacity of traction of the feed belt
- Feed speed variation controlled by inverter  
from 3 m/min to 15 m/min  
from 4 m/min to 20 m/min



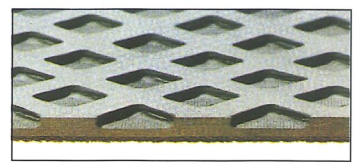
Feed belt



Flat



Raised lozenges pattern

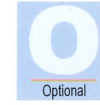


Small diagonal embossed squares (specific in case of vacuum device)



Rigid feed table

Most of the series A versions are standard equipped with a rigid feed table  
Are also available two versions of machine equipped with multifunction feed table floating/rigid

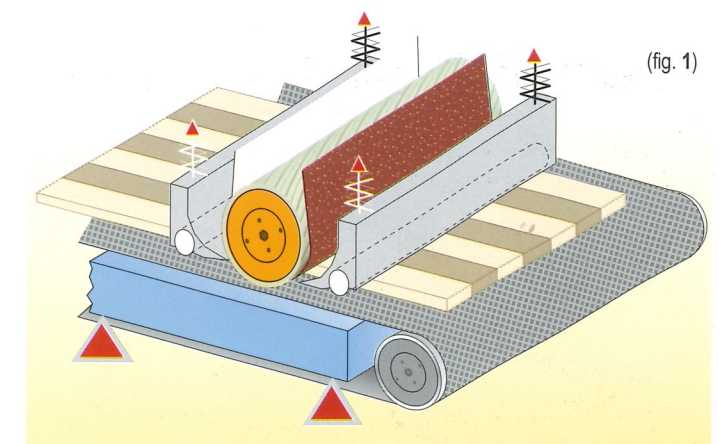
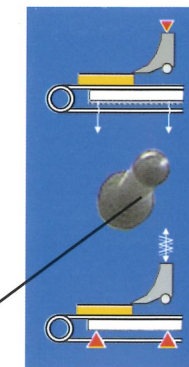


Multifunction feed table rigid / floating

In calibrating mode (fig. 1) the feed table must be rigid to assure a high level of thickness tolerance of the processed workpieces, while the pressure units are free to float.

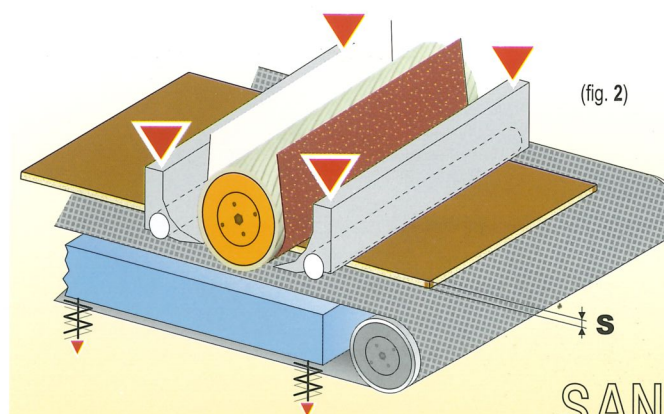
In veneer/lacquer sanding operation (fig. 2) the pressure units are set rigid and the feed table works in a floating mode.

This type of setting allows the levelling of different panel thickness ( $\Delta$ ) up to a maximum of 2 mm (fig. 3). Setting operations of feed table and pressure units are automatically made by a quick set device



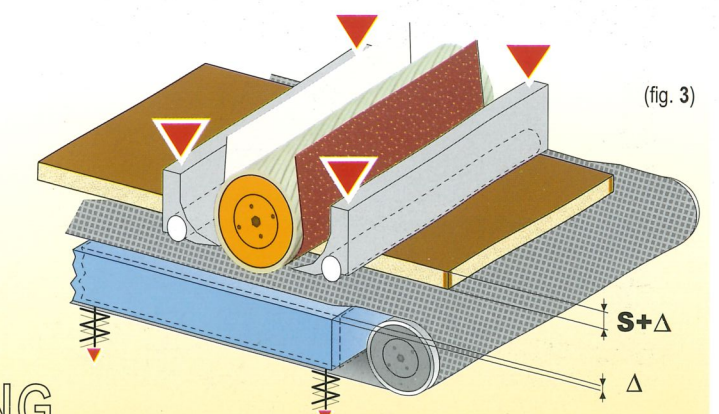
(fig. 1)

CALIBRATING



(fig. 2)

SANDING



(fig. 3)

# Pressure units - to secure a good traction of the work pieces

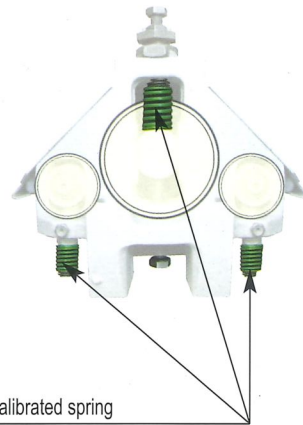
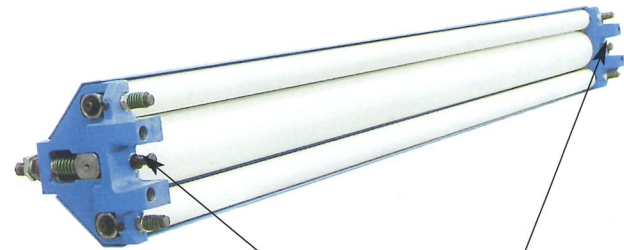
# Other machine features

The safe traction of the work-pieces is determined by the rigidity of the pressure units ( that is their ability not to bend if stressed by heavy loads), at same time they must be able to adapt to thickness variation of work-pieces.



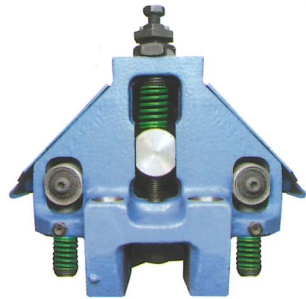
## Rubber covered rollers

- dual setting purpose
- elastic (to allow panel thickness variation in calibrating mode)
  - rigid (to allow feed table flotation in fine sanding operation)



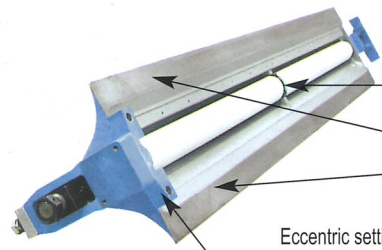
Variable pressure load control with a calibrated spring

R - L screws for setting the parallelism in reference to the feed table



## Heavy duty pressure units with lips and rubber covered rollers

- dual setting purpose
- elastic (to allow panel thickness variation in calibrating mode)
  - rigid (to allow feed table flotation in fine sanding operation)



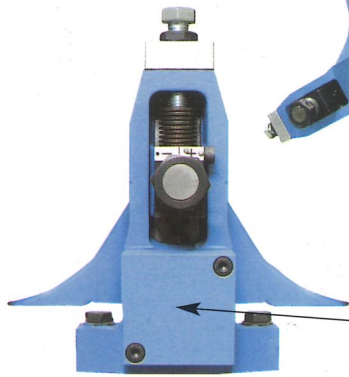
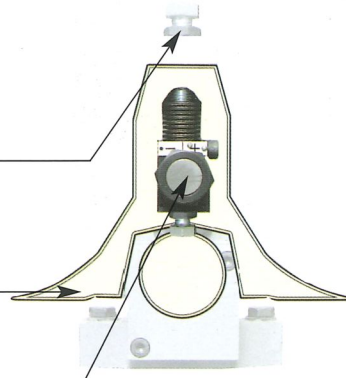
Variable pressure load control with a calibrated spring

Middle support and setting

Cast iron lips

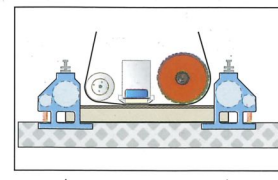
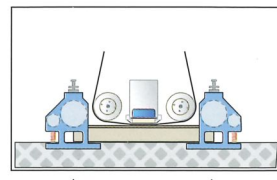
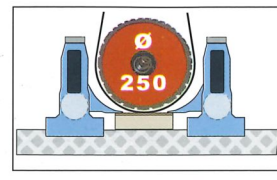
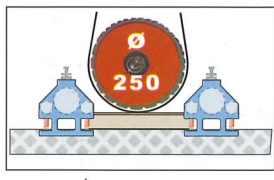
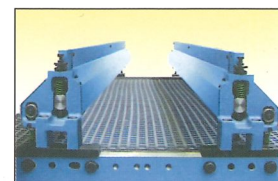
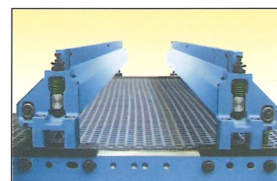
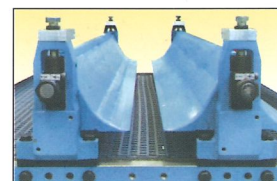
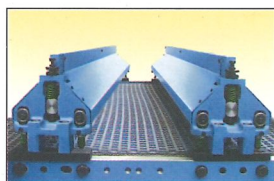
Eccentric setting of the level of the pressure unit over the feed table

R - L screws for setting the parallelism in reference to the feed table



Pneumatic system for automatic locking/unlocking by quick-set device

The pressure units must be positioned very close to the working unit to secure a good traction of all work pieces, especially the short ones or the thin panels with warpage



230 mm

70 mm

340 mm

470 mm



## Disk brakes

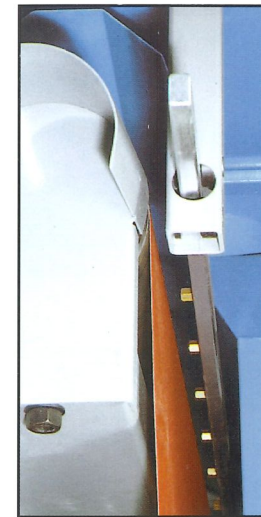


Pneumatic operated disk brakes to stop the working units within few seconds from emergency.

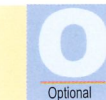


## Sanding belt oscillation system

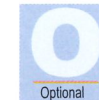
Sanding belt oscillation system with electronic dual-photocell. Complete with safety micro-switch to stop the machine in case of misalignment or breakage of the abrasive belt.



## Oscillating blowers

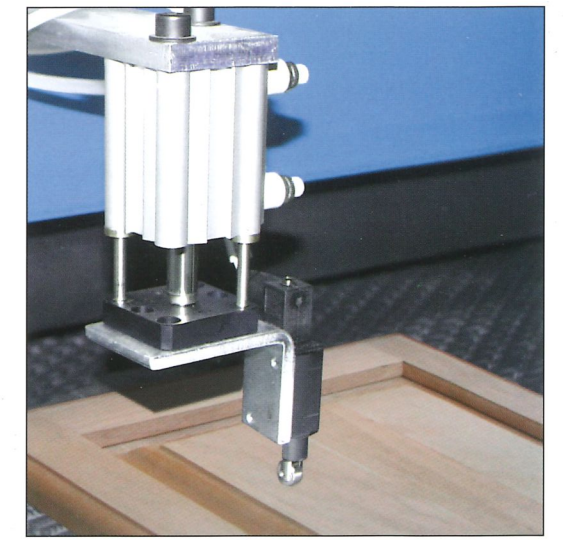


Oscillating air jet blowers for sanding belt cleaning, with high efficiency jets.



## Auto-set

Automatic thickness measuring system of the workpieces with positioning of the feed table.

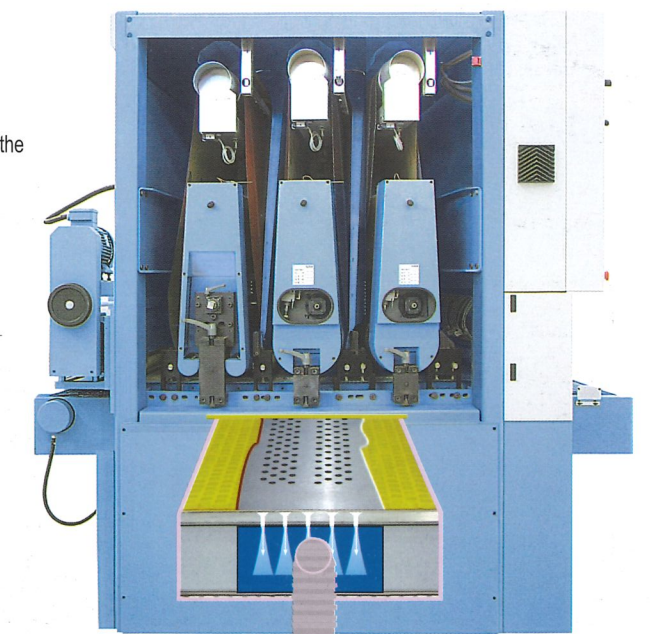
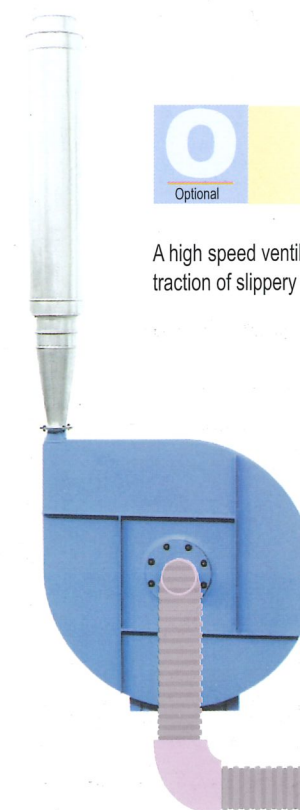


## Vacuum hold system

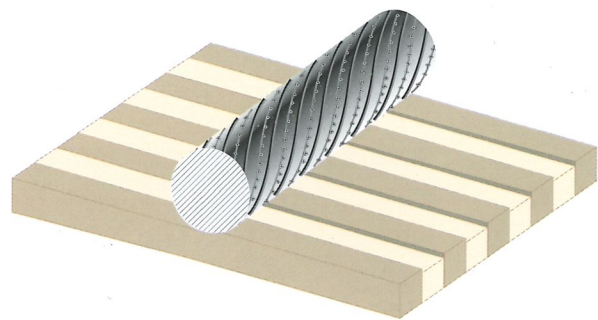
A high speed ventilator generates a strong pull under each working unit to secure the traction of slippery or short panels.

### Vacuum power

working units	2	3	4
power needed [kW]	3	4	5,5



# W180 Planer head - from 0.5 to 5 mm of take away

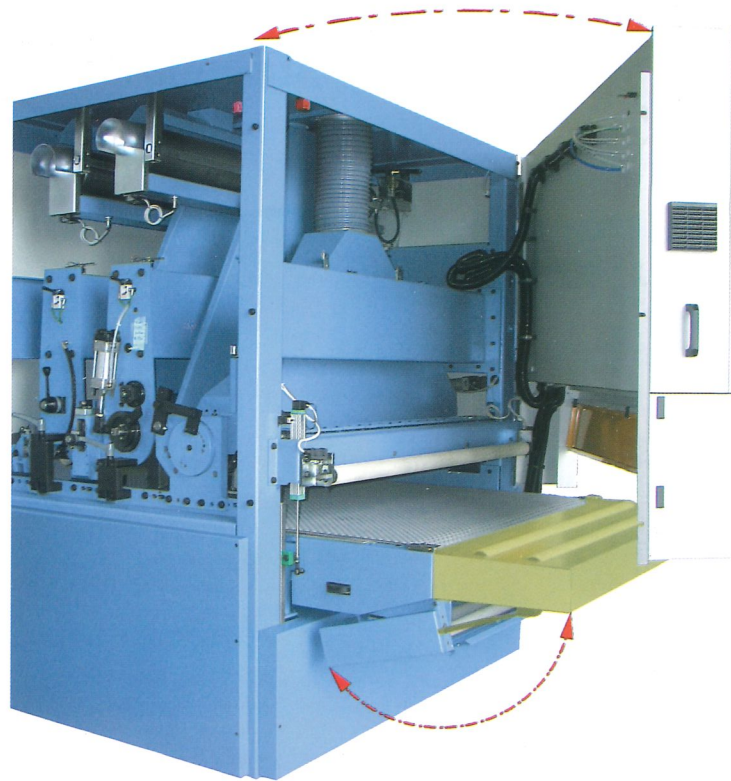


## Planer - sanding machines

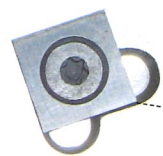
These are equipped with a planer-head unit W180-8 in the first position. The planer head W180-8 has a diameter of 180 mm with 8 rows of tips, set helicoidally and with inclined cutting edge in order to have a smooth impact.

Many the advantages in processing of solid wood panels with W180:

- possibility of high amount of take away (impossible with sanding belts), "normal" from 0,5 to 1,5 / 2 mm, and up to 5 mm when needed.
- low motor power usage, 22 kW. is the normal motor size.
- feed speed of production variable from 4 to 8 / 12 m/min (in relation to width and take away).
- low cost of tools, one set of tips lasts for hundred of thousands of meters in a ratio 1 to 20 (in comparison to sanding belts in the same operations and conditions).
- very low sanding belt wear (only utilized for finishing).
- high level of surface finish, the first sanding belt after the planer starts with grit 100 / 120, the second can finish with grit 150.
- good thickness tolerance of panels processed with 1 planer and 2 belt units = +/- 0,1 mm.

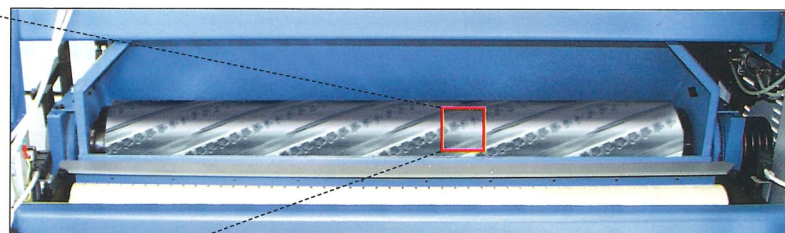
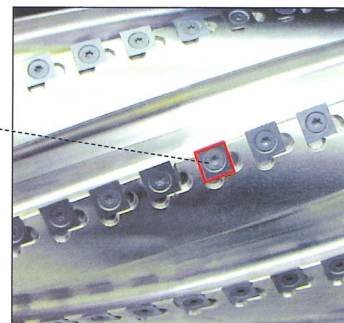


Quick & easy system of inspection and servicing of the planer unit W180, with a complete opening of the front side of the machine, the electric console and the control panel.



## Carbide inserts

n° 504 (width 1350 mm)  
dim. 14 x 14 x 2 mm



All new planer-heads are supplied with aligned inclined tips, for a more silent cut at lower power consumption. This new aligned disposition allows a very easy removal of the resin and dust deposits with a simple block of wood.



## Sectioned pressure shoe

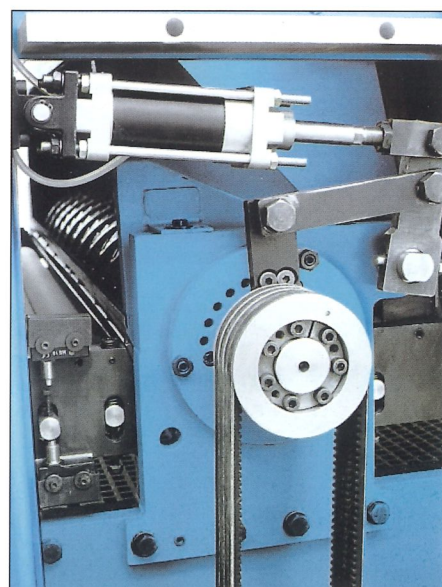


Infeed sectioned pressure shoe with pneumatic control, sections pitch 65 mm.  
(View of working unit without protection covers)

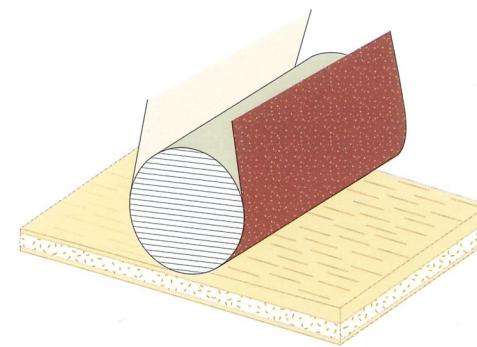


## W-Set

W-set pneumatic for easy on-off setting of the W180 unit from its working position, from the main panel.



# C200 - C250 - C330 Cylinder units



A wide abrasive belt runs on a rubber covered (or steel surface) cylinder. The rubber hardness 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 parameter for a correct utilization of the cylinder unit is the cutting speed; at same feed speed a cylinder turning at 24 m/sec of speed takes away much more stock with less power utilization than one running at 16 m/second; all complex cylinder-tensioning unit of the abrasive belt must be dimensioned to operate at high speed (or the unit vibrates and the bearings will be worn in very short time).

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

**Motors built on IEC rules, of primary Brands, high efficiency**

- contact surface in :
- **steel** - for heavy calibrating
  - **rubber** covered with hardness
    - sh. 90 / 80 - calibrating
    - sh. 70 / 60 - calibrating-wood sanding
    - sh. 50 / 40 - wood sanding
    - sh. 30 / 20 - lacquer sanding

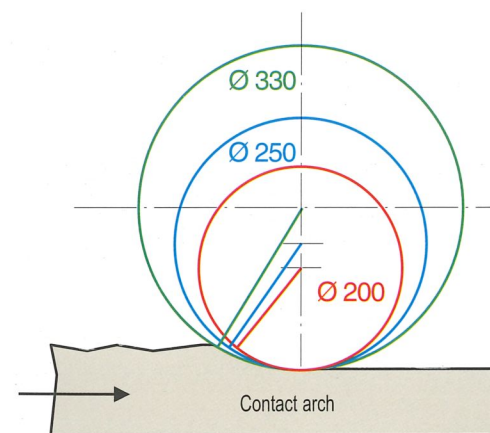
available power:

- one speed
  - 9 - 11 - 15 - 18 - 22 - 30 kW
- two speeds
  - 9/11 - 10/15 kW
- cutting speed variation 2 - 20 m/sec.
  - 9 - 11 - 15 - 18 kW

## Diameter of cylinders

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).



## Units available

- Ø 200 mm for calibrating
- Ø 250 mm for all purposes
- Ø 330 mm for finish sanding



## Grit-set

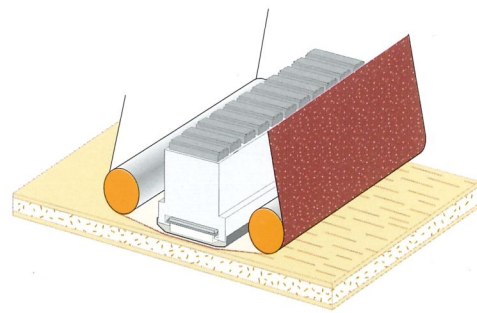
### GSE - Electronic grit-set

System for centesimal positioning of the depth of deployment of the cylinder in relation to the abrasive belt grit and the amount of take away. Read-out and centesimal setting from the control panel.

### GSP - Pneumatic grit-set

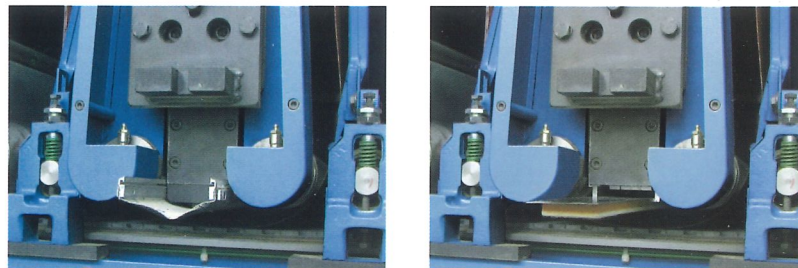
System for depth positioning of deployment of the cylinder in relation to the abrasive belt grit and the amount of take away; equipped with 4 positions revolver

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.

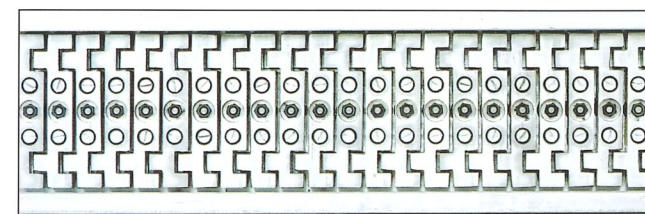
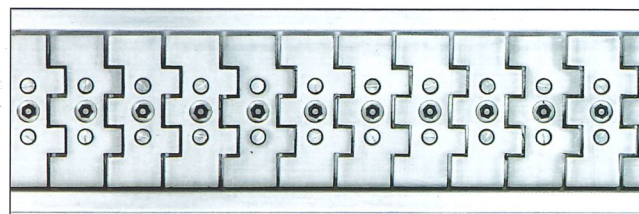


**S** T1 Standard pneumatic pad  
Standard

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



**O** TP32 Electronic controlled  
 TP16 sectioned Pad  
Optional

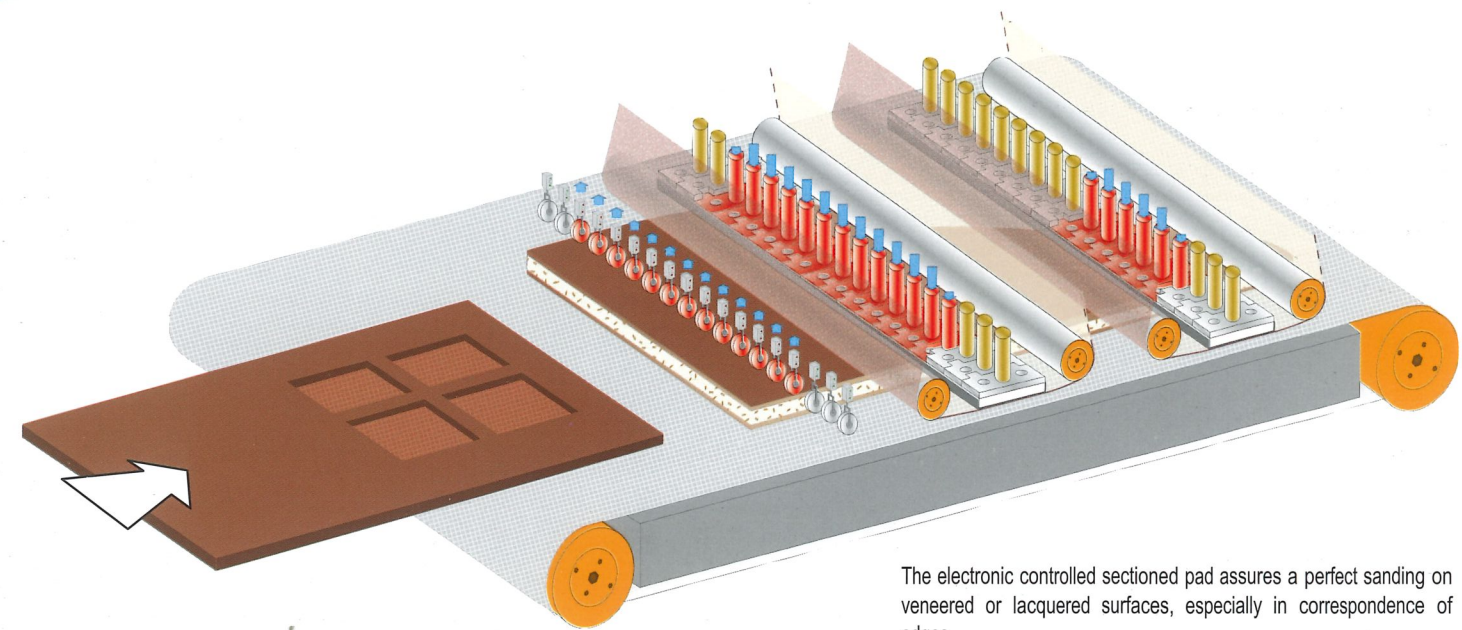
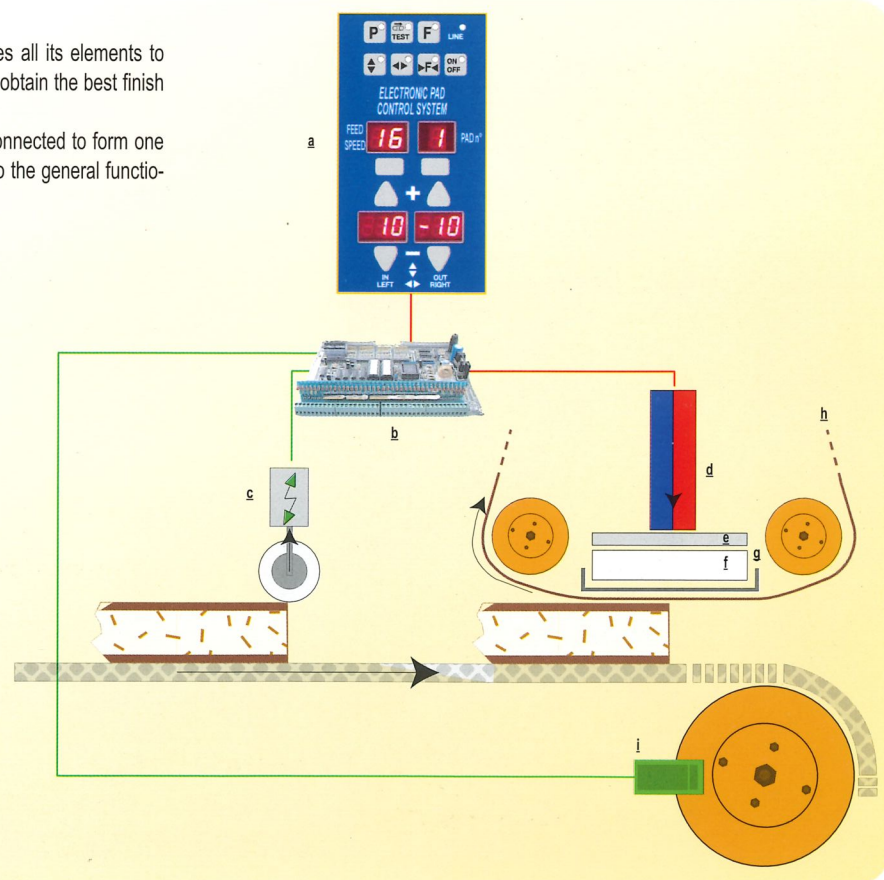


**TP32** pitch of sections 32 mm  
 n° 42 sections with a working width of 1350 mm  
 n° 36 sections with a working width of 1150 mm

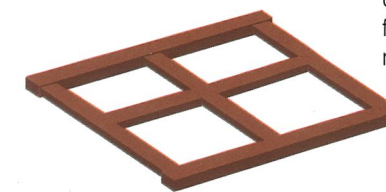
**TP16** pitch of sections 16 mm  
 n° 84 sections with a working width of 1350 mm  
 n° 72 sections with a working width of 1150 mm

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 electro-magnetic 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



The electronic controlled sectioned pad assures a perfect sanding on veneered or lacquered surfaces, especially in correspondence of edges .  
 Each individual pad-segment work at pre-determined conditions of utilization, for the timing of contact and especially with a graduality of application of pressures.  
 Thank to the electronic sectioned pad we can process panels of all different shapes without any risk of damaging the edges .  
 Moreover, thank to the graduality of application of pressures together with the high excursion of the segments (up to 2-3 mm) we can process panels with thickness differences within the panels as well as from panel to panel, without any variation of working pressure and therefore without any variation of the quality of sanding.



## CK - Combined unit

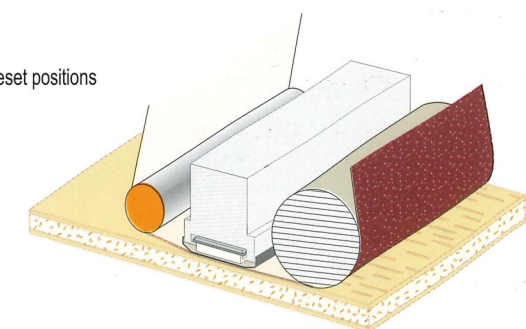
### Combined unit (cylinder + pad)

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).

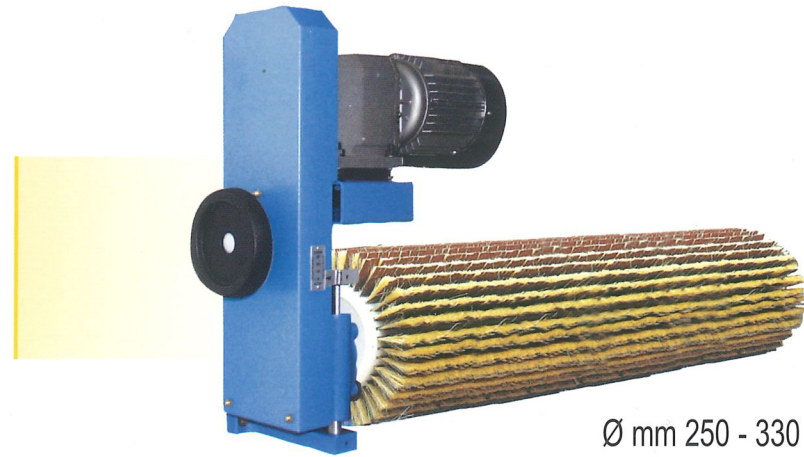


- Support on a revolving turret at 4 preset positions
- Pneumatic Grit set
- T1 pneumatic pad

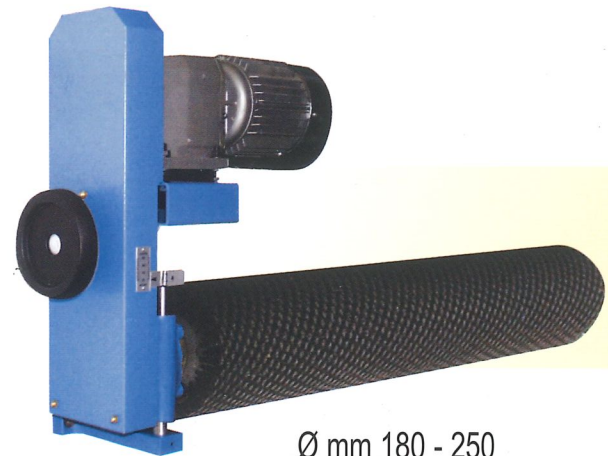


### Brushing-sanding units

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.



Ø mm 250 - 330



Ø mm 180 - 250

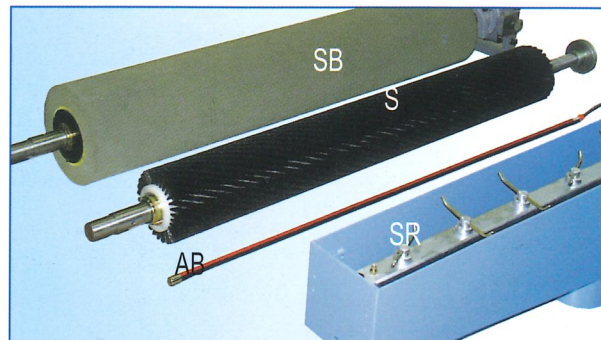
### Scotch-brite™ units

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.

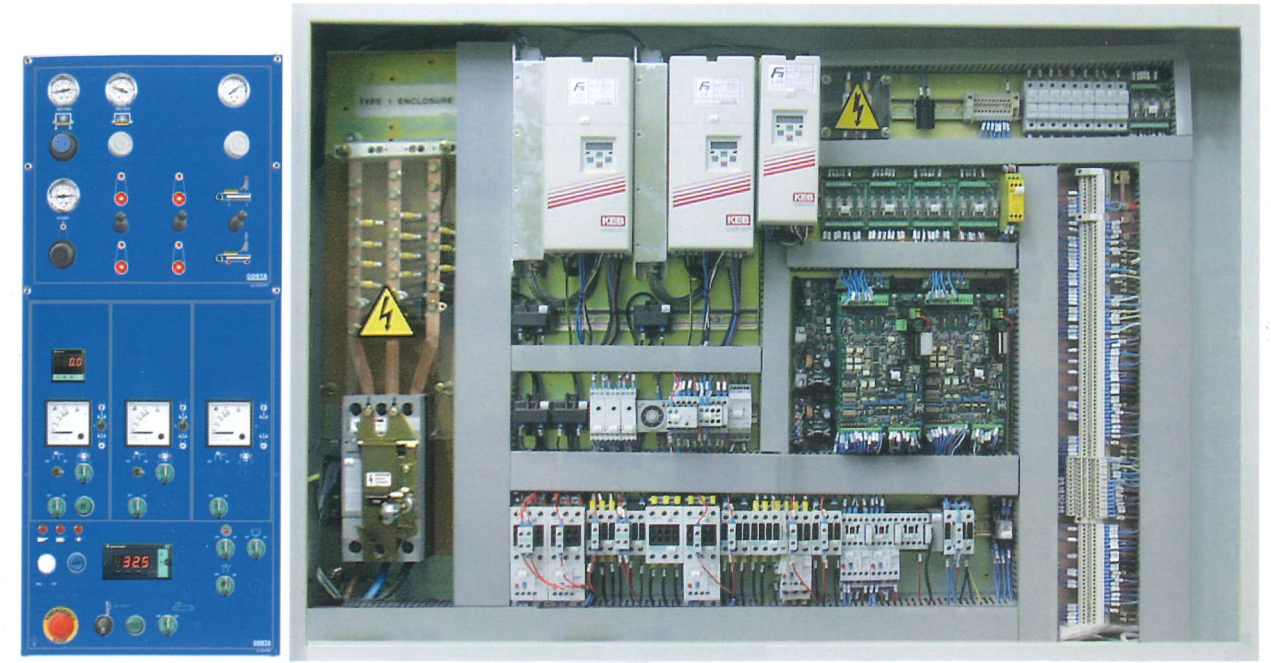
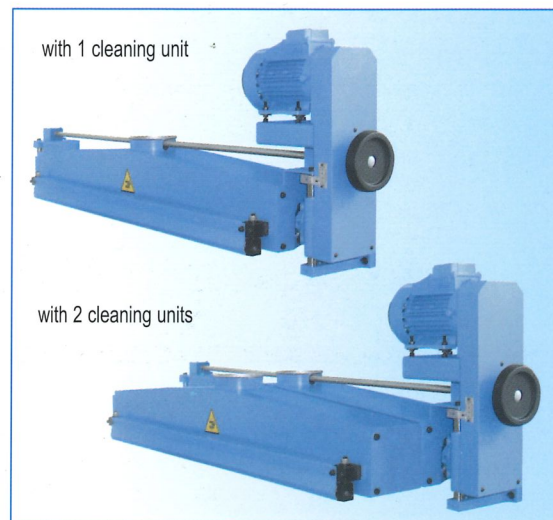
### Panel cleaning units on the rear side of the machine

We have a variety of "panel cleaning units" to complete the finishing operation by taking away the dust left on the panels :

- 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 of white-wood sanding 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;
- antistatic bars help lowering the static electricity from the panels;



S 140 / 180	Brushes	Ø 140 - 180 mm
SB 140 / 180	Scotch Brite	Ø 140 - 180 mm
SR	Rotary Blowers	
SL	Linear Blowers	
SJ	Ionizing Blowers	
AB	Antistatic bars	

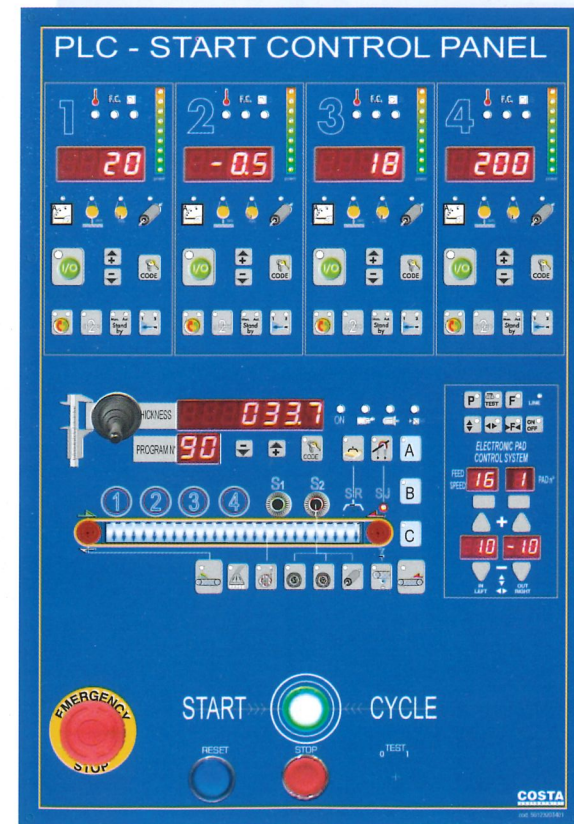


### Standard panel

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.

### Electric control cabinet

The electric control cabinet is positioned in machine front side; is equipped with key-lock for the door to prevent access to unauthorized personnel; a main switch need to be turned off to open the door; is built on CE electric rules, or UL - CSA or other national rules depending on market of destination; protection grade IP54; normal component are Siemens, but other brand names are available on request.



### START (opt.)

Machine control panel with PLC, where all data and variation of parameters need a manual input, but are automatically transferred in a pre-defined sequence to the machine via single push of the button of the start cycle. START control panel can memorize up to 9 working programs in its PLC.



### PCM (opt.)

"Easy" Personal Computer System, operating on 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".



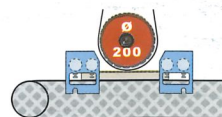
# Series A - Main technical data

**A**  
SERIE

## Calibrating-Sanding Machine

Base version of Series A - configured with C200

- cylinder units Ø 200 mm
- motor power of working units from 9 to 18 kW
- pressure rollers rubber covered "rigid + floating"
- rigid feed table

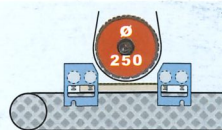


**A1**  
SERIE

## Calibrating-Sanding Machine

Version A1 - configured with C250

- cylinder unit Ø 250 mm
- motor power of working units from 9 to 22 kW (1<sup>st</sup> 30 kW)
- rubber covered pressure rollers "rigid+floating"
- rigid feed table

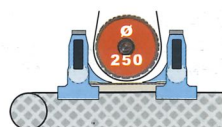


**AK**  
SERIE

## "Heavy Duty" Calibrating-Sanding Machine

Version AK - configured with C250

- cylinder units Ø 250 mm
- motor power of working units from 9 to 22 kW (1<sup>st</sup> 30 kW)
- heavy-duty pressure rollers with lips, "rigid+floating"
- rigid feed table

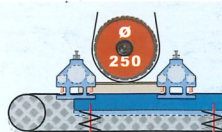


**AF**  
SERIE

## Sanding Machine with Floating Feed Table

Version AF - configured with C250

- cylinder units Ø 250 mm
- motor power of working units from 9 to 22 kW (1<sup>st</sup> 30 kW)
- rubber covered pressure rollers "rigid+floating"
- floating + rigid feed table

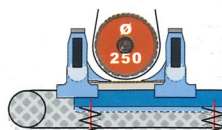


**AKF**  
SERIE

## Calibrating-Sanding Machine with Rigid / Floating Feed Table

Version AKF - configured with C250

- cylinder units Ø 250 mm
- motor power of working units from 9 to 22 kW (1<sup>st</sup> 30 kW)
- heavy-duty pressure units with lips, "rigid + floating"
- floating + rigid feed table

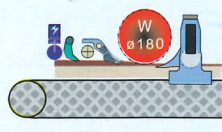


**AW1**  
SERIE

## High Performances Planing-Sanding Machine

Version AW1 - configured with W180

- planer head unit Ø 180 mm in 1<sup>st</sup> position
- cylinder units Ø mm 250
- motor power of working units from 9 to 22 kW (1<sup>st</sup> 30 kW)
- heavy-duty pressure units with lips
- rigid feed table



### Main technical data

	1150	1350	[mm]
Useful working widths	1150	1350	[mm]
Longitudinal sanding belt dimensions	1180 x 2620	1380 x 2620	[mm]
Standard machine opening	3 ÷ 160 (220)	3 ÷ 160 (220)	[mm]
Feed speed of calibrating machines	3 ÷ 15	3 ÷ 15	[m/min]
Feed speed of sanding machines	4 ÷ 20	4 ÷ 20	[m/min]

### Compressed air required

Each working unit (8 bar)	50	50	[NI/min]
Each air jet blower (5 bar)	510	650	[NI/min]

### Weight & Dimensions

	width 1150 mm		width 1350 mm	
Machine with 2 working units	1810 (* 2610) x 1770 x 2250 [mm]	2750 ÷ 3250 [kg]	1810 (* 2610) x 1970 x 2250 [mm]	2950 ÷ 3450 [kg]
Machine with 3 working units	2150 (* 2950) x 1770 x 2250 [mm]	3400 ÷ 4400 [kg]	2150 (* 2950) x 1970 x 2250 [mm]	3650 ÷ 4650 [kg]
Machine with 2 working units	2846 (* 3646) x 1770 x 2250 [mm]	3800 ÷ 4950 [kg]	2846 (* 3646) x 1970 x 2250 [mm]	4100 ÷ 5250 [kg]

(\* ) - included infeed & outfeed roller table extensions (400+400 mm)

### Air volume required for each unit

	ø outlet	20	24	28	[m <sup>3</sup> /s]
Each longitudinal working unit	160 [mm]	1447	1737	2026	[m <sup>3</sup> /h]
Each FB250/350 - S180/250 - SB180/250	160 [mm]	1447	1737	2026	[m <sup>3</sup> /h]
Each S180/140 SB 180/140	160 [mm]	1447	1737	2026	[m <sup>3</sup> /h]
W180 - planer unit	200 [mm]	2261	2714	3166	[m <sup>3</sup> /h]
Each working unit (width mm 1150)	150 [mm]	1272	1526	1781	[m <sup>3</sup> /h]
A CT / 1350		5154	6186	7216	[m <sup>3</sup> /h]
A CCT / 1350		7731	9279	10824	[m <sup>3</sup> /h]
A WCT / 1350		7415	8900	10382	[m <sup>3</sup> /h]
A CCTT / 1350		10308	12372	14432	[m <sup>3</sup> /h]
A WCCT / 1350		9992	11993	13990	[m <sup>3</sup> /h]

We reserve the right to change features without any notice.

**COSTA**  
LEVIGATRICI

COSTA LEVIGATRICI S.p.A.  
Via Venezia, 144 - 36015 Schio (VI) Italy  
Tel. (+39)0445-675000 - Fax (+39)0445-675110  
www.costalev.com - info@costalev.com