Embroidering is fun, but creating your own designs provides an even more exciting way to unleash your creativity!

Fall is here and the kids have gone back to school, so it’s a perfect time to get creative with your SINGER® FUTURA™ sewing & embroidery machine! You can really express yourself by digitizing your own designs. Perhaps you’d like to stitch out some of your children’s favorite artwork and put them on a keepsake quilt? Or a create a logo? Whatever your vision, your SINGER® FUTURA™ sewing & embroidery machine can help you make it come to life.

In this issue of Embroidery Made Easy, we will introduce you to the AUTOPUNCH™ digitizing software. You’ll learn the basics of using the AUTOPUNCH™ Wizard and then practice what you’ve learned in this month’s project - a cute embroidered dish towel for your kitchen. In addition, we will explain the “Color Block List” feature that’s inside your software. Hope you’re excited - let’s get started!

Understanding AUTOPUNCH™

AUTOPUNCH™ Basics

Creating your own designs to embroider with your SINGER® FUTURA™ sewing and embroidery machine is fun and easy with the AUTOPUNCH™ software. There a few simple steps to follow, starting with the selection of a graphic or image file, sometimes also called clip art. Selection of a good image file may be the most important aspect of the digitizing process. Knowing how to select appropriate image files for AUTOPUNCH™ will be covered in more detail in an upcoming issue of Embroidery Made Easy. For this basic lesson, we will be using an image file that is simple and limited to just a few colors.

Here’s a quick explanation as to how AUTOPUNCH™ works. Because the embroidery machine cannot read an image file, the image needs to be converted to a format that the embroidery machine can understand. This process of conversion is called ‘digitizing’ or ‘punching’. AUTOPUNCH™ is a software program that works using a mathematical formula to set stitches to a design. When it sees an image, it is mathematically going to set stitches in the same basic process every time, and it does not vary unless it is told to do so. Because AUTOPUNCH™ uses the same formula to digitize every image the same, all of the design blocks will be filled with stitches that have the same stitch type and stitch angle.
Understanding AUTOPUNCH™ (cont’d)

Most of the time, AUTOPUNCH™ works beautifully, with great results. But this is not always the case, depending on the image file being used. Sometimes better results are achieved by making changes in some or all of the eight customizing steps. AUTOPUNCH™ uses a process (with eight possible customizing steps) to digitize an image into embroidery data, and you can edit your image file in a number of different ways. Each step provides options to make changes, with specific instructions, giving more control over the quality of the finished design. For example, by varying stitch angles and fill types, you can make a design more interesting and life like. Knowing when to make changes comes with experience. The more you experiment with AUTOPUNCH™, the more you will know when it will be beneficial to make changes.

It is recommended to start the digitizing process by first allowing AUTOPUNCH™ to digitize on its own, making little or no changes in the customizing steps of the AUTOPUNCH™ Wizard. This is how to start the digitizing process:

Open the software for the SINGER® FUTURA™sewing and embroidery machine. From the main toolbar select the New icon.

Then click on the AUTOPUNCH™ icon. The AUTOPUNCH™ Wizard opens. Now, follow the steps in the AUTOPUNCH™ Wizard.

Step 1 – Open Image

- Select the fish scan image from the list
- Click on OK
- Click Next

Once the image is selected, you could move all the way to the last step, skipping the next six steps to completely digitize the design. To do so, click on Finish. However, you might achieve better results if you choose to make changes in the next two steps which pertain to preparing the image for digitizing: first, by eliminating any unwanted space around the image, and second, by setting the size of the image. The best digitizing results occur when the image is the same size as the finished design. See how to do this in Steps 2 & 3.

Drag bounding box around fish to crop
Understanding AUTOPUNCH™ (cont’d)

Step 2 – Crop Image

It is best to eliminate any unwanted space around the fish. Click on the square nodes of the bounding box so that the box fits closely around the fish. Any part that is outside of the box will be cropped from the design area.

Step 3 – Set Dimensions

- Before setting dimensions, determine which unit of measure that you would like to use - either English or Metric. (For this exercise, English is selected.)
- Click on the Units: box and change to inches. Change the number to 5 to make the image a more appropriate size. Type in 5 in the space provided. Notice that the width and height remain proportionate.
- Click on Next
- Click on Finish

Finally, click on the Finish tab at the bottom right of the Wizard. Once the design appears digitized on the screen, you will want to look at it in a more realistic way, similar to how it will look once it has been stitched out on the embroidery machine. To do this, click on the View tab in the main toolbar, and then select Realistic View. The design now looks like real stitches. If the results are favorable, then you can embroider the design right away. If the results are unfavorable, you can simply start over and make the necessary changes in the digitizing steps.
Understanding AUTOPUNCH™ (cont’d)

Step 4 – Color Reduction

In this step, you are able to change the amount of colors that are assigned to the image. Every time AUTOPUNCH™ detects a color, it will assign a color stop to that color. Most image files are actually made up of tiny little pixels or dots. Each dot is a unit of measure and is very small - not usually seen by the naked eye. Unless you were able to zoom in very closely, you would not even realize that the image has pixels. Each of the pixels is assigned a color or actually a number *(the computer doesn’t actually understand color, just numbers)*. Since they are so small, pixels often blend together to form various shades and blends of colors. We cannot see all of the shades, but the computer does. For example, the color yellow in the fish, could very well be made up from many different shades of yellow. AUTOPUNCH™ would assign a color stop to each shade of yellow that its detects. To simplify the embroidery process, you can tell the AUTOPUNCH™ Wizard how many color stops that you would like to use, eliminating any undesirable or unnecessary color stops.

A good place to start in determining how many colors to use is to follow what the program suggests. Typically, this works very well for suggesting the appropriate amount of colors for the selected image. To do this, select the option: **Reduce colors automatically** in Step 4 of the AUTOPUNCH™ Wizard. Then click on the **Suggest** icon. The colors will be decreased to the suggested amount. Click on **Preview color-reduction** and the image will reflect the changes made. At this point if, you can make further changes by clicking on one or more of the colored boxes and then clicking on the **Remove**. The selected colors will be removed from the list.

This is a good time to experiment a bit further. Click on **Reduce colors to**: and type in 20 in the space provided. Then click on **Suggest**: 20 colored boxes now appear. Notice that there are several shades of the same colors. If you were to leave this as is, the program would put a color stop every time it detects a new color shade creating a lot of unnecessary color stops.
In this step, the AUTOPUNCH™ Wizard determines how the program will handle filling in each shape or design block. The width of the shape will determine which type of fill-stitch will be used to fill in an area, either a “Column” type or a “Fill” type.

Column stitches travel from one edge of the object to the opposite edge in one step, creating a satin effect. Column fill is appropriate to fill areas smaller than 9mm in width. A single stitch with a length longer than that can leave too long of a thread that could pull out or unravel.

![Normal Satin Stitches](image)

A Fill stitch is typically used to fill in areas that are wider than 9mm. This type of fill uses smaller intermittent steps to fill in the area. Step fills are created by using parallel rows of stitching. Different effects can be achieved by changing the step length in a fill area.

![Step Satin Stitches](image)

The AUTOPUNCH™ Wizard is automatically set to change fills at 9mm. Although this setting is usually fine for most designs, some designs will digitize better by decreasing this setting to 6mm. The narrower the stitch width, the less areas will be filled in with a column type stitch.
During the digitizing process, AUTOPUNCH™ looks for areas to fill in that are complete or free from gaps or holes. When it finds a section that is complete, it will fill it in. If it enters into an area that has a gap, it will flow into the adjacent area, treating it as if it were the same space. An easy way to think about this would be to imagine a fence around the area. If there is a break in the fence, it would be like leaving the gate open. Whatever is inside of the fence could get out the open gate.

Each of these closed in areas are called “blocks”. AUTOPUNCH™ treats each block individually. As explained before, the size of the block determines the type of fill that will be assigned to that block, either “column” or “fill”. The yellow section on the back of the fish’s tail seems to be all one block, but actually it is not. The two smaller yellow areas just above the fin are completely closed off from the rest of the yellow space. Therefore the AUTOPUNCH™ Wizard fill those areas as a separate blocks and because those areas are small, it assigned a column type fill to fill them.

Step 6 – Customize Stitch Blocks

AUTOPUNCH™ also uses a mathematical approach to determine the sequence in which each area will sew out. At times, it may not order them in an appropriate stitching sequence. This can be the case when you have blocks that are the same color, but should not be stitched in the same time. Look at again at the fish. When AUTOPUNCH™ filled in the black areas, it included every design block that is black. All of the black design blocks will sew in a sequence without stopping for a color change. For most designs that is okay and actually preferred, however, not when it comes to the center of the eye of the fish. This block should be stitched after the white part of the eye for the best results. Think of digitizing a design much like an artist would when painting a picture. The design is built in layers. There are colors that are in the background that should be stitched first and colors that are in the foreground should be stitched last.
Hint: It can sometimes be difficult to tell what each block is and where it actually appears in the design.

Click on the Show preview window. The block will appear, colored in and in the proper position.

Step 6 provides the option to move the blocks around to change their stitching order. In the fish example, the third color block that appears is the eye of the fish. It would be best to move this block to sew after the white part of the eye is stitched. Click on the block, then move the block down by clicking on the Move Down tab. Continue to click on this tab to move the block into the desired position.

Step 7—Embroidery Settings

This step allows you to modify the embroidery settings for the design. You can select pre-defined values for the type of fabric for which you are using, or set parameters for each block manually. Other parameters such as fill type, density, underlay and allowing for stretch can be set in this step as well. If you desire to manually set the parameters for an individual block, click on the desired block and then enter in the values for in the appropriate spaces.
Step 8 – Connection

The final step is to determine whether the design will use a long “jump” stitch to connect the blocks or individual stitches to connect the blocks. Most of the time, it is preferred to use a jump stitch because they are easier to remove when the design is completed. When the selection is made, click on the **Finish** tab, and AUTOPUNCH™ will start the digitizing process.

This can take some time, depending on how complex the design is. The design will appear fully digitized in the hoop on the screen. You are now ready to transmit the design to the machine and stitch it out.
Color Block List

There is a useful tool inside the software for the SINGER® FUTURA™ sewing and embroidery machine called **Color Block List**. The Color Block List gives an instant overview of the various colors that are in the design and the order in which each color will be sent to the machine for embroidery. To turn this function on (if it is not already visible) select the **Tools** tab on the main toolbar, and then select **Color Block List**.

The Color Block List now displays along the bottom of the screen. The color blocks appear in the sequential stitching order. If the cursor is hovered over the lower part of the color block, a tip is displayed, presenting the thread color code of that block.

*Example: If the color palette has been set to Robison-Anton, the Robison-Anton color will appear with the corresponding thread color number, such as color 9020).*

Clicking on an individual block will highlight that color in the main design on the screen. A grey box will appear around the outside perimeters of the color. At this time the highlighted color could be manipulated in many ways. The color could be changed to a new color, deleted, moved, copied, flipped, etc.

One of the features of the Color Block List is to reveal the beginning and ending points of that color. Take a closer look. Notice that there are small marks on each of the color blocks.

These marks indicate the start and end point of each color block; that is the position at which the first stitch of the color block starts, (circle) and the last stitch where the color block ends (circle with cross).
The Color Block List also allows for reordering of the color blocks. There are a few different ways to reorder the colors. The easiest is to simply click on a color block box to select it, then drag it to the new position. The colors will appear in the new order.

More than one color block can be moved at the same time. Hold the down Control key on the keyboard, and simultaneously click on each color block to be moved. Several blocks will be highlighted. Drag the group of blocks to the desired new position.

Here's another option to move the color blocks. Select the specific color block(s) to be moved, and then right click on the block(s). A sub-menu appears in which you can choose to move the highlighted block(s) to the start of the design, the end of the design or a specified position.

If the “position” tab is selected, another box appears. Enter a number into the space provided. The selected blocks will embroider before the object at the numbered position.
Apple Tea Towel

It's fun to create your own designs! Create this cute kitchen tea towel as you learn the basics of the digitizing process using the AUTOPUNCH™ software and your SINGER® FUTURA™ sewing & embroidery machine. Add a special touch with the ruffle attachment and a border of decorative stitches.

Visit the SINGERCo.com/blog or SINGERCo.com/projects to download the project!

Coming in the Next Issue…

Now that we have shown you the basics of how AUTOPUNCH™ works, in our next issue we will explain the importance of using the right type of image files for the best embroidery results. Not all image files are the same!

How do you know which types of images will produce good embroidery results, and which ones won't?