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Digitizing for Cap Embroidery

Successfully embroidering on a cap can be much more than just hooping and sewing a cap. The way a design is digitized from the first stitch to the last can make a big impact on the success of the embroidery on the finished product.

Design Size for Caps

The cap frame that you are using will most likely handle a much larger design than the cap itself. The size of a design that may be successfully sewn on a cap depends on the profile of the cap itself. Higher profile caps can accommodate much larger designs than lower profile caps.

As designs sew toward the top of the cap, the inside of the cap can brush the lower arm of the machine and restrict cap movement. This can cause some distortion and cause vertical lines to appear as if the tops move in toward the center of the cap. If the design sews even farther up on the cap, the pressure of the lower arm against the inside of the cap can cause the cap to be pushed off the frame.

To figure out how large of a design can safely fit on the cap,

1. Measure from the bill to where the cap starts to curve over the head of the potential wearer. This will require a little bit of judgment.
2. Subtract one inch from that measurement to find a fairly safe design height. Stay within this size if the design contains right angles, borders, or fine details.
3. If the design is more organic and contains few borders or details, the size can slightly (≈½") exceed the safe area calculated in the step above. However, some trapezoidal distortion may be noticeable.
4. The width of the design depends on the cap frame.


h – 1" ≈ safe zone
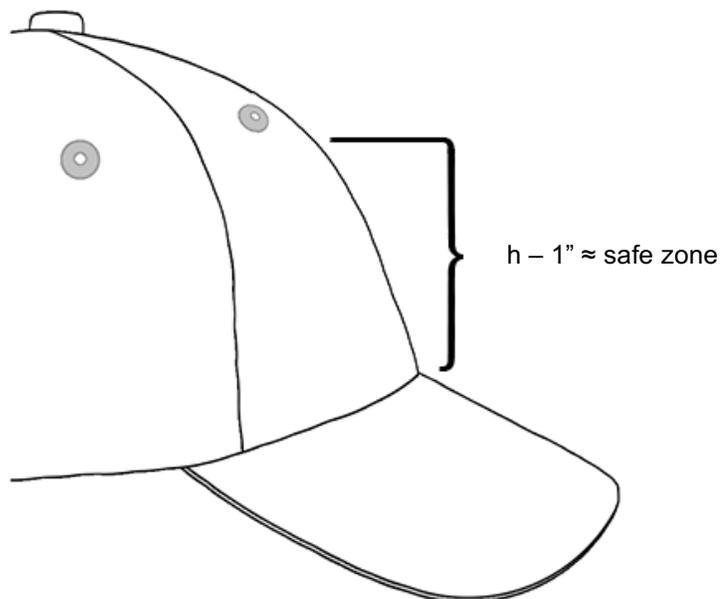
Material Push & Sew Sequence

Fabric is weird. It just is. Embroidery isn't like printing on paper. You're creating images on a surface that refuses to be stable or even still. So yeah, fabric is weird.

CAPS!?!?!? Caps take the oddities of fabric to a new level. They bounce. They flag. They move… and they have seams, and bills, aaaaand they're not flat!

So, now what?

- First, use underlay to stabilize the area as much as you can.
- Watch how you push material. As you sew, the material will tend to push in that direction. Avoid as much as possible sewing toward material that has been anchored by stitching or garment construction. It will push a ripple of material that will end up with nowhere to go. In other words,
  - Sew away from the bill. – Typically this would be sewing from the bottom of the design towards the top.
  - Sew away from the center seam. – This usually means that you are going to have more success sewing from the center to the left and right edges of the design.
  - While starting in the middle is a good idea, starting on the seam is not. The seam is tough with multiple layers of stitching and possibly backing. Starting on the seam can lead to broken threads and, on exceptionally bad days, broken needles. Start just off the seam and you'll have much more success.
  - Sew away from pieces you've already sewn. – If you're working from the bottom center and pushing toward the outer edges, this one will usually take care of itself. However, if you're embroidering the word "THREAD", don't sew the D and then the E and then the A. It will push the material and end with a ripple between the A and D.

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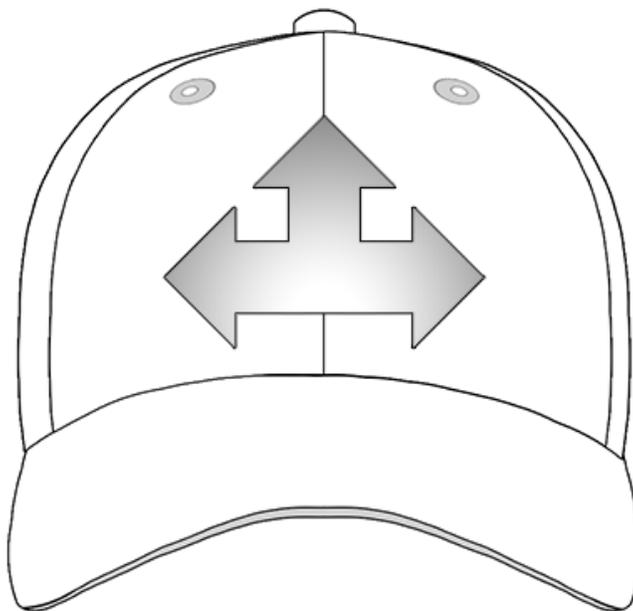
- Finish pieces as you go. This may go against what you've heard about embroidery digitizing and efficiency, but it will help. Because caps move and flag so much, completing parts of design in smaller chunks will help tremendously with registration. For example, if you were creating lettering with borders, do a couple letters and borders at a time instead of the whole word and then the whole border. Yes! This *will* introduce more trims and color changes, but it will line up far better in the end.
- Use good tie stitches. If you're not tying in and out properly, you'll be frustrated with the machine for missed starts and missed trims. Using a more aggressive tie stitch will help on a cap. Try using a small plus shape like a style 5 in DesignShop for ties where visibility is not an issue. A style 1 should still work well for you in most other areas.

Underlay

A good underlay will stabilize the area to be embroidered. Even with the underlay, use the same concepts of pushing from the bill and center seam. This may mean creating your own underlay instead of using the automatic features. Creating your own underlay will allow you a bit more control of the push of the material.

For underlay of a larger area, I typically will create two light fills pushing away from the center.