

Garment Production

Level-II

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Acronym

GSM-Gram Square Meter

CAE-computer-aided embroidery

QC-Quality control

LAP =Learning Activity Performance

Introduction to the Module

In garment production field, **Prepare and Perform Embroidery Design and Machine operation** required to create, edit embroidery designs and perform machine embroidery.

This module is designed to meet the industry requirement under the Garment Production occupational standard, particularly for the unit of competency: **Prepare and Perform Embroidery Design and Machine operation.**

This module covers the units :

- design requirements
- Create design
- Edit design
- Present design for feedback
- embroidery machine
- embroidery machine setting
- work pieces and workstation
- Produce Machine embroidery on articles/ garments
- Completion of work

Learning Objective of the Module

- Identify client design requirements
- Perform design Creation
- Carry out design edition
- Present design for feedback
- Set up embroidery machine for production operation
- Test embroidery machine setting
- Prepare work pieces and workstation
- Produce Machine embroidery on articles/ garments
- Completion of work

Module Instruction

For effective use this modules trainees are expected to follow the following module instruction:

1. Read the information written in each unit
2. Accomplish the Self-checks at the end of each unit
3. Perform Operation Sheets which were provided at the end of units
4. Do the “LAP test” given at the end of each unit and
5. Read the identified reference book for Examples and exercise

Unit one: Design requirements

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Embroidery design Specifications
- Template/frames
- Garment considerations
- Tools and equipment required for design

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Determine embroidery design specification
- Identify available template/frames
- Identify Garment considerations
- Identify tools and equipment required for design

1.1.Embroidery Design Specifications

Embroidery can be applied before or after the construction of a garment and concentrated in specific areas or as part of an overall design. It can be used as an embellishment on the surface of the cloth to enhance the look of the fabric or it can be used in a way that makes it integral to the function of the **apparel**, rather than simply as a decorative addition. For example, a buttonhole can be created with interesting stitch work and the shape of a simple garment can change through the application of smocking.

Embroidery is “thread art” used to embellish a garment, hat or some other product by adding a sewn pattern. Generally, this sewn pattern includes a design and can also include lettering and/or monograms. embroidery is the art of applying decorative designs onto fabric using a needle.

The design size, stitch count, thread colors and more can be found on the "Sewing Info" tab on any product page.

What is design specification?

A specification often refers to a set of documented requirements to be satisfied by a material, design, product, or service. A specification is often a type of technical standard. There are different types of technical or engineering specifications, and the term is used differently in different technical contexts

Specification can be defined as a ‘statement of needs’. It describes what the customer wants to buy and consequently, what the successful supplier is required to supply. Specifications can be simple or complex depending on the need. The success of the procurement outcome often relies on the Specification being a true and accurate statement of the buyer’s requirements.

What is an embroidery design?

An embroidery design is a drawing that includes all the necessary information for creating an embroidered image. A replica of what you want to stitch, it can be either hand-drawn or computer-generated. It’s composed of symbols and stitches representing how the hoop should look when finished stitching so that your machine knows where to start and stop.

Content

Embroidry designs contain diffirent design in combination or images with text according to the purpose or requirement of the design

Color range, color number

Embroidery is most suitable for designs with solid colors and clear color separation. Designs with gradients and shading are difficult to reproduce properly in embroidery and is not recommended.

Keep in mind the apparel color when choosing design colors, dark colors will not be as vibrant on dark apparel, and vice versa. Choosing contrasting colors will help the design be as visible as possible.

Dimensions

Ways to change design dimensions include:

- ✓ Change Lower case lettering into uppercase.
- ✓ Eliminate some of the letters.
- ✓ Place the letters on 2 or more lines.
- ✓ Arc the lettering around the logo.

Stitch types and sizes

Stitch types

An embroidery stitch, “is defined as the movement of the embroidery needle from the backside of the fabric to the front side and back to the back side.

In the context of embroidery, an embroidery stitch means one or more stitches that are always executed in the same way, forming a figure of recognisable look. Embroidery stitches are also called stitches for short. Embroidery stitches are the smallest units in embroidery. Embroidery design are formed by doing many embroidery stitches, either all the same or different ones, either following a counting chart on paper, following a design painted on the fabric or even working freehand”. This basic principle also applies to machine embroidery.

An embroidery stitch is a kind of stitch used in embroidery, which is a method for stitching designs onto fabric using a needle and thread. These stitches typically follow a pattern, with your working thread moving in and out from the back of the fabric to the front of the fabric. They can either be stitched by hand, or by machine. Sometimes, different embroidery stitches come together to make a design on a piece, and sometimes they are hidden on the inside of your fabric.

Different stitch techniques are used for specific purposes when embroidering a design or logo. Depending on the look of the design and the fabric being embroidered. There are three main types of stitches you need to consider in computerised embroidery:

- ✓ **Fill Stitches**
- ✓ **Satin stitch**
- ✓ **Running stitch**

Fill Stitches: One of the three most common stitches used in embroidery along with the run stitches and satin stitches. Fill stitches are used to cover large areas and they generally

have a flat look. Altering the angle, length and direction of the stitched pattern can create different types of fill patterns.

The fill stitch is also used to create an underlay foundation to layer more complicated embroidery designs or designs being sewn on flimsy materials (rayon, silk, etc).

Fill have a flat look and less sheen than a satin stitch, but they can fill an area much larger than is easily achieved by the limits of the satin stitch and avoid the rippled texture that areas filled with overlapped satins will tend to have.

Satin Stitches/Column Stitch – Excellent for narrow detail like lettering stems, vine work, borders. But can be no wider than 0.4 inches (10mm) and no narrower than 1mm (0.04 inches).

Satin stitches track back and forth over a narrow area, alternating between an angled stitch and a straight stitch, like a zig-zag with every other stitch perpendicular to the area's edges. The satin stitch has a shiny finish due to the unbroken, long threads in those straight passes.

This is the most common embroidery stitch type and is used in the majority of lettering and design outlines.

Running or Walking Stitch- A single, straight stitch that provides detail. Used for outlining small items and widths less than 1 mm or simply to walk from one part of the design to the other. used for drawing fine detail. .

The dashed line style is typically used to capture very small details in embroidery designs. The walking stitch is commonly used to re-create the look of hand sewing in many retail designs.

Stitch Size

You need to know the size of a design for two reasons. First, you need to be sure the design you are choosing will fit into the sewing field of your machine's hoop. You can find out the maximum size your machine will sew by consulting your machine's manual. Secondly, you need to be sure the design will fit onto the area you wish to sew it. Measure the area where you will be stitching your design to determine if your design fits – check for pockets, seams, buttons, or other obstructions that might get in the way of your embroidery design.

Knowing your design's stitch count and size can help you in making stabilizer and fabric decisions.



Fig-1.1.stitch type

1.2.Available template/frames

A "template" is printout of a design. It has the center of the design identified, as well as the horizontal and vertical axis lines.

Using Templates for Position & Placement

Here's the printout, which shows the design at actual size, along with horizontal and vertical lines. Where they intersect is the design's center point.

It can be helpful to trim the paper so that you're not working with extra bulk.

Put the template on the garment or fabric and position it where you'd like it to go.

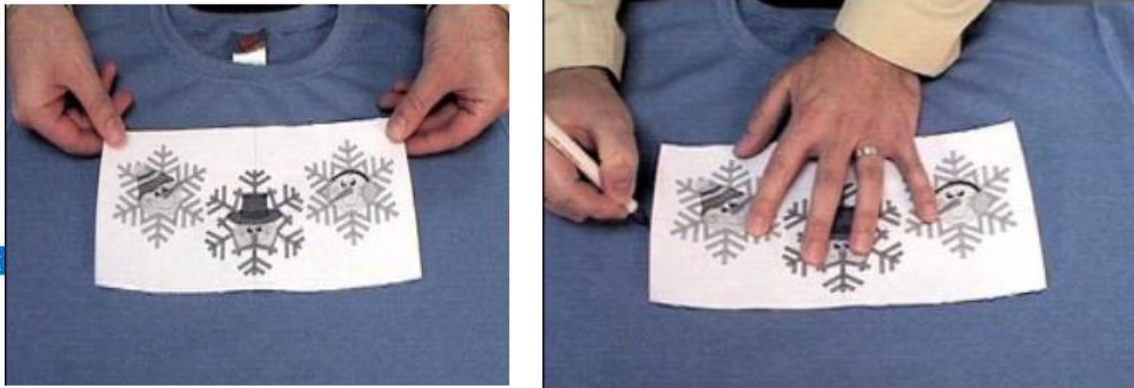


Fig-1.2.template

Poke through the center and mark it with your favorite marking tool (an air-erase pen is used here). Then, mark the horizontal and vertical axis lines.

Connect the horizontal points, and the vertical points.

1.3.Garment considerations

1.3.1.Fabric types and weights

The weight of a fabric is essentially its thickness. Fabric weights are usually measured in GSM - the higher the number, the heavier and thicker the fabric will be.

The number of stitches or stitch count within the design will affect the overall weight of the embroidery. This is a consideration when taking into account the garment or fabric you are applying the embroidery to. For example a design with a large stitch count and therefore a heavy weight will distort a lightweight and thin fabric t-shirt and cause the t-shirt to become miss-shaped when worn

With so many different fabric types available to the modern embroiderer, it can be hard to know which type of material is best to use with your embroidery designs and when to use them.

When it comes to fabrics used in machine embroidery, there are 3 main categories based on how certain fabrics are produced:

- ✓ Nonwoven fabrics, such as felt
- ✓ Woven fabrics, such as cotton, linen, silk, wool, and polyester
- ✓ Knitted fabrics, such as yarn and French terry cloth

When choosing your fabric you need to consider the weight of the embroidery design. The fabric needs to be strong enough to hold the design. Looser fabrics are less able to hold the threads. If you want to use a specific type of fabric, you need to select a design that is suitable for the weight of that fabric. The ‘thread count’ of the fabric refers to the fabric’s weave and determines the ability of the fabric to permit a needle to thread through it without difficulty.

1.3.2.Color of fabric

When you’re choosing colors for your embroidery designs, software makes it simple by letting you color the design on-screen before you stitch it out. Sometimes background fabric needs to be considered, too.

Fabrics used for embroidery are available in different thread counts and are available in cotton, linen, and blends.

You'll want to start by testing your fabric marker.

1.3.3.Suitability of dimension and proportion, design, color and other characteristics of fabric

Adjusting stitch spacing You may need to change stitch density in order to stitch on a different fabric or with a different thread. Or you may want to do a test design and reduce the overall stitch count.

Spacing Sometimes text is too crowded or too loosely spaced.

Line spacing is defined as the distance from the bottom of one line to the bottom of the next. A letter height of 1.0 inch with a line spacing of 1.0 inch makes the letters from each line touch. To have space between the letters, you must have a line spacing greater than the letter height. If it is less than or equal to the letter height, the letters will touch or overlap.

1.3.4.Position of the embroidery design/alignment

The location of the embroidery on a garment is often key to how the finished product will turn out. You may therefore want your logo big and bold across the front with perhaps a web address or contact number on.

1.4.tools and equipment required for design

For Hand Embroidery Design

Art pencil- there are many differences between normal and art pencils. Art pencils are more flexible for making art, and it's easy to remove from paper also. Choose a good art pencil to start with.

Art paper- normal papers are low in GSM. But you need thick paper to start drawing, which can help you to draw randomly.

Art pens- art pens are not like normal ball pens, which we used to write regularly. It can make shape lines that will be more visible.

Tracing paper- It's thin and very light paper. That's a bit transparent, which helps you to make a copy for other designs.

How To Start Designing An Embroidery Pattern?

Hand Draw Embroidery Design

You need just paper and pencil to start a design on your own. steps on how to do hand embroidery design.

Step1:Take a paper and a pencil. Start sketching your design. Just try to build the thing that you want to draw here. Be soft and draw lines and sketch the whole thing raw.

Step2.When you have a raw sketch, you enter the second step of your design, draw lines clearly and mark a bit deep. It will make your basic design clear and visible that you want to art. After creating lines, clear the extra lines that you draw in the first step. You can use a soft eraser to remove the extra lines.

Step3.This is the final step. Take a tracing paper and make a copy of your design from the paper. It will make it easy to embroidery this design in any fabric. It would help if you used an art pen that makes deep and dark lines on tracing paper.

“Sidenote- using tracing paper makes your design more visible and easy to stitch when you do embroidery.”

Vector Pattern Or Computerized Pattern/design

Computer- you need a computer set up to do design in software. It’s a common thing nowadays. **Adobe products/embroidery software-** Adobe has different editing software for image and video also.

For doing this, you also need to draw art on paper, or in this modern time, you can use an iPad to draw a design, and then you can convert it into a machine format.

Adobe photoshop- let’s think we have a physical design, and we want to make it a formatted design for an embroidery machine. You need to take a photo, and then you can edit it in adobe photoshop to make it a design. For that, you need to know how to use Adobe photoshop. Know how to make layers in photoshop and how to edit a photo, and also color grinding.

Adobe illustrator- This is also an adobe product that helps you create a vector file that’s more professional and in high resolution. You can use this type of file for selling as an embroidery pattern. design created by hand drawing scan that and input it in adobe illustrator to make a vector file. Make shapes and recreate the art from scanned copy. And then save it as your requirement.

Needles to use for an embroidery machine

Using the right needle is often crucial when it comes to embroidery, so it’s essential to know how to pick the right types and sizes of needles so that your embroidery project turns out just the way you envisioned it.

As with any other sewing project, you’ll need to adjust the needles to the type of fabric used. For lightweight fabrics, use smaller sharper needles while heavier fabric s will require larger needles. Read more about needles here.

Embroidery Threads:

You can use a variety of threads when carrying out machine embroidery. Rayon thread is the most popular, because it’s widely available, and has a very attractive sheen. It also comes in a huge range of colours, and it can withstand high-speed stitching without breaking or fraying.

Polyester thread is also a smart and popular choice for machine embroidery, as it provides a similar effect to rayon and also comes in a wide range of colours. It's resistant to shrinking, fading, and bleeding too, which means it's particularly great for kids' clothes and sports kits. The main difference between polyester and rayon is that polyester has less of a sheen.

Although cotton thread isn't as widely used for machine embroidery, it can work well. Although, it's worth noting that finer cotton threads can be weak and prone to snapping, so those that are on the heavier side work best when you're working with a machine. They're stronger and will provide more coverage.

Silk thread isn't as readily available or widely used as some of the others, but its strength means it lends itself quite well to machine embroidery. It comes in a selection of weights, but those on the heavier side are more suitable for machine work. And, when used, they have a lovely sheen, which is what gives silk embroidery its luxurious look.

Multifilament threads such as rayon or polyester are most frequently used for sewing embroidery. Silk embroidery thread is very expensive, so rayon thread is generally used instead.

Self-Check -1.1	Written Test
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instruction. I answer the following questions

1. List and explain tools and equipment required for hand Draw Embroidery Design

2. What are three main types of stitches you need to consider in computerised embroidery:

3. Why Rayon thread is more important for embroidery design?

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

Unit two: Create Design

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Review Existing design
- Tools and equipment for create design
- Develope design specifications
- Store and protect design

This unit will also assist you to attain the learning outcomes stated in the cover page.

Specifically, upon completion of this learning guide, you will be able to:

- Reveiw and modify existing design against requirement
- Creat design concept using appropriate tools and equipment
- Develope design specification
- Label,organise,store and protect design

2.1.Review Existing design

Why Design Reviews?

Embroidery Software provides many viewing features to make it easier to work with your design. Zoom in on an area to see more detail or view the design at actual size. Show or hide various design elements with the available display settings. Preview an existing design in different colors on different fabrics.

When working with embroidery designs, you need to understand the stitching sequence. You can check a design's stitching sequence in Embroidery Software by 'traveling' through it stitch-by-stitch. Embroidery Software also provides information about designs in a variety of ways and formats. Before even opening Embroidery Software or your design, you can check some design information. You can view stitching details about a design in the Design Properties dialog. Also the Print Preview provides essential design information, including a design preview, the size of the design, color sequence and any special instructions.

How to Make Your Own Embroidery design

Making your own embroidery pattern involves two interdependent steps; designing the pattern and bringing it to life on a digital embroidery machine. In the first step, you create your own embroidery design by hand and digitize it on any embroidery software of your choice. Examples of embroidery design software include; Embrilliance Stitch Artist, BuzzSize, Brother Initial Stitch Embroidery Lettering & Monogramming Software, among others.

In the second step, you print out your design and bring it to life on your choice modern digital embroidery sewing machine to sew the intricate patterns. You can also create a collection of embroidery patterns and add them to your collection for future projects. There is a ready market for unique embroidery patterns out there.

Design files:

Digitized design files can be created on our own or purchased with embroidery software. Generally, embroidery file formats come under two categories, namely the source format, which is specific to the software and the machine format, which is particularly for a specific brand of embroidery machine. Embroidery machines commonly support one or more design formats such as Tajima's .dst, Melco's .exp/.cnd and Barudan's .fdr based on the brand of the machine. Machine formats normally comprise primarily stitch data (offsets) and machine functions (trims, jumps, etc.) and editing of these files is very difficult and needs extensive manual work.

Editing designs:

After a design has been digitized, the editing of designs or combining it with other designs can be carried out using the embroidery software.

Loading the design:

After completion of editing work, the final design file is loaded into the machine in the form of floppy disks, CDs or USB interface cables. The design format required by the machine will vary depending on the particular brand.

2.2.tools and equipment for create design

The first thing you'll want to keep in mind when you are beginning to sketch out your design is the size you'd like the finished embroidery to be. If you are wanting to stitch something that requires a lot of detail to be added into it, it's always smart to embroider the design slightly bigger.

You'll also want to choose an embroidery hoop size that your design will fit into. There is no "right" hoop size to use when you are stitching, but a general rule of thumb would be to choose an embroidery hoop that will allow at least a one inch margin around the design. This way the embroidery hoop won't get in your way while you're stitching.



Fig:2.1.hand embriodery design

Print your own embroidery patterns

1. Selecting your embroidery pattern design
2. Printing your embroidery pattern
3. Preparing your printed embroidery pattern for transfer
4. Ironing your embroidery pattern onto fabric
5. Stitching your printed embroidery pattern

How to make a digital embroidery?

To carry out digital embroidery, you need an embroidery machine with a computer. Once the device is set up, you must follow a few essential steps.

Creation of the design to be embroidered: this is the image to be printed on the garment or fabric. At this level, all types of designs can be used. It can be a logo, a shape, a sentence... Once the graphic element has been chosen, we move on to the next step.

Transferring the image to the digital embroidery machine: here you need to upload your file to the machine via a USB stick. This will allow you to visualise your design, logo or other motifs on the computer, which will then be embroidered and thus reproduced on the chosen material. Once the machine has integrated what it needs to do, the process continues.

Starting the process of embroidering the image on the fabric: here the machine does the work. Once it has registered the work to be done, it is ready to start. All that remains to be done is to program the number of passes to be made and the parameters, and it's done.

Computerized aided embroidery (CAE) has so many advantages:

- ✓ Computerized embroidery is very suitable for personalizing clothing, caps, fabrics. It allows the realization of numerous designs with a wide range of colours.
- ✓ It limits the cases of rework: with manual embroidery, there can be mistakes. With digital embroidery, the fact that a mock-up is produced beforehand means that the machine-designed image can be modified several times before the embroidery process is launched. The result is professional!
- ✓ Machine embroidery is faster: unlike handmade embroidery, machine embroidery is much faster. This means that more requests can be met in a short time.
- ✓ All types of designs can be produced easily and quickly. Once the design is transferred to the computer, it can be reproduced as many times as possible without errors.
- ✓ Digital embroidery promotes sales. As it has become more popular, customers have found that computer embroidery produces masterpieces. Items that are more beautiful and original than those made by hand. From that point on, the demand for machine-made products increased and they are in high demand. And high demand means high sales

Embroidery machine.

A machine is an essential piece that you’ll need for any project. You can’t create machine embroidery without an embroidery machine.

Embroidery thread

If you use an embroidery machine for sewing, the best embroidery thread to use is **polyester or cotton thread**. If you are looking for a different appearance or texture, try using wool or silk threads for embroidery

Your embroidery machine needs a thread to stitch out your designs. The color and distribution of the thread vary depending on the embroidery design.

Embroidery hoop

A hoop is a circular or rectangular item, usually made of plastic. In both hand and machine embroidery, hoops are used for holding the cloth while stitching. This way, the garment will remain tense until the end of the process.

You can find hoops in different sizes, shapes, materials, and prices. Make sure that you have an adequate hoop before starting any process. This piece is crucial for success.

Embroidery stabilizer

Also known as backing, the stabilizer is the base for your embroidery design. There are different types of stabilizers.

The most popular options are tear-away, cut-away, and wash-away stabilizers. If you need some guidance to choose the perfect stabilizer,

During embroidery, wrinkling and other related issues can be avoided by stabilizing the fabric before the embroidery process. The fabric stabilizing method depends on the fabric characteristics, type of embroidery machine and the complexity of the design. For better stabilization of fabric, generally additional fabric pieces known as ‘interfacing’ are placed on the bottom or top of the fabric or both sides.

Hardware peripherals such as scanners, ,

Scanning:Scanners convert designs into a computer format allowing the digitizer to use even the most primitive artwork without recreating the design. Many of digitizing systems allow the digitizer to transfer the design directly into the digitizing program without using any intermediary software.

Printers: Once you've chosen the design for your embroidery, it's time to print out your pattern.

If your fabric is fairly thin, you could print your embroidery pattern on ordinary paper, such as Matte Photo Paper, and trace the design straight onto the fabric. Simply tape the pattern to a window, cover with the fabric, and trace the lines with a marking pencil or pen.

A typical "workflow" for creating an embroidery includes the following steps.

- ✓ Create a drawing (by hand or with a drawing software) or download an image
- ✓ Import the drawing into an embroidery software
- ✓ Convert to editable vector drawing format if the drawing is in raster format
- ✓ Adapt the drawing to the constraints of the embroidery (eliminate the fine details, reduce the colors)
- ✓ Transform the drawing into "embroidery objects". An embroidery object defines an areas for which embroidery stitches generated according to various parameters specified by the designer and / or the default system
- ✓ Adjust / re-adjust these embroidery objects (embroidery types, stitch density, patterns, embroidery order, etc.)
- ✓ Convert to executable format for a machine brand (.pes, .art, .jef, .dst etc.)
- ✓ Stitch the design (load it into a machine)

2.3.Develope design specifications for guide production

There are times when your design may look spectacular on paper but may not meet your expectations on the fabric. Follow our guidelines below to help create your artwork for your embroidery product.

Keep your designs simple. Stitching for embroidery tends to create thicker lines than regular ink. Some designs that may look great on paper may come out convoluted or hard-to-read on the fabric it is printed on. "Less is more" is the go-to for embroidery designs as keeping it simple makes it easier to transition the design to fabric.

Keep your designs to a minimum. Embroidery designs are typically within a 5,000 to 6,000 stitch count range resulting in quicker production times. Our digitization process will reject any complex design that exceeds the maximum stitch count of 15,000.

Use bold lines, shapes, and sizes. The graphic needs to be enlarged enough to meet embroidery minimums; otherwise, it will not be embroidered. Keep the text or graphic size to a minimum.

Use only the colors that are available for embroidery. Since embroidery uses stitching and requires thread, we cannot blend colors or use unique colors. You can use only the colors that we have available thread colors for, and you can find the colors in the available thread colors section below. Using a different color that is not listed may result in an error when ordering your embroidery product.

Use a transparent background for your design with simple designs. Some embroidery graphics will include a transparent background to use the color of the product as the backdrop. Anything outside the main design with a transparent background may result in unwanted embroidery stitches on your product.

Avoid using photographs. The process of embroidering cannot stitch photographic images. If you want your photographic print to be embroidered, you have to create a new design that includes solid shapes and colors and most resembles your photo. Regardless, altogether avoid using photographic images for embroidery.

Avoid using thin lines, small text, and narrow spacing. Ensure that your text is legible with careful spacing between your text or shapes. Narrow spacing can cause issues where your letters or shapes muddle together. We recommend adding additional space between lettering for clear visibility and clarity.

Avoid using finer detailed logos or text. Since the process of stitching is required for embroidery, the thickness of the stitching doesn't always translate your detailed design into great embroidery.

2.4.Label,organise and store design for protect

Organizing your embroidery designs will give you the peace of mind of knowing that your files are in a safe and secure place and make finding your designs faster and easier than ever before.

Creating File Folders For Embroidery Designs

You want to get into the habit of adding any downloaded designs to a file folder as soon as we download it or adding any design we create to these folders. Just be sure you know where you're exporting the designs you create from your software to.

Now that we know where our designs are downloaded to on our computer or where we saved our own designs, we can organize them by creating file folders.

After you have created the folder you can then drag and drop the downloaded design into that folder. Keep in mind; you can organize these designs however you see fit! Here are a few of our suggestions:



Naming the folder by category: Naming your file folder by category is a great way to organize your files.

Folders within folders: Another great thing about using file folders is you can create other folders within a folder! Say you don't want to see all your design folders on your desktop, create an "Embroidery Design" folder and start adding your category folders for a nice organized feel.

USB Flash Drive/Hard Drive Disk For Storing Embroidery Designs

A USB flash drive is a data storage device (aka embroidery design storage device in our world) with a USB interface. It is typically removable, rewritable so you can add any files to it, and generally is a much smaller space than a hard drive. These are a great option as you can plug these directly into most embroidery machines, making finding your designs on your computer or machine walk in the park.

This is also a great option if you have limited space on your computer and need to save your designs elsewhere, as you can drag the designs off of your computer and onto a hard drive for later use.

Saving Designs

These files contain all the work that went into creating the embroidery design. They can include the following elements and information (as applicable for any particular design):

Embroidery objects: e.g. flower petals and center, lettering, lacework, monograms, outlines, etc.

Includes stitch types, densities, angles, etc.

Fabric Settings: woven, knit, etc.

Artwork used to create the design (when applicable).

NOTE: The current state of a design results in a stitch “snapshot”, listing all the colors used in the design in a sequence, as well as the stitch (X-Y) coordinates needed to stitch out each color.

Exporting A Machine File

The File Export Machine File command will extract the current stitching information only:

Sequence of colors

Color names (if supported by the machine format)

X-Y coordinates for stitches for each color in the sequence

Starting position of the design in the hoop (if supported by the machine type)

Manage Embroidery Collections

Categories

There are many ways to organize and manage embroidery collections. You could create folders for “categories” like Christmas, Halloween, Easter, food, sports, animals, children, etc. Then save the individual collections as appropriate to each folder. You could create folders by designer, like Anita Goodesign, OESD, Floriani, Embroidery Library, etc. Whatever method you use, after you create a category folder, be sure to also create folders for each design collection.

What is digitization?

Embroidery digitizing

Embroidery digitizing is the process of converting artwork into a stitch file that can be read by an embroidery machine and interpreted as different stitch types.

Digitization is a process that converts your design file to a format that supports embroidery. Each embroidery type requires a separate digitized file. You can re-use your digitized files for future orders of the same embroidery type.

When it comes to embroidery, all files need to be digitized to a format the embroidery machines support.

It's important to note that when you add new elements to an already digitized file, it's a new design that has to be digitized again.

Your embroidery machine needs digitized designs to stitch out your projects.

Types of digitized embroidery designs

Hand digitized embroidery designs

An embroidery expert has created these digitized designs using embroidery software. That procedure is time-consuming, but it results in high-quality embroidery designs. No matter how intricate they are, hand-digitized models are always the best option.

Auto-digitized embroidery files

These files are the result of processing digital graphics with automatic digitizing software. The process is straightforward, the digitizer's work is faster, and the prices of the files are usually lower.

The problem with these files is that their quality is usually lower. Some embroidery parameters could be missing or imprecise. This lack of information can affect the quality of your artwork.

Before the embroidery process can begin, we need to convert your file into a format that our embroidery machines can read. This process is called digitization.

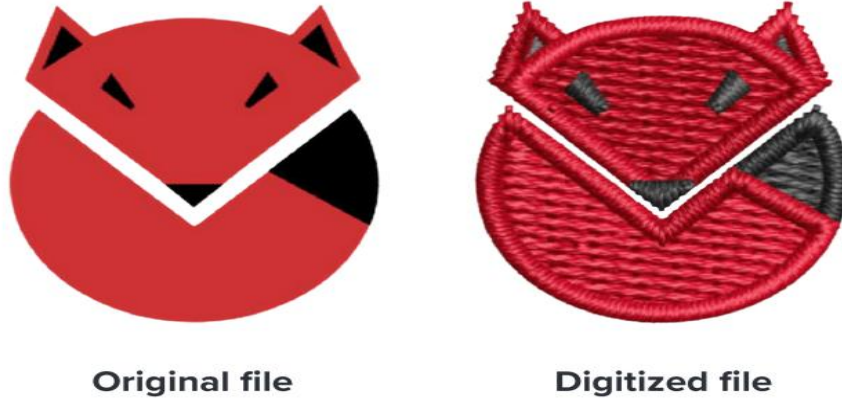


Fig:2.2.original and digitized image

Embroidery Digitizing - The Basic Steps:

- Understand required design size, fabric type, artwork and any special requirements
- Prepare artwork for digitizing
- Decide how the design will run on an embroidery machine from start to finish
- Assign embroidery stitch types to specific areas while considering factors such as the fabric type
- Test run the design to see if adjustments to the digitizing are needed

Understand the Digitizing Job

First the digitizer must understand the requirements of the specific digitizing job. This includes knowing the desired size of the digitized design and the type of fabric and garment it will be embroidered on. It also involves learning how the design should be interpreted. If there are white spaces in the design should those areas be in thread or should the background show through? The digitizer should also know if a particular style of digitizing is required or if specific stitch types should be used to match an existing design.

Preparing Artwork for Embroidery Digitizing

Next the digitizer must analyze the artwork to see if it should be edited for embroidery. The final size of the design must be considered. Not all logos that were designed for a print media such as a business card will work well for embroidery. Many designs need to

be modified or simplified. Sometimes only the design name and a small image are used. Some elements such as outlining may need to be eliminated and small text may be enlarged and rearranged.

Pathing in Digitizing

After the artwork has been modified in graphics program, the file is opened in an embroidery program where it is used as a template for creating a stitch file (computer file consisting of different stitch types). First, the digitizer must decide how the "pathing" in the logo will run. The pathing is the sequence of stitches in a design from start to finish. Pathing can affect how an embroidered design will "lie" when it is finished. If a design isn't embroidered in the correct sequence, you may have unwanted gaps of fabric or uneven text. The pathing will also affect how long the design will run on the machine during the embroidery process. Although you may not care what the running time is, a shorter, smoother design will cost you less.

Assigning Embroidery Stitch Types

Next, the digitizer assigns stitch types to each section of the design based on what stitches will best represent the artwork. The digitizer starts by adding the underlay stitches. Although you can't see underlay stitches in a finished logo, having the correct underlay stitches is essential to creating a great looking logo. Underlay helps stabilize the fabric to the backing (another essential element in embroidery), lay down the nap of the fabric so that the remaining stitches have a smooth surface to embroider on and add density to the design. Not using the correct underlay can cause the stitches to sink into the fabric or allow the shirt fabric to show through the design. the digitizer must decide what type of fill stitch to use, the direction of the fill and where the fill should start and stop in the design. When making these decisions the digitizer must consider what type of fabric the logo will be embroidered on and make appropriate adjustments. Stitches will sink into fabrics such as polar fleece and lay on the surface of denser fabrics such as nylon. A logo that was originally digitized for denim, a fabric that allows stitches to lay on the surface, won't look as good when embroidered on a pique knit where the stitches sink into the fabric.

How To Digitize A Logo for Embroidery-

Logo digitization is a process of converting the existing logo or brand icon into a stitch file that can be transferred to a fabric through means of embroidery.

Step 1: The first step is to upload the logo of your brand to the **embroidery digitizing** software. The uploaded file should be in machine-readable formats like JPG and PNG and then crop the irrelevant spaces to upload the exact requirements to the software.

Step 2: Once you have uploaded the logo, set the dimension of your logo design as you want it to be on your product. This dimension will be the final size of the logo placed on the garment.

Step 3: Now, choose the stitch type like a straight stitch, fill stitch, or satin stitch in response to the kind of stitching you looking to have for your logo. Each type of stitch has its own set of parameters, feel, and length that defines the final appearance of the design.

Step 4: After selecting the type of stitch, the next step is to set the direction of the chosen stitch. This defines in which direction the stitch should be falling on the garment.

Step 5: After all the major parameters are selected, it is time to select the color combination of the threads to be used for logo digitization. The thread colors should fall aligned with the colors on the logo.

Step 6: Now, the file is ready to get transferred to the embroidery machine using a flashcard, USB cable, or any other means of transferring to the computer running the embroidery digitization software.

Step 7: The next step is to prepare the machine for the process of **logo digitizing for embroidery**. This step includes deciding on the needles, threads, sequence, and orientation. After setting the guidelines for the machine it is important to position the fabric in the actual

Step 8: The last step is to test while embroidering a sample and see how it comes and how does it appear on the fabric. Check for all the pre-mentioned guidelines concerning colors, position, orientation, sequence, stitch, and other design elements.

Step 9: Now, take the final step of creating the logo on the desired piece of fabric while accomplishing the process in the most fruitful manner. Now, the digitized logo is all set

to be delivered with the most inspiring look and feel of promoting your brand in an innovative way.

Embroidery file types by machine

.dst: embroidery file format for Tajima commercial embroidery machines
 .exp: embroidery file format for Melco commercial embroidery machines
 .jef: embroidery file format for Janome commercial embroidery machines
 .kww: embroidery file format for Brother commercial embroidery machines
 .dsb: embroidery file format for Barudan commercial embroidery machines
 .tap: embroidery file format for Happy commercial embroidery machines

Self-Check -2.1	Written Test
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INSTRUCTION:I.Say true or false

1. digitizing is the process of converting artwork into a stitch file that can be read by an embroidery machine and interpreted as different stitch types.

A. true B. false

2. Before the embroidery process can begin, we need to convert file into a format that our embroidery machines can read.

A. true B. false

Instruction II :Matching

- | | |
|-------------------------------------|------------------------------------|
| 1. Scanning | A. Naming the folder by category |
| 2. sequence of stitches in a design | B. USB interface cables. |
| 3. organising | C. pathing |
| 4. For loading design | D. convert designs into a computer |

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

Operation Sheet-2.1	CONTENT-1
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The basic steps of creating design

Step 1:prepare tools and equipment

Step 2: create Design concept

Step3:identefy design specification

Step4:create design

LAP Test-2.1	Practical Demonstration
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The basic steps of creating design

Task 1:prepare tools and equipment

Task 2: create Design concept

Task3:identefy design specification

Task4:create design

Unit Three: Edit Design

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Select design for edit
- Import design
- Edit design to achieve objective
- Determine design specification
- save design

This unit will also assist you to attain the learning outcomes stated in the cover page.

Specifically, upon completion of this learning guide, you will be able to:

- select suitable designs for edit
- Import design for edit
- Edit design to achieve objectives according to embroidery machine
- Determine embroidery Production specifications and material
- Mark,save and record design

3.1.Select design for edit

Embroidery editing is the process of taking an existing embroidery design and changing some of the features of that design. Editing software will allow you to combine more than one design, change the size of a design, change the thread colour or the stitches of a design.

Editing: Changing aspects of a design device via a computerized editing program. Most programs allow the user to scale designs up or down, edit stitches block by block; merge lettering with the design; move aspects of the design around; and combine designs or edit machine commands. Move single or multiple stitches, Insert stitches, Replace stitches, Delete stitches.

3D preview of the embroidery design with twisted threads for visualizing the final result.

Preview the designs with different fabrics that are included in the software

Embroidery process simulation with extra ability to simulate the frame movement

Resize and rotate designs

Create beautiful designs with the Array tool

Apply special functions to objects(thread trim, stop, sequin, applique, needle up etc.)

Apply any special function you wish in any stitch of the design no matter if it is a stitch object (only stitch information) or outline object (the stitches are re-calculated in every operation). Also you can select multiple stitches and apply the special function you wish.

Merge open designs by using Copy and Paste functions

Customize the color and the thickness of all inserted outlines.

Editing tools like Group, Ungroup, Cut, Copy and Paste.

Change the design's Start and End point.

Ability to remove stitches from the design by specifying length range. (remove zero length stitches automatically), Move a single or several stitch points, Add a new stitch point, Change the stitch type, Split the design on chosen stitch point.

Stitch Density: Refers to the number of stitches used to give proper coverage of the pattern without creating a thick, hard area in the embroidery that may be uncomfortable to the consumer.

Stitch Editing: Digitizing feature that allows one or more stitches in a pattern to be deleted or altered.

Scale: Program parameter used to expand or condense the size of the design without changing the number of stitches. A separate scale parameter is used for each direction.

Original Design

- ✓ Too complicated for embroidery– needs to be modified.
- ✓ This design has a lot of details in the background that need to be taken out.
- ✓ This design has too many lines of text.
- ✓ The colors need to be changed to match our embroidery thread colors.
- ✓ Background image & extra text were removed.
- ✓ All colors were modified to match our embroidery colors.

In addition to making global changes to a design, such as changing the thread palette and design colors, some product levels allow you to edit design objects and even individual stitches. When available, the Edit Objects toolbox provides many tools for reshaping, resizing, rotating objects, as well as add or remove stitch angles. Other editing functions

are available via the Context toolbar, popup menu, and Edit menu. Explore the topics on the right to find out what else you can do with the software's editing features.

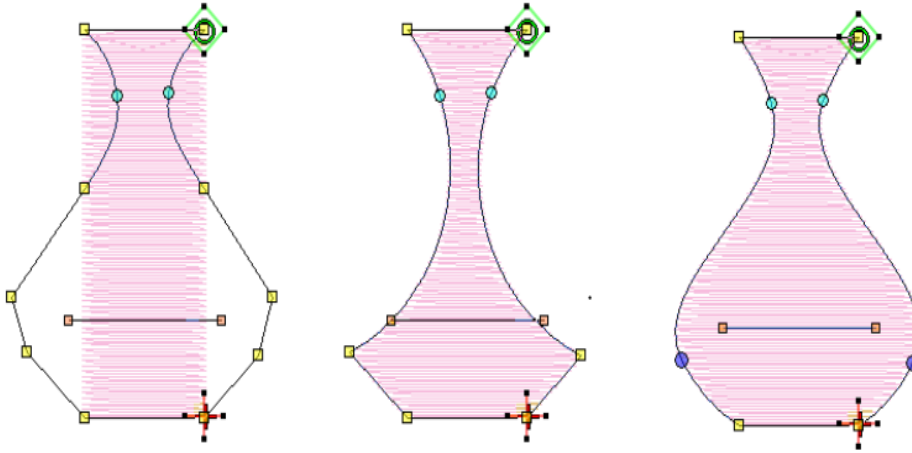


Fig:3.1.reshaping design

Rotate objects

Select an object or entire design and click to activate rotation handles. Use these or the controls on the Context toolbar to rotate objects into position. See also Transform objects.



3.2.Edit design to achieve objective

Embroidery Density, Stitch Count and Size

Density

The density of an embroidery design is the relationship of its stitch count relative to its size. There is no set number or measurement for the density of a whole design, because each area of the design may have a different stitch type and therefore a different density. Some designs may be fairly stitch intensive in some areas while much lighter in others.

The denser the design, the sturdier the fabric will need to be to support the stitches, and the more stabilizer you will need to prevent puckering during embroidery. Lighter designs need less support from the fabric and stabilizer.

Embroidery digitizers set the density of each stitch type to create different decorative effects. An experienced digitizer will be careful to make sure a design does not become too dense by layering too many stitches in an area. Overly-dense designs can create problems during embroidery and can add too much stiffness to the finished project.

Stitch Count

This is the total number of stitches in the design. Knowing the size of the design will help you know how long it will take to stitch. The more stitches, the longer the stitching time. If your machine stitches per minute, you can estimate the time needed to sew the design, keeping in mind that stitches per minute (SPM) is an average, and that you will also need time to change threads. The stitch count also gives you a clue as to the density of the design.

3.3.Determine design specification

How To Make Your Own Embroidery Designs

Embroidery designs are a type of colorwork, which is the process of stitching two or more colors to create an overall picture. This can be done on natural fabrics like wool and cotton with thread, but also on plain fabric like linen that has been dyed.

All of the embroidery designs are precisely based on many different designs which have been used for centuries. It is a style that has been widely utilized because it is not only elegant but is also very versatile and can be found in multiple media.

To create the design, you will usually use canvas or embroidery hoops or frames to stitch your fabric together and support it in place. Embroidery designs are usually worked in a “ground fabric”, or in a piece of fabric, that contrasts with the area of the design.

When it comes to making embroidery designs, there are many different ways for the embroiderer to make them. This article explores some of the different ways that the embroiderer can do this.

How to make your own embroidery design?

There are many different ways to make embroidery designs, embroidery designs can be made through many different mediums. The first option is to create your design by hand. As well as these there is also machine work that is performed by an embroiderer. Machine work can include: stitching, balancing tension and assembling components with thread.

There are many different ways to create your own embroidery designs. Here are some methods through which embroidery designs can be made.

Using Commercial Designs

The most popular as well as the easier way is to use any of the commercially available embroidery designs. There are many reasons why they are more popular than other methods of creating their own embroidery designs. They are very simple and easy to use, so anyone can do them. These commercial embroidery designs usually have a wide variety of different designs for all seasons and occasions in women’s clothing, for example, roses and leaves, butterflies, birds, hearts, etc. It also creates more opportunities for embroiderers who want to work with other people in their group projects.

There are many advantages of using commercial (pre-made) designs, such as the designs are available on the web for free for all occasions and seasons, resulting in decreased time and cost for research. The designs are easy to use. They can be easily modified according to an embroiderer’s needs or something that is not exactly in the original design. It could also be used as a reference while they create their own designs.

Draw Your Own Design

This may be a time-consuming process because it requires a lot of effort and time but this is the best way when you have an idea in your mind to decorate your stuff. The following steps are involved in this process:

Finding a design

When an embroiderer creates their own embroidery designs, they usually have to search for appropriate pictures on the web or any other libraries. They construct their own designs by copying bits and pieces of these pictures and then combining them together to form one design. This method requires a lot of time and effort to do each step. It is easier for them to work with commercial designs as it saves a lot of time. there are different steps involved in this process

Sketching

After the embroiderer has chosen a suitable picture, they should start sketching the design on paper.

They first have to decide on an appropriate size of the area on which they are going to work on. Then they have to put their pattern paper or a plain piece of paper on top of it and draw their own design with a pencil. But after drawing their sketch, they should always erase all of the pencil marks because otherwise, it may affect the material during stitching.

Transferring your design onto fabric

Now comes the main part, transferring your design onto fabric. This part of the process is also very important for the outcome. It should start with cutting out the shape of your embroidery designs and then cutting them into smaller pieces. The embroidery design should be done on a size of fabric that is big enough to cover it when sewn together.

Now you just have to pin all the pieces of your design onto your fabric and cut out all the extra pieces that are left, you can use scissors so that it is easier for you to handle fabric.

Stitching

Now comes another part, stitching these pieces onto your fabric. First, you should start from the middle of your embroidery pattern and begin from the center. Then stitch it onto the fabric by using a thread that is as close to the fabric as possible. After sewing it, catch both pieces in one needle and sew them together.

Finishing touches

This is another important part that is not so easy to do but very important for your embroidery designs to look perfectly beautiful and attractive. It is necessary to do

finishing touches like putting on thread or beads at certain parts of your design before you stitch it onto your fabric.

There are many other ways through which embroiderers make their own designs to use on different types of fabrics and colors.

Using Embroidery Software | Editing & Digitizing

Another way to create and make embroidery designs is by using computer software.

There are several types of commercial and free embroidery digitizing software available today. they could be divided into two categories: Vectors Editing and Digitizing.

Vector Editing software are type of software that helps create patterns on clothes from the images or letters on a computer, like the letters on a keyboard or any other symbol that is typed in. You can also create your own design in vector form or import an already created design and then edit that design. While Embroidery Digitizing software help you to convert your favorite image to an embroidery file format.

How to make embroidery designs on the computer?

Different kinds of embroidery software are available which gives a very good experience to the users to create designs on the computer. These embroidery software help the users to create and design their own stitching designs with the help of features like image editing and creating photo stitching. With these software, you can create custom designs as per your requirements easily without any trouble.

If you want to learn how to make embroidery designs on the computer, then follow the steps below.

- ✓ You must have embroiderer software (no need to use photoshop, images can be made directly from the computer)
- ✓ Choose a picture from your own or other sources and open it in the software
- ✓ Change the size and color as you wish or use factory settings for your stitching design
- ✓ Save it with a name that is shown on the screen in the software (you could also add words and graphics) if you wish so that it can be used again in future projects
- ✓ Print and cut out the pattern of your design
- ✓ Use it on your projects.

3.4. importe design and Save

How to import and modify an embroidery design

downloaded an embroidery design for free online and added words and a frame around it, so first need to select Embroidery Edit on the home screen

After downloaded the design onto computer, saved it on a USB stick. In order to access it, first to press the USB key on the memory screen.

Here's the list of embroidery files stored on the USB stick attached to the machine. Only .pes, .phc and .dst embroidery data files can be used with the Dreamweaver XE. As you can see the .pes files show up with an actual image of the design while the .dst files show up with just the name of the file. When you click on the file name or thumbnail, a larger image of the design will show on the screen.

Save the embroidery design

- Once the embroidery design is complete the design is saved in the internal file format of the specialist embroidery software.
- This is important if the design needs to be changed or edited
- Later as working with a native file makes this easier.
- **Underlay Stitches:** Stitches in a design that are put down before the design stitches; used to stabilize the fabric or raise the design so that the fine detailing is not lost.

Variable Sizing: Ability to scale a design to different sizes.

Self check-3.1	CONTENT-1
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Instruction I: explain the following questions

1. Define what are these words

A. Density,

B. Stitch Count

2. what is the purpose of Underlay Stitches

3. _____ is the process of taking an existing embroidery design and changing some of the features of that design.

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

Operation Sheet-3.1	CONTENT-1
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Operation sheet-1

The basic steps of digitizing

- Step 1: Upload Your Logo to the Digitizing Software.
- Step 2: Set Embroidery Design Size.
- Step 3: Choose Your Stitch Type.
- Step 4: Set Stitch Direction.
- Step 5: Set Your Embroidery Thread Colors.
- Step 6: Transfer the File to Your Embroidery Machine.

LAP Test-3.1	Practical Demonstration
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The basic steps of digitizing

- Task1: Upload Your Logo to the Digitizing Software.
- Task2: Set Embroidery Design Size.
- Task 3: Choose Your Stitch Type.
- Task 4: Set Stitch Direction.
- Task 5: Set Your Embroidery Thread Colors.
- Task6: Transfer the File to Your Embroidery Machine.

Unit four: Present Design for Feedback

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

Present Design concept

Feedback

Modify design concept

Material and quantities

This unit will also assist you to attain the learning outcomes stated in the cover page.

Specifically, upon completion of this learning guide, you will be able to

Present design concept for feedback

Receive Feedback and consider with design objective

Improve and modify design concept if necessary

Identify material with quantity

4.1.Present Design concept

How to provide effective design feedback

Design feedback is an integral part of any successful design project; it gives clients an opportunity to review and critique a design solution that has been presented. It is the role of the design contact (the representative that liaises with the design team) to collate and manage internal communications at their end and provide the agency with a concise list of feedback.

Below is a step-by-step guide to help you provide any designer with detailed design feedback that will result in the best outcome for any design project.

6 steps to provide effective design feedback

Step 1 - Start by clarifying the objective

Whether viewing a new design for the first time via email or in person these three questions will set you in good stead for providing effective feedback.

Does the design meet my brief? Any design agency worth its salt will produce designs

that visually represent the client's objectives and requirements provided in a well-documented brief. To assist, consider your organization's key objectives and discern whether the design team has addressed them.

- ✓ Is the design aligned with our organization's brand? In most cases, designers work with brand guidelines to ensure the correct imagery, graphics and fonts are used, and that the design adheres to the general rules outlined in the guidelines. However, designers rely on your experience and knowledge of your brand to tell them if they have hit the mark, or if there is room for improvement.
- ✓ If your organization doesn't have brand guidelines, the process involves looking at existing branded materials and asking specific questions to help ascertain a look and feel that accurately translates the personality of your organization.
- ✓ Does the design contain all relevant content? Having a firm understanding of your content prior to beginning any design process is essential, providing this to your designer prior to the design phase will save valuable time and ensures the designer accommodates all content accordingly.

Step 2 - Be clear

keep it simple! Providing simple and clear feedback will ensure that the designer will implement feedback accurately, and that means a faster start to your website/print project!

Step 3 - Be specific

It's not a secret that designers over get frustrated with ambiguous feedback that doesn't really tell us much at all.

The more specific the feedback, the better. Try to avoid generic comments like "change the font" or "I don't like the image" that leave designers asking why or to what? Instead provide specific, actionable suggestions. Offer alternatives, sketches and details, and if you're unhappy with something, give your reasoning; it will take far less time if the designer knows exactly what the issue is.

Step 4 - Be descriptive

The more context and reasoning, the better! In general, comments like, "I just don't like it," or, "This sentence isn't true," aren't constructive; they simply don't provide the detail and necessary guidance to make changes from a design perspective.

My advice:

Attempt to understand why you don't like it. Does the page look too busy? Are you finding areas of copy hard to read? Are the colours around the wrong way?

Step 5 – Be disciplined

Most agencies follow a clear process when working on design projects. Usually there are several 'rounds' of 'design' with 'design feedback'. Agencies present designs to clients and give them several days (depending on their individual project timeline) to review and consolidate their feedback. The agency then undertakes the first, second and third rounds of revision.

3 Round revision model

First round: Identify major issues and provide feedback to address them. If you're presenting a design to stakeholders, use the first round to get the design to a stage where you think you have nailed the brief. This should give it the best chance of success.

Second round: Confirm that the changes made have resolved the issues identified in the first round; tweak and respond if they don't. Ensure the design composition is balanced after addressing latest changes. Get any stakeholder feedback required and consolidate into one final group of changes. Let them know there is only one chance to give feedback. If your project is time sensitive, provide all stakeholders with a feedback deadline.

Final round: Approve the design tweaks and move forward.

Ideally, major issues should be discussed immediately, minor tweaks can be provided at both the first and second round. Round three should be near perfect if you have thoroughly reviewed in previous rounds.

Step 6 – Listen

You've no doubt realised by now that designers are a finicky bunch, we like things 'just so'. The design team at Butterfly prides themselves on upholding an exceptionally high-standard of design, and we genuinely want the best outcome possible for our clients. That being said, we will always give our professional advice regarding a piece of design feedback that we don't agree with.

4.2.Feedback

How to Give Professional Design Feedback

When delivered well, constructive design feedback improves the design process and boosts team culture.

4.3.Modify design concept

Receiving design feedback

How do you receive feedback from design?

- ✓ Set a process and clear expectations.
- ✓ Start early and ask often.
- ✓ Stay open-minded and don't take it personally.
- ✓ Clarify and find the root of the cause.
- ✓ Present better solutions, and know how to justify them.
- ✓ Take praise with grain of salt too!

Self check-4.1	CONTENT-1
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1. _____ is an integral part of any successful design project; it gives clients an opportunity to review and critique a design solution that has been presented.

2. List down the steps to provide effective design feedback

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

Unit five: Set Embroidery Machine

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- production specification Interpretation
- Manual and reference observation
- Tools and equipment arrangement
- Machine set up
- Threading and check tension
- Check fabric
- OHS practices

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Intreprete work orders and embroidery specification
- Refere documentation relating to machine setting
- Prepare tools for set up machine
- Arrange materials per embriodery requirement
- Set up machine according specifications for operation
- Threading machine,wind bobbin and check tension
- Check fabric before feed to operation
- Follow OHS practices

5.1.production specification Interpretation

- ✓ What thread type to choose
- ✓ What backing (solid or solvable fabric on the back side) to use
- ✓ How different fabric types behave
- ✓ What underlay stitching to use in different situations
- ✓ Basic stitch types
- ✓ Choosing filling patterns and strategies

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		Design and Machine operation	December,2020

- ✓ Stitching order (and how to change it)

5.2. Machine Embroidery Tools and equipment

Needles

You can't sew without needles, and having the right needle for the right job is very important. There are three basic needles used for embroidery tools and they come in different sizes. The three main needles are crewel, tapestry and milliner needle

Hoops

Next on the list of essential tools are hoops and frames. Made of wood, bamboo or plastic they hold the fabric taught while the embroidery is being stitched. They help keep the tension of the fabric and the stitches taut. Hand embroidery hoops are round or oval while machine embroidery hoops can be square.

MATERIALS- Plastic and wood are perfect for beginners while brass versions of hoops are available for the more experienced seamstress.

SIZES- Buy a few sizes for different projects keeping in mind that you can always move smaller hoops around for larger items.



Fig:5.1.different types of hoops (circular,border and cap hoop)

Scissors:Another essential basic tool is a small sharp pair of scissors. Embroidery scissors differ from normal scissors because they are smaller and more pointed. They have smaller sharper blades that enable them to cut close to the threads.

Lighting :The fine work involved in embroidery requires good lighting. This can be in the form of a really good spot by the window or a proper lamp. Magnifying lamps are a great asset for really fine work.

Thread:There is a wide variety of choices to make when it comes to embroidery thread. Select the type most suited to your project and your fabric. There is floss, cotton, wool and metallics there's to choose from. Make sure the thread is durable and washable.

Fabric: Once you have all the tools in place there needs to be a suitable fabric to place your design on and get to work. There is a wide range of fabrics available and it is important to choose the correct fabric to suit the type of stitches you plan to use.

Most embroidery fabrics tend to be white or cream but there is nothing stopping you from using hot pink linen if that takes your fancy. Embroidery doesn't need to look old-fashioned or boring.

Measuring: You don't need as many measuring tools for embroidery as for other forms of sewing. A simple clear plastic ruler can be useful as well as a tape measure and measuring instruments like a set square and a compass. If you need to draw grids, smaller quilting rulers can be used.

Needle Threader: A needle threader is a very useful gadget for threading difficult threads through the eye of a needle. These often come free in packs of assorted sharps needles so check your sewing supplies before you go out and purchase one.

Thimble: It is good to get used to wearing a thimble to keep fingertips safe and prevent blood spots on the fabric. Plastic and rubber thimbles are more comfortable for longer periods of sewing. I always find it hard to keep the metal ones on. Although not as common, leather thimbles will also protect your fingers and mold to shape with repeated use.

Tracing: There are many options to trace or transfer the embroidery pattern onto your fabric. Tracing paper, tracing wheels, transfers, lightboxes, water-soluble pens, and iron-on transfers are different options to try out and find the one best suited to you.

Pens: Water-soluble pencils, tailor's chalk, pens, and fabric drawing inks are different options for the drawing of the pattern. Where the outlines of the pattern will be hidden by the stitching.

Pins: Top-quality stainless steel pins with no rust are important and of course a pin cushion to store them.

Seam Ripper: It is a good idea to have a seam ripper. They make unpicking so much easier in the event of making a mistake. Removing hand stitches and embroidery is much easier than machine stitching. Many times you can just gently pull the thread back through the fabric.

Tweezers: Tweezers with slanted edges are a very useful tool for removing thread remains after unpicking.

Pinking shears: Pinking shears are a useful but not essential tool to keep the edges of your work from fraying while you are creating the design. Keeping the edges of the fabric neat and trim helps with the finishing off at the end of the project.

Beeswax: Some beeswax to coat your thread prevents tangling. This is not an essential item, but if you are working on a lengthy project, beeswax to coat your threads would make tangled threads less of a problem. Make sure the residue left by the beeswax will not affect your design.

Iron: Pressing your work regularly is an important part of keeping the stitching flat and not puckering. Many fabrics become wrinkled from the overhandling during embroidery or from the edges of the embroidery hoop.

Be careful with using steam in case any of the colors of the threads run on the fabric. Red always seems to be the one color most likely to run.

Interfacing: Softer delicate fabrics are easier to work with if they have a backing. Thin interfacing or special soluble interfacing is often used with embroidery.

5.3. Machine set up

Embroidery machine operators work with industrial machines to complete embroidery projects. They sew logos, initials, and other designs onto a range of fabrics and may also perform maintenance duties and provide creative input.

The embroidery machine operator's responsibilities include setting up embroidery machines, selecting pertinent tools and materials, troubleshooting equipment, and ensuring that all projects are completed to clients' specifications. You will also be expected to carry out regular maintenance duties and provide creative advice.

To be successful as an embroidery machine operator, you should have a good eye for detail and the ability to keep track of multiple work orders. Outstanding candidates will possess both analytical and artistic skills.



Fig:5.2.embroidery machine operation

Embroidery Machine Operator Responsibilities

Analyzing and understanding project specifications and clients' needs before starting each embroidery project.

Selecting the thread, fabric, hoops, and designs appropriate to each project.

Setting up machines and supervising the embroidery process.

Carefully reading instructional manuals to ensure smooth troubleshooting and repair processes.

Performing regular machine and inventory inspections and reporting any issues or reordering stock as required.

Providing suggestions regarding the design, placement, and fabric and thread selection.

Drawing guides or pinning tissue paper patterns onto fabric.

Providing training and guidance to new staff.

Keeping track of work orders and updating records.

Communicating with clients and ensuring that all orders are sent out in a timely manner.

5.4. Threading and check tension

Proper Thread Routing: All threads must be routed correctly at all points along the path through the sewing head.

General Thread Route

Thread must pass up from cones through guide holes in thread tree and through every specific point along the face of the sewing head. Thread must be “docked” at the thread holder spring

Proper Machine Setup: Upper Thread

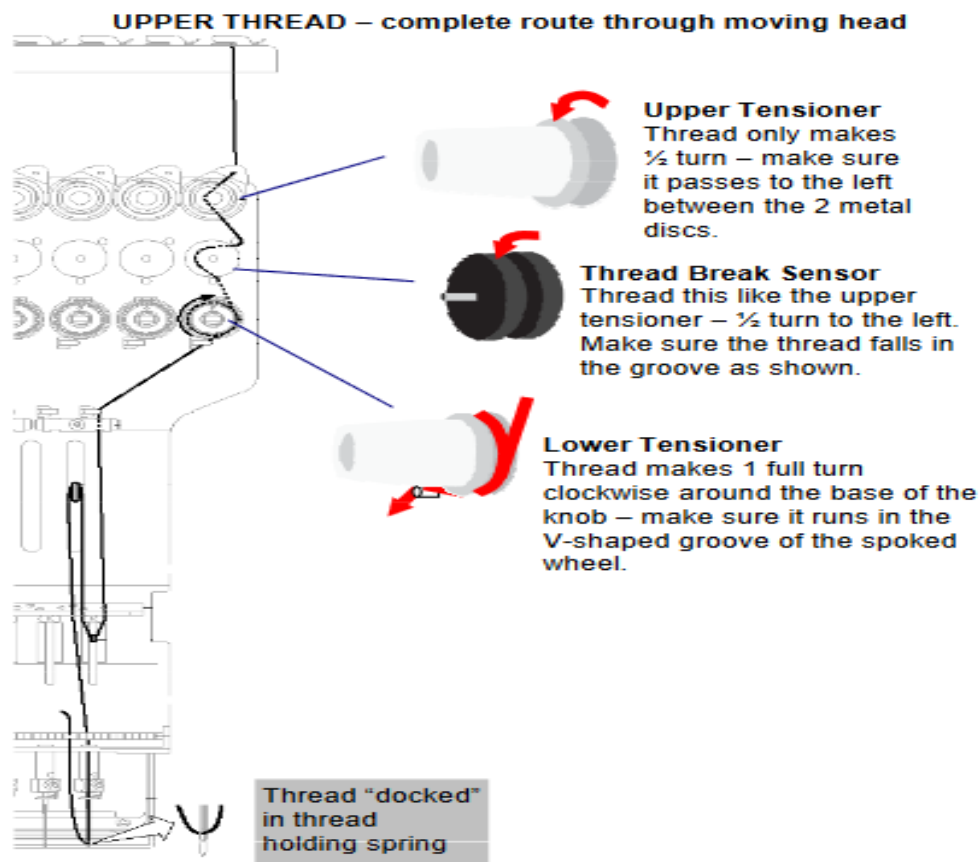


Fig:5.3.upper threading

Proper Machine Setup: Bobbin loading and Tension check/ adjustment

Machine Setup

Design Transfer and Tension check/ adjustment

RE-LOADING THE BOBBIN CORRECTLY

The bobbin will need to be replaced frequently, allowing only 30,000 to 60,000 stitches per spool. This has to be done correctly every time.

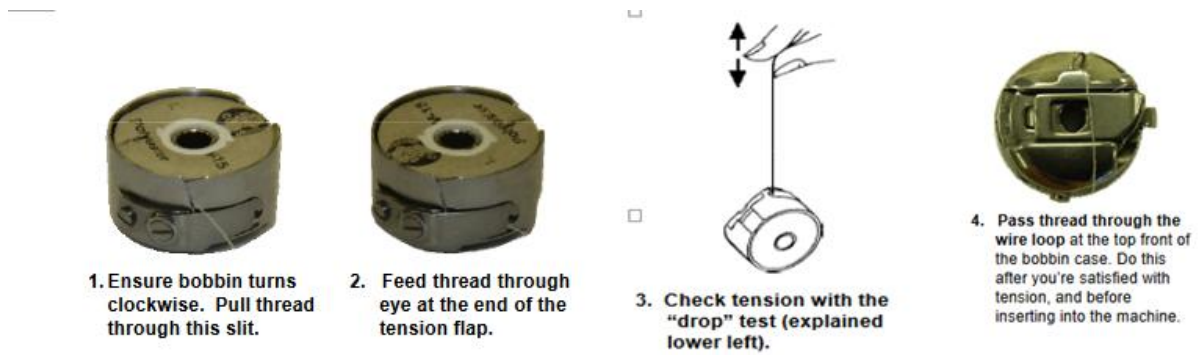


Fig:5.4.bobbin threads

5.5.OHS practices

Safe work procedures and written instructions

Safe work procedures and practices ensure that everyone in the organization knows their responsibilities and can perform their duties effectively. There should be safe work procedures on an organizational level, such as how to conduct a risk assessment, as well as on a worker level, such as how to lock out properly.

Health and safety training and instruction

Everyone in the workplace — from senior management to frontline workers — needs to understand their responsibilities when it comes to implementing and maintaining a healthy and safe workplace. Senior management should understand their role in establishing policies and continually driving the OHS management system and programs. Employers must ensure that workers are trained, qualified, and competent to perform their tasks. Supervisors must provide adequate instruction and oversight to workers so they can safely perform their work. And workers need to work safely, according to how they were trained.

Identifying hazards and managing risk

Managing the risk in your workplace includes identifying hazards, assessing the risks those hazards present, and controlling the risks to prevent your workers from getting injured.

Inspection of premises, equipment, workplaces & work practices

Workplace inspections can help you to continually identify hazards and prevent unsafe working conditions from developing.

Self-Check -5.1	Written Test
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1.List down different Tools and equipment required for Machine Embroidery

2.explain what is upper and lower threads

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

Operation Sheet-5.1	CONTENT-1
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Operation sheet-1

The basic steps of Set up embroidery machine for production operation

Step 1: clean machine

Step 2.Select tools and arrange

Step 3: setting machine according to specification.

Step 4: threading needle and prepare bobbin.

Step 5. feed Fabric to check

LAP Test-5.1	Practical Demonstration
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The basic steps of Set up embroidery machine for production operation

Task1: clean machine

Task 2.Select tools and arrange

Task 3: setting machine according to specification.

Task 4: threading needle and prepare bobbin.

Task 5. feed Fabric to check

Unit six: Test Embroidery Machine Setting

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Select frame and preparation
- check machine functionality and operate
- Product embroidery/sample examination and confirm
- Test quality

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to

- Select and Prepare frame accordance with manufacturer's and workplace instructions.
- Check up machine functionality and manage as per specifications.
- Operate embroidery machine operated in according to manufacturer's and workplace instructions
- Examine embroidery products or sample to confirm stitch is achieved and to identify adjustments
- Conduct quality test to ensure optimal production outcomes

6.1.Select frame and preparation

How to Machine Embroider

Preparing the Fabric

Machine embroidery may seem intimidating at first, but the process is fairly straightforward. If you use a special embroidery machine, you can set and create the design with the push of a few buttons. Using a standard sewing machine requires more skill, time, and precision, but the steps are still simple

Part One: Preparing the Fabric

Iron the fabric, if necessary. To create an even, tight design, you'll need to start with fabric that has no wrinkles or creases in it. Use an iron to rid the material of any wrinkles before you begin.



Fig:6.1.Iron the fabric

Use a paper template to determine placement.

Draw or print a paper version of your desired embroidery design. Cut it out and move it around your material to visualize the best possible placement for your design.

Once you've found that placement, temporarily pin the paper template in place.



Fig:6.2.design template

Mark your desired placement. Use a washable fabric pencil to mark the top, bottom, right, and left sides of the design on your fabric. Mark the center of the design, as well.

- ✓ The center you mark should be centered in your embroidery hoop after you place it on.

- ✓ To find the center of your design, fold it in half crosswise and lengthwise. The point of intersection should be your center point. Poke through it and mark the point on your fabric.
- ✓ Remove the paper template after marking out its placement.

Choose a stabilizer. Unless you're using a very heavy material, you'll need to apply a stabilizer to the back of the fabric before you embroider it. Choose a stabilizer based on the weight of the fabric and the design of your intended embroidery.

- ✓ For most fabrics, a cut-away stabilizer is best when you want to create a solid embroidery design only viewable from the front of the material. This type of stabilizer is permanent.
- ✓ When you want to create embroidery that can be viewed from the front and the back, use tear-away, wash-away, or heat sensitive stabilizer. All of these options can be removed at the end of the project.
- ✓ Most stabilizer choices are suitable for linen and cotton, but for knit and interlock fabrics, cut-away stabilizers should almost always be used.
- ✓ Mid-weight stabilizers work well enough for most fabrics. Delicate and stretchy fabrics might need heavy-weight removable stabilizers, while stiff materials might only need light-weight stabilizers.



Fig:6.3.stabilizer

Adhere the stabilizer to the fabric.

If you use cut-away stabilizer, apply a thin, even coat of temporary spray adhesive to one side of it. Stick the stabilizer onto the wrong side of your fabric.

- ✓ Some stabilizers are self-adhesive. These do not need to be sprayed with a separate adhesive; simply stick the adhesive side of the stabilizer to the wrong side of the material.
- ✓ Note that the piece of stabilizer you use should be slightly larger than the embroidery hoop you plan to use



Fig:6.4.Adhere

Determine whether or not a topping is necessary. Most fabrics don't need a topping layer, but you should use one when you select a fluffy, loose pile fabric.

- ✓ Embroidery can sink into the fibers of the fabric when that fabric is fluffy. A topping helps to prevent that from happening.
- ✓ Toppings are actually just wash-away stabilizers. Instead of placing it on the wrong side of the fabric, though, you should set it on top of the right side.



Hoop the fabric and stabilizer together.

Close the pieces together in between the two halves of an embroidery hoop. The stabilizer should be on the bottom, followed by the fabric, followed by the topping (when applicable).

- ✓ Embroidery machines usually come with hoops designed for use with that machine.
- ✓ If you are using a sewing machine instead of an embroidery machine, use a standard 4-inch by 4-inch (10-cm by 10-cm) circular or rectangular hoop.
- ✓ Center all two or three layers over the outer hoop. Lay the inner loop on top and tighten it in place. If done properly, the design area should be centered in the hoop, taut, and smooth.



Fig:6.5.hooping

what is machine embroidery?

Machine embroidery allows you to add long-lasting logos, crests, and bespoke designs to your clothing or accessories. This is ideal if you want to create professional work uniforms for your staff or high-quality kits for your sports team.

The term “machine embroidery” refers to the process of using a sewing machine or specialist embroidery machine to create a pattern on a textile of your choice. It is most commonly used commercially, as it’s a great tool for branding products or uniforms, but it can also be used to create patterns for purely decorative purposes.

Different Types of Embroidery Machines:

- Free-motion machine embroidery
- Computerized machine embroidery

A. Free-motion Machine Embroidery:

A basic type of zigzag sewing machine can be utilized to produce embroidery designs in the case of free-motion machine embroidery. Tightly banded fabric has to be moved beneath a needle to create a design in this kind of machine embroidery. In this case, the embroidery has to be developed manually by the operator using the machine’s settings so that the tight stitches form a design or an image on a fabric.

With free-motion machine embroidery, designs are created using a basic zigzag sewing machine, but this can be quite limiting. It’s also labour-intensive and very time-consuming, because the embroiderer is required to develop the design manually using the sewing machine’s different settings.



Fig:6.6.Free-motion machine embroidery

These types of machines have only one needle, hence the operators have to stop and manually rethread for every color in a multicolour design, which consumes lot of time. Any design created by this machine is very unique and cannot be accurately reproduced, unlike with computerized embroidery as this is a manual process rather than a digital production system.

Computerized machine embroidery

- ✓ Single head embroidery machine
- ✓ Multi head embroidery machine

On the other hand, as the name suggests, computerised machine embroidery is controlled by a computer. These industrial and commercial embroidery machines, like the ones we use here at Custom Planet, have a hooping or framing system that holds a fabric's embroidery area taut under the sewing needles. The area is then moved automatically by the machine to create the design from a pre-programmed digital embroidery pattern.

Embroidery machines will vary in their capabilities, and they all require different degrees of user input. Some will require you to change the thread colour during the process, while others will be able to trim and change colours automatically. Also, multi-needle machines can consist of numerous sewing heads, which means they can embroider multiple garments at once.



Fig:6.7.Single head multi needle embroidery m/c fig.multi head multi needle embroidery m/c

What does embroidered mean?

If an accessory or piece of clothing is embroidered, this means patterns have been sewn onto it with thread. This can be for practical or decorative purposes: for example, a business owner might want to have their company's logo embroidered on their staff's polo shirts, while a bride-to-be might want some fun T-shirts embroidered for her hen do.

There are a number of different types of embroidery, but we specialise in machine embroidery here at Custom Planet.

Digitising artwork for embroidery

Embroidery digitisation is the process of converting an existing piece of artwork, such as a company logo, into a stitch file that an embroidery machine can then read and use to replicate the design on a garment. We're experts in digitising artwork for embroidery, and we offer this service to anyone looking to have their clothing or accessories embroidered.

Benefits of machine embroidery

When you're looking to have clothing and accessories branded or decorated with a design of your choice, there will be other techniques, such as printing and hand embroidery, that you can consider. But, there are a range of advantages to machine embroidery that will make it the most suitable choice for certain projects, and we're going to outline those here.

It's reliable

When branding or decorating a garment using machine embroidery, the equipment is provided with a design file. The design will then be copied onto your fabric, achieving an identical image each and every time. This means, if you're embroidering several pieces of clothing or accessories, they'll all be branded or decorated in the exact same way, which is ideal if you're mass-producing school uniforms or need to jazz up several hen do T-shirts to look the same. As long as the embroidery machine is set up correctly and in good shape, all of the work will also be completed to a high standard, so you can be sure you'll get fantastic results every time.

For this reason, machine embroidery is favoured for a lot of commercial jobs, but it can be used for a variety of different applications.

It's fast and efficient

As well as being very reliable, machine embroidery is quick, which means big jobs can be completed in a short space of time. While the designing of a logo might take a long time, once the design file is created, it simply needs to be fed into the embroidery machine, which will get to work. And, a lot of this process is automated, which means everything can be done with minimal interruptions.

Requires very little manual labour

Compared to some of the alternatives, machine embroidery requires very little manual labour, and this will often mean that it's a relatively affordable option. Other methods, such as hand-stitching, require a great deal of time and manpower, which you will have to pay a premium for. As a result, while it is still an investment, having your garments or accessories machine embroidered will typically be cheaper.

How to use the memory function to save embroidery patterns

You can save embroidery patterns that you have customized in the machine's memory or USB flash drive. Since the saved patterns are not lost after the machine is turned off, they can be retrieved at any time. It would be convenient to store embroidery patterns that you have customized and will use often; for example, your name, patterns that have been rotated or had the size changed, patterns that have had the sewing position changed, etc.

6.2.Embroidery quality control Check

After adjusting the machine in the embroidery section, the supervisor will check some samples to ensure that the machine is set up correctly. The embroidery operator will get the Q.C's approval before the bulk production. The Q.C inspector will inspect the pieces in a bundle randomly. If they find one or more defects out of the pieces they inspect then the entire bundle will be rejected. If they find no defects in the bundle then the bundle will be released for the next process. Then inspection procedure is the same as the in-line Q.C system.

Responsible for QC Check:

Embroidery In-charge/Supervisor/Cutting Q.C.

Purpose of Embroidery QC Check:

- ✓ To ensure that the embroidery production is going to be acceptable to proceed with metal-free cut parts to the sewing line to minimize and control garment quantity and minimize garment rejection due to embroidery mistakes.

Outcome:

- ✓ The entire cut which is going to be produced will be without embroidery mistakes.
- ✓ Minimize garments rejection due to embroidery defects.
- ✓ This metal detection procedure will ensure product safety, legality, and quality.

Self-Check -6.1	Written Test
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1.List Different Types of Embroidery Machines

2.explain Benefits of machine embroidery

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

Operation Sheet-6.1	CONTENT-1
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Operation sheet-1

The basic steps of Test embroidery machine setting

Step 1: select frame and preparation

Step 2: check machine functionality

Step 3: operate embroidery machine

Step 4: test quality of desing.

LAP Test-6.1	Practical Demonstration
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The basic steps of Test embroidery machine setting

Task1: select frame and preparation

Task2: check machine functionality

Task3: operate embroidery machine

Task4: test quality of desing.

Unit seven: Prepare work pieces and workstation

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Backing fabric
- Material and equipment set up
- Routine minor maintenance
- Problem identification and record

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to

- Lay selected work pieces and backing
- Set up and adjust Equipment and *materials* for work specifications
- Perform *Routine minor maintenance* to manufacturer specifications
- Record and report any problems

7.1.Backing fabric/Stabilizers

Backing: Woven or non-woven material used underneath the item being embroidered to provide support and stability. Sometimes referred to as a stabilizer in the home embroidery market.

Backing can be large enough to be hooped with the item being embroidered, or placed between the machine needle plate and the hooped garment. Available in various weights and in various types of material that can be either in precut sheets or rolls. Backings can also be cutaway, tear-away, or specialty.

Importance of Stabilizers/backing

Both hand and machine embroiderers can make use of a tool known as “stabilizers” to help stiffen the fabric and to keep the material in place during embroidery. These aren’t essential, but they can make the craft more user-friendly, and are particularly useful for beginners or in projects that are particularly complicated.

There are four types of stabilizers that are either placed underneath or on top of the fabric being embroidered, and are called heat-away, tear-away, cut-away, and wash-away. Heat-away stabilizers turn to ash from the heat of an iron, while wash-away stabilizers

dissolve when water is applied to them. Cut-away stabilizers remain on the material even after it is embroidered, and tear-away stabilizers easily tear away from the fabric once the project is finished.

how to prepare an embroidery hoop

Materials

- A plastic hoop with lip on the inner ring
- Quilting cotton, or whatever fabric you prefer
- A pair of scissors

4 Simple Steps to Preparing Your Embroidery Hoop

1. Prepare your fabric

Unfold your fabric and find a corner. Place your hoop over the fabric, making sure to keep 1.5 - 2 inches of overhang, and then cut a square around the hoop. It doesn't have to be perfect as you will be cutting the fabric into a circle later.



Fig:7.1.Prepare your fabric

2. Frame your fabric

On your work surface, place the inner part of the hoop with the lip facing up. Lay your fabric over it and fit the outer ring on top. You will need to adjust the screw of the outer ring so that it fits over the top.



Fig:7.2.Frame your fabric

3. Tighten the fabric

Now that you have the fabric in your hoop, tighten the screw so that the fabric is held in place but can still be adjusted. Flip the hoop over and pull the fabric from the back, applying a light amount of tension as you work your way around the hoop.

This will ensure that your fabric is taut. Be careful not to pull the material too tightly, as this could stretch the fabric and affect the weave. Once your fabric is taut, tighten the screw of the hoop all the way, so that your fabric is impossible to move.



Fig:7.3.Tighten the fabric

4. Check your work

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Tap the fabric with your finger: if it has the correct amount of tension, it should bounce straight back. You can also check that the weave is straight by holding your hoop to a light source.



Fig:7.4.Check your work

7.2.Routine minor maintenance

Checking and replacement of needles, attachments and/or parts

Oiling of machine parts

Lubrication can be defined as the application of oily or greasy substances, also called ‘lubricants’, in order to reduce friction and allow moving machine parts to slide smoothly past each other.

Lubricants form a film between the metal surfaces of machine parts to avoid metal-to-metal contact and to keep the machine running efficiently.

Maintenance (Oiling the **machine**)

Turn off the **embroidery machine**.

Open the hook cover, and remove the bobbin case.

Put a drop of **oil** onto the hook. ...

After **oiling**, insert the bobbin case into the hook, and then close the hook cover.

The main functions of a lubricant are:

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Reducing friction by creating a film between two surfaces

Preventing machine wear

Corrosion protection

Cooling by dissipating heat from surfaces

Cleaning by transporting contaminating particles to filters

Self-Check -7.1	Written Test
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1.What is backing and its Importance?

2.what are the purpose of Routine minor maintenance

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

Unit eight: Produce Machine embroidery on articles/ garments

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Produce embroidery
- OHS practice
- Embroidery methods
- Asses Work for quality
- Check machine
- Manage production problems
- Control manufacturing details
- Manage mashine Troubleshooting

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to

- ❖ Produce embroidery by showing appropriate techniques and procedures
- ❖ Follow OHS practices
- ❖ Produce embroidery by showing appropriate techniques and embiodery methods
- ❖ Assess work for compliace with quality standards and prodcution specification
- ❖ Check and adjust machine to ensure optimum performance
- ❖ Manage productinproblems like thread breaks
- ❖ Control manufacturing detals like speed,stitch quality and quantity
- ❖ Manage machine troubleshooting

8.1. Produce embroidery by Using an Embroidery Machine

Use the right needle and the right thread.

Most embroidery machines already come with an embroidery needle, but if yours does not have one, make sure that you fit it with an embroidery needle instead of a general sewing machine needle. You should also select an embroidery thread instead of all-purpose thread.

- ✓ The needle needs to be big enough to carry the thread into the fabric without causing any damage.
- ✓ Use sharp embroidery needles for most fabrics, but switch to a ballpoint needle when working with stretchy knits.
- ✓ The top thread should be embroidery thread, but you should wind the bobbin with all-purpose thread. Embroidery thread is heavier and more durable than all-purpose thread, making it ideal for the top design. All-purpose thread is used in the bobbin to reduce the overall weight, though

Set up the machine.

Turn the machine on and thread both the needle and the bobbin. As with a standard sewing machine, you'll need to draw the bobbin thread up through the bottom of the machine using your needle.

- ✓ Some embroidery machines also double as sewing machines. In this case, you'll need to remove the sewing machine section and attach the embroidery arm.
- ✓ Since each machine can differ, you should consult the instruction booklet to determine the proper way to thread yours.

Plug the machine into a computer, if necessary.

Many embroidery machines load designs via a separate computer. If yours is a machine like this, you'll need to attach the machine to your computer using a USB cord.

These machines also come with an installation disc. Place this disc into your computer and load the appropriate software before using your embroidery machine.

Other embroidery machines have a computer built into them. For these machines, all you need to do is turn the computer portion of the machine on. You should not need to load any software or connect to a computer.

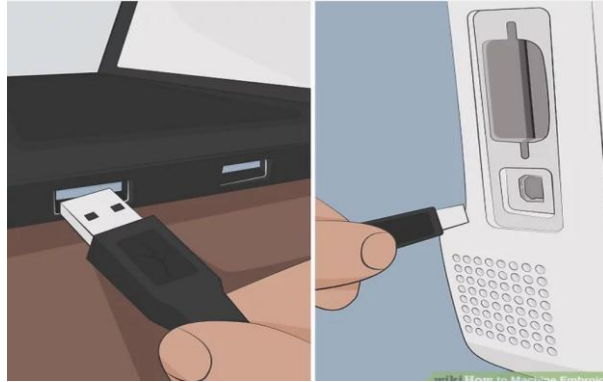


Fig:8.1.Plug the machine into a computer, if necessary.

Lock the hoop in place.

If you're using an embroidery hoop that came with the machine, there should be a way for you to snap the hoop in place.

- ✓ Check the machine's instructions if you do not know how to do this.
- ✓ The hoop will need to be loaded in so that the right side of the fabric faces up.
- ✓ If you use an embroidery hoop that didn't come with the machine, it may not snap into place. In this case, you might need to hold the hoop down with separate clips or small clamps to prevent it from moving during the embroidering process.

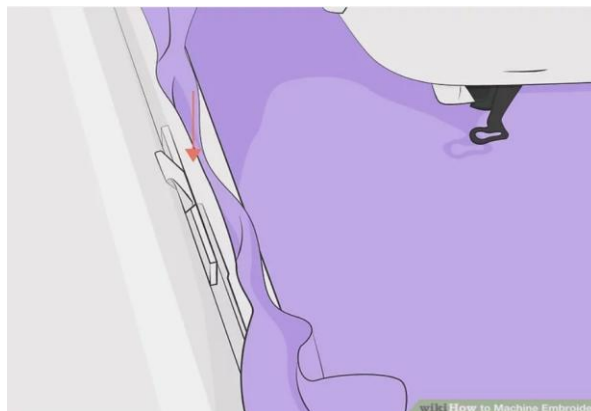


Fig:8.2.Lock the hoop in place

Load your design.

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Follow the on-screen instructions provided by the embroidering software to select and load a design into the machine. The exact procedure can vary greatly depending on manufacturer and model, so there is no single generic set of instructions to follow.

- ✓ Sort through the built-in library of designs provided by the software. Usually, you can also add new designs to this library from files previously saved to your computer.
- ✓ When embroidering letters, look through the different font options, as well.

Initiate the embroidery process.

The start mechanism can vary based on make and model, too, but there's almost always one button labeled along the lines of "start" or "send design." Press this button and allow the machine to take things from there.

- ✓ After you initiate the process, the machine will run on its own. You do not need to press on a power foot pedal or turn the material by hand as it works.

Pause and clip the thread.

Watch the machine closely as it starts embroidering. After it creates approximately six stitches, press the "pause" button on your machine.

- ✓ Carefully reach in with a pair of scissors and cut the tail of thread at the start of your design.
- ✓ Doing this prevents the excess thread from getting tangled in the design as your machine works.

Press the "start" button again.

Press this button again to continue the embroidering process. Allow the machine to run automatically without any further interruption.

Even though the process is automatic, it's always a good idea to keep an eye on your machine as it runs.

Watch for any warnings or messages the software may flash as the machine runs.

Note that the machine should stop on its own once it reaches the end of the design.

Cut away any excess thread.

When the machine finishes your design, switch it off and remove the material. Take a sharp pair of scissors and snip away any threads connecting separate parts of the design.

For instance, there will often be small threads connecting the letters of a name or word.

You can cut these threads off without unraveling the rest of the work.

Take the fabric out of the embroidery hoop during this step, as well.



Fig;8.3.Cut away any excess thread.

Remove any excess stabilizer.

If you used cut-away stabilizer, snip away any excess stabilizer from around the design using scissors. Leave the stabilizer stuck under the embroidered design in place.

Tear-away stabilizer can be gently ripped away from beneath the threads. Wash-away stabilizer dissolves in a washing machine. Heat sensitive stabilizer can be loosened and removed by running an iron over the embroidered area.

If done correctly, the completion of this step completes the process.



Fig:8.4.Remove any excess stabilizer

8.2.Embroidery methods

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How is Embroidery Digitizing Carried Out?

Digitized embroidery uses computers and advanced technology to create stunning designs that are unique and easy to use. This new method has advantages over traditional hand-embroidered garments such as speed, more detail/variety in design options, and low cost compared with other forms of embellishment (e.g., beadwork).

While it's not necessarily meant to replace traditional methods forever, digitized embroidery offers consumers an affordable way to add interest and depth to their attire for any occasion or season. Digitized embroidery is simply a modern way to bring together old and new embroidery techniques.

An embroidery machine can create designs with the help of embroidery digitizing, which could not be made otherwise because they are too intricate or detailed. It's an exciting process that allows for more creative freedom, making it perfect for those who want to make their designs stand out from the crowd with a traditional but unique (and even better) look.

quilting

Quilting is the term given to the process of joining a minimum of three layers of fabric together either through stitching manually using a needle and thread, or mechanically with a sewing machine or specialised long arm quilting system. An array of stitches is passed through all layers of the fabric to create a three dimensional padded surface. The three layers are typically referred to as the top fabric or quilt top, batting or insulating material and the backing.

Applique Embroidery Digitizing

In applique embroidery digitizing, designs are made by sewing or sticking woven pieces or fabric patches onto the larger pieces to form a specific pattern. More extensive patterns are created by attaching various smaller designs. If you want to personalize a design or give it a personal touch, this method would be best suited to make it unique and more beautiful.

Applique embroidery digitizing is mainly used for decorations on garments or as badges for organizations and institutions.

applique embroidery is a textile art form in which one fabric is decoratively stitched on top of another. It's popular in clothing and various crafts, and in general it can be done in one of two ways: by hand or with a special embroidery machine. Most of the time, the fabrics are layered to create a distinctive pattern or design, and it's common for artists to use multiple colors and fabric textures. The thread used in the stitching is usually important, too, and is often intended to be as decorative as it is functional.

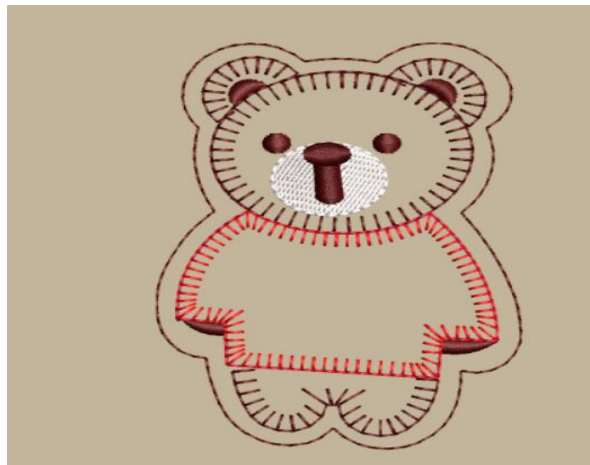


Fig:8.5.Aplique

lace insertion Embroidery Digitizing:

This technique helps create beautiful, airy patterns that you can make into different items or accessories like ornaments, covers, etc. The machines stitch out the specially digitized designs in the form of laces onto a water-soluble stabilizer. Once the pattern has been created, you can rinse the stabilizer away to leave the mesmerizing lace design behind.



Fig:8.6. lace Embroidery Digitizing

cord embroidery

the Cord Stitch is a rope-like stitch that is made with tightly placed Cross Stitches. These Stitches overlap each other, leaving no ground space. The result is a beautiful braid-like texture and is lovely to use on outlines. This stitch is adapted from hand sewing, here the Cord Stitch is used to close the fabric's edges.

Cording embroidery is a specialist embroidery technique, which let us to sew on materials, patterns made of ribbons, beads, cords or decorative chains (e.g. metal or plastic chains). Very often this kind of embroidery is called “bead embroidery”, because it allows us to sew on beads really fast – the embroidery machine does everything for us and we don't have to do it manually



Fig:8.7.cord embroidery

Sequin Embroidery Digitizing:

For Sequin embroidery, the machines have to be equipped with a sequin dispenser. The dispenser drops sequins onto the fabric as the machine continues to stitch. Sequin embroidery includes plastic disks, material, a textured surface, and a high shine in most cases.

This process is, in fact, truly worth the experience as it is easier to get excellent results and high-quality designs. Sequin embroidery digitizing will help your fabric design surpass other designs in uniqueness and excellence.

However, if any wrong design is chosen, the uneven, raised, and unstable sequin structure will adversely affect the covering stitches. So makes sure to consider only the correct selection of compatible designs for sequin embroidery digitizing.



Fig:8.8.Sequin Embroidery Digitizing

Borer Embroidery Digitizing

The machines are equipped with boring tools (knife, needle) to cut holes in the fabric. Borer embroidery digitizing consists of designs having borer holes due to the needle penetrations, regardless of the stitch types. This type of embroidery is commonly stabilized with zigzag and satin stitching to prevent the fraying of threads.

Borer embroidery digitizing is one of the most complex and challenging types of embroidery digitizing to master.



Fig:8.9.Borer Embroidery Digitizing

8.3.Control manufacturing details

Stitch density: It refers to how many stitches are packed into a given area. A higher stitch density means that the embroidery machine will create more stitches and thus use more thread to cover a space.

the stitch density in machine embroidery refers to how far apart the rows of stitches are. So, the larger the number, the further the rows of stitching are from each other, and the less dense the design will be.

What is good stitch density in a machine embroidery design?

A high stitch density embroidery design has stitch holes that are close together. And this matrix of holes can cause tearing of the fabric, as the design basically cuts itself out of the material. Also, excessive density can distort the embroidery design.

Fabric properties and appropriate stitch density in machine embroidery designs

In some situations, you do want the stitch density of your embroidery design to be a bit higher than the standard .

Conversely, if you are stitching on a very delicate fabric, you may achieve better results if you lower the stitch density. It can help reduce bunching and puckering.

How can you change stitch density?

There are two different ways you can change stitch density. One way is precise, the other way is usually unintentional. For a precise change to stitch density where you actually specify a specific setting in an embroidered area, you must have a digitizing program. Every digitizing program allows you to control this setting, however it seems like every digitizing program calls it something different.

8.8.Manage machine Troubleshooting

Table:8.1.Embroidery Machine Problems and Solutions

Common Problems	Problem cause:	What to do/solution:
Machine making noises	Machine needs cleaning or oiling	Clean feed teeth and shuttle areas
	Blunt or damaged needle	Insert new needle
	Machine needs servicing	Check manual for oiling (some machines must be oiled by a qualified service person)
		Have machine serviced
Problems with metallic threads, thread kinks and twists back on itself Problem cause:	Tension too tight through needle	Adjust the needle tension
	Needle too small	Use Metalfil needle with large eye
	Thread feeding incorrectly	Use a metal thread guide
		Use a thread net over the spool
Stitching doesn't go around the border of the design correctly	Fabric too loose in hoop	Tighten fabric in hoop
	Hoop too loose in frame	Tighten hoop in frame
	Damaged or bent needle	Insert a new needle

Needle breaks	Needle loose, bent or too small for fabric type	Insert new needle and use correct size for fabric
	Stitch position and presser foot not matched	Use correct presser foot for stitch type and adjust the needle position accordingly
Upper thread splits and breaks constantly	Machine not threaded properly	Thread the machine again and/or adjust the tension
	Upper tension too tight or thread caught	Check the hook for damage
	Needle not inserted correctly, damaged or too small for fabric type	Insert a new needle
Top thread is looped-up at the back of fabric	Tension not correct	Adjust the tension
	Machine not threaded correctly Thread not through tension disk	Thread the machine again
	Bobbin not inserted correctly	Take out and replace the bobbin
Thread slips out of the needle before beginning to sew	Take-up lever pulls the thread out as it lifts	Pull thread down and hold as the Take-up lever lifts for the first stitch.
	Trimming thread too close to the needle	
Machine skipping stitches	Damaged, blunt or bent needle	Insert a new needle
	Incorrect needle for fabric type	Use the right needle for the fabric type
	Needle not inserted properly	
Bobbin thread breaks constantly	Bobbin incorrectly wound or damaged	Rewind and insert a new bobbin
	Bobbin case damaged or not threaded	Replace bobbin case if damaged

What is Digital Embroidery?

Digital embroidery, on the other hand, in simple words, involves turning an image or logo file into an embroidered pattern with the help of software so that the machines can follow the exact design during stitching. The types of embroidery digitizing are selected based

on the requirements, design, and material.

However, embroidery digitizing isn't as simple as uploading your image file to the embroidery machine and setting it to work. It's much more sophisticated than that and requires skilled hands. Converting the images digitally into embroidered designs is not 100% automated because the machines cannot recognize and read the same files that your computer can.

So we have to convert them into a digitized design because that's the language an embroidery machine can understand.

Hence, digital embroidery is a more challenging, complex, and unique technique, the output of which fares far better in quality than traditional hand embroidery.

How Has Embroidery Digitizing Been A Game Changer?

The modern embroidery field has seen a lot of change in the past few years. It is now common for designers to digitize their designs before sending them to an embroidery machine. There are many advantages of doing this, the first one being that it saves time and money, which is great for both customers and designers. The most important benefit is that digitizing offers more design options, which leads to better end products!

With more choices, more innovation, and more affordability within less time, you can get it all with digital embroidery.

How is Embroidery Digitizing Carried Out?

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make their designs stand out from the crowd with a traditional but unique (and even better) look.

Digital embroidery has ushered us into a new era of creative freedom that was impossible with hand embroidery. It has enabled textile customers to choose an embroidery pattern and convert it into a digital file with minimal effort. This file can then be used in embroidering or printing on fabric with the help of any machine. Digitizing has made life easier for fashion wear consumers and textile customers because they no longer have to spend hours creating their own designs for printing or stitching on clothes and other accessories.

Self-Check -8.1	Written Test
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Instruction:I

1.List and explain Embroidery Machine Problems and Solutions,at list 5.

2.explain different ways of Remove any excess stabilizer

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

Operation Sheet-8.1	CONTENT-1
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Operation sheet-1

The basic steps of Produce Machine embroidery on articles/ garments

Step 1: adjust and check Machine

Step 2.produce Embroidery design on pieces

Step 3: manage Production problems

Step 4: assess quality for compliance

LAP Test-8.1	Practical Demonstration
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The basic steps of Produce Machine embroidery on articles/ garments

Task1: adjust and check Machine

Task 2.produce Embroidery design on pieces

Task 3: manage Production problems

Task 4: assess quality for compliance

Unit Nine: Completion of work

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Final work quality
- Embroidery faults
- Solve faults
- Direct complete work
- Document works

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to

- ❖ Check complete work against quality standards
- ❖ Report and record any Identify faults
- ❖ Take corrective action to solve faults
- ❖ Direct complete embroidery work to next operation
- ❖ work Documentation

9.1.Final work quality

Embroidery finishing process

Embroidery work involves materials and methods which can determine the quality of the final product. Base materials, different raw materials, various techniques to carry out stitches and many other finishing aspects in the end products are important from the point of view of quality. Finishing of the embroidered products is one of the very important aspects of the quality of embroidered finishing process.

After the embroiderer has completed the embroidery work, the finishing needs to be done to improve the quality of their work and give high quality services to the clients.. The finishing process is much more than just folding up the embroidered product or garment, and removing the backing.

Following are the main issues which should be sorted and rectified during the finishing process:

Thread tails: Trim off the thread remains as near to the article as possible, and take care not to cut any locked knots (if made).

Missing stitches: When some stitches are skipped and are found missing, they should be modified. The simplest way for this is to thread a hand-sewing needle with a double strand of embroidery thread matching the base fabric and do a hand satin stitch to fill in the areas, in which the stitches are missing.

Thread loops:- If one observes thread loops in the same direction as of the stitches, they should not be trimmed. Instead, the embroiderer can use finger nails to pull the loops to the wrong side or backside of the garment. However, if thread loops are in an opposite direction of the stitches, it is safe to trim them. They should be trimmed as closely to the stitches as possible.

Crooked logo or embroidered product:- Firstly, spread the garment evenly on the trimming table, then if the embroidery appears slightly twisted and wrinkled, steam iron well on the embroidered area.

When the embroidery is hot (because of the effect of ironing), twist and turn your hand and stretch the fabric a bit softly. Repeat this process a number of times.

Finally, check the embroidery again.

Stains on embroidered product: While doing embroidery, the fabric might acquire some stains like oil, dust, etc. There are many ways of removing stains depending on the type of fabric and type of stains. Most of the stains can be removed with a drop of dish soap and water. If this does not work, once the product is dry, you can spray the area with acetone or bleaching agent in case of white fabrics depending upon the type of stains.

Damaged embroidered product: The damage caused to the product while doing embroidery or hooping should be removed properly. One must not finalise and deliver the product to the client with damages as it might will be unfair to both the client and the worker, besides damaging the reputation of the organisation or the business handling the project. The best way to deal with it would be to bring the situation to the attention of the customer and let them decide what they wish to do. They could ask for a replacement, the cost of which could be borne by the organisation or the business.

Ironing and packaging:After finishing the embroidered product and checking the above points,the product is finally ironed to remove all the creases and wrinkles and folded properly.

At the end, the packing is done according to the packing methods followed in that organisation.

factors that improve embroidery quality

Needle

Imagine trying to draw a detailed portrait with a blunt, heavy-weighted pencil. There’s no way you’ll be able to capture the intricate details. Similarly, replicating the finer details of your brand’s logo in stitching requires a high-quality, sharp needle that’s the right gauge for the job.

Backing Paper

If you’ve ever written in a notebook without any padding, you’ll know the quality of your handwriting usually suffers. But when you place a few sheets of paper behind as padding your writing looks much better. It’s the same with embroidery. Maximising the quality of your embroidered logo requires the right type of backing paper, with an adequate thickness, to ensure the fabric doesn’t pulsate and harm the quality of your logo.

Thread Quality

There are two key reasons to choose high-quality threads. First, lower quality threads are more likely to break during production, which can cause imperfections in the detail of the logo. Second, lower quality threads are also more unpredictable in the dyeing process, which can cause inconsistencies in Pantone colour and cause your logo to look off-brand.

Upper Thread Tension

When it comes to thread tension, it’s all about finding the right balance. With upper threads, if the tension is too tight there will be multiple thread breakages. If it’s too loose, on the other hand, the embroidery will be plagued with loops across the surface.

Bobbin (Lower Thread) Tension

Getting the right balance of lower thread tension ensures the embroidery stays locked together. When it’s too loose, it’ll impact the upper thread tension and cause loops. When it’s too tight, it’ll pull the logo into the fabric, which will not only make the logo look sunken (a bit like an inside out umbrella!), but also potentially damage the fabric.

Framing

As with thread tension, it's also important to get the tightness of the framing right. If it's wrong, it can lead to puckering, which negatively impacts the quality of detail in the embroidery. If you've ever seen the effects of pulling a loose thread from a pair of trousers, you'll know what this looks like. By getting the balance right, we ensure your logo is on-brand and instantly recognisable.

Artwork Digitisation

It's also important to use state-of-the-art technology in the embroidery process. The reason for this is that software allows us to replicate your logo and brand artwork to a much higher degree of accuracy. The better the technology, the better the final outcome.

Machine Quality

Embroidery is ultimately a mechanical process. Therefore, using subpar machinery to do the job will lead to subpar results. For this reason, it's important to use high-quality machines, constantly tweak the settings to optimise for superior results and ensure machines are regularly serviced by qualified engineers.

Wrap up

It's no easy feat delivering flawless embroidery. That's why we scour the UK for the most talented embroiders we can find. This way, we can guarantee you'll get on-brand, on-point, on-time, every time.

If you're looking for a clothing supplier who will nail every step of the embroidery process and deliver superior branded clothing that maintains your brand image, fill in the contact form below to get in touch with one of our clothing experts. They'll be happy to help.


9.2.Embroidery faults and its solution

Embroidery is used in garments to enhance their aesthetic appeal, but when defects appear in the embroidery itself, the quality of the garment deteriorates.


Embroidery defects can be a result of irregularities in the stitches or the design or both. Based on the defect we can incorporate some remedial measures to counter their occurrence in the garment.

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- **Poor Registration:** This defect appears when the embroidery's design and stitches don't align correctly.

<p>causes</p> <p>Shifting of the fabric,the embroidery is being sewn into</p>		<p>Remedies/solution</p> <p>Proper digitization by using suitable underlay stitches</p> <p>Proper hooping by using backing to prevent flagging in the fabric.</p>
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- **Fabric Grin/Gapping:** In this defect the base fabric is visible from the embroidery, either from between design or patterns or on the edge of the embroidery.

<p>causes</p> <p>The pull of thread is compensated</p>		<p>Remedies/solution</p> <p>Proper digitization by use of appropriate underlay stitches,high stitch density,and using different fill pattern or direction of the stitches</p> <p>Thread's pull can be compensated by overlapping and satin border stitches</p> <p>Use of proper topping</p>
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- **Missed Trim:** Appearance of extra embroidery threads left between patterns or other design elements in the embroidery.

<p>causes</p> <p>Lack of proper thread trims digitization when moving from one point to another in the embroidery using jump stitches,or when changing the thread colour</p>		<p>Remedies/solution</p> <p>Proper digitization,using proper number of trims,appropriate tie-off stitches</p> <p>Replacing trimming knife when required</p> <p>Hand trimming the missed threads by trimming snips</p>
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- **Bunching at Corners:** The corners of the design or letters in the embroidery are not crisp due to gathering up of thread at one point.

<p>causes</p> <p>Lack of proper digitization leading to excess thread in the corners</p> <p>Wrong stitch selection</p> <p>Choosing wrong stitch length on corners</p> <p>Faulty stitch balance</p>		<p>Remedies/solution</p> <p>Proper stitch selection</p> <p>Using stitches of shorter lengths on the design corners</p> <p>Monitoring and correcting stitch balance, ie the thread should not be too loose</p>
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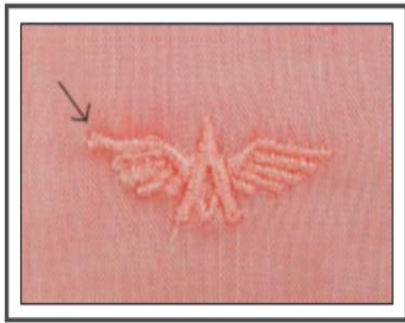
- **Poor Stitch Balance:** In this defect, the bobbin thread shows up on the top side of the embroidery.

<p>causes</p> <p>Faulty needle thread tension</p> <p>Wrong thread selection</p>		<p>Remedies/solution</p> <p>Using good quality pre wound bobbins</p> <p>Machine thread tension setting should be properly managed</p> <p>Proper needle thread selection</p>
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- **Fabric Damage:** Damage caused to the fabric due to repetitive needle penetration, especially around the corners of the embroidery.

<p>Causes</p> <p>Incorrect needle size and type</p> <p>Repetitive stitches on a single spot on the fabric</p>		<p>Remedies</p> <p>Proper digitization</p> <p>Managing stitch count in the corners</p> <p>Selecting correct needle type and size as per fabric</p>
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7. **Thick Embroidery:** Embroidery being too dense or thick at some places.

Causes Very high stitch density Improper backing used for the embroidery		remedies Proper digitization, ensuring correct stitches tension, and stitch density Use of shorter stitch length on corners Thread tension being properly balanced Thread size should be small Ensuring use of proper backing type and weigh
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8. Poor Stitch Density: Base fabric visibility through the embroidery due to low stitch density.

Causes Low stitch density		remedies Proper digitization ensuring appropriate stitch selection, stitch density and underlay stitches Use of proper backing and topping
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9. Poor Hooping: The fabric surrounding the embroidery gets distorted or crumpled and cease to lay flat on a surface.

causes Use of wrong backing and/or topping		Remedies Ensuring use of proper topping and backing When hooping the fabric, it should not be stretched too much, as when it gets relaxed when removed from the hoop, fabric will crumple. Ironing hoop marks
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Embroidery is generally used for logos or for adding a design element to the garment. Ensuring embroidery's quality thus becomes vital for the ensuring quality of the final garment. With the above information on the defects, their causes and remedies at hand, we can ensure minimum quality fallouts due to embroidery defects in our garments.

9.2.Completed work is directed to next operation

Work documentation is completed as required

Gently wash your embroidery

There are a few things you need to remember if you want to wash your design. First don't use a washing machine, it's much better to hand wash or to take your design to the dry cleaners. If you are washing by hand, simply place your embroidery gently into a bowl of water with a little soap for a short while. Do not rub.

admire the completed design And once the design is finished, you can remove the hoop from the embroidery unit and admire it.

Qualities of a Good Design

A good embroidery design when stitched-out is smooth, pucker-free around the outer edges, and has no traces of the bobbin thread showing on the top side. There is no gapping between individual elements of a design or between the fill stitches and the design outlines.

Maintenance

Clean and oil the machine every 3 to 4 hours of stitching time. The high speed of embroidery creates more lint and fuzz than encountered during normal sewing.

Proper Setup

Embroidery success starts with needle and thread. Select a needle designed specifically for machine embroidery changing often. Choose a good quality machine embroidery thread designed specifically to withstand the heat and friction associated with high speeds of embroidery. Next, select an embroidery bobbin thread, typically lighter in weight than machine embroidery thread, to aid in pulling the top thread to the back side.

Pressing Matters

Pressing will almost always improves the appearance of a design especially if there is puckering around the design. Press face-down on a fluffy towel for the best results.

Problem Solving

a variety of common machine embroidery trouble-shooting scenarios and how to solve them.

here is nothing quite as satisfying as stitching a perfect embroidery design for a special project. But, it can also be frustrating when things go wrong. In order to troubleshoot and fix embroidery design problems, learn to identify the qualities of a good design and how machine maintenance can prevent issues from occurring in the first place.

Inspection, Mending, Shearing, Finishing

The defects found upon close inspection will be mended by sewing machine. The floating thread is clipped by the shearing machine and sent to a dying factory to be finished.

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9.3.identify faults and take corrective action

Storage Tips for Embroidery Work □ Leftover threads and yarns should be wound and stored neatly for future use □ Store the embroidery hoops in a bag or box □ Keep the incomplete embroidery work covered so that it doesn't get dirty

Avoiding Common Embroidery Mistakes □ Choose correct size and type of needle as per the base fabric □ Check the hoop tension. It should not be too loose nor so tight that the fabric puckers □ Use appropriate chemical for removing stains, dust etc. to avoid fabric damage

Thickness of the embroidery thread should be compatible to thickness of the base fabric and the type of stitch being done □ Trace the design carefully □ Use scissors carefully while cutting the trims and extra loops

Embroidery Tips for Quality Embroidery Work □ Before starting work, wash hands with soap to keep the material clean □ Embroidery hoop should be fitted properly □ Avoid taking a very long embroidery thread (not more than 17 inches)

Use needles of appropriate size and type to avoid fabric damage □ Avoid using very hot iron directly on embroidery □ Carry out embroidery in a well lit place to avoid strain on the eyes □ Use good quality, colour fast threads to avoid spoiling of embroidery work

Self-Check -9.1	Written Test
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1.List down factors that improve embroidery quality(at least 5)

2.Explain different Embroidery faults and its solution

Note: Satisfactory rating – above 60%

Unsatisfactory - below 60%

Reference

1. BERNINA Embroidery Software manual
2. Brother embroidery software manual
3. Personal Embroidery Design Software System Ver.7 Instruction Manual

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