AUTOMATIC BOXMAKING MACHINE
WITH ADDITIONAL DIE CUTTING AND PRINTING

Production line
BOXMATIC 25DCFM-D

Operator's manual

Version 0,1



Producer: SOLARCO Machinery, s.r.o, Czech Republic

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1. INTRODUCTION

1.1. Machine´s model

1. BOXMATIC 25DCFM-D

a) BASIC UNIT - crosswise slots and creases, lengthwise creases and cutting, crosswise cutting (guillotine), gluing flap cutting
b) AUTOMATIC LOADING UNIT - including the safety barriers and the optical guard
c) ADDITIONAL UNIT: DCFM -D printing and die cut section

M – machine without feeder, sheets are loaded manually

2. Basic tools (thickness of transversal slotting and creasing knives accords agreement):

		BOXMATIC 25
Transversal slotting knives:	98 mm	9 pairs
Transversal creasing knives:	140 mm	8 pcs
	100 mm	6 pcs
	80 mm	4 pcs
	60 mm	4 pcs
	50 mm	3 pcs
	40 mm	3 pcs
Longitudinal creasing wheels:		2 pairs
Longitudinal cutting wheels:		2 pairs
Flap knives:	35 mm	1 pair
	50 mm	1 pair
Calibration cylinder		2 pc

3. Extended equipment

Printing unit	3 pcs

1.2. Basic instruction

This manual was intended to provide the future owner or operator all important informations, about technical parameters, functions and maintenance.

It is necessary to instruct operators before running the machine and make sure that they respect the operational safeguards, those are the general factory rules.

Only a person knowledgeable of manipulating electrics can do the repairs of any electric device.

Only person who has been trained and designated by the machine owner can operate the machine.

The machine will work to your complete satisfaction only if you observe the advices and suggestions in this manual and knowledge gained during the installation and operators training provided by our company.

If any problems or unclearness shell occur, contact your service expert immediately. In an extreme case, contact our office on following phone and fax number: ☎+420 321 734 923, 🖷+420 321 734 921. We will be glad to provide to you the appropriate information and we will try to remove all eventual obstacles in the smooth functioning of your new machine as soon as possible.

2. THE PURPOSE AND DESCRIPTION OF THE MACHINE

Automatic boxmaking machine BOXMATIC is designated for production of RSC, HSC, OSC and FOL boxes from single wall and double wall mainly, but the machine is capable of producing other types of boxes (5PF, Trays, Partitions, etc.). The machine can also just slit and crease the board. The machine is easily re-adjustable for different types of products and can cut corrugated board across and along, which means that exact format of board is not needed to produce certain products.

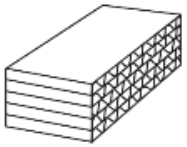
The basic module can be extended by an additional module with die cutting and printing. This module can make additional cuttings e.g. slots for hand holes and print labels, e.g. RESY, etc. The types of boxes according to FEFCO that machine can produce are listed in the technical data.

The machine is programmed via touch screen by entering figures according to the FEFCO standard. In the longwise direction, the position of slotting, flap cutting, die cutting and additional printing is set via touch screen. For the transversal direction, the position of creasing wheels, slotting knives, creasing knives and cutting knives are set simply by means of measurement rulers across the machine.

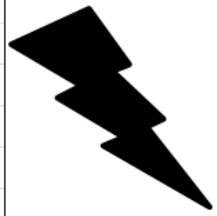
Furthermore, the machine is able to produce two or three boxes alongside each other across the machine and three boxes in the length of the board. In that case, it’s said to be double production or triple production.

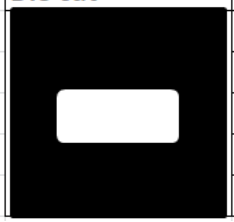
3. BASIC TECHNICAL DATA

Machine type	**25 DCFM-D**
Corrugated cardboard:	
Type	MW,SW,DW,TW

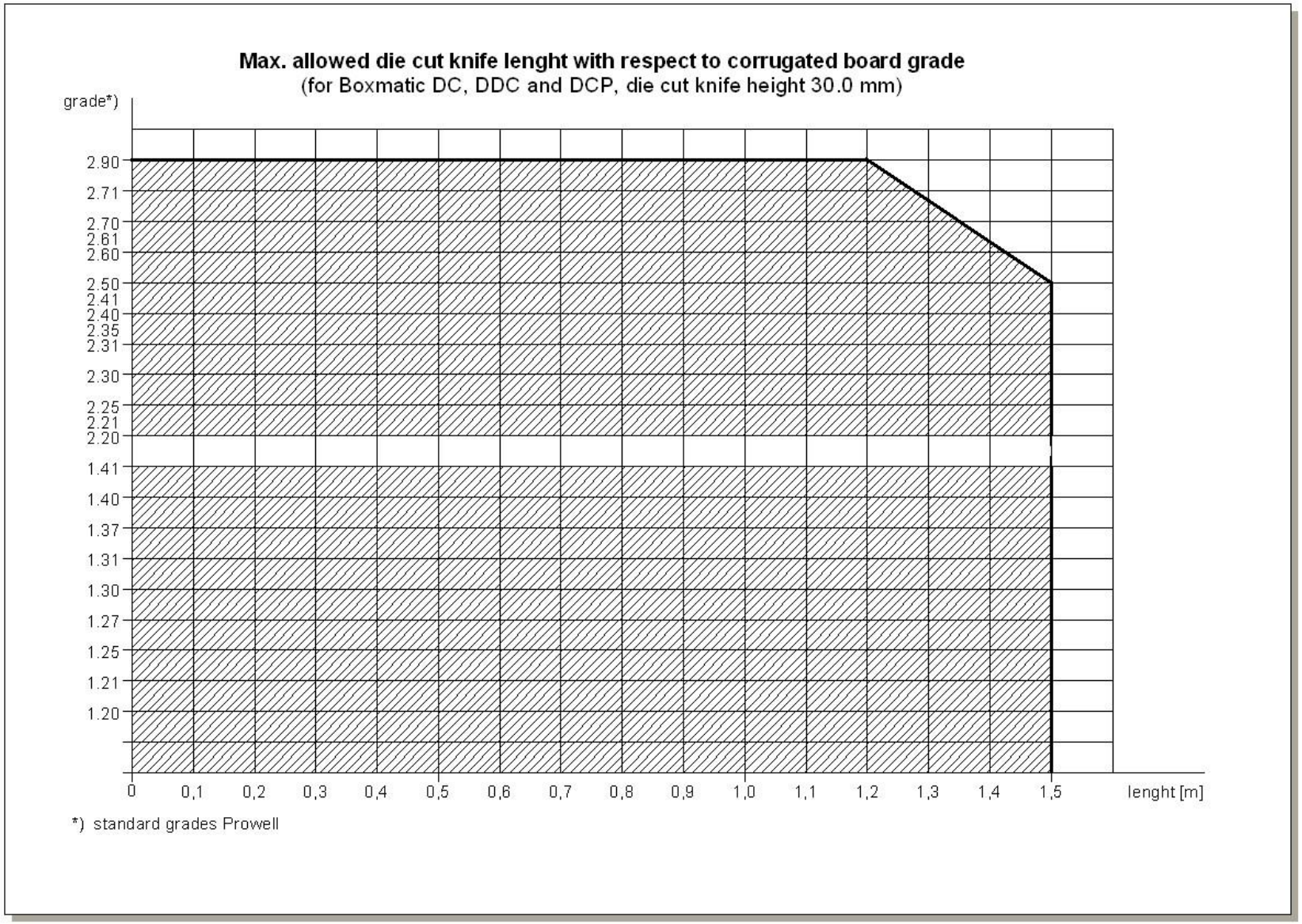
Corrugated	Max sheet size	2500 x 5000	mm	98 x 196	inch
	Min input sheet size	500 x 1000	mm	20 x 40	inch
	Material thinckness	3 - 14	mm	0.118 - 0.551	inch
	Material density	300 - 1600	g/m2	0.07 - 0.33	lbm/sq ft
	Slotting thickness	8 + 12	mm	0.314 + 0.472	inch

Machine productivity and precision:	
Single production	200-600 pcs/hour
Multiproduction	Up to 2 000 pcs/hour
Absolute precision (first dimension precision)	± 4 mm
Relative precision (following dimensions precision)	± 2 mm
The precision values are for orientation only and relate to usual box designs. The precisions are given for the distance between centers of the given operations. The precision is granted if the maintenance of the main propulsion chain has been carried out.	
Other parameters:	
Equivalent level of acoustic pressure A with filter A	74 dB
Maxim. Value of acoustic pressure	103 dB
Level of acoustic power	94 dB
Measurement was done 1 m away from the surface of machine and 1.6 m above the ground.	
Working temperature	10 – 30 °C
Maximal relative humidity	70 %
Recommended temperature and relative humidity	20 °C, 60 %

Mains	Power Supply	2x400/50Hz	V	2x480/60Hz	V
	Installed input	25	kW	38	A
	Instantenous input	10	kW	15	A
	Protection machine	32	A	32	A
	Protection cutomer	40+	A	40+	A
	RCD Breaker	min HI 300-500 mA			
	Air pressure	8-10	Bar	116-145	Psi
	Air consumption	700-1000	l/min	185-265	gal/min
	Air reservoir capacity	500+	l	132+	gal
	Air hose	2x0.75 inch			
	Internet	Ethernet cable with DHCP address			

Die cut	Max. lengthwise length	1x230 or 2x100	mm	1x9 or 2x4	inch
	Max. overal knive length	1500	mm	59,05511811	inch
	Max. die cut cycle count	1200	cycles/hour		
	Lengthwise -Wooden suppport	1x254 or 2x119	mm	1x10 or 2x4,68	inch
	Crosswise wooden support	100 - 2450	mm	4 - 96.45669	inch
	Thickness of wooden support	15	mm	0.625	inch

**) diagram 1:


Max. allowed die cut knife lenght with respect to corrugated board grade
(for Boxmatic DC, DDC and DCP, die cut knife height 30.0 mm)
grade*)
2.90
2.71
2.70
2.61
2.60
2.50
2.41
2.40
2.35
2.31
2.30
2.25
2.21
2.20
1.41
1.40
1.37
1.31
1.30
1.27
1.25
1.21
1.20
0
0,1
0,2
0,3
0,4
0,5
0,6
0,7
0,8
0,9
1,0
1,1
1,2
1,3
1,4
1,5
lenght [m]
*) standard grades Prowell

FEFCO designs possible to produce:

FEFCO Machine type	1DCP	18/23 DDC	18/23 DC	18/23
HSC/RSC				
0200	✓	✓	✓	✓
0201	✓	✓	✓	✓
0202	✓	✓	✓	✓
0203	✓	✓	✓	✓
0204	✓	✓	✓	×
0205	✓	✓	✓	✓
0206	✓	✓	✓	×
0208	✓	✓	✓	×
0209	✓	✓	✓	✓
0210	×	✓	×	×
0212	×	✓	×	×
0214	✓	✓	✓	✓
0228	✓	✓	✓	×
0229	✓	✓	✓	×
0230	✓	✓	✓	✓
0231	✓	✓	✓	✓
TRAYS/TELESCOPIC				
0300	✓	✓	✓	✓
0301	✓	✓	✓	✓
0302	✓	✓	✓	×
0306	✓	✓	✓	✓
0310	✓	✓	✓	✓
0312	✓	✓	✓	✓
0313	✓	✓	✓	✓
0320	✓	✓	✓	✓
0325	✓	✓	✓	×
0331	✓	✓	✓	×
FOLDERS				
0400	✓	✓	✓	×
0401	✓	✓	✓	×
0402	✓	✓	✓	×
0403	✓	✓	✓	×
0404	✓	✓	✓	✓
0405	✓	✓	✓	✓
0406	✓	✓	✓	×
0409	✓	✓	✓	✓
0410	✓	✓	✓	×
0411	✓	✓	✓	✓
0412	✓	✓	✓	×
0413	✓	✓	✓	×
0415	×	✓	×	×
0420	×	✓	×	×
0440	×	✓	×	×
0441	✓	✓	✓	×

0452	✓	✓	✓	✓
FEFCO Machine type	18/23 DCP	18/23 DDC	18/23 DC	18/23
0453	✓	✓	✓	✓
0454	✓	✓	✓	×
0455	✓	✓	✓	×
0456	✓	✓	✓	×
0458	✓	✓	✓	×
WRAPS				
0501	✓	✓	✓	✓
0502	✓	✓	✓	✓
0503	✓	✓	✓	✓
0504	✓	✓	✓	✓
0505	✓	✓	✓	✓
0507	✓	✓	✓	✓
0509	✓	✓	✓	✓
0510	✓	✓	✓	✓
0511	✓	✓	✓	×
0512	✓	✓	✓	×
OTHER				
0601	✓	✓	✓	×
0602	✓	✓	✓	×
0605	✓	✓	✓	×
0606	✓	✓	✓	×
0607	✓	✓	✓	×
0608	✓	✓	✓	×
0610	✓	✓	✓	×
0615	✓	✓	✓	×
0616	✓	✓	✓	×
0620	✓	✓	✓	×
0621	✓	✓	✓	✓
PARTITIONS				
range 09xx	✓	✓	✓	✓
PADS				
Dividers	✓	✓	✓	✓

4. SAFETY INSTRUCTIONS

4.1. Health and safety precautions

Set the machine to a horizontal position. There must be enough space around the machine for production, operator's movement and maintenance.

The floor at the workplace must be isolated from dampness and cold and it must allow the attendants to move freely and safely.

The machine has to be plugged in to an electrical distribution network, which is subject to regular revision code (according to ČSN 33 1500 in Czech Republic or valid directives abroad).

It is necessary to carry out regular revisions and measurements of electric devices in ordained deadlines according to valid directives, regulations and standards in the country of user.

Only person knowledgeable of ČSN – EN 60 204-1 or rather IEC 204-1 article 3.55 is allowed to connect the machine to electricity network.

Only worker who is trained and familiar with directions for the use at this machine can be allowed to operate it.

The source of pressured air is not a part of the shipment and it is subject to special technical conditions as indicated in this manual.

4.2. Safety precautions for operator – Duties of operator

- Keep the machine and the workplace clean and tidy.
- Put all the safeguards into proper positions.
- Make sure you know how to stop the machine before you start to work.
- Do not wear any loose parts of clothes while operating the machine.
- Stop the machine immediately if something unexpected happens.
- Check the machine and make sure it is all set to go before you start to work.
- Turn the machine off if it is not under control.
- Turn the master switch off before you start to clean the machine.

WARNING: **There is air pressure in the pneumatic circuit of slotting knives clamping beam even if the machine is off. You can release the pressure through the manual valve (see chapter 5.5.4.).**

WARNING: **The machine must be off, disconnected from source of pressured air, the master switch secured by padlock during the replacement of chain and any other repairs. To disconnect the machine from source of pressured air, detach the hose from reduction valve.**

4.3. Prohibited activities

- To clean the machine and to do any other manipulations inside or outside, while the machine is still running.

4.4. Operation safeguards

- Wear recommended work suit.

4.5. General rules

- Remove possible oil or grease from the control panel.
- Do not place your hands or other parts of body on or under the moving parts of the machine.
- Be careful as to the threat of injury from moving parts of the machine.
- Familiarize yourself with the function of operating the machine.
- Make sure the machine is off when it’s not used.
- Do not divert yourself while operating the machine.
- Use appropriate manipulation devices.

5. TRANSPORT, RECEPTION, HOOK-UP, ADJUSTMENT

5.1. Transport instruction

The machine is transported in dismantled state – the machine itself and feeder or the ASF (automatic system feeder section). The machine must be properly fixed on transport. The lifting capacity of forklift for loading and unloading must be at least 6 tons.

5.2. Unpack instruction (reception)

The machine is moved from the transport vehicle to its destination point via forklift or on a pallet. The machine is set up and set to horizontal position at the workplace.

WARNING: Only service technician is allowed to perform this task.

The machine must be placed so that it has access to 3x400V/50Hz network, source of pressured air and internet.

Maintenance tools:

Wrench	8 – 10	1 pcs
Wrench	13 – 17	1 pcs
Wrench	19 – 24	1 pcs
Set of Allen keys, T-type	3, 4, 5, 6	1 set
Set of Wiha keys, L-type	4,5	1 set
Tube spanner 18/19		1 pcs
Electrical cabinet key		1 pcs
Lubricator with oil (60 ml)		1 pcs
Lubricator with fat (30 ml) *	* die cut version only	2-8 pcs
Key for die cut, printing unit cover		1 pcs
Hook of die cut drawer*	* die cut version only	1 pcs

5.3. Machine connection

The machine is powered by three phase system 3x400 V and frequency 50 Hz. The connection must be fixed. The connection of the machine is subject to regular revisions according to relevant standards

The machine needs source of air under pressure of 8 – 10 Bar with the capacity of 290 liters/hour. Set the manometer to 6 Bar. **It is important to continuously control the water in cleaner and drain it out.**

The safety of the machine from the viewpoint of protection from dangerous touch voltage is increased by the installation of an electrical stream protector (which is located inside the electrical cabinet). In order for it to work properly, it is necessary to test it regularly by pressing yellow testing button. If the protector works well, the machine is disconnected from the power when testing button.

WARNING: **This testing must be performed at least once per month and only person knowledgeable of ČSN-EN 60 204-1 can do it.**

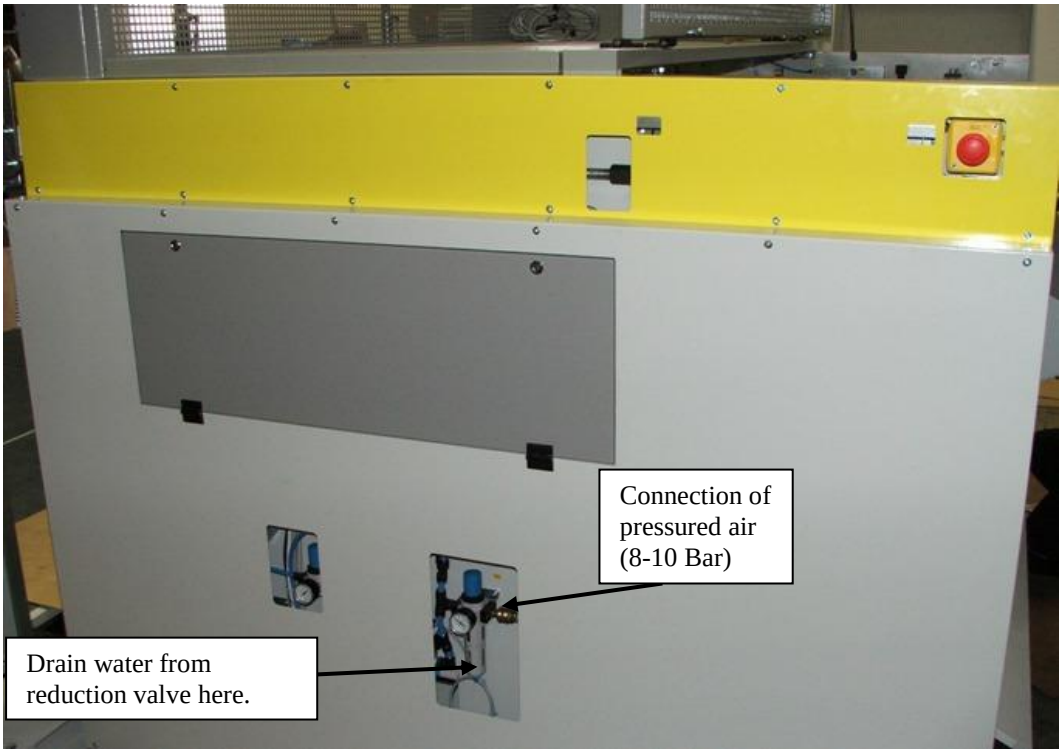


Fig. 5.3.1: Left side of the machine

5.4. Description of control elements



Fig. 5.4.1: Main switch

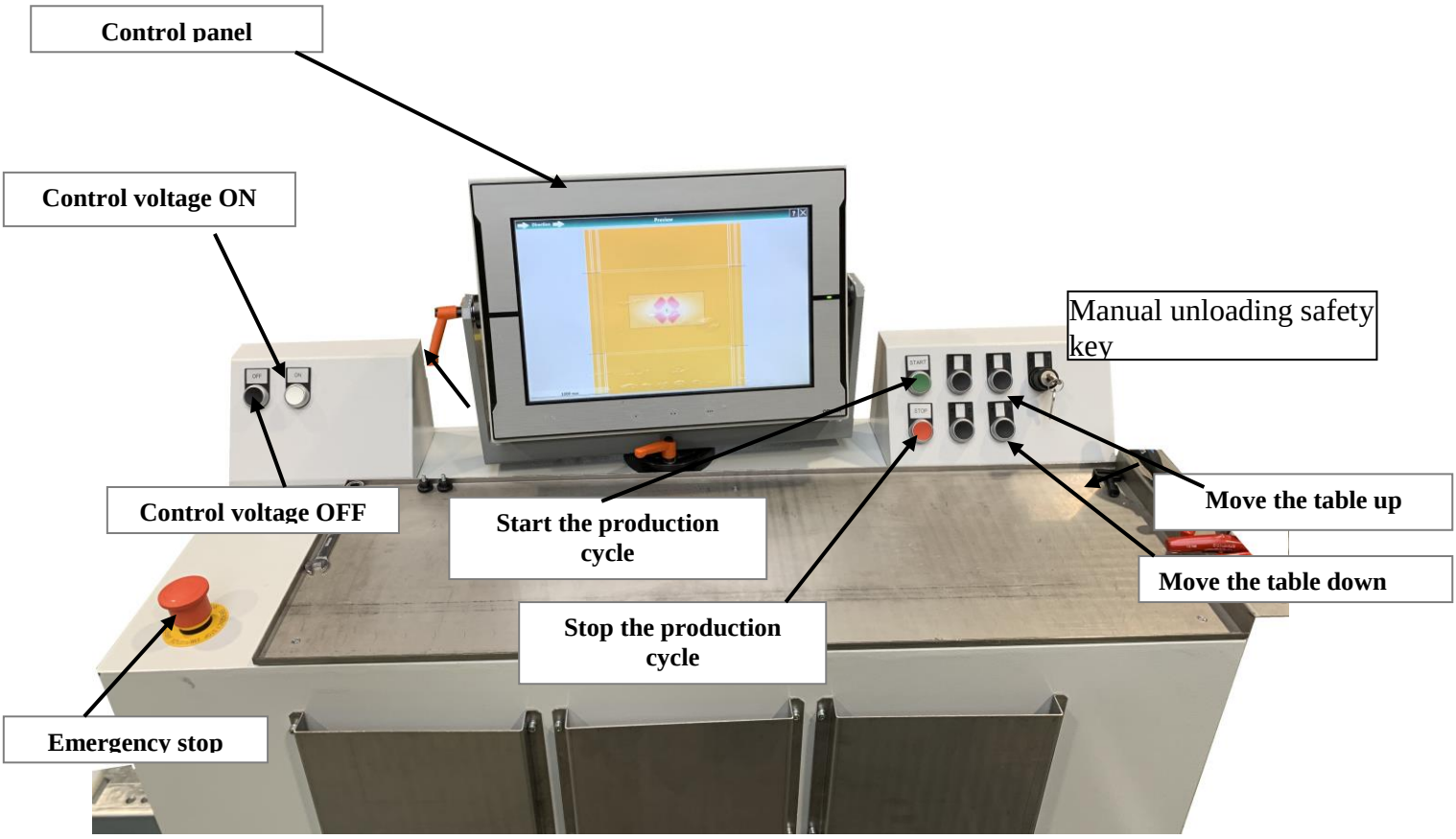


Fig. 5.4.2: Operator's panel

Notice: Boxmatic (M) has not the button stop/start production cycle, shafts forward, shafts backward and feeder up and down on the electric cabinet.

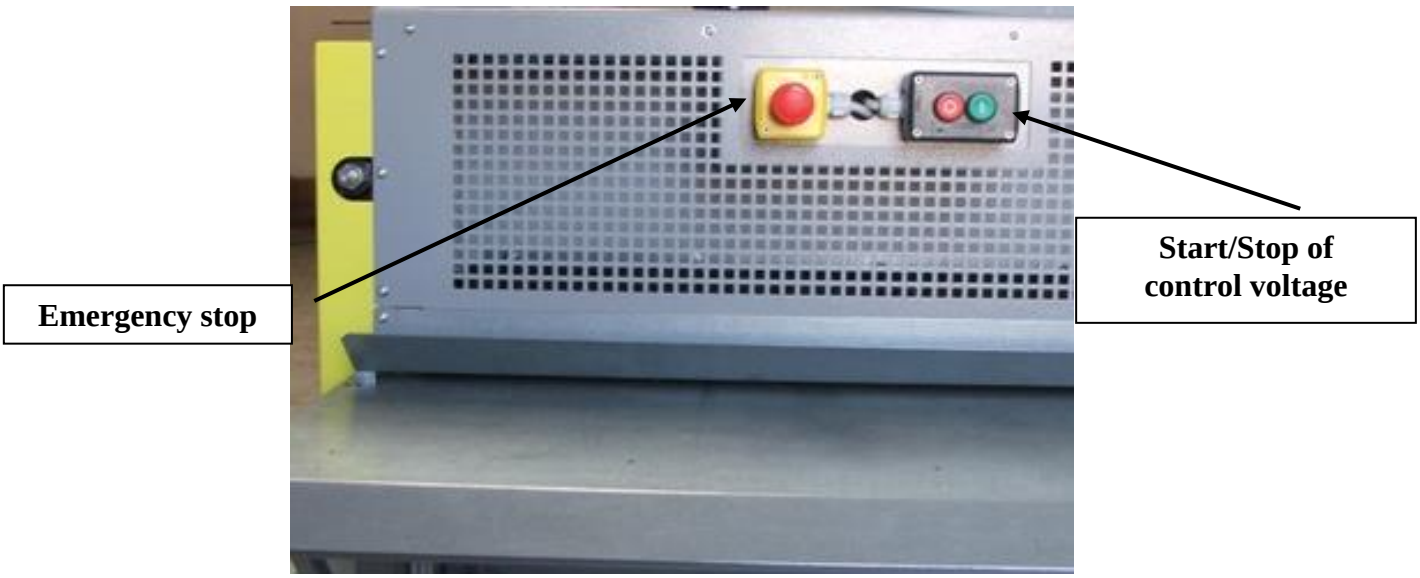


Fig. 5.4.3: Control button on the model BOXMATIC 18/23 xxMXX

5.5. Machine adjustment

5.5.1. Feeder adjustment (it is not valid for BOXMATIC M)

The platform rises up to the sucker feeder automatically. The metal sheet guides move symmetrically from the center, which assures that the sheet of board is perpendicular to the feeding shaft on the machine. Insert the board sheet between the two metal sheet guides and adjust them so they are just touching the edge of the cardboard sheet. To move with the metal sheet guides push on the buttons on the electric cabinet (see fig. 5.5.3.)

You can load the board with the feeder after this adjustment. The platform lifts automatically accordingly to cardboard sheets fed into machine. This is operated and secured by a light gate. Unless the ray from the light gate is interrupted, the platform will, after the working cycle started, lift up until the ray is cut. After all the sheets are fed, the platform automatically descends.

You can prolong load area of feeder up to allowed 4m by 6 (8) pieces metal rods inserted to bays at its back side according picture 5.5.1.

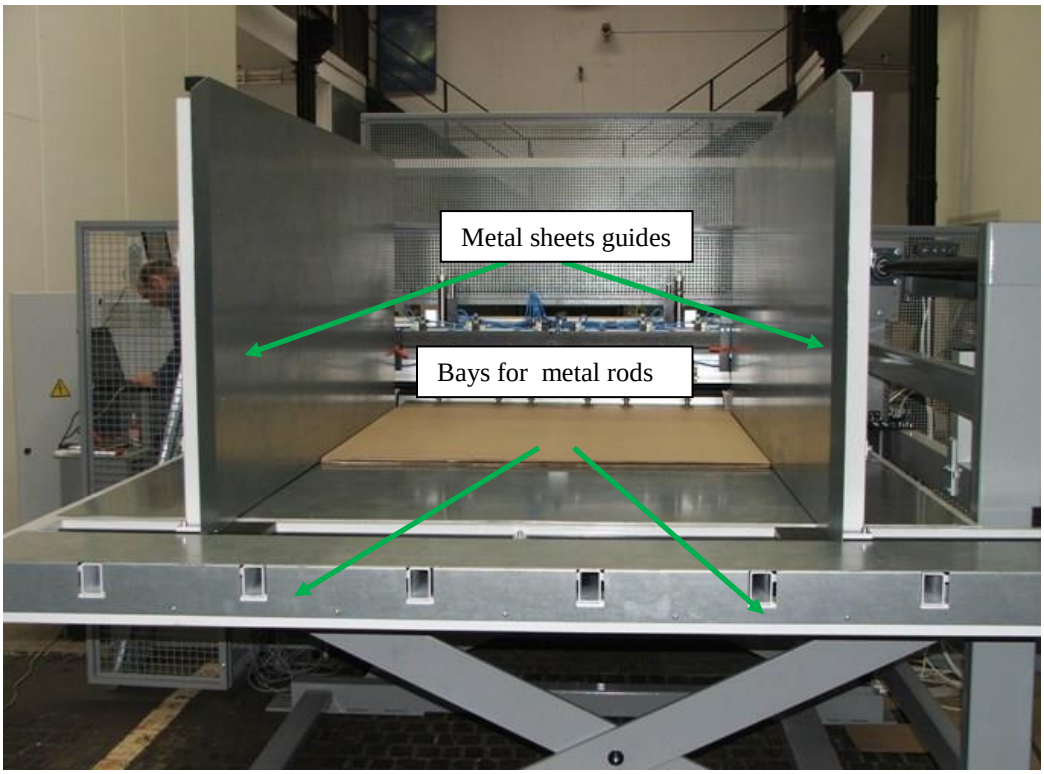


Fig. 5.5.1: Automatic feeder



Fig. 5.5.2

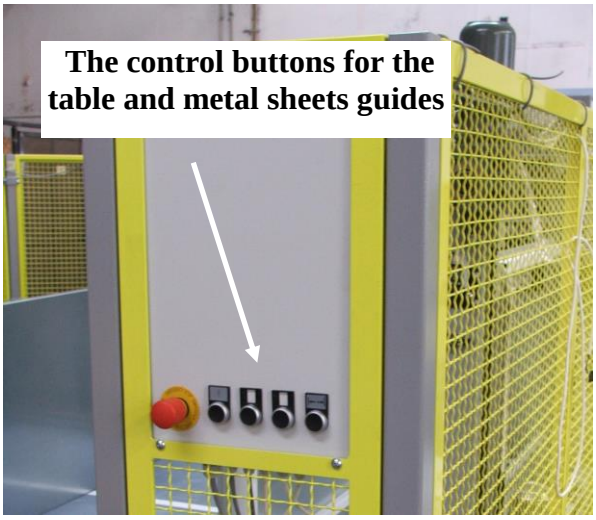


Fig. 5.5.3

The cardboard can be loaded by the automatic system feeder section (ASF section).



Fig. 5.5.4: ASF section



Fig. 5.5.5: The suckers on the ASF section

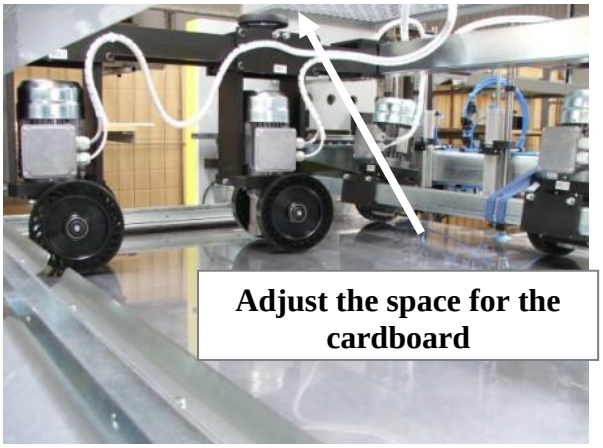
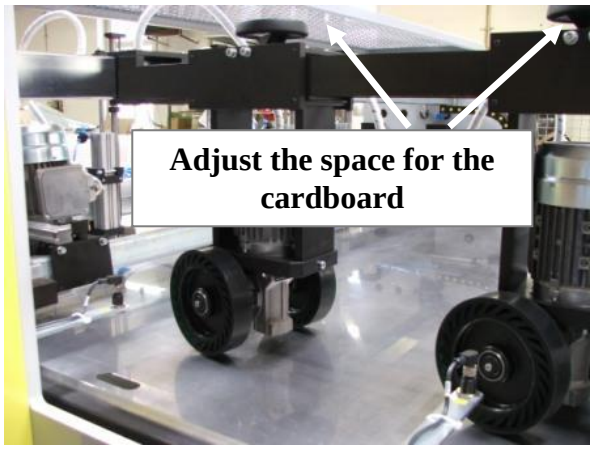


Fig. 5.5.6:



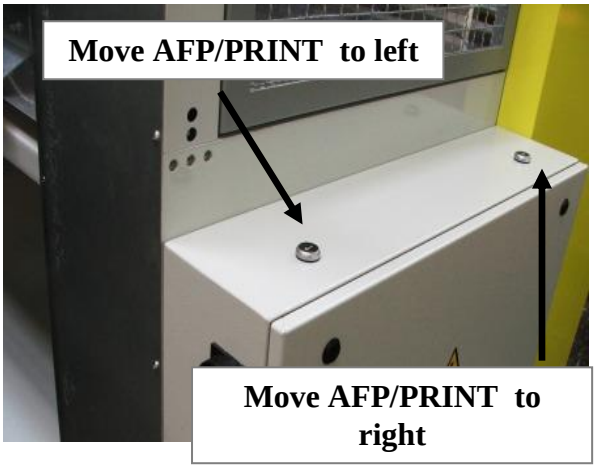


Fig. 5.5.7:

Fig. 5.5.8:

Set the suckers to their position accordingly to the width of the board sheet. Use all six suckers if the board is wide or you can use just two suckers if the cardboard is narrow (the minimum is two suckers). If the board sheet is bent, then use larger number of suckers, because the sucker straightens the sheet automatically after they lift it up so the sucker feeder inserts board evenly to the drive wheels. Set the outermost suckers that lift the sheet along the front tacks so that they touch the sheet at the very edge. Turnoff the unused suckers via manual valve. Every single sucker, except for the two middle ones, has its own valve. The negative pressure is in the suckers determined by ejectors to which the pressured air is supplied. Their own valve can regulate the pressured air going to ejectors. Higher pressure of air supplied to ejectors, will give more power to the suckers. The air pressure can be set to a value from 2 to 6 bars. The pressure is regulated in order to cut down the consumption of air. You may need the pressure up to 6 bars for large sheets. Usual working pressure is an about 2 to 4 bar.

After this adjustment, load the feeder with sheets of board so that they reach the brushes, which prevent the feeder from picking up two sheets at the same time. Place these brushes close to the cardboard.

ADVICE: **Start production cycle. After processing couple of sheets, check if brushes separate during the feed. If it is necessary adjust the pressure in reduction valve of suckers.**

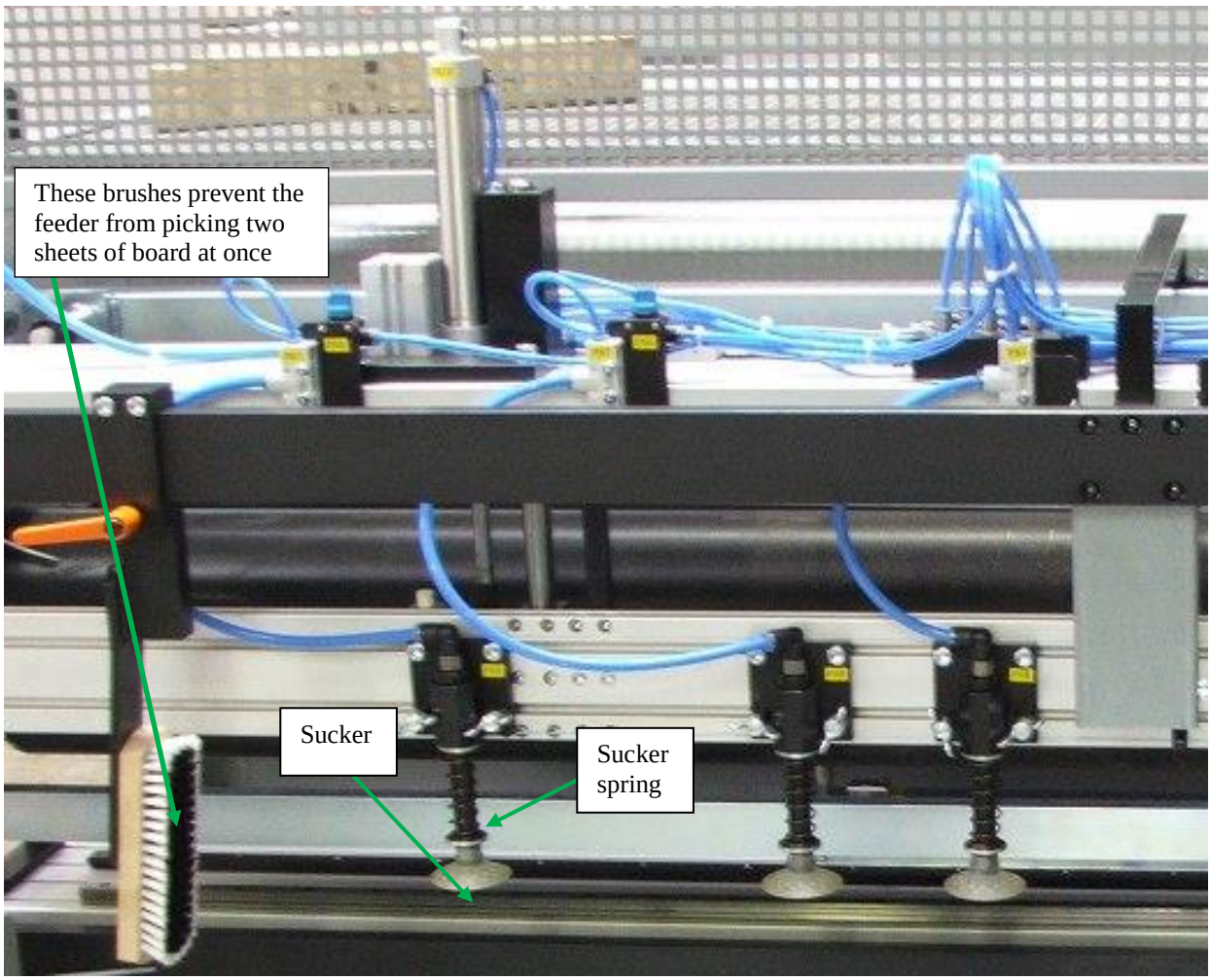


Fig. 5.5.9: Sucker feeder detail

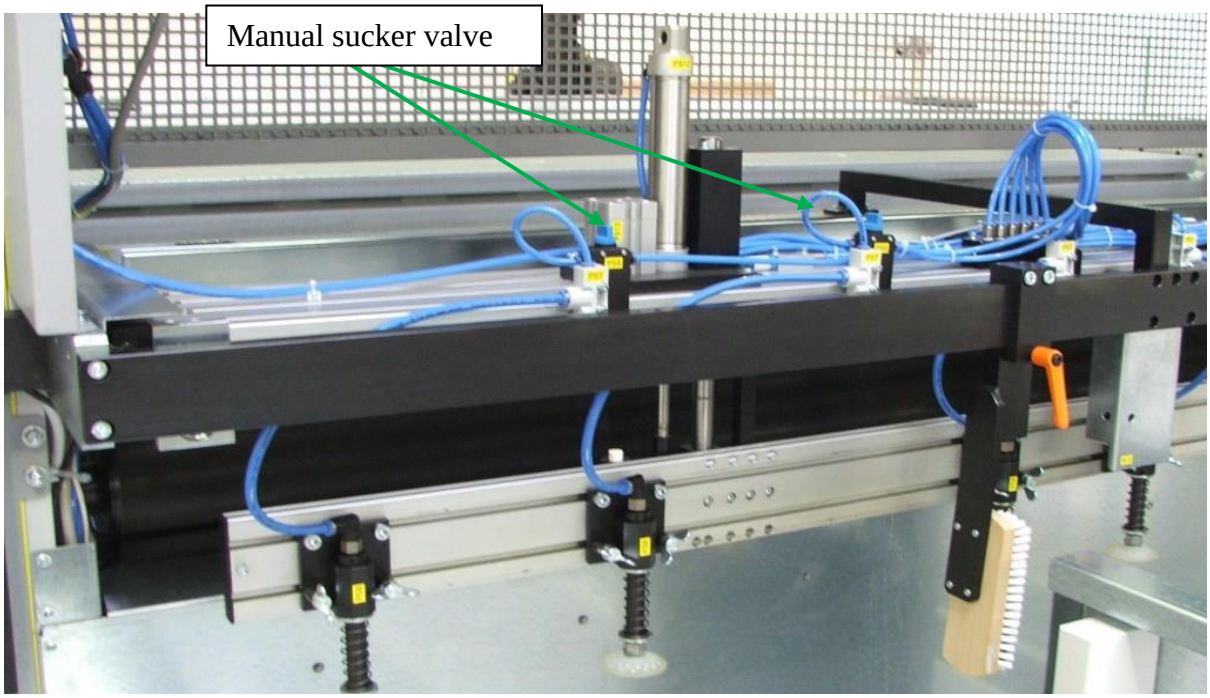


Fig. 5.5.10.: Sucker valves

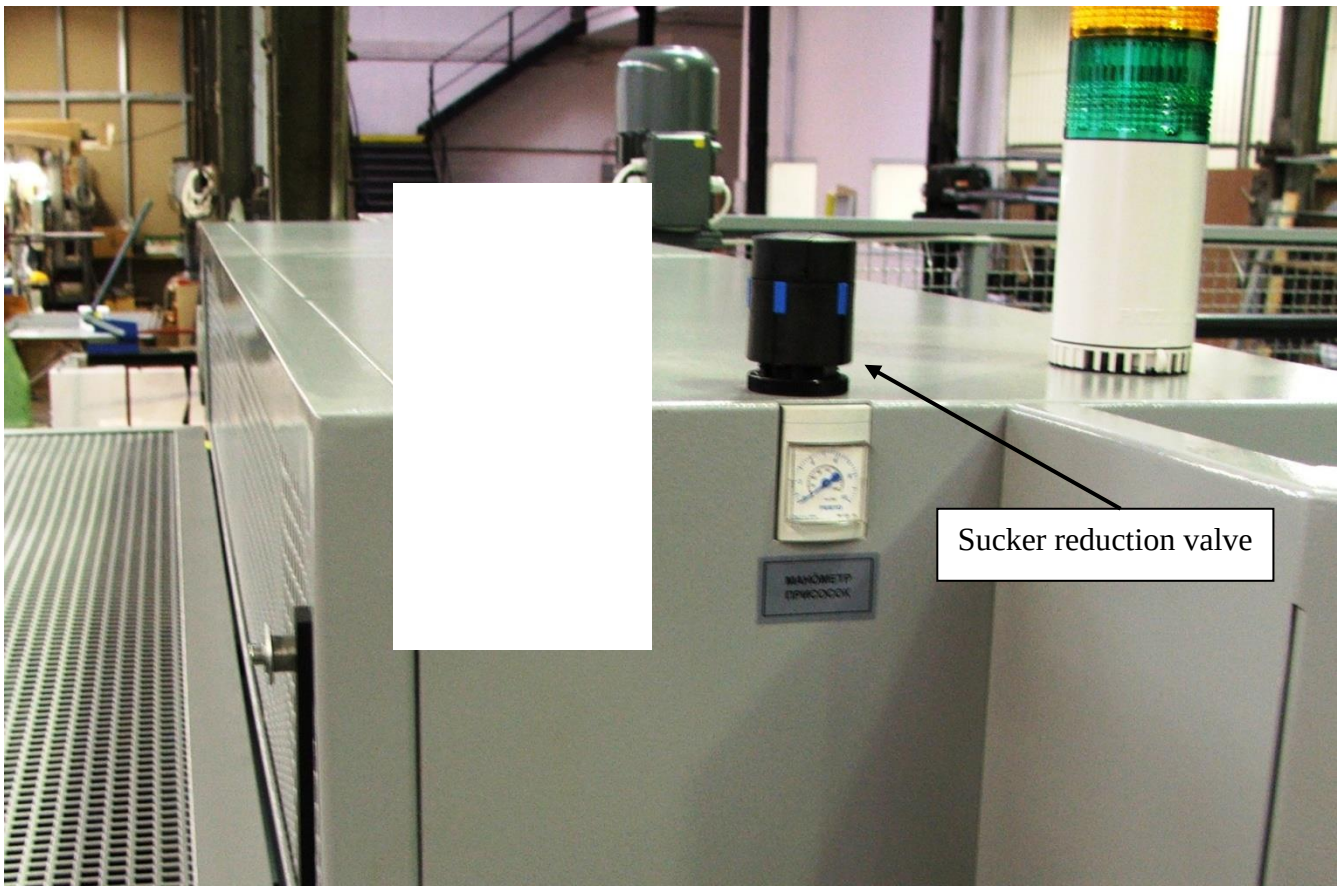


Fig. 5.5.11: Print and sucker reduction valve

Manual table adjustment (only for model BOXMATIC M)

To adjust the feeding table, loosen the crank on the side stop and using the ruler, move the side stop to the half of the width of the corrugated cardboard sheet. Finally tighten the crank again.

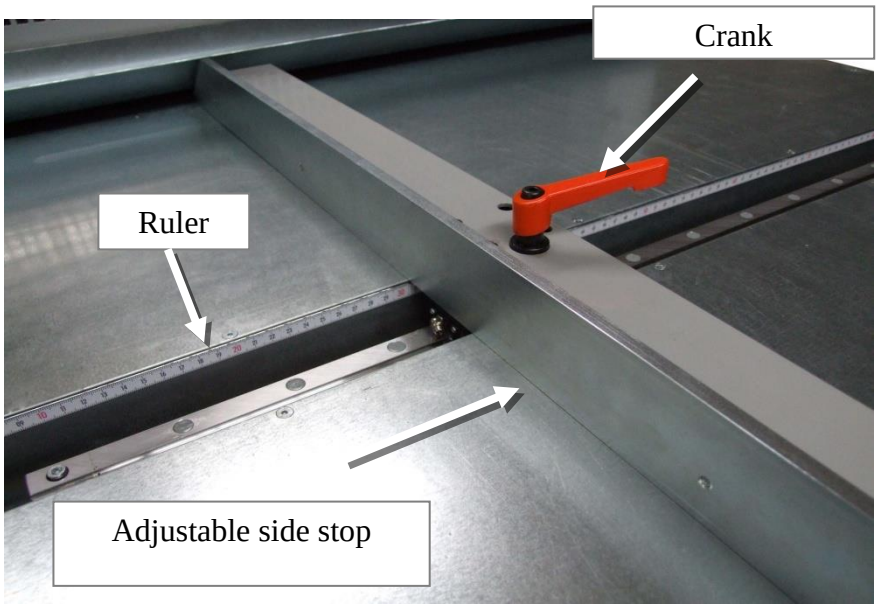


Fig. 5.5.12: Manual table for Boxmatic M

5.5.2. Drive wheels adjustment

Drive wheels move the sheet of board along the machine. These wheels are set up accordingly to the width of the sheet and how much the sheet is bent. If the sheet should be bent, set the two outermost wheels so that they move the sheet at its edge. In order to move the wheel along the shaft, loosen the screw in the wheel. Before you can loosen this screw, you must push the stepping button on the control panel repeatedly to turn the shaft until the screw is accessible. After that, you can loosen it by a special wrench. The wheel consists of two pieces. There is a special lock on one side and a fastening screw on the other side. In order to remove the wheel from shaft, remove the screw that links the two halves of the wheel and move the upper half of the wheel at least the width of the wheel to disengage it from shaft.

WARNING: To make the adjustment easier, mount the shaft with wheels in such a way that all the screws are facing the same direction.

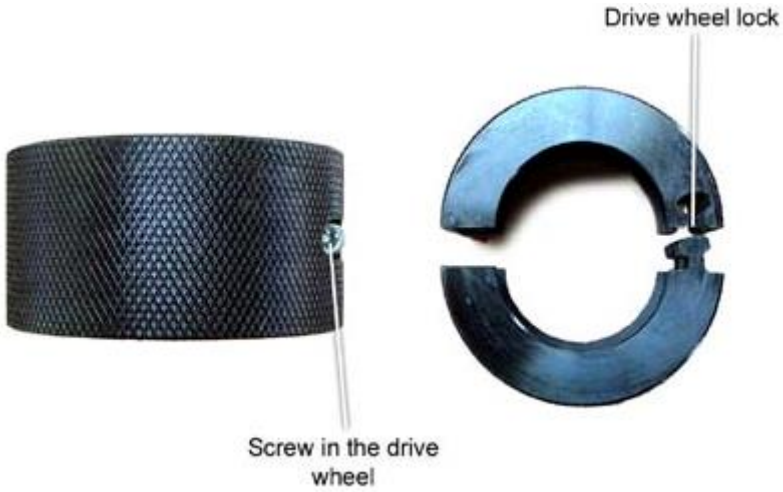


Fig. 5.5.14: Screw in the drive wheel

5.5.3. Slotting and creasing knives adjustment

Slotting and creasing knives are both located on one beam so that slotting and creasing across occurs simultaneously. When assembling the creasing knives, make them about 20mm longer than the actual length of the creasing. Creasing knives are made up of segments of various lengths and the slotting knives are inserted under the creasing knives (in the range up to 20 mm from each side) so that you always obtain the desired length of transversal creasing. Slotting knives can slide into each other to set the slot length, which is particularly important when producing more than one box at a time. The slot lengths and relevant knife assemblies are listed in an accompanying table. The length and number of slotting knives allow making use of the entire length of the slotting beam.

The knives are fixed pneumatically on the beam by four plates. Except for the outside 150mm long plates which fix the knives by screws. The plates that fix the knives pneumatically will stay on the machine and only the outside ones are removed so that it’s possible to slide the knives underneath the pneumatic plates. In the case you need to cut a larger width than 1400mm, you must fasten the outside knives by these outer plates. If you release the pressure from the fixing elements by manual valve, you can slide the knives to the side since there’s a spring on the bridge and a groove in the knives. If you need to fit the knives along the whole length of the

beam, you have to place the desired knives on the beam and then screw on the outside special plates. Precise crosswise adjustment of knives can be done by the fitted measuring rule. After the adjustment of slotting and creasing knives, you must turn on the pressure by the manual valve. The machine will not turn on unless the pressure is on.

To adjust the depth of transversal creasing, use the eccentric screws located at the edges of the beam. Loosen the M8 screw that secures the eccentric screw first and turn the eccentric screw to adjust the depth. **Adjust the depth evenly on both sides of the beam.**

WARNING: Even when the machine is off, pressure remains in the pneumatic circuit that fastens the slotting and creasing knives. The pressure can be released by manual valve.

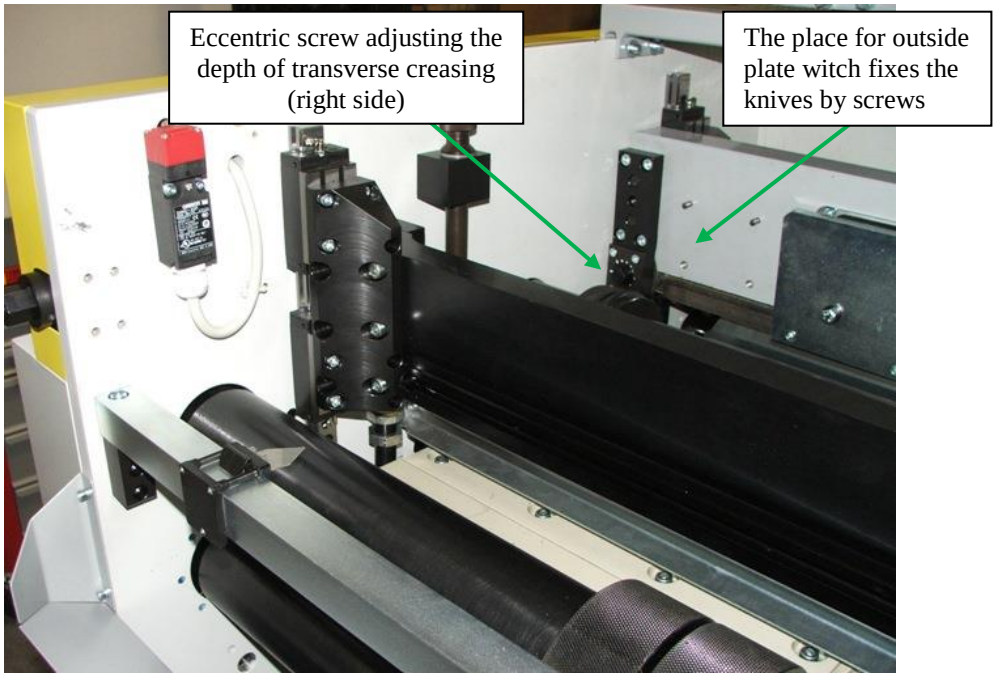


Fig. 5.5.15: Right side

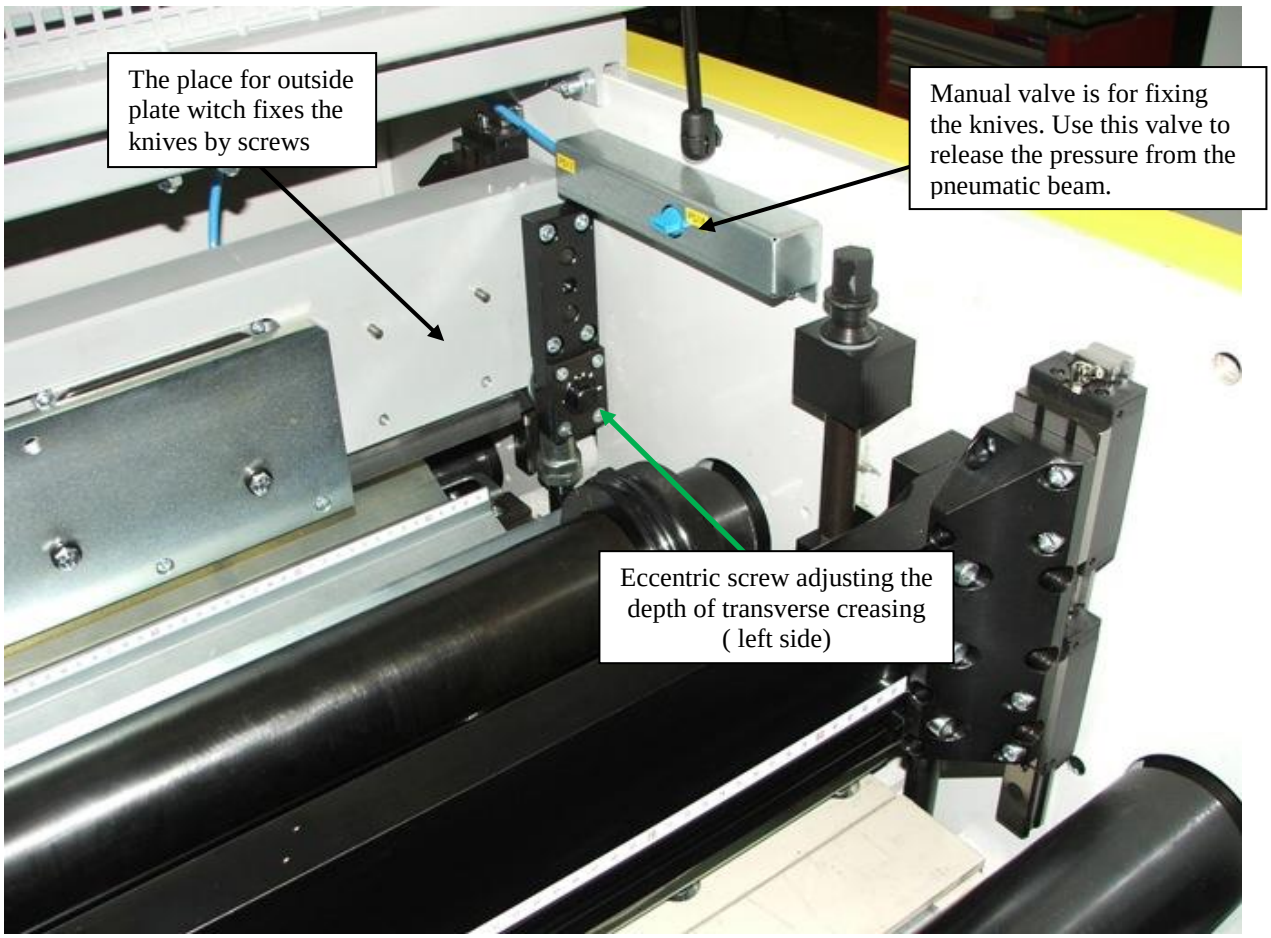


Fig. 5.5.16: Detail of the left side inside machine

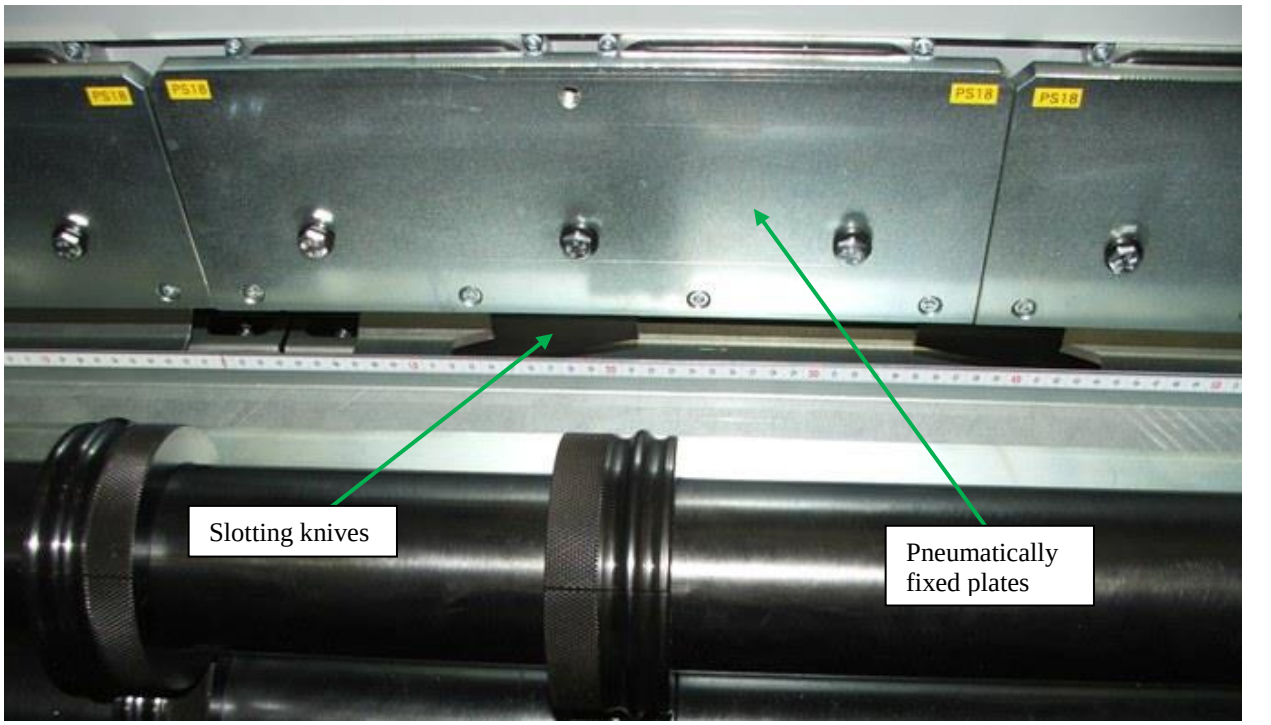


Fig. 5.5.17: Slotting knives and pneumatically fixed plates

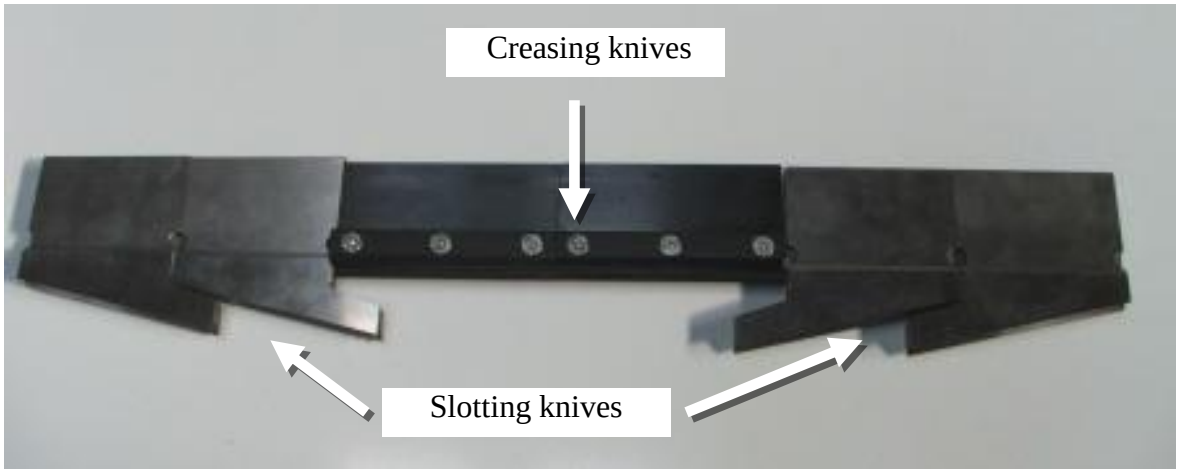


Fig. 5.5.18: Slotting and creasing knives

5.5.4. Creasing wheels adjustment

Lengthwise, the creasing wheels consist of upper and lower creasing wheels and they crease the board in a lengthwise direction. The lower creasing wheels have grooves in them and the upper creasing wheels hold replaceable segments, which provide creasing. You can replace the creasing segments if you wish deeper or lesser creasing. There are six wheels on the lower shaft and six on the upper shaft in as basic equipment on the machine. If the board is already creased, you must remove the creasing segments from the upper creasing wheels and the creasing wheels will serve as drive wheels. The adjustment in the crosswise direction is done the same way as the adjustment of drive wheels. Press the stepping button on the control panel repeatedly to turn the shaft until the screws in the creasing wheels can be loosened and slide the wheel on the shaft to the desired position. The measuring rule allows for precise positioning of wheels. You must be sure that the creasing segment on the upper wheel is in the middle of the groove in the lower wheel.

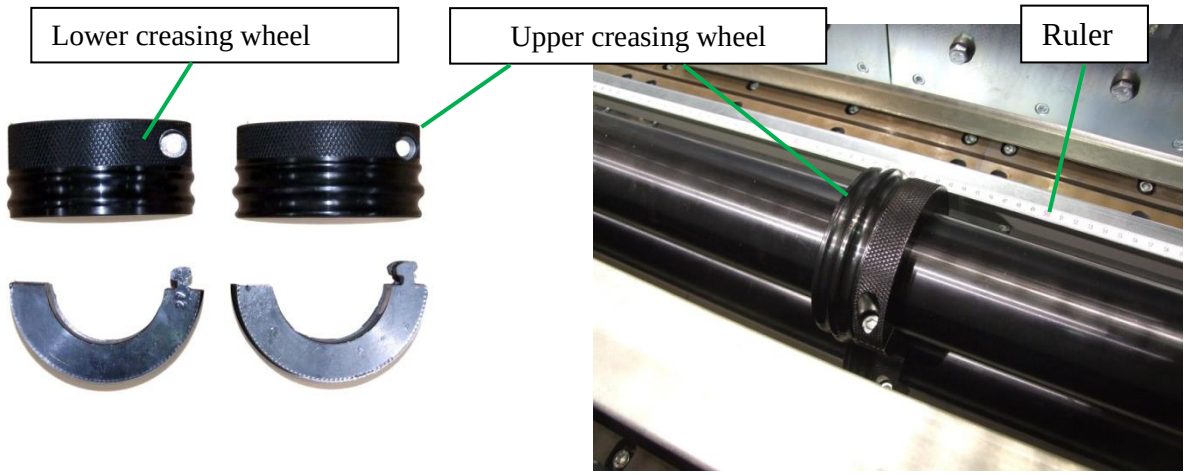


Fig. 5.5.19: Lower and upper creasing wheel and ruler



Fig. 5.5.20: Detail of upper creasing wheel.

5.5.5. Cutting wheels adjustment

Cutting wheels, on which the cutting knives are mounted, allow cutting the board sheet up in the lengthwise direction, or cut the sheet in the middle, when the machine produces two boxes alongside each other. The adjustment in the crosswise direction is made the same way as the adjustment of drive wheels. Press the stepping button on the control panel repeatedly to turn the shaft until the screw in slitting wheel can be loosened and slide it to desired position. The ruler secures a precise positioning. If you do not trim the board, adjust the cutting wheels so that they would only drive the board sheet, the knives would be in this way off the board and set one pair of extra drive wheels to the middle of the sheet of board.

WARNING: There must be a gap of about 2 mm between cutting wheels that are currently not in use.

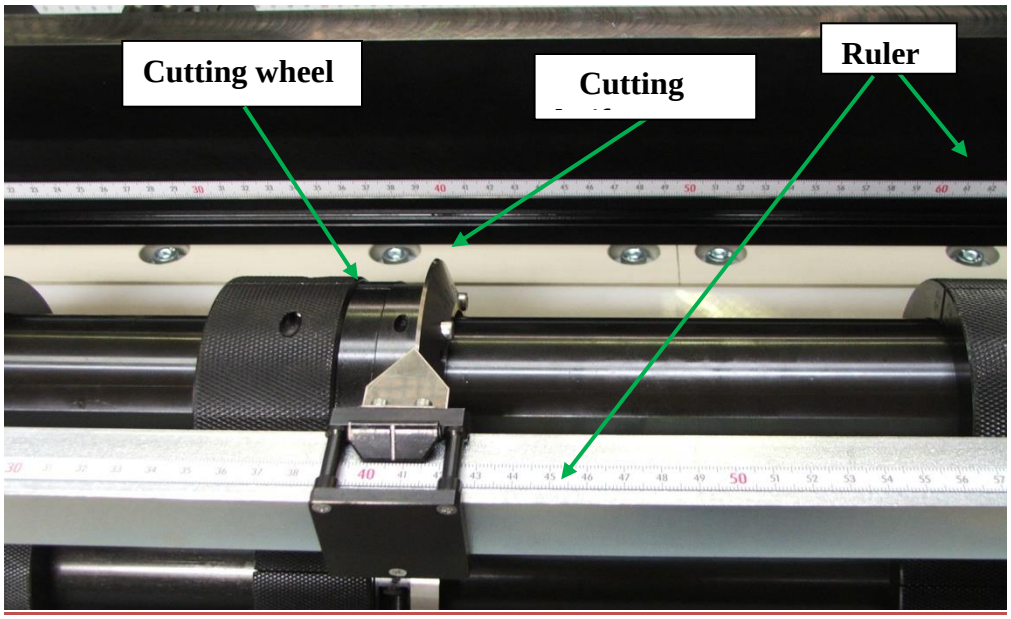


Fig. 5.5.21: The ruler secures appraise positioning.



Fig. 5.5.22: Disassembled upper cutting wheel

5.5.6. Flap knives adjustment

Angled knives cut out glue flap of the box. They are located on the second beam, where the guillotine is located; the guillotine will trim the board crosswise at the same time as the flap is cut out. There may be two, four, or six flap knives depending on the number of boxes the machine is producing across. Use the ruler to set the flap knives to desired position. Set the PPE blocks, which serve as a support for the board, against the flap knives.

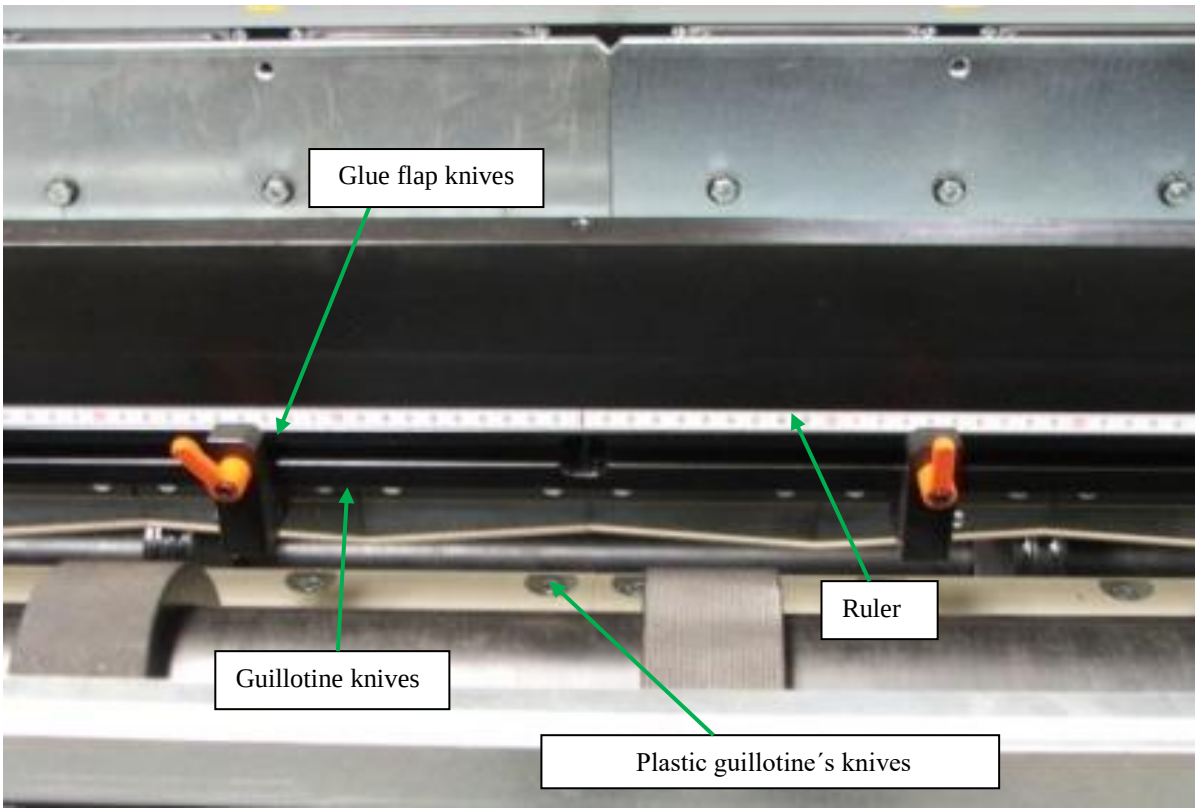


Fig. 5.5.23: Flap knives adjustment

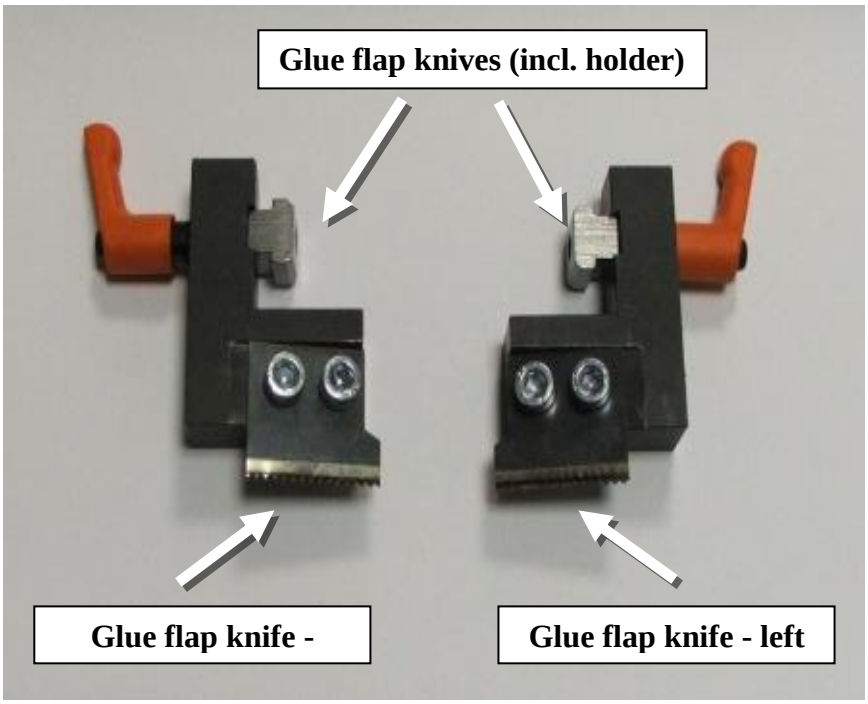


Fig. 5.5.24: Flap knives

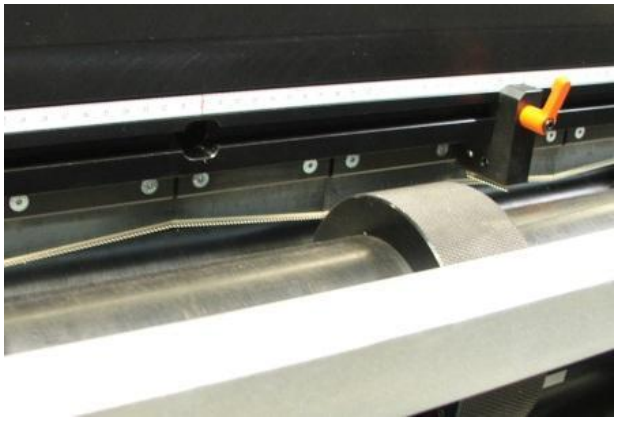


Fig. 5.5.25: Guillotine knives-Boxmatic 18

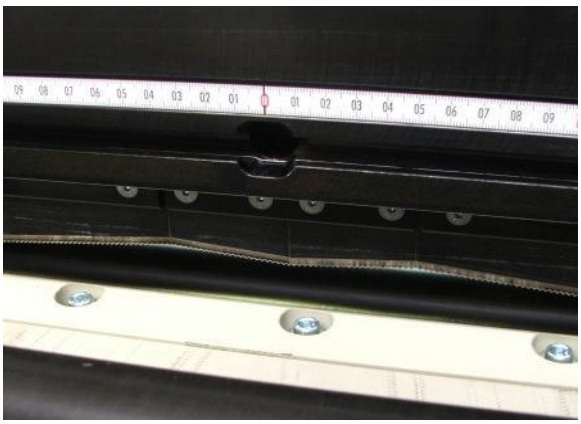


Fig. 5.5.26: Guillotine knives – Boxmatic 23

5.5.7. Adjusting the shafts for different thickness of corrugated board

When changing the cardboard sheet thickness, you must adjust the distance between the drive, creasing and cutting wheels. The nut on the picture adjusts the distance between upper and lower shafts. Using this nut, you set all shafts on one side at the same time. The distance between the drive wheels must be such that the wheels pass the cardboard reliably, but don't deform it. The scale shows the gap between the drive wheels in millimeters. The middle creasing shaft can be adjusted independently.

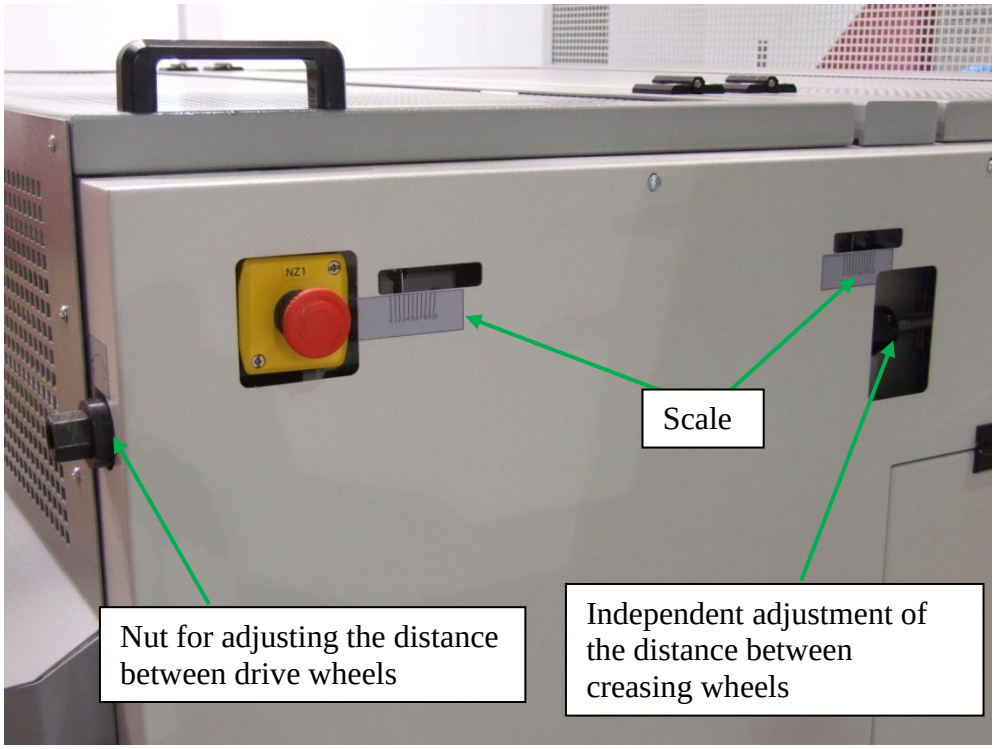


***Fig. 5.5.27**:* Adjusting of the shafts for different thickness of corrugated cardboard

The pair of shafts in front of the guillotine is adjusted independently too. Open the back upper cover and you can see the nuts. Insert a sample of cardboard between the shafts. Adjust the space with the key on the height so you can pull out the cardboard lightly.

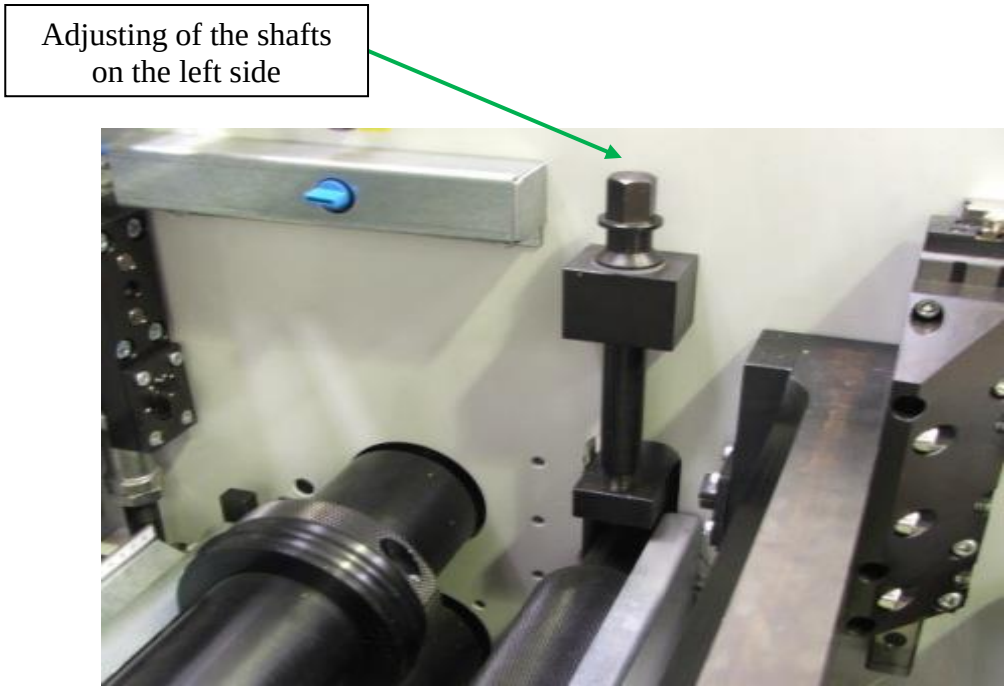
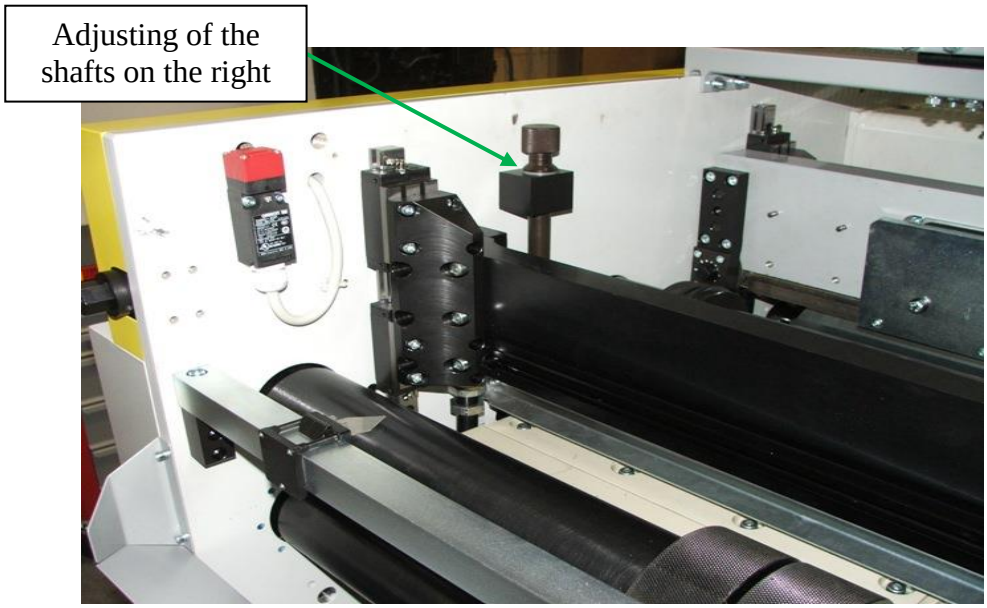
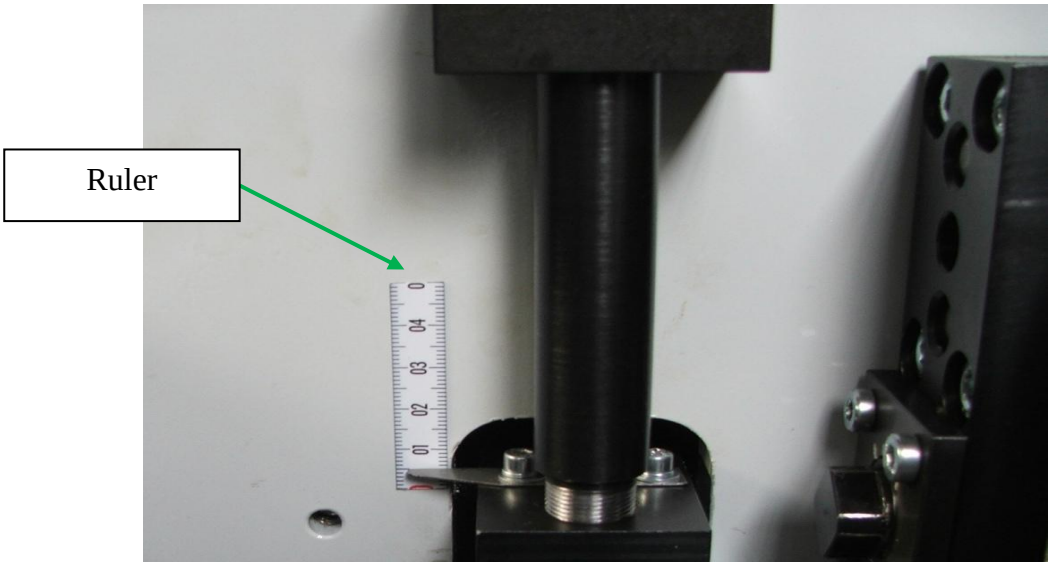


***Fig. 5.5.28**:* Adjusting shafts – left side



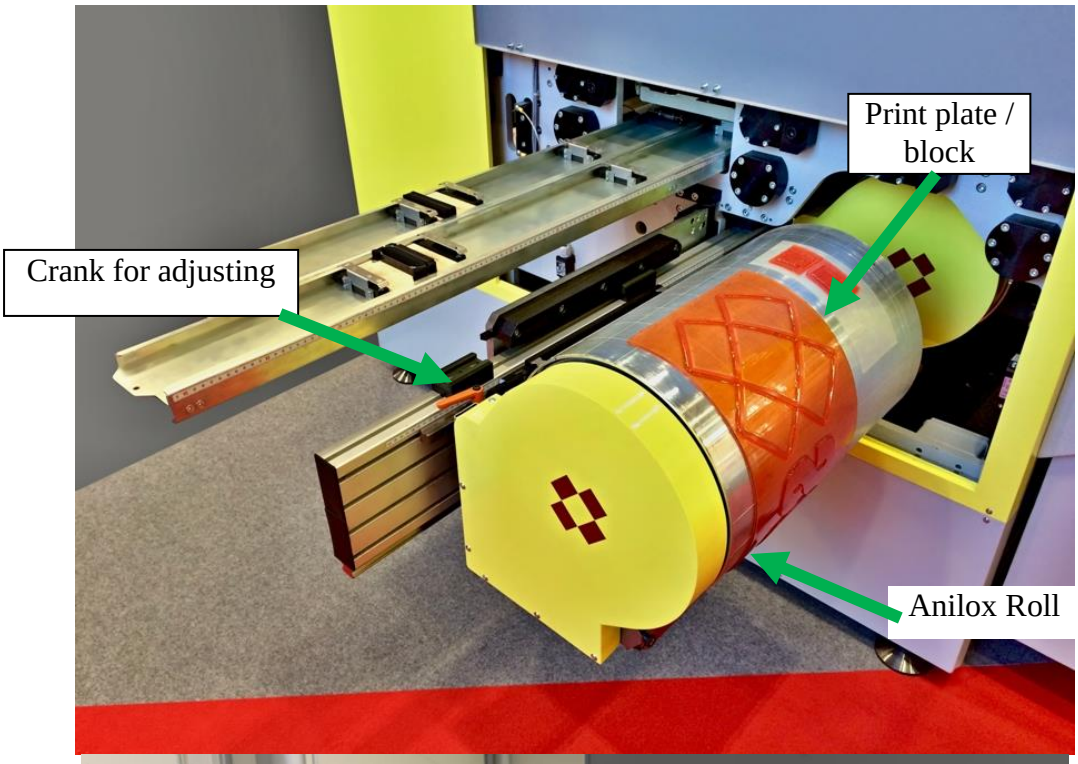
Obr. 5.5.29: Adjusting shafts – right side

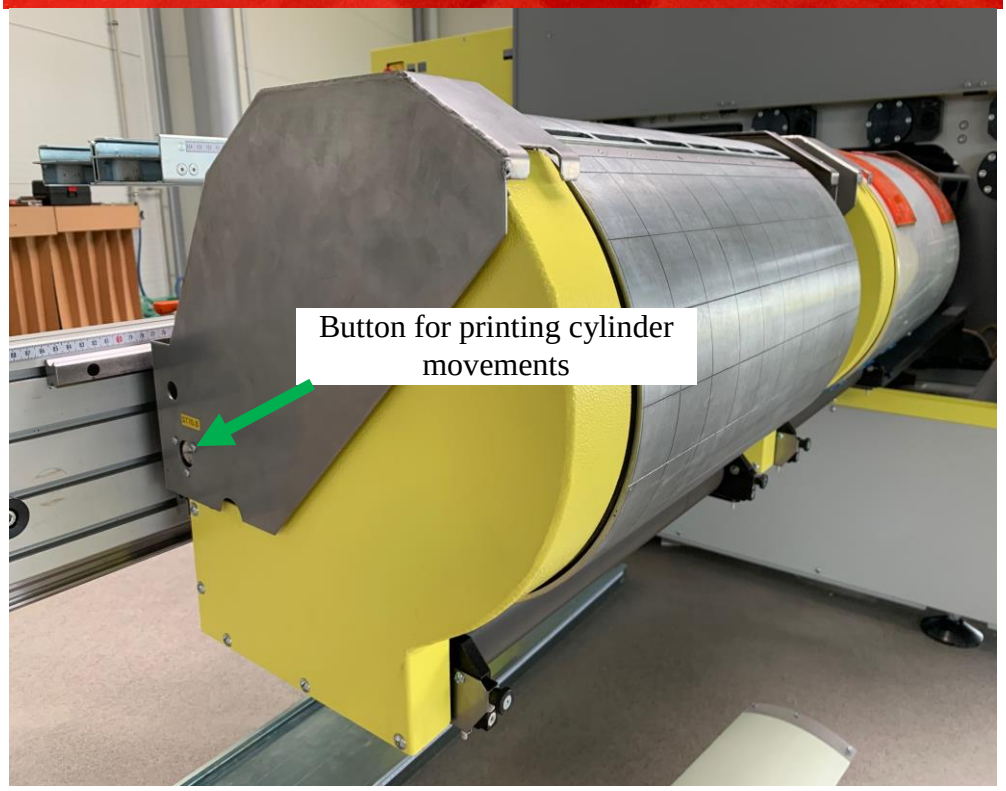
The space height is checked by the ruler on the both machine´s sides.



Obr. 5.5.30: Ruler

5.5.8. Printing setting





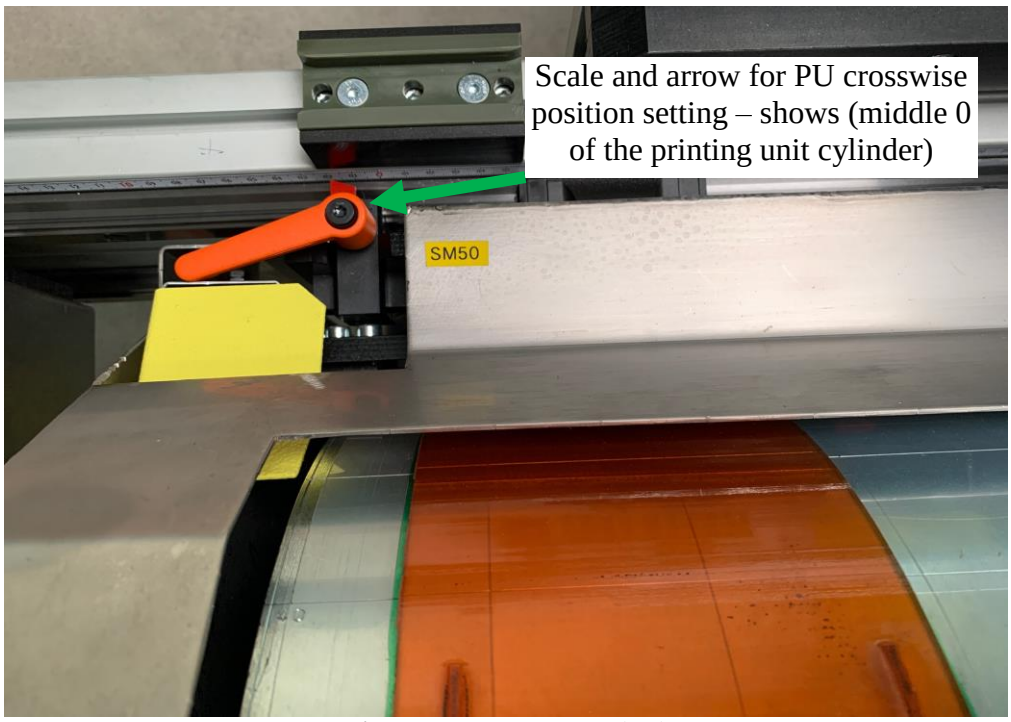
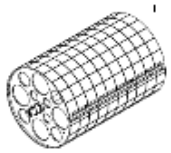
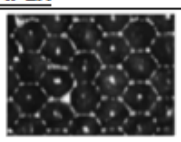


Fig. 5.5.31: Printing unit (PU)

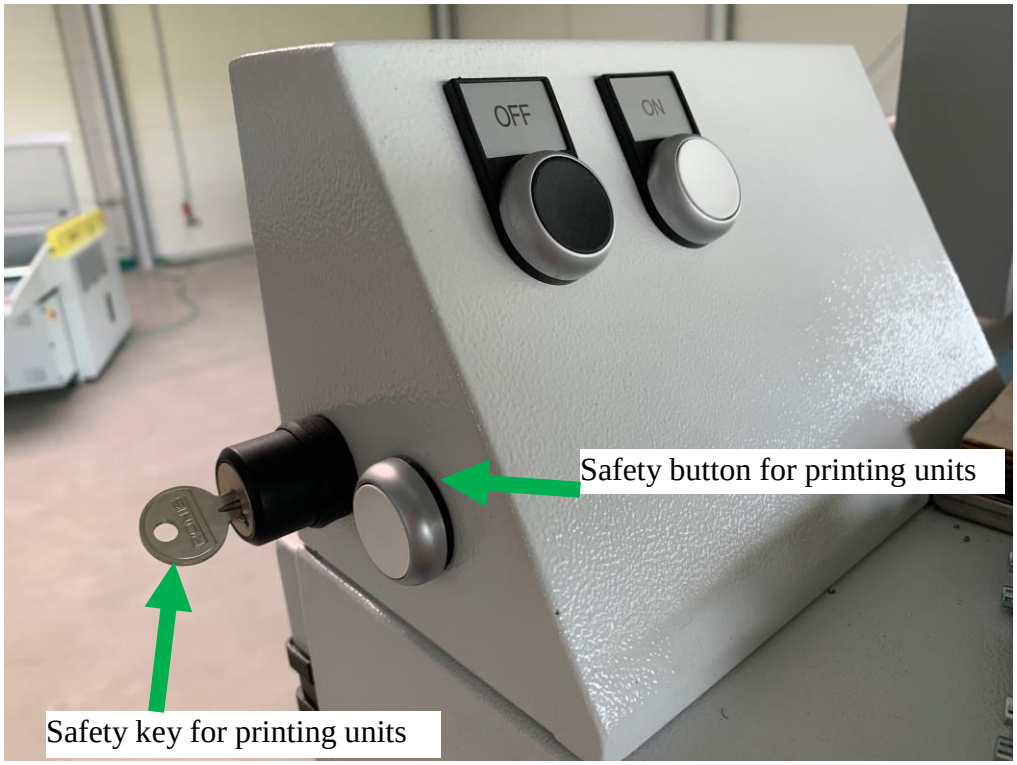
Printing cylinder	Cylinder Circumference	1106	mm	43.364	inch
	Printable length	1000	mm	40	inch
	Print plate max size	500x1000	mm	20x40	inch
	Smart print min distance	50	mm	2.0	inch
	Print plate height (including backing)	4,8	mm	0.285	inch
	Lead edge mount strip	Mattews			
	Min distance between printing cylinders	110	mm	4,5	inch
Anilox roll	Cylinder length	509	mm	20.0394	inch
APEX	Total length	572	mm	22.5197	inch
	Raster length	503	mm	19.8031	inch
	Raster	100	l/cm3	254	lpi
	Quality	UCP			
	Volume	14	cm3/m2	9,04	bcm
Ink	Working viscosity	18-21	seconds	(DIN4, DIN 53211)	
	Working temperatutre	20-25	°C	68-77	°F
	pH	8,0 - 8,9			
	Ink tray capacity	1	l	0.277	gal

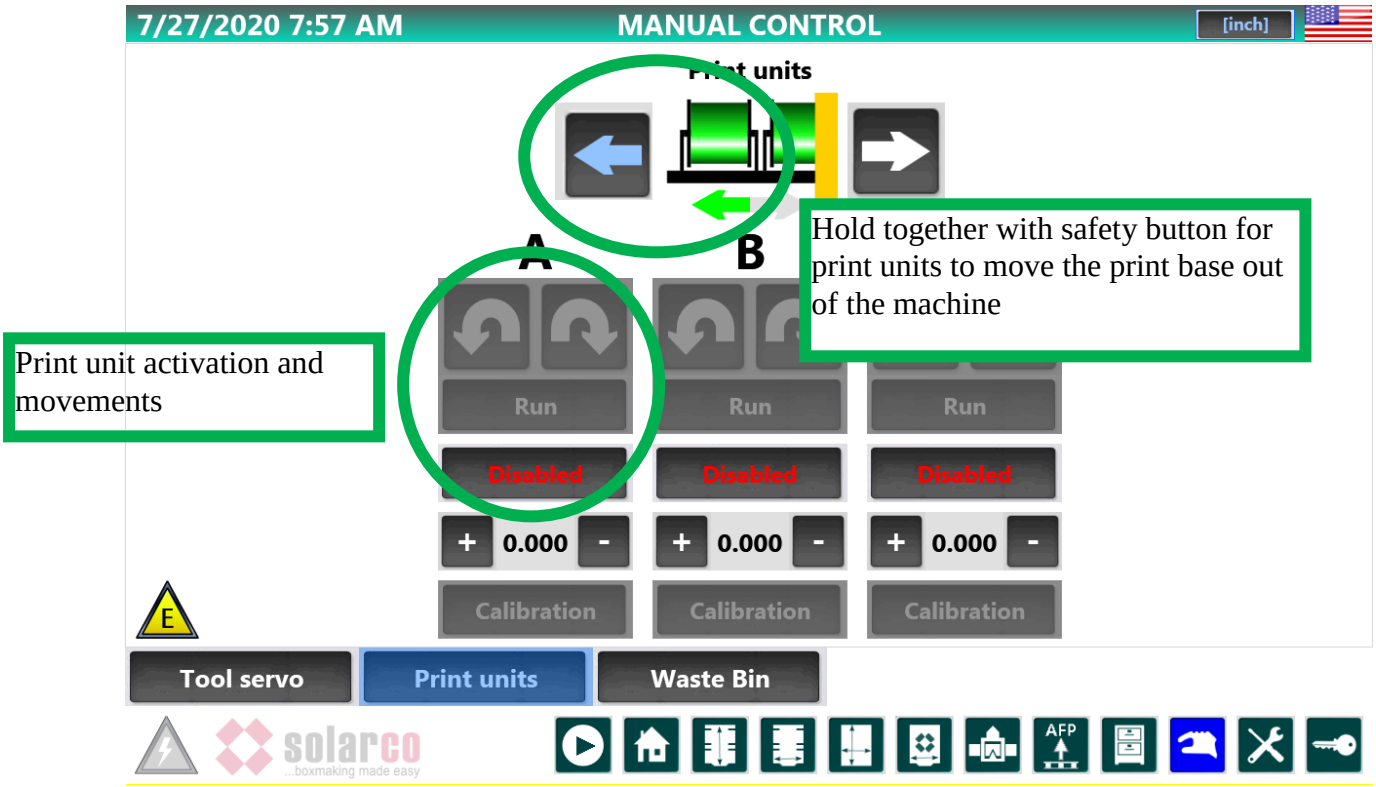
In the machine, there can be one or more printing units installed, which allow for printing Logos and labels - RESY, FRAGILE, etc. The printing unit consists of printing cylinder, anilox roll.

To set the printing units and printing plates to desired positions, follow the procedure below:

1. Stop machine production cycle.
2. Open the safety covers on left side of the machine (using the four-sided key) and fix it in place using the latch – Open print unit safety door in 90 degrees.
3. Slide the printing unit base out of the machine – turn the safety key for printing units, hold the white button next to the safety key for PU.

PU Safety button and push button on the screen with the print base movement direction at the same time.



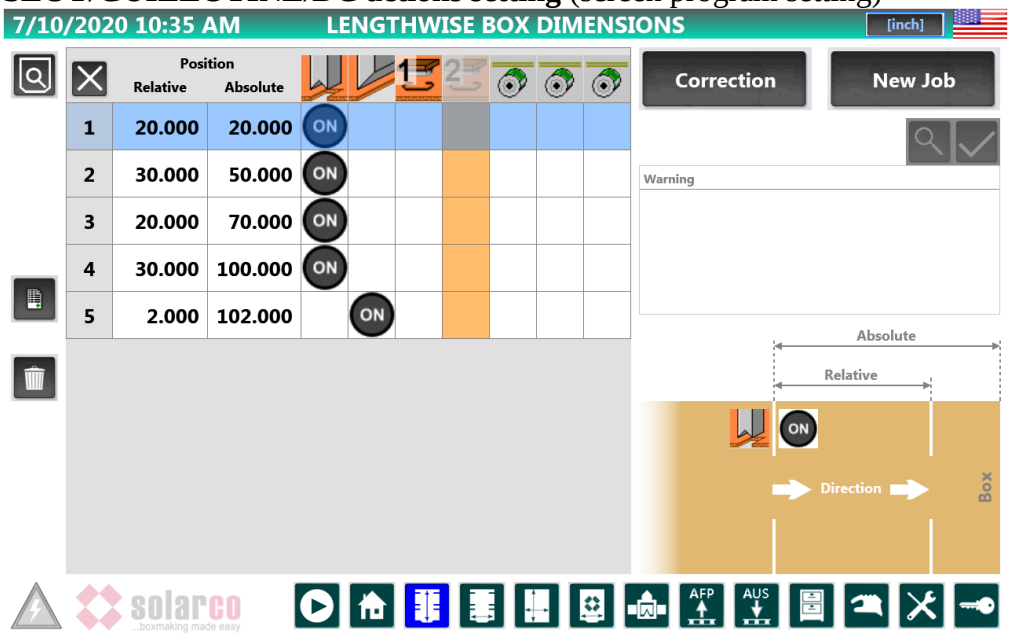


NOTE: **Printing unit must be secured by the nuts during printing.**

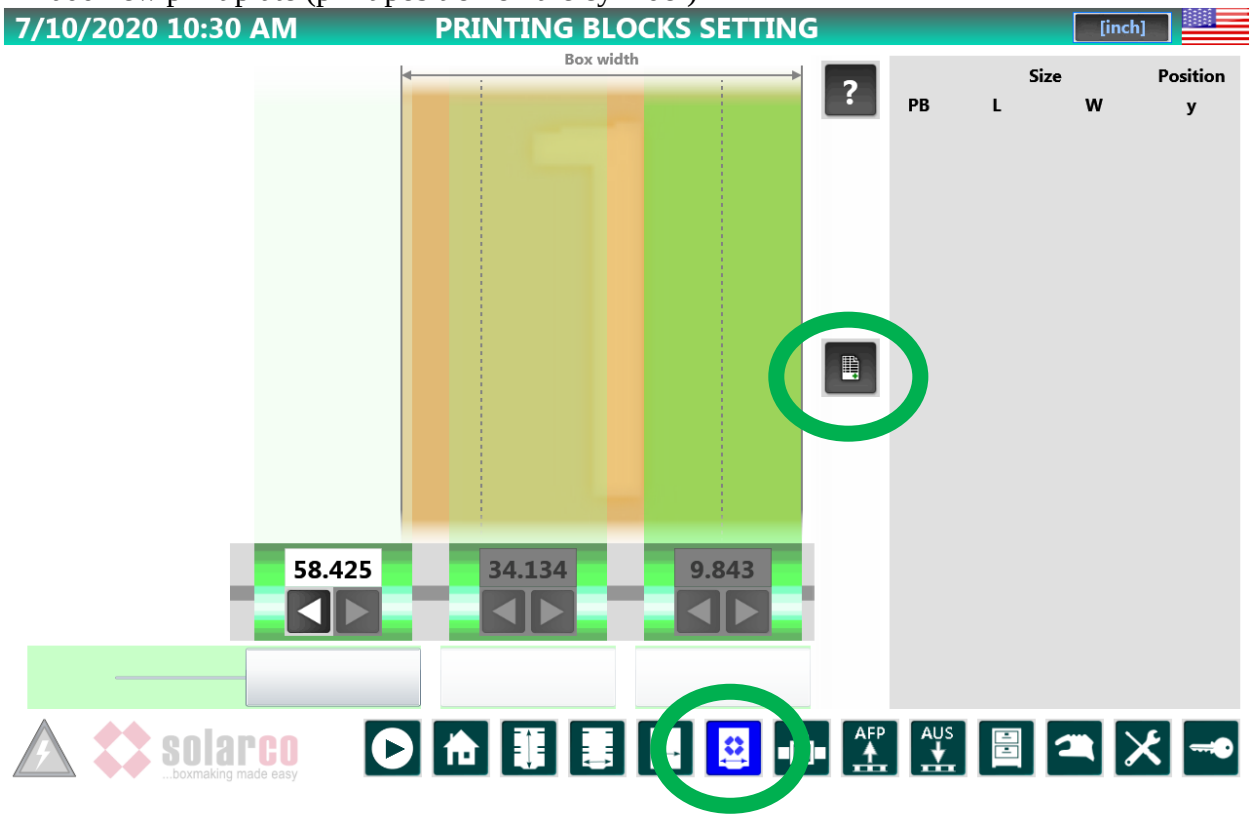
4. Slide the printing unit's base back into the machine and close the safety cover.
5. Turn the machine on.

5.5.8.1. Print programming

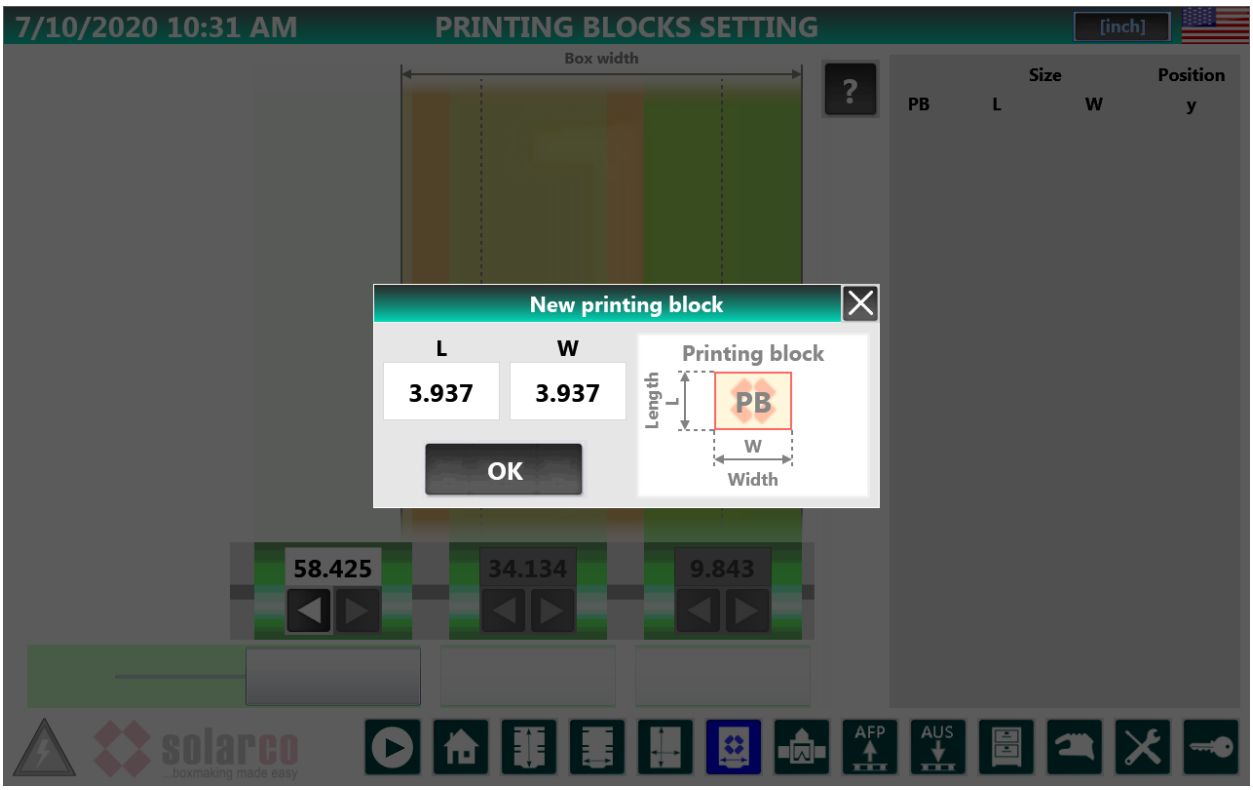
1. **NEW ORDER** – number of steps (screen program setting)
2. **SLOT/GUILLOTINE/DC actions setting** (screen program setting)



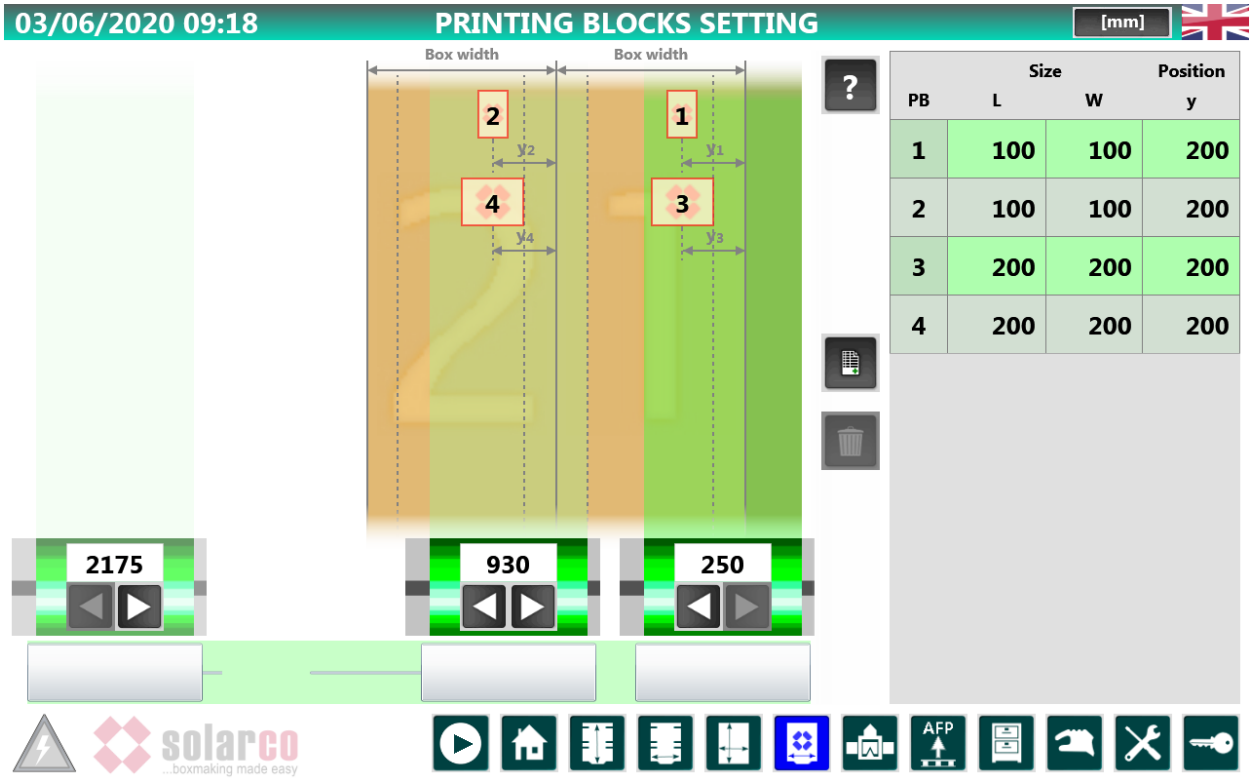
3. **Crosswise dimensions setting** (crosswise dimensions screen)
4. **Define print plate dimension** (print screen)
   - add new print plate (print position on the cylinder)



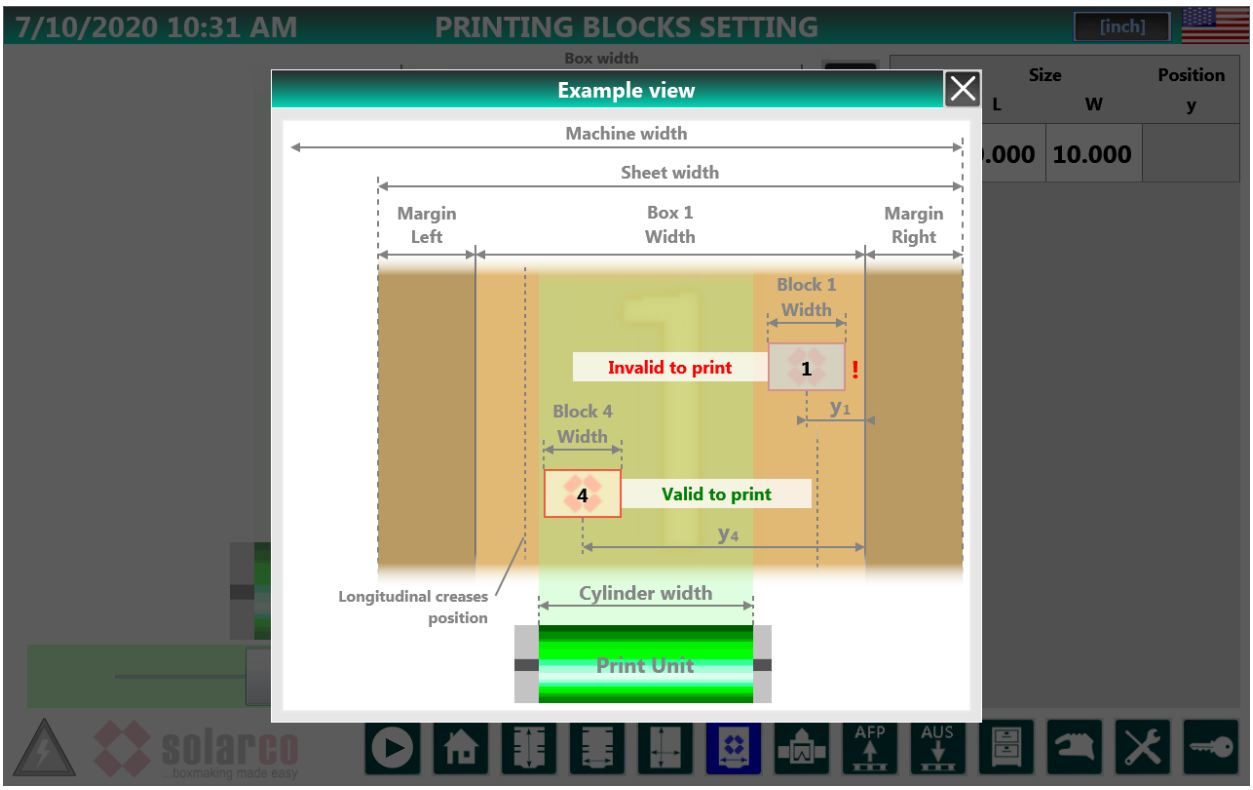
   - define parameters of print plate - print length and width



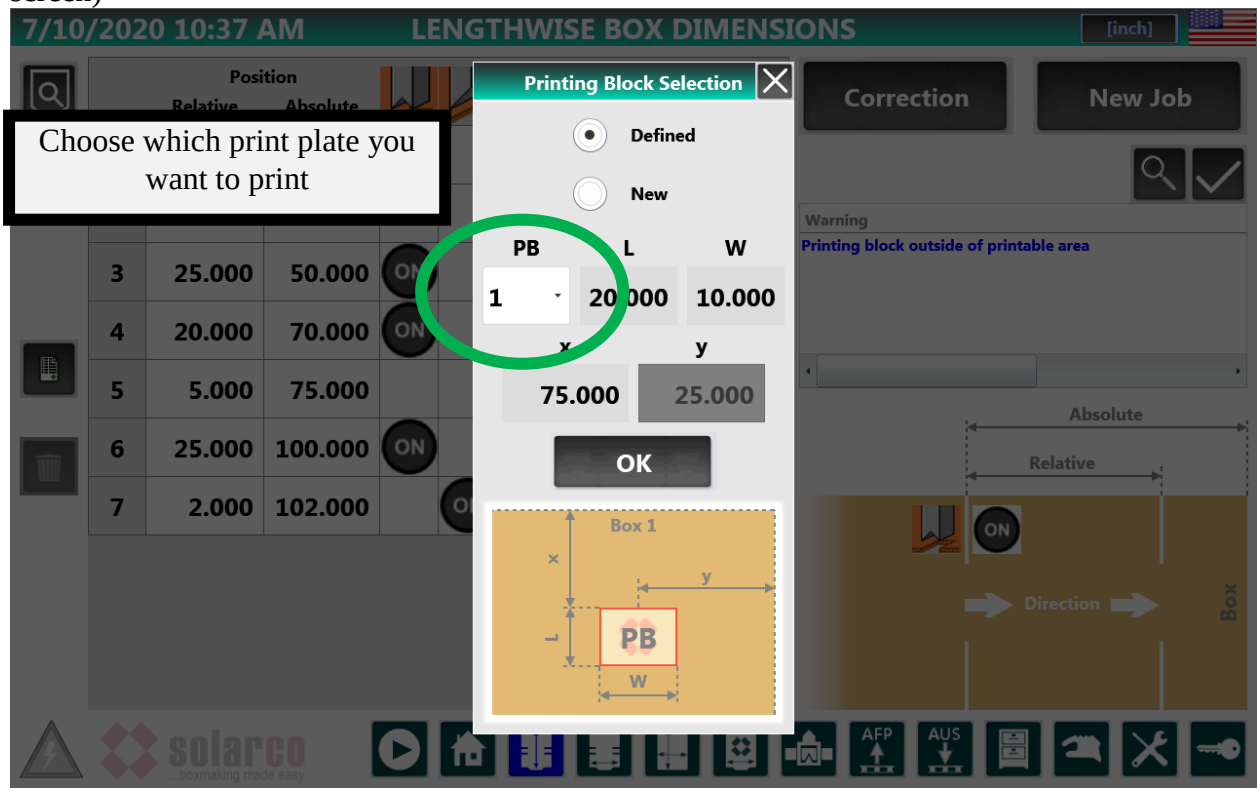
■ add next print plate with parameters
NOTE: Maximum 5 printing positions on one printing cylinder.



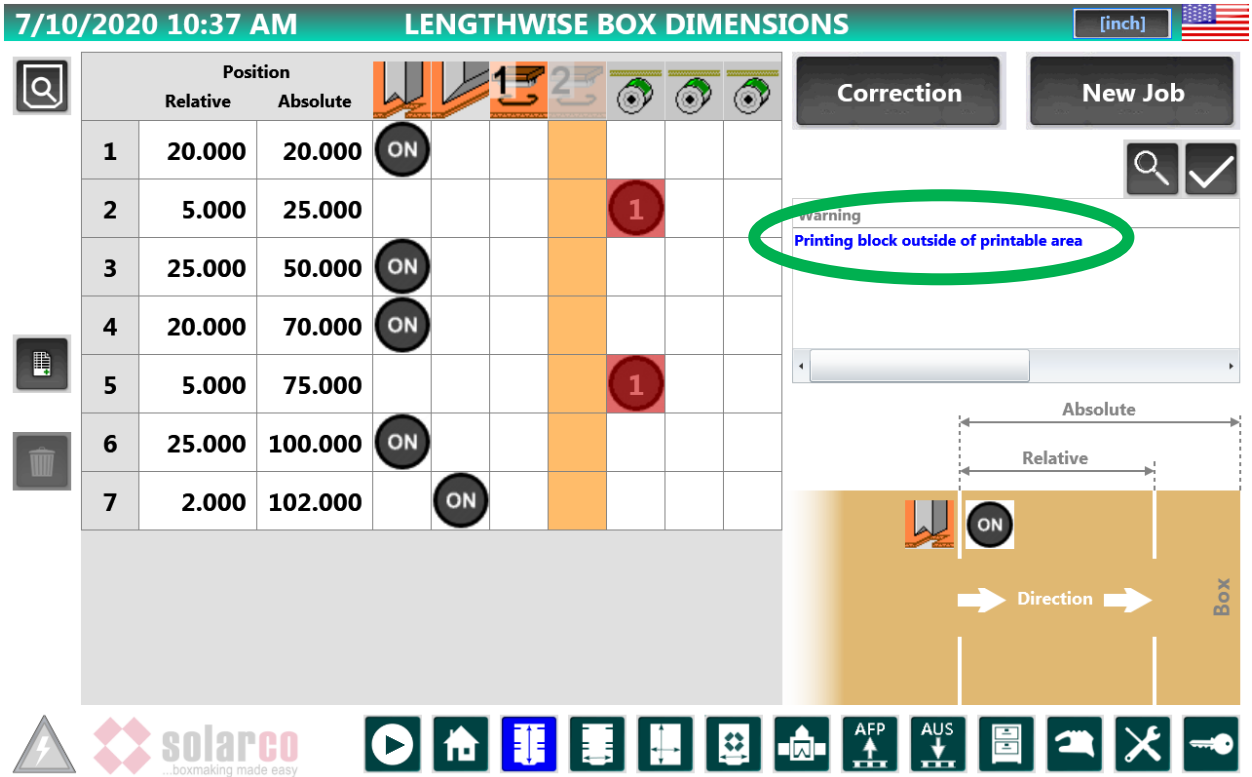
In case of printing position is out of the PU printing range print plate is grey and won't be able to program in lengthwise box dimensions.



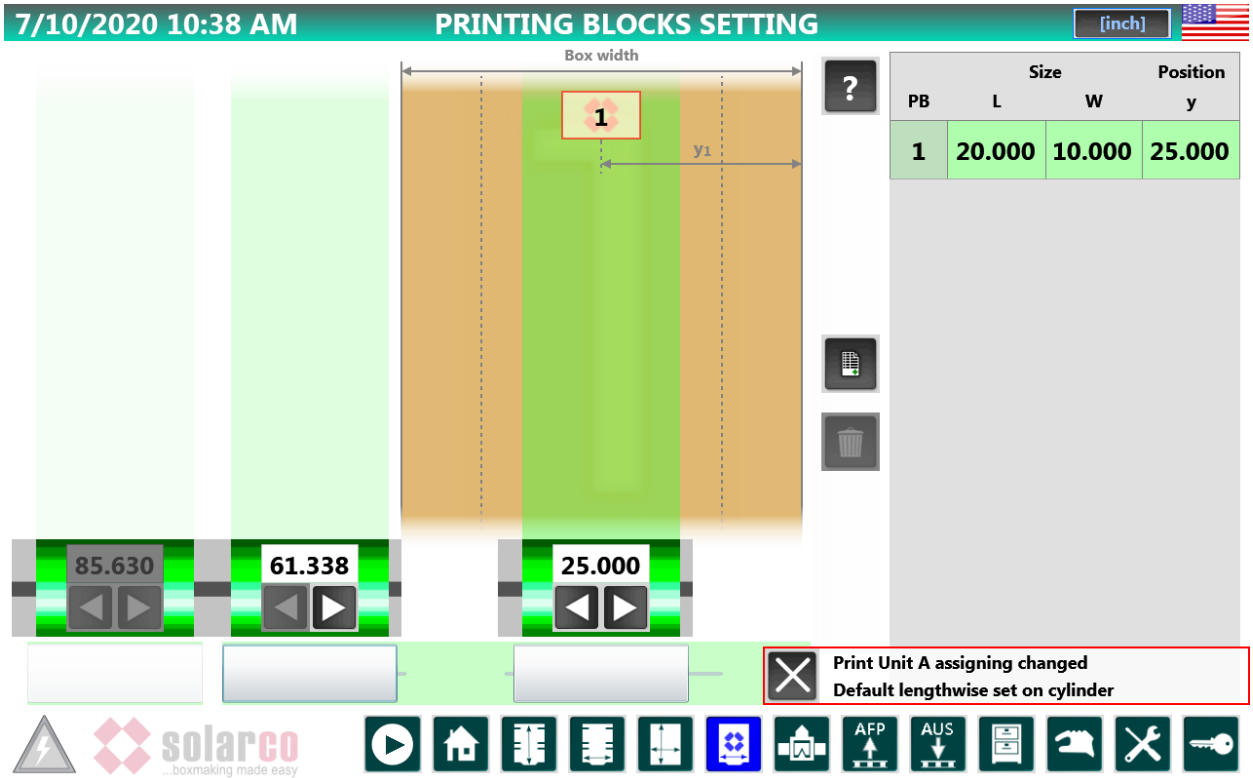
5. **Add print actions in lengthwise box dimension screen** – print plate (program setting screen)



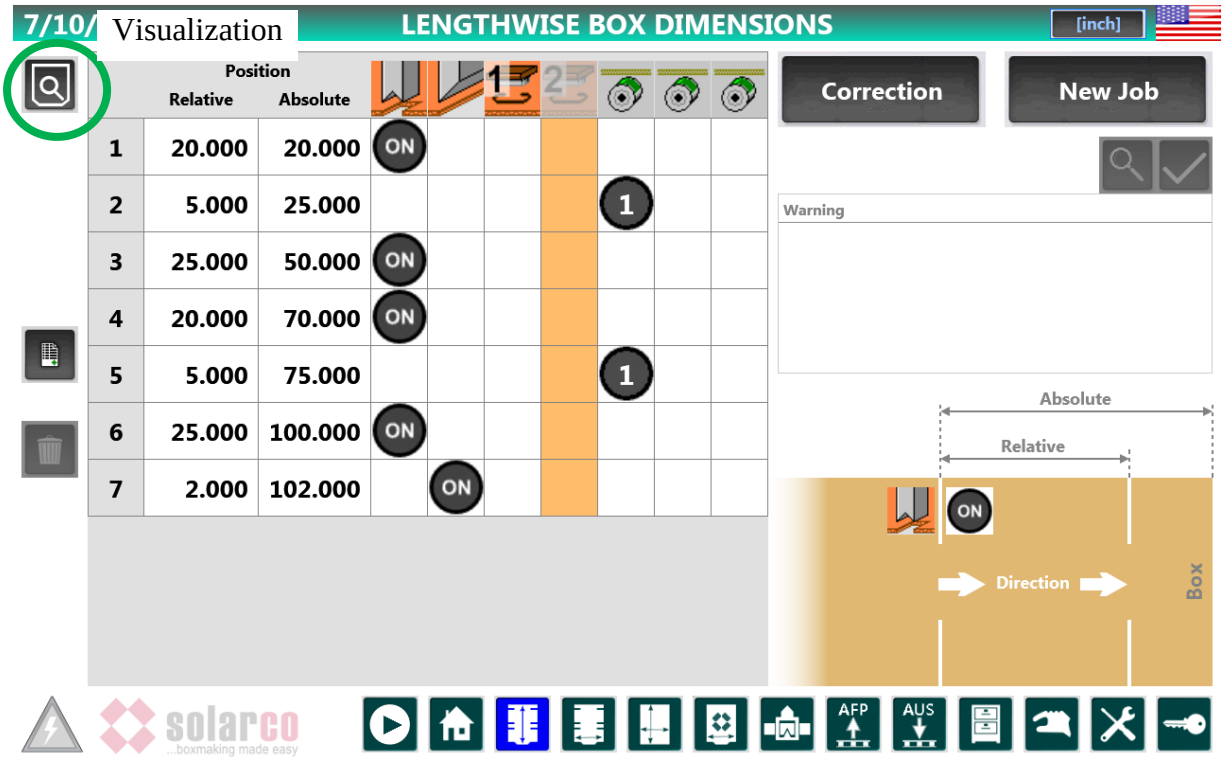
In case print plate is not on the PU printing area – print action is read and error message in warnings.



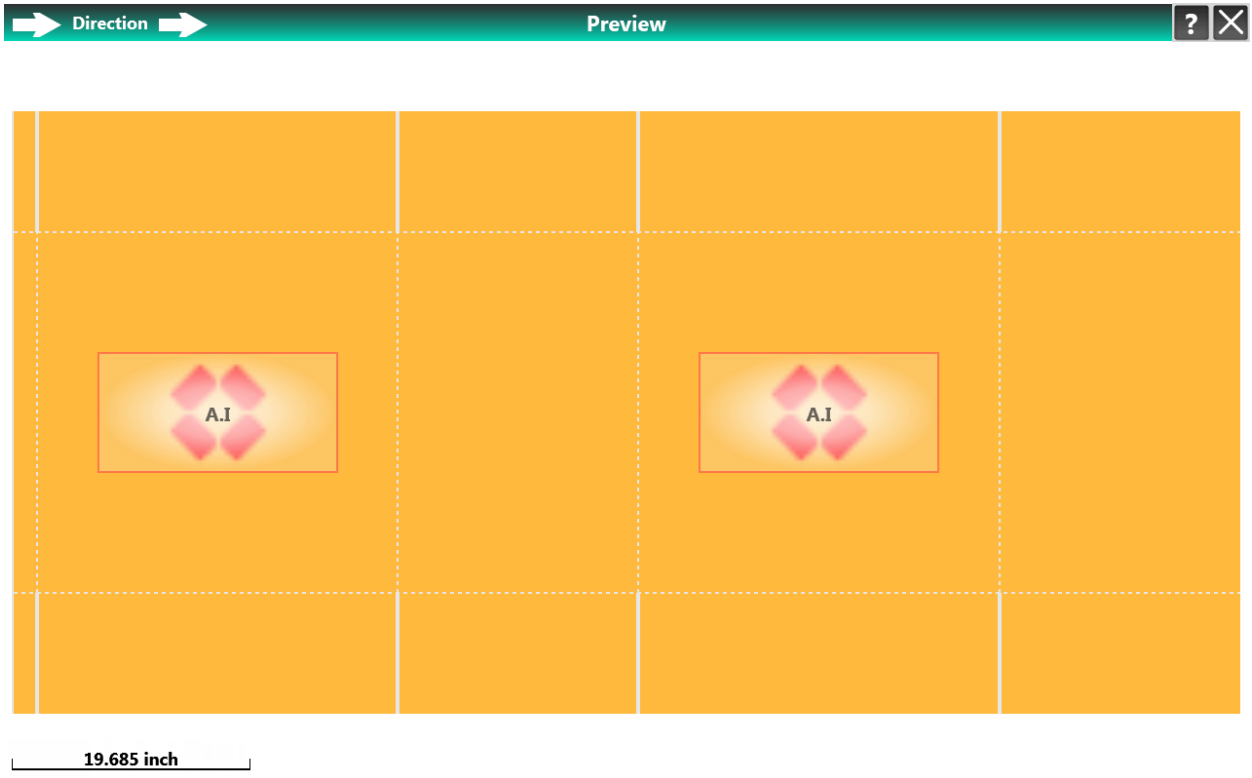
6. **Move printing unit to fit on desired printing unit** (print setting screen)



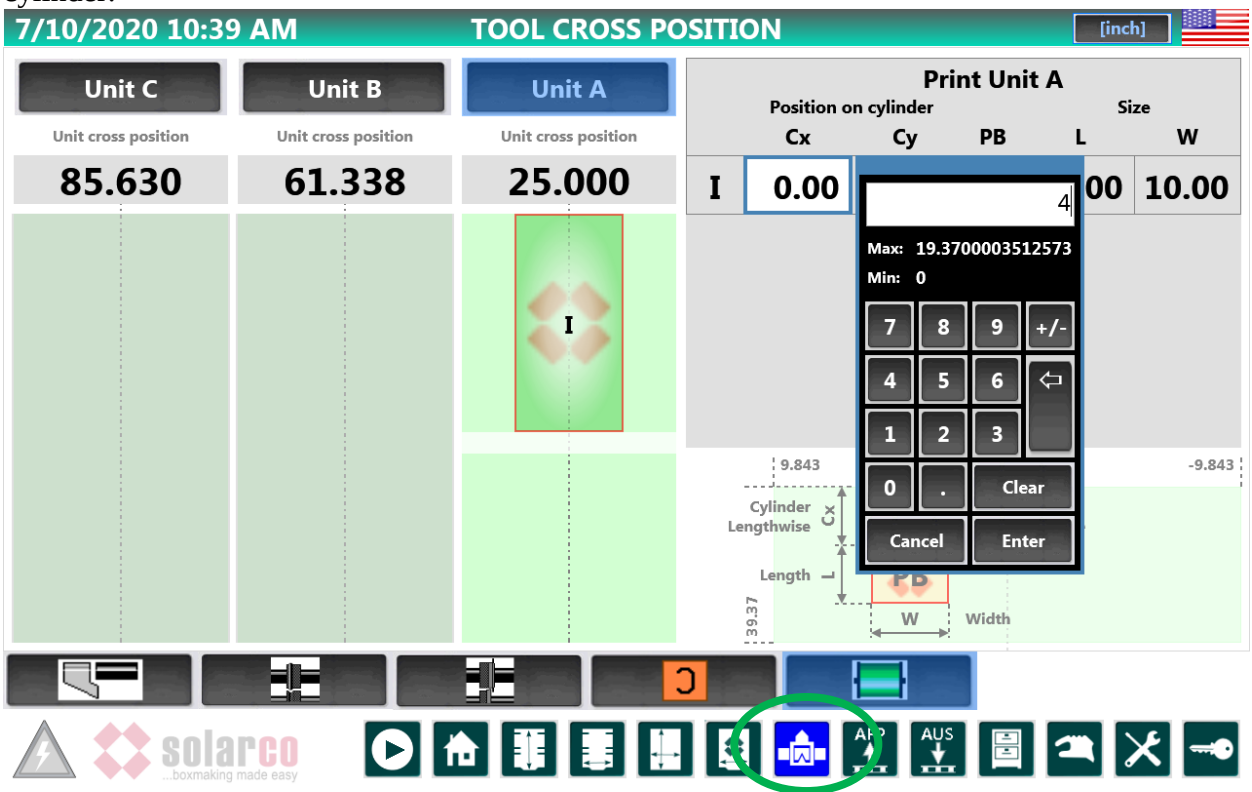
NOTE: In case you move with the printing unit in crosswise direction, all printing plates will get default lengthwise position on the printing cylinder – Message: „Print Unit assigning changed Default lengthwise set on cylinder.



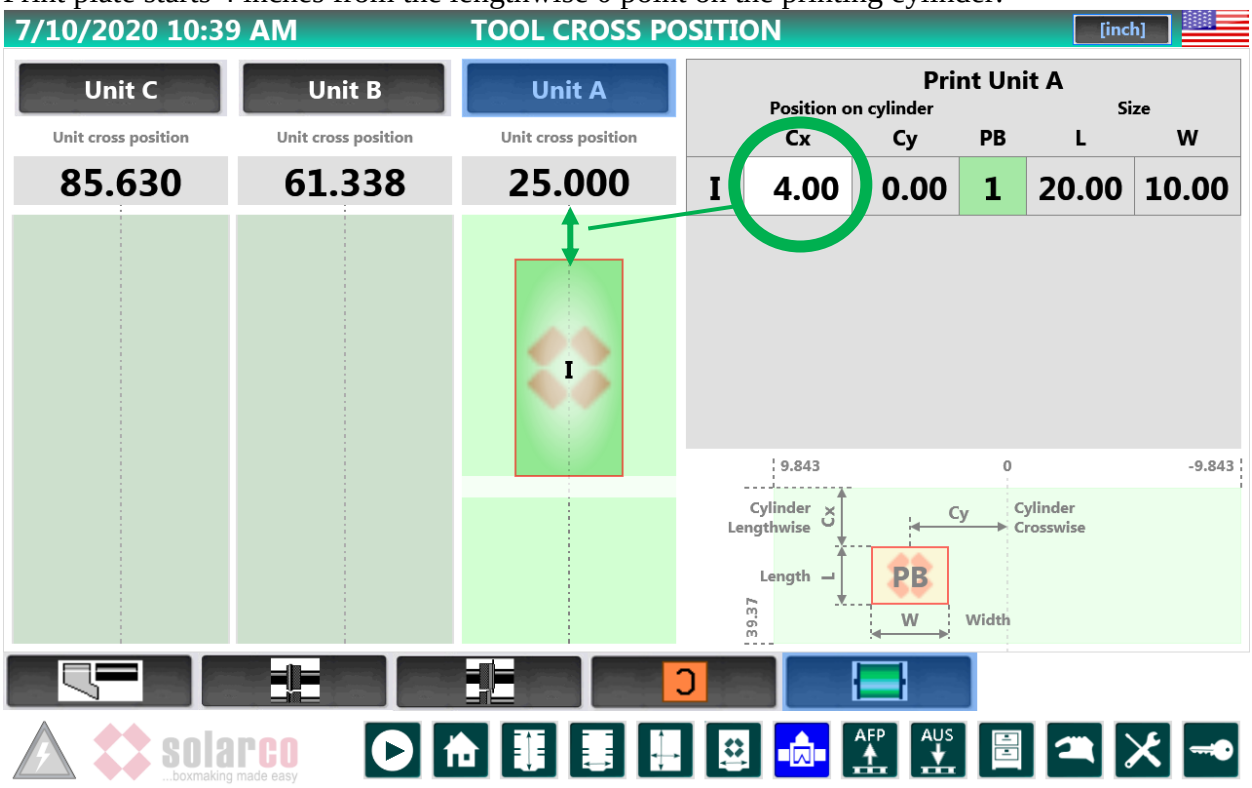
7. Visualization screen



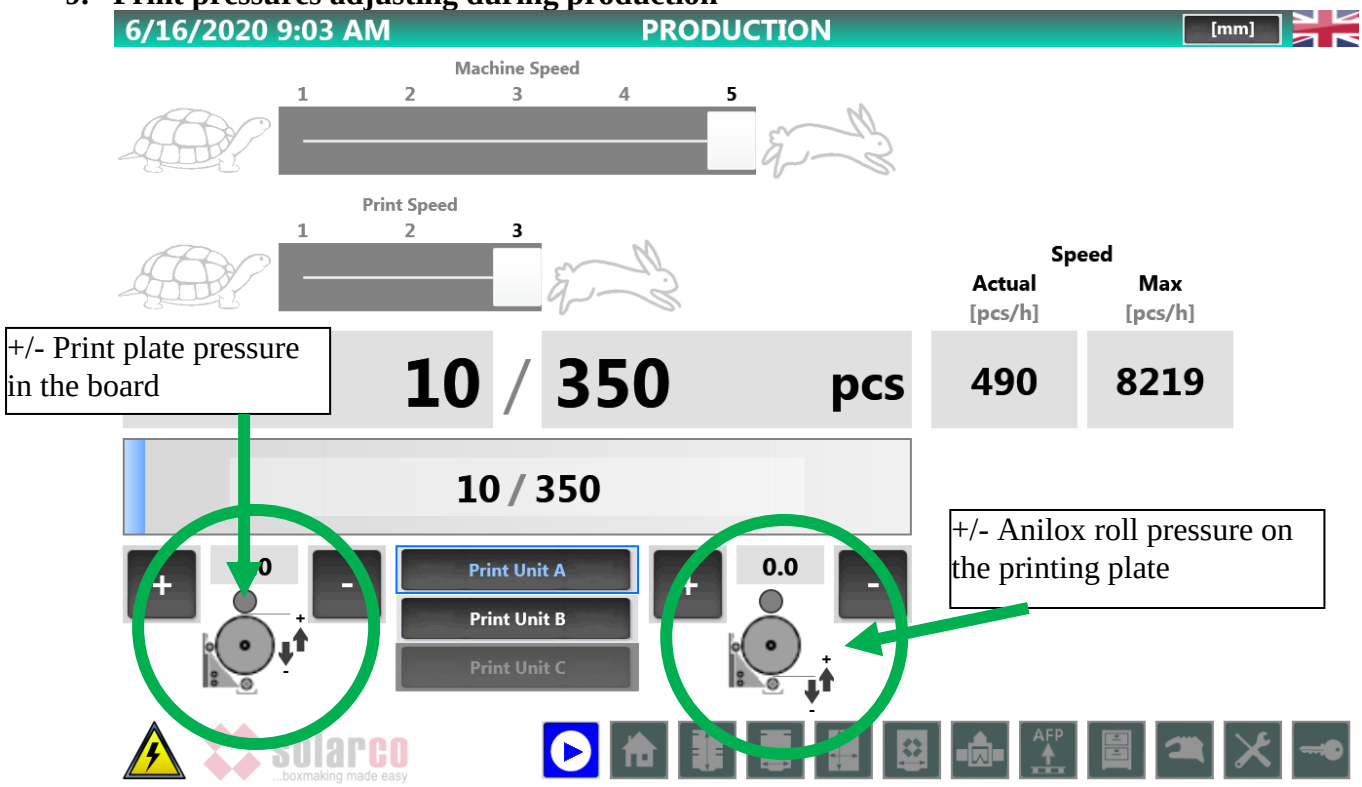
8. **Define lengthwise position** of print plate according to real position on the printing cylinder.



Print plate starts 4 inches from the lengthwise 0 point on the printing cylinder.



9. Print pressures adjusting during production

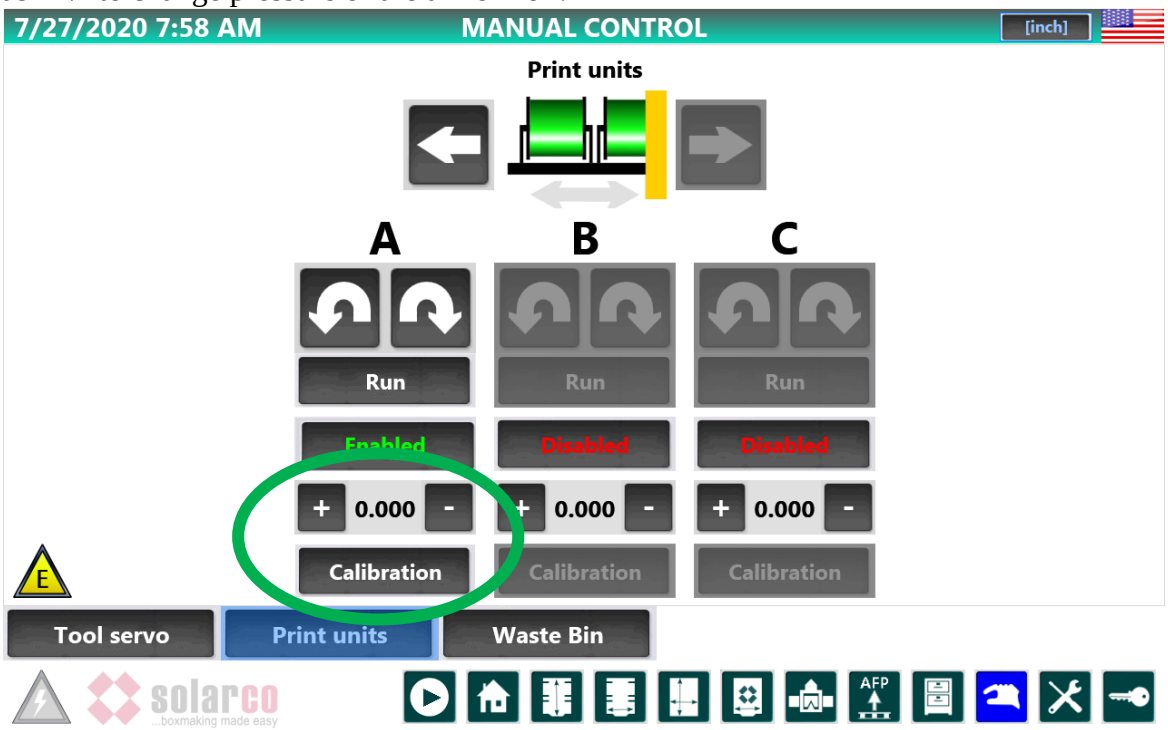


NOTE: Anilox roll pressure can be calibrated when the printing unit is out of the machine. In production screen we are doing final adjustments.

10. Calibration of anilox roll pressure

It is possible to calibrate anilox roll pressure on the printing plate while the printing units are out of the machine.

- Push calibration to see if the ink is transferring correctly on the printing plate.
- Push +/- to change pressure of the anilox roll.



5.5.9. Die cutting

The machine BOXMATIC 18/23 DC, DDC and DCP allows for cutting of slots for hands holes, ventilation holes, straight cuts, etc. Furthermore, it is possible to cut boxes that do not have the same length of flaps.

The dimension of the die cutting block is 254 (2x119) mm x 100-1800mm, the wooden support thickness is 15 mm and the knives height is 30 mm. On the request we can setup the die-cut section for the knives height 30 mm. The die cutting blocks are placed into the tray. They are set in the crosswise direction using a fitted ruler. They are locked into place by special clamps. The die cutting blocks cut against the board and can be slid into movable lower ram or upper ram. If you slide the die-cutting block into the upper position, you must slide, into the lower position, the board, against which the knives cut. Set the desired distance between the die cutting and the edge of the segment of the box where the die cutting is set.

WARNING: The total length of the knives may be 1500 mm at most. (see diagram 1)

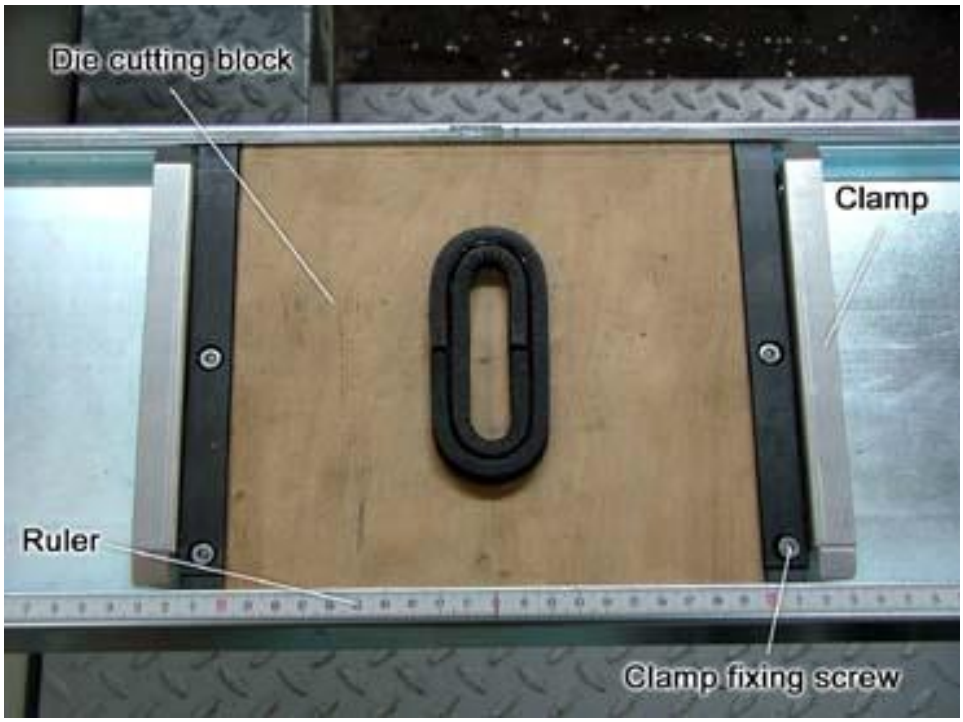


Fig. 5.5.35.

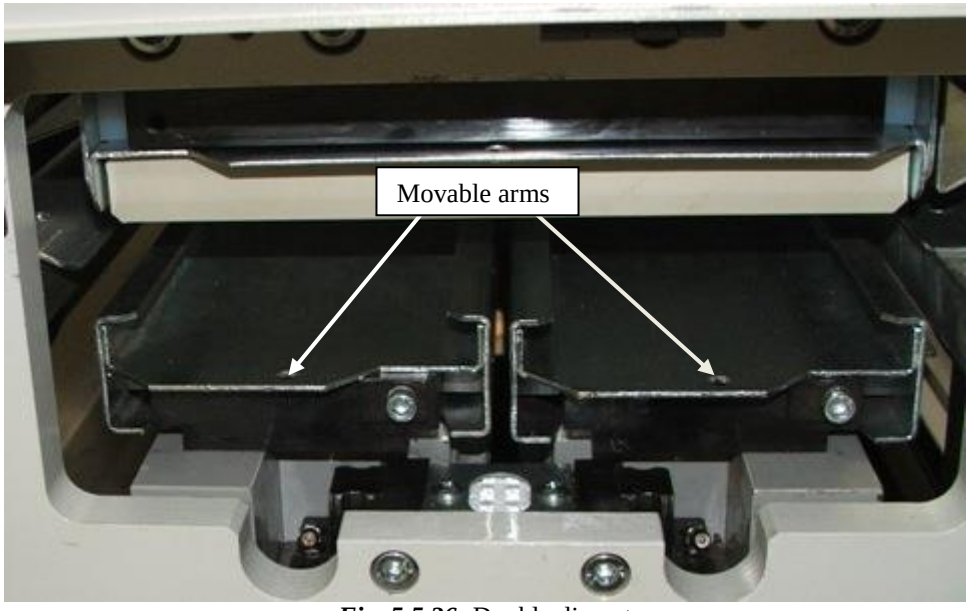


Fig. 5.5.36: Double die-cut

The die cutting section can consist two independent die cutting beams. They can work independently or simultaneously. If they work by this way, it is necessary to adjust both beams to their start position.



Fig. 5.5.37: Two independent die cut beams



Fig. 5.5.38: One wide die cut beam

To adjust beams to their start position press the full cycle icon twice.

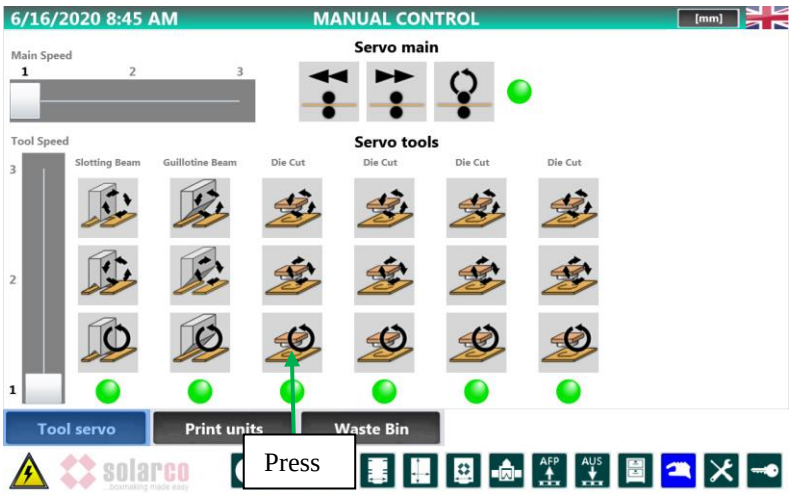


Fig. 5.5.39: Home position cycle

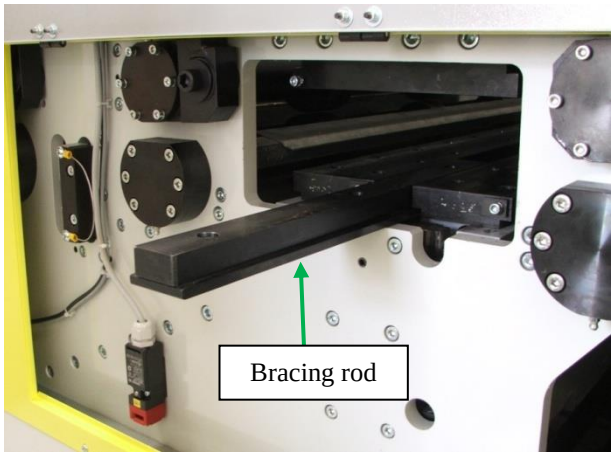


Fig. 5.5.40: Bracing rod

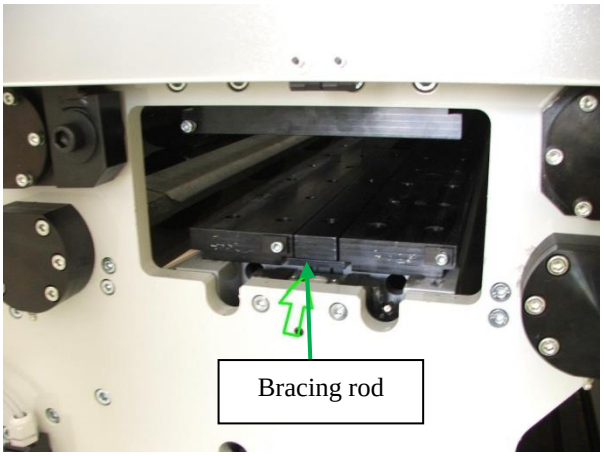


Fig. 5.5.41: Bracing rod in the right position

By this way (simultaneously working) it is necessary to use four bracing rods (by Boxmatic 23 five rods) which are put between two die cuts beams.

6. SETTING THE MACHINE USING CONTROL PANEL

The control panel is a touch screen. It is used to manually control the machine, to use a diagnostic and set the dimensions of a box. In the production mode isn't possible to switch between the screens.

The control panel offers seven main screens for the usual operation of the machine. These are:

- The main screen – allows a user to enter the number of the boxes to produce and to start or stop the production cycle. If machine is not in the production mode, the screen provides the information about alarm if occurred.
- The box dimensions screen – allows the user to enter the box dimensions (distances between the individual slots).
- The sheet dimensions screen – allows the user to change the way the boxes are laid out on a sheet including margins.
- The tools position screens – displays the transversal positions of the tools as needed for the current job.
- The job management screen – allows the user to store the current job or to search and load a previously stored job.
- The manual control screen – can be used to control the shafts and the beams manually.
- The settings screen – displays the number of processed sheets, brake counters of the beam motors and production time. This screen is used by the authorized person for service purpose.

Control panel

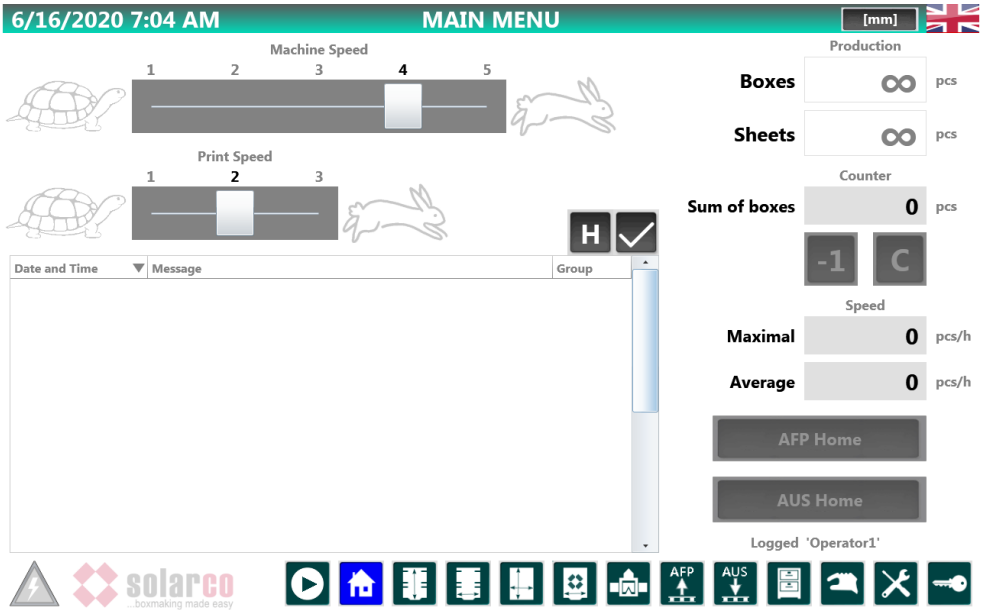


Fig. 6.1: The main menu screen



Fig. 6.2: This icon indicates "Power OFF / **ON** (left), **white/black** switching buttons (middle/right) on the bottom

If you press the icon Parameters you can see the next menu.

Parameter Shake allows to choose the number of shaking with the loaded cardboard and to load only one sheet to the next procedure. Push the icon Shake more times to change the number or shaking (1 – 6).

6.1. “Box dimensions” screen



Fig. 6.1.1: The box dimensions button

On this screen we enter the box dimensions. It contains a table of the operations that need to be done to get a box. Each row of this table is a single step. Each step has relative and absolute position. These positions are the longitudinal positions of the box operation (slot, cut off or die cut). Relative position is the distance between the present operation and the previous one, while the absolute position is the distance between the present operation and the beginning of the box. The next icons (Slotting beam, Guillotine, 1st die-cut) of the row, beside position, there are tool fields. An “ON” icon in a tool field means the given tool will be used in that step. To turn a tool on or off in a given step, just press the appropriate tool-field screen button.

If we want to use the guillotine, the absolute position of the last step is equal to the length of the box.

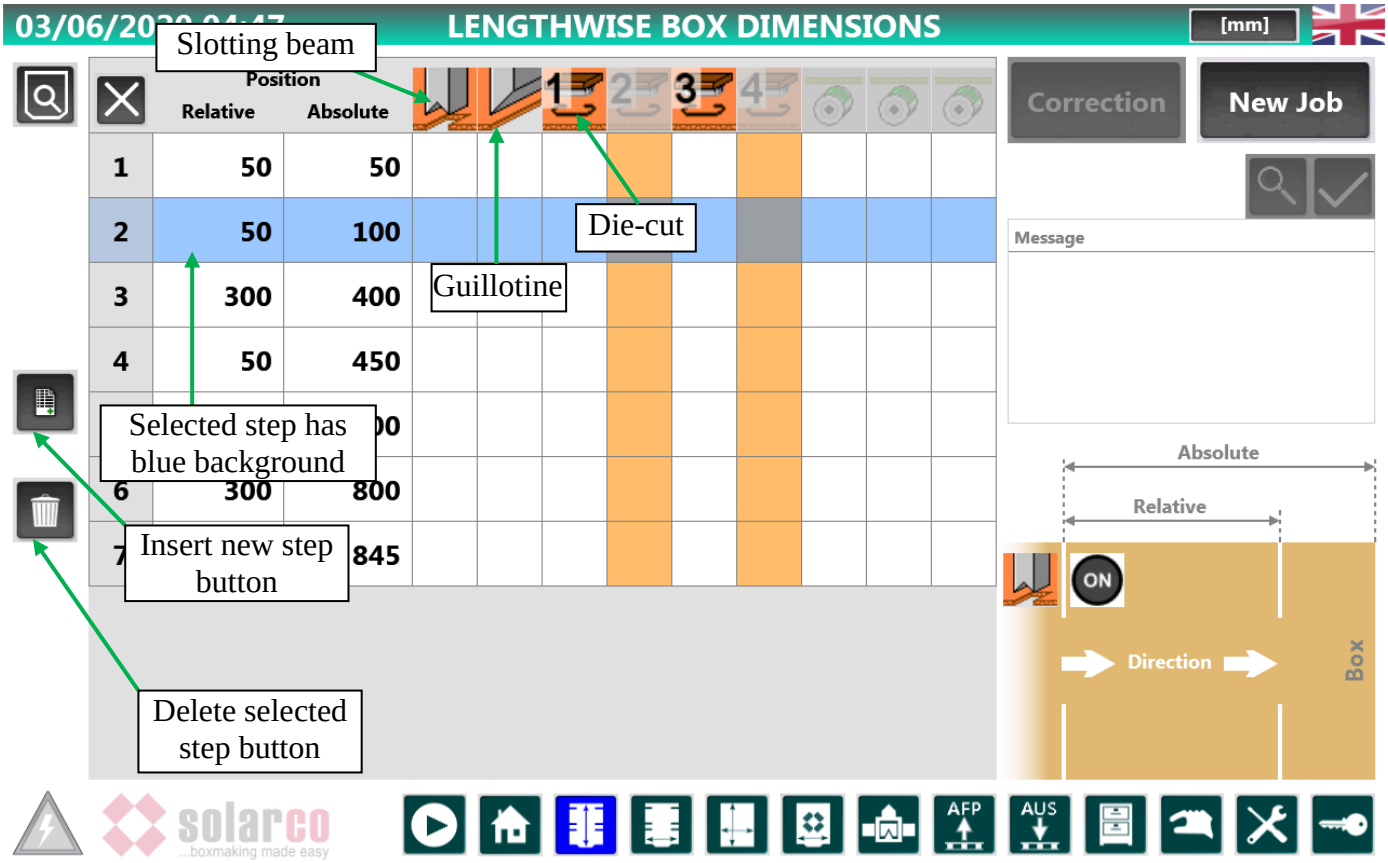


Fig. 6.1.2: Lengthwise Box dimensions description

6.2. Example of a job setup

This chapter describes an example of a job setup. While the details of the process may differ, the basic outline is always the same:

1. On the box dimensions screen, start a new job, set the number of steps (may be 0) and then set the tools and positions for the steps. Then you can set the box crosswise dimension up through the screens accessed by the “crosswise dimension” button.
2. On the sheet dimensions screen, enter the size of the sheet to be used if necessary. Otherwise system gets the necessary dimensions from dimension of the box which has been entered. You can also change the layout of the boxes on the sheet here.
3. Look at the calculated transversal tool positions on the tool positions screen and setup the tools appropriately.
4. Optionally, you can go to the job management screen and save your job setup for later.

The following is an example of a job setup described in more detail:

1. Make sure that machine is not already in production cycle. If it does, a production menu will be displayed on the screen and switching of the screen is not allowed.
2. Start a new job as shown on the following screenshots.

Example 1.1:
typical FEFCO 0201 with two hands holes using die-cut for one time cycle per hole

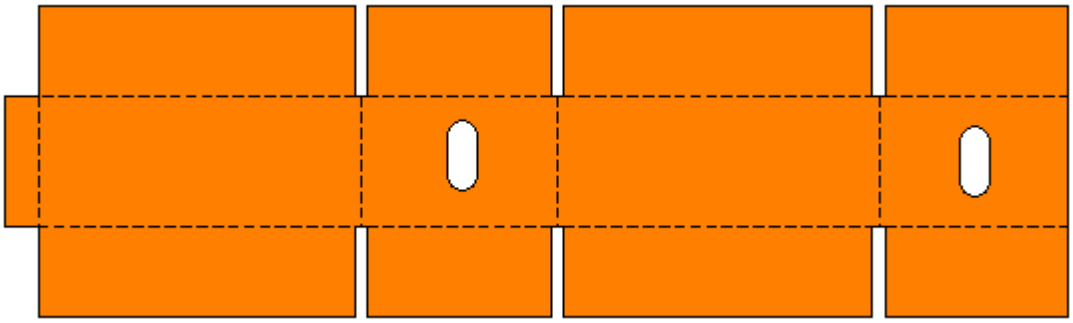


Fig. 6.2.1: FEFCO 0201 example

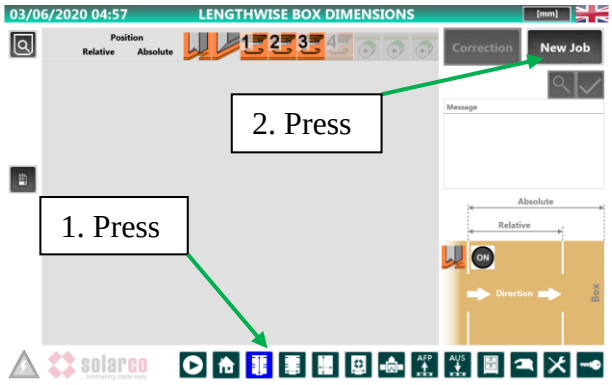


Fig. 6.2.2: Main menu

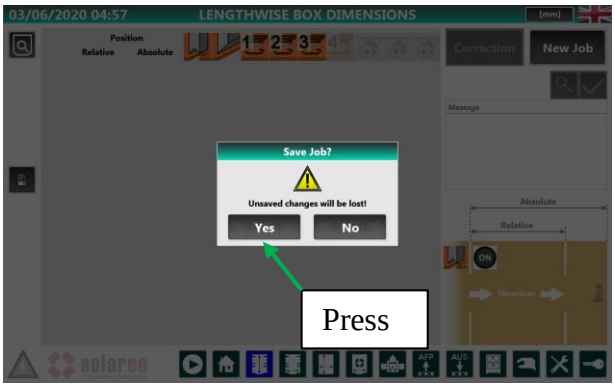


Fig. 6.2.3: Box Dimensions

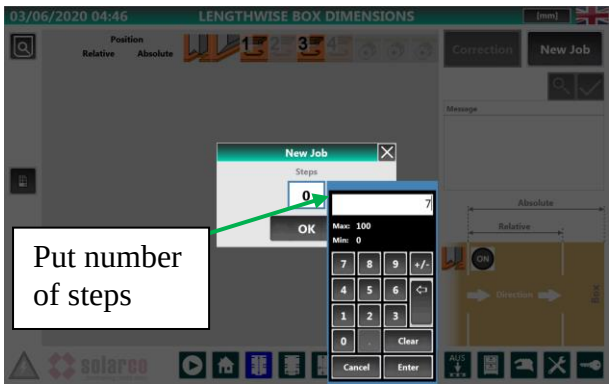


Fig. 6.2.4: Box type selection

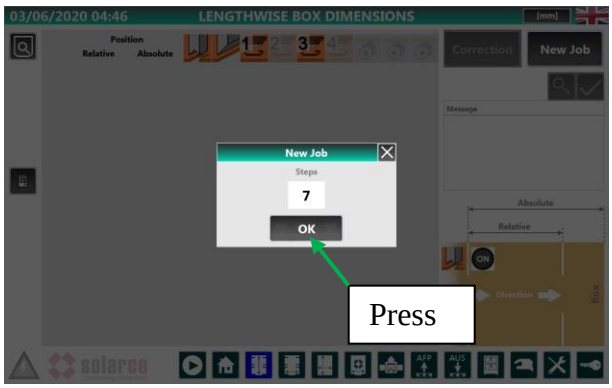


Fig. 6.2.5: After press Custom Design

Your job has now 7 empty steps. In the first six steps of the program, we will cut the slots using the slotting beam and die-cut beam number one for hands hole. In the final, seventh step, we will cut off the rest of the sheet using the guillotine. Now set step positions as shown in the following figure:

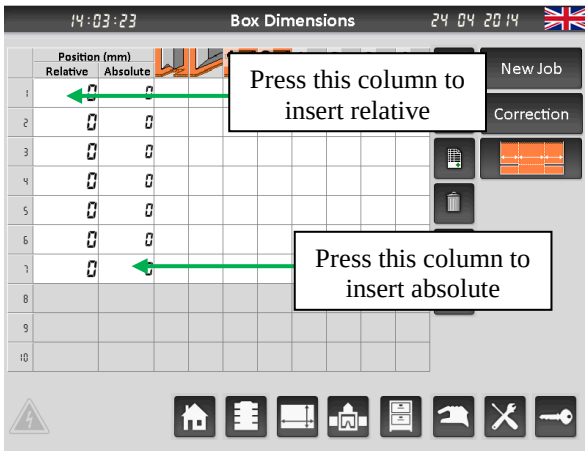


Fig. 6.2.8: Box Dimensions insert value

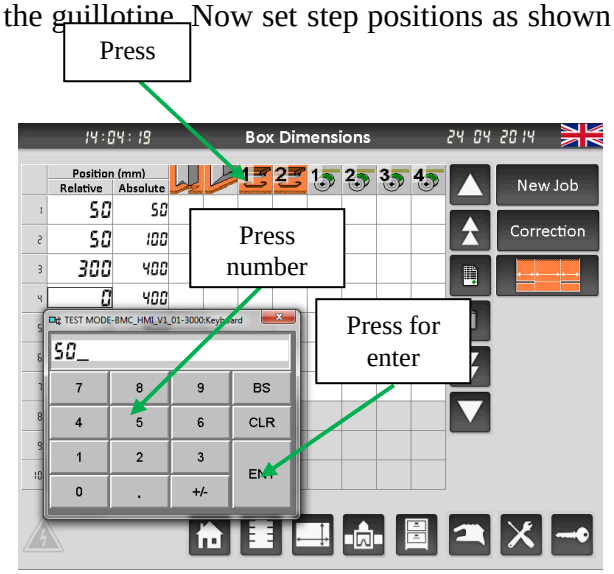


Fig. 6.2.9: After select and press line BD

Now select the tools to be used in each step. Each column of the table represents one tool. Actual tools displayed on the screen depend on the type of your machine. The tools shown on the screenshots in this chapter are (from left to right): slotting beam, guillotine and die-cut. One position can contain more tools.

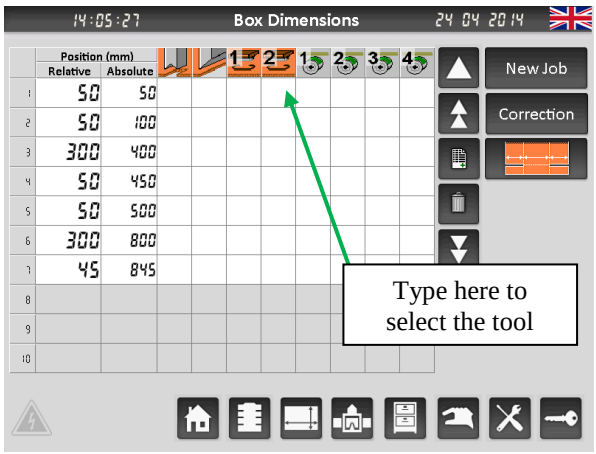


Fig. 6.2.10: Box Dimensions (BD)

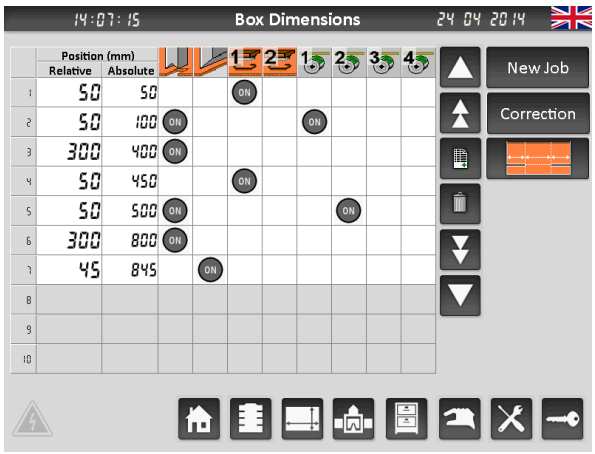


Fig. 6.2.11: Box Dimensions (BD

Example 1.2: typical FEFCO 0206, using die-cut for straight cutting

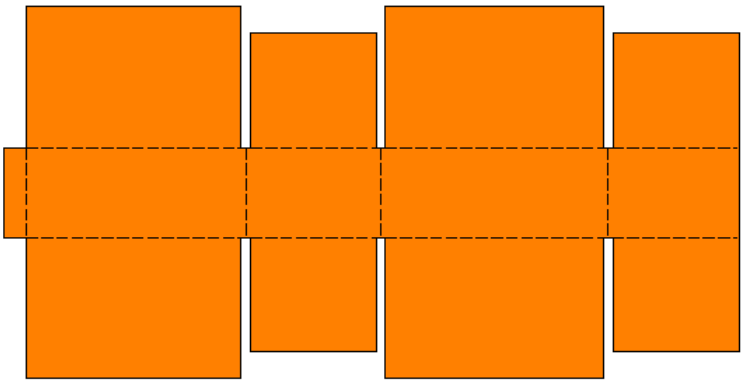


Fig. 6.2.12: FEFCO 0206

The die-cut unit works in two modes. It can either cut out a hand hole (described above), or it can make, using a straight knife, a longitudinal cut. To start the straight cut, tap on the appropriate field twice (tap only once for a single punch). To stop the straight die cut then tap once a die cut field in one of the following steps. If die-cut icon starts to flash, this indicates that some of the die-cut parameters are invalid for the chosen operation. Push the icon to open die cut parameters dialog and enter the length of the straight die cut knife and the overlap of the individual cuts (3mm should do it).

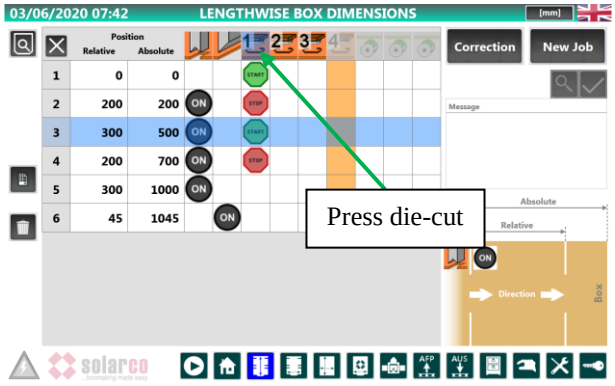


Fig. 6.2.13: Box Dimensions, press die-cut

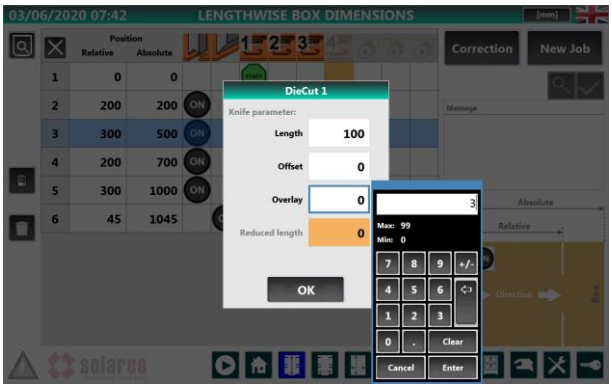


Fig. 6.2.14: Setting die-cut parameters

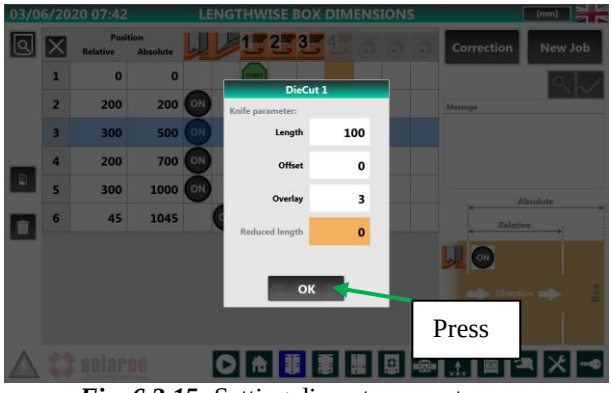


Fig. 6.2.15: Setting die-cut parameters

6.2.1. “Crosswise Box Dimensions” screen

6.2.1.1. Slot and creasing



Fig. 6.2.16: Crosswise Box Dimensions button (CBD)

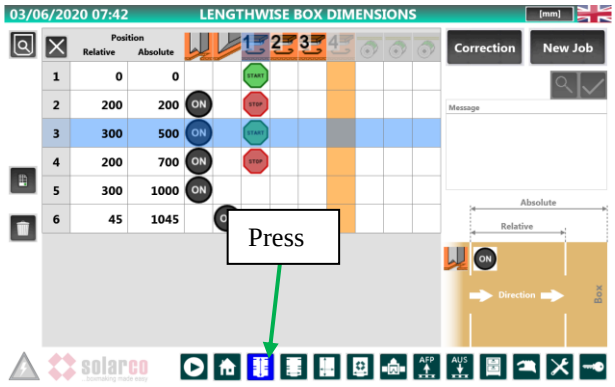


Fig. 6.2.16: Box Dimensions – select CBD

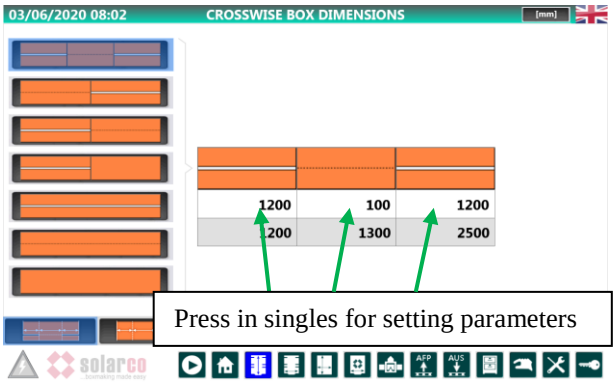


Fig. 6.2.17: Crosswise Box Dimensions

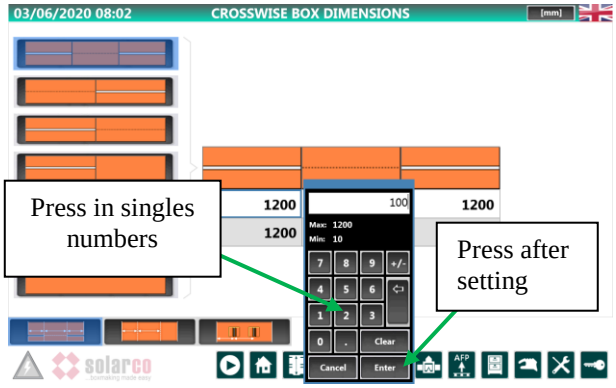


Fig. 6.2.18: Crosswise Box Dimensions setup value

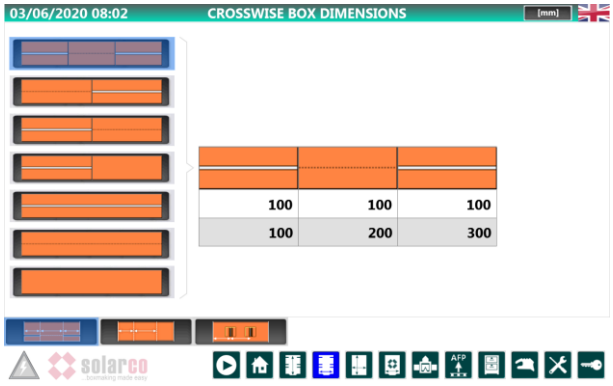


Fig. 6.2.19: Crosswise Box Dimensions after setup

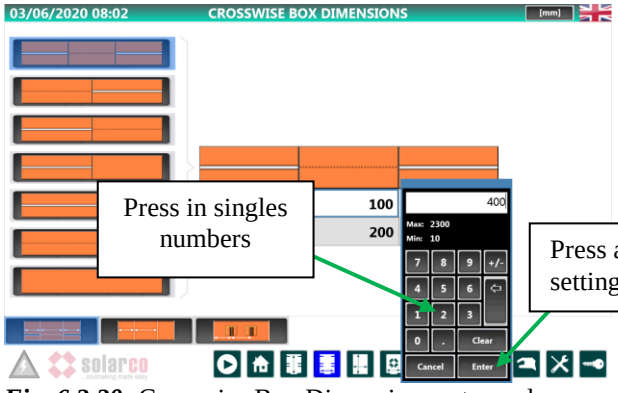


Fig. 6.2.20: Crosswise Box Dimensions setup value

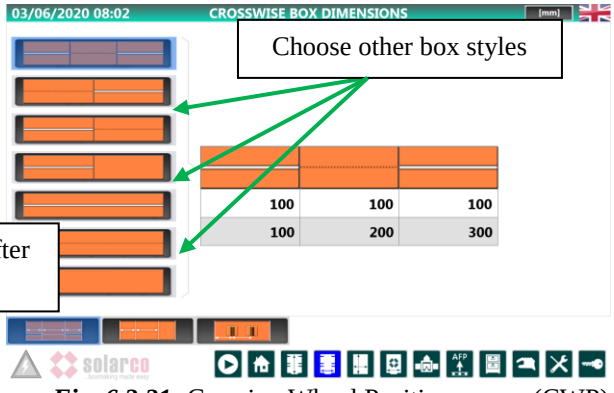


Fig. 6.2.21: Creasing Wheel Position screen (CWP)

Note: If there is any value in this screen, then other cross dimension screen are available to edit.

6.2.1.2. Creasing wheel position

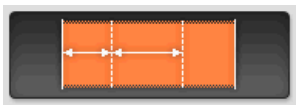


Fig. 6.2.21: Creasing Wheel Position button (**CWP**)

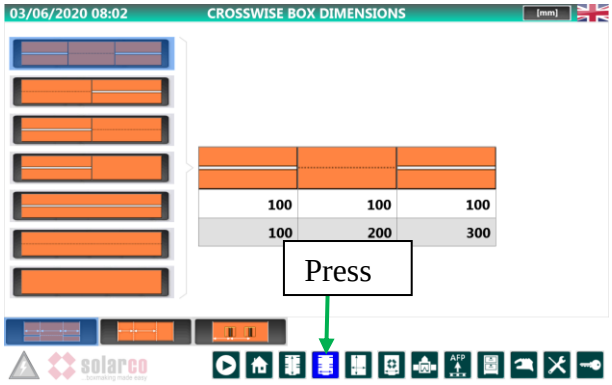


Fig. 6.2.21: CWP – select CWP

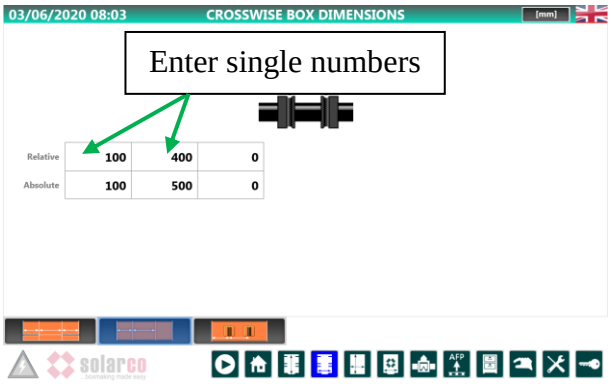


Fig. 6.2.22: Creasing Wheel Position

6.2.1.3. Die-cut tool position

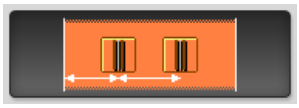


Fig. 6.2.25: DC Knives Position button

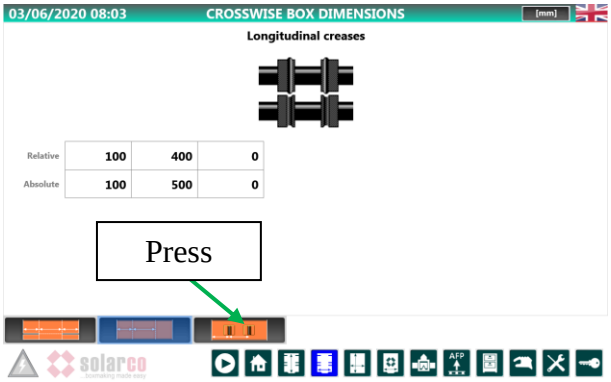


Fig. 6.2.26: CWP – select DC Knives Position screen

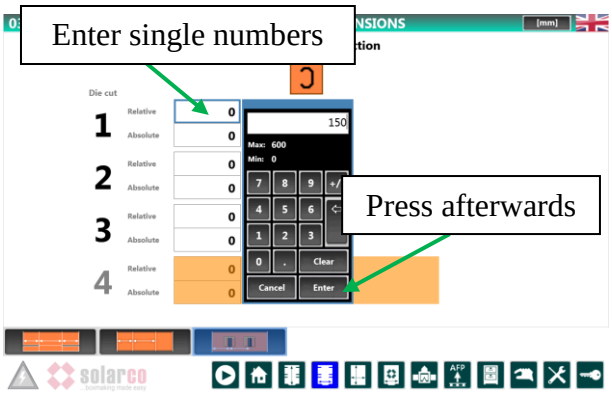


Fig. 6.2.27: Crosswise Box Dimensions of DC

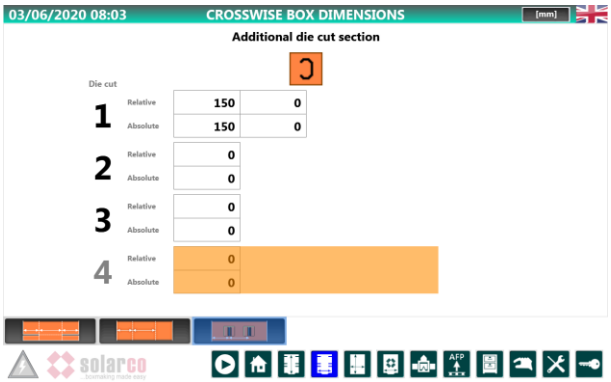


Fig. 6.2.29: Entered DC knives dimensions

6.3. “Sheet Dimensions” screen



Fig. 6.3.1: Sheet Dimensions button (**SD**)

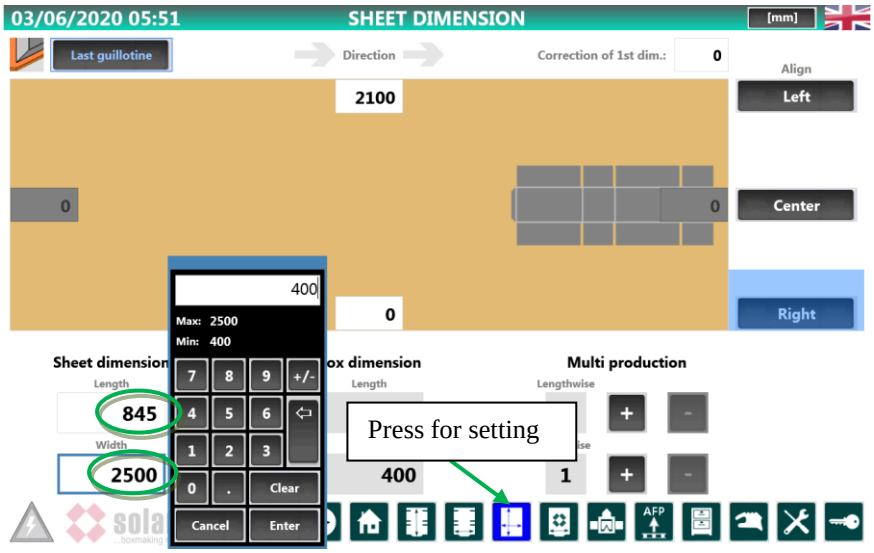


Fig. 6.3.3: Sheet Dimensions

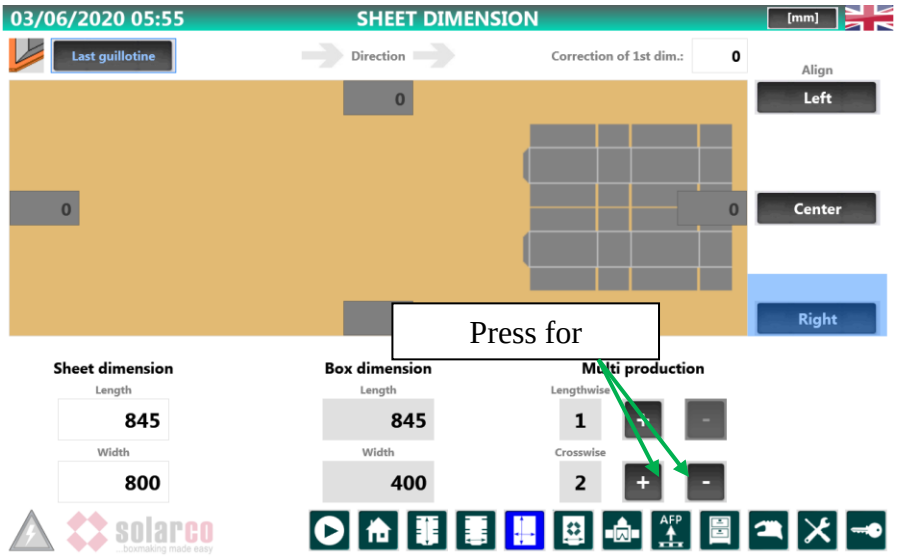


Fig. 6.3.4: Multi production (multi out)

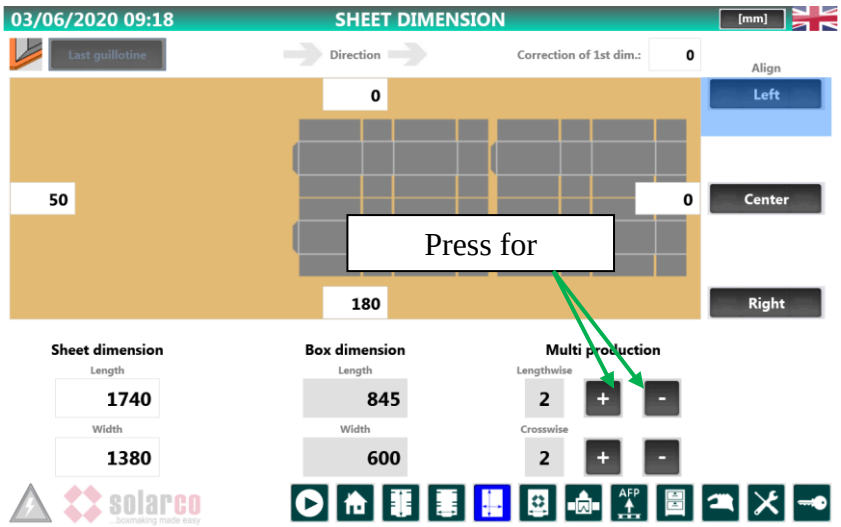


Fig. 6.3.5: Multi production (multi up)

By default, the sheet dimensions are automatically set to the minimal necessary dimensions calculated from the box dimensions. To change the sheet dimensions, push the button with equality sign. This will enable the sheet dimensions fields so that you can change their values. If the sheet is larger than the box (or boxes), you can position the boxes on the sheet image the way shown in the Fig. 6.3.5.

This screen also allows you to setup so-called multi production, which means the machine produces boxes two out way or three out way. Obviously, you will need enough wide sheet.

For instance, if the job you need to run requires sheet 400 mm by 845 mm and the sheet you have is 980 mm by 895 mm, you can use double production (two out way):

Once you've set the sheet dimensions and double production, you can change the margins (waste) on the sheet. This allows you to either maximize the size of your waste so that you may use it (waste) on other jobs, or minimize it, so that it is easier to handle and recycle.

Note: When cardboard dimensions are bigger than necessary dimensions (there is some value on the rear edge field), you can edit marked front margin field and you can put the value up to value originally on the rear margin field. Then machine works so that inserted dimension will be cutted out by guillotine, but it has no affect for the next boxes in case of the lengthways multi production. This behavior can be useful when you need to cut out damaged leading edge of the cardboard.

Differences at positions of crosswise tools by various align of boxes on the sheet.

I.

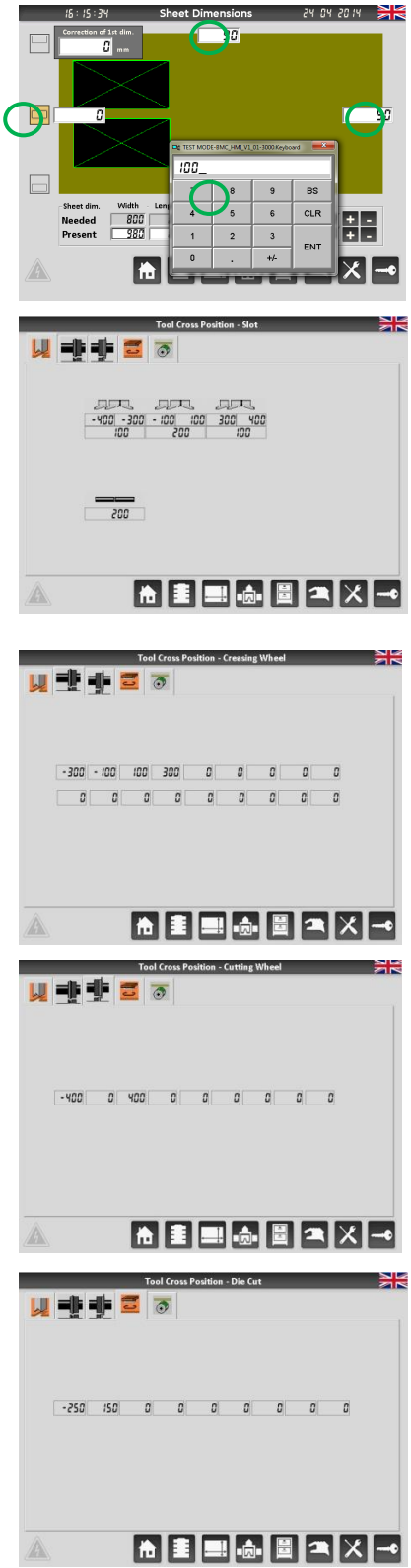


Fig. 6.3.12: Sheet Dimensions

II.

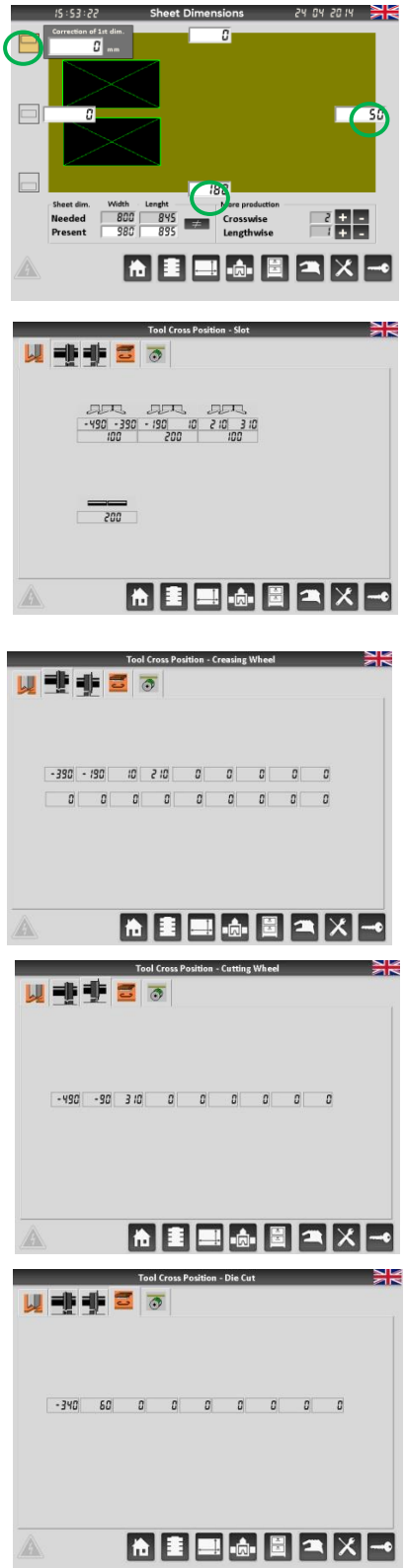


Fig. 6.3.13: Sheet Dimensions

III.

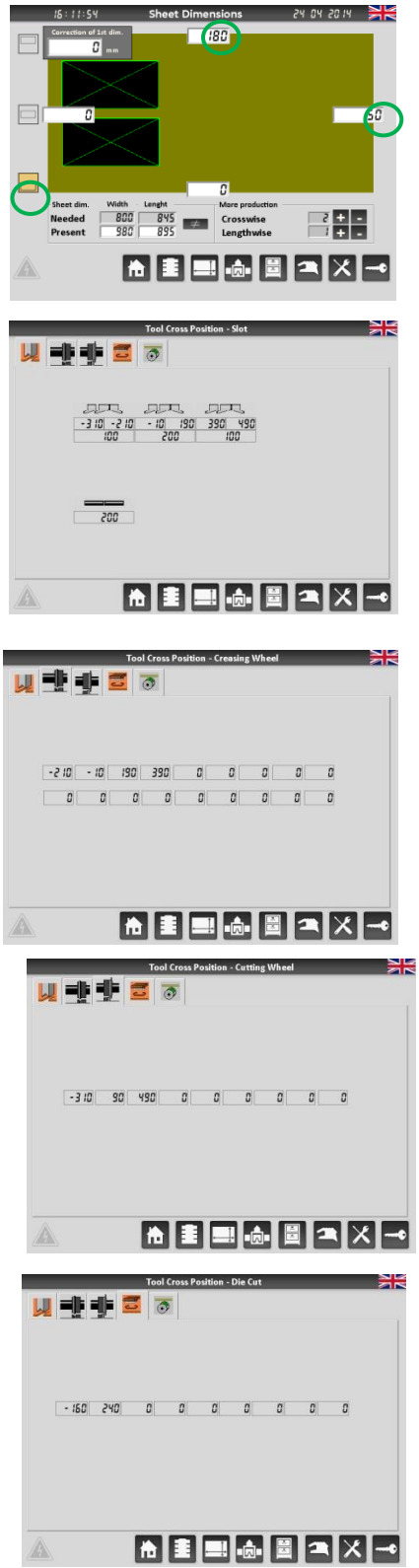


Fig. 6.3.14: Sheet Dimensions

If you set the sheet dimensions too small, the sheet margins fields will change color to red to indicate invalid input.

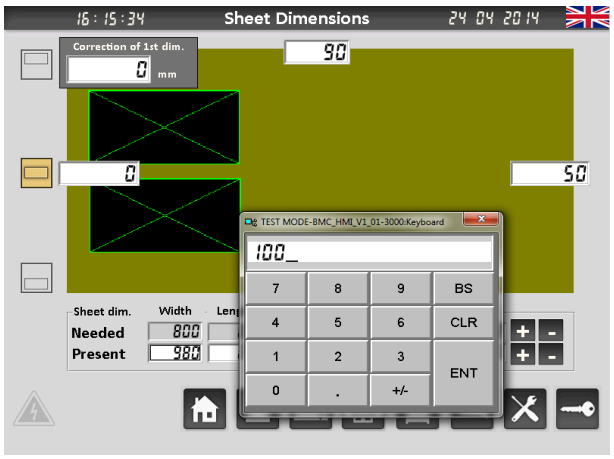


Fig. 6.3.15: Sheet Dimensions

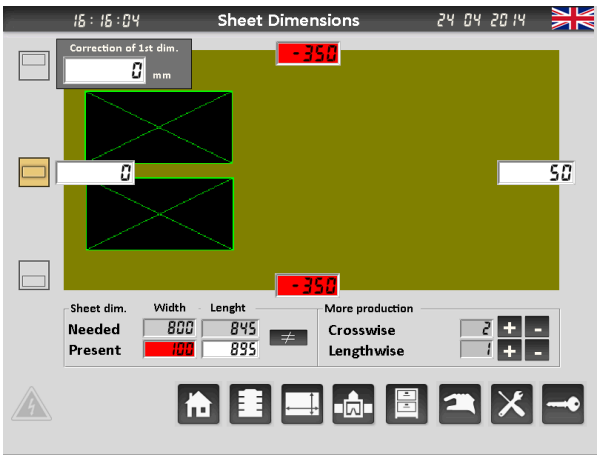


Fig. 6.3.16: Sheet Dimensions

Set up width of the sheet is limited by width of the machine. I you will set up bigger width then is allowed by machine type, this mistake will be indicated by the same way as in case of faulty setting of the sheet dimensions.

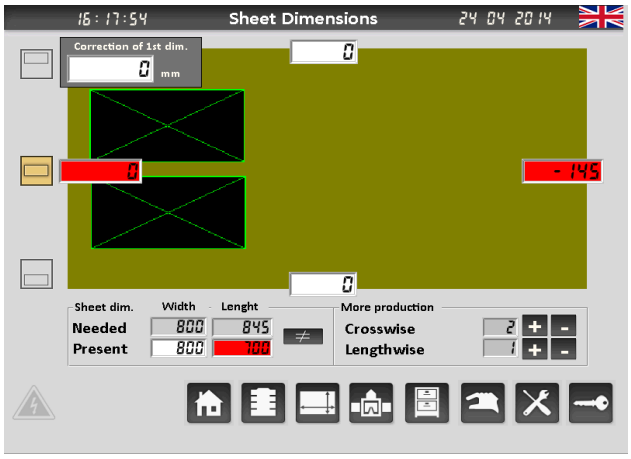


***Fig. 6.3.17*:** Sheet Dimensions

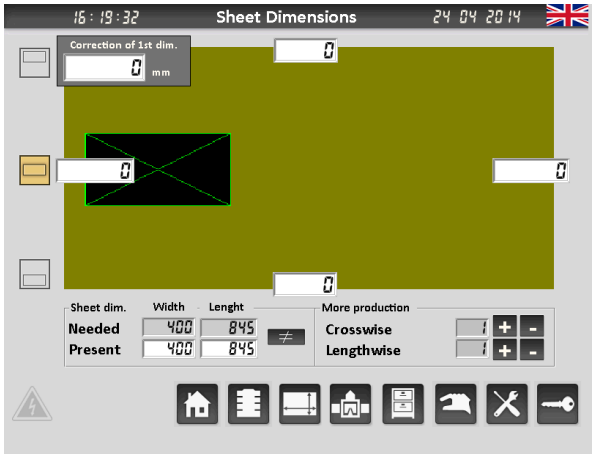
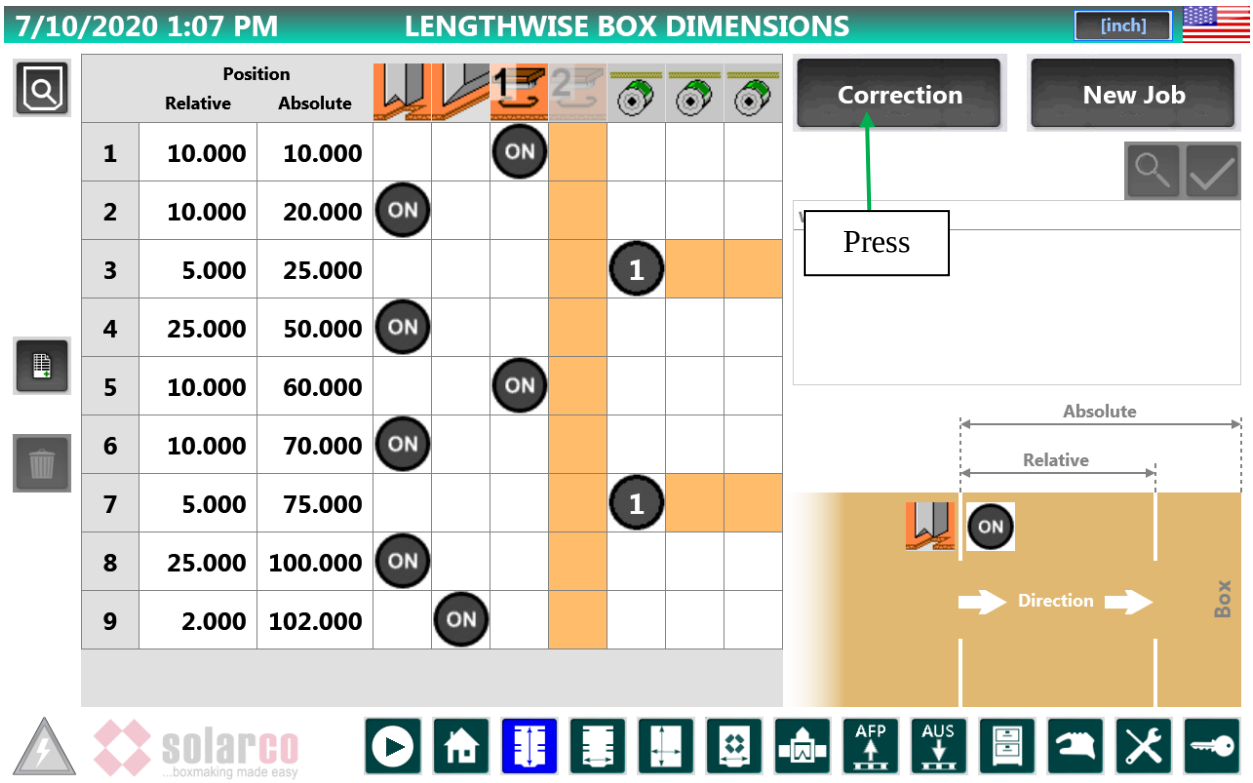


Fig. 6.3.18: Sheet Dimensions

By the multiproduction job you can make a distance correction on the each production step. Press the requested **<u>icon Correction</u>**.



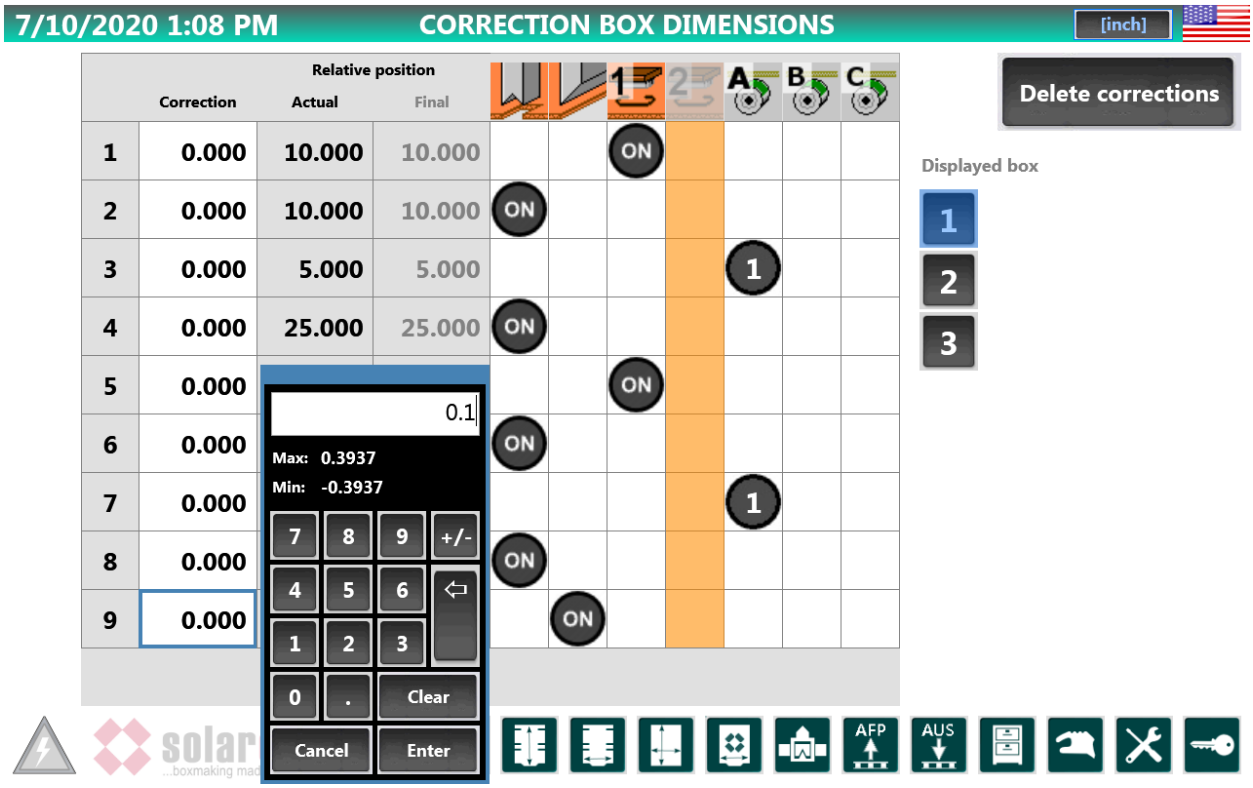


Fig. 6.3.19: Box Dimension – distance correction

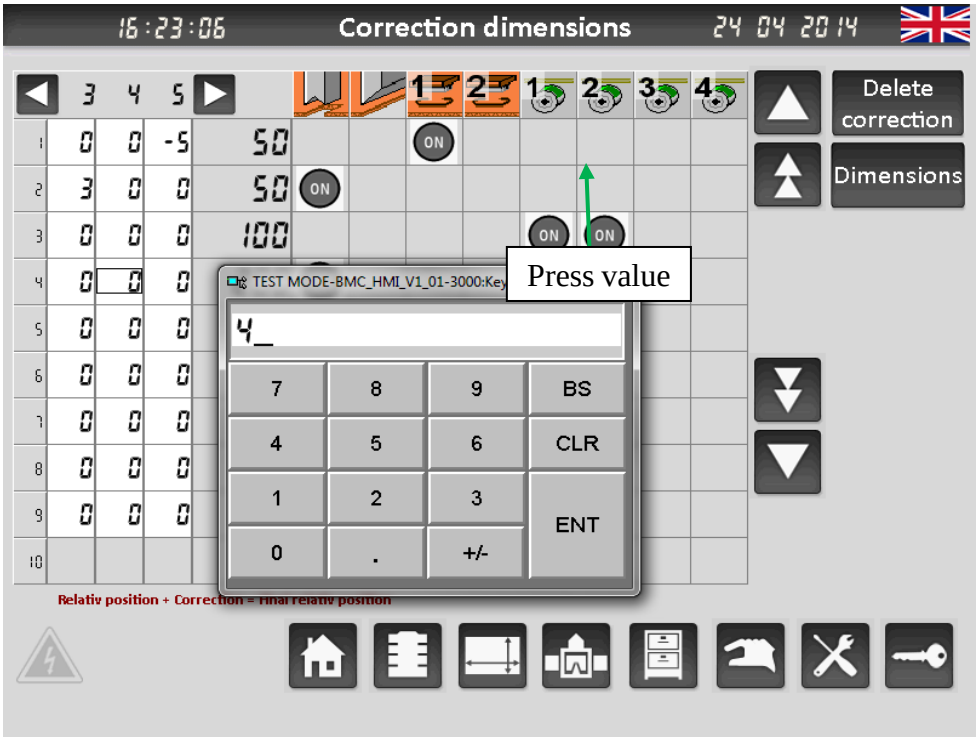


Fig. 6.3.20: Insert new value

Please note, by the correction the tools icons are not active more.

6.4. "Main menu" screen



Fig. 6.4.1: The main menu button

Enter the number of boxes to be produced. After producing this number of boxes, the machine automatically stops the production cycle. If you want to keep machine working as long as you feed the sheets, enter zero (0) boxes. Both the number of remaining boxes and the number of boxes already produced remains in the memory even after the main switch is turned off. Machine stops production cycle if there is no cardboard on the lifting table or until you will press button "STOP" as well.

If a sensor which checks position of inserted sheet does not indicate an exact position of its front edge due lower quality of cardboard, is necessary correct position by setting "Correction of 1st dimension". You can change this value max. +/- 10 mm.

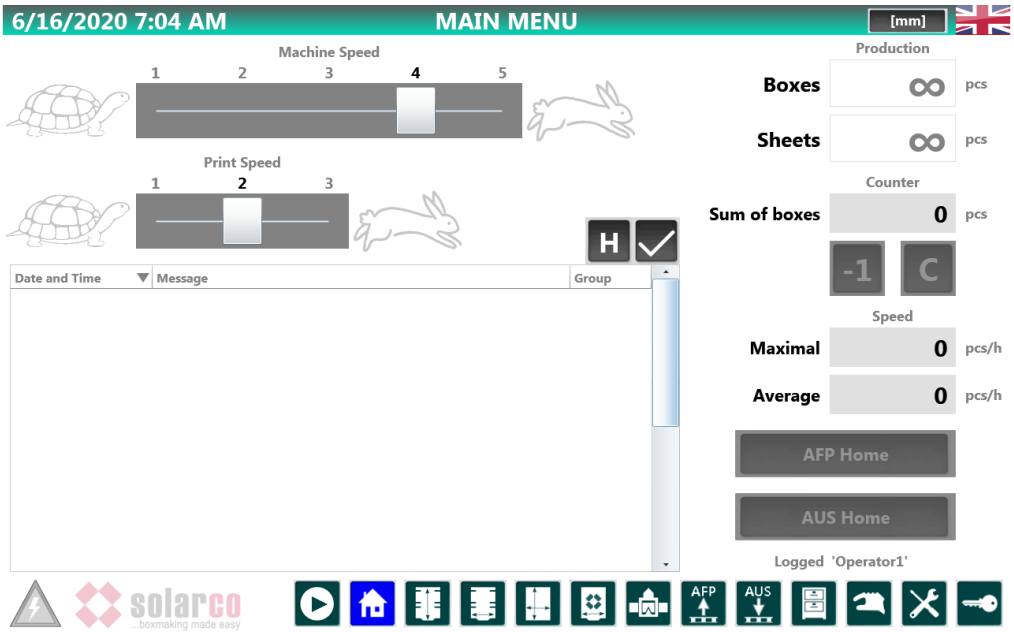


Fig. 6.4.2: Main Menu, setting pcs

1. Select the production speed using a slider. The slider has five positions representing five speed profiles. The lowest speed is marked by the image of a turtle, while the highest speed is represented by a rabbit.

2. Make sure the power is on (the power icon should be colored in). To turn the power on, you have to close all covers, make sure none of the emergency Stop buttons is pressed and area of safety scanner is clear. Turn the Power button “ON” (it is an actual physical button). If the power is on you can start production cycle by pressing the "START" button. You can stop cycle anytime by pressing “STOP” button. (This option is valid only for models with automatic feeder).

   Models M with manual feedenig use for start and stop of production cycle two buttons on the back side of machine (see Fig. 5.4.3)

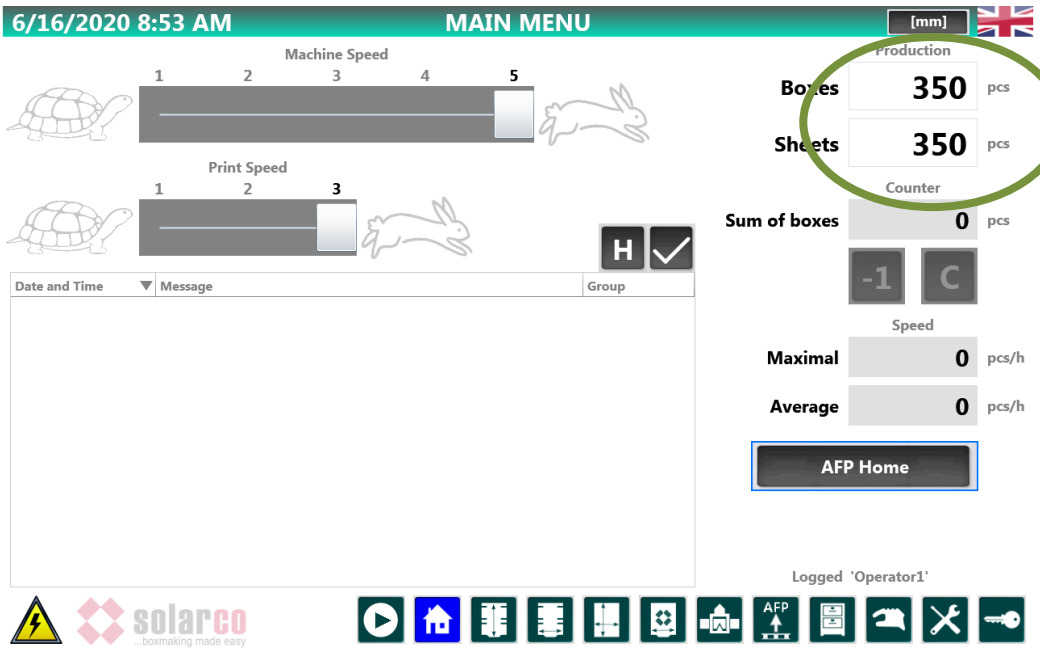


Fig. 6.4.3: Main Menu, setting pcs

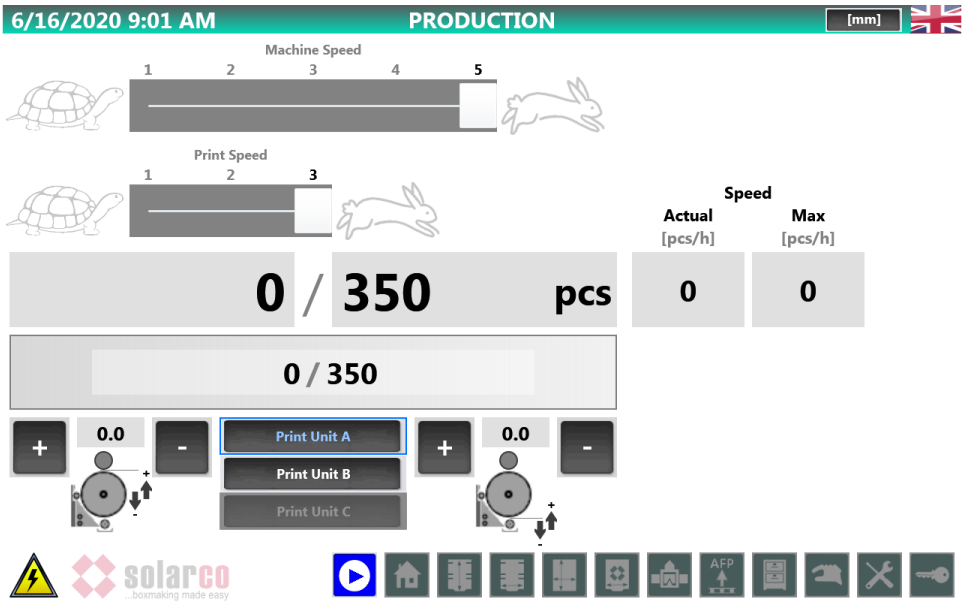


Fig. 6.4.5: Production menu

3. When the production cycle is ON, the production menu shows the number of the made boxes.

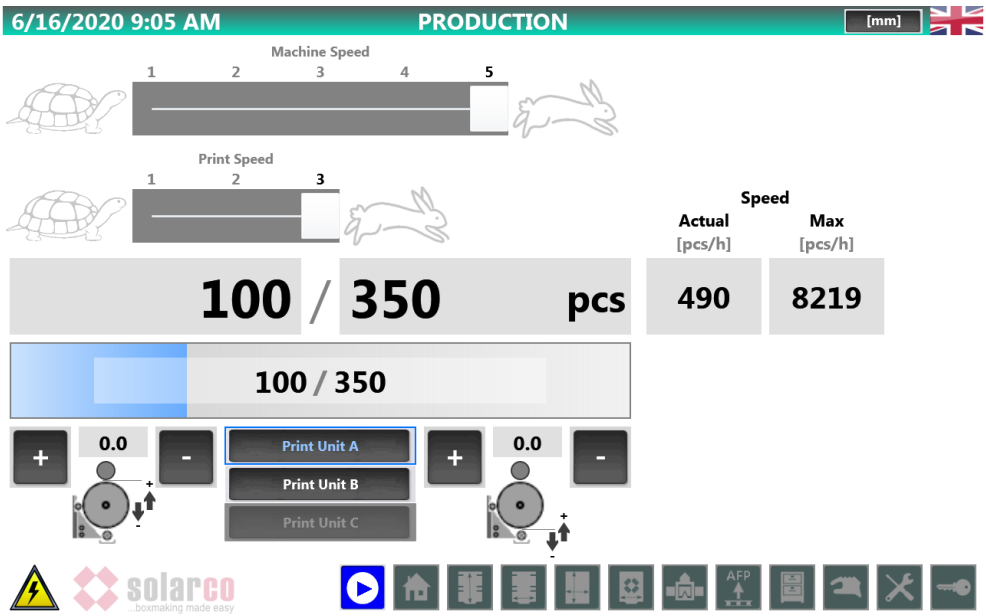


Fig. 6.4.6: Production menu

6.5. “Manual control” screen



Fig. 6.5.1: Manual control screen button

You can use the manual control screen to move the shafts forward and backward or to move by all tools as the slotting beam, guillotine etc.

On the upper part of the screen, there are buttons controlling the shafts. Use the arrows to move the shafts forward and backward. Use the slider to select one of the five speeds (1 is the lowest, 5 is the highest). Note that this speed does not influence the production speed of the machine. You can use the forward / reverse buttons on the cabinet as well.

On the bottom part of the screen, there are buttons controlling tools (there can be up to 5 tools according machine type). The button with a single arrow, moving the beam, operates in two modes. When the beam stays in its “home position”, then it will make a cycle. If it starts from other position, then beam returns back to home position first. The button with several arrows will move the beam only by a small step.

Note that this velocity shift is independent of the production speed of the machine.

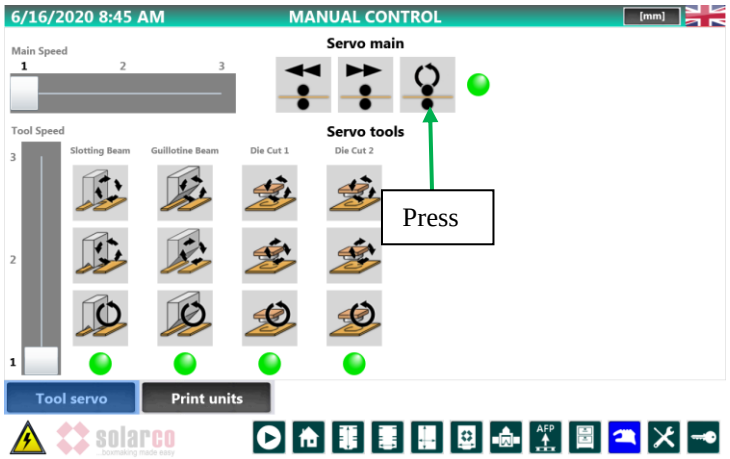


Fig. 6.5.2: Manual control screen – active

To adjust all shafts to their start position - press this icon.

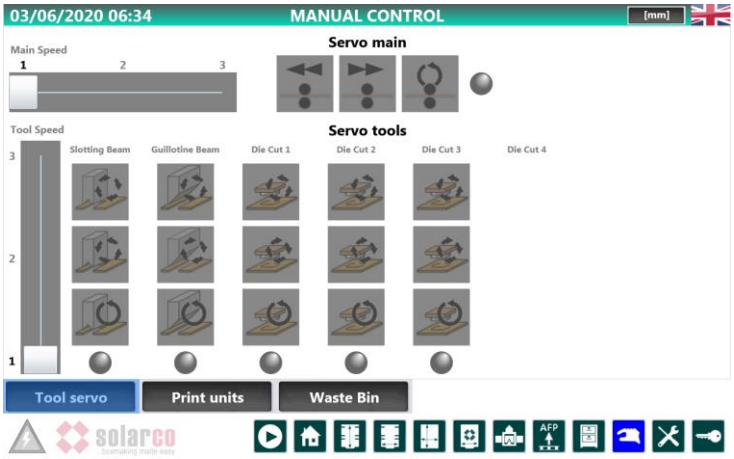


Fig. 6.5.3: Manual control screen – non active

6.6. “Service” screen



Fig. 6.6.1: Service screen button

The service screen displays several counters. There is a total processed sheets counter, slotting beam brake counter and cycle counter and production time clock.

Perhaps the most import counter is the slotting beam brake counter, because it is necessary to adjust the brake regularly. There are two brake counters. One of them can be reset and it is there to show the operator when to adjust the motor brake. After you’ve adjusted the brake, reset the counter. Repeat when the counter reaches a prescribed limit. The second counter counts total number of times the brake has been applied. It’s not possible to reset this counter.

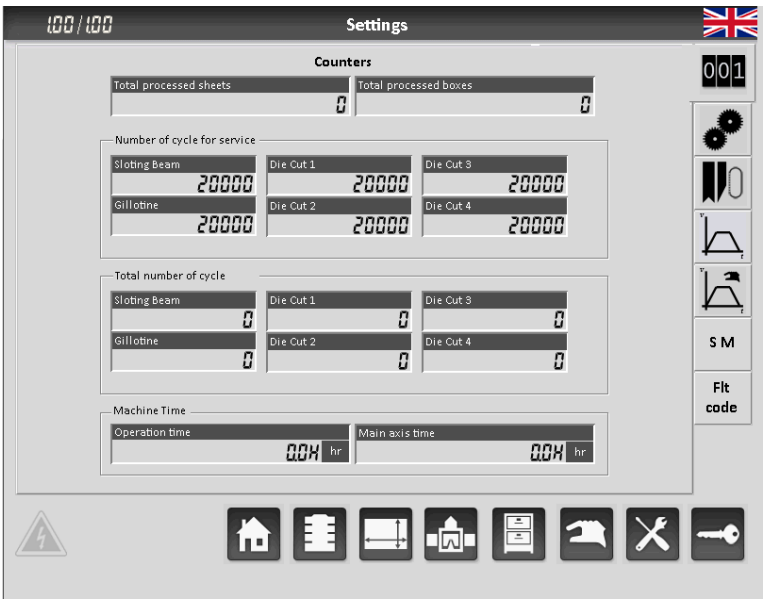


Fig. 6.6.2: Service screen

6.7. Die-Cut operation

If die-cut works as two separate die-cuts or as one die-cut, it depends on used movable arms covers. If one for each separated die-cut is used, then two separate die cuts are available.

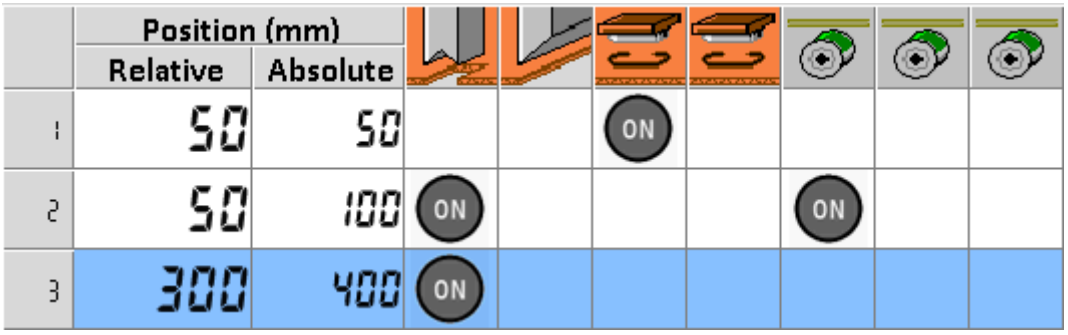


Fig. 6.7.1: Detail of die-cut setting

If one cover for both of them is used, then only one column is available for box dimension setting.

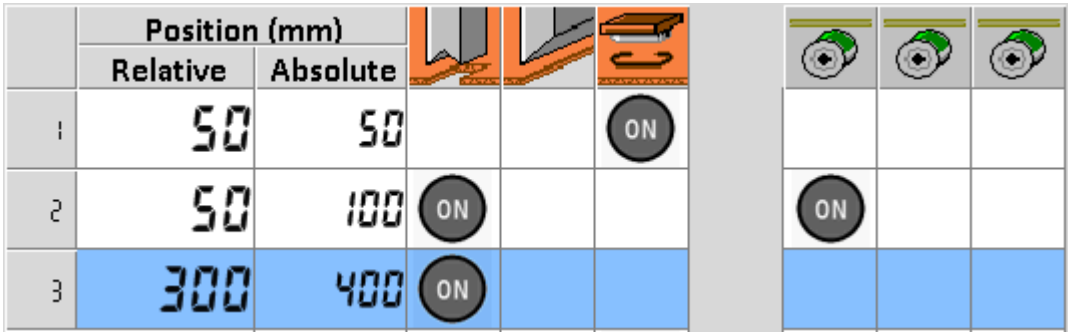
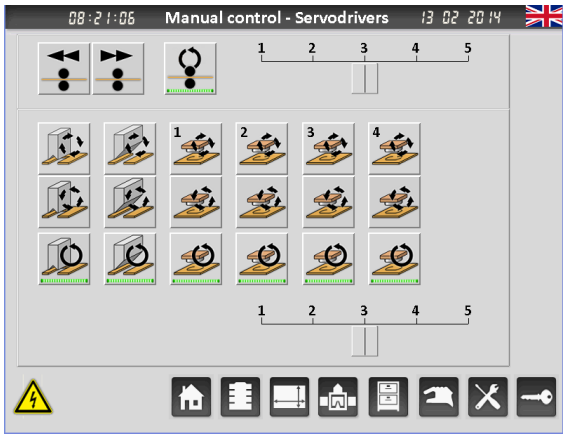


Fig. 6.7.2: Detail of screen die-cut when one die-cut used.

The same procedure is valid for manual operation.



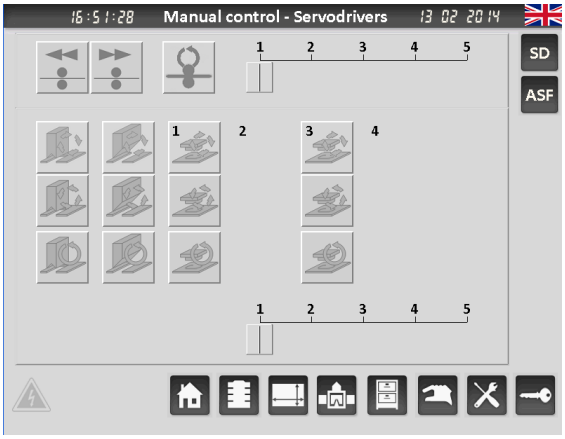


Fig. 6.7.3: One die-cut as one

Fig. 6.7.4: Two die-cuts separately

There is a sensor to recognize the die-cut movable arms cover. To change a cover it should be min. 5 sec. covered / uncovered.

Note: Prior to the common cover is installed, both separate die cuts MUST be moved to the home position manually by cycle button on the touch screen.

6.8. "Job management" screen



Fig. 6.8.1: Job management button (**JM**)

6.8.1. Saving a job

Once you've checked that all the job parameters are correct, you can save the job. You may recall that saved job later in the case you need it again or have a similar job. To save a job, go to the Job Management screen, then push the button with the image of a floppy disk. This button will open a dialog that let you enter some details about the job. After you've filled them in, press the "Save" button on the dialog.

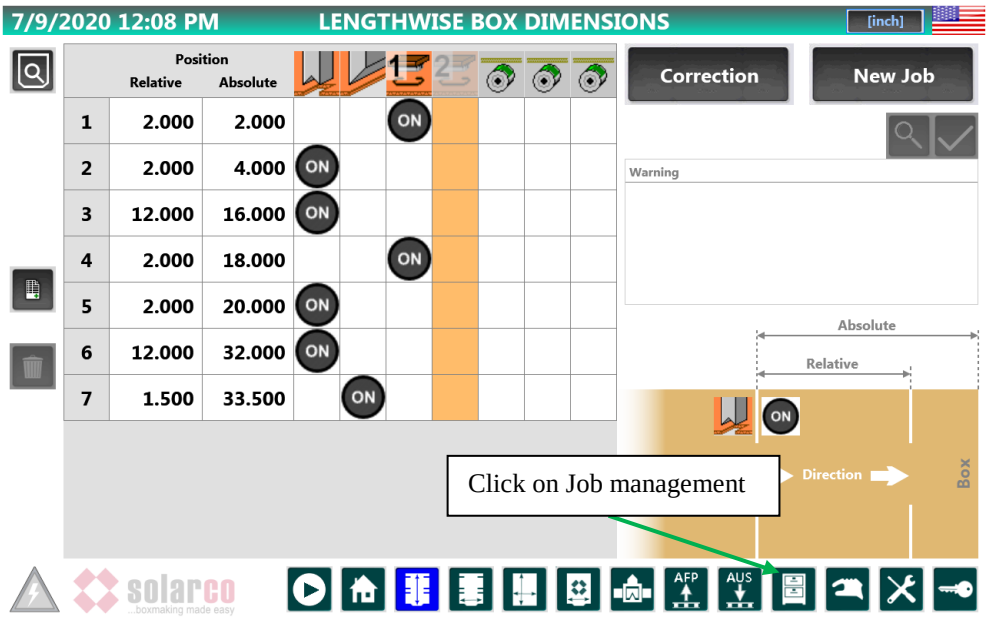


Fig. 6.8.1.1: Box Dimensions screen – click on Job Management

Add new customer and save his orders in the file.

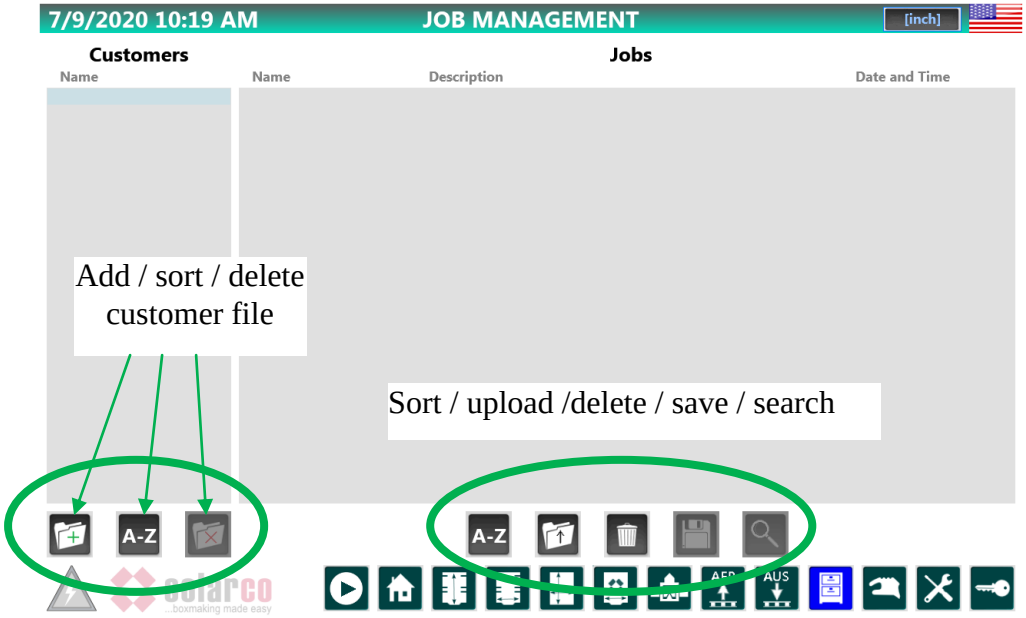


Fig. 6.8.1.2: Job Management screen

Add various jobs using unique ID. Fill Job name and description. Save as new or overwrite previous job.

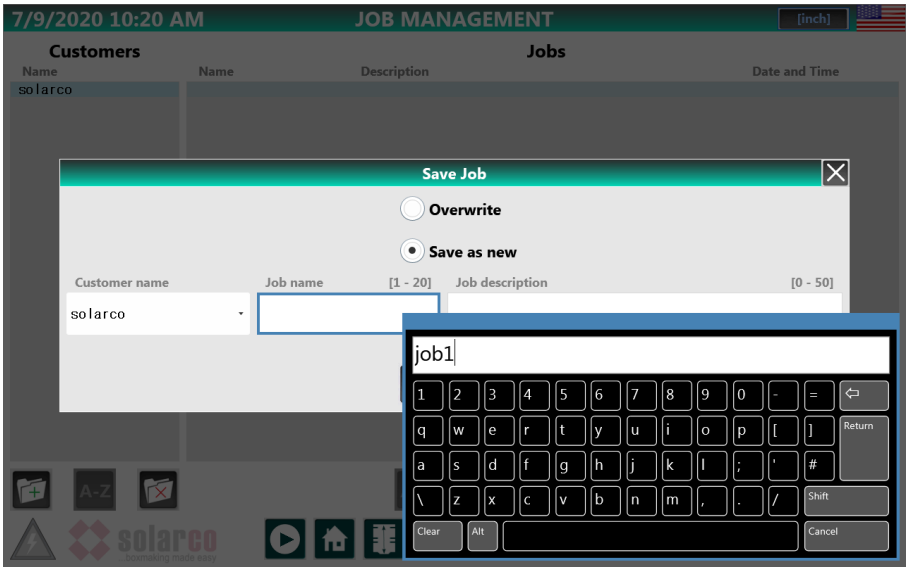


Fig. 6.8.1.3: Saving job.

6.9. “Tool Positions” screen



Fig. 6.9.1: Tool positions button

The tool positions screen displays the transversal position of the tools (the creasing and slotting knives and the creasing and slitting wheels) needed to be set to. The zero on the ruler (Fig. 5.5.6.1) is the longitudinal axis of the machine. Negative values are measured from the axis to the left; the positive values are measured from the axis to the right. These positions are valid for the box placed on the cardboard and for multiproduction as well.

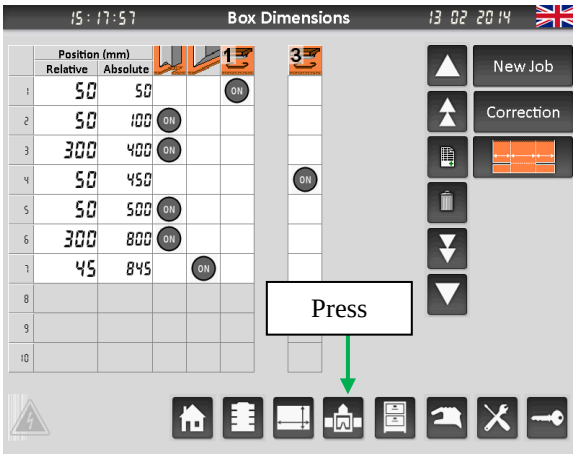


Fig. 6.9.2: Box Dimensions – press toll positions button

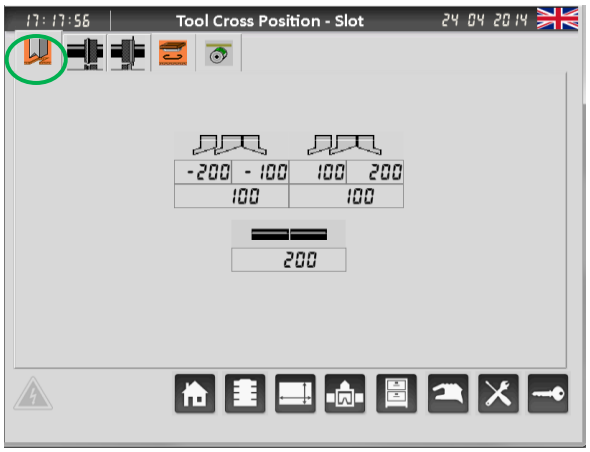


Fig. 6.9.3: Tool Cross Position – slot

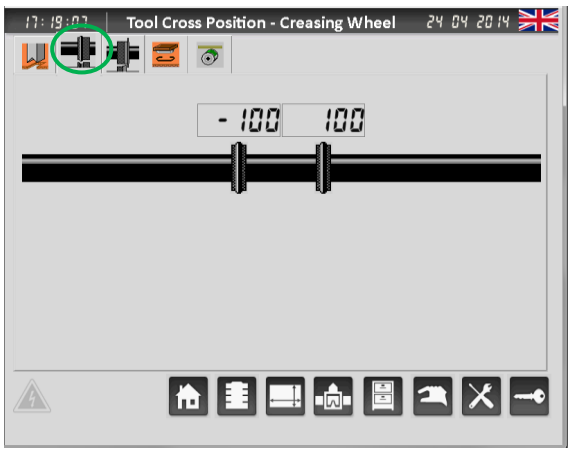


Fig. 6.9.4: Tool Cross Position – Creasing Wheel

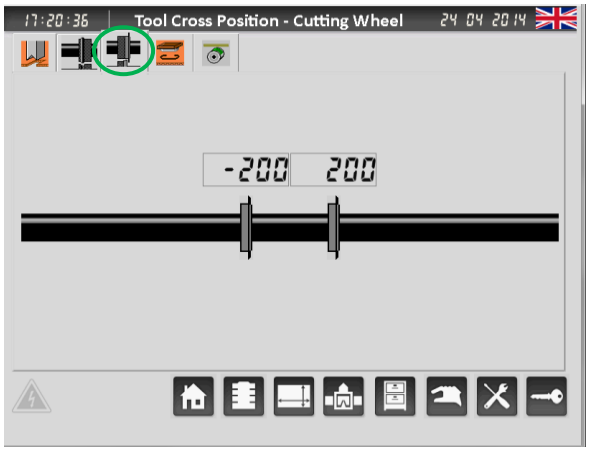


Fig. 6.9.5: Tool Cross Position – Cutting Wheel

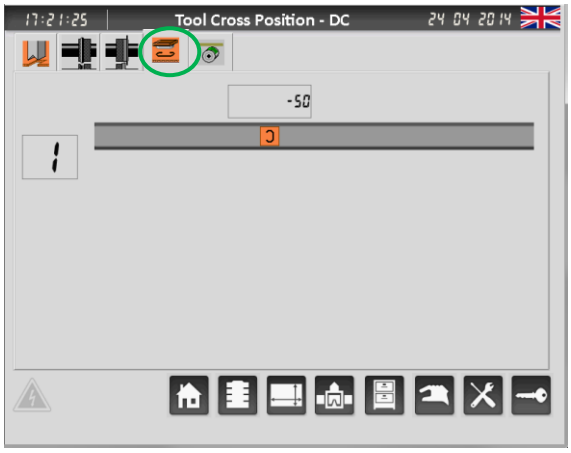
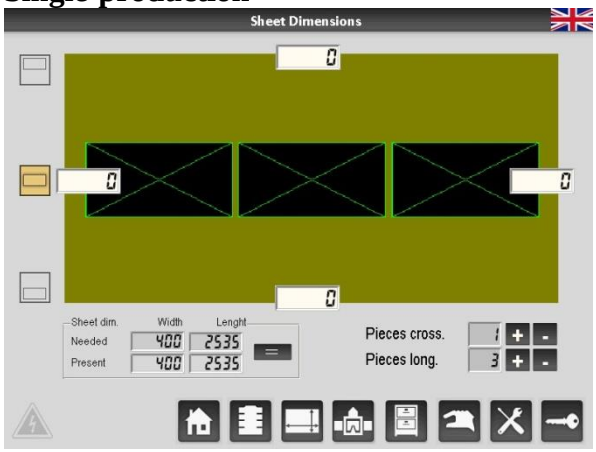


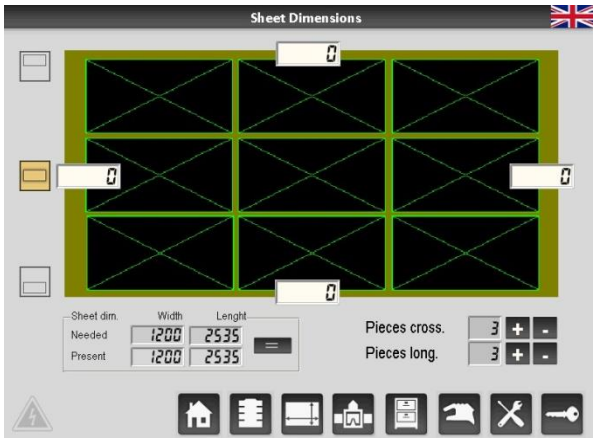
Fig. 6.9.6: Tool Cross Position – Die Cut

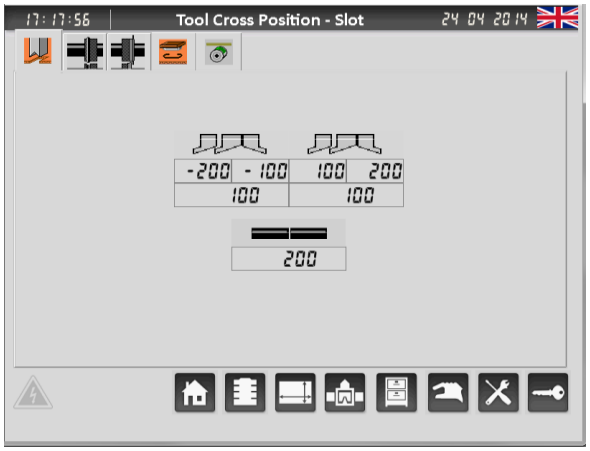
The following is an example of how the multiproduction is changing positions of the tools.

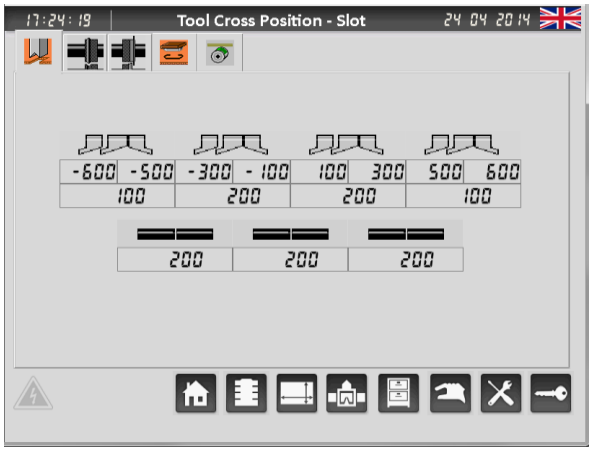
Single-production

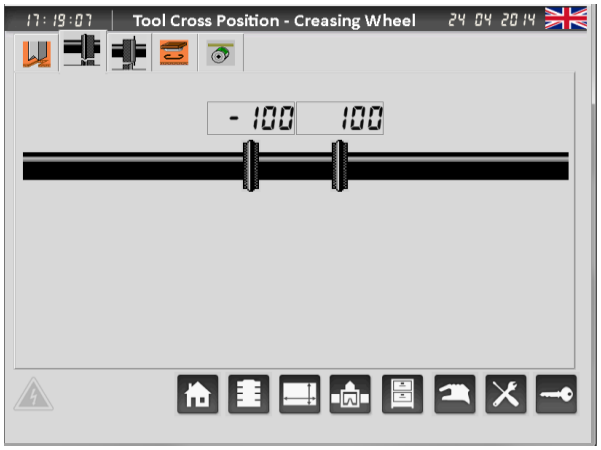


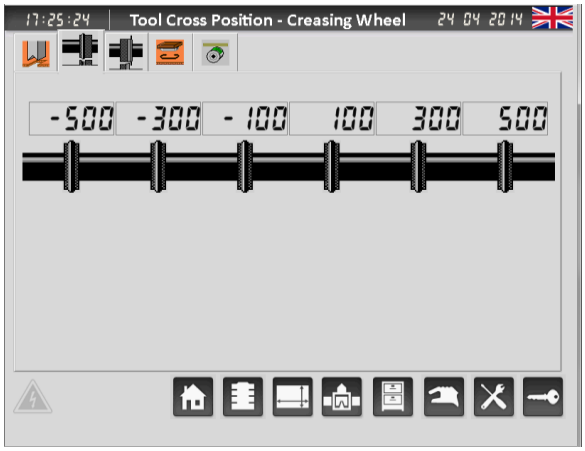
Triple-production

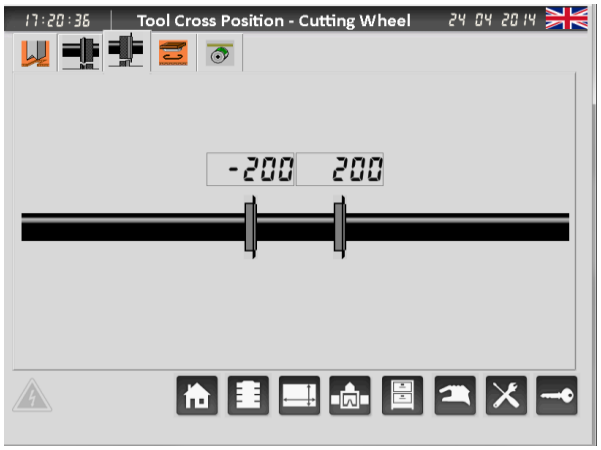


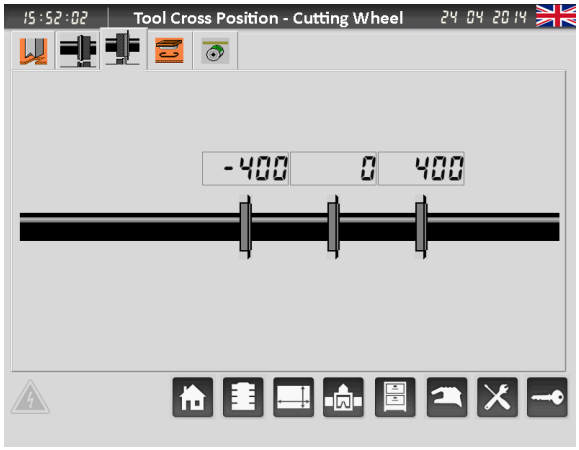




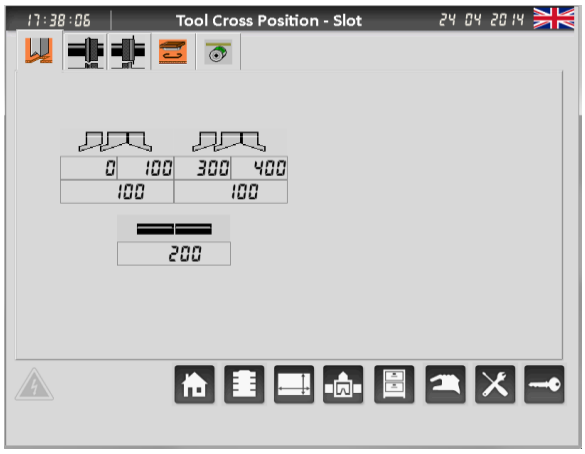


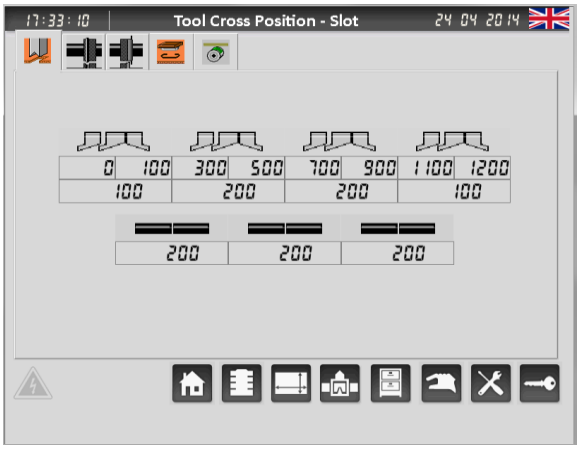


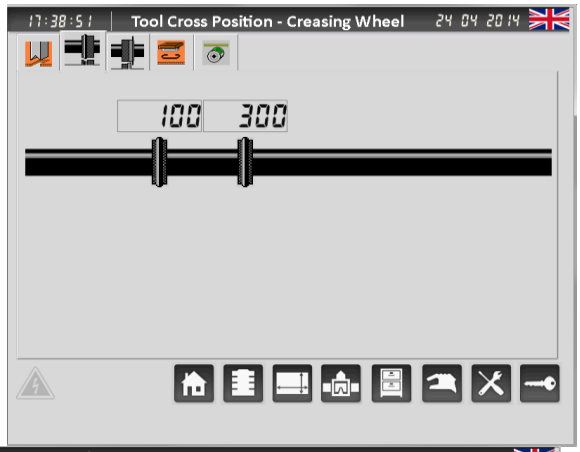


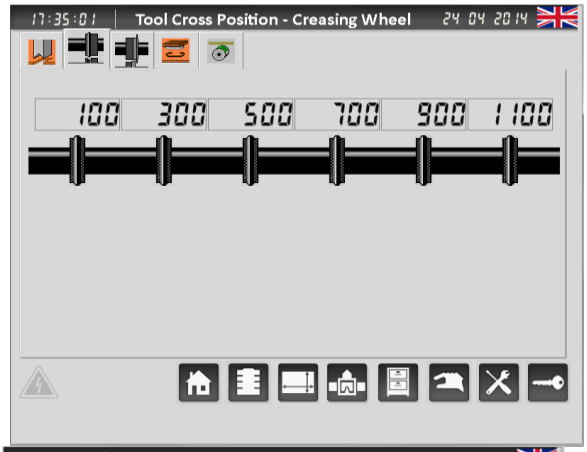


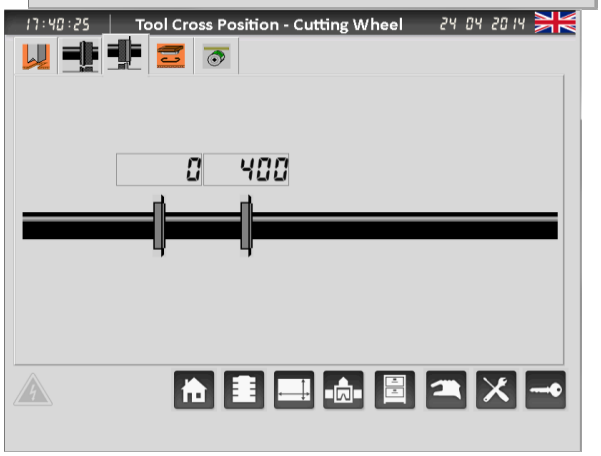
Tools position for ASF loader version

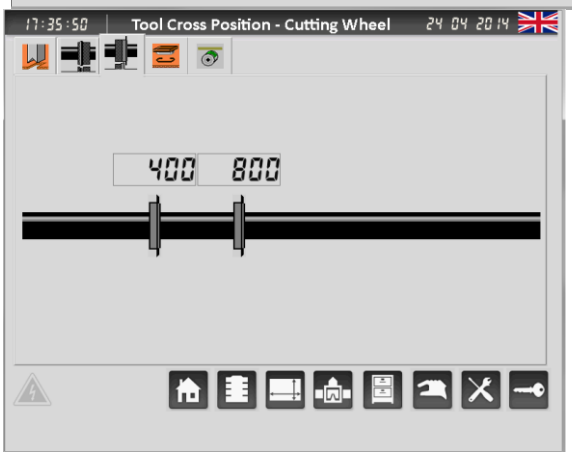





17:38:51
Tool Cross Position - Creasing Wheel
24 04 2014
100 300


17:35:01
Tool Cross Position - Creasing Wheel
24 04 2014
100 300 500 700 900 1100


17:40:25
Tool Cross Position - Cutting Wheel
24 04 2014
0 400


17:35:50
Tool Cross Position - Cutting Wheel
24 04 2014
400 800

7. MAINTENANCE

7.1. Release water

It is necessary to check the water filter and release it if needed **(water in any case must not get into the pneumatic circuit)**. To release water, leave the machine connected to the source of pressured air. Loosen up the nut, which is located at the bottom of the filter receptacle.



Fig. 7.1.1: The water filter

7.2. Greasing

Used lubricants and their equivalents:
Grease: MOGUL LV 2-3 ISO 6743/9 CCEA 2/3

Grease the grease nipples every two months

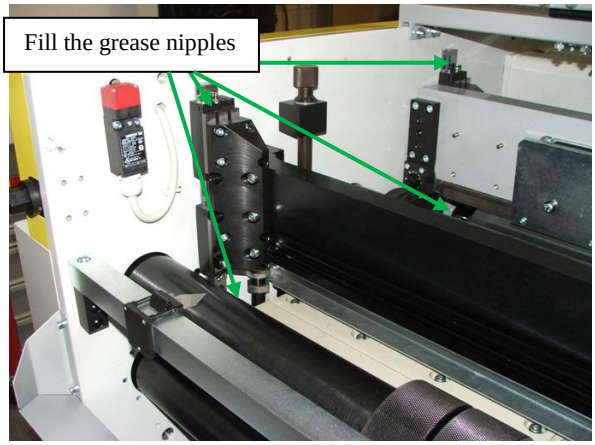


Fig. 7.2.1.

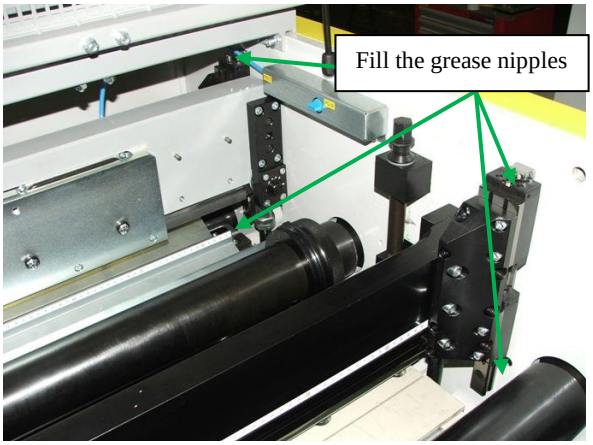


Fig. 7.2.2.

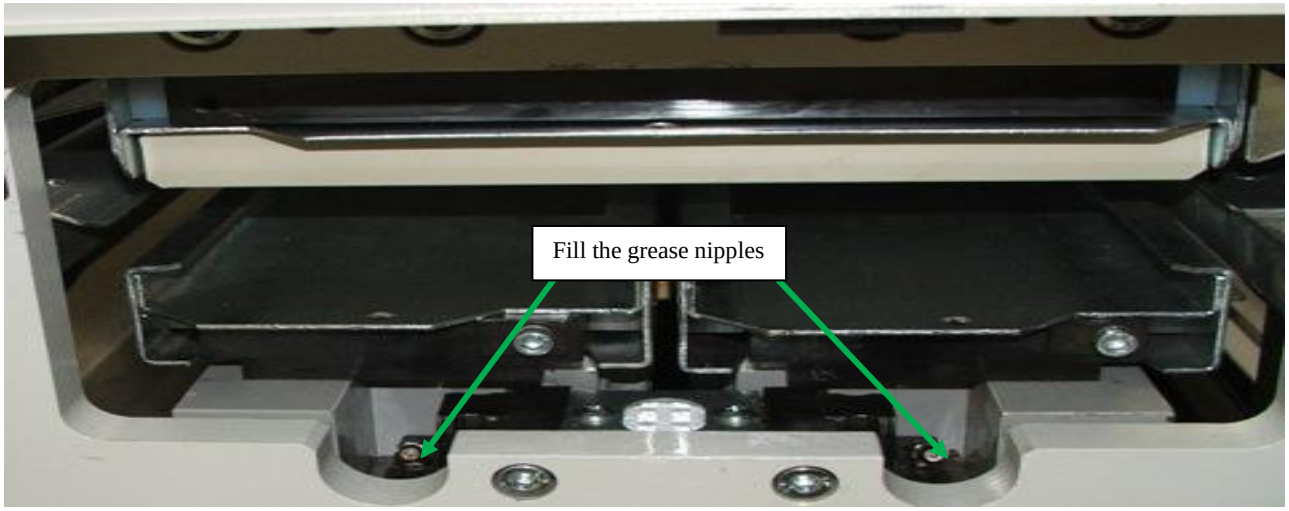


Fig. 7.2.3.

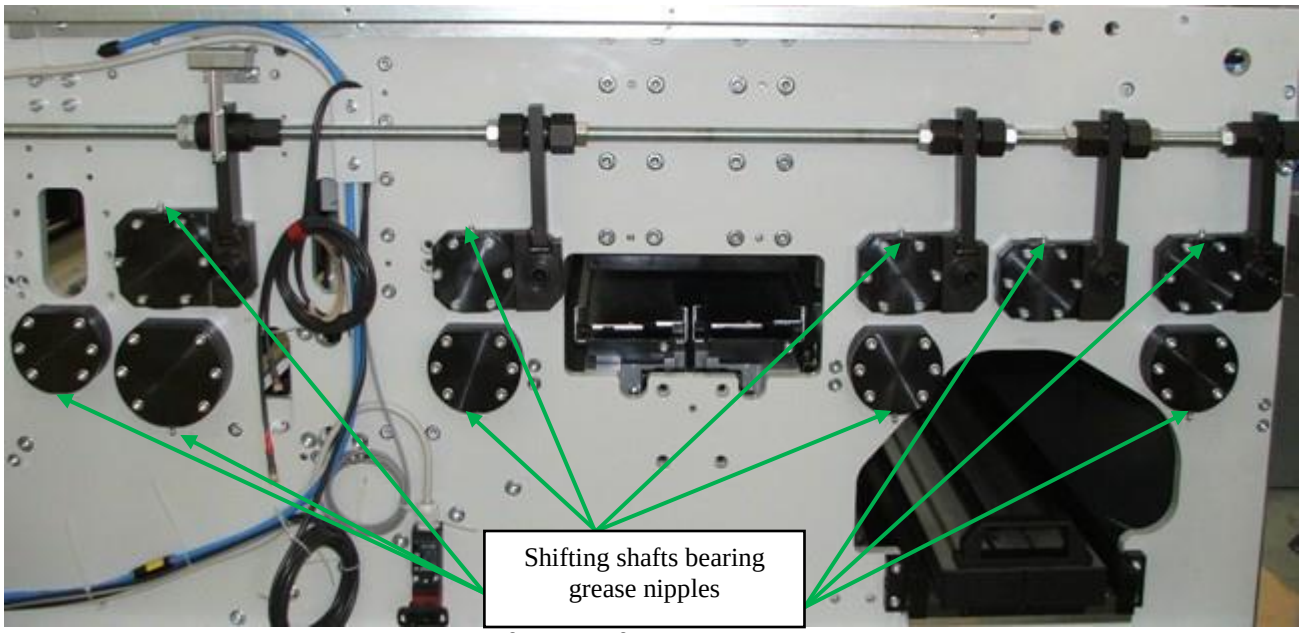


Fig. 7.2.4: Shifting shafts bearing grease nipples

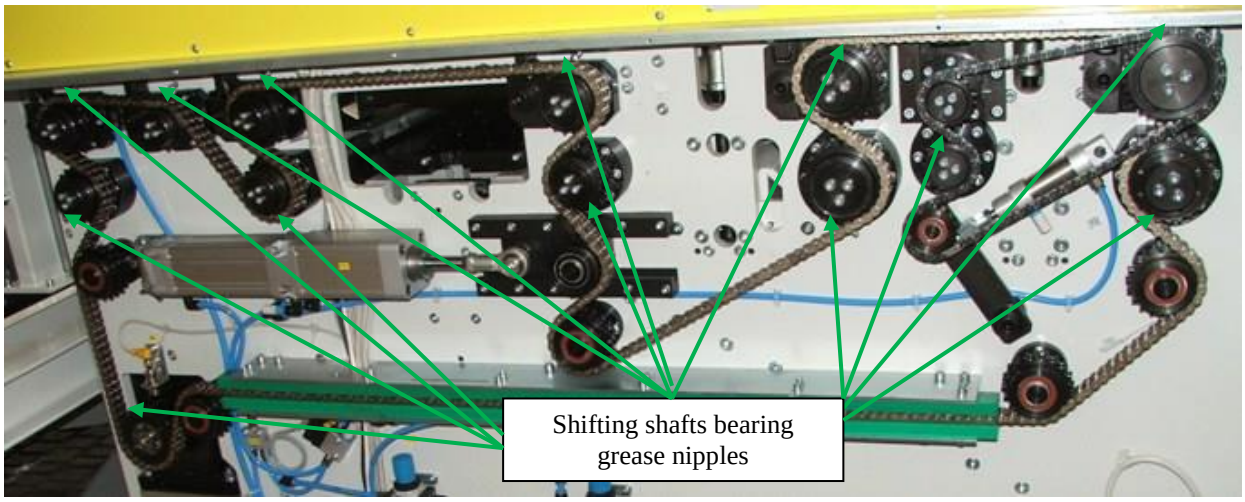


Fig. 7.2.5: Shifting shafts bearing grease nipples

Grease the grease nipples every six months

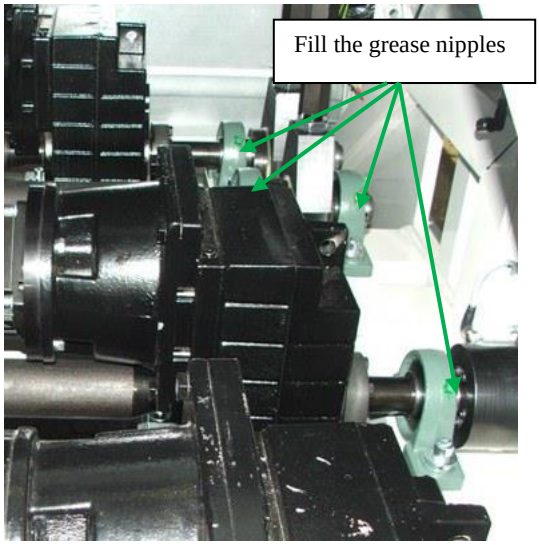


Fig. 7.2.6.

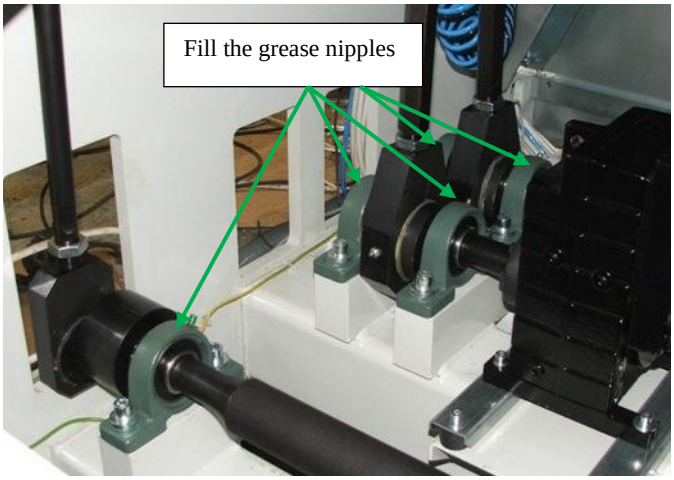


Fig. 7.2.7.

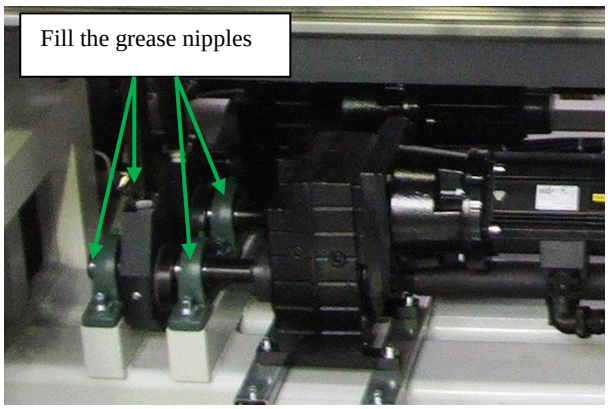


Fig. 7.2.8.

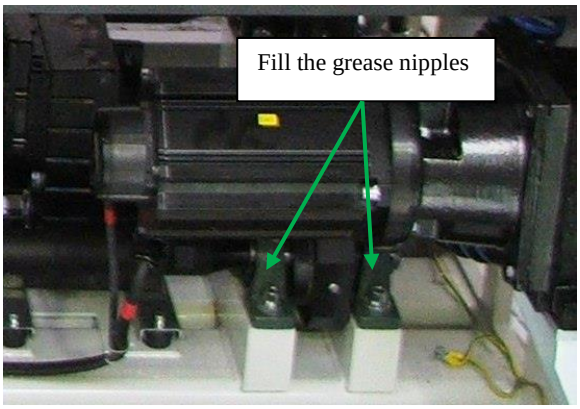


Fig. 7.2.9.

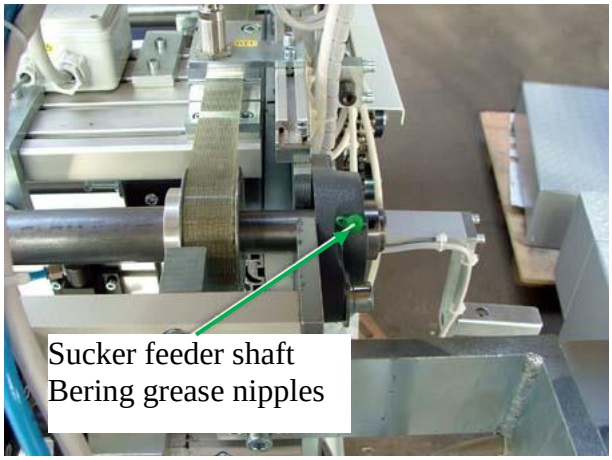


Fig. 7.2.10.



Fig. 7.2.11.

7.3. Replacement of the drive chain and lubrication

ATTENTION: It is necessary to replace the chain after 1 million processed sheets, or in the case the chain extends by more than 3%. The lifespan of the chain and position precision are given for high-rigidity chain IWIS. For other chains, we don't guarantee these parameters. The machine must be disconnected from the source of pressured air during chain replacement and the main switch must be secured by a padlock. To disconnect the machine from a source of pressured air, disconnect the house/pipe leading to the reduction valve.

Only operator or service technician can replace the drive chain.

Procedure:

6. Set the distance between shafts on both sides of the machine to 12.
7. Turn the machine off and disconnect the source of pressured air from it. Secure the main switch against accidental turn by padlock.
8. Set the distance between shafts on both sides of the machine to 1.
9. Dismantle the machine covers on the right side of the machine.
10. Disengage the connection link of the chain and take the chain out. Before putting a new chain in, make sure the chain has the right length (right number of links).
11. Put the covers back on.
12. Connect the pressured air again. The machine is ready for production.

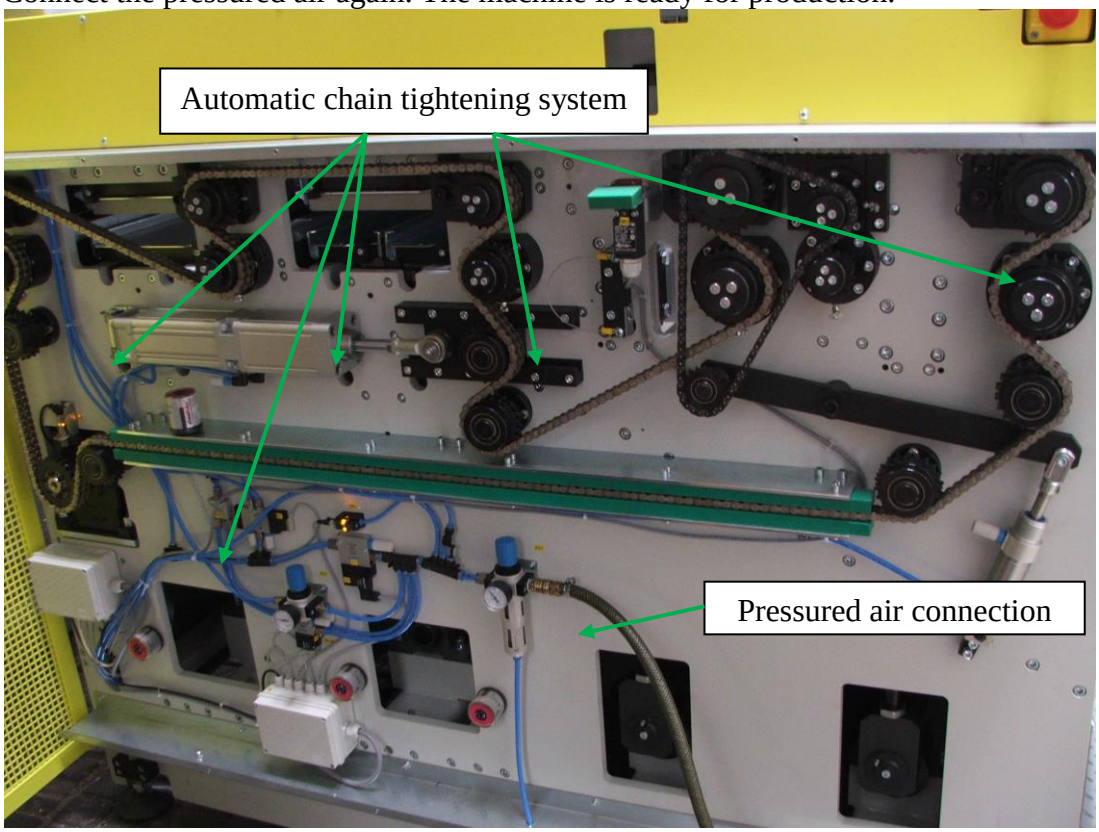


Fig. 7.3.1: Automatic chain tightening system and pressured air connection

ATTENTION: Only a designated service technician can conduct the other operations not described in this manual.

Check and replace at least 1 x per year. Use the original cartridge SIMALUBE SL 14 for the chain and SIMALUBE SL 01 for the die cut beam.

Choose the using setting 12 month (see. Fig. 7.3.1.3.).



Fig. 7.3.1.1.



Fig.7.3.1.2.



Fig. 7.3.1.3.

Plug cut off and screew (see. Fig. 7.3.1.4. , Fig. 7.3.1.5 and Fig. 7.3.1.6.).



Fig.7.3.1.4.



Fig.7.3.1.5. Cartridge Simalube SL 01 (DC vers.)

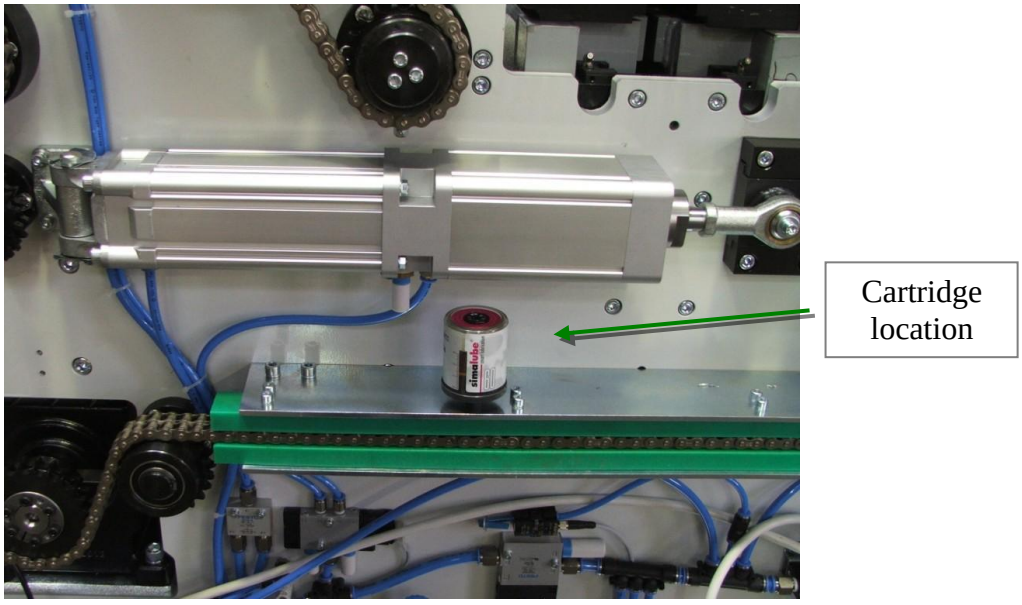


Fig. 7.3.1.6.

7.4. Slotting knives cutting clearance adjustment

Adjustment tools: Six-sided socket screw wrench ..... size 6
Six-sided socket screw wrench ..... size 5
Wrench ..... size 10 2x

Procedure:

Make sure:

13. The upper moveable part of the slotted cut, the beam is in the upper position (after the end of the cycle)
14. If not, used the step-button on the screen to get there.
15. Open the back cover of the machine. Electrical circuit will be turn OFF.
16. Remove the flip-flop ruler placed between the slotted cut and the shaft of creasing wheels.
17. On the inner right side of the machine using the blue valve button, turn the pressured air off for slotted knives.
18. There is a rod with guiding plates of the slotted cut, remove that rod.

Adjustment :

1. Unloose the fastening screws of the lower slotted knives so it's easy to move these knives by hand (screws M8, use the six-sided socket screw wrench num. 6.)
2. Loose the backnuts of the adjusting screws of the lower slotted knives the way you get the screws into the position that you may to distend knives (screws M6 hexagon head-wrench num. 10.).
3. Distend the lower slotted knives as much as possible.
4. Put into the upper beam the slotted knives the way, that the upper slotted knife with its cutting area, will face the spacing between the two lower slotted knives.
5. Secure the upper slotted knives by turning the blue valve button back ON (on the right inner side of the machine).
6. The upper slotted knives have to be placed also above both ends of the last lower slotted knife. Secure them with the clamping plate using screws M8 (six-sided socket screw wrench num. 6.).
7. Check up ones more a correct seating and fastening of the upper slotted knives.
8. Use the step-button on the screen to move with the upper moveable beam (slotted cut) down. The fastened knives with their cutting area must cover the spacing between the two lower slotted knives.
9. Just push by hand (with the sensitivity) the lower slotted knives toward the upper slotted knives (they are in the lower position).
10. Carefully tighten the screws belonging to that lower slotted knife. Begin in the middle. Between the lower slotted knives and the upper slotted knives must not stay any spacing (screws M8, use the six-sided socket screw wrench num. 6.).
11. Use the step-button on the screen to move with the upper moveable beam up.
12. The lower slotted knives tighten carefully, using the step-button on the screen move upper knives down. In this position you have to fasten adjusting screws for each lower knife, that they may touch each other (the lower knives with the upper knives). (Screws M6, hexagon head-wrench num. 10.).
13. Tighten the backnuts of the adjusting screws with the two wrenches num. 10.

14. Make sure your adjustment is done correctly. In the manual mode use the step-button on the screen to go through the whole cycle of the slotted cut.
15. In the manual mode, using the cycle button on the screen, make a control cut.

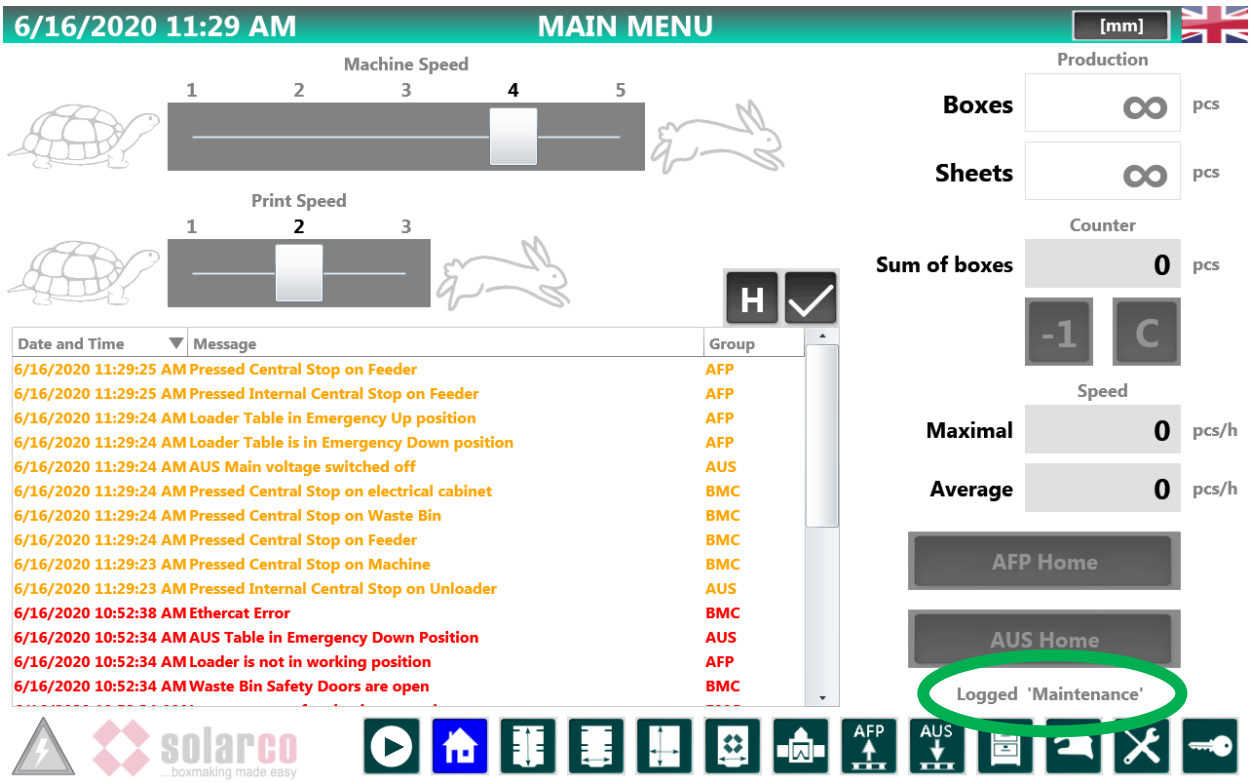
WARNING: Do not over tighten the arrest screws.

Finish your job:

1. Place and screw down the rot with the guiding plates (two screws M8, use the six-sided socket screw wrench number 6.), and settle the flip-flop ruler.
2. Make sure that the rod with the guiding plates is put down correctly. Use the step-button on the screen to go through the whole cycle once more.
3. Make a control cut in the manual mode using the cycle-button on the screen.

7.5. Double die cut seting up a „0“ position

This procedure is valid only for Boxmatic machine on version DCFM-D, DC-D, DDC-D and DDC-DD. In case it is necessary to set up to zero position, you can do it through the maintenance screen logged as „Maintenance“. Password is „1000“. Now you are approved to open the maintenance screen.



For this setting up you must to remove the die cut tools from the die cut trays and be sure that two separate die cuts pictures are present on the screen.

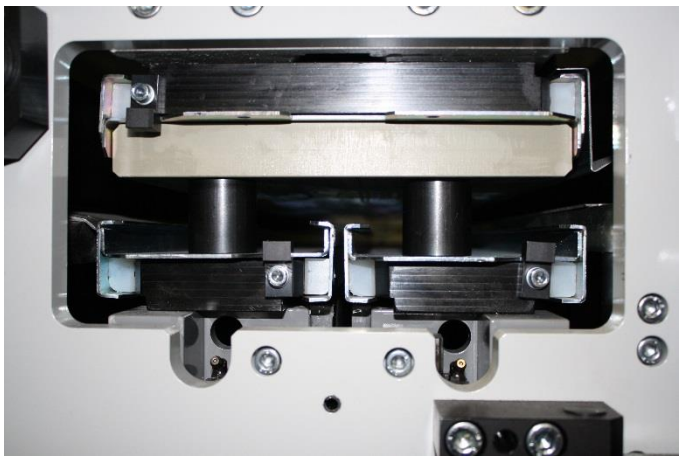


Fig. 7.5.2.: Double die cuts with calibration blocks

Procedure to set up die cuts :

1. Insert calibration bloxks in both die cut trays.
2. If you are not able to fit blocks in the trays - Go to the bottom position of the both die cuts manualy (it isn't necessary to get die cuts in exact zero position)

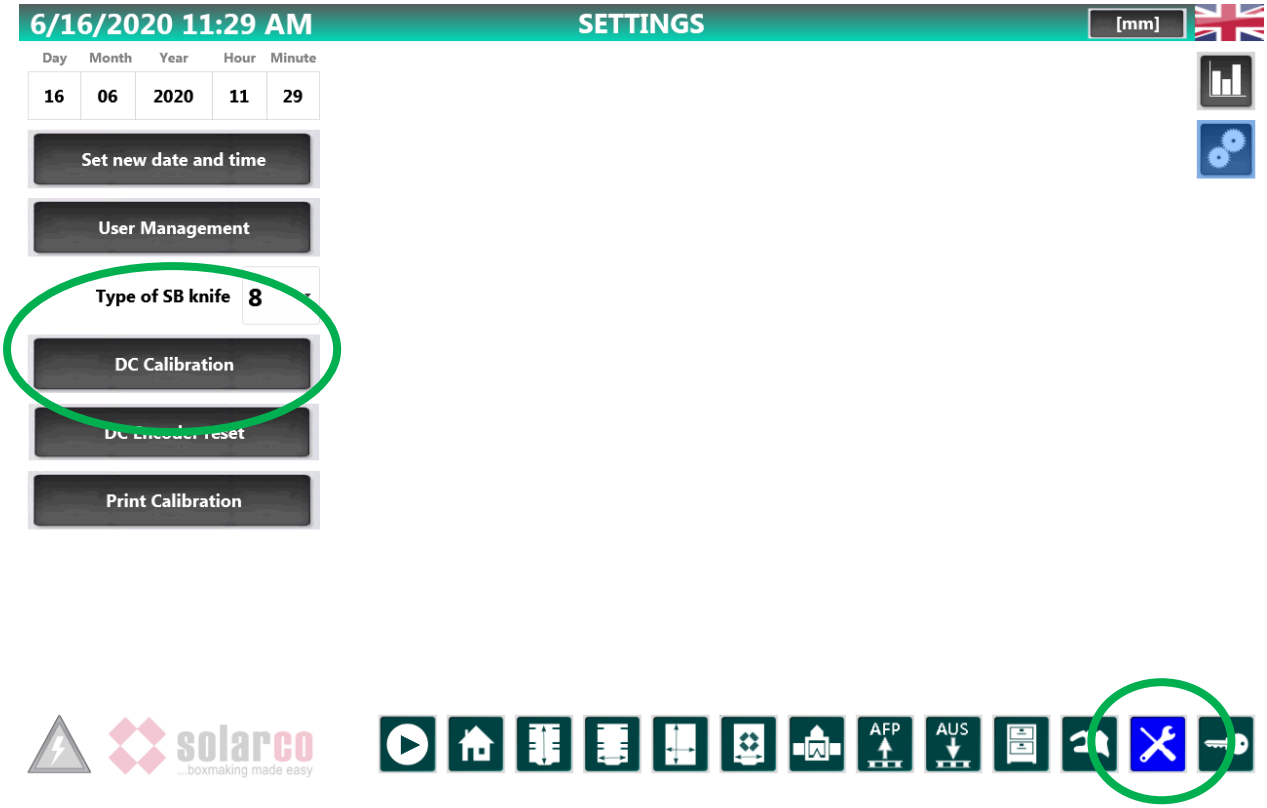


Fig. 7.5.3.: DC Calibration screen

3. Go to the service counters screen and then press the button to get an access to the service screen.

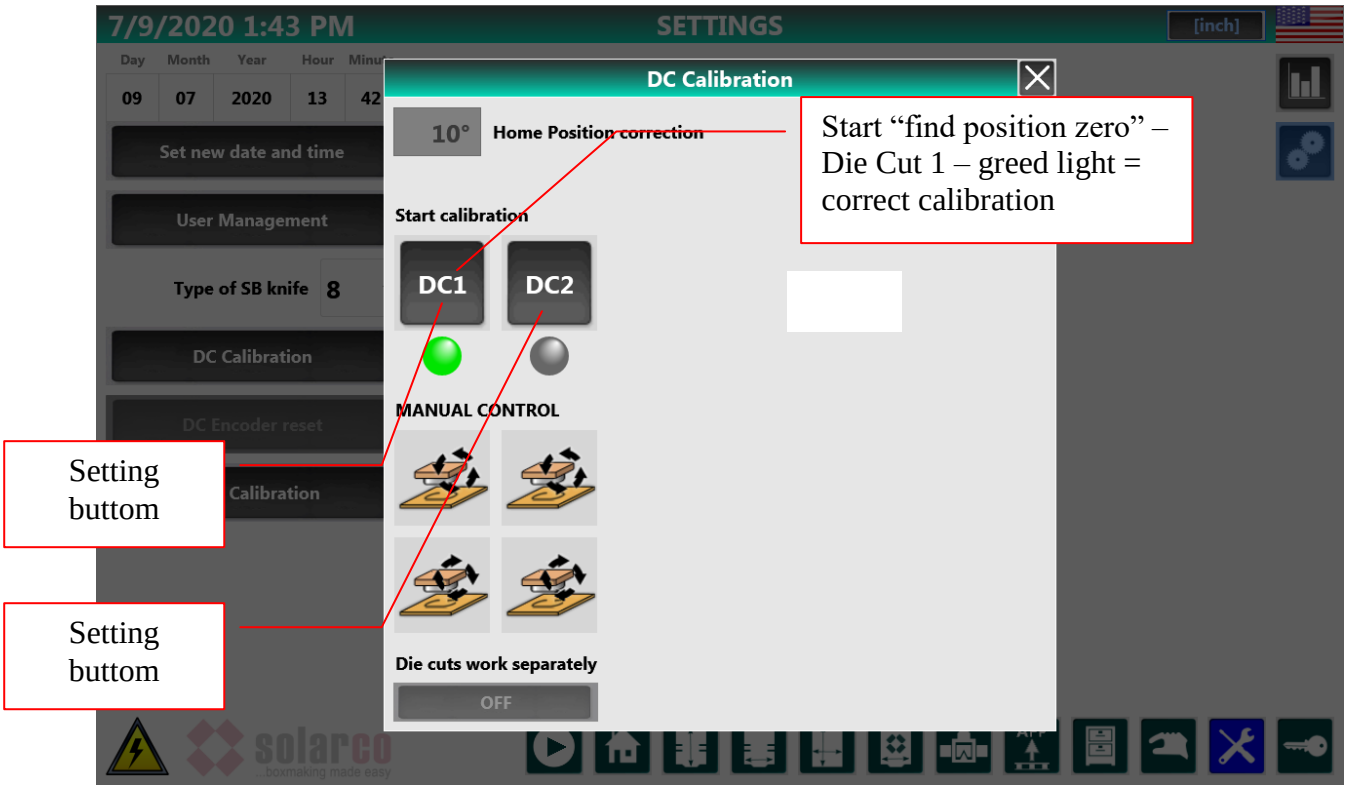


Fig. 7.5.5.: DC Calibration buttons

Service screen. On the marked part of this picture screen you see the buttons. Press the“DC Calibration “ pop up“ window appears (picture above) . Press both DC1 and DC2 to calibrate both die cut sections.

After this procedure remove the calibration blocks and check if both die cut beams are in the same level.

7.6. Optical guard maintenance

Adhesion of dust to the optical guard window may cause a false operation. The OMRON optical guard will require periodic cleaning of the window and dust detection surface. If the optical guard is interrupt, than the machine is stopped automatically.

8. DANGEROUS AREAS

Dangerous areas are around the exit of the machine and in the area of loading platform. “DANGEROUS AREA” labels are placed on the back of the machine. In this area, the finished boxes are stocked and the waste is collected.

ATTENTION: It is strictly prohibited to reach out to, or into areas labeled “Danger of injury”.

The cardboard sheets are moving in this area and circular knives trim the cardboard.

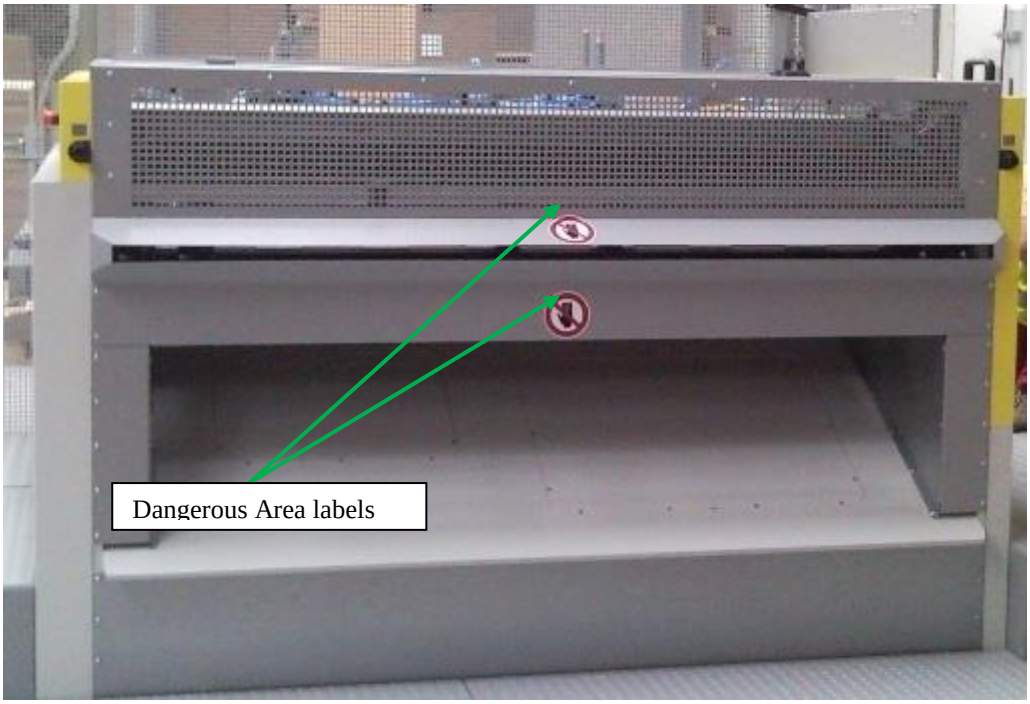


Fig. 8.1: Indication of a danger area

Three beams of light gates secure dangerous area of loading platform. The light gate prevents the area of loading platform from being entered while the machine is running.

WARNING: Operator can start up the machine only after he/she made sure that there is no person in the area of loading platform.

WARNING: Upon interruption of the light gate beam, the machine is stopped and disconnected from electric source and pressured air is released from pneumatic circuit, except for the pneumatic clamps of the slotting knives.

Fig. 8.2: Safety guards and scanner

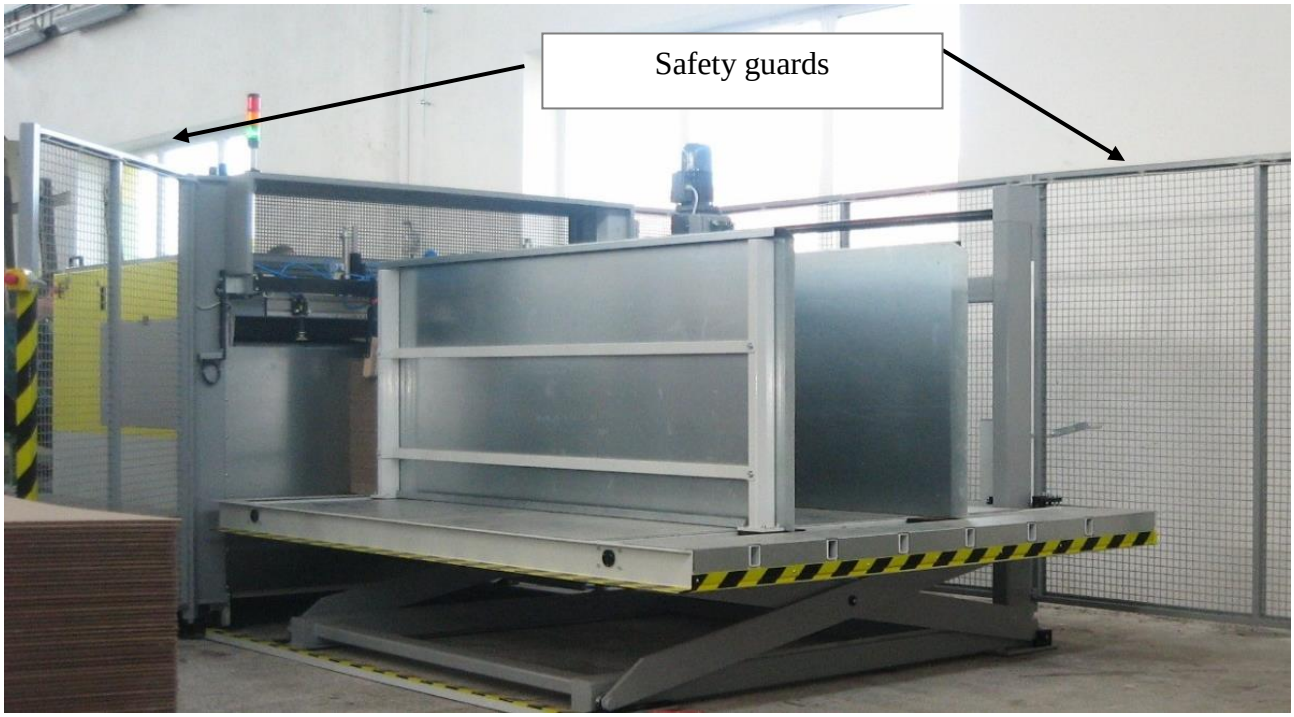


Fig. 8.2: Safety guards



Fig. 8.3: Safety optical guard

9. LIST OF PROBLEMS AND SOLUTIONS

- *The machine cannot be turned on by "ON" switch.*

  Check whether the master switch is on.
- *The machine cannot be turned on by "ON" switch even if the main switch is on.*

  One of the safeguards was left open or there's obstacle disrupting the light gate. Close all safeguards and/or remove the obstacle.
- *The working cycle cannot be started and the control panel shows the message "There's no pressure in the pneumatic circuit. Without pressure, the machine will not start production cycle".*

  Make sure that there is 6 Bar on the reduction valve and the pneumatic clamps of slotting knives are on.
- *After starting up the working cycle by "START" button, the feeding shafts start to rotate, but no cardboard sheets are fed between the drive wheels.*

  Clean the detector that detects the edge of the cardboard sheet.

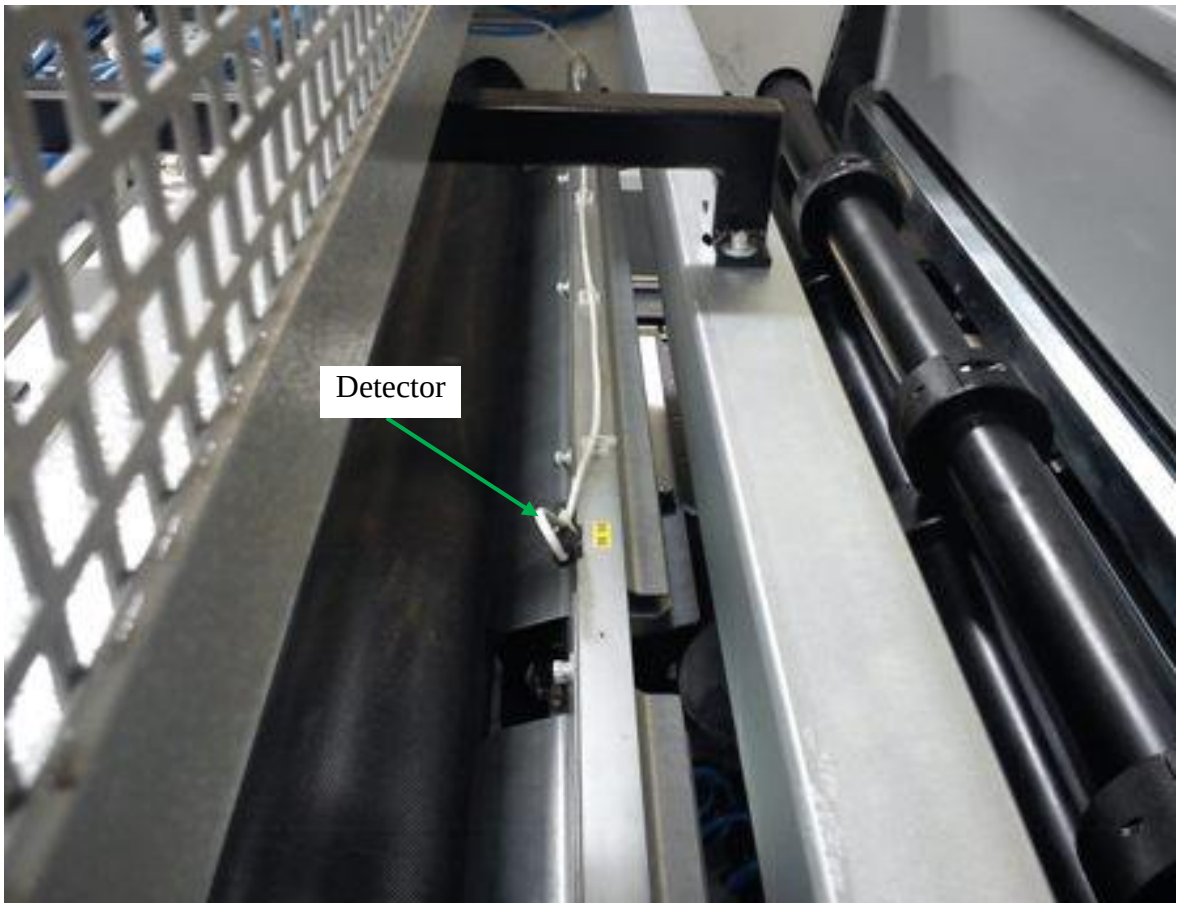


Fig. 9.1.

- *The sucker feeder adheres to the sheet of board, but the sheet is not fed to drive wheels.*

  There is insufficient supply of pressured air. Solution: Increase the diameter of supply tube. Decrease the pressure on the manometer of sucker reduction valve.

  Or the sheets are not touching tacking plates. Solution: move the sheets so that they are touching the plates.

  Or the tacking plates and/or guiding plates hold the sheets too tightly. Open the tacking and/or guiding plates slightly.

- *Suckers do not lift the sheets.*

  Clean the suckers using pressured air. Unplug the bend from the ejector (wrench number 14) and clean the ejector and the bend with hose leading to the sucker with pressured air.

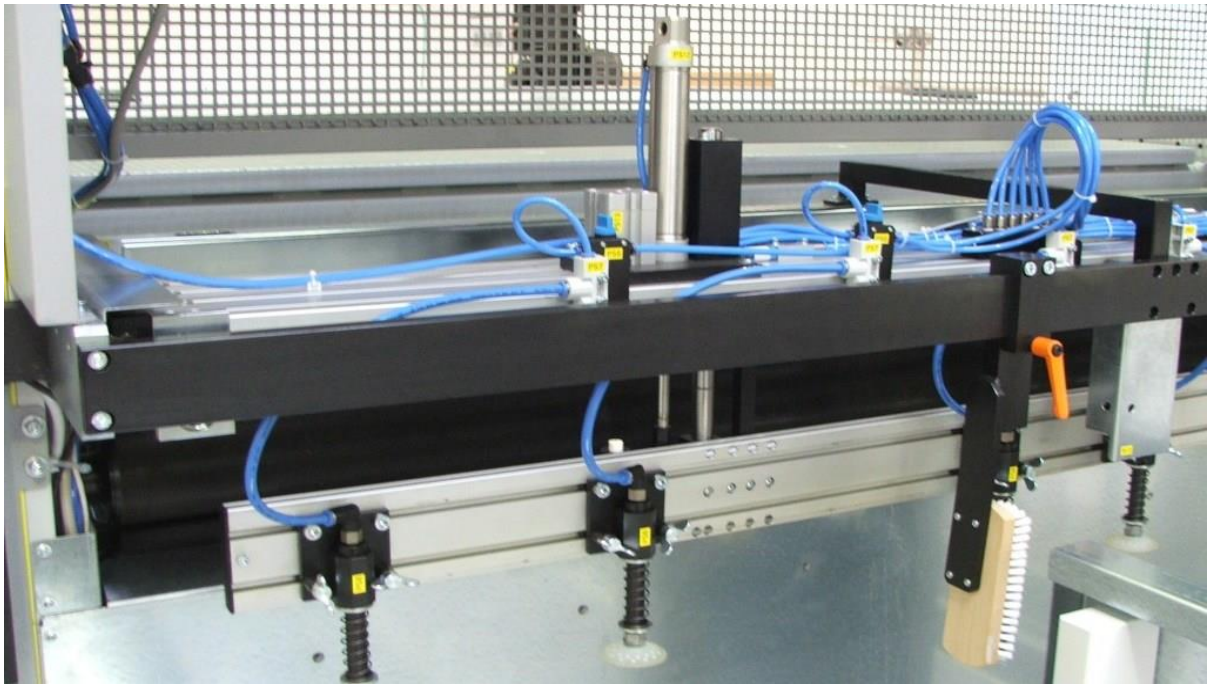


Fig. 9.2.

10. STORING AWAY

In the case machine will be stored for a certain time between the installation and use, it must be stored in a dry place, where the temperature ranges from +5˚C to +45˚C.

11. DISASSEMBLING AND LIQUIDATION

Once the lifetime of the machine is up and the decision about its liquidation has been made, it is necessary to:

- Dismantle pneumatic elements.
- Dismantle electric and electronic parts.
- Dispose of the rest of the machine as metal scrap.

The machine does not contain any dangerous substances, which you need to be aware of.

12. APPENDIX

A. Electrical schema
B. Pneumatic schema
C. Machine floor plan
D. Emergency stop buttons location
E. Knives assembling
F. Spare parts list
G. Declaration of conformity