MUSE
TITAN V3

Safety Symbols:

Red Icons indicate dangerous situations that could result in serious injury or death.

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Indicates a hazardous situation.   Indicates a risk of fire.   Warns of potential risk to eye-safety.

Indicates a respiratory hazard.   Indicates an electrical hazard.   Warns sharp edges that could cause injury via laceration.

Looking for financing or eager to buy, contact Sales:

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702-802-3103

Safety Warnings:

WARNING	• This product is rated as a Class 4 machine, however the enclosure makes the overall rating of the machine Class 3R. • Keep the enclosure closed during operation to avoid eye & skin exposure.
(eye icon)	• Never stare directly at the laser when the machine is running.
(respiratory icon)	• Avoid using materials made of carbon or that contain carbon components. • Make sure your exhaust in functioning properly before each use.
(fire icon)	• Do not leave your machine unattended. • Always keep a fire extinguisher and first aid kit nearby. • Regularly inspect your fire extinguisher to ensure functionality.
(electrical icon)	• Do not attempt to access any electrical areas while the machine is on. • Unplug the machine and wait for an hour before accessing panels.
(hazard icon)	• Inspect your machine before each use. Do not use if the machine or its accessories are damaged in any way. • Always maintain a clean work area.

Safety Stickers:

Unboxing:

1. Open the crate by flattening the metal tabs on the crate.

3. Remove the foam covering from the top and sides of the Muse Titan.

4. Get a lifting buddy and move the Titan to your work area.

Remember to lift with your knees.
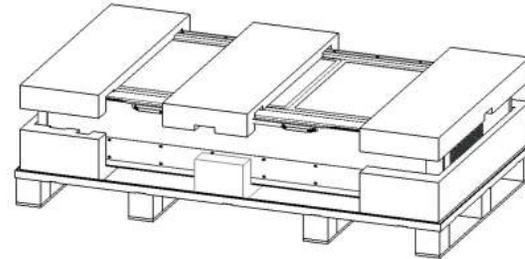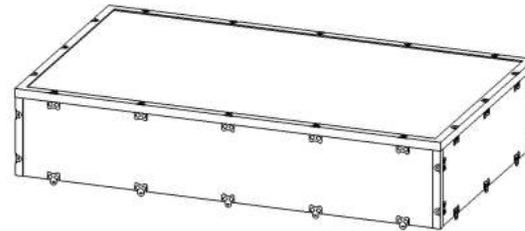
2. Carefully remove the crate cover.

Diagrams:

Honeycomb Trays

Pause Button

Water Reservoir

Lid

Lid Handles

Rotary Port

Touch Screen

Passthrough Cover

Exhaust Flange

Passthrough Cover

Power On/Off

Air Inlet

Air Assist & Exhaust Controls

Water Inlet & Outlet (For Optional Chiller)

Full Spectrum
L A S E R

Diagrams:

Left Side:

Mirror Adjustment
Panel

Right Side:

Wi-Fi
Adapter

Ethernet
Port

Exhaust
Flange

Air Inlet

Cooling Vents

Cooling Fans

Water Inlet & Outlet
(For Optional Chiller)

Laser Head Assembly:

Mirror 3

Z-belt

Air Assist

Air Assist

Remove Focus Lens

The Focus Lens is removed by gently pushing the back of the lens until a clicking sound is heard. Then remove the Lens from the front.

2.0"
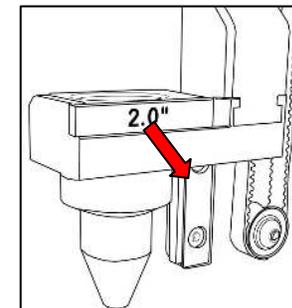
Setting Up Your Muse:

1. Remove the Zip ties.
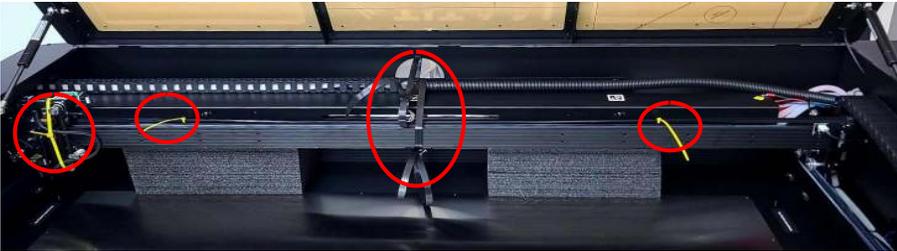
2. Remove the foam located under the laser tube. It can be found in the back of the gantry.
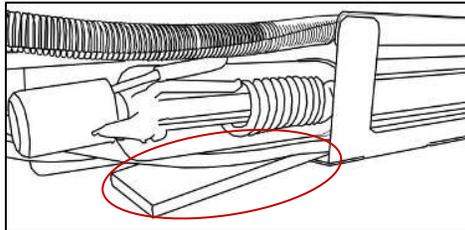
3. Install the exhaust flange onto the machine.
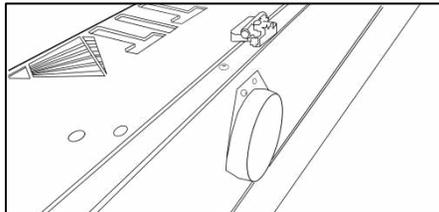
4. Secure one end of a ducting onto the machine
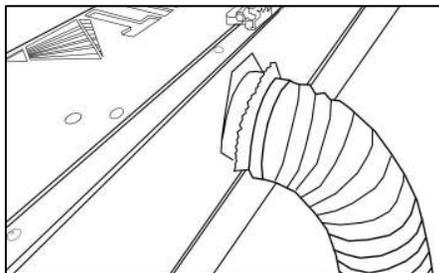
5. Connect the other end to the exhaust fan. Get the second ducting and connect it to the other end of the exhaust fan before connecting it to external ventilation.

FROM MUSE   TO OUTSIDE VENTILATION/ FUME EXTRACTOR
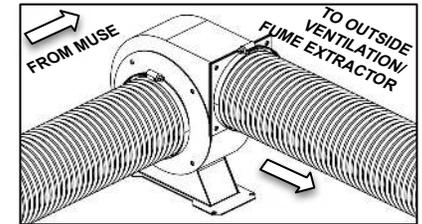
6. Use the provided funnel to fill the water reservoir with 1 liter of distilled water.

Water Test:
Turn on the machine and check the water flow.

Ensure the water icon on the touchscreen is **Blue**. If the icon is **Red** or if the water pump is making noise, then open up the side panel using the provided hex keys.

Locate the water pump and massage the water tubes to remove the air bubbles present. The noise should be minimal and water icon will become **Blue**.

Reservoir Cap
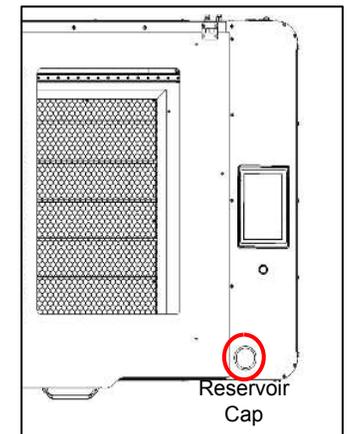
7. Connect one end of the air tube into the air fitting on your machine and the other to the air compressor.
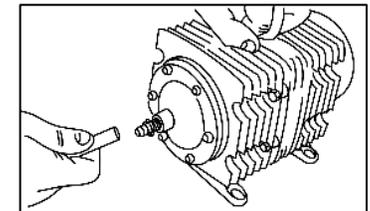
8. Connect the power cables. Your machine is ready for use.

Full Spectrum LASER

Connecting to Internet:

Connect Via Router (Recommended):

To establish a reliable link to RE3, it is recommended to connect the Fiber Galvo to the router. The Muse Titan is equipped with an ethernet cable that should be plugged into the ethernet ports of both devices

Note: Ethernet port looks the same on all devices
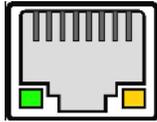
Connect to Wi-Fi:

Make sure that the dongle, a device attached to the USB port of your machine, is present and connected as it enables your machine to connect to the WiFi network.
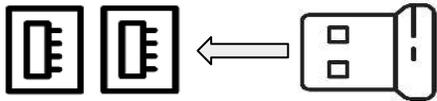
1. To connect to the WiFi network, select the Network button located on the top right of the Touchscreen.

2. Then, choose the WiFi option and search for your network. Once you have located your network, select it and enter your password.

Connecting Directly Using Computer:

This option is only advisable when the other two methods are not possible. The Muse Titan can connect to the computer through Ethernet, but an adapter might be required for your computer.

Focusing:

There are two ways to use the autofocus feature on your machine. The first method involves pressing the autofocus button on the touchscreen. The second method requires accessing the autofocus icon located under the Jog Controls Tab in RE3.
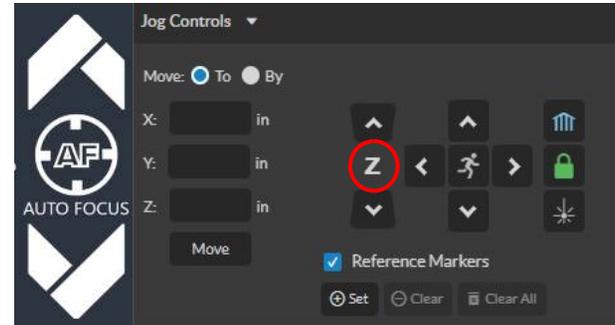
Adjusting the Stallguard:

If your machine is experiencing excessive shaking or vibrations during autofocusing, it may be necessary to adjust the machine's stallguard component.

What is Stallguard?

The stallguard is a crucial component in the machine that regulates the amount of tension it can handle before coming to a stop. We want your machine to detect the material and move towards its focus distance. However, if the stalling value is too low, the machine may hit the material and cause damage.

How to Adjust Stallguard?

To adjust the stallguard, follow these steps:

1. Connect to the Setup Page: Access the software's Setup page by using the format IP address/setup (e.g., 000.000.00.000/setup).
2. Select the Laser Tools Tab: Once in the Setup window, locate and select the Laser Tools tab.
3. Locate the Set Motor Type Section: Look for the Z-axis settings and navigate to the Autofocus Stall Guard Value.
4. Adjust the Value: Change the Autofocus Stallguard Value as needed.

Touchscreen Interface:
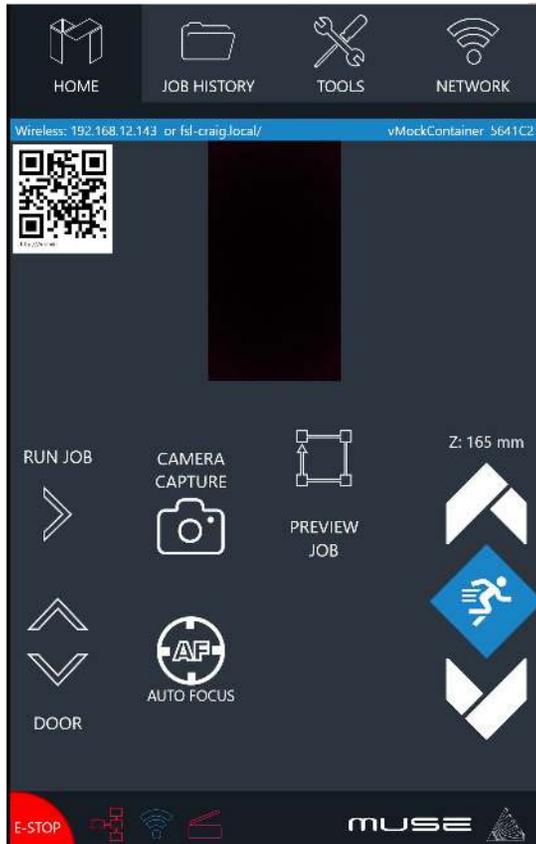
Preview Job Icon:
Selecting the icon will make the machine outline the area of your project on your workspace.

Home
The Home screen displays important information such as the device's IP address, the QR Code for RE3, and controls for the laser head.

Job History
The Job History icon provides easy access to previous projects. Users can select the file and view its contents, or choose to re-run the job. Note that an internet connection is not required to use files saved in this section.

Machine Indicators:
Wired IP Indicator:
The IP indicator shows if the machine is connected to an ethernet cable.

Connected   Not Connected

Wi-Fi Indicator:
The Wi-Fi indicator will indicate if the machine is connected to the Wi-Fi.

Connected   Not Connected

Run Job Icon:
Selecting the icon will run the job.

Network ➪ Wi-Fi
Enables users to connect to a Wi-Fi network.

Mobile Version
A mobile version of the device is accessible by either scanning the QR Code or entering the device's IP address into the web browser of a mobile device.

Tools
The Tools icon enables the user to verify and modify the machine settings, activate rotary attachments, home the laser, and retrieve relevant information regarding the device.

AutoFocus Icon:
The Autofocus icon automatically moves your machines Z-stage to the height needed to perform an engraving. (Needs QR card to work.)

Camera Capture Icon:
The Camera Capture icon takes images of the workspace.

Movement Controls:
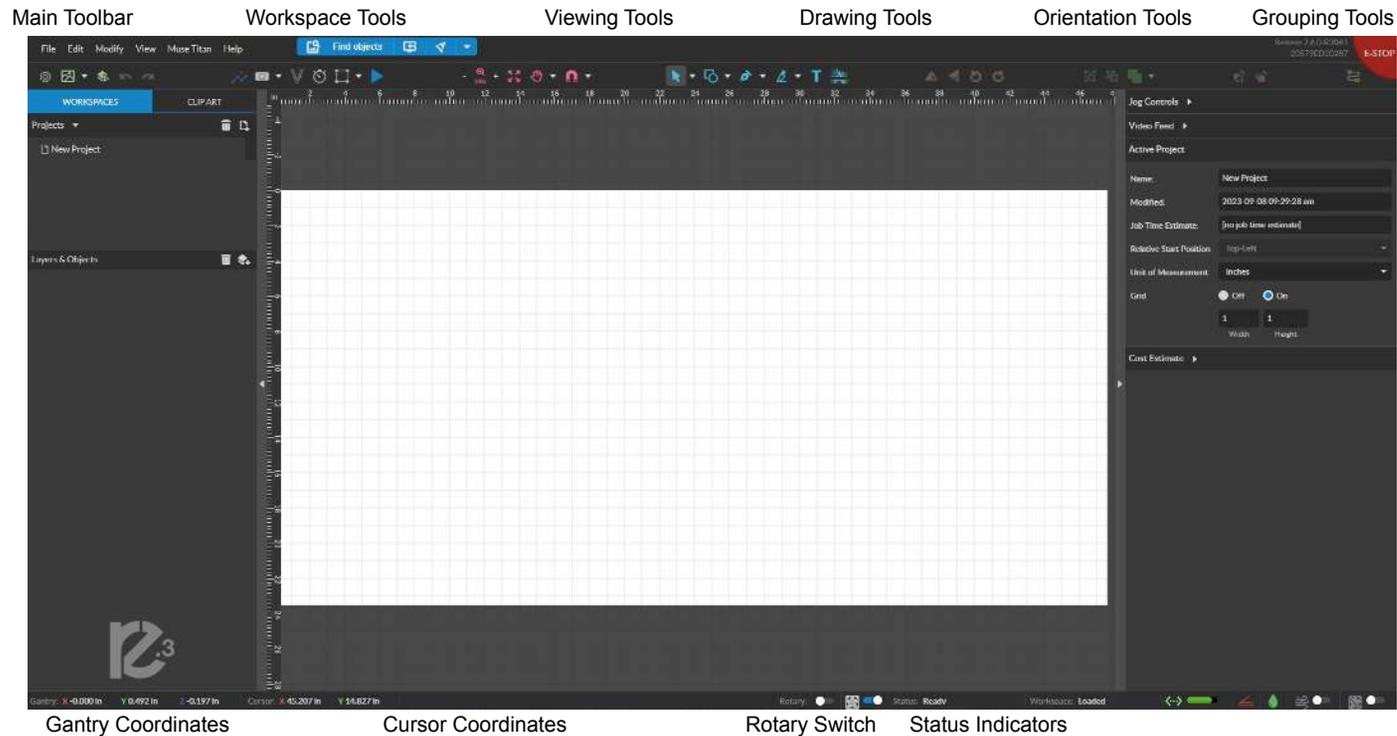The left icon governs the movement of the gantry along the X and Y axes. Three different speed settings can be chosen by selecting the prism icon. The right icon is used to control the height of the laser head.

RetinaEngraveV3 (RE3):

RE3 can be accessed by entering your machines IP address into your web browser. When loaded RE3 will appear like so.

Main Toolbar   Workspace Tools   Viewing Tools   Drawing Tools   Orientation Tools   Grouping Tools

Project
List

Project
Information

Gantry Coordinates   Cursor Coordinates   Rotary Switch   Status Indicators

Main Toolbar
File: Create new projects,import and export existing projects, import image or drawing, and sync the workspace.
Edit: Select object, delete or duplicated objects, undo and redo changes, access setting and materials Library.
Modify: Arrange layers, move and modify images, and create compound objects and paths
View: Adjust magnification, canvas settings, and view other display settings
Machine Name: Use the camera functions, run a job and access the laser tools page from diagnostics.
Help: Access the user guide, support, tutorials, and the list of keyboard shortcuts.

Workspace Tools
Focusing Test: Verify that your laser it in focus
Capture Workspace: Takes images of workspace
    Clear Last Workspace Capture: Clears previous workspace image.
Trace Background Image
Estimate Job Time: Amount of time the job will take.
Show Bounding Perimeter of all Objects: Shows the space the job will occupy.
Run Job: Start Engraving

Viewing Tools
**Zoom (-/+):** Enlarges/Reduces workspace screen detail and size.
Fit All: Fits entire captured image on screen.
View
    Pan (H): Manually pan project window using mouse.
    Zoom (Z): Zoom project window using mouse.
Snap
    Use Snapping (Shift+F10): Enable or disable the snapping feature.
    Use Snap Zones: Enable or disable the snap zone feature.

Full Spectrum
L A S E R

Drawing Tools:
1. **Select: Pointer**
   - **Subselect**
   - **Lasso**
   - **Layer**
2. **Shape: Line**.
   - **Rectangle**
   - **Ellipse**
   - **Polygon**
   - **Triangle**
   - **Star**
3. **Path:Pen**
   - **Bezigon**
   - **Freehand**
4. **Knife:** Cuts out objects
   - **Freehand Shaping:** Initiates "freehand" mouse pointer for creating paths.
5. **Text**
6. **Monogram**
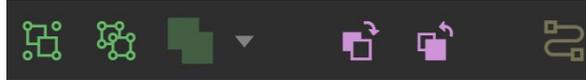
Grouping Tools:
Group: Group objects
Merge: Union: Combine layers into a single compound layer.
   Difference: Combine non-overlapping layers into a single compound layer.
   Intersection: Combine overlapping layers into a single compound layer.
   Subtract: Remove and combine non-overlapping layers into a single compound layer.
   Split: Split up a compound shape or object.

Orientation Tools:
Flip Horizontally: Flip object along horizontal axis.
Flip Vertically: Flip object along vertical axis.
Rotate CCW: Rotates 90 degrees counterclockwise.
Rotate CW: Rotates 90 degrees clockwise.
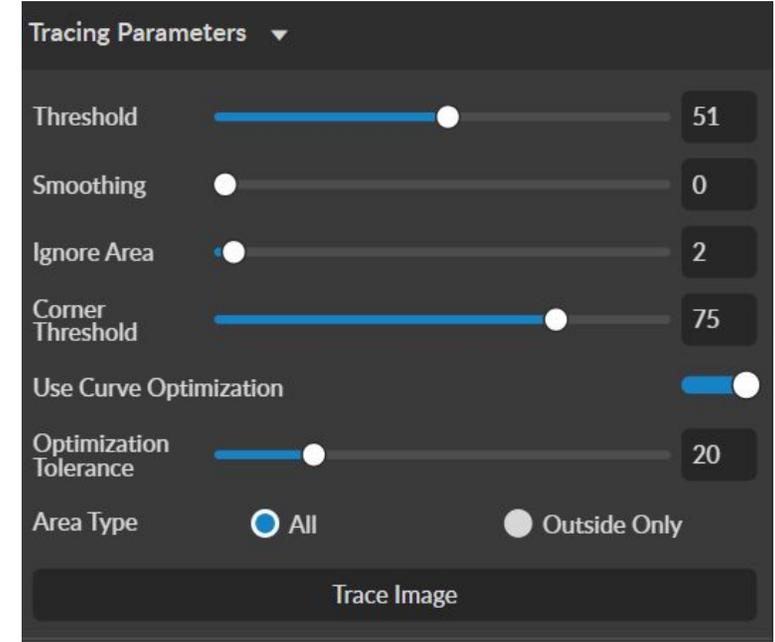
Positioning Tools:

Center Left   Center Middle   Center Right   Center Top   Center Middle   Center Bottom

Position Coordinates

Object Size

Object Transformation

Scaling Button

Tracing Parameters:
Tracing is used on rastered images to be made into vector lines for cutting.
Threshold- Pixels to include

Smoothing- smoothens the corners of the selected object

Ignore Area- how much speckling will be removed

Corner Threshold- how sharp corners will look

Optimization Tolerance- determines how many lines are in each curve.

Ex. The greater the tolerance, the fewer lines but it affects accuracy.

Area Type- All- The entire picture is trace.

Outside Only- The border of the picture is traced.

Camera Functions:

Camera Capture:

In order to capture the workspace, locate the camera capture tool in the Workspace Tools section. Upon selection, the machine's gantry will move along its axis, and once the movement is complete, the captured workspace will be displayed.
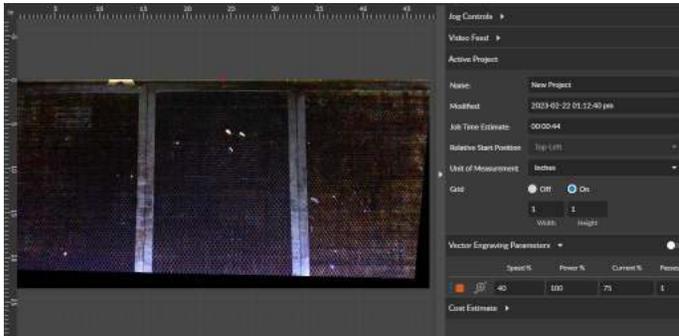
Vector Tracing:

Preparation: Have a design ready on a piece of white paper for the tracing process.

1. Enter RE3, perform a camera capture using the camera capture icon.

2. Next,select the "Vectorize" icon and create a box around the object you want to trace.

3.RE3 to create both vector and raster data. Delete any unwanted data.

4. Line up your material to the image. The traced object cannot be moved from the vectorized box, so ensure that the material is positioned directly below it.

Camera Calibration:

Preparation: Remove the Honeycomb trays from the machine and place the calibration paper in the center of the workspace.
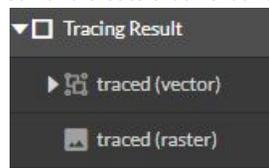

1. Go to the Touch screen,and select the Home tab. Then select the Reference Markers icon.

2. Use the gantry controls to move the laser head above the first reference point. Once aligned, select "Set Marker". Repeat this process for the three remaining reference points.

3. Enter the RE3 set up page using the format: IP address/setup (ex: 000.000.00.000/setup).

4. Enter the Laser Tools tab and find the **Stationary Camera Calibration** section.

5. Run the calibration. The red diode will turn off and the laser head will touch marker 4 before retracting. The gantry will then move to take a new camera capture, which will display under the calibration page.

Check the results displayed below the camera capture. If an error occurs, check the camera cable and try again. If it's successful, exit the Setup Page and re-enter the RE3 designer.

Full Spectrum AI:

Entering RE3:

In order to use the AI, the machine must be connected to the internet.

Go to the web browser and enter the following format: **IP Address/re3**.

The software will have and additional toolbar next to the Help icon.

AI Toolbar:

The **Find Objects** icon is used to detect multiple objects within the workspace. In order to use this function a screenshot of the workspace needs to be taken.
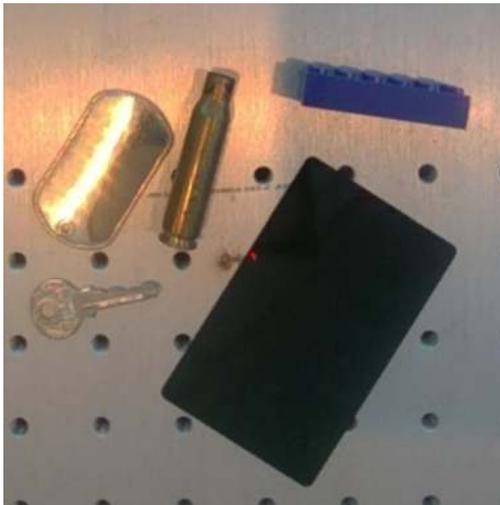
After taking the Screenshot, hold the **Shift** key and select a few spots on the present objects, then hold the **Shift** and **Alt** keys to select background spots. Once completed, select the **Find Objects** icon.
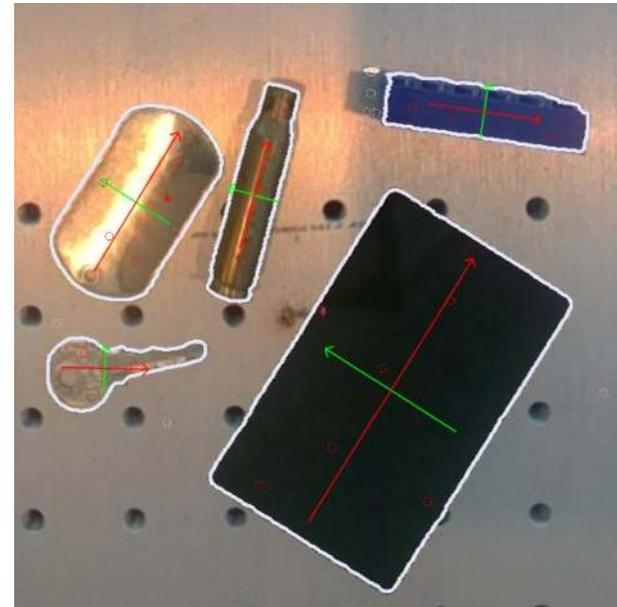
The AI will then identify the objects, highlight the perimeter and calculate the center of each object. The width is displayed in red, while the height will be displayed in green.

If a part of the background was added to the perimeter it can be removed by using the **Shift** and **Alt** keys to identify it as background then select the **Find Object** icon again.

The screenshot can be cleared of any selects using the following icon.

Full Spectrum AI:

Aligning objects:

Vector and Raster objects can be selected and placed onto the center of each object using the align option. Keep in mind that the AI will only place the object at the center, resizing must be done manually.
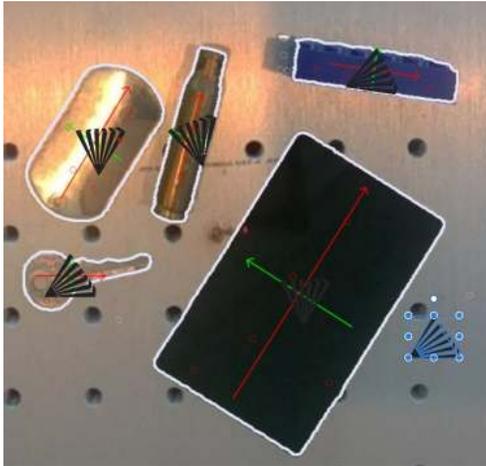
Aligning Text:

There are two methods to align text.

1. The Textbox Options:

Write your text in a textbox. Then select the **Align** option.
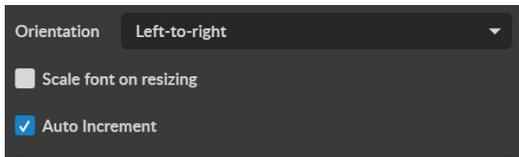
If the text needs to be numbered select the Auto Increment option from the Text window.

2. The Advance Settings:(Sidebar)
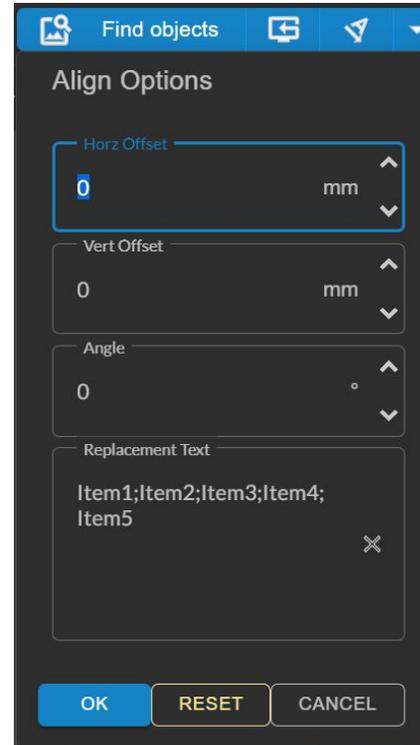
Select the down arrow to open the Advanced settings.

The horizontal and vertical offset can be adjusted here. As well as, the angle of the object.

The text for the objects can be placed under the **Replacement Text** window. The text for each object can be written down as long as the ; key is used to separate them from each other, as shown in the picture.

Use the ok button to save the settings. Then select the **Align** option.
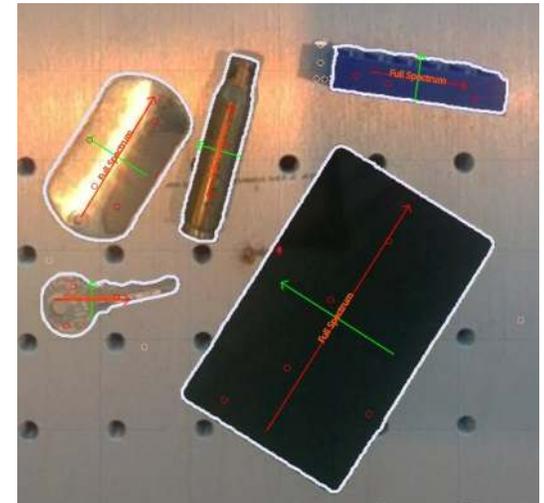
Full Spectrum AI:

Text to Art Generation:

Our AI can generate raster images using a text prompt. Select the downward arrow to open the prompt window.

Write your prompt and then select the **OK** icon. The window will close automatically. Select the **Generate image from text** option. Your image will be generated.
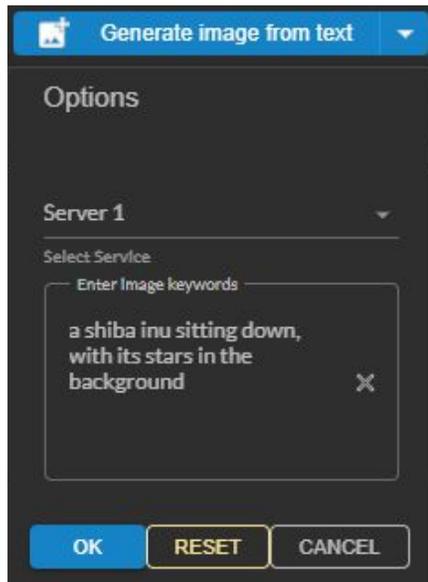
Background Removal:

Our AI can identify the subject of the image and remove any unwanted background.
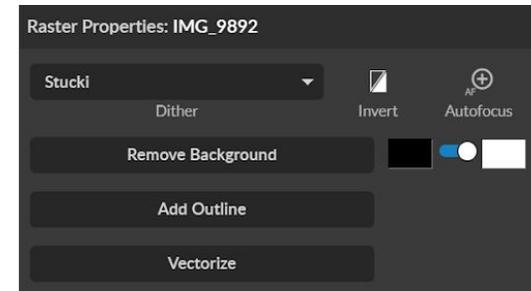
Removing the background can be done from the Raster Properties section. The background will be replaced with the background color of your choice. The white background is selected for normal engravings while the black background is used for images that are going to be inverted.

Stopping your Laser:

Once a project has started, it will run continuously until it is completed. In case of an emergency, there are several options available to stop the laser immediately:
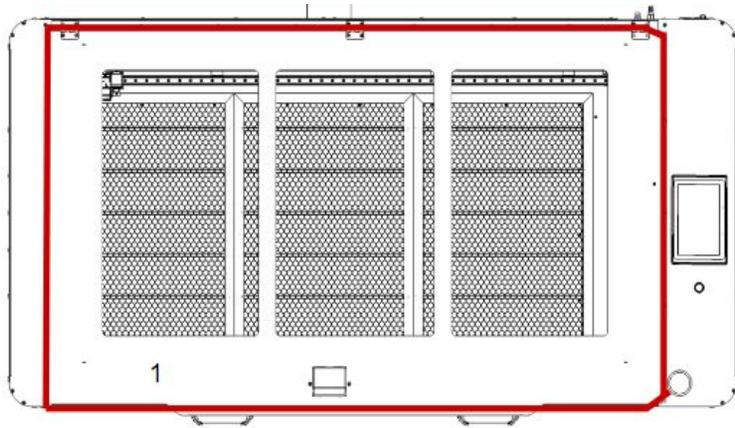
1. Open the Lid: This will immediately stop the laser from firing. If the laser doesn't stop, please contact support.
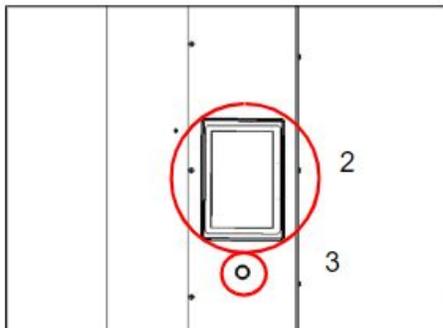
2. Touchscreen Stop/Pause Button. By stopping the job it will be be marked as finished, selecting Play again will start the project from the beginning.

3. Test Fire/Pause Button. This button usually serves as a test fire button. However if the machine is running it serves as a pause button.

4. E-Stop Button. Located in the lower left corner of the touch screen, pressing this button will cut power to the laser instantly. Please handle this button with care as it is still part of the touch screen and can be fragile
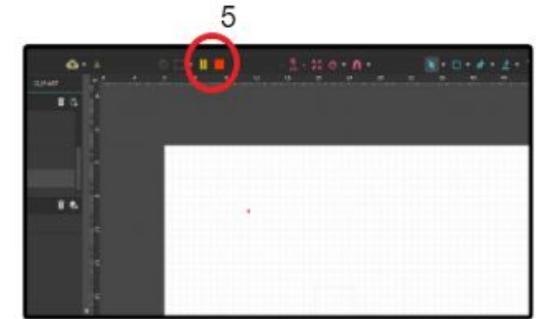
5. RE3 Stop/Pause Button.

6. Power Switch. Turns the machine on and off.

7. Unplug Power. This should be considered a last resort, as unplugging the power cord of the Muse Titan from the electrical outlet may cause damage to your cables.

Project Procedure:

```
┌─────────────────────────────┐
│     Connect to Software     │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│   Create or Import Design    │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│   Adjust Object Properties   │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│        Place Material        │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│         Focus Lens           │
└─────────────────────────────┘
              ↓
┌───────────────────────────────────┐
│  Align Material to Engraving Areas │
└───────────────────────────────────┘
              ↓
┌─────────────────────────────┐
│          Run Job             │
└─────────────────────────────┘
```

For more information on your machine refer to your user manual. For information on RE3, refer to the RE3 Guide found in our website.

General Maintenance:

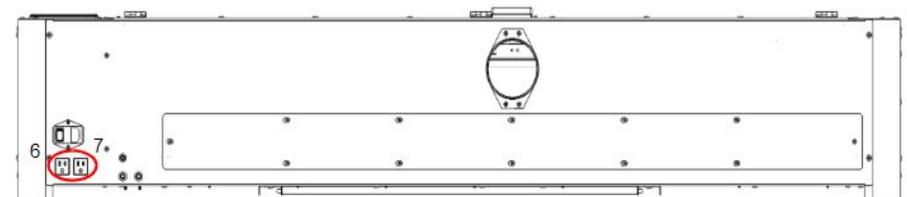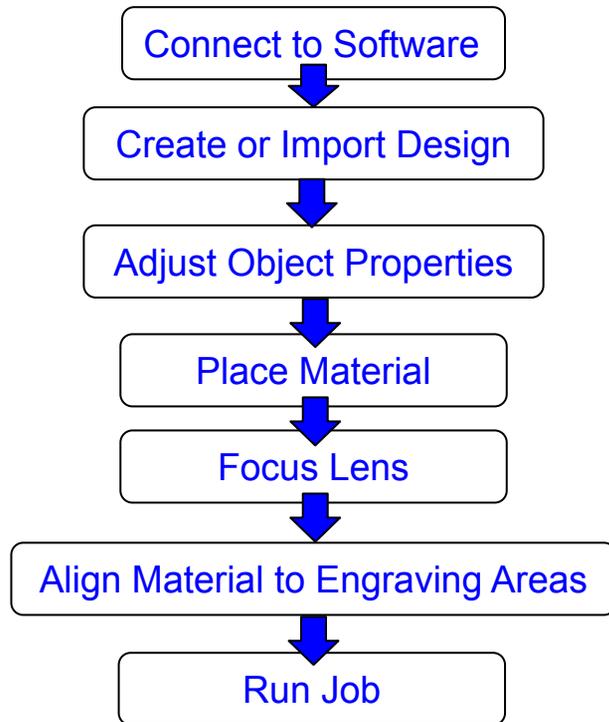By following our maintenance instructions, you can ensure your machine will function at peak performance for a long time. Please keep in mind that the following maintenance schedule can vary depending on machine usage.

Before each daily use:

Clean your lens with optical grade wipes.
Check your water, and air tubes for any potential leaks.
Make sure your ventilation system is functioning properly.

After weekly use:

Clean your machines workspace with a vacuum to remove small debris.
Clean your honeycomb trays with Oven-off or something similar.
Clean laser tube mirrors with optical grade wipes.
Check fume extractor filters and clean as needed.

Monthly:

Perform an Alignment test monthly to ensure proper engraving.
If cleaning is no longer effective, replace fume extract filters.
Check X and Y belts, tighten if needed.
Clean rails using white lithium grease.

Belt Replacement:

Side Belts:

1. Power off the machine and allow at least one hour for the capacitors to discharge.

2. Remove the retaining screws by unscrewing the M4 screws on the belt and carefully remove the belt.

    We advise removing one side at a time.
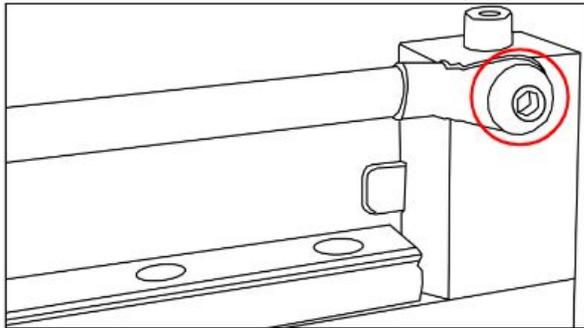
3. Mount the new belt in the same location, ensuring that the M4 screws slide into the gantry.

4. Once both ends are in place, tighten the screws to secure and retain the belt.

Gantry Belt:

1. Power off the machine and allow at least one hour for capacitors to discharge.

2. Locate the belt retaining screws, located behind the laser head assembly.
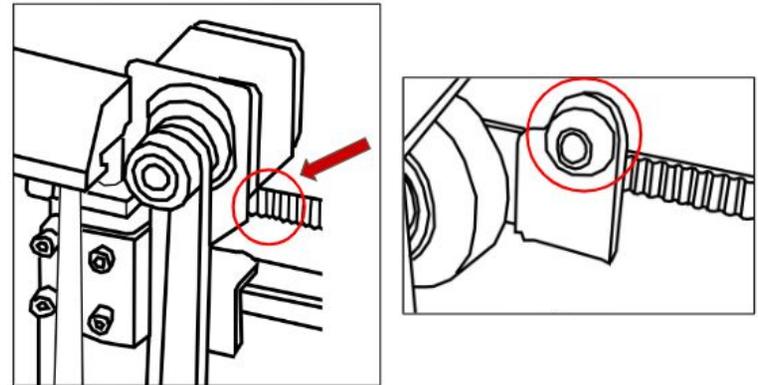
3. Loosen the retaining screws and remove the M4 washers. Remove the old belt and discarded it.

4. Connect one end of the new belt and run it through the belt assembly to ensure that both ends are correctly in place before mounting and tightening the screws.

Tension the belt by pulling on the motor with a moderate to strong force, then re-tighten the bolts.

If the motors do not move the belt, verify that the motors are connected to the control card.

Limit Sensors:

The Titan is equipped with Limit sensors in both the X and Y direction to prevent the gantry from trying to move past the workspace limit.

X-Gantry:

Y-Gantry:
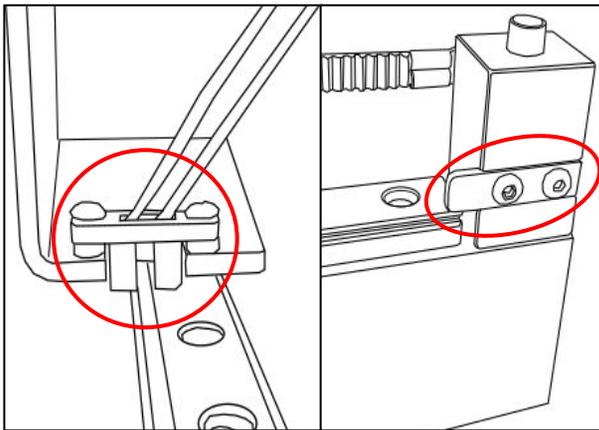
Mirror Alignment:

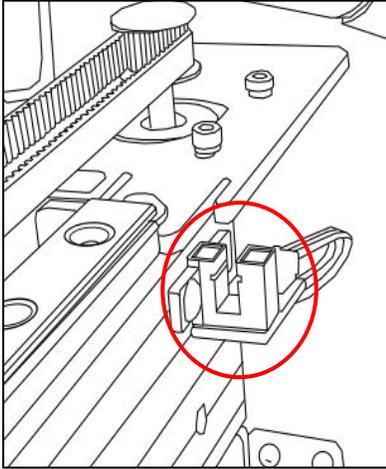The Titan is equipped with a laser that is initially aligned with the red diode, and the mirrors. However, it is important to regularly check the machine to ensure that the alignment remains accurate.

To check the alignment of the laser, follow these steps:

1. Carefully place a piece of painters tape on Mirror 3.

2. Move the gantry so that the laser head assembly is positioned at the far left.

3. Activate the laser to fire a beam, which should create a mark on the tape.

4. Next, move the laser head assembly to the far right position.

5. Fire the laser again and check the paper to see if the new mark overlaps with the previous one on the tape (as shown below).
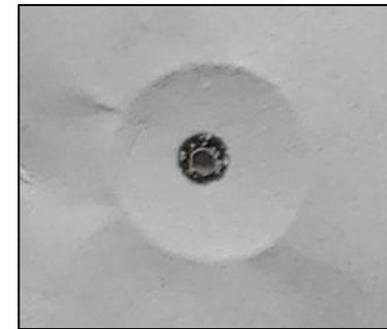
If the marks do not align, it indicates that the mirrors require realignment.

For more information on Mirror Alignment, view our linked Zendesk article here.

Troubleshooting:

Q: What should I do if my laser isn't marking?

A: Check if the laser is in its focal height. If the machine is off by even a few millimeters, it won't engrave. The laser head should be refocused after changing materials.

Still having difficulties? Make sure that your material is compatible with your laser engraver. Material containing carbon components should not be cut in this machine. For a list of material compatible with our laser machine, click on the link here.

Q: Why are my marks turning out incorrect?

A: Experiment with different settings to find the ones that work best for you. Here are some initial guidelines to get started:

- To get darker/lighter engravings, adjust the power or speed.
- To get deeper engravings, decrease the speed or increase passes.
- For clearer engravings, use a picture with a high resolution.

Q: What should I do if my engravings are too shallow?

A: You may need to increase the power and/or decrease the speed. Multiple passes can also add more depth. For precise engravings, ensure that the laser is fully focused. You can also use a smaller lens to engrave in more detail.

For a more detailed explanation on how to adjust the settings on your CO2 laser, please refer to the material settings article linked here.

Q: What should I do if my engravings look wobbly and uneven?

A: If you've recently calibrated your camera, your work area should be flat, smooth, and level. If not, recalibrate it on a different surface. Ensure your material is flat while engraving, it may need to be flatten and/or weigh down your material before engraving to avoid this issue.

Q: How can I solve issues with focusing my laser?

A: The Muse Titan will automatically focus to your material by touching the material and moving to the programmed focus height. If your machine does not move to the height try autofocusing manually using the autofocus button.

If your machine's laser head assembly moves irregularly, check belts. The belt may need to be replaced.

Q: I changed my focus lens and now it's not engraving like I want.

A: When changing your focus lens you also have to change your air assist cone. Since different focus lenses have different focal heights, an air assist cone is made to work only with one lens.

If your having an issue not listed here, visit our Help Center. We provides comprehensive videos, guided, and useful resources for troubleshooting to helping you get the most out of your investment in our products.

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FULL SPECTRUM LASER INVITES YOU TO JOIN OUR COMMUNITY OF HOBBY MAKERS AND PROFESSIONAL THROUGH OUR SOCIAL MEDIA CHANNELS (FACEBOOK,INSTAGRAM,TWITTER AND YOUTUBE) WE ALWAYS HAVE SOMETHING NICE TO SAY ABOUT HOBBY MAKER CULTURE OR THE INDUSTRY WE WORK IN. YOU CAN FOLLOW US AS WE CROSS THE COUNTRY GOING TO CONVENTIONS AND MAKER EVENTS OR JUST CHECK OUT ALL THE AWESOME STUFF WE MAKE. BEST OF ALL, WE OFFER ALL THOSE DESIGNS FOR ALL THOSE PROJECTS WE MAKE WITH OUR LASER CUTTERS FOR FREE. JOIN OUR COMMUNITY AND SEE WHAT ALL THE EXCITEMENT IS ABOUT.

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