

ORANJE

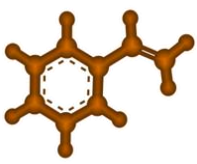
HIGH PRECISION CNC FOAM CUTTER

USER MANUAL

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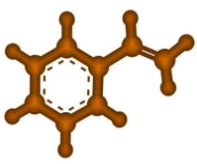
via Eusanio Stella, 17

67100 L'Aquila - ITALY



INDEX

1	FOREWORD.....	3
2	IDENTIFICATION and MARKING.....	5
3	MARKING.....	6
4	Package components.....	7
5	Oranje’s components.....	8
6	FINAL ASSEMBLING.....	10
7	Disassembly electronic case from CNC Foam Cutter ORANJE.....	21
8	Environmental Conditions.....	27
9	SET-UP & USE.....	28
9.1	ShaCo Sw Use.....	28
10	MAINTENANCE.....	36
10.1	GENERAL PERIODIC CONTROLS.....	36
10.2	WIRE REPLACEMENT.....	36
10.3	CLEANING.....	39
11	Troubleshooting.....	41
12	WEEE disposal of waste equipment in the European union.....	43
13	WARRANTY.....	45
14	Acronyms and abbreviations.....	46



1 FOREWORD

The Customer documentation for *High precision Foam Cutter – ORANJE* (P/N PC205005005-1.0) is Included into the following volumes:

- **Technical Description (TED)**

The **Technical Description** contains mainly instructions on packaging /un-packaging, mounting and connecting the desktop CNC Foam Cutter **ORANJE**.

The Technical Description gives also an overview of the application, performance features, interfaces and functions of CNC Foam Cutter **ORANJE**. It also contains the most important technical data.

- **User Manual – Installation Guide (UM) - THIS DOCUMENT**

The User Manual provides information on *how to* operate, monitor and maintain the desktop CNC Foam Cutter **ORANJE**.

Symbols Used in the Documentation



Symbol for Warnings

This symbol identifies notes which, if ignored, can result in personal injury or in permanent damage to the equipment.



Symbols for Notes

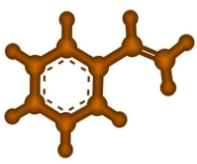
This symbol identifies notes providing information which extends beyond the immediate context.



Important Notice on Product Safety

Before taking any action on the equipment please read carefully the safety rules and precautions.

Keep these instructions carefully.



Non-observance of these conditions and the safety instructions can result in personal injury or in property damage, therefore only trained personnel may install and maintain the system.

The system complies with the standards **EN 61558-1, EN 61558-2-6**.

All equipment connected has to comply with the applicable safety standards.



Important Notice on Product Operation

Every ORANJE machine has been carefully tested before shipping. It is assumed stable voltage at electric socket. If this is not the case, insert a voltage stabilizer between machine and electric socket in order to prevent equipment damages and to electronic and motor components

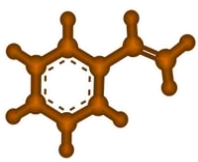


Always wear protective gloves

Some of the parts may have elevated operating temperatures



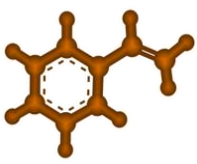
Always wear protective glasses



2 IDENTIFICATION and MARKING

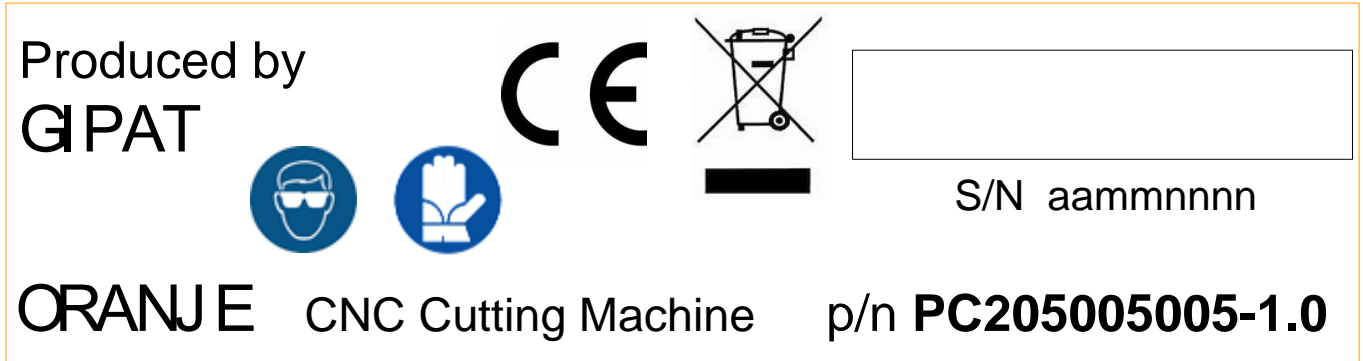
User shall examine the shipping container for obvious damage prior to installing this product; notify the supplier of any damage which he believes occurred during shipment or delivery; user shall inspect the contents of this package for any sign of damage and ensure that the items listed below are included.

Before opening the package the user shall also verify that the label reports the correct supplied manufacturer's P/N and trade mark/name on the shipping documents.



3 MARKING

The following figures show the marking on the external side of ORANJE



Picture 1: GIPAT's product code

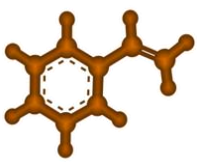
4 Package components

BEFORE USE: carefully check whether all components listed below are present inside the package.

In case any of them were missing or damaged, contact our *customer care* and do not proceed with final assembling.

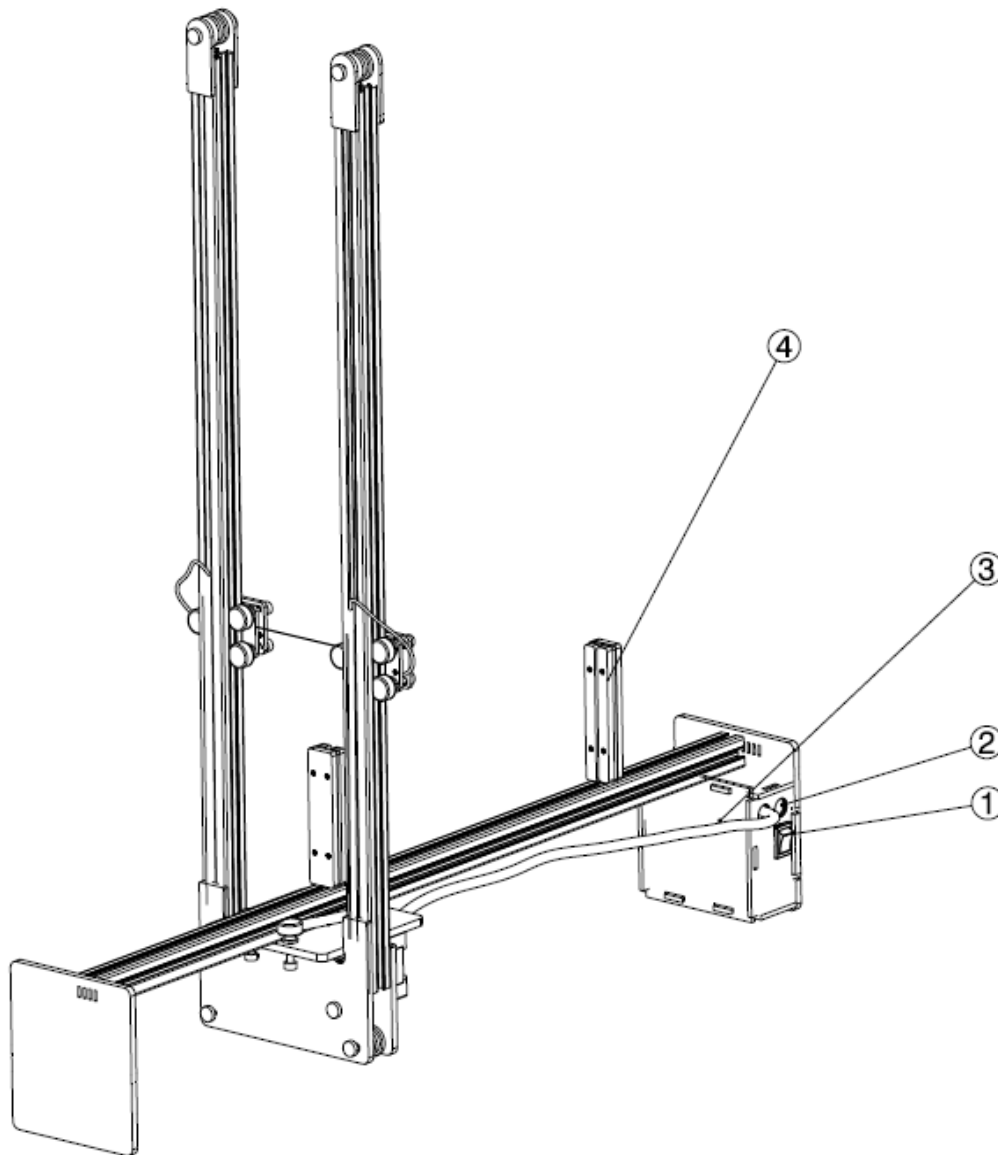
Item list present in the box:

- a) Nr.1 Oranje's base
- b) Nr. 1 Oranje's portal
- c) Nr. 2 Brackets (supporting anchorages)
- d) Nr.1 AC/DC Adapter
- e) Nr.1 Cutting Wire rocket (mt.2)
- f) Nr.1 USB cable
- g) Nr.1 assembling key

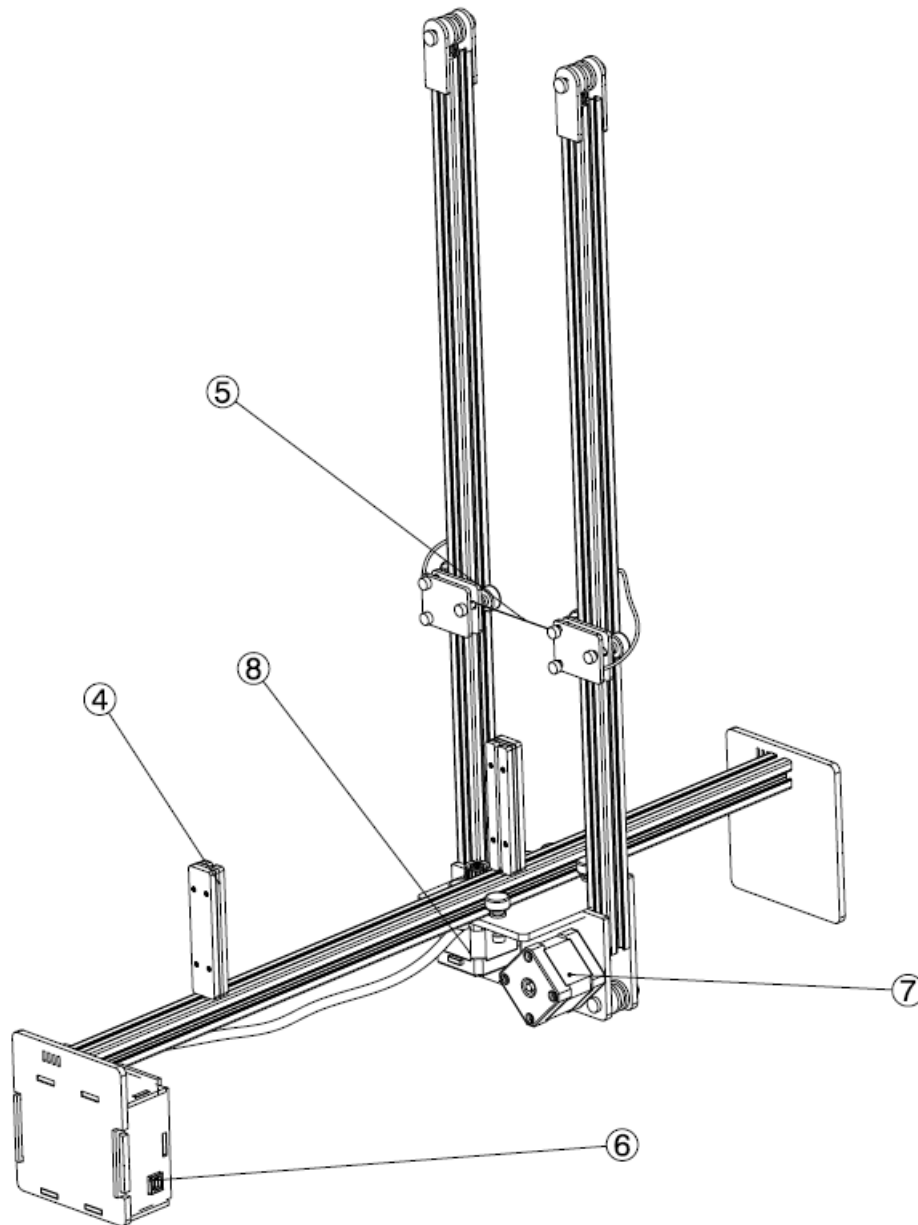
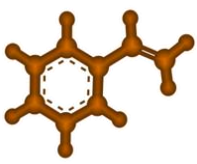


5 Oranje's components

Before using the CNC machine user should be aware of its components and safety issues.




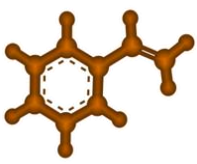
Picture 2: ORANJE's components-1



Picture 3: ORANJE's components-2

Numbering below refers to above pictures

1. ON/OFF power button
2. Power interface (INPUT 100/230 V, OUTPUT 12 V), jack DC Power Supply 5,5mm
3. Electronics case and 'orange' cable
4. Styrofoam anchorages
5. Cutting wire ( hot during use)
6. USB interface type B



6 FINAL ASSEMBLING

ORANJE is provided partially assembled (due to better packaging and shipping):

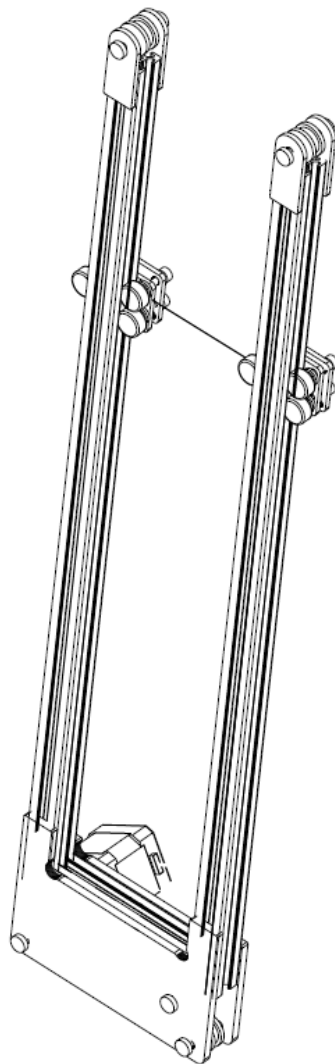
it is composed of two main parts:

- a) portal with cutting wire;
- b) base including electronic case

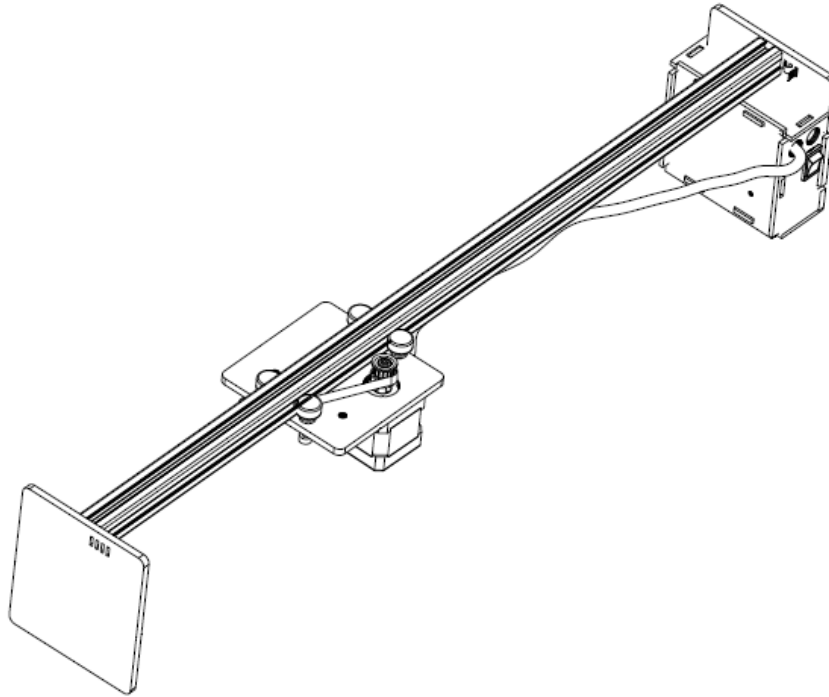
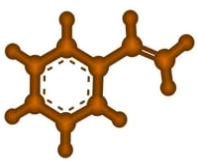


Note:

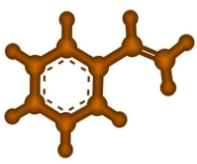
Note that in order to assemble the ORANJE a specific tool – hex key – is included in the packaging box



Picture 4: ORANJE's portal with wire

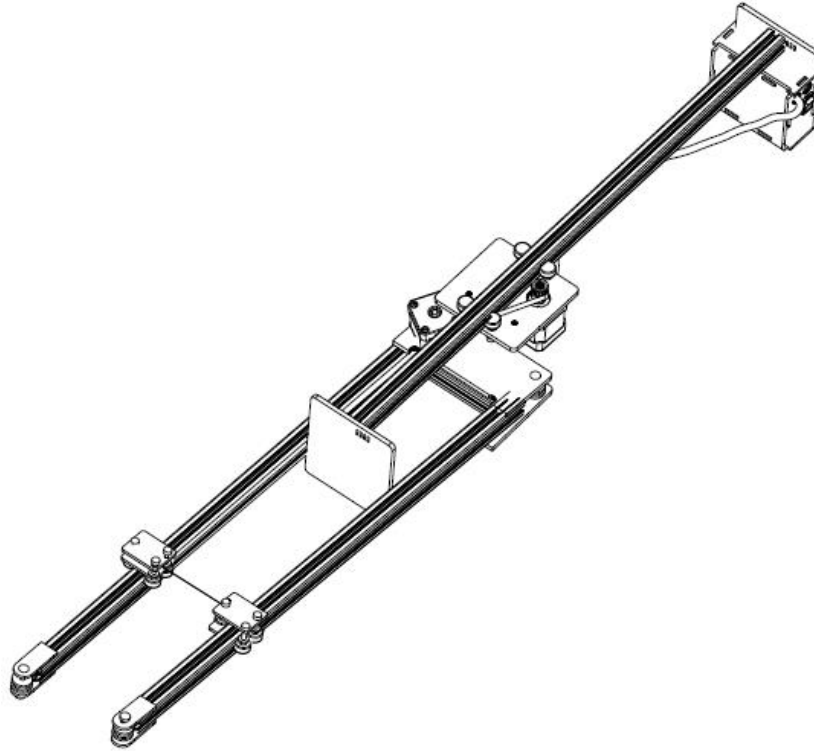


Picture 5: ORANJE's base

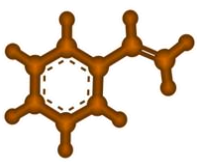


To fix the two parts together, follow the steps below:

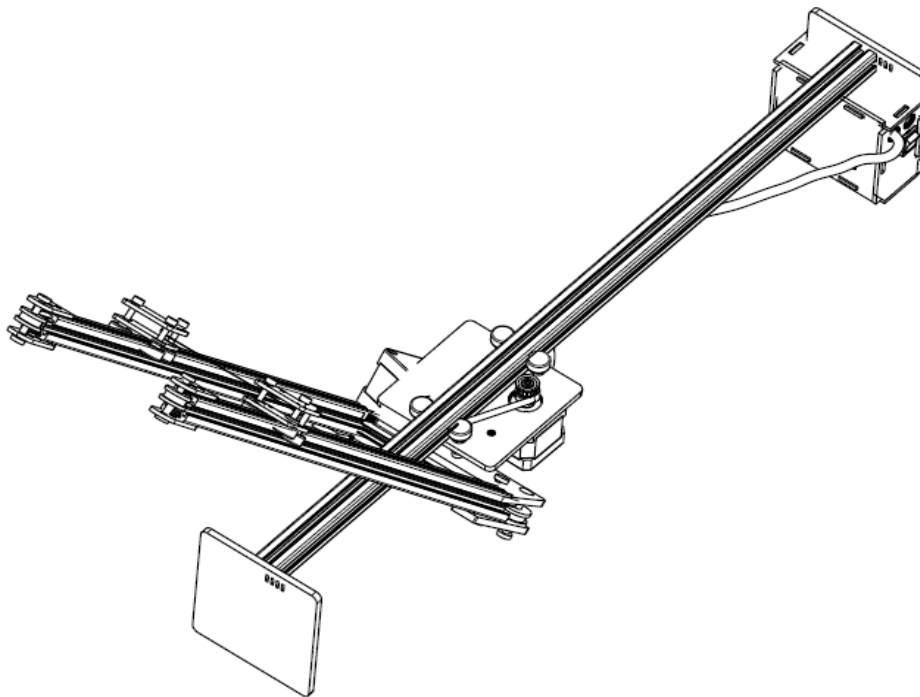
move the wire upwards so as to avoid cutting it during the assembly phase (Picture 4). Pass the base through the portal on the opposite side of the electronics case. Pay attention to the directions as shown in Picture 6.



Picture 6: ORANJE's portal assembling - 1

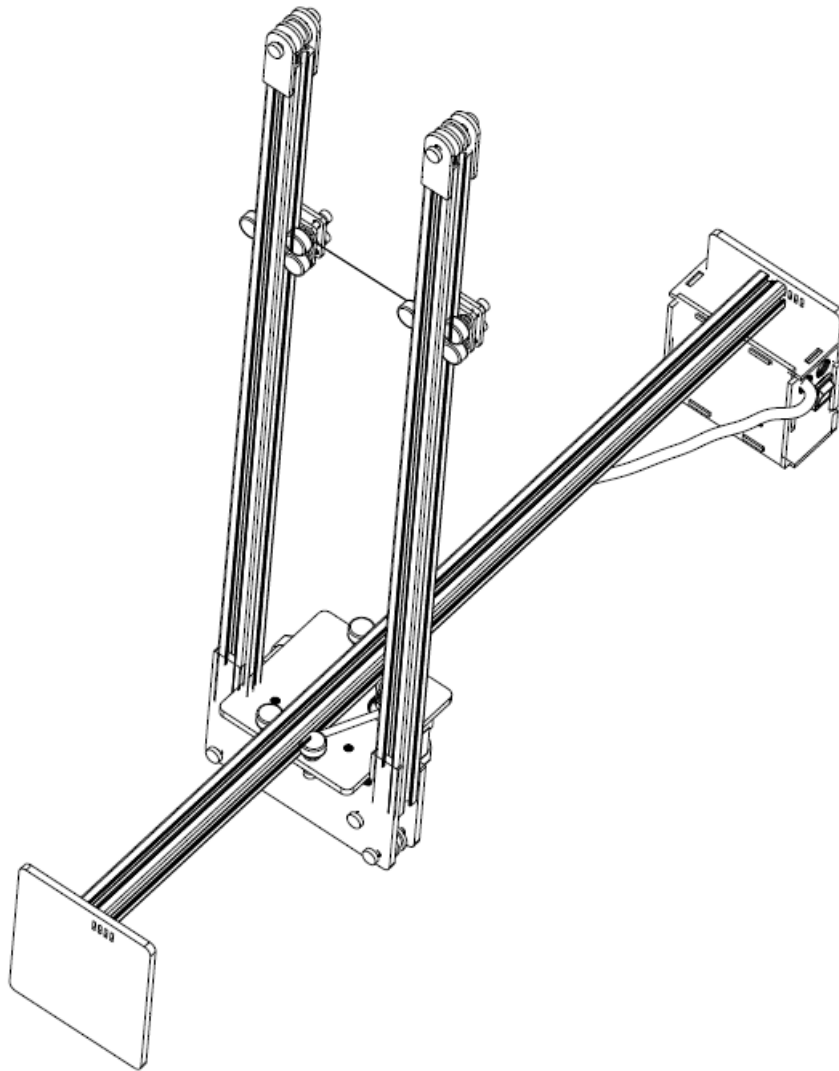
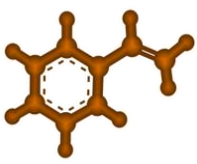


Proceed with the rotation of the portal keeping the base stationary (Picture 7):

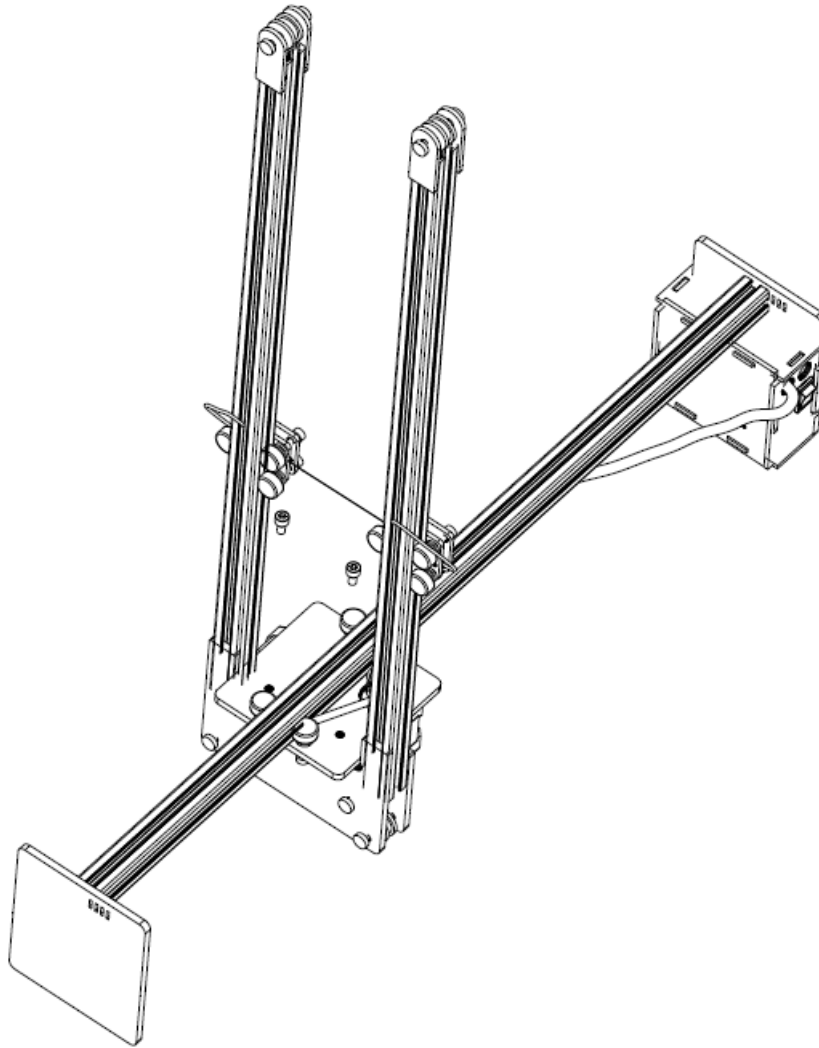
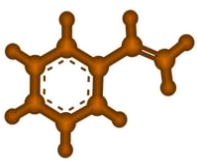


Picture 7: ORANJE's portal assembling - 2

Once the portal is in a vertical position, fix it permanently to the base with the screws provided (Picture 8), using hex key tool provided as well.



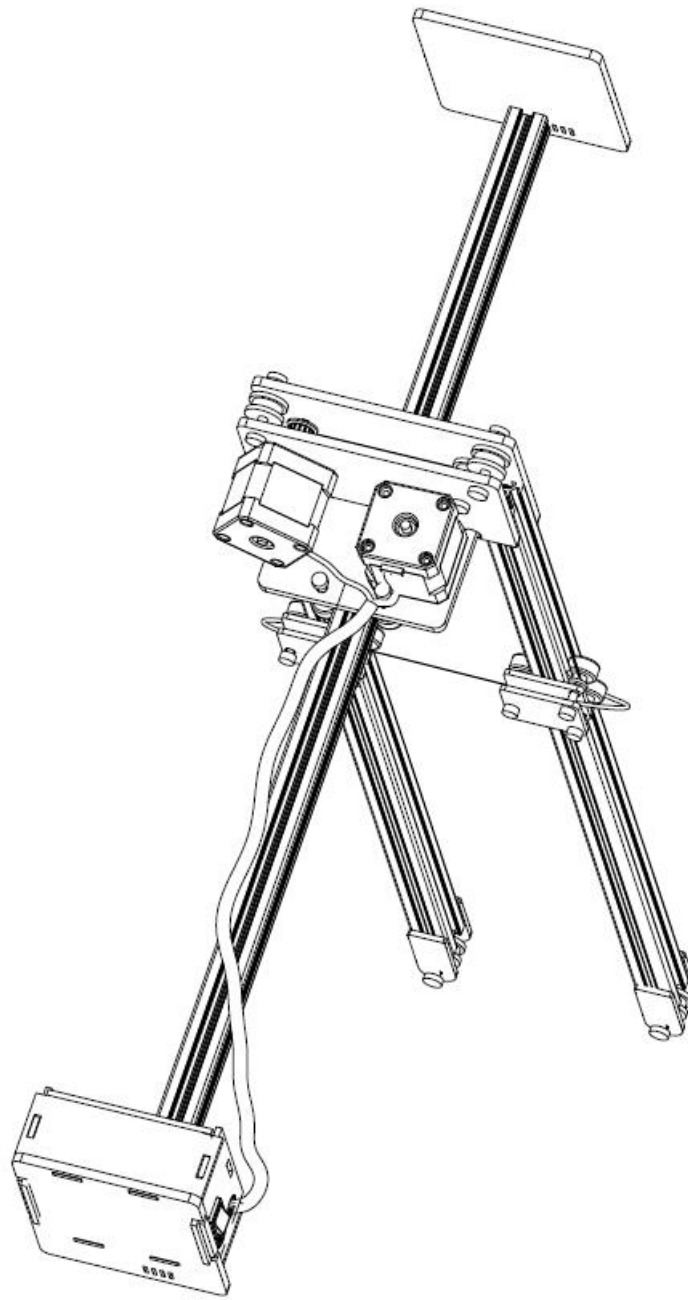
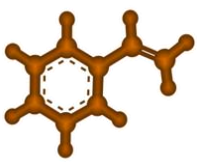
Picture 8. Insertion of portal fixing screws



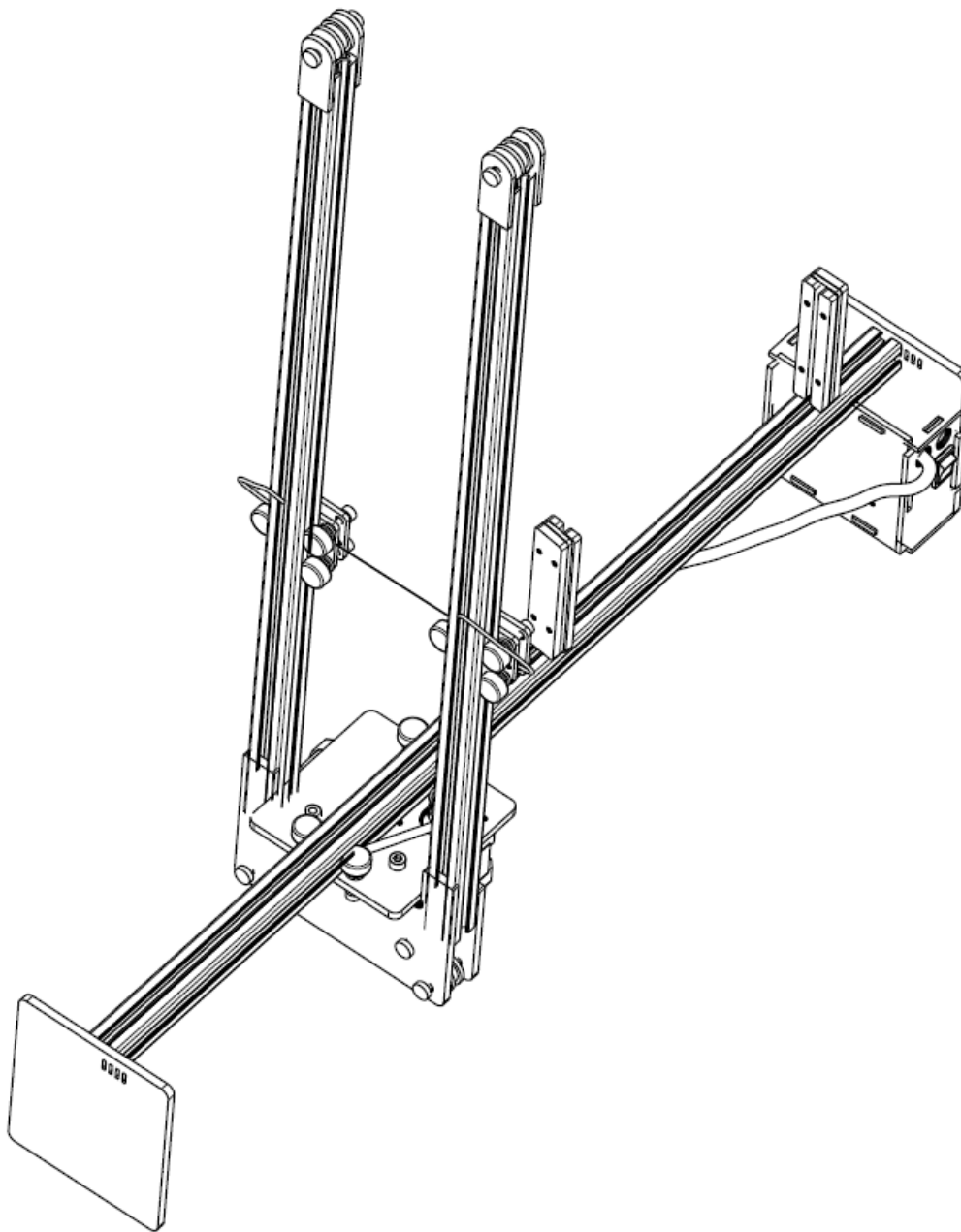
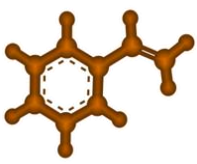
Picture 9. Completion of portal assembling

Connect the power and control cables to the portal motor with the wire, referring to the colors of the cables (**Picture 10**).

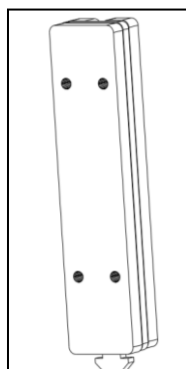
The cable with the colored ring is mounted on the motor that moves the horizontal carriage, the other to the vertical one. The power supply cables must be connected to the appropriate connectors.



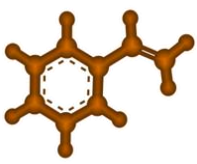
Picture 10. Stepper motor – cable connection



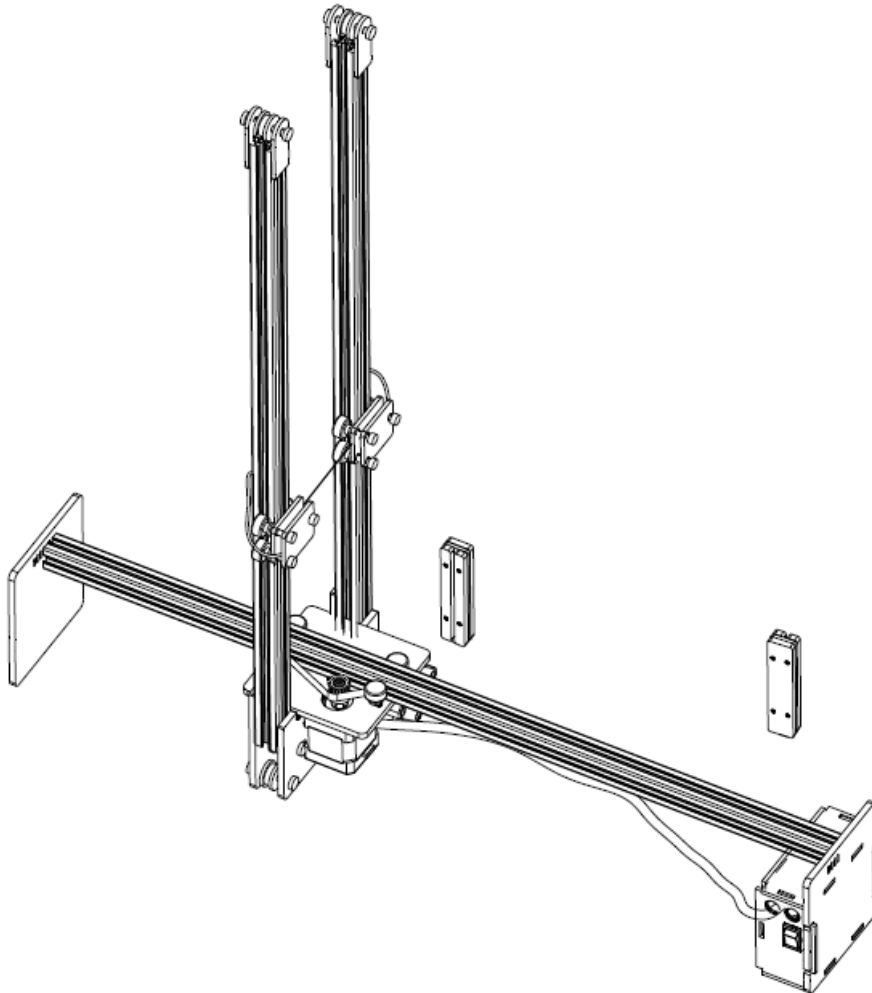
Finally set the anchoring supports of the polystyrene: fixing is made possible thanks to the particular end of the supports (Picture 11):



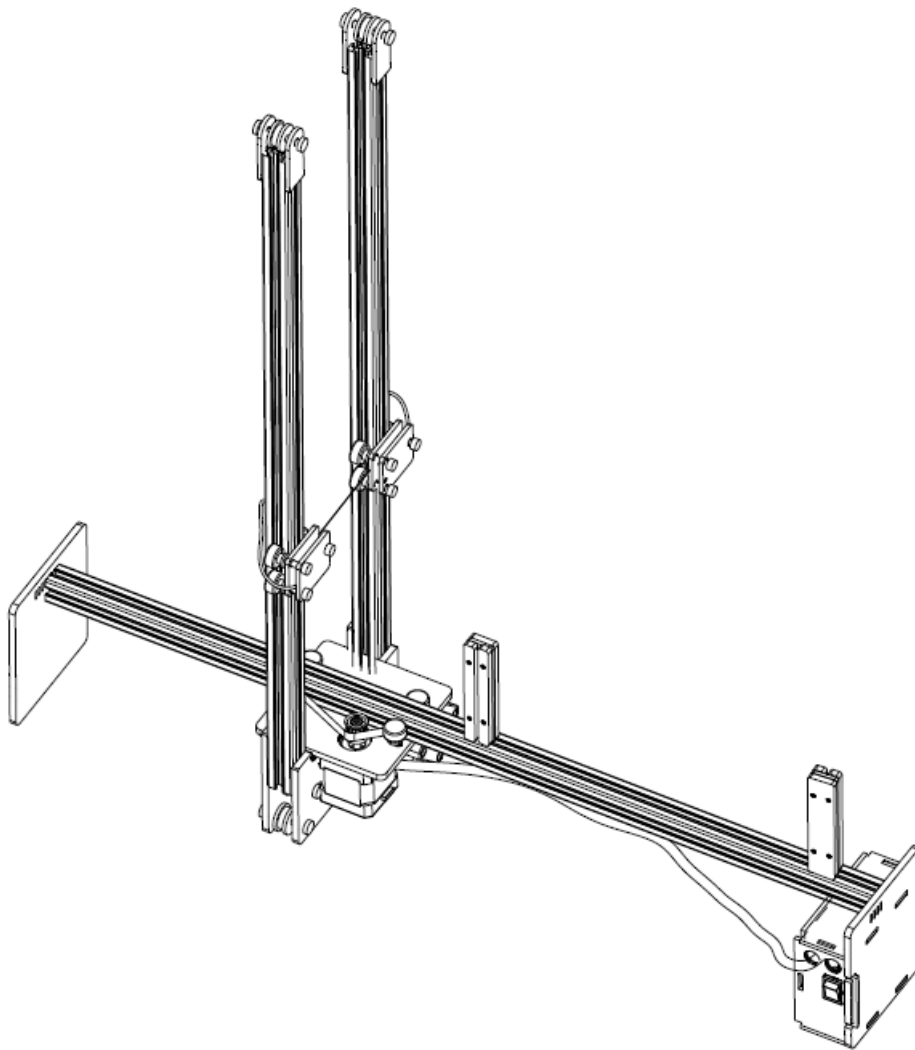
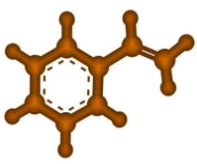
Picture 11. Anchoring support for polystyrene sheet.



Insert the two supports parallel to the profile, in order to allow the lower part entering inside the profile groove (Pictures 12-13).

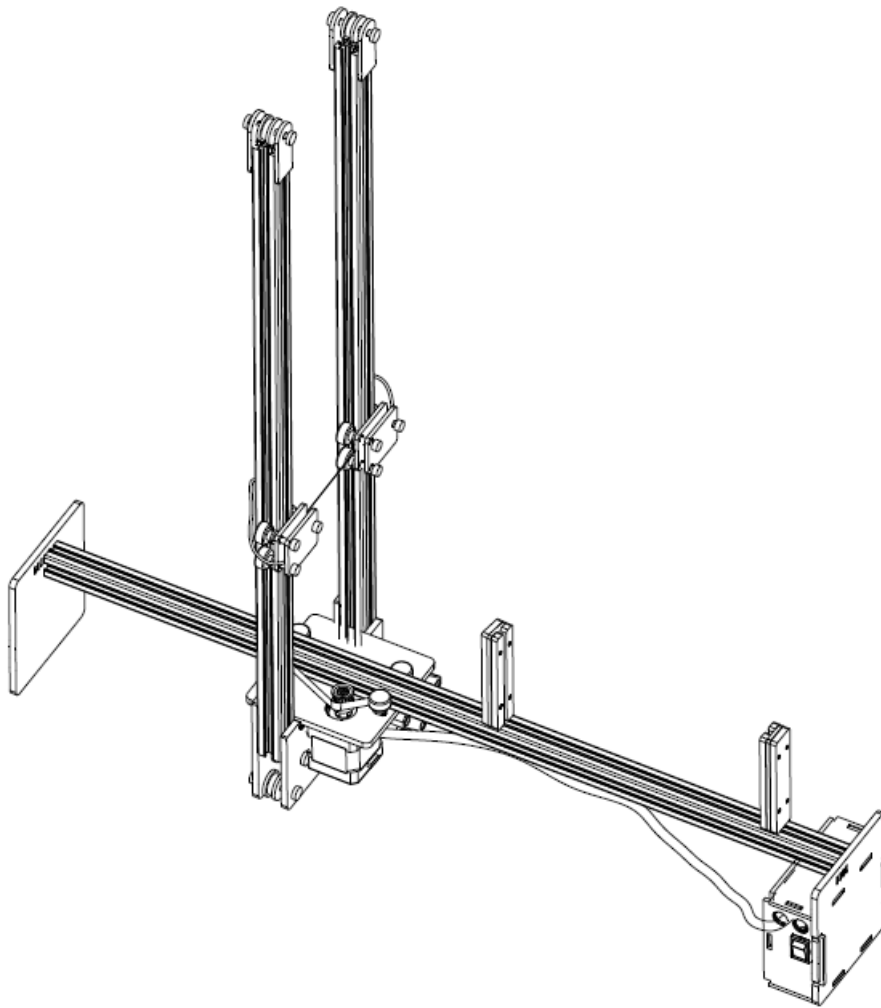
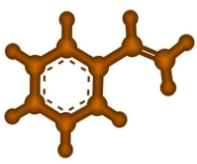


Picture 12. Anchoring supports insertion – 1



Picture 13. Anchoring support insertion-2

Once the anchoring supports are inside the profile, it is possible to rotate them in order to permanently block them inside it. (Picture 14).



Picture 14. Anchoring supports insertion – 3

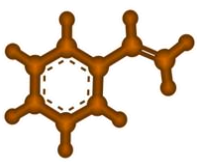
Connecting USB Cable

Connecting USB cable to the ORANJE machine is very simple and straightforward.

Using the proper cable (item **f**) in the list see § 4) present in the box, simply attach the cable end to the appropriate connector indicate in Picture5 as connector '6'.

Connecting Power Cable

Using the proper cable (item **d**) in the list see § 4) present in the box, simply attach the cable end to the appropriate connector indicate in Picture5 as connector '2' and insert the plug into the electric socket

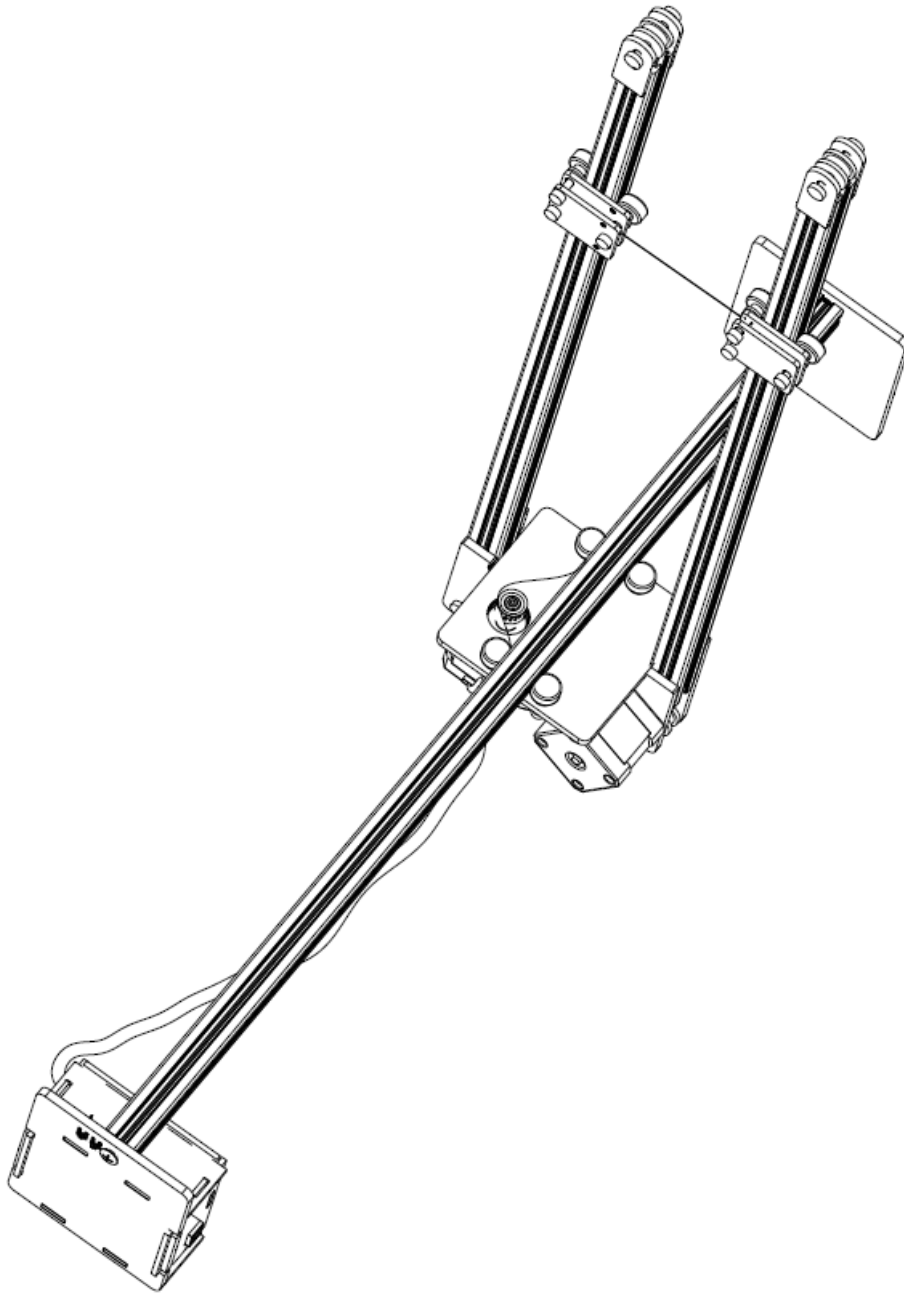


7 Disassembly electronic case from CNC Foam Cutter ORANJE

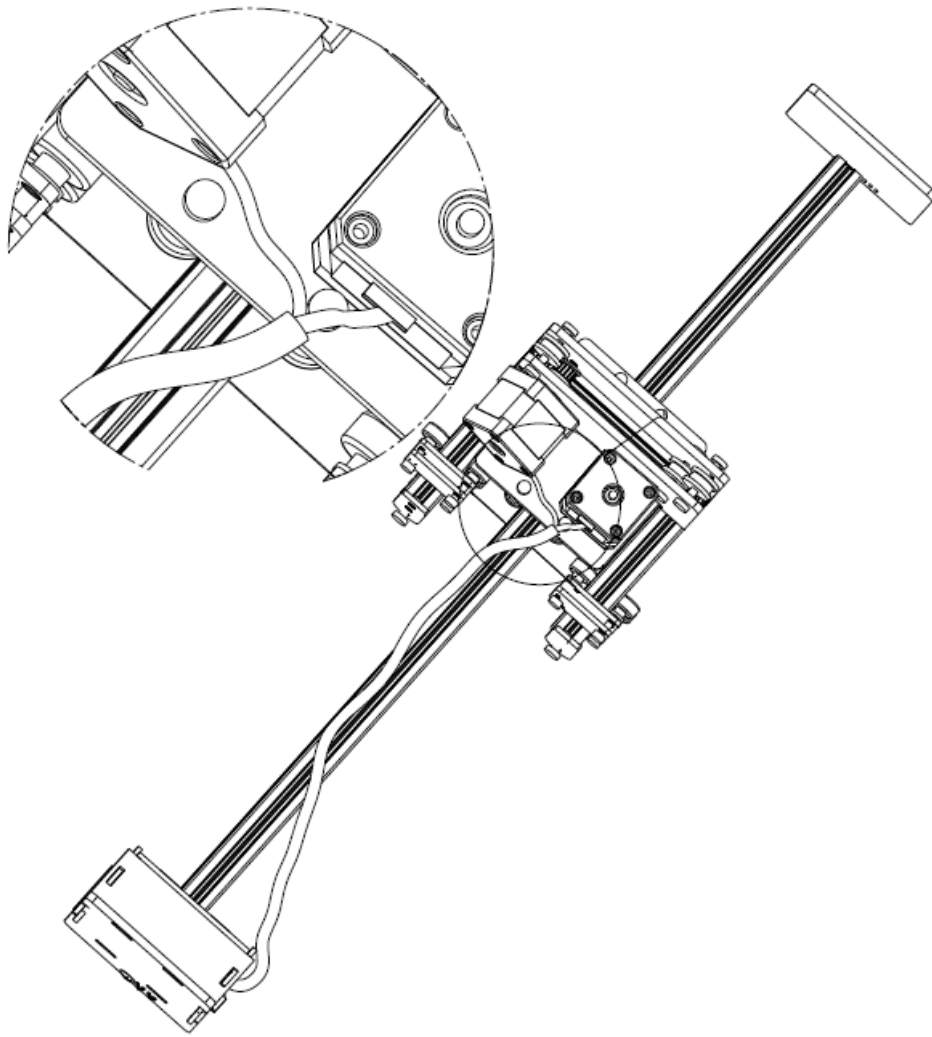
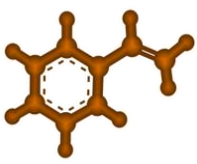
In case of failure of electronics, follow these instructions in order to disassembly electronics case from ORANJE and send it for warranty/assistance.

Note

In order to extract the electronics from case:

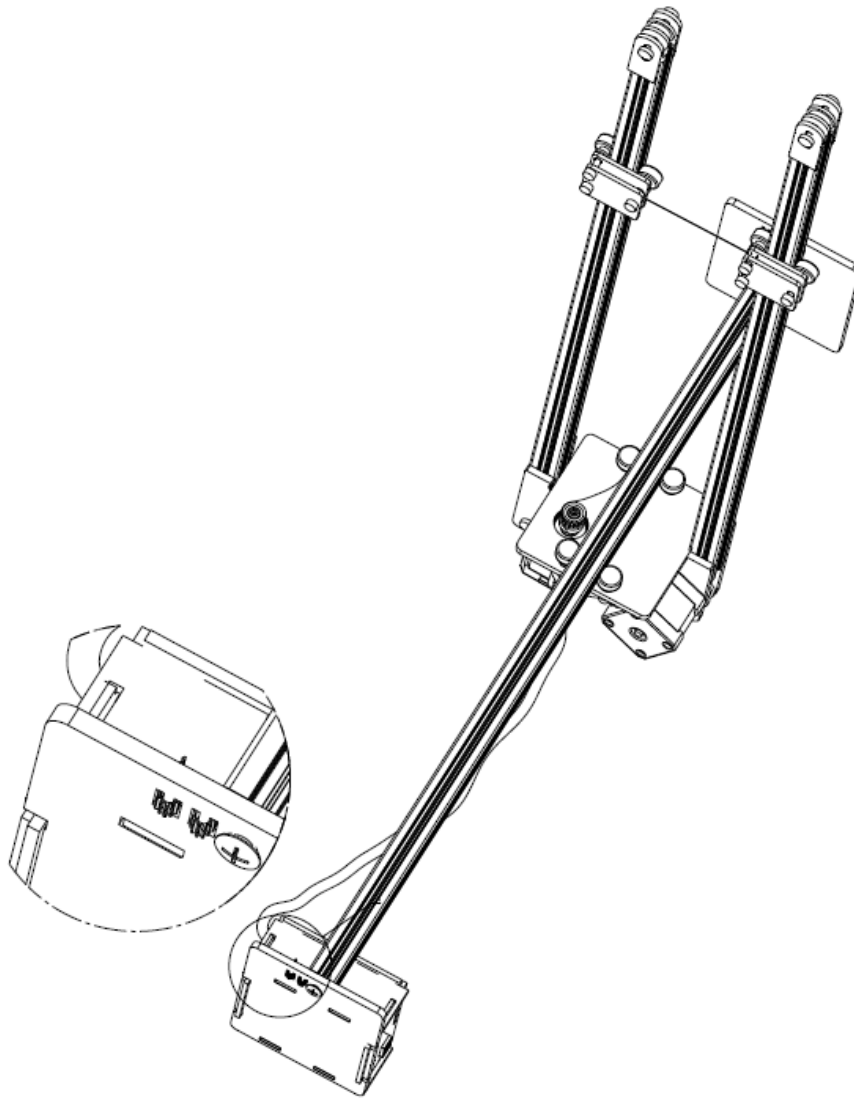
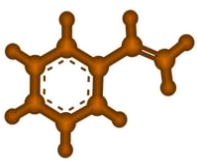


First remove electrical cable, then USB cable from USB interface, then



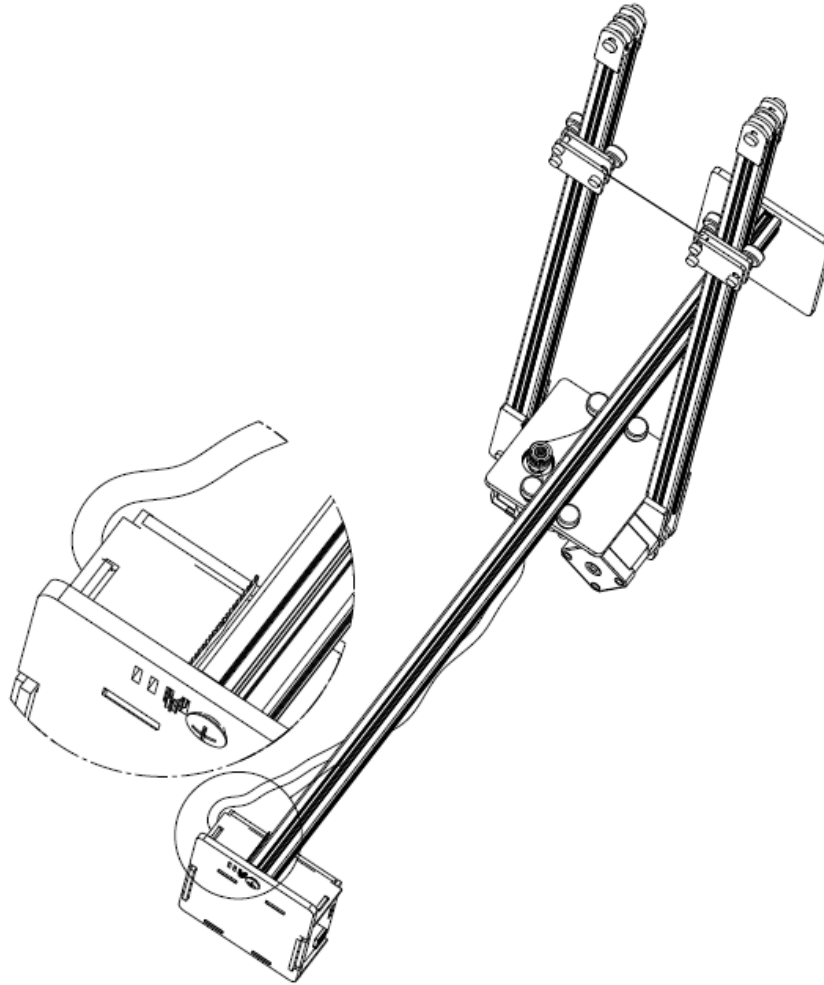
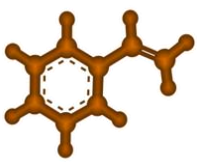
Picture 15. Cable terminals disconnection

disconnect cable terminals from motors and wire heating as in **Picture 15**,



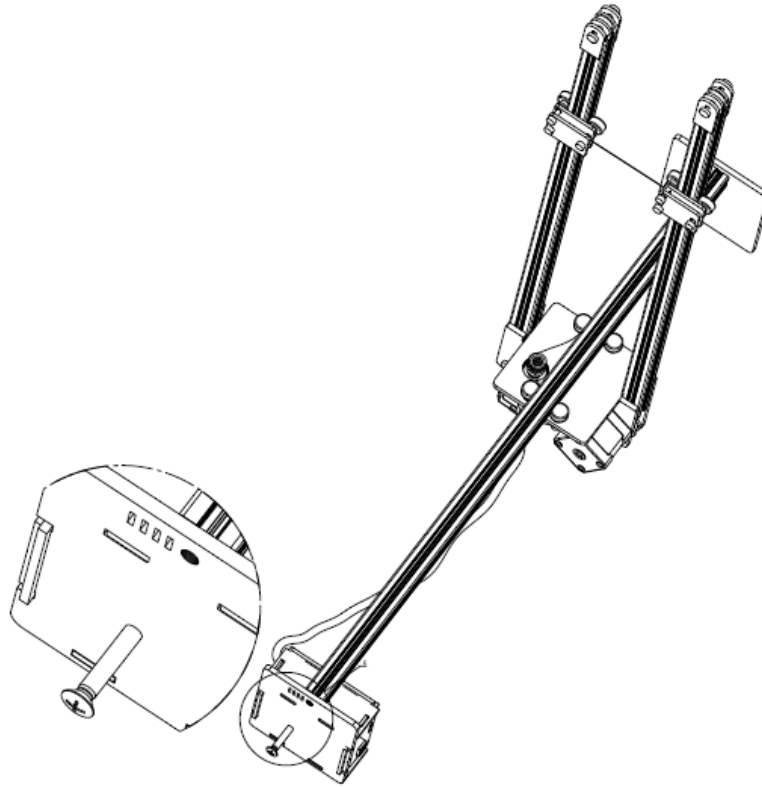
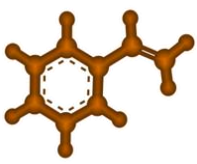
Picture 16. Strap removal - 1

Remove the strap from the holes as in **Pictures 16** and **17**

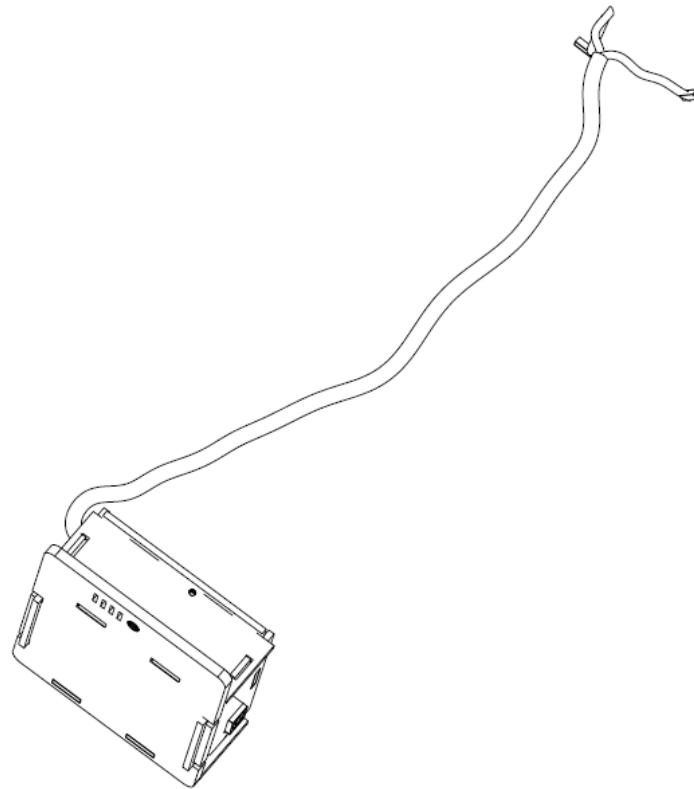
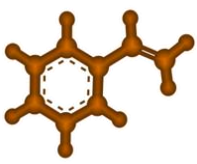


Picture 17. Strap removal – 2

finally unscrew the fixing of the module (**Picture 18**) and extract the module (together with orange cable, as per **Picture 19**)



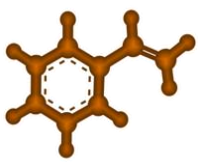
Picture 18. Unscrew the electronic module



Picture 19. Electronic module disassembled



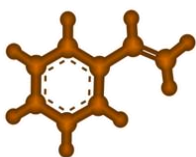
once the case has been disassembled , the machine must be placed horizontally on a plane because it acts as a supporting element



8 Environmental Conditions

The recommended environment conditions are as follow:

- Operation temperature: 0 – +45°C
- Storage temperature: 0 – +40°C
- Humidity: 85% (not condensing)



9 SET-UP & USE

Use the machine only for the purposes indicated in these instructions. Use for any other purposes is strictly prohibited




Read all hazard warnings and operating instructions. Failure to follow the warnings on hazards and operating instructions can result in serious burns, fires and / or accidents.

The use of the machine with specific tools not explicitly indicated by GIPAT srls can create the risk of accidents! For damages caused by improper use, the *user* is solely responsible.

BEFORE USE

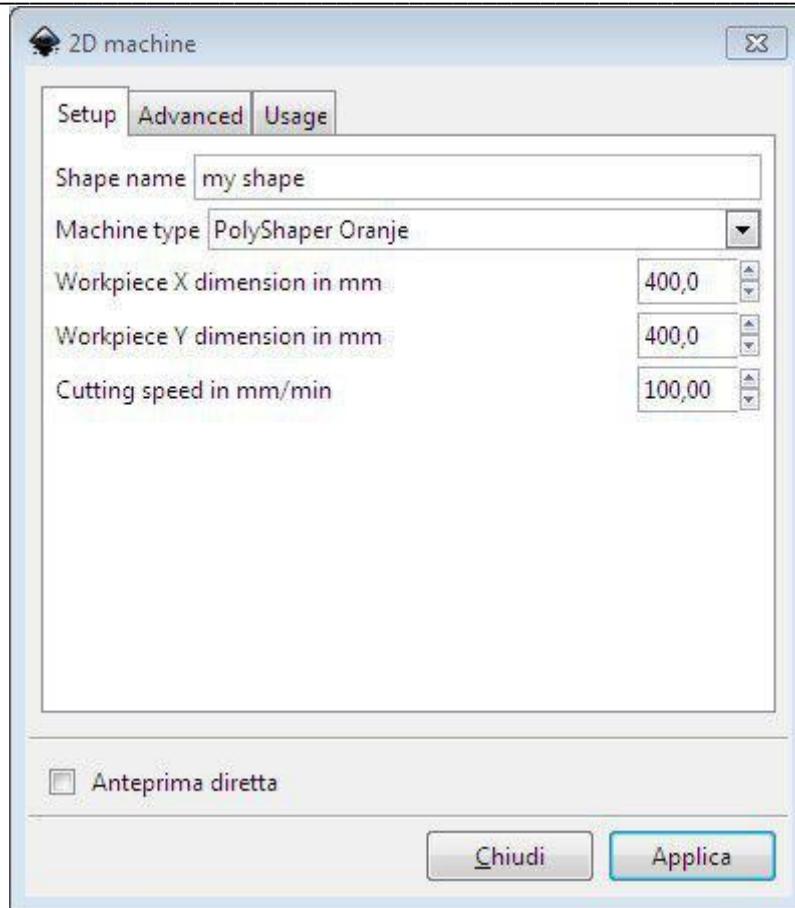
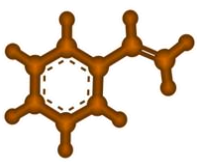
Unpack the machine and assemble it according to the delivery status (assembled, partially assembled, disassembled), connect to the 100/230 volt power supply, refer to assembling instructions at §6, then:

1. Orientate the machine in such a way that the USB port looks at us. Let's define it '**front**'.
'Front Left' is electronic case side, 'Front Right' right the opposite
2. As explained at pag. 20 insert the USB cable to the case and to the PC (where we have previously installed **ShaCo Sw** package)
3. Insert the cable to the jack, the plug to the socket and switch to ON
4. Place the polystyrene sheet (max 50x50x5) between the 2 brackets
5. **Manually bring** ( **Note: slowly and carefully procedures**) **the wire system on the top left corner until it touches the polystyrene angle**

9.1 ShaCo Sw Use



we assume user has already installed ShaCo Sw package and InkScape one and is familiar with shape drawings. For related issues and tutorial please refer to www.polyshaper.eu/en/support.php



Picture 20. Main screen of PolyShaper 2D extension – Inkscape sw

Open *Inkscape sw* – already installed on your PC – and select "**Extensions**" menu of the plugin:

the extension *PolyShaper* is reached from the menu **Extensions->PolyShaper->2D machine**; it takes in input only paths , not objects (written, polygons, shapes, etc.) and *raster* images. Pay attention: Open paths are not allowed.

Take the drawing as close as possible to the top left corner with respect to the *Inkscape* sheet, being careful not to let it come out of the edges. Once you have selected the path you want to cut, open the plugin (picture 20). In the main screen you can change the name, choose the PolyShaper machine by which you will cut the shape, set the size of the work area and finally set the cutting speed. When everything is correctly set, click on **Apply** and the *cutting file* will be generated in the *PolyShaper* folder located under the main folder of the computer.

Trouble Shooting

Path is not selected

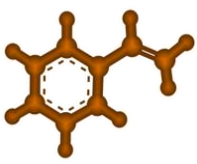
Move plug-in window and select the path

Selection done is not a 'path'

Case a): selection is an object

tenendo selezionato l'oggetto dal menu path, click on object to path

Case b): selection is a raster image



select the image, from the menu path, vectorize bitmap, then in the window that appears click simply '**OK**'. If it is a purely black and white image, *play* with the parameters for other cases or refer to more specific tutorials for the specific **Inkscape** tool.



Picture 21. Advanced tab - PolyShaper plug-in

Advanced 'tab' of Main Screen (picture 21):

flatness:

is a parameter that allows to *discretize* all the curves inside the drawing in small straight lines. 0.1 is a fair compromise for normal applications. If a too coarse discretization is perceived on the cutting path, it is suggested to reduce this parameter to 0.01.

It is not recommended to maintain this value or further reduce it, as the time required to calculate the cutting path could increase strongly

margin thickness:

if different from 0 it creates a rectangular frame around the made drawing. Such trimming is cut only after completing the entire drawing in order not to weaken the polystyrene sheet during the internal

path. A rectangle will be created that is larger than the dimensions of the drawing of the value expressed in *mm*, set by user in the input window.

draw the path of the tool

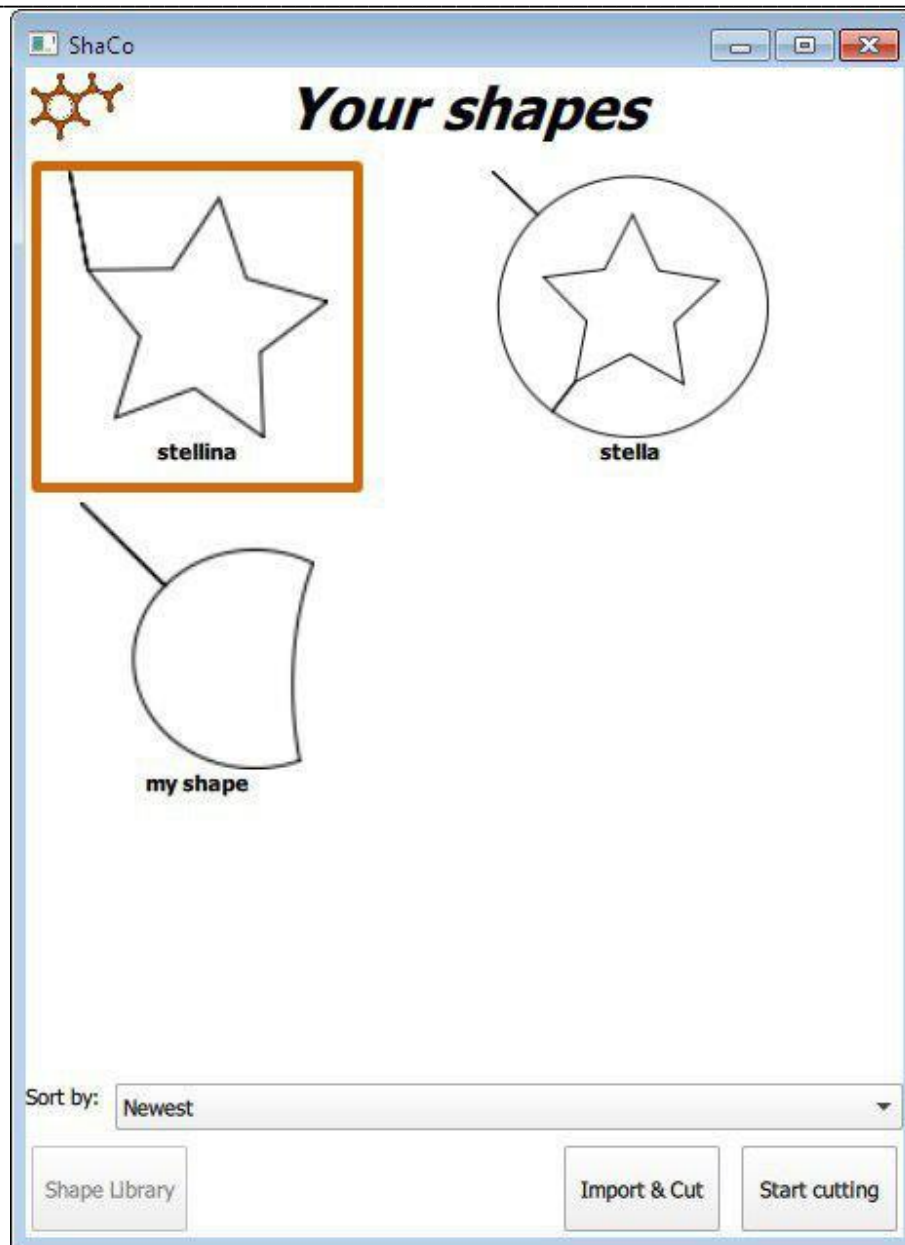
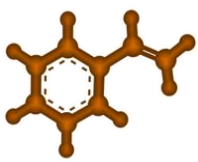
if checked at the end of the calculation of the cutting path it will be drawn in red above the drawing.

automatically close....

the plugin does not handle open paths but **only** closed paths. Especially in the case of paths imported from other drawing programs, it may happen that some nodes of the trace are open.

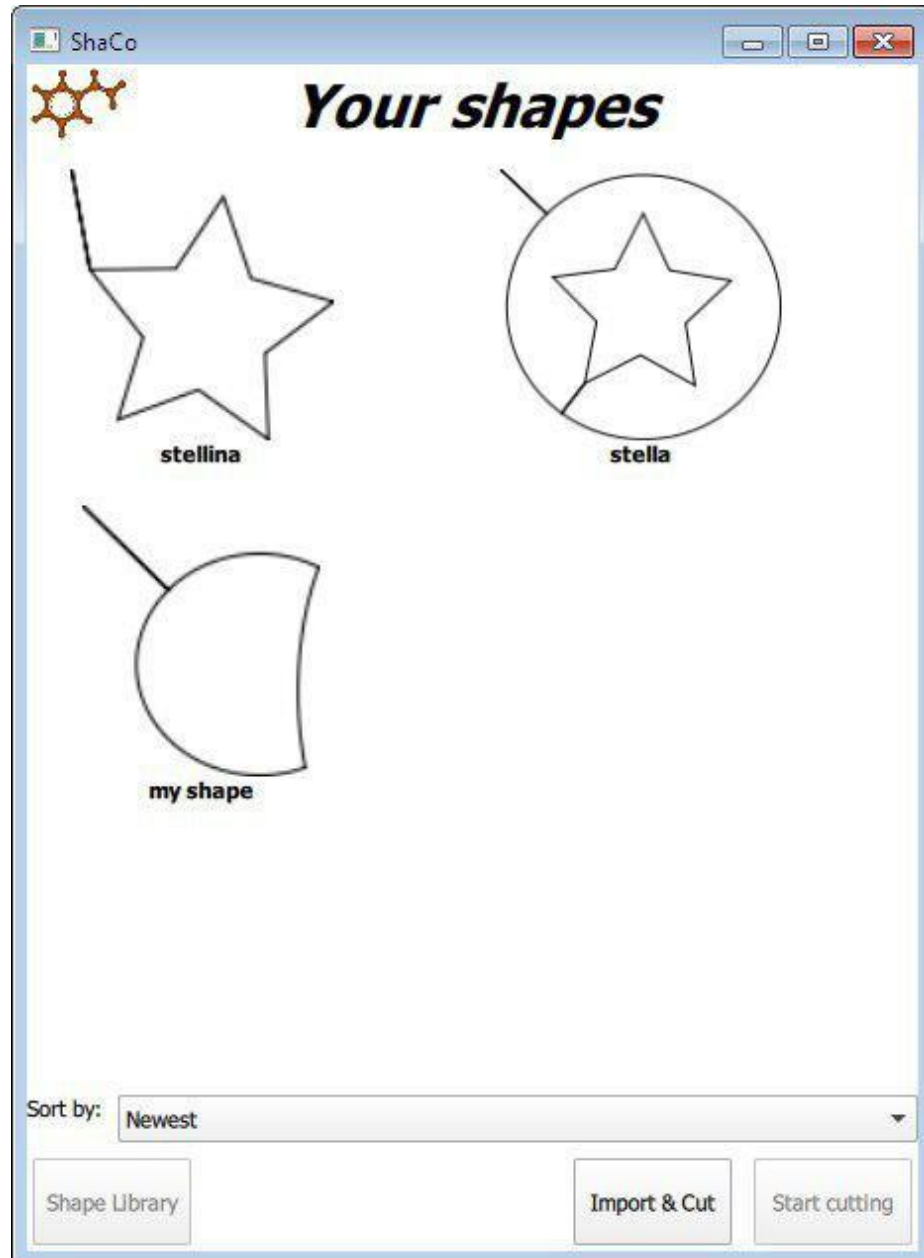
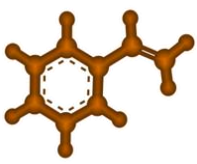
This function, if checked, automatically closes open nodes with the next open node. The algorithm used for this function, although well structured, can create unwanted paths. Associate this function with the "*draw the path*" function to immediately check the result.

Once the *cutting file* has been created on the plug-in, open **ShaCo**. The shape made will be shown directly on the main **ShaCo** page. If you want to proceed with the cut, select the desired shape (an orange box appears around the shape preview) and then click on the button at the bottom right, namely "*Start cutting*" (picture **22**).



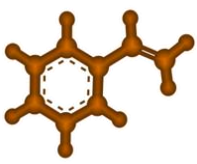
Picture 22. ShaCo menu – select shape and Start cutting

If you have *.gcode* files made with other programs or with previous versions of the plug-in, click on “*Import&Cut*” and then start cutting (picture 23).



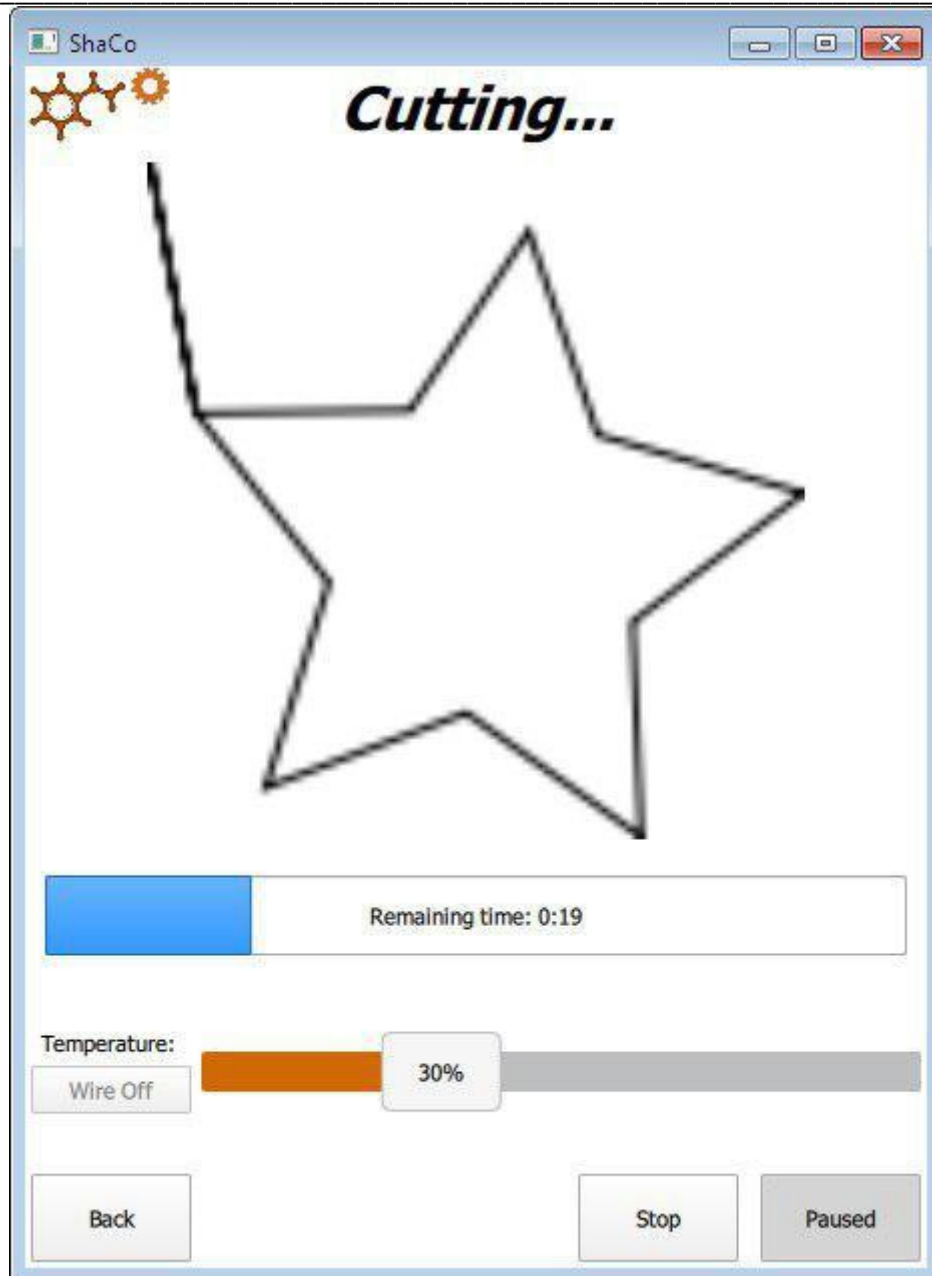
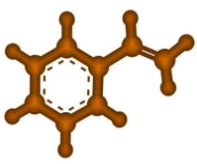
Picture 23. ShaCo menu – Import & Cut

The thread temperature must be set on the “*Preparing to cut*” menu. If you do not know the right temperature It is advisable to start with an *high-enough* temperature and then reduce it during cutting. Do not bring the wire to the *incandescence* because it tends to wear out very quickly.



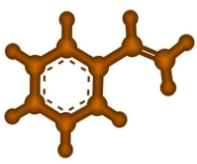
Picture 24. Preparing to cut menu

The animation of the machine suggests bringing the hot wire in the upper left corner of the piece of polystyrene (just a little bit inside!). click on "Start!"



Picture 25. Cutting menu

Go to the Cutting menu where you can pause and then resume cutting, or stop (abort) or leave everything as it is and go on with the processing.



10 MAINTENANCE

**Note:**

ORANJE's repairs must be carried out by *qualified* personnel using only original spare parts. On the contrary, the safety of the machine might not be guaranteed.



Make sure the machine is switched off and the plug is unplugged before performing any maintenance checks or accessories substitution or simply machine storage.

10.1 GENERAL PERIODIC CONTROLS

Check regularly that all parts of the machine are in order, especially that the sliding guides work perfectly and that the wire is not twisted and is at the correct operating voltage.

**Note:**

After 500 up to 600 cuts the spring due to thermal shocks could deform and lose its elasticity, in this case replace it.

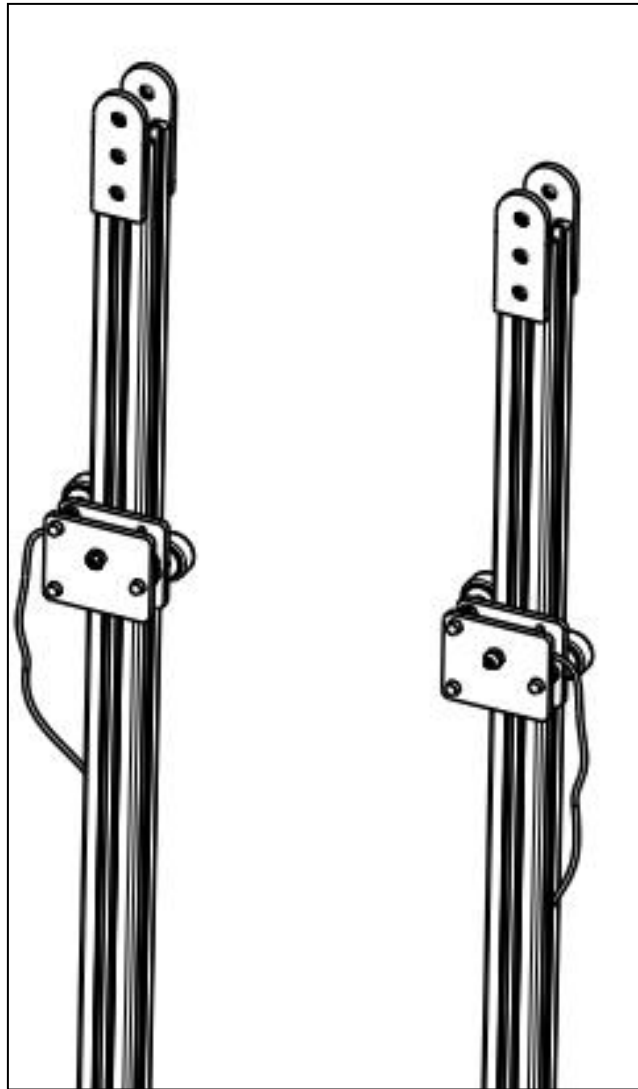
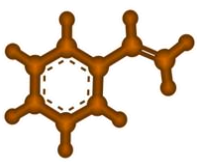
Check the correct alignment of all moving parts, check that they are not *seized* and that there are no faults that could affect the operation of the instrument.

**Note:**

Keep the hot wire **clean**. If it is regularly maintained and cleaned, it works more precisely.

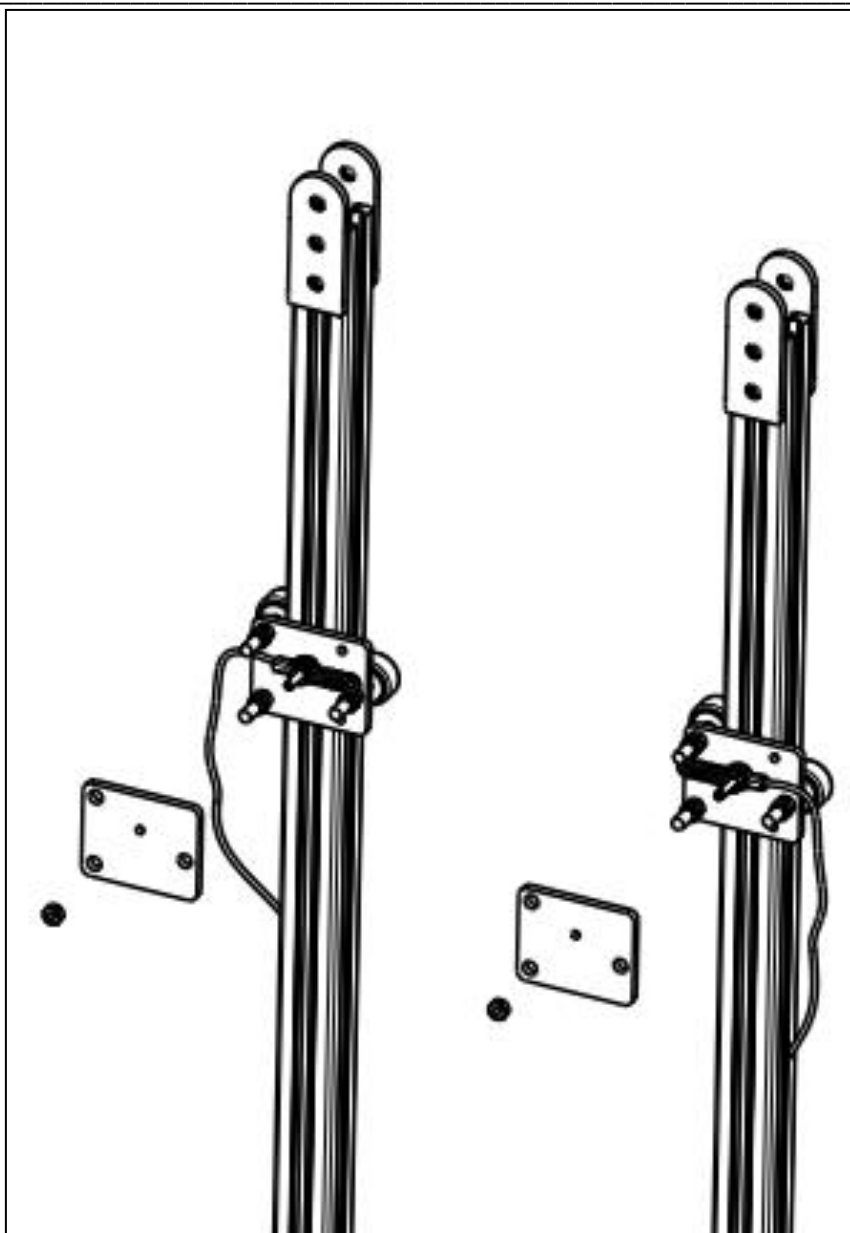
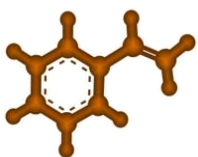
10.2 WIRE REPLACEMENT

In case of accidental break, it is possible to replace the wire in a very simple way



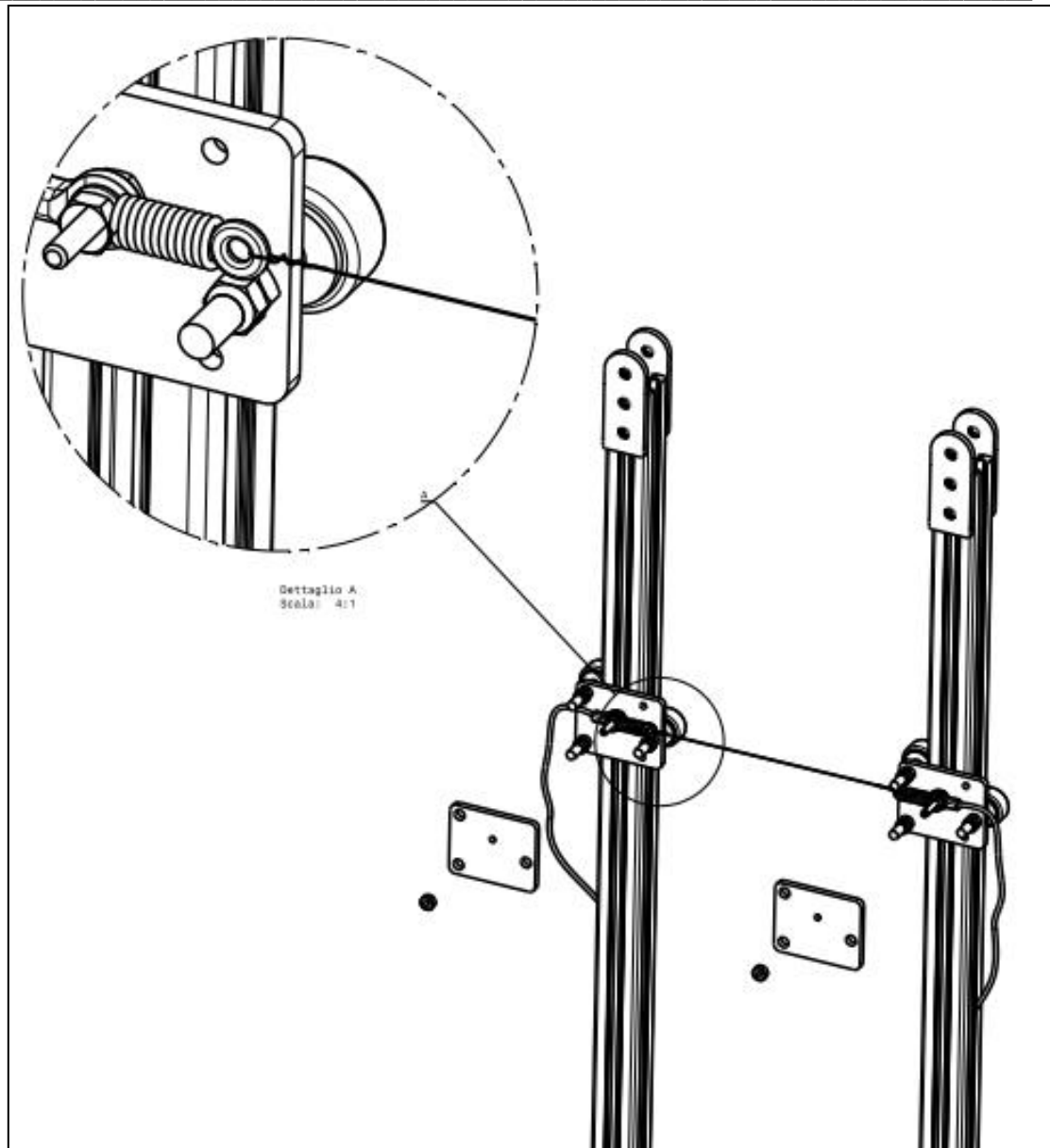
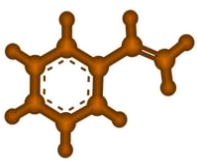
Picture 26. Wire replacement - 1

With key suitable for M3 nuts or pliers unscrew the nuts to remove the two plates that cover the wire(Picture 27).



Picture 17. Wire replacement - 2

Proceed by cutting a piece of wire that allows you to join the two ends of the portal. Pass the thread through the eye of the spring at both ends as shown in Picture 28. Fixing is done by wrapping the thread on itself at both ends.



Picture 28. Wire replacement - 3

At this point it is possible to replace the two plates and screw the previously unscrewed nuts back on.

10.3 CLEANING

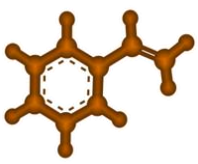
To guarantee good results in total safety, always keep the machine clean. Regularly check that dust or other external objects have not penetrated the guides, buttons, sockets and plugs. Use a soft cloth to remove deposited dust or compressed air.



Protect your eyes and your hands during cleaning by wearing glasses and gloves



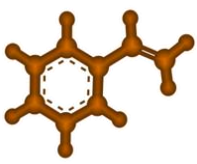
Use a damp cloth to clean the machine. A light detergent can be used.



Do not use alcohol, petrol or other solvents. The use of aggressive cleaners is not recommended



Avoid contact of the machine with water.



11 Troubleshooting

All CNC Foam Cutters are designed to provide reliability and consistently high performance in all network environments. The installation of ORANJE machine is a straightforward procedure (see INSTALLATION, §6).

Should problems develop during installation or operation, this section is intended to help locate, identify and correct these types of problems. Please follow the suggestions listed below prior to contacting your supplier. However, if you are unsure of the procedures described in this section or if ORANJE is not performing as expected, do not attempt to repair the unit; instead contact your supplier for assistance.



Note: for troubleshooting related to *ShaCo Sw* use refer to § 9.

ORANJE machine does not 'move'

Make sure the power cable has been connected to the 2 extremes (see §6, section "Connect power cable")

Make sure the USB cable has been connected to Oranje and to PC (see §6, section "Connect USB cable")

Check the ON button is switched

Make sure you have correctly installed *Shaco Sw*

Make sure you have correctly connected the cable terminals to the 2 motors (see §6, section "Stepper motor cable connection")

Cutting wire does not heat

Check the connection of the cutting wire power cables to the portal (see §6, section "Stepper motor cable connection")

Make sure the power cable has been connected to the 2 extremes (see §6, section "Connect power cable")

Make sure the USB cable has been connected to Oranje and to PC (see §6, section "Connect USB cable")

Check the ON button is switched

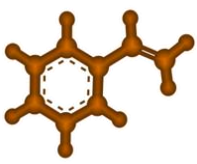
Check that the cables that carry the power supply to the wire that have not accidentally been disconnected refer to the picture replacement

Make sure you are in the appropriate section of the *ShaCo Sw* where it is possible, by means of appropriate push buttons, to supply wire and adjust temperatures

Cut SHAPE is not as expected

the wire was not positioned in order to contact the polystyrene in the upper left

the piece of polystyrene was smaller than the design: the machine will slam either down or to the right



polystyrene has been placed too far to the right, overstepping the right limit of the working area

the wire is slow or the temperature is too low: you can see that all the sharp corners are smoothed

the problem could happen if the temperature has been adjusted for a different material (previously used) and changing it with a thicker one the previous temperature may be too low

the polystyrene moved and was not well anchored

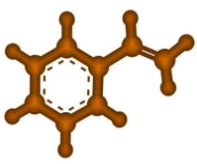
the design does not end where it starts: , it could be a problem of slow belt or on the horizontal or vertical axis

GENERAL NOTES:

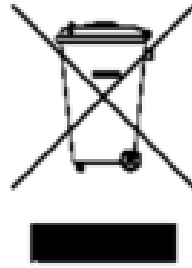
Check the cables and connectors to ensure that they have properly connected during installation. (About 90% of network downtime can be attributed to wiring and connector problems.)

Make sure that each AC power cord is plugged into a functioning electrical outlet.

If the problem continues after checks above, contact your Supplier



12 WEEE disposal of waste equipment in the European union



GB – Disposal of Waste Equipment in the European Union

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product. For equipment used for professional use, please contact your supplier to verify terms and conditions of the purchase contract. These products must be disposed off separately from the other waste.

FR – Traitement des appareils sur le territoire de l'union europeenne

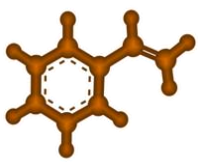
Le symbole present sur le produit ou sur la confection indique que le produit ne peut etre jetar avec les autre dechets domestiques. L'utilisateur est responsable de consigner dans un centre de recolte hornologuè pour recycler les appareils electriques et electroniques. Le recyclage de ces dechets permet de proteger l'individu et l'ecosysteme. Pour informations supplementaires relative au centre de recolte des ces appareils, veuillez contacter l'administration locale, ou bien, au magasin dans lequel l'appareil a etè achetè. Pour les appareils à usage professionnel, les utilisateurs sont invites a contacter leur fournisseur et verifier les termes et conditions du contract d'achat. Ce produit ne doit etre jeter avec les autres dechets commerciaux.

ES – Depòsito de desechos electrònicos en la Union Europe

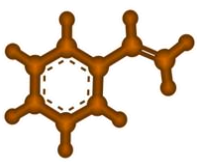
Este símbolo presente en el producto o en su embalaje indica que no puede ser depositado junto a los desechos domésticos. Es responsabilidad del usuario depositar el aparato entregándolo proximo a un punto de recogida destinado al reciclaje y desmantelamiento de aparatos electricos y electronicos. La recogida selectiva y reciclaje de los aparatos electronicos permite proteger la salud del individuo y del medio ambiente. Para mas information sobre puntos de recogida selectiva de aparatos, contacten con la entina local para depositar desechos, o con la tienda mas proxima donde ha adquirido el producto. Para equipos usados de modo profesional, por favor contacten con su proveedor para verificar los terminos y condiciones del contart de compra. Este producto no debe ser depositado unido a otros desechos comerciales.

IT – Smaltimento delle apparecchiature nel territorio dell'Unione Europea

Questo simbolo presente sul prodotto o sulla sua confezione indica che il prodotto non può essere smaltito insieme ai rifiuti domestici. È responsabilità dell'utente smaltire le apparecchiature consegnandole presso un punto di raccolta designata al riciclo e allo smaltimento di apparecchiature elettriche ed elettroniche. La raccolta



differenziata e il corretto riciclo delle apparecchiature da smaltire consente di proteggere la salute degli individui e l'ecosistema. Per ulteriori informazioni relative ai punti di raccolta delle apparecchiature, contattare l'ente locale per lo smaltimento dei rifiuti, oppure il negozio presso il quale è stato acquistato il prodotto. Per apparecchiature provenienti da usi professionali, gli utenti professionali sono invitati a contattare il proprio fornitore e verificare i termini e le condizioni di acquisto. Questo prodotto non deve essere smaltito unitamente ad altri rifiuti commerciali



13 WARRANTY

The warranty period for *CNC foam cutter machines* is valid from the date of shipping and complies with European standards. GIPAT's machines are not covered by warranty for damage caused by wear, overload or improper use. The manufacturer guarantees that all non-functional parts due to defects in material and / or workmanship are replaced. Warranty performance will be provided only if the requested machine is sent back appropriately to the dealer, with original package.

Warranty does not cover shipping costs.



Note

Manufacturer reserves the right to make technical changes without prior notice. Technical specifications may change from country to country.

14 Acronyms and abbreviations

CNC	Computer Numerical Control
P/N	Part Number
S/N	Serial Number
TED	Technical Description
UM	User Manual