MUSE CORE
USER MANUAL

Full Spectrum
L A S E R

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:

M-F 8AM-5PM PST
sales@fslaser.com
702-802-3101

Need help, visit us at our Help Center or contact Support:

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support@fslaser.com
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 symbol)	• Never stare directly at the laser when the machine is running.
(respiratory symbol)	• Avoid using materials made of carbon or that contain carbon components. • Make sure your exhaust in functioning properly before each use.
(fire symbol)	• 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 symbol)	• 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 symbol)	• 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:

Diagrams:

Water In/out

Exhaust

Power Switch

Touchscreen

Play/ Pause Button

Air Inlet

Power Switch

Machine Control

Water In

Water Out

Rotary Port

USB Port

Ethernet Port

Honeycomb Tray

Unboxing:

1. Cut open the box.
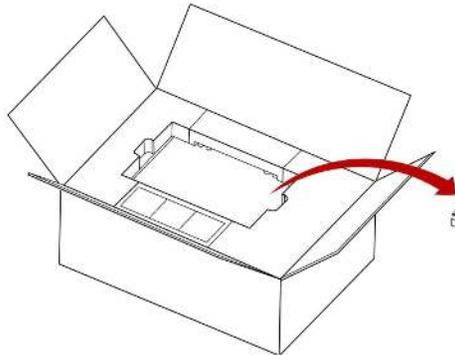
2. Take out the Honeycomb tray.

3. Pull out the Muse Core.
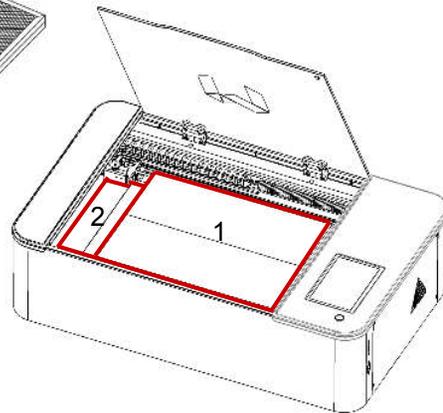
4. Carefully remove Box 1 and 2 from the machine. Then remove the foam remaining under the gantry.

Setting up your Muse:

1. Remove Zip Ties.

2. Connect the exhaust ducting to the exhaust..
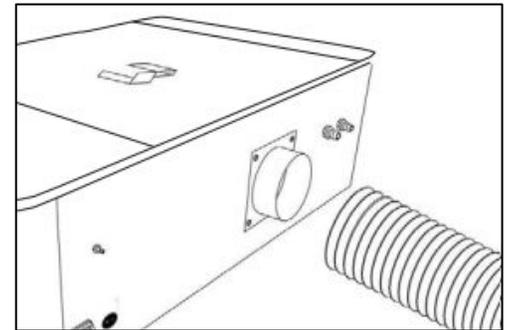
3. Connect to the exhaust fan.

FROM MUSE

TO OUTSIDE VENTILATION/ FUME EXTRACTOR

Full Spectrum
L A S E R

3
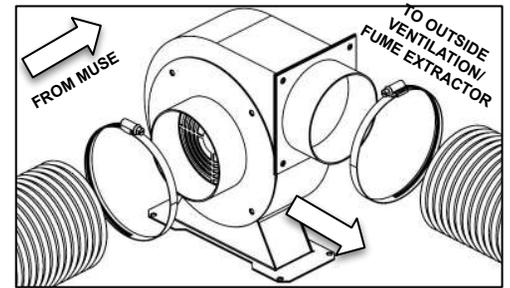
Hobby Kit Only

4. Get a bucket and fill it with two and a half gallons of distilled water.
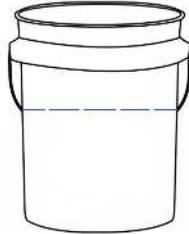
5. Pull out the water pump and place its plastic fitting on.
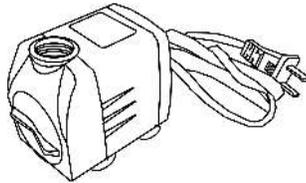
6. Locate the two water tubes. Connect the first one to the **Water Out** fitting on your machine and place the other end inside the bucket. Connect the second one to the plastic fitting on the pump and the **Water In** fitting on your machine.

7. Once connected, place the water pump in the water bucket. Cover the bucket in some way to prevent debris from falling in.

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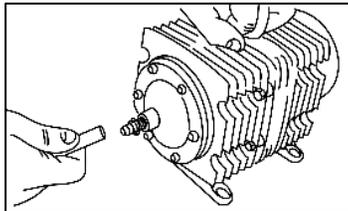
9. Connect the power cables into a power outlet. Your machine is ready for use.

Coolbox Only
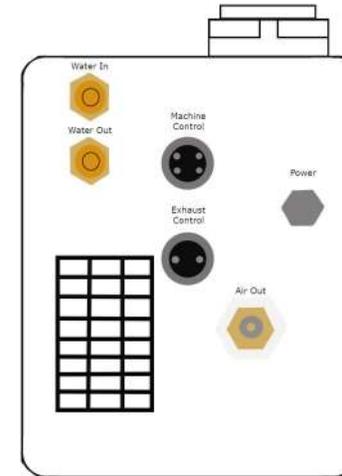
4. Retrieving the provided water tubes. Connect the first tube to the **Water Out** fitting on your machine and to the **Water In** of the Coolbox. Connect the second tube to the *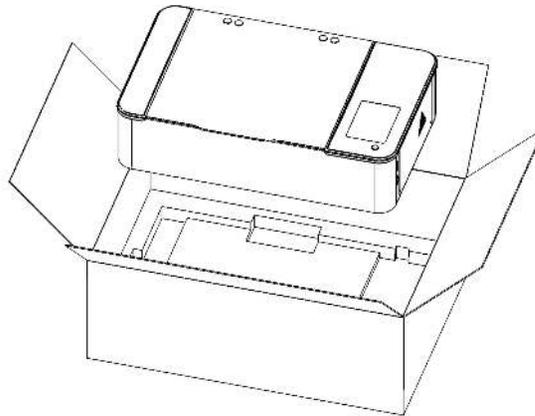*Water In** of the machine and the **Water Out** of the Coolbox. Verifying that the connections are secure before continuing.

5. Next, connect the air hose to the air fitting on both the machine and the Coolbox, ensuring that it is firmly attached.

6. Proceed to connect the machine control cable to the Coolbox and the machine, double-checking that the connection is secure.

7. Finally, connect the power source to both machines, and verify that they are receiving power. Your machine is now ready for use.

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 Core 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
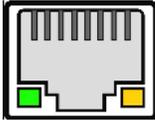
Connect to Wi-Fi:

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.
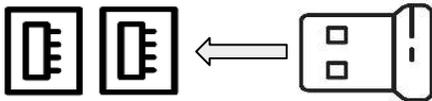
1. To connect to the WiFi network, select the Network button located on the top right of the Touchscreen.

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 Core can connect to the computer through Ethernet, but an adapter might be required for your computer.

Focusing:

Preparation: Choose your desired material and retrieve the provided billet.
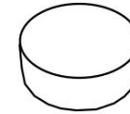
1. Either access RE3 or use the Touchscreen to maneuver the laser head into position directly above the material.

2. Position the billet beneath the laser head and use the adjustment knob to set the appropriate height.
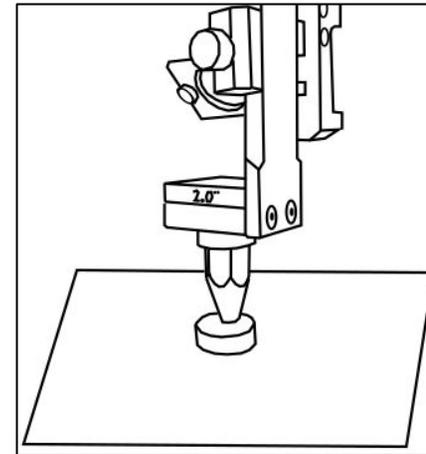
3. Once in place, lower the laser head onto the billet and secure it before removing the billet.

Your machine is now properly focused. However, it is important to note that you should refocus your machine each time you switch to a new material.

Touchscreen Interface:
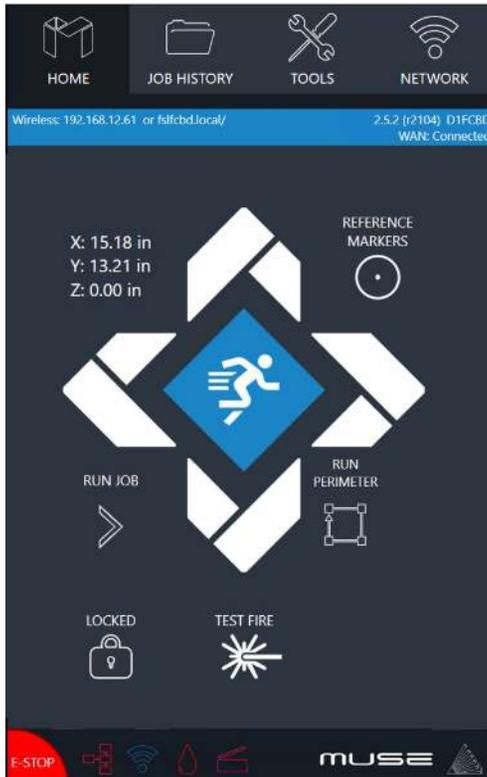
Movement Controls:
The laser hade can be moved up and down according to three speed settings. The settings can be changed by selecting the prism icon.

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.

Reference Markers Icon:
Selecting the icon will place a reference point that can be seen on RE3.

Test Fire Icon:
Selecting the test fire icon will fire the laser.

Run Perimeter Icon:
Selecting the icon will make the machine outline the area of your project on your workspace.

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.

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**
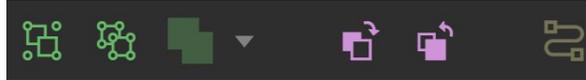
Grouping Tools:
Group: Group objects
Merge: Union: Combine layers into a single compound layer.
         Difference: Combine non-overlapping layers into a
         single compound layer.
         Intersection: Combine overlapping layers into a
         single compound layer.
         Subtract: Remove 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.
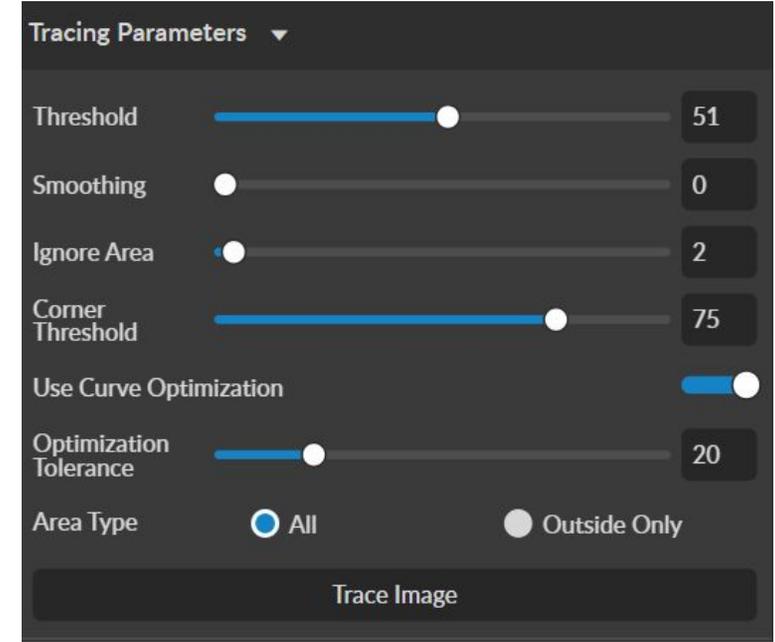
Positioning Tools:

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.

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:
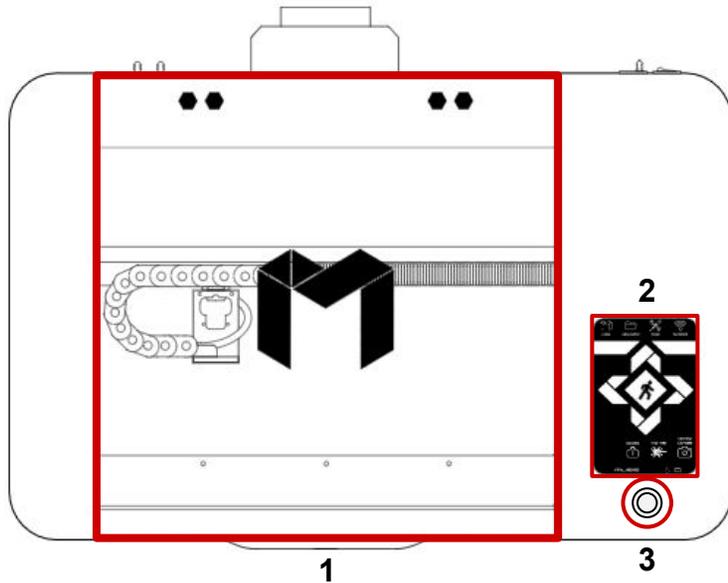
1. **Open the Lid:** This will immediately stop the laser from firing. If the laser doesn't stop, please contact support.

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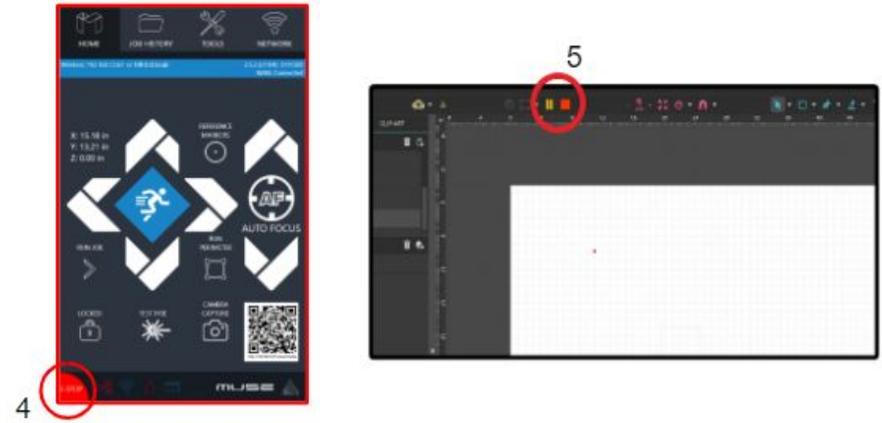
4. **E-Stop Button:** Located in the lower left corner of the touch screen, pressing this button will cut power to the laser instantly. Please handle this button with care as it is still part of the touch screen and can be fragile

5. **RE3 Stop/Pause Button.**
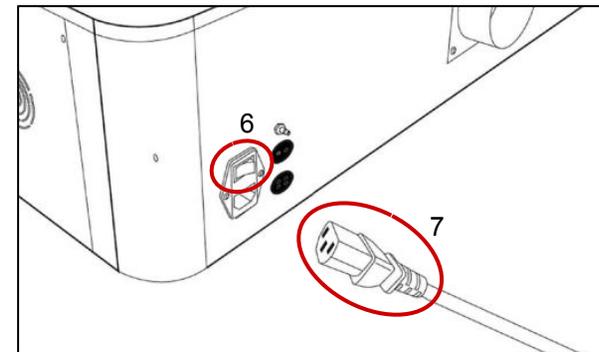
6. **Power Switch**. Turns the machine on and off.

7. **Power Outlet**. 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             │
└─────────────────────────────┘
```
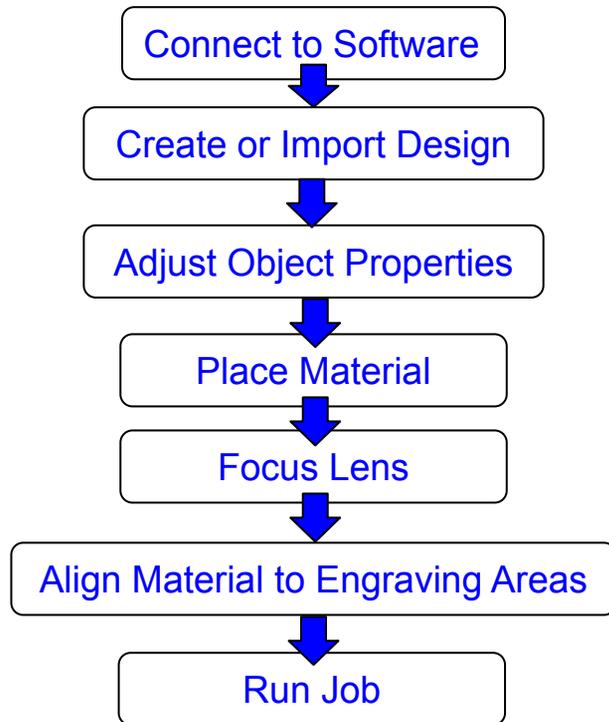
For more information on your machine refer to your user manual. For information on RE3, refer to the RE3 Guide found in our website.

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.

Full Spectrum
**L A S E R**

Belt Replacement:

X-Belt Replacement:

1. **Power Off and Unplug Machine.**

2. **Locate the Belt Screws.** The belt can be found above the adjustment knob. Adjust the gantry as necessary to access the screws.
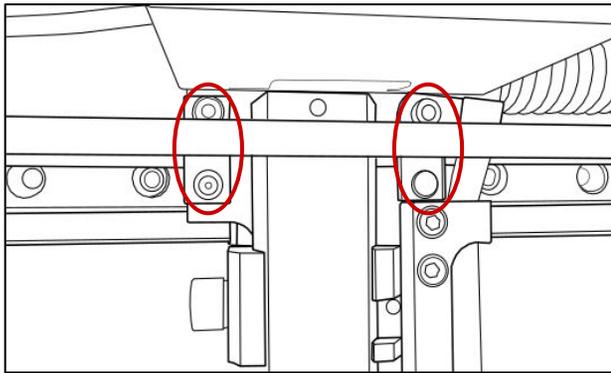
3. **Loosen Retaining Screws:** Loosen or remove the M4 retaining screws to remove and discard the old belt.

4. **Remove the Belt:** Remove one end of the belt, then remove the other.

5. **Mount New Belt:** To mount the first end of the new belt, thread it through the mounting slot with the folded part facing up. Secure the belt by tightening the M4 screws, you hands can be used to start the threading.Run the belt along the pulley, making sure that the belt as straight.Mount the second end of the belt into the mounting slot.

6. **Adjust Belt:** Check the tension of the belt by moving the gantry up and down. Adjust the tension as needed.

Y-Belt Replacement:

1. **Power Off and Unplug Machine.**

2. **Locate the Belt Screws.** The belt is under the gantry (see below). Adjust the gantry as necessary to access the screws.
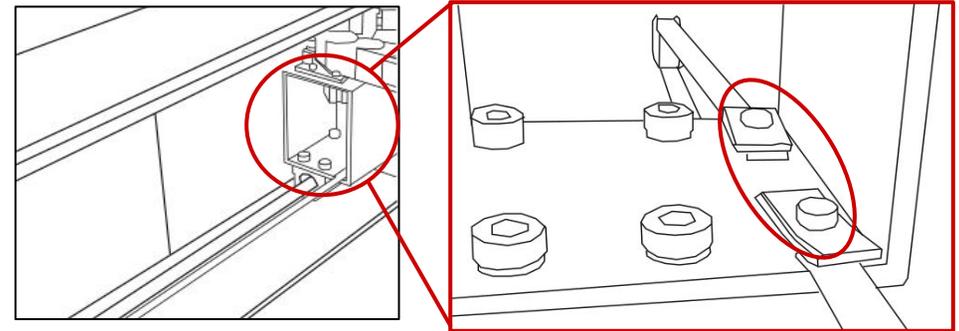

3. **Loosen Retaining Screws:** Loosen or remove the M4 retaining screws to remove and discard the old belt.

4. **Remove the Belt:** Remove one end of the belt, then remove the other.

5. **Mount New Belt:** Mount the front end of the new belt, thread it through the mounting slot with the folded part facing up. Secure the belt by tightening the M4 screws, you hands can be used to start the threading.Run the belt along the pulley, making sure that the belt as straight. Mount the back end of the belt into the mounting slot.

6. **Adjust Belt:** Check the tension of the belt by moving the gantry up and down. Adjust the tension as needed.
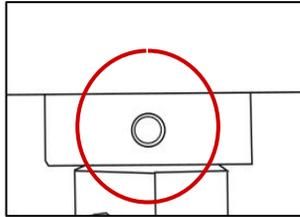
Full Spectrum
L A S E R

Air Assist Cone Replacement:

Please Note: The Air Assist Cone must be replaced when the lens is switched.
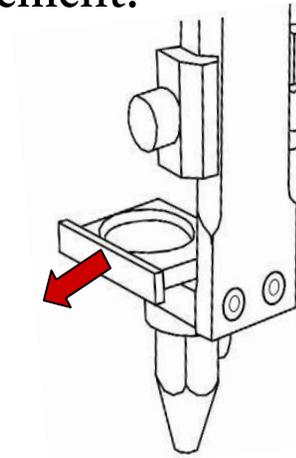
1. Disconnect the air hose by gently removing each end.
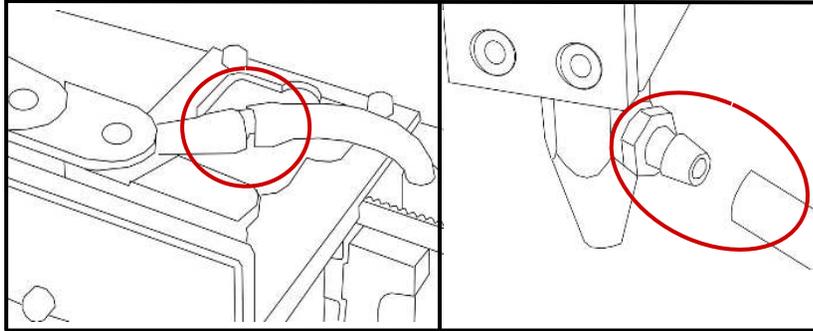
2. Using a 1.5 hex wrench (not included) to loosen the "set" screw on the cone. Remove the Air Assist Cone.

3. Place the new air assist cone under the focus lens and into the slot. Tighten "set" screw with a 1.5hex wrench. Reattach air hose.

Lens Replacement:

1. Remove the lens by pushing the back of the lens until you hear a click. Then, simply slide out the old lens.

2. After that, clean the new lens and slide it in.

3. Finally, go to the settings in RE3 to change the lens in use.

Full Spectrum
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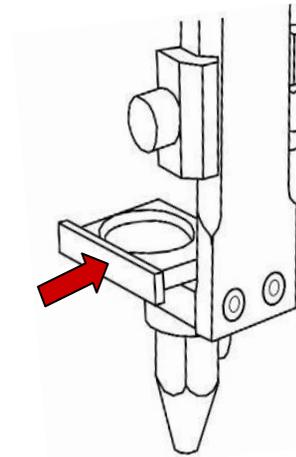
Troubleshooting:

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

A: Adjust 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: 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 Core can be focused manually using the provided focusing billet.

If your machine's laser head assembly moves irregularly, check belts. The belt may be cracked or torn and 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.
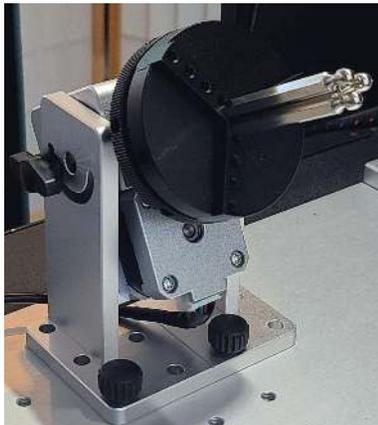
Core Accessories (Sold Seperately):
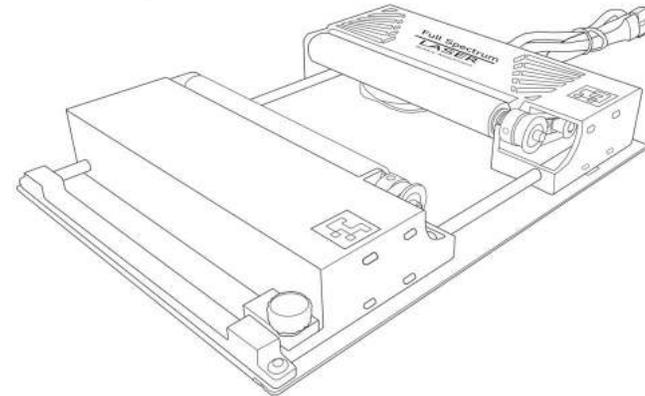
Chuck Rotary:
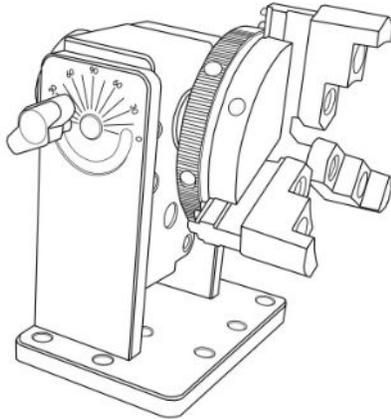
The Chuck Rotary is a compact rotary that is designed to help object of any size with ease.

The jaws can be swapped out by removing the screws. The rod attachment can be used for engraving smaller objects such as rings.
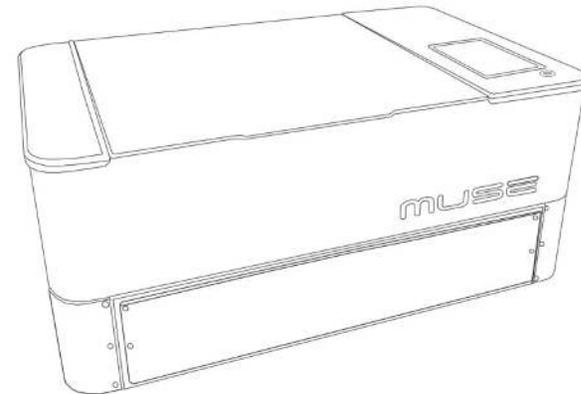

For more information visit the product page here or check out or Zendesk article here.

Low Profile Rotary:

The Low Profile Rotary is a compact rotary that is designed to be used with any Muse machine. Its adjustable mount makes the Low Profile rotary capable of engraving cylindrical objects ease.

Riser/ Rise-Rotary:

The Muse Core and Muse 3D have a Riser option available for individuals looking to engrave taller objects. The riser also has a built in pass through making it possible to engrave longer materials with ease.

If your interested in both a rotary and a riser we recommend looking into the Riser-Rotary option here or contact our sales team for more information.

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