

Understanding Push & Pull Effect in Embroidery

Good embroidery requires a good understanding of digitizing to avoid problems that can occur with the forces of thread while embroidering call Push and Pull. Or in digitizing term we call it Push and Pull compensation.

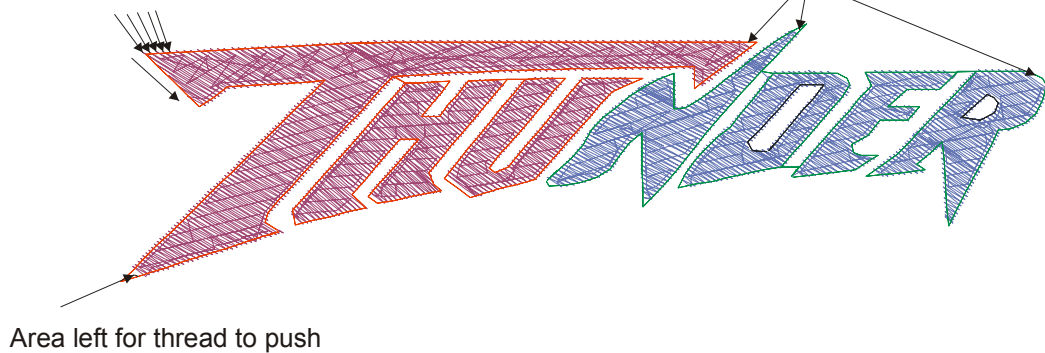
So what is actually Push and Pull effect in embroidery?

Because most of the substrates we embroider on are fabrics, which have "give" as a part of their nature. This means they push and pull as the machine moves back and forth with the stitching, causing distortion, unevenness etc. There is a tendency with fill and satin stitches to pull and push the fabric in opposite directions, causing the design to appear distorted.

During embroidery application, stitches "pull the fabric in", with the direction of the stitching. Also, in the case of an area of fill, the stitching "pushes out at a right angle to the line of stitching". Understanding this embroidery phenomenon is important because it explains why design detail lines may appear to be off when viewing a design on screen, and yet the design will stitch fine upon application to fabric. During digitizing, compensation is made considering for the "push and pull" effect and the stitches are set accordingly. Fill size and density affect how much "push and pull" compensation to use.

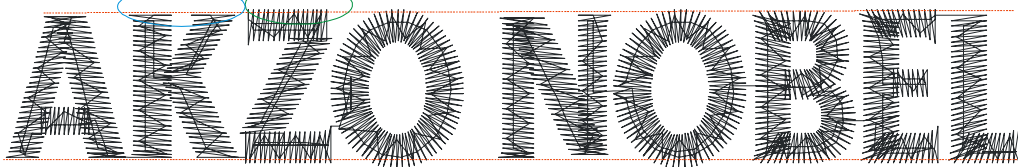
Thread is lying outside of the outline for itself to Pull in

Area left for thread to Push



During stitching this will Push out from the red guideline

During stitching this will Pull in towards the red guideline



Continue.....

Text also needs compensation. Some letters have horizontal columns, while others have vertical columns. When the threads run horizontally, they lie nicely, but the density will push the threads apart and make the letters slightly taller. The pull is sideways and is not very visible to the eye. With vertical columns, however, the density pulls the fabric together and can make a particular letter appear shorter than the others. Good text will not appear even when viewed on a computer screen. Pull-compensation will be worked into the text so that the letters will appear the same height when they are sewn onto the garment.

A good digitizer is aware of the pull compensation and can make adjustments by varying the stitch direction, amount of underlay and the stitch density.

When working with a digitizer it is always best to let them know the type of application, what the intended use is and what fabric is to be stitched. By doing this, the digitizer will better understand the possible need for additional pull compensation ahead of time, eliminating down time for you, and possible last minute changes.