

COMPUTER AIDED EMBROIDERY & DESIGNING

NSQF LEVEL - 3

TRADE THEORY

SECTOR : APPAREL

(As per revised syllabus July 2022 - 1200 hrs)



Directorate General of Training

DIRECTORATE GENERAL OF TRAINING
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
GOVERNMENT OF INDIA



**NATIONAL INSTRUCTIONAL
MEDIA INSTITUTE, CHENNAI**

Post Box No. 3142, CTI Campus, Guindy, Chennai - 600 032

Sector : Apparel

Duration : 1 Year

**Trade : Computer Aided Embroidery & Designing - Trade Theory - NSQF
Level - 3 (Revised 2022)**

Developed & Published by



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FOREWORD

The Government of India has set an ambitious target of imparting skills to 30 crores people, one out of every four Indians, by 2020 to help them secure jobs as part of the National Skills Development Policy. Industrial Training Institutes (ITIs) play a vital role in this process especially in terms of providing skilled manpower. Keeping this in mind, and for providing the current industry relevant skill training to Trainees, ITI syllabus has been recently updated with the help of Mentor Councils comprising various stakeholder's viz. Industries, Entrepreneurs, Academicians and representatives from ITIs.

The National Instructional Media Institute (NIMI), Chennai, has now come up with instructional material to suit the revised curriculum for **Computer Aided Embroidery & Designing - Trade Theory in Apparel Sector under Yearly Pattern**. The NSQF Level - 3 (Revised 2022) Trade Practical will help the trainees to get an international equivalency standard where their skill proficiency and competency will be duly recognized across the globe and this will also increase the scope of recognition of prior learning. NSQF Level - 3 (Revised 2022) trainees will also get the opportunities to promote life long learning and skill development. I have no doubt that with NSQF Level - 3 (Revised 2022) the trainers and trainees of ITIs, and all stakeholders will derive maximum benefits from these Instructional Media Packages IMPs and that NIMI's effort will go a long way in improving the quality of Vocational training in the country.

The Executive Director & Staff of NIMI and members of Media Development Committee deserve appreciation for their contribution in bringing out this publication.

Jai Hind

ATUL KUMAR TIWARI, I.A.S

Secretary

Ministry of Skill Development & Entrepreneurship,
Government of India.

October 2023
New Delhi - 110 001

PREFACE

The National Instructional Media Institute (NIMI) was established in 1986 at Chennai by then Directorate General of Employment and Training (D.G.E & T), Ministry of Labour and Employment, (now under Directorate General of Training, Ministry of Skill Development and Entrepreneurship) Government of India, with technical assistance from the Govt. of the Federal Republic of Germany. The prime objective of this institute is to develop and provide instructional materials for various trades as per the prescribed syllabi under the Craftsman and Apprenticeship Training Schemes.

The instructional materials are created keeping in mind, the main objective of Vocational Training under NCVT/NAC in India, which is to help an individual to master skills to do a job. The instructional materials are generated in the form of Instructional Media Packages (IMPs). An IMP consists of Theory book, Practical book, Test and Assignment book, Instructor Guide, Audio Visual Aid (Wall charts and Transparencies) and other support materials.

The trade practical book consists of series of exercises to be completed by the trainees in the workshop. These exercises are designed to ensure that all the skills in the prescribed syllabus are covered. The trade theory book provides related theoretical knowledge required to enable the trainee to do a job. The test and assignments will enable the instructor to give assignments for the evaluation of the performance of a trainee. The wall charts and transparencies are unique, as they not only help the instructor to effectively present a topic but also help him to assess the trainee's understanding. The instructor guide enables the instructor to plan his schedule of instruction, plan the raw material requirements, day to day lessons and demonstrations.

In order to perform the skills in a productive manner instructional videos are embedded in QR code of the exercise in this instructional material so as to integrate the skill learning with the procedural practical steps given in the exercise. The instructional videos will improve the quality of standard on practical training and will motivate the trainees to focus and perform the skill seamlessly.

IMPs also deals with the complex skills required to be developed for effective team work. Necessary care has also been taken to include important skill areas of allied trades as prescribed in the syllabus.

The availability of a complete Instructional Media Package in an institute helps both the trainer and management to impart effective training.

The IMPs are the outcome of collective efforts of the staff members of NIMI and the members of the Media Development Committees specially drawn from Public and Private sector industries, various training institutes under the Directorate General of Training (DGT), Government and Private ITIs.

NIMI would like to take this opportunity to convey sincere thanks to the Directors of Employment & Training of various State Governments, Training Departments of Industries both in the Public and Private sectors, Officers of DGT and DGT field institutes, proof readers, individual media developers and coordinators, but for whose active support NIMI would not have been able to bring out this materials.

Chennai - 600 032

EXECUTIVE DIRECTOR

ACKNOWLEDGEMENT

National Instructional Media Institute (NIMI) sincerely acknowledges with thanks for the co-operation and contribution extended by the following Media Developers and their sponsoring organisation to bring out this IMP for the trade of **Computer Aided Embroidery & Designing- Trade Theory - NSQF Level - 3 (Revised 2022)** under the **Apparel** Sector for ITIs.

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NIMI records its appreciation for the Data Entry, CAD, DTP operators for their excellent and devoted services in the process of development of this Instructional Material.

NIMI also acknowledges with thanks the invaluable efforts rendered by all other NIMI staff who have contributed towards the development of this Instructional Material.

NIMI is also grateful to everyone who has directly or indirectly helped in developing this Instructional Material.

INTRODUCTION

TRADE PRACTICAL

The trade practical manual is intended to be used in practical workshop. It consists of a series of practical exercises to be completed by the trainees during the course of the **Computer Aided Embroidery & Designing** trade supplemented and supported by instructions/ informations to assist in performing the exercises. These exercises are designed to ensure that all the skills in compliance with NSQF LEVEL - 3 (Revised 2022) syllabus are covered.

The manual is divided into Nine modules

- Module 1 - Basics of computerized embroidery
- Module 2 - Hand and machine embroidery
- Module 3 - Familiarization of computer designing
- Module 4 - Computerized embroidery machine operation
- Module 5 - Handling different types of fabrics
- Module 6 - Digitizing software & its application
- Module 7 - Processing with digitizing software
- Module 8 - Monogram & Logo
- Module 9 - Different techniques in machine embroidery

The skill training in the shop floor is planned through a series of practical exercises centered around some practical project. However, there are few instances where the individual exercise does not form a part of project.

While developing the practical manual a sincere effort was made to prepare each exercise which will be easy to understand and carry out even by below average trainee. However the development team accept that there is a scope for further improvement. NIMI, looks forward to the suggestions from the experienced training faculty for improving the manual.

TRADE THEORY

The manual of trade theory consists of theoretical information for the Course of the **Computer Aided Embroidery & Designing** Trade Theory - NSQF LEVEL - 3 (Revised 2022) in Apparel. The contents are sequenced according to the practical exercise contained in NSQF LEVEL - 3 (Revised 2022) syllabus on Trade Theory attempt has been made to relate the theoretical aspects with the skill covered in each exercise to the extent possible. This correlation is maintained to help the trainees to develop the perceptual capabilities for performing the skills.

The trade theory has to be taught and learnt along with the corresponding exercise contained in the manual on trade practical. The indications about the corresponding practical exercises are given in every sheet of this manual.

It will be preferable to teach/learn trade theory connected to each exercise at least one class before performing the related skills in the shop floor. The trade theory is to be treated as an integrated part of each exercise.

The material is not for the purpose of self-learning and should be considered as supplementary to class room instruction.

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LEARNING / ASSESSABLE OUTCOME

On completion of this book you shall be able to

Sl.No.	Learning / Outcome	Refer Ex:No
1	Identify and use embroidery tools, machine and operate following safety precautions.(NOS;AMH/NO102)	1.1.01-1.1.06
2	Prepare sample basic hand stitches (Temporary & permanent stitch). (NOS: AMH/N1011)	1.2.07
3	Attain the skill to prepare sample by both the technique (Hand and Machine). (NOS:AMH/N1022)	1.2.08-1.2.09
4	Embroidery Design the following with suitable fabric design using coral draw software. (Indian Dresses, Western Dresses) (NOS :AMH/N1302)	1.3.10-1.3.19
5	Set up the machine and machine accessories as per requirement. (NOS: AMH/NO801)	1.4.20-1.5.26
6	Identify, select and troubleshoot the machine with proper maintenance procedure(NOS:AMH/N1003)	1.5.27
7	Develop the skill to make computerizes design with the application of software. (NOS:AMH/N1302)	1.6.28-1.6.31
8	Setup computerized embroidery machine for transferring the image.AMH/9402	1.7.32
9	Run the computerized embroidery machine for all the digitizing process. (NOS: AMH/N1302)	1.7.33-1.7.37
10	Prepare T-shirt used monogramming & logo design. (NOS: AMH/N1302)	1.8.38-1.8.39
11	Identify, select and apply the digitizing design and use various techniques e.g. Applique work, Sequins work, Taping work, Cording work, Chenille work. (NOS:AMH/N1302)	1.9.40-1.9.42

SYLLABUS

Duration	Reference Learning Outcome	Professional Skill (Trade Practical) (With indicative hour)	Professional Knowledge (Trade Theory)
Professional Skill 60 Hrs; Professional Knowledge 12 Hrs	Identify and use embroidery tools, machine and operate following safety precautions. (Mapped NOS: AMH/NO102)	1. Familiarization with the present trend of computerized Embroidery by showing samples. (10 hrs.) 2. Familiarization with Machine & software. (10 hrs.) 3. Observe Safety Precautions. (05 hrs.) 4. Machine oiling and maintenance. (05 hrs.) The demand, infrastructure facilities, types of tourist visiting different places & prepare a report. (18 hrs.)	Familiarization with the Institute Introduction to the Trade <ul style="list-style-type: none"> • History and Invention • Today's requirements Job Prospects and objective of the course. (06 hrs)
		5. Familiarization & Handling of Tools with Safety Practical Exercises on. (20 hrs.) <ul style="list-style-type: none"> • Color Wheel • Color Schemes 6. Identify the fabric Machine oiling and maintenance. (10 hrs.)	Knowledge of Trade related Tools & their Importance. Knowledge of Color Wheel and color Schemes. (06 hrs)
Professional Skill 30 Hrs; Professional Knowledge 06 Hrs	Prepare sample basic hand stitches (Temporary & permanent stitch). (Mapped NOS: AMH/N1011)	7. Basic Hand Stitches (30 hrs.) <ul style="list-style-type: none"> • Temporary • Basting even • Basting uneven • Diagonal • Slip basting • Permanent • Running stitch • Hemming stitch • Slip stitch • Run and back stitch • Over casting • Whip stitch • Steam stitch • Satin stitch • Back stitch • Chain stitch • Button hole stitch • French stitch • Mirror stitch 	Knowledge of Hand Embroidery & Stitches. (06 hrs)
Professional Skill 30 Hrs; Professional Knowledge 18 Hrs	Attain the skill to prepare sample by both the technique (Hand and Machine). (Mapped NOS: AMH/N10110)	8. Start and shutdown process of machine. (15hrs.) 9. Familiarize with different stitches by running computer embroidery machine. (15hrs.)	<ul style="list-style-type: none"> • Manual • Run and triple run • Satin • Step/tatami • Piping/contour (18 hrs)

Professional Skill 150 Hrs; Professional Knowledge 24 Hrs	Design the following with suitable fabric design using coral draw software. (Indian Dresses, Western Dresses) ((Mapped NOS: AMH/N1302)	10.Familiarize with personal computer and its parts. (10 hrs.) 11.Starting a Personal computer and starting software's like paintbrush, coral draw. (20 hrs.) 12. Use of printer and scanner. (10 hrs.) 13.Mouse practice. (05 hrs.) 14.Practice on paint brush. (15 hrs.) 15. Practice of computer basics (20 hrs.) 16.Making designs and colouring. (20 hrs.) 17.Practice on coral draw and different software. (30 hrs.) 18.Making designs and colouring on software. (15 hrs.) 19.Use of scanner. (05 hrs.)	<ul style="list-style-type: none"> • Introduction and function of various parts of computer also relate it to computerized embroidery machine. • Basic knowledge of computer. • Introduction to Corel Draw. • Commands like cut, copy, paste and text writing. (24 hrs)
Professional Skill 60 Hrs; Professional Knowledge 24 Hrs	Set up the machine and machine accessories as per requirement (Mapped NOS: AMH/NO801)	<p>Machine operation</p> <p>20.How to change needle in details and its tools. (05 hrs.)</p> <p>21. Load thread on machine. (05hrs.)</p> <p>22. Winding/installing the bobbin. (05 hrs.)</p> <p>23. Bobbin precaution. (05hrs.)</p> <p>24.Precautions while changing needle. (10hrs.)</p> <p>25 Use of different fabric on computerized embroidery machine. (10hrs.)</p> <p>26.Practicing on running machine tension making of upper thread and bobbin thread. (20 hrs.)</p>	<ul style="list-style-type: none"> • Types of Needle and their uses and handling. • Needle precautions • Types of needle • Checking the needle • Selection of needle according to fabric • (12 hrs) <p>Types of Embroidery Threads</p> <ul style="list-style-type: none"> • Brief knowledge of threads. <p>Composition</p> <ul style="list-style-type: none"> • Benefits and disadvantages of different kinds of thread. • Difference between upper thread and bobbin thread. (06 hrs) <p>Type of Fabrics</p> <ul style="list-style-type: none"> • How to handle different-different fabrics. • Benefits and disadvantage of heavy and light fabrics. • Details Knowledge of • Machine Head, tension point, sensors etc. • Embroidery process • Head working area and stitch formation. (06 hrs)
Professional Skill 30 Hrs; Professional Knowledge 06 Hrs	Identify, select and troubleshoot the machine with proper maintenance procedure (Mapped NOS: AMH/N1003)	27.Practice running designs on machine already available in machine. (30 hrs.)	<ul style="list-style-type: none"> • Maintenance of machines and Safe operating principle. (06 hrs)

Professional Skill 60 Hrs; Professional Knowledge 30Hrs	Develop the skill to make computerized design with the application of software. ((Mapped NOS: AMH/N1302)	Hooping Practice 28.Clipping fabric on pantograph (10 hrs.) 29.Placement of design and making origin of design. (10 hrs.) 30.Familiarize with backing paper or stabilizing material. (10 hrs.) 31. Operating a machine and loading designs and setting origin. (30 hrs.)	<ul style="list-style-type: none"> Stabilizers/backing their types and uses. Need of stabilizing fabric. (06 hrs) Knowledge of digitizing software and machine keys. <ul style="list-style-type: none"> Description of software and its need. How software works (x-axis and Y-axis). How software designs linked with machine. Introduction of digitizing software like software interface etc. (24 hrs)
Professional Skill 30 Hrs; Professional Knowledge 12 Hrs	Setup computerized embroidery machine for transferring the image.AMH/9402	32.Transferring of Images and ketches in software design Related to paintbrush and coral draw with the software. (30 hrs.)	<ul style="list-style-type: none"> Use of scanner with digitizing software. Importance of scanner. (12 hrs)
Professional Skill 270Hrs; Professional Knowledge 72Hrs	Run the computerized embroidery machine for all the digitizing process. (Mapped NOS: AMH/N1302)	Software digitizing 33.Type of stitches. (30 hrs.) 34.Digitization process and all commands in software. (130 hrs.) 35.Stitch control and smooth running of machine as per digitizing. (80 hrs.) Machine designs functions and tools. 36. Resize design with machine. Flip, rotate etc. (10 hrs.) Uses of m/c Control Panel(COD) 37. Move to particular point. (20 hrs.)	Detailed study of digitizing procession software. <ul style="list-style-type: none"> Learn different stitches with examples on machine. Making design on software. Loading digitized designs in machine by students Information of design on LCD (Liquid Crystal display) Details knowledge of machine regarding Area and its capabilities. (60 hrs) Setting of design on different articles <ul style="list-style-type: none"> Placement specification like with printing. (12 hrs)
Professional Skill 60 Hrs; Professional Knowledge 12 Hrs	Prepare T-shirt used monogramming & logo design. (Mapped NOS: AMH/N1302)	38.Operating machine on self-made design. (30 hrs.) 39.Monogramming and logo making on designs. (30 hrs.)	Knowledge of Monogram & Logo. (12 hrs)
Professional Skill 60 Hrs; Professional Knowledge 24 Hrs	Identify, select and apply the digitizing design and use various techniques e.g. Appliqué work, Sequins work, Taping work, Cording work, Chenille work (Mapped NOS: AMH/N1302)	40.Appliqué/patching. (10 hrs.) 41.Making embroidery samples on garments: (10 hrs.) <ul style="list-style-type: none"> Dresses neckline Patch embroidery Chanya choli Logo designing Blouse Kurtas Indo western 42.Machine working in simple embroidery and specialized embroidery like sequins, tapping & cording, Chenille etc (videos or photo). (15 hrs.)	Advance techniques in Machine Embroidery. (06 hrs) Detailed knowledge of special Attachments on Operating machine on self-made design. <ul style="list-style-type: none"> How to handle these attachments Knowledge of changing guides for sequins and cording tapping device. (18 hrs)

Familiarization with the institute

Objectives: At the end of this lesson you shall be able to

- state the staff structure of the institute
- state the available trades in the institute and their activities.

The Industrial Training Institute throughout India follow the same syllabus pattern given by the National council for Vocational Training (NCVT). In India there are about 13,350 Government ITIs and Private ITI 's as per the Govt. of India, Ministry of Skill Development and Entrepreneurship (MSDE) The Government Industrial Training Institute in each state work under the Directorate of Employment and Training which is a department under the Labour Ministry in most of the states.

The Head of the industrial training institute is the Principal, under whom there is one vice-principal, Group Instructor(s) Training officers and a number of Vocational Instructor(s) Assistant Training Officer(s) and Junior Training Officer and so on as shown in the Organisation Chart of ITI.(Fig 1)

In every industrial training institute there is a store and the in charge of the store is storekeeper for inward and outward movement of tools, equipment and consumables. The instructor will indent the training requirement on receiving from stores, the instructor will issue the training requirement to the trainees according to the graded exercises as per syllabus.

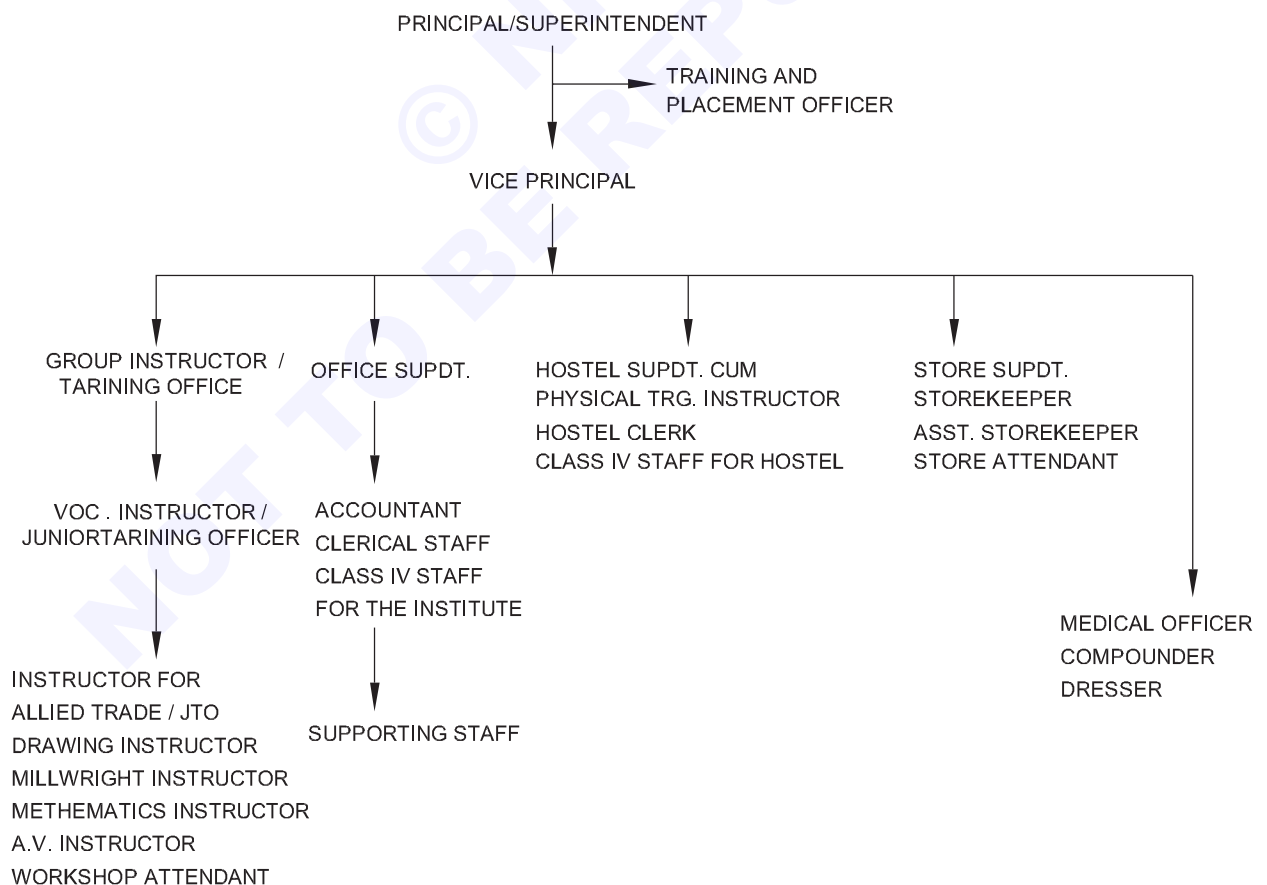
The basic moto of providing industrial training is to give hands to training to the new trainees so as to make them as skilled labour/industrial workers/or self employed entrepreneur.

The function of stores in the ITI is to provide the raw material and machine tool equipments and to take care of machine and their maintenance.

Instructor gets the raw material and the tool equipments from the stores and issue to the trainees for training and to carryout the job.

Fig 1

ORGANISATIONAL CHART OF ITI



The Directorate of General Training under the Ministry of Skills Development and Entrepreneurship provides training in various sectors of the economy and labour market. Our National Team (NCVT) selects and trains apprentices from the Vocational Training Divisions for the Craftsman Training Program (CTS) and Vocational Apprenticeship Program (ATS).

Training is provided with one - or two-year courses in 141 professional extensions (engineering and non-engineering disciplines) . The minimum educational qualification requirement is pass mark to suit vocational groups in 8th &10th standard, Admission to the training classes takes place in July each year.

The annual pattern has been introduced in 2019 based on the revised syllabus according to the revised curriculum.

At the end of each academic, All India Trade Test is conducted through CBT system and Multiple-Choice system. The National Trade Certificate (NTC) is issued to the successful candidates by DGT. This certificate is globally recognized. The National Skill Qualification Framework (NSQF) which includes Level 3 and 4, was introduced and implemented in 2022 for certain sections.

After completing the training and obtaining the certificate, the trainees are required to undergo training in government and private institutions under the Apprenticeship Act 1961 for one or two years, depending on the profession. Apprentice Examination is conducted and Apprenticeship Certificate is issued. Job Opportunities are available in government and private companies in India and foreign countries. Professionals can start small businesses with government loans or on their own.

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Introduction to the trade

Objectives: At the end of this lesson you shall be able to

- history and invention of machine embroidery
- requirement for computerized embroidery.

History and Invention of machine embroidery

The evolution of embroidery technology needed a seed to start. Machine embroidery began in the middle of the 19th century with the invention of the hand embroidery machine. The operator was required to move the fabric above and below the needle with a hand crank and guided the needles along a pattern. Despite the effort it took to work the machine, it was an efficient innovation, doing the labor of four hand embroiderers. Just after the turn of the century, in 1911, the first multi-head embroidery machine was invented, allowing users to produce multiple pieces of work at once. (fig 1)



It wasn't until the 1950's that embroidery machines became common and it was 30 more years before computer-controlled machines were invented. In the 1980s, the earliest versions of the modern computerized embroidery machine were developed.

Wilcom and Melco were two of the pioneers in the field. Wilcom introduced the first graphic design system for embroidery that could be run on a microcomputer, and Melco produced the first embroidery sample head and the first digitizing system for embroidery machines.

Since the 1990s, computerized machine embroidery has become widely popular for both commercial and personal use. Now, new technology is making the process even more efficient and profitable. Modern innovators are looking at new ways to increase the efficiency, ease of use, and versatility of computer-controlled embroidery machines. Some of the latest developments include higher speeds, more needles per head, more attachments per head, and more precise cutting with laser technology, to name a few.

Evolution of Embroidery Technology - Recent Hardware Innovations

The new machine offers the advantage of embroidery heads that can be stopped or started independently. Traditional multi-head machines require all heads to shut down if one needs a bobbin changed, for example. The new model increases machine productivity by 50%. Another factor that contributes to the machine's efficiency is the Acti-Feed thread control system, a monitoring system that adjusts the feed and tension automatically.

Requirement for Computerized embroidery is as follows

- 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. 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. Between perfection and time saving, digital embroidery is the guarantee of a unique result

In the Embroidery Digitizing service that we offer, we feed the machine with the design our customers give us. The machine has high-quality professional software that reads the image. Using the advanced algorithms, they generate error-free outputs. Therefore, there will not be any mismatch in colors or any thread ripping off from the designs.

Since all the designs are machine-made, the time required for making one piece is very little. Therefore, it is possible to deliver bulk orders in less time with accuracy in each design.

Higher Rate Of Productivity And Accuracy

The complexity of design does not stand as a hurdle when it comes to Machine Embroidery. The embroidery digitizer is an expert that understands the type of fabric and what design would suit best for it. Curtailing it all, the service gives one a higher rate of productivity and accuracy with best-in-class quality.

Unlimited Choice of Designs

An Embroidery Digitizing Service offers a huge range of options from colors to designs and any alterations (if needed) to choose from in which they have the designs embroidered. In machine embroidery, a skilled digitizer digitizes the design by the means of sophisticated

embroidery digitizing software. Since a machine is used for this process, there are almost no chances of variations. The design can also be saved in a digitized format and can be used on an unlimited number of garments.

Machine Embroidery is a great example of how digitizing any type of work is beneficial for us. Your design is a click away from your service provider. Therefore, it becomes easy for you to communicate the changes you need even at the very last moment. You can increase the size, type, color and many other attributes of your designs and the service provider will open for those changes.

Machine Embroidery is a more-easy, cost-effective, and productive way to have embroidery done on your piece of cloth.

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Job prospects and objective of the course

Objectives: At the end of this lesson you shall be able to

- **state about job prospects and objective of the course.**
-

ITI trade Computer Aided Embroidery and Designing is powered by NCVT. ITI trade Computer Aided Embroidery and Designing is a job oriented trade ITI trade . It is suitable for government job and private job. This trade is very powerful for self-empowerment. It is perfectly design to fulfill industrial requirement of Indian Industries as well as International industries.

Computer Aided Embroidery & Designing operates semiautomatic sewing machine with multiple-sewing heads controlled by pattern chain that embroiders designs on garments or garment parts done through the computerized embroidery machine. Positions garment, places hoop frame on machine bed, starts machine to sew design onto garment, rethreads machine for multi-color designs, monitors the progress and ensure the required quality of embroidery is achieved.

Computer Aided Embroidery & Designing has a wide scope of Employability ranging from self-employment, contractual employment to Industrial jobs. On successful completion of this course, the candidates shall be gainfully employed in the industries for following occupations:

- Embroidery-Machine Operator (Semi-Automatic)
- Embroider, Machine
- Framer-Computerized Embroidery Machine

Progression Pathway

- Designer
- Designer Tailor/ Embroiderer
- Pattern Maker

- Pattern Master
- Advance Pattern Master
- Merchandiser
- Supervisor

Objective

- Brief knowledge of safe working practices.
- Identification of different embroidery tools and machine used and how to operate them with safety precautions
- Know in detail about basic hand stitches and their types and classification (Temporary & permanent stitch).
- Learn to create designs using coral draw software and save them in required file format.
- Set up the machine and machine accessories as per requirement
- To Identify, select and troubleshoot the machine with proper maintenance procedure
- Develop the skill to make computerizes design with the application of digitizing software.
- Setup computerized embroidery machine for transferring the image.
- Run the computerized embroidery machine for all the digitizing process.
- To monogram & logo design on the garments
- Identify, select and apply the digitizing design and use various techniques e.g. Applique work, Sequins work, Taping work, Cording work, Chenille work.

Knowledge of trade related tool & their importance

Objectives: At the end of this lesson you shall be able to

- about the trade related tool in detail.

Measuring Tape (Fig 1)

A tape measure is used primarily for taking body measurements, as well as for drafting patterns, measuring fabric, laying out patterns on fabric, specifying the length of a garment, checking the size of hems, measuring curves and corners. It is 150 cm long and the measurements between are in centimeters and millimeters. We can see centimeters on one side and inches on the other side.



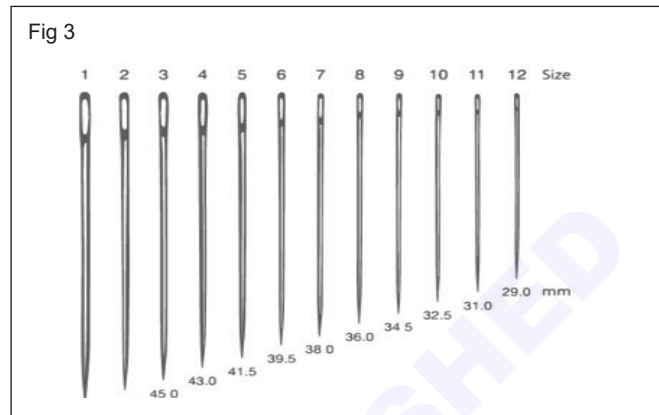
Thimble (Fig 2)

A thimble is a bell or ring shaped sheath with a hard substance, such as bone, leather, metal or wood. It is worn on the tip or middle of a finger or thumb to help push a needle while sewing and to protect the finger/thumb from being pricked.



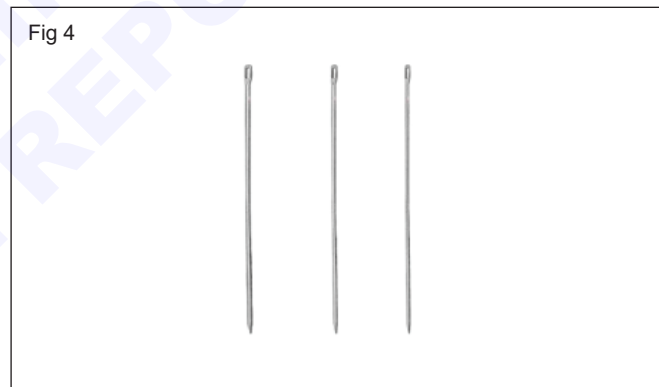
Embroidery Needles (Fig 3)

Embroidery needles have a medium length with a long eye and sharp point. They come in sizes 1 to 12, with 1 being the largest and 12 being the smallest (fig a). They're a solid go-to choice for general embroidery projects.



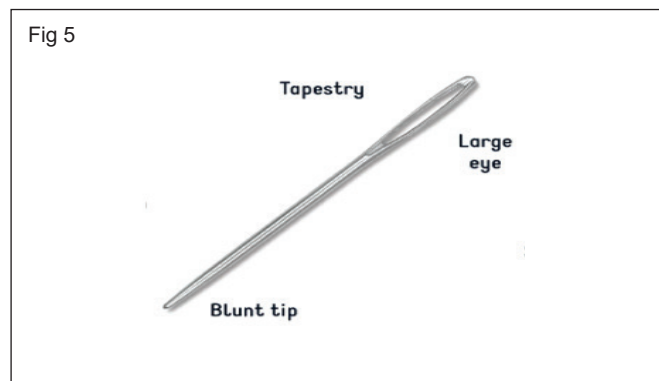
Beading Needles (Fig 4)

Beading needles have an extra small eye and long, flexible shaft. They commonly come in sizes 10 to 15, with 10 being the largest and 15 being the smallest. Due to their flexibility and fine size, they are the prime choice for threading seed beads and other small holes.



Tapestry Needles (Fig 5)

Tapestry needles have an extra-long eye and blunt point. They come in sizes 13 to 28, with 13 being the largest and 28 being the smallest. Primarily used for cross stitch, these needles are good for fabrics that have a looser weave or open holes for predetermined stitches.



Quilting Needles (Fig 6)

Quilting needles have a small, roundish eye and a short shaft. They come in sizes 3 to 12, with 3 being the largest and 12 being the smallest. They're the needles of choice for traditional hand quilting because they allow for quick, precise stitches between layers of fabric.

Fig 6



Milliner Needles(Fig 7)

Milliner needles have a small, roundish eye and a long shaft. They come in sizes 1 to 10, with 1 being the largest and 10 being the finest. These needles are ideal for techniques that required wrapping thread around the needle multiple times such as bullion knots, the drizzle stitch, or French knots.

Fig 7



Sashiko Needles

A signature tool of the Japanese mending method, sashiko needles are long, sturdy, and specially made for the running stitch. In other words, it is designed to let you load multiple stitches onto it before pulling it through the fabric. They come in a range of sizes; traditional ones measure about 2 inches while modern ones tend to be shorter and have a larger eye for easier threading.

Needle Threader (Fig 8)

A needle threader is a small sewing tool designed to help pull a thread through the eye of a sewing needle. Both hand and machine forms exist. The common type combines a short length of fine wire bent into a diamond shape, with one corner held by a piece of tinfoil or plastic. The user passes the wire loop through the needle eye, passes the string through the wire loop, and finally pulls both the loop back through the needle by the handle, which pulls the thread through.

Embroidery Floss (Fig 9)

Embroidery floss (also called stranded cotton) is most popular and comes in a rainbow of colors. It consists of

six individual plies that can be separated or combined to achieve a thickness that best suits your project.

Fig 8



Fig 9



Machine Embroidery Thread (Fig 10)

There are essentially three different types: cotton, rayon and polyester. Cotton is the thickest and fills in the most. Rayon is the most popular, is shinier than cotton and not quite as thick. Polyester is the toughest of the machine embroidery thread types. It does not break easily and, like the rayon thread, is very shiny.

Fig 10



Machine embroidery threads differ from normal machine threads in that they are less twisted and can therefore spread out more evenly. This results in a much nicer embroidery appearance, especially with finer fabrics and detailed embroidery files.

Marking tool

Tracing paper/tracing carbon:

It helps to transfer embroidery designs to different types of fabric quite easily. You can either use a lightweight tissue, actual tracing paper, or dressmaking carbon paper as your tracing paper. (Fig 11 a) & (Fig 11 b)

Fig 11 a



Fig 11 b



Tracing wheel

A smooth tracing wheel has a flat edge and must be used with tracing paper to produce a mark on fabric. (Fig12 a) Serrated edge tracing wheel is used for tracing marks from a pattern to fabric pieces. (Fig12 b)

Fig 12 a



Fig 12 b



Tailor's Chalk (Fig 13)

Tailor's chalk is specially made for fabric marking and comes in many colors – no, it is not the chalk used in school blackboards, once upon a time, for the uninitiated. This chalk is thin, very easy to use, and convenient to hold and is gone with a wet wipe or wash.

Washable pen markers (Fig 14)

Disappearing markers are useful for temporary marking, drawing designs, embroidering, and memo writing.

Fig 13



Disappears spontaneously with water or exposure to air or with eraser if included, any marks on cloth, wool, plastics, wood, or paper.

Fig 14



Cutting Tool (Fig 15)

Embroidery Scissors: Scissors have two sharp blades held together and pivot on a single point in the middle. When used, the grip of your hand forces the blades to close, shearing the material in two.

Fig 15



Tailor's Shears (Fig 16)

Shears are more expensive than all-purpose scissors because they are tougher and more versatile. Shears have different-sized finger holes. The smaller finger hole on one handle is for your thumb, and the larger is for your fingers. Because to hold shears using more than one finger, can apply more pressure and have extra control when used to cut. The blade on shears is usually longer and sharper. This will cut cleanly without ragged edges. The sharper blade and better grip make this the sturdier tool.

Pinking shears (Fig 17)

It have a serrated edge, so it does not fray or unravel fabric and cloth. pinking shears are used for cutting woven cloth. cloth edges that are unfinished will easily fray, the weave becoming undone and threads pulling

out easily, the sawtooth pattern does not prevent the fraying but limits the length of the frayed thread and thus minimizes damage.

These scissors can also be used for decorative cuts and a number of patterns (arches, sawtooth of different as peck rations or asymmetric teeth) are available. True dressmaker's pinking shears, however should not be used for paper decoration because paper dulls the cutting edge.



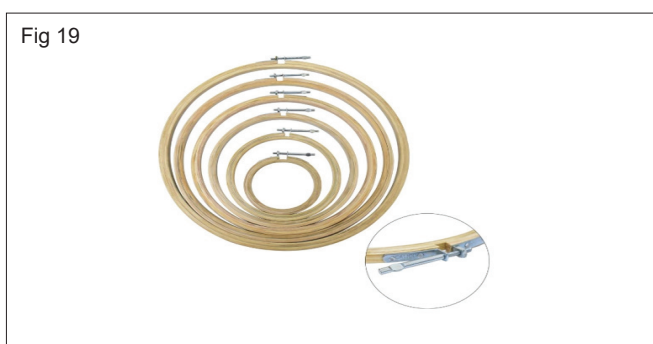
Duckbill Scissors (Fig 18)

Duckbill scissors are a pair of wide flat blade and a slightly angled handle so that the hand is lifted from the fabric while cutting. The paddle blade (also called the duckbill blade) prevents from cutting the stitches or the good part of the fabric. At the same time, the angled handle allows to hold the scissors well while the blade is really flat on the material. Using the duckbill scissors is easy to cut the fabric very close to stitches and that's why they are widely used in making appliques



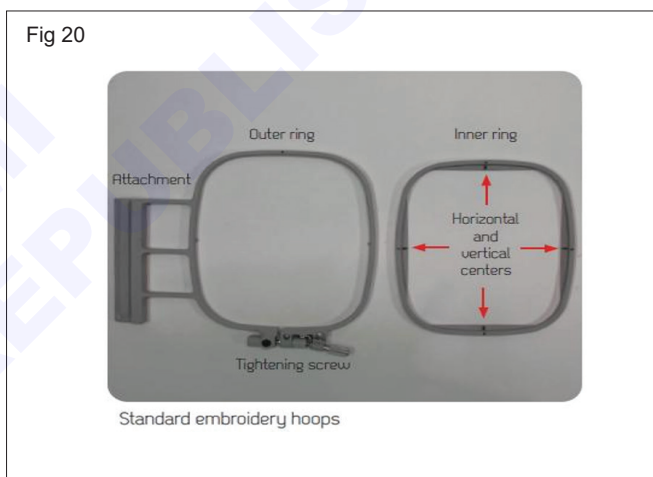
Hand embroidery hoop (Fig 19)

An embroidery hoop holds your fabric taut and securely in place as you stitch, which allows for even stitching and prevents puckering. Hoops come in many sizes, marked by their diameter in inches. For your project, choose one that encircles the entire design. To mount fabric into the hoop, loosen the screw join and separate the two rings; then, layer the fabric over the inner ring and press the outer ring down around the inner ring; tighten the screw again, and this should secure your fabric in the embroidery hoop



Standard Embroidery Hoops for Single-Needle Machines (Fig 20)

Standard embroidery hoops provide the strongest tension on fabric for the embroidery process. Fabric and stabilizer are secured between two rings: the inner ring, which is a fixed size, and the adjustable outer ring. The tightening screw on the outer ring allows for different thicknesses of fabric and stabilizer. The outer ring has an attachment that slides onto the machine and is recognized by the machine. The fabric/stabilizer lays on top of the outer ring and under the inner ring.



Standard Embroidery Hoops for Multi-Needle Machines (Fig 21&Fig 22)

On a multi-needle machine, the standard hoops were designed for tubular embroidery on finished goods. Commercial embroidery hoops secure the fabric/stabilizer combo between two rings: the inner ring, which is one size, and the adjustable outer ring. The tightening screw on the outer ring allows for different thicknesses of fabric and stabilizer. The inner ring has two attachments that slide onto the arms of a commercial machine. The fabric/stabilizer lays on top of the outer ring and under the inner ring. Because the inner ring attaches to the machine from the top of the hoop, excess fabric falls over the outer ring, under the attachment points. This design allows for true tubular embroidery.

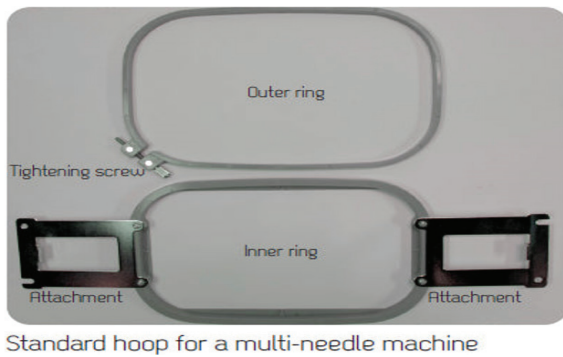
Magnetic Hoops for Multi-Needle Machines

There are three types of magnetic hoops for multi-needle machines that are ideal for tubular embroidery such as pant legs, sleeves, pockets, and more.

Fig 21



Fig 22



Quick Snap (Fig 23)

Quick Snap capitalizes on a multi-needle machine's free arm feature and is ideal for tubular embroidery such as pant legs, sleeves, and pockets. Follow the steps on this page to use Quick Snap.

When Quick Snap frames are attached to the machine, the machine detects an 8" x 12" hoop. It is the embroiderer's responsibility to load a design that fits in the opening of the frame and not rely on the machine's detection. Use of the trace feature is strongly encouraged

Fig 23



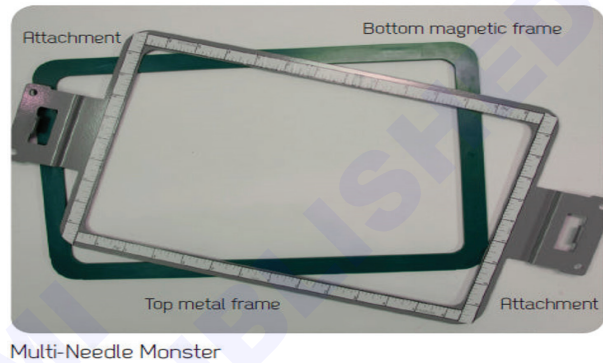
Snap Hoop Monster for Quick Snap

This attachment replaces the arms on the multi-needle machine. The metal bottom frame is inserted into the attachment. Fabric/stabilizer is sandwiched between the top and bottom frames.

Multi-Needle Monster (Fig 24)

Multi-Needle Monster is also a flat, magnetic hoop and has two points of attachment. It attaches to the machine just like a standard hoop—brackets slide into the arms. To make full use of the free arm, the magnetic frame sits under (or below) the metal frame. Multi-Needle Monster is recognized by the machine as a standard embroidery hoop.

Fig 24



Z Screwdriver (Fig 25)

Screwdriver is used to easily remove the two screws in the needle plate on the embroidery machine. It's important to remove the needle plate every once in a while and gently brush out the fluff and lint etc that builds up around the knives.

Fig 25



Screwdriver (Fig 26)

Screwdriver is designed for adjustment to your bobbin case tension screw.

Fig 26



Knowledge of color wheel & color scheme

Objectives: At the end of this lesson you shall be able to

- state about implementing of colour & learning of colour combination.

Colour

The life giving element in fashion designing. Colours play a very important part in human life. Choosing effective colour scheme is more important.

Colours have to balance the harmony and rhythm in the design to give proportionate effect on a design. They make a design attractive and lively and various emotion and feeling can be expressed by colours.

Colours give both physical and psychological effect to the eye.

There are some colour which are associated with emotion such as-

Red

Colour of blood, flame, and symbol of love when we come in contact of red it is attractive and it speeds up the body's metabolism.

Red is preferred colour indicated on valentine's day some arranged function specious items (kumkum, bangles, beads chain)

Yellow

Gives happiness, sunshine, flowers, and cheerfulness. Colour of spring. When your friend or you say are emotionally sad that when you see yellow than your mind stabiliser.

Green

Tranquil and colour of tree and grass (fertility) gives life. This colour is also dangerous because it is colour of poison and jealousy (felling, bad for somebody) Olive green gives a sophisticated (elegant) look only to some people.

Blue

Colour of sky sea. Light blue gives a younger look. Dark blue has a dignified look.

Purple

An elegant colour used by royal people, fashionable colour used informal evening wear. Though it is an artificial colour the lighter shades of purple is used for women wear.

Brown

Soil and rich fertile gives sad and wistful feeling (day feeling). It can be a romantic colour if used colourfully while designing.

White

Denote purity, innocence, peace this colour denote with winter but use of this colour in large scale given depression.

Black

Night, death, evil, black magic, orthodox colour an elegant colour for party and evening wear, the light colour for winter.

(list the other reasons and uses of the above given colours).

Colour is divided into 3 elements (dimensions)

Hue, value, intensity

Hue

Another name for colour.

Value

Lightness or darkness of a colour.

Intensity

Brightness or dullness of colour.

Colour Wheel

Colour wheel has 12 colours and main or key colours on the wheel are primary colour,

Secondary colour, tertiary colours. This colours are used to establish their relationship with each other.

What is Primary colour?

Primary colour are natural colours which cannot be got by mixing any colour. They are Red Yellow, Blue.

How do you get secondary colour?

When two primary colour are mixed in equal proportions we get secondary colour.

Red (1 drop) + Yellow (1drop) = Orange

Yellow (1drop) + Blue (1drop) = Green

Blue (1drop) + Red (1drop) = Violet.

How do you get tertiary colour?

Mixing of one primary with secondary gives tertiary colours.

Mixing colours with proportion

Red (2drop) + Yellow (1drop) = Red Orange

Yellow (2drop) + Red (1drop) = Yellow Orange

This stage we can see the family colour of Red.

(Red, Reddish orange, Orange, Yellowish Orange, Yellow).

Yellow (2drop) + Blue (1drop) = Yellow green

Blue (2drop) + Yellow (1drop) = Blue green

There we see the family of green

(Yellow, Light green, green, Blue, Green, Blue)

Blue (2drop) + Red (1drop) = Blue violet

Red (2drop) + Blue (1drop) = Red violet.

We also get to see the family of Blue

(Blue, Royal Blue, Violet, Purple, Red)

Mixing of colour must be proper given proposition which will give the actual colour.

What is Value?

When white colour or black colour is added to the natural colour we get to see lighter or darker shades of one colour.

(Take one colour of your choice from the colour wheel, start adding small drops of white colour to the natural colour step by step fill you gets white colours.

We can see the difference of one colour step by step from natural to white).

On the colour wheel

When all the 12 colours are painted it is divided into 2 as warm colours and cool colours.

Warm colours are from purple to yellow and cool colours are from light green to violet.

Warm colours are used in winter season reason these colours keep you warm in cold weather. Cool colour are used in summer season reason these colours keeps you cool in sunny weather.

Colour schemes or relation

Selecting of 2 colour that are equally place on the colour wheel are called Diad colour .

Example

Red with orange

Yellow with green

Blue with violet

Selecting of 3 colour that are placed equally on the colour wheel is called Triad colour.

Example

Red, yellow, blue, orange, green, violet.

Selecting of 4 colour or more on the colour wheel is called tetrad.

Combination of one colour with the opposite colour is called Complementary colour.

Example

Orange and blue

Yellow and violet

Green and purple.

Choosing of four colour on the wheel in split complimentary color

Example

Yellow with yellow green

Blue violet with violet.

Colours without colour or natural colour are Achromatic colour

Example

White, Black, grey

Using various value and intensity of a colour is Monocromatic colour.

What is the quality of colour?

The combination of light, dark of a colour is called as quality of colour.

- 1 Tone
- 2 Light colour
- 3 Dull colour
- 4 Dark colour
- 5 Vivid colour

Tones

Mixing white or black to the base or natural colour this give the brightness to a colour . It dullness to a colour has to be given then grey (combination of black and white together) should be added to the natural colour.

Light colour

Mixing white with natural colour. Here you can see the lighter shades of a colour. You can find these lighter colour in the women collection of dresses.

But these colours denote catch the eyes, but have their own vale in the group of colour scheme.

Dull colour

Reducing the brightness of a colour by adding grey to the natural colour. These colours reduce tension. Adding of less grey gives diffuse or blue effect and adding more of grey gives muddy effects.

Dark colour

Dark colours relate to royalty. Adding of black give weight to the colour and the dress. Most of the gents/ men's wear have these colours. We can see in suits and formal wear. When lighter colour are paired or combined with this dark colour it is more conventional and comfortable in use.

Vivid colour

Vivid colour as surprising colours. Bright and powerful. The usage of these colours by a personality has a tendency of standing a part among the other colour.

Example

Orange and blue

Yellow and violet

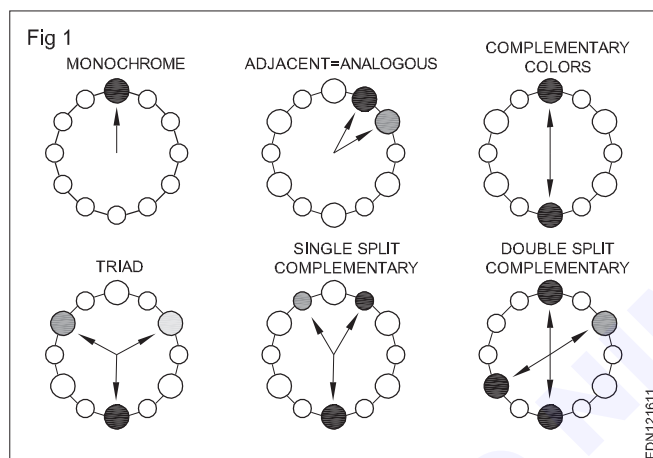
Green and purple.

Choosing of four colour on the wheel in split complimentary color.

Example

Violet, orange, yellow, blue color placed adjacent to each other analogous color.

Color Schemes (Color Harmonies) (Fig 1)



Monochrome (meaning “one color”) color harmonies include only one color in different value (i.e.) the lightness and darkness of a color and intensity (i.e.) the brightness or dullness of a color. An example of a monochrome color scheme includes any color mixed with white, gray, or black. For example, red, rose and pink (red mixed with white) are monochrome.

Adjacent colors are also known as called analogous colors. They uses colors that are adjacent to each other on the color wheel. An example is a color scheme that includes various values and intensities of blue and violet.

Complimentary colors are the colors opposite each other on the color wheel. For example, violet and yellow, red and green, and blue and orange are examples of complimentary colors.

A single split complement uses a primary color with colors on either side of its complement. An example is a color scheme that includes various values and intensities of violet, yellow - green and orange - yellow.

A triad uses the colors at the points of an equilateral triangle (i.e.) three colors spaced equally on the color wheel. These are also known as balanced colors. An example of a triadic scheme could be red, blue, and yellow; green, orange, and purple, etc.

A double split complement are also called tetradic, uses two pairs of complements, one apart on the color wheel. An example is red, green, orange, and blue.

Warm Colors and Cool Colors

The warm colors include reds, oranges, and yellows, these colors create the feeling of being closer; the cool colors include blues, greens and violets, these colors have a tendency to feel like they are receding or backing away from you and they create cool tones.

Color schemes

Monochromatic color scheme

A monochromatic color scheme uses a single color mostly. In this type of scheme, various darker shades, grayer tones, and tints of the main color may be included in coloring. In addition, the one color is often paired with white or another neutral.

Analogous color scheme

Analogous colors are colors that are adjacent to each other on the color wheel. Some examples are green, yellow green, and yellow or red, orange and yellow. This color scheme is often found in nature and are pleasing to the eye. The combination of analogous colors give a bright and cheery effect to the design. When using the analogous color scheme, one should make sure there is one hue as the main color.

Complementary color scheme

Colors that are opposite each other on the color wheel, such as blue and orange, red and green, purple and yellow. Complementary color schemes creates a more energetic feel. The high contrast between the colors creates a vibrant look.

Split-complementary color scheme

A color scheme that includes a main color and the two colors on each side of its complementary (opposite) color on the color wheel. These are the colors that are one hue and two equally spaced from its complement. To avoid fatigue and maintain high contrast, this color scheme should be used when giving power point presentations, or when using a computer for an extended period of time. Additionally, certain colors should not be mixed, like red and green. Colors that should be used are red/purple and yellow/green.

Tetradic color scheme

Tetrads or quadrates is the color scheme of any four colors with a logical relationship on the color wheel, such as double complements.

Neutral color scheme

A color scheme that includes only those colors that are not found on the color wheel are known as neutrals. Beige, brown, white, black, and gray are the examples of neutral colors.

Warm and Cool Color Schemes

A color scheme that does not include blue at all its Warm color scheme. Whereas, the color scheme that do not include red at all is known as cool color scheme.

Grey colours

Objectives: At the end of this lesson you shall be able to

- define white and black colour
 - explain Grey colour using by white and black colour.
-

Black colour

Night, death, evil, black magic, orthodox colour on elegant colour for party and evening wear. The right colour for winter.

White colour

Denotes purity, innocence, peace, this colour denotes with winter but use of this colour in large scale given dipression.

When white colour or black colour is added to the natural colour we get to the lighter or darker shades of one colour black + white = grey color.

Black, White and Grey are not true colours. They are considered to be neutral a chromatic colours.

Light colours or Grey colour

Mixing white with black colour. Here you can see the lighter shades of a colour. you can find these grey colour in the dress.

Tints shades and gradation

Objectives: At the end of this lesson you shall be able to

- state the features of gradation and shades
 - explain tints of color.
-

Gradation

- 1 Gradation of size and direction produce linear perspective
- 2 Gradation of colour from warm to cool and tone from dark to light produce aerial perspective.
- 3 Gradation can add interest and movement to a shape.
- 4 A gradation from dark to light will cause the eye to move along a shape.

Shades

Shading- The darkening or colouring of an illustration or diagram with parallel lines or a block of colour is know as shading.

It creates a very slight variation typically in colour or meaning. It is development or the next stage of the drawing art.

Shading gives life to the design /sketch this process is used in drawing for depicting levels of darkness on paper by applying media more densely (or) with a darker shade for darker areas and less densely or with a lighter areas to create variation. It increases the volume and depth of the drawing/design and expresses the effects of light and dark as well as the more suitable reflections of light.

Shading makes the drawing look realistic and natural. The closer the lines of shading are together, the darker the appears. Likewise the further apart the lines are the lighter the area appears. It is also used to give three dimensional effects to the design/sketch.

Even shading, directional shading, open shading shaded gradation and graduated tones are the different type of basic shading methods in practice. A part from different shading method use of different grades of pencil also creates varied effects in shading. The texture (i.e) hardness or smoothness of the pencil used play an important part in delivering the desired effect to the sketch. The simplest method is to vary the pressure exerted on the pencil, so that the line appear as different tones of gray.

Tints

Tints is the mixture of a colour with white which increase lightness and a shade is the mixture of a colour with black which reduce lightness.

A tone is produced either by the mixture of a colour with gray or by both tinting and shading. Mixing a colour with any neutral color (including black, gray and white) reduce the chroma or colour fulness while the hue remains unchanged.

Basic hand stitches

Objectives: At the end of this lesson you shall be able to

- define name and classify temporary hand stitches
- describe their use.

Temporary hand stitches

Basic stitches are divided into constructive and decorative stitches which are used in embroidery. Constructive stitches are further divided into temporary and permanent stitches.

Temporary stitches: Basting or tacking is a temporary stitch used for holding two or more layers of materials together before the permanent stitches are made. Usually this stitch is horizontal and is worked from right to left. This is the only stitch, which is started with a knot. For basting use a contrasting colour thread so that it can be easily seen and removed. The length of the stitch will vary depending on the weight of the fabric and how securely the pieces are to be held together. To end basting make two stitches, one on the top of another. There are several types of basting stitches.

Even basting is used for short length of seams and folds.

Uneven basting is used for long length of seams and folds.

Diagonal basting is used when several layers of fabric are to be held securely.

Padding stitch is used in coats to hold the lining and inner lining.

Tailor's tacks – Thread marks are basically uneven basting stitches. They are used to transfer marks on a lower layer of fabric.

Permanent stitches by hand

Objectives: At the end of this lesson you shall be able to

- define name and classify type of permanent stitches
- state the uses of each type of stitches.

Permanent stitches: In permanent stitches avoid using knots, while starting and ending the stitches. Begin with a small back stitch if it can be concealed under the permanent Permanent stitches or leave a short length of thread (about 2 to 3cm) extending on the wrong side which can be caught and held under the first few permanent stitches. To end the stitch take the thread to the wrong side and secure with loops.

This is the simplest form of hand stitch used on almost every garment.

- i **Running stitch** is the simplest of all the hand stitches. It is used for sewing delicate fabrics seams, tucks, gathering, shirring, quilting mending can be done with this stitch.
- ii **Hem stitch:** This is used to secure down a folded edge of material. Hemming appears as slanting stitches on the wrong side and small at right side.

These stitches should be fine and spaced close enough to hold the fold securely in place. Before starting the hem fasten the thread with several tiny stitches on top of each other. Finish the hemming with several stitches to fasten it securely.

iii **Slip stitch:** This is a type of hemming used to join two folded edges or to join one folded edge to the flat surface. This stitch is faster and easier to make a seam from the right side itself used to attach patch pockets, jacket lining, securing.

iv **Back stitch** used to attach two pieces of cloth together by using a handmade stitch. It is strong and sometimes substituted then machine stitching. Its right and wrong side stitches are different. It is used to repair a seam when you do not have machine.

v **Over casting:** It used on raw edges either single or double threaded or layer to prevent them from trading.

vi **Whip stitch:** This stitch is similar to over hand stitch used to finish edges. The only difference between is in overhead the needle is pushed slantingly and the stitch is formed straightly and in whip stitch to needle in pushed straight down forming slant stitches.

Methods of Transferring the design: After selecting the design for the embroidery work, the markings for the design should be transferred to the right side of the material without spoiling it. There are several ways of doing this besides the method shown in practical lessons. Some of them are Direct Method, Tacking Method, Transfer by Ironing.

Direct method: Fabric such as organdy, nylon, muslin, nylux, voile, etc., can be laid over the design and traced directly with pencil.

Tacking method: This method is used on velvet, dark coloured cloth materials and all knitted fabrics. This method is worked by tracing the design on a thin tissue paper and tacking the design with the fabric by fine running stitch and then tearing the rest of the paper.

Transfer by ironing: Readymade paper pattern can be transferred onto the material by ironing. The transfer has the design outline in wax or ink on thin paper. The printed design is laid onto the material and moderately hot iron is applied to the back of the transfer. When the paper is removed, it is found that the design is transferred onto the material.

Embroidery stitches: Besides weaving and printing techniques, embroidery work gives an ornamental look to the fabric. There are different kinds of embroidery stitches, which are known by special names. For successful embroidery work, it is essential that you learn to work the basic stitches. In addition, you should acquire the ability to choose the right kind of stitches, designs and colour combinations suited to the type of fabric and for the purpose and use of garment or article, on which the embroidery is to be made. The stitches must be sufficiently taut, so as not to make loops and yet loose enough not to pucker the material. While beginning embroidery, the design must be outlined first. The outlining must always be done correctly or otherwise the design would lose its shape. Embroidery is a needle and thread are for ornamenting the base of fabric it has been classified.

There are different kinds of embroidery stitches, for example :

Flat stitch: When we make the stitches of fabric which are flat on the surface of fabric are known as flat stitches. Running stitch, back stitch, Pekinese back stitch, stem stitch, raised stem stitch, couching, detached couching.

Looped stitch: Looped stitches are those stitches which are formed by making a loop of thread on to the needle. Chain stitch, cable chain stitch, lazy daizy stitch, double lazy daizy, button hole stitch, closed button hole, cluster button hole, feather stitch, double feather stitch, closed feather stitch.

Cross stitch: Crossed stitches are those stitches which are formed by making a cross of two stitches. The length of the stitches may vary but it has a crossing structure. Herring bone stitch, double herring bone, fish bone stitch, open Roumanian stitch, cross stitch, double cross stitch.

Knotted stitch: Knotted stitches are those types of stitches in which a thread is tied up with a knot with the help of needle. French knot, bullion knot.

Filling stitches: The stitches which are used for filling the entire area are known as filling stitches. It may have long floats of thread for filling. **For example:** satin stitch, long and short satin stitch etc.,...

Running stitch: It is essential that you learn to work the basic stitches, for successful embroidery work. While beginning the embroidery, the design must be outlined first. Running stitch used for outlining purpose oftenly, as well as decorative stitch. This used for base stitch for interlacing work. The various stitches are done by using this basic stitch. Whipped running, laced running, double back laced running, double whipped running, double laced running are running stitch variations.

Use outlining stitch of a design and foundation stitch for whipped and woven decorative stitches. This stitch must be even in length and spaces between stitches even while working. Keep stitch about three times as long as space between.

Nice for curved line design. Running stitch variations suitable for decorative border. Filling work of design done by running stitch, which is easy and quick to work.

Back stitch: Back stitch also one of the basic stitch. Strongest and most versatile of the hand stitches. Back stitch may be combined with many other stitches to produce special effects. For example work chain stitch first and then, with contrasting colour, work back stitch into the center of each loop, you have chained back stitch or work large back stitches and then whip with contrasting colour for whipped back stitch. This is the back of the outline stitch. It follows a tight curve very well if the stitches are kept tiny. It is the base stitch for many other stitches like Pekinese, interlaced band etc.

This stitch is suitable for all type of design. In small and simple designs it give simple outlining effect. Very tiny back stitch used for sharp curved line in a design. Small, evenly space and regular of this stitch gives, the machine stitch effect to the design.

Stem stitch: The stem stitch is most frequently used for narrow, curving lines. This stitch is used as outlining stitch for another stitch which used as filling to design edges, accent etc. For example, work a design in Tambour embroidery and then outline. Outside edge with lighter or darker shades for contrast.

Very suitable for outlining any area, stems etc. The stitches should be tiny, especially on a sharp curve. When curve is in the opposite direction, thread may be held always above the line. It gives the twisted cord effect.

Satin stitch:

Satin is a flat filling stitch that looks simple to work. It gives neat finishing and good appearance only with good practice of learning. Blocks of stitches can be worked in different shades and effects.

This stitch is most suitable for embroidering floral designs as well as the other design patterns like geometrical, animal designs, natural scenario etc. This stitch is worked on all kinds of fabrics like satin, silk, linen corduroy, georgette etc. It can be worked even in any type of canvas.

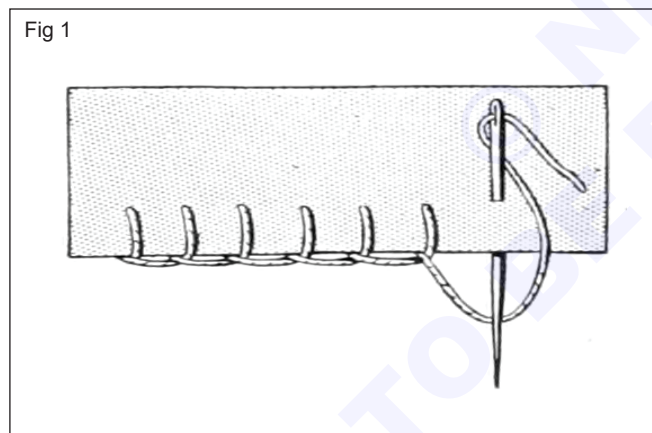
Sewing method

Start stitching from the base of the petal. The first thread should be single threaded and one stitch should be placed on top of the fabric as a single stitch and one stitch should be stitched closely and tightly on top of the stitch without diagonal falling.

Chain stitch: This is one of the beautiful stitch used in embroidery work. Crewel from India is usually worked entirely in chain stitch. For shading in Jacobean patterns, just work row upon row of chain, following contours. Chain stitch may be whipped or laced to decorate it further.

It is used in line covering, outlining of a design like branches, stem etc. This is the basic stitch for its variations. Its variation stitches used for decorative borders, filling etc. Zigzag chain, cable chain stitch, sloping chain, Russia chain stitch, lazy daisy, open chain stitch are some of its variations.

Floral design is suitable for this stitch. This is more beautiful for stems, branches, leaves like designs. This is one of the outlining stitch. Two strands of yarn is enough for beautiful work.



Button hole stitch(Fig 1)

Button hole stitch is a traditional embroidery stitch. It is used as a decorative finish for edges of blankets and in making of hand worked button holes.

Stitches may be of same size or grouped at regular intervals. This stitch is more suitable for free hand design. This stitch is worked between pair of lines.

It is also worked in cut work, eye let hole and applique work. Button hole stitch is also used for filling the designs.

Single cross stitch : In this only one cross-stitching is stitched. It has got another name as conditional stitch.

Star cross-stitch : This stitching appears as in the form of star, hence it is called as star cross. To carry out this

flower stitching more quantity of thread is needed. In appearance it gives charming visual effect. This star stitching is named as bed cross stitching. It is sample form of cross-stitching

To decorate pillow corner,

Cuisine cover, bed opened

Table cloth etc this cross-stitch is used.

In one row in same color various stitching first created and then again through the same this type of stitching is completed. This will save the time and also gives soft effect.

French knot (Fig 2)

French knot is a slightly textured and raised stitch. knots can be worked close together to fill an area completely. Producing a lumpy effects . Lumpy knots as desired within design area.

French knots can be made larger by increasing number of twists of thread around needle. These are mostly used for floral patterns. All types of fabrics are suitable to work thin stitch. Poplin is often used by the beginners, to achieve good results. Apart from skein threads. Pearl threads and woolen threads are also used. This stitches are widely used to embroider the ladies wear and kids wear.



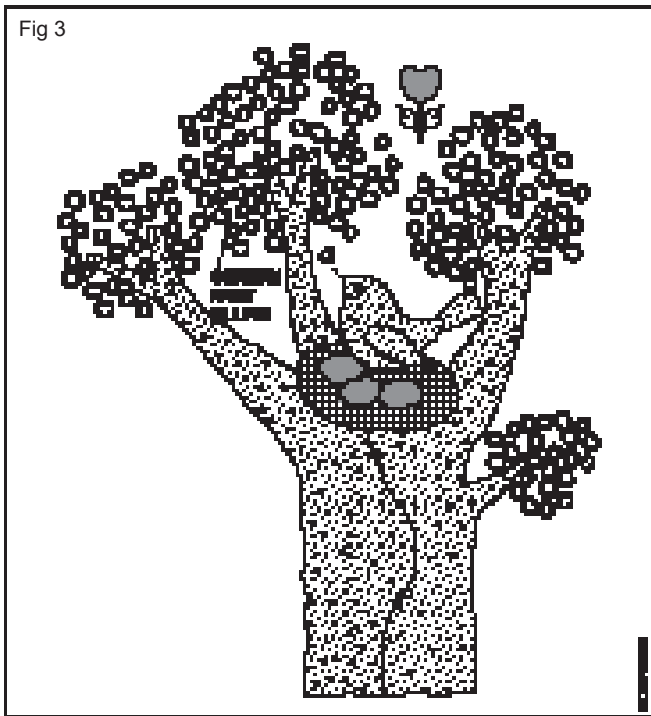
Bullion knot (Fig 3)

Button knot is the variation of the french knot. The stitch varies from the french knot with the number of thread twist. It is used for decorative purpose. This finished stitch, resembles the shape of a coil. while working, do not wrap the thread tightly around the needle. So that to avoid becoming it hard to pull through, to fix them in place. Two contrast colours of thread is in the needle to give an enhanced effect to the stitch.

It is often used to work the floral designs especially the "rose" flowers

This decorative knot stitch is widely used to embroider the flowers or buds. It should be worked patiently and one attains perfection with good practice.

This stitch often used to embroider the sarees, baby frocks and other articles.

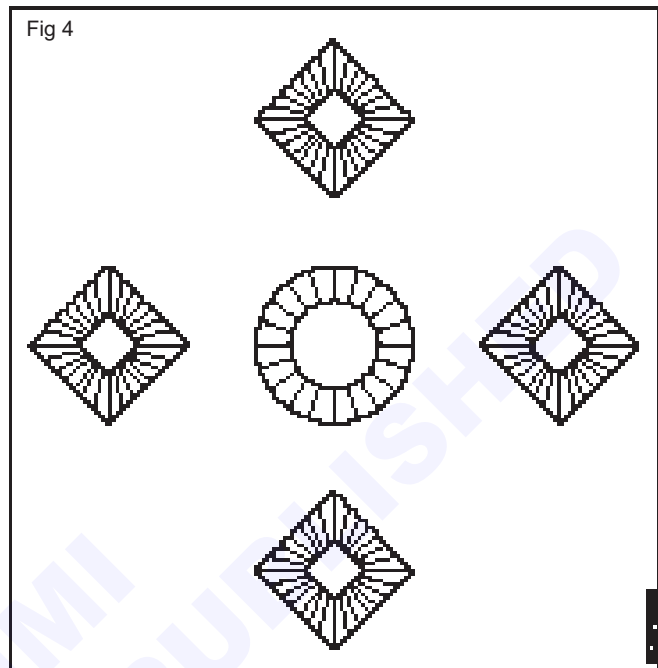


by a small circle, the rest of the embroidery is prepared with 2 silken thread either with stem stitch or herringbone stitch closely embroidered. The colours used for this embroidery is rich rust, red, light green, pine, indigo surrounds the mirror. This is done on cholis, sharara.

Motifs are of flowers and creepers with rows of mirror. This is done on table cloths also. Same colour thread or contrast colours also used.

Mirror work (Fig 4)

This is otherwise known as Abhu Bharat mirror work from Punjab, Kathiawar in which round pieces of mirror is attached, one button hole stitch pattern are created with the fixing of round shaped mirrors. The design to be embroidered are first sketched out by hand. The portion where the mirror has to be stitched is shown



Types of Stitches

Objectives: At the end of this lesson you shall be able to

- define the different types of stitches in software.

Line Stitches (Fig 1)



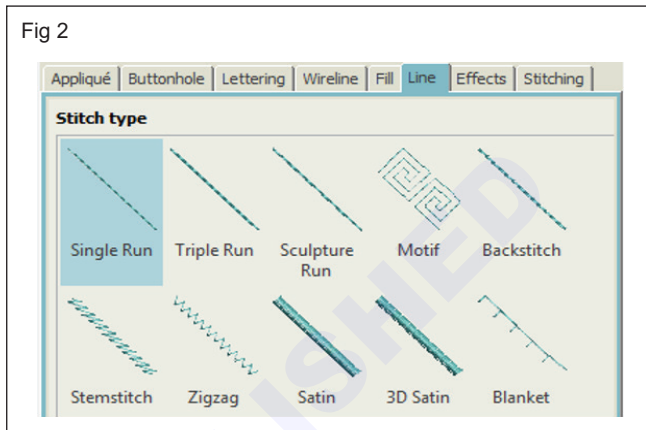
Embroidery software provides tools for creating outline stitching of varying thicknesses and styles. Digitize outlines with both open and closed shape methods. Lines of varying thickness are typically used to add borders, outlines, and details to shapes. There are tools for creating simple run stitching as well as decorative outlines using motifs.

In all cases, digitizing techniques are the same. Most digitizing tools are available. Simply select a digitizing tool, a fill or line method, a stitch type, and click reference points. Press <Enter> to confirm or <Esc> to cancel. Stitch types can be easily swapped. Simply select the object and choose another stitch type.

Simple runs

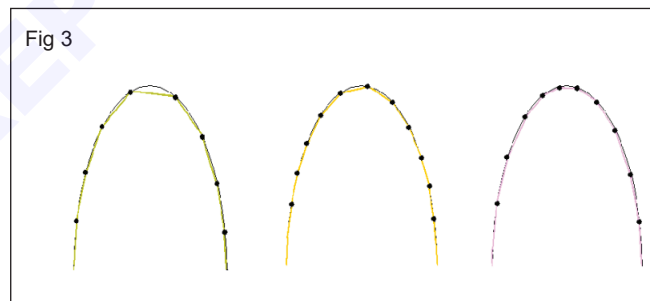
Use Single and Triple Run tools to digitize lines of simple run stitching.(Fig 2)

Use Object Properties > Line > Single Run to create single rows of stitching for borders or details along a digitized outline.

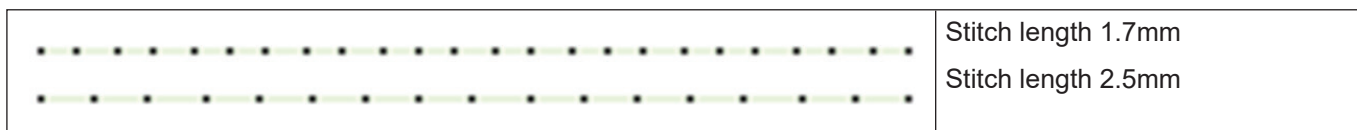


Use Object Properties > Line > Triple Run to create a thicker outline for heavier borders or details

Digitize simple runs as like any other outline stitch. Adjust settings via Object Properties.(Fig 3)

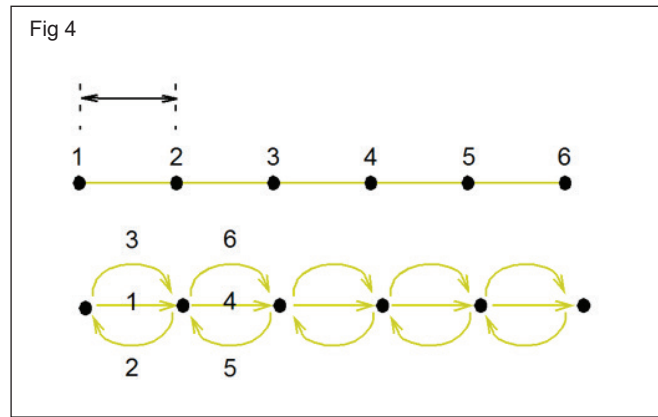


For both run and triple-run stitches, stitch length can be adjusted via Object Properties to suit the shape. If a line has tight, sharp curves, reduce the length, for example to 1.8 mm, so that the stitches follow the line. To reduce the stitch count for flatter curves, increase the stitch length.



Choose between run or triple run for thicker lines...

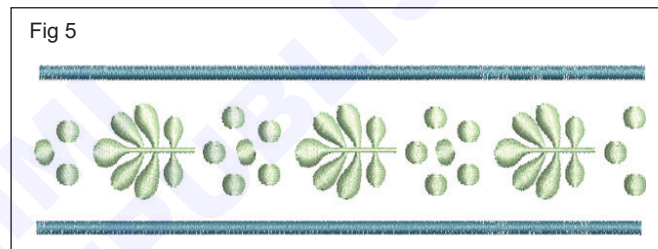
Mimic hand-made embroidery by using triple run and setting run length to 4.0mm.(Fig 4)



Satin lines

	Use Object Properties > Line > Satin to create thicker borders or columns of even thickness.
	Use Object Properties > Line > 3D Satin to create raised satin borders – can be used with trapunto for quilting effects.

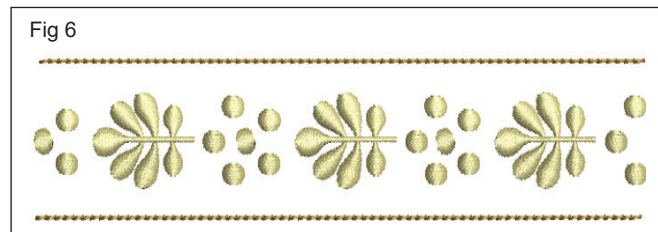
Satin stitch can be used for outlines. It is well-suited to thicker borders. Adjust stitch density by setting a fixed spacing value, or let auto spacing calculate it. Use 3D Satin to create raised borders consisting of multiple layers of satin stitching. Stitch settings can be adjusted before or after digitizing.(Fig 5)



Backstitch lines

	Use Object Properties > Line > Backstitch to create traditional backstitch borders – old, adaptable stitch type used for delicate outlines.
--	---

Backstitch is a traditional, adaptable stitch which can be used as a delicate outline. This small, even stitch follows intricate curves well. Backstitch can be used for blackwork and redwork designs. Specify the exact stitch length, thickness and overlap values as well as the number of strokes.(Fig 6)

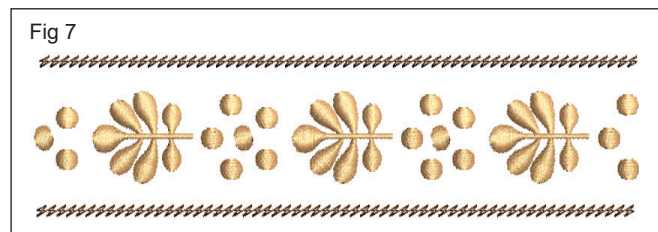


Stemstitch lines


	Use Object Properties > Line > Stemstitch to create traditional stemstitch borders or details such as stems and vines.
--	--

Stem stitch is a detail stitch. It is used for stems and vines with other decorative stitches, or as an outline for stitches such as satin or motif fills. Specify various settings including line thickness, spacing, angle, single or triple, and stitch thickness.

Stemstitch can also be used to create heavier stipple fills with stemstitch lines. (Fig 7)

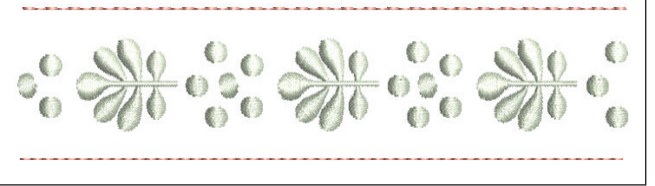


Sculptured runs



	<p>Use Object Properties > Line > Sculpture to place a row of 'sculpture' stitches along a digitized line to simulate line stitches used in quilting.</p>
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The Sculpture Run outline is used to simulate line stitches in quilting. It is a variation of multiple run stitching, where each alternative triple/multiple run stitch is replaced by a single run stitch. Sculpture Run outline is recommended for use only with later-model machines.(Fig 8)

Fig 8

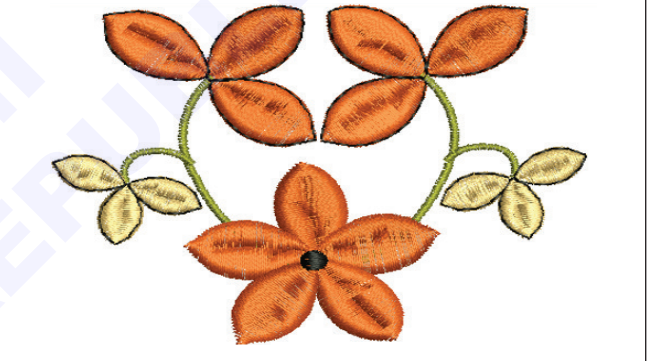


Satin stitch

	<p>Use Object Properties > Line > Satin to create thicker borders or columns of even thickness.</p>
	<p>Use Object Properties > Line > 3D Satin to create raised satin borders – can be used with trapunto for quilting effects..</p>

Satin stitch can be used for outlines or fills. It is well-suited to borders and thicker outlines. It is also well-suited to narrower shapes where the stitch runs the entire width of the column. Satin stitches are almost parallel. Because there are generally no needle penetrations breaking up the fill, satin stitch creates a glossy, high-quality effect. Satin stitch can be used with any of the digitizing tools. (Fig 9)

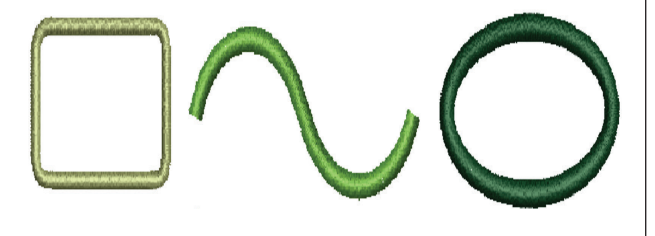
Fig 9




Satin lines

Use Satin line to create thicker borders. Use 3D Satin line to create raised embroidery designs consisting of multiple layers of satin stitching. Stitch spacing and width can be adjusted before or after digitizing via Object Properties. (Fig 10)

Fig 10

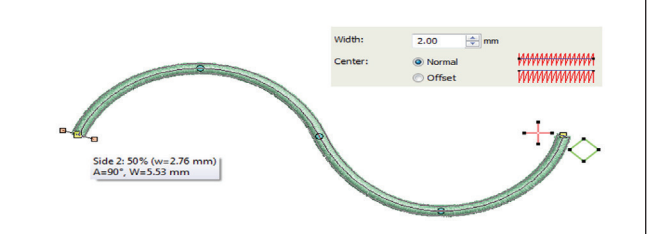


Line thickness

	<p>Use Select > Reshape to adjust object outlines, stitch angles, start and end points, curved lines, etc.</p>
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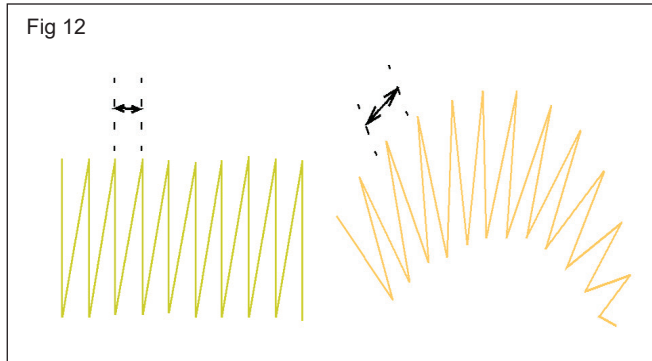
Satin line width can be controlled either by means of the Width setting in Object Properties, or interactively, using the Reshape tool and dragging the sizing handles. Use the Offset setting if Satin line to overlap the boundary of a filled shape. This will stop gaps from appearing. (Fig 11)

Fig 11

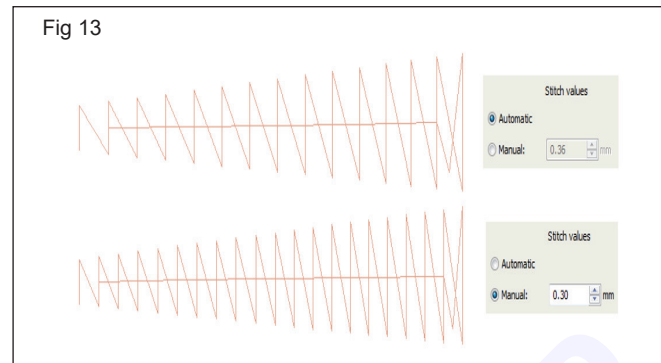


Stitch density



Stitch spacing is the distance in millimeters between two needle penetrations on the same side of a shape. Where it is very narrow, stitches need to be less dense because too many needle penetrations can damage the fabric. (Fig 12)



Where a border narrows, stitches are tight, thus requiring fewer stitches to cover the fabric. The Automatic setting adjusts stitch spacing for satin stitches according to outline width. For objects of varying width, Automatic adjusts spacing accordingly. (Fig 13)



Satin fill

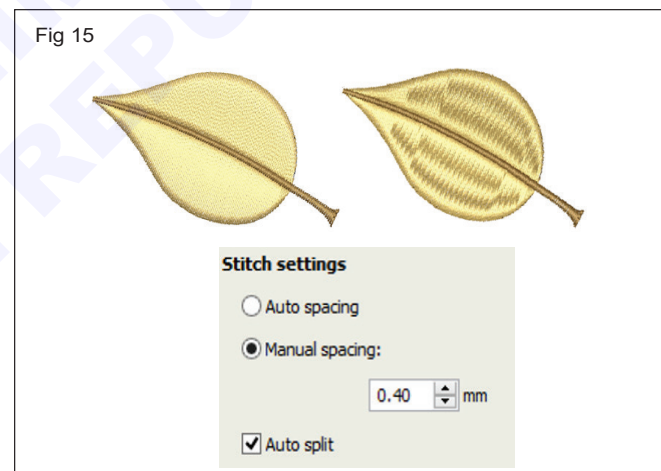
	Use Object Properties > Fill > Satin to create stitch fills for narrow shapes and thick borders.
	Use Object Properties > Fill > 3D Satin to create raised surfaces – can be applied to lettering or used with trapunto for quilting effects.

Satin fill is well-suited to narrow borders and shapes where the length of each stitch runs the width of the shape. Satin stitches are almost parallel, with every second stitch slightly slanted. Because there are generally no needle penetrations breaking up the fill, satin creates a glossy, high-quality effect. (Fig 14)



Auto Split

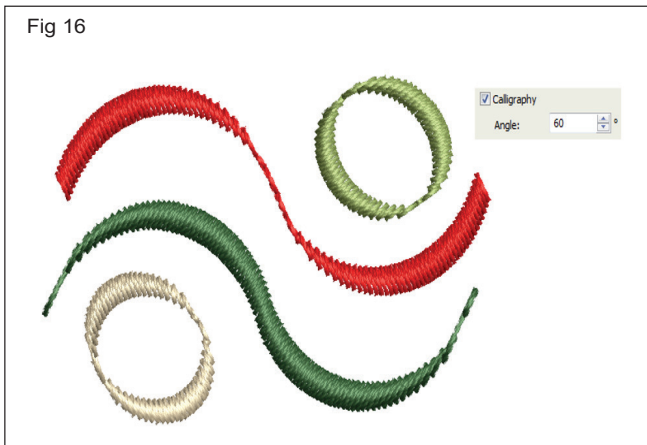
If a satin shape is wide, some stitches may exceed the maximum stitch the embroidery machine can produce. When Auto Split is applied, long satin stitches are broken into shorter ones. It also distributes needle penetrations randomly so that they do not form a line in the middle of the shape. (Fig 15)



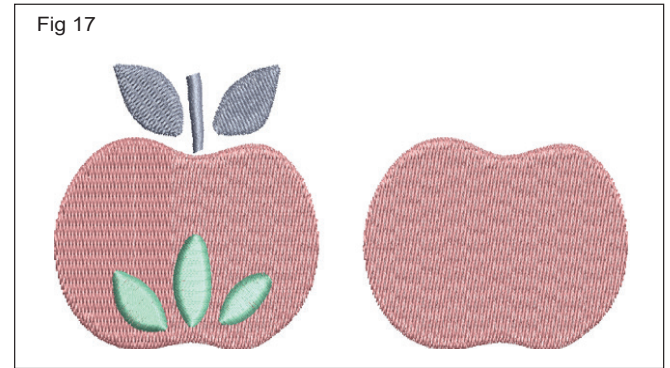
While Auto Split is used primarily to prevent long stitches in wide shapes, it can also be used as an alternative to Tatami fill. Auto Split looks more satin-like and works well with turning stitches, creating soft lines and a little more depth. By contrast, Tatami fill is flat and can show unwanted patterns with tight curves.

Calligraphic turning satin

Satin lines, both open and closed, include a 'calligraphy' setting which allows you to specify an angle like an italic pen nib. Generally use this setting with Digitize Open Line but it can also be applied to Digitize Closed Shape with Line stitching selected.



Tatami fills (Fig 17)

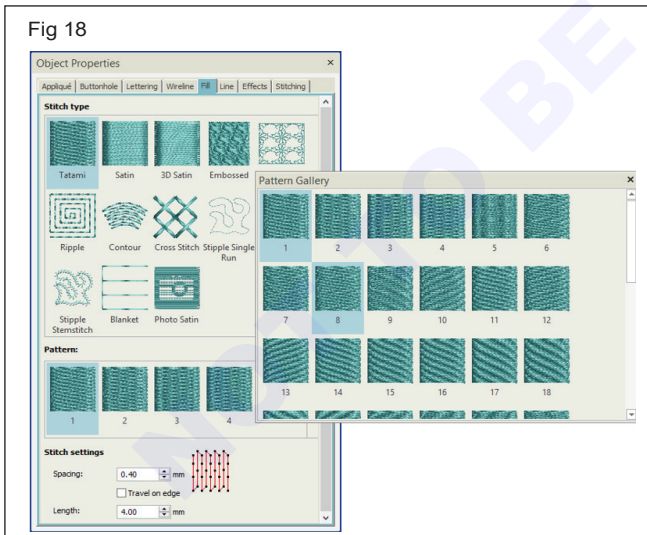


Tatami fill stitch consists of rows of run stitches and is suitable for filling large, irregular shapes. Stitches are laid in rows going back and forth across the shape. These can be parallel or slightly turning. Stitch offsets in each row eliminate unwelcome split lines. You can control stitch density in tatami fill objects by adjusting the pattern, stitch spacing and length.

	Use Object Properties > Fill > Tatami to create stitch fills for larger, irregular shapes with solid, uniformly flat fields of stitching.
	Use Digitize > Digitize Closed Shape to create closed shapes using either outline or fill stitching. Left-click for corner points, right-click for curves.

Apply Tatami fill

To preset Tatami fill, open the Object Properties with no objects selected. To edit settings, select a tatami fill object. The Object Properties > Fill tab opens. Select Tatami and choose a suitable pattern from the gallery. Any closed line digitizing tool is available for use. (Fig 18)

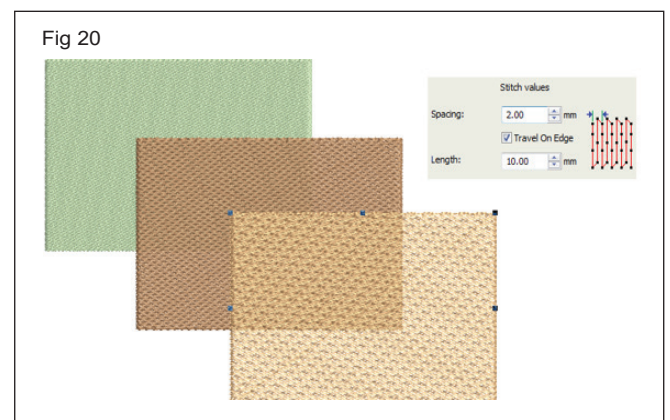
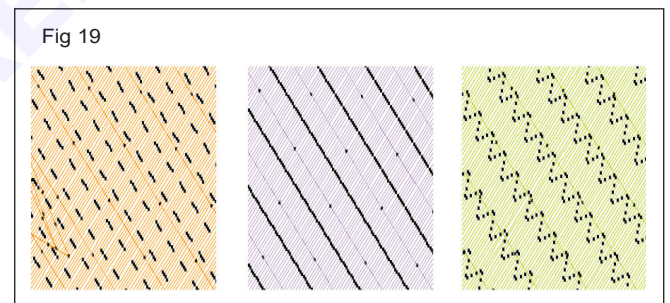


Tatami patterns are formed by needle penetrations. The default pattern (No. 1) is designed to create a uniformly flat and smooth texture similar to a woven mat. There are many other preset patterns to choose from. Experiment to find the best pattern for purpose.

Tatami fill density (Fig 19)

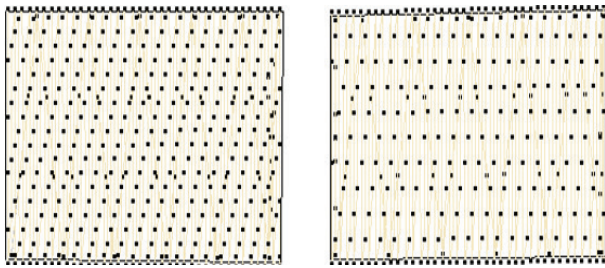
For Tatami fill, stitch density is determined by row spacing. The spacing setting is the distance between

two forward rows. To increase density, enter a smaller value. To create a more open fill, enter a larger value. (Fig 20)



Stitch length varies slightly in Tatami fill to ensure that small stitches are not generated at the edges of the shape. Increase length for a looser, more glossy appearance. (Fig 21)

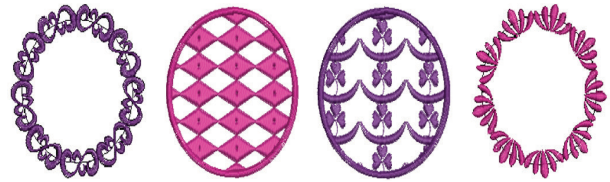
Fig 21



Motif stitch

Motif stitch can be used for lines or fills. Create decorative outlines using any pattern from the selection list. Also modify the rotation angle, orientation and scale, and vary the space between patterns. Motifs are repeated in parallel rows to form decorative fills. (Fig 22)

Fig 22

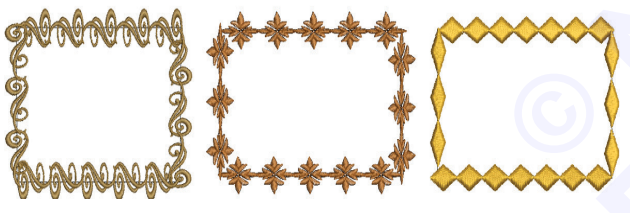


Motif runs

	Use Object Properties > Line > Motif to create ornamental craftstitch borders. Choose from pattern library.
	Use Digitize > Digitize Open Line to create a row of run or other outline stitching along a digitized line. Left-click for corner points, right-click for curves.

Using Motif line in combination with Digitize Open Line or any other line input method. Digitize motif line as you would a normal run line. Left-click for corner points, right-click for curve points. (Fig 23)

Fig 23



Press <Enter> to complete.

- To use the original size and orientation of the motif press <Enter>.
- To scale the motif, move the pointer until the motif is the required size, click, then press <Enter>.

Motif sizing & spacing

Set the exact size and spacing of motifs in a Motif line via the Object Properties dialog before or after digitizing.

Scale individual motifs in the motif run by adjusting Width and Height settings. In the Spacing field, enter

the distance between each repetition. If the motifs do not fit the digitized line exactly, the software adjusts spacing to make them fit. (Fig 24)

Fig 24

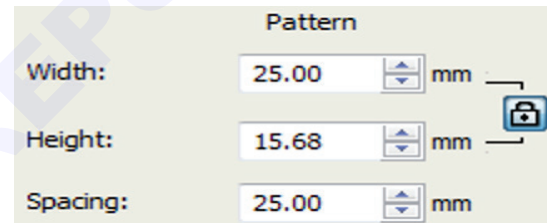
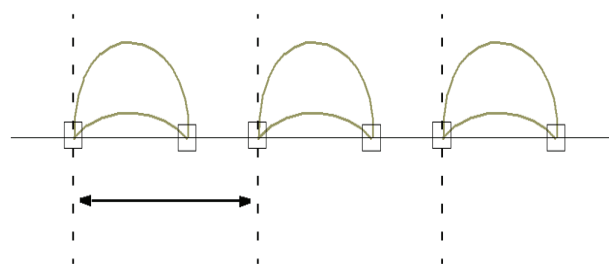


Fig 25



Reshape motif runs

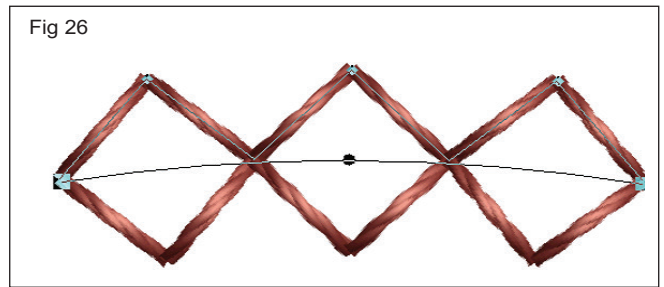
	Use Select > Reshape to adjust object outlines, stitch angles, start and end points, curved lines, etc.
--	---

Reshape motifs runs in the same way as you reshape lettering objects. Select a Motif line object and click the Reshape icon.

Use the control points to adjust outline and motif spacings:

- Drag the sizing handle to scale the object proportionately.

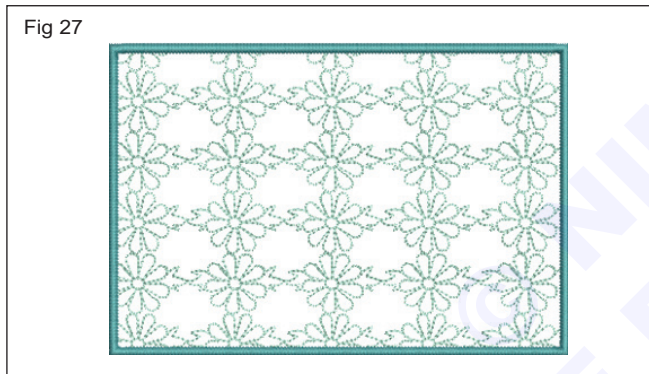
- Right/left-click to add reshape nodes.
- Click-and-drag individual motifs to adjust spacing.
- Select reshape nodes and press <Spacebar> to toggle between corner and curve points.(Fig 26)



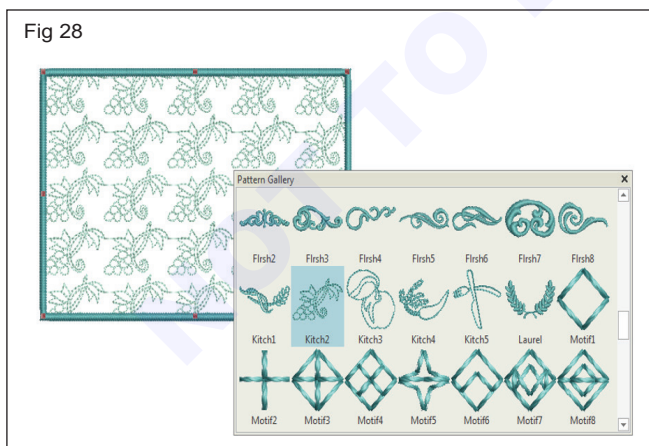
	Use Object Properties > Fill > Motif to create decorative open fill stitching. Choose from a motif library.
	Use Digitize > Digitize Closed Shape to create closed shapes using either outline or fill stitching. Left-click for corner points, right-click for curves.

Motif fills

Use Motif fill in combination with Digitize Closed Shape or any available closed shape digitizing method. Digitize motif fills as to a normal tatami fill. Click to for corner points. Right-click for curve points. Alternatively apply motif fill to existing closed objects. The stitch angle has no effect on layout.(Fig 27)



As soon as entry and exit points are entered, motif fill stitches are generated using current settings. Change motifs via the Object Properties dialog.(Fig 28)

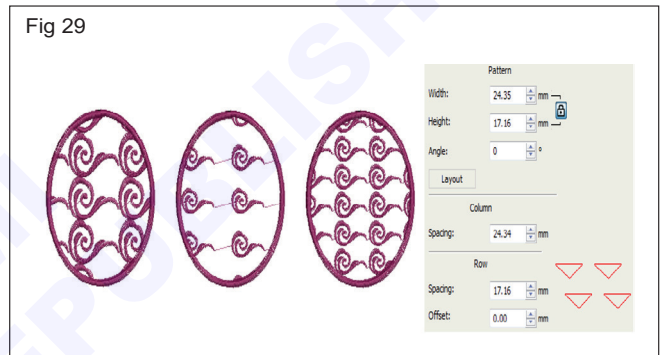


Blackwork gets its name from the black silk thread traditionally used in this form of embroidery. Use the special Blackwork Fill pattern set to create interesting scrolling or geometric patterns.

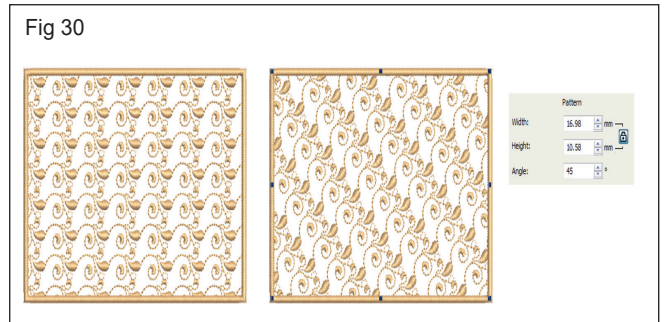
Adjust motif pattern settings

Adjust motif fill size and spacing . The same controls exist for pattern sizing. Spacing is the distance between

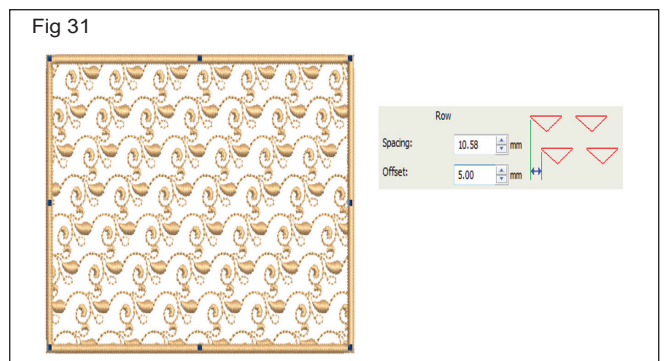
each pattern repetition except that in a motif fill, control both row and column spacing. By default, column spacing defaults to pattern width, while row spacing defaults to pattern height.(Fig 29)



In addition to column and row spacing, motif fills also allow to specify an orientation for the entire fill using the Angle setting.(Fig 30)

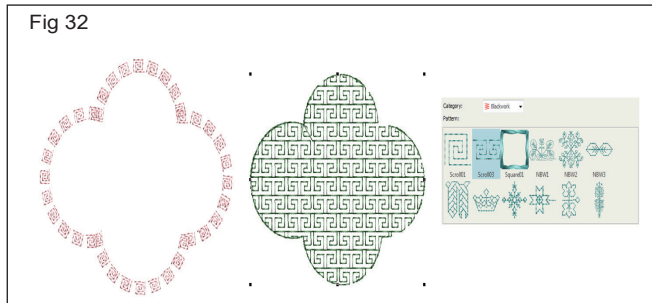


In addition, can offset one row from another. However the cursor over the field to view a graphical representation. (Fig 31)

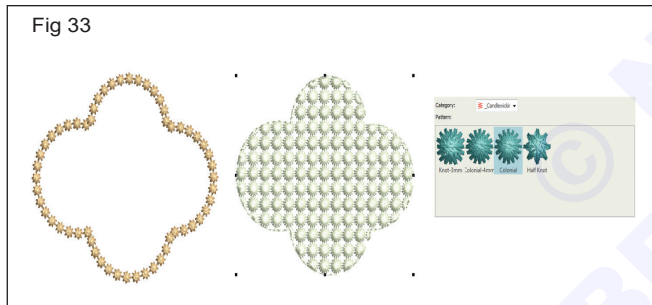


Fancy stitches

Apart from the default motif gallery, the software provides a number of specialist or fancy motif fills as well. For example, Blackwork gets its name from the black silk thread traditionally used in this form of embroidery. Early designs tend to be angular, whereas later designs use more diagonal stitches. Blackwork employs just a few simple stitches to create complex designs. It can be used to decorate articles of dress or furnishings such as handkerchiefs, table napkins, tablecloths, and doilies. (Fig 32)

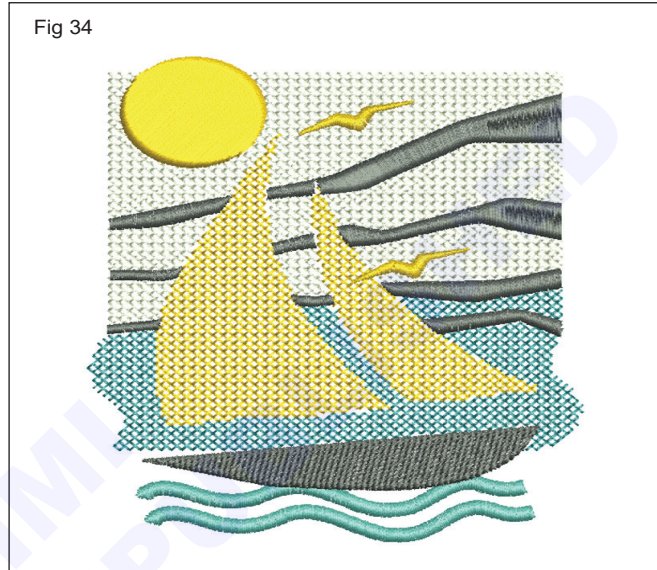



Candle wicking is a traditional white-on-white embroidery technique, usually done on white linen or cotton fabric with heavy cotton threads. More use of color is becoming popular today. Stitches used are mostly knots, both Colonial and French, as well as stem stitch. Candle wicking can be used to embroider white bedspreads, pillows and clothing. Candle wicking Outline can be used for ornate borders. (Fig 33)



Cross stitch

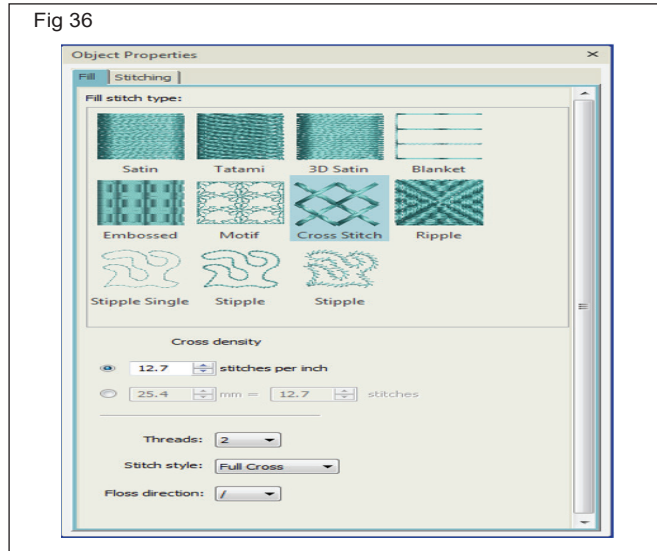
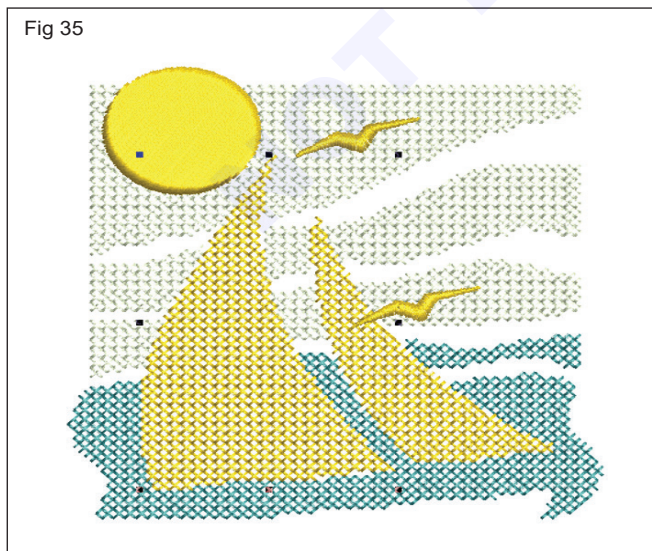
Cross stitching is a popular technique for filling large areas with low stitch counts. Cross stitch is also sometimes combined with appliqué. Cross Stitch fill is something like Motif fill but is generated differently. Crosses in separate objects line up precisely when using the same fabric count. This is because cross stitch fills are generated on a universal grid not object-by-object. Fractional crosses are generated at object boundaries in order to avoid gaps. Cross Stitch fill uses travel runs under and along the cross stitching. Stitch angle has no effect on pattern layout (Fig 34)





Use Object Properties > Fill > Cross Stitch to create open patterned fills with crosses generated to suit standard grid for entire design.

To adjust settings, select and double-click an object. Select Cross Stitch if not already selected.



Cross stitch settings include:

Setting	Purpose
Cross density	Controls the size of cross specified as a fabric count rather than cross size. Crosses in different objects align precisely if using the same cross density.
Threads	Sets the number of times – 2, 4 or 6 – thread passes over the same cross in order to make it bulkier.
Stitch style	Specifies whether full cross (X), diagonal, or upright (+). Stitch style as no effect on grid alignment if the same stitch size is used.
Floss direction	Controls which way top leg of the cross – i.e. full length stitch – is directed – forward or backward for diagonal full crosses and horizontal or vertical for upright full crosses.

Cross stitch can be perpendicular or diagonal. Note that stitch angle has no effect on the cross stitch grid.

Step Fills (Fig 37)

Creating fills with Step fill Different stitch types suit different shapes. BERNINA Embroidery Software provides normal Satin and Step fills, as well as Fancy and Craft Stitch fills. These can all be accessed from the Stitch and Color Bar. There is also a dedicated Craft Stitch toolbar.

Step fill consists of rows of straight stitches and is suitable for filling large, irregular shapes. Stitches are laid in rows going back and forth across the shape.

These can be uniform or patterned. You can choose from a number of preset patterns. You can also control stitch spacing and length.

Note With Step fills you can select patterns formed by needle penetrations. The default Step pattern (No. 1) is designed to create a uniformly flat and smooth texture similar to a woven mat. See also Applying Step patterns

Fig 37



Introduction and function of various parts of computer

Objectives: At the end of this lesson you shall be able to

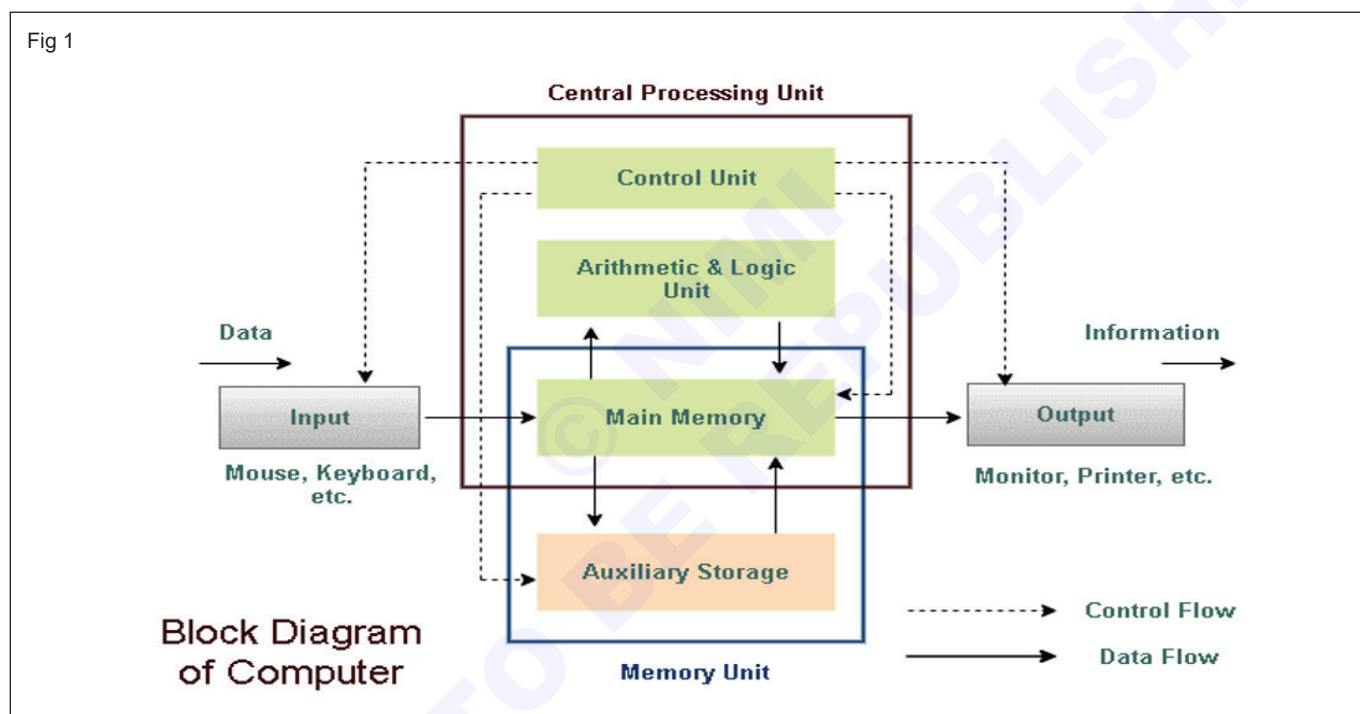
- explain computers input and output device
- define the process of central processing unit
- describe software used in computer
- know the trade related software.

Introduction to computer

Computer is a device that transforms data into meaningful information. Computer can also be defined in terms of functions it can perform. A computer can i) accept data, ii) store data, iii) process data as desired,

and iv) retrieve the stored data as and when required and v) print the result in desired format. The major characteristics of a computer are high speed, accuracy, diligence, versatility and storage.

The block diagram of computer is shown in Fig 1



The computer performs basically five major operations of functions irrespective of their size and make. They are

- 1 It accepts data or instruction by way of input,
- 2 It stores data,
- 3 It can process data as required by the user,
- 4 It gives results in the form of output, and information.
- 5 It controls all operations inside a computer.

We discuss below each of these operations.

- 1 **Input:** this is the process of entering data and programs into the computer system.
- 2 **Control Unit (CU):** The process of input, output, processing and storage is performed under the supervision of a unit called 'Control Unit'. It decides

when to start receiving data, when to stop it, where to store data, etc. It takes care of step - by- step processing of all operations in side the computer.

- 3 **Memory Unit:** Computer is used to store data and instructions.
- 4 **Arithmetic Logic Unit (ALU):** The major operations performed by the ALU are addition, subtraction, multiplication, division, logic and comparison.
- 5 **Output:** This is the process of producing results from the data for getting useful information

The ALU and the CU of a computer system are jointly known as the central processing unit (CPU). You may call CPU as the brain of any computer system.

Peripheral devices are connected to the computer externally. These devices are used for performing some specific functions. Peripheral devices are as follows:

- 1 Input Devices
- 2 Output Devices
- 3 Other Peripherals

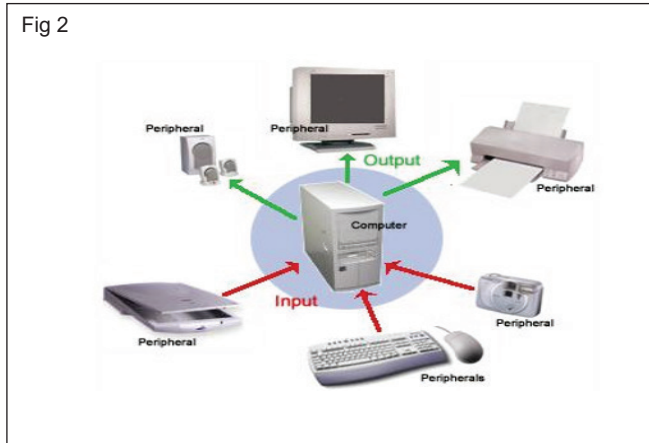


Fig 2 Different peripheral devices of Computer
INPUT DEVICES

Input devices accept data and instructions from the user. Following are the examples of various input devices, which are connected to the computer for this purpose.

- 1 Keyboard
- 2 Mouse
- 3 Light Pen
- 4 Optical/magnetic Scanner
- 5 Touch Screen
- 6 Microphone for voice as input
- 7 Track Ball

Keyboard

A keyboard is the most common input device. Several kinds of keyboards are available, but they resemble each other with minor variations. The keyboard in most common use is the QWERTY board. Generally standard keyboard has 104 keys. In these keyboards, the cursor control keys are duplicated to allow easier use of the numeric pad.



Mouse

A mouse is an electro-mechanical, hand-held device. It is used as a pointer. It can perform functions like selecting menu commands, moving icons, resizing windows, starting programs, and choosing options.

The most common mouse uses an internal, magnetically coated ball, to detect the movement of the mouse across a flat surface, usually a desktop. Now a days Optical or laser mouse is used to detect the movement. All windows based applications today are designed to work with a mouse. A mouse is used to replace hard-to-remember key combinations with easier “Point and Click” actions. However, it cannot substitute all keyboard operations. It can be alternative for commands based operations.



Light pen

An input device that utilizes a light-sensitive detector to select objects on a display screen. A light pen is similar to a mouse , except that with a light pen you can move the pointer and select objects on the display screen by directly pointing to the objects with the pen.



Optical Scanner

These devices are used for automatic data collection. The devices of this category completely eliminate manual input of data. For example, the bar-code reader is actually just a special type of image scanner. An image scanner translates printed



Touch Screen

Touch panel displays and pads are now being offered as alternatives to keyboard. Here the input can be given through the computer screen, that accepts the input through monitor; users touch electronic buttons displayed on the screen or they may use light pen.

Fig 7



Microphone

Microphone is an input device, which takes voice as input. The voice communication is more error-prone than information through keyboard. There are two types of microphones available

1 Desktop Microphone

Fig 8



2 Hand held Microphone

Fig 9



Track Ball

Trackball, a pointing device, is a mouse lying on its back (as shown in figure 1. 9). To move the pointer, you rotate the ball with your thumb, your fingers, or the palm of your hand. There are usually one to three buttons next to the ball, which you use just like mouse buttons. The advantage of trackballs over mouse is that the trackball is stationary so it does not require much space to use it. In addition, you can place a trackball on any type of surface, including your lap. For both these reasons, trackballs are popular pointing devices for portable computers.

Fig 10



Output devices

Output devices return processed data that is information, back to the user. Some of the commonly used output devices are:

- 1 Monitor (Visual Display Unit)
- 2 Printers
- 3 Plotter
- 4 Speakers

Monitor

Out of all the output devices, monitor is perhaps the most important output device because people interact with this device most intensively than others. Computer information is displayed, visually with a video adapter card and monitor. Information processed within the CPU, that needs to be visually displayed, is sent to video adapter. The video adapter converts information from the format used, in the same manner as a television displays information sent to it by a cable service.

Two basic types of monitors are used with microcomputers, which are as follows:

- 1 CRT
- 2 LCD

Cathode Ray Tube (CRT): CRT or Cathode Ray Tube Monitor is the typical monitor that you see on a desktop computer. It looks a lot like a television screen, and works the same way. This type uses a large vacuum tube, called cathode ray tube (CRT).

Fig 11



Liquid Crystal Displays (LCD): This type of monitors are also known as flat panel monitor. Most of these employ liquid crystal displays (LCDs) to render images. These days LCD monitor are very popular.

Fig 12



Printer

After a document is created on the computer, it can be sent to a printer for a hard copy (printout). Some printers offer special features such as colored and large page formats. Some of the most commonly used printers are:

- 1 Laser Printer
- 2 Ink Jet Printer
- 3 Dot Matrix Printer
- 4 Line Printer

Laser Printer: A laser printer produces high quality print that one normally finds in publishing. It is extremely fast and quiet. Moreover, the operation of a laser printer is easy with automatic paper loading and no smudging or messing up of ink ribbons. The fastest laser printer can print up to 200 pages per minute in monochrome (black and white) and up to 100 pages per minute in colour. (Fig 13)

Ink-Jet Printer: An ink-jet printer creates an image directly on paper by spraying ink through as many as 64 tiny nozzles. Although the image it produces is not generally quite as sharp as the output of a laser printer, the quality of ink-jet images is still high. In general, ink-jet printer offers an excellent middle ground between dot matrix and laser printer. Like laser printer, an ink-jet printer is quiet and convenient, but not particularly fast. Typically, an ink-jet printer is more expensive than a dot-matrix printer, but costs only half as much as a laser printer. (Fig 14)

Fig 13



Fig 14



Dot Matrix Printer: The dot matrix printer was very popular at one point of time. It is a very versatile and inexpensive output device. In dot matrix printer the print head physically “hits” the paper through the ribbon and produces text (or images) by combinations of dots; hence the name dot matrix printer. Its speed is measured in characters per second (CPS). Although it is less expensive, it is louder, slower and produces lower print quality. (Fig 15)

Fig 15



Line Printer: A line printer is generally used with large computer systems to produce text based data processing reports. Line printers are high-speed printers with speeds ranging anywhere from 100 to about 3800 lines per minute. In the past, print quality on line printers was not high. Developments in technology are improving the print quality on line printers. These are in the cost range of lacs of Rupees. (Fig 16)

Plotter

A plotter is a special kind of output device that, like a printer, produces images on paper, but does so in a different way. Plotters are designed to produce large drawings or images, such as construction plans for buildings or blueprints for mechanical objects. A plotter can be connected to the port normally used by a printer. (Fig 17)

Fig 16



Fig 17



Speaker

Speakers are another type of output device, which allow you to listen to voice like music, and conversation with people. (Fig 18)

Fig 18



Central Processing Unit (Fig 19)

A Central Processing Unit, or CPU, is functionally the most important component of a computer system. Without a CPU, any computer is more or less non-functional. It is generally referred to as the 'brain' of the computer due to the vast number of functions it performs.

A CPU is essentially a hardware that performs functions related to input and output, processing and storage of data for a computer system. It is the main control center for all operations that happen in a computer system.

A CPU can be installed or inserted into a CPU socket. These sockets are usually located on the motherboard. Further, a CPU is provided with a heat sink. This heat sink helps in absorbing and dissipating heat. This helps in keeping the CPU cool and functioning smoothly.

Fig 19



A CPU performs several essential features. Some of those features are:

- It can perform various types of data processing operations. CPU can store data, instructions, programs, and intermediate results.
- It controls the functions of all the significant parts of a computer.

The central processing unit has three significant parts. And those parts of CPU are:

- Storage unit or memory.
- Control unit.
- ALU (Arithmetic Logic Unit)

The most basic function of a CPU is to act on commands that are programmed into it through the RAM or the Random Access Memory of the computer system. When the CPU receives an instruction presented in binary form, the instruction is converted into signals that each part of the processor can work on. Finally, after the instruction is decoded, it is executed.

In the past, most CPUs had a single processing core. This made them considerably slower. Today, almost all CPUs work with multiple cores, which makes them more efficient and able to perform a greater volume of work.

Different Parts of the CPU

A CPU has various components which are dedicated to performing certain specific functions. The various components are:

• The Storage or the Memory Unit:

As per its name, this unit is dedicated to storing all information and data that is saved on the computer system. This data is supplied whenever the user needs it. It is also sometimes referred to as the internal storage unit.

There are also two types of memories in a computer, including primary memory and secondary memory. Some functions that are performed by the memory unit are:

It is used for storing intermediate results of processing.

It can store all the data and instructions that are required for processing. All inputs and outputs are transmitted with the help of the main memory.

It helps in storing the final results of processing. This is done before these results are released to an output device.

- **The Control Unit:**

This part of the CPU is responsible for handling all operations of the system. But does not actually carry out specific functions related to data processing. This unit uses electrical signals to execute all processes for the system. It controls the transfer of data, input/output functions and coordinates all internal working of the hardware.

- **Arithmetic Logic Unit (ALU):**

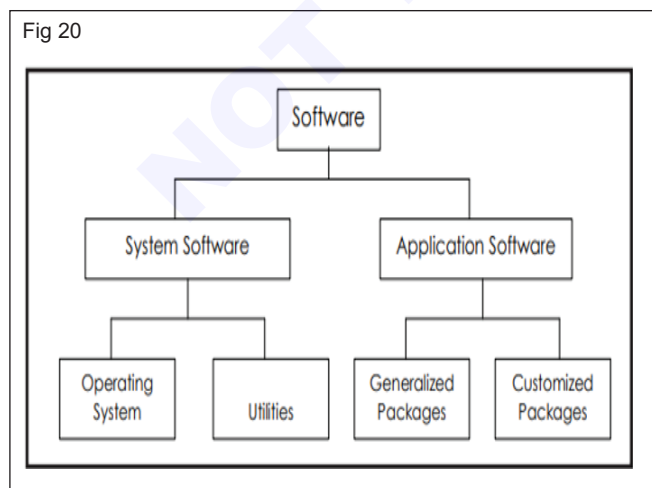
As the name indicates, this unit mainly consists of two subsections. The first is the arithmetic section, and the second is the logic section. The function of the arithmetic section is to perform various arithmetic operations. Some arithmetic operations that are usually performed include addition, division, multiplication, and subtraction.

You should note that all complex operations are performed by making repetitive use of the operations that are mentioned above. The logic section, on the other hand, performs the function of carrying out logic operations. Some logic operations are comparing, merging, selecting, and matching data.

Software

As you are aware, computer cannot do anything on its own. It is the user who instructs computer; what to do, how to do and when to do. In order to perform any task, you have to give a set of instructions in a particular sequence to the computer. These sets of instructions are called Programs. Software refers to a set of programs that makes the hardware perform a particular set of tasks in particular order. Software can be classified mainly into following categories and sub-categories

Classification of Software



System Software

When you switch on the computer the programs stored in ROM are executed which activates different units of your computer and makes it ready for you to work on it. This set of programs can be called system software.

System software are sets of programs, responsible for running the computer, controlling various operations of computer systems and management of computer resources. Operating System (OS) falls under this category.

An operating system is a system software that provides an interface for a user to communicate with the computer, manages hardware devices (disk drives, keyboard, monitor, etc), manages and maintains disk file systems and supports application programs. Some popular Operating systems are UNIX, Windows and Linux.

Although operating system provides all the features users need to use and maintain their systems, inevitably, they still do not meet everyone's expectations. This has led to another type of system software called "Utilities". These are programs that bridge the gap between the functionality of an OS and the needs of users. Utility programs are a broad category of software such as compress (zip)/uncompress (unzip) files software, antivirus software, split and join files software, etc.

Application Software

Application software is a set of programs, which are written to perform specific tasks, for example: An application package for managing library known as library information system is used to manage information of library such as: keeping book details, account holder details, book issue details, book return details etc. Another application package for managing student details is called student's information system, manages student's roll no, name, parents name, address, class, section, processing of examination results etc. Application software can be broadly classified into two types:

- a Generalized packages
- b Customized packages

Generalized Packages

These are user friendly software written to cater to user's very general needs such as preparing documents, drawing pictures, database to manage data/information, preparing presentations, play games etc. It is a group of programs that provide general purpose tools to solve specific problems. Some of the generalized packages are listed below:

- Word Processing Software (for preparing documents): Word Perfect, MS-Word, OpenOffice.org Writer
- Spreadsheets (Data Analysis): Lotus Smart suites, MS Excel, OpenOffice.org Calc, Apple Numbers

- Presentations: Presentation Graphics, MS-PowerPoint, OpenOffice.org Impress
- Database Management System: MS-Access, OpenOffice.org Base, MS-SQL Server, ORACLE
- Graphics Tools: Paint shop pro, Adobe Photoshop

Customized Packages

These are the applications that are customized (or developed) to meet the specific requirements of an organization/institution. For Example: Student information details, Payroll packages, inventory control etc.

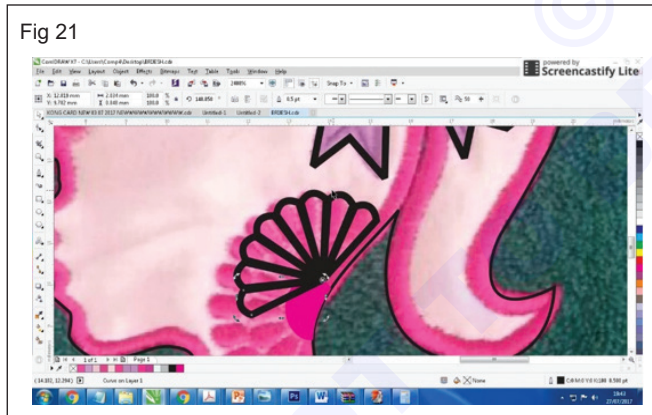
These packages are developed using high-level computer language.

Software Related to Computerized embroidery

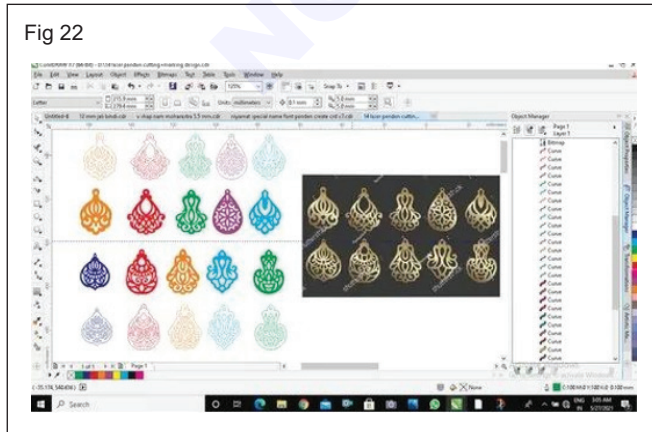
CorelDraw is a vector graphics developed and marketed by Corel Corporation. It was revealed by CREL (2008) that Corel Corporation is Canadian computer software, with a vector- based illustration program developed to bundle with desktop publishing systems. Additionally, it stated that it is the first software which combines vector graphics software with a photo editing program. It has a full range of editing tools that allow users to adjust contrast and colour balance.

CorelDraw is used to make simple technical drawing, create figures, garments and garment features with the aid of grids and guides, design textile fabric, embroidery, mood board, and collage for wall hanging and develop presentations for the screen and for print.

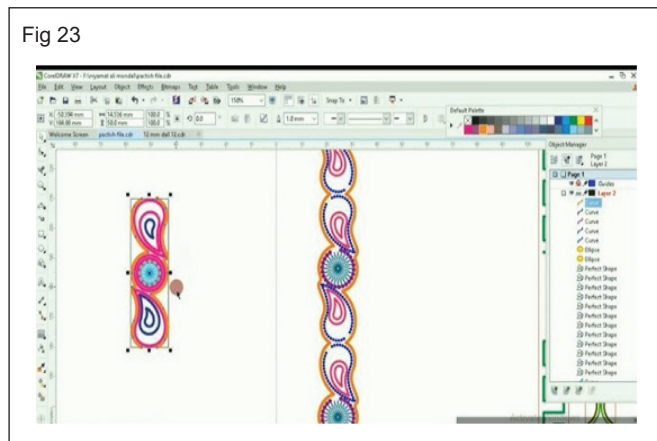
- Creating patches in corel draw



- Creating embroidery designs in corel draw

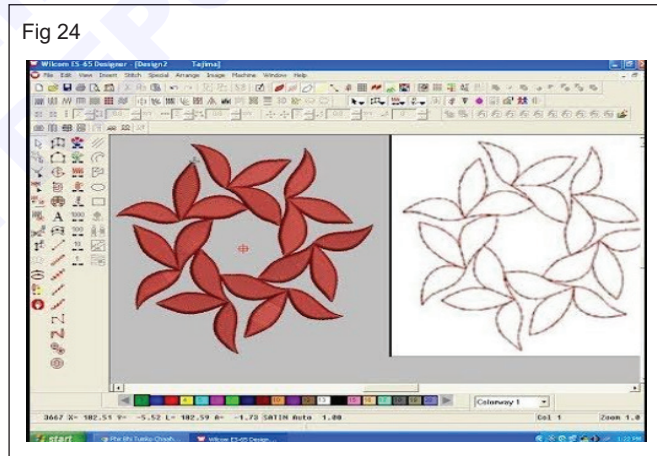


- Creating border designs in corel draw

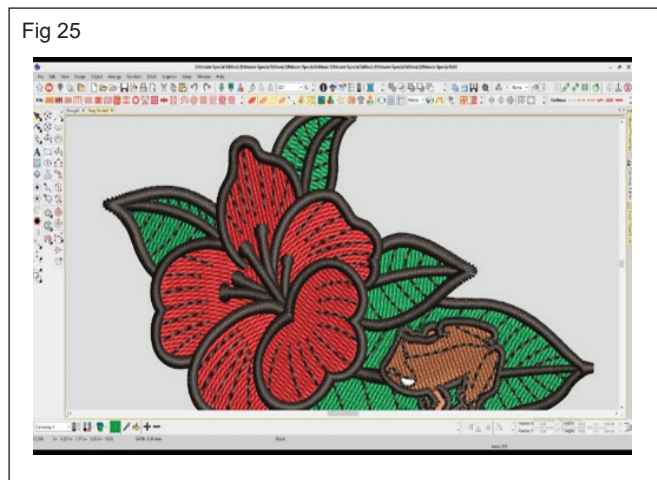


Wilcom provides the ultimate embroidery software for professional digitizers, embroidery shops, industry educators, apparel decorators and hobbyists. Wilcom's Professional Solutions offer the most advanced embroidery software tools for businesses looking to take their embroidery operations to the next level. With cutting-edge digitizing and editing capabilities, multi-decoration workflows, and a user-friendly interface, Wilcom's software empowers businesses to create high-quality embroidery designs efficiently and effectively. Streamline your embroidery process, increase productivity, and stay ahead of the competition with Wilcom's Professional Solutions.

- Creating embroidery designs in Wilcom

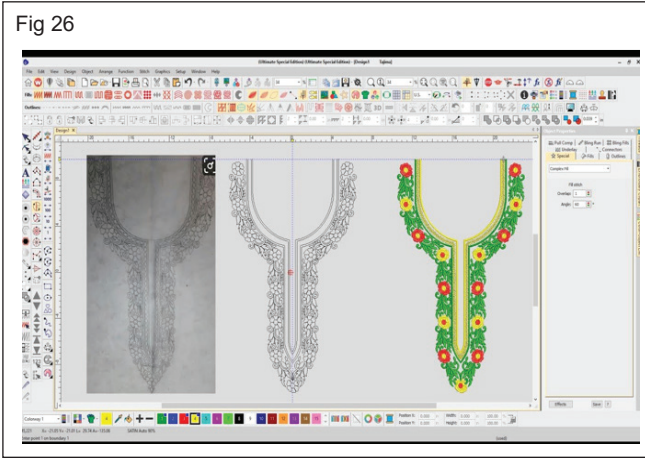


- Creating patches in wilcom



- Creating neck embroidery designs

Fig 26



Basic knowledge of computer

Objectives: At the end of this lesson you shall be able to

- **knowledge of basics of computer.**

Basics of Computer Hardware

Computers are machines. Like most machines, they are made up of various parts, sometimes moving, parts that allow them to function in different ways. These hardware components have been specially designed over the years to perform their unique functions with different levels of speed, capacity, and ability.

To that end, there are also different types of computers like a gaming PC, a media center, or a work computer.

An office worker might have a small hard drive in their work computer if they don't need to store much data beyond simple text files. However, an independent film editor or a digital artist might need a larger hard drive to fit all the video and image files on their computer. Hard drive size references its capacity, or how much data it can hold.

The major components of computer are

- **Motherboard:** Besides providing the space for the hard drive, CPU, and other components, the motherboard is home to BIOS, or Basic Input/Output System, the very minimal piece of software that comes with a computer. When the computer is first turn off, before it loads the operating system, it must boot from BIOS.

The motherboard also provides a place for users to plug in peripherals like a mouse and keyboard.

- **Graphics Card:** The graphics card, or video card, is the component that outputs images onto the computer's display, or monitor. While some motherboards offer built-in, onboard, or integrated video cards, the quality is not as good as that of a dedicated video card that purchased separately and install onto the motherboard ourself.

High-end graphics cards are most popular among people who value the quality of the computer's display, namely people like PC gamers or people who work in 3D graphics or digital art.

- **Power Supply Unit:** Remember, computers are electronic, and without power, they can't run! The power supply unit is the component that converts AC power into low-voltage DC power to run the sensitive components inside the computer. Power supply units come with fans to lower the heat inside the computer, as overheating can affect the computer's performance and endanger its components.

- **Hard Drive:** This is probably the most familiar piece of computer hardware. Basically, a hard drive is a computer's storage device. If you've ever saved a picture from the internet, or saved a Word file in your documents, you've placed that data onto your computer's hard drive.

A hard drive contains various components, such as the spindle, actuator, and platter. On hard disk drives, the platter is the spinning plate of aluminum, ceramic, or glass depending on what the type that stores the computer's information and performs read/write operations. When the computer's information are saved, it means the information on the hard drive since that is where the operating system, and all the files are stored.

The amount of data the hard drive can store depends on its capacity. Early hard drives could hold about 5 MB, or megabytes, of data, and they were about as big as an industrial-sized fridge-and-freezer combo unit. Physical bulk aside, 5 MB is about the size of one MP3! It's nothing. More recently, hard drives have become much smaller in physical mass and can store huge amounts of data, ranging from about 250 to 500 GB, or gigabytes, for the average computer user, to 1 TB, or terabyte, for the power user. One terabyte is 1,048,576 megabytes!

- **Central Processing Unit:** The "brain" of the computer, the central processing unit — also referred to as the processor does exactly what its name suggests: it processes all of the computer's functions. Processors are small, square components with pins and connectors on one side that is plugged into the CPU socket on the computer's motherboard. Because CPUs need to calculate and process so much information, most come with a heat sink and a fan to keep the component cool.

The type of hardware that is installed is generally known as your computer's specifications.

Selecting the Right Peripherals

Peripherals are the physical hardware that allows computer users to interact with the computer.

Besides these, the computer's tower, or case, is vital. It's the container that holds all of the parts in place, keeping them safe from outside elements and giving a convenient space for everything to stay securely plugged in.

- **Monitor:** A monitor is the computer's display. Without this, it is not possible to see any job done on the computer, rendering the machine sort of useless if the goal is to use it for email and browsing the internet!
- **Mouse:** A mouse is an object that lets us to click around the screen, drag and drop things, and interface with the objects displayed on the computer's monitor.
- **Keyboard:** The keyboard allows to type things into the computer. Without a keyboard it is not possible to input commands in the BIOS, write emails to your friends, or get much work done at all.
- **Other:** Other computer peripherals that enhance the computer experience are speakers, which produce sound generated from the onboard or dedicated sound card; headphones, which allow for more discrete sound enjoyment; and microphones, which let to use voice to communicate with others on the internet or record the voice for videos and music, and more.

Making the transition to computers can feel intimidating at first. The mouse can feel patently unintuitive, and the touchpad (which does the same job as the mouse) can be incredibly difficult to work with. To use computers, you should be able to perform the following tasks:

- Moving the cursor on-screen with the mouse or touchpad.
- Clicking, right-clicking, and double-clicking the mouse.
- Using basic keyboard functions such as backspace, enter/return, space bar, delete, tab, shift, and caps lock.
- Basic typing skills.

If you're going to be using a computer for a substantial amount of time, you also need to make sure your system is "ergonomically-friendly." Ergonomics means that your system is comfortable to use and won't cause a repetitive stress injury. Repetitive stress injuries (RSIs) are injuries that occur due to long-term repetitive movement.

- **Monitor:** The monitor should be raised to the eye level. Use a riser or a bracket to achieve this.
- **Keyboard:** Install a keyboard tray under the desk so that the keyboard is positioned below the elbows.
- **Mouse:** Use a wrist pad to lift the wrist upward. Use the mouse at a downward angle rather than an upward angle.

Getting the Right Software Installed

Unlike hardware, software is not a physical component of computer. Rather, it's a program that the computer runs to allow to do certain things.

The most important software to know of when getting into computers is the operating system. An operating

system, or OS, is not just one piece of software but a collection of software that acts as the foundation for everything to do on computer. As its name suggests, an operating system is the system by which all other software, and even some hardware components, operate on the computer.

Other important computer software includes word processors, such as Microsoft Word or image editing programs like Photoshop.

Learning How to Use an Operating System

Think of an operating system (OS) as the interface which lets us to communicate with the computer. The majority of us will start the computer experience with Windows, the operating system built by Microsoft. Some will start with Mac OS X, which is the operating system used on Apple computers.

To use an operating system effectively, we should be able to perform the following:

- Finding, running, and closing a program.
- How files, folders, and directories work.
- Saving a file.
- Using Windows Explorer to find and open a file.
- Shutting down and restarting a computer.

Using Word Processors

Now after knowing how to use operating system, undoubtedly be excited to get some actual work done. One of the first things to be familiarize with is the humble word processor. A word processor is a software application that can create textual documents.

Windows ships with WordPad and NotePad — two simple yet effective text editors. Their Mac OS X equivalents are TextEdit and Notes.

Microsoft Word is a part of the Microsoft Office suite of software tools. It is a highly capable word processor that can create everything from a simple letter to a complicated graphical flyer.

One should be familiar with the following before proceed further:

- Opening Microsoft Word.
- Creating a new document in Word.
- Using basic formatting functions (bold, italics, underline, font size, and type).
- Saving and printing a finished document.

Getting Online

The internet is one of the greatest inventions of mankind. One can use it to stay in touch with friends and relatives, follow the news, reference encyclopedias, shop for things, and search for virtually anything. Getting familiar with the internet is the first step in unleashing the full power of the computer.

To use the internet, one should need a web browser. A web browser is a software application that can open websites and communicate with the internet.

Using the internet requires that have basic competency with the following tasks:

- Finding and opening a web browser.
- Opening a website.
- Understanding links.
- Creating and using an email account.
- Searching on Google.
- Using Wikipedia as a reference tool.
- Opening a video.

A lot of people today use computers for social media.

Basic Graphic Design

One can explore the basics of graphic design through MS Paint. Microsoft Paint is a software solution that comes with the Windows operating system. It's one of the simplest graphic design solutions out there.

Basics of Microsoft Paint include:

- **Selecting:** use the selection tool to select part of an image to be moved or otherwise manipulated.
- **Cropping:** select part of the image and then select the "crop" button, which then cuts the rest of the image out.
- **Filling:** use the "fill" tool to fill a portion of the image with a selected color.
- **Erase:** erase parts of the image with the eraser tool.
- **Pen:** draw directly on the image with the pen tool.
- **Shapes:** put different-colored shapes in the image.
- **Text:** type text directly on the image.

With these features alone, one can do a pretty decent job of cropping, editing, and labeling an image. Anything more advanced will require knowledge of a solution like Adobe Photoshop or Adobe Illustrator.

Troubleshooting

When something goes wrong on the computer, the first inclination may be to call tech support. But while that's a direct answer, part of being "computer savvy" is trying to figure out the answers to your problems yourself.

Troubleshooting is an iterative testing process. One can check each part of the process one by one and then figure out what's wrong.

If Wi-Fi is down. The testing process might go like this:

- Ask to determine whether other people can get on.
- If other people are on, it's an issue with the computer.
 - Check to make sure the using the right password.
 - Restart the computer and try to log in again.
- If it's down for everyone, it's a problem with the internet.
 - Restart the router and the modem.
 - Call the telecommunications company.

By investigating further on the own, you can solve a lot of problems — and learn more about the computer systems that is used.

Programming

How does a computer know what to do when you ask it to do something? It's all about programming. Every software system on your computer is actually lines of written code. This code is written in a language that the computer understands. The code tells the computer things like "Open a screen, put an image on it, and let the user click the image to make it larger or smaller."

Programming is a great skill to develop. Some common programming languages include JavaScript, Python, and C++. If you know programming, you can get a great job in the IT field. And you can engage in fun hobbies such as designing and developing your own games.

Introduction to coreldraw

Objectives: At the end of this lesson you shall be able to

- explain coreldraw
- coreldraw tools and uses.

Introduction Coreldraw :

CorelDraw is a software program for editing vector graphics

Vector graphics are created in graphics packages and consist of objects. Each object can be edited separately, meaning that the shape, colour, size and position can be changed.

Developed by Ottawa-based software company, Corel, CorelDraw, styled CorelDRAW, allows users to do things like add special effects such as borders to images, in addition to allowing for contrast adjustment, colour balancing and more.

One of the handy features of the software is that it can also work with multiple layers and multiple pages.

Use of Corel Draw

It is used for designing different artwork like poster, logo, cards any vector related graphics. We discuss its uses below:

• **Converting Bitmap to Objects**

Converting from BITMAP to object is a bit complicated work, but Corel provides an easier way of doing it as Corel has a good collection of tools through which converting makes easier.

We just have to the right click on Bitmap and select what we want to do (Fig 1)

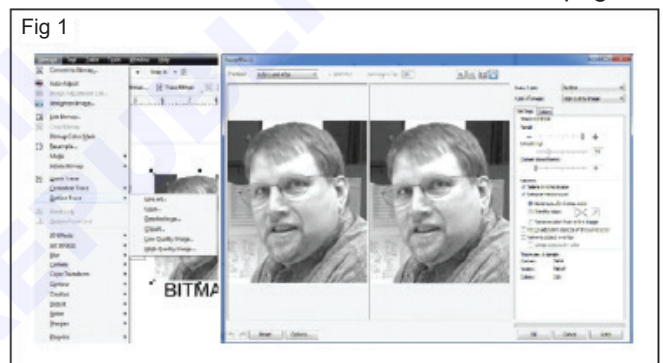
- The quick trace is a command that will convert from Bitmap to Vector object.
- Centerline trace is a command that tries to extract the centreline of your Bitmap and removes the rest.

- Outline trace is a command that tries to extract the outline of a Bitmap.

• **Using CorelDraw with Other Programs**

CorelDraw is designed to work with the other software's as well. The other software that the Coral Corporation designs is "Coral Photo Paint", which can be incorporated with Coral Draw. As the Graphics designed can be edited and recreated with Coral Paint.

When we save the graphic, it can be saved in other formats that are compatible with the other software. It can be saved in formats like PNG, CDR, Jpeg etc.



These images saved can be opened in Adobe Illustrator as well. These all the saved formats makes a bond with other designers to make alterations in design on the device in an easier way.

Coreldraw Tools and uses (Fig 2)

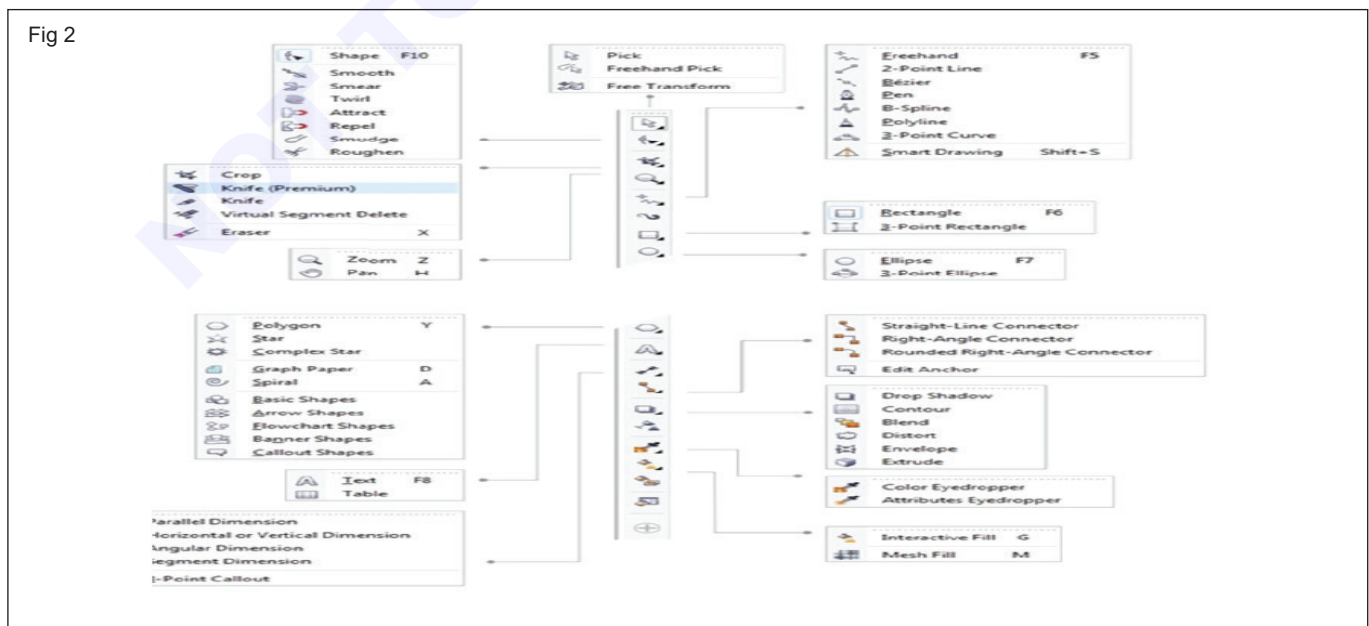
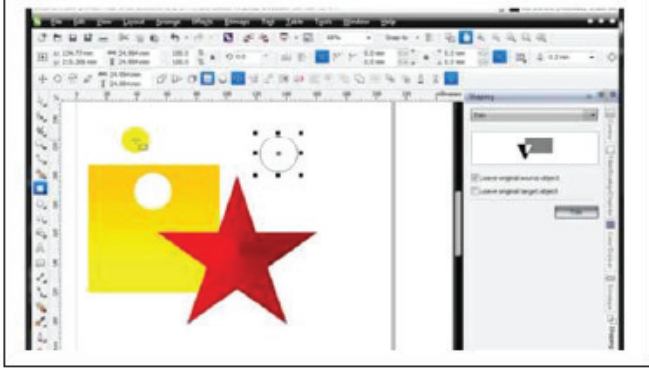


Fig 3

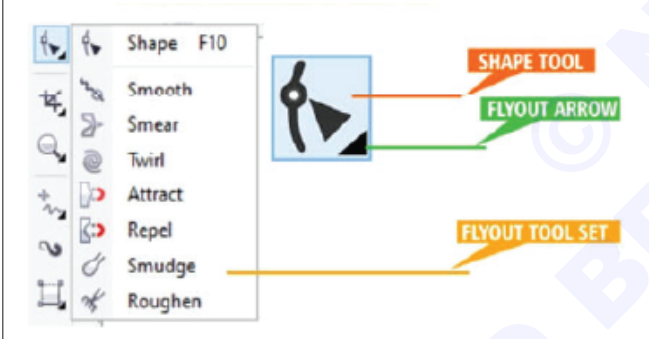


- **Pick Tool** = To select, resize, and rotate toward the image object. (Fig 3)
- **Shape Edit** (Fig 4)
- **Shape** : Editing an image object shape.
- **Smudge Brush** : Alter / distort the overall picture with attractive shorelines.
- **Roughen Brush** : Alter / distort the overall outline shape drawing by attractive shorelines.
- **Free Transform Tools** : Transform image objects using rotation (rotation)free, rotation angle, and resize, and also tilt the image shape.

Crop Tool (Fig 5)

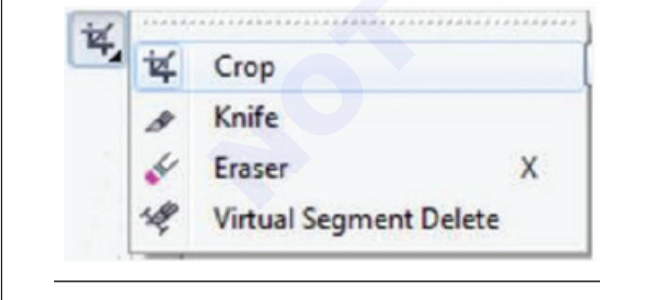
- **Crop** : Eliminate the unwanted parts in the object.

Fig 4



- **Knife** : Alter / distort the overall picture with attractive shorelines.

Fig 5



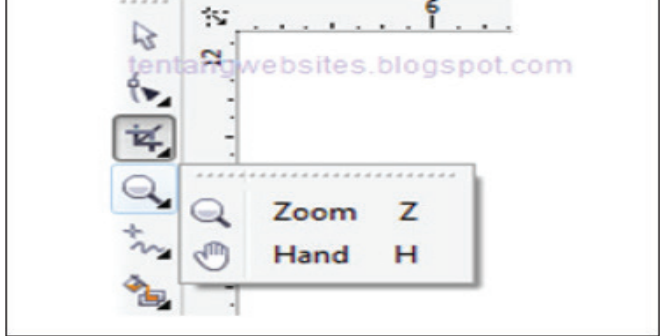
- **Erase** : Remove the area in the picture.
- **Virtual Segment Delete** : Delete an object that is part of the intersection (the intersection).

Zoom (Fig 6)

- **Zoom** : Change the magnification of the image in the image window

- **Hand** : Adjusts the images that appear in the image window

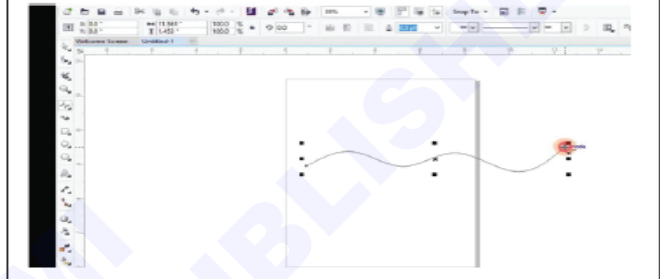
Fig 6



Curve (Fig 7)

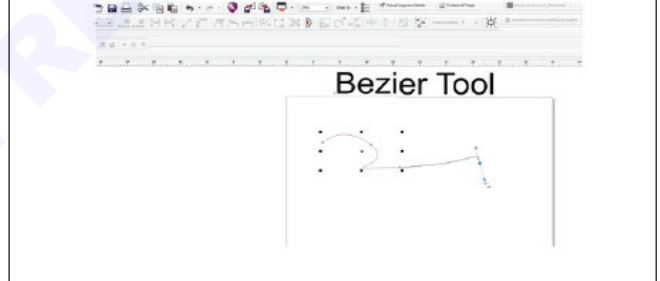
- **Freehand** : Draw segments or curves in the form of a single line

Fig 7



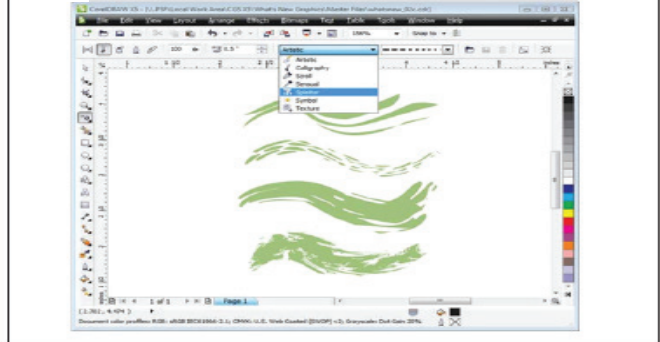
- **Bezier** : Drawing curves in the form of a single line per point (node) (Fig 8)

Fig 8

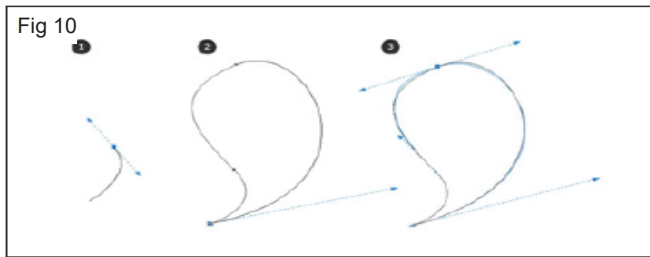


- **Artistic Media Tool** : Bring up the generator function form (pen), such as brush (brush effect with a particular pattern of outward appearance), sprayer (spray paint effects), calligraphic (calligraphy pen effects), and Pressure (pen effects techniques that will form the curved edge without lines). (Fig 9)

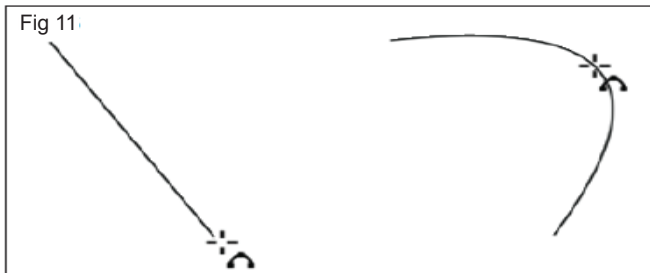
Fig 9



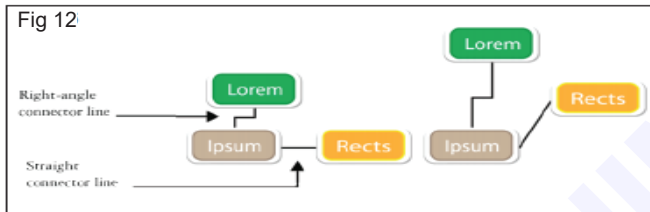
- **Pen** : Drawing curves in a segment point to point (node).(Fig 10)



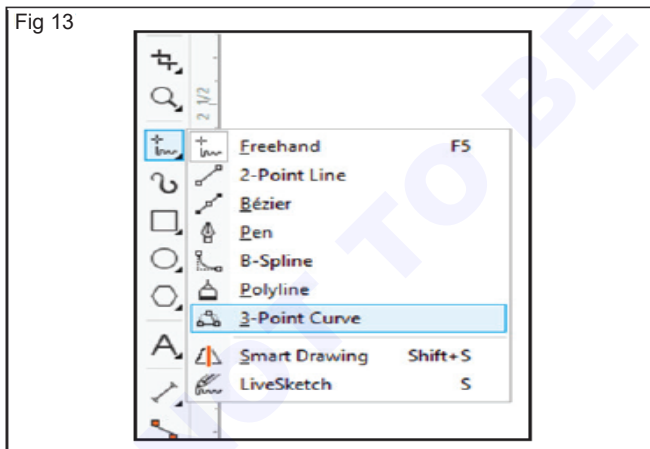
- **Polyline** : Drawing lines and curves in preview mode.(Fig 11)



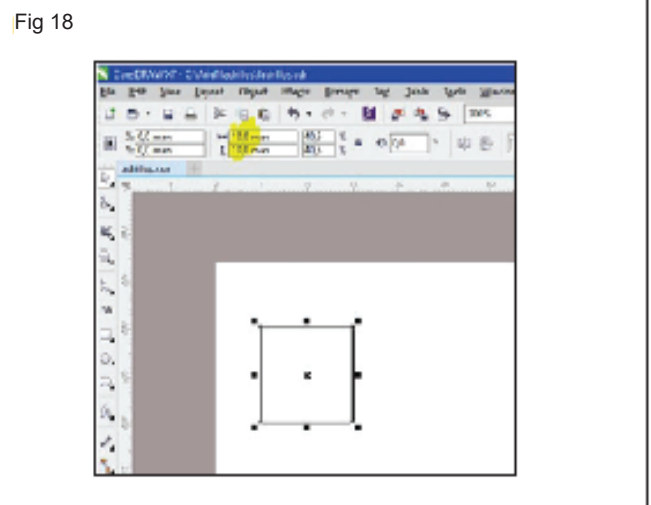
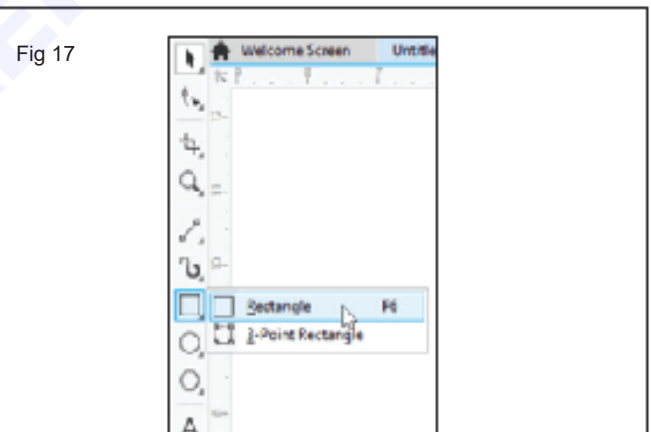
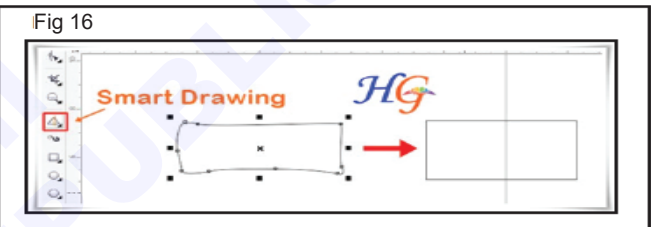
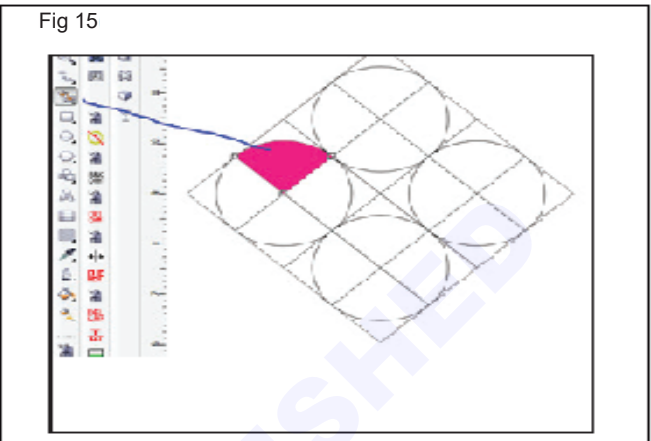
- **Interactive Connector** : Combining the two objects with a line. (Fig 12)



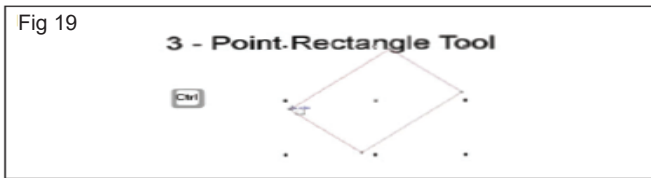
- **3 Point Curve** : Draw a curve by specifying the start and end point, then the center of the curve. (Fig 13)
- **Dimension** : Draw a vertical line, horizontal, angular, and oblique.



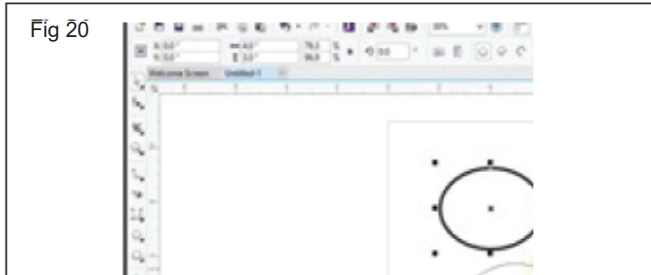
- **Smart Tools**
- **Smart Fill** : To create objects of an area then fill with color or texture.(Fig 14),(Fig 15,16)
- **Smart Drawing** : To change your pointer graffiti images to form the basis of its form or shape that is more subtle.
- **Rectangle**
- **Rectangle** : To establish terms and boxes.(Fig 17 &18)



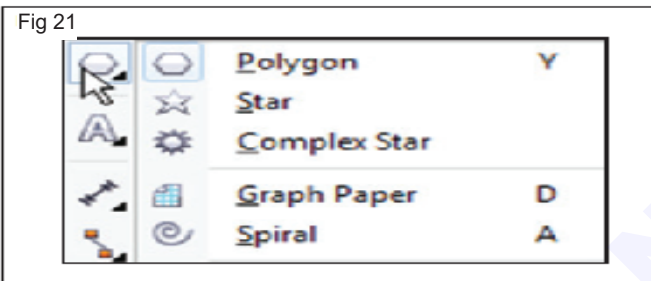
- **3 Point Rectangle** : To establish terms and arrange boxes with point to point. (Fig 19)



- **Ellipse**
- **Ellipse** : To draw an ellipse to a circle. (Fig 20)



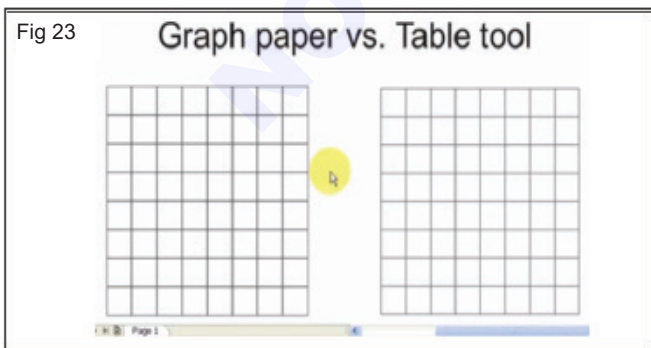
- **Object Tools:**
- **Polygon** : To form a polygon and star symmetrically (Fig 21)



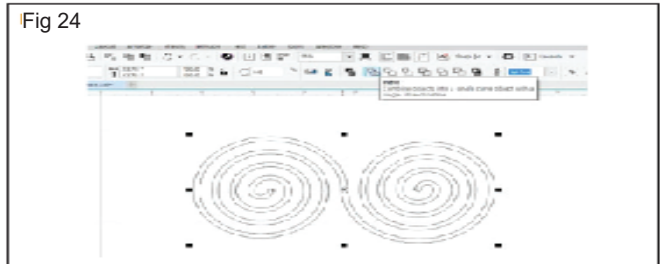
- **Star** : To form stars.
- **Complex Star** : To form stars with more complex shapes with intersection angles. (Fig 22)



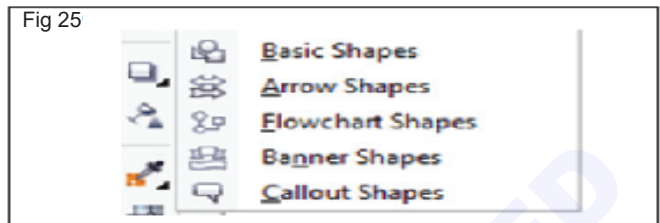
- **Graph Paper** : To establish a similar arrangement of tables or boxes such as engineering drawings on paper.(Fig 23)



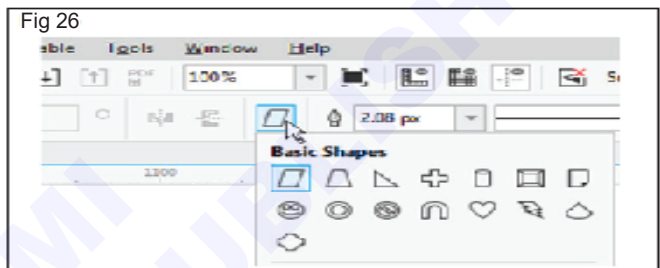
- **Spiral** : To form a spiral (per) is symmetrical and logarithmic.(Fig 24)



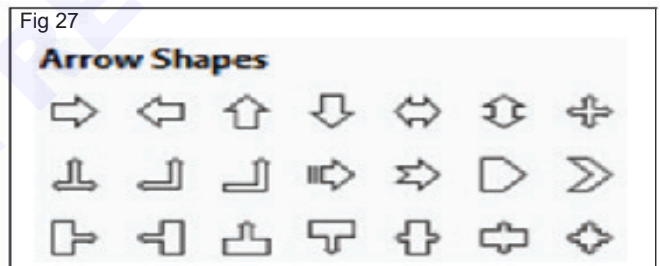
- **Perfect Shapes**
- Click Shapes tool in Tool Box (Fig 25)



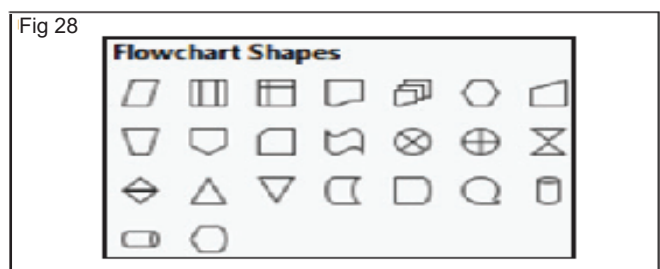
- **Basic Shapes** : A variety of forms so as octagonal, smiley face, until the triangle.(Fig 26)



- **Arrow Shapes** : To facilitate drawing arrows with various forms of variation form, direction, and number of arrowheads.(Fig 27)



- **Flowchart Shapes** : To facilitate drawing flowchart shapes (chart).(Fig 28)



- **Banner Shapes** : To make it easier to draw shapes and symbols tape explosion.(Fig 29)

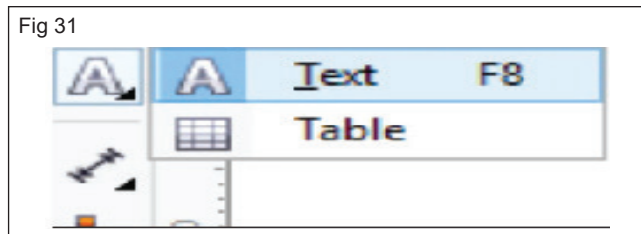


- **Callout** : To make it easier to draw and label the speech bubble shape. (Fig 30)



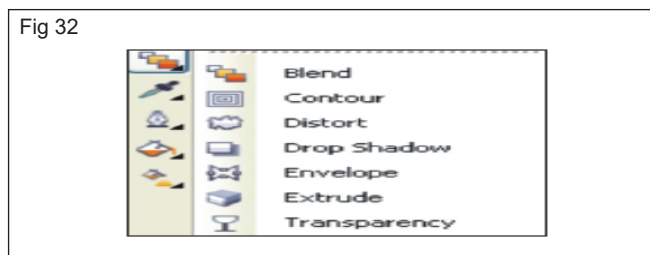
- **Text Tool :**

To make the text directly in the drawing area that serves as both an artistic and caption text.(Fig 31)

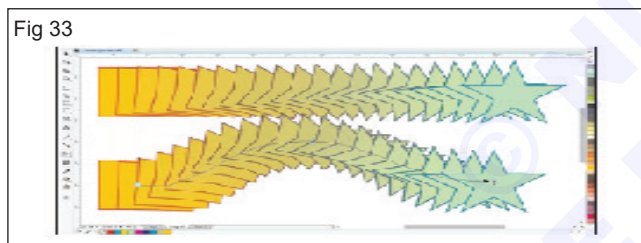


- **Interactive Tools**

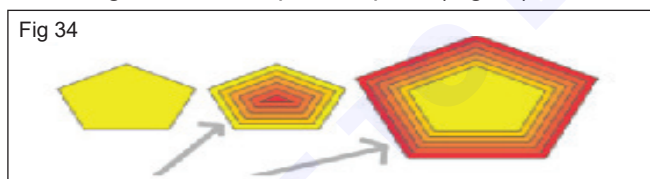
Click the interactive Tool in Tool Box (Fig 32)



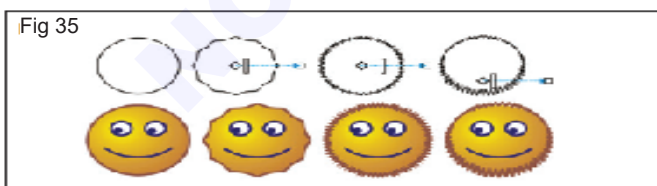
- **Interactive Blend :** To establish terms and boxes (Fig 33)



- **Interactive Contour :** To establish terms and arrange boxes with point to point (Fig 34)



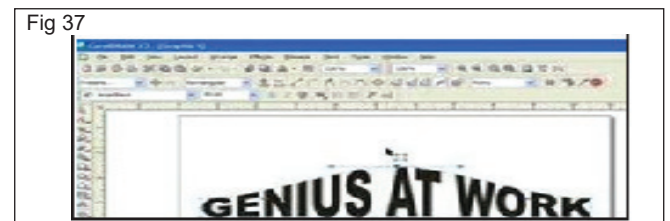
- **Interactive Distortion :** To distort objects in push / pull, zipper, and twister. (Fig 35)



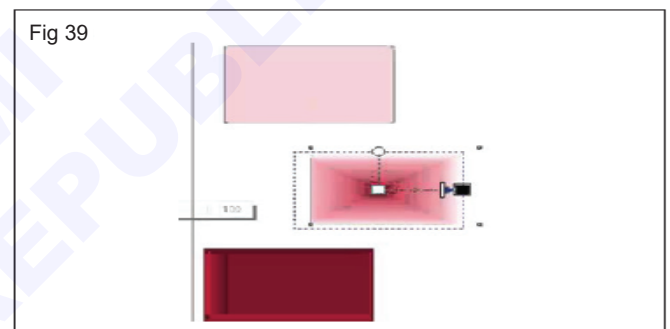
- **Interactive Drop Shadow :** To insert an object into the shadow (Fig 36)

- **Interactive Envelope :** To change the shape of the object by dragging a point (node) on the outline (Fig 37)

- **Interactive Extrude :** To form the illusion of depth on the object. (Fig 38)

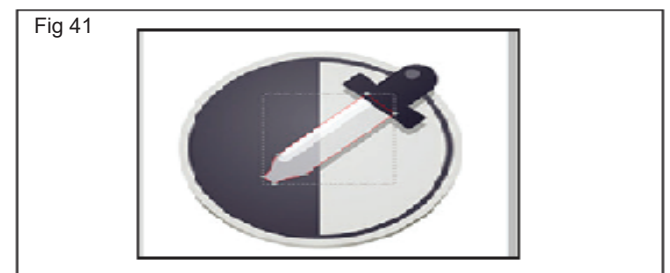
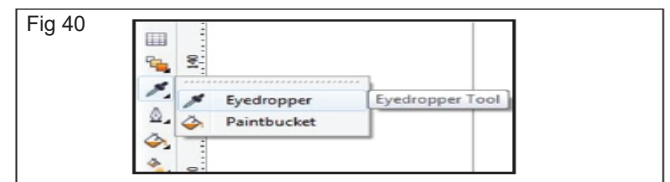


- **Interactive Transparency :** To insert a transparent effect on the object. (Fig 39)



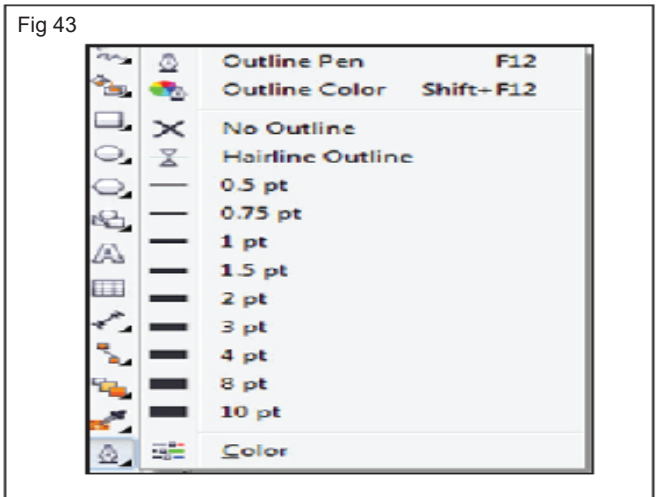
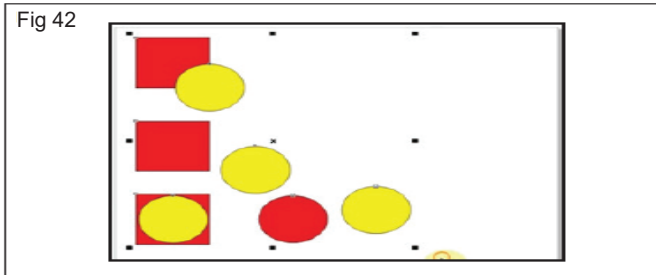
- **Eyedropper**

- **Eyedropper :** To select and copy the relevant properties of an object, such as color (fill in the object), lines, line thickness, size, and effects(Fig40&41)

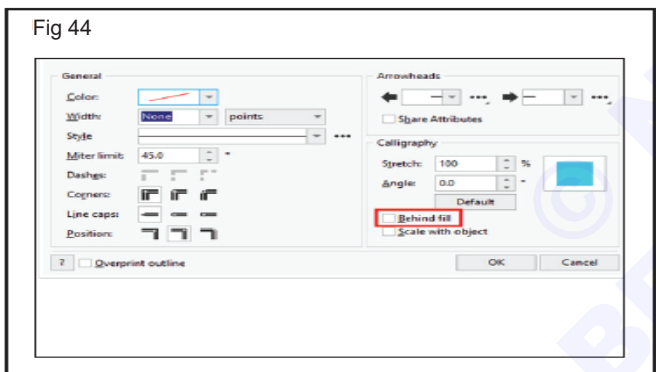


- **Paintbucket :** To implement the related property of an object, such as color (fill in the object), lines, line thickness, size, and effects; taken by the eyedropper tool, to other objects.(Fig 42)

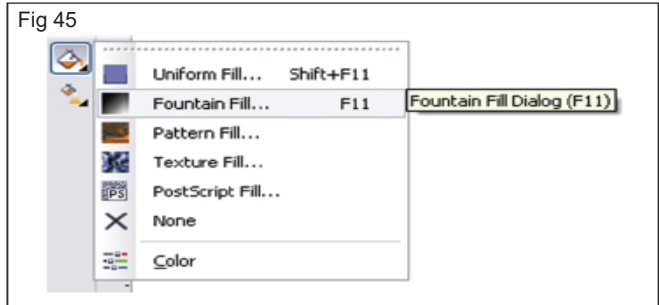
- **Outline** (Fig 43)



- **Outline Pen Dialog** : To access the outline pen dialog box (Fig 44)



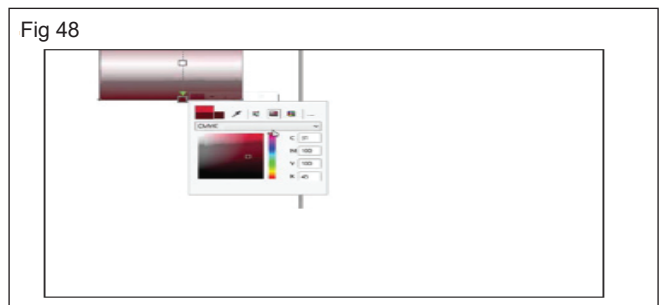
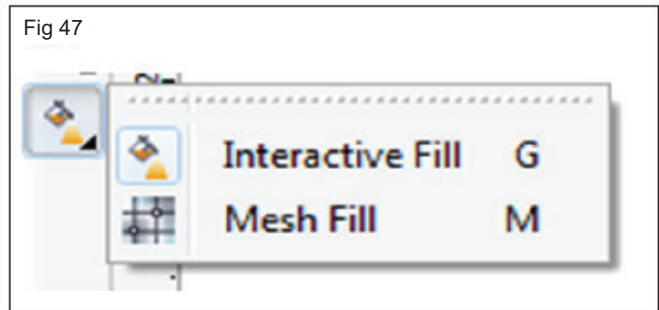
- **Outline Color Dialog** : To access the color settings dialog box outline
- **No Outline** : To eliminate the outline of an object.
- **½ Point Outline** : To establish the thickness of ½ point line
- **1 Point Outline** : To form a line thickness of 1 point
- **2 Point Outline** : To form the 2 point line thickness.
- **8 Point Outline** : To form the line thickness 8 points.
- **16 Point Outline** : To form the 16 point line thickness.
- **24 Point Outline** : To form a 24-point line thickness.
- **Color Docker Window** : To open the docker for setting color and object outline.
- **Fill Tools**
- **Fill Color Dialog** : To access the settings dialog box of paint (changer interior of the object) of an object (Fig 45)



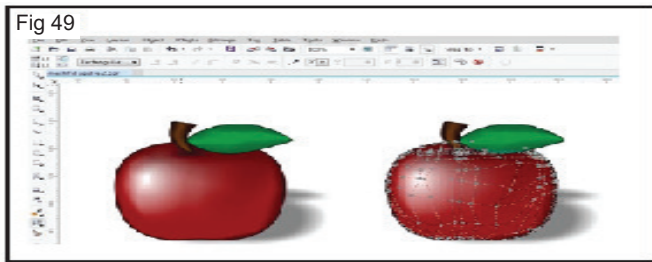
- **Fountain Fill Dialog** : To access the dialog box filler color and gradation to the object. (Fig 46)



- **Pattern Fill Dialog** : To access the dialog box filler patterns into objects.
- **Texture Fill Dialog** : To access the dialog box filler into the texture object.
- **Post Script Fill Dialog** : To access the dialog box filler image post-script to the object.
- **No Dialog** : To eliminate the filler element of an object
- **Color Docker Window** : To open the docker for setting color and object outline.
- **Interactive Fill** : To fill a variety of fill (filler objects) into an object.(Fig 47 & 48)



- **Mesh Fill** : To apply network lines on an object may be useful (Fig 49)



Coreldraw Screen and page setup

Objectives: At the end of this lesson you shall be able to

- corel draw basic screen and parts
- corel draw page setup.

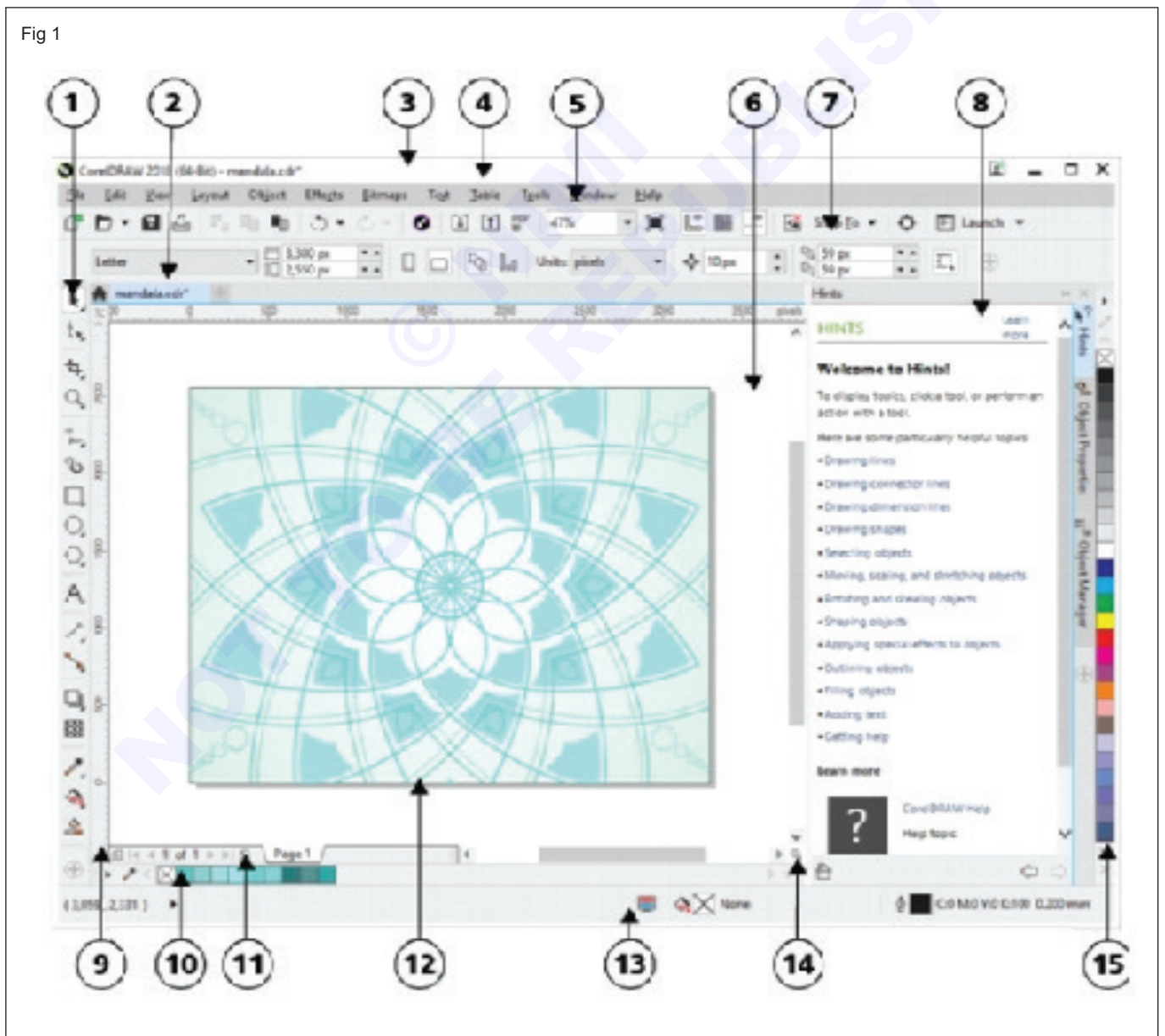
Basic Screen in Coreldraw

- Coreldraw, the application window opens containing a drawing window. Although more than one drawing

window can be opened, you can apply commands to the active drawing window only.

- The Coreldraw application window appears below (Fig 1)

Fig 1



Part	Description
1. Toolbox	A docked bar with tools for creating, filling, and modifying objects in the drawing
2. Document tab	A tab displays for each open document to allow you to quickly move between documents
3. Title bar	The area displaying the title of the currently selected drawing
4. Menu bar	The area containing pull-down menu options
5. Toolbar	A detachable bar that contains shortcuts to menu and other commands
6. Drawing window	The area outside the drawing page bordered by the scroll bars and application controls
7. Property bar	A detachable bar with commands that relate to the active tool or object. For example, when the text tool is active, the text property bar displays commands that create and edit text.
8. Docker	A window containing available commands and settings relevant to a specific tool or task
9. Rulers	Horizontal and vertical borders that are used to determine the size and position of objects in a drawing
10. Document palette	A dockable bar that contains color swatches for the current document
11. Document navigator	The area at the bottom left of the application window that contains controls for moving between pages and adding pages
12. Drawing page	The rectangular area inside the drawing window. It is the printable area of your work area.
13. Status bar	An area at the bottom of the application window that contains information about object properties such as type, size, color, fill, and resolution. The status bar also shows the current cursor position.
14. Navigator	A button at the lower-right corner that opens a smaller display to help you move around a drawing
15. Color palette	A dockable bar that contains color swatches

Coreldraw Document Setup

It's important to learn how to get your document set up properly from the beginning, to help your design process flow smoothly.

Set a Page Size and Orientation

- Click **Layout** ► **Page setup**.
The Options dialog box appears with the Page size page displayed.
- Perform a task from the following table.

Dialog Box Option	Do the following
Choose a preset page size	Choose a paper type from the Size list box.
Match the page size and orientation to the printer settings	Click Get page size from printer.
Specify a custom page size	Type values in the Width and Height boxes.
Set the page orientation	Click the Landscape or the Portrait button.
Set the page size and orientation for an individual page in a multipage document	Make sure the page you want to change is displayed in the drawing window, choose a page size and orientation, and enable the Apply changes to current page only check box.
Display the page border	Enable the Show page border check box.
Add a frame around the page	Click the Add page frame button.
Choose a rendering resolution for the document	Choose a resolution from the Rendering resolution list box. This option is available only when the Unit of measurement is set to Pixels.
Set a bleed limit	Enable the Show bleed area check box, and type a value in the Bleed box.

Command like cut, copy, paste and text writing

Objectives: At the end of this lesson you shall be able to

- explain the commands used in coreldraw.

Choosing objects

Before we modify the object, we must choose it. We can choose the objects in that sequence in which these objects were created. We can marquee choose objects by disclosing them along with the rectangle's selection area or an irregular shape.

We can make selection collections that enable us to choose specific objects without collecting them simultaneously. Selection collections are connected with some numbers from range 0 to 9 and can be saved along with the document.

To choose the object

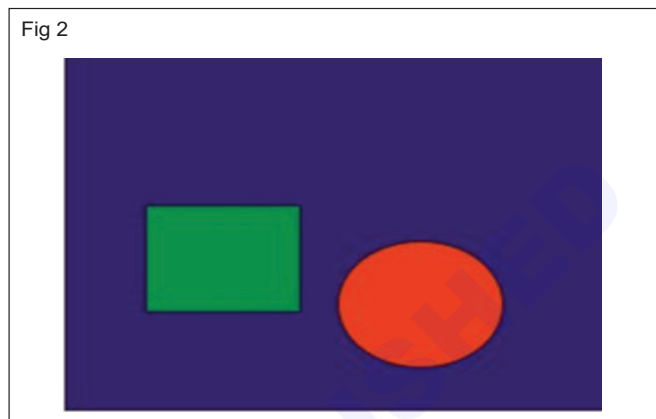
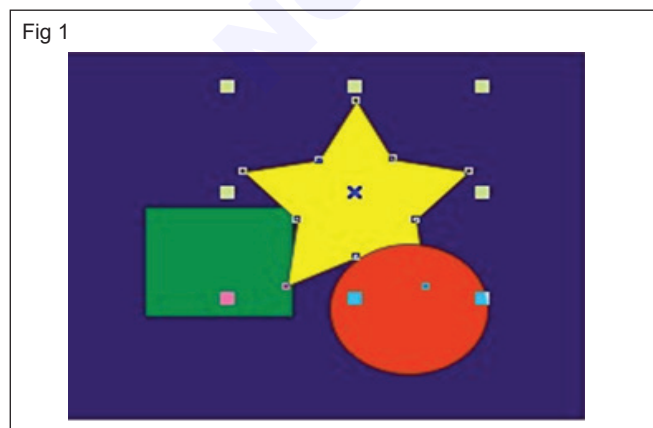
- Press the Pick tool, and press an object.

After the object is selected the following commands can be operated

The cut, copy and paste options are common to most if not all windows programs and the procedure is the same for Corel Draw as all the others. Cutting an object does not mean you get rid of it just because it is not in the scene anymore, it has just been removed from your scene and a copy of it has been stored on the clip board (an area of memory set aside for storage, in this case images) and copying an object by selecting the copy option, although it appears nothing has happened, a copy of the object you selected was stored on the clip board for later use.

Cutting

Cutting is an operation which removes (cuts) the part of the image you have selected from the scene. an example of before a cut and after a cut is shown below. In the image on the left you can see a square, star and circle, in the image on the right I have removed (cut) the circle from the picture



Example of selected object

Example of deleted (cut) object

To remove an object from your scene, click on the object to be removed to select and

Example of Right Click Menu (Fig 3)

Press the **delete** key or **right** click on the object and select the **cut** option from the resulting menu (shown on the right) **Copying**

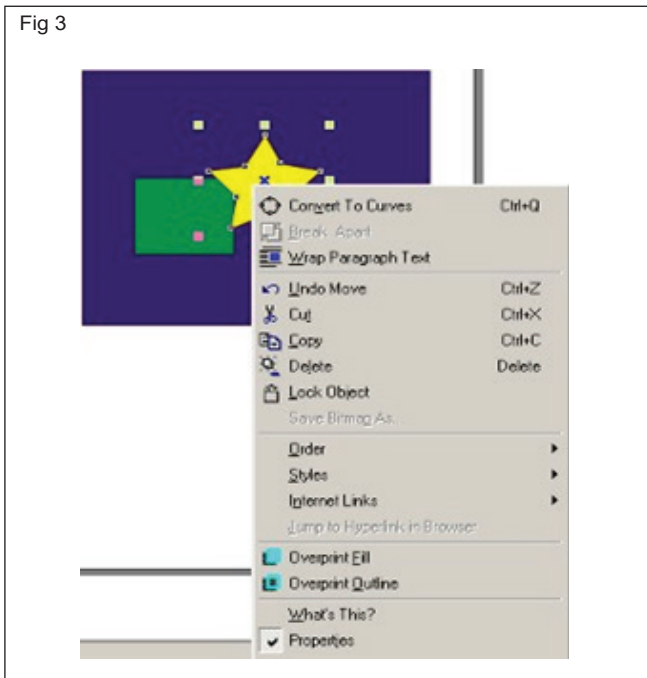
Copying an object has the effect of duplicating it so that you have two or more of the same objects in the scene. This is particularly useful in animations where you need to have the same character in exactly the same position or need to move them slightly to give the impression of movement in the

Pasting

Pasting an object has the effect of reproducing an object that has been cut or copied to the clip board and works like this:

If you have copied or cut an object from your scene either, Click on the edit menu then click on the Paste option or Right click on an empty part of the scene (it has to be an empty part of the scene because of the various things you can do with another object, pasting an object into it or onto the part of the scene where another object resides is not permitted) and click on the Paste option.

Fig 3



Commands used in Corel Draw

Align Bottom	B	Aligns selected objects to the bottom
Align centers horizontally	E	Horizontally aligns the centers of the selected objects
Align centers vertically	C	Vertically aligns the centers of the selected objects
Align left	L	Aligns selected objects to the left
Align right	R	Aligns selected objects to the right
Align to Baseline	Alt+F12	Aligns text to the baseline
Align Top	T	Aligns selected objects to the top
Artistic Media	I	Draws curves and applies
Back one	Ctrl+PgDn	Back one
Break Apart	Ctrl + K	Breaks apart the selected object
Brightness/Contrast/Intensity	Ctrl +B	Brightness/Contrast/Intensity
Bring up property Bar	Ctrl +Enter	Brings up the property bar and gives focus to the first visible item that can be tabbed to
Center to page	P	Align the centers of the selected objects to page
Character formatting	Ctrl + T	Character formatting
Color Balance	Ctrl+Shift+B	Color balance
Combine	Ctrl+L	Combines the selected objects
Contour	Ctrl +F9	Opens the contour docker window
Convert	Ctrl +F8	Converts artistic text to paragraph text or vice versa
Convert Outline To Object	Ctrl+Shift+Q	Converts an outline to an object
Convert To Curves	Ctrl+Q	Converts the selected object to a curve
Copy	Ctrl+C	Copies the selection and places it on the Clipboard
Copy	Ctrl+Insert	Copies the selection and places it on the Clipboard

Cut	Ctrl+X	Cuts the selection and places it on the Clipboard
Cut	Shift+Delete	Cuts the selection and places it on the Clipboard
Delete	Delete	Deletes the selected object(s)
Distribute Bottom	Shift+B	Distributes selected objects to the bottom
Distribute Centers Horizontally	Shift+E	Horizontally Distributes the centers of the selected objects
Distribute Centers Vertically	Shift+C	Vertically Distributes the centers of the selected objects
Distribute Left	Shift+L	Distributes selected objects to the left
Distribute Right	Shift+R	Distributes selected objects to the right
Distribute Spacing Horizontally	Shift+P	Horizontally Distributes the space between the selected
Distribute Spacing Vertically	Shift+A	Vertically Distributes the space between the selected objects
Distribute Top	Shift+T	Distributes selected objects to the top
Duplicate	Ctrl+D	Duplicates the selected object(s) and offsets by a specified amount
Duplicate In Place	+	Duplicates the selected object(s) at their current location
Dynamic Guides	Alt+Shift+D	Shows or hides the Dynamic Guides (toggle)
Edit Text...	Ctrl+Shift+T	Opens the Edit Text dialog box
Ellipse	F7	Draws ellipses and circles; double-clicking the tool opens the Toolbox tab of the Option
Envelope	Ctrl+F7	Opens the Envelope Docker Window
Eraser	X	Erases part of a graphic or splits an object into two closed paths
Exit	Alt+F4	Exits CorelDRAW and prompts to save the active drawing
Export...	Ctrl+E	Exports text or objects to another format
Font Size Decrease	Ctrl+NUMPAD2	Decreases font size to previous point size
Font Size Increase	Ctrl+NUMPAD8	Increases font size to next point size
Font Size Next Combo Size	Ctrl+NUMPAD6	Increase font size to next setting in Font Size List
Font Size Previous Combo Size	Ctrl+NUMPAD4	Decrease font size to previous setting available in the Font Size List
Forward One	Ctrl+PgUp	Forward One
Fountain Fill...	F11	Applies fountain fills to objects
Freehand	F5	Draws lines and curves in Freehand mode
Full-Screen Preview	F9	Displays a full-screen preview of the drawing
Graph Paper	D	Draws a group of rectangles; double-clicking opens the Toolbox tab of the Options dial
Graphic and Text Styles	Ctrl+F5	Opens the Graphic and Text Styles Docker Window
Group	Ctrl+G	Groups the selected objects
Hand	H	Hand Tool
Horizontal Text C	Ctrl+,	Changes the text to horizontal direction
Hue/Saturation/Lightness...	Ctrl+Shift+U	Hue/Saturation/Lightness

Import...	Ctrl+I	Imports text or objects
Insert Symbol Character	Ctrl+F11	Opens the Insert Character Docker Window
Interactive Fill	G	Adds a fill to object(s); clicking and dragging on object(s) applies a fountain fill
Lens	Alt+F3	Opens the Lens Docker Window
Linear	Alt+F2	Contains functions for assigning attributes to linear dimension lines
Macro Editor...	Alt+F11	Macro Editor...
Mesh Fill	M	Converts an object to a Mesh Fill object
Micro Nudge Down	Ctrl+DnArrow	Nudges the object downward by the Micro Nudge factor
Micro Nudge Left	Ctrl+LeftArrow	Nudges the object to the left by the Micro Nudge factor
Micro Nudge Right	Ctrl+RightArrow	Nudges the object to the right by the Micro Nudge factor
Micro Nudge Up	Ctrl+UpArrow	Nudges the object upward by the Micro Nudge factor
Navigator	N	Brings up the Navigator window allowing you to navigate to any object in the document
New	Ctrl+N	Creates a new drawing
Next Page	PgDn	Goes to the next page
Nudge Down	DnArrow	Nudges the object downward
Nudge Left	LeftArrow	Nudges the object to the left
Nudge Right	RightArrow	Nudges the object to the right
Nudge Up	UpArrow	Nudges the object upw
Open...	Ctrl+O	Opens an existing drawing
Options...	Ctrl+J	Opens the dialog for setting CorelDRAW options
Outline Color...	Shift+F12	Opens the Outline Color dialog box
Outline Pen...	F12	Opens the Outline Pen dialog box
Pan Down	Alt+DnArrow	Pan Down
Pan Left	Alt+LeftArrow	Pan Left
Pan Right	Alt+RightArrow	Pan Right
Pan Up	Alt+UpArrow	Pan Up
Paste	Ctrl+V	Pastes the Clipboard contents into the drawing
Paste	Shift+Insert	Pastes the Clipboard contents into the drawing
Place Inside Container...	Ctrl+I	Places selected object(s) into a PowerClip container object
Polygon	Y	Draws polygons
Position	Alt+F7	Opens the Position Docker Window
Previous Page	PgUp	Goes to the previous page
Print...	Ctrl+P	Prints the active drawing
Properties	Alt+Enter	Allows the properties of an object to be viewed and edited
Record Temporary Macro	Ctrl+Shift+R	Record Temporary Macro
Rectangle	F6	Draws rectangles; double-clicking the tool creates a page frame
Redo	Ctrl+Shift+Z	Reverses the last Undo operation
Refresh Window	Ctrl+W	Redraws the drawing window

Repeat	Ctrl+R	Repeats the last operation
Rotate	Alt+F8	Opens the Rotate Docker Window
Run Temporary Macro	Ctrl+Shift+P	Run Temporary Macro
Save As... S	Ctrl+Shift+	Saves the active drawing with a new name
Save...	Ctrl+S	Saves the active drawing
Scale	Alt+F9 Window	Opens the Scale Docker
Select all	Ctrl+A	Select all object of the active page
Shape	F10	Edits the nodes of an object; double-clicking the tool selects all nodes on the selected
Size	Alt+F10 Window	Opens the Size Docker
Smart Drawing	Shift+S Dbl-click	opens Smart Drawing Tool options; Shift+drag backwards over line erases
Snap to Grid	Ctrl+Y	Snaps objects to the grid (toggle)
Snap to Objects	Alt+Z	Snaps objects to other objects (toggle)
Spell Check...	Ctrl+F12	Opens the Spell Checker; checks the spelling of the selected text
Spiral	A	Draws spirals; double-clicking opens the Toolbox tab of the Options dialog
Step and Repeat...	Ctrl+Shift+D	Shows Step and Repeat docker
Stop Recording	Ctrl+Shift+O	Stop Recording
Super Nudge Down	Shift+DnArrow	Nudges the object downward by the Super Nudge factor
Super Nudge Left	Shift+LeftArrow	Nudges the object to the left by the Super Nudge factor
Super Nudge Right	Shift+RightArrow	Nudges the object to the right by the Super Nudge factor
Super Nudge Up	Shift+UpArrow	Nudges the object upward by the Super Nudge factor
Symbol Manager	Ctrl+F3	Symbol Manager Docker
Text	F8	Adds text; click on the page to add Artistic Text; click and drag to add Paragraph Text
To Back Of Layer	Shift+PgDn	To Back Of Layer
To Back Of Page	Ctrl+End	To Back Of Page
To Front Of Layer	Shift+PgUp	To Front Of Layer
To Front Of Page	Ctrl+Home	To Front Of Page
Toggle Pick State	Ctrl+Space	Toggles between the current tool and the Pick tool

Toggle View	Shift+F9	Toggles between the last two used view qualities
Undo	Ctrl+Z	Reverses the last operation
Undo	Alt+Backspace	Reverses the last operation
Ungroup	Ctrl+U	Ungroups the selected objects or group of objects
Uniform Fill...	Shift+F11	Applies uniform color fills to objects
Use bullets	Ctrl+M	Show/Hide Bullet
Vertical Text	Ctrl+.	Changes the text to vertical
View Manager	Ctrl+F2	Opens the View Manager Docker Window
What's This?	Shift+F1	What's This? Help
Zoom	Z	Zoom Tool
Zoom One-Shot	F2	
Zoom Out	F3	Zoom Out
Zoom To Fit	F4	Zoom To All Objects
Zoom To Page	Shift+F4	Zoom To Page
Zoom To Selection	Shift+F2	Zoom To Selected

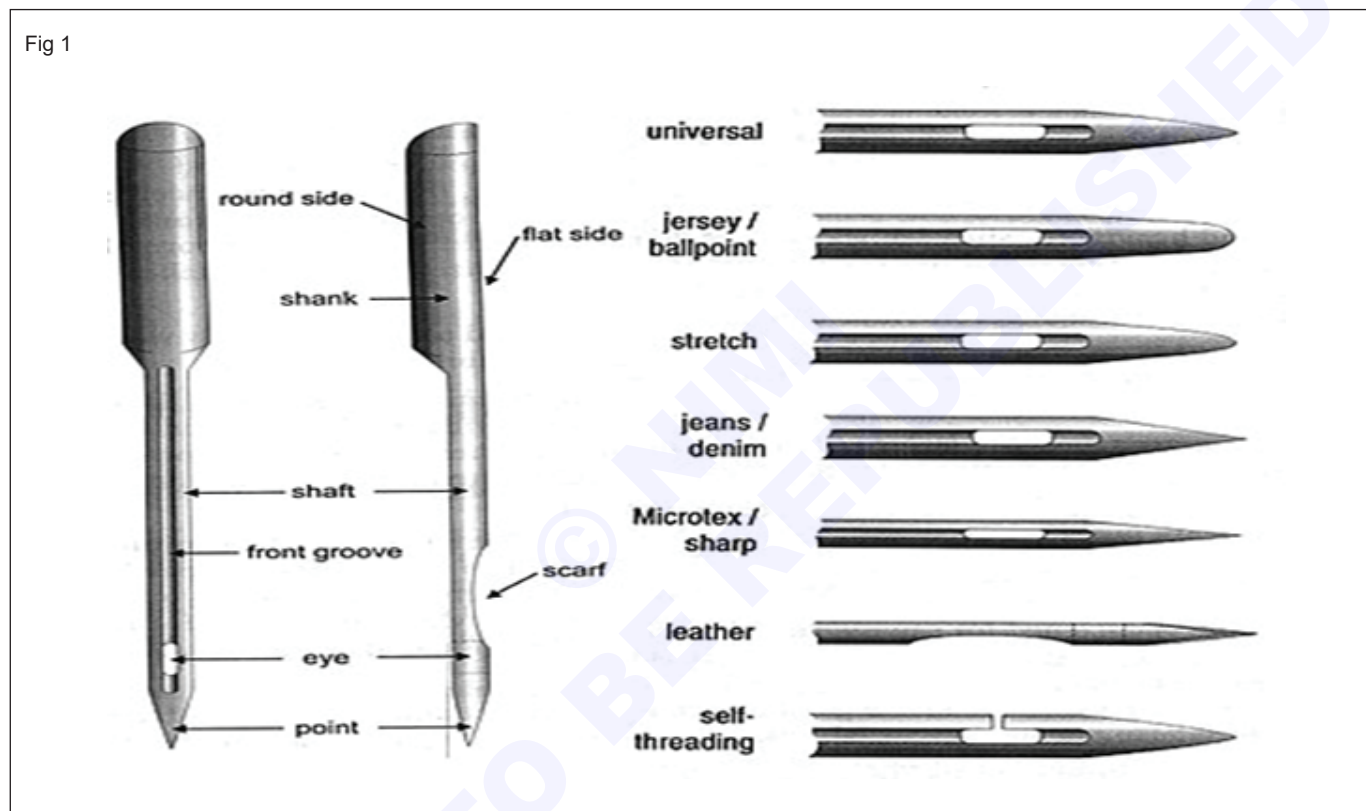
Types of needle and their uses and handling

Objectives: At the end of this lesson you shall be able to

- brief study about needles
- different types of needles
- selection of need according fabric
- perform needle precaution.

Parts of an Embroidery Needle

Anatomy of a Sewing and Embroidery Needle



Sewing machine needle parts. Source: Wikipedia. Embroidery needle looks like the stretch needle

- **Butt** - the end on top of the needle
- **shaft** - to be clamped by the needle holder of the sewing or embroidery machine,
- **shoulder or taper** - where the stem tapers down to the shaft,
- **shaft (or blade)** - has a length suitable to driving the eye and the thread through the material and to the bobbin, defines the size (diameter) of the needle
- **Groove** - cut into the front of the shaft to allow the thread to lie more closely to the needle as it passes through the fabric
- **Scarf** - provides additional space for the hook or shuttle to pass closeby,

- **Eye** - the hole, carries the thread,
- **Point** - penetrates the material by separating the thread or by cutting a hole through a thread.
- **Tip** - the end of the point.
- **Point groove** - on the tip on some needles.

Embroidery needles have an elongated eye, widened groove, and a special scarf to accommodate embroidery thread. The larger eye decreases friction from the thread, which decreases thread breakage and shredding. Sometimes, simply switching to an embroidery needle can fix embroidery issues. And, in other cases, selecting a sewing needle will do the same.

Types of Embroidery Needle

Embroidery needles are in a large range of sizes (around 65/9 to 110/18), the most common are 75/11, 80/12, and 90/14.

Fig 2



The larger the numbers, the thicker the shaft of the needle, the thicker threads it can accommodate, and the thicker, denser fabric it can penetrate. The reverse applies to smaller needle numbers.

There are three different types of point shapes on machine embroidery needles: universal, sharp, and ballpoint.

Fig 3

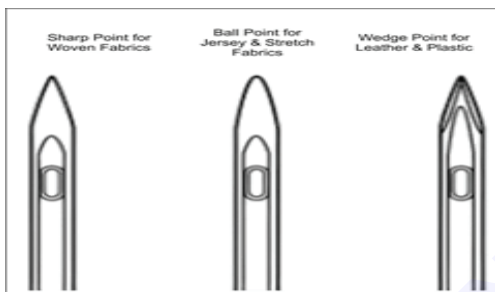


Fig 4

NEEDLE POINT CUTTING STYLES IN STITCH HOLE IN FABRIC

SET (SHARP) POINT



NARROW WEDGE POINT



1 Sharp

Sharp embroidery needles have the sharpest point and penetrate through dense, woven fabrics. Sometimes projects with water-soluble topping also need a sharp needle to pierce well. (Fig 5)

Fig 5



2 Ballpoint

Ballpoint embroidery needles, on the other hand, have a rounded point that pushes aside fibers of knit fabrics rather than piercing and damaging them. (Fig 6)

Fig 6



3 Universal

Universal embroidery needles have a slightly rounded point that falls between the other two types. As such, universal needles work well on woven fabrics and stretchy, knit fabrics. Unless the embroidery needle package designates otherwise, most generic machine embroidery needles are universal. (Fig 7)

Fig 7



Universal

4 Wedge point needle

“Narrow wedge point” needle is preferred in leather fabrics. The idea behind this needle is that as it perforates the leather, it leaves enough distance between the stitches in the embroidery to maintain the strength of the leather. It is possible to punch out the design after embroidering (Fig 8)

Fig 8



Coatings and Finishes

Fig 9



Some embroidery machine needles have a gold or titanium coating on the point and shaft.

Coated needles penetrate dense fabrics better and last up to 5 times longer than their counterparts. This is because they maintain their point shape over longer periods of use and heat up less from the friction from high-speed stitching.

They can be used in any type of fabric, but they are more expensive than uncoated needles.

Titanium or gold-coated needles are also great for adhesive stabilizers, which can be more difficult for universal needles to penetrate without getting a gummy build up.

As mentioned, selecting the best embroidery needle involves choosing the point type, needle size, and needle material.

Choose a Needle Size :

First, consider the material to be embroidered.

Thick and dense like wool or canvas start with 90/14.

Light or medium weight like quilting cotton - 75/11.

Very lightweight and delicate like voile, chiffon, or crepe - 70/10 or 65/9.

Second, check the thread choice will work with that needle size.

Thicker thread (smaller wt number) needs a thicker needle with a bigger eye. For example 30 wt thread size up to 80/12.

Thinner thread (larger wt) works better with a thinner needle and smaller eye. For example 60 wt thread might

suit with the 70/10 needle.

Lastly, make sure the needle size will work with the embroidery design.

If stitching a very intricate, detailed design, consider a smaller, sharper needle that will make smaller needle holes more precisely.

Checking the needle

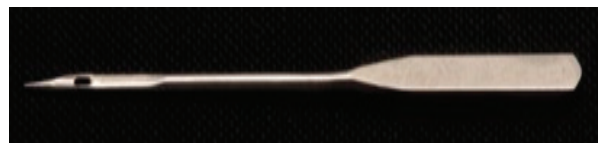
First consider the fabric to be embroidered.

- Most stretchy, knit fabrics work well with a ballpoint or universal needle point.
- Most woven fabrics work well with a universal or sharp needle.
- Very dense, very thick fabrics (denim, canvas, vinyl) may need that sharp needle to penetrate. Using a small, ballpoint needle on these fabrics is one of many reasons an embroidery machine needle keeps breaking.
- Next, consider the stabilizer selection. If water-soluble topping is used and a universal needle isn't puncturing, then you need a sharp needle.
- Change the needle frequently for accurate stitching.
- Thread breakage or poor penetration could be due to a bent, dull, or nicked needle
- Store the needle back in its original case or an appropriate needle storage area if you need to temporarily switch it out.

Selection of needle

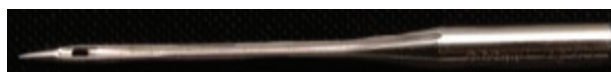
Domestic machine needle

Fig 10



Commercial machine needle

Fig 11



Thread type and weight	Needle Size	
	Home (flat)	Commercial (round)
Rayon (60 Wt.)	9/65 or 8/60	9/65 or 8/60
Rayon (40 Wt.) (Including potpourri, multi, melange and vari)	11/75 or 12/80	11/75 or 12/80
Rayon(30 Wt.)	11/75 or 12/80	11/75 or 12/80
Polyster/Polyneon (60 Wt.)	9/65 or 8/60	9/65 or 8/60
Polyster/Polyneon (40 Wt.) (Including Neon and Blended)	11/75 or 12/80	11/75 or 12/80
Polyster/Polyneon (30 Wt.)	14/90	14/90
Metallic (50Wt.)	11/75	11/75
Metallic (40Wt.) (Including Jewel, Superwist, Astro and Twisted Metal)	11/75 or 80/12	11/75 or 80/12
Metallic (30Wt.)	14/90	14/90
Metallic (20Wt.)	14/90 to 16/100	14/90 to 16/100
Cotton (50 Wt.)	9/65	9/65
Cotton (30 Wt.)	14/90	14/90
Wool (12 Wt.)	16/100	16/100

Selection of needle according to fabric

Fabric type	Needle size/point	
	Home (flat)	Commercial (round)
Delicate/Transparent fabrics (E.g. Lingerie, silk, georgette, organdy, chiffon, tricot etc.)	9/65 to 10/70 (Ballpoint)	9/65 to 10/70 (Ballpoint)
Light weight Woven fabrics (E.g. Dress shirts, linen, cotton, cotton blends, poplin etc.)	11/75 to 12/80 (Sharp point)	11/75 to 12/80 (Sharp point)
Knit fabrics (E.g. Fleece, pique)	11/75 to 12/80 (Ball point)	11/75 to 12/80 (Ball point)
Elastic Fabrics (E.g. Lycra)	11/75 to 12/80 (Ball point)	11/75 to 12/80 (Ball point)
Waterproof/Coated fabrics	11/75 to 12/80 (Sharp point)	11/75 to 12/80 (Sharp point)
Medium - weight woven (Wool, medium - weight linens, gingham, man - made fabric, fine corduroy, suitings)	12/80 to 14/90 (Sharp point)	12/80 to 14/90 (Sharp point)
Active sportswear/Double knits	14/90 (ball point)	14/90 (ball point)
Heavyweight fabrics (canvas, heavy denim, vinyl)	14/90 to 16/100 (Sharp point)	14/90 to 16/100 (Sharp point)
Leather	10/70 to 14/90 (Sharp point) or Leather point	10/70 to 14/90 (Sharp point) or Leather point

Needle Precautions

1 Always place pins perpendicular to the stitching line

Fig 12

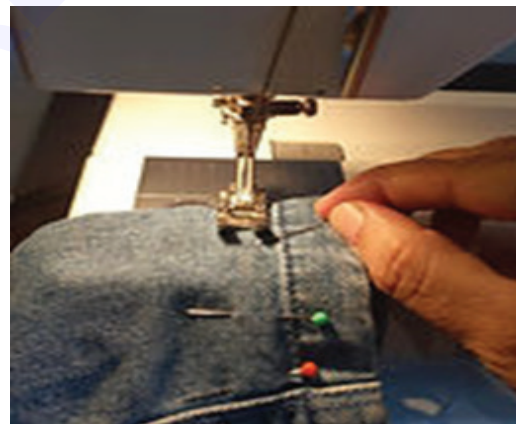


Correct Placement of pins on Sewing Machine. It is a common practice to pin layers/folds of fabric in place before a seam is placed. It is important to always place these pins perpendicular to the direction of the stitch line. This helps in preventing lateral shifting of layers from the marked position. Also, this ensures easy removal of pins while sewing.

2 Do not sew over pins

While it is important to pin layers & folds to ensure sewing in the right place, stitching over pins can

Fig 13



cause multiple damages to the sewing machine; most prevalent being needle breakage & needle bending. It is therefore advisable to keep pulling out pins as the said area approaches the pressure foot. This would be an easy task if the pins are placed perpendicular to the stitch line.

3 Do not try to take the bobbin out while needle is still dipped in. Never try to pull the bobbin out of the bobbin cavity while the machine needle is still dipped in the presser foot.

This can lead to needle breakage and also broken needle can get jammed in the feed dog assembly leading to bigger complications in the sewing machine.

Fig 14

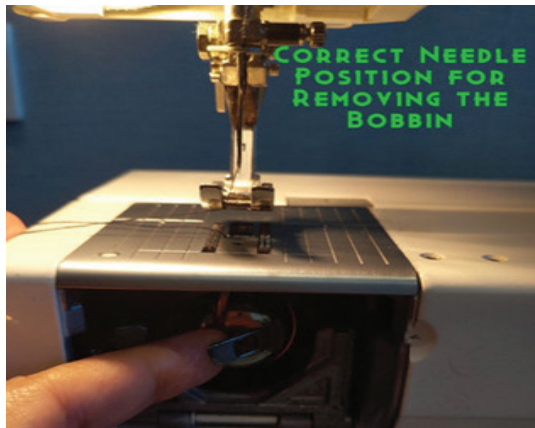


Fig 17



Fig 15



4 Do not try to pull the fabric out while needle is still dipped in & the presser foot is down

In order to pull the fabric out of the machine, rotate the hand wheel till the needle is completely lifted up and then lift the presser foot. Now slowly pull the fabric out and snip threads at the right place.

Fig 16



5 Do not try to change needle position while the needle is still dipped in. Some of the machines provide with an option of changing the alignment of the machine needle to center, right or left. While this is a wonderful feature that allows to manipulate the stitch line smoothly between various seam allowances and helps in other adjustments, one needs to be extra careful about when is the right time to perform this action. In order to change the alignment of needle, make sure that the needle is not dipped inside the sewing cavity/presser foot, as changing alignment at this position can break the needle and jam the feed dog assembly.

6 Do not use bent needles examine the needles closely before starting the stitch. If the needle appears to be bent (this could happen because of a previous misadventure with the machine), change the needle before continuing with the sewing projects. Working with bent needles can damage both, the fabric & the machine.

7 A clean and well-oiled sewing machine and a good quality needle will decrease the chances of injuring the eye and prolong the life of the sewing machine. It will also improve the creative satisfaction of the sewing while most importantly reducing the chances of injuring the eye.

Types of Embroidery threads

Objectives: At the end of this lesson you shall be able to

- brief knowledge of thread and its types
- benefits and disadvantages of different types of embroidery threads
- know about the difference between upper thread and bobbin thread.

Machine embroidery thread is different from regular sewing machine thread. Just by looking at two spools side by side, it can be seen that the embroidery thread has a pretty sheen too it. Sewing thread is more dull. That sheen is what helps the embroidery look pretty and polished once it's stitched out.

Embroidery thread has different weight than regular thread. The embroidery machine is not made to handle the weight of regular sewing thread. It can throw the machine off and cause problems.

In addition, regular thread has a lot of lint and can gunk up your embroidery machine. Because of these differing properties, it also holds true that you shouldn't sew with embroidery thread.

Machine Embroidery Thread Thickness

In the machine embroidery, thread thickness is referred to by weight. The larger the number, the finer the thread, the easier it will break. Finer threads are good for heirloom quality embroidery, and thicker threads are better for general work.

Fig 1



For example, the standard thickness for rayon thread would be referred to as 40 wt thread. A 20 wt thread would be thicker, and a 60 wt thread would be finer. When choosing thread weight, it all depends on the desired result or purpose of the job.

For high quality, high detail designs over a small surface area, you might use a finer thread. For larger designs, maybe for materials that will be outdoors or in constant use, you might want a thicker thread.

For the embroidery machine to work correctly, it is essential to use the right thread. It is not only about the type of thread but also how it is chosen

To pick the right embroidery thread, consider what kind of machine and what type of stitch is being used. Then consider desired outcome and how much time the work will take.

Different type of embroidery Threads

Cotton embroidery threads:

The only 100% natural fiber thread made for high speed machines. Cotton has various finishes, each providing specific results. Cotton embroidery thread is very often overlooked by automatic embroidery machine users. But the fact is that it performs beautifully in embroidery machines and has a lovely, soft sheen. Additionally, cotton thread is available in weights up to the very fine 100.

Fig 2



- **Mercerized:** The thread is treated in a solution, causing the fibers to swell. This allows the dye to better penetrate the fibers and increases the luster of the thread. It also increases the strength of the thread.
- **Gassed:** The thread is passed through a flame at high speed to reduce the fuzz.
- **Glazed:** The thread is treated with wax or other chemicals, then polished to create a higher luster. Although the result is a glossy, hard finish which protects the thread, the glaze does rub off and can gum up the needle and machine. OK for hand quilting but not recommended for machine use.

- **Cotton-wrapped poly:** Most cotton-wrapped poly threads are approximately two-thirds poly and one-third cotton and will therefore resemble the characteristics of poly more than cotton.

Pearl Cotton

Pearl cotton is also made of twisted strands, but they cannot be divided. It's commonly packaged in both spools and skeins. Because of its heavier textured feel, line stitches like the stem stitch or chain stitch—usually sit higher up on the fabric, making it a good choice for surface embroidery.



Silk Thread

Soft and fine, silk thread is ideal for embroidery. Of all the natural fibers, silk is not only the strongest, but it also has the highest sheen. The prime benefits to working with silk are that it doesn't leave holes, takes well to dyes, and comes in two forms: spun (heavier strands) or filament (single strand).



Wool Yarn

This natural fiber is long-lasting, colorfast, and wears well over time. For embroidery, wool thread is categorized into three main varieties: fine crewel yarn, divisible 3-ply Persian wool, and tapestry wool (the latter of which is most commonly used).

Satin and Rayon Floss

Satin and rayon threads are both synthetics with a high sheen. While they glide easily through fabric and stay soft even at high stitch counts, they are not recommended for machine embroidery.

The Rayon thread perform consistently well in high-speed embroidery machines with very little breaking or fraying. Rayon is a high sheen thread, and often used as a lower cost alternative to silk threads. Most



Rayon embroidery threads are available in 40wt, though 30wt can be found without effort. A wide range of colors and shades are available, including variegated colors. Though some brands can be, rayon embroidery threads are not generally colorfast. It is best to avoid using any bleaching agents, including those made for colors. Stitches sewn with rayon threads are very smooth and consistent, leading to a higher quality embroidery project. Rayon threads do deteriorate over time, so attention should be paid to how it is stored. In low humidity regions, rayon threads can be stored in the refrigerator to extend thread life for as long as possible.



Polyester embroidery threads:

Polyester embroidery thread is the popular and economical choice. It is available in a wide assortment of colors, and your results will be similar to that of rayon. The benefit of polyester is that it won't shrink, fade or bleed. Like rayon thread, polyester thread is strong and won't easily break or fray.

Polyester thread is synthetically produced from polymer resins. It can be made with a matte finish to look like cotton, with a medium sheen, or high sheen finish to look like rayon or silk. Trilobal poly is higher quality polyester with sheen equal to rayon and is lint free. Due to its strength and color fastness polyester is becoming one of the most popular embroidery threads available these days.



Over-Dyed Thread

As its name implies, “over-dyed” non-divisible thread features multiple colors that harmoniously progress from one to the other. This is differentiated from variegated thread or floss, which features subtle shades of a single color.

Fig 8



Metallic Thread

Metallic thread is used to enhance embroidery with added shine, and they come in colors of gold, silver, and platinum as well as antiqued finishes. These threads can be delicate and fairly difficult to handle, so it's best to work with shorter lengths.

Fig 9



Novelty Embroidery Floss

Beyond the basic embroidery floss and pearl cotton, there's a wide assortment of specialty fibers available in the market: glittered thread, multi-colored matte thread, even glow-in-the-dark thread—often as polyester. Experiment freely, but just remember to pair the thread with the right size needle.

Multi-colored matte thread

Fig 10



Glow-in-the-dark thread

Fig 11



Glittered thread

Fig 12



Advantages and disadvantages of different kind of threads

Types of thread	Advantages	Disadvantages
Cotton	<ol style="list-style-type: none"> 1 Soft 2 Durable 3 Easily adjusts to changes in the fabric (Such as shrinkage) Since, it is a natural fiber. 4 Available in various thread weights 5 Easy care 	<ol style="list-style-type: none"> 1 Low sheen 2 Not as strong as polyester 3 Low - quality cotton is linty
Rayon	<ol style="list-style-type: none"> 1 High sheen 2 Softer 3 Relatively heat resistant 4 Less elasticity than polyester 	<ol style="list-style-type: none"> 1 Not colorfast 2 Not as strong as polyester 3 Less durable than polyester
Polyester	<ol style="list-style-type: none"> 1 Durable Designed for heavy duty use 2 Strength More tensile strength than rayon or cotton 3 Colorfast 4 Retains shape 5 Recovers stretch 	<ol style="list-style-type: none"> 1 More elasticity than rayon 2 Lower temperature tolerance than rayon
Nylon	<ol style="list-style-type: none"> 1 Strength 	<ol style="list-style-type: none"> 1 Low melting temperature. Not heat resistant 2 Not colorfast will yellow over time 3 Becomes brittle through laundering and exposure
Metallic	<ol style="list-style-type: none"> 1 Beautiful sheen 2 Excellent stitch quality when embroidered, quilted or sewn 	<ol style="list-style-type: none"> 1 Tension adjustments are required 2 Stitching speed may need to be decreased
Glittered	<ol style="list-style-type: none"> 1 Holographic effect 	<ol style="list-style-type: none"> 1 Tension adjustments are required 2 Stitching speed may need to be decreased

Difference between upper thread and bobbin thread

Bobbin thread for machine embroidery is thinner and made from polyester, which makes it different from upper thread. There is a difference in thickness between upper thread and machine embroidery bobbin thread.

Bobbin thread and top thread are two different threads used in sewing machines.

A bobbin is located directly under the needle. When the needle plunges through the fabric, the bobbin wheel creates a loop with the main thread and wraps it around the bobbin thread, then pulls it tight. That's how a stitch is formed.

Bobbin thread can be a different color than the embroidery thread, but be sure it matches or is close to matching the color of piece. Bobbin thread is seen on the underside of the embroidery, and can sometimes shine through the design.

Depending on what is embroidered, there are a few different options in terms of colors for the bobbin thread. Generally, the color of the bobbin thread to match the color or color tone of the piece.

When embroidering a dark design, perhaps navy blue or black, use dark bobbin thread. While embroidering a pale yellow or white, use a light bobbin thread. Also pre-wound bobbin thread in black and white is available to save time and no need to wind it.

To make the stitch accurate use the same thread and color for the bobbin as use for the embroidery. It might be hard to purchase pre-wound bobbins with the same thread as the embroidery thread, have to wind it yourself. Most machines come with a bobbin winder.

Types of fabric

Objectives: At the end of this lesson you shall be able to

- explain different types of fabric and handling methods
- know about the benefits and disadvantages of heavy and light fabrics.

We wear different types of fabrics every day, but chances are that we don't know what they are, or even how to take care of them. Good fabrics are worth nothing if not cleaned or maintained properly, and improper care could be a waste of money.

Clothing, after all, is and should be treated as an investment. Proper care for the different clothes in your wardrobe can help keep them looking their best and prolong their use. Here are the different kinds of fabrics and how to take care of them:

Cotton

Cotton fibers develop along with the seeds of the cotton plant. These fibers are plucked and spun into yarn. This yarn is then woven into cotton fabric. Cotton is widely used in clothing apparel due to its light and breathable texture. Furthermore, cotton is one of the most preferred fabrics in hot and humid regions (such as coastal areas). This is because cotton is highly breathable and can also absorb a good amount of sweat.

Most cotton fabrics are "pre-shrunk", which makes them highly durable. Cotton garments can be machine-washed with any detergent. As with any fabric, reserve bleach for whites. If bleach is needed for colored clothing, use color-safe bleach as much as possible.

(Denim, the cloth you find in jackets and jeans, also falls in this category – cotton is woven into denim using a twill.)

Machine-wash in cold or warm water with all-purpose detergent and line-dry in shade to avoid yellowing. For white cotton, wash with bleach on a hot water setting.

Fig 1



Synthetics (Polyester, Nylon, Spandex, etc.)

Nylon fabric is a polymer fabric that is made up of synthetic fibers. It usually features low breathability but very high tensile strength and resistance to wearing and tearing. Nylon fabrics are usually quite stretchable and are, therefore, widely used in socks and stockings. These fabrics are also used in sportswear. Unlike rayon, nylon fabrics are 100% synthetic.

Synthetic fabrics don't have the risk of shrinkage unlike more delicate fabrics, and are resistant to water-based stains. However, friction makes them conducive to static electricity.

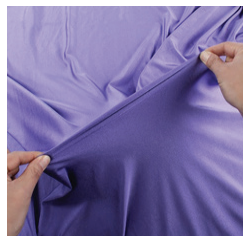
Polyester, considered the "wonder fiber" of the 20th century, makes for durable, easy-to-wash garments that come in a wide variety of colors. Most polyester fabrics can be machine-washed in warm water, but be sure to iron on low heat to keep the fibers from melting.

Another synthetic widely used today is spandex, an elastic fiber used in a lot of sportswear because of its flexibility and its resistance to wear and tear due to friction. Be sure to avoid bleach and hot water when washing spandex fabrics.

Fig 2



Polyester



Spandex



Nylon

Rayon

Rayon is a synthetic fabric that is made from fibers that are made from naturally sourced cellulose. Rayon is not considered to be a fully synthetic fabric because it is manufactured from natural raw materials. These fabrics are known to be highly versatile and can be even known to mimic the texture and feel of natural fabrics such as silk, linen, cotton, and wool. The fabrics made up of rayon fibers are known to be very soft, comfortable, and quite absorbent.

Rayon is a textile made from wood pulp and is treated with chemicals, which makes it a semisynthetic fabric.

While cool and comfortable, rayon has the drawback of losing its crispness, as well as bleed and/or shrink, when laundered.

Consider hand-washing in cold water with mild detergent if dry-cleaning is not an option. Air dry and iron when slightly damp.

Fig 3



Linen

This is an example of a natural fabric, this time made from flax. Linen is a surprisingly light and breezy fabric that keeps you cool in hot weather, and, like cotton, is machine-washable.

Clean linens in warm water with chlorine-free bleach and hang to dry. Using the medium heat setting on the dryer is also a good option for drying this fabric.

Strong, plain or damask weaves. Comes in weights from handkerchief linen to very heavyweight. Used in blouses, dresses, sportswear, outerwear, home-decor.

Fig 4



Cashmere

Cashmere makes for some of the most comfortable sweaters and scarves, as this fabric is made of a natural fiber woven from goat hair.

Dry-clean cashmere as much as possible. If this is not an option, consider hand-washing with baby shampoo. Ironing or machine-drying can ruin cashmere, and wringing can loosen the weave.

Never hang cashmere scarves or sweaters. Instead, fold them to make sure they retain their shape.

Fig 5



Silk

Silk fabrics are woven from silk yarn, which can usually be sourced from the cocoons of the silkworm. The most common form of silk is obtained from the silkworm species known as *Bombyx mori*. The practice of rearing silkworms to extract silk from them is popularly known as sericulture. The absorbency of silk fabrics makes them highly desirable in warm climates. Furthermore, silk is a very soft fabric that can also offer protection against some insects such as mosquitoes. Silk is also used in some types of parachutes. Common examples of fabrics that are made from silk fibers include chiffon, charmeuse, crepe de chine, and shantung.

Silk feels exquisite, but is quite delicate to handle and difficult to clean. This natural fiber is among one of the world's oldest textiles and clothing materials, and the fiber is in itself washable.

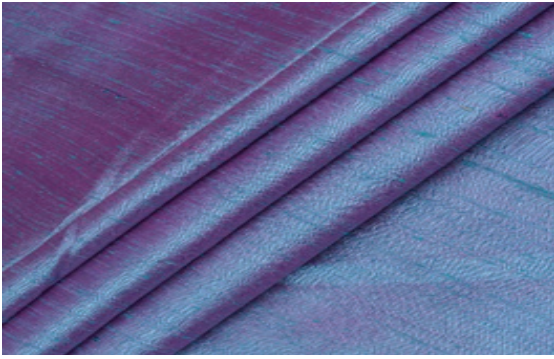
However, silk is difficult to clean because of the many fabric weaves that may tighten or pucker when washed. When washing silk, be sure to follow the garment labels. Dry-clean as much as possible. If hand-washing is an available option, use products formulated especially for delicate fabrics.

To dry silk garments, roll them in a towel to press out the moisture and hang to dry. Press with a warm iron.

Wool

Wool fabrics are made up of wool fibers, which are obtained from certain woolly animals such as sheep. Common examples of wool fabrics include cashmere, angora, mohair, and qiviut. Wool is one of the most preferred types of fabric in cold areas due to its ability to trap heat and keep its wearers warm. It is also used in blankets, carpeting, saddle cloth, and horse rugs.

Fig 6



Natural wool is woven from animal fur, which is a great natural insulator and really easy to dye into many different colors.

Wool fabrics can be a cross between rugged tweeds and wool challis, and sometimes both weaves are incorporated in certain clothing. Wool knits need to be dry-cleaned, but may be hand-washable in cool water depending on the label.

Garments made of lined wool look best when dry-cleaned once a month. Be sure to remove the surface soil a damp cloth and refresh by hanging from a padded hanger.

Fig 7



Brocade

This is a heavy, rich fabric made on jacquard looms to give it texture, woven with extra threads in multiple colors. It has a stiff hand and is often made with a satin finish and metallic threads. It is used in suits, sportswear, evening wear, bridal, accessories, home decoration. This fabric has a tendency to catch and snag easily, making lining a must. It is usually dry cleaned only. It also has a tendency to ravel so make sure you finish seams when sewing with it.

Chiffon

Lightweight, sheer, plain-weave fabric made from twisted yarns. Very drapy with a lovely hand. Quite strong, despite its delicate appearance. Has a tendency to snag and pull easily.

It is used for dresses, eveningwear, scarves, blouses, lingerie. These fabrics are hand washed or dry cleaned. It is slippery and difficult to cut and sew. It is recommended to hand basting seams before stitching to reduce slippage.

Fig 8



Fig 9

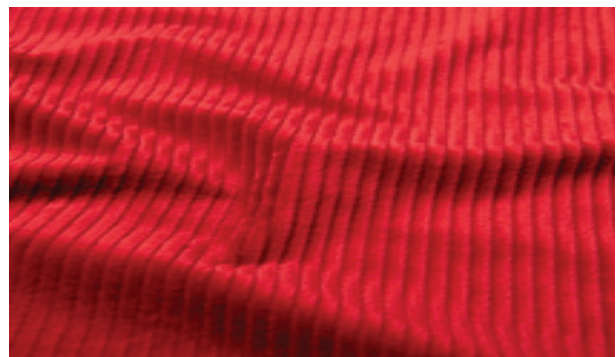


Corduroy

A rugged cloth woven with vertical ribs, or “wales”. Originally worn by servants of the French monarchy .This is a very durable cloth that can be plain, or nowadays is embellished with printing or embroidery.

It is used for pants, coats, jackets, shirts, kids’ clothing. It is machine washable. Serge seams to reduce shedding of fibers.

Fig 10



Crepe

This fabric has a distinctive, crinkled surface texture, has very tightly twisted yarns used to make it. Lightweight crepes include georgette. Mid weight crepes include wool crepes seen in dresses and sportswear. Heavyweight crepe includes four-ply, in which four yarns are twisted together to create each yarn that is woven into the crepe. Very luxurious, and wears like iron.

Used in dresses, sportswear, evening and bridal. These fabrics are hand washed or dry cleaned.

Fig 11



Denim

Denim is a type of woven twill fabric, usually made from cotton. It consists of two yarns that are woven together. The yarn that runs across—known as the weft—is threaded over and under the yarn that runs downwards, which is called the warp. Denim is usually yarn-dyed with indigo. That means the warp yarns are dyed before they're woven into denim, while the weft yarns are left undyed or bleached. Possibly the most popular cloth in the world, denim is used for everything from jeans to home-decor. Machine washable.

Fig 12



Jersey

Lightweight plain-knit fabric with ribs on the face and purl stitches on the back. Generally soft and easy to wear. Wool jersey can be hand washed or dry-cleaned. Silk jersey should be dry-cleaned. Other jerseys generally stand up to machine washing. Used in dresses, tops, kids' clothes, underwear.

Fig 13



Satin

A tightly woven fabric with a lustrous, smooth face. Dry-clean only. Leaves marks if you remove stitching. Used in Bridal and evening wear, jackets, pants, shirts, home-decor.

Fig 14



Velvet

Luxurious fabric with a short pile on a woven background. Can be very lightweight to mid-weight. Silk velvet is usually about 75 percent rayon and 25 percent silk. Dry clean only. Requires special care when pressing or you risk pressing the nap down. Used in formalwear, dresses, tops, pants, jackets.

Fig 15



Heavy and light weight fabrics

Fabric weight is the outcome of how a fabric has been woven, its finish and sometimes the fibre type. Looking at the weight can help you to decide if it will be the most suitable fabric for its end use.

GSM and OZ

GSM is a metric measurement meaning grams per square metre- it is how much 1 square metre of fabric weighs and the higher the GSM number the denser the fabric will be. Ounce per square yard (oz/sq2) is the imperial measurement which is also commonly used. A lightweight fabric is typically between 30- 150 GSM, medium weight 150-350 GSM and heavyweight 350+ GSM, such as our clear window PVC (640 GSM), although this can vary depending on the type of fabric.

These fabrics generally fall into these categories:

- Lightweight fabrics: chiffon, linen, organza, cheesecloth, lace, voile, mesh.

- Medium weight fabrics: sateen, oxford, velvet, taffeta.
- Heavy weight fabrics: upholstery fabric, canvas, brocade, poplin, denim .

How fabric weight affects application

FABRIC THICKNESS

The heavier the weight, generally the thicker the fabric will be, although bear in mind that the weight does not tell how thick the fabric is. Fabrics with different fibers or weaves but with the same weight may not have the exact same thickness.

FABRIC QUALITY

The weight of a material does not always determine its quality. Different fabric weaves and yarns will be different weights which is essential for its end use. For example, denim is heavyweight because of its twill weave and cotton fiber which is useful for hardwearing jeans, whereas chiffon is very lightweight as it is a loosely woven, plain weave making it ideal for floaty dresses.

CHOOSING THE RIGHT FABRIC

The weight of a fabric is particularly important when having to choose between two similar fabrics which are of different weights. If the fabric of one cotton t-shirt has a higher GSM than the fabric of another cotton t-shirt, then it is likely to be more hard wearing. Choosing the weight of a particular fabric will depend on how often it is going to be worn or used and what its purpose will be, for example, lightweight denim is suitable for a shirt and a heavier denim for jeans.

WEATHER CONDITIONS

It should also be taken into account that lightweight fabrics will be more appropriate for hotter temperatures. In addition, they usually have a better drape which in some cases means an interfacing will need to be applied to the back of the fabric to provide more structure, whereas heavier fabrics may not need backing.

FABRIC COMFORT

Another factor to consider is comfort especially with fabrics such as denim for the reason being that heavier denim fabrics will be much denser and sturdier. This means they will be durable for a lot longer. However until worn in the stiffness of the fabric can make the garment difficult to put on and can be more uncomfortable to move in than the lighter weight denim, therefore a compromise of a mid-weight denim fabric (about 12oz) is often a suitable option.

Typical fabric weights and uses

- Lightweight fabrics are suitable for underwear and summer items such as dresses and shirts. A lightweight T-shirt fabric will be about 5.3 oz, a standard weight 5.5 oz and a heavier T-shirt 6-7 oz.
- Fabrics classed as 'upholstery' fabrics are heavyweight and are known to be stronger than other textile materials. They are suitable for cushion and furniture coverings and can be used for curtains but should not to be used for anything requiring intricate effects such as gathering because the fabric will be too thick and stiff. Thin curtain fabrics have a GSM of around 140. The heavier the material is, the denser it will be which means it will block out more light and insulate the room better.
- Wool is a luxurious warm fiber often used for tailoring. Three season wool is suitable for autumn/ winter and spring and weighs about 10- 12oz. For very cold countries you can get heavier winter wool which can weigh as heavy as 600 GSM. Wool can also be woven specially to make it into a much cooler, lighter fabric for hotter countries.

Machine head, tenson point, sensor

Objectives: At the end of this lesson you shall be able to

- explain parts of an embroidery machine
- basics processes of computerized embroidery.

Computerized Embroidery Machine

The commercial machine is built for high performance and high efficiency so as to optimize its output. This means that the embroidery process should be fast and effective so that fabrics are embroidered fast and efficiently, and on the other hand, the machine should be power efficient and easy to operate. These goals can be achieved through the automation of embroidery processes. Also, this machine usually uses link-stitch embroidery, also called chenille embroidery, which was patented in 1994. In this machine, the entire embroidery process can be automated, or only specific (sub-)processes can be automated. This shows that (embroidery) patterning can be controlled manually (in partial automation) or automatically (in full automation).

If the process of sewing and pattern creation is controlled by a computer, which can also store the pattern in its memory, then the embroidery process is described as computerized machine embroidery, and the machine is called a computer-controlled embroidery machine, or simply a computerized embroidery machine.

Normally, the embroidery hoop is held in place by a mobile frame that moves under the guidance of the computer, and this expectedly allows the hoop to move under the needle so that an embroidery pattern can be sewn. It is therefore evident that the movement of the hooped material is automated by the computer, while in the free-motion machine, the user makes the movement manually.

A computer program instructs the computer to guide the embroidery hoop to make a specific sequence of movements so that a specific pattern can be embroidered. The pattern created on the fabric is a pre-programmed embroidery pattern that is created from a digital embroidery pattern read and interpreted by the computer. As expected, the patterns need to be conceived first and then converted into a computer file that can be stored by a computer and can also be executed by a computer program.

Automation of the embroidery process allows patterns to be reproduced on different fabrics, hence making computerized machine embroidery suitable for product branding and embroidering uniforms as the same pattern can be sewn to multiple cloths quickly and efficiently.

Even so, user input is still needed when running a computer-controlled embroidery machine. The degree of user input depends on how many needles are in the

machine head, as well as how many threads spools the machine can hold. If the sewing head (sometimes called machine head) holds one needle, then the machine will stop when a different thread is needed, as well as require the user to change the thread if the embroidery pattern being sewn is multicolored.

If the machine has a multi-needle sewing head and holds multiple thread spools, then each needle can be threaded with a different thread color before running the machine, and then have the machine sew a multi-colored embroidery pattern.

Normally, the needles must be threaded in a manner that allows for the color change sequence to be set in the computing device. Some machines can change colors automatically and trim the finished product. In the industrial computer-controlled embroidery machine, there are multiple sewing heads with each head holding about 15 needles, and this allows for multiple clothes to be embroidered with the same pattern simultaneously.

Parts of an Embroidery Machine

Fig 1



There are different types of embroidery machines but they all share some basic design and functional components that allow the machine to embroider fabric.

These components constitute the basic embroidery machine. Like the sewing machine, the embroidery machine has a bed that houses the bobbin case and holds the upright arm, horizontal arm, and sewing head (or embroidery head).

The basic embroidery machine has the following parts:

Bed

This is the surface of the machine where the foundation fabric rests on when it is being stitched. It provides the

work area, and also covers the bobbin case where the threaded bobbin is placed.

The most basic bed is the flat-bed which is a low-profile bed. Another type is the raised-bed in which the bed is formed as a pedestal to create a high-profile bed that makes it easy for one to attach pre-sewn parts to the fabric. The post-bed has the working bed raised on a vertical limb so that three-dimensional products such as bags and caps can be stitched.

In the cylinder-bed, the machine bed is placed on a horizontal cylinder-like limb that is connected to the upright arm so that tubular clothes like sleeves and trousers can be seen. Lastly, the side-bed is a complex modified form of the cylinder-bed that allows one to embroider cylindrical parts such as cuffs, and it is also called feed off the arm bed.

Upright arm

It is the vertical arm that extends from the right side of the machine bed, and it holds the horizontal arm. It can also house a computer and its display, usually a small liquid crystal display (LCD).

This LCD screen is usually placed on the upper half of the front side of the upright arm, and the accompanying control buttons are directly below it.

Horizontal arm

It is the arm that is oriented parallel to the machine bed, and it holds the sewing machine head, also called the embroidery head. It can also hold the thread spool on its top surface. The embroidery head is located to the left of the upright arm.

Embroidery head

This contains the needle bar that holds the needle and raises and lowers it during stitching. In a computerized embroidery machine, this head can contain the logic head/unit that operates the needle bar and embroidery arm. The logic head is the computing device that reads, interprets, and implements the instructions set in the embroidery file.

Sensors

Sensors that will tell you if something went wrong, in particular broken threads.

Servo Motor

The needle is driven by a servo motor, which must be switched ON before stitching starts. The speed of this servo motor determines the rate at which the needle runs and makes stitches per minute or the stitches-per-minute (SPM) rate.

Embroidery arm

This is the mobile limb that holds the embroidery hoop and moves it on the machine bed.

Embroidery hoop

It holds the cloth taut and frames it so that the machine can work on the cloth area in the frame. The movement of the hoop under a stationary sewing head allows the embroidery pattern to be stitched. It is usually made of

an inner and outer frame, and this allows for tensioning the fabric before the hoop is moved under the needle by the embroidery arm.

Tension Point

Adjusting the upper, thread tension correct thread tension. Adjusting the bobbin thread tension. If the desired stitching cannot be achieved after adjusting the tension of the upper thread with the thread tension dial adjust the tension of the bobbin.

Cap frame

This is a specialized embroidery hoop and arm assembly that allows for embroidery of caps and hats.

Pantograph

It is also called the frame sash, and it serves to hold the hoop to the arm. In fact, the embroidery hoop is held stationary by the pantograph, and it is this frame sash (pantograph) that moves hence causing the hoop to move. Therefore, the arm, the pantograph, and the hoop move as a cohesive unit during the hoop movement under the embroidery head.

Face and throat plates

The faceplate is placed on the front of the machine head, and when it is opened, it allows one to access the needle bar and other components inside it. On the machine bed, one can access the bobbin case by opening the throat plate. These plates are not found in all machines.

Displays

These are visual displays on the machine that allows the user to know how the machine is functioning. The display is usually provided by indicator lights and LCD screens. In some machines, there is a thread brake indicator light, while other machines simply stop stitching after their thread-break detector notices a broken thread.

Relatedly, a thread-break can be shown on the LCD screen. In models that come with a touchscreen LCD display, the display allows the user to input instructions to the machine.

Controls

This allows the user to regulate the operation of the machine, and it includes pushbuttons, touchscreen buttons, and switches.

Memory Card and Reader/Writer Box

The memory card provides additional storage space that can hold additional embroidery files, while the Reader/Writer Box allows the user to transfer embroidery files from the computing device in the embroidery machine to the memory card.

Some machines allow for embroidery to be done directly after installing the memory card, as they can read, interpret, and execute the commands in the stored embroidery files. This is done by the logic head.

Now that the basic parts of an embroidery machine have been described, the basic embroidery process needs to be explained.

Basic Processes of Computerized Embroidery

Computerized machine embroidery is done in sequential steps that are influenced by the type of foundation fabric, choice of thread, size of the design, and choice of stabilizer. These steps are:

Acquisition of a design file

The design file can be created using software or purchased. This design file is created using embroidery digitizing software.

The initial file that is created from scratch is termed the source format of the design file, and it needs to be adapted to be used by a particular brand of embroidery machine, and this adaptation of the source format of the file creates the machine format of the design file.

The person who creates the source format is called the digitizer, and this source format is usually described as the object-based embroidery design.

Editing of the machine format of the design file

This involves scaling, rotating, cropping, splitting, duplicating, and distorting this file format. Also, this edited design can be combined with existing designs in the PC to create a finished embroidery design file.

This finished design file is then exported as a file format that can be interpreted and implemented (i.e. executed by stitching the patterns) by the embroidery machine. This exported file is called the embroidery file.

The embroidery file is loaded into the machine

Fit to the machine the hooped fabric with the areas to be stitched marked. If needed, this fabric can be stabilized using (stabilizing) materials called (interfacing) stabilizers that are placed a top or beneath the fabric to prevent the finished product from irritating or rubbing against the skin.

Stabilizers are usually non-woven material like foam or fiber and are sometimes called backing. The backing and the foundation fabric are held together tautly by the embroidery hoop.

If the backing can be torn by hands, then it is called a tear-away backing, and if tearing it can only be achieved by cutting it with a scissor, then it is called cut-away backing.

Some stabilizers can be dissolved in water, while others can be removed using flames, and they are called solve water-soluble backing and heat-n-gone backing respectively.

The stabilizer and foundation fabric must be stretched with adequate tension by the hoop so that the stabilizer does not tear or deform inappropriately.

- Needle is centered above the starting point of embroidery stitching on the fabric.
- Start the embroidery machine and watch out for errors during stitching.

- Upon completion of embroidery, remove fabric from machine and trim it.

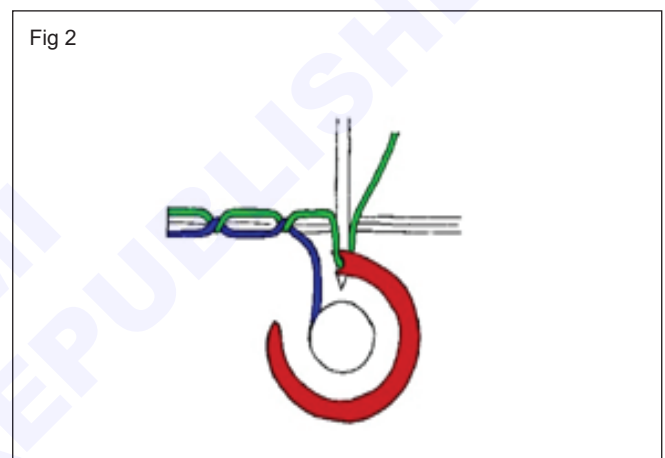
To add, the machine format of the design file provides two sets of data: stitch data (the offsets) and machine function data like jumps.

The embroidery file can incorporate added machine function data depending on the functional capabilities of the machine, for instance, trims can be incorporated if the machine supports automatic trimming of embroidered cloth.

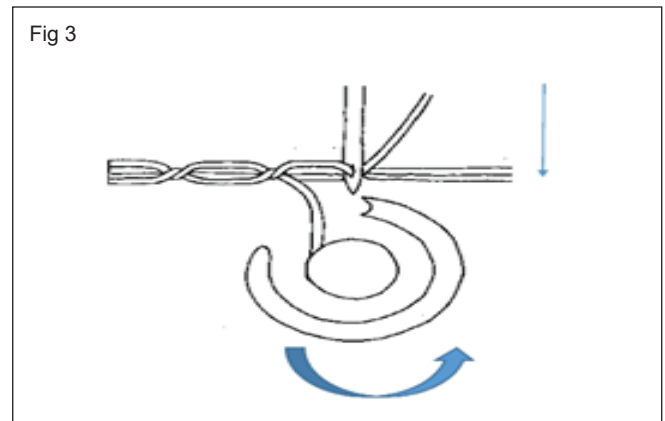
Stitch formation

The Principles of Lock Stitch Formation

Lock stitch requires two groups of threads to form a stitch. A needle thread that feeds from the top & a lower thread from a bobbin. A rotary hook catches the needle thread loop as it passes around the bobbin & interlocks the two threads.



The needle is inserted into the material



As the needle moves up-wards from its lowest position the needle thread forms a loop which is caught by the point of the hook.

The hook enlarges the needle thread loop.

The thread loop is guided around the bottom thread of the spool.

The beginnings of interlacing will be done in this phase.

Fig 4

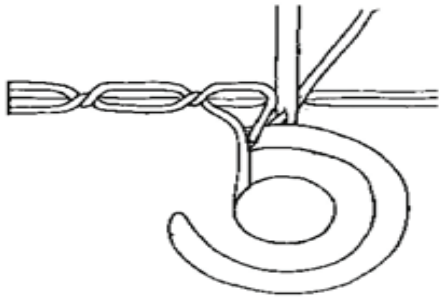


Fig 5

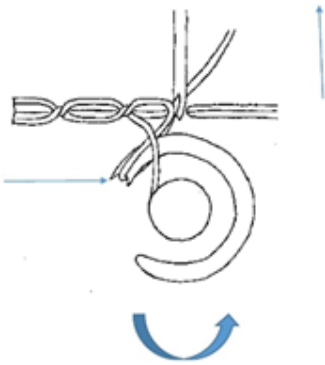


Fig 6

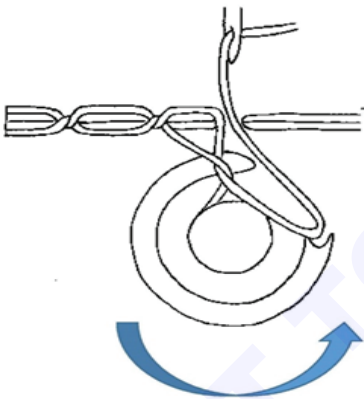
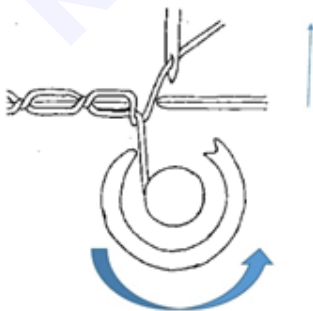


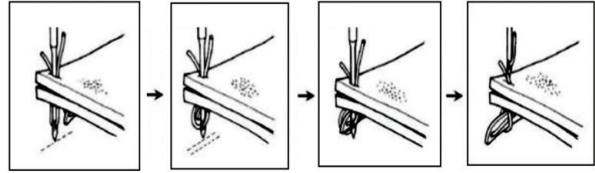
Fig 7



Principles of Chain Stitch Formation

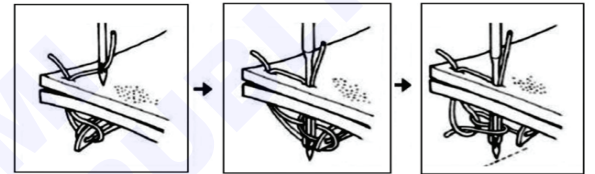
The needle is entered through the fabric with the thread & reaches to its lowest position. Needle contain old loop around its blade. When needle moves on upward there will be the formation of a new loop.

Fig 8



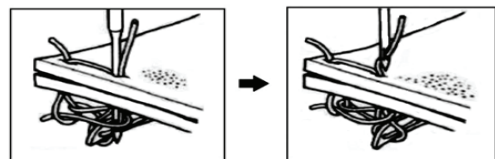
The new loop is caught by the looper (above the needle eye below the old loop). The needle moves upward. The old loop is cast off from the needle blade and slides on the base of the new loop, which is still held by the looper. Between the new and old loop, an interlacement is to be formed under the fabric. In that time fabric is also moved one stitch forward due to the feed dog mechanism.

Fig 9



The looper enlarges the new loop so that when needle again entered through the fabric it passes through the loop. Then the looper leaves the loop, which held on the needle blade. This loop now becomes the old loop.

Fig 10



Head Interval

Head interval refers to the space from one head to the next. standard machines refer to machines with 360mm (14) head intervals.

Stretch machines have a 500 mm (19.6) head interval, A larger interval makes is easier for larger, bulky products to fit comfortably between heads and a larger X - axis embroidery field.

Maintenance of machines and safe operating principle

Objectives: At the end of this lesson you shall be able to

- maintain the machine and follow safety operation principle.

Sewing interruptions can be caused by many factors, however the most common causes include the following:

- Needle Thread Breakage or Pull-out – not picking up at the beginning of a stitch pattern
- Bobbin Thread Run-out or Thread Pick-Up – not picking up at the beginning of a stitch pattern
- Improper Thread Trimming
- Thread break detector stoppage

In order to minimize interruptions during the stitching of complex embroidery patterns, the following vital elements must work together during the embroidery process. These vital elements include:

- Proper Digitizing for the fabric and pattern being sewn
- Proper Embroidery Machine Maintenance and Settings
- Correct Backings and/or Toppings for the Application
- Proper Needle Type and Size
- Quality Embroidery Threads We will look at each of these elements and discuss potential causes for excessive sewing interruptions.

Troubleshooting and Maintenance Process

Element	Causes	Solution
INTERRUPTIONS DUE TO NEEDLE THREAD BREAK 1 Digitizing	<ul style="list-style-type: none"> • Improper cornering with too many stitches in the same location • Not using appropriate underlay stitches that help minimize flagging during the rest of the stitch pattern • Density properties too high within designs that layer many colors of thread • Not using Tie-In Stitches at beginning of thread changes • Not using Short Stitches at the end of a stitching cycle 	<ul style="list-style-type: none"> • Try to minimize the stitch density at any one point. • Reduce density properties as you build up layers of embroidery <ul style="list-style-type: none"> • On lettering, use your “short-stitch” function • Use appropriate underlay stitches that help minimize flagging <ul style="list-style-type: none"> • Use slower speed “Tie-In” Stitches at beginning of thread changes • Use slower speed “Tie-Off” Stitches at the end of a stitching cycle. Try not to put these stitches in the exact location
2 Embroidery Machine	<p>Lack of preventive maintenance</p> <ul style="list-style-type: none"> • Excessive lint and dirt in the machine • Machine needing to be lubricated <p>Worn machine parts</p> <p>Normal wear and tear of machine</p> <ul style="list-style-type: none"> • Burr on hook • Bobbin plate is scratched • Needle hole in needle plate enlarged causing excessive flagging <p>Machine thread tensions not set correctly</p> <ul style="list-style-type: none"> • Tension too tight for the thread and application 	<p>Development a good preventive maintenance program</p> <ul style="list-style-type: none"> • Blow - off the machines everyday • Make sure the machines are properly lubricated on a regular basis. • Pull machines out of production to inspect the machines on a regular basis • Replace all worn machine parts • Inspect the hooks for excessive wear • Check for excessive shake between the basket and hook base and replace the hook if necessary • Check the needle guarding surface in the bobbin case holder to make sure it has not been worn and allow the hook point to hit the needle.

Element	Causes	Solution
	<ul style="list-style-type: none"> • Tension too loose not allowing the machine to pull the stitch up properly causing a “birds-nest” of excessive thread. <p>Machine out of adjustment</p> <ul style="list-style-type: none"> • Needle bar height • Hook Settings – Timing and position to needle • Foot or counter-presser not set correctly • Take-up Spring not set correctly <p>Thread trimmer</p> <ul style="list-style-type: none"> • Trimmer not cutting cleanly • Tension release not working properly causing the thread to pull back out of the needle when the thread is trimmed • Thread caught in trimmers 	<ul style="list-style-type: none"> • Remove burrs or sharp edges from the hook point • Polish the bobbin plate to make sure it is smooth • Replace the needle plate if the needle hole has been enlarged. • Sharpen and replace the thread trimming knives. <p>Make sure the Embroidery Machines are adjusted properly</p> <ul style="list-style-type: none"> • Correct needle bar height • Proper hook settings – Timing and position to needle • Make sure the needle centers in the counter-presser (foot) and it is adjusted the correct height to minimize flagging. • Set the Take-up Spring so that it is working properly <p>Set the Machine thread tensions correctly</p> <ul style="list-style-type: none"> • On satin stitches, check for the 2/3 – 1/3 rule on the underside of the stitching. • Make sure there are no “birds-nests” on the back side of the stitch pattern. If so, try tightening the needle thread tension. <p>Make sure the Thread trimmer is operating properly</p> <ul style="list-style-type: none"> • The trimming knives and sharp and trim the needle and bobbin thread cleanly. • The tension release mechanism is working properly so a needle thread tail is left allowing it to be picked up at the beginning of the next stitching cycle.
3 Hooping, Adhesive and Backing	<ul style="list-style-type: none"> • Hoop not loaded properly • Adhesive not holding the fabric properly where a hoop is not used • Wrong backing for the application allowing excessive flagging • Backing too thick putting too much stress on the thread 	<ul style="list-style-type: none"> • If hoops are used, make sure they fit properly into the pantograph. Use the smallest hoop possible for the pattern to minimize flagging. • If an adhesive tape is used, make sure it holds the fabric firmly in place to minimize flagging. • Note: flagging is when the material moves up with the needle minimizing the size of the needle loop which can cause excessive skips and thread breakage. • Use a quality backing that provides dimensional stability in all directions of the stitch pattern.

Element	Causes	Solution
4 Needle	<ul style="list-style-type: none"> • Needles not installed in the machine correctly – pushed all the way up in the needle bar with the scarf facing the stitch forming devise. • Incorrect needle size / thread size relationship – needle too small for the application • Bent or burred needles • Lint / Adhesive build up on the needles • Poor needle quality – buying cheap needles 	<p>Use the correct needle for the thread being used.</p> <ul style="list-style-type: none"> • Check the needles at regular intervals to make sure they are not bent or burred, and there is not lint or adhesive build-up on the needle. • Use quality needles from a reputable needle supplier
5 Thread	<ul style="list-style-type: none"> • Low tenacity thread – too weak • Excessive elongation – causing poor loop formation • Excessive knots or major imperfections in the thread • Improper Twist – thread unraveling prematurely causing an unravel-type thread break • Thread not lubricated properly • Causing Inconsistent frictional <p>Characteristics</p> <ul style="list-style-type: none"> • Allowing the thread to melt due to needle heat • Wrong needle size for the weight of thread is being used • Thread not stored properly • Damaged cone affecting thread pay-off • Thread dirty or bruised • Poor pay-off the cone • Thread picking up residue from adhesive 	<ul style="list-style-type: none"> • Use a high tenacity quality embroidery thread from a reputable global thread company. • Use the correct size thread for the embroidery application. • Make sure the thread stored properly • Using A&E/RA special “snap spool” feature to hold the loose end • On storage bins or in the original shipping container
b) INTERRUPTIONS DUE TO BOBBIN THREAD	<ul style="list-style-type: none"> • Poor quality pre-wound bobbins • Poor quality wind • Size – diameter, thickness, core • Inconsistent bobbin wind – machine wound bobbins • Improper bobbin thread tension - too tight or too loose • Bobbin thread run-out • Inconsistent yardage from bobbin to bobbin • Bobbin over-spin • Causing a short tail that cannot be picked up by the needle thread during the beginning of the next stitching cycle 	<ul style="list-style-type: none"> • Use a quality bobbin thread. The needle thread will sew only as well as the bottom thread. • Use quality filament or spun pre-wound bobbins from A&E/RA that have consistent yardage. • Adjust the bobbin with a firm but not too tight of thread tension. • Use A&E/RA's special pre-wound magnetic bobbins that help to minimize bobbin over-spin.
c) MACHINE STOP ISSUES	<ul style="list-style-type: none"> • Thread-Stop Detector • Thread-stop detector defective • Detector stops machine prematurely due to inconsistencies in the thread 	<ul style="list-style-type: none"> • Make sure the thread-stop detector is working properly. • Observe the thread pulling into the machine to see that it is pulling uniformly and not in a jerky motion. If it is pulling erratically, check the following:

Element	Causes	Solution
	<ul style="list-style-type: none"> • Poor yarn quality • Inconsistent thread lubricant • Detector stops machine prematurely • Burr or excessive wear of the hook causing erratic pull off the cone • Detector stops machine prematurely due to poor digitizing • Excessively long stitches • Multiple direction changes 	<ul style="list-style-type: none"> • Excessive hook wear so that the bobbin case holder is not gliding smoothly in the hook base. • The hook contact surfaces for burrs or scratches • If it is pulling through the machine erratically only during certain portions of the pattern, observe if this timing is consistent from machine to machine and one multiple patterns. This may indicate that the pattern needs to be re-digitized to correct this situation. • Use a quality thread that pulls consistently through the embroidery machine and will not cause premature detector stops.

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Stabilizers

- Objectives:** At the end of this lesson you shall be able to
- detailed knowledge about stabilizers and their uses
 - need of stabilizing fabrics.

A stabilizer (referred to in industrial circles as backing) is an essential for machine embroidery. It is used to support the fabric during the stitching process to keep puckering or stretching from occurring. It gives the needed stiffness that is not there in unstable thin fabrics or slippery fabrics like chiffon and silks. It prevents the inevitable sagging of delicate and unstable fabric – no distortion even after extensive work, puckering, or tearing of the material. It does act as a barrier preventing problems to the fabric during the stitching process. In case of thick heavy weight fabric they do not need backing. Still, in the case of most other fabrics, it is better to use some backing when doing machine embroidery and even for some intense hand embroidery. They are also used when making quilts, sewing collars, pockets, hems, etc. Some are used as reinforcement on seams of delicate fabrics like silk.

The choice of stabilizer can make or break an embroidery project. Using a stabilizer that is insufficient for the fabric or the stitch count of the design can make even the best digitized design look bad. Stabilizers are classified by the method used to remove the excess from the back of the project after the design has been stitched.

The three most common types are:

- 1 Cut-Away
- 2 Tear-Away
- 3 Wash-Away

Within each group are several weights of stabilizer.

- Choose the weight that most closely corresponds to the weight of the fabric to be embroidered.
- Choose the weight according to the stitch count of the design – the greater the stitch count, the heavier the stabilizer should be. Adhering any one of these stabilizers to the fabric with a temporary adhesive spray before hooping is recommended to keep the layers from shifting during the embroidery process and to make the item easier to hoop.

The most important factors to consider when choosing an appropriate stabilizer are:

- Fabric
- Embroidery Design
- Back Appearance
- The “Hand” or Feel
- Test Result

Fabric

The most important rule to use a cut away stabilizer when embroidering on knits or stretchy fabrics. The cut away will support the stitches not only during the

embroidery process, but during the lifetime of the garment as well. Fabric weight and stabilizer weight should be compatible. In general, the heavier the fabric, the heavier the stabilizer should be. Conversely, the lighter, softer, or more drapery the fabric, the lighter the weight of the stabilizer should be. A sheer fabric will require a water-soluble stabilizer so that no remaining bits of stabilizer will be seen from the right side. The fabric and chosen design should be compatible. A lightweight fabric can become overwhelmed by a stitch-intensive design. Conversely, an open airy design can become visually lost in a napped or heavy fabric.

Stitch count	Cut - away	Tear - away	Wash - away
12,000 or less	Polymesh cut - away	Light weight Tear - away	Aquafilm backing
12,000 to 15,000	Polymesh cut - away	Ultra clean & tear or medium weight tear - away	OESD Badge-master
15,000 to 25,000	Medium weight cut - away	Ultra clean & Tear or Medium weight tear - away	OESD Aquamesh
25,000 or more	Heavy weight cut - away	Heavy weight tear - away	Wash - away not recommended

Embroidery Design

The more stitches in a design, the heavier the stabilizer should be. Use a well-digitized design that has sufficient underlay to provide base support for the stitches. If it is necessary that you use a particular type of stabilizer, choose the design accordingly

Stitch counts are provided as a guideline only. There are many additional factors to consider including design density. Design density is the relationship between the stitch count and design size. For example, a 4” design with 15,000 stitches will need a heavier stabilizer than an 8” design with the same number of stitches. For best results, do a test sew of your design

Back Appearance

If absolutely no stabilizer to be shown in the wrong side, then use a water-soluble stabilizer. If the stabilizer being removed, you can use a tear away. When using a cut away stabilizer, the excess must be cut away leaving a circle of stabilizer on the back side of the project.

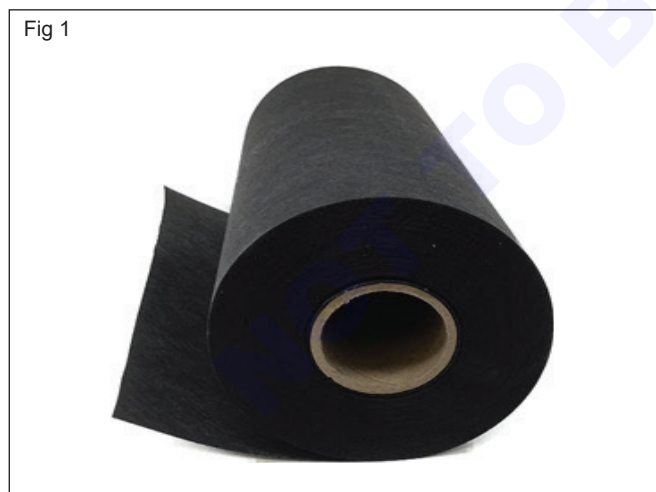
Feel

- The weight and type of the stabilizer will influence the drape of the fabric. – A heavy weight stabilizer will add weight to the garment. Even a heavy tear away stabilizer will add weight since some stabilizer will remain behind the stitches. – The lighter the weight of the stabilizer, the greater the drape of the fabric will be. – A wash away stabilizer will add no weight at all to the fabric after it is washed.
- The cut edges of a cut away stabilizer remain on the back side of the project. The heavier the cut away, the more irritating this edge could be on a garment that will be worn directly against the skin.

Cut-Away Stabilizers

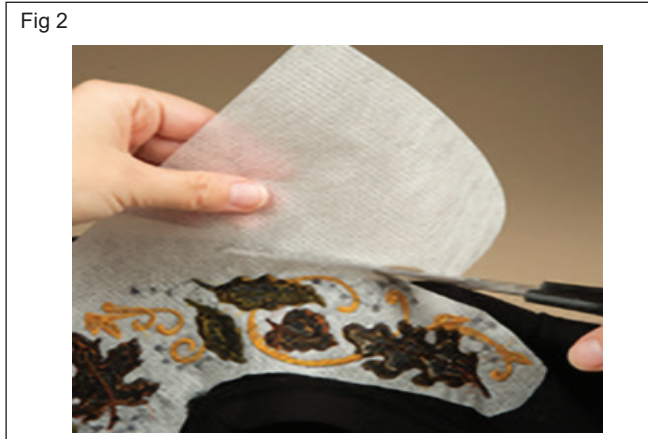
Cut-Away stabilizers are considered the most stable of the three stabilizer types. They can be used on any fabric type, but must be used when stitching on knits or stretchy fabrics. The excess stabilizer will be cut away, but the stabilizer behind the stitches will be there for the lifetime of the garment and will prevent the design's stitches from popping as the garment is stretched or manipulated.

These are recommended for the support of lower quality fabrics and with larger embroideries. Extremely soft to touch, ensuring comfort while wearing the garment i.e. babywear and jerseys. Available at Embroidery Warehouse in 50, 75 and 90 gsm (white) / 80 gsm (black)



Heavy Weight Cut-Away

- The heaviest stabilizer – will support the greatest number of stitches
- Available in white or black
- Great for use with sweatshirts and heavy fabrics



Medium Weight Cut-Away

- Will give more support than a lighter cut away, but will be less stiff than a heavy weight
- Great for medium weight T-shirts or fabrics

Poly Mesh Cut-Away

- Minimal shadow through to the right side of fabric
- Very soft feel and gentle against skin
- Very little shadow through when used on a woven fabric such as batiste
- Available in white, beige, and black
- White Poly Mesh also available in a fusible form (see Specialty Stabilizers)
- Great for use with baby items or children's clothing, and lightweight stretchy fabric

Tear-Away Stabilizers

Tear away stabilizers are used if it is required to remove most of the excess stabilizer from the back of the project after embroidery. They can be used on all fabrics with the exception of stretchy fabric or knits or very sheer fabrics

An affordable cotton / polyester mix, non-woven backing for general purpose industrial embroidery. This is a much stronger backing. Suitable for caps, leather products etc. Remember to support the Embroidery well while removing the backing during the cleaning process. Available at Embroidery Warehouse in 65,80 and 95 gsm (white)



Fig 4



a Heavy Weight Tear-Away

- Tears away very cleanly and easily – stiff edges are easy to grasp
- Supports large number of stitches
- Great for items that need more support for heavier stitch count designs

b Medium Weight Tear-Away

- Available only in black
- Firm tear away, but very easy to remove

c Ultra Clean and Tear

- A soft medium weight tear away stabilizer
- Removes very easily – does not stress the stitches as it is removed
- Remaining fibers will easily wash away as the project is laundered

d Light Weight Tear-Away

- The lightest weight of the tear away stabilizers – adds very little weight to the project
- Easy to tear away leaving a very clean edge
- Can be printed on and used for paper piecing
- Great for use when stitching decorative stitches on the sewing side
- Available in a fusible version (See Specialty Stabilizer section)

Wash-Away Stabilizers

Wash away stabilizers should be used when all traces of the stabilizer need to be removed from the back of the project, such as when using a sheer fabric or embroidering a project that will be seen from the back side as well as the front. Since this type of stabilizer does not support as many stitches as tear away or cut away stabilizers, careful consideration should be given to the design choice. Do not use this stabilizer if your fabric cannot be washed.

It is especially good with **sheer fabrics like organza, open-weave fabrics, net, and tulle**. It is used when making **lace, buttonholes, edge work, shadow work, heirloom work, and applique**.

After the work is done, the stabilizer is washed away, and the sheer fabric remains intact. The hot water soluble nonwoven backing material gets dissolved in plain hot water – you just have to keep it soaked in hot water for some time, as the brand prescribes.

It can also be used on top of the fabric on fabrics that cannot be properly marked like terrycloth. After the embroidery is done, the stabilizer is washed away. For this to work, first, draw the design onto the stabilizer. Keep the stabilizer on top of the fabric, fit the hoop and do the work. Afterward, soak the stabilizer in cold or warm water to remove it.

Fig 5

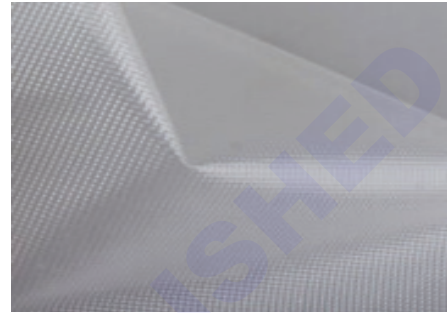


Fig 6



AquaFilm Backing

- A clear lightweight backing – quick to rinse away
- Use for quilting in the hoop if the quilt itself cannot be hooped
- Too lightweight for stand-alone lace

BadgeMaster

- A heavy clear backing
- Can be used for stand-alone lace
- Majority of stabilizer can be torn away before rinsing

AquaMesh

- An opaque backing that supports the greatest number of stitches
- Can be used in the creation of stand-alone lace
- Very stable water soluble stabilizer that is not prone to premature perforation during stitching
- Excess cannot be torn away – cut the excess away from the outer edges and then rinse

Fusible Stabilizers

Fusible stabilizers are used by cutting a hoop-sized piece of stabilizer and adhering it to the back of the fabric. This will prevent stretching of the fabric during the hooping process, and will help to keep outlines correctly registered. The fabric/stabilizer is then hooped in the traditional manner.

This kind of backing is fused to the back of the fabric using heat. These stabilizers come in different fabric weights, and a suitable one should be chosen for the right effect.

But there occurs a problem while it is being removed—that is one disadvantage.

And a matching weight between the stabilizer and fabric is necessary. Otherwise, there is a chance of bubbling. A sheer weight fusible is used on delicate fabric to give good stability to the thin fabric when you sew or do embroidery. For heavy-weight fabric, a similar stabilizer is used.

Some will have two sides adhesive –it can be used to fuse fabric together – it is useful in applique work and for sewing hems. It is also useful when repairing holes in the fabric. Some will have a glossy finish on the other side, and some will have a matt finish.

Fig 7



Sew in Tear away stabilizer

Sew-in stabilizers are not fused to the fabric – they are kept under the fabric and temporarily fused with adhesive spray. Sew-in stabilizers are available in many weights. Lightweight, medium weight and heavyweights are used depending on your fabric. Some ultra-firm stabilizers can even make the fabric stand stiff.

Tear away (sew-in) is a stabilizer that can be torn away completely or partially after the work is done. It is a favorite to use on woven fabrics and fabrics that do not stretch – it is easy to use. But it is not much suited for thin, unstable fabrics, ones that stretch, or ones with open/loose weave.

The best tear-away stabilizer for hoopless embroidery is one that attaches to the fabric when it is moistened with water. This way, it does not have the needle clogging problem with fusible backings and stays intact under the fabric as you embroider. One problem with this stabilizer is that it can cause distortion when you tear it off. If you get a good quality tear away, it will tear or wash away cleanly and completely without ruining the stitches or fabric.

Paper-Backed Pressure Sensitive Adhesive Stabilizers (aka sticky-backed stabilizers)

These stabilizers are used in the same manner. They are all coated with the same type of pressure-sensitive adhesive with a protective paper backing. The difference will be in the number of stitches that the stabilizer will support as well as the manner in which the excess stabilizer is removed. Select the stabilizer type (cut away, tear away, or water-soluble) by applying the same principles as if using a regular stabilizer. (Refer to earlier page on stabilizers.) Most generally these stabilizers are used for “hoop-less” embroidery.

Fig 8



Water Activated Stabilizer

HYDRO-STICK TEAR AWAY

Hydro-Stick is a heavy weight tear away stabilizer with an adhesive coating that is activated by water. It is most often used for “hoop-less” embroidery. HydroStick holds the fabric VERY firmly. The project cannot be accidentally bumped or moved out of place during the embroidery process. It will not gum the needles since it is not a sticky adhesive.

Fig 9

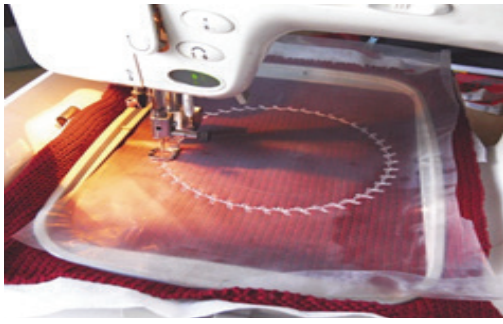


Toppings

As the name implies, toppings are used only on the top of the fabric to control the nap of the fabric. They are too lightweight to be used as the backing stabilizer

Fake fur, terry cloth, velvet, corduroy, and fleece – Topping stabilizers are used for these materials. Some types of toppings dissolve in water and can easily be removed once the work is finished. Water soluble topping dissolves away, giving a clean appearance to your work. They can be used to make lace.

Fig 10



Aqua Film Topping

A clear water soluble product – excess easily removed with water. Must be used on napped fabrics such as towels, knits, velvets, or velveteens to prevent the nap of the fabric from poking through the stitches. Improves the appearance of the embroidery design on any fabric with any kind of an irregular weave.

Top Cover

Top Cover is a vinyl type product that prevents the color of the fabric from showing through the stitches as well as controlling the nap. It is Ideal for use when stitching light designs on dark fabric, or vice versa. The Top Cover behind the stitches will remain there throughout the lifetime of the project.

Fabric as a stabilizer

A woven fabric (pre-washed) like muslin can be used for backing. It is especially good to use to avoid the stiffness of the other stabilizers. Organdy and crisp lawn are other fabrics usually used as backing for embroidery buckram is a coarse and stiff woven fabric that can be used as a stabilizer. Nylon gauze /polyester fabric is also used as a backing. Whatever you use, ensure that it does not have any stretch.

Description of software and its need

Objectives: At the end of this lesson you shall be able to

- describe about software and its needs
 - different types of embroidery software.
-

Description of software and its needs

Embroidery always looks beautiful with its multitudes of designs, highly creative and intricate weaving. Although embroidery designs were conventionally done by hand, the advent of technology has made it possible for the creation of embroidery creation software. This has overridden the manual process of embroidery, which was incredibly time-consuming. Hence, from hand embroidery to the use of embroidery, lots of improvements have taken place, particularly in digitizing the embroidery process.

Embroidery machines were known to provide lots of flexibility, but it still had some limits that embroiderers could not readily overcome. But as for digitization, several tweaks were added to the entire embroidery process, thereby unleashing the vastness that comes with using embroidery.

The embroidery software, machine designs can now be manipulated and altered in such a way that it produces more captivating or creative effects. Images can readily be copied or mirrored without errors; colors could be added or removed while underlays could also be deleted or added. Even different elements from design could be merged without any limitations whatsoever. These and many more customizations can be carried out with ease.

Embroiderers are encouraged to try out their skills with the wonders of the embroidering with embroidery making software. However, if not done the right way, it could lead to unwanted chaos which could douse the enthusiasm that is currently shared in the industry about the magic of embroidery. And to avoid such a scenario, it makes sense to learn how to get the hands on any of the topnotch embroidery digitizing software in the industry.

For the embroidery design software that will add several touches to the designs and elevate the embroidery skills to the next level, look for advanced embroidery application with unique features:

Versatility

A good embroidery creation software must be able to work with a wide range of embroidery machines. It must also be compatible with any operating system such as PC or Mac or both. This is one of the most crucial aspects that need to pay close attention to before purchasing any embroidery app.

Take note of the type of computer and the embroidery machine you have and then check with renowned manufacturers, to see if the embroidery design software you are interested in works with the equipment you have. Some embroidery apps can only be used with Mac while just a handful support both systems and devices.

Customization

Embroidery making software should be customizable, especially if wanted to be creative by trying out other forms of patterns, designs, and even lettering. This means that you should not be limited by the built-in features that come with the embroidery application.

Use Licensed Software Only

Free embroidery abounds everywhere online, and it is great to have and use them. If needed more from an embroidery making software than being able to play around or create one or two projects for, need to go for a licensed product. If in case of Embroidery businesses handle multiple projects then go for paid versions or licensed copies of these embroidery design software. Using a licensed embroidery software is for safety and that of embroidery machine. For instance, if you encounter technical problems, most of the creators or manufacturers of free embroidery software are not under any obligation to help you out if you purchased and used their product.

Creators of free embroidery digitizing software do not offer customer and product support in any way. They have no business spending time to guide us through the entire installation process if we don't know how to go about it and won't receive any form of notifications about software updates if it is a free embroidery software. But paid versions of creative drawings embroidery offer full access to their updates as well as excellent customer support if you run into any technical problems that you cannot handle.

Price Range

The price of **embroidery production management software** varies. This is why it is good to note down the functionalities and features needed before deciding the amount of money you are willing to shell out on this program.

Excellent Customer Service and Product Support

The brands or creators of these embroidery software also provide unquantifiable support and excellent customer service at any time we need them. Some of these brands also have forums where you can ask

questions or rub minds with other users or members. Therefore, product support is crucial, and you can only get it if you buy the licensed versions.

Based on the pointers outlined above, here are some of the best embroidery application in the market today. We have even gone to the trouble of categorizing the embroidery software based on two things:

- Embroidery shop administration software, and
- Machine embroidery business software

Before discussing the embroidery machine in these categories, let's take a look at the types of embroidery software that exist today.

Types of Embroidery Machine Applications

There are different types of embroidery software out there in the market these days. All you need to do is go for the one that meets your requirements and budget.

So, here they are in no particular order:

Embroidery Digitizing Software or Digitizers

This type of embroidery software is explicitly designed to convert an image to embroidery file, thereby making it ready for immediate stitching. Embroidery digitizing software translates or digitizes the vector format into a stitch format, thus getting it ready for use.

Monogramming Embroidery Software

This is the lettering type of embroidery software, and it is mainly designed to create highly optimized stitching fonts. Some monogramming embroidery machines may combine or merge with different modules. A few others, however, only focus on one thing at a time.

Editors

This type of embroidery software gives both control of and access to the creative part of the design, which allows to start from scratch and then develop all the vectorising, digitizing, and the final stitches.

Working of software

Objectives: At the end of this lesson you shall be able to

- **Know how software works**

How Software works (X – Axis and Y – Axis)

The embroidery machines for Embroidery Digitizing we see today are specially designed machines which are computer controlled. They consist of an Embroidery Head in which multiple needles are fixed and a frame holder in which the product (shirt or any garment) is being fixed. This frame holder known as pantograph moves in two directions in order to sew the embroidery design. The directions in which the frame holder moves are the 'x' and 'y' axis directions. The field (grid) in which the design is being created have 'x' axis as the horizontal direction and 'y' axis as its vertical direction. So, the machine reads the values of 'x' and 'y' axis for example: x250, y850. After reading these values the machine moves its pantograph in the same positions.

This is one of the primary reasons why there is need to know the type of **embroidery production management software want before purchase it.**

Vectorizers

This type of creative drawings embroidery software is designed to translate or digitize bitmap images into a vector format or vectorized picture.

This implies that the image undergoes a linear transformation that primes it for digiti

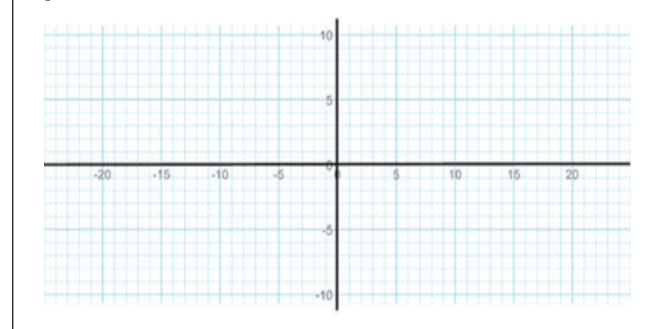
Need of Embroidery Design Software

One of the most significant benefits of choosing and using top-quality embroidery creation software is that will no longer be limited to the designs that are offered by the embroidery equipment or machine, especially when it comes to letting loose the creativity. The in-built design features that come with many of the high-quality embroidery machines out there today may be more than enough for people who see embroidery as a hobby. But if it is take up embroidery as a commercial venture you need topnotch creative drawings embroidery software that does much more than store some stitches or designs.

For instance, a commercial embroidery designer, may need a program that allows them to make use of scanned images. One that enables to create the exact designs the have pictured in your mind or that of your clients. Some of the most robust software programs for embroidery allows users to create highly intricate designs. As long as you can picture it in the mind, can recreate it. The advantages of using embroidery design software are

- Manage and organize your embroidery designs
- Converts Embroidery Formats
- Embroidery Drive Writing
- Graphics support
- Locate Designs

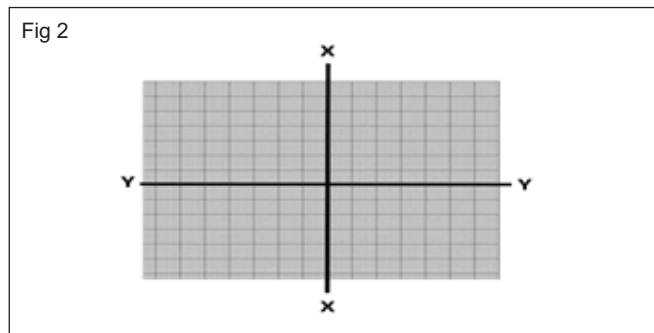
Fig 1



There is a vertical axis (the X axis) and a horizontal axis (the Y axis). These two lines help us to understand where things are located within a space. In this case, it's two-dimensional since we are working on a flat plane.

This is the space your embroidery machine sees when you give it information. If you can imagine a very, very dense graph with all the points the width of a hair, that is the vast number of intersections your machine needs to work. Take a look and will see lots of little points in a grid- these are similar. That grid helps your tablet understand where your finger, pointer, or embroidery head is at any given point.

Here is a “large” version of what your embroidery machine sees. The grey portion are a lot of little squares



The instructions for the machine to know where to stitch are like a “connect the dots” on a teeny tiny grid like the one above. If I want to outline an apple, you draw around it on your digitizing program, but if you lay that apple on a graph and mark every intersection in which the edge of the apple touches a line. Those are the anchor points that help the machine.

We use a very, very fine grid to get the best reproduction. The more intersections, the more information to make better stitching. With a really fine grid (like on your machine) you get a nice smooth line. With a little less fine line, you get spaced-out dots and a more jagged stitch line.

Software designs linked with machines

Objectives: At the end of this lesson you shall be able to

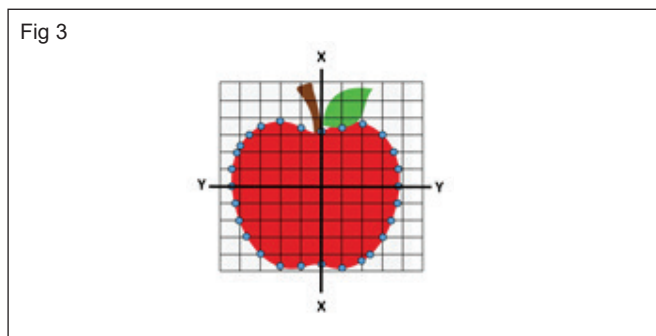
- how software designs linked with designs
- know about digitizing software.

Embroidery on the favorite fabric is trending nowadays. If someone has a picture and it is up-to-date with fashion trends, people will want a customized pattern that they can use to stitch onto their clothing. If it is for a special occasion, such as a wedding or birthday party, an easy method of embroidering different images on clothes would be ideal.

An image is considered any form of visual representation of one or more objects. While digital images have become a part of everyday life, they still rely on the standard file format called JPEG. Other than JPEG there are different file formats available to store the images. Different formats of images can be converted into embroidery designs using different software.

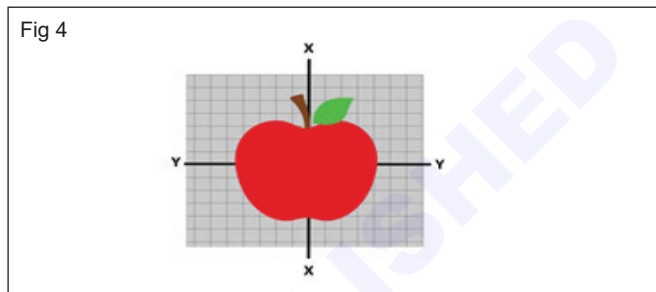
Embroider File Format

A file format is a method in which a file is saved. Imagine taking pictures with the digital camera. Before viewing the pictures, need to open them from camera or memory card. A file format, in that sense, is like a



This is what our apple looks like as a “connect the dots” laid on a large grid.

Imagine how much info we get from using a very fine grid...



So, let's recap. The machine needs points plotted on an XY graph to know where to move the machine. And most importantly, machines don't think; they just process the information you provide.

transport vehicle for moving information from one place to another.

An embroidery file format is a specific collection of data and text that the software will interpret, manipulate, and store so that it can be used for stitching out patterns on a loom or fabric. Embroideries are created for use with sewing machines by manipulating this pattern-generation data. The most popular formats for electronic storage of embroideries include DST (DDS), JEF., XXX, EXP, etc.

Embroidery file formats are line-oriented formats. They are text files with data that must be interpreted for each line. The data and text can have a set of instructions for manipulating the stitch, or it may contain just data and not instructions on how to stitch something else. The format is also called the “stitch file”, “stitches file” or “SEF file”.

The format is created by setting up a table of data fields, which stores information about each embroidery stitch

to be made, such as size, type, position, and parameters such as the length of thread used in the pattern. Some software packages allow the user to create tables in spreadsheet software like Microsoft Excel.

DST and PES As Embroidery File Formats

Tajima introduced DST(Data Stitch Tajima) to store information of embroidery designs but this format is easy to read for most of embroidery machines. DST files are primarily used with embroidery machines, which can read and interpret them. DST files are also used for Digitizer software for electronic embroidery machines that creates designs for use in other embroidery formats.

“DST” files are designed to store digitized images of traditional sewing patterns. “PES” file format is a proprietary file format created by the Japanese company Brother but can be read by Babylock, Bernina, and Brother embroidery machines. These files are used to store embroidery information along with bitmap images of various graphic formats.

The main advantage of the DST format is that it offers more flexibility in storing and organizing data and images within one file, as compared to PES format, which does not support multi-image operations within the same file. In addition, the DST format supports multiple types of embroidery stitches within a single file. The PES format is limited to storing information about one image in one file.

Embroidery digitizing software

There are many ways to convert an image into an embroidery design. The easiest way is to use a website that offers for free Embroidery Digitizer Software. Embroidery Digitizer Software is a type of software for converting an image into an embroidery file format. It makes a two-dimensional image into the data required for stitches to be created on the fabric. It converts any bitmap or raster graphic images into stitch data by using pattern generation rules. Conversion of images into files is performed by plugging in special cords available with the software and then inputting data by using a digitizing stylus attached to the computer. Many of us will be surprised by the quality of the results of the designs when using an online embroidery digitizer software service. There are several software that offer free online conversion:

Different Images File Formats

TIFF

A TIFF (tagged image file format) file is an image file that is compressed into a .tiff format and uses the Tagged Image File Format (TIFF) compression scheme.

A TIFF file is a raster graphic image and is created by using tagged fields in the format. This format supports color images, black and white images, grayscale images, and color separations. One of the original purposes of this format was to support tagged fields in a standard file format so that all graphics software could interpret the data and read it as they were intended to

be read. While other formats may support tagged fields, TIFF remains one of the most widely supported image formats for viewing via web browsers.

TIF files can include scanned documents, bitmap images (created by programs such as Photoshop or Paint), or photographic images (such as those taken with a digital camera or camera phone).

Bitmap

A bitmap file is any computer file that is composed of a matrix of dots also known as pixels. These dots are then assigned color values by the software that creates the image. When files are saved as bitmaps, they are not compressed which makes them larger in size than other image formats. The advantage of a bitmap file is that it can display images at any resolution; however, it can take up more storage space on a computer or device than in other formats. It was originally developed for use in the Windows platform but has now been expanded to almost every operating system and graphic software program.

JPEG

JPEG (Joint Photographic Experts Group) is a powerful image format for saving and sharing digital images. It stands for Joint Photographic Experts Group which was the group that developed the format over the years.

Images are made up of tiny squares called pixels, which are layered one on top of another to create a picture or image. JPEG compresses an image into bitmap files that can be stored or shared online in transparent formats such as GIF, PNG, or JPG without losing resolution. JPEG compression reduces file size while maintaining maximum image quality.

GIF

A GIF (Graphics Interchange Format) file is a bitmap image file that displays 256 colors or less on any given image. This format was designed to be used with the World Wide Web. GIF files can be opened and viewed in almost any graphic software program and can be saved as a JPEG file. The GIF format does not support the use of transparency, where pixels can display an area that blends into the background of the image; however, it does support animations to enhance its appearance without having to actually create another graphic file. GIF files do not compress an image; therefore, they are larger in size than other formats.

PNG

A PNG (Portable Network Graphics) file is a raster graphics image file that was developed as an improved image format over the GIF format. PNG files support a wider range of colors, better compression, increased metadata capacity, and display of text layout.

PNG files can be opened and viewed in most graphic software programs but are not supported by most web browsers.

PNG combines the advantages of GIF, indexed color, and halftone images. In indexing, a PNG file contains embedded color values used for color-fast edges in the image. For instance, this allows shapes to be drawn on any type of background without needing to first create an alpha channel. This makes it possible to display two different colors simultaneously on a single background without losing quality.

EPS

An EPS (Encapsulated PostScript) file is a raster graphics image file that was created using the Adobe PostScript language. EPS is usually used as a layered or raster image format for 3-D printing, manufacturing, and design applications. It is also used to create vector drawings that can be scaled to any size without losing quality.

The EPS format is normally referred to as an .esp design file because it uses a “dotted” line structure with each dot being represented by an individual pixel in the final output.

Vector Based Images

A vector-based image is an image file format that has been designed to scale to any size without losing quality. Vector-based images are created using a computer's vector-based drawing program such as Illustrator, CorelDRAW, or Inkscape.

Vector files start with a schematic outline of the final design and then fill it in by creating digital thread paths for stitching together individual threads of varying widths. This file format can either be imported directly into a design software program or rendered as an image file which can then be saved in a compatible format such as DXF (ArcView) or SVG (CorelDraw).

To Digitize An Image To Embroidery File Format

There are numerous ways an image can be converted into embroidery. The most common way of conversion is using digitizing software. It takes a little time and patience if not familiar with photo digitizer software but it's worth the effort for beautiful results.

Remove background of the Image. First remove the background of the image if it is not transparent. If the image is in PNG format it is need to consider this step because the image's background might not be transparent.

Next convert the image file to vector. Use Vector Tracing technique for that and it is available in almost every digitizing and vector editing software. It is needed to trace the vector very carefully and pay attention to every small detail also because this vector output would be then converted to embroidery file format

Import the image to digitizer software. The more color there is in the image will make it easier to be converted into stitch information. However, if the picture has one color or many shades of black and white, there will be no problem either because photo digitizer software can handle that too. This is because it converts pictures into

an embroidery design in the form of pixels that have various colors.

Preview your image. After importing the image you will notice when previewing it is that there are errors. Some of those can easily be fixed by adjusting the contrast and the brightness of the photo. There are many features in the digitizer software to adjust the problems, so check Tools in the settings and fix issues accordingly.

Most photo digitizer software allows users to crop images before digitizing them into stitch information. You may also want to edit the image by moving parts around if necessary for a better-looking design or if there are unwanted parts in it as well. After cropping design is ready for digitizing.

Now digitize design into stitch information. Go to the Tools menu of the software, choose bitmap and then click on “Digitize” which brings up the digitizer window. Under Presets, choose Embroidery. This is a very important step because some picture formats cannot be converted into embroidery while others can be. The best way to figure out which one you have is to see if your image will be saved in the “PNG” format or in the “JPEG” format.

After selecting the “Digitize” button, certain options including stitch color, thread count, and stitch type are to given. These are all important questions to answer because the final digitized image will look completely different if the details are not proper. The more colors in the final image play a crucial role in this step so ensure that the colors that is selected match the design.

To convert different image file formats to embroidery files

Digital images can be converted to embroidery files after they are digitized. Typically, this involves saving it under the correct file name and downloading it to the computer. In some cases, however, it is needed to convert an image file into a different image file before converting it to an embroidery file.

JPG to PES

The .JPG format is a digital image file format that can be easily imported into some embroidery software for conversion. There are several different ways this image can be converted to .PES file form that is compatible with embroidery machines.

The process to convert a JPG image file to .PES file format is quite easy and is same as described above. But, make sure to remove the background of JPG first. A transparent background is a must when it comes to the conversion of JPG to PES and it is need to save that transparent background image as PNG. And, now it will be quite easy to play with PNG format as it has a transparent background.

JPG/JPEG to DST

The process for JPG/JPEG to DST is the same as we described above for the JPG to PES. After converting the JPG or JPEG file to PNG and making its background

transparent need to make sure to crop the image. Remove any extra part of the image so that it may resize properly.

GIF to DST

Convert an .PNG to .DST by using any Embroidery Digitizing software feature, you can also do the same with a GIF.

But, first need to convert GIF image file format to any other format like JPG or PNG. Choose any design from the GIF and then convert that to JPG and PNG.

Now, go back to the Digitizer Software and click on the "Image Processing" tab. Now click "Edit Image". Select the image, select "Browse" and then select the .JPG or .PNG file (Whichever you chose while converting). Then click OK which will bring up the final window where to change the format of the source file into a .DST embroidery file by clicking on the down arrow at the bottom.

Introduction to digitizing software

Objectives: At the end of this lesson you shall be able to

- know about embroidery digitizing
- do's and don't of embroidery digitizing
- different embroidery digitizing.

Introduction to embroidery digitizing

Embroidery digitizing is the process of transforming artwork into a file that an embroidery machine can read and stitch out with the resulting embroidery looking like the original artwork. Converting implies to push a button to make an embroidery file from an image. While, most embroidery digitizing software does allow to auto digitize areas in the image, true professional embroidery digitizing is not a one-click task and requires some experience and know-how to achieve a good digitized file for machine embroidery.

Digitized file for machine embroidery

A digitized file for machine embroidery means that the file can be read by an embroider machine and the machine can stitch out the design according to the instructions of the file. Digitized embroidery files can come in a variety of file formats as different type of embroidery machines read different file types.

Machine embroidery file formats

Unfortunately, there are a ton of different embroidery file formats, as each embroidery machine manufacturer uses a proprietary file type. For example, Brother embroidery machines will read the PES file format. Janome embroidery machines read JEF files.

Embroidery digitizing difficulty also depends on the nature of the embroidery design. Photo-realistic and intricate designs will be more complicated to create than simple shapes and designs. While learning to digitize, start with very basic images and work your way up.

JPG to PES

First need to remove the background because JPG does not have a transparent background like a PNG image. So, after removing the background need to save it as PNG image and follow the steps given above to convert that PNG (transparent background) image to a vector. Conversion to vector format is also very important. The rest of the steps are the same as described above.

PNG to PES

PNG files can be converted into PES embroidery designs in a similar way to how it is converted into DST files. However, the process is slightly different. Open the .PNG file in Photoshop and then save it as a .JPG file. In Photoshop, this can be done by clicking on File then Save for Web & Devices and making sure the quality setting is set to JPG High or Optimized. This will save the image as a .JPG file, which is used in Embroidery Design Editor's Image Processing feature.

Equipment need to digitize embroidery designs

Most machine embroidery digitizing software runs on PCs. Install a PC emulator on the MAC and run any PC only software via an emulator. Embrilliance Stitch Artist is one of the few embroidery digitizing programs that will run natively on a MAC. A lot of digitizers like to work with a tablet and stylus, but these are not necessary accessories. But digitizing pc use an external mouse to be easier to use while digitizing than the track pad built in on computer.

Understanding Digitizing

Digitizing is defined as a process of converting one file into a range of instructions that an embroidery machine can comprehend to sew the thread. Honestly, digitizing is no less than art and helps create accurate embroidered design. For this reason, digitizing is important, especially when you have to get embroidery done on some fabric.

Similarly, the digitized files are essential for machine embroidery to work accurately. The digitized files are not common. These files have a **PDF format** and can be used in **commercial embroidery machines**. These files have the design path and thread colors and can be optimized with digitizing machines.

The Digitizing Process

The digitizing process can be pretty lengthy and instructions are below

Underlay Stitching

This is the first stitching of the design and is known to hold down the fabric to the fabric backing. In addition, it can lay down the garment fibers to ensure the primary portion stays on the top.

Path

The embroidery digitizers are known to outline the embroidery path. This path is basically instructions for the machine to start the embroidery and stop it at the specific point. In addition, it outlines the embroidery order, when sew in the design fill and when to create the border on the design's edges.

Pull Compensation

It defines how the embroidery will work and appear on various fabrics. This is because various fabrics won't stretch while some are rigid and stretchable. To illustrate, the spandex and polyester polo stretches are suitable for cotton t-shirts. Moreover, you can adjust the pull compensation allows proper design sewing on different fabrics.

Types Of Stitches

In the next step, the digitized files are integrated with stitching type that has to be used for embroidery. Normally, fill, run, and satin stitches are mostly used. In the section below, we are sharing more details about different types of stitches, such as;

Run Stitch : this is a continuous stitch which is done on the design's width. It is suitable for thinner parts of the design, such as text and borders

Satin Stitch: This is a more common stitch and can be used for detailing and making thick borders

Fill Stitches: these are the tight and compact stitches and can easily cover the bigger designs. Fill stitches actually have various forms and can be used for creating patterns

The Dos Of Digitizing For Machine Embroidery

Consider The Fabric

Consider the type of fabric you will be using for embroidery. This is because some embroidery techniques only work for certain fabrics, and if some fabric is too stretchy, it can result in puckering. Similarly, the knitted design won't work well on denim because it has a specific level of stretch. So, always consider the fabric while creating the digitizing file.

Choose The Right Sequence

Determine and outline the embroidery sequence since it directly impacts the embroidery machine's functions. The right sequence is setting the placement stitch, underlay, and top stitch. Keep in mind that if you don't set the sequence, it will result in instable design and bad stitches. Use the digitizing software to create the sequence (it's also known as path).

The Stitch Angle

It's the stitch angle for embroidery designs. The angles can be diagonal, horizontal, or vertical, depending on the design. For instance, if you have to create a design with various stitches, setting various stitch angles is important to ensure the design comes out with right texture and contrast.

Utilize Underlay

It is defined as the base of design and can help stabilize the embroidery design. The underlays include zig-zags, edge runs, fill stitches, and center runs. Keep in mind that underlay helps create smooth surface for creating the embroidery design and reduce the distortion in design. Moreover, if you don't consider the underlay, it will result in messy embroidery and will make the embroidery process challenging.

Don'ts Of Digitizing For Machine Embroidery

Don't Use Excessive Jump Stitches

For those who don't know, jump stitches are defined as the extra threads that are left behind on the embroidery design. It happens when needle shifts from one part to another and drags the thread. There will be multiple jump stitches when the digitized design isn't selected properly and happens when you don't consider the design sequence. Anyways, having excessive jump stitches will not only result in distorted design but it will increase the timeframe needed to complete the embroidery.

Don't Use Incorrect Density

It is defined as the distance between different stitches and it plays an important role in embroidery design's appearance. With low density, the embroidery time will be reduced, less needles will bread, and thread won't bread. On the other hand, using high density, it can tear the fabric, broken needles, stiff design, and thread design. So, keep the density low.

Don't Use Auto-Digitizing Apps

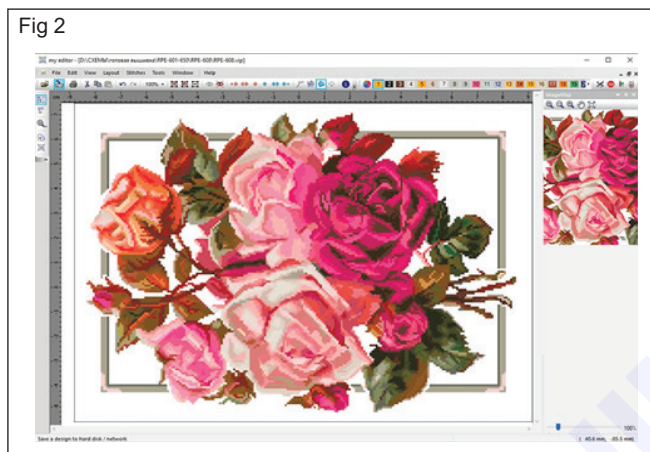
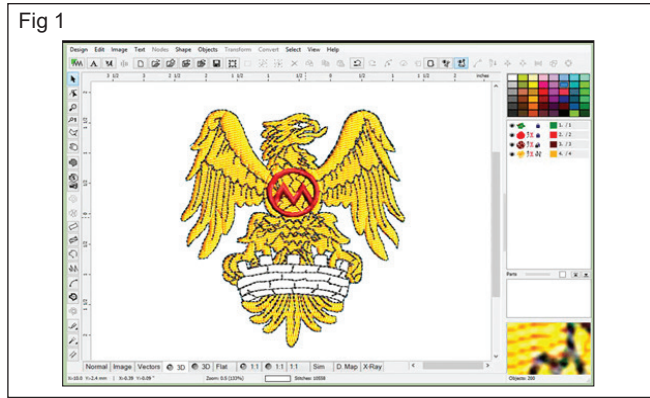
The auto-digitizing apps sound great and actually work for basic designs. However, they can make errors during the digitizing process and end up with wasted time and efforts. So, if you have to work on intricate design, it's better to opt for manual programs or an auto-digitizing app with which you can customize the settings.

Embroidery Digitizing Software

1 Embird : Embird is an embroidery digitizing software based on a modular design. To access a specific mode or option, need to purchase the module itself. Separate modules provide access to such tools like Digitizing, Sfumato Stitch, Cross Stitching, Font Engine and Pre-digitized Alphabets. If free embroidery digitizer is needed use Embird in the demo mode. Although it has certain limitations, its functionality is enough for digitizing ordinary artworks. The demo mode is available for 2 months, after which need to upgrade the program to continue using it.

2 My Editor: My Editor free embroidery software is rather intuitive due to a friendly interface. Use the program to view and modify files, saving them in various formats. Along with improved tools for managing and creating finished works, My editor has options that enable to view and save files. With this free embroidery digitizing software, you can work with NGS files. Also view and save them in various formats for different embroidery

machines. The program comes with extra options that allow to preview designs with different fabrics, resize and rotate them.



3 **Ink/Stitch** : Ink/Stitch is an extension of well-known **vector graphics software**. This is a free embroidery

digitizing software that allows creating embroidery files with the help of an open-source drawing tool. Also you can create stitch files from various SVG designs. It can convert SVG fills into filled stitch areas and convert SVG strokes into zigzags and lines. Besides, Ink/Stitch offers a tool for creating satin columns from paths with two sub-path lines and can customize SVG path objects for each of the four stitch types.

This software allows us to import the majority of embroidery formats, re-use and adapt them with the help of the Inkscape's path tool. InkStitch has options for managing thread colors and projects.

4 **SophieSew**: SophieSew free embroidery digitizing software offers an object-oriented approach to design. A user starts with simple elements like images and lines, gradually collecting them into more complex and large designs (running stitches, fill areas). Step by step, the user gets a ready work. SophieSew features various tools, such as duplication, deletion, rotation, re-sizing, etc. You can use them to enhance individual elements, the entire design or several designs at once.

5 **Hatch**: Hatch Embroidery is suitable for beginners and amateurs, as it is designed as an easy-to-use platform. You can use a 30-day free trial option to test the functionality and performance. Hatch Embroidery has many options and tools both for simple and complex designs. The program is suitable both for novices and advanced digitizers, as it offers manual and automatic digitizing, editing with various layout features, appliqué, resizing, recoloring, multiple hoops, offset contouring, sequencing, monograms, world-class lettering and other functions.

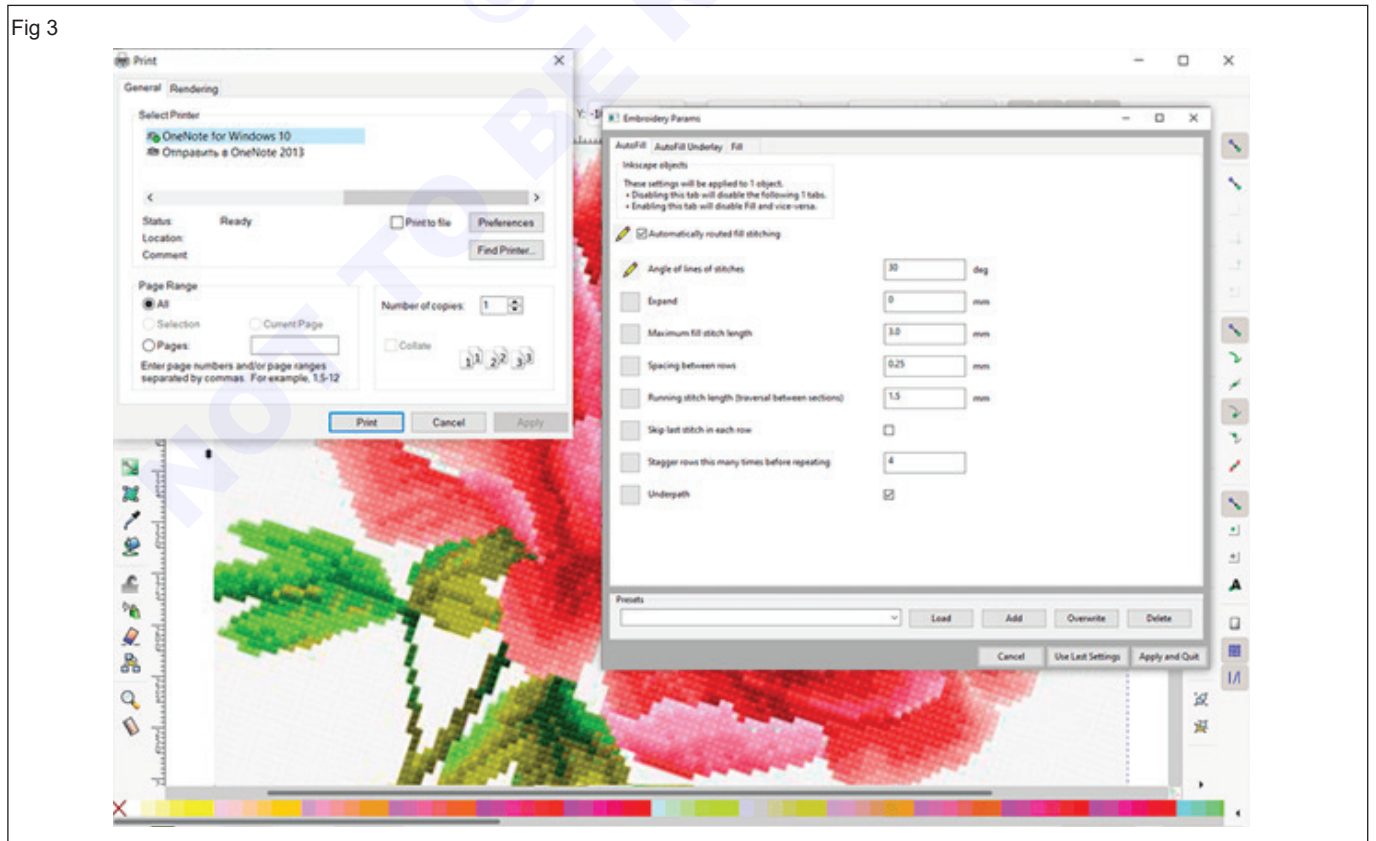


Fig 4

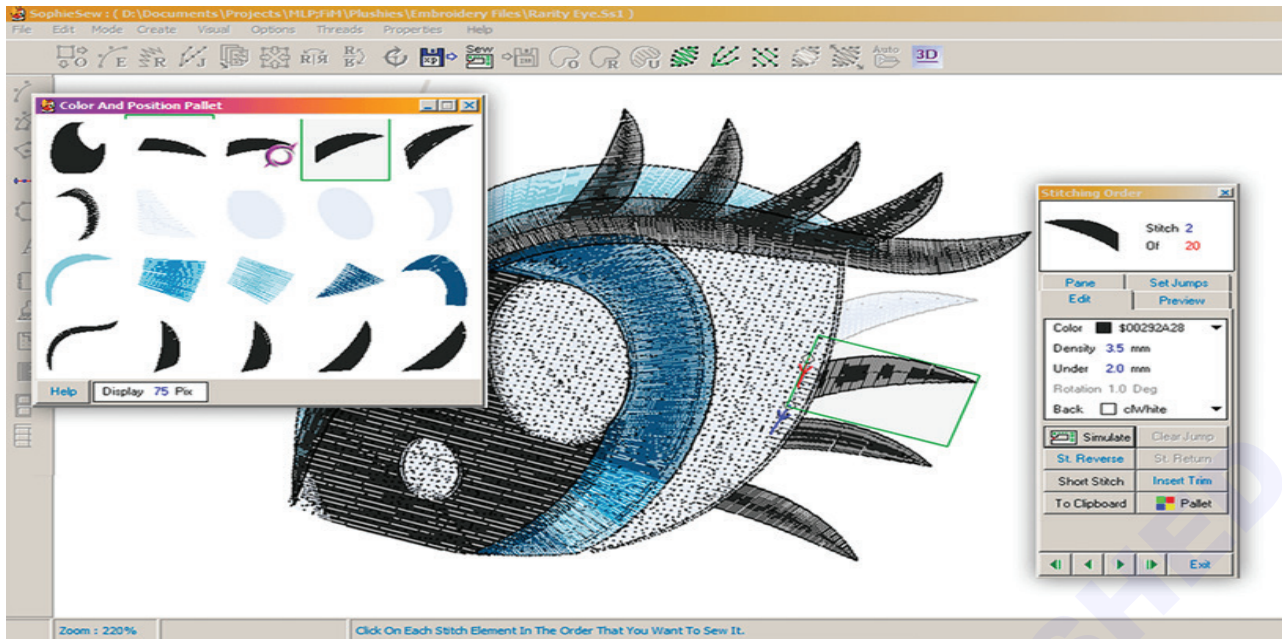
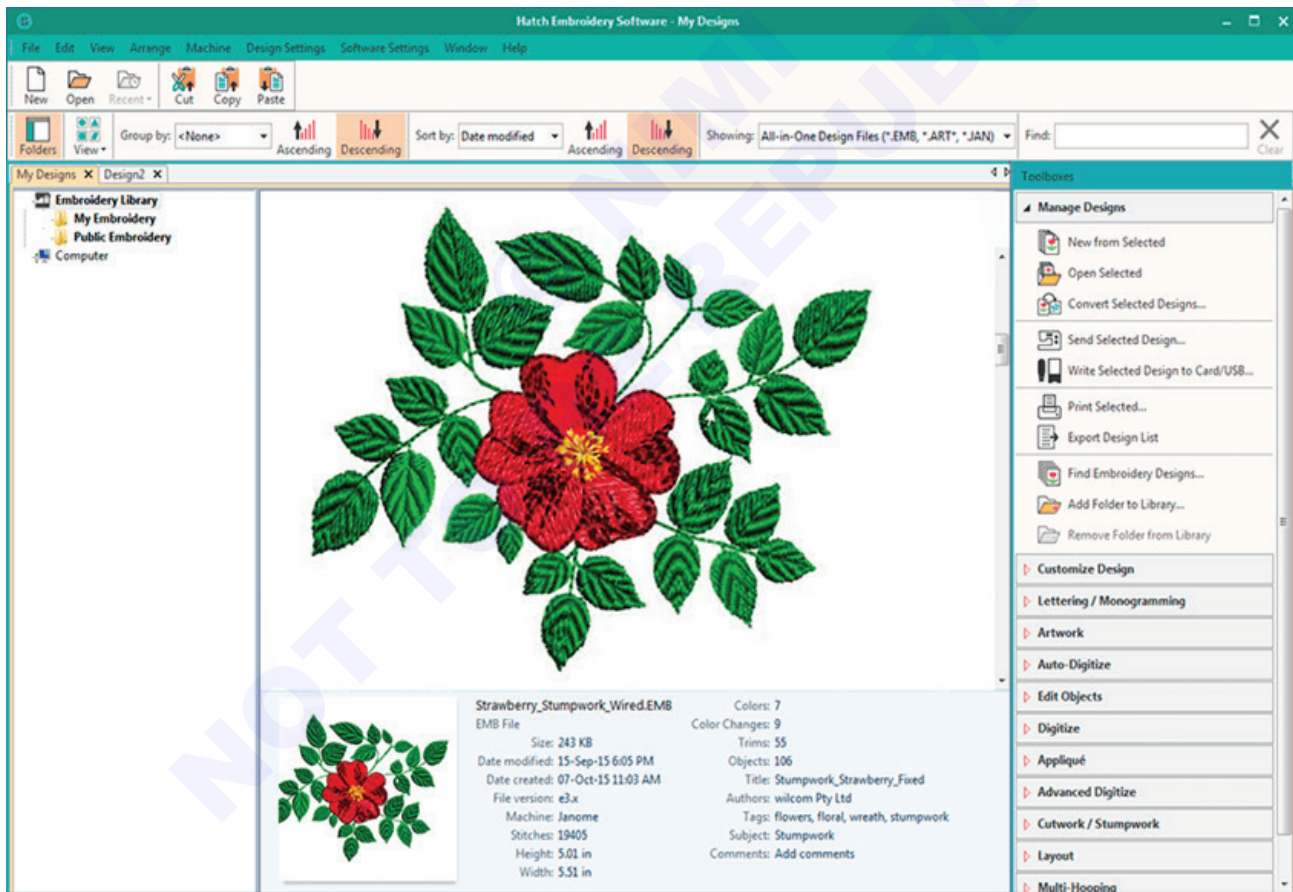


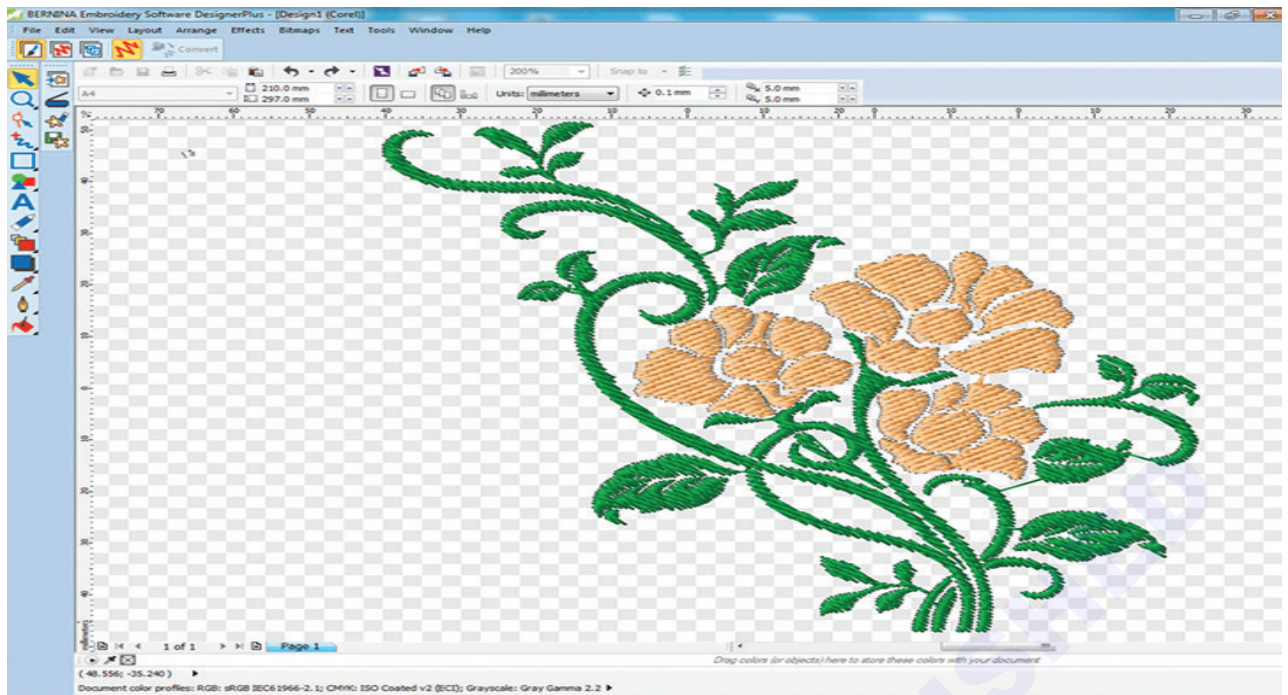
Fig 5



6 **Bernina Artlink:** This is a free online embroidery digitizer for beginners. In the updated version of Bernina Artlink, users can quickly re-size designs and make other adjustments. With the software we can reformat the design and download it from the PC to a Bernina embroidery machine. After the update, the program supports Windows 8.1. Besides, its interface

was noticeably improved. It is compatible with Bernina embroidery machines as well as with other brands. There are many features and tools available such as editing designs in Artistic View, previewing color combinations and printing an embroidery preview in its original size. This will help to know exactly if you are using the right colors.

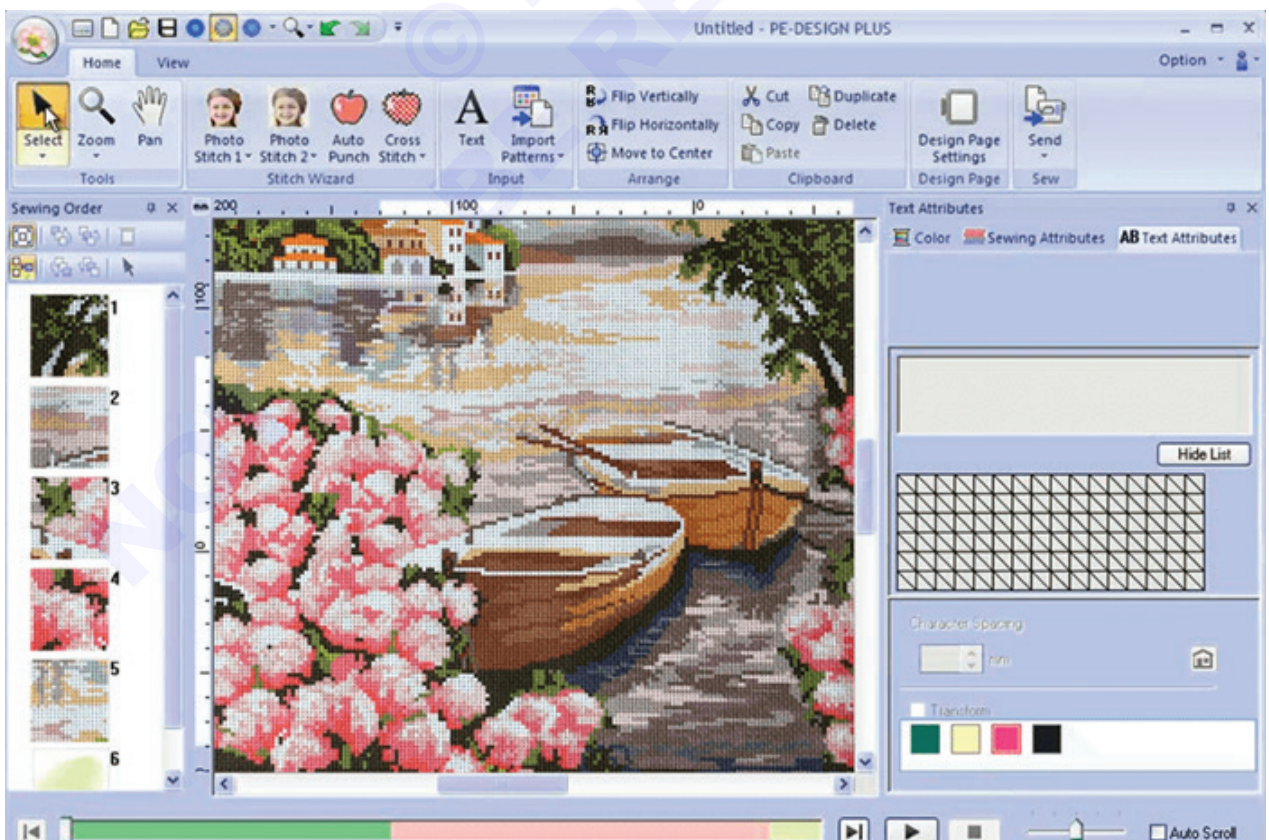
Fig 6



7 Brother Embroidery Software: BES is a universal embroidery digitizing program that will suit any skill-level user. Create and correct eye-catching monograms, lettering and borders using the available 145 applique designs, 77 integrated accent designs and

77 built-in borders. BES is compatible with a Brother embroidery machine and other brands. The software offers various tools and options, like adding effects to the designs, aligning designs, changing stitch patterns and previewing new clothing templates to get a sense of how the work will look in reality.

Fig 7



Use of scanner with digitizing software

Objectives: At the end of this lesson you shall be able to

- know the use & importance of scanner.

Scanning is the process of converting physical documents into digital images with a scanner. This process typically involves capturing an image of the document at a high resolution (300dpi or higher), and then saving it in a lossless format (PDF or TIFF) for archival purposes. Document scanning reduces storage requirements, improves accessibility to information, and helps to protect the data by creating a digital backup of the physical documents. However, there are cases where simply scanning documents is not enough. That's because this method only creates a single searchable "index", (the file name), which can make it more difficult to retrieve any given file. That's where the digitization process comes into play.

Digitization is the process of converting printed and handwritten text contained on a scanned document into a digital format that is readable by computers. Just like document scanning, the process starts with creating a digital image of the original document. Then, optical character recognition software is used to convert the contents of the document into machine-encoded text.

This allows for keyword searching, text editing, and data mining, taking data manipulation to a whole new level. With digitizing, not only store and retrieve information more easily, but also analyze and interpret it, fostering data-driven decision making.




It is important to scan the artwork properly to intend to use one of the automatic digitizing techniques; the scanned image quality will affect the quality of the final embroidered design.

With embroidery design, less is more. You do not need every detail in an image to create a design. Use the 'structure' of the image rather than the fine details of texture and color. To simplify artwork, cover it with tracing paper and draw only the essential shapes and lines which will be filled with stitches. When scanning, take away the original artwork and put white paper behind the tracing paper. Shiny surfaces, such as glossy photographs, may not scan well. Cover them with tracing paper. If the artwork has very light colors, highlight outlines with a fine black felt-tip pen.

Scanning resolution

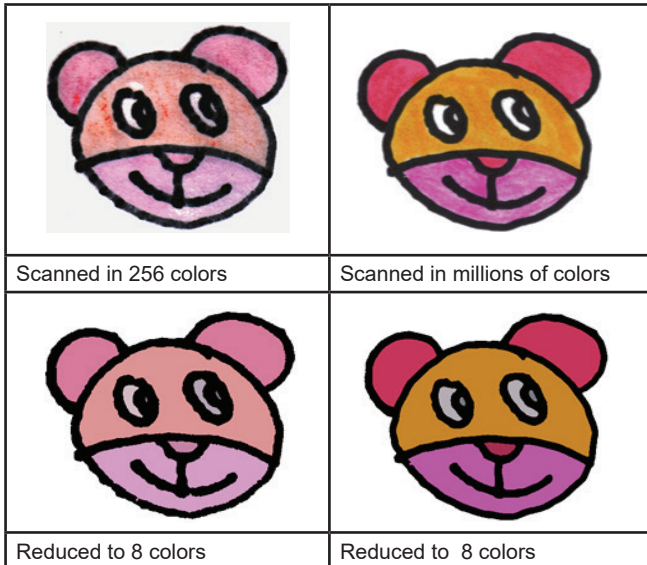
Most scanners require users to enter scanning resolution information. Resolution determines the number of dots per inch (dpi) used to create a drawing. The higher the value, the clearer the image but larger the file. For digitizing purposes, use a maximum resolution of 300 dpi (dots per inch). A resolution of 72 dpi (screen resolution) will usually be sufficient. Generally the smaller the source image and/or more detail it contains, the higher the resolution needs to be. Use the following table as a guide.

Type of artwork	Scanning resolution
Business cards, Letterheads	150 - 300 dpi
Hand Sketches	150 - 300 dpi
Photos and images	150 - 300 dpi
Commercial art, line drawing	75 - 300 dpi

Source image	Sample	Description	Recom. color mode	colors in image
Line art		Two colors - usually black and white	Black/White drawing Line art	2 2
Drawing		Sketch or drawing with shades of grey	Greyscale Line art	256 2
Color Picture		Two colors or more	Color RGB Millions of colors Color drawing	16 mill 16 mill 2 - 256

Color mode

Most scanners also require users to enter color mode information. First decide whether the image is line art (black and white drawing), sketch, color picture, or black and white or color photograph, then choose an appropriate mode. Black and white mode produces the smallest files. Color photograph and grayscale modes generate 256 color images and produce similar sized



files. 'RGB', 'True Color' or 'millions of colors' modes generate 16.7 million colors and produce the biggest files. Use the table below to decide which mode is suitable for use with the image.

Different scanning software uses different terms for the same mode.

Color depth

Scan color images in RGB mode (millions of colors) rather than 256 color mode. You may not notice any difference on screen. In fact the 256 color image may look better than the RGB image. However, the software converts all images to 256 colors or less upon loading. It uses the extra information to produce a better image than if it was originally scanned at 256 colors.

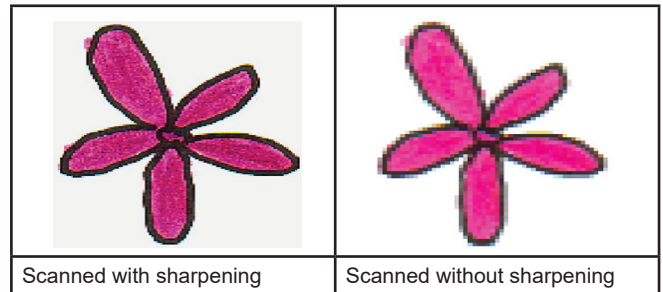
Note

- Do not scan line art images in grayscale mode; grayscale scanning produces fuzzy edges.
- Do not scan color images in CMYK mode as this is only used for images that will be printed and the colors may be different from RGB colors.
- If the image needs to be resized, scale it when you scan it. Scaling afterwards may distort the image.

Sharpening

Some scanning software lets to apply what is called 'sharpening' as we scan. Sharpening compensates for the slight blurring in a scanned image by looking for any differences between colors in the image. Sharpening accentuates these differences which makes the image edges more defined. It does not increase the image

details; it just makes them more obvious. In general, use sharpening with images that have well-defined outlines. Do not use it with non-outlined images.



Scan artwork

We can scan images directly into the design software for use as digitizing backdrops. The scanning feature allows to use most TWAIN-compatible scanners. Use any scanning software provided that it can save the image in one of the compatible formats. To scan an image set up the scanner. Prepare the artwork for scanning. Create a new file or open a design you want to insert the drawing into go to Artwork > Scan Artwork. The scanning program will open. Choose a scanning mode and resolution. Preview the image in the scanning program. Select the area to scan and scan the image. Save the scanned image in a third-party application. Save in a compatible format to the designs folder.

Different type of Scanners

Flatbed Scanners also called desktop scanners are the most versatile and commonly used scanners. In fact, this article will focus on the technology as it relates to flatbed scanner.

Fig 1



Sheet-Fed Scanner: are similar to flatbed scanners except the document is moved and the scan head is immobile. A sheet-fed scanner looks a lot like a small portable printer.

Fig 2



Hand held scanners use the same basic technology as a flatbed scanner, but rely on the user to move them instead of a motorized belt. This type of scanner typically does not provide good image quality. However, it can be useful for quickly capturing text.



Drum scanners are used by the publishing industry to capture incredibly detailed images. They use a technology called a photo multiplier tube(PMT). In PMT, the document to be scanned is mounted on a glass cylinder. At the center of the cylinder is a sensor that splits light bounced from the document into three beams. Each beam is sent through a color filter into a photomultiplier tube where the light is changed into an electrical signal.



Benefits of Scanners

A scanner is a crucial piece of computer hardware that uses light sensor technology to scan and transform a physical image or document into a digital one that can be read by a computer. The scanners can scan black-and-white or colour documents. There are high-resolution and low-resolution scanners on the market, and select the one that best suits the needs.

- One of the most frequent applications for a scanner is copying. A poster, worksheet, brochure, or other documents can be copied several times using a scanner so that they can be printed as often as required. It will operate as though your computer were linked to a printer. A scanner also gives users the advantage of editing documents before printing copies, which is not available with a copier
- Another popular application for scanners is digital archiving. It is a technique for creating and storing digital copies of hard copies of documents. These documents include business records, tax paperwork, personal documents, and family letters.

- It allows you to make changes to your document before printing it if necessary
- Scanners enable you to convert hard copies of photos into digital copies that can be shared with friends and family via the internet
- Many facts and figures required for research projects for school, college, or professional use can be found in books borrowed from the library or other sources. We can use a scanner to capture the key pages and store them in a computer so we can access them as needed
- Users of scanners can also use the internet to send copies of photos to friends and family. Although digital photography has become the standard format for both amateur and professional photographers, many people still have old family photos that were taken with conventional film cameras and were never recorded digitally.

Here are the steps that a scanner goes through when it scans a document

The document is placed on the glass plate and the cover is closed. The inside of the cover in most scanners is flat white, although a few are black. The cover provides a uniform background that the scanner software can use as a reference point for determining the size of the document being scanned. Most flatbed scanners allow the cover to be removed for scanning a bulky object, such as a page in a thick book. A lamp is used to illuminate the document. The Lamp in newer scanners is either a cold cathode fluorescent lamp (CCFL) or a Xenon lamp, while older scanners may have standard fluorescent lamp.

The entire mechanism (mirrors, lens, filter and CCD array) make up the scan head. The scan head is moved slowly across the document by a belt that is attached to a stepper motor. The scan head is attached to a stabilizer bar to ensure that there is no wobble or deviation in the pass. Pass means that the scan head has completed a single complete scan of the document. The image of the document is reflected by an angled mirror to another mirror. In some scanners, there are only two mirrors while others use a three mirror approach. Each mirror is slightly curved to focus the image it reflects onto a smaller surface. The last mirror reflects the image onto a lens. The lens focuses the image through a filter on the CCD arrays.

The filter and lens arrangement vary based on the scanner. Some scanners use a three pass scanning method. Each pass uses a different color filter (red, green or blue) between the lens and CCD array. After the three passes are completed, the scanner software assembles the three filtered images into a single full-color image

Scanning Process

Most scanners today use the single pass method. The lens splits the image into three smaller versions of the original. Each smaller version passes through a color

filter (either red, green or blue) onto a discrete section of the CCD array. The scanner combines the data from the three parts of the CCD array into a single full-color image.

Another imaging array technology that has become popular in inexpensive flatbed scanners is contact image sensor (CIS). CIS replaces the CCD array, mirrors, filters, lamp and lens with rows of red, green and blue Light Emitting Diodes (LED). The image sensor mechanism, consisting of 300 to 600 sensors spanning the width of the scan area, is placed very close to the glass plate that the document rests upon. When the image is scanned, the LEDs combine to provide white light. The illuminated image is then captured by the row of sensors. CIS scanners are cheaper, lighter and thinner, but do not provide the same level of quality and resolution found in most CCD scanners.

Scanning the document is only one part of the process. For the scanned image to be useful, it must be transferred to the computer. There are three common connections used by scanners:

- **Parallel:** Connecting through the parallel port is the slowest transfer method available
- **Small Computer System Interface(SCSI):** SCSI requires a special SCSI connection. Most SCSI scanners include a dedicated SCSI card to insert into your computer and connect the scanner to, but you can use a standard SCSI controller instead.

- **Universal serial bus(USB):** USB scanners combine good speed, ease of use and affordability in a single package.
- **FireWire:** Usually found on higher-end scanners, FireWire connections are faster than USB and SCSI. FireWire is ideal for scanning high-resolution images.

On the computer, you need software, called a driver, that knows how to communicate with the scanner. Most scanners speak a common language, TWAIN. The TWAIN driver acts as an interpreter between any application that supports the TWAIN standard and the scanner. This means that the application does not need to know the specific details of the scanner in order to access it directly. For example, one can choose to acquire an image from the scanner from within Adobe Photoshop because Photoshop supports the TWAIN standard.

On addition to the driver, most scanners come with other software. Typically, a scanning utility and some type of image editing application are included. A lot of scanners include OCR software. OCR allows to scan in words from a document and convert them into computer-based text. It uses an averaging process to determine what the shape of a character is and match it to the correct letter or number.

The great thing about scanner technology today is that you can get exactly what you need.

Different stitches of machine

Objectives: At the end of this lesson you shall be able to

- learn different stitches with examples on machine.

Embroidery Stitch

Embroidery stitch is also called as embroidery sewing. There are many kinds of embroidery swings available. Each needle drops is count as a number of stitches. That means if there are one thousand stitches on a design, then we can understand that the needle will drop one thousand times. Also, it's the easiest method to know the number of needle drops on a design. All embroidery costing and timing is based on the number of stitches. So, the stitch is the embroidery and embroidery means stitches.

Different types of machine embroidery stitches

Satin Stitch

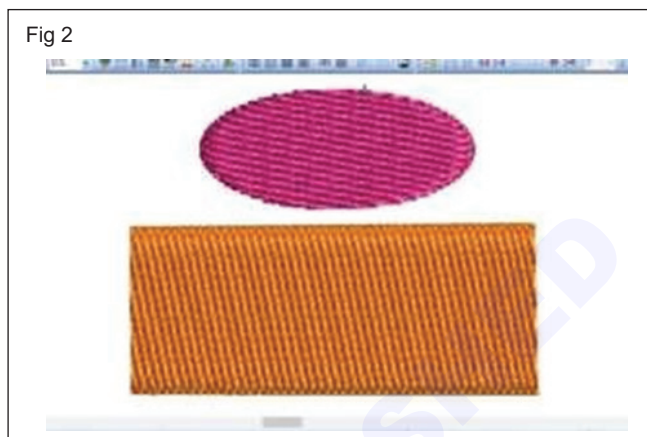
Satin stitch is also called as a jump stitch. It runs like a left-right-left-right technique. Also, Satin is the most used embroidery stitch ever. It's very nice and finest stitch ever. Mainly for any straight objects which is less than one cm, we can use Satin stitch. Here I will practically show you what is Satin and how to sew it. Both hand and with the embroidery machine, you can sew this Satin stitch. Here is an example image of Satin embroidery stitch below.



Tatami Stitch

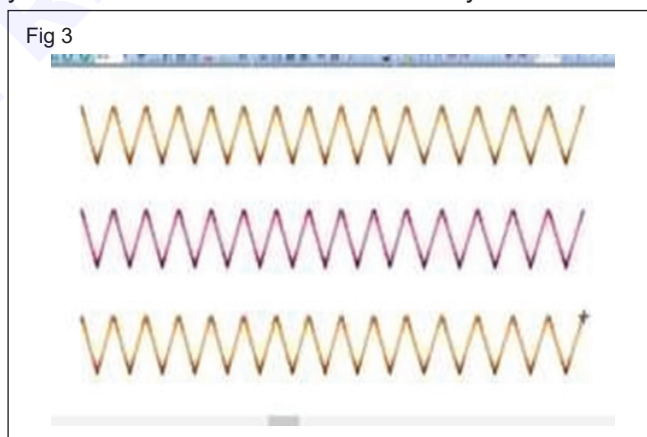
Tatami is a stitch which is known as a fill stitch. It's used to fill big shapes objects. When an object is larger than 1 cm we use this Tatami stitch. It's a nice looking filling stitch ever. Mainly the shape of the Tatami is different to see. It's smooth also. Here is an example image of the **Tatami embroidery stitch below.**

The image is an example of the Tatami stitch. It's the finest stitch for any larger objects. There are also many kinds of Tatami stitch available. But the most common and most used is this one. Also, we can customize this Tatami effects on different shapes and different angles.



Zigzag Stitch

The zigzag stitch is like a left-right zigzag effect stitch. It's a bit similar to the Satin stitch but, only the difference is the Satin goes by one like straight one line angle like this. And the zigzag stitch goes like an angle to angle. If we make the spacing of the zigzag stitch very close, then it will look like Satin. Only we can understand that is a zigzag when its spaced enough. Here is an attached example image of the zigzag stitch. Hope this will help you to understand the stitch more easily.

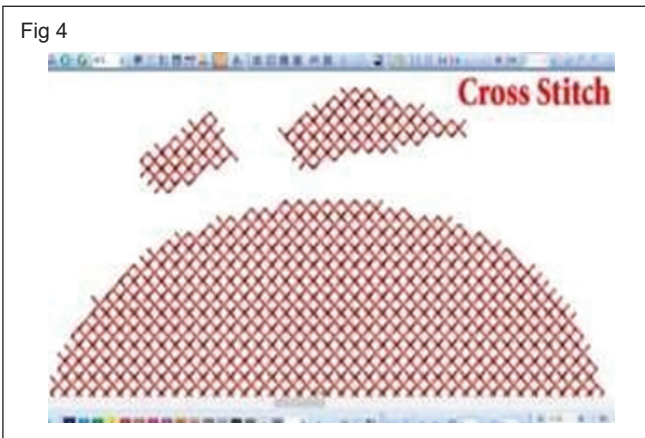


So, this is called zigzag stitch in embroidery. It's also very nice to see when we use this for the manual effect embroidery designs.

Cross Stitch Embroidery

The cross stitch is also a very nice stitch in embroidery. Cross stitch is used in many kinds of embroidery designs. Hand embroidery, machine embroidery, and other effects also we can use this cross stitch. There are many kinds of cross stitch available in machine embroidery. Some of them called as the full cross, half cross, side cross, quarter cross etc. Here I will show you the most used cross stitch which is also known as the full cross stitch.

Fig 4



On the above image you can see an example of the full cross stitch. In machine embroidery stitches types the cross stitch is a major type. That's all about machine embroidery stitches types and names for today.

Straight Stitch

Straight or running stitch is basic of embroidery work, this kind of stitch will repeat the stitch line and can be greater in length and breadth. When you are going with a straight stitch, you may notice that single lines repeat and make the thicker lines. This technique is mainly used to make thicker designs like logos or monograms font.

Bean Stitch

Bean stitches are stitches back and forth between any two points and mostly used to outline the design. This gives a bolder and denser appearance than a straight stitch and requires fewer stitches than a satin stitch. Hence this stitch is considered important in all **machine embroidery stitch types**.

Underlay Stitches

It is also the most important one stitches among machine embroidery stitch types. Underlay stitches are being put down the design stitches. These have much fewer denser stitches made in the design and are placed in the opposite direction to the final stitches.

Fig 5



Fig 6



Running Stitch/Walk Stitch

Running stitch is among machine embroidery stitch types with a single stitch formed between two points. It is much like underlay or fill stitch and is used for outline work and giving details.

Fig 7



Making designs on software

Objectives: At the end of this lesson you shall be able to

- features of a good design
- understand vector graphics and bitmaps
- creating design using coreldraw
- transfer embroidery designs to the machine
- access and select designs from USB.

Embroidery design with software consists of turning basic artwork shapes into embroidery designs. These software gives the flexibility of creating embroidery objects using artwork as backdrops, or of directly converting digital artwork. It is possible to take a mixed-mode approach as well, doing the bulk of the design by means of automatic conversion, followed by touch-ups and edits using the software's embroidery digitizing tools.

Artwork & designs

High quality embroidery starts with good design and forward planning. Electronic artwork in both bitmap and vector formats can be inserted, pasted or scanned into embroidery software for use as digitizing templates or 'backdrops'. Likely sources include:

- Internet and CD clipart libraries
- Business cards, post cards and wrapping paper
- Samples in the Design Library
- Books of embroidery patterns
- Children's story books
- Printed table cloths or tea towels
- Original artwork – e.g. children's drawings. Unless you are an experienced digitizer, do not use complicated artwork. Also, be sure to check the copyright of any images which are not self-made.

Features of Good design

Keep the following points in mind when digitizing the design and assessing the final output. The stitched-out design should also have the following characteristics:

- Design looks good – shapes, colors, balance
- Shapes are filled with correct fill and outline stitches
- Details are clearly defined
- Stitches are neat, smooth and even
- Stitches angles follow design shapes
- Lettering is clear and easy to read
- The design stitches out efficiently on the machine
- Shapes are stitched correctly – no unwanted gaps
- The fabric has not puckered around the stitched areas

- The design is free of loose ends.

The embroidery software contains hundreds of ready-to-stitch designs, including attractive ornaments, samples and digitizing backdrops. Design files (EMB files) and images (BMP, JPG, and WMF files) can be found in the Embroidery and Picture libraries. The most valuable thing to do when starting out is to spend some time exploring these designs and getting to know what's available. The software includes its own Design Library design management application to view and manage the embroidery designs. Alternatively, explore design folders using File Explorer.

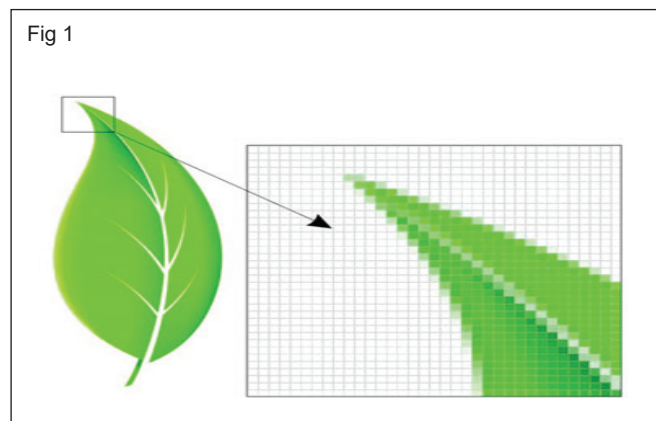
Embroidery creation techniques

Depending on the level of product, there are two fundamental design modes in Embroidery software

- **CorelDRAW Graphics:** This mode allows you to create or edit graphic designs using the CorelDRAW® Graphics Suite toolset.
- **Wilcom Workspace:** This mode allows you to create and edit embroidery designs using an embroidery digitizing toolset.

Understanding vector graphics and bitmaps

The two main types of computer graphics are vector graphics and bitmaps. Vector graphics are made of lines and curves, and they are generated from mathematical descriptions that determine the position, length, and direction in which lines are drawn. Bitmaps, also known as raster images, are composed of small squares called pixels; each pixel is mapped to a location in an image and has numerical color values.



Vector graphics are ideal for logos and illustrations because they are resolution-independent and can be scaled to any size, or printed and displayed at any resolution, without losing detail and quality. In addition, one can produce sharp and crisp outlines with vector graphics. Bitmaps are excellent for photographs and digital paintings because they reproduce color gradations well. Bitmaps are resolution-dependent — that is, they represent a fixed number of pixels. They look good at their actual size, but they can appear jagged or lose image quality when scaled, or when displayed or printed at a resolution higher than their original resolution.

One can create vector graphics in CorelDRAW and also import bitmaps (such as JPEG and TIFF files) into CorelDRAW and add them to the drawings. A vector graphic consists of lines and fills. Bottom: A bitmap is made up of pixels. CorelDRAW lets to start a new drawing from a blank page, a template, or an existing drawing. A blank page gives the freedom to specify every aspect of a drawing. A template provides a starting point and leaves the amount of customization to the user.

When starting a new drawing, CorelDRAW lets the user to specify page, document, and color management settings and also can choose from a list of preset settings, which are based on how the user intend to use the drawing. For example, choose the Web option for creating a drawing for the Internet, or the Default CMYK option for creating a document destined for commercial printing. However, if the preset settings are not suitable for the drawing that is created, it is possible to customize the settings and save them for future use.

Basing a new drawing on an existing drawing lets us to reuse objects and page settings. CorelDRAW allows the user to open existing drawings saved to the CorelDRAW (CDR) format as well as drawings and projects saved to various file formats such as Corel DESIGNER (DSF or DES), Adobe Illustrator (AI), Adobe Portable Document Format (PDF), Encapsulated PostScript (EPS), and Computer Graphics Metafile (CGM). However, it shall be not possible to open certain files, depending on their file type and contents. In such cases, try importing the files as objects in an open drawing

Creating designs using corel draw software

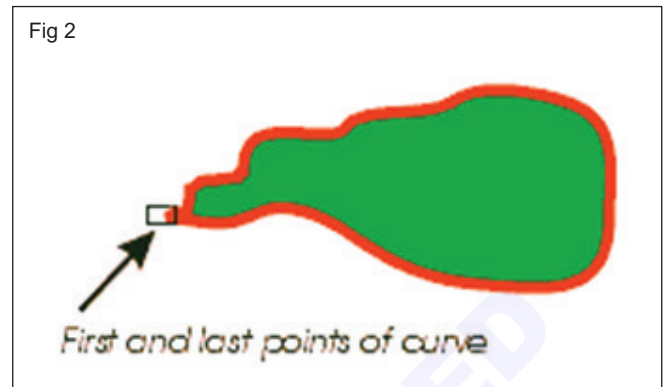
 Choose the Freehand Tool from the toolbox.

Once the Freehand tool selected, the cursor in the workspace shows a little squiggly line just to one side of the crosshairs, very similar to the icon. The center of the crosshairs is the important part. To draw a straight line segment with the Freehand tool, just click to place one end of the line, then click again where the other end of the line to be. Don't drag in between the two clicks.

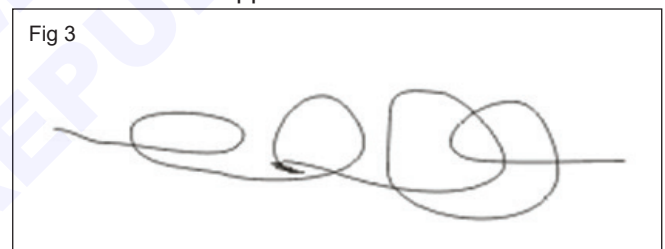
To draw a wavy line across the page by clicking and dragging with the mouse while moving the mouse slightly up and down. Avoid making loops. Using the Pick tool, set the wavy lines at different widths and colors. The Status bar will tell how many nodes are there in the curve. The nodes and their associated vectors define

the curve. In general, the fewer the nodes, the smoother the curve will be in a curvy path. Remember that an open curve cannot be filled. Actually there is an option in the Document/General section of the Options dialog box to fill open curves.

Example for Closed curve:



When drawing a closed curve with the mouse start and end the drawing at the same point. Depending on how close it come to the origin point the curve may close itself. Click the Auto-close curve icon from the Freehand drawing property bar. CorelDRAW software enables to finish the curve by drawing a straight line segment from the last ending point to the origin point. Make one loop overlap another loop. Start near one side of the page and end near the opposite side.



Loops in a continuous path do not constitute a closed object. The ends of the path must meet and join in order for the curve to be considered closed. With the looped curve selected, click the Auto-Close Curve icon. (This icon is available any time).An open curve is selected. If no fill shows up, probably have "no fill" as default. Click on a color cell from the color palette to fill the closed object.



Any time a closed curve's path crosses itself so that two filled spaces overlap, there will be no fill in the overlapped part. This can be used to create some great graphical effects, but can be surprising if it is not expected.

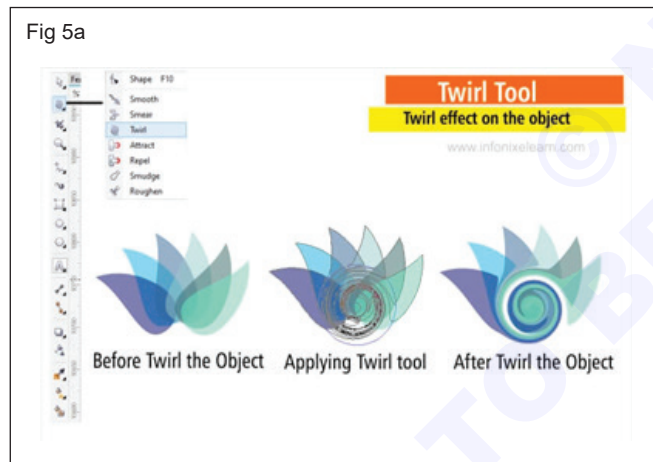
Scanning images

It is possible to scan images in CorelDRAW. CorelDRAW supports scanners that use Microsoft Windows Image

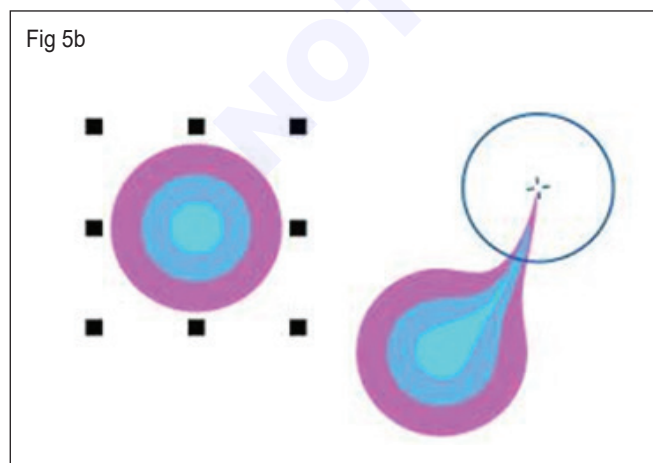
Acquisition (WIA), which provides a standard interface for scanning images. If the scanner does not support WIA, but has a compatible TWAIN driver, it is possible to use this driver for scanning images in CorelDRAW. TWAIN is supported by both the 32-bit and 64-bit versions of CorelDRAW. However, note that there are very few 64-bit TWAIN drivers available. The software interfaces and options vary.

In latest version of coreldraw paint, four new, pressure-sensitive Liquid tools — Smear, Attract, Repel, and Twirl — offer fresh creative options for retouching designs. Use these tools to reshape specific image areas to produce unique artistic effects. Each tool responds to the pressure of the digital pen or stylus, and provides options that help to control the intensity of the effect. With the Liquid smear tool, one can push pixels around an image area to produce distortion effects and set the size of the brush nib, specify the amount of the effect to apply, and choose between a rounded or pointy smear. The Liquid twirl tool produces twirl effects from image areas. Set the size of the brush nib, the speed of the twirl from the centre of the brush. The Liquid attract and Liquid repel tools pull pixels toward or push pixels away from an image area. Set the size of the brush nib and the speed at which the pixels move. With the new Liquid tools, we can retouch designs and create unique artistic effects.

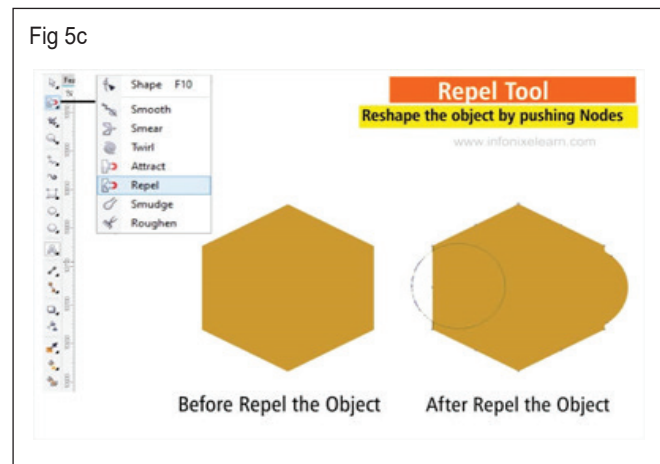
Twirl Effect (Fig 5a)



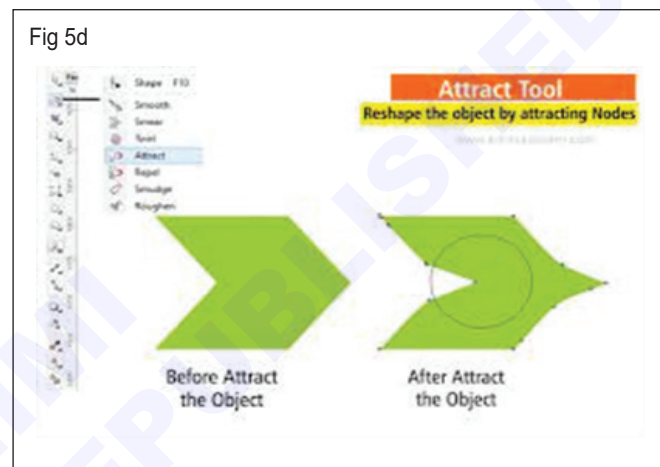
Smear effect (Fig 5b)



Repel Effect (Fig 5c)



Attract Effect (Fig 5d)



Working with multiple drawings

Multiple drawings can be opened in a single drawing window, making it easy to handle many drawings simultaneously. And also access each open drawing from its tab at the top of the drawing window, and start new drawings. Open drawings appear docked, but can undock any drawing needed and drag it inside or outside the application window

To work with multiple drawings

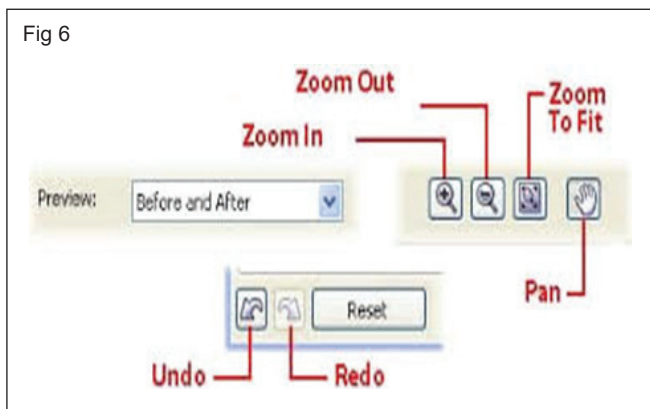
To Switch to another open drawing: At the top of the drawing window, click the tab that has the filename you want.

To Start another drawing: Click the Newbutton to the left of the last tab in the drawing window.

To undock a drawing: Drag the tab to a new position inside or outside the application window.

Undoing, redoing, and repeating actions

Undo the actions that is performed in a drawing, starting with the most recent action. If the result of undoing an action is not satisfied we can redo it. Reverting to the last saved version of a drawing also lets to remove one or more actions. Certain actions applied to objects, such as stretching, filling, moving, and rotating, can be repeated to create a stronger visual effect. Customizing the Undo settings let to increase or decrease the number of actions that you can undo or redo.



Zooming, panning, and scrolling

Change the view of a drawing by zooming in to get a closer look or by zooming out to see more of the drawing. Panning and scrolling are two additional ways to view specific areas of a drawing. When working at a high magnification levels or with large drawings, one may not be able to see the whole drawing. Panning and scrolling let to move the page around in the drawing window to view previously hidden areas. Use the Pan tool to pan around a large image and view particular areas. Zoom in and out while panning and pan while zooming. Use the Quick Pan mode to switch from any active tool to the Pan tool. This feature lets to pan without having to change tools

Previewing drawings

Preview a drawing to see how it will look when printed or exported. When preview a drawing, only the objects on the drawing page and in the immediate area of the drawing window are displayed, and can see all layers that are set to print in the Object manager docker. To have a closer look at specific objects in a drawing, select and preview them. When preview the selected objects, the rest of the drawing is hidden. While preview a drawing, one can specify the preview mode. The preview mode affects the speed with which the preview appears as well as the amount of detail displayed in the drawing window. By default, the borders of a page are displayed in the drawing window and can hide them at any time. If a drawing is intended for print, display the area that will actually print as well as the bleed, the part of the drawing that extends beyond the page border. Bleeds are useful when a drawing contains a color page background or objects that are positioned on the page border. Bleeds ensure that no white space appears between the edges of a drawing and the edge of the paper after the printer cuts, binds, and trims the document.

Saving drawings

By default, drawings are saved to the CorelDRAW file format (CDR) and are compatible with the latest version of the application. Save a drawing that is compatible with an earlier version of CorelDRAW Graphics Suite and specify save options. Such options are useful when the file contains new text, fill, outline, and transparency features that are not supported in earlier versions. Save a drawing to other vector file formats as well. To use

a drawing in another application, it should be saved in a file format that is supported by that application. The File >Export command to export files to a variety of bitmap and vector file formats that can be used in other applications. While saving a drawing, CorelDRAW lets to add reference information so that it can easily found and organize drawings later on.

When saving a file use advanced options to control how bitmaps, textures, and vector effects, such as blends and extrusions, are saved with the drawing. Different embroidery machines understand different languages. Each has its own control commands for the various machine functions. Before you can stitch a design, it must be in a format which can be interpreted by the machine. Machine or 'stitch' files are low-level formats for direct use by embroidery machines. They contain only stitch coordinates and machine functions. They are generally created on-the-fly when sending designs to machine. Or they are converted when saving to disk or memory stick.

A machine embroidery file contains a set of instructions for the embroidery machine to follow in order for it to successfully stitch out a design. Therefore, they contain a lot of different bits of information. First of all, it tells the embroidery machine the number of different colors of thread to use, what these colors are, and when to change colors. For each thread color, it knows the area to be stitched, the pattern of stitching and the length and density of the stitches. Knowing all of the data that a machine embroidery file stores, it should be self-evident why machine embroidery files are different from graphic files like JPGs, PDFs and SVGs. These file formats hold no information about color stops and stitch patterns. Graphic files can, however, be a great starting point to make an embroidery file.

Design shapes and stitching sequence

The embroidery objects comprising a design form a stitching sequence. Before creating an embroidery design, it is good practice to analyse and plan shapes and stitching sequence in advance. Shapes need to be clearly defined to make them easy to embroider. The best ones have relatively constant width, with smooth edges, no sharp turns and no small, protruding details. Outlines and details should always be stitched last.

If digitizing is done manually, objects are stitched out in the order they were created. In other words, the digitizing sequence defines the stitching sequence. To convert an electronic design, the software uses automatic sequencing to create the optimum stitching sequence. Auto-sequencing attempts to generate embroidery designs which are economical to produce, with minimal down time, and accurate registration of textures and colors.

Mixed-mode approach (Fig 7)

To take a mixed-mode approach, do the bulk of the design by means of automatic conversion, and touch-ups and edits using the software's embroidery digitizing tools. In addition, always manually adjust the stitching sequence to improve the stitchout, for example, to minimize color changes.

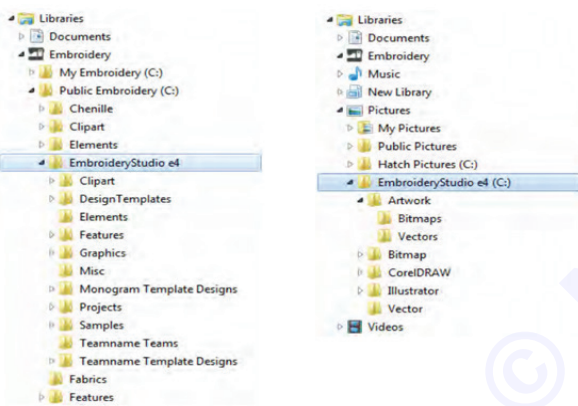
Fig 7



Sample designs & artwork

Embroidery software contains hundreds of ready-to-stitch designs, including attractive ornaments, samples and digitizing backdrops. Design files (EMB files) and images (BMP, JPG, and WMF files) can be found in your Embroidery and Picture libraries

Fig 8



The most valuable thing to do when starting out is to spend some time exploring these designs and getting to know what's available. Embroidery Software includes its own Design Library design management application to view and manage the embroidery designs. Alternatively, explore design folders using File Explorer.

Using electronic artwork

There are two broad categories of artwork file, both of which can be imported into Embroidery software for use as digitizing backdrops – vector and bitmap. CoreIDRAW Graphics supports the automatic and semi-automatic digitizing of both bitmap images and vector graphics. The quality of the resulting embroidery greatly depends on the type and quality of the original artwork.

Preparing images for digitizing

Generally vector graphics preserve the picture quality when resized, whereas bitmap images cause problems of pixelation and image degradation when enlarged or scaled down. In order to make bitmap images more suitable for automatic digitizing, embroidery software provides image processing capabilities.

Digitizing shapes manually

Trace shapes and lines over electronic artwork using

various digitizing on 'input' methods. Using a bitmap image in this way is like using an enlargement drawing on a digitizing tablet, except that everything is done on screen.

Converting artwork to embroidery

Embroidery software allows to convert vector objects directly to embroidery objects. In fact, entire vector designs can be converted to embroidery. One can modify these designs as needed and also convert embroidery to vector graphics.

Fig 9



How to transfer embroidery designs to your machine

USB Stick

Nowadays vendors provide embroidery designs on USB sticks. This is great because we can use the stick directly in the machine. Simply need to find the directory specific for the machine, open it and select the design. The drawback to using the USB stick directly is that all formats are on the stick and may slow loading the designs down. Also, the USB stick is your only copy of the designs, so be sure to make a backup or copy the designs to your PC.

Most embroidery machines use a USB stick or perhaps an SD card to read the embroidery designs. If it is an old machine, the machine may take a small card or even a floppy disk. At any rate, unless using designs built into the machine, you have to get designs loaded onto the media that the machine uses. Use the USB stick as the destination for the designs to use in the machine.

Use a USB stick that is less in size. Some machines won't even read sticks with greater capacity. However, even if they do, larger sticks with tons of designs take longer to load into the embroidery machine. The stitch files for the embroidery machine are relatively small, so put a lot of designs on a USB stick.

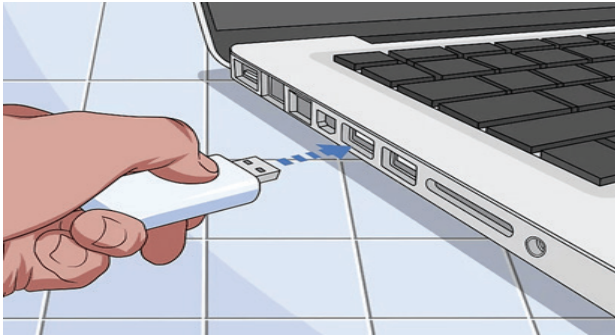
The drawback to using the USB stick directly is that all formats are on the stick and may slow loading the designs down. Also, the USB stick is the only copy of the designs, so be sure to make a backup or copy the designs to the PC.

Note: It is recommended that copy the directories and needed embroidery files to the computer hard drive to make it easier to load to the machine as it is ready to embroider.

Copy designs to USB stick

Place USB stick into one of the USB slot on the computer. In one of the windows on the screen, click on the DVD/CD drive to open the CD and navigate to the source directory. In the other window navigate to the USB stick and create a directory with the name of the design collection.

Fig 10



Note: create a folder for each different collection that is put on to the USB stick for the machine. This will make it much easier to locate the correct design while it is embroidered.

Name the new folder so it is easy to identify the designs for future use. Select the files to be copied from the source disc and select them all by selecting the check box by the word name at the top of the file list or click on the first file name in the list and while holding down the shift key select the last file name on the list. Everything in between will be selected. If you want only some of the files, hold the Ctrl key down while selecting the files. Copy the selected files to USB stick. Files are on the USB stick ready to place into the embroidery machine.

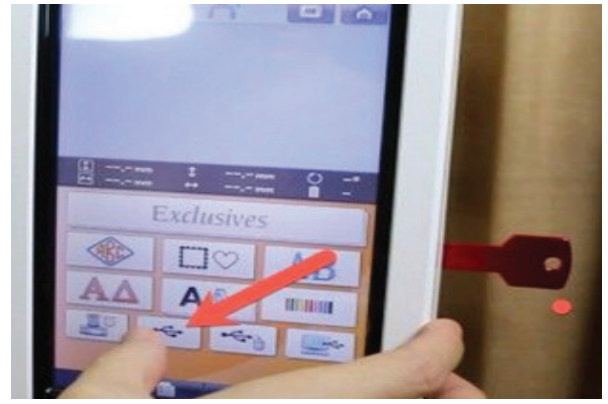
Accessing and Selecting Designs from the USB

To access and select designs from the USB on the embroidery machine turn on the machine and insert the USB into the USB port. The USB logo on the screen of the machine appears and browse through the files that are loaded on the USB stick. The machine will automatically start up and the designs on the USB will be displayed on the screen.

Fig 11



Fig 12



Use the arrow buttons on the machine to select the design to be embroidered. The design will be displayed on the screen with the stitch count and the amount of thread the design will use. After selecting the design to be embroidered, press the start button to begin embroidering.

Troubleshooting Common USB Issues

USB is one of the most common ways to transfer data between devices. This is especially true for embroidery machines, which often require large files to be transferred in order to create a design. One of the most common USB issues is that the embroidery machine does not recognize the USB drive. This can be caused by a variety of factors, such as a faulty USB drive, a USB port that is not working properly, or incorrect driver installation. If the machine does not recognize the USB drive, the first thing to do is check the USB port to make sure it is properly plugged in. If it is, try connecting the USB drive to a different port on the machine. If the drive is still not recognized, then reinstall the drivers. To do this it is needed to consult the machine's manual to find out the specific steps for the model.

Another common issue is that the machine is unable to read the design files on the USB drive. This can be caused by a variety of factors, such as a corrupted file, a file that is too large for the machine to read, or incorrect driver installation. If the machine is unable to read the design files, the first thing to do is check the file size. The design files should be no larger and preferably smaller. If the files are larger than needed then reduce the file size by using software such as Adobe Photoshop or CorelDraw. If the files are still not being read then it is needed to reinstall the drivers. For this need to consult the machine's manual to find out the specific steps for the model.

In addition to these common issues, there are a few other things to do to troubleshoot USB problems. First, make sure that the USB drive is formatted in the correct file system. The drive should be formatted. Second, try using a different USB cable. If the cable is damaged or not working properly, it can cause problems with the USB connection. Finally, make sure that the drivers are up to date. Drivers that are out of date can often cause USB issues.

When experiencing USB problems with the embroidery machine, the best thing to do is troubleshoot the issue systematically. First, check the USB port to make sure it is properly plugged in. Second, check the file size to make sure the files are within the machine's limits. Third, check the file type to make sure it is compatible with the machine. Fourth, reinstall the drivers if necessary.

USB is a type of port that is commonly used to connect devices to a computer. This can include a variety of things such as external hard drives, printers, and, in the case of embroidery machines, USB flash drives. Many embroidery machines include a USB port, which can be used to transfer embroidery designs between the machine and a computer.

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Information of design on LCD

Objectives: At the end of this lesson you shall be able to

- know about the information of liquid crystal display in embroidery machine.

Introduction

Each system has a friendly HMI operation mode. It is easy to be operated and learned. The system has powerful functions and is greatly convenient for user using. It has improved operational performance and efficiency. With multilingual support, it can switch the operation system language based on the user's needs at all times. With large memory capacity, the system can store 20 million stitches and 200 embroidery cards. Computerized Embroidery Machine Operation with multiple embroidery card input paths, it is extremely convenient for client's selection and using, such as Mobile U disk, network (PC software required). The system supports multiple embroidery card file formats and can identify Tajima DST and Barudan DSB and so on.

Powerful parameter adjustment function can adjust various parameters according to the requirements in order to meet the required system control performance. Automatic embroidery recovery function in power failure can recover to previous several stitches and continue embroidering automatically after there is a sudden power failure in embroidering process without having to worry about misplacement of embroidery card, to be free from complex re-alignment operation.

Equipment self-test function can take detection for the state of electrical equipment and parameters for convenient adjustment and maintenance. For spindle stop position adjustment function, the user can take system parameter adjustment according to the features of respective embroidery machine to achieve accurate stop position.

Automatic embroidery card parameter memory function may take automatic saving for the set embroidery parameters or related data of embroidered card, including color changing, origin, offset point, embroidery parameter, repetition and other information for the convenience of using the same embroidery card.

Applique offset function can set any color changing bar and take applique out of frame for convenient appliqué operation. Accurate card surrounding embroidery function can meet the requirements of card positioning embroidery. Embroidery card input operation is to input embroidery card in U disk into memory. It can be operated at embroidery preparation status and embroidery card status. Embroidery card input is to input files on external storage medium into system memory for convenient embroidery selection. If there is no embroidery card in memory, it will enter into the interface when the system

is started. The system supports reading Tajima DST and Behringer DSB formats of embroidery card files. Before reading the embroider card, insert the U disk into USB interface, and then take operation panel key operation.

Touch Screen control Panel features

- User-friendly interface
- New ergonomic touch screen allows for easy and comfortable operation with right-hand thumb
- Preset hoop parameters designed to avoid hitting hoops
- Multi-angle, rotatable and adjustable control panel bracket allows for better visibility
- Pre-sew design trace capable
- Optional camera positioning device
- High Definition true color 8" LCD Touch Screen
- Built-in factory mode, standardizing outgoing quality control process
- Built-in file folder management
- Screenshot function
- 3D design view for better visibility
- Built in button form 172° degrees to 196° under manual color change mode, a great help for machine maintenance
- Frame offset and frame outlining available for easy appliqué embroidery
- Machine parameters can be exported and imported for easy maintenance
- One step trace button directly on the main screen
- External 100° button and trimming button
- Multiple languages: English, Chinese, Spanish, Portuguese, Turkish, Dutch, French, German, Russian, Vietnamese, Thai, Arabic and more
- Laser pointer is activated when tracing design
- New mode for needle path calculation, optimizing embroidery quality
- Automatic identification of embroidery designs in photo formats, such as JPG, JPEG, PNG and more.
- Large memory capacity: 20 million stitches or 200 design patterns.
- Machine reads multiple design formats such as DST, DSB and more.

- Thread break detection system.
- Automatic needle threading and thread trimming.
- 270° wide angle cap frame.
- Automatic color change with a maximum change orders of 200 times.
- Emergency stop button for timely troubleshooting.
- USB input or direct transmission from PC via LAN port.
- Quick changes of embroidery hoops of multiple sizes.
- Removable embroidery table.
- Optional swivel casters for easy motion.

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Detail knowledge of machine and setting of design on different article

Objectives: At the end of this lesson you shall be able to

- setting of design on different articles.

Placement on designs on different articles

Embroideries, whether they are floral or any other designs, prettify an article of clothing and give a sense of identity to the wearer. However, in order to ensure that the embroideries look proper and neat, you would have to follow a general rule of placement in terms of where the embroidered design should be located.

To determine exactly where the designs to be placed, measure the width of the item, usually from one side seam to the other or, if there is a placket, from the placket to the side seam. Multiply this measurement by two. Make a small vertical line to represent this measurement. Measure the distance between the top seam/edge and the bottom seam/edge. Make a horizontal line out of this. Unless otherwise specified, the intersection of these two lines will form the centre of the embroidery design placement. Here are some other general guidelines on embroidery placements that you can follow.

1 Embroidery on shirt collar (Fig 1)



For the collar, position the design (usually a monogram) so that the bottom edge is 1/4 inch above the buttonhole on the collar point.

2 Embroidery on button plackets (Fig 2)

On the button plackets, keep the design between the second and third buttonholes.

3 Embroidery on short sleeved shirts (Fig 3)

On the short sleeved shirt, keep the design 1/2 inch above the hemstitching line.

Fig 2



Fig 3



4 Embroidery on the sleeve cuffs of long sleeved shirts (Fig 4)

Fig 4



Start by half-folding the cuff. Make a mark in the fold's middle. Make a 1.5-inch mark from the centre to the buttonhole. This should be in the centre of the design. 1/4 inch up from the middle fold, make a mark. This is supposed to be the bottom edge.

5 Embroidery near the hem (Fig 5)

Fig 5



Draw a horizontal line 1.5 inch from the edge of the shirt's hem. Make a 7-inch vertical line from the placket to the side seams. Insert the design there.

6 Embroidery on T-shirts (Fig 6)

Fig 6



To embroider the design on the front of the T-shirt, position it 2- 4 inches down from the neckline (definitely above the armhole line), in the centre of the front bodice (middle of the two side seams accurately). If the designs are larger, make sure it does not fall below the tuck line. The design must be visible even when the T -shirt is tucked inside the waistband of the pants.

Place the design 7- 9 inches below the neckline when embroidering on the back of a t-shirt, sweatshirt, or hooded shirt. To put the embroidery on only one side of the T-shirt, put it on the left chest. Locate the centre of the T-shirt (or placket) and the side seam. Draw a short vertical line. Draw a small horizontal line down from the shoulder seam -7- 9 inches for adults and 3 - 4 inches for children. Place the design's centre on this meeting point.

7 Embroidery placement on jackets (Fig 7)

Fig 7



For embroidery in front of the jacket, mark the middle of the placket and side seam at the same level as the second button of the jacket on the left chest. For the back of the jacket, place embroidery designs anywhere between 2 and 8 inches down from the neckline/bottom edge of the collar stand. A good place to start is between the shoulder blades.

8 Embroidery on neckties (Fig 8)

Fig 8



When embroidering on neckties, place the embroidery design about 3 inches up from the tie's bottom tip. Place this about 6 inches from the bottom tip for a middle placement.

9 Embroidery on blouses, dresses and skirts (Fig 9)

On blouses, for a centre embroidery, place the embroidery design 2- 4 inches from the blouse's neck. If you have a V-Neck blouse and wish to embroider on only one side, place the design at the end of the V. Find the centre of the space on a level with the end of the V between the V-tip and the side seams. Make sure that all designs are at least 1.5 inches above the hemline on dresses and skirts. Maintaining a consistent distance between embroidery motifs will help the garment to be balanced.

Fig 9



10 Embroidery on socks and handkerchief (Fig 10)

Fig 10



Embroidery on socks is typically done on the cuff, right side down, on the inside. The embroidery design will be visible on the outside when the cuff is folded down. For a handkerchief, the embroidery design can be placed 1.5 inches from the corner of the kerchief at a 45-degree angle.

11 Embroidery placement on bags and aprons (Fig 11)

Fig 11



For bags and totes, place the embroidery design 2 – 4 inches down from the top edge, centred between the straps. For aprons, the proper embroidery placement is 4 inches down from the top edge.

Embroidery placement on household items

1 Tablecloths, placemats and napkins (Fig 12)

Fig 12



For tablecloths, embroidery is typically done on corners; about 5 inches from the corners after the hem is finished would make it visible on most types of table cloths. For placemats, the design can be centred or placed on the corners, while the designs on napkins are always placed diagonally at a 45-degree angle on one corner around 3 inches from the corner and placed diagonally.

2 Bedspread (Fig 13)

Fig 13



Bedspreads are embroidered in the centre. On top sheets, however, the bottom edge of the embroidery designs is placed upside down, 2 inches from the top wide hem, on the back of the sheet. When you make the bed, the top hem is folded down on top of the blanket, so the embroidery design is facing you. Fitted sheets are not usually embroidered.

3 Pillowcases and cushions (Fig 14)

Embroidery designs are typically centred on pillowcases and cushions. The embroidery design is placed on the wide hem of the open edge that faces the opening. On pillowcases with a wide hem, they are placed in the

centre of the space between the edges of the opening's wide hem.

Fig 14



4 Blankets and bath towels (Fig 15)

Place the embroidery design 10 inches from the blanket's top corner. If you have a towel with a border print, position the design so that the bottom edge is 1.5 inches above the border. If the towel lacks a border, place the design 2 inches from the hem of a hand towel and 4 inches from the hem of a large bath towel. Position the design on the opposite side of the label.

Fig 15



Embroidery Placement Chart

Item	Location
Clothing	
Polo	7"-9" down from left shoulder seam centered between placket and side seam or 3"-5" from center
T-Shirts	7"-9" down from left shoulder seam centered between placket and side seam or 3"-5" from center
Pockets	½" down from top centered between side seams
Oxford	7"-9" down from left shoulder seam centered between placket and side seam or 3"-5" from center
Shirt Cuff	1 3/8" from button hole ¼" above top stitching at edge of cuff
Turtlenecks	On neck cuff, centered between left shoulder seam and middle of cuff
Shirt Front	4" - 6" from neck, 1½" - 3" for small sizes centered between left and right seams
Shirt Back	5" from collar, 3" for smaller sizes centered between left and right seams
Jacket Back	9"-10" down from back collar seam
Jacket Left Chest	6½"-8" down from left shoulder seam 4" over from center
Robes	4"-6" down from shoulder seam centered between side seams
Blouse	1" toward button hole ¼" above top stitching

Pajamas	7"-9" down from left shoulder seam 3"-5" over from center
Sweater	7"-9" down from left shoulder seam centered between placket and side seam or 3"-5" from center
Sweatshirt	7"-9" down from left shoulder seam centered between placket and side seam or 3"-5" from center
Accessories	
Apron	4" down from top and centered
Bib	centered
Cap	centered
Handkerchief	1½" down from corner embroider on angle
Scarf	4" from hem, centered
Ties	2" up from bottom tip
Linens	
Blanket	9"-10" down from corner embroider on angle
Sheets	Center on band
Hand Towel	2"-3" above bottom hem, centered
Bath Towel	4" up from bottom hem, centered
Wash cloth	1½" up from bottom hem, centered or place angled 1" above corner
Beach Towel	5" up from hem, centered
Napkins	3" from diagonal corner fold
Pillow cuff	centered in all directions on cuff

Misc	
Bag	4" down, centered
Table cloth	5" up from corner edge
Placemat	3" from diagonal corner fold top right corner

Placement specification like with printing

Objective: At the end of this lesson you shall be able to

- Know about the specification like printing.

Placement for Machine Embroidery

Spending time testing embroidery designs and selecting the appropriate threads and stabilizer is all for naught if the embroidery is positioned incorrectly. Keep in mind that embroidery should be stitched in a flattering location on a garment and each unit of a home décor set should match the other units.

Design Templates

Templates tells about the actual size of the embroidery, the center of the design, and the orientation of the design. A template provides a visual image of the finished design before it is stitched.

Seeing the actual size of the embroidery design is helpful when planning embroidery. Often one need to know where one design ends and the other begins when connecting two or more embroidery designs.

A Design template that can be used for placement



The center of the design is where the needle will be positioned when the design is selected on the embroidery machine. If the template is not centered on the hooped fabric, then move the hoop to position the needle over the center of the template. A template is a helpful tool for navigating in the hoop.

Knowing the orientation of the design is crucial when planning and stitching embroidery. The orientation of the design is the part of the design that will stitch at the top of the hoop. We often take this for granted, especially in lettering. For instance, we can be confident that the letter M will stitch in a portrait orientation and always be the proper finished monogram for Mary and not Wilma. In many other designs, though, the orientation is not what's normally expected. In order to fit a large design in a 5" x 7" hoop, the design may be rotated and saved in a landscape orientation. If didn't use a template to plan the embroidery layout, there's a good chance the design would stitch in an unintended direction.

Print the templates

Print a template in any embroidery editing software. Using an adhesive backed template is an easy way to audition the embroidery before ever making a stitch. **Print & Stick Target Paper** is perfect for this job. Just place the adhesive backed paper into the printer and print. Peel and stick it where ever it is needed.

A Printed design template that can be used for placement

Placement

After the template is printed it's time to plan the embroidery project. Use the template to audition the design on the item before taking a stitch. This ensures professional results on every embroidery project. When stitching on garments, you want the embroidery to be visible, not obstruct movement, and to flatter the person wearing it.

The standard industry guideline for embroidery placement on left chest embroidery on a polo, T-shirt, or sweatshirt is approximately 6" from the shoulder and 4" from the center front. Common center chest embroidery placement is approximately 3" down from the neckline. Of course you don't have to limit yourself to those areas; consider hemlines, plackets, collar points, pockets, yokes, and jacket backs, too.

Stick the print & stick template to mark your desired placement

Place the template on the item or garment and if it is a garment, try it on. Stand in front of a mirror to critique the placement. Make adjustments now, **Print & Stick** Target Paper templates are repositionable and remain tacky for multiple uses.

Hoop the item with the template in place. Keep it in position until the item is hooped and attached to the machine. Once the needle is centered in the template simply remove it. Home décor items, or blanks, are usually stitched in duplicate—think towels, napkins, pillowcases, and the like. The goal on these projects is to get each member of the set to match. The industry standard for single design placement (3½" tall) on bath towels is centered 3¼" above the border; on hand towels, the design placement (design should be 2" tall) is centered 3" above the border. A design in a napkin corner should be placed 3" from the corner.

The above industry standards are general guidelines and should be used as starting points for placing embroidery. Always take the size of the embroidery design into consideration for every project. In addition to embroidery design templates, there are several other helpful positioning aids available to embroiderers. They make duplicating items in a ready-made set a breeze.

Positioning Aids

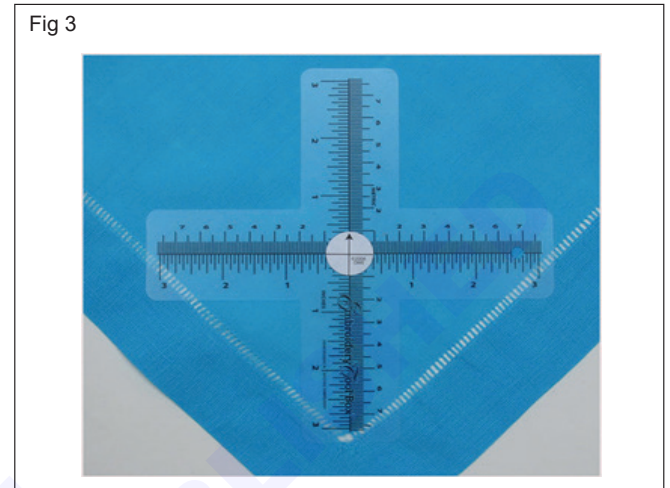
Embroidery placement needs to be done without the presence of the person who will be wearing it. In this case, use a positioning aid such as Embroiderer's Helper. Fold the shirt, for example a polo shirt, in half and place it on a flat surface. Place the straight edge of the Embroiderer's Helper on the fold and the notch at the button. Slide a target sticker under the Embroiderer's Helper at the appropriate size notch. Repeat for the bottom notch. Remove the Embroiderer's Helper. The top target sticker is the location of the embroidery design and the bottom target sticker will be helpful for squaring the shirt in the hoop.

A centering ruler is very helpful for placement of an embroidery design on a napkin corner. Use it to mark the spot for a whole set of napkins. Make sure the ruler is placed on the napkin in an identical fashion for the entire set. Place the 3" mark on the napkin corner and the 3" mark on each arm at the side edge or top-stitched hem. Place a target sticker in the hole with the arrow pointing into the body of the napkin. Repeat for all of the napkins in the set.



Use the embroiderer's helper as a positioning aid for embroidering on shirts.

A speedier positioning aid for napkins can be found in the Perfect Placement Kit. The **Perfect Placement Kit** includes 15 templates with industry standard placement guides. The Napkin-on-Point template eliminates all measuring. Towels are the number one blank embroiderers like to decorate. Mark all the towels at the same time, in the same spot. Measure with a ruler or use a positioning aid such as the Perfect Placement Kit.



A centering ruler may be used to position the design on a napkin.

Stitched Placement Guides

Some embroidery designs include a placement guide as the first color in a design. The guide is a running stitch outline of an item, such as a collar point, corner of a rectangle or square, pocket top, or pant leg hem. The placement guide is normally stitched on tear-away stabilizer first, and the item is aligned with the placement guide. Temporary spray adhesive or sticky stabilizer holds the item in place during the embroidery process. The placement guide is torn away after the item is removed from the stabilizer. Placement guides are helpful for placing embroidery close to a fabric edge. They are not appropriate for embroidery that is centered in large expanses of fabric, such as the center of a pillow sham, towel, or jacket back. If an embroidery design does not include a placement guide, then add the own with most of the embroidery software available today.



Stitched placement guides are available with some designs, or you can make your own guide.

Multi-Hooping

Now after planned the embroidery project for one design, take a look at multi-hooping, which is adding more designs to the overall layout. First, print the templates of the designs. Then see the designs in actual size on the fabric before stitching the designs to make continuous embroidery seamless. Place vellum in the printer and print templates of each design that are intend to use.

Audition the templates on the fabric, connecting the designs as desired. Don't focus on the center of the designs; look at where one design ends and the other begins. When creating continuous lines of text, connect the text on a continuous baseline. In Season's Greetings, have two ascenders (S and G) and one descender (the lower case g). Once the designs connected with tape or linked, slide target stickers under each template. Write the design name on the target stickers. Keep the templates handy, as we need them again to confirm placement.

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Knowledge of monogram & logo

Objectives: At the end of this lesson you shall be able to

- brief about monogram and logo designing.

Introduction to Monogram

A monogram is a motif made by overlapping, intertwining, or combining two or more letters to form one new symbol. Monograms combine the initials of an individual or a company, and these can be used as recognizable symbols or logos.

When combine letters, and each one depends on the other to contribute a portion, it is a Monogram (mono=one). It makes up one new symbol. Many monograms were letters from the owner's name intertwined forward and backward.

A cipher (remember it is the opposite of what you have always thought) is two or more letters and are not woven together, however, they can overlap. Such as the image below.



This image was made using our ESA font Diamond Monogram 50 mm.

Nowadays, "monogram" has also come to mean anything sewn, painted, engraved, embroidered, or embossed on clothing, luggage, books, and as many things. They are intended as a mark of ownership, some simple and some plain. Monograms first appeared on coins as early as 350BC. The earliest known examples are of the names of Greek cities which issued the coins, often the first two letters of the city's name. Monograms have been used as signatures by artists and craftsmen on paintings, sculptures, and furniture, especially when guilds enforced measures against unauthorized participation in the trade.

Use of Monograms

Some companies and organizations adopt a monogram for a logo, usually with the letters of their acronym. Fashion is a heavy user of monograms. There are three major purse designers that all use ciphers for their logos. These have all become internationally known "logos" for these brands. For example:

Not really readable. So if this is a monogram (intertwined letters to form a new symbol), this just does not work.

Fig 2



To have a monogram, sometimes have to get creative with it.

Fig 3



Not super readable either. If glance at it, can see B with a bit of tail. And also turn letters around (a famous handbag and clothing designer comes immediately to mind).

Fig 4



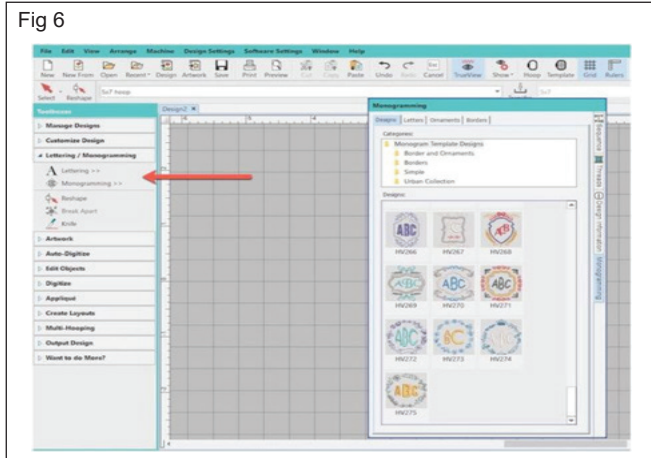
Better but now reading as B and R. Sometimes the choices are not there, so you have to go a different direction.

Fig 5

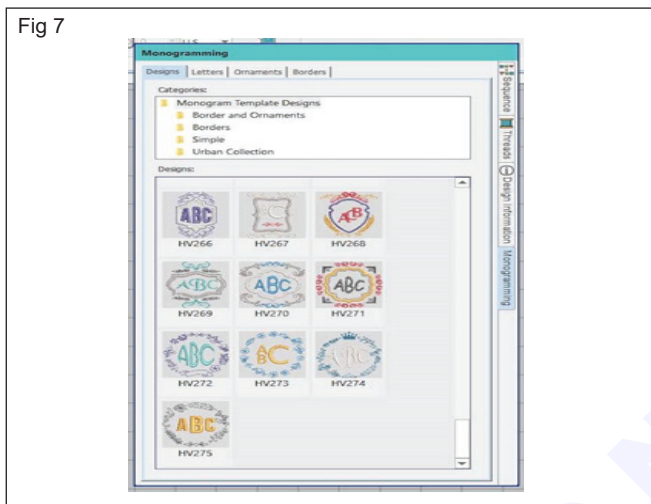


Embroidery Monogram Fonts

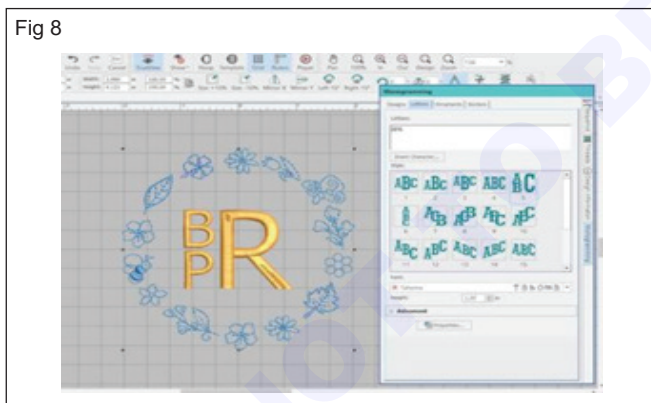
There are many different ways to embroider a monogram, but the most effective ones require some form of embroidery software. The most professional embroidered monograms are made with keyboard fonts whether they be ESA, BX or True type formats. To create a monogram in software open a new document, and select "Lettering and Monograms" on the left side. This directs you to the pre-installed fonts and design setups to use for ciphers.



Here is the Monogram layout choice tab. You can choose designs, ornaments, and borders.

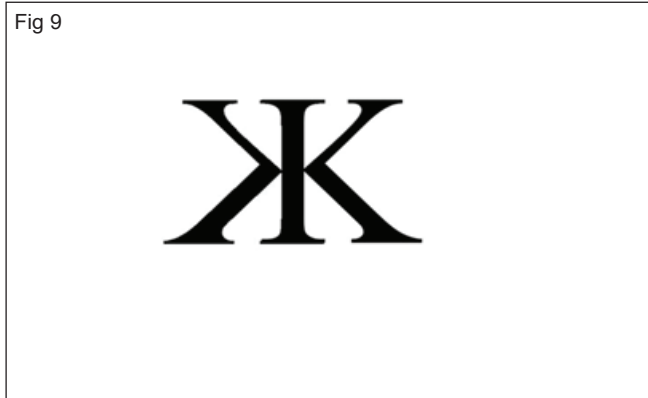


Simply choose the font and then type in the three letters of the letter set you want to embroider, and they will appear in the format it is been selected.



This design can be resized to work with the application and hoop. The choices are endless and beautiful and take only minutes to do.

The monogram can be created in (one set of intertwined letters) several ways. Choose 2 or 3 (or more if you are adventuresome) letters in a font preferred. For example: KAK. Here is a monogram for Karen Kirkegaard Autumnbow (famous International jetsetter and international spy). Notice that together the Ks are symmetrical- if turn one around, they can sit back to back and read well! The A is also symmetrical on its own, so it is perfect in the center.



Here are the two Ks together



Here is the A added in.

The combinations for Monograms are endless And these monograms are done using plain old letters

Example for assymetrical letters :CLB. Not a lot there, but we can still make a beautiful Monogram.

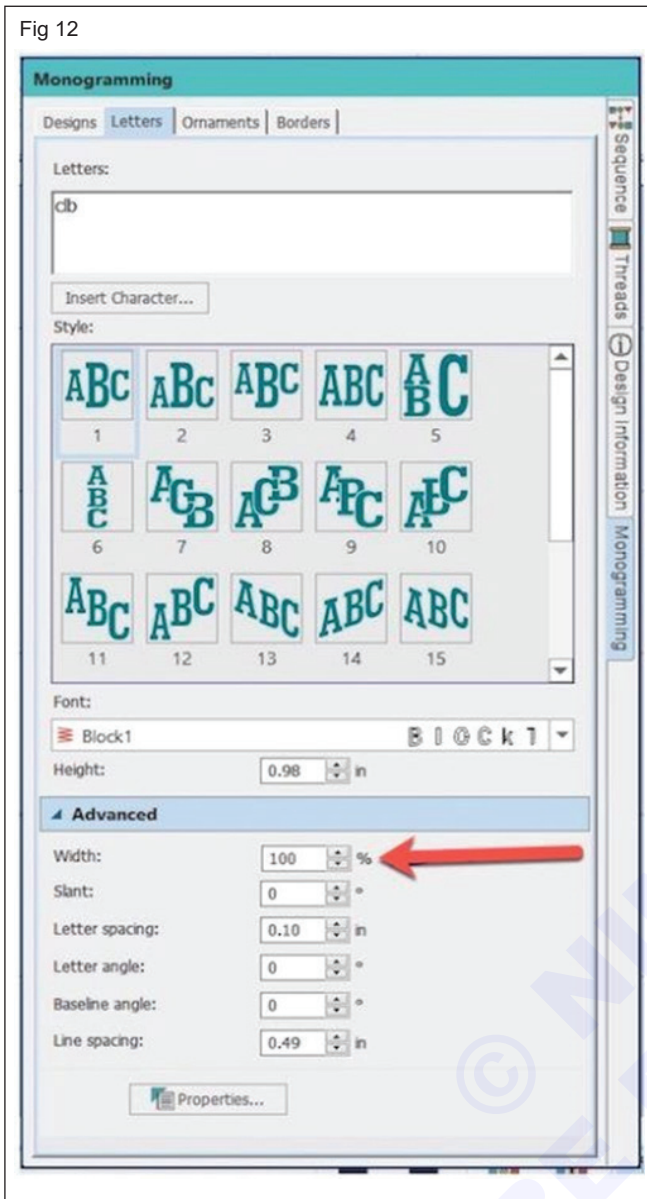


Here see the C, the L, and the B, but they are not so “readable” as the cipher. Now on this one, the letters have been manipulated a bit. The B is twice as large as the other letters (change the size using the “select/lettering,” and the L has been stretched out. Use the “width” setting under the advanced tab after have selected the letter.

Fonts For Embroidery Monograms

The hardest part is choosing the font and the layout of how you want to stylize the letters. Each different font and single tweak to a design can greatly impact what the outcome will look like. This is fun because no matter whatever change, it will look different.

Fig 12



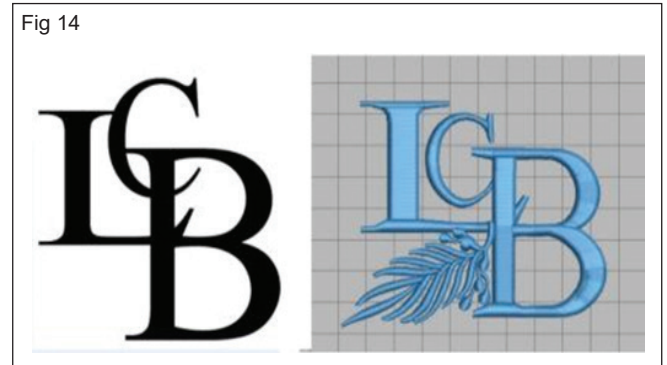
ESA embroidery fonts are a super-easy way to create quality embroidery lettering and are “Embroidery Specific Alphabets.” They are an embroidery font file format specific to Hatch and Wilcom embroidery software. They’re keyboard fonts that are the most customizable form of embroidery font. They can be easily adjusted, resized, and reshaped to give you professional results.

Fig 13



Try adding an element- a branch, leaf flower, swirls, anything that expresses. Here is the same monogram but with two simple elements added.

Fig 14



These are called ESA Flexi shapes, ESA glyphs, and ESA flexi fonts! These will help bring the fonts and monograms to the next level.

- Flexi shapes are an easy way to create unique shapes in the software; since they are assigned a keystroke, you can customize these shapes
- ESA glyphs help embellish the font using a shape or a letter; there are also customizable
- ESA flexi fills are more flexible fonts, allowing to create beautifully dramatic effects.

Simple, clean, and nice. It should be noted that when starting, start simple less is usually more, and also remember that these are generally not used in a large format like a full back piece on a jacket. When using nature elements, keep in mind that natural things grow in natural ways. They do not have to be symmetrical or perfect.

Tips To Creating Monograms For Embroidery Machines

When designing a monogram, you can take three letters (or so) and sketch them out. Here is a monogram for EBH in the sketch (on the back of an electric bill)) and how it ended up. There is an E and a B, and two H's crisscrossed to make a nice framework. He was looking for a shape he liked and then fit the letters in.

Tips to creating the perfect monogram:

- 1 **Start simple:** Use a simple font; if it is too complicated, you will be the only one who knows what it says. Start simple, learn what works simple and then develop the skill.
- 2 **Plan a shape:** A theme, a “skeleton” to build on.
- 3 **Add elements sparingly:** Too many small elements will give a bullet-proof embroidery.
- 4 **Use glyphs:** These are designed to be resized, and they are professionally digitized.
- 5 **Try to use Flexi Fill fonts to give textur:** Like the Glyphs, they are professionally prepared, so they work and provide soft, supple embroidery,.
- 6 **Try frames or glyph adornments above or below the font.**

How To Digitize Monograms Designs

- Always print the artwork.
- Find the objects that are furthest back in the design and start there.
- Use a pencil or colored pencils to path the design and make notes of challenging areas.
- Properly path the underlapping and overlapping Satin objects with Run stitches for efficient stitching.
- Always test stitch your design and watch it sew out. Stop your machine when you see a section that could be changed or improved, and make a note of it on the artwork. Go back and revise the design
- Start with simple designs.

How To Print Logo Designs for Embroidery

Logo design is one of the most powerful elements to style and brand a business. Let's find out how to prepare your logo designs for embroidery!

As a business owner, you want as many people as possible to be aware of your brand. There are many ways to increase brand awareness. Among them is using logo design embroidery.

But why would you want your brand logo design to be embroidered rather than, say, printed? After all, printing logos are common and more widespread. There are some reasons why. For starters, printed logos deteriorate over time, while embroidered ones don't.

The fact that they are durable also means they can reach more people for a long time, which will help increase brand awareness. Embroidered logos are also considered more professional. With a professional image comes trust.

Sounds good, right? While business logo design embroidery offers many benefits, they are more complex than you think. You will need to put in more effort as well. No worries. We are here to help.

In this post, we discuss everything to know about logo embroidery. From logo digitization, why you want to embroider your business' logo, what to prepare, how to digitize your logo for embroidery, and what to consider, to stitch counts and tips.

Logo Digitization

To embroider a logo design first need to convert it into a format that an embroidery machine can accept. This is what logo digitization means. The type of format the logo file needs to be converted into depends on the kind of embroidery machine is being used.

Convert the file properly to get the best results. Some of the formats embroidery machines can read and accept our

- .dsb (compatible with Barudan commercial embroidery machines)
- .dst (compatible with Tajima commercial embroidery machines)

- .exp (compatible with Melco commercial embroidery machines)
- .jef ((compatible with Janome commercial embroidery machines)
- .kwk (compatible with Brother commercial embroidery machines)
- .tap (compatible with Melco commercial embroidery machines)

These are some of the most popular brands, so probably use one of them. If you are unsure, just double-check the machine and then convert your logo file into the format it can read and accept.

Fig 15



Purpose to Embroider a Logo

1 Identity and branding

One of the benefits of embroidering a logo design is identity and branding. One way to set the business apart from others is by wearing custom corporate apparel. Wearing a brand logo design embroidered shirt alone helps to build identity and branding.

In addition, the more people see the brand's visual representation, the more likely they are to memorize the company the next time they need the product or service.

2 Trust and professionalism

If your customers associate professionalism with your brand, that is a huge plus. With a professional image comes trust. Wearing shirts with an embroidered logo does just that.

An embroidered logo communicates a sense of professionalism. It shows the customers that you truly care about the appearance, which is just another way of saying that you care about the customers. On top of that, it also shows that the company takes what it does seriously.

To creating a sense of belonging and community for the employees, look no further than corporate apparel. Offering corporate apparel to the employees helps create a sense of belonging and community. For an employee, such apparel can boost self-confidence and bring pride in them for working for the company. It shows that they belong to something larger than themselves. It is an excellent way to boost employees' morale.

To get a brand's visual representation digitized for embroidery, there are several things to prepare. They are

1 Choose the right thread colors

With printing, the printed result will have the same colors as the original. With embroidering, you won't always get the same look. In some cases, the best you can do is to make sure that the embroidered result looks as close to the original as possible.

So, to get the best result possible, take your time to choose the right thread colors. If you can't find the exact same color, find one that is at least comparable.

2 Decide on the stitch type

The next thing to prepare is the stitch type. There are three common stitch types used for logo embroidery: straight stitches, satin stitches, and fill stitches. Choose the type(s) that you think fits the most with your design.

- a Straight stitch: This type of stitch is for making straight lines as well as curved shapes. Straight stitches are often used in outlining, shading, and detail work.
- b Satin stitch: This stitch is commonly used for designing the logo, writing the text, and for the borders. Satin stitches give the embroidery a shiny appearance.
- c Fill stitch: As the name suggests, fill stitches are stitches used for filling up the blank spaces. They are also used to create a textured look for the embroidered logo design and increase its durability.

Digitize the logo design for embroidery

Upload your file to the embroidery digitizing software. The first step is to upload the logo file to the digitizing software. Before uploading, make sure that the file is in a machine-readable format like JPEG or PNG. Remove any irrelevant spaces surrounding the image.

Set the dimension. Keep in mind that the dimension will be the final size of the logo embroidered on the product. So, make sure it is right. If necessary, double-check it. Next, choose the stitch type. There are various stitch types to choose from. The most common stitch types are straight stitch, satin stitch, and fill stitch. Note that each offers something different. For example, the straight stitch is great for outlining, shading, and smaller details finish, while the fill stitch is great for adding strength and durability to the embroidery. Choose the stitch type that fits the overall design. After choosing the stitch type, the next thing to do is to choose the direction of the chosen stitch. This determines in which direction the chosen stitch should be falling on the product. The stitch direction can give the fabric different contours and shades to replicate the design of the logo.

The last thing want is embroidery with uneven stitches and jumps. After all, mistakes in the embroidering process cost money and time. As such, consider the stitch direction carefully. After all the major parameters are set, now is the time to select thread colors. Depending on the colors in the design, you may or may not find the exact thread colors. Now that the JPEG or

PNG file has been converted into an embroidery file transfer and digitize it for embroidery to the machine. We need a flashcard, USB cable, or any other data transferring means. Make sure that the machine reads and accepts the file before proceeding. Before the embroidery process select the threads, needles, stitching sequence, orientation, etc.

The placement of a logo determines the size and complexity of the embroidery. Depending on the complexity of the design, you might need to make some adjustments so it can be embroidered. Oftentimes, some logo design elements must be altered or dropped altogether and the overall design distilled. For example, the size of the text that is smaller in the original is increased for the embroidery, the outlining is dropped, and some detailed parts are removed. Unless the logo design is quite simple, simplifying it is unavoidable.

The size of the logo relates to the placement. Some places, like the left chest, are ideal for larger images. Meanwhile, the sleeves are great for smaller images.

Although it is unlikely that can match the color of the logo with thread, there are lots of options in embroidery threads. Since the logo design is going to be embroidered, the fabric that are using matters a lot. Some designs look amazing when the fabric shines through as the background. Some others don't. So choose a fabric that suits the logo design. The fabric chosen also helps to choose stitch types.

There are lots of stitch types out there; each one offers a different look. Stitches replicate an image with varying thickness and movement. Indeed, not unlike paint strokes for a painting. As mentioned earlier, there are three common stitch types: straight, satin, and fill.

Straight stitch is the basic building block. Despite the name, use straight stitches to build non-straight lines and even curves. Also use it to make a thicker line by adding more of these stitches, creating shading, outlining any objects or letters, and finishing smaller details.

Satin stitch is often used for text. It is shiny, which is why it is perfect for not just text and words but also borders and wherever needed a shiny finish.

As for the fill stitch, it is used to fill in the image. It is used in many big designs, textured embroidery, as well as filling backgrounds. The stitch is not for filling in the image and complimenting other stitches, however. Fill stitch is also used to strengthen the design and add durability.

About Stitch Counts

When it comes to stitching, the denser it is, the higher the count will be. At a glance, a higher stitch count might not seem to be an issue. However, it can significantly impact the overall cost of the project. An embroidery with a higher stitch count will cost more than one that has a lower count. That's just how significant it is. So, must pay attention to the stitch count of the project. This is especially important to save money and/or are on a budget. Different monogram styles and arrangements

When it comes to monogram arrangements, there are many types. The most popular monogram arrangements are:

- **The initial** style monogram is just a one-letter monogram where only the initial of the company or name is used. This single-letter monogram can also have decorative flourishes, depending on the style you'd like to achieve.
- **The block** style is popular for three-letter monograms. This style has all the letters the same height and width.
- **The traditional** style is popular for three-letter monograms and is used mostly for names. The initials on the sides are the first and middle name initials, while the middle letter represents the last name. Both initials on the sides are slightly smaller to emphasize the last name.
- **The stacked** style works best for three-letter monograms. The first and middle name initials are stacked on top of the other and placed on the left side. The last name is placed on the right side, and the height should match the first two.
- **The interlocking** monogram style is mainly used with fonts that have flourishes. That way, these elements touch each other.
- **The circle** monogram style works great for two-letter monograms and three-letter monograms. The characters are inside a circle, or they can be shaped to take the form of a circle.
- **The diamond** monogram style works the same way as the circle monogram. The characters can fit within a diamond shape or can take the shape of a diamond.
- **The split-letter** monogram consists of a small space overlapping the initial character. This space can contain the complete word of what the initial stands for.

Advantages of monogram logos

A monogram logo can use calligraphy style lettering, or be simple, strong and bold. But either option can be an effective logo for any company, as long as it supports the message or identity you want to present.

Difference between Logo and Monogram

LOGO	MONOGRAM
A logo is a graphic mark, emblem, or symbol used to aid and promote public identification and recognition. It may be of an abstract or figurative design or include the text of the name it represents as in a wordmark.	A monogram or wenzel is a motif made by overlapping or combining two or more letters or other graphemes to form one symbol. Monograms are often made by combining the initials of an individual or a company, used as recognizable symbols or logos.
A symbol or other small design adopted by an organization to identify its products, uniform, vehicles, etc. The Olympic logo was emblazoned across the track-suits	A design composed of one or more letters, typically the initials of a name, used as an identifying mark.

- **Style** - a monogram logo can be designed in any style that suits your business. And as this is a simple design, you will easily portray a message about how you want your company to be perceived, as well as your brand identity.
- **Unique** - there are a number of ways to make your monogram logo unique, so even with the same initials, no two companies would have the same logo. These unique points could include the colour of the letters and the background, the shape of the logo, and the style of lettering. This also means that even if you choose to use black and white for your logo, your company persona will still be presented through the shape and the style of the logo itself.
- **Scalable** - most logos will lend themselves to scalable design. But this is even easier with a monogram logo, and this can be easily resized on every device size, without losing clarity. Even monogram logos that are small are still easy to identify.
- **Noticeable** - monogram logos are a great way to build a brand identity and be noticed by your customers. That's because a letter combination is easier to remember than more complicated logo styles, and as a result, your potential customers will recognise and notice your logo across your online and real world presence.



A symbol or design that identifies a brand.	To mark with a design composed of one or more letters.
A visual symbol or emblem that acts as a trademark or a means of identification of a company or organization.	A picture drawn in line only, before the colour and/or shading is applied; an outline sketch.
A single graphic which contains one or more separate elements.	A sentence consisting of only one line, or an epigram consisting of only one verse, of poetry.

Different types of Logo

There are many different types of logos, such as:

- Combination mark logos
- Wordmark logos
- Lettermark logos
- Monogram logos
- Letterform logos
- Symbol or pictorial logos
- Abstract logos
- Mascot logos
- Emblem logos
- Letters inside shape logos
- Negative space logos
- Dynamic logos
- 3D logos
- Animated logos

1 Combination Mark Logos



A combination mark logo is a visual and a word in a composition together. Here there's no one type of combination mark, they're actually a combination of many of the others. That's why these logos are the most common, they have infinite possibilities and are super practical. In a combination logo, the visual component can be on top, to the side or even below the wordmark. The best combination mark logos are the ones that can be used separately and still be 100% recognizable.

2 Wordmark Logos

Wordmark logos are second in line when it comes to common uses, and they make up half of almost

every combination logo. For a logo to be considered a wordmark its visual must be made up of the brand name in stylized letters. To create a wordmark, start by writing the name of the brand and then trying it out with different fonts. When the apt logo is found then customize the letters individually. Taking the time to customize the letters in the word is what makes the difference between a logo and your brand name typed out in a nice font. For example, give the letters a sense of personality; add ligatures, turn the dots on the i's into shapes, make the t crosses longer, the y's curvier, etc.



3 Lettermark Logos



Lettermark logos are the best choice if the brand name is long and composed of more than two words. A lettermark logo minimizes the length by using the initials of each word and creating a group. In some cases, the letters will sound like a word. NASA is an excellent example. NASA stands for National Aeronautics and Space Administration, but nobody calls it that. Other examples that don't sound like words, like NPR and TNT, are read as each letter one after the other. Lettermark logos also work as part of a combination mark in the same way that a wordmark can. When creating a lettermark logo,

try using design aspects that will stand out and make the logo more noticeable. Use different colors, varying sizes of text, or add shapes or lines to give the logo personality. Remember to always reflect the brand values and story.

4 Monogram Logos



Monograms logos are similar to lettermark logos. But they do have a noticeable visual difference. Both logos use the initials of the brand name to make up the design, but monograms interlace the letters instead of having them side by side or top to bottom. A monogram is reminiscent of the way a family name is embroidered on linens or etched on silverware. This style of logo has a generalized perception of luxury or exclusivity. Although there are exceptions like many sports teams and some sports brands. A monogram logo works best with brand names that have no more than three words. Since the letters are intertwined with each other, it needs to stay legible and easy to understand. Choose this style of logo to minimize the variables when it comes to visual branding.

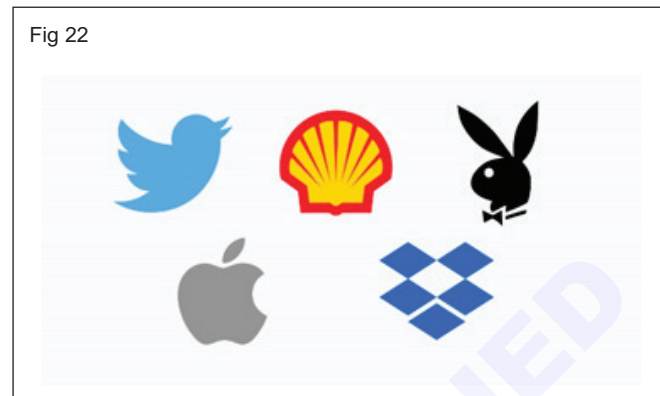
5 Letterform Logos



Letterform logos are another type of logo that includes letters. In this case, only one letter. This style of logo is perfect for brands that appreciate simplicity. For a letterform logo to stand out, it'll need a high dose of personality and form. Just a letter on its own won't be as memorable. Brands need logo variables to use on different platforms and touchpoints. A wordmark with a letterform variable covers all the possible eventualities

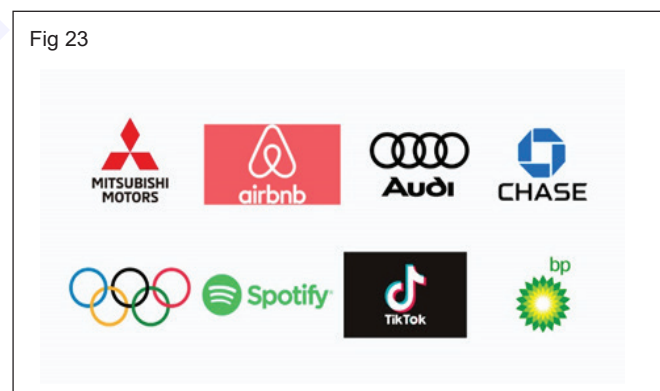
that a logo needs. From business cards to favicons and app icons. App icons on a phone screen compete for attention. If the app uses a visual that doesn't resonate with the brand or is hardly recognizable, users will have a hard time finding it. Letterforms are great for app icons.

6 Symbol or Pictorial Logos



Symbol logos —also called pictorial logos—are made up of graphics that visually represent the brand name or function. These can be icons, illustrations or shape compositions that are instantly recognizable as something specific. For example, Twitter has a bird symbol, Shell has a shell, Dropbox has an open box. Finding an icon that can visually represent your brand name or brand story is relatively easy. The trick is in adding that extra bit of personality, that touch that makes it unique. That's how the Twitter logo becomes the Twitter bird, the Playboy logo the Playboy bunny and the Apple logo the Apple apple. These are the easiest types of logos to get right, all you need to do is make yours unique and relevant.

7 Abstract Logos

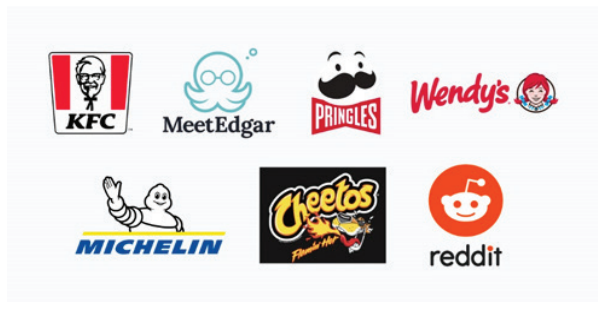


Abstract logos are like symbol logos gone rogue. Instead of visually depicting a brand name or brand story, an abstract logo goes in a different direction. In some cases, it can start off as a symbol and then transform into an abstract visual and other times the abstraction is born on its own. To create an abstract logo, you need to fully understand the purpose and story behind the brand.

8 Mascot Logos

Mascot logos are fun and personable, but also limited. Not every brand will benefit from a mascot logo. How to know if a mascot logo is right for the job?

Fig 24



If the brand story involves a person or a unique personality, a mascot logo might be the right option. Mascots can be illustrated or simplified renditions of the brand's ideal customer or who the customer aspires to be. In some cases, the mascot is the company founder or someone that influenced the birth of the brand. In others, it's a fictional character that's meant to inspire the consumer to be interested and engage. The first mascot logo of this style was the Michel man from Michelin. Remember, though, having an animal in a logo doesn't mean you have a mascot logo. The mascot needs to have personality and a story behind it. Take advantage of this angle by using the mascot in merchandise design and product manufacturing, like plush dolls and figurines.

Fig 25



9 Emblem Logos

An emblem logo is a contained design that includes all the elements inside an emblem shape. Brands that use emblem logos hardly ever have other logo varieties, but might have simplified versions of the same emblem. Emblems make great labels, pins, bottle tops, or anything where the logo needs to fit in a small space. They're also memorable and interesting. An emblem can be as simple as a couple icons and a lettermark inside an interesting shape, or as complicated as a custom illustration with a lot of detail. A well-designed emblem logo will be timeless, sleek and worth making stickers with. Use text effects to make the words stand out and good contrast between shapes and letters.

10 Letters Inside Shape Logos

Similar to an emblem but not quite are the logos that are words inside shapes. The difference between them is the level of complexity. You could say that an emblem is to a combination mark what a letter inside a shape is to a wordmark.

Fig 26



The idea behind this logo style is to give a wordmark—or lettermark—that extra something to make it stand out from the rest. The shape can be anything, as long as it matches the purpose and story of the brand. When considering a letters inside shape logo, think of what shape could possibly represent the brand. Since the options are infinite, there's no limit to what to do. For example, Domino's Pizza is a domino, and Pfizer resembles a pill. Give the logo a backstory by using a shape that supports it.

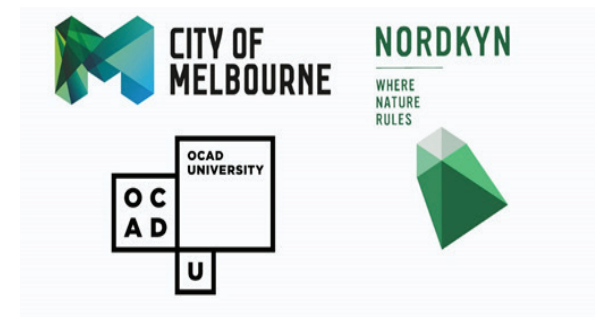
Fig 27



11 Negative Space Logos

Negative space logos are a unique creative option for any brand. The visual idea of negative space is to use empty areas to depict a symbol, shape, or graphic. It can be a subtle effect or a very clear one, that depends on what aiming to achieve. Generally, negative space logos consist of two visuals, the one that surrounds and the one that is encased. The encased shape is the one denominated negative space. There's no limit to what shapes to use to create the negative space effect. It can also be a letter and a shape, or even two letters. For a while, negative space logos were just a trend, now they're timeless.

Fig 28



12 Dynamic Logos

A dynamic logo is basically one primary logo that can be adjusted or customized in endless ways. Some dynamic logos, like the logo for the City of Melbourne, change color but keep the shape the same. The logo for OCAD University is more about adding elements onto the foundation design. Not every brand is broad enough to deserve a dynamic logo. It really only makes sense for a large brand that has enveloped other smaller brands, that reaches a wide diversity of people, or that will be showcased in different places. The best part of a dynamic logo treatment for the brand is that don't necessarily need to start there. As the brand grows and the logo becomes more recognizable, then start adding dynamism to it. Add a gradient or a pattern to where it's usually one color. Make it match other elements around it. Bring it to life.

Fig 29



13 3D Logos

Give the logo an extra layer of uniqueness by making it three-dimensional. Make the letters of wordmark pop out of the page, make the emblem look like it's made of metal, or the shape around the brand name look like a real object. Creating a 3D logo involves a few specialized design skills. They need to be added perspective, shading, doubling up on shapes and some highlights in just the right places. Just like emblem logos, 3D logos will need a flat variation for use on touchpoints that won't fit a 3D version. Three-dimensional logos look great when they are flat designs with touches that trick the eye to think it's 3D. But they look even better animated and rendered to look like they really are 3D. Another option is to take the current logo and make it 3D.

14 Animated Logos

Any type of logo can be animated, no matter the style. Use an animated version of the logo for video intros and outros on YouTube, to the end of the TikTok clips or to the opening title of a explainer videos. Yes, any logo can be animated, but not every animation will work. If you have no animation experience, best hire a professional that offers logo animations. Ask to see different styles to choose which one works best with the brand.

Advanced techniques in machine embroidery

Objectives: At the end of this lesson you shall be able to

- know about advanced techniques in machine embroidery
- explain about special attachment
- handle the special attachment and change the guides.

Advanced Techniques in Machine Embroidery

The digital world is evolving and evolving fast in every field of life. The handiwork of all types is getting digitized nowadays. And the digitization of embroidery is taking the front seat in the world of artwork. The process, in simple words, involves turning an image or logo file into an embroidered pattern with the use 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. 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 first into a digitized design because that's the language an embroidery machine can understand.

We at CreativeSkill offer custom embroidery digitizing that you can use for various purposes, including casual, personal, or professional use.

Types of Embroidery Digitizing

The digitizing software converts the images and designs into stitching that a machine can interpret. So embroidery digitizing is like a painting, a tracing made with stitches. Understanding the types of embroidery digitizing is one of the most crucial pieces of the puzzle.

There are many variables and choices to consider while assessing and deciding the types of embroidery digitizing. Let's learn about those major types and how they can help to choose the best for business.

1 Flat Embroidery Digitizing:



One of the most common ways of digitized embroidery is **flat embroidery digitizing**. It involves the application of pattern stitching directly onto the fabric backing to create an elaborate flat design. This process does not distort the images & designs, hence making it very popular for embellishment. Flat embroidery is mainly used when the patterns to be stitched are sophisticated and detailed. The created designs may not be as flashy and bold as the other techniques. Still, you won't have to worry about the distortions in the creation or logo when you create intricate designs with flat embroidery digitizing.

2 3D PUFF Embroidery:



3D puff embroidery digitizing is created for 3D embroidery in which the surface of the design is raised by placing a foam underneath the embroidery stitching. It gives the digitized design a three-dimensional & aesthetic look by making the design stitches stand out on the fabric.

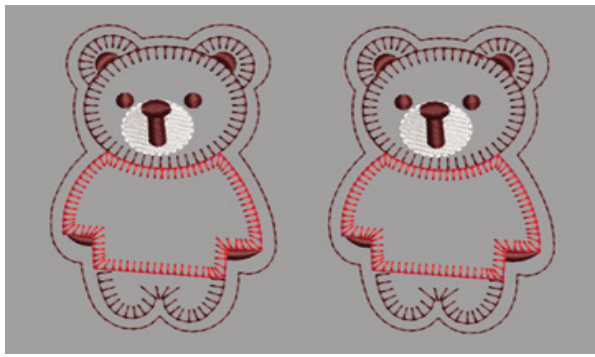
puff embroidery digitizing is perfect for simple designs and logos without any complexities, for instance, initials & alphabets. Likewise, it's primarily used for bolder and bigger designs that are supposed to stand out and get noticed. Puff embroidery have its own unique look.

3 Applique Embroidery Digitizing

In applique embroidery digitizing, designs are made by sewing or sticking woven pieces or designed patches of fabric onto the larger pieces to form a specific pattern. More extensive patterns are created by attaching various smaller designs. 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. Quilting and banner-making processes also make use of the applique digitizing extensively.

Fig 3



4 Chenille Embroidery:

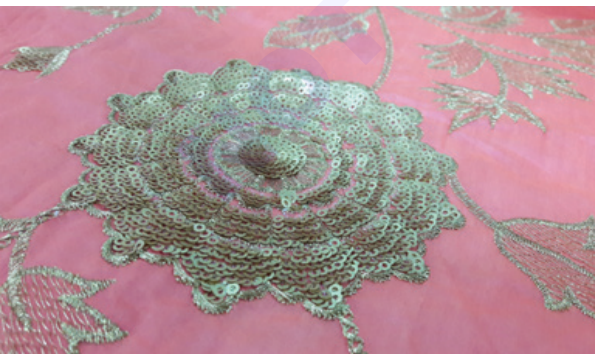
Fig 4



Pretty there are few embroidery designs with soft and fuzzy fabric. That's all thanks to the Chenille embroidery digitizing. Chenille is made from twisting together short yarns (silk + wool or cotton), giving it its characteristic softness and texture. Special care is taken regarding the yarn density while making designs with the help of Chenille digitizing. This technique works best for more extensive and plainer designs that have a felt backing. The soft feel of the embroidery and their textures in Chenille embroidery sets them apart from the other types of embroidery digitizing. Chenille embroidery letters give beauty to the designs. Chenille patches are now in trends.

5 Sequin Embroidery:

Fig 5



For Sequin embroidery, the machines have to be equipped with a sequin dispenser. The dispenser drops sequins onto the fabric as the device 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 the 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.

6 Cording/Taping/Coiling Embroidery :

Fig 6



Cording or Taping embroidery digitizing involves the creation of original convex designs to create a 3D effect. This type of embroidery digitizing is mainly recommended for children's products and home furnishing textiles. It allows to create unique designs using ribbons and beads and even combine them with other decorating materials such as pearls and jets. Taping means sewing on the cord along its middle to make it flatter and more expensive. The design includes wrapping the colorful threads around a core thread attached to the base material in coiling digitizing. It hides the base stitches and avoids having any additional stitches or materials on the bottom side of the garments.

7 Chain Stitch Embroidery:

Fig 7



Chain stitch embroidery digitizing is best suited for designs that include loops and stitches to form chain-like patterns. This technique is usually laborious and challenging as compared to other types of embroidery digitizing, and the designs may not come out to be very aesthetic. Additionally, it uses a lot of thread.

On the plus side, digitizing the chain stitch embroidery helps create thick textured lines and ensures that chain patterns are perfect in the source images/designs.

8 Photo Digitizing:

Fig 8



The process of photo embroidery digitizing makes the design on the material consequently look like an artist's work on canvas. It includes multilayered and multi-colored stitching that provides the design with its volume and color tone modulation. Photo stitch embroidery digitizing has some characteristic features that include bigger design sizes and a considerably large number of stitches.

Hence, the digitization of photo stitch techniques executes the designs and coloring masterfully and harmoniously. In addition there will be satisfaction with the work of art that photo stitch digitizing produces.

9 Borer Embroidery Digitizing:

Fig 9



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.

10 Freestanding Lace Embroidery Digitizing:

This technique helps create beautiful, airy patterns that 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. freestanding lace embroidery add beauty to design the bridal gown wears.

Fig 10



The lace patterns are gap-free and freestanding, thereby preventing the prevalent issue of gaps between the inner netting designs and the satin stitch borders of the digitized embroidery pattern.

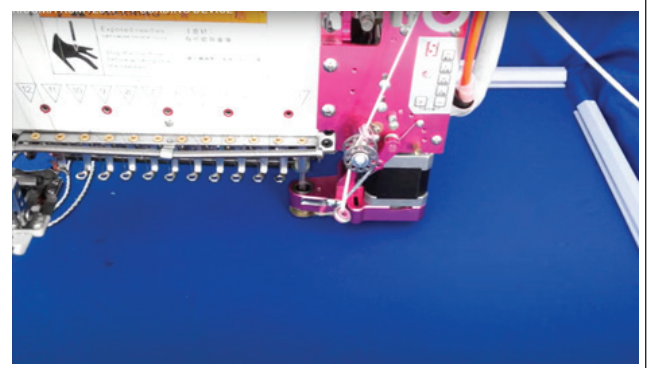
Choosing the type of embroidery digitizing is not easy. Everything depends on the design, specifications, material, and a few other things, and it demands exemplary neatness, unwavering concentration, and flawless proficiency. Embroidery isn't just art anymore. It's now a representation of core values, principles, and ideals.

Knowledge of special attachment

Cording device

Cording & Looping are digitizing techniques used in conjunction with a cording foot to create several different looks. From high fashion to dimensional embroidery, this attachment can be used in several different ways. With cording, this technique is used in creating elegant embellishment usually using swirls & curves – you can also use it to accent any embroidery design. Looping mimics chenille by creating loops that are attached by stitching on top. Utilize yarn, polyester, cotton, or wool threads with this specialty foot.

Fig 11



The Cording Foot allows sewing on thin cords or strings. As the bottom of the foot sole provides several grooves, more than one sting can be sewn on in one step.

Utilized finish with the texture of materials. Softness of the materials can be felt.

Digitally Controlled Presser Foot "DCP" holds the material accurately with the appropriate force and timing.

Example for Cording and Looping embroidery

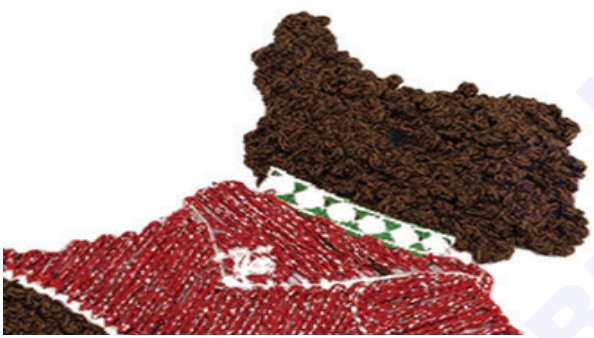
Fig 12



Fig 13

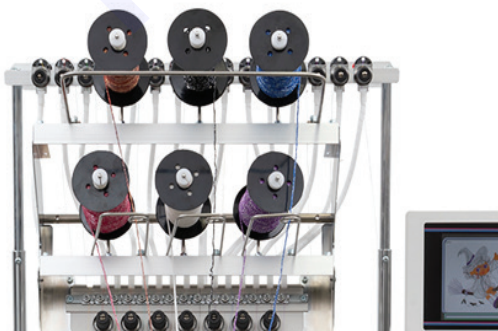


Fig 14



As like making regular Cording embroidery, and fluffy looping embroidery emblems can also be made. Easily changeable cords/colors is possible. The bobbins are located in front of the machine. You can easily check for material consumption and exchange bobbins. Due to the linear arrangement, the distance from the bobbin to the needle base is shorter. Friction on the cord material is greatly reduced and higher stitch quality is achieved.

Fig 15



Standard embroidery is not affected is by attaching this device.

Fig 16



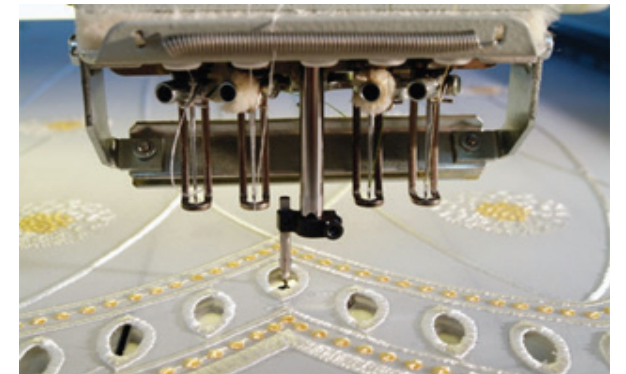
From one, up to 6 cords can be used. Standard embroidery is not affected. Just by changing the presser foot, standard embroidery can be performed.

Boring device

Embellish garments with unique decoration technique the Boring Device is simply installed on the machine and replaces an embroidery needle. This sharp device will create cuts in the fabric as it "stitches." Once the cuts are created, a surrounding needle will typically stitch a circle or oval satin outline shapes around the sliced fabric. By using a satin stitch, it will pull the fabric (that has been cut) back into the stitching and create eyelets or even lace effects.

A boring device that can be attached to and detached from a lower end of one of a plurality of needle bars provided on a multi-needle embroidery sewing machine, and includes a boring knife that makes a cut in a work cloth and a first engagement portion to be engaged with a second engagement portion provided on the one of a plurality of the needle bars. The second engagement portion restricts horizontal rotation of the boring device, and a horizontal position of the boring knife with respect to the one of the needle bars is determined when the first engagement portion is engaged with the second engagement portion.

Fig 17



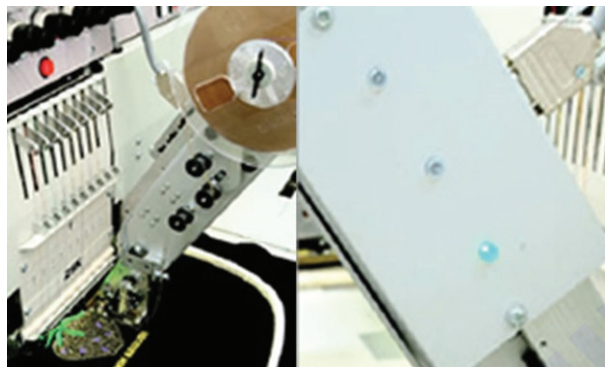
Sequin device

An embroidery machine that has a boring device has the capability of creating a variety of different holes. Whether the design is a circle, oval, or eye, these holes can be

created using various stitches. The holes produced by this type of embroidery machine are generally stabilized with zigzag or satin stitches. One must remember to deactivate the thread breakage monitor before begin boring. In addition, you must move the pantograph 12 mm to the front of the machine and remove the fabric pieces that have been embroidered.

While many machines are capable of forming multiple embroidery stitches, the borer is the most important accessory. It can be difficult to position the boring device in the correct location, especially if it has a multi-needle machine. The borer is attached to a needle bar that has a predetermined position, which may make it difficult to adjust to the correct position. A wrongly positioned boring device can also prevent the embroidery design from being perfectly visible on the work cloth.

Fig 18



Sequin device

Boost the Creativity and the bottom line by designing the products with sequins will bring an exclusive element to the business. Sequins come in all different shapes, sizes, finishes, patterns, etc. Sequins can be placed within an embroidery design sporadically; or, can create continuous lines or fills – it's up to one's imagination. Many company offers sequins attachments, but multiple types of attachments to utilize up to 4 different sequins decoration on just one head.

A sequin device can be attached to a very basic single needle flatbed double chain stitch machine for attaching sequins. There is a control box provided in the machine which can be used to change the sequin size and skip timing (1 sequin every 1 stitch to 10 stitches), with the ability to handle three sizes of sequin that is 3 mm, 5 mm, 7 mm by changing the optional guide and pressure foot. Since it is manually operated sequin attaching device hence depends on skilled operators to position and manipulate materials under the needle.

The machines can run between 600-1200 RPM and are equipped with sequin feeding volume and skip timing setting panel, others may have a stepping motor for accurately cutting and carrying more sequins. The advanced versions within the basic-level technology machines have one more function – the outing function, which can make designs like flower and so on, along with the ability to add a sequin to a previously skipped position. There are also lockstitch sequin attaching

machine, which run at relatively slower speeds of 200 to 1200 SPM depending on the embroidery specifications. While attaching sequins by double chainstitch there is risk of unravelling during any thread break, lockstitch sewing is relatively secure even during thread cut during use of garment. Stitch length is between 3 mm to 5 mm.

Beading device

For creative work with beaded or sequined ribbons. The groove in the middle of the foot serves as a guide for sewing on cords, bead and sequin ribbons. . The bead device allows to embroider a variety of beads at diameters of 2, 2.5 and 3.0mm at 800 RPM. It can be installed on the left or right, or both sides of the F-head. The beads are placed into the small container on top of the device and are automatically pushed onto the wire that feeds them into the placing mechanism. When using a machine with D drive, two heads can be equipped with four devices, allowing for four different types of beads to be embroidered in the one run. Our bead device extends the creative possibilities, particularly when used in conjunction with our sequin, cording and hot air cutting mechanisms.

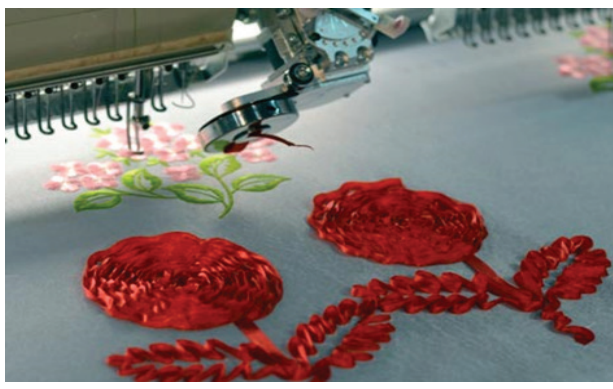
Fig 19



Cording & Ribbon Device

The New Cording/Ribbon Device is the newest and most distinctive embellishment of it's kind. This device can be added to the side of the embroidery machine head utilizing the end needle – and will feed cording or ribbon from a roll. By utilizing different digitizing techniques, there are several unique and unusual decoration looks that can be achieved.

Fig 20



Pearl and Beads Device

The Pearl and Beads Device for embroidery machines allows to add sequins, pipe and beads to any design. It works with a single needle head, which increases precision and production. This embroidery device is suitable for sewing on various types of garments, including caps, T-shirts, flat garments, gloves, jackets, sleeves and bags. This machine is compatible with designs made by TAJIMA and Wilcom. Use different optional devices to customize the embroidery work.

The Beads and Pearls Device for embroidery machine includes a bead guide bar suspended above the feeding mechanism. This bead string contains pinholes, which are positioned by the bead guide pipe. A needle threaded through these pinholes is then passed through the beads and embroidered on the textile. This bead device is removable from the head of the embroidery machine, which makes it easy to replace the bead string.

The Pearl and Beads Device for embroidery machines can be configured to incorporate a variety of features. These features can be incorporated into any embroidery project, and the system is highly customizable. The unit also includes a height-adjustable support 8 for easier installation. It can also be used to thread a pearl string, which is suspended in the feed mechanism's lead pearl bar. The system enables us to change the pearl string as you embroider, making it possible to create any size design.

Fig 21



Roll2Roll Device

The Roll2Roll Strap Device is built specifically for the Racer series of ZSK embroidery machines. It allows semi or fully-automatic embroidery on belts, tapes and many other textile rolls. It can handle up to two different types of material at one time, such as cloth and felt. The embroidered roll is then automatically rolled up at the front of the machine. An optical sensor is also available for the Roll2Roll. This can detect specific markings on the carrier tape, ensuring accurate positioning of the embroidery area.

There are two options when fixing the material to be embroidered.

- 1 **Clamping:** The maximum material width is 220 mm, where 170 mm can be embroidered.

- 2 **Guiding:** The maximum material width is 190 mm, where 160 mm can be embroidered.

Features of the Roll2Roll System are

- Embroidery device for partially or fully automatic embroidery of rolls.
- Compatible with ZSK Racer series (table top) embroidery machines; RACER 1W, RACER 2W, RACER 4W, RACER 6W.
- Pneumatic clamping system.
- An automatic pull-through system from roll to roll.
- Thrust for up to two materials.
- Automatic bobbin case changer.
- Automatic positioning of the embroidery area in the X and Y axis.

Roll2Roll Suits Products like these:

- Mattress straps
- Office curtains
- Borders and ribbons
- Emblems and badges
- Applicators and patches

Fig 22



Sequin Device LED

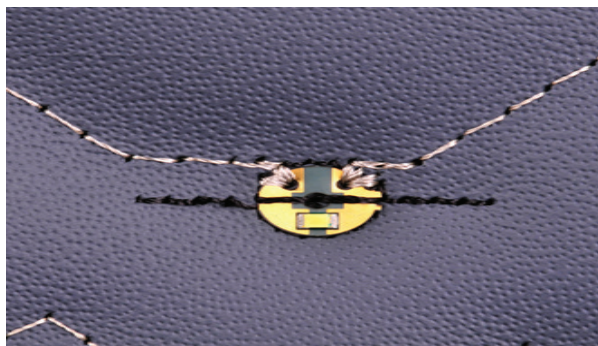
The fusion of electronics and textiles it's already here. Embroidery machines have specially developed an innovative functional sequin device (FSD).

As more and more e-textiles and smart wearables are entering the market every day, production demands are increasing.

Whether its integrated LEDs, sensors, or RFID chips, it has the solution for automated placement and fixing of functional sequins. This removes the need for secondary application processes. Conductive paths for connecting the FS to other components can also be embroidered directly into the design. Creating special effects with LEDs are a common use of functional sequins. LED's are pre-mounted on sequin rolls which are sewn into the fabric structure during the embroidery process. Huge cost savings and increased production speeds can be achieved by automating the integration of functional sequins.

Available for left or right side.

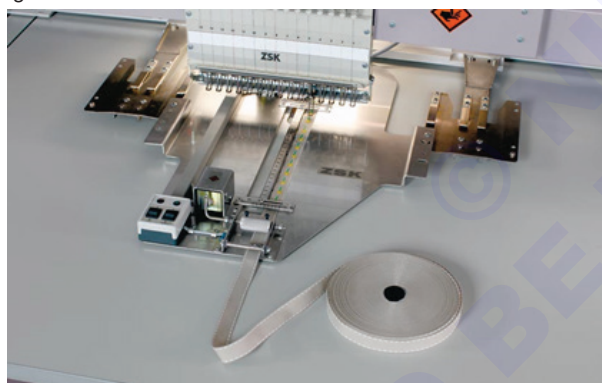
Fig 23



Ribbon / Tape Hoop

This device allows for embroidery on variable band widths between 15mm and 35mm. These bands can be labeled or finished utilizing embroidery embellishment – such as name tapes or belt band decoration. Besides this application, there are several products in the promotional & advertising sector that can also be embroidered – such as lanyards, VIP bands, etc. Other types of decoration that can be used with this attachment are ribbon embroidery, fashion, decoration & home textiles.

Fig 24



Shoe Frame

The adjustable shoe frame is different than any other clamping system available. The frame's shape is designed with all shoe types in mind – the arm clamps are independent of each other which helps with the varying thicknesses & padding along the side of the shoe. In addition to having independent clamps, the frame allows for width adjustment to work with the various shoe styles.

Pocket Frame

Embroidering on pockets is a challenge – the pocketed area is typically small and when it's hooped (or in a windowed system), there is little room to drape the fabric around the tubular arm. ZSK has designed the unique embroidery pocket frame to overcome issues such as this. The curved frame allows for a larger embroiderable area and also offers the fabric more room to flow freely around the tubular arm.

Fig 25



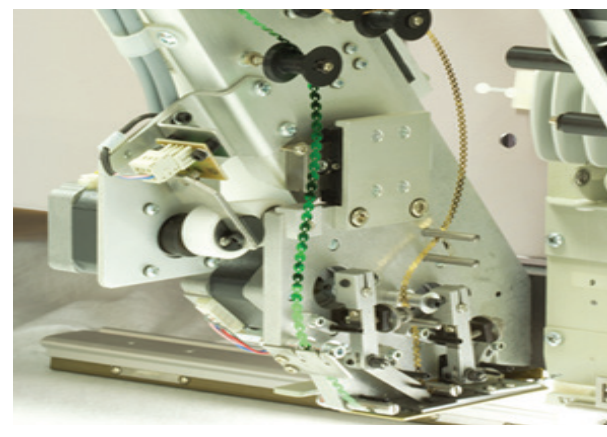
Fig 26



Sequin Device T6 (twin)

With the sequin device T6 (twin) it is possible to stitch two different sequins. (Sequin size 3 - 9mm). The sequin device T6 (twin) needs to be controlled by EPC win or Base Pac software. Left or right sided devices available. The sequin device replaces one needle per head.

Fig 27



Shirt Collar Frame

To embroider a shirt collar, taking the shirt out of the package, embroidering it and folding it back is a very time-consuming task. Using the new shirt collar frame, the collar can be embroidered without having to take the shirt apart. The system can be supported by an optional pallet that can be installed on Sprint machines. It will hold the shirt in the bag while the collar is being embroidered.

Fig 28



Stripe Embroidery Attachment

Embroider on belts, sashes and collars, not only with hoops. It can be difficult to find a way to embroider strips with regular hoops, but this special hoop makes embroidering on straps and similar items a hassle-free experience. The sturdy construction and strong clamps ensure that the belt is held securely in place, preventing sewing errors. In addition, the large embroidery area means the hoop can handle strips and sashes of various sizes. To use the hoop, simply attach it, tighten the clasps and insert it into any embroidery machine. When the machine is finished embroidering, take off the frame, loosen the clamps, and you get a beautiful end product. So, if you are ready to start embroidering on straps, sashes, ribbons and other similar items, the belt attachment will be a great addition to your collection of embroidery accessories.

Fig 29



RAIL Mounted Clamping System

This is used for large designs on, heavy blankets, sport bags, towels, car mats, duffel bags and anything else you can clamp in the frame and sew through. Due to the width of the clamp, it does not fit in between most standard tubular arms, so we made it rail mounted for better support and strength.

Clamping System Features

- Single lever opens, closes and locks the clamp.
- All metal construction, powder coated aluminum & stainless steel.
- The clamp automatically adjusts to different fabric thickness.

- Clamping action does not leave “hoop burns”.
- Clamp stays on the machine while loading and unloading.

Suitable for any Industrial embroidery machines.

Fig 30



Cutting Device

One of the most important tools for an embroidery machine is a cutting device. Previously, these devices were used only for scrapbooking or heat transfer shirts. Quilters found that they could use the same cutting device for multiple pieces of the same size of fabric. These devices have now become more popular than ever for embroidery machine users. They are particularly useful for cutting intricate shapes, which would otherwise require a hoop. But, what exactly is a cutting device?

The cutting device for embroidery machines can be described as a device for producing a uniform length of thread ends. It works by cutting the ends of the needle thread, independent of the stitching position. The device is attached lateral to the stitch hole, on the lower side. It is oblong in shape and has a barb opposite to it. Once the cutting device is attached to the machine, the thread is cut. The cut thread ends are essentially equal in length.

A heat cutting device is a device that works in conjunction with an embroidery machine to create precise cuts. It can be used for applique, reverse applique, perforated fabrics, and labels. These devices can be used in conjunction with any single-head embroidery machine and are installed close to the last or first needle. They are equipped with GMI software that allows the user to control the working height of the hot needle tip. They can also be used to cut fabric with an applique pattern.

Fig 31

