



muse  servo

U S E R M A N U A L

UMV1_REV 08-18-25

1

Introduction and Safety

1.0 Support

Thank you for choosing a Muse Servo vinyl cutter.

For Muse Servo support, please go to...

<https://signwarehouse.com/blogs/content/muse-servo-support-resources>

1.1 Safety & Warnings

Please read the following safety guidelines regarding use of your Muse Servo cutter:



Symbols inside triangles represent important notes that warrant your full attention. There are different symbols denoting specific warnings. The symbol at left, for example, warns of a possible danger of electric shock.



The cross-bar indicates activities that are prohibited because of risk of injury or possible damage to your equipment. This particular symbol at left warns against the use of tools to remove parts of the equipment.



Don't use with an electrical power source which doesn't meet the required voltage rating. Using with substandard sources of electricity may result in fire or



Don't use your Muse Servo if it begins to emit an odor or smoke.



Don't un-plug your Muse Servo while powered on. Doing so may damage the equipment.



Make sure your Muse Servo is grounded. Using your Muse Servo without it being grounded may result in risk of equipment damage or electric shock.



Don't disassemble your Muse Servo or attempt repairs unless directed by SignWarehouse technical support.



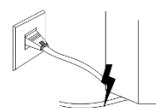
Don't drop any liquids or metal objects into your Muse Servo. Liquids or impact from hard or heavy objects may damage the equipment.



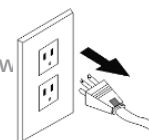
Touching your Muse Servo's blade with your finger may result in injury.



Don't damage or replace the power cable supplied with the vinyl cutter. Don't excessively bend, pull, or fold the power cable or place weight on it. Crimping the power cable may result in risk of failure or electric shock.



If you're not going to use your Muse Servo for a long time, unplug the power cable from the outlet.



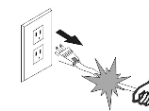
Placing your hands on the cutting platen during operation may result in injury.



Place your cutter on a stable surface. Operating the vinyl cutter on an unstable surface may result in a fall that can damage the equipment or internal components.



To unplug the power cable from a receptacle, always grasp the plug instead of the cable. Pulling the cable may damage it and increase the risk of fire or electric shock.



Don't operate during an electrical storm where lightning is present. For protection against power surges, a surge protector is recommended.



Don't physically move the cutting head while your Muse is powered on. Manually moving the cutting head during operation may damage the main





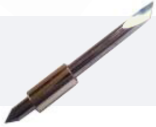

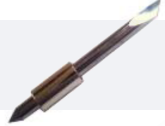


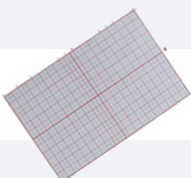
1.3 Warranty

The Muse cutter comes with a one-year parts warranty. If you have any questions about your cutter's warranty, please contact SIGNWarehouse at <https://signwarehouse.com/pages/contact-us>.

It is recommended that you keep your original box with the Styrofoam packing materials in case your Muse Servo must be shipped or returned to SIGNWarehouse.

1.4 Muse Servo Contents & Accessories

Besides the cutter, your box should also contain the following items:

		Servo24	Servo60
	Accessories Box containing all of the following except for the Cutting Mat	1	1
	Power Adaptor	1	-
	Power Cable	1	1
	USB Cable (white or blue)	1	1
	30° Blade	-	1
	45° Blade	2	2
	60° Blade	1	-
	Blade Holder	1	2
	Test Pen	1	2
	Cutting Mat	1	-

1.5 Parts of the Muse Servo Cutter

1.5.1 Parts of the Muse Servo24 and Servo60

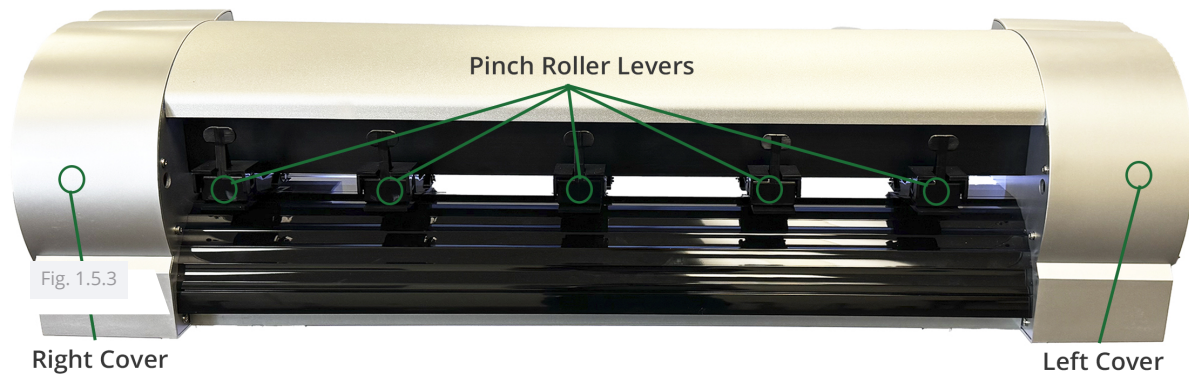
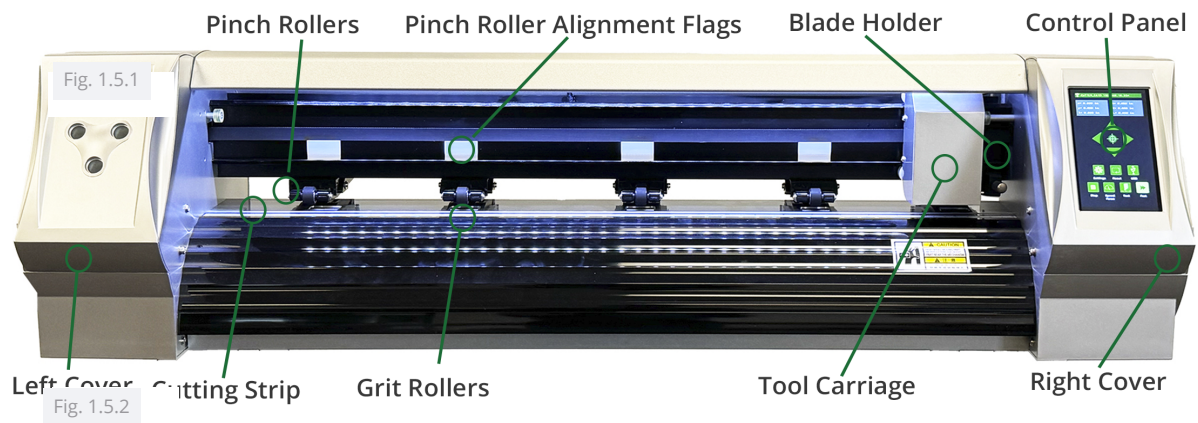
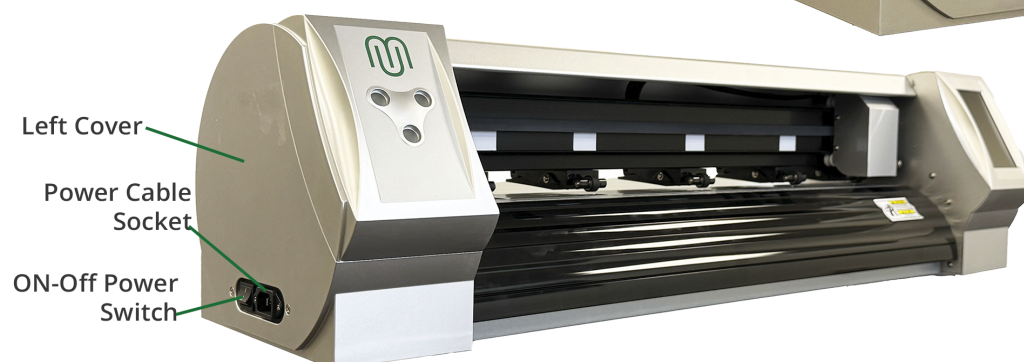


Fig. 1.5.4



1.6 Accessories

1.6.1 Test Pen

The test pen is used in calibrating the Muse's camera (Section 3.01), calibrating the Scale (Section 2.07), and is also recommended for test drawing while you are learning where shapes will cut based on various software settings. Note that a small piece of wax needs to be removed from the pen's nib before use. You may also wish to cut off the very top of the pen refill so that it more easily fits into your Muse:



1.6.2 Muse Blades

There are two kinds of blades that came with your Muse (note that which two kinds differ depending on the model you purchased).

1. The 30° **yellow** capped blade (not shown) is well-suited for window tint and fabric. It is included with the M60.
2. The 45° **red** capped blade is well-suited for cutting thinner materials such as heat transfer vinyl and wall/auto/decal vinyl. Two of these are included with the Muse.
3. The 60° **blue** capped blade has a longer cutting edge and is well-suited for cutting thicker materials like sandblast stencil, flock, craft foam, magnet sheets, light chipboard, rhinestone template materials, etc. It is included with the M15 and the M24.



Installing the blades into the blade holder is covered in Section 2.01. Blade Offset is covered in Section 2.02.2.

1.7 Pinch Rollers

Your Muse is designed for cutting rolls and sheets of adhesive-backed films such as vinyl, stencil mask and sandblast etching films. It can also use the included cutting mat for non-backed materials such as paper, cardstock, magnet sheets and Mylar.

The MUSE Servo 24 and 60 have individually actuated pinch roller levers. This enables more precise control of pressure applied to roll media. NOTE: Always activate pinch roller symmetrically, with the same number of rollers lowered on the left and right sides of loaded vinyl. Asymmetrical application of pinch rollers may cause media to skew as it's fed through the cutter.

Insert the media into the space between the pinch roller and grit roller and pull out the media far enough to ensure that it is loaded straight. The edges of the vinyl should be parallel to the left and the right frame of the cutting platen. (A 'platen' is the lower plate that supports the vinyl as it passes through the cutter.)

Slide the pinch roller assemblies left and right so that the pinch rollers are centered over the grit roller. The positions of the exposed grit rollers in the platen are marked by white squares above the platen. The white pinch roller alignment flags are clearly visible from the front of the cutter.

Once the pinch rollers are in position, lower them to keep your media in place. When using the cutting mat, you need at least two wheels near the outside edges of the mat, thus center the mat inside the cutter (versus having it all the way to one side).

Actuation of the pinch rollers is simple and intuitive. From the back of the cutter, raise the lever to raise the pinch roller from the platen. Lowering the lever lowers and actuates the pinch roller.

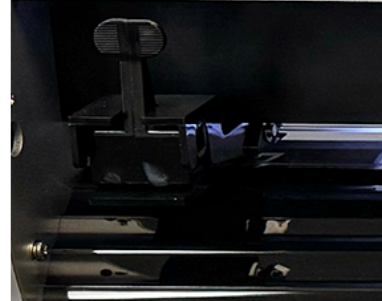


Fig. 1.7 Raised Pinch Roller

1.8 Control Panel

When you first power on the Muse, the following Main Screen or Home Screen will be displayed after several seconds:

The functions of the buttons on this Main Screen are:

SETTINGS: Opens the SETTING menu with access to other functions, such as CAMERA, WI-FI, ARRAY, ADVANCED SETTINGS, etc. See Section 1.8.1.

RECUT: Recuts the last job which is stored in the Muse's memory. Note that while the Muse is cutting, this button will read PAUSE. Pressing it will pause the cutting process in case any changes need to be made. Pressing again will resume the cut.

USB: Opens the UDISK window allowing access to files on a USB thumb drive plugged into the Muse's USB Flash Drive port. Files must be saved in .PLT format to appear in the menu (See Sections 1.10.6 – 1.10.8 for details).

STOP: One-touch emergency stop button stops the cutter and cancels the cut.

SPEED/FORCE: This button opens the SPEED/FORCE screen where you can optionally set the cutting speeds and force of the cutter, as well as access the stored presets (See Sections 2.2-2.5).

TEST: Press the **TEST** button to cut a small square. This is recommended to ensure a clean cut is achieved with the current settings before proceeding with a cut job.

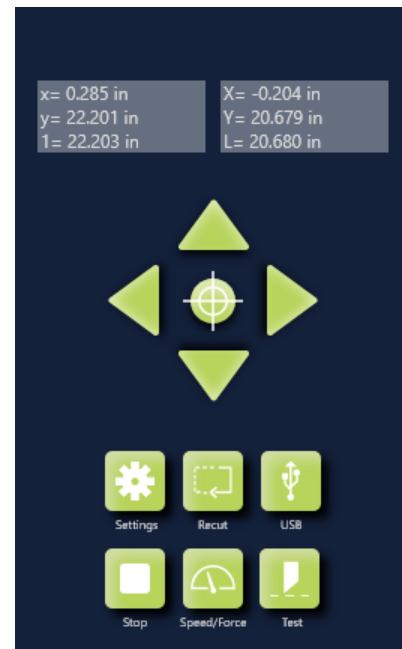


Fig. 1.8.1

Arrows: The left-right arrows move the tool carriage while the up-down arrows move the grit rollers. This allows you to start cutting anywhere on the media (i.e. set an origin).

Double Arrow: The double arrow button controls the speed of the tool carriage and grit rollers while setting a new origin. The default setting is the faster mode. Pressing this button once will change the color of the button from blue to red, which indicates the slower mode. This mode can be used for very precise movement.

1.8.1 Settings Menus

The Setting menus provides access to seven additional screens on two different pages: There are three Settings Menus: Settings, General Settings, and Advanced Settings. The functions found on the Settings Menu Are...

CAMERA: Opens the CAMERA SETTINGS menu. Refer to Section 3.00.

WIFI: Connect the MUSE to your home or office router for wireless connectivity (refer to Sections 1.10.4 and 1.10.5).

ADVANCE MODE: Three options for where the blade holder goes at the end of a cut:

- **TO START:** return the blade holder to the origin (the location immediately before the cut was started)
- **TO END:** advance the blade holder to the top of the completed cut with the option to move an additional distance
- **To LEFT:** advance the blade holder to the left of the completed cut with the option to move an additional distance

ADVANCE SETTINGS: Refer to Section 1.8.3.

GENERAL SETTINGS: Refer to Section 1.8.2.

SYSTEM INFORMATION: Hardware and firmware versions, Baud rate, and other settings that should need no adjustment unless directed by a SignWarehouse technical representative.

1.8.2 General Settings

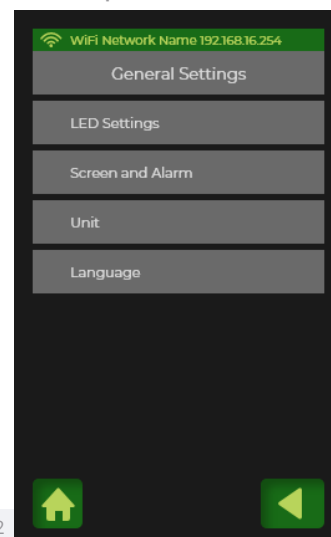
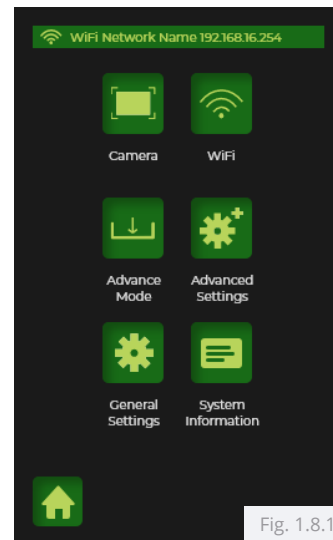
On the Settings Menu, Press the General Settings button at bottom left to access the General Settings Menu. Here, you will find functions for

LED

Screen and Alarm

Unit

Language



LED: This option allows you to customize the platen lighting in your Muse.

The LED lighting's primary benefit is in providing ideal illumination during scanning of printed registration marks when contour-cutting printed media. This diminishes the possibility that poor ambient lighting will interfere with scanning and contour-cutting.

The default setting is ON with the LED at 255, which is 100% white in RGB color. You can adjust the brightness of the lighting by touching and swiping the wide button at the top of the display, or simply turn it off by pressing the Off button.

ALARM: Enabling ALARM AFTER COMPLETED will produce an audible alarm of 5 beeps once a job completes. Uncheck this box if you wish to turn off this feature. Similarly, enabling LED AFTER JOB COMPLETED will change the LED color to blue once a job completes.

This feature is only on the M15 and M24 models.

SCREENSAVER: After a predetermined period of time, the cutter goes into standby mode to save energy and the LCD screen will darken as the cutter goes to sleep. You can change the amount of time before sleep mode begins.

UNIT: This setting allows you to choose the unit of measurement for all functions involving distance, such as the spacing between repeats or position of the cutting head. The default setting is MILLIMETERS (mm). The other option is INCHES (in). Because the SPEED and FORCE settings on a Muse are based on a scale versus units, they remain the same whether you are in imperial mode or metric.

LANGUAGE: This screen offers a choice of three languages: English, Spanish, and Mandarin. You can choose one of these for the language in which all settings and menu communication are displayed

1.8.3 Advanced Settings

Press SETTINGS on the Main Screen, then select ADVANCE SETTINGS. The functions in the Advanced Settings Menu are:

SHOW POINT: This feature shows the origin point of your cut jobs. When toggled on, the Main Screen will display an updated center button used to reset the origin, as well as some location positions (See Fig 1.8.4).

Absolute Location displays the current location relative to the "power-on" origin point of (0,0):

- X is the position relative to the movement of the cutter's tool carriage from left to right across the platen.
- Y is the position relative to the forward and backward motion of the media as it is fed by the grit rollers.
- L is the straight-line distance from X to Y.

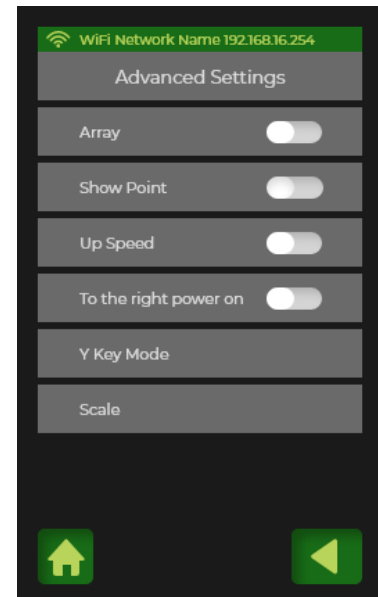


Fig. 1.8.3

Relative location displays a new location relative to the last origin you set. This will match the Absolute Location until you press the origin set button:

- x is the current left-to-right distance moved from the last origin (how far you have moved the tool carriage across the platen).
- y is the current up-&-down distance moved from the last origin (how far you have moved the media forward or backward in the Muse).
-

Y KEY MODE: This setting controls how the Muse cutter moves your media forward or backward (along the Y axis), as you press the up/down arrow keys on the control panel.

- In the DEFAULT setting, pressing the up arrow moves the media forward and pressing the down arrow moves it backwards.
- Setting the Y KEY MODE to INVERSE will flip this so that pressing the up arrow will move the media backwards.

SCALE: This setting is used to input the sizing calibration. Refer to Section 2.7.

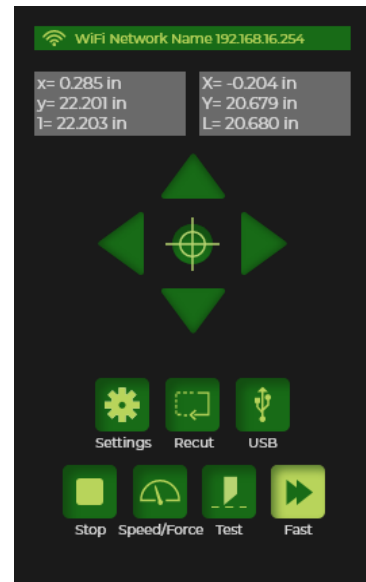


Fig. 1.8.4

1.8.4 Array Setup

This feature allows you to convert one cut job into multiple copies and arrange them in rows and columns.

Tap the ARRAY button to open the ARRAY SETTINGS screen:

Use the Array function to pre-plan a pattern of copies to be cut from one file. Sending a single copy of a vinyl graphic from your PC with the Array function activated allows the MUSE SERVO to automatically process multiple copies of the job in a pattern of your choosing. There are two data fields labeled X, Y on the screen. Use these to determine the number of copies, arranged in rows and columns, and the amount of space (margins) between rows and columns.

- The X value at the top determines the number of columns.
- The Y value at the top determines the number of rows.
- The X value at the bottom determines the space between columns.
- The Y value at the bottom determines the space between rows.

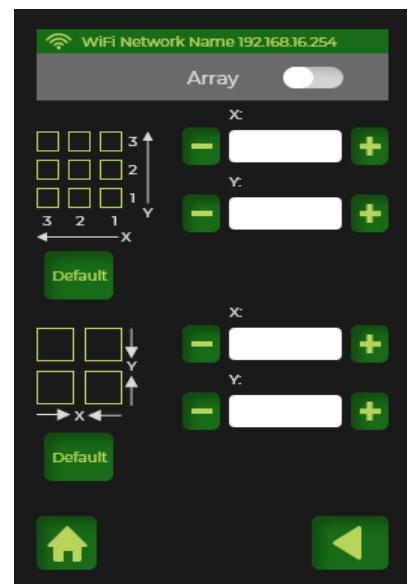


Fig. 1.8.5

1.9 Registering and Installing the Design Software

Depending on which software you purchased with your Muse vinyl cutter, there are two ways to set it up:

1. You'll find complete step-by-step instructions on our Product Support Blog for LXI. Please click here to access the setup tutorial or go to <https://signwarehouse.com/blogs/support/lxi-22-support-resources>



2. To install Create Space, download the software from the following link (note there are separate links for Mac and Windows users). You will also find a video to assist you with installation and activation of your registration number:
<https://techsupport.signwarehouse.com/create-space-software-support-resources/>

1.10 Connecting a Muse Servo to Your Computer

Place your Muse Servo on a sturdy horizontal surface. Keep the area around the cutter free of clutter and unnecessary items. This will prevent other objects from obstructing normal feeding of media through the cutter. Impacts with items around the cutter can cause a material to lift off the platen or feed incorrectly. Either of these can negatively impact cut quality and/or tracking.

To turn on the power, press the top of the power switch (toward I) at the bottom of the left end cap, directly in front of the power cable socket.

The Muse will take a few seconds to power up. The LED light will come on and the tool carriage will engage. **NOTE:** Once the cutter is on, do not move the tool carriage manually. This can damage the tool carriage and/or main board. Use only the arrows on the control panel to move the tool carriage.

To power off your cutter, press the bottom of the power switch (toward 0).

There are 3 ways that you can connect your Muse Servo to the computer:

1. USB Cable
2. Wi-Fi
3. USB Flash Drive

You may choose any one of these three connectivity options. You can also change from one to the other at will, but for best results use one at a time. Here are the benefits of each connectivity option:

1. The USB cable is the simplest and most reliable connection. Setup is quick and easy. See Sections 1.10.1 or 1.10.2 for instructions.

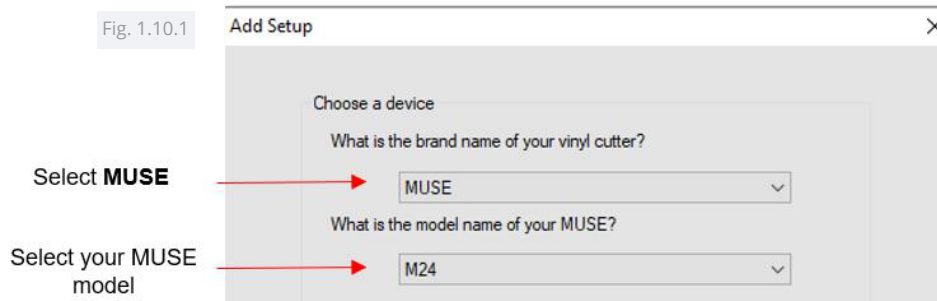
2. Wi-Fi takes a little more time and care to set up but offers a wireless environment in which the cutter can be used without being connected to the computer on which the software is installed. See Section 1.10.3 and Section 1.10.4 or 1.10.5 for detailed instructions.
3. The USB flash drive option allows you to use the cutter without being connected to the PC. Files can be saved from the design station computer in .PLT format and transferred to the cutter using a USB thumb drive. See Sections 1.10.6 - 1.10.8.

1.10.1 USB Connection in LXi

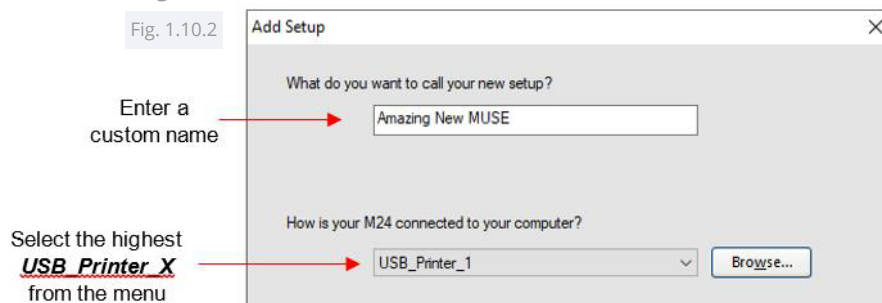
Turn on the Muse before connecting to your computer. Using the USB cable that came with the cutter, plug the wider end into your computer's USB port and the squarish end into the cutter's USB port which is on the right end cap (see FIG. 1.5.4).

Open LXi Production Manager. If this is your first time opening LXi, a popup screen will request a Brand and Model selection. Otherwise, select Setup and from the drop-down menu, click Add Setup.

From the pop-up window, choose MUSE as the Brand. Find and select M15, M24 or M60 in the Model window:



Click Next. The setup window will ask how your Muse Servo is connected to the computer. Open the drop-down menu and select the largest available option for USB_Printer_X where X will be 0, 1, 2, etc. For example, if you see both USB_Printer_0 and USB_Printer_1 then you would select USB_Printer_1 because it is the higher of the two. It is not recommended that you select USB001 or USB002 (or other) from that menu. They may work for basic functions but may not adequately support contour cutting.



Click on Finish at the bottom of the Add Setup window.

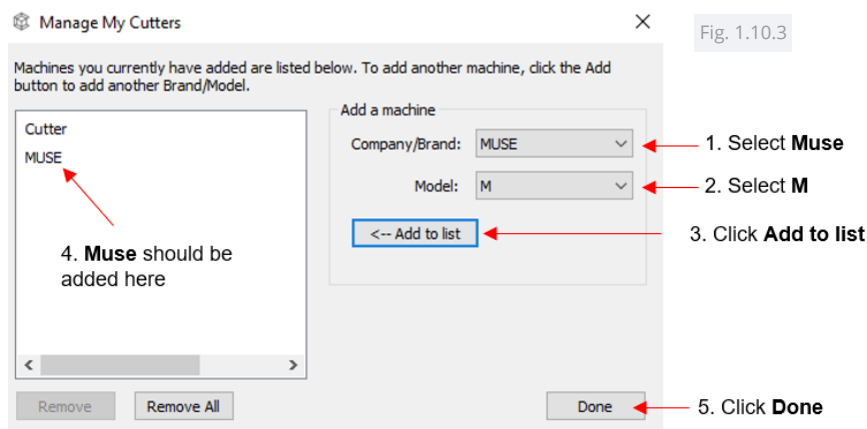
1.10.2 USB Connection in Create Space

Turn on the Muse Servo before connecting to your computer. Using the USB cable that came with the cutter, plug the wider end into your computer's USB port, and the squarish end into the cutter's USB port which is on the right end cap (see FIG. 1.5.4).

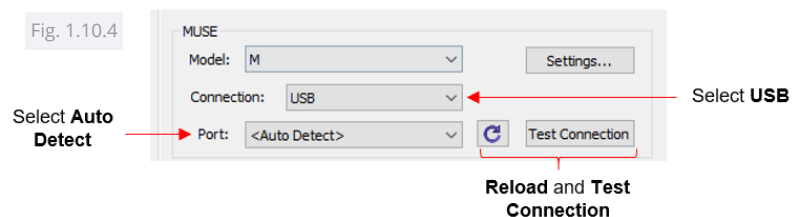
Open Create Space and select New Project.

Go to Cutter>My Cutter>Manage Cutters and a new window will open (FIG. 1.10.3).

A new window will open. On the right side, under Company/Brand select MUSE and under Model select M. Click Add to list. Click Done to apply and close the window.



Once you are ready to cut, click the Cutter icon on the Toolbar at the top of the screen. The Cut Settings window will open and, in the Connection drop-down menu, select USB. You can change the port or leave it on Auto Detect. If you click on Test Connection, it should move the blade carriage back and forth one time. This does not send a cut, just a signal to the cutter.



1.10.3 Connecting the Muse Servo to a Wi-Fi Network

For initial setup using the Wi-Fi option, you may need to place the Muse Servo in the same room or in close proximity to the Wi-Fi router. This will create a stronger connection and faster Wi-Fi network configuration. Once the connection is set, you can move the cutter around within the limits of your router's coverage area.

You will need the name of the network and the password.

Carefully complete the following steps:

1. On the Control Panel, press the SETTINGS button to access the SETTINGS menu:
2. Press the WIFI icon (Fig 1.10.3).

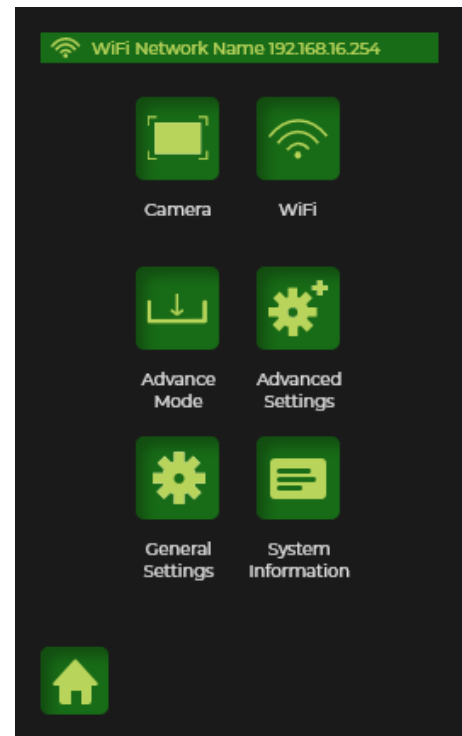


Fig. 1.10.3

3. In the next screen, press the SCAN button and a list of wireless networks will appear. Select your network and press APPLY.
 4. Press the SET button and enter your network password. Press OK.
 5. An IP address (IP ADDR) will appear. The first three sets of values will be obtained from your network. Use the + or - buttons to set the last digits of the IP ADDR that you wish to use:
 6. Press APPLY to set the changes and add the Muse to your wireless network. This can take up to a minute or longer.
- If the APPLY button on the Muse Servo WiFi screen changes to CONNECTED OK, you have successfully connected!
 - If the APPLY button changes to PASSWORD ERR, check your settings, and enter the correct values.

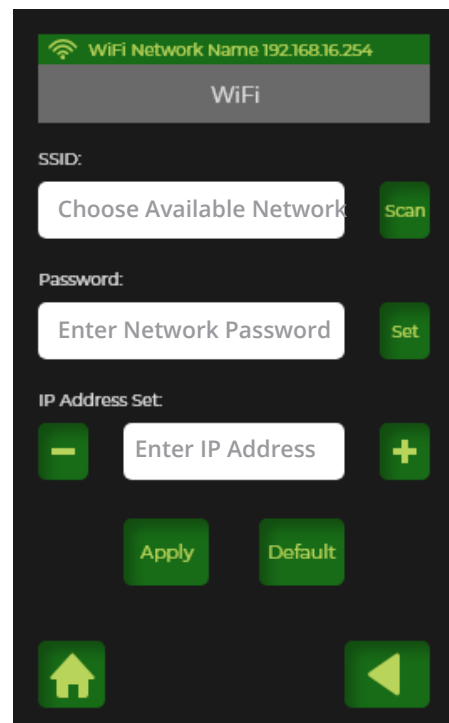


Fig. 1.10.4

7. Note the complete IP address at the top of the window (FIG. 1.10.4). You will be entering this same IP address in the software you use for cutting.
8. If you need to reset or change networks, press and hold the DEFAULT button for 3 seconds. This will reset the settings and enable you to change the network.
9. Before connecting the Muse to your computer using a Wi-Fi connection, you must verify that your computer is also connected to the same network. To do this, locate and launch the network icon for your computer:



10. A menu of available networks will appear. Select the network used for the Muse setup and, if needed, enter the network password. Wait a bit for the connection to be made and the menu should indicate you are now connected to that network.
11. Proceed to either the next section (if using LXi Production Manager) or Section 1.10.5 (if using Create Space).

1.10.4 Wi-Fi Connection in LXi

Open LXi Production Manager. If this is your first time opening LXi, a pop-up screen will request a Brand and Model selection. Otherwise, select Setup and from the drop-down menu, click Add Setup.

From the pop-up window, choose MUSE as the Brand. Find and select SERVO-24 or SERVO-60 in the Model window:

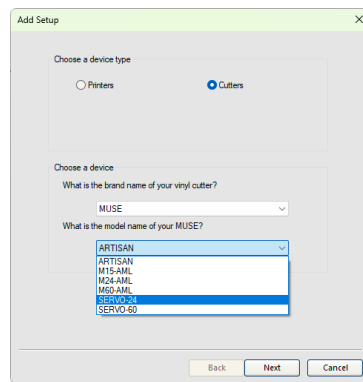


Fig. 1.10.5

Click Next. The setup window shown in FIG. 1.10.9 will ask how your Muse is connected to the computer. Select TCP/IP. A small window will appear in which you can type in the cutter's IP Address from Step 7 in Section 1.10.3 (FIG. 1.10.7)

Below TCP/ IP address, you will need to enter the correct Port number which is 8080. Enter this value and click Test. If you have a successful connection, LXi will indicate success. Click on OK to close the Communication window. Click on Finish at the bottom of the Add Setup window.

If Test fails, check the Muse Servo again to verify the network name and the IP address. If you change settings, it may be necessary to wait a minute and start from the beginning of the process in order to allow the computer time to reset and recognize the Wi-Fi connection.

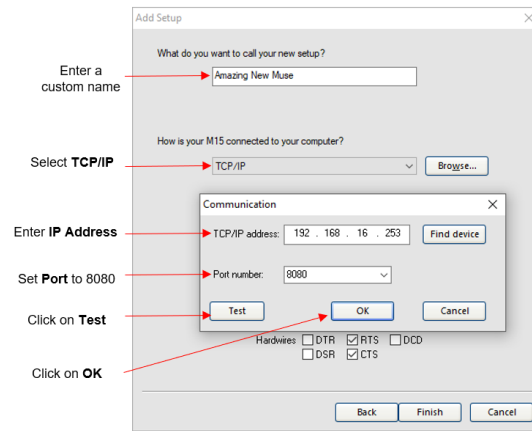


Fig. 1.10.9

1.10.5 Wi-Fi Connection in Create Space

Open Create Space and select New Project.

Go to Cutter>My Cutter>Manage Cutters.

A new window will open. On the right side, under Company/Brand select MUSE and under Model select M. Click Add to list. Click Done to apply and close the window:

Once you are ready to cut, click the Cutter icon on the Toolbar at the top of the screen. The Cut Settings window will open and, in the Connection drop-down menu, select TCP/IP (FIG. 1.10.11)

In the IP field, type in the IP Address from Step 7 in Section 1.10.3.

Once you type in the IP address, click on Test Connection, it will move the blade carriage back and forth. This does not send a cut, just a signal to the cutter. If not connected, you may need to change the IP address to a free number on your system.

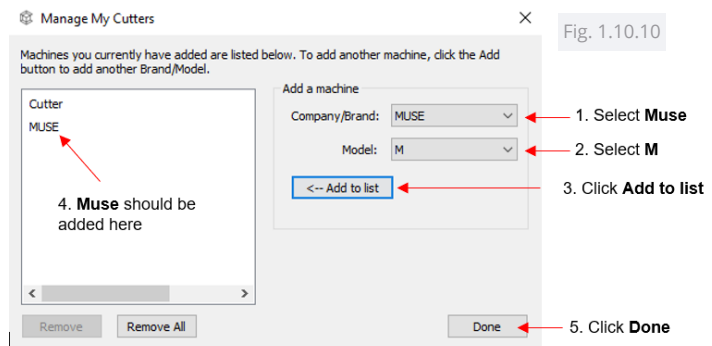


Fig. 1.10.10

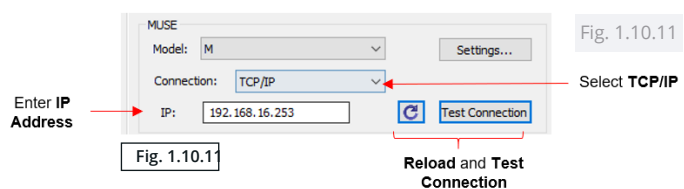


Fig. 1.10.11

1.10.6 USB Flash Drive Setup in LXi

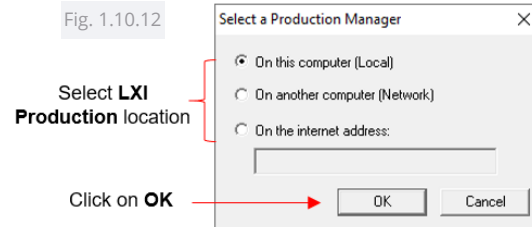
If you are new to LXi, follow the first few steps in Section 1.10.1 to add the Muse Servo to LXi Production Manager.

Using the UDISK (USB thumb drive) option involves saving a .PLT file containing the cut design and some or all of the cut settings. This file can then be opened directly onto the Muse Servo and cut. Remember that with this option, once the file is saved to the thumb drive, the design is locked in and cannot be edited, other than setting up an array of repeats.

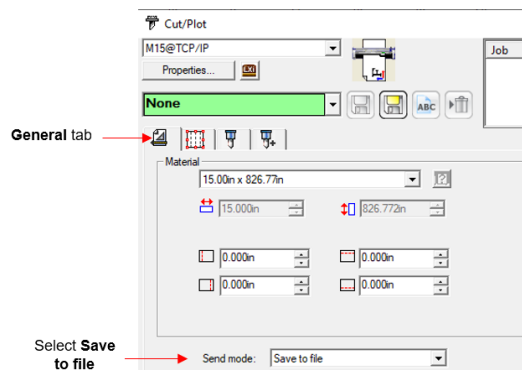
Once your file is ready to cut in LXi, insert a USB flash drive into the design station computer.

Go to File>Cut/Plot or click the Cut/Plot icon . A window will open and you will need to select the location of the LXi Production Manager in relation to your design station computer:

Click on OK and LXi Production Manager will open.



The Cut/Plot window will also have opened. On the General tab, select SAVE to FILE from the Send mode drop-down menu:



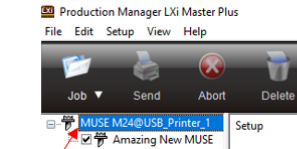
When you have made any necessary changes to the file size, copies, rotation, etc., click the Send button at the bottom right of the Cut/Plot window.

A window will open prompting you to select the desired location to save the .PLT file. Browse to the installed flash drive and save the file after entering a new name. Go to Section 1.10.8.

NOTE: if you will continually be using the USB Flash Drive as your method of sending files to the Muse Servo:

- Change the Port connection by right clicking on the Muse Servo in the Production Manager list, and selected Change Port (as shown in FIG. 1.10.14)
- In the Change Port window, select FILE and then complete other options, as preferred:

Fig. 1.10.14

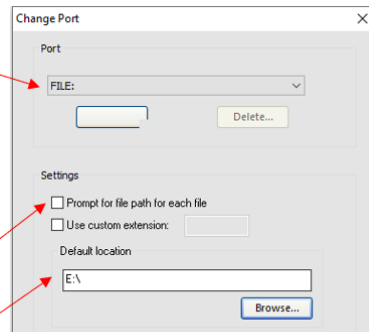


Right click on selected MUSE listing and select **Change Port**

Select **FILE** from menu

Option to **Prompt** each time

Select **Default location** for saving PLT files



1.10.7 USB Flash Drive Setup in Create Space

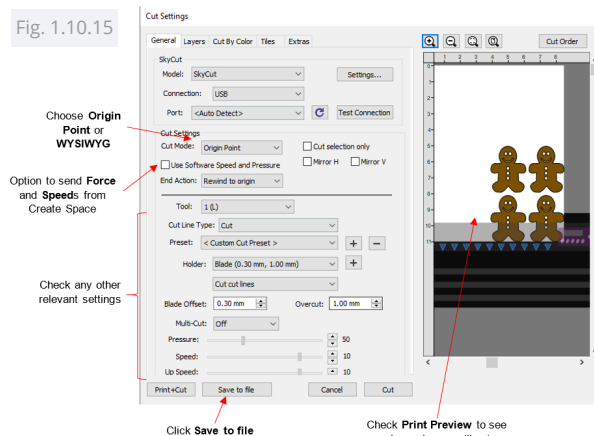
If you are new to Create Space, follow the first few steps in Section 1.10.2 to add the Muse to Create Space.

Using the UDISK (USB thumb drive) option involves saving a .PLT file containing the cut design and some or all of the cut settings. This file can then be opened directly onto the Muse and cut. Remember that with this option, once the file is saved to the thumb drive, the design is locked in and cannot be edited, other than setting up an array of repeats.

In the Cut Settings window, verify you see the design in the Preview as shown in FIG. 1.10.15, and choose either Origin Point (move shapes to cut at the origin) or WYSIWYG mode (leave shapes in location on virtual mat in main window) depending on which you prefer.

Mark the box for Use Software Speed and Pressure, if you want those included in the file. Otherwise, leave the box unchecked and you can set those values on the Muse Servo's control panel. The other cut settings including Blade Offset, Overcut, and Multi-cut (Passes) will always be included in the .PLT file:

Fig. 1.10.15



Once your file is ready to cut, insert a USB flash drive into the computer. Click on Save to File at the bottom of the Cut Settings window. A new window opens where you can browse to find the USB flash drive, name the file, and mark the box for Add registration marks, if this is a contour cutting application.

1.10.8 Loading and Cutting a .PLT File from the USB Drive

Insert the USB flash drive into your Muse Servo cutter's USB Flash Drive Port (see FIG. 1.5.4).

On the Main Screen, press the SPD/FOR button and change the FORCE and SPEED settings if you did not elect to send them within the .PLT file (refer to Section 2.02.1). Perform a test cut, if needed.

Press the USB icon on the Home Screen. Press OPEN to access the files on the USB flash drive. The Muse Servo will browse the contents of the installed USB thumb drive and display all readable .PLT files (Note: If there are folders on the drive, you may have to use the touch screen to open the correct folder to find the saved .PLT file).

Locate the file you wish to cut and touch to select it. Then touch the START CUT button to

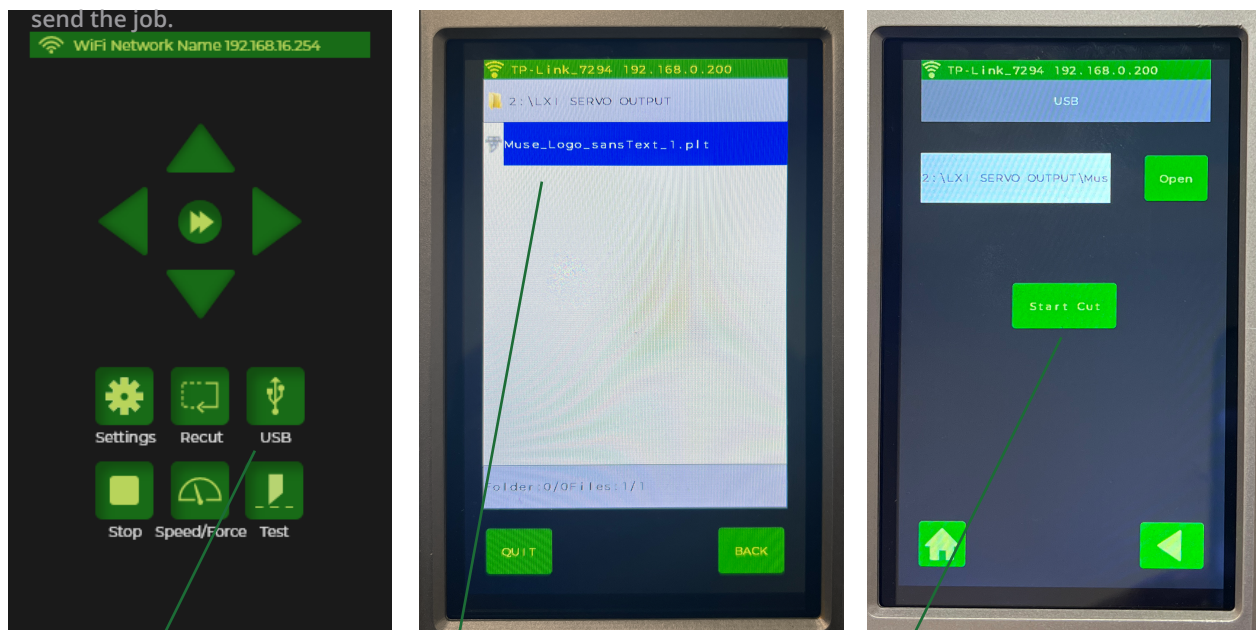


Fig. 1.10.16

Press the USB icon to navigate to the screen to view .plt files on an inserted USB thumb drive.

Touch the folders to open them. Touch to select the desired PLT file.

Once the desired .PLT files is selected, press the Start Cut button to send the job to the

Press START CUT to cut the .PLT file. Note that if you want to cut repeats refer to the Array function covered in Section 10.8.4.

1.11 Maintenance

All Muse Servo cutters are made with high-quality internal lubrication to protect all mechanical components. Therefore, there is no need to oil or lubricate any of the components, ever! Daily care consists of cleaning the platen and blade holder to prevent buildup of dust and material debris. Dusting the platen with a soft brush will get the job done perfectly. Debris inside the blade holder can be removed using a can of compressed air and a nozzle. Also, make sure the pinch rollers and grit rollers are kept clean and free of any stickiness.

2

Cutting

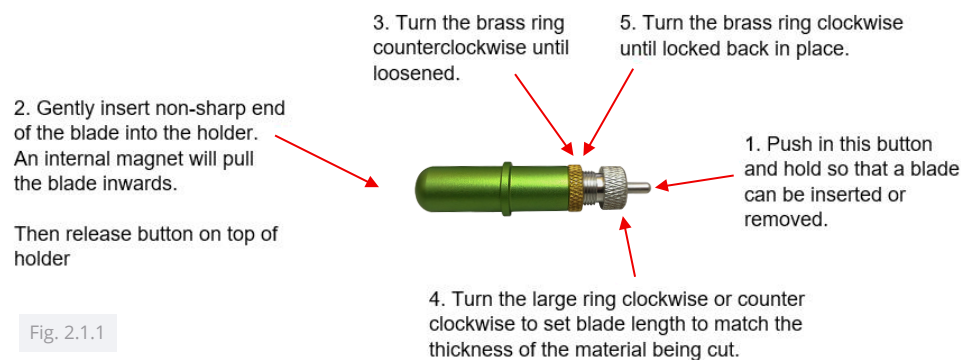
2.0 Cutting Overview

To be a successful owner of a vinyl cutter, you need to keep in mind a few factors:

- You're going to make mistakes. This is normal and part of the process of mastering a cutter.
- Read this chapter. It contains valuable information to help you understand how to load the blade, set the exposure, understand the effects of various cut settings, create presets, and set a new origin.

2.1 Proper Blade Installation

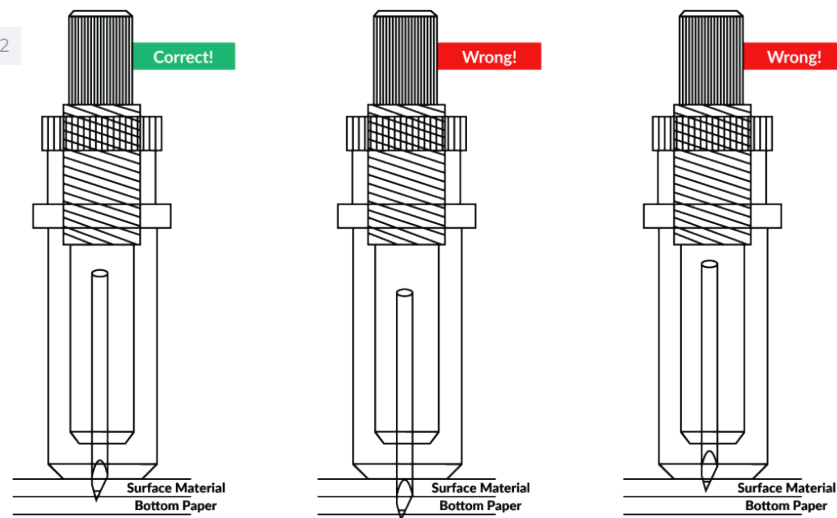
Before using the Muse Servo advanced control panel to set the cutting speed and force, it is important to make sure the blade is installed properly in the blade holder. Remove the protective cap on the blade and follow these instructions:



The blade tip only needs to protrude far enough to cut through the face film and adhesive of adhesive-backed vinyl. This is a combined thickness of approximately 0.005" or less. The blade should not extend farther than ~ half the thickness of a credit card.

When properly installed, the tip of the blade is barely visible (See FIG. 2.01.2 below). Adjust the blade inside the holder by turning the knob clockwise to extend more of the blade and counterclockwise to retract it.

Fig. 2.1.2



Perfect. The blade cuts through the vinyl, but not the release liner.

The blade is too far out. It's cutting all the way through the release liner.

The blade isn't out far enough to cut through the vinyl.

Box Test: To make sure the blade is inserted properly, use the images in FIG. 2.1.1 as a guide. Once the blade is installed in the blade-holder, place a sheet of vinyl on a flat surface, and place the blade-holder against the vinyl. Try to hold it perfectly perpendicular to the surface (FIG. 2.1.3). Next, move the blade-holder across the vinyl and draw a square. Set aside the blade-holder and try to weed the box.

- If you cannot remove the box from the rest of the vinyl, you may not have cut deeply enough. The blade may need to be adjusted so that the tip extends farther.
- If the vinyl lifts easily, but the release liner below is deeply scored or cut all the way through, the blade is cutting too deeply. Adjust it so that less of the tip is showing.

If you can easily weed the box, but the release liner paper below is barely scored (or not scored at all), the blade is installed correctly in the blade-holder. You are now ready to install the blade-holder in the tool carriage and use the speed and force settings



Fig. 2.1.3

2.2 Cut Settings

Now that you have inserted the blade properly in the blade-holder, you can use the Muse Servo's control panel and menu options to expertly manage the speed and force of the cutter. Cutting vinyl successfully requires managing the amount of force you apply to the material and the speed at which the tool carriage moves across the platen.

2.2.1 Force and Speed

Force Guidelines: There are different levels of force required for various kinds of self-adhesive vinyl and heat transfer vinyl. Generally speaking, thicker or coarser materials such as reflective vinyl or glitter-flake HTV require more force than standard 3 mil sign vinyl.

The Muse makes managing these settings easier. It allows you to store, edit, and recall saved settings for different kinds of materials, so you can quickly change from one type of film to another.

The recommended or optimal force varies for different materials. The ideal force setting may even change for different colors. White vinyl sometimes requires more cutting force than other colors, due to the density of the pigment. It's always a good idea to perform a test cut before proceeding. This can be done using the TEST button on the SPEED/FORCE screen.

Speed Guidelines: In commercial signs and graphics, the faster you get a job done, the better. Time is money and speed saves time. So, it's tempting to run your cutter at top speed all the time, but this is not always the best approach.

Think of the cutter making vinyl graphics as if you were drawing, holding a fountain pen, or cutting with a hand-held X-Acto knife. If you were cutting or drawing a large square, you could go very quickly. If, however, you were cutting an intricate image, you might want to slow down and make sure you got all the curves and corners right.

The same holds true for vinyl cutters. You can cut large simple graphics at maximum speed. Cutting small, intricately detailed graphics requires more care and should be done at lower cutting speeds.

Just as you would do manually, if you're cutting something thick or tough, you would slow down to make sure you're cutting with enough force. Likewise, when using your Muse, cut thicker or tougher films on a lower speed setting to ensure good cut quality.

US and VS Speed Settings: To make your cutter even more efficient, there are two available speed settings in the Muse control panel:

US is the 'up speed', the speed of the tool carriage when the blade is lifted moving from the origin to the start of the first shape to cut, or when moving from one shape to the next.

VS is the 'down speed' or the speed of the tool carriage when the blade is in the down position, cutting the shapes from the media.

For instance, you may need to use a lower VS to cut a detailed graphic, but you can leave the US at a much higher setting. Overall, there will be a time savings compared to use a lower VS for the entire project.

Changing Speed and Force: To change the speed and force settings on your Muse Servo:

From the Main Screen, press the SPD/FOR button and the following screen appears:

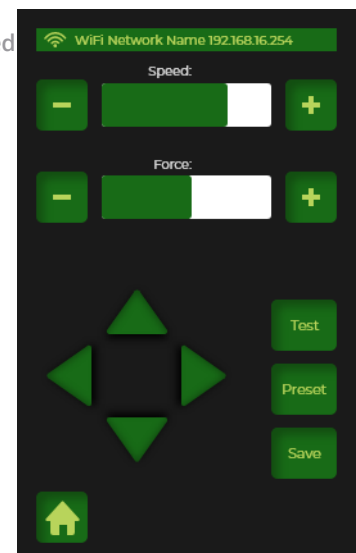


Fig. 2.2.1

You can change settings by either sliding your finger across a bar or by pressing the + or – buttons to increase or decrease the parameter. The green slider will change to show the Speed or Force selected, relative to the minimum and maximum values possible.

Both the Up Speed and Cut Speed are displayed on a scale from 1 to 13:

- The settings from 1 through 4 are the slow speeds and should be used when cutting dense difficult materials.
- The settings from 5 through 8 are medium speeds and should be used for easy-to-cut materials, such as cardstock, vinyl, iron-on transfer, and rhinestone template material.
- The settings from 9 through 13 are the fast speeds and are useful for engraving and drawing. You may, however, find that some materials will cut well at the faster speeds. You can normally use this higher range for the Up Speed.

Force is displayed on a scale from 1 to 160 where 160 represents the maximum of 800g (on the M15 and M24 models) and 2000g (on the M60 model).

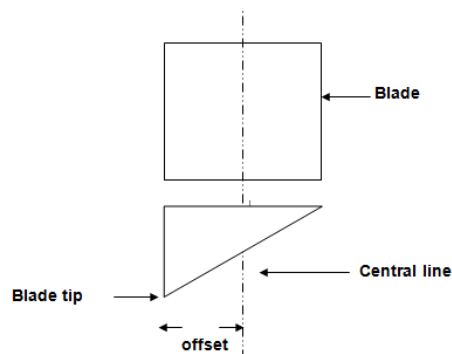
Once you have set the desired speed and force, load some vinyl and press the TEST button. Weed the pattern to determine whether the applied force is sufficient to cut through the top layer and adhesive, but not so much that it cuts through or deeply scores the release liner.

The Muse Servo has the ability to store up to eight combinations of Speed and Force. Refer to Section 2.03.

2.2.2 Blade Offset

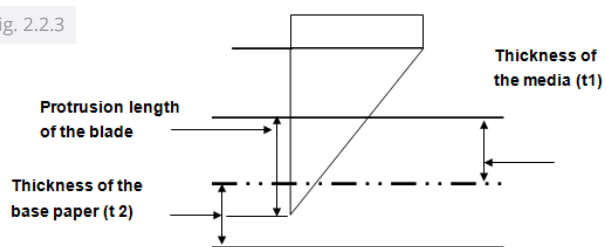
OFFSET is the distance that the blade tip is displaced from the centerline of the blade.

Fig. 2.2.2



Protrusion Length of the Blade

Fig. 2.2.3



Length of protrusion = $t_1 + t_2 / 2$, but for your convenience you may just make it about 0.3mm ~ 0.5mm beyond the blade holder tip.

Offset Adjustment: If you are cutting rectangular paths and find that paths which should have 90° angles are instead rounded, the **Blade Offset** is too low. If the angles are sharp but distorted, the offset value is too high:



In either case, you will need to adjust the **Blade Offset** value in LXi Production Manager (see Section 2.5) or in Create Space (see FIG. 2.6.1). These are the base settings for each type of Muse blade:

- 30° yellow capped: 0.75 mm (0.03 in)
- 45° red capped: 0.3 mm (0.01 in)
- 60° blue capped: 0.4 mm (0.02 in)

2.2.3 Overcut

If your test cut has gaps in the paths or if the corners were not cut precisely, you may need to adjust the **Overcut** setting. This can be done on the Default Job Properties tab in the LXi Production Manager (see Section 2.5) or in the Cut Settings window in Create Space (FIG. 2.6.1).

2.3 Presets

Presets allow you to save your settings for a material. The Muse Servo can save up to 8 presets. The pre-loaded presets are for EnduraGloss, Holographic and Oracal 651 vinyl, EnduraLITE reflective sheeting, and EasyWeed, Logical Color Warm Peel Universal, HotMark 70, and Logical Color GlitterSoft heat transfer film (HTV). Remember, these are just pre-loaded for your convenience and are intended to help you get started cutting our most popular self-adhesive films quickly and correctly. You can change these settings and/or replace them with your own presets.

Open an existing PRESET by pressing the **LOAD** button on the SPD/FOR screen (refer to FIG. 2.2.1). The eight presets are split between two screens: Touching a present illuminates the preset number.

Touch Load to apply that prese. The cutter retuns to the Speed/Force screen with the new speed and force settings applied

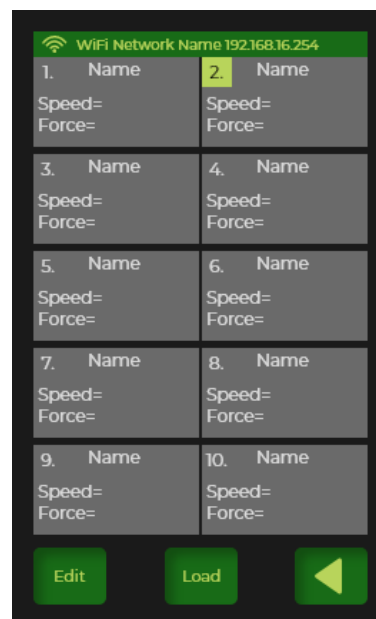


Fig. 2.3.1

Rename Presets: When a preset has been selected, you can also rename it. Touch the preset to select it. Then Press the **Rename** button in the lower left corner. The rename touch panel appears. Use the touch screen to enter the new name. You can toggle between upper and lower case using the Up Arrow key.

Tap letters in quick succession to toggle through the options (eg one tap for A, two quick taps for B etc). Press OK to save the new preset name and return to the Speed Force menu.

Use the number/letter keys to spell the new name.
Press the 123 key to toggle from letters to numbers.
Press the Up arrow key for uppercase letters.

Press OK when finished.

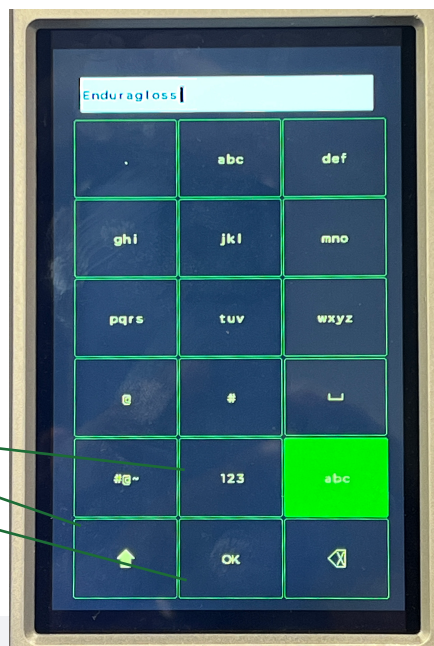


Fig. 2.3.2

2.3.1 Saving a Cutting Parameters Preset

The following steps show you how to create your own preset of cut settings:

1. From the Main Screen, press the SPD/FOR button.
2. Enter the desired US, VS, and FS settings and press SAVE (refer to FIG. 2.2.1). The Preset screen will open.
3. Press one of the custom preset boxes, as shown in FIG.2.3.2. The number will illuminate. Click **SAVE** and that preset will be updated with the new settings. Press **RENAME** (as directed above) to update the name of the updated preset. Enter the name of the new preset you would like to save and press OK (Note: there is a 15-character limit).
4. Press Save to save the new settings and preset name. This returns you to the Home screen with the new settings applied. You are ready to cut your design.

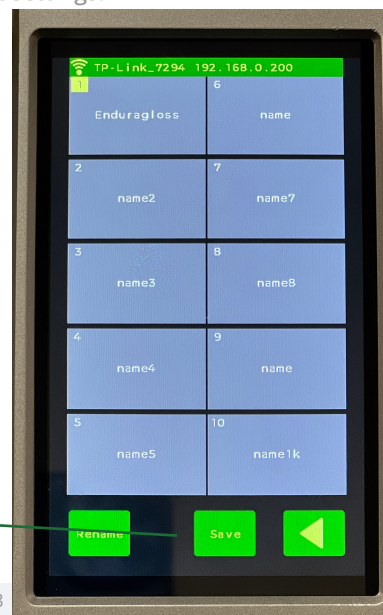


Fig. 2.3.3

2.4 Setting the Origin before Cutting

Setting an origin point is an important part of managing your material cost and using the Muse Servo contour cutting capabilities. Setting the origin point consists of using the arrow keys to move the tool carriage to a specific point on the cutter's X axis (left-to-right on the platen) and advance the media forwards or backwards.

Once you have positioned the blade in a specific point over the media (typically close to the bottom right corner of the material), your origin is defined and you do not need to press anything before cutting.

NOTE: If you have activated the SHOW POINT option, you can press the middle button after setting a new origin point and the x and y values at that position will update to 0,0. As you move the tool carriage away from this origin point, the x and y values will show exactly how far away from this new origin point the tool carriage has moved. More details on the SHOW POINT

You can also use the Muse Servo's camera to set a very precise origin for applications such as when engraving metal charms or for the placement of the blade holder over the first registration mark in contour cutting:

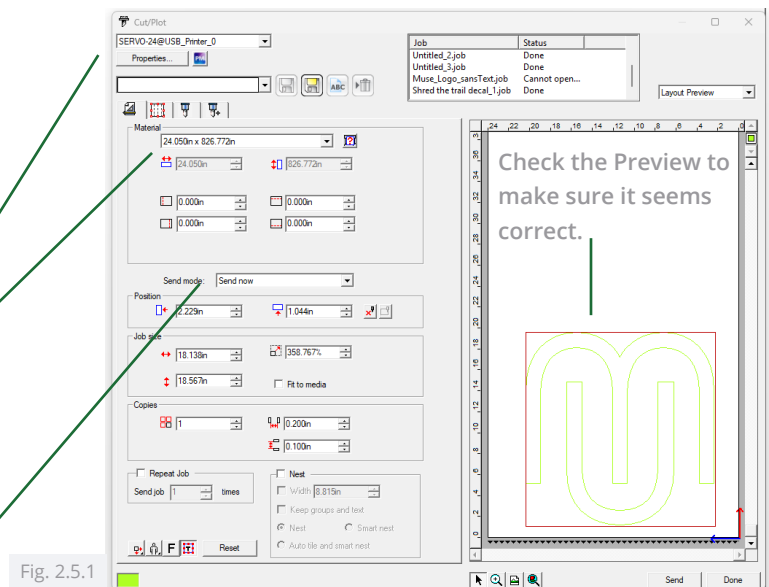
- Calibrate the camera for contour cutting (refer to Section 3.1).
- When you are ready to set an origin, press SET>CAMERA>SCAN>OK.
- A photo will be taken. In that photo, press the corner of the reg mark or whatever other indicator you are using for an origin. This will move the red "+" to that position.
- Again, press OK. For a contour cut, that should be close enough for the camera to find the first registration mark. However, if you need a very precise origin, such as for engraving a charm, continue the steps until the dashed lines are dead center with your indicator.

2.5 Cutting from Vinyl Express LXi to the Muse Servo

When you are ready to cut, click the Cut/Plot icon to launch the Production Manager and open the following Cut/Plot window:

For a simple cut you only need to address the following on the General tab:

- Make sure the correct cutter is selected at the top of the Cut/Plot window.
- Verify the Material sizing is correct. If not, you can click on Properties, enter new dimensions and they will



- Make sure Send mode is set to Send now if you are cutting directly to the Muse Servo24 immediately.

While there are quite a number of other cutting features you may need for your applications, take note of several common ones:

- To change the Blade Offset covered in Section 2.2.2, click on Properties and select the Cut tab. Enable the setting called Knife Offset and enter a new setting, using inches as the units.

- To the right of the General tab is the Options tab , where you can set Passes if your material cuts better with more than pass.
- Also to the right of the General tab is the Advanced tab , where you can modify the Overcut setting covered in Section 2.2.3.

When you are ready to send the project to the Muse Servo, click on Send.

2.6 Cutting from Create Space to the Muse Servo

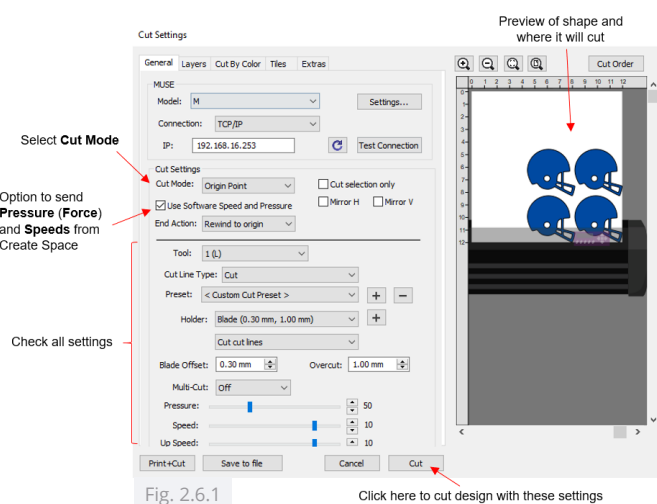
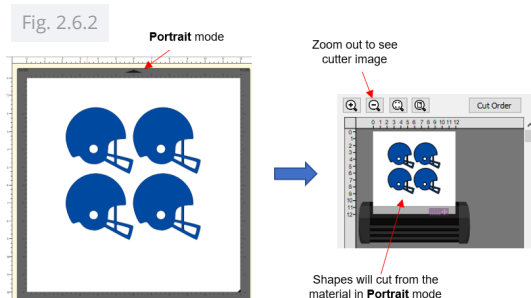
When you are ready to cut, click on the Cutter icon to open the Cut Settings window:

Cut Mode controls where shapes will cut on the material. Typically, you will choose Origin Point to be more efficient with material. Shapes will be aligned and cut next to the origin you set on the material. If the Cut Mode is set to WYSIWYG, shapes will cut based on their placement in the document (mat) area as shown in FIG. 2.6.2 and 2.6.3.

Use Software Speed and Pressure: Enabling this option will use the Pressure and Speed settings in SCAL, thus overriding those set on the Muse Servo's control panel.

Note that when designing in Create Space, you can use either Portrait mode (typically used with the included cutting mat) or Landscape mode (typically used for longer projects). These are set on the Document Panel to the right, along with setting up your document area under Mat Size. Keep in mind that the triangle (arrow) on the edge of the on screen can be used to indicate where your shapes will cut relative to the direction the material is fed into the Muse. You can also then verify, based on the preview in the Cut Settings window where the shapes will cut relative to the Muse Servo itself:

NOTE: When contour-cutting a printed graphic, you may need to rotate the image by 90° on the cutter's platen in order for the MUSE Servo to read the registration marks correctly.



As you can see in FIG. 2.6.1, there are other cutting functions available in this window, such as Cut Order, Cut by Color, Layers (Cut by Layer), Mirroring, and more.

When you are ready to send the project to the Muse Servo, click on Cut.

2.7 Resolution/Scale Calibration

If you were to cut out any particular shape, for example, a 10" x 10" square, you might find that it actually measures 9-15/16" x 10-1/32". It will be very close to 10" x 10" but perhaps just slightly smaller or larger in either or both dimensions. Now this might be perfectly acceptable for the type of cutting you do. Therefore, it may not even be necessary to do this particular calibration. However, if you do want to make sure your shapes are cut precisely to scale, the following procedure will allow you to calibrate your Muse Servo cutter.

In your design software, add a square and size it to 10" x 10" or, if using metric units, 250 mm x 250 mm.

On the Muse Servo control panel, go to SET>ADVANCED SETTINGS>SCALE (Fig 2.7.1).

The following window opens where you can verify that the current X and Y SCALE values are both set to 1.0000:



Fig. 2.7.1

Using the test pen and a large sheet of paper, draw the square, noting which side was drawn left-to-right (which is the X side) and which side was drawing front to back (which is the Y side), as you face the Muse Servo head on.

To calculate the SCALE, divide the design dimension by the actual drawn dimension times the current SCALE. Thus, if you draw a 10" square and it measures ~10 1/32" (left-to-right) or if you draw a 250 mm square and it measures ~ 250.8 mm (left-to-right), then:

- $X \text{ SCALE} = 10'' \div 10 \frac{1}{32}'' \times 1 = 10'' \div 10.03'' \times 1 = 0.997$
- Or, in metric, $X \text{ SCALE} = 250 \text{ mm} \div 250.8 \text{ mm} \times 1 = 0.997$

Repeat for Y SCALE. In this example, assume the Y side drew smaller than 10" and the calculated Y SCALE is 1.002.

Return to the SCALE screen and enter the values using the + and – buttons:

Repeat the test to verify the dimensions are correct. If you still need to adjust, repeat the calculation with the newly measured dimensions but remember to also multiply by the SCALE numbers you entered into the SCALE screen. Then enter those new SCALE values and test again.

2.8 Poll Size & Media Initialization

The MUSE Servo has two features that allow users to know the width of media before cutting. One is the Width Test function in the System Information menu. The other is the Poll size function in the LXI 22 Production Manager and Cut/Plot windows. The Width Test can be done on the cutter once vinyl is loaded.

Load vinyl.
Then press W Test to initialize
the media setup.
The cutting head will travel
across the platen, find the left
edge of the loaded vinyl, return
to the home position, and
display the scanned media
width as the new Material
Width

Fig 2.8.2 shows the result of the
W Test with a 23 inch roll or
sheet of vinyl on the platen.

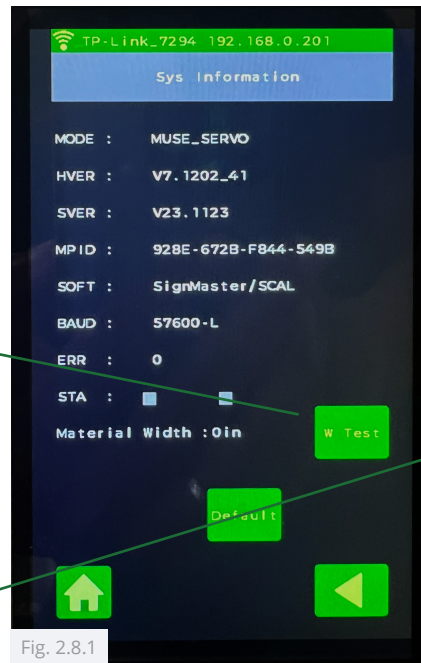


Fig. 2.8.1

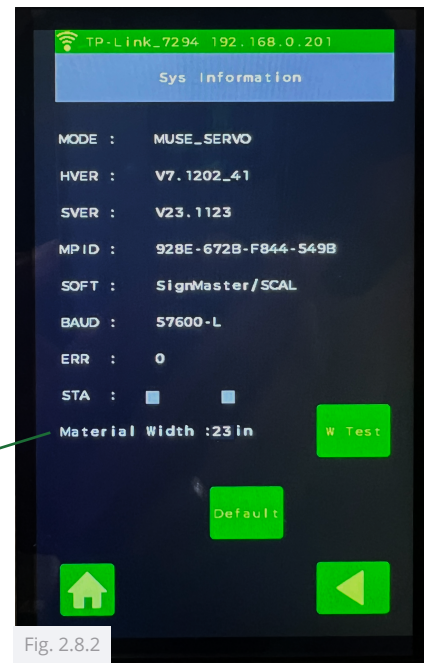


Fig. 2.8.2

To use the poll size feature in the LXI Cut-Plot window, create your graphic and click File/Cut-Plot.

- From the Cut-Plot window, click the Poll icon in the upper right area of the preview screen (Fig 2.8.3)
- The Servo cutting head will scan the loaded vinyl and update the Material Width. The Cut-Plot setting will change to User Defined and the newly scanned media width will be displayed (Fig 2.8.4).
- The preview will be updated showing the design relative to the updated media width.

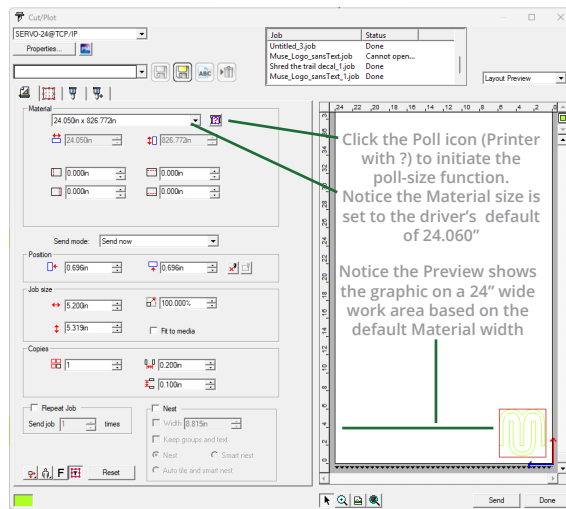


Fig. 2.8.3

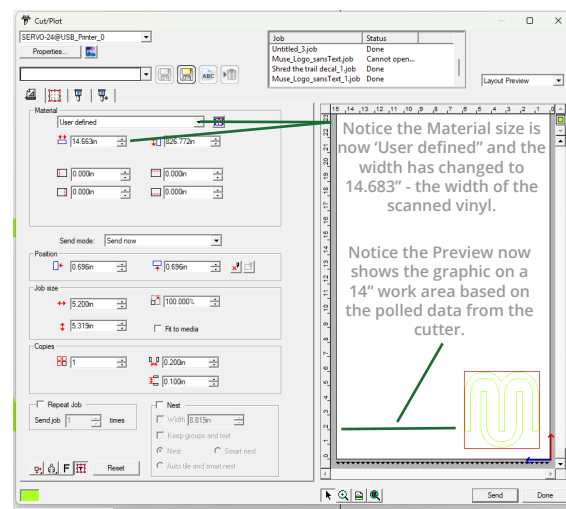


Fig. 2.8.4

3

Print and Cut (Contour Cut)

3.0 Contour Cutting with your Muse Servo

The Muse Servo uses a combination of hardware, firmware, and software to enable easy contour cutting of digitally printed images.

Contour cutting is a process where an image is sent to a printer with registration marks added around the image. The printout is then placed in the vinyl cutter and the vinyl cutter's camera scans the registration marks. It then knows where to cut the contour path around the printed image, based on where the registration marks are located relative to the project in the software you're using.

This chapter covers the calibration of the camera and an overview of the process. For more detailed instructions, including video tutorials, go to the SIGNWarehouse Tech Support blog at: <http://techsupport.signwarehouse.com/>

3.1 Camera Calibration

Your Muse Servo is unlike other cutters. Most contour-cutting vinyl cutters use a laser scanner to scan printed registration marks. The Muse Servo has an advanced camera that provides fast and consistent scanning and supports very precise calibration.

If you find that alignment of the cut path and the intended contour is not ideal, you can bring them into alignment by calibrating the camera. Under normal circumstances, the camera alignment should only be done once, but if your cutter is jostled or damaged in transit, you may need to recalibrate the camera.

NOTE: If you own a Muse Servo 60 model and plan to use both cutting heads, the calibration for both can be done at the same time. Refer to Section 4.1.

The camera calibration process is quite simple. Here's a brief summary. Step-by-step instructions will follow.

- What you need for calibrating:
 1. A sheet of white copy paper
 2. Muse test pen (see item #9 in Section 1.4)
- Use the test pen and a function on the control panel to draw a pattern of vertical and horizontal lines on a sheet of paper.

- The camera will then take a photo of this pattern and the display will show the plotted image with a small red cross and long dotted blue lines superimposed.
- Tap the middle of the pattern with your finger to move the small red cross close to the center. You can use the arrow keys, if you like, to place it more precisely in the middle. The x3 button on the control panel enables magnifying the camera view for extremely precise alignment.
- The Muse Servo will take over and locate the center precisely. You will then conclude the calibration by pressing STOP on the MAIN SCREEN.

3.1.1 Step-by-Step Calibration Process

The following steps show you how to create your own preset of cut settings:

1. Load the sheet of paper into the cutter, taking care to adjust the position of the pinch rollers so that the paper is securely placed on the platen.
2. The recommended SPEED and FORCE settings for the camera calibration are 8 and 30, respectively. This will help the pen draw a clear and clean test pattern for the calibration.
3. Place the test pen into the tool carriage. You can open the lid to gain more room to insert the test pen. Make sure you position the pen in the blade holder seat so that it's low enough to mark the paper when lowered, but high enough to clear the paper when the blade holder seat is raised. Use the TEST button to draw a test square to make sure the pen is positioned correctly.
4. Once your small test square is cleanly drawn, move the pen over so that the calibration pattern will not be drawn on top of your last test.
5. From the main screen, press SET>CAMERA.
6. Select ADJUST to open the screen for calibrating. Press the Start Arrow in the lower right corner:
7. Press and hold for several seconds
8. Press START. The test shape, which is a grid of 6 lines, will be drawn on the paper and the camera will move over the test shape, take a photo, and display the photo on the control panel.
9. If you cannot see the test shape clearly, press the LED button once so that it reads LED 50%. You can also use the X3 button to zoom in, if needed. Press the PIC button to take another photo. You should see three items in the photo: the test shape that was drawn with the pen, a red +, and the blue dashed +:

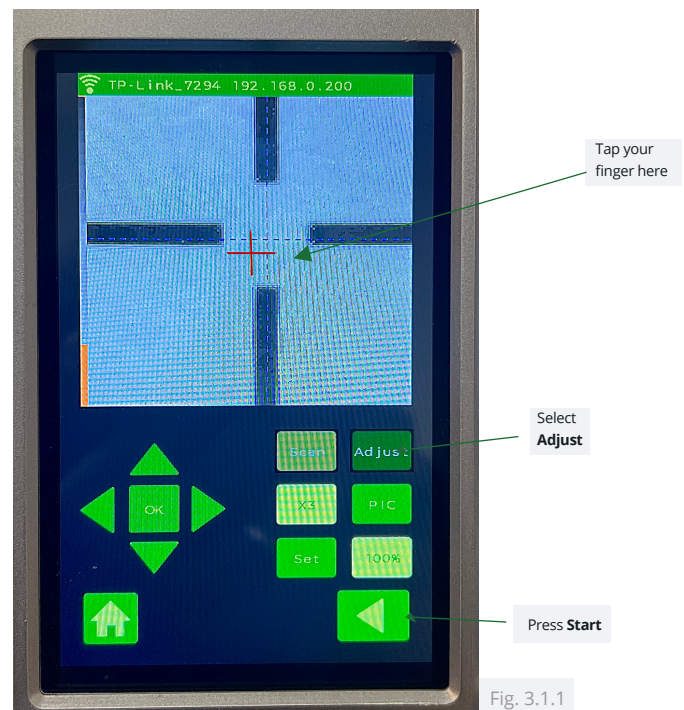
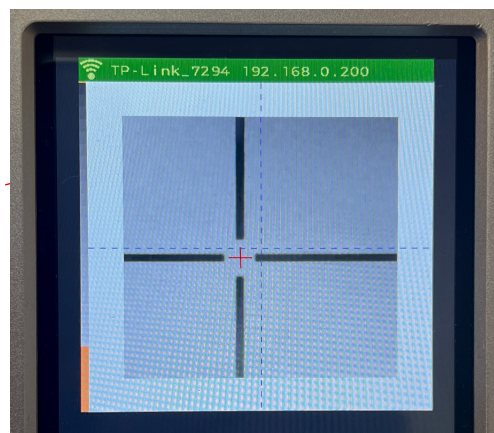


Fig. 3.1.1

10. Tap your finger near the middle of the drawn test shape on the screen. This will move the red + close to that location.
11. Press OK. A new photo will be taken and one of two things will happen:
 - The **red +** is so close to the center that the Muse Servo's camera will now take over and find the true center on its own. You will see the **red +** and the **blue dashed +** aligned in the center and the arrows (only) will return to their blue color. Refer to the left side of the next screenshot.



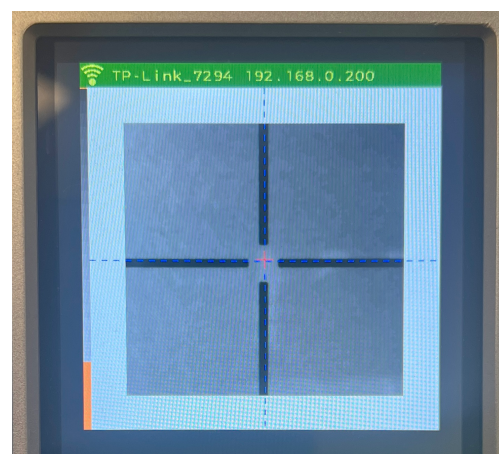
Red + is now much closer to the middle of the test shape

Blue dashed + is also much closer to the middle of the test shape

- The **red +** and the **blue dashed +** are still not aligned. Refer to the right side of the next screenshot. You will need to tap the center again and press OK. Continue, if needed, until the center is identified automatically.

Once the red bombsight is aligned over the blue and both are aligned over the scanned crop marks, the cutter's camera has been calibrated. (See fig 3.1.3 at right). You are now ready to contour-cut printed graphics with precise alignment.

12. Once the alignment is in place, press the HOME button and then press STOP on the MAIN SCREEN to save the calibration and conclude the process:



Red + and Blue dashed are both aligned. Camera is calibrated.

3.2 Contour Cutting with Vinyl Express LXi Master Plus

This section presents the **desktop print-and-cut workflow** which requires LXi Master or Master Plus, and a desktop inkjet or laser printer. For large-format print-and-cut instructions for LXi RIP, please refer to Section 3.3.

3.2.1 Adding a Contour Cut to a Design

Design or import the image which will be printed.

To add a contour path for cutting, select the design and go to **Effects>Contour Cut**. This will open the Contour Cut dialog in the Design Central toolbox and a contour cut should appear:

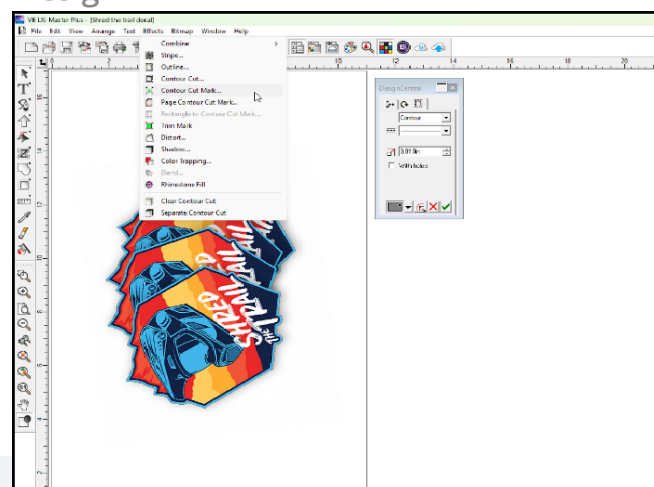


Fig. 3.2.1

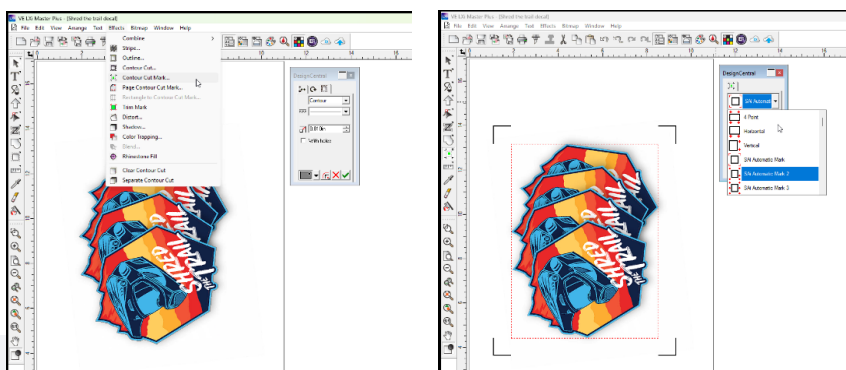
Adjust the Offset based on how large a border you want to create between the edge of the printed image and the cut path.

To place the cut path inside the printed area for a 'full bleed' decal, select a negative value in the Offset instead (e.g. -0.0125). Once you have the setting you want and the preview looks acceptable, press the enter key on your keyboard or click the green check mark icon in the Design Central window to apply the settings.

3.2.2 Adding Registration Marks and Printing

1. With the design and its contour selected, go to Effects>Contour Cut Marks. In this Design Central window, the type and sizing of registration marks can be modified. First, select SAI Automatic from the drop-down menu and the marks will appear like this:

Fig. 3.2.2



2. By default, the registration mark settings are far more conservative than needed when using the Muse Servo's camera. In order to make them smaller and move them closer to the design, select Options (as shown in the prior screenshot). In this next window, you can change to these smaller settings for the Mark Length and the Margin:

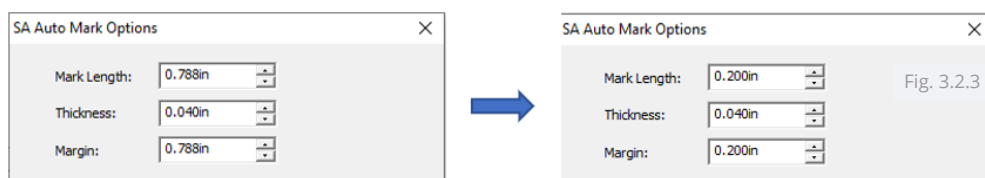


Fig. 3.2.3

3. Click on OK to update the registration marks and then click the green check mark icon to apply the settings.

- Go to File>Print and verify that all settings and the Preview appear correct. You may need to go to File>Document Setup and/or File>Print Setup to make changes. Otherwise, the Print window should show your project with the registration marks. Also, verify that the Scale is set to 100% before clicking OK to print:

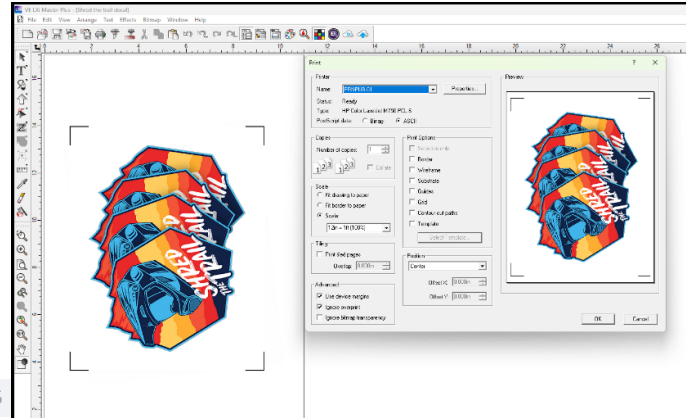


Fig. 3.2.5

3.2.3 Contour Cutting to the Muse Servo

- Load the printout into the Muse Servo using the same orientation as on the screen in LXI. In the example being used, FIG. 3.2.5 shows a Landscape orientation and the printout should also appear the same. This is then how the printout would also be loaded. Note that if the material is not backed (e.g. paper or cardstock), the Muse Servo's cutting mat should be used as the carrier.
- Try to load the material straight so that the front registration marks are parallel to each other on your Muse Servo's platen. Move the tool carriage so that the blade is over the lower right registration mark. The blade needs to be close to the bottom corner as shown in FIG. 3.2.7

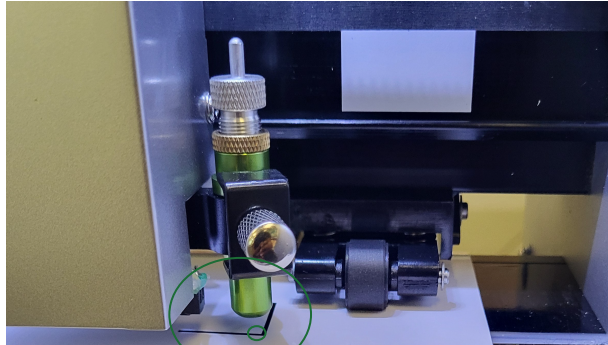


Fig. 3.2.6 Position the blade over the lower right corner of the lower right registration mark.

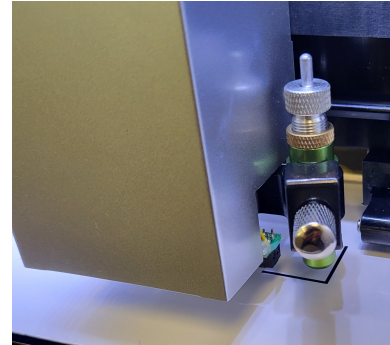


Fig. 3.2.7

- In LXI, go to File>Cut Contour. LXI Production Manager will open, as well as the following Cut Contour window, where you can verify the correct cutter is selected (in case you have more than one set up):
- In the LXI CutPlot window, make sure the page size matches that set in the design space. Do not resize or move the graphic. Leaving it in the default setting, in the lower right corner provides the best setup for accurate scanning of the registration marks. You may need to mount the sheet of media on an adhesive cutting mat to provide more space around the sheet to place the pinch rollers and
- allow the cutter to scan all the marks.

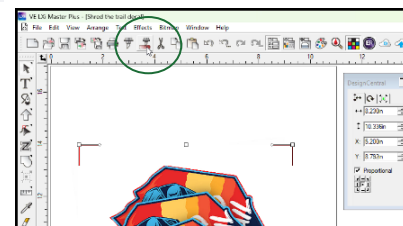
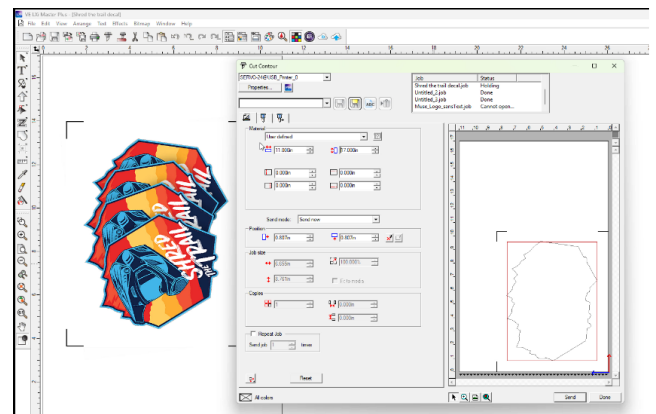


Fig. 3.2.8



Click Send and the Muse Servo24 will start to scan the marks and automatically perform contour cut.

As the camera scans each registration mark, the LCD display will show the mark being scanned. If, for any reason, the cutter fails to scan a particular mark, the camera display will show how far off-center the alignment is. At that point, you can use the arrow keys to adjust the camera to align over the corner of the mark, or simply tap the center of the screen to prompt the camera to focus on the corner of the mark and begin cutting (FIG. 3.2.9).

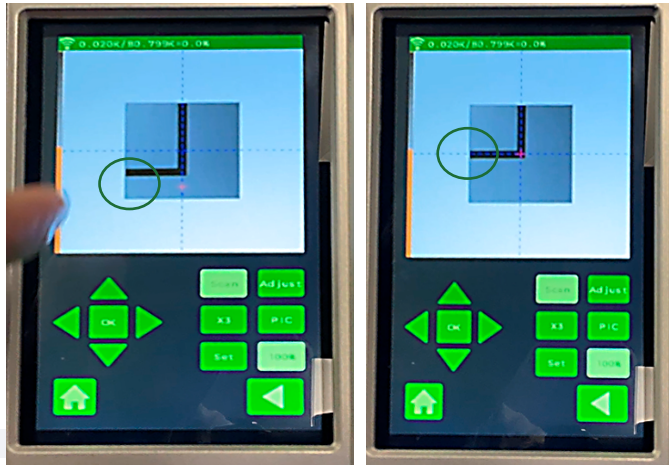


Fig. 3.2.9

3.3 Contour Cutting with Vinyl Express LXi RIP Design

The RIP Design license allows use of large format printing (with the drivers for the large format printers included) as well as color management tools. The following steps present a typical workflow:

1. Import or design the project. To create a contour cut line use the same procedure from Section 3.2.1. In this example the following design has a negative contour Offset added:
2. Click on the RIP and Print icon to open the RIP and Print window, as well as Production Manager. You'll observe the design aligned in the lower right corner of the preview. Select the design and center it on the page to move it away from the corner. Otherwise, when the camera moves to photograph the first registration mark, it could send the cutting head out of range on the right side of the Muse Servo:

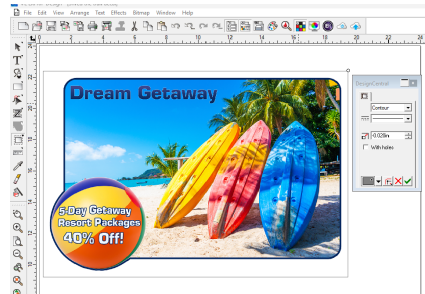


Fig. 3.3.1

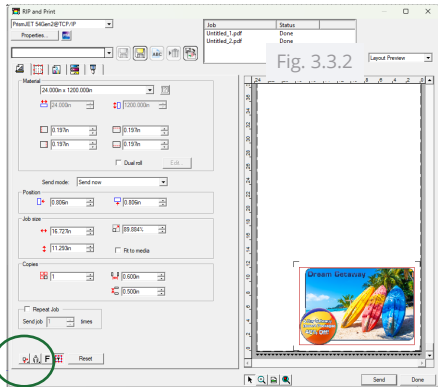


Fig. 3.3.2

LXI RIP defaults alignment to Justified right. This often leaves no room on the edge of the media to scan the lower right registration mark.

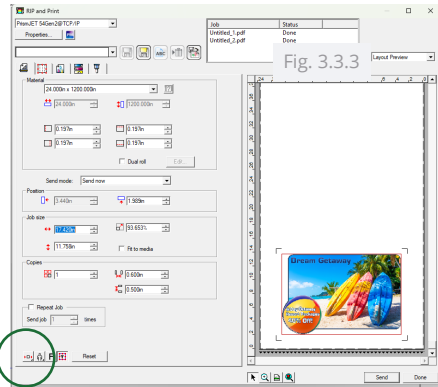
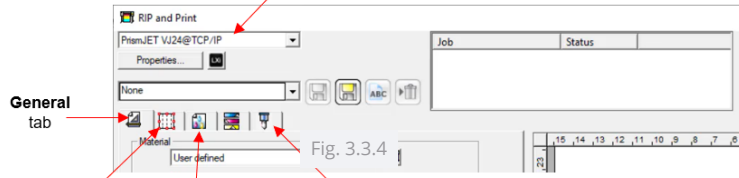


Fig. 3.3.3

Center the image to ensure enough margin to scan the registration marks

3. Note the following in the RIP and Print window:

Select the printer



General tab:

Panel tab: Do not change any settings

Color Management tab:

Contour tab:

Fig. 3.3.4

4. Click on the Color Management tab and select the appropriate Output Profile:

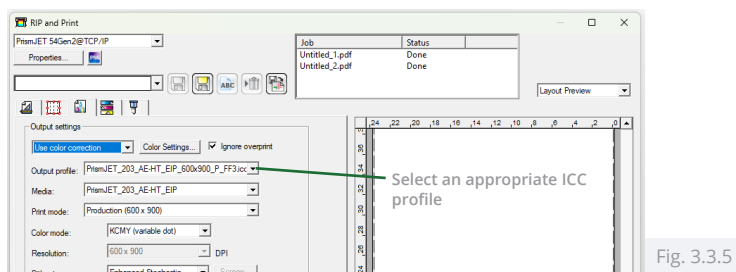


Fig. 3.3.5

5. Return to the General tab and select Material size, Job size, and Copies as desired:

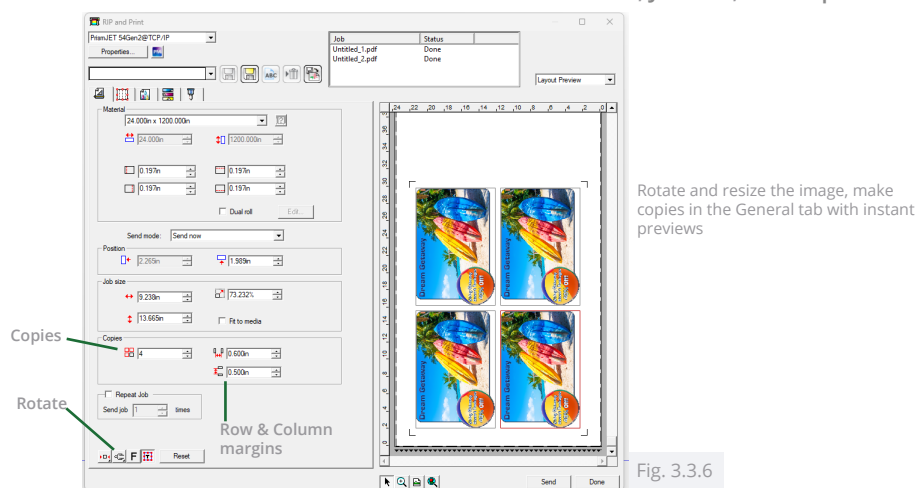
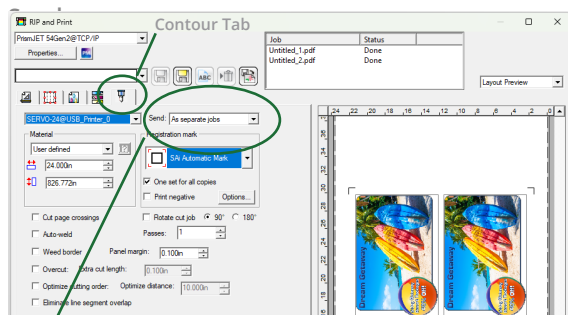


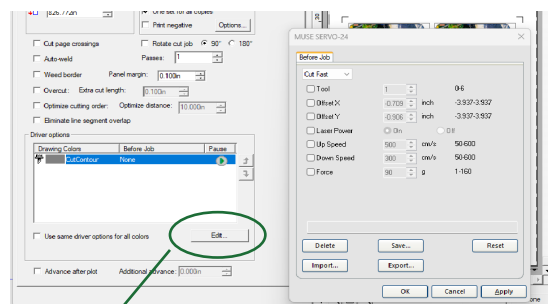
Fig. 3.3.6

6. Click on the Contour tab and confirm all of the following settings before clicking on



In the Send window, choose Send as Separate jobs. This will send the raster data to the printer and hold the vector data in the cutter queue until the printed graphic is ready for contour-cutting.

Fig. 3.3.7



Click the Edit button below the Draw option window to change the speed and force settings. The default is Cut Fast. Change this to None in order to utilize the speed and force settings dialed on on the MUSE control panel. Otherwise, LXI will overwrite the cutter's presets. This may not result in ideal cut quality. Either method can be used.

Fig. 3.3.8

7. Click on Send and the job will be sent to the printer. In the Job Production window, the Printer queue can be accessed to monitor the progress of the printing:

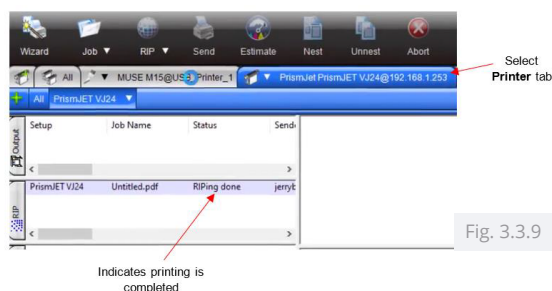


Fig. 3.3.9

8. When removing the printout from the larger format printer, be sure to allow several extra inches above the printed registration marks for clearance of the pinch rollers.
9. Load the printout into the Muse Servo in the same orientation as printed and set the blade tip over the lower right registration mark as was shown in FIG. 3.2.6 and 3.2.7 in Section 3.2.3.
10. In the Job Production window, select the Muse Servo tab and the job status should indicate Holding. Select the job and click on Send at the top:

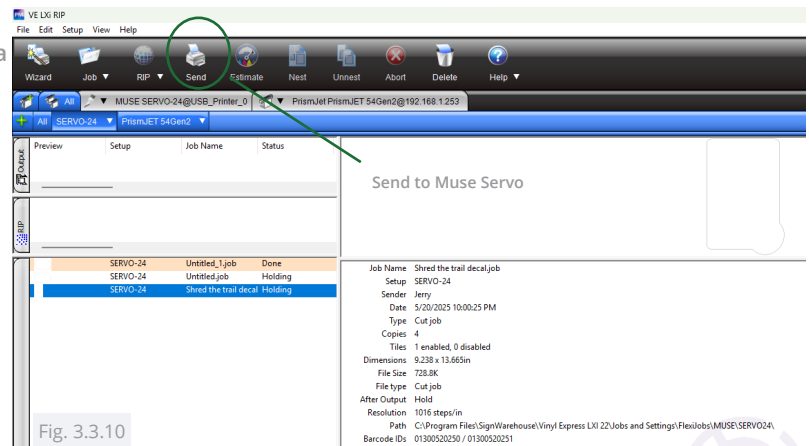


Fig. 3.3.10

3.4 Contour Cutting with Segmented Registration Marks

3.4.1 Using Segmented Registration Marks to Contour-cut long jobs

1. The MUSE Servo supports segmented registration marks for accurate contour -cutting of larger batches of decals.
This feature is useful when alignment is drifting over the course of a complex print and cut job. Most of the process is the same as that outlined above, but there are a few extra steps and options you can use.

Start by adding a count cut path to your artwork in LXI 22. The segmented marks can be applied in the Print & Cut Window

NOTE: Design your decals with a bold outline whenever possible. Then, in the Design Central Offset window, select a slightly negative value, as seen here.

This places the contour-cut path slightly inside the printed area, providing for an extra margin of error in aligning the cut paths. This is especially helpful when producing large batches of decals.

Set a negative offset or 'choke' in the Design Central Offset window



Fig. 3.4.1

2. Set your copies you need in the Print & Cut Window. The Preview will show one set of registration marks around the set.

Remember to center your graphic to allow for adequate margins on either side of the registration marks. This enables the cutter to scan marks on both sides of the media.

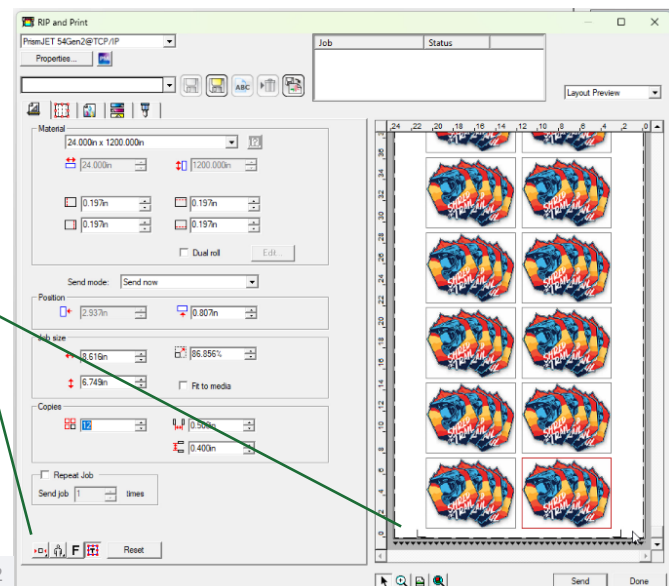


Fig. 3.4.2

3. In the Registration Marks window, scroll down to change the setting from SA Automatic to SA Segmentation.

Change the Registration Mark setting to SA Segmentation

Fig. 3.4.3

4. The preview pane will update with segmented marks alongside your copies. The placement of the marks is determined by the size of the Steps. This can be precisely managed in the Registration Marks Options window.

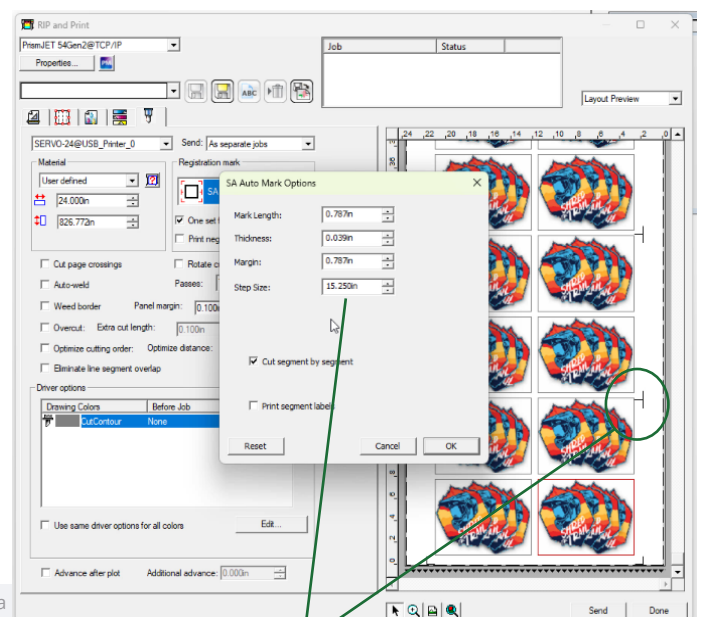
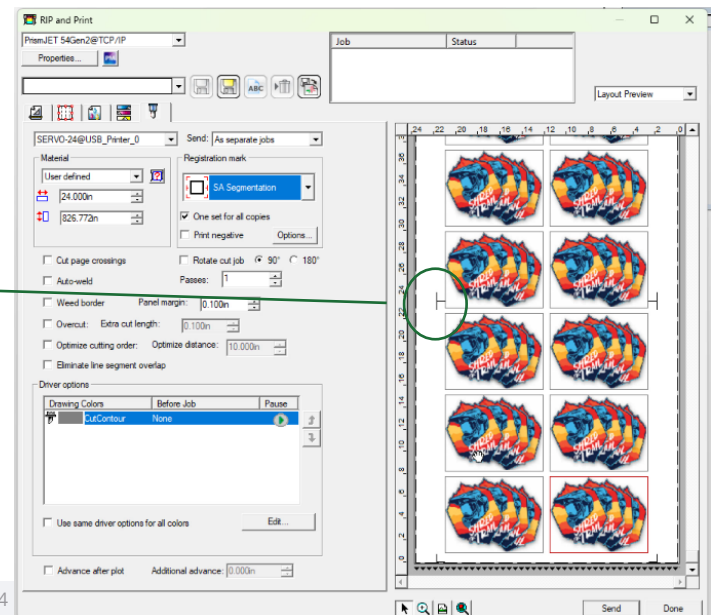
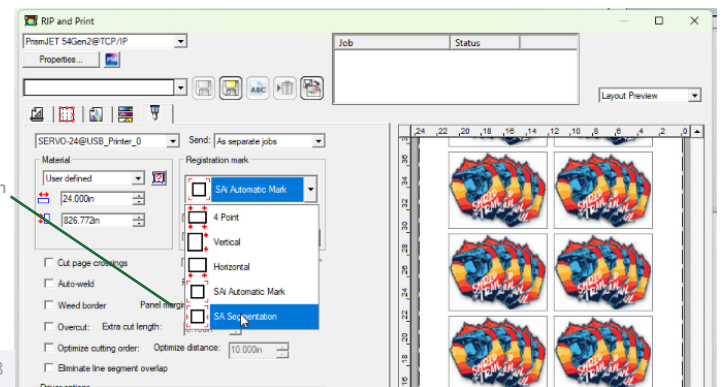
Note the position of the intermediate marks relative to the rows between copies.

Fig. 3.4.4

5. Click the Options button to view the settings and change the Step size to move the intermediate marks. The MUSE Servo will scan and cut the copies in groups determined by the step size. For best results, try to align groups of decals by row between the intermediate registration marks. This ensures that the entire path is cut in one pass.

Fig. 3.4.5

Fig. 3.4.5a



Adjust the Step Size to place the marks in the margins between copies if possible.

- Using the General tab to adjust the margins between rows is not recommended. Even if the intermediate registration marks are not perfectly aligned in the margins, the decals will be cut correctly.

Do Not Adjust the margins between rows. Changing this from the default value will cause the alignment to 'drift' as successive rows are cut.

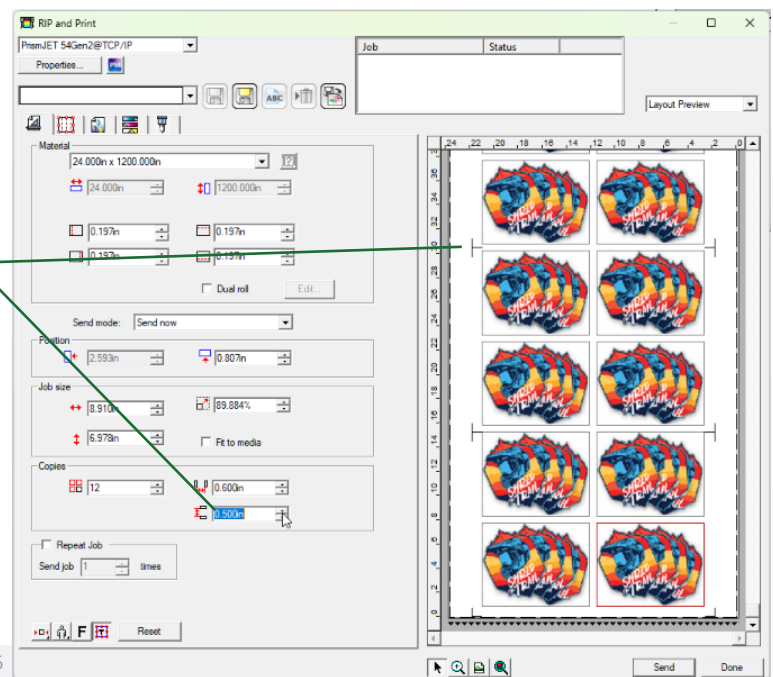


Fig. 3.4.6

- Click Send to print the job. The multiple copies of the cut job will be sent to the MUSE Servo queue in Production Manager. The number of copies in the general information pane confirms that the segmented cut job will be processed once the print is loaded. Set the origin on the cutter just inside the lower right-hand corner of the first registration mark before sending the cut job.

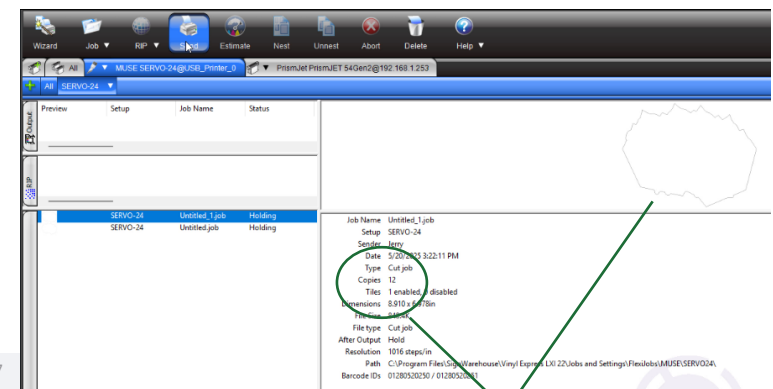


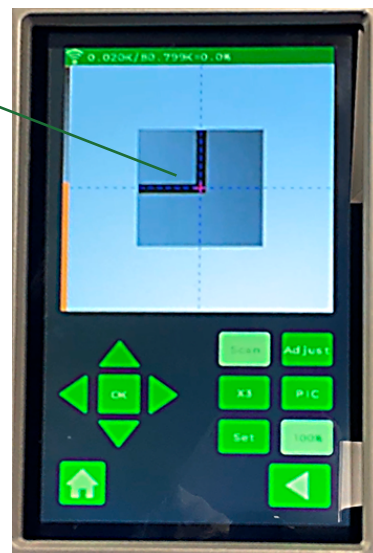
Fig. 3.4.7

12 copies of this vector cut job are pending in the MUSE Servo cutter queue.

- Set the origin on the cutter just inside the lower right-hand corner of the first registration mark before sending the cut job.

The Servo will scan the first four marks and cut the first batch of copies, then scan the second set of marks and cut the next batch, and so on (See Fig 3.4.8 below).

The lower right mark is scanned first, just as with standard registration marks.



The intermediate marks in the corners of the segments are scanned in sequence. The copies within each segment are cut after those marks are scanned.

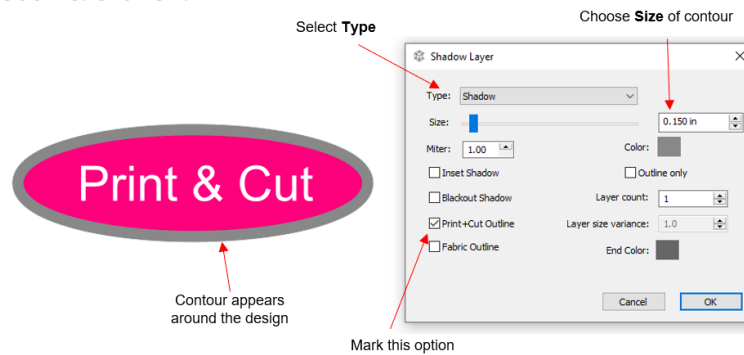


3.4 Contour Cutting with Create Space

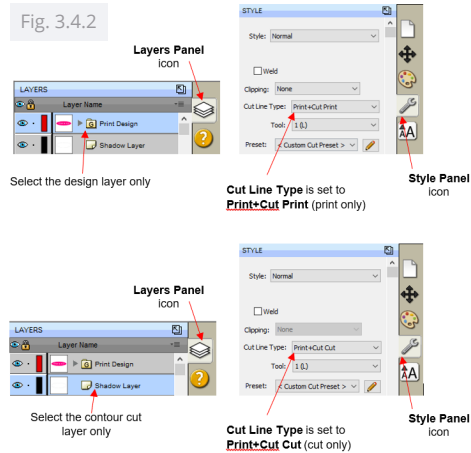
Adding a Contour Cut to a Design and Printing

Import or design your project in Create Space.

To add a contour cut, select the design and go to Effects>Shadow Layer (Contour Cut). In the window which opens, you will set the shape and size of your contour cut. Mark the box for Print+Cut Outline. Click OK.



NOTE: The Print & Cut Outline option automatically sets the Cut Line Type for the design to Print+Cut Print. This means it will only print and will not cut. It also automatically sets the Cut Line Type for the contour to Print+Cut Cut which means it will not print and will only cut. Note that these assignments can be verified or changed by selecting a layer and going to the Style Panel:



If you wish to see the print border for the currently-selected printer and the registration marks, enable Show Print Margins and Show Registration Marks, respectively on the Document Panel:

By default, the registration mark settings are far more conservative than needed when using the Muse Servo's camera. In order to make them smaller and move them closer to the design (or to the borders of the printout), go to Cutter>Cutter Settings. In the upper right corner of this window, you can make changes, as appropriate for your needs. For example:

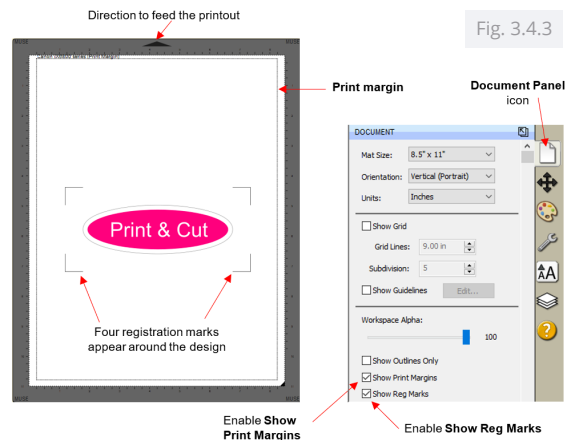


Fig. 3.4.3

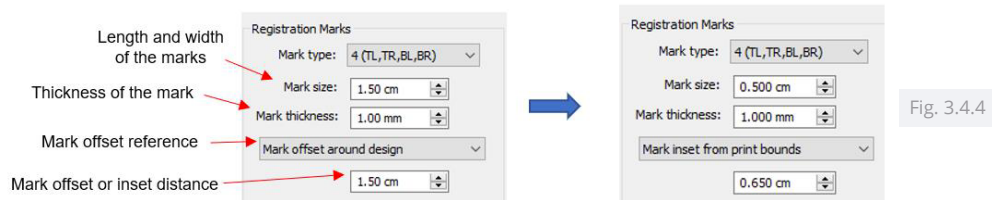


Fig. 3.4.4

Click the Cutter icon at the top to open the Cut Settings window. Click the Print+Cut button.

The Print and Cut window will open. Adjust the cut settings, as needed.

Click Print to open the Print window. By default, the Print Registration Marks should be marked. Click OK to print the project.

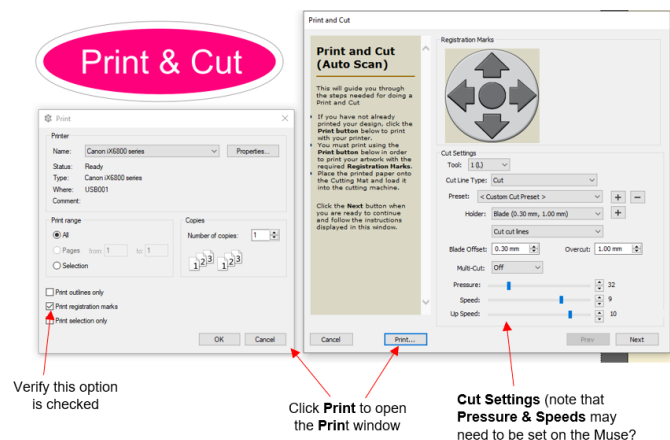
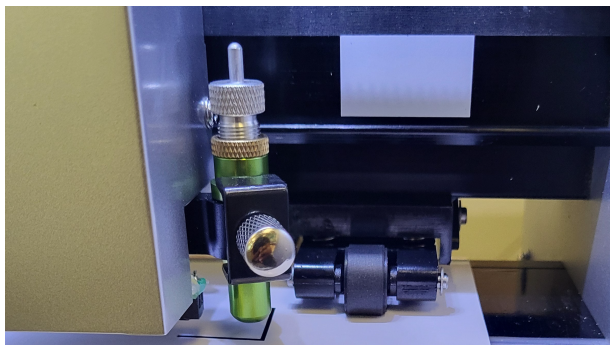


Fig. 3.4.5

3.4.2 Contour Cutting from Create Space to the Muse Servo

Load the printout into the Muse Servo based on the arrow direction (triangle) shown in the main window of Create Space. In the example being used, FIG. 3.4.3 shows a Portrait orientation (also indicated on the Document Panel) and the printout should be loaded the same way. Note that if the material is not backed (e.g. paper or cardstock), the Muse cutting mat should be used as the carrier.

Try to load the material straight so that the front registration marks are parallel to each other on your Muse Servo's platen. Move the tool carriage so that the blade is over the lower right registration mark. The blade needs to be close to the bottom corner as shown in FIG. 3.4.6.



Position the blade over the lower right corner of the lower right registration mark.

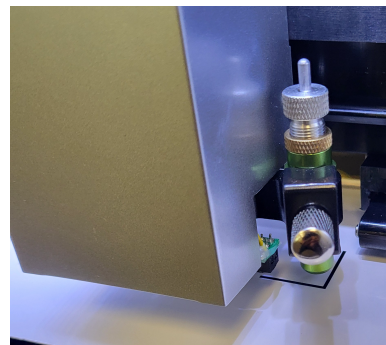


Fig. 3.4.7

Select Next to move to the reading of the registration marks. You can use the arrows on the box to move the carriage or use the arrows on the cutter to move the tool carriage into the right spot. You want the blade in the bottom corner of the lower right registration mark.

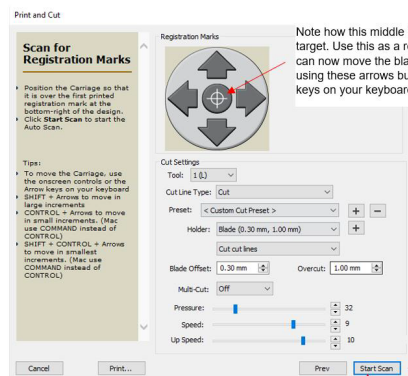


Fig. 3.4.8

Click on Start Scan

Once in the correct spot, click Start Scan and your Muse Servo will begin scanning the marks:

As the camera scans each registration mark, the LCD display will show the mark being scanned. If, for any reason, the cutter fails to scan a particular mark, the camera display will show how far off-center the alignment is. At that point, you can use the arrow keys to adjust the camera to align over the corner of the mark and complete the scan, or simply tap the center of the screen to prompt the camera to focus on the corner of the mark and begin cutting (FIG. 3.4.9).

NOTE: If your MUSE Servo fails to find the second registration mark, you may need to rotate the graphic on the platen or cutting mat by 90°.

This may be necessary even if your CreateSpace mat is oriented in portrait mode.

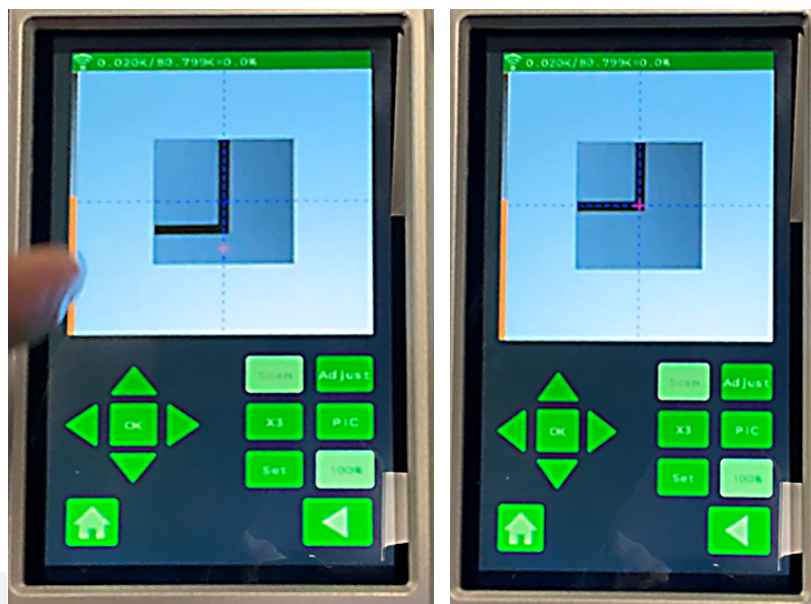


Fig. 3.4.9

4

Automotive Applications

4.1 Cutting Window Tint Film

NOTE: For most automotive film applications, the MUSE Servo60 is preferred. The Servo24 has comparable speed and force, but the 60-inch is a better fit for the 42 - 60-inch film widths used in window tint and PPF * applications.

All suggested settings are a starting point. Depending on the brand and type of film, adjustments may be required to optimize cut quality. When troubleshooting cut quality issues, always start with a fresh blade.

Normal Window Tint Film using a **Muse Servo 30-degree blade** and the **Muse Blade Holder**

The Force should be low; ideal would be between 16-18 on the sliding scale. The blade should be adjusted only as deep as the film to be cut. Aim for the lower number when using a new and serviceable blade and make adjustments as the blade dulls.

For the Speed, on the sliding scale, 2-4 is ideal. Aim for the lower speed as recommended by the manufacturer.

NOTE: Cutting "on the pull". Because window tint film is so thin, it can sometimes wrinkle during plotting. To avoid this, some cutter drivers have an option that limits cutting so that the blade is only actuated when film is being fed backward into the cutter, as opposed to being fed forward. This is known as cutting 'on the pull'. This setting is found in the LXI Cut-Plot window as (name here). Checking this box activates this feature and greatly simplifies the task of cutting thin, sensitive films such as a 1-mil metalized polyester, and various window tint film.

Click the Advanced Tab from the LXI22 Cut-Plot Window and check the Unidirectional Cutting box to activate cutting 'on the pull'

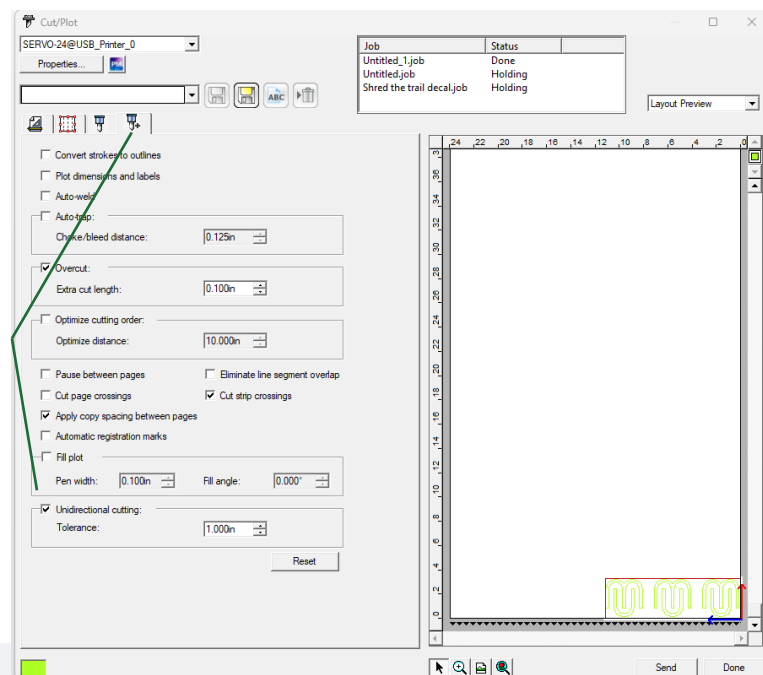


Fig. 4.1.1

4.2 Paint Protection Film with Muse Servo M60

NOTE: All suggested settings are a starting point, depending on the media adjustments that may be required based on the media itself.

Normal Paint Protection Film using a **Muse Servo 60-degree blade** and the **Muse Blade Holder**

Paint Protection Film is a PVC film with a thickness of 6 - 12 mil, depending on the brand.

This material is meant for medium-term paint protection of automotive surfaces. Because of the thickness of this film, a 60-degree blade is recommended.

The blade exposure should be adjusted so that it will only cut as deep as the film. Please use the box test presented in Section 2.1.

The **Recommended Force** setting is 35-40 on the sliding scale. Aim for the lower number when using a new and serviceable blade and make adjustments as the blade dulls. The pressure may vary depending on the blade holder as well.

The **Recommended Speed** setting is 3 (5.9ips) to 5 (9.8ips) on the sliding scale. Slower speeds are generally recommended when cutting thick and/or dense films like PPF and prismatic reflective film.

Overcut: Due to the thickness of the face film, cuts may not be complete at corners in normal drag knife or drag & swivel cutting. To ensure the film is cut all the way through at corners, change the Overcut setting to extend cut paths beyond the point of intersection.

The **Recommended Overcut** setting is .3-in to .5-in (0.75-cm to 1.25-cm). Test these settings on your film and adjust based on test cut and weeding performance.

Click the Advanced Tab to find the Overcut setting.
Change this from the default 0.100in to 0.500 in.
This will ensure corners are cut completely.

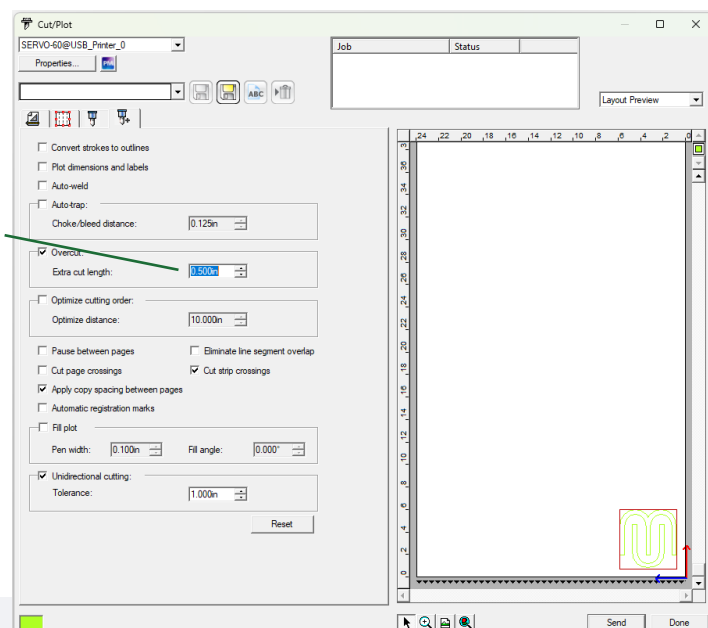


Fig. 4.2.1

Troubleshooting FAQ

Having trouble? Check out these common questions & answers!

Question: What's the smallest character I can cut?

Answer: As the name implies, Muse Servo cutters use true digital servo drive motors, rather than stepper or micro-stepping motors. The servo drive motors support accurate cutting of characters as small as 0.25" (1/4"). A 60° blade may be required for accurately cutting small text to prevent edge lifting during cutting. When cutting graphics this small, the speed setting on your cutter should be reduced.

Question: Why is the cut quality inconsistent?

Answer: Inconsistent cut quality is often a function of the speed setting. You can adjust the speed across a wide range up to 24 inches per second. High speed is appropriate for large simple shapes and letters. But for small fonts and complex shapes, a slower cutting speed will produce better quality.

Question: Why doesn't the vinyl track correctly on long cut jobs?

Answer: Poor tracking is typically caused by the vinyl being incorrectly loaded into your cutter. Whenever possible, position the pinch rollers as close as possible to the edges of the vinyl. Allow some margin for error so that the vinyl doesn't 'walk' out from under one of the pinch rollers as the roll is fed through the cutter.

After loading the vinyl and setting the pinch rollers, use the arrow keys to feed the vinyl forward and backward a few feet to ensure the media is loaded properly and tracking straight. Feeding it forward and back will also place small grooves in the face film that aid in consistent tracking. If the vinyl alignment skews consistently to one side during cutting or media feed, there may be uneven pressure from the pinch rollers. Check to make sure both, or all pinch roller wheels are in the down position. If all wheels are down and the vinyl still consistently skews to one side, you may need to replace one of the pinch rollers.

Question: Why are there rough edges on cut graphics?

Answer: 1. The knife blade may be protruding too far from the blade holder. Refer to Section 2.01 and adjust the blade so that you're not cutting too deeply into or through the release liner.

Question: My LCD display doesn't seem to turn on - or I see a black row of blocks in my LCD screen

Answer: 1. If the LCD is blank, check to make sure your cutter is plugged into a working outlet and turned on.

2. If you're seeing black blocks on the LCD screen, make sure you're getting adequate voltage to your cutter (your outlet may be lower voltage). If you're plugged into a

Question: Why are some of the letters cut incompletely?

Answer: 1. Make sure the blade holder is correctly installed in the tool carriage.

2. Check the blade tip to make sure it isn't damaged.

3. The blade holder may be worn out. As blade holders age, their control of the blade's movement is degraded. The first sign of this is often incompletely cut shapes, such as rectangles with uncut corners.

4. Reinstall the software and check with your IT support staff to ensure there is no interference between your computer and your cutter. Anti-virus software can sometimes cause interference in the communication to your vinyl cutter, for instance.

Question: Why does my cutter cut more deeply in one part of the vinyl than another?

Answer: There is a Teflon strip that covers the width of your cutter under the path of the cutting head along the X axis (left to right). When your vinyl cutter is properly set up and cutting vinyl at the proper depth, the blade doesn't touch this strip. If the blade is incorrectly installed, or if your cutter is allowed to cut beyond the vinyl, the Teflon strip may become scratched. If this happens frequently, the strip will become damaged causing that area of the strip to push upward against the bottom of the vinyl resulting in inconsistent depth across the platen. Contact SIGNWarehouse and purchase a replacement for the Teflon strip.

Question: Why isn't my Muse Servo responding to jobs sent from the software?

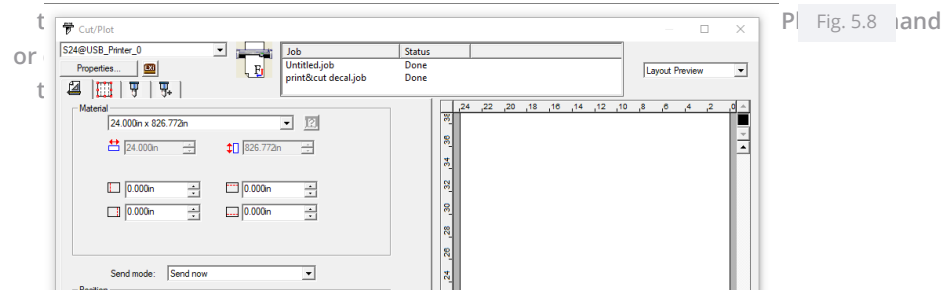
Answer: 1. This is almost always caused by selecting the wrong port in the setup process. Refer to Section 1.10 and make sure your cutter is in the correct mode for plotting by USB or Wi-Fi. If you're using the USB port, make sure the Port Setting in the LXi Production Manager is USB_Printer_0.

2. If the settings are correct, but your cutter isn't responding, open the LXi Production Manager, change the USB port or connection method, and send a test cut. Repeat until you find the correct USB port for the computer. For more detailed instructions, please

3. Check the settings in your LXi Production Manager and make sure the send mode window

is set to Send Now (Fig 5.8). If the setting is File or Hold in List, the data won't be sent from

your computer to the vinyl cutter. If it is set to Hold in List, you will find the jobs holding in



Question: Why can't I weed the graphics after cutting?

Answer: Most likely, you haven't cut the vinyl deeply enough to cut through the face film and adhesive. To fix this, adjust the pressure setting and perform a test cut. This can be done from the control panel or from the LXi Production Manager. Weed the test pattern to make sure the vinyl's face film and adhesive have been cut, but that the release liner isn't scored too deeply. Adjust the pressure setting as needed. Then proceed with your vinyl graphics.

Question: What kind of maintenance does my Muse Servo cutter need?

Answer: All Muse Servo plotters are made with high-quality internal lubrication to protect all mechanical components. Therefore, there is no need to oil or lubricate any of the components, ever! Daily care consists of cleaning the platen and blade holder to prevent buildup of dust and vinyl debris. Dusting the platen with a soft brush will get the job done perfectly. Vinyl debris in the blade holder can be removed using a can of compressed air and a nozzle.

Appendix I: Specifications

	MUSE Servo24	MUSE Servo60
Drive System	Digital Servo	
Max Media Width	28.4" (720mm)	64.9" (1650mm)
Max Cutting Width	24" (610mm)	60.6" (1540mm)
Max Cutting Force	8000g	
Max Moving Speed	47 ips (1200mm/s)	
Max Cutting Speed	47 ips (1200mm/s)	
Cutting Precision	plus/ minus-0.01mm	
Repeat Precision	0.082mm	
Contour Cutting	Yes	
Mark Sensing Method	Camera	
Processor Memory	128MB	
Interface Options	USB Cable USB Disk Wifi	
Power Supply	110/50	
Power	<100W	
Product Dimensions	37.5" x 11" x 10"	74.2" x 11" x 10"
	955 x 280 x 255mm	1885 x 280 x 255mm
Package Dimensions	42" x 15" x 16"	76" x 15" x 16"
	1066 x 381 x 406mm	1940 x 381 x 406mm
Shipping Weight	44lbs (20kg)	104lbs (47kg)
Working Environment	41°-95°F (+5° - +35°C)	
Supported Software	LXI 22 Create Space v6	SignLab 11 Flexi Complete
Floor Stand	Optional	Included
Canvas Media Basket	Optional	Optional
Media Handling System	Optional	Optional

Product Specifications based on manufacturer data. Subject to change without notice.

Appendix II: Cutting Guide

Optimal performance with any vinyl cutter depends on using the best settings for the material used. As noted in segment 2.3, the MUSE Servo supports storing custom presets for quick changes from one material to another. If you are unsure what speed and force settings to use for a particular vinyl or film, consult this guide.

NOTE: All suggested settings are a starting point. Depending on the media and the condition of your blade, you may find some fine adjustments may be required for optimal cutting and weeding performance. For best results, always start with a fresh blade and begin by dialing in the proper blade exposure using the manual box test discussed in segment 2.1

Material	Blade	Force	Speed
Calendared Vinyls			
ORACAL 631	45° Blade	18	10
ORACAL 641	45° Blade	20	10
ORACAL 651	45° Blade	24	10
EnduraGLOSS	45° Blade	24	12
Holographic Vinyls			
Schein Mosaic	45° Blade	24	10
Schein Chrome Polish	45° Blade	24	10
Schein Carbon Fiber	45° Blade	26	10
Reflective Films			
EnduraLITE 48000	60° Blade	38	10
EnduraLITE 8100	45° Blade	42	10
ORALITE 5300	45° Blade	38	10
ORALITE 5600	60° Blade	38	10
ORALITE 5700	45° Blade	40	10
ORALITE 5800	60° Blade	70	2
Cast Vinyls			
ORACAL 751	45° Blade	24	10
ORACAL 851 GlitterCAST	45° Blade	36	10
ORACAL 951	45° Blade	24	10
Paint Mask Stencil			
ORAMASK 813	60° Blade	26	10
ORAMASK 810S	60° Blade	20	10

Appendix II: Cutting Guide

Material	Blade	Force	Speed
Heat Transfer Film (HTV)			
SISER Easy Weed	45° Blade	28	10
Chemica Hotmark	45° Blade	30	10
Logical Color WarmPEEL Universal	45° Blade	28	10
Sandblast Resist Stencil			
Hartco 425	60° Blade	90	10
Hartco 535	60° Blade	95	4
Hartco 935 Equalizer			
Paint Protection & Window Tint Film	*		
ORAGUARD 270 StoneGuard	60° Blade	35 - 40	3 - 5
ORAGUARD 2815 PPF	60° Blade	35 - 40	3 - 5
High Performance Window Tint Film	30° Blade	16 - 18	2 - 4

* Please refer to segment 4 for more important tips for optimizing cutting and weeding quality with window tint and paint protection films.