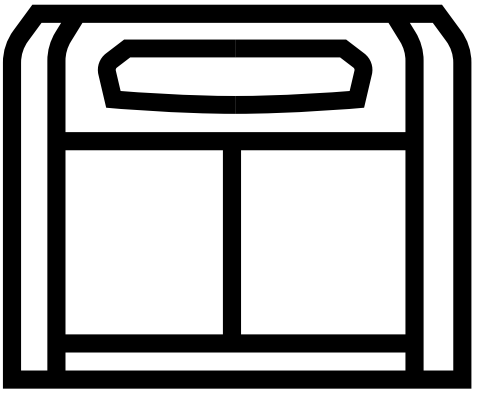
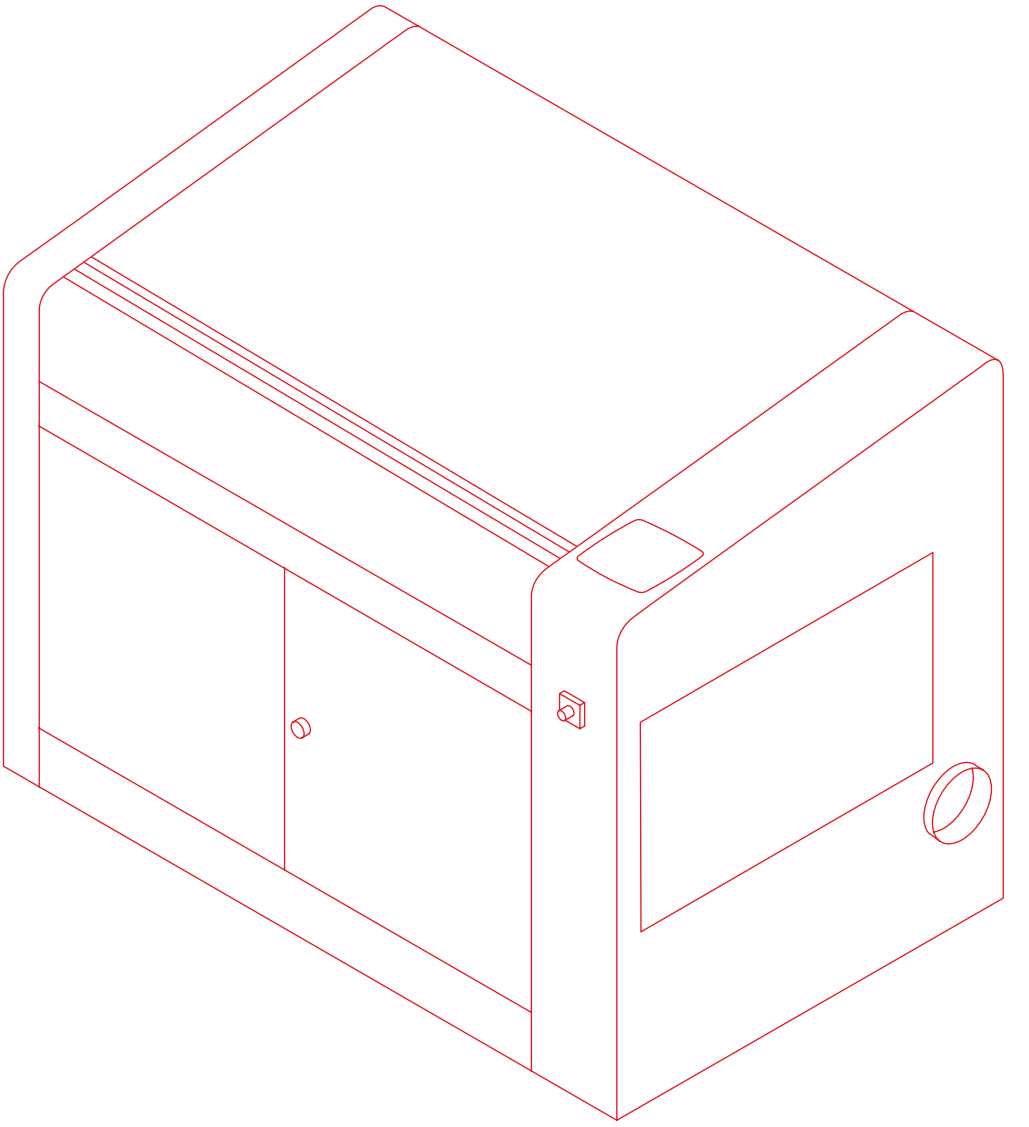


ignis

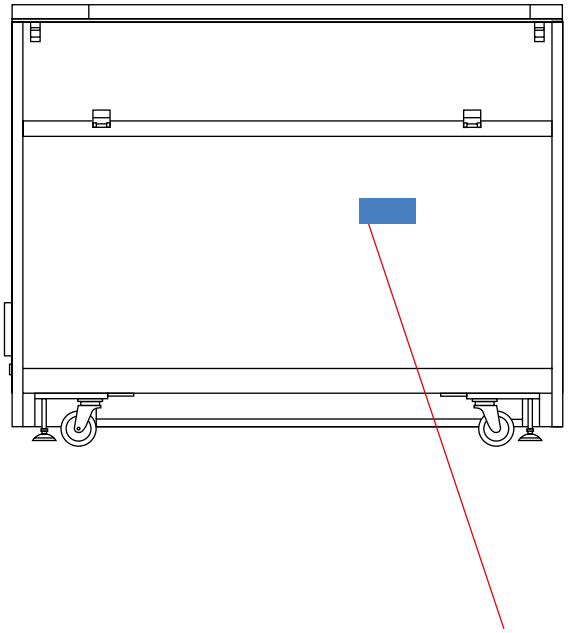
Instruction Manual



Contents

Conformity Information

The compliance label including regulations can be found on the back of the machine.



FUNDACIÓcim UPC
BARCELONATECH

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Fundació Centre CIM
Parc tecnològic de Barcelona
C/Llorens i Artigas 12 - 08028 Barcelona

MODEL BCN3D Ignis
YEAR 2016
SERIAL Nº
REI-RAEE : 6107

General

This instruction manual aims to:

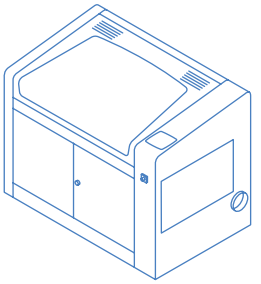
- Inform users of the machine, its operating modes and operating limitations;
- Present the product's technical specifications;
- Warn on the safety requirements of the machine and its components;
- Establish modes for installation and start-up;
- Indicate the necessary maintenance procedures.

Following the instructions for use contained in this manual:

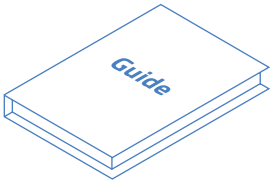
- Will avoid situations involving hazards and risks;
- Will minimize repairs costs and downtimes of the machine;
- Will increase the machine's reliability and useful life.

Product Components

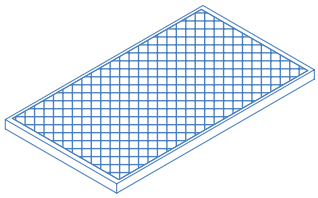
BCN3D Ignis



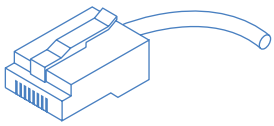
Instruction manual



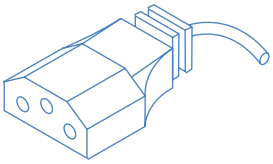
"Honeycomb" metal mesh



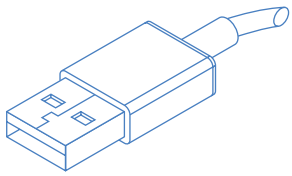
Network cable



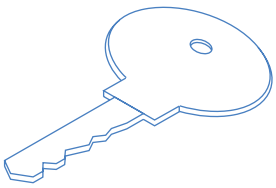
Power supply cable



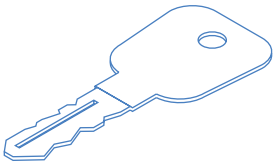
PC-USB cable



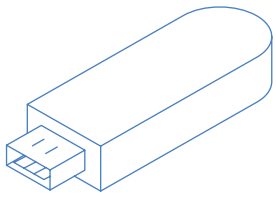
Electronic panel access key



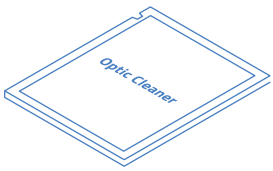
Machine connection key



Pen drive - Software



2 lens-cleaning cloths



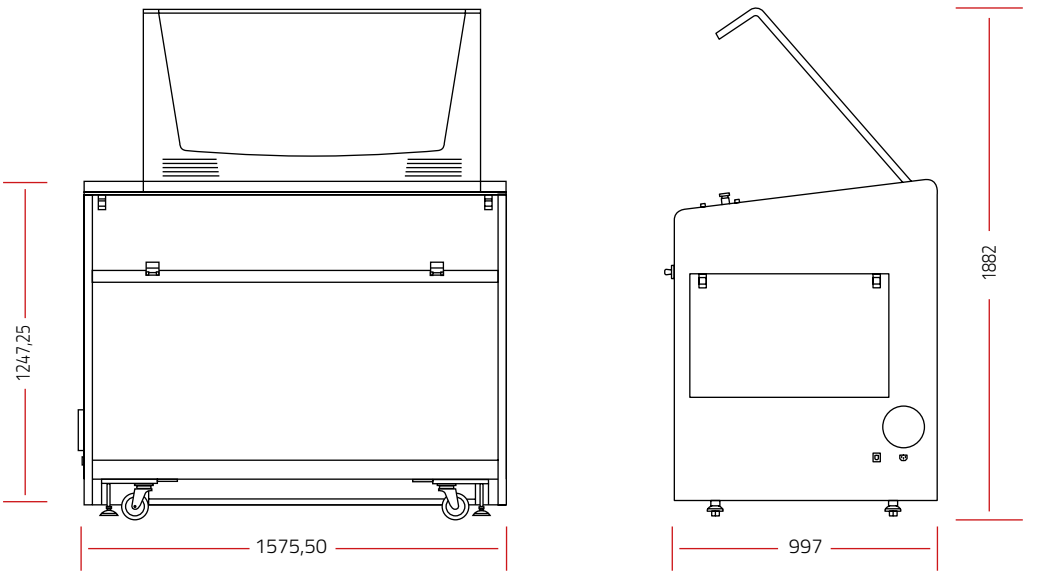
Technical Specifications

General description

BCN3D IGNIS has been designed for cutting, marking and engraving specific materials listed in this document (Processable materials, page14).

For more information: https://www.bcn3dtechnologies.com/es/ignis-downloads/

General dimensions



DESCRIPTION	DIMENSION	UNIT
Maximum width	1576	mm
Maximum depth	997	mm
Height, cover closed	1248	mm
Height, cover open	1882	mm
Minimum weight, with packaging	300	Kg

Primary Systems for the BCN3D IGNIS

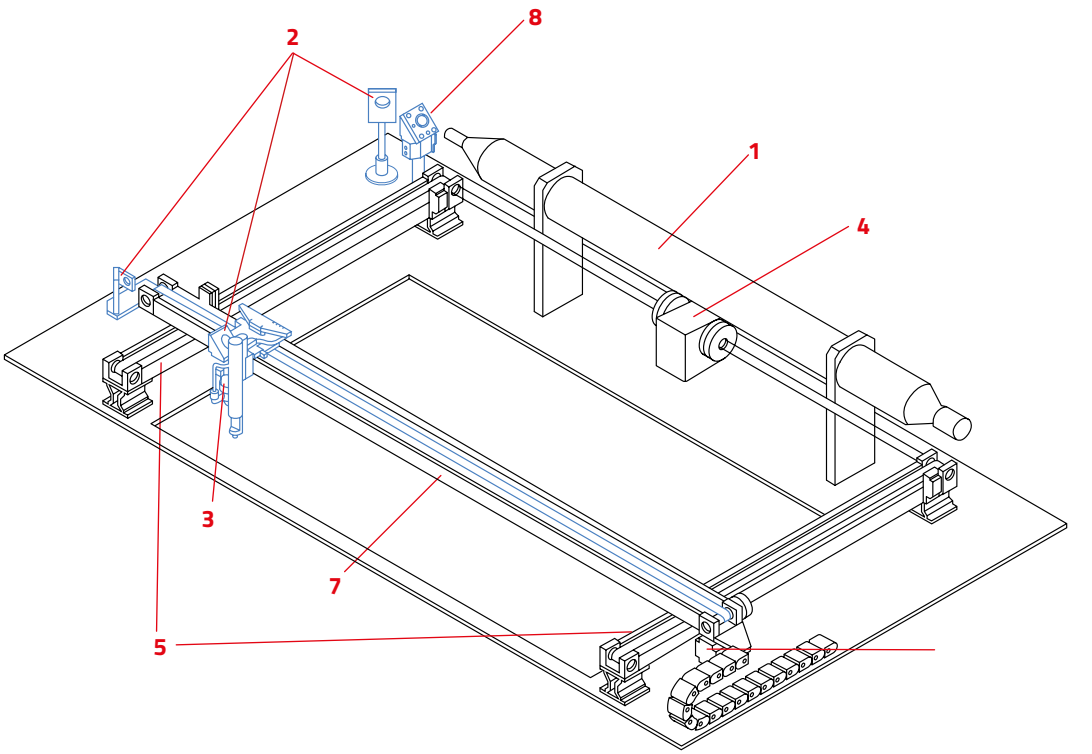
To better understand this instructions manual, the following describes the three fundamental systems of the BCN3D IGNIS:

Optic system and X-Y axis

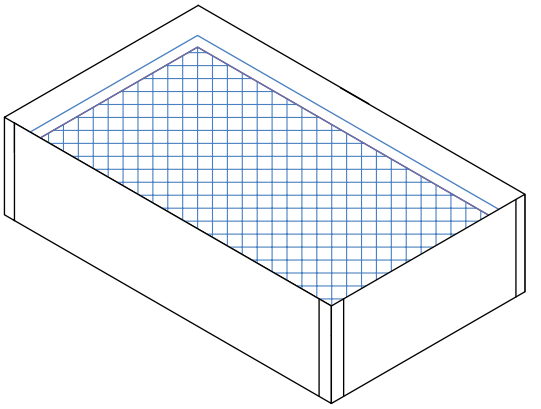
The optic system is created with the tube, its mirrors, the lens and the beam combiner. The function of this system is to direct the radiation originating in the laser tube up to the head by means of the mirrors and to concentrate the energy at the cutting point by means of the 2 inclus lens. The beam combiner allows having a visual reference of the exact position of the beam during the path.

The laser beam moves in the work plane from the action of the motors for the X, Y guides.

1 Tube laser
2 Mirror grouping
3 Head
4 Y axis motor
5 Y axis guides
6 X axis motor
7 X axis guides
8 Beam Combiner



Primary Systems for the BCN3D IGNIS



Work platform and the Z axis

The parts for cutting or scanning are placed on the Honeycomb, which are extractable to clean the cube.

The Z axis moves vertically, is motorized and works to position the part to the correct height for the task.

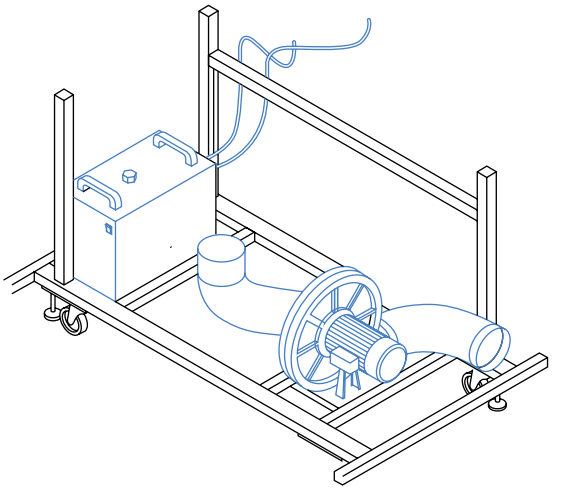
This positioning is completed automatically with the “Autofocus” function. The length of the z axis is 290mm.

Ventilation and refrigeration integrated system

BCN3D Ignis comes with an integrated ventilation system with a turbine. This system is located in the interior of the machine and is controlled by the system itself. BCN3D Ignis has air vents on the upper case, thus creating a continuous flow for extracting air.

The ventilation system guarantees an efficient extraction of dust and gases that are formed while operating a cut, mark and scanning.

The water refrigeration system allows the laser tube to work in ideal conditions, lengthening the maximum lifespan.



Technical characteristics sheet

Physical properties	
Exterior dimensions	1576x997x1248mm
Packaging dimensions	160x1160x11411 (+-10)mm
Weight	300kg
Noise (weighted in A)	70-71dB (A)
Maximum operating temp.	70ºC

Machine properties	
Maximum cutting area	995x575mm
Maximum piece size	1000x600x290mm
Repeatability	+-0.01mm
Resolution	0.0231mm (1100DPI)
Minimum text font	1,7mm alphanumeric characters
Laser type	CO2
Power	100w
Display	320x480 TFT 3.5" color, con visualizador de operaciones
Operations	Engraving Marking Cutting
Fume extraction	P550W 220V (860m3/h)
Cooling	Water Chiller CW3000
Lens	2" (ZnSe) 2'5"; 3"; 3'5"; 4" (opcional)
Mirrors	3xØ20mm
Table type	Honeycomb
Safety	Category I (with ongoing supervision)
Certification	CE
Red pointer	The red pointer allows us to have a visual reference of the point where the laser will cut

Technical characteristics sheet

Electronics	
Controller	Ruida RD6442G
Drivers	3xleadshine M880A
Motorisation	3xNema 23
Connection	Ethernet (LAN) (máx. 200m) USB (máx 5m) Autónomo (Pen drive USB)

Software	
Operating Systems	Windows 7, Windows 10
Software	RDWORKS V8.01.18
File input formats	*.ai; *.dxf; *.plt; *.dst; *.dsb; *.eps; *.nc; *.bmp; *.gif; *.jpg; *.tiff; *.png; *.ico; *.raw
Compatible drawing software	Inkscape, Illustrator, Coreldraw, Photoshop, Autocad, Gimp, Solidworks, Rhino, etc

Propiedades eléctricas	
Power supply	AC 230V, AC 3,6-1,3A, 50-60Hz
Output	24V DC, 13A
Power consumption	1000W

Processable materials

MATERIAL	MARKING	ENGRAVING	CUTTING
Wood	YES	YES	YES
Acrylic	YES	YES	YES
Glass	YES	YES	NO
Coated metals	YES	YES	NO
Ceramic	YES	YES	NO
Delrin	YES	YES	YES
Leather	YES	YES	YES
Melamine	YES	YES	YES
Methacrylate	YES	YES	YES
Paper	YES	YES	YES
Agglomerate	YES	YES	YES
Rubber	YES	YES	YES
Cardboard	YES	YES	YES
Plywood	YES	YES	YES
Painted metals	YES	YES	NO
Tile	YES	YES	NO
Cork	YES	YES	YES
Anodised aluminium	YES	YES	NO
PVC (or Vinyl chloride derivatives)	NO	NO	NO
Vinyl	NO	NO	NO

More information:
https://www.bcn3dtechnologies.com/es/ignis-downloads/

Security

Before starting up the machine, you must read the present instructions manual and, in particular, the portion on "WARNINGS".

In addition to reading the present manual, you must obtain the basic information for the laser security before handling the machinery.

Any use that has not considered the present manual will be inappropriate and may cause dangerous situations and run the risk of bodily harm and/or material damages.

Equipment for approved users

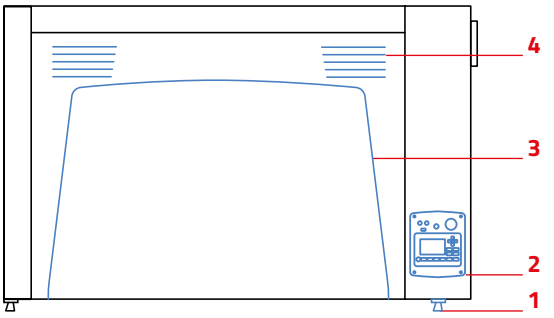
The machine should only be used by authorized personnel who have specific training, who can work in the industrial or non-industrial environment, by persons of an age equal to or greater than 18 years old and with minimum height of 2 meters with raised hands.

Any presence of external people or those without training should be considered if close to the danger area around the machine. It is recommended that the operation area of the machine be perfectly marked out, thus allowing access only to authorized personnel.

Tasks of assembly, calibrating, maintenance (electric and mechanical) and disassembly, among the other services related with any adjustment or calibration, will be completed solely by official personnel from BCN3D or by the authorized Technical Assistance Service from BCN3D and autorized distributors

ACTIVITIES	GROUP OF USERS
Operation and control	Personnel with specific training
Maintenance, calibration, assembly disassembly and adjustments	Official personnel from BCN3D or SAT

Security components



1 Interrupter key
2 Control panel
3 Security covering
4 Air entrance for ventilation

BCN3D IGNIS is equipped with a security anchoring system, whose function is to prevent any radiation from accessing the danger area during the entire process when the laser is active and guarantee that the machine does not cause any risk during the tasks of supplying and handling pieces. Other security components are:

Warnings

Correct use of the machine

- Any use not contemplate in this manual will be considered as misuse.
- Misuse of the machine can lead to risks of body injuries and/or material damage.
- Special attention should be paid to the type of material and positioning of the piece to be processed. Do not exceed the maximum dimensions for the piece and place the piece on the work surface as flat as possible

Before starting up the machine, operators must read and apply the instructions contained in the user manual.
Misuse of the machine is prohibited.

Unqualified personnel

- The use of the machine by people with insufficient knowledge may cause danger and/or damager to the machine.
- Personnel must be informed of the machine's functions and any potential risks.

All personnel operating the machine must receive specific training.
The company must provide said training to the team of people responsible for performing the operations to be carried out using the machine.

Calibration, repairs and adjustments

- The use and calibration of the machine must be performed by official BCN3D personnel.
- Allowing unauthorised personnel to perform these tasks may lead to grave injuries and/or damage to the machine.

The repair, calibration, revision and start-up tasks must be performed by official BCN3D personnel and autorized BCN3D distributors.

Laser radiation

- A lack of protection measures can lead to: burnt cornea, skin burns and risk of igniting clothing.

Never cancel out the safety systems.
Never manipulate the laser unit.
Ensure that the optical mirror system is not blocked, broken or in poor condition (see Maintenance section, page 37).
Ensure that the protection cover is not broken, cracked or in poor condition.
Follow the maintenance plan described in this manual.

Unsupervised operations

- You are using a 100W power laser. A wrong job configuration (excess power, slow speed..., etc.) can cause a fire hazard.
- Special attention must be paid to low speeds and other powers while using combustible materials such as paper, cardboard, wood, etc.
- Unsupervised operations can cause a fire which could lead to very serious personal injuries and/or damage to the machine.
- It is advisable to have a fire extinguishing system installed close to the machine.

Never operate the machine without supervision.

Warnings

Unauthorised handling

- There must be authorised personnel responsible for controlling the correct operation and handling of the equipment by the rest of the operators.
- The person in charge of supervising must ensure that all personnel coming into contact with the machine has received correct training.
- The person in charge of supervising must ensure that the machine is always watched over during the materials process.
- The personnel in charge of supervising must safeguard to main switch key.

Disconnect the key switch when the machine is not being used.

Integrity of the machine

- Performing operations while missing any part of the machine can cause damage to the machine, grave personal injuries or even death.
- Check that the machine is fully assembled and all components, mirrors, parts of the structure, cutting base...etc.

In the event of identifying a missing component, do not turn the machine on and contact the manufacturer immediately.

Faulty, damaged or poorly adjusted machine

- Deviations in the machine's normal process and unforeseen ongoing operating results may indicate hazardous conditions (clogged products, poorly secured guides, etc.).
- Check that there are no mirrors in poor condition prior to turning the machine on.
- The whistling heard after the machine is in operation indicates that the cooling system has been activated. This whistling should stop after a few seconds.
- Check the machine's movements when there are any unusual movements of the guides, stop the process using the emergency push button.
- Check that the transparent cover on the machine is not damaged.
- If any of the previous cases take place, stop the machine immediately and contact the manufacturer.

Operators must ensure that all devices are operating correctly prior to using the machine (Maintenance, page 37).

Reckless actions

- Reckless actions can cause personal injuries and/or damage to the machine.

Never cover the mirrors.
Do not leave any foreign object on the machine (tools, etc.). Objects which interrupt or modify the beam direction can cause grave damage.

Poor maintenance

- Shadows, reflections and poor cleaning increase the risk of accidents.
- An accumulation of previous process residue can cause risks.
- The work area must always be kept clean and dry.
- If the machine is stopped, the front cover must be kept shut.

Warnings

The machine must be maintained correctly and kept clean following the instruction contained in this manual.

Missing or worn signs

- All warning signs and luminous indicators are essential for guaranteeing the safety of the users.
- Performing operations without the existing signs can cause personal injuries and/or damage to the machine.

The manufacturer must be informed of any wear and tear or broken warning pictograms. The manufacturer must be informed of failures in any of the LED indicators on the control panel.

Appropriate work clothing or lack of protective equipment

- We recommend the use of gloves and safety boots when handling heavy pieces.

Follow the occupational health and safety specifications established by the risk prevention manager according to applicable Law, on Occupational Risk Prevention.

Processing toxic materials

- Processing materials which are not permitted could cause risks due to inhaling toxic substances.

Operators are not allowed to process materials which are not included in the Processable Materials list of this manual.

Trapping

- Closing the machine's upper cover without paying sufficient attention could entail risk of trapping body parts.

Before closing the cover, ensure that all personnel is out of reach of the cover.

- Closing the back panel and the front doors without paying sufficient attention could entail risk of trapping fingers and/or hands.

Before closing the panel and doors, ensure that all personnel is out of reach of the hazard area.

- Removing the work base without paying sufficient attention could entail risk of trapping fingers and/or hands.

Before removing the base, ensure that all personnel is out of reach of the hazard area.

Handling loads

- Dropping and sliding loads can entail body injuries and/or damage to the machine.

Do not handle heavy or unstable loads close to the machine.

Warnings

Improper removal of residues and productions materials

- The improper removal of residues may cause environmental damages.
- Dispose of residues in accordance with applicable legal regulations.

Modifications in the vender settings

The basic functioning parameters, or vender settings, which are set by the manufacturer, guarantee the proper functioning and safety.
These can be accessed with software and from the display and they are protected with a password. Any modification of them may cause dangerous situation or cause severe risks.
It is totally prohibited to make any changes to these parameters.

ATENTION

Any modifications made to the machine without the approval of the manufacturer will invalidate the Statement of Compliance provided for the product and its warranty.

Connect the machine to a wire with 230 AC volts and a ground and only use cables from the manufacturer.

Connect the machine to a 6 bar air supply.

It is prohibited to use the machine for any use not listed in the present manual.

It is prohibited to exceed the maximum dimensions for a part that can be processed.

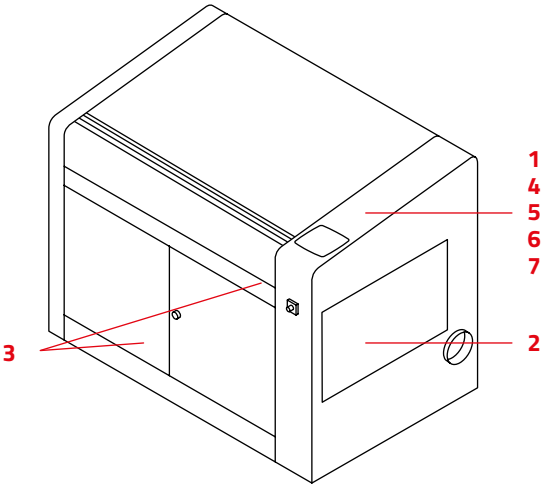
It is prohibited to process parts whose work surface is not flat.

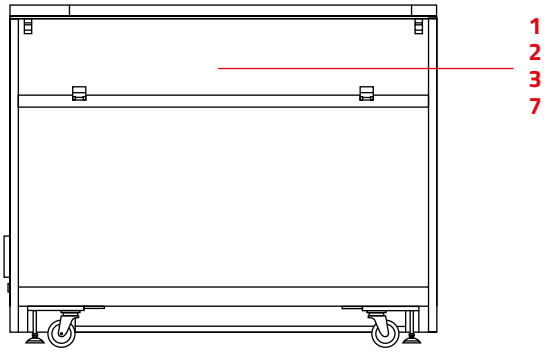
It is prohibited to process any materials not listed in this instructions manual.

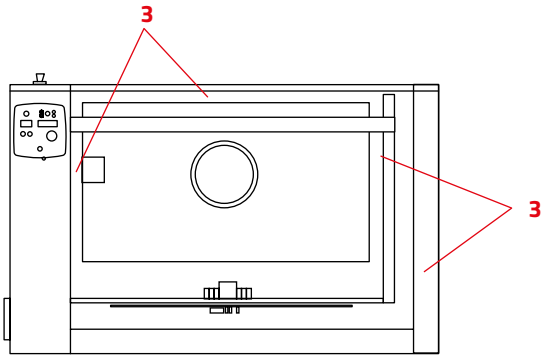
It is prohibited to make any changes to the vender settings.

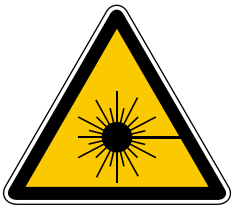
Contact the manufacture if you have any questions or concerns.

Safety pictograms

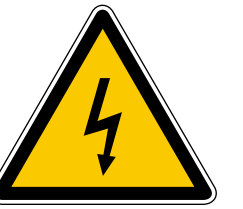








1 Laser radiation emission hazard



2 Electrical hazard

!HAZARD!
TRAPPING

3 Trapping hazard

NEVER OPERATE
WITHOUT SUPERVISION
FIRE HAZARD

4 Fire hazard

5

CLASS 1 LASER PRODUCT
EN 608251:2007

6

NEVER OPERATE
WITHOUT SUPERVISION

7

PRECAUTION
CLASS 4 LASER, UPON OPENING AVOID EXPOSING EYES OR SKIN TO DIRECT OR DISPERSE RADIATION AND WHEN THE SAFETY BLOCK ARE NEUTRALISED

Transport - Storage - Installation

Transport

The machine will be transported by the manufacturer or, otherwise, by an authorised distributor.
The manufacturer is responsible for unloading, adjusting and tuning the components.

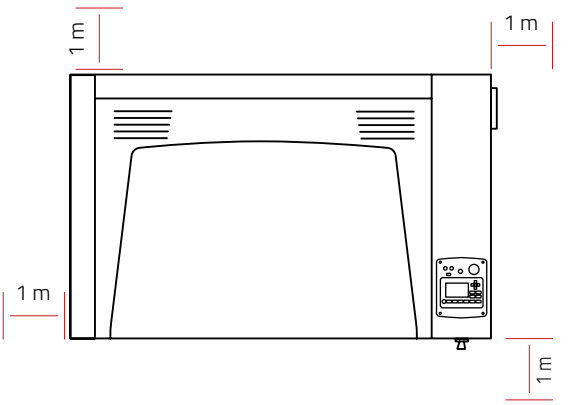
In the event of damage or missing parts, the machine shall not be released. The procedure for checking components and inspecting damage shall be carried out by the manufacturer or, otherwise, by an authorised distributor.
The buyer is responsible for demanding the machine to be appropriately tuned and adjusted.

The buyer is responsible for alerting of any error, missing or damaged component of the machine after its installation and tuning.

Storage conditions

The storage condition should not generate any risk to the integrity or functionality of the machine or its components, and the user is responsible for ensuring the machine is stored appropriately. The machine should be stored in a dry environment and at temperatures ranging between 10°C (min. temp.) and 40°C (max. temp.). The machine should be kept away from traffic areas where it may suffer blows. Never store objects on top or inside the machine.

Installation conditions



The final location of the machine should comply with the minimum distances for installation as shown in the image to the left.

The machine does not come with a smoke filter for the ventilation system.

It is recommended to place the machine close to the ventilation system, a pneumatic extraction system or exterior access to make it easier to extract any smoke. Never operate the machine without a filter or exterior access.

It is recommended to place a fire extinguisher in an area close to the machine to eliminate any risk caused by the existence of a flame.

Assembly and Installation

The machine will be assembled by an authorised distributor, which may be the transport company itself or BCN3D personnel.

The assembly activities must be performed by professionals qualified in completing this task and never by the user.

The machine's initial adjustment and calibration activities will be carried out by the company responsible for the assembly process.

PC Configuration

Installing RDWorks

In order to use BCN3D IGNIS, it is necessary to download and install RDWorks.

1 Download the latest version of the RDWorks installer at:

https://www.bcn3dtechnologies.com/es/ignis-downloads/

2 Install the software

3 Follow the instructions to complete the installation

4 The following screen will appear:

5 Select the key to the ON position at BCN3D IGNIS

6 Connect the PC-USB cable to the BCN3D IGNIS and the PC.

7 Once connected and continuing on the same screen as in point 4, press the “Install USB driver” button.

8 Configure the settings in a way that is the same as those in the image, changing the “Origin” option to “TopLeft”.

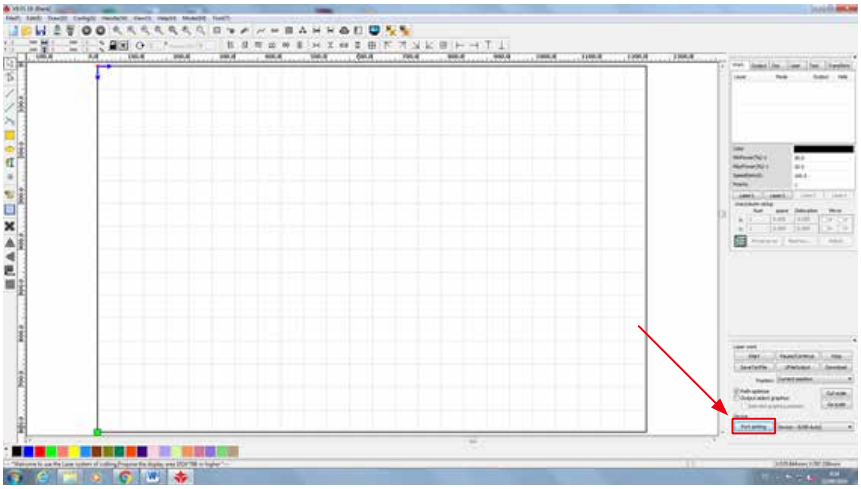
Installing RDWorks

9 Once this checklist is complete, press the "Install" button.

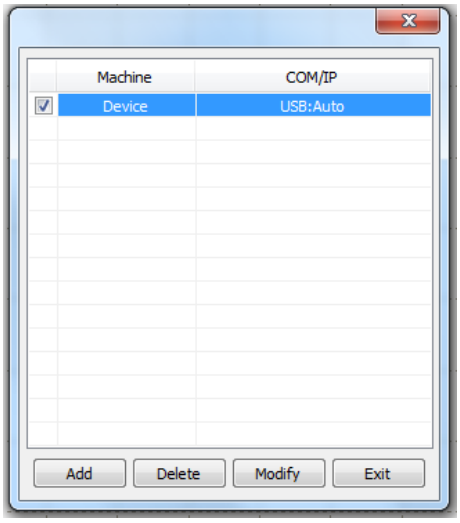
10 The program will already be installed at this time.

11 Open RDWorks.

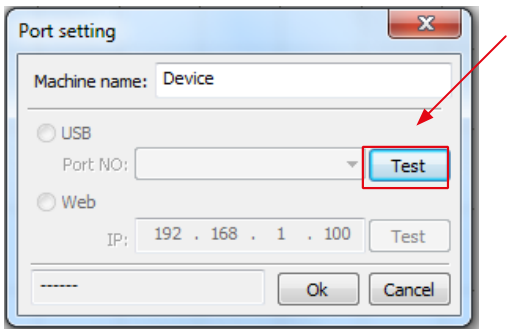
12 Press the "port setting" button on the bottom right.

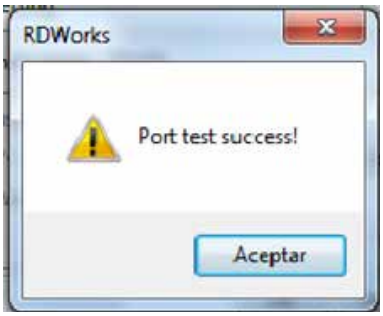


13 Double click with the left button of the mouse on "USB:Auto"



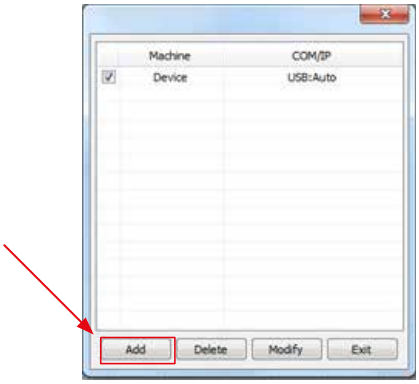
14 Following this, press the test button. If you receive a "port test failure" warning, test that the USB cable is properly connected and the machine turned on, if this is not the case and you see the warning "port test success!", this means that the USB setting is correct.



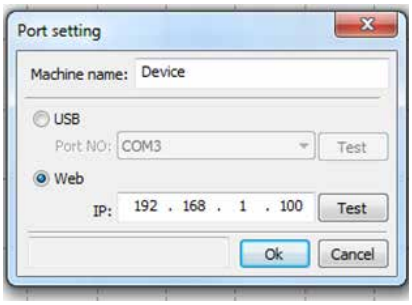


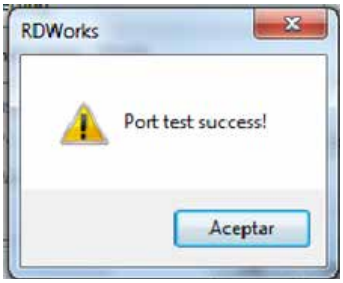
15 To connect the machine via Ethernet connect the cable to the BCN3D-IGNIS and the computer. Following this, press the "port setting" button again.

16 Press the "add" button

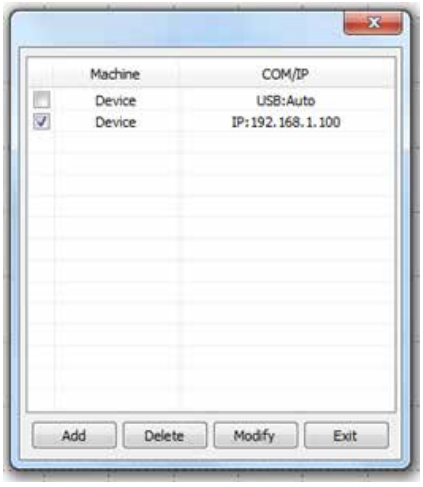


17 Choose the web option. If the pre-established value is kept and the IP of the machine has not changed on the display, when you press the test button "port test success" will appear. If this does not occur, test the connection of the cable Ethernet and the IP that appears on the display.





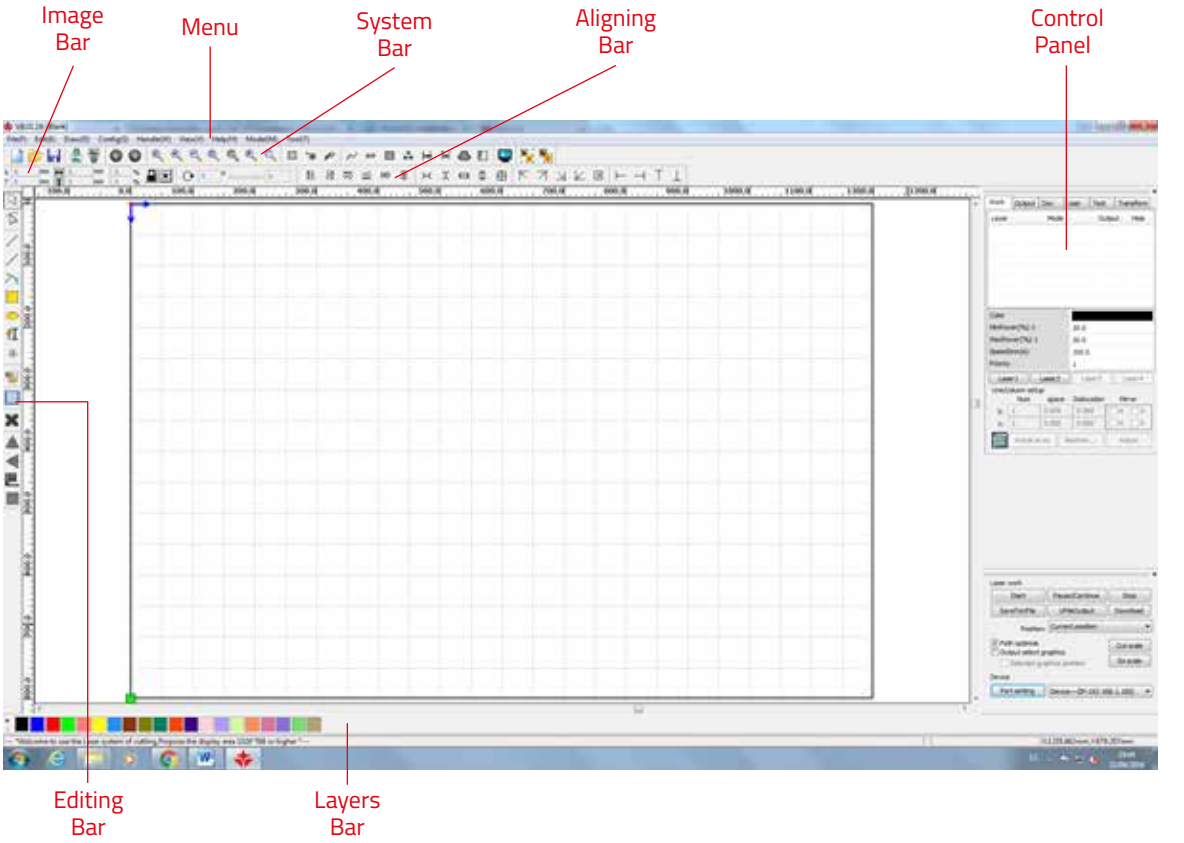
18 Once the status of the door is checked, press the "Ok" button. The following screen will appear:



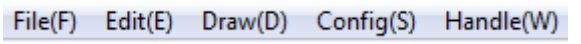
19 Actions to select the method of communication with the BCN3D-IGNIS from the computer, as well as how to modify, add or erase the previously set settings, this can be done from this screen.

Using RDWorks

Interface



Menu: In this area you will find the primary functions



System Bar: Some of the commands that are used most frequently from the menu are located on this bar.

Image Bar: This section provides basic graphic information about the file, such as the size, location, scale, etc.

Editing Bar: The editing bar is where the user can place commands that are frequently used to make editing easier.

Aligning Bar: This is used to align various objects.

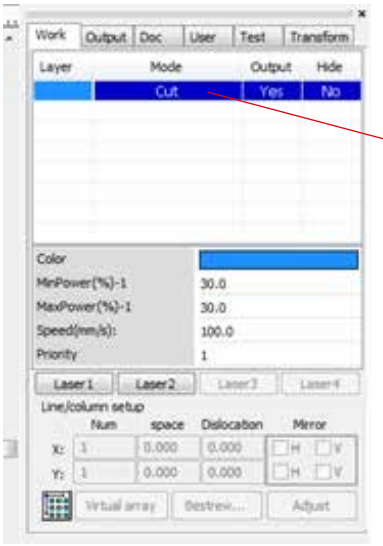
Layers Bar: This is used to combine the different layers of some files.

Control Panel: This is used to complete processing tasks for the laser.

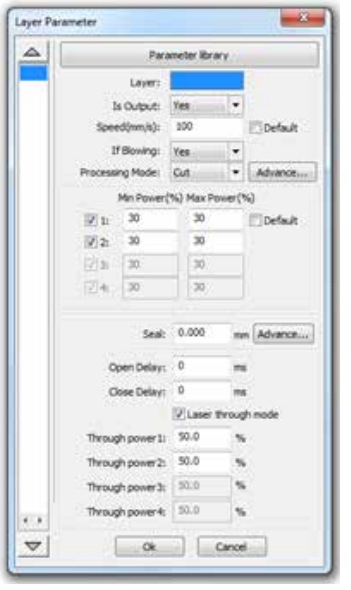
Configuring the laser's parameters

Control panel

After drawing or importing a task, the following information appears on the right side of the screen.



To access the layer menu, you should double click on the layer in the control panel.
The following menu will appear.



In this menu you can select the most relevant settings for the task. The following will explain:

Is output: This function only allows for a "yes" or "no" response. This serves to indicate if the machine must process the layer that is defined or not.

Speed: This option allows us to choose the speed that the head will move for the task. If the "default" box is marked, the file will execute at the decided speed from the control panel on the machine.

If blowing: This option allows us to control the extractor that is integrated with the machine. This option must always be in the "yes" position (Activated in BCN3D IGNIS as a default)

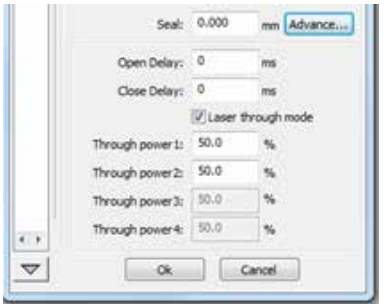
Processing mode: This option allows us to select the process to be carried out:

- "cut": cutting and marking
- "scan": engraving
- "dot": engraving with a set of dots.

Minimum power y maximum power: In this section you can choose the percentages for power that will be used as the maximum and minimum. If the "default" option is checked, the values that will be used will be defined in the control panel on the machine. This serves to avoid excessively burning any cuts or scans, mainly at corners.

Sub-Menus:

1. If a cutting task is selected, the following sub-menu will appear



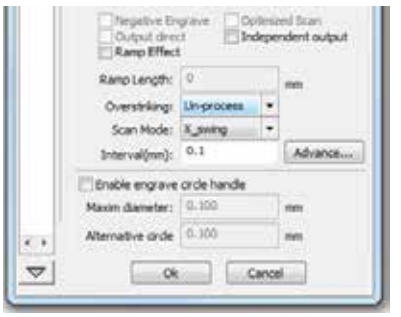
Seal: This option allows you to make a radius allowance for closed figures. The "advance..." option allows us to select the direction of the allowance.

Open delay: This shows the wait time that is defined upon turning the laser on.

Close delay: This shows the wait time that is defined upon turning the laser off.

Laser through mode: This option allows us to select the % that the "through power" is configured with respect to the previously defined power in the layer parameters or the control panel.

2. . If a scanning task is chosen, the following sub-menu will appear:



Scan mode: This dropdown menu allows us to choose the type of scanning that will be completed. You can select in which axis the scanning is done in and if it will be done in only one direction (unilateralism) or back and forth (swing).

Interval: Shows the distance that the head will move, on the axis, which will not move during the cutting, between one line and the next.

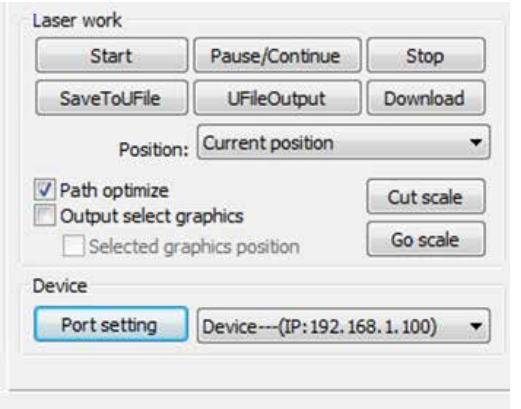
If you desire to make a dot scan:

Dot time: The time that the machine activates the laser on a single point. If the time increases, the mark that is left will be darker and deeper.

Dot interval: The distance between dots.

Dot length: The distance from the dot, if you want to cut one line of dots.

Sending tasks to BCN3D-IGNIS



Start: This option allows the task to be executed immediately without needing to save the file.

Pause/continue: This button allows to stop the task at any time. It pushes, one the task is paused, the machine will continue the task from the point where it stopped.

Stop: This allows the process to stop at any time during the task. Does not allow the process to be resumed once pressed.

Go scale: Allows the user to move the head, thus forming a rectangle around the area where the task will be made. Allows to easily see if the figure is located in the correct position and if the material that you wish to be modified is placed correctly. It does not consider the layers set as output "no".

Cut scale: Allows us to cut the mark that has been defined in the "Go scale" section.

Position: Allows us to select the point of reference from which the task position will be considered. When pushing this button, you may choose from the following possibilities:

Current position: The task refers to the dot where the head is located at the time of executing the task and will be considered as the origin.

Anchor point: This saves the position in the program that is defined as the Origin for the machine. In this way, if you wish to repeat the same program at another time, the starting position used for the first task will be the same for the following.

Machine zero: Allows the task to be positioned on the starting dot as defined by the manufacturer.

Absolute coordinate: Allows the file to be positioned in the same relative position that is located in the work area in RDWorks. With the same distance as the working limits.

Path optimize: The file that is sent will be the path that requires the least amount of time.

Output select graphics: Allows the task to be sent only for the file that is selected. If the box "Selected graphics position" is selected, the task will be sent to the same relative position that appears in the software.

SaveToUFile: With this button, you can save the current file in order to use it later without a connection.

Download: Pressing this button will download the current file and sent it to the controller from BCN3D-IGNIS. Following this the user may start the task from the control panel on the machine.

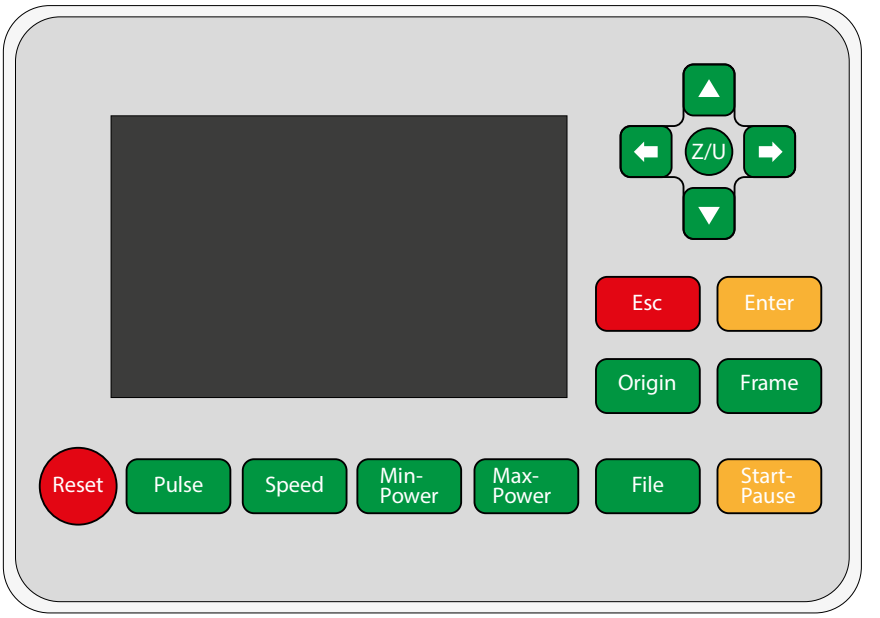
Warning!

All tasks with BCN3D-IGNIS must be completed under direct supervision.

It is required to visually control the process during the entire task.

Function of the control panel

Control panel:

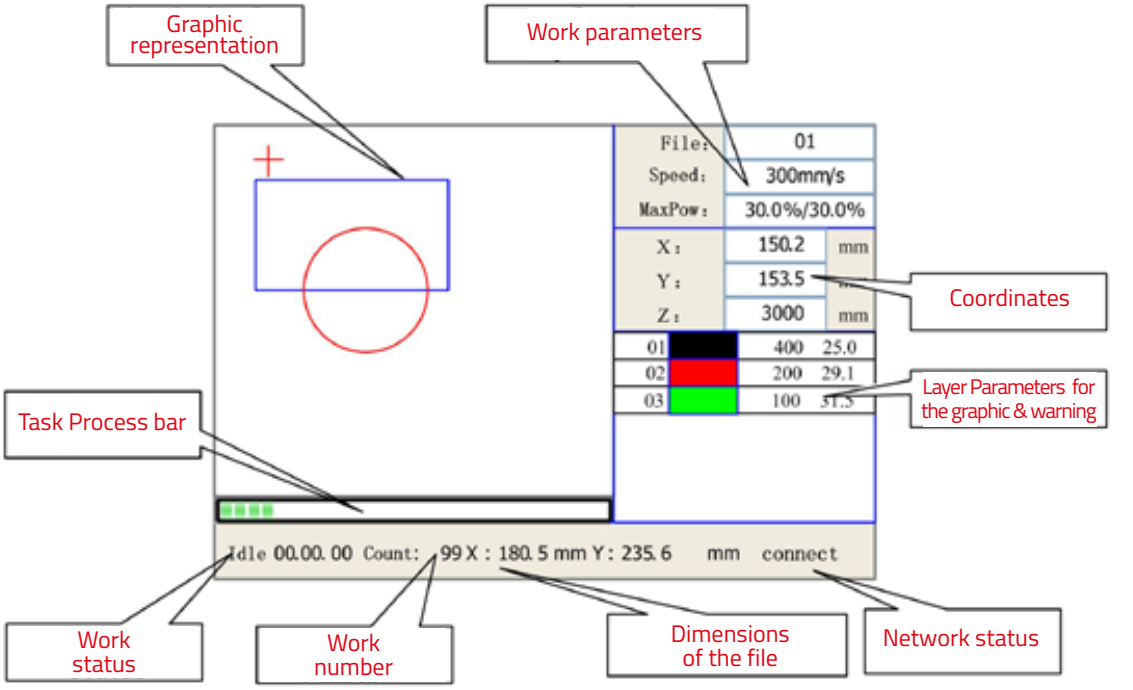


Introduction to the buttons

Reset	Resets the controller
Origin	Defines the relative origin
Pulse	The laser emits radiation
Frame	The mark the archive is working in
File	Allows you to control the information being submitted to the memory or USB drive
Speed	Shows the current speed of the task
Max-Power	Defines the maximum power for the task
Min-Power	Defines the minimum power for the task set set
Start-Pause	Start or stop a task
← →	Moves the head on the x axis ("X+/-")
▲ ▼	Moves the head on the y axis ("X+/-")
Z/U	Activates the interface. Shows the functions such as moving the z axis, going to the starting position of each axis, etc.
Esc	Stop a task. Return to the menu from any sub-menu
Enter	Validate a change

Introduction to the general interface

After turning the machine on, the display will show the following interface.



Graphic Representation: On this part of the panel, the trajectory is drawn, which the head follows during the task.

Work parameters: Indicates the task number that is being completed, the speed and the maximum power.

Coordinates: Indicates the position of the head related to the start.

Layer parameters for graphics and warnings: Indicates the most important information for the layers if an operations is being done with multiple layers. Warnings are also shown in this area.

Network status: Indicates the status of the Ethernet connection.

Dimensions of the file: Indicates the dimensions of the file on the x and y axes.

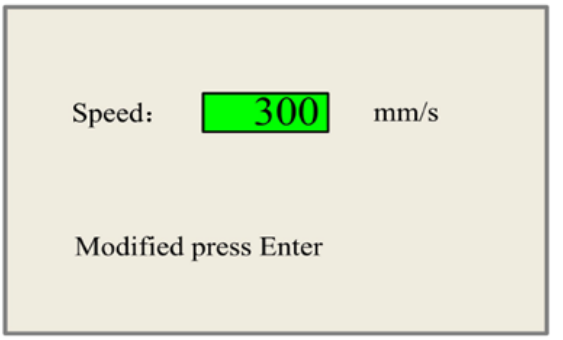
Task number: Gathers the task number from the current file.

Work status: Indicates the status the machine is in (working, stopped, finished...)

Process bar: Indicates a visual progress of the current task.

Speed selector:

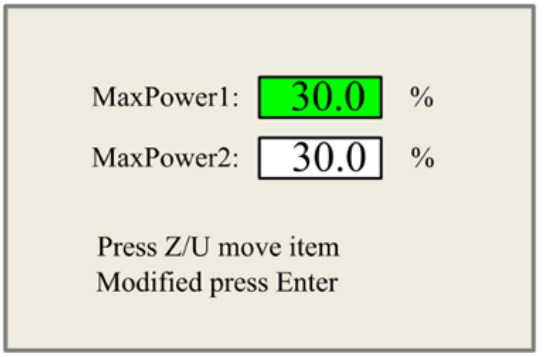
Press the "speed" button when you are in the main menu and this will appear:



Press the ⬅➡ keys to move the cursor in the numeric area and press the ⬆⬇ keys to select a value. Finally, press the "enter" key to save any changes. If you want to erase the change you must press "Esc".

Select the maximum and minimum power:

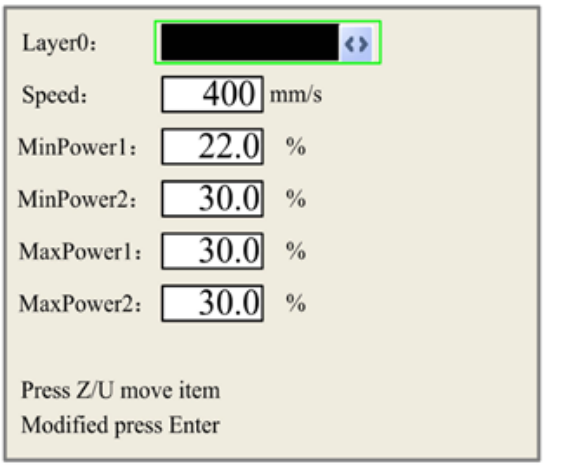
Press the "max power" or "min power" button when you are on the main menu and the following screen will appear:



Press the "z/u" key and you can move the green block up and down to select which of the values you wish to modify. To modify the value, you use the same method as with the speed.

Options for layer parameters

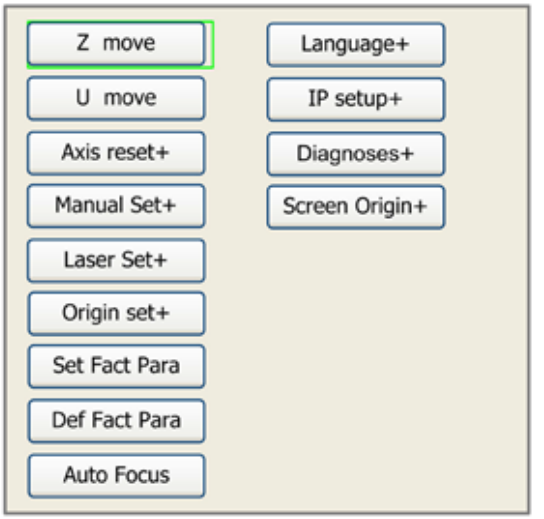
After choosing a file to preview on the main menu, the user may press the "enter" menu to move the cursor to the first layer, following this you can use the ⬆⬇ keys to select the layer that you wish to modify or see its values.



After pressing "z/u" you can move the green box to select the parameter you wish to change. The new value is inputted as in the previous sections and to confirm the value press "OK", otherwise press "Esc".

Z/U Menu

The "Z/U" may be pressed when a task is finished or the machine is waiting, in order to access the following menu:



To select the desired section, you can move the green box with the ⬆⬇ keys and select it with the enter key.

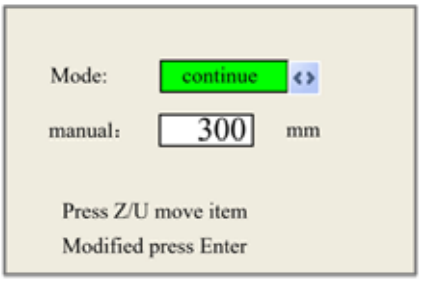
"Z move"
This function can be used to move the z axis. To do this you should press the ⬅➡ key

"U move"
This functionality is not activated on the BCN3D IGNIS

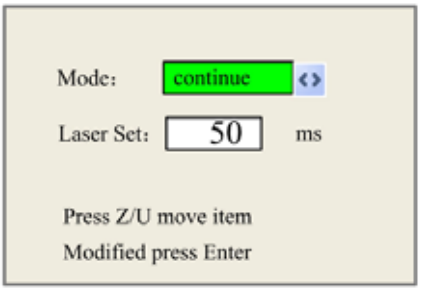
"Axis reset+"
If this function is selected, the following menu will appear:

To move the green box with these options, use the ⬆⬇ keys and following this select the axis that you want to make as the reset, press the "enter" key.

"Manual set+"
This function allows you to move the head on the surface of the task in two different ways, manually or continuous. To be able to select which of the two functions you want to use, you need to first press the "Z/U" button. The continuous mode allows you to move the head with the keys and the ⬅➡⬆⬇ keys, however the manual mode allows you to choose a fixed distance and every time one of the previous keys is pressed, the head will move the defined distance.

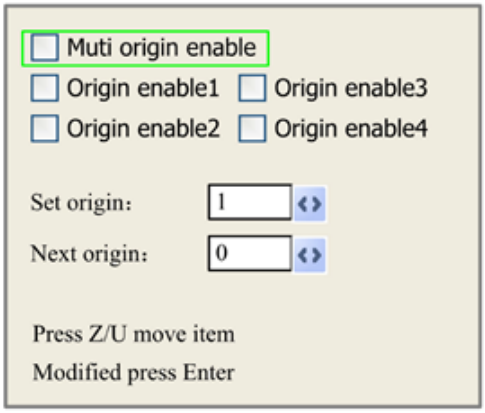


"Laser set+"
This function has the same function as the previous one, but the difference is that it refers to the amount of time that the laser will emit radiation. If the user chooses the continuous mode by pressing the "pulse" key, radiation will only be emitted while this button is pressed, however with the manual, it would be emitted during the entire time selected.



Z/U Menu

"Origin set+"
When this function is selected, the following menu will appear:



To move from the first menu, you need to press the "Z/U" key. To select the desire options, the ⬆⬇⬅➡ keys are used and to accept each option, you need to press the "enter" key.

Pay attention to see if the value from the "set origin" or "next origin" has varied afterward, you need to press the "enter" button to confirm the change.

Each one of the options from this mode are explained in the following.

- Multiple origin enable: If this option is deactivated, the system will only consider one origin, however the "origin" key can be used to consider this point. If the option is activated, the "origin" key is deactivated and multiple origins can be considered.
- Origin enable 1/2/3/4: If the "multiple origin" option is activated, any of these dots can be activated or deactivated independently.
- Set origin 1/2/3/4: If the "enter" button is pressed, it will define the origin number by selecting the point x,y where the head is found.
- Next origin: Define the point to be considered as the origin for the following task. If the number 0 is selected, the point defined as the origin prior to activating the "multiple origin enable" will be used. If a point between 1-4 is selected, it will consider the point defined as the origin by selecting it wit the "multiple origin".

Warning: If "multiple origins" is selected, the "next origin" selected is 1 and the four origins are activated, when sending a task with the function "take the original origin as current origin" the task will always start as a different origin. The rotation will be: 1->2->3->4->1…

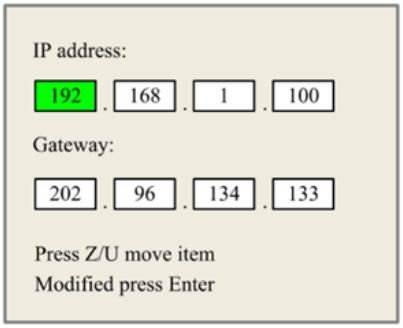
Z/U Menu

“Def factory para”
If this option is pressed, a dialogue box will appear that shows “Successful Recovery” and this will mean that the parameters defined by the manufacturer will be satisfactorily recovered. To exit the dialog box, press the “enter” key.

“Auto focus”
Press “enter” for the IGNIS to set the focal distance automatically.

“Language settings”
In this section, the language can be chosen between the options that appear on the following image:

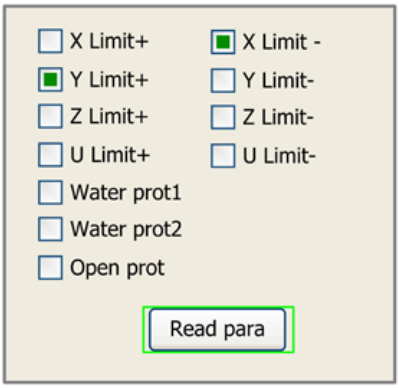
“IP Setup”
When this option is selected, the following screen will appear:



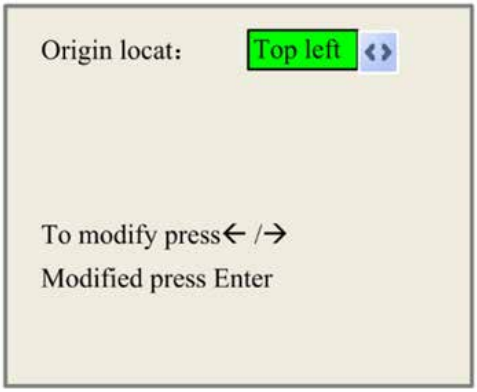
Press “Z/U” to be able to change the box by using the ⬆⬇⬅➡ keys. When the parameters have been changed, press “enter” to validate the change and “Esc” to discard the modifications.

“Diagnoses”
This section provides information from the machine, such as the status of the sensors at the end of the path or the status of the refrigeration.

If this section of the menu is pressed, the following information will appear:



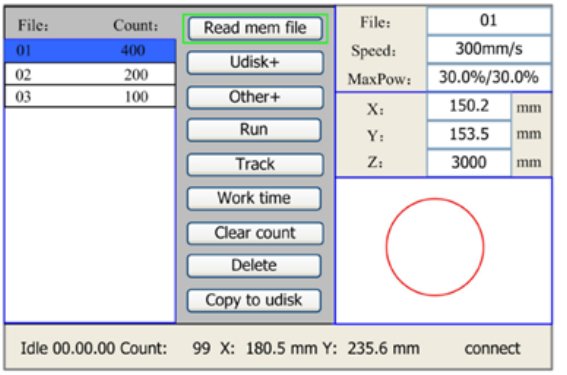
“Screen Origin”
This option will allow the original position of the screen to be changed, which will allow you to avoid the position of the graphics.



File Key

Memory file

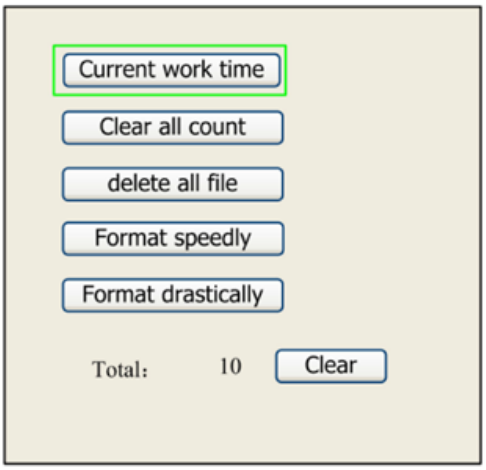
Press the "file" key on the main menu and the following menu will appear:



The system will first read the file from the memory, then show the files in the upper left part of the screen and preview the task in the lower right part of the screen. To move within the "File" menu, use the ⬅ ➡ keys and to access the section you wish to see, the "enter" button is pressed. The available options are the following:

- **Read mem file:** Reads the list of files in the machine's memory.
- **Udisk+:** Read the list of files from the pen drive.
- **Other+:** This section allows you to access the remaining operations from the "File" menu
- **Run:** To execute the selected task.
- **Track:** To continue with the desired file.
- **Work time preview:** To see a preview of the time for the task with an error of 1ms.
- **Clear count:** To erase the counter for the times a task has been run.
- **Delete:** To erase a file from the memory.
- **Copy to Udisk:** To copy a file from the memory on the pen drive.

If the option "other+" is activated, the following menu will appear:



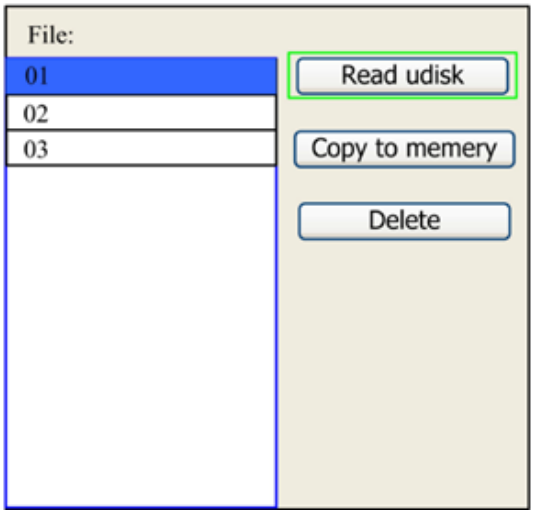
If the option "other+" is activated, the following menu will appear:

Current work time: This option allows us to see a preview of the time remaining for an operation in process, with an error of 1ms.

- **Clear all count:** Allows us to erase the number of times that the same operation has been run.
- **Delete all file:** Erases all the files from the memory.
- **Format speedly:** If activated, this will format the memory quickly, afterward both files will be erased.
- **Format drastically:** : If activated, this will format the memory drastically, afterward both files will be erased.
- **Total:** The total working times for all tasks.

File Key

If the option “U disk file+” is pressed, the following menu will appear:



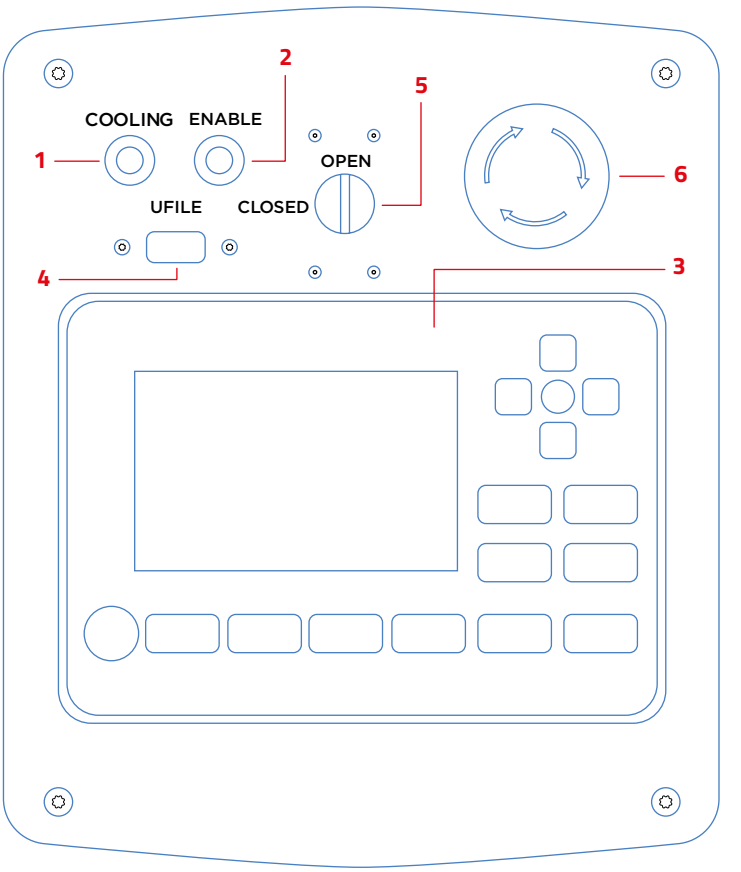
- **Read udisk:** To read a list of files on the pen drive.
- **Copy to memory:** To copy a file from the pen drive to the machine’s memory.
- **Delete:** To erase a file from the pen drive.

So that the BCN3D IGNIS can read the files from the pen drive, they should be exported through the “SavetoUfile” option on the control panel.

Operation

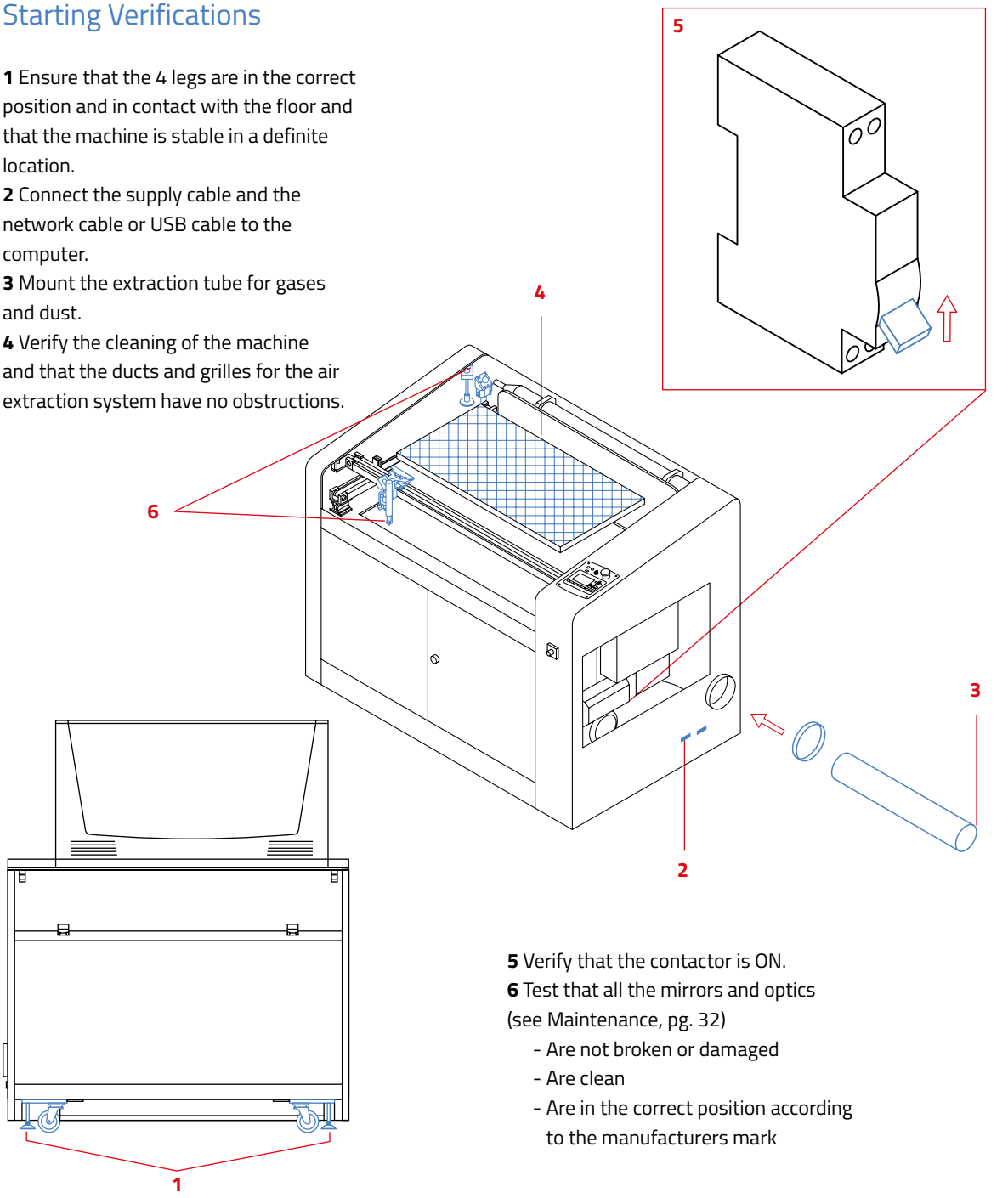
Control Panel

1 Cooling	Indicates that the cooling and ventilation are operating correctly.
2 Enable	Push button which enables the laser and the motors
3 Display	Display
4 USB port	Allows the user to connect a pen drive with the tasks that they wish to complete
5 Air regulator	Controls air pressure at the head of the laser
6 Emergency button	Emergency stop. Stops laser and motor functions



Starting Verifications

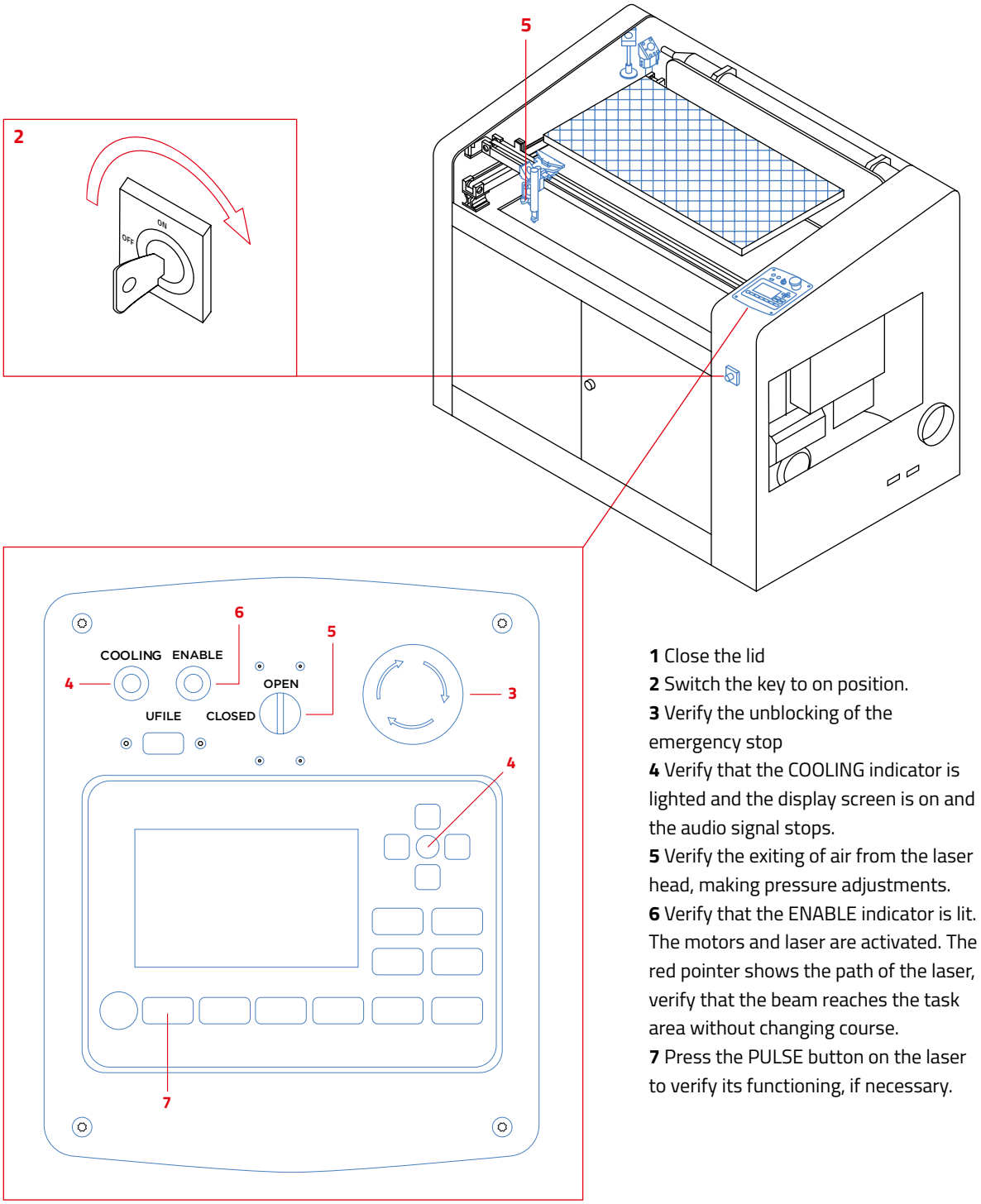
1 Ensure that the 4 legs are in the correct position and in contact with the floor and that the machine is stable in a definite location.
2 Connect the supply cable and the network cable or USB cable to the computer.
3 Mount the extraction tube for gases and dust.
4 Verify the cleaning of the machine and that the ducts and grilles for the air extraction system have no obstructions.



5 Verify that the contactor is ON.
6 Test that all the mirrors and optics (see Maintenance, pg. 32)
- Are not broken or damaged
- Are clean
- Are in the correct position according to the manufacturers mark

Starting Settings

Starting a task with BCN3D-IGNIS

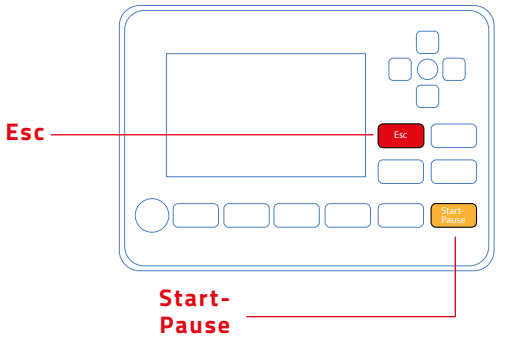


1 Close the lid
2 Switch the key to on position.
3 Verify the unblocking of the emergency stop
4 Verify that the COOLING indicator is lighted and the display screen is on and the audio signal stops.
5 Verify the exiting of air from the laser head, making pressure adjustments.
6 Verify that the ENABLE indicator is lit. The motors and laser are activated. The red pointer shows the path of the laser, verify that the beam reaches the task area without changing course.
7 Press the PULSE button on the laser to verify its functioning, if necessary.

There are three types of stops while completing a task or when the machine is processing. The following will describe the functions of each one of them and actions to be complete once activated.

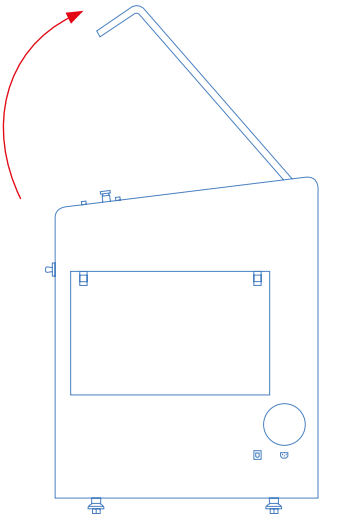
A stop from display (cancel task)

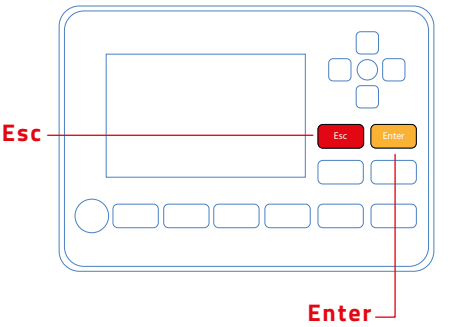
The Start-Pause function makes a controlled stop. The head will stop and the cover can be opened. Once closed, the task can be resumed from the same point where it was paused using start/Pause botton or press the Esc button to cancel the task.



A stop by raising the cover

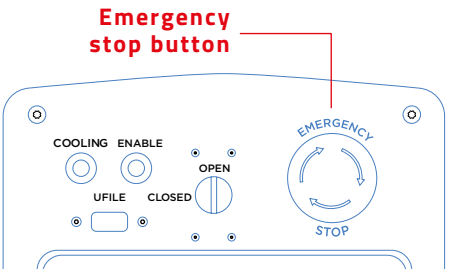
When the cover is raised in the middle of a task, the head will stop. When the cover is closed again, the screen will show the options to cancel the task (pressing the Esc button) and resume the task from the same point where it was paused (pressing the Enter button).





Emergency stop

This is a stop completed for any emergency.



This emergency stop will inhibit the laser and disconnect the motors.

Only then, and if the situation is under control and there is no danger, the cover can be opened.

When an emergency has been controlled and the causes that caused it eliminated, the machine can continue operating. (In spite of any doubts on the safe conditions for the machine, contact an authorized manufacturer or distributor)

The emergency stop button is unblocked with a quarter turn clockwise. Following this a task cancellation will occur (if not, when reestablishing the energy for the laser, the task will continue from the point where the emergency stop button had been pressed).

Following this, the same task can be again loaded, which was being completed prior to the stop, from the display > Enter.

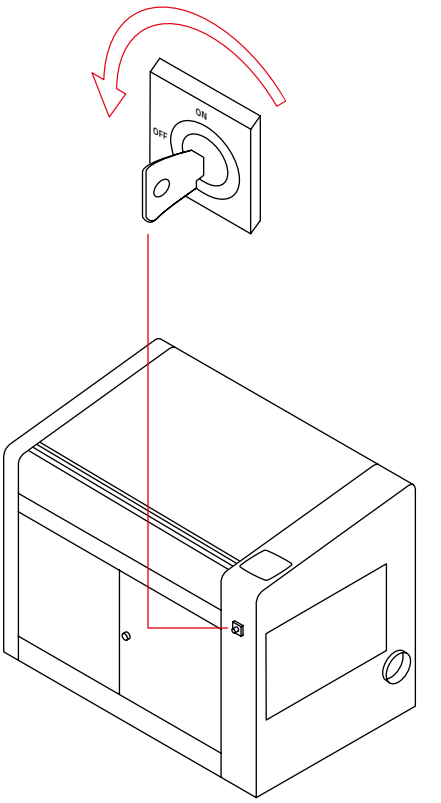
Complete shut down from the key (Cutting power)

This relates to a stop from the key switch. Disconnects the machine from it p ower supply.

This assumes a complete system restart.

This must only be completed when finished using the BCN3D IGNIS.

To start using this after a complete stop from the key switch, follow the steps that appear on the display screen.



Maintenance

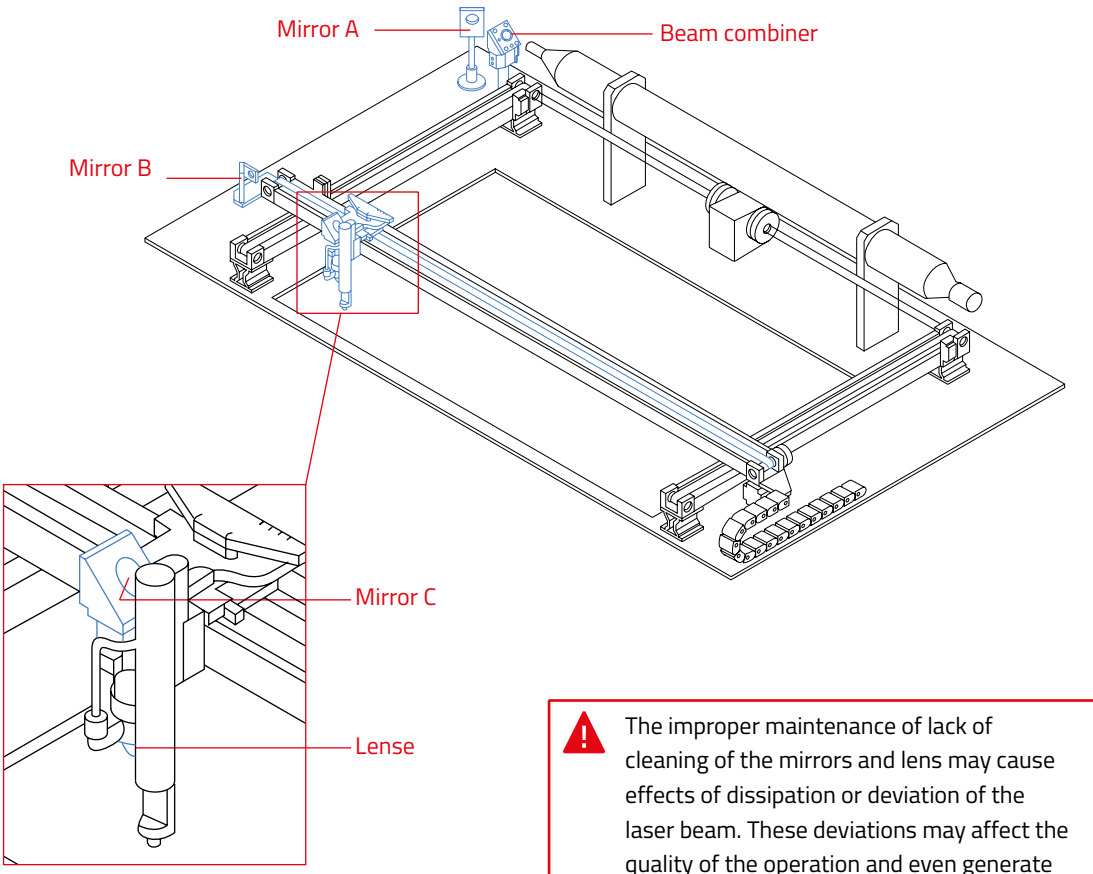
Maintenance Plan

		COMPONENT	MANTENIMENT
DAILY	**LASER**	Mirrors and lenses	Check: - That they are clean and clean them if they are not clean - That the position is correct according to the manufacturer's instruction.
		Work base	Clean the base for suction
	TRANSMISSION	Belts	Check they are working correctly
	VENTILATION SYSTEM	Ventilation grilles on cover	Check they are clean and free from obstructions
		Ventilation grilles on table	Check they are clean and free from obstructions. Vacuum if needed.
	COOLING SYSTEM		Check for leaks If there are leaks, contact the distributor
SETMANAL	**LASER**	Work table	Clean the table for suction
MENSUAL	**VENTILATION SYSTEM**	Ducts	Check for damage or deformations
	TRANSMISSION	Ball screws	Lubricate with MoS2 molybdenum disulfide
ANUAL	**COOLING SYSTEM**	Cooling water	Change water
	VENTILATION SYSTEM	Turbine	In the event of an increase in noi-se, contact the manufacturer

Mirros, beam combiner and lense

The optic system for the BCN3D IGNIS is comprised of three mirrors, on beam combiner and one lens. Mirror A is found on a support fixed to the base plate, the beam combiner is located between mirror A and the laser tube, as well as with a fixed support, mirror B is located on a support on the mobile axis and mirror C is located on the laser head according to the following diagram:

With each connection for the machine, z and before completing any task, it is necessary to test the mirrors, the beam combiner and the lens is in perfect conditions, that there are no scratches or water and they are perfectly clean.

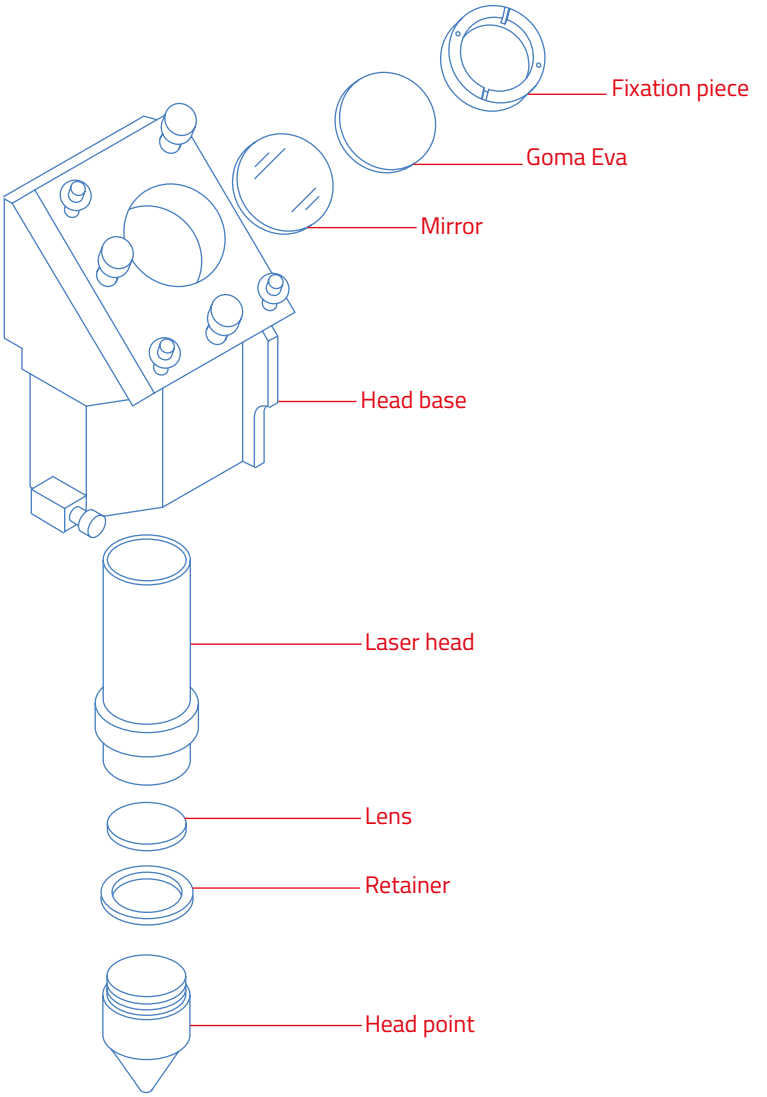


The improper maintenance of lack of cleaning of the mirrors and lens may cause effects of dissipation or deviation of the laser beam. These deviations may affect the quality of the operation and even generate dangers, such as burning the cornea, skin, damaging the machine and fire risk.

Removing mirrors and lenses

The mirrors are fixed to their supports by means of a securing piece screwed to the base of the head.

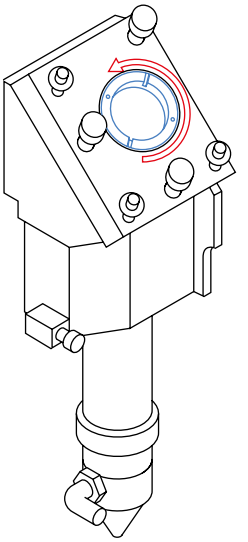
The lens is houses in the laser head and is secured by means of a threaded retainer.



Maintenance operations

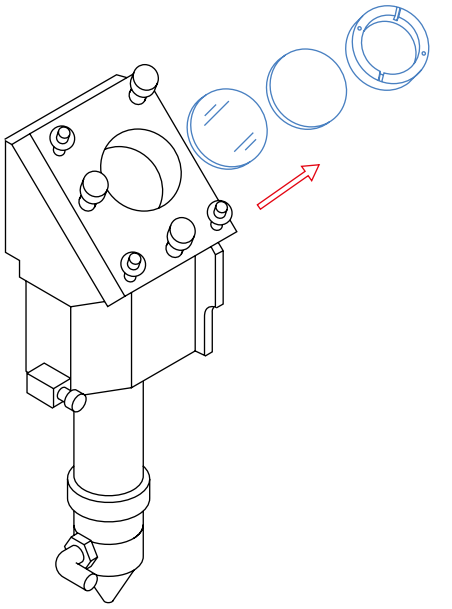
1.

Unscrew the fixation piece using a flat screwdriver.



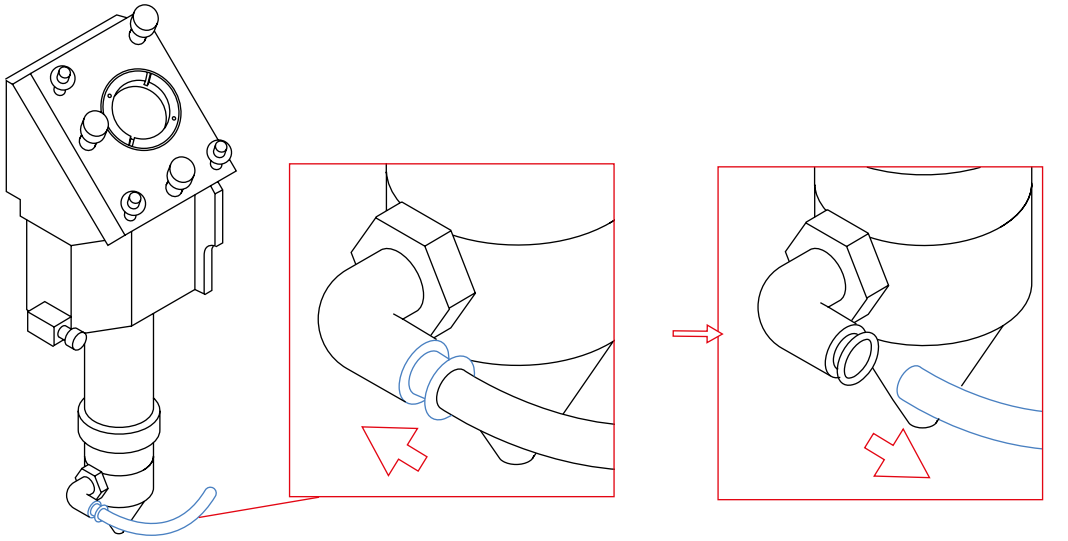
2.

Remove the mirror.



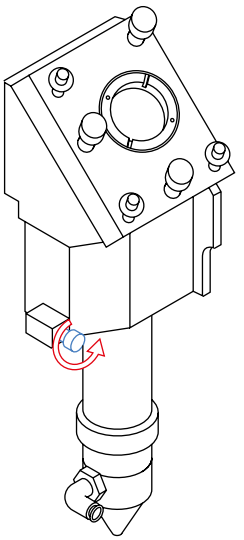
3.

Uncouple the air tube by pressuring the hose connection and pulling on the tube.



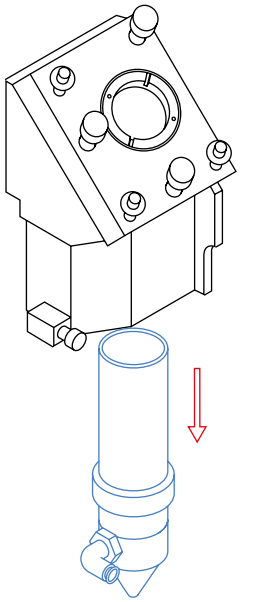
4.

Unscrew the support anti-clockwise as seen in the image.



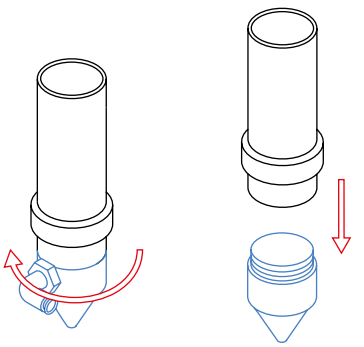
5.

Remove the support.



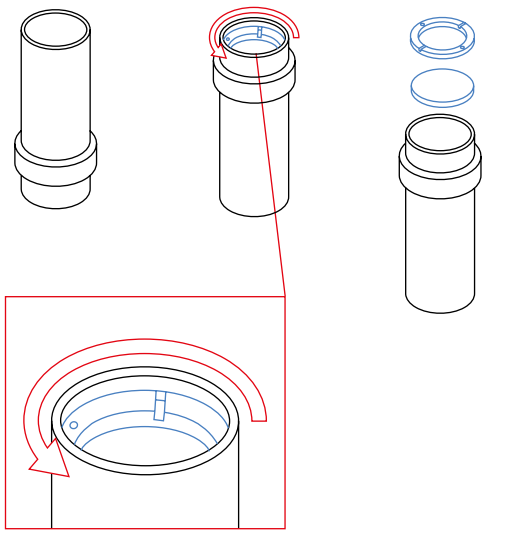
6.

Remove the bottom conical part by unscrewing anti-clockwise.



7.

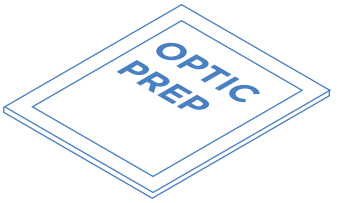
Using a flat screwdriver, unscrew the retainer from the lens positioned on the support.

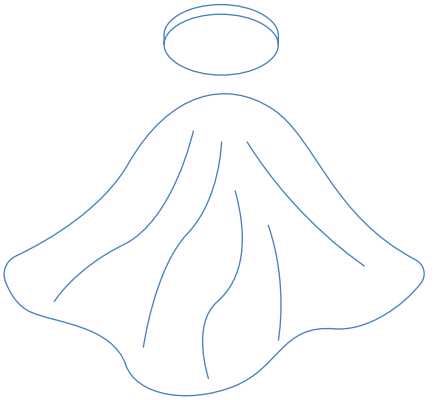


Maintenance operations

Cleaning mirrors and lenses

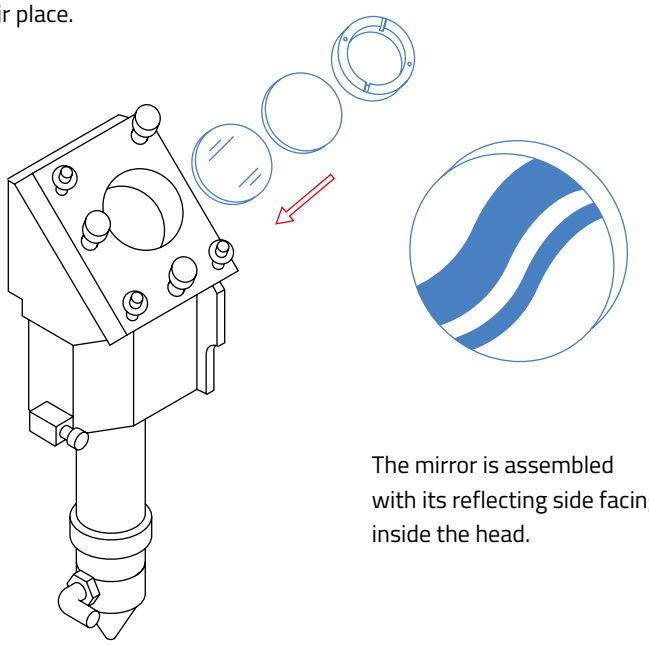
Clean carefully using a clean lens cloth.
The machine comes with a specific set for cleaning the lens.





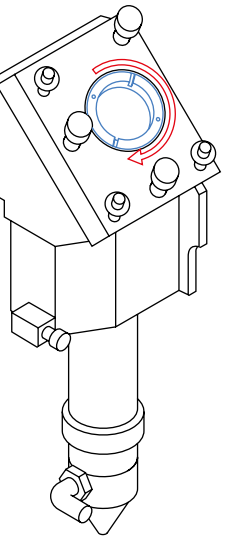
Assembling mirrors and lenses

1.
Position the mirror and the fixation piece in their place.



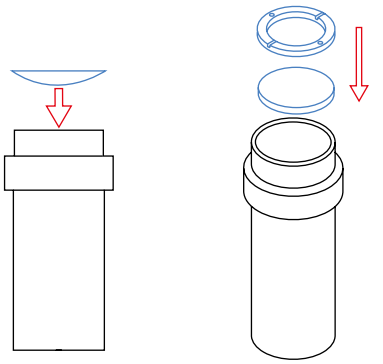
The mirror is assembled with its reflecting side facing inside the head.

2.
Screw the mirror support using a flat screwdriver.



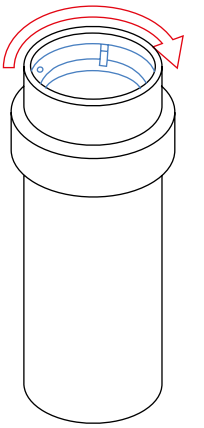
3.

Insert the lens into the support with the convex part facing inwards.



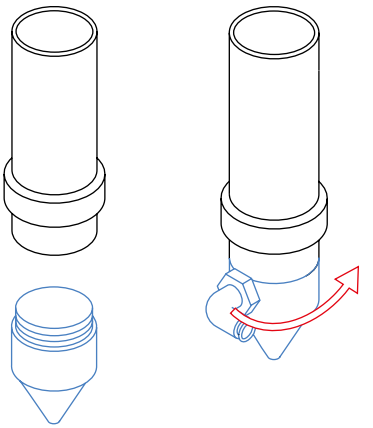
4.

Screw the retainer using a flat screwdriver.



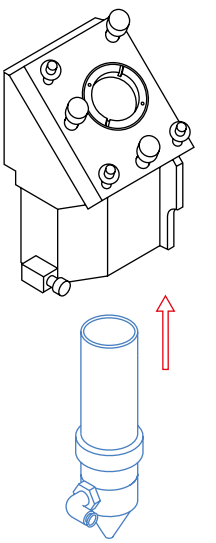
5.

Screw the bottom conical part.



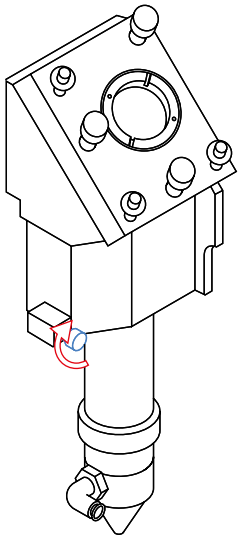
6.

Insert the support inside the head undercvvzv it reaches the end.



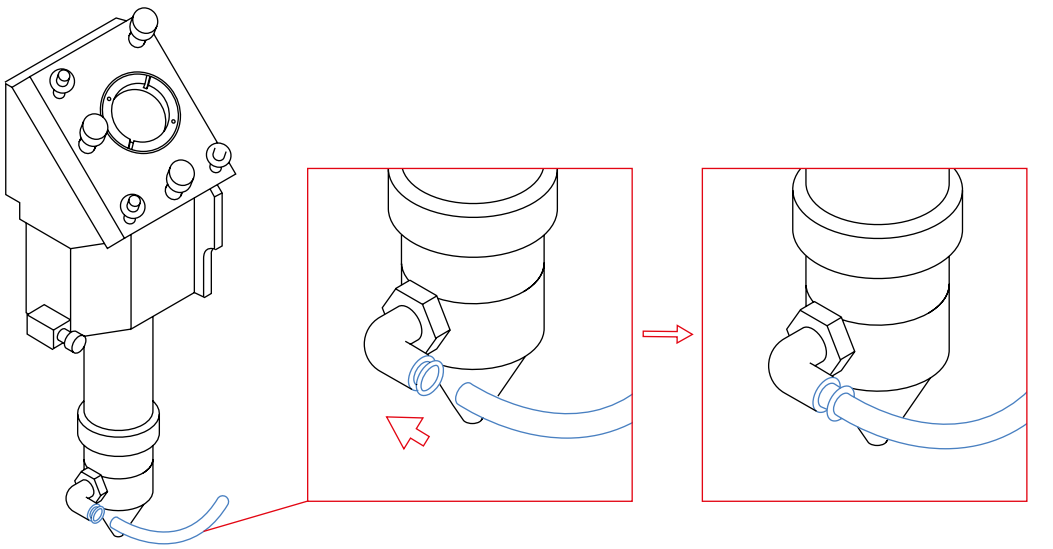
7.

Screw the support as seen in the image.



8.

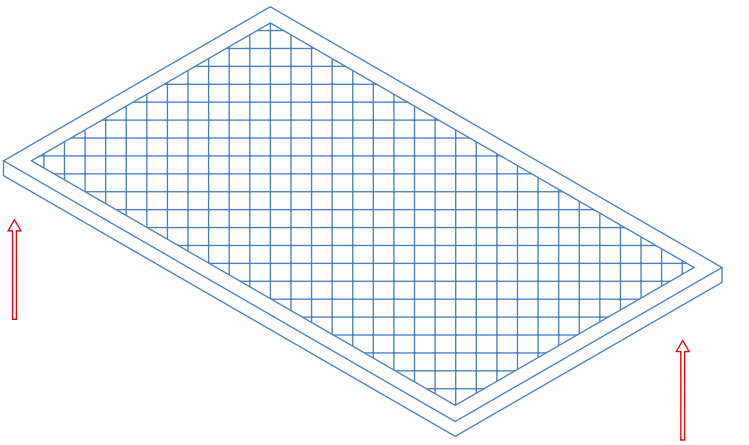
Couple the air tube by pressuring the tube inside the hose connection.



Maintenance operations

Work base

The work base must be vacuumed at the end of the working day. Paying special attention to ensure the mirrors, guides and head do not suffer any blows.



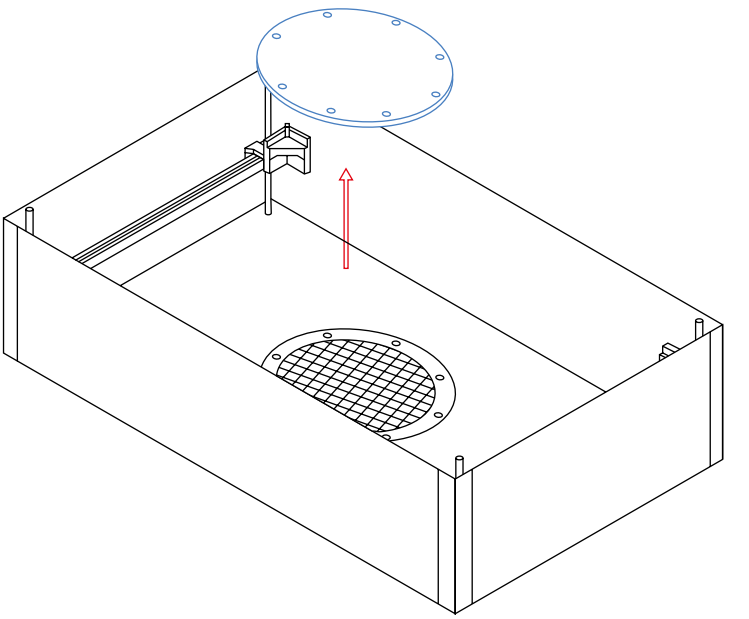
Work table

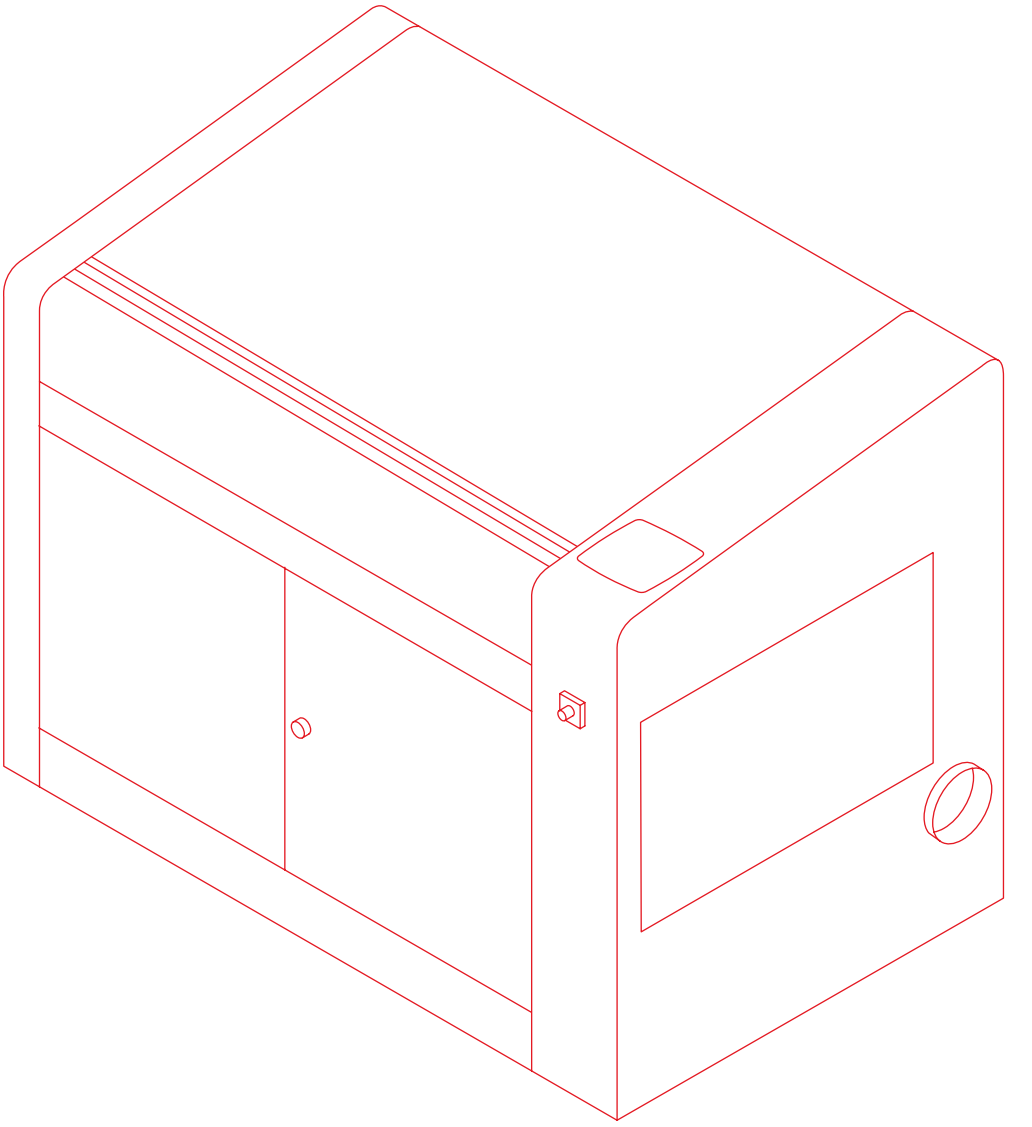
1.

ERemove the metal mesh (honeycomb) and vacuum all residue deposited at the bottom of the table. Paying special attention to cleaning the ventilation grille.

2.

Remove the cover which covers the grille by unscrewing using a 2.5 Allen screwdriver and cleaning any accumulated dirt using a dry cloth.





Frequent problems

The machine will not turn on

Test that the plug that the machine is connected to has power, which may be defective or that the cable is plugged in. In the even that it is not working, you should test that the contactor is in the "ON" position, in the "initial settings" section it explains where this is located and the position it should be in.

The machine is turned on but the laser does not shoot

The laser has various protective measures to prevent injury or damages to the machine itself. These measures will not allow the laser be able to cut or move the head from the display.

To solve the problem, you must test the following points:

- The emergency breaker is not activated
- The front and rear doors are closed.
- If the refrigeration circuit is well connected (test if the cooling indicator from the display is turned on)

The task is not starting

If the machine does not starting working on a task, if may be due to the following causes:

- The dimensions for the task are too large. Test that the sent file does not exceed the maximum dimensions for the work table.
- In a saved file or "scan", it may have defined the task to be too close to the X and Y limits. To solve this problem, the task may be located in a position that is too central with respect to the honeycomb.
- The previous problem can also be the cause of accelerations or excessive speeds. In the event that focusing on the task is not enough, you should reduce the acceleration and speed values.

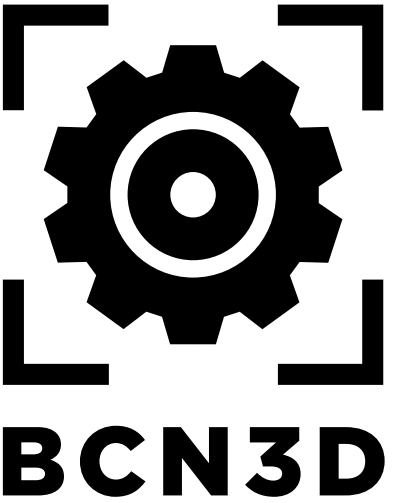
The tasks being completed are starting at an undesired point

In most cases, this problem occurs when a new accidental origin is activated. To cancel the "ORIGIN" function and solve this problem, press the "Z/U" button on the main menu and choose the "axis reset+" section. To correct the error, select the "XY axis reset" section. For more information on the starting point for the task, look at the "sending tasks to Ignis" section and the "position" sub-section.

We would like to thanks all users for the trust they have deposited in BCN3D Technologies, for helping us materialise our dream of creating a better product each day.

That is why we provide you with a team of experts who will be happy to resolve any query you may have and to

Telephone: 93 413 76 10
E-mail: sat@bcn3dtechnologies.com


BCN3D