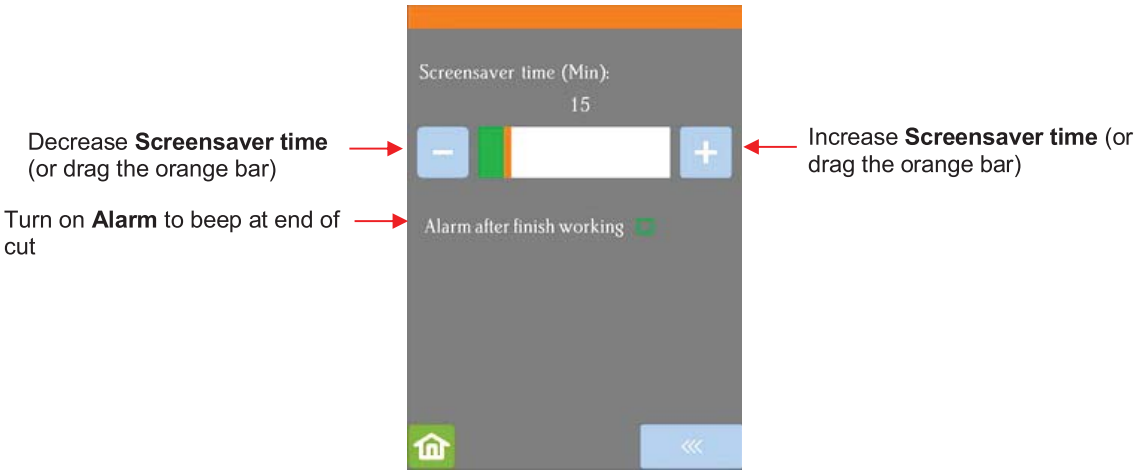
- **Screen and alarm** has two settings:
  - ◊ **Screensaver time**: Set a black-out time, in minutes, for the control panel
  - ◊ **Alarm after finish working**: When a job is complete, have an alarm sound (five beeps)

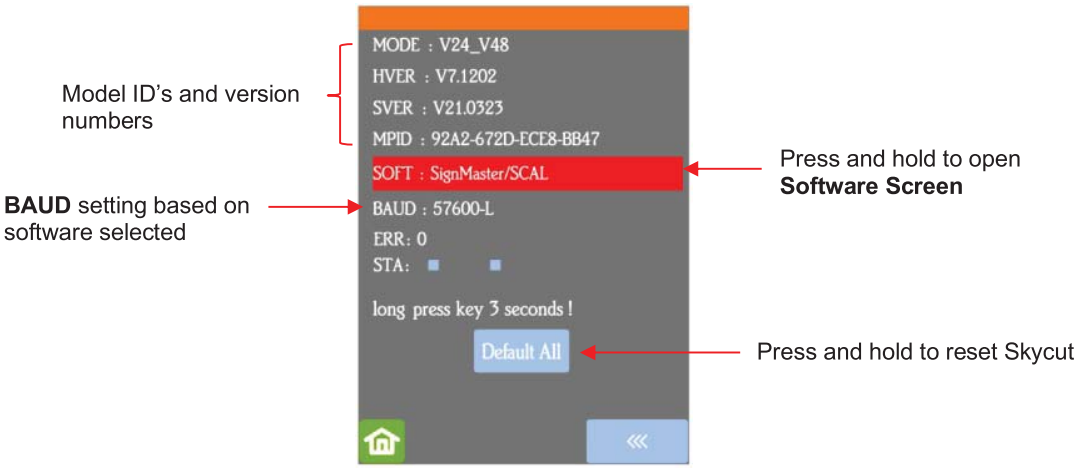


- **Unit** allows you to choose either inches or mm for settings such as **Show Point** and the **Spacing** setting under **Array.**

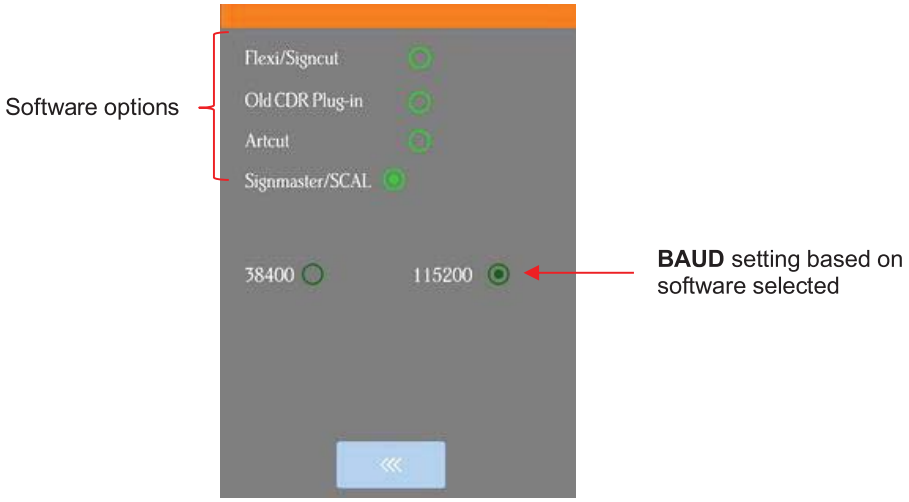
- **Language** allows you to choose from multiple languages to be used throughout the control panel display screens:

1.14.3 Sys Information

- The **Sys Information** screen displays information about the Skycut and only has three setting changes available:



- ◊ This initial screen displays current version numbers.
- ◊ If you ever need to reset your Skycut, press and hold **Default All** until it turns red. Then wait for the button to update to **Success!**
- ◊ If you ever need to change which software is in use with your Skycut, press and hold **SOFT** for two seconds and release. The following screen will open:



- ◊ To use a different software program to cut to the Skycut, press inside the appropriate circle. The **Baud Rate** indicator will automatically change if needed.

1.15 Maintenance

Skycut machines do not require any kind of lubrication or routine checks. However, here are a few things to keep in mind for successful operation of your cutter:

- Keep the pinch wheels clean. Depending on the adhesive being used on the cutting mat, it's possible for the pinch wheels to become sticky and pick up small pieces of cardstock or other material being cut. This can lead, in some cases, to the mat skewing or ruining materials during subsequent cuts. To clean the pinch wheels, use a lint-free cloth and an adhesive remover such as isopropyl alcohol or Un-Du to clean the pinch wheels thoroughly.
- Keep the grit shafts clean. Equally important as the pinch wheels, the grift shafts beneath the cutting mat should also be free of adhesive and tiny bits of material. They can be cleaned the same way as the pinch wheels. Note: Do not pour cleaner onto a grit shaft. Instead, dab some adhesive remover onto a lint-free cloth and then use the damp cloth to clean the shafts. You can also use tweezers to remove any material or adhesive that is stuck to a shaft.

- Keep the cutting mat clean and sticky. As mentioned in the *Section 1.08.2*, the cutting mat can be washed with soap and water to remove small invisible pieces of material which are reducing the tackiness of the cutting mat. After drying, you can add more repositionable adhesive, if needed.
- Check your blade holder, as needed. If suddenly you cannot get a clean cut, check the blade holder for any tiny slivers of material that may have been caught up by the blade and fed up inside the blade holder.
- If you cut vinyl or other backed materials regularly, you may need to replace the cutting strip at some point. You will be able to tell based on seeing deep cuts in the strip and an inconsistency in the cutting. Contact your dealer for information on obtaining a replacement.

1.16 Other Useful Tools and Supplies

- The following list has items you may or may not need while enjoying your Skycut. These are suggestions based on twelve years of collecting information from other cutter owners:
  - ◊ Brayer or Rolling Pin: (1) to apply lint from a towel onto an overly sticky mat (2) to press materials evenly onto a mat for cutting
  - ◊ Post-It Notes: (1) for setting blade/tool tip height above a material (2) for draw and cut applications
  - ◊ Old Fluffy Bath Towel: (1) to dry a washed mat (2) to apply an invisible layer of lint onto an overly-sticky mat
  - ◊ Dishwashing Soap: (1) to remove visible and invisible fibers from the mat, thus renewing the adhesive (2) to clean the mat well before adding more adhesive
  - ◊ Soft Brush: (1) to gently remove waste scraps during the washing of a mat. Refer to *Section 1.08.2.*
  - ◊ Artist Palette Knife: (1) to gently remove cut shapes from a mat (2) to scrape off small waste pieces from a mat
  - ◊ Blue Painter's Tape: (1) to tape around the edges of thicker materials that might slip during cutting
  - ◊ Repositionable Adhesives: (1) to add more adhesive to a cutting mat (most any brand or type can be used, provided it is repositionable). Refer to *Section 1.08.2* for suggestions and instructions.
  - ◊ Adhesive Removers: (1) to completely strip a cutting mat of adhesive (2) to disarm adhesive long enough to remove large scraps of material that will not peel off
  - ◊ Lint-free Cloth: (1) for dusting off your cutter and cleaning pinch wheels and grit shafts
  - ◊ Awl or Paper Piercer (or other sharp pointed tool): (1) to pick or lift out a test cut to verify results
  - ◊ Stabilizers: A stabilizer is an adhesive material that is applied to the bottom of the material you are cutting so that cleaner cuts can be achieved. The stabilizer works in one or more of the following ways – (1) provides firmer contact with the cutting mat (2) provides a final layer that does not need to be cut if the stabilizer will be removed after cutting (3) prevent some slightly-elastic materials from being stretched by the blade. Recommended stabilizers include freezer paper, Thermo-web Heat n' Bond, and Steam-a-Seam 2.
  - ◊ Double-sided Tape: (1) For securing metal tags or charms to the cutting mat for engraving
  - ◊ Non-slip Shelf Liner: (1) To place under cardstock and other material when embossing

2. Cutting

2.00 Quick Reference for this Chapter

- How to *properly* mount the blade holder: *Section 2.01.3*
- How to control which shapes get cut: *Section 2.02.1*
- How to control where shapes get cut: *Section 2.02.2*
- Understanding **Blade Offset** and **Overcut**: *Section 2.03.3* and *Section 2.03.4*
- How to set a very precise origin: *Section 2.05.1*
- How to add weeding lines to a cut: *Section 2.06.3*
- Checklist before cutting: *Section 2.07*
- How to get shapes to cut to precise dimensions: *Section 2.08*
- How to know which settings to adjust to solve cutting issues: *Section 2.09*

The Most Common New Owner Mistakes:

- Too much blade is exposed on the blade holder (material is lifting up and/or tearing) - refer back to *Section 1.07.3*
- The blade holder or test pen haven't been properly mounted - refer to *Section 2.01.3*
- The pinch wheels are not properly positioned (material or mat is sliding around or bunching up during the cut) – refer back to *Section 1.09*
- Failing to do a test cut (recommended cut settings are not working) – refer to *Section 2.01.5* and *2.09*
- Not practicing enough with the test pen and paper (shapes are not cutting in the correct locations) – refer to *Section 2.02.2*

2.01 What You Need to Understand About Cutting

IMPORTANT: Please read all of *2.01*!!!

2.01.1 You Have To Make Mistakes

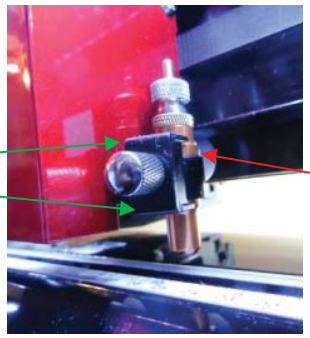
- To be a successful owner of a Skycut, you need to keep in mind a few factors:
  - ◊ The key to becoming successful at cutting is to do a lot of it.
  - ◊ You're going to make mistakes. This is normal and part of the process of mastering a cutter.
  - ◊ Read all of *Sections 2.01 and 2.02*.
  - ◊ Perform test cuts before cutting large projects. It prevents wasted material and preserves your valuable time.

2.01.2 Record Your Successes

- As you have successful cuts, take note of the settings you just used, such as **Force**, **Speed,** blade type, number of passes, brand of material, etc. There is a blank form in *Section 2.10* that you can print and use to record your results. There are also suggested settings for common materials at the end of this chapter. Use these as starting guides but remember that your results may vary based on the many factors which can affect cutting.

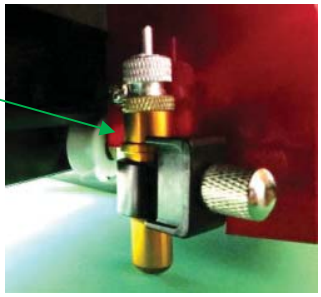
2.01.3 Installing the Blade Holder, Test Pen, or Accessory Tools

- The gold blade holder has a rim around the outside that will, when cutting most materials, rest on the blade holder seat. Thus, when inserting the blade holder, loosen the front screw until the blade holder can drop down so that the rim is below the top part of the clamp:



- The **Blade Height** is the distance from the tip of the blade to the top of the material you are about to cut. Thus, in the photo above, you can see that there are several millimeters of **Blade Height** which is important for two reasons:
  - ◊ You do not want the blade dragging across the material when the blade holder is moving from the origin to the first shape to cut (or between shapes).
  - ◊ More force is applied when there is a drop distance for the blade holder to start cutting. This is also referred to as "punch room" and provides more consistent cutting across the width of the machine.

- When cutting a very thick material, such as 2 mm craft foam, it is recommended that the blade holder be pulled upwards before tightening the front screw so that the rim is touching the underneath of the clamp:



- When using the test pen or an accessory tool without a rim, you'll need to insert the tool using a spacer on top of the material. A stack of 35 Post-It notes or 35 sheets of regular copy paper work well.
  - ◊ The recommended method for loading the test pen or another accessory:
    - ○ Place the spacer <u>on top of the material</u>, with the material loaded into the Skycut.
    - ○ Loosen the screw on the blade holder seat and insert the tool so that the tip of the tool is touching the top of the spacer:

- Now tighten the front screw carefully making sure you are NOT pushing down on the blade holder seat. Once tight, remove the spacer. You should feel the tool gently scratching the top of the spacer.
- This distance will provide the tool some "punch room" to give extra force and more consistent results.

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

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

2.01.5 Perform Test Cuts!

- You have two options:
  (1) Perform the built-in test cut on the Skycut itself using the **Test** option on the **Main Screen** or from within the **Speed/Force Screen.**
  (2) Select any basic shape and size it to be around 0.3" – 0.5" (~ 8 mm – 13 mm):
    - I personally like using a design with an internal shape, such as a ring. You can then easily see if the blade is cutting into the mat (or into the backing sheet on rolled materials) when you lift out the cut shape and observe where the internal shape cut. To locate a ring, click on the **General Power Shapes** icon  on the left side **Tool Panel** and go to **Basic Shapes>Basic**.
    - When cutting intricate shapes, use a small letter or a shape will lots of sharp turns for testing. For a rhinestone project, use a small portion of your rhinestone pattern as a test.
- There is a flow chart in *Section 2.09* which will help you determine which settings to change when test cutting a material.

2.01.6 Keep the Cutting Mat Clean and Sticky

- Press your materials evenly to the mat. Consider 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.
- Refer back to *Section 1.08* for information on cleaning the cutting mat and adding more adhesive.

2.01.7 Don't Get Frustrated, Get Help!

- Besides having your own Skycut dealer as your first line of contact, there are other resources where you can ask questions and get answers. Utilize the resources listed in *Section 1.01.*

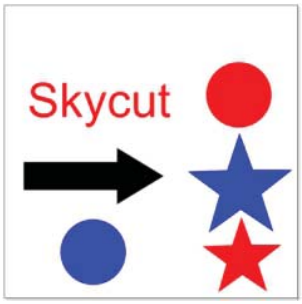
2.02 Choices Before Cutting

- There are a number of factors under your control for cutting:
  - ◊ What shapes to send to the cutter: *Section 2.02.1*
  - ◊ Where the shapes will be cut from the material: *Section 2.02.2*
  - ◊ What tool(s) will be used for cutting (or drawing, scoring, engraving, etc.): *Section 2.02.3*

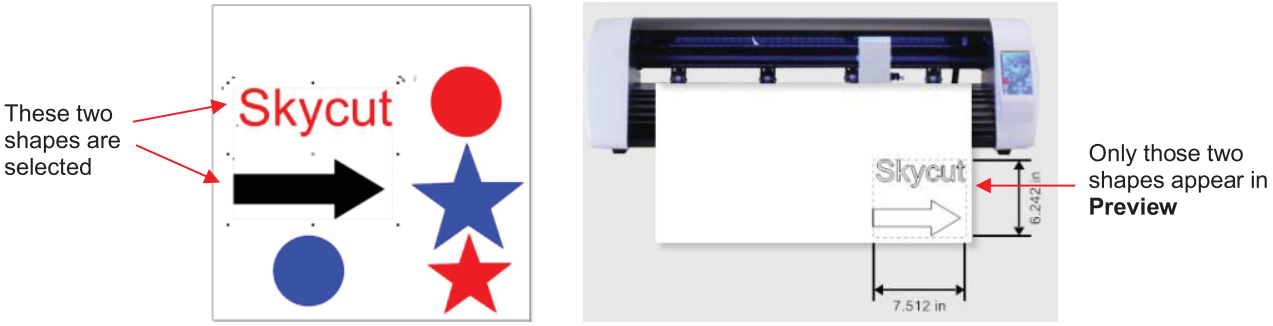
◊ What settings will be used: *Section 2.02.4*

2.02.1 Controlling Which Shapes Will Cut

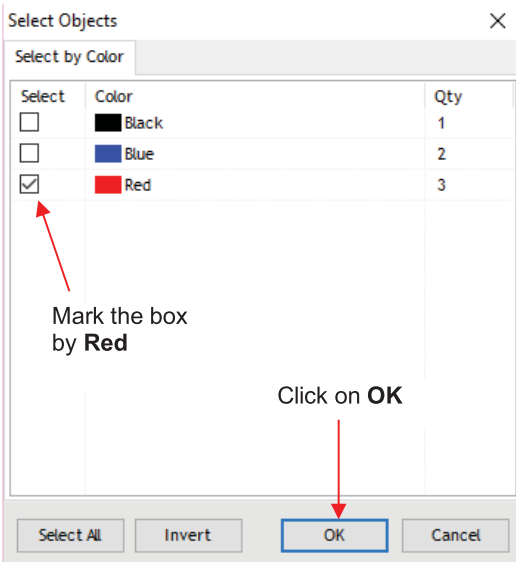
- There are three ways to control whether a shape will be cut or ignored. In explaining these options, the following shapes have been added to the **Drawing Area.** Note that this file (called *Controlling What Cuts*) is shared in a zip file available here.

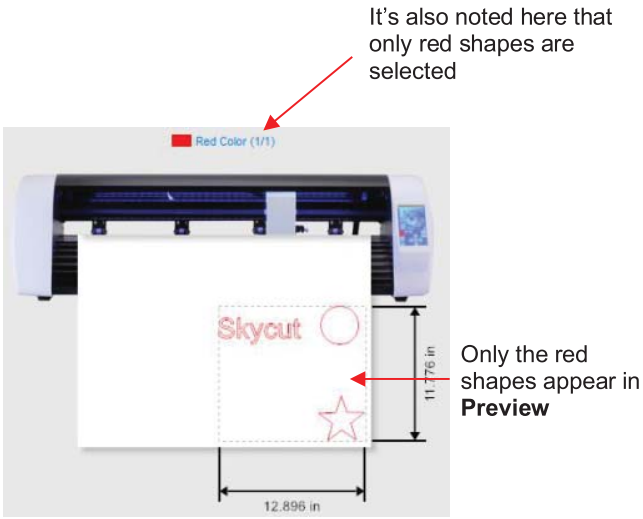


◊ Option 1: If no shapes are pre-selected, then all shapes will be sent to cut. However, if you pre-select, for example, only the "Skycut" and the arrow, then only those shapes will appear in the **Send to be Cut Preview**:

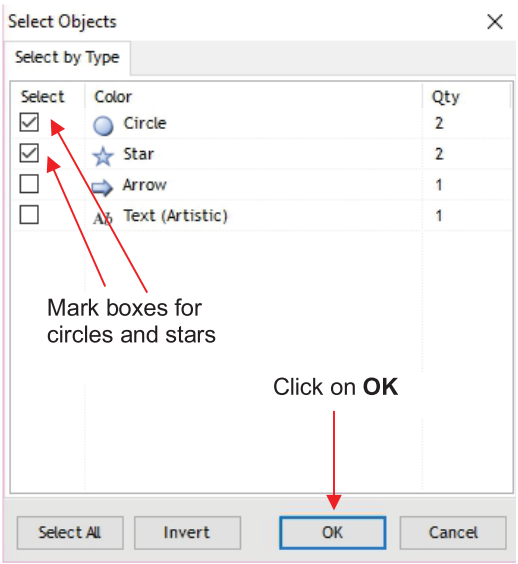


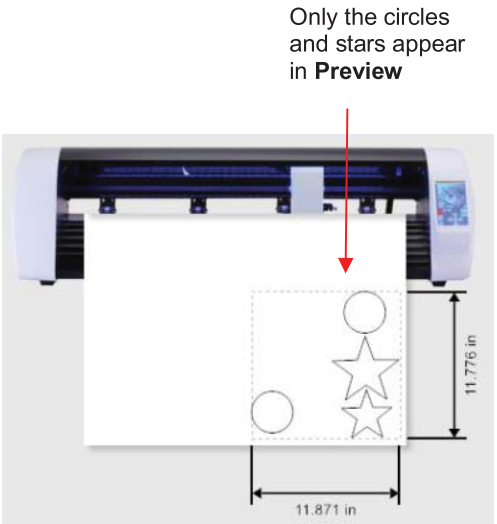
○ A more common practice is to select all objects of one color and only have those shapes sent to cut. To do this, go to **Edit>Select by>Color** (or use the shortcut key "**S**") and the following window will open where you can, for example, mark **Red** to be selected. Then the **Preview** will only have "Skycut", the red circle, and the red star present:





- Along the same lines, you can select all objects of type and only have those shapes sent to cut. To do this, go to **Edit>Select by>Object Type** (or use the shortcut key "**O**") and the following window will open where you can, for example, mark **Circle** and **Star**. Then the **Preview** will only have circles and the stars present:

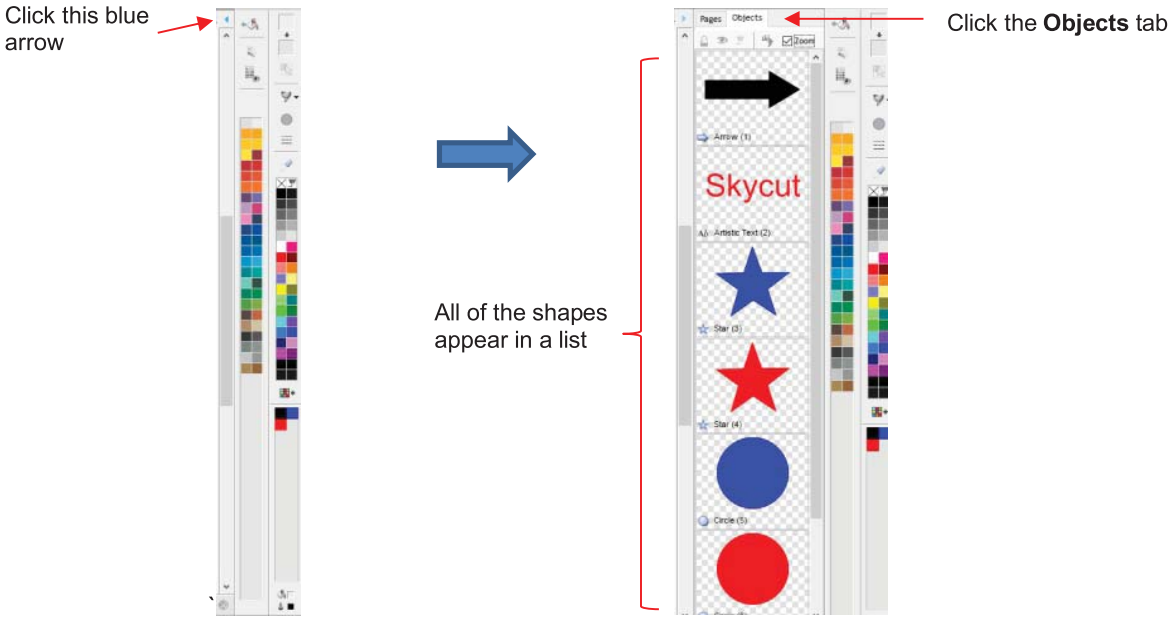




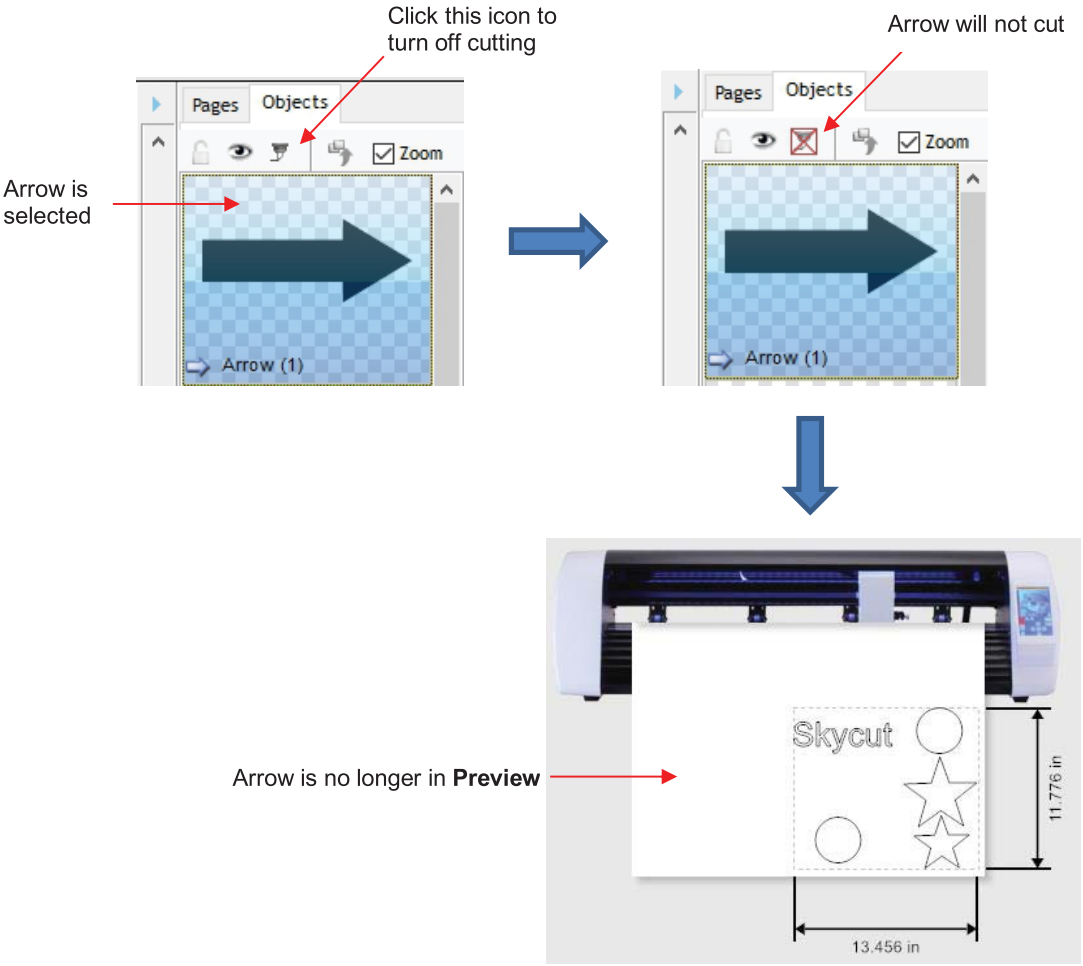
- Note that the icon at the top of the screen:  will open a menu where you can then access the same **Select by Color** or **Select by Type** options:

◊ Option 2: Mark shapes not to be cut on the **Objects** tab of the **Page Thumbnail Viewer**:

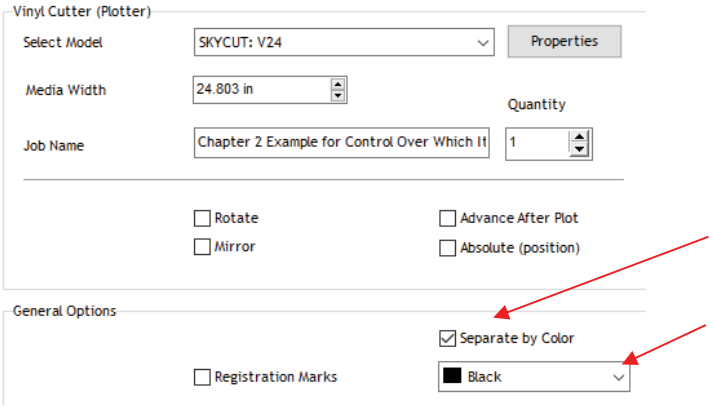
- To access the **Objects** tab, click on the small icon to the left of the palette:



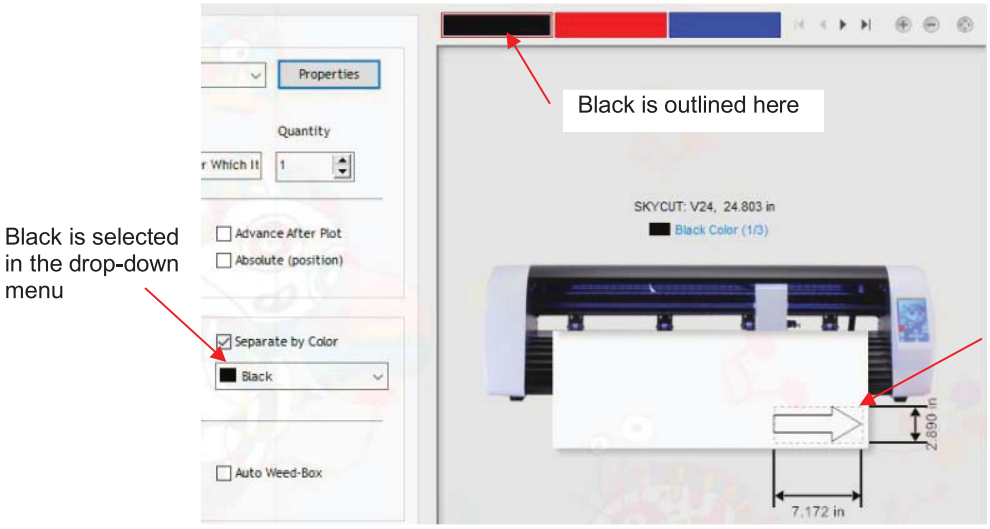
- Select a shape, such as the arrow. On the **Object** tab, it can then be set not to cut:



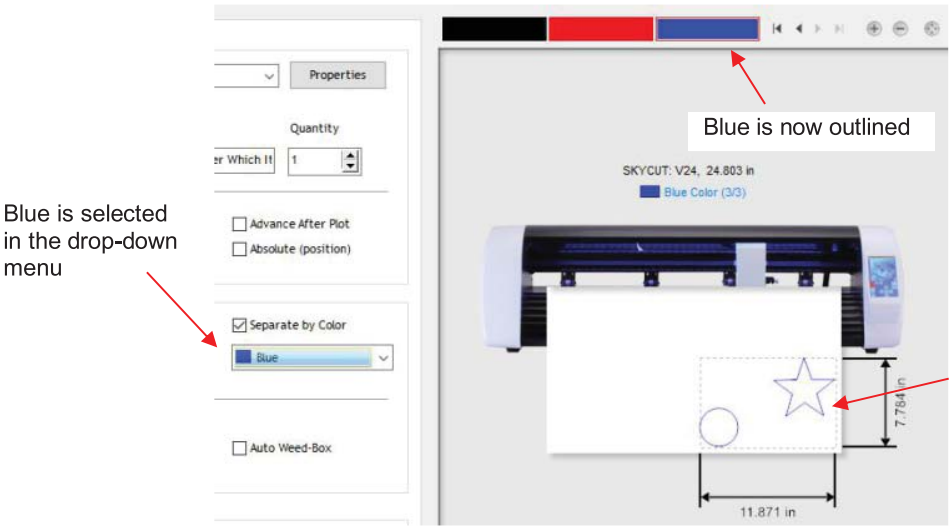
◊ Option 3: Cutting can be controlled by color from within the **Send to be Cut** window. Click on the **Separate by Color** option and a drop-down menu will appear:



- In the **Preview** window, shapes with the current color from the menu appear. Also, the color is selected at the top:



- Switching to blue changes the window accordingly:

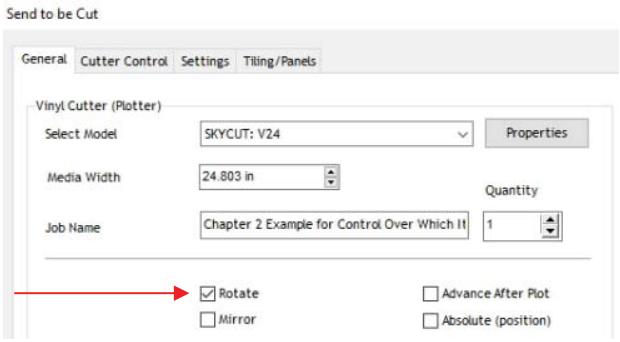


- Note that you can also change colors by clicking on those colored rectangles above the preview.

2.02.2 Controlling Where Shapes Will Cut

- This was briefly covered in *Section 1.13* where the **Rotate** and the **Absolute (position**) options were introduced.
  - ◊ **Default:** Moves the shapes to align with the origin you have set based on the blade tip.
  - ◊ **Absolute (position):** Cuts the shapes where they are positioned on the **Drawing Area.**
  - ◊ **Print and Cut (**aka **Contour Cutting):** Cuts the shapes relative to where registration marks are scanned:
    - This is the mode used when you want to print images on your printer and then have the Skycut cut them out.
    - Registration marks are printed, along with your images. The printout is placed into the Skycut and a built-in camera automatically locates and aligns with each printed mark. The Skycut will then cut out your shapes based on triangulation. This is far more precise than **Absolute (position)** because it takes into account not only any misalignment of your printout in the cutter, but also any errors in the printing. Most printers do not print images precisely in the location on the paper as they are located on the screen.
    - Note that raster images (.JPG, .BMP, .PNG etc.) will need to be traced first so that cut lines are created. Section 3.04 will present an example.
    - Refer to *Chapter 3* for complete instructions on calibrating the camera and examples of PNC applications.

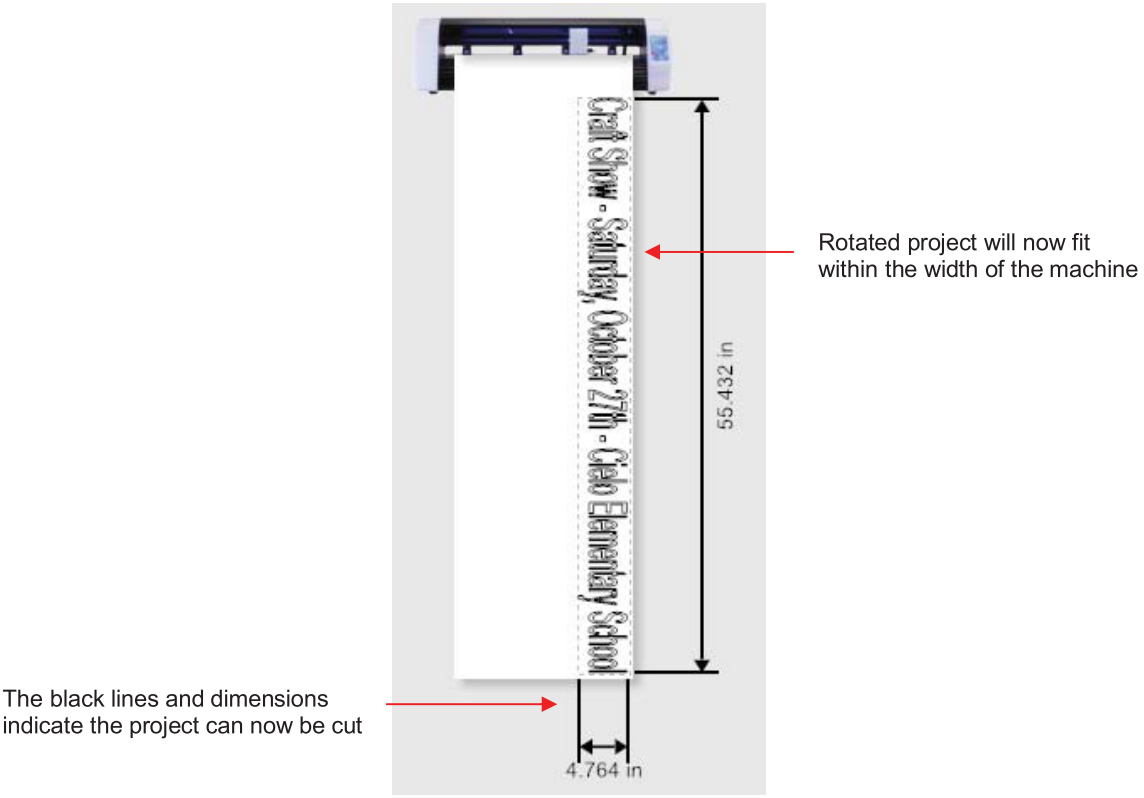
- You can also rotate a design for cutting, relative to how it appears on the **Drawing Area**:
  - ◊ To rotate the project, go to **Send to be Cut** and mark the **Rotate** option:



  - ◊ For example, in a project with long text, it is more convenient to view and edit the text in a left-to-right orientation:

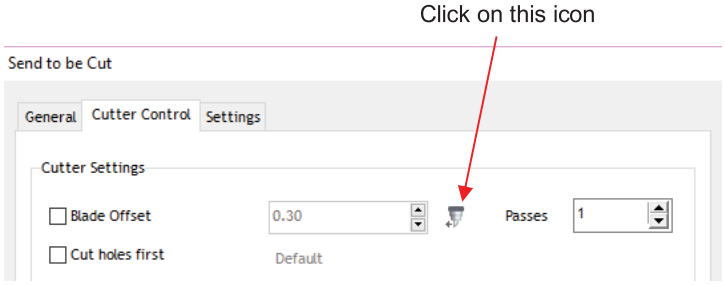
  - ◊ However, when you then send this project to the **Preview** window, you will observe that it is too wide to cut from left to right on your Skycut:

◊ Marking the option for **Rotate** will then rotate the design and allow the project to cut:

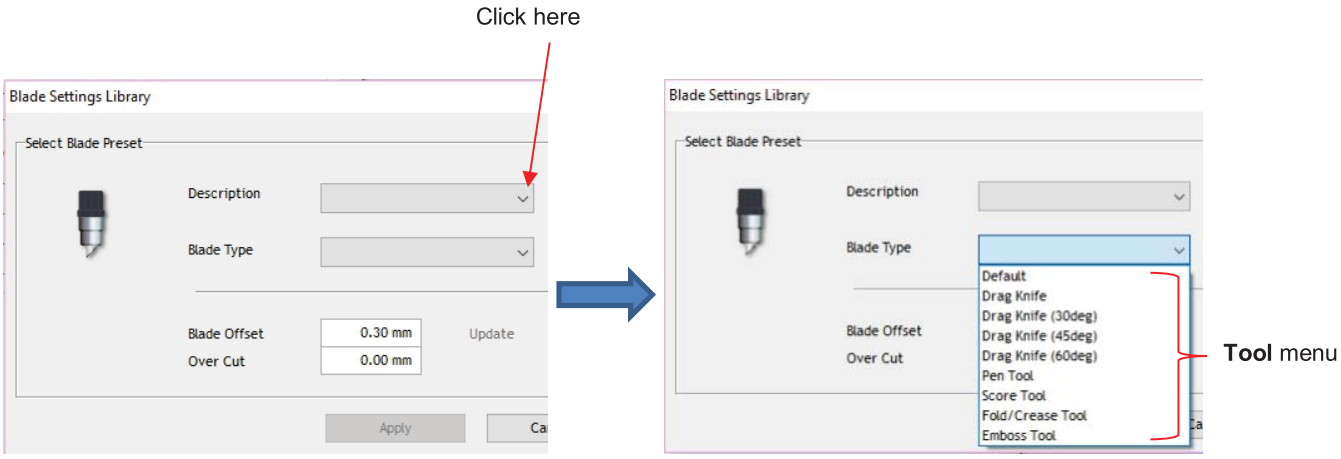


2.02.3 Selecting the Tool to be Used for Cutting

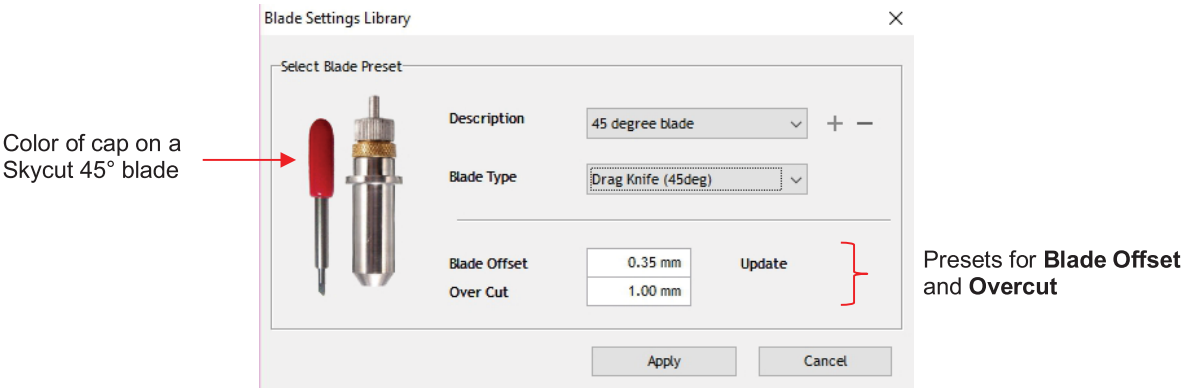
- To select the tool you'll be using, open the **Send to be Cut** window and click on the **Open Blade Settings Library** icon:



- The **Blade Settings Library** window will open. Click on the down arrow to the right of **Description** where you can access a drop-down menu for the **Blade Type**:



- Selecting one of the options, such as **45 degree blade** will display an image of the blade, the **Blade Offset** and **Overcut** assigned as a **Preset**:



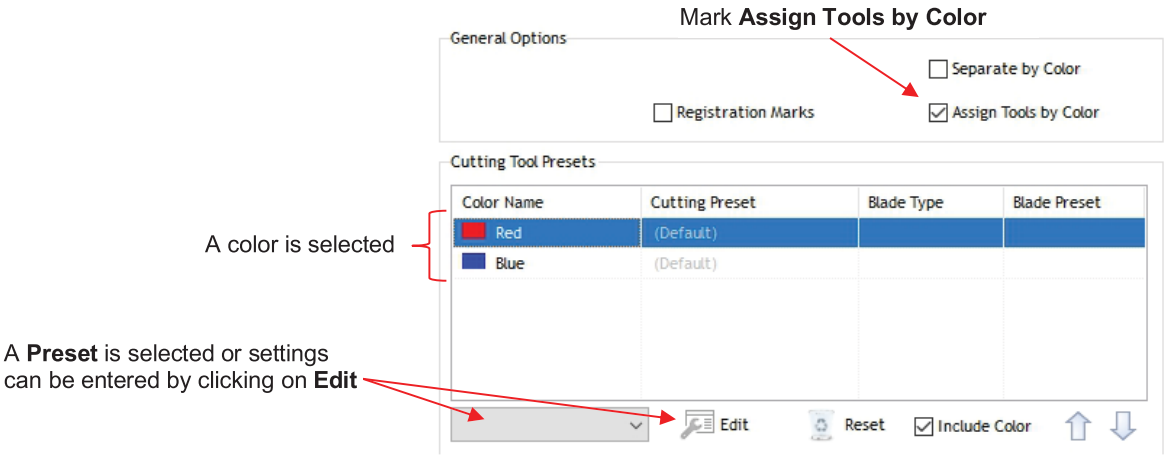
- *Sections 2.03.3* and *2.03.4* will explain **Blade Offset** and **Overcut** settings. *Section 2.04* will explain how to modify these settings, if needed and save as a **Preset.**

2.02.4 Determining the Cut Settings

- There are three locations in SignMaster where **Cut Settings** can be selected:
  - ◊ **Send to be Cut>Cutter Control** tab (which was covered in *Section 1.13)*
  - ◊ **Send to be Cut>General** tab
  - ◊ **Vinyl Spooler>Cut Options** tab

- **Send to be Cut>General**

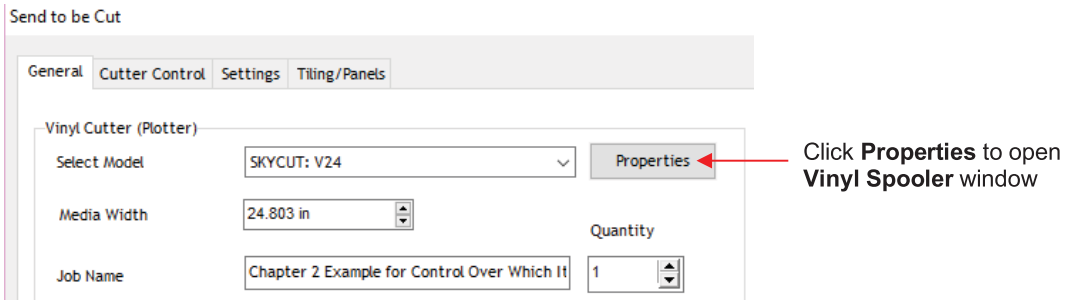
  - ◊ Use this location when you need to assign different settings to different layers of your project. For example, let's say you wanted to use the embossing tool to score lines in a popup card, followed by cutting out the card itself. Or, another example would be using the test pen to draw a design and then cutting a contour around it. Under **General Options, Assign Tools by Color** is marked and then, below that in the **Cutting Tool Presets** section, individual colors can be highlighted and cut settings assigned by selecting a **Preset** or by clicking on **Edit**:



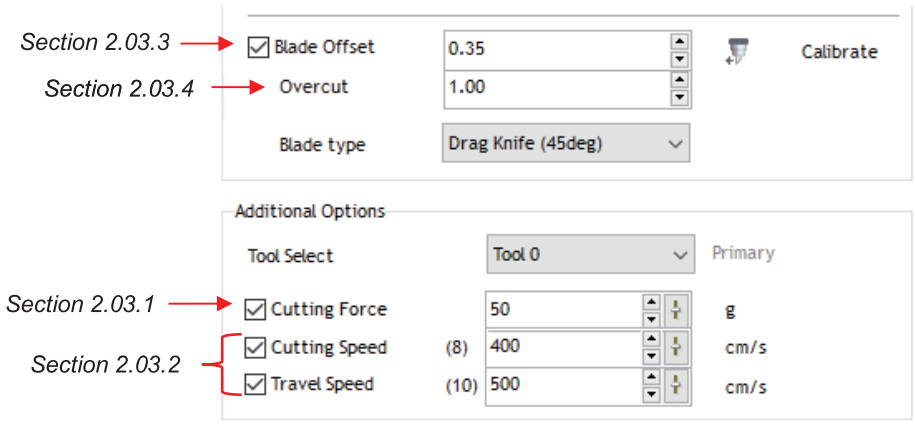
◊ More details for using this feature are covered in *Sections 4.01.1* and *4.02.2.*

- **<u>Vinyl Spooler>Cut Options</u>**

◊ Use this option as an alternative to entering settings via the **Cutter Control** tab. It can be accessed from the **Properties** button in the **Send to be Cut** window. You will also use it in print and cut (contour cut) applications to check and adjust cut settings as well.



◊ In the **Vinyl Spooler** window, click on the **Cut Options** tab and the cut settings are located in the lower section of that window:



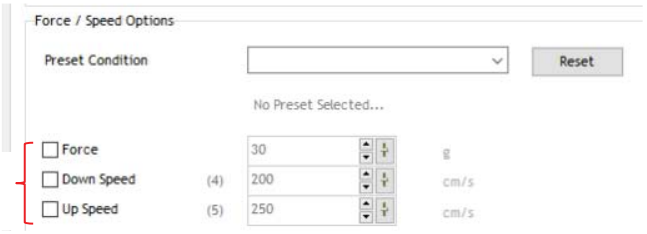
- These settings should be understood thoroughly, as you will be adjusting them often as you change materials or as your blade dulls over time. Note the prior screenshot shows the section number to go to for more information.

2.03 Cut Settings

- Before presenting the various settings, note that the **Force** and **Speed** settings can be set on the control panel itself. In order to cut from SignMaster and use the settings on the Skycut, uncheck these boxes in either of the two places where the settings can be made:

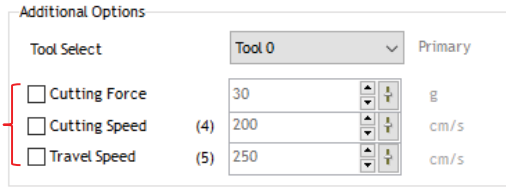
  ◊ **Send to be Cut>Cutter Control** window:

Uncheck these boxes if **Speed** and **Force** settings on Skycut are to be used



  ◊ **Vinyl Spooler>Cut Options** window:

Uncheck these boxes if **Speed** and **Force** settings on Skycut are to be used



2.03.1 Force

- **Force** (also called **Pressure**) ranges from 1 to 160 where the maximum of 160 represents ~2000g of cutting force. If it is set too low, the material cannot be cut. In fact, it is recommended that the minimum setting is always ~20 or higher. However, if it is set too high, you will get bad cutting (even incomplete cutting at times) and tearing of the material. Always perform small test cuts before cutting your actual project and make adjustments in order to get a clean test cut before proceeding with your larger cut.
- Dull blades will need more force than new blades, thus anticipate increasing the force over the life of the blade.
- When cutting materials that can use either blade, the 45˚ blade (red cap) will need a little more force than the 60˚ blade (blue cap), because of the extra contact with the material being cut and because the 60º blade is cut much thinner, making it a “sliver blade.”
- As noted earlier, this setting can be made on the Skycut control panel instead. Press the **Force/Speed** icon  and then set the **FORCE** to the desired level.

2.03.2 Cut Speed and Up Speed

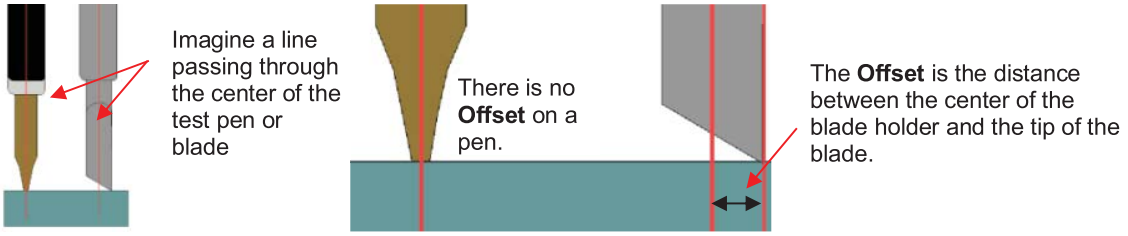
- **Cut Speed** (also called **Down Speed**) is how fast the blade travels while it is in the “down” or cutting position. **Up Speed** (also called **Travel Speed**) is how fast the blade travels while in the “up” position, such as when it is moving from the origin to the location of the first shape to cut or when moving from one cut shape to begin cutting another.
- The Skycut has 13 speed settings ranging from “snail’s pace slow” to “insanely fast.”
  - ◊ The settings from 1 through 4 are the slow speeds and should be used when cutting dense difficult materials, such as chipboard, craft plastic, styrene, and balsa.
  - ◊ The settings from 5 through 8 are medium speeds and should be used for easy-to-cut materials, such as cardstock, vinyl, iron-on transfer, and rhinestone template material.

◊ The settings from 9 through 12 are the fast speeds and are useful for engraving, embossing, and drawing. You may, however, find that some materials will cut well at the faster speeds.

- **Cut Speed** is usually more important to control since the blade may need more contact time with a particular material. **Up Speed** can usually be left quite high although, for print and cut accuracy, it may need to be lowered if there are many shapes to be cut from a printout.
- On the Skycut control panel, the default setting is to have the **Up Speed** and **Cut Speed** the same and referred to as **SPEED.** This can be adjusted by pressing the **Force/Speed** icon  and then setting the **SPEED** to the desired level. In order to enter a separate **Up Speed** on the control panel, refer to *Section 1.14.1*.

2.03.3 Blade Offset

- **Blade Offset** 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:



- If you set the **Blade Offset** to 0 when cutting with a blade, corners will be rounded. On the other hand, if it is set too high, bubbles will be cut on sharp corners:

Offset is too low: corners are rounded

Offset is too high: bubbles appear at the corners

- Currently it is recommended that a **Blade Offset** of between 0.25 – 0.35 be used for each of the three types of Skycut blades. Any time you order new blades, check for the recommended **Blade Offset** on the packaging. However, it's not unusual for blades to be slightly off-spec. Based on cutting a rectangle or square, increase or decrease the **Blade Offset** in increments of 0.1 or smaller until the shape has perfectly square corners.

- Alternatively, SignMaster has two built-in **Blade Offset** calibration routines which can be used to determine the best **Blade Offset** setting for the current blade in use. Here are the steps to access either one:

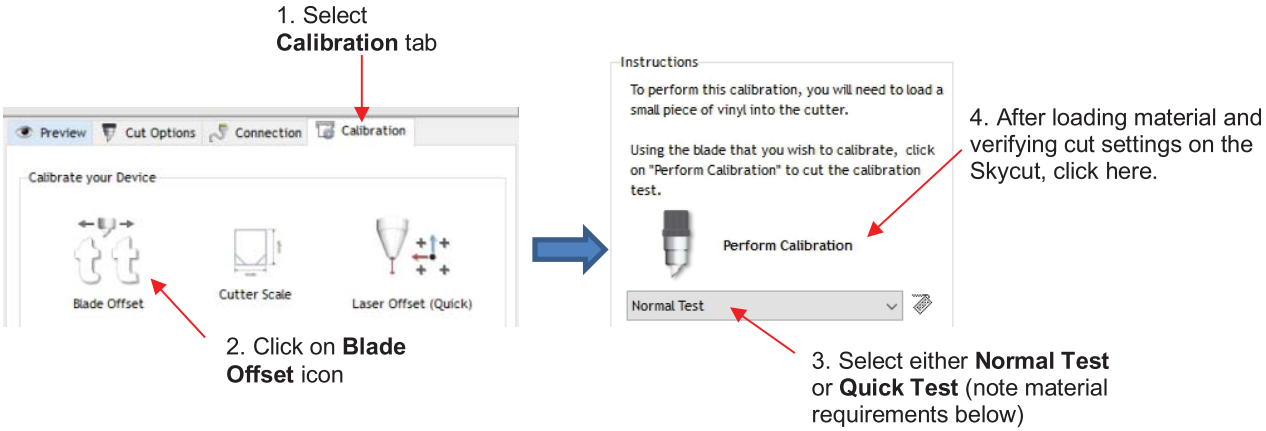
  ◊ Select the material you want to use for testing, such as vinyl, paper, or cardstock. Note how much material will be needed for the test you select and add a few inches to these dimensions:

    - **Normal Test**: Width: ~9" (354 mm) Height: ~3.5" (89 mm)
    - **Quick Test**: Width: ~4.5" (114 mm) Height: ~1" (25 mm)

  ◊ Install the blade you wish to calibrate into the blade holder and mount the blade holder in the Skycut. Enter appropriate settings in SignMaster or on the Skycut control panel. Test cut a small shape to make sure the settings are correct.

  ◊ Go to the **Vinyl Spooler** window and select the **Calibrations** tab.

◊ Click on the **Blade Offset** icon and a new window opens:



◊ In both tests, the instructions on the screen will guide you on how to enter the best result and then will display the recommended **Blade Offset** to use. This new **Blade Offset** value will then be updated in the cut settings. Instructions on how to add this setting as a **Preset** are covered in *Section 2.04.*

2.03.4 Overcut

- **Overcut** is related to **Blade Offset** in that it isn't needed when using a pen, embosser, engraver, and so forth, because the tips of those tools are aligned with the center of the tools themselves. However, leaving **Overcut** at 0 when using the blade holder will result in large shapes not quite closing:

Overcut is too low: paths do not close

- In some cutting programs, **Overcut** is not a separate setting but rather automatically calculated and applied based on the **Blade Offset** entered. However, in SignMaster, you can enter an actual **Overcut** setting and should do so any time a blade is used.
- In general, the blade type doesn't greatly affect the **Overcut** required. Try using 1.00 mm. In the event you cut a large closed shape, like an 8" circle, you may find that you'll need to increase **Overcut** to 2.00 mm.

2.03.5 Passes

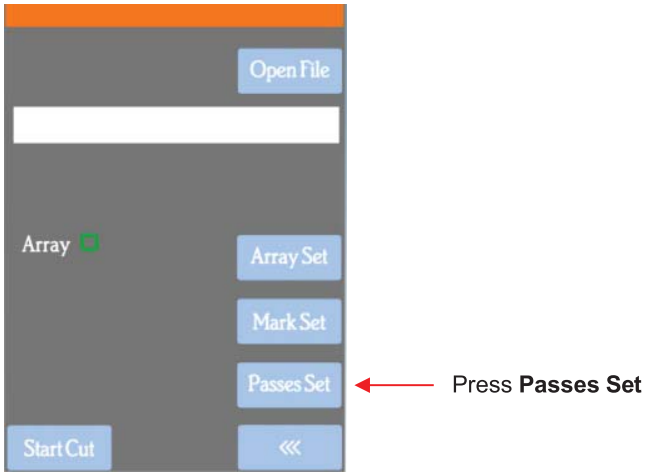
- The **Passes** setting causes each individual path to be cut the set number of passes before the blade moves to the next path to cut. This is better than just repeating the entire cut as each repeated pass is cut with the blade held down throughout the repeated passes, resulting in cleaner cutting.
- In general, when increasing **Passes**, the **Force** setting can be decreased. For example, you may find a cardstock that requires a **Force** of 55 to cut in a single pass will only need a **Force** of 45 if cutting in two passes.
- **Passes** 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 certain fibrous materials, such as fabric, where a second pass will ensure that all of the fibers have been cleanly cut
  - ◊ Cutting intricate or detailed shapes (such as script titles) from certain materials, such as heavy or 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

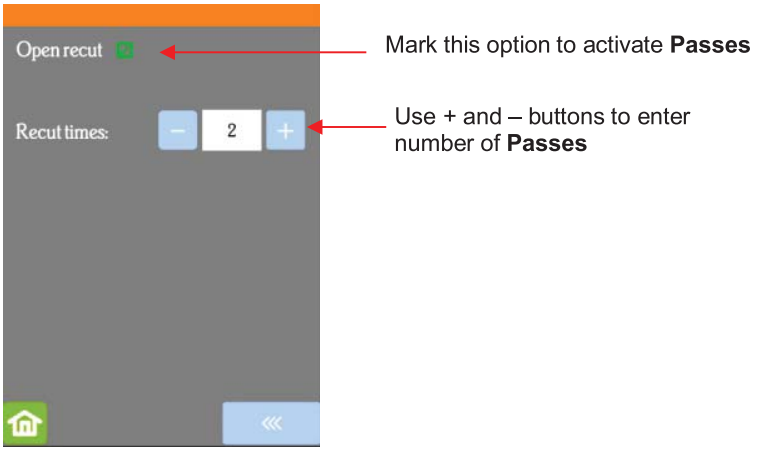
- You will find a **Passes** setting in the **Send to be Cut>Cutter Control** window, under the **Cutter Control** tab:

- Alternatively, you can activate **Passes** on the control panel. Press the **USB** button on the **Main Screen** and you will see a **Passes Set** button in the window which opens: Press it to open the **Passes** screen:

NOTE: If your screen does not have **Passes Set** displayed, please go to *Appendix B* for activation instructions.



- Press the **Passes Set** button to open the following screen:



- ***IMPORTANT***: The **Open recut** option will default to off whenever the Skycut is first powered on. Thus, make a mental note (or, even better, put a Post-It note on your cutter) to turn this option on when using multiple passes.

- Note: You can also turn activate passes by color of the shape. Refer to *Section 2.06.5*.