GIOTTO EVO

USE AND MAINTENANCE MANUAL

Edition 11/2021

The information given in this manual can be modified without warning and does not involve any obligation from ITALIAN CUTTING SYSTEMS s.r.l. The software, described in this manual, is supplied in license for use and it cannot be copied but only used according to the license terms, provided for in the sales contract.

© Copyright 1997-2019, ITALIAN CUTTING SYSTEMS s.r.l.

INDEX

1. INTRODUCTION

The GIOTTO EVO contour cutter is a pantograph to cut PU foam by using a continuous rotation and/or oscillating blade.

This manual describes in detail the pantograph maintenance and use functions. It shall be used by a qualified user and kept in a dry and protected place and it shall be always available to consult.

By following this manual carefully, the operator can manage the machine and get the best of its potential.

It's recommended to carefully read this manual and follow the instructions provided, as the proper functioning of the machine and its products are a direct consequence of the operator's skill.

We therefore hope that this manual will be a valuable support tool in the daily operation and management of the machine and its functions.

2. TECHNICAL CHARACTERISTICS

2.1. Technical data

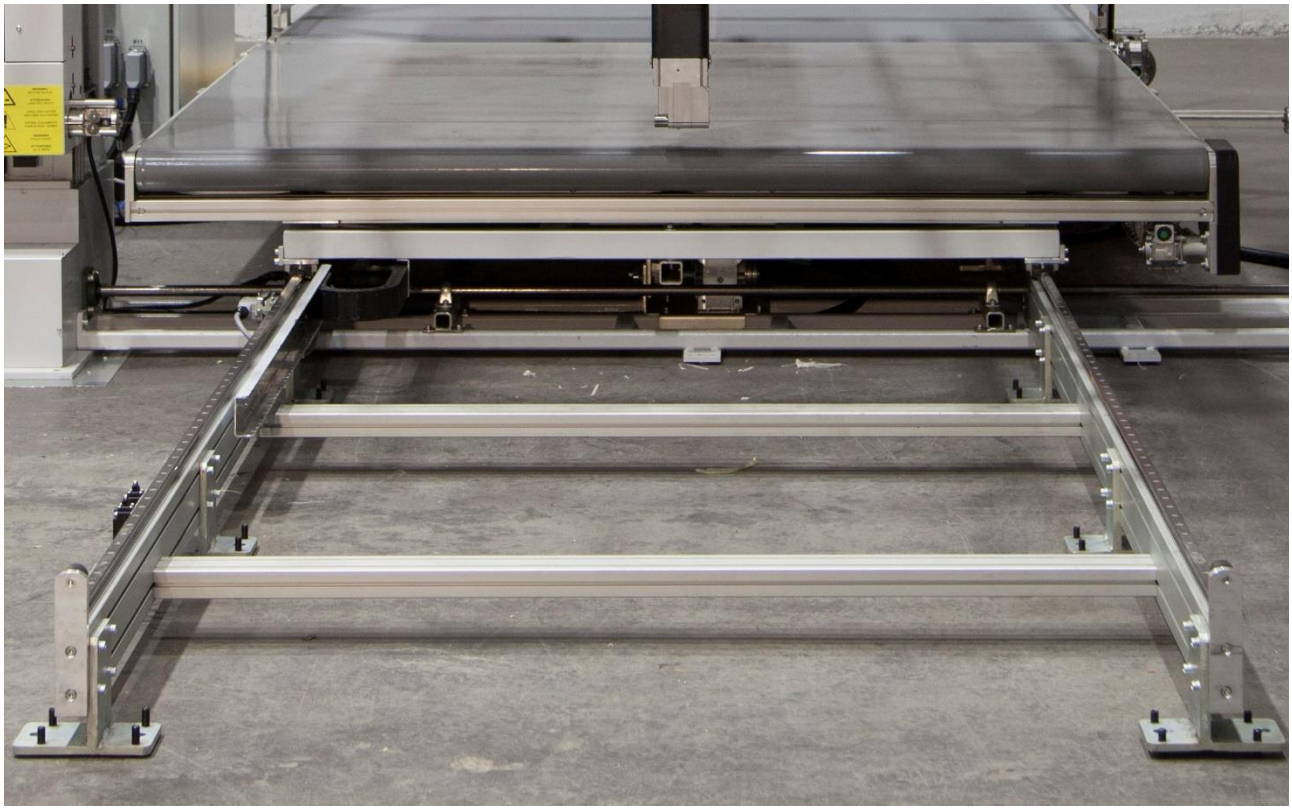
Supply voltage:	3 x F (400V) + N + T (50-60Hz)
Power:	16 KW
Pneumatic power:	6 Bar
Continue blade measure:	13500 x 3,8 x 0,7 (D14 if toothed)

2.2. Models

- 1.0 with continuous blade
- 1.1 with both continuous and oscillating blade

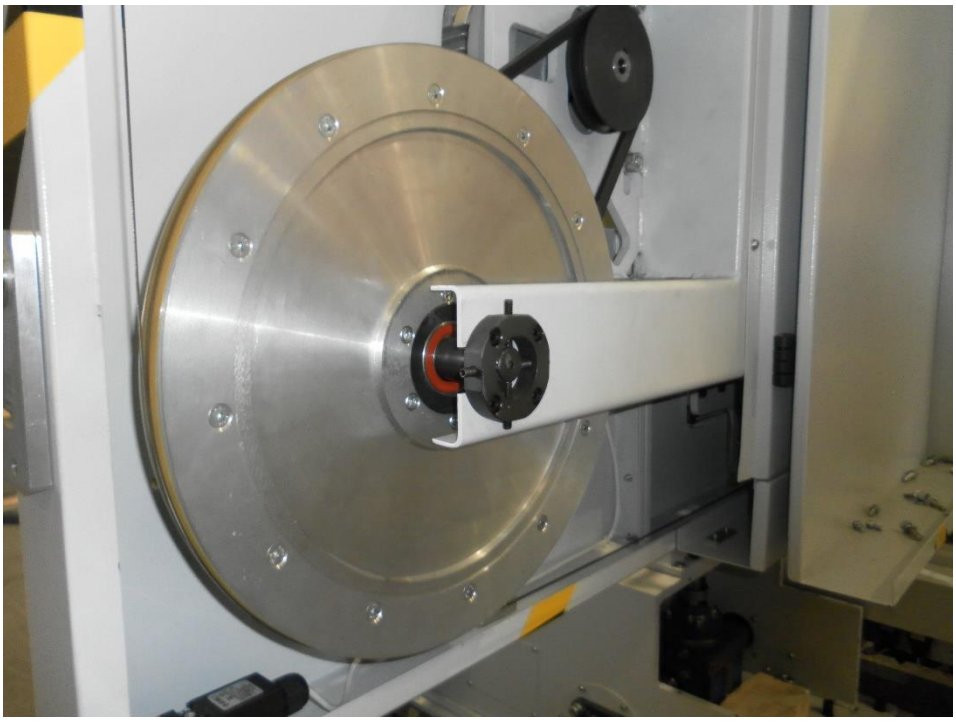
2.3. Machine modules

Table with rotating conveyor



Arc – cutting aggregate

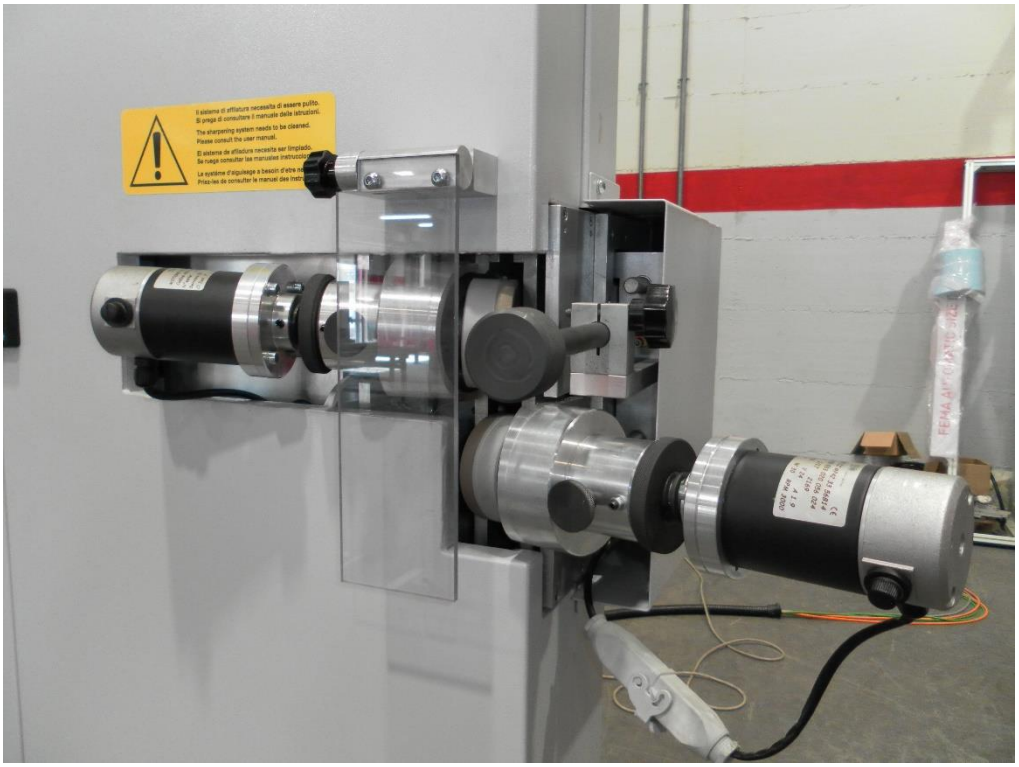
Wheels



Hold-down device – openable

Central support

Sharpener



2.4. Machine modules

Frame
The frame of the machine is an iron structure completely welded and composed by a transporter bridge, a rotating or transporter support basis where provided, for the placement of the polyurethane and a hold-down device (press) to block polyurethane blocks.

Arc
It is composed by an iron structure containing a system of motor-controlled flywheels and rotation arms for the accommodation and the movement of the continuous and/or alternate blade. The arc includes (where provided) a semi-automatic blade sharpening system composed by power-driven grindstones.

Hold-down device (press)
It is composed by aluminum rods, auto-brake electrical engine driven. The press is used to block polyurethane pieces.

Numerical control
It is composed by a cabinet that hosts the work process system driver computer, a commands board and an electronic and electric panel that interfaces between the machine and the computer

Electric installation and panel
The electric panel is composed by the needed components to connect the electric parts of the machine to the computer. This connection takes place by fireproof flexible electric cables and protected by armored girdles and cable drag chains.

Emergency control system
It guarantees the correct functioning of the machine in accordance with the law concerning the security. This system will be described widely into the security chapter.

2.5. Terminology

Axis X, Y, Z, W
The axis shall be considered as trajectories that the machine goes during the work conduct. The X axis indicates the horizontal trajectory that the machine and the covered; the Z and W axes indicate the rotating movement (clockwise and anti-clockwise) of blade guide arms and the head of blade guide central head.

3. INSTALLATION, FUNCTIONING AND TRANSPORT

3.1. Conditions for the transport of the machine

After delivery, to be sure that any part of the machine has not been damaged during the transport. Potential damages due to the transport, observable with the naked eye, shall be documented and reported by registered post A.R. to the Company ITALIAN CUTTING SYSTEMS s.r.l. within two days.
The potential damages, due to the transport that are not observable with the naked eye, shall be reported following the same procedure, within six days.
The transport of the machine shall be prepared by the customer according to the modalities defined in the sales contract. The customer shall also prepare equipment as to transport the machine or its components from means of transport to the place of installation.

3.2. Conditions to set up the machine

The needed conditions for a good installation of the machine are:

- Quality of the support surface
- Flatness of the support surface
- Tightness of the support surface
- Installation area

Quality of the support surface

It is needed a flat surface, with maximum climb of 10mm on the total installation surface.

Tightness of the support surface

The soil shall be impermeable by oil.

Installation area

Free from expansion joints, inclinations and similar among the load points.

3.3. Implementation and pre-functioning check

The lifting and the implementation of the machine is carried out by specialized staff from ITALIAN CUTTING SYSTEM s.r.l. The implementation includes the installation of the system components, the connection of the machine to the power system, the calibration of all standards of movement and software, as well as the instruction of staff/user and the control of machine good functioning.

4. INSTRUCTION FOR THE USE OF THE CONTROL SYSTEM

4.1. Technical knowledge

4.1.1. Keyboard

Computer keyboard shall be used to execute all the setting commands and machine command, except the commands of power supply to the auxiliary's circuits and the press activation, sharpening system, central arm and turning table. All the machine pilotage commands are well described and highlighted by each view on the screen.

4.1.2. Mouse

The program can manage the mouse to access more quickly to the commands showed up at video. Usually to activate a command, it is necessary to be placed with the cursor in the command area and press the left button. To activate a list command, usually the single pressure on the left button corresponds to the positioning on the command (highlighted with a different color), whereas a rapid double-pressure on the left button corresponds to execute the command selected. The right button of the mouse, most of the time, is associated to the ESC button which usually cancel or finish the command in execution.

4.1.3. Console

The buttons on the console are used to activate the power supply to the auxiliary's circuits, control and move some devices and more. The console looks like this:

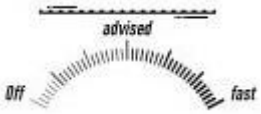
Here's the function of keys and controls:

Ignore tool:
it allows to the numeric control to exclude blade presence sensor, pressure switch of minimum pressure and sensor of blade presence. The operation could be necessary when the user wants to move the machine and the blade is not on, or it fell out of the flywheels, or vice versa when the blade is on, but the machine is set to work with an alternate blade. Moreover, it also makes possible to lower the press excluding the photocell of block presence and to execute an actuators' reset in the case of anomalies. In the case of the presence of table with conveyors, this key also activates the conveyors when the conditions would not normally allow to do so.

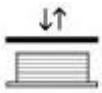
AUX:
it activates the power supply to the auxiliaries' circuit. When this is activated, the key lights up and allows the handling of all machine systems. If the key doesn't light up when pressed, it means that one of the safety conditions could have intervened, or there is a lack of power supply to the electrical panel.

Emergency:
it removes power from the auxiliary circuit and allows the intervention of safety circuit. To restore the emergency key, the user needs rotate it and subsequently press the AUX key again.

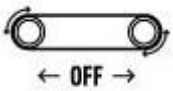
Sharpening:
it allows to set the sharpening on automatic, manual or turned off.



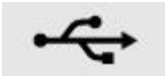
Blade:
it allows to regulate the blade rotation speed on the flywheels



Hold-down device:
it raises/lowers the hold-down device. While rising, if the selector is kept actuated for more than two seconds, the device is brought to the upper maximum limit automatically: to stop it, it's sufficient to move the selector in one of the two directions again.



Conveyor:
if a conveyor is present on the machine table, this moves it forward/backward. The blade must be off, with arc and hold-down device placed at maximum height. Furthermore, the table must be on its front/back limit switch. This last condition can be overridden by pressing and holding "Ignore tool", explained before.



Pen drive:
it is used for to connecting a USB storage unit (E.g. pen drive)

Thermal trip:
it lights up when a hold-down, central support, turning table, blade engine heat protection intervenes.

5. MAINTENANCE

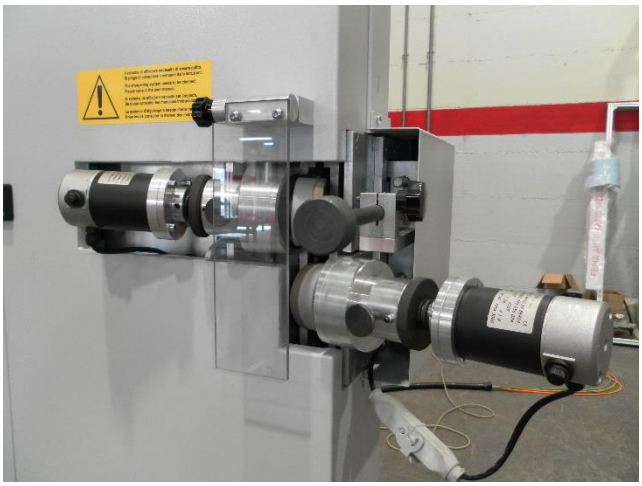
5.1. Cleaning of the machine

a) Keep the four wheels, on which the blade rotates, always clean.

The accumulation of material on the wheels' rubber rings, given their peculiar shape, causes a displacement of the blade from central position of balance and in this case, it also shifts away from the center of the grindstones of the sharpening system. The frequency of wheels cleaning is proportional to the density and to the speed by which the machine moves.

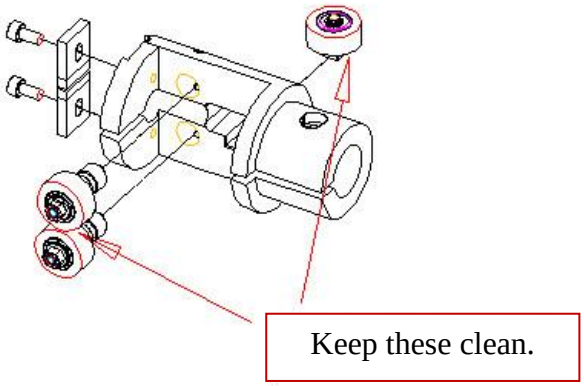
b) Keep the grindstones of sharpening system clean.

The grindstones are consumable mechanical parts, which accumulate material as dust, iron shavings, etc. and they are subject to environmental factors as humidity. That's why it is necessary to keep them under control so that it is advisable to keep them clean.



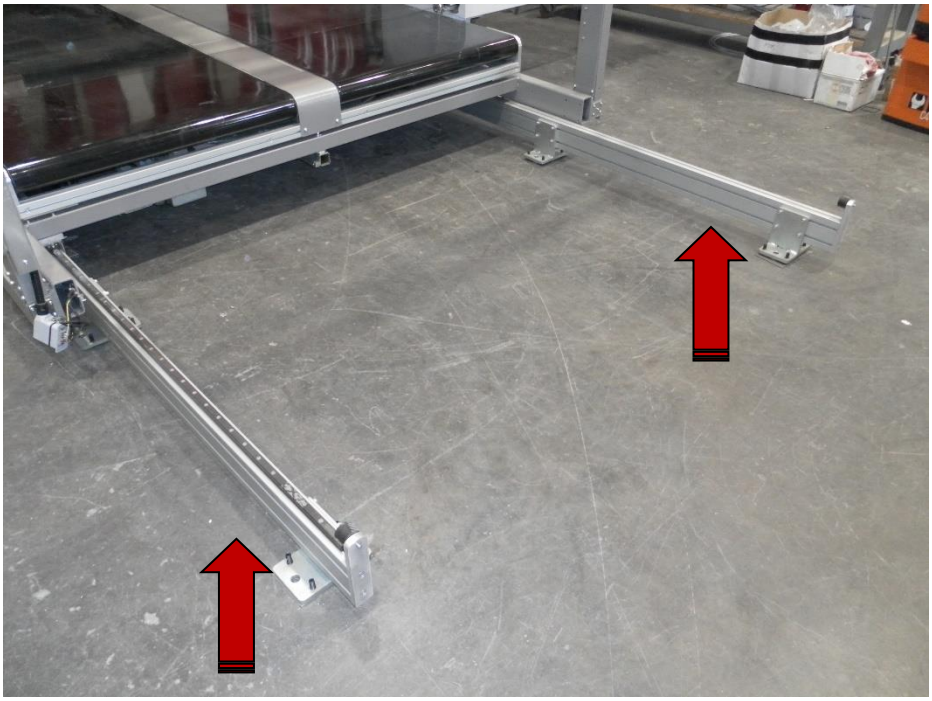
c) Keep both the two side blade guide heads and central head of machine clean.

The blade guide heads are mechanical parts in strict contact with the blade which, coming in contact with the material, accumulate dust and other substances that deposit on the blade guide heads inevitably; sharpening system can also deposit iron shavings that accumulate on the heads due to the sharpening.



d) Keep the guides, where the table slides, clean.

Clean the guides with compressed air, in order to avoid excessive fiction. It's possible and advisable to grease the guides.



It's recommended to execute these operations during the break between a cut and another one, in order to intervene if necessary.

5.2. Ordinary maintenance

5.2.1. Daily Maintenance

1) Cleaning with air:
    a. Heads;
    b. Flywheels;
    c. Guides for the X axis and for all parts in movement;
    d. Parts in movement of sharpening group;
2) To control the status of bearings, widia wheels, on the head group (to control the potential locking).

5.2.2. Weekly Maintenance

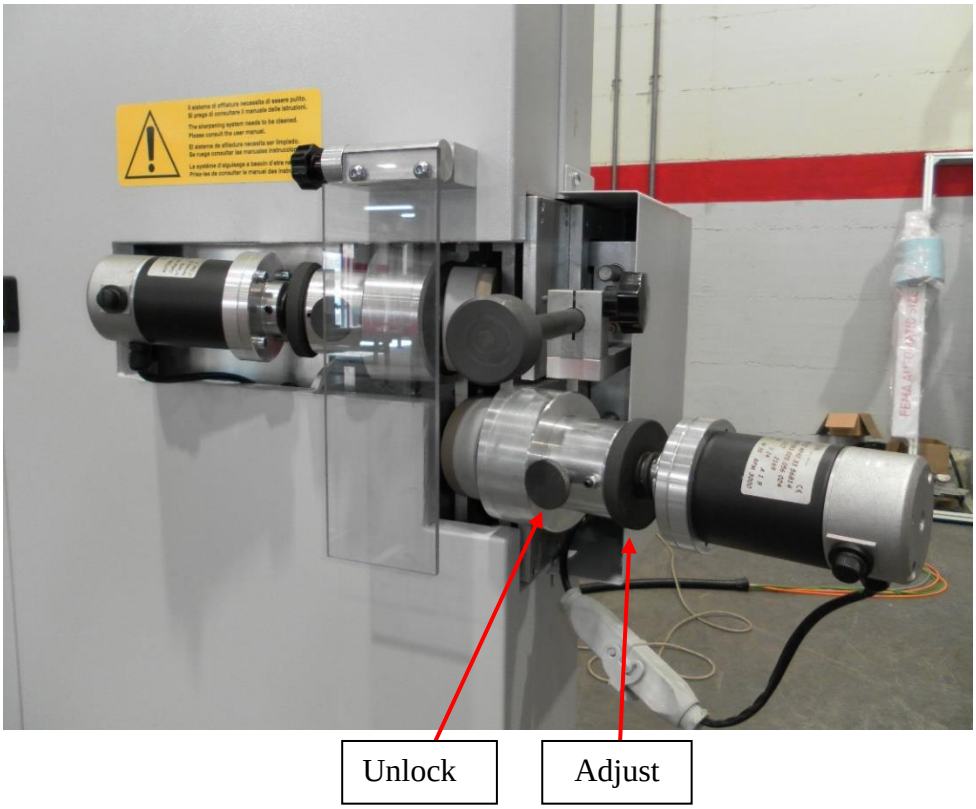
1) Total cleaning of the machine.
2) Cleaning with air:
    a. Heads;
    b. Flywheels;
    c. Guide for the X axis and for all the parts in movement of sharpening group;
    d. Recirculating screws of Y axis;
3) Oil lubrification/grease spray:
    a. Y axis handling guides;
    b. Central arm handling guide;
    c. Press handling guide;
4) Greasing with solid grease:
    a. Press mobile profiles;
    b. Snails for recirculating screws of Y axis (where it exists).
5) Control of water level in sharpening container.
6) Lubrification of rotation heads ‘axle box in bronze, with grease spray or solid grease.

5.2.3. Monthly Maintenance

1) Greasing of linear bearings of Y axis guides
2) Greasing of bearings housings which are on the upper beam of the machine;
3) Greasing of the rack and/or trapezial screws press (depending on the model);
4) Greasing of the X axis rack.

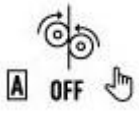
5.3. Sharpening system adjustment

GIOTTO EVO's sharpening system features an on/off switch which is usually placed close to the system itself, on the machine's flank or on its back. By turning it on, the blade starts running and the sharpening system is activated, the grindstones start running and are brought closer to the blade.
This kind of adjustment can also be performed when the AUX circuit is off (for safety reasons mostly), by activating the safety bypass key selector on the opposite side of the machine.



Adjustment
With the sharpening system active, it's possible to use the front knob to lock/unlock the grindstone position and then adjust it using the wheel. The grindstone has to be placed in a way that it slightly touches the blade, without abrading it too much. The same adjustment must be performed for the second grindstone too.

Once the adjustment is complete, the selector can be turned off, deactivating both the blade and the sharpening system. From this moment on, the automatic sharpening can be used.

This symbol 

is located on the console. Place the selector on A. This will activate automatic sharpening cycles, based on the timing input in the settings (usually a 15 seconds sharpening cycle every 90 seconds of activity).

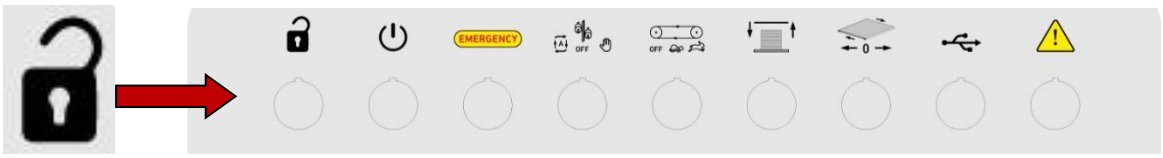
It's advised to **adjust** the system, and check for the correct sharpening of the blasé, at least 3-4 times per day.

5.4. Blade changing procedure

Blade replacement is a very simple operation which is executable within few minutes. Before operating though, it is necessary to position the machine in the correct way so that the tool can be inserted inside the arc and over the appropriate flywheels.

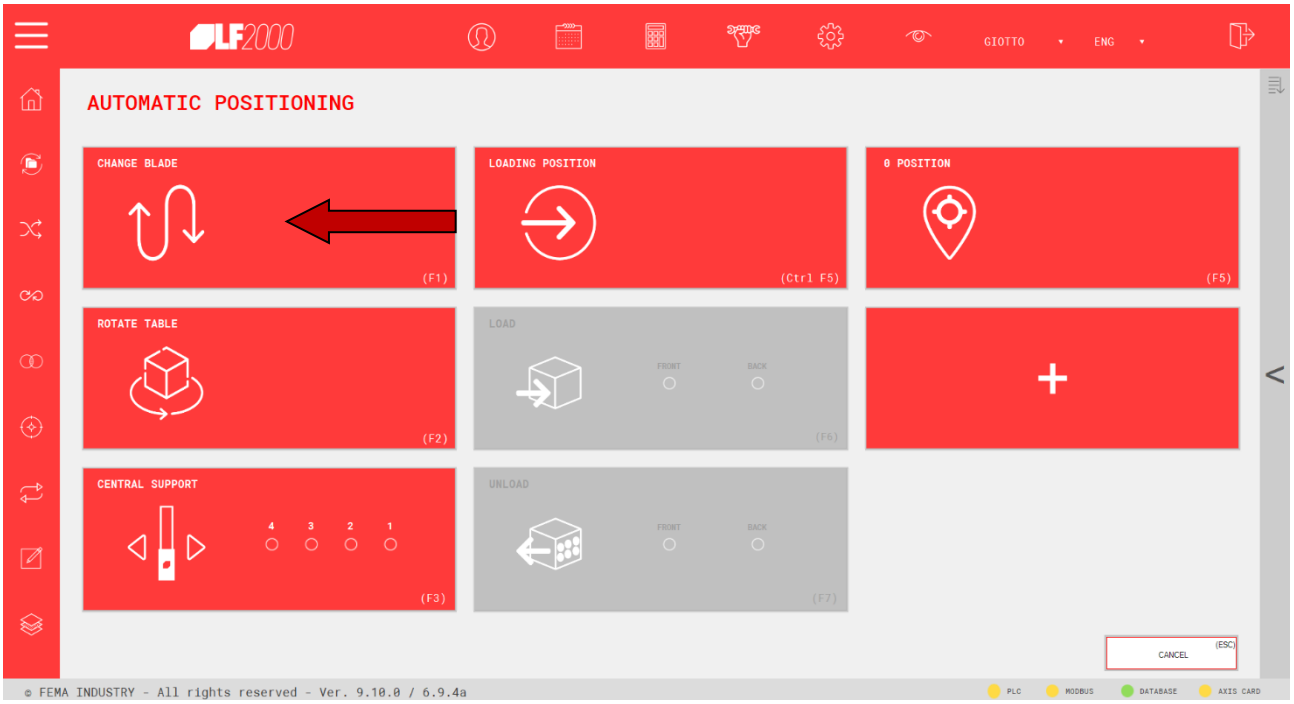
5.4.1. Positioning the heads

There are two ways for the proper positioning of the machine. In both cases, always keep the ignore tool button pressed. It is on the operator panel, and it will allow the heads to move to the correct position.



a. Automatic positioning

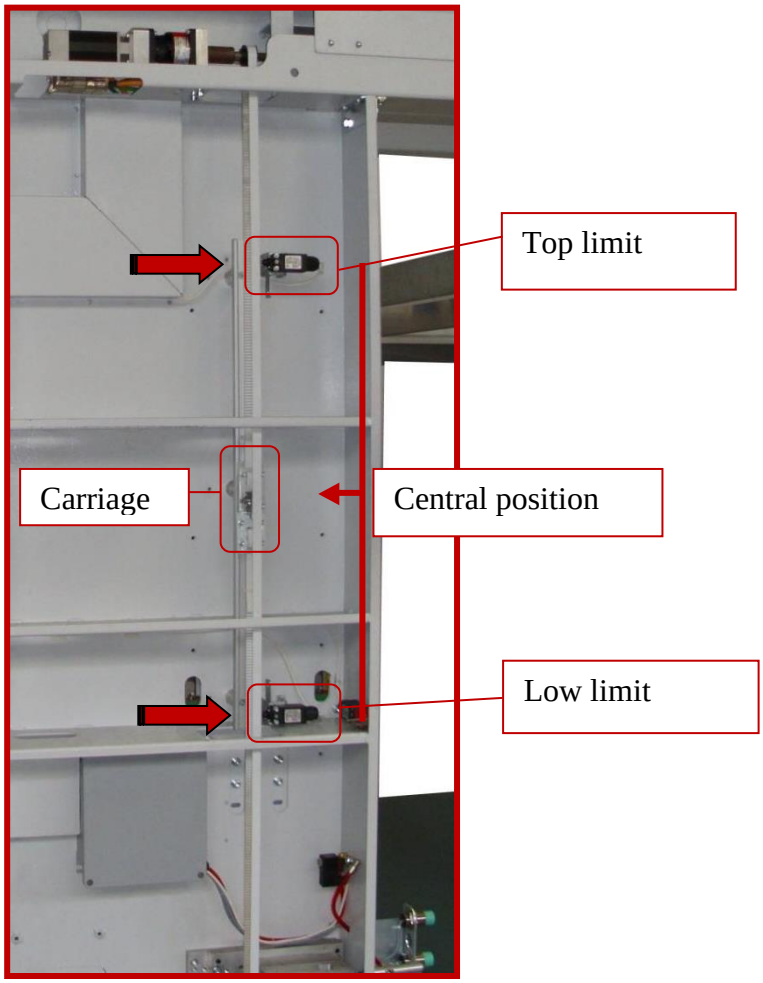
- Press the **F5 – Automatic positioning** key on the computer keyboard. Then, select **F1 – Change blade**.



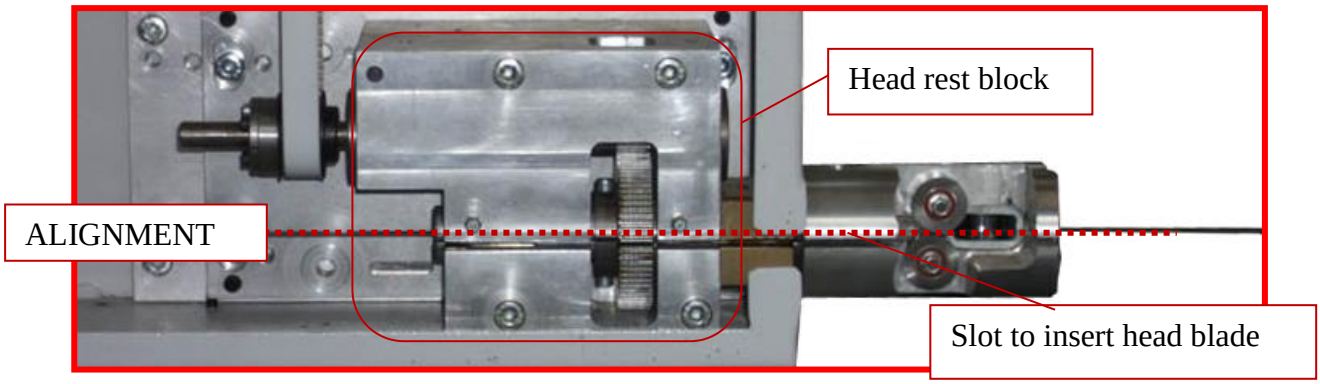
By selecting this command, the heads are moved to 180° position.

After positioning the heads into 180° position, you should verify that:

- The carriage that allows the blade head rotation is in a central position compared to the two limits.

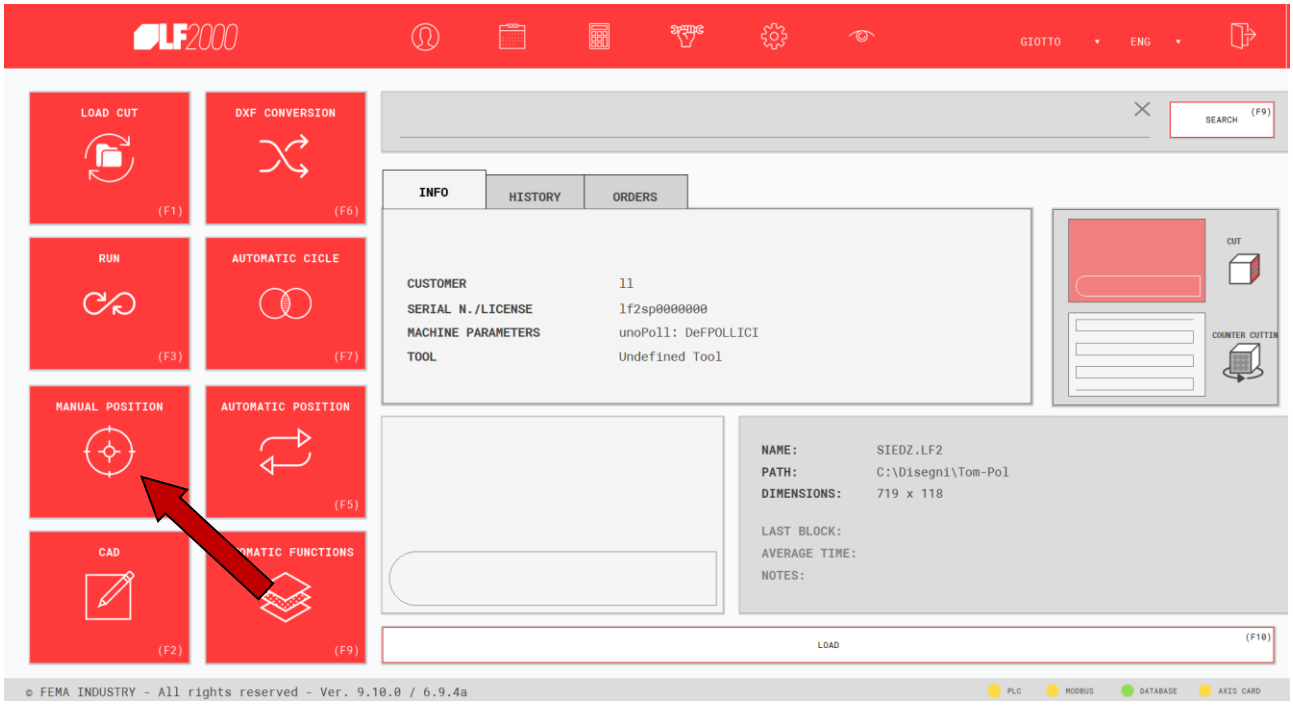


- The slot to insert the blade, which is on the cut head, shall be lined up with the cut which is on the head rest block.



b. Manual positioning

- Press the **F4 Manual Position** key on the computer keyboard.



- Press the F4 key on the computer keyboard to start the cycle.
-

- After entering into the manual piloting screen, position the heads at **180°** position by using the arrows or the PgUp PgDn buttons.

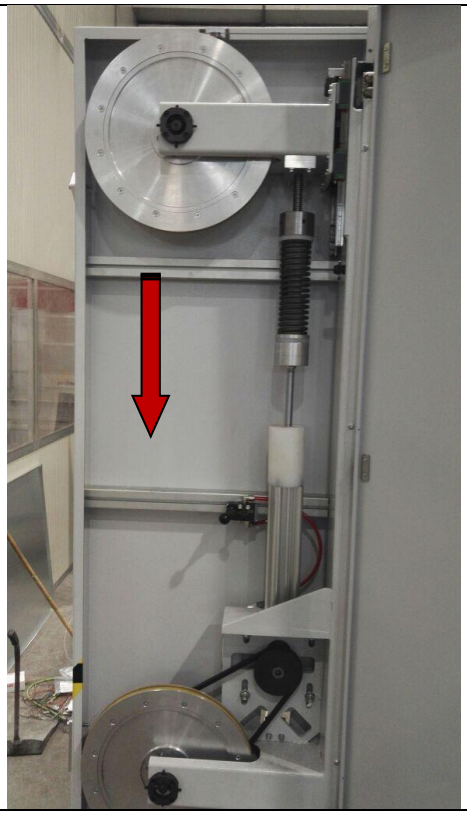
5.4.2. Changing the blade (continuous)

Before starting, please wear protective gloves to prevent accidental cuts.

After correctly positioning the machine, follow these steps to replace the bandknife:

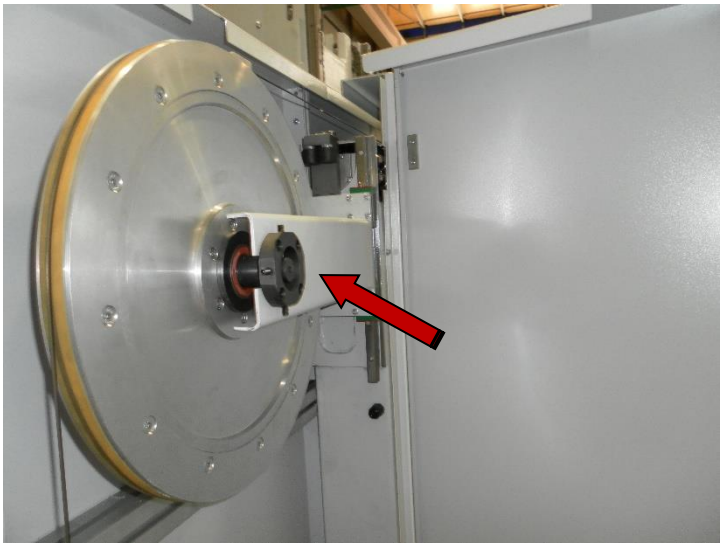
1. **Loosen the blade tensioning**

Loosen the blade tensioning by acting on the selector in the left door or on its side. It can also be done using the PLC manual management (see chapter 6.3). The wheel will slide down, and the blade will loosen.



It's also possible to deactivate the emergency system with the doors open using this key selector. This will allow the movement of the tensioning system even when it shouldn't be possible (AUX not inserted).

2. Take the blade out.

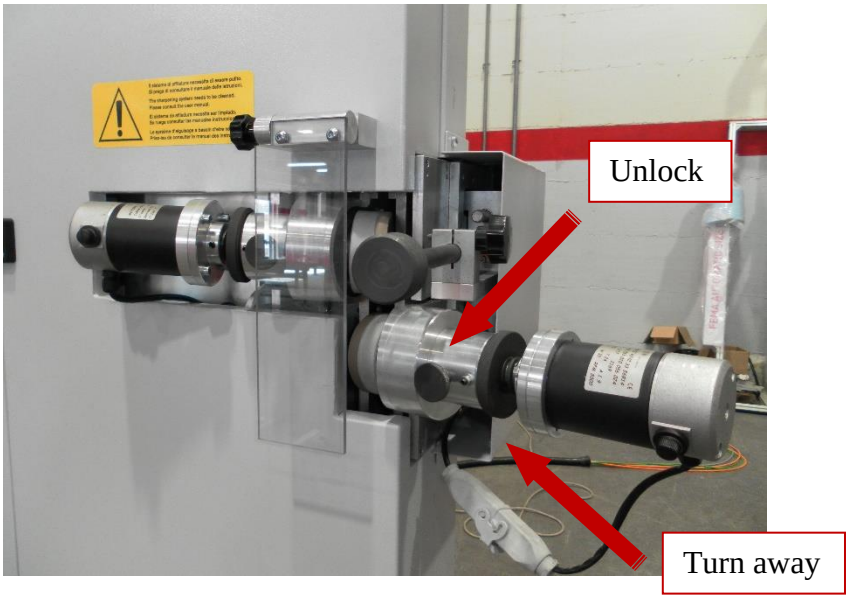


As second operation, take the broken blade out from both routes of blade extraction:

- Open the panel on the left and the one on the bottom.
- Slide it through the top of the arc.
- Remove it from the cutting heads on the sides and on the central support. (*)

3. Prepare the sharpening system

In order to let the blade pass into the sharpening system, move it away from its path.
To move the system, use the knobs to unlock the grindstones and turn them away from their regular position.

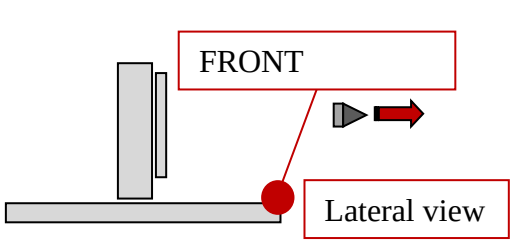


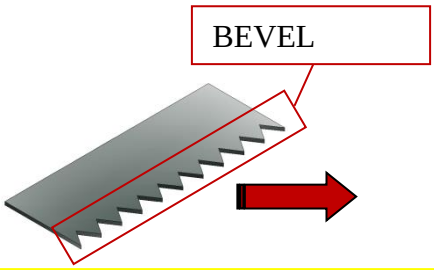
4. **Extend the new blade**

   Extend the new blade in order to avoid accidental curling or twisting.

5. **Insert the new blade**

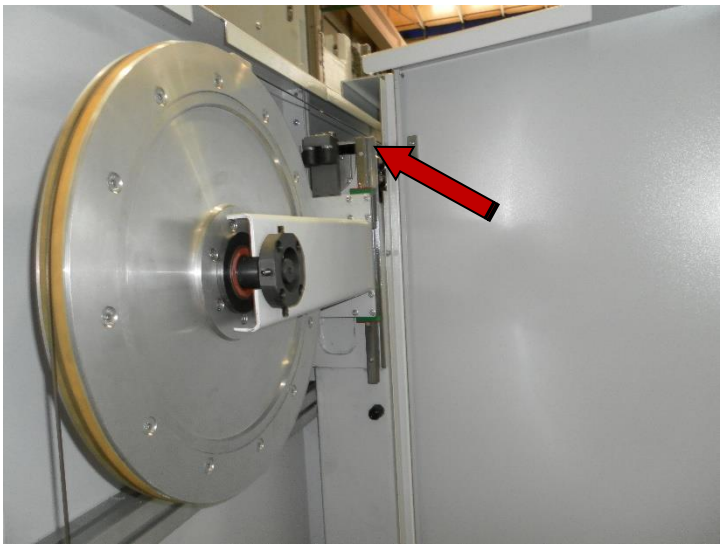
The blade must be inserted with the bevel (sharp area) facing towards the front of the machine.



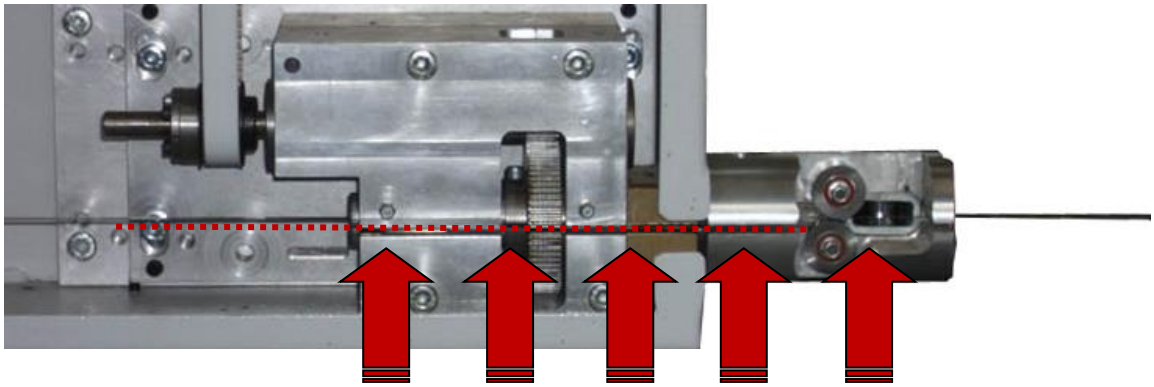


Place the new blade through its usual path:

Slot on the top of the arc.

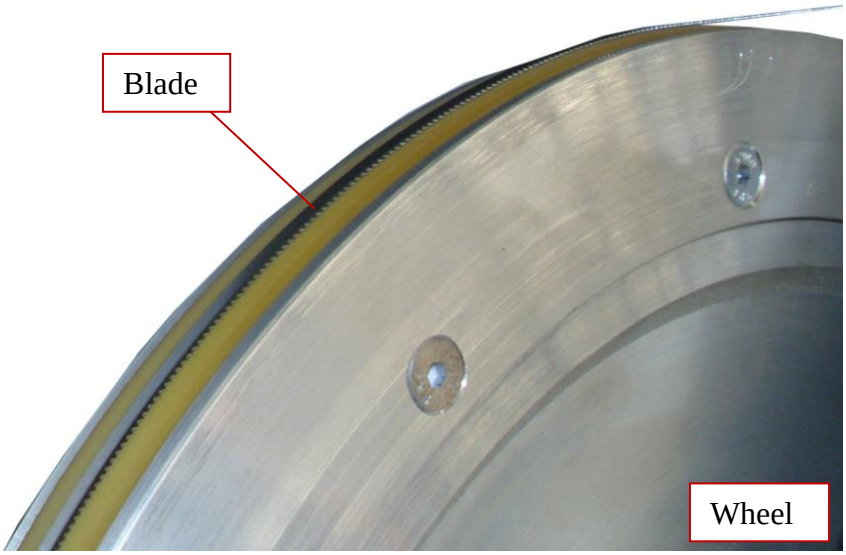


Cutting heads, on the sides and central support (*)



6. **Center the blade on the 4 wheels.**

After tensioning, turn one of the four wheels clockwise. The blade will center itself on all the wheels.



7. **Tension the blade.**

Use the lever or selector inside the left door to restore the tensioning system to its original status. The position of the lever/selector may change based on your model.

8. **Confirm the blade change on the PLC**

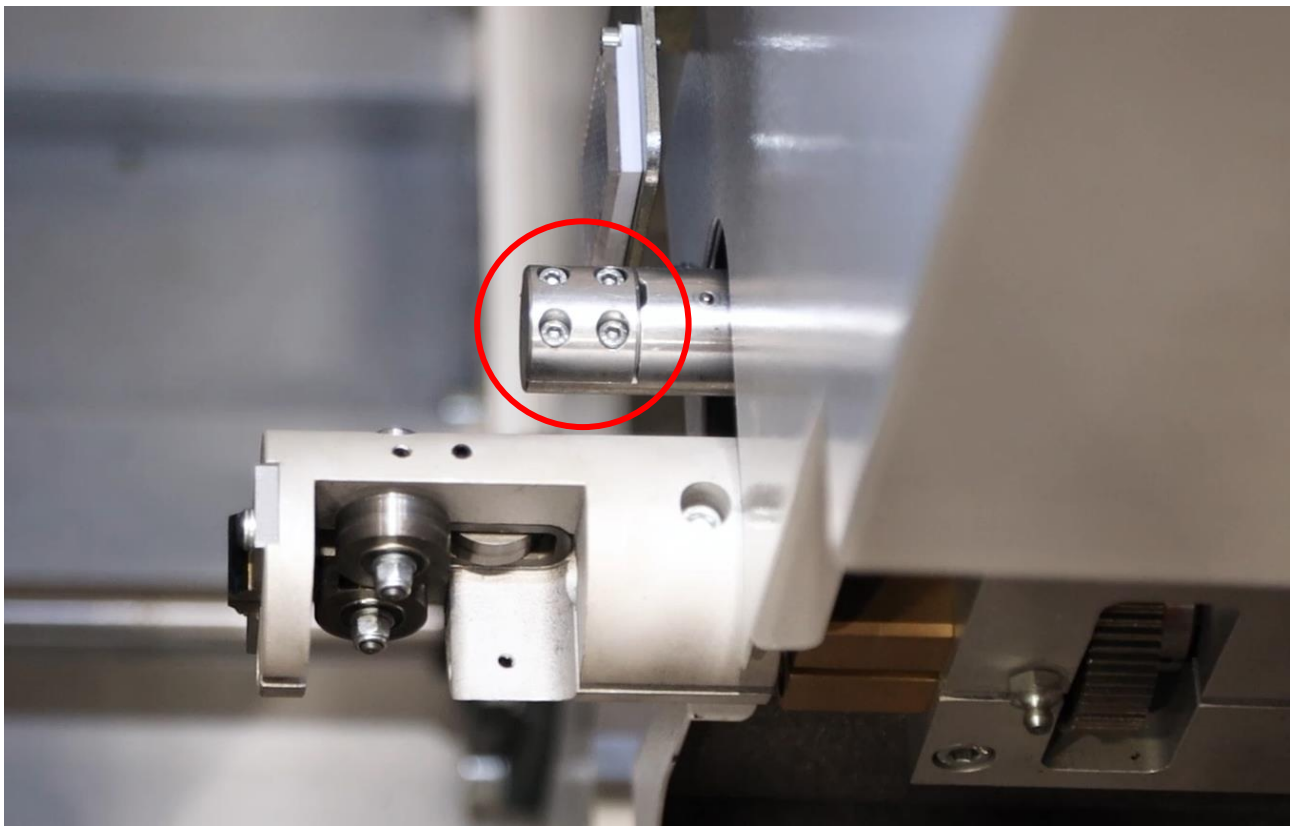
For further information about this procedure, please contact customercare@femaindustry.com

5.4.3. Changing the blade (oscillating)

Before starting any type of operation, please wear iron gloves to avoid any type of injury due to the blade.

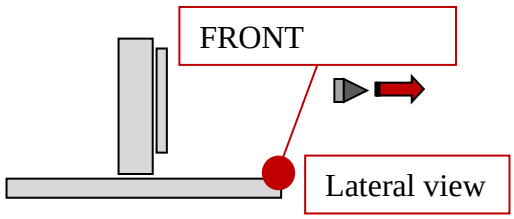
After correctly positioning the machine, follow these steps to replace the blade:

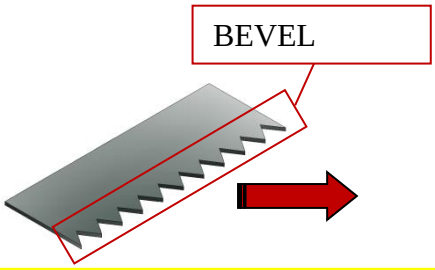
1. **Extend the new blade** in order to avoid accidental curling or twisting.
2. Loosen the bolts of the right head.

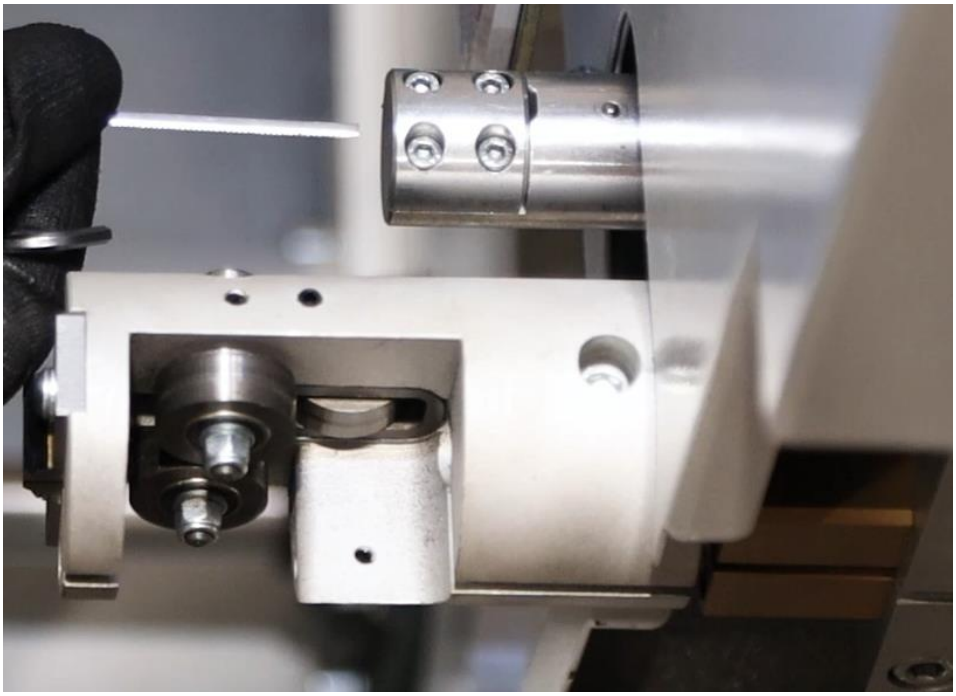


3. Insert the new blade

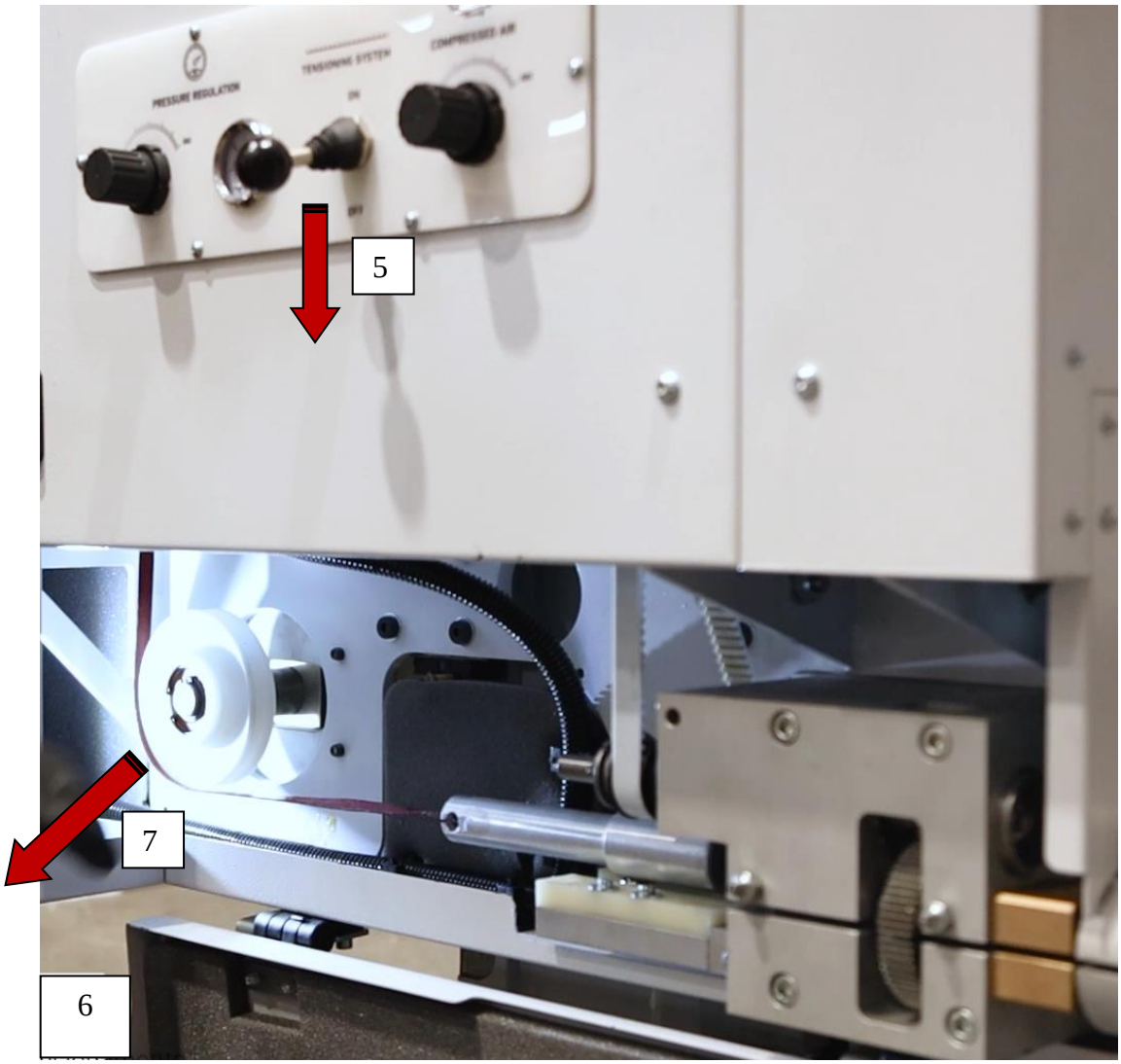
The blade must be inserted with the bevel (sharp area) facing towards the front of the machine.







4. Tighten the bolts which were loosened at step 2.
5. Lower the lever to release the tensioning.
6. Open the bottom left door.
7. Remove the tensioning and transmission strip from the flywheel.

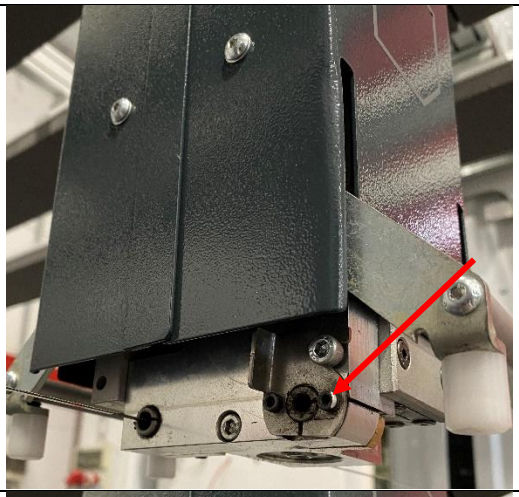
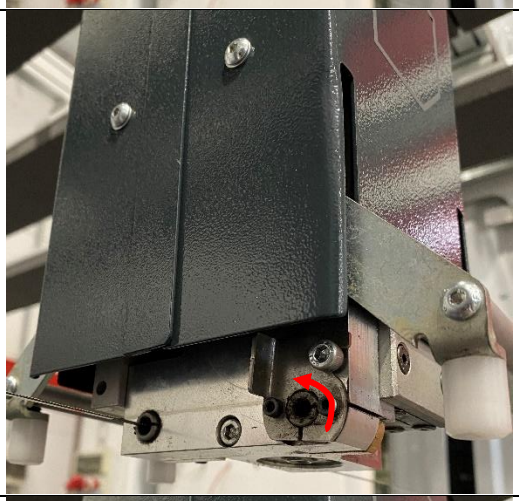
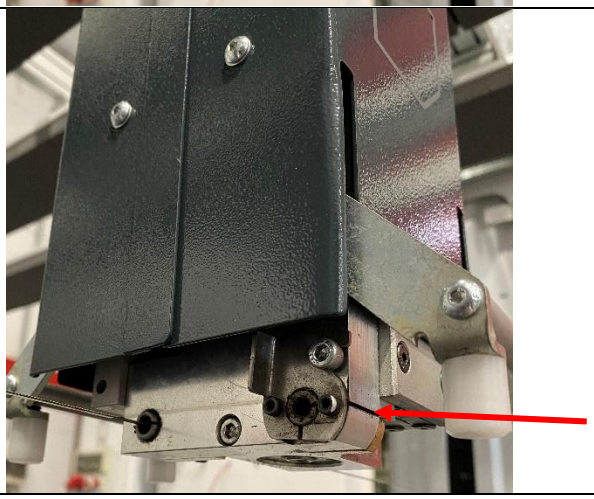


8. Repeat steps 2, 3 and 4 for the left head.
9. Restore the tensioning by lifting the lever which was lowered at step 6.

For further information about this procedure, please contact customercare@femaindustry.com

5.4.4. Central support cutting head

Removing and inserting the blade through the central support requires an additional procedure, given the module's complexity. In order to have the blade passing through:

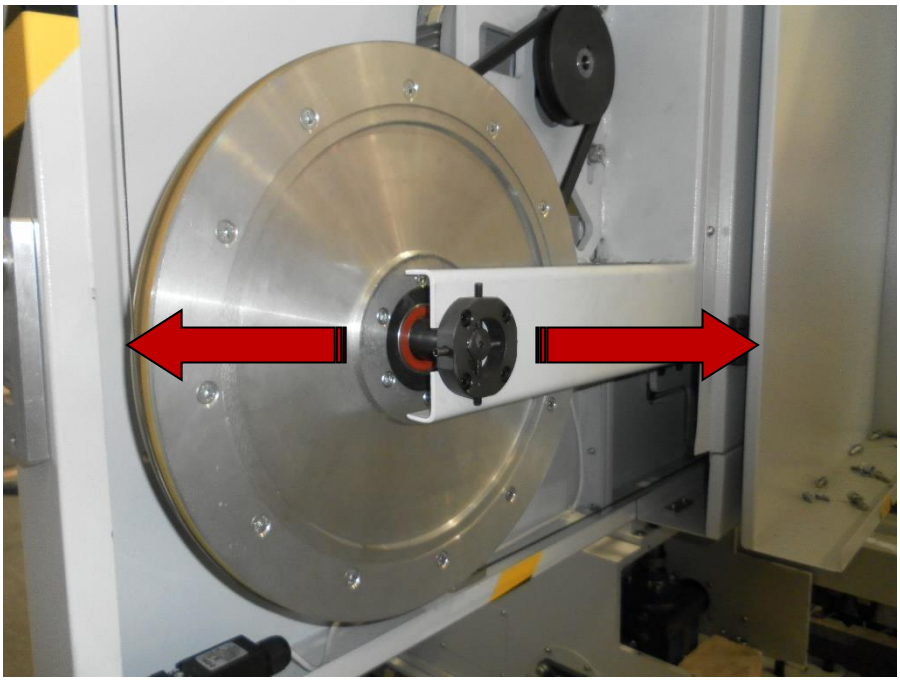
Loosen the locking bolt.	
Rotate the protective closing.	
Insert the blade through the horizontal slit.	
Close back the module, rotating the closing again and tightening the locking bolt.	

5.5. Flywheels regulation (continuous blade)

Before starting, please wear protective gloves to prevent accidental cuts.

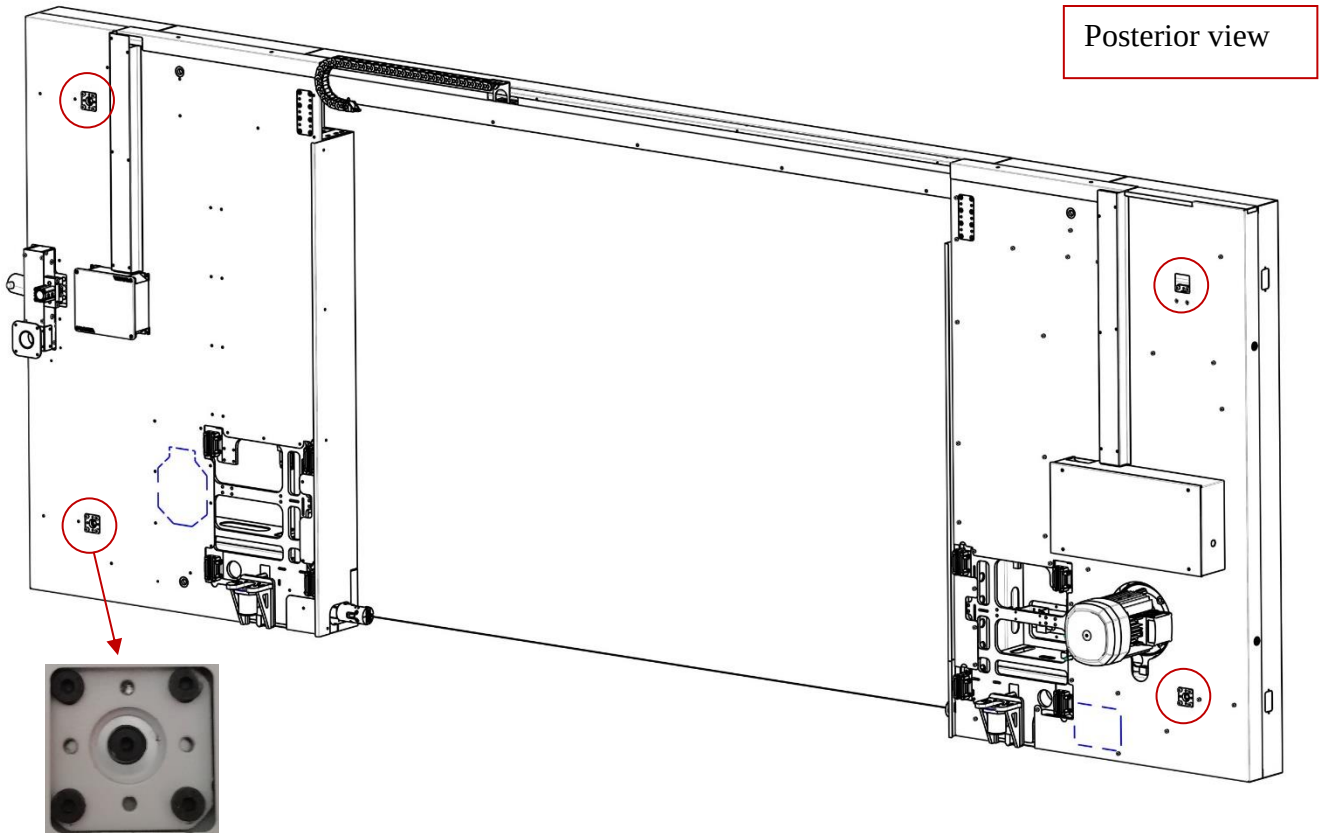
Follow all the operations by using the blade already tensioned and untwisted.
There are two kinds of possible wheel regulation: depth and planar.

5.5.1. Depth regulation



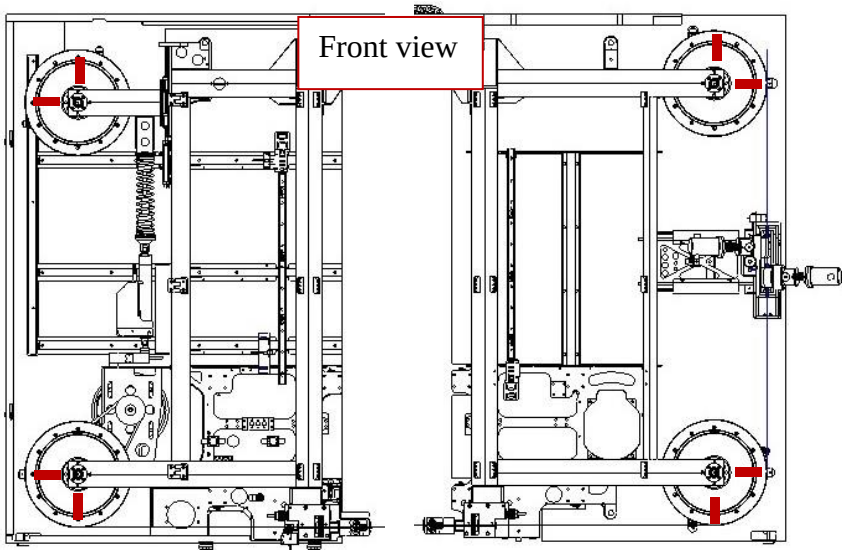
The depth regulation of the wheels is necessary to align the wheel with the cutting heads and to center the blade on the wheel side surface.
The procedure shown can be performed on a single flywheel or all of them, until the correct setting is achieved.

1. Loosen the wheel block nuts

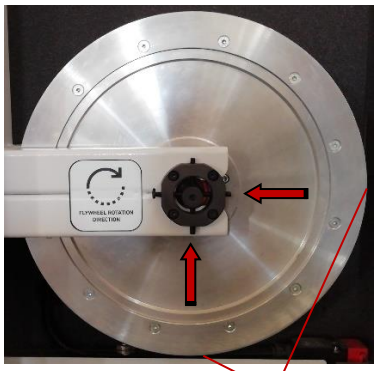


To regulate the depth, as first thing, loosen the flywheel block nuts, located on the posterior part of the arc, by using an 8-mm hexagonal key.

2. Loosen the external grains

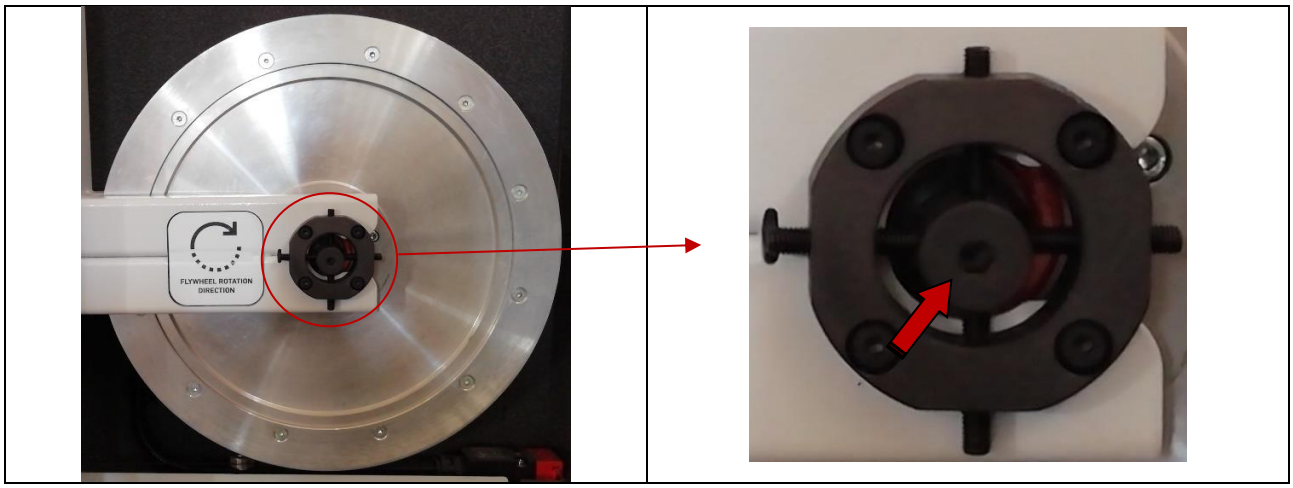


Bottom right flywheel



Loosen the external grains of the flywheel (grains which are in blade direction).

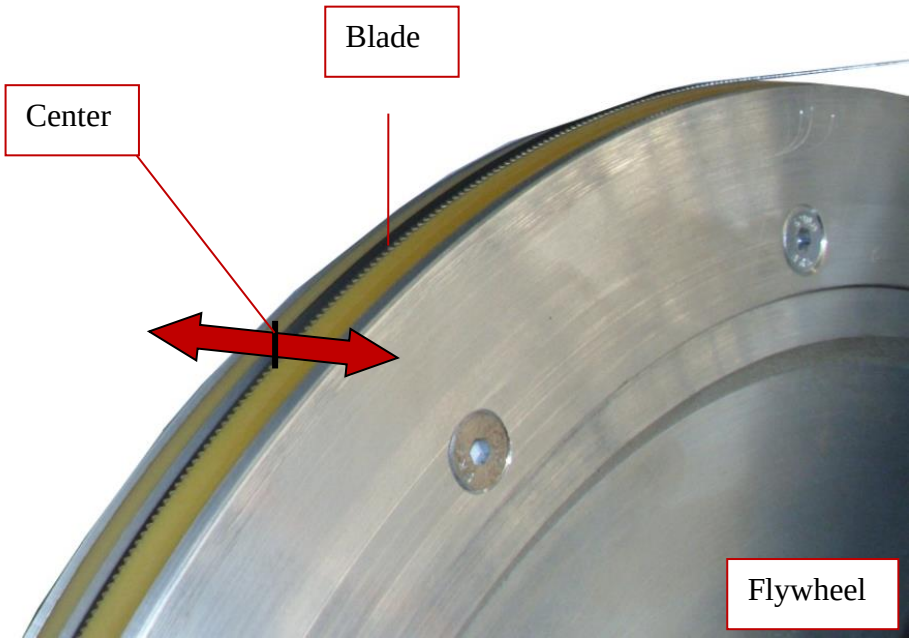
3. Regulate the depth of wheel using the central bolt



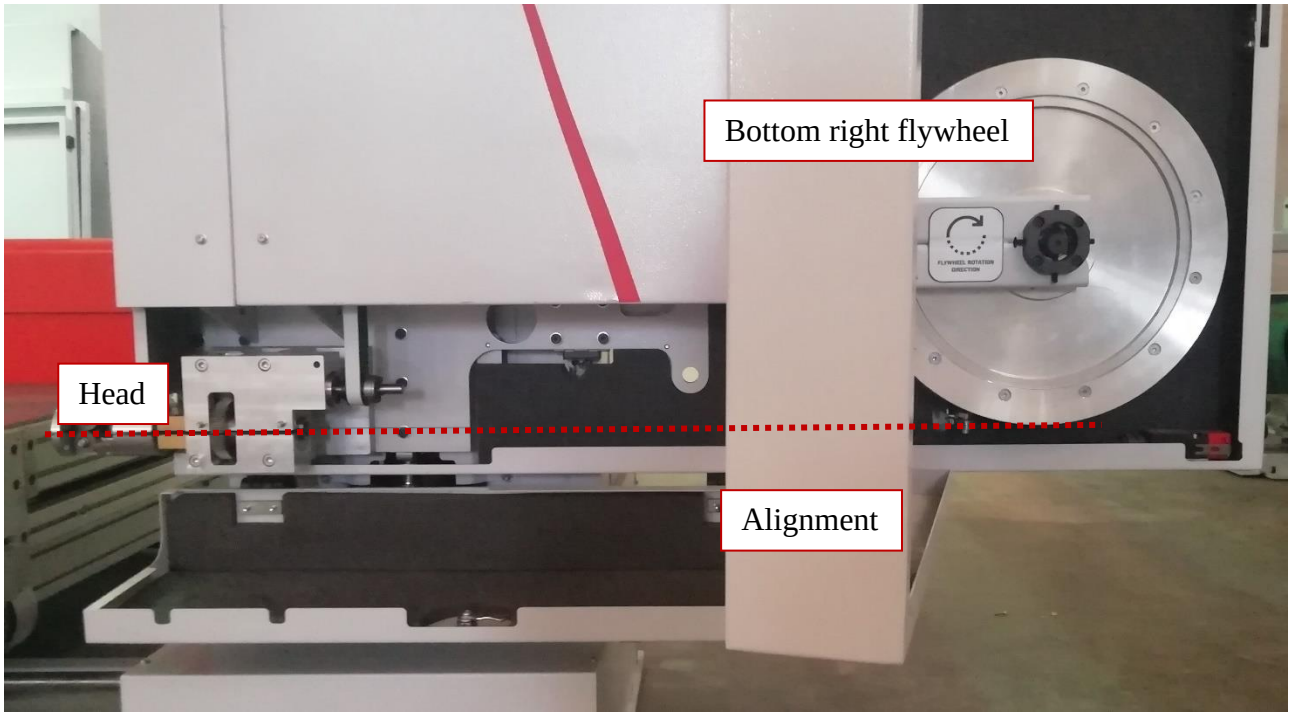
Regulate the depth of flywheel by loosening or tightening the central bolt by using a 6-mm hexagonal key.

The flywheel is **correctly regulated** in depth when:

a. the blade is located perfectly in the center of the flywheel side surface.

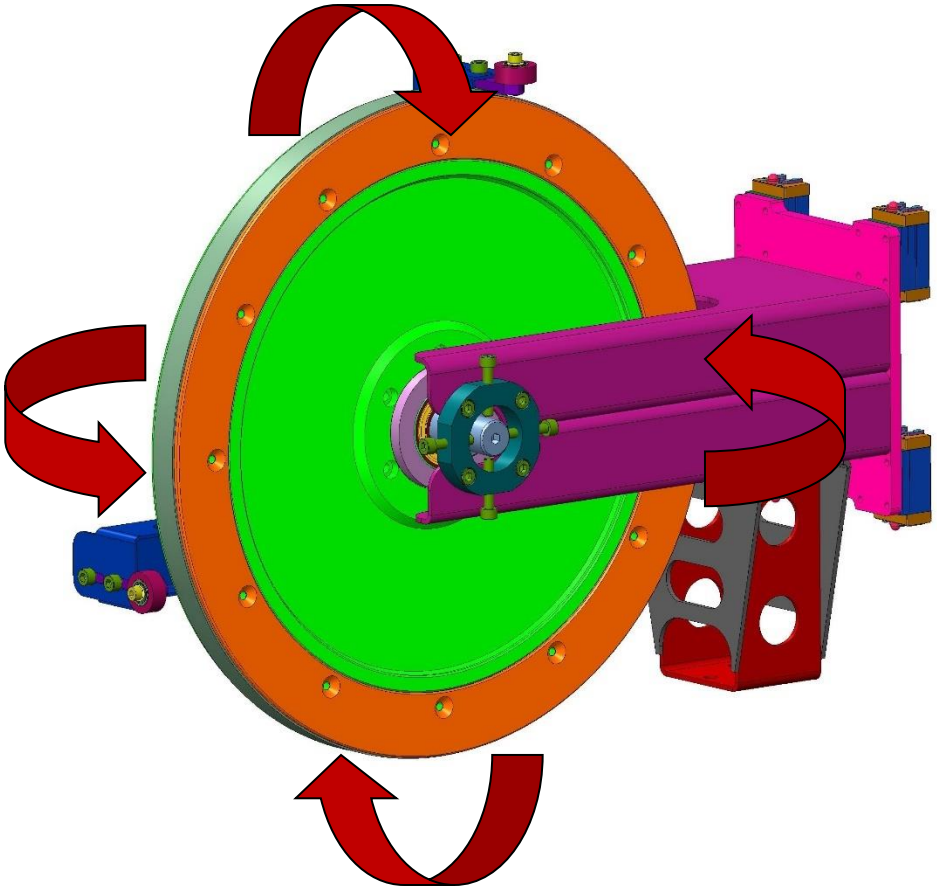


b. the bottom flywheels and cutting heads are correctly aligned.



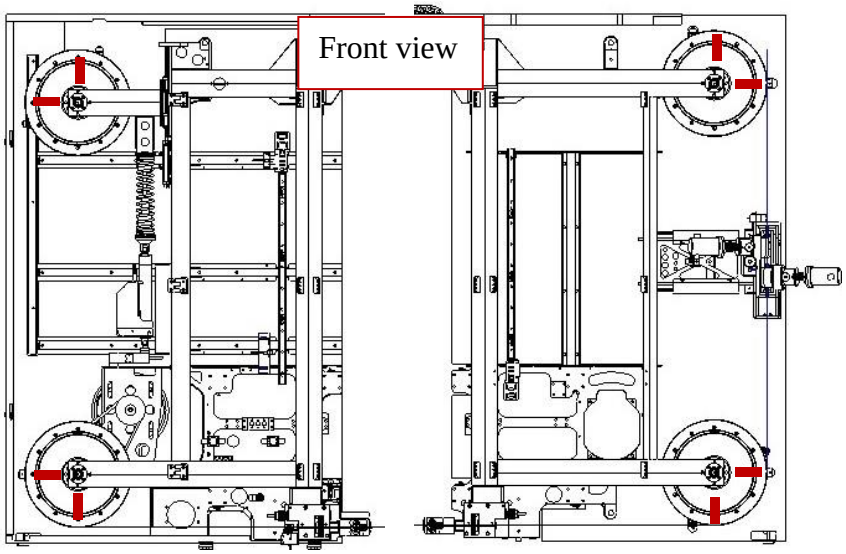
4. Tighten the external grains and the posterior wheel block nuts

5.5.2. Planar regulation

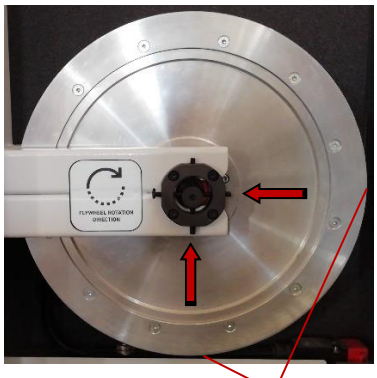


The planar regulation of the flywheels is necessary to center the blade on the flywheel side surface The procedure shown can be performed on a single flywheel or all of them, until the correct setting is achieved.

1. Loosen the external grains

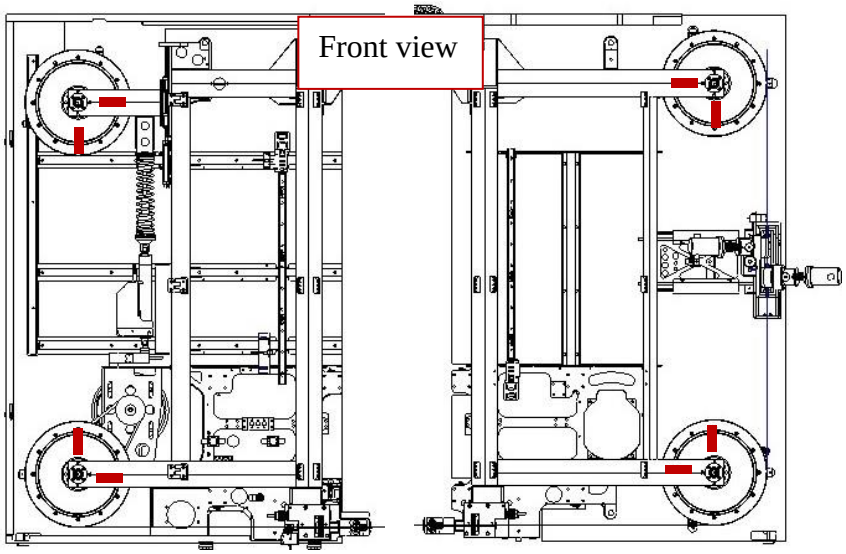


Bottom right flywheel

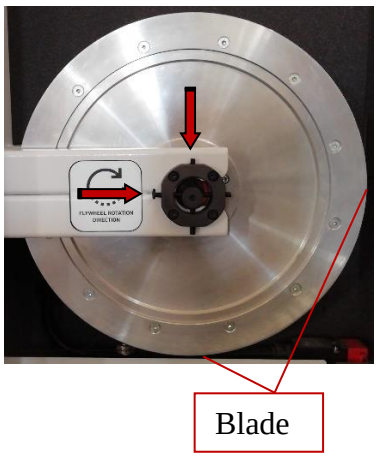


Loosen the external grains of the flywheel (grains which are in blade direction).

2. Regulate the planarity by using the **internal** grains

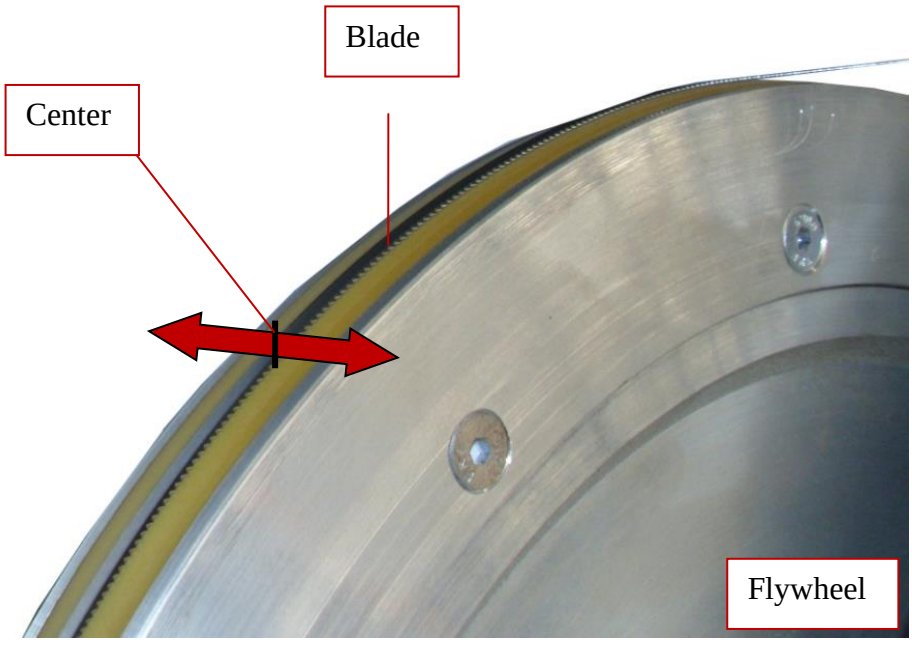


Bottom right flywheel



To regulate the flywheel planarity compared with the central fulcrum, loosen or tighten the two internal grains until obtaining an optimal position.

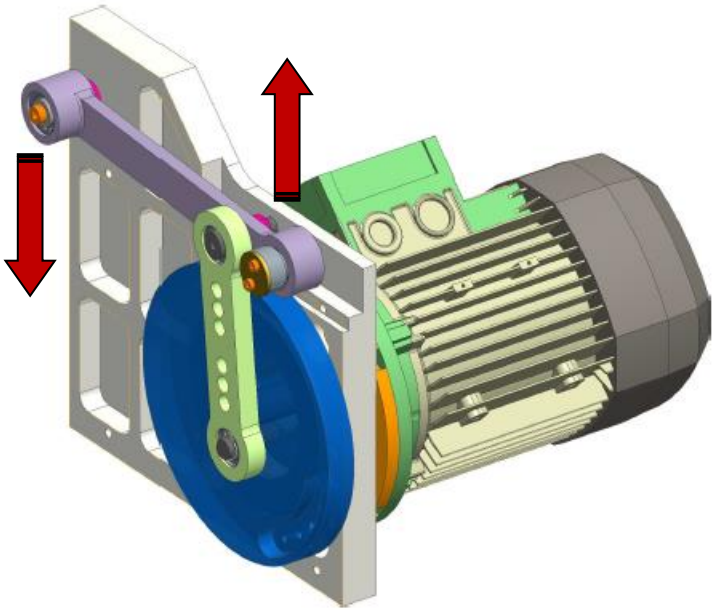
The flywheel is **correctly regulated** in planarity when the blade is located perfectly in the center of the flywheel side surface.



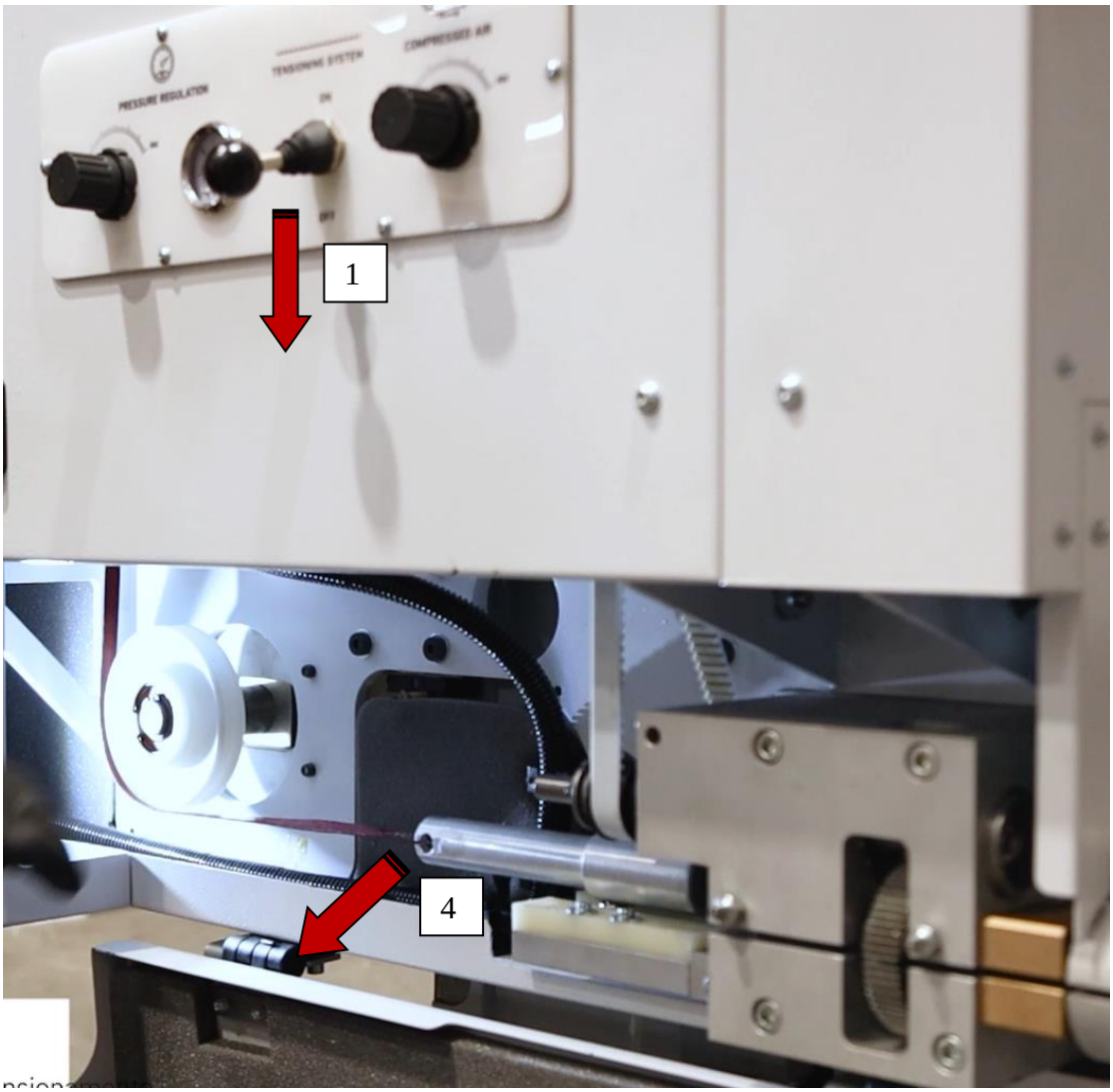
3. Tighten the external grains previously loosened.

5.6. Transmission strips replacement (oscillating blade)

1. Lower the lever to release the tensioning.
2. Open the four doors of the machine.
3. Remove both the transmission strips in the piston rod located in the right side of the machine.



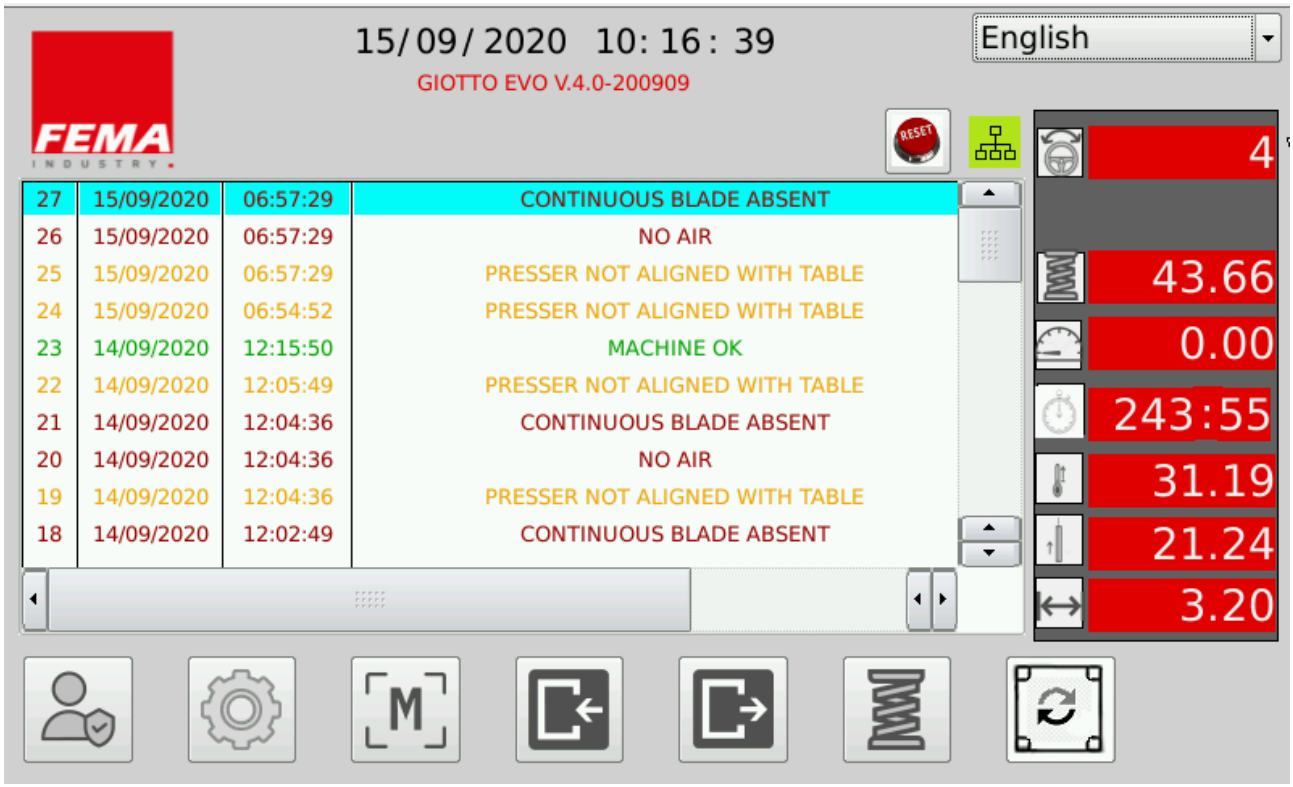
4. Remove both the transmission strips from the blade guide heads.



5. Making sure there are no twists, pass the new longer strip from the piston rod to the left cutting head and fix it on both ends.
6. Follow the same procedure for the shorter strip to the right cutting head.
7. Restore the tensioning by lifting the lever which was lowered at step 1.
8. Close all doors.

6. PLC STATUS

Using the PLC-GIOTTO icon on the desktop, the user can quickly access the PLC control screen, without the need to access it from LF2000. This function is only available for GIOTTO EVO models. By opening this program, the user will access its main screen, which will look like this:



This screen serves a viewing purpose, with the exception of some controls. In it are shown date, time and program version. Please note that not all controls may be available, because some of these devices are only available in certain models.
Here's the description of the visualization fields:

Central support:
Shows the current position of the central support. In order to change it, act on the LF2000 management software. In the event of a faulty system positioning (i.e. with the support in position 1 while differently shown in this screen) and for expert users only, this position can be manually edited. Press the "Ignore tool" button on the console, while clicking on this field at the same time. Then change the shown position with the actual correct one.

Block height:
If the size detection sensors are present, this shows the height of the block currently loaded.

Blade tensioning:
Shows the Kg currently present on the loading cell of the blade tensioning system.

Blade rotation speed: 
Shows the rotation frequency on the blade on the flywheels, measured in Hz.

Blade life duration: 
Shows the length of the blade life, measured in minutes. This counter is reset every time the user changes the blade, confirming it in the PLC screen. This control can also be pressed to access the blade duration visualization screen.

Blade temperature: 
Shows the blade temperature in degrees Celsius (°C)

Elongation: 
Shows the distance of the tensioned flywheel from its starting position, measured in mm. This parameter can be used to measure the elongation of the blade.

Blade width: 
Shows the width of the blade, measured in mm.

Power button: 
If the machine is not powered up, a green flashing button will appear, reminding the operator to press the green power button.

Network status: 
This icon is green if the machine is correctly connected to a shared folder, and a red one if it's not.

Language
Shows the language currently set. The user can change it by simply clicking on the bar.

Status list
In the central area it's displayed a list of the last 100 status messages displayed by the machine. Errors or presumed ones are shown in red.

The remaining controls displayed are activatable buttons:

Reset: in the event of a temporary error, like a faulty sensor signal or a safety system's intervention later disabled, this button tries to reset the machine regular functioning. If the error is not solved or not temporary, the control has no effect.

Admin login: the user can input a password and gain administrator access to the settings page. Default password is **6666**.

Logout: if the user is logged in as Admin, pressing this button will log out and get back to standard mode. This button replaces the "Admin login" button.

Settings: gives access to the PLC settings screen.
This control is enabled in admin mode only, and should only be used by highly qualified personnel**.**

Manual management: gives access to the manual management of some controls and apparatuses.

Inputs: gives access to the PLC input screen.

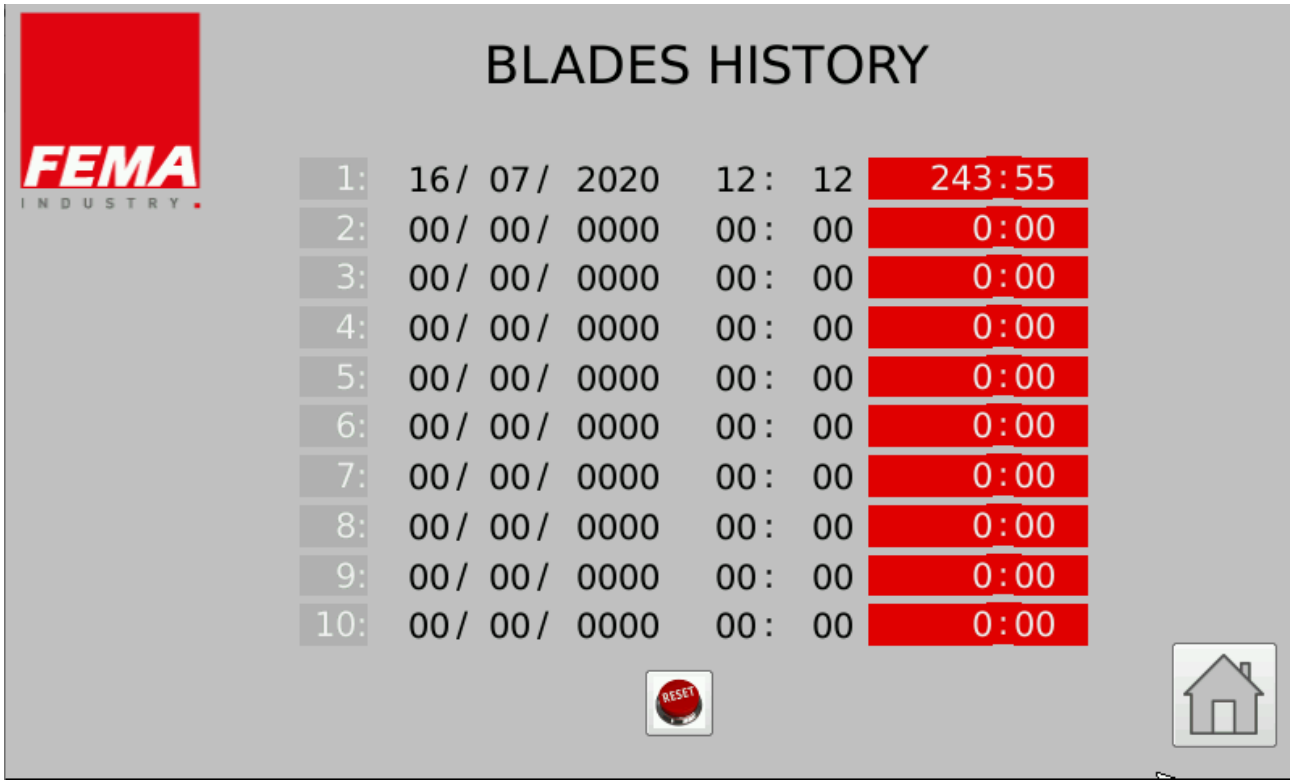
Outputs: gives access to the PLC output screen.

Release tension: brings the tensioning system down to its preload threshold.

Change blade: allows the user to force a blade change. This will simulate the conditions encountered in a blade break event. For more information, please refer to the change blade paragraph.

6.1. Blade history

By pressing the button, the user can access this screen, showing the history of the latest blades used, which will look like this:



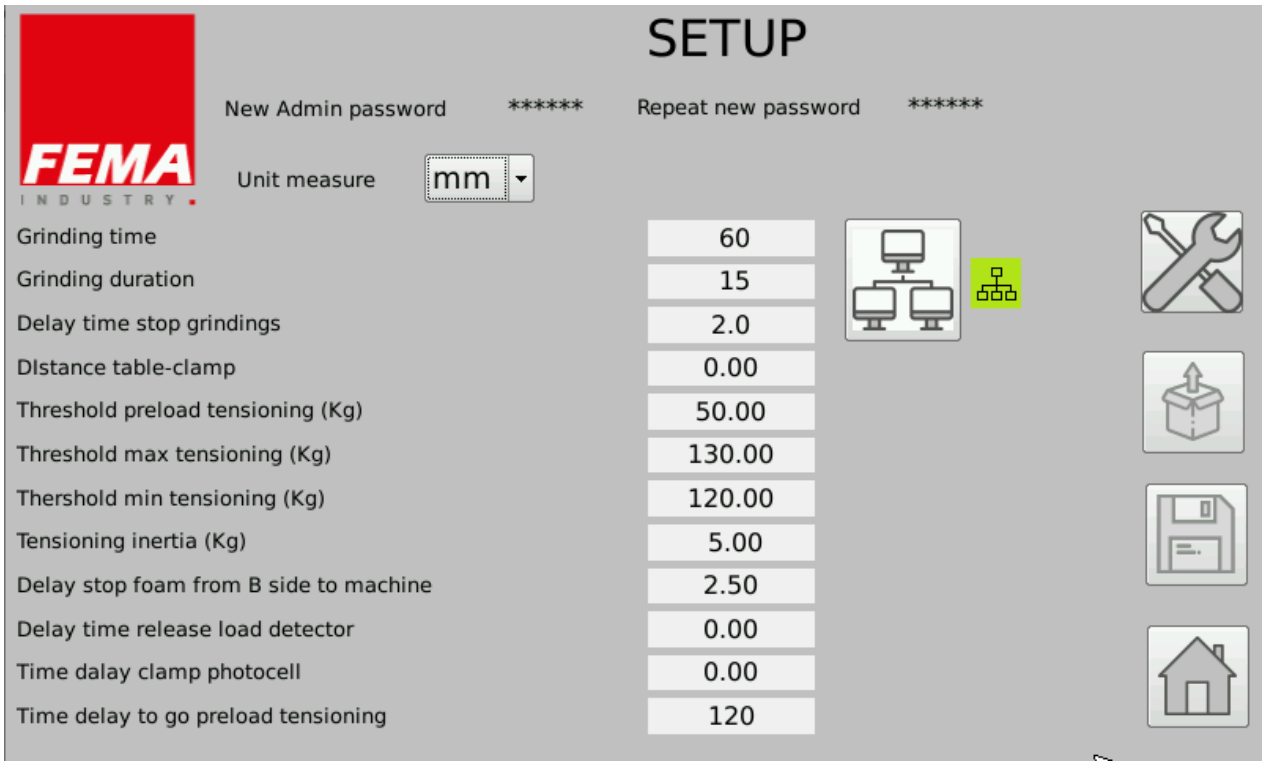
In this screen there are all installation dates of the blades and their corresponding duration. By pressing and holding the reset button, the log is cleared.

The home button quits to the main screen.

6.2. PLC settings - Setup

This control is enabled in admin mode only, and should only be used by highly qualified personnel**.**

The settings screen will look like this:



Grey parameters can be changed by FEMA personnel only.

Password: by clicking on both “Password” fields, the user can change the password for logging in as Admin. Passwords in these fields must match correctly.

Unit meas.:
Lets the user choose the unit of measurement between millimeters and inches.

Grinding time:
It indicates the time in seconds before activating the sharpener. Virtually every time the machine is turned on and the time specified in this parameter passes, the grindstones’ motors are activated automatically (provided the grinder selection is set to the AUTO sharpening position).

Grinding duration:
It indicates the sharpening duration in seconds. Virtually every time the machine is turned on and passes the specified time set for “Grinding Time”, the serrated roller is automatically operated (provided the selector is in AUTO sharpening position) and remains switched on for the time indicated by this parameter.

Time delay stop grinding:
Indicates the time required before powering down the grindstone in order to completely detach from the blade.

Distance table – clamp:
Indicates the actual distance, in millimeters, measured between table and clamp. Should it change for any reason, the user should update this parameter.

Threshold preload tensioning:
Indicates how many Kgs are present on the loading cell of the tensioning system when the machine is turned off.

Threshold max and min tensioning:
Indicates the maximum and minimum values present on the loading cell of the tensioning system during cutting procedures.

Tensioning inertia:
indicates how many Kgs the tensioning system will add or subtract, as a compensation of mechanical inertia. This allows the cell to load an actual Kg value closer to the expected one.

Delay stop foam from B side to machine
Indicates the time of further advancement needed for a block loaded from the B position (back conveyor) to be completely placed on the machine table. It's a compensating value to be applied on the signals registered by the photocells.

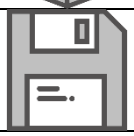
Delay time release load detector
Indicates the time delay between the block detection sensor activates and the actual stopping of the belt.

Time delay photocell clamp:
Indicates the time delay between the block detection sensor activates and the actual stopping of the clamp.

Time delay start preload tensioning:
Indicates how long the tensioning system will stay active after shutting the machine down or finishing a working cycle.

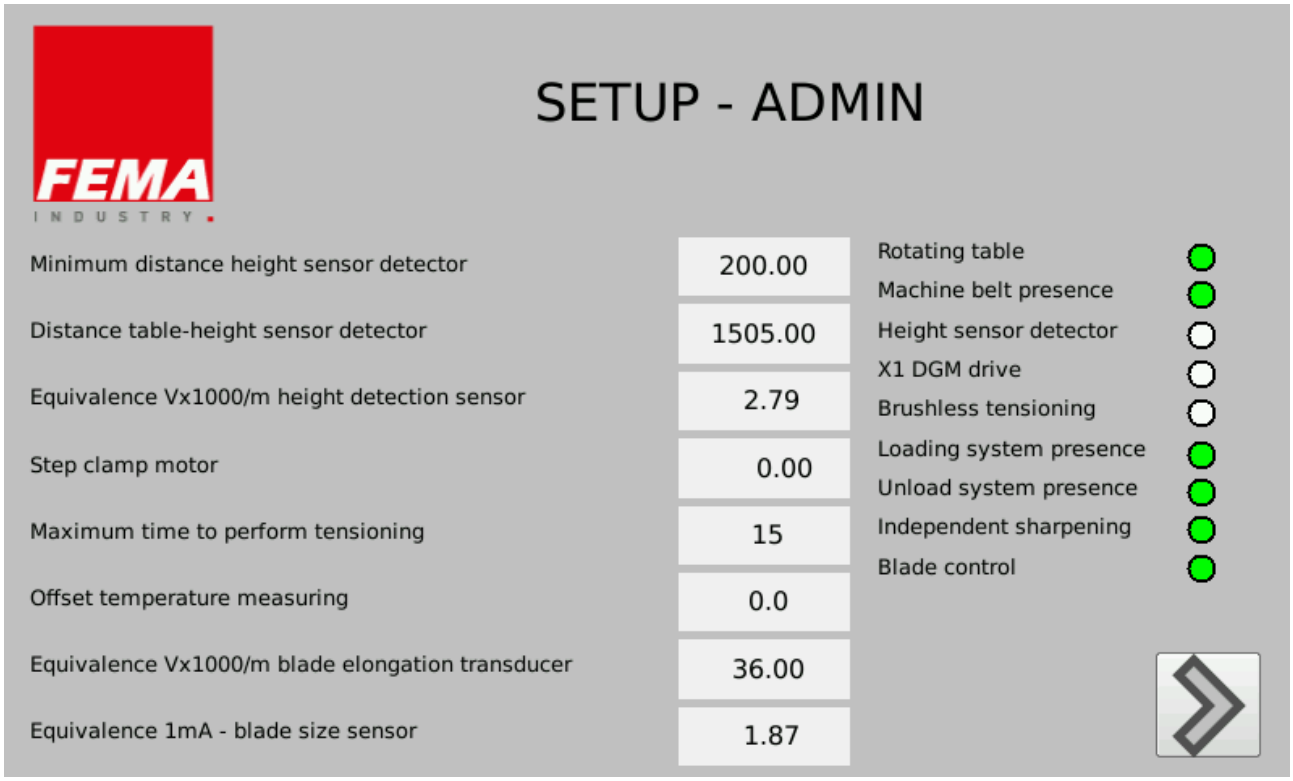
Finally, there are also these activatable controls:

	**Connection**: opens the panel for setting up a connection between the machine and a shared folder.
	**Settings:** opens a new panel with settings that can be changed by the admin only. This will be furtherly explained in the next chapter.
	**Home:** goes back to the main screen
These controls are available only with an inserted USB drive.	

	**Load:** loads a parameter configuration file from the USB drive.
	**Save:** saves a parameter configuration file on the USB drive.

6.2.1. Admin setup

This screen is only available if the admin access has been executed from the main screen. It will look like this:



Minimum distance height sensor detector
Indicates the minimum distance (in millimeters) that has to be kept between the block and the height sensor in order to get a correct and optimal reading.

Distance table – height sensor detector:
Indicates the actual distance, in millimeters, measured between sensor and conveyor.

Equivalence Vx1000/m height detection sensor
It's a multiplier necessary for an optimal conversion of the signal from the block height sensor. It converts the measured Volts into millimeters.

Step clamp motor:
It's a necessary parameter to convert the clamp motor movement pulses into mm.

Max time to perform tensioning:
Indicates the maximum time for the tensioning system to finish the loading cycle.

Offset temperature measuring:
Parameter needed to properly show the temperature of the blade, being an offset from the standard value.

Equivalence Vx1000/m blade elongation transducer
It's a multiplier necessary for an optimal conversion of the signal from the elongation transducer. It converts the measured Volts into millimeters.

Equivalence 1mA - blade size sensor
It's a multiplier necessary for an optimal conversion of the signal from the blade size measurement sensor. It converts the measured mA into millimeters.

In the right section there are more status controls. The only available values for those are ON (green) and OFF (white).

Rotating table:
Activate if the machine features a rotating table.

Conveyor presence:
Activate if the machine features conveyors.

Height sensor detector:
Activate if the machine features a size detection sensor.

X1 DGM Drive:
Activates/deactivates controls for different kinds of machine drivers.

Brushless tensioning:
Indicates whether the tensioning system features a regular or brushless motor.

Loading system presence:
Activate if the machine features load tables and conveyors.

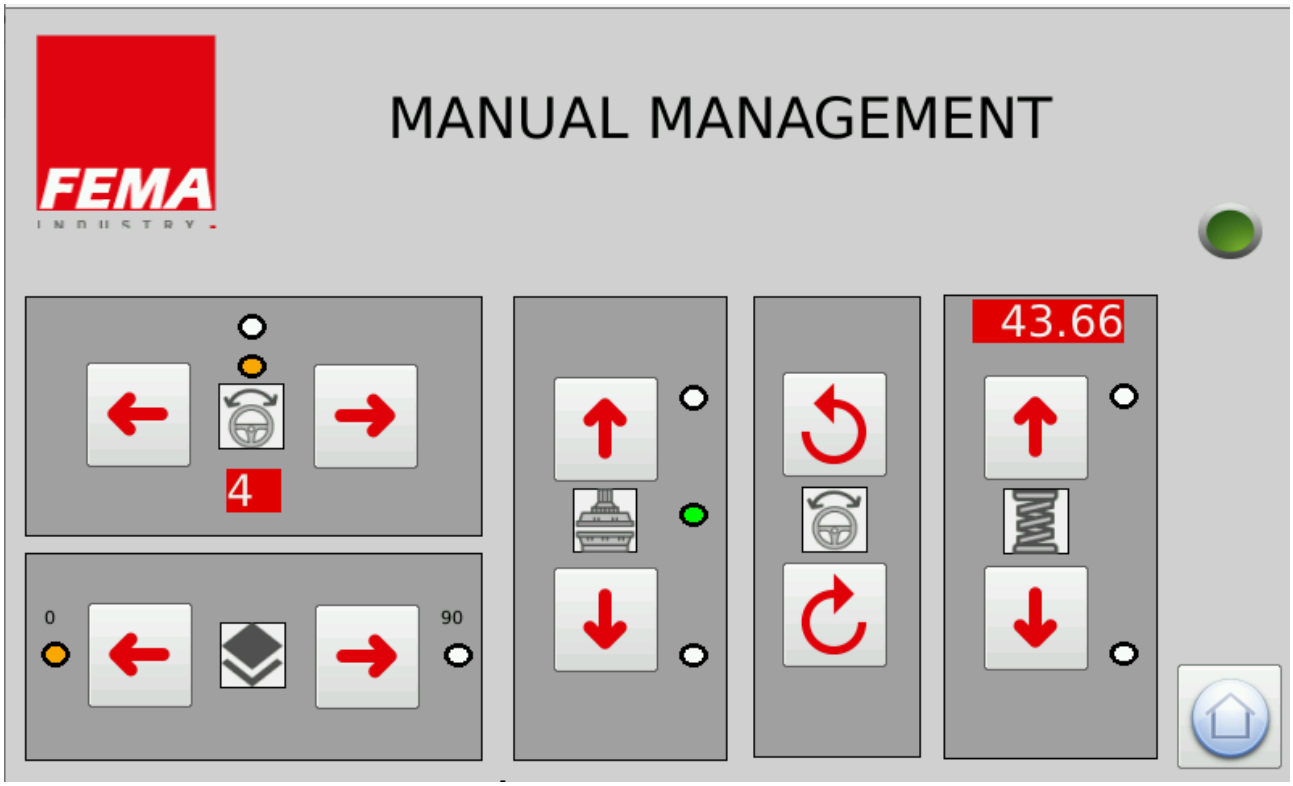
Unloading system presence:
Activate if the machine features unload tables and conveyors.

Independent sharpening:
Activate if the safety can be bypassed to turn on the sharpening.

Blade control:
Activate if the machine is equipped with the blade control module.

6.3. Manual Management

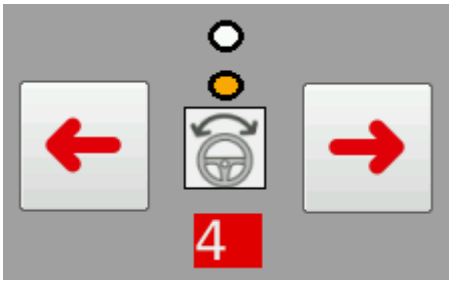
The PLC Manual Management screen looks like this:



This screen is divided into five sections, and each one controls a different apparatus.

Pressing this button will quit to the main screen.

6.3.1. Central Support

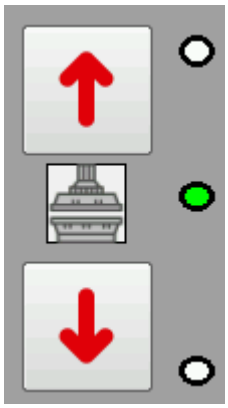


This section controls the central support. The dots on the top mimic the sensor which is being read. If at least one of the two circles is yellow, it means the central support is correctly placed in one of its four possible positions, as shown by the number in the bottom. If not, the user can manually change the central support position.
Pressing one of the arrows will move the arm left or right. By using them, the user can correct the position of the central support until a sensor is read and one or both circles turn yellow.
Caution: moving the central support freely may result in a crash with the hold-down device. If the user is trying to reach a different position than the one shown by the number, or if he's moving the central support for a long distance, he should **manually take the hold-down device in the full-frontal position before moving the central support.**

6.3.2. Table rotation

Using the arrows, the user can manually rotate the machine table.
Caution: before moving the table, it must be manually brought in the full-frontal position.
The circles indicate the position for the table. If the left one is yellow it means the table is in the straight 0° position. If the right one is yellow instead, it means the table is rotated by 90°. Pressing one of the arrows will switch the table's position to the other one.

6.3.3. Hold-down device



Using the arrows, the user can manually move the hold-down device. Pressing the Up arrow will move the device towards the back of the machine, while pressing the Down arrow will move it towards the front.

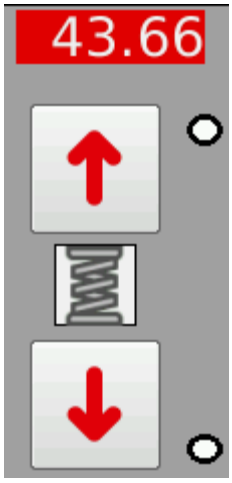
The circle in the middle turns green when the alignment with the table is reached, while the others turn yellow if the limit switch is reached.

6.3.4. Central support head

The user can manually move the central support cutting head clockwise or counterclockwise.

This should be done to ensure the central support cutting head is always aligned with the two side cutting heads. In order to do so, using the management software, set the machine heads to 180°, as reference. This can be done with the Manual Management function (F4 command) or by placing the heads in the blade changing position (F5+F1 commands). Then, using the circular arrows, move the central head until it's aligned.
The central support head can also be aligned manually, as shown in the next chapters.

6.3.5. Tensioning system

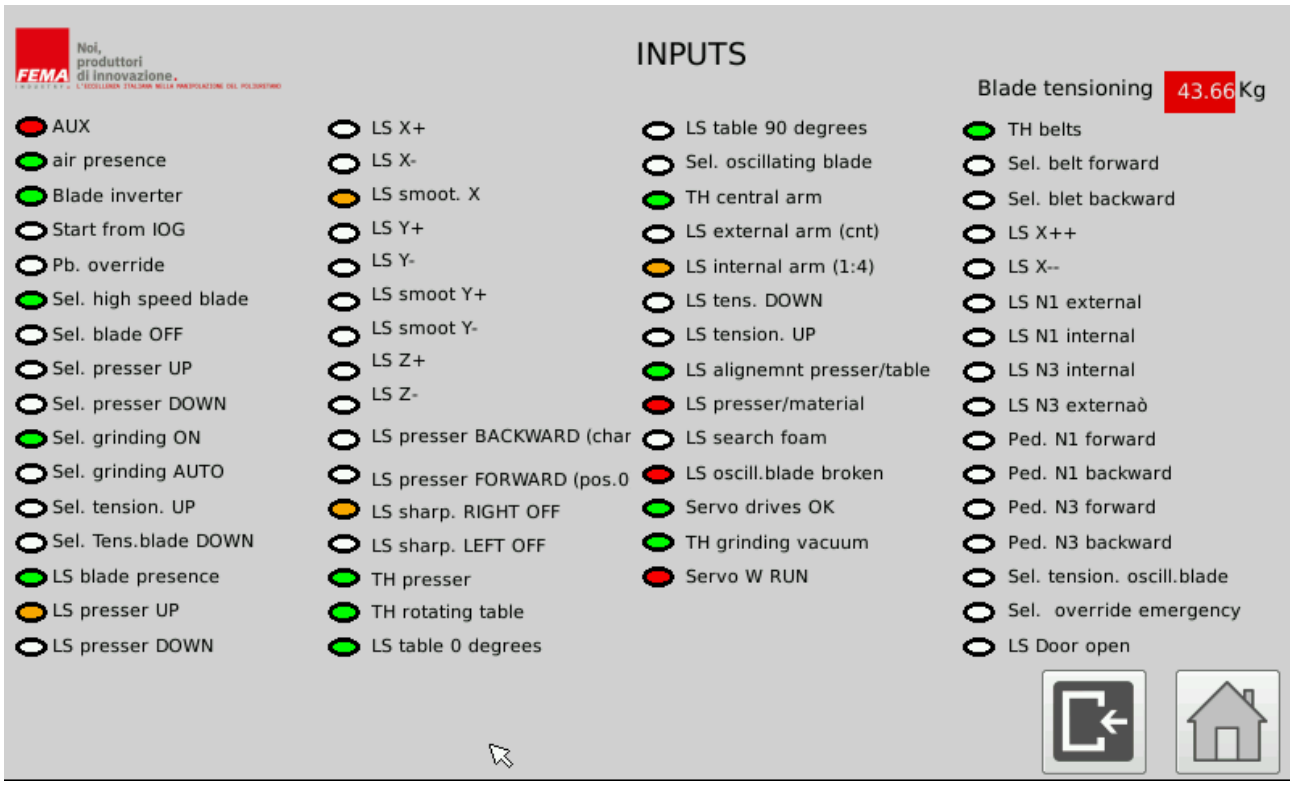


Using the arrows, the user can manually move the tensioning system. Pressing the Up arrow will move the device upwards, increasing the tension, while pressing the Down arrow will decrease it, moving it downwards.

The circles turn yellow if one of the limit switches is reached.

6.4. Inputs

The PLC input screen looks like this:



It shows all input signals of the PLC, each with a description and with an indicator which displays its current status:

- White: Inactive
- Green: OK
- Red: Problem
- Orange: Possible problem

This last case represents, for example, limit switches.

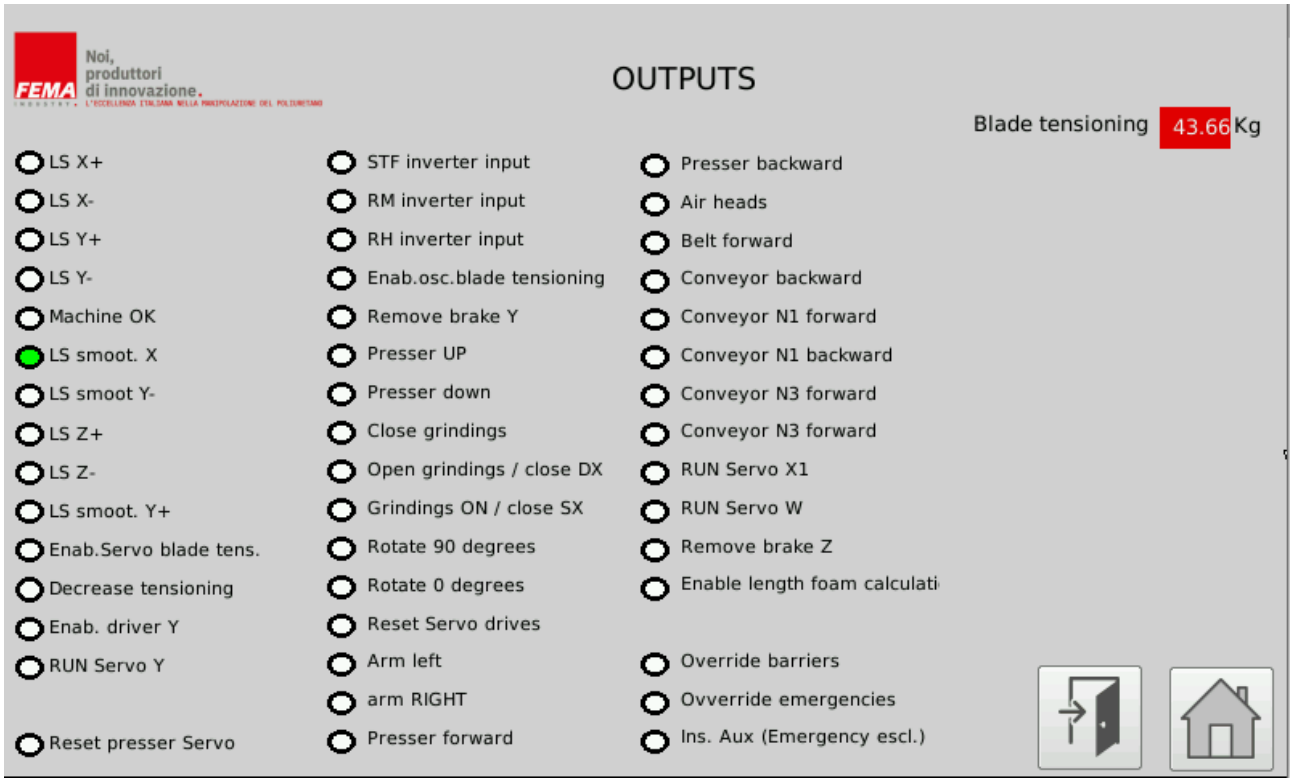
There are also two activatable controls:

Home: goes back to the main screen

Outputs: gives access to the PLC output screen.

6.5. Outputs

The PLC output screen looks like this:



It shows all output signals of the PLC, each with a description and with an indicator. The only possible statuses in this case are **Green – ON** and **White – OFF.**
There are also two activatable controls:

Home: goes back to the main screen

Inputs: gives access to the PLC input screen.

6.6. Blade change

This CNC system is equipped with a sensor which detects the presence/absence of the blade. This is also a safety device, as shown in the next chapters. If the blade were to break, the sensor wouldn't detect its presence and the machine would be immediately stopped.
In an event such as this, the PLC will show an alert message like this:

By selecting **confirm** the user will signal that a blade change is actually in progress, so the data of the blade which is being removed will be stored in the blade history screen.
By selecting **abort** instead, the user signals that no change is actually taking place, therefore all will remain unchanged.

In addition to the sensor signal mentioned above, it's possible to force the blade change signaling and updating the blade history. As shown in the previous chapters, this can be done by pressing the blade change button  in the main screen. Doing that will trigger this screen.

7. OTHER PROCEDURES

7.1. Loading/unloading procedure

A block can be loaded on the machine from point A (front conveyor) or from point B (back conveyor). Vice versa it can be unloaded from points D (front) or C (back).
Using the proper command in the software (F5 = 0 POSITION + letter of the load/unload chosen point + F6) the machine is automatically brought to the most suitable point for the required operation.

Attention: loading controls assume the machine to be empty, therefore all movements are performed at high speed.

For unloading operations instead, the machine uses the same speed as the cutting one until reaching the hold-down device. This it lifts until reaching the top limit switch. From this point on, the movements are performed at high speed, as the machine is out of the block potential height.

If a loading procedure is performed from the conveyor which features the size detection system, after placing the block on the machine table, the press lowers automatically, placing itself at a height optimal for the loaded block.

Attention: the A-position loading command is not performed if the photocell S34 (photocell internal conveyor 2) is busy, as the presence of a block on it interferes with the machine's hold-down device.

- If the machine features the size detection system, the hold-down device will automatically go to the last detected height by pressing 3 times the red "ignore tool" button. 
- If the machine features a back conveyor table, the hold down device will not lower if the sensor S34 is obstructed. This can be overridden by holding down the "ignore tool" button. 

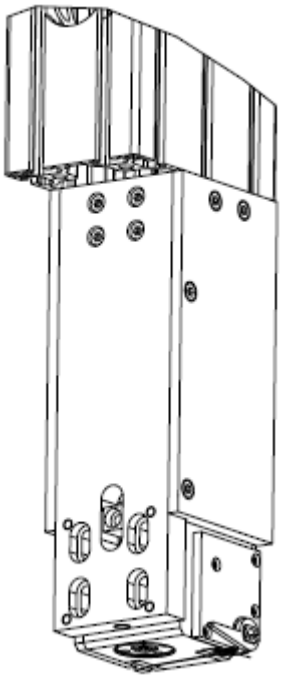
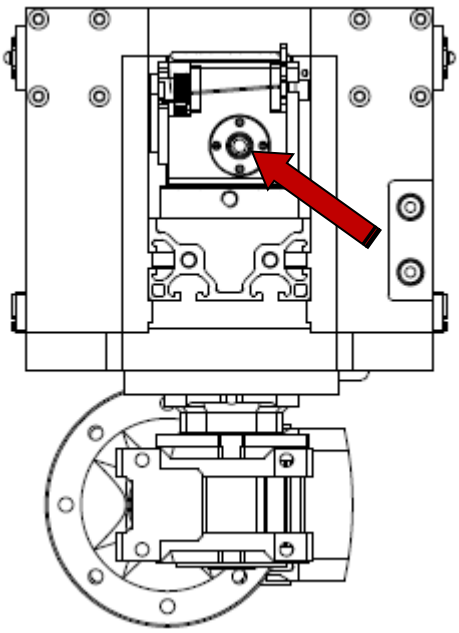
7.2. Table/hold down device alignment

The hold down device always moves in sync with the table, and their alignment is ensured by the S29 photocell. Its signal, though, is only monitored during automatic cut. During manual management, if press and table are somehow unaligned, the hold down device would try to sync up automatically by moving back and forth trying to reach the alignment sensor.
If a previous load/unload procedure was interrupted, the table may be in an area external to the maximum reach of the hold-down device. In this case, it would keep moving as described, searching for the alignment sensor without ever finding it.
In order to allow the hold-down device to align with the table, manually place the table back inside the working area.

7.3. Central support head alignment

The central support head must always be aligned with the side cutting heads. If any condition causes a misalignment, however small, the user should adjust the central support using the PLC, as shown in the previous chapter, or manually, as described here.

1. Using the management software, set the machine heads to 180°, as reference. This can be done with the Manual Management function (F4 command) or by placing the heads in the blade changing position (F5+F1 commands). The machine can now be switched off.
2. Locate the bottom socket in the central support, as shown in the picture below.

		
Central support	Central support – bottom part	Central support as seen from below. The arrow points to the socket.

3. Using a 6-millimeters hexagonal key, move the central support head until reaching the correct alignment with the side heads, at 180°. During this movement, make sure the blade is not being heavily twisted between the heads. By the end of this alignment it has to be straight and untwisted from one head to the other.

8. TROUBLESHOOTING

1) Message “Power OFF or Blade Break or Violation of Danger Area”

This problem is caused when the safety circuit has to intervene. The problem could be due to:

a) The boundary ropes or protective devices for the danger area are closed and the trip switches have been activated.
b) Check that the emergency button and/or the power of the control panel are in the ON position.
c) Check that the doors are closed.
d) Check that there is power to the electrical panel.
e) Damage to the emergency circuit.

2) Message “Inverter Error”

This problem is caused by the intervention of the circuit breaker or by engine failure of the inverter. To determine the source of the problem, check the following:

a) Is the AUX button illuminated?
b) The inverter on and not damaged. Analyze the inverter error tab that is attached.

3) Message “Presses out of position”

This problem occurs when trying to operate the machine and the presses are not completely closed. Ensure that all the sensors (pistons closed) on the heads are turned on. Verify in STATE PLC that FC PIST1 CLOSED and FC PISt2 CLOSED are both ON.

4) Message “Error, rotating table not in position”

Occurs when trying operating the machine with the table not rotating in the correct position. Verify in STATE PLC that one of the sensors are TABLE at 0° or TABLE at 90° are ON and that the TABLE UP sensor is illuminated.

5) Message “Insufficient air pressure”

Verify that there is sufficient compressed air. In STATE PLC check the AIR PRESENCE signal.

6) Message “Error, blade not present”

Check the following:
a) That the blade is properly mounted on the machine
b) That the blade sensor is close to the blade and on

7) Message “Error, incorrect blade”

Check the following:

a) That the switch inside the left door is positioned on the type of utensil used

8) The central arm does not move
a) Verify that the machine is positioned on the X-and Y-limit switch. Bring the machine into place automatically with F5 (zero position) and then F3 (move arm)
b) Verify that the presses are positioned at the top and that the PRESSES UP sensor is on
c) Enough air is present

d) Auxiliary circuit (AUX) is on
e) The machine is not in motion
f) The thermal power relay of the central arm (STATE PLC) is OK.

9) The central arm has exceeded the minimum and maximum movement

ATTENTION: This operation can only be performed by trained and qualified personnel

a) Turn the power dial on the rear door of the electrical panel to OFF
b) Open the doors
c) Manually switch on the power to the electrical panel
d) Press one of the controls (arm SX / arm DX) to bring the central arm within the appropriate movement area
e) Switch the power OFF
f) Close the doors
g) Turn the power dial to ON
h) Turn on the AUX
i) In STATE PLC verify that the heads positioning sensors are functioning normally in the presence of a metal object and that the signal is displayed on the PLC screen
a) Redo the positioning of the arm

10) The turntable does not move

a) Verify that the machine is positioned on the X+ position (with STATE PLX). Manually position the machine using F5 (zero position) and F2 (turntable)
b) Enough air is present
c) Auxiliary circuit (AUX) is on
d) The machine is not in motion
e) The thermal power relay of the turntable (STATE PLC) is OK

11) The sharpening tool is not working

a) Verify that the machine is in motion
b) Verify that the sharpening tool switch is ON
c) Verify that the thermal power relay of the suction is not is use
d) Verify that the fuse protection of the entrance/exit bridge rectifier

12) The press does not lower

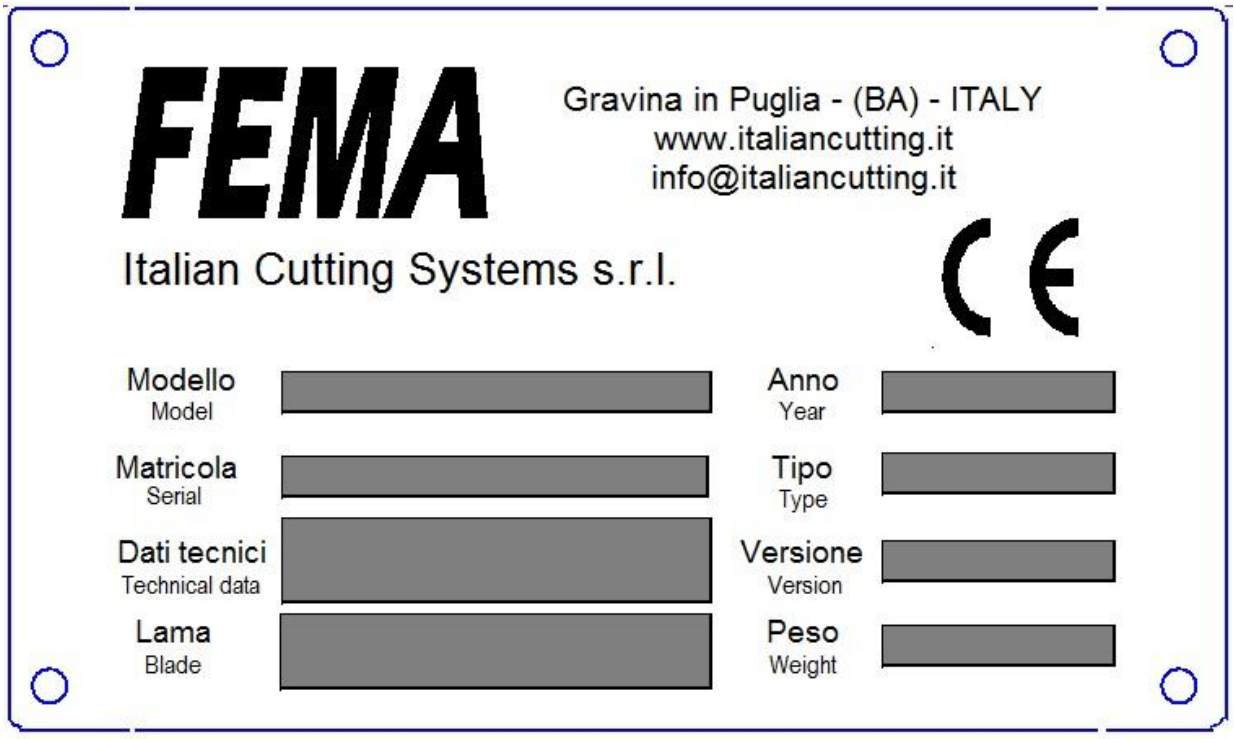
a) Verify that the PRESS DOWN action is not already activated
b) If by holding the IGNORE UTENSIL the presses go down, indicates that the photoelectric block detectors are not aligned
c) Verify that the Y+ position is not already actioned
d) Verify the thermal power relay of the press (STATE PLC) is OK

9. SAFETY

9.1. Safety Indications

If used properly, the machine is safe in operation, with a safety apparatus updated to the most recent techniques.

The CE symbol on the machine declares its conformity with regards to health and safety requirements laid out in the Machinery Directive 2006/42/CE and subsequent ammendments73/23 CEE and 89/336 CEE and the EN norms standards valid at the time of installation.



The CE symbol is applied to the plaque on the machine and indicates the model, serial number, year of construction, type and technical data. The plaque is located at the right rear side of the machine near the sharpening system.

Nonetheless, the machine may be a source of danger if used improperly or by inadequately trained personnel.

In the following paragraphs will be highlighted all safety aspects of the machine, in order to inform the user of the potential hazards and relevant measures that can be taken.

Please observe all general rules regarding health and safety at work that are not to be dealt with in this manual!

9.2. Terminology

Dangerous Areas (according to UNI EN 292-1)
"Danger Areas" refer to the area within and around the machine that are cordoned off by fences and barriers and relate to the electric safety system that is in this zone for the protection of individuals.

User/Operator
The operator is the person working for the user at the premises where the machine is installed.

Skilled Maintenance Worker
These are the people responsible for the transportation, installation, commissioning and maintaining the machine. They are also responsible for cleaning, maintaining and updating the software and troubleshooting. Skilled maintenance workers are ITALIAN CUTTING SYSTEMS s.r.l. employees or they have been authorized by Italian Cutting Systems s.r.l in writing.

9.3. Safe operation

The machine is built according to the latest technology and is secure in its operation.
However, the machine may be a source of danger if used improperly or by inadequately trained personnel.

The risks are:

- ☞ Operator safety hazards
- ☞ User safety hazards
- ☞ Damage to the machine and the products of the user
- ☞ Impairment of the efficiency of the machine

9.3.1. Using the machine safely

The machine is intended solely for the cutting of flexible polyurethane. The polyurethane should have a density that is compatible with the blade being used, so that the foam does not withstand being cut. It is not permitted to under any circumstances to use this machine for any other purposes (e.g. cutting materials other than expanded polyurethane or expanded polyurethane with a density that is not recommended).

- ☞ **Note**

Failure to comply with these guidelines may result in personal injury or damage to the machine. All risks are borne by the user.

The use of this machine also complies with the provisions set out by the manufacturer in regards to installation, operation, transportation and maintenance (in the case of an agreement of this kind between the manufacturer and user).

Avoid doing any kind of work that may compromise safety.

Any modifications or adjustments made to the machine by the user or the operator are not permitted; the manufacturer holds no responsibility for any personal injuries or damages to the machine or the property.

9.3.2. Safety measures for the user/operator

The machine can be operated and be subject to routine maintenance and repairs, only if carried out by authorized personnel. All personnel must be briefed about the dangers when using this machine, especially for those working on the electrical and mechanical equipment.

Read machine documentation
All persons that have been instructed by the user to operate the machine or carry out routine or any other maintenance must read all the machines documentation. We suggest that the user request any machine user's sign that they have read and understood the documentation.

Agree responsibilities
It is important that it is clearly establish who will operate, maintain and repair the machine so that there is no confusion that may result in safety issues.

The machine must only be operated with the work safety perimeter in place.

Perfect working status
The user and operators may only operate the machine if it is in perfect working status.

It is the users' and operators' responsibility to ensure the cleanliness, maintenance and control standards of the machine according to the instructions.

The operator must ensure that only authorized personnel use the machine.

Controlling the danger area
Before starting the machine, the operator must ensure that the danger area is clear of any obstructions or any other personnel.

Faults and damages
It is the operators' responsibility to notify the user immediately of any changes that may compromise safety. You should check at least once per shift that there are no abnormalities or damage to the machine.

Control and repair of safety systems
Unauthorized adjustments and changes made to the machine by the user or operator are not allowed. In doing so, the manufacturer will take no responsibility for any damages to people or premises.

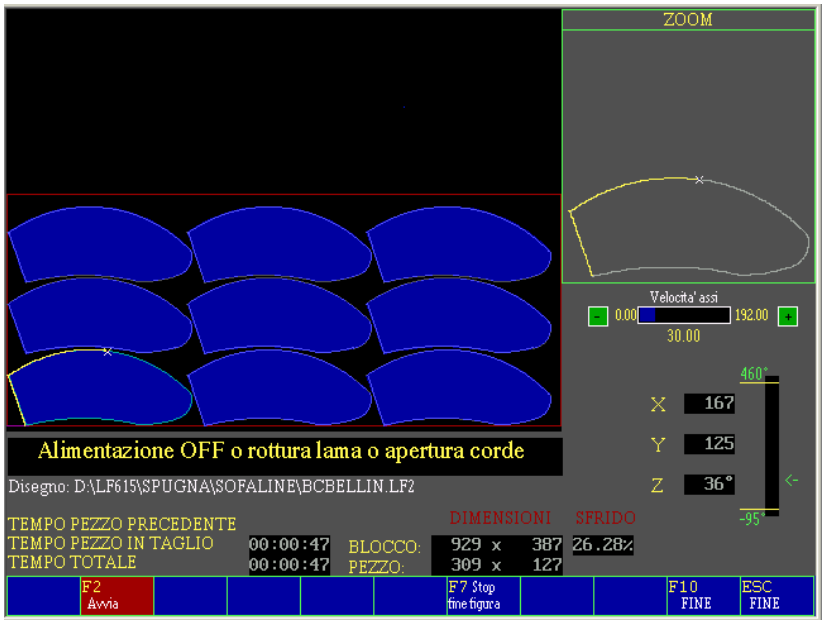
The user and operator should never remove or disable any safety devices. However, should it be necessary during routine or any other maintenance to disable or remove any, they must be activated or replaced immediately after the work has been completed.

The installation and operation of the machine will comply with the users' national norms. The user is responsible for complying with these norms.

Shut down advise
With all work relating to transportation, installation, commissioning, commanding, operating, maintenance and repairs, you must comply with the prescribed shut down procedures.
Unless otherwise stated, for all adjustment work, cleaning, maintenance and repairs, the machine must always be disconnected and switched of using the main power switch.

9.4. Emergency

In case of a safety anomaly (emergency buttons pressure, intrusion in the working area, hitting limit switches, blade decoupling, doors opening), the system gets locked instantly by disconnecting power supply to all the electrical components of the machine.



Suspension of the machine – Warning system

In the case of intervention of the safety device, the system will show which specific error occurred, or display the following message of generic error:

Power supply OFF or blade breakup or breach of the danger area

This can be due to one of the following causes:

- Loss of power supply to the circuit of auxiliaries
- Pressure of the emergency button
- Safety intervention danger area
- Machine doors opening
- Intervention end of stroke of blade breakup
- Blade occupancy sensor intervention with the machine set to work in alternate and the other way around
- Intervention pressure switch because of lack of compressed air
- Safety Intervention Inverter due to the lack of engines start-up
- Anomaly on one of applications

- ☞ Machine no properly located for the required command

Restart of the machine
After fixing the inconvenience which occurred, the user can restart the machine by reactivating the auxiliary's circuits AUX and subsequently by using the F2 command which is on the keyboard. If the inconvenience cannot be restored, call the operators responsible for maintenance and repair.

9.4.1. Bypassing the emergency system

It's possible to bypass the emergency system described in this chapter to perform some operations, without causing any safety issues.

Using this key selector placed on the left side of the machine, it's possible to unlock the emergency switches. This deactivates the regular safety conditions, for the exclusive purpose of handling the tensioning system (see also the paragraph about the blade change) and the sharpening system.
Note: if this selector is active, the machine **cannot** operate. The operator should first deactivate this selector and then restore power to the machine by pressing the AUX button.

9.5. Safety measures

9.5.1. Injuries, cuts and bruises prevention

The machine is equipped with safety devices aimed at preventing the entry of the operator/user inside the danger area. Nevertheless, the operator/user could overstep such safety devices (fence) and access in this area, at his own risk. In the case ITALIAN CUTTING SYSTEMS s.r.l. has no liability, because it's forbidden to get close to the machine when it's working, as it's already been said in the previous paragraphs. It also recommended to maintain the safety area clear from everything, to avoid that the machine is hampered in the movement procedure during the work process and cause danger for who stands close. Moreover, before starting the machine, it is always recommended to be sure that the polyurethane block is firmly planted on the worktable as has already been said in the previous paragraph (concerning the press). Lastly the operator/user has the obligation to wear gloves during the change or the rehabilitation of the blade in his own set-up located on blade holder flywheels. In addition, for a greater safety, all the commands to start the machine have to be typing twice to ensure the effective request done by the operator.

9.5.2. Electric shock prevention

To secure a potential opening of the electric panel on time and under the conditions permitted, there is a master switch for the door lock. Then to open the panel, it is necessary to disconnect the switch.
Upstream of any electric circuit, there are magnetic fuses and switches to protect against circuit breakers.
To secure potential electric shocks, there is a magnetothermal differential master switch installed by the user who acts.
The maintenance of the electrical system shall be conducted by qualified staff, responsible for it.

9.6. Standards and legislation

- Machinery Directive 2006/42/ CE – 73/23 CEE – 89/336 CEE

Harmonized standards applied:

- UNI EN 292 part 1 and 2 (safety of machine)
- UNI EN 294 – EN 349/2008 – EN 60204/1

Furthermore, according to Annex III of the Machinery Directive 2006/42/CE, the CE marking is affixed to the machinery.

10. SPARE PARTS

For all models:

Code	Description	Quantity
0000079747	Tooth wheel Z22 + Shaft for head group	2

Model 1.0

Code	Description	Quantity
FI00001313	HM wheel D25 D16 H10 with Seger hole	6
FI00000519	Bearing 625 2RS1	12
0000079830	Eccentric shaft head blade guide	4
0000079717	Bronze bushing head continuous blade group	2
0000079711	Bronze bushing flange continuous blade group	2
FI00000513	Bearing 6205 2RS1	8
FI00002036	Blade guide plate 25X20X10	4
0000052182	Ring Tecnopol KT95 370X400X18 col. yellow	4
0000064171	Hold-down device carriage	
FI00001330	Cup Synthetic Grindstone	
0000069111	EVO blade guide peg	

Model 1.1 (in addition to the previous ones)

Code	Description	Quantity
FI00002074	Square tensioner strap type B 10X7100mm with two pawls D. 9.8x12mm	1
FI00002072	Square tensioner strap type B 10X743mm with two pawls D. 9.8x12mm	1
FI00000519	Bearing 625 2RS1	24
FI00000500	Bearing 6002 2RS1	4

Continuous blade measurement: 13500 x 3,8 x 0,7 (D14 if toothed)
Oscillating toothed blade measurement: 2425 x 3 x 0,6 x D24

A label like this is present on all major machine's areas:

In the event of an assistance request, please specify the item number in your inquiry.

11. INVERTER ERROR CODES

Status		Cause	Remedy
e.g. 50.0	Present output frequency	Trouble free operation	
OFF	Stop (outputs U, V, W inhibited)	LOW signal at terminal 28	Set terminal 28 to HIGH
Inh	Inhibit (outputs U, V, W inhibited)	Controller is set up for serial control (see C01)	Start the controller via the serial link
StP	Output frequency = 0 Hz (outputs U, V, W inhibited)	Setpoint = 0 Hz	Setpoint selection
		Quick stop activated through digital input or serial link	Quick stop deactivated
LC	Automatic start inhibited	c42 = 0	LOW-HIGH signal change at terminal 28
br	DC-injection brake active	DC-injection brake activated • via digital input • automatically	Deactivate DC-injection brake • Digital input = HIGH • automatically after holding time c06 has expired
CL	Current limit reached	Controllable overload	Automatically (see C22)
LU	Undervoltage on DC bus	Mains voltage too low	Check mains voltage
dEC	Overvoltage on DC bus during deceleration (warning)	Excessively short deceleration time	Automatically if overvoltage < 1 s, OU, if overvoltage > 1 s
nEd	No access to code	Can only be changed when the the controller is inhibited	Terminal 28 = LOW or serial inhibit
rC	Remote keypad is active	Attempt to use buttons on front of controller	Buttons on front of controller are disabled when remote keypad is active

Error		Cause	Remedy [1]
cF	Data on EPM not valid	Data not valid for controller	• Use EPM providing valid data • Load Lenze setting
CF		Data error	
F1	EPM error	EPM missing or defective	Power down and replace EPM
CFG	Digital inputs not unambiguously assigned	E1...E3 assigned with the same digital signals	Every digital signal can only be used once
		Either just "UP" or "DOWN" used	Assign the missing digital signal to a second terminal
dF	Dynamic braking fault	Dynamic braking resistors are overheating	Increase deceleration time
EEr	External error	Digital input "TRIP set" is active	Remove external error
F2...F0	Internal fault		Please contact Lenze
FC3	Communication error	Serial timer has timed out	Check serial link connections
FC5	Communication error	Serial communication failure	Please contact Lenze
dF	Remote keypad fault	Remote keypad disconnected	Check remote keypad connections
OC1	Short-circuit or overload	Short-circuit	Find reason for short-circuit; check motor cable
		Excessive capacitive charging current of the motor cable	Use shorter motor cables with lower charging current
		Acceleration time (C12) too short	• Increase acceleration time • Check drive selection
		Defective motor cable	Check wiring
		Internal fault in motor	Check motor
		Frequent and long overload	Check drive selection
OC2	Earth fault	Grounded motor phase	Check motor/motor cable
		Excessive capacitive charging current of the motor cable	Use shorter motor cables with lower charging current
OC6	Motor overload (I^2t overload)	Motor is thermally overloaded, for instance, because of: • impermissable continuous current • frequent or too long acceleration processes	• Check drive selection • Check setting of c20
OH	Controller overtemperature	Controller too hot inside	• Reduce controller load • Improve cooling
OU	Overvoltage on DC bus	Mains voltage too high	Check mains voltage
		Braking operation	Increase deceleration time
		Earth leakage on the motor side	Check motor/motor cable (separate motor from controller)
rSt	Faulty auto-TRIP reset	More than 8 errors in 10 minutes	Depends on the error
SF	Single phase fault	A mains phase has been lost	Check mains voltage

(1) The drive can only be restarted if the error message has been reset; see c70

12. BRUSHLESS DRIVERS ERROR CODE

Every type the DGM turns on it execute a check-up:
- Δ Memory E2prom
- Δ Hall sensor
- Δ Initialisation
- Δ Alarms

9.1 List of the alarms stored

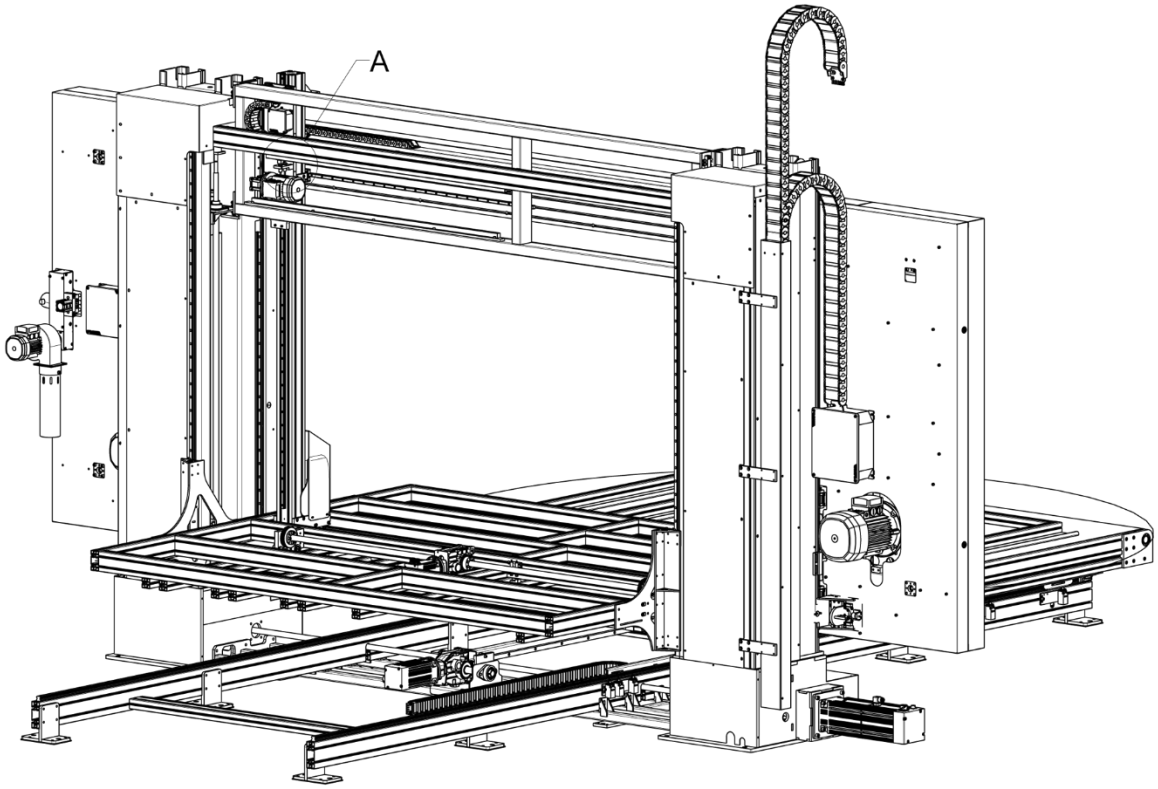
All alarms stored are reset once turning on of the drive.
Some alarms are resettable also using the input signal of `reset_
Warnings: if the external command of start remains enabled, the motor could restart suddenly as soon as reset the motor.

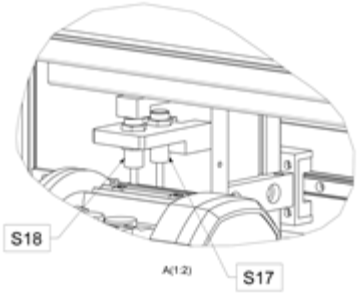
Error code	Message	Description	Solution	Reset
FA01	Error E2prom	The drive notes a reading problem in E2prom data memory. The drive disable the power and remove the `Drive OK_	All data stored in the E2prom can be lost when this alarm occurs. It's necessary to load default data and after to set again all data including reserved area data. This delicate operation is described in the technical manual	No
FA02	Hall sensor not OK	The drive notes a problem in reading the signal of Hall current probe. The drive disable the power and remove the `Drive OK_	If at start of drive the motor is still in rotation (becouse of another motor is drugging it) it can be necessary to deactivate the `initial auto timing `function (see cap.7.2.7) An Hall sensor has broken and the drive has to be repaired	No
FA03	Overcurrent	The drive note an over current or a damage in the power module. The drive disable the power and remove the `Drive OK_	Remove cables U,V,W from the drive and try to put in `start_.If the protection doesn't intervene, verify as follows: -the not presence of short circuit between motor phases and ground -the properly setting of time constant of current speed	No
FA04	Overvoltage	The drive note an over voltage in the DC BUS. The drive disable the power and remove the `Drive OK_	The braking cycle is heavier for the drive. Increase the ramps if the application allows it.	Yes
F05 o FA05	No voltage on main supply	The drive notes the lack of at least 2 phases of power supply. The drive behaviour is due to the setting done in parameter S.4004		Yes
F05 o FA06	No phase	The drive noted the lack of a phase in the power supply. The drive behaviour is due to the setting done in parameter S.4003		Yes
FA07	Alarm-resolver	The drive noted a problem in the connection of the resolver. The drive disable the power and remove the `Drive OK_ Or it noted an error in resolver tracking	Verify the resolver cable wiring and its integrity (cap 5.2) The speed of motor exceed the nominal speed set: check parameter. The dynamic is heavy for the drive and it's not able to follow the motor position.	Yes

F08	Secure Power Disable (SPD)	SPD safety circuit intervention: the external power supply contact of the safety circuit (SPD) is open.	Close the contact and reset the alarms. In case of fault of the SPD safety circuit, after reset the alarms a new alarm will appear FA18 or FA23	Yes
FA09	Alarm Overtemp. Motor	The thermal probe of the motor has got an over temperature. The drive disable the power and the `drive Ok_	Verify that the cycle of work will be not heavy for the type of motor chosen. Verify the correct wiring of the PTC probe. (Cap 5.2)	Yes
FA10	Braking resistor alarm	The theoretical thermal calculus of the braking resistor has revealed an over warming	The number of cycle of braking is heavy for the resistor chosen. Reduce heaviness of work and put a suited resistor.	
FA11	Alarm no voltage 24V	The lack of aux voltage of 24Vdc on pin 39 The drive disable the power and the `drive Ok_	Give a voltage of 24Vdc between terminal 39 (+24) and 10 (com) of J 5. Voltage can be taken from terminal 24 (+24) and 9 (com) of J 5.	Yes
FA12	Under voltage alarm	The drive is supplied by an auxiliary source. There is a lack of RST power voltage to the terminals. The drive disable the power and the `drive Ok_	Automatic reactivation when power voltage return.	Yes
F13 o FA13	Position error alarm	Error in digital lock or position control. The error is due to a big difference between reference and reaction. It can be an alarm or a warning depending from setting of parameter S.1500	Correct the parameter of speed PID and the position or reduce the dynamic.	Yes
FA14	Alarm Home position	During the cycle positioning Home position has not found	Execute an home position	
F15	Warning I2t Drive	The drive supplies such a high current that the theoretical temperature of the drive has exceeded the max threshold of the drive. The drive doesn't stop to work but it begins to furnish a max current equal to the rated of the drive. In this case the drive show the led I2t and activates the output 24V `I2t_.	Verify the work cycle is not heavy for the type of drive. Verify that the parameter as constant of speed loop is not too much extreme. Increase ramp if the application allows.	Yes
F16	Warning I2t motor	The drive supplies such a high current that the theoretical temperature has exceeded the delta T of 100€ . From this point the drive limits the max current supplied to the rated of the motor.	Verify the work cycle is not heavy for the type of drive. Verify that the parameter as constant of speed loop is not too much extreme. Increase ramp if the application allows. Verify that the `Time I2T_ value on special motor parameter is set at a correct value compared to motor	Yes
F17	Warning Overspeed	Advise that the max speed set on parameter `limit speed_ has been exceeded. The drive still works correctly.	Verify that parameter `speed limit_ is at least 10% bigger than the max speed reachable to the motor. Verify that time constant set for the speed loop will not generate a higher overshoot of speed (overspeed)	Yes
FA18	SPD Failure Optoinsulator1	The optoinsulator 1 of the SPD safety circuit is damaged	It's necessary to repair the drive	No
F19	Warning out of position	The drive note in one of the 3 position modality an error of position exceeding the max threshold	Check if the threshold is compatible with the system. The dynamic requested are not reachable from the drive. In case try to set KP parameters of speed and current loop.	Yes

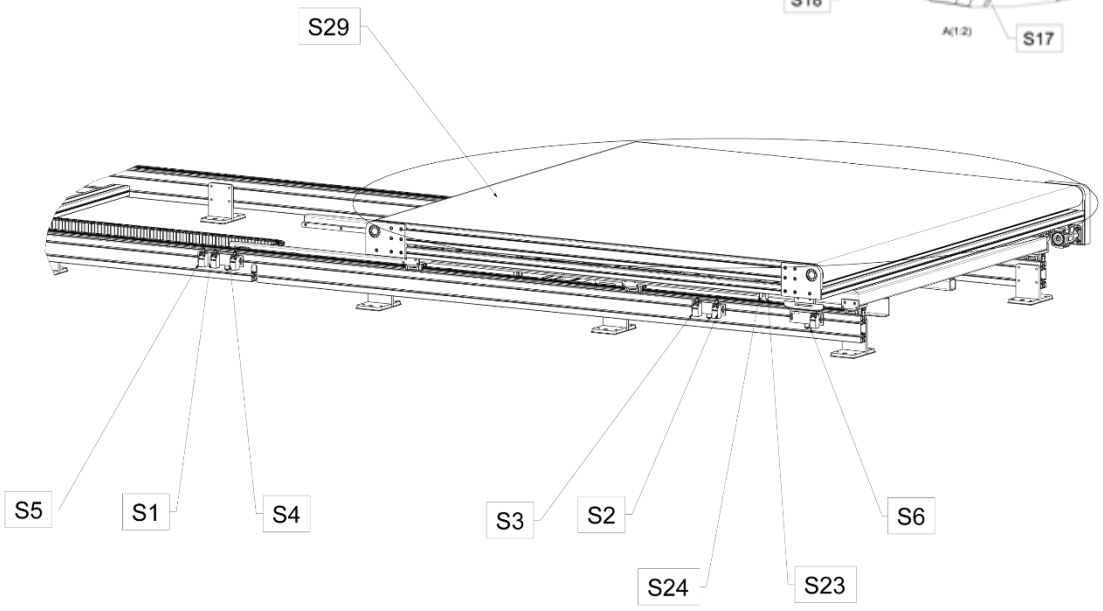
F20	Warning Canopen and Profibus	Node Guard Canopen and Profibus alarm.	Restore the bus communication	Yes
FA21	Eeprom breaking	The Eeprom of parameters doesn't work	Repair the drive.	No
F22	Motor phase error	During the autotuning of the resolver the drive shows the wrong connection of the motor phases	Two solutions are possible: 1. HDT motors: verify the exact connection of phases as shown in table (see paragraph 5.1 power connector J1 and J2) and repeat the autotuning 2. Other brand motor: invert two of the three phases of the motor and repeat the autotuning.	Yes
FA23	SPD Failure Optoinsulator2	Optoinsulator 2 of the safety circuit SPD broken	It's necessary to repair the drive	No

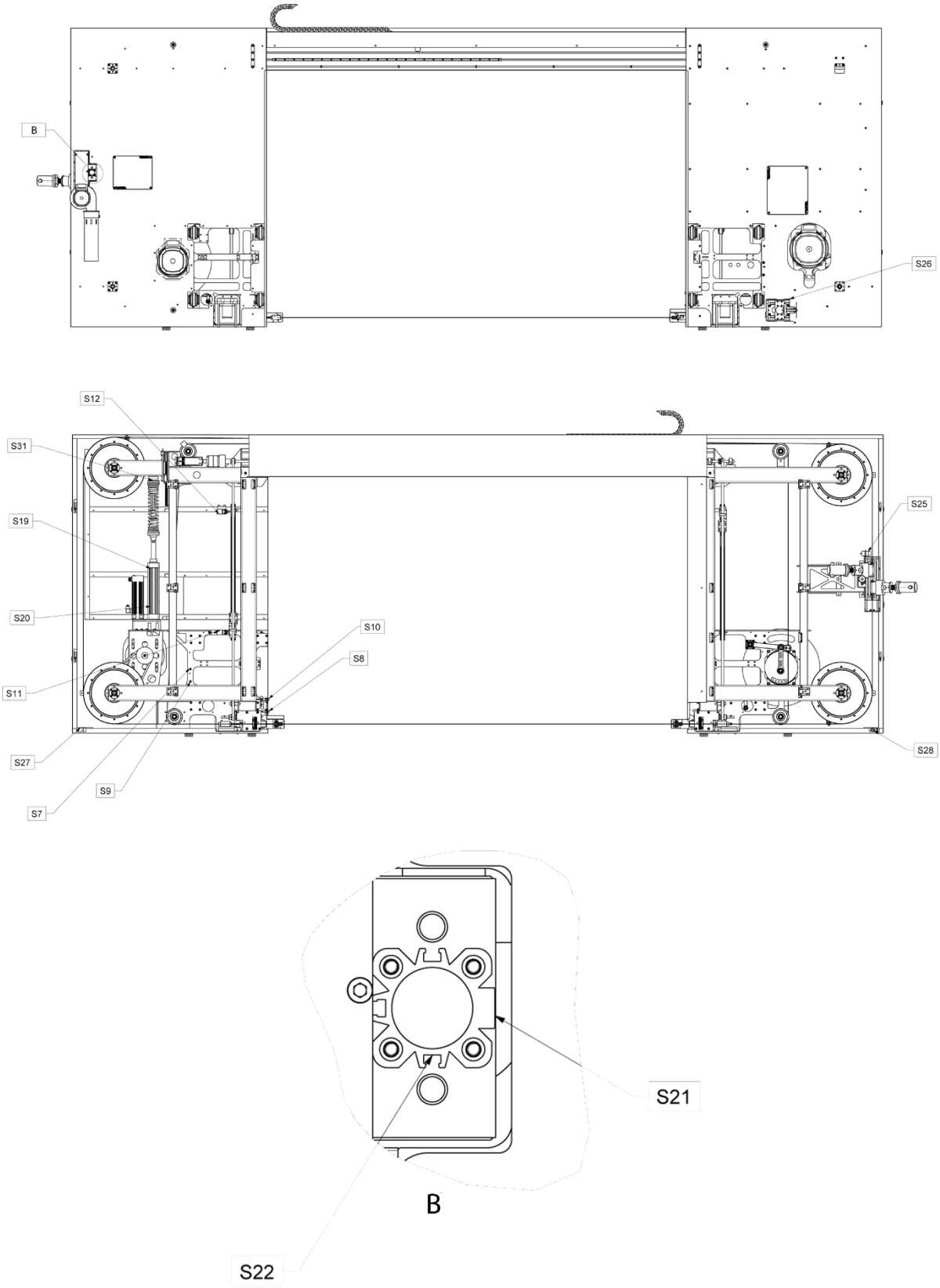
13. SENSORS

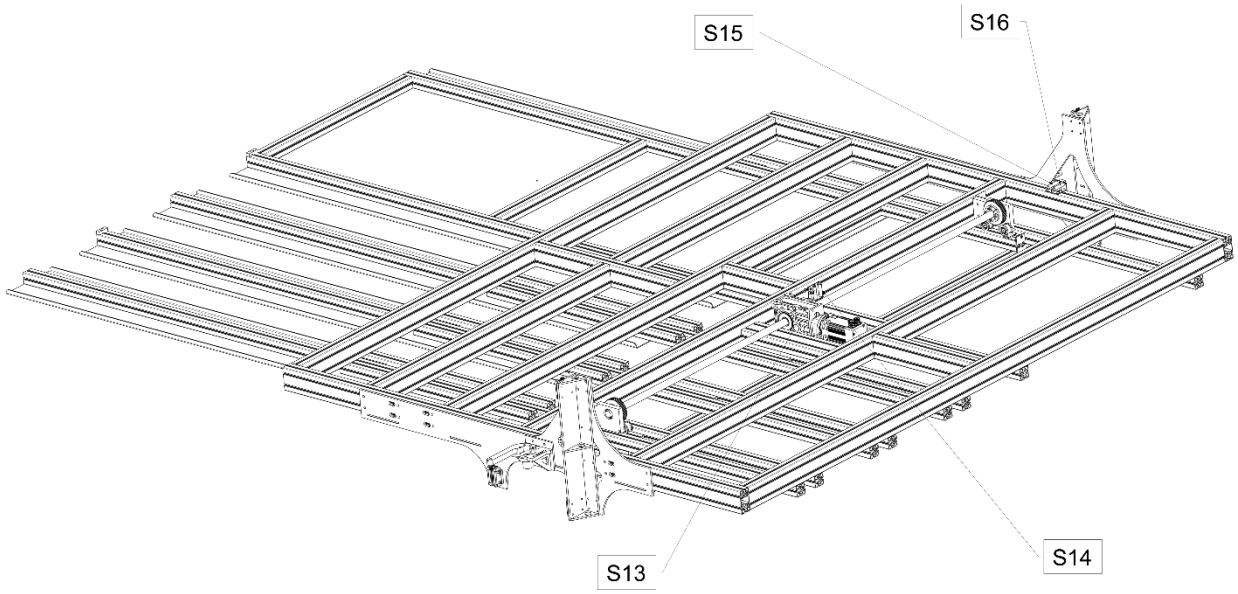


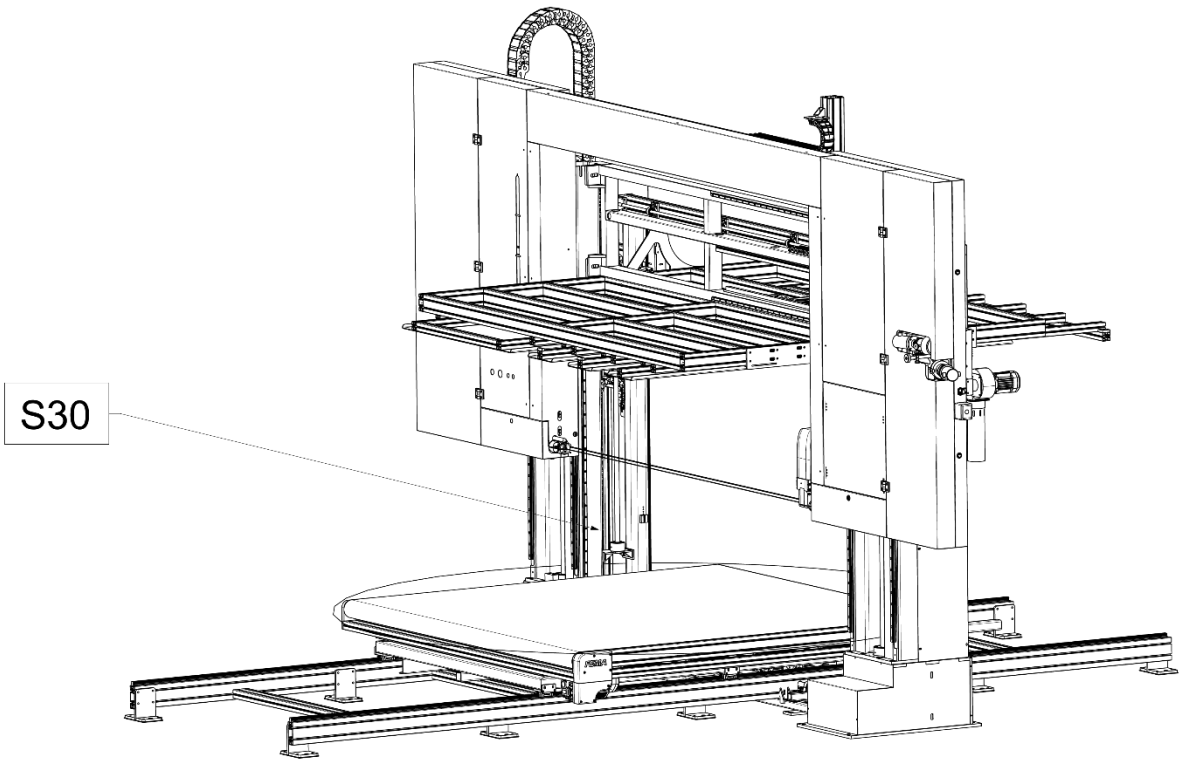


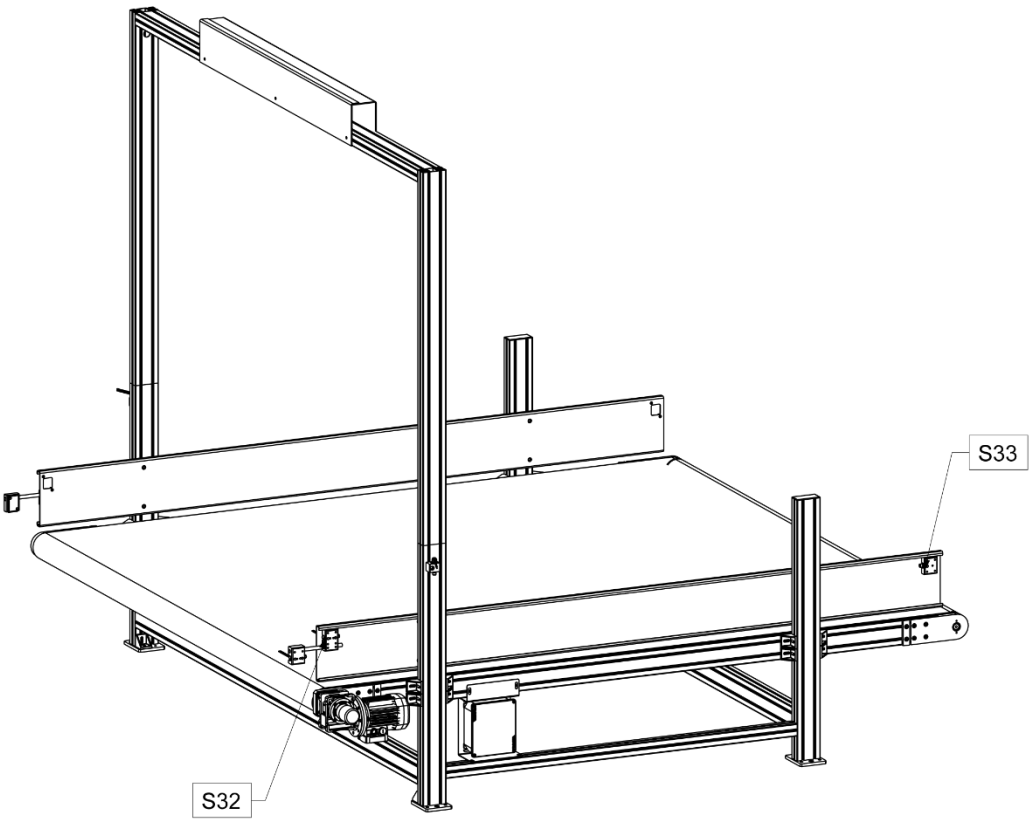
A

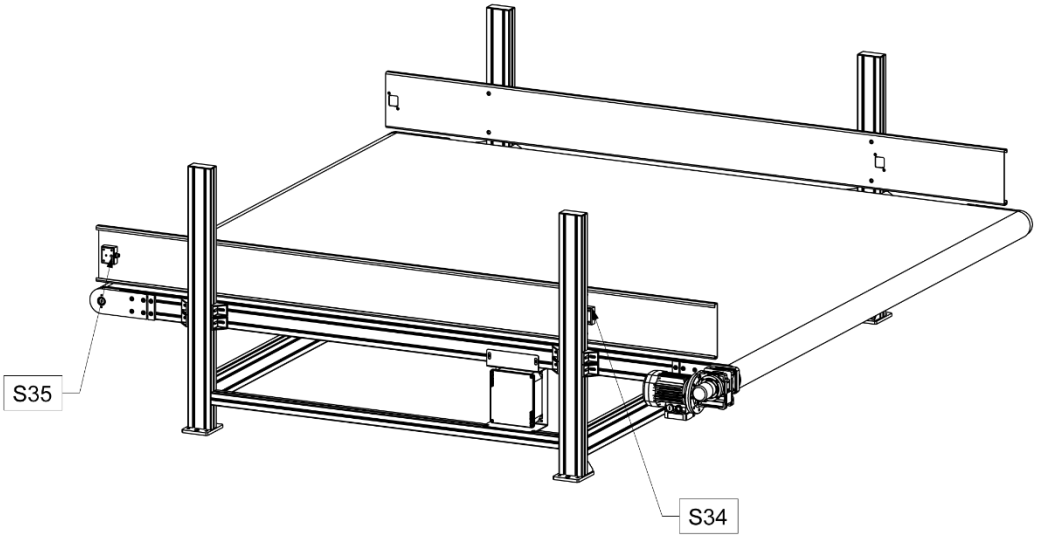












Code	Description	Area/Function
S1	LS X-	TABLE FORWARD/BACK
S2	LS X+	
S3	LS SLOW X+	
S4	LS SLOW X-	
S5	LS X --	
S6	LSX ++	
S7	LS Y-	ARC UP AND DOWN
S8	LS Y+	
S9	LS RALL Y-	
S10	LS RALL Y+	
S11	LS Z+	HEADS ROTATION
S12	LS Z-	
S13	LS X1-	PRESS FORWARD AND BACK
S14	LS X1+	
S15	LS PRESS UP	PRESS UP AND DOWN
S16	LS PRESS DOWN	
S17	LS CENTRAL SUPPORT 1	MOVE CENTRAL SUPPORT
S18	LS CENTRAL SUPPORT 2	
S19	LS TENSIONING UP	
S20	LS TENSIONING DOWN	
S21	LS SHARPENING FORWARD	
S22	LS SHARPENING INBACK	
S23	LS TURN TABLE 0°	
S24	LS TURN TABLE 90°	
S25	CONTINUOUS BLADE PRESENCE	
S26	OSCILLATING BLADE BROKEN	
S27	DOORS SAFETY 1	
S28	DOORS SAFETY 2	
S29	PHOTOCELL PRESS ALIGNMENT	
S30	PHOTOCELL FOR BLOCK SEARCH	
S31	LOADING CELL	
S32	PHOTOCELL INTERNAL CONVEYOR 1	
S33	PHOTOCELL EXTERNAL CONVEYOR 1	
S34	PHOTOCELL INTERNAL CONVEYOR 2	
S35	PHOTOCELL EXTERNAL CONVEYOR 2	