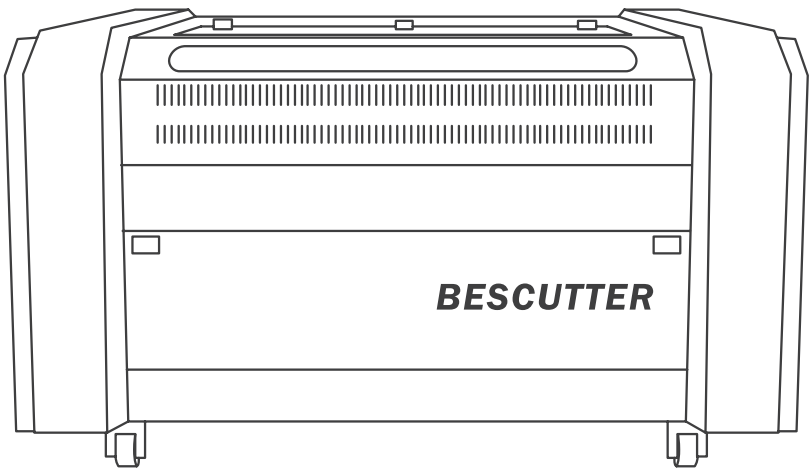
BESCUTTER

Powered by Laser

USER MANUAL



VERSA Series

MODELS:

VERSA 150 / VERSA CCD / VERSA 260

Models addressed in this manual:
VERSA 150, VERSA 260 and VERSA CCD.

Please keep this user manual within your reach so that you can consult it at any moment. This manual is considered as a permanent part of the laser system and should be kept with the machine in case it is resold.

BESCUTTER
Powered by Laser

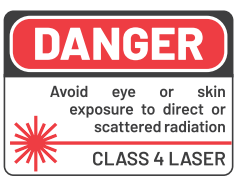
Last updated July 2020

INDEX

1. SAFETY

Laser systems use highly focused and energized light beams to cut, engrave and mark materials. When used correctly, they are a very powerful manufacturing tool. **BE EXTREMELY CAREFUL** when working with a laser system. Read this manual completely before installing, servicing, or operating the equipment. Failure to follow this manual's instructions, not using Personal Protective Equipment (P.P.E) or not taking adequate precautions may result in personal injury or even death.

- **NEVER** leave the laser equipment unattended when it is in operation.
- **NEVER** allow people without proper qualification or training to install, operate or do equipment maintenance.
- **ALWAYS** pay attention to the work in progress and be careful to react to any abnormality or possible threats.
- **ALWAYS** wear Personal Protective Equipment (P.P.E) such as safety glasses , gloves, footwear, industrial safety clothing, respiratory and hearing protectors.
- **NEVER** cut and / or engrave disapproved or dangerous materials such as PVC or other materials that generate harmful gases.
- **NEVER** leave the laser tube access door open except when replacing the tube.
- **NEVER** insert or pass through any object in the path of the laser beam.
- **NEVER** observe the path of the laser beam directly.
- **ALWAYS** keep the work table free of combustible, flammable and / or explosive materials.
- **ALWAYS** keep the work table clean and remove any object other than the material to be cut and / or engraved.
- **NEVER** leave the work area cover opened while the laser is operating.
- **NEVER** cut or engrave metals, mirrors, or highly reflective materials to avoid lens or mirror damages.
- **ALWAYS** confirm that the fume extractor, air compressor and water chiller are working before turning on the laser.
- **ONLY** trained personnel are authorized to disassemble or modify the laser machine, since doing so can result in electrocution due to parts that operate with high voltages.
- **ONLY** trained personnel are authorized to install, operate, or maintain the laser system.
- **ALWAYS** wear approved Personal Protective Equipment (P.P.E) to prevent injuries.
- **ONLY** manufacturer or authorized distributor parts and spare parts are allowed to be used in the laser system.
- This is a **CLASS 4 LASER.**
- There can be both visible and non-visible radiation.
- Avoid exposing your skin or eyes to direct or scattered radiation.
- The wave length generated by the laser tube is 10.6um.
- Use approved eye protection for a wavelength of 10.6um when working with or around the equipment.
- Press the **EMERGENCY STOP** button located on the LED panel, in case of:
  - Fire.
  - Abnormal sounds.
  - Injuries.
  - Any other emergency situation.



2. UNPACKING AND PRE-ASSEMBLY

Attention: When placing the machine in its final location, keep in mind that you must keep a space wide enough for a correct installation and handling of the laser tube and peripheral equipment (Chiller, Fume Extractor and, Air Compressor).

1. Use a drill with a 5/16 chuck to remove each of the screws from the wooden box.

2. Remove all plastic protections and foams that cover the machine.

3. Open carefully each of the machine's doors and remove the boxes and accessories in its interior.

Attention: The laser tube is fragile. It must be handled carefully

The two driving belts may be secured to prevent rail movement. If so, remove the zip ties and carefully move the rail back and forth to make sure it can move freely.

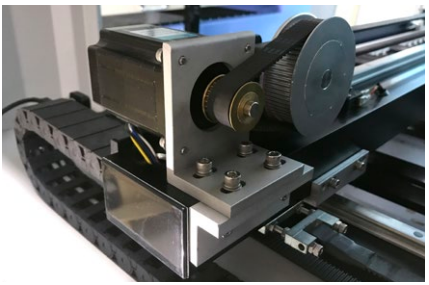
Zip tie to prevent rail movement.

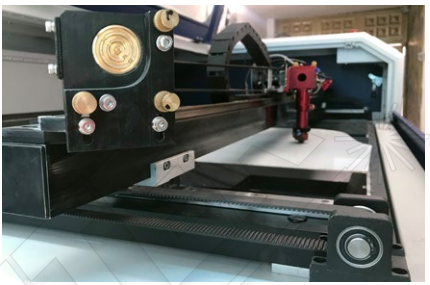
4. Remove the steel pallet under the machine, leaving it on its wheels.

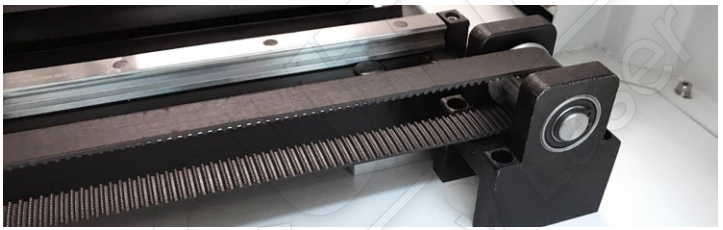
In case the floor's surface is not level, turn the orange Wing Nut to lower or raise the rubber bases of the leveling caster wheels.

3. SYSTEM OVERVIEW:

3.1 Mechanical Drive System.



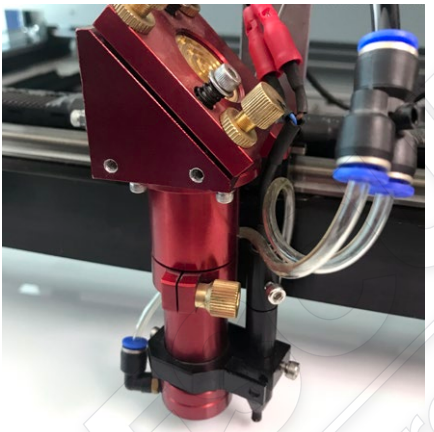


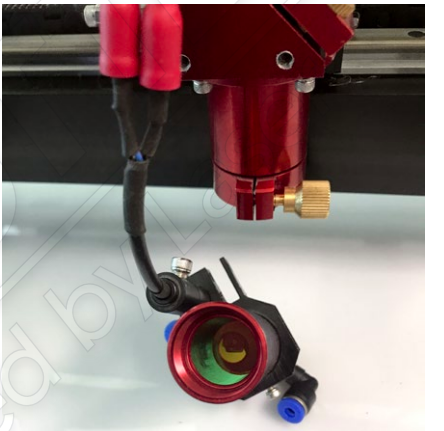


3.2 Optical System.

Attention:
The front surface of the reflection mirror should be placed facing the laser tube.

Attention: High voltage power supplies can generate voltages higher than 10,000V. Strong static electricity might be generated for a short period, even when the power supply is off. **Do not directly touch the wires at any time.**





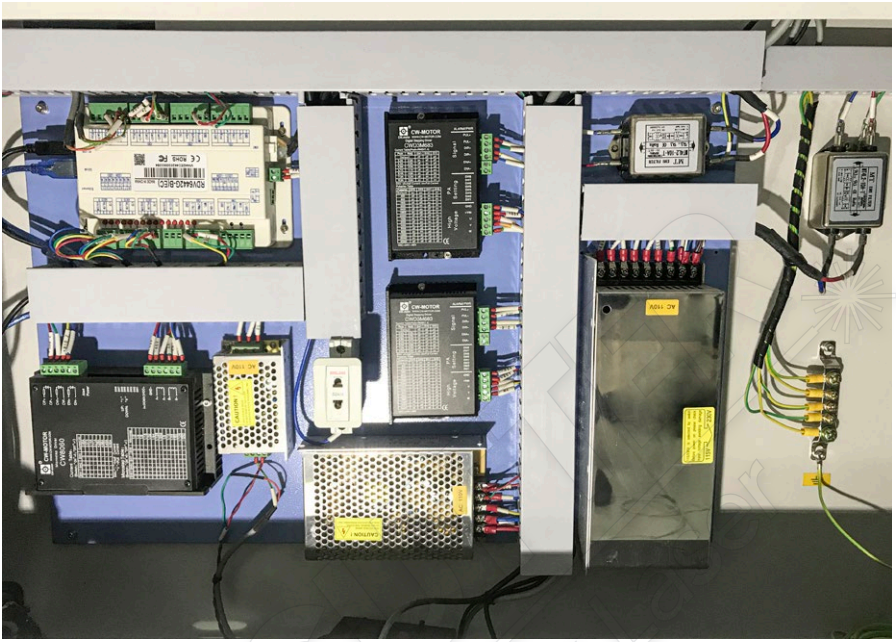
Attention: When changing the optical lens, remember that it should be placed with the flat surface facing the work table (down).

3.3 Control System

Ruida Control System

Ruida Control Panel

Ruida Control Board



Electrical Cabinet

Control Panel main buttons

Power Supply

3.4 Back

3.5 Peripheral Equipment

Industrial Water Chiller

Air Compressor: *110V 60 Hz.*

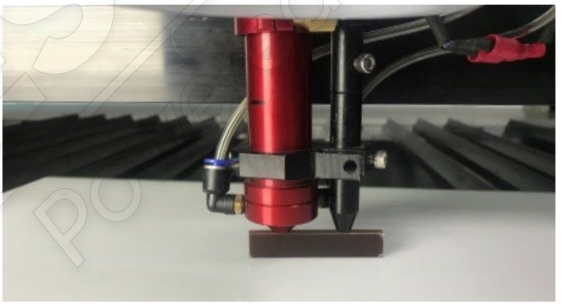
Note: peripheral equipment may vary.
In the case of the Water Chiller, there are different references depending on the model of the laser machine.

Fume extractor:
700 Watts, 3400 r/min, 110V, 60 Hz.
Ducts: *Corrugated Rubber Pipe 183cm x 15 cm.*

3.6 Accesorios

Toolkit.

Attention:
There might be certain differences between the accessories for each model.



Focus measurer to adjust the position of the laser head.

4. INSTALLATION

4.1 Conditioning

4.1.1 Work Area Conditioning:

Make sure the work area is free of condensed water, electromagnetism, strong air currents, pollution, among others. The workplace temperature should be between 10 ° C and 38 ° C, humidity should be between 10% and 90%. Make sure of having access to two 110V/60Hz grounded outlets.

4.1.2 Operator:

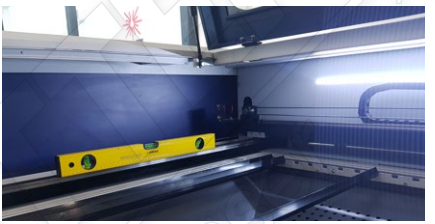
The operator must be properly qualified and trained to install the laser system. Additionally, the operator must have read this manual and be aware of the risks involved when working with a category 4 laser or high voltage equipment.

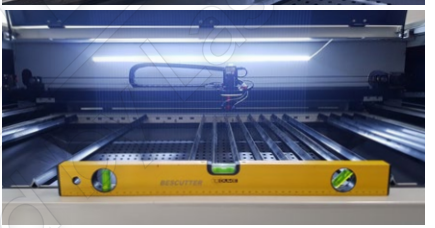
4.1.3 Other adjustments:

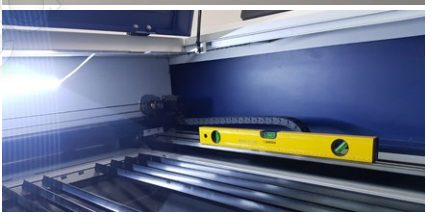
Users must prepare the materials and supplies needed, including: 8 liters of distilled water (you can use ionized water as a second option) for the Chiller, two (2) AC110V grounded electrical outlets, a computer, a proper exhaust system, testing materials, among others.

4.1.4 Machine Leveling:

The machine must be properly level. Use a conventional spirit level to measure each side of the working area (y-axis) and the working table (x-axis).





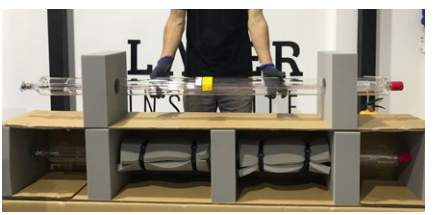


4.2 Installation

4.2.1 Laser Tube Installation

Open the rear cabinet door (where the laser tube is placed) and remove the top of the Laser tube mounts.

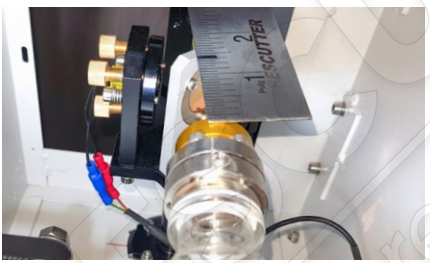
Attention: do not move or adjust the bottom parts of the laser tube mounts, because it could affect the laser path significantly.



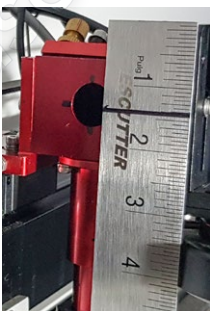
The laser tube is protected by pads inside its packaging to prevent damage during transport. **It takes two people to carefully remove the laser tube from its packaging.** One of the two people should hold the laser tube firmly by the middle section and the other person should remove the pads that cover it. It is important that the pads are carefully removed instead of being pulled since both ends of the tube have connections and water inlets that are fragile.

Note:
sometimes the screws are packed separately inside the tube box.

Place the laser tube in the mounts keeping its positive terminal on the opposite side from the **first (1st) reflective mirror.** Make sure that the negative terminal (right side) is located of 1 ⅛" aprox. away from the first calibration mirror.



Verify that the height of the tube on the worktable matches the height of the third reflective mirror, as seen in the following image:

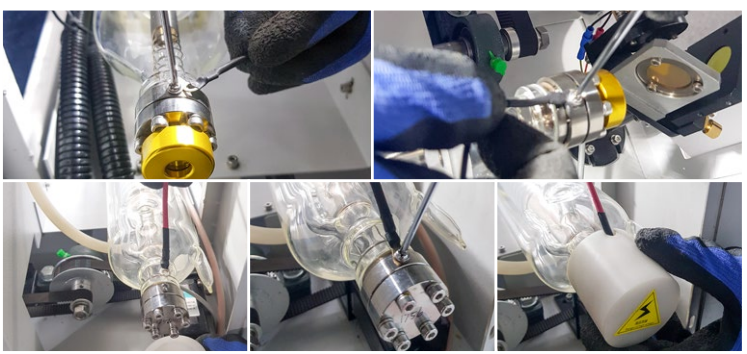


Make sure that the water outlet and the low voltage wire are connected on the same side as the first (1st) reflective mirror.

Connect the water inlet /outlet hoses and high/low voltage wires. Keep the rubber cover to protect the high voltage connections.

Make sure that the water inlet and outlet hoses are tight enough to avoid drips or spills. The water outlet must be located upwards to avoid bubble creation.

Remove the rubber cover and connect the red wire on the left side of the laser tube. Connect the black wire on the right side of the tube.



Warning:
Install the upper parts of the mounts and adjust them without tighten the screws too much.

Use a spirit level to make sure that the tube is perfectly level; it is a very important step because it avoids laser beam path misalignments.

Attention:

- Maintain a safe distance between the laser tube and the first reflective mirror to prevent damage.
- Use adequate force to manipulate the tube, excessive use of force could break it.
- Prevent the creation of bubbles inside the tube to maximize cooling efficiency.
- Water hoses must be properly secured to prevent dripping and must be placed in a straight way to minimize water flow resistance.

Warning: Make sure that all hoses are properly connected to the tube. If not, it may cause serious damages (including laser tube explosion).

4.2.2 Water Chiller Installation:

After you have installed the laser tube, please verify the Water Chiller connections.

Remove the lid located on top of the Chiller and **add distilled** water in the tank until it reaches the range "NORMAL".

When the chiller is in use, a certain amount of water will be pumped into the laser tube decreasing the water levels in the tank. Taking this into account, make sure that the water level remains as "NORMAL".

Note: the green section located in the back of the chiller indicates the **"NORMAL"** level.

Then connect the water outlet of the Chiller to the water inlet of the laser machine *(WATER-IN)* and, the inlet of the chiller to the outlet of the laser machine *(WATER-OUT).* Finally connect the signal cable that comes from the laser machine to the alarm connector *(ALARM OUTPUT)* of the chiller.

Starting the machine:
After the installation is completed, press the power switch on the Water Chiller. You will hear different noises (loud beeps). The water should then start to flow into the laser tube. The green light in the front of the chiller will light when the water flow is correct. If there is any problem an alarm will be generated with a loud beep and the red light will turn on. If the chiller does not work properly, the laser beam will not be generated.

Attention:

- Only use distilled water.
- Never turn on the chiller without filling the tank with water.
- The water in the laser tube must flow from the high voltage terminal to the low voltage terminal. Otherwise, the laser tube could be damaged.
- Change the water every two weeks. In case the room temperature is below the freezing point (32 ° F or 0 ° C), the water must be drained to prevent water tank damage.

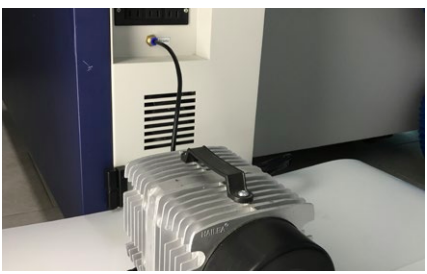
4.2.3 Fume Extractor Installation:

Connect the corrugated ducts (bellows) from the machine outlet to the air inlet of the extractor; adjust it using the metallic clamps. Connect the fume extractor outlet to an extra exhaust system for additional air purification.

This ending must be connected to the compressor outlet, and the other one to the laser machine air inlet located in the back (under the name of 'Air pump').

4.2.4 Air Compressor Installation:

To connect the copper adapter to the compressor, cut 4 cm of one of the silicone hoses of the chiller, then insert the smaller one and secure the union using zip ties, as shown in the image:



Attention: the air compressor is a very important part of the laser system. Compressed air passes through the hoses to the laser head removing smoke or any other type of pollutant, regulates the temperature of the lens and some materials, avoiding the fire. The amount of air can be graduated from the air flow valve. It is important to check the compressor connections and make sure it is working at all times while the laser is in use.

5. EQUIPMENT INSPECTION AND CALIBRATION

5.1 Before turning on the equipment

Before turning on the laser, inspect all connections (electrical, mechanical, peripheral equipment, etc).

Warning: The two driving belts may be secured to prevent rail and laser head movement. If so, remove the zip ties and carefully move the rail back and forth to make sure it can move freely.

5.1.1 Start-up process

After turning on the machine and peripheral equipment, make sure that the water from the laser tube flows in the right direction. Also check that the water inlet/outlet hoses and power cord are connected correctly. Make sure there there are not air bubbles in the laser tube.

Turning the laser system on:

1. Ensure power supply and make sure that breaker located in the back of the machine is up.
2. Turn the main power switch to the right.
3. Make sure the emergency switch is not active; to deactivate it, turn it to the right.
4. Activate the switch (located in the laser unit) that enables the chiller and the compressor.
5. Turn the chiller on.
6. Turn the fume extractor on.

Turning the laser system off:

1. Turn off the switch that enables the chiller and the compressor.
2. Turn off the laser unit.
3. Disconnect the fume extractor.

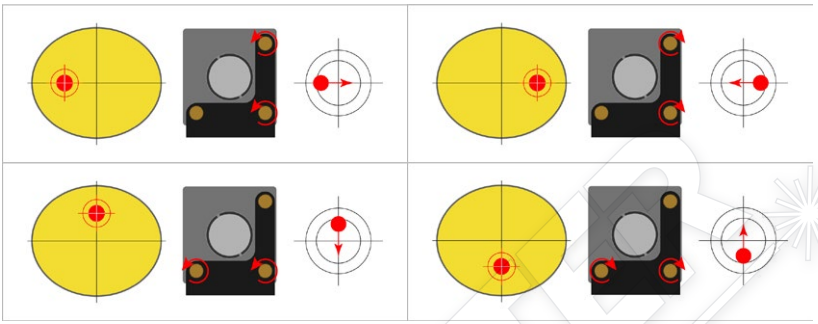
Note: these procedures may vary according to the laser equipment model.

Warning: The laser head initially moves to the top right corner every time the machine is turned on, if not, press the "Esc" button to prevent the movement of the laser head. (Go to section 8 of this manual, for a possible solution).

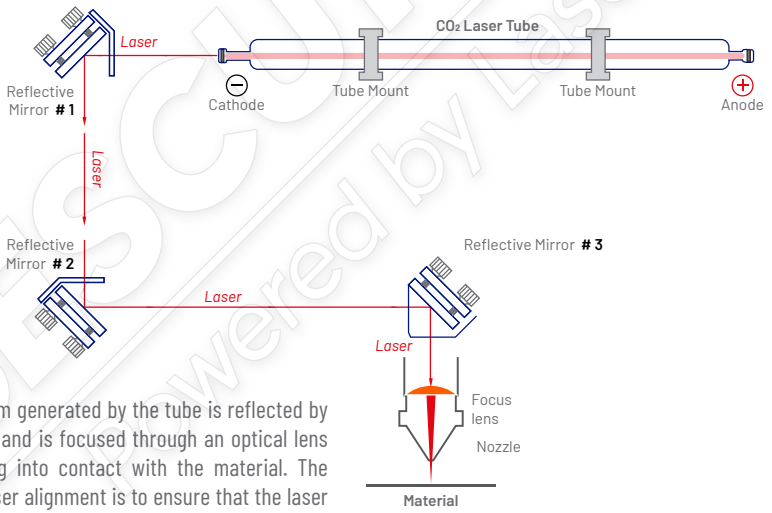
5.2 Laser Beam Alignment

In the toolkit you will find the implements needed to calibrate the laser system (acrylic, tape, etc). Next, you will find an explanation on how to adjust the mirror screws to perform a successful calibration of the laser beam.

5.2.1 Screw adjustments to guide the path of the laser beam



The optical system consists of a laser tube, three reflective mirrors, an optical lens and, the laser head. The following diagram corresponds to the path of the laser beam:



The laser beam generated by the tube is reflected by three mirrors and is focused through an optical lens before coming into contact with the material. The purpose of laser alignment is to ensure that the laser beam path is correctly centered from the laser tube to its exit through the laser head nozzle.

5.2.2 Laser test run

Warning: Be cautious in case you press the 'Reset' button on the control panel because the **laser head will automatically move to the upper right corner.** Make sure that the work area is free, before operating the machine.

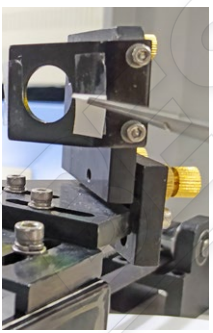
Note: After turning on the machine, wait for the control panel to turn on for you to use it.

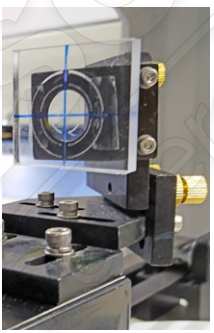
First, press the arrows on the control panel to **make sure the laser head can move freely.** If everything works correctly, continue with the laser beam calibration.

Attention: if after pressing the **'Pulse'** button, the machine does not generate the beam, press the red **'esc'** button twice and then press **'Pulse'** again.

Locate one of the acrylic pieces *(provided in the tool kit),* then draw a crosshair or a cross on the acrylic using a marker. *(This is optional).*

Cut a piece of double-sided tape and use it to glue the acrylic to the first mirror **(without dirtying it).**





Place the acrylic in the mirror making sure that the cross is located in the center of it. **Then check the maximum power by pressing the "Max power" button. Configure this parameter with a value of 30%.**

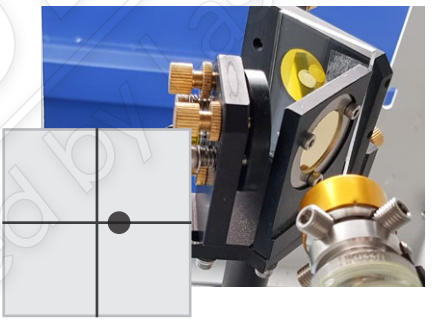
Press the **'Pulse'** button on the control panel and verify that the light beam had hit the acrylic piece (use the same piece to perform the entire calibration process).

5.2.3 Laser Beam Alignment: from the tube to the first reflective mirror

Make sure of keeping a distance of 1 ⅛" aprox. between the laser tube and the first mirror before continuing
(4.2.1 Laser Tube Installation).

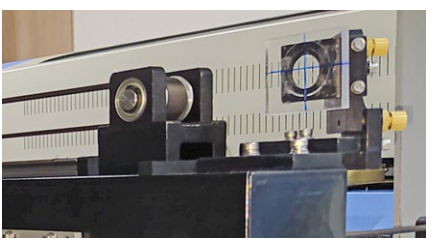
Place one of the acrylic pieces on the first mirror. Then press the "Pulse" button on the control panel.

Verify that the laser had impacted the center (slightly tilted to the right) of the first reflective mirror.

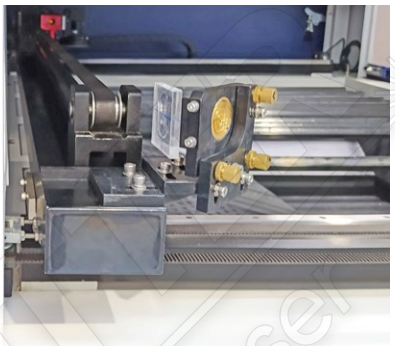


5.2.4 Laser Beam Alignment: between the first and second reflective mirror.

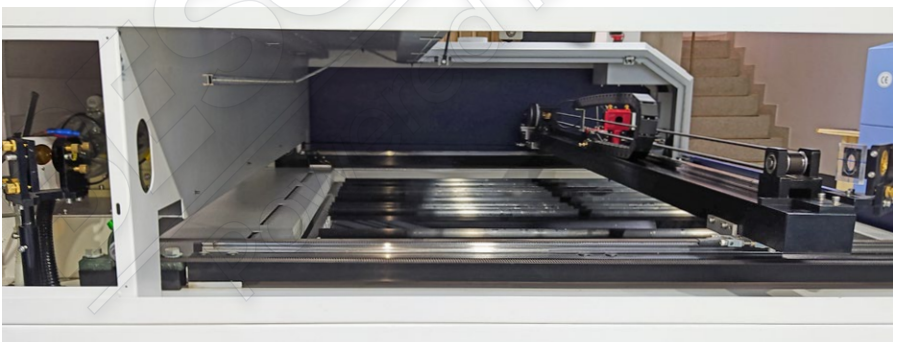
Step 1: Place the acrylic piece on the second reflective mirror. The second mirror is located on the left end of the rail.



Step 2: Press the movement buttons on the X-Y axes of the control panel to move the laser head to the top left end of the work table (the closest position to the first and second reflective mirror). Press the 'Pulse' button and make sure the laser hits within the area corresponding to the second mirror.



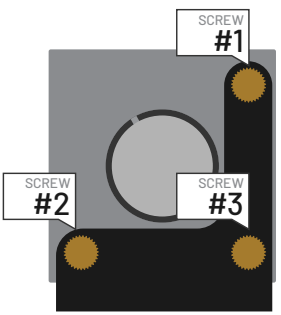
Step 3: Press the scroll button on the Y axis to move the rail and laser head to the bottom left end (the furthest position from the first reflective mirror). Press the 'Pulse' button and check if the marks from the Step 2 and 3 are located one above the other. If not, tighten the screws of the first reflective mirror.



In case the mark from the **step 3** is placed:

To the left: loosen the screw **#2**
Up: loosen the screw **#1**
Up left diagonally: tight the screw **#3**
To the right: tight the screw **#2**
Down: tight the screw **#1**
Down right diagonally: loosen the screw **#3**

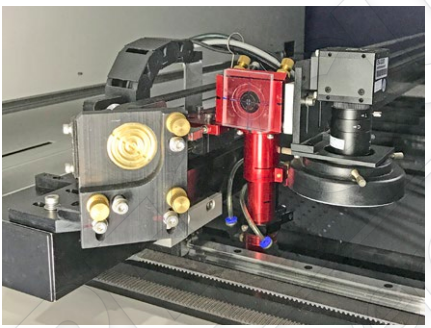
Make these adjustments until both marks are located one above the other.



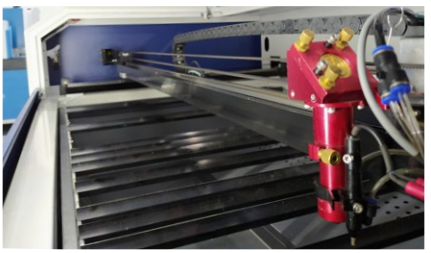
5.2.5 Laser Beam Alignment: between the second and third reflective mirror:

Note:
the screws on the first mirror already are calibrated. In this step the screws to be manipulated are those from the **2nd REFLECTIVE MIRROR.**

Step 1: Place the acrylic piece on the third reflective mirror. The laser head must remain at the minimum distance between the 2nd and 3rd reflective mirror. Press the 'Pulse' button and check the position of the laser mark.



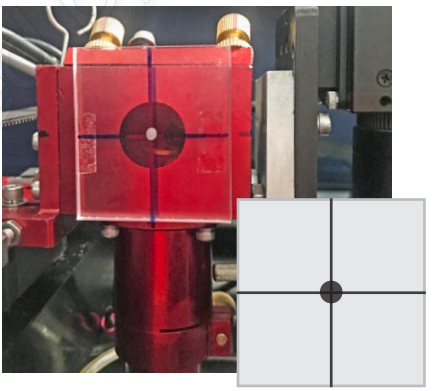
Step 2: Move the laser head to the furthest point between the 2nd and 3rd mirror and press the button 'Pulse'. Check if the mark matches the previous one (they overlap each other); otherwise, tighten the three screws as indicated in the previous section. *(5.2.1 Screw adjustments to guide the path of the laser beam).*



Step 3: After the marks match, move the laser head from right to left and make new marks by pressing the button 'Pulse' to verify that they remain one over the other.

Final mark between the 2nd and 3rd mirror:

Respectively, from the second reflective mirror up to the third, the laser should fit into the central part of the mirror. If not, calibrate the laser again until it hits the center of the third reflective mirror.



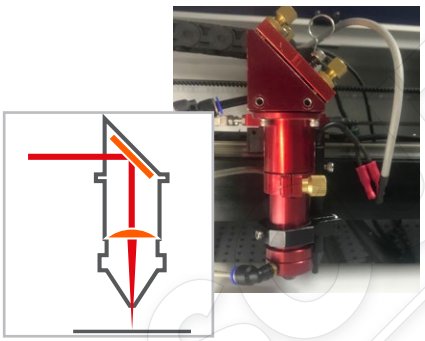
In case the mark from the **step 3** is placed:

To the left: loosen the screw **#2**
Up: loosen the screw **#1**
Up left diagonally: tight the screw **#3**
To the right: tight the screw **#2**
Down: tight the screw **#1**
Down right diagonally: loosen the screw **#3**

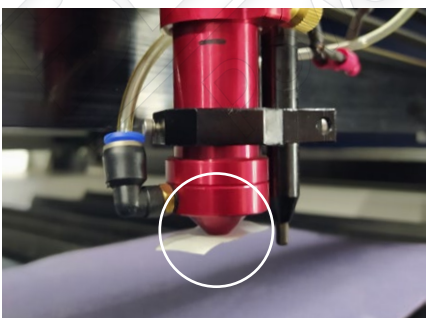
Make these adjustments until both marks are located one above the other.

5.2.6 Vertical alignment: From the third mirror to the laser outlet *(nozzle)*

Note: the screws on the first and second mirrors already are calibrated. In this step the screws to be manipulated are those from the **3rd reflective mirror.**

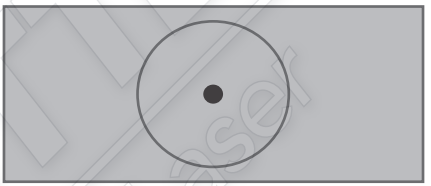


Paso 1: Attach a piece of masking tape in the output of the laser head (nozzle).



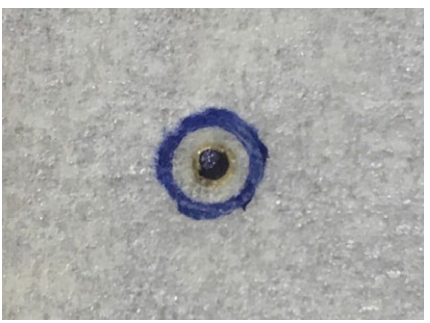
Paso 2: Configure the max power parameter with a value of 18%, to test vertical calibration.

Paso 3: Press the 'Pulse' button and check if the mark and the nozzle output are concentric, as shown in the image below. If not, please adjust the 3 screws of the third reflective mirror, located on the back top of the laser head.

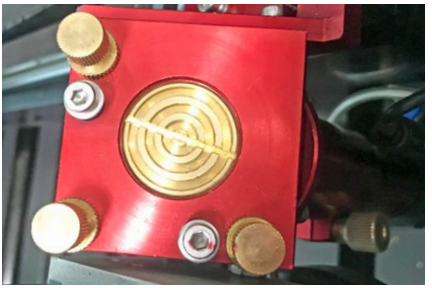


Concentric laser mark

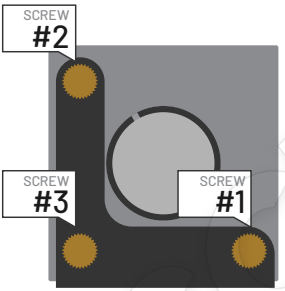
Note: if the laser beam output is not centered, use adhesive tape once again and tighten the 3 screws of the third reflective mirror until the mark laser hits the center.



The laser mark and the nozzle output must be concentric (see previous image). If not, tighten the screws **#1**, **#2** and **#3** of the third reflective mirror.



Note: Please note that the order of the screws, and the movements to calibrate the **3rd reflective mirror** (located on the laser head) **are different from the previous ones.**



In case the mark from the **step 3** is placed:

Up: tight the screw **#2**
To the right: tight the screw **#1**
Down left diagonally: tight the screw **#3**
Down: loosen the screw **#2**
To the left: loosen the screw **#1**
Up right diagonally: loosen the screw **#3**

Make these adjustments until both marks are located one above the other.

Attention:
The laser path must be adjusted after maintenance and / or optics replacement. If not, the quality of the cut will be affected and may cause damage to the lens.

6. MAINTENANCE

6.1 Water Chiller

It is recommended to clean the water tank and change the water every 2 or 3 weeks.

Attention: Before turning on the machine, make sure the water is at its normal level, and it is circulating in the tube freely, so that an alert won't be generated.

6.2 Fume Extractor

To perform general maintenance of the fume extractor, you must turn it off and then remove the ducts (bellows). Loosen the screws to remove the outer cover of the extractor, and proceed to clean it taking away all the solid residues inside and outside the fan; check the blades and clean them with a brush. Finally, put the cover again and tighten the screws back.

The fume extractor can accumulate solid particles that may alter its suction capacity, causing unusual noises and inefficient operation.

6.3 Mirrors and Lenses

Attention: The machine must be turned off.

We suggest to daily visually inspect the mirrors and lenses, and clean them whenever it is necessary to ensure optimum performance. The third mirror and focus lens tend to require more cleaning and care, especially when the gas extraction is not optimal.

Use a soft piece of cloth or tissue to clean the focus lens and mirrors. Use an optical cleanser or 91% isopropyl alcohol to moisturize the tissue, making sure that it is not excessively humid.

Then, carefully rub the lens or mirror to remove the dust and residues on the surface. Use different parts of the tissue to ensure that it is clean.

When you have removed all visible contamination, use a new tissue to clean the surface again using zigzag motions.

Finally, let it dry before placing it back.

Lens / Mirror

Attention: clean the mirrors and lenses carefully. Avoid bumps and any surface damage. Remember to install the lens **with its flat-side towards the worktable.**

6.4 Guide Rails

We suggest cleaning the guide rails at least twice a month. Use a dry cotton cloth and lubricating oil (you can use WD-40 multipurpose lubricating oil). **Perform this process when the machine is off.**

Manually move the laser head towards one of the ends (left or right). Use a dry cloth to clean the rail until it is shiny. Then, lubricate the rail (you can use sewing machine oil, 3 in 1 oil, **DO NOT use motor oil**), and slowly push the laser head back and forth to distribute the lubricant evenly.

7. CO2 GLASS LASER TUBE: USE PRECAUTIONS

- Before using the laser tube, connect the water chiller and make sure that the water enters the tube through the left side and verify that it exits through the upper right side.
- Make sure there are no bubbles in the tube and that the water flows evenly on the inside.
- The water temperature must be checked constantly. Maintain it between 12°C and 30°C.
- Avoid dust accumulation on the high voltage electrode. Keep the electrode away from metal as much as possible to avoid fire risks.
- Keep the tube dry to avoid fire risks.
- The laser tube is made of glass, making it fragile. Avoid sudden movements and excessive use of force when handling the tube.
- Avoid operating the tube over its limits. **Keep the maximum power parameter <= 85%** (lower or alike). The efficiency of the laser tube is 80% of the nominal power for a longer useful life.

8. TROUBLESHOOTING

SITUATION	ANALYSIS	TEST METHOD
There is not laser output during machine operation.	**1.** Check if the laser tube or laser output works normally. Check if the 2 switches that enable the water chiller are on. The potentiometer must be adjusted to allow the laser output.	Check if the tube is in good condition or if there is any abnormality in the laser path.
	2. Check if the water circulates normally (water must flow freely). If there is no water flow, proceed to the test method.	Clean the water chiller tank.
	3. Check if both the signal light on the laser power supply and the cooling fan are on. If they are not, proceed to the test method.	Use a multimeter to check the voltage levels. In case they do not work well, the laser power supply must be changed.
	4. Press "Pulse" if there is no light proceed to the test method.	Verify that the maximum power in the control panel is 85%. If the issue persists, the laser tube probably has a problem.
	5. If the laser beam is generated after pressing "Pulse".	Probably the Chiller operation alarm is on or a sensor is faulty and needs to be changed.
	6. The water chiller works properly but still there is no laser beam.	Check if the mainboard has problems in its connections, if the problem persists it should be checked and/or changed.
Superficial engraving or cut	**1.** Check the power and speed of the laser beam. If the speed is too fast, the power is low, and the water temperature is too high (more than 30°C).	Increase maximum power, reduce the speed, add ice to regulate temperature. If the temperature problem persists, drain and change the water in the chiller
	2. Check the engraving depth to see if it is normal.	Increase graphics resolution or scanning precision.
	3. The engraving is still superficial.	Check if the mirrors are dirty or damaged or if the laser beam path is deviated, if so, perform mirror calibration.
	4. Connect a tester or multimeter to the main voltage source, if it shows 20mA, but the depth is still low.	The laser tube is nearing the end of its useful life and needs to be replaced.

SITUATION	ANALYSIS	TEST METHOD
The machine turns on and off or the laser output is unstable	**1.** Check if the mirrors are too dirty or damaged, or if the laser beam path is skewed.	Clean or change mirrors, adjust the laser beam path through the mirror calibration.
	2. The light path of the mirrors is normal and the water flow is in the "normal" range.	Drain the water from the laser tube and chiller. Then fill it again with distilled water.
	3. Water flow is normal.	Probably the Chiller operation alarm is on or a sensor is faulty and needs to be changed.
	4. If the problems persist probably the mainboard, the laser power or the laser tube itself are generating this problem.	Check each of the previous parts alternately to diagnose the problem, if the issue persists contact our Tech Support Department.
The size of the output graphics is not correct.	**1.** Open Coreldraw to check if the Graph Plotter unit is 1016 when you generate a PLT file.	Change the plotter unit to 1016.
	2. Check if the radius of the mark is suitable	Verify if the radius of the mark in the software is the same radius of the mark in the material.
The machine restarts abnormally.	**1.** The direction is correct when rebooted, but the rail does not stop when the limit is reached (if it is a new machine, please check the mainboard parameter).	Check if the laser head collides abruptly during movement. If so, probably there is a problem with the mainboard or any proximity sensor (x-axis or Y-axis) and you should replace it.
	2. The rail resets normally, the laser head does not move, maybe the tensioner jams or the motor shaft breaks, the parameter is wrong.	Change the corrugated belts or the small motor, modify the motor movement parameter (clockwise or counterclockwise), check that there are not objects blocking the movement of the belts.
	3. The movement of rails is opposite to the movement in the control panel, and hits one side of the machine.	The motor movement parameter of the main board is wrong. Stop the machine by pressing the "emergency" button and modify the parameter of the mainboard from the software. Download the upload configuration again.
	4. Drivers or motor problem.	Check the stepper motor drivers connections (black boxes) and verify that everything works correctly. In case they do not work correctly, contact our Tech Support Department.

SITUATION	ANALYSIS	TEST METHOD
The machine stops in the middle of the engraving process, skips engraving, or engraves Incorrectly.	**1.** Check the condition of the equipment's ground connection. Verify that it is standard (the resistance should not be greater than 5Ω).	Modify the ground connection for it to meet the standard resistance requirement (lower than 5Ω).
	2. Check if the original design pattern has errors like crossed graphics or something is missing.	Fix the errors using a design software like Autocad, Corel Draw, Adobe Illustrator, etc.
	3. Other patterns don't have this problem, only some patterns present this problem.	Compatibility issues between RDworks and design patterns. Check if the design file extension is compatible with the machine (DXF, PLT, Ai, etc). Re-design the patterns.
	4. If the problems persist	Maybe it is a computer's serial port problem; check the COM port (USB port). If the problem persists reinstall RDworks software.
When turning on the machine, the laser head does not move towards the top right side of the working table .	**1.** Laser head movement problems.	Press the "Esc" button to stop the movement.
	2. Initial movement of the laser head towards a wrong origin.	Go to RDWorks (software). Follow the extension: File/Vendor Settings and click on Read & Write.
	3. If the problems persist.	Go to File/Vendor Settings and activate the Invert Direction option in the x or y axis (according to the situation). Then press the Reset button on the control panel.

Read the instructions and recommendations of the laser system before using it. This manual is considered as a permanent part of the laser system and should be kept with the machine in case it is resold.

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