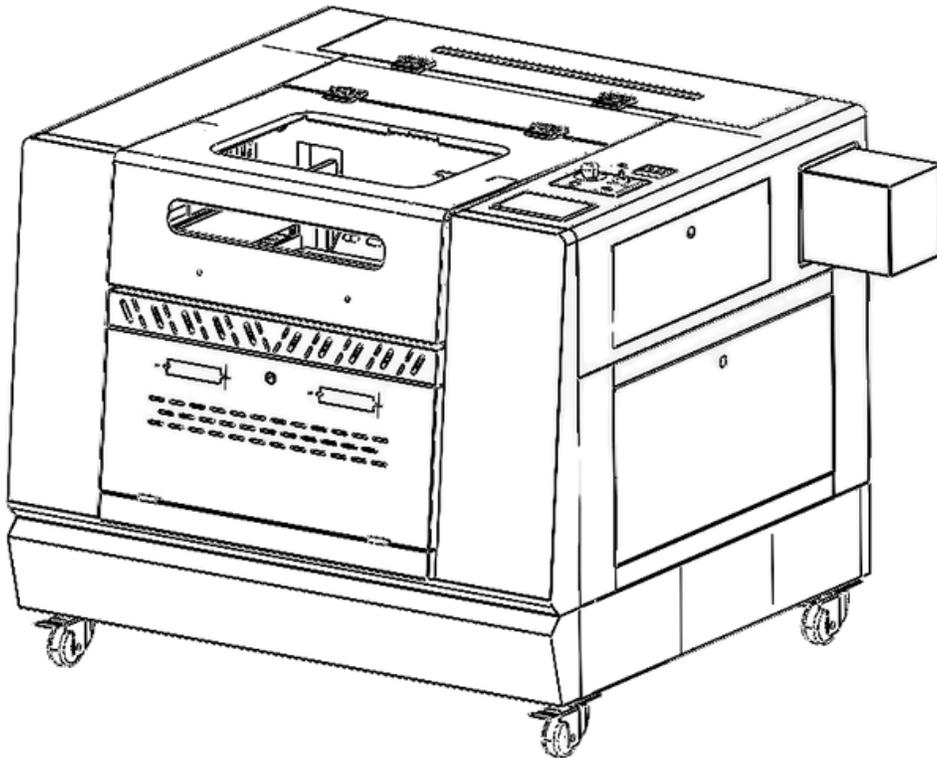# SA LASER

RAZOR SERIES
CLASS IV CARBON DIOXIDE LASER
USER MANUAL

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INTRODUCTION

The SA Laser Razor series consists of industrial gantry style carbon dioxide based lasers designed for cutting or engraving a range of materials. Whithin the protective housing, the laser beam traverses three mirrors from the source on a two axis moving frame. The laser beam is then reflected into the focsuing lens for irradation of the workpeice.

OPERATION

Operational procedures include programing a unique pattern on the software, opening the protective housing to place material onto the workspace, closing the housing if possible, initiating the cutting / engraving process, opening the protective housing and removing the finished workpiece. Because the machine can cut materials that exceed the dimensions of the workspace, the housing includes removable panels (pass-through).

MAINTENANCE

Maintenance consists of routine cleaning of the scrap tray and mirrors. These procedures are performed with the machine off.

SERVICE

Service includes lifetime support from out team as well as repair when needed. Procedures during service may require the machine to be turned on. SA Laser recommends that only trained personnel complete service or repair.

WARRANTY

The standard 2 year warranty applies to the laser machine itself and all parts purchased from SA Laser

The standard 2 year warranty covers any defects in material or workmanship while the machine is operating under normal use and for its intended purpose during the warranty period.

During this warranty period, SA Laser will repair or replace any part or product that is proven defective while the machine is being used under normal conditions and for its intended purpose.

For any major warranty claims, the buyer is responsible for shipping or transporting the machine to SA Laser. The machine will be shipped back to buyer at no cost after warranty work has been completed. If warranty claim is not substantial, spare parts can be shipped out from SA Laser to buyer at no cost to the buyer.

Any and all modifications that are made to the machine must have written consent from technical support or the warranty can be voided.

SAFETY

The SA Laser Razor series is a Class IV laser product, as defined in International Standard IEC 60825-1

The Razor series complies with 21 RFC 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

During normal operation, the output of the embedded laser is contained. The laser cabinet has a main access door with a safety interlock that turns the laser off if it is opened during operation. There are also non-interlocked doors that can be opened during operation. If any non-interlocked doors are opened during operation, proper personal protective equipment (PPE) is required.

The visible output beam of the laser diode pointer (Red Dot) is accessible to the operator. This red dot is potentially hazardous if the beam is directed into the eye. Its beam path is located well inside the protective housingm, and under normal operation, no hazardour levels of laser radiation can escape.

The American National Standards Institute (ANSI) safe use of lasers Z136.1-2000 is the standard reference for laser safety use for operators. The standards are developed by the ANSI Accredited Standards Committee (ASC) Z136, a collaboration of the leading experts in the field, and are the authoritative standard in the United States for safe laser operation and practices. Although the standards are not "law," compliance with the standard is often mandated by federal entities. It is the operators responsibility to ensure the installation and operation of the SA Laser EDGE system is performed in accordance with all applicable laws.

Operators must read and follow the operating requirements and specifications listed in this manual to not cause harm to the machinery, themselves, or others. Highly recommended practices include keeping an ABC fire extinguisher nearby, in the event any fire is started from the cutting / engraving process. Ample forced or natural ventilation will carry away toxic, harmful fumes or particulates from the work area, during normal operation of engraving. Allowing only qualified operators in the area will keep the machine performing.

The SA Laser Razor series family requires almost double digit amperage to run, so a dedicated circuit may not be needed, but be very mindful of the load on the circuit to prevent a possible electric hazard or fire.

FIRE AND MATERIAL HAZARDS

This machine uses high heat to engrave, etch and cut material. The machine should never be left unsupervised while it is in use. Leaving the machine unattended while in use can result in a fire and substantial damage to the machine or building it is in. Any damage caused by fire that is not due to defects in workmanship or the machine itself will NOT be covered by SA Lasers 2 year warranty.

Any materials that are considered hazardous to the health of the machine, operator or individuals surrounding the machine while in use are NOT recommended to engrave or cut. These materials can produce toxic fumes or cause the machine to not function properly from residues and need replacement parts.

Materials that should NOT be cut, etched or engraved:

Polycarbonate – Fumes produced by polycarbonate can cause irritation to eyes, skin and the respiratory tract.

PVC Compounds – Fumes produced by polyvinyl Chlorine can cause irritation to eyes, skin and respiratory tract. This material should not be exposed to elevated temperatures.

Vinyl – Fumes produced by vinyl that has chlorine can cause irritation to eyes, skin, and the respiratory tract. This material should not be exposed to elevated temperatures.

For safety, research a materials safety data sheet (SDS) before using on this machine. Safety data sheets give information on whether materials are safe or not to be exposed to the high heat during engraving / cutting. Any material containing chloring is not safe to you, your laser, or the individuals around you. If you are unsure about the safety of a material, reach out to us and we will help identify the safety of it.

LASER SAFETY AND RECOMMENDED POLICES

Each laser has a stack light on the top, right side of the machine. Ensure the light is only green before opening the protective housing to grab or place material into the work bed. Ensure laser rated safety glasses for 10640nm are worn while operating the machine, especially when reflective materials are being engraved / cut to prevent any indirect exposure to the laser.

Always keep access covers as well as the top lid closed whenever the machine is in operation. Avoid any direct exposure and do not stare at the laser beam while the machine is operating. Notice and understand all of the warning labels located on your machine.

The following safety measures must be strictly enforced and followed by the respective laser safety officer on location to ensure the safety of the machine and operator. SA Laser shall not be held responsible for any damages or injuries resulting from the improper use of the laser machine.

<u>**ALWAYS**</u>:
- Wear properly rated 10,640nm protective glasses when operating or keep the lid closed.
- Maintain a clean environment for proper unclogged laser cooling.

NEVER:

- Operate the laser machine, unless properly trained.
- Operate the laser near flammable or explosive materials.
- Dismantle the laser machine unless instructed to by an SA Laser Technician.
- Set anything on top of the protective housing while the laser is in use
- Use unsafe materials such as PVC and Vinyl that emit noxious gasses.
- Leave the machine unattended while in use
- Lift the lid of the machine while the laser is running
- Push or pull the laser head or the gantry while the laser is running

In case of a fire:

1. Press the Emergency Stop button located on the top right side of the machine.
2. Lift the Lid .
3. Quickly blow out the flame(s), or an ABC fire extinguisher for serious flames.

LASER SAFE MATERIALS

Plastics:
- ABS (Acrylonitrile butadiene Styrene)
- Acrylic (Plexiglass, Lucite, PMMA)
- Delrin (Acetal)
- Kapton Tape (Polymide)
- Mylar (Polyester)
- Polyethylene Terephthalate Glycol (PETG)
- Nylon (MELTS)
- Polyethylene (MELTS)

Foam:
- Depron
- Gator Foam

Textiles & Others:
- Cloth (Leather, suede, felt, cotton)
- Paper (Cardstock, cardboard)
- Rubber (Only if it does not contain chlorine teflon)
- Woods (MDF, Balsa, Birch, Red Oak, Cherry, etc.

Materials that can not or should not be cut:
- Metals (C02 machines cannot engrave metal, they can just anneal it)
- Polycarbonate
- Any material containing chlorine

SAFETY FEATURES & REGULATORY COMPLIANCE

SA Laser has incorporated specific features into the Razor series in order to meet the requirements of 21 CFR 1040. These safety features include:

- A safety enclosure, which fully encloses the engraving laser and its beam path
- Dual redundant interlock systems that turn off the engraving laser when the main access door is opened.
- A visible emission indicator on the stack light illuminates when the laser is firing.
- An emergency stop is used to immediately cease emission of the machine and laser radiation.
- A viewing optic window in the lid is incorporated to limit levels of laser radiation.
- A remote interlock functions when the terminals of the connector are not electrically joined. All laser radiation from the laser product shall be prevented.

21 CFR 1040 require that certification, identification, and warning labels be placed on laser products. Reproductions of labels on the Razor series follow with the locations specified.

While the warning labels can be found all around the machine, it is important that they are all followed. The warnings are put into place to warn the operator of safety requirements. If these warnings are not followed, serious damage to the machine or injuries to the operator can occur.

Certification / Identification

The "Certification" and "Identification" label can be found on the back right side of the machine

SA Laser	
7210 Eckhert Rd, San Antonio, TX 78238	
Model: Razor X	Serial Number: SGDXXXXXXX
Class IV Laser product	Carbon Dioxide Laser
Maximum Output Power: 130W	Wavelength: 10640 µm
Required Power: AC 110V ± 10% 60 HZ	Pulse Duration: CW
MFG Code: SA-A	Manufactured: Month Year
Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019	

DANGER

INVISIBLE LASER RADIATION — AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION

130W Max Output at 10.6 µm, CW

CLASS 4 LASER PRODUCT

Warning Logotype

The "DANGER: Visible & Invisible Radiation" warning can be found on the top, right hand side of the machine. Staring at the laser beam can cause damage to the eyes. Touching the laser beam can cause serious injuries.

Laser Aperture
The "Avoid Exposure" warning label can be found inside the working area on the laser head, as well as the back plate in the working area from mirror 1 to 2.

Non-Interlocked Protective Housing
The "Danger" labels for non-interlocked panels are located on each side of the machine, top access panel. This machine produces laser radiation, so all panles must be closed when the laser is operating, unless the pass through panel is needed.

Interlocked Protective Housing
The "Danger" labels for interlocked doors are located on the right side of the front main door, which is accessible if the interlock is defeated.

Electrical Safety
The "Danger! High Voltage" sticker can be found on the left side of the machine, bottom panel where the high voltage laser power supply is located. This label indicates that precautions should be taken when touching or handling any electrical components of the machine. Disconnect the laser from all power sources prior to opening these cabinets.

Key Control

The "POWER" key switch is installed as part of the control panel. The master switch controls the main contactor that powers on the machine. When this switch is turned off, the machine is powered down.

Emergency Stop

The emergency stop switch is installed az part of the control panel. The emergency stop switch controls the main contactor that powers on the machine. When the emergency stop is pressed in, the machine is powered down.

Emission Indicator

The emission indicator is installed as part of the control panel. The emission indicator lights up green when the machine is idle and the laser is not emitting The emission indicator lights up as yellow when there is a fault or if interlock is not closed. The emission indicator lights up red when the machine is operating.

Remote Interlock

The machine incorporates a remote interlock connector for the operator of the machine to connect it to a physical barrier or door(s) of a laser protected area. The machine will come with a jumper connected that must be rewired.

GETTING STARTED

Your new laser will be delivered in a large wooden crate like shown below. Please have a 5/16 bit to loosen all the screws holding the crate together. The crates will have pallet feet, which allow a forklift or pallet jack to be used so you can move the crate with ease.

Upon opening the crate on all sides, one of the pront panels will have sloped ramp peices to be placed on the ground. After fully unpacking the machine, unlocking the wheels and retracting the feet will allow the machine to roll off of the pallet and into place.

Below is an overview of the machine and its components

Emission Stack light

Amperage meter for the laser

Emergency Stop

Main Power Key Switch

Glass Laser source power button

Exhaust power button (If plugged into machine)

RF Laser source power button (For Duo only)

Main keypad

USB

USB connection to computer

U-DISK

U-Disk connection to controller card

CAMERA

Camera connection to computer

Y Axis

Y-Axis to Rotary toggle switch

Rotary

GFCI protected outlet

Remote Interlock

Remote Interlock Port

Main circuit breaker

Main power outlet

RUIDA KEYPAD

1-Reset
Use if machine is unresponsive.

2-Pulse
Fires the laser as long as the button is held down.

3-Focus
Initiates auto-focusing the bed to the laser head.

4-Frame
Outlines the area to be engraved.

5-Origin
Sets the job starting point.

6-Shift
Modifier key. Not used in normal operations.

7-Esc
Clears out any machine errors (yellow) or returns to the previous screen in the menu.

8-St/Pau
Starts, resumes, or pauses the current job.

9-Stop
Aborts the current job and ceases all machine activity.

10-Menu
Access menu interface to read/edit machine settings.

11-File
Accesses files that are sent or saved to the keypad.

12-Power
Allows user to change the power percentage of the laser beam.

13-Speed
Allows user to change the speed at which the job runs at.

14-Enter
Used to confirm menu changes or keypad errors.

Included with your machine is everything needed to get started engraving and cutting. The chiller, air assist, rotary accessory, blower system and accessory toolbox come included and are either inside, on the side or behind the machine upon opening. The full list of accessories are listed below:

Included Inside the Accessory Toolbox:
- Machine Keys
- Side Panel Key
- Set of Allen keys
- Screwdrivers
- lens Cleaning paper

Included with the Rotary Accessory:
- Chuck Key
- Additional outward facing chuck jaws
- Rotary Connection Cable

SETTING UP THE CHILLER

All machines in the Razor series will come with a water chiller to ensure stabilized tempuratures for the glass tubes. *The Razor 3 & Duo will come with integrated water chillers in the back that do not require setup other than filling it.*

The chiller will come with a power cable, water chiller signal cable and two pieces of silicone tubing to attach the chiller. Firstly, place the chiller near the right side on the back of the machine near the "In" and "Out" water ports.

Attach one of the silicone tubes to the "Outlet" port on the chiller and connect it to the "IN" port on the machine. Next, place the other silicone tubing to the "Inlet" port on the chiller and the other end to the "OUT" port on the machine. This will keep a constant flow of water going out from the chiller, into the machine to cool the laser tube. Locate the water indication tube in the back of the chiller next to the ports. Fill the chiller up with distilled water until water reaches the "Full" section. Next, plug the chiller into the back of the machine with the plug that says "Chiller". Next, plug in the signal cable from the back of the chiller to the machine.

SETTING UP THE AIR PUMP

The air pump will come with 6mm OD nylon tubing. The tubing will plug into the front of the air pump on the push to connect fitting to the machines push to connect fitting. The power cable should plug into the outlet called "Air" on the back of the machine, next to the chillers plug.

TURNING THE MACHINE ON

Find the main power cable and secure it into the back of the machine and plug in. Flip the circuit breaker to the upward position. Locate the key for the machine in the tool box, and insert it into the key switch and turn to the "On" position. Rotate the E-Stop clockwise to turn the machine on.

TUBE & MIRROR ALIGNMENT

OVERVIEW

Proper tube & mirror alignment is crucial to getting consistent results around the entire work bed. This process starts by leveling the gantry and rails. The rest of the process starts at the glass tube laser source in the back of your machine and ends at the nozzle of your laser. Mirror 1 is enclosed in the back left corner of your machine, close to the end of the glass tube. Mirror 2 is fixed on the left side of the gantry rail and mirror 3 is attached to the nozzle .
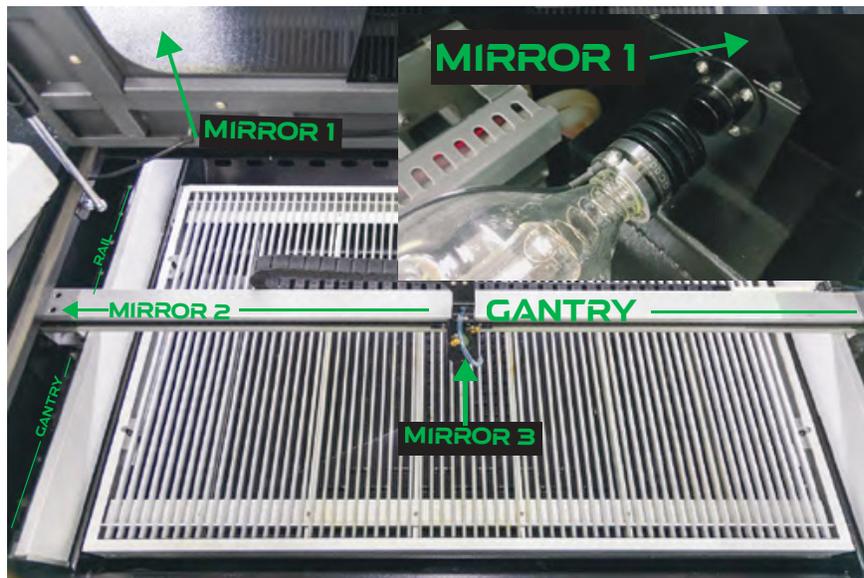

STEP 1

LEVEL AND SQUARE THE GANTRY

Place a bubble level on the gantry rails and the gantry itself to determine if you need to level the gantry. If either one is not level, adjust one or more of the 4 support feet on the bottom left and right side of the machine as needed until both the gantry and it's rails are level. You will need a 24mm wrench or channel locks to adjust the feet. A 15/16" wrench is a little big, but will still work.

Once leveled, check to see if the gantry is square to the rails. Use a measuring tool to measure from the front of the gantry rail to the front of the machine. If the left and right side of the gantry are measuring different distances from the front of the machine, you will need to adjust the gantry position. This process requires two people.
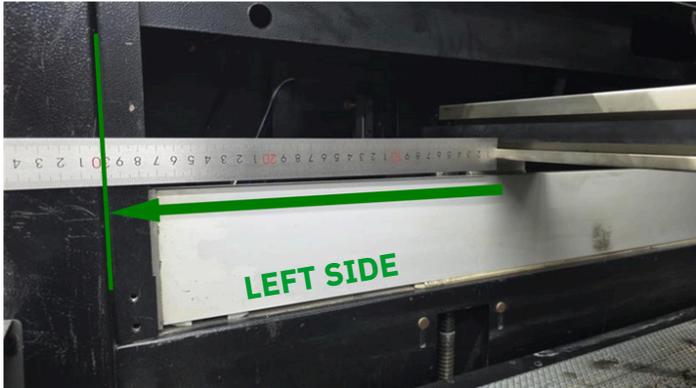
Open up the tube enclosure at the back of the machine and locate the gantry shaft coupler. Loosen the Allen screws and have a second person apply pressure to the gantry by pushing/pulling the gantry bar on each side to compensate for the difference in measurement. Once the gantry has been adjusted, have the second person hold the pressure on the gantry until you can tighten the Allen screws on the gantry shaft coupler. Once tightened, re-measure the gantry distance on each side. Repeat this process if the gantry still doesn't measure equal distance on each side.
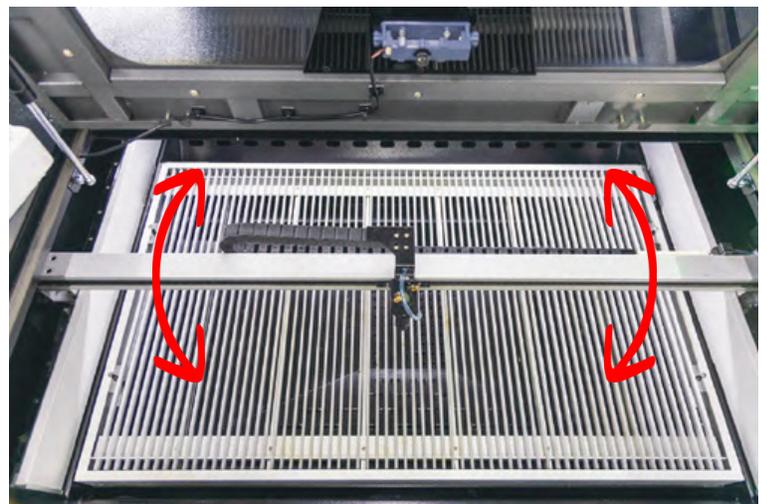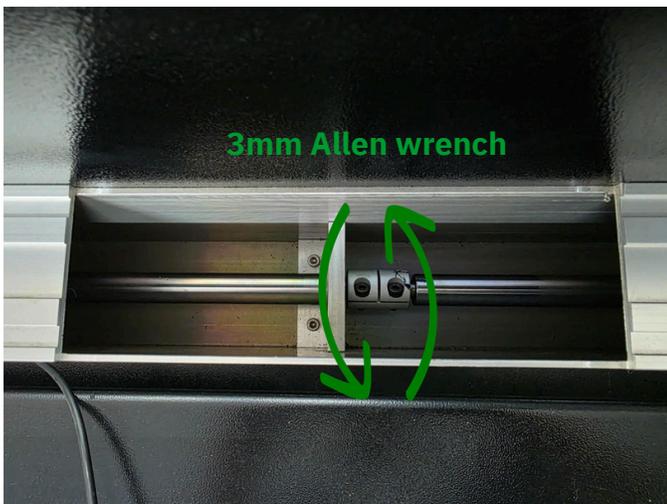
STEP 2-
ALIGN PULSE BETWEEN MIRROR 1 AND 2

PREFACE:
The glass tube is the foundation of mirror alignment and affects every mirror. If this isn't shooting straight into Mirror 1, then you will have some degree of misalignment from one side of the bed to another no matter how well mirrors 1, 2, and 3 are aligned. Improper tube and mirror alignment can manifest itself in your engravings as fuzziness, inconsistent cuts, or color/depth differences in different areas of the work bed.

The glass tube can be adjusted in 2 directions. To adjust the elevation of either bracket, loosen the four 5mm hex screws on each side of the bracket then turn the bracket dial on the bracket to raise or lower the bracket. In other words, adjust the elevation angle of the glass tube. Tighten the 4 hex screws on either side of the bracket to secure the bracket's position.
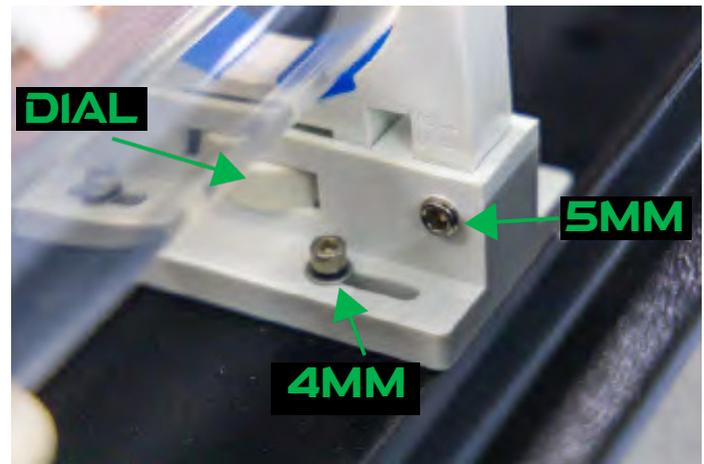
To horizontally adjust the tube, loosen all eight 4mm hex screws between the two brackets that are holding the brackets to the floor of the tube enclosure. Slide the brackets towards the front of the machine or towards the back to adjust the horizontal angle. Tighten the 4 hex screws on each bracket to secure the position. Brace the bracket to prevent the bracket from sliding while you tighten it.

RAZOR DUO access panel

Glass tube source

RF source
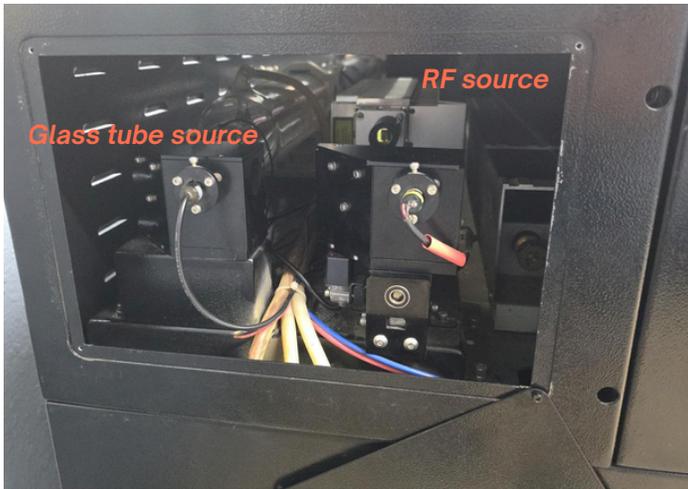
Locate the access panel in the back left of the machine by mirror 1. It's held in by 4 Philips screws. Unscrew all 4 screws to remove the access panel. Alternatively, you can remove 3 screws and loosen the bottom-right screw a little to let the panel hang by the last screw. Inside is the enclosure that houses mirror 1 and the red laser.

Mirror 1 adjustment

Red Laser adjustment
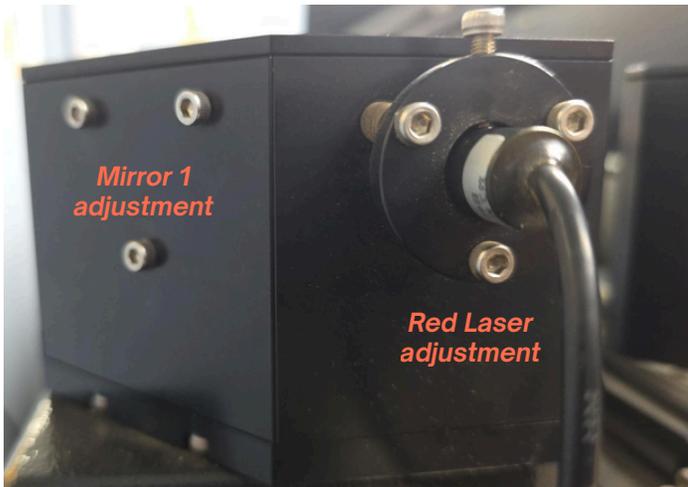
Your red laser and mirror 1 have three adjustment screws; top-left, top-right, and bottom.

Open the gantry access panel using the panel key that came with your laser. Place small piece of high-heat vinyl tape behind the circular opening that is fixed in front of mirror 2 & close the panel again.
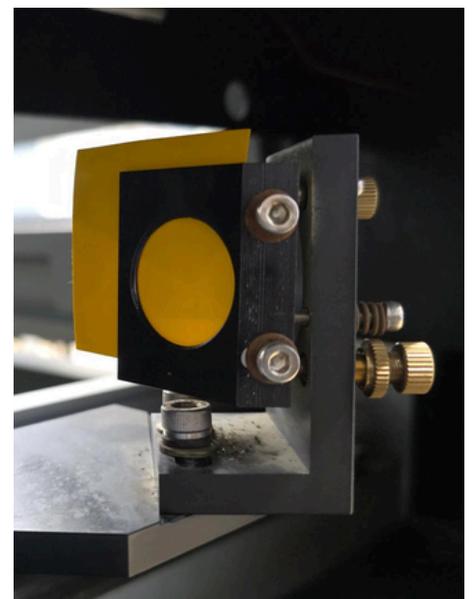
Turn your laser on. Please note, that it is recommended to turn your lasers power down to between 10-15% for this process. You can do this by pressing the **Power** button on the Ruida keypad, typing in the number percentage and pressing the **Enter** button.
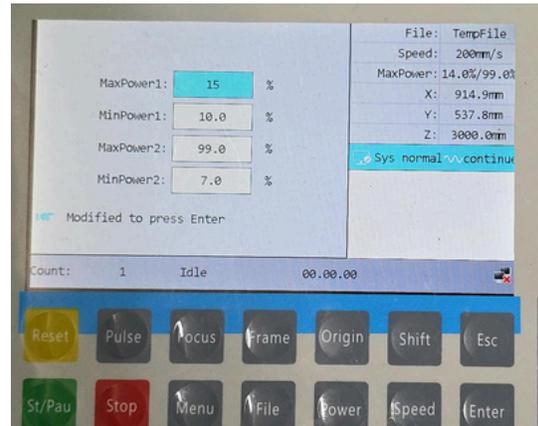

Move the gantry all the way to the front of the work bed (Y down button). Adjust the red laser so that the red dot is showing in the center of mirror 1. This will give you a visual target to align the laser pulse to.
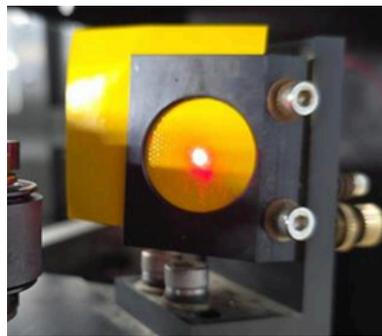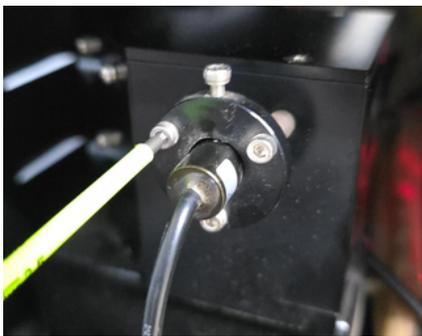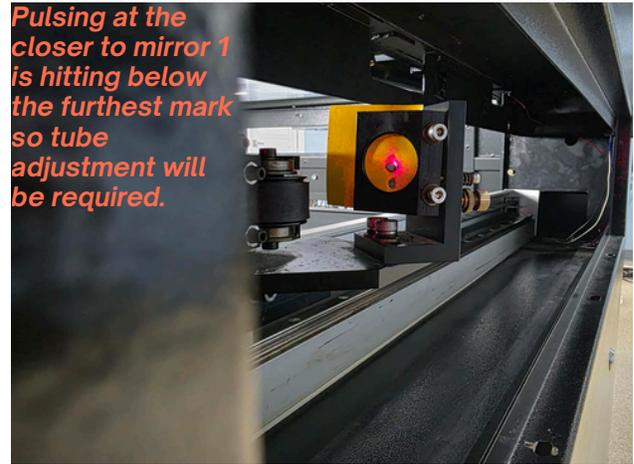

Arrow movements represent laser/red dot on the receiving mirror.

Tap the pulse button on the remote control to fire a short burst from the laser and mark your tape. Note where the laser mark is. The goal is to get this mark centered in the circle. If the laser mark is not centered, make adjustments to mirror 1 using a 2.5mm Allen wrench. It's recommended to make small adjustments then pulse again to check alignment. Replace tape as needed.
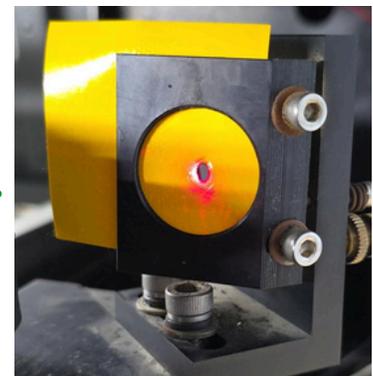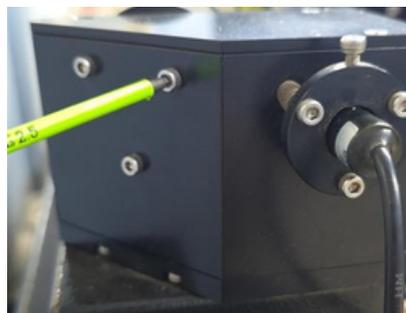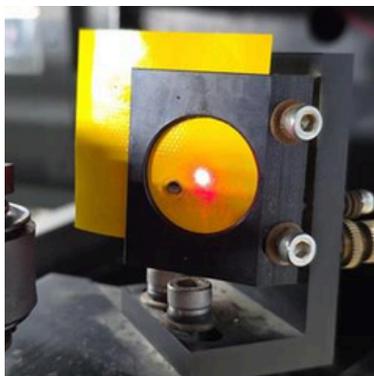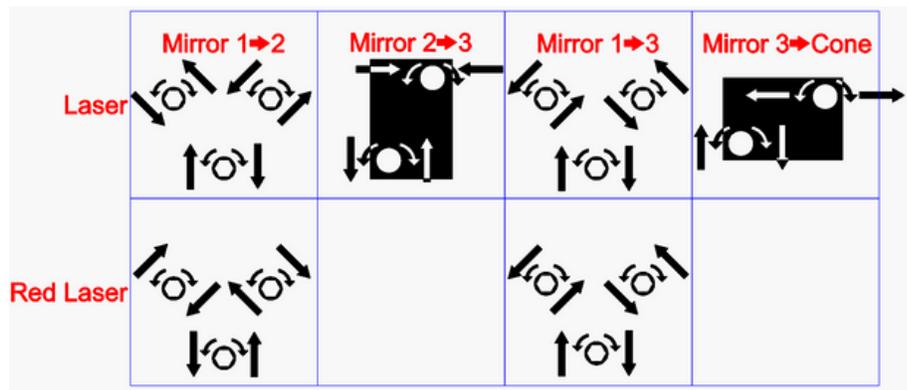
Once your laser mark is centered on mirror 2, move the gantry towards the back just enough so that mirror 2 is accessible through the panel then pulse the laser.


Centered pulse at furthest distance from mirror 1.

Pulsing at the closer to mirror 1 is hitting below the furthest mark so tube adjustment will be required.

If the pulse is hitting the same spot, you can move on to STEP 3. If the pulse is not hitting the same place where the laser pulsed at the front of the machine, take note of where the pulse is in relation to the front-end pulse. Determine where the laser is traveling from back to front.

For example, if the pulse is centered at the front of the machine, and it is pulsing down and left of center at the back of the machine, then we know the laser is shooting at an upward angle and to the right from back to front.

Front of machine

Laser beam path   Mirror 1

Back of machine
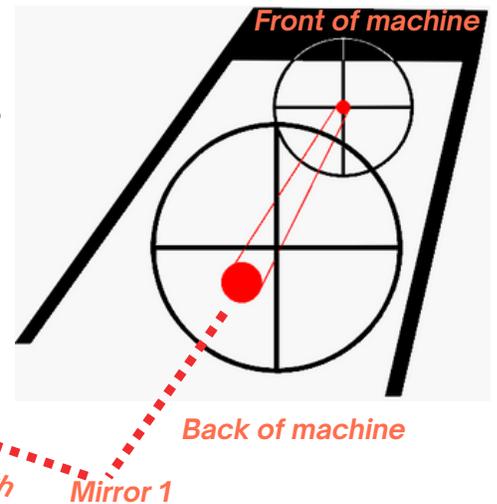
To correct the horizontal movement in this example, you would need to adjust your glass tube so that the end closest to mirror one is angled more towards the left side of the mirror 1 hole.
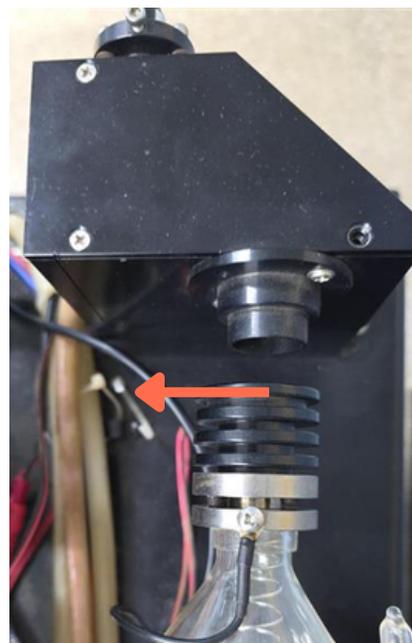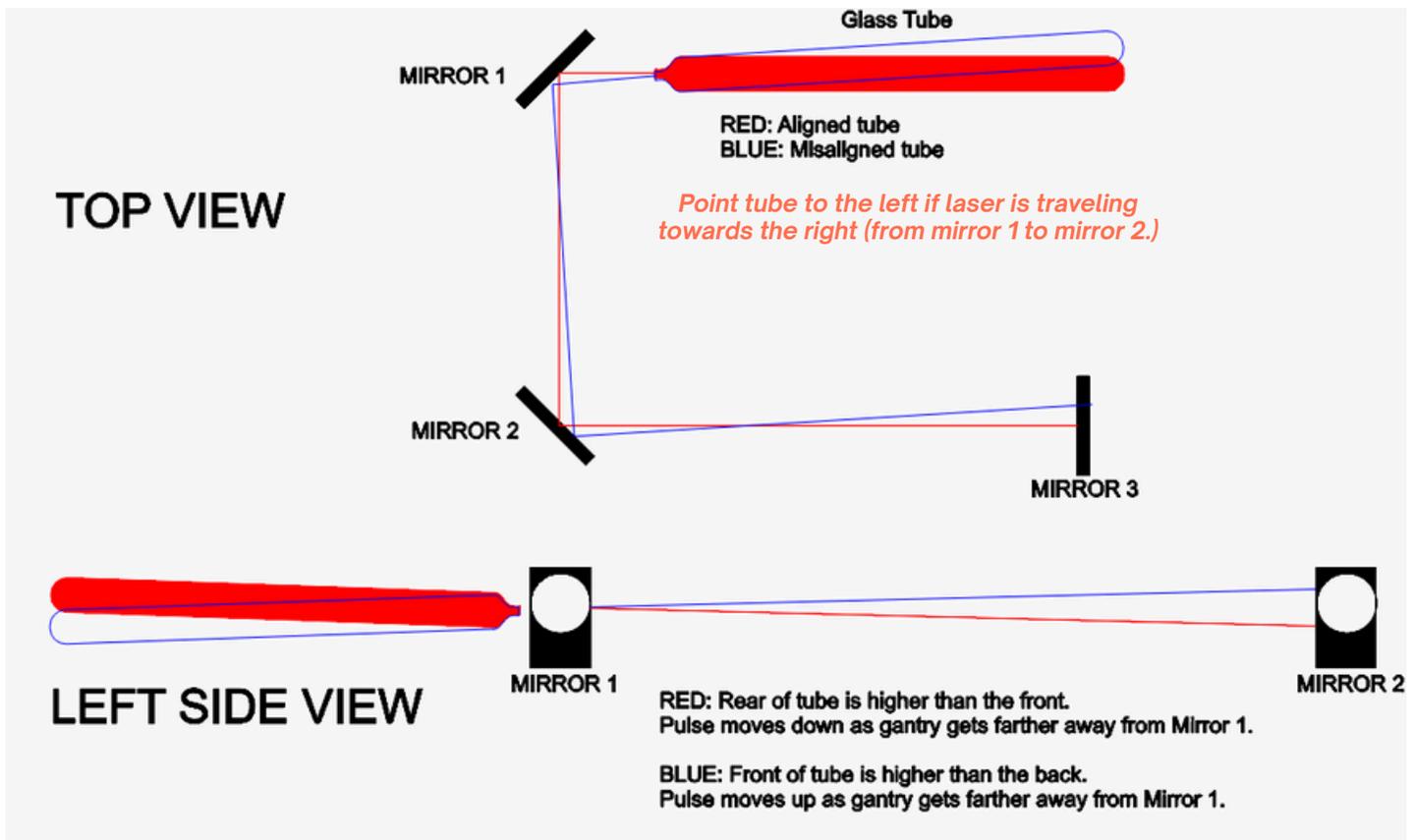
To correct the upward angle, we will need to adjust the bracket dials so either the back end of the tube raises or the front end lowers.
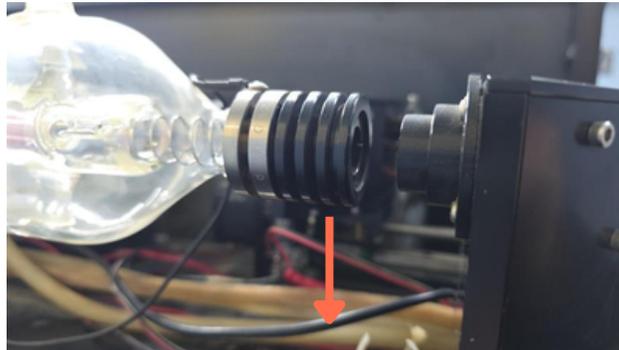
Once you've made the tube adjustments, move the gantry to the front of the machine and pulse. The pulse will not be centered since the tube was moved. Adjust mirror 1 until you pulse at the center of the mirror. Once centered, move the gantry to the back of the machine and pulse. See where the back-side pulse is in relation to the front-side pulse. If the 2 pulse marks still don't align, then repeat this process. Continue on if they do align.

Remember: Any time you make an adjustment to the tube, you must move the gantry to the front of the machine and adjust mirror 1 until you pulse in the center of mirror 2.


Glass Tube

MIRROR 1

RED: Aligned tube
BLUE: Misaligned tube

Point tube to the left if laser is traveling towards the right (from mirror 1 to mirror 2.)

TOP VIEW

MIRROR 2

MIRROR 3

LEFT SIDE VIEW

MIRROR 1

RED: Rear of tube is higher than the front.
Pulse moves down as gantry gets farther away from Mirror 1.

BLUE: Front of tube is higher than the back.
Pulse moves up as gantry gets farther away from Mirror 1.

MIRROR 2

STEP 3 -
ALIGN PULSE BETWEEN MIRROR 2 AND 3

Once your pulse is hitting center between mirror 1 and mirror 2 at the front and back of the machine, place vinyl tape over mirror 3. Press on the tape with slight pressure to create a circular indention. This will help you see where your circle is. Move Mirror 3 to the front right of the machine.

Tap the pulse button. If the pulse mark didn't pulse on the red laser dot (1), adjust the red laser screws (2) until the red dot to falls in the hole made by the pulse (3).   Now when you adjust mirror 2, you can see the red dot move and it should be where your pulse will hit.
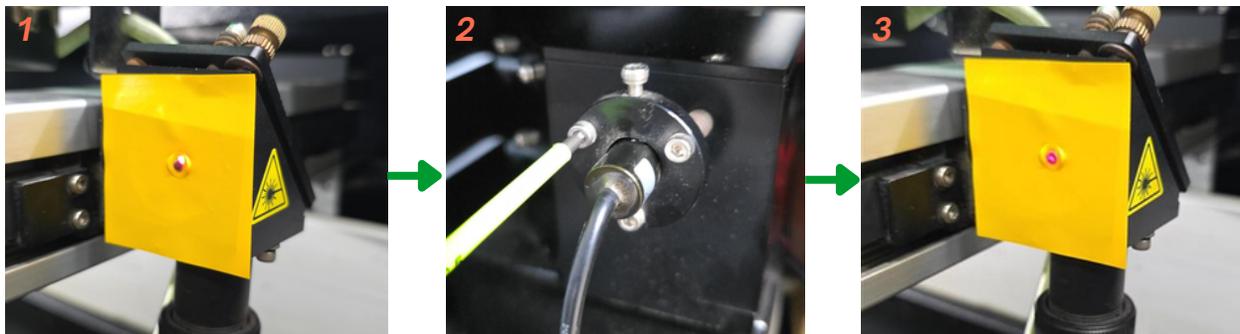
If the pulse mark is not centered on the circle, make adjustments on the brass knobs on mirror 2. Because your pulse and red dot are aligned, you can use the red dot to gauge your knob adjustments and get your pulse centered on mirror 3.
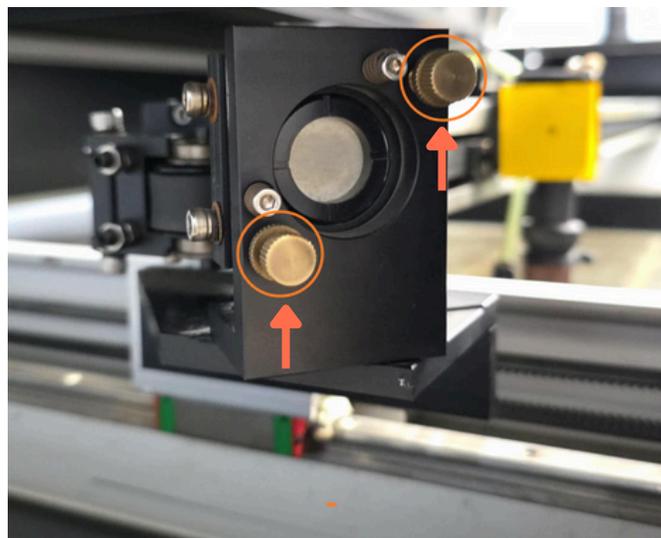
Once you are pulsing center of mirror 3, you will move it close to the left side of the bed by mirror 2 and tap the pulse button. **Just like Step 2**, if the pulse isn't hitting the same spot on the left side, then further tube adjustments will need to be made. Be very delicate since the adjustments should be minute compared to before.

Remember: Any time you make an adjustment to the tube, you must move mirror 3 to the right of the machine and adjust mirror 2 until you pulse in the center of mirror 3.
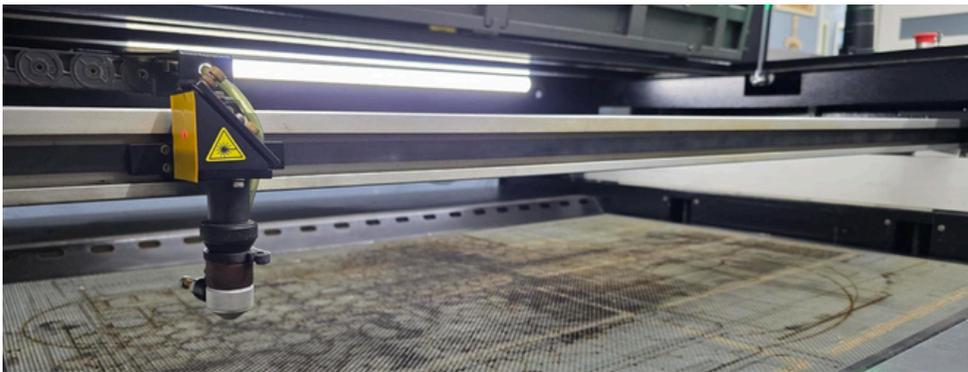
Once your pulse is consistent on the right and left side of the bed, you can secure the glass tube. Tighten all screws gently and evenly, once alignment is complete.

STEP 4 -
ALIGN PULSE BETWEEN MIRROR 3 AND CONE

Once your laser mark and red laser are centered on mirror 3, place another piece of tape under the cone of the nozzle and press firmly against the bottom of the cone to create an indention. You may want to close the air assist valve to ensure the air assist doesn't blow your tape off. Tap the pulse button to make a laser mark on the tape.
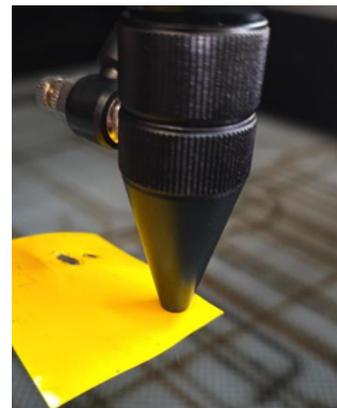
Remove the tape and maintain it's X & Y orientation so you know which direction the mirror needs to adjust. You will see the cone indention and a laser mark inside of it. Just like the other mirrors, you want your laser mark to be centered inside the cone indention. If you are not centered, make your adjustments using the brass knobs on mirror 3. Replace the tape under the cone and press firmly to make an indention, then pulse again. Repeat this process until you have a dot in the center of the cone indention. Once your laser mark is centered in the cone indention, then your mirrors are aligned.

Note: if you see an oval pulse mark or two separate dots, that means your laser beam is reflecting off of the cone.
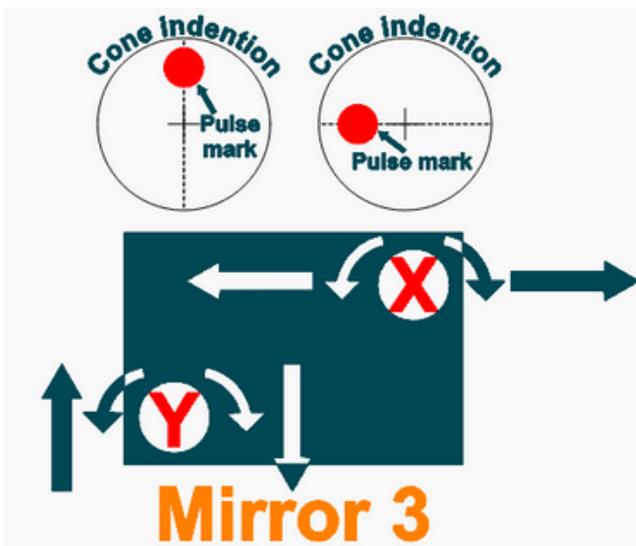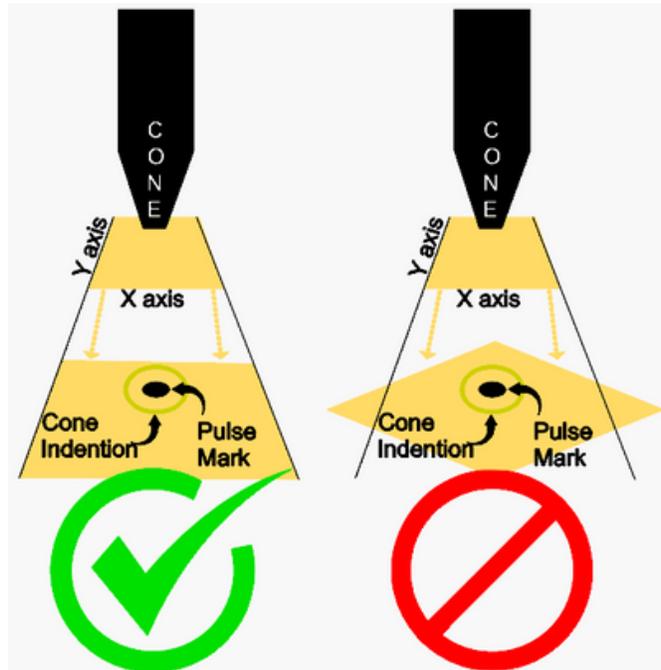
If you have a **RAZOR DUO** you can now align the **RF** source. Start by pushing the **RF Laser** button down. Once the button is lit up, adjust your red laser until it is centered on Mirror 3. Pulse the laser and adjust Mirror 1 until the pulse is also hitting center of Mirror 3.

DO NOT ADJUST MIRROR 2 OR 3 OR YOU WILL THROW THE GLASS TUBE OUT OF ALIGNMENT.

LEVELING THE WORKBED

In order to have consistent engravings across your entire work bed, you must ensure that it is level to the gantry.

The knife bed rests on a ledge and has 2 screws on each side of the it. The screws rest in a small hole or groove on the ledge.

To start leveling your bed, first loosen all of the 4 screws on the knife bed until you don't feel resistance. Once they are all loose, tighten them just enough until you feel the slightest resistance. This will place all 4 screws as barely touching the ledge they rest on. Give all 4 screws 3 full turns clockwise. Now your knife bed will be slightly elevated above the ledge it is resting on and we have room to tighten or loosen each screw.
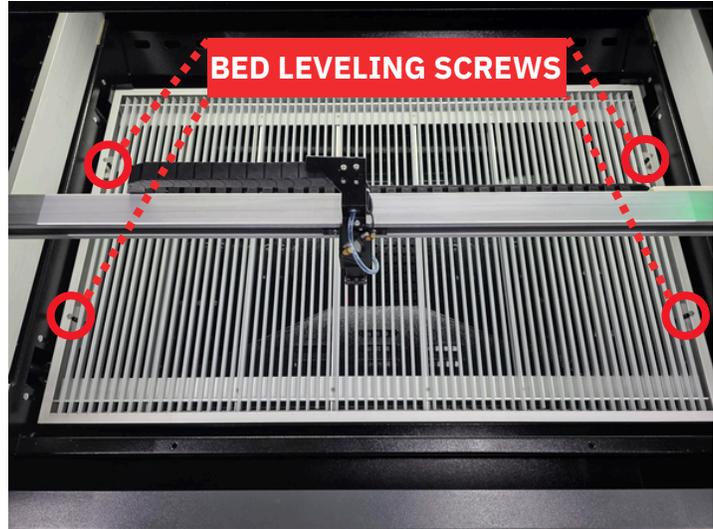

Next, move your laser to the bottom-left area of the work bed. Use your focus disc and place it under the laser head. Raise the work bed until the cone of the laser head is just high enough that your focus disc moves under the cone without any friction.

Then move the laser head to the top-left corner area. Slide your focus disc under the laser head. If the focus disc won't fit under the laser head, turn the top-left knife bed screw counter-clockwise slowly until the focus disc is just under the laser head and moving without friction. If the disc is too low, turn the screw clockwise until the focus disc is just under the laser head and moving without friction. Repeat this process for the remaining 2 corners.
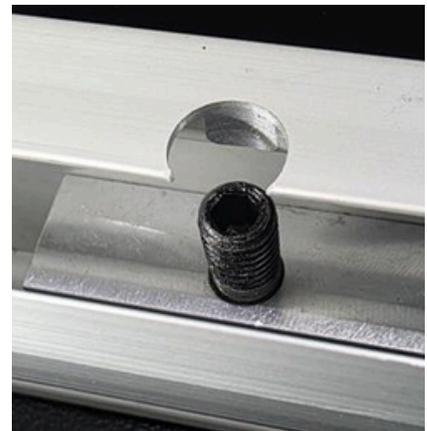
After you have set the level at all 4 corners, check each corner area once more to double check. Make any adjustments as needed.

If you find that your work bed is raised to it's limit and your laser head is still too high to engrave very thin materials, you can further adjust the bed screws clockwise to raise the bed height until you are in focus on your material.
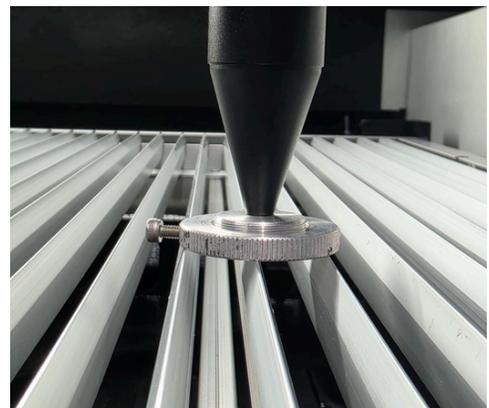
INSTALLING & STARTING WITH LIGHTBURN

Current versions of LightBurn run on the following operating systems:
- 64-bit Windows 10 (build 1809) or later
- macOS 12 or later

To install LightBurn, go to their website: **https://lightburnsoftware.com/.** Click the **Download Trial** button.

LightBurn is layout, editing, and control software for your laser cutter.

LightBurn is a native application written for Windows and Mac OS. No subscription needed.

[Learn more] [Download Trial]

Click on **DOWNLOAD LIGHTBURN FOR WINDOWS 64-BIT.** The numbers will change based on version.

Try it out for free

[⊞ DOWNLOAD LIGHTBURN FOR WINDOWS 64-BIT (2.0.03) ⨠]
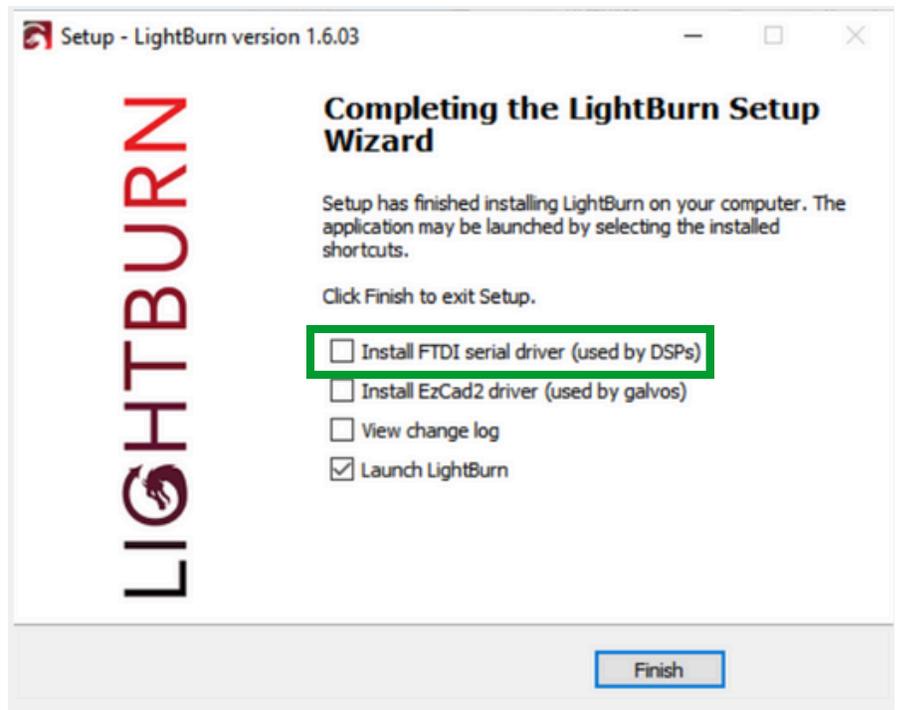
Alternative Downloads:
- ⬤ MacOS (v2.0.03)
- △ Linux (AppImage) (v1.7.08)
- △ Linux (.run) (v1.7.08)
- △ Linux (.7z) (v1.7.08)

When you've completed the download, you should see the file in your "Downloads" folder or a manually selected folder. Double-click the file to start the installation wizard. Follow the prompts in the wizard. Click **YES** or **ALLOW** to anything asking for permission. Be sure to select the **Install FTDI serial driver (used by DSPs)** driver option. This allows LightBurn to communicate with your laser.

Setup - LightBurn version 1.6.03

Completing the LightBurn Setup Wizard

Setup has finished installing LightBurn on your computer. The application may be launched by selecting the installed shortcuts.

Click Finish to exit Setup.

☐ Install FTDI serial driver (used by DSPs)
☐ Install EzCad2 driver (used by galvos)
☐ View change log
☑ Launch LightBurn

[Finish]

You must have a machine profile to use LightBurn. When you open LightBurn for the first time, it will prompt you to create a profile and bring up the **Devices** window.

Ensure your computer is connected to your laser via the USB cable and that the laser is turned on.
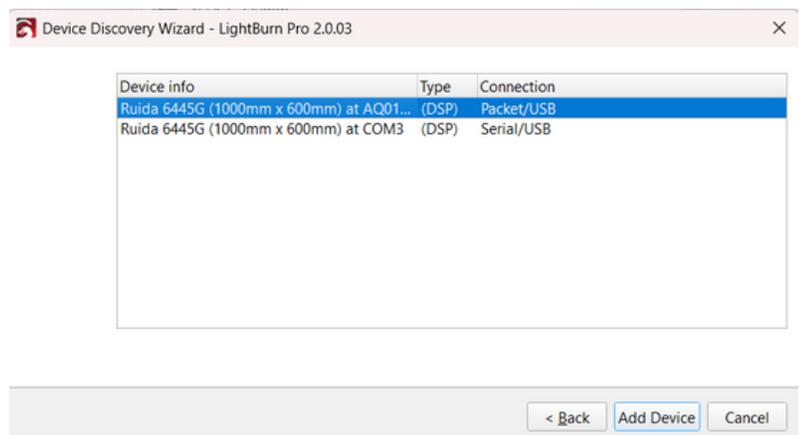
Click **Find My Laser** to begin.
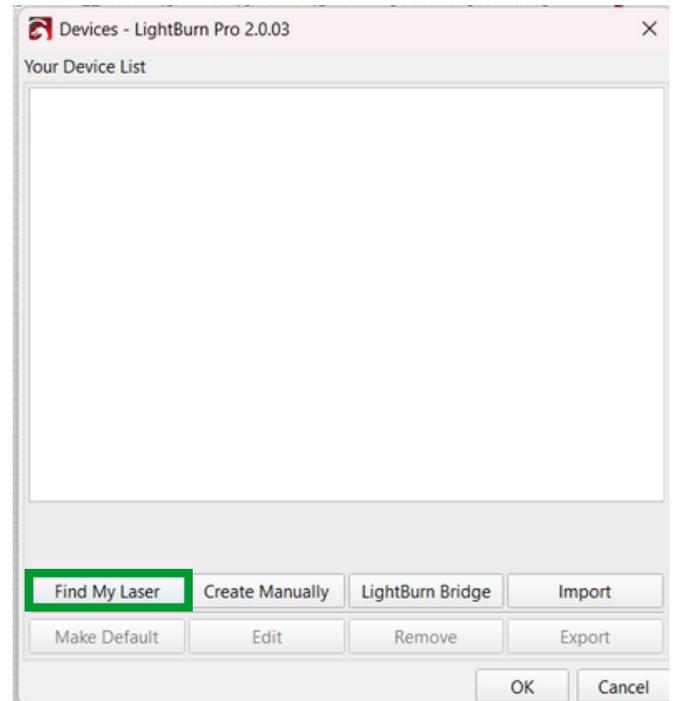
The next screen reminds you to turn your laser on and connect via USB. Click **Next**.
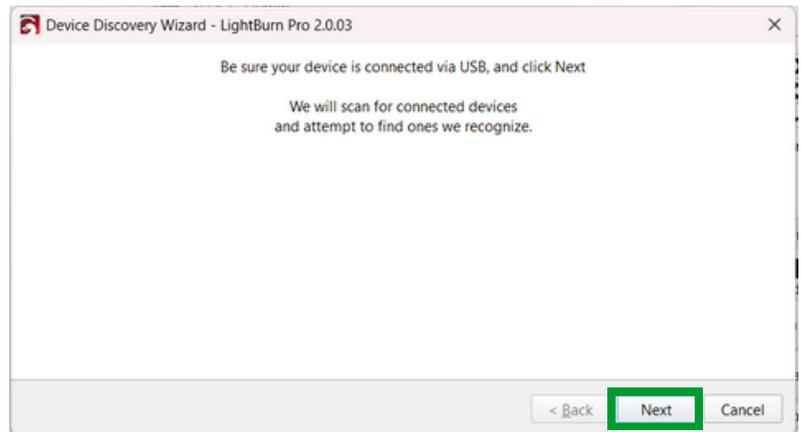
The next screen will show what device(s) is found. If 2 show up, you may select either option, then click **Add Device**.
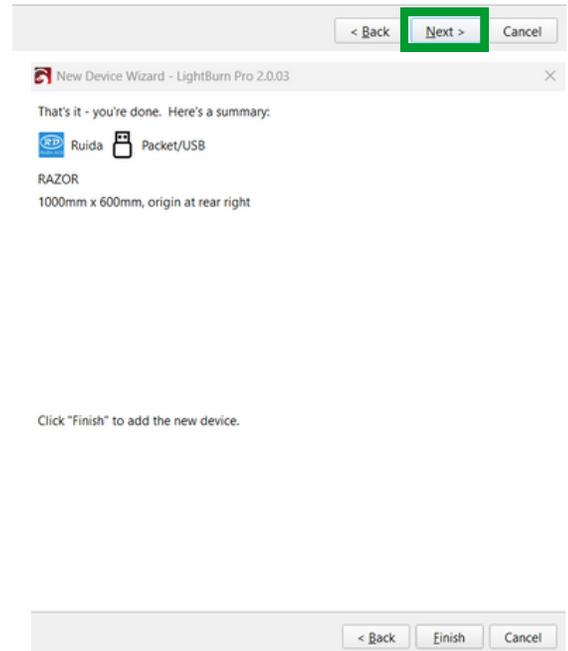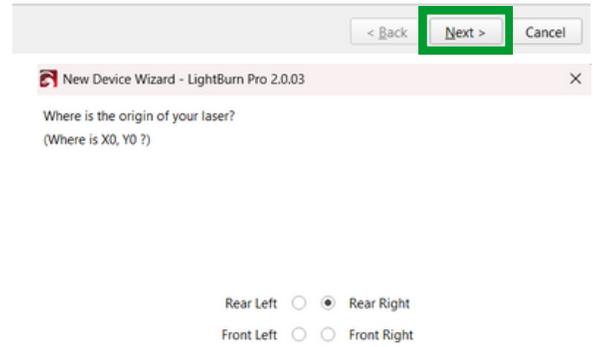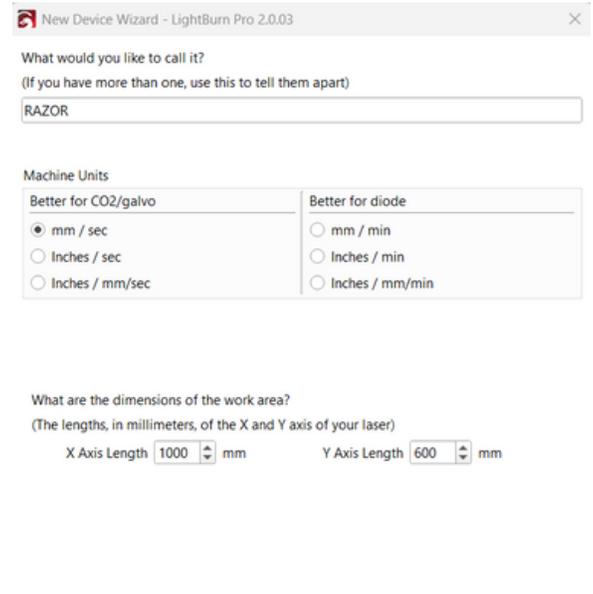
Now, you can assign a name or description to be able to identify this machine's profile in LightBurn.

You can specify the machine units. This can be changed at any time. The work bed dimensions should have already populated as well for the X and Y axis length.
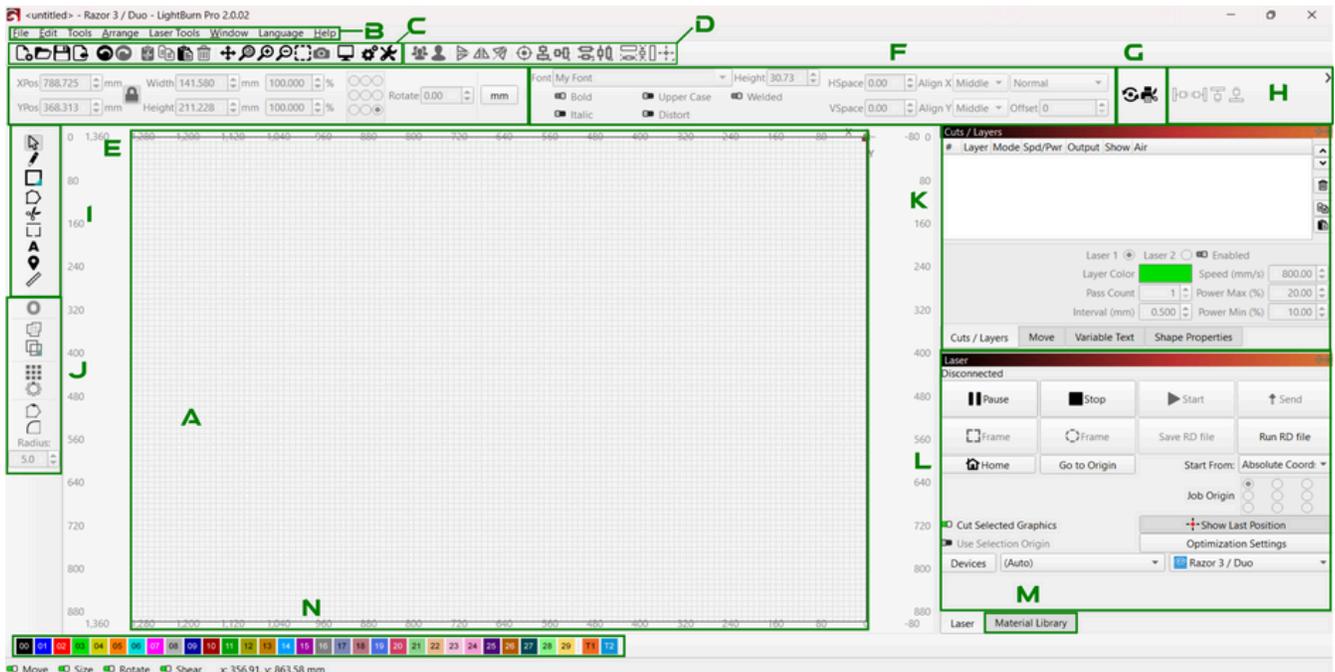
Select the **Rear Right** option for the origin of the laser (home position).

Click **Next**.

Click **Finish**.

MAIN LIGHTBURN SCREEN

A: WORKSPACE/EDIT WINDOW

B: MENU BAR

C: MAIN TOOLBAR

D: ARRANGE TOOLBAR

E: NUMERIC EDITS TOOLBAR

F: TEXT OPTIONS TOOLBAR

G: ROTARY / CYLINDER CORRECTION

H: DOCKING TOOLBAR
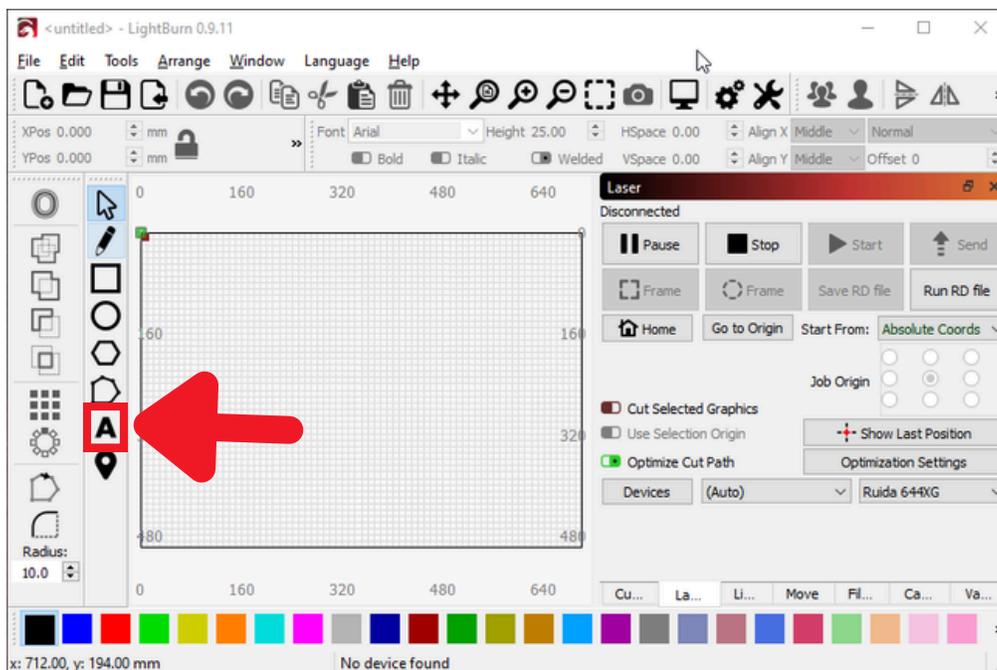
I: CREATION TOOLS

J: MODIFIER TOOLS
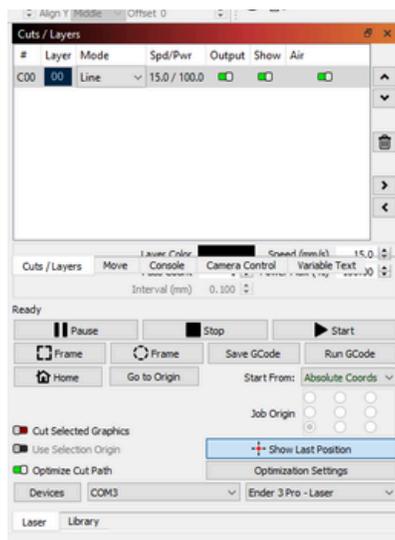
K: CUTS / LAYERS WINDOW

L: LASER WINDOW

M: MATERIAL LIBRARY

N: COLOR PALETTE

To begin a project, clock on the Text icon indicated by the red arrow with a red square around it. Once the tool is selected, click anywhere on the grid workspace and a text cursor will appear. For this walk through, type "Test" into the text box.

Next is to set the speed and power for the text. Located on the top right side of the screen, youll find the layer options, shown to the left. Make sure the mode is set to "Fill", then change the power (Min & Max) to about 20% with a speed of 500 mm/s.

With the desired material loaded into the machine, press the "Focus" button on the Ruida keypad and hit "Enter". This will automatically auto focus the laser. Press the laser button on the machine to toggle on the laser source and press "Start". The machine will then begin to engrave the selected text.

This concludes the example that will be able to be used as reference for different applications to help run the machine effectively.

MAINTENANCE

DANGER: CLASS 4 LASER RADIATION. Maintenance of a gantry-style CO_2 laser involves working near high-voltage components and invisible infrared radiation (10,600nm). Permanent eye damage, skin burns, and fire can occur instantly upon exposure. Ensure the machine is off before performing any maintenance. Do not bypass or disable the safety interlocks on the door.

Lens Cleaning:

The lens that is used to focus the laser beam is called the focal lens. The lens should be cleaned at least once per week depending on usage of laser, especially when smoke is formed. When cleaning the lens, use denatured alcohol as the cleaning solvent and a microfiber cloth to gently clean. Lens cleanings paper included will also work. Do not scrape the lens. Use a soft swirling motion when applying cleaning, then use a dry swab.
Make sure not to leave any dirt, smudges, or water on your focal lens. The focal lens should be replaced if it is cracked, chipped, or if the coating is scratched.

Belt Tension:

The rubber belts should be checked for appropriate tension every 6months. You should expect the two side Y-Axis belts to be the same tension. These Y-axis belts work together to move the gantry from front to back. If one belts tensioned more often than the other, the gantry can become damaged or the graphics will be warped. Tensioning the belt consists of tightening two screws on the bearing sliders.

TROUBLESHOOTING

Frame Slop Error:

The design is physically larger than the work area, or it's too close to the edge to allow for "overscan". Try moving the design further from the edge of the workbed in Lightburn.

Machine Protected Error:

The safety interlock on the door is indicating that the lid is not fully shut. Ensure the safety interlock is properly closed.

Weak laser Power:

Optics may be dirty or the lens is out of focus. Clean the mirrors and lenses and double check optimal focus.

Constant Alarm Noise:

The flow sensor for the chiller is detecting no flow. Make sure there is plenty of coolant in the chiller and ensure the lines are not restricted or put into the wront ports.

NOTICE: If troubleshooting requires the removal of protective panels while the system is energized, the area must be designated as a Temporary Laser Controlled Area. Only certified Laser Safety Officers should perform "Open Housing" troubleshooting.