

***Summa*** / **valiani**  
your perfect cut

# INVICTA

Instruction and Maintenance  
Manual



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## 1 PREFACE

Thank you for choosing one our product. Invicta is a digital cutting system that allows the creation of objects by cutting different materials. This cutting system, depending on the equipment, can cut materials such as flat and corrugated cardboard, thermo-adhesive, reflective, painting plates, rigid cardboard and more resistant materials such as Foams and Forex.

The machine consists of a worktable with its tool holder, a support base, the control unit, the suction pump and the related components for correct assembly. Tools are supplied depending on different configurations chosen at the time of purchase.




Invicta is supplied with a software compatible with the Windows environment and the related USB cable for the Machine/PC connection (PC not included). This software allows the import of vector type files coming mainly from Adobe Illustrator® and Corel Draw®

### 1.1 TO ENSURE PROPER AND SAFE USE

- To ensure the safe and correct usage of your machine, please read this manual carefully before use.
- After reading this manual keep it in a handy place for quick consultation if necessary.
- Do not allow children to touch, or be near, the machine.
- The following symbols/icons describe important points to safely operate the machine. Please ensure that our safety and general operating instructions are strictly followed.

### 1.2 CONVENTIONS USE IN THIS MANUAL

To ensure safe and accurate usage of the machine, as well as to prevent injury to persons and property, the security measures contained in this manual are classified in three categories as described below. Be sure to get a full understanding of the difference between each of the categories before reading the manual.

 NOTE	<p>These are warnings to guide and optimize actions by the operator, or to better highlight the particular characteristics of the machine.</p>
 DANGER	<p>This category provides information that, if ignored, could result in serious injury to the operator.</p>
 CAUTION	<p>This category provides information that, if ignored, could result in injury to the operator and/or damage to the machine.</p>












### 1.3 SAFETY PRECAUTIONS (NOTE)











When using the cutting tool, take care not to set the blade more than necessary. An overly blade set-up might damage the cutting slip-mat and adversely affect the cutting quality.



PRECAUTIONS (DANGER)

 <b>DANGER</b>	
Do not touch the rollers or moving parts such as the carriage while cutting or plotting is in progress. Such action may result in injury	
Be sure to ground the earth terminal. If the cutting plotter is not grounded, the operator could suffer an electric shock in the event of current leakage.	
Keep your hands, hair, etc., away from the rollers or moving parts such as the carriage even if the machine is stopped, as it may suddenly start moving when data is received. Such action may result in injury.	
Do not disassemble, repair, or modify the machine. Such actions may result in an electric shock or create a fire hazard due to current leakage. Contact with the high-voltage parts within the cutting plotter may also cause an electric shock. If the machine requires repairs, please contact your sales representative or your nearest vendor for advice.	
Do not connect the machine to a non-rated power supply. The use of a different supply voltage may result in an electric shock or create a fire hazard due to current leakage.	
Do not use the machine in a location where it might be exposed to water, rain, or snow. Such locations may cause electric shock or create a fire hazard due to current leakage.	
If the machine generates smoke, overheats, emits a strange odor, or otherwise functions abnormally, do not continue using it. Turn off the power and unplug the power cord from the electrical socket. Use of the cutting plotter in such a condition may result in a fire hazard or electric shock. After confirming that smoke is no longer being emitted, contact your sales representative or nearest vendor for repairs. Never attempt to perform repairs yourself. Repair work by inexperienced personnel is extremely dangerous.	
Do not allow dust or metal scraps to adhere to the power plug. A dirty power plug may result in electric shock or create a fire hazard due to current leakage.	
Do not use the power cord if it is damaged. Use of a damaged cord may result in electric shock or create a fire hazard due to current leakage. Replace the power cord with a new one.	
Be careful when handling the cutting blade. Touching the blade with your bare hands may cause injury. Always wear gloves when handling blades. Do not touch the cutter blade whilst cutting is in progress.	
The machine while using vacuum pump or oscillating tools emits a sound pressure higher than 78 dB (A), for which the use of PPE is required.	

## 1.5 SAFETY PRECAUTIONS (CAUTION)

 CAUTION	
Do not use or store the machine in a location exposed to direct sunlight or the direct draft of an air conditioner or heater. Such locations may impair the performance of the cutting plotter.	
Do not use the machine in an excessively dusty or humid location. Such locations may impair the performance of the cutting plotter.	
Do not place any receptacle containing water or other fluid on top of the cutting plotter. Fluid falling inside the cutting plotter could cause electric shock or create a fire hazard due to current leakage.	
Do not use the cutting plotter in a location subject to excessive mechanical vibration or electrical noise. Use in such locations may impair the performance of the cutting plotter.	
When disconnecting the power cord or interface cable, do not pull on the cord/cable. Such action will damage the cord/cable, resulting in a fire hazard or, possibly, an electric shock.	
Do not clean the cutting plotter using volatile solvents such as thinners or benzene. Such actions may impair its performance.	
Provide sufficient space around the cutting plotter so that it does not strike any objects in its vicinity during cutting or plotting. Such contact may cause cutting or plotting to go out of alignment.	

## 1.6 CEE REGULATION

This manual has been written in accordance with the directions of CEE DIRECTIVE 2006/42/CE as detailed in the machine design definition. User instructions are an integral part of the machine. The criteria used for writing comply with the indications of the EUROPEAN STANDARD EN - 292 and, in particular, the point related to USER INSTRUCTIONS (instructions, general requirements and nature of the instructions).

## 1.7 NOTE ABOUT THIS MANUAL

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior written permission of the Construction Company.

- Product specifications and other information contained in this document are subject to change without notice.
- Although every effort is made to provide complete and accurate information, please contact your sales representative or the nearest dealer if you find any incorrect or unclear information or wish to make any other comments or suggestions.
- The Construction Company assumes no liability for damages resulting from incorrect use of the machine.

This instruction and maintenance manual is essential for the technician who will install and operate the machine for the first time. It also provides all the information needed to properly prepare the operator for using, and performing proper maintenance, on the machine. The instruction and maintenance manual is essentially divided into:

- Cover with the name of the machine
- Summary
- Preface
- Manufacturer's details and machine identification
- Instructions for the transportation, installation and use of the machine
- Machine maintenance instructions

The instructions, drawings, images and documents contained in this manual are of a technical nature and confidential property of the Valiani. They cannot be reproduced in any way, either entirely or in part, without prior written permission from the company.

## 1.8 SCOPE OF THE INSTRUCTION MANUAL

This instruction manual is an essential part of the machine and its scope is to provide all the information necessary to:

- Safely move a packed, or unpacked, machine.
- Correctly install the machine.
- Safely use the machine
- Safely and correctly carry out machine maintenance.
- Decommission and dismantle the machine with respect to the laws in force and the environment.

The instruction manual should be handled with care, using clean hands, and should not be placed on dirty surfaces. It should be protected from humidity, heat and used carefully so as not to damage its contents. Under no circumstances should any of its contents be removed or modified. Should the manufacturer make any changes to the machine he will provide new documentation if necessary.

## 1.9 INFORMATION REGARDING TECHNICAL ASSISTANCE

The machine is covered by a guarantee as detailed in general conditions of sale. If, during the guarantee period, there are any faults with the machine or with the way it works the manufacturer will, after identifying the problem, conduct repairs or replace any faulty parts deemed necessary. Unauthorised repairs, or the use of parts not provided by Valiani. (unless specified in writing by the Construction Company, will render the guarantee void and cancel any responsibility for damage caused by the machine as a consequence of unauthorised repairs or the use of unauthorised parts. For these reasons we strongly advise our clients to always call their sales representative, their nearest vendor or technical assistance department at Construction Company for advice.

## 1.10 SELECTION OF A USB CABLE

Please note that the maximum length of single USB cable cannot exceed 5 meters. Should a cable longer than 5 meters be needed please use signal repeaters for USB cables so as not to lose data signal strength between the computer and the machine.



Figure 1-1

## 1.11 WARRANTY CONDITIONS

The Construction Company guarantees that their products are soundly made and are free of manufacturing defects. For guarantee details please refer to the specific guarantee document supplied with this manual.

## 1.12 GENERAL INFORMATION

Carefully following the assembly, usage and maintenance standards described in this manual will ensure lasting performance and protect your investment. We suggest that you read and follow the recommendations carefully before machine start-up. We are available to offer any assistance that you may require. Please remember that non-observance of the advice and instructions included in this manual will, or could, result in the loss of warranty. As part of its continuing quality improvement programme Construction Company reserves the right to carry out modifications it believes to be necessary. For further details or any eventual problem, please contact us.

## 1.13 TRADEMARKS

All trademarks mentioned belong to their owners, third-party brands, product names, trade names, corporate names and companies mentioned herein may be the trademarks of their respective owners or registered trademarks of other companies and have been used for purposes of explanation and the owner's benefit, without implying a violation of copyright law.

## 1.14 COPYRIGHT

All the material contained in this manual is owned by the vendor and may not be reproduced in full, or in part, without prior written consent from the vendor.

## 2 WARNINGS

### 2.1 LABELS PRESENT ON THE MACHINE

The machine is fitted with various labels to show either data or safety concern areas for the operator. Referring to the photograph below these are:

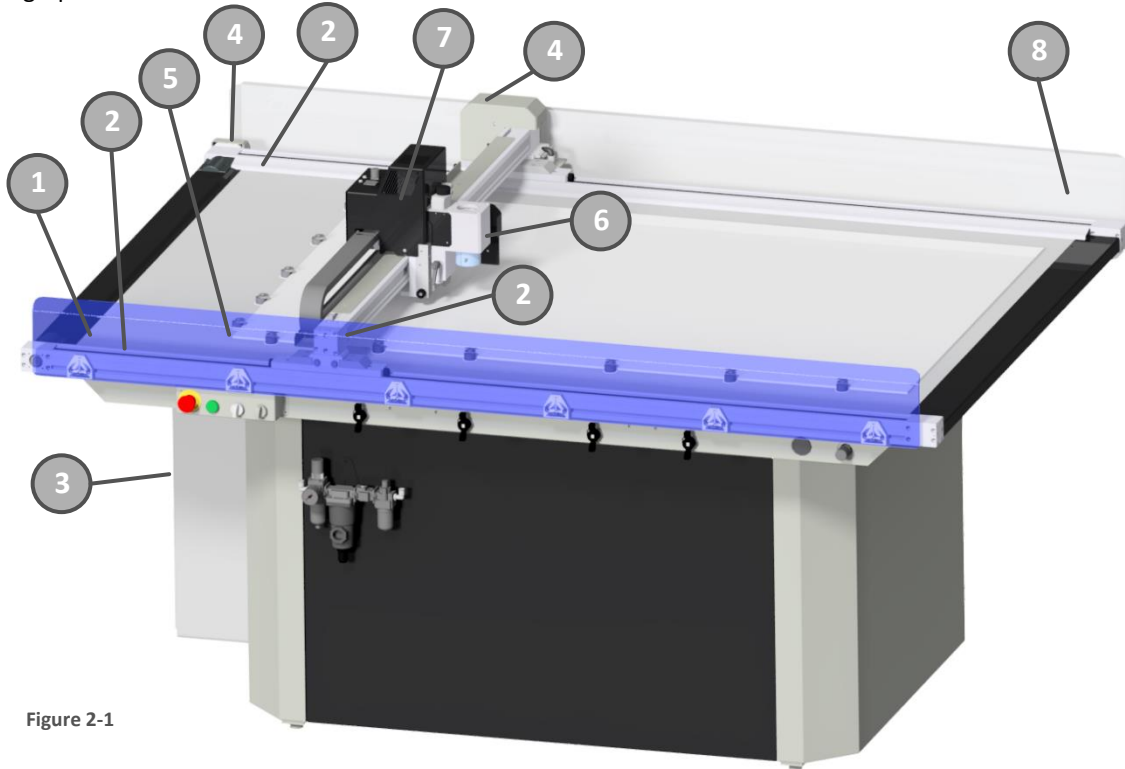


Figure 2-1

### 2.2 DETAILS OF THE VARIOUS LABELS

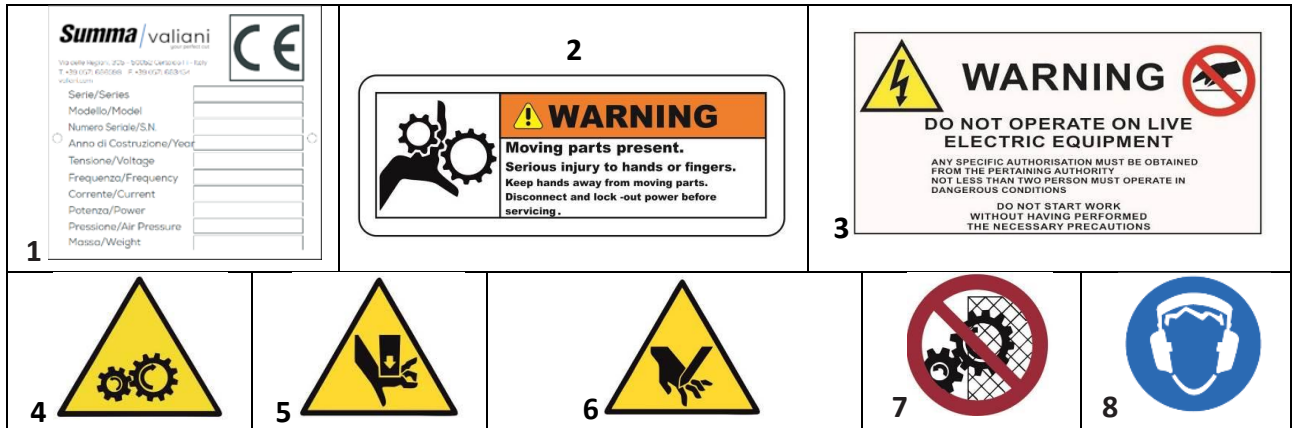


Figure 2-2

**LABEL 1:** Plate showing: manufacturer data, model, year, serial number, weight, electrical and pneumatic information of the machine.

**LABEL 2:** Adhesive label: Hand Entanglement / Rotating Gears warning (Moving parts present. Serious injury to hands or fingers. Keep hands away from moving parts. Disconnect and lock-out power before servicing).

**LABEL 3:** Adhesive label: detailing the dangers of working with electrical equipment.

**LABEL 4:** Adhesive label: Rotating gears warning.

**LABEL 5:** Adhesive label: Hand crash warning.

**LABEL 6:** Adhesive label: Hand cut warning.

**LABEL 7:** Adhesive label: Do not remove protection while machine is on.

**LABEL 8:** Adhesive label: Wear hearing noise protection.

## 2.3 SAFETY EQUIPMENT FITTED TO THE MACHINE

The machine is equipped with various safety devices and an emergency stop button, to the drivetrain, that protects the operator from possible injury resulting from contact with moving parts.

Any mobile safety devices is fixed on the machine by screws. These devices are fitted to areas of the machine where there are moving parts, blades or sharpen tools or in any area that might generate possible danger to the operator while using the machine. The protective devices are made of polycarbonate or metal (depending on the models), secured by screws and removable only using wrench or allen keys.

The safety devices fitted on the machine are as follows:

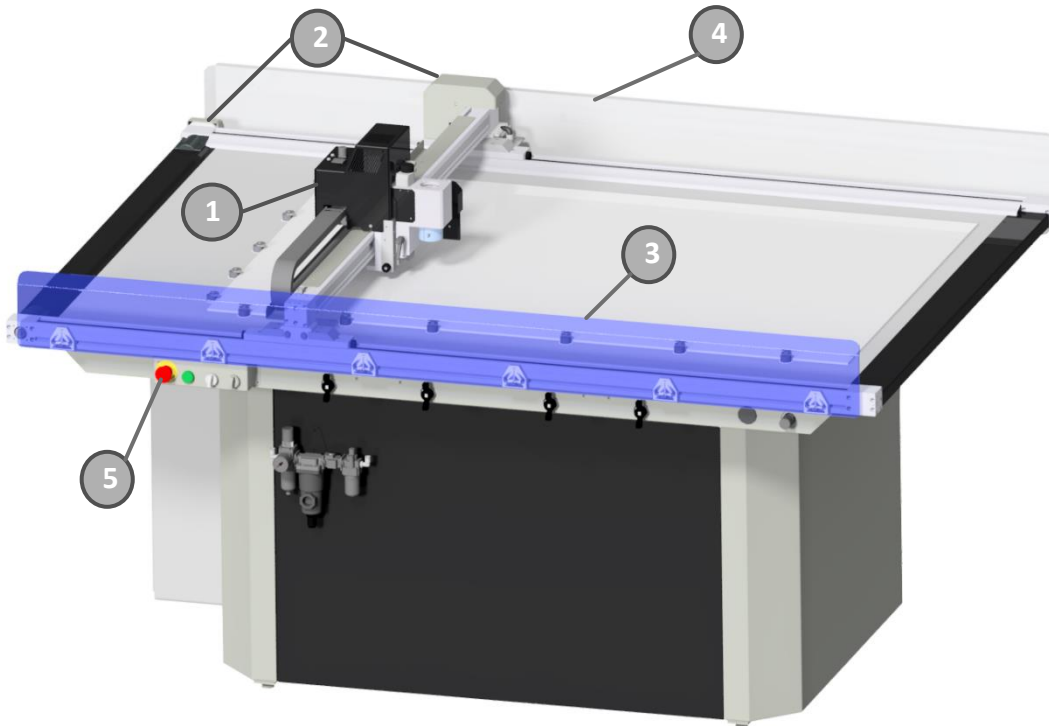


Figure 2-3

- 1 Cutting head unit cover (fixed protection, secured with screws).
- 2 Motors covers (fixed protection secured with screws).
- 3 Front safety guard (fixed protection secured with screws).
- 4 Rear safety guard (fixed protection secured with screws).
- 5 Emergency stop button (see section 4 of this instruction manual).



**DANGER!** Before switching the machine on, please check that all the safety covers are closed. Ignoring these precautions could result in serious injury to the operator, to anybody nearby or potentially damage the machine. Under no circumstances use the machine with the mobile safety covers open or the fixed covers removed.

## 2.4 OPERATOR SAFETY MEASURES

According to the type of work conducted with the machine some maintenance work will require the operator to wear gloves and safety glasses.

While servicing the machine, it is recommended to use personal protective equipment:

- Gloves while cleaning the machine;
- Gloves with operations involving the cutting head and cutting blade;
- Safety glasses while performing maintenance and inspection of the compressed air system

## 2.5 OTHER RISKS

This section has the scope of identifying the other risks associated with using the machine so that operators can identify situations in which they should take particular care when doing specific tasks.

- During installation take the outmost care when positioning the machine on its base, where there could be a risk of you losing your balance and dropping the work table. Only people directly involved in the assembly operation should be allowed into the assembly area.
- Be very careful to avoid injury from the cutting blade during any work conducted on the cutting blade head or the blade itself. Always wear safety gloves in these situations.
- To avoid possible injury to hands or fingers do not to place your hands on the worktable, under the cutting head carriage or the cutting head while the machine is working.
- Wait for at least a minute after switching the machine off before performing maintenance on electrical equipment so that any residual electrical energy has had time to dissipate
- Even if the machine is stopped the "EMERGENCY" button must be pressed to put the machine into "suspend mode" before doing any maintenance work (including adjustments).



**NOTE! Before doing any maintenance to the electrical system the operator must read this manual and refer to the circuit diagrams provided.**



**NOTE! This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.**

## 3 INTRODUCTION

Invicta consists of a “frame” to be assembled on site, which will form the basis of the machine, the worktable and the frontal end rear protection shield. It will be enough to connect the parts together, mount the controller unit and connect the connectors to be operational. The tools are supplied separately and thanks to the innovative tool change system they are easy to use.

The software supplied with the machine will guide the operator in choosing the correct tool and using it.

Invicta is equipped with a camera (A) Figure 3-1 for printing crop mark detection (not available for AP version).

The camera in combination with the Opticrop software (Optional) allows the detection of printing crop marks, the repositioning of the vector file and consequently the creation of cuts and creases on pre-printed materials (not available for AP version).

AP versions defer for the from standard ones for the possibility to mount a second permanent tool, which consists in a pen holder capable to add text on materials.

### 3.1 MATERIAL HOLDING SYSTEM

Invicta comes as standard with a dual media holding system, which consists of a pneumatic clamping system or vacuum table.

The materials to be hold:

- Mechanically, using the fold-away pneumatic clamps (B) (D)
- Through suction, using the vacuum table (C)
- Alternatively, a combination of both is also available

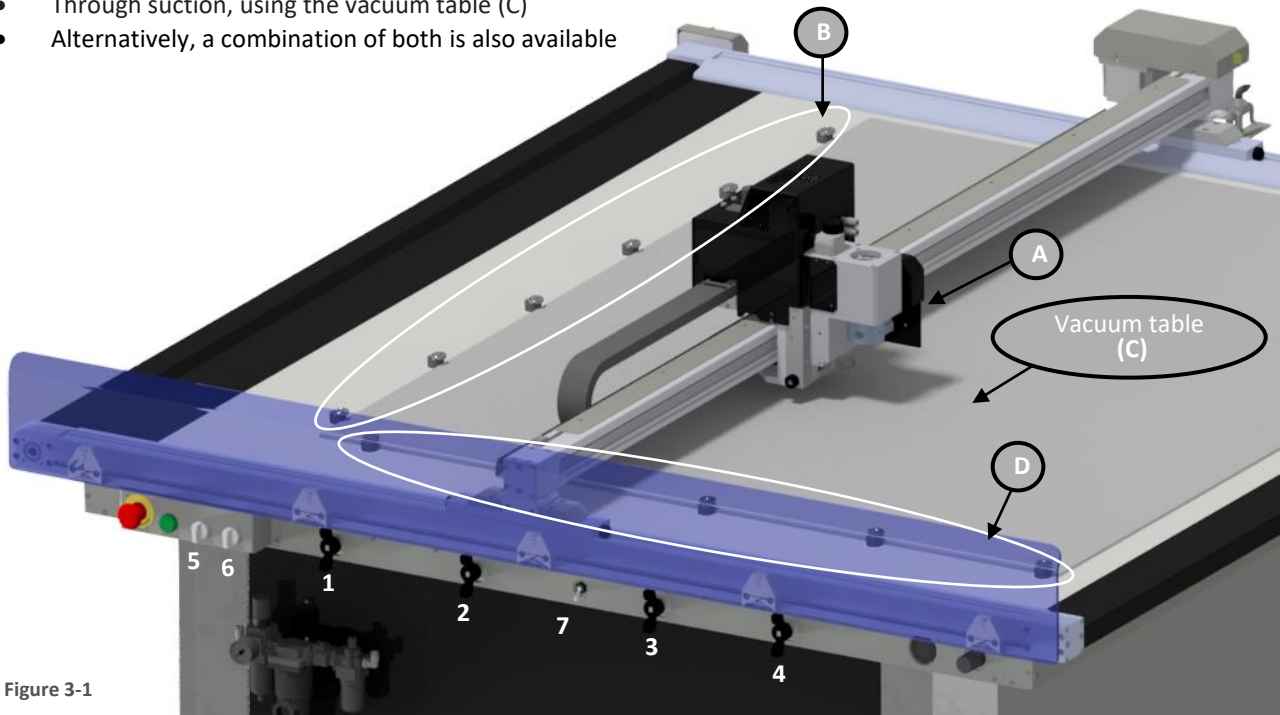


Figure 3-1

#### 3.1.1 VACUUM TABLE

On the Invicta V0812, V1015 and V1612 the working surface is divided in four sectors, which can be enabled or disabled depending on the “material size”. After switching on the vacuum pump (5), the selector (6) allows to activate or deactivate the suction. The four taps (1, 2, 3, 4) are intended to determine which zones we are going to use to hold the material.

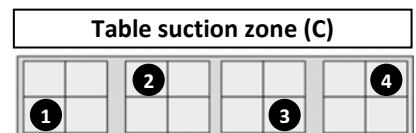


Figure 3-2

On the Invicta V0806 the working surface is not divided in sectors. After switching on the vacuum pump (5), the switch (6) allows to activate or deactivate the vacuum to all the table.

#### 3.1.2 FOLD-AWAY CLAMPS SYSTEM

On the Invicta V1612 there's a pneumatic selector (7) do disable all vertical clamps (B). This has the aim to allow you to load a material on a roll.

## 3.2 CUTTING TOOLS

The machine can be used with several tools that allow a greater variety of cuts, types of workable materials

**Grey – Tangential Drag Knife (included):** The tangential cutting tool allows you to cut a wide variety of materials with a maximum thickness of 5mm (0.196”). The use of drag knife allows you to perform cuts even at high speed.

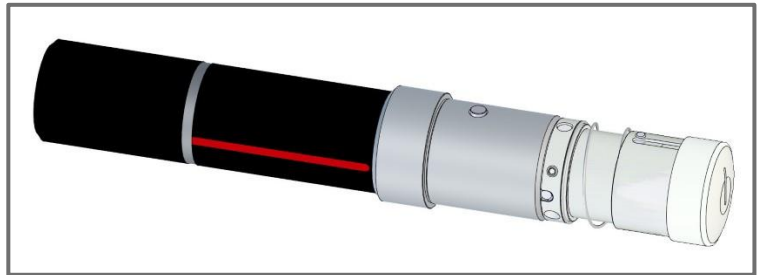


Figure 3-3

Depending on the blade holders and the kind of job the machine is supposed to perform the following blade might be available:

	Code	Description	Fields of use
	L100	Multipurpose Blade. 50°Angle	Universal knife for materials such as paper, cardboard, thin plastic, soft PVC, Foam Board.
	L100B	Multi-purpose Blade. 38 °Angle for a more precise cut on small radius.	Universal knife for materials such as paper, cardboard, thin plastic.
	L1W40	Carbide multipurpose blade for a longer sharpening duration. 50 ° angle.	Long lasting blade ideal for very abrasive materials. (See L100)
	L1W52	Carbide multipurpose blade for a longer sharpening duration and with a 38 ° angle for greater precision on cuts with a reduced radius.	Long lasting blade ideal for very abrasive materials. (See L100B)
	002156	Multipurpose T16 Blade (38° Angle)	Universal knife for soft materials. To make sharp edges.
	002157	Multipurpose T17 Blade, with a tighter angle for greater precision on cuts with a small radius. (25° Angle)	Sole leather, cardboard, thin polyester. To make sharp edges.

**NOTE:** For any special need, other blades might be available. Please contact your local Valiani dealer, or the manufacturer for further information.

**Black - Oscillating Cutting Knife (Optional):** The oscillating cutting tool is operated by compressed air and it is suitable for both soft and rigid materials. The tool reaches a number of 9000 oscillations per minute (rpm) with a stroke of 8mm (0.315”). Depending on the blade used, it can cut up to 20 mm (0.787”) thick \*. Minimum use pressure: 7 Bar

\* With TC25 Blade.

Depending on the work to be performed, the following blades are available:



Figure 3-4

	Code	Description	Fields of use
	002720	TC 5mm Blade	Gasket material, solid cardboard, foam cardboard, foamboard with paper surface, foamed materials, soft foam panels, corrugated cardboard, packaging material, honeycomb cardboard.
	001899	TC 10mm Blade	
	001898	TC 15mm Blade	
	001897	TC 25mm Blade	

**NOTE:** For any particular need, other blades might be available. Please contact your local Valiani dealer, or the manufacturer for further information.

# INVICTA

**Black X - Oscillating Cutting Knife - Type X (Optional):**

The oscillating cutting tool type X is operated by air compressed and it is suitable for soft and thin material. The tool reaches a number of 16000 oscillations per minute (rpm) with a stroke of 8mm (0.315"). Depending on the blade used, it can cut up to 20 mm thick \* Use pressure 8 Bar.

\*With 0.64x38mm (0.025"x 1.49") blade.

Depending on the work to be performed, the following blades are available:



Figure 3-5

	Code	Description	Fields of use
	002156	Multipurpose T16 Blade (38° Angle)	Universal knife for soft materials. To make sharp edges.
	002157	Multipurpose T17 Blade, with a tighter angle for greater precision on cuts with a small radius. (25° Angle)	Sole leather, cardboard, thin polyester. To make sharp edges.
	002445	T18 Heavy-Duty Blade	Very rigid materials, sole leather, asbestos free, tang graphite, for thickness up to 5 mm.
	002447	T19 Blade – Soft Rubbers	Soft rubbers up to 12 mm thick.
	002733	T21 Blade – Double Edge HD Blade	

**NOTE:** For any special need, other blades might be available. Please contact your local Valiani dealer, or the manufacturer for further information.

**Pink – Kiss-Cut Tool (Optional):** With mechanically-controlled knife pressure, this tool is specifically designed for kiss-cutting material down to its liner up to 1.2 mm thick.

This tool also includes an adjustable nose piece for precise depth control. Depending on the materials the following blades are available.

	Code	Description	Use
	003110	TK36° blade kit (5pcs)	Standard Tangential Knife 36° - Max cutting thickness 0.25 mm
	003111	TK60° Blade	Tangential Knife 60° - Max cutting thickness 1.2 mm
	003112	36° Double- tip blade	Tangential Double Tip Knife 36° - Max cutting thickness 0.25 mm
	003113	45° Double Wedge Blade	Tangential Knife 45° wedge 40/25° - Max cutting thickness - 1 mm



Figure 3-6

**Grey - Corrugated tool (Optional):**



The Corrugated tool, thanks to its design, compresses the material and makes it easy to cut. Ideal for working with corrugated cardboard and a wide variety of materials, including adhesive vinyl, reflective films, crystal/PVC, magnetic materials, polypropylene sheets and honeycomb, expanded PVC, and rigid panels up to 5 mm thick.



Figure 3-7

The Corrugated tool comes as standard with 2 (two) compression wheels o suit different applications. Depending on the application and/or when a smaller zone is required, you can switch to the narrow wheels.

- **Standard compression wheels:** Ideal for cutting materials up to 5 mm thick
- **Narrow compression wheels:** Ideal for cutting materials up to 1.8 mm tick

	Code	Description	Use
	003408 (500.9820)	50° symmetrical coated knife up to 5mm	Corrugated board up 5mm, PVC, Polypropylene, GreyBoard
	003409 (500.9821)	65° symmetrical coated knife up to 8mm	Corrugated board up 8mm, PVC, Polypropylene, GreyBoard

### 3.3 CREASING TOOL (OPTIONAL)

**Brown – Creasing tool Type B:** The Packaging Tools set, consists of one head (Tool holder) with an assortment of creasing wheels of various geometry, which have been designed to crease a wide range of materials, such as folding cardboard, and corrugated cardboard.

Creasing can be performed either in Pressure Mode or Position Mode.

In Position Mode, the creasing wheel is lowered to a set depth thru the tool holder’s ring and this method is well suited for creasing corrugated carton preventing to break the flute.

Pressure Mode is commonly used for folding cardboard; however, a hybrid mode might be needed with other materials. The various wheels can be exchanged on the head without any additional tools, therefore minimizing delay during the working process.

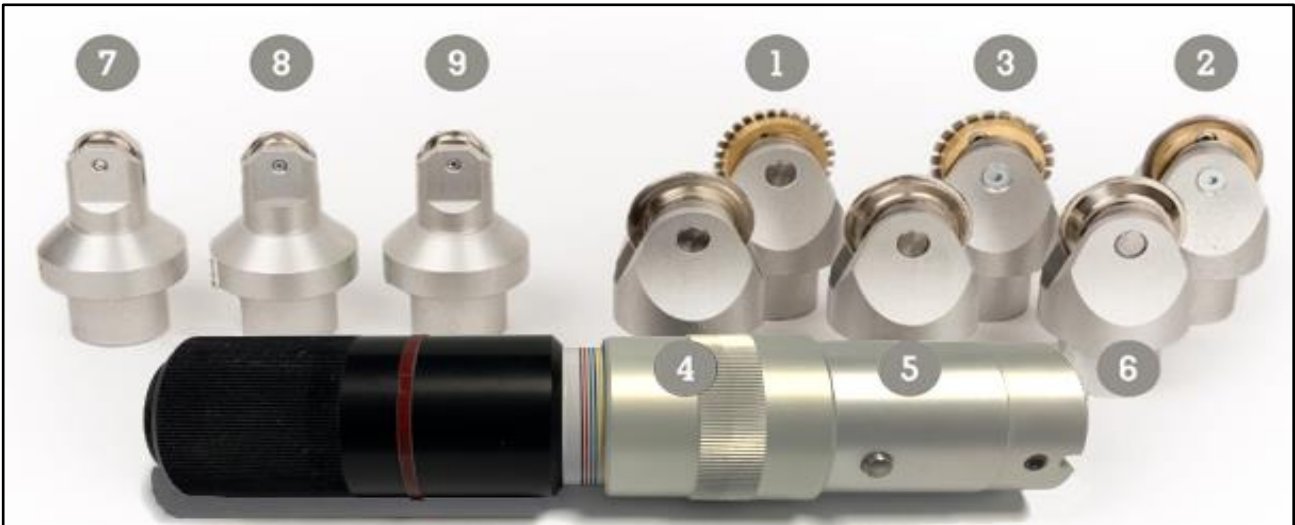


Figure 3-8

The creasing wheels set consists of 9 tools each with different characteristics:

- |    |                                 |   |
|----|---------------------------------|---|
| 1. | <b>Perforating Tool Ø 32 mm</b> | Serrated cut wheel, 2-1 mm step.                  |
| 2. | <b>Cutting Tool Ø 32 mm</b>     | Metal wheel, for Cut-crease                       |
| 3. | <b>Perforating Tool Ø 32 mm</b> | Serrated cut wheel, 3-1 mm step.                  |
| 4. | <b>Creasing Wheel Ø 32 mm</b>   | 3 pt (1.1 mm) round crest, Flute F/E              |
| 5. | <b>Creasing Wheel Ø 32 mm</b>   | 4 pt (1.5 mm) round crest, Flute B/C              |
| 6. | <b>Creasing Wheel Ø 32 mm</b>   | 6 pt (2 mm) round crest, Flute A/B/Double         |
| 7. | <b>Creasing Wheel Ø 16 mm</b>   | 2 pt (0.7 mm) round crest, cardboard 150-300 gsm. |
| 8. | <b>Creasing Wheel Ø 16 mm</b>   | 3 pt (1.1 mm) round crest, cardboard 150-300 gsm. |
| 9. | <b>Creasing Wheel Ø 16 mm</b>   | 4 pt (1.5 mm) round crest, cardboard 250-400 gsm. |

## 3.4 MULTI-WALL CREASING TOOL – BROWN Ø60 (OPTIONAL)

**Brown – Creasing Wheel Ø60:** It consists of a tool holder with a bundle of creasing wheels of various geometries specific for single and multiple flute corrugated cardboards.

Creasing can be performed either in Pressure Mode or Position Mode. In Position Mode, the creasing wheel is lowered to a set depth through the second head's knob and this method is well suited for creasing corrugated carton preventing breaking the flute. Pressure Mode is commonly used for folding cardboard; however, a hybrid mode might be needed with other materials.

The different wheels can be changed from the head without the need of any additional tool, thus minimizing the delay during the work process.

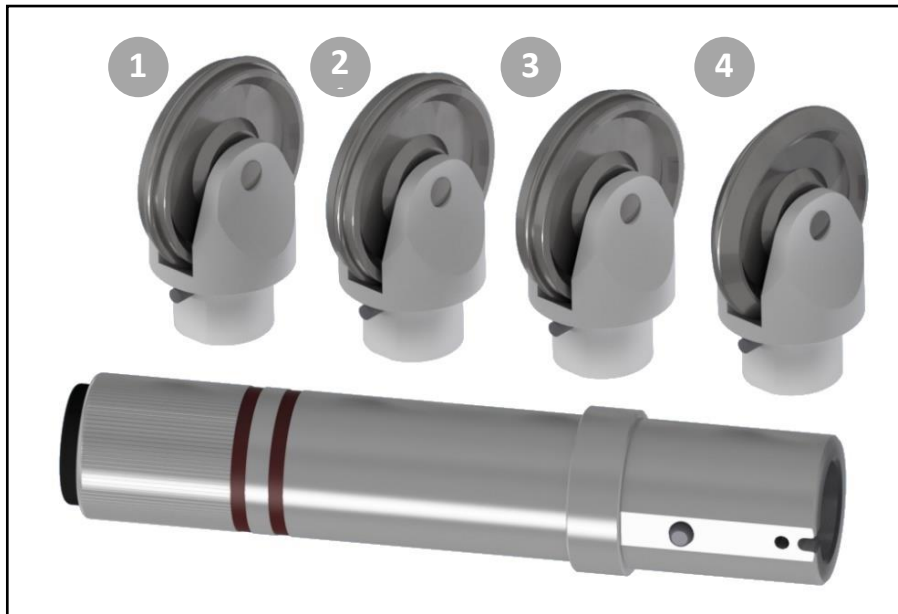


Figure 3-9

There are four types of available wheels upon request, each one with different characteristics:

1. **Creasing Wheel Ø 60 mm:** 3x2mm 8pt (1.1 mm) round crest, Flute type F/E
2. **Creasing Wheel Ø 60 mm:** 3x1.5mm 8pt (1.5 mm) round crest, Flute type B/C
3. **Creasing Wheel Ø 60 mm:** 2x1.5mm 6pt (2 mm) round crest, Flute type A/B/Double
4. **Creasing Wheel Ø 60 mm:** V-Shape for double and triple flute board.

## 3.5 VERSATOOL (OPTIONAL)

The VersaTool is basically a tool holder capable to fit all tool belonging to the "i" series (interchangeable), allowing the operator to expand the range of tools available.

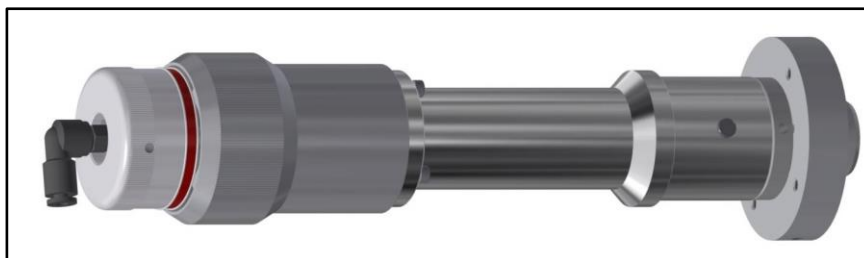


Figure 3-10

### 3.5.1 INTERCHANGEABLE CUTTING HEADS (OPTIONAL)

The VersaTool holder, as mentioned above, can be equipped with a bunch of interchangeable cutting heads (optionals), which allow you to increase the type of cuts, and consequently the range of materials that can be processed with the same machine.



Figure 3-11

**B - 45° Head (red) for bevel cuts:** The 45° head cuts from the front of material with an inclination of exactly 45°. The head allows the cutting of all types of mountboard with thicknesses from 0 to 2,2 mm (0,087”).

**C - 90° head (grey) for straight cut:** The 90° cutting head, thanks to a wide Teflon foot it guarantees a wider cutting footprint and superior accuracy, especially on thick and hard materials (max 5mm – 3/16”). In combination with a vacuum table it allows the machine to cut to the edge of the material.

**D – 40° Head (green) for bevel cut:** The 40° cutting head offers ample versatility guaranteeing an excellent quality of cut from the front of materials on all types of mountboard with thicknesses from 0 to 2,2 mm (0,087”). This head gives very good results when cutting curves with little radius and cuts good quality clip art.

**E - Embossing head (purple):** The embossing head is designed for decorating in relief. Whatever design, corner or clip art it can be elegantly pressed in relief on a mountboard by using the pressure of a sphere.

**F - 90° Head (white) for straight cut:** The 90° head (white) allows both a pass-through cut and a kiss-cut.

Depending on the blade holders and the king of job the machine is supposed to perform the following blade might be available:

	Code	Description	Fields of use
	L100	Multipurpose Blade. 50°Angle	Universal knife for materials such as paper, cardboard, thin plastic, soft PVC, Foam Board.
	L100B	Multi-purpose Blade. 38 °Angle for a more precise cut on small radius.	Universal knife for materials such as paper, cardboard, thin plastic.
	L1W40	Carbide multipurpose blade for a longer sharpening duration. 50 ° angle.	Long lasting blade ideal for very abrasive materials. (see L100)
	L1W52	Carbide multipurpose blade for a longer sharpening duration and with a 38 ° angle for greater precision on cuts with a reduced radius.	Long lasting blade ideal for very abrasive materials. (See L100B)
	002156	Multipurpose <b>T16</b> Blade (38° Angle)	Universal knife for soft materials. To make sharp edges.
	002157	Multipurpose <b>T17</b> Blade, with a tighter angle for greater precision on cuts with a small radius. (25° Angle)	Sole leather, cardboard, thin polyester. To make sharp edges.

**NOTE:** For any special need, other blades might be available. Please contact your local Valiani dealer, or the manufacturer for further information.

**G - 45° Head (blue) for bevel cut:** The 45° head is offered for cutting from the backside of materials of all types of mountboard (matboard) and Foamboard with thicknesses of 0 to 5mm (3/16”). The use of this head is recommended for cutting all mountboards (matboards) that have a delicate faceside that could be damaged by a classic front cut. It is also aimed for use with dense matboards with thicknesses of up to 4,4mm (0,173”) like museum and conservation boards.

**H – Fork** The fork is the tool used to manually change the cutting heads and is always supplied with VersaTool.

## 3.5.2 SCORING / CREASING TOOLS (OPTIONAL)

The VersaTool accessory, as mentioned above, can be equipped with a creasing tool capable to perform creasing and perforating process on packaging materials. The head has the same fastening system as the interchangeable cutting heads and it is supplied with 9 creasers. The system provides for release and quick coupling of each tool making it very versatile.

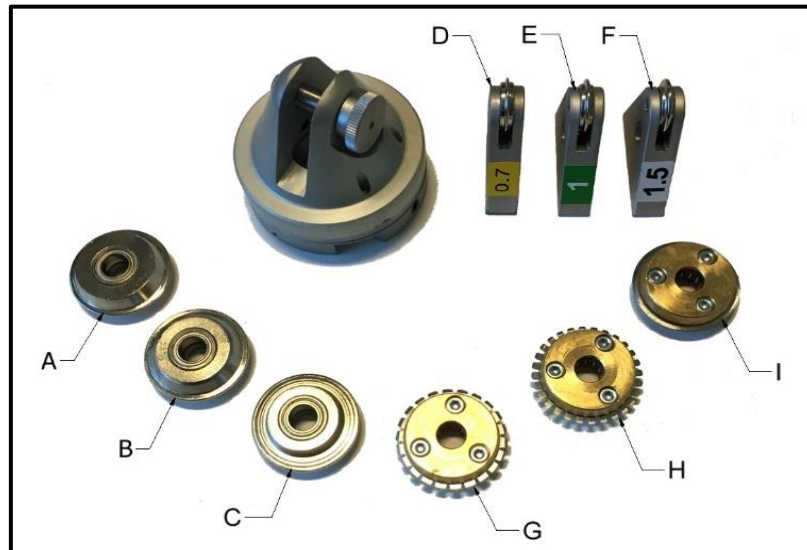


Figure 3-12

The set of tools for creasing consists of 9 tools each with different characteristics:

**A - Scoring tool:** 32mm / 1.26" diameter, 1mm / 0.039" round crest, tool for creasing corrugated cardboard

**B - Scoring tool:** 32mm / 1.26" diameter, 1,5mm / 0.059" round crest, flat board & E flute creasing wheel.

**C - Scoring tool:** 32mm / 1.26" diameter, 2mm / 0.078" round crest, flat board & E flute creasing wheel.

**D - Scoring tool:** 16mm / 0.63" diameter, 0.7mm / 0.0275" round crest, flat board & E flute creasing wheel.

**E - Scoring tool:** 16mm / 0.63" diameter, 1mm / 0.039" round crest, flat board & E flute creasing wheel.

**F - Scoring tool:** 16mm / 0.63" diameter, 1.5mm / 0.059" round crest, flat board & E flute creasing wheel.

**G - Perforated tool:** Serrated cut wheel,  $\varnothing$  32mm / 1.26", 3-1mm / 0.118-0.039" step.

**H - Perforating tool:** Serrated cut wheel,  $\varnothing$  32mm / 1.26", 2-1mm / 0.078-0.039" step.

**I - Blade tool:** Metal wheel, 32mm / 1.26" diameter, for scoring polypropylene 250 ÷ 500gr.

## 3.6 DRAWINGS AND DECORATIONS TOOLS

**FIXED PEN HOLDER** (optional only for Invicta): The Pen Holder is a tool used to create writings, decorations and drawings. This tool can be permanently mounted on any Invicta model and it is supplied as standard with three adapters; each of which consists of two elements of different sizes. The different diameter sizes allow you to adapt pens or pencils of various sizes. The three adapters have their own cap to prevent the tips of the markers/pencils from drying out or being damaged.

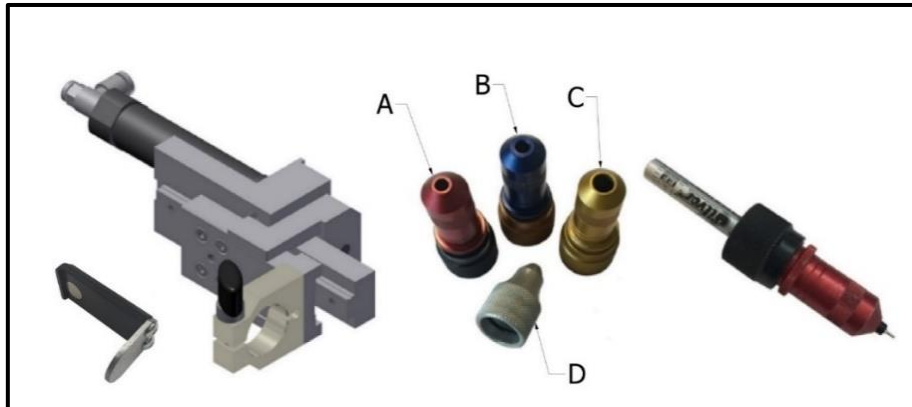


Figure 3-13

A – Pen Holder small    B – Pen Holder medium    C – Pen Holder big    D – Cap

**NOTE:** A support for plotter nibs is also available on request.

## 3.7 PEN PLOTTING TOOL (AVAILABLE FOR AP VERSION)

For those needing to write text and part numbers or job names on items prior to cutting. The Plot Drawing Tool is available as a permanent tool and it takes standard pen cartridge ball point. This tool is ideal to label materials such as cardstock with text, marks or symbols for the apparel industry.

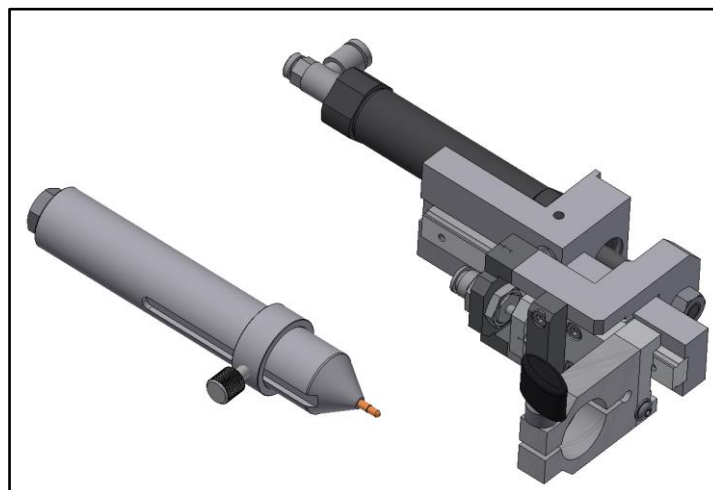


Figure 3-14

## 3.8 TECHNICAL DATA

MODEL	V0806	V0812	V1015	V1015 AP	V1612	V1612 AP
Max cutting area	610 x 812 mm (24" x 32")	1219 x 812 mm (48" x 32")	1524 x 1016 mm (60" x 40")		1220x1550 mm (48" x 61")	
Cutting Capacity (depending on the cutting head used)	5 mm (3/16") 20 mm (3/4") with oscillating tool					
Max cutting speed	370 mm/s (14.6 "/sec)				910 mm/s (26.3 "/sec)	
Max acceleration	0.5 m/s <sup>2</sup> (19.685 "/s <sup>2</sup> )				2 m/s <sup>2</sup>	
Pneumatic pressure	6 bar – 87 PSI 8 Bar/115 PSI (5.3 CFM) with oscillating tool					
Rated power supply	200/208/230V - 50/60Hz - 2,2/2,5KVA					
Machine table weight	115 Kg 253.5 lbs	142 Kg 313 lbs	164 Kg 361.56 lbs		201 Kg 443 lbs	
Machine combo stand weight	60 Kg (132.3 lbs)	62 Kg (136.69 lbs)			97Kg (214 lbs)	
Machine multiposition stand weight	///	108 Kg (238.1 lbs)			///	
Electric box weight	31 kg (68.34 lbs)					
Pump weight	~30 Kg (66.1 lbs)					
Sound emission	82 dB					
Connectivity	Ethernet					
DATA Buffer	External PC (not included)					
File Formats	.SVG; .PLT; .DXF; .CF2; .PDF; .HPGL; .XML;					
Tool Change	Manual					
No. Tools Holder	1 Slots					
Materials Holding System	Pneumatics Clamps and Air Suction					
N° Vacuum Pumps	1					
Standard configuration	Cutting machine, stand, one cutting tool.					

## 3.9 PROPER USE OF THE MACHINE

The machine, depending on the tools it is equipped with, can be used to cut or crease different type of materials (See table 1) with a maximum thickness of 5mm (3/16") or 20 mm (0.087") with the oscillating knife.

Materials that can be processed with cutting tools

Paper and cardboard	Paper, folding cardboard, corrugated cardboard, honeycomb cardboard
Plastics	Forex, low density PVC, foams, rubber, polypropylene
Adhesives	Vinyl and plastic stickers,
Others	Fabrics, leather, magnetic sheets

Table 1

Processing of materials other than those indicated in the previous table, must be authorized by the manufacturer after examining their technical data sheet.



**CAUTION! Do not use mountboard thicker than that mentioned above so as not to damage the cutting head.**



**DANGER! The machine cannot be used in a combustible atmosphere.**

The machine is designed to be used in laboratories

During the installation, the figures who will work with the machine and in particular the User and the Maintenance Technician, will be identified and trained.

	<b>Tasks</b>	<b>Characteristics</b>
<b>Installer</b>	The installer manages the machine positioning, checks the electrical connections, and starts the machine.	The technician, or whoever is appointed and trained.
<b>User</b>	User manages machine operations and eventually it also provides for cleaning.	Figure chosen by the "customer" with the scope of identifying the person/s who will be responsible of using the machine. This figure will be properly trained by the technician.
<b>Maintenance technician</b>	The maintenance technician manages machine maintenance and repairs; therefore, it can also perform extraordinary activities with respect to those performed by the installer.	Figure chosen by the "customer" with specific technical knowledge able to be trained by the technician.

### 3.10 IMPROPER USE OF THE MACHINE

Invicta is not suitable for operation in potentially explosive atmospheres (ATEX)

Invicta cannot be used for processing materials other than those indicated in paragraph 3.7. In particular, materials such as:

- Glass fiber
- Carbon fiber
- Particularly flammable materials.

### 3.11 BEFORE USE

Before you start using the machine, make sure it is completely unlocked from any transportation security device, mounted on its feet, levelled and properly assembled and connected to a power source.

## 4 DETAILS OF THE COMMAND CONTROLS

All commands regarding the work cycle of the machine come from the computer.

The commands on the machine are:

- Emergency button (8)
- Machine Power ON (9)
- The vacuum pump ON/OFF selector (5)
- Vacuum ON/OFF selector (6)
- Manual Taps for vacuum zones 1,2,3,4 (Not present on Invicta V0806)
- Vertical Clamps Disabling (7) (Available only on the Invicta V1612)
- Clamp Pressure Gauge (10)
- Clamp Pressure Regulator (11)

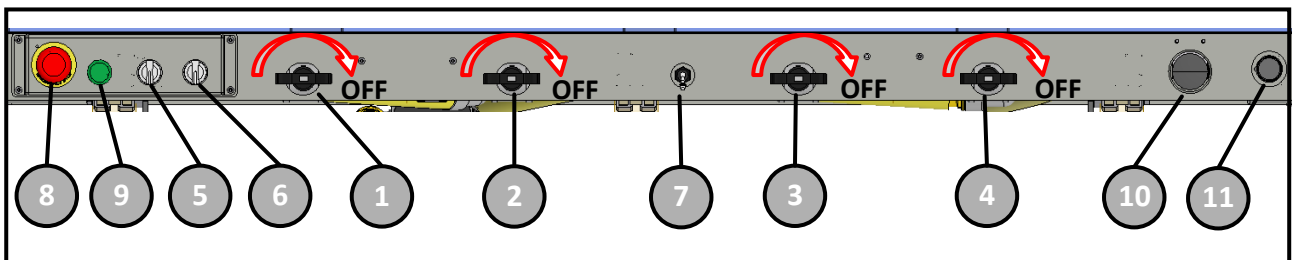


Figure 4-1

The EMERGENCY button should be used to stop the machine immediately if there is any danger to the operator or risk to the machine itself. It cuts power to all the axes cards. This button has a mechanical stop to prevent the operator accidentally pressing it again. To re-activate normal operations, turn the EMERGENCY button a quarter of turn in a clockwise direction to release the mechanical stop.

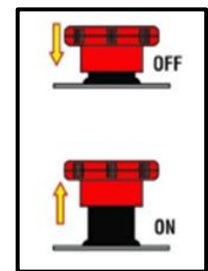


Figure 4-2

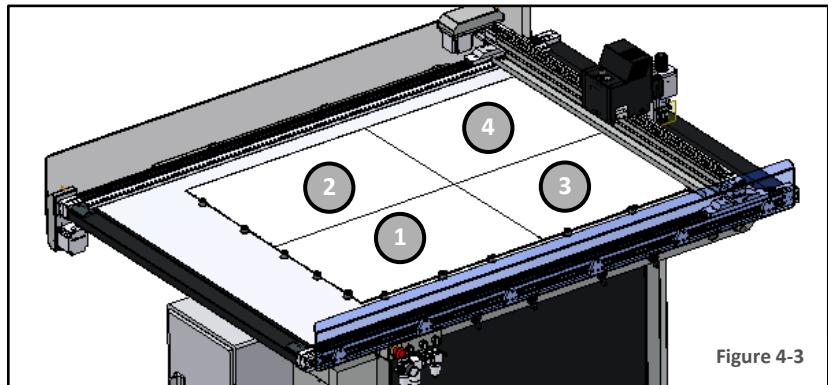
By pressing the Machine Power-On button (9), motors will be enable and consequently engaged, as well as the clamps will raise up.

Turning the pump switches (5) CW, they start the vacuum pumps. Turning CCW they stop the pump engine.

By turning clockwise, the suction switch (6), suction will be activated on the different zone, according to the taps selection. By rotating counterclockwise, the suction will be released.

Manual Valve taps (1,2,3,4) allow you to enable/disable the suction on different area (not available on Invicta V0806).

The manual switch (7) (available only on Invicta V1612) allows you to deactivate the vertical clamps (B). Figure 3-1



The pressure gauge (10) shows the pressure being used for clamping.

The pressure regulator (11) allows the clamping pressure to be adjusted so that it doesn't affect the surface of material being held for cutting.

## 5 PREPARING FOR USE

This paragraph is intended to list the important tasks to use the machine:

- Start the machine by turning the main switch, placed on the electrical panel, clockwise.
- Power the machine on by pushing the power on button (9) Figure 4-1

**NOTE:** If the Power-ON button does not light up, please make sure the emergency button is not pressed down, if so release it. (See Par.4).

- Press Power On button
- Turn on the PC and start the V-Studio program.



**CAUTION!** In order to allow the connection between the PC and the machine, the machine should be switched on and connected to the computer before opening V-Studio.

- Place the slip sheet over the machine table, Par.5.1.
- Insert a cutting tool in the slot Par. 5.8.3.
- Place the material to be processed over the slip sheet.
- Depending on the holding system please proceed as follows:

### When using vacuum:

- Start the vacuum pump (5) Figure 4-1.
- Open the suction thru the switch (6) Figure 4-1.
- Open vacuum zones (1) (2) (3) (4) according to the material dimension Figure 4-1.

### When using clamps:

- According to the software preview, clamps that should generate a collision with one of the tool will be highlighted in red. If so please rotate the top part of the clamp clockwise (Figure 5-1) so that when the cutting process starts they will not interfere.
- Load a file and once set-up proper tool start cutting cycle (See software manual).
- Perform any calibration required Par.6.

- To interrupt or pause any cutting process please use designated button on the cutting screen. (See software manual)
- In case of danger, it will be sufficient to press the emergency button Figure 4-1 to instantly stop and cut power off to the machine.

**To reset the machine:**

- Disarm the emergency button (See Par.4).
- Push the Power ON button (9) Figure 4-1.
- Restore the program on the PC (See software manual).

## 5.1 POSITIONING THE PROTECTIVE POROUS WORKTABLE BOARD

To ensure a perfect cut it is essential that the depth of the cutting blade slightly exceeds the thickness of the material the operator needs to cut. To do this, and so as not to damage the worktable, it is necessary to place a special protective cover board (1) under the board clamps as shown in the photo.

To do this please proceed as follows:

- If not already done, connect the electrical and pneumatic systems.
- If not already done, please turn the machine ON
- If the emergency button is pressed done, please release it.
- Press Power On button (9) Figure 4-1, to have the system releasing clamps.

**NOTE.** On the Invicta V1612 please make sure the Enable/Disable is not set on "ON".

- Place the special porous board (1) under the clamps (2).

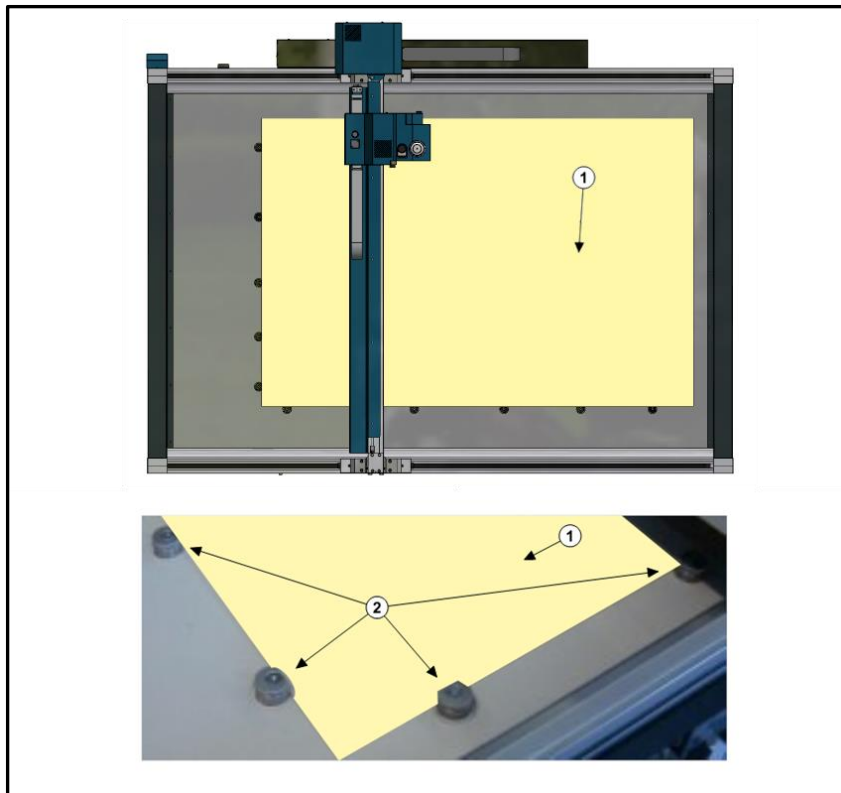


Figure 5-1



**CAUTION!** Don't remove the forex panel from the working table, it is intended to improve suction. If it is damaged, contact the manufacturer for replacement.

## 5.2 TANGENTIAL CUTTING TOOL SET-UP (OPTIONAL TOOL)



**DANGER!** Use protective gloves is strongly recommended, be very careful as the pressure of the moving part (2) could cause the blade exit.

To mount or replace the blade holder, proceed as follows:

**NOTE:** Depending on the blades being used for the desired processes, the relative dedicated blade holder must be mounted (blade holder for L100 / L1W blades or blade holder for flat blades T16 / 17).

a) Loosen the locking set screws (1) and remove the gliding pad (2) Figure 5-2.

**Attention:** If a blade holder has already a blade mounted on, please proceed first removing the blade to prevent possible accidental injuries (carry out point (e) and then resume the procedure from point b).

b) Loosen the set screw (8) and remove the blade holder (9).

c) Insert the new blade holder with the reference pin (10) oriented as shown in the figure and make sure it is inserted all the way in.

d) Tighten the set screw (8).

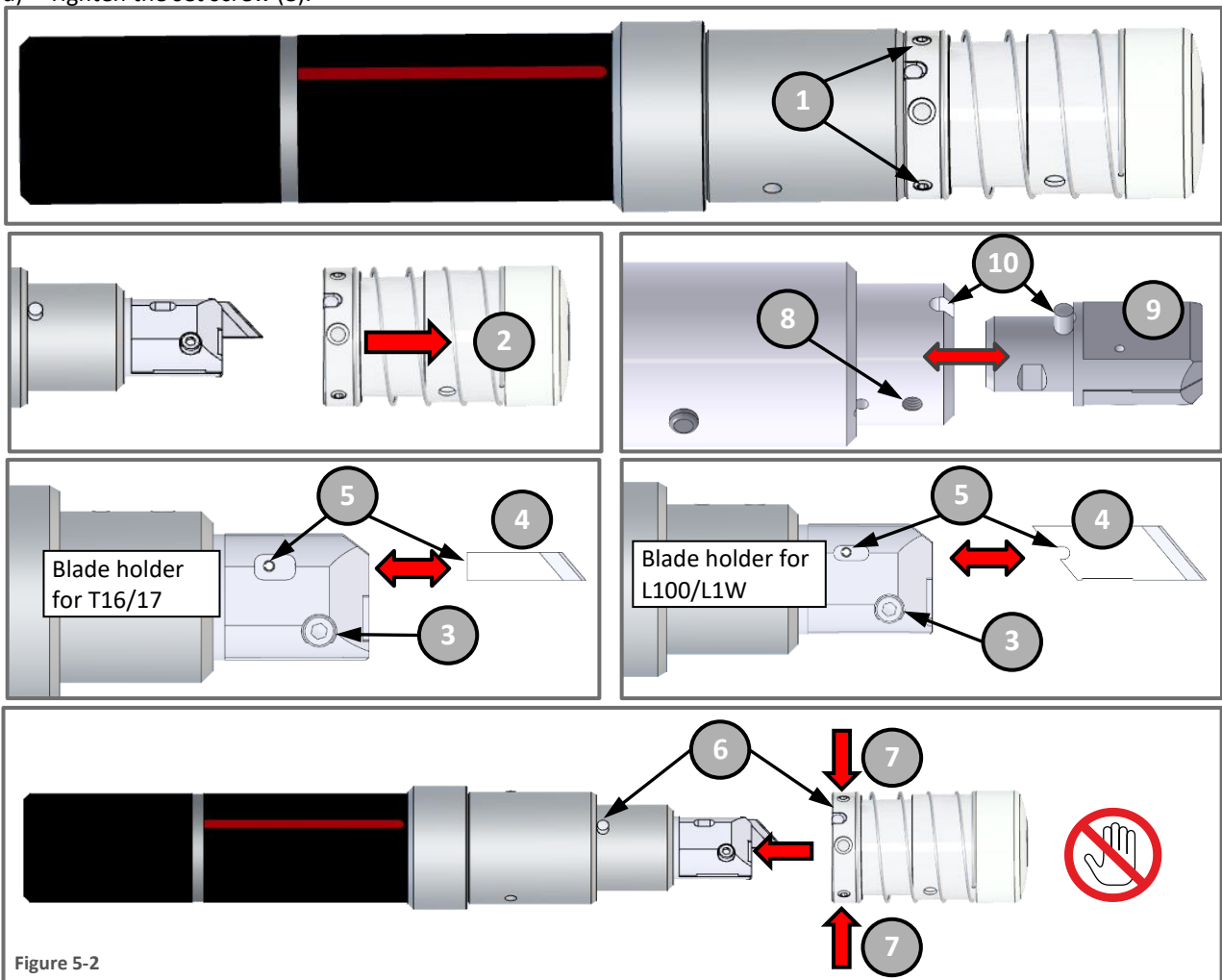


Figure 5-2

e) Loosen the blade cartridge screw (3) and remove the used blade (4) (if present).

f) insert a new blade (4) until the notch of blade reaches the pin (5), then tighten the screw (3).

g) Position the blade gliding pad so that the reference pin matches its housing (6), then grab it from the sides (7) and push it towards the tool.

**ATTENTION:** while inserting the blade protection, pay attention your hands are not positioned in front of the tool as indicated by the prohibition symbol.

h) Tighten the locking set screws (1).

To replace a blade, carry out the procedure described above, skipping points b) c) d).

## 5.3 OSCILLATING CUTTING TOOL SET-UP (OPTIONAL TOOL)



**DANGER!** Use protective gloves is strongly recommended, be very careful as the pressure of the moving part (2) could cause the blade exit.

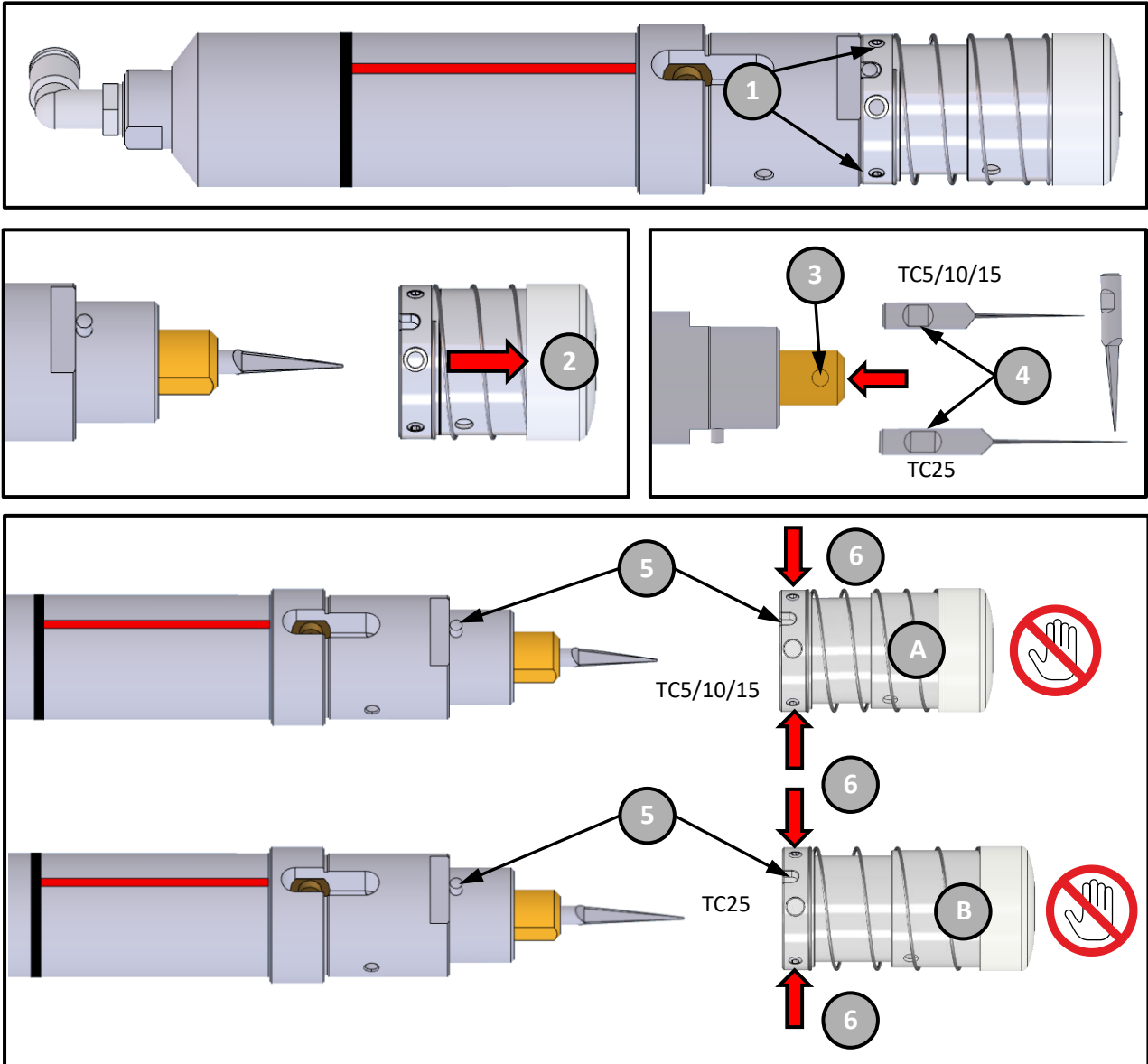


Figure 5-3

- Loosen the locking set screws (1) and remove the movable blade guard (2).
- Loosen the blade holder screw (3) and insert a new "TC" Type blade, paying attention that the blade notch (4) matches the locking screw and then push it inside until to the stop and tighten the screw (3).
- Position the blade guard (A) or (B), depending on whether we have chosen a TC5/10/15 or TC25 type, paying attention that the reference pin fits into its housing (5), then grab it from the sides (6) and push it towards the tool.

**ATTENTION:** while inserting the blade protection, pay attention the palm of your hand is not positioned in front of the tool as indicated by the prohibition symbol.

- Tighten the locking set screws (1).

## 5.4 X TYPE OSCILLATING TOOL PREPARATION (OPTIONAL)



**DANGER!** Use protective gloves is strongly recommended, be very careful as the pressure of the moving part (2) could cause the blade exit.

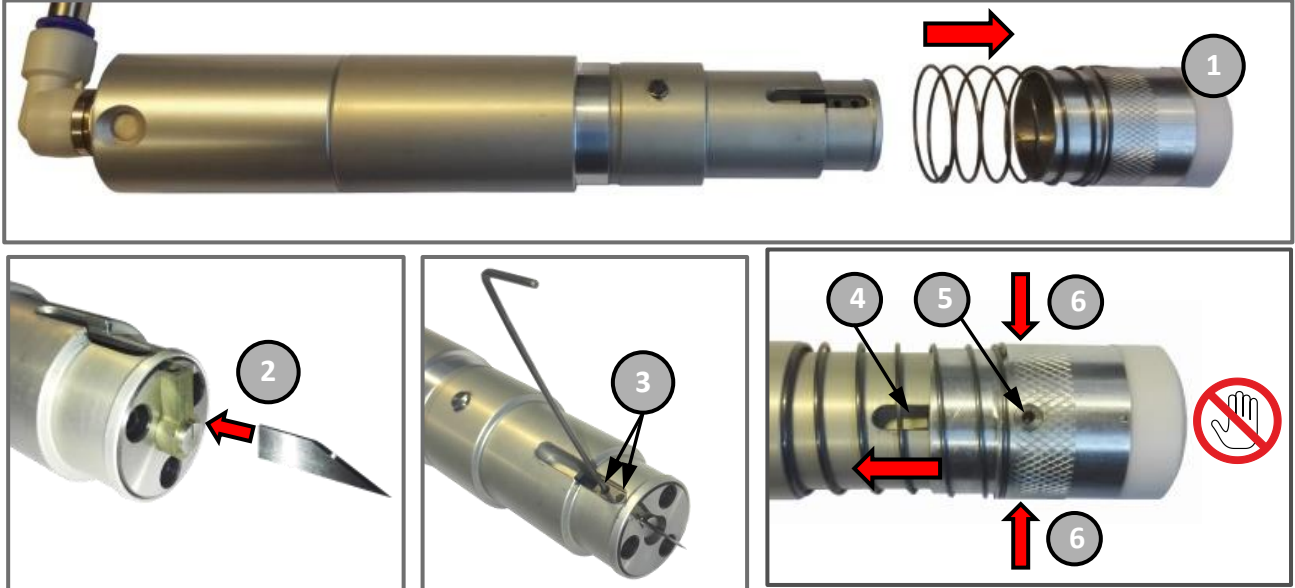


Figure 5-4

Remove the blade guard (1) by pulling it outwards.

- Insert a flat blade into its housing with the tip facing the centre of the tool (2).
- Tighten the two blade locking set screws (3) with a 1.5mm Allen key
- Position the blade guard so that the reference pin (4) matches the sliding slot (5), then grab it from the sides (6) and push it towards the tool.



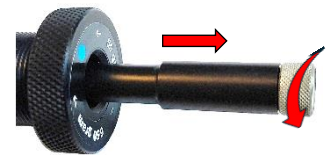
**DANGER!** while inserting the blade protection, pay attention the palm of your hand is not positioned in front of the tool as indicated by the prohibition symbol.

## 5.5 KISS-CUT TOOL SET-UP (OPTIONAL TOOL)



**DANGER!** Use protective gloves to prevent cuts.

Unscrew the blade shaft (counter-clockwise), then pull it out.



Insert the blade extractor onto the blade, then push on both side and pull the blade out of the seat.



Place a new blade paying attention to the correct side. Insert the blade shaft back into the tool and screw it back in until the desired cutting blade depth is reached.



Figure 5-5

## 5.6 CORRUGATED TOOL SETUP (OPTIONAL)



**WARNING:** Wear protective gloves and be very careful as the blade may protrude beyond the pressure wheels.

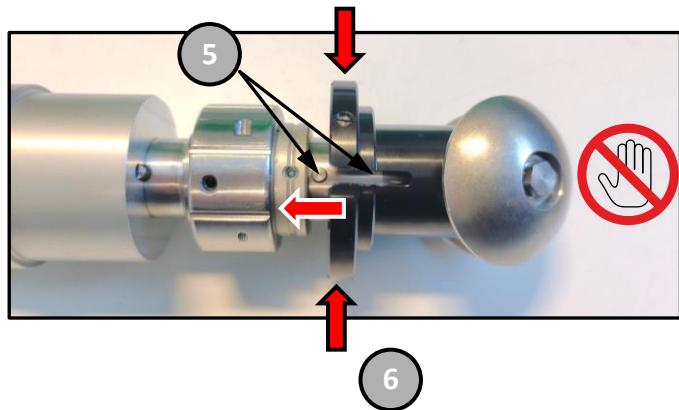
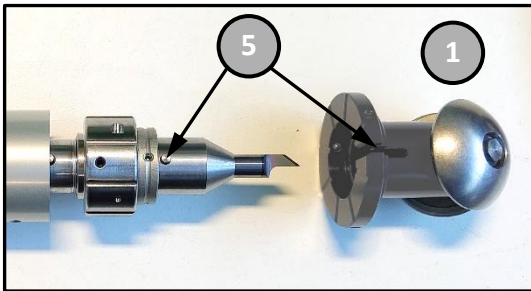
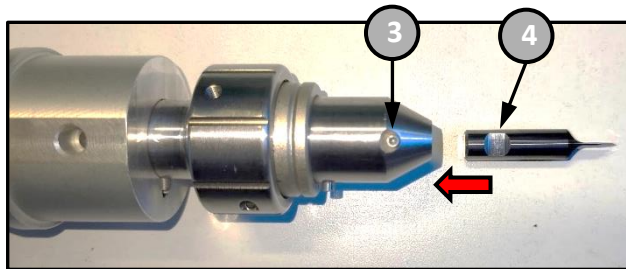
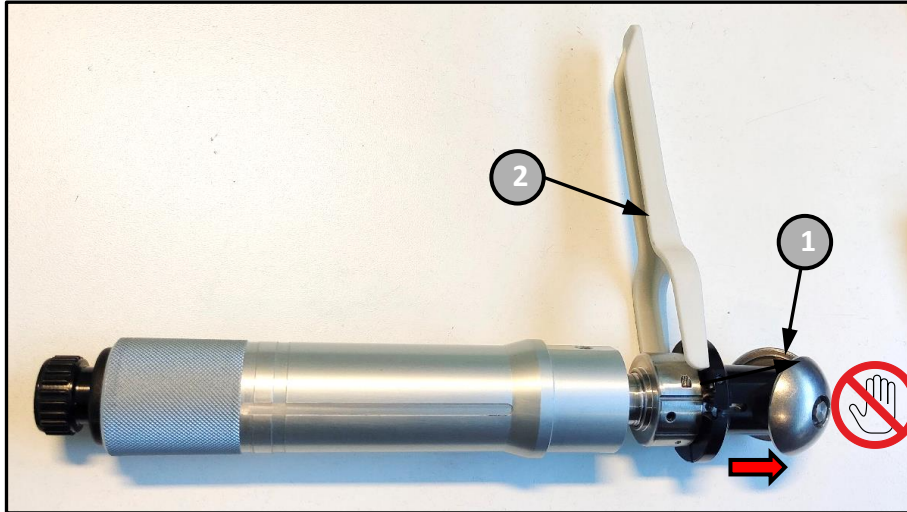


Figure 5-6

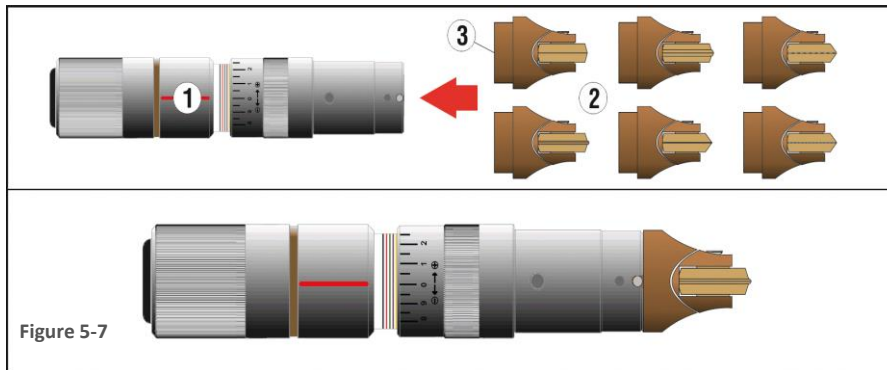
Remove the pressing wheels (1) with the appropriate extractor tool (2) if already mounted on the tool. Loosen the blade locking screw (3) and replace/insert a new blade so that the flat part (4) matches the locking screw, then push it until it stops and tighten the screw (3). Insert the tool into the machine holder (see paragraph 5.8.3). Install one of the compression wheels (1), making sure that the reference pin fits into its housing (5), then grasp it from the side (6) and push it towards the tool.

**Attention:** when inserting the compression wheels, make sure your hands are not placed under the blade as the “do not” sign says.

**Attention:** To avoid accidental cuts, never leave the tool with the blade mounted without first refitting the compression wheels and adjusting them to the maximum length so that the blade does not come out (paragraph 6.1).

## 5.7 CREASING TOOL SET-UP (OPTIONAL TOOL)

Insert one of the Nine (9) creasing wheels available (2), as shown in the diagram above, until the magnet (3) at the base of the tool holds to the creaser.



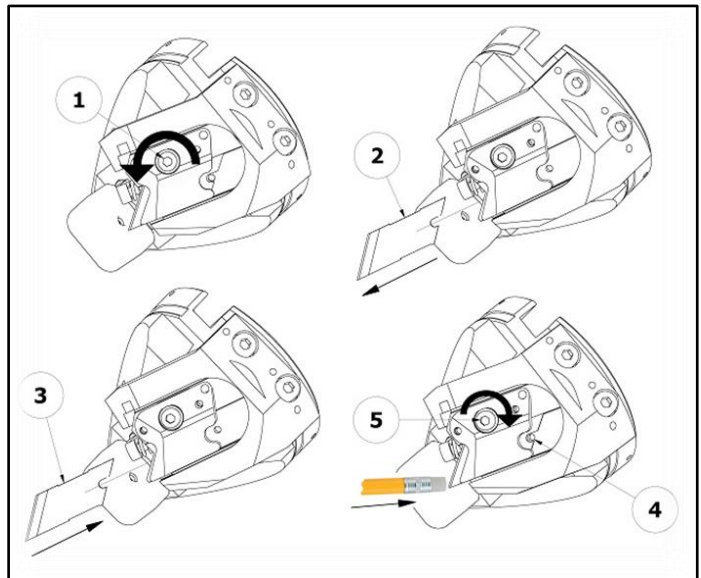
## 5.8 FITTING A CUTTING BLADE



**DANGER!** Handle the blade carefully, protect it if necessary, to avoid cutting. If necessary, during reassembly using a rubber object to keep it in its housing during locking of the locking screw.

### 5.8.1 HEAD FOR BEVELLED CUTS (GREEN)

- Loosen the blade retaining screw (1) using the 2,5mm hexagonal key supplied with the machine.
- Pull out the blade (2).
- Place a new blade (3), ensuring its correct alignment.
- Push the blade up to the top with the pin (4) using an object to avoid risk of cutting.



**NOTE!** For locking the blade, it is sufficient to insert the long side of the hexagonal key 2,5 on the screw (5) and force on the short side, to limit the torque on the screw itself.

Figure 5-8

- Tighten the looking screw (5) to block the blade.
- Reassemble the head (see chapter [5.8.3](#)).

## 5.8.2 90° HEAD FOR VERTICAL CUTS (WHITE)

- Disassemble the head (see chapter 5.8.5).
- Remove the blade holder (1) from the cutting head by loosening the set screw (2) with a 3 mm Allen wrench.

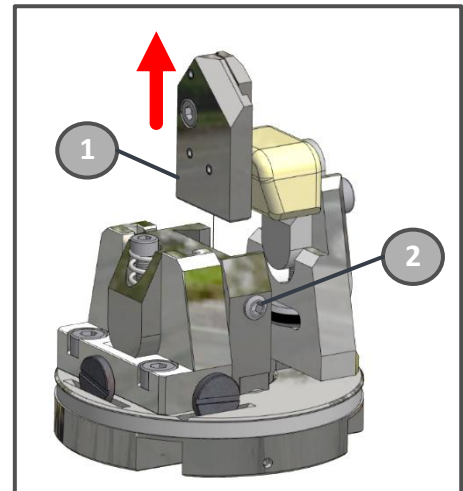


Figure 5-9

- Loosen the blade holder screw (3) with a 2.5 mm Allen wrench and insert the blade (4) until it reaches the pin (5), then tighten the screw (9).

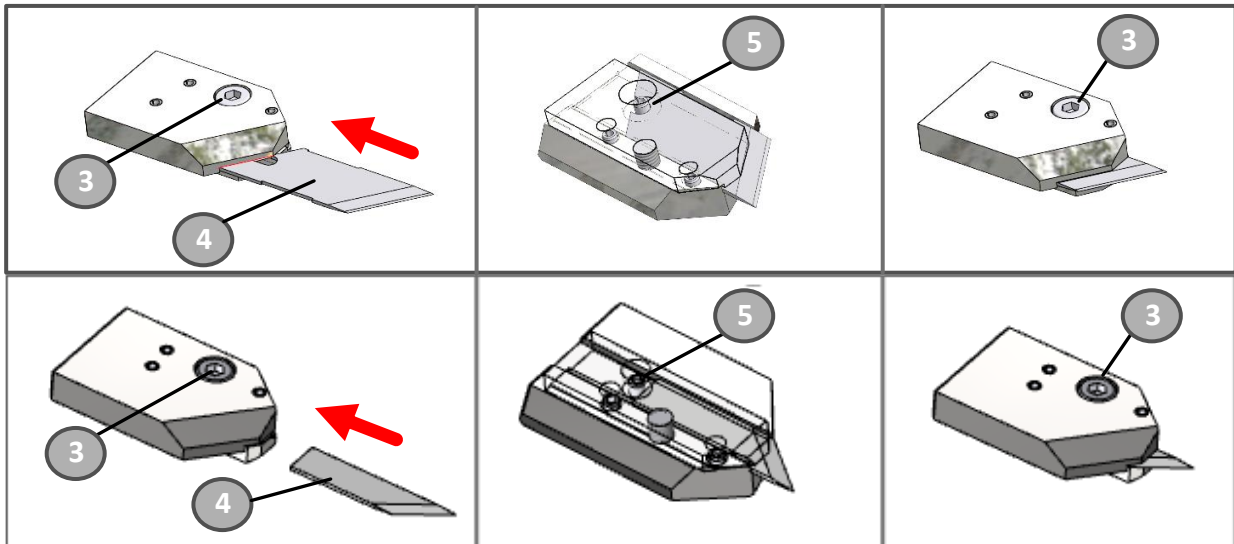


Figure 5-10

- Insert the blade holder (1) into the cutting head and tighten the set screw (2).
- Reassemble the head (see chapter 5.8.4).

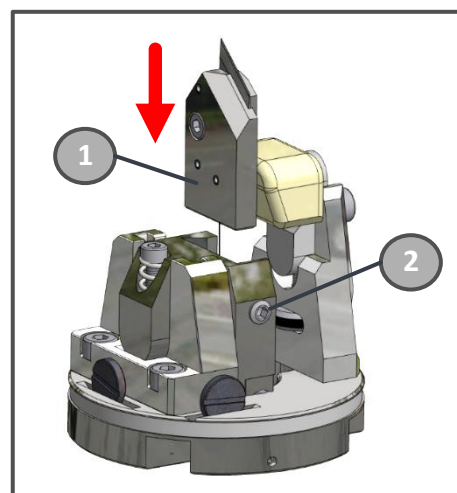


Figure 5-11

## 5.8.3 TOOL ASSEMBLY

Using the allen key (L) supplied with the accessories, loosen socket head screw (M) to allow insertion of the tools.

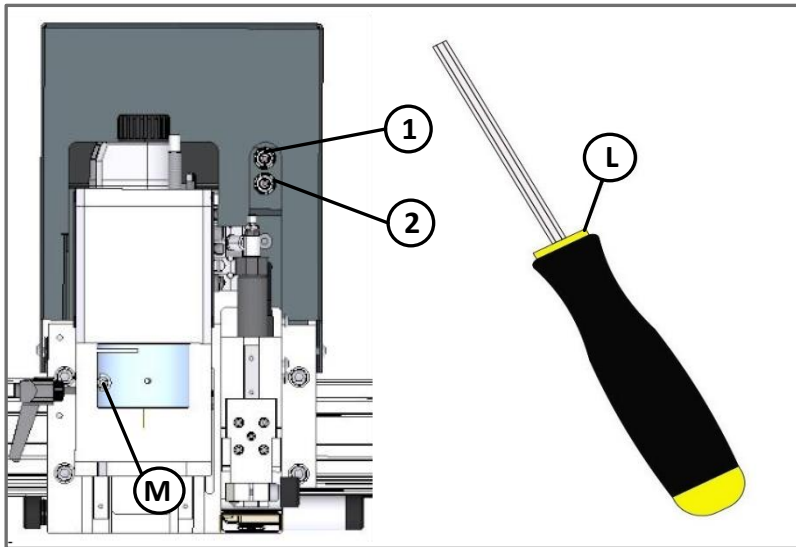


Figure 5-12

**Attention:** to install the Versatool and Corrugated tool, you must first do the following:

- **Versa tool:** loosen the screw (X) and remove the magnet flange (Y).

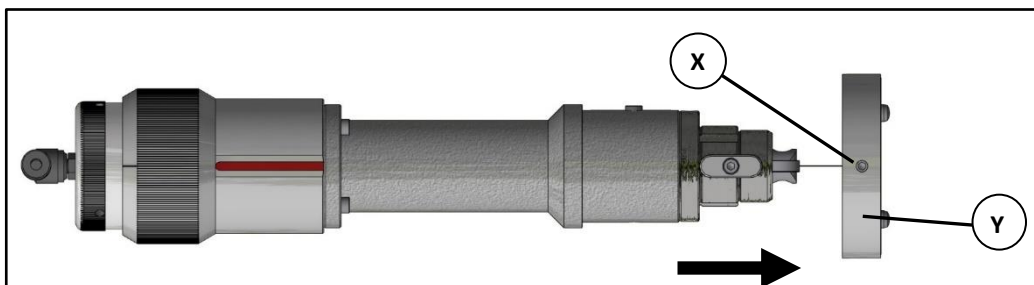


Figure 5-13

- **Corrugated tool:** remove the pressing wheels as described in paragraph 5.6, if the adjustment ring is present, remove it (be careful of the blade).

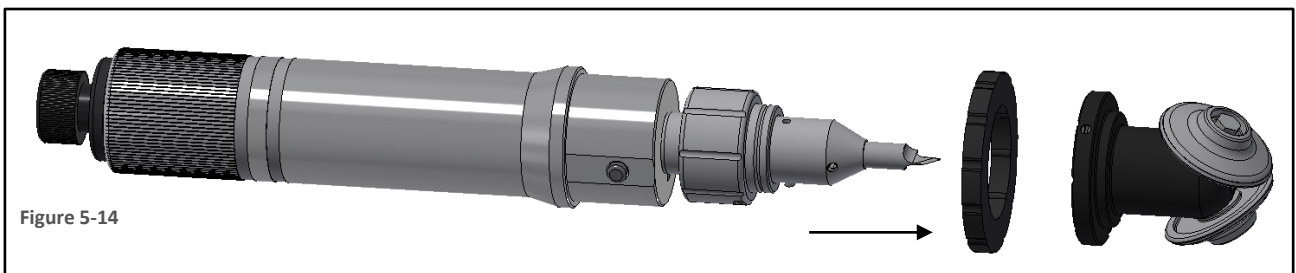


Figure 5-14

Insert tools in the slot making sure it has reached the correct position, as shown in the diagram below.



**Note:** The pin "Y1" must coincide with the slot "Y2".

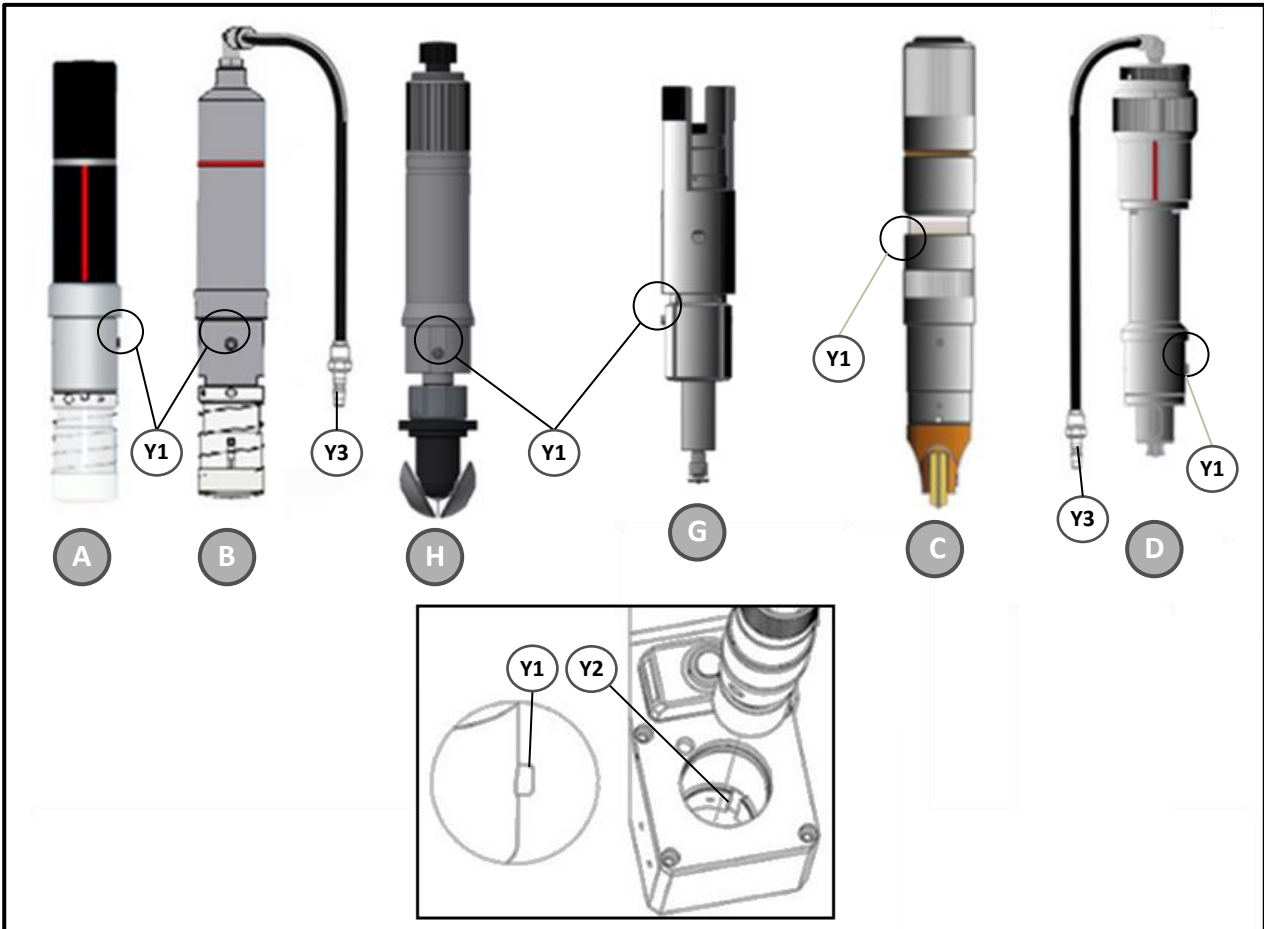


Figure 5-15

Once inserted, tighten the previously mentioned socket head screw (M) and insert the male air connectors (F), if present, into the appropriate female connectors on their head holder units, see table below:

Reference Figure 5-15	Description	Connector Figure 5-12
A	Tangential Drag Knife	///
B	Oscillating Knife	2
C	Creasing tool	///
F	Versa-tool	1
G	Kiss-cut tool	///
H	Corrugated tool	///

**ATTENTION:** The VersaTool assembly must be completed by reinserting the magnet support (Y) and tightening the screw (X).

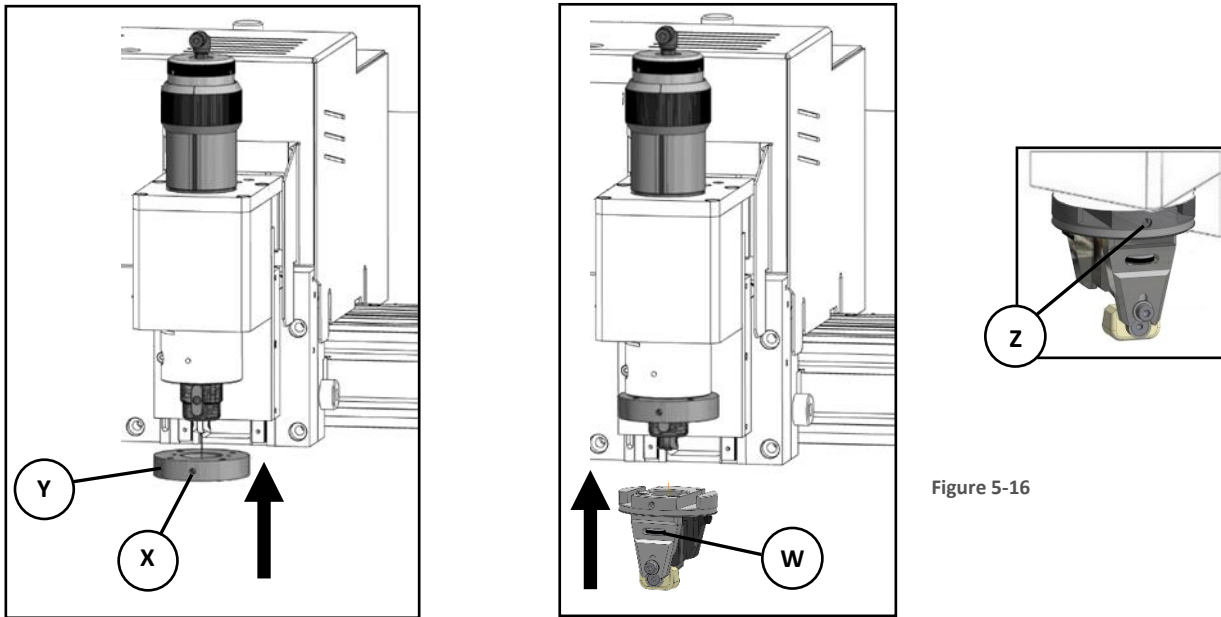


Figure 5-16

**Attention:** The correct installation of the corrugated tool requires that both the adjustment ring (1) and the compression wheels (2) are inserted (see paragraph 5.6).

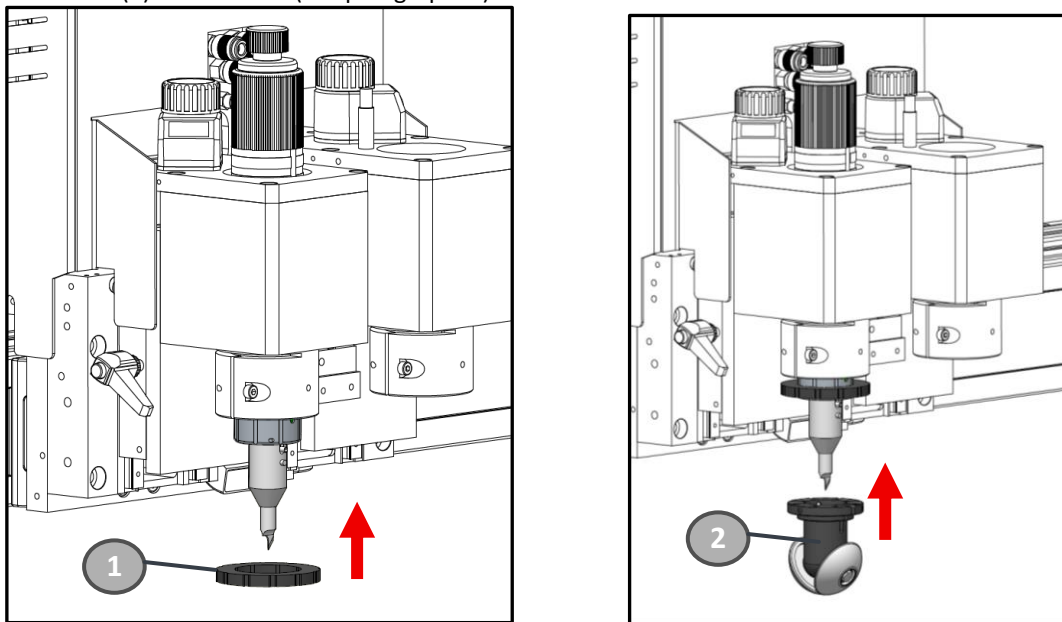


Figure 5-17

## 5.8.4 ASSEMBLING THE VERSA-TOOL HEAD

To mounting a head (W) on the VersaTool, insert it under magnet holder and when it adhere to the flange, tighten the screw (Z) (Figure 5-16).

## 5.8.5 DISASSEMBLING THE VERSA-TOOL HEAD

Should it be necessary to replace the head with another one, proceed as follows:

- Loosen the screw (Z) (Figure 5-16).
- Hold the diapason (1) by its handle and push it into the slot located at the top part of the head. Holding the tool with the other hand, give it a slight knock (2) to release the head.
- This will detach the interchangeable head from the magnets rack, and it will stay attached to the diapason (3)
- Pull away the diapason.

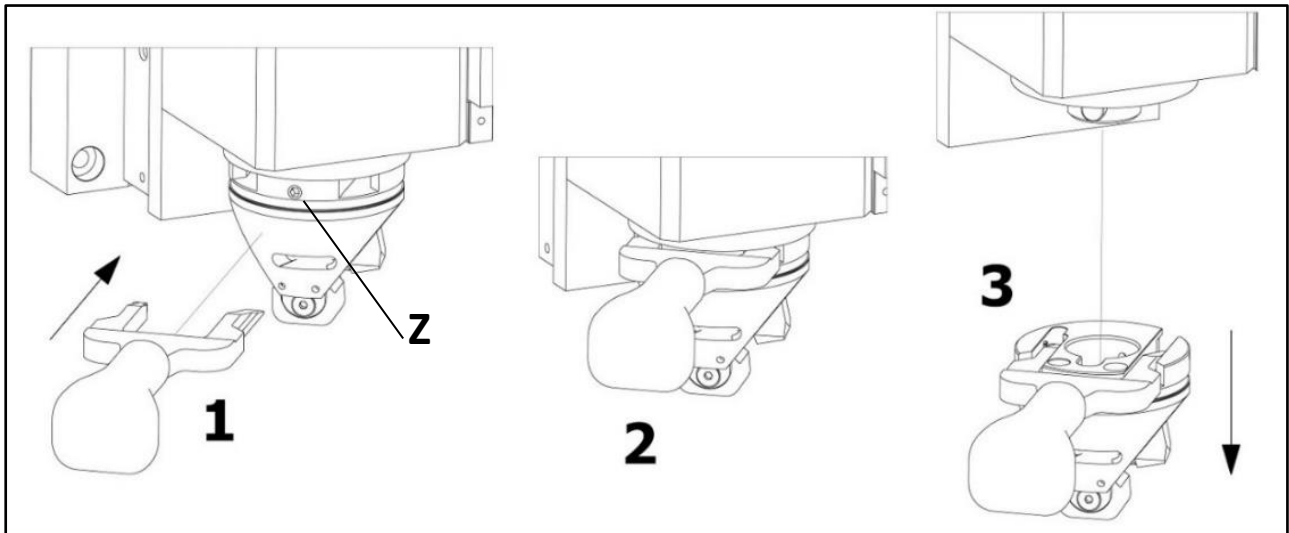


Figure 5-18

## 5.8.6 MULTIPURPOSE DRAWING TOOL - PEN REPLACEMENT

To replace a pen, please follow this procedure:

- Stop the machine and loosen the knob (1) then take out the pen (2).

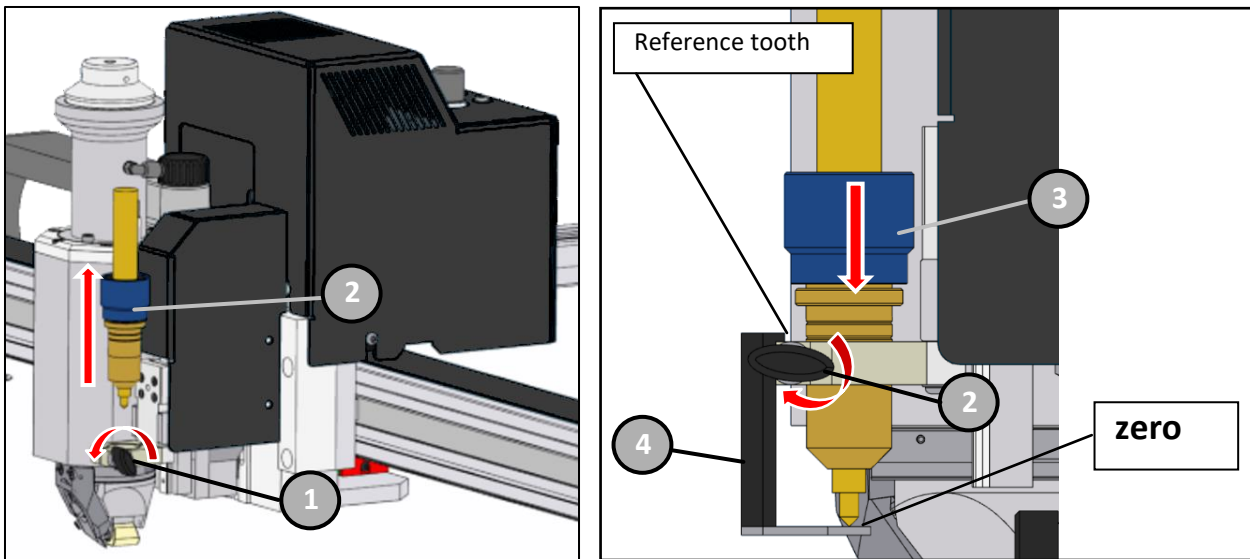


Figure 5-19

- Position the magnetic die (4) as per image above, making sure it perfectly fits the reference tooth.
- Insert the pen holder (3) until the tip of the pen touches the die.
- Tighten the knob (2), remove the die (4).

## 5.8.7 PEN PLOTTING TOOL – PEN CARTRIDGE REPLACEMENT (ONLY FOR AP VERSIONS)

To replace the pen cartridge, please follow the below procedure:

- With the machine stopped and turned off, loose the knob (1) located on the side of the locking ring and take the pen holder out (2).
- Remove the screw (3) located on top of the pen holder,
- Extract the pen cartridge (4) paying attention to do not lose the spring located on the front.
- Replace the cartridge and proceed in reverse to reassemble everything.

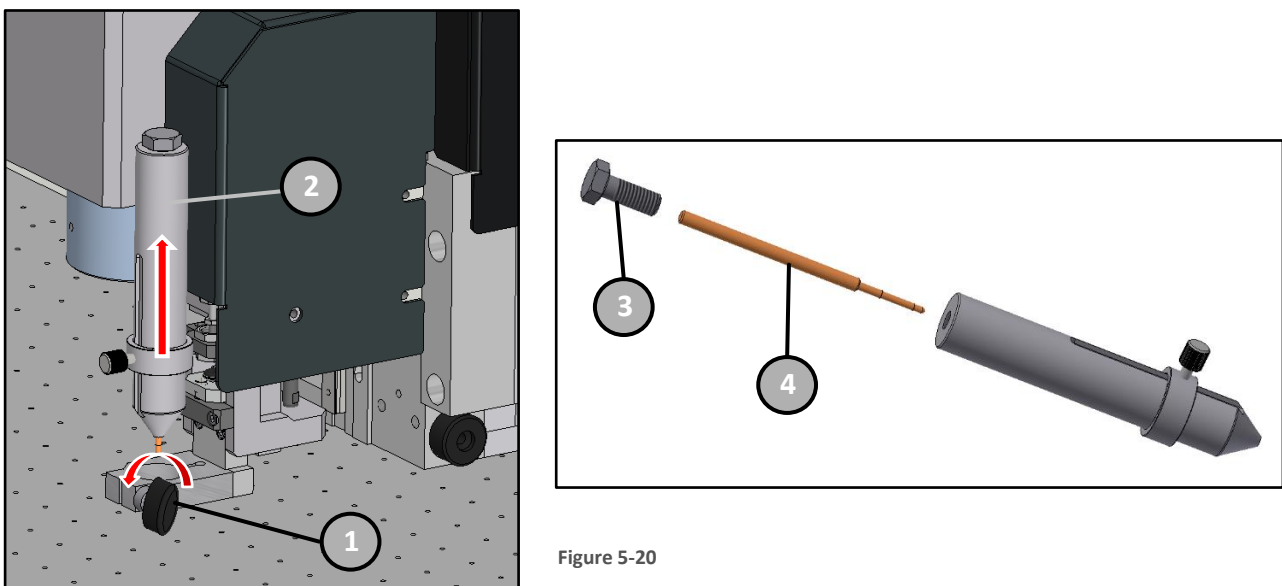


Figure 5-20

## 6 ADJUSTMENTS

To ensure perfect result it may be necessary to perform some manual adjustments, such as:

### 6.1 ADJUSTING THE CUTTING AND CREASING DEPTH

To ensure a perfect cut of any material, it is essential that the cutting blade depth slightly exceeds the material thickness being cut (approx. 0,2 mm / 0,008").

To perform this operation, it is necessary to follow some simple steps: unlock the knob (3), turn the head dial (1) counterclockwise (to increase) or clockwise (to decrease) the blade cutting depth, then lock the knob (3).

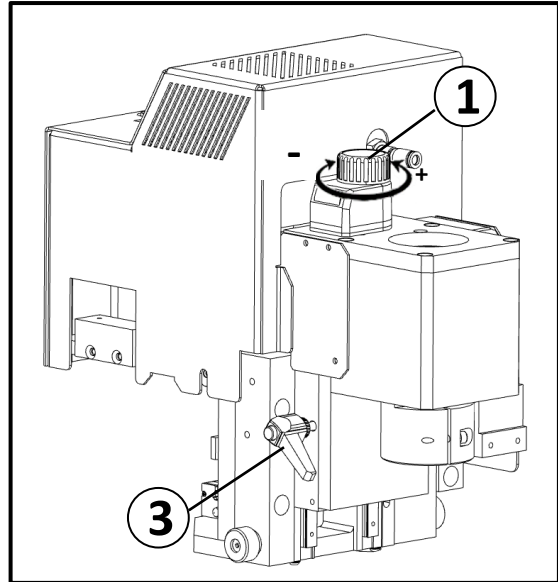


Figure 6-1

To ensure a perfect creasing, with the tool in your hands, adjust the ring (2) of the tool holder by turning it counterclockwise to increase tool pressure, or clockwise to decrease the tool pressure.

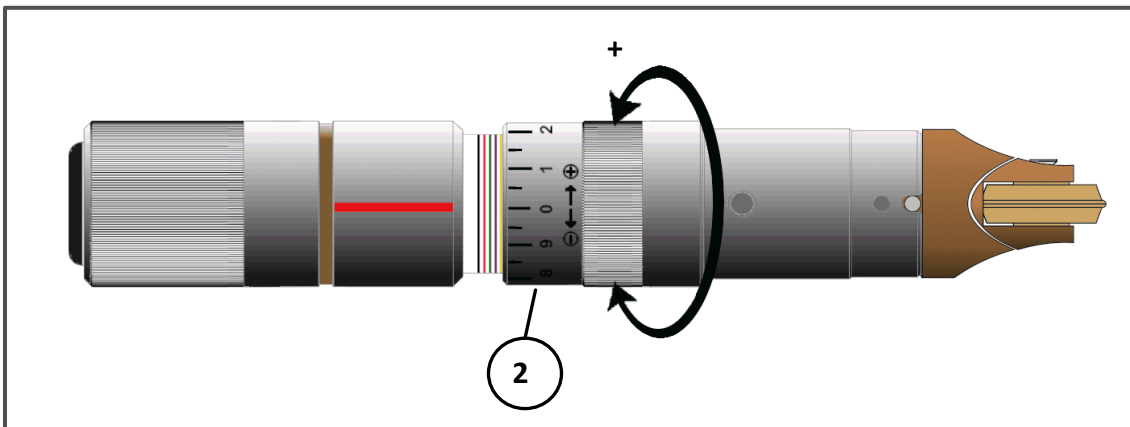


Figure 6-2



**NOTE!** Each step on the scale corresponds to 0.1mm (1/32"), Ten steps=1mm 10/32").

## 6.2 ADJUSTING THE VERSATOOL CUTTING DEPTH

To adjust the VersaTool cutting depth is sufficient turn the knob (1) anticlockwise (to increase), or clockwise (to decrease) the cutting depth.

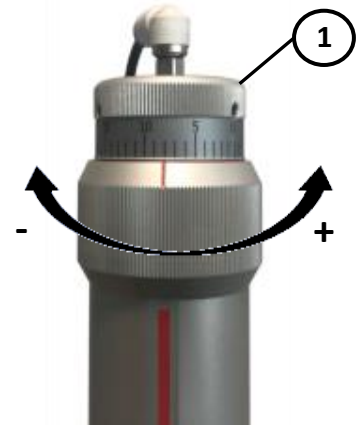


Figure 6-3



**NOTE!** One unit on the counter correspond to 0,1 mm (1/32").  
Ten units correspond to 1 mm (10/32")

## 6.3 ADJUSTING THE CUTTING PRESSURE OF THE KISS-CUT TOOL

Once inserted the standard knife blade into the knife holder. Make sure the knife blade is firmly fixed in the holder. The knife is inserted correctly if it cannot be removed manually from the knife holder. The installation tool can be used to apply enough pressure on the knife to secure it.



Figure 6-4

Gently insert the knife holder into the tool shaft. Hold the nose piece in place with one hand and, with the other hand, turn the knife holder counterclockwise until the alignment pin fits into the small notch of the tool shaft. Now, turn the knife holder clockwise until its thread takes hold inside the tool shaft.

Choose the correct spring (3) based on the material thickness and consistency, so that the applied cutting pressure can be manually adjusted accurately for the specific material.



Figure 6-5

Hold the nose piece in place with one hand. Adjust the knife depth with the other hand by turning the knife holder clockwise until the knife tip is just visible from under the nose piece.

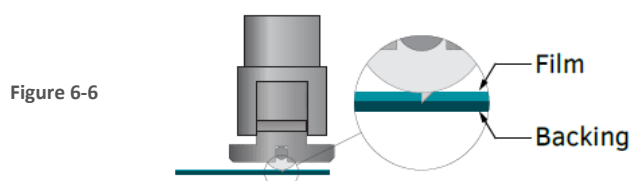


Figure 6-6

## 6.4 ADJUSTING HEIGHT OF THE CORRUGATED TOOL PRESSURE WHEELS

After having adjusted the position of the cutting blade using the head knob (1) see also paragraph 6.1. Rotate the ring (2) to increase or decrease the pressure applied by wheels on the material.

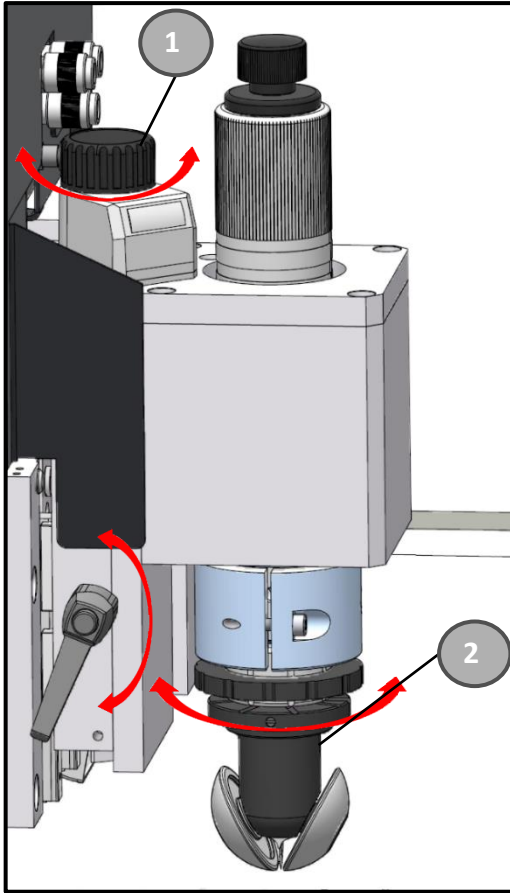
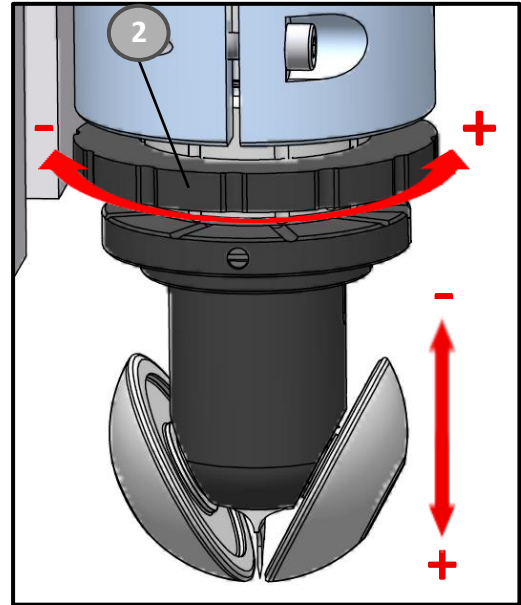


Figure 6-7



## 6.5 ADJUSTING THE DOWN PRESSURE OF THE CUTTING HEAD

To cut special hard materials, or to avoid the wheel on the cutting head leaves a mark on soft materials, it may be necessary to adjust the pressure of the air in the cylinder controlling the head down pressure. Adjustment can be made as follows:

- Pull knob (1) out (on) for a short distance to release the pressure regulator.
- Turn the knob (1) until it reaches the pressure necessary for the blade head to operate correctly
- When the correct pressure is reached push the knob (1) home to lock in place (OFF).

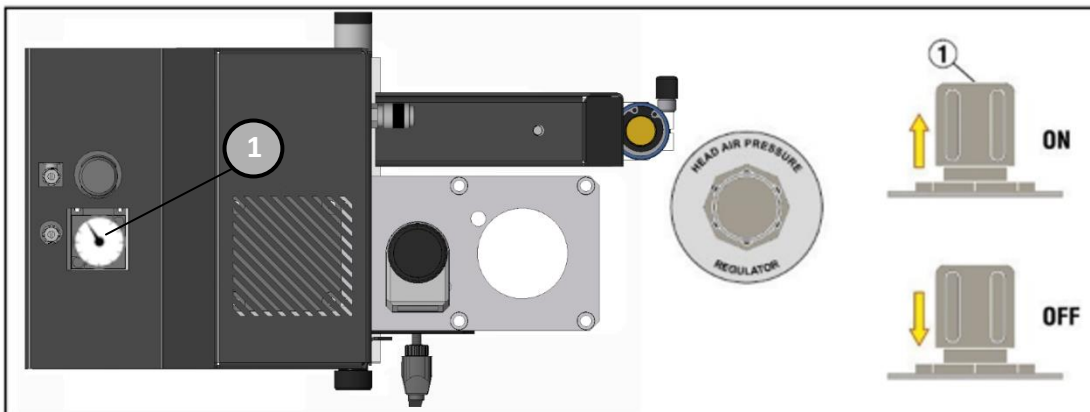


Figure 6-8



**NOTE!** We suggest that you adjust the pressure in a range between 0.25 and 0.5 bar depending on the thickness of the materials to be processed.

## 6.6 OVAL AND ROUND CUT ADJUSTMENT

If you find errors in the cut of oval or round shapes, as per figure below (1), a little calibration will be required, since the shape is not perfectly closed. This error occurs when the blade plunges into the material with a speed that does not allow the starting and ending points to match (4). With this calibration you will increase the time and space (2) (3).

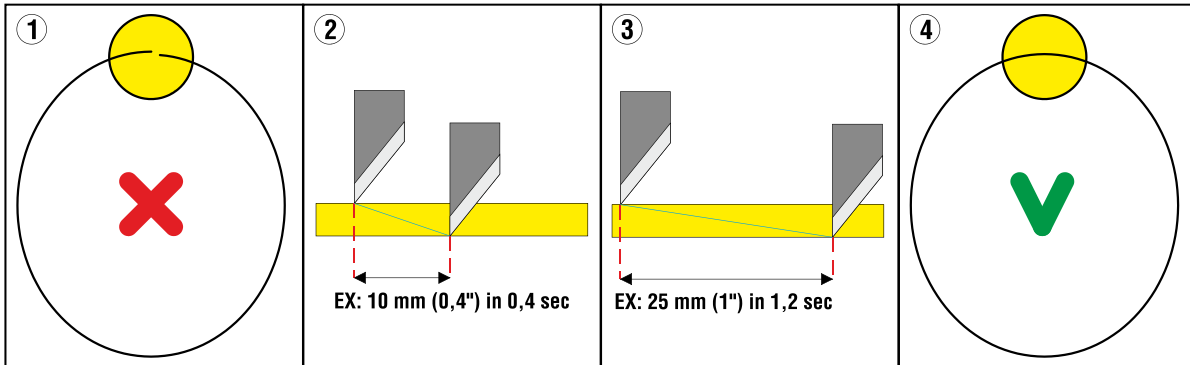


Figure 6-9

Please proceed with the calibration as follows:

- Locate the flow regulation (1)

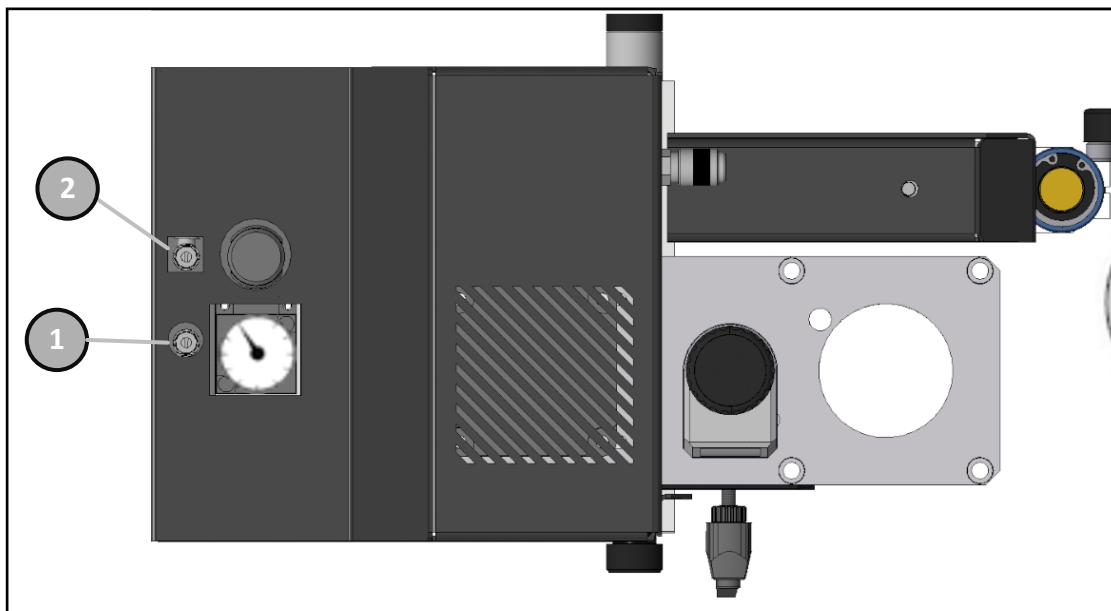


Figure 6-10

- With a screwdriver by turning the valve air fitting clockwise you will reduce the air flow making the blade travel longer (4). Vice versa, by turning the valve air fitting counterclockwise, you will increase the air flow, shortening the time of the blade plunge (5).

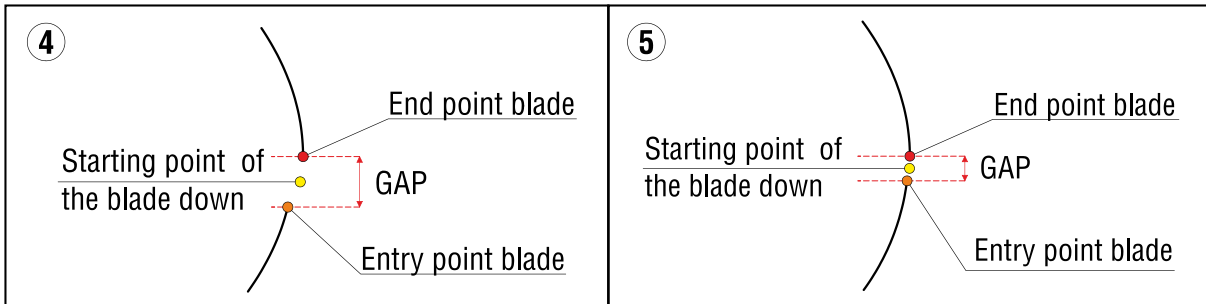


Figure 6-11

- Perform calibration until you find the correct setting.

## 6.7 HEAD-DOWN SPEED ADJUSTMENT FOR SHAPES WITH CORNERS

Using a slotted screwdriver adjust the screw on the flow regulator (2) to modify the speed of the cutting head when moving down

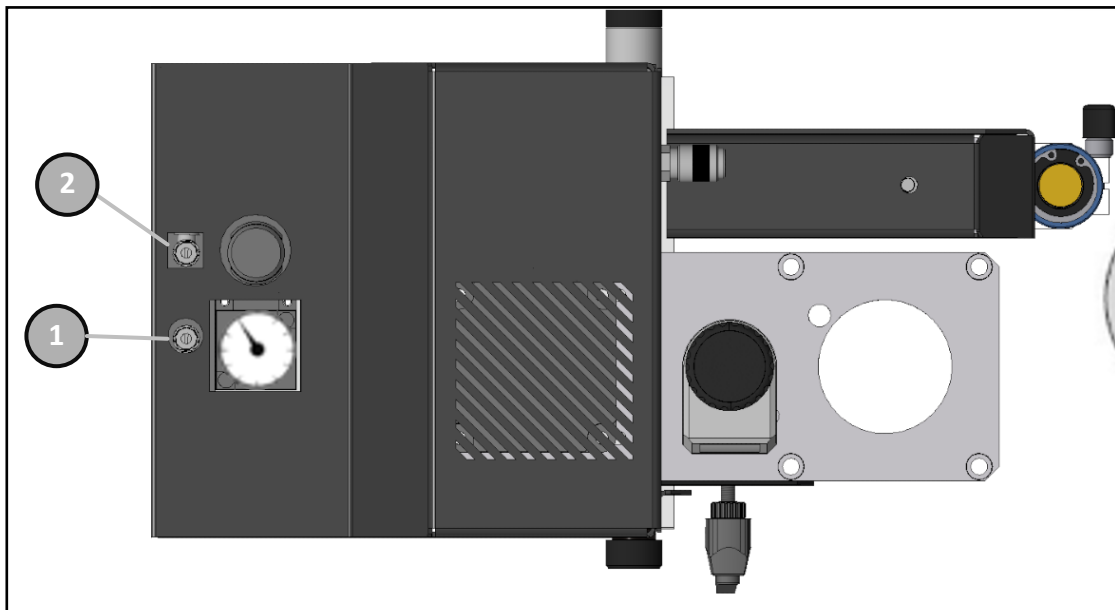


Figure 6-12

You should rotate the screw clockwise to reduce the air flow, so that the blade enters the material more slowly. Vice versa you should rotate the screw anti clockwise to increase the speed of the cutting head when moving down.

## 6.8 ADJUSTING THE RUBBER PRESSURE ROLLER

The rubber roller on the 40° green cutting head will wear during normal use and its position with respect to the cutting blade needs to be adjusted periodically to ensure good quality mountboard cutting. This adjustment also needs to be made each time a rubber roller is changed. To adjust the rubber roller proceed as follows:

- Switch off the machine.
- Loosen the screw (1).
- Insert a pin into the slot (2) to make an adjustment. Remember that by moving the ferrule to the right the roller is raised and by moving to the left the roller is lowered. As an example, we have supplied some images of cuts made and how to make the corresponding adjustment to the pressure roller. On image 6 we can see that the V-Groove cut is very narrow and therefore the pressure roller needs to be raised in respect to the mountboard by turning the ferrule anti clockwise. On image 7 we can note that the V-Groove cut is very wide and therefore the pressure roller needs to be lowered towards the mountboard by turning the ferrule clockwise.

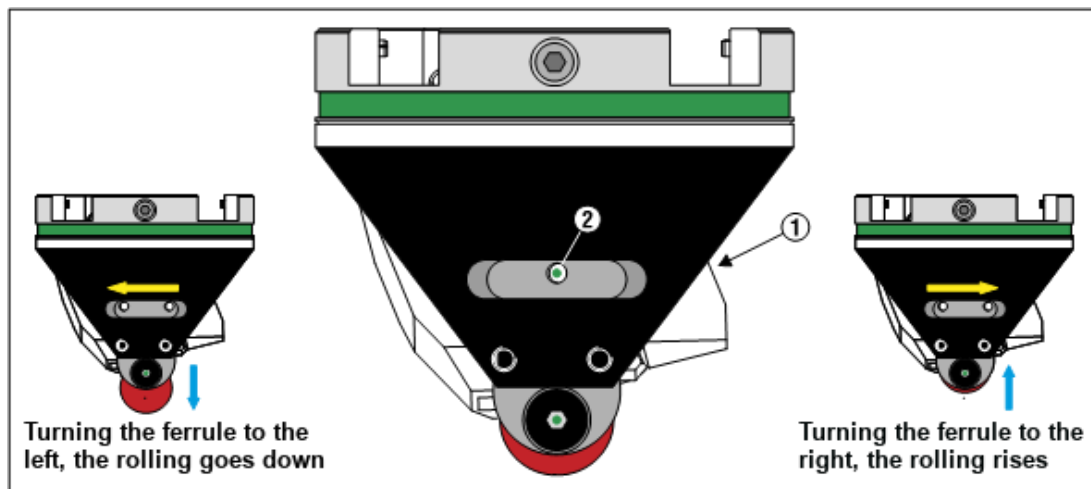


Figure 6-13

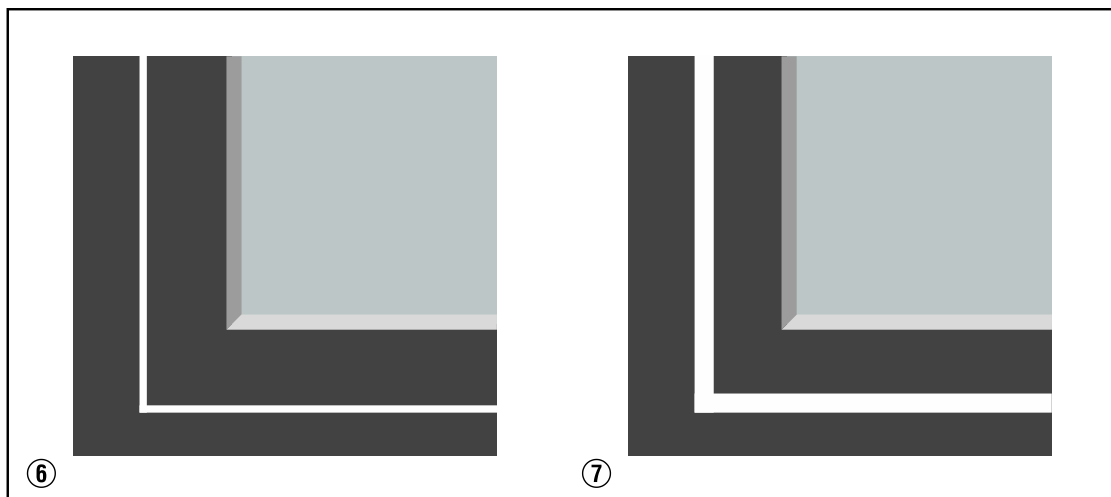


Figure 6-14

- When you reach the desired position tighten the screw (1).
- Continue the adjustment until you reach the required V-Groove width and achieve a good cutting quality.

## 6.9 ADJUSTING THE PRESSURE FOOT

- Loosen the set screw (1).
- Turn screw 2 clockwise or anticlockwise to raise or lower the pad support.
- Once you have adjusted and reached the desired position tighten the grub screw (1).

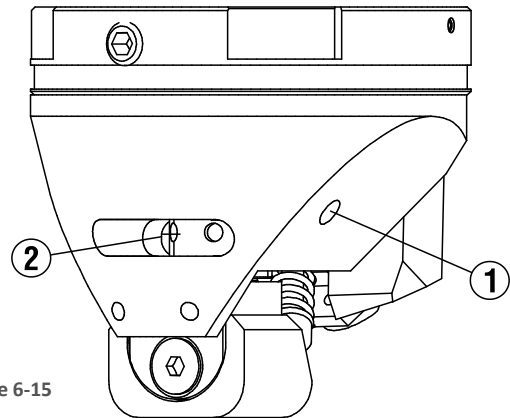


Figure 6-15

## 6.10 PEN PLOTTING TOOL – POSITION SETUP (ONLY FOR AP VERSION)

The Pen Plotting tool requires a calibration to determine its position according to the thickness of the material on which is supposed to write.

The steps to perform this adjustment are described below

- Loosen the ring's knob (1) and remove the pen cartridge holder.
- From Software control panel, lower first tool piston, and afterwards the cartridge piston.
- Insert the pen holder (2) again and loosen the position ring (3).
- Lower the pen until the tip touch the material and from that point keep pushing down to apply the spring a little preloading.
- Tighten first the ring's knob (1) and afterwards the position ring (3).
- From the Software control panel reset both outputs to have cartridge and tool up again.
- Run a test to make sure the procedure has been carried correctly.

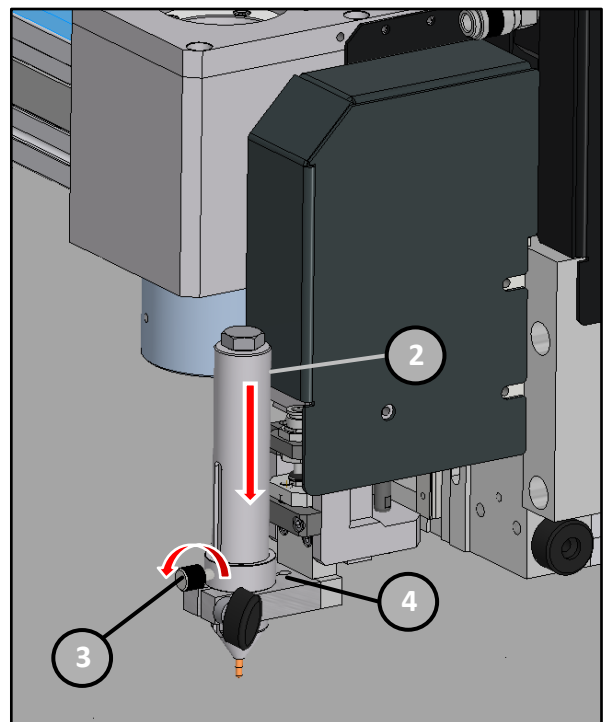
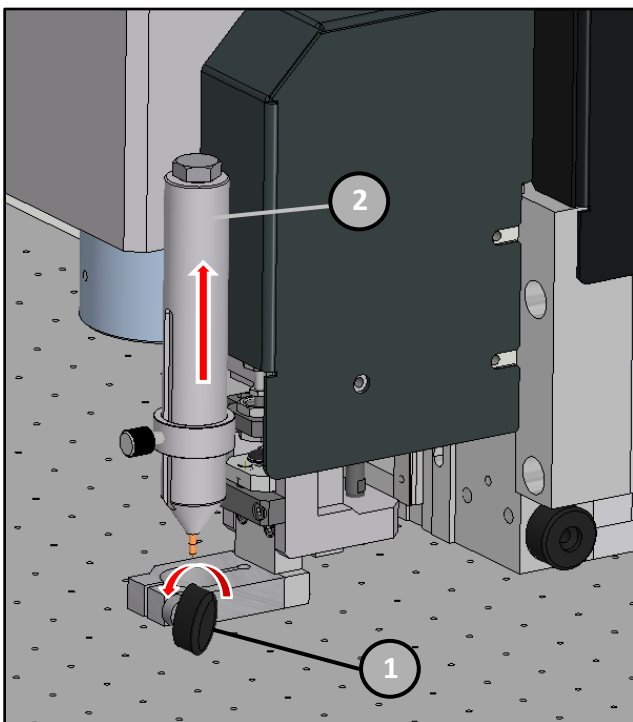


Figure 6-16

## 7 ROUTINE MAINTENANCE

Very little maintenance is required, and it is limited to the operations detailed in the following paragraphs.



**CAUTION!** Please disconnect the machine from electricity, before carrying out any maintenance operations.

### 7.2 CLEANING

One of the most important maintenance tasks is the frequent and complete cleaning of the following parts:

#### Worktable (daily)

- Clean the top of the work table everyday with compressed air or with a soft and dry brush.
- Carefully clean under the material clamps and remove any residual scraps of material or any dirty stuff that might be deposited there.

#### Electrical panel fan (every week)

- Turn the machine off.
- Remove the fan cover
- Blow the air filter using the air compressed
- Re-position the filter and the cover

#### Cutting head (daily)

- Clean the cutting head using compressed air or with a soft dry cloth to remove dust and any debris left from production.
- Check the rubber roller for possible damages due to cutting waste or normal wearing, If necessary, the roller must be replaced.



**DANGER!** Before cleaning the cutting tools remove the blade to avoid any accidental injury

#### Vacuum Pump

For maintenance and cleaning of the vacuum pump, follow the relative provided manual.

### 7.3 LUBRICATION

Remove the blade as previously described. Lubricate the guide at points (1) and (2) with a small amount of spray grease taking particular care not to allow any grease to reach the rubber roller. Carefully wipe off all excess grease before re-inserting the cutting blade. It is absolutely essential that you do not allow any lubricant to come into contact with the rubber roller.

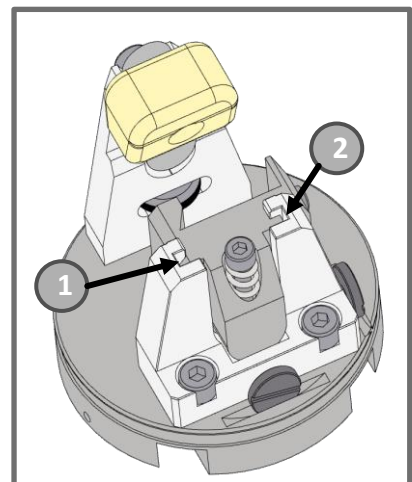


Figure 7-1



**CAUTION!** Use only a synthetic grease spray based on petroleum jelly. Avoid using conventional oils as they can cause an accumulation of dust and paper dust scraps on the cutting head guides and could leave traces of oil on the material being cut.

## 7.4 REPLACING THE RUBBER PRESSURE ROLLER

The rubber roller fitted to some cutting heads can wear out or get damaged during the normal use of the machine.

To change the pressure roller proceed as follows:

Switch off the machine, remove the cutting blade as described before. Loosen the retaining screw (2) using a 2.5mm hexagonal key to free the pressure roller (3). Remove the support pin (4) and roller leaving the screw in position. Spray a small quantity of lubricant on the support pin (4) and slide on the new pressure roller (5). Refit the pin and pressure roller to the cutting head and tighten the retaining screw (2).

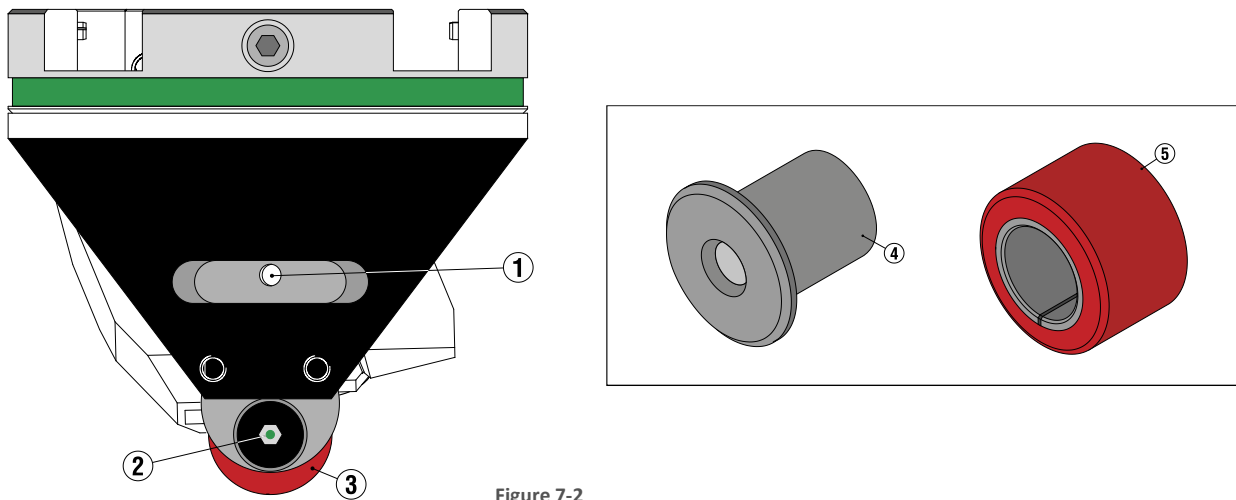


Figure 7-2

Eliminate every trace of lubricant from the pressure roller to avoid marking the material to be cut. If necessary adjust the position of the pressure roller. Switch on the machine and resume normal production.



**CAUTION!** During the pressure roller change operation particular care must be taken not to loosen screw (1) as this could move the rubber roller holder position and have consequent effects on the quality of cut.

## 7.5 PNEUMATIC SYSTEM MAINTENANCE (EVERY 1-2 MONTHS)



**NOTE!** if the oscillating head is not used for long time, it is not necessary to have oil in the pressure regulator, so it is not necessary to refill the oil into the tank.

Make sure the tanks (A)(C) of the air treatment unit located at the entry to the pneumatic circuit of the machine does not contain any water generated by the compressor and if so empty the tank releasing the valve (B). Check the oil level as well and if necessary re-fill it following the below steps;

	<p>Turn off the compressor (or close the pneumatic system valve if present near work zone) and remove the main air pipe (1). Unscrew the cap (2) of the tank.</p>
	<p>Re-fill the tank with a funnel until the oil reaches the level indicated in the figure (3). An oil suitable for a pneumatic system with a viscosity of ISO VG 32 or max 46 is recommended.</p>
	<p>Re-insert the cap (4) and tighten gently. Attention! Over-tightening could break the tank's thread generating air and oil loss.</p> <p>The quantity of oil released in the pneumatic circuit is regulated by the manufacturer during the testing phase before the machine is shipped.</p> <p><b><u>NOTE!</u></b> For sufficient lubrication, the oil flow adjustment knob must be between 1 and 2.</p>
	<p>Re-connect the air hose, turn the compressor back on (or open the pneumatic system valve if present near work zone) and make sure there is no air leaking before operating the machine.</p>



**CAUTION!** Use only the oil suggested in the previous table to top off pneumatic system tank.

## 8 TROUBLE SHOOTING

This section relates to possible problems that could occur during normal use of the machine. For any problems not covered in this manual please contact your sales representative, your nearest dealer or the technical support.

### 8.1 CONNECTION PROBLEMS

The “unable to connect error message” reports that the V-Studio software is not capable to link with the machine. There might be several reason that generates this issue;



Figure 8-1

- The Ethernet cable connecting the PC with the machine is disconnected or damaged.
- The machine IP setting is incorrect. (For software / machine connection and parameter settings, see the adjustments section of the software manual).
- The main machine switch is not set as "ON" position.
- Smart Cut process might be not close correctly and still running underneath. Please check thru the task manager.
- The PC has turned the some componets off after a long “stand-by” period. This interupt the connection with the machine and might require a PC reboot. Check, and if necessary, change the Windows settings to avoid partially closing down the system on "Standby"



**CAUTION!** Always ensure that the USB cable is connected correctly and that the machine is always switched on before opening V-Studio.

## 8.2 WORKING PROBLEMS

Various important problems could appear in different areas of the machine:

- The machine does not power on
- Clamping system not working (pneumatic or electrical problem).
- The cutting head and blade do not descend (pneumatic or electrical problem).
- The suction pump does not turn on
- The suction does not work (pneumatic or electrical problem).

### 8.2.1 THE MACHINE DOES NOT POWER ON

If the machine does not power on, which means the “Power-On” button does not light up, it means that the machine is not getting power to engage motors and release clamps.

- If the machine does not power on please make sure it is connect to a power source.
- Make sure the emergency button is not pressed down. If so release it but turning clockwise and press the Power-On button again.

If the emergency button wasn’t pressed down or after releasing it the machine still does not power on, please proceed as follows:

- Disconnect the plug from the power supply and check if the cable is correctly inserted in the socket of the control unit. Try to connect the plug and turn on the machine.
- If the cable is correctly connected but the light of the power on button is not on is means the fuses are burned. Contact a specialized technician for the electrical verification of the electrical panel.

### 8.2.2 CLAMPING SYSTEM NOT WORKING

#### Pneumatic problem

Should the clamping system not work please proceed as follows to check that the air valves are working:

- Make sure the air pressure connection is properly working and supplying a pressure 6 to max 7 BAR (6,5 Bar - 90 PSI is recommended) on the main pressure regulator and the compressor.
- Make sure there is no air leaking from the air tubes or the air fitting.
- If the air pressure is fine and there’s no other evident issue, please turn the machine off.

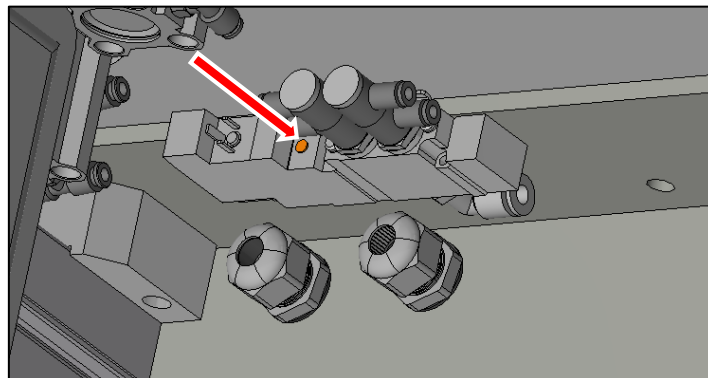


Figure 8-2

- Locate the clamps valve which is normally positioned under the working table. Press the little orange button on the solenoid valve to make sure is still working. The clamps should lift up when the button is pressed and lower when it is released. If the clamps work, when using the manual button, it means that the pneumatic system is working normally, and that the problem could be electrical.

## Electrical problem

If, after checking the pneumatic system, the clamps still do not work, please proceed as follows to check the electrical system:

- Turn the machine ON again and release the Emergency button if pressed down.
- Press Power ON button to have the machine engaged and check the electrical connection on the above mentioned valve.
- Check clamping system using I/O management through the V-Studio Diagnostic. If the clamps still do not work in manual mode, the solenoid valve might need to be replaced.

### 8.2.3 CUTTING HEAD, BLADE OR MULTIPURPOSE DRAWING TOOL DO NOT DROP DOWN

#### Pneumatic problems

If the cutting head and blade do not descend please follow these procedures to check the pneumatic system connections:

- Make sure that the air pressure is correct (6 / 6,5 Bar - 90 PSI), or see chapter 3.2 in the case of using an oscillating head).
- Check that the air pressure to the cylinders on the cutting head assembly and the cutting head are correct (min 0,25 Mpa).
- If the air pressure is correct, turn the machine OFF the power by pressing Emergency button down and rotating the power on button.
- Loosen the three screws on the head protection and remove them.

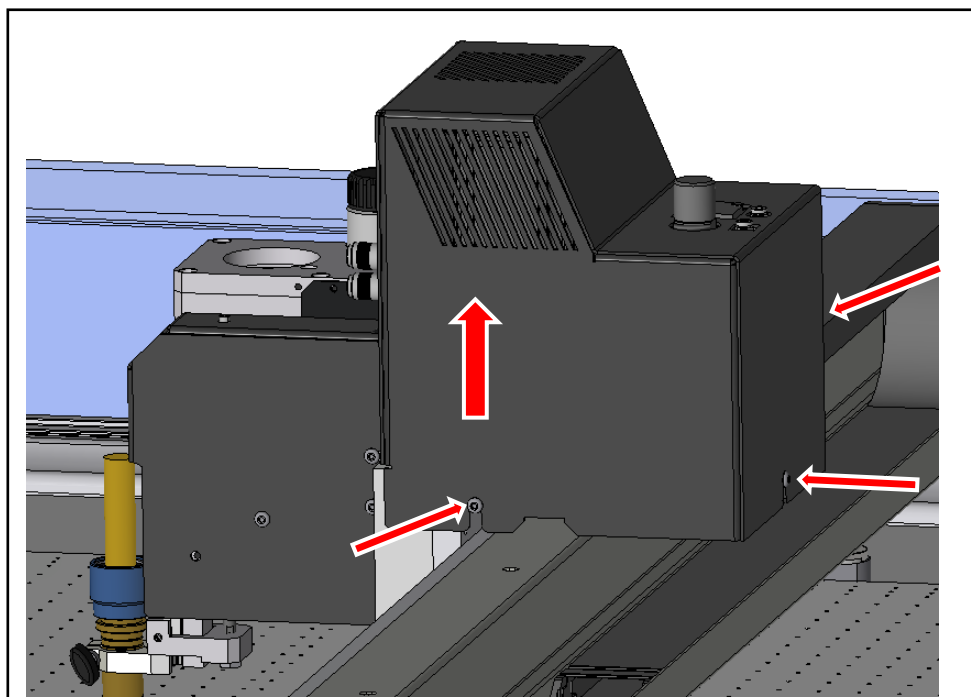


Figure 8-3

- Manually check that the head command cylinders, works by pressing the orange buttons of every valve (on each solenoid valve there is a label of recognition YV1, YV2, YV3, YV4, YV5 and YV6 only for AP versions):
- The YV1 valve drives the main cylinder that lowers and raises the cutting head assembly.
- The YV2 valve drives the secondary cylinder which lowers and raises the cutting blade.
- The YV3 valve (if present) drives the secondary cylinder that lowers and raises the cutting blade slower than YV2.
- The YV4 valve drives the cylinder which lowers and raises the multipurpose drawing tool device.
- The YV5 valve enables the blade of the Oscillating tool (make sure before the test that the head is high, and the surface is clear)

- The YV6 valve (only AP versions) drives the secondary cylinder which lowers and raises the pen by a few millimetres.

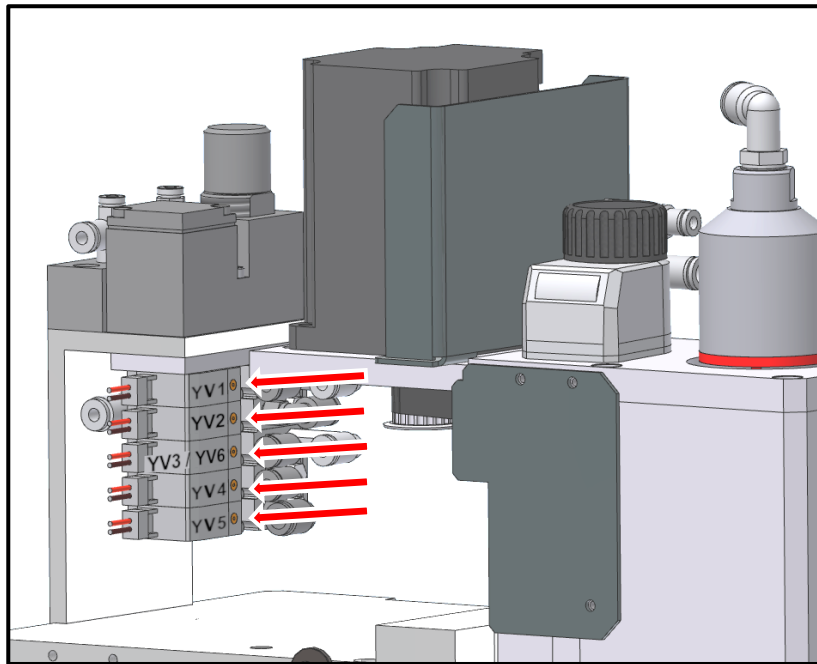


Figure 8-4

- If you press and release the key of each solenoid valve, the control cylinders do not move, there may be an electrical failure

### Electric problem

If, after checking the pneumatic system, the cutting blade holder, blade or multipurpose drawing tool device do not descend please proceed as follows to check the electrical system:

- Turn the machine ON again.
- Press the Power On button and check connectors to each valve (YV1, YV2, YV3, YV4, YV5 and YV6 only for AP versions).
- Check that each cylinder works using the manual test from the control panel of the software. If the valve still does not work, it might need to be replaced.
- Reassemble the head cover when the operations are finished.

---

### 8.2.4 THE SUCTION PUMP DOES NOT TURN ON

If the pump does not start, perform the following procedure:

Make sure that the Selector is light up

- If the light on the pump selector does not light up when rotating the selector (5), please turn the machine off, disconnect the power cord and verify the integrity of the pump power cable and as well as it is properly inserted its socket. Restore the machine by turning on again and if the vacuum pump does not start, please contact the assistance service.
- If the light on the pump selector does not light up, please make sure the machine is connected to a power source, the machine is turned on and the emergency button is not pressed down. In case one of the previous things was active, please restore it and try again by rotating the same selector. If nothing change, please contact the assistance service.

## 8.2.5 THE SUCTION TABLE DOES NOT TURN ON

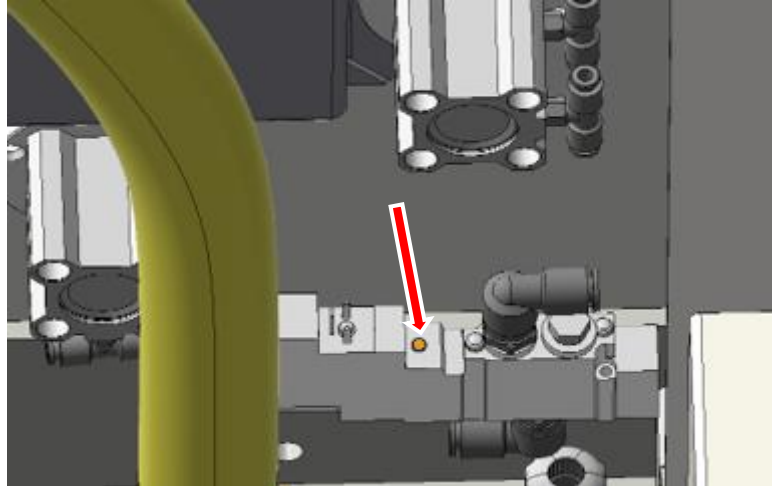


Figure 8-5

### Pneumatic failure

If the pump selector lights up but the suction does not work, check the connection of the valve as described below:

- Check the pressure of the air coming from the compressor and the main pressure gauge on the machine. The second should be in a range between 6 and 6.5 BAR and the one on the compressor a little higher.
- Make sure there's no air leaking in any part of the pneumatic system.
- Make sure that not all vacuum taps are not closed.
- With both, machine and pump turned on, press the small orange button of the valve, and make sure if suction comes through the opened sectors. The valve we are referring to, it is the one with only two Ø6 connected pipes and normally placed under the machine vacuum table. If that does not happen the valve might need to be replaced.
- On the contrary, if the suction works, it means that the pneumatic components are operating normally and there may be an electrical fault.

### Electrical Failure

After performing the pneumatic system check, if the suction still does not work, please proceed with the following electrical checks:

- Turn the machine on and release the EMERGENCY button in case it was pressed down.
- Press the Power-ON button
- Check the electrical connector on the valve, the same valve located under the machine table (the one with only two Ø6 connected pipes).
- If the valve does not work when the selector (6) switch (Figure 6-1) is turned ON, it might need to be replaced.

## 9 DECOMMISSIONING AND DISMANTLING

When dismantling or disposing of the machine it should always be noted that:

- The client, under 91/689/EEC directives, or byelaws in force in the relevant country, is responsible for the disposal of the machine and its components.



**NOTE!** Qualified people who have knowledge of the appropriate laws and methods to use should conduct the dismantling and re-cycling operations.



**DANGER!** During dismantling of the machine, ensure that the parts being removed are within limits for a workman to carry (max. 25 Kg) and that there is no risk of anything falling and causing injury.



**DANGER!** When dismantling the machine pay particular attention that it does not become unbalanced. This could be dangerous for anyone in the immediate vicinity whether involved, or not involved, in the dismantling operation.

- The machine should be dismantled in order to effectively separate the various materials used in its construction.
- Proceed with emptying the oil in the air pressure regulator ensuring that it is disposed of as necessary under EEC law or the law of the country prevailing in the country of disposal.



**CAUTION!** Discarding oil into the drainage system is prohibited.

- All plastic and electrical materials should be taken to authorised recycling organisations.
- Where possible recycle motors, transformers and electro-mechanical components otherwise take them to official industrial waste sites.
- All ferrous metals should be taken to authorised recycling centres.
- The standby batteries should never be discarded into the environment as they are classed as pollutants and therefore should be disposed of by authorised centres.

### 9.1 HAZARDOUS SITUATIONS

In the case of a fire use CO<sup>2</sup> extinguishers so as not to damage electrical components.

In the case of fire use powder extinguishers type ABC + Nitrogen to limit the damage in areas not containing electrical components.

## 10 DOCUMENTATION SUPPLIED WITH THE MACHINE

The instruction and maintenance manual of the machine is accompanied by the following documents:

- V-Studio software manual.
- Electrical system diagram.
- Vacuum pump manual
- Warranty & replacement parts shipment form

## 5 YEAR WARRANTY

We have always been committed to ensuring the highest quality of our products, and it is precisely for this reason that we offer an extension of the warranty to 5 years for our machines, at no additional cost. The only requirement to take advantage of the warranty extension is to activate it online when registering the machine on the support section of the Summa website, in the V series Warranty & Support section, within 30 days from the date of installation, coinciding with the machine's first start-up.

## WARRANTY CONDITIONS

The 5-year warranty will only be valid if activated within the time and manner requested; otherwise the machine, purchased from Valiani or an authorized Valiani dealer, including the mechanical, pneumatic, electrotechnical and electronic components will be guaranteed to conform to the Valiani production specifications for a period of one (1) year from the date of product installation/activation coinciding with the date of the machine's first start-up, automatically recorded by the machine's software system (Standard Warranty). The technical support service and free remote connection is valid for one (1) year. Upon expiry it will be possible to request an extension for a fee. The 5-year warranty is only available for the Optima, Invicta, Integra V-series. The 5-year warranty is available in all countries\*.

### CONTENT

During the Warranty Period, Valiani will, at its discretion, repair or replace the machine that does not comply with the Warranty without additional costs, with the exception of travel and labor costs relating to Valiani personnel sent to the site.

The repair, at Valiani's discretion, may involve software updates, replacement of components or boards with others of equivalent functionality, whether new or refurbished. Replaced components, accessories, batteries, or boards are covered by the remaining duration of the original warranty period. As such, the Warranty Period will not be extended in any way. The substituted machine, original accessories, and/or replaced mechanical and electronic components become the property of Valiani.

### METHOD

To obtain warranty assistance, the buyer must contact Valiani no later than eight (8) days from the discovery date of the defect in materials, workmanship, or non-compliance with the product's specifications, and before the expiration of five (5) years from the installation/activation of the machine.

In the event that a specific part of the machine is requested to be returned to Valiani or an authorized Valiani dealer, the product must be sent with shipping costs to be paid by the owner/customer, in accordance with Valiani's RMA procedures. This warranty will be void if the RMA procedures are neglected or not properly followed. In the case of a warranty replacement order with a request to return the defective part, if the buyer does not ship it back to Valiani within forty-five (45) days of receipt, Valiani will issue an invoice for each item replaced and not returned.

### WARRANTY EXCLUSIONS

This warranty is not valid on consumable parts or wear parts and if the origin of the fault is not attributable to product defects but to external factors such as, purely by way of example and not exhaustively:

1. Use that does not comply with the indications of the user manual (incorrect use), tampering, negligence, or neglect and in the case of alterations or repairs carried out by personnel not authorized by Valiani.
2. Use of accessories, software applications and peripherals (including but not limited to: batteries, USB adapters and power supplies), not manufactured, supplied, or expressly authorized by Valiani.
3. Use of blades or components not produced, supplied or expressly authorized by Valiani.
4. Connection to incompatible energy sources, supercharging the machine, or the connection to an earthing system not in accordance with the law.
5. Use of connection cables to the electric control unit of the Product that are elongated, modified, damaged or have been crushed or short-circuited.
6. When defects or damages are due to humidity, liquids or other infiltrations.

Oscillating tool, 1Kw Router, Vacuum pump and Industrial Vacuum Extractor are excluded from the 5-year warranty.

In addition, this warranty will not apply if the serial number of the Product has been modified, deleted, duplicated, removed or made illegible. Valiani reserves the right to refuse free assistance if the requested documentation cannot be provided or if the information is incomplete, illegible or incompatible with the factory data.

### DATA BACK-UP

Before sending your Product or a specific part of the machine for warranty service, please take note and backup all the data that you have entered for your product, such as the library, the settings for the machine setup and any adjustments for cutting, as this data could be deleted during the repair or service operation.

### OUT OF WARRANTY REPAIRS

In the event that the customer requests Valiani to perform a repair of the machine or a specific part of the machine beyond the Warranty Period, or if the Warranty cannot be applied due to the nature of the defect(s) or malfunction(s), Valiani, at its discretion, may carry out these repairs and charge for the costs incurred.

\* Except China and Hong Kong

# DECLARATION OF CONFORMITY



The manufacturer:

**VALIANI S.r.l.**

**REGISTERED OFFICE:**

Via delle Regioni, 305-307 – 50052 Certaldo [FI] - ITALIA  
 Tel. (+39) 0571 666 598  
 www.valiani.com – email: info@valiani.it

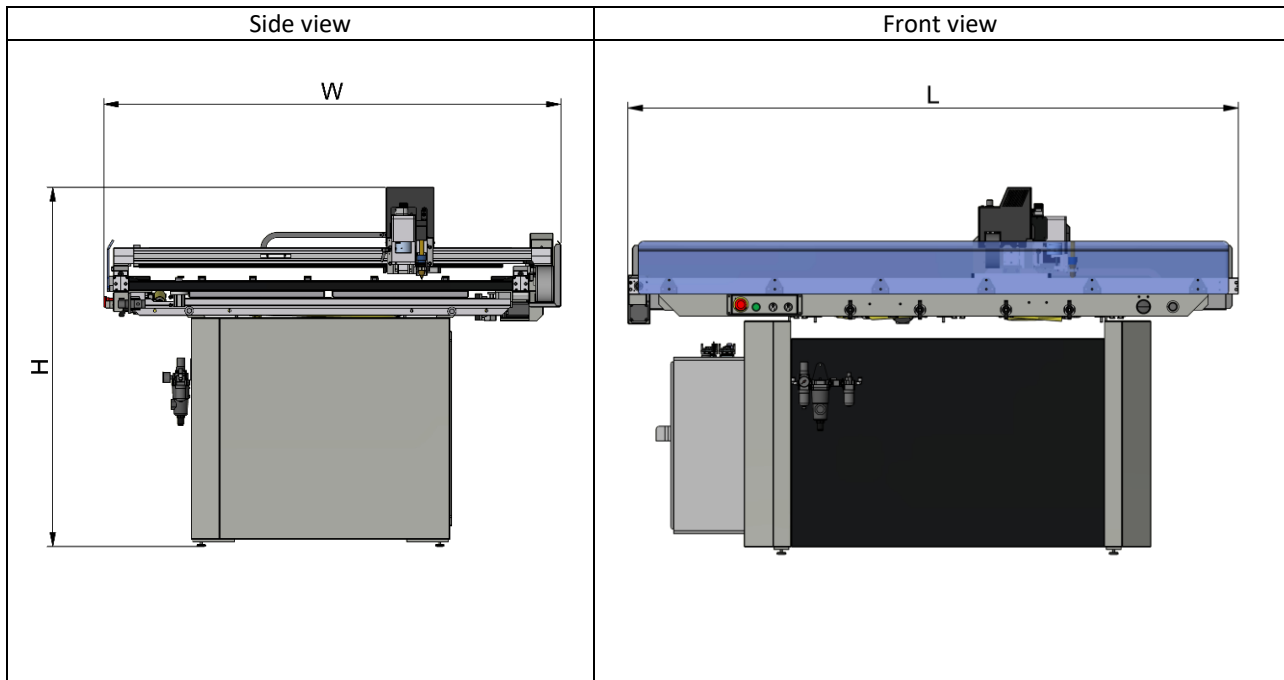
***Declares under our sole responsibility that the machine .....  
 has been made in compliance with the following directives***

- **Directive 2006/42/EC** of the European Parliament and of the Council on machinery.
- **Directive 2014/35/EU** of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.
- **Directive 2014/30/EU** of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.
- **Directive 2011/65/EU** of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment, as amended.

The technical documentation has been compiled in accordance with Annex VII A of Directive 2006/42/EC.

Person authorized to compile and keep the technical documentation:			
<b>Name:</b>	<b>NICO</b>	<b>Surname :</b>	<b>VALIANI</b>
<b>Address</b>	<b>Via delle Regioni, 305-307</b>	<b>Country:</b>	<b>Certaldo [FI] - ITALIA</b>
<b>Corporate position:</b>	<b>Chief Executive Officer</b>		

13 DIMENSION WITH STANDARD STAND



Model	W	H	L
V0806	1390 (54.73)	1250(49.21)	1450 (57.1)
V0812	1390 (54.73)		1920 (75.6)
V1015 V1015 AP	1590 (62.6)		2090 (82.28)
V1612 V1612 AP	2110 (83.07)	1268 (50)	1920 (75.6)

Remark: all measures not in parentheses are in millimetres, while the ones in parentheses are in inch





**Summa** / **valiani**  
your perfect cut

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