GARMENT PRODUCTION

Level-I

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I. Acknowledgment

Ministry of Labor and Skills wish to extend thanks and appreciation to the many representatives of TVET instructors and respective industry experts who donated their time and expertise to the development of this Teaching, Training and Learning Materials (TTLM).

II. Acronym

1. TVET –**Technical Vocational education and Training**

2. TTLM_ Training Teaching and Learning Material

3. LAP_ Learning Activity Performance

4. OHS- Occupational Health Safety

III. Introduction about this Module

In garment technology**,** Garment construction is a technical accomplishment that requires the knowledge and skills of basic sewing techniques application of stitches, seams, darts, gathers, pleats and edge finishing,. Its appropriate application in garment construction is necessary for a good quality product. A garment that is made, will be attractive if it fits well, and proper attention is paid to its finer details.

This module covers the units:

- **Workstation**
- **Machine condition**
- **Prepare garment components**
- **Assemble garment components**
- **Hand stitching**

Complete work Learning Objective of the Module

- Preparing workstation
- Checking machine condition
- Preparing garment components
- Assembling garment components
- Perform Hand stitch

Module Instruction

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

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

Unit one: Work stations

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

- Setting up Workbench according to OHS practice
- Cleaning and checking machine
- Aadjusting machines
- Selecting appropriate materials
- Checking needle
- Identifying and preparing Other equipment
- Recording and reporting problems.

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

1.1. Setting up Workbench according to OHS practice

1.2. Cleaning and checking machine to ensure correct operation

1.3. Aadjusting machines according to specifications

1.4. Selecting appropriate materials

1.5. Checking needle Condition .

1.6. Identifying and preparing Other equipment for production

1.7. Recording and reporting problems.

1. 1. Setting up Workbench according to OHS practice

1.1.1. Definition of work station

A workstation is an area where an individual performs daily work-related tasks. For example, in an garment production work shop setting this might include a sewing machines, fabrics, accessories, sewing, checking area, packing area and other garment production related are . It is the purpose of the workstation to provide the user with space to carry out their typical work duties.

1.1.2. OHS practice:-

Occupational health and safety is one of the most important aspects of human concern. It aims an adaptation of working environment to workers for the promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations. Prioritizing OHS at working area has several key benefits, including: Reduced risk or accidents or injuries by identifying and mitigating hazards. Improved efficiency and productivity due to fewer employees missing work from illness or injury. Safety and health measures play an important role in any industry. It is essential that the workers be aware of the various occupational hazards in the industry. At the same time, it is necessary that the management take the necessary steps to protect workers from potential hazardous situations.

WORKPLACE HEALTH AND SAFETY

Workplace Health and Safety an important factor in any sewing industry either in hand sewing, using a sewing machine both an electrical or a manual sewing machine. Employees/individuals encounter several risk factors, such as awkward arm, neck, trunk, leg postures and back pains. Posture in sewing is also an important factor. Safety measures have to be taken seriously

especially when sharp pointed objects are used such as, scissors, tacking pins, needles, and other equipment.

Safety rules

Safety is very important in Sewing. To make sure that everyone can learn and have fun in a safe environment, keep the following rules in mind:

1. Always: Place your coats, books and bags in separate places, away from your sewing area.
2. Always: Leave your shoes on during sewing class. You do not want to accidentally step on a pin or needle.
3. Always: Keep your fingers away from the sewing machine needle when winding the bobbin and operating the machine.
4. Always: Look under your fabric before cutting with scissors and carry scissors with the sharp edge pointing towards the floor. When the scissors are not being used, place them on the cutting table, sewing table, or in

The trainee/participant seeks permission from the teacher/trainer before using the sewing machine.

• Always check that the sewing machine and its cord are in good working order.
• Check all adjustments and settings carefully before commencing any sewing operation.
• The work area should be clean and free of equipment, rubbish and other obstacles.
• Ensure you have had instruction and training in the use sewing machine and satisfactory

Hazard and risks

Hazards that may be encountered when conducting sewing activities include:

• Cut and injuries from sharp edges, knife blades, scissors and pins.
• Holding the wrist in awkward position while cutting with scissors cause injury to the wrist.
• Participants/trainees hold their neck, trunk and arms in an awkward position as they strain to

see detail in an object.

• Finger injuries while sewing.

• While cutting fabric the participants/trainees often bend over table, which may cause low back injury from poor posture.

• Eye strain from poor lighting.

• Back injury from improper lifting procedures.

1.1.3. Work bench

A workbench is a sturdy table at which manual work is done. They range from simple flat surfaces to very complex designs that may be considered tools in themselves. Workbenches vary in size from tiny jeweler's benches to the huge benches used by staircase makers. Almost all workbenches are rectangular in shape, often using the surface, corners and edges as flat/square and dimension standards. Design is as varied as the type of work for which the benches are used but most share these attributes:

A comfortable height for working with provisions for seated or standing work

A way to fix the workpiece to the surface so that it may be worked with both hands

Provisions for mounting, storing and accessing tools

Workbenches are made from many different materials including metal, wood, stone, and composites depending on the needs of the work.



Figure 1.1.3.1. Work bench in fabric cutting area

1.2. Cleaning and checking machine to ensure correct operation

Cleaning: - Cleaning is the process of removing unwanted substances, such as dirt, infectious agents, and other impurities, from an object or environment.



Figure 1.2.1 cleaning of sewing machine

Cleaning materials and tools

A mop is your go-to tool for cleaning hard floor surfaces like tile, wood, or laminate and making them shine. You can buy one that has a handle you can fill with cleaning fluid, or a simple stick mop with a sponge head. Another option is a steam mop which uses hot water, and sometimes cleaning fluid, to clean floors.

Correct sewing machine operations

Those are the cleaning materials, tools and equipment's in the garment work shop

Broom and Dust Pan:- A broom is a cleaning tool consisting of usually stiff fibers attached to, and roughly parallel to, a cylindrical handle, the broomstick



Figure 1.2.2 brooms

Waste Segregating Dustbin:- a large container for rubbish from a house or other building, usually made of strong plastic or metal and kept outside



Figure 1.2.3 brooms

Vacuum Cleaner:- A **vacuum cleaner**, also known simply as a **vacuum** or a **hoover**, is a device that causes suction in order to remove dirt from floors, upholstery, draperies, and other surfaces. It is generally electrically driven.

Bucket and Mop.

Bathroom Cleaner Kit.

Leather and Wood Cleaning Products.

Duster and Gloves.

Disinfectants and Detergents

Checking Sewing machine: - examine, inspect, look at, look over, scrutinize, scan, survey. Study, investigate, research, probe, dissect, explore, look into, inquire into, go into, and go over with a fine-tooth comb.



Figure 1.2.4 Checking bobbin

1.3. Adjusting machines according to specifications

Adjust means: -

Change (something) so that it fits, corresponds, or conforms; adapt; accommodate: to adjust expenses to income.

Put in good working order; regulate; bring to a proper state or position: to adjust an instrument.

Settle or bring to a satisfactory state, so that parties are agreed in the result: to adjust our differences.

Insurance.

To systematize.

Sewing machine: - A sewing machine is **a machine used to sew fabric and materials together with thread**. Sewing machines were invented during the first Industrial Revolution to decrease the amount of manual sewing work performed in clothing companies.

Sewing machine specification: - an act of identifying something precisely or of stating a precise requirement.

1.4. Selecting appropriate materials

Material for garment production: - A raw material, also known as a feedstock, unprocessed material, or primary commodity, is a basic material that is used to produce goods, finished goods, energy, or intermediate materials that are feedstock for future finished products.

Materials to produce Garments are as follows

Woven and knitted fabrics

- Threads
- elastics
- interlining
- zipper
- buttons

1.5. Checking needle Condition

Sewing needle: - A sewing needle, used for sewing, is a long slender tool with a pointed tip at one end and a hole (or eye) to hold the sewing thread. The earliest needles were made of bone or wood; modern needles are manufactured from high carbon steel wire and are nickel- or 18K gold-plated for corrosion resistance.

1.6. Identifying and preparing other equipment for production

Equipment's for garment production: - garment productions equipment's are as follows,

- Fabrics inspection machine.
- Plotter printing machine.
- Cutting machine.
- Fusing machine.
- Embroidery machine.
- Sewing machine.
- Thread Trimmer machine.
- Thread sucking machine.

1.7. Recording and reporting problems

Recording and reporting: - The recording (patient registration) and reporting system is used to systematically evaluate patient progress and treatment outcomes, as well as to monitor overall program performance (through cohort analysis).

Sewing machine problems

Common Sewing Problems

- Needle thread breakage.
- Bobbin or looper thread breakage.
- Thread fusing when the machine stops.
- Skipped stitches.
- Imbalanced / variable stitching.
- Staggered stitching.
- Variable stitch density.
- Seam pucker.

Recording and reporting problems means recording and reporting the problems of sewing machine which are listed above to represented personnel's.

Self-Check -1	Short answers

Give short answer for the questions bellow

1. Give at least four sewing machine problems

a. _____ b._____ c._____ d._____

2. What is the meaning of recording _____

_____

3. The meaning of specification _____

_____

4. Write at least four garment production equipment's

a._____ b._____

c._____ d._____

Operation Sheet 1	Prepare work station

PURPOSE: Enable to work without any disturbance in the work place

TOOLS AND MATERIALS: -

TOOLS

- Vacuum Cleaner
- Bucket and Mop.
- Bathroom Cleaner Kit
- Leather and Wood Cleaning Products
- Duster and Gloves
- Disinfectants and Detergents

CONDITIONS OR SITUTATIONS FOR THE OPERATION: - given necessary tools & equipment's.

You are required to perform the following within30 minutes

PROCEDURE:-

- Set up work station
- Select and lay out materials
- Set up &ready tools and equipment's
- Perform work station preparation

LAP Test- 1	Practical Demonstration

JOB TITLE: preparing work station

UNIT: work station

READING: TTLM- Information sheet unit one

OBJECTIVES: At the end of the job the trainee will able to prepare work station

WORK SHOP: **Materials Required**:

- Vacuum Cleaner
- Bucket and Mop.
- Bathroom Cleaner Kit
- Leather and Wood Cleaning Products
- Duster and Gloves
- disinfectants

Unit Two: Machine Condition

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

- Machines
- Machine lubrication
- Machine settings.
- Machine requirements Attachments
- Threads
- Needles

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

2.1 . Checking and cleaning Machines

2.2. Checking and maintain machine lubrication

2.3. Adjusting Machine settings.

2.4. I dandifying machine requirements and installing attachments

2.5. Selecting appropriate threads

2.6 Checking and changing Needles

2.1. Checking and cleaning industrial sewing machines

A sewing machine is used to stitch the fabric and other pliable materials together with threads. Sewing machines were invented during the first Industrial Revolution to decrease the quantum of manual sewing done in garment industries. Since its invention, it has greatly improved the efficiency and productivity of the fabric, garment and needle industries. The different parts of a sewing machine and its functions help the Operator to know the functioning of a sewing machine. There are different types of sewing machine used in the manufacturing of garments and other articles, but here in this Unit, we will study only single needle lock stitch machine. A sewing machine controls the fabric with feeding devices and forms a perfect stitch to join the

fabrics. It has various parts and attachments, each of which have their own importance and use. There are mainly two categories of sewing machines that is, domestic sewing machine and industrial sewing machine. A Sewing Machine Operator should have the knowledge and skills to operate the different types of sewing machine. The Operator should know about the various operations of the sewing machine, its parts, heir functions, its attachments and the terms related to stitching.

2.2. Checking and maintain industrial sewing machines lubrication

The care and maintenance of a sewing machine helps to improve its working. This consists mainly of cleaning, oiling, and right handling, which contributes to good output, quality production and safety of the workers. Care and maintenance is also necessary in order to operate the machine smoothly and for its long term use. It is very important to identify the sewing defects such as upper thread break, bobbin (lower) thread break, bunching of threads, skipped stitches, irregular stitches and stitches that are not formed properly, etc., for proper working of sewing machine and good quality production. This Unit discusses the cause and different defects and the corrective action to be taken. The needle, presser foot, and bobbin area are the main parts of the sewing machine that need to be routinely cleaned.

1.2.1 List of Material required for cleaning & oiling

- Flat paintbrush (½" to ¾" wide) or old toothbrush
- Cleaning solvent or fluid
- Soft disposable cloth to remove dust and lint/ Cleaning cloth
- Sewing machine manual
- Sewing machine oil / lubricating oil

2.2.2 Points to be considered while cleaning;

- Turn it off
- Open the slide plate and remove the bobbin case.

- Then remove the throat plate.
- Remove the face plate from the left end of the head.
- Any lint, dust, or loose threads in the area around the feed dog and rotary hook, shuttle may be brushed or blown away.
- Do not use anything hard, such as a screwdriver or scissors points, to remove the lint. Instead, carefully use a pointed instrument like a needle or pointed tweezers pick out bits of thread and lint that cannot be brushed out.
- Turn the hand wheel manually to expose any areas that might have been hidden initially. Brush again.
- Carefully tilt the machine head back until the head rests on the post on the back of the table.
- Brush out any lint, dust, or threads from the lower part of the machine.
- Use a soft, thin and clean cloth to remove any lint on the machine parts.
- Check the needle to be sure it is clean and the eye is not clogged.
- Wipe away any excess oil or dust on the head, machine bed, motor, table, and stand.
- If there is lint between the tension discs and in the thread guides, use thread to floss the tension discs and remove any lint.
- Replace the needle, if necessary.
- Wash hands after cleaning the machine.
- After completing the work, put a piece of fabric under the foot, lower the presser foot, cover the machine, and pick up any trash.

2.2.3. Points to remember while oiling the sewing machine

- Before oiling, ensure that the sewing machine is turned off.
- Oil the machine using the directions given in the machine manual.
- If a manual is not available, oil the machine as per the directions of the teacher/instructor as per the required frequency
- Locate oil holes of the sewing machine.

- Put one to two drops of oil into each hole. Too much oil will clog the machine.
- Wipe off all dust and excess oil from the machine or table; clean up any spilled oil immediately.
- Sew on a few fabric scraps to remove any excess oil.
- Wash hands after oiling the machine
- Excess oil is a major problem that can spoil and damage the fabric.
- Report any injuries or accidents immediately to the instructor.
- Report a breakage to a tool or machine to the instructor. If the equipment does not operate properly, notify the instructor immediately

2.2.4. Procedures to clean and oil the industrial sewing machine,

Remove all the parts possible in order to clean the machine thoroughly



Fig 2.2.4.1 cleaning shaft

- **Bobbin area If possible**, removes the bobbin case to remove all lint and stray threads.



Fig 2.2.4.2 cleaning theorate plate

- **Upper thread tension**; Pull a piece of cloth soaked in solvent back and forth between the discs to clean.

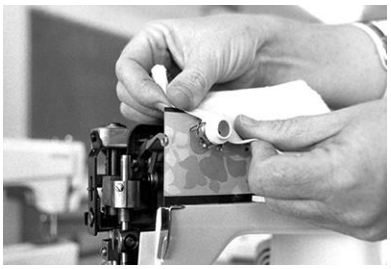


Fig 2.2.4.3 cleaning internal part of needle bar

- **Bobbin area**; Clean carefully to remove lint using a soft brush. Tweezers may be helpful in removing stray threads.

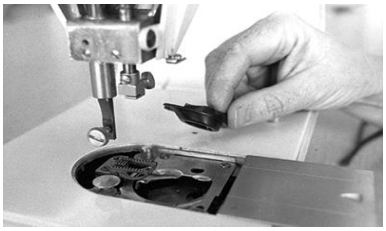


Fig 2.2.4.4 needle holder

- **Face plate area**. Remove lint from the face plate area using a soft brush. A cloth dipped in solvent can be used to remove grease and grime.

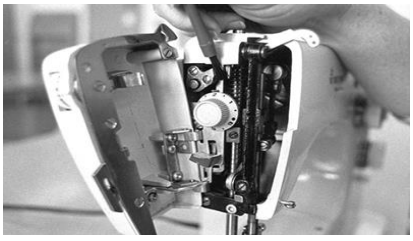


Fig 2.2.4.4 head cleaning

- **Face plate area**. Place a drop or two of oil on moving parts where they slide through a housing or move against each other



- *Fig 2.2.4.4 face plate cleaning*

- **Oiling**; Place one or two drops of oil in all holes designated by the instruction booklet.

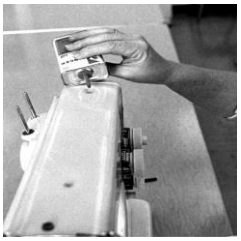


Fig 2.4.5 oiling

2.2.5. Benefits of cleaning and oiling industrial sewing machines and equipment's

- ⇨ Improve machine and equipment performance
- ⇨ Increase the life span of the machine
- ⇨ Increase machine reliability
- ⇨ Reduce service downtime
- ⇨ In order to ensure all the moving parts continue to work as they should.
- ⇨ Reduces wear on all of the moving parts of the machine.
- ⇨ Preventing rust and unnecessary friction.

2.3. Adjust machine settings.

Introduction:-Setting up of industrial sewing machines for production and the repair, adjustment, maintenance and testing of machines to ensure efficient working order. Operator controlled single station industrial sewing machines and high volume automatic machine. Sewing machine is one of garment production machine used to stitch the fabric and other pliable materials together with threads. Sewing machines were invented during the first Industrial Revolution to decrease the quantum of manual sewing done in garment industries. Since its invention, it has greatly improved the efficiency and productivity of the fabric, garment and needle industries.

2.3.1 Adjust machine settings

Setting the Machine can set basic functions required to use the machine in System Settings. The machine can be used on factory default, but the configuration can be changed depending on the condition of the user. The changed condition holds even if the machine is turned off.

Basic Settings for Sewing Straight Stitches on a Sewing Machine

- Stitch Length: 2.5mm or 10 (stitches per inch)
- Stitch Width: needle centered over stitch plate*
- Stitch Tension: 3.

2.3.2 Thread guides.

The thread guides are the metal devices that help regulate tension. They are various loops when run the thread through before looping it into the needle. They keep the thread from getting tangled and distribute the tension evenly from the spool to your fabric.

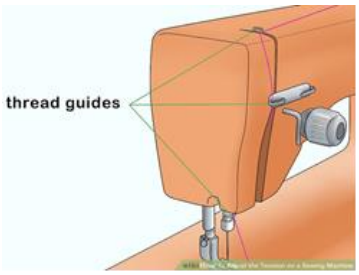


Figure.2.3.2.1 Thread guides

2.3.3. Sewing Machine Tension

Sewing machine tension adjustment is controlled by devices that separately control the needle thread and the bobbin thread; putting varying amounts of tension (or strength) on the threads they control to form a strong, balanced stitch. Sewing machine tension can be tightened or loosened to affect the needle thread, the bobbin thread, or both.

2.3.4. The tension discs and regulator.

The tension discs and tension regulator together are called the tension assembly. The tension discs squeeze the thread as it passes between them, while the tension regulator controls the amount of pressure on the discs. When adjusted to a higher number (turned clockwise), the discs move closer together, increasing the pressure. Turned to a lower number (counter clockwise), the discs move apart, decreasing pressure.



Fig 2.3.4.1 Tension disc

2.3.5 Adjust the top tension.

To increase your top tension if it's too loose, turn your knob so that the numbers are increasing. Try ½ to 1 number higher, and then test the stitches on a piece of scrap fabric.

Continue until it looks even on both sides and you can no longer see the bobbin thread on the right side of the fabric



Fig 2.3.5. 1 Adjust tension

2.3.6 Understand tension.

Tension is what keeps the bottom and top stitches in equal tension with one another. In other words, it is what keeps the front and back stitches looking the same. Both the top and bottom tension must work together in order to create consistent stitching. If the top and bottom stitches aren't even, it may be due to the tension not being right on the top or bottom.

☞ The more thread in the stitch, then the looser the stitch. The less thread then the tighter the stitch.



Fig *Fig 2.3.5.2* Thight Tension

- If you are unable to get it completely even, proceed to adjusting the bobbin tension.
- Probably the most common sewing problem is getting correct sewing machine tension. By thread tension, it means the amount of thread that can pass through the machine to create the stitch

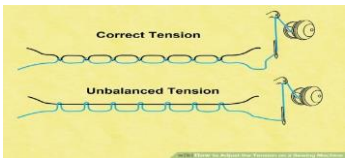


Fig 2.3.5.4 balance & unbalance Tension

2.3.7 Balanced Machine Stitches

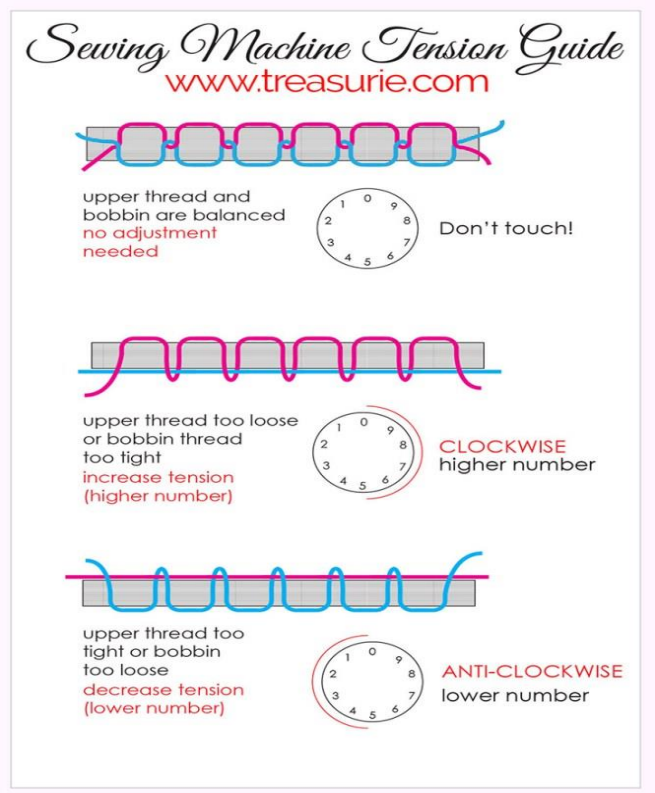
Machine stitches should look the same on both sides of the seam. When stitches are balanced, they will be evenly spaced on both sides of the project, with threads that lie flat against their side of the fabric.

Table 2.3.1 shows balancing stitch

Fabric weight	**Example**	**Stitch length mm (inches)**
Light	Cotton lawn, voile	Short: 1.8 – 2.5mm (1/16” – 3/32”)
Medium	Quilting cotton, poplin, flannel	Standard: 2 – 3mm (1/16” – 1/8″)
Heavy	Denim, canvas	Long: 2.5 – 4mm (3/32 – 3/16”)

2.3.8 What a balanced stitch looks like

The upper thread and the bobbin thread should cross near the center of the fabric. Only see the upper thread on the right side of the fabric, and the bobbin thread on the wrong side. If stitches looks like this, the tension is balanced



1. The upper thread & the bobbin thread should cross near the center of the fabric. Only see the upper thread on the right side of the fabric, & bobbin thread on the wrong side .if the stitch looks like this, the tension is balanced.

2. Bobbin thread shows on the right side. If the bobbin thread on the right side of the fabric, the upper thread shows on the wrong side of the fabric the upper thread is too loose need tight the tension.

2.3.9 If Bobbin Thread Is Visible on Top of the Piece Being Sewn

Bobbin thread's appearance on top of the piece you are sewing could mean a couple of things The tension that controls the thread coming



Fig 2.3.8.1 tension effect

2.3.10 Sewing Machine Bobbins:-The bobbin is the small spool of the thread located in the compartment under the needle. There seems to be a common belief that sewing machine bobbins are interchangeable between machines. sewing machine bobbins may very slightly different in size and shape and will not fit every machine This may lead to many common sewing problems such as wrong tension (too tight or too loose), thread

breakages, uneven stitching or not sewing at all. At worst, the bobbin could get jammed in the machine or cause damage so should be always use the bobbins intended for make and model of machine.



Fig 2.3.8.2

different size of boobin

2.3.11 Sewing machine threads are usually made from cotton, nylon, polyester, or even silk. The basic function of a thread is to deliver aesthetics and performance. They form efficient stitches without breaking or becoming distorted during the useful life of the product. It is comparatively easy to select the correct color thread if the fabric is a single color. You just have to select a color that will blend with the color of your fabric.

2.3.12 Sewing machine needle

It is a fine cylindrical piece of metal with a sharp point at the lower end, a hole or eye in it, used in sewing.

Choosing the right sewing machine needle for your sewing project

Choosing the right sewing machine needle is an important factor in achieving a professional finish and also not wasting time with broken needles, holes and snags and puckered seams. There are lots of different type needles for all types of fabrics, getting the right needle for the job is as important as selecting the right fabric. The thread you choose will also have an impact on which needle you use. In general the lighter the weight of the fabric and thread the finer the needle you will use. Needles also vary by the type of point and the size and shape of the eye, as well as in thickness.

Basic Settings for Sewing Straight Stitches on a Sewing Machine The Straight Stitch is the basic stitch that is used for sewing. The most common use for a straight stitch is to sew two pieces of fabric together. The Straight Stitch can also be sewn a few stitches in reverse at the beginning and end of a seam to secure the seam ends

Stitch length

Stitch length is basically how long each stitch is sewn by your sewing machine sewing with the default stitch length, whether that's programmed in a computerized machine or whatever the dial is set on for a mechanical one.

Parts of sewing machine and its function

1. Hand wheel Allows controlled/sew sewing
2. Knee bar Raises and lowers foot : push to the right using knee and foot raises
3. Top thread holders : Holds your thread in place
4. Top threading guides: All the little parts that guide your thread along to the needle to create the right amount of tension
5. Back stitch lever : Used to stitch backwards/lock off the end of a row of stitching
6. Foot pedal :The foot pedal is it is what makes the machine sew
7. Stitch length knob : Adjusts the length of the individual stitches
8. Tension knob :Adjusts the tension of your
9. On/Off Switch: Turns the machine on and off; some machines will have a switch (like a light switch) and some will have buttons labeled "on" and "off". Always make sure to turn off the machine when you are done using it.
10. Bobbin Cover : Flat metal piece which covers the area where the bobbin is installed
11. Feed Dogs : Serrated metal pieces that pull your fabric forward as you sew
12. Throat Plate : Flat metal piece which provides guides for seam allowances
13. Presser Foot : Holds the fabric in place

14. Bobbin: Holds the bottom thread Like the thread, you must make sure that your bobbin is the correct one for your Juki machine - NOT ALL BOBBINS ARE CREATED EQUAL and using the wrong one can damage your machine.
15. Bobbin Case Holds the bobbin

2.4. Identifying machine requirements and installing attachments

2.4.1. Identifying machine requirements

One of the most important things with learning to sew is to have a good understanding of the essential functions of a sewing machine and how they work. The attachments are known as sewing machine parts and accessories. Sewing machine attachments make the use of sewing machines easier and deliver a variety of ornamental sewing potentials. These sewing machine attachments are mechanisms that are attached to sewing machines without cutting through or changing the original frame of the machine. The removal of such an attachment leaves the machine in its original condition.

2.5. Selecting appropriate threads

Sewing thread is the yarn used to combine two or more fabric pieces together in garments, accessories, and other textile products. Thread may be comprised of the same construction and fiber content as the garment, but is often different. Thread encompasses the majority of the stress and strain from movement and needs to be strong and durable. It must resist breaking and be compatible with the rest of the garment in terms of color, care instructions, and construction. Major quality checks for sewing threads include construction (diameter and fineness), strength and elongation, shrinkage, twist, twist balance, and color. The other parameters include sew ability (Nayak et al., 2010), imperfections, finish, package density, and winding. Sew ability is tested by sewing the thread in the intended fabric at the highest machine speed. The sewn fabric should consist

uniform and consistent stitches, which indicates good sew ability. Sewing thread should be free from imperfections such as knots, slubs, thick and thin places.

2.5.2. Type of thread

The purpose of sewing machine thread is useful for seams, quilting seams, buttonholes, stitching on buttons, decorative stitches, and decorative seams and even in the singer.

Over lock thread is the same as singer thread. Precision Patching or Topstitching (70/10, 75/11, or 80/12 Sharp Needle and Cotton, Polyester, or All-Purpose Thread) Sharp needles have sharp point that easily pierces cottons, microfibers, and silks, resulting in better penetration through the fabric and fewer skipped stitches. Sharp needles come in a range of 60/8 to 110/18 sizes, but a 70/10, 75/11, or 80/12 is a good place to begin. Match your thread to your fabric, pairing cotton with cotton, or polyester with synthetic fibers. Choosing the right needle and thread when sewing on denim can eliminate most of the headaches that occur when working with this heavyweight fabric. Using a needle that is too small or thread that is too lightweight are the most frequent causes of broken needles or skipped stitches. A jeans needle has a heavy-duty blade designed specifically to pierce extra-thick woven fabric. Sizes generally range from 90/14 to 110/18, but the 100/16 is a good first choice. For thread, at the fabric store look for polyester thread labeled "jeans." It is heavier in weight and comes in the most common colors used for jeans-gold and blue-gray.

- **Knits/Jersey (80/12 Ball Point and Polyester or All-Purpose Thread)**

Ball point needles are made especially for sewing on knits, such as T-shirt fabric and jersey. The ball point won't damage or break the fibers as it pierces the fabric. Ball point needles also come in a range of sizes, from 70/10 to 100/16. When sewing with a knit fabric, remember that if the fabric stretches, your seam needs to stretch, too. If your sewing machine doesn't have a stitch designed especially for knits, try stretching the fabric slightly as you sew. Then when the fabric returns to its natural state, the stitches will be a bit closer together and will allow for a bit of give.

2.6. Checking and changing Needles

Sewing needle is one of the most important machine parts that affect sewing performance in many ways. The main source of the problem is the generation of needle temperature and needle breakage during sewing. The causes of needle temperature are mainly due to

The friction between the needle and fabric

The friction between the needle and the sewing thread. The higher the friction the higher is the needle temperature. lt was found by research that during sewing the needle temperature rises to as high as 3500 C. lf the needle temperature is excessively high then the following adverse effects may occur. 1. Due to excessive heat the nickel of the needle may melt and stain the garment.

2. At high temperature the needles may bend or break or get damaged very easily. lf the needle breaks then

(i) Production will be hampered,

(ii) There will be faulty production such as needle mark

(iii) Missing part of broken needle may occur injury to the wearer.

3. lf the melting point of the sewing thread is equal to or lower than the needle temperature then the sewing thread will partly or completely be melted or damaged.

4. lf the fabric is thermoplastic and its melting temperature is lower than the needle temperature then the fabric will be burnt at the places of stitching. These burnt stitching causes scar in the skin and in most cases they are uncomfortable for wearing. Apart from this the melted fabric will stick on the needle as well causing the diameter of the needle to be increased so that the smoothness of the needle will be reduced. These will increase the friction of the needle causing further increase in needle temperature. Thus it is quite clear that attempt should be made to keep

the needle temperature as low as possible. The main source of development of temperature is the generation of friction, which depends on one or more of the following factors;

i. The fineness or coarseness & selection needle point of the needle.

ii. The coefficient of friction, coating of the sewing needles.

iii. The fineness or coarseness of the sewing threads.

iv. The coefficient of friction and lubrication of sewing thread.

v. The coefficient of friction of the fabric to be sewn.

vi. Fabric to be sewn.

vii. The count of the threads of the fabric to be sewn.

viii. Thread tension during sewing.

ix. Machine speed, higher the speed higher the friction and higher will be temperature

x. lmproper setting of the sewing needle.

xi. Friction between needle & throat plate.

In some cases cooling systems are arranged to reduce the sewing room temperature. Garment buyers may not provide the particulars of the needle and sewing thread, in that case we have to know what type of sewing needle and sewing threads should be used. Apart from this the condition of the sewing room may be quite

Parts and Functions of a Sewing Machine Needle

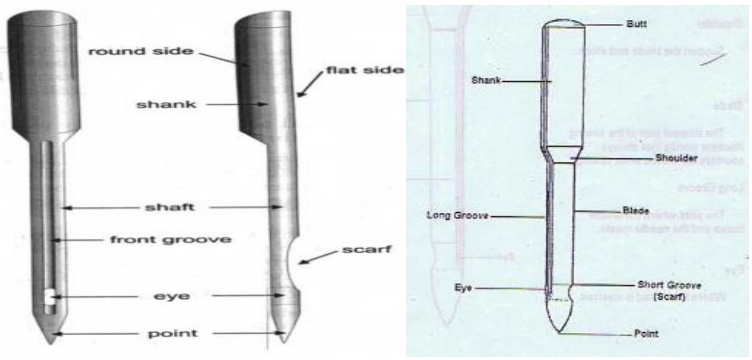


Fig 2.6.1 part of sewing machine needle

1. Butt - absorbs the pressure of the needle bar

2. Shank-provides stability to the needle blades and to its part when inserted

3. Shoulder-supports the blade and shank

4. Blade-the thinnest part of the sewing machine needle that always counters the friction while sewing

5. Long Groove-the point where the shuttle hooks and the needle meet

6. Eye-it is where the thread is inserted.

7. Short Groove-the part of the needle blade

8. Point/Tip-it cuts the fiber of the materials

Sewing Machine Needle sizes for different Fabric types

According to the purpose, Different sizes of a needle are used for different types of fabric.

Table 2.6.1. Different size of needle for different types of fabric

Different Size of Needle for Different Types of Fabric			
USA	**EU**	**Weight of Fabric**	**Types of Fabric**
8	60	Very Fine	Fine Silk, Chiffon, Organza, Voile, Fine Lace
9	65		
10	70		
11	75	Light Weight	Cotton Voile, Silk, Systhetics, Spandex and Lycra
12	80		
14	90	Medium Weight	Quilting Fabrics, Cotton, Velvet, Fine Corduroy, Linen, Muslin, Jersey, Wool, Sweatshirt knit
16	100	Heavy Weight	Denim, Suiting, Leather
18	110	Very Heavy Weight	Heavy Denim, Heavy Canvas, Upholstery Fabric
20	120	Extra Heavy Weight	Extra Heavy Fabric

Self-Check -2	Multiple choices and short answers

Part one Give short answer for the questions bellow

Which of the following is parts of sewing machine?

a. bobbin b. bobbin case c. hook d. all

2. Functions of needle part ‘But”?

a/ absorbs the pressure of the needle bar b/ needle blades c/ its part d/ **S**houlder

Part two short answers

Write at least 6 parts of sewing needle

1._____2._____3._____4._____5._____6.

Write at least four sewing machine adjustments part.

a._____ b._____

c._____ d._____

Operation sheet 2

OPERATION TITLE:	Adjust sewing machine for sewing purpose
PURPOSE:	For sewing
CONDITIONS OR SITUTATIONS FOR THE OPERATION:	Trainees should know the how adjust sewing machine
EQUIPMENT,TOOLS AND MATERIALS:	Screw driver, needle, thread, piece of fabric, oil, bobbin and bobbin cases
PRECAUTIONS:	• Prepare all needed materials, tools and equipment's • Use the right maintenance tools when required
QUALITY CRITERIA:	➧ All steps were completed in the correct sequence, ➧ All adjusting parts should be adjusted clear and visible, ➧ Your work should be neat and accurate.

PROCEDURES

I. Sewing machine adjustment

STEP

1. Clean any dust oil and other unwanted spots.
2. Insert bobbin with bobbin case
3. Install needle
4. Threading the yarn
5. Adjust stitch regulator
6. Test on the piece of fabric.

7. Finish task

LAP Test 2	Practical Demonstration

JOB TITLE: Adjust sewing machine for sewing purpose

UNITT: Machine condition

READING: TTLM- Information sheet unit 2

OBJECTIVES: At the end of the job the trainee will able to prepare Machen for sewing

WORK SHOP: **Materials, tools and equipment required**:

- Screw driver
- Needle,
- Thread,
- Piece of fabric,
- Oil,
- Bobbin
- Bobbin cases
- Sewing machine

Unit Three: Prepare Garment Components

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

- OHS procedures.
- Operations
- Laying out Garment components

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

3.1. Follow OHS procedures.

3.2. Determining garment assembly sequence operations

3.3. Laying out Garment components in garment assembly sequence

3.1. Follow OHS procedures.

3.1.1. OHS practices for sewing garment

Introduction

Occupational safety and health (OSH), occupational health is a multidisciplinary field concerned with the safety, health, and welfare of people at work.

The goal of occupational safety and health programs is to foster a safe and healthy work environment. OSH may also protect co-workers, family members, employers, customers, and many others who might be affected by the workplace environment The OHS **(**occupational

health and safety) means the system of protecting from work accident and all activity to guarantee and protect health and safety of the workers through preventive of works accidents and occupational diseases.

3.1.2. Hazard identification and control

Hazard identification is part of the process used to evaluate if any particular situation, item, thing, etc. may have the potential to cause harm. The term often used to describe the full process is risk assessment:

- Identify hazards and risk factors that have the potential to cause harm (hazard identification).
- Analyze and evaluate the risk associated with that hazard (risk analysis, and risk evaluation).
- Determine appropriate ways to eliminate the hazard, or control the risk when the hazard cannot be eliminated (risk control).

Occupational health and safety is concerned with addressing many types of workplace hazards, such as:

- Chemicals
- Physical hazards
- Biological agents
- Psychological fallout
- Ergonomic issues
- Accidents

3.1.3. Risk reduction measures

- Personal protective equipment
- Safe materials handling
- Taking of rest breaks
- Ergonomic arrangement of workplaces
- Housekeeping

3.1.4. Ergonomic arrangement of work place

Ergonomic is a science which is used for arrange the work place and Ergonomics on the hand:

- Combine all of the issues to improve workers efficiency and well being
- Maintain industrial production through the design of improved work places.

3.1.4. OHS & Ergonomics applications:

- To satisfy the needs of changing local people‘s attitudes.
- To change local work methods
- To change the traditional ways of doing things.
- Therefore, OHS & Ergonomic applications are a major source of work place improvement.

3. 2. Determining garment assembly sequence operations

Introduction:

The readymade garment manufacturing processing depends on some steps and techniques. The clothing creation running actions and methods included in the developing outfits for the huge of creation in company time frame for company reasons is known as outfits developing technologies. Garments plants are identified according to their item kinds are as follows: Garments Factory are classified with some dept.

3.2.1. Introduction to garment assembly:-

Garment assembly means; assembling a collection of different versions of each of a plurality of different parts of a garment, e.g. sleeves, bodices, skirts, etc., presenting the collection of garment parts to a customer for selection, fitting individual selected ones of the garment parts. Sewing is the craft of fastening or attaching objects using stitches made with a needle and thread. Sewing is one of the oldest of the textile arts, arising in the Paleolithic era.

The basic process of sewing involves fastening of fabrics, leather, furs or similar other flexible materials with the help of needle and threads. Sewing is mainly used to manufacture clothing and home furnishings. In fact, sewing is one of the important processes in apparel making.

Table 3.2.1.1 Operations **of Garments Manufacturing are given below in details:**

SL No.	Operation	Job	Method
01	Design/Sketch	It is given by buyers to manufacturers containing sketches including measurements of particular styles	Manual/Computerized
02	Basic Block	Basic block is an individual component of garments without any style of design (without Allowance, Style, Design)	Manual/Computerized
03	Working Pattern	When a pattern is made for a particular style with net dimension regarding the basic block along with allowance then it is called working pattern.	Manual/Computerized
04	Sample Garments	To make a sample, this will be approved by buyer. After making a sample, it is sent to buyer for approval to rectify the faults	Manual
05	Approved Sample	After rectify the faults, sample is again sent to buyers. If it is ok then , then it is called approved sample	Manual
06	Costing	▪ Fabric Costing ▪ Making Charged ▪ Trimmings ▪ Profit	Manual
07	Production Pattern	Making allowance with net dimension for bulk production	Manual/Computerized
08	Grading	If the buyer requires different sizes, so should be grade as S, M, L, XL, XXL	Manual/Computerized
09	Marker Making	Marker is a thin paper which contains all the components for different sizes for a particular style of garments	Manual/Computerized
10	Fabric Spreading	To spread the fabrics on table properly for cutting	Manual/Computerized
11	Cutting	To cut fabric according to marker dimension	Manual/Computerized
12	Sorting &	Sort out the fabric according to size and for	Manual

	Bundling	each size make in individual bundles	
13	Sewing	To assemble a full garments	Manual
14	Ironing & Finishing	After sewing we will get a complete garment which is treated with steam ironing & also several finishing processes are done for example extra loose thread cutting	Manual
15	Inspection	Should be approved as initial sample	Manual
16	Packing	Treated by Polyethylene bag	Manual
17	Cartooning	After packing, it should be placed In cartooning for export	Manual
18	Dispatching	Ready for export	Manual

3.2.1 Sewing defects

There are so many defects found in sewing process. But some of the remarkable and most commonly occurred defects are as below.

- Needle damage
- Skip stitches
- Thread Breakages
- Broken Stitches Seam Grin
- Seam Puckering

3.2.2. Prepares and sews sleeves garment parts

Sleeves are a crucial part of a garment because they are so important to its appearance and comfort of the many styles of sleeves possible, the currently popular set-in sleeves, kimono sleeves, and raglan sleeves.

- **SET-IN SLEEVES ARM HOLE AND SEW PARTS**

A sleeve that is to be set into a garment is always cut fuller than the armhole so that it can be shaped over the top of the arm and thus has enough ease for a comfortable fit.

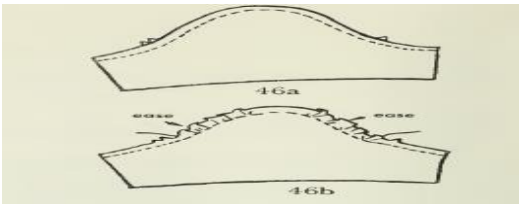


Figure **3.2.1.:** shirts sleeve arm hole parts

- **THE PLACKET**

Any sleeve stitched to an open cuff needs a placket stitched in the sleeve up from the wrist. The position of the placket is important-it is placed at the back of the sleeve in line with the elbow. There are three main styles of plackets .continuous placket, shirt-sleeve placket, and darted placket. Before the cuffs are stitched in place, the wrist is tucked or gathered on the sleeve edge. The gathers and tucks create a leasing sleeve silhouette, rounding at the wrist to contour the arm. The following sleeves are showing that can be sewing in different design and styles.

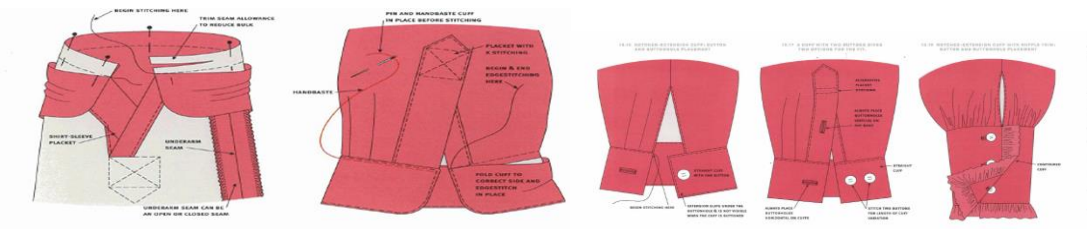


Figure **3.2.2** packet parts and its component

- **Preparation of materials**

A. pattern of sleeve cuff opening: length 12cm, width 2.5cm
B. pattern of cuff,
C. fabric, thread and sewing machine

Then sew sleeve placket opening first and preparing sleeve cuff in order assemble cuff with sleeve.

- **Procedure of Operation Process**

1. Press cuff opening and sleeve placket
2. Cutting slit
3. Machine –stitch sleeve placket

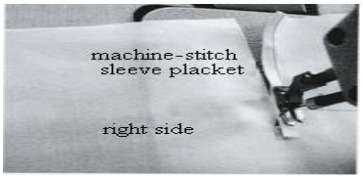


Figure 3.2.3 stitching Right side Sleeve

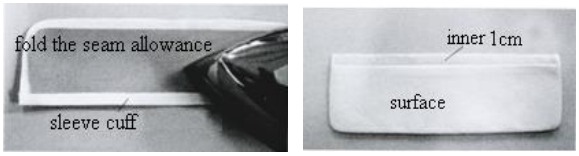


Figure 3.2.4 cuff

- **Installation sleeve cuff**



Figure 3.2.5 cuff installation

- **Sew Style of the stand with collar**

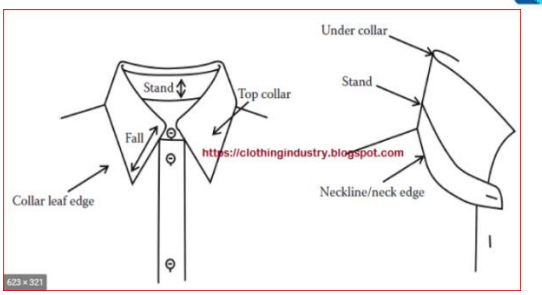


Figure 3.2.5: Collar components

Preparation materials to sewing collar parts for speed of work

- Outside collar by straight grain, seam allowance 1cm of outside collar
- Inside collar by straight grain, seam allowance 1cm of the inside collar
- Collar interlining by resin interlining, the size of outside collar interlining should be equal to the net pattern of the outside collar. Inside collar should be thin fusible woven interlining and seam allowance 1cm.

Procedure of sew collar parts

1. **Choose a pattern in the desired style.** Collars come in different shapes and sizes, and they are usually integrated into the design of a shirt or dress rather than added on later.

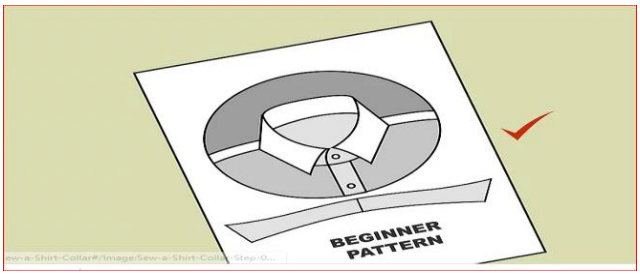


Fig.3.2.6 first step to prepare collar

Select the fabric you want to use for the collar. Your sewing pattern should indicate what type of fabric you will need for the collar and specify if a special type of fabric is recommended

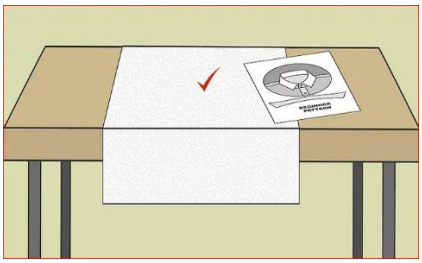


Fig.3.2.7. second step to prepare collar

Use the paper pattern included with your pattern to cut out the collar pieces. Cut out the paper pattern pieces that you will need to make your collar. Then, fold your fabric in half and smooth it out.

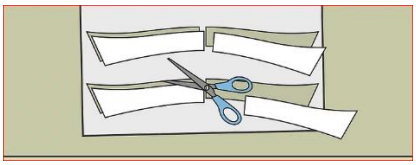


Fig.3.2.8 third step to prepare collar

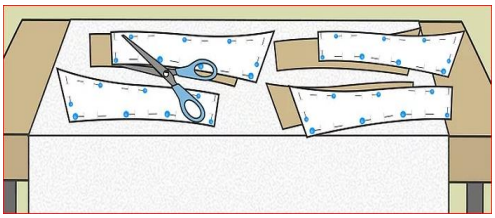


Fig.3.2.9 fourth step to prepare collar

Iron interfacing onto the wrong side of 1 collar piece.

After you finish cutting out the fabric pattern pieces, place 1 of the collar pieces wrong wide up on a flat surface, such as an ironing board or a towel on a countertop.

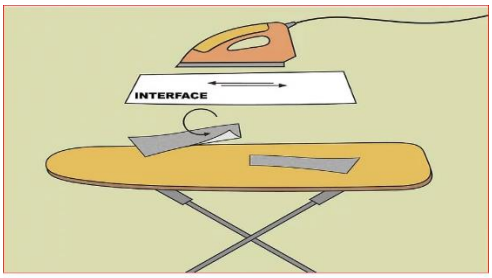


Fig.3.2.10 fifth step to prepare collar

Sewing the Collar Together

Pin the collar pieces so that the right sides are facing each other. Lay the collar piece with the interfacing attached to it so that the right (print or outer) side is facing up. Then, position the other collar piece on top of that one with the right side facing up.

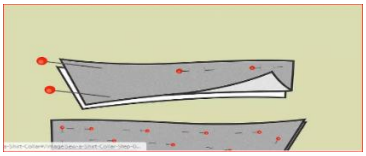


Fig.3.2.11 pinned collar

3.3. Laying out Garment components in garment assembly sequence

A layout is a plan for the placement of pattern pieces on the speeded fabric.

Spreading is the process of unwinding large rolls of fabric into long, wide tables in preparation for cutting each piece of a garment. The number of layers of fabric is dictated by the number of garments desired and the fabric thickness. Spreading can be done by hand or machine. Depending upon the fabric and cutting technology, up to 200 layers of fabric may be cut at one time. Fabrics that are more difficult to handle are generally cut in thinner stacks.

- Blouse, Shirt, plackets, collars, stand, facings, pockets, yoke/ shoulder, pocket, flap etc.
- Skirt Front, back, waistband etc.

- Trouser/ Pant Pocket, waist band, patch, fly, and belt loop, etc.

Types of laying components to make full garment and classifications are:

- sleeves – puff sleeve, tailored sleeve, cup sleeve and cuffs
- waistbands – straight or shaped
- collars – sports collar, shirt collars
- plackets_ flat, rolled(folded), over lapped
- facings – neck, armholes
- binds
- zips – dress, skirt, trouser, invisible
- buttons and buttonholes
- Pocket – cut away, patch, in seam, flap

3.1.1. Prepare laying garment components

✓ **THE SKIRT Components And Its Laying Out Of The Garments**

The skirt covers the lower part of the body in a tubular shape, from the waist down to the desired length.

✓ **Laying of skirt Components**

A. Waist band
B. Front panel
C. Back Panel
D. Pocket (if necessary

Laying part of trousers

Trousers, **slacks**, or **pants** (North American English, Australian English) are an item of clothing that might have originated in Central Asia, worn from the waist to the ankles, covering both legs separately Trousers are garments worn on the lower torso. Unlike skirts, pants have tubes surrounding each leg. Essentially all dress trousers are alike. They have split lined waistband, fly front, back and front pockets and they are lined to the knee.

Trousers don't have extended waistband tab, that is why fly shield closure is on the level of waistband to give maximum support possible for centre front.

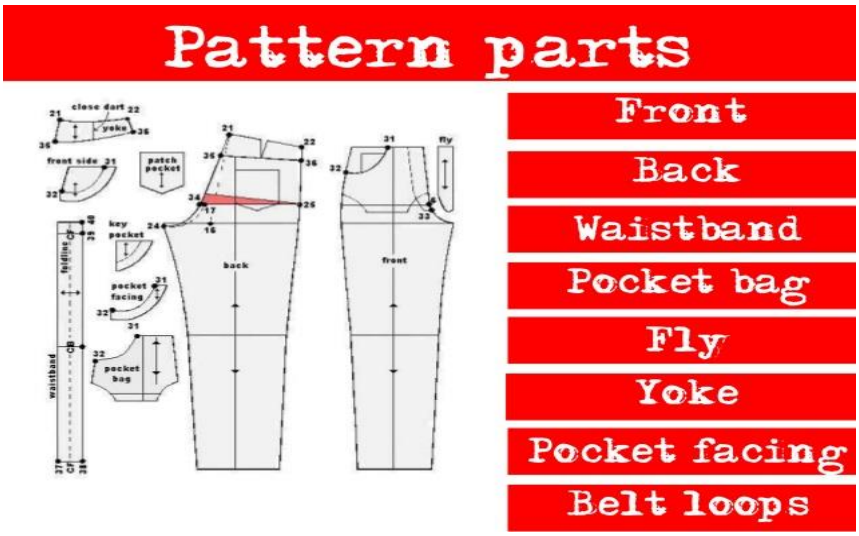


Figure 3.3.1 ***Parts and components of trouser***

- ✓ **Shirt laying components**

  A **shirt** is a piece of clothing that you wear on the upper part of your body. Shirts have a collar, sleeves, and buttons down the front.

- ✓ Generally laying out garment parts means preparing all garment pieces in order to make good quality garments from preparation to assembling process. That is the system of arrangements of every garment pieces or components with fitness in size dimension length and color type.
- ✓ Example to make garment shirts we should prepare the shirt components like: front and back body sleeve, collar, pocket, cuff, placket and buttons.

Self-Check -3	Multiple choices

II. Multiple choices

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page

1) Which one of the following is not type of sleeve2 point each)
   A. cup sleeve C. tailored sleeve
   B. Puff sleeve D. cuffs E. All
2) Which one of the following can NOT be garment pieces?
   A. Belt loop C. Sleeve
   B. Pocket D. Trouser
3) Which one of the following can NOT affect the productivity of a sewing operator?
   A. Machine speed C. Quality of bundle
   B. Material handling of the operator D. None of the above

Note: **Satisfactory rating – 3 points** **Unsatisfactory - below 3 point**

Answer Sheet

Score = _____

Name: _____ Date: _____ Rating: _____

2. _____
3. _____
4. _____

Operation sheet 3	Practical Demonstration
OPERATION TITLE:	**Prepare shirt components**
PURPOSE:	To know shirt components
CONDITIONS OR SITUTATIONS FOR THE OPERATION:	Trainees should know the shirt components
EQUIPMENT,TOOLS AND MATERIALS:	Front panel, back panel, sleeves, collar cuffs, placket, pockets
PRECAUTIONS:	• Prepare all needed materials, • Use the right maintenance tools when required
QUALITY CRITERIA:	➡ All steps were completed in the correct sequence, ➡ All shirt component should be prepared ➡ Your work should be neat and accurate.

PROCEDURES

II. Prepare shirt components

STEP

1. Receive bundle form cutting room
2. Separate each parts with the size
3. Correct the size
4. Set full components to sew.

LAP Test 3	Practical Demonstration

JOB TITLE: prepare garment components

UNIT: Garment components

READING: TTLM- Information sheet unit 3

OBJECTIVES: At the end of the job the trainee will able to prepare shirt component for sewing

WORK SHOP Materials, tools and equipment required:

- Cut piece bundle of shirt
- Barcode machine
- Bar code
- Screw driver
- Needle,
- Thread,
- Piece of fabric,
- Oil,
- Bobbin
- Bobbin cases
- Sewing machine

Unit four: Assemble Garment Components

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

- Machine stitch
- Sewing
- Machine speed and work handling
- Quality and correct fit.

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

4.1. Performing type of machine stitch

4.2. Sew Garment Components

4.3. Controlling Machine speed and work handling in sewing operation

4.4. Checking garment assemble quality and correct fit.

4.1. Performing type of machine stitch

In textiles, a stitch is a series of repetitive single turns or loops of threads or yarns through interloping, interloping, or interlacing. It is the fundamental element for sewing, knitting, embroidery, crochet, and needle lace-making whether by hand or machine. It can be formed by any of the following three methods:

- Interloping: It is formed by passing the loop of one thread through the loop of another sewing thread. E.g. Stitch type 401
- Intra looping: It is formed by passing the loop of one thread through the loop of the same thread. E.g. Stitch type 101

- Interlacing: It is formed when one thread passes over another thread. E.g. Stitch type 301

Based on this, there are more than 70 types of stitches out of which around 18-20 types are used most frequently and for ease of identification all the types have been grouped to 6 classes based on the number of the needle, direction of sewing, the form or shape of the stitch, purpose of the stitch.

The 6 classes of stitch are mentioned as:

1. Class 100: Single Thread Chain stitch

The stitches formed here are from one or more needles by the method of intra looping. Thus, one or more loops of the needle thread are passed through the fabric and secured by looping with the next loop of the same thread after they are passed through the fabric. This type of stitch is very insecure as each loop is dependent on the next loop and a single thread breakage can pull apart the entire stitch.

These look similar to that of lockstitch on the face side with the loops on the back. The added advantage of these loops is that it makes the stitch elastic and thus can be used where the fabric needs a little stretch such as in back neck tape in t-shirts. Also, with easy removal of stitch, it is used in basting operations in tailor-made garments. This kind of stitch is often not preferred for seaming operations but is widely used in multi-needle machines, as temporary stitch and blind stitch.

2. Class 200: Hand Stitch

These types of stitches are hand stitches that are used for decorative purposes. These are formed by a single sewing thread and the stitch is held by a single line of thread passing from one side to the other side of the fabric. This is mostly used for casual fitting with a simple sewing needle and thread as domestic needs but is also found as topstitch in high-priced garments due to its perfect finish. This can also be done on automatic machines called pick stitch sewing machines but are very slow and are rarely in use. The front and back of all the other types are given below.

3. Class 300: Lock Stitch

Lock stitch is the most common form of stitch in ready-made garments and is formed when the thread or threads are introduced from one side of the material to interlace with thread or threads introduced from the other side of the material. The top thread is called the needle thread and the bottom thread is called the bobbin thread. The interlacing of the threads makes the stitch secure and difficult to unravel makes it the most appropriate for a wide range of seams. Also, the lockstitch has adequate strength for most purposes with a correct combination of thread and fabric.

The main disadvantages of lock stitch are

Limited bobbin thread length makes it necessary for changing of the bobbin from when it gets finished.

Multi-needle stitching with many closed space needles is not possible due to limited space for the bobbin. So, at most two needles can be used in a lockstitch machine.

The interlacing of thread limits the elasticity of the stitch and is unsuitable for edge neatening.

It is not suitable for knitted fabric due to a lack of elasticity.

Stitch type 301 is the most common type of stitch with uses in joining garment components, topstitching, etc. Also, buttonholing, button attaching, blind stitching falls in this class of stitches. The front and back of all the other types are given below.

4. Class 400: Multi-thread Chain Stitch

It is a multi-thread chain stitch type where loops formed in one set of sewing thread is passed through the fabric and are held by interloping and interlacing with loops formed by another set of threads called the looper threads. It looks like that of a lockstitch on the front side of the fabric but has a double chain effect created by the looper thread on the backside. Compares to lockstitch, a 2-thread chain stitch is much stronger and since no threads are interlocking with each other within the fabric there are lesser chances of having a puckering in the seam. Another advantage of this is that both the needle and looper thread runs from large cones on the top of the

machine unlike that of the limited sewing thread inside the bobbin. Also, it runs much faster than that of a lockstitch machine at 8000rpm. Stitch type 401 is the most common of them all and is used in sewing jeans and trousers and is also used with overlock as a safety stitch. Stitch type 406,407 are used for joining lace, braid, elastics with the garment. The front and back of all the other types are given below.

5. Class 500: Over-edge Chain Stitch

It is mostly known as overlock stitch and is formed by one or more sets of sewing threads with at least one set of threads going around the raw fabric edge. All the stitch in this class has high elasticity which does not unravel on thread breakage. Also, the machines are equipped with a trimming knife to make the edge neat before sewing. The width of the stitch may vary from 3-5mm. Overlock stitches are classified according to the number of threads used for sewing such as 1,2,3,4 or 5 thread stitches.

1 thread overlock stitches are used for butt-seaming.

2 -3 thread overlock stitches are used as edge neating seam in woven and knitted garments.

4 thread overlock stitch also known as mock safety stitch provides extra strength while retaining flexibility.

5 thread stitch has two needle threads known as safety stitch which forms a stronger seam.

6. Class 600: Covering Chain Stitch

It is known as Flatlock stitch and is formed by three sets of sewing thread namely, needle, looper, and spreader. Apart from the needle threads, the other two sets cover the top and bottom parts of the stitch. It is the most complicated of all types with up to a total of nine threads including four needles and the rest looper and spreader thread.

4. 2. Sew Garment Components

Sewing is the activity of making or mending clothes or other things using a needle and thread. Sew a straight stitch 0.5 in (1.3 cm) from the raw edges on 3 sides. Take the pinned collar pieces to your sewing machine and start sewing along the first short edge. Sew all the way around the collar until you get to the other pinned edge.

- **Components of the shirt**

A **shirt** is a piece of clothing that you wear on the upper part of your body. Shirts have a collar, sleeves, and buttons down the front.



Fig.4.2.1 collar sewing

Trim the fabric around the outside of the stitches.

After the 2 collar pieces are attached, use a pair of fabric scissors to trim around the outside of the stitches. Cut away the excess fabric at the corners of the collar and cut a few notches into the fabric along the long edges to make it easier to push out the fabric and press the collar.

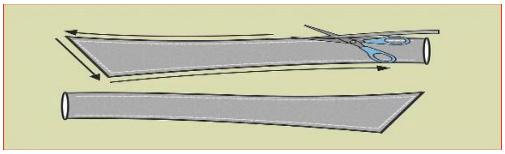


Fig.4.2.2 collar trimming

Invert the collar pieces and push out the fabric at the corners. After you have removed some of the excess fabric, use your finger to turn the collar right-side out. Then, reach into the collar and press around the edges with your fingers.

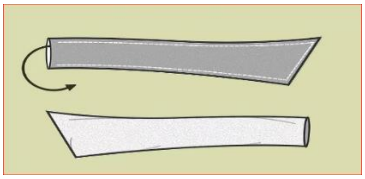


Fig.4.2.3 inverted collar

Press the collar

Press the collar with an iron to make it flat and crisp. Lay the collar on a flat surface, such as an ironing board or a towel on a countertop. Then, iron it with the iron on its lowest setting. Run the iron back and forth across the collar until it is flat and neat.

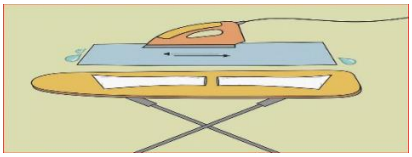
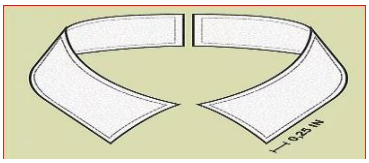
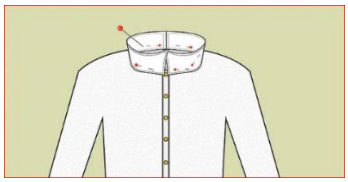


Fig.4.2.4 pressing a collar

Add an edge stitch to the outside of the collar if desired. Edge stitching the collar is optional, but it can make the collar look more finished and help it to hold its shape.





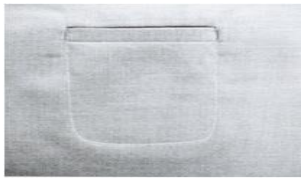


Fig.4.2.5 edge stitching *Fig.4.2.6 collar attaching on the shirt* *Fig.4.2.7 welt pocket*

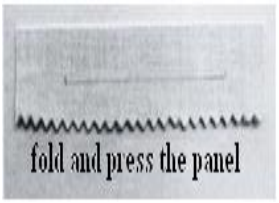
Single welt hidden pocket

Preparation materials

- Pattern of the pocket with Length 12cm; width 10cm, pocket opening by top stitch
- Pocketing by jaconet or rayon lining twill
- Welt pocket by fabric, length size=pocket opening +3cm, width size=4cm
- Pocket stay by straight grain, Length size=pocket opening +4cm, width size=6cm

Procedures of Operation Process





(1) Pocket stay (Fig.-4.2..8)

(2) press welt pocket (Fig. 4.2.9)





(4) Sew pocket stay (Fig. 4.2.11)

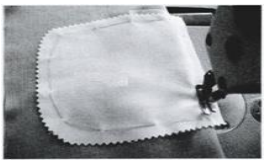
(3) Sew welt pocket (Fig. 4.2.10)

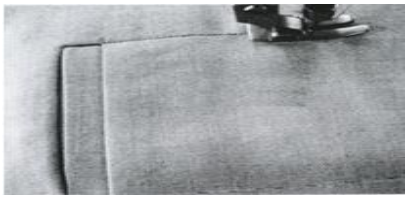




(5) Press welt pocket (Fig. 4.2.12)

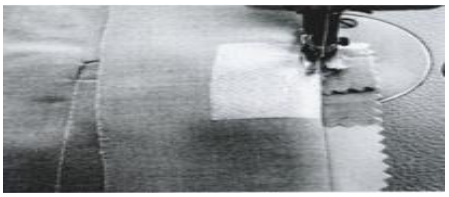
(6) Sewing the pocketing by hand (fig 4.213)





(7) Machine- stitch pocket opening (fig 4.2.14)

(8) Press top stitching (fig 4.2.15)



9) Stitching triangle (Fig.4.2.16)

STRAIGHT WAIST BANDS OF SKIRT WITH ONE PIECE

Most straight waistbands are cut in one piece with a fold line in the middle. Straight waist bands can be wide or narrow but on average are cut 2 inches wide.



Figure 4.2.17

4.3. Controlling Machine speed and work handling in sewing operation

Machine speed and work handling are controlled for the type of operations, fabrics and product types**.** Sewing techniques where the positioning, feeding and handling of work pieces involves discretionary changes, contouring or critical stopping points or involving the special handling skills required to accommodate fabric variations controlling the sewing machine in order to operate perfectly. The followings operations should control by the operators while sewing garments.

- Sewing techniques is the system of handling and controlling sewing machine.
- Aligning and sewing different seam/stitch type is creating different stitch methods and aligning garment pieces like using lapped, flat, open super imposed seam.
- positioning, feeding and handling of work pieces
- Gathering, easing, tucking, stitching curves
- Hemming is the system of folding the edge of sewing garments part
- darts and pleats is used to make for fitness of the garment to the wearers

Aligning and sewing straight seams or joining flat pieces of stable fabric together such as:

- ✓ top stitch
- ✓ edge stitch
- ✓ open and closed seams
- ✓ lapped seams
- ✓ flat seam
- ✓ super imposed
- ✓ over lapped seam
- ✓ decorative seam

- ❖ Sewing machine with hundreds of different stitches, embroidery automatic buttons, drop-in bobbins, automatic needle threaded. But if we had to choose one we would definitely say variable speed control (also called adjustable speed control).
- ❖ A Foot Pedal vs. Speed Control Slider we must control the sewing speed when you sew. This is important because you need to be in control when you are sewing or else you are going to have crooked lines.



Fig 4.3.1 speed controlling by her foot

Before the variable speed control slider you had a pedal. You put pressure on the foot pedal, which makes the sewing machine "go" or the sewing needle go up and down.

Just like a car the harder you press, or the more pressure you put on the pedal, the faster your machine will sew.

The problem with foot pedals is they can be sensitive and it is almost impossible *for me* to provide a consistent steady pressure on the pedal while maintaining hand / eye coordination and focusing on the garment I'm sewing.

The adjustable speed control and how it helpful to control

A machine with adjustable speed control will typically have a slider. This is a computerized sewing so it has an LCD screen with easy navigation keys to choose your stitch. You get 100 built-in stitches, which is plenty for any type of project a beginner can think of. Since this is computerized it has more automatic and touch button features like a start / stop button and of course speed control.

Generally controlling sewing machine speed for a better work handling mechanism to controlling following those activities

- Controlling sewing machine pedal pressing activities
- Adjusting the speed of machine
- Properly handling and sitting position
- Checking proper threading system of the machine

4.4. Checking garment assemble quality and correct fit

Quality is the degree to which a commodity meets the requirements of the customer at the start of its life. Quality standards are defined as documents that provide requirements, specifications, guidelines, or characteristics that can be used consistently to ensure that materials, products, processes, and services are fit for their purpose. Standards provide organizations with the shared vision, understanding, procedures, and vocabulary needed to meet the expectations of their stakeholders. Because standards present precise descriptions and terminology, they offer an objective and authoritative basis for organizations and consumers around the world to communicate and conduct business. Quality standard documents define the process used to produce documents. This means that you set out the procedures involved in document development and the software tools used for document production.

General Appearance

- Overall neatness
- Plaids, stripes, checks, and other designs are matched at seams
- Pattern and fabric are compatible

- Fabric with a directional design (such as vertical flowers) or nap (such as corduroy) is cut in a consistent direction, unless garment design requires variation
- Notions are compatible with fabric and garment design
  - ✓ Color
  - ✓ Fiber
  - ✓ Weight
  - ✓ Design
- Garment pressing is appropriate for fabric and style
- Flat, smooth, free from bulkiness
- Straight belt is uniform in width
- Contour belt has smooth, gradual curves
- Closure is appropriate, attractive, durable, secure, and functional
- Appropriate size and length for garment and individual

BUTTONHOLES

- Reinforced with interfacing
- Even in length, width, and equally spaced
- Uniform in appearance
- Placed with the grain or yarn direction of the fabric
- Appropriate length (large enough to allow button to pass through easily, yet small enough to hold garment closed)
- Correct placement
  - ✓ On right front of women's garments
  - ✓ On left front of men's garments
  - ✓ Overlap wide enough to cover button without gapping
  - ✓ Overlay occurs where it was intended (center front, center back, side seam, cuff)

Bound Buttonholes

- Rectangle has perfectly square corners
- Rectangle has the appearance of being about ¼ inch (6mm) wide
- If bound buttonhole is meant to be a decorative design detail:
- Fabric for lips match, blend, or complement the garment
- Outside of buttonhole is neat and flat

Machine or Hand-Worked Buttonholes

- Stitched in thread that matches or decoratively contrasts with fabric
- Stitching is regular and smooth in appearance, and uniform in length

Collar

Collar –All collars consist of a minimum of two pieces, the upper collar (which will be on the outside) and the under collar. There are many different types and styles of collars.

- Top stitching is even and secure, if used
- Only the top collar is visible

✓ Seam line is just under the edge of the collar

✓ Built-in roll prevents under-collar from showing

✓ Under stitching or topstitching holds under collar in place

✓ Collar stays are inconspicuous, if used

- o Interfacing is appropriate for design and fabric
- ✓ Maintains shape
- ✓ Reinforces fabric
- ✓ Provides stability
- o Enclosed seam allowance is invisible on outside
- ✓ Appropriate use of interfacing to prevent imprints from seam allowances
- ✓ Collar is smoothly pressed
- o Appropriate button(s) and buttonhole(s)
- ✓ Button size is suitable or fabric and design
- ✓ Buttonhole size appropriate for button

CUFFS: - A piece of fabric sewn at the bottom of a sleeve.

- o Flat, smooth, and free from bulkiness
- o Enclosed seams are trimmed and graded
- o Interfacing is used appropriately to prevent seam allowance imprints
- o Interfacing is appropriate for design and fabric
- ✓ Maintains shape
- ✓ Reinforces fabric
- ✓ Provides stability
- o Even in width
- o Built-in roll prevents cuff facing from showing
- o Seam line is on the cuff edge, if two-piece cuff

DARTS

- o Stitching line is smooth and free of puckers, bubbles, or folds
- o Appear as straight lines from the outside of the garment
- o Evenly spaced, if in groups
- o Symmetrical in shape and length on the left and right side of the garment body
- o Placed and shaped to conform to the body

FITTING

- o Fitting molds flat cloth pieces to the body contours and allows the garment to be comfortable and attractive.

- Grain or yarn direction (relationship of the yarns
- In the fabric to the hang of garment on the body).
- Lengthwise grain is perpendicular to the floor
- Crosswise grain is parallel to the floor
- Grain on the right side of garment matches that on the left side of garment
- Line (silhouette and seam lines of garment)
- Silhouette lines on the garment follow the silhouette lines on the body.

Self-Check -4	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write assembling steps on men's shirt?
2. Write and explain stitch classes?
3. Write sewing machine speed control steps?
4. What is the meaning of quality standards?

Note: **Satisfactory rating – 6 points** **Unsatisfactory - below 6 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Operation 4	Practical Demonstration
OPERATION TITLE:	Assemble shirt components
PURPOSE:	To know assemble shirt components
CONDITIONS OR SITUTATIONS FOR THE OPERATION:	Trainees should know the shirt components
EQUIPMENT,TOOLS AND MATERIALS:	Front panel, back panel, sleeves, collar cuffs, placket, pockets
PRECAUTIONS:	• Prepare all needed materials, • Use the right maintenance tools when required
QUALITY CRITERIA:	➡ All steps were completed in the correct sequence, ➡ All shirt component should be prepared ➡ Your work should be neat and accurate.

PROCEDURES

III. Prepare shirt components

STEP

1. Receive bundle form cutting room
2. Separate each parts with the size
3. Correct the size
4. Set full components to sew.
5. Assemble components
6. Check finished garment
7. Conform assembled parts

LAP Test 4	Practical Demonstration

JOB TITLE: Assemble garment components

UNIT: Garment components

READING: TTLM- Information sheet unit 4

OBJECTIVES: At the end of the job the trainee will able to assemble shirt component

WORK SHOP Materials, tools and equipment required:

- Cut piece bundle of shirt
- Barcode machine
- Bar code
- Screw driver
- Needle,
- Thread,
- Piece of fabric,
- Oil,
- Bobbin
- Bobbin cases
- Sewing machine
- Iron

Unit five: Hand Stitch

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

- Materials
- Type of stitch.
- Specifications
- hand stitching
- finished work
- Confirm completed work

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

5.1. Laying out Material in preparation of stitching process

5.2. Selecting appropriate type of stitch.

5.3. Determining hand stitch specifications

5.4. Performing hand stitching

5.5. Inspecting finished work

5.6. Confirm completed work

5.1. Laying out Material in preparation of stitching process

Hand stitches have many uses. Before the sewing machine, garment-making was done exclusively by hand. However, in today's home sewing world of sophisticated sewing machines and sergers, few garments are made entirely by hand. But, many home-sewn and custom-made garments continue to have some type of hand stitching used primarily as finishing techniques

(hemming, securing fasteners, etc.). Thus, knowing and understanding the proper stitch to use is important to the item's appearance as well as its function and longevity.

5.1.1 Stitching process

- Threading
- Tying a knot
- Taking a couple of very small stitches in the same location
- Taking a stitch and locking it by looping the thread around the needle and pulling it secure.

5.2. Selecting appropriate type of stitch

Basic hand stitches

there are several main hand stitches

• **tacking stitch**: - Tacking stitch is used to temporarily hold togethertwo or more fabrics in position while it is being permanently stitched. Simmer to running stitch

but with longer stitches (also known as basting). It is used on smooth fabrics and in areas that require close control, such as curved seams,

seams with ease, and set-in sleeves.

To do the tacking stitch:

1. Work with single or double or double thread, knotted at the end, and make evenly spaced stitches by taking the needle in and out of the fabric.

2. End a line of tacking with 1 backstitch or a knot.

3. To release the tacking stitches, cut off the knot and pull out the thread.

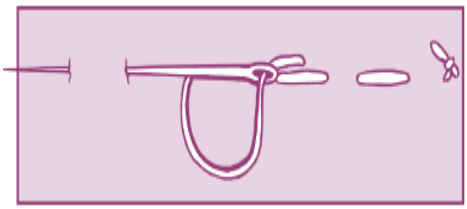


Figure 5.2.1 Tack stitch

• Running stitch: - Running stitch is short even stitches used for fine seaming, tucking, and

mending and for gathering. It is like tacking stitch except that the stitches are smaller and permanent.

To do the running stitch

1. Fasten the thread with a few back stitches and work small stitches by passing the needle in and out of the fabric. Keep the stitches and spaces as even as possible.

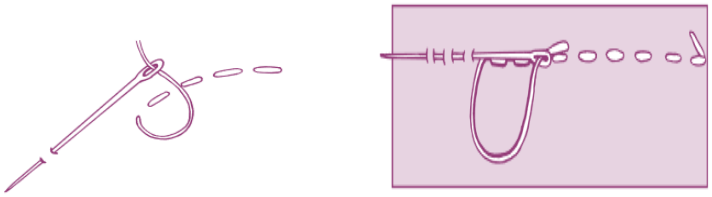


Figure 5.2.2 running stitch

• Back stitch: - Back stitch is the strongest hand stitch and is used to imitate machine stitches, Work back stitch from right to left. It serves to secure hand stitching and repair seams; for hand-under stitching, top stitching and hand picking zippers.

To do the backstitch

1. Begin with a couple of stitches worked on the spot, and then take a stitch and a space.
2. Take the needle back over the space and bring it out the same distance in front of the thread.
3. Continue to the end of the seam.
4. Fasten off with a couple of stitches on the spot.

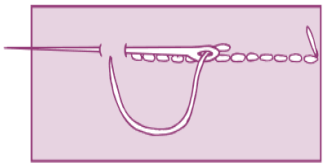


Figure 5.2.3 back stitch

• Slip stitch: - This is a nearly invisible stitch formed by slipping the thread under a fold of a fabric. Slip stitch can be used to join two folded edges together or one folded edge to a flat piece of fabric.

To do the slip stitch

1. Work from right to left with a single thread fastened with a knot hidden inside the hem.
2. Bring the needle out through the folded edge; pick up a few threads of the flat fabric and then

work through the folded again.

3. Slide the needle along, come out of the fold to make the next stitch.

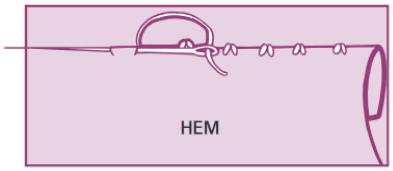


Figure 5.2.4 slip stitch

• Overcast stitch: - Overcast stitch, or over sewing, is a way to neaten a raw edge to prevent heavyweight fabrics from fraying. Relate the length of the stitch to the fabric and how badly it will fray. The most basic applications are formation of narrow seams and finishing of seams.

To do the overcasting stitch

1. Begin with a few back stitches.

2. Make diagonal stitches over the raw edge, spacing them equally and make then all the same length. Be careful not pull stitches too tight.

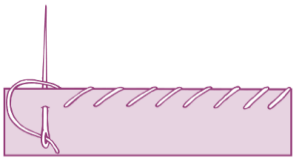


Figure 5.2.5 over cast stitch

• Blanket stitch: - There is a difference between BLANKET STITCH (often incorrectly called Buttonhole Stitch) and

Buttonhole stitch (sometimes called Tailor's Buttonhole).

Blanket stitch got its name because the stitch was used to hold down the edge of a blanket, turned once. It falls into the category of “looped” stitches. Having numerous variations -- some of which are illustrated below -- it still remains blanket stitch.

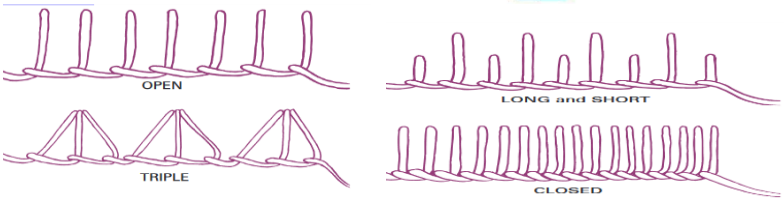


Figure 5.2.6 blanket stitch

Traditionally an embroidery stitch, the blanket stitch can be used in garment construction. It is often serve, to cover fabric edges decoratively.

To do the blanket stitch

Worked close together, blanket stitch is used to support fabric for cutwork. It is worked before the fabric is cut on a single thickness.

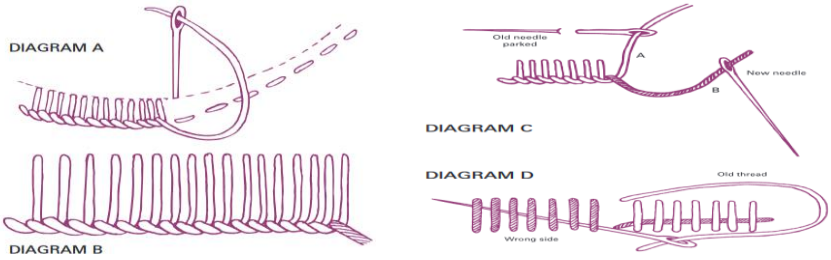


Figure 5.2.6 blanket stitch

To end an old thread and start a new one, leave the threaded needle dangling on the right side. Start the new needle by running it through the back of the previous stitches, bringing the needle up the distance of one stitch away. Before starting the new stitching, draw the old thread upwards as shown in Diagram C, parking the needle out of the way. With the new needle start stitching, using the parked thread as a "ruler".

When enough of the new stitches are established, complete the missing stitch and work the end as shown in Diagram D

• Buttonhole stitch: - buttonhole stitch is used to stitch hand- made buttonholes. These require more support because the button shank constantly rubs the edge of the fabric. It falls in the "knotted" category.

To do the blanket stitch

1. Bring the thread out on the lower line.

2. Insert the needle in position in the upper line and take a straight downward stitch, keeping the

working thread under the point of the needle.

3. Pull up the stitch to form a loop and repeat

5.3. Determining hand stitch specifications.

Hand stitches have many uses. Before the sewing machine, garment-making was done exclusively by hand. However, in today's home sewing world of sophisticated sewing machines and sergers, few garments are made entirely by hand. But, many home-sewn and custom-made garments continue to have some type of hand stitching used primarily as finishing techniques (hemming, securing fasteners, etc.). Thus, knowing and understanding the proper stitch to use is important to the item's appearance as well as its function and longevity. Depending on the stitch and its use, some techniques require double thread (sewing on a button, or securing hooks/eyes and snaps), but most are worked with single thread. A relatively short length of thread is strongly recommended. Thread that is too long can become tangled easily and will tend to fray and break. Many sewing experts recommend using thread no longer than 18 to 24 inches.

It is always important to select the appropriate thread and needle for the fabric and the task.

Specification of hand stitch

- Use extra-fine thread for basting stitches--it is a very fine thread that does not show press marks.
- Use topstitching or buttonhole thread for making hand buttonholes and for sewing on buttons or other fasteners. Use button or carpet thread for sewing on buttons. When heavier thread is used, a single strand rather than double is sufficient.
- Use a color similar to the garment for basting, since some colors (especially dark colors) rub off or transfer.
- Hand needles come in a variety of sizes and types. For finer fabrics, use a smaller needle.
- Use a finer needle when short, single stitches are required such as pad stitching. Longer needles are preferred when multiple stitches are to be stitched at one time, such as basting.

5.4. Performing hand stitching

To stitch a beautiful garment various steps have to be undertaken.

Attaching two or more pieces of cloth together with the help of a needle and thread, by taking the threaded needle up and down through two pieces of cloth is what forms a stitch.

Use a finer needle when short, single stitches are required such as pad stitching. Longer needles are preferred when multiple stitches are to be stitched at one time, such as basting.

Standards

A ***well-made hand stitch*** will:

• be secured at beginning and ending with no loose threads.

• have a uniform length.

• be invisible on the outside of the garment.

• be neat on the inside.

• have knots or thread ends between the fabric layers or hidden within construction details.

• consist of an appropriate thread type for the stitch, fabric, and task.

• be smooth and not create puckers on the right or wrong sides of the fabric

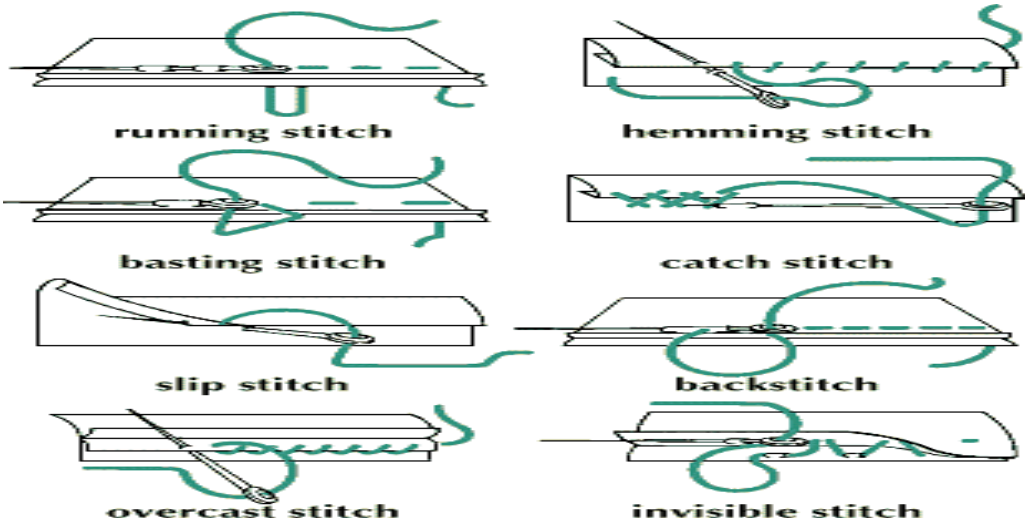


Figure 5.4.1 All types of hand stitch

5.5. Inspecting finished work

The inspection that is done for controlling the quality of garments is mainly meant to examine in bare eyes. Checking of the fabrics of garments, sewing, button, thread, zipper, measurements of garments etc. with the standard process is called the inspection. In each section of a garments industry, there are arrangements for inspection. The main purpose of inspection is to identify the faults at the earliest possible steps for production of garments and earlier the defects will be detected lesser will be the wastage of time and money. For conducting successful and meaningful inspection, steps can be adopted as per the 'inspection loop' described below. First, identify defects through inspection, inform about the defects to the concerned person, identify the causes of defects, and rectify them.

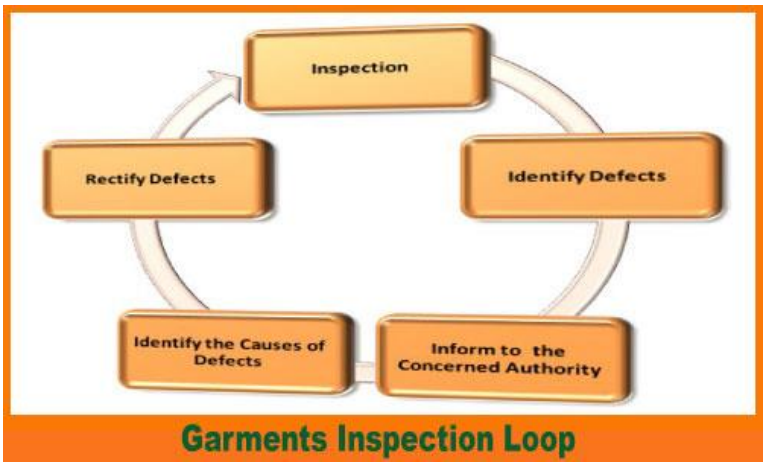


Figure 5.5.1 garment inspection loop

What inspected: -

Sewing defects:- Sewing defects - Like open seams, wrong stitching techniques used, same colour garment, but usage of different colour threads on the garment, miss out of stitches in between, creasing of the garment, erroneous thread tension and raw edges are some sewing defects that could occur so should be taken care of.

Needle damage: evidenced by holes, picked threads, ruptured threads or damage to the fabric; caused by wrong size or types of needle, blunt needle, needle heat, machine feed difficulty.

- Skipped stitches
- Thread breaks
- Broken stitches
- Seam grin
- Seam pucker
- Pleated seams
- Wrong stitch density
- Uneven stitch density
- Staggered stitch
- Improperly formed stitches

Seam defects:

- Mismatched of adjacent part
- Wrong seam or stitch type used
- Wrong shade of thread used

Assembly defects:

- Finished components not correct to size or shape or not symmetrical
- Finished garments not to size due to from incorrect patterns, inaccurate marking or cutting, shrinkage and stretching fabric, incorrect seam width.
- Parts, components, closures or features omitted, caused by bad work flow, parts omitted in cutting, careless operator.
- Components of features wrongly positioned or misaligned arising from incorrect marking or sewing not following the mark.
- Interlining incorrectly positioned, twisted, too full, too light, cockling.
- Lining too full, too tight, showing below the bottom of the garments, twisted, incorrectly pleated and so on.
- Garments parts cockling, pleated, twisted, showing bubbles and fullness.
- Garment parts shaded due to being mixed after cutting.
- Parts- in one way fabric in wrong direction
- Mismatching trimmings

Finishing inspection or finishing defects

- Spots/burn/melt at the time of ironing
- Broken button, zipper and so on.
- Flattened nap or surface
- Change in color
- Crease not correctly formed
- Garments not thoroughly dried
- Stretching in fabric during pressing

- Pocket and collar incorrectly aligned at the time of pressing and ironing.
- Lining showing pleats, creases, wrinkles, shines, etc.
- Shrinkage due to heat and moisture.
- Incorrectly folding
- Mismatched trimmings
- Incorrectly packing (not as per packing instruction)

5.6. Confirm completed work

The definition of conform is to make the same, or be in agreement or fit with measurement

To be or act in accord with a set of standards, expectations, or specifications.

Conform complete work in garmenting; Garment design is an integration of all the design elements, including colour, texture, space, lines, pattern silhouette, shape, proportion, balance, emphasis or focal point, rhythm and harmony. Each of these contributes towards the visual perception and psychological comfort of the garment. Principles of illusion can be utilized in garment design to flatter the figure of the wearer (Davis, 1996). For example, the Muller–Lyer illusion (a line with angled extensions at each end appears longer than a line of equal length, but with doubled back angled lines at each end) may be applied to pattern design to lengthen or shorten the perceived figure of the wearer. The lengthening effect may also be created by applying the horizontal–vertical illusion, i.e. a vertical line seems longer than a horizontal one of the same length.

Self-Check -5	Hand Stitch

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write steps of hand stitch operation ?
2. Write and explain types of hand stitch?
3. Write at least six finishing defects?
4. Draw the garment inspection loop.

Note: **Satisfactory rating – 6 points** **Unsatisfactory - below 6 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Operation sheet 5

OPERATION TITLE:	**Assemble shirt components**
PURPOSE:	To know assemble shirt components
CONDITIONS OR SITUTATIONS FOR THE OPERATION:	Trainees should know the shirt components
EQUIPMENT,TOOLS AND MATERIALS:	Front panel, back panel, sleeves, collar cuffs, placket, pockets
PRECAUTIONS:	• Prepare all needed materials, • Use the right maintenance tools when required
QUALITY CRITERIA:	➡ All steps were completed in the correct sequence, ➡ All shirt component should be prepared ➡ Your work should be neat and accurate.

PROCEDURES

IV. Prepare shirt components

STEP

8. Receive bundle form cutting room
9. Separate each parts with the size
10. Correct the size
11. Set full components to sew.
12. Assemble components
13. Check finished garment
14. Conform assembled parts

LAP Test 5	Practical Demonstration

JOB TITLE: Assemble garment components

UNIT: Garment components

READING: TTLM- Information sheet unit 4

OBJECTIVES: At the end of the job the trainee will able to Assemble shirt component

WORK SHOP Materials, tools and equipment required:

- Cut piece bundle of shirt
- Barcode machine
- Bar code
- Screw driver
- Needle,
- Thread,
- Piece of fabric,
- Oil,
- Bobbin
- Bobbin cases
- Sewing machine
- Iron

Unit Six: Complete work

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

- Hand sewing.
- Garment faults and action.
- Pres Garments.
- Reworks action
- Documentation.

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

6.1. Undertake hand sewing according to required sewing quality.

6.2. Inspecting and identifying sewn garment faults and take action.

6.3. Pressing Garments according to fabric requirement and construction details.

6.4. Performing and arranging other appropriate reworks action

6.5. Completing work documentation.

6.1. Undertake hand sewing according to required sewing quality.

Hand sewing have many uses. Before the sewing machine, garment-making was done exclusively by hand. However, in today's home sewing world of sophisticated sewing machines and sergers, few garments are made entirely by hand. But, many home-sewn and custom-made garments continue to have some type of hand stitching used primarily as finishing techniques (hemming, securing fasteners, etc.). Thus, knowing and understanding the proper stitch to use is important to the item's appearance as well as its function and longevity.

Backstitch (Prickstitch) -- a very strong, secure stitch. Sometimes a distinction is made between the ***backstitch*** and ***prickstitch***. Some authorities consider the prickstitch to be the shorter, finer stitch. Stitches are even and evenly spaced on the top side of the fabric. On the back or underside, the stitches overlap slightly. The stitch is used:

- To hold fabric pieces together firmly–sew or repair seams.

- In place of machine stitching in handmade garments.
- As under stitching for delicate garments or a difficult-to-reach location.
- To put a zipper in by hand.

To do the *backstitch*, begin by securing the thread on the underneath side or between the fabric layers. Bring the needle through to the right side of the fabric.

Insert the needle approximately 1/16 to 1/8-inch to the back of where the thread came out of the fabric. Pass the needle under all layers of the fabric and forward twice the length of the stitch (approximately 1/8 to 1/4-inch). Bring the needle back to the top or surface of the fabric pulling the thread snug. Stitches will have a chain-like look on the underneath side.

Buttonhole --a very strong stitch. It is worked from right to left with the point of the needle toward you and the raw edge of the fabric (edge of the fastener you are covering) away from you. The stitch is used to:

• make hand worked buttonholes.

• sew on fasteners (snaps, hooks, and eyes).

• finish the edge of an appliqué

• cover hooks and eyes.

To do the buttonhole stitch, secure thread end and bring thread to the outside edge. When working a buttonhole, insert the needle to the

- Backside between the lips, bringing the point of the needle to the surface approximately a 1/8-inch below the lip.

Wrap the thread under the needle from left to right. Pull the needle through allowing the loop to slide to the edge of the lip forming a knot as the thread is pulled very secure.

When covering hooks and eyes, bring the needle to the surface. Sew around the fastener looping the thread behind the needle to form tight knots along one side. Stitches should be very close together and very secure.

Catch stitch -- worked from left to right from one edge of the fabric to another creating an X-like formation. The X-like formation provides some elasticity or "give" in the stitch, which is ideal in some situations (working with knit fabric, tacking facings, etc.). It is used:

- For hemming.
- For tacking a facing at a seam edge.
- To hold interfacing pieces together.

The catch stitch can be worked from edge-to edge across a fabric edge. This is sometimes called a ***flat catch stitch.*** A small stitch is taken ¼-inch down from the hem edge.

Another small stitch is taken in the garment at the hem edge. Notice the needle is pointing left as the stitching moves from left to right creating the X-stitch formation.

Flat catch stitch

A ***blind catch stitch*** is worked with the hem edge turned back approximately ½-inch. The stitch catches the backside of the hem to the back side of the garment. The stitches do not show from the right or wrong side when completed. The blind catch stitch is used to create a *tailor's hem.*

Blind catch stitch

With thread end properly secured, take a very small stitch (a couple of threads) of the garment. Take the next stitch approximately ¼-inch to the right in the backside of the hem.

Alternate between the hem and the garment moving from left to right. This technique is generally preferred as the hemming stitch for most knits.

Cross-stitch tack -- a decorative as well as a functional stitch. The stitch provides a degree of flexibility yet security to an area. It is often used when tailoring a jacket or coat lining to secure the center back ease pleat and any dart tucks.

A series of diagonal stitches are taken ¼ to ½- inch apart through all layers of fabric, to form a series of "X's" or crosses. Either single or double thread can be used.

Diagonal basting -- a custom tailoring term for a longer form of the pad stitch. It is used to hold the interfacing to the facing. The stitch can be a permanent or temporary stitch.

If it is to be permanent, it must not show through on right side of the fabric. The following diagram illustrates how changing the direction of stitching affects the look of the Finished stitches - chevron or parallel lines. **Featherstitch (Briar)** --primarily a decorative hand stitch that can be used on the inside or outside of a garment. The stitch can be functional as well as decorative. It is often used:

• When tailoring a lining to secure the center back ease pleat and dart/tucks.

• To secure appliqué to a desired area.

• As an embroidery stitch.

A series of very small stitches are taken on alternate sides of a given line, pleat, or tuck area. The thread can be single or double, decorative or plain.

To do the *featherstitch*, begin by securing or hiding the thread end. Bring thread to the surface in the center or on the "given line."

Take a small diagonal stitch, approximately 1/8-inch to the right of the center. Angle the needle to come out on the centerline approximately 1/8 to 1/4-inch below the thread/stitch above. Position the thread so that it crosses the centerline and is underneath the needle at all times.

The next stitch is taken diagonally from the left of the center line, pointing toward and coming out at the center line. These formations are repeated for the desired length needed.

Felling -- a slant stitch formation used to:

• attach or secure edges of fabric such as the undercollar to the neck edge facing of the garment when custom tailoring.

• close seams from the right side.

• attach appliqués.

Using single thread, secure thread in an inconspicuous location between layers of fabric. Hold the needle diagonal to the folded edge and pick up a very small stitch (a couple of threads) in the fabric opposite the thread.

Slip the point of the needle through the edge of the fold and approximately ¼-inch to the right, picking up a few threads of the other side or garment piece. Pull the needle and thread through. Stitches should be close together and pulled very secure.

Repeat stitch formation.

French tack --a thread connection securing separate garment segments to one another--i.e. a free-hanging lining or a floating snap. The connection is usually 1/4 to 3/8-inch in length.

It can be formed one of two ways:

Thread Bridge & Buttonhole Stitch – Using matching double thread, connect the parts/pieces with a bridge of double threads, approximately 1/4 to 3/8-inch in length. The bridge should consist of at least two sets of double threads. Starting at one end of the bridge, work a close, tight buttonhole stitch across/around the thread bridge. Refer to information above on buttonhole stitch.

Stitches should be *very tight* and *very close together*. At the end of the thread bridge, lock,

- Secure, and hide thread end.

Crochet Stitch/Loop - Using matching double thread firmly secure thread. Take a very small stitch, leaving a loop in the thread. Release the needle.

Using your fingers, loop the thread Pull loop very snug next to the fabric.

Continue the looping process to create the desired tack length.

Make sure loops are very secure and snugly positioned against the previous loops.

Insert the needle through the last loop to lock. Secure to the adjacent fabric segment and hide thread ends.

Overcast – is used primarily as a seam or edge finish to prevent raveling. It is made by stitching over the fabric edge and can be worked from either direction. A single thread is used.

Secure thread. Beginning with the thread on the top side of the fabric edge and to the side of the needle, move the needle forward approximately 1/4-inch. Insert the needle from the back side bringing it to the right side.

Repeat for the length needed. Thread will wrap the raw edge of the area (seam, facing, hem). Secure the thread at the end of the line of stitching and hide thread end.

Pad stitch--a custom tailoring stitch. Stitches can form a chevron or "V"-like formation, or be more parallel depending on the direction of each row of stitching–see **diagonal basting stitch**. The stitch is worked using single thread. The pad stitch is used to:

• give firmness to a garment area.

• attach the interfacing permanently to the garment piece.

When the stitches are short and close together, they provide more control and firmness. This is especially needed in a jacket/coat lapel area, or in the stand of a collar.

Secure thread and bring it to the surface of the fabric. Working from top to bottom or bottom to top, take a 1/8 to 1/4- inch stitch pointing the needle perpendicular to the direction you are stitching. Pull thread secure, but not tight.

Depending on the control or firmness needed, move the needle up or down the fabric 1/4 to

1/2-inch and take another 1/8 to 1/4-inch stitch.

Continue by repeating these stitches.

Running -- an in-and-out even stitch. It is very closely related to an even basting stitch, but stitches are smaller and usually permanent.

Use single thread. The ***running stitch*** is used for:

- Easing
- Very fine gathering.
- Hand darning.
- very delicate sewing such as fine seaming and tucking

Secure thread and bring the needle to the fabric surface. Insert the needle into the fabric; taking three or four small, even, forward stitches, approximately 1/4-inch apart.

- Pull the needle through the fabric. Repeat.

6.2. Inspecting and identifying sewn garment faults and take action.

The aim of garment inspection is to visually inspect articles at random from a delivery in order to verify their general conformity and appearance with instruction/description and/or sample received.

There are different types of inspection following by inspectors as requirement of consumers.

I. ***Pre-Production check:***-This is done before production starts. Where then is a final verification of the material used; style, cut and workmanship of the garment or pre-production sample as per the customer Requirements.

II. ***Initial production check:***-This is done at the start of production where a first batch of garments is inspected; to distinguish possible discrepancies/variation and to allow fro the necessary corrections to be made bulk production. The inspection is a preliminary stage covering mainly style and general appearance, workmanship, measurements, quality of fabrics, components, weight, colour and/or printing.

During production check:-This is done during production to ensure initial discrepancies/variations have been rectified. This inspection is in fact the follow -up of the initial production check and is generally carried out a few days after the initial inspection, especially if discrepancies have been detected at that time.

Final Random Inspection: -This is carried out when the production of the total quantity of an order or partial delivery is completed. A sample lot will be selected from the order and a percentage of the garments will be inspected, this percentage usually being stipulated by the buyer. The AQL sampling inspection may be applied or another inspection system designed by the buyer. Sewing Faults with Causes and Remedies: There are so many defects found in sewing process. But some of the remarkable and most commonly occurred defects are as below.

1. Skipped stitches

1. Skipped stitches:

SL No.	Causes	Remedies
01	Failure of hook or looper and needle to enter the loop at the correct time.	Examine the setting and timing between needle and hook or looper.
02	Irregular thread tension on the upper or lower loop.	The tension of the thread should be adjusted.
03	Due to needle deflection.	The needle should be changed.
04	If needle thread loop size is too small.	Needle size and thread should be adjusted.
05	When flagging of fabrics is happened during sewing.	The pressure of the pressure foot should be adjusted perfectly.
06	If the sewing thread is unable to form a loop.	The thread should be changed.

2. Unbalance stitch

2. Unbalance stitch:

SL No.	Causes	Remedies
01	Incorrect tension of sewing thread.	The setting of accurate tension to the thread.
02	Used incorrect thread path.	Using of accurate thread path.
03	Incorrect adjustment of needle thread path.	Using of right thread path.
04	Snagging of the needle with bobbin case and positioning finger.	Bobbin case to be smooth and finger positioning to be set again.
05	If sewing threads are not lubricated.	Better quality threads must be used here.

3. Staggered stitch,

3. Staggered stitc

SL No.	Causes	Remedies
01	Due to needle deflection.	Needle size should be increased.
02	Due to the wrong needlepoint.	The needle should be changed.
03	Incorrect adjustment of needle and thread size.	Needle size and thread size should be changed.
04	Due to defected motion of feed dog.	Feed dog motion should be adjusted.
05	If fabrics are not controlled properly in the feed mechanism.	Accurate pressure of the pressure foot should be adjusted.

4. Variable stitch density,

4. Variable stitch density:

SL No.	Causes	Remedies
01	The incorrect unwinding of thread form package during sewing.	The position of the thread guide should be 2.5 times higher than the position of the thread package.
02	Twisting of needle thread in the bottom of thread package.	A foam pad should use at the bottom of the thread package.
03	Twisting of thread in thread guide.	Correct threading of sewing thread during sewing.
04	Excessive tension of the thread.	The tension of the thread should be less or the use of higher strength threads.
05	Using of broken check spring.	Check spring should be changed.
06	Fraying of thread in the needle.	Finer threads should be used or to be used heavy needle.
07	Becoming more heated of sewing thread.	Needle lubricant and needle cooler should be used.
08	Becoming more heated of the hook.	Lubricant should be available and test the distance between needle and hook.
09	Using low-quality sewing thread.	The sewing thread should be changed.

5. Seam puckering,

5. Seam puckering:

SL No.	Causes	Remedies
01	Higher thread tension.	Bobbin tension should be kept as low as possible.
02	Improper thread balance.	Proper thread balance should be ensured between the top and bottom thread.
03	Incorrect thread types.	Have to maintain tension guides properly.

6. Bobbin or looper thread breakage,

6. Bobbin or looper thread breakage:

SL No.	Causes	Remedies
01	The incorrect winding of threads on to the bobbin.	The proper winding of threads on to the bobbin.
02	Excessive tension to the bobbin threads.	The tension should be adjusted to the bobbin threads.
03	If the edges bobbin case, looper eye, and so on are more sharpened.	The edges should be smooth.
04	Incorrect fitting of the bobbin case.	Test the size and types of the bobbin.

7. Needle thread breakage,

7. Needle thread breakage:

SL No.	Causes	Remedies
01	The incorrect winding of threads on to the bobbin.	The proper winding of threads on to the bobbin.
02	Excessive tension to the bobbin threads.	The tension should be adjusted to the bobbin threads.
03	If the edges bobbin case, looper eye, and so on are more sharpened.	The edges should be smooth.
04	Incorrect fitting of the bobbin case.	Test the size and types of the bobbin.

8. Thread fusing when the sewing machine stops.

8. Thread fusing when sewing machine stops:

SL No.	Causes	Remedies
01	Faulty sewing thread.	Should be used better quality thread.
02	The densely woven fabric is poorly finished.	Should be improved fabric finishing.
03	Damaged needle after sewing thread breakage.	Should be changed the needle.

6.3. Pressing Garments according to fabric requirement and construction details

.

Pressing Is the process by which the unwanted creases and wrinkles are removed from the garments and the outlook of the garments is improved as well is termed as pressing. The pressing process influences the final garment appearance and hence the garment appeal. The pressing process influences the final garment appearance and hence the garment appeal. Finishing and pressing machines contour the semi-finished garment panels as well as finished garments by bringing down the fibres in the fabric to an elastic state and then deforming and setting them. It is also known as ironing. Pressing is an important finishing process of in garment industry. In garments industries there is a separate section for ironing the products. It is generally done by heated plates and electric irons in moist condition of garments.

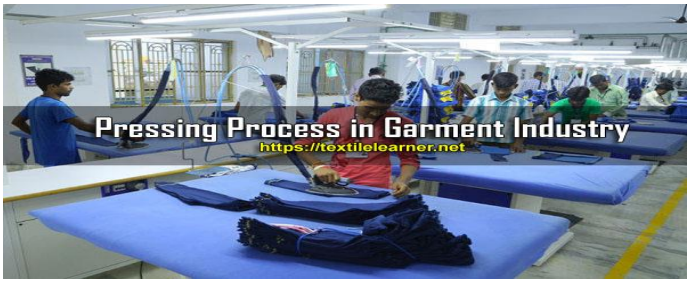


Figure 6.3.1 garment pressing

Basic Components / Parameters of Pressing:

In order to achieve good pressing quality, there are four basic parameters that need to be controlled to meet optimum performance: heat, moisture, pressure and cooling with vacuum.

1. **Heat**: Heat is required in most pressing operations to enable the fibers to soften and thus stabilize the garment shape. Temperature selection is of utmost importance, as an incorrect temperature setting can cause damage to fibers and yarns.

2. **Moisture**: Moisture is introduced by the use of steam. Steam at different pressures has different moisture contents; the higher the steam pressure, the lower the moisture in the steam. The presence of moisture is required to aid in fiber swelling and thus shape stabilization. Different fibers require different amounts of moisture. For example, natural fibers such as cotton and wool and regenerated cellulose fibers such as bamboo viscose and viscose rayon require the presence of moisture in the steam, and therefore steaming tables are usually preferred. On the other hand, synthetic fibres require heat to promote swelling and therefore relaxation of the structure. Excessive moisture may cause fabric shrinkage and colour bleeding.

3. **Pressure**: Pressure is applied to the garment during pressing to give good crease retention and permanency. Excessive pressure may result in garment or crease distortion.

4. **Vacuum:** Vacuum is applied at the completion of the pressing operation. This draws cool air through the garment, reducing the garment temperature, lowering the moisture content and increasing shape retention. Particularly important for garments made from wool and wool blends, this also applies to cotton and viscose blends with synthetic fibres such as polyester and nylon.

6.4. Performing and arranging other appropriate reworks action

Rework in the garments industry is a regular work that hampers the smooth production rate and focuses poor quality products having an impact on overall factory economy. Minimization of reworks is a must in quality and productivity improvement. Rework is a vital issue for inferiority product and low production rate

Rework is the process of correcting defective, failed, or nonconforming items after inspection.

This process includes

- ❖ Disassembly
- ❖ Repair
- ❖ Replacement
- ❖ Reassembly.



Figure 6.3.2 Garment reworking

6.5. Completing work documentation.

Garment work means making and altering garments.

Documentation refers to a set of records that professionals or companies keep to provide evidence or information that can be used to inform decisions. In the workplace, documentation is retained records of employment and company actions and events as required by legal mandates and company policy.

The following diagram shows starting up to completing the garment work



Self-Check -6	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. One of the following is the components of pressing? A, heat B/ pressure C/ Vacuum D/ all
2. The purposes of stitch class 200 is? A/straight stitch hand stitch C/ lock D/Chain
3. Write sewing machine speed control steps?
4. What is the meaning of quality standards?
5. What are the stitch class? Explain it

Note: **Satisfactory rating – 6 points** **Unsatisfactory - below 6 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Operation sheet 6

OPERATION TITLE:	**Hand stitch**
PURPOSE:	To perform hand stitch
CONDITIONS OR SITUTATIONS FOR THE OPERATION:	Trainees should know the operational procedure of hand stitch
EQUIPMENT,TOOLS AND MATERIALS:	Front panel, back panel, sleeves, collar cuffs, placket, pockets
PRECAUTIONS:	• Prepare all needed materials, • Use the right hand stitching tools when required
QUALITY CRITERIA:	➡ All steps were completed in the correct sequence, ➡ All shirt component should be prepared ➡ Your work should be neat and accurate.

PROCEDURES

Prepare sample hand stitching

STEP

1. Receive sample fabric from cutting room
2 Prepare hand needle, thread, scissors,
3 Threading in the needle
4 Start hand stitching.
5 Check stitch quality
6 Finish stitch
7 Check finished garment
8 Conform

LAP Test 6	**Practical Demonstration**

JOB TITLE: prepare sample of hand stitch

UNIT: Hand stitch

READING: TTLM- Information sheet unit 6

OBJECTIVES: At the end of the job the trainee will able to perform hand stitch

WORK SHOP Materials, tools and equipment required:

- Sample Cut piece or fabric
- Hand needle

- Sewing thread
- thimble
- scissors,
- Sewing thread,

Reference

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