KNK Maxx/Groove-e with MTC User Manual[1]

October 28, 2013

This manual is based on Make The Cut (MTC), version 4.6.1. Because of regular updates to MTC, we recommend not printing this entire document, but rather read it on the screen or print only those pages you need at any given time.

Features of this Online Interactive User Manual

Turning Pages: To turn pages, click on arrows, enter a page number, click or swipe on the lower corners of the pages, or click on triangles on right or left sides of pages.	**Enable Full Screen:** Click for Full Screen mode. Press Esc or click on icon to return to regular mode.
Print: Select pages to print to your printer. It is recommended that you do not print the entire manual as it is updated every six months or so.	**Bookmark**: Table of Contents opens and you can click on any chapter, section, or subsection to immediately access.
Thumbnails: Displays the thumbnail images for all pages in the book.	**Sound:** Click to turn off or turn back on the page flipping sound.
Zoom: Zoom in and out, as needed. You can also double click on a page to zoom in or out. Note that while zoomed in, moving the mouse automatically scrolls the page up and down.	**Search**: You can search by any word(s) in the manual. Click on the **Search** icon, enter the word(s), and all pages with that word or words will be listed. Click on a listing to be taken to that page.

Videos: This user manual contains numerous links to online videos. Click on these green Video icons to open either a You Tube or Vimeo hosted video and learn the topic in that particular section of the manual. Past experience has shown that watching videos can be extremely beneficial when learning software and cutting applications.

Where to Start

- Thank you for choosing a Klic-N-Kut. Before using a blade in your new cutter, we suggest you read *Chapters 1 and 2* and watch the videos provided via links in these two chapters.

- If you run into difficulties with the operation of your KNK, turn off the power and look for a solution in this manual. If you continue to have technical questions or issues, please contact your KNK supplier as soon as possible.

- For additional cutter support, please visit our Yahoo group at: http://groups.yahoo.com/group/Klic-N-Kut/ or our forum at http://knkusa.com/forums/

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Contents

1. Introduction to Your KNK

1.01 Unpacking

- Verify that you have received all contents. There is a checklist below. Please notify your KNK supplier immediately if anything is missing.
- Remove all foam pieces and cut the zip ties carefully before turning on the KNK.

- Use the enclosed test pen as you experiment and become familiar with operating the KNK. Place scrap paper on the mat and simply draw shapes rather than cut them. This will prevent possible damage to the blade, mat, and cutting strip as you learn where shapes will cut and the basic operating procedures.

- Do not unplug the USB cable from your computer or from the cutter unless you first turn off the cutter. Doing so can cause power fluctuations that, in turn, can damage the cutter.

- Always turn off the KNK when not in use. Leaving the cutter turned on for extended periods of time can possibly damage the machine.

1.02 Contents

- Your KNK with MTC package comes with the following:

KNK digital die cutter	Blade holder
Make The Cut (MTC) Activation Pin	45° blade (red cap)
Cutting Mat	60° blade (blue cap)
Spray adhesive	USB cable
Test Pen with 2 inserts and a spring	Serial cable
Bolt-on flatbed tables and screws	Power cord

1.03 Items to Note (Please Read!)

- Blades: The blades used by cutters are extremely fragile. Do not drop or even bump the blade onto any hard surface as they can chip easily. When not in use, retract the blade into the blade holder or remove and cover the sharp end with the soft plastic cap. Be careful to keep these small blades in a safe place.

- Warranty: The one year warranty covers Manufacturer's Defect only and does not include normal wear and tear. If warranty work is required, the owner is responsible for shipping costs to and from Accugraphic Sales. If a KNK is damaged during shipment, then your dealer should be notified as soon as possible. If damages are reported later than three weeks after delivery, then it will be the responsibility of the owner to ship the damaged KNK back to Accugraphic for repair.

- KNK owners outside the USA should contact their KNK dealer for procedures regarding warranty work or shipping damage.

- Transporting: When transporting the cutter, move the pinch wheel levers into the upward position. Remove the accessories from the KNK and place in a separate bag. We also recommend retaining the original boxes with the foam inserts in case you ever need to ship your KNK.

- Additionally:
  ◊ DO NOT touch or jam the plotter's track while it is operating. If the cutter is damaged, it is the owner's responsibility.
  ◊ DO NOT shake the cutter while it is operating.
  ◊ DO NOT cut any materials that have staples or other embellishments attached.
  ◊ DO NOT touch the cutter with a magnet.
  ◊ DO NOT allow small items to fall into the cutter.

◊   TURN OFF the cutter when not in use.

1.04 Parts of the KNK

Control Panel

Pinch Wheel
Positioning Label
(white rectangle):
Total of 4 (5 on 24")

Blade Carriage

Blade Holder Seat

Cutting Strip

Carrier Sheet
(Mat)

Grit Shaft (beneath
Pinch Wheels):
Total of 4 (5 on 24")

Bolt-On Front Table

Pinch Wheel:
Total of 3 (4 on 24")

Front

Power Port

USB Port

On/Off Switch

RS232 Serial
Port

Left Side

Right Side

Pinch Wheel
Lever:
Total of 3

Bolt-On Back
Table

Back

1.05 Control Panel

Video

1. LCD Display
2. Test: Cuts a small test shape when cutter is in Offline mode
3. Online / Offline Toggle
4. Menu
5. Repeat: repeats last cut when cutter is in Offline mode
6. Pause: stops cutting

7. Offline Mode: moves carriage to the left; Online Mode: increases cutting force
8. Offline Mode: moves mat to the back; Online Mode: increases cutting speed
9. Offline Mode: moves carriage to the right; Online Mode: decreases cutting force
10. Offline Mode: sets the Origin
11. Offline Mode: moves mat forward; Online Mode: decreases cutting speed

Online Mode Display
v = cutting velocity, mm/sec
f = cutting force (scaled from 1 to 200)

Step 1: Turn on your KNK.

A welcome message will flash for a few seconds when cutter is first turned on. Then the cutter will come to rest in the Online Mode. Experiment with "+" and "-" buttons, as shown.

Increase/Decrease **Velocity** (Speed)

Increase/Decrease **Cutting Force** (Pressure)

Offline Mode Display
x = forward/back distance from origin
y = left/right distance from origin

Step 2: Press the **Online** button.

This will change to Offline mode. Experiment with "+", "-", TEST, and Origin buttons, as shown.

Press the **Test** button for a small shape to cut at the origin. Note the cutter will then be in Online Mode.

Move the mat forward or towards the back

Move the carriage left or right

Press the **Origin** button to set the origin. Note the cutter will remain in the Offline Mode.

9

Laser Mode Display

Step 3: In <u>Offline</u> Mode, press the **Menu** button.

The Laser display will show and the laser can be activated.

LED
LASER

Press the **Origin** button to turn the laser light on. You will see a red light appear below blade carriage. Also, the cutter will change to <u>Online</u> mode. To turn off the laser, repeat Steps 2 and 3 and then press the **Origin** button again.

Setting Display
Us = Traverse speed (movement of carriage when head is up)
Br = Baud rate (USB: 57600, Serial: 9600)

Step 4: In <u>Online</u> Mode, press the **Menu** button.

Experiment with the "**+**" and "**-**" buttons for the **Traverse Velocity**. Change the **Baud Rate** based on the connection you are using.

Setting
Us 600mm
Br 57600

Increases/Decreases **Traverse Velocity** (Up Speed). Set to 200 if doing PNC applications

Increases/Decreases **Baud Rate**: <u>USB: 57600</u>
<u>Serial: 9600</u>

Set Per Display
Xp = Calibration of X scale
Yp = Calibration of Y scale

Step 5: In <u>Online</u> Mode, press the **Menu** button twice.

Press again to turn off the **Menu** function.

Set Per
Xp=36719
Yp=36654

Do not change these values. Instead, it is recommended that calibration of your KNK be done from within the software. Refer to *Section 2.10.*

Pause Display
v = cutting velocity, mm/sec
f = cutting force (scaled from 1 to 160)

Press the **Pause** button during the cut and the cutter will immediate stop cutting.

At the end of a cut, the **Repeat** button can be pressed, in <u>Offline</u> Mode, to activate the same cut again.

Pause
v= 500mm
f= 83

As shown above, use the "+" and "-" buttons to change the cutting velocity or cutting force and press **Pause** again to resume the cut.
…OR…
Turn off the cutter to abort the cut.

1.06 Blades and Accessories

Testing Pen Holder:

Video

- The testing pen should be used until you are comfortable with the operation of your KNK and know, with certainty, where images will cut. To assemble this testing pen, remove the top cap, slip the spring over the top half of the pen insert and then drop the pen insert into the bottom half of the pen holder. Slide the cap over the pen insert, allowing the pen insert to fit through the hole at the top of the cap. Screw into place.

Spring goes over top of insert and stops at a small ridge on the pen insert.

Blades Included With KNK Purchase:

- There are two kinds of blades included: The 45 degree red capped blade is suited for cutting thinner materials such as paper, smooth cardstock, iron-on transfer, and vinyl. The 60 degree blue capped blade is a much longer blade and is well-suited for cutting thicker materials, such as heavily textured cardstock, chipboard, gum paste, craft foam, poster board, and rhinestone template material.

Blade Installation:

Video

- The blade must be carefully inserted into the blade holder. Do this over a soft surface (e.g. over a hand towel). It's important to protect the fragile blade! To install, follow the numbered steps as shown:

4. Turn counterclockwise to move towards the top.

6. Turn clockwise until locked in place.

2. Gently insert non-sharp end into holder. An internal magnet will pull the blade inwards.

1. Push in and hold so that a blade can be inserted OR removed.

3. Turn counter-clockwise to retract the blade.

5. Turn clockwise to set blade length to match the thickness of the material being cut.

- In Step 5, hold the material you are cutting up next to the blade and turn the silver gridded part to adjust the amount of blade protruding. You will want to only see enough blade, as needed, to cut through the thickness of the material to be cut. This is less than you probably think! So be on the conservative side first and you can always extend the blade, as needed.

- Important – Please read Chapter 2 before cutting!

Alignment Pin

- The KNK Groove and Groove-e both come with an alignment pin to be used instead of the laser when setting the origin in the **WYSIWYG** cut mode and also for the **Print and Cut** process. This is how the alignment pin is inserted into the small hole on the blade holder seat:
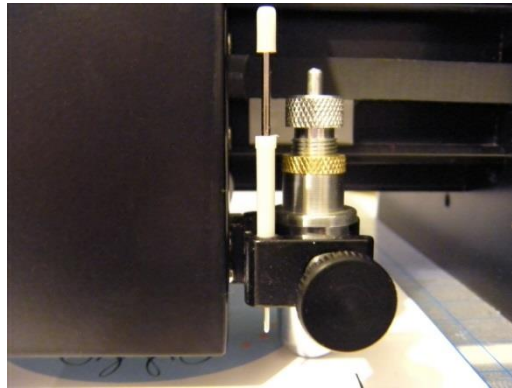
- To use the pin, simply push down on the top to verify the location of the tip. If you lose the pin, then replace with any other pointed object that can be mounted firmly into the hole on the seat. Calibration of the location of the tip is required for precise **Print and Cut** work. This is covered in *Chapter 9.*

1.07 Mat (Carrier Sheet)

- Always use a mat to hold the material to be cut unless the material has its own protective backing. For example, vinyl and iron-on transfer both come with a layer that you do not cut. Thus, this backing layer serves as the carrier for cutting. Paper and cardstock do not have a backing, thus they must be cut on the mat.

- If your mat was sold with a can of Krylon Easy Tack, carefully follow the directions on the can. Shake the can well and place your mat on newspaper in a well-ventilated area such as a patio or inside a garage. Never spray near other objects! Spray the mat back and forth vertically and horizontally, but only apply a light coat! Then allow about 30 minutes to dry. Press your hand to the middle of the mat and lift. If you cannot lift the mat, then apply a second coat. If you can lift the mat and it drops right away, then it's probably just right for cutting paper. If you can lift the mat and it drops after a few seconds, then that's about right for cardstock and rhinestone template materials. If the mat stays stuck, then that's best for cutting fabric.

- If the newly-sprayed mat is too sticky, causing difficulty in removing cut items without tearing, place an old but clean towel over the surface of the mat and press with a brayer or rolling pin. Then pull up. Test the stickiness and repeat until the mat is more appropriate for your material. It should only take a few pressings to greatly reduce the stickiness, as tiny (too small to be visible) fibers from the towel are added to the surface.

- While Krylon Easy Tack has proven to be an excellent mat adhesive for cutting paper and cardstock, alternative adhesives may be used in place of the Krylon. If you are cutting thicker materials, such as oil board or styrene, then you may want to experiment with stronger adhesives or use painter's tape to secure the material to the mat. If you are cutting thin paper, then you may want to experiment with lighter adhesives.

- Use a plastic scraper (an old credit card will suffice) to scrape off any random material pieces remaining on the mat after a cut. For finer particles of paper or lint, you can use a lint roller. Tear off a sheet and then press down and pull up across the surface of the mat to clean in sections.

- When mats begin to lose their stickiness, they can be washed. Use a mild dishwashing detergent, warm water, and a brush to thoroughly clean the surface. Then allow to thoroughly dry. Normally, the mat will regain its original stickiness. But if not, apply more adhesive.

- Avoid direct contact between the pinch wheels and the mat as the rubber on the wheels will tend to pick up the adhesive and then later stick to the material you are cutting. If this happens, these rubber wheels may be cleaned with isopropyl alcohol or Un-Du. Move the wheel away from a grit shaft, apply the cleaner to a clean rag or paper towel, and rub the entire wheel until free of adhesive.

- Alternatively, silicon spray or silicon grease can be applied to the rubber wheels and then the adhesive from the mat will not stick to the rubber. <u>Do not spray the wheels directly</u>; instead spray a clean rag or a paper towel and then apply the wet paper towel to the wheels, or use a cotton swab to apply the silicon to the wheels.

1.08 Attaching your KNK Bolt-On Tables

- It is strongly advisable that you attach the included bolt-on tables. They do not require any table support beneath, thus can extend out over the front or back of a desk. The benefit is that these tables support the cutting mat and prevent bowing in the middle. Additionally, the material being cut will be less likely to come unstuck from the mat.

- The installation of the front and rear tables on your KNK is best done with two people. Each box contains 2 identical tables (front and rear) and a supply of screws.

First, lay a soft towel down. Next, gently turn your KNK upside down to expose the bottom panel. Unscrew the screws along one side of the bottom panel.

Next, slip one of the tables into place and put the bottom screws back in. Once the screws are tightened, turn your KNK back over, where the cutter is facing up.

Insert 4 of the screws (5 on the 24" Maxx) that were packaged inside the box with the tables. Be sure to keep the screws relatively loose until all have been inserted. Then tighten down but <u>not too tight</u> or you will risk stripping the threads.

Repeat this for the other side of your KNK.

1.09 Installation of your KNK and Software

Registering Make The Cut

> IMPORTANT: Please read this section!!!

- If you received a 14 digit Activation Pin with your purchase of *Make The Cut* (MTC) software, this is **_NOT_** the code you use in the software. This pin must first be registered! If, instead you already have a much longer number beginning with "MTC", then use that number in the software to register and skip the next two steps.

- Go to the following link to register your Activation Pin:

  https://www.make-the-cut.com/register.aspx

- Complete the form using the Activation Pin. Carefully enter your email address because you might need to request your registration number again in the future and it will be sent to that address. Upon completing the form, a registration number will be provided. This is your permanent registration number for the computers you own. You can leave this window open until you get MTC installed or you can verify that the number has also been emailed to you.

Installing in Windows

- All new owners should download and install the latest version of the software and the latest plug-in for the KNK. Go to the following link to download the latest version of MTC:

  http://www.iloveknk.com/Support/Software/Make-The-Cut/MTC-Windows/

- Then go to this link to download the plug-in for the KNK Maxx:

  http://www.iloveknk.com/Support/Software/Make-The-Cut/Plugins/Maxx-Groove-Groove-e/

- Install the software and plugin. Then open MTC. When asked if you wish to register or continue using the trial mode, enter the registration number that was provided when you registered.

- If you missed opening the software when asked, you will find the icon on your desktop (or you can open by locating *Make The Cut* from your **Windows Start>All Programs** menu).

- If you lose your registration number and you need to install MTC onto another computer, please go the same prior link and click on "**Recover Pin**."

- It's now time to connect the KNK to your computer. Go to *Section 1.10.*

Installing on a Mac

- There are three things to install: the MTC program, the MTC Bridge, and the KNK Plug-in. These are contained within one file which can be downloaded here:

  http://www.iloveknk.com/Support/Software/Make-The-Cut/MTC-Mac/

- Before installing, please read and follow instructions regarding Apple's Gatekeeper software (scroll to *Mac Users, please note the following error*) at the following link:

  http://knkusa.com/resources/

- After the download has completed, open the Downloads folder and launch the downloaded MTC dmg file.

- A blue window will open with instructions to use for installing the software and bridge. Watch the following video first so that you can better visualize what needs to be done. This video was originally designed for the Zing, however, all steps are the same, with the exception of testing the connection. Wait to do this from within MTC.
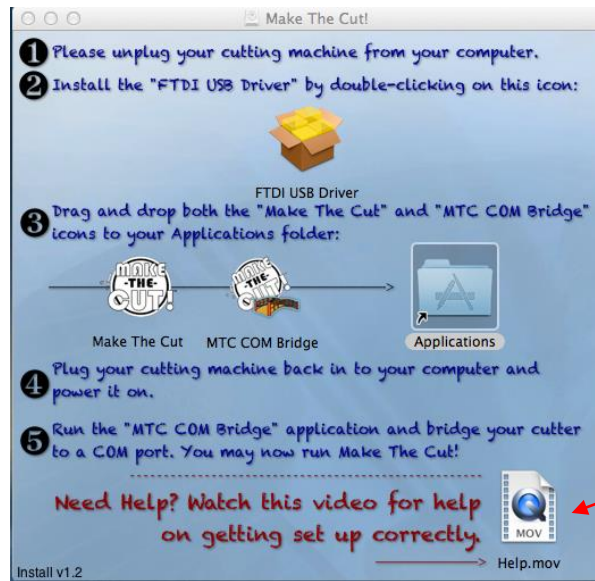
Watch this video! BUT remember, it works a bit differently on your KNK!

- In the Bridge program, after selecting the tty listing under COM 1, be sure to click on **Save** at the bottom of that window:
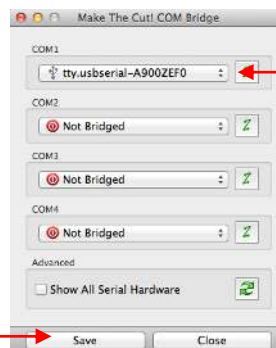
Select the tty connection here.

Then, click on **Save**.

- Go to your **Applications** folder and hold the **Ctrl** key while clicking on the MTC icon. Choose **Open** from the drop-down menu.

- Enter the registration number you received when you registered the software.

- If you lose your registration number and you need to install MTC onto another computer, please go to the following link to have it emailed to you:

  http://make-the-cut.com/LostRegKey.aspx

- You may now skip to *Section 1.11.*

1.10 Connecting the KNK to Your Computer under Windows

- Place your KNK on a sturdy horizontal surface. If you have not yet done so, attach the bolt-on tables to the cutter (refer to the instructions in *Section 1.08.*) If you are not going to use the tables, then be sure to allow enough free room in both the front and the back for the mat to extend during cutting.

- Connect the power cord to the left side of the cutter and plug into a wall outlet or power strip. Turn on the power using the power switch on the left side. The yellow LED display should come on and the cutter will initialize (carriage will move to the far right side of the cutter).

- Connect your KNK to your computer using either of the following:

  ◊ **USB Connection**: Turn off the cutter and connect the USB cable to the right side of the cutter and into an available USB port on your computer. Turn on the cutter. The Windows Hardware Manager will

15

identify the USB connection. If the Hardware Installation window pops open, proceed and accept all defaults. On the Control Panel, press the **Menu** button and verify that the **Baud Rate** is set to 57600. Refer to *Section 1.05, Step 4.*

◊ **Serial Connection**: Turn off the cutter and connect the RS232 cord to the right side of the cutter and into the serial port on your computer. Turn on your cutter. The Windows Hardware Manager will identify the USB connection. On the Control Panel, press the **Menu** button and change the **Baud Rate** to 9600. Refer to *Section 1.05, Step 4.*

1.11 Verify Communication and Test Draw Shapes

- New owners tend to be VERY eager to try out their KNK. It's also important to test your cutter to ensure that data is being sent properly from your computer to the cutter. The following steps will allow you to do some testing with the pen tool. But note that **the following steps are for DRAWING, not cutting**. Before inserting the blade tool into your KNK, please read the following Section*s: 1.05, 1.06, 1.07,* and *Chapter 2.*

1.11.1 Setup for Communication Test and Drawing

- Press an 8.5" x 11" sheet of paper to the mat. If your mat has NO adhesive, then use tape to firmly attach the paper to the mat surface. Note: do NOT use this method when you begin using the blade. You must spray your mat with adhesive so that when images are cut, they will remain attached to the mat.

- While the paper can be placed anywhere on the mat, it is recommended that the paper be placed so that the wheels will pass over the edges of the paper. This prevents adhesive from the mat sticking to the rollers.

- Raise the pinch wheel levers in the back and slide the mat into the cutter, aligning the mat along the right side of the cutter. **Make sure the wheels are aligned with white rectangles on the cutter**. (Refer to the photo below). The pinch wheels can be slid left and right, as needed. Once under rectangles, drop the levers. Note that only 2 wheels need to be used for this testing or when cutting most materials. The left-most wheels can be moved to the far left side and left in the up position.

Wheels should be located under white rectangles.

Set origin in front right corner of paper.
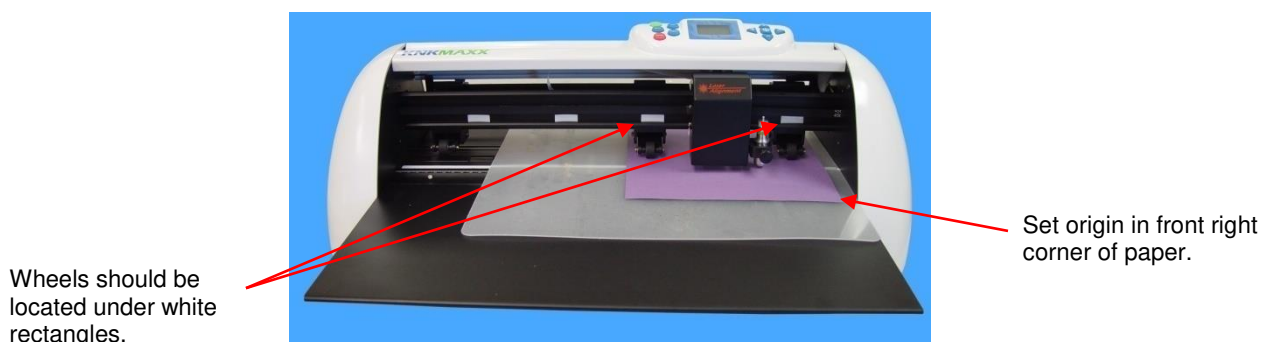
- Assemble the pen holder as shown in *Section 1.06.* Make sure the pen will write by scribbling on scrap paper. Then loosen the screw on the blade holder seat and insert the pen tool. Make sure the pen nib is slightly above the cutting surface so that it will not drag across the paper. Firmly tighten the screw.

Video

- Refer to *Section 1.05 Control Panel* for instructions on the display panel. Set the origin by going off-line and then using the **+** and **-** buttons to move the tool over to the front right corner of the paper (thus, most of the mat and your material are behind the cutter at the start of the cut). Press the **Origin** button to set the origin. Press the **Online** button to return to online mode. NOTE: you must reset the origin every time you turn on the cutter.

Video

- For drawing, the **Force (f)** should be set to around 50. If you find the pen isn't drawing, then increase as needed. The **Velocity (v)** (also referred to as **Speed**) can be set to whatever you like for drawing. Try 200.

- In MTC, you will set the **Virtual Mat** to **Portrait** and make several other settings for doing the tests:
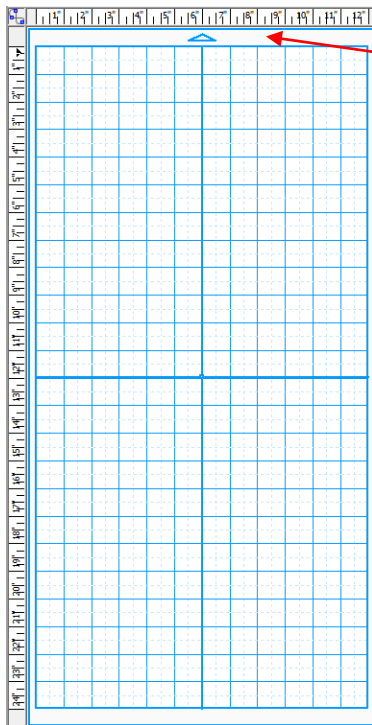
Indicates the direction the mat is fed into the cutter. In **Portrai**t mode, arrow will point up on the screen. In **Landscape** mode, arrow will point to the left on the screen. More on the **Virtual Mat** is covered in *Section 4.04*

Select **24" x 12" Large Mat** to most closely match the mat you received with your KNK.

Select **Light Blue** or other desired color.

Set **Zoom** to 30%

Select **Portrait** for this test. Later on, experiment with **Landscape.**

- Go to **File>Import>From Basic Shapes** and select the category called **Arrows**. Double click on any of the arrow images to add that image to your screen. An arrow will help you better compare where a shape gets drawn versus how you see it on the screen.

Double click any of the arrow images to add to your screen.
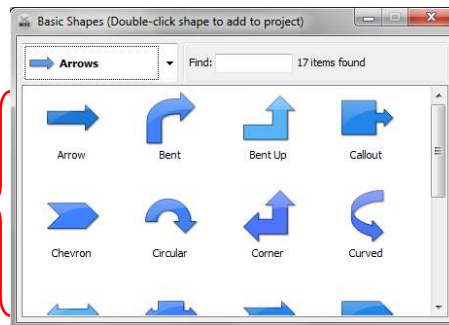
- After double clicking the arrow, you should see it on the screen. In this test, it doesn't matter where you place the arrow as it will be drawn at the origin you set on the machine. If you like, you can drag the arrow shape to the **Virtual Mat** on the screen, if it's not already on the mat:
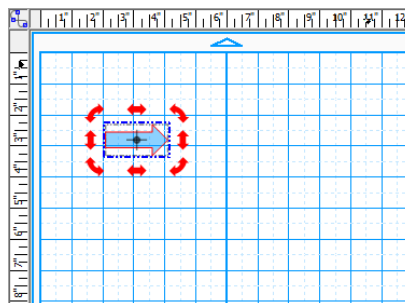
More on moving and manipulating basic shapes is covered in *Section 3.09*.

17

- To open the cutting control window, go to **Cut Project With>Klic-N-Kut Series**. A new window will open where you can locate your **COM** port assignment under the **Serial Port** menu:

Select KNK Maxx

Open menu and locate COM port with the USB Serial Port connection

Click on **Test Connection**

Set the **Baud Rate** to match what's set on your KNK (refer to *Section 1.05*)
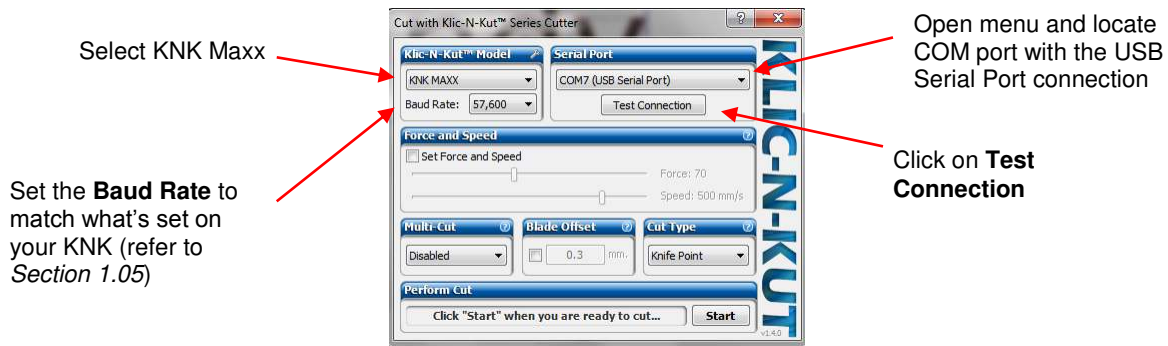
1.11.2 Communication Test

- To test communication between your computer and KNK, click on the **Test Connection** button. The blade holder will make a small movement indicating that the connection is working. Here is a list of some of the possible communication errors that might occur:

  ◊ "Overlapped I/O Operation is in Progress" - (1) Verify the correct listing is selected in the Serial Port menu (2) Verify that the USB cable is securely plugged into your KNK and into the computer.

  ◊ Nothing happened and no error message – (1) Check the baud rate on the machine to make sure it matches what is selected in the window (2) Make sure your KNK is online.

  ◊ "Access is Denied." - The Latency Timer needs to be changed on the Com Port assignment. To do this, watch the video called "Communication Fix" at this link:

  http://www.iloveknk.com/FreeVideos/Support/

- If the **Test Connection** still fails, please contact your KNK Supplier for assistance or post at the Klic-N-Kut Yahoo group mentioned on the first page.

- If the test succeeded, then try drawing your shape! First note the following in the **Controller** window:

Force or **Speed** may be set here, as well as on the KNK. If checked, then these settings will override those set on the cutter (unless your KNK is an older model).

Select **Knife Point**
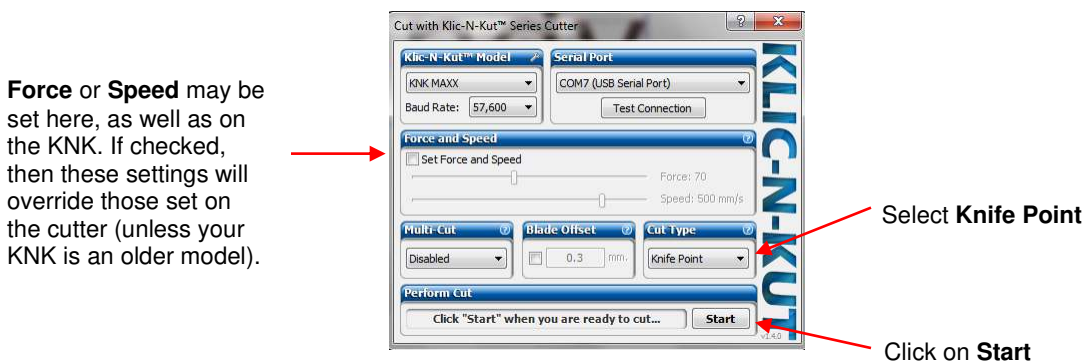
Click on **Start**

- After making the appropriate settings, click on **Start.**

- The arrow will be drawn at the origin you set on the paper with the test pen. If you like, change the origin to a different location, say an inch away from the right side and from the bottom. The arrow will now be drawn at that new origin.

- If anything goes wrong during the cut, press the **Pause** button on the cutter to stop the cut. This is your panic button! Turn off the cutter and then turn back on again. Take the necessary steps to begin your cut fresh. If data is still being transmitted to the cutter, allow it to continue until you see this window:
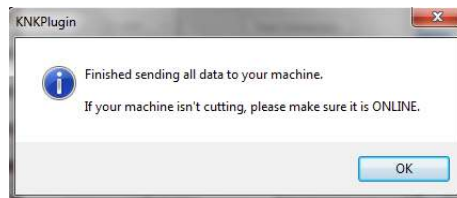
- To draw again, return to the cut window and choose a different origin. Practice moving the origin to different locations. This is how **Knife Point** mode works. If you want the image to draw where you have it on the Virtual Mat, then you need to switch to **WYSIWYG** mode and use the laser or alignment pin to set the origin versus the tip of the pen. Refer to *Section 2.07* for more details on controlling where images will cut.

IMPORTANT: Please read Section 2.01 before cutting!

2. Cutting

2.01 What You Need to Understand About Cutting

IMPORTANT: Please read all of 2.01!!!

You Have To Make Mistakes

- The key to becoming successful at cutting is to do a lot of it! Those who shy away from using their KNK never get to the stage of mastering it. It's very normal for new owners to be intimidated by their cutter. So, remember the following key things:

  ◊ You won't break your new KNK by cutting paper, vinyl, cardstock, rhinestone rubber, and other easy-to-cut materials. The worst thing that might *possibly* happen is that you'll break a blade. That's it! And the likelihood of even that happening is low.

  ◊ You need to start cutting so that you'll make a lot of mistakes! We ALL do that! It's in making these mistakes that you start to learn. You realize that those mistakes didn't result in a broken cutter. Plus you'll stop making the same mistakes as you remember more of the things you need to check before every cut.

  ◊ As you make fewer mistakes you begin to build confidence and you begin to have more cutting success! From there, you begin to experiment more and produce more. Thus, your best course of action is to just start cutting… a lot… after, of course, you have read the rest of this section!

The Most Common Mistakes Made by New Owners

- We all make them and we all learn from them. So, please note the following most common mistakes and then <u>finish reading this entire Section 2.01</u> as the details behind these listed mistakes will be explained:

  ◊ Too much blade is exposed on the blade holder

  ◊ The blade tip is too close to the material

  ◊ Too much force is being used for the material being cut

  ◊ Forget to set the Blade Offset before cutting

  ◊ Failure to do a test cut to make sure settings are optimal

  ◊ Not practicing enough with the test pen and paper to know where shapes will cut

Begin with Easy Materials and Easy Shapes

- You didn't begin your first driving lesson out on the freeway. You probably started driving on a farm or in a parking lot. Then you progressed to the neighborhood and other low-traffic streets. Then you began driving on major streets. Think of your cutting in the same way and don't start your first cuts with thick difficult materials or detailed cutting files! Instead, start cutting basic shapes and inexpensive materials, such as cardstock from Wal-Mart or just scraps you have on hand. Work your way up to more difficult cuts after you master the easy ones.

Record Your Successes

- As you begin to have great results, take note of settings, such as cutting force, velocity, blade offset, blade type, brand of material, etc. There is a blank form at the end of this chapter that you can print and use to record your results. There are also suggested settings for a range of materials in *Section 2.03*, more specific settings at the end of *Chapter 2,* and in *Chapter 10*. Use these as starting guides but remember that your results may vary based on the many factors which can affect cutting.

Use the Correct Blade for the Material You Are Cutting

- Your KNK comes with a 45° blade (red cap) and a 60° blade (blue cap). An optional fabric blade is also sold. Use the following as a guide for choosing the appropriate blade for the material you are cutting:

  ◊ The 45° blade (red cap) should be used to cut vinyl, paper, smooth cardstock, Dura-lar, Mylar, iron-on transfer, vellum

  ◊ The 60° blade (blue cap) should be used to cut textured cardstock, chipboard, Grungeboard, stiffened felt, craft foam, rhinestone rubber, craft plastic, self-adhesive magnet, styrene, Magic Mesh, and Shrinky Dink.

  ◊ The fabric blade should be used to cut all fabrics and unstiffened felt.

Set the Blade Length/Exposure Correctly

Video   Note: This video applies to all KNK blade holders

- When setting the **blade length/exposure**, hold the blade holder up next to the material before pressing the material to the mat, so that you can more accurately set the length to match the thickness of the material. For really thin materials, like vinyl and paper, just the very tip of the blade will be protruding from the bottom of the blade holder. In fact, you should just barely be able to feel it with your finger and not be able to see it very well, if at all.

- A good way to test your blade length is to fold a piece of the material onto itself and then cut a line into the material by hand, as shown in the video linked in this section. If the blade cannot cut through the material, you will need to extend the blade. If the blade cuts through the material and cuts into the next layer, you need to retract the blade. If the blade cuts through the material but does not nor scratch the layer below, you have the perfect length.

- Having the blade fully extended will <u>never</u> result in better cutting. In fact, it can cause skewing, tearing of the material, damage to the blade, and damage to the mat.

- When conducting the test cut, be sure to check your mat for cut lines after the test. You should be able to set the length to get clean cuts but with no visible markings on the mat. If you do see cut lines in your mat, retract the blade a bit and repeat your test cut.

Material
Mat
Perfect Length   Too Long   Too Short
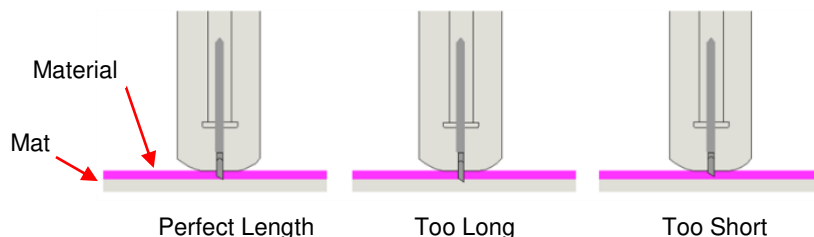
Set the Blade Tip Height Above the Material

Video

- The **blade height** is the distance from the tip of the blade to the top of the material you are about to cut. When you insert the blade holder into the blade holder seat, it does not necessarily have to be positioned with the outer rim touching the blade holder seat. You have control over that height and can raise the blade holder up a little higher before locking it into place with the front screw on the blade holder seat.

- Adjust the blade height so that:

- The blade tip will not be dragging across the material you are cutting when moving to the point to begin the cut.

- The dropping of the blade will invoke more downward force… to a point! Thinner, easy-to-cut materials (such as paper and vinyl) can have the blade tip fairly close to the material. Denser materials, such as cardstock, chipboard and craft plastic, need the blade tip a little higher, but not too high:

Blade tip needs to be above the material

But not too high or blade tip will not reach the material when dropped.

Perfect Height   Too Low   Too High
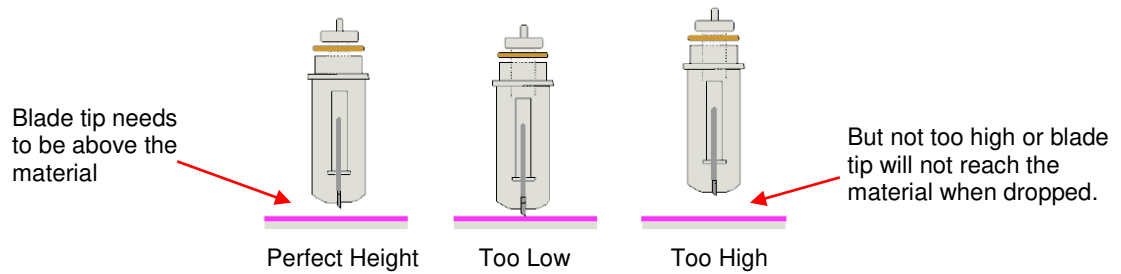
- There are several methods to use in making sure the blade tip is set at a consistent height from one cut to the next:

  ◊ One recommended method for getting the same height set for all of your cuts is to use a spacer of some kind. Place the spacer on top of the material you are cutting. Loosen the front screw and insert the blade holder so that the tip of the blade is touching the top of the spacer. Now tighten the front screw and remove the spacer. This distance will provide the blade some "punch room" to give the extra force and more consistent cutting of your material. What to use for this spacer? For materials such as cardstock and fabric, try using 25 Post-It note sheets or 12 squares cut from cardstock. When cutting very thick materials, such as 0.03" chipboard, felt, or craft foam, use 13 Post It note sheets or 6 squares of cardstock instead.

  ◊ An alternate method is to cut O Rings to slip over the bottom of the blade holder and then allow the blade holder and O Rings to sit on top of the blade holder seat. Use 1 ring for thin materials (paper and vinyl), 2 rings for cardstock, 3 rings for rhinestone template materials, 4 rings for thick chipboard, and so forth. Unlike the method above, you do not have the material itself lifting the blade holder position, so you need to keep increasing the number of O rings for thicker materials. These rings can be cut from cereal boxes with two glued together to create one ring. The cutting file for these is located here: http://www.iloveknk.com/FreeFiles/KNK/Important/.

Adjust the Speed, Force, and Number of Passes Based on the Material and Shapes

- Using correct cut settings is as equally important as the type of blade, blade length, and blade height. Refer to *Sections 2.03* and *2.04* for details.

Keep the Cutting Mat Clean and Sticky

- Press your materials evenly to the mat. Think about using a brayer both before AND after cutting. Repressing the material after cutting can greatly aid in weeding the cut shapes from the waste.

- When necessary, tape thicker materials to the mat to keep them from slipping during the cut.

- If you cut a range of materials, you might need more than one mat so that you can use stickier mats for certain materials.

Perform Test Cuts!

- Use the **TEST** button on the KNK to perform test cuts. Do not proceed with your cut until the test cut is clean. When cutting intricate shapes, a test cut of an intricate image, such as a letter or a small portion of your rhinestone pattern, might be a better indicator of correct settings.

- While in offline mode, press the **TEST** button to cut a small rectangle or ring. This will indicate if your pressure settings and blade length are sufficient. If necessary, change your settings, move your origin, and perform additional test cuts until the material cuts a clean shape.

- Repeat test cut in the same location to simulate multi-cut cutting for thicker materials that will clearly require two or more passes. This is easy to do. After the first test cut, press the **Online** button to go offline again, and press the **TEST** button again. A second cut will be made in the same location.

- While in the online mode, pressing the **TEST** button will cause nothing to happen.

Know Where Your Images Will Cut

- Practice with the test pen until you know, with 100% confidence, where your images will be drawn. This is important since you do not want to be guessing when you begin actually cutting with a blade. Refer to *Section 2.07.*

Adjust Blade Offset

- What is the blade offset? It is the horizontal distance from the center of the blade shaft to the tip of the blade. A pen or engraving tool has an offset of 0 because the tip is centered with the center of the pen/engraving tool shaft. But a blade is different:

Imagine a line passing through the center of the test pen or blade

There is no **Offset** on a pen.

The **Offset** is the distance between the center of the blade holder and the tip of the blade.
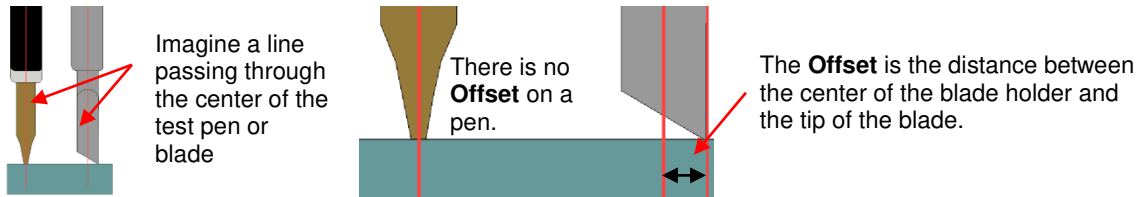
- What happens if you set the **Blade Offset** to 0? Or what if it's set too high?

Offset is too low: paths do not close
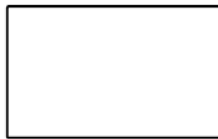
Offset is too low: outer corners are rounded

Offset is too high: Divots will appear around corners

- Refer to *Section 2.06* for setting the **Blade Offset**.

Don't Get Frustrated, Get Help!

- Besides having your own KNK dealer as the first line of contact, there are many user forums, message boards, Yahoo groups, etc where you can post questions and get answers from other users, dealers, and Make The Cut experts. Utilize these resources!
    ◊ KNK Maxx Yahoo Group: http://groups.yahoo.com/group/ILoveMyKNKMax/
    ◊ KNK Support Forum: http://knkusa.com/forums/
    ◊ Make The Cut Yahoo Group: http://groups.yahoo.com/group/makethecut/

2.02 Cut With Klic-N-Kut

- Before accessing the cutting window, you need to have at least one shape on the current page to cut. If you have no shapes, then attempting to access the cutting window will result in a popup message stating, "There is nothing inside the current project to cut!"

- To confirm what will cut, you can access the **Cut Preview** function in the following ways:
    ◊ Click on the **Cut Preview** icon on the **File Toolbar**
    ◊ Press **Ctrl+Shift+E**
    ◊ Go to **Cut Project With…>Cut Preview.**

- The cut preview will display the shapes that will be cut. Immediately invoking the function again will show the "material" with the cut shapes removed. This is also sometimes called the negative:

Shape as shown
on Virtual Mat
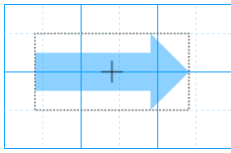
Shape shown with first
click of **Cut Preview**
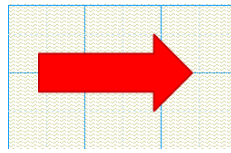
Shape shown after second
click of **Cut Preview**
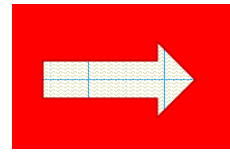
- The **Cut with Klic-N-Kut Series** window can be accessed in the following ways:

  ◊ Click on the **Cut Project With** icon on the **File Toolbar**

  ◊ Press **Ctrl+Shift+C**

  ◊ Go to **Cut Project With…>Klic-N-Kut Series…**

- The following window will open:

- The above diagram shows the relevant section numbers for each setting. The **Start** button doesn't need its own section as it simply initiates the cut once you have decided upon the other options.

- Select **KNK Maxx** or **KNK Groove-E** from the drop down menu under Klic-N-Kut Model. Set the **Baud Rate** to match the baud rate selected in *Section 1.05 Step 4.*

- The movement within the Klic-N-Kut logo can be toggled on and off by left clicking on the logo.

2.03 Force

- The cutting force (also called pressure) greatly affects the quality of the cut. If the force is too low, the material cannot be cut. If the force is too high, you will get bad cutting (even incomplete cutting at times) and tearing of the material. Use recommended starting forces for the material you are cutting, test before cutting, and make adjustments in order to get a clean cut.

- The cutting force ranges from 1 to 160 on the force scale. The maximum of 160 represents the 950g of cutting force on a KNK. To change the force (**F**), use the left and right "+" and "-" buttons, while in Online

mode. On newer KNK models, the force can also be set within the **Cut Project With** window. Check the box next to **Set Force and Speed** and scroll to the desired setting. If necessary, use the arrow keys on your keyboard to fine-tune the setting.

- Dull blades will need more force than new blades, thus anticipate needing higher force over the course of the life of the blade.

- When cutting materials that can use either blade, the 45 degree blade needs more force than the 60 degree blade, because of the extra contact with the material being cut.

- Materials that absorb moisture (such as cardstock, paper, fabric, and chipboard) will need more force (and possibly more than one pass) if they have been exposed to humidity. One tip is to blow dry these materials before cutting.

- The following are approximate force settings for a range of materials. Again, remember to use the **Test** button on the machine to cut small rectangles or rings to verify the pressure setting and your blade length are sufficient for the cut. Also remember to remove the test cut and observe the mat for any cut lines. Decrease the blade exposure, as needed, to prevent unnecessary cutting into the mat.

    ◊ For vinyl, set the pressure setting to around 30 – 40. Cheaper vinyl, such as cling vinyl, may require a slightly higher pressure. Iron-on transfer will need a force of around 60 – 70.

    ◊ For computer paper and foil, set the pressure setting to around 30 – 50.

    ◊ For vellum and heavier paper, like the more expensive patterned papers used in scrapbooking, set the pressure setting to around 55 - 75. However, heavier vellum may require more pressure.

    ◊ For lighter cardstocks, try a pressure setting of around 60 - 85.

    ◊ For heavier cardstocks like Bazzill and Club Scrap, pressures can range from 75 - 120. Some Bazzill weaves may require multi-pass to completely cut the cardstock. This is not a function of pressure; rather a function of the inconsistency in the cardstock itself. Note that humidity can cause cardstock to absorb moisture and become difficult to cut.

    ◊ For the green rhinestone template material, use a pressure setting of 75 and 2 passes.

    ◊ For very thin chipboard, try a pressure setting of around 100 - 120. As with the heavier cardstocks, humidity can play a factor and multi-cut may be necessary.

    ◊ For thicker chipboard, the pressure setting will need to be anywhere from 120 - 160 and multiple passes will be necessary to completely cut through the material.

- More specific settings are available at the end of this chapter.

- For detailed information on cutting various materials, refer to Chapter 10.

2.04 Speed

- The speed or velocity is how fast the blade is travelling while cutting. On your KNK, it ranges from 50 mm/sec to 600 mm/sec.

- With the cutter in **Online** mode, press the top and bottom **+** or + buttons to increase or decrease the cutting speed (**V**), respectively. On newer KNK models, the speed can also be set within the **Cut Project With** window. Check the box next to **Set Force and Speed** and scroll to the desired setting. If necessary, use the arrow keys on your keyboard to fine-tune the setting.

- For small and/or intricate designs, slower speeds are better. For large or simple designs, much faster speeds should work fine. A slow speed is 50 or 100. A fast speed is around 300. A speed of 600 is extremely fast but useful when using a marker or pen, or when engraving.

- There is also an "Up Speed" (US) found by pressing the **Menu** button one time. This is the speed when the blade is in the up position, moving from one location to another to begin cutting. Sometimes it makes sense to keep this speed at ~200 mm/sec, such as during a print and cut (PNC). Refer to *Section 1.05* for instructions on reducing the US from default to 200.

2.05 Multi-Cut

Set the number of **Multi-cut** passes to cut each path. (Settings from 1 to 10)

- The **Multi-Cut** setting causes each individual path to be cut the set number of passes before the blade moves to the next path to cut. This is better than just repeating the entire cut as each repeated pass is cut with the blade held down throughout the repeated passes, resulting in cleaner cutting.

- **Multi-Cut** is recommended in the following situations:

  ◊ Cutting thicker denser materials, such as chipboard, where multiple passes allow the blade to progressively "carve" through the material

  ◊ Cutting of certain fibrous materials, such as fabric, where a second pass will insure that all of the fibers have been cleanly cut

  ◊ Cutting intricate or detailed shapes (such as scripty titles) from certain materials, such as heavily textured cardstock where a single pass may leave certain spots not cleanly cut

  ◊ Cutting rhinestone template material where a second pass results in much cleaner weeding of the cut circles.

2.06 Blade Offset

- The recommended **Blade Offset** for most cutting, with both the 45° and the 60° blades, is 0.25. For the fabric blade, an offset of 0.4 is recommended. When drawing with a pen or engraving, set the **Blade Offset** to 0. This setting is found in the settings control window:

Blade Offset can be changed by checking this box and then entering a new value.

2.07 Cut Type

- There are three modes in controlling where images will cut to the KNK. They are called:

  ◊ **Knife Point**: Moves the shapes to cut at the origin you have set on the cutter itself. Use the blade tip to set the origin for cutting.

  ◊ **WYSIWYG:** Cuts the shapes where they are positioned on the **Virtual Mat.** Use the laser light or alignment pin to set the origin- either at the corner of the cutting mat or the corner of the material (as described later in this section).

  ◊ **Print and Cut:** Cuts shapes relative to registration marks printed on your printer. Refer to Chapter 9 for complete instructions on the print and cut process.
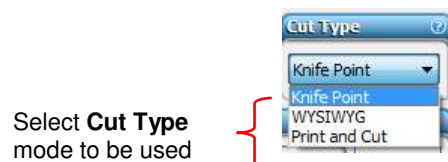
Select **Cut Type** mode to be used

Knife Point

- This is the mode recommended for most applications as it economizes the use of your cutting materials.

- Shapes can be located anywhere on the screen, including outside the **Virtual Mat**. The shapes will be moved and cut to where you set the origin on the material. The origin is set using the position of the **blade tip**.

- When more than one shape will be cut, the shape closest to the origin will be cut at the origin and any other shapes will be cut the distance and direction from that shape as positioned on the screen. The following figures show examples of where images will cut. Note that it doesn't matter whether you choose **Portrait** or **Landscape** modes for the **Virtual Mat.** The shapes will cut in the same relative locations on the material. Use the arrow on the Virtual Mat as a guide to the direction to insert the actual mat or material into your KNK.

Knife Point – Portrait Mode
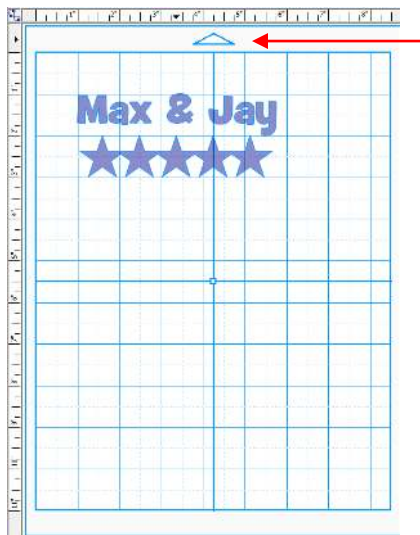
Location of shapes on the screen
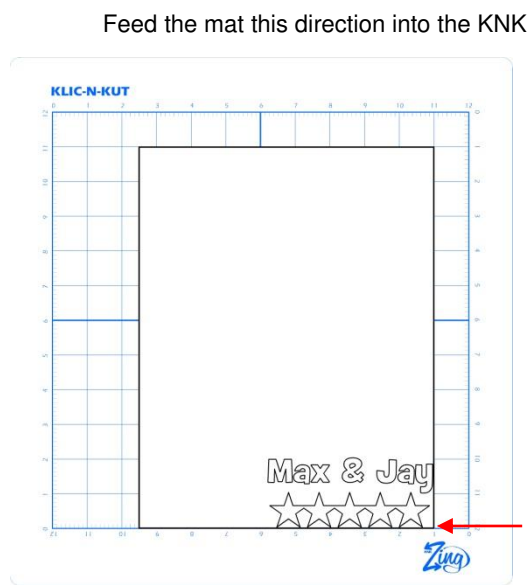
Where shapes are drawn or cut on material

Knife Point – Landscape Mode
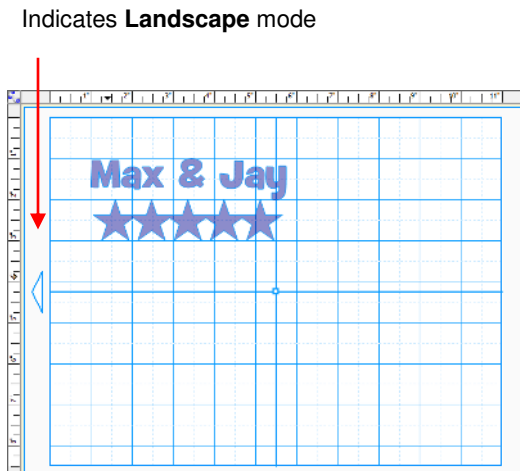
Location of shapes on the screen
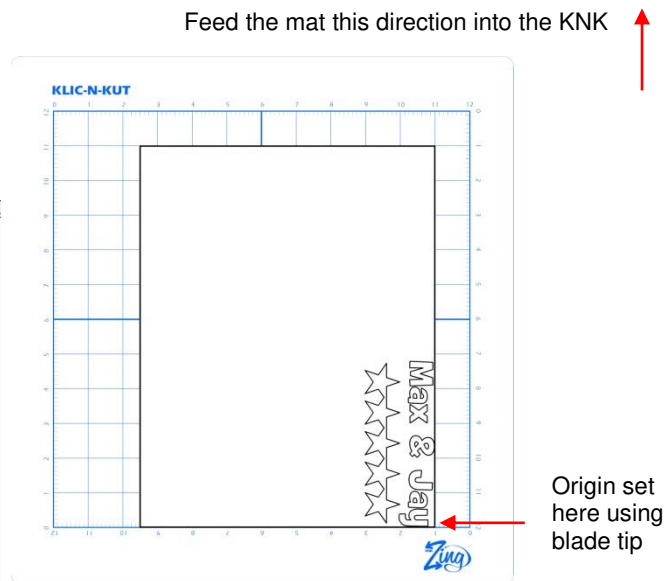
Where shapes are drawn or cut on material

- If you plan to use scraps of materials for cutting shapes, you will want to use the **Knife Point** mode:

   ◊ Place several scraps (large enough for the shape on your screen) on your mat in different locations, as shown below.

   ◊ Insert the mat into the KNK and then set the origin at the lower right corner of one of the scraps and cut the currently selected shape.

◊ Move the pen to the bottom right corner of the next scrap and set the origin there and cut the same shape (or another shape, depending on what you have on your virtual mat). Repeat for other scraps. Note the red "X"'s indicate where the origin would be set so as to not cut off the scrap:
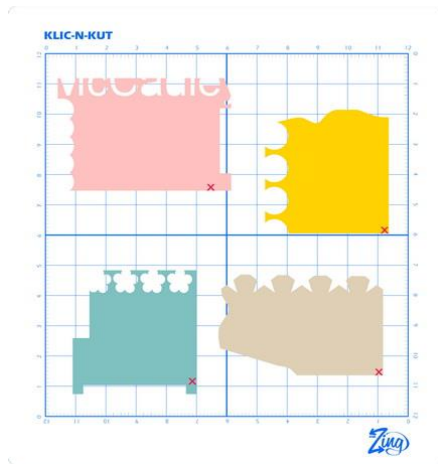
Feed the mat this direction into the KNK

WYSIWYG

- This is the mode recommended when you need to cut shapes in very specific locations on your material (such as the center front of a greeting card).

- Create a virtual mat that matches the material dimensions. For example, if you are cutting from an 8.5" x 11" sheet of cardstock, then create a Virtual Mat with those same dimensions. You can use either **Portrait** or **Landscape** mode - just remember to place your material on the mat in the correct orientation for feeding into the KNK.

- The origin is set using the **laser light**, not the blade tip. Go Offline, press the **Menu** button one time, and then press the **Origin** button. Direct the red dot of the laser to the **bottom right corner of your material** (see below). Note that if you need absolute precision for the location of your cuts, it will be necessary to calibrate the **Laser Offset**, which is covered in Chapter 9.

- If you own a KNK Groove-e, then use the alignment pin instead of the laser. Refer to **Alignment Pin** in *Section 1.06*. As with the laser, calibration of the location may be necessary.

WYSIWYG– Portrait Mode
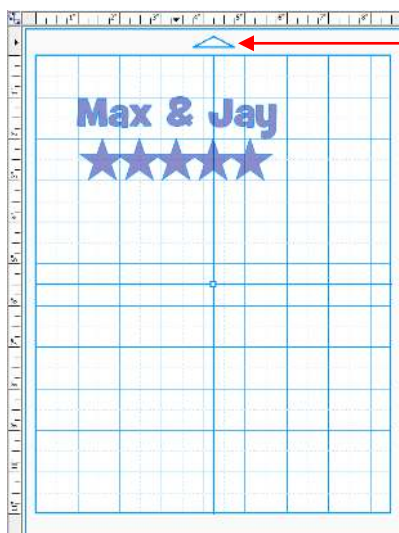
Indicates **Portrait** mode
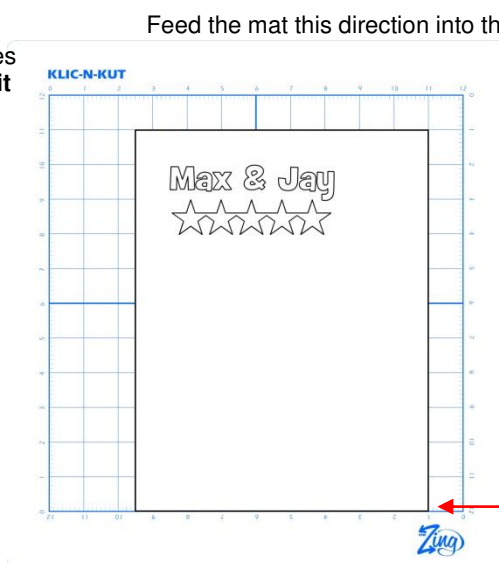
Feed the mat this direction into the KNK

Origin set here using laser light or pin

Location of shapes on the screen   Where shapes are drawn or cut on material

<u>WYSIWYG – Landscape Mode</u>

Feed the mat this direction into the KNK

Indicates **Landscape** mode

Origin set here using laser light or pin

Location of shapes on the screen   Where shapes are drawn or cut on material
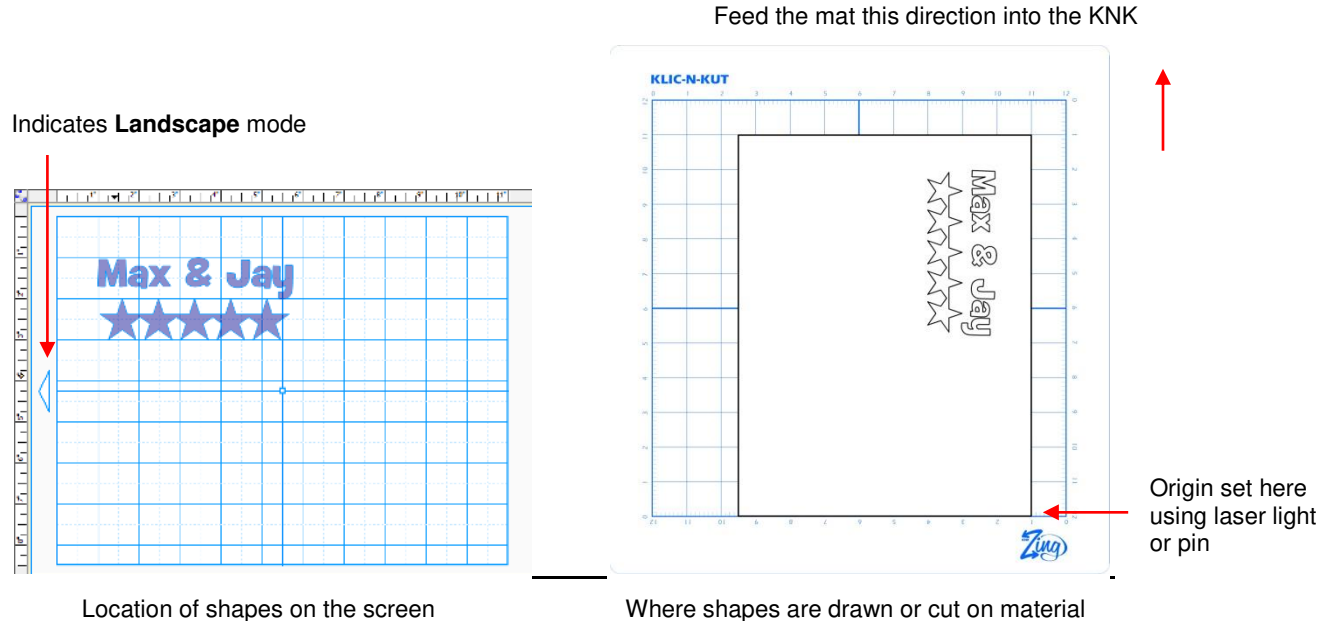
Print and Cut

- This is the mode recommended when you want to print images on your printer and then have the KNK cut them out.

- It is similar to WYSIWYG because shapes will be cut where they are located on the **Virtual Mat**. However, in the **Print and Cut** process, three printed registration marks are printed along with your images. The laser light is then set at each mark and the KNK will then cut out your shapes based on triangulation. This is far more precise than WYSIWYG because it takes into account not only any misalignment of your printout on the mat, but also any errors in the printing. Most printers do not print images in the same location on the paper as they are located on the screen.

- Note that raster images (.JPG, .BMP, .PNG etc) will need to be pixel traced first so that cut lines are created. Refer to *Chapter 6* for tutorials on how to do the pixel tracing (also called vectorizing).

- **Refer to *Chapter 9* for tutorials on the print and cut process.**

2.08 Serial Port and Test Connection

- Under **Serial Port**, you select the connection which will be used for connecting your computer to your KNK. Look for the words "USB Serial Port" if you find that there are more than one listing in the drop menu:

KNK is assigned to COM 7

This is not the connection between the computer and the KNK
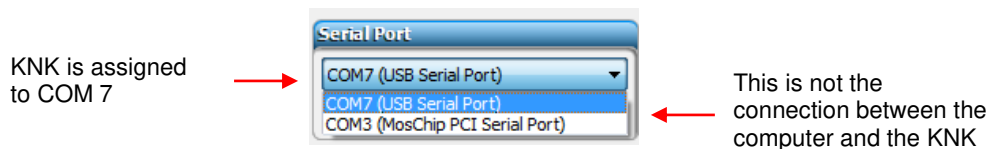
- The **Test Connection** button can be used to verify that your computer is communicating properly with your KNK. Pressing it should cause a small movement of your blade carriage.

Click here to test communication
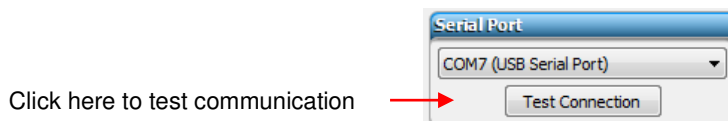
2.09 Important Checklist Before You Cut!

- Do you have your material on the mat and the mat inserted into the cutter? (Note: materials with a backing sheet, such as vinyl and iron-on transfer do not require a mat for cutting)

- Do you have the mat under the pinch rollers and the levers lowered in the back?

- Have you set the blade length/exposure based on the thickness of the material you are cutting?

- Do you have the blade holder firmly mounted in the blade holder seat and the blade tip at the correct height above the material?

- Have you set the origin at the front right corner of your material (or where you need the origin to be)?

- Have you set the force?   And the velocity?

- Have you selected the correct Offset value for the blade you are using?

- Do you need to turn on Multi-cut for this material?

- Do you know, with confidence, where your shapes are going to cut?

2.10 Calibrating your KNK's Resolution

- Digital die cutters may cut shapes slightly off from the size of the shape in the software. For example, an 8" x 8" square might cut 7-15/16" x 8-1/32". 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, the following procedure will allow you to calibrate your KNK.

- Note that this **Resolution** only applies to **Knife Point** and **WYSIWYG** cutting modes. For **Print and Cut** applications, **Resolution** is determined automatically based on where the registration marks are set with the laser light during the print and cut process.

- Go to **File>Import>From Basic Shapes** and select the category called **Polygons.** Then scroll down to locate the **Square** and double click to place the square onto the screen:

A square will appear on the screen

Select **Polygons**

Double click on **Square** to add to the screen.
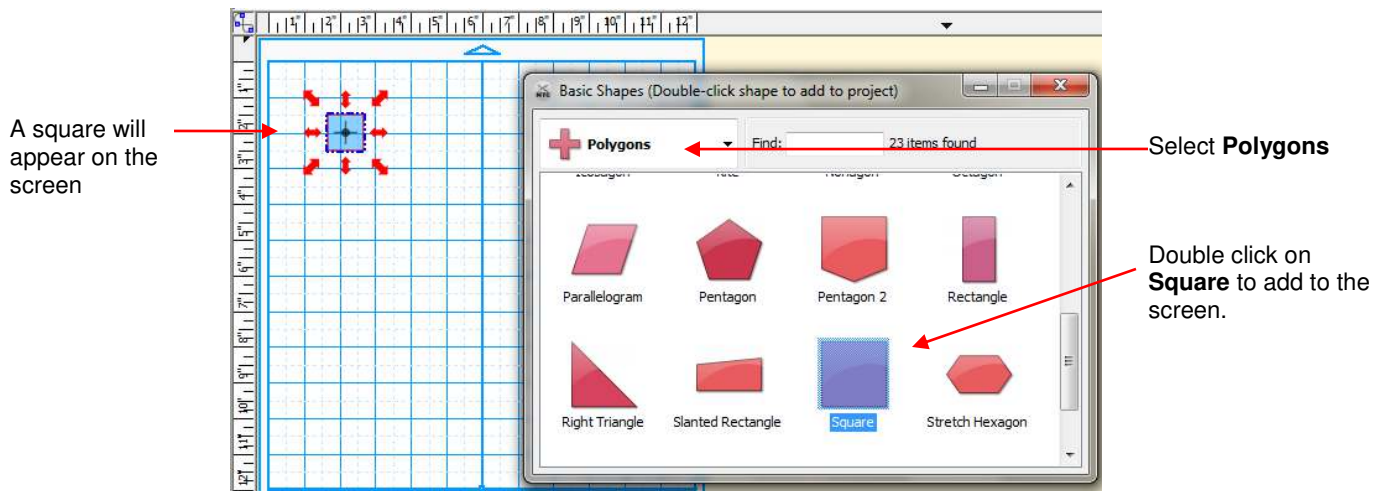
- To resize the square, select it and then at the top right of the screen, change the **W** to, for example, 8 inches. Note that if you prefer to enter a size in mm, then enter 200 mm, but enter it just that way, with the "mm" following the 200. The value will be converted to inches, but not to worry: you can still perform the calibration in mm.

Enter 8.0 and press the **Enter** key

H will automatically change to 8.0, as well, if **Aspect Ratio** is locked

To calibrate in inches | X: 1.9097 Y: 4.9722 W: 8.0000 H: 8.0000

Make sure this is locked

Enter 200mm

To calibrate in metric | X: 1.9097 Y: 4.9722 W: 200mm H: 7.8740
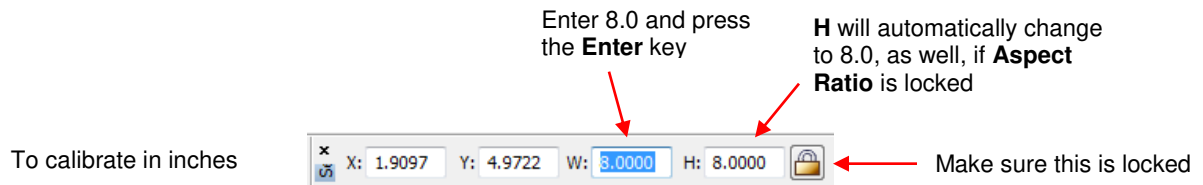
After pressing the **Enter** key, both **W:** and **H:** will be converted to inches, but you can use a metric ruler to measure your drawn square and enter the results in mm, as shown below.

X: 1.9097 Y: 4.9722 W: 7.8740 H: 7.8740

- Set the origin on your paper. Make sure you have plenty of room to draw the square. Click on the **Cut Project With** icon (or go to **Cut Project With>Klic-N-Kut Series)**:

Cut Project With icon

H

W
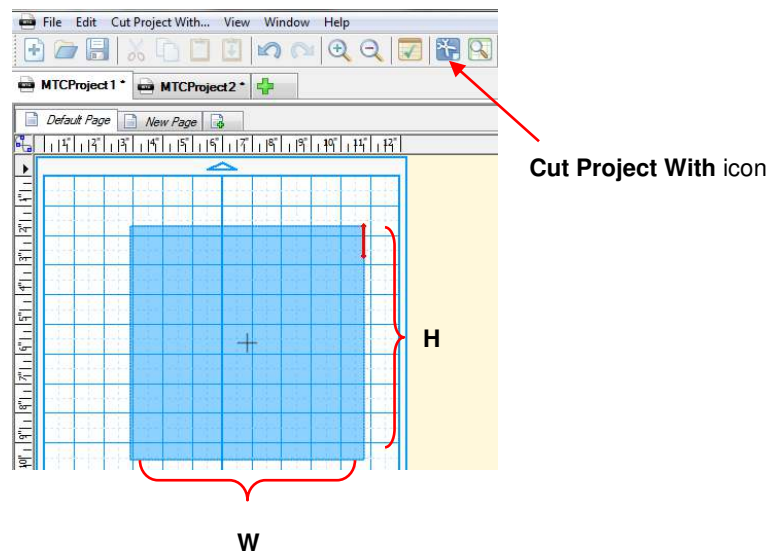
- Have your KNK draw the square. Then take a ruler and carefully measure the two sides.

- Click on the **Cut Project With** icon again, and click on a tiny wrench icon next to the Klic-N-Kut Model menu:

Click on small wrench icon here

- A window will open. Click on the **Resolution** tab and then click on another small wrench icon:

31

Click on **Resolution Calibration** tab
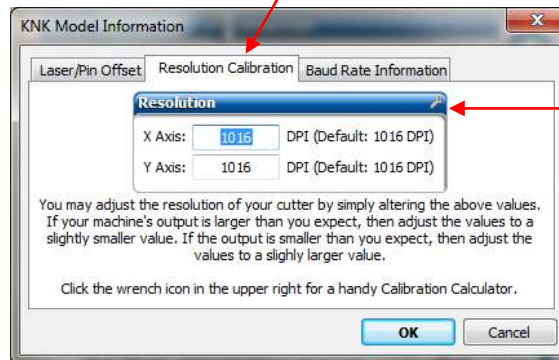
Click on small wrench icon here

- This window now opens. Enter the dimensions on the screen (200 and 200) and then enter the measured width and height. Note the **Width** is the left-to-right dimension as you face the cutter and the **Height** is the up-and-down measurement.
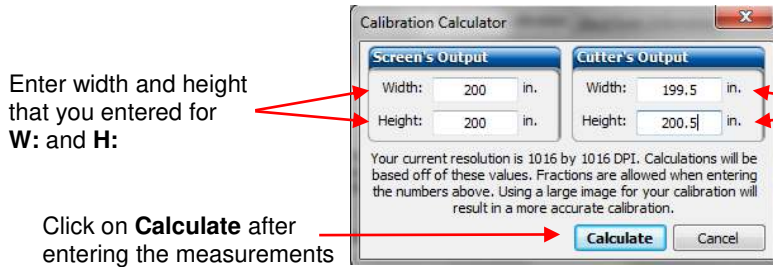
Enter width and height that you entered for **W:** and **H:**

Measure the actual width and height by measuring with a ruler. Be as accurate as you can.

Note that it doesn't matter which units are used. Just enter mm even though it shows in.

Click on **Calculate** after entering the measurements

- Click on **Calculate** and the following window will open asking you if you want to accept these numbers as your new resolution numbers. Answer **Yes** and then test again. Now, if either number is significantly different from 1016 (more than 1030 or less than 1000), you may have made an error and you'll want to re-enter your values again.
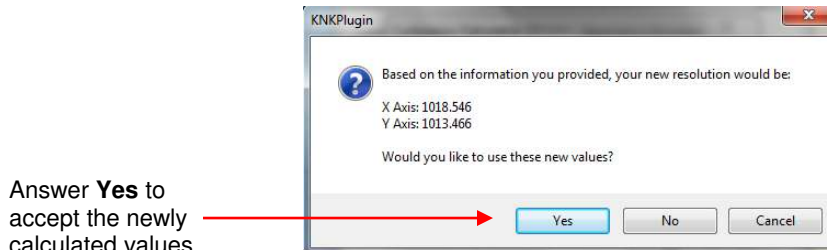
Answer **Yes** to accept the newly calculated values

- After responding **Yes**, the **Resolution** numbers will be updated. If, after testing again, you find that you're still slightly off, then just repeat again. If you need to be very precise and you cannot accurately measure the sides, then you can also just slightly adjust the actual numbers themselves using this as a guide:
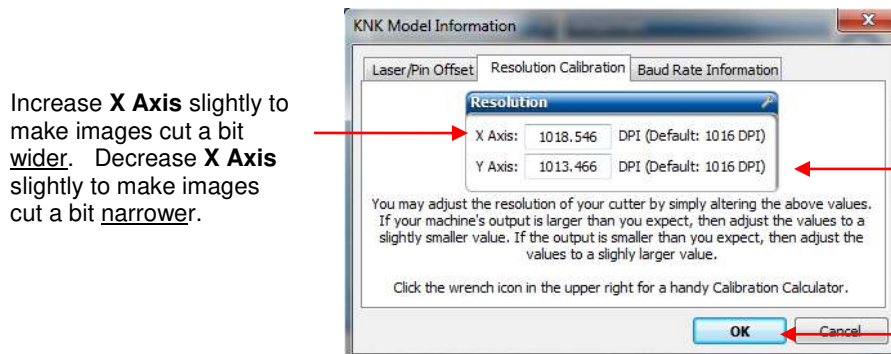
Increase **X Axis** slightly to make images cut a bit wider. Decrease **X Axis** slightly to make images cut a bit narrower.

Increase **Y Axis** slightly to make images cut a bit taller. Decrease **Y Axis** slightly to make images cut a bit shorter.

Click on **OK** to accept these values or new values you manually enter.

Settings Form for Cutting Materials[1]

Material/Brand	Blade	Force	Speed	# of Passes	Tape to Mat?	Notes

Suggested Cut Settings for Various Materials on Maxx and Groove-E[1]

These settings should be used for the <u>initial test cut</u>. Adjustments may be necessary based on <u>the condition of the blade</u>, <u>variations</u> in the material, <u>humidity</u>, condition of the <u>cutting mat</u>, etc.

Material	Material Brand or Source	Blade	Force	Speed	# of Passes	Spacing: Orings	Tape to Mat?	Other Comments
Cardstock	Bazzill	Red	115	200	1-2	1	N	
Cardstock	Bazzill	Blue	95	201	1-2	1	N	
Cardstock	Colormates	Red	75	300	1	1	N	
Craft Plastic	Grafix 0.007	Blue	120	300	2	2	N	
Craft Plastic	Grafix 0.02	Blue	160	100	2	2	Y	Also tried 140 in 4 passes
Craft Plastic – PET-G	Clear Scraps	Blue	160	150	2	2	N	
DuraLar-thick (mirror paper)	0.005" (digitalcuttersplus.com)	Red	120	250	1	2	N	Offset = 0.50
Fabric	thin cotton for quilting	Fabric	120-140	400	2	1	Y	Offset = 0.50
Fabric	thicker nappy fabrics	Fabric	140	400	3	2	N	Heat n Bond applied first
Felt: Regular		Fabric	100		3	2	Y	Used sticky mat
Felt: Stiffened		Blue	120	200	2	3	Y	
Foam	Fun Foam from Michael's	Blue	25	150	2	3	Y	
Gum Paste		Blue	15	100	1	2		Roll out using pasta press. Coat mat with shortening. Allow to set on mat 10 min before cutting
Grungeboard		Blue	160	100	2	2+	Y	Dull side up + reverse image
Iron-On Transfer (T-Shirt Vinyl)	www.knkusa.com	Red	60	150	1	1	N	Dull side up + reverse image
Magic Mesh		Blue	80	200	1-2	1	N	One pass on mesh alone two passes when pre-applied to C/S
Mylar		Red	110	250	2	1	N	
Magnet—Self Adhesive		Blue	90	250	2	2	N	Ellison brand
Rhinestone Rubber	green, www.knkusa.com	Blue	75	200	2	2	N	Remove backing sheet before pressing to mat
Rhinestone Rubber	black, formerly sold at knkusa.com	Blue	95	250	2	2	N	Remove backing sheet before pressing to mat

[1] © 2009- 2013 Sandy McCauley, All Rights Reserved
 Original KNK: Multiply pressure/force setting by 4
 Groove: Multiply pressure/force setting by 3

Material	Material Brand or Source	Blade	Force	Speed	# of Passes	Spacing: Orings	Tape to Mat?	Other Comments
Shrinky Dink: Regular		Red	130	150	1	1	Y	
Shrinky Dink: Printable		Blue	140	150	2	2	Y	Had to punch cut a few but were fine.
Sticky Flock		Blue	80	200	1	2	N	Remove both outer sheets and press well to the mat.
Styrene .02		Blue	120	250	2	2	Y	Cut clean in 2; doesn't give perfect results when cutting intricate detail.
Tissue Paper		Fabric	24	100	1	0	N	Ironed tissue first, carefully rolled onto mat to avoid wrinkles; used UnDo to remove from mat
Vinyl	www.knkusa.com	Red	30	350	1	0	N	
Vellum		Red	60	250	1	1	N	
XPEL		Red	75	200	1	2	N	

Original KNK: Multiply pressure/force setting by 4
Groove: Multiply pressure/force setting by 3

3. MTC Basics

This chapter begins the Make The Cut User Manual and is based on Version 4.6.1. As noted on the first page, this is meant to be an online interactive manual. Refer back to that page for features to use while reading online. It is highly recommended that you do <u>not</u> print this entire manual. It is updated frequently as additions and changes are made to the software. Also, hyperlinks to new online videos are added with each update. These are provided to enhance your learning experience. Wherever you see a large green "Video" icon, click on it to automatically link to and open a video related to the topic that follows:

3.01 Main MTC Screen

Below is a screen shot of the main screen in MTC identifying toolbars, bars, and other important elements on the screen. Note the specific names of the items shown as they will be referenced throughout this user manual:
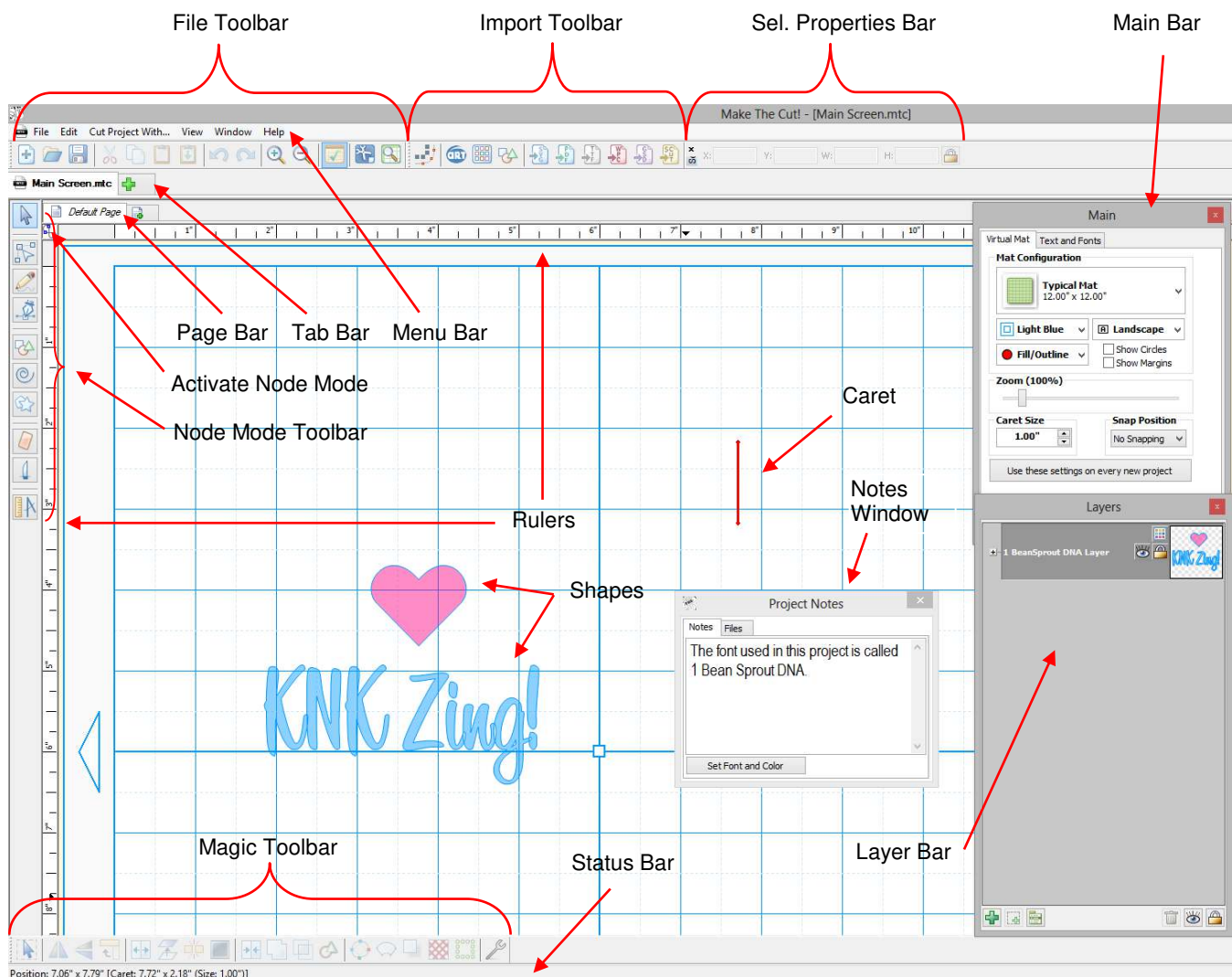
- Shown above are four **Toolbars,** seven **Bars**, one **Window,** two **Rulers,** two **Shapes,** and a **Caret**.

- Some of the elements shown, such as the **Rulers**, **Notes Window**, as well as some of the **Toolbars** and **Bars**, can be turned on or off by going to **View** on the **Menu Bar**.

- Hovering your mouse over any of the screen icons will pop up the icon's name and/or function and shortcut key. Identification of these icons is also presented in *Sections 3.02*, *3.03*, and *7.06*.

- Most of the bars and toolbars may be moved to different locations on the screen. Hold down the left mouse button on the gray dots along the left side of the bar or toolbar and drag. To position these bars and toolbars vertically, drag to the left or right edge of the screen.

- **Shapes** are the objects or images that you will be adding to your projects. They can be created from scratch or imported from other sources. As you will see throughout sections in this user manual, you have many options and resources available to you!

- The **Caret** indicates where an imported or pasted shape will be placed and the height of that shape. To move the **Caret**, double click at any desired location on the screen. The size of the **Caret** can be changed on the **Virtual Mat** tab (refer to *Section 3.04*).

- The **Notes Window** (also called **Project Notes**) is opened from **View** on the **Menu Bar**. This is used to provide information such as instructions or Terms of Use, and to attach files. Refer to *Section 8.15.*

- There is also a ***Lettering Delights*** window that can be opened from **View** on the **Menu Bar**. When you first open MTC, a popup may ask you if you want to open this window. For details about the Lettering Delights function, refer to the last part of *Section 4.07.*

- Not all of the functions in MTC appear as icons. Thus, check the subheadings within the *Table of Contents* to find more functions to use in designing your cutting files.

3.02 Toolbars

- There are four toolbars in MTC: **File**, **Import**, **Magic, and Node Mode**. In this section, only the individual icons will be identified. To learn more about using the functions, refer to the user manual sections indicated under the labels.
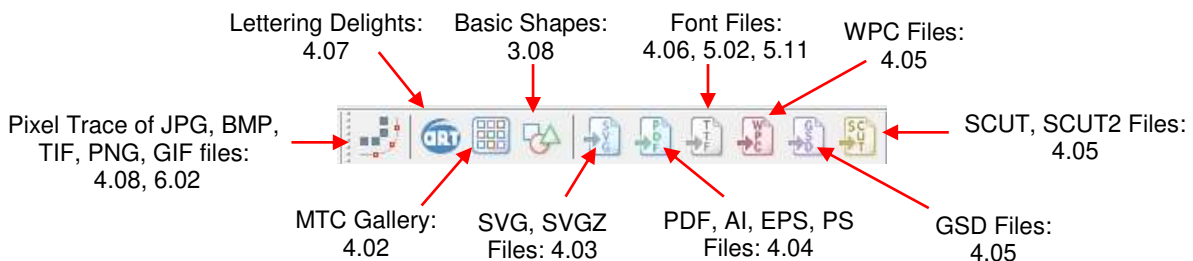
File Toolbar

- The **File Toolbar**, by default, is located at the top left of the screen. It can be turned on and off under **View** on the **Menu Bar**.
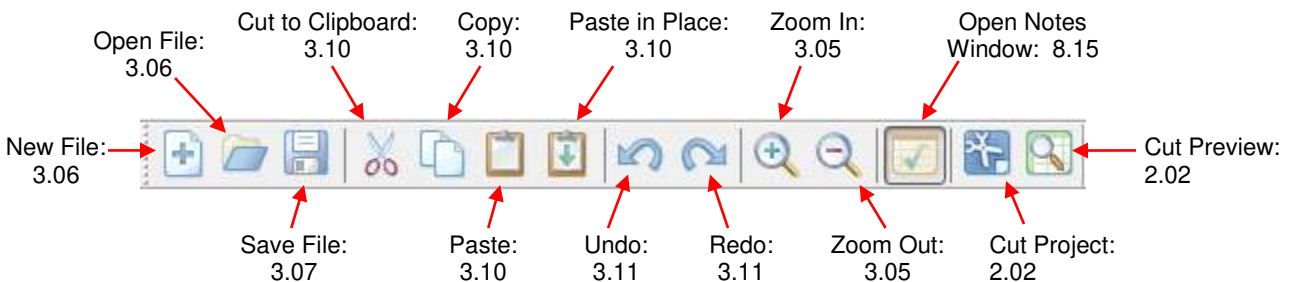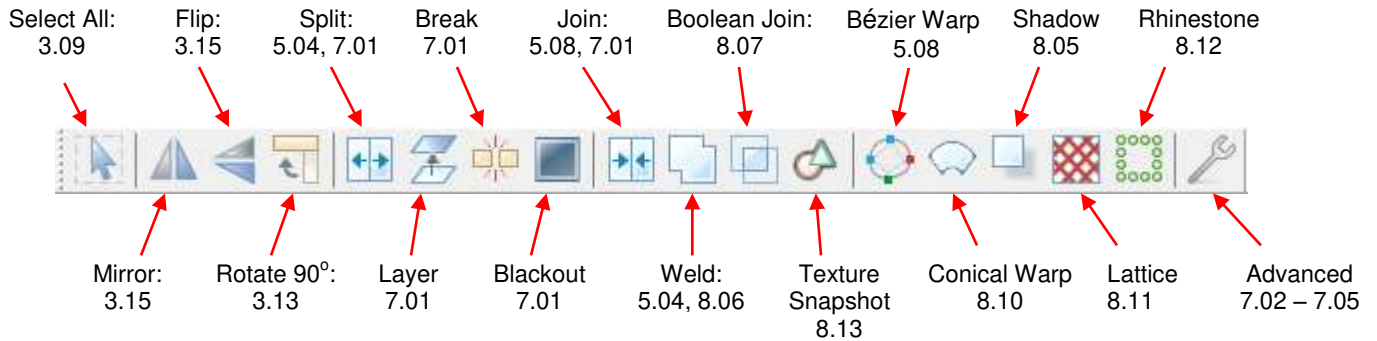

Import Toolbar

- Use the **Import Toolbar** to import the following file types:

37

Magic Toolbar

- The **Magic Toolbar** contains the functions that are used in editing and designing:

Select All: 3.09
Flip: 3.15
Split: 5.04, 7.01
Break 7.01
Join: 5.08, 7.01
Boolean Join: 8.07
Bézier Warp 5.08
Shadow 8.05
Rhinestone 8.12

Mirror: 3.15
Rotate 90°: 3.13
Layer 7.01
Blackout 7.01
Weld: 5.04, 8.06
Texture Snapshot 8.13
Conical Warp 8.10
Lattice 8.11
Advanced 7.02 – 7.05

Node Mode Toolbar

- The **Node Mode Toolbar** contains the functions used in editing paths and nodes in vector images. You may never find it necessary to use these tools. But if you need the ability to modify images at the most basic level, the tools are available and powerful in their functionality. Refer to *Section 7.06* for identification of the individual icons and how to use them.

3.03 Bars

There are seven bars in MTC, presented below. In this section, only the individual icons will be identified. To learn more about using the functions, refer to the user manual sections as indicated.

Menu Bar

- Like most Windows applications, the **Menu Bar** in MTC provides access to most of the functions in the software. The following text boxes indicate the primary functions found in each of the **Menu Bar** choices:

Open, close, save, import, export, print files
Cutter plug-ins and cut preview
Navigate to and organize windows, arrange icons

Window and program controls

File   Edit   Cut Project With...   View   Window   Help

Manipulating & editing shapes and designing
Turning on and off toolbars, bars, windows, zoom. default colors
Register, help, tutorials, user forum, automatic saving, backup, restore, drivers, user settings

Sel. Properties Bar

- The **Select Properties Bar** displays the location and size of the current selected shape or shapes:

X,Y mat locations of selected shape(s): 3.09
Width and **Height** of selected shapes(s): 3.13
Lock or unlock **Aspect Ratio:** 3.13

Close bar

X: 1.1875   Y: 2.4375   W: 2.8087   H: 3.3363
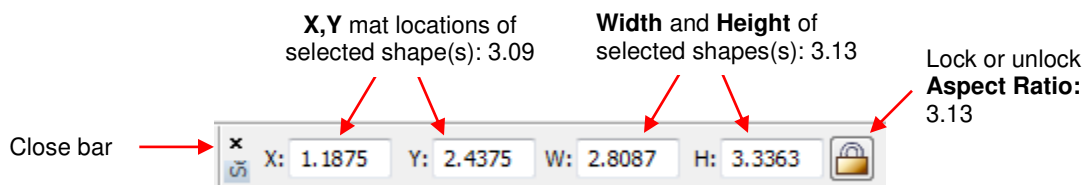
Main Bar

- The **Main Bar** has two tabs: **Virtual Mat** and **Text and Fonts**. The **Virtual Mat** tab allows you to set the size and visual appearance of the mat, as well as orientation, the appearance of shapes, snapping to grid, and **Caret** size. Refer to *Section 3.04*. The **Text and Fonts** tab allows you to select a font, open a new font, and type text. Refer to *Section 5.02.*

Layer Bar

- The **Layer Bar** is one of the most important functions to understand in MTC. It is used to organize shapes into layers for visual display, easier manipulation, and selecting which shapes to print or cut. All shapes on a layer may be re-colored, hidden from view, locked, deleted, and moved up or down. Refer to *Section 3.12* for details on using the **Layer Bar.**
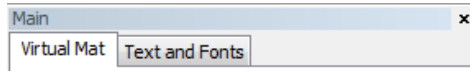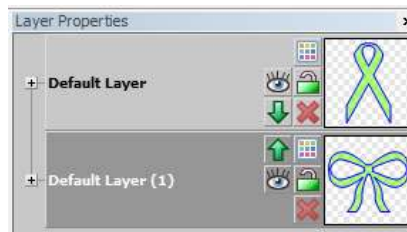

Tab Bar

- In MTC, opened files are also called **Projects**. The **Tab Bar** shows all of the currently open projects. Under **Windows** on the **Menu Bar**, you can choose how to view opened projects, with similar display options found in other Windows programs (such as **Cascade**, **Tile Horizontal**, **Tile Vertical**, etc.).

Open Projects (Files):
3.06
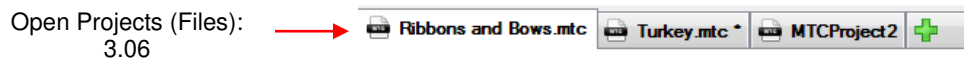
- Right click on any **Project** name on the **Tab Bar** and a menu of options will appear. This screenshot indicates the user manual sections where this will again be referenced:
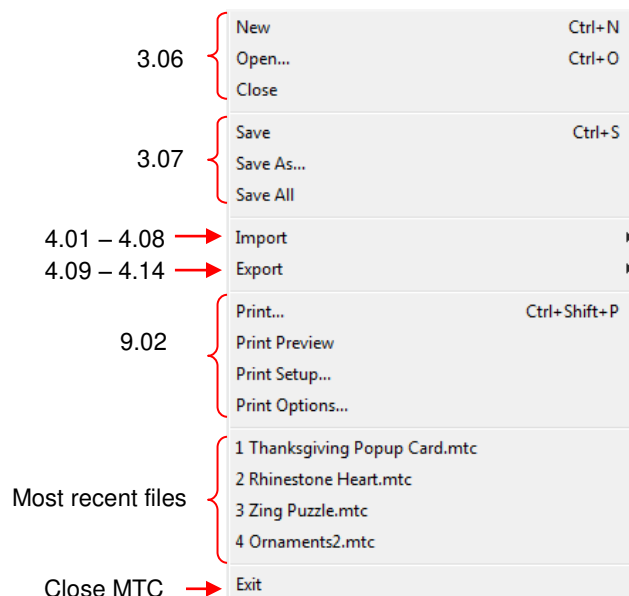
Page Bar

- The **Page Bar** allows you to move shapes or layers to individual pages within the same project file. Each page will have its own tab and the pages can be renamed or deleted, as desired.

Click here to add a new blank page.

- Right click on any **Page** name on the **Page Bar** and a menu of options will appear:

Move current page forward or backward along **Page Bar**

Rename current page

Duplicate current page – see below

Options to **Cut, Copy, and Paste** pages to a different location on the **Page Bar**

Paste all shapes from **Cut** page into current page

Make shapes on current page **Visible** on other pages

Delete current page

- When you select the **Duplicate** option, it will make a copy of the current page, giving it the same name with an asterisk added. The new duplicated page will be located to the immediate right of the original:
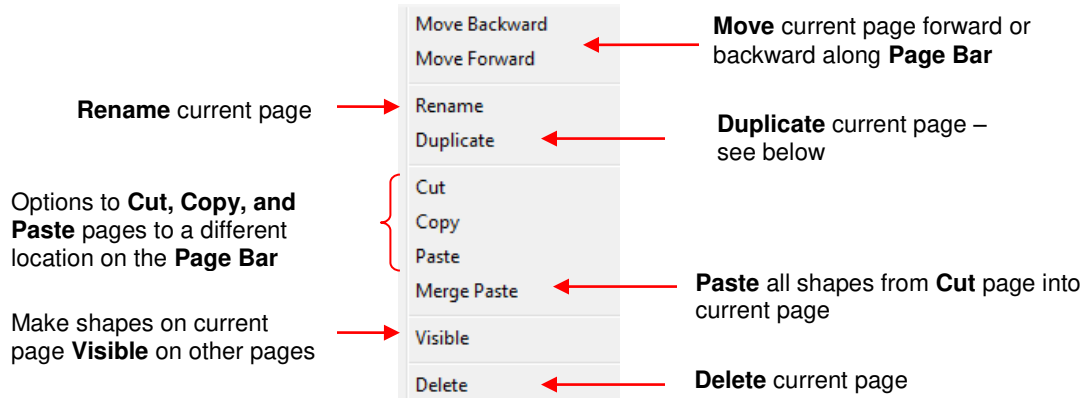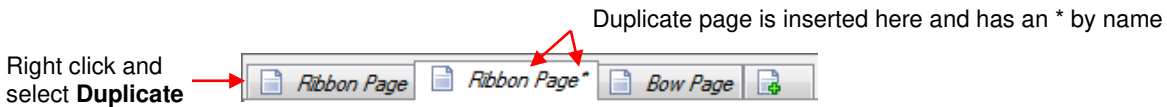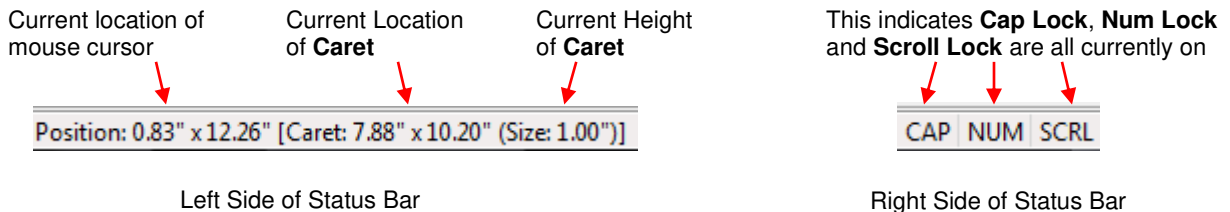
Duplicate page is inserted here and has an * by name

Right click and select **Duplicate**

Status Bar

- The **Status Bar,** at the bottom of the screen, provides different sets of information, depending on where your mouse cursor is positioned:

  ◊ If you have your cursor on the main open part of the screen, the **Status Bar** shows the location of the mouse cursor, the location and size of the **Caret**, and which **Scroll Locks** are currently activated:

Current location of mouse cursor

Current Location of **Caret**

Current Height of **Caret**

This indicates **Cap Lock**, **Num Lock** and **Scroll Lock** are all currently on

Position: 0.83" x 12.26" [Caret: 7.88" x 10.20" (Size: 1.00")]

CAP NUM SCRL

Left Side of Status Bar

Right Side of Status Bar

  ◊ If you hover your mouse over one of the icons on a bar or toolbar or if you open one of the drop-down menus from the **Menu Bar**, the **Status Bar** typically provides additional information about the purpose of that icon or menu choice. For example, resting the mouse over the **Break** icon, causes the **Status Bar** to display the following:

Break apart a selected group of shapes to its basic elements

3.04 Virtual Mat

Virtual Mat Settings: *Video*   Creating a Custom Virtual Mat: *Video*

- The **Virtual Mat** serves as a design area for the software, as well as to indicate, in some cutting modes, where the shapes will be cut.

- To change the appearance of the mat, click on the **Virtual Mat** tab on the **Main Bar**:

Select mat dimensions.

Choose from 8 mat colors.

Choose how shapes will be displayed: **Fill**, **Outline** or both.

Scroll to desired **Zoom** level

Choose **Caret Size** which will become default size for pasted and imported shapes

Select **Portrait** or **Landscape** Orientation

Option for circular gridlines

Option to show mat margins

Choose snap to grid positioning

Click to make current mat settings the new default

- You also have the option to create your own custom mat sizes to add to the drop down list. Select **Custom Mat** from the drop down menu and the following window will open:

Enter a name for your new mat. Use a new name for each new mat!

With a KNK mat, do not mark this box.

Enter the dimensions (**Width** and **Height**) for your new mat. Note that the **Width** should be the up/down dimension and **Height** should be the left/right dimension.

Click on **Save** when done

- Important: Always set the longer dimension of your cutting mat as the **Width.** For example, in the above screenshot, a **Width** of 22" and a **Height** of 13" are entered and the mat configuration will look like the following, depending on whether you then set orientation to **Portrait** or **Landscape**:
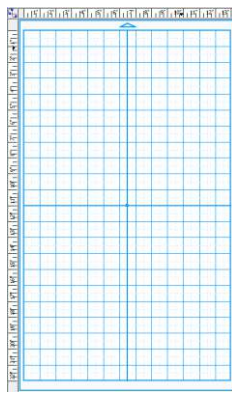
Portrait
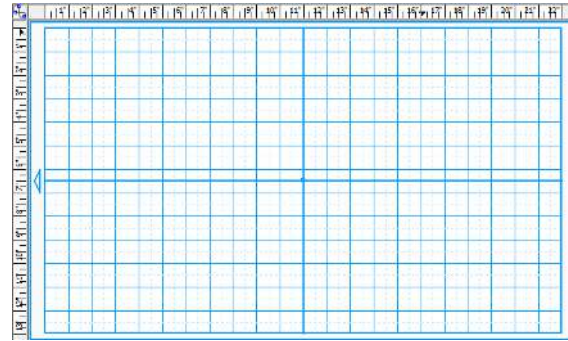
Landscape

- Use a unique name for any custom mats you create. Repeating the same name, if you have the same dimensions, but a reversal of the **W** and **H** can cause the original mat to appear, even when selecting the newer version.

- If you wish to delete a custom mat from the drop-down menu, select it and then press the **Delete** key or just right click on the mat name and an option to delete will open. If you saved a file with a custom mat and then share the file with another MTC owner, your mat will be added to his/her drop-down menu in MTC.

- At the time of this writing, there is no metric option for the Virtual Mat or rulers. Here is a video link for a work-around solution:

3.05 Zooming and Panning

- Any of the following methods will allow you to zoom in and out in 10% increments from 20% to 1000%:
  - ◊ Hold down the **Ctrl** key while rolling the mouse wheel. The zoom will center on where the mouse cursor is currently located on the screen.
  - ◊ Scroll the **Zoom** setting on the **Virtual Mat** tab on the **Main Bar**
  - ◊ Press the **+** and **–** buttons on the keyboard
  - ◊ Click on the **Zoom In** and **Zoom Out** buttons on the **File Toolbar**.

- Another way to zoom in and out is to use one of 4 shortcut keys (also available under **View>Zoom To)**:
  - ◊ **1** (or press the middle button on the mouse): Zoom to 100%
  - ◊ **2**: Zoom to 20%
  - ◊ **3**: Zoom to center of current-selected shapes using current zoom level
  - ◊ **4**: Zoom to 300%
  - ◊ **5 – 0**: Zoom to 500%, 600%, etc. to 1000%
  - ◊ **Ctrl+3** – Zoom to Virtual Mat
  - ◊ **Ctrl+4** – Zoom to all shapes on screen

- To move the workspace up and down, roll the mouse wheel.
- To pan, press the **Spacebar** while dragging the left mouse button.

3.06 Opening MTC Files

3.06.1 Opening a New File/Project

- When you launch MTC, a new blank **Virtual Mat** will appear with a new blank project opened. At any time, another new project can be opened, in a new window, using any of the following:

  ◊ Click the "**+**" icon on the **Tab** bar

  ◊ Right click on a project tab on the **Tab Bar** and select **New** from the menu

  ◊ Click on the **New** icon on the **File** toolbar

  ◊ Press **Ctrl+N**

  ◊ Go to **File>New.**

3.06.2 Opening an Existing MTC File

- An existing file can be opened into MTC by using any of the following:

  ◊ Click on the **Open** icon on the **File** toolbar

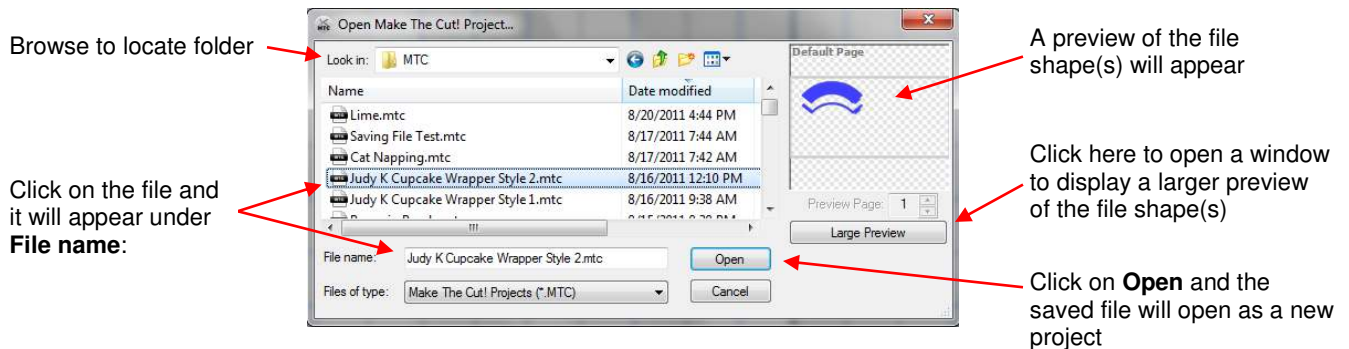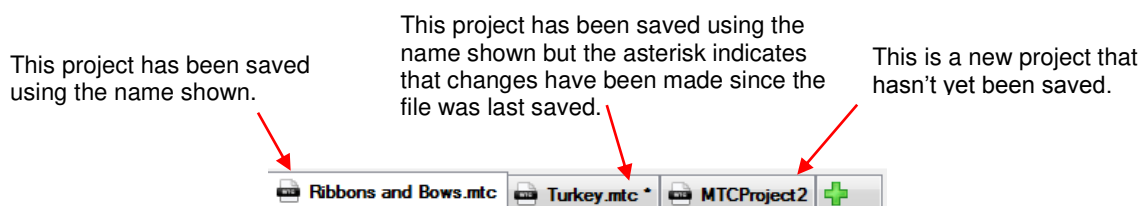 ◊ Right click on a project tab on the **Tab Bar** and select **Open** from the menu

  ◊ Press **Ctrl+O**

  ◊ Go to **File>Open**

  ◊ Double click an MTC file in Windows Explorer (refer to *Section 3.06.3* for instructions on installing and using the **MTC File Viewer**)

  ◊ Double click an MTC file attached to an email

  ◊ Drag and drop an MTC file into a running instance of MTC

  ◊ Import from **MTC Gallery** (refer to *Section 4.02*).

- In all cases, a window will open where you can browse to locate the file you wish to open:

  Browse to locate folder

  A preview of the file shape(s) will appear

  Click here to open a window to display a larger preview of the file shape(s)

  Click on the file and it will appear under **File name**:

  Click on **Open** and the saved file will open as a new project

- There is also a **Basic Shapes** library available (Refer to *Section 3.08*). Plus other file formats (such as .svg, .eps, and .ai) may be imported into MTC. Refer to *Sections 4.01-4.08.*

- As you open new projects or existing files, the **Tab Bar** will show each project:

  This project has been saved using the name shown.

  This project has been saved using the name shown but the asterisk indicates that changes have been made since the file was last saved.

  This is a new project that hasn't yet been saved.

43

- Click on any of the tabs and that project window will be displayed. You can scroll/tab through the projects using any of the following:

    ◊ Press **Ctrl+F6**

    ◊ Press **Ctrl-Tab**

    ◊ Go to **Window>Next Window**.

- All of the projects can be displayed at once, in separate windows, by choosing one of the various options under **Window** on the **Menu Bar**.

3.06.3 Previewing Thumbnails for Existing MTC Files

- A downloadable application is available for viewing thumbnails of .mtc files in Windows Explorer or when you go to **File>Open** within MTC. Note that it will only work with Windows Vista, 7, and 8:

<p align="center">Make The Cut! File Viewer</p>

- After downloading and installing the file, you will need to also clear your thumbnail cache in Windows. To do this, click on the **Windows Start** button and then go to:

<p align="center">**All Programs>Accessories>System Tools>Disk Cleanup**</p>

    (In Windows 8, go to **Control Panel>Administrative Tools>Disk Cleanup**)

- The following window will appear, if you have more than one drive on your computer, and you'll want to make sure it shows your c drive. Then click on **OK**:
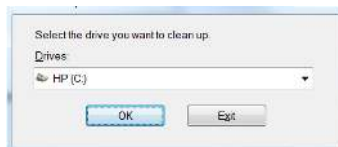
- After several minutes, a new window will open. Scroll down in the menu of this window and make sure **Thumbnails** is checked and then click on **OK** at the bottom of the window:

Verify **Thumbnails** is checked
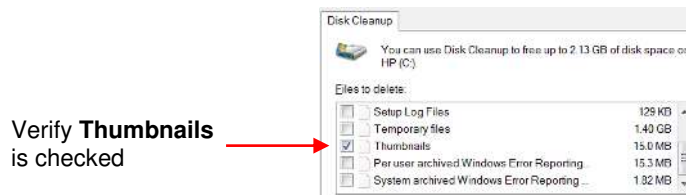
- You will be asked if you wish to permanently delete these files. Click on **Yes**. After this is completed, you'll want to restart Windows.

- After Windows has resumed, open Windows Explorer and go to a folder which has MTC files. New thumbnails will now be created and it may take several minutes if you have hundreds of MTC files contained within that folder. A few features to note about these thumbnails:

No dots indicates the file has only 1 page

Two dots indicate the file has two pages
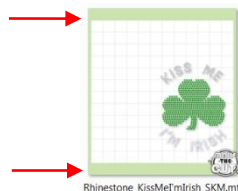
Wide band at the top and bottom indicates the file is in **Portrait** mode

Wide band along the sides indicates the file is in **Landscape** mode

- For files with multiple pages, you will be able to preview thumbnails of each page. First locate and click on the **Show the Preview Pane** icon to open the rightmost pane in Windows. Then use the **Next Page** and **Previous Page** buttons to navigate through the file:

Click on the these buttons
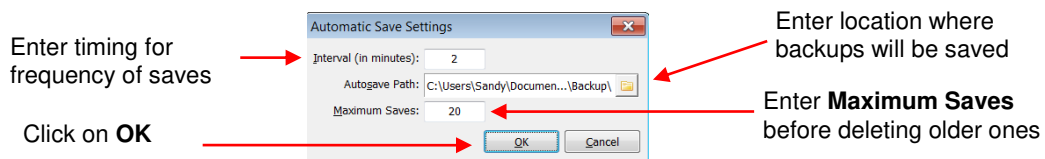to see other page
thumbnails within the file
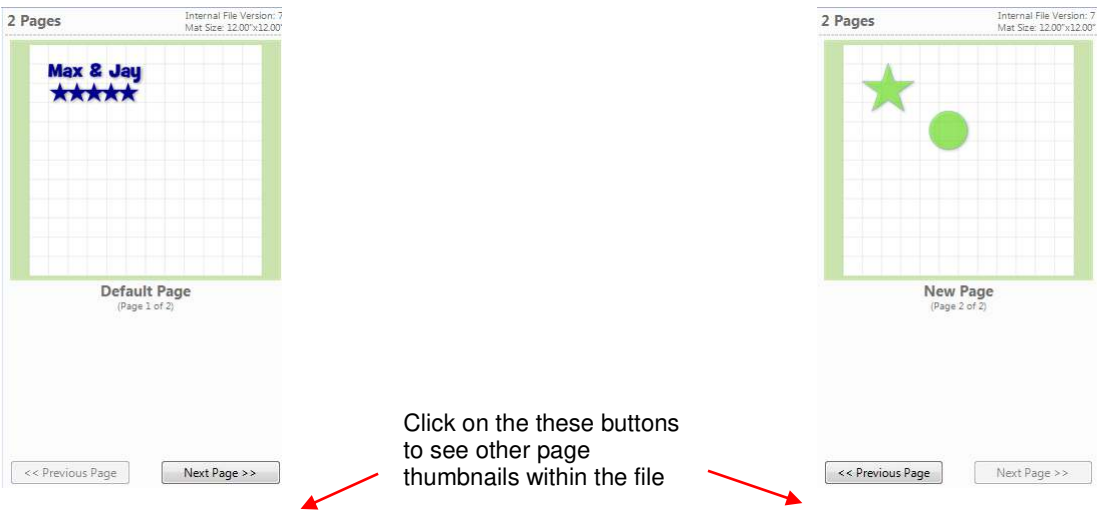
- Zipped files will not show thumbnails of the file contents. Thus, you will need to extract zipped files first in order to have these thumbnails.

- Hidden layers will not appear in the thumbnails. So, before saving your files, you may wish to make all layers visible. Refer to *Section 3.12.*

3.07 Saving MTC Files

- A file can be saved in MTC format by using any of the following:

    ◊   Click on the **Save** icon on the **File** toolbar

    ◊   Right click on the project tab on the **Tab** bar and select **Save** or **Save As** from the menu

    ◊   Press **Ctrl+S**

    ◊   Go to **File>Save** or **File>Save As.**

- If you've made changes and wish to save under a different file name, choose **File>Save As**. Name the file, choose a location, and click on **Save**.

- If you wish to save all of your open projects, go to **File>Save All** or right click on a project tab on the **Tab Bar** and select **Save All** from the menu. The various windows in which you've made changes will then open, in sequence, with the option to save the changes or not or cancel the saving process for that file.

- You can also turn on an auto-saving option by going to **Help>Advanced>Advanced Settings**. The setting is located under **Automatic Project Saving**. Check the box next to **Enable Automatic Saving.**

    Check box to bring up
    Automatic Saving settings

    Automatic Project Saving
    ☑ Enable Automatic Saving

- This is a very good idea when doing extensive designing or editing of files. It's not unusual for graphic programs to occasionally crash or the possibility of a sudden power outage to occur. Once you check the box, the following settings window will open:

    Enter timing for
    frequency of saves

    Click on **OK**

    Enter location where
    backups will be saved

    Enter **Maximum Saves**
    before deleting older ones

    Automatic Save Settings

    Interval (in minutes):   2
    Autosave Path: C:\Users\Sandy\Documen...\Backup\
   Maximum Saves: 20

    OK   Cancel

- To change the save settings, uncheck the **Enable Automatic Saving** box and then recheck the box so that the **Automatic Save Settings** window will reopen and changes can then be made.
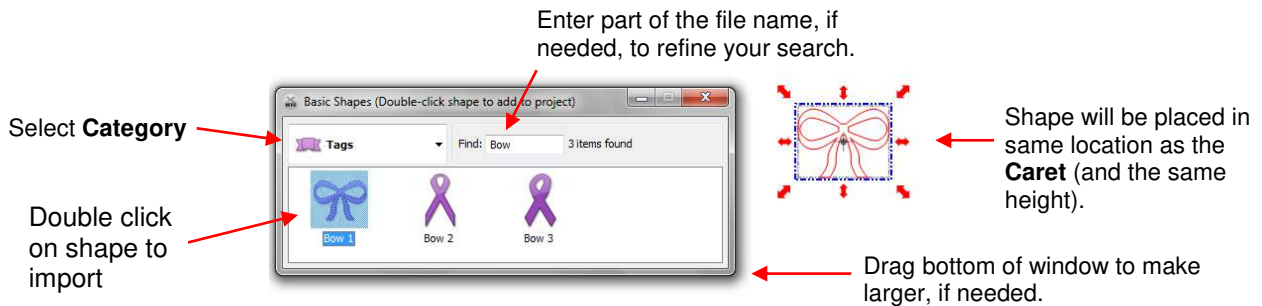
3.08 Opening Basic Shapes

Video

- MTC has a rich selection of basic shapes available. To access the **Basic Shapes** library use one of the following:

  ◊ Click on the **Import Basic Shapes** icon on the **Import Toolbar** or on the **Node Mode Toolbar**

  ◊ Press **Ctrl+Shift+B**

  ◊ Go to **File>Import>From Basic Shapes**

- You may then select one of the predefined categories and all shapes within that category will be displayed. Double click on a shape to import it directly onto the screen at the same height and same location as the **Caret**.


Enter part of the file name, if needed, to refine your search.

Select **Category**

Double click on shape to import

Shape will be placed in same location as the **Caret** (and the same height).

Drag bottom of window to make larger, if needed.

- Note that one of the categories, after you get it set up, is labeled "**Your Shapes**" which allows you to assign shapes to that category for quick access. If you have a shape that is repeatedly being used, then saving it to the **Basic Shapes** menu will save time in the future. Refer to *Section 4.10.*

- The **Basic Shapes** library can also be accessed from the **Node Mode** toolbar. Using this access, versus the ways described above, will allow you to drag your mouse freely to set the height and width of the shape, as well as flip it. Refer to *Section 7.07.*

3.09 Selecting, Moving, and Deleting Shapes

Selecting

- To select a shape, click anywhere within the bounding area or bounding box, which is indicated by the rectangle appearing around the shape:

Bounding box defined by outer rectangle
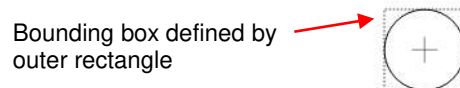
- There are several ways to select more than one shape:

  ◊ Select the first shape and hold down the **Shift** key while clicking on additional shapes. Note that as your mouse moves over a shape, a red outline will appear. This makes it easier to select a shape which is overlapping other shapes. If you are having difficulty selecting a particular shape, you may need to hide other shapes around it. Refer to *Section 3.12.*

  ◊ Hold down the left mouse button and drag your mouse to form an "imaginary box" around the images you want selected. Always make sure you start clearly outside the boundaries of the images you want to select. If part of the shape is outside the selection of that shape, it won't be selected. This method of selection is referred to as a marquee-select throughout this manual.

  ◊ If all of the shapes are on the same layer, click on the thumbnail for that layer. Refer to *Section 3.12.*

46

- The **Caret** will disappear while you have a shape (or shapes) selected but will reappear in the upper right corner of the last selected shape, once unselected.

- If you wish to select all of the shapes on the screen, there are several options:
  ◊ Press **Ctrl+A**
  ◊ Right click on the screen and choose **Select All** from the menu
  ◊ Click on the **Select All** button on the **Magic Toolbar**.
  ◊ Go to **Edit>Select All.**

- To scroll through shapes, forward (or in reverse), use any of the following:
  ◊ Right click on the screen and choose **Next Shape** (or choose **Previous Shape**)
  ◊ Press **Shift+Tab** (or press **Shift+Esc**)
  ◊ Go to **Edit>Next Shape** (or go to **Edit>Previous Shape**).

- To unselect all shapes, use one of the following two ways:
  ◊ "Click away" – click anywhere else on the screen and the shapes will be de-selected
  ◊ Press the **Esc** key
  ◊ Go to **Edit>Select None**.

Moving

- To move a selected shape, hold down the left mouse button anywhere within the bounding area and drag to another location.

- You can also move a selected shape in small increments by pressing the arrow keys on the keyboard. Further, if you hold down the **Ctrl** key while pressing these arrows keys, the shape will move in larger increments with each keystroke.

- With a shape selected, the **Sel. Properties Bar** indicates the exact location of the top left corner of the bounding area of your shape under **X:** and **Y:** (Note that the 0,0 location is at the top left corner of the gridded part of the mat). You can enter values into either or both of the **X:** and **Y:** windows to move the shape to a new location.

X,Y location of top left corner of selected shape

X: 0.0000   Y: 0.0000   W: 3.6089   H: 1.7960
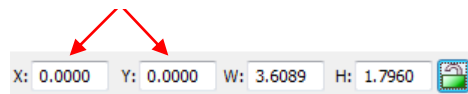
- You can also use the **Rulers** to identify where a shape is located, as well as the dimensions of the shape. In this case, small black arrows on the **Rulers** show the current location of the mouse cursor. Thus, if you want to know, for example, the center location of a shape, place your mouse on the center icon of the shape:

Vertical and horizontal guides also appear on a selected shape and can aid in aligning to other shapes

X location of center of selected shape
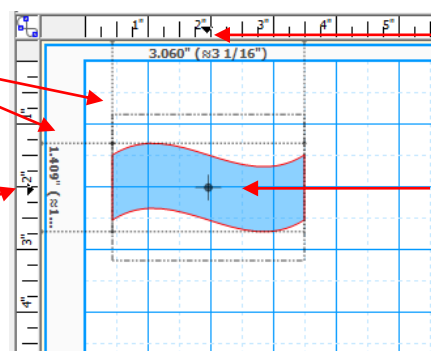
Y location of center of selected shape

Place mouse cursor in center of shape to determine center location of the shape along the **Rulers**

47

Deleting

- To delete a selected shape, use any of the following options:

  ◊ Press the **Delete** key

  ◊ Press **Ctrl-X**

  ◊ Right click on the screen and choose **Delete** from the menu

  ◊ Go to **Edit>Delete**.

  ◊ Located the shape on the layer to which it is assigned and click on the **Delete Shape** icon:

- To delete all of the shapes in the current project, use any of the following options:

  ◊ Right click on the screen and choose **Delete All** from the menu

  ◊ Press **Shift+Delete**

  ◊ Go to **Edit>Delete All**.

- You can also delete a layer of shapes at one time from the **Layer Bar**. Refer to *Section 3.12.*

- To delete all of the tiny shapes not wanted in your project, use any of the following to access the **Delete by Area** option:

  ◊ Right click on the screen and choose **Delete By Area** from the menu

  ◊ Press **Ctrl-Shift-R**

  ◊ Go to **Edit>Delete by Area**.

- The **Delete by Area** window allows you to select the size, by area, of objects you wish to delete from the project. As you scroll to increase the size, you will see the shapes begin to disappear from the project.

  When the desired shapes are removed, click on **Apply**:

Scroll to desired maximum size of objects to be deleted
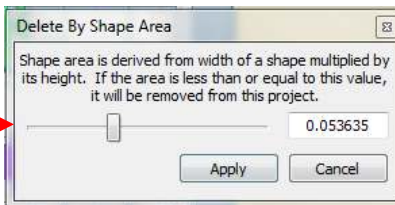
3.10 Cutting, Copying, Pasting, Duplicating

3.10.1 Cutting to the Clipboard

- To cut shapes to the clipboard, first select the shape or shapes and then use any of the following:

  ◊ Click on the **Cut to Clipboard** icon located on the **File Toolbar**

  ◊ Right click on the screen and select **Cut**

  ◊ Press **Ctrl+X**

  ◊ Go to **Edit>Cut.**

3.10.2 Copying Shapes and Copying to the Clipboard

- A quick way to make a copy of any selected shape(s), is to hold both the **Ctrl** and the **Shift** keys and then drag the selected shape(s) with your mouse.
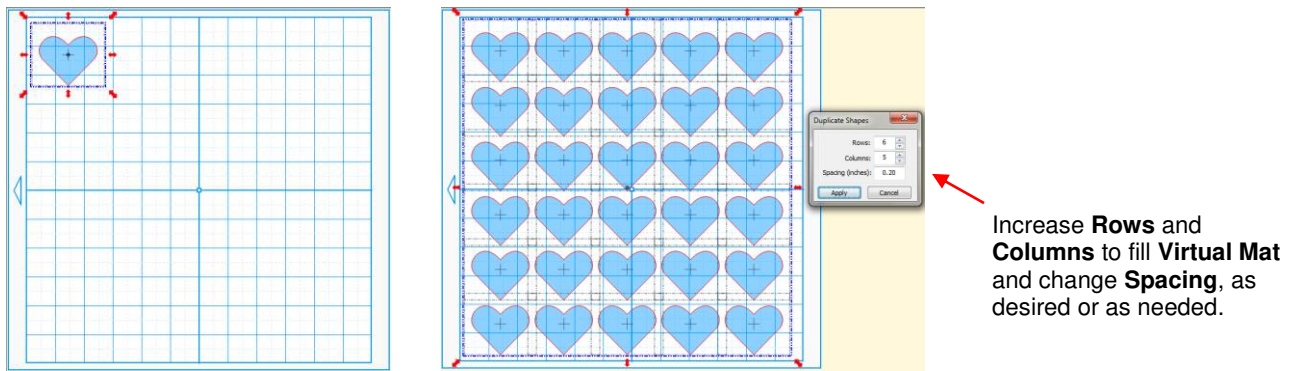
- To copy shapes to the clipboard, first select the shape or shapes and then use any of the following:

  ◊ Click on the **Copy to Clipboard** icon located on the **File Toolbar**

  ◊ Right click on the screen and select **Copy**

  ◊ Press **Ctrl+C**

  ◊ Go to **Edit>Copy.**

- To make multiple copies, refer to the **Duplicate** function described later in this section.

3.10.3 Pasting from the Clipboard

- The **Paste from Clipboard** function in MTC works a little differently from most Windows programs. When you select **Paste**, the shape on the clipboard will be placed at the **Caret**'s location and sized the same, in height, as the **Caret.** If **Paste in Place** is used instead, then the pasted shape will be the same size as the original and placed in the location of the original (at the time the **Copy** was applied).

- To **Paste** shapes from the clipboard, use any of the following:

  ◊ Click on the **Paste from Clipboard** icon located on the **File Toolbar**

  ◊ Right click on the screen and select **Paste**

  ◊ Press **Ctrl+V**

  ◊ Go to **Edit>Paste**.

- To **Paste in Place** shapes from the clipboard, use any of the following:

  ◊ Click on the **Paste in Place** icon located on the **File Toolbar**

  ◊ Right click on the screen and select **Paste in Place**

  ◊ Press **Ctrl+Shift+V**

  ◊ Go to **Edit>Paste in Place**.

- Note that once you press **Paste in Paste**, you'll see a darkening of the original image (if you haven't moved the original image since invoking the **Copy)**.

3.10.4 Duplicating - Duplicate

- The **Duplicate** function allows you to make multiple copies of a shape aligned in rows and/or columns, with the spacing you desire. To access **Duplicate,** first select the shape(s) and then use any of the following:

  ◊ Right click on the screen and select **Duplicate>Duplicate**

  ◊ Press **Ctrl+D**

  ◊ Go to **Edit>Duplicate>Duplicate**.

- To fill your grid with images, move the selected shape(s) to the top left corner of the gridded part of the Virtual Mat. With the shape(s) still selected, use **Ctrl-D** (or other options above) to open the **Duplicate Shape** window. Enter the totals desired in each **Row** and in each **Column**, plus the **Spacing**. Click on **OK** to accept.

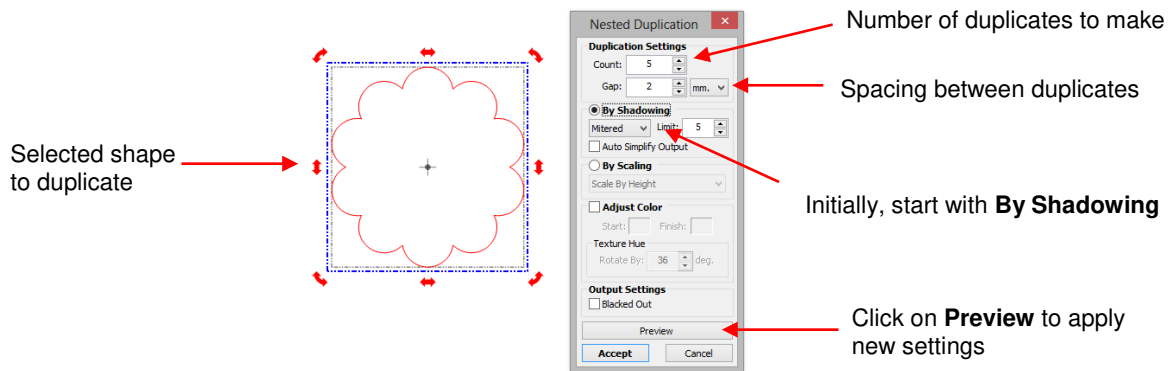Increase **Rows** and **Columns** to fill **Virtual Mat** and change **Spacing**, as desired or as needed.

- To create a single row of repeats, set the **Rows** value to 1. For a single column of repeats, set the **Columns** value to 1. To overlap the repeats, enter a negative number under **Spacing**. Refer to *Section 8.06* for a tutorial on how this function can be used to create a border.

3.10.5 Duplicating – Nested Duplicate

- The **Nested Duplicate** function allows you to make multiple outlines or inlines, with the spacing you desire. To access **Nested Duplicate,** first select the shape(s) and then use either of the following:

    ◊   Right click on the screen and select **Duplicate>Nested Duplicate**

    ◊   Go to **Edit>Duplicate>Nested Duplicate**.

Outlines and Inlines

- In the first example, a scalloped circle is selected and the **Nested Duplicate** function accessed. The following window opens with defaults settings shown: and settings are made to create 4 outset repeats of the scalloped circle, each 1 mm apart:

Number of duplicates to make

Spacing between duplicates

Selected shape to duplicate

Initially, start with **By Shadowing**

Click on **Preview** to apply new settings

- It is desired to have a total of 6 nested shapes, so 5 is entered as the **Dupe Count** (duplicates to be added). The spacing is changed to 2 mm and the **Shadow Setting** set to **Mitered.** Before accepting, click on the **Preview** button to see the duplicates:

Shape style for duplicates (choice of **Rounded**, **Mitered**, or **Beveled**), along with a **Limit** setting for the **Mitered** option.

Click on **Accept** when done.

- In order to create in-lines, instead of outlines, enter a negative number for **Dupe Gap**:

Negative value

Shadowing Versus Scaling

- There are three options for how shapes can be duplicated in **Nested Duplicate**:
  ◊ **Shadowing**: duplicate paths will always be the same distance from the prior duplicate and may need to change shape in order to do so. This is evident in the prior example with the flower where both the outlines and the inlines changed shaped the further they were duplicated from the original. This is not the case with basic shapes, such as circles or polygons:
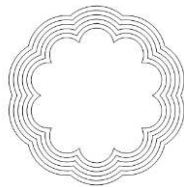
Duplicates become distorted
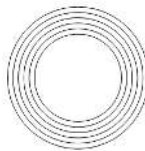
No distortion in duplicates
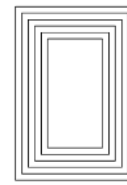
No distortion in duplicates

  ◊ **Scaling by Width:** duplicate paths stay scaled to the original and the width will be changed according to the gap selected. The resulting height may result in a different gap from one duplicate to the next. The flower again demonstrates the difference quite clearly. A circle will not be any different. However, notice how the rectangle responds in order to keep the same aspect ratio between the height and the width:
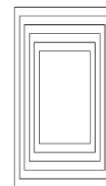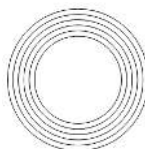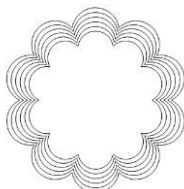
◊ **Scaling by Height:** is basically the same as **Scaling by Width.** Again, the circle is no different and the flower, being symmetrical doesn't vary from the **Scaling by Width** option. But the rectangle is quite different:
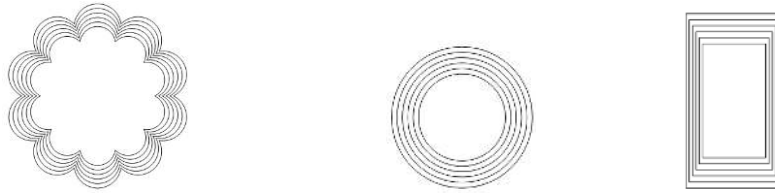
Adjust Color

- There's also the option to create a color gradient using the **Adjust Color** option. On the Virtual Mat, turn on **Fill** and then enter a **Start** and **Finish** color to create something like this:

Click on **Preview** and then **Accept** when done.

Mark **Adjust Color** and then select start and end colors for the gradient

- The **Texture Hue** setting can be used to apply a color gradient on nested duplicates containing a texture. Refer to *Section 8.13* for an example.

3.10.6 Duplicating – Rotated Duplicate

- The **Rotated Duplicate** function allows you to make duplicates arranged in a circle or partial circle pattern. To access **Rotated Duplicate,** first select the shape(s) and then use either of the following:

  ◊ Right click on the screen and select **Duplicate>Rotated Duplicate**

  ◊ Go to **Edit>Duplicate>Rotated Duplicate**.

- To illustrate how this works, start with a small circle from **Basic Shapes**. Select it and then activate the **Rotated Duplicate** function using either of the methods just mentioned. The following window opens:

Enter number of repeats

Enter **Rotate By**

Enter distance from the center (radius)

- To create a semicircle of, for example, 10 shapes increase the **Dupe Count** to 9. Then click on the small

  sigma Σ icon which will then change the setting inside the **Rotate By** window so that a perfect semicircular pattern of equally-spaced shapes is created:

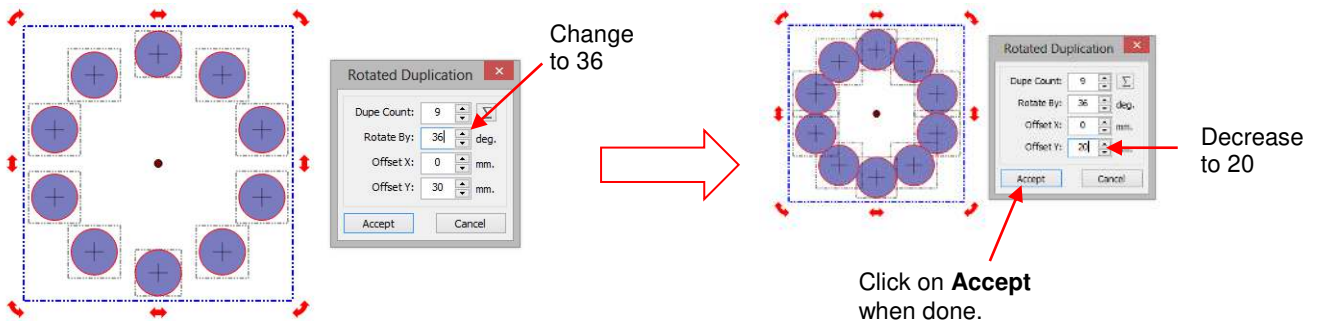Enter **9**

Click here
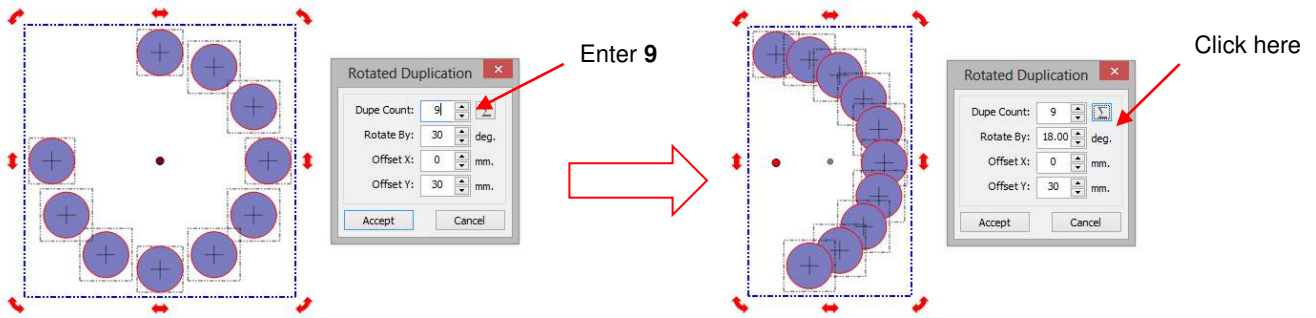
- If you want the shapes in a full circle, double the **Rotate By** setting. In this case, you would enter 36 deg (2 x 18). If you then want to overlap the circles, decrease the **Offset Y** to located them closer to the center:

Change to 36

Decrease to 20

Click on **Accept** when done.

- The **Offset X** value will move each shape that distance in the X direction. Note how an increasing value of X affects the arrow shape in this duplication:

Offset X: 0   Offset X: 15   Offset X: 30
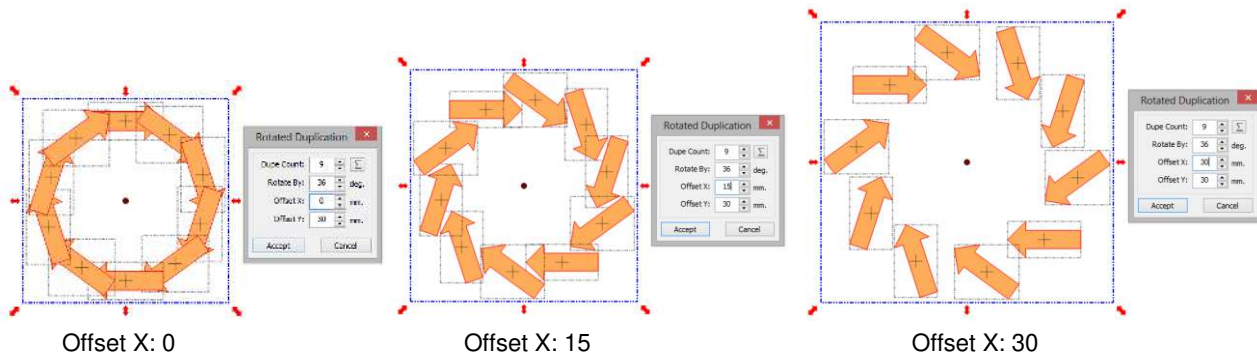
- The designing possibilities are unlimited with this magnificent feature! Be sure to watch the video linked at the beginning of this section.

3.11 Undo/Redo

Undo

- As with most Windows applications, there is an **Undo** function to reverse the most recent steps performed. You can use any of the following to execute the **Undo** function:

   ◊   Click on the **Undo** icon on the **File Toolbar**

   ◊   Press **Ctrl-Z**

   ◊   Go to **Edit>Undo.**

- If you are experiencing software crashes due to memory limitations, two solutions are available:

◊   Go to **Edit>Clear Undo History**.

◊   Limit the number of **Undo/Redo** steps stored in memory. To do this:

➢   Go to **Help>Advanced>Advanced Settings**. Under **Undo/Redo Buffer Size**, check the box next to **Limit Undo/Redo Size**:

Check this box   ⟶

Undo/Redo Buffer Size
☑ Limit Undo/Redo Size

➢   Upon checking this box, the following window will open:

Enter the maximum number
of **Undo** steps to be stored
(or 0 for unlimited)

Limit Undo Size

Max: 0   Set   ⟵   Click on **Set**

Enter the number "zero" for unlimited undos

➢   Enter the maximum number of steps to be saved. You will then need to save any current files and close/reopen them for the change to take effect.

➢   If you wish to change this setting, you will need to uncheck the **Limit Undo/Redo Size** box and then check it again to bring up the settings window.

Redo

- As with most Windows applications, there is also a **Redo** function in case you **Undo** too many steps or simply change your mind. You can use any of the following to execute the **Redo** function:

  ◊   Click on the **Redo** icon on the **File Toolbar**

  ◊   Press **Ctrl-Y**

  ◊   Go to **Edit>Redo.**

3.12 Layer Bar

Part 1: **Video**   Part 2: **Video**   Part 3: **Video**

- The **Layer Bar** (or **Layer Properties Bar**) is used to assign or group shapes into separate layers to better organize your file, more easily apply changes to a group of shapes, select one shape or a layer of shapes on the screen, and to control what is sent to the cutter or printer. This bar can be turned on and off under **View** on the **Menu Bar.** Most likely, you will want to have this bar showing at all times.

- You do not have to worry about adding shapes to the **Layer Bar**. They will be automatically assigned to the current layer or a new layer as you add them. You <u>will</u> want to learn how to move shapes to new layers or combine shapes into the same layer, depending on the circumstances.

- Here are a few examples of when you would want to have shapes on different layers:

  ◊   Paper piecing or shadowed shape projects where some shapes will be cut from one color and other shapes from another color (or a number of other colors).

  ◊   Fold-up projects (boxes, envelopes, popup cards, etc.) where the fold lines will need to have different settings and/or different tools used than your cut lines.

  ◊   Print and cut projects where you may need to send certain layers to be printed but other layers to be cut.

  ◊   Rhinestone template projects where you need to cut two different templates, such as a fill that will be done in one color of rhinestones and an outline in another color.

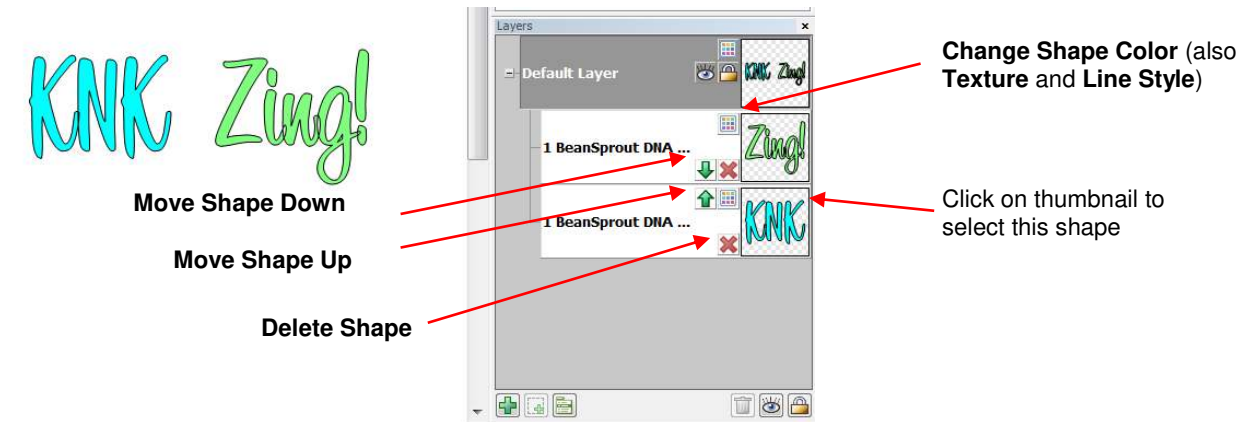- Other benefits of assigning shapes to layers include:

◊ Ability to select, with one click of the mouse, all shapes assigned to a layer without selecting other shapes

◊ Ability to hide or lock layers so that the shapes on that layer are not inadvertently selected, moved, resized, etc.

◊ Ability to change the color, line style, and/or texture on all of the shapes assigned to a particular layer.

- The following screenshot will be used to show how the **Layers** bar functions can be applied:
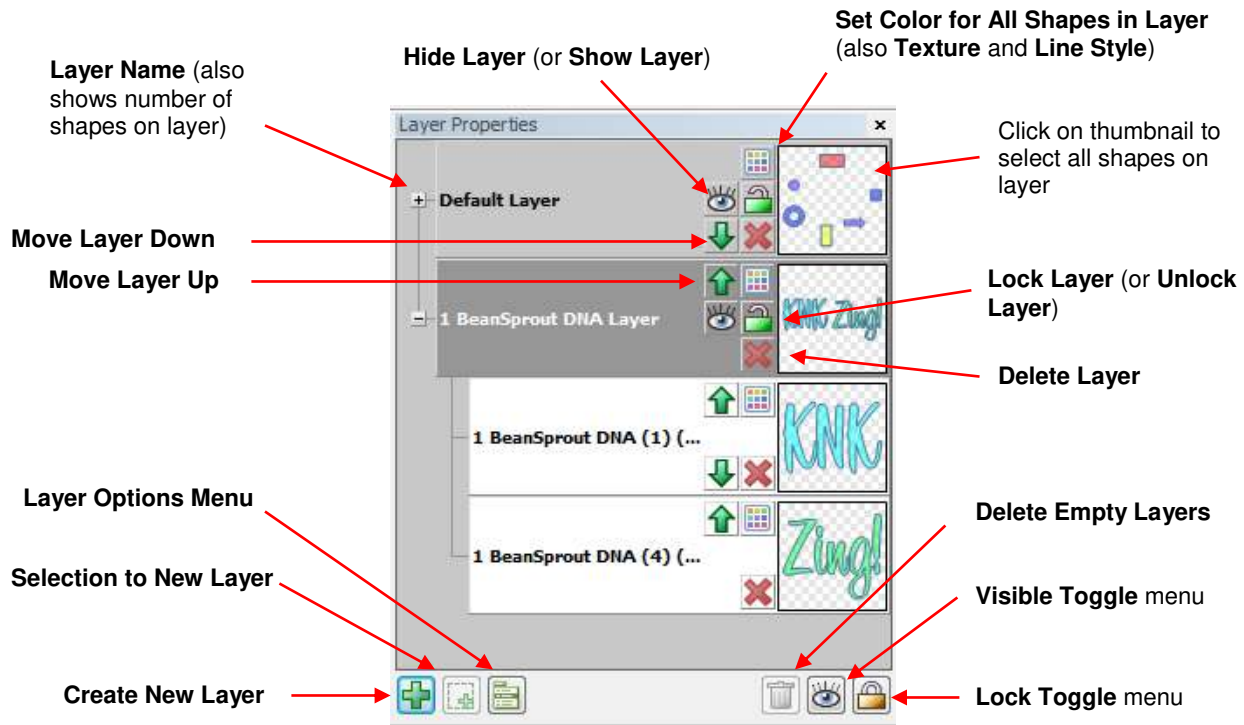
- On the right side of the **Layer Bar**, each layer has a preview or thumbnail showing the shapes assigned to that layer. Click on that thumbnail and all shapes on that layer will be selected.

- To the left of each **Layer Name**, there is a small "**+**" sign. Click on it and the "**+**" will turn to a "**-**" and that layer will open to reveal each individual shape assigned to that layer.

- Double click a layer name and you can change the name of that layer. Rest your mouse cursor over a layer name and the number of shapes in that layer will appear.

- Hide and unhide layers by clicking on the eye icons (**Hide Layer** and **Show Layer**). A hidden layer will display the shapes in pale versions of their actual colors and will also prevent any movement or resizing, etc. of those shapes. Also, any shapes that are hidden will not be sent to your cutter or to your printer.

- Change the order of layers using the arrow icons (**Move Layer Down** and **Move Layer Up**). Shapes assigned to a higher layer will appear to be on top of the shapes assigned to a lower layer. This is a useful feature for displaying how a paper piecing project will look when completed.

- Lock and unlock layers by clicking on the lock icon (**Lock Layer** and **Unlock Layer**). A locked layer prevents the shapes in that layer from inadvertently being moved or resized. It also allows the shape to be displayed without an outer bounding box.

- Change the **Color**, **Texture**, and/or **Line Style** for all shapes assigned to a particular layer by clicking on the color palette icon (**Set Color for All Shapes**).

- Delete a layer (and all shapes assigned to that particular layer) by clicking on the **Delete Layer** icon.

- Individual shapes are also assigned to their own layers within a layer. Notice below how the words "KNK" and "Zing" are individual layers within the **Default Layer** which displays both words together. Some of the same functions used for layers are available to be applied to the individual shapes within a layer.

Move Shape Down

Move Shape Up

Delete Shape

Change Shape Color (also **Texture** and **Line Style**)

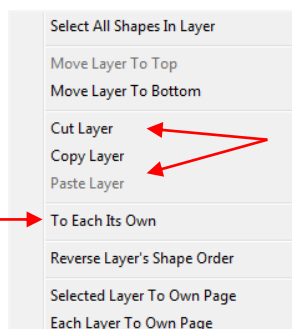Click on thumbnail to select this shape

- When starting a new project, shapes will automatically be assigned to a **Default** layer. To move a shape to a new layer, select it and then click on the **Selection to New Layer** icon.

- Any new shapes that are created will automatically be assigned to the currently selected layer (with the exception of a few situations). To create a new empty layer, click on the **Create New Layer** icon.

- When adding text, a new layer will be created and the name of the layer will be the font used for that text (as shown above where the font used for *KNK Zing* is called 1 Bean Sprout DNA).

- To completely remove a layer from being displayed, but at the same time not delete the layer, move the layer to its own page, using the **Layer Options Menu** at the bottom of the **Layer Bar.**

- Click on the **Delete Empty Layers** icon to delete any layers that contain no shapes.

- Click on the **Visible Toggle** menu to offer options to **Show All** layers, **Hide All** layers or **Toggle Visible** which will reverse the current hide/show status of all layers (i.e. hide layers currently visible and unhide layers that are currently not visible).

- Click on the **Lock Toggle** menu to offer options to **Lock All** layers, **Unlock All** layers or **Toggle Lock** which reverses the current lock/unlock status of all layers (i.e. unlock layers currently locked and lock layers that are currently unlocked).

- Right click on a **Layer Name** or right click on the layer's thumbnail (or select the layer and then click on the **Layer Options Menu** icon) and the following menu will open:

Most of these are self-explanatory

Cut and **Paste** can be used to merge layers.

This option will move every shape on the selected layer to its own new layer

- To merge two layers, right click on the thumbnail for one of the layers and select **Cut Layer**. Then right click on the thumbnail for the other layer and select **Paste Layer**. Then immediately click on the **Selection to New Layer** icon. This will create a new layer containing all of the shapes from those two layers.
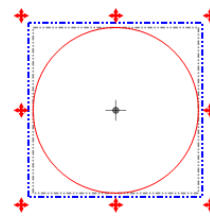
3.13 Resizing, Rotating, Slanting, and Warping

- The **Resizing**, **Rotating**, **Slanting** and **Warping** functions are presented together because all four can be readily applied to any selected shape.

- When you first select a shape, you will notice that the bounding box has double headed arrows at the four corners and in the center along each of the four sides. A double click inside the bounding area of the shape will change those icons to other choices, resulting in three different modes:
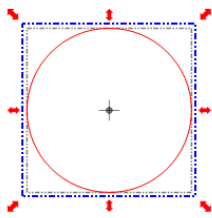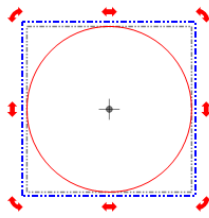
| Resizing Mode | Rotating / Slanting Mode | Warping Mode |

Resizing

Video

- With the shape selected, use your mouse to drag any corner of the shape to resize proportionately. Dragging the double-sided arrow on one of the four sides will allow you to resize either vertically or horizontally while leaving the other dimension constant.

- Depending on the current setting for **Snap Position** on the **Virtual Mat**, the resizing will occur in increments matching that setting. To freely resize the shape, change **Snap Position** to **No Snapping**.

- If you wish to release the aspect ratio while dragging a corner, press the **Ctrl** key while dragging. This allows the height or width of the shape to be freely changed without changing the other dimension.

- If you need to make the shape an exact size, then enter the dimension in the **W** or **H** box in the **Sel. Properties Bar.** The lock icon can be toggled depending on whether or not you want to hold the aspect ratio constant:

Enter desired dimension, including a decimal point, and then press **Enter** key.

X: 2.8026 Y: 1.0865 W: 3.0000 H: 3.0000
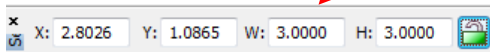
Indent to hold **Aspect Ratio**; out-dent to release and allow **W** or **H** to be changed without automatically changing the other.

- Dimensions can also be entered in mm or cm as long as those units are entered along with the value:

When entering units, other than inches, add the units to the end.

The size in inches will be automatically calculated and then displayed.

X: 5.0172 Y: 3.0704 W: 15.0 mm H: 1.1787   X: 2.4062 Y: 0.7812 W: 0.5906 H: 0.3243
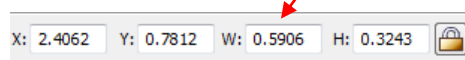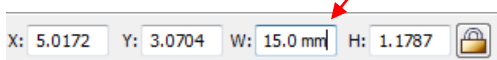
- At this time, it is not possible to display these settings in metric. If you need to know the W and H of a particular shape in either cm or mm, please refer to *Section 7.08.*

- Percentages can also be used in the dimension settings. For example, if you want to double the size of a shape, you can enter 200%:

Starting Size   Enter 200% to double the size   New dimensions show shape is twice as large

W: 4.0000   H: 3.7435   W: 200%   H: 3.7435   W: 8.0000   H: 7.4870

- Percentages can also be entered with an "R" added to calculate the reciprocal. For example, entering "200%R" will result in the size being halved. Entering 300%R will make the resulting size 1/3, etc.

- Fractions may also be entered with a space between the number and the fraction. For example, 6.5 could be entered as 6 ½:

The **H** value remains at 1.0 because the **Aspect Ratio** was not locked.

Starting Size   Enter 6 ½ (don't forget the space).   A value of 6.5 is then displayed.

W: 4.0000   H: 1.0000   W: 6 1/2   H: 1.0000   W: 6.5000   H: 1.0000

- In versions of MTC prior to 4.5.2, resizing a textured shape requires holding the **Shift** key while dragging a corner. This will resize the texture as well as the shape.

Rotating and Slanting

Video

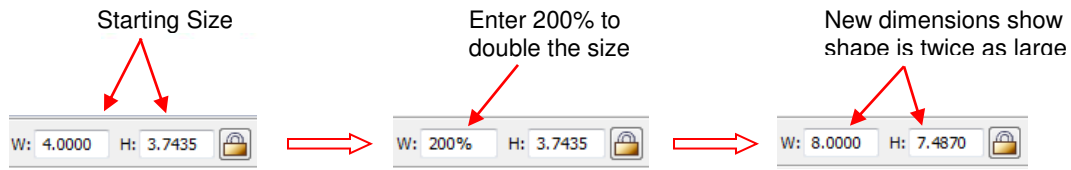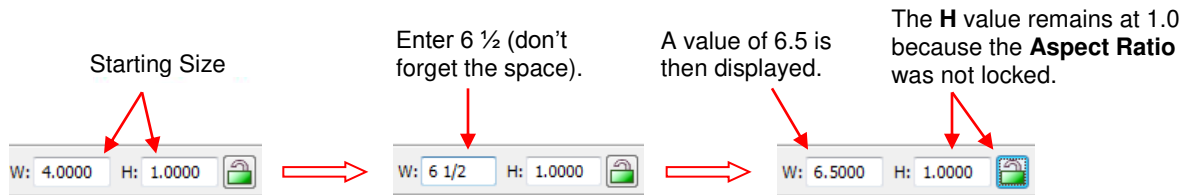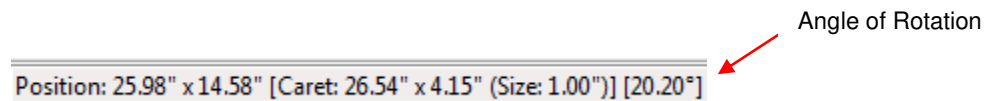- With the shape selected, dragging any of the four corners will allow free rotation of the shape. The shape will be temporarily locked at its center and will rotate around that center. As you rotate, the angle of rotation appears at the bottom of the screen:

Angle of Rotation

Position: 25.98" x 14.58" [Caret: 26.54" x 4.15" (Size: 1.00")] [20.20°]

- If you hold the **Shift** key while dragging one of the four corners, the shape will be pinned in the diagonally opposite corner and will rotate around that corner. If you hold the **Ctrl** key while dragging one of the four corners, the shape will rotate in 15° increments. **Ctrl+Shift+Rotate** will rotate around the opposite corner in 15° increments.

- If you need to rotate in increments other than 15°, go to Help>Advanced>Advanced Settings and change the default to the desired increment (from 1 to 180°):

Rotate By

45 ⬍ Degrees

When rotating a selected group of shapes while holding the CTRL key, rotate by this many degrees.
[1, 180]
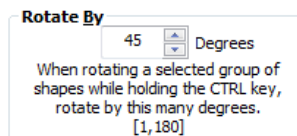
- A selected shape can also be rotated exactly 90° clockwise, by using any of the following:

 ◊ Click on the **Rotate 90° Clockwise** icon on the **Magic Toolbar**

 ◊ Press **Ctrl+G**

 ◊ Go to **Edit>Shape Magic>Rotate 90°**.

- If you drag one of the double headed arrows along a side, versus a corner, you can slant the shape instead of rotating it:

Drag a corner to rotate

Drag a side to slant

Rotated Square   Slanted Square
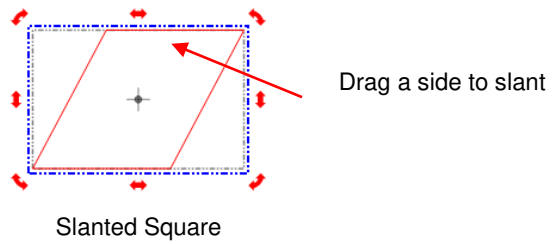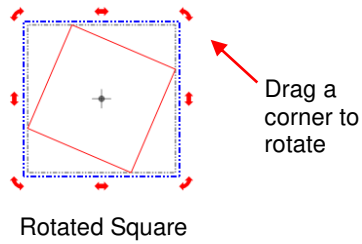
- Note that if you are using an earlier version of MTC, then refer to these two videos:

Rotating raster images in MTC 4.2 or earlier: **Video**   **Video**

Warping

- In the warping mode, shapes can be transformed dramatically by dragging the "+" handles at the corners. Dragging along the sides results in the same effects as slanting above, but can be combined with the dragging of corners to create many different variations on the original shape:

Drag a corner to begin warping

Text begins to warp. Try dragging additional corners**, too!**

- Holding the **Shift** key or the **Ctrl** Key while dragging a corner allows the warping to extend even further!
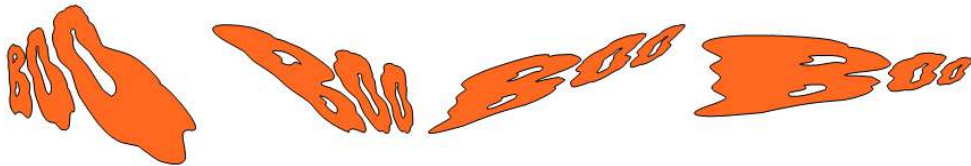
- Note: throughout this user manual, screen shots of shapes will sometimes appear without the gridlines of the virtual mat in the background and without the bounding boxes around the shape(s). This was done to make the images appear clearer and less cluttered.

3.14 Changing Color, Texture, and Line Style

- There are three ways to access the functions for changing the **Color**, **Texture** or **Line Style** of a selected shape:

  ◊ Right click on the screen and select **Change Color/Texture/Line**

  ◊ On the **Layer Bar**, open the layer, locate the shape, and click on the **Change Shape Color** icon

  ◊ Press **Ctrl+Shift+U** (Color), **Ctrl-Shift+O** (Texture), **Ctrl+Shift+Y** (Line Style)

Changing Color

- In the **Color** window, you can click on any of the **Basic** colors or create a custom color.

Option 1: Select one of the **Basic colors** or one of the **Custom colors** already created in the current project

Option 2: Click in the window and then scroll up and down to lighten or darken

Option 3: Enter the RGB values directly (or Hue, Sat, Lum)

Click on **Add to Custom Colors**, if desired
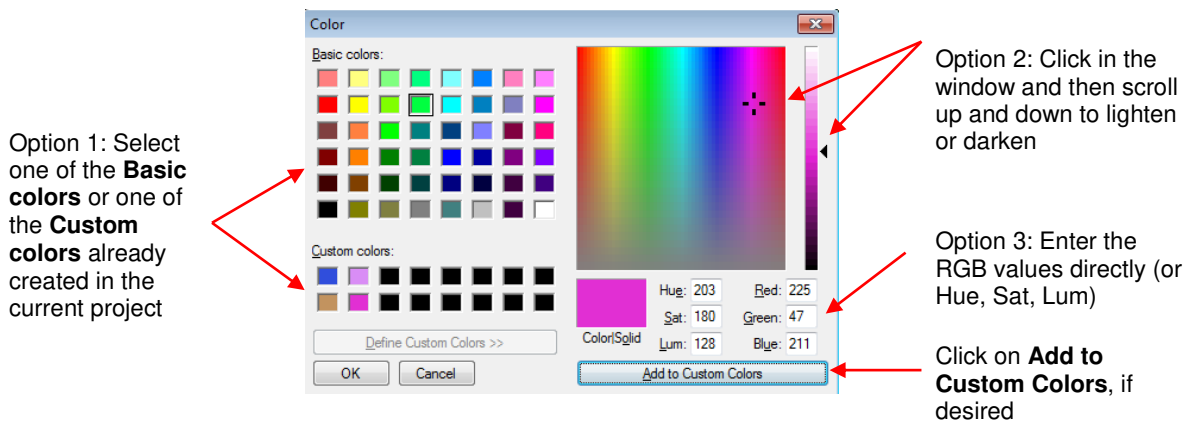
- Note that a new **Custom Color** will only be saved and available in the current project.

Changing Texture

- Instead of using a solid color, you can also fill shapes with textures, which are typically raster files, such as .bmp, .jpg, .png, imported into MTC. When you access the **Change Texture** function, the window which opens will depend on whether or not you already have a texture available from another shape in your project. If you do not, then when you go to **Change Texture**, the **Open Image for Texturizing** window will open and you can browse your computer to open a texture file, scan one into MTC, or paste one from Windows Clipboard:
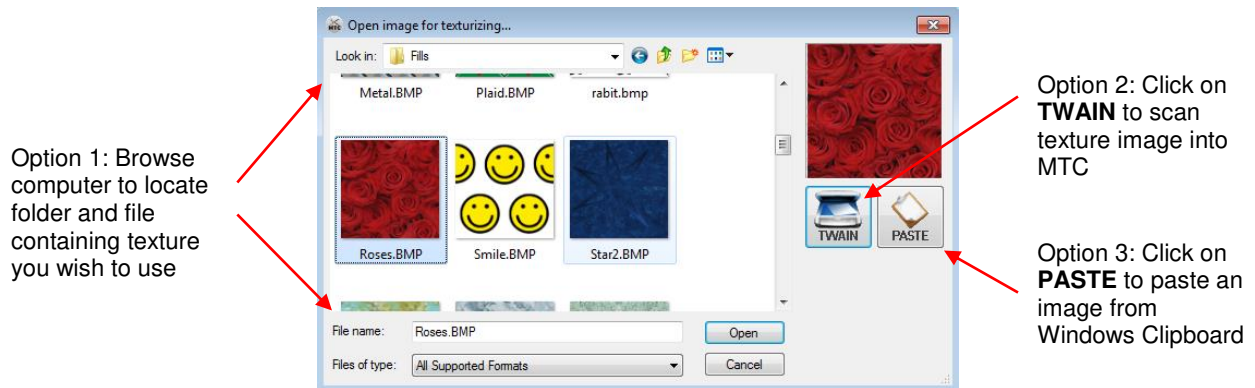

Option 1: Browse computer to locate folder and file containing texture you wish to use

Option 2: Click on **TWAIN** to scan texture image into MTC

Option 3: Click on **PASTE** to paste an image from Windows Clipboard

- After importing this first texture, or if there was already a texture open in your current project, then the **Choose Texture** window opens. In this window, you have options to:

  ◊ Tile the **Texture** (fill a shape with a modified version of the texture)

  ◊ Vertically or horizontally flip the texture

  ◊ Offset or move the texture within the shape

  ◊ Adjust the color and brightness of the texture

  ◊ Resize the texture with or without resizing the shape

60
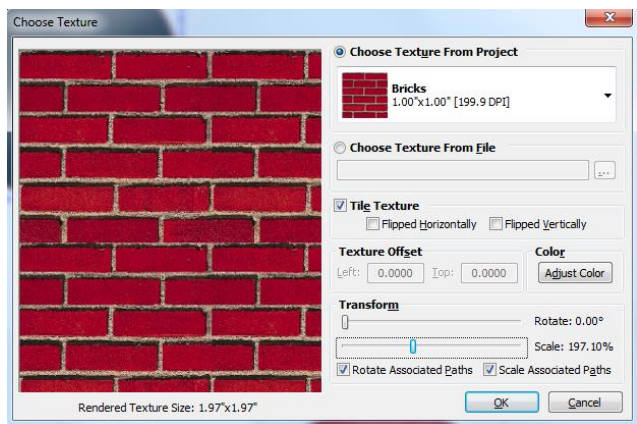
Option 1: Select a texture already present in your project.

Option 2: Browse computer to locate folder and file containing texture you wish to use.

Settings for the texture include flipping, rotating, modifying the color, and offsetting the texture.

Scale: scroll bar resize **Texture Scale Paths**: mark options to rotate and/or resize shape while resizing texture

- After clicking on **OK**, your selected shape will fill with the texture chosen. Here are two examples:

- These are two examples where the shape was filled without scaling down the texture. In this next example, the text "PENGUIN" was created and then the texture imported is the following penguin image:

Preview of imported image
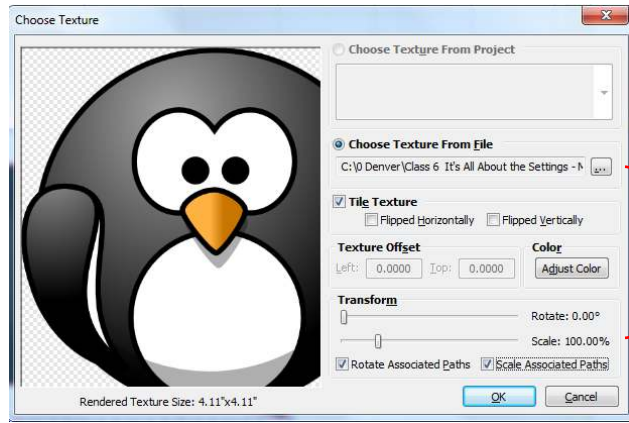
Default settings

- To create a repeating pattern of the penguin, at a much smaller size and with other customizations, the following changes are made in the **Change Textures** window:

Preview of texture using currently adjusted settings
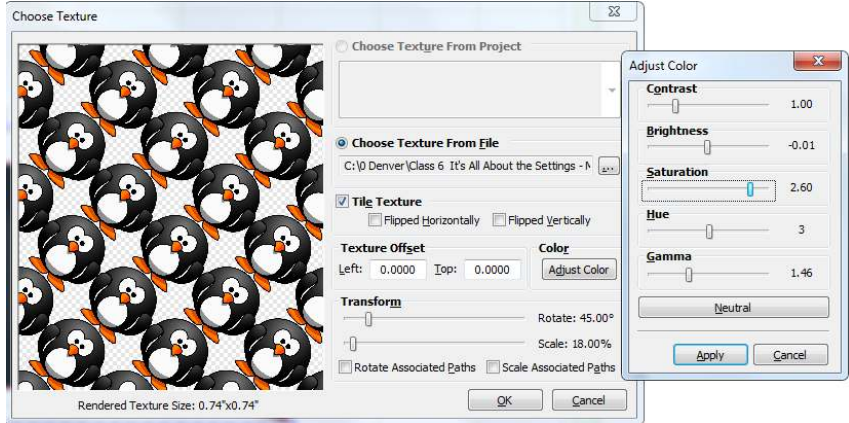
Clicking on **Adjust Color** will open this window. Change color settings, as desired. Then click on **Apply**.

Check **Tile Texture** box, adjust **Rotate** to 45 degrees and **Scale** to 18%, and then click **Adjust Color**.

- After clicking on **OK**, the shape fills with the new customized texture:

61

Removing a Texture

- If you wish to delete the texture from a shape, right click on the shape and select **Change Color/Texture/Line** and then select **Remove Textures**.

Changing Line Style

- The **Choose Line Style** window allows you to create dashed lines instead of solid lines, as needed. Similar to **Choose Texture**, the **Choose Line Style** provides the option to create a new style or you can pick a **Line Style** already in use in your current project:

Option 1: Select a line style already present in your project

Option 2: Create a new line style by setting desired **Dash** length and **Space** between dashes
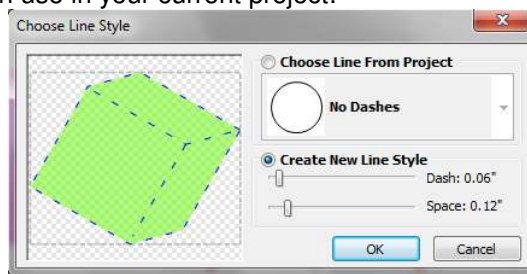
- After clicking on **OK**, your selected shape will appear with the line style you have chosen. Here are two examples:

3.15 Other Shape Manipulations

Alignment

- There are eleven functions used to align shapes with one another. After selecting two or more shapes, these functions can be accessed using any of the following:

    ◊ Right click on the screen and select **Align and Space>Align>**

    ◊ Go to **Edit>Align and Space>Align>.**

- For some of the functions there are shortcut keys and these are indicated in the detailed subsections below.

- The following three shapes, in their current relative positions, will be used to illustrate what happens when each alignment function is applied:
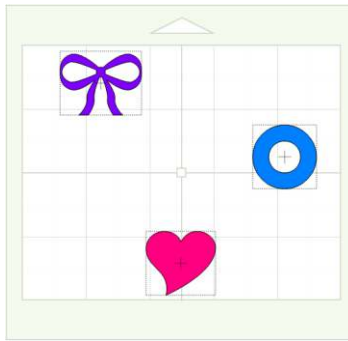
Center Alignment

- There are three different centering functions. Again, with the shapes selected, right click and go to **Align and Space>Align>:**

  ◊ **Vertical Center** (press **V**) aligns shapes vertically and positioned to the average vertical center of the group.

  ◊ **Horizontal Center** (press **H**) aligns shapes horizontally and positioned to the average horizontal center of the group.

  ◊ **Stack** (press **S**) aligns shapes to be horizontally and vertically centered with one another.
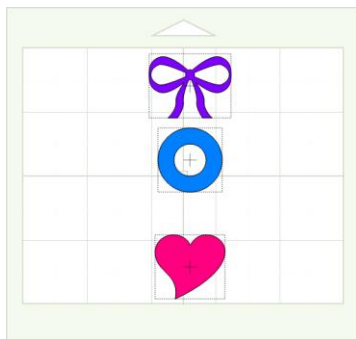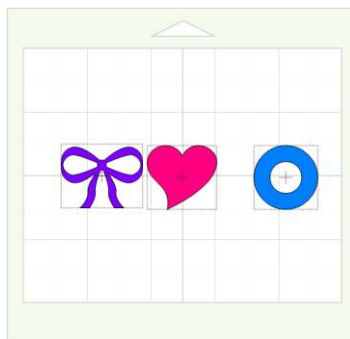
Vertical Center (V)   Horizontal Center (H)   Stack (S)
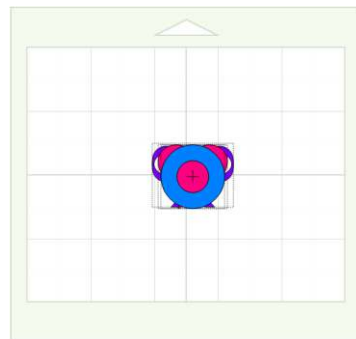
Outer Alignment

- There are four different alignment functions used to align shapes to the outside edges. Again, with the shapes selected, right click and go to **Align and Space>Align>:**

  ◊ **Right** (press **R**) aligns shapes along their right sides and positioned to the rightmost shape of the group.

  ◊ **Left** (press **L**) aligns shapes along their left sides and positioned to the leftmost shape of the group.

  ◊ **Top** (press **T**) aligns shapes along their top sides and positioned to the uppermost shape of the group.

  ◊ **Bottom** (press **B**) aligns shapes along their bottom sides and positioned to the lowermost shape of the group.
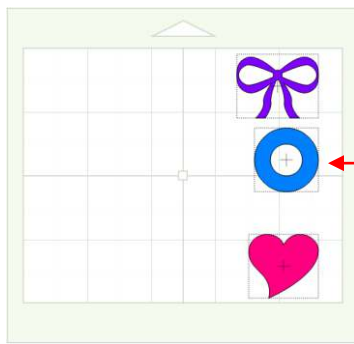
Right (R) aligns the shapes along right side of blue ring
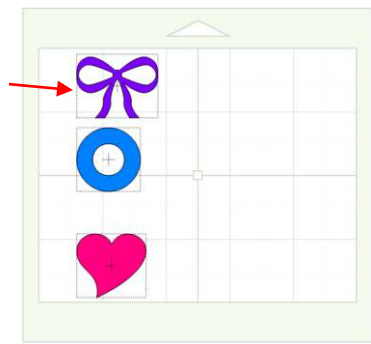
Left (L) aligns the shapes along left side of purple bow
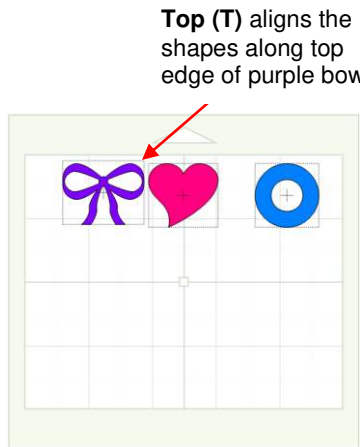
Top (T) aligns the shapes along top edge of purple bow
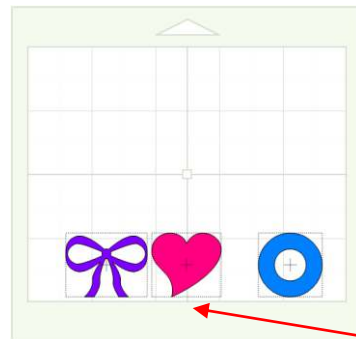
Bottom (B) aligns the shapes along bottom edge of pink heart

Edge Alignment

- There are four additional alignment functions used to align shapes in a slightly different way. Again, with the shapes selected, right click and go to **Align and Space>Align>:**

  ◊ **Edge Left** aligns shapes along the left edge of the rightmost shape of the group.

  ◊ **Edge Right** aligns shapes along their right side of the leftmost shape of the group.

  ◊ **Edge Top** aligns shapes along their bottom edge of the uppermost shape of the group.

  ◊ **Edge Bottom** aligns shapes along their top edge of the lowermost shape of the group.
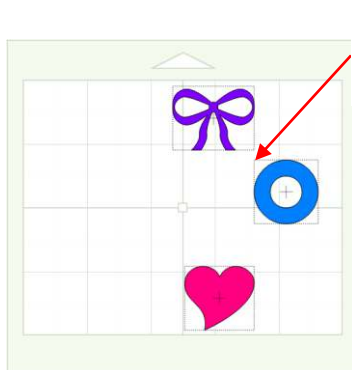
Edge Left aligns the shapes along left edge of blue ring
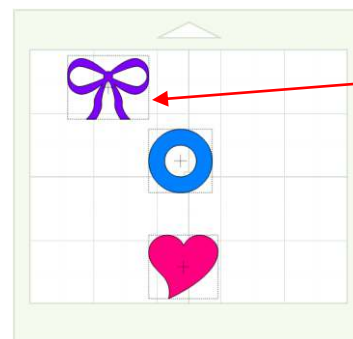
Edge Right aligns the shapes along right edge of purple bow

Edge Bottom aligns the shapes along bottom edge of purple bow

Edge Top aligns the shapes along top edge of pink heart
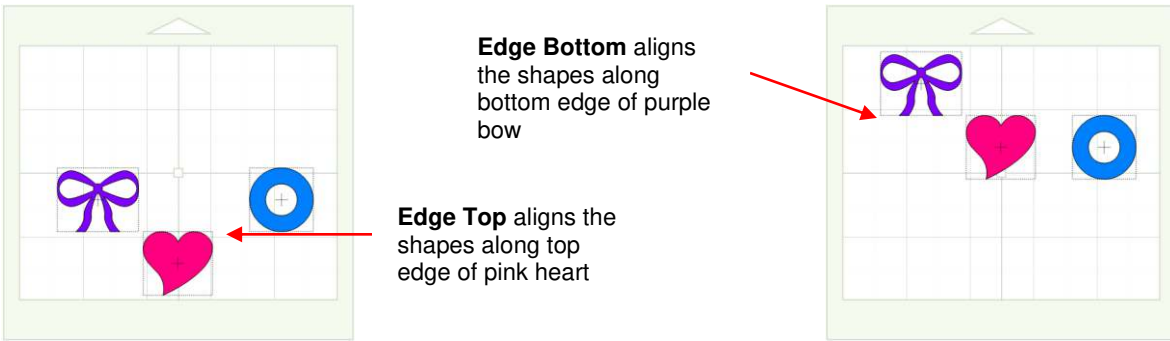
Spacing

- There are two alignment functions used to equally space shapes, either horizontally or vertically. After selecting three or more shapes, these functions can be accessed using any of the following:

    ◊ Right click on the screen and select **Align and Space>Space>Vertical** (or **Horizontal**)

    ◊ Press **[** or **]** (see below)

    ◊ Go to **Edit>Align and Space>Space>Vertical** (or **Horizontal**).

- **Vertically** (press **[**) equally spaces shapes between the uppermost and bottommost shapes in the selection.

- **Horizontally** (press **]**) equally spaces shapes between the leftmost and the rightmost shapes in the selection.

- Another way to increase or decrease the spacing between a selected group of shapes, is to hold the **Ctrl** key and drag the middle:

Hold the **Ctrl** key and drag this red handle to the right.

Stars are now spaced further apart
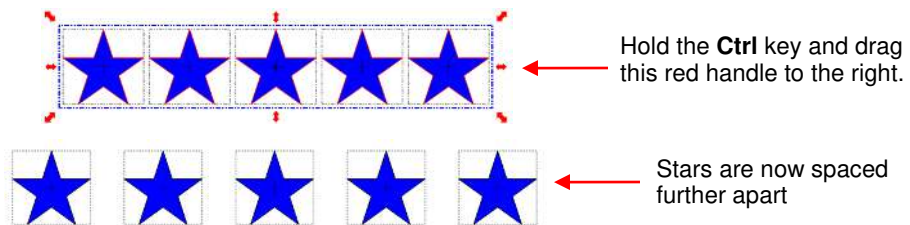
- This same method can be used for vertical spacing, as well. The shapes also do not need to be the same. You could equally space, for example, a star, a letter "B", and a straight line.

Mirroring and Flipping

- To horizontally mirror a shape, select it and then use one of the following:

    ◊ Click on the **Mirror** icon on the **Magic Toolbar**

    ◊ Right click on the screen and select **Shape Magic>Mirror**

    ◊ Press **Ctrl+M**

    ◊ Go to **Edit>Shape Magic>Mirror.**

- To vertically flip a shape, select it and then use one of the following:

    ◊ Click on the **Flip** icon on the **Magic Toolbar**

    ◊ Right click on the screen and select Shape Magic>Flip

◊   Press **Ctrl+F**

◊   Go to **Edit>Shape Magic>Flip.**

MTC WTC

4. Importing and Exporting

4.01 Accessing the Import Options

- Go to **File>Import** and select from one of the available import options. Note the shortcut keys for the various file types:

For all raster shapes → Pixel Trace　　　　Ctrl+Shift+T

Freely shared files from other MTC owners →　From Lettering Delights
From MTC Gallery　　Ctrl+Shift+A
From Basic Shapes　　Ctrl+Shift+B

Ready-to-cut vector formats → SVG/SVGZ File　　　Ctrl+Shift+G
Vector PDF/PS/EPS/AI File　Ctrl+Shift+D
True/Open Type Font File　Ctrl+Shift+H
WPC File　　　　Ctrl+Shift+Q
SCUT/2/3 File

Opens LD's web site with access to user's account and ability to import free and purchased files

Shapes which come with MTC, as well as, user's own assigned shapes

Open True Type and Open Type fonts that are not preinstalled in Windows

- Alternatively, click on the appropriate icon on the **Import Bar.** Note the sections of the user manual included with each label:

Lettering Delights: 4.07
Basic Shapes: 3.08
Font Files: 4.06, 5.02, 5.11
WPC Files: 4.05

Pixel Trace of JPG, BMP, TIF, PNG, GIF files: 4.08, 6.02

SCUT, SCUT2 Files: 4.05

MTC Gallery: 4.02
SVG, SVGZ Files: 4.03
PDF, AI, EPS, PS Files: 4.04
GSD Files: 4.05

- Alternatively, right click on the project tab on the **Tab Bar** and select **Import** from the menu. This is the same as going to **File>Import.**

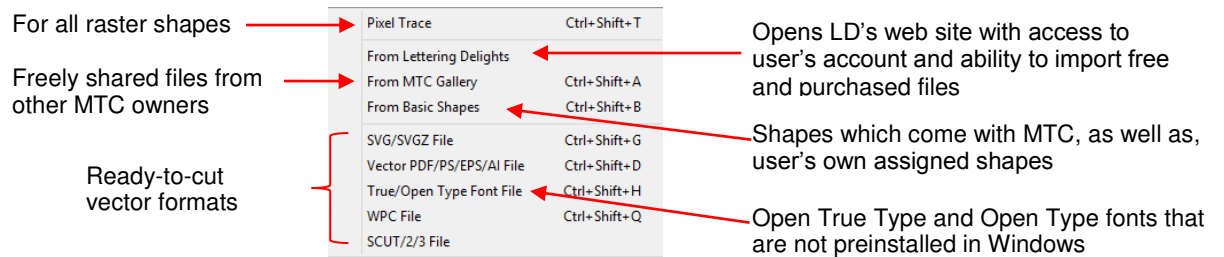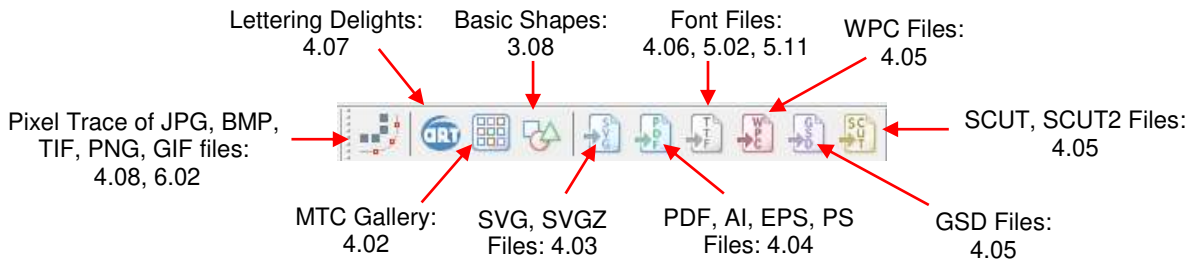## 4.02 Importing from the Online MTC Gallery

Video

- The **MTC Gallery** can be accessed using the three methods shown above or by going to **Help>Free SVG's and MTC's.** When selected, the following window opens and you can choose from thousands of freely shared files from other MTC owners:

Optional: Enter a **Search Term** that may have been used in the file name or description.

Select a particular **User ID**

Select **Sort By Date**, **Title**, **Description**, or **ID** and choose between **Ascending** or **Descending**

Search Gallery
Search Term: Thanksgiving
Search Categories: All
Search User ID: All
File Type: ☑ SVG ☑ MTC
Sort By: Date
● Accending ○ Decending
Items Per Page: 30
Reset　Search
Simply click the "Search" button to view all gallery items.

Select a **Category** from drop-down list

Select **File Type**- SVG, MTC or both

Select # of **Items** to view per page

After entering search options, click on **Search** button

- Upon clicking on **Search**, thumbnails of the images identified in the search will appear:

Each thumbnail indicates the **File Name**, **Category**, **Description**, **User ID**, and **Uploaded Date**.
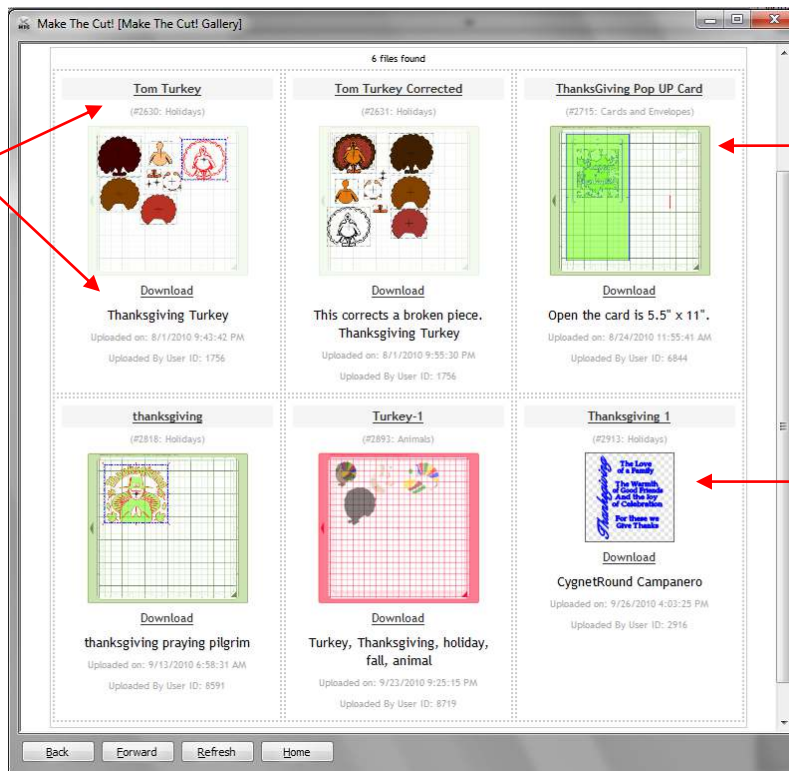
MTC uploaded files appear with a **Virtual Mat** background.

SVG uploaded files appear without the **Virtual Mat** background.

- Click on the thumbnail image and a larger preview window will open. Click on **Download** and the file will immediately import at the current location of the **Caret**. You can then resize, cut, edit, save, etc., as needed.

4.03 Importing SVG, SVGZ from Your Computer

- If the selected file format is **SVG** or **SVGZ**, then importing the graphic will bring the shape into MTC to be resized, edited, cut, etc. Similar to opening files, a window will pop open, allowing you to browse your computer to locate a subfolder and select the file you wish to import. With SVG you can click on **Large Preview** to open a window displaying a much larger view than the thumbnail preview:

Browse to locate folder containing the file.

Click on the file and it will appear under **File name**:
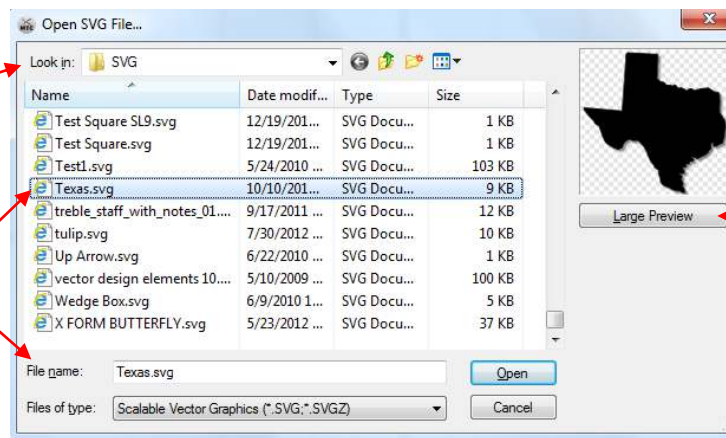
Preview of the file to be imported

Click here to open a window to display a large preview of the file shape(s).

- Different programs use different DPI's when exporting as SVG. While MTC will import the SVG at the DPI most commonly used, it is possible that an imported size will be different from the original (such as what happens with SVG's created in KNK Studio). So, always check the size to see if it is appropriate for your needs before cutting.

- If you import an SVG which is a print and cut file and the cut lines are not appearing, apply the **Join** function, followed by the **Layer** function (refer to *Section 7.01*). A new layer will be created with the cutlines around the raster. The original layer can be deleted.

- You can also import SVG files using drag and drop into a running instance of MTC.

4.04 Importing AI, EPS, PS, PDF

- If the selected file format is one of the following vector formats: **AI, EPS, PS, PDF** (vector only), then importing the graphic works the same as opening MTC files or importing SVG files. There are a few different import options:

Browse to locate folder containing the file.

Click on the file and it will appear under **File name**:

Preview of the file to be imported

Select page number if it's a multi-page file

Option for Importing **Strokes Only**, **Fills Only** or **Strokes and Fills**.

Click here to open a window to display a large preview of the file shape(s).

Click on **Open** and the saved file will open as a new project.

- Note that when the file has multiple pages (such as some PDF vector files), the user should choose which page to import. Click on **Large Preview** to better see the individual shapes or use Adobe Reader to view the pages in the same way you would view any PDF file.

- MTC will only import AI files that are Version 9 or newer. Thus, if an AI fails to import, that is the most likely issue. From some programs, such as Funtime, it will be necessary to save in a different format, such as PDF or EPS.

- A PDF created from a raster image will not import into MTC. In the preview window will be a message saying "**Nothing to Preview"** and a message in blue type will appear at the bottom of the window. This message will give you the option to access the **Pixel Trace** window so that that image can be vectorized first. Refer to *Chapter 6*.

Nothing will appear in this window if the PDF contains raster images.

Instead, this blue link will appear and clicking on it will then open **Pixel Trace.** Refer to *Chapter 6*.

- There is also an **Import Strokes and Fills** menu with three options to **Import Strokes Only, Import Fills Only** or **Import Strokes and Fills**. Select the latter and then note if you have unwanted lines in your image. If so, then try one of the other choices, such as **Import Strokes Only**.
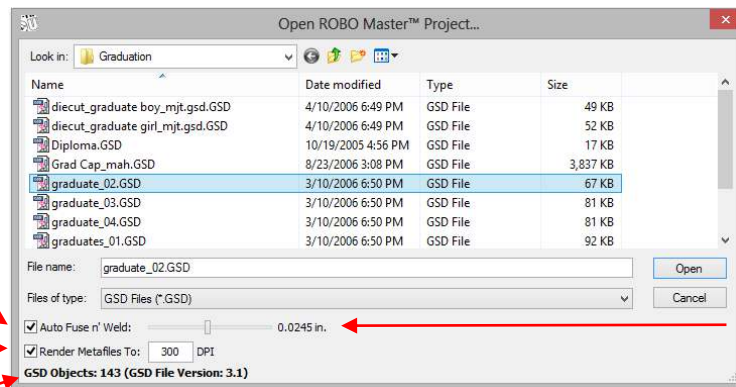
4.05 Importing SCUT, SCUT2, WPC, GSD

- Files created in Sure Cuts a Lot (SCAL) are saved in the format SCUT or SCUT2, depending on the version of SCAL used. Files with the WPC file extension are created in programs developed by Sign Max, which include WinPC Sign, Funtime, Pazzles Inspiration, and Gazelle. GSD files are created in RoboMaster, RoboMaster Pro and Wishblade Advance. These formats are all imported using the same methods as described for SVG. There are no special settings. Just locate the file on your computer, select it, and click on **Open.**

- The GSD format does not have an available preview. Also, the **Fuse N Weld** option is available, in the import window, to connect the many individual segments making up paths in these files and it is recommended that the box remains checked. The scroll bar next to this setting allows you to set the minimum distance between two nodes in order for them to be connected upon importing.

Auto Fuse n' Weld option will connect individual segments: highly recommended

Converts embedded metafiles to a texture

Increase **Tolerance** if the breaks are not being closed. Set smaller if nodes are being connected that should not be.

Indicates how many paths are found. Note that with **Auto Fuse n' Weld** turned on, the imported graphic, in this example, ended up with 7 paths instead of 143.

- It is recommended that both the **Auto Fuse n' Weld** and **Render Metafiles To 300 DPI** be left turned on. The **Fuse N Weld** option is needed to connect the many individual segments making up paths in GSD files. The **Render Metafiles** function is use to identify embedded wmf and emf files used for print and cut applications and convert those to textures.

- Before saving an imported GSD file, run the **Auto Simplify Path** to reduce nodes. Refer to Section 7.02.2.

4.06 Importing TTF, OTF Font Files

- If the imported file format is **TTF**, **OTF**, or **OPF** then the font file will be added to the installed fonts list and be available for creating text shapes. The font does not need to be installed first in Windows, nor does it need to be re-opened in MTC after the file is saved and opened again on the current user's computer or any other computer. More details on importing font files are covered in *Section 5.02*

4.07 Importing from Lettering Delights

- If the **Lettering Delights** option is chosen, then the **Lettering Delights** window will open at the left side of the screen.

- You may log into the following web site: http://www.letteringdelights.com/ and purchase new cutting files or load existing cutting files from your account.

Currently-selected product

Click to only show products you've already purchased.

Click on down arrow to open drop down menu of other products at Lettering Delights. Note that if you click on the **Star** icon above, only products you've purchased will be shown.

- The Lettering Delights cutting files you own will be displayed in alphabetical order by **Collection Name**. If you wish to change the sorting order to **Sort by Date Added**, go to **Help>Advanced>Advanced Settings, and select the other option under Sort Lettering Delights**:

Sort order menu for Lettering Delights products

- When working with **Sort by Collection Name**, if you know the name of a particular LD product, you can type the first letter and you will be taken to the products which begin with that letter. This allows you to more quickly scroll through the products.

- Once you have selected a Lettering Delights product, double click on any image and a window will open where you can choose to go to the Lettering Delights' web site to purchase this particular product. The shapes in that product package will then be available to download directly into MTC in the future, when you log into your account.

- The following example shows a collection of clipart called "Arizona Grand Canyon State" that has been found at the Lettering Delights site, but has not yet been purchased. You can see the images contained in this collection and, upon double clicking any of the images, a window will open:

71

- If you answer **Yes,** your Internet browser will open and you will be taken to this link: http://www.letteringdelights.com/clipart:arizona_grand_canyon_state-10057.html where you can again view the images in this collection, browse projects made with this collection, link to related collections, and, of course, purchase this collection.

4.08 Importing Raster Files (JPG, BMP, PNG, etc.)

- If the selected file format is a raster (e.g., JPG, BMP, TIF, PNG, or GIF), then the **Pixel Trace** option is used to import the graphic and vectorize selected portions or all of the shape. Refer to *Chapter 6 Tracing*.

- Raster images may also be copied and pasted into the **Pixel Trace** window directly from Windows Explorer.

- If the raster file is only going to be used to fill a shape with the image (also referred to as adding a **Texture**), then refer to *Section 3.14.*

4.09 Accessing the Export Options

- One can export a selected shape or group of shapes in any of the following ways:

    ◊ Go to **File>Export** and select from one of the available export options

    ◊ Right click on the screen and select **Export**

    ◊ Right click on the project tab on the **Tab Bar** and select **Export** from the menu. This is the same as going to **File>Export.**

    ◊ Use any one of three shortcut keys to bring up the available **Export** choices. Refer to the following screenshot.

Exports selected shape to the "**Your Shapes**" category under **Basic Shapes**.

Sel. To Basic Shapes	Ctrl+Shift+L
Sel. as SVG To MTC Gallery	Ctrl+Shift+W
Project To MTC Gallery	
Sel. To SVG File	Ctrl+Shift+S
Sel. To Vector PDF File	
Sel. To EPS/AI File	
Sel. To Raster File	

Allows user to upload selected shape to the online **MTC Gallery**

Export in one of the common vector standard formats

Export shape as a raster file

4.10 Exporting to Basic Shapes

Video

- When exporting a file to the **Basic Shapes** library, a popup window will appear asking for the file to be named. Enter a descriptive name for the shape and then click on **Add.** That shape will be added to the category – "**Your Shapes**".
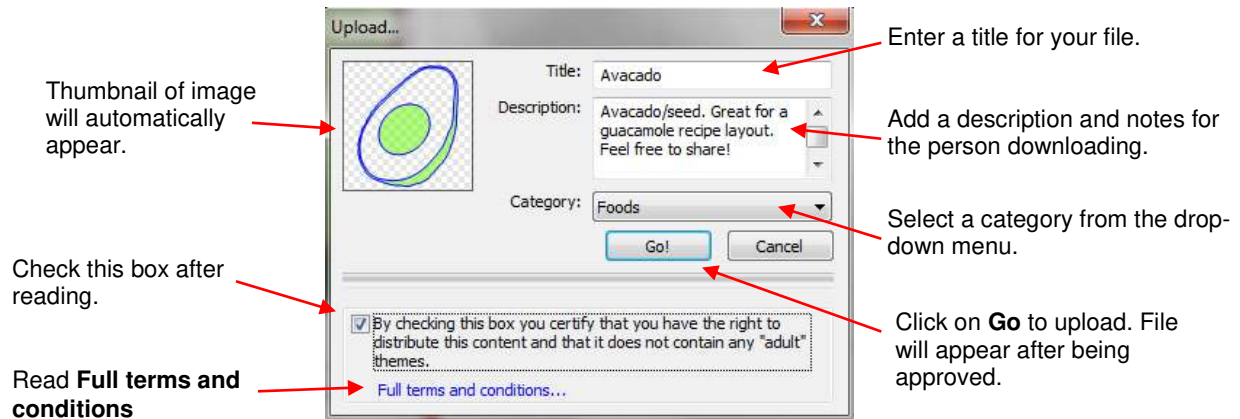
Add Basic Shape
Name: Flourish   Add
Please enter a name...
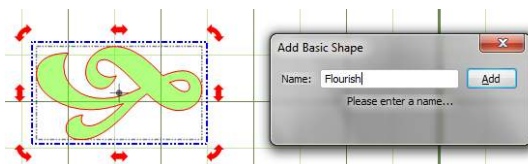
- As you build **"Your Shapes"** library, you may want to back it up in the event you have a hard drive crash or if you want to load **"Your Shapes"** to other computers you own. To access this function, go to **Help>Advanced>Advanced Settings.** Under **Backup/Restore Shapes**, you will find the options to either **Backup** or **Restore**.

Backup/Restore Shapes
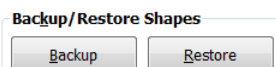
Backup   Restore

- Clicking on **Backup** will bring up a **Save As** window where you can browse your computer to find a locating for storing, such as onto a flash drive. Clicking on **Restore** will bring up an **Open** window where you can then browse to locate the backup file you created.

4.11 Exporting to MTC Gallery

- When exporting to the **MTC Gallery**, you have a choice between exporting as an SVG or as an MTC. To export just a selected shape from MTC to the **Gallery**, select the file and then choose the **Sel. as SVG to MTC Gallery** option. The following window will open where you can then enter information and select a category:

Thumbnail of image will automatically appear.

Enter a title for your file.

Add a description and notes for the person downloading.

Select a category from the drop-down menu.

Check this box after reading.

Read **Full terms and conditions**

Click on **Go** to upload. File will appear after being approved.
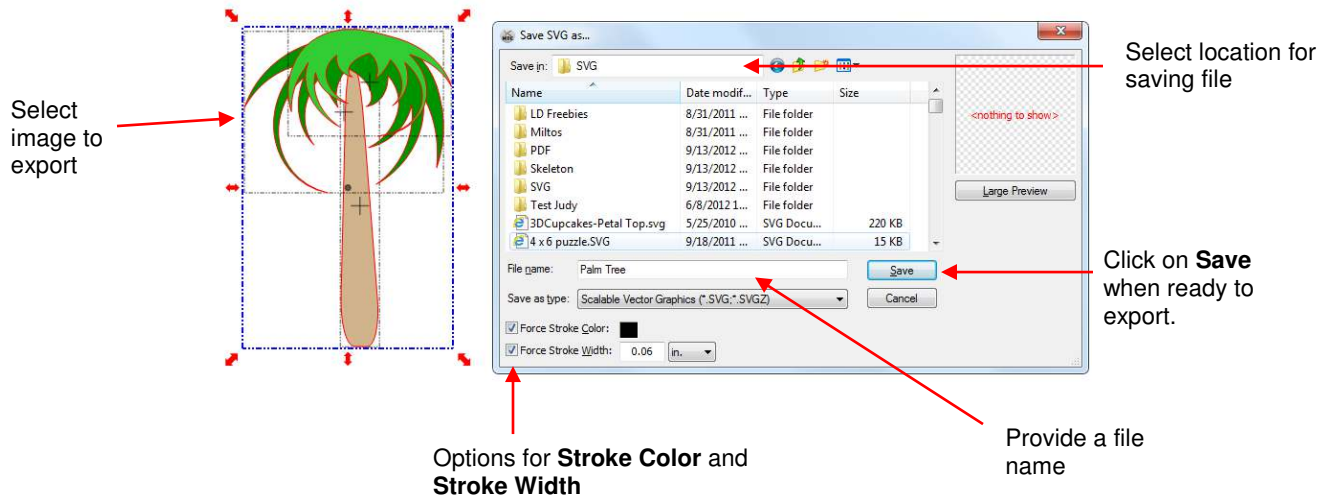
- When another MTC owner imports the file, it will automatically import at the height and location of the **Caret**. If necessary, the designed size could be mentioned in the **Description**. For a file such as this avocado, it's not necessary. But for something like a cupcake wrapper, it could be important for the user to know the original design dimensions.

- Another alternative, which preserves the original dimensions of all shapes in the file, is available. From the **Export** options, choose **Sel. as Project to MTC Gallery**. An identical window appears, but the upload will include everything in the file, including the same **Virtual Mat** settings, **Notes, Layers,** etc.

- If you upload a file and then later wish to delete it, locate your file and click the **Delete Item** link at the bottom of the image window:

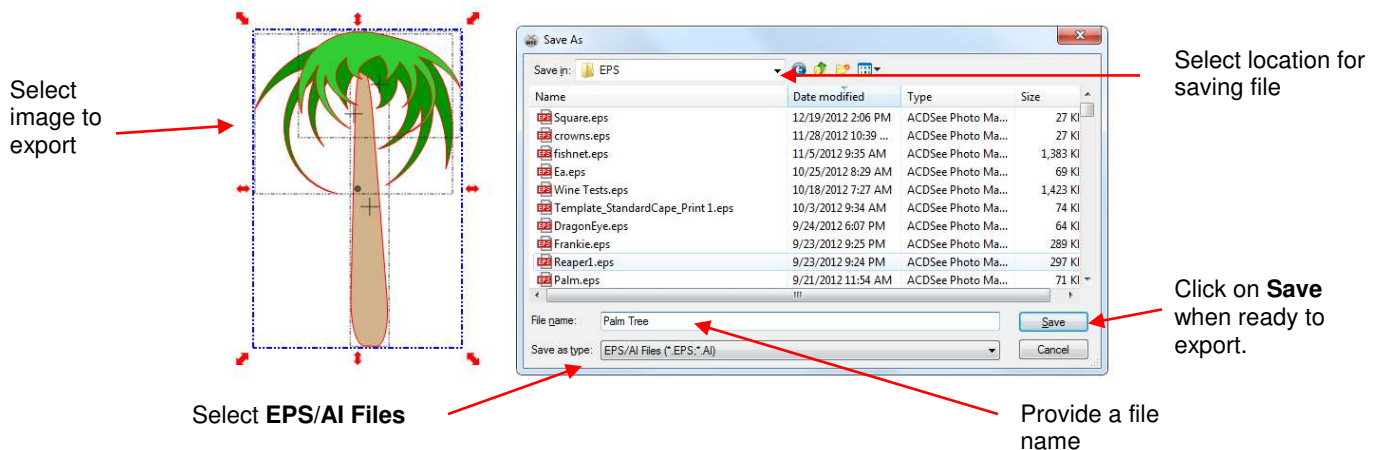Click here to remove your file from the MTC Gallery
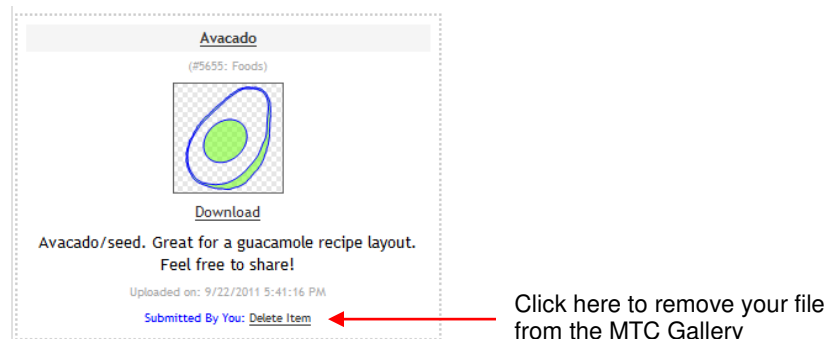
4.12 Exporting as SVG

- To export as an SVG file, select the shape or shapes and then either go to **File>Export>Sel. to SVG File** or right click on the selected shape(s) and choose **Export>Sel. to SVG File**.

- Choose a location and name for the file. You also will have the option to set a **Stroke Color** and/or **Stroke Width**. Note the stroke doesn't appear if you re-import the file into MTC. However, you will be able to view this stroke in other vector programs, such as Inkscape.

Select image to export

Select location for saving file

Click on **Save** when ready to export.

Provide a file name

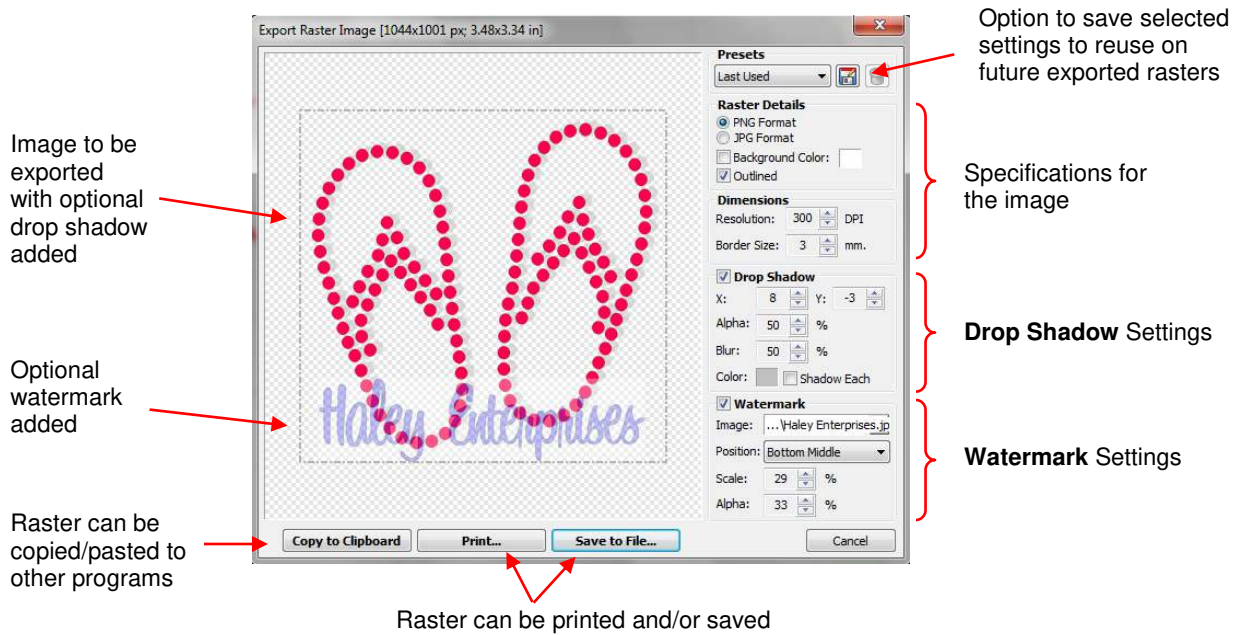Options for **Stroke Color** and **Stroke Width**

4.13 Exporting as EPS/AI or PDF

- For either of these formats, first select the shape or shapes and then either go to **File>Export** or select the **Export** option from the drop-down menu (right click on selected image for **Export** option). Then choose either **Sel. to AI/EPS File** or **Sel. to Vector PDF File**. A window will open:

Select image to export

Select location for saving file

Click on **Save** when ready to export.

Select **EPS/AI Files**

Provide a file name

4.14 Exporting as a Raster File

- There are many reasons why you might want to export your file as a raster. For example: (1) The image could be posted on a web site or blog, (2) The image could be shared with a friend or a customer, (3) The image could be used in a digital scrapbooking program.

- Select the image and right click to bring up the menu to select **Export** and then select the last choice, **Sel. to Raster File**. This window will open:

Option to save selected settings to reuse on future exported rasters

Image to be exported with optional drop shadow added

Specifications for the image

Drop Shadow Settings

Optional watermark added

Watermark Settings

Raster can be copied/pasted to other programs

Raster can be printed and/or saved

- Note the many settings available for the raster export. If the image is to be imported into a layering program (such as Photoshop or a digital scrapbooking program), then PNG will be the preferred format. For commercial applications, you may wish to add a watermark to protect your image from being copied. A drop shadow can be added to give your image dimension. Experiment with these settings and if you find certain ones that you wish to use repeatedly, click on the option at the top to save the settings and a window will open where the settings can be saved with a name you provide:
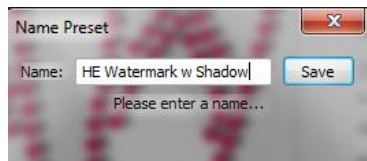
4.15 Using Windows Copy/Paste

Adobe Illustrator

- In Adobe Illustrator, select the shape or shapes and use **Edit>Copy** or **Ctrl+C** to copy the images to the

    Windows clipboard. In MTC, use **Paste in Place** (**Ctrl+Shift+V** or the icon on the **File Toolbar**) to import the shapes at the original size. Note the fill and stroke colors assigned in Illustrator will not be brought into MTC.

- On some shapes, duplicates can result during the conversion from AI to MTC. The quickest way to eliminate those duplicates is to apply the **Fuse n' Weld** function. It isn't necessary to know which shapes might be

    duplicated. Just select all of the imported shapes and click on the **Advanced** icon on the **Shape Magic Toolbar,** and select **Fuse n' Weld**. A small window will open. It's not necessary to adjust any settings in this case. Instead, click on the **Optimal** button. The window will close and any duplicate shapes will be fused into a single version:

Click on **Optimal**
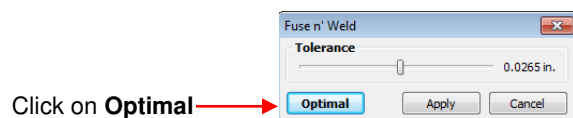
- If you have any problems using the Windows Copy/Paste method, try importing your saved AI files into MTC. Refer to *Section 4.04.*

Inkscape

- In Inkscape, select the shape or shapes and use **Edit>Copy** or **Ctrl+C** to copy the images to the Windows clipboard. In MTC, use **Paste in Place** (**Ctrl+Shift+V** or the icon on the **File Toolbar**) to import the shapes at the original size. Note the fill and stroke colors assigned in Inkscape will not be brought into MTC.

- Similar to AI files, duplicates can occur with some shapes during the copy/paste process. Apply the **Fuse n' Weld** function noted above to reduce any duplicates into single occurrences.

- If you have any problems using the Windows **Copy/Paste** method, try importing your saved SVG files into MTC. Refer to *Section 4.03.*

KNK Studio/ ACS Studio

- In KNK or ACS Studio, select the shape or shapes and use **Ctrl+C** or **Edit>Copy** to copy the images to the Windows Clipboard. In MTC, use **Paste in Place** (**Ctrl+Shift+V** or the icon on the **File Toolbar**) to import the KNK shapes at the original size. The **Fill** color in KNK Studio will also be maintained.

- If you need to cut by color, then it may be easier to select one color at a time in KNK Studio, to copy/paste over to MTC. A new layer will be created on the Layer Bar and those shapes assigned to that new layer. This may be faster and easier then copying and pasting everything to MTC and then trying to reassign same-colored shapes to their own layers.

- If the dimensions of the imported shapes are larger than the same dimensions shown in KNK Studio (which will happen with rhinestone patterns, for example), apply the **Flatten Paths** command and the dimensions should then match. The shapes have not changed sizes during the conversion from KNK Studio to MTC; this is simply a correction to remove the Bezier control points. Refer to *Flatten Paths* under *Section 7.04.*

- The **Notes** function in KNK/ACS Studio will also allow text to be copied and pasted to the **Notes Window** in MTC.

- If any of the VEF and WFN fonts specific to KNK/ACS Studio have been used to create text, that text may also be copied and pasted from KNK/ACS Studio to MTC even though those particular fonts cannot be opened in MTC.

- If you have any problems using the Windows **Copy/Paste** method, export your files from KNK Studio in either EPS or PDF format to import into MTC. Refer to *Section 4.04.*

- To export from MTC to KNK/ACS Studio, select the shape(s) and use either the EPS or PDF export functions described in Section 4.1. Imported files in KNK/ACS Studio will need to have fill colors assigned and **Thick Line Attribute** set to **No Line** or **Hair Line**. Refer to the KNK Studio User Manuals.
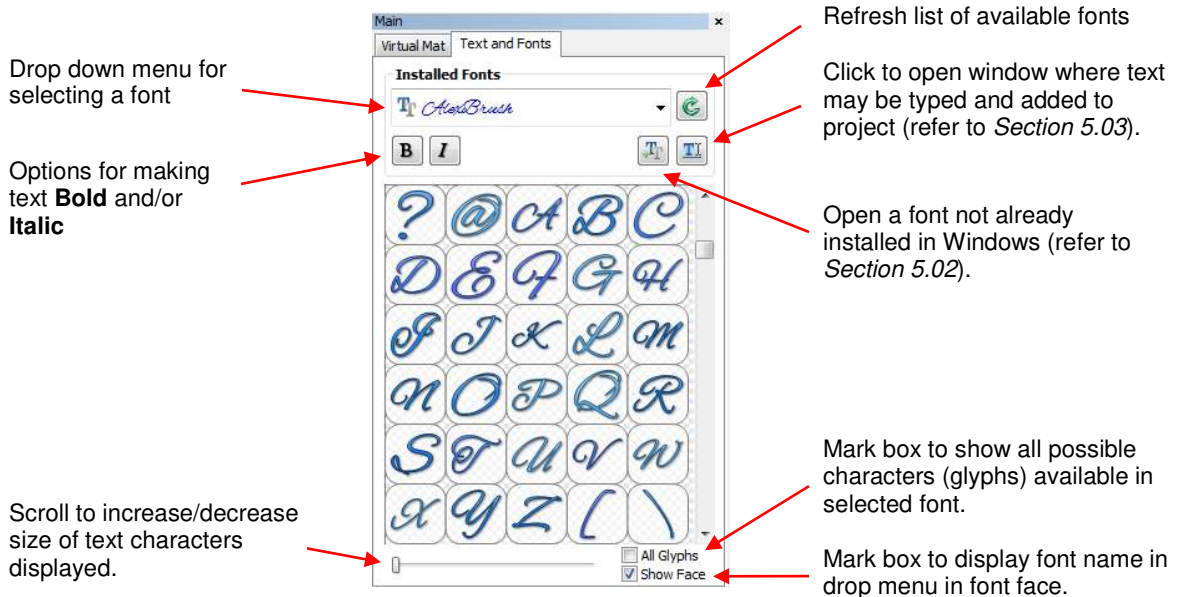
5. Working with Text

5.01 The Text and Fonts Tab

- On the **Main Bar** in MTC, you will find a tab called **Text and Fonts**:
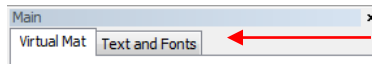
  Click on this tab to access **Text and Fonts**

- The **Text and Fonts** tab is used for:

  ◊ Browsing and selecting which font to use for creating a text shape. Note that marking the **Show Face** option will display the font names in their font type.

  ◊ Browsing all of the characters (glyphs) available in any given font

  ◊ Opening/importing new fonts

  ◊ Accessing the window for typing text

  ◊ Choosing to make text bold or italic.

  Drop down menu for selecting a font

  Options for making text **Bold** and/or **Italic**

  Scroll to increase/decrease size of text characters displayed.

  Refresh list of available fonts

  Click to open window where text may be typed and added to project (refer to *Section 5.03*).

  Open a font not already installed in Windows (refer to *Section 5.02*).

  Mark box to show all possible characters (glyphs) available in selected font.

  Mark box to display font name in drop menu in font face.

- Fonts appearing in black in the drop-down menu are installed in Windows. Fonts appearing in blue have been opened into MTC during the current session. Fonts appearing in green have been opened during this session or previously opened, with the option marked to permanently install in MTC. (Refer to *Section 5.02*.)

- You can click on any font in the drop-down menu and then use your mouse scroll button to scroll through all of the fonts in the menu. Make sure the **Show Face** option is marked if you want the font names to appear in the actual font.

- If you are looking for a particular font, type the first letter of the font name and you will be taken to the fonts that begin with that letter.

- Some fonts will change significantly if the **Bold** option is selected, so be aware of that possibility. The same is true of the **Italic** option. Make sure it is not indented/blue in color.

5.02 Opening Font Files

- True type (.TTF) and open type (.OTF) fonts which are already installed on your computer are ready to be used in MTC. However, unlike most other Windows applications, uninstalled fonts do not need to be pre-installed in Windows in order to be used. They can be opened directly in MTC, as easily as importing other vector files.

- A font can be opened in MTC using any of the following ways:

  ◊ Click on the **Import TTF/OTF** icon on the **Import Toolbar**:

  ◊ Click on the **Add Font from TTF File** icon on the **Font and Text** tab of the **Main Bar**:

  ◊ Press **Ctrl+Shift+H**

  ◊ Go to **File>Import>True/Open Type Font File.**

- After invoking one of the methods to open a font file, the following window opens:

Browse to locate a folder.

Click on the font name and it will appear below.

Click on **Open**

Check this box if you wish to keep font installed in MTC
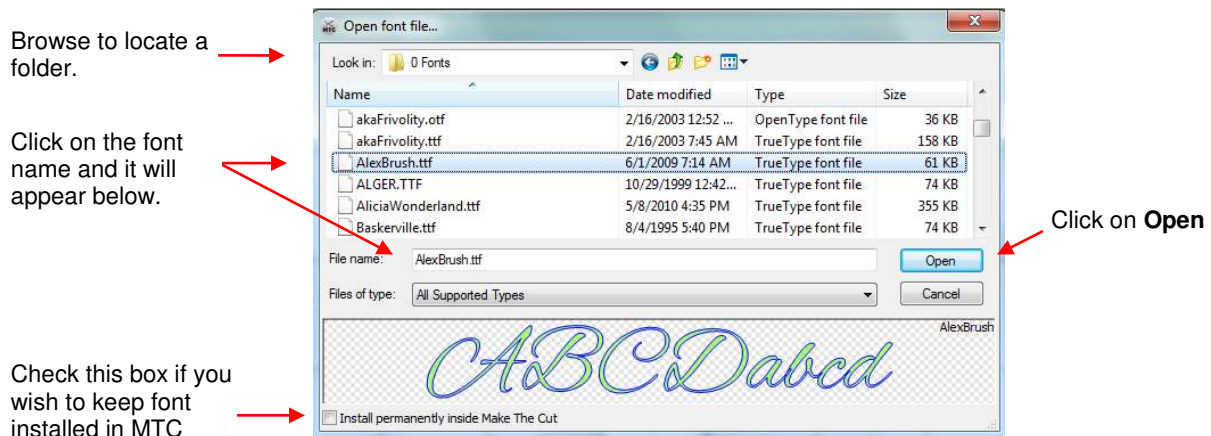
- When MTC is closed, any new fonts which were opened <u>during that session</u> (but not permanently installed in MTC) will automatically be uninstalled from MTC. Not to worry! Once a particular font is used to create text and that file is saved, then <u>that same font</u> does not need to be re-opened when opening <u>that same file</u>.

- If you wish to open more than one font at a time, hold the **Shift** or **Ctrl** keys, just as you would when selecting multiple files in other Windows applications.

- If you wish to continue using that same font or fonts in MTC for other projects, then check the **Install permanently inside Make The Cut** box at the bottom of the **Open Font File** window.

- To remove a font permanently installed in MTC, select it and press the **Delete** key on your keyboard or right click on the font. Note that this only works with fonts you installed from within MTC, not fonts installed in Windows.

5.03 Add Text Group

- There are two ways to open the **Add Text Group** window for creating text for your project:

  ◊ Click on the **Add a Group of Characters** icon on the **Text and Fonts** tab

  ◊ Press **Ctrl+I.**

Vertical Spacing

Rotation options to rotate letters for creating vertical text

Alignment options

Begin typing to enter text into window. Press **Enter** key to start new lines.

Options for **Splitting** by **Lines**, by **Glyphs**, by **Spaces**, or **No Splitting**

Click **Reset** to erase typed text.

Click on **Accept** to enter text onto screen

- As you type the text, it will also appear on the screen at the location and height of the **Caret** (refer to *Section 4.01)*. After clicking on **Accept** in the above window, the **Add Text Group** closes and the text is ready for any additional editing desired:

Jonas and Eli

August, 2011

- Note that text can also be imported into this window, from other Windows applications (Word, Outlook, Excel, or other text programs), using the normal copy and paste method. **Video**

Rotating Text

- To create vertical text, select **Rotate Left** in the **Add Text Group** window:

Select **Rotate Left** from menu and each individual letter will be rotated 90^0 to the left.

Only one line is typed thus alignment and vertical spacing does not matter

- Then select the text created and rotate 90^0 (**Ctrl+G**):

Text after clicking on **Accept**

Text after apply **Ctrl-G** to rotate

Splitting Text

- There are four options in the **Splitting** drop-down menu:

  ◊ **No Splitting**: Entire text is treated as a single shape:

  KNK USA
  Home of the Zing   ← 1 shape

  ◊ **Split by Lines**: Individual lines of text will be separate shapes:

  KNK USA
  Home of the Zing   ← 2 shapes, one for each line of text

  ◊ **Split by Spaces**: Spaces created using the space bar will divide text into separate shapes:

  KNK USA
  Home of the Zing   ← 6 shapes, one for each word

  ◊ **Split by Glyphs**: Each typed character will be its own individual shape:

  KNK USA
  Home of the Zing   ← 19 shapes, one for each character- characters can be individually moved, as desired
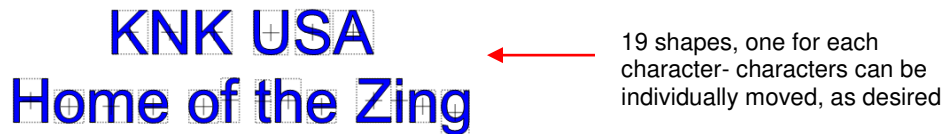
- The different options are useful depending on what the next planned step will be with the text. For example, if you plan to overlap the characters to weld together, then you want the text to be **Split by Glyphs**. But as you explore other designing functions, you will learn how the other options will be better choices.

- If you inadvertently select the wrong option for your intended design, not to worry! You can use the **Split** function (**Ctrl+P**) on the text after you close the **Add Text Group** window to **Split by Glyphs**. Then, if you want **Split by Lines** or **Split by Spaces**, then just marquee-select the characters groupings, one at a time, and apply the **Join** function (**Ctrl+J**) to recreate the splitting you wish to have. For example, marquee-select the entire top line of the title that was **Split by Glyphs** and apply the **Join tool:**

KNK USA
Home of the Zing   ⇒   **KNK USA**
Home of the Zing

Marquee-select top line of characters   Apply **Join** (**Ctrl+J**)   Top line is now all one shape
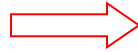
KNK USA
Home of the Zing   ⇒   **KNK USA**
Home of the Zing
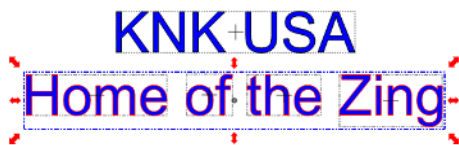
Marquee-select bottom line of characters   Apply **Join** (**Ctrl+J**)   Bottom line is now all one shape
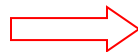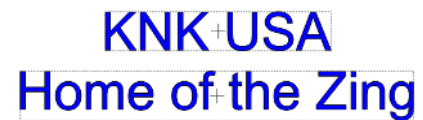
5.04 Creating a Connected Letter Title

Video

- Using the instructions from *Section 5.03*, type the letters of your title. In this example, you will want to choose **Split by Glyphs** so that individual letters can be moved to overlap one another, as desired:
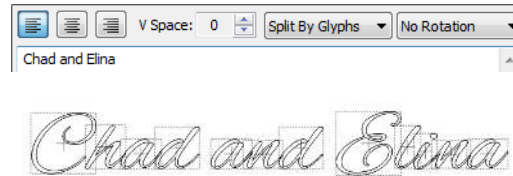
- If you forget to select **Split by Glyphs**, then select your title and use the **Split** function in any of the following ways:

    ◊ Click on the **Split** icon on the **Magic Toolbar**

    ◊ Press **Ctrl+P**

    ◊ Right click on the screen and choose **Shape Magic>Split** from the menu

    ◊ Go to **Edit>Shape Magic>Split**.

- With the letters split, you can select one or more and use the left and right arrow keys to change the spacing between letters, overlapping as desired. It is advisable to zoom in on the text to get a more accurate view of the actual positioning of the letters. You may also want to check the text both with and without the **Fill** turned on (which can be changed on the **Virtual Mat** tab).

- You can also quickly overlap letters by selecting them all, holding the **Ctrl** key, and then dragging the middle right of the bounding area towards the left. Note that you must be in **Resizing** mode for this to work (refer to *Section 4.13*) :

Make sure text is in **Resizing** mode.
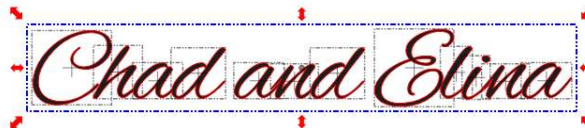
Hold **Ctrl** key and drag this middle double arrow icon to the left to decrease spacing

- When you are satisfied with the overlap, select all of the letters and then apply the **Weld** function using one of the following:

    ◊ Click on the **Weld** icon on the **Magic Toolbar**

    ◊ Press **Ctrl+W**

    ◊ Right click on the screen and choose **Shape Magic>Weld** from the menu

    ◊ Go to **Edit>Shape Magic>Weld**.

- To create an outline/shadow for titles and other shapes or if you need to thicken a font that turns out to be too thin for cutting, refer to *Section 8.05.*

5.05 Incorporating Dingbat Shapes into a Title

Video

- A quick way to incorporate a shape into a welded title is to use any of thousands of dingbat fonts available from the Internet for free. In this example, a free font called *1 Bean Sprout DNA* is being used for the title and the dingbat font, *Wingdings*, will be used for the shape.

- Using the steps in *Section 5.03,* create the title, with the **Split by Glyphs** option selected:

- Marquee-select the left side and drag away from the right to create a gap for a shape:

- On the **Text and Fonts** tab, select the font, *Wingdings*, from the drop-down menu. Scroll to locate the scissors image. Rather than entering the **Add Text Group** window, you can double click on the image you want to use and it will added at the location of the **Caret** (refer to *Section 4.01*)**:**

Some dingbat fonts will show up, as images, in the drop-down list of all fonts. Thus, uncheck **Show Face**, as needed.

- Resize and arrange the dingbat shape, as desired. Also overlap the letters with each other, as desired. Then apply the **Weld** (**Ctrl+W**) tool.
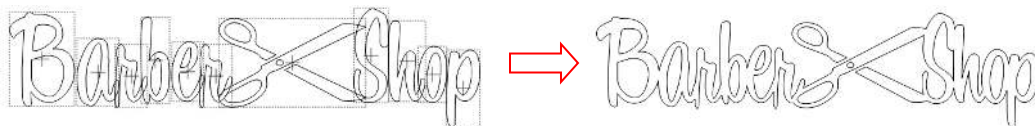
- Note that dingbat fonts are not the only shapes that can be welded to letters. Any shape imported or created within MTC can be used!

5.06 Welding Titles in Imaginative Ways

- Some fonts simply do not work well with the traditional overlapping of the letters to be welded into one piece for cutting. For example, let's take an extreme case with Arial font and the name, "Billy". Note what happens when you take the work and then overlap the letters in this particular font:

Type the letters   Overlap the letters   Weld the letters – undesirable result

- Most crafters will just start looking for a different font… one with ligatures (extenders) that easily connect the letters to one another. However, many fonts with ligatures are script fonts and may not convey the desired look. So, is there a solution? Definitely! Look for objects that can be used to connect the letters! A basic thin rectangle is an easy solution. Just align it along the bottom of the letters and weld:
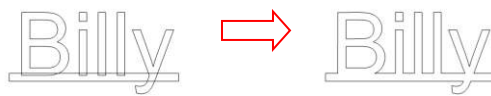
- But the objects to use as a base do not have to be so basic! Look for objects that will tie into a theme! Here are just a few examples:

5.07 Fitting Text to the Outside of a Shape

Wrapping Text around A Circle

- The **Wrap Objects to Path** function can be used to fit text to the outside of a shape. In this example the words "Happy Birthday" will be wrapped around a circle three times.

- The first step is to type the text, making sure the **Split by Glyphs** option is selected. If you forget, then use the **Split** function to break your text into individual letters:

- The next step is to create the circle. You can import a circle from **Basic Shapes** and resize it to what seems close to fit the lettering if the letter were repeated three times. It's not necessary to be exact as you will have some settings to tweak this!   Worst case, you will be able to cancel the process and resize the circle larger or smaller, as needed:
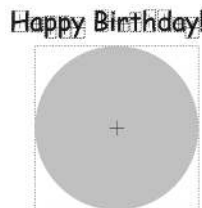
- There is currently only one way to activate the **Wrap Objects to Path** function. Select what you want to wrap (in this case, the text) and hold down the **Ctrl** key while you drag the text onto the shape. When you see the cursor change to release the mouse button and the following window will open:

Mark the **Repeat** box

Enter 2 for the desired # of **Repeats,** so that the total will be 3**.**

Enter desired **Spacing**.

Note that the three *Happy Birthday's* do not quite fit.

83

- The lettering doesn't fit. But not to worry! Begin to tweak the settings:

Offset is used to move the starting location of the text.

Vert. Align moves the text inwards towards the center of the shape or away.

Space moves the individual characters closer or further apart.

Click on **Accept** when done.

Now all three are arranged evenly around the circle.

- To end up with a perfectly arranged design, work with the settings in this order:

   ◊ **Repeat Count:** If you want a particular number of repeats, enter it.

   ◊ **Spacing:** This is the distance between each of the repeats. In our example, it is the space set between the end of "Birthday" and the start of the next "Happy." Note that this may not be retained as the **Space** setting is adjusted to get all of the repeats visible.

   ◊ **Space:** This is the distance between the individual shapes making up the design. In our example, it is the space between all of the letters making up "Happy Birthday."

   ◊ **Vert. Align:** This indicates how close the original text is positioned to the circle. At 100%, the text just touches the circle but the setting can be increased to move the text outwards, away from the center of the circle or decreased to move the text inwards, towards the center.

   ◊ **Offset:** This will rotate the text around the outside, if desired, so that the text begins in a circle location along the outside of the circle.

- On the settings you drag with your mouse button, remember to also use the right and left arrow keys on the keyboard for smaller changes in the settings.

- Click on **Accept** and then delete the circle:

Wrapping Text Half-way Around the Top and the Bottom of a Circle

- In this example, the text needs to be split so that the first half wraps around the top half of a circle and the second half wraps the other way around the bottom.

- Type the text, again making sure that **Split by Glyphs** is selected. In this example, an address will be used:

231 Semoran Commerce Place Apopka, Florida 32703

- Marquee-select the second half of the address and apply both the **Mirror** and the **Flip** functions:

After applying **Mirror** (**Ctrl+M**) on second half of text

After applying **Flip** (**Ctrl+F**) on the second word

84

- Draw a circle and marquee-select the first of the text. Hold the **Ctrl** key while dragging the text into the circle, letting go of the mouse button first. The **Wrap Objects to Path** window will open:

Do not check **Repeat** box as there will be no repeats in this case.

Text is aligned along bottom, so **Offset** will be adjusted to move text to the top.
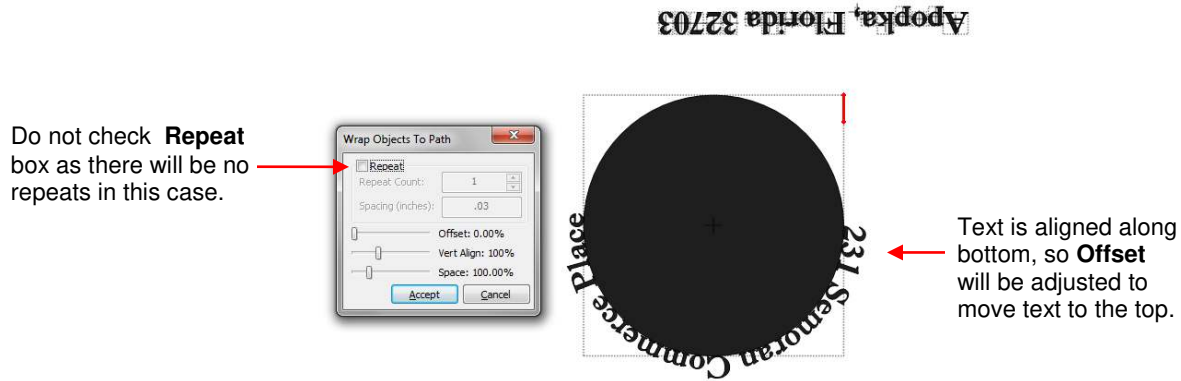
- This time, leave the **Repeat** box unchecked. Then begin adjusting the **Offset** so that the text moves to the top half of the circle. It is a good idea to write down the **Space** and **Vert. Align** settings so that similar values can be used when you do the second half of the text:

Adjust settings and write down the **Vert. Align** and **Space** settings.

Text is now spaced and positioned along top half of circle.

Click on **Accept** when done.
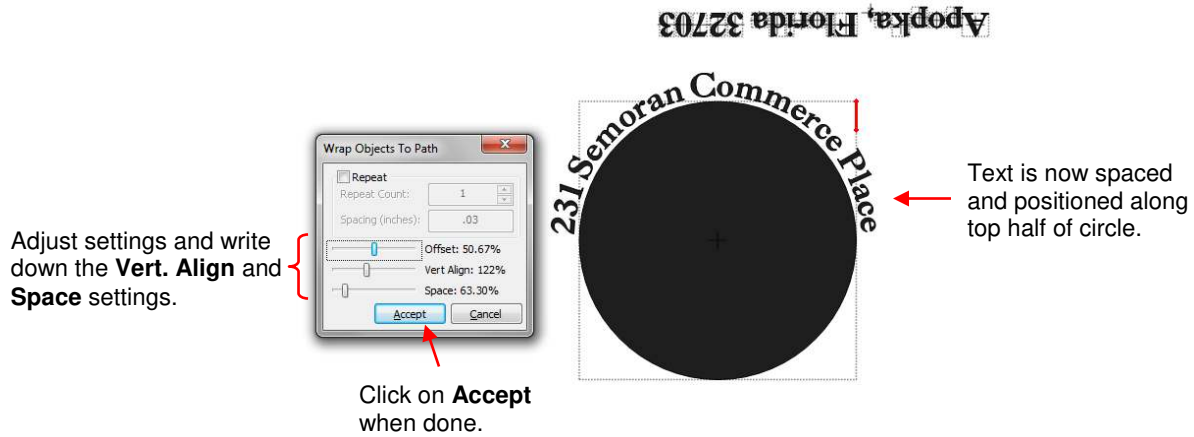
- After clicking on **Accept**, the second half of the text is selected and, again, moved to the center of the circle while holding the **Ctrl** key:

Second half of text shows up with correct orientation for the lower half of the circle.

- Adjust the **Vert. Align** and the **Spac**e settings to match what was used for the top half. Then change the **Offset** to align second half of text along the bottom half of the circle.

Note the **Vert. Align** and **Space** settings are identical to what was used for the top half.
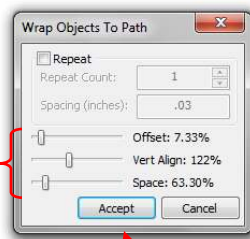
Second half of text is now aligned along bottom of circle.

Click on **Accept** when done.

- Click on **Accept** when done. Add other shapes, as desired. In this case the company named was added to the center:

- The **Wrap Objects to Path** can be used for other designing applications, one of which is shown in *Section 8.08.*

5.08 Fitting Text to Paths

- A different function, the **Bézier Warp**, can also be used to fit text to a circle or to fit text to a custom designed path.

- As before, type the letters you wish to fit to a circle using the method described in *Section 5.03.* The text created in *Section 5.04* will again be used. Note that the lettering can be welded or not. And if not welded, the letters can be **Split by Glyphs** or not:

- With the title selected, open the **Bézier Warp** window using one of the following ways:

  ◊ Click on the **Bézier Warp** icon on the **Magic Toolbar**

  ◊ Press **Ctrl+T**

  ◊ Right click on the screen and choose **Shape Magic>Bézier Warp** from the menu

  ◊ Go to **Edit>Shape Magic>Bézier Warp.**

Closed Path in Bézier Warp

- In the first example, the text is fit to a circular shape and the **Auto Size** option is chosen. Note that the **Manual Size** option could also have been used and will be selected in the example after this one:

General Settings
Smooth: 108
No Flatten
Auto Simplify ☑
Points: 4
Vert. Align: Top
Close Curve ☑
Parameterized ☑
Size & Position
○ Auto Size
Left: 25%
Right: 25%
○ Manual Size
Horz. Align: Center
Width: 93%
Height: 93%
Other
Zoom: 111%
Presets
No Preset

Text will initially be wrapped around entire circle. But after adjusting **Size & Position**, text will appear like this.
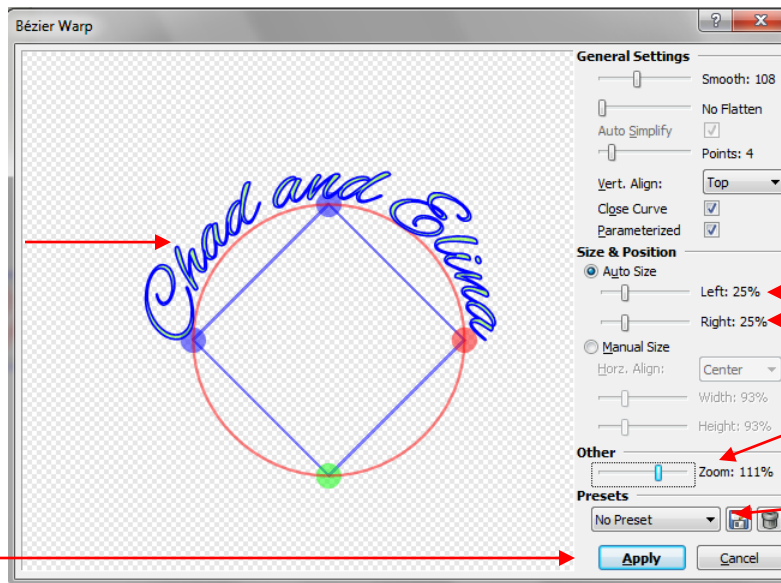
Scroll these two settings to 25" to fit text halfway around circle.

Option to zoom preview image

Option to save current settings

Click on **Apply** when done.

Open Path in Bézier Warp

- To use an open path, the **Close Curve** option is unchecked, so that the path is a line instead of a circle. Next, more **Points** are added and then the points are dragged to create the desired path. Use the **Zoom** setting if you cannot see your entire text.

Scroll **Smooth** setting to make curve more rounded

Increase **Points** to add more changes in the curve

Change **Vert. Align**: from **Top** to **Middle** to equalize top and bottom of letters

Uncheck **Close Curve** to create an open path.

Check the **Manual Size** box.

Adjust **Width** and **Height** to create desired look.

Text falls along custom design path

Path can be modified by dragging green, blue, and red handles points

General Settings
Smooth: 88
Flat: 0.021"
Auto Simplify ☑
Points: 4
Vert. Align: Middle
Close Curve ☐
Parameterized ☑
Size & Position
○ Auto Size
Left: 3.20%
Right: 3.20%
○ Manual Size
Horz. Align: Center
Width: 69.00%
Height: 108.30%
Other
Zoom: 100%
Presets
No Preset

Zoom out as necessary

Click on **Apply** when done.

87

- In this example, **Manual Size** was selected but you can also try **Auto Size** again, too! The **Bézier Warp** process is about experimenting and having fun with it! If you like certain settings, remember that the option to save settings (**Presets**) is available.

5.09 Creating an Overlay Title and Welding Text to Frames

- Creating a frame for welding single letters or images is very easy. Using the steps in *Section 5.03,* create a title. The font chosen for this example is *Times New Roman*. Also, **Split By Glyphs** is selected so that individual letters can be resized, if needed, to overlap the frame:

- Click on the **Import Basic Shapes** icon on the **Import Toolbar** and select **Polygons**. Scroll to locate the **Rectangle** shape and double click to add to the screen:
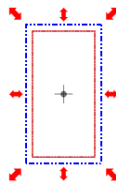
- On the **Virtual Mat** settings tab on the **Main Bar** (refer to *Section 4.04*), make sure you have **Outline** mode selected so that you will be able to see the rectangle and the letters clearly. Also, change to **No Snapping** under **Snap Position** so that you can resize the rectangle and letters with precision.

- It will also be easier to select individual letters if the rectangle is on its own layer and below the text. <u>With only the rectangle selected</u>, click on the **Selection to New Layer** icon (at the bottom of the **Layers Bar**) and then move the rectangle layer so that it is below the text layer:
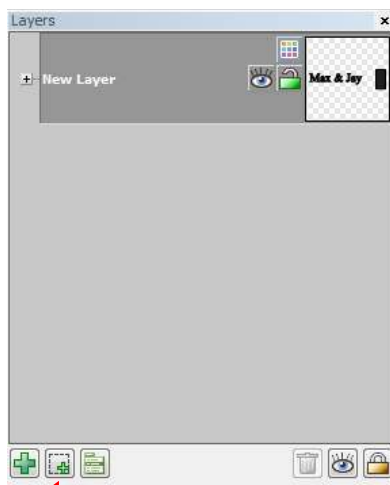
The selected rectangle is moved to its own layer by clicking on **Selection to New Layer** icon.
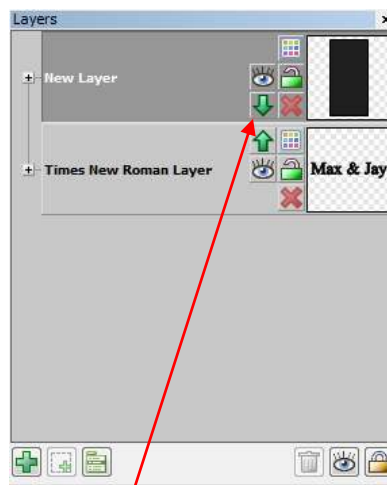
Then, the layer with the rectangle is moved below the layer with the text by clicking on the down arrow on that layer
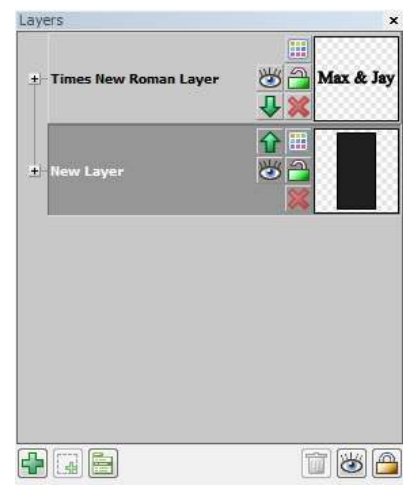
Now the two shapes are on separate layers with the text above the rectangle

- Resize the rectangle to be wide and thin so that the letters extend a little above and below it. Then resize and re-space individual letters, as needed, to overlap the rectangle. Remember to zoom in for a closer look at the overlap:

Zoom in to verify the overlap and adjust individual letters, as needed.
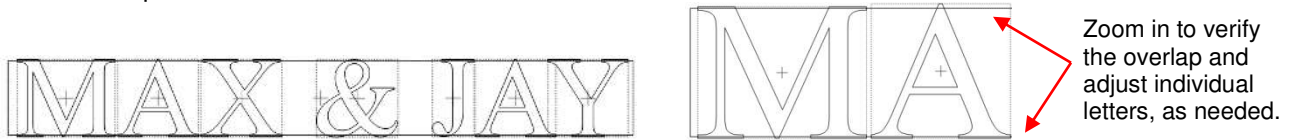
- If the regular weld tool were applied at this point, the letters would disappear, with the exception of the tiny overlaps at the top and the bottom:

- Thus, an alternative type of weld must be applied. The one to use is part of the **Boolean Join** options (Refer to *Section 8.07* for more details on the **Boolean Join**). But before the **Boolean Join** can be used, you must reduce the number of individual shapes to just two: the letters (as one single shape) and the rectangle. To combine the letters to be treated into a single shape, click on the preview of the text layer on the **Layer Bar** and then apply the **Join** function, which can be accessed in any of the following ways:

  ◊ Click on the **Join** icon on the **Magic Toolbar**
  ◊ Press **Ctrl+J**
  ◊ Right click on the screen and choose **Shape Magic>Join** from the menu
  ◊ Go to **Edit>Shape Magic>Join.**

- Now marquee-select both the rectangle and the letters and bring up the **Boolean Join** menu, using any of the following:

  ◊ Click on the **Boolean Join** icon on the **Magic Toolbar**
  ◊ Press **Ctrl+U**
  ◊ Right click on the screen and choose **Shape Magic>Boolean Join** from the menu
  ◊ Go to **Edit>Shape Magic>Boolean Join.**

- The following popup menu will appear and as you move your mouse over the various options, you will see your image change on the screen. The option called **B-A Difference** shows the rectangle outline disappearing where the letters overlap, which is what you want in this case:

Click on drop down menu to select one of the five choices.

When the image shows the weld you want, click on **Apply.**
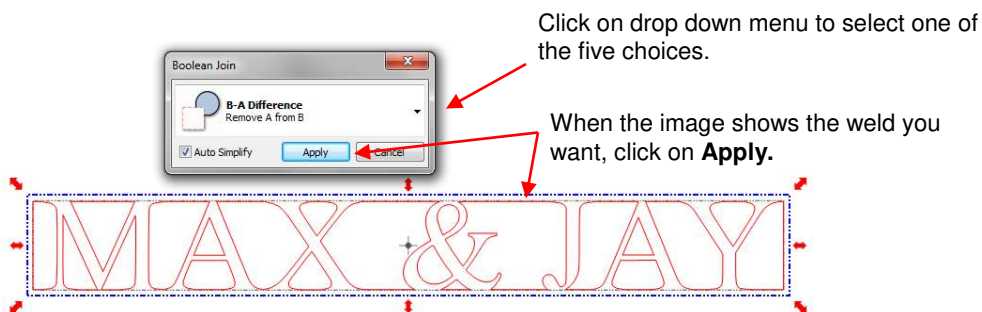
- Now, this resulting weld would work fine for an overlay where the negative part of the image is what you want to keep. To have an actual frame, add a rectangle to the outside and then select all, apply **Stack Ctrl+S** (which will center the two shapes) and perform a **Join** (**Ctrl+J**). Here are the two results:

Overlay Title

Title welded to a frame

5.10 Stenciling Letters

Video

- When creating a stencil, you want to keep the "waste" or "negative" of a cut. When using regular fonts, such as Arial, some of the letters, such as a "B", "a", and "e", will not work because they have interior paths called child shapes. Those child shapes are not connected to the waste portion of the material and will be lost from the stencil as shown below. The red arrows indicate the child shapes inside parent shapes for the letters "B","a", and "e":

- To avoid this, a procedure called stenciling can be used to connect the area outside of the letters to the child shapes, essentially eliminating them. While there are various ways to do this in MTC, the easiest is probably using the **Eraser** tool. In this method a straight line erase, at a preset width, results in the interior shape being connected to the outside of the letter.

- The **Eraser Tool** is the 8th icon ![icon] on the **Node Mode** toolbar and can be activated by first opening the **Node Edit toolbar** ![icon] (or pressing **W**) and then clicking the icon or pressing **F8**.

- Zoom in close on the lettering so that you'll be able to see exactly where you need to erase. When you activate the **Eraser Tool**, the following settings will appear at the top of the screen:

Leave unchecked ⟶

Size: 1.5 mm.
☐ Inverse Eraser

⟵ Enter the **Size** (thickness) of eraser you want to use.
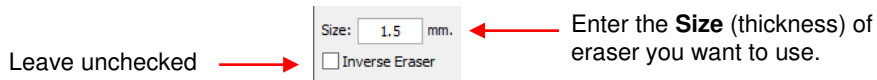
- The **Size** you enter will normally relate to the height and style of the lettering you are stenciling. In this example, the word "Batteries" is typed at a height of 1 inch. The eraser **Size** is set at 1.5 mm, but it could be smaller or larger depending on your personal preference.

- Hold down the **Ctrl** key and the left mouse button and drag the mouse in a straight line where you want to erase. A red line is drawn:

Small horizontal lines at the top and bottom of the red erase line indicate that the line is perfectly vertical.

Hold **Ctrl** key and drag mouse down, through the middle of the "B"

- Release the **Ctrl** key and the left mouse button. The "B" will now have a gap through the letter:

- Repeat the process with the other letters containing child shapes. If at any time something goes awry, use the **Undo** key at the top of the screen to back up a step.

- Now when you cut the letters to create a stencil, all parts of the letters remain connected:

Completed stencil

- Note that the erased lines do not always need to be vertical. For example, with the font Cooper Black, the "o"s are angled, thus you might want to angle the erase lines the same way:

Vertical Stenciling   Angled Stenciling on the angled letters

5.11 Open Path Fonts (OPF)

- Besides TTF and OTF, a third type of font, Open Path Font (.OPF) can be opened in MTC. This font consists of single lines/curves only:

- These fonts are useful when using a pen or engraving tool in your cutter or for designing single line rhinestone titles (Refer to *Section 8.12* for more information on the **Rhinestone** function in MTC.)

- Currently, this font type only works in Make The Cut and does not install into Windows for use in other applications. There are free ones to download here:

  http://www.iloveknk.com/Support/Software/Make-The-Cut/Open-Path-Fonts/

- You can purchase Open Path Fonts (also called Thin Fonts) from www.letteringdelights.com and from www.onelinefonts.com to use in MTC. Note that these also come with the TTF equivalents, which are not actual single lines and curves, but are still thin.

6. Tracing

6.01 Raster versus Vector

- All graphics are either raster or vector and there is no third type. While you can often tell by the file format, even that isn't always a good way to know for certain. For example, a PDF file can be made from either raster images or vector images and some PDF's will contain both types.

- You may not be able to tell, at first glance, whether an image is a raster or a vector. For example, this screen shot shows the same image in both formats:

Raster   Vector
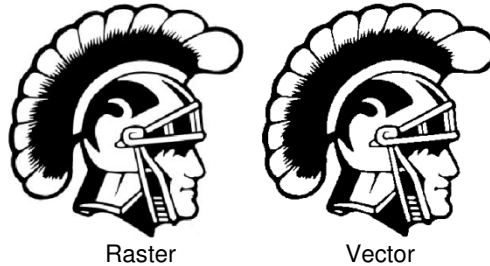
- Most everyone today has a digital camera and, at the very least, has heard the term "mega-pixel." A pixel is a square that is black, white, or colored. Photographs are made up of millions of these pixels to create the image you see. If you zoom in close enough on any raster image, you can see these tiny pixels. But when you zoom in close on the same area in the vector version, you will instead see lines and curves, not squares/pixels:

Raster   Vector
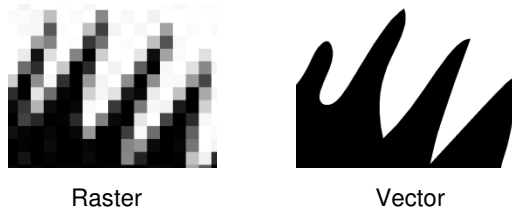
- A vector image isn't made up of pixels. Instead, a vector is like a connect-the-dot puzzle in which little dots (called nodes or points) are connected to each another with paths (either straight lines or curves). Digital die cutters need those paths so that that they can communicate to the cutter where the blade should travel in order to make the cuts you want… kind of like a road map. In MTC, the nodes look like this:
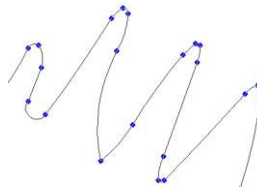
- As mentioned earlier, you can often tell whether a file is a raster or a vector based on the file format. Here are some guidelines:

  Raster: BMP, JPG, TIF, PNG, GIF   Vector: AI, EPS, WMF, DXF, SVG   Either: PDF, sometimes EPS & WMF

- To convert a raster into a vector, MTC offers two options: **Pixel Trace** and **Manual Trace**. Because the **Pixel Trace** feature in MTC is so fast and powerful, it is always worth trying it first. The only situation in which it may not be able to provide the results you need are (1) the image is very tiny or has a very poor resolution or (2) the image has poor contrast between one part and the next. For example, imagine a brown dog lying on brown carpet. How would the software know what part is the dog and what part is the carpet? Thus you may need to manually trace some images, so both functions are covered, in detail, in this chapter.

6.02 Finding Easy Images to Trace

- What qualifies as an easy image? The obvious answer is "an image which gives you the results you want!" But those who are new to the vectorizing process do not always realize which images are going to be easy and which ones are not. Note that you shouldn't be discouraged from trying to trace anything. But when you are learning the process, working with easier images will make the learning stage go smoother. So here are a few guidelines in selecting images:

    ◊ Black and white images are easier to vectorize than colored images

    ◊ Colored images with flat colors are easier to trace than those with variegated colors

    ◊ Large, high resolution images are easier to trace than tiny, low resolution images

    ◊ Images with tiny details will be more difficult to trace than simpler images with fewer details

    ◊ Photographs are usually the most difficult to trace, especially when some of the colors blend (such as the brown dog on the brown carpet, mentioned earlier).

- For your own personal use, there are many images that can be found on the Internet. Use Google Images to search and find images based on keywords. Google Images also has filters at the top of the window (under **Search Tools**) to limit your search to black and white, as well as to clipart or line drawings. Use these filters!

6.03 Pixel Trace

Intro: **Video**   Tracing for a PNC: **Video**   Trace and Edit Example: **Video**

- To begin the **Pixel Trace** process, it is recommended that you first double click near the top left part of the **Virtual Mat**. This will plant the **Caret** at that location and, as you play with the trace settings, you'll be able to see the results of the current-selected settings.

- The next step is to import a raster image. You can access the **Open Image for Tracing** window in any of the following ways:

    ◊ Click on the **Pixel Trace** icon on the **Import Toolbar**

    ◊ Press **Ctrl-Shift-T**

    ◊ Go to **File>Import>Pixel Trace**

    ◊ Drag and drop a raster image into a running instance of MTC.

- When the window opens, there are three options for importing your raster image:

Preview of image

Option 1: Browse to find image folder. Click on the image and the **File Name** will appear below. A preview will appear. Click on **Open** to import the image.

Option 2: Scan image into MTC

Option 3: Paste from Windows Clipboard

Click on **Open**
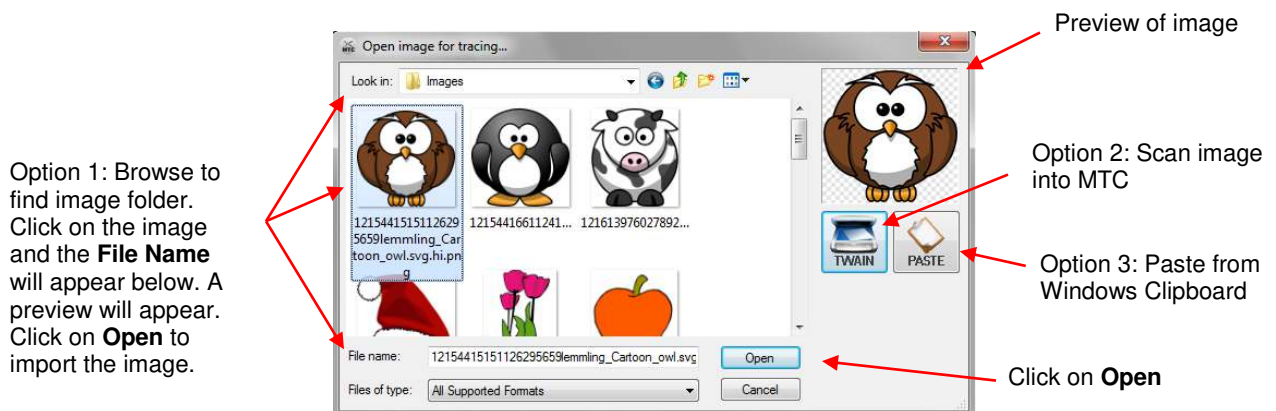
    ◊ Option 1: Import a file that is already on your computer, CD, flash drive, external drive, etc.
    ◊ Option 2: Import an image using a scanner connected to your computer

◊ Option 3: Copy/paste an image from Window Explorer or from the Internet

- The image will open in the **Pixel Trace** window. Note the following information in this window:

Visualization Settings: adjust for personal preference only. These settings do not affect the trace.

On-screen **Preview** will appear at current location of the **Caret**

The blue lines indicate the trace lines. The green is the fill that will show up if the trace is accepted.

Information about the original image: size, resolution, etc.

Trace options and settings (covered in detail below)

After each setting change, click **Apply Changes** to see new trace.

Information about the tracing: # of nodes, size, number of paths, etc.

Import when ready or **Cancel** trace process.

- When experimenting with the various tracing methods, remember the following:
    - ◊ Each time you change a setting, you need to click on the **Apply Changes** button to see the updated preview.
    - ◊ Before beginning the **Pixel Trace** process, position your **Caret** in the top left part of the screen. You will then also see a preview of the tracing on the main screen as you test different settings in the **Pixel Trace** window. You may need to move the **Pixel Trace** window to see this tracing.
    - ◊ Experiment! Remember that you can change settings and refresh the results without making any commitments. Take notes when you discover something new about tracing!
    - ◊ A combination of tracing methods might occasionally yield the best results. Each time you click on **Import**, you will be given the opportunity to place the current trace into your main window, but then return and try different settings or different methods. Be adventurous in your tracing! You can always go back and delete parts of a trace you don't like or duplicate tracings that are not as perfect as perhaps one of the others. *Chapter 7* contains methods for editing your tracings, as well.
    - ◊ For print and cut applications, mark the **Texturize Path** box so that the original raster graphic will also be imported with the trace. You may also want to mark the **Blackout Path** box so that only the outermost trace line will be imported.
    - ◊ If your imported graphic has many images and you only wish to trace one, or if you only want to trace a part of an image, hold the **Ctrl** key and marquee-select the portion you want:

Only these two images will be traced.

◊ If you decide to cancel your selection, just hold the **Ctrl** key and left click once anywhere on the preview.

- If you choose to use the **Scale** function to resize your image before importing, then note that as you are sliding the bar, the new size of the image will appear:
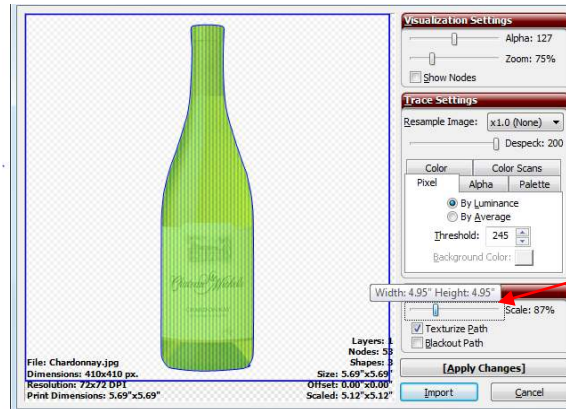
As the slider is moved on the **Scale** setting, the popup shows new dimensions of image.

6.03.1 Pixel Trace Method

- The pixel trace is a monochromatic vectorization. In the **Pixel Trace** window, blue trace lines and green fills will appear, regardless of the colors in the original image. These are defaults and can be changed by going to **View>Default Colors**. After tracing, the tracings in the main window will be colored according to the **Virtual Mat** color selected. They can be changed to other colors just like any other shapes.

- The **Threshold** setting ranges from 1—255. Decrease this setting to add more distinction between colors and increase the number of individual paths recognized and traced. Increase to lessen the distinction between colors and decrease the number of individual paths recognized and traced. At the extreme of 255, you will have nothing more than a box around the outside of the image being traced.

- The following screenshots show the same image with different **Threshold** values used and the resulting trace when imported onto the screen:

Image in **Pixel Trace** window:

Resulting trace after import:

| Threshold: 1 | Threshold: 75 | Threshold: 127 | Threshold: 250 | Threshold: 255 |
| Lots of detail | Losing wing detail | Wings missing | Detail in claws missing | Border only traced |
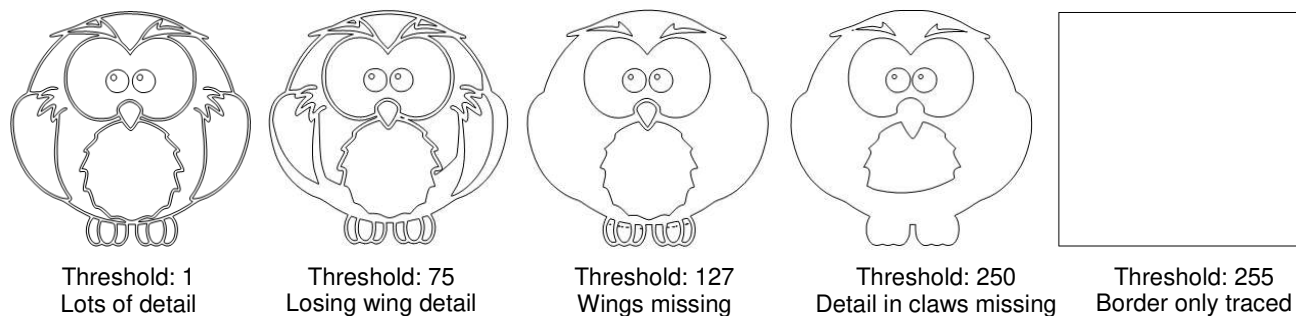
- As shown in the above example, the most detail was obtained with the lowest **Threshold**. Typically, this is not necessarily what you want in your tracing. The point is to experiment freely over the entire range of **Threshold** settings to see the effects of changing this important setting. At the same time, test the other available settings.

- Choosing **By Luminance** versus **By Average** can give different results. Start with **By Luminance** and switch if you are having problems getting a good trace. Refer to *Appendix B Terminology* for definitions of these two terms.

- The **Despeck** setting will filter out small paths that you may not want to be traced. Increase to remove these tiny paths from your tracing. However, if you see parts disappearing that you need, then decrease. You can also apply a **Break** to your tracing and then manually delete parts you do not want.

Despeck set to 0:
Tiny specks in owl's claws

Despeck set to 15:
Tiny specks removed

- The **Resample Image** setting can be used to increase or decrease how tightly an image is traced. Lower it to decrease the number of nodes and "loosen" the fit of the tracing. Increase it to increase the nodes and create a more precise fit. This can also be used to soften angular tracings, as shown in this trace of a cat:

Resample Image: x1.0
Cat image is too
angular

Resample Image: x0.75
Improved, but the cat's
head is still angular

Resample Image: x0.5
All parts are much
smoother now
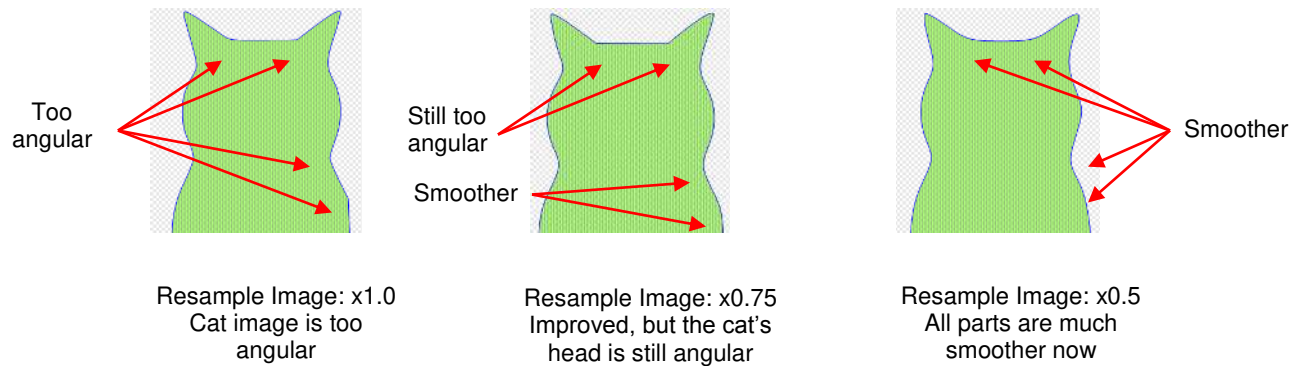
- The Background Color setting becomes usable when there is a transparent or alpha channel in the image you are tracing (such as you will find in some PNG and GIF files). The background color will define the semi-transparent pixels by blending them with the background color you select. Here is a photo of a white car that illustrates this feature:

- When imported into the **Pixel Trace** window, with default settings in place, note the parts of the image that are traced with the default white background selected:

Default values

Background Color
default is white
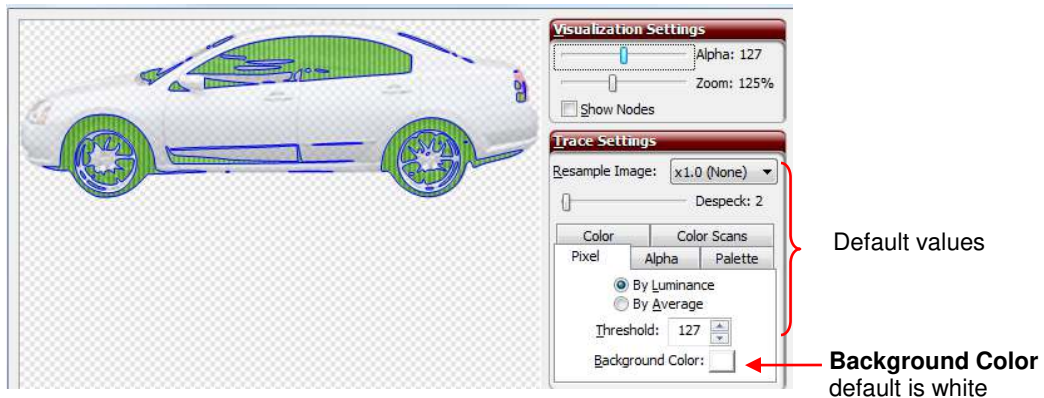
- Next, click on the **Background Color** box and a window will open. Select a different color, for example, red:

Click on another color
from palette.

Click on **OK**
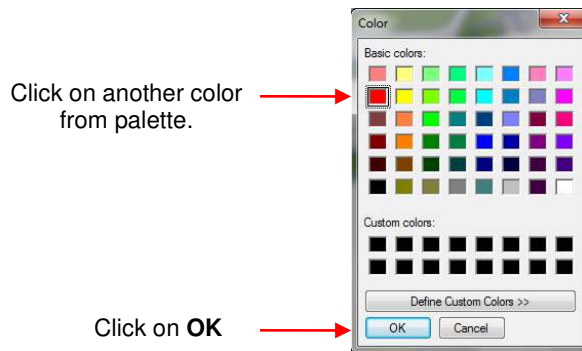
- The parts of the image that will be traced changes:

Changing the
Background Color to
red is the only change
made.
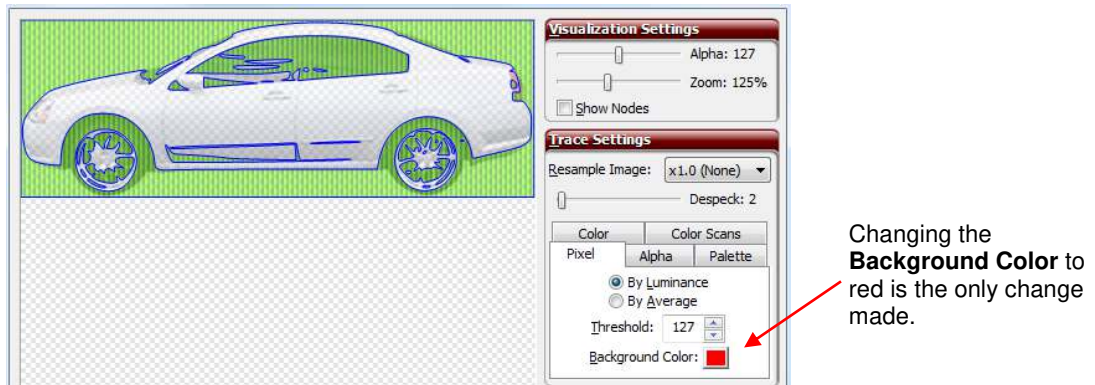
- This can be used to identify and trace different parts of an image. However, with the newer **Alpha, Palette**, and **Colo**r options available, this feature may not ever be something you need.

6.03.2 Alpha Trace Method

- Use the **Alpha Trace** for PNG files with transparent backgrounds (alpha channels). To switch to the Alpha Trace method, click on the tab named **Alpha** and following will appear:

Resample Image and **Despeck** will be used just as they were in **Pixel Trace.**

Click on the **Alpha** tab
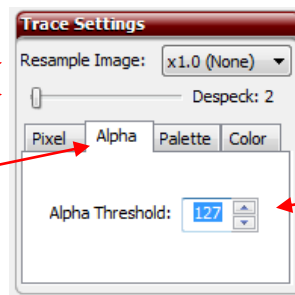
Alpha Threshold will be used just as it was in **Pixel Trace**, but probably won't require as much change.

- Use the **Alpha Threshold** in the same way that the **Threshold** was applied in the Pixel Trace method. You will most likely discover that less adjustment is required. Both **Despeck** and **Resample Image** settings also apply in the same way.

- In this example, we are importing a PNG image of a leopard. Before importing, make the following changes on the **Virtual Mat** tab of the **Main Bar.** These two changes will allow the image you trace to appear in full color, on the main screen, after tracing:
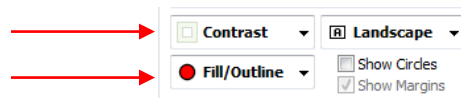
- Before using the **Alpha Trace** feature, note how the leopard appears when the default settings in the **Pixel** tab are applied. Also note that if you first double click in the top left part of the screen, you can "plant" the **Caret** in a location where you can see a clearer preview of shape that will be produced with those settings:
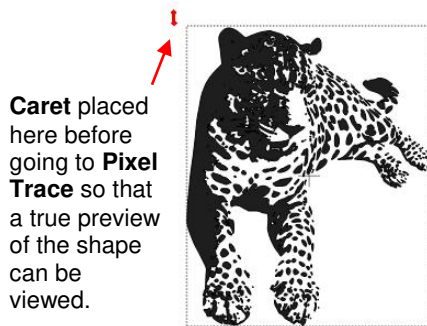
Caret placed here before going to **Pixel Trace** so that a true preview of the shape can be viewed.

This might be exactly what you want for a vinyl cut!
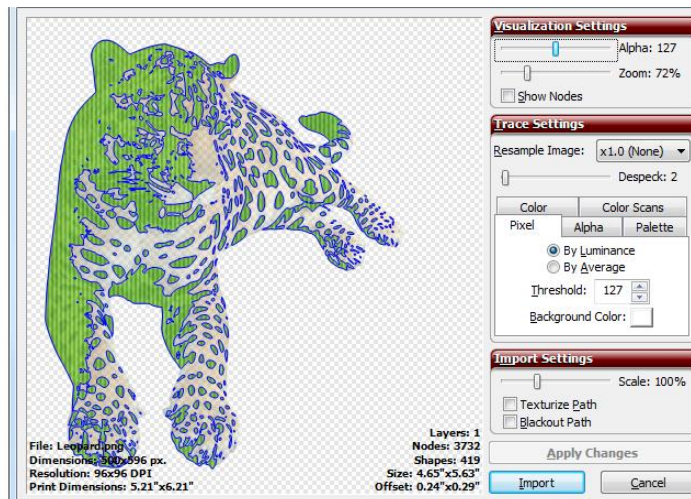
Default **Pixel Trace** settings when image is first imported.

- As indicated in the screenshot, the tracing could be used for vinyl cutting, since vinyl is applied using transfer tape. However, let's say this is going to be a print and cut application in which the leopard will be printed onto paper and then the outside border cut out. What is needed is a single contour line around the leopard. By experimenting with the **Threshold**, it is found that a setting of 240 is needed to obtain a smooth outline around the image. Additionally, either a **Despeck** of 18 or marking **Blackout Path** was needed to remove tiny paths traced inside the animal:

Threshold is increased to 240

Blackout Path is marked to remove tiny interior paths.
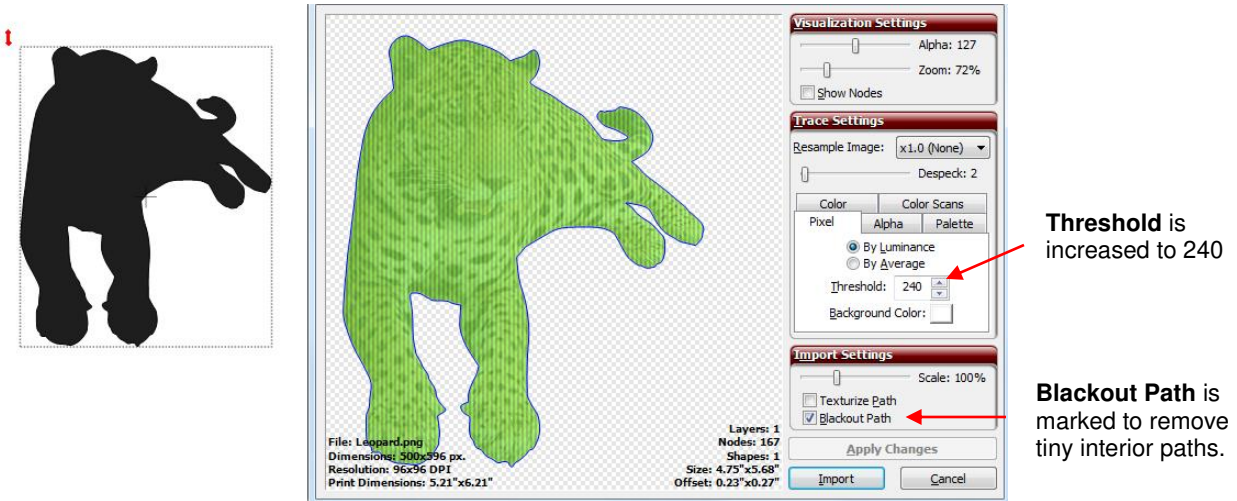
- However, if you switch to the **Alpha Trace** tab, the default of 127 immediately gives you, in this case, the outline you want:

Alpha Threshold default value of 127 gives smooth outline of shape
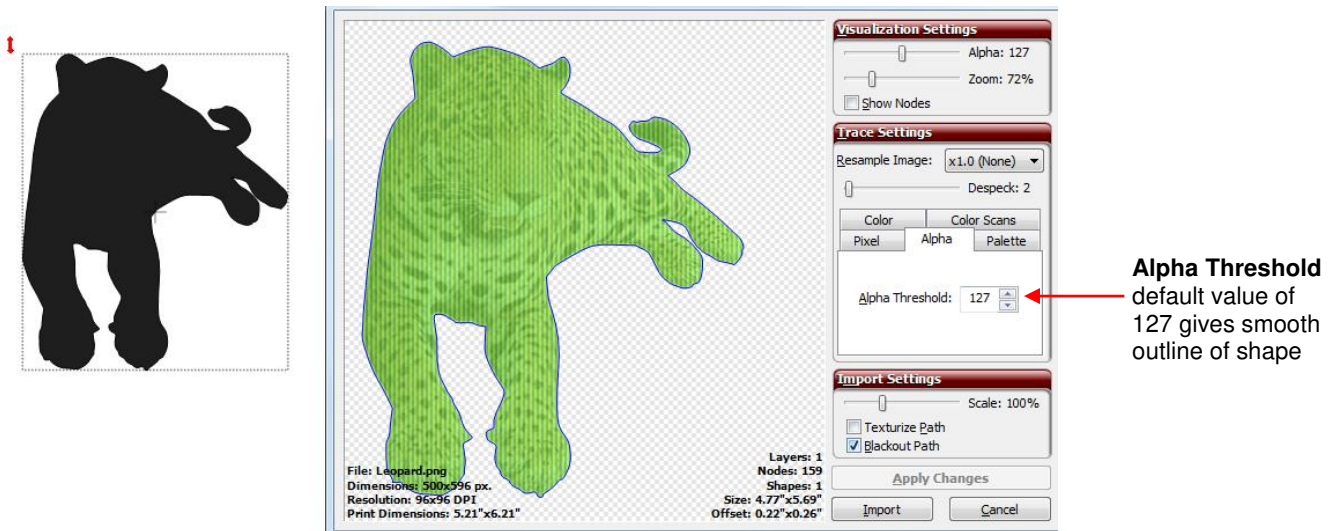
- Mark the **Texture Path** box, click on **Apply Changes**, and the image appears on the screen, ready for the print and cut process (refer to Chapter 9):
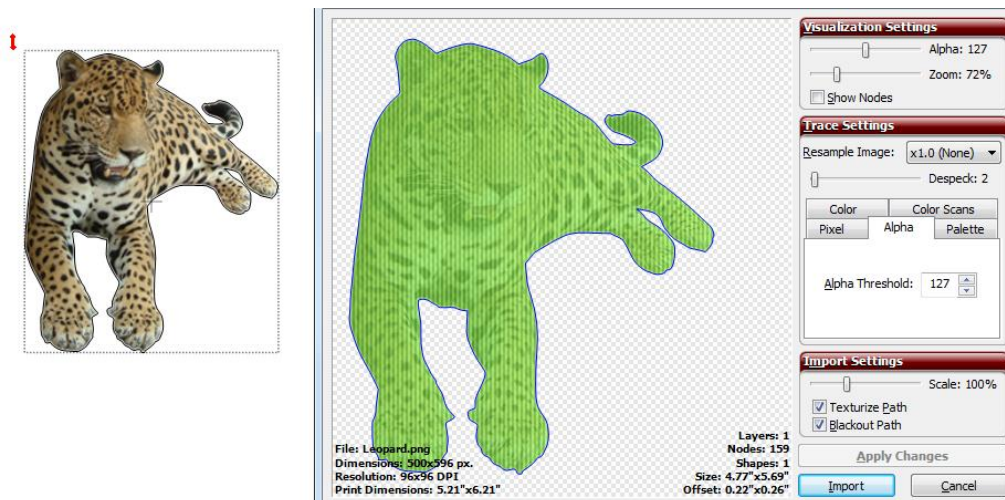
6.03.3 Palette Trace

- The **Palette Trace** provides color tracing which is especially useful when designing paper piecing patterns. In this example, the following flower image was imported and will be vectorized:

- With the **Palette Trace**, the most prevalent 16 colors in the image are identified and displayed. To switch to the **Palette Trace** method, click on the tab named **Palette** and the following will appear:

Resample Image and **Despeck** will be used just as they were in **Pixel**.

Median Cut or **Octree** can be used to generate the colors.

Click on the **Palette** tab

Up to 16 colors will appear)

- You can then select which colors to merge together, into one color, to be traced. Note that selecting **Median Cut**, instead of **Octree,** will use a different algorithm and produce a different set of 16 colors:

Median Cut is used to generate the colors.

A different set of colors is generated.

- For this example, we will return to the choice of using **Median Cut**. First, turn off all of the colors by right clicking on the boxes. A popup menu will appear which provides some options for which colors to have selected as well as how to sort them. Begin by choosing **Select None.**

Select options

Sort options

Click on **Select None**

- With no colors selected, you can then click on colors that are similar and would be merged together to simplify the trace. For example, for the flower in this example, begin by clicking on all of the shade of pink:

Click once on each pink box to mark it. If you inadvertently click on a color box you do not wish to include, click again to deselect it.

- Use **Despeck** to eliminate tiny unwanted paths and **Resample Image to** sharpen details or provide more curves to the image. Also, click on **Apply Changes** as you change settings so that you can see the effect of each change. Now, the parts selected to be traced will be outlined in blue and filled with green, just as we saw with the **Pixel** method:

In the main screen you will see the shape of the tracing at the location of the **Caret.**

Resample, as needed

Use **Despeck**, if needed

All of the pinks have been marked

A blue outline and green fill mark those parts that are colored the same as the pinks selected.

- Note that **Despeck** and **Resample Image** can be used, respectively, to remove tiny unwanted traced specks and to sharper or soften the tracing (just as they were used in the **Pixel Trace** method). In this particular case, only **Despeck** was applied.

- Now, before we accept this part of the image, you can add more colors if you wish. For example, the very center of the flower is more of a purple, but if you are going to cut this as a paper piecing pattern or as a vinyl design, perhaps you want to use the same color for the petals and for the center. Thus, clicking on that color, followed by click on **Apply Changes,** results in that color being added to the parts that are traced:

The flower center is now added to the tracing

Mark the dark purple color and then click on **Apply Changes.**

- Click on **Import** and the program will ask you if you want to **Continue Tracing** or **Finish Tracing**. Answer **Continue Tracing**. Now click on the pink and red boxes again to turn them off or right click on the colors and choose **Select None** from the menu. Then click on the green boxes and click on **Apply Changes**:
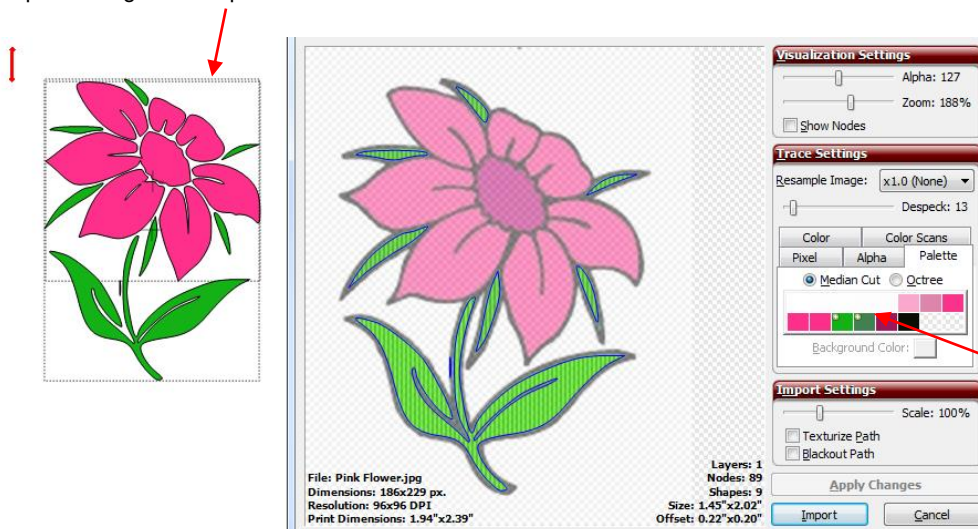
Mark the two green boxes after deselecting all of the pink ones. Click on **Apply Changes**.

- Click on **Import**. Then decide if you wish to also trace the black shadow around the image or create one using the **Shadow Layer** feature in MTC (refer to *Section 8.05*). If you decide to trace the black layer, then answer **Yes**. Repeat the above step, but only have the black color box selected.

- Now, before clicking on **Apply Changes**, stop and think about what you want to create. You do not want individual black parts to be created as separate shapes. Instead, you want the large black outline on which you will adhere the individual pink petals and green leaves. So, mark the **Blackout Path** option in order to remove any interior parts. Then click on **Apply Changes** to see the results:
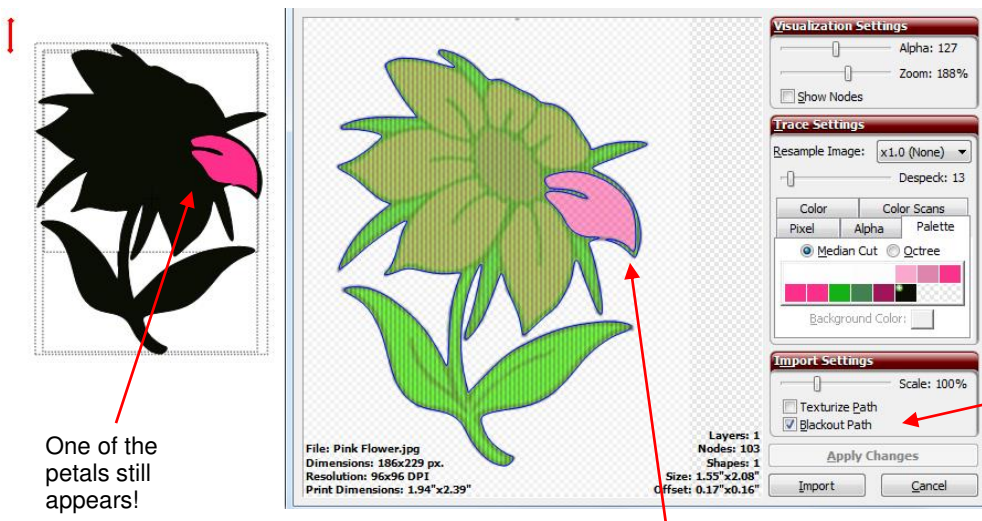
One of the petals still appears!

Mark the **Blackout Path** option and then click on **Apply Changes.**

There is one small spot where the black is not a continuous path.

- But there's a problem! Instead of seeing one large black outline of the flower, there's still a petal showing. This is because the black wasn't recognized as extending around the outside edge of that petal. But not to worry… increasing the **Resample Image** value to **X2.0 Times** provided a closer trace and which then covered that thin section around that particular petal:

102

Increase **Resample Image**. Then click on **Apply Changes**.

Outline now looks complete!
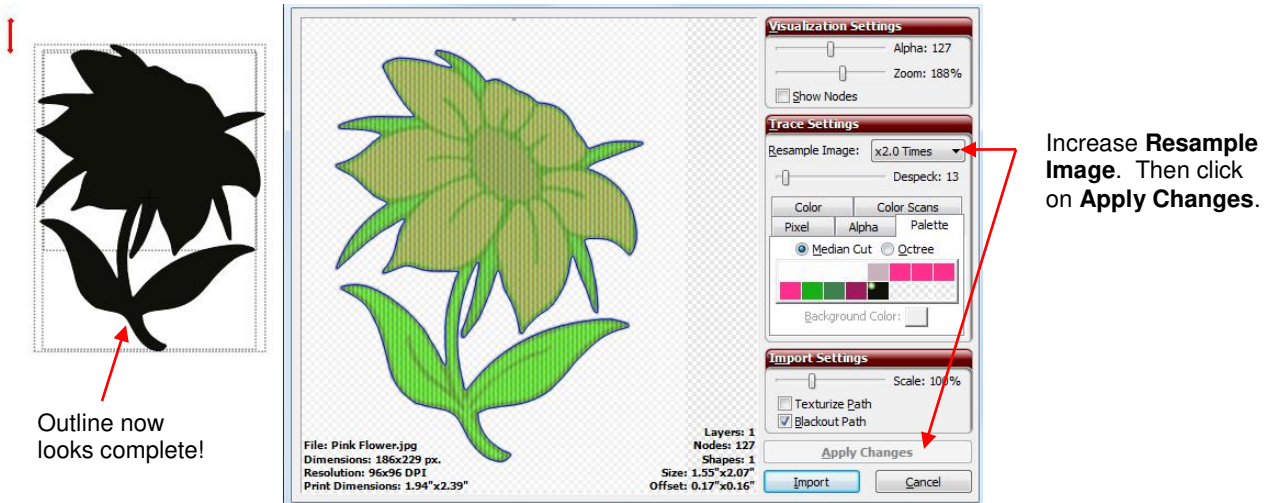
- Click on **Import** and answer **Finish Tracing**. On the **Layers Ba**r, you will see the different layers of your image. However, there is no **Show/Hide Layer** icon on those individual layers. Thus you need to click on the **Layer Options Menu** and select **To Each Its Own**:

While individual layers can be selected, you cannot individually turn the layers on and off for cutting by colors. Thus click on **Layer Options Menu** and select **To Each Its Own.**
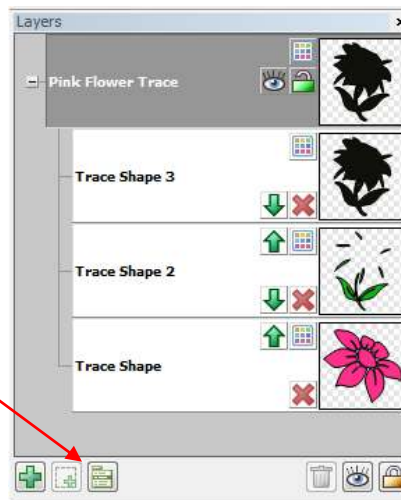
- Now each of the four colors has been moved to its own higher level layer where you will now be able to turn on and off individual layers for cutting. Also, you can move the layers up and down so that the black layer is on the bottom where it serves as an outline:

Arrows were used to change the order of the layers so that the black layer is now on the bottom
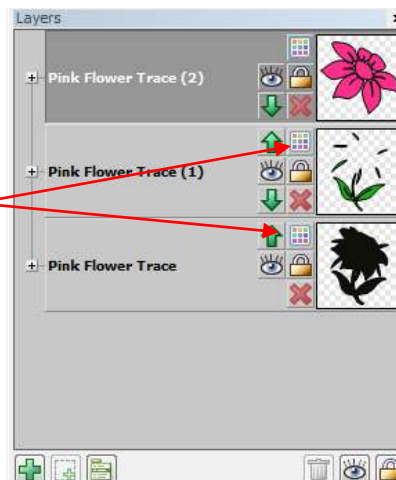
- Is the flower perfect? No. The blue arrows indicate where the image needs some tweaking:
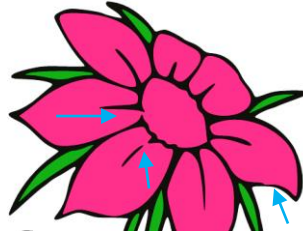
- There are easy-to-use editing tools to tweak the petals in this image. These tools will be presented in *Section 7.11.*

6.03.4 Color Trace

- The **Color Trace** is similar to the **Palette Trace** but you can individually click on a color, from your original imported raster, to trace and then specify a **Tolerance** level which will add or subtract similar colors to include in that selection. This is the image to be used in this example and has been imported:

- To switch to the **Color Trace** method, click on the tab named **Color** and the following will appear:

Resample Image and **Despeck** will be used just as they were in **Pixel**.

Click on the **Color** tab

Since this is a PNG file, **Background Color** can be modified, if needed.

Click on the white box to open a window for selecting the color to trace.

Increase or decrease **Tolerance** to add or subtract portions of the image to be included in the trace.

- The first step is to click on the little white box on the **Color Trace** tab. A window will open showing the imported image and you can select the first color to be traced. Let's start with the interior of the flower pot. An eyedropper cursor will appear and it can be moved around the screen to pick up the color of any part of the image. To select the color of the flower pot, simply place the eyedropper anywhere over the flower pot:

An eyedropper icon is moved around the image

This box indicates the color of the current pixel under the eyedropper.

RGB: 222,83,0
HTML: #de5300
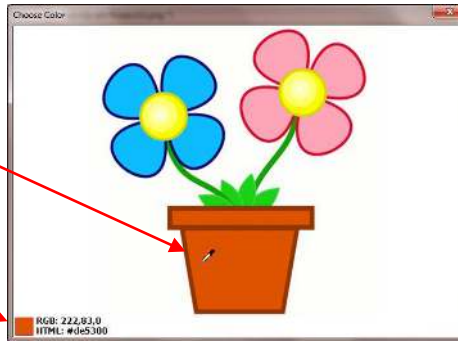
- When the desired color is selected, left click once to select it, click on **Apply Changes**, and the trace will be immediately made using current settings. Just like with the other trace methods, other settings in this window can be adjusted. In this particular case, the **Despeck** setting will need to be used to eliminate tiny paths being added to the tracing.

Blue lines and green fill indicate portion of image traced.

Preview on screen
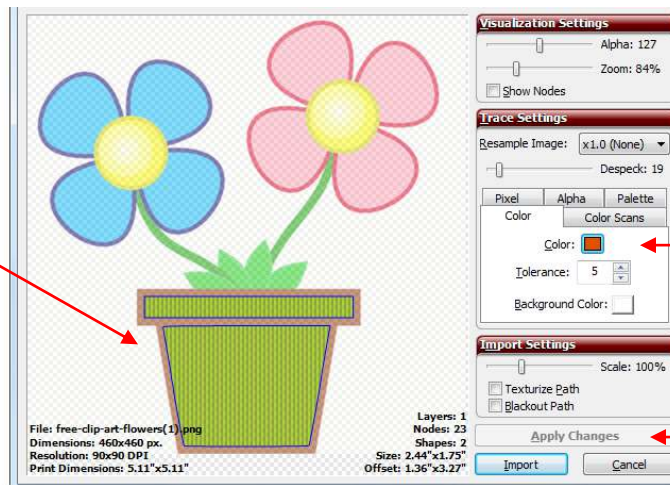
Despeck raised to remove tiny paths.

The **Color** box changes to the color selected with the eyedropper.

Click on **Apply Changes** each time a change is made to update the preview.

- Let's assume that you want the entire flower pot traced instead of just the interior. Increase the **Tolerance** setting to expand the color range that is close to the original color. In this example, the **Tolerance** is increased to 14 and the flower pot looks great! The entirety is now traced. Unfortunately, the outside of the pink flower also fell into this color range and is being included. But that's okay! That part can be deleted later after the tracing is completed:

Outline of flower is also traced.

Tolerance increased to 14
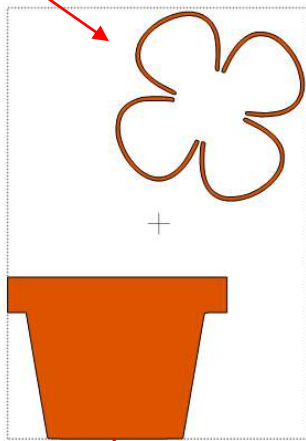
The entire flower pot is now traced as one shape.

105

- Click on **Import** and the program will ask you if you want **Continue Tracing** or **Finish Tracing**. Answer **Continue Tracing**.   Click on the **Color** box again and then pick another color. This time choose the green leaves:

Tolerance is still set to 14.
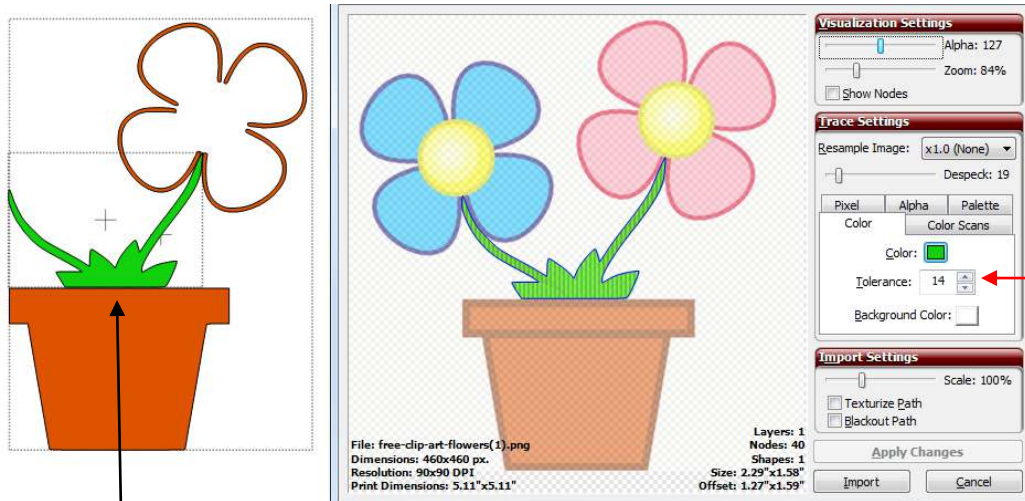
The leaves and stem are both traced.

- If you want the leaves and stem to be traced as different shapes, then reduce the **Tolerance**. It was required to reduce the **Tolerance** all the way down to 2 in order to get just the leaves traced:

Tolerance is reduced to 2.
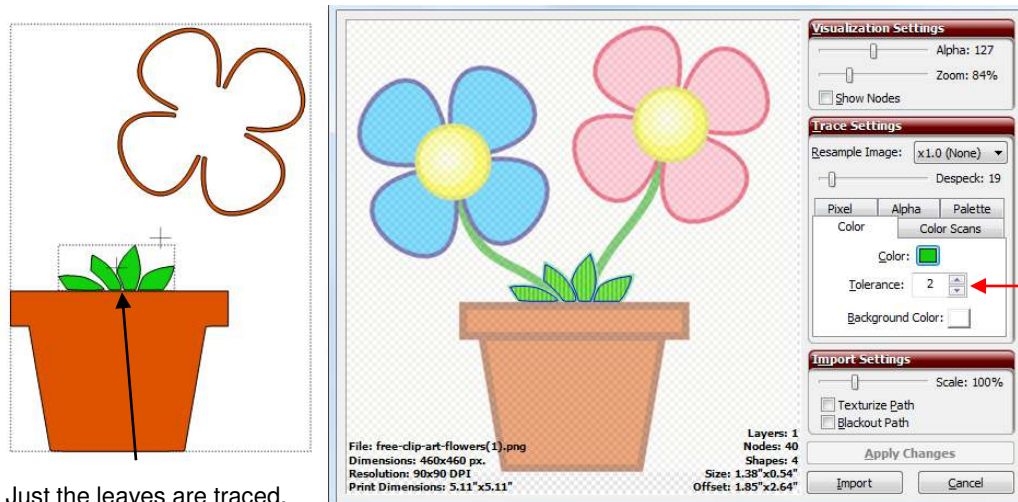
Just the leaves are traced.

- Click on **Import,** answer **Continue Tracing** to trace more layers, and then select the stem color. Again, the **Tolerance** must be kept low in order to trace the stem only and not include the leaves in the selection:

Tolerance kept low.
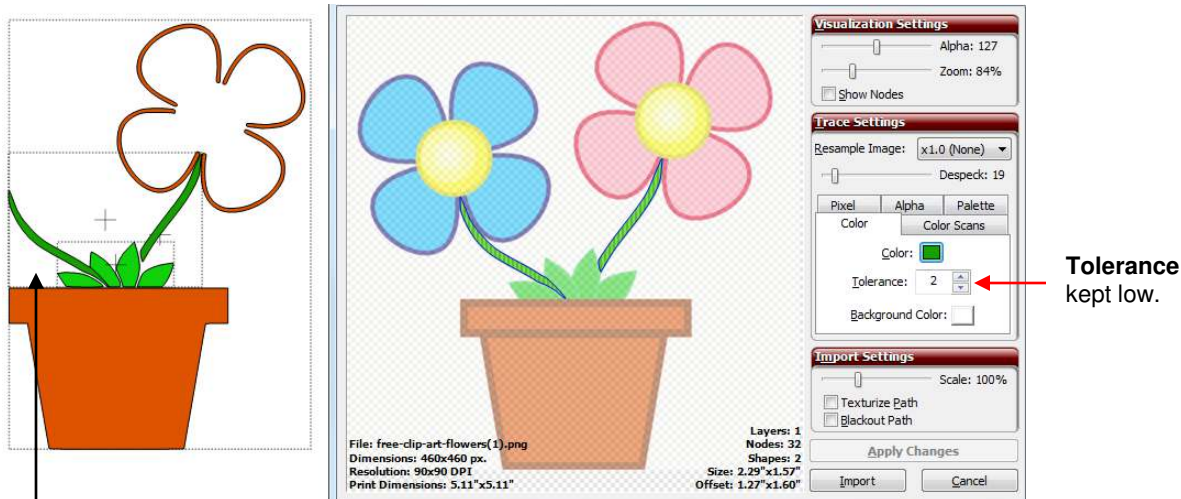
Stems are now traced.

- Click on **Import** and now repeat the same process for the blue and pink flowers.

- This leaves the yellow centers of the flowers. Click on the **Color** box to bring up the original raster for color selection. The centers are not one solid color, but rather radiate from an almost white color in the middle to a very dark yellow (almost brown) shade on the outside. In cases such as this, pick a shade somewhere in the middle of the color range (a darker shade of yellow, but not the darkest):

Pick somewhere between the lightest and darkest shades of yellow.

Watch this box for a medium shade of yellow to appear:
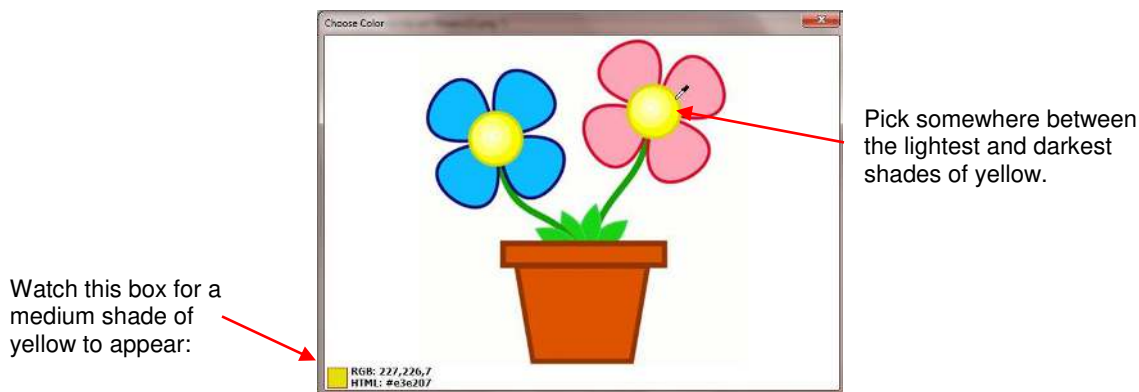
- Left click on the yellow. The **Choose Color** window will close. The **Color** box will show this selected yellow color. Click on **Apply Changes**. Increase the **Tolerance** and the full outside of the yellow regions are included in the trace:

Increase **Tolerance** to 5.

107
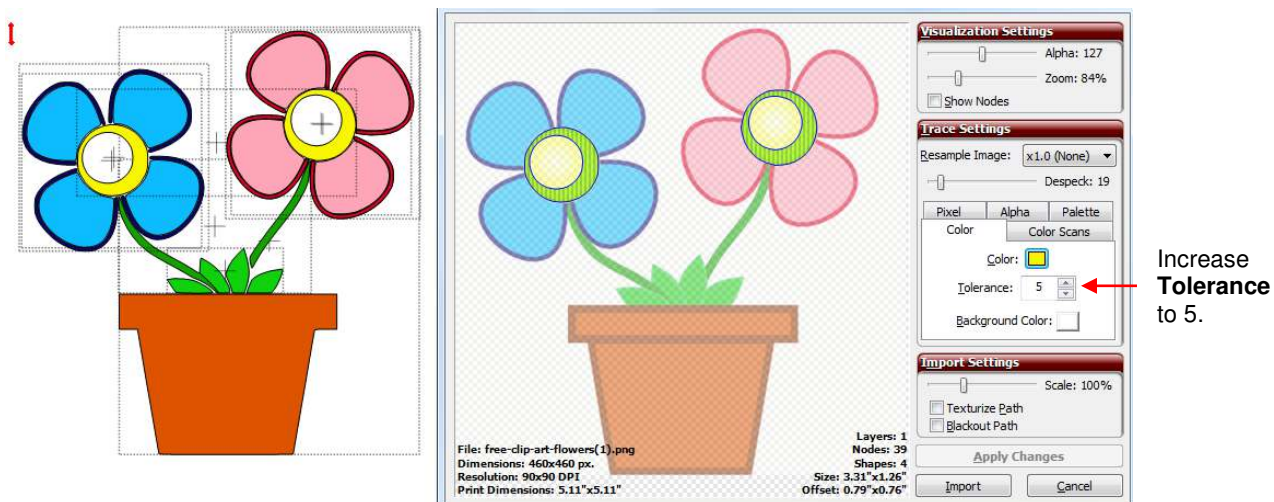
- The inner circles where the color is a very pale yellow are not included. Increasing the **Tolerance** gradually reduces the sizes of those inner circles:

Yellow centers expand with higher **Tolerance**

Increase **Tolerance** to 40.
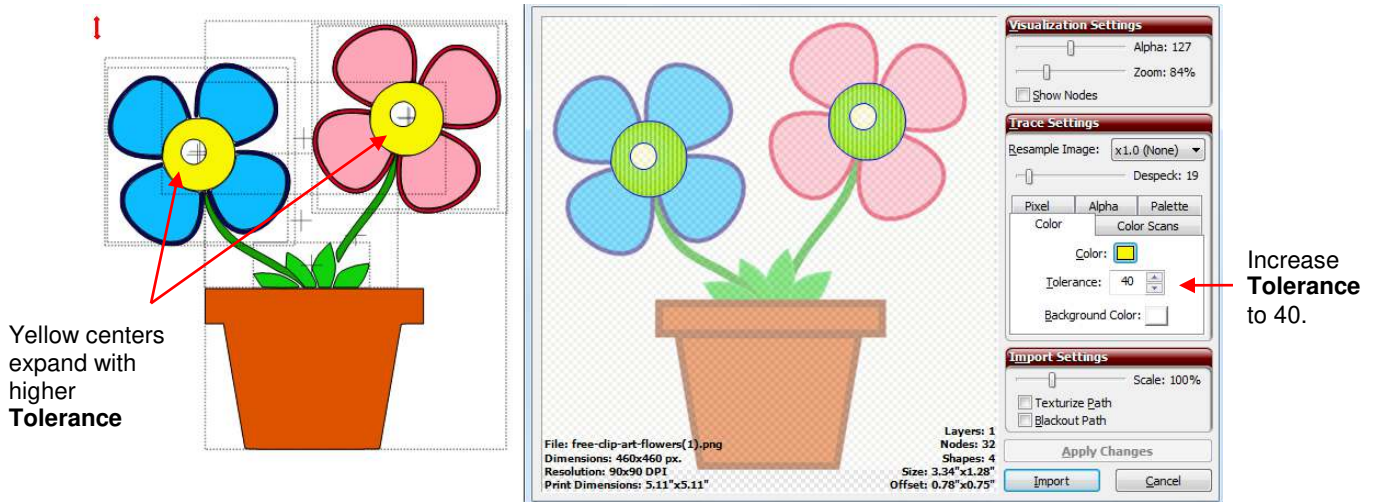
- However, there's an easier way to handle those! Just mark the **Blackout Path** box and they are instantly removed from the trace:

Yellow centers fill in completely with **Blackout Path** marked

Click on **Blackout Path**
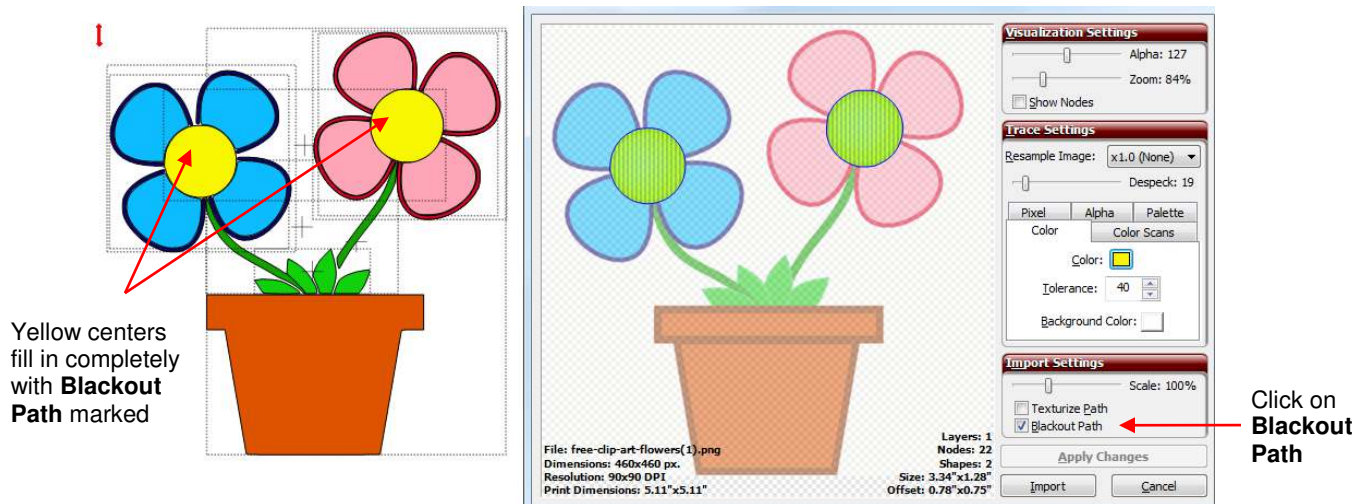
- Click on **Import** and, this time, answer **Finish Tracing**. The tracing part is complete:
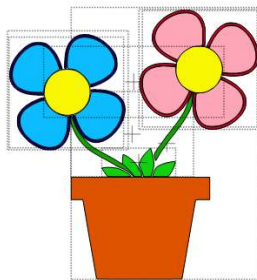
- Now for the editing. To select the tracing, click on the **Layer Options Menu** icon and select **To Each Its Own**. Now the image can be edited, as needed and the colors turned on or off for cutting.

After selecting **To Each Its Own** from **the Layer Options Menu**, each color that was traced, will have those shapes on their own layer.

Layer Options Menu
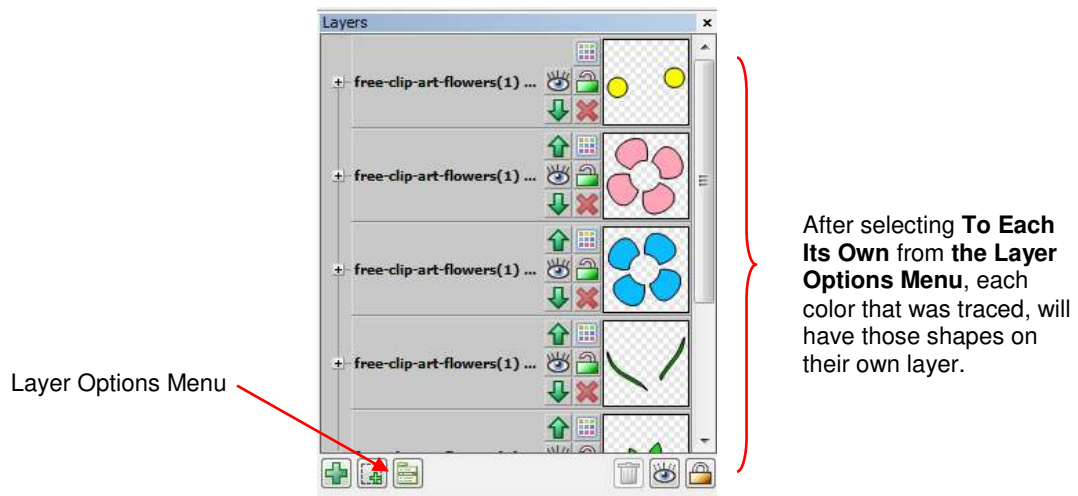
- Locate the path that had the extra outside flower border traced and select that layer:

Click on the layer preview

- Apply a **Ctrl+B (Break)** so that the pink flower border that was traced with the flower pot can now be selected and deleted. Then the flower is ready to cut from individual colors of paper, cardstock, vinyl, etc.:

6.03.5 Color Scans Trace

- Version 4.3.3 of MTC introduced a fifth tracing tool called **Color Scans**. This feature will trace by color (similar to the ways that **Palette** and **Color** tabs work) but it will do all of the colors in one step. You specify how many colors you want identified. This is the image to be used in this example:

- To switch to the **Color Scans Trace** method, click on the tab named **Color Scans** and the following will appear:

109

Resample Image and **Despeck** will be used just as they were in **Pixel**.

Trace Settings

Resample Image: x1.0 (None)

Despeck: 2

Pixel | Alpha | Palette

Color | Color Scans

Count: 8

Stack Scans

Blackout Outlines

Gray Scale

Background Color:

Click on the **Color Scans** tab.

Select the number of colors to be identified

Option for changing how layers are constructed

Option to remove internal paths from outline layer of image

Option to convert to shades of gray only

For PNG files, the **Background Color** can be modified, if desired

- The first step is to select the number of colors you want to scan. Always include white in the count. To see the original imported image, hold the right mouse button over the preview:

Hold right mouse button to see original image and count colors

Change number of colors or accept default of 8 to see what gets traced

Click on **Apply Changes** to see results of current settings

- In many cases, you might want to just go ahead and check the tracing results if the default **Count** of 8 is used. Before deciding any particular **Count** seems okay, be sure to check the number of shapes. In this case it shows 113:

Tracing around the flames needs to be tighter

Preview of traced image on Virtual Mat

Number of **Shapes**

110

- Some of the settings will now be adjusted:
  - ◊ Based on how loose the tracing appears to be, the **Resample** will be increased.
  - ◊ Based on the excessive number of shapes, the **Despeck** setting will be raised to about 20. This will eliminate any tiny shapes that are not wanted. Of course, it's important to also make sure you do not lose any fine detail you need.

- After clicking on **Apply Changes**:

Increased **Resample Image** and **Despeck**

Fewer shapes
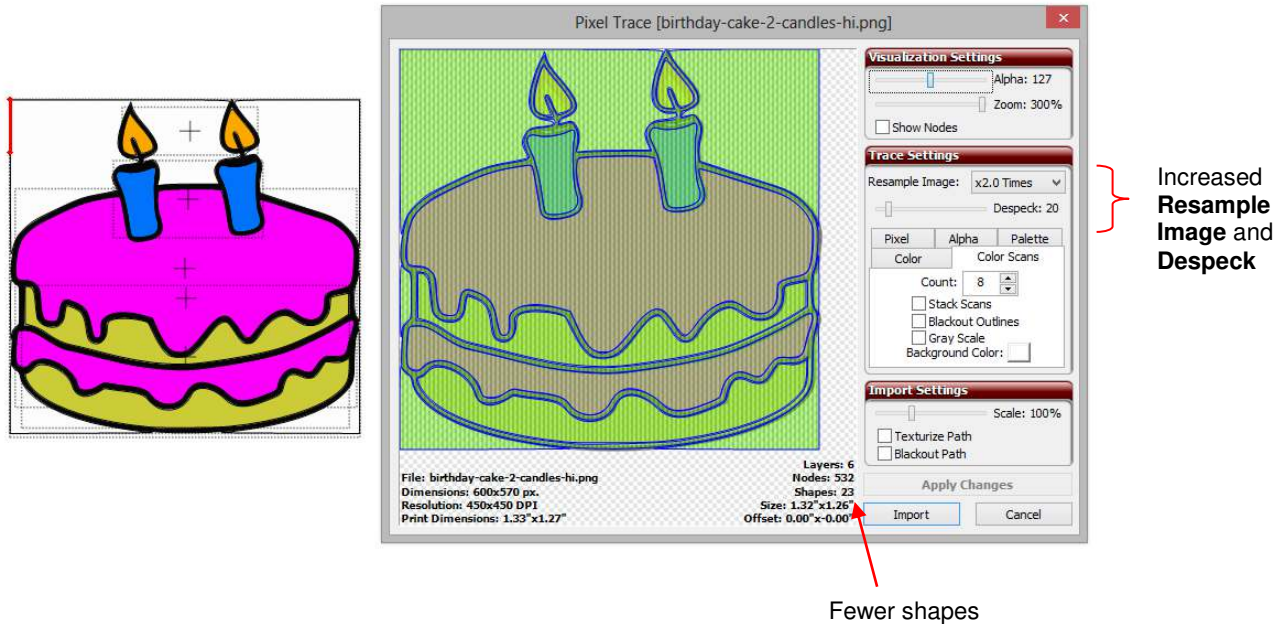
- The number of **Shapes** was reduced from 113 to 23. This still seems high. However, remember that every individual shape you see has a black outline shadow. In most paper piecing projects, you will probably prefer the black outline to be a single background shape. This is where the **Blackout Outlines** option can be applied.

- Also note that the lighter yellow on the flame is still missing from the image. If that detail is desired, then increase the **Count** and, possibly, decrease **Despeck**, until the yellow centers of the flame appear. In this case, a **Count** of 17 was required, but the **Despeck** was left at 20:

Yellow centers of flames are now showing

Increased **Count** to 17

Marked option for **Blackout Outlines**

Trace is improved: sharper points on the flames and layers "fit" one another better

Even fewer shapes

111
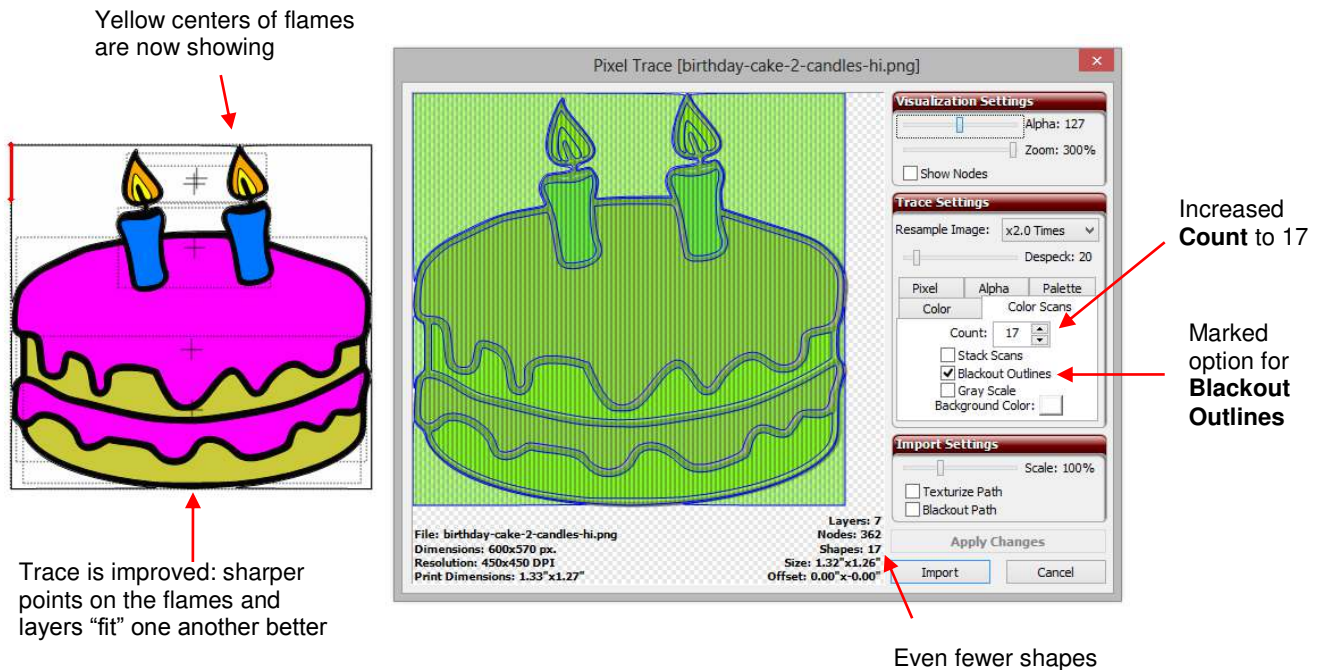
- When you click on **Import**, you will be asked if you wish to **Continue Tracing** or **Finish Tracing.** Select **Finish Tracing**. Click on **Finish Tracing.**
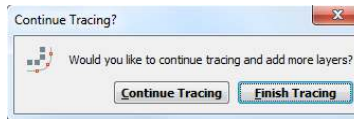
- Next, let's have a look at the **Layers Bar.** Opening the trace layer shows that each of the 9 colors not only has those shapes joined together, but also have been named with the corresponding color:

Even though **Count** was set to 15, only 7 layers/colors were traced. Note the layers are named based on the color.

- If the **Blackout Outlines** option had not be marked, then the black layer would not be filled in:

Blackout Outlines not checked   **Blackout Outlines** checked

- You'll notice there's also a white layer which will always be created unless the background of the image is a color other than white. This white layer can be deleted except in situations where there are white shapes that make up the image. For example, here's an image that's been traced and it contains white:
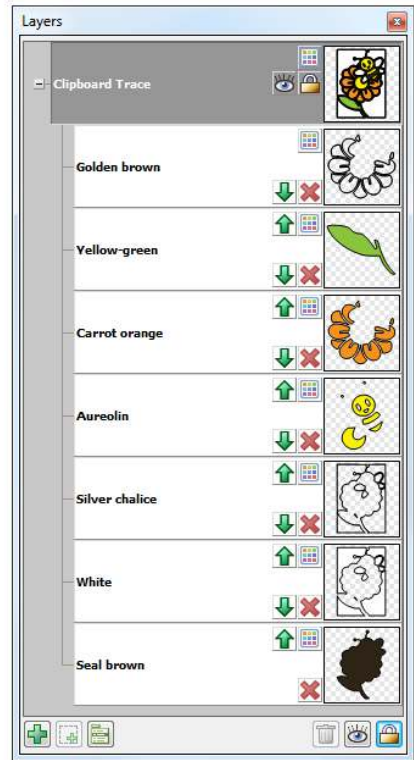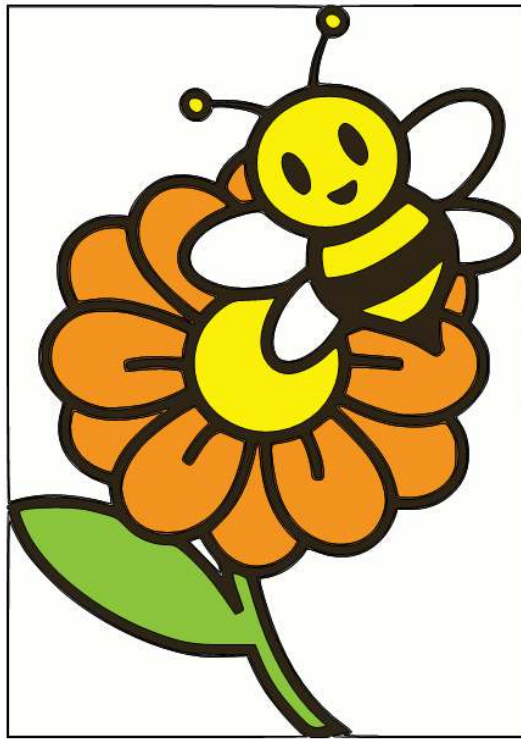
Seven layers

- It also contains a layer called Silver Chalice and another called Golden Brown. Before separating the various layers, you can also just try deleting the ones you feel you don't need. If you don't lose anything visually, then you know you don't need that layer. Just watch carefully in case it happens to be something small.
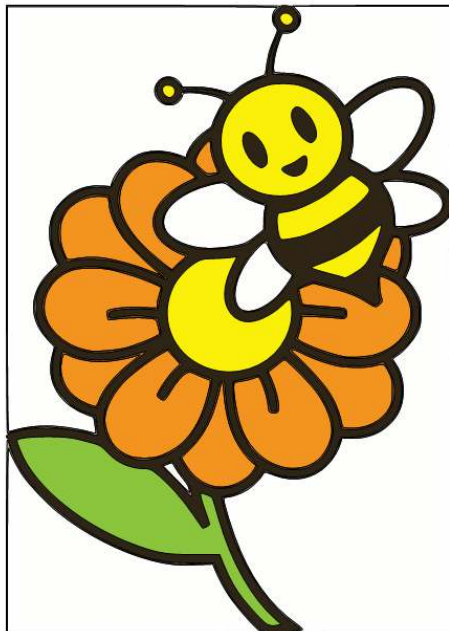
Traced image
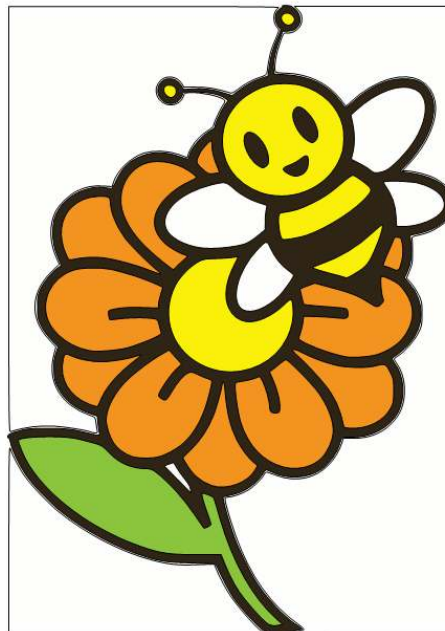
Traced image after deleting Silver Chalice and Golden Brown layers – no difference!
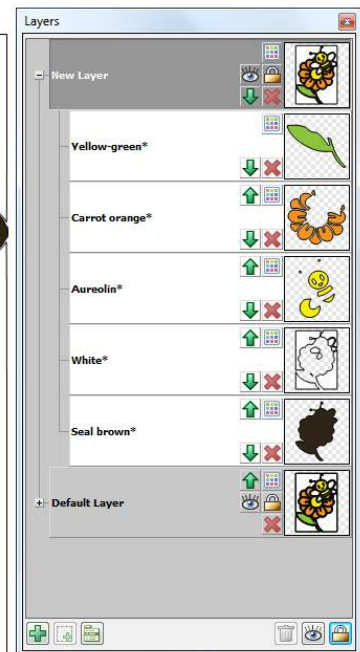
- Now, move the White layer aside so that you can edit out everything but the bee's wings. Use Break so that individual paths can be selected:
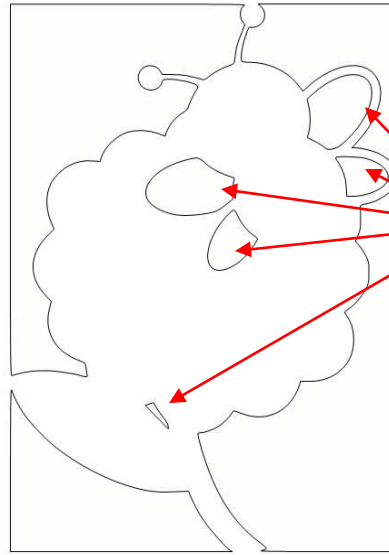
The only parts to keep are the four sections of the bee's wings and a small section between the steam and leaf of the flower.

White layer

- After breaking and deleting, those five white parts can be rejoined and added back to the image:

Stack Scans

- The **Stacked Scans** feature affects what parts of the image are traced and assigned to each layer. In certain printing applications, it would be advisable to have this function checked when doing a pixel trace in order to get a higher quality result for the printout. On the other hand, for most paper piecing applications, you wouldn't want to use this because you might miss out on specific parts you want to cut out. The easiest way to understand how this feature affects the tracing is to just look at what happens. The following example, in which a well-known logo will be traced, shows the effect of **Stack Scans**:

- After tracing the layers are separated. Note the differences in what is created:

Stack Scans not checked
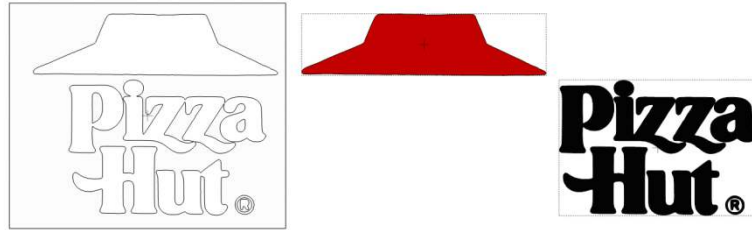
Stack Scans checked

- While the **Stack Scans** function was developed for certain printing applications, paper crafters may find it useful for some paper piecing projects. For example, using **Stacked Scans** to trace a simple image of a basketball will eliminate the need to individually adhere all of the sections of the basketball onto a black background. Instead, a single black overlay can be cut and laid on top of a single orange piece:

Image traced

Blackout checked: Eight orange sections would need to be glued onto the back background.

Stack Scans checked: One black overlay would need to be glue onto one orange background.
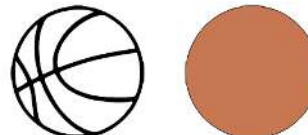
Grayscale Option

- The **Grayscale Option** introduced with version 4.6 converts imported raster images into the closest of 256 possibly shades of gray, based on the number of colors selected. It is well suited for photos or paintings.

- When selecting a photo for the **Grayscale** application, look for a solid color background and bright lighting on the subject you wish to trace. Here are examples of a good choice and a poor choice:

Will work well: solid background, good lighting
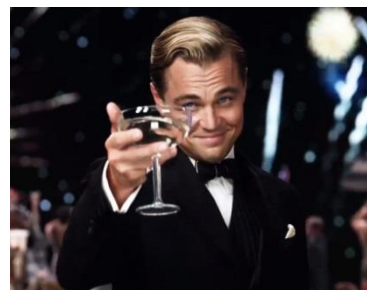
Will not work well: busy background, object in front of face, poor lighting

- Import the photo and select the **Color Scans** option. Because you will most likely be layering your cuts, mark the **Stacked Scans** option. Then start with a count of 2 and work upwards, comparing each trace to determine which is desirable. Remember that with increase in count, a new layer of cutting will be required:

Count: 2

Count: 3

Count: 4

Count: 5
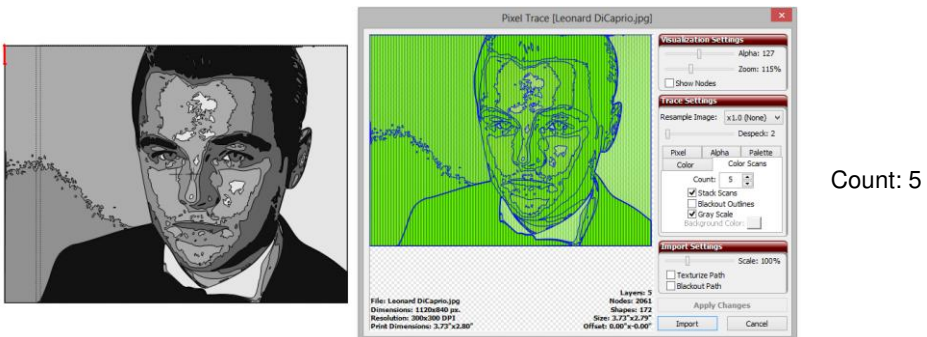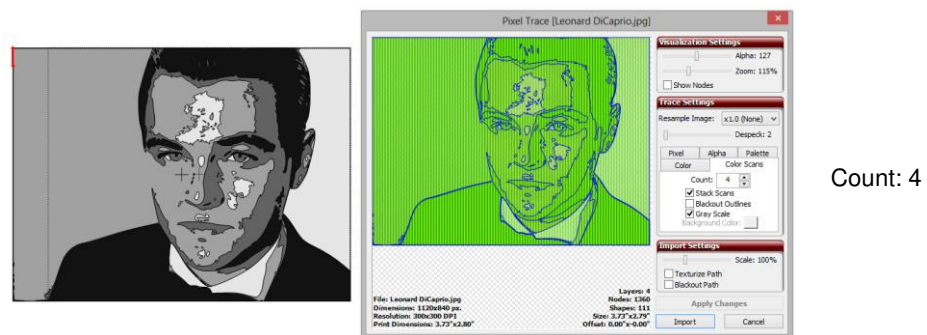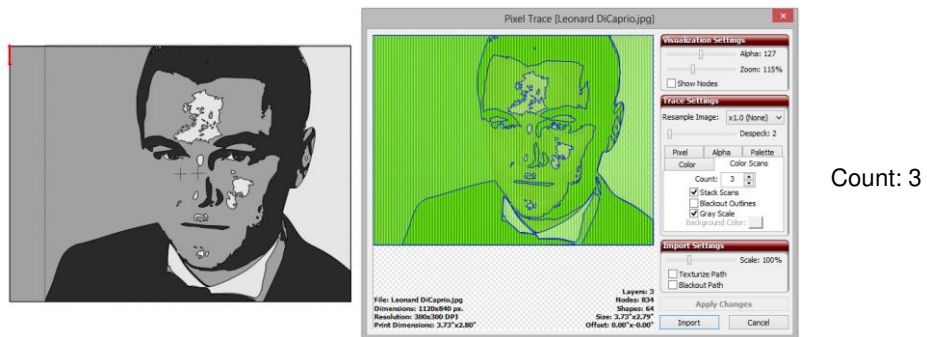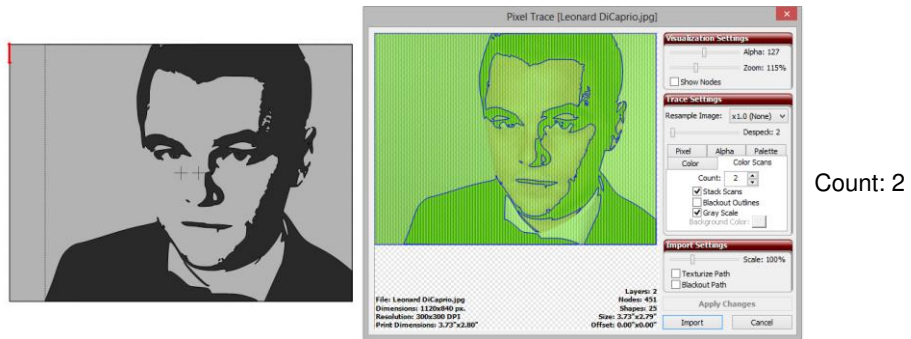
- The last two screenshots have the detail, but until the Despeck setting is applied, it's not clear which one might be best. Remember that any tracing can be edited, so large unwanted paths, such as the background in the lower left of the last scan, can be easily removed after the completion of the tracing process. Be sure to read relevant sections of *Chapter 7*.

- In the next two screenshots, **Despeck** has been set to 20:
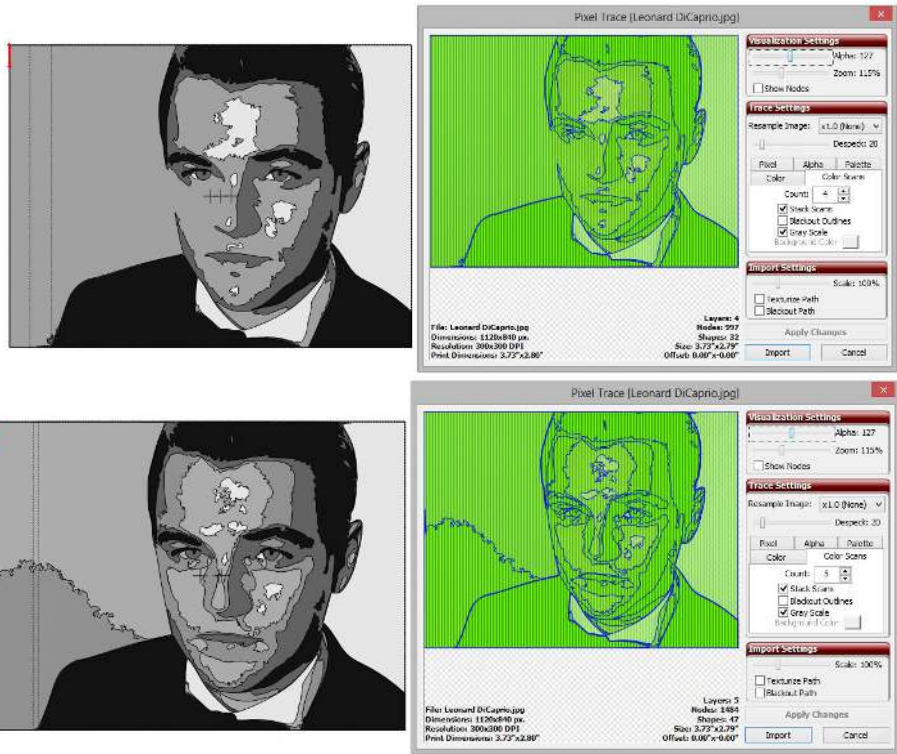
Count: 4

Count: 5

- It is decided that the simplicity of the one with a Count of 4 looks better. But there are some touchups required:

The background on the right doesn't match the background on the left.

White patches will be removed.

Small "squiggle" needs to be removed.
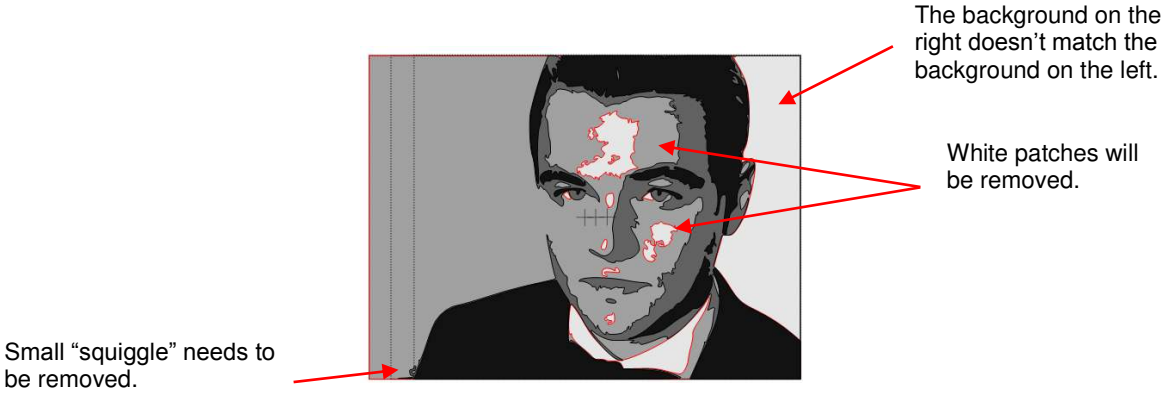
- After editing, we have the final grayscale trace of Leonardo DiCaprio:
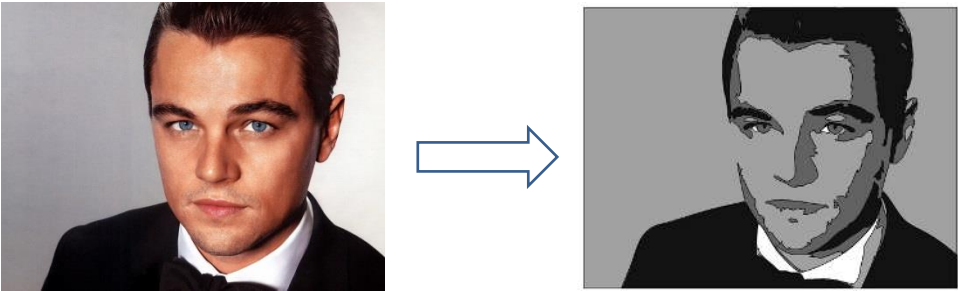
6.04 Manual Tracing

- There are two ways to manually trace an imported image in MTC:

117

◊ Using the **Draw Freehand Lines** tool (**Pencil Tool**) (refer to *Section 7.10):* If you own a graphics tablet and enjoy freehand drawing, you may find this method workable for manual tracing. It's not covered in this tutorial because it's fairly simple to freehand draw lines and curves as presented in *Section 7.10*. But unless you have a very steady hand, your tracing will probably require considerable node editing if you want smooth curves in the final design.

◊ Using the **Draw** Bézier Curves and Straight Lines tool (Bézier or Pen Tool) (refer to *Section 7.12*): Review this section and practice using the tool to draw both straight lines and curves before attempting to repeat the steps shown in the following tutorial.

Importing an Image for Manual Tracing

- Raster images can be imported using either **Pixel Trace** (refer to *Section 6.03*) or as **Texture** filling a shape (refer to *Section 3.14*). The former method will be presented here.

- Click on the **Pixel Trace** icon and browse to locate the image you want to trace. You can also scan in an image or paste an image that has been copied to the Windows Clipboard. In this tutorial, the dress image from this web site will be used:

    http://houseofstirfry.com/chia/templates/dress01.html

- Note that this dress could easily be pixel traced but because it provides a great example of how the Bezier curves can be drawn to fit a shape such as this, it will be used for the manual tracing example!

- Instead of making changes to settings in order to automatically trace the image, set the **Threshold** to 255 on the **Pixel** tab and mark the **Texture Path** box. Click on **Apply Changes** and the entire window will fill with green indicating a rectangle around the image will form the trace line:

Set **Threshold** to the maximum of 255.

Mark **Texturize Path** box

Click on **Apply Changes**.
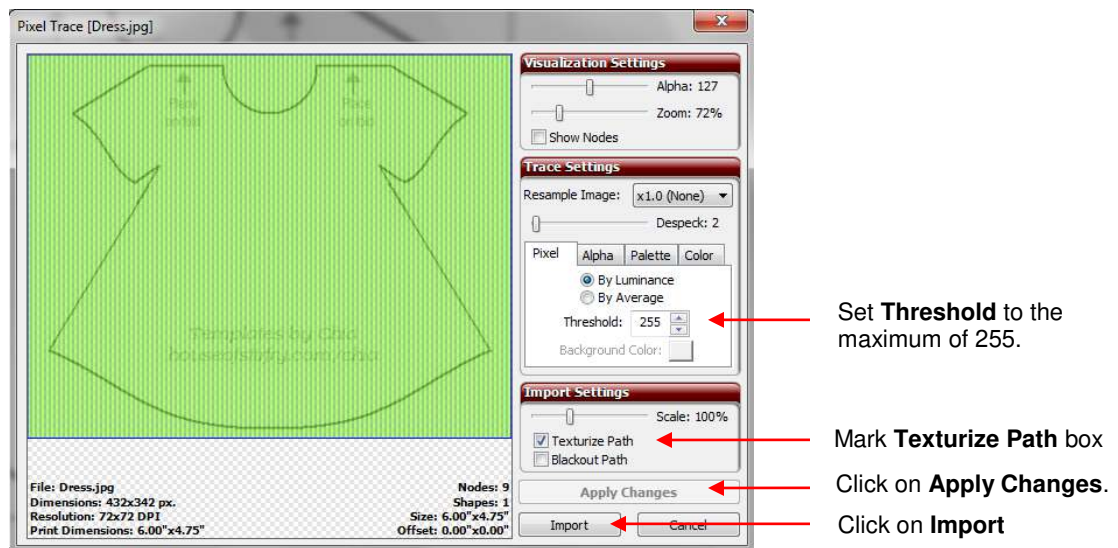
Click on **Import**

- Click on **Import.** Answer **No** when asked if you wish to trace more layers. The image will appear on the screen. Be sure to change your mat color to **Contrast** on the **Virtual Mat** tab (refer to *Section 3.04*) and also select either **Fill** or **Fill/Outline** so that you can clearly see the image:

- One little additional tip: when manual tracing and editing, it can often be troublesome if you inadvertently click on and select the imported image. A way around this issue is to have the import image on one page and perform the tracing on another page. But first, you want to make the imported image visible on other pages. To do this, right click on the current page containing the imported image and select **Visible**:

Right click on current page to open menu.
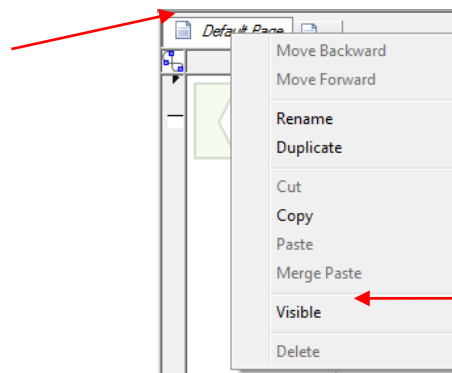
Click on **Visible**.

- Now click on the icon to add a new page and you will see the imported image clearly on the screen but not be able to inadvertently select it:
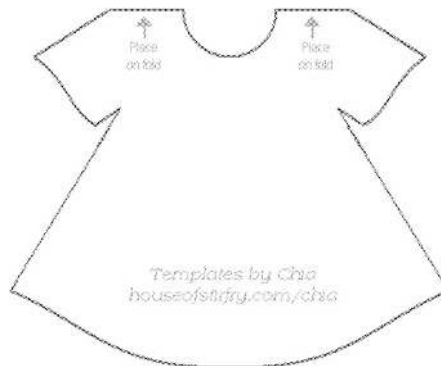
- The image will now be slightly grayed, but still distinct enough for tracing.

Manual Tracing Using the Bézier Curves and Straight Line (Pen Tool)

Simple: **Video**   Intermediate: **Video**

- As mentioned at the beginning of this section, you will want to read Section 7.12 to learn how to comfortably and successfully use the Pen Tool.

- Now, the best method for tracing a symmetrical image is to only trace one half. Then you can make a mirror image copy and weld to the origin to create a perfectly symmetrical shape. This is what will be done in this case because the dress is symmetrical.

- Before beginning the trace, take note of how many changes in curves and straight lines exist. This will help you understand where you will be beginning and ending paths as you trace:

Trace will begin and end here moving counter- clockwise around the dress.

Red arrows indicate where a change in direction or curvature occurs and where a new path begins.

Place on fold

Place on fold

Templates by Chia
houseofstirfry.com/chia
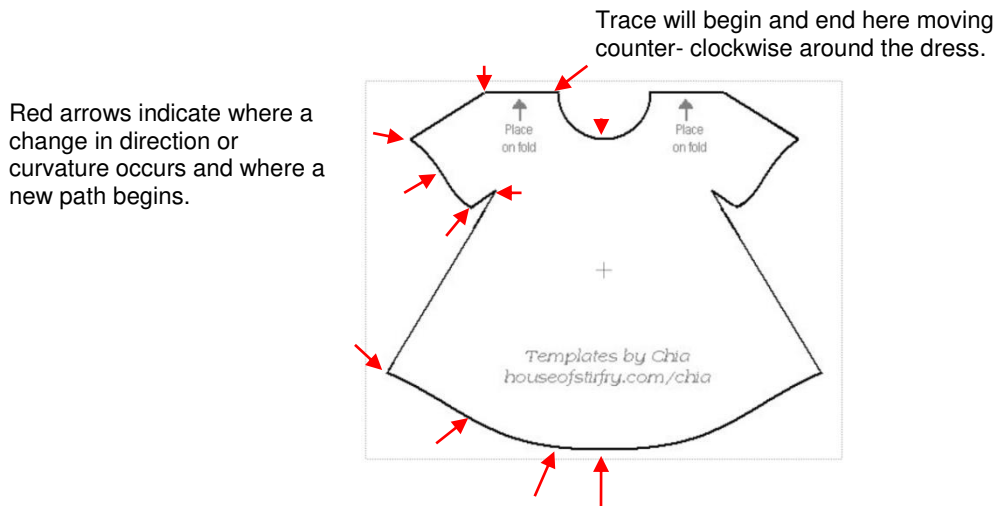
- The process guidelines are as follows:

  ◊ Left click once to plant a node. Right click to end a segment and plant the end node.

  ◊ A series of straight line segments can be made, one right after another, without needing to right click.

  ◊ Curve segments can also be created, one after another, although it may be difficult to get the curves to look exactly the way you want. For this reason, it is often easier to end each new curve by right clicking before starting the next segment.

  ◊ After ending a segment, you can left click in that same spot where the last one ended to begin the next segment. The new segment will automatically connect to that last node.

  ◊ You do not need to end a straight line segment before adding a curve segment. After left clicking to plant the last node for the straight line segment, click and hold the left mouse button at the point where that next curve segment should end and drag the mouse, as needed, to form the curve that fits the image. With the left mouse button still held down, right click to end that curve.

  ◊ When you reach the original starting point and right click on it, the shape will fill with color and you will have a closed path, in spite of starting and stopping along the way.

- Now to show this process in more detail:

  ◊ Trace the straight portion as show:

2. Left click once

1. Left click once to begin the trace here.

3. Left click once

Place on fold
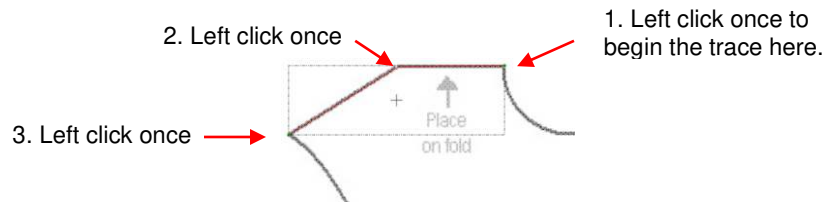
  ◊ Now, to do the first curve, go to the point at which the curve ends, hold down the left mouse button and drag the mouse so that the curve matches up with the dress. Then, while still holding down the left mouse button, right click to end the segment:

4. Hold down the left mouse button here and begin to drag the mouse to fit the curve.
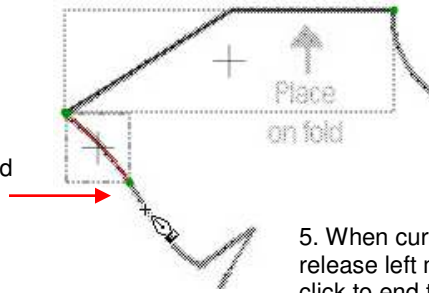
5. When curve is perfect, do NOT release left mouse button until you right click to end the segment.

◊ Next, left click where the last curve ended, move to where curve will end, hold down left mouse button and drag to form curve. Immediately right click to end that segment:
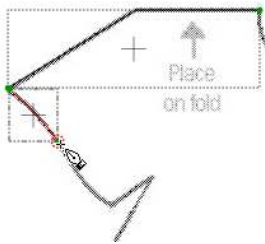
6. Left click on top of where the last segment ended.
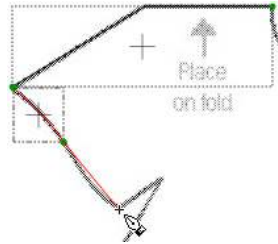
7. Hold down right mouse button at end of next segment.
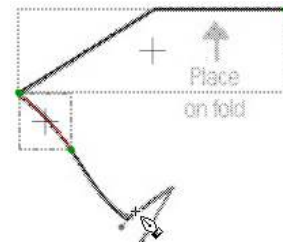
8. Drag mouse to fit curve and then right click before releasing left mouse button.

◊ Now there are two more straight line segments, so just left click at each one. Then, again, move to the end of the next curve, hold down left mouse button and drag to fit the curve and then right click to end:
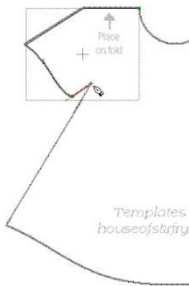
7. Left click on top of last segment end and then left click at top of inner sleeve.
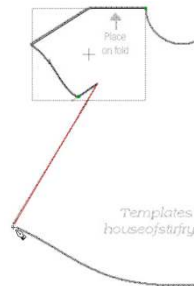
8. Left click at bottom of dress.
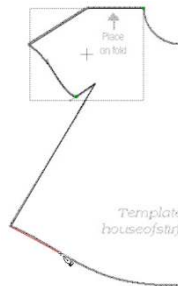
9. Hold down left mouse button and drag to fit curve of dress.
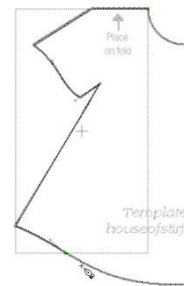
10. Right click while still holding left mouse button to end the segment.

◊ Start and end another curve segment to finish bottom curve of dress. Then do another short straight segment along bottom, followed by a long segment up center of dress::
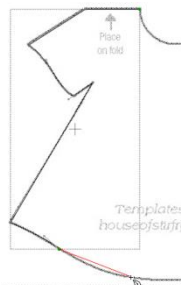
11. Left click on top of last segment end and then hold down left mouse button where curve ends.
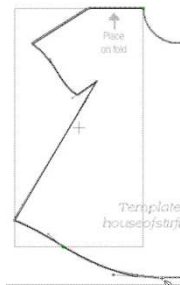
12. Hold down left mouse button and drag to fit curve of dress. Right click to end.
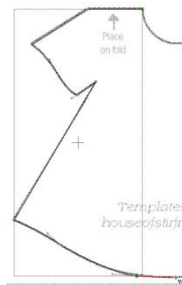
13. Left click where last segment ended and click again to finish straight part of dress bottom.
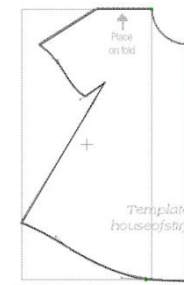
14. Left click at top of dress.

121

◊ Finally, hold down left mouse button at top where initial trace began. Drag mouse to create the neckline curve. While left mouse is still held down and extended out to form the curve, right click to end the segment and then release mouse button. The final right click will close the shape and the dress will fill with color:
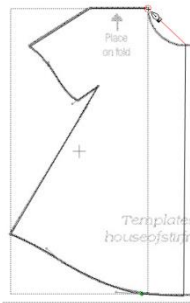
15. Move to top and hold down left mouse button over original starting point.
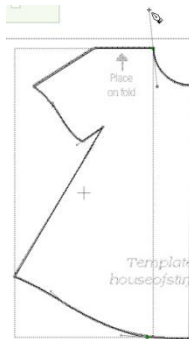
16. Drag mouse up to fit curve of dress neckline.
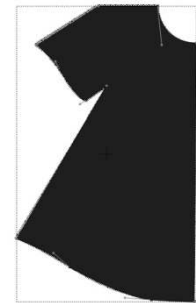
17. While still holding left mouse button down, right click to end the trace. Dress fills with color.

Flip/Mirror and Weld to Complete Symmetrical Shapes

- The final step to complete the dress involves making a mirror image copy and then welding it. Select the dress and do a **Copy/Paste in Place**. Then, immediately click on the **Mirro**r tool. (If the line of symmetry were horizontal, then you would click on the **Flip** tool). Then use the arrow keys to move the symmetrical copy to overlap as desired and perform the **Basic Weld**:
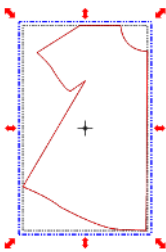
Copy dress trace and **Paste in Place**
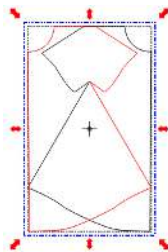
Apply **Mirror** tool
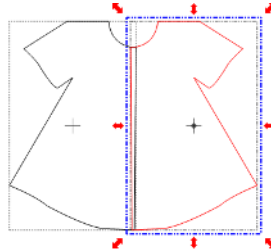
Move copy to overlap dress trace
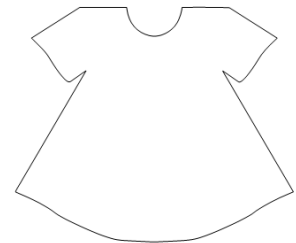
Apply **Weld** tool

7. Editing

7.01 Separating and Combining Shapes

Split

- The **Split** function is used to break up combined shapes into individual shapes, but keep inner paths joined to their respective outer paths. Sometimes the outer paths are called parent shapes and the inner paths are called child shapes.

- After selecting a combined shape, the **Split** function can be accessed in any of the following ways:

  ◊   Click on the **Split** icon on the **Magic Toolbar**

  ◊   Press **Ctrl+P**

  ◊   Right click on the screen and choose **Shape Magic>Split** from the menu

  ◊   Go to **Edit>Shape Magic>Split**.

- As was shown in *Section 5.04*, if you apply **Split** to a word such as "Bob", the child shapes inside the letters "B", "o", and "b" are still a part of the parent shapes:

The grid is visible through the inner "empty" paths.

There are no bounding boxes around the inner paths.
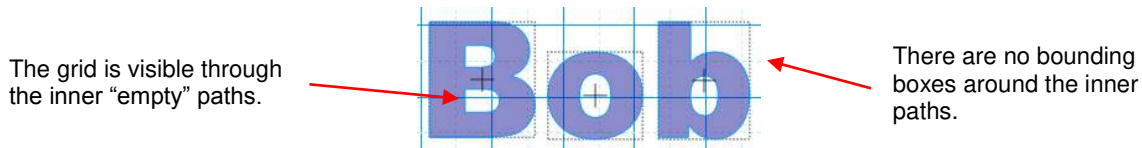
- Three things will let you know that the child and parents shapes are still joined to one another:

  ◊   There are no individual bounding boxes around the child shapes, only around the individual parent shapes.

  ◊   You can see the grid lines of the **Virtual Mat** inside the child shapes, indicating those are empty spaces:

  ◊   If you move one of the letters, the child shape moves with the parent shape.

- The same is true when you open a file and discover that all of the parts are combined as one shape. First apply the **Split** function to see if the file will then be broken into the combined shapes that make the most sense.   For example, the following SVG file (Cupcake Seashells by Judy Keating) is imported into MTC:

One single bounding box
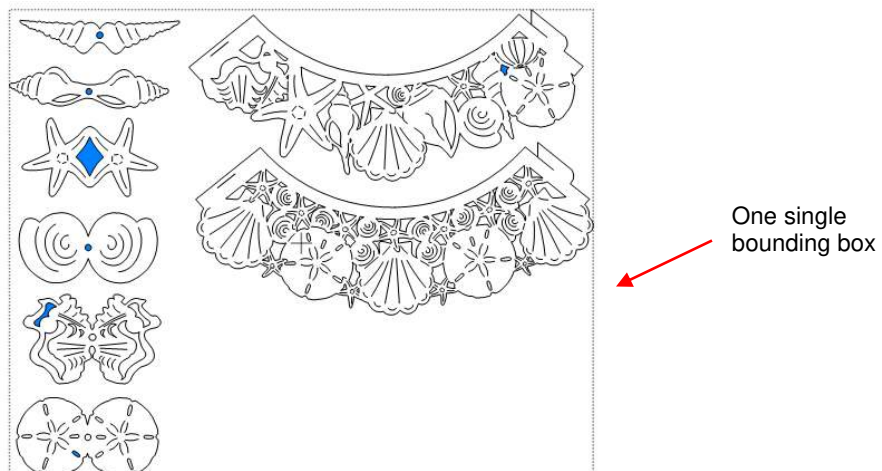
- The file imports as a single shape. But once **Split** is applied, there are 8 individual shapes which can then be individually moved, resized, re-colored, assigned to separate layers, etc.:

123

Bounding boxes now indicate a total of 8 different shapes.
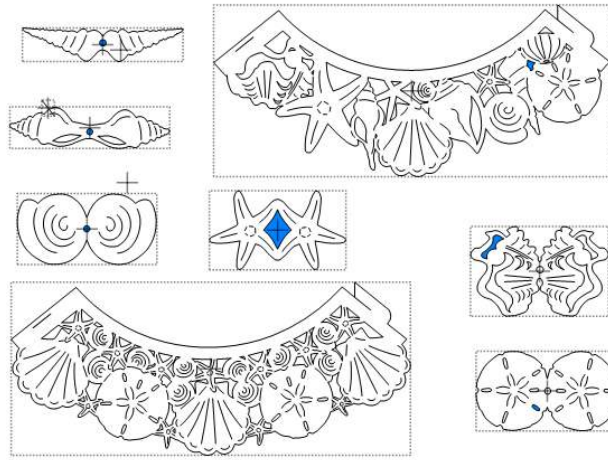
Break

- The **Break** function is used to separate every path, every curve, and every line into its own individual shape.

- After selecting a combined shape, the **Break** function can be accessed in any of the following ways:

  ◊ Click on the **Break** icon on the **Magic Toolbar**

  ◊ Press **Ctrl+B**

  ◊ Right click on the screen and choose **Shape Magic>Break** from the menu

  ◊ Go to **Edit>Shape Magic>Break.**

- If the **Break** function is applied to the "Bob" example used in the earlier section on **Split**, the child shapes then have individual bounding boxes and they fill will color. This indicates that the child shapes are no longer joined to their parent shapes:

The inner paths are now filled with color.

There are now bounding boxes around each inner path.
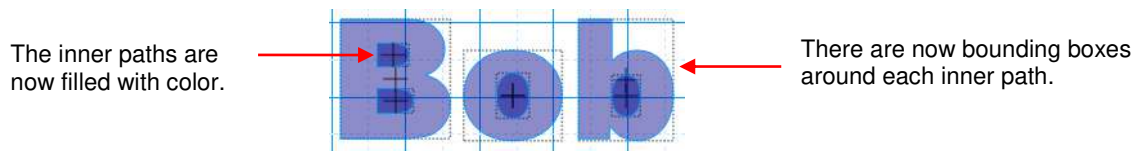
- Once you apply **Break**, you have complete editing control over every individual shape within a design. But be careful! It's also easy to inadvertently move an individual shape (especially the tiny ones) and you can risk messing up the design. So, only use **Break** when needed and then, most importantly, know how to rejoin your shapes, which is covered in the next section.

Join

- The **Join** function is used to combine individual paths, curves, and lines into a single shape. This is basically the opposite function to **Break**.

- After selecting two or more shapes, the **Join** function can be accessed in any of the following ways:

  ◊ Click on the **Join** icon on the **Magic Toolbar**

  ◊ Press **Ctrl+J**

  ◊ Right click on the screen and choose **Shape Magic>Join** from the menu

  ◊ Go to **Edit>Shape Magic>Join.**

- If the **Join** function is applied to the "Bob" example in the above section on **Break**, the word will now become all one shape and even the individual letters can no longer be selected:

The grid is visible again inside
the inner parts of the letters.
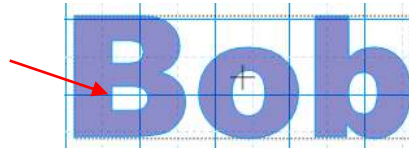
One single bounding box
around the entire word

- Another reason to apply **Join** before cutting is to control the order of the cutting. A child shape, which is joined to a parent shape, will always be cut before the parent. This provides stability to the cutting. If you were to cut the other way around, where the outside parent shape is cut first, this shape would be more likely to come loose from the mat when followed by a child shape being cut.

Layer

Video

- The **Layer** function is in-between **Split** and **Break** in terms of what it does. But it can also perform a **Join** function at the same time! Follow the examples carefully.

- After selecting a combined shape, the **Layer** function can be accessed in any of the following ways:

  ◊ Click on the **Layer** icon on the **Magic Toolbar**

  ◊ Press **Ctrl+L**

  ◊ Right click on the screen and choose **Shape Magic>Layer** from the menu

  ◊ Go to **Edit>Shape Magic>Layer.**

- For example, let's use the "Bob" example above, after we applied the **Join**, which resulted in a single shape. Applying the **Layer** function will initially seem to have performed the same function as **Break**:

Child paths fill with color
after applying **Layer**
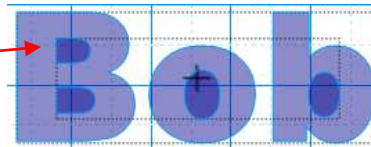
- However, the big difference is this: If you apply **Break** to "Bob", you end up with seven individual shapes (one for each outer parent shape plus one for each inner child shape).   If you apply **Layer** to "Bob", you end up with only two shapes (the three outer parent paths are joined as one shape and the four inner child shapes are joined as a second shape). In this example, one shape is moved away from the other to show what makes up each of these new separate shapes:

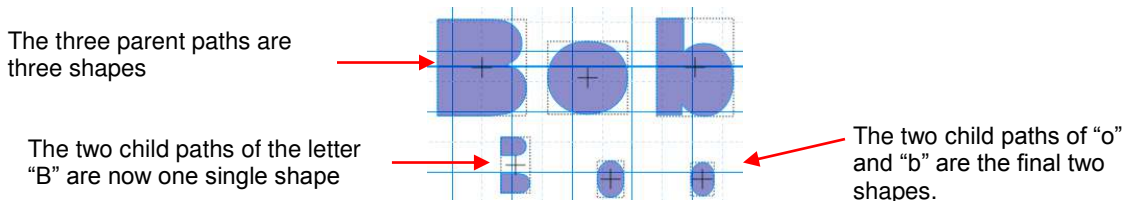Parent paths of "Bob"
have been joined into
one shape.
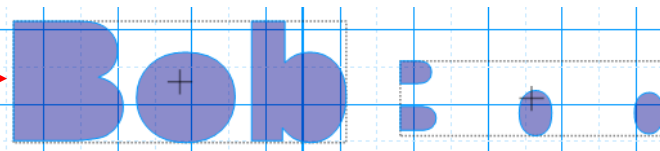
Child paths of
"Bob" have been
joined as a
second shape.

- A different result occurs if we go back to the "Bob" example in which the word has been **Split** first and then apply **Layer**. Again, it looks similar to the results of a **Break**:
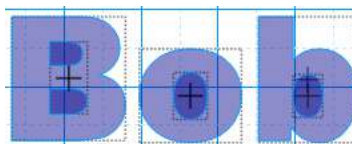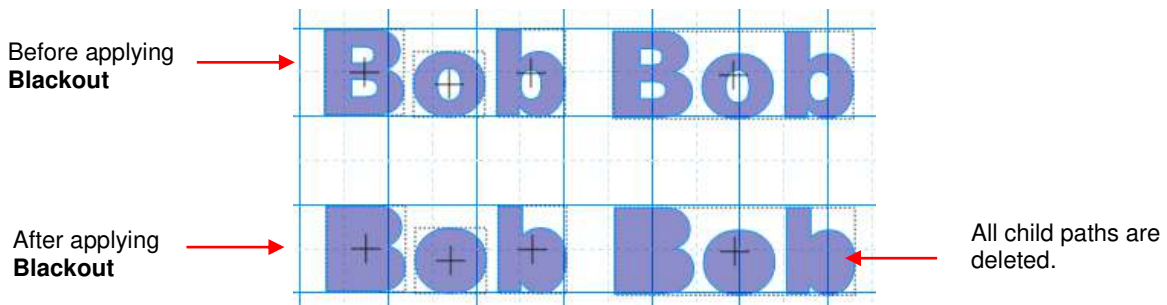
- This time, instead of getting two individual shapes, we end up with six (one for each parent path plus one for each inner set of child paths). The difference is that that two inner child paths inside the letter "B", remain joined as one shape:
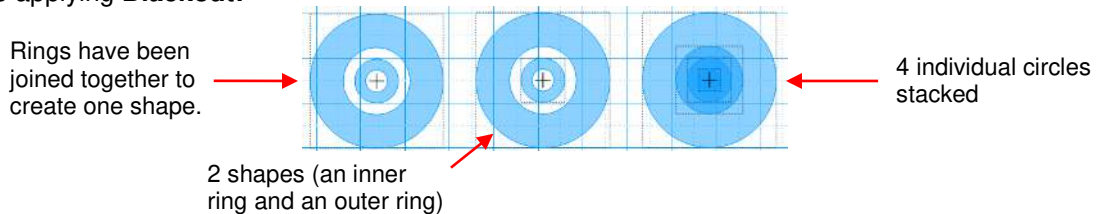
The three parent paths are three shapes

The two child paths of the letter "B" are now one single shape

The two child paths of "o" and "b" are the final two shapes.

Blackout

- The **Blackout** function deletes all child paths from their parent paths.

- After selecting a shape that contains one or more child paths, the **Blackout** function can be accessed in any of the following ways:

  ◊ Click on the **Blackout** icon on the **Magic Toolbar**

  ◊ Press **Ctrl+R**

  ◊ Right click on the screen and choose **Shape Magic>Blackout** from the menu

  ◊ Go to **Edit>Shape Magic>Blackout.**

- In the prior "Bob" example, it doesn't matter if you have **Split** the text into individual letters or the text is still one shape, the same result occurs using **Blackout**. The inner child paths are deleted:

Before applying **Blackout**

After applying **Blackout**

All child paths are deleted.

- What happens if there are nested child paths?

Before applying **Blackout:**

Rings have been joined together to create one shape.

4 individual circles stacked

2 shapes (an inner ring and an outer ring)

After applying **Blackout**:

All of the child paths are deleted

Nothing happens because these individual circles do not have child paths
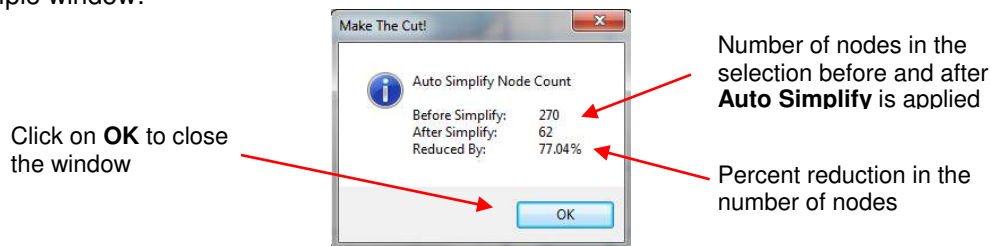
Each ring loses its child path

126

7.02 Shape Magic Advance Part 1: The Simplify Functions

7.02.1 Auto Simplify Paths

- The **Auto Simplify Paths** function is an on/off feature which should be turned on when MTC is installed. Its purpose is to continuously reduce the number of nodes after other functions are applied, so that a design will cut smoothly and quickly to a cutter.

- **Auto Simplify Paths** can be accessed in the following ways:

  ◊ Click on the **Advance** icon on the **Magic Toolbar** and select **Auto Simplify Paths**

  ◊ Right click on the screen and choose **Shape Magic>Advanced>Auto Simplify Paths** from the menu

  ◊ Go to **Edit>Shape Magic> Advanced>Auto Simplify Paths.**

- Most of the time, this function can be left on. However, if you are extensively editing an image, such as using the **Eraser** function over and over on the same selected shape, then it may be necessary to turn off this feature. Repeated applications of the **Auto Simplify Paths** will begin to distort the shapes. So, as recommended in later sections of this chapter, turn it off, and then the following **Auto Simplify Path** can be applied once the editing is completed.

7.02.2 Auto Simplify Path

- The **Auto Simplify Path** function can be applied when you have turned off **Auto Simplify Paths**. Select the shape(s) and then apply **Auto Simplify Path** in any of the following ways:

  ◊ Click on the **Advance** icon on the **Magic Toolbar** and select **Auto Simplify Path**

  ◊ Press **Ctrl+Shift+Z**

  ◊ Right click on the screen and choose **Shape Magic>Advanced>Auto Simplify Path** from the menu

  ◊ Go to **Edit>Shape Magic>Advanced>Auto Simplify Path.**

- The function will be automatically applied and a window will open indicating the results of the simplification. Here is a sample window:

Click on **OK** to close the window

Number of nodes in the selection before and after **Auto Simplify** is applied
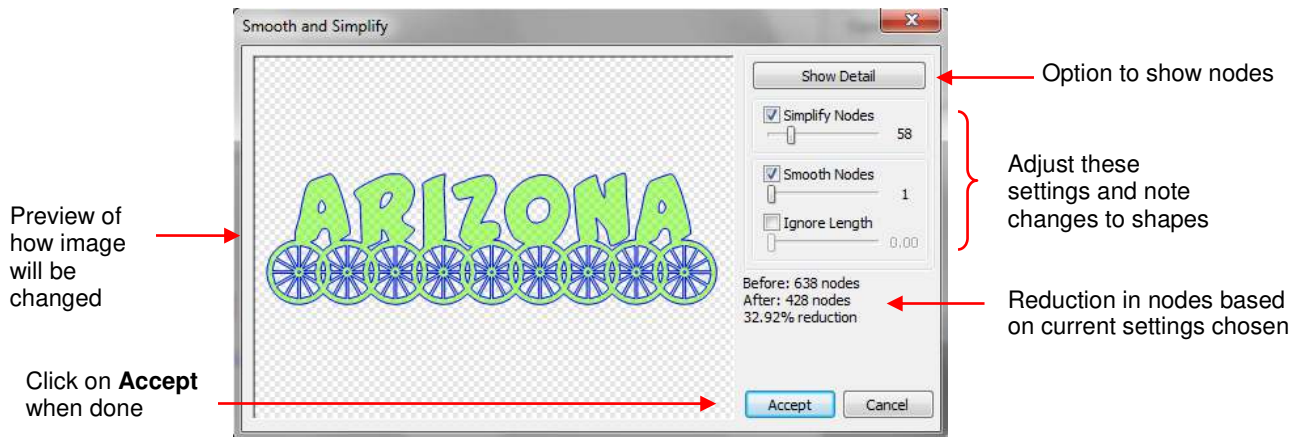
Percent reduction in the number of nodes

- If not enough nodes are deleted, then try temporarily decreasing the size of the shape. Use the scaling method shown in *Section 3.13* to reduce the size of the shape to, say, 25 %. Apply the **Auto Simplify Path** function. Then resize using the reciprocal, 25%r, to return to the original size.

7.02.3 Smooth & Simplify

- The **Smooth and Simplify** function is a manual version of the **Auto Simplify Path** function in which you can choose how much simplifying will be applied. Select the shape and then open the **Smooth & Simplify** window in any of the following ways:
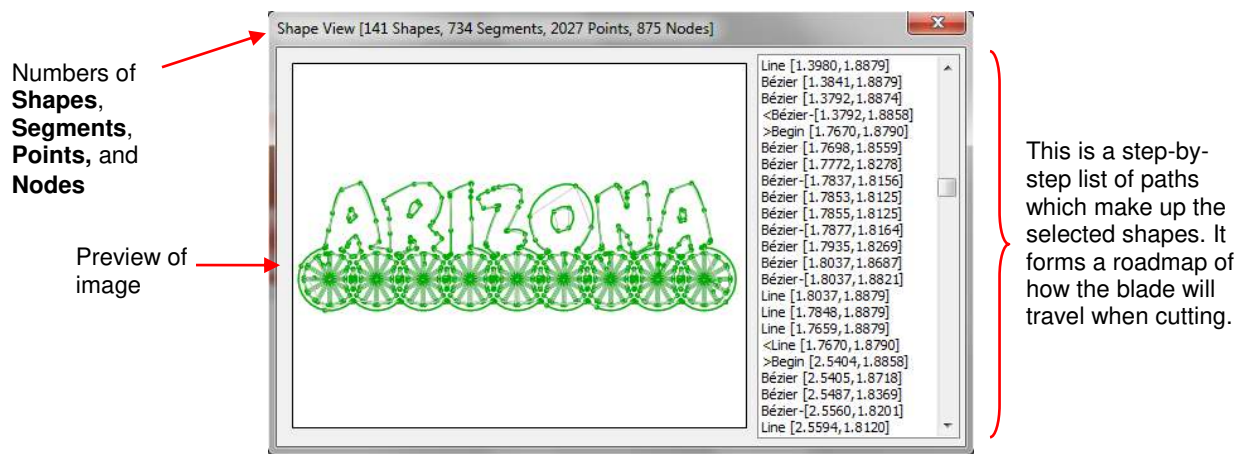
  ◊ Click on the **Advance** icon on the **Magic Toolbar** and select **Smooth & Simplify**

  ◊ Press **Ctrl+Shift+J**

  ◊ Right click on the screen and choose **Shape Magic>Advanced>Smooth & Simplify** from the menu

◊   Go to **Edit>Shape Magic>Advanced>Smooth & Simplify**.

- The following window opens with settings which can be adjusted as desired. Adjustments will be reflected in the preview so that distortions of the image can be avoided:

Option to show nodes

Adjust these settings and note changes to shapes

Preview of how image will be changed

Reduction in nodes based on current settings chosen

Click on **Accept** when done

- The **Ignore Length** option can be used to control the amount of smoothing applied to an image. For example, in the following image of a very angular apple, the higher the setting for **Ignore Length**, while holding **Smooth Nodes** at a constant value, the more rounding of the shape:

Original Shape   Ignore Length: 0.15   Ignore Length: 0.36   Ignore Length: 0.43   Ignore Length: 0.71
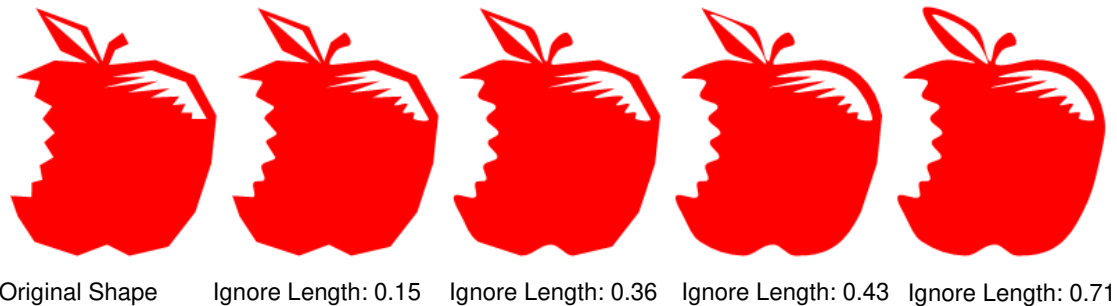
- In general, the **Smooth and Simplify** function is not used because of the two easier functions (**Auto Simplify Paths** and **Auto Simplify Path**) which were both added to MTC after this function was introduced.

- If **Simplify Nodes** doesn't reduce the nodes significantly, then try reducing the size of the image, as described at the end of the **Auto Simplify Path** section.

7.03 Shape Magic Advance Part 2: Details

View Path Detail

- The **View Path Detail** function is used to provide information about the selected shape or shapes, as well as indicating the order in which shapes will be cut. It can be accessed in the following ways:

  ◊   Click on the **Advance** icon on the **Magic Toolbar**   and select **View Path Detail**

  ◊   Press **Ctrl+Shift+X**

  ◊   Right click on the screen and choose **Shape Magic>Advanced>View Path Detail** from the menu

  ◊   Go to **Edit>Shape Magic>Advanced>View Path Detail**.

- Once selected, the following window opens:

Shape View [141 Shapes, 734 Segments, 2027 Points, 875 Nodes]

Numbers of
Shapes,
Segments,
Points, and
Nodes

Line [1.3980,1.8879]
Bézier [1.3841,1.8879]
Bézier [1.3792,1.8874]
<Bézier-[1.3792,1.8858]
>Begin [1.7670,1.8790]
Bézier [1.7698,1.8559]
Bézier [1.7772,1.8278]
Bézier-[1.7837,1.8156]
Bézier [1.7853,1.8125]
Bézier-[1.7855,1.8125]
Bézier-[1.7877,1.8164]
Bézier [1.7935,1.8269]
Bézier [1.8037,1.8687]
Bézier-[1.8037,1.8821]
Line [1.8037,1.8879]
Line [1.7848,1.8879]
Line [1.7659,1.8879]
<Line [1.7670,1.8790]
>Begin [2.5404,1.8858]
Bézier [2.5405,1.8718]
Bézier [2.5487,1.8369]
Bézier-[2.5560,1.8201]
Line [2.5594,1.8120]

Preview of
image

This is a step-by-step list of paths which make up the selected shapes. It forms a roadmap of how the blade will travel when cutting.

Nodes on Mat

- The **Nodes on Mat** function is an on/off feature which will be turned off when MTC is first installed. When turned on, the nodes on all shapes will be shown on the screen:

Nodes On Mat turned off   **Nodes On Mat** turned on
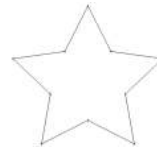
- **Nodes On Mat** can be accessed in the following ways:

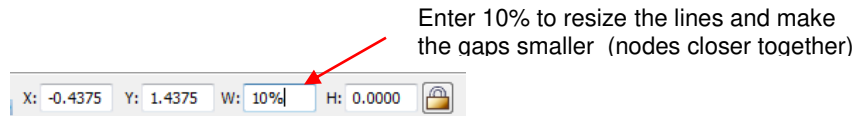 ◊ Click on the **Advance** icon on the **Magic Toolbar**   and select **Nodes On Mat**

  ◊ Press **Ctrl+Shift+I**

  ◊ Right click on the screen and choose **Shape Magic>Advanced>Nodes On Mat** from the menu

  ◊ Go to **Edit>Shape Magic>Advanced>Nodes On Mat.**

- To view the order in which shapes will be cut, click on the top line on the right side to highlight it. The location of that starting cut will appear on the shape on the left side. Next, press and hold the down arrow key on your keyboard. There is no way to actually control the order in which shapes cut. As of Version 4.3, shapes will automatically cut in order from right to left.

7.04 Shape Magic Advance Part 3: The Path Functions

Flatten Paths

- The **Flatten Paths** function removes all Bézier curves from a shape. It is very seldom used because other functions perform it automatically as needed. The one time you might need it is when resizing a bounding box that extends beyond the boundaries of a shape. The **Flatten Paths** feature will resize a bounding box to align with the true width and height of the image.

- For example, import the **Heart 1** shape from the **Generic** folder in **Basic Shapes**:

Observe the gaps between the bounding box borders and the heart itself

The gaps are due to the control points on the Bézier curves

- These gaps do not pose a problem except in some circumstances, such as:

  ◊ If you are trying to align the top, left, or right sides of this heart with another shape or shapes. Because of the gaps, you wouldn't be able to use the alignment functions from *Section 3.15,* with the exception of the bottom alignment.

  ◊ If you needed the heart to be a specific size, for example, exactly 1" in height. The bounding box for this heart is 1" tall, but clearly the heart is significantly shorter than that.

- To refit a bounding box, select the shape and then the **Flatten Paths** function can be applied in any of the following ways:

  ◊ Click on the **Advance** icon on the **Magic Toolbar** and select **Flatten Paths**

  ◊ Press **Ctrl+Shift+F**

  ◊ Right click on the screen and choose **Shape Magic>Advanced>Flatten Paths** from the menu
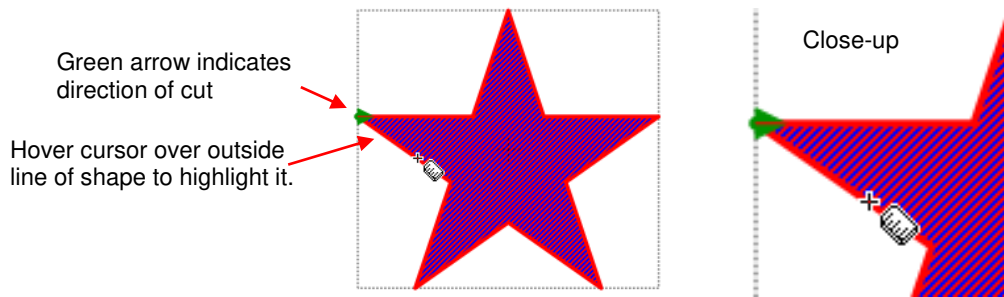
  ◊ Go to **Edit>Shape Magic> Advanced>Flatten Paths**.

- The heart now appears with the bounding box aligned:

No more gaps!

- Because the **Flatten Path** command adds a substantial number of nodes, it is advisable to follow up this function with the **Auto Simplify Path** function presented in *Section 7.02.2.*

Thin Paths

- The **Thin Paths** function is used to convert a shape into a single line or curve. This is useful in rhinestone designing for converting thin fonts into single line fonts. It can also be used after tracing a black and white line image (aka coloring book image) such as this wolf image:
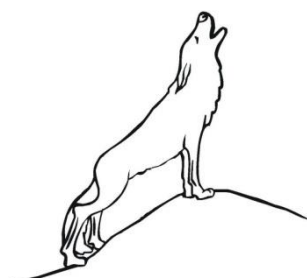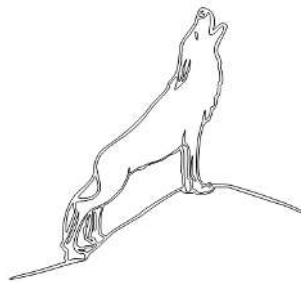
| Original image | Shape after **Pixel Trace** | Shape after **Thin Paths** |
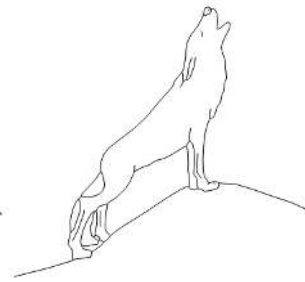
- After selecting the shape, **Thin Paths** can be applied in any of the following ways:

  ◊ Click on the **Advance** icon on the **Magic Toolbar** and select **Thin Paths**

◊   Press **Ctrl+Shift+K**

◊   Right click on the screen and choose **Shape Magic>Advanced>Thin Paths** from the menu

◊   Go to **Edit>Shape Magic> Advanced>Thin Paths.**

Fuse n' Weld

- The **Fuse n' Weld** function is used to remove duplicate shapes in the same path and also join nodes together that are on top of one another. This is mostly commonly used when importing certain file formats in which there can be hundreds of small disconnect paths making up the shape.

- As an example, let's say we have several disconnect straight lines paths:

- To connect these, we need to first make sure the gaps are very small. To that, we will select the line segments and resize to say 10% using the method shown in *Section 3.13*.   In other words, make sure the Aspect Ratio is locked and type in 10% in the W: setting box:

  Enter 10% to resize the lines and make the gaps smaller (nodes closer together)

  X: -0.4375   Y: 1.4375   W: 10%   H: 0.0000

- Once the line is resized, click on the Join icon ⇥⇤ on the Shape Magic toolbar to join the segments and then the Fuse n' Weld function can be applied in any of the following ways:

  ◊   Click on the **Advance** icon on the **Magic Toolbar** 🔧 and select **Fuse n' Weld**

  ◊   Press **Ctrl+Shift+M**

  ◊   Right click on the screen and choose **Shape Magic>Advanced>Fuse n' Weld** from the menu

  ◊   Go to **Edit>Shape Magic> Advanced>Fuse n' Weld**.

  Fuse n' Weld
  Tolerance
  ⬒ 0.0500 in.
  Optimal   Apply   Cancel

  Slide the **Tolerance** to the maximum and then click on **Apply**.

- For closing tight gaps, such as in this case, slide the **Tolerance** to the maximum and click on **Apply**.

- To resize the selection, type in 10%r into the **W:** setting, so that the reciprocal will be applied and the line will be resized to its original width.

Reverse Paths

- The **Reverse Paths** function is used to change the direction of a cut. This is not a commonly used function but can sometimes fix cutting issues with some files.

- To see the direction of a cut, press **F10** to open the **Measure Tool** on the **Node Mode** toolbar. Move your mouse over a shape and it will fill with stripes. A green arrow will point in the direction of the cut. In the following example, the cut will proceed counterclockwise around the shape:

Green arrow indicates direction of cut

Hover cursor over outside line of shape to highlight it.

Close-up

- **Reverse Paths** can be accessed in any of the following ways:

  ◊ Click on the **Advance** icon on the **Magic Toolbar** and select **Reverse Paths**

  ◊ Right click on the screen and choose **Shape Magic>Advanced>Reverse Paths** from the menu

  ◊ Go to **Edit>Shape Magic> Advanced>Reverse Paths**.

- Applying **Reverse Paths** to the above example will cause the arrow to now point downwards and the cut will proceed clockwise around the shape:

Same shape after **Reverse Paths** is applied

Green arrow is now indicating that cut will proceed counter-clockwise around the shape.

Close-up
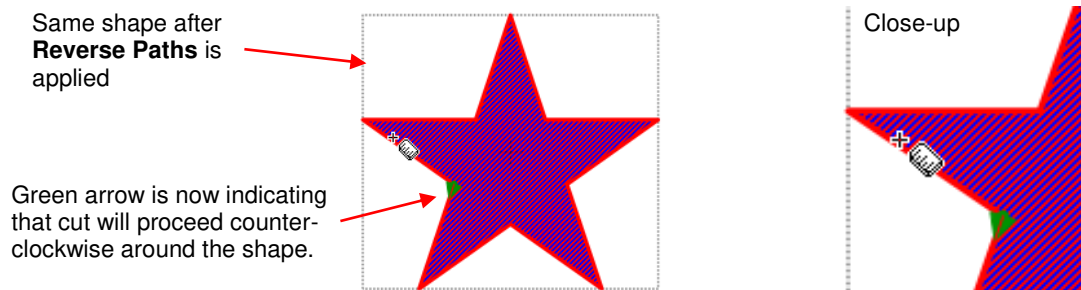
- Refer to *Section 7.08* for additional uses for the **Measure Tool**.

7.05 Shape Magic Advance Part 4: Tiler

- The **Tiler** function is used to split a shape or selection of shapes into smaller sections for cutting.

- In the following example, it is assumed that you wish to cut a 58" wide design (such as the one below) but your cutter only has a maximum 14" cutting width (such as the KNK Zing).

- After selecting the shape, the **Tiler** function can be accessed in the following ways:

  ◊ Click on the **Advance** icon on the **Magic Toolbar** and select **Tiler**

  ◊ Press **Ctrl+Shift+N**

◊   Right click on the screen and choose **Shape Magic>Advanced>Tiler** from the menu

◊   Go to **Edit>Shape Magic> Advanced>Tiler.**

- The following window will open with a set of default settings:

Preview of shape broken into tiles for cutting

W and H of shape on screen

Option to adjust **W** and **H**

W and H of each tile

Distance to offset horizontal of vertical tiles

Click on **Preview** to update with new settings.
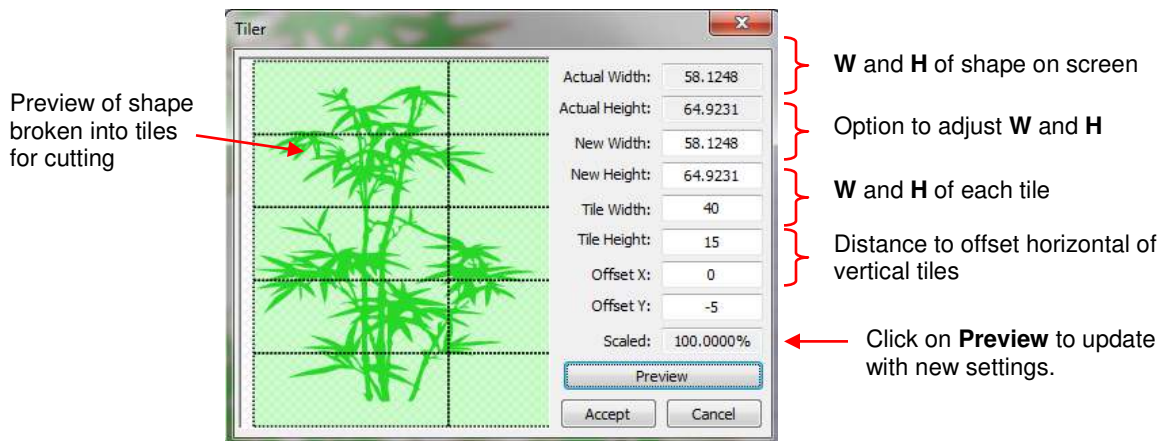
- Only the **Tile Width** must be set to something less than 15" since the cutter can handle 14" wide cutting. For this example, the **Tile Width** will be set to 13.5". Note that it is assume that the cutter can cut long sections of vinyl at one time, so the **Tile Height** will be set slightly larger than the height of the shape. Also there is no need to have an **Offset** yet, so it is set to 0:

Revised preview

Tile Width changed to 13.5"

Tile Height changed to 66"

Offset Y changed to 0"
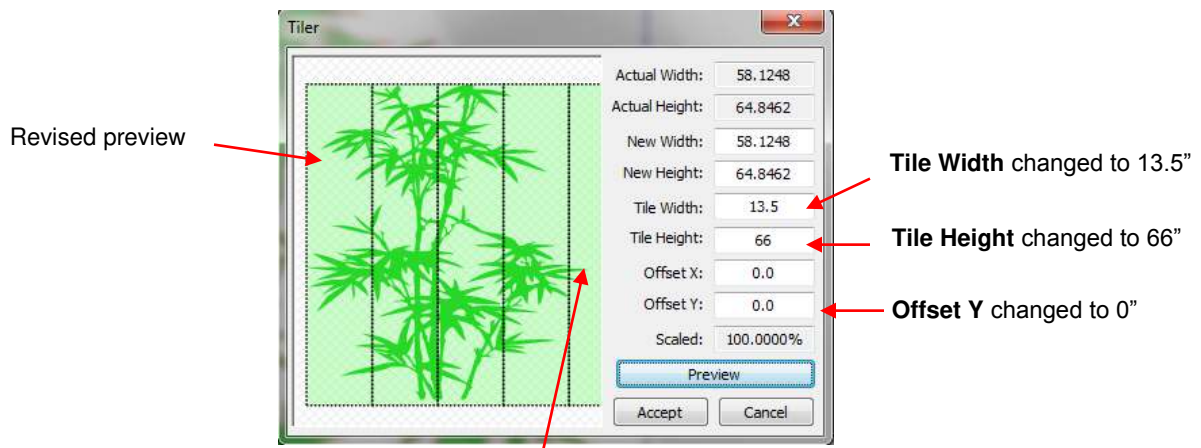
5th tile only has a tiny part of a leaf!

- Everything looks fine except for the last tile in which there's only a fraction of a leaf. This wouldn't be an economical use of the vinyl. Thus, the settings could be adjusted just a slight amount so that only four tiles will be cut instead of five. There are several options: 1. The **Actual Width** of the image could be made slightly smaller, 2. The **Tile Width** could be made slightly larger, or 3. A combination of both:

Revised preview

New Width: decrease slightly

Tile Width: increase slightly

Only 4 tiles now   Click on **Accept**
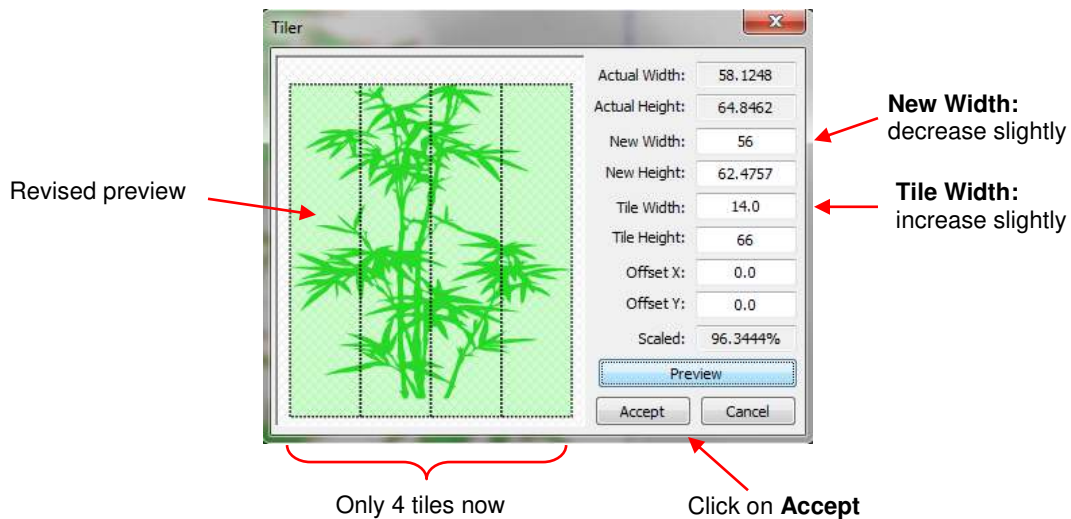
- The individual tiles are placed on new **Pages** on the **Page Bar:**

Original shape will still be on original page

Four new pages are created to house the four tiles
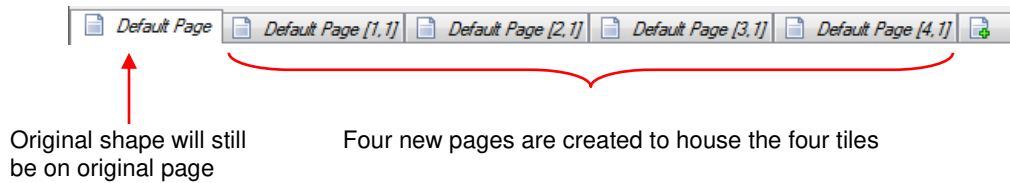
7.06 Node Mode Toolbar

- The **Node Mode Toolbar** offers tools to use for editing shapes, drawing lines and curves, importing from the **Basic Shapes** library, and a number of other functions. This toolbar can be activated in any of the following ways:

  ◊ Click on the icon in the upper left region of the screen as shown in *Section 4.01*.

  ◊ Press **F1** or **W**

  ◊ Go to **View>Node Mode.**

- The **Node Mode Toolbar** appears along the left side of the screen. The following screenshot shows the function of each tool and section number detailing this tool. Note that three of the functions are presented in *Chapter 8* because they are related to designing, rather than editing:

Edit this project normally (Select Tool): 7.07 ——→

Edit paths at node level (Node Edit Tool): 7.13 ←——

Draw freehand lines (Pencil Tool): 7.11 ——→

Draw Bézier curves and straight lines (Pen Tool): 7.12 ←——

Add basic shapes (Basic Shapes Tool): 8.02 ——→

Create spirals (Spiral Tool): 8.03 ←——

Create stars and polygons (Stars and Polygon Tool): 8.04 ——→

Erase sections of paths (Eraser Tool): 7.10 ←——

Slice shapes and lines (Knife Tool): 7.09 ——→

Measure shapes lengths and angles (Measure Tool): 7.08 ←——

7.07 Edit this Project Normally (Select Tool)

- The **Edit this Project Normally** function (**Select Tool)** is the 1st icon on the **Node Mode Toolbar** and can be activated by clicking on the icon or pressing **F1**. It has one primary function which is to take you out any other function on this toolbar, thus allowing you to use the other toolbars or functions in MTC.

7.08 Measure Shape Lengths and Angles (Measure Tool)

Video

- The **Measure Shape Lengths and Angles** function (**Measure Tool**) is the last icon on the **Node Mode Toolbar** and can be activated by clicking the icon or by pressing **F10**. It is used to obtain properties and details about any shape, including internal paths within that shape.

- In this example, the **Measure Tool** is used to note differences between these two stars:

- Click on the **Measure Tool** icon and the mouse cursor becomes a ruler. Hover the cursor along the side of one of the shapes. The shape will fill with stripes and the top of the screen will show the properties of that shape, which include **Perimeter** (distance blade will travel), Path Area, **Cut Direction,** number of **Nodes,** and the bounding box dimensions of the shape (**W** and **H** which should match those you see in the **Sel. Properties Bar** when you are no longer in **Node Mode**).

Small green arrow indicates direction of cutting

Move cursor over outside line of shape to bring up properties
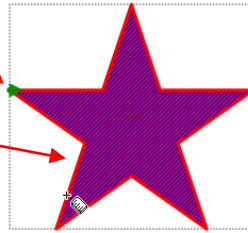
Option to show size in inches, cm, or mm

Properties of the highlighted part of the shape

Units	Perimeter: 4.0755 in.	Nodes: 10
Inches	Path Area: 0.35 in²	Width: 1.0823 in.
	Clockwise: Yes	Height: 1.0000 in.

- Likewise, when you hover the cursor over an outer side of the other star, the solid area of the star will fill with stripes and the properties of the outer star will be displayed. If you hover the cursor over the inner star, then the properties of that star will be displayed instead:

Units	Perimeter: 3.7267 in.	Nodes: 10
Inches	Path Area: 0.46 in²	Width: 1.0822 in.
	Clockwise: Yes	Height: 1.0000 in.

Properties of outer star
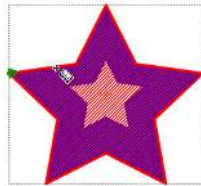
Units	Perimeter: 1.3951 in.	Nodes: 10
Inches	Path Area: 0.06 in²	Width: 0.4051 in.
	Clockwise: Yes	Height: 0.3743 in.

Properties of inner star
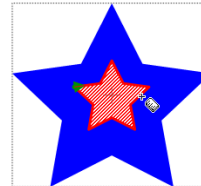
- Note that the **Path Area** of the outer star includes the area of the inner star. It does not subtract out that part of the shape. This makes sense with regards to cutting since the same amount of material would be needed to cut the outer star, regardless of whether or not the inner star were cut. If, for any reason, you needed the actual area of the larger star, then you could subtract the **Path Area** of the inner star from that of the outer star.

- To measure an angle, place the cursor at the point where the two sides of the star meet and drag outwards along one of the sides. The length and the angle of this side to the horizon are displayed. Then hold the **Ctrl** key and bring the mouse cursor down to the outer tip of the other side. The length of this side and the angle relative to the other side are now displayed:

Units	Length: 0.4118 in.
Inches	Angle: -109.48°
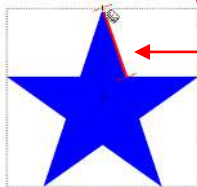
Length of side is shown, along with the **Angle** of this side to the horizon.

Units	Length: 0.4025 in.
Inches	Angle: 109.93°
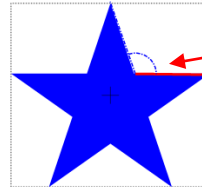
Hold **Ctrl** key and move cursor to the end of the other side. Properties shown are the **Length** of the side and the **Angle** between the two sides.

- Similarly, the **Angle** of the other star can be measured and then the full list of properties compared between the two stars:

Units	Length: 0.3919 in.
Inches	Angle: -118.11°
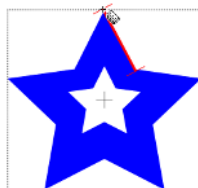
Units	Length: 0.3765 in.
Inches	Angle: 124.00°
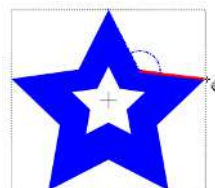
## 7.09 Slice Shapes and Lines (Knife Tool)

- The **Slice Shapes and Lines** function (**Knife Tool**) is the 9th icon [knife icon] on the **Node Mode Toolbar** and can be activated by clicking on the icon or pressing **F9**. It is used to cut an existing shape or shapes along straight lines or freely drawn paths.

- For example, let's use the Secret Agent Man shape from the **Basic Shapes** library. Let's say you want to remove the bottom of the shape so that when cut, the shape would still be attached to the material and could be folded up:

The **Knife Tool** will be used to remove the bottom line of this shape.
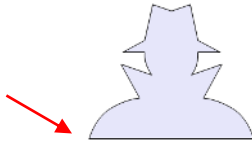
- To slice off just the bottom of the shape, select the **Knife Tool** and hold down the mouse button outside of the shape on one side, just barely above the bottom of the shape and then drag the mouse over to the other side, letting go once the cursor is outside of the shape:

Begin cutting just outside of and above the bottom the shape.
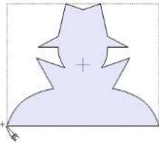
Drag the mouse to the other side and let go when the cursor is beyond the shape border.
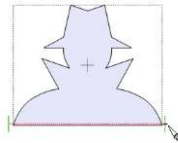
- Then click on the **Select Tool** (**Edit this project normally**) [cursor icon] at the top of the **Node Mode Toolbar**. Now you can select and move the cut line away from the bottom of the shape and delete. The shape no longer has a connecting line along the bottom:

Drag bottom line away and delete.
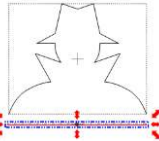
Shape is open at the bottom.
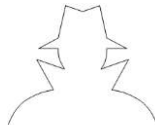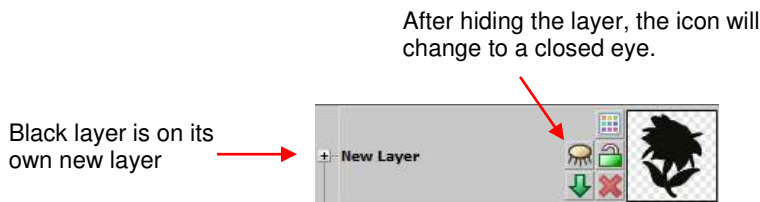
7.10 Erase Sections of Paths (Eraser Tool)

[Video]

Erasing

- The **Erase Sections of Path** function (**Eraser Tool)** is the 8th icon [eraser icon] on the **Node Mode** toolbar and can be activated by clicking the icon or by pressing **F8**.

- Use this tool to erase parts of a shape as well as adding to a shape. To erase, drag the left mouse button and the shapes beneath that drawn path will be deleted. For a straight line erasure, press the **Ctrl** key while dragging your mouse.

- Important! Before using the **Eraser** tool for extensive changes to an image, turn off **Auto Simplify Paths**. Otherwise, the shape will begin to lose its form as the simplify process is applied repeatedly. To do this, right click on the screen and choose **Shape Magic>Advanced>Auto Simplify Paths** from the menu (or refer to *Section 7.02.1* for the other methods). Then, after you have finished using the **Eraser** tool, apply either the **Auto Simplify Path** or **Smooth and Simplify** functions to reduce the number of nodes for smoother cutting. Refer to *Sections 7.02.2* and *7.02.3*.
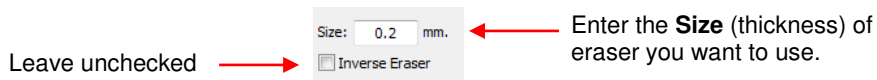
- The flower that was traced in *Section 6.03* will be used to illustrate the **Eraser Tool**. The flower will be re-colored blue so that the red eraser lines, in the screenshots, will be easier to see in this user manual. The arrows indicate the areas that need to have some of the blue layer erased:

Re-color flower
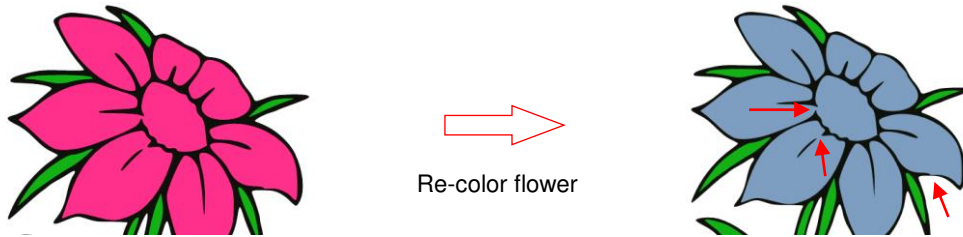
- When using the **Eraser Tool**, all layers will be erased in the location where the eraser is applied. So, to avoid erasing the black layer when erasing the blue, the black layer needs to be hidden. Select that layer and press the **Selection to Own Layer** icon at the bottom of the **Layer Bar**. Then hide the black layer by pressing the **Hide Layer** icon

After hiding the layer, the icon will change to a closed eye.

Black layer is on its own new layer

+ New Layer

- Zoom in close so that you'll be able to see exactly where you need to erase. When you activate the **Eraser Tool**, the following settings will appear at the top of the screen:

Size: 0.2 mm.

Enter the **Size** (thickness) of eraser you want to use.

Leave unchecked ⟶ Inverse Eraser

- Hold down the left mouse button and drag the mouse in a small line where you want to erase. A red line will be drawn and, when you release the mouse button, the portion of the shape beneath that red line will be erased:
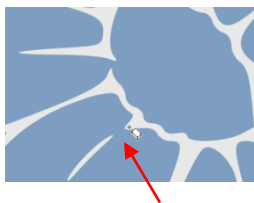
Shape needs to be erased so that this petal matches the others
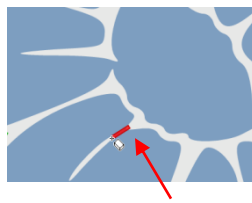
Drag mouse along path to be erased. A red line will appear as you drag.
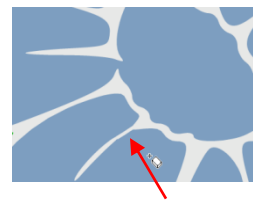
Release mouse and path under the red line is erased.

- If the line was too thick and you erased more than you wanted, then use the **Undo** button (or **Ctrl+Z**) to back up a step. Then enter a smaller **Erase Size**. If not enough was erased, then increase the **Eraser Size** and go over your path again with the thicker eraser.

- Apply the **Eraser** tool to the other two areas of the yellow petals. In the next example, one of the petals needs to be separated from the center of the flower:
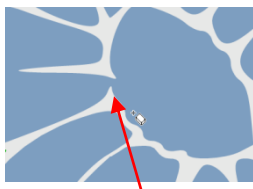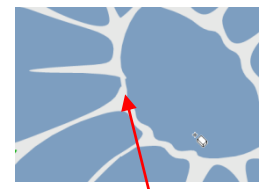
Petal is connected to center of flower.
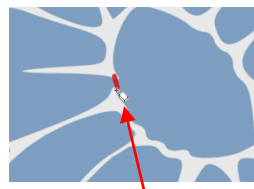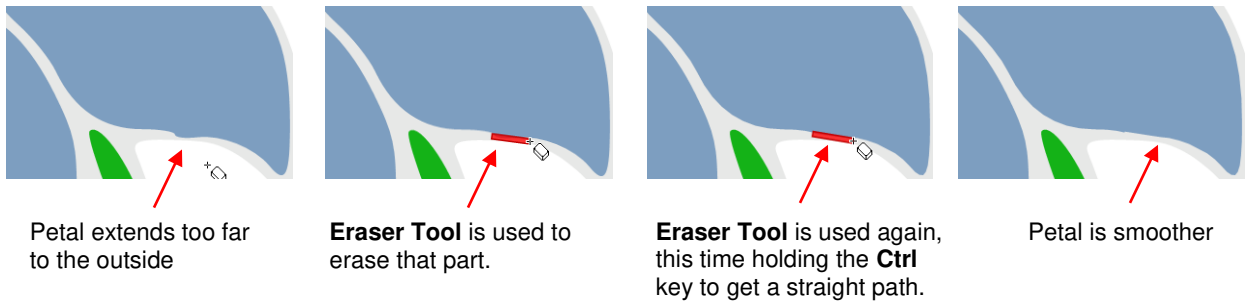
Eraser Tool is used to disconnect.
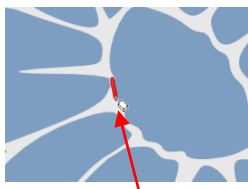
Eraser Tool is used again to smooth edge of petal and around center of flower.

Petal is now separated from center of flower.

138

- In this last example, one of the petals sticks out a little too far and will be trimmed back. On the second erasure, the **Ctrl** key is held down so that the red line will be perfectly straight:

| Petal extends too far to the outside | **Eraser Tool** is used to erase that part. | **Eraser Tool** is used again, this time holding the **Ctrl** key to get a straight path. | Petal is smoother |

- Once you have finished erasing all part of the petals, click on the **Select Tool** so that you have access to the regular MTC functions. Select the petals and apply the **Auto Simplify Path** (*Section 7.02.2)* to smooth the edges where you erased and reduce the nodes. At this point, if you are finished using the **Eraser Tool,** you can now reactivate **Auto Simplify Paths**. Refer to *Section 7.02.1.*

Inverse Erasing (Adding to an Image)

- The other option in the **Eraser Tool** settings is the **Inverse Eraser** which allows you to add to or fill in empty areas of a shape. Mark that option and again, set a **Size** for using the **Eraser Tool** as a drawing tool:

Check the **Inverse Eraser** box.

Enter the **Size** (thickness) of drawing line.
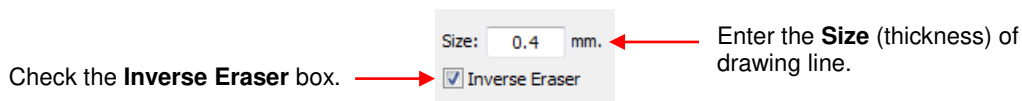
- Back to our prior example, the gray path around that last yellow petal represents the black shadow layer that was hidden during the erasing process. Notice how it becomes very thin in that area where the last petal was smoothed:

Shadow layer is very thin at this point.

- This is a perfect application for the **Inverse Eraser**. If there were many areas around the image where the shadow layer needed correcting, it would probably be faster to delete the shadow layer that was pixel traced from the original and then use the **Shadow Layer** function in MTC to create a new one (refer to *Section 8.05*). But in this case, only that one spot seems too thin.

- Several things need to be done before using the tool. If you plan to use it for a number of spots around the shape, then again turn off **Auto Simplify Paths** (refer to *Section 7.02.1*). Note that if you are still in the **Eraser Tool** function, you'll need to click on the **Select Tool** to return to normal MTC mode.

- Next, unhide the black layer and move it down on the **Layer Bar** so that it is now behind the petals.

139

Black layer moved to the bottom so that it is now behind the blue petals and green leaves.
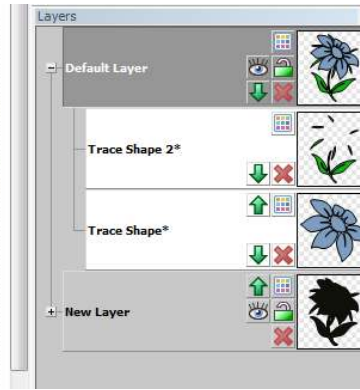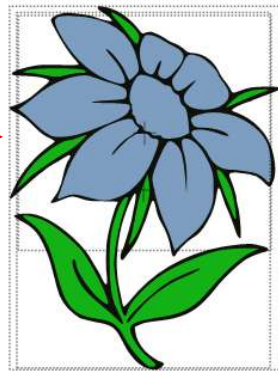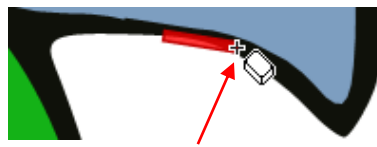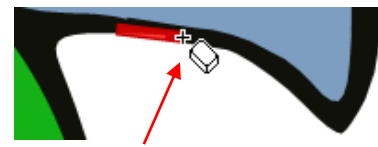
Black layer moved to the bottom.

- Activate the **Eraser Tool**, again confirming that the **Inverse Eraser** box is marked. Then zoom in on the area where the black shadow was very close to the petal. Drag the left mouse button to extend that border around the flower:

Black border is too thin.

First path is added, overlapping with thick area.

Another path is added, overlapping with first.

More is added, again overlapping with first path.

Result of added paths.

- As with the erasing process, apply the **Auto Simplify Path** function (refer to *Section 7.02.2*), if you turned off the **Auto Simplify Paths** before using this tool. Then turn on **Auto Simplify Paths.** Refer to *Section 7.02.1*.

- CAUTION! If using the **Inverse Eraser** and cross from one individual shape into another, this addition will not automatically be welded and, when sent to the cutter, you may end up with unwanted cut lines. For example, let's say you have a flower and there are two leaves that are not attached to the stem. You decide to use the **Inverse Eraser** to join those leaves to the stem:
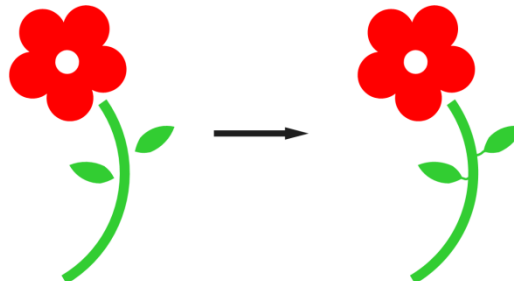
- Everything looks like it worked as you wanted but, you cut out the flower stem/leaves, the new leaf stems will cut into the larger stem. However, it appears to be what you wanted because you have **Fill** turned on. If you switch to **Outline** mode and zoom in on the leaves, you'll see this:

The leaves are not
welded to the stem.
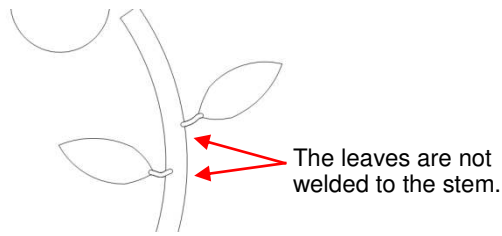
- If you realize this has happened, you only need to apply the **Weld** tool to remove the overlapped parts:
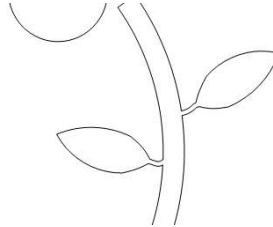
- To prevent this, first select the shapes (in the case, the stem and two leaves) and apply the Join tool . Then you can use the **Inverse Eraser** and the parts added will be automatically welded.
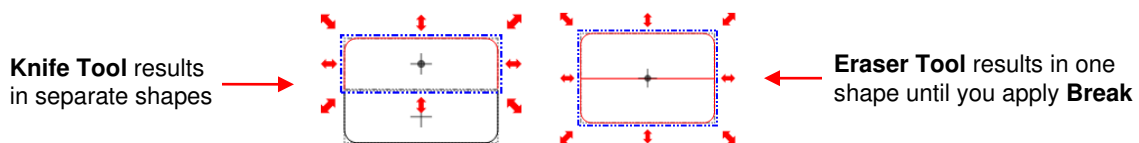
Eraser or Knife?

- In *Section 7.09*, it was shown how the **Knife Tool** can be used to cut shapes into parts. The **Eraser Tool** can also be used for this same purpose when the **Size** is set to a very small value, such as 0.03 mm (the minimum size allowed). The differences between the two tools are:

 ◊ The **Eraser Tool** automatically closes the paths on both sides of the erased parts:

  Knife Tool results
  in open paths

  Eraser Tool results
  in closed paths

  ◊ The **Eraser Tool** doesn't break the shape into individual shapes whereas the **Knife Tool** does:

  Knife Tool results
 in separate shapes

  Eraser Tool results in one
  shape until you apply **Break**

  ◊ The **Eraser Tool** isn't limited to straight line cuts:

  Knife Tool can only cut straight lines

  Eraser Tool can cut custom paths

- If you are creating a popup card, where the tops and bottoms of the shapes needs to be deleted, then the **Knife Tool** is the better choice:

141
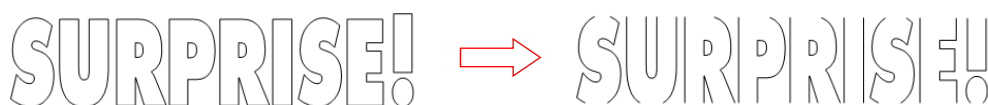
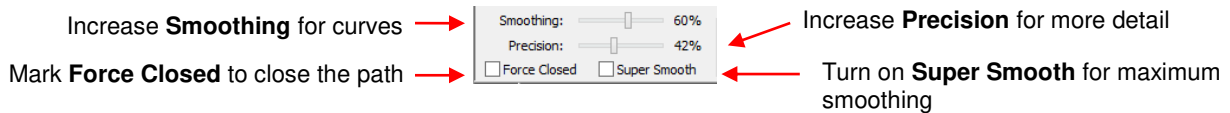- If you are breaking up an image to create a paper piecing project, the Eraser Tool is the better choice:
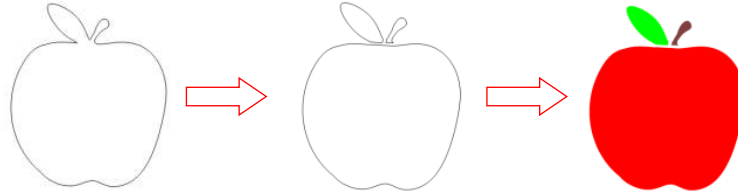
7.11 Draw Freehand Lines

The **Draw Freehand Lines** function (**Pencil Tool**) is the 3rd icon on the **Node Mode Toolbar** and can be activated by clicking on the icon or pressing **F3**. This tool is used to freely draw thin or thick lines with your mouse or tablet, or even draw dashed lines or a path of circles! Your shapes can then be edited using the other tools on the **Node Mode** toolbar, as well as customized using other functions in MTC.

Drawing Thin Lines

- There are a number of settings which will affect the outcome of your drawing. **Smoothing** is used to control whether the drawing is more angular (made up of straight lines paths) or rounder (made up of curves). **Precision** is used to control the number of nodes used as the image is drawn. The **Force Closed** option, when marked, will automatically close the beginning and the end of the path as you draw:

Increase **Smoothing** for curves →
Mark **Force Closed** to close the path →

Smoothing:	60%
Precision:	42%
Force Closed	Super Smooth

← Increase **Precision** for more detail
← Turn on **Super Smooth** for maximum smoothing

- For example, if you are freehand drawing the letter "A", you would want to decrease **Smoothing** and **Precision** so that straight lines are drawn. But if the same low settings were used to draw an "S", the letter would end up angular and not well-formed:

- For a curve, such as an "S", you would want to increase **Smoothing** so that no straight lines are formed. For the smoothest result, check the **Super Smooth** option:

**Smoothing**: 100%   **Super Smooth**: On
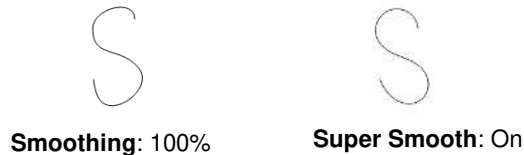
- The **Precision** setting, as mentioned before, allows a more precise "S" to be drawn, but many more nodes will result. The following shows the difference when **Precision** is left at 0 versus 100% versus 50%:

Precision: 0%   **Precision:** 100%   **Precision**: 50%
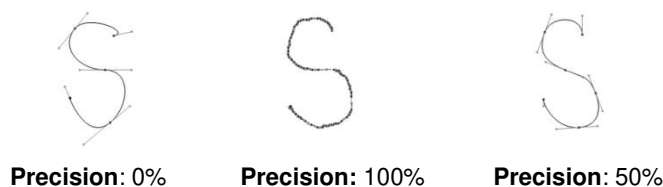
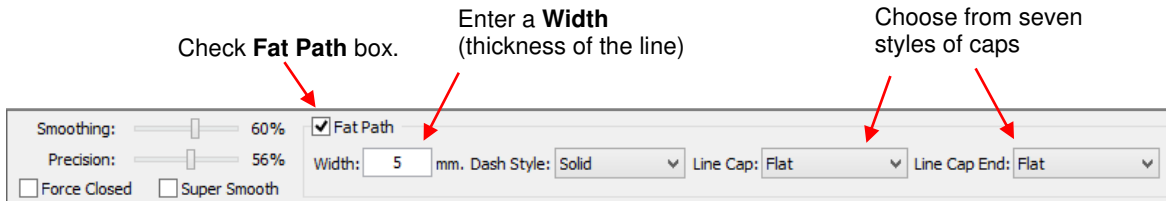- If you need to draw a perfectly straight line, hold the **Ctrl** key while drawing:

142

- The **Force Closed Path** option can be marked so that, as you draw an image, the start and end will always be connected.   For example, in this freehand drawing of a lightning bolt, the end of the line is always connected back to the beginning. Once the cursor returns to where it started, the shape will close and fill with color (assuming **Fill** is turned on):
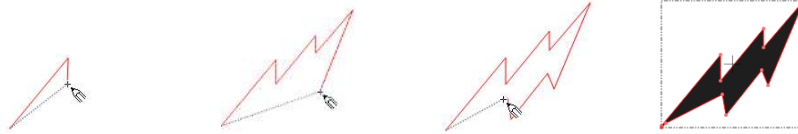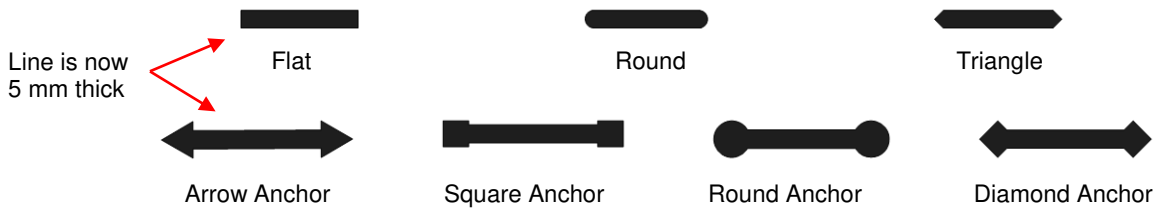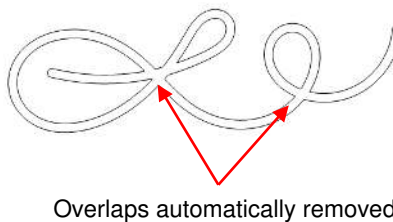
Drawing Thick Lines

- To draw a line that is set to a particular thickness, mark the **Fat Path** box and enter settings for thickness and **Line Cap** style:

Check **Fat Path** box.   Enter a **Width** (thickness of the line)   Choose from seven styles of caps

Smoothing:	60%	☑ Fat Path
Precision:	56%	Width: 5 mm. Dash Style: Solid ∨ Line Cap: Flat ∨ Line Cap End: Flat ∨
☐ Force Closed	☐ Super Smooth	

- When you freely draw with **Fat Path** selected, the line will be the thickness you selected. Note that when you cross the path, the overlap will be automatically removed. Also note the differences in the three **Line Cap** options:
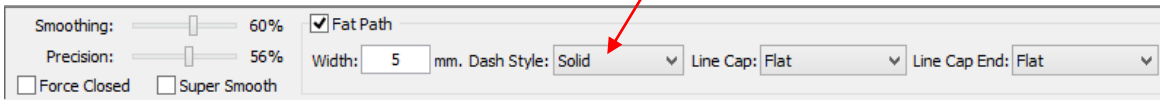
Line is now 5 mm thick

Flat   Round   Triangle

Arrow Anchor   Square Anchor   Round Anchor   Diamond Anchor

- Note that if a **Fat Path** crosses itself, the overlap will be removed:

Overlaps automatically removed

Drawing with Other Line Styles

- The **Freehand Drawing Tool** offers other line styles besides solid lines, including dashes, circles, and combinations of the two:

Smoothing:	—▯—	60%	☑ Fat Path						
Precision:	—▯—	56%	Width:	5	mm. Dash Style:	Solid ▾	Line Cap:	Flat ▾	Line Cap End:	Flat ▾
☐ Force Closed	☐ Super Smooth								

- There are five **Dash Style** options to produce even more designing capability, especially, when then combined with the seven different start and end cap options. Here are a few examples:
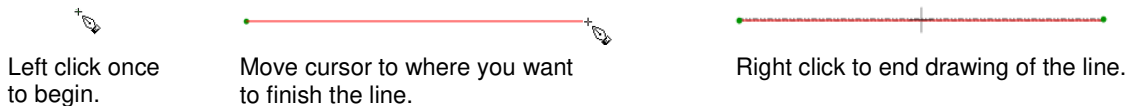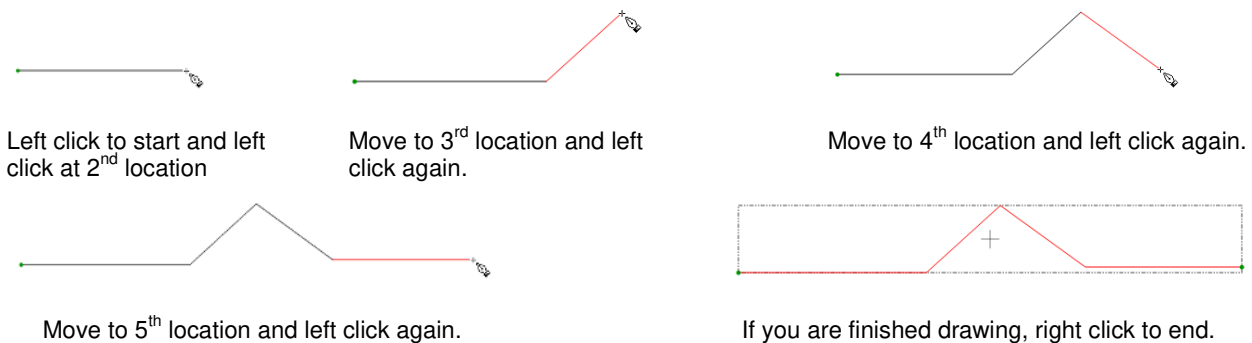
7.12 Draw Bézier Curves and Straight Lines (Pen Tool)

- The **Draw** Bézier Curves and Straight Lines function (Pen Tool) is the 4th icon [icon] on the **Node Mode Toolbar** and can be activated by clicking the icon or by pressing **F4**. Use this tool to draw new paths. It can be a bit tricky to master but just like with many good things- practice makes perfect!

Drawing Straight Lines

- To draw a single straight line, use your mouse to left click once where you want to start the line and then right click where you want to end the line. Each click produces a node:

Left click once to begin.   Move cursor to where you want to finish the line.   Right click to end drawing of the line.
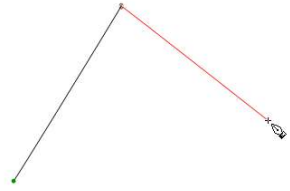
- If you wish to continue drawing a connecting straight line path, then instead of right clicking to end, keep left clicking. At any point you can right click to add the last node and end the drawing of straight lines:

Left click to start and left click at 2nd location   Move to 3rd location and left click again.   Move to 4th location and left click again.

Move to 5th location and left click again.   If you are finished drawing, right click to end.
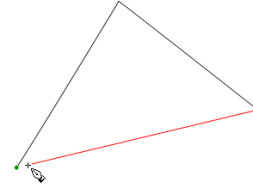
- On the other hand, if you are creating a closed path, then just as the mouse cursor approaches the starting node, the shape will fill with color and you can click one last time to end the process. You do not have to right click to end the drawing if the shape is closed:
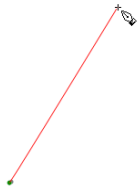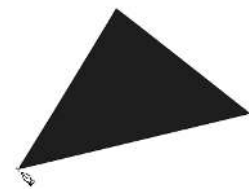
|			
Left click to start and then left click at 2nd location	Move to 3rd location and left click again.	As you approach the start, watch for the shape to fill.	As soon as the shape fills with color, left click to end.

- Again, if the shape is closing, you can left click or right click to end the drawing of that shape. If the shape is not closing, then you must use a right click to stop the drawing of that shape.

Drawing Curves

- Drawing curves is a bit more difficult. The key is to take it one step at a time, practice the technique a lot, and remember that you can later correct your curves using the **Node Edit Tool** (refer to *Section 7.13*).

- To draw a curve, use your mouse to left click once where you want the start the curve. Then instead of left clicking, hold the left mouse button down and begin dragging the mouse outwards. Continue holding the left button and notice a dotted line appears with two points at either end. These are called control points:

Control Points

- As you drag the mouse, you'll see that you have full control over how long this dotted line will be, as well as where the control points are positioned. Experiment with longer and shorter control lines, as well as rotating the line to bend the curve in a range of different ways:
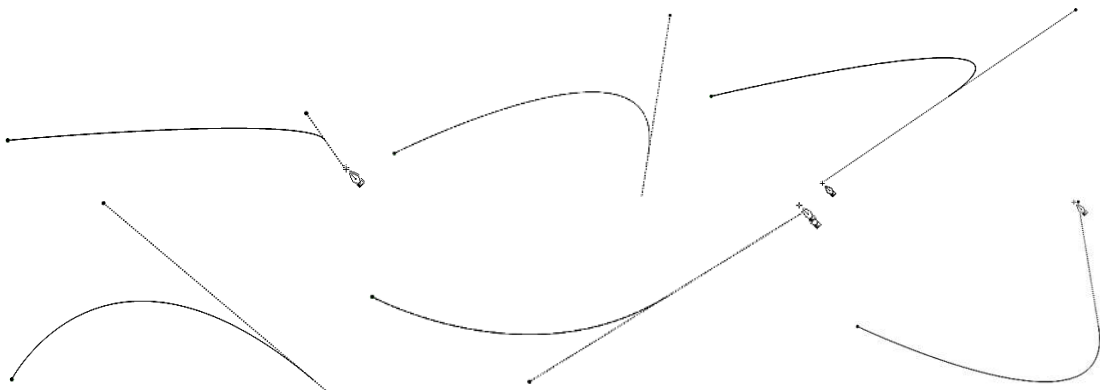
Combining Straight Lines and Curves

- There are different methods for creating a continuous string of straight lines and curves. The straight lines are easy because, as you left click to plant nodes, the straight lines remain straight and do not change as you create the next connected straight line. However, once you begin creating Bézier curves, you cannot return to straight lines, without right clicking to end the curves and then beginning the next straight line from that point:

2 straight lines are drawn and then a curve is created
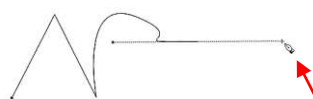
But then, when you attempt to switch back to a straight line, the curve becomes distorted
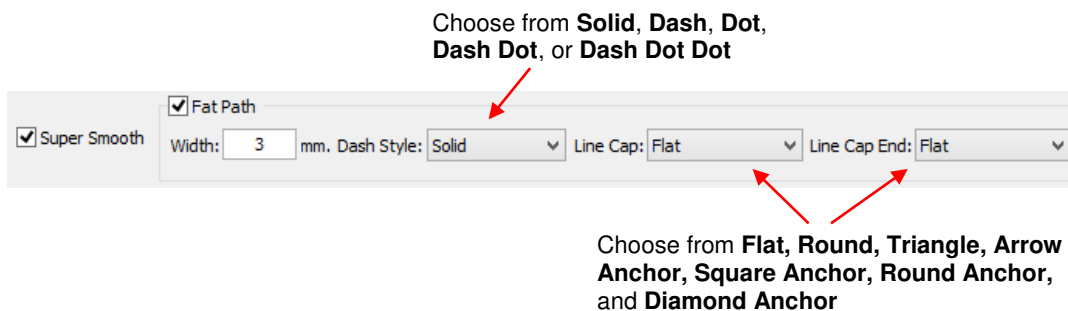
145

- Not to worry! Once the curve is complete, you can right click to end that curve and then left click in the same spot to begin a new straight line or another curve without disturbing the one just created:

- In the end, all of those points/nodes will be connected. This is a method that can be used to do manual tracing, as presented in *Section 6.04*.

Fat Path and Super Smooth

- The **Draw** Bézier Curves and Straight Lines function, like the Draw Freehand Lines function, has the option for Fat Path and Super Smooth.   There are the same five Dash Style types and the same seven options for Line Caps at the start and end of the Bezier curves/lines. Refer to *Section 7.11* for examples.

Choose from **Solid**, **Dash**, **Dot**,
Dash Dot, or **Dash Dot Dot**

Choose from **Flat, Round, Triangle, Arrow
Anchor, Square Anchor, Round Anchor,**
and **Diamond Anchor**

7.13 Edit Paths at Node Level (Node Edit Tool)

Special note: As of version 4.6, the end nodes on a selected path are displayed as squares instead of small circles. The screenshots in the following sections reflect the way nodes were displayed prior to this change.
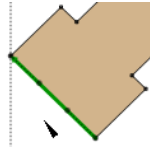
- The **Edit Paths at Node Level** function (**Node Edit Tool**) is the 2nd icon on the **Node Mode Toolbar** and can be activated by clicking the icon or by pressing **F2**. Use this tool to edit both paths and nodes in any shape.

- Before editing paths and nodes, it is recommended that the following settings be made:

  ◊ **Nodes On Mat** should be made visible by pressing **Ctrl+Shift+I** (or any of the other ways shown in *Section 7.03*)

  ◊ Set **Snap Position**, on the **Virtual Mat**, to **No Snapping,** so that segments and nodes can be dragged freely

  ◊ Set the display on the **Virtual Mat, t**o **Fill/Outline** or **Outline** so that nodes will be visible.
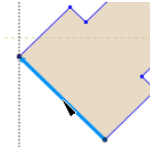
Segment Editing

- In this section, the Tools shape from **Basic Shapes** will be used. Select the head of the hammer and then activate the **Node Edit Tool**. You will notice that as you move the mouse over the shape, whichever individual segment is beneath the mouse cursor will change to red. This is similar to how individual shapes will turn red when in the regular mode in MTC. If you left click on a segment it will turn green, unless you happen to have the green mat color selected in which case the segment will turn blue. Note that the following screenshots were made from an earlier version of MTC. Starting with version 4.6, the end nodes on a selected segment appear as blue squares, and a selected end node turns yellow. For now, these screenshots show the nodes as small black circles only:

146
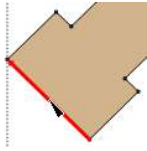
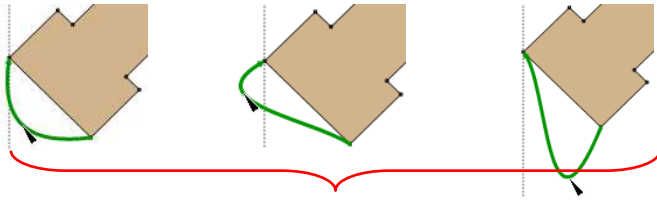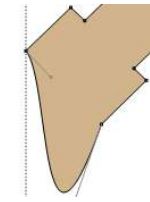|		
Hovering over a segment turns it red	Selecting a segment turns it green	Selecting a segment, with a green mat, turns the segment blue

- A selected segment can now be "dragged" in the following ways:

  ◊ Drag on the segment with your mouse to change the curvature in different ways:
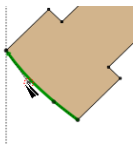
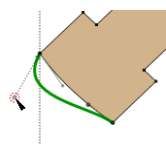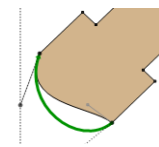|	
Drag a segment in any direction to transform into different shapes.	Upon releasing mouse button, shape will be modified.

  ◊ Drag on the Bézier control points (also called handles) to also modify the shape of the segment:

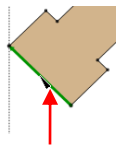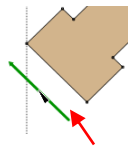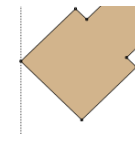|		
Select the segment and then place mouse over control point	Drag point and shape will change	Drag other point and shape will change differently

  ◊ A selected segment can be moved using the arrow keys on your keyboard. Alternatively, you can also move the segment by holding the **Ctrl** key and dragging the segment with your mouse:
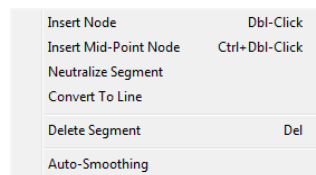
|		
Select segment	Use arrow keys on keyboard to move segment.	Shape is extended outwards.

- If you right click on a selected path, the following menu will open. Explanations for each options are described below:

|	
Insert Node	Dbl-Click
Insert Mid-Point Node	Ctrl+Dbl-Click
Neutralize Segment	
Convert To Line	
Delete Segment	Del
Auto-Smoothing	

Note shortcut keys for several of the drop-down options

◊ **Insert Node:** a node will be inserted wherever your mouse cursor is currently positioned on the segment and the segment is now split into two segments.

Place cursor where
you want node added

Segment is split into two segments
at location of new node.
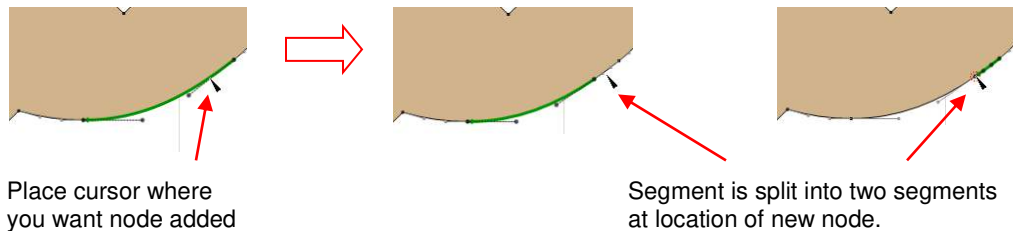
◊ **Insert Mid-Point Node:** a node will be inserted exactly half-way along the selected segment and the segment is now split into two segments of equal length.

Place cursor anywhere
along segment

Segment is split into two
segments at the midpoint.
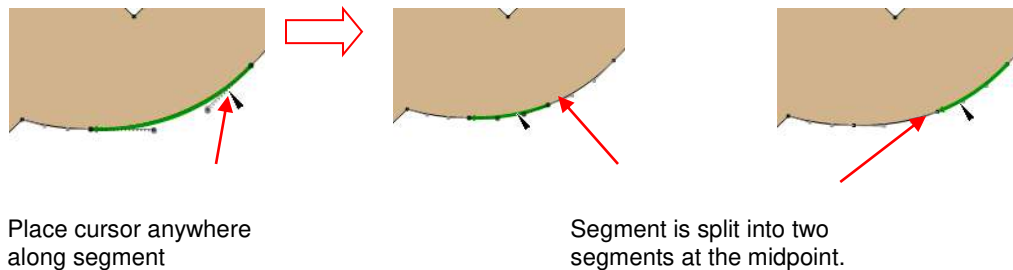
◊ **Neutralize Segment:** the segment will become perfectly straight but will still be a Bézier curve with Bézier control points to maneuver. This is something of a panic button to use whenever a segment becomes extremely distorted.

Neutralized segment is still a
Bézier curve with control points
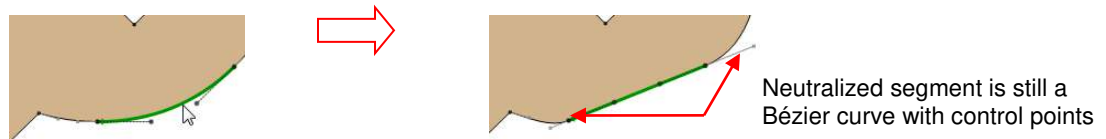
◊ **Convert To Line:** the segment will be converted to a straight line and will no longer be a Bézier curve. However, dragging the line to form a curve will immediately transform it back into a Bézier curve.

Line segment is no longer a Bézier
curve: has no control points
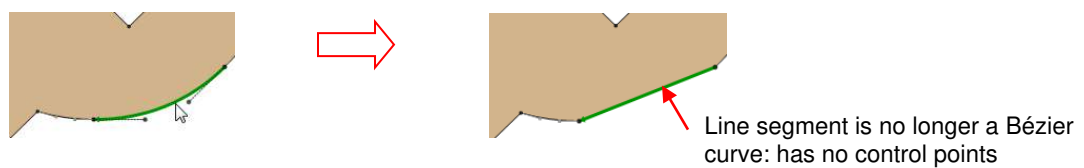
◊ **Delete Segment:** the segment will be erased and will leave unconnected nodes at the ends of the two paths that were connected to this segment. Note that if the shape was previously a closed shape (and **Fill** was turned on), it will now be an open shape with no **Fill**.

Deleted segment is erased and
shape is no longer filled with color.

◊ **Auto-Smoothing:** all changes to a segment will result in smoothing (curving) of this segment as well as adjacent segments. This should be turned off when segments have sharp junctures or cusps with other Bézier curves. A heart will be used to illustrate this:
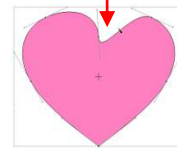
148

The top two segments will be dragged upwards
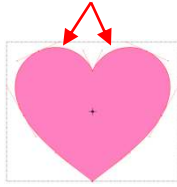
Auto-smoothing is turned off: sharp cusp is retained.
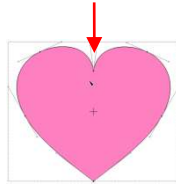
Auto-smoothing is turned on: sharp cusp is converted into a curve.

Or…

Node Editing

- If you hover your mouse over one of the end nodes on a selected path, you will see it become encircled with a dotted red path. That means the node can now be edited. For example, you can drag the node to a new location and the connecting segment(s) will move as well.
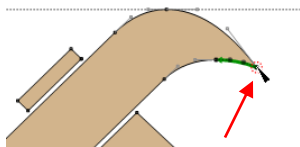
Red dashed circle appears around a node as the mouse cursor is held over it
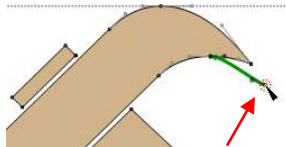
Drag the node to a new location
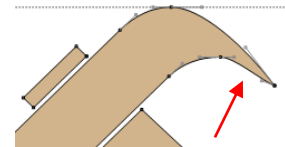
Segments on either side of the node are modified.

- If you right click on a highlighted node, the following menu will open. Explanations for each option are described below:

Smooth Node
Symmetric Node
Delete Node
Break Node
Auto-Smoothing
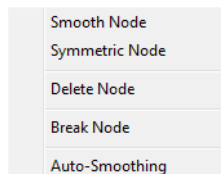
- For the sake of illustrating the node editing, the hammer claw has been modified so that there's a "bump" or warp at the intersection of two segments. Note the length and direction of the two control points:

"Bump"

Control point for segment on the left side

Control point for segment on the right side
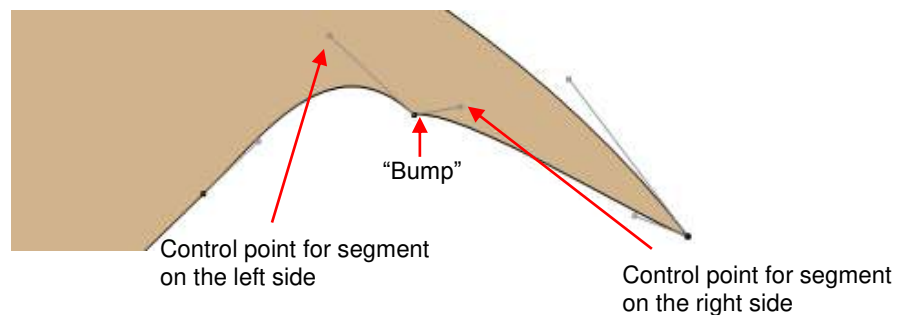
◊ **Smooth Node:** The lines of the Bézier control points on either side of that selected node will align in a straight line, resulting in a smoother transition:

Two control point lines are now in a straight line with one another

149
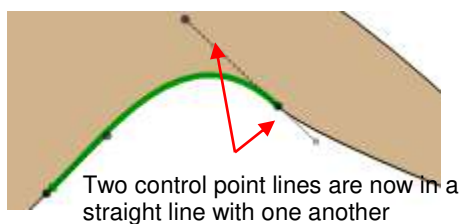
◊ **Symmetric Node**: The lines of the Bézier control points on either side of the selected node will become equal in length, resulting in a smoother transition:
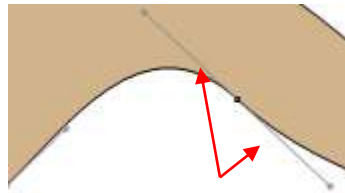
Two control point lines are now the same length

◊ **Delete Node:** The node will be deleted and the two segments will become a single segment. The Bézier control points of the new segment will automatically adjust to try to recreate the previous path of the two segments:

◊ **Break Node:** Breaks the node into two nodes so that the segments are no longer connected. The shape is no longer a closed path, thus it will not be filled with color. The new broken nodes can be moved to different locations, if desired and reconnected using the **Pen Tool**:
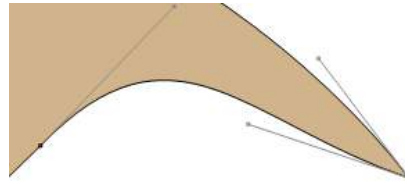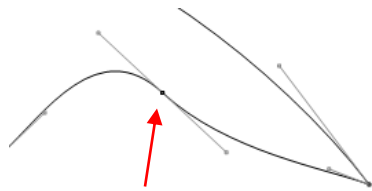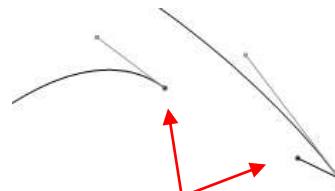
Node is broken and shape loses fill color

Broken nodes can be dragged to new locations
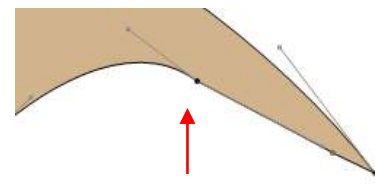
Broken nodes can be reconnected using several methods: refer to *Section 7.14*.

Note that you can also use node breaking to define the cutting start point of a path since, on a broken path, the blade will always start cutting where a node is not connected to any other node.

◊ **Auto-Smoothing:** Same function as Auto-Smoothing under Segment Edit. It is listed again, under the Node Edit for quick access. Again, if a sharp transition needs to be maintained between the segments involved, leave unchecked. Otherwise, select this option to automatically smooth curves.

Applications for Node Edit

• It's not always obvious when the **Node Edit Tool** (for either or both segment and node editing) might be needed. Here are a few examples to keep in mind:

◊ Editing of pixel traced images: Sometimes a pixel trace will appear to be perfect until, for example, you use it for a print and cut and discover that some of the paths are slightly outside the printed areas of the original image:

150

Trace line doesn't follow shape here.

A node is added to break segment and segments are dragged inward.

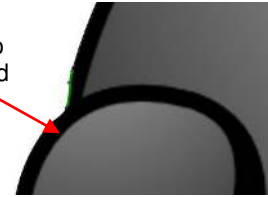◊ Manual tracing: One of the quickest ways to manually trace a raster image is to simply click/click/click around the image and then use node and segment editing to move paths and nodes to more closely align with the original image and to adjust segments for smoother cutting.

◊ Improving a cut: If you have problems with a particular location on a cut shape, examine the nodes in that location. You may find a cluster of nodes or a sharp cusp. Edit the segment and then retest the cut.

◊ Modifying poorly designed files: Sometimes you will pick up free files that prove to not quite work the way you expected. Examples are often fold-up templates where corners and fold lines do not quite meet. Having the ability to move segments and nodes can perfect these kinds of designs and provide cleaner and more professional end products.

7.14 Reconnecting Broken Segments

- A shape that appears closed but will not fill with color has one or more broken segments. In many cases, it's not necessary to close the path because often the disconnected nodes are so close to one another that a closed cut will still be obtained. However, you may still wish to have your shapes fill so that you can better see what the final design will be.

- If you cannot easily see where the segment is broken, select the **Measure Tool** from the **Node Mode Toolbar** and then hover over the shape. Because a cut will always begin at a disconnected node on an open shape, the green direction arrow will show where the cut begins, thus indicating where the segment is broken.

Green arrow indicates where the path is broken
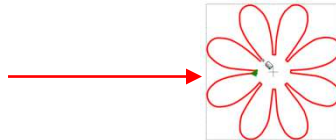
- There are several ways to connect open segments. The first one listed below is restricted in its application. Any of the others can be used to close one broken segment at a time.

Using Fuse n' Weld

- If the shape has many tiny gaps where the nodes to be connected are within close proximity, then refer back to *Fuse n' Weld* portion of *Section 7.04.*

Using Edit Paths at Node Level (Node Edit Tool):

- Select the broken segment and then right click on the end node that is not connected to another segment. The following menu appears:

Delete Node
Join Node To Closest Node
Join Node To Closest Node with Line
✓ Auto-Smoothing

151
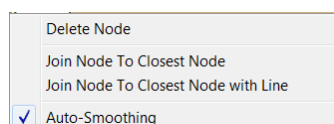
◊ **Join Node to Closest Node:** if this is selected, a segment will form between that node and the nearest node and will appear perfectly straight but will still be a Bézier curve with Bézier control points to maneuver.

| Right click on end node and select **Join Node to Closest Node.** | Ends are connected and the shape is now closed. | Bézier control points are moved to create desired curve. |

◊ **Join Node to Closest Node with Line:** if this is selected, a straight line segment will be formed between that node and the nearest node but will not be a Bézier curve. However, dragging the line to form a curve will immediately transform it back into a Bézier curve.

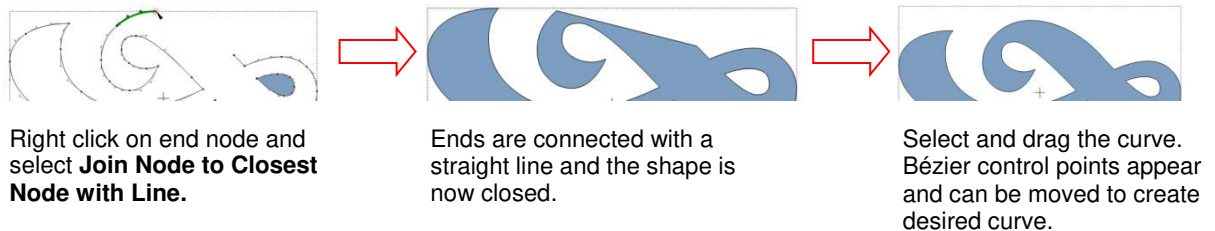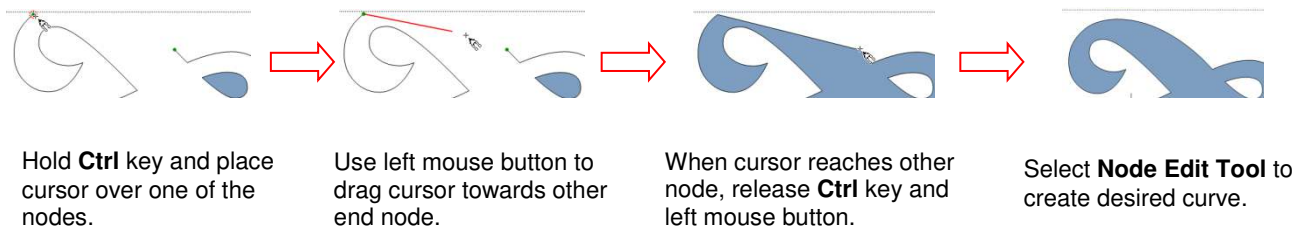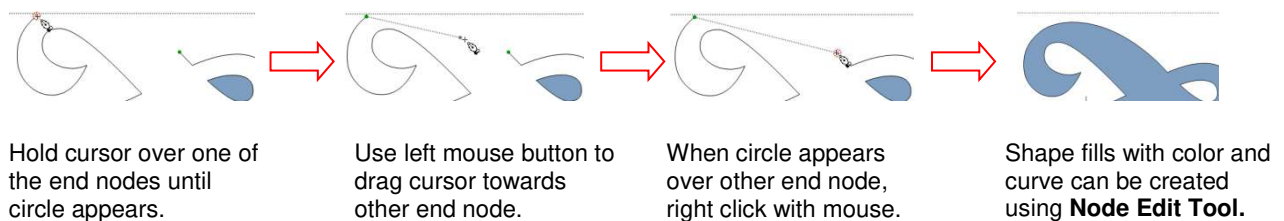| Right click on end node and select **Join Node to Closest Node with Line.** | Ends are connected with a straight line and the shape is now closed. | Select and drag the curve. Bézier control points appear and can be moved to create desired curve. |

Using the Drag Freehand Lines (Pencil Tool)

- First, press and hold the **Ctrl** key. Then drag your mouse from one end node to another and release. The path will close with a straight line. Return to **Edit Paths at Node Level**, if necessary, to drag the line to form a desired curve.

| Hold **Ctrl** key and place cursor over one of the nodes. | Use left mouse button to drag cursor towards other end node. | When cursor reaches other node, release **Ctrl** key and left mouse button. | Select **Node Edit Tool** to create desired curve. |

Using the Draw Bézier Curves and Straight Lines (Pen Tool)

- Hover your mouse over one of the end nodes until a small circle appears around it. Then drag the mouse to the other node. When you see a small circle appear around that node, right click to release and a straight line, connecting the two nodes, will be created. Return to **Edit Paths at Node Level**, if necessary, to drag the line to form a desired curve.

| Hold cursor over one of the end nodes until circle appears. | Use left mouse button to drag cursor towards other end node. | When circle appears over other end node, right click with mouse. | Shape fills with color and curve can be created using **Node Edit Tool.** |

152

8. Designing

8.01 Where Do I Start with Learning to Design?

- MTC offers some excellent easy-to-use designing tools to assist you in creating whatever you can imagine! The best way to learn these tools is to focus on only one at a time, watch the related video, and pause the video after each step, to repeat what you are seeing. You might want to also jot down some notes about any particular settings or tips presented in the video. Try to imagine how the same tools can be used for other kinds of designs and write down your ideas.

8.02 Add Basic Shapes (Basic Shapes Tool)

- The **Add Basic Shapes** function (**Basic Shapes Tool**) is the 5th icon ⬚ on the **Node Mode Toolbar** and can be activated by first opening the **Node Edit toolbar** ⬚ (or pressing **W**) and then clicking on the **Basic Shapes Tool** icon or pressing **F5**.

- This tool will access the same library of shapes found on the **Import Toolbar,** with the exception of the "**Your Shapes**" category. However, instead of double-clicking on a shape to automatically place that shape on the screen, this function allows you to hold down the left mouse button and freely drag your mouse to create the size you desire. In this example, the kite shape from the **Polygons** category has been selected:

Begin dragging mouse from top left towards bottom right. Note that cursor icon looks like the chosen shape.
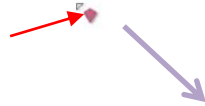
Cursor will jump to bottom left and shape will be drawn.

- Holding the **Ctrl** key while dragging to create the shape will release the **Aspect Ratio**, allowing you to make the shape thinner or wider. You may need to set **Snap Position** to **No Snapping** on the **Virtual Mat** tab:

With **Ctrl** key held, shape can be drawn shorter and wider…

… or shape can be drawn taller and thinner

- Dragging from the bottom upwards (rather than from the top downwards) will automatically vertically flip the basic shape on the screen.

Begin dragging mouse from bottom right toward top left .
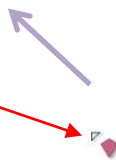
Shape is drawn vertically flipped

- Upon releasing the left mouse button, you may immediately begin drawing another of the same shape.

- This function also tracks your most recently used shapes and provides a list of them within the menu:

Recently Used shapes appears at the top of all categories instead of **Your Shapes**

Your most recently used **Basic Shapes** are easily accessed

8.03 Create Spirals (Spiral Tool)

Video

- The **Create Spirals** function (**Spirals Tool**) is the 6th icon [icon] on the **Node Mode Toolbar** and can be activated by first opening the **Node Edit toolbar** [icon] (or pressing **W**) and then clicking on the **Spiral Tool** icon or pressing **F6**. This tool allows you to create spirals with as many turns as you wish, along with several other settings.

- Once you are in this function, you create a spiral by holding the left mouse button and freely dragging your mouse to create a spiral to the size you desire. You are using the same method as described in *Section 8.02*:

As you drag your mouse, a spiral is added to the screen.

Two blue handles appear: at the start and at the end of the spiral.

- Dragging the handles clockwise or counterclockwise will change the locations of the start point and end point of the spiral:

Drag this handle to change the start point of the spiral.

Drag this handle to change the end point of the spiral.

- If you hold the **Shift** key while dragging the ending point handle, you can change the scale (overall size) of the spiral.

- If you inadvertently draw a new spiral while trying to adjust the current spiral, press the **Delete** key to remove it. If you need to move the spiral, hold the left mouse button down anywhere on the spiral (except on top of a handle) and drag to another location.

- The left side settings for the **Spiral Tool** allow you to change the **Turns** (same as dragging the ending point handle), change the **Inner Radius** (same as dragging the starting point handle), and change the **Divergence** (the distance between the turns). There is also a **Reset** button to bring back default values:

Divergence changes distance between the **Turns** as the spiral progresses (see below)

**Turns** changes the end point of the spiral

Click here to reset to default values

Inner Radius changes the start point of the spiral

154

- With a **Divergence** of 1.0 (default) the distance between the turns is the same. If the **Divergence** is less than 1.0, the distance decreases as the number of turns increases. With a **Divergence** larger than 1.0, the distance increases:
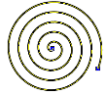
Divergence: 1.0
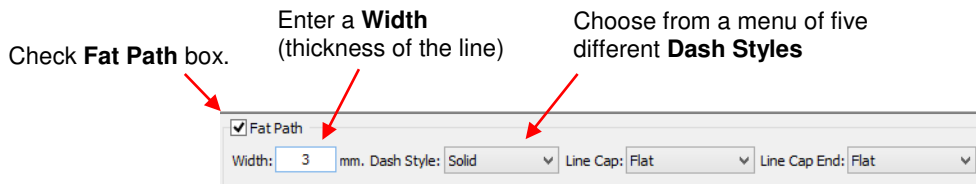Distance between all turns
is the same
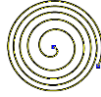
Divergence: 0.5
Distance decreases with
the number of turns

Divergence: 3.0
Distance increases with the
number of turns.

- The right side settings for the **Spiral Tool** allow you to have a **Fat Path**, control the thickness of the **Fat Path**, as well as the style of path and the end caps:

Check **Fat Path** box.

Enter a **Width**
(thickness of the line)

Choose from a menu of five
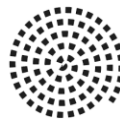different **Dash Styles**

- The five available **Dash Styles** are:

Solid   Dash   Dot   Dash Dot   Dash Dot Dot

- The start and end point styles of the spiral can be changed to any of seven different line caps:

Choose from a list of seven
different **Line Cap** styles
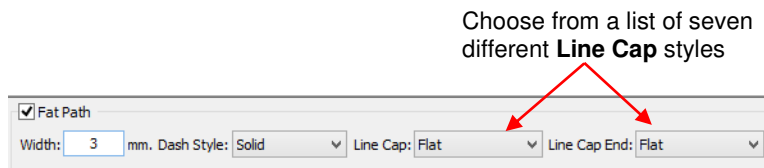
- The available **Line Caps** are:
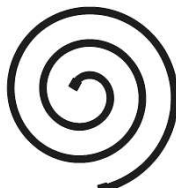
Flat   Round   Triangle   Arrow Anchor   Square Anchor   Round Anchor   Diamond Anchor

- Once a spiral is created and you click to another function, it cannot be modified further. However, the most recently used settings will be retained when you go back to the **Spiral Tool**.

8.04 Create Stars and Polygons (Star & Polygon Tool)

- The **Create Stars and Polygons** function (**Star & Polygon Tool**) is the 7th icon [ ] on the **Node Mode Toolbar** and can be activated by first opening the **Node Edit toolbar** [ ] (or pressing **W**) and then clicking

on the **Stars & Polygon Tool** icon or pressing **F7**. This function allows you to create customized stars and polygons.

Star

- Once you are in this function, you create a star by holding the left mouse button and freely dragging your mouse to create a star to the size you desire. You are using the same method as described in *Section 8.02*:

As you drag your mouse, a star will be formed.

Two blue handles appear: in an inner corner and at an outer point.

- If you need to move the star, hold the left mouse button down anywhere on the shape (except on top of a handle) and drag to another location. If you inadvertently draw a new star while trying to adjust the current star, press the **Delete** key to remove it.

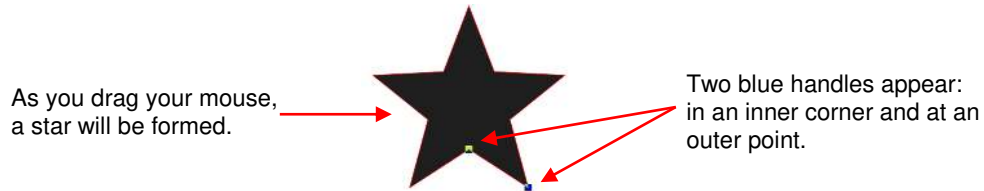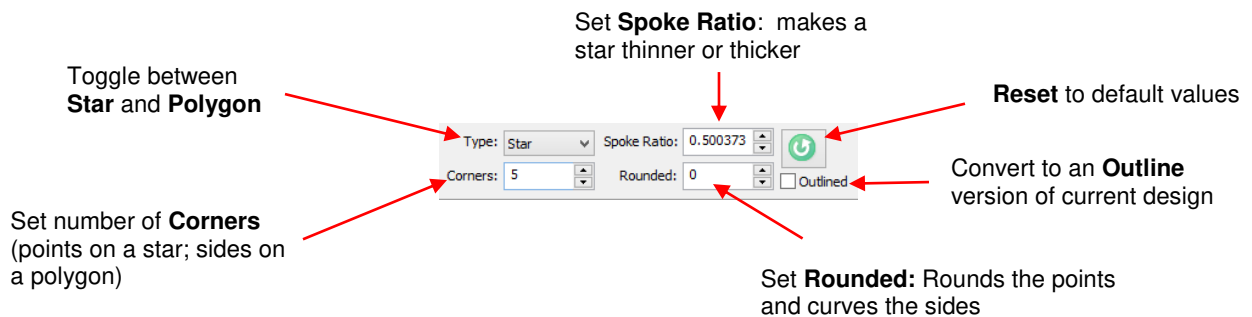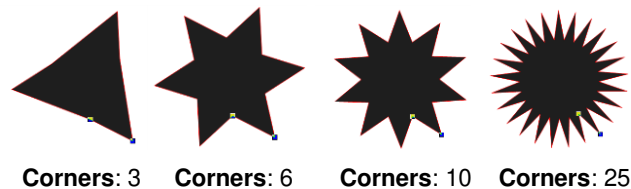- There are several settings used to control the appearance of the star, as well as a **Reset** button. Examples of how these settings change a star are presented in detail below. Note, however, that there are thousands of possibilities based on combinations of these settings:

Set **Spoke Ratio**: makes a star thinner or thicker

Toggle between **Star** and **Polygon**

Reset to default values

Convert to an **Outline** version of current design

Set number of **Corners** (points on a star; sides on a polygon)

Set **Rounded:** Rounds the points and curves the sides

◊ **Corners:** The default is five. However, the range is 3 to many. Here are a few examples:

Corners: 3 **Corners**: 6 **Corners**: 10 **Corners**: 25

◊ **Spoke Ratio**: The range for this setting is 0 to 1.0. You can also change this setting by dragging the outer point handle inward or outward. You will see that it changes both the thickness and the size of the star. You can also rotate the star using this handle:

Drag inward

Drag outward

Drag further inward

Drag further outward

Rotate

◊ Dragging the <u>inner corner handle</u> up or down also changes the thickness, but not the size of the star. Dragging the handle left or right rotates the interior of the star. It also creates a far wider spectrum of design possibilities:

Drag up	Drag down	Drag to the left	Drag to the right

Drag up and to the right	Drag down and to the left	Rotate clockwise	Rotate further clockwise
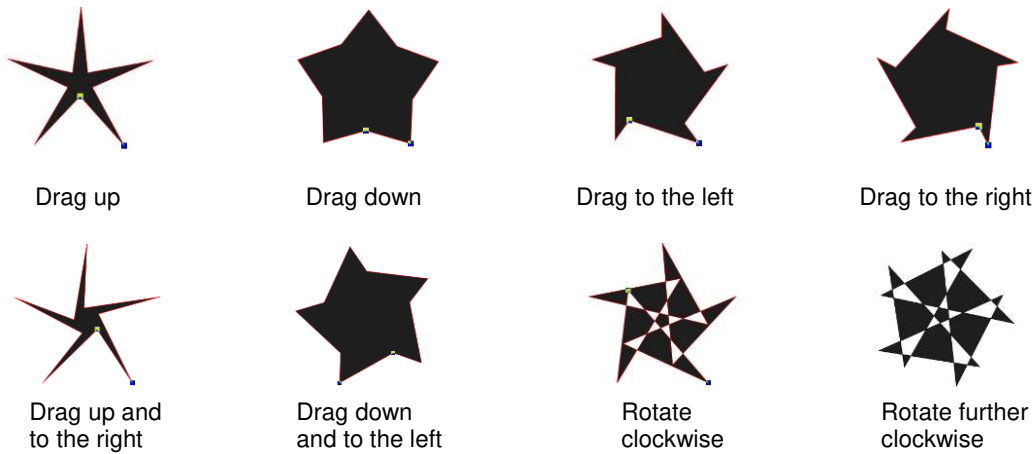
◊ If you hold the **Ctrl** key while dragging either handle, no rotation will occur.

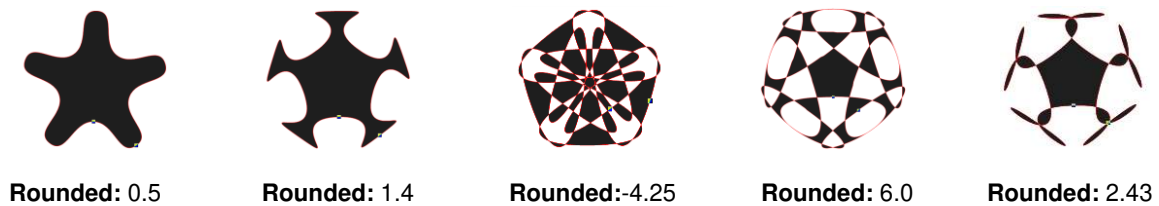◊ **Rounded:** This feature is used to curve the sides of a star. The default is 0. While you can hold the **Shift** key and drag the handle to change the value, the range is much larger (from -10.0 to 10.0) if you input values in the setting window at the top. Here are just a few of the thousands of possibilities:

Rounded: 0.5	**Rounded:** 1.4	**Rounded:**-4.25	**Rounded:** 6.0	**Rounded:** 2.43

◊ **Outlined:** This feature removes all or part of the interior paths on a star which may result in shapes better suited for cutting:

Rounded: -6.0		Rounded: -8.5	
Outline: Off	**Outline:** On	**Outline:** Off	**Outline:** On

Polygon

• To draw a polygon, first set the **Type** to **Polygon**. Then, holding the left mouse button, freely drag your mouse to create a polygon at the size you desire:

Set **Type** to **Polygon** ──

Type: Polygon   Spoke Ratio: 0.487824
Corners: 5   Rounded: 0   ☐ Outlined

As you drag your mouse, a polygon will be formed.

A blue handle will appear at one of the corners.

- If you need to move the polygon, hold the left mouse button down anywhere on the shape (except on top of the handle) and drag to another location. If you inadvertently draw a new polygon while trying to adjust the current polygon, press the **Delete** key to remove it.

- There are several settings used to control the appearance of the polygon, as well as a **Reset**. Examples of how these settings change a polygon are presented in detail. Note, however, that there are thousands of possibilities based on combinations of these settings:
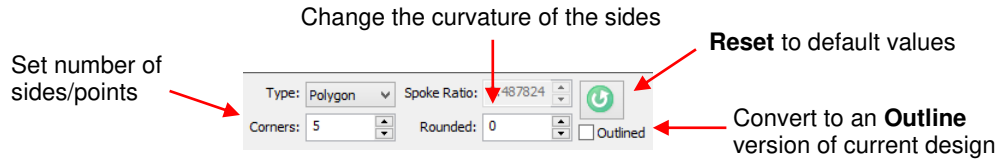
◊ **Corners:** This controls how many points or sides are present on the polygon. The default is five. However, the range is 3 to many. Here are a few examples:

Corners: 3 **Corners**: 4 **Corners**: 5 **Corners**: 6 **Corners**: 15

◊ To resize a polygon, hold the left mouse button and drag the blue handle inward or outward. You can also use this same handle to rotate the polygon, as desired:

◊ **Rounded:** This feature is used to curve the sides of a polygon. The default is 0. While you can hold the **Shift** key and drag the handle to change the value, the range is much larger (from -10.0 to 10.0) if you input values in the setting window at the top. Here are just a few of the many possibilities:

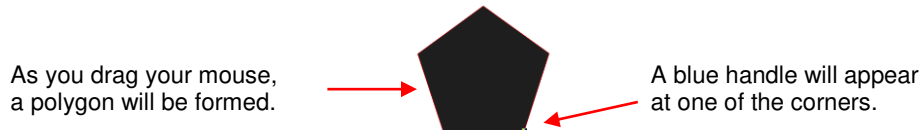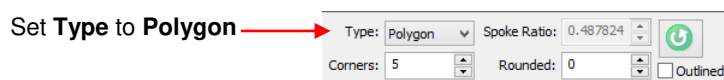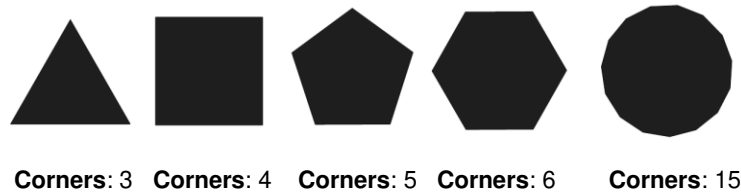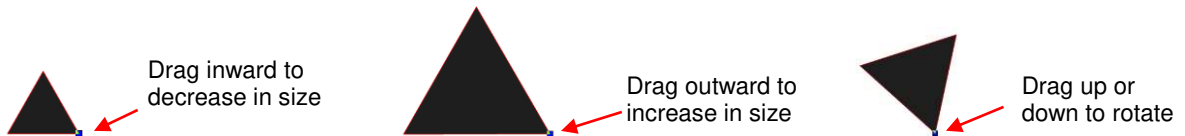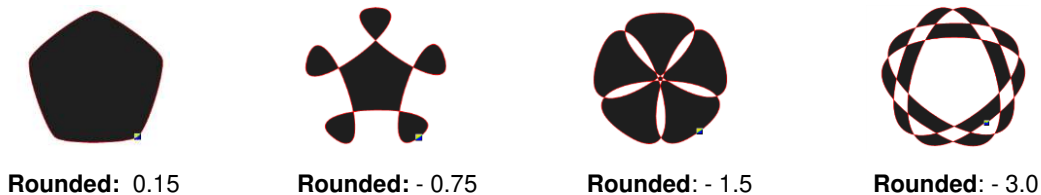**Rounded:** 0.15 **Rounded: -** 0.75 **Rounded**: - 1.5 **Rounded**: - 3.0

◊ **Outlined:** This feature removes all or part of the interior paths on a polygon, which may result in shapes better suited for cutting:

Rounded: -1.5 **Rounded:** -2.5

Outline: Off **Outline:** On **Outline:** Off **Outline:** On

8.05 Shadow Layer


- The **Shadow Layer** function allows you to create an outline or an inline of any shape including, of course, text. After selecting the shape or shapes, the **Generate Shadow Layer** window can be opened in any of the following ways:

    ◊ Click on the **Shadow Layer** icon on the **Magic Toolbar**

    ◊ Press **Ctrl+H**

    ◊ Right click on the screen and select **Shape Magic>Shadow Layer**

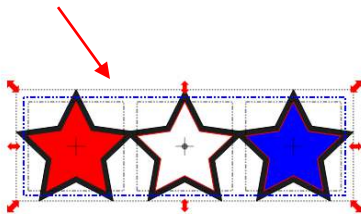   ◊ Go to **Edit>Shape Magic>Shadow Layer.**

Outset Shadow

- In this example, three stars have been added to the screen from the **Basic Shapes** library and they have been colored red, white and blue:
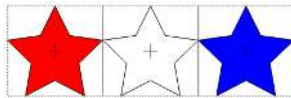
- Marquee-select the stars and then use **Ctrl+H** to open the **Generate Shadow Layer** window:

- The **Shadow Width** can be entered as a fraction (¼, ½, ¾, etc.) or as a number (1, 0.2, 0.03, etc.). Next to the input window is a drop-down menu for the units of measurement, with the option of selecting in, cm, or mm.

- Note that the shadows on the three stars will automatically weld together to form one single outline shadow and this shadow will be placed on its own layer on the **Layer Bar.** This layer can then be re-colored from black to another color, as desired:


Blackout Option

- The **Blackout Option** can be toggled on and off to either apply the shadow to interior paths or to black out the shadow and only have a single outset:
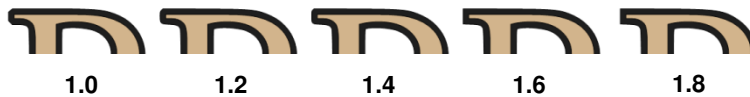
Blackout not applied ⟶　　　⟵ **Blackout** applied

Corner Join Option

The **Corner Join** controls the style or shape of the shadow at the corners. There are three choices:

Observe how the
shadow fits the serif
of the letter

Mitered　　**Beveled**　　**Rounded**
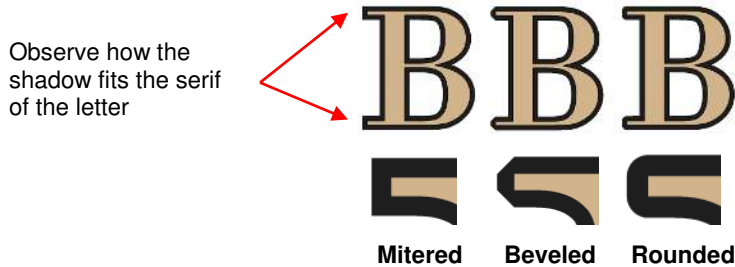
- The **Miter Limit** affects how far the shadow layer extends at the corners:

1.0　　**1.2**　　**1.4**　　**1.6**　　**1.8**

Inset Shadow

- An **Inset Shadow** is the opposite of an **Outset Shadow** – instead of creating a contour that is larger than the original shape, a contour is created that is smaller and fits inside the original shape.

- For example, let's say you are going to create a two-color vinyl sign that says "For Sale" :

For Sale

- If **Outset Shadow** is used to create the second layer, the letters will automatically be welded because of their proximity to one another. This may not be suitable for your application:

For Sale

- Instead, create an **Inset Shadow** by inputting a negative number for the **Shadow Width**:

Previews

Insert a negative number to
create an inset shadow

Select desired **Corner Join** style
and enter **Miter Limit**, if **Mitered**
is selected.

Click on **Accept** when done.

- The result, after re-coloring the layers:

8.06 Weld Tool

- The **Weld** tool removes the overlap between two or more selected shapes. After selecting the shapes, it can be applied in any of the following ways:

    ◊ Click on the **Weld** icon on the **Magic Toolbar**.

    ◊ Press **Ctrl+W**

    ◊ Right click on the screen and select **Shape Magic>Weld**

    ◊ Go to **Edit>Shape Magic>Weld.**

Designing a Balloon

- In Section 5.03, the **Weld** tool was used to remove the overlap with lettering. It can also be used to design everyday items from basic shapes:

Circle, heart, triangle	Overlap shapes	Apply **Weld** (**Magic Toolbar**)	Result: Balloon
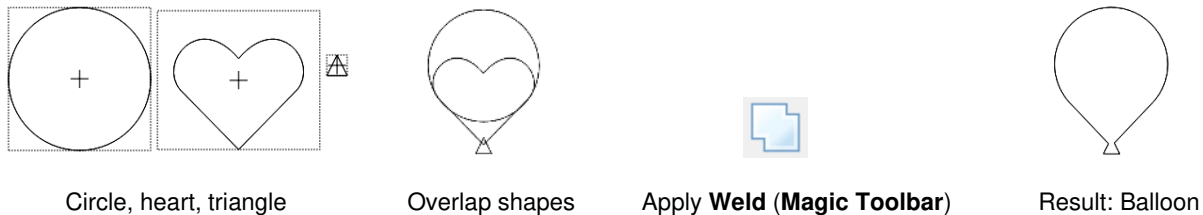
Designing a Border

- Another use of the **Weld** tool is in designing borders. First create the shape to be repeated. A circle with a smaller circle near the top is created. Apply the **Join** (**Ctrl+J**) function to make the two circles into a single shape:

Add 2 circles from Basic Shapes	Resize one and place near the top of the other	Select both and apply **Ctrl+J** to **Join**
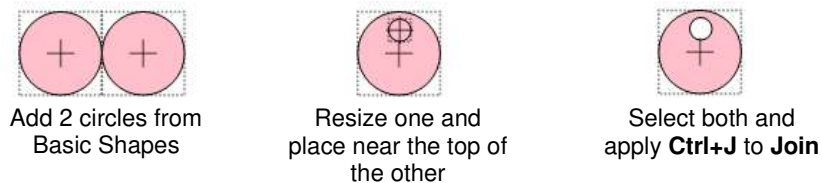
- Select the shape and use **Ctrl+D** to initiate the **Duplicate** function:

Enter 1 **Row**, 12 or more **Columns**, and a negative value for **Spacing** so the shapes will overlap

Click on **Apply** when done
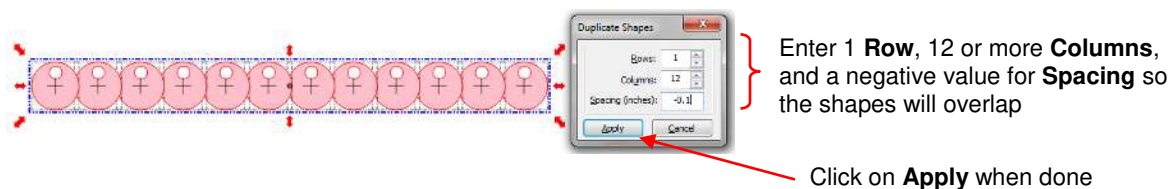
- Add a long rectangle to overlap the bottom and then apply the **Weld** tool to the selected shapes:
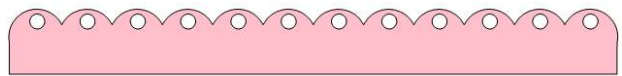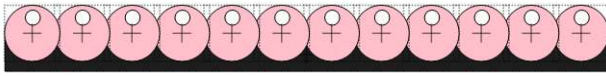
Designing a Wreath

Video

- In *Section 3.10.6*, it was shown how to arrange a shape into a circle pattern using the **Rotated Duplicates** function. This feature opens up a world of designing possibilities. In this tutorial, we'll create a wreath using the following flourish found in the *Wingdings* font that comes with Windows:

- Select the shape and open the **Duplicates** window by right clicking and selecting **Duplicate>Rotated Duplicates**. Enter the number of flourishes you want to use in the wreath and click on the sigma icon. Then double the Rotated By setting to arrange the duplicates in an equally-space circular pattern:

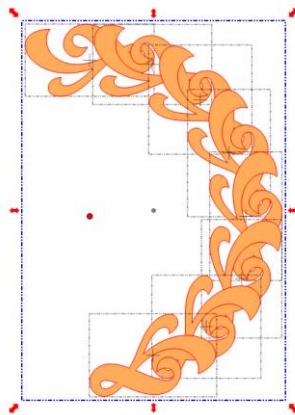Enter **Dup Count** and click on icon
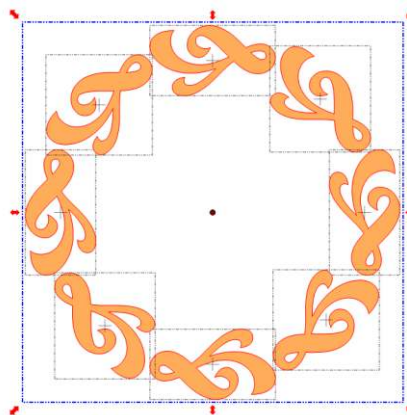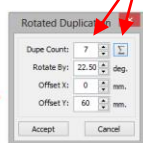
Enter double the **Rotate By** setting to arrange shapes in a circle
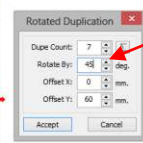
- Experiment with **Offset X** and **Offset Y** to create a design that you like! When satisfied, click on **Accept** and then click on the **Weld** function to remove the overlap:
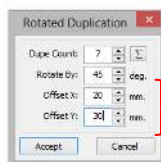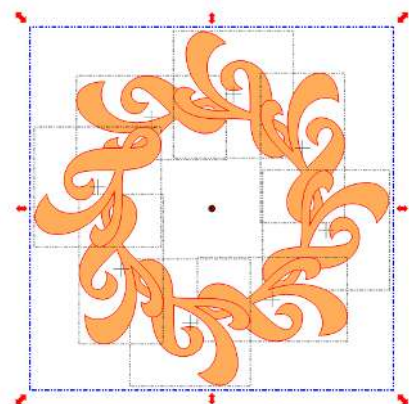
Experiment with the **Offsets**
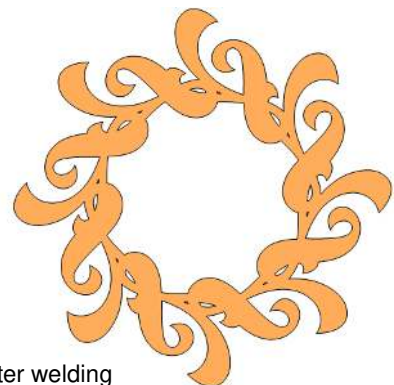
Final design after welding

- To see more examples of how the **Rotated Duplicate** function can be used for designing, visit this link:

http://teamknk.com/rotated-duplicate-a-reason-to-upgrade-to-mtc-4-6/

162

8.07 Boolean Join

- The **Boolean Join** menu contains five welding options but it can only be applied to two selected shapes at one time. If you have more than two shapes, then just apply the **Boolean Join** to any two at a time or, in most cases, you can either use the **Weld** (**Ctrl+W)** function or the **Join** (**Ctrl+J**) tool first to reduce your multiple shapes down to two and then use the **Boolean Join** function needed to complete your design.

- For example, if you have text that has been **Split by Glyphs** and there are 5 letters in your word, then you have 5 individual shapes. You would need to apply either **Weld** or **Join** so that those 5 letters become one single shape. Then you could perform a **Boolean Join** with that text and some other shape to achieve your desired design. This will become clearer later in this section.

- After selecting two shapes, the **Boolean Join** menu can be opened in any of the following ways:

    ◊ Click on the **Boolean Join** icon on the **Magic Toolbar**

    ◊ Press **Ctrl+U**

    ◊ Right click on the screen and select **Shape Magic> Boolean Join**

    ◊ Go to **Edit>Shape Magic> Boolean Join.**

- The menu contains the following choices:

Five tools are shown with the purpose of each tool. The screen will also show the net result as you select each one.

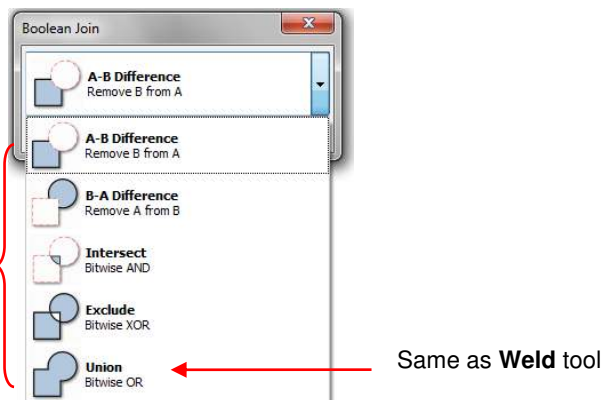Same as **Weld** tool

- When you apply a **Boolean Join** to shapes of two different colors, the resulting shape will be the color of the shape that was on the higher layer.

- Note: There is an **Auto Simplify** option in the **Boolean Join** window. You may need to uncheck that option to get the desired result. For example, the **Exclude Function** will not perform correctly without unchecking that option.

Cutting One Shape from Another

- If you wish to cut one shape from another, then the **Boolean Join** menu provides the solution you need. In this example, two hearts will be cut from a title.

- First, type the word "MOM" using the font of your choice. Make sure to have "**No Splitting**" selected in the **Add Text Group** window. By doing this the text will be a single shape. Then import one of the hearts from the **Basic Shapes** library, resize and duplicate to create the design you want to make:

Arrange hearts, as desired, over the text

- Make a third copy of the heart and set aside. After arranging the first two hearts on top of the text, select them both and apply a **Join** (**Ctrl+J**), so that they will now be one shape. Thus, you now have just two shapes for the **Boolean Join**: the text and the joined hearts:

The text forms one shape. The two hearts are now the second shape

Two bounding boxes, thus two shapes

- Marquee-select the two shapes and go to the **Boolean Join** menu (**Ctrl+U**). Select the second option**: B-A Difference**. Note that if the hearts had been behind the title (positioned in a lower layer than the title), then the **A-B Difference** would have given the desired result.

Heart shapes are cut from text and the text changes to the color of the hearts.

- Select the heart you set aside and decrease in size to fit inside the cut area of the title, so that a little white border surrounds the heart. Note that with some shapes you might need to use the **Inset Shadow** function presented in *Section 8.05.*

- Make a duplicate of the smaller heart and arrange inside the other cut area. Recolor the original "MOM" text to pink (refer to *Section 3.14):*

8.08 Wrap Objects to Path

- **Wrap Objects to Path** can be used to align repeats of a shape along the path of another shape. To open the **Wrap Objects to Path** window, select the smaller shape, hold the **Ctrl** key and drag this shape into the middle of the larger shape. As soon as you see the mouse cursor change, release the left mouse button before releasing the **Ctrl** key.

8.08.1 Designing a Scalloped Oval

- Import a circle from **Basic Shapes** and resize to create an oval. Then also import or open any design. In this design, we joined a larger circle with a smaller one to create an eyelet shape:
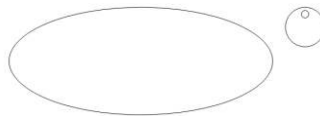
- Select the design, hold down the **Ctrl** key, and drag the shape into the circle. Once you see the cursor icon change, release the mouse button and the **Ctrl** key.
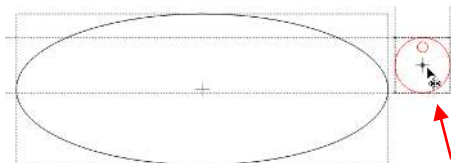
Cursor starts as a double headed arrow
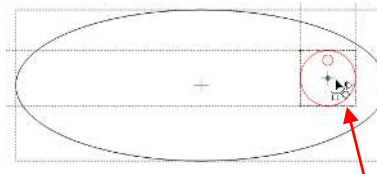
Cursor changes to an arc with little shapes. This indicates that you can now release the mouse button and **Ctrl** key.

- Upon releasing, the **Wrap Objects to Path** window will open. Begin by marking the **Repeat** box, set a negative **Spacing** according to the overlap you want, and begin increasing the **Repeat Count** until the last image overlaps the first:
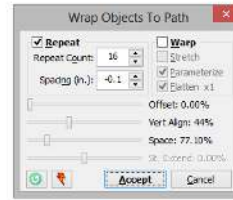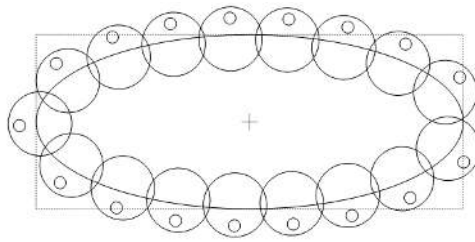
- In order to get equal spacing and for the images to overlap for welding, begin tweaking the **Vert. Align** and the **Space** settings. The **Space** setting is actually changing the **Spacing** setting you originally entered by some percentage so that you can visually achieve equal spacing of the repeats around the circle. If the spacing entered were positive, then a larger **Space** value will, logically, increase the spacing between the objects. But with a negative **Spacing**, such as in this example, a larger **Space** value decreases the spacing, resulting in more overlap:

The goal is to achieve a symmetrical pattern

Adjust the settings to achieve the goal. Use the arrow keys on the keyboard to change values in smaller increments.

If needed, click here to reset to default values

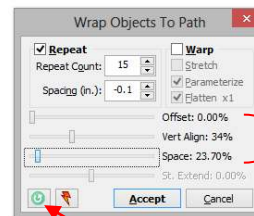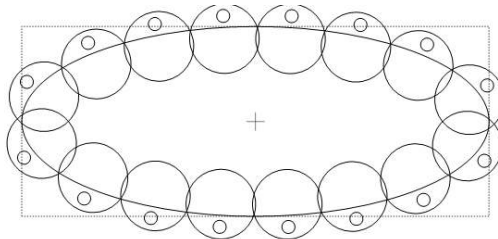- Once you have the settings needed to get the desired overlap, click on **Accept**. You will be given the option to weld and you should respond **Yes**. Then apply a **Break** and remove the interior shape. Move the oval away or hide it so that the remaining scallop with eyelets can have a **Join** applied:
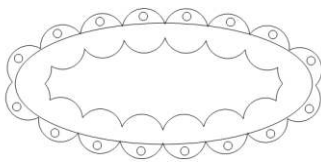
After clicking on **Accept**
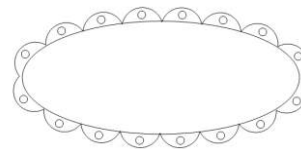
After deleting interior

- Then we can create an **Inset Shadow** of the original oval to make it smaller. Then remove the original oval, select everything and apply a **Join**:
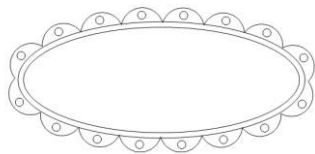
Inline oval is added
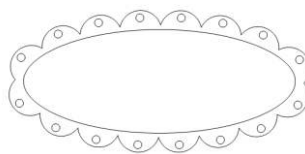
Original oval deleted and **Join** is applied
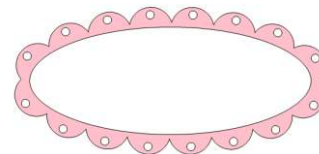
Fill is turned on

8.08.2 Warp Objects to Path

Part 1: *Video*   Part 2: *Video*   Stretch Extend: *Video*   Filling a Frame *Video*

- The **Warp Objects to Path** function forces the shape or shapes put onto a path, to bend or distort in order to hug the shape of that path. To apply **Warp**, check the box in the **Wrap Objects to Path** window. Here's

165

an example of the difference in what you would see if **Warp** is not applied versus applied with the same shape, same repeat, same path:

Note how the keys bend/warp to hug the shape of the curve

Fit a key to a curve

Warp: Off

Warp: On
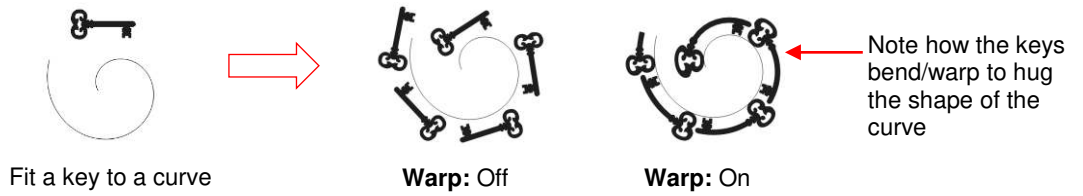
- There are three settings within the **Warp** function:

Stretches shape(s) to fill the length of the path

Prevents scrunching of shapes in tight curves

Reduces nodes to smooth shape(s)
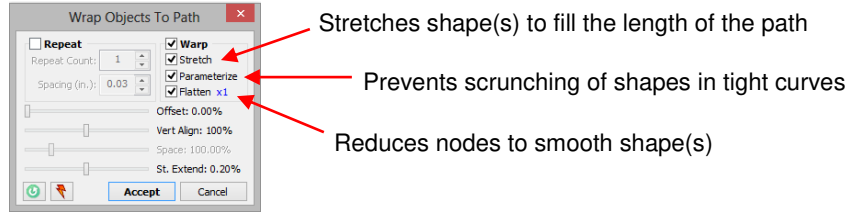
◊ **Stretch:** The **Stretch** setting will extend the shape or shapes to fit along the entire length of the path. In the following example, a stretch hexagon from the **Basic Shapes** is use to create a curve with tapered points:

Fit a hexagon to a curve

Stretch: Off

Stretch: On
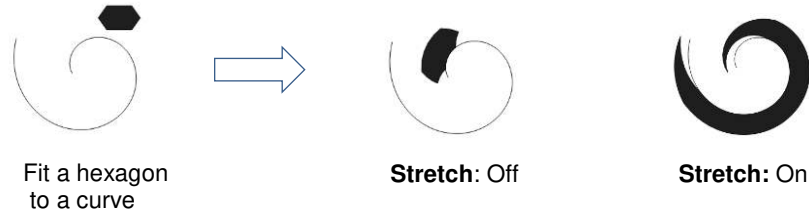
◊ **Parameterize**: The **Parameterize** setting will keep individual shapes more evenly sized and spaced along a Bezier curve. In the following example, a Happy Birthday greeting is placed on a curve. The two versions illustrate the effect of having **Parameterize** turned on versus off:

Parameterize: Off

Parameterize: On

◊ **Flatten:** The **Flatten** setting will smooth shapes (add curvature) by adding nodes. There are five settings: x1 – x5. In the following example, an arrow is fit to the curve:

Fit an arrow to a curve

Flatten: Off

Flatten: x1

Flatten: x2

…

Flatten: x5

- Use the other settings from **Wrap Objects to Path**, to control the starting point (**Offset**), position on the curve (**Vert. Align**) and overlap of repeats (**Space**), just as presented at the beginning of this section. There is a fourth setting, **St. Extend**, which is similar to **Space**, but used to create equal spacing between repeats

166

when the **Stretch** function is applied. In the following example, the border created in *Section 8.06* will be stretched to fit around a circle:
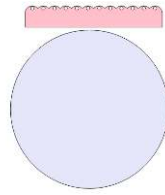
◊ After entering the **Wrap Objects to Path** window, **Repeat** is checked and increased first. Then, **Warp** is turned on:

Turn on **Repeat**

Turn on **Warp**

Four borders are positioned around the circle

The four borders now bend to hug the circle

◊ Notice that where one border ends and the next one begins (indicated by the green arrows below), the scallop spacing is greater than between the scallops along a border. In other words, the repeats need to overlap more so that the spacing looks more even. This is first accomplished by decreasing the **Spacing** setting:

Decrease **Spacing** until scallops looks even between the repeated borders.

A change in **Spacing** does not affect the start and end of the stretch

◊ However, there is still the same gap between the initial start and end of the stretch, as indicated by the blue arrow above. This is where the **St. Extend** setting will correct the gap. By changing it from 0% to 50%, the start and end will now overlap and the spacing is correct:

Increase **St. Extend** to 50%

Spacing is now the same as between the other borders.
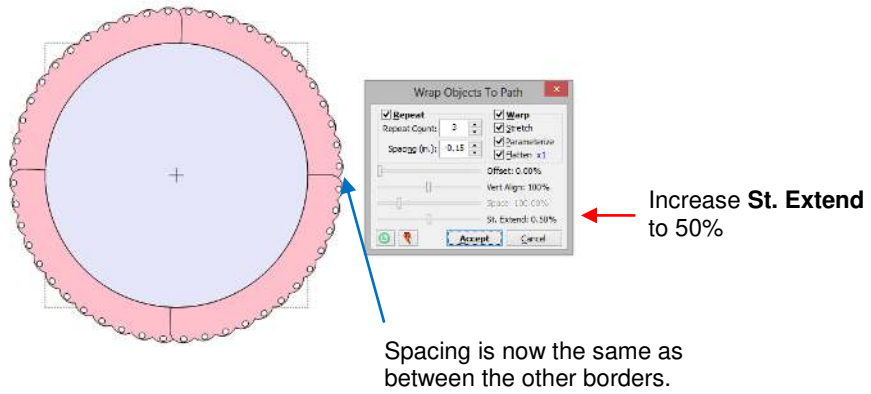
◊ Upon clicking on **Accept**, a popup window provides the option to weld the repeated borders. Responding **Yes,** followed by deleting the circle, yields the final scalloped frame:
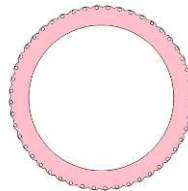
8.08.3 Live Edit Window

• One last feature in the **Wrap Objects To Path** function is a **Live Edit** window which allows you to modify, at the node level, the object being placed onto the path. In this example, the **Basic Shape** called Broad 2 is being applied to a curve and stretched. Note the roundness at the middle of the Broad 2 shape at both the start and end of the curve:

Centers are a bit rounded.
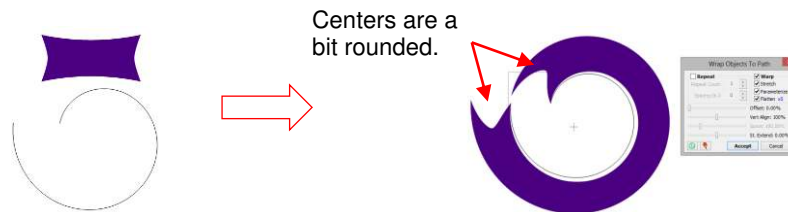
• Without needing to leave the **Wrap Objects to Path** function, the Broad 2 shape can be modified by clicking

on the red icon at the bottom of the window. **The Wrap Objects To Path** window will expand and display the current object:

Click here to open **Live Edit** window

Object is displayed
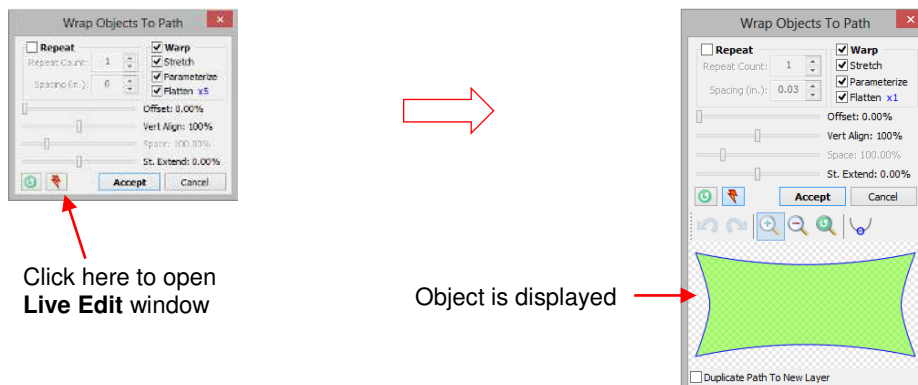
- At this point, the object can be edited as if you were using the **Edit Paths at Node Level** tool presented in *Section 7.13.* Curves can be re-shaped, nodes can be dragged to new locations and added or deleted. In this case, the inner portion of the Broad 2 shape will be edited to be more "pointy" in order to alter the stretched shape on the curve:

Before editing object   After editing object

Note the rounding of the interior

Resulting change to modified object:

Curves are made straighter and center nodes dragged inwards
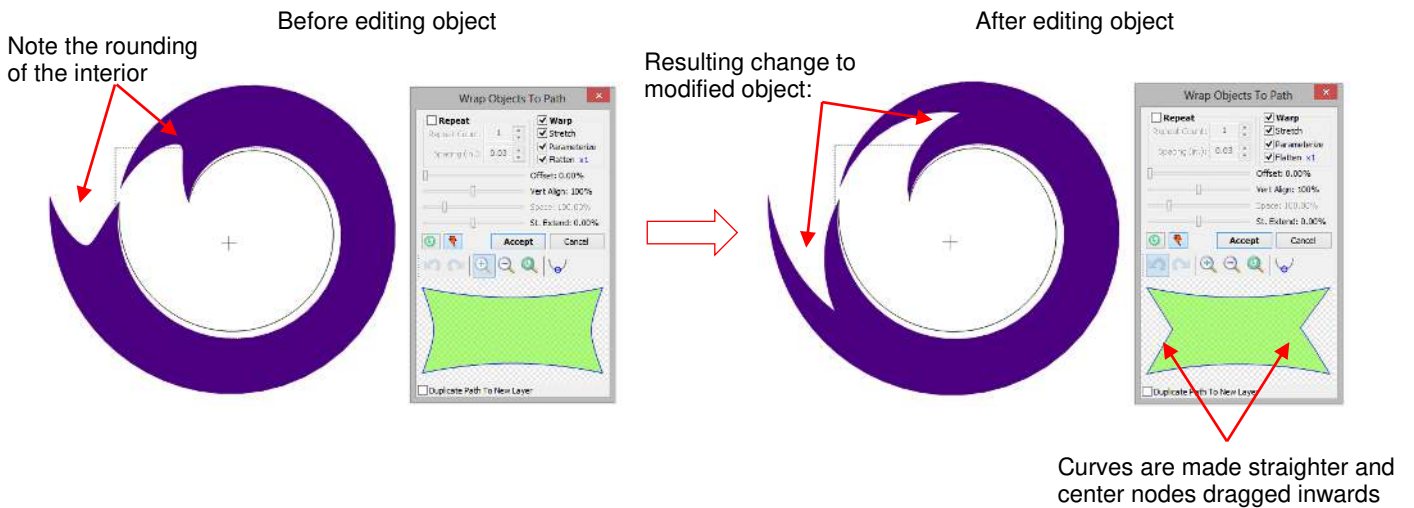
- There are additional icons just above the displayed shape which permit zooming in or out, and even auto-smoothing. If you hold the space bar, you can then pan the small screen, moving to other parts of the shape, which is convenient if you have zoomed in close on particular areas to edit.

Undo/Redo Zoom Auto-Smoothing

Option to have a duplicate of current modified shape added to the **Layers Bar**
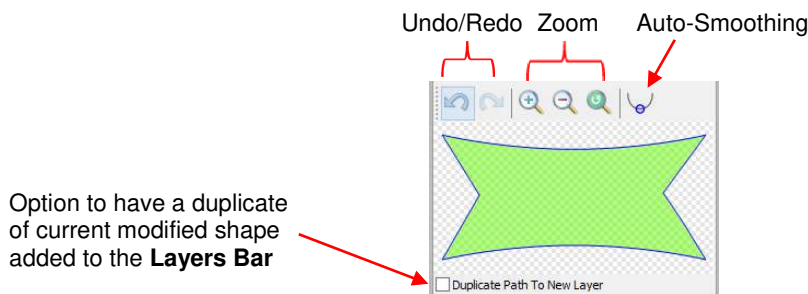
- An options box at the bottom of the window allows you to copy the currently modified object and place it on a new layer on the **Layers Bar** (for later use, as needed). You might also want to then save this new shape to **Your Shapes** in the **Basic Shapes** library, as well (refer to *Section 4.10*).

8.09 Auto 4-Point Warp

- This function is used to fill a four sided concave quadrilateral with a selected shape or shapes. What exactly is a four sided quadrilateral? There are three types, as shown below, however, only one of these three will work:

Will work!   Will not work!   Will not work!

Concave quadrilateral   Convex quadrilateral: Complex quadrilateral:
                          Note the corner which   Note the intersecting
                          "dips in"   sides
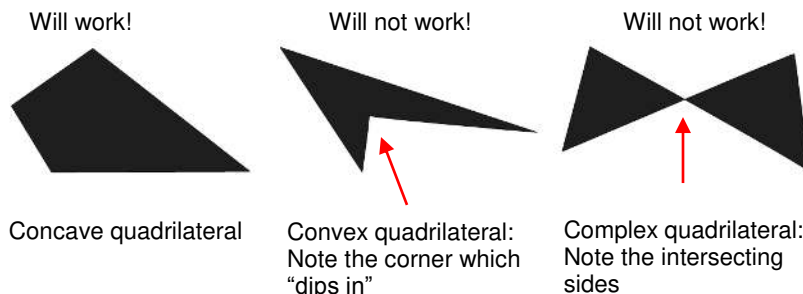
- A second requirement for **Auto 4-Point Warp** is that the mode needs to be switched to **Warp**. This is done by clicking on the quadrilateral to cycle through the three available modes (refer to *Section 3.13*):
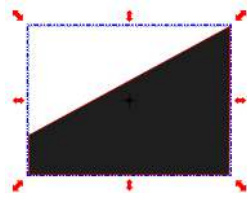
| Resize mode: will NOT work! | Rotate/Slant mode: will NOT work! | Warp mode: WILL work! |
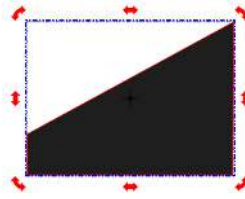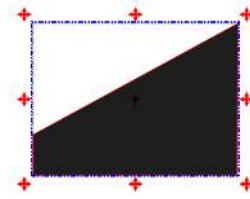
- To activate the **Auto 4-Point Warp** function, hold the **Ctrl** key and the left mouse button while dragging the shape or shapes onto the quadrilateral. In this case, the selected shape is text. As soon as the cursor icon changes, release the mouse. This works just like **Wrap Objects to Path**, but with a different icon. (refer to *Section 8.08*):
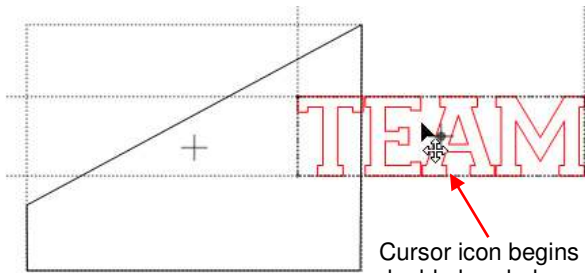
Cursor icon begins as a double headed arrow
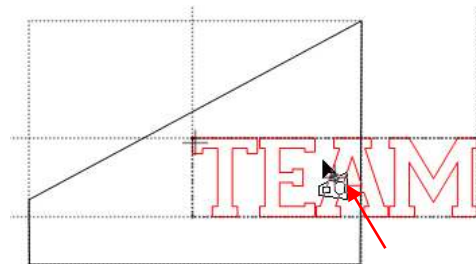
As soon as the cursor icon changes, release the **Ctrl** key and mouse button

- The following window opens and the text fills the quadrilateral. Note the settings available in this window::

Choose **Bilinear** or **Perspective**

Rotate Warp Point Order

Reverse Warp Point Order

Reset to default

Adjustment settings

Click on **Accept** when done
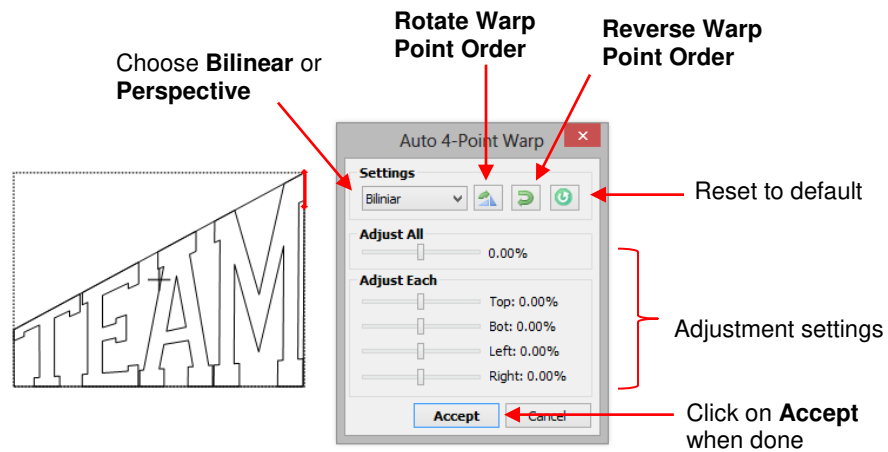
◊ The **Bilinear** / **Perspective** setting changes how the shape is warped:
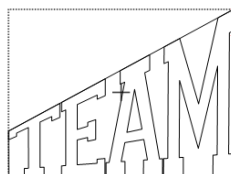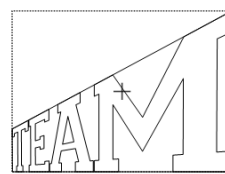
| **Bilinear** | **Perspective** |

◊ The **Rotate Warp Point Order** rotates the shape by 90 degrees, still fitting the text within the confines of the original quadrilateral:
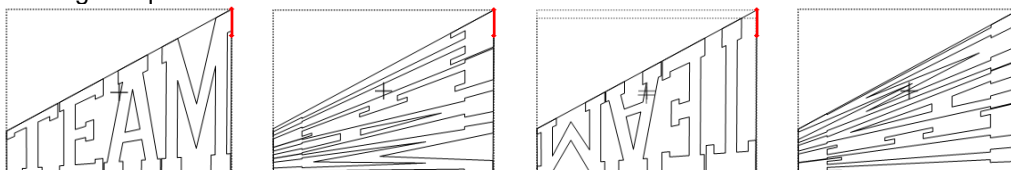
◊ The **Reverse Warp Point Order** mirrors the image:
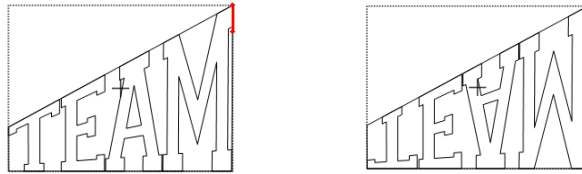
◊ The **Adjust All** and **Adjust Each** settings allow you to move the text from the original boundaries of the quadrilateral:

Adjust All: -50%   **Adjust All:** 0%   **Adjust All:** 15%

Top only: 25%   **Bottom only:** -25%   **Left only:** 15%   **Right:** 15%
Bottom: -25%
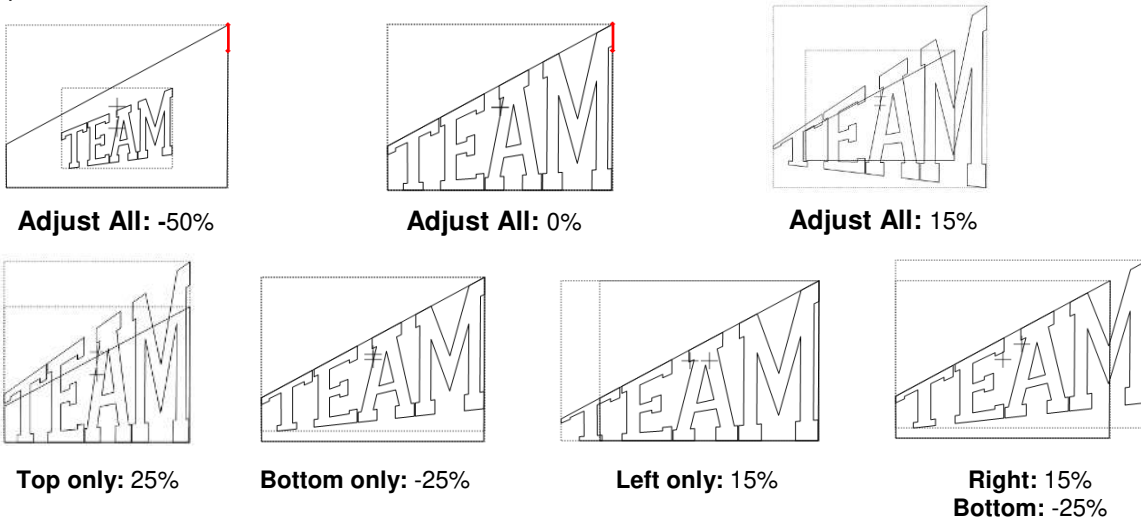
- When you achieve the desired shape, click on **Accept.**

- Sometimes, you may not get what you expect when first applying the **Auto 4-Point Warp**. For example, when we add KNK to a mirror image of the same quadrilateral, as was used for "TEAM", this is what we get:
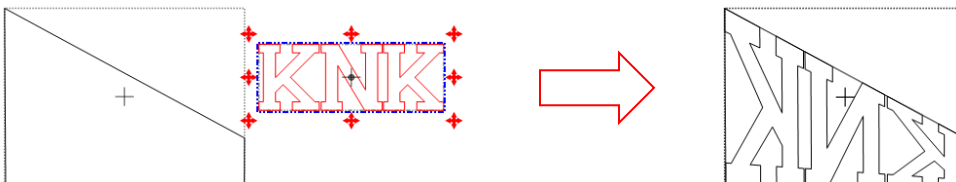
- Both the **Rotate Warp Point Order** and **Reverse Warp Point Order** need to be applied:

Click twice   Click once
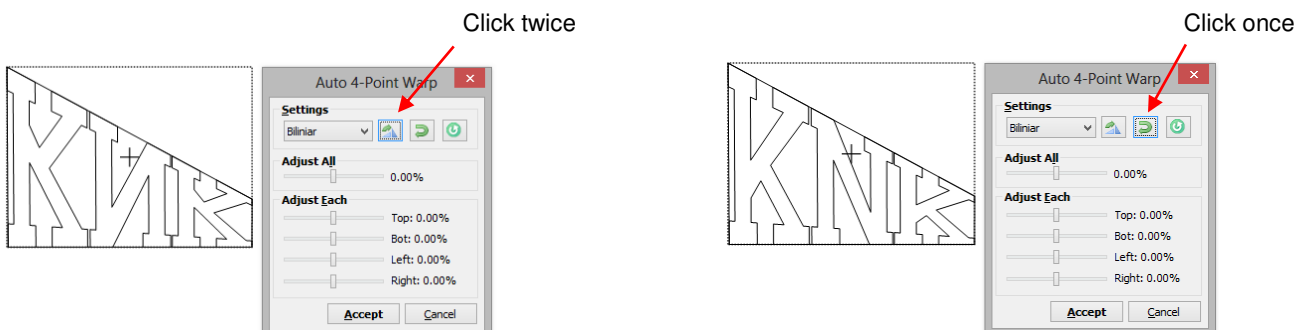
- After applying **Rotate Warp Point Order** twice and **Reverse Warp Point Order** once, we end up with the KNK in the correct orientation. After deleting the quadrilaterals, and recoloring our text, we have the final result:

8.10 Conical Warp

- The **Conical Warp** feature can be used for shaping designs to fit around conical shapes, which are tubular shapes in which the top is a different diameter than the bottom. What makes this feature especially fun to use in designing is the incredible 3D simulation, as you will see in the **Tumbler Wrap** example which follows below.

- The **Conical Warp** feature is accessed in the following ways:

  ◊ Click on the **Conical Warp** icon on the Magic Toolbar

  ◊ Press **Ctrl+Q**

  ◊ Right click on the screen and select **Shape Magic>Conical Warp**

  ◊ Go to **Edit> Shape Magic>Conical Warp**
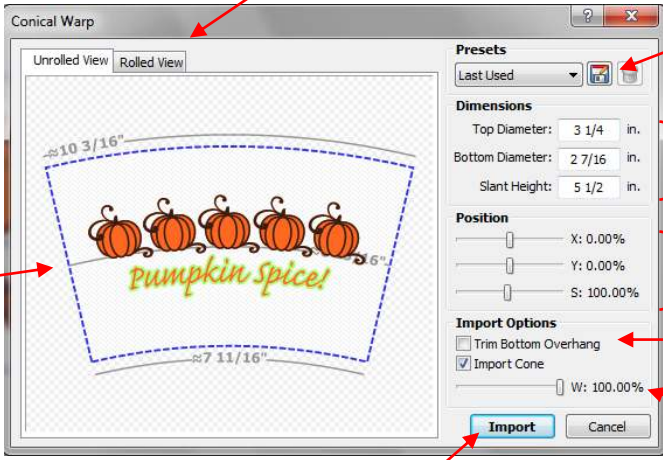
Tumbler Wrap

- A design has been created for the wrap. The pumpkin is from the free *Create-A-Card* set in the Lettering Delights window. A random font was chosen to create the lettering:

- Select the entire design and then click on the **Conical Warp** icon. The follow window opens:

Select the desired **View.**

Settings may be saved for future use.

Enter **Top** and **Bottom Diameters**, as well as the **Height** of the **Tumbler**, along the actual surface.

The design appears on the wrap outline

Scroll to move the **Position** of the **Design** or modify the **Size.**

If the design extends beyond the bottom, you have the option to trim the overhang.

Scroll to decrease the **Width** of the wrap

Option to import the outside shape of the wrap/cone

- Before clicking on **Import**, click on the **Rolled View** tab. You will be able to drag your mouse across the screen to rotate the tumbler and view from virtually any direction:
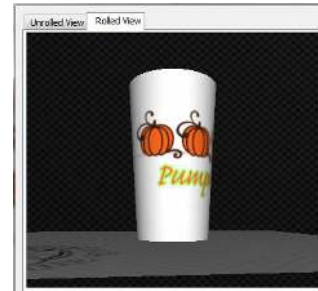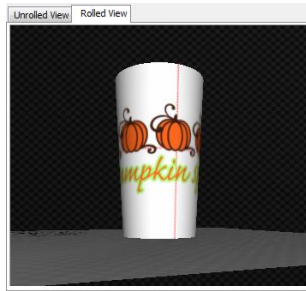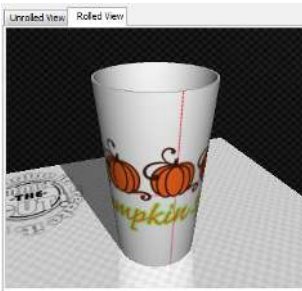
- If you wish to save this image to your computer, double click the image while in Rolled View and a window will open with the option to save as a .png file.

- You can continue to make changes to the settings in the **Rolled View**, as well, and click on **Import** when done. If you selected **Import Cone**, then you will see both the outside shape of the wrap for the tumbler, as well as the original image, reshaped to fit the wrap:

- This feature can also be used in the design of cupcake wrappers!   **Video**

8.11 Lattice

Video

- The **Lattice** feature can be used to create a lattice design within a shape or part of the entire shape itself. It can be accessed in any of the following ways:

  ◊ Click on the **Lattice** icon on the **Magic Toolbar**

  ◊ Press **Ctrl+E**

  ◊ Right click on screen and select **Shape Magic>Lattice**

  ◊ Go to **Edit>Shape Magic>Lattice.**

Latticed Circle

- Begin with a circle, select and then click on the **Lattice** icon on the **Magic Toolbar**. This window will open:

A preview of how the lattice will appear in the selected shape
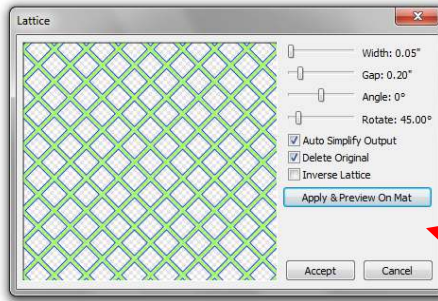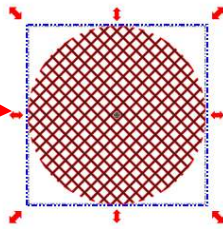
Settings which will alter the appearance of the lattice

Click on **Apply & Preview On Mat** to see how the current settings actually look on your selected shape.

- The selected circle indicates that the current settings for **Lattice** will result in a much smaller, detailed look than desired. But with the adjustment of the **Width** and **Gap** settings (both made larger), the result is much more practical for cutting:

Preview indicates the lattice is now much larger.
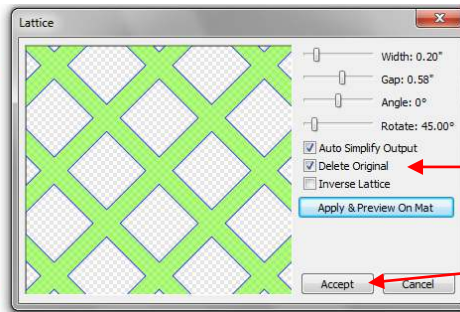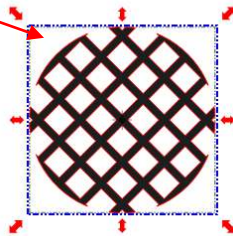
Width and **Gap** both increased

Option to **Delete Original** shape if no longer needed

Click on **Accept** if design is complete.

- Now the design shown would cut exactly as shown. You would have a single cut piece. But for some lattice designs, the opposite is wanted. For example, when cutting a design from the front of a greeting card, you plan to keep the card and not the design itself. In this case, you would mark the **Inverse Lattice** option and perhaps tweak the **Width** and **Gap** settings some more

Notice the difference. In this case the lattice part will be attached to the cut material

:
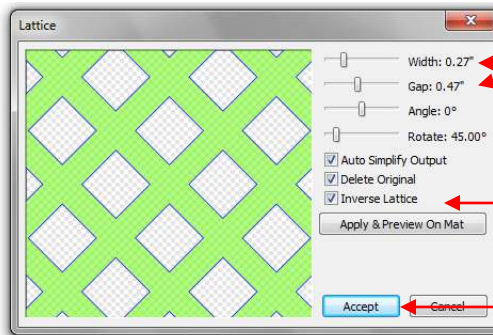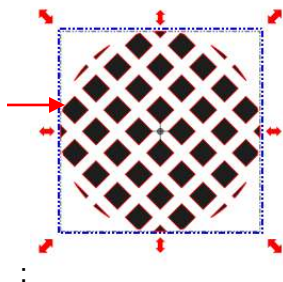
Width and **Gap** modified after switching to **Inverse Lattice**

Click on **Inverse Lattice** to reverse the type created

Click on **Accept** if design is complete

8.12 Rhinestone Design

Designing: **Video**   Editing: **Video**   Applying Simulations: **Video**

Checking circle size: **Video**   Resizing Existing Patterns: **Video**   Re-spacing Existing Patterns: **Video**

- MTC's **Rhinestone** feature provides both outlining and horizontal fill of shapes with the size of circles needed for your rhinestones and the spacing desired. It can be accessed in any of the following ways:

    ◊   Click on the **Rhinestone** icon on the **Magic Toolbar**

174

◊ Press **Ctrl+K**

◊ Right click on screen and select **Shape Magic>Rhinestone**

◊ Go to **Edit>Shape Magic>Rhinestone.**

- There are some very specific guidelines to follow when designing a rhinestone pattern:

  ◊ The shape needs to be sized before applying the rhinestone circles. If you wait until afterwards and then realize that you want your overall design to be twice as large, then resizing will make the circles twice as large and the spacing twice as large, too! So, before accessing the **Rhinestone** feature, decide on the overall size you wish to use.

  ◊ The circle size selected will need to be larger than the stone size you purchased. As a general rule, select a size three numbers larger than your stones. Thus, if you purchased 10SS stones, then in the rhinestone design window, you will want to be selecting 13SS stones. This larger size will allow the 10SS stones to more easily brush into the holes.

  ◊ When selecting a font to use, be leery of "fancy fonts". You want the lettering to be readable after it is converted to circles. When in doubt, have someone who doesn't know the words you've typed attempt to read the circle design on the screen. If they cannot decipher your words, then try a more basic font.

  ◊ Rhinestone designs almost always need "tweaking" which involves adding, deleting, moving, or re-spacing circles. You will need to apply a **Break** (**Ctrl-B**) to separate the pattern into individual circles. To quickly add a circle, select one, click on the **Copy** icon and then click on the **Paste in Place** icon and drag the circle to its new location. Then you can continue to just click on **Paste in Place** to add more. To re-space a row or column of circles, marquee-select and then use the shortcut keys, **[** and **]** to provide equal vertical and equal horizontal spacing, respectively.

Rhinestone Outline

- In this example, the initials from a high school will be outlined. As mentioned in the introduction to this section, the first step is to size width and height of the lettering. Make sure there is enough space between the letters so that the circles will not overlap. Also, you may want to resize the lettering vertically to make the letters taller. This allows more circles to be applied and can improve the ability to read the text:

Letter is 6" wide but only 2.3" tall

Letter is still 6" wide but is now 3.6" tall and will show up better on the shirt
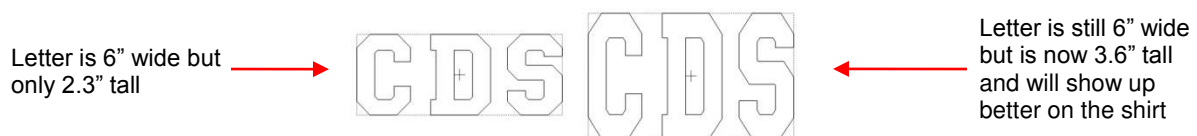
- To apply a rhinestone outline, select the shape and then click on the **Rhinestone** icon. This window opens:

Select a circle size larger than your stones

Select desired **Spacing**

Click on **Outline Shapes**

Option to **Delete Original** shape

Click on **Preview** button to see effects of settings

Click on **Accept** when done.

Preview of design

Rhinestone [Preview Count: 221 Stones]

Stone Size	Pearl Plate	Millimeters	Inches
SS11	PP23	2.90 - 3.00	0.1100
SS12	PP24	3.00 - 3.20	0.1200
SS13	PP25	3.20 - 3.30	0.1300
SS13	PP26	3.30 - 3.40	0.1330
SS14	PP27	3.40 - 3.50	0.1330

Spacing: 0.0333"

- Outline Shapes
- Fill Shapes
- Delete Original

Preview On Mat

Accept   Cancel

- It is recommended that you mark the **Delete Original** option while previewing your design on the screen. However, before clicking on **Accept**, remove the mark. You may need to recreate your design at some point and having the original shape will be beneficial.

- The final step will be to tweak the design using the short cut keys mentioned at the beginning of this section.

Rhinestone Fill

- The other option in the **Rhinestone** feature is **Fill Shapes**. Instead of outlining the shape, the image will be filled with circles in horizontal rows. In our prior example, the same letters will now appear like this:

Number of circles in design

Click on **Fill Shapes**

Preview of design
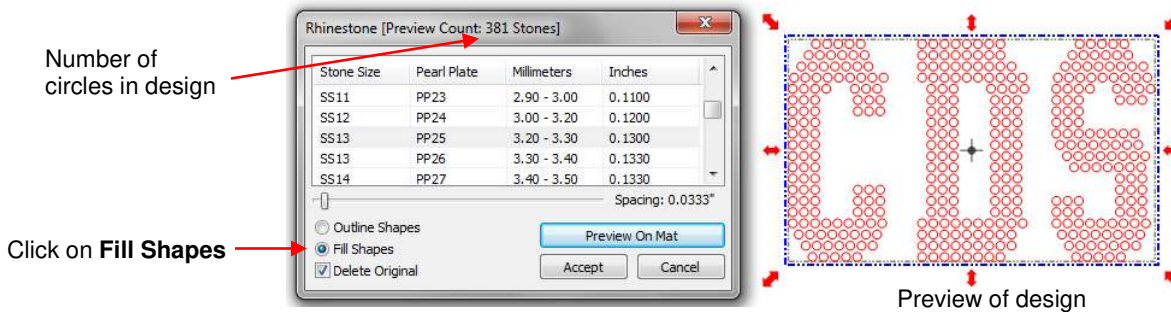
- Note that in the title of this window, the number of circles in the design is shown. Rhinestones are typically sold by the gross and 1 gross equals ~ 144 stones.

Additional Tips on Rhinestone Designing

- Sometimes the circles you want to re-space equally may fall closer to a 45^0 angle versus vertically or horizontally. Select your entire design and rotate until the line of circles is closer to vertical or horizontal. Re-space using the [or] shortcut keys and then rotate back into place.

- If you want to outline your design, then create the outline first using the **Shadow Layer** function (**Ctrl-H**). Choose a **Shadow Width** at least the size of the circles plus the spacing. In the 10SS example, the circles were 0.13" in diameter and the spacing was 0.03". If the same settings are used in this next example, then the **Shadow Width** needs to be 0.16" (note that mm or cm can also be used):

Set the **Shadow Width** to at least the size of the circles plus the spacing
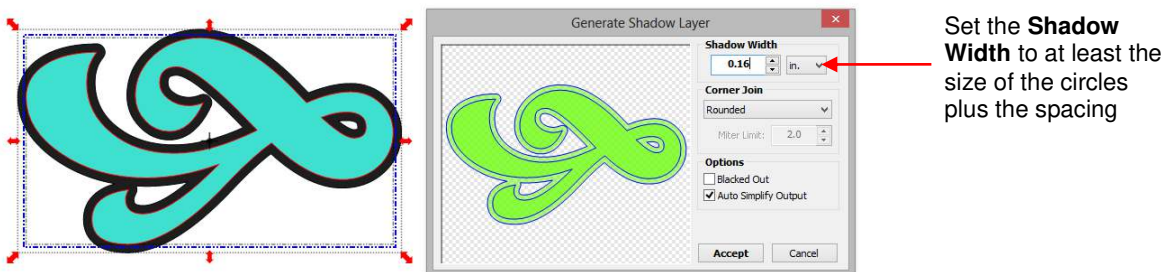
- The resulting design with the shadow set to the circle size plus the spacing, looks like this:
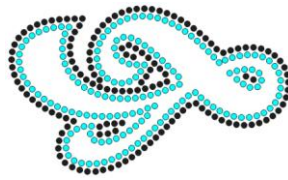
- With symmetrical rhinestone designs, consider using the following process to perfect your design:

  ◊ This heart outline is clearly not symmetrical:
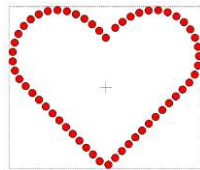
  Right half of heart is not symmetrical with left half

  ◊ Delete the right half and position the upper and lower circles to the desired location:

  Right half is deleted and then circles tweaked to positions desired

  ◊ Select circles and then perform the following steps shown:
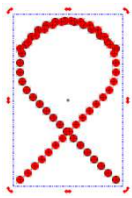
  Click on the **Copy** icon, followed by the **Paste In Place** icon, and then the **Mirror** icon.
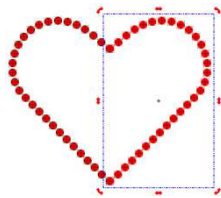
  With right side still selected, press right arrow key until right side is in place.
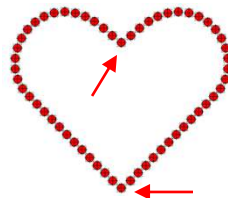
  Delete the top and bottom circles since there are identical copies on top of one another

  Apply the **Join** function and the design is complete

8.13 Texture Snapshot

- The **Texture Snapshot** function is used to create a texture from one or more selected shapes. Upon execution, any overlap between the shapes is removed and a single trace line around the exterior is retained. The fill becomes whatever color or texture the selected shapes had. It can be accessed in any of the following ways:

  ◊ Click on the **Texture Snapshot** icon on the **Magic Toolbar**

  ◊ Press **Ctrl+1**

  ◊ Right click on screen and select **Shape Magic>Texture Magic**

  ◊ Go to **Edit>Shape Magic>Texture Magic.**

- This feature is handy for print and cut applications. For example, a detailed paper piecing pattern can be instantly converted to a print and cut using this function:
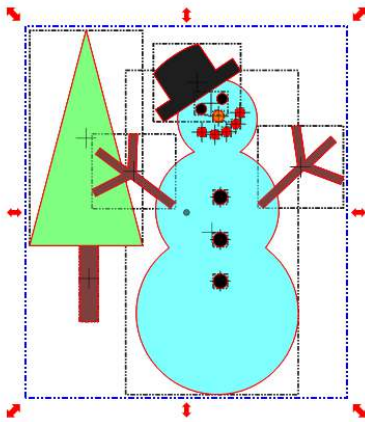
A paper piecing snowman where there are 17 individual shapes
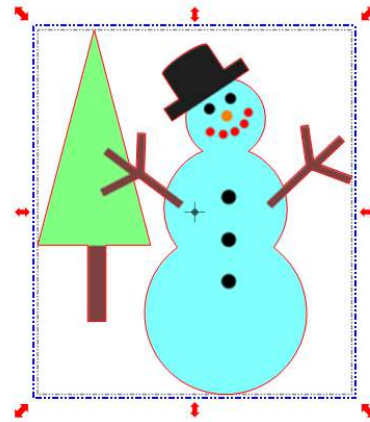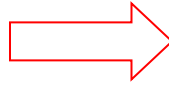
After applying **Texture Snapshot:** exterior cutline with a texture fill

Creating a Gradient Texture Fill

- The **Nested Duplicate** function can be used to create a gradient color texture for any given shape. Decide which color you wish to use for the main shape, for example yellow. Add a rectangle from **Basic Shapes** and change the rectangle to that color:

Rectangle can be any dimension.

- Select the rectangle and apply the **Texture Snapshot** function.

- Create the shape you wish to fill. In this example a flower will be used. Select the shape, right click and select **Change Color/Texture/Line.** Pick **Select Texture** and the following window will open where you can select the yellow texture and also mark the tiling option so that the entire shape will fill with the color, regardless of the size of the original rectangle:
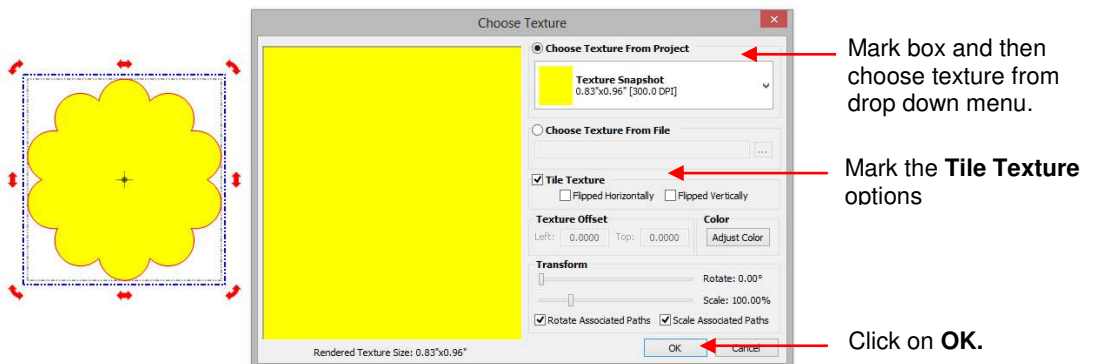
Mark box and then choose texture from drop down menu.

Mark the **Tile Texture** options

Click on **OK.**

- Now, with the shape still selected, access the **Duplicate Nested** function by right clicking and selecting **Duplicate>Nested Duplicate**. The following window will open:

178

Enter duplicate count

Mark **Adjust Color** box

For a spectrum of colors, enter 10 (= 360 / 36)

Click on **Preview**

Click on **Accept** when done.
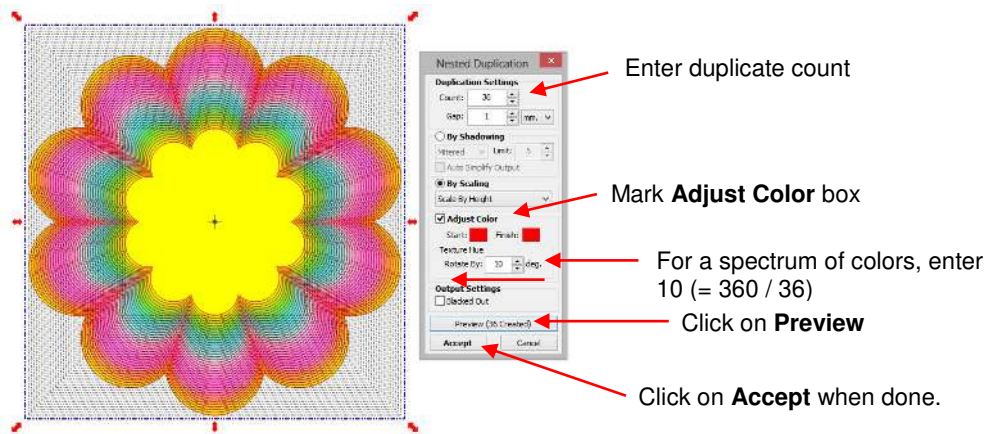
- The **Rotated Hue** function is used for this application. For a spectrum of colors which begin and end with the same color, the degrees are calculated by dividing 360 by the number of duplicates. In this case, 36 duplicates are chosen, so the **Rotated By** setting entered is 10 deg. After clicking on **Accept**, we have our finished flower. **Texture Snapshot** can again be applied:

8.14 Jigsaw Puzzle

- The **Jigsaw Puzzle** feature installs as a separate application. To open it, go to your Windows **Start** button, select **All Programs**, locate your **Make The Cut** folder and then select **Jigsaw Puzzle Generator**.

- The following window will open:

Preview of jigsaw puzzle

Enter desired **Width** and **Height** (which can be changed after importing into MTC).

Enter desired **Rows** and **Columns** to determine number of pieces in puzzle.

Increase or decrease **Corners** to change the roundness of the 4 corners of the puzzle.

Click on **Generate Puzzle** after each settings change to update preview.

Click on **Export Puzzle** when the puzzle is complete.

- If you plan to apply this puzzle over a specific image, you may want to choose dimensions that correspond to your image. For example, let's assume you have imported a 4" x 6" photo into MTC and plan to make a print and cut jigsaw puzzle. Enter those dimensions into the **Jigsaw Puzzle Generator**, as shown above.

- Further, to keep the pieces from becoming too distorted (or worse, overlapping); you should make the number of **Rows** and **Columns** similar to the dimensions, as shown. If you want more pieces then you can increase the number of **Rows** and **Columns** proportionately. For example, instead of having 4 **Rows** and 6

179

Columns use double the number to 8 **Rows** and 12 **Columns** (or 1.5 times to 6 **Rows** and 9 **Columns**). Note how the pieces would look if a rough proportion were not maintained. The pieces would cut into one another:

Puzzle pieces overlap!
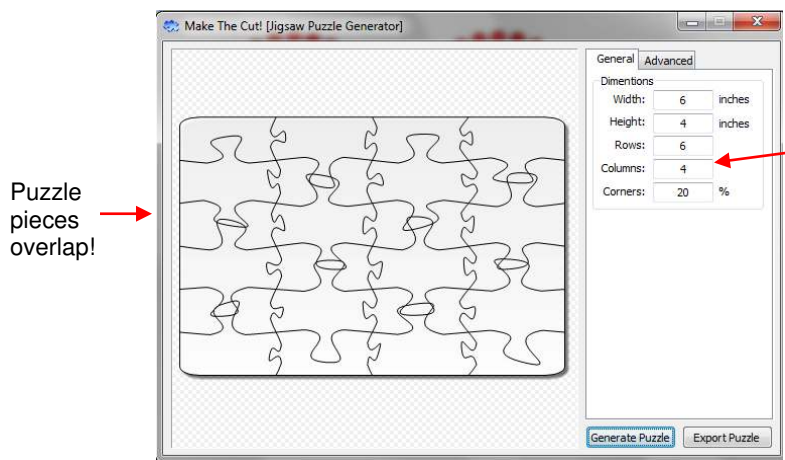
Instead of following the dimensions of the puzzle, the numbers entered for **Rows** and **Columns** are opposite to what was used above.

- There is also an **Advanced** tab you can use to alter the design of the pieces and even save your new settings.

- When you are satisfied with the appearance of your puzzle pieces, click on the **Export** button and a window will open and you can save your puzzle as an SVG file.

- In MTC, import your SVG puzzle file and align it over the image you wish to convert into a puzzle. Perform a print and cut as presented in *Chapter 9*. Alternatively, if you print your image a little bit larger than the overall design of the puzzle, you can set your origin just inside the corner of your printed image and then cut the design using the **Knife Point** setting (Refer to *Section 2.02*).

- Here is an example of an imported picture and the puzzle imported and sized to fit on top:

8.15 Notes Window

- The **Notes** window in MTC can be used in a host of ways: (1) providing instructions for cutting and assembling the project, (2) adding your name, copyright, and Terms of Use, (3) explaining the purpose of different pages or layers, (4) crediting others for assistance with the design, (5) citing sources for clipart or names of fonts used, and (6) attaching files you want to provide with your project.

- The **Notes** window can be opened using the following ways:

  ◊ Click the **Toggle Notes Window** icon on the **File Toolbar**

  ◊ Go to **View>Notes Window.**

- There are two tabs in the **Notes** window – **Notes** and **Files**. The **Notes** window is used for entering any text you wish to include with your project:

Click on the Notes tab

Enter the text here

Click here to change which font is used and the color, size, and style of the text.
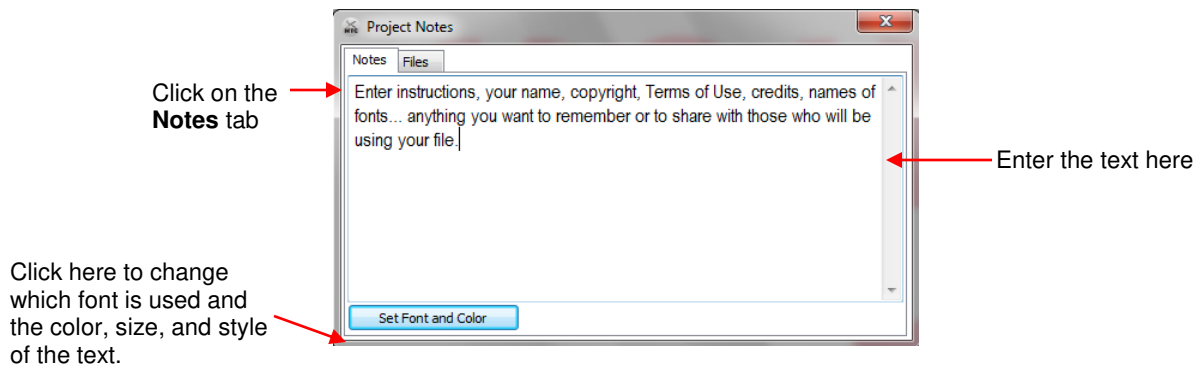
- If you choose your own font and then share the file with someone else, the **Notes** will only show up in that font, if the recipient has that same font installed on his/her computer. Otherwise, the **Notes** will show up in a system default font, such as Arial.

- The **Files** tab can be used to attach files to your project file. For example, you might want to attach a photograph of your completed project, or a PDF tutorial, or another MTC file that is associated with this one. Any file can be attached:

Click on the Files tab

List of files which have been added to this project

Size of each file which has been added to this project

Click on the Add Files to browse your computer and select files to attach.
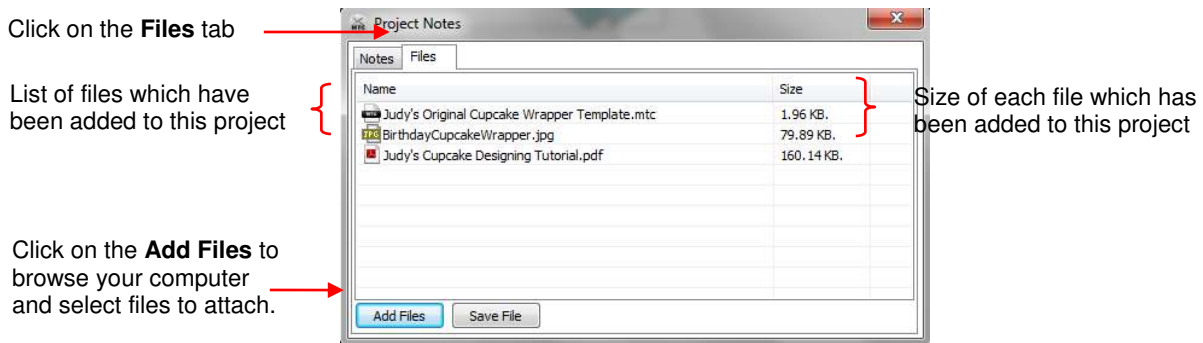
- If you have any information entered into your **Notes** window or a file attached, then it will automatically open when the file is opened by you or someone else. However, as of Version 4.2.0, you can turn off this feature by going to **Help>Advanced>Advanced Settings** and unchecking the box next to "**Enable Automatic Notes**", under **Enable Notes View:**

Uncheck to turn off automatic display of Notes upon opening an MTC with notes.

Automatic Note View
☐ Enable Automatic Notes
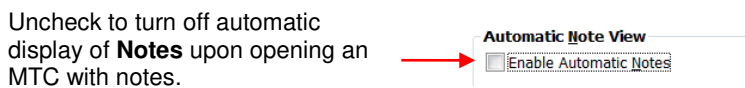
- If you open an MTC project file from someone who has attached one or more files in the **Notes** window, you can try double-clicking the file name to automatically open that file. With some file formats, such as PDF, you will need to save the file to your computer and open it outside of MTC.

- To save an attached file, click on the file name and then click on the **Save File** button to open a window where you can browse your computer to locate a folder for saving that file.

To save a file, first highlight the name by clicking once.
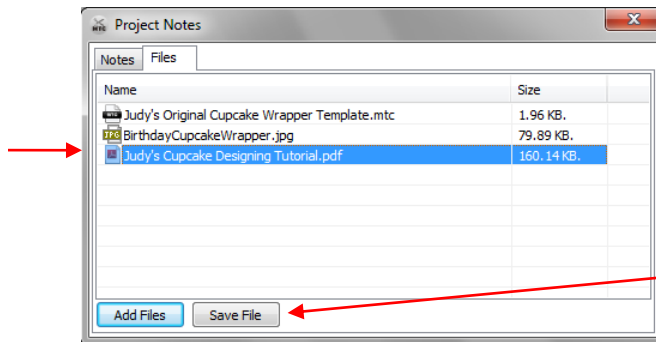
Then click on **Save File** to save the highlighted file to a location of your choice on your computer.

8.16 Design Contest Tutorials

- In October 2011, a contest was sponsored by KNK USA. The challenge was to take existing designs or shapes and transform them into new shapes using various functions in MTC. The following tutorials are from the two winning entries and are excellent examples of how the tools available in MTC can be used in creative ways.

Designing a Whale by Brigit Mann

- Begin with the following **Basic Shapes**:

- Select the Yin Yang, resize to about 3" in height. Apply the **Break** function. Delete the lower circle and set the right side of the Yin Yang off to the side. Make the circle slightly smaller (this will be the whale's eye). Apply a **Join** to the left side to recombine the circle to the Yin Yang:

- Resize the crescent and rotate and put it partially on the whale body where the mouth would be. Select both pieces and apply **Boolean Join**, selecting **B-A Difference**:
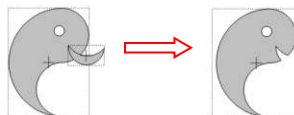
- Unlock the **Aspect Ratio** and resize the tear to 2.5" **W** x 0.8"**H.** Select and click on the Bézier **Warp** tool. Under **Size** and **Position,** slide the left and right to about 37:
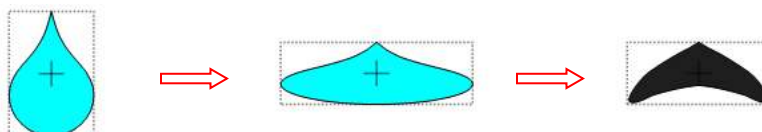
- Rotate the tail to line up with and overlap the whale body. Apply the **Weld** tool:
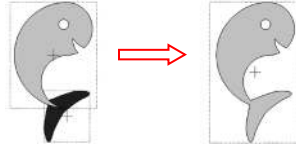
- Lock the **Aspect Ratio** and resize the triangle size to about 1.1". Insert nodes on each side as shown. Then drag top node to the left:

Insert a node about 1/3 of the way from top of path: →

Insert a node about ¼ of the way from top of path: ←

Drag top node to the left →
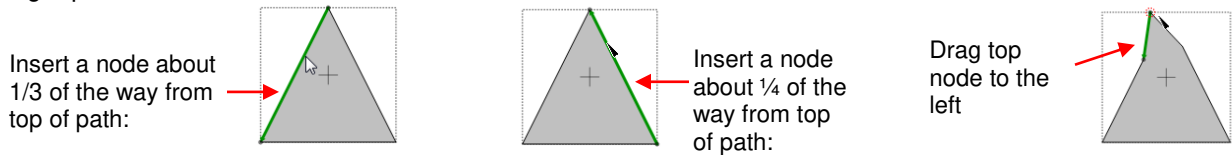
- Curve paths outwards to form fin:

Drag curve ←

Drag curve →

Fin is formed →
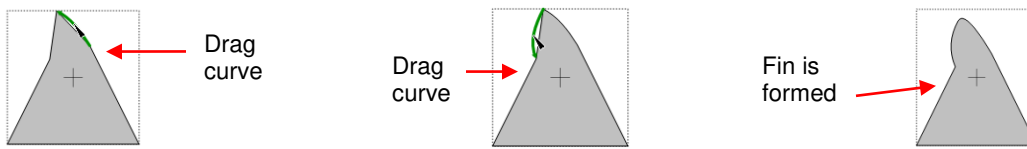
- Rotate the fin, overlap onto the whale's body and apply the **Weld** tool:
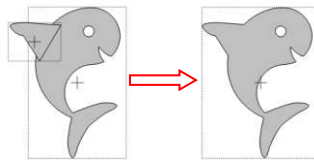
- Resize the other Yin Yang section to a width of 1". Using the **Knife** tool, slice in the middle and delete the top piece, join the two nodes together this is the flapper:
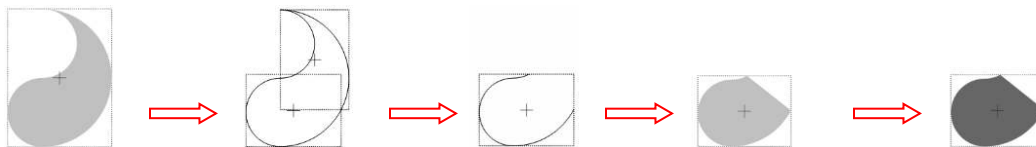
- Select the whale and apply a **Shadow Layer** (with blackout selected). Then arrange the flapper on top:
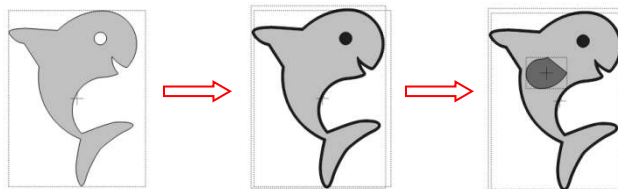
- To add some splashes, start with additional tear shapes, resize to make thinner, and apply **Warping** or other method of distorting the shape. Rotate and arrange under the whale to complete the design:
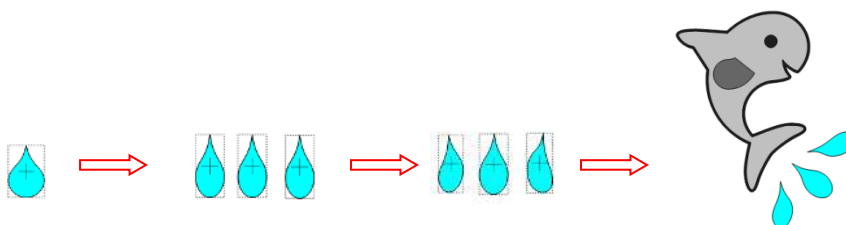
Designing a Flower by Laury Vaden

- This colorful flower is made from just a few **Basic Shapes**: Circle, Swirl, Heart2, Tear, and Wavy 2.

- Set **Snap Position** to **No Snapping**. Choose one of the non-contrast mats such as the standard green mat.

- Select the Circle and move it down and away from the other shapes. Then select the Tear and move it down. Click on the Tear until red icons change to the mode shown below. This is the **Scale** mode. Elongate the Tear and thin it as shown:
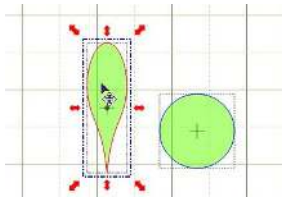
- Holding the **Ctrl** key, move the Tear over the Circle and release. This will open the **Wrap Objects to Path** window. (Refer to *Section 8.08)*for details on activating this function):
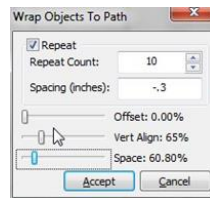
- First, check the **Repeat** box. Then increase the **Repeat Count**. Use a negative value for the **Spacing** so that the Tears overlap slightly. Spacing is controlled by both the **Spacing** setting that you type in and the **Space** slider setting just above the **Accept** button. This might be a little confusing especially when you use negative numbers versus positive numbers. Practice a bit to see how it works with both. The **Vertical Align** slider controls how far into the circle the Tears will be located. The **Offset** slider is not used because the tears are being aligned along a circle:
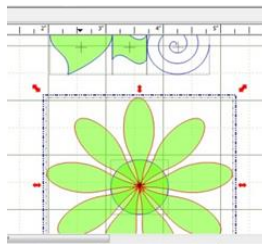
- Select the Circle and all of the Tears/Petals and apply the **Weld** function:
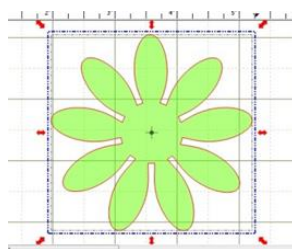
- Click on the flower and apply a **Copy** and **Paste In Place** to create a duplicate. Double click on the duplicate until the shape is in the **Rotate** mode. Then slowly rotate the copy by dragging the corner icon around until the copy lines up with the spaces of the original:
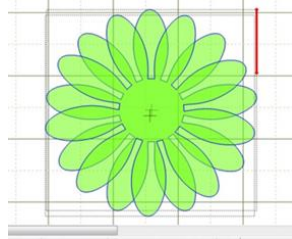
- Flower Center: Select one of the flowers and perform another **Copy** and **Paste in Place**. Move the copy away from the other flowers and click on the **Shadow Layer** icon:
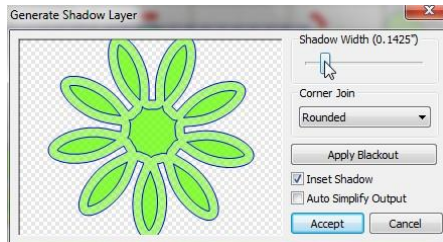
- The above popup menu will appear. Check the **Inset Shadow** box. Uncheck the **Auto Simplify Output** box. It is recommended that **Mitered** be selected as the **Corner Join** instead of **Rounded**. The shape for the flower center is only the center shape. Use the **Shadow Width** slider to create the inset. Click on **Accept** when you are done:
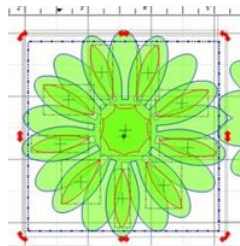
- To delete the petals, first select the inset shape and then apply the **Break** function. Now delete each of the petal insets. Again, you are only interested in the very center inset. The original shape (the one that was used for the **Shadow Layer**) may also be deleted.

- Place another circle on the mat from the **Basic Shapes** library. Select both the new Circle and the center inset and press **S** to **Stack** them:
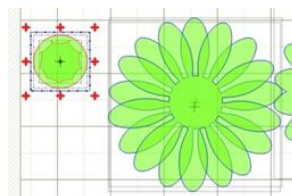
- Select just the inset shape and then click on the **Lattice** icon to open the **Lattice** window. Check the boxes for **Inverse Lattice**, **Auto Simplify Output**, and **Delete Original**. Note the other settings used and click on **Accept:**

185
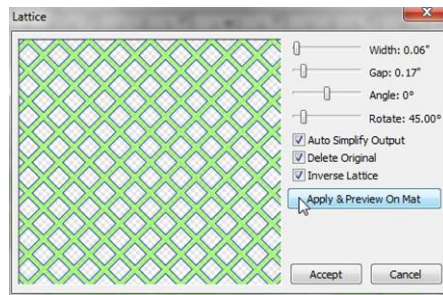
- Join the Circle and the lattice by selecting both and applying the **Join** function. To remove the tiny cutouts, press **F8** to activate the **Eraser** tool. Check the **Inverse Eraser** box and set the **Size** to 1. Then erase the little cutouts that you do not want.
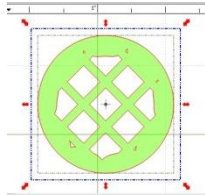
- This is the center of the flower. Select both sets of petals and the center and press **S** to **Stack** them:
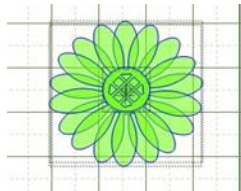
- Flower Shadow or Mat: The last part of the main flower is to create an outset shadow of the entire flower. The first step is to select the entire flower head and apply **Copy** and **Paste in Place** to create a new copy on top of the old. Move the new copy away from the flower and apply the **Weld** tool:
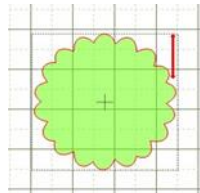
- Select the flower outline and press the **Shadow Layer** icon:
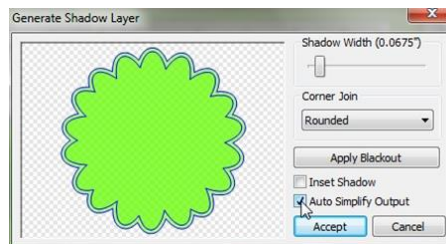
- Use the settings above to make a shadow for the flower. Press **Accept** when you are done. Delete the original outline (the smaller one). Select the flower and the shadow and press **S** to **Stack** them together.
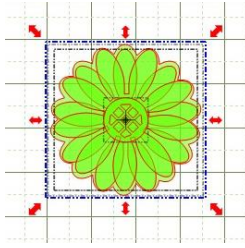
- Color: Set the mat to **Contrast** on the **Virtual Mat** tab. Make sure each shape is on its own layer, then move the layers up or down so that the center of the flower is on top. Change the colors of the two sets of petals and the center:
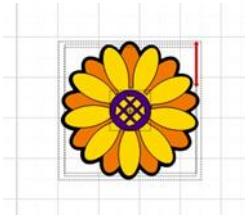
- Flower Stem: Select the Wavy shape and move it away from the other shapes. Click on the **Rotate 90 degrees** icon:
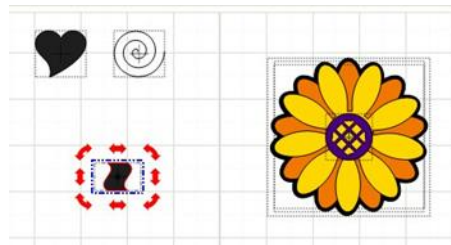
- Click on the shape until you see the red **Scale** mode icons then elongate the shape, by dragging the red icons, until it is the size and appearance of the stem you want:
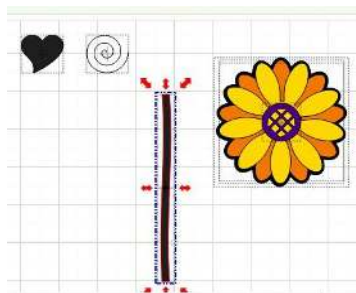
- Leaf: Select the Heart shape and bring it down to the stem. Manipulate it until it is the shape and size you want for a leaf. Do this by using the different red **Scale** icons in **Scale** mode. You may also wish to try some of the red warping icons in **Warp** mode (red Quad arrows):
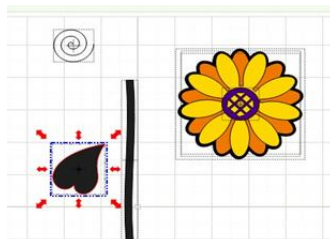
- Place the leaf near the stem. Later you will use the **Fat Path** in the **Pen Tool** in **Node Edit Mode** to add a little stem to the main stalk.
- Spiral: (Note that since this tutorial was written, a **Spiral** tool has been added to MTC. Thus refer to *Section 8*.03, as desired) for a quicker method to create the spiral leaf added to the stem).

187

- The **Basic Shape** Swirl is an open path/single line shape which needs to be converted into the spiral that will be cut out. It also has a few too many turns for the flower:
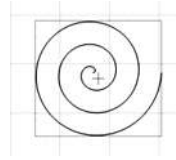
- Use the **Node Edit Tool** to delete nodes at the start and at the end of the Swirl to reduce the number of turns
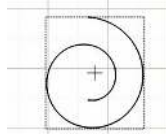
- To convert to the spiral that will be welded to the flower stem, select the modified Swirl and use **Copy** and **Paste In Place** to make a copy. Select the copy, and reduce in size to make it smaller but not change the shape. Arrange the two shapes and press **S** to **Stack** them:
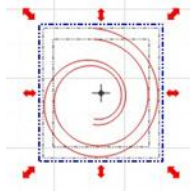
- Combine the two paths into a single shape by using the **Pen Tool** in **Edit Node Mode** (press **F5**):
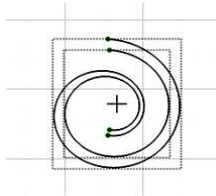
- When you activate the **Pen Tool** you will notice four nodes now appear at the ends of the two spirals. Connect the nodes by left clicking on one node and right clicking on the node to which you want to connect:
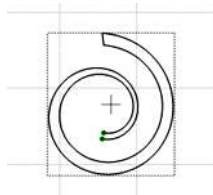
- Repeat with the other set of dots/nodes to finish closing the open path into a shape.

- To position the swirl shape, select it and click the **Mirror** icon. Next click the **Rotate 90 degrees** icon. Move the spiral into place against the stem. Select the stem and spiral and click the **Weld** icon:
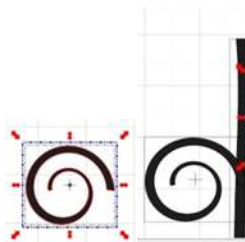
- Add a Leaf Stem: Click on the leaf and position it a little away from the stem. Click on the **Pen Tool** again. This time check the **Fat Path** box. Select a **Size** for the **Fat Path** to use for drawing the leaf stem. Left click on the flower stem and right click in the center of the leaf:

188
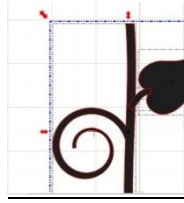
- Select the flower stem, the leaf and the leaf stem and click on the **Weld** icon.

- Add three circles and resize two to be progressively smaller. Position them on the stem as shown below. Select the stem and the little circles and apply **Join**:
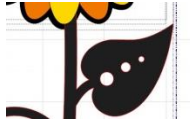
- Recolor the stem to be green. The design is completed!

9. Print And Cut

9.01 What Is a Print and Cut (PNC)?

- The print and cut process involves printing an image from MTC to any printer you own and then, with the aid of the KNK's laser (or the Groove-E's alignment pin), having the image or images cut out with perfect precision. Below are three typical kinds of print and cut applications but there are more, so be sure to check out *Section 9.06* and *9.07*:

  ◊ Cuts along the actual borders of the printed image(s):
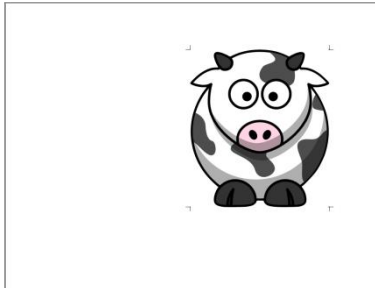
  Image is precisely cut along printed borders

  ◊ Cuts outside of the borders but following the shapes of the printed image(s):
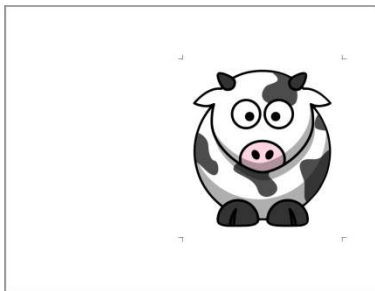
  Image is cut in same shape but offset from outside printed borders

  ◊ Cuts follow a different shape from that of the printed image(s):
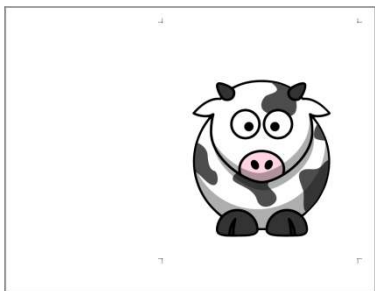
  A custom shape is cut around the printed image.

9.02 What is a PNC Calibration?

Video

- In order to get precise PNC results, you must tweak the **Laser** (or **Alignment Pin**) **Offset** calibration. This is nothing more than determining how far away the laser light (or alignment pin) on your KNK is located relative to the tip of the blade. Because the laser is manually installed into a small hole inside the blade carriage, the distance from the laser light to the tip of the blade will vary from one KNK to the next. Also, you

will want to use the same blade holder with all of your PNC applications, as the distance can also change with larger or smaller diameter holders.

- With the KNK Groove-E's alignment pin, the process and the accuracy of the PNC are exactly the same. Refer to **Alignment Pin** in *Section 1.06* to see how the pin is installed.

- The distance is measured in mm in an X direction and in a Y direction:

Laser dot   Tip of blade   X Offset

Y Offset
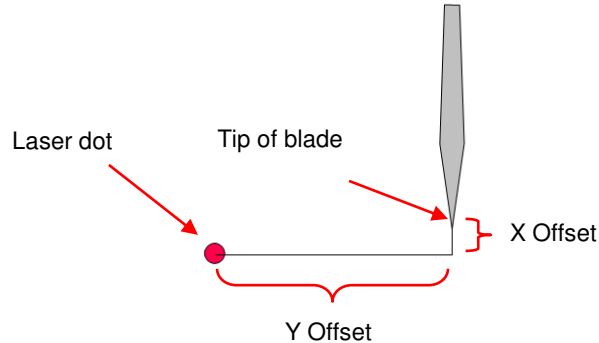
- This calibration only needs to be done one time, for a given blade holder, and then you can record this calibration in case you ever need to install MTC on a new computer or you have to reformat the hard drive on your current computer. The units are in mm which are easier to measure in very small distances.

- The KNK plug-in has a set of default calibration numbers which will be somewhat close to your final numbers, but not exactly the same. To access these numbers, click on the tiny wrench icon:

Click on the wrench to open the calibration window

Laser Offset Default Values
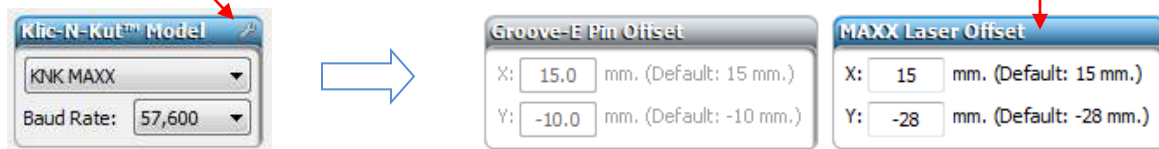
- The process involves performing and repeating a PNC to see how much you need to adjust the **X** and **Y** values in order to get perfect results. And you SHOULD be able to get perfect PNC's! :)

9.03 PNC Procedure Part 1: Setting Up and Printing

- What do you need before you begin a PNC?

  ◊ First, you need an image to print, a printer, and the blade holder you plan to use for all of your PNC's. The diameter of the blade holder will impact the laser calibration.

  ◊ You need to be well rested! You don't want to start learning the PNC process when you are tired, stressed, or in a hurry. Mastering a PNC comes when you have the time to repeat it about 4 times in a row. At that point, you will not only have repeated the process enough times to feel very comfortable with the order of the steps, but you'll have your calibration perfected and then be ready to do future PNC's quickly and with ease.

  IMPORTANT: Do not use high speeds when performing very precise PNC's, including the following calibration. Set the **Us** speed to 200 (refer to *Section 1.05, Step 4*) and also your cutting **Speed** to 200.

- While it is possible to do PNC's in either portrait or landscape mode, it is highly recommended that you select the same orientation you typically use for your other cutting in MTC. If you prefer to work in portrait, please skip to the **Portrait Mode Option** section following the **Landscape Mode Option** section.

Landscape Mode Option

- To begin, create a new custom mat that's set for letter size or A4 or whatever size your printout will be. Refer to *Section 3.04* if you need instructions for creating a custom mat. Uncheck the **Margins** box. For letter size, make the **Width** 11" and the **Height** 8.5". For A4, set the **Width** to 11.69" and the **Height** to 8.27".

- Since you are reading the *Landscape Mode Option* section of the user manual, set the **Virtual Mat** to **Landscape** and select your new custom mat.

- What's the best image to use for the **Laser Offset** calibration? An arrow is ideal because you'll be able to quickly verify if you have the printout correctly placed on the cutting mat. Also, it's a great shape for seeing how to adjust your X and Y calibration numbers. You can use most any image, but to follow the rest of the tutorial more easily, an arrow from the **Basic Shapes** library is highly recommended:

> IMPORTANT: Make the arrow at least 4" high (as shown below) for an accurate calibration.

Mat dimensions should match printout

Choose **Landscape**

Import an arrow and rotate to face upwards
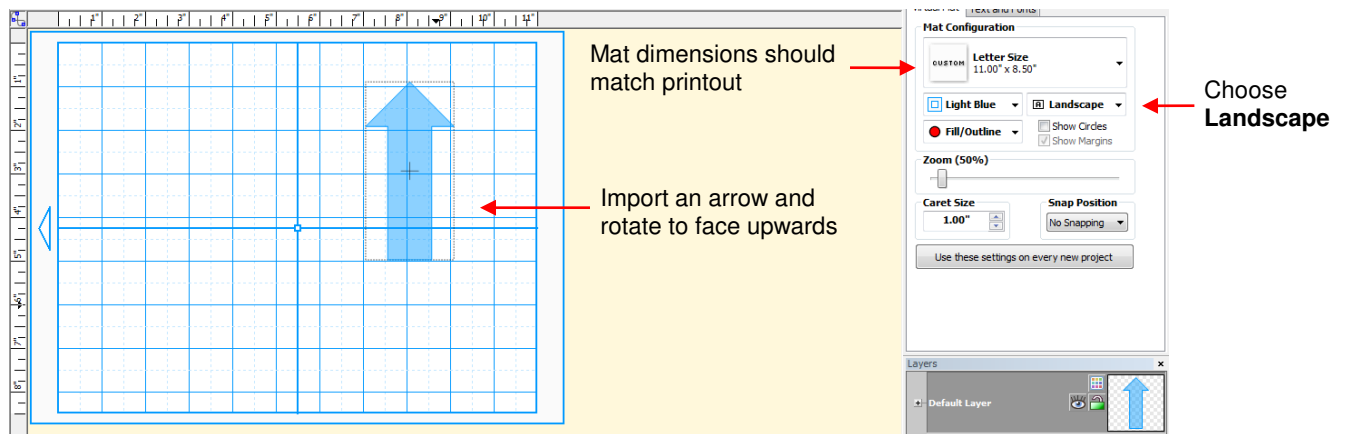
- Notice that the arrow is pointing upwards on the screen. Make sure your arrow is also pointed upwards! Later, when you print the arrow and place the paper on the mat, the arrow will be pointing to the right as you insert the mat into the KNK.

- Next, go to **File>Print Setup**, select the printer you plan to use, and set the **Orientation** to **Landscape**:

Select your printer

Verify paper size

Choose **Landscape**

Click on **OK** when done

- Next, go to **File>Print Options** and mark the following boxes:

Print Options

☑ Show Paper On Mat
☑ Print Shape Outlines
☐ Do Not Offset Printer Margins
☑ Print Registration Marks
☑ Show Reg Marks on Mat

Make The Cut!™ Reg Marks ▾

☑ Print Wireframe Only

Blade Offset: 0 mm.

Multicut: Disabled ▾

Color: ■

OK   Cancel

Check these three options

Check this option if you want an outline only of the arrow printed (to save on ink!)

Set to 0 as this does not apply to KNK cutters.

Option to change color of the image outline

Click on **OK** when done

- After clicking on **OK**, you should see the green borders on the **Virtual Mat**, indicating how the printout will be placed on the mat and where the arrow will be printed. If the arrow is outside the green borders, move it so that it falls within the boundaries:

Information about your current printer settings are shown here.

Green dashed lines indicate the part of the screen that will be printed.

- Go to **File>Print Preview** and you will be able to see the arrow plus the four registration marks which should be aligned with the boundaries of the arrow:

Click here to print.

Check this preview carefully.

Do you see all four registration marks? (red arrows point out the 4 reg marks)

Will you be getting what you need printed?

(Note that the Wireframe option was turned off for this screen shot so that the image could more clearly be seen in this tutorial).

- Always make sure you can see those registration marks before continuing since they are an integral part of the PNC process. If your print preview matches the one above and you see the four marks, click on the **Print** button. Also verify that what is being printed is what you need. For example, you may have added an extra shape to be cut, but you do not want it showing up in the printout. This is where you will want to use the **Layers** feature to control what will be printed, as well as what will be cut later.

- You may want to print several (4 or 5) copies since you will want to repeat this process several times in order to get your calibration settings perfect.

- After printing, place the printout onto the mat, in the same orientation you see in the main window and insert the mat into the KNK. As you are facing the KNK, the printout should be on the mat in a portrait orientation with the arrow pointing towards the right end cap:

Feed the mat this direction into the KNK

Place your printout on the cutting mat in this orientation.

Set the origin in the bottom right corner of the printout, using the laser (or alignment pin if you have a Groove-E)

- Go to Section 9.04 to continue with the next steps!

Portrait Mode Option

- To begin, create a new custom mat that's set for letter size or A4 or whatever size your printout will be. Refer to *Section 3.04* if you need instructions for creating a custom mat. Uncheck the **Margins** box. For letter size, make the **Width** 11" and the **Height** 8.5". For A4, set the **Width** to 11.69" and the **Height** to 8.27".

- Since you are reading the *Portrait Mode Option* section of the user manual, set the **Virtual Mat** to **Portrait** and select your new custom mat.

- What's the best image to use for the **Laser Offset** calibration? An arrow is ideal because you'll be able to quickly verify if you have the printout correctly placed on the cutting mat. Also, it's a great shape for seeing how to adjust your X and Y calibration numbers. You can use most any image, but to follow the rest of the tutorial more easily, an arrow from the **Basic Shapes** library is highly recommended:

IMPORTANT: Make the arrow at least 4" high (as shown below) for an accurate calibration.

Mat dimensions should match printout

Choose **Portrait**

Import an arrow and verify it points to the right.

- Notice that the arrow is pointing to the right on the screen. Make sure your arrow is also pointing to the right.

- Next, go to **File>Print Setup**, select the printer you plan to use, and set the **Orientation** to **Portrait**:

Select your printer

Verify paper size

Choose **Portrait**

Click on **OK** when done

- Next, go to **File>Print Options** and mark the following boxes:

Check these three options

Check this option if you want an outline only of the arrow printed (to save on ink!)

Set to 0 as this does not apply to KNK cutters.

Option to change color of the image outline

Click on **OK** when done

- After clicking on **OK**, you should see the green borders on the **Virtual Mat**, indicating how the printout will be placed on the mat and where the arrow will be printed. If the arrow is outside the green borders, move it so that it falls within the boundaries:

195

Information about your current printer settings are shown here.

Green dashed lines indicate the part of the screen that will be printed.

Four registration marks should appear at the corners of the bounding box.

- Go to **File>Print Preview** and you will be able to see the arrow plus the four registration marks which should be aligned with the boundaries of the arrow:

Click here to print.

Check this preview carefully.

Do you see all four registration marks? (red arrows point out the 4 reg marks)

Will you be getting what you need printed?
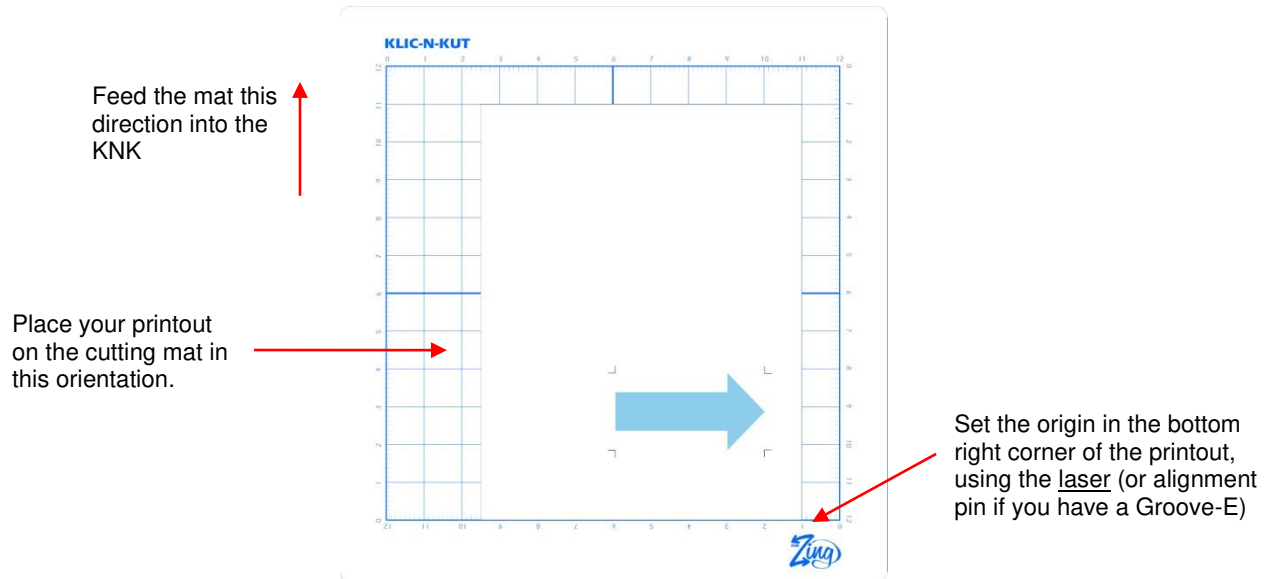
(Note that the Wireframe option was turned off for this screen shot so that the image could more clearly be seen in this tutorial).

- Always make sure you can see those registration marks before continuing since they are an integral part of the PNC process. If your print preview matches the one above and you see the four marks, click on the **Print** button. Also verify that what is being printed is what you need. For example, you may have added an extra shape to be cut, but you do not want it showing up in the printout. This is where you will want to use the **Layers** feature to control what will be printed, as well as what will be cut later.

- You may want to print several (4 or 5) copies since you will want to repeat this process several times in order to get your calibration settings perfect.

- After printing, place the printout onto the mat, in the same orientation you see in the main window and insert the mat into the KNK. As you are facing the KNK, the printout should be on the mat in a portrait orientation with the arrow pointing towards the right end cap:
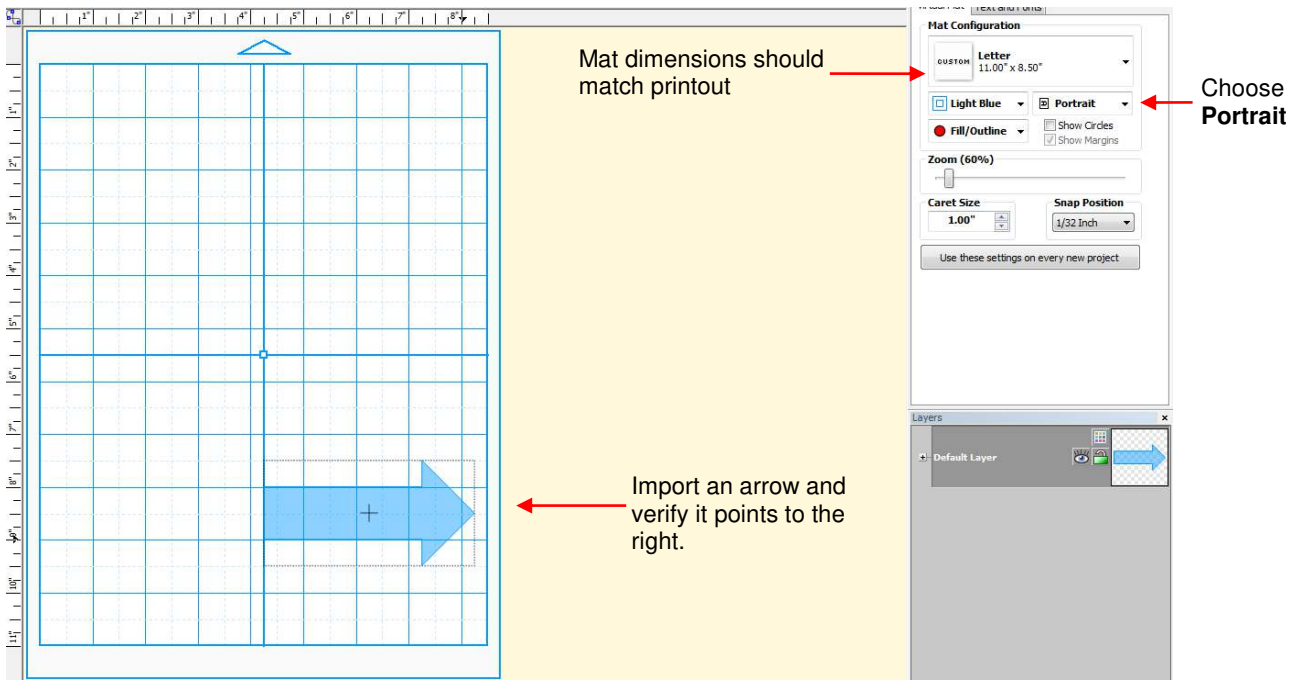

Feed the mat this direction into the KNK

Place your printout on the cutting mat in this orientation.

Set the origin in the bottom right corner of the printout, using the laser (or alignment pin if you have a Groove-E)

9.04 PNC Procedure Part 2: Aligning and Calibrating

Aligning the Laser (or Pin) with the Registration Marks

IMPORTANT: Set Us and Cut Speeds to 200

- Click on the **Cut Project With** icon to go to the cut window. If you haven't yet performed a test cut, do so now using either the **Knife Point** or **WYSIWYG** setting. Perform the test cut in a location that won't be part of your final cut or use a scrap of the same material you are cutting.

- After the test cut is successful, move the laser light (or alignment pin) until it is directly over the lower right corner of the printout, as shown in *Section 9.03.* Set the origin.

- Under **Cut Type**, select **Print and Cut**:
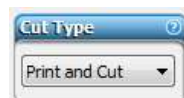
- Click on **Start** and the following window will open. Check **Fixed Length** and enter 11.0", assuming you set your **Virtual Mat** to be 11" in width. Then click on **Begin.**
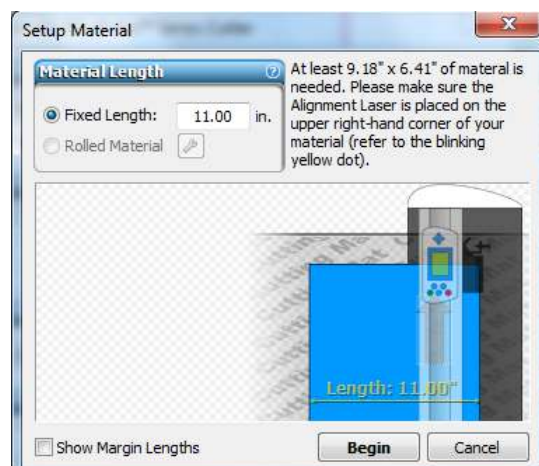
- The laser (or alignment pin) should automatically move to within a very short distance of the first registration mark. The following window will open:

This dot will be
flashing red

Select step size for each
arrow key movement

Setup Print and Cut (3 Point Registration)

Laser Movement

Move By: 1/128 inch

Point #1 [0.000", 0.000"]
Point #2 Waiting...
Point #3 Waiting...
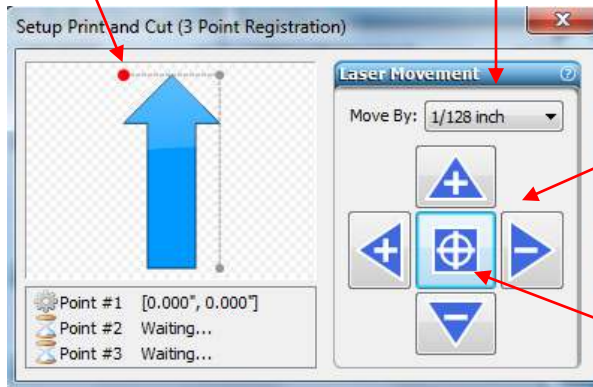
Click on arrows to move the laser
light or pin. Or use the arrows on the
keyboard.

Click on **Center button** (or press **Enter** key on
keyboard) after you have moved the laser (or pin)
to the exact corner of the reg mark

- Make sure the laser (or pin) has moved to within an inch or less of the registration mark indicated by the flashing red dot shown above. Note: this will be the upper right reg mark as you are facing the KNK since your printed arrow should be pointing to the right (as shown on the previous page).   If not, you'll want to review the steps you've used so far to make sure you have all of the same settings shown and you have your printout on the mat in the same orientation as shown previously.

- The next step is to move the laser dot (or pin) so that it is precisely at the corner of the printed registration mark. Use the arrow keys in the software or use the arrow keys on your keyboard. You will notice that the intensity of the laser light will change when it is on top of the printed black lines. This can be very useful! When the laser light (or pin) is precisely on the printed dot, click on the center target button on the screen (or press the **Enter** key on your keyboard).

- The laser light /pin will move to the vicinity of the next registration mark and the flashing red light in the software moves to the same relative point:

This dot will now be flashing red
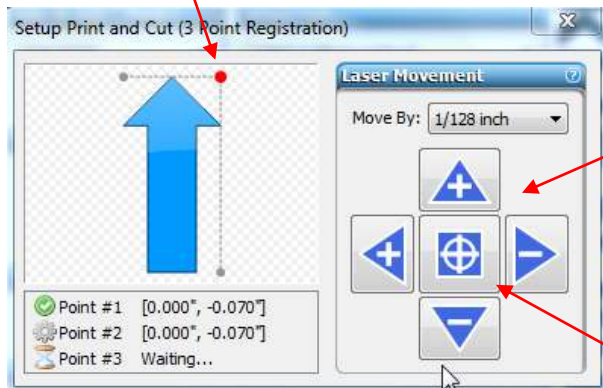
Setup Print and Cut (3 Point Registration)

Laser Movement

Move By: 1/128 inch

Point #1 [0.000", -0.070"]
Point #2 [0.000", -0.070"]
Point #3 Waiting...

Again, click on these arrows or your
keyboard arrows until laser/pin is on the
reg mark corner.

Once the light/pin is centered on
the reg mark dot, click on **Next**.

- Repeat the process with the final reg mark:

This dot will now be flashing red

Setup Print and Cut (3 Point Registration)

Laser Movement

Move By: 1/128 inch

Point #1 [0.000", -0.070"]
Point #2 [0.000", -0.062"]
Point #3 [0.014", -0.062"]

Again, click on these arrows or your keyboard arrows until laser/pin is on the reg mark corner.

Once the light/pin is centered on the reg mark dot, click here or press **Enter** on your keyboard.
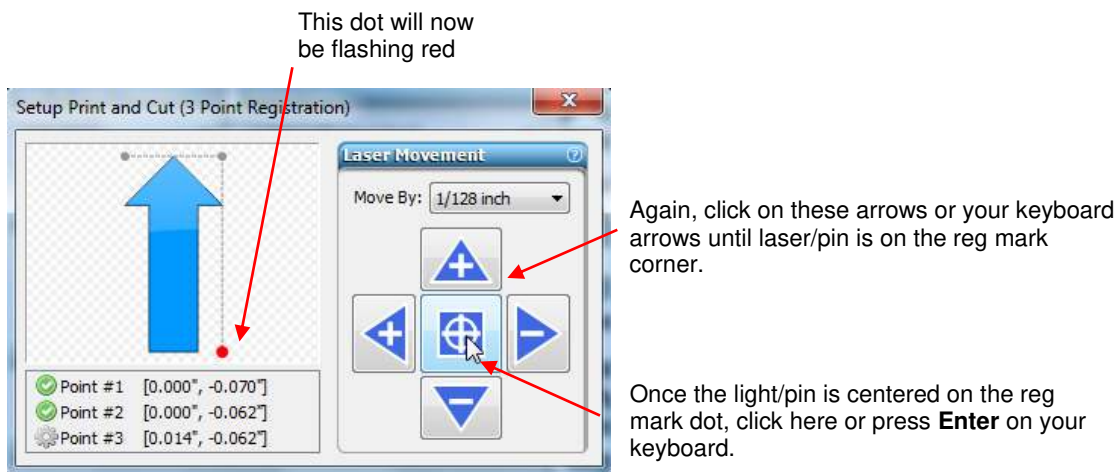
- After completing the third reg mark, the following window will open and remind you to wait until the laser light/pin has returned to the origin before pressing **OK.**

KNKPlugin

Important:

Please wait until the tool carriage returns to its home postion.

You may click "OK" once the tool carriage returns home and is no longer moving.

OK   Cancel
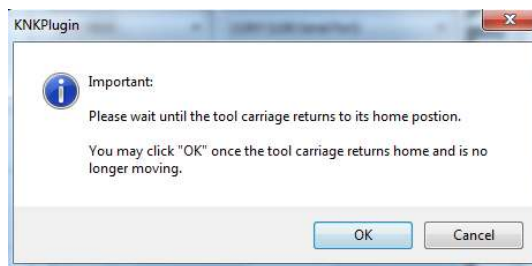
IMPORTANT: If the pin moves vertically down and is still aligned with the third reg mark (instead of returning to the right lower corner where you set the origin), you will need to download an earlier version of the KNK plugin. Please refer to the Resources tab at www.knkusa.com.

- Once you click on **OK**, the data will be sent and the arrow will be cut out.

Adjusting the Laser Offset

- After the print and cut is completed, examine how the cut lines were made relative to the printed lines. If the offset is large enough, use a mm ruler to measure. If the offset is very small, then just estimating will be fine as you refine your calibration.

- In the following diagram, the red lines represent the cut lines and the black lines represent the printed lines. Use this diagram to determine whether your **Offset** values need to raised or lowered for your laser (or pin):

If the red cut line is below the black print line, then decrease the value of X.

If the red cut line is above the black print line, then increase the value of X.

If the red cut line is left of the black print line, then increase the value of Y. (Note: Y is a negative number)

If the red cut line is right of the black print line, then decrease the value of Y. (Note: Y is a negative number)

Red line is lower than black line: change X from 15.0 to 14.0.
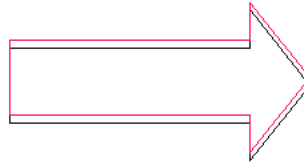
Red line is higher than black line: change X from 15.0 to 16.0.

Red line is left of black line: change Y from -28.0 to -27.0 (an increase to a negative number).
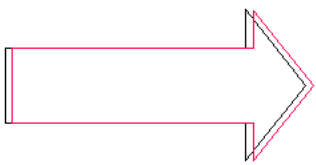
Red line is 1mm right of black line: change Y from -28.0 to -29.0 (a decrease to a negative number).

- Modify your X and Y **Offset** values in the window shown at the end of *Section 9.02*. Start with 1 mm adjustments (like shown above).

- It's a good idea to keep track of prior values, so that you'll know which direction to change for subsequent calibration tests. Remember that you should expect to get perfect results, so keep adjusting those X and Y

values until you get there. After adjusting by 1 mm, you will need to adjust by 0.5 mm and even smaller to get it perfect.

- You may find that one side is aligned but the other is not. For example, the cut line may be perfectly aligned with the print line on the lower side of the arrow but maybe 0.5 mm above the arrow along the upper side. Adjust the calibration based on the side that is off.

- Once the PNC is perfect, write down these X and Y values in case you buy a new computer or you have to reformat your hard drive.

> IMPORTANT: When you are ready to try this process on an actual raster image, don't forget to turn off the **Wireframe** option under **File>Print Options**.

9.05 Print and Cut Tips

- When pixel tracing imported images, the trace lines will not necessarily be perfectly aligned with the image. This can result in tiny bits of white appearing in certain spots, suggesting the PNC wasn't accurate. Zoom in close on the image so that you can see the trace line following the outline of the image. Look at the same spots where the PNC didn't follow the image perfectly. This could be the cause of the inaccurate PNC. There are three ways of dealing with this situation:

    ◊ Retrace the imported image, increasing the **Resample** setting. This will result in a tighter fit of the trace line to the original graphic.

    ◊ Use **Node Editing** and **Segment Editing** to move the trace lines to more closely fit the original graphic. This is covered in detail in the last part of *Section 7.13.*

    ◊ Create an inset line to use for cutting instead of the original trace line. This is presented in *Section 9.06.5 PNC with an Inset Cut Line.*

- If a PNC is not precise and the cause is not the alignment of the trace lines, then try slowing down the speed. If the mat is moving numerous times, in and out of the cutter, a slight shifting can occur, especially at high speeds. Try reducing the **Us** speed and **Cut** speed from 200 to 150.

- Remember that the calibration of the **Laser Offset** is specific to the blade holder type being used. Thus, if you change brands, the laser calibration will need to be modified.

- If your test arrow is cutting perfect, thus indicating you have the correct calibration, but your next print and cut is way off, then perhaps your situation is something outside of the ordinary. Please review the following section which covers different scenarios in which a few extra steps will be required when setting up the layers for your print and cut.

- It is not necessary to set the origin or even put the printout on the mat in advance of starting the PNC procedure. Watch this video for a way to make the process a little quicker!

9.06 Print and Cut Scenarios

9.06.1 Cutting Multiple PNC Images on the Same Page

- When performing a PNC on multiple images (whether they are all the same image or different images), the procedure is the same. One set of four registration marks will be printed along the outside edges of the bounding area of ALL of the images on the page:

Multi-image PNC in Landscape mode

Multi-image PNC in Portrait mode
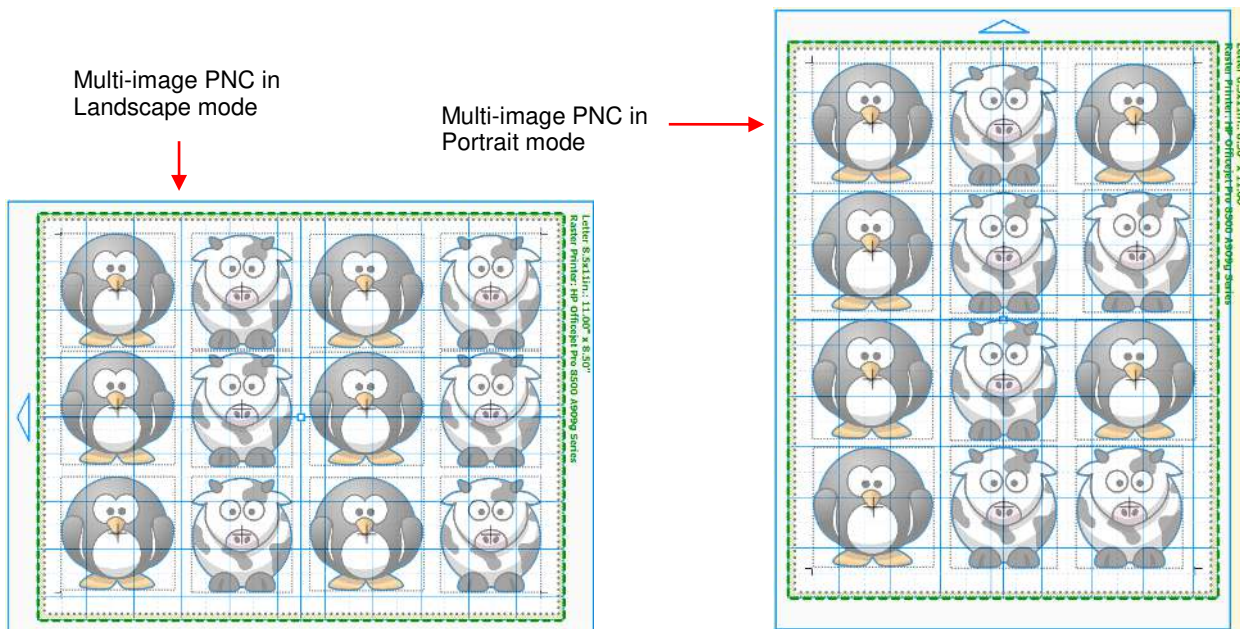
9.06.2 PNC With a Contour Shape Larger Than the Printed Image

- In *Section 9.01*, two other PNC applications were shown. In one case, an outside contour will be cut. In the other, an alternative shape is added, such as the tag shape shown below.

Contour is added using **Shadow Layer**

Tag shape is added
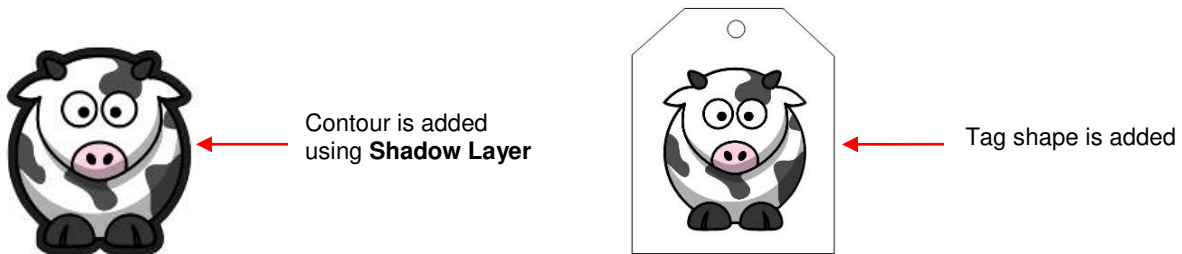
- You want to remove the cut line on the cow, which was created during the pixel trace, so that the only line cut will be the shadow line. To do this:

  ◊ Make sure the raster image (the cow, in this example) is on a higher layer than the shadow to be cut.

  ◊ Select both the cow image and the shadow and apply the **Weld** function from the **Magic Toolbar**. The internal cut line disappears leaving the original raster image now filling the **Shadow Layer**:

Contoured image with only a single outside cut line.
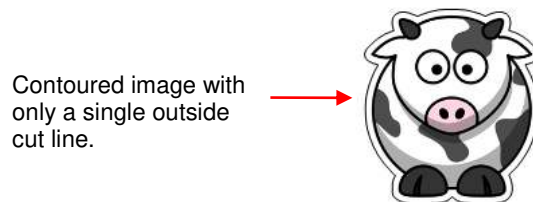
- The cutting process proceeds as described in *Section 9.04*.

- In the other case, with the tag shape around the original traced image, the process is exactly the same. Select the tag and the cow image and apply the **Weld** function from the **Magic Toolbar**:

201

Image within the tag shape
with only the tag as the cutline.

- The cutting process proceeds as described in *Section 9.04*.

- In both cases, regardless of the color of the outside shape, the resulting shape is white and will not show up on the printout. If it desired to have a colored outside shape, then before applying the **Weld** function, make a copy of the tag and recolor it, as desired:
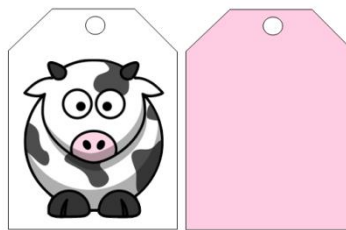
- After welding, place the cow image tag on top of the colored tag. Use the Stack function to make sure the two images are perfectly aligned. Note that the welded tag isn't white, it's clear or invisible, thus the pink color shows through! When sent to the print preview window, you see this:

- After printing, be sure to turn off either tag layer so that the outside shape will only be cut one time.

9.06.3 PNC With a Contour Shape Smaller Than the Printed Image

- In this situation, a shape is going to be cut that is smaller than the outside boundaries of the imported graphic. For example, let's say a scalloped border is desired as the cut line:

Original imported image   An interior scallop is to be added and cut.

202

- Since anything outside of the scallop will not be needed, that part will be eliminated. This is done by first arranging the scallop over the image and then moving the scallop layer to its own layer and to the bottom on the **Layers Bar**:

A scallop shape is added and aligned, as desired.

Scallop is moved to the bottom layer so that it is behind original image.
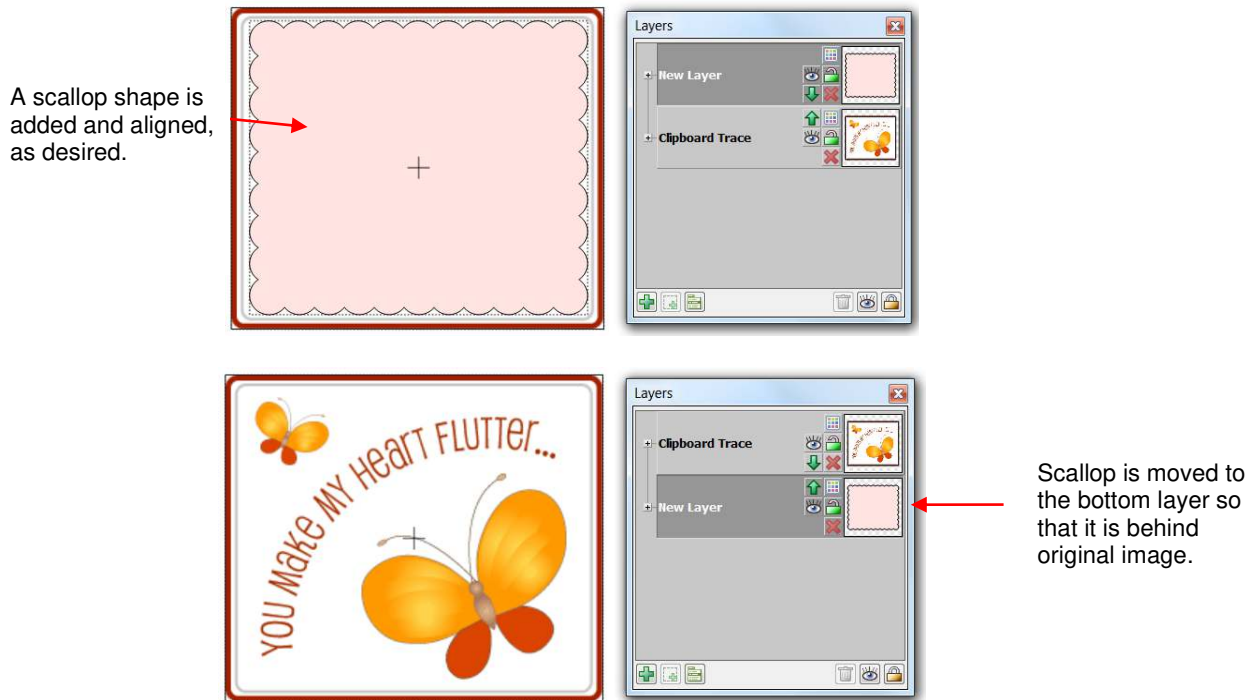
- Next, marquee-select both the original image and the scallop (or use **Ctrl+A** to **Select All**) and then apply the **Join** function from the **Magic Toolbar**. The scallop will now appear on top:
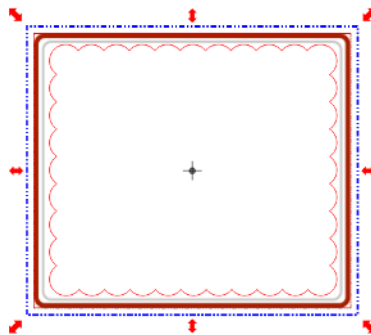
- Immediately apply the **Break** function from the **Magic Toolbar**. The original image now appears but with the scallop shape around it:

- Click elsewhere on the screen so nothing is selected. Then click on the image and drag one image away from the other:

This original can now be deleted.

New scalloped version

- The original can now be deleted and the scalloped version duplicated (if desired) and the PNC process conducted, as normal.

9.06.4 PNC With a Contour Shape Overlapping the Printed Image

- This situation is similar to the prior one, however, in this case the scallop overlaps the borders of the printed image in such a way that it is smaller in one direction but larger in the other:

Original imported image

A heart shape is to be added and cut.

- In this case, the same **Join** and **Break** method is applied as shown in the previous example. Make sure the heart shape is colored as you desire and is on the lower layer. After applying the two functions, drag one shape away from the other:

Shape is now ready for PNC

Original imported image can be discarded or hidden

- A print preview shows that only the original graphic will be printed. Note how the registration marks are printed based on the large white rectangle:

- After printing, proceed with the usual process.

9.06.5 PNC with an Inset Cut Line

- This situation may seem to be identical to the one presented in 9.06.3. The difference is that the original trace line will not be eliminated because it is not desirable to eliminate parts of the original image. By using the following method, a bleed allowance is introduced.

- A pixel trace can often have areas where the trace line (cut line) will be outside of the original image. This is especially true of tight interior corners or sharp turns on the image. This results in white areas appearing around the print and cut:

The red arrows indicate spots around our cow's left ear where white areas would show when cut. The original trace line doesn't quite fit the image in those spots.
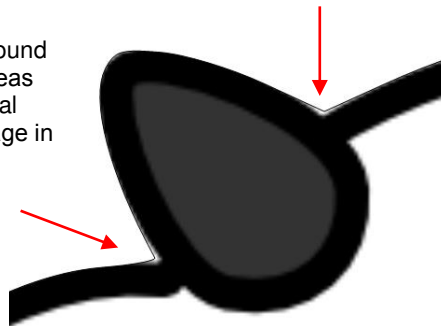
- At the end of *Section 7.13,* it was shown how to use node and segment editing to correct the trace line so that it better fits the original image. Sometimes, however, there may be more editing needed than would be practical to do. In these cases, an inset cut line can be created. While the same method presented in *Section 9.06.3* could be used, in this case it is desired to have what is called a bleed allowance (a margin of error for cutting) by allowing the original larger image to still be printed.

- Select the traced image and access the **Shadow Layer** function in any of the following ways:

   ◊   Click on the **Shadow Layer** icon on the **Magic Toolbar**

   ◊   Press **Ctrl+H**

   ◊   Right click on the screen and select **Shape Magic>Shadow Layer**

   ◊   Go to **Edit>Shape Magic>Shadow Layer.**

- Select the desired **Shadow Width** using a negative number so that an inset is created. Note that this is typically less than 0.03". Select a **Corner Join** option and refer back to *Section 8.05 for* reference. Click on **Accept** when done.
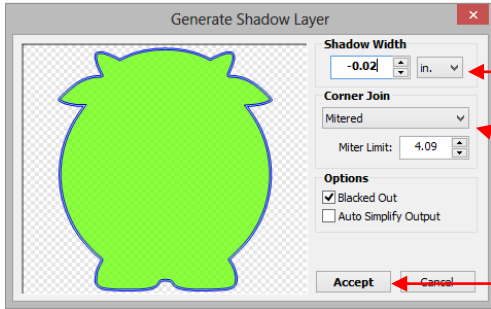
Set desired **Shadow Width** using a negative number so that an inset shadow is created.

Select **Corner Join** type.

Click on **Accept** when done.

Note how the new inset line will clearly cut inside the printed image so that no white areas will appear around the cutout.
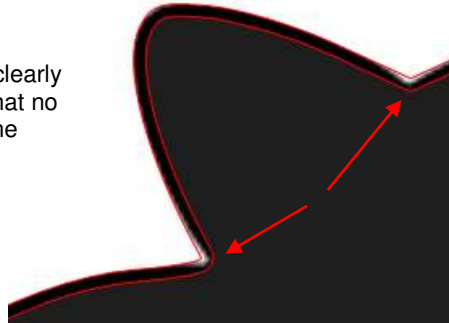
- Typically these inset lines are very close to the original trace lines and cutting both lines could lead to cutting issues, such as tearing or fine slivers of paper coming loose. For that reason, you will want to turn off the original trace lines so that they are not cut. However, the registration marks are tied to these original trace lines because they are larger than the new inset lines. If you simply turn off the original printed layer when you start the PNC process the print and cut will not work correctly. But, there is an easy way to make this work.

- Move the new inset cut line layer to the bottom of the **Layers Bar** so that it is behind the original imported image.

- Add a large white rectangle to the project. If the page will be filled with multiple objects then the rectangle should surround all of the images. If there is only one image, then the rectangle can be sized to fit just that image. Place on its own layer and move to the bottom:

One rectangle is placed around the original image and its inset.
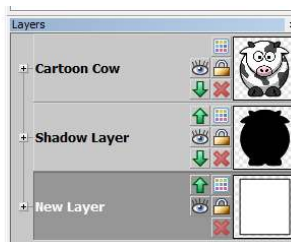
Original image should be top layer

Inset shadow

Surrounding white rectangle

If there are multiple images:

One rectangle is placed around all of the images and their insets.
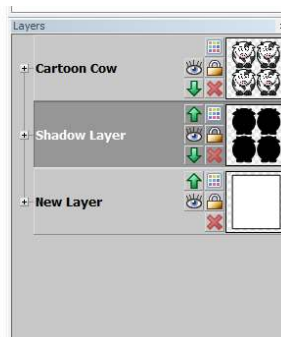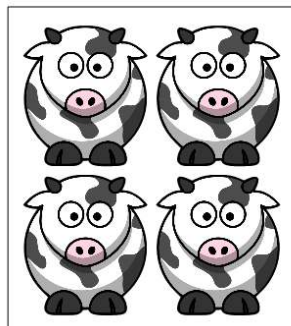
Original images should be top layer

Inset shadows

Surrounding rectangle

- The rectangle layer must be turned on for both printing and cutting. Because the inset shadow layer is hidden behind the original images, it can also be left on for printing. However, when you are ready to cut, the original image should be hidden so that only the surrounding rectangle and the inset cut line layer are sent to cut.
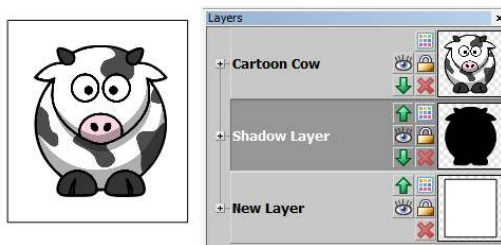
All layers are left on for printing
(although shadow layer is optional)
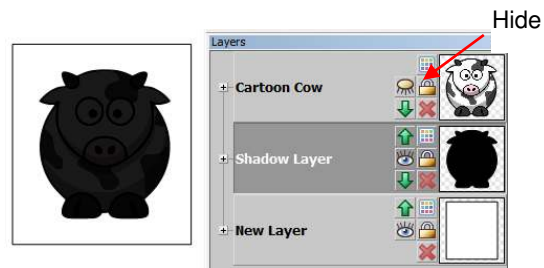
Turn off original image layer for PNC process. Make sure shadow (inset cutline) layer is showing, as well as the rectangle layer

9.07 Print and Cut without Printing from MTC

- The following sections cover PNC situations in which there will be no printing performed from within MTC.

9.07.1 Printing from another Program

- Sometimes users prefer to design and print from a different computer program. In this situation, the best course of action is to add a rectangle that complete encloses the images that will be printed and later cut from MTC. The key things to remember are:

  ◊ The size of the rectangle being added should be a specific and noted size so that an identical rectangle can be added in MTC. The borders of this rectangle will define the locations of the registration marks for the PNC process.

  ◊ If a vector program (e.g. Adobe Illustrator, Corel Draw, Inkscape) is used and the cut shape(s) is/are defined in this program, then export both the rectangle and the cut shape(s). MTC can import .eps, .ai, .pdf, and other formats. Refer to Chapter 4 for more info on importing and exporting. Also, when you import the file, resize everything together so that the outside rectangle matches the exact size you used when creating it.

  ◊ If a raster program (e.g. Elements, Word, Paint) is used, then you will need to scan your printout and then use the **Pixel Trace** option in MTC to import the image so that the cut shape(s) can be added to the file. In this case, create an outside rectangle to match the scanned one, in both size and location. This is important because the scanner may have scanned at a slightly different size and the results will be more accurate when matching the rectangle dimensions with what the scanner read.

9.07.2 PNC Applications with Existing Images

Video

- With MTC, it is even possible to do a print and cut with no printing involved at all! Two such situations are: (1) Cutting out shapes that have been drawn or stamped by hand and (2) Cutting out printed images from a magazine, calendar, newspaper, etc.

- Similar to the prior section on *Printing from Another Program*, the only thing one needs is a rectangle that is printed or drawn onto the page that encompasses the images you want to cut out. That rectangle could be pre-printed onto sheets of paper or cardstock to use for stamping or drawing images or it could be printed onto the paper/cardstock after the images are stamped or drawn or one could even use a rectangular object

to hand draw the boundaries of the rectangle. The important thing is for the corners to be precise right angles.

- Once you have the rectangle on the page, scan the image into MTC and **Pixel Trace**. Then rotate the shapes, as needed, so that the lines of the rectangle are perfectly aligned with the grid on the **Virtual Mat**. In other words, make sure the horizontal lines of the rectangle are perfectly horizontal and the vertical lines of the rectangle are perfectly vertical.

- Perform the PNC process as usual. The corners of the rectangle serve as the registration marks.

10. Applications

10.01 Cardstock and Paper

Selecting Cardstock

- White core cardstock does not yield the same cutting quality as solid color core cardstocks.

- Some cardstock brands or types simply do not cut well. Use those for something else besides cutting intricate shapes. Other cardstock, such as Bazzill Smoothies, Worldwin Cutmates, Colormates, and Michael's Recollections, cut beautifully.

- If a textured cardstock cuts poorly, try flipping it over and placing the textured side face down. Remember to mirror the shapes before cutting, as needed (e.g. text).

- If your cardstock has been exposed to humidity, then dry the cardstock for about 15 – 30 minutes in an oven that has been preheated to ~100 – 150 F, but then turned off before placing the cardstock inside.

- With each brand of cardstock, record the settings that worked well so that next time, you'll have a good starting point for your test cut.

Settings

- Remember to set your blade exposure to only cut through the material. For thin paper, just the tiniest tip of the blade will be needed. For thicker cardstock, use a little more blade, but still not as much as you may think. Revisit Section 2.01 for reminders on both the setting of the blade length and the blade height.

- There are recommended forces shown in the *Suggested Settings for Various Materials* table near the end of Chapter 2. Use these as guidelines for your test cuts and then adjust, as needed. Remember to record your own successes!

- A speed of 200 - 250 should work well for most cutting of paper and cardstock. Some users prefer to cut faster and some slower. Use your own experience as a guideline.

- For most paper and cardstock, use the red capped blade. For very thick or heavily textured cardstock, you may wish to use the blue capped blade.

- The cutting force will vary depending on the density of the paper or cardstock, any exposure to humidity, dullness of the blade, and even the dye used to color the material! Two passes can often be needed with some cardstock, regardless of the cutting force available.

- Keep your cutting mat clean and sticky. Brayering cardstock to the mat will insure firm and even adhesion. Brayering again after the cut can aid in weeding the waste from the cut shapes.

Troubleshooting

- The following list presents the various causes of tearing:

  ◊ Too much blade is exposed. If you see that the blade is cutting into your mat, shorten the blade exposure. You should only be cutting through the material itself and then, maybe, grazing the adhesive layer on the mat.

  ◊ The blade is chipped. Try a different blade.

  ◊ The paper is not adhered well to the mat. Make sure the mat is clean, sticky, and the paper is pressed smoothly and evenly on the surface.

  ◊ You may be using too much cutting force. Try reducing it and doing test cuts.

  ◊ You may have too many nodes in the shape. Refer to *Section 7.02*

  ◊ If the cardstock has been exposed to humidity, then the moisture in the material can make it difficult to cut cleanly. Try drying the cardstock.

  ◊ The material itself may be subject to tearing, especially on intricate cuts. Try a different cardstock.

- If the cardstock has spots that <u>didn't completely cut</u>:

  ◊ Try increasing the blade tip height (not exposure) and/or the cutting force and verify the cardstock is will adhered to the mat. Also, some cardstock brands require two passes, so reduce the cutting force and set Multi-Cut to 2 passes.

  ◊ To "save the cut", flip the entire sheet over, and use sandpaper to sand the spots where the cuts didn't complete. You should be able to sand down to where the blade did cut in those spots and your design will then be released from the waste. This is the best way to maintain smooth outer edges.

- My shapes are not quite cut out. Most of them are still attached to the waste at one spot:

  ◊ You probably have **Blade Offset** turned off or set too low. Make sure the setting matches what is needed for the blade you are using. Refer to *Section 2.06.*

10.02 Chipboard

Selecting Chipboard

- There are many types of materials considered to be chipboard. Some can be cut and others cannot. The best guidelines are:
  ◊ If the chipboard is <u>thicker</u> than the maximum blade length, then it <u>cannot</u> be cut.
  ◊ If the chipboard is <u>very stiff</u> and cannot easily be bent, then it probably <u>cannot</u> be cut.
  ◊ Thin flexible chipboards are the best choice. It's worthwhile finding a particular brand of chipboard, such as that sold at KNK USA, to use in your projects so that you will know which blades and settings work best each time.
  ◊ For a thicker look, consider cutting two copies of the same shape from thinner chipboard and adhering together.
  ◊ Just like with some textured brands of cardstock, some chipboard types will yield cleaner cuts on the bottom side. So, mirror your images first after verifying so that you can use the other side of the cut shape.

Settings

- As with all materials, set the blade length to be just a fraction longer than the thickness of your chipboard and use the thick materials, blue capped blade.

- Chipboard can easily come loose from the mat. Try using masking tape or blue painter's tape around the outside edges of the chipboard to prevent the chipboard from slipping during cutting. You can also apply a stabilizer such as freezer paper or Heat n' Bond to greatly improve both the consistency of cutting, as well as the intricacy of what can be cleanly cut.

- Some thin soft chipboards, such as cereal box, may cut at a setting of 110, thus try this setting for your test cut. Increase in increments of 10, as needed. For denser, thicker chipboards, you will not only need to increase the pressure substantially, but also use two or more passes. To simulate multi-pass during the test, just repeat without moving the origin. The test cut will be performed in the same spot. Again, it is imperative that you use the **Test** button to make sure a clean cut can be achieved before attempting to cut your shape.

- A slow speed is recommended so that the blade can work its way through chipboard.

- When cutting thicker materials, the blade holder needs to be raised in the blade holder seat to enhance the downward force. To do this, try using a stack of 13 Post It notes, as described in *Section 2.01.*

Troubleshooting

- Some chipboard will produce a lot of "crumbs" during the cut and this can build up inside the blade holder as well as build up around the cut lines causing interference with the blade during the second pass. For this

reason, some users will use canned air to blow the crumbs away from the surface between each pass. You may also need to clean the inside of the blade holder by removing the blade and taking it apart, so that any small pieces can be removed.

- If the test cut was perfect, but the shapes failed to cut cleanly, the mat may not have been sticky enough to hold the chipboard throughout the cut. Rather than add more adhesive, you may want to use a stabilizer as described under *Selecting Chipboard*. Also try slowing the cut it the shapes were fairly detailed and the uncut sections were on tight curves.

- If a stuttering sound is heard during the cut and/or the shapes are distorted, then reduce the speed and force and increase the number of passes. The blade is catching in the chipboard causing the mat to slip. You need to make things easier on the cutter as the blade works its way through the dense chipboard.

10.03 Vinyl

More Info

Types of Vinyl

- There are a number of different kinds of vinyl available at KNK USA:
  - ◊ Decal/Sign vinyl which can be used to make stickers for windows, tumblers, etching projects, etc.
  - ◊ Wall vinyl which can be removed without damaged to interior walls. It has a beautiful matte finish and can also be applied to tiles, chargers, and even greeting cards.
  - ◊ Outdoor Vinyl which has an extended outdoor duration (3-5 years). There is also a 5-8 year High Performance variety.
  - ◊ Metallic Vinyl which has a permanent adhesive and is suitable for outdoor use or for party decorations, greeting cards, laptop covers, etc.
  - ◊ Accupro Wrap Vinyl for wrapping cell phones, laptops, notebooks, etc.
  - ◊ Iron-on Vinyl for decorating garments or other surfaces such as cardstock. Refer to *Section 10.05* for details on cutting and applying.

Settings

- Vinyl has a backing sheet which can serve as the carrier/mat during cutting. The vinyl needs to be at least 4" wide so that both sides will be gripped by the pinch wheels. If you are cutting from vinyl which is narrower than this or cutting from scraps, then use a cutting mat to hold the vinyl during the cut.

- On long cuts, it's important to have the vinyl aligned straight in the machine. Cut the needed length from the vinyl roll (add a few inches for error allowance). Feed the excess underneath the cutter and around to meet the other end. Line up and drop the pinch wheels. Use the + and – buttons on the Control Panel to feed the vinyl in and out, most of the way, to make sure the vinyl stays aligned.

- Set the origin at least 1/2" away from the right side and a little ways in from the bottom. Make sure the vinyl is past the screws on the flatbed table, or apply clear mailing tape to cover the screws so that the vinyl will not catch on them.

- While there are many types and thickness of vinyl, in general it is very easy to cut. Thus, start with a conservative estimate for the force setting in the initial test cut, say 30. Use the red capped blade and start with barely any blade exposed. Do the test cut and then gently lift the corner of the vinyl from the backing sheet. Make sure the test cut is a clean cut and the blade did not penetrate the backing paper.

- Vinyl can usually be cut at a speed of ~ 200 - 300 unless very small, intricate shapes are involved.

- If you store your vinyl in a warm location, the adhesive can be affected and that can then affect the cutting. Also note that some vinyl colors have a tendency to pull away from the backing sheet more easily than others. If you notice the vinyl pulling up in corners and tight spots, try slowing the cutting speed.

Applying Vinyl

- For easier removal of the waste from the backing, add a rectangle around the perimeter of the shape(s) you are cutting. Select everything and apply a **Join**. This will then ensure that the interior shapes are cut first, with the outside rectangle cut last.

- When weeding, you may need to cut away and remove smaller waste parts versus trying to lift the entire waste section at one time. You do not want the waste vinyl inadvertently coming into contact with the shapes you want to keep. Use a craft knife or paper piercer to gently lift away pieces of waste vinyl to discard.

- If you are applying small lettering or doing an etching application, do NOT weed the waste vinyl. The entire piece should be applied to the project surface, smoothed down firmly and evenly, and then weeded. The adhesion between the vinyl and the hard surface will make weeding much easier, with less likelihood of small shapes coming loose.

- To transfer vinyl to a wall (or window or other surface), apply transfer tape across the vinyl, repeating rows of tape to completely cover the shapes. At the top, have one layer of tape with just the bottom half covering the vinyl so that the top half can be pressed to the wall and used as a hinge. Once you have the vinyl aligned as desired, flip up, leaving that top piece of tape adhered/hinged to the wall. Remove the backing sheet from the vinyl. Then carefully bring the vinyl back down and begin pressing to the wall, smoothly and evenly. Use an old credit card or plastic scraper to smooth out wrinkles and get better adhesion. Gently peel away the transfer tape from the top and press again with the credit card or scraper.

10.04 Fabric and Felt

More Info   More Info

- It is highly recommend that the KNK Fabric Blade be used when cutting fabric and felt. It is designed to give sharper cutting in tight corners and points.

- When cutting with the fabric blade, it is not necessary to apply a stabilizer to all fabrics. While some thicker fabrics will cut much better with an iron-on stabilizer such as Steam-a-Seam 2 or Thermo-Web's Heat n' Bond, others will still yield good results when cut without it. Some users also prefer to iron their fabrics to freezer paper before cutting.

- With or without a stabilizer, it is highly recommended that a clean and sticky mat be used. If no stabilizer has been applied, then brayer the fabric firmly and evenly to the mat. With most fabrics it will be necessary to use stickier mats than normal and tape the outside edges of the fabric.

- Because the backing sheets on Steam-a-Seam 2 and Heat n' Bond are slippery, spraying them with Odif USA 505 Temporary adhesive can then make them stick firmly to the mat and not slip during cutting. Some residue from the 505 may get onto the mat, thus the reason to use a dedicated mat for fabric. This residue will add to the bonding for future cuts. (Thanks to Lynn Keniston for this idea!)

- Some users also prefer to remove the backing sheets on stabilized fabrics before brayering to the cutting mats. This works as well.

- The best unstiffened (soft) felt to use is 100% wool. It cuts cleaner than other types. A wool blend should also work well. The Nonwovens WoolFelt is 35% wool, 65% Dacron and tends to cut very cleanly. If the felt you have is not cutting well, consider applying one of the stabilizers mentioned above.

- If the felt is pre-stiffened, then it should cut fine using the blue capped thick materials blade versus the fabric blade. Because of the thickness, you may need to tape the felt to the mat to prevent slippage during cutting.

- In general you will need to use 2 or 3 passes when cutting most fabrics and felts. It is necessary so that all fibers will be cleanly cut.

- For cutting force, it will depend on the fabric. For cutting force, it will depend on the fabric. Refer to the table at the end of Chapter 2 for recommended settings.

10.05 Iron-On Transfer

Video   *More Info*
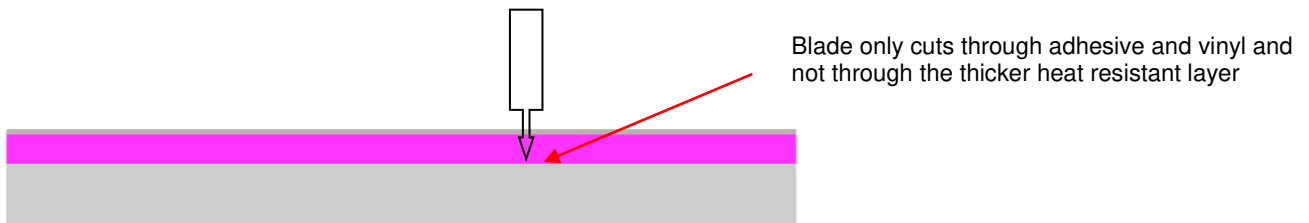
Types of Iron-On Transfer

- There are a number of different kinds of vinyl available at KNK USA:
    - ◊ Regular Iron-On Transfer (T-Shirt Vinyl)
    - ◊ Iron-On Flock
    - ◊ Glitter Flex and Glitter Flex Ultra
    - ◊ And more!

Cutting Iron-On

- Iron-on transfer vinyl and flock consists of three layers:

Heat-resistant layer (shiny side)

Iron-on vinyl

Adhesive (dull side)

- For cutting, have the **dull side up** (adhesive side up):

Blade only cuts through adhesive and vinyl and not through the thicker heat resistant layer

- Because iron-on transfer has the heat protection layer, which will not be cut, this can serve as the carrier/mat during cutting. The material will need to be at least 4" wide so that both sides will be gripped by the pinch wheels. If you are cutting from from scraps, then use a cutting mat to hold the material during the cut.

- The force required is ~60 for regular iron-on. Other types may require higher settings. Be sure to do a test cut first and then see if vinyl layer will peel away from backing.

- Remember to **reverse your image** before cutting! Because you are cutting with the adhesive side up, you'll be flipping the material over, after weeding and before pressing. To mirror your image, select it and then apply the **Mirror** function.

- Cut around your image with scissors before weeding. Note that it's really hard to see the cut image, so be careful!

- Use a paper piercer or craft knife to grab onto a piece of the waste vinyl and then pull to remove. Remember to weed small internal parts, as well.

Adhering Iron-On

- Use a hot dry iron (cotton setting) and with steam turned off.
- Use a fairly firm surface…. Not a highly cushioned ironing board.

- Insert a cloth between the layers of a shirt in case adhesive melts through to other side

- Press shirt first to create a smooth flat dry surface.

- Arrange pattern on shirt, carefully centering.

- Press firmly for 10 full seconds. Do not move iron around… just press firmly.

- Allow to slightly cool and then remove top heat-resistant layer. If pattern begins to come up, then cover with the heat-resistant layer and immediately repress for another 10 seconds.

- Some people will also flip shirt inside out and press from other side for another 5 seconds. Note: other types of iron-on may require additional pressing time or even less pressing time. Contact your supplier for information.

- Wait 24 hours before laundering.

10.06 Rhinestone Templates

Designing Rhinestone Patterns

- Refer to *Section 8.12* for specific instructions on designing rhinestone patterns in MTC. The most important things to remember are:

  ◊ The circles must be several sizes larger than the actual stones you've purchased. For example, if you have 10SS stones, then design using 13SS or 14SS stones in the software. This allows the stones to more easily fall into the holes during brushing.

  ◊ Always size your shape first before converting into a rhinestone design. Once the circles are created for the pattern, the pattern cannot be resized without changing the size of those circles.

Cutting Rhinestone Template Material

Video

- Rhinestone templates can be used hundreds of times. There are several commonly used materials for making these templates. The current most popular choices are:

  ◊ The green rhinestone template material sold at KNK USA is the most popular because it is less expensive than the other options and has been around longer. It is recommended over a similar thinner rubber sold by companies who market their material for the lower force cutters. The disadvantages to using any rubber template material is that you need to apply a solid backing after the template is cut and also dust the template with a powder so that the powder will cover any of the permanent adhesive exposed in the holes. The solid backing typically chosen is foam board or stencil board.

  ◊ The black Rock-it flock, also sold at KNK USA, is more expensive than the rubber template materials but doesn't require a backing to be applied after cutting. It also doesn't require dusting. The Rock-It templates can be used to mix and match designs, such as combining letters and images.

  ◊ Sticky Flock is a similar material to Rock-it but is more expensive still and slightly thinner. It has the same advantages as Rock-it.

- The first step before cutting the template is to check the size of the design you've created and then cut a piece of rhinestone template material that is at least 1" larger in both height and width compared to your design. It is beneficial to have a little bit of material around the edges of the design where excess rhinestones can still be brushed back over the design.

- Peel off the backing sheet first and press the rhinestone material to a clean sticky mat. Brayer firmly to make sure the rubber has excellent contact with the mat.

- Set **Multicut** to 2 times, again to aid in weeding the cut circles. Use a 60 degree blade for cutting and a force of about 75 for the green rubber and 60 - 70 for the flocks. Perform test cuts of small numbers of circles (say, around 8 – 10) to make sure the force you're using is sufficient.

Weeding and Brushing in Rhinestones

- After cutting, brayer the template material again. As you lift the pattern, the majority of the little circles should remain stuck to the mat. If there are still circles attached, then press firmly and lift on other parts of your cutting mat. Eventually, you should have the majority removed.

- If your template was cut from a rubber, apply your pattern to a backing material such as stencil board or foam board. Make sure it's a different color from your rubber. You may wish to first cover the backing board with clear mailing tape for a slicker, more permanent surface. Verify that none of the little circles are still attached to the back of the template and causing a "bump" in the pattern.

- Again, if your template was cut from rubber, using an old toothbrush and brush some powder (talc, baking, facial) into the holes. Tap upside down to remove excess powder and then wipe the top of the pattern clean. The powder will stick to any adhesive inside the holes and prevent rhinestones from getting stuck in the holes.

- Place your template into the bottom of a bead tray, cake pan, or other large flat container. Those who use the flock materials will often cover the bottom of their container with a layer of the same flock. Pour the rhinestones on top of the template.

- Use a Shur-Line Trim and Touch-up Pad to brush the rhinestones in a circular motion. Keep brushing and you will find that the stones that landed upside down will be brushed out and correct ones will replace them. This pad type brush is essential to the ease and success of this important step!

- When ~95% of the pattern is correctly filled, then use tweezers, a toothpick, or just your finger to position the last few rhinestones into the pattern.

- Cut the rhinestone transfer tape to size and then press it down onto your stones. Press firmly but do not push the stones deep into the holes. If you have a problem with the stones jumping as you are dropping the transfer tape, then try using a Bounce sheet or anti-static spray on the tape before pressing.

- As you lift the tape, start in a corner and keep one side pressed down and watch to make sure all stones are being lifted. If a stone fails to lift, press back down to pick it up. Once the stones are lifted, you can now place the transfer tape back onto its backing or go ahead and press the stones to your shirt, other fabric, or even cardstock!

- Note that the transfer tape is reusable! You should be able to get 4 or 5 pressings from one piece, even though it becomes wrinkled from the pressing. Keep using until it doesn't pick up and hold the stones.

Heat Pressing Rhinestones

- If using your home iron to press the stones to a shirt:
  ◊ Use a hot dry iron (cotton setting or higher with steam option turned off).
  ◊ Use a firm surface… not a highly cushioned ironing board
  ◊ Insert a cloth between the layers of a shirt.
  ◊ Press shirt first to create a smooth flat dry surface.
  ◊ Arrange pattern on shirt, carefully centering.
  ◊ Press firmly for 10 seconds. Then move about ½" in case steam holes were over areas of some stones and then press firmly for another 10 seconds.
  ◊ Move to another area of stones and repeat.
  ◊ Flip shirt inside out and press for another 10 seconds on side where stones are applied.
  ◊ Allow to thoroughly cool before removing clear transfer tape.

- If using a heat press to press the stones to a shirt:
  ◊ Set the temperature to ~ 330—350 degrees F (165 – 175 degrees C) and set the pressure to medium.
  ◊ Press garment first for a flat dry surface.

◊ Arrange pattern on shirt, carefully centering. Press for 10-12 seconds.

◊ Peel cold, cover with Teflon sheet, and re-press another 10-12 seconds. Alternatively, flip the shirt inside out and press from the back for 10-12 seconds.

◊ Use a lower temperature if pressing on 50/50 cotton poly fabric. Use a higher temperature on denim or tote bags.

Extra tips on Rhinestone Applications

- If you are combining iron-on transfer with rhinestones, do not press the rhinestones onto the iron-on vinyl. While it will appear to have worked well, the stones will fall off once the garment is laundered. When using both, create a contour line around your iron-on pattern for the stones.

- Pressing rhinestones to cardstock also works very well. If pressing onto the front of a greeting card, unfold the card first.

- After pressing and allowing to cool, use your fingernail or an old credit card/gift card to scrape the pattern to see if any stones come loose. If so, replace those stones with new ones and press again.

10.07 Drawing with a Pen or Glue Pen

- With the Maxx, Groove, and Groove-e, you can draw with any pen, pencil, marker, or glue pen, that can be securely gripped by the blade holder seat and not be dragging across the material. The optional Zing Pen Holder can also be used to hold thinner pens. The advantage of the Pen Holder is that the center of the pen will be positioned the same as the blade on the Maxx / Groove-e Blade Holder, thus allowing you to draw with the pen and then cut out a shape. The pen will draw in the correct relative positions to the cut:

Outside cut circle is aligned with pen drawn circle → ← Outside cut circle is NOT aligned with pen drawn circle

- If you do not own the Zing Pen Holder or you wish to use a pen which does not fit into the holder, then refer to the following section: *Adjusting for Differences in Diameters of Tools and Blade Holders.*

- When the project involves both drawing and cutting, you will need to use **WYSIWYG** for the cut mode so that the shapes will be aligned.

- Always draw first and then cut. Turn off the **Blade Offset** for drawing because it is not needed and can give undesired results. But then remember to turn it back on for the cut process.

- Do not have the pen positioned too low in the blade holder seat or the tip of the pen could drag across the paper when moving from one shape to the next.

- Make sure your shapes will not be drawn where any of the pinch wheels travel over the material. Otherwise, the ink or glue could smear. Position your material on the cutting mat accordingly.

- The Sakura Quickie glue pens work well in the Maxx and Groove-E. They will fit into the Zing Pen Holder, as well as directly into the blade holder seat (if alignment with cutting isn't needed).

- The open path fonts available in MTC should work well for drawing as they provide single drawn lines and curves versus an outline form. Refer to *Section 5.11.*

- The following video shows how to use the Zing pen holder and the blade holder for an aligned "draw and cut." This same method will work with the other KNK models:

Video

- The following video shows how to use a glue pen and the blade holder for an aligned "draw and cut." This same method will work with the other KNK models:

Video

Adjusting for the Difference in Diameters of Tools and Blade Holders

Video

- The following method was first presented by Bryan Williams in an MTC Forum webinar. Diane Hiscoe made the video above, using Bryan's method and inspired me to create the following tutorial. Thanks, Diane!

- If you plan to use two tools with different diameters, then you will face an alignment problem. In the following example, two glasses and an inner circle will be drawn with a silver gel pen and then the outside circle cut out.

- Because the gel pen is thin, it sits further back in the blade holder seat than the blade holder. With no adjustments made, the resulting drawn image and cut circle are out of alignment:

- However, there is a straight-forward method one can use to compensate for tools with different diameters. This method involves adding a rectangle, within MTC, around the shapes. This rectangle will be drawn with the pen and then the corners will be used as registration marks for a print and cut process:

A rectangle is added which completely surrounds the shapes in the project.

This rectangle should be on its own layer.
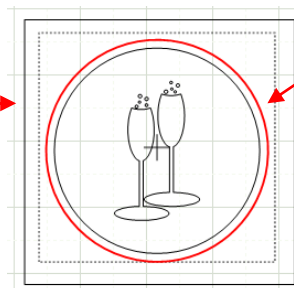
The red line is the cut line. The other lines will be drawn with the gel pen. These lines are the glasses, inner circle, and outer rectangle.

- The layers to be drawn (glasses, inner circle, and outer rectangle) are showing on the **Layers Bar** and the layer with the cut line is turned off:

Hide the layer to be cut
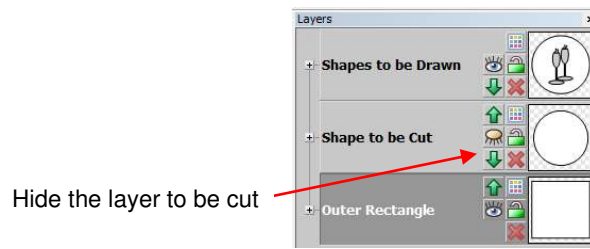
- Set the origin using the laser (or alignment pin) and select **WYSIWYG** for the **Cut Type**. Turn off **Blade Offset** and then set the appropriate **Force** and **Speed**. Draw the shapes with the pen.

- Turn off the layer with the glasses and the circle, but leave the outer rectangle layer turned on. Also, now show the layer with the circle to be cut:

Hide the layer with the circle and the glasses

Show the layer with the circle to be cut. Leave the outer rectangle layer showing.
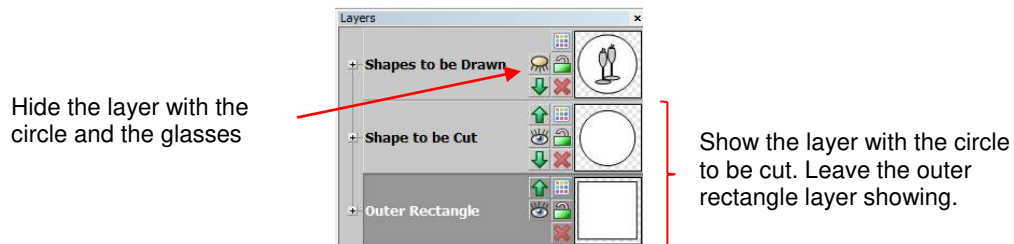
- Again set the origin using the laser/pin. Turn on **Blade Offset** and set the appropriate **Force** and **Speed**. Set the **Cut Type** to **Print and Cut**. Execute the cut, using the corners of the rectangle as the registration marks. The resulting gel pen lines and cut will now be aligned:

10.08 Embossing and Scoring

- The Zing Embossing Tool has two different sized embossing heads and can be used in the other KNK models. The smaller one is recommended when scoring cardstock for fold-up projects, such as pop-up cards, gift bags, and small boxes. Either head can be used for embossing shapes.

- When the project involves both embossing/scoring and cutting, you will need to use **WYSIWYG** for the cut mode so that the shapes will be aligned.

- When embossing, it is recommend that a soft material be place beneath the paper or cardstock to allow a deeper impression to be made. One excellent material to use is non-slip shelf liner. Even though the surface is somewhat uneven, you will obtain very good results. Other materials which can be used include rhinestone rubber, craft foam, and felt. Make sure the material is well adhered to the mat (tape it down, if necessary). Then tape your paper or cardstock to the top of this material.

- When scoring, the paper or cardstock can be applied directly to the mat, just as you do for cutting. This makes it much simpler when you need to score and then immediately cut.

- Make sure you do some tests first to get the best settings for the scoring or embossing you need. For scoring cardstock, this typically involves a higher force (~150) and two or three passes. Refer to the Suggested Settings table at the end of this chapter. If you have a soft material beneath your paper/cardstock, then a lower force can be used, but you may still need several passes. Also raise the tool in the blade holder seat the same way you do with the blade holder, to get more force invoked.

- Remember to turn off the **Blade Offset** setting when scoring or embossing but turn it back on when you get ready to cut.

- When embossing paper or cardstock, it is recommended that you use the **Shadow Layer** function to create a very small outline and inline, say 0.01". These tiny offset lines will then produce a slightly thicker overall outline of your shapes. This works better than fill embossing which can stress the cardstock and cause wrinkling. Here are the steps:

- Create the shape you wish to emboss. In this example, the numbers 25 are used for a 25th wedding anniversary:

- Select the shape and go to the **Shadow Layer** function: and perform the following:

Set **Shadow Width** to 0.01"

Select **Corner Join** style.

Click on **Accept**.

- After clicking on **Accept**, re-select just the original image, and go to the **Shadow Layer** function again and perform the following:

Set **Shadow Width** to - 0.01"

Select **Corner Join** style.

Click on **Accept**.

- Now you have three versions of your shape and when using the embossing tool, you will have a thicker outline of the shape:
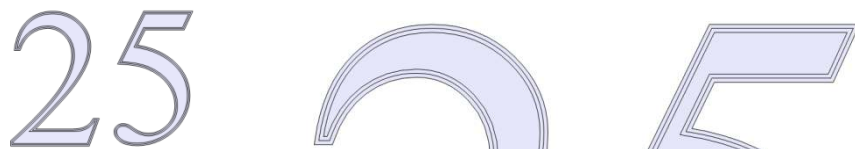
- The following video shows the embossing tool being used to emboss a design onto metal. Even though this video was made using the Zing, the same method will apply:

10.09 Engraving

- There is a drop-in Engraving Tip for the original silver blade holder or the Maxx blade holder, or you can use the Zing Engraving tool in a Maxx, Groove, or Groove-e model.

- The same basic guidelines apply to engraving as in embossing and scoring:

- You will probably need to use the **WYSIWYG** cut mode.

- You will need to turn off the **Blade Offset** setting for engraving.

- You will probably need to use multiple passes to get the desired results.

- On softer metals, you may not want the engraving tip too far above the metal as it can leave a pock mark when it drops to start engraving. If possible, test on scraps first.

- Refer to the *Suggested Settings* table at the end of this chapter or force and speed settings on various materials. Note that you can engrave on materials that cannot be cut on the KNK, such as jewelry charms, dog tags, and trophy plates.

- The open path fonts available in MTC should work well for engraving. They contain single path lines and curves versus outlines and are usually more desirable when engraving letters. Refer to *Section 5.11.*

Project: Engraving a Dog Tag

- When engraving items that are already cut (such as the items listed previously), it can sometimes be tricky getting the perfect alignment you need. Here's a method that works well (thank you to Michelle Hessler for posting this technique):

- Carefully measure the dimensions of the item. For example, it if is a circular dog tag, then measure the diameter. Recreate the shape in MTC and size it to be the same. In the follow example, the diameter of the dog tag is 1-1/8", so a circle of the same size is drawn:

Photo of actual dog tag

Circle created in MTC at the same diameter as the tag
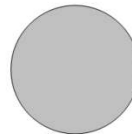
- Because this shape will be cut from another material to use in the alignment process, the shape is resized to be a tiny bit larger. For a circle, you can simply resize it in the **Sel Properties Bar**. If the shape is something non-symmetrical, then use the **Shadow Function** with a **Shadow Width** of about 0.04".

- Next the desired lettering and/or shapes are added. In this case, the dog's name and a phone number with "Please Call" are chosen. Because there is also a hole near the top of this dog tag, a ¼" high square is added just to show the top limit of where the lettering could be located. This is deleted as soon as the lettering is added and positioned:

Chibi
Please Call
480-839-3849

Chibi
Please Call
480-839-3849

- The lettering is placed on one layer in MTC while the circle is place on a different layer. A sheet of thin chipboard is placed on the cutting mat. Using **WYSIWYG** cut mode, the circle is sent to cut:

Tape chipboard to top of mat
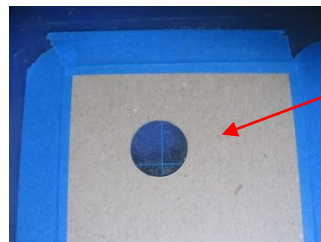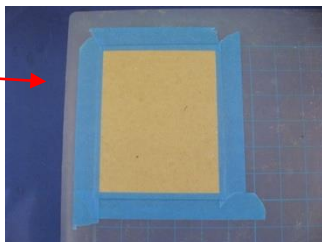
Circle layer is sent to cut and removed from the rest of the chipboard.

- After the hole is cut in the chipboard, do not lift the pinch wheel levers! This is important. You can go offline and use the up/down arrows to move the mat so that the cut circle can be removed. Then the actual dog tag is placed inside the cut hole. Tape is used to secure the tag:
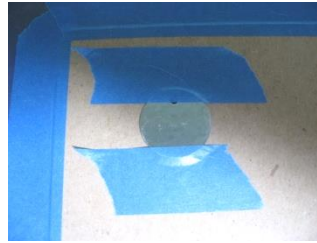
- The blade holder is replaced with the engraving tool. Then press the **Online** button so that the blade holder will return to the same origin that was used to cut the chipboard. **Blade Offset** is turned off and a **Force** of 140 and 3 **Multicut** passes are set. The letter is engraved in the same location on the tag as was designed on the Virtual Mat:

10.10 Using the Punch Tool

- The Maxx drop-in Punch Tool or Zing Punch Tool can be used for creating decorative designs (such as pergamano and other parchment arts) or for creating small holes for paper embroidery.

- To protect the mat and the thin punch, it is recommended that a thick soft material be used as a cushion between the paper/cardstock and the cutting mat. Suggested materials that will work well include non-slip shelf liner, craft foam, and stiffened felt.

- The same basic principles apply to punching as in embossing and scoring:

- You will probably need to use the **WYSIWYG** cut mode.

- You will need to turn off the **Blade Offset** setting.

- You will possibly need to use multiple passes to get the desired results.

- Refer to the Suggested Settings table at the end of this chapter or force and speed settings on various materials.

- To design a punch pattern, use the **Rhinestone** function presented in *Section 8.12* however, select the smallest size available from the drop down menu. This will create holes suitable in size for paper embroidery. After clicking on **Accept**, you may need to apply a **Break** in order to respace and tweak your overall design.

- If the circle sizes from the **Rhinestone** function produce holes that are larger than what you desire, then repeat the design process but first, make your overall design twice as large as you plan to use. In the **Rhinestone** function window, again select the smallest size, but double the spacing. Then, after clicking on **Accept**, reduce the overall design by half! Your holes will now cut at half the size of the first design you created.

- As with the other tools, testing is necessary to get the perfect settings for the particular material you are punching. Don't forget to set the punch tip height higher, just as you do with the blade holder, in order to get more force invoked.

10.11 Cake Decorating

Video Video

- Here are some ways to use the KNK Maxx in cake decorating (thank you to Rebecca Stewart for providing most of the following info in this section):

  ◊ Cupcake wrappers (refer to *Section 8.10*

  ◊ Icing sheets: both regular and print and cut

  ◊ Stencils for airbrushing cakes

  ◊ Fondant, gum paste, Sugar Veil cut shapes

  ◊ Templates from thin chipboard to use as patterns when cutting thick layers of gum paste

- Icing sheets can be cut on the regular KNK Maxx mat, although it's a good idea to have one dedicated to cake use only. The same is true for the blade holder and blade.

- Press the icing sheet to the mat, making sure the pinch rollers will not travel over the icing sheet! The plastic backing on the sheet acts just like the backing on vinyl - cut through just the icing, leave the backing intact. Peel off the cut and put the leftover sheet back in the bag.

- When cutting fondant or gum paste, roll it out and place it on a lightly greased piece of wax paper, and stick that down on the sticky mat. Whether you cut through the wax paper or not, the wax paper makes it easier to get the cut shapes off the mat without distorting them. Some people prefer to use shortening applied to a mat with no adhesive, however, it can be tricky getting the shapes cleanly off the mat.

10.12 Additional Applications

Wood

Video

- Cutting wood can be tricky because it is subject to splintering. Stick to very thin pieces of balsa or birch (1/16" or thinner).

- Use a low force and not the typical blade tip height used for other materials, which can increase the chance of splintering when the blade drops to puncture the wood. Try using 6 Post It notes for setting the blade tip height.

- Tape the balsa to a sticky mat to keep it from shifting during the cut. Also decrease the blade offset so that corners will be cut more rounded. Use a low speed ~50 or slower.

- If you plan to engrave the wood first, use the small end of the Embossing Tool. Unlike the procedure when embossing or engraving other materials, perform the cut first and then emboss/engrave. If you try embossing first, the wood can be weakened and made more susceptible to splintering.

Craft Plastic

- Craft plastic (PET-G) is sold at a variety of Internet sites, including E-Bay, Dick Blick, Clear Scraps, and Scrapbook.com. Not only can it be cut on the Maxx, but fold lines can be created using the engraving tip. The advantage of PET-G is that you can fold these score lines back and forth many times without the plastic snapping. If you prefer, you can also create fold lines by cutting dashed lines. These also are very strong and can be folded dozens of times before weakening.
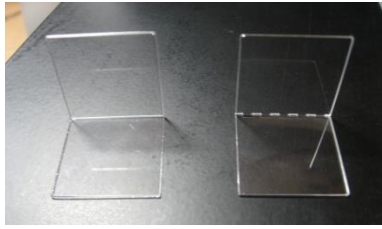
- PET-G comes in 0.015" and 0.02" thicknesses with protective sheets on the front and back to protect it from scratches. These protective sheets will make it appear to be colored, but it is perfectly clear when the sheets are removed. You can remove both before cutting, but you might prefer to leave one of the sheets attached to protect the bottom side from any adhesive on the cutting mat. This bottom sheet can also serve as a stabilizer during the cut.

- PET-G doesn't need to be cut totally clean. So, if there are parts that are not cleanly cut, try tearing the shape away from the waste. That should work just fine. Ideally, of course, the cut will be clean and this step not needed. Refer to the table at the end of *Chapter 2* for cut settings and the table at the end of this chapter for scoring settings.

Suggested Maxx/Groove-E Settings for Various Accessories[1]

Important: Remember to turn **Blade Offset** back on after using
accessory tools and before cutting with your blade again!

Material	Tool	Force	Speed (Cut/Up)	# Passes	Surface	Other Comments
Copper	Engraving	80	500	1	Mat	36g Copper -Taped to mat
Aluminum	Engraving	40	500	1	Mat	36g AL - Taped to mat
Acrylic	Engraving	160	500	1	Mat	Hard acrylic—Taped to mat
Paper	Engraving	1-15	500	1	Craft foam	Tape craft foam to mat
Cardstock	Engraving	80-100	500	1	Craft foam	Tape craft foam to mat
Vellum	Engraving	1-5	500	1	Craft foam	Tape craft foam to mat
Heavy Vellum	Engraving	30-40	500	1	Craft foam	Tape craft foam to mat
Thin Smooth Cardstock	Embossing	63	500	1	Craft foam	Tape craft foam to mat
Thin Smooth Cardstock	Embossing	140	500	2	Craft foam	2 contours—0.01"
CTMH Cardstock	Embossing	160	500	2	Craft foam	2 contours—0.01"
Paper	Punch	140	300	1	Craft foam	Used dash line: 0.01" dash; 0.25" space

Settings Form for Accessory Tools

Application/Material	Tool	Force	Speed	# Passes	Surface	Other Comments

Appendix A Key Board Shortcuts

Shortcut	Icon	Description	Menu, Other Location
Standard Functions			

Shortcut	Icon	Description	Menu, Other Location
Ctrl+N		Open a new file/project	File>New or Tab bar
Ctrl+O		Open an existing .mtc file/project	File>Open
Ctrl+S		Save a file/project	File>Save
Ctrl+Shift+P		Print	File>Print
Ctrl+Z / Ctrl Y		Undo last action / Redo last action	Edit>Undo / Edit>Redo
Ctrl+F6		Go to next window/project	Top left icon in Menu Bar
Ctrl+Tab		Go to next project/project	Window>Next Window
Ctrl+F4		Close current project	Top left icon in Menu Bar
Alt+F4		Close all projects and MTC, as well	

Viewing and Zooming Tools

Shortcut	Icon	Description	Menu, Other Location
Ctrl+3		Zoom to Virtual Mat	View>Zoom To>Mat
Ctrl+4		Zoom to All Shapes on Screen	View>Zoom To>All
1		Zoom to 100%	View>Zoom To>100%
2		Zoom to 20%	View>Zoom To>20%
3		Moves display to selected shape(s), keeps current zoom level	View>Zoom To>Selected
4		Zoom to 300%	View>Zoom To>300%
5 , 6, 7, 8, 9, 0		Zoom to 500%, 600%, 700%, 800%, 900%, 1000%	View>Zoom To>500% … 1000%
+ or -		Zoom in or Zoom out	Press + (or -) key on the numeric keypad; icons on File Toolbar
D		Display textures while other shapes are selected	
Roll mouse wheel		Move workspace up and own	
Ctrl+roll mouse wheel		Zoom in and out, centered on location of mouse cursor	
Spacebar+drag left mouse button		Pan workspace	
Ctrl+Shift+I		Toggle the showing of nodes for selected shapes	Edit>Shape Magic>Advanced>Nodes On Mat

Selecting Shapes

Shortcut	Icon	Description	Menu, Other Location
Ctrl+A		Select all	Edit>Select All
Shift+Esc		Select next shape	Edit>Previous Shape
Shift+Tab		Select previous shape	Edit>Next Shape
Esc		Select none	Edit>Select None
Shift		Hold Shift and click on shapes to add to selection	

Shortcut	Icon	Description	Menu, Other Location
Duplicating Shapes			
Ctrl+C		Copy to clipboard	Edit>Copy
Ctrl+V		Paste from clipboard	Edit>Paste
Ctrl+Shift+V		Paste in Place from clipboard	Edit>Paste in Place
Ctrl+Shift+drag		Create a duplicate of selected shape(s)	
Ctrl+D		Create duplicate copies of selected shape (s)	Edit>Duplicate

Cutting/Deleting Shapes

Shortcut	Icon	Description	Menu, Other Location
Ctrl+X		Cut to clipboard	Edit>Cut
Del		Delete selected shape(s)	Edit>Delete
Shift+Del		Delete all shapes in the file	Edit>Delete All
Ctrl+Shift+R		Delete all shapes smaller than specified area (W x H)	Edit>Delete By Area

Manipulating Shapes
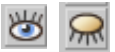
Shortcut	Icon	Description	Menu, Other Location
[or]		Arrange shapes with equal vertical (or equal horizontal) spacing	Edit>Align & Space>Space>Vertically (or Horizontally)
B or T		Align selected shapes along bottom of bottommost shape (or along top of topmost shape)	Edit>Align & Space>Align>Bottom (or Top)
L or R		Align selected shapes along left side of leftmost shape (or along right side of rightmost shape)	Edit>Align & Space>Align>Left (or Right)
S		Center / stack selected shapes	Edit>Align & Space>Align>Stack
H or V		Align selected shapes along horizontal (or vertical) center	Edit>Align & Space>Align>Horz. Center (or Vert. Center)
Ctrl+F		Vertically flip selected shape(s)	Edit>Shape Magic>Flip
Ctrl+M		Horizontally mirror selected shape(s)	Edit>Shape Magic>Mirror
Ctrl+G		Rotate selected shape(s) 90 degrees clockwise	Edit>Shape Magic>Rotate 90 deg
Ctrl+Drag middle right icon on selected shapes		Modify spacing between selected shapes	

Opening Windows

Shortcut	Icon	Description	Menu, Other Location
Ctrl+I		Open "Add Text Group" window	Icon on Text and Fonts tab, Main Bar
Ctrl+Shift+U		Open "Color" window	Right click>Change Color/Texture/Line>Color
Ctrl+Shift+O		Open "Choose Texture" window	Right click>Change Color/Texture/Line>Texture
Ctrl+Shift+Y		Open "Choose Line Style" window	Right click>Change Color/Texture/Line>Line
Ctrl+Shift+X		Open "Shape View window"	Edit>Shape Magic>Advanced>View Path Detail
		Open "Project Notes" window	View>Notes Window

Shortcut	Icon	Description	Menu, Other Location

Layers Window Icons

Shortcut	Icon	Description	Menu, Other Location
		Move this layer up / down	On any given layer
		Layer is visible / hidden	On any given layer
		Set color, texture or line style for this layer	On any given layer
		Layer is unlocked / locked	On any given layer
		Delete this layer	On any given layer
		Create a new layer	Bottom of Layers window
		Place current selection on a new layer	Bottom of Layers window
		Open Layer Options Menu	Bottom of Layers window
		Delete empty layers	Bottom of Layers window
		Open Visible Toggle menu	Bottom of Layers window
		Open Lock Toggle menu	Bottom of Layers window

Text and Fonts Icons

Shortcut	Icon	Description	Menu, Other Location
		Bold / Italic	On Text and Fonts tab of Main Bar
		Refresh installed fonts list	On Text and Fonts tab of Main Bar
		Open TTF/OTF font file	On Text and Fonts tab of Main Bar
		Open Add Text Group window	On Text and Fonts tab of Main Bar

Importing

Shortcut	Icon	Description	Menu, Other Location
Ctrl+Shift+A		Open "Make The Cut Gallery" import/download window	File>Import>From MTC Gallery
Ctrl+Shift+B		Open "Basic shapes" window import window	File>Import>From Basic Shapes
Ctrl+Shift+D		"Open Adobe File" import window	File>Import>Vector PDF/PS/EPS/AI
Ctrl+Shift+G		"Open SVG File" import window	File>Import>SVG/SVGZ File
Ctrl+Shift+H		"Open Font File" import window	File>Import>True/Open Type Font File or Icon on Text and Fonts tab (Main Bar)
Ctrl+Shift+Q		"Open WPC File" import window	File>Import>WPC File
		"Open GSD File" (or "Open SCUT File") import window	File>Import>GSD File (or SCUT File)
Ctrl+Shift+T		Open "Pixel Trace" import window	File>Import>Pixel Trace
		Open "Lettering Delights" import window	File>Import>From Lettering Delights

Shortcut	Icon	Description	Menu, Other Location

Exporting

Shortcut	Icon	Description	Menu, Other Location
Ctrl+Shift+L		Open "Add Basic shape" window	File>Export>Sel. To Basic Shapes
Ctrl+Shift+S		Open "Save SVG as" window	File>Export>Sel. To SVG File
Ctrl+Shift+W		Open "Upload" window to upload as SVG file to MTC Gallery	File>Export>Sel. As SVG To MTC Gallery

Editing Tools

Shortcut	Icon	Description	Menu, Other Location
Ctrl+B		Break a shape into all of its individual paths	Edit>Shape Magic>Break
Ctrl+J		Join selected shapes into a single shape	Edit>Shape Magic>Join
Ctrl+P		Split typed text into individual characters (glyphs)	Edit>Shape Magic>Split
Ctrl+R		Remove all interior paths from selected shapes	Edit>Shape Magic>Blackout
Ctrl+L		Break apart selected shape(s) into layers	Edit>Shape Magic>Layer
Ctrl+Shift+F		Apply "Flatten Paths" function	Edit>Shape Magic>Advanced>Flatten Paths
Ctrl+Shift+J		Smooth and simplify shapes	Edit>Shape Magic>Advanced>Smooth & Simplify
Ctrl+Shift+M		Open "Fuse and Weld" window	Edit>Shape Magic>Advanced>Fuse n' Weld
Ctrl+Shift+N		Open Tiler window	Edit>Shape Magic>Advanced>Tiler…
Ctrl+Shift+Z		Open "Auto Simplify" window to reduce nodes	Edit>Shape Magic>Advanced>Auto Simplify Path
		Toggle Auto Simplify Welds	Edit>Shape Magic>Advanced>Auto Simplify Welds

Designing Tools

Shortcut	Icon	Description	Menu, Other Location
Ctrl+1		Apply "Texture Snapshot"	Edit>Shape Magic>Texture Snapshot
Ctrl+E		Open "Lattice" window	Edit>Shape Magic>Lattice
Ctrl+H		Open "Generate Shadow Layer" window	Edit>Shape Magic>Shadow Layer
Ctrl+K		Open "Rhinestone" window	Edit>Shape Magic>Rhinestone
Ctrl+Q		Open "Conical Warp" window	Edit>Shape Magic>Conical Warp
Ctrl+Shift+K		Apply "Thin Paths" function to create a center line trace	Edit>Shape Magic>Advanced>Thin Paths
Ctrl+Shift+N		Open "Tiler" window	Edit>Shape Magic>Advanced>Tiler…
Ctrl+T		Open "Bézier Warp" window	Edit>Shape Magic>Bezier Warp
Ctrl+U		Open "Boolean Join" window	Edit>Shape Magic>Boolean Join
Ctrl+W		Weld selected shapes to remove overlap	Edit>Shape Magic>Weld
Ctrl+Drag one shape onto another		Open "Wrap Objects to Path" window	

Shortcut	Icon	Description	Menu, Other Location

Output

Shortcut	Icon	Description	Menu, Other Location
Ctrl+Shift+C		Open controller window for current default cutter	Cut Project With>current default sel. Cutter
Ctrl+Shift+E		Show preview of cut shapes	Cut Project With>Cut Preview
Ctrl+Shift+P		Print	File>Print
		Reverse Paths (change direction of cut on selected shape)	Edit>Shape Magic>Advanced>Reverse Paths

Node Editing Tools

Shortcut	Icon	Description	Menu, Other Location
W		Toggle Node Mode Toolbar on/off	Upper left corner of Virtual Mat
F1		Edit This Project Normally	On the node editing toolbar
F2		Edit Paths at Node Level	On the node editing toolbar
F3		Draw Freehand Lines	On the node editing toolbar
F4		Draw Bezier Curves and Straight Lines	On the node editing toolbar
F5		Add basic shapes	On the node editing toolbar
F6		Create spirals	On the node editing toolbar
F7		Create stars and polygons	On the node editing toolbar
F8		Erase sections of paths	On the node editing toolbar
F9		Slice shapes and lines	On the node editing toolbar
F10		Measure shape lengths and angles	On the node editing toolbar

Appendix B Troubleshooting

Communication Issues

There is no "USB-Serial" COM Port connection available in the list of available COM ports.

- Unplug the KNK from your computer. In MTC, go to **Help>Advanced>Download and Install FTDI D2XX Drivers**. Once the drivers have installed, reboot your computer. When your computer has finished restarting, reconnect the KNK to your computer. You should get a pop-up that will finish the installation.

    ◊ If this fails, again unplug the KNK from your computer. Download and install the driver for the KNK Maxx/Groove-e from here:

    http://knkusa.com/resources/

    ◊ Once you have downloaded and installed the driver, reboot your computer. When your computer has finished restarting, reconnect the KNK to your computer. You should get a pop-up that will finish the installation. If you continue to have trouble, contact your KNK dealer or KNKUSA.

_____

When I tried to cut, I got an error message that said: "Overlapped I/O Operation is in Progress"

- Verify the correct listing is selected in the Serial Port menu.
- Verify that the USB cable is securely plugged into your KNK and into the computer.

_____

When I tried to cut, nothing happened, no error messages either.

- Make sure your cutter is online.
- Check the baud rate on the machine to make sure it matches what is selected in the window.

_____

When I tried to cut, I received an error message that said, "Access is Denied."

- The Latency Timer needs to be changed on the Com Port assignment. To do this, watch the video called "Communication Fix" at this link: http://www.iloveknk.com/FreeVideos/Support/

_____

I've reinstalled the driver and change the Latency Timer, but my computer keeps losing the connection to the KNK.

- You may need to change the power settings for the USB ports. To do this, go to Windows **Control Panel>System and Security>Power Options**. Click on **Change Plan Settings** and then **Change Advanced Power Settings.** In the **Advance Power Settings** window, click on the **+** next to **USB Settings**. Make sure the **USB Selective suspend setting** is **Disabled**.

- If the KNK still becomes disconnected, make sure you are using the latest plugin. These are available at http://knkusa.com/resources/

- Try applying Flatten Paths before sending to the cut window. Select your shapes, click on the wrench icon at the bottom of the screen, and select **Flatten Paths** from the pop up menu.

- Try changing the COM Port that has been assigned. **Video**

_____

Operating Issues

My mat is rotating when the KNK starts to cut!

- Both pinch wheels need to be gripping the mat. Move the mat either left or right so that it is under both wheels.

_____

The rollers are ripping the top layer of my material.

- It's important to keep the rollers clean of adhesive. Use Un-Du or Goo Gone to thoroughly clean the wheels. Then either make sure the wheels are always over the material you are cutting or place strips of paper where the wheels will be crossing the mat.

_____

Some of the buttons are hard to use on the control panel. I have to press really hard to get them to work.

- There is a tutorial available for fixing that. It's very easy to do and will make a big difference:

  http://www.iloveknk.com/Support/Tutorials/Klic-N-Kut/Buttons Sticking - Cleaning the Control Panel.pdf

_____

At low pressures the blade doesn't touch the surface.

- That is correct. Simply increase the pressure, as necessary, to get a good test cut.

_____

The KNK stops cutting when the screen saver comes on.

- This can happen with some computers. Turn off the screen saver before cutting.

_____

During a cut, the KNK stopped and went into the Pause mode.

- The blade is trying to reach a point outside of the available cutting width. Turn off the cutter and click on Cancel. Answer "Yes" to quit. Then turn the cutter back on. Set your origin closer to the far right limit so that you have the full cutting range width available.

_____

Sometimes, while the KNK is turned on, but not cutting, there's a faint whistling sound being emitted.

- This is due to what is called "micro stepping." It is a high pitched noise caused by idling between 2 veins on the encoder, but shouldn't be of concern to the user.

_____

Cutting/Drawing Issues

I am getting large diagonal lines sliced through all of my cuts.

- Your Make The Cut software is still in trial mode. You need to register your copy of MTC using the activation pin that came on the software CD. Here is the link: https://www.make-the-cut.com/Register.aspx

_____

My shapes are drawing off the material. What am I doing wrong?

- If you are using **Knife Point**, make sure you are setting the origin based on the position of the test pen or blade holder, not the laser light or alignment pin. The laser light or pin are is used for **WYSIWYG** mode.

- Check whether your **Virtual Mat** is in **Portrait** or **Landscape** mode. This will change whether your image appears the same way you see it on the screen or rotated 90 degrees relative to the screen.

- Details on these various settings are covered in *Section 2.07*.

_____

When drawing with the test pen, I have extra lines being drawn.

- Make sure you raise the pen in the blade holder seat on the KNK before tightening the front screw. The blade holder seat needs to be able to drop the pen down when it reaches the spot to draw the shape. Otherwise, the pen tip will be dragging across the paper from the origin to where the shape will begin to be drawn and then back to the origin at the end of the "cut".

_____

I'm drawing with the test pen and there are bubbles at the corners.

- For perfect corners, turn off **Blade Offset** (set to 0) since you do not need an offset for pens. Refer to Sections 2.01 and 2.06.

_____

My cut started out fine but by the end of the cut, it's not cutting through the material.

- Make sure the blade holder housing doesn't have any bits of material inside of it.

- Make sure the front screw is tight so that the blade holder isn't slipping upwards during the cut.

_____

My cut is clean in some places but not in others. Why am I not getting consistent cutting?

- Try raising the blade holder a little ways up in the blade holder seat (~1/16"). If the blade is too close to the material, not enough force is being invoked.

- Make sure your material is pressed firmly onto a clean and sticky mat (assuming you are cutting a material such as paper or cardstock).

- You may need to increase the force. Try raising it by a setting of 10 and repeat the cut.

- Your material may require two passes. If a material is not homogenous or if it is heavily textured, using two passes is sometimes needed to get the entire shape cut cleanly. Also, if the material has been exposed to humidity, then it will become difficult to cut in one pass. You can dry paper and cardstock in a slightly heated oven for around 15 minutes or so to release the moisture. Preheat the oven at the lowest temperature and then turn it off before putting your paper into the oven.

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I am getting a lot of tearing in my cuts.

- A number of things can cause tearing so work through this check list:

  ◊ Too much blade is exposed. If you see cut lines in your mat, shorten the blade exposure. You should only be cutting through the material itself.
  ◊ The blade is chipped. Try a different blade.
  ◊ The paper is not adhered well to the mat. Make sure the mat is clean, sticky, and the paper is pressed smoothly and evenly on the surface.
  ◊ You may be using too much cutting force. Try reducing it and doing test cuts.
  ◊ You may have too many nodes in the shape. Refer to *Section 7.02*
  ◊ The material itself may be subject to tearing, especially on intricate cuts. Also, if the cardstock has been exposed to humidity, then the moisture in the material can make it difficult to cut cleanly. Try blow drying the cardstock or placing in a slightly warm oven for half an hour. Worst case, try a different cardstock.

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I am cutting a file with dashed lines for folds and the dashes look terrible in some places. How can I fix this?

- Those dashes are probably a series of separate straight line paths or even rectangles, versus being a solid cut line with a dashed line style assigned. Try replacing them with solid lines (*Section 7.10*) and then

  converting the line style from solid to dash as shown in *Section 3.14*.

  _____

My shapes are not completely cutting out. They are still attached to the waste part of the material.

- Make sure you have turned the Blade Offset back to the appropriate value for the blade you are using. If the Offset is at 0, then your closed paths will not quite close when cutting with a blade.

  _____

My cardstock is not cutting all the way through. I have the blade all the way out and using the maximum force.

- Please refer to Section 2.01. It's important to only have as much blade exposed as is necessary to penetrate the cardstock. You may also need to raise the blade tip height. Reduce your force back to suggested values for the material you are cutting and do a test cut.

- Do not use more pressure than is needed. If the cardstock is cutting through about 90% of the cut, then turn on Multi-cut. Some cardstocks do better with a second pass.

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Software Issues

I cannot get the MTC Bridge to install on my Mac.

- The Mac O/S needs to be 10.5.8 or newer.

- You may need to change a setting which allows programs not download from the Apple Store to be installed. Refer to this link: http://knkusa.com/resources/

  _____

Make The Cut will not accept the registration number on the CD that came with my KNK.

- The **Activation Pin** is the number on the CD envelope. This number needs to be used for registering your copy of the software <u>at the web site</u> shown in *Section 1.09*. Once you register, you will be given a **Registration Number** to then use in MTC.

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I have a new computer and I want to install Make The Cut. I cannot locate my registration number for MTC.

- Go to this link to have your registration number emailed to you at the email address you used when registering your copy of MTC: http://www.make-the-cut.com/LostRegKey.aspx

- If the email address you used for registering is no longer valid, go to this link and submit a support ticket to MTC: http://www.make-the-cut.com/Support/

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I prefer to work in metric versus inches. How do I switch to metric?

- At this time, MTC will only display the rulers and location/sizing in inches. However, you can enter a dimension in metric by typing the size and then followed by mm or cm. Refer to *Section 3.13*. To verify the dimension of shapes in metric units, use the **Measure Tool** on the **Node Edit** toolbar. Refer to *Section 7.08*.

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Is there a way to see thumbnail images of my MTC files in Explorer?

- Yes. The link to download the MTC File Viewer and instructions for using are detailed in *Section 3.06.3*.

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I have a very complicated file that I am attempting to edit. Make The Cut keeps crashing.

- You can allocate more memory by going to **Help>Advanced>Advanced Settings** and enabling the **Limit Undo/Redo Size**. Or you can clear the **Undo** steps by going to **Edit>Clean Undo History**. Refer to *Section 3.11* for more details.

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When importing images into Pixel Trace window, MTC is freezing up.

- Go to **Help>Advanced> Advanced Settings**. Uncheck the box next to **Enable Twain:**

TWAIN Import
☐ Enable TWAIN

_____

I'm having problems using the 3D view under Conical Warp.

- Go to **Help>Advanced> Advanced Settings**. Uncheck the box next to **Enable OpenGL.** The 3D view will now be disabled**.**

OpenGL Views
☐ Enable OpenGL

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MTC crashed and I thought I had Auto-save turned on. But my file isn't being recovered.

- The last version that was auto-saved should be available in the folder specified here: **Help>Advanced> Advanced Settings**. Uncheck and recheck the box next to **Enable Automatic Saving** and the settings window will open. Check the location for your backup file shown by **Auto-save Path**.

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When I import vector files into MTC, I lose the individual colors. All of the shapes end up the same color. How do I retain the colors that were used in the original program?

- Some file formats may not import with the original assigned colors. If possible choose SVG as an import format when MTC is not available.

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I am trying to import a PDF file but nothing is showing up.

- PDF files can be made from vector or raster or a combination. If MTC doesn't detect any vector paths, then you should be able to click on a blue link at the bottom of this import window (in MTC versions 4.3 and older). The Pixel Trace window will open and allow you to then vectorize the raster image(s) within that PDF file.

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I am trying to use my scanner to import a file to Pixel Trace, but the Twain button that shows in Chapter 6 isn't there. How do I get it back?

- Go to **Help>Advanced>Advanced Settings**. Check the box next to **Enable Twain:**

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I am trying to move a node but it keeps jumping. I can't just move it where I want.
- You probably have **Snapping** turned on. Check the current setting on the **Virtual Mat** and switch to **No Snapping**.

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When trying to resize an image by using the boxes at the corner of the image, I am having a problem controlling the sizing.

- You probably have **Snapping** turned on. Check the current setting on the **Virtual Mat** and switch to **No Snapping**.

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*I have **Pixel Traced** an image and imported it for a print and cut. But my original image is faded. How do I import the image so that it looks like the original?*

- On the **Virtual Mat**, select **Contrast** from the list of available colors. Note that your image will print just like the original regardless of the mat color selected. But if you prefer to see your image in full color, then use the **Contrast** option.

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My raster images cause MTC to be very slow. Is there a fix for this?

- As of version 4.2.0, this should no longer be a problem. Go to **Help>Advanced>Advanced Settings**. Check the box next to **Enable Image Caching:**

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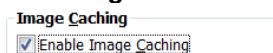
My raster image isn't showing up when I print it for my print and cut.

- Two possibilities: Check the **Layer Bar** and make sure it is not being covered by another layer. Also, go to **File>Print Options** and make sure you do not have **Print Wireframe Only** checked.

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*I am trying to use **Boolean Join** but it is grayed out. I have my shapes selected. Why can't I select this function?*

- **Boolean Join** can only be applied to two shapes at one time. If, for example, you are trying to stencil some letters using rectangles, then all of the letters need to have Join applied first. And all of the rectangles need to have Join applied first. Then you have two shapes. Alternatively, you could just stencil one rectangle and one letter at a time.

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I was using the eraser tool and my image has lost its original shape. It's all distorted now and I didn't do that with the tool. What happened?

- Before using the **Erase** tool, you need to select your shape and then go do **Edit>Shape Magic>Advanced** and uncheck **Auto Simplify Welds**. This will prevent the software from simplifying the shape after every use of the **Erase** tool. Once you have completed your editing, then select your shape and use either **Auto Simplify Path** or **Smooth & Simplify** to reduce the number of nodes.

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Is there a way to move all of the letters in my text closer together at one time?

- Yes. When typing your text, make sure you have **Split by Glyphs** selected. If you forget, then select your title and click on the **Split** icon on the **Magic Toolbar**. Next, make sure you are in **Resizing** mode where your selected text has the double headed arrows pointing outwards (refer to *Section 3.13* of the User Manual). Then hold the **Ctrl** key while dragging the middle right arrow of the selected text. This will allow you to separate the individual letters or make them closer together.

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I have carefully gone through the setup in Section 3.06 several times for showing Thumbnails of my MTC files in Windows Explorer, however I still cannot get them to appear.

- In Windows Explorer (Windows 8), click on the View tab, then Options and select Change Folder and Search Options. Click on the View tab and make sure the top option (Always show icons, never thumbnails) is NOT checked.   If you own an earlier version of Windows, then use this video to locate this same folder: but then make sure you look at that same top option about icons and thumbnails.

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<u>Acknowledgements</u>