



## JUST EMBROIDER IT! **E 16: Embroider on Caps!**

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**Cap Embroidery ▪ Cap Construction ▪ Cap Profile  
Embroidery Designs for Caps ▪ Hooping Caps ▪ 10 Tips for Stitching**

## Cap Embroidery

Caps are very popular and worn by both males and females of varying ages and in every walk of life. But a cap is not complete without a message, so make it an embroidered message!

Understanding the details of cap embroidery such as: cap construction, backing/stabilizer, hooping basics, and design choice and size. These elements are key to achieving successful results in cap embroidery and will reduce challenges you may have.



The process for embroidering caps is different than stitching on other items. With caps, you are stitching in the round on items that are not solid or flat, adding dimension. Taking this into consideration will help you select better designs and appropriate supplies, giving you pleasing results.

### Successful Cap Embroidery

- Remember caps are a curved surface!
- Choose designs keeping the cap in mind.
- Know your lettering and sewing field limitations.
- Select the correct needles and backing/stabilizer.

## Cap Construction



Basic cap construction is **structured** or **unstructured**. Most ball caps are made with six panels; often with a seam running down the front center. Variance in construction methods, such as material thickness and stiffness, can leave some seams bulky and difficult to work with. This can be a factor in determining which designs work best.

### STRUCTURED CAP



Crown of the cap is stable and molded into shape, the front of the crown is located directly above the bill of the hat. The shape of the crown is created by using buckram, which is a firm fabric lining that adds support and durability to the front of the cap.

### UNSTRUCTURED CAP



The crown is flexible and free forming; the wearer's head give it shape. The inside of the cap has no support material.

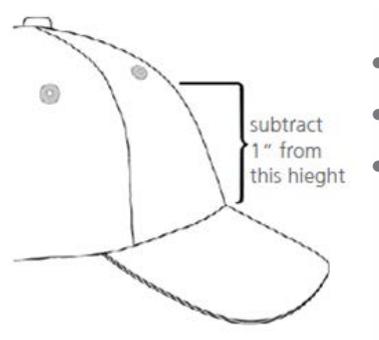
## Cap Profile

The size of a design able to be sewn on a cap depends on the profile of the cap itself. Higher profile caps can accommodate much larger designs than lower profile caps.

The profile refers to the crown on the front of the cap above the brim. The cap or crown profiles will determine the size of the design that a can be used. Crown profiles can be high, mid or low.

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 vertical lines to appear as 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 determine how large a design can be to safely fit on the cap:



- Measure from the bill to the curve of the cap.
- Subtract 1" from that measurement; this is a safe embroidery design height.
- The width of the design will depend on the cap frame and limitations of the machine being used.

## Embroidery Designs for Caps

Setting up designs for caps requires a few considerations. Make sure that the design is an appropriate size for the profile of the cap and the sewing path does not create fabric ripples, thread breaks, needle breaks, or registration issues.

When determining the size of the design, the sewing field limitations of the cap frame/hoop need to be considered. The sewing field limitation is the actual stitching area available in the cap frame/hoop.

The embroidery design for a standard cap is recommended be no more than 2.10"–2.25" in height. If you are working on a low profile cap, 2.0" is usually the maximum in height.

The bottom of the design is recommended to be 3/8" to 1/2" from the seam of the cap front and brim. The construction of the cap, stiffness, and how bulky the seam is where the cap and brim are sewn together could cause needle deflection during stitching if the design is too close to the seam of the cap. This will result in design distortion, needle breakage and poor quality stitching.

Remember, you are stitching a curved surface, so as the design stitches the cap will roll. The direction that the stitching is rolling will have a huge effect on the results of the stitched design. Designs should stitch from the bottom up, which is from the brim of the cap to the crown and then center out.

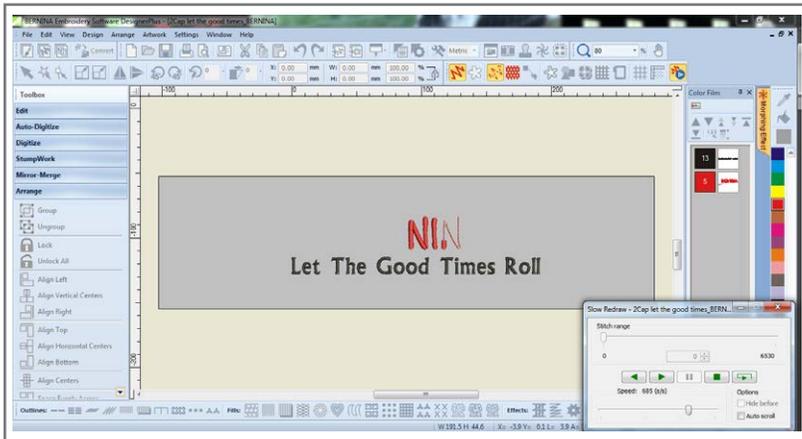


## A WORD ABOUT STOCK DESIGNS....

Stock designs are designs that you purchase or have in your design library. Not all stock designs are suited for use on caps; the majority are not unless they have been digitized for that purpose. The direction of stitching and stitch density need to be considered for optimal results on caps. Don't forget, you are working in the round, not on a flat surface when embroidering.

Some stock designs may be edited and optimized for cap embroidery but you will need to edit them in digitizing software such as BERNINA Embroidery Software 8. With software you can view the stitching sequence to determine if it is possible to stitch on caps. Reducing the density and stitch count of the design would also be done in the digitizing software.

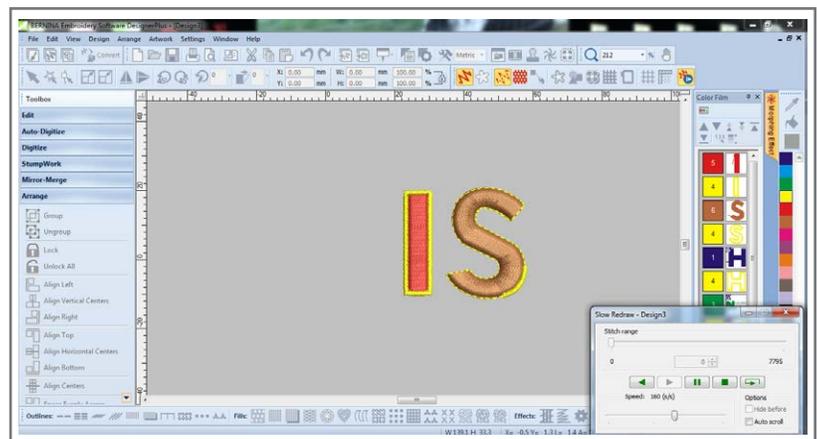
## Stitching Lettering



With lettering, stitching should begin at the bottom line of stitching in the center of the word and stitch out to each side.

Finish the design as you go, this means that if the letter also has an outline stitch the outline after the letter fill stitching is complete.

Using these guidelines for design stitching will produce higher quality results and help to prevent design misalignment.



## Importance of the Stitching Direction

Many hooping systems and frames have a band to lock in the bill of the cap when the cap is hooped. This allows the cap to float. The floating could cause the fabric of the cap to push or pull stitches. As the cap is sewn from one side to the other, the fabric is being pushed in that direction. If the fabric is pushed far enough it could cause the fabric to fold or flag. When the next color or portion of the design is stitched on the flagged cap registration challenges can occur. Using the digitizing software to sequence the stitching to stitch from the center out will evenly push the fabric and provide the best results.

## Caps and Stitch Detail

The cap construction and thickness of the seams should be considered when looking at design details and small lettering font styles. If you experience skipped stitches or needle breaks, especially when just sewing over the seam, consider reducing the detail and tightness in the top layers.

### TIPS FOR DESIGN SUCCESS:

- Use the slow redraw for a virtual stitch out in the digitizing software. This will help to determine stitching sequence and direction.
- After setting up the embroidery design you are going to be stitching, print and cut out a copy of the design at a 1:1 ratio. Audition it on the cap, for size and placement.
- Test stitch out the design on a similar weight, flat fabric. After you are satisfied with the results stitched in a flat hoop test the design by stitching on a cap.

## Backing or Stabilizers

Yes, stabilizers are necessary! Backing/cap stabilizer creates a smooth, consistent surface for the needle, hook and bobbin. You find this especially true on caps with rough buckram. The backing/stabilizer will help to keep the thread and bobbin tension smooth and even and keep the seams from dragging across the needle plate. Use a thick, strong backing and avoid using a lightweight tear-away (even two layers) as it will not give you desired results. A 2.5 – 3 oz. tear-away cap backing is the best choice to produce quality embroidery.



## Hooing Caps

Hooing caps is just like anything new, sometimes you get lucky the first time, but the more you do it the better you perfect the skill. Hoop caps as tightly as possible to prevent flagging. If the cap frame has clips, use them, they will help keep the cap tight on the frame.



Take care to hoop the cap straight, even the slightest fraction off can make the design appear crooked. The strap on the cap frame should fall into the seam of the cap. If the strap has teeth they will be seated in that seam holding everything secure and straight.



## Ten Tips for Stitching Caps

1. Machine: Regular maintenance and cleaning of machine is key for optimal stitching.
2. Cap frames/hoops: Frames are adjustable to hold the cap tight. Store your frames carefully to ensure they are not damaged.
3. Choose the right caps. Make sure they work on your machine.
4. Cap preparation: Some caps may need a little steam to relax and soften the surface.
5. Needles and thread: Change needles often if using caps with buckram. A 75/11 for lettering and detail is ideal, a needle too large can cause skipped stitching.
6. Backing/Stabilizer: Hoop the backing with the cap. Unstructured caps will need a heavier backing.
7. Design placement: Use the side, back and top to relocate elements of a logo if it is too small to read. Use the center seam as the start/finish for consistent placement.
8. Hooping/Framing: Hoop as tight as possible to avoid flagging. With the 270 degree frame, offset the center of the cap to the left. It will center itself when clamped down. Use clips to hold in place being careful not to stretch.
9. Digitizing Tips: Stitching rolls the cap bottom up – center out . Finish each area as you go, stitch the fill then the outline of letters.
10. Cap Fabric: The type and weave of cap fabric can affect the final embroidery appearance and results.



**For more information on stitching caps using the BERNINA E 16 Multi-needle Embroidery Machine visit:**

<https://www.bernina.com/en-US/Products-US/BERNINA-products/Multi-needle-Embroidery/BERNINA-E-16#!tutorials>