

VINYL CUTTER USER MANUAL

SAFETY INFORMATION

IMPORTANT: READ THIS SECTION IN FULL BEFORE PROCEEDING

This product is designed for use as a cutter/plotter for vinyl and similar density materials. Use of the product in ways for which it was not designed can be very dangerous and will void the warranty.

The product has fast moving parts and uses sharp blades. To avoid injury, keep fingers, hands, hair, loose clothing and other body parts away from the carriage head, rollers and other moving parts when the cutter is powered on.

Do not disassemble, repair, or remodel the plotter unless specifically instructed to do so by a qualified technician. Such action may cause electric shock or a fire hazard due to current leakage.

Use only the provided power supply and connect only to a properly grounded three prong wall outlet. Failure to do so may result in electrical shock or fire.

Do not use the cutter in an area where it will be exposed to water, rain, snow or other liquids that may get into the cutter. Fluids falling into the cutter may cause electrical shock.

If the cutter generates sparks, smoke, strange odor or otherwise functions abnormally, discontinue use, disconnect the cutter from the wall socket and contact the dealer from which you purchased the product. Never attempt to perform repair work yourself unless under the direction of a qualified service technician.



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Visit MHcutter online for video training, and to view the most current updates.

www.mhcutter.com/videos



SECTION 1 - GETTING STARTED

1.1 - TRAINING VIDEOS

If you prefer to watch instead of read, you can find training videos at: www.mhcutter.com/videos

1.2 - HARDWARE SETUP

Your MH300 cutter/plotter ships with the following standard accessories:



Power Cable



USB Cable



Grounding Cable
(Used With Stand)



Software Card



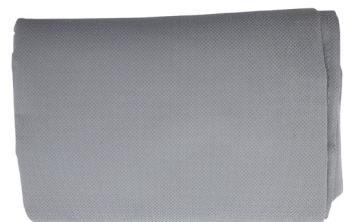
Blade Holder



Pen Holder



Blades (30°, 45°, & 60°)



Dust Cover



x2



x4



x12

Stand Hardware
(For Models With Stand)

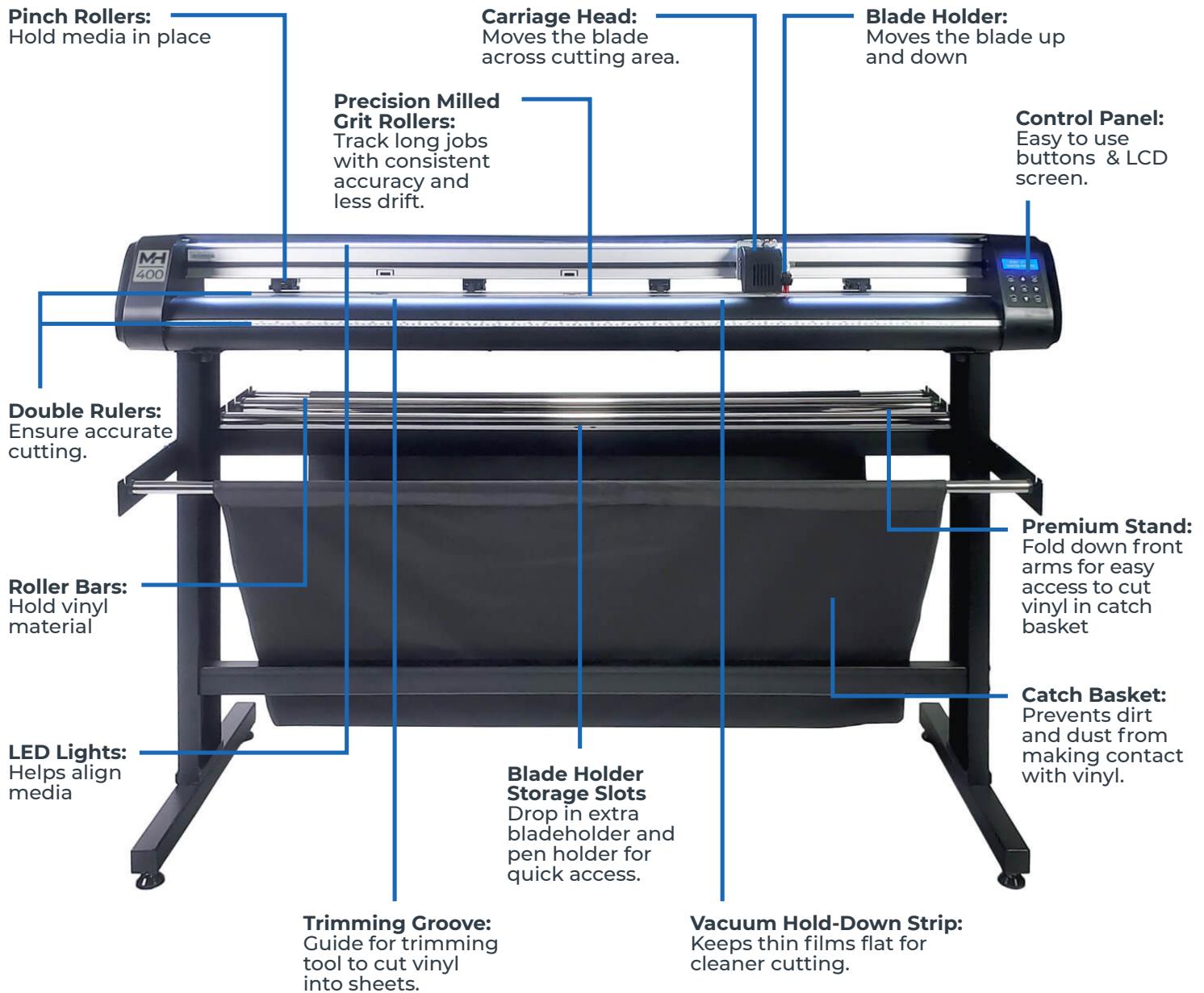


Screwdriver

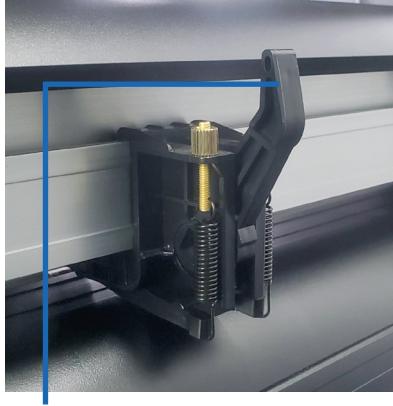


Allen Wrench

1.2 - HARDWARE SETUP (CONTINUED)



Main Power Switch & Vacuum Power Switch:



Pinch Roller Lever:
Move pinch rollers up & down.

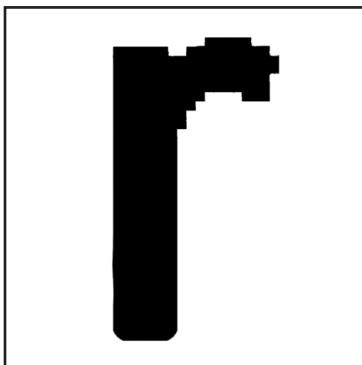


USB Port:
Connect your MH300 to your computer

UDisk Port:
Cut files without a PC

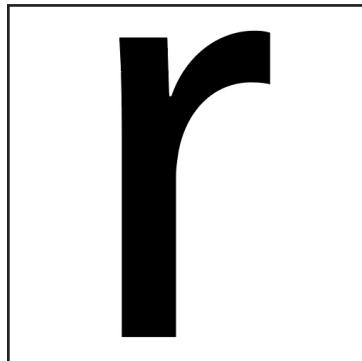
1.5 - UNDERSTANDING RASTERIZED VS. VECTORIZED IMAGES

There are two main ways that an image can be represented:



Rasterized:

Rasterized images are composed of individual dots (pixels) as you might find in a photograph. These images have filename extensions such as .JPG .PNG .GIF



Vector:

Vectorized images are made from lines (paths) between points as you might find in a scaled vector graphic drawing. These images have filename extensions such as .AI .SVG .EPS

If you try to zoom in and enlarge a (rasterized) photo, you will eventually see the individual dots (pixels) and the edges will not appear smooth. With vectors this is not a problem and you can enlarge the image to any size you want.

Your MH cutter requires vectorized artwork. If you are using Vinyl Master as your design software program, new designs you create will be in vector format. For raster images, VinylMaster has vectorization and tracing features that allow you to import many different types of pixel images that can be converted to vectorized artwork. For vectorization, images with strong contrast between the subject and the background typically work best. Please consult the training materials for VinylMaster to use the vectorization feature.

1.6 - SOFTWARE DOWNLOAD SETUP: Vinyl Master (Windows PC)

Your MH cutter ships with a card that will allow you to use the serial number of the cutter to download and activate VinylMaster on a Windows PC.

STEP 1: The image below shows the location of your machine serial number. It is located on the front left side of the cutter's cross-beam.



Software Download Card



1.6 - SOFTWARE DOWNLOAD SETUP (Continued)

STEP 2: Using your favorite browser, go to mhcutter.com

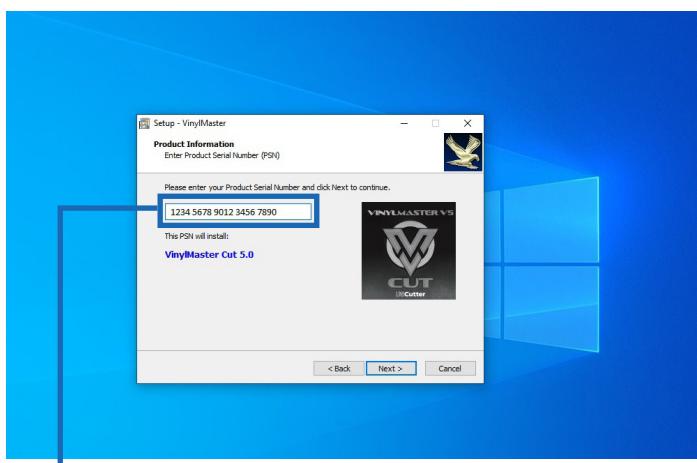
STEP 3: Create an account at mhcutter.com and go to the download page.

STEP 4: Enter your machine serial number (MSN) to download the correct software.

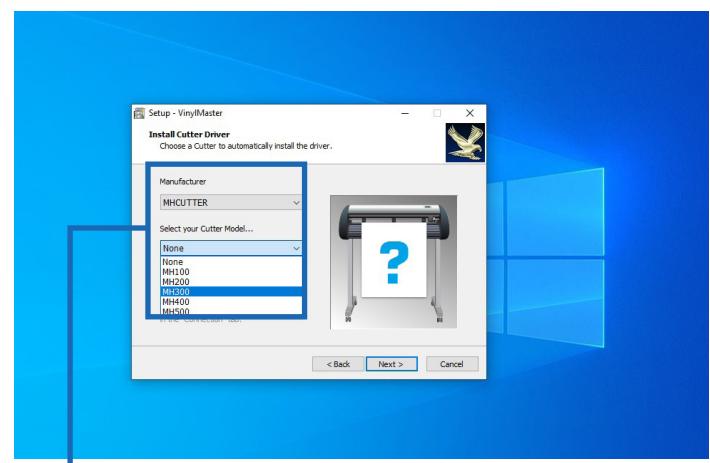
STEP 5: Follow the installation instructions in the software installer program.

You can watch a video that covers the entire registration, download & activation process at mhcutter.com/videos

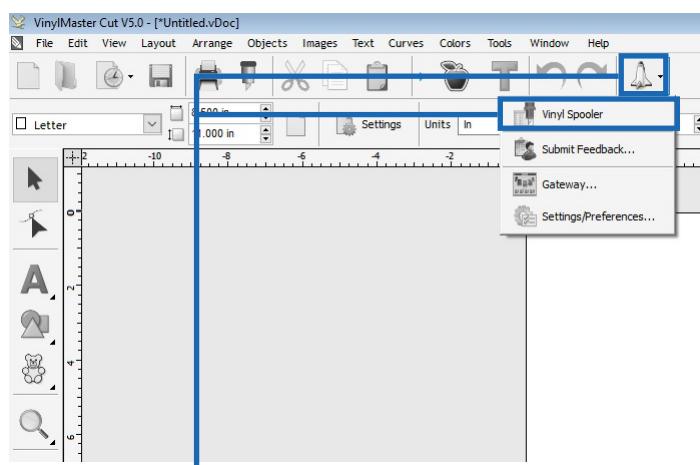
DO NOT LOSE THE CARD & MACHINE SERIAL NUMBER (MSN) - KEEP IN A SAFE PLACE



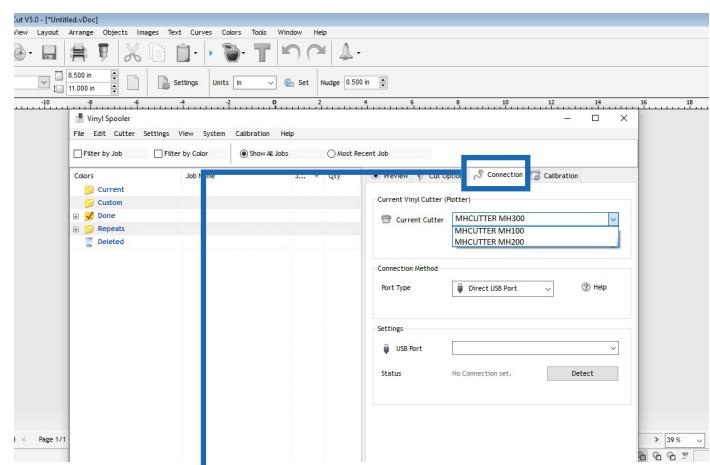
To install VinylMaster software you will need to enter the Product Serial Number (PSN) that you received from mhcutter.com



Install the cutter driver by selecting **MHCUTTER** in the Manufacturer drop down menu & **MH400** in the Select Your Cutter Model drop down menu.

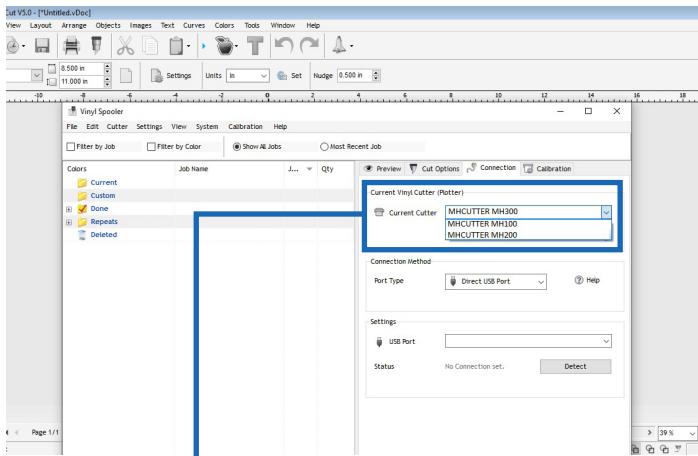


Click the shuttle icon, in the drop down click on Vinyl Spooler.



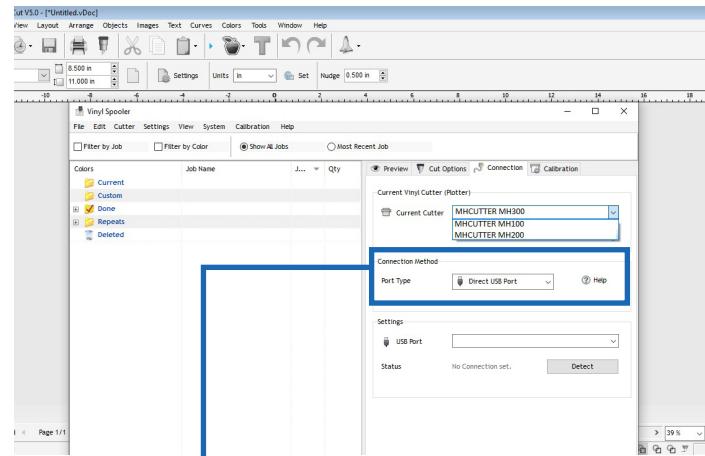
In the Vinyl Spooler Menu click on Connection

1.6 - SOFTWARE DOWNLOAD SETUP (Continued)



In the Current Vinyl Cutter click on the drop down menu and select **MHCUTTER MH00**

It is a good idea to remove the blade holder and send a small test file via the USB cable to the cutter to confirm communications.



Under Connection Method click on the drop down menu for Port Type and select **Direct USB Port**.

SECTION 2 - Making Your First Cut

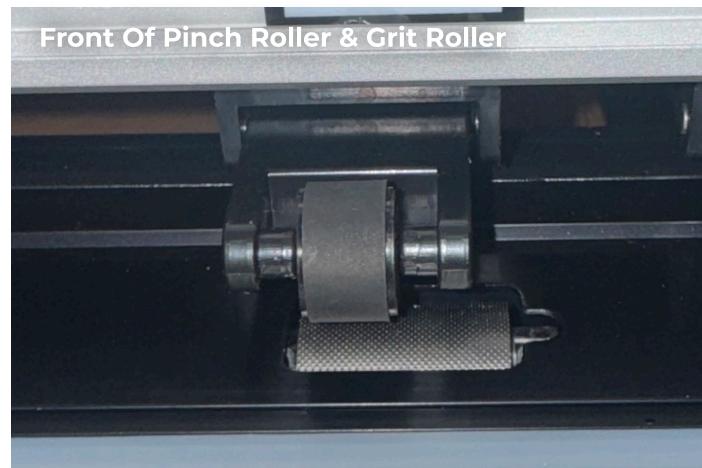
2.1 - OVERVIEW OF MATERIALS THAT CAN BE CUT

There are lots of different materials you can use with your MH100 including: paper, cardstock, vinyl, stencil, poster boards, fun foam, and much more. The key thing to consider is how dense the material is. Some very dense materials such as metal, sandblast mask, magnet etc. are not recommended as they may yield unsatisfactory results. As a general rule you should be able to cut any material that is less than 1 mm thick and at the approximate density of 0.5 g/cm³. Always start with a test cut, especially when changing materials

2.2 - LOADING MATERIAL INTO THE CUTTER

Materials that have no backing (such as thin card stock) should be placed on a cutting mat (sold separately) and then loaded. Materials such as vinyl, which have a backing, can be placed directly in the MH100 without using a cutting mat.

The top pinch rollers must be placed directly above the bottom grit rollers, which are located at specific locations along the width of the cutter. The bottom grit rollers are what actually drives the media forward and the top pinch rollers hold the media down. Place the material to be cut in the MH400 so that the rollers are at the edges and will not touch the area you want to cut. In some cases, such as with wide jobs it cannot be avoided and rollers will go over the middle of the media, however this is typically not a problem even if the rollers touch the cut area.



2.2 - LOADING MATERIAL INTO THE CUTTER (Continued)

Lower individual pinch rollers by lowering the pinch roller levers at the back of the cutter. You can use the screws on each pinch roller to adjust the downward pressure of the pinch roller.



When cutting, the vinyl will move outwards from the cutter towards you. In most cases, vinyl on rolls is loaded from the back of the cutter and other materials on a cutting mat can be loaded from the front of the cutter.

2.3 - USING THE PEN TOOL TO TEST YOUR DESIGN

Before cutting valuable material, it is recommended that you first work with the pen tool on some blank paper. The pen tool will follow the same path that the blade will so you can be sure you will be cutting the exact design you thought you would be cutting. Simply place the pen tool in the blade/tool bracket on the carriage head, tighten the screw and you are ready to start.

Note: The pen has a small cap on the tip that needs to be removed prior to use.



2.4 - UNDERSTANDING BLADES & THE BLADE HOLDER

Your MH300 ships with one 30 degree (yellow tip), one 45 degree (red tip), & one 60 degree (blue tip) blade.

30° BLADE: 30 degree (yellow tip) blades are recommended for very thin materials and thin fabrics

Note: You may need to place thinner materials on the sticky part of a cutting mat so they do not tear as easily when being cut

45° BLADE: For most needs the 45 degree (red tip) blade is best.

60° BLADE: 60 degree (blue tip) blades are only required for thicker materials or when a higher degree of precision is needed.

Note: 60 degree blades might get dull sooner or chip easier.



2.4 - UNDERSTANDING BLADES & THE BLADE HOLDER (Continued)

The diagrams below show how to insert a blade, as well as the correct way to set the blade depth so that it cuts all the way through the top layer but only lightly scratches the backing layer.

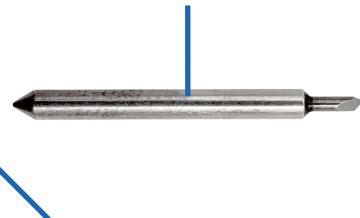
STEP 1: Push in the plunger to insert or remove blade.



STEP 3: Loosen brass ring (counterclockwise)

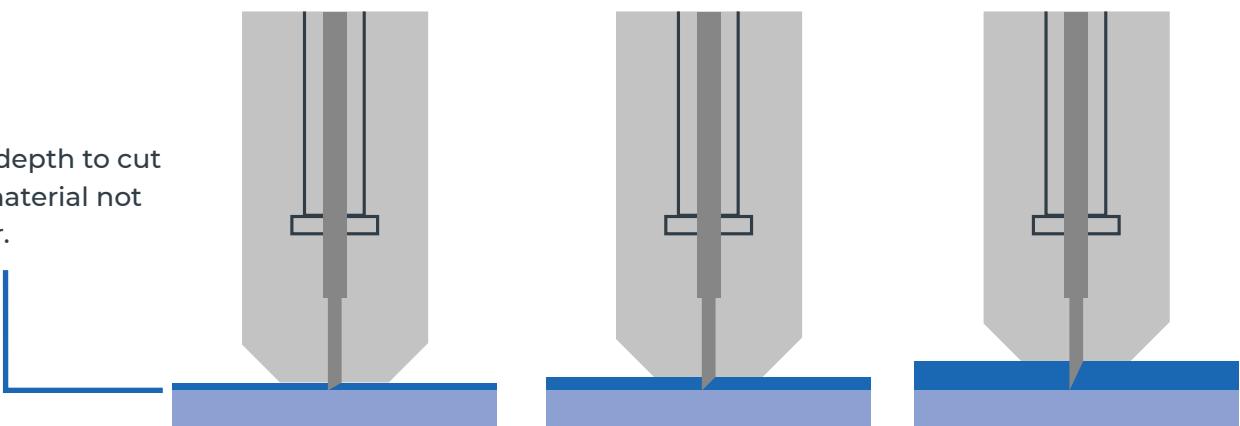
STEP 4: Adjust blade length with silver ring.

STEP 2: Carefully insert blade into bladeholder and then release plunger



STEP 5: Tighten brass ring to lock position.

Set blade depth to cut only the material not the backer.



30° BLADE: Used for thinner materials.

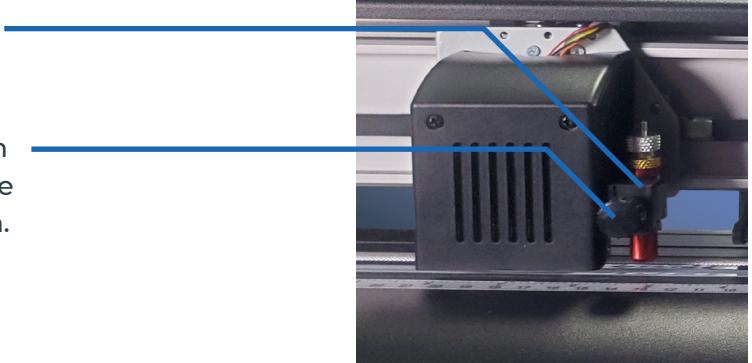
45° BLADE: Used for most common uses.

60° BLADE: Used for thicker materials

2.4 - UNDERSTANDING BLADES & THE BLADE HOLDER (Continued)

Placing bladeholder in the MH300 cutter (make sure you place the blade holder correctly in the groove for correct height position)

CARRIAGE ARM: The arm has an inner groove to keep the blade holder at the correct height.



LOCKING KNOB: Allows access to the blade/pen holder carriage arm for exchanging or replacing the blade holder. Locks blade holder in correct position.



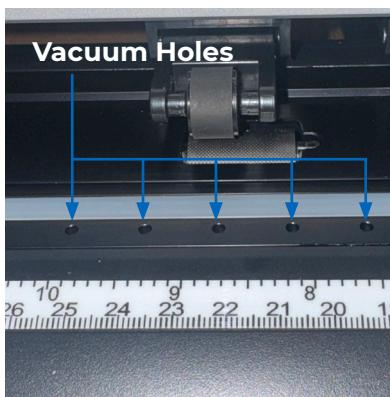
2.5 - SPEED AND FORCE SETTINGS

SPEED: A good starting value for speed is 400

FORCE: A good starting value for force is 70

To achieve more precise results, you should start with moderate speed and force settings (400 and 70) and then increase speed only if the job is less complex. Increase pressure if the cut is not making it all the way through the top layer of the material being cut. As a general rule, you will try increasing pressure before you extend the blade length.

Note: different brands of the same material (eg. glitter) may need to use more or less pressure, depending on the specifics of each manufacturer's brand.



2.6 - VACUUM HOLD DOWN

- The power switch next to the main power switch on the left end cap enables a vacuum which is designed to hold down thinner materials. In cases where your thin media does not cover all the holes, you should tape over any unused holes to ensure maximum vacuum power.

2.7 - TIPS FOR ACHIEVING OPTIMAL RESULTS

- Use a short blade depth. In most cases the blade should be exposed only a barely visible amount outside the bladeholder. New users tend to expose too much blade. The idea is to cut through only the top layer of the vinyl and to leave the backing layer with only minimal scratches. This allows you to weed the top layer off the backing easily. Take the bladeholder in your hand and cut a circle in the vinyl, to see that the vinyl layer is fully cut, but the backer layer is barely scratched. If corners or small detail do not cut all the way through, consider increasing the force before extending the blade depth. You only need to extend the blade depth or use the 60 degree (blue tip) blade for thicker materials.
- Align the pinch rollers so that they are in line with a gritted part of the bottom rollers. The pinch rollers must align with the gritted sections on the bottom roller.
- An optional cutting mat (purchased separately) can be used when cutting materials that do not have their own backing. Place your material on the cutting mat so that the pinch rollers roll on the mat, not the material. Move unused pinch rollers out of the way so they don't touch the parts of the material being cut. Use a brayer roller (not included) to flatten your material on the sticky part of the cutting mat or tape the edges of thicker materials to the cutting mat. For wider jobs it sometimes cannot be avoided and the pinch rollers will need to roll over areas of the material being cut. Typically this is not a problem. If cutting very thick materials you may want to consider purchasing a thinner mat.
- When cutting long pieces of material it is important to carefully position the material so that it is completely straight and doesn't drift to one side when cutting. Use the double rulers on the cutter to align long lengths of material.

SECTION 3 - Contour Cutting

3.1 - CONTOUR CUTTING - Print & Cut With Registration Marks

Contour Cutting involves printing a design that has special L-shaped registration marks in the outside corners. You may see the term ARMS (Automatic Registration Mark Sensor) being used to refer to Contour Cutting. This is just a more technical term for achieving the same type of results as Contour Cutting, also known as Print & Cut.

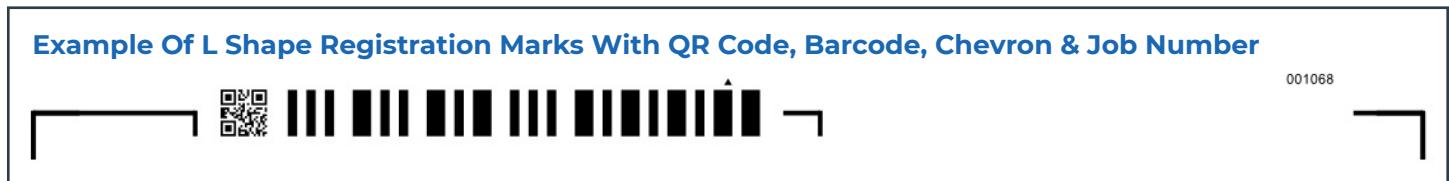
In order for the software to be able to find the outside edges of your artwork and draw a contour, you want to use vectorized files with no background such as SVG/AI/EPS vector files when possible. If working with pixel based images such as photos, JPEG files with a background or images with a solid white background, you should remove the background and save as a PNG. In general, images with a complex background are likely to need modification to remove the background prior to proper vectorization and contour cut use.

PDF files can contain both vector and raster images, but usually these are on separate pages within a PDF document. Zoom in on the image to see if it starts to pixelate when magnified (raster) or keeps lines smooth (vector). Refer to section 1.5 on page 7 of this manual to learn more about the differences when comparing pixel based and vector based images.

VinylMaster software will allow you to create a printable PDF file, as well as an associated PLT file that can be copied to a thumbdrive which can connect to the U-disk port on the side of the cutter.

Note: The MH400 is a cutter and does not print. For printing you will need a printer.

The L-shaped registration marks are read by the cutter to allow precise cutting around the outside contours of the design. Common uses for contour cutting are to create peelable stickers or cutting out printed designs from printable heat transfer vinyl.



When cutting wide format jobs on the MH400 53" or 65" models, it is recommended to use the Custom Mark Settings:

MARK OPTION TAB:

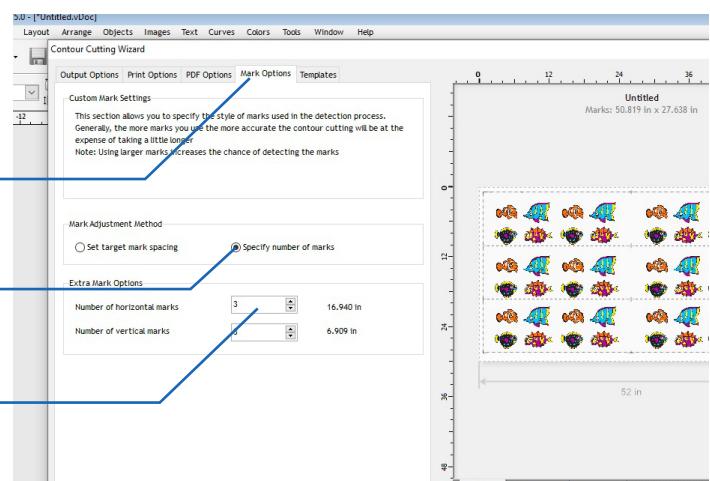
Found in Contour Cutting Wizard.

MARK ADJUSTMENT METHOD:

Select Number Of Marks

EXTRA MARK OPTIONS:

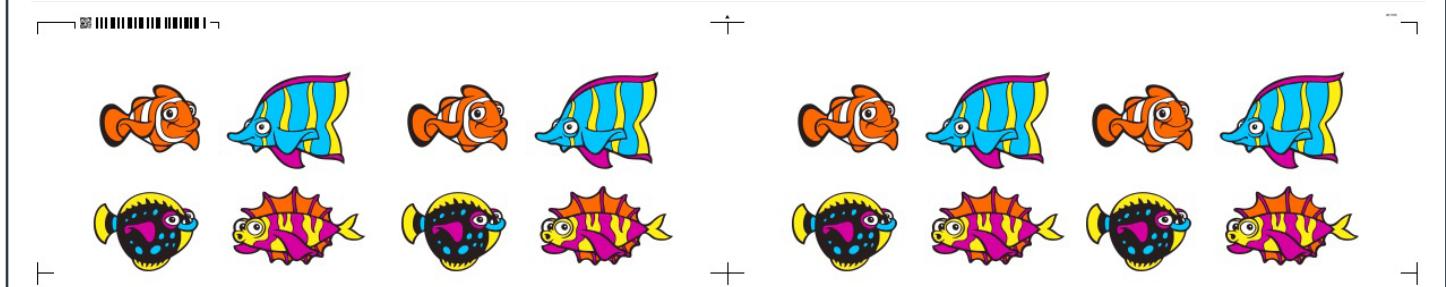
Set Number Of Horizontal Marks to 3



3.1 - CONTOUR CUTTING - Print & Cut With Registration Marks (Continued)

Note: Make sure that you allow at least 15mm white space around any marks to be sure that they can be read by the cutter.

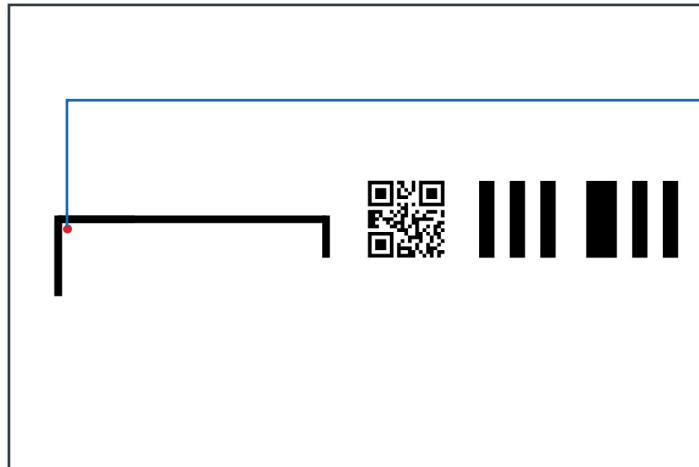
Example Of Job With Center Registration Mark Added



IMPORTANT: Always print contour cut jobs at actual size - some printers will be set to "fit to page" as default which will cause the job to not cut correctly.

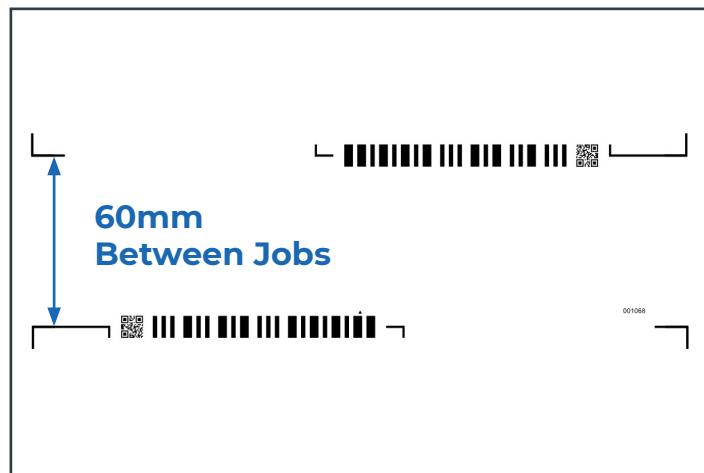
BLADE PLACEMENT:

After printing on a separate printer, place the printed vinyl in the cutter, with the blade just slightly inside the first L-shaped registration mark. (See red dot)



Press the U-DISK key on the cutter's control panel, then press OK for the cutter to start scanning the barcode and then look for the associated PLT file on the thumbdrive attached to the cutter. After completing a barcode job the cutter will scan for the next set of registration marks

Note: When auto searching, the cutter searches for the next job at a distance of 2.36" (60mm). When a single file is selected from the U-disk, the cutter does not search for the next job



SECTION 4-Maintenance/Troubleshooting

4.1 - CARE & MAINTENANCE OF YOUR MH400 CUTTER

There is no need to oil or lubricate your cutter - simply keeping it clean should be enough to provide you with many years of service.

Keep the grit rollers and pinch rollers clean. The combination of pinch roller from above and grit roller from below is what makes your cutting mat or material move back and forth in a straight line. If one of these parts is greasy or sticky, you will see the material pull to one side, causing incorrect cutting. At the same time, you want to be sure that the downward pressure of the pinch rollers is the same for every roller. Once again, this is to keep the material straight as it goes through the cutter. You can adjust the screws on each pinch roller to get more/less pressure. Adjusting only one of the screws on the pinch roller will impact side-to-side pull of the media.

Over time, your cutting strip (the white strip located directly below the path of the blade) may need to be replaced. Use a flathead screwdriver, putty knife or other flat blade instrument to pry out the old cutting strip from the groove in which it sits. You may also need to clean out any old glue or adhesive tape so that the new replacement strip sits completely flat in the groove. You can order a new cutting strip from your local MH Series dealer.

Blades can get dull or chipped over time. In order to maintain precision cuts, it is recommended that you change to a fresh blade every 6 months, after any major use period or whenever the blade is dull, chipped or damaged.

4.2 - RECOMMENDED CUTTER SETTINGS

Below items cut within material thickness limits of 1 mm and density of approx 0.5 g/cm³

Note that thicker materials may need multiple repeat passes to cut all the way through.

MATERIAL	SPEED	FORCE	BLADE
Heat Transfer Vinyl	400	70	45°
Pressure Sensitive Vinyl	400	70	45°
Stencil Material	350	160	45°
Paper (75 gsm)	200	50	45°
Labels/Decals	500	80	45°
Cardstock (160 gsm)	500	500	45°
Foils	200	100	60°
Posterboard (250 gsm)	350	500*	60°
Felt	200	300*	30°

**Force settings with an asterisk may need multiple passes.*

Note: The following materials have not been tested, so they may or may not effectively be cut by the MH400 and your own tests will decide. Wood Veneer, Thin Magnetic Sheets, EVA, Mylar, Thin Chipboard, Paint Mask, Styrene, Leather, Felt, Denim, Cotton, Wool

4.2 - RECOMMENDED CUTTER SETTINGS (Continued)

The above settings should be considered as starting points and may need to be modified depending on the characteristics of the specific brand and nature of material you are using. When considering how to cut a material that you are encountering for the first time, look at the thickness vs. density of the material. Materials with a high density will typically need more force and a slower speed. In cases where the material is thicker, multiple passes is often a good place to start before increasing force. When working with thicker materials, some users set the blade holder above the slot where it normally sits, so that the bladeholder has sufficient distance to fall and get maximum downforce. Thin materials, and especially fabrics are best addressed with a 30° blade. Fabrics often require the use of starch or backing material to stiffen the fabric before cutting and/or using a brayer roller (purchased separately) to get the fabric to stick and lay flat on the sticky part of the cutting mat (purchased separately).

4.3 - TROUBLESHOOTING CUTTER ISSUES

Before contacting support, you may want to try basic troubleshooting.

UNIT WILL NOT POWER ON:

- Make sure power cord is securely plugged into the power adapter.
- Check the exact outlet you are using by plugging in a lamp. Note that sometimes the bottom outlet in a two outlet wall plate is controlled by a light switch.

THE VINYL PULLS TO ONE SIDE WHEN IT GOES THROUGH THE CUTTER:

- Proper alignment of top/bottom guide rulers when placing vinyl in the cutter is most important- Also, make sure the pinch rollers are over the gritted part of the bottom roller.
- Make sure the grit rollers on the bottom bar are clean of any sticky residue.
- Place your vinyl so that the pinch rollers are near the outside edges. (*Note that pinch rollers must always match up with grit rollers below.*)
- If you have a wide enough model to have multiple pinch rollers, you may have better results by adding (or removing) a middle pinch roller.
- Make sure the small levers on the back of pinch rollers are all down.
- You might be using too much downforce on the blade. Increase passes instead.

THE BLADE DOES NOT CUT ALL THE WAY THROUGH THE MATERIAL:

- Some materials need multiple passes to cut all the way through (This can only be set in SW).
- Check that blade offset and overcut settings are set correctly in software.
- Try increasing pressure before considering extending exposed blade length.

CUTTER STOPS/STALLS WHEN CUTTING VERY THICK MATERIALS:

- Try decreasing speed/force and increasing number of passes.
- Place the bladeholder higher in the jaw above the normal seat position to allow blade to drop more.

I CANNOT GET USB TO CONNECT:

- Test the USB port on the computer with a different USB device.
- Make sure the connection settings on your computer show USB in the software.
- With computer on, remove and re-insert the USB cable to re-initialize the port.

4.3 - TROUBLESHOOTING CUTTER ISSUES (Continued)

MY CUTS SHOW TEARING:

- Check to see that your blade is not exposed more than the thickness of the media, but not the backer.
- Try reducing the down force. Too much force can impede material movement.
- Blade may be chipped or dull and needs to be replaced.

THE CORNERS OF MY CUTS ARE NOT CUTTING COMPLETELY:

- Check to see that you have the correct overcut setting in your software.
- A typical overcut setting is 1 mm but may be more/less for different blade angles.
- When using the pen, overcut will be zero.

I DO NOT SEE MH400 AS A PULL DOWN MENU OPTION IN VINYLMASTER:

- This is likely due to not having the latest version of VinylMaster installed. VM 5.0 version 20240501 or higher is required.
- On the top line of VinylMaster software select Help->About to see your PSN
- Go to mhcutter.com/downloads and select Download Software.
- Input your VinylMaster PSN to allow download.
- Re-install the software and select MH400 as the cutter during install.

WHAT DO THE ERROR CODES MEAN?:

Error 0 = cannot find the initial registration mark to start

Barcode Not Seen = Sensor cannot read the barcode

File 123456 Not Found = Barcode is read, but file is not found on U-disk.

Error 1/2/3/4 = Specifies which of the four registration marks cannot be read properly.

Error codes can be triggered by various causes: overhead light reflections, media not straight in the cutter, media does not have enough contrast (holographic or laminated media may not be seen by the sensor as easily)

4.4 - WARRANTY AND SUPPORT

MH cutters come with a limited 1 year warranty as provided by your dealer. In the USA, your warranty and support are provided by:



USCutter offers a limited 1 year warranty on this cutter.

Details of our standard warranty policy can be viewed on-line at the following link:
www.uscutter.com/Warranty-And-Returns-Policy

For support for your equipment, contact USCutter at:

Sales & Support: 1-425-481-3555

M-F 7:30-11:30am, 12:30-4pm PST

support.uscutter.com