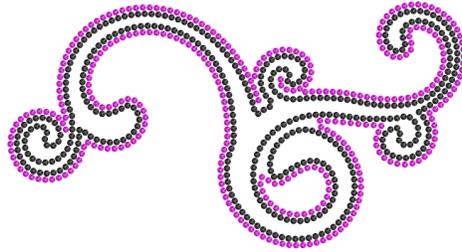


SCAL6 Rhinestones - Expanded Tutorial



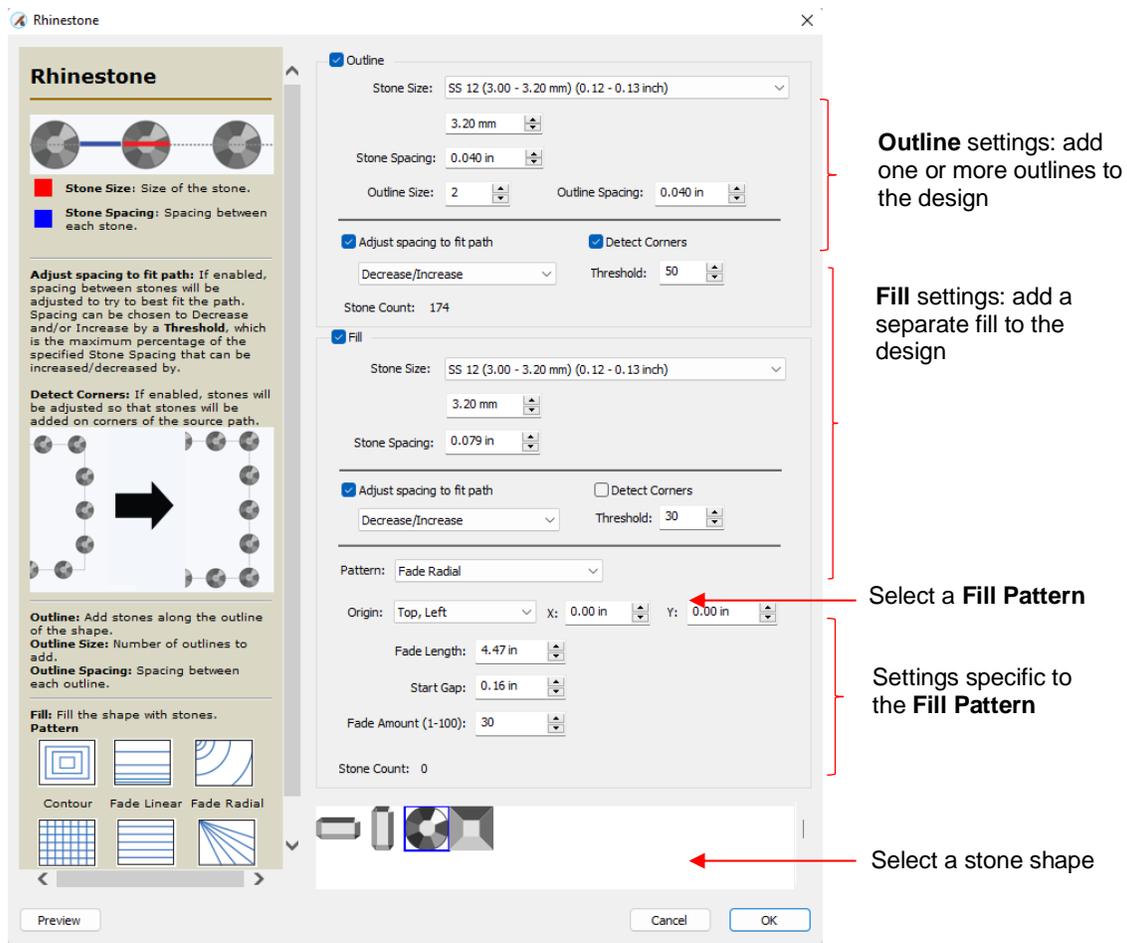
- This tutorial contains the same instructions presented in the SCAL6 User Manual plus some additional sections related to rhinestone designing.
- SCAL's **Rhinestones** feature provides outlining and a variety of fill options with the size of circles (or alternate shapes) needed for your rhinestones and the desired spacing. Before using the function, it is important to understand some basic guidelines, especially if you are new to this application.

7.21.1 Guidelines for Rhinestone Pattern Design

- In general, you want to size the shape before applying the rhinestone circles. If you later want to resize the design, SCAL does have the ability to regenerate the rhinestone pattern, maintaining the original selected stone size and spacing. But in order to have a good sense of how the design is going to appear on your garment and to make sure the lettering is readable, you want to design close to the target size.
- ***IMPORTANT:*** Always make a backup copy of your design before entering the **Rhinestone** window because the original design will be replaced with the new rhinestone pattern. You might later want to use that same original design but apply a different size rhinestone or create a shadow layer from it, or some other change.
- The circle size selected will need to be larger than the stone size you purchase. As a general rule, select a size three numbers larger than your stones. Thus, if you purchased SS10 stones, then in the rhinestone design window, you would select SS13 stones. This larger size will allow the SS10 stones to more easily brush into the holes, saving a lot of time and tedium.
- 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 used attempt to read the rhinestone design on your monitor or from a printout of the design. If they cannot easily decipher the words, then try a more basic font.
- If you plan to do a lot of rhinestone applications, create and cut a template with small patterns (~ 15 – 20 circles) in different sizes so that you can test brush your rhinestones to find out the optimum size to use when designing. A difference of just 0.1 or 0.2 mm can affect how easily the stones will brush into a pattern right side up. If the size is too small, the stones will tend to not fall in. If the size is too large, then the ones that land right side up will tend to get flipped over by the brush. Also, stones can vary slightly in size from one manufacturer to the next and also from one color to the next. Further, the size of the cut holes can vary slightly from one template material to the next.

7.21.2 Rhinestone Effect Overview

- After selecting a shape, the feature can be accessed in either of the following ways:
 - ◇ Go to **Effects>Rhinestones**
 - ◇ Right-click and select **Appearance>Rhinestones**
- The following window opens:



Click **Preview** to reflect changes in settings

Click **OK** when done

7.21.3 Rhinestone Outline

- In this example, the initials from a high school will be outlined. As mentioned previously, the first step is to size the width and height of the design. 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, leaving the width the same. This will better fill a T-shirt, allow more circles to be applied, and will improve the readability of the design:



- To apply a rhinestone outline, first make a backup copy of the shape. Then select the shape and go to **Effects>Rhinestones**. The upper half of the **Rhinestone** window has the following settings:

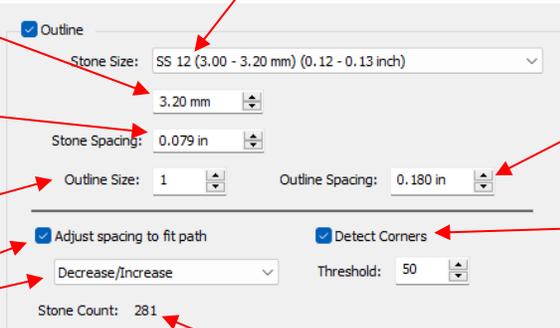
Stone Size will update based on what you selected under Stone Size or you can enter a size directly

Select a Stone Size but larger than your actual stones

Select or enter a spacing: usually between 0.02" – 0.04" (0.5 and 1.0 mm)

Option to add additional outlines

These settings are used to improve spacing



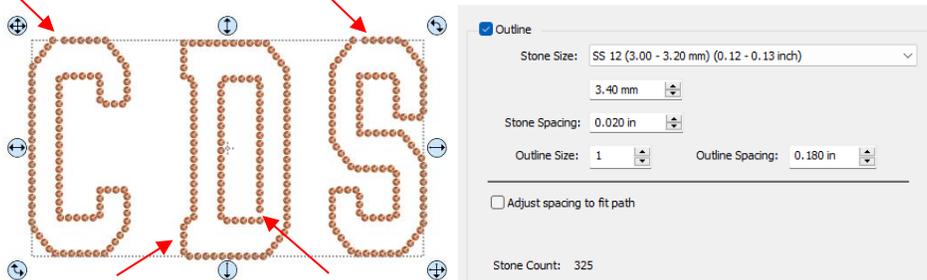
Spacing between each outline

Enable so that stones are placed where paths have sharp turns

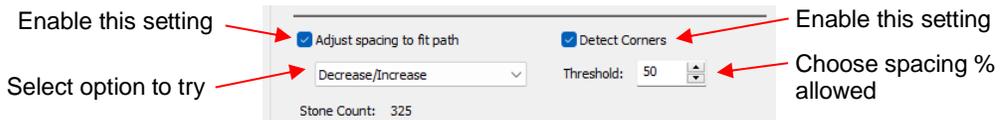
Number of stones based on current settings (must click on **Preview** first)

- After inputting the initial settings, click on **Preview** at the bottom of the window and your selected design will be outlined with simulated stones:

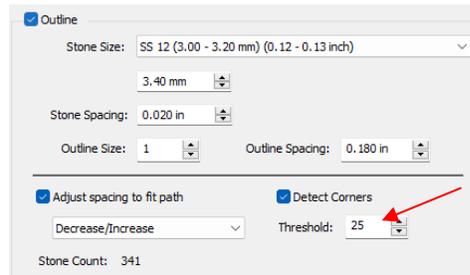
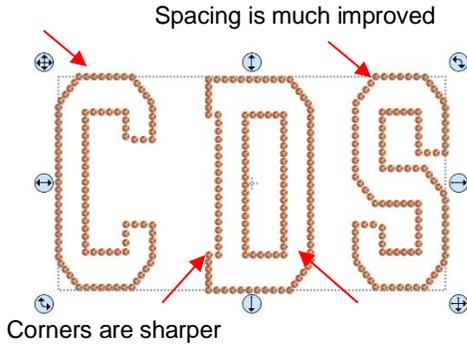
Slight adjustments needed



- The preview shows that the spacing is off a bit in places and some of the corners are rounded. There are two options which can be used to make adjustments. Check the box next to **Adjust spacing to fit path** and additional settings will appear:

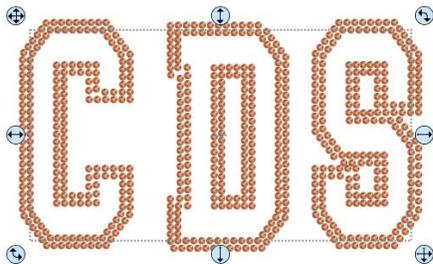


- These settings will require experimenting in order to optimize equal spacing between the stones. Initially, however, just click on **Preview** after marking the box and the spacing should change. This is often all that is required. However, from the drop-down menu, you can also choose to only **Decrease** or only **Increase** the spacing. The **Threshold**, which controls how much spacing will be used, is also available to adjust:

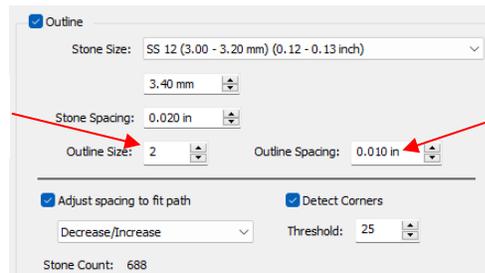


◇ Note that the higher the **Threshold**, the more increase in spacing you may see. So, typically, you want to keep that value lower versus higher.

- The **Outline Size** option allows you to add contour outlines of rhinestones to your design. Increase to the number of outlines you want, along with the spacing:



Set # of Outlines



Set Spacing between Outlines

- Note that the color of stones for the outline is based on the **Stroke** color on the **Fill & Stroke Panel**.

7.21.4 Rhinestone Fill

- The lower half of the **Rhinestone** window is the **Fill** section:

Enable the **Fill** option

Select or enter a spacing: usually between 0.02" – 0.04" (0.5 and 1.0 mm)

These settings are used to improve spacing

Select a **Fill Pattern**

Select a **Stone Size** but larger than your actual stones

Stone Size will update based on what you selected under **Stone Size** or you can enter a size directly

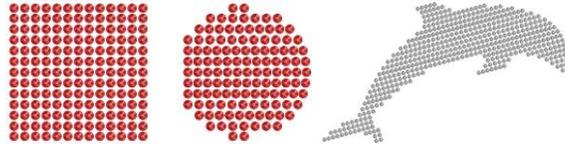
Enable so that stones are placed where paths have sharp turns

Number of stones based on current settings (must click on **Preview** first)

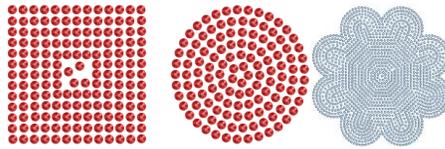
- Instead of outlining the shape, the image will be filled with rhinestones in a choice of patterns. The color of the simulated stones will be based on the **Fill** color of the shape on the **Fill & Stroke Panel**.
- As shown in the following examples, some shapes work better than others with certain patterns, thus always experiment with both the pattern options and the settings:

◇ **Grid** (default) - creates a fill of horizontal rows:

Test **Stagger** option and **Angle** to vary the pattern to better fit the shape



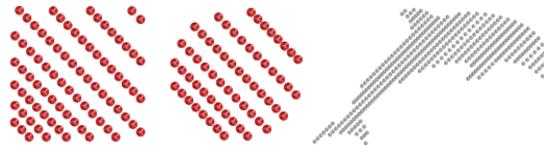
◇ **Contour** - also called an “island fill”, this option typically works better with rounded shapes versus square shapes:



Tends to work better with symmetrical images

◇ **Fade Linear**: a linear pattern where the spacing between the rows gradually increases

Fade Length – increase to complete image
Start Gap – initially set to Stone Spacing
Fade Amount – decrease to add more rows



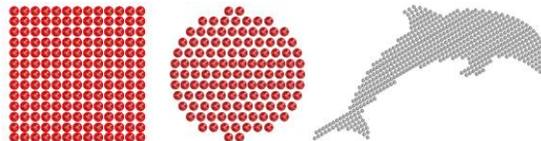
◇ **Fade Radial**: a pattern of curves when the spacing between the curves gradually increases



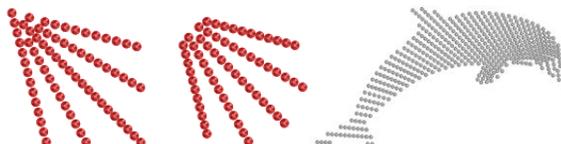
Use **Fade Linear** guidelines
Origin – try different options to better fit the shape

◇ **Linear**: Similar to Grid but with a slightly different algorithm thus worth checking in case results are better and will require less editing:

Angle – adjust in order to better fit the shape

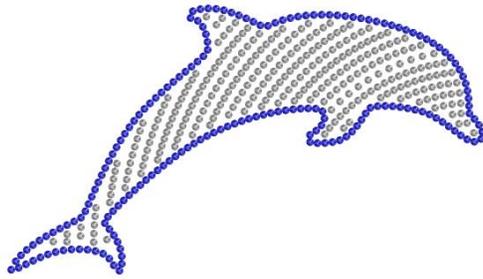


◇ **Ray**:



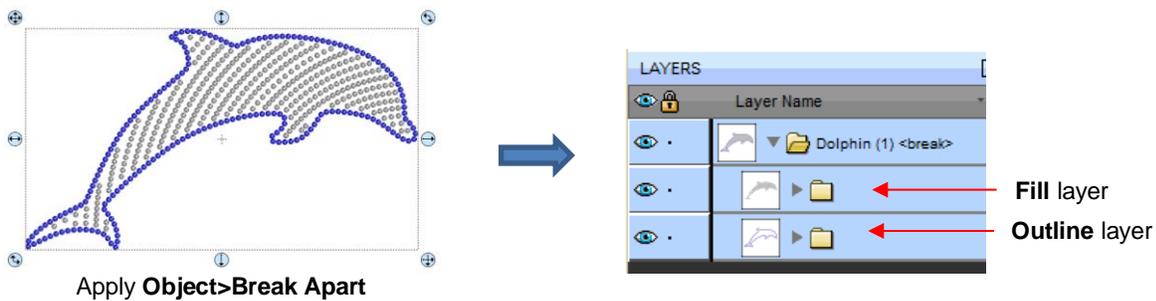
Angle – decrease for thicker fill
Origin – try different options to better fit the shape

- For better definition, you will probably want to use both an outline and a fill with your design. Separately select the size of the stones and spacing, plus adjust the various other settings available to you:



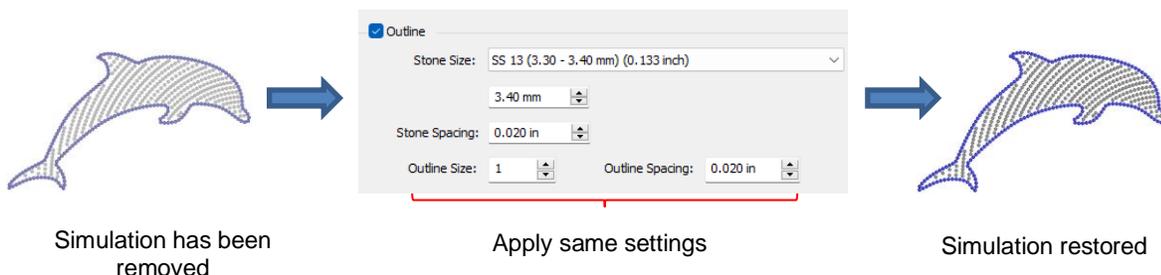
7.21.5 Editing Rhinestone Designs

- Before editing, make a backup of the design created by the **Rhinestone** function. As was mentioned earlier you can resize rhinestone designs but if certain editing has occurred, you might or might not get the results you want after editing.
- Rhinestone designs will sometimes need “tweaking” which involves adding, deleting, moving, or re-spacing circles.
- When you have designs with both an outline a fill pattern, the first step is to separate those into two layers. To do this, select the design and apply **Object>Break Apart**. The **Layers Panel** will now display two layers:



◇ At this point, every stone can be individually selected but with the **Fill** and **Outline** layers in their own folders you can easily recolor them and hide or lock, as needed. Once editing is completed, you may wish to separately group the two layers to keep any stones from shifting position from the others.

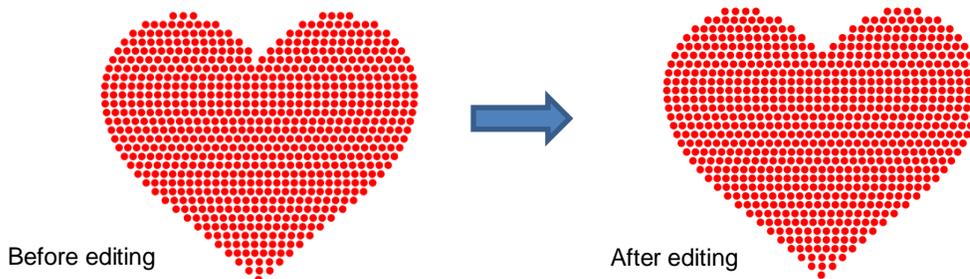
- If you wish to remove the simulation, select the layer and apply **Object>Merge**. If you then need to work with any individual circles, apply **Object>Break Apart**.
- The simulation can be restored now or after editing or not at all. The circles will still remain as individual shapes. Again, this does not affect how the design cuts; the simulation is only for displaying or printing. If the design is extremely large or you have a slow computer, you may find that the simulation causes more lagging as you are editing the design. In that case, save the following step until after editing is completed.
- To restore the simulation, select the layer and reopen the **Rhinestone** window. In the **Outline** section only, enter the same **Stone Size** setting used to create the design. Note that the **Spacing** doesn't matter any longer, nor is it necessary to select the **Fill** option:



- The following list shows the most common functions applied when editing rhinestone designs:
 - ◇ Use the **Zoom** functions (*Section 1.09*) to move in close for easier selection of individual or small groups of circles
 - ◇ Use the **Lasso Selection** tool  (*Section 3.02.2*) to more easily select a group of circles
 - ◇ To quickly add a circle, hold the **Alt** key and left click once on a circle. A duplicate is created in the same spot.
 - ◇ To delete multiple circles, hold the **Delete** key while clicking on individual circles
 - ◇ Use the **Nudge** arrow keys on the **Position & Size Panel** to move circles to new locations
 - ◇ Alternatively, use the arrow keys on your keyboard to move a circle or row of circles. If needed, change the increment to 0.01" (0.25 mm) by going to **Edit>Preferences** (or, on a Mac, press **Command + ,**). Then click on the **Edit** tab and change the **Arrow Key Increment**, as shown here:



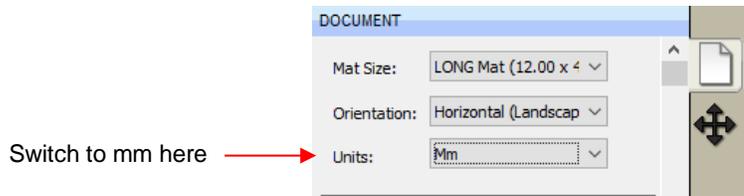
- ◇ To realign a row or column of circles, use the alignment functions covered in *Section 3.18.2*.
- ◇ To respace a row or column of circles, use the spacing functions covered in *Section 3.19.2*.
- In the following example, an additional heart is added at the top to balance the two sides. Also, the sixth row of circles are selected and **Distribute Center Horizontally** is applied:



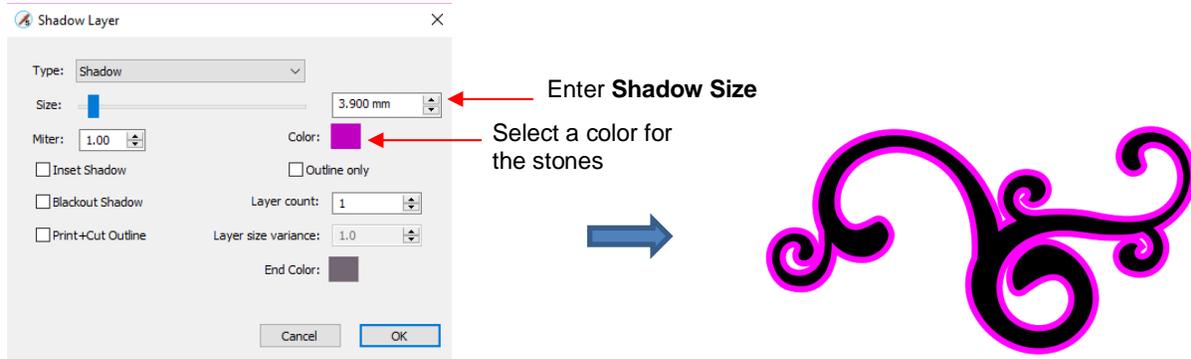
- Sometimes the circles you want to re-space equally may fall closer to a 45° angle versus vertically or horizontally. Select your entire design and rotate until the line of circles is closer to vertical or horizontal. Re-space the circles and then rotate back into place.
- After editing the design, you may wish to group the design to avoid inadvertently moving one or more stones out of place. To do that select the design and go to **Object>Group** or apply **Ctrl+G**.
- If you have a shape that has a **Rhinestone** effect applied and want to remove it (even after the file has been saved and re-opened), select the shape and go to **Object>Remove Effects**.

7.21.6 Using Shadow to Add an Outline to a Rhinestone Design

- If you want to outline your design in a different color so that its template can be separately cut, then create the outline first using the **Shadow Layer** function (*Section 7.23*). Choose a **Shadow Size** at least the size of the circles plus the spacing. Otherwise, the stones will overlap. Since rhinestone design programs work in metric, it's easier if you temporarily change the units in SCAL to mm. This setting is on the **Document Panel**:

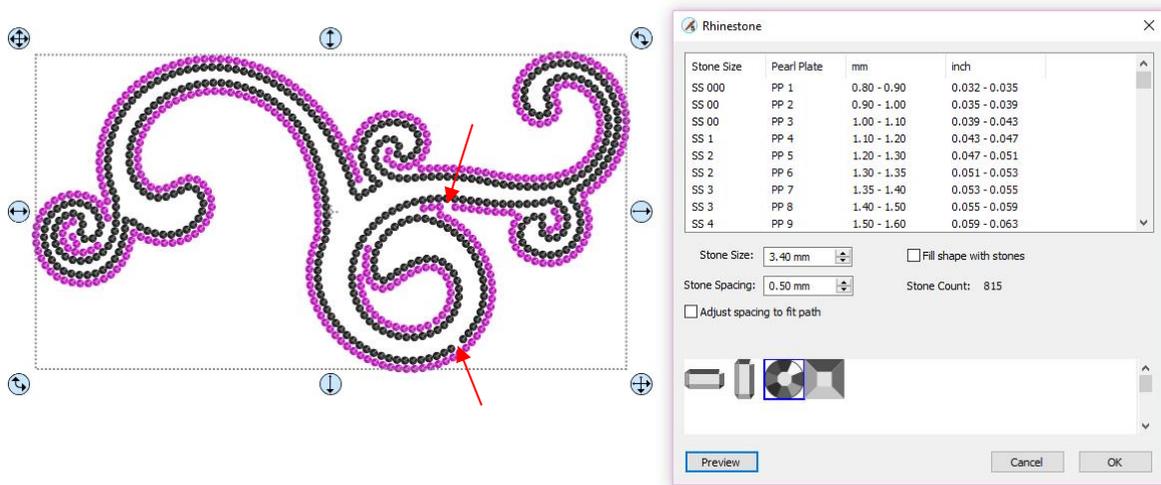


- For the following example, a swirl design from the **Library** is added to the **Cutting Mat** and sized for a T-shirt. The same settings for SS 10 stones will be used - the circles will be 3.4 mm in diameter and the spacing will be 0.5 mm. Thus, the **Shadow Size** needs to be 3.9 mm:

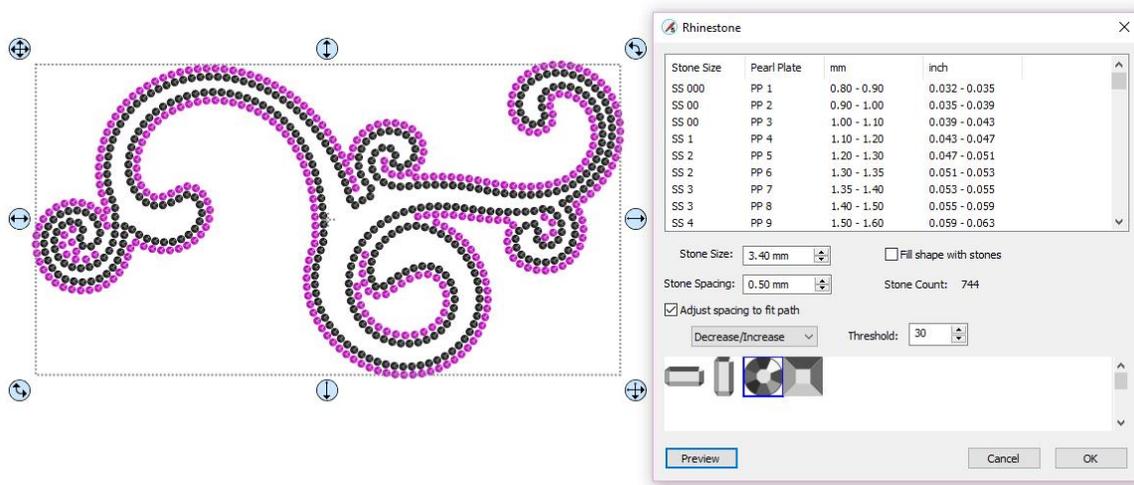


- Note: this was the **Shadow Size** to use if the same size stones are used for both the original design and the shadow layer. At the end of this section, the **Shadow Size** formula is shown for the situation when the stones are not identical in size.

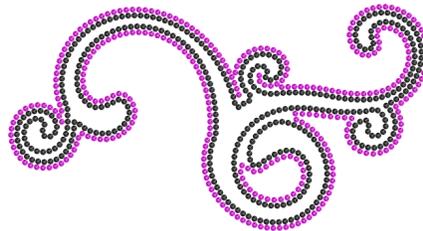
- Next, select the design and the shadow and make a backup copy. Then go to the **Rhinestone** window. Since the same settings will be used for both the original design and the outline, both can have the rhinestone effect applied in the same step:



- The red arrows indicate that the spacing should be adjusted. In this case the **Adjust spacing to fit path** was again used to improve the design:



- However, additional editing is needed to improve the overall look. After removing some of the circles, the final design is ready to cut:



- If the stones are not the same size, the average should be used, plus the spacing:

Shadow Size = (Size of circle for smaller stone + Size of circle for larger stone) / 2 + **Spacing**

- ◇ Thus, if the circle sizes were 3.4 mm and 4.6 mm, with a desired **Spacing** of 0.5 mm, then:

$$\begin{aligned}
 \text{Shadow Size} &= (3.4 + 4.6) / 2 + 0.5 \text{ mm} \\
 &= 8.0 / 2 + 0.5 \\
 &= 4.5 \text{ mm}
 \end{aligned}$$

- ◇ Note that this is the same calculation if the outline is using the smaller circles or the larger circles.

7.21.7 Using Purchased Rhinestone Fonts and Designs

- One of the best investments you can make if you are planning to do a lot of rhinestone applications is to buy files instead of trying to make your own. While the disadvantage is that you will be somewhat limited in the sizing of the final design, the time-saving advantage can make it well worth the cost.
- This section will explain how to properly size a purchased font. The same technique would be used with a design. You can find beautiful rhinestone designs and fonts at the following two web sites:
 - ◇ [Synergy 17](#)
 - ◇ [The Rhinestone World](#)
- The first step with a rhinestone font is to install it the same way you would install any TTF font on your computer. Then open SCAL and the font should appear in your font menu.

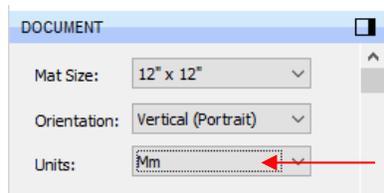
- Enter text using the same method with any font. This was presented in *Section 4.04.1*. In this tutorial, the phrase “Irish at Heart” will be typed out in a rhinestone font called *Dreamer*.

Irish at Heart

- If the circles seem too close together, set the **Stroke** to **None** on the **Fill & Stroke** panel:

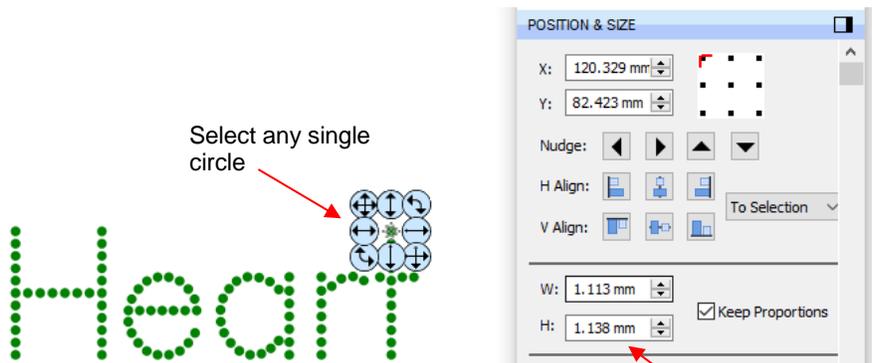
Irish at Heart

- Remember that it’s pointless to resize the design. The goal is to scale it so that the circles will be the correct size for the rhinestones you plan to use. Since rhinestone designing typically uses mm for measurement, change the **Units** to **mm**. Later you can switch back to inches, if needed, to know how large the final design will be at the size of rhinestones you’ll be using:



Select mm

- To find out what size these circles are, select the text and go to **Object>Break Apart**. Then select just one circle and check the size on the **Position & Size Panel**:



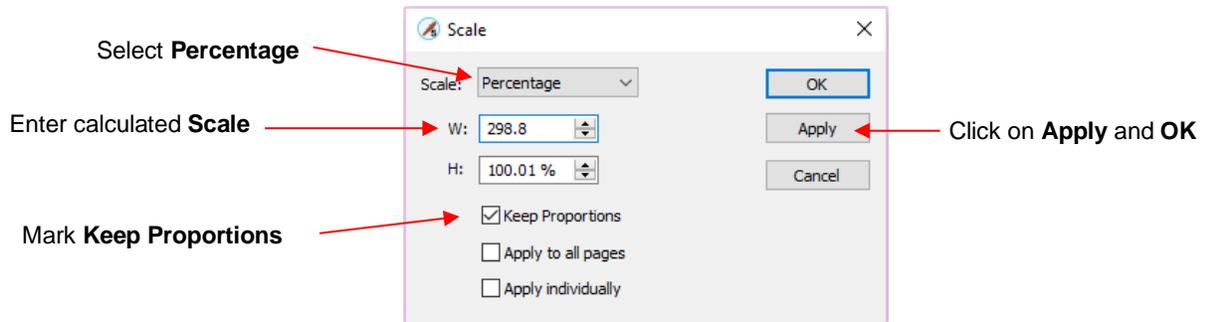
Note the size

- The circle size in this case is 1.138 mm but let’s say the size needs to be 3.4 mm in order for the template holes to work with the SS10 rhinestones purchased. The **Scale** factor is always calculated as:

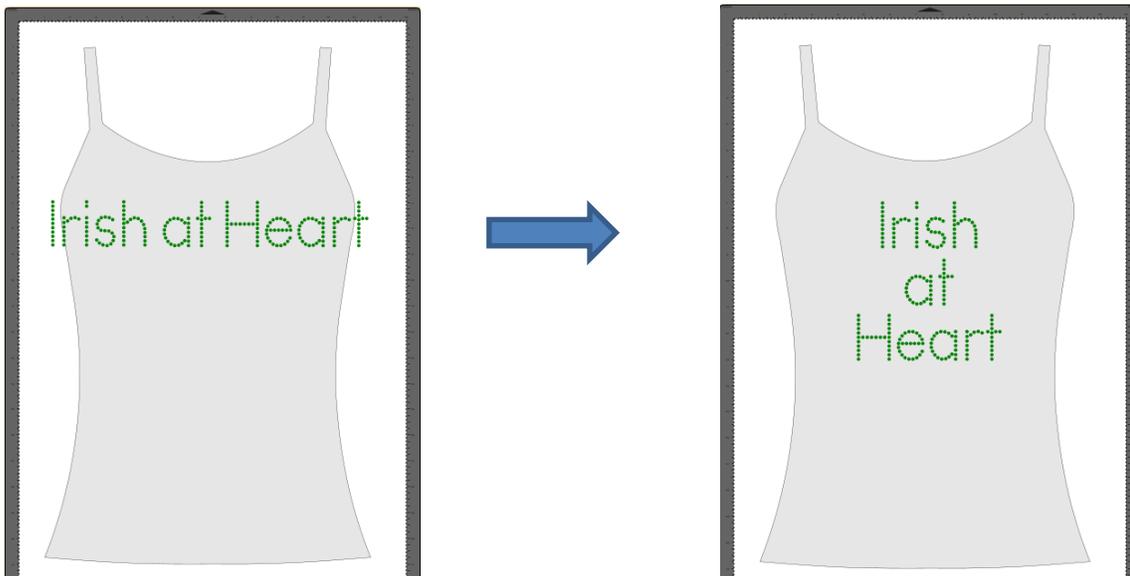
Size Needed divided by **Current Size** times **100**

◇ Thus, in this case, the **Scale** = $3.4 \div 1.138 \times 100 = 298.8$ %.

- To now scale the phrase to the correct size, select all of the wording and go to **Object>Transform>Scale**. In the window that opens, switch to **Percentage**, make sure the **Keep Proportion** option is marked, enter the **Scale** calculated and then click on **Apply**:



- The text is resized. You can then select a single circle and verify the new size is what you need (3.4 mm in this example) or within several hundredths of a mm.
- If you normally work in inches, switch back to inches to check the final size of your design to make sure it will fit onto your shirt or other medium. In this case, the phrase is now over 12" in width and will not fit onto the shirt in this arrangement. However, the words can be arranged in a different manner and the design will work:



- The other alternative would have been to use size SS8 or size SS6 stones instead.
- Resizing patterns involves the same process. Insert the purchased file, **Break Apart**, determine the size of a circle and then calculated the needed **Scale** factor. Use the **Scale** window to resize the design and determine if it will work with the size of stones you plan to use.