UNIT -1

SEWING MACHINE

SEWING TERMINOLOGY

1. **Anchoring stitches**-These are machine stitches that are sewn with zero stitchlength, to keep from pulling out. This term can also be used to refer to when you stitch backwards for a couple of stitches, to anchorit.

2. **Applique**-This comes from the French word “appliquer,” which means to apply or put on. In sewing, applique is used to describe the process of applying one kind of fabric on top of another layer of fabric. This is fixed into place by sewing or by another fusing means. It can also refer to a surfaceembellishment.

3. **Armscye**-The opening in a bodice to which the sleeve is attached; also known as an armhole.

4. **Basting**-Basting stitches are temporary long running stitches, made by machine or hand, that hold fabric together before the final permanentstitching.

5. **Bias** -Bias refers to the diagonal of the fabric; a cut that's made diagonally across the crosswise and lengthwise grain of the fabric. This is a 45 degreeangle to the gain line, or diagonal direction of thefabric.

6. **Blanket stitch-**A hand stitch used for finishing a fabricedge.

7. **Buttonhole**-A small cut in the fabric that is bound with small stitching. The hole has to be just big enough to allow a button to pass through it and remain inplace.
8. **Casing** -A folded over edge of a garment, which is usually at the waist. It is used to enclose a way of adjusting the fit – for example for adrawstring.

9. **Clip-**To help flatten a curved seam, snip at even intervals along the inner curve, being careful not to cut into the stitchline.
10. **Crossgrain**-The line of fabric perpendicular to the selvage edge of thefabric.

11. **Dart -** A dart is a folded wedge of fabric used to shape a garment, particularly over curves. They normally appear around the waist andbust.

12. **Darn (or darning)-**Usually refers to the repair of a small hole, most often in knitwear, using a needle and thread. It is often done by hand, using a darning stitch.It can also refer to any number of needlework techniques that are worked using darning stitches.

13. **Ease** -The allowance of space in a pattern for fit, comfort and style, over exact body

measurements. For example, a garment with a 40" bust made to fit someone with a 38" bust would have 2" of positiveease.

14. **Edge stitch** -Straight stitching very close to the edge of a seam, trim or outer edge. This is usually sewn to keep pressed seams inplace

15. **Facing** -A fabric piece used to create a finished edge on a garment, mirroring theedge it is sewn to and creating a enclosed edge. Typically used for necklines, edges with closures, orarmholes.

16. **French seam** -A French seam is a finished seam in which the seam is initially stitched with wrong sides together, then flipped inside and stitched right sides together. This encloses the seam allowance, creating a clean finish on the inside ofthe garment.

17. **Face**-The front of a piece of fabric (the *right*side).

18. **Gather** -A way of gathering the fabric to create fullness in the fabric, such asruffles. It is a technique for shortening the length of a strip of fabric, so that the longer piece can be attached to the shorterpiece.

19. **Grain**-Grain describes the direction of the warp and the weft in a woven fabric. The threads in a woven fabric are set up on a loom in a lengthwise and crosswise orientation. The lengthwise grain is used to lay out the garment pattern pieces. The crosswise grain runs from one selvage edge to theother.

20. **Grain line**-The imaginary line running lengthwise on the fabric, always parallel tothe selvage edge. The grain line is marked on pattern pieces with a straight line, usually with arrows at either end, and marked as "grain line" or "straightgrain."

21. **Grading** -After a seam is stitched, the two layers are trimmed to a different width in order to prevent a ridge showing on the outside of the garment seam. A second definition of Grading is the process of converting a pattern size to a larger orsmaller size.
22. **Hem** -The finished bottom edge of a garment. The hem indicates the edge which is usually folded up and sewn, thus creating a neat and evenfinish.
23. **Interfacing**-A term for a textile used on the unseen (wrong) side of fabrics. They support and stabilise the fashion fabric of thegarment.
24. **Lining**-A piece of material used to finish the inside of a garment. Linings can hidethe seam and make the garments easier and more comfortable towear.

25. **Notch**-The notches on a pattern help align the pattern pieces when you sew them together. Another type of notch is one that is added when sewing the outside edge of a curved seam. These notches are added by cutting wedge shapes into the seam allowance at even intervals, being careful not to cut into thestitching.
26. **Pattern**-A template on paper or cardboard from which all ofthe pieces of the garment

are traced onto fabric. All the parts are then cut out and assembled to create the final piece.

27. **Pintuck** -A narrow, stitched fold of fabric. This style is usually seen in multiples and creates a stylish and smartfinish.
28. **Pleat** -A type of fold in the fabric created by doubling the material back on itself and securing it in place. When ironed, they create a sharpcrease.
29. **Seam-**The line where 2 pieces of fabric are held together by thethread.
30. **Seam allowance-**This is the width of the fabric beyond the seam line. The standard seam allowance is normally1.5cm.
31. **Selvedge-**The woven edge of the fabric that runs parallel to the lengthwise grain– also called "selvage." They are the finished edges that do notfray.
32. **Staystitch** -Stitching placed on or just outside the seamline, stitched on a singlelayer of fabric. It is used to stablise the fabric and prevent it from stretching out of shape.
33. **Topstitch** -Topstitching is a row of stitches seen on the outside of a garment. They can be decorative and also add strength and wearing ability to anitem.
34. **Under stitch**-A row of stitching that attaches the facing to the seam allowance onthe inside of thegarment.
35. **Warp**-The lengthwise thread in wovenfabric.
36. **Weft**-The crosswise threads in wovenfabric.
37. **Yardage**-A term for an undefined length of fabric. Patterns will indicaterequired yardage needed for a garment in a specific size, detailing how much yardage is needed.
38. **Yoke**-A panel across the shoulders or thewaistline.

TYPES OF SEWING MACHINE

Though there are different types of sewing machine but mainly, three types are considered for sewing, as given below.

1. Mechanical sewing machines

2. Electronic sewing machines

3. Computerised sewing machines

1. Mechanical sewing machines-These machines are less expensive and are the simplest type of sewing machines in terms of build. They are the hand-operated sewing machine and treadle sewing machine.

Hand-operated sewing machine

(i) This is the simplest form of domestic sewing machine which is operated by hand.
(ii) A handle is attached to the flywheel which is detachable and is used to operate the machine.
(iii) A hand-operated sewing machine is generally used for domestic purpose for simple projects as it does not work very speedily.

(iv) This machine is suitable where there is no electricity supply

Treadle sewing machine

(i) This machine is the same as a hand-operated sewing machine but it is operated by feet, with an additional stand attached to the machine.
(ii) A belt is attached to the lower stand passing through the balance wheel and driven by feet.
(iii) These machines run faster than the hand-operated sewing machine.
(iv) This machine is also suitable for the places where there is no electric supply.
(v) When handling the treadle sewing machine, both the hands of the Operator are free to handle the fabric. Hence, this speeds up the work of sewing.

2. Electronic sewing machine

These machines became popular during the 1970s. There are many more features in an electronic sewing machine than in a mechanical sewing machine.

(i) These sewing machines run faster than manually operated machines.
(ii) In the electronic machines, balance wheel comes to motion by a belt, which is attached to an electric motor.
(iii) A single motor is attached to the electronic sewing machines and this motor supplies power to the needle.
(iv) It is essential to control the speed of this machine by putting pressure on an electronic foot pedal.
(v) Practice is essential to handle an electric sewing machine.

3. Computerised sewing machines

(i) These sewing machines are very fast and specific to use.
(ii) These machines are similar to the electronic sewing machines. However, a computerised sewing machine works with the help of various softwares.
(iii) Computerised sewing machines allow the Operator to tailor the functions according to the sewing needs.

A computerised sewing machine functions very appropriately in designing and stitching various components of the garment like sleeves, yokes, pockets, etc. These advanced computerised machines have an LED display or LCD display or touch screen. They are multi function machines and are expensive.

The following are some other types of sewing machines according to their specific applications.

(i) Lock stitch machine
(ii) Chain stitch machine
(iii) Double chain stitch machine
(iv) Buttonhole machine
(v) Button stitch machine
(vi) Bar-tack machine
(vii) Feed off arm machine
(viii) Over-lock machine
(ix) Blind stitch machine
(x) Over-edge machine

SEWING MACHINE: PARTS AND THEIR FUNCTIONS

The basic parts of a sewing machine are:

1. **Spool pin** is a metal rod placed on the top of the machine for correct positioning of the reel of thread.

2. **Thread guide** takes the thread from the spool pin to the needle through a small hole. It holds the thread in position from the spool to the needle. It smoothens the thread and protects it from abrasion.

3. **Tension disc** is a combination of two concave discs placed together with the convex sides facing. From spool pin, the thread passes through the thread guide, then between the tension discs to the needle. Tension discs control the delivery of the upper thread from the spool to the needle. The tension of the thread is adjusted by a spring and nut which decreases or increases the pressure.

4. **Thread take-up** lever is a lever fitted to the body of the arm located above the tension disc. It receives its up and down motion from the front axle. At the outside end of the lever, there is a small hole through which the thread passes. The take-up lever first loosens the top thread during the stitch formation, and then removes any slack to set or lock the stitch.

5. **Needle bar** is a metal rod to hold the needle at one end with the help of a clamp. Its main function is to give motion to the needle.

6. **Presser foot** is a detachable device for holding the material in place on the feed dog while stitching. This device is not used when attachments for tucks, ruffles or embroidery are used.

7. **Presser foot lifter** is the lever attached to the presser bar (located inside the face plate) to control the up and down movement of the presser foot. It must always be lifted up to take out the material from the machine.

8. **Stitch regulator** controls the length of the stitch.

9. **Bobbin winder** is a device which helps in winding the bobbin (located inside the slide plate) properly. The thread passes through it tightly or loosely, as desired.

10. **Fly wheel** (or balance wheel) is a round wheel located at the upper right of the sewing machine. This is made to revolve the machine. It controls the motion of the machine manually or electrically.

11. **Slide plate** is a rectangular plate, which facilitates the removal of the bobbin case without lifting the machine top.

12. **Needle plate or throat plate** is a semi-circular disc with a hole to allow the needle to pass through it. The fundamental purpose of this plate is to provide a levelled surface for the material and to prevent the dust from entering the inner parts of the sewing machine.

13. **Feed dog** consists of a set of teeth fitted below the needle plate. When the machine is in motion, the feed moves upwards, thus advancing the material as each stitch is made. It helps to move the material forward while sewing.

14. **Face plate** is a cover, which when removed, gives access to the oiling points on the needle bar, presser bar and take-up lever. 1

5. **Arm** is a horizontal part of the head that houses the drive shafts.

16. **Check spring** is a small wire spring behind or at the top of the tension discs. It provides a little amount of tension on the thread of the needle and acts a shock absorber.

17. **Slack thread regulator** is a metal hook near the tension discs.

18. **Bobbin case** is fixed in the shuttle case placed in the bottom chamber (the hollow space under the slide plate) of the sewing machine and moves into position to catch the top thread and form the stitch as the needle is lowered into the bobbin case. The lower tension of the thread can be adjusted (by loosening or by tightening) by a small screw fixed on the bobbin case.

19. **Clutch or thumb screw** is in the centre of the fly wheel and it engages and disengages the stitching mechanism.

20. **Rubber ring** is a ring on the bobbin winder which comes in contact with the nut of the balance wheel. This should never be allowed to become oily, as it will make it slippery and will not be able to make proper contact with the balance wheel.

21. **Bobbin winder tension angle** is a device situated near the bobbin winder which helps to wind the bobbin evenly.

22. **Needle clamp** is a screw that is tightened to hold the needle in position.

23. **Handle driver** is attached to the handle attachment of the machine and helps to drive it with hand.

24. **Shuttle** holds the bobbin case and moves to form the loop as the machine is operated. It is fitted below the feed dog or to its left side.

25. **Treadle drive** is a large wheel located under the board in the treadle machine. It is connected tothe balance wheel with a leather belt. As it rotates, the power is transmitted to the balance wheel by the leather belt.

26. **Treadle** is the foot rest at the base of the treadle machine which is pressed with the feet to operate the treadle machine.

27. **Pressure regulating screw** is the screw above the presser bar, which can be tightened to increase the pressure on the fabric when stitching with fine/ lightweight fabric and loosened to accommodate thick fabric.

4.INDUSTRIAL MACHINES

Button Attaching Machine - As the name implies, the button attaching machine is virtually as simple as it gets and is geared for a singular task only.

Uses: With the prime objective of sewing on buttons, this machine is highly specific and serves one main purpose only, so that's one point off of versatility. However, it's fair to say that you can literally deal with every type of button with this machine, and the process is fairly automatic.

Buttonhole Machine - One of the most common types of industrial sewing machines, the buttonhole machine is utilized for punching holes in your garment. Yes, the task is specialized and carried out by a particular utility.

Uses: The main use for this machine is that with it, you can sew buttonholes with different stitch densities, which can result in different qualities.

Embroidery machine - These advanced embroidery sewing machines have many built-in embroidery designs and ability to store the designs in its memory along with USB ports so that you can import designs into the machine and store your favorite bought or designed embroidery designs. You can use them when and where you want them.

Some even have design editing features so that you can combine many designs and make a new one altogether. More advanced machines will have features like the ability to preview the designs on the LCD display screen (colour & b/w) and then change the thread colour etc.

Zigzag Sewing Machine - The zigzag sewing machine is pretty self-explanatory and is good at making a very particular pattern.

Uses: As the name implies, a zigzag sewing machine is proficient in making sewing patterns that appear in a zigzag shape. They can effectively be used on any garment that requires this pattern but is most notably used for the sewing of bras, jacket, and other clothes that require extra attention to detail.

Bartack Machine - Like the button attaching machine, the bartack machine is also very specific and functions a singular task only.

Uses: The main purpose that this type of machine serves is to reinforce seams and garment components. The principle dictates that any and every type of bartaking task can be executed to perfection by this machine, which is something you can't do with other machines.

CARE AND MAINTENANCE OF SEWING MACHINE

Introduction

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.

Cleaning, Oiling and Handling of Sewing Machine

A clean, well-oiled sewing machine is essential for good output and safety. The maintenance of sewing machine is also important in preventing stitching faults. When not in use, keep the machine covered with a suitable cover to prevent dust from settling on it. In some organisations, this is done by the operators but in others, it is done by a mechanic.

Cleaning of sewing machine

While cleaning the machine, pay attention to the various parts of the machine, the machine table or stand, the work station, and even your hands, to avoid soiling the material being sewn, prevent accidents and damage to the machine. These directions mainly hold true for the lockstitch machine, but they can easily be adapted to other machine types also. The machine should always be kept covered when not in use to protect from dirt and dust. Before attempting to clean the machine, it is wise to remove the needle to avoid the danger of sewing into the finger during the cleaning process.

Material required for cleaning

1. Flat paintbrush (½" to ¾" wide)

2. Cleaning solvent or fluid

3. Soft disposable cloth

4. Screwdriver

5. Sewing machine manual

6. Small handy vacuum cleaner

All dust and dirt can be removed by wiping the part out carefully with the cloth, but if the machine is clogged, a more careful cleaning is necessary. Common tools like a small dry brush or old toothbrush or compressed air and a soft cloth are used to remove dust and lint.

Points to be considered while cleaning

1. Before cleaning any machine, turn it off.

2. Open the slide plate and remove the bobbin case. Then remove the throat plate. Whenever it is required, remove the face plate from the left end of the head.

3. 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/plucker to pick out bits of thread and lint that cannot be brushed out.

4. Turn the hand wheel manually to expose any areas that might have been hidden initially. Brush again.

5. Carefully tilt the machine head back until the head rests on the post on the back of the table.

6. Brush out any lint, dust, or threads from the lower part of the machine.

7. Use a soft, thin and clean cloth to remove any lint on the machine parts.

8. Unscrew all plates and screws and the bobbin case.

9. Check the needle to be sure it is clean and the eye is not clogged.

10. Replace the needle, if necessary.

11. Wipe away any excess oil or dust on the head, machine bed, motor, table, and stand.

12. If there is lint between the tension discs and in the thread guides, use thread to floss the tension discs and remove any lint.

13. If you have oiled the machine, sew on few scraps to remove any excess oil.

14. Wash hands after cleaning and oiling the machine.

15. After completing the work, put a piece of fabric under the foot, lower the presser foot, cover the machine, and pick up any trash.

16. For cleaning the machine, it is good to clean one Notes area at a time. Remove only those parts that are detachable, and keep in mind the position and direction of each part that is removed for cleaning. Keep the parts in order to make it easier to attach them.

17. When using a screwdriver, apply pressure on the screw, if a screw does not loosen easily. Soak it in a good quality cleaning fluid available in the market for the sewing machine. Petrol or kerosene can also be used as cleaning fluids. Then set the screwdriver in the slot to loosen the screws if required.

18. Remove all the parts that is, the needle, presser foot, slide plate, throat plate, bobbin case, and the face plate. Put them in the tray and soak in cleaning fluid.

19. Wrap the motor to protect it from oil and cleaning solvent. Ensure that the sewing machine has been unplugged.

20. To clean the feed dog, remove the needle plate of the machine and brush off all lint deposits and dirt sticking to different parts.

21. To clean the shuttle case, remove all the screws holding the shuttle case. Take out the shuttle case and wipe its groove free of dirt, and thread bits.

22. Sometimes loose threads wind around the pivots of the treadle and make the sewing machine hard to run. Thread bits must be removed which are caught in the wheel along with all lint and dust sticking to the treadle parts.

23. Use a cloth or small brush to clean near the needle and feed dog.

24. If the machine starts to run hard, it is an indication that dirt or lint is jammed inside a bearing. In that case, remove the bobbin case to remove all lint and stray threads. Continuously run the machine and flush it with the cleaning fluid until the dirt and gummed oil are washed from the bearing

25. The bobbin case can be removed from the sewing machine easily. Use a dry brush to clean out all lint. Remove any thread that may be wound up around the hook shaft. In some machines, the hook assembly can also be removed for complete cleaning.

26. Remove bobbin and bobbin case, and clean small thread particles from there.

27. Pull a piece of cloth soaked in the solvent, back and forth between the discs to clean it from dust, lint or any other particles. Repeat with a dry cloth to make sure that no lint or thread is caught between them. To remove any remaining dirt and oil, dip a cloth or brush in a cleaning fluid and scrub all parts of machine that can be reached. Check the lower tension of the bobbin case and the upper thread tension discs. Pull a thread under the bobbin to remove dirt.

28. Clean the hand wheel, washer, and the shaft. Lubricate the shaft with two drops of sewing machine oil and place a small amount of grease on all gears. Reassemble the hand wheel and clutch. After properly cleaning these areas, reassemble all the parts of the sewing machine and run it. If reassembled correctly, it should run smoothly.

Oiling the sewing machine

Always keep your sewing machine well oiled. All dust should be removed from the exposed parts at least once every week, and the important parts of the machine should be oiled. Use good quality sewing machine oil. Always remove lint deposits, dust and thread bits before oiling any part of the machine. In order to operate the machine smoothly, it is essential to oil it repeatedly. Material required

1. Sewing machine manual

2. Sewing machine oil

3. Soft disposable cloth

Points to remember while oiling the sewing machine

1. Before oiling, ensure that the sewing machine is turned off.

2. Oil the machine using the directions given in the machine manual. Inspect the condition of all visible parts of the machine every time you oil it.

3. If a manual is not available, oil the machine as per the directions of the teacher/instructor as per the required frequency.

4. Locate oil holes of the sewing machine. They are mostly identified by arrows, or red or yellow paint. Put one to two drops of oil into each hole. Too much oil will clog the machine. Turn the hand wheel manually so that the oil will work its way between the parts.

5. Wipe off all dust and excess oil from the machine or table; clean up any spilled oil immediately.

6. Sew on a few fabric scraps to remove any excess oil.

7. Wash hands after oiling the machine.

8. Excess oil is a major problem that can spoil and damage the fabric.

Method for oiling of the sewing machine

It is necessary to oil the sewing machine periodically. If the machine is used everyday, oil it once a week. If you do not use it very regularly, then oiling once a month is sufficient. The frequency of oiling depends on its use, and sometimes on the material sewn. To oil thoroughly, remove the upper thread, needle plate, slide plate, face plate, bobbin case, and needle and presser foot. Put sewing machine oil in all oil holes and joints where one part rubs against another. One or two drops of oil are enough for each point. While oiling, turn the fly wheel back and forth to facilitate the flow of the oil to different moving parts. It is necessary to oil the shuttle case. After oiling the points on the head of the machine, tilt the machine head back to oil the points on the underside. On a treadle machine, the belt will have to be releasedbefore tilting the machine head back. Remember to oil the pivots of the treadle. When the machine has been completely oiled, wipe away excess oil and run it slowly for 2–3 minutes on a waste piece of material. Before you close the machine, place a scrap of fabric under the presser foot and lower the needle. The fabric will absorb the excess oil that might drain down through the machine and will prevent the formation of oil spots on your work the next time the machine is used.

If the sewing machine becomes gummed and dirty with oil, put a drop of kerosene or petrol in each oil hole and at joints, and run it rapidly for 1–2 minutes. Then wipe off the oil that oozes out with a soft cloth and re-oil the machine. It will require a second oiling within few hours after this treatment.

Check the machine instruction booklet/manual to determine the types of oil lubricant to use and where to use them. Do not oil the tension discs, the hand wheel release or the belts and rubber rings in any machine. Run the machine so the oil would be distributed into all the bearings. Use oil freely because all oil has been removed in the cleaning process. For later oiling, one drop of oil on each bearing and in each oil hole is enough.

After oiling the sewing machine, wipe away the excess oil and reassemble the machine. The oil used should be of good quality, preferably regular machine oil, as otherwise it may clog the bearings. Care should be taken to see that too much oil is not deposited in, as it is liable to spoil the cloth being stitched. It is advisable to do a few stitches on a waste piece of cloth until clear stitches are obtained.

Care and maintenance of sewing machine Most sewing machines encounter problems that can be traced to poor general maintenance or neglect. But with some simple tools and just a few minutes daily, weekly, or monthly, depending on how much our sewing machine is used, we can help keep our machine running smoothly.

PROBLEMS RELATED TO SEWING MACHINE CAUSES AND REMEDIES

Some of the common defects related to sewing and the sewing machine, the possible causes, and the best possible corrective actions associated with these are.

1. **Defect: The machine does not feed the material.**

Possible causes

(i) The stitch length has been set to zero.
(ii) The presser foot pressure is too low.
(iii) Feed dog is lowered.
(iv) Threads are knotted under the fabric.

Corrective action

(i) Set the proper stitch length.
(ii) Set pressure of presser foot.
(iii) Raise feed dog.
(iv) Remove fabric and knotted threads. Then again place the fabric properly.
(v) Place both threads back under the presser foot before starting to sew.

2. **Defect: Machine running heavily**

Possible causes

(i) Dust or lint clogging under the feed dog
(ii) Insufficient oiling
(iii) Thread caught in the shuttle
(iv) Machine not used for sometime with the result that the parts have jammed

Corrective action

(i) Clean the feed dog.
(ii) Oil the machine properly.
(iii) Remove the thread from the shuttle.
(iv) Disassemble the removable parts, clean and oil them.

3. **Defect: The sewing machine does not run.**

Possible causes

(i) The presser foot is not properly placed and the needle hits the presser foot.
(ii) The needle has come out and is in the shuttle area of the machine.

Corrective action

(i) Place and tighten the presser foot properly.
(ii) Remove the needle and insert a new one again, or place it at the right position.

4. **Defect: The upper thread breaks.**

Possible causes

(i) The threading is not correct.
(ii) The thread has a knot in it.
(iii) The upper thread tension is too tight/high.
(iv) The needle is bent or blunt.
(v) Wrong size of needle
(vi) The needle has been inserted wrongly.
(vii) The needle and thread do not match, and are also not suitable for the fabric to be sewn.
(viii) Started stitching too fast
(ix) Thread take-up lever has not been threaded

Corrective action

(i) Thread the machine correctly.
(ii) Remove knots from the thread.
(iii) Make correct the thread tension.
(iv) Replace with a new needle, of good condition.
(v) Replace with a needle of the correct size.
(vi) Insert the needle properly.
(vii) Use a suitable thread and needle.
(viii) Start the machine at a medium speed.
(ix) Check the threading order.

5. **Defect: The bobbin thread breaks**

Possible causes

(i) The bobbin has not been fully inserted/pushed in the bobbin case.
(ii) The bobbin case has not been threaded correctly.
(iii) The bobbin does not turn smoothly in the bobbin case.
(iv) A lint in the bobbin case or shuttle

Corrective action

(i) Securely install the bobbin in the bobbin case.
(ii) Thread the bobbin case correctly.
(iii) The bobbin should not be overwound.
(iv) Check that the bobbin has been wound evenly.
(v) Clean the bobbin case and shuttle, and remove the lint. Defect: Skipped stitches

6. **Defect: Skipped stitches**

Possible causes

(i) The thread tension is too tight/high.
(ii) The needle is bent or blunt.
(iii) Wrong size of the needle
(iv) The needle and thread do not match.
(v) The thread take-up lever has not been threaded.
(vi) Light pressure on the presser foot
(vii) Incorrect setting of the needle

Corrective action

(i) Correct the thread tension.
(ii) Replace with a new needle of good condition.
(iii) Replace with a needle of correct size.
(iv) Use a suitable thread and needle.
(v) Check the threading order.
(vi) Increase pressure on the presser foot.
(vii) Reset the needle properly.

7. **Defect: The stitches are not formed properly**

Possible causes

(i) The thread has not been pulled into the thread guide.

(ii) Threading is not correct.

(iii) The bobbin case has been threaded wrongly.

Corrective action

(i) Fully pull the thread into the thread guide
(ii) Correct the threading.
(iii) Correctly thread the bobbin case.

8. **Defect: Irregular stitches**

Possible causes

(i) Incorrect size of the needle
(ii) Improper threading
(iii) Loose upper thread tension
(iv) Pulling of the fabric
(v) Light pressure on the presser foot
(vi) Loose presser foot (vii) Uneven or overwound bobbin

Corrective action

(i) Choose the correct size of the needle for the thread and fabrics.
(ii) Rethread the machine properly.
(iii) Tighten the upper thread tension.
(iv) Do not pull the fabric; guide it gently.
(v) Increase pressure on the presser foot.
(vi) Reset the presser foot.
(vii) Rewind the bobbin properly.
(viii) Remove overwinding of the bobbin.

9. **Defect: Fabric pucker**

Possible causes

(i) The stitch length is too long for the material.
(ii) The needle point is blunt.
(iii) Incorrect thread tension
(iv) Light pressure on the presser foot
(v) The fabric is too sheer or soft.
(vi) Using two different sizes or kinds of upper and lower threads

Corrective action

(i) Decrease the stitch length.
(ii) Replace with a needle of good condition.
(iii) Reset the thread tension.
(iv) Increase pressure on the presser foot.
(v) Use an underlay of tissue paper/backing.
(vi) The upper thread and bobbin thread should be of the same size and kind.

10. **Defect: Bunching of thread**

Possible causes

(i) The upper and lower threads are not drawn back under the presser foot.

(ii) The placement of the feed dog is down.

Corrective action

(i) Draw both threads back under the presser foot.
(ii) Fit the feed dog properly.

11. Defect: Needle breaks

Possible causes

(i) A thin needle was used for sewing a heavy weight material.
(ii) The needle has not been fully inserted/pushed into the needle bar.
(iii) The screw of the needle clamp is loose.
(iv) The presser foot is not the correct one.
(v) The presser foot is loose.
(vi) Pulling of fabric

Corrective action

(i) Use the correct size of the needle.
(ii) Properly insert/push the needle in the needle bar.
(iii) Securely tighten the needle clamp screw.
(iv) Use correct presser foot.
(v) Reset the presser foot.
(vi) Do not pull fabric; guide it gently.

12. Defect: Loud noise is heard and/or knocking noise; machine jammed

Possible causes

(i) Dust has accumulated in the feed dog.
(ii) Lint is in the hook and shuttle area.
(iii) The thread is caught in the shuttle.

Corrective action

(i) Clean the machine and remove the lint.
(ii) Disassemble the shuttle case and clean it.
(iii) Oil the machine.

13. Defect: Threading cannot be done

Possible causes

(i) The needle is not at the highest position.

Corrective action

(i) Turn the hand wheel until the needle reaches its highest position.

14. Defect: The thread does not enter the eye of the needle.

Possible causes

(i) The eye of the needle is clogged.
(ii) The thread is thick in comparison to the eye of the needle.

Corrective action

(i) Clogging should be removed by using a fine wire.
(ii) Change the needle.
(iii) Select the thread according to the needle.

UNIT -2

BASICS OF APPAREL STYLE

SEWING EQUIPMENT AND TOOLS

INTRODUCTION

Clothing along with food and shelter has been recognized as integral and inseparable part of mankind in all parts of the world. Historical records shows that primitive people were covering and decorating their body with paints, tattooing, mutilation as well as by fur, beads, stones, wood, leaves and barks etc. This was the first attempt that was made to cover the body. The main function of clothing is to provide protection against climatic extremities, means of self expression, aesthetic enjoyment, conformity, to indicate socio- economic status as well as a source of decoration.

CLASSIFICATION OF TOOLS USED IN CLOTHING CONSTRUCTION

Clothing construction requires a variety of tools that can be classified into the following categories:

- MeasuringTools
- MarkingTools
- CuttingTools
- FittingTools
- SewingTools
- Finishing / PressingTools
- GeneralTools

Using the right tool will help make the garment construction easier. These tools help increase the accuracy of the finished product, saves time and also simplify tasks.

MEASURING TOOLS

The following are the commonly used measuring tools for garment construction

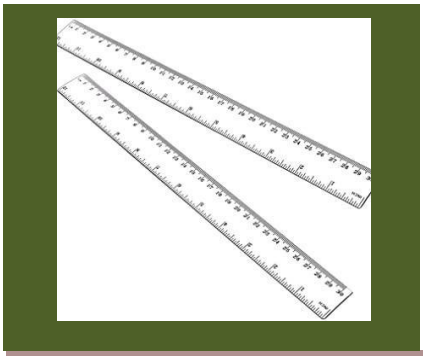
1. **Measuringtape**
2. **Ruler or YardStick**
3. **L -square or Tailor'sSquare**
4. **Hem marker/skirt marker**
5. **Gauge**

Measuring tape

Tape should be of good quality with a smooth surface and with metal tipped ends that prevent the tapes from raveling. At one end of the tape the metal tip is long (3") and is used when vertical measurements are taken. The other end has a short metal tip with a small hole at the centre. This side is used in taking circumference measurements. The small hole aids in drawing circle of perfect measure. Tape is marked with centimeters as well as inches to facilitate the conversion from one system to another. Generally tapes are of 150 centimeters(60 inches) long. The best tape choice is a flexible synthetic or fiberglass, which will not tear or stretch.

Ruler or Yard Stick

Ruler or yard stick is the best device for taking long, straight measurements on paper. Sticks of good quality and that are smoothly finished should be used. Ruler of 15 cm to 30 cmlong and yard stick of 1.5 meterscale marked in centimeters and inches are commonlyused.



L -square or Tailor's Square

It resembles the letter L – with perfect right angled corner. It is more accurate than ruler and convenient for measuring skirt lengths or straight lines of material before starting pattern layout. It is made of good quality, light weight, smoothly finished hardwood. Sometimes it is available with French curve, useful to mark corners, perpendiculars and curves of the pattern

MARKING TOOLS

1. **Tailor'schalk**
2. **MarkingPencil**
3. **TracingWheel**
4. **Dress Maker's CarbonPaper**

Tailor's chalk

Most commonly used dress maker's marking tool is tailors chalk and it is made of either clay or wax. It is available in various colours like white, yellow, blue, red etc with different sizes and shapes which facilitates quick and efficient marking. Wax based tailor's chalk is available in a 2 inch square white colour piece, mainly used for marking woolen fabrics. Tailors chalk is very safe because it does not leave any stain or permanent marking on the material. Light brushing is sufficient to rub off the marked lines completely.

Marking Pencil

These are convenient and precise tools for marking cutting and stitching lines. These are available in white and pastel colours. Since the marking pencil is made of wax, the coloured lines can be removed by simple washing.

Tracing Wheel

It is used with or without dressmaker's carbon paper to transfer pattern marking onto the fabric. Tracing wheel is about 15 cm in length, having a wheel with saw-like periphery, which is connected by means of stem and at the rear end with a convenient handle. Tracing wheels are available in variety of edges 1)Needle-point wheel, makes a faint line that is desirable on fine thin fabric. 2) A serrated edge produces a prominent line that is good for marking heavy, loosely woven fabric, deep points are more effective on thicker fabric 3) A smooth wheel is recommended for delicate fabric such as velvet and knit that are subjected to snagging and are damaged by other types of wheels. Use of tracing wheel in conjunctionwith a carbon paper is very safe, because it does not leave any coloured markings, but a line of tinydots remain which aretemporary.

Dress Maker's Carbon Paper

By using carbon paper constructional details such as shape of the pattern, cutting and stitching line can easily be transferred on the material. These are available in white and several colours.

Care to be exercised while using carbon paper.

1. No carbon markings should never be placed on the right side offabric.
2. No lines to be markedboldly.
3. The colour of the carbon must not show through thefabric.
4. If the garment is underlined, marking may be made on the underliningonly.
5. White carbon paper is recommended for colour fabrics, because it is removed easily duringcleaning.

CUTTING TOOLS

Scissors and shears are the important tools to the dress maker. Various types and sizes of scissors and shears are designed to perform different constructional work. Common working principles of scissors and shears are similar but their application is different. Visually one can easily differentiate scissors and shears - shears have one finger ring bigger than the other for better grip while cutting thick or several layers of patterns. Whereas scissors have identical round finger rings. A separate pair of scissors or shears should be kept for cutting the cloth and the paper pattern.

The following types of shears and scissors are used in clothing construction.

1. **Shears**
2. **Scissors**
3. **Rotarycutter**

SHEARS

1. **Dress makingshears**
2. **Bent-handle shears**
3. **Electricshears**
4. **Pinkingshears**
5. **Serrated bladeshears**

Dress making shears

Dress making shears are heavy duty scissors which are designed specifically with the needs of seamstresses in mind.The distinguishing feature of dressmaker's shears is that the handle is offset from the blades, allowing them to be used to cut fabric against a flat surface without distortion. In shears, one of the finger rings is typically larger than the other. In industrial terms, the finger rings on scissors and shears are known as “bows”. The large bow of a shear is usually on the side of the blade which points towards the floor when in use. The length of the blade varies from 25 to 30cm.

The edges of dressmaker's shears are typically ground with a beveled edge and they are extremely sharp. It is important to keep shears, sharp to avoid mangling of the fabric, as specially while cutting multiple layers of fabric at a time for efficient cutting.

Dressmaker's shears are not symmetrical, as they are available in both right and left-handed versions to facilitate comfortable use. It is important to use dressmaker's shears which are engineered for dominant hand, as it reduces the risk of injury and makes work more comfortable. It is also a good idea to try out a pair of shears before use, to make sure that they are comfortable in handling. shears are available in different materials from heavy brass to very light weight materials. Some have rivets at the crossing of two blades.

Bent-handle shears

These shears have straight blades with a handle that is off-set at an angle allowing the lower blade to stay flat on a cutting surface. The design of the handle allows the bottom blade to rest on the flat surface below the fabric without lifting the fabric from the flat surface. The blade size is less than 15 cm long. Sharp shears are the key to prevent hand fatigue and accurate cutting along pattern lines.

Electric shears

These are used in most sample rooms. Electric shear is a type of hand tool suitable for a variety of cutting applications. They are essentially battery-powered shears Electric shears are also known as power scissors or cordless scissors. They resemble a utility knife with dual crossing blades on the end rather than a single blade, but a few models are designed slightly

different. Most varieties are powered by alkaline batteries, but a few are powered by rechargeable batteries. They are ideal for cutting silk, nylon, and soft, hard-to-cut fabric.

Pinking shears

They produce a notched cutting line (zig zag) which gives a neat appearance to the inside of garments, as these shears have saw tooth blades.

These shears are used for pinking seams or decorative edges on felt, suede, chintz, etc. They are used to add a ravel-resistant seam finish to loosely woven fabric. It automatically notches and reduces bulk in seams and creates a decorative finish. Blade lengths range from 7" to 10 1/2" and are available in lightweight models, as well as scalloping shears for a more rounded effect.

Scissors

Scissors are hand operated cutting instruments. They are 5 to 6 inches long, used for light cutting, trimming, clipping corners and cutting curves. They are designed for snipping threads and trimming seams. They are also used for cutting various thin materials, such as paper, cardboard, metal foil, thin plastic, cloth, rope and wire.

1. **Embroideryscissors:**
   These are light weight cutting scissors with 3 to 4 inches in size with narrow blade tapering into two sharp points. Blades are joined by a pin, screw or rivet and designed with two evenly sized ring handles. These scissors are ideal for clipping and notching, trimming fabric from delicate appliqués, embroidery and snipping thread tails.

2. **Button holescissors:**
   These scissors are adjusted to cut button holes of required length. They are greatly used when many button holes are to be made. Buttonhole scissors have a special adjustable screw for securing them partially open as per the length of buttonhole required. This open position translates to a precise cutting length (usually between 1/2" and 1 1/4") that prevents cutting of the stitches at the buttonhole end.

3. **Trimmingscissors:**
   These are used for trimming or clipping seams and cutting corners, and are generally 15 to 17.5 cm long with narrow blades and tapered sharp points.

4. **Snippingscissors:**
   These are spring-action clippers with or without a finger loop featuring very short blades for cutting thread tails and clipping seams quickly.

Care guidelines while using shears and scissors:

1. Take long strokes using the length of theblades.
2. Do not use fabric-cutting scissors for cutting paper or other nonfabric materials.

3. Wipe scissors with dry cloth after each use. This is especially important after cutting polyesters and other synthetics, since lint from these manmade fibersis abrasive and can dull the blades.
4. Keep the cutting blades sharp. Scissors and shears may be sharpened using a professional-style electric sharpener or they may be sent to a professional sharpeningservice.
5. Occasionally oil the pivot screw with a tiny drop of sewing machine oil. Open and close the blades few times, then wipe the blades with a softcloth.
6. Don't force a cut -this can deform the blades or spread thempermanently.
7. Store scissors or shears in a box orpouch.
8. Never drop shears on the floor, it looses itssharpness.

Rotary cutter

This tool helps in cutting more than five layers of cloth at a time. It is electrically operated having a round circular shaped blade with a guard in the front of the blade. It is generally used in small garment manufacturing units. There are several sizes and types of rotary cutters available. Blade sizes range from 18 mm to 60 mm in diameter. Smaller diameter blades make cutting out curves and details much easier; whereas the larger-diameter blades make quick work of long, straightcuts.

FITTING TOOLS

French Curve / Tailor's Curve: The main function of the curve stick is to give shape especially at neckline, arm hole, waist, crotch etc. It is made up of good quality wood or plastic with shaped curves marked in inches. Sometimes it is also used for measuring the length of the curve that is shaped.

SEWING TOOLS

The correct selection of sewing thread and needle prior to garment assembly is essential in order to achieve required finish to the garment.

The importance of thread and needle is often under estimated though fundamental to garment construction i.e. forming of stitches and subsequently joining of seams. Without hand and machine needle the construction work is incomplete. Clothing industry has demanded the development of threads and needles of various sizes and shapes to cope up with advanced technology at which the garments are manufactured with minimum machine troubles.

1. **Needle**
2. **Sewingthreads**
3. **Sewingaids**

Needle

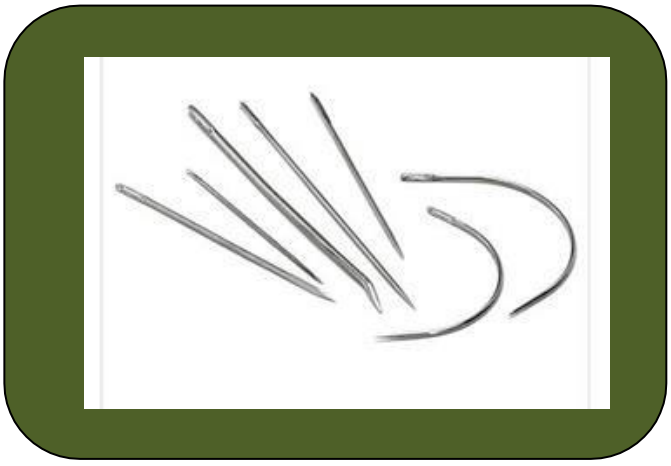
Needles are classified as follows

1. **Hand sewingneedles**
2. **Machine sewingneedle**

1.Hand sewingneedles

A hand sewing needle is a long, slender steel shaft, with an eye at one end. The shaft tapers to a fine ball point tip or wedge end. These needles function to carry the thread through the fabric while hand sewing. Needles are designed in a variety of sizes, types, and classifications developed according to specific use.

For each needle type, sizes range from a low number, (coarse needle) to higher number (finer needle). Diameter of the needle shaft increases proportionately at the eye end according to the length and size.



Hand needles are selected according to the following factors

1. Structure offabric
2. Weight and type offabric
3. Type ofthread
4. Size and weight of threadand
5. Intendeduse

The needles available for hand sewing are specified below

1. **Ball pointneedle**
   A needle is designed with a rounded tip and a small round eye, designated as medium length, sizes range from 5 to 10 for knits and lingerie fabrics. Ball point needle slides between the yarns instead of piercing as it penetrates the fabric. It reduces occurrence of holes and runs in fabrics such as jersey and tricot.

2. **Ball pointneedle**
   This needle is very fine, long with a small round eye used for beadwork, sewing sequins, pearls, etc.

3. **Betweens**
   A needle designed with a small rounded eye and designated as short length; sizes range from 1 to 12 to produce short fine stitches as in tailoring, handwork and open work

4. **Crewels/embroidery**
   A needle is designed with a long oval eye and designated as medium length; sizes range from 1 to 12 to carry multiple strands of thread for embroidery.

5. **Chenille**
   Large-eye needle with sharp point for ribbon embroidery,

6. **Darners**
   A coarseneedle designed with a large, long oval eye. Designated as long length, the sizes range from 14 to 18. It can carry multiple strands of thread for weaving on loosely woven woolen and open weave knit fabrics.

7. **Sharps**
   A needle with a small rounded eye and of medium length is called the sharp. Sizes range from 1 to 12. These are general purpose needles with sharp point for sewing and appliqué

8. **Tapestry**
   Large-eyed needle with a blunt point for cross stitch, needle point and for stitching knitted items.

2.Machine sewing needles

Sewing machine needles are made up of steel. They are manufactured in different sizes and types for both industrial and home sewing machines. Size range from fine to coarse and are chosen with regard to interaction of yarn of the fabric and size of thread. Higher numbers indicate thicker points and coarser needles. Needles are standardized and classified with regard to the type and model number of machine on which they are used.

There are many different kinds of needles among which majority of sewing needles are listed below

1. **Ball-point needles** are used for sewing knits and meshes. The rounded tip of this needle passes between the fibers of thefabric.
2. **Sharp-point needles** are used for sewing fine woven fabrics. The pointed, sharp tip pierces the fibersof thefabric.
3. **Universal point needles** can be used for sewing both knits and woven's. It is an excellent needle for general sewinguse.
4. **Denim needles** are used for sewing heavy, dense fabrics such asdenim.
5. **Leather needles** have a wedge-shaped tip for punching through leather, even for heavy vinyl and similar fabrics. Care should be taken while sewing with these needles as they leave large holes on removal ofstitches.

Sewing threads

Sewing thread is an integral component of the garment though it is often invisible. Typically, the cost of thread is less than 5% of the retail selling price of the garment but 50% of the responsibility of the garment's performance is dependent on sewing thread.

A wide variety of threads from cotton, polyester, polycot to rayon are available for varied uses. It is customary to use cotton thread or cotton materials and polyester or polycot thread for synthetics. Rayon threads are used for embroidery work.

SEWING AIDS

DRESSMAKER'S PINS:

Comes in different sizes for use in different fabrics for holding of fabrics together temporarily before machining. These are long slender pins with highly polished finish and a fine tip for easy

THIMBLE:

A sewing thimble protects the middle finger of the right hand while hand sewing. Helps to push needles through the material being sewn and to prevent fingers getting pierced by the needle

SEAM RIPPER
A seam ripper is used to remove and pick out unwanted stitches/threads. The fine tip of a seam ripper picks out single thread and cuts it.

NEEDLE THREADER:

It can be used for both hand and machine needles to push the wire through needle eye.

FINISHING/ PRESSING TOOLS

Once the garment is constructed, it is subjected to neatening through trimming and pressing. Pressing is important at every stage of stitching, because poor pressing can destroy the appearance of a well constructed garment. In addition to the sewing tools and sewing machine, good pressing equipment is also essential.

1. **Iron**
2. **Ironboard**
3. **Sleeve board**

IRON

There are different types of irons available in the market like flat iron, thermostatic, automatic, non automatic, charcoal, steam iron etc. Among all, the thermostatically controlled or automatic electric irons are the best, in which the temperature can be adjusted to various types of materials. These are most convenient for general purpose and homeironing.

Irrespective of types available in the market one should remember to keep base of the iron very clean and follow the guidelines given by the manufacturer while using.

IRON BOARD

Ironing boards can be free standing or mounted depending on the available space and frequency of use. Good padding should be provided to cover the base and it should be made from a natural fiber fabric like cotton or wool for best pressing. Foam pads are available for most ironing boards but they do not allow moisture absorption. A thick soft padding on the ironing board gives better results.

SLEEVE BOARD

A sleeve board allows pressing of narrow garments sections such as sleeves and trouser leg. The ideal sleeve board must be strong, stable and have sufficient space between the board and the base so that fabric does not crease in working. It is ideal for pressing necklines, shoulder seams and small hard to reach areas like pockets, belts, loops as they can be spread on this board without stretching or wrinkling the rest of the garment.

GENERAL TOOLS

PIN CUSHION: Pin cushions are useful to store needles before and after they are removed from the fabric. They can be made at home by using soft fabric and filling it with hair instead of cotton wool. Some pin cushions have an emery pack for cleaning and sharpening pins and needles, and some cushions can fit on the wrist for handy use. Pin cushions are available in a variety of styles like a tomato pin cushion, a wristband pin cushion and magnetic type.

AWL: It is a small, sharp-pointed tool used to punch small, round holes for marking in paper or leathers

LOOP TURNER: It is a long wire with a latch hook, used for turning bias strips to make spaghetti straps and narrow belts.

BODKIN: It is used for drawing elastic, cord or ribbon through a fabric casing. They are basically large needles with large eyes meant for easy threading.

ORANGE- STICK: This is a long tool whose point can be inserted into the corners of collars, seams, etc., so as to give a neat pointed appearance.

STILETTO: This is a pointed metal with a wooden handle and is used to make eyelet holes or openings.

DRESS FORM: It is a padded form of body and may be made of wood, cardboard, plaster, reinforced plastic. It is an essential necessity in all sample rooms for designing and fitting.

2.MEASUREMENT

Meaning of Anthropometric Measurements

The term anthropometry is derived from the Greek work “Anthropos” which means “Human being”.

According to **Encyclopedia of Britannia, 1971,** “it is a systematic collection of measurements of the human body”.

Comparative measurements of human beings are known as Anthropometric Measurements. In Anthropometric Measurements we take the measurements of different parts of human beings, like-height, length, head circumference, Waist circumference, Hip circumference and the weight.

In garment construction we need to take the measurements of an individual or a dress form to construct a garment of proper fit. Standard measurements obtained by calculating proportionately from some basic measurements like: the bust measurements are also used.

Importance of Anthropometric Measurements

Carefully taken measurements play a very important role in garment production for individual use as well as for industrial production. Proper measurements are important for consumer satisfaction. Following are some points that describe the importance of measurements:

1. Knowledge of anthropometry is needed in taking measurements and creating the standardized scale.
2. Anthropometric data is used in the readymade clothing industry.
3. Detailed measurements are useful for standard drafting and making paper pattern.
4. Measurements are also necessary for perfect fit because no two persons are same are alike in the body measurements.
5. The final look and fit of the garment principally depends upon the measurements taken.

6. Measurements are needed for calculating the exact quantity of fabric required, to avoid fabric wastage.

Guides for Taking Accurate Measurements

While taking measurements one should keep in mind some of the rules which will help in avoiding mistakes related to fitting, these are:

1. One should try to find out the client's requirements regarding the fit, style, shape, pockets, collar etc. before taking measurements. A preliminary talk with the client and showing patterns and fashion pictures and stitched garments can help a lot.
2. One should observe the figure of the client carefully and record any deviation from the normal figure,
3. The person to be measured should stand erect in a natural pose and if possible in front of a mirror.
4. Measurements should be taken in proper order and in a certain sequence and should be recorded simultaneously.
5. All girth measurement should be taken just right as ease for movement is included in the draft.
6. Repeat the measurements to confirm.
7. Measurements to be taken comfortably, without pulling the tape too tight or too loose.
8. Before starting the measuring one should locate the structural lines of the garment by tying a cord at waist line, scye line & neck.
9. Measurement should be taken over well fitted undergarments and if taken over out garments, then these garments should be fairly closely fitted.
10. While taking length measurement tape should be kept absolutely flat, smooth and straight i.e. parallel to the spine or centre front.
11. Care should be taken to start and finish measurements at the same point.
12. While taking width measurements be sure that tape does not sag and tape should be parallel to the floor.
13. Arc measurements are taken from centerlines to side seam.

14. One should avoid taking too many measurements or relying on elaborate methods of measuring which can create more mistakes.

Direct and Divisional Systems of measurements

There are two different approaches to the drafting of patterns by measurement; direct and divisional system.

Direct system - In the direct system, measurements are taken on the figure directly. This is the most commonly used system for garment construction.

The Direct measurement system has some drawbacks like taking of direct measurements is considered difficult and unreliable, and the construction of a basic pattern on such data is thought to be unscientific.

It is impossible, for instance, to establish exact points or levels on the figure from which one could measure with accuracy expected in drafting. The figure may vary slightly from day to day, and the physical state, even the mood of the person, may affect some measurement (e.g. a tired person usually tends to stoop more, and so will have a wider back). A different foundation garment may change some measurements, and personal preferences may have to be taken into account (preference for tighter- or loose- fitting clothes, for instance).

Apart all these difficulties, direct measurements must be used because there is no satisfactory substitute for them in dressmaking. The only thing one can recommend is to take and use measurements intelligently, according to a definite plan.

Divisional or proportionate system - The Divisional system depends on various measurements and proportions obtained by calculation from one or two basic measurements (mostly from the bust, sometimes by height).

The Divisional system is used mainly in tailoring where shapes of garments are less standardized, fashion changes more frequently, fashion details are more varied and subtle, and fabrics cover a much bigger range.

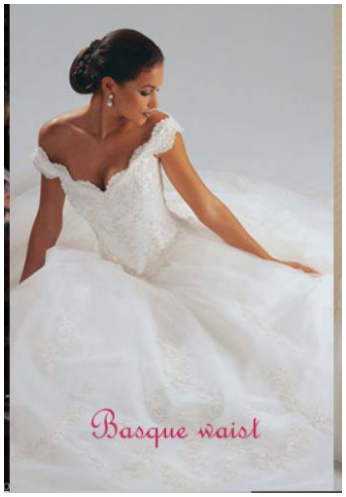
3.SILLHOUETTES

A dress silhouette is the overall shape that a dress creates when it hangs on your body—in other words, it's the outline of the dress rather than all the little details. From gowns to evening dresses, different silhouettes aim to emphasize or flatter different body types or parts. For instance, certain silhouettes (like A-line dresses or ball gowns) emphasize a small waist, while others (like shift or empire) draw attention away from the waist.

A-line. First coined by fashion designer and stylist Christian Dior, A-line silhouettes are among the most popular dress types because they look great on almost every body shape. The A-line silhouette features a fitted bodice and flares out at the waist to form a triangle shape like a capital A. A-line silhouettes emphasize a defined waist and broader hips. A-line dresses can range in length from above-the-knee to full skirts (maxi). Occasionally, the term A-line may describe any dress that has a hem much wider than its shoulders, regardless of a fitted upper body, cinched waist, or corset-style top.

Chemise /v – line - The term "chemise dress" has traditionally been used to describe a dress cut straight at the sides and left unfitted at the waist, in the manner of the undergarment known as a chemise. This term has most often been used to describe outer garments during transitional periods in fashion (most notably during the 1780s and the 1950s), in order to distinguish new, unfitted styles from the prevailing, fitted silhouette.It is a type of cut style which starts at the waist or below it and falls down towards the center, creating a V shape. It accentuates the hips portion, and is

suitable for curvy figures, and for ladies who have a short waist structure. It is also known as Basque waist.



Trapezoid silhouette

This silhouette which is similar to an A line silhouette but with a more pronounced flare near the hem is shaped like a trapezoid or rather a tent. Basically speaking it looks like a triangle, flaring as it does from under the armhole. This silhouette works as a short dress rather than as a full length dress, as it can overwhelm the figure.

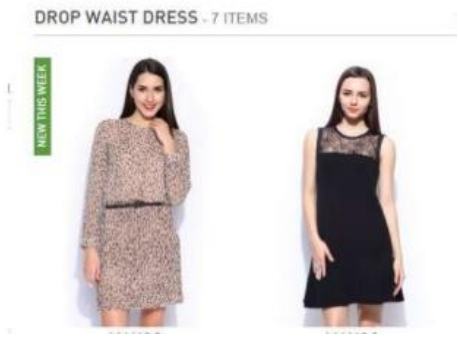
TENT

A TENT dress is a style that is wide like the TRAPEZE dress, but the hem is flounced. TENT dresses also do not fall below the knee like the TRAPEZE dress usually does.

Empire waist. Empire waist dresses are fitted through the bust but flare out immediately under the bustline, rather than at your natural waistline. This shape's effect is slimming; the cinch creates a high waist and a longer silhouette than if the dress cinched at your natural waist, elongates the wearer's frame—great for petite women or women who want to draw attention away from their waist.

Sheath. Sheath dresses are form-fitting at every point—from your neckline to your armholes to your hem. The sheath silhouette emphasizes your curves (especially useful for curvy or hourglass figures) and will often feature slits for freedom of movement.

Low-Waist Dress - Drop-waist dresses typically fit loosely from shoulder to hip, transitioning into a pleated or gathered skirt at the hip, rather than the natural waistline.



Shift./I -line Shift dresses flow from your shoulders, straight down along your body, with only slight differences between the measurements for bust, midsection, hips, and hem. Also known as column dresses, this silhouette is especially popular in the summertime because its boxy shape hangs off your body, giving your skin ample room to breathe in hot weather.

Pegged Dress - A pegged skirt tapers towards the bottom - much like pegged jeans have legs that are wider at the thighs but taper to be just wide enough for the foot to get through at the ankle. Pegged skirts may not taper as drastically as pegged trousers and may end up at the knee rather than ankle

Bell silhouette - Bell or Ball gown silhouette is fitted in the bodice till the waist and then flares generously to the hem to make a bell shaped skirt . This silhouette is typically found in traditional dresses/ wedding dresses ; a very popular choice of young women about to be married.
The flare of the skirt in this silhouette is mostly achieved by layers of fine fabric . A petticoat with many frills of crinoline under the gown also helps to create this silhouette.

Princess — This silhouette is quite similar to the A-line, It is fitted at top and follows clean lines as it flares out through the skirt.

BALLOON - BALLOON dresses have a similar shape to the BELL dress, because they have the fitted bodice at the top and a wide hem, but BALLOON dresses are loose and flow. They have all the fabric of a BELL dress without the bell shape, so the hem bounces with you as you walk. This is where the “balloon” part of their name comes from!

4.TYPES OF DRESSES

One piece dress- One-Piece is clothing for women of a shape in which the upper garment and the skirt are connected together.

Two-piece dresses sets like the name suggests are two piece dresses that are meant to go together. They're usually in the same colour or print and are available in a variety of silhouettes.forming a clothing ensemble with matching top and bottom parts

casual wear emphasises comfort and informality. Casual wear refers to the clothes we use for everyday wear. This style emphasises on comfort, relaxation, and informality. It includes a wide range of clothes and styles. Casual dressing gives first place to personal expression and comfort over formality and conformity.

Tee-shirts (polo shirts, turtlenecks, etc.), jeans, jackets, khakis, hoodies, summer dresses, skirts, sneakers, loafers and sandals are examples for casual wear. Sportswear, clothes worn for manual labour also falls under casual wear. It can be worn when you are going on trips, shopping, and casual outings with friends. This style is also worn by high school and college students unless the schools don't have a specific uniform. Casual wear is usually made from materials such as cotton, jersey, denim, polyester and flannel. Casual wear is not made from expensive and dressy materials such as chiffon, brocade, and velvet. Casual wear should not be worn for ceremonial events, parties, weddings and other formal events, business meetings or to work (in offices).

Formal Wear

Formal wear refers to clothing that is suitable for formal events such as ceremonial events, weddings, balls, formal dinners, etc. Formal wear is nowadays mostly worn at formal dances, high school prom dances, and entertainment industry award programs.

Although most people associate black tie with formal wear, the satirically proper dress code for formal wear is white tie for evening and morning dress for daytime. Women are supposed to wear ball gowns or formal evening (floor length) gowns.

Uniforms such as formal military uniforms, law court dress, academic and graduate dress are also considered as formal wear.

The following list will give a clear description of the dress code for formal wear.

Formal Wear for Men

- Black dress coat (tailcoat), matching trousers with two stripes of satin or braid (Europe or the UK) or a single stripe (the US)
- White vest
- White bow tie
- White piqué wing-collared shirt with stiff front
- Braces
- Shirt studs and cuff links
- White or grey gloves
- Black patent shoes and black dress socks

Formal Wear for Women

- Floor length evening gown long gloves (optional)
- Long gloves (optional)ss

Informal wear, also called business wear, corporate/office wear, tenue de ville and (colloquially) dress clothes, is a Western dress code for clothing defined by a dress shirt with necktie, sometimes with a business suit for men, and cocktail dress or pant suit for women. On the scale of formality, it is considered less formal than semi-formal wear but more formal than casual wear, yet retaining availability for more personal expression than semi-formal wear. Thus, informal should not be confused with casual wear such as business casual or smart casual despite that some people may refer loosely to informal dress as "formal" in contrast with merely casual.

Party Wear- rA party dress is a **dress worn especially for a party**. Different types of party such as children's party, cocktail party, garden party and costume party would tend to require different styles of dress. One classic style of party dress for women in modern society is the little black dress.

Uniform -It is **a type of clothing worn by members of an organization while participating in that organization's activity.** Modern uniforms are most often worn by armed forces and paramilitary organizations such as police, emergency services, security guards, in some workplaces and schools and by inmates in prisons. In some countries, some other officials also wear uniforms in their duties.When everyone in the business or school wears the same thing, employees and students have equal footing. No one can stand out due to better or more expensive clothing. This increases self-confidence and unifies the group. Everyone is on the same platform, regardless of economic status.Wearing a uniform means not having to buy work or school clothes. This creates less strain on the budget.

Finally, uniforms create a sense of belonging. Everyone wearing one feels at home, and that improves team building and overall satisfaction.

5.PATTERN MAKING TECHNIQUES

Pattern grading is the scaling of a pattern to a different size by incrementing important points of a pattern to smaller or bigger sizes.Once a designer has completed a drawing of a garment, it is transformed into a sample pattern.

“Patternmaking” is the process of creating all the correctly sized pieces needed to make a complete garment. For many smaller manufacturers, pattern making is still done on paper because the cost of computerized systems remains prohibitive.

Methods of Pattern Making

Pattern making involves three methods-

- Drafting
- Draping
- Flat paper patternmaking

Drafting:

It involves measurements derived from sizing systems or accurate measurements taken on a person, dress or body form. Measurements for chest, waist, hip and so on, and ease allowances are marked on paper and construction lines are drawn to complete the pattern. Drafting is used to create basic, foundation or design patterns.

Advantages of Drafting Method

1. It is easy to understand and easy to work with drafting method for a new worker.

2. Drafting is very useful for personal use and for small scale garment production like local tailors, boutiques.
3. Clothes made from drafting techniques are based on individual measurements and hence are perfect in fitting for an individual.

Limitations of drafting method

- It is a two dimensional method, thus look of a design can be seen only after stitching a garment.
- Drafting method is limited by its dependence on a chart of specified measurements, which makes it impractical for creating the ever changing designs.
- Rapid changes in designs and sizing are very difficult and long process in drafting technique.
- Drafting pieces do not contain seam margins, notches, stitch lines, some other details.

Draping:

It involves the draping of a two dimensional piece of fabric around a form, conforming to its shape, creating a three-dimensional fabric pattern. This muslin is transferred to paper to be used as a final pattern (Armstrong). Ease allowances for movement are added to make the garment comfortable to wear. Advantage of draping is that the designer can see the overall design effect of the finished garment on the body form before the garment piece is cut and sewn. However, it is more expensive and time consuming than flat pattern making.

Principles of Draping

- Always use grain lines.
- Straight grain should always run perpendicular to the floor and cross grain parallel to the floor.
- The body lines such as bust line, waistline, hipline etc should be parallel to the floor

- Use good quality pins that do not loose shape easily.
- Establish seam lines on the form
- Tear the muslin piece instead of cutting
- Check the balance of the warp and weft
- Mark grainline on muslin; mark cross grain at the fullest part of the dress form
- Place the muslin on the form as per the marked lines, place it in position with pins
- Pin the fabric to the form at the seams.
- Never pull the fabric and distort the grain
- Darts, pleats, tucks etc need to be pinned
- Drape all pieces of the garment
- Mark all lines clearly
- Mark curved seams with small dots at frequent intervals.

Advantage of draping

- Draping is advantageous because without cutting the fabric one can know the entire effect of a garment rather than just minute details.
- It is a three dimensional method, the design can be visualized while draping and any necessary changes can also be made.
- Dress form can be of particular size or of standard measurements.
- This helps the designer to achieve the difficult designs by draping different fabrics. For designs such as cowls this method alone can offer good results.
- In draping we can see the features of garment, and characteristics postures in relation to fabric and time into which we are going drape it, and immediately we can sense the harmony between draped fabric and wearer

Limitations of draping techniques

1. It is an expensive technique of garment construction and not so common in India.
2. Draping requires more talent than required for flat pattern design.
3. Initially dresses are drape

Flat Pattern Making:

It involves the development of a fitted basic pattern with comfort ease to fit a person or body form. A sloper is the starting point for flat pattern designing. It is a simple pattern that fits the body with just enough ease for movement and comfort (Shoben and Ward). Five basic pattern pieces are used for womens clothing. They include a snug-fitting bodice front and bodice back with darts and a basic neckline, a sleeve and a fitted skirt front and back with darts. However, as fashion changes frequently womens styles fluctuate frequently. These basic slopers are then manipulated to create fashions.

A basic sloper has no seam allowances, which facilitates its manipulations to various styles. It has no design interest, only construction lines are marked on it. It is necessary that the basic structure of a sloper should be such that adjustments can be introduced easily. For a good pattern making, accurate measurements are of utmost importance.

Three Major Patternmaking Principles

For making flat pattern and for making alterations according to different design it is very important to know the pattern making principles. If we know the basic principles of pattern making and alteration, we can create any design without affecting the size and shape of the original pattern. Any pattern can be created and modified if we know the basic three principles, which are:

1. **Principle of dart Manipulation:** there are many rules for creating, combining and dividing the darts and transferring dart at different places on a pattern piece. Dart can be shifted to a new place by slash and spread method and by pivot method.

2. **Principle of added Fullness:** there are rules for adding fullness in a garment. Fullness can be provided in a garment with the help of gathers, pleats, tucks etc.

3. **Principle of contouring:** there are rules for making contoured patterns to make it fit the curves of the human

Advantage of flat pattern designing

1. Flat pattern methods provide the versatility to create designs according to fashion change. This method requires a basic pattern fitted to the dummy or the individual figure. Initially this is time consuming and tedious process but it will not require repetition.
2. Basic slopers are basic blocks which can be adapted for a particular design.
3. Pattern alteration is very easy. Patterns can be altered by creating and shifting darts to new places, by adding or deleting darts, by adding pleats, gathers, yokes etc. This alteration is very simple in case of flat pattern technique.
4. The main and one important advantage of this technique is that the newly developed designer pattern retains the size of original basic pattern.
5. Grading in different sizes can be done very easily by flat pattern techniques. It saves the time and energy to be otherwise wasted in making pattern for different sizes.
6. It is very useful for mass production of garments as it based on standard measurements.
7. One basic pattern or sloper can be used again and again to develop several designs, and every time we don't need to take measurements.
8. All paper patterns have seam allowances and detailed markings. It makes it easy to work.
9. Provide better understanding and use of commercial patterns.
10. The woman with a problem figure can save hours of alteration, basting and fitting an individual garments by making her own patterns from a basic pattern, fitted to her figure.
11. A creative person whose interests and talents lie in the costume arts can design her own wardrobe by creative use of flat pattern design. One can restyle old and out of date pattern.

Limitations of flat pattern

1. It is not as easier as drafting. We need to know in detail about the basic principles of pattern making and pattern manipulation to construct a properly fit garment.
2. It is a two dimensional method, the final appearance of the design can be seen only after stitching a garment.
3. It needs proper training and practice.