

# Making Your Embroidery Lay Flat

**Eliminate puckers and bunching with proper digitizing, stabilizing, and hooping.**

Presented by September Brown

Diamond Threadworks

[www.diamondthreadworks.com](http://www.diamondthreadworks.com)

Copyright 2004

Embroidery tension problems can occur almost every step of the way, from digitizing to the final stitch. Here are some tips to help your designs lay flat after they're finished.

## **Digitizing so your designs lay flat:**

Have you ever stitched a design where everything was digitized at a 45-degree angle? If you have, then you know how much it pulls and distorts the fabric around it. The most basic digitizing technique to help keep your designs laying flat is to alternate the direction of the stitches from one design element to the next, but there's much more you can do.

Digitize your designs with the final fabric in mind. Most designs will need underlayers in the opposite direction of the stitches and some added stitch compensation will help offset the pull of the stitches. Without them, circles will become ovals, and your heads will be lopsided. Knits pull even more than wovens, so digitize according to the fabric you intend your design to be stitched out on. Don't forget about the direction of the fabric weave. Some fabrics, such as denim, have a diagonal weave, and a stitch direction of 45 degrees will distort the final design more than a different stitch direction would. If you use a 45-degree stitch direction, compensate accordingly with your underlayer and pull compensation. If your software allows it, using a curved fill pattern to follow the shape of the design will help further minimize the pulling and pushing that can occur when a section is filled in only one direction.

Be careful when using satin stitches. Many embroidery machines don't handle long satin stitches well, and the longer the threads, the more frequent the thread breaks. Long satin stitches pull on the fabric and can cause bunching and puckering.

In most cases, the software's default density settings will be set for 40 wt thread, but some software, such as the POEM software, is intended for a different weight thread. Know your software, and digitize accordingly. If your software is made for 40 wt thread, and so is your machine, then always do a tension test on your machine before you go changing the default density settings on your digitizing software. The tension disks on your embroidery machine will wear out over time, and the tension will loosen up. If you frequently have to compensate for this by increasing the tension on your machine, then go get your machine tuned up. Don't change the density on your designs, because if you do, your customers will have problems stitching it out, and your designs will be too dense for them. Their t-shirts will cave in the first time they wash them, and your designs will look awful, sitting inside of a "knit bowl". Your customers may not complain to you, but they'll complain to each other, and what's even worse is they'll quit buying your designs.

## **Hooping so your design lays flat:**

Hooping incorrectly is the most common reason a design puckers and doesn't lay flat.

### **Hooping techniques:**

First of all, choose the correct type of backing for your fabric. If you aren't sure what to use, print out the chart at [www.diamondthreadworks.com](http://www.diamondthreadworks.com), keep it near your machine, and write in your own comments when you need to. Only use stabilizers that were made for embroidery. Sewing stabilizers and interfacings have more stretch and aren't designed to provide the stability that embroidery demands. Cheap substitutes, such as typing paper and coffee filters add lint to your machine, and dull your needles super quick, causing your design stitch quality to suffer. Use the lightest weight stabilizer you can for the type of fabric you're going to embroider on. If you're doing a t-shirt, use a light to medium weight backing. If you're embroidering on lingerie fabric, use No Show Nylon Mesh (formerly polymesh). If you use something too heavy, it's going to add weight to your design, which will eventually pull on your fabric and make it cave in. Also, the edges of the backing will show through to the front, like a piece of cardboard is back there.

Cut your stabilizer larger than your hoop, approximately 1 inch or more extra on each side of the hoop, for a minimum size. If you buy a wide roll for your largest hoop, you can turn it sideways and cut it shorter for your smaller hoop.

Save your money, and use only one sheet of stabilizer. Designs should rarely need more than one piece of backing. If your design needs more than one sheet, then chances are good that you're hooping it wrong, or using the wrong type of stabilizer for the job.

### **Technique 1) Hooping fabric and stabilizer together:**

Use this technique for iron fusible backings, or with tearaway stabilizer with woven fabrics (such as cottons that don't stretch).

Sandwich your stabilizer and fabric between both parts of the hoop. Do not float your backing underneath the hoop. Floating a piece of backing underneath does not help provide stability, but adds more weight. The money saved by cutting a smaller piece will be lost when you ruin the item. Don't skimp here, and don't be tempted to add an extra piece of backing. You really don't need it in most cases. One exception is if your using No Show Nylon Mesh, which is designed for light to medium weight fabrics, you can use two sheets for added stability with very dense designs or for heavy fabric. In most cases, though, only one layer is quite sufficient.

Tighten the screws until the stabilizer is taut, but not stretched. It should be like a tambourine. If it's too loose, it will shift around and won't do it's job. If it's too tight, it will stretch, and when you release it, the fabric will snap back, leaving stretch marks around the edges of the embroidery.

### **Technique 2) Hooping stabilizer then adhering the fabric:**

Use this technique with adhesive backings (all types dry or wet), or when you use cutaways or tearaways in conjunction with an adhesive spray.

Hoop stabilizer taut, like a tambourine, not too loose, and not too tight.

Prepare the stabilizer for adhering, by removing the adhesive backing, wetting the Wet-N-Set or Hydrostick, or spraying cutaway or tearaway with adhesive spray. Be sure you use embroidery adhesive, not quilting spray, art spray, Elmer's spray glue, or other types of spray adhesive. The other sprays build up on your needle and jam things up, they cause numerous thread breaks, and they also just don't perform as well.

If you use the one-piece Hoop-It-All, then stick the stabilizer to the bottom of the hoop, and use your thumbnail or a burnishing tool to rub it down around the edges. This will help keep it from slipping off the hoop while you're embroidering. You can use Wet-N-Set (Hydrostick) while it's wet, except for when you use the Hoop-It-All, because it tends to slide off the hoop if it's not dry first. You can let it dry, then wet the center when you're ready to attach the fabric.

To center your design, use a permanent marker to mark the front of your hoop with center lines. You could also mark the back side of the stabilizer, but you would have to do this again each time you hoop. Be sure you use an ink or pencil that won't run on the fabric if you decide to mark the stabilizer. Mark your lines on your fabric, fold along the lines, and line up the fold with the marks on the front of the hoop. If you need help with placing your designs, the placement chart at [www.diamondthreadworks.com](http://www.diamondthreadworks.com) is the most comprehensive chart you will find anywhere.

Stick your fabric to the stabilizer.

### **For all types of hooping:**

If desired, embroider a basting stitch around the inside edge of the hoop. This will help keep the fabric more stable inside the hoop, and is particularly helpful in keeping heavy sweatshirts and towels from pulling, which causes puckering. You will be surprised at the difference a basting stitch can make.

Now, you are ready to embroider your design.

### **Hooping Tips:**

Always use a cutaway with any fabric that stretches, and make sure to adhere the fabric to it. Use an iron on a fusible, use adhesive spray, or use a Wet-N-Set or Hydrostick, to make sure that the fabric can't slide around on top of the stabilizer once it's inside the hoop. A cutaway stabilizer won't break down and wash away over time, so it will continue to keep your embroidery stable over time. Cutaways generally give better definition than tearaways, as the fibers are longer, allowing the threads to grasp tighter.

Use tearaway stabilizer for fabrics that don't stretch, such as quilting cotton, and other woven fabrics. Tearaway breaks down over time, and will go away, completely or in part.

Quality matters! The process used to create a stabilizer determines how stable it really is. The Wet Laid process creates a non-directional, dense, non-woven stabilizer, which means you only need one layer when you use it. Random Laid, or Carded techniques, on the other hand, have weak areas, or can stretch in one or more directions. For more information, there's a great description at [http://www.htcproducts.net/products\\_wetlaid.html](http://www.htcproducts.net/products_wetlaid.html).

If you're not sure which type of stabilizer is right for your job, see the Embroidery Chart for Fabrics at [www.diamondthreadworks.com](http://www.diamondthreadworks.com) for the most complete embroidery chart you'll find anywhere. If your fabric isn't listed, there are blank spaces so you can add your own.

When you're embroidering items that are too small to hoop, you can print your design right on your stabilizer before you hoop it. Be sure to center it accurately, and then stick your item to it. Another way that's even more accurate is to embroider the design without thread, right on the stabilizer. The needle marks will show you the exact placement for your small item.

Use black stabilizer for dark fabrics, especially the insides of jackets or vests, where the stabilizer may show.

When embroidering on dark fabric, place some white stabilizer (or fabric) underneath the stitching, on top of the fabric. Advance the design, and sew the outline first, to make an appliqué. Remove the excess stabilizer (or fabric), then

return to the beginning of the design, and stitch as usual. The white background will make the colors stand out more brilliantly. This is especially useful for light thread colors, or hologram thread.

Water-soluble stabilizer is often overused as an unnecessary topping, to raise the threads above the towel nap or fabric. In most cases, it's not needed, and is added work and expense. WS breaks down as soon as it's wet, and is no longer there to keep doing its job. Eventually, laundering will cause the terry loops to work up through the threads. WS does serve a purpose in holding down the loops DURING the embroidery process, but it's important to choose a design that has a good layer of understitching that will continue to hold the loops down after the WS is dissolved. If your design doesn't have good underlayering, then you need to add some manually, or use tulle instead of WS. Choose a color to match the towel. Trim away the excess from around the edges after you embroider it. You don't need to remove the excess that's between parts of the design, as it will blend with the towel and isn't usually noticeable.

## **Stitching tips to help your fabric lay flat:**

### **Check your thread type:**

Thread quality makes a difference in the final product. Some threads are more elastic than others, and will stretch as they go through the machine, then relax after they're in your fabric, causing the fabric to pull and pucker. Even two brands of the same type of product can be constructed differently, and will behave differently. For some great information on thread types and construction, see the articles at [www.superiorthreads.com](http://www.superiorthreads.com).

### **Check your thread path:**

Everything between the spool and the needle adds tension to the thread. Be sure your machine is threaded properly, and that the thread doesn't fall off the spool and wrap around the spool pin, or get caught up in other places. Metallic and flat threads should always come off the side of the spool, not over the top.

### **Check your machine:**

Before you begin, do a tension test every day. Stitch the letter I, or a column of satin stitches. Turn it over, and look at the bottom. The middle third should be bobbin thread, and the outer two thirds should be top thread.

Sew a straight line. The top and bottom threads should have even tension, and there shouldn't be loops on either side of the fabric. If bottom thread is loose and the upper thread lies straight along the top of the fabric, then the needle tension is too tight, or the bobbin tension is too loose. If the lower thread lies straight along the fabric and the upper thread is loose, then the upper tension is too loose, or the bobbin tension is too tight. If the bobbin thread suddenly shows on top in the middle of stitching out the design, you may have a buildup of lint and dust in the bobbin case.

Tension disks can wear, and lose their tension.

Start with a clean machine. Lint build-up under the bobbin case can cause threads to suddenly go out of tension. A warped bobbin case can cause threads to skip intermittently, or have intermittent increases/decreases in tension.

Always try to correct the upper tension first. Only change the bobbin tension as a last resort, as changing the bobbin tension is sensitive, and difficult to return to its original tension.

### **Check your needle:**

Choose the right needle for the job. The wrong needle can cause extra tension on the thread. There's a needle chart at [www.diamondthreadworks.com](http://www.diamondthreadworks.com) that can help you match your needle to your thread and your fabric.

### **Check the item on your hoop:**

Make sure nothing is pulling or hanging up on anything as the hoop moves. Support heavy items with a table or riser so they don't pull. Add basting stitches inside the hoop, to help keep heavy items from pulling while they're sewing.

When your hooped shirt is on the machine, turn the left sleeve inside out. This will help keep the embroidery area more open, and you will be less likely to sew the shirt onto itself over the hoop. If you do, learn a lesson from the commercial embroiderers. Don't waste your time trying to undo the mistake, because you probably can't remove it without cutting the shirt, so just save your time, cut it off the hoop, use the fabric for test samples, and learn your lesson.

I hope you have enjoyed these tips, and hope you have learned something that will be helpful for you.

Thank you for visiting my website,  
September Brown