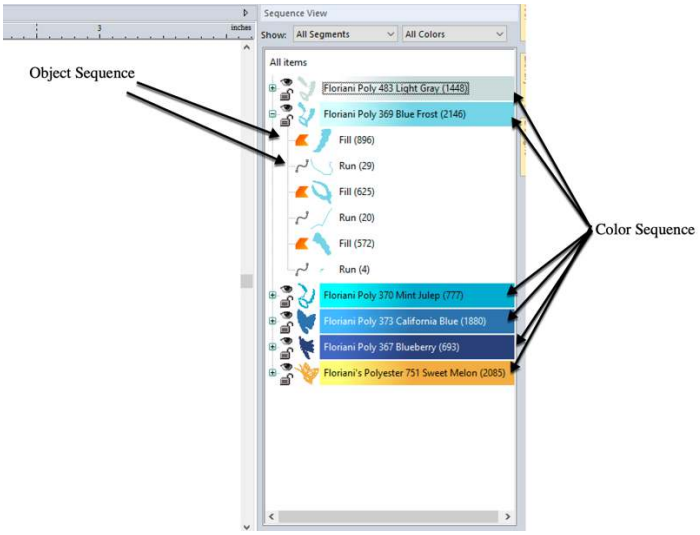
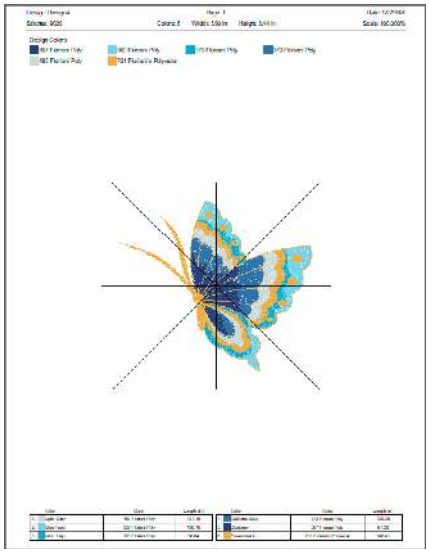
Lesson 7: Design Sequencing

Design Sequencing is an important concept to understand when creating, editing, or adding to a design. The machine does whatever the design tells it to. And it does it in the order the design tells it to create it. For this reason, you need to understand how to "sequence" objects in a design.

A design has two important parts: Object Sequence and Color Sequences. The Object Sequence is the order in which objects in a design will stitch out. The object sequence is only broken up by Color Sequences (or color groupings/sections) if the design contains more than one color. A design can contain many stitch objects and color sequences. Color Sequences can contain one or more stitch objects. The machine will stitch all the objects in that sequence before stopping or moving to the next color sequence. The machine follows the Object Sequence one Color Sequence at a time.



The main place you see the object and color sequences is in the Sequence View panel of the software. It lists everything in order from top to bottom. The object at the top sews first at the machine and the bottom object sews last. The object sequence shows under each Color Sequence title. You can also see the order in which things stitch out when doing a Slow Redraw in the software. After saving a design, it is important to print the design sheet because it includes the color sequence needed when stitching the design out at the machine.



Creating a Design Blueprint

Establishing a design blueprint is crucial to the digitizing process and is often overlooked or not given proper attention by digitizers.

It is extremely important to take a few minutes before digitizing your first stitch to establish a blueprint to follow as you digitize. This step not only helps you to determine how to navigate through your design efficiently but also helps save you time and eliminate potential errors/omissions when digitizing the design. To help establish a good, solid blueprint for your design, it is recommended that you do the following:

1. Determine the color sequence order the design will follow.
2. Determine the order you will stitch each object in a color sequence and locate areas where you can path between objects instead of trimming.
3. Locate all areas where objects overlap each other so you will be ready to apply the appropriate overlapping between them while digitizing the design.
4. Measure each object you will digitize to determine the proper stitch needed.
5. Look for any special considerations or potential problem areas in the design and plan for how you will handle them.

Because the Design Blueprint is so important, let's discuss it in greater detail. It is important to keep in mind that no two designs are exactly alike. You have to look at each design and figure out the path that needs to be taken. This is one of the more difficult things to learn when new to digitizing. But, with conscious practice, it can quickly be learned.

There are a series of questions you can ask yourself when developing your blueprint:

- What characteristics of the material do I need to keep in mind to make sure the design has the best chance of stitching out as desired?
- Thinking dimensionally, what parts of the design appear furthest away to closest?
- What can I do to keep the needle moving up and down by minimizing the number of trims and color changes in the design as much as possible?

As simple as this may sound, there is a lot to consider in each of these questions. Because of this, let's explore each question in detail.

What characteristics of the material do I need to keep in mind to make sure the design has the best chance of stitching out as desired?

If the fabric shifts or moves easily (knit or sheer fabric) it is important to make sure you digitize the design in a way that you don't have objects stitching into each other. You want objects to stitch away from each other as much as possible. When objects stitch toward each other on fabrics that shift and move easily you can create a ridge of fabric that pops up and pokes out between the stitched objects.
It also can create a lot of fabric puckering.

If you use a fusible or sticky stabilizer on these types of fabrics, you don't have to worry so much about these problems occurring as fusing the stabilizer to fabric significantly reduces fabric shifting and movement. Stable, woven fabrics don't have as many issues in these areas because they stay more still during stitching. But when dealing with lightweight woven materials it is recommended to follow the same inside-out stitching approach. When dealing with heavier weight woven materials you have to pay greater attention to your density usage

and make sure you keep it as light as possible to reduce the chances of making it stiff, bulletproof embroidery.

Thinking dimensionally, what parts of the design appear furthest away to closest?

You want to look at the design you will be digitizing as if it is three-dimensional. When you do this, usually you find that the objects that would realistically appear furthest away work better stitched out first in the design. The objects that realistically would appear closest to you typically work best being stitched out last.

In a way, you are creating layers to your design and these layers help you maintain the proper look and dimension for the design.
The only time you stray from this approach is when you can increase a design's efficiency by reducing the number of trims and color changes while at the same time not negatively affecting the design's final look or quality.

What can I do to keep the needle moving up and down by minimizing the number of trims and color changes in the design as possible?

Whenever you can eliminate trims and color changes in a design it is beneficial. This not only reduces the amount of time the design takes to stitch out but also minimizes the chances of having what I call a false thread break at the machine.

A false thread break is what happens when the machine stops stitching at the beginning of an object just after a trim took place. The thread fails to connect with the bobbin and the machine reads this as a thread break. This can waste a lot of time as the operator has to stop what they are doing (usually hooping for the next run) to get the machine back up and stitching. When the machine isn't running, you aren't making money. Eliminating trims and color changes helps reduce the odds of these false thread breaks from happening and helps ensure that your needle continues to move up and down.

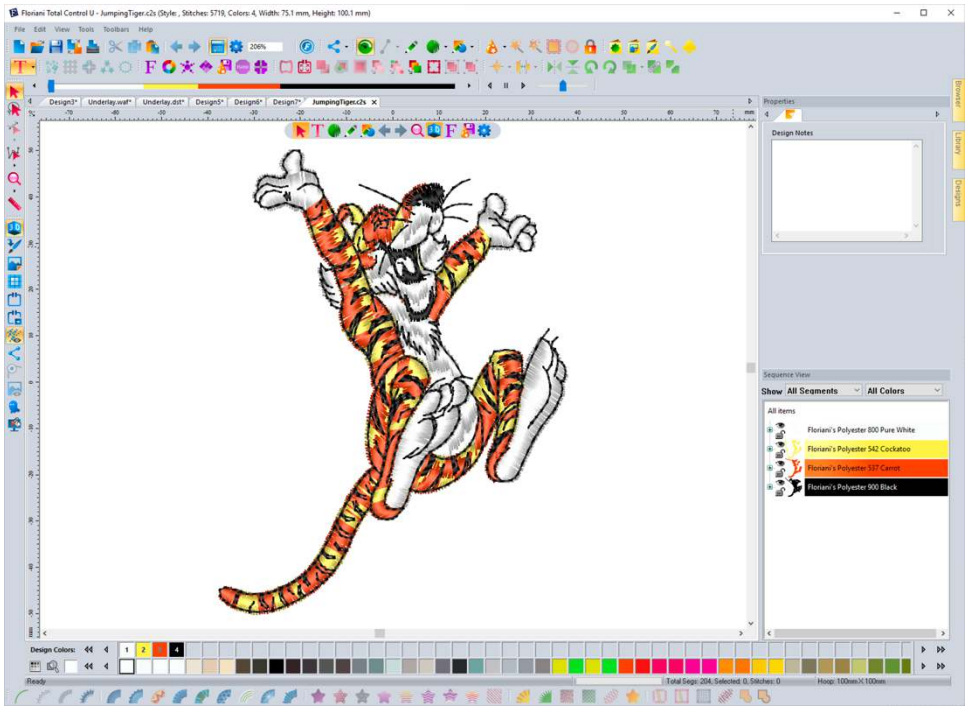
Utilizing the proper pathing technique is another way in which you can minimize trims in a design. Pathing stitches, as explained before, are those run stitches used to move from one object to another that are later stitched over the top of by objects that stitch out later in the design. You always want to do what you can to utilize pathing stitches as much as possible. So, when looking at your design you need to really look and think carefully for any opportunity to use pathing stitches.

One of the best examples of utilizing pathing stitches to ensure design efficiency is found in Walter Floriani's Jumping Tiger design. It truly is amazing to see how meticulously this design is planned out and executed.

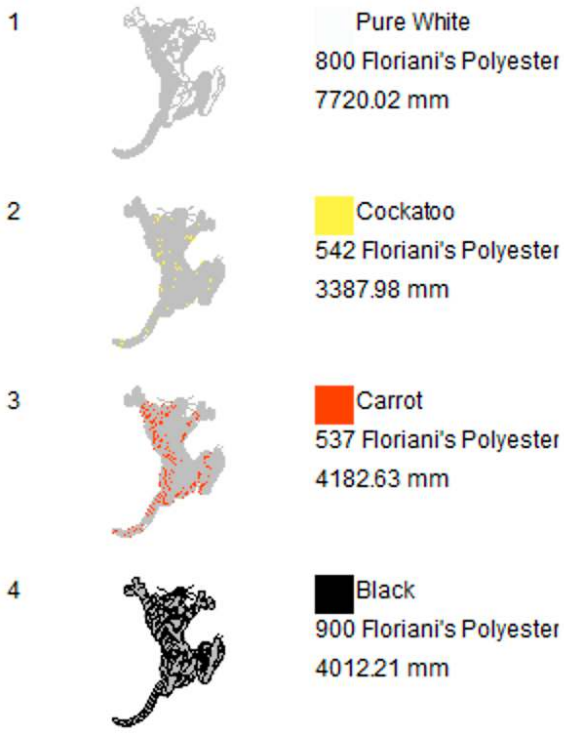
Planning a design is like playing a challenging game that requires thought and strategy to win. You have to strategically plan your designs to make them efficient.
Turn planning your designs into a game.
Watch how much easier it gets the more you do it. More importantly, watch how much BETTER and FASTER the designs stitch out. You will be amazed at how much time you can save stitching out a design when it is properly planned out. Excessive trims and color changes greatly impact the time it takes to stitch a design out.

Let's take a look at Walter Floriani's Jumping Tiger design and examine its efficiency.

Digitizing Blueprint Lesson - Planned Out Design



The thing that is so amazing about this design is that the only time it does a thread trim is when a color change takes place. And it completes each color entirely before moving to the next color. So, there are only four trims that take place in the entire design. By looking at the design it is hard for many to believe that there are not many more trims in the design than there are.
The pathing and execution of this design are truly astonishing.



Here is what we are going to take a close look at with this design regarding pathing:

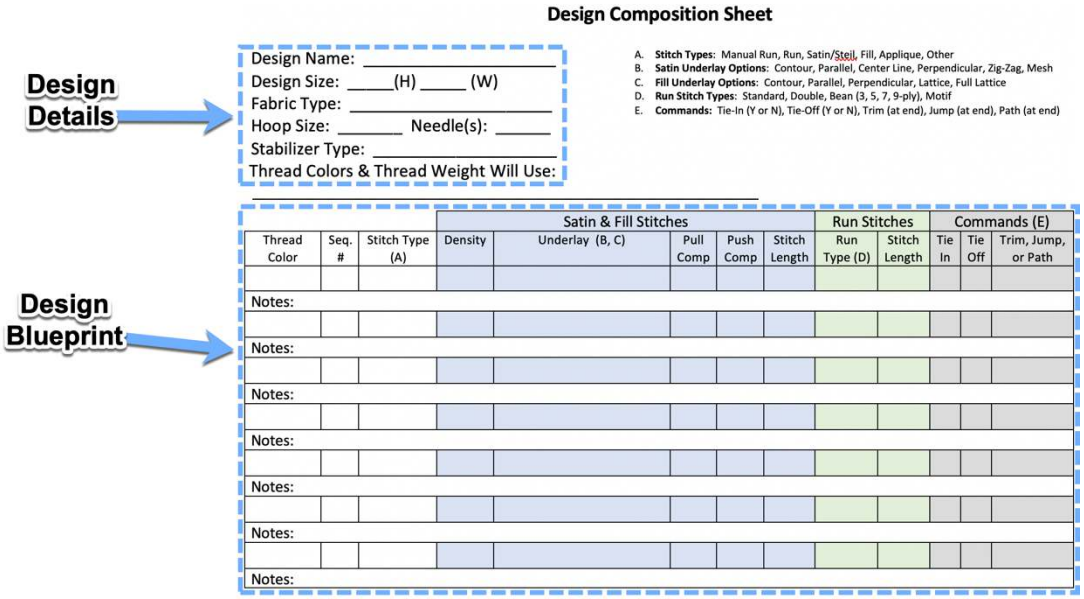
- How to move from object to object with the pathing stitches
- The run stitch length used for the pathing stitches

This is one of the best designs you will ever watch stitch out. It not only is one of the most efficient and beautifully pathed designs you will ever see but it also will teach you about proper density and stitch length usage. To achieve the level of efficiency that this design has one must take the time to study and plan the design before digitizing the first stitch.

Let's now open and watch the video titled **Jumping Tiger.mp4**.

Design Composition Sheet

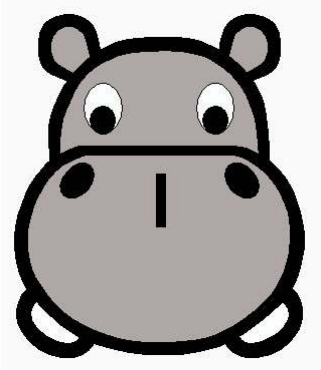
To help aid in the pre-digitizing stage, the Design Composition Sheet should be used. This form includes those items you need to pay attention to and should plan out before digitizing. It contains the "Design Details" and the "Design Blueprint."
Here is an example of what it looks like:



As you can see in the image above, this form addresses the following:

- Design Details Section:
  - Design Name, Design Size, Fabric Type, Hoop Size, Needle(s), Stabilizer Type, Thread Colors, and Thread Weight to Use.
- Design Blueprint Section:
  - Thread Color, Sequence #, Stitch Type, Density, Underlay, Pull & Push Compensation, Stitch Length, Beginning & End Commands, and Notes for each object.

Please open and watch the video **Design Composition Sheet.mp4**. Here we will see how to fill out the design composition sheet for the design below.



After you've done everything necessary in the Pre-Digitizing Stage, digitizing the design is next. Because you've taken the time to prepare, digitizing the design becomes much easier because you have your blueprint to guide you through the process.