

USER MANUAL

TAURUS

Label Laser Finishing System

TRS35PL / TRS35PL-PLUS

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TECHNICAL SPECIFICATIONS

Taurus series is a Roll to Roll digital finishing system powered by Galvo Scanner technology and supported by a sealed CO₂ laser source.



!IMPORTANT!

Who operate with this equipment MUST always wear glasses for the eyes protection from potential laser beam irradiations. DPR has not any liability on injures caused by an improper use of the unit or because safety instructions were not followed.

	TRS25PL	TRS35PL
Laser Source wavelength	10.25 ± 0.4 µm	
Laser Power	150W	350W
Spot size	250 µm	270 µm
Cutting area	250x250	330x330
Media Width	100 up to 250mm	100 to 350mm
External Roll Diameter	Up to 500mm	
Internal roll diameter	Fixed 76mm	
Air compressor (<u>for shafts only</u>)	not available	included

LASER SOURCE LIFETIME

It is not possible to quantify an exact numerical value for laser source lifetime but it can easily work for more than 5 years.

The source will not die but the power of the source will decay approximately 2% - 3% per year.

When the power is not enough anymore the laser source has to be recharged. Costs and conditions will be confirmed at the moment of recharge.

ACCEPTED SUBSTRATES

This sealed CO₂ laser source emits monochromatic 10.25 ± 0.4 µm single wavelength, the most commonly used for converting applications allowing the use of paper and plastic films.

For each paper and plastic films is always highly recommended to run a media test for workability confirmation. If the chemical composition of the substrate to be cut does not allow the absorption of $10.6 \pm 0.4 \mu\text{m}$ single wavelength frequency that type of substrate will not be cut by this system.

The speed performance is related to the cutline complexity, type of substrate, media width and thickness of the substrate to be cut.

POWER REQUIREMENTS

	TRS25PL	TRS35PL
Taurus system	110/220V – 32A – 50/60Hz This equipment is supplied with bare end cable 2x6mm ² + GND, the CEE form is not included.	110/240V – 12KW – 50/60Hz This equipment is supplied with bare end cable 2x6mm ² + GND, the CEE form is not included.
Fume Extractor*	110/220V – 16A - 50/60Hz The equipment is supplied with bare end cable 2x2.5mm ² + GND, the CEE form is not included.	110/240V – 4KW - 50/60Hz The equipment is supplied with bare end cable 2x2.5mm ² + GND, the CEE form is not included.
Water Chiller*	110/220V – 16A - 50/60Hz The equipment is supplied with bare end cable 2x2.5mm ² + GND, the CEE form is not included.	AC 1P 220/240V - 5KW - 50Hz The equipment is supplied with bare end cable 2x2.5mm ² + GND, the CEE form is not included.

** if this accessory is **supplied** by D.P.R Group*

OPTIC PATH PRESSURIZATION AND ENVIRONMENTAL REQUIREMENTS

The pressurization of the optic path within the source reduces the risk of contamination of the optics. The required characteristics are reported in table.

Optic path pressurization:	Compressed air (clean, dry, oil free, filtered at 0,1µm, dew-point <-40°C). Use only a neutral plastic 6mm-ext/4mm-int connection tube.
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Environmental functioning and storage requirements

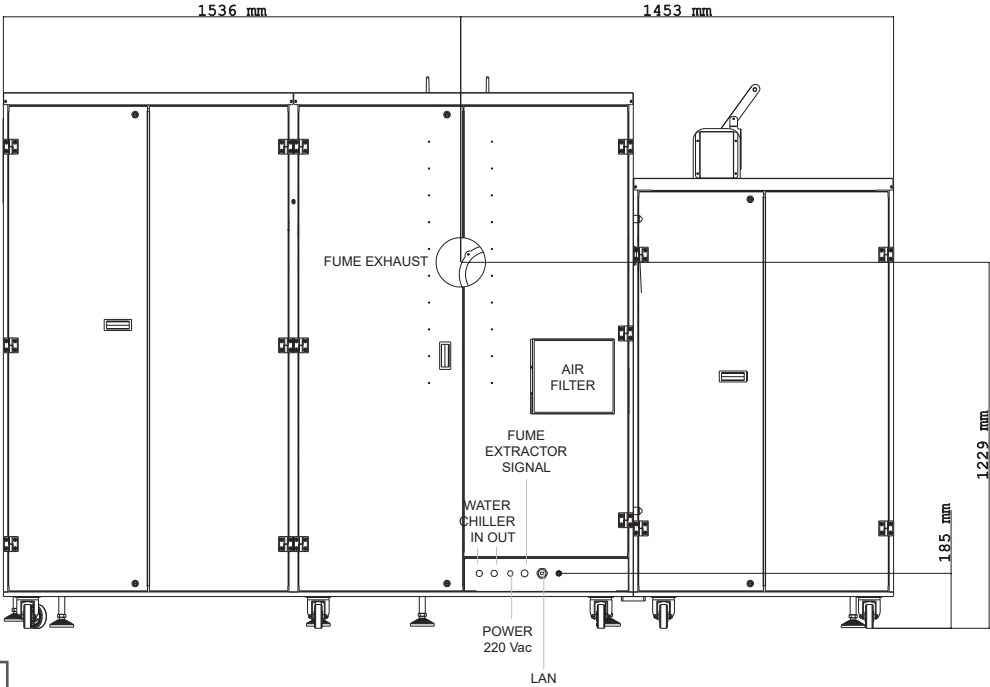
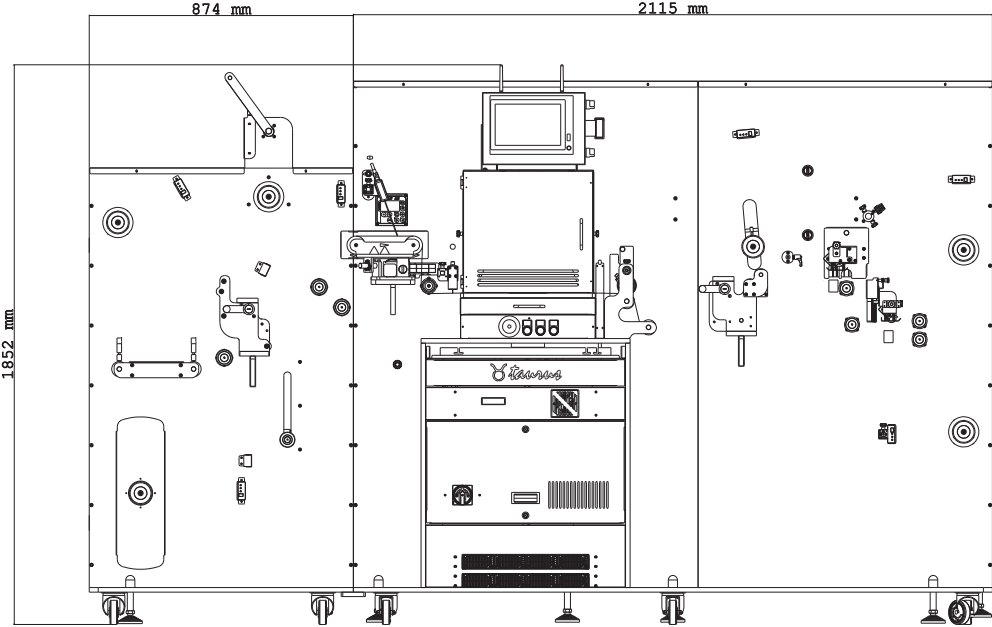
Operating temperature: From 5°C to 35°C (in case of temperature below 10°C, make flow the coolant for 15minutes before turning on the source).

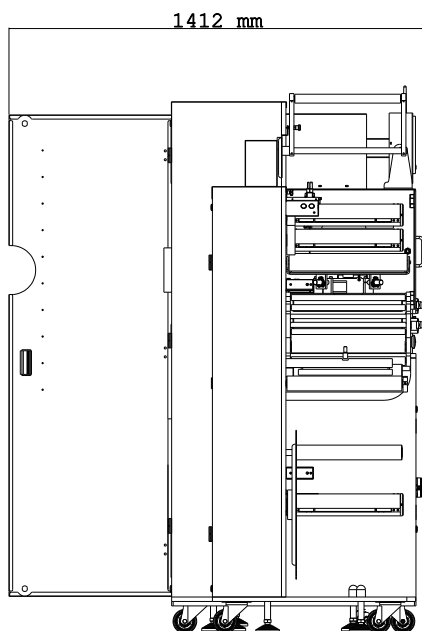
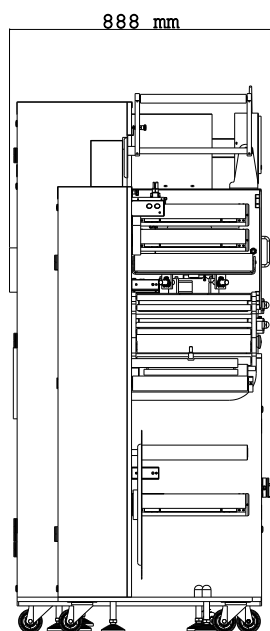
Storage temperature: From 5°C to 50°C

Altitude: <3000m

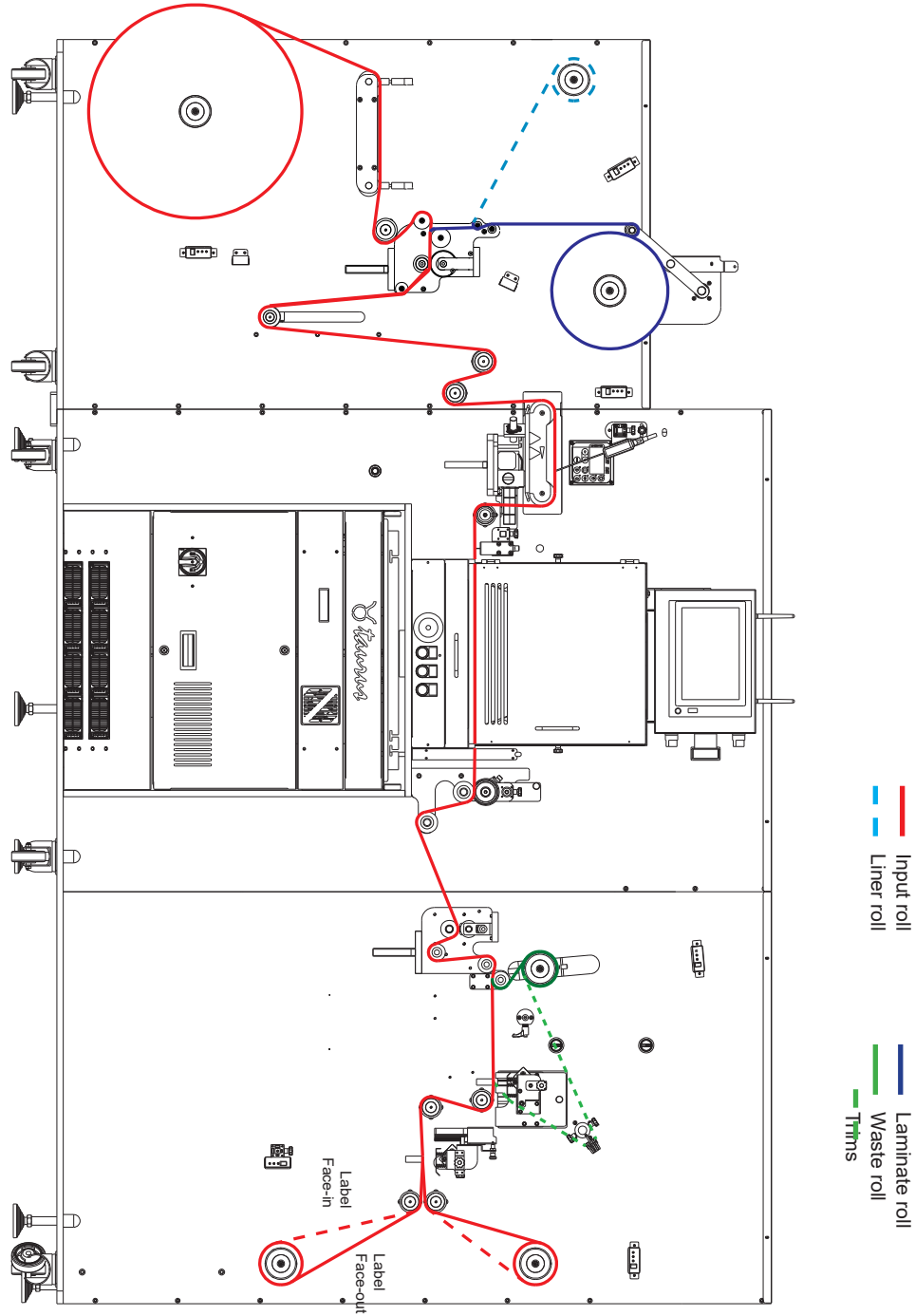
Humidity: Absence of condensation at inlet water temperature

LAYOUT AND SIZE





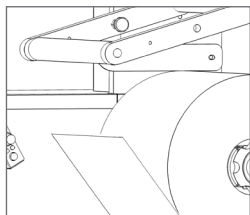
MEDIA PATH



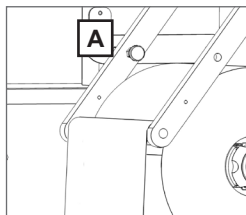
OPERATION STEPS

How to set the silencer

Silencer accessory is used to reduce drastically the noise generated by noisy self-wound lamination application.

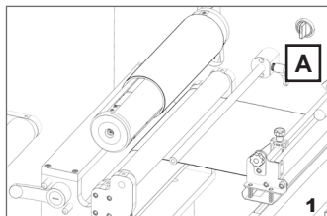


Load and fix the self-wound lamination roll onto the core holder.
Pull the lamination end over the aluminum roller.

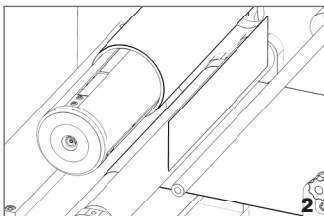


Use the knob (A) to unlock the silencer and let fall it down over the lamination roll.

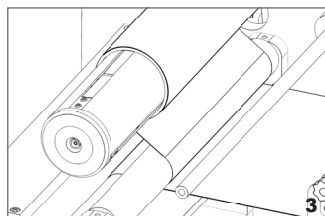
How to load the waste



1. Turn clockwise the switch (A) to to raise the core holder and load the cardboard core. Then fixed it with the compressed air and turn counter-clockwise the switch.

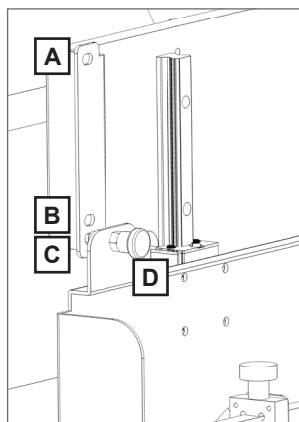


2. Peel off the waste from the liner.



3. Attach the waste to the cardboard core loaded onto the core holder.

How to set slit module



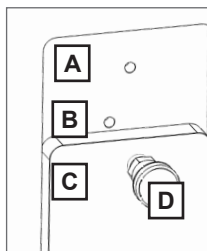
Slitter module has 3 positions:

- Upper position (A), the blades are lifted to allow the media loading;
- Middle position (B), slide right and left the blade holders to find the desired position where perform the longitudinal cut. Tighten the screw to fix the blade holder in position;
- Lower position (C), the blades cut through the media.

To lock the module in A,B or C position use the knob (D)

How to cut the external trims

Use the trim removal module to cut the external trims. This will allow you to remove it along with the waste.

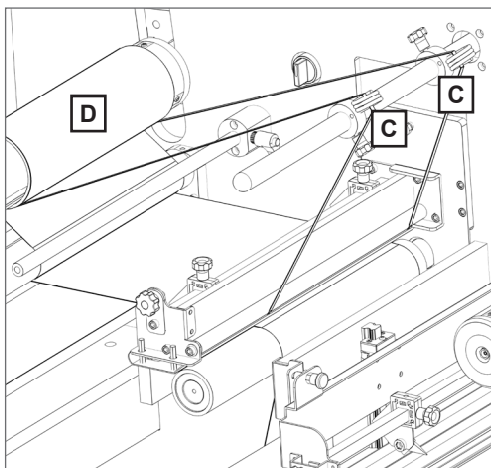
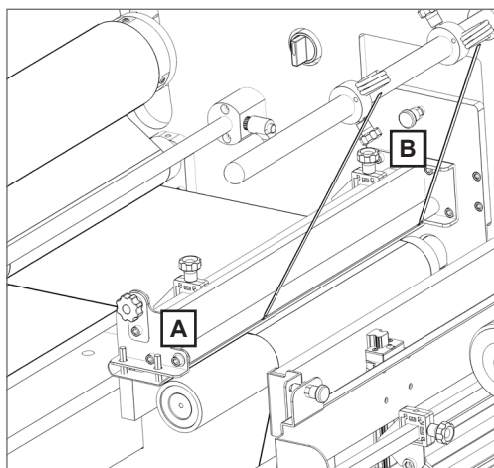


Trims removal module has 3 positions:

Upper position (A), the blades are at it's highest to allow for media loading:

Middle position (B), blade are slightly lowered and can be moved from right and left to find the desired position where to perform the longitudinal cut. Tighten the screw to fix the blade holder in position:

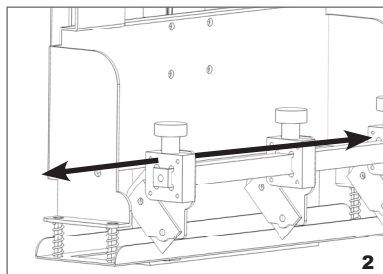
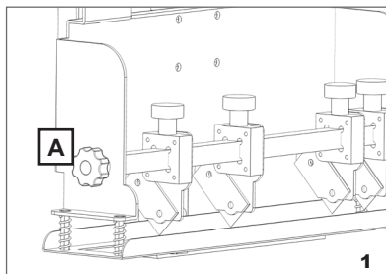
Route the external trims through the springs (C) and secure it to the waste rewriter (D).



Move the blade holder (A) in the desired position, then use the knob (B) to lock the module in lower position.

Route the external trims oinside the spring (C) and secure it to the waste rewriter (D).

How to add or remove a blade holder

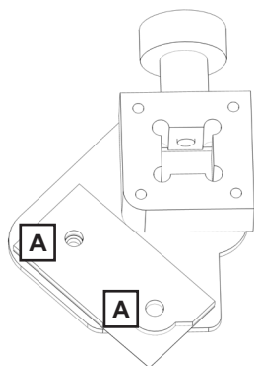


1. Release the knob (A) to keep out the support iron bar

2. Slide in the additional blade holder or slide out the unnecessary blade holder.

Install back the support iron bar and tighten the knob.

How to rotate or replace the razor blade



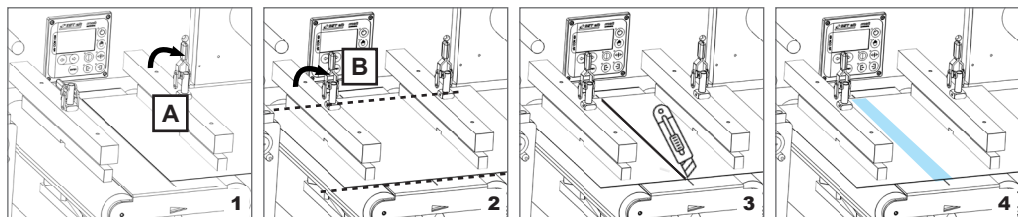
1. Remove the two screws (A), the small iron support holding the blade in place comes off.

2. Replace or rotate the blade.

This razor blade offers four cutting corners, when a cutting corner worn out, it is possible to rotate the blade and expose a different cutting corner before have the blade completely replaced!!

3. Screw back the small iron support to fix down the blade in place

How to use the splice table



1. Clamp (A) is used to secure the bracket down over the media already loaded through the unit;

2. Load the new media roll onto the unit, then align it with the old media from the last job. Use clamp (B) to secure the bracket down on the new media;

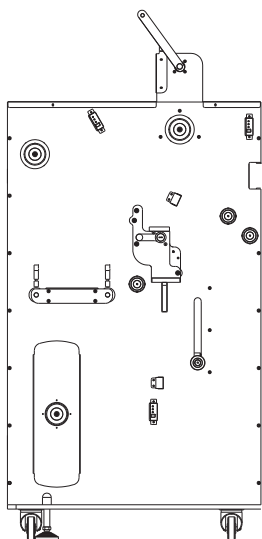
3. Use a cutter to cut the excess media along the lines.

4. Join both media ends together by applying tape above and underneath the ends. Once complete, release both clamps.

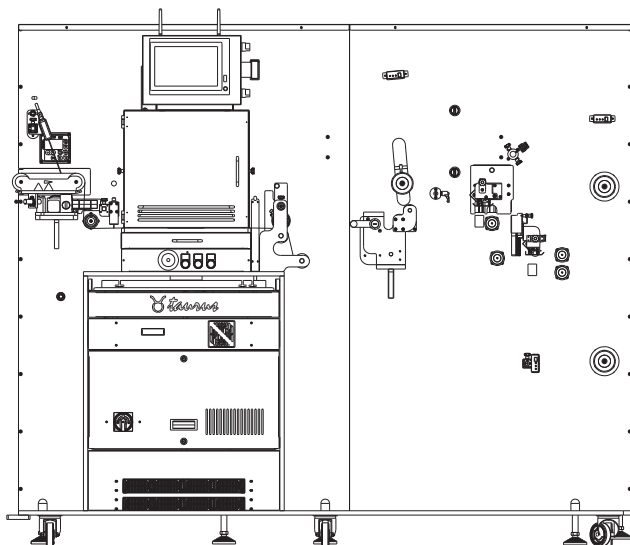
EQUIPMENT

Taurus unit is assembled by two modules, leveled and fixed together:

UNWINDER MODULE



LASER AND REWINDER MODULE



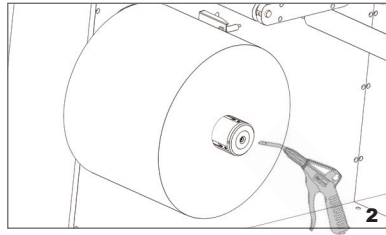
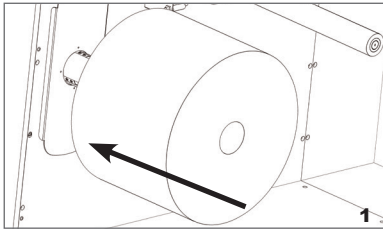
!!IMPORTANT!

The two modules are properly leveled and aligned together for a correct operativity.

DO NOT move the unit by yourself, you might compromise the working operativity, please contact the technical support before take any action.

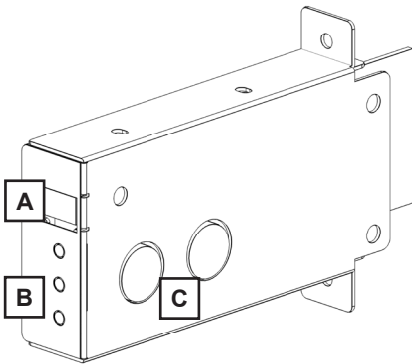
UNWINDER MODULE

Module used to load the continuous unprinted or printed roll of media, it is equipped with pneumatic shafts depending on the selected version.



Load the input media roll onto the shaft and through the air gun, expand the pneumatic core to get the roll fixed.

Each core holder is managed by its own controller designed to set the required media tension, keeping that tension automatically constant even the roll diameter variation during the job.



A) Display

B) ON/OFF : activate/deactivate the tension control

 + : increase the media tension

 - : decrease the media tension

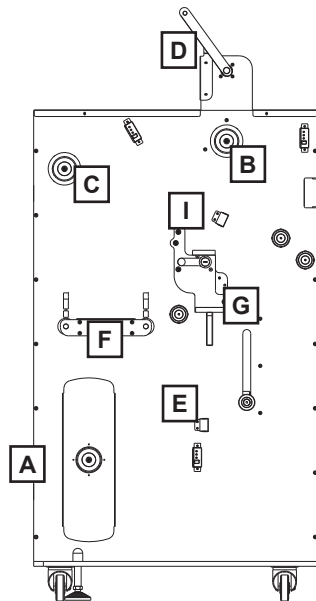
C) Ultrasonic sensor

Display conditions:

- flashing O - F - F = the controller is deactivated

- flashing number = the controller is active and it shows the tension level set

Keeping “run” pressed; the core will spin.



This module offers the opportunity to apply adhesive cold self-wound or with liner lamination.

A) Core holder designated to load the input media roll.

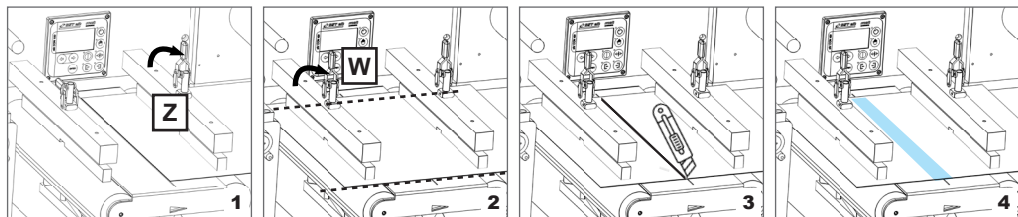
B) Core holder designated to load the lamination roll.

C) Core holder designated to rewind the lamination's liner.

D) *Silencer accessory* used to reduce drastically the noise generated during the application of noisy self-wound lamination roll.

E) *Media sensor* to stop immediately the unit when the media runs out.

F) *Splice Table* joins easily the finished roll to the new roll, it helps to save time and waste of media during the changing roll operation.



1. Clamp (Z) is used to secure the bracket down over the media already loaded through the unit;

2. Load the new media roll onto the unit, then align it with the old media from the last job. Use clamp (W) to secure the bracket down on the new media;

3. Use a cutter to cut the excess media along the lines.

4. Join both media ends together by applying tape above and underneath the ends. Once complete, release both clamps.

G) Nip Roller assembly used to lock and forward the media through the system when the lever is set on “close” position. While when the lever is set on “open” position the media is unlocked and unable to be pulled by the system.

I) Laminate sensor

MEDIA SENSOR

- When media is loaded, the orange LED is on.
- When media runs out (or media is not loaded), the orange LED turns off and it stops the unit.

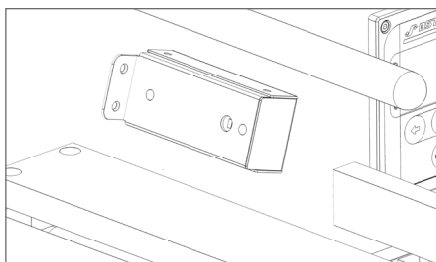
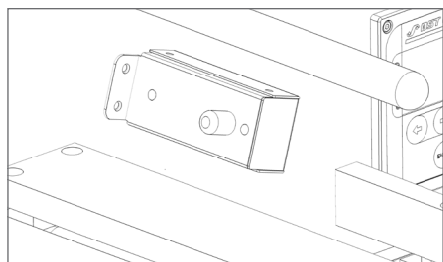
HOW TO SET THE MEDIA SENSOR

After properly loading the media, Press and hold the small button for a few seconds. When orange LED flashes, release the button, and the sensor is now set)

NOTE: (If the LED does not flash after completing these steps, the sensor is not set. Please repeat the steps.)

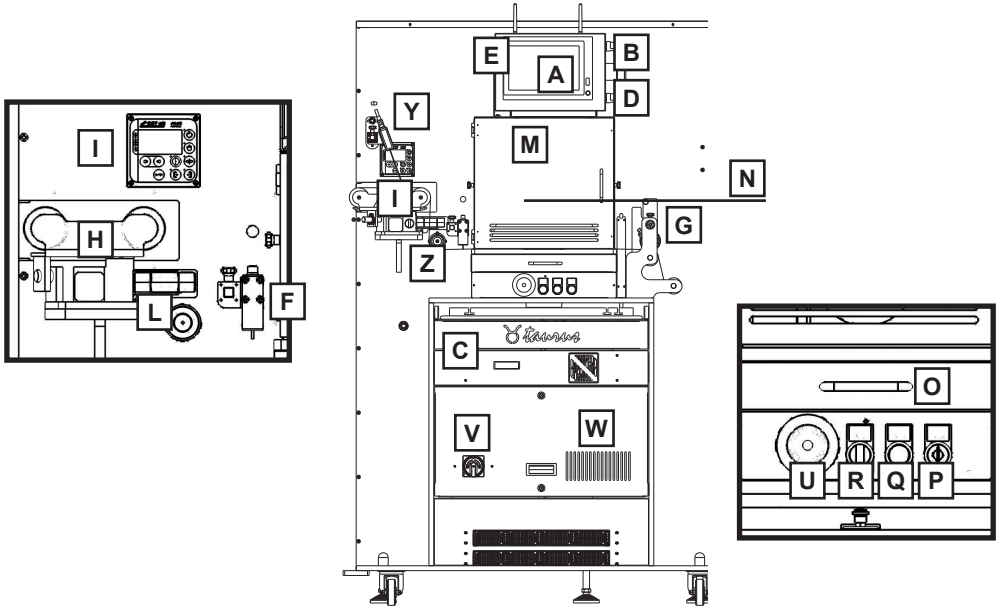
LAMINATE SENSOR

- When laminate is not used, keep cap installed on the sensor.
- When laminate is loaded, remove the cap.



LASER MODULE

Main module equipped with galvo scanner and laser source and where the laser die cutting process takes place.



A) Integrated touch screen PC with installed the Taurus cutting software manager, user friendly application developed to manage the laser cutting process.

B) It turns ON/OFF the touch screen PC.

C) Galvo scanner controller (closed behind the doors).

D) It turns ON/OFF the lights inside the cutting room.

E) It turns ON/OFF the galvo scanner controller.

F) Mark sensor used to synchronize the cutting position on printed roll.

G) Encoder used to synchronize automatically all operations depending on the working speed, it has to be positioned by middle of media width and locked down in contact with the substrate.

H) Web guide used to keep straight and aligned the media path through the unit.

I) Web guide controller.

L) Web guide sensor.

M) Cutting room where the laser cutting process takes place, if the front and lateral doors are not properly closed the cutting process is disabled.

N) Fumes output.

O) Tray to collect the waste.

P) Key to turn ON the unit.

Q) Button to turn OFF the unit.

R) Light on shows the operativity status.

U) Emergency button to cut out immediately the power on the unit.

V) Main ON/OFF Switch.

Z) Tray for the mouse and keyboard.

W) Main electrical panel (closed behind the doors).

Y) Data matrix sensor used to automatically load the cutting file. (OPTIONAL)

MARK SENSOR

The mark sensor synchronises the cutting position on the printed media through the black mark reading. This device works with default default settings. In case of any issue, please reset it following the the instructions below.

DEVICE RESETING

1. Press and hold the + and - push-buttons for 10 seconds



2. The set parameters are reset to the factory settings.

3. The sensor light now shall be green.

HOW TO CALIBRATE THE MARK SENSOR

1. Press the button “SET” on the sensor. The sign “tch” shall appear.



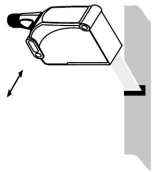
2. Press again “SET”. The sign “2P” shall appear.



3. Press again “SET”. The sign “1St” shall appear.



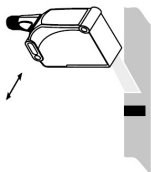
4. Now on the TAURUS software, press the button “FORWARD MEDIA”, and stop once the sensor light is exactly on the mark.



5. Press “SET” again on the sensor. The sign “2nd” shall appear.



6. From the TAURUS software press “FORWARD MEDIA” until the sensor light is no longer on the mark.



7. Press “SET” again on the sensor.

If the procedure was successful the sensor light will change to red, and it will display a score from 1 to 100 with the quality of the calibration.

If any error occurs, the “Err” sign will be displayed.



61 - 100	😊
31 - 60	😐
1 - 30	😞



WEB GUIDE

In automatic mode, the edge sensor detects the current position (Actual position) of the material web and transmits the respective information to the integrated controller.

The controller compares the Actual recorded position against the default Setpoint position.

The controller will send a relevant correction signal to the actuator if a deviation is found to exist between the two values.

The actuator pivots the movable pivoting frame suspended on the housing of the compact web guide control around a rotating point in the material web infeed until the material web is located back in its Setpoint position at the outfeed.

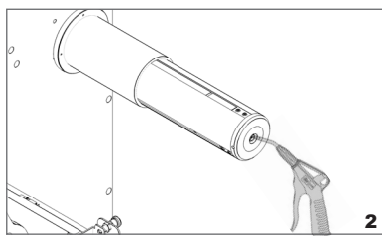
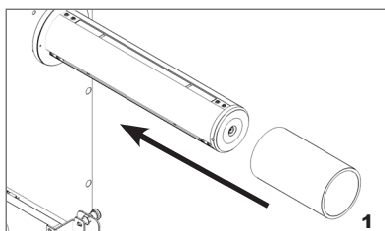
REMOTE CONNECTION

The device equipped with integrated Wi-Fi connection, against the operator authorization, can be connected remotely through TeamViewer desktop remote application to perform the remote technical support.

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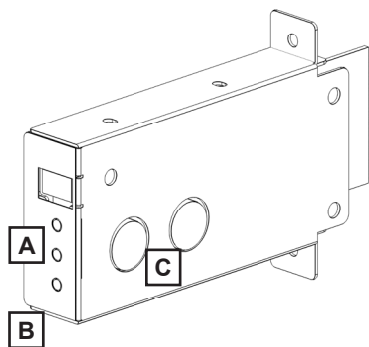
REWINDER MODULE

Module used to remove/rewind the waste, split and rewind the finished job on roll. It is equipped with pneumatic shafts depending on the selected version.



Load the media roll onto the shaft and through the air gun, expand the pneumatic core to get the roll fixed.

Each core holder is managed by its own controller designed to set the required media tension, keeping that tension automatically constant even the roll diameter variation during the job.



A) Display

B) ON/OFF : activate/deactivate the tension control

+ : increase the media tension

- : decrease the media tension

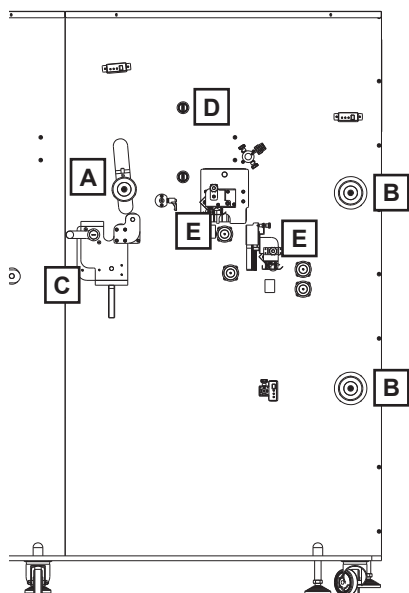
C) Ultrasonic sensor

Display conditions:

- flashing O - F - F = the controller is deactivated

- flashing number = the controller is active and it shows the tension level set

Keeping “run” pressed; the core will spin.



A) Core holder designated to rewind the removed waste.

B) Double shaft designated to rewind the finished job. They can work individually or both at the same time.

C) Nip Roller assembly used to lock and forward the media through the system when the lever is set on “close” position. While when the lever is set on “open” position the media is unlocked and unable to be forwarded by the system.

D) Switch to raise or lower the wastecore holder. Turn clockwise the switch to raise the waste removal core holder while turn counter-clockwise the switch to lower the waste removal core holder.

E) Longitudinal slitter assembly, with the opportunity to load up to 10 blade holders, it splits longitudinally the input media into narrower widths and each one rewound on its own cardboard core.

The blade holder is equipped with razor blade (0.2mm thickness). This blade with four shape corners, before have it replaced, it can be rotated on itself up to four times when a cutting side worn out.



!!IMPORTANT!

Every time a cardboard core is loaded onto the shaft, remember to active the controller by setting the tension intensity through the potentiometer's clockwise rotation.

ACCESSORIES

For correct operation, the unit mandatory requires fume extractor and water chiller accessories having the below requirements.

FUME EXTRACTOR

This equipment requires the extraction of the fumes generated during the cutting process.

The electric connection allows to start and stop automatically this accessory depending on the Taurus working status while the hose connection through the fume exhaust, guarantees to keep the cutting room clean from fumes generated during the cutting process.

Through the control panel it is possible to set the extraction rate and it alerts when the filters must be replaced.



!!IMPORTANT!

if the fumes are not removed promptly and remain inside the cutting room, they cause quality cutting issues because the laser beam is absorbed by the fumes and not by the substrate to be cut.

	TRS25PL	TRS35PL
Airflow	245 m3/hour	508 m3/hour
Exhaust	75mm diameter	100mm diameter
Hose length	3 meters	3 meters

WATER CHILLER

Laser source requires a minimum flow of coolant to a closed circuit supplied with an external “chiller”.

The “chiller” must be able to guarantee the required stability of the coolant temperature with the thermal load generated by the laser source: see the following table.

The connection to the closed circuit cooling system must be made using the two quick connectors present on the rear of the unit, respecting the “WATER INPUT” and “WATER OUT- PUT” indications.



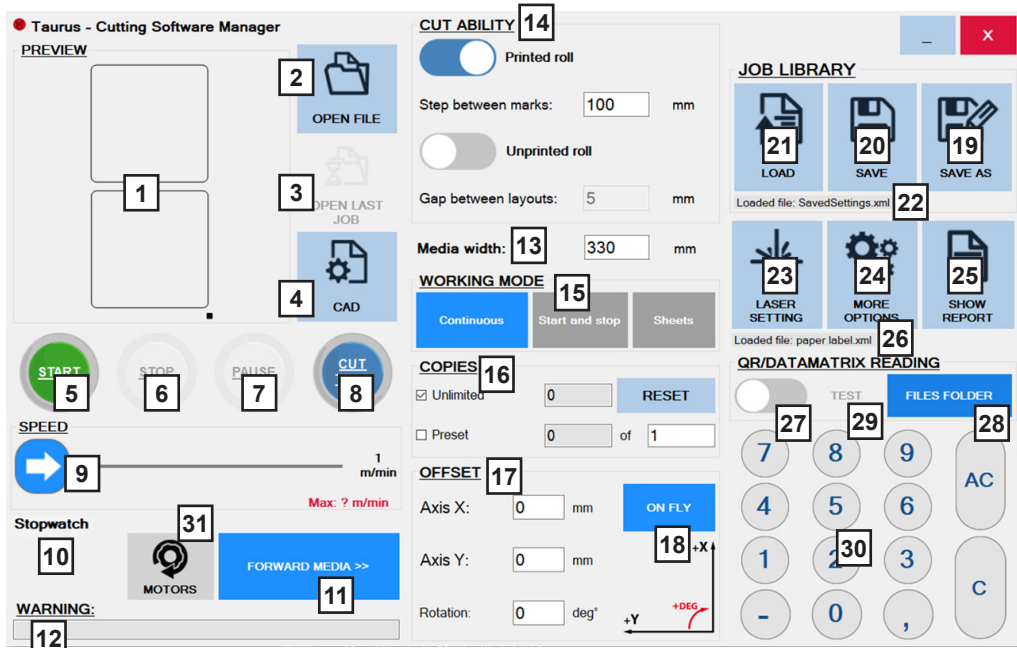
!IMPORTANT!

If the water chiller does not performs as required, the laser source operates in a dangerous conditions showing an inconstant cutting quality and potentially causing irreparable damages to the laser source.

	CLOSE COOLING CIRCUIT	
	TRS25PL	TRS35PL
Heat Load	3.5kW	5.5kW
Coolant set point temperature range	(20±0.5)°C	(20±0.5)°C
Inlet coolant pressure	4Bar	≤4Bar
Coolant differential pressure (between the input and output lines at laser source plug)	≥1.6Bar at 7l/min	≥2.2Bar @ 10.5l/min
Inlet coolant temperature stability	±1°C/min	±1°C/min
Dynamic coolant flow rate	(7.0±0.5)l/min	(10.5±0.5)l/min
Residual particulate dimensions	<200µm	<200µm
Humidity	Absence of condensation at inlet coolant temperature.	
Cooling fluid	- 60-70% demineralized water with hardness <10 French degree, electrical conductivity <50µs/cm at 25°C; - 40-30% Dowcal 200 (stabilized propylene glycol);	

CUTTING MANAGER SOFTWARE

The cutting manager software comes already installed on the touch screen and it will be used to perform all the operations on Taurus. The cutting file accepted is PDF only.



- 1) PDF cutting file preview, it shows the single cutline layout.
- 2) It opens the PDF cutting file.
- 3) It loads the previous job including the whole configuration already set for that job.
- 4) It opens the integrated CAD software in order to adjust each cutline size, offset and sorting cut.
- 5) It starts the job.
- 6) It stops the job.
- 7) It pauses the job.
- 8) It performs a single cut test.
- 9) It shows the linear working speed. The arrow cursor allows the user to increase or decrease the speed even when the unit is performing the cut. Depending the laser parameters set and the cutting file complexity, the software automatically shows the maximum achievable working speed.

10) It shows the time spent for the latest job performed.

11) It forwards the media at the selected working speed.

12) Communication box shows warnings to the operator.

13) Media width to be set by the operator.

14) Cut Ability:

PRINTED ROLL = synchronizes the cutting position on the printed media, the unit works through the black mark reading while the operator has to set the step between the black marks.

UNPRINTED ROLL = using blank media, the operator has to set the desired gap between each layout. We recommend a gap not lower than 4mm (0.15").

15) Working mode

CONTINUOUS = the cutting will be processed on fly, synchronized while the web is moving.

START & STOP = routine where the media stops to allow the cutting process, once the job is completed it will automatically move to the next layout. Working mode suggested for the jobs where the cutting file contains a high number or extremely complex cutline.

SHEETS = user has to place manually the sheet inside the cutting room, close the door, and then press start. After 5 seconds the cut will be processed.

16) Copies

UNLIMITED = the unit will cut until the media roll runs out or when using printed media, the sensor does not detect any black mark.

PRESET QUANTITY = the unit will cut the required quantity of layouts.

17) Offset and orientation layout adjusting.

18) To adjust "on fly" the offset while the cutting is performing.

19) It saves the "job" including PDF cutting file and the whole configuration into the library. Available to recall it every time that specific job is required.

20) It allows to save and update any modification applied to the job configuration.

21) It loads the job from the library.

22) It shows the link where the file has been saved.

23) It opens the laser parameters menu.

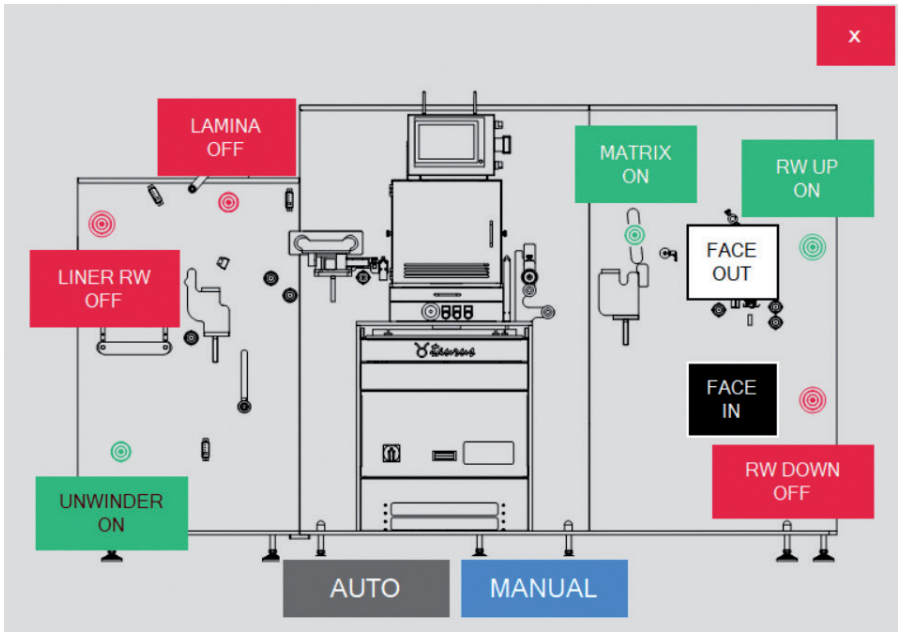
24) It opens the menu for additional settings.

25) It opens the working report showing the name and duration for each job performed.

26) It shows the link where the laser parameters have been saved.

- 27) It activates the QR/DataMatrix sensor to load automatically the cutting file.
- 28) Folder where save the cutting files to be loaded automatically by QR/DataMatrix code reader.
- 29) It allows to test manually the QR/DataMatrix reading.
- 30) Numeric keypad.
- 31) Opens motors menu.

MOTORS MENU (31)



From this window the user can control the motors activation.

- **Auto**: at the start of the job all motors are on, then the machine itself will determine which one have to be used or deactivated.
- **Manual**: decide directly which motor has to be switched on or off.

User can also set the rotating verse for the rewinders, to make rolls with “face out” or “face in” labels”.

LASER PARAMETERS MENU

13

LOAD

12

SAVE

11

SAVE AS

CUTTING PEN: 0 1

14 Pens config name: paper label.xml

SPEED AND POWER

2 Engraving speed (m/min): 180 Laser power(%): 84 3

STARTING AND ENDING POINTS

4 Start (µsec): 3560 Power reduction (%): 30 6

5 End (µsec): 560 Length (mm): 2 10

APPLY TO ALL PENS

CORNER ACCURACY

Manual ☒ Automatic ☐

7 Reduced speed time (µsec): 300

8 Laser beam reduction: 0.5

9 Threshold amplitude("): 140

DASHED LINE

22 Enable ☒ Cut (mm): 5 Space (mm): 1

WIZARD PROCEDURE

Test mode: 1- X=Engraving speed Y=Laser power

Media width: 330 mm ☐ Sheet 17

16 X Y

Start value: 180 40

18 Increment value: 20 10 +Y

19 ☒ SQUARE 20 ☐ CUSTOMIZED SHAPE 21 RUN TEST

15

7 8 9 AC

4 5 6

1 2 3

- 0 , C

1) The software offers a list of “cutting pen” with the opportunity, if desired, to associate a different pen to each cutline inside the cutting file.

This feature allows to process in the single pass, multiple type of cuts (kiss cut, perforation or full cut) within the same layout.

SPEED AND POWER

The laser technology offers the cutting process through the combustion of the material where the quality of the cut depends by the correct compromise between the engraving speed and the laser power.

2) How fast or slow the laser beam is focused on the substrate.

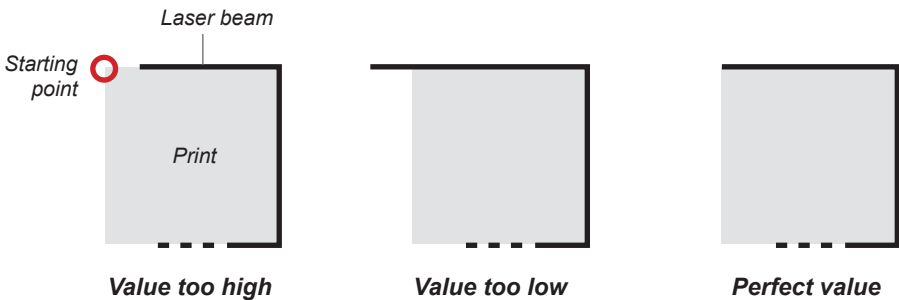
Thicker is the media and slower the engraving speed has to be set (the laser beam has to be focused longer on the same point to make sure to cut properly the substrate) while thinner is the media and faster the speed has to be set.

3) Percentage of power to cut the substrate, value set according the engraving speed.

STARTING & ENDING POINTS

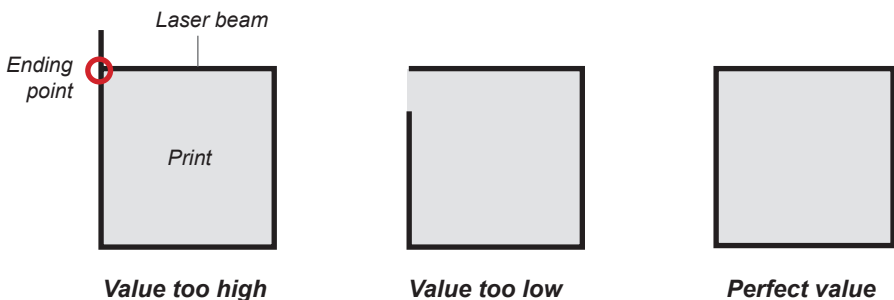
4) Start = time value related to the moment when the laser beam is getting active on the substrate.

If this value is too high the laser beam is turned on too late so it will start to cut after the desired starting point, while if the value is too low the laser beam is turned on too early so it will start to cut before the desired starting point.



5) End = time value related to the moment when the laser beam is getting inactive on the substrate.

If this value is too high the laser beam is turned off too late so it will stop to cut after the desired ending point, while if the value is too low the laser beam is turned off too early so it will stop to cut before the desired ending point.



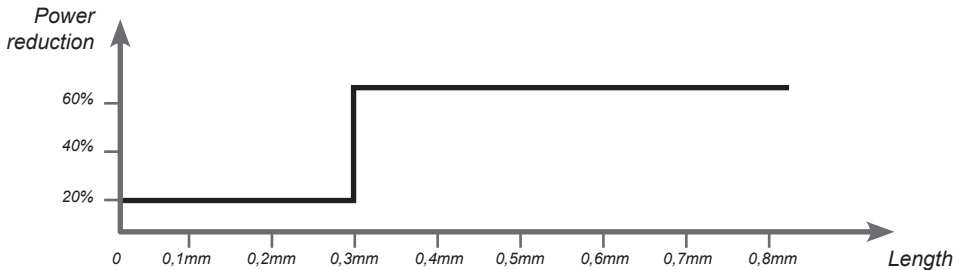
IMPORTANT! BURN-IN?

6) Power Reduction & Length values have to be adjusted in order to avoid the “cut through” issue at the label path starting point.

If both values are set at “0” when the laser beam is getting active on the substrate it acts immediately with the set engraving speed and laser power values, this condition might show the burn-in issue.

While it is possible to reduce the XXX % (power reduction) from the set laser power for along a desired YYY mm (length) space to allow a soft and more gradual laser beam action on the substrate at label path starting point.

Higher is the power reduction value and lower will be the laser power beam on the substrate, higher is the power reduced length value and longer will be space with laser beam with power reduced.



CORNER ACCURACY

When cutting a corner, the laser beam working direction changes extremely fast and it might affect the corner accuracy.

Just flag “AUTOMATIC” feature to leave the system adjusting automatically the laser beam acceleration, speed and power when close to the corner to process it with high accuracy. It is the easiest and faster procedure but it slows down the working speed, alternative the operator can adjust manually the values to get the required corner accuracy.

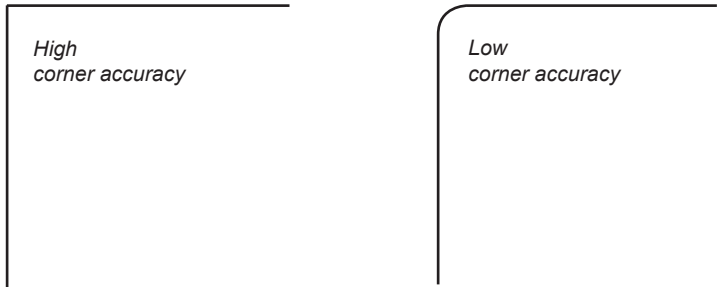
“MANUAL”

7) Reduced speed time = value related to the duration of laser beam with reduced speed in correspondence to the corner (average value is 300 µsec, it has not to exceed 600µsec other way it is suggested to reduce slightly the laser power value).

8) Laser beam reduction = this value reduces automatically the laser power along the slowing down duration.

9) Threshold amplitude = value to activate or deactivate the corrections to the laser beam behavior. These rules will be automatically activated to the corners having an amplitude lower than the value set.

Example: Angle 90°



- 10)** These settings are applied automatically to all the cutting pens used in the job.
- 11)** It saves the “Laser Parameters” configuration into the library and available to recall it every time that specific configuration is required.
- 12)** It allows to save and updated any modification applied to the laser parameters.
- 13)** It loads the laser parameters from the library.
- 14)** It shows the laser config file name.
- 15)** Numeric keypad.

WIZARD PROCEDURE

It is a working tool capable to find out easier and faster the correct laser parameters for the substrate to be cut.

This tool will automatically compile and cut a diagram within multiple squares **(19)** or customized shapes **(20)** having different incremental values.

(18) On both X and Y axis the operator will set the type, starting and incremental values. Smaller is the increment and more accurate will be cutting result.

It is important to set the media width **(16)** used to run this test.

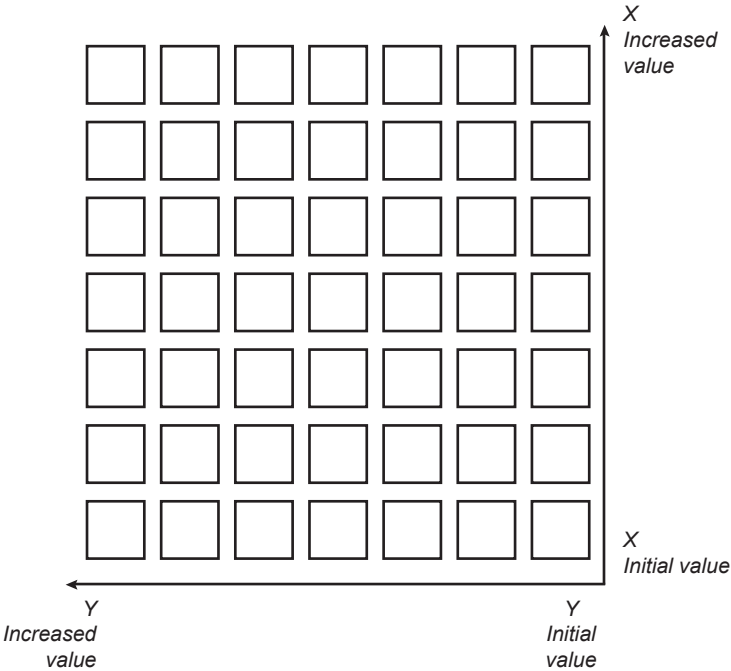
The wizard procedure as default works in roll to roll mode, click “Run Test” **(21)** to forward the media and automatically perform the diagram test.

While if is it requested to perform this procedure on “sheet” **(17)** loaded manually by the operator just flag this option and click on “Run Test”. The sheet size has to at least big as the cutting area (250x250mm for TRS25PL, or 330x330 for TRS35PL)

Possible combinations:

- 1. X = Engraving Speed – Y = Power
- 2. X = Start – Y = End
- 3. X = Length – Y = Power reduction
- 4. X = Reduce speed time – Y = Laser beam reduction

EXAMPLE OF WIZARD PROCEDURE



16) Media width to be set by the operator.

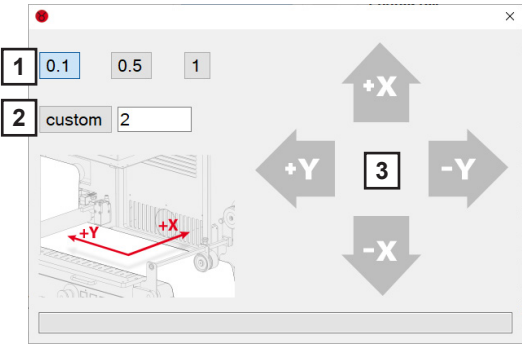
22) Enable to cut (with the current pen) the lines as dashed, using the cut and space values set.

OFFSET ON FLY

This feature allows the operator to adjust the offset layout while the unit is working at the minimum (1 m/min) working speed only.

Select a preset or custom movement value in millimeters, applied in the direction of the pushed arrow.

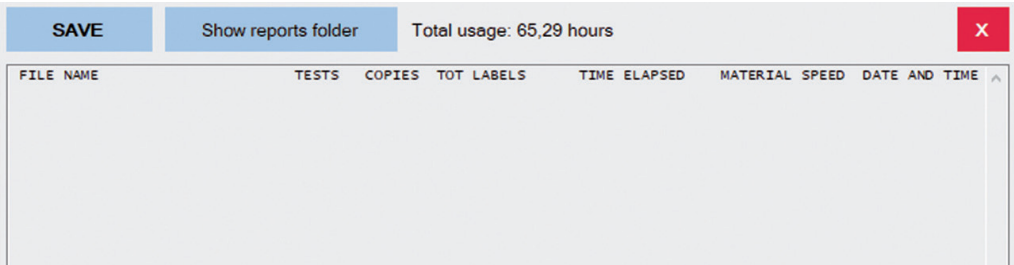
It is allowed a single movement in two directions (not opposite) for each cut.



- 1. It moves the offset layout of 0.1 or 0.5 or 1mm
- 2. It moves the offset layout of custom value
- 3. Movement directions

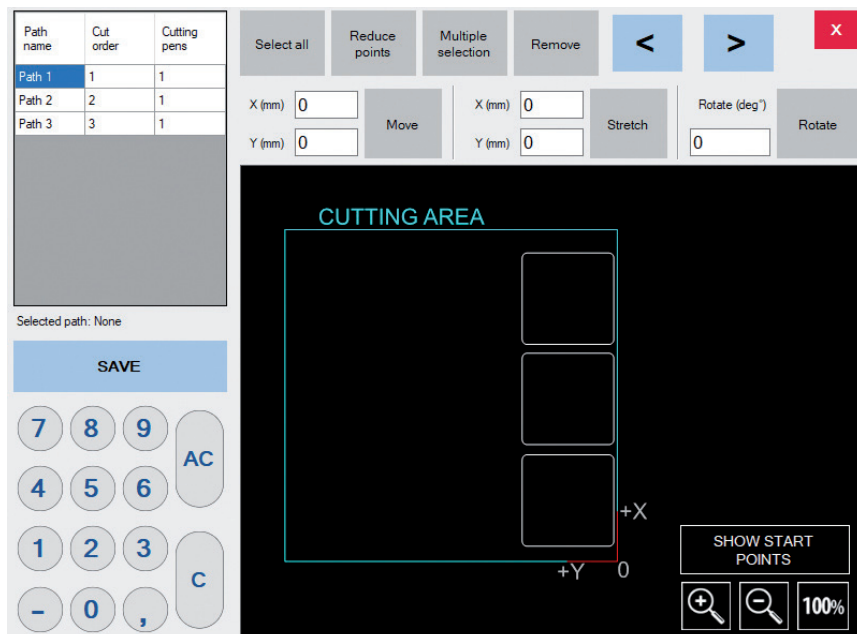
CUT REPORT

This menu shows the report of the jobs run on the device with the opportunity to save/export it as txt file. Moreover, it shows the working hours since the unit has been installed.



CAD FILE EDIT

Through the integrated CAD, the operator adjusts slightly the cutting file on board. It shows the cutting file preview and position inside the cutting area.



It offers the chance to:

- move each cutline inside the cutting area
- stretch each cutline
- rotate each cutline
- undo and redo changes
- select multiple or all the cutlines to apply same changes
- select the sorting cut to optimize the working time
- select for each cutline a designated "cutting pen"
- show or hide the starting points of the paths (green dots)
- reduce points of shapes



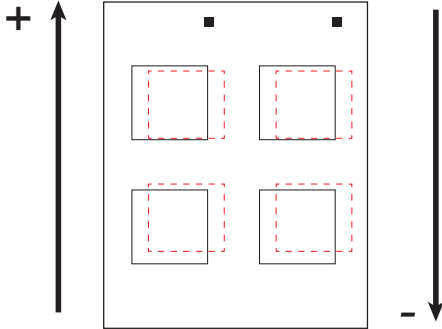
!!IMPORTANT!

After any modification it is mandatory to click "SAVE" button to apply the changes.

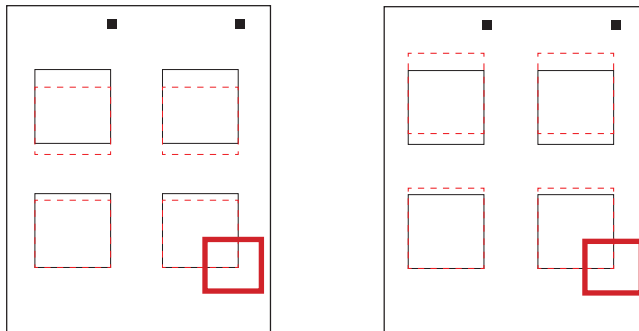
X AXIS



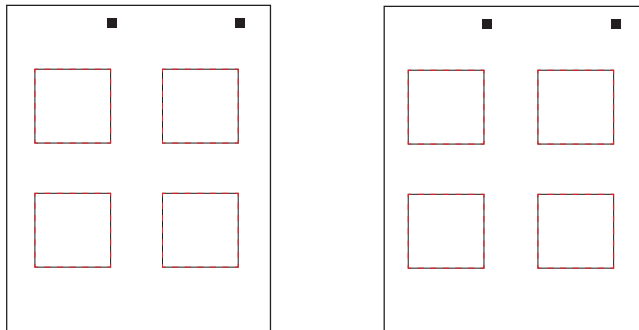
**CUTTING
DIRECTION**



STEP 1
VERIFY THE
CORRESPONDENCE OF
THE CUT WITH THE PRINT



STEP 2
AT THE POINT INDICATED,
ADJUST OFFSET TO ALIGN
THE CUT WITH THE PRINT



STEP 3
OPEN THE CAD, AND NEAR
THE "STRETCH" BUTTON,
SET THE CORRECTION
AMOUNT FOR X, PRESS
THE STRETCH BUTTON AND
THEN PRESS SAVE.

X (mm)	+5	Stretch
Y (mm)	0	

X (mm)	-5	Stretch
Y (mm)	0	



!!IMPORTANT!

After any modification it is mandatory to click "SAVE" button to apply the changes.

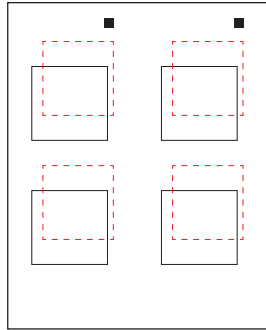
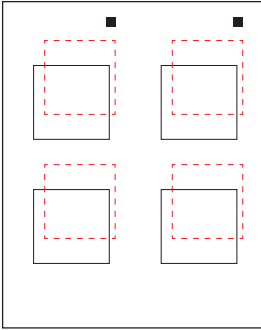
Y AXIS



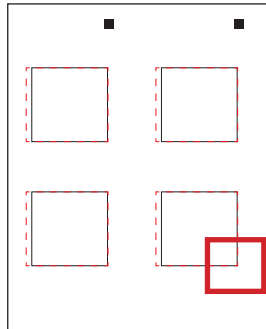
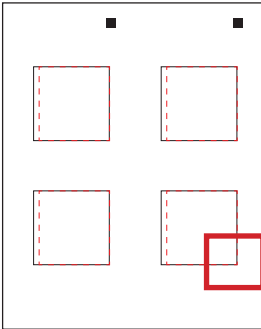
**CUTTING
DIRECTION**

+

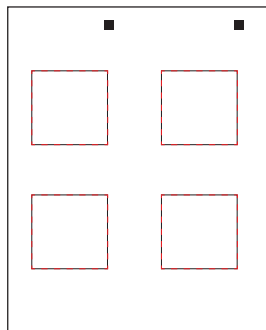
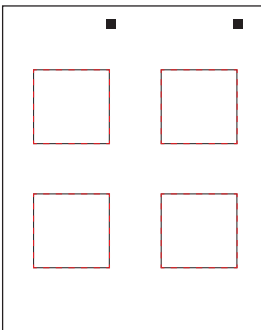
-



STEP 1
VERIFY THE
CORRESPONDENCE OF THE
CUT WITH THE PRINT



STEP 2
AT THE POINT INDICATED,
ADJUST OFFSET TO ALIGN
THE CUT WITH THE PRINT



STEP 3
OPEN THE CAD, AND NEAR
THE "STRETCH" BUTTON,
SET THE CORRECTION
AMOUNT FOR Y, PRESS
THE STRETCH BUTTON AND
THEN PRESS SAVE.

X (mm)

0

Y (mm)

+5

Stretch

X (mm)

0

Y (mm)

-5

Stretch

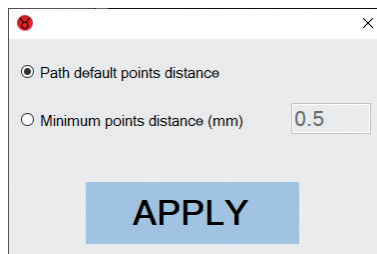


!!IMPORTANT!

After any modification it is mandatory to click "SAVE" button to apply the changes.

REDUCE POINTS

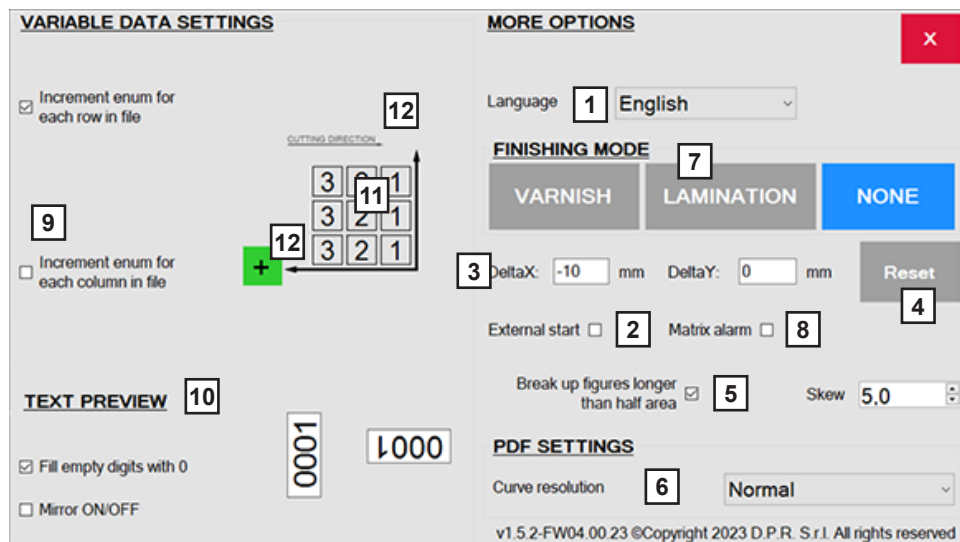
It allows you to reduce the points of the selected path. In case you cut a path with both straight lines and curves inside, and the material gets cut through just on the curves, you need to reduce the number of points inside that part. press the button, then a window will show up. You need to check “minimum points distance” and set the desired value (we suggest from 0.2 to 0.5mm)



!IMPORTANT!

After any modification it is mandatory to click “SAVE” button to apply the changes.

MORE OPTION / VARIABLE DATA SETTINGS



MORE OPTION

1. Language selection.

2. Determines if the start point of the cut shape is put outside the label path. Useful in case of problems with lamination

3. Delta values show the overall offset considering the multiple adjustments applied on Axis X and Y through the main interface.

These values adjusted in the main interface, are applied and saved in the system but after each cut they show “0” to make easier the offset setting procedure.

4. It is possible to reset at “0” the Delta values.
5. This flag allows the system to activate automatically the banner feature for the label path longer more than 70% of the working area. “Banner Working Mode”.
6. Curve resolution.

*Example:
curve 5mm*

High

High precision
Low speed

Normal

Normal precision
Normal speed

Low

Low precision
High speed
7. Set if you are working with varnish module or lamination core.

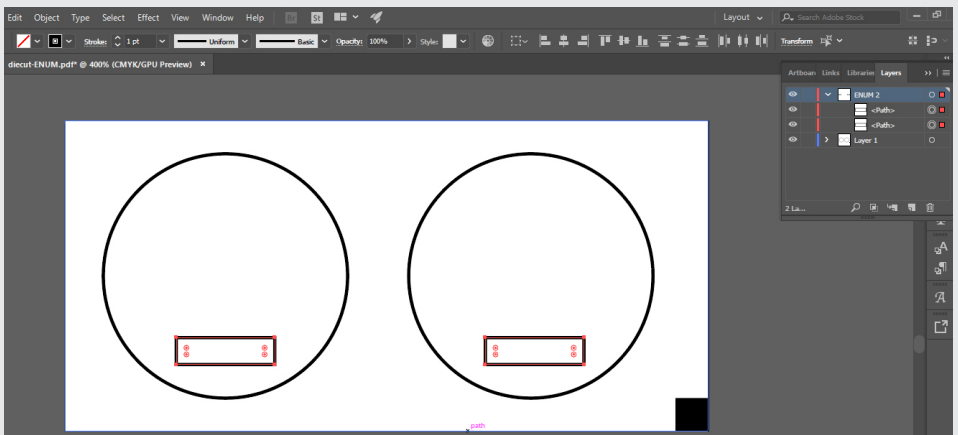
8. Activate or not the checking for the matrix core. If there is too much waste and the core reaches the top, taurus will stop.

VARIABLE DATA SETTINGS

9. Choose if you want or not to increment at each row or column.
10. Controls to set the output style of the variable data, for the horizontal and vertical textboxes.

To engrave variable data, you must first create inside your file a layer named ENUM n (the “n” stands for the number of the laser pen you want to use, so if for example you write “ENUM 2”, you will engrave with the laser pen 2).

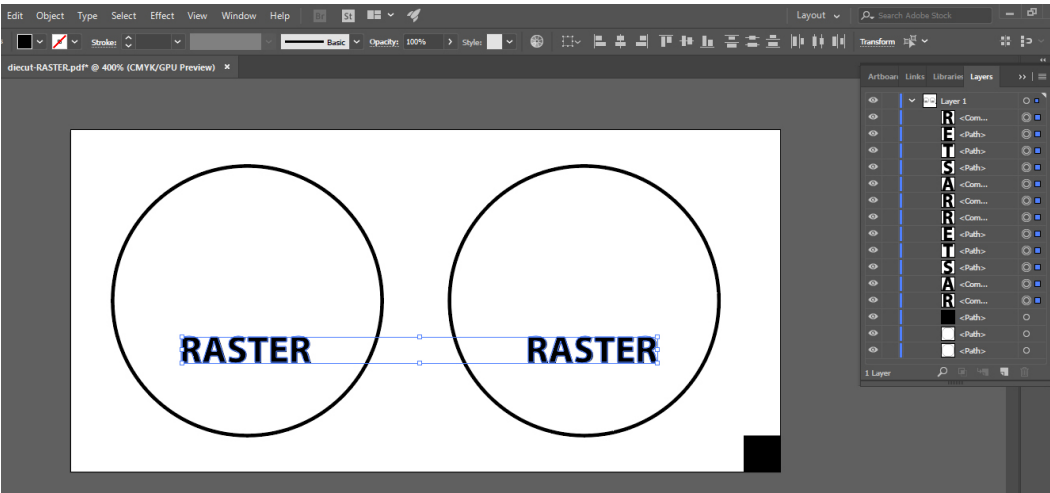
Then add to this layer the rectangles that will be considered as the text area for the variable data.



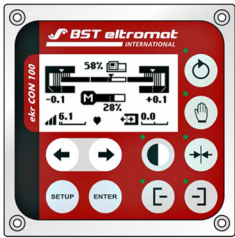
- 11. The preview of the increment order among the rows and the columns of the textboxes.
- 12. Controls to set the verse of increment for rows and columns.

FILLED PATTERNS

To engrave filled patterns, you must put inside your file vectorial filled shapes (without any contour, or it will be considered as a cutting lines path).



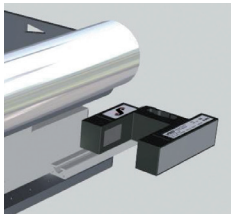
HOW TO SET WEB GUIDE



On the control panel all control and display elements to manage the operation of the web guiding system are shown.

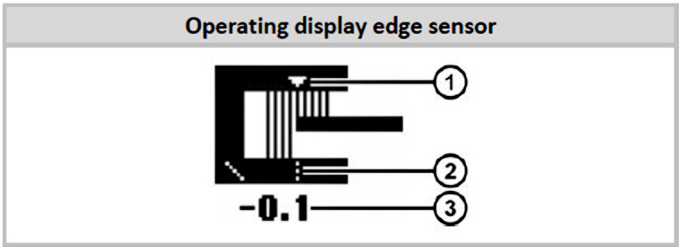
Below are the only two buttons used by the operator to switch the operation mode, from “centre positioning” required during the media loading to “automatic” once the media has been properly loaded through the system.

Function	Key	Designation	Description
Operating mode selection		Automatic	Automatic web guiding
		Centre positioning	Centre positioning of the guiding device



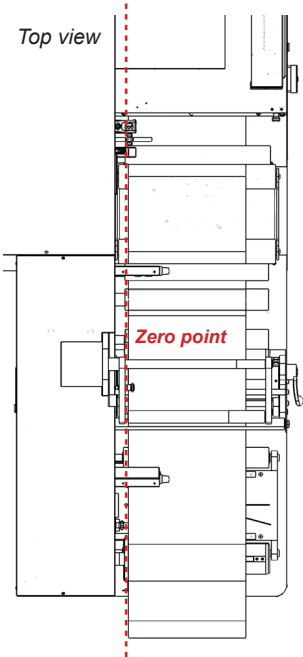
The edge sensor is properly set by the manufacturer, where (2) the centre of the sensor scanning area is aligned to the “zero point” media edge.

Below is the edge sensor status constantly displayed on the control panel, for correct operation, the numeric value (3) should not exceed ± 4 .



Symbol meanings

①	The white triangle marks the set position of the web edge in the sensor scanning area.
②	The dashed line marks the centre of the sensor scanning area.
③	The numeric value indicates the current web edge position in the sensor scanning area (unit mm).



MEDIA LOADING

1. All the core holder controllers must be off.
2. Set the web guide in “center positioning” operating mode.
3. Fix an empty cardboard core (wide as the media width to be used) onto the rewinder.
4. Load the input roll onto the Unwinder Core Holder.



!IMPORTANT!

it is mandatory to place the input media roll against the iron plate, it defines the media edge “zero point”.

5. Keeping the nip roller modules open, pass the media through the unit following the diagram showing the media path.
6. Fix the media end to the empty core onto the rewinder core holder.



!IMPORTANT!

it is mandatory to tape the media while keeping the edge against the iron plate, to guarantee the media path alignment through the system.

7. Close the nip roller modules.
8. Activate and set the core holders controllers.
9. Push “forward media” on touch screen to check if the media has been loaded properly and straight.
10. If required, load the lamination. Pay attention to align it on the desired position.
11. Load the job and start the cutting process.
12. Once enough media cut, pause the job and peel off the waste and tape it on its dedicated core. Resume the job for few more copies until the finished labels are rewound on the core.
13. If require, Pause the job to:
 - Set the back rotary blades to remove the external trims.
 - Set blade holders to split the input roll on multiple rows.
14. Resume the job.
15. Finally Pause the job and tape each row onto its own cardboard core.
16. Resume the job.

HOW TO DESIGN THE PRINT AND CUT FILE.

The digital workflow requires the “*Print File*” used by the printing engine to print the input roll and the “*Cut File*” used by Taurus to allow the cutting process.

Both files having the same width as the roll of media used are required to be saved in horizontal view (landscape).

The graphic and the black-mark positions printed on the media must match exactly the same positions designed in the cut file.

PRINT FILE

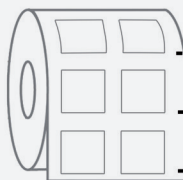
Print file includes:

- the graphics
- the black-mark



!!IMPORTANT!

The printed input roll must be rewound as shown by the diagram in order to be properly managed by Taurus.



CUT FILE

Cut file can be designed with any Adobe Illustrator and Corel Draw version and saved as vector PDF only, it includes:

- the cutlines (**add them by default in a layer named “0”**)
- the black-mark set into its own layer



!!IMPORTANT!

The cut lines have to be set all together into the same layer to be cut with the same laser settings while if any cutline has to be associated to a specific cutting pen then it should be set into a layer named with the selected cutting pen name.

I.E. the cut file within 3 cut lines A, B and C. If we want to process the cut line B only within cutting pen nr. 2, the cut line B will have to be set into its designated layer named “2”.



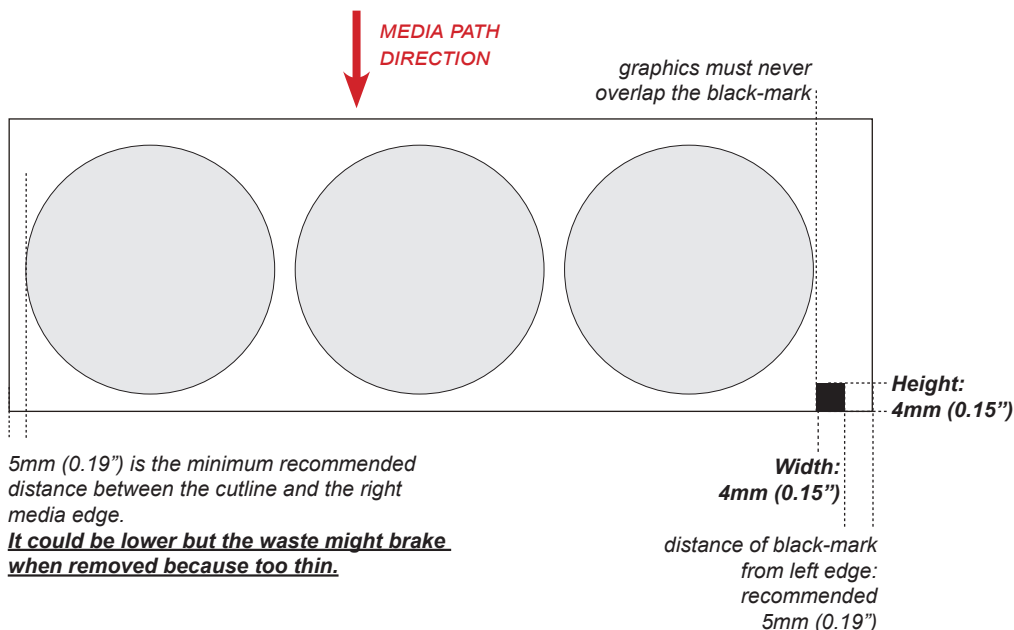
!!IMPORTANT!

The cutline must be: COMPLETELY VECTORIAL WITHOUT ANY FILLING. 100% BLACK. 1PT AS THICKNESS:

Make sure to remove any guide and hidden layers from file.

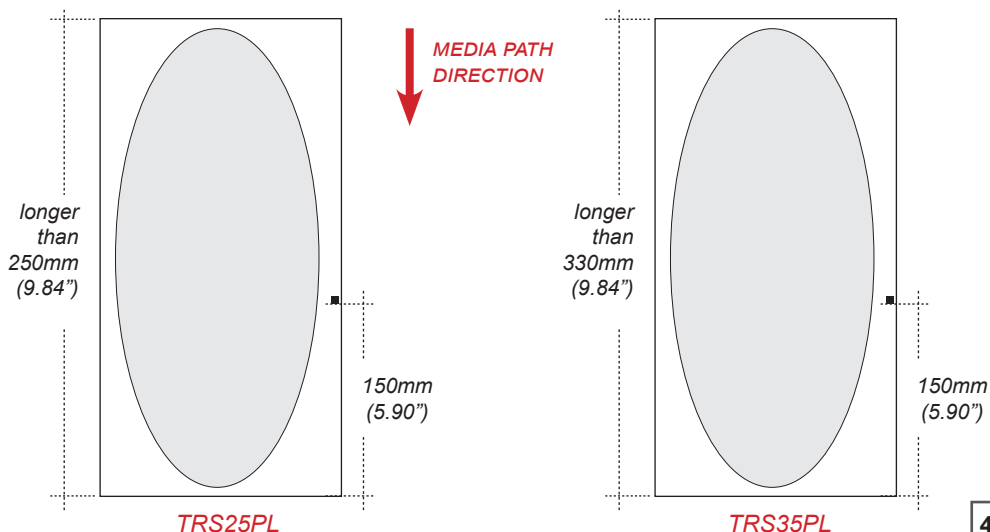
BLACK-MARK POSITION

- The recommended black mark size is 4x4mm (0.15" x 0.15"). While the height of the mark must be mandatory 4mm (0.15"), its width is 4mm minimum but it could be wider.
- Black Mark has to be placed bottom-right and it has to be the lower object in the file.



HOW TO CUT LABELS LONGER THAN THE CUTTING AREA

When the label is longer than 250mm (9.84") on TRS25PL or longer than 330mm (13") on TRS35PL, the black-mark has to be placed 150mm from the bottom of the file.



HOW TO CUT BLANK LABELS

1. Select "Unprinted Roll".
2. Import the cut file with no black mark.
3. Set the Gap between each layout.
4. Click "Start" to process the job of unlimited or preset blank labels.

HOW TO CREATE THE QR / DATA MATRIX 2D CODE

This feature allows system to load automatically the cut file related the job printed onto the media.

Simple steps to set properly the data matrix code.

- use any QR code generator.
- mandatory size is 10x10mm.
- printed once at the beginning of each job.
- positioned at least 5mm from the media edge (same site of black-mark).

QR / DATA MATRIX SPECIFICATION

*F(diecut file name),L(laser parameters name),D(distance between marks(mm)),
M(media width(mm)),T(working mode (1=continuous, 2=start and stop),
N(copies to do (letter "u" for unlimited, or the number of layouts))*

Example:

Fartwork_A,Lpaper label,D100,M100,T1,Nu

OPEN SETTINGS ?

Type: QR CODE

Cut file (name): FILE_A

Laser parameters file (name): paper label

Step between marks (mm): 100

Media width (mm): 100

Working mode: Continuous

Copies to do: 1 Unlimited ON

Code: FFILE_A,Lpaper label,D100,M100,T1,Nu

EXPORT DATAMATRIX

PREVIEW

TAURUS CODE GENERATOR

To create a QR / DATA MATRIX with the previous specifications, the quickest way is to use our "Taurus Code Generator" application (downloadable from our website)



!!IMPORTANT!

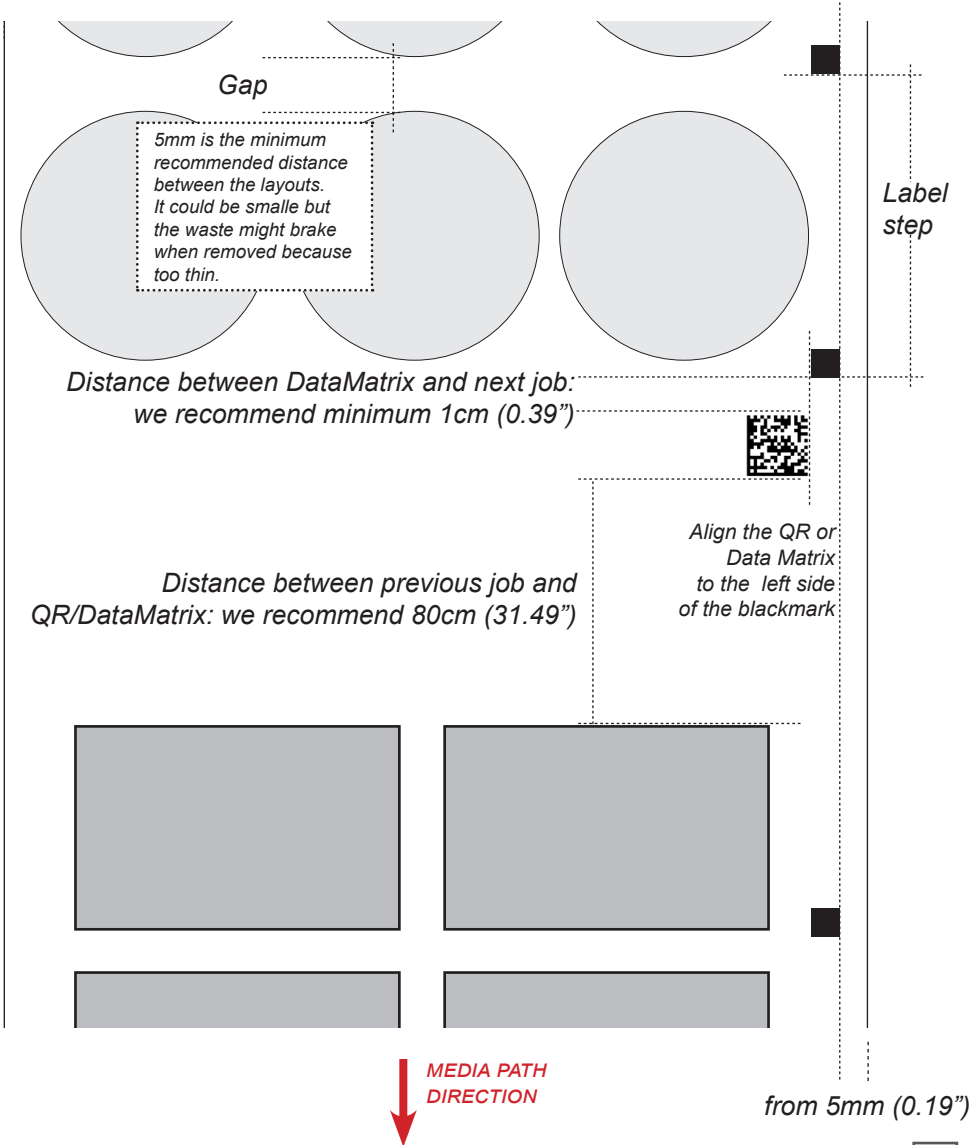
Make sure to write exactly the same cut file and laser parameters name including any space or symbol.

QR / DATA MATRIX TEST

To verify the generated QR / DATA MATRIX code satisfies the system requirements, print it on the sheet and place it under the reader.
Click “test” on the main interface. The system will open a window showing the string of that code.

QR / DATA MATRIX READER

Slide the reader on the iron bar support to better read the code printed onto the media.



COMMUNICATION SPECIFICATIONS

The user application must communicate with the Taurus server by using tcp/ip.

By default the server ip is the same of the network plugged to the ethernet port, and the server port is the 3333.

You can't send to the server more than 65MB of data.

The (), +, "", and ... characters in this documentation are used just to simplify the understanding, and they are not part of the commands.

Each command sent or received ends with "!", used as terminator. If you send unrecognized command, the server will return "Unknown command sent!"

OBTAIN TAURUS STATUS

Command: GET_STATUS!

Description: With this command you get the status of the taurus and its jobs. Each block of data containing taurus status or job data, ends with a 0x17 hexadecimal character.

Return data:

(TAURUS STATUS)

TAURUS STATUS: *not cutting/cutting/paused* + 0x17 (end of taurus status data) +

(JOB1)

N:(job code),STJ:(job status),FD:(number of files completed),FTD:(number of files to do),C:(customer),TS:(job start time) +

; (end of JOB1 data) +

(FILE_A OF JOB1)

F:(file name),ST:(file status "not cutting/cutting/paused/suspended/completed"),M:(material),CT:(cut tests done),LD:(layouts done),LTD:(layouts to do),TL:(total of labels done),TE:(time elapsed in seconds),MS:(material speed "x m/min/start and stop/sheets"),FS:(file start at),CS:(laser power consumption in kW) + ; (end of FILE_A data) +

(FILE_B OF JOB1)

F:(file name),... + ; (end of FILE_B data) + 0x17 (end of JOB1 block of data) +

(JOB2)

N:(job code),... + ; (end of JOB2 data) +

(FILE_C OF JOB2)

F:(file name),... + ; (end of FILE_C data) + 0x17 (end of JOB2 block of data) + ! (terminator)

Example of returned data (line feed and carriage return are shown here, and they are not actually returned):

(if after the commands code there isn't any data, it means that this value is not set yet. For example if after TS: there isn't anything, it means that the job is not started yet)

TAURUS STATUS:cutting(0x17)

N:001,STJ:cutting,FD:0,FTD:2,C:Customer 1,TS:dd-mm-aaaa H:mm;

F:file1,ST:cutting,M:paper label,CT:3,LD:100,LTD:2000,TL:300,TE:3500,MS:16 m/min,FS:dd-mm-aaaa H:mm,CS:400;

F:file2,ST:not cutting,M:paper label,CT:0,LD:0,LTD:3000,TL:0,TE:,MS:,FS:,CS:0;(0x17)

N:002,STJ:not cutting,FD:0,FTD:1,C:Customer 2,TS,;

F:file3,ST:not cutting,M:plastic label,CT:0,LD:0,LTD:2000,TL:0,TE:,MS:,FS:,CS:0;(0x17)!

JOB ENDED NOTIFICATION

Description:

Every time a job ends (so whenever the layouts to do for each file are completed) the server will remove it from the queue, and provide to each connected user a report.

The Taurus software also stores a report of any completed job in C:Taurus\Report\Queue jobs completed report.txt

Return data:

(JOB1)

N:(job code),STJ:(job status),FD:(number of files completed),FTD:(number of files to do),C:(customer),TS:(job start time) + ,TF:(job end time) + ; (end of JOB1 data) +

(FILE_A OF JOB1)

F:(file name),ST:(file status "not cutting/cutting/paused/suspended/completed"),M:(material),CT:(cut tests done),LD:(layouts done),LTD:(layouts to do),TL:(total of labels done),TE:(time elapsed in seconds),MS:(material speed "x m/min/start and stop/sheets"),FS:(file start at),CS:(laser power consumption in kW) + ; (end of FILE_A data) +

(FILE_B OF JOB1)

F:(file name),... + ; (end of FILE_B data) + ! (terminator)

Example of returned data (line feed and carriage return are shown here, and they are not actually returned):

N:001,STJ:completed,FD:2,FTD:2,C:Customer 1,TS:dd-mm-aaaa H:mm,TF:dd-mm-aaaa H:mm;

F:file1,ST:completed,M:paper label,CT:2,LD:1000,LTD:1000,TL:3000,TE:2000,MS:16 m/min,FS:dd-mm-aaaa H:mm,CS:400;

F:file2,ST:completed,M:paper label,CT:2,LD:2000,LTD:2000,TL:8000,TE:3000,MS:start and stop,FS:dd-mm-aaaa H:mm,CS:500;

APPEND JOB TO QUEUE:

Command:

APPEND:N:(job code),C:(customer);(FILE_A->)F:(file name),M:(material),LTD:(layouts to do (number or "u" for unlimited));(FILE_B->)F:(file name),...;!

Description:

This command allows you to append a new job to the queue.

YOU MUSTN'T USE FILES WITH THE SAME NAME AMONG THE JOBS. FOR EXAMPLE YOU CAN'T ADD FILE_A TO BOTH JOBS N:001 AND N:002, OR ADD IT TWO TIMES TO THE SAME JOB.

Example of sent data:

APPEND:N:001,C:Customer 1;F:FILE_A,M:paper label,LTD:300;F:FILE_B,M:plastic label,LTD:200;!

Return data:

If the command syntax is correct it returns "Job appended to queue with success!".

Otherwise it returns "The APPEND request syntax is not correct, it should be "APPEND:N:job_code,C:customer;F:file_1,M:material,LTD:layouts_to_do;F:file_2,M:material,LTD:layouts_to_do;...(terminator)!"

REMOVE JOB FROM QUEUE:

Command:

REMOVE:N:(job code/all);F:(file name 1,file name 2/all)!

Description:

This commands allows you to remove jobs or files from the queue.

Example of sent data:

(REMOVE ALL JOBS)	REMOVE:N:all!
(REMOVE ALL FILES OF A JOB)	REMOVE:N:001;F:all!
(REMOVE SPECIFIED FILES)	REMOVE:N:001;F:FILE_A,FILE_B!

Return data:

If the command syntax is correct it returns "Files removed with success!".

Otherwise it returns "Remove didn't go properly:(list of errors)!".

JOBS QUEUE WINDOW

Taurus queue

Job code	Customer	Order	File	Material	Layouts done	Layouts to do		
001	Customer 1	1	FILE_A	paper label	0	5		
		2	FILE_B	plastic label	5	5		
002	Customer 2	1	FILE_C	paper label	0	5		
		2	FILE_D	plastic label	5	5		

Description:
Each time a job is appended to the queue, it gets shown in this window.

The user can see for each job which files needs to open, their order, the type of material, the layouts to do.

The user can even choose to delete the files from queue, by clicking on the trash can icon on the right.

Whenever a job gets completed the layouts to do for each file, the job will be considered ended and removed from the window.

REGULAR MAINTENANCE

Keep the cutting chamber cleaned from fumes and glue.

Keep the nip rollers clean of glue.

Keep monitored the fume extractor filters.

Keep the water chiller's filter clean from dust.



!IMPORTANT!

Clean the unit using alcohol only, do not use chemical agents that might damage the unit.

Do not use blades to remove glue or sticky waste from the roller or any part of the unit.

SAFETY

**WHILE OPERATING WITH THIS EQUIPMENT ALWAYS WEAR
PROTECTIVE GLASSES**

**DO NOT INSERT HANDS INTO THE NIP ROLLERS MODULES
PAY ATTENTION TO THE SHAFTS WHEN OPERATING**

TROUBLESHOOTING

if you are experiencing the following issues with this unit, please follow troubleshooting steps below

“ERROR: PROCESSING THE FILE WENT WRONG” or “ERROR: The .pdf file is not built correctly”

To solve make sure that:

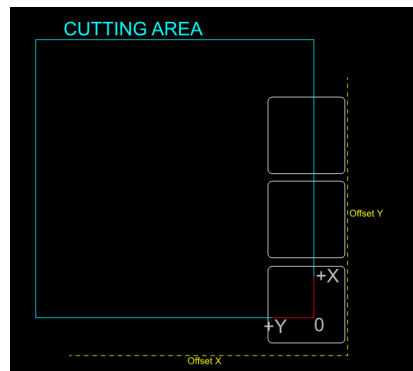
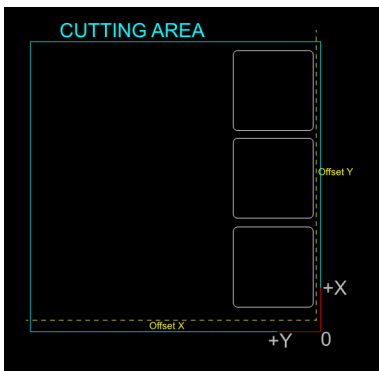
- The cut file contains just the cut lines and not any filled figure (at exception of the mark while working with jobs on printed material)
- The cut file name contains just standard occidental characters
- Check again the “HOW TO DESIGN THE PRINT AND CUT FILE” section (pag.37)
- If there are filled patterns, ensure that they are made properly as shown in the “FILLED PATTERNS” section
- If the cut file uses variable data, ensure that it is integrated properly as shown at the end of the “VARIABLE DATA SETTINGS” paragraph (pag.32)

“ERROR: THE CUT IS OUTSIDE THE AREA” or “ERROR: Cut outside the area on the axis...”

To solve make sure that:

- The cut file is inside the cut area. To check this open the cad and look the preview. Set the offsets (back from the main interface) in order that the shapes are contained inside the light blue cutting area.

If even the offsets aren't enough for this, select all the figures from the cad, and use the “Move” button to shift them.



-Slow down the cut speed

-Press “MORE OPTIONS” and check “Break up figures longer than half area”

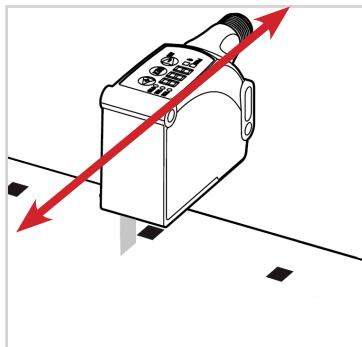
-If you are working on printed material make sure that the step between marks value is correct

-If you are working on printed material with a shape longer than the cut area, it is crucial that the cut file contains the mark at 150mm from base (check “HOW TO CUT LABELS LONGER THAN THE CUTTING AREA” at page 38)

“ERROR: Blackmark not found”

To fix the problem do:

-Align the mark sensor at the same spot of the mark



-Reset the mark sensor (check “DEVICE RESETTING” at “MARK SENSOR” page 17)

-Calibrate the mark sensor (check the “HOW TO CALIBRATE MARK SENSOR” page 18)

“MARK POSITION CHANGED AND MAY NOT GET READ. CHECK THE MARK SENSOR ALIGNMENT”

This alert shows up when the mark alignment has changed, and since the mark sensor may not be on its spot and be missing it, it is recommended to check again the sensor alignment

“MARK THICKNESS IS NOT 4mm”

The mark thickness is not 4mm, the laser may not behave properly during the cut.
Fix the print and the cut file

“MARK DISTANCE FROM BASE IS NOT 150mm”

This alert shows up while you are working with labels longer than the area on printed material, and you don't put the mark at 150mm from the base.

Fix the print and the cut file with the mark at the suggested height (as explained at “HOW TO CUT LABELS LONGER THAN THE CUTTING AREA” page 38)

“CUSTOM VALUE NOT VALID”

To fix set the custom offset value for the “on fly alignment” with a proper decimal number

“OFFSET X IS NOT VALID”

To fix set the offset x value with a proper decimal number

“OFFSET Y IS NOT VALID”

To fix set the offset y value with a proper decimal number

“Enter valid step between marks” or “DISTANCE BETWEEN MARKS IS NOT VALID”

To fix set the step between marks value with a proper decimal number major than 0

“ENTER VALID MATERIAL WIDTH” or “MATERIAL'S WIDTH IS NOT VALID”

To fix set the media width value with a proper decimal number major than 0

“ENTER VALID CUTTING ORDER VALUE FOR Path 1”

To fix set the cutting order value with a proper decimal number major than 0

“CUTTING ORDER VALUE MAJOR THAN...”

The cutting order value is major than the max quantity of figures present inside the file, and must be set below this amount

“Path 1 AND Path 2 HAVE THE SAME CUTTING ORDER VALUE”

The cutting order can't be the same for two shapes, it must differ for each one

“CUTTING PEN FOR Path 1 HAS TO BE FROM 0 TO 9” or “ENTER VALID CUTTING PEN VALUE FOR Path 1”

The pen value set for the shape must be from 0 to 9

“ENCODER NOT LOWERED”

When the Taurus starts to cut, the encoder gear must be lowered and touch the material

“ENTER VALID MINIMUM POINTS DISTANCE”

The minimum points distance value must be at least 0.0mm

“ERROR: enter valid number of copies”

The amount of copies set must be at least 1

“ERROR: enter valid gap between layouts”

Set a valid value in mm for the gap between layouts

“ERROR: enter valid distance between marks”

Set a valid value in mm for the distance between marks

“ERROR: enter valid offsets and rotation”

The values for offsets and rotation must be decimal numbers

“ERROR: ENTER VALID MEDIA WIDTH”

Set a valid value in mm for the media width

DATAMATRIX READING FAILED

When the datamatrix scan goes wrong, you will get an alert with the details of the error:

-Cut file not found.

It means that the cut file name parameter is missing from the datamatrix code (check [“HOW TO CREATE DATAMATRIX 2D CODE”](#) page 39) or that the file doesn't exist inside the datamatrix files folder, and must be placed there.

To show this directory, press the “FILES FOLDER” button inside “DATAMATRIX READING” group, on the main interface. Consider also that the cut file name inside the datamatrix code, MUST NOT CONTAIN THE EXTENSION OF THE FILE (so without .pdf or .dxf at the end).

-Laser config file not found.

It means that the laser config file name parameter is missing from the datamatrix code (check [“HOW TO CREATE DATAMATRIX 2D CODE”](#) page 39) or that the laser config file doesn't exist.

Make sure that the file name set is correct, and that it doesn't contain the .xml extension inside the datamatrix code.

-Step between marks not acceptable.

It means that the step between marks parameter is missing from the datamatrix code (check [“HOW TO CREATE DATAMATRIX 2D CODE”](#) page 39) or that its value is not acceptable.

-Media width not acceptable.

It means that the media width parameter is missing from the datamatrix code (check [“HOW TO CREATE DATAMATRIX 2D CODE”](#) page 39) or that its value is not acceptable.

-Working mode not acceptable.

It means that the working mode parameter is missing from the datamatrix code (check [“HOW TO CREATE DATAMATRIX 2D CODE”](#) page 39) or that its value is not acceptable.

-Layouts to do not acceptable.

It means that the layouts to do parameter is missing from the datamatrix code (check [“HOW TO CREATE DATAMATRIX 2D CODE”](#) page 39) or that its value is not acceptable.

BUBBLE AT THE STARTING POINT



If the laser beam starting point generates a bubble (when using the lamination as shown in the picture) as resolution we recommend to open “*more option*” menu and flag External Start.