iPunch Version 8.5
Startup Guide

Contents

Essential Embroidery Theory 1

I. Object-Based Digitizing and Embroidery Basics

?? **What IS outline-based digitizing?**
Most modern digitizing programs are **object** or **outline** based. iPunch works exactly this way. Shapes or outlines, called objects, are drawn by the user. Those shapes are filled in by the program with stitches. To manage the stitches, one manages (i.e. resizes or reshapes) the outlines. Outline-based digitizing systems provide the following **advantages:**

- **Time saving** from management of segments of similar stitches called **stitch groups** by controlling their outline instead of controlling their individual stitches
- **Better Stitch Quality.** The outline drawn around each **stitch group** provides a reference to ensure that stitches in that group are always trying to create the shape drawn by that outline, no matter how much those stitches are edited or redrawn. This results in cleaner edges and better-looking stitches.

?? **Object and Non-Object Based Digitizing files in Digital Embroidery**
You'll save the designs you create in a file format that saves both the outlines you draw and the stitches as well (and the image, too). You'll also encounter stitch files that only contain the stitch information and nothing else. In summary, there are 2 categories of stitch files in embroidery:

	Condensed (Outline-Based) files	**Expanded (stitches-only) files**
File types	EHF, EDS, CND	DST, EXP, HAPPY (TAP), PEC, PES, HUS, SEW, PCM, PCS, FMC, FDR, ZSK
Easily resized and edited	Yes	Not as easily
Readable by embroidery machines	No	Yes

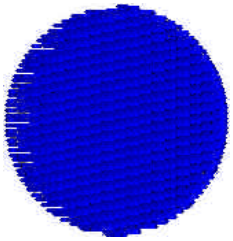
?? **How this works in iPunch@Home**

- iPunch creates outline-based stitches by letting the user create the object or outline, then fill with stitches. There are different ways to view the objects and stitches – from the right-click menu in the design window.

?? **Some Embroidery Basics: The 3 basic stitch types in Embroidery**
No matter how simple or complex a design is, 3 types of stitches are used to create it. They are briefly described below with examples of each.

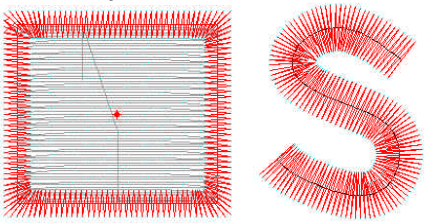
Fill Stitches

Fill stitches are used to "fill" large areas (i.e. areas greater than ½" square) in a design with continuous rows, at the same angle, of thread, sewn down with a repeated pattern of stitches. They are built by sewing rows of stitching in an even pattern of needle points, giving a look as shown in the picture below.



Satin Stitches

Like fill stitches, satins fill in areas with stitching with continous rows of thread. However, there are no needle points anchoring the thread except on the edges. This limits the maximum width (unlimited for fills) of a satin to ½ inch, but it also makes satin stitches stand out with a cleaner edge and a higher shine than fill stitches. Satins also sit higher off fabric, making them excellent for finishing details such as borders and text. Satin stitches do have a minimum width of 1mm, due to the width of an embroidery needle itself.



Running (walk) Stitches

Unlike fills and satins, running stitches do not fill in areas, but rather trace details with a single or double row of stitching. If creating with ***fill stitches*** can be thought of as using a wide paintbrush, and if creating with ***satin stitches*** can be thought of as creation with a medium-thickness marker, then creating with ***running stitches*** are like using a fine ballpoint pen.

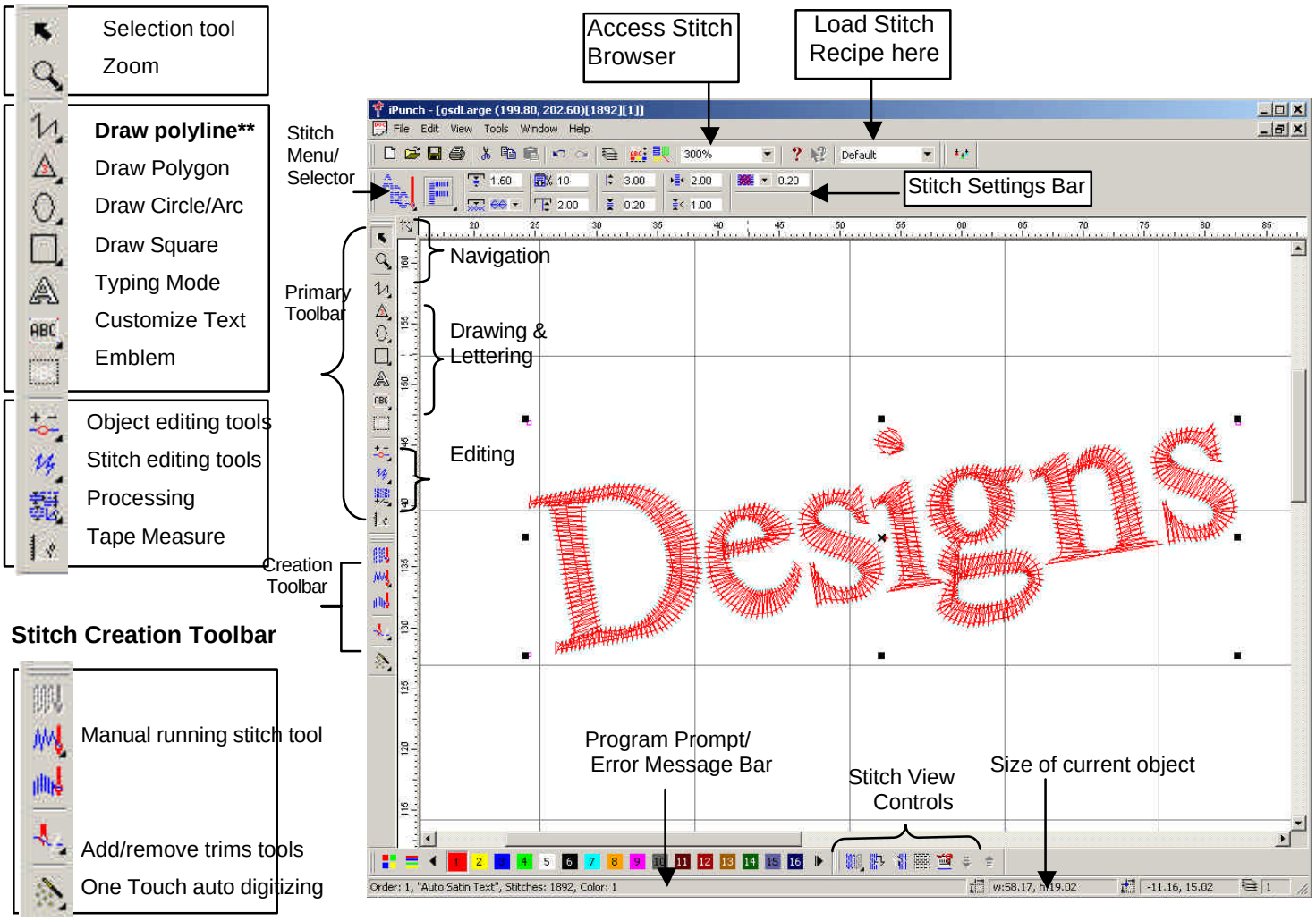
Things to Know Before Starting

The iPunch Program Window

1. Screen resolution and setting: Before anything else – make sure that your screen resolution is set to at least 1,024 x 768 pixels and at least 16-bit (16-million) colors. IPunch will work at lesser settings, but these recommended settings ensure the most user-friendly arrangement.

2. It is important to understand how the iPunch program window is organized so that you can become efficient and effective in the program as quickly as possible. Shown below are the most important functions of the iPunch program window – you'll need to know these for this course and for effective operation of the program.

Primary Toolbar



Stitch Creation Toolbar

Things to Know Before Starting

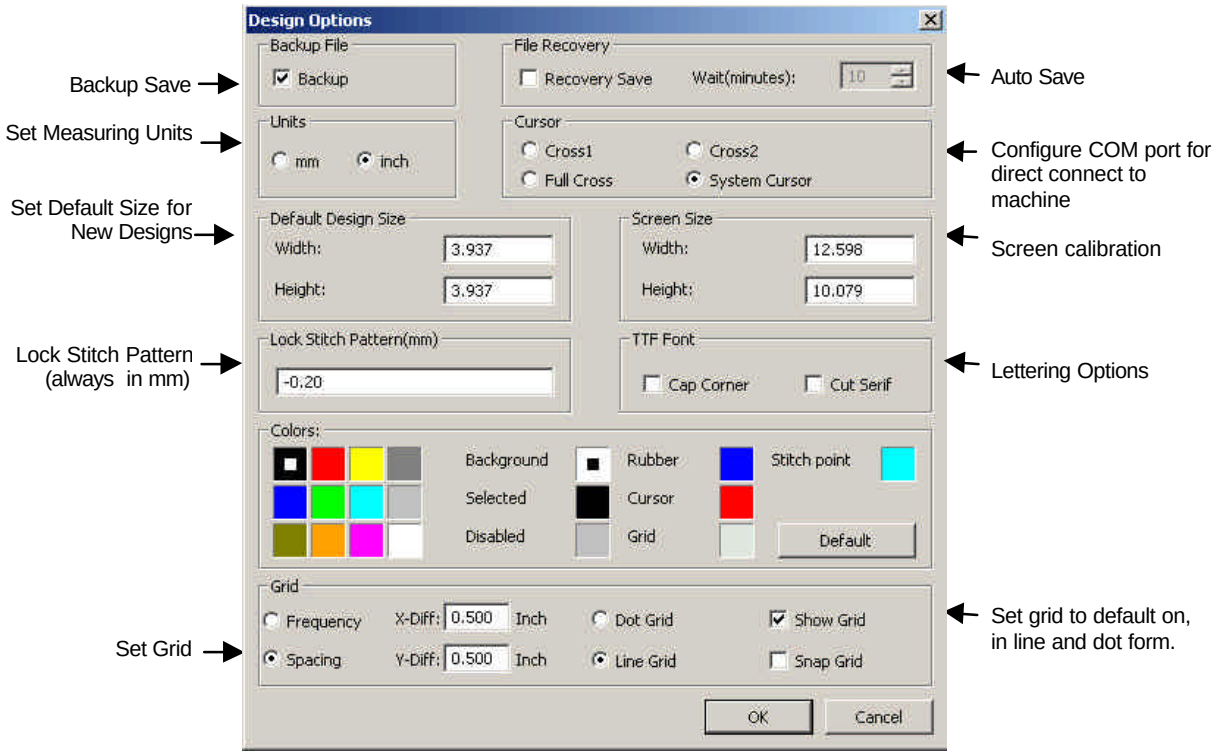
Initial Program Setup

Every time you install or re-install iPunch, set your preferences in the program. These preferences do not have to be changed again unless you need to re-install. There are many possible ways to customize the program window. The most important are the following:

- **Backup Save** – creates another copy of your digitizing file in the same directory.
- **Screen Size:** Calibrates the program to your monitor to ensure that the view magnifications are accurate.

- **Lock Stitch Pattern –** customizes how many stitches (and how far apart they are) are in the program's automatic lock stitch. A good one to set is: -.5; .5; -.5

- **Grid Size/activation –** You'll find it much easier to judge the size of details and how they should be digitized or edited when you have a grid reference.



Basic Operations in iPunch

Objective: Learn the foundation tools/functions of iPunch that let you do everything else in the program.

SELECTING STITCHES AND OBJECTS IN IPUNCH

In order to perform an action (such as move, resize, generate stitches, edit) on something (such as an object or stitches) that's in a design, iPunch needs to know ***which*** object or stitch you're going to perform it on, because it could be one of many stitches or objects in that design. This is also true even if it's the ONLY object or stitch in the design – either way, it *has* to be selected.

How to Select things in iPunch

?? Use the Select tool in the navigation bar to select objects and stitches. Click on the tool (found at the top of the Primary toolbar) or press ESCAPE, which defaults the program into selection mode.

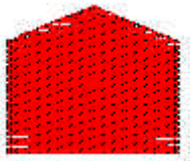
2. **Click on an object or stitch** to single select.

IPunch is in Selection mode when this is pressed in

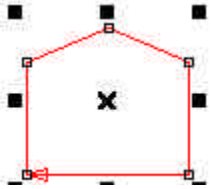
- **Ctrl-Click** or **SHIFT-Click** to select more than one object
- **Ctrl-Drag-Click –** lasso (region) select

?? Ipunch "marks" selected objects as shown below:

Object, not selected

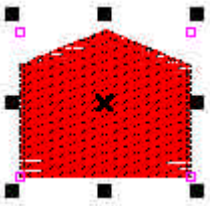


Object & Fill Stitch, not selected

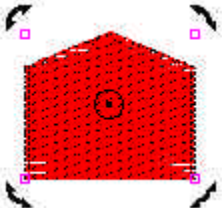


Selected Object with nodes showing

Object only selected



Object & Fill Stitch, Selected

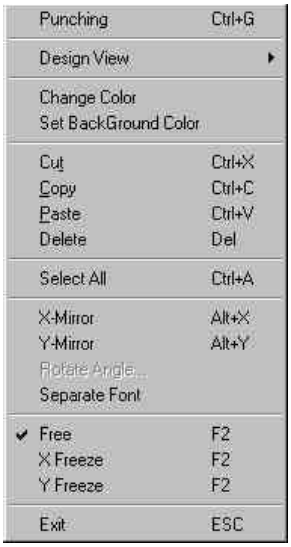


Stitch group selected, in Rotate mode

2. OTHER BASIC UNIVERSAL OPERATIONS

- **The Right Click Menu –** Just as with most Windows® applications, you can access a menu of available options by pressing the right mouse button anywhere in the design window at any time. The appropriate options will appear based on what you're doing at the moment.
- **Undo/Redo –** Almost all operations in iPunch can be undone by clicking on the Undo button, and re-done by clicking on the Redo button, found at the top of the program window. IPunch allows many "undo's".

Undo/Redo



Right-click menu

Try this Exercise!

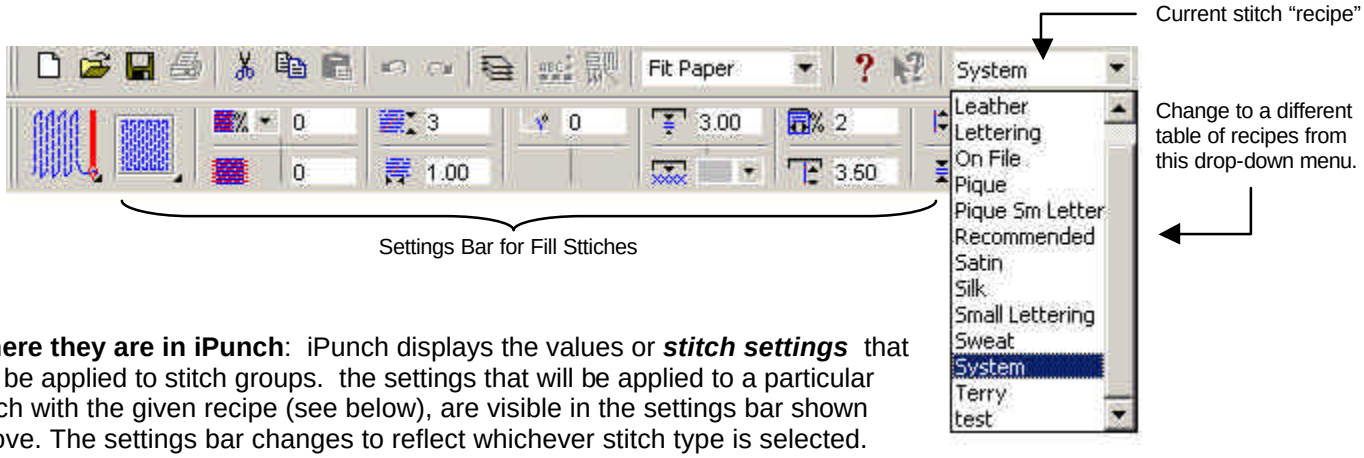
Draw a shape i.e. a circle/square using the Primary toolbar. Fill it with stitches by pressing ENTER twice, then ESC. Try selecting it, its stitches, its object. Then try rotating it, resizing it. Use the right-click menu to copy it and paste copies of it on the screen. Try x- and y-mirrors to flop it. Try the Undo/Redo functions. Familiarizing yourself with these functions will let you become comfortable much more quickly with the rest of the iPunch program.

Embroidery Theory:

Stitch Settings and Their Purpose

What Stitch Settings Are: As discussed back on page 2, iPunch builds stitches based on the shape of objects that you draw (or on the outlines of automatic lettering. But the program needs more information than just a shape to build stitches: it needs to know a combination other, numerical information, similar to a "formula" or "recipe" that helps tell the program where each stitch of that particular group of stitches is created. Additionally, these values need to be changeable so that a design can be adapted to different sewing conditions (i.e. different types of fabrics. These values include information to customize stitch characteristics such as:

- Stitch density (called "span" in iPunch)
- The distance between one stitch point and the next (known as stitch length)
- How much and what type of supporting stitching (known as ***underlay***)
- The amount of overlap that an area of stitching needs to sew beyond the shape of the objects. (known as ***pull*** or ***External compensation***).



Where they are in iPunch: iPunch displays the values or ***stitch settings*** that will be applied to stitch groups. the settings that will be applied to a particular stitch with the given recipe (see below), are visible in the settings bar shown above. The settings bar changes to reflect whichever stitch type is selected. Shown above are the settings available for fill stitches.

How iPunch Manages Stitch Settings: Because (1) every type of stitch has its own set of unique settings and (2) different types of garments may require different values for every one of these stitch settings, there are a lot of numbers to learn! Fortunately, iPunch comes with pre-programmed "recipes" named for each type of fabric that makes the changes to for ***all*** of the values for ***all*** of the stitch types. To pick a recipe, just choose one from the drop-down menu as shown above on the right.

Things to Know Before Starting

2 Things to Do Before Starting any Job in iPunch

1. **Ensure that your artwork or canvas is the correct size.** You can adjust this from Edit…Properties
   The following options are available in **Edit…Properties**
   - ***Proportionate:*** Check if you're resizing the background artwork and/or stitches
   - ***Resize Stitches & Image:*** Check together with "Proportionate." If not checked, image will remain at original size.
   - ***Canvas:*** If you just want to add additional area around your art and leave the image at original size, check this but not the previous two.

2. **Load in a "Recipe" of default stitch values for the garment on which you will sew.** Do this as shown in the section above.

Creating Stitches

Lettering in iPunch 8.5

Since lettering is not only a good place to start for understanding how to create stitching in iPunch, but also a popular need for most digitizers, we've listed the steps for creating custom lettering below for you to try and follow. The next page is a guide on creating 2-color lettering (using fill-type lettering) with satin borders.

BASIC STEPS TO CREATE SATIN LETTERING

1. Create the Initial Text Object (Outline)

- **A. Start.** Find the "A" in the Primary toolbar (shown on the left) and click on it.
- **B. Choose a font** out of that family. You can use the arrow keys to scroll through them. (Leave the other option at TTF Satin)
- **C. Set a Start Point.** Click in the design where you want the text to start, then type the text
- **D. Left-click anywhere in the design to set the text.** Selection markers will appear around your text as shown on the right.
- **E. Move or re-size** the text object as desired. Size of the text object will appear at the bottom of the program window.

2. (Optional) Customize text– Click on a Customization/ Placement Mode

If you are content with the layout of the text as you've typed it, you may skip all of this section (Steps 2A-2E). If you wish to add some custom effects to the text, such as arcing, bridging, monogram, etc, follow these steps:

A. **Choose a customization mode**. Find the button shown on the left, which is located below the "A" text tool in primary toolbar. If you have no experience using any of these customization modes, simply click on this button and from Display in Box, on 1 Line, on 1 or 2 Objects, in Diamond as shown on the left.
B. Enter character spacing and height if desired.
C. **Manipulate the overall shape** of the baseline (box or line) to curve, arc, etc.
D. **Manipulate individual characters** by clicking on a letter to activate its **Control Box.** If more than one letter's control box is activated, changes done to 1 letter will affect those other letters as well.
E. **To go to the next step**, press **ENTER.**

3. Stitch Generation Step

- **A. Select** your text if you haven't already done so**.**
- **B. Press ENTER to start the process.** Look for the red and green Starting and Ending points for each letter to appear.
- **C.** Enter any stitch settings or values that need to be adjusted. At this point, you may change the Trim Off function to Trim On to force a trim between each letter.
- **D. Press ENTER again** to generate the stitches

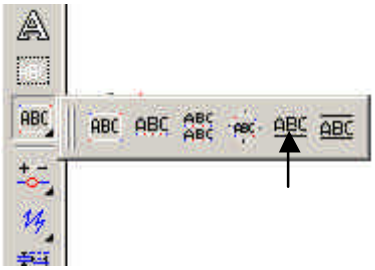
STEPS TO CREATE LETTERING ON A DRAWN PATH (i.e. an ARC)

1. Create the Text Object and the Arc

- **A. Create the text outlines** as described in the steps 1A-1F at the top of this page.
- **B. Draw an object to put the text on.** The arc tool is found by clicking and holding on the circle/ellipse tool.

2. Put The 2 Together

Select the arc and the text outline. Click on the selection pointer, then draw a box around both text outline and object.Click on "Display on 1 Object". You can find this as shown in the figure on the right.



3. Customize.

You can click on individual letters at this point and move, rotate and resize them as desired. When finished,press ENTER

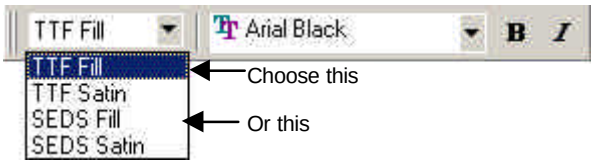
4. Generate Stitches. See steps 3A-3D above.

STEPS TO CREATE FILL STITCH LETTERING WITH AN AUTO(satin) BORDER

1. Setting Up

A. Make your canvas large enough. Remember, fill stitch lettering is generally used for large sized letters, so you may need to enlarge the canvas if you're typing more than a few characters. Do this from Edit > Properties or create a new design with large dimensions i.e. for a jacket back like 12" x 12".

B. Choose a Fill Stitch Font Family.
Before typing, choose a font from either the TTF Fill font family or the SEDS Fill font family Keep an eye on the characters and ensure that they're open enough (i.e. not too intricate) to accept satin stitch borders (if you choose the Satin type border).



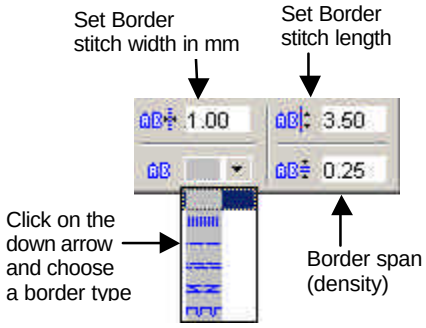
2. Set up the Auto-Border and Generating Stitches

A. **Size or Modify Outlines as Necessary.** Re-size, kern, rotate characters using any of the customization tools below the Typing tool. When finished press ENTER.

B. **Enter Stitch Generation Mode.** To do so, begin the stitch generation process by selecting the text outlines (if they aren't already selected) and press ENTER. The red and green In and Out points will appear on each letter. It is only at this stage that the auto- border options become available.

C. **Set up the border.** The settings for the border can be found on the right side of the Settings bar as shown below. Find the 4 border settings boxes as shown. Set according to your preferences. If satin selected, ensure border stitch is at least 1 mm wide.

D. **Generate Stitches**. When finished setting up the border, right-click anywhere in the design window and choose ENTER.



3. Changing the Border Stitch Color

Follow these steps if you wish to change the color of the border.

A. **Separate Font.** After generating stitches, right-click and ***separate font.*** Click off to one side of the stitches to clear the selection markers that appear.

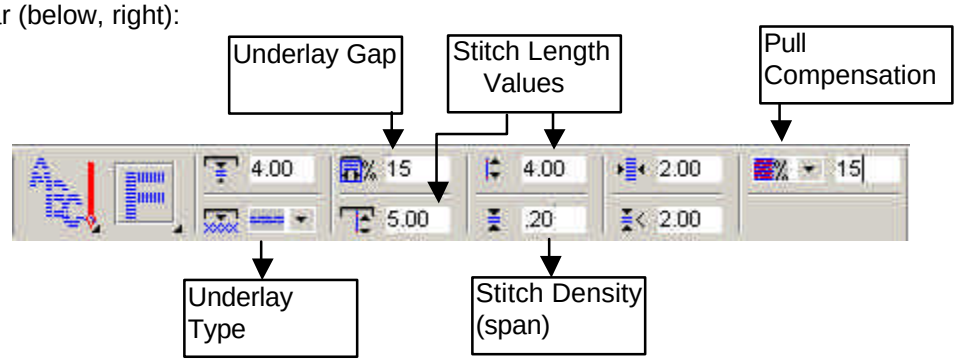
B. **Mask either the fills or the satin border**. Use the design view controls: Right-click and choose Design View > View Only Satins or View Only Fills.

C. **Select the fills and change colors.** Don't forget to un-mask the fills or satins in the same way you masked them in (B) above.

D. **Resequence as Necessary** from the stitch browser.

Stitch Values Relevant to (satin) Lettering

As described at the top ofpage 6, the stitch recipe manager makes choosing appropriate stitch values easy. However, it is good to understand the key stitch values that most affect the quality of your lettering. You can change these values manually as needed by pressing the Settings button (shown below, left) after you've passed step 3b on page 7 (or after 2b on page 8). Doing so causes the following dialog box to appear (below, right):



We've listed and explained the most important 4 for satin stitch lettering below.

1. **Top Stitch Density or Span –** This value controls the density of the stitches – it is the amount of space allowed per run of stitching, so the higher the value, the lower the density, and vice-versa. The useful values are:
   - Ideal sewing situation (denim, T-shirt, hats) - .19 to .20
   - Loose weave garments such as woven golf shirts – slightly higher at .17 to .18
   - Wide satins or 3D foam: use densest value .10 - .16
   - Narrow satins (approx. 1 to 1.5 mm wide) require a light value - .22 to .25

2. **External (Pull) Compensation** – This is additional width added to stitches to compensate for loss in width due to pull of the garment and the tension on the thread. There is no limit to how much you can add. General pointers are as follows:
   - Always use 0.2mm at the least. (The recipes will already have this
   - value programmed in.)
   - **Boldfaced text** – the more you increase this value, the more "boldfaced" you can make text appear.
   - **Narrow Satins** – (i.e. small lettering). Considered to be satins between 1 and 2mm wide. When creating narrow satins such as on small text, be prepared to add more than the standard 0.2mm.

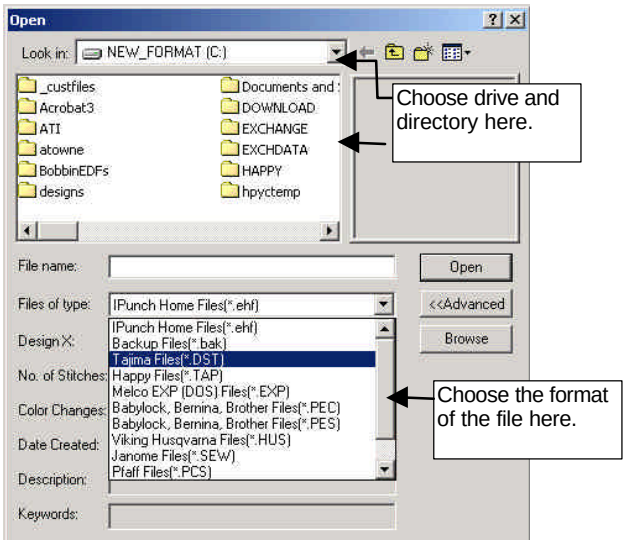
3. **Underlay – ALWAYS** use at least 1-line underlay. Underlay is a pattern of "pre-stitching" that anchors the garment to the backing for a more stable sewing surface, and can provide additional surface or "framework" for the finishing satin or fill stitch. It can make the finishing stitches seem to lift higher off the fabric and even prevent the garment from showing behind the satin or fill. Too much underlay, however, increases sewing time and may cause lighter garments to pucker.
   - **For Satin Text:** Make sure your recipe defaults to 1 line + zigzag. UNLESS the satin stem (or column) is narrow (1-2mm wide)
   - **Additional types** – heavier underlay for more difficult sewing surfaces. (towels – use heaviest underlay).
   - **Narrow Satins** (1-2mm): use 1-line, or 1-line with zigzag for piques.
   - **Underlay "peeking"** out from underneath the edge of satin stitching – fix this by choosing a simpler underlay such as 1-line underlay or increasing the Underlay Gap value (explained below)

4. **Underlay Gap:** Controls how far inside from the edge that the underlay sews, helping prevent it from showing beyond the edge of the finishing satin or fill stitch. Applies to anything except a 1-line underlay. Always use at least 7% unless there is a lot of external (pull) compensation. For narrower satins (1mm wide), use higher values or alternately use 1-line underlay or none at all.

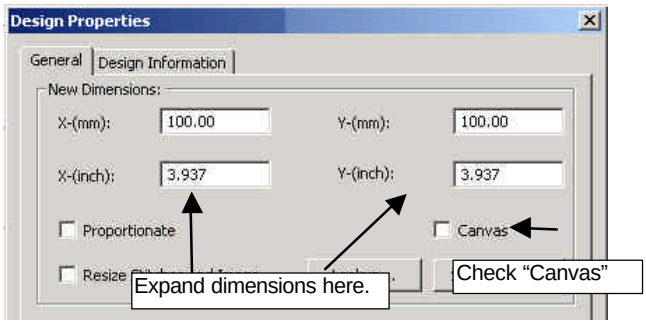
Combining Text With a Stock Design

Importing pre-digitized stock designs is a great way to create custom logos without having to digitize.

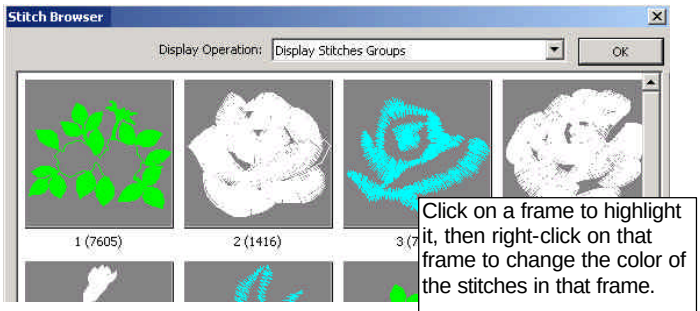
Opening and Setting Up Stock Designs
Below is explained the steps for opening up a stock (pre-digitized) design before working on it.



1. **Open the file.** Click on File..Open. The dialog box at the right appears. As shown, choose the drive and directory where the design is (your CD ROM for example), the format that the design is in (you should know this beforehand). Then, highlight the design and click Open.

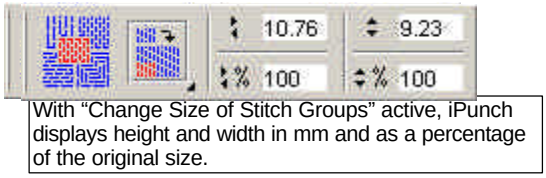


2. **Expand the Design Canvas.** IPunch opens the design into a work area only large enough to fit the design. Before enlarging the design or adding onto it, expand the canvas from Edit…Properties as shown on the right.



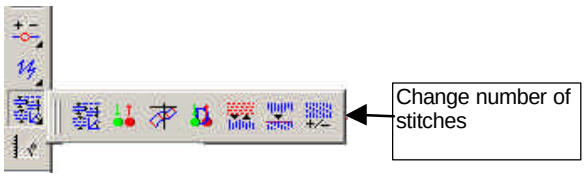
3. **Set the Colors** of the design. Designs in most common formats (.dst, .exp) do not have any information about what color each stitch block is. This should be provided by the seller of the design. You'll need to set the colors for the design using the Stitch Browser, as shown on the right.

4. **Re-size the Design as necessary.**
Imported stock designs may need to be re-sized. To do so, follow these steps:
    1. **SeSelect the stitches of the design** using the select tool. If they are the only stitches in the window, you can simply Select ALL (CTRL+A).
    2. **Click on Change Number Stitches.** Shown on the right.



    3. **Change mode to "Change size of stitch groups.**
    4. **Enter new dimensions and press ENTER.** At the top of the program, look for the dimensions boxes shown on the right.

CAUTION! Resizing a design too much can lead to problems relating to the limitations of that design.



Outputting your Design for an Embroidery Machine

Once you've created custom text or a custom design, you can output to an embroidery machine by saving the file first in .eds format in your hard drive (in your "my Documents" directory for example), then saving in .dst format on a floppy disk or other device for your machine.