



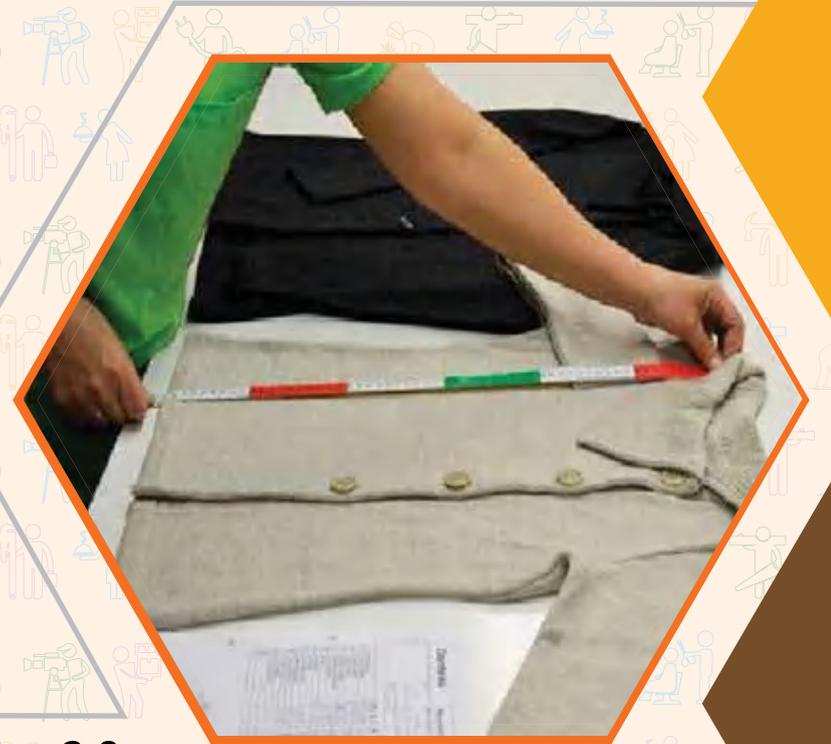
Participant Handbook

Sector
**Apparel / Made-Up's and
Home Furnishing**

Sub-Sector
**Apparel / Made-Up's and
Home Furnishing**

Occupation
Tailoring

Reference ID: **AMH/Q0701, Version 2.0**
NSQF level: 4



Sampling Tailor



<https://youtu.be/bwSQVC7YHjl>
Scan QR code to access e-book

Sampling Tailor

Participant Handbook

AMHSSC



Shri Narendra Modi
Prime Minister of India

“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”



Certificate

COMPLIANCE TO
QUALIFICATION PACK - NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

APPAREL, MADE-UPS & HOME FURNISHING SECTOR SKILL COUNCIL

for the

SKILLING CONTENT : PARTICIPANT HANDBOOK

Complying to National Occupational Standards of

Job Role/Qualification Pack: Sampling Tailor QP. No. AMH/Q0701 NSQL LEVEL 4

Date of Issuance: 30 September 2021

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Chief Executive Officer
APPAREL MADE-UPS & HOME FURNISHING
SECTOR SKILL COUNCIL

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About this Book

This Participant Handbook is designed to enable training for the specific Qualification Pack(QP). Each National Occupational (NOS) is covered across Unit/s.

Key Learning Objectives for the specific NOS mark the beginning of the Unit/s for that NOS.

- AMH/N0102: Maintain work area, tools and machines
- AMH/N0103: Maintain health, safety and secure work place with Gender and PwD Sensitization
- AMH/N0701: Prepare for Sampling
- AMH/N0702: Carry out fabric cutting operations for preparing garment sample
- AMH/N0703: Stitch using machine or by hand
- AMH/N0704: Contribute to achieve sample quality in stitching operations

The symbols used in this book are described below:

Symbols Used



Learning Outcomes



Exercise



Steps



Activity



Tips



Notes



Objectives

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1. Introduction and Orientation

Unit 1.1 - Introduction to Apparel Sector

Unit 1.2 - Process Flow in Garment Industry

Unit 1.3 - Roles and Responsibilities of a Sampling Tailor



Key Learning Outcomes

At the end of the module, participants will be able to:

1. Familiarize with the basics of a garment industry.
2. Identify the process flow in a garment industry.
3. Discuss about the garment quality standards.
4. Identify the roles and responsibilities of a Sampling Tailor.

UNIT 1.1: Introduction to Apparel Sector

Unit Objectives

At the end of the unit, participants will be able to:

1. Discuss where the Indian garment industry stands.
2. Familiarize with the basics about how the industry operates.
3. Discuss about the garment industry.

1.1.1 Apparel Sector – Industry Overview

The apparel and textile industry is one of the most booming industries. Apart from providing one of the basic necessities of life, it also plays an important role through its contribution to industrial output, employment generation, and the export earnings of the country. With Indian apparel and textile being among the world's largest producers, the country is also the 5th largest exporter of apparel and textile across the globe with US\$ 36.4 billion. (source: Annual T&A industry report 2021 by Wazir Advisors)

The textile industry is one of the oldest business options in India since the ancient age. Different types of textile fibers are produced in India, among which cotton, jute, silk, and wool are the major ones. Both skilled laborers and unskilled officials are needed to run this business smoothly. Thus, the textile and apparel industry serves as the platform offering a huge number of employment opportunities to eligible people in India. A brief on complete supply chain for apparel industry is shown as below.



Fig.1.1.1: Apparel production process

The apparel and textile industry contributes 5 percent to the country's GDP from the domestic sector, whereas 7 percent is contributed from the industrial output in value terms and the export earnings of the country acquire a contribution of 12 percent from the apparel and textile industry.

Exports of AMH products stood at US\$ 21.5 billion in the year 2019-20 and have grown at a CAGR of 3 per cent since 2009-10. Top exported Apparel and Home Textiles commodities include T-shirts, kitchen & toilet linen, bed linen, men's shirt, women's top. India's domestic AMH market is also expanding rapidly, and domestic consumption stood at US\$ 81 billion growing at a CAGR of 10 percent, between 2005-06 to 2018-19.

The Indian textile sub-sector has traditionally been contributing significantly to the economy and manpower as well as to the structural changes in the manufacturing sector. Several factors that would contribute to the growth would include:

- Rising income levels are expected to increase the demand for home textiles and garments from domestic Consumers.
- Free trade agreements provide India a comparative advantage in the export segment as compared to its competitors – China, Bangladesh and Pakistan – as they create opportunities for manufacturers to supply to potential markets in East Asia.
- Low production cost continues to be an advantage for the sector and, consequently, demand from existing foreign markets continues to increase.
- Structural changes in the sector, with a shift from vertically disintegrated to integrated large firms, with automated machines for yarn and fabric production.
- Increased spending on research and development to enter the specialized fabrics and technical textiles sector.
- Favorable policy environment to support domestic and foreign investments and the implementation of schemes to enhance the production capacity and improve technology.

Ready Made Garments

The ready-made garments segment comprises men's, women's and kid's clothing, which may be used for either private (home/office wear) or commercial (uniforms for school, waiters and flight crew) purposes. The ready-made garments section has grown rapidly in the last few years. Both exports and domestic demands shall drive sector growth in future.

- Men's wear is the biggest segment in the ready-made garment segment, comprising about 43 percent of its share in the total revenue generated. This is followed by women's wear, with a share of 38 percent; 10 percent share of boys wear and 9 percent for girls wear in the total revenue generated by the ready-made garment segment.
- Changing lifestyles and consumption patterns are expected to drive the sector's supply of casual wear with an 11 percent growth, which would drive demand for workforce with specialized skills in western formals design, blended fabrics and increased application work on clothes.



Fig.1.1.2: Apparel production department

1.1.2 Made-ups and Home Furnishings

The made-ups sub-sector is growing at a steadily increasing pace in the country. The wide variety of products that come under this sub-sector are not only include necessities but also functional and luxury products. Made-ups sub-sector is divided into three (3) broad categories:

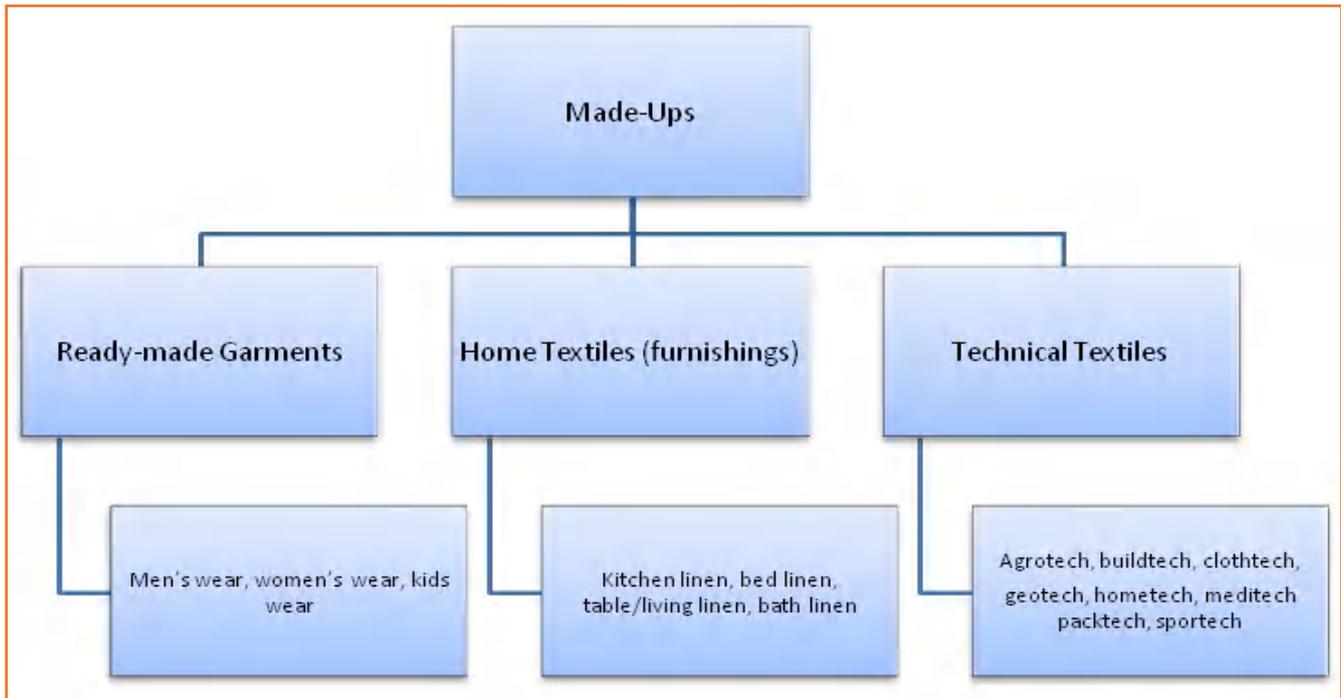


Fig.1.1.3: Made-ups and Home Furnishing Sub-sector

Indian is among one of the biggest exporters in Apparel and Made-ups industry. In Home Textiles India is second only to China in global exports, whereas in apparels, India is among the top 10. , India is fast becoming one of the leading global players in the Home Furnishings/ Textile. Home Furnishings industry offers wide varieties of products like bedspreads, furnishing fabrics, curtains, rugs, cushion covers etc.

The Indian Home Furnishing industry provides a unique blend of modern technology and ethnic techniques to bring out products that are one of the best in the world. The increase in the spending power of the Indian working class is also expected to contribute in the growth of domestic consumption of made-ups and home furnishings industry.

With increased demand and completion from countries like China, the demand of skilled workforce/kaarigars in the Home Furnishings industry is bound to increase in coming years.



Fig.1.1.4: Home Furnishing

Size of Indian Textile and Apparel Industry

In India, the Apparel industry is spread across the country. However, the distribution of the clusters depends on the availability of raw material as well as the manufacturing. Cotton based units can be seen in all parts of the country, while the synthetic and woolen based industries are mainly concentrated in Maharashtra, Gujarat, Punjab, Jammu & Kashmir, Haryana, Madhya Pradesh and Uttar Pradesh. The silk-based industry finds concentration in Andhra Pradesh, Karnataka and Tamil Nadu while, jute clusters are largely located in Bihar and West Bengal.

Most of the apparel exporters (approx. 95%) are based out of Delhi NCR, Tamil Nadu Punjab, Rajasthan, Maharashtra and West Bengal. Rest of the India accounts for remaining 5% of the apparel exporters.

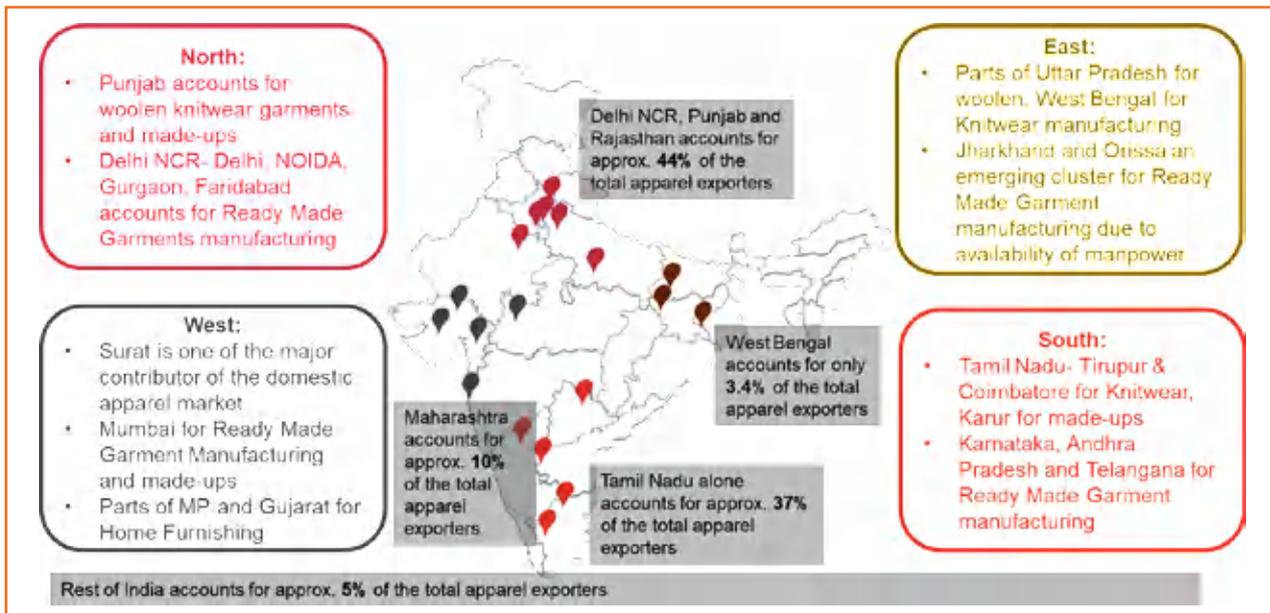


Fig.1.1.5: Major Apparel, Made-ups and Home Furnishing Clusters in India

1.1.3 Skill Development Policy

Indian government runs more than seventy skill development schemes at central, state and district level. The government has launched the Skill India flagship program to empower youth of the country by imparting employable skills to them. Under this initiative, the government has set up Ministry of Skill Development and Entrepreneurship (MSDE) to bring all the skill initiatives of the government under one umbrella and lead skill development ecosystem in the country. The ministry also launched a comprehensive Skill Development Policy in 2015 in which, detailed skill set requirement, courses offered, and roles and responsibilities of different stakeholders were defined. Further, sector wise skill gap analysis was also undertaken to understand sector specific skill requirement.

Pradhan Mantri Kaushal Vikas Yojana (PMKVY) and Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) are the flagship schemes which offer a variety of courses in the AMH sector. Among other skill development programmes, Integrated Skill Development Scheme (ISDS) was the main program run by the Ministry of Textiles, Government of India, introduced in XIIth Five Year Plan (FY 12-17).

The scheme had a target to train 1.5 million people for the T&A industry. As continuation of the scheme, the ministry has launched Scheme for Capacity Building in Textile Sector (SCBTS) also known as SAMARTH in 2018 with a target to train 1 million people in the sector.

ISDS has helped the industry by supplying skilled workforce, which, in turn, has helped the manufacturers in improving productivity and quality. Overall, it has helped in reducing cost, wastage and improving competitiveness that resulted in better business performances.

1.1.4 Employment Scenario in the Sector

Indian Garment Industry is closely connected to the fashion industry and grows hand in hand. Apparel Made-up & Home furnishing (AMH) is one of the largest employments generating sector in India, constituting about 60 per cent share of the total Textile and Apparel (T&A) exports. The Indian textile sub-sector has traditionally been contributing significantly to the economy and manpower as well as to the structural changes in the manufacturing sector. As per the latest round of Periodic Labor Force Survey (2018-19), the total workforce in India is estimated to be about 479 million. The share of labor working in the manufacturing sector was around

10.2 per cent (about 59 Million). Direct employment in the AMH sector primarily comes under manufacturing and the service sectors. The AMH sector employs about 35.8 million labour out of which 47% are engaged directly through the core manufacturing and trade of AMH product and 53% are engaged indirectly through the ancillary sector activities.

India is among the very few countries which have presence across the entire supply chain, from natural and synthetic fibers right up to finished goods manufacturing. It has presence in organised mill sector as well as decentralised sectors like handloom, power loom, silk, etc.

Incremental human resource requirement in core AMH sector, including manufacturing and trade is estimated to be about 35 Lakh for upcoming five years period between 2021-22 and 2025-26. Of the total incremental human resource demand, 89 per cent demand is projected to be in manufacturing of AMH products and 11 per cent demand is projected to be in trade related activity. Incremental labour demand in ancillary sector is estimated to be about 52 Lakh. Thus, the total incremental labour demand in AMH sector is about 87 Lakh.

Total incremental supply at all skill level, during the 2021-25 period, is projected to be of 18.4 Lakh. With the incremental demand of 31 Lakh, the skill gap in AMH - manufacturing is projected to be of 12.6 Lakh.

UNIT 1.2: Process Flow in Garment Industry

Unit Objectives

At the end of the unit, participants will be able to:

1. Identify own role in the garment manufacturing process flow.
2. Summarize the process flow in a Garment Manufacturing Unit.

1.2.1 Process Flow of a Garment Industry

Garment manufacturing involves several processes from receiving an order to dispatching the same. A process flow chart is an easy diagrammatic way of showing how raw materials are moved from one process to another until we get the final desired product.

Widely the whole apparel process flow can be divided into three broad categories:

1. **Pre-production processes:** This includes sampling, sourcing of raw materials, approvals, PP meetings etc.
2. **Production processes:** These basically include cutting and sewing
3. **Post-production processes:** This includes thread trimming, pressing, folding and packing, shipment inspection etc.

There are various departments in an Apparel Manufacturing unit, who play a pivotal role in the entire production process. The departments are mentioned below:

- Fabric Store
- Trim Store and Packing Warehouse
- Textile Testing Laboratory
- Sampling Department
- CAD Department
- Cutting Department
- Sewing Department
- Design Department
- Quality Assurance Department
- Pressing Department
- Final Inspection Department
- Packaging Department
- Industrial Engineering Department
- Human Resource Department
- Accounts and Costing Department
- Excise and Export Documentation Department
- Shipping Department
- Maintenance Department

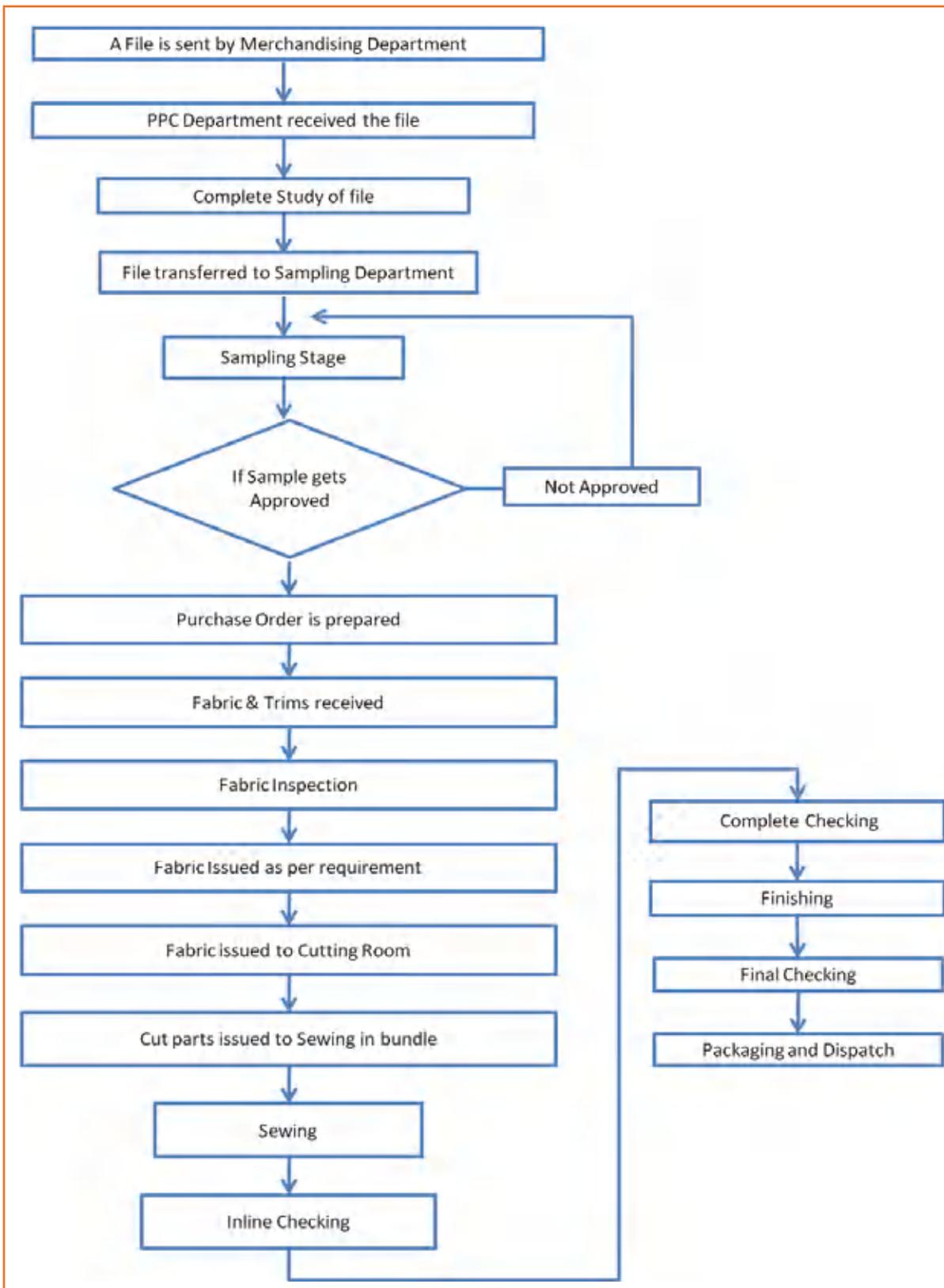


Fig.1.2.1: Process Flow of a Garment Industry

UNIT 1.3: Roles and Responsibilities of a Sampling Tailor

Unit Objectives

At the end of the unit, participants will be able to:

1. Know who is Sampling Tailor.
2. List the roles and responsibilities of a Sampling Tailor.

1.3.1 Job Description and Attributes

A sampling tailor is a person who is developing garment sample as per buyer's specifications in the apparel industry. A sampling tailor should be able to perform basic fabric cutting operations and stitching garments of various designs with different necklines, sleeves, collar etc. as per the quality standards. This job requires the individual to have thorough knowledge of measurements, garment styles, sampling & apparel production processes and should be able to sew garments with different materials & trims.

1.3.2 Roles and responsibilities of a Sampling Tailor

The key roles and responsibilities of a Sampling Tailor:

- Creating a garment sample in accordance with the buyer's requests.
- Performing the process of fabric cutting for sample.
- Sewing a variety of patterns of clothing.
- Taking and recording measurements to make pattern for sample.
- Choosing the right material and style for samples.
- Sew garments with different materials & trims.
- Utilising hand irons or pressing machines to press clothing.
- Checking fit and perform alteration if required.

1.3.3 Personal Attributes

A sampling tailor should have below qualities:

- Good eyesight.
- Eye-hand-leg coordination.
- Motor skills and vision (including near vision, distance vision, colour vision, peripheral vision, depth perception and ability to change focus).
- He/she should also have good interpersonal skills.
- Open to learning, have basic understanding of measurements.

Resources

Scan the QR code or click the link to access the videos or e-book.

Description	QR Code
Apparel industry in India	 https://youtu.be/tN5oLGSjepQ
Role and Responsibilities of Sampling Tailor	 https://youtu.be/bwSQVC7YHjl

Exercise

- India is ____ largest exporter of Apparel and Textile.
 - 2nd
 - 3rd
 - 4th
 - 5th
- The apparel and textile industry contributes ____ percent to the country's GDP from domestic sector.
 - 5
 - 6
 - 7
 - 10
- Biggest segment in the ready-made garment is:
 - Children's Wear
 - Women's Wear
 - Men's Wear
 - Sport's Wear

4. Which of these items comes under category of Home Furnishing and Made-ups?
 - a) Bedspreads
 - b) Curtains
 - c) Cushion covers
 - d) All of the above
5. What is the full form of PMKVY?
 - a) Pradhan Mantri Kushal Vikas Yogna
 - b) Pradhan Mantri Kaushal Vikas Yogna
 - c) Pradhan Mantri Krishi Vikas Yogna
 - d) None of the above
6. In which year SAMARTH Scheme launched?
 - a) 2015
 - b) 2016
 - c) 2018
 - d) 2021
7. Which of these Skill Development scheme is run by Ministry of Textile?
 - a) ISDS
 - b) DDU-GKY
 - c) PMKVY
 - d) All the above
8. India is _____ largest exporter of Apparel and Textile.
 - a) 2nd
 - b) 3rd
 - c) 4th
 - d) 5th
9. _____ are essential part of finishing department .
 - a) Team Work
 - b) Coordination
 - c) Cooperation
 - d) All the above
10. Packing list is a _____ type of document.
 - a) Pre Shipment Document
 - b) Post Shipment Document
 - c) Both A & b
 - d) None of the above



2. Prepare for Sampling

Unit 2.1 - Tools and Equipment Required

Unit 2.2 - Measurement

Unit 2.3 - Fabric Understanding

Unit 2.4 - Garments Understanding

Unit 2.5 - Trims and Accessories

Unit 2.6 - Tech Pack

Unit 2.7 - Pattern Making

Unit 2.8 - Fit and Alterations



Key Learning Outcomes

At the end of the module, participants will be able to:

1. Identify the tools and equipments used for the job.
2. Recognize quality systems and other processes practiced in the organization.
3. Identify various types of fabrics/apparels and garments and types of fabrics/apparels that require stitching by hand or machine stitching.
4. Analyse the characteristics of the garment materials and how they differ with each other.
5. Identify various types of trims.
6. Take measurements accurately and become well versed with unit conversion techniques.

UNIT 2.1: Tools and Equipment Required

Unit Objectives

At the end of the unit, participants will be able to:

1. Identify tools used in pattern making, sewing and finishing.
2. Make use of tools used in pattern making, sewing and finishing.

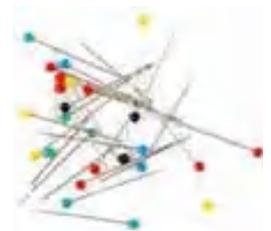
2.1.1 Sketching Tools

A sampling tailor is someone who produces custom clothing items such as suits, shirts, trousers and jackets, etc as per the buyer requirements. A sampling tailor uses the following tools to carry out his work:

1. Pattern making tools
2. Spreading and fabric cutting Tools
3. Sewing Tools
4. Finishing tools

2.1.2 Pattern Making Tools

Straight pins: Used for draping, fitting, joining panels together.



Straight pin holder: Hold the pins in the form of a pincushion worn on the wrist while draping or a magnetic holder when kept on the table for safe use.



Scissors: The most basic cutting tools where two blades are held together through a pivot point. There are different types of scissors such as paper scissor for cutting paper, fabric scissor for fabric, pinking shears for zigzag finish etc.



<p>Pencils and pens: Mechanical pencils with lead are used for pattern work. Red, green, black and blue felt tip pens are used for pattern information.</p>	
<p>Trimming scissors: These are small scissors used for carrying out alterations, trimming seams, repair work and cutting threads while sewing.</p>	
<p>L-scale: It is called a Tailor's square or tri-scale and is made of wood or plastic. The L-scale has two arms, one measuring 12" and the other arm 24" and form a 90 degree angle. It is used for drafting on brown paper majorly to draw perpendicular lines.</p>	
<p>Leg shaper: A curve scale that is either 24" or 36" long and is used to measure and shape the interior part of the leg.</p>	
<p>Tailor's art curve: It is used to draw curves wherever required in pattern drafting.</p>	
<p>French curve: It is a transparent curve scale that helps in marking shapes of the neck, depth of armhole and bottom of the garment.</p>	
<p>Hanger hooks or ringers: It is used to hold the patterns together or hanging on rods.</p>	
<p>Push pins: Push pins are used for pattern manipulation. It prevents slipping of pattern while cutting several piles of paper together.</p>	
<p>Magic mend scotch tape: It is used to mend pattern work.</p>	

<p>Black twill tape: Black twill tape is used for placing style lines on garments and dress forms.</p>	
<p>Notcher: It is used to mark seam allowance, indicate center line and to identify front and back of patterns like in sleeves.</p>	
<p>Tracing wheels: It is used to transfer pattern shape into paper and for pattern markings on fabrics. For light and loosely woven fabrics, the tracing wheel should be used with care or the fabric could get damaged.</p>	
<p>Awl: It is used to mark the ending of darts, pockets, trim and button hole placements.</p>	
<p>Measuring tape: It is used for measuring the size of patterns. It is crucial for taking body measurements. It is 152 cm or 60" long with markings on both sides. One end of the measuring tape is made of metal having 3" length which is used for measuring a vertical area and the other having 1/2" length, used for measuring a circular area.</p>	
<p>Tailors chalk: Tailors chalk is used for drawing adjusted seams and style lines. It is also used for marking the paper patterns on the cloth by pressing. Alterations and construction markings are made using the tailors' chalk.</p>	
<p>Brown paper: It is thick quality paper used for making patterns by drafting. 100,180,240 and 300 GSM are commonly used brown papers for drafting purposes.</p>	
<p>Dressmaker's carbon paper: Carbon papers are generally used for transferring patterns. They are used for tracing designs in embroidery.</p>	

Fig.2.1.1: Pattern making and cutting tools

2.1.3 Fabric Cutting Tools

The sampling tailor should understand the tools and equipments to carry out the job . He is required to know cutting of only single garment. The tools required for the process are given below.

- **Cutting Tables:** These are used to spread the fabric and cutting the garment.
- **Scissor:** Used for end cutting
- **Weights:** Hold down fabric
- **Measuring Tape:** A flexible tape with Inches and centimeter demarcation on the either side
- **Fabric Shears:** It should be sharp enough to cut the fabric

All the cut components of a garment are assembled here to make a complete garment. Mostly used machine is single Needle lock stitch machine. Other Specialized Sewing Machines are also used based on the requirements.

2.1.4 Sewing Tools

Sewing is carried out either manually or by a machine. For hand sewing, the following items are required:

<p>Sewing Machine: It is used to stitch different components together to make a garment. A sampling tailor uses different types of machine to complete one garment. There are different types of industrial sewing machines. We will discuss this in detail in subsequent units.</p>	
<p>Needles: These needles come in size range of 0 to 12. Based on the cloth thickness and type, the appropriate number needle is used. These are all purpose needles which are used in hemming, button placing etc.</p>	
<p>Crewel needle or darn needle: A crewel needle is a sharp needle with elongated eye for threading of thicker yarn or multiple threads. It is generally used for surface techniques such as embroidery, appliqué, etc. A darn needle is a large and thick needle. It is usually blunt and generally used in darning or knitting.</p>	
<p>Needle threader: It helps in threading mechanism of the machine and hand needles.</p>	
<p>Thimble: Thimble is a protection cover for finger while sewing. It is made of generally plastic or steel.</p>	

Seam ripper: It consists of a sharp curved edge for opening/ripping and cutting seams.



Thread Cutter: A thread cutter is used to cut loose threads coming out of the fabric while stitching. The design aids in precision cutting and prevents cuts in fabric.



Fig.2.1.2: Sewing tools

2.1.5 Finishing Tools

Finishing is also carried out either manually or by machines. For finishing, the following tools are required:

Ironing board/Table: For ironing clothes, a table or ironing board can be used. The angular left side of the board is appropriate for ironing dart edges and sleeve cuffs while stitching. The table/board should have proper stuffed backing for smooth ironing.



Iron: A heavy duty and good brand steam iron with a thermostat regulator is preferred.



Sleeve board: It is in the shape of a sleeve. This board is 30" long and 3/4" thick and used to press shirt sleeves.



Fabric Steamer: For readymade garments with can-can, embroidery, it becomes difficult to iron such pieces. Hence, the steam iron helps smooth any wrinkles in the fall of the fabric.



Fabric cleaning spray gun: It is a spot cleaning gun, which is ideally suited for removing machine oil, pen and similar stains from garments.



Fig.2.1.3: Finishing tools

UNIT 2.2: Measurement

Unit Objectives

At the end of the unit, participants will be able to:

1. Identify the measuring points.
2. Make use of tools used in measuring.
3. Identify dress form landmark measurement.

2.2.1 Measurement Tape

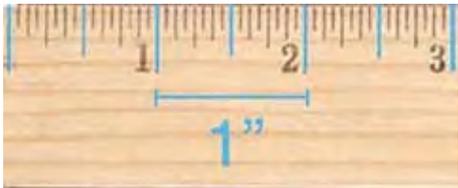
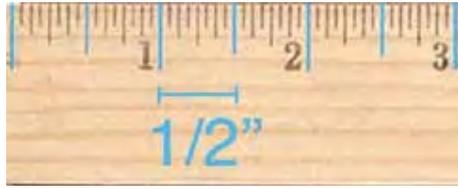
A measuring tape is basically a length of metal strip or cloth or fibre which is linearly marked with units of length for measurement. There are usually two types of measuring tapes that are used: One is the self-retracting spring mechanism tape and the second one is a long length tape. In case of straight measurements ruler can be used but measuring tape is a more versatile measuring tool which can be used to measure longer lengths and curves very easily.

In case of measuring garments, usually the fibre tape is used with inches and centimeter marked on two sides of the tape. It is both flexible and can be used for long.



Fig.2.2.1: Measuring tape

Units of measurement

	<p>The distance between two consecutive longest straight vertical marks is known as 1 inch</p>
	<p>The long vertical lines in between two inch lines form the half inch line. The distance between an inch line and the line just in between two inch lines is known as $\frac{1}{2}$ inches.</p>
	<p>The slightly shorter vertical mark that divides half inches in the middle form $\frac{1}{4}$ inches. Its distance from either inch mark or $\frac{1}{2}$ inch mark is $\frac{1}{4}$</p>

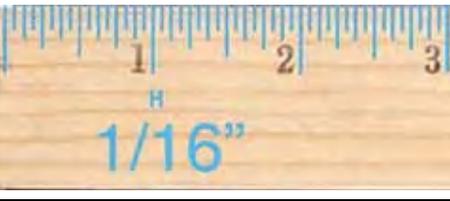
	<p>These are the second smallest markings on a ruler or in some cases the smallest. The distance between this small mark and its consecutive bigger mark is known as 1/8 inches.</p>
	<p>The smallest marks although not present in all rulers are the sixteenth mark and the distance between the smallest tick and any of the ticks just after or before it is known as 1/16 inches.</p>
<p>Metric Scale</p>	
	<p>Metric scales have markings in centimeter and millimeter. The larger markings in a metric scale represent centimeter.</p>
	<p>The smaller ticks on a metric ruler represent a millimeter. There are 10 millimeters in a centimeter so there will be 9 marking in between two centimeter markings.</p>

Fig.2.2.2: Units of measurement

Conversion Table

Units	1m	1m	1cm	1m	1m	1ft	1in	1in
Conversion	100cm	1000mm	10mm	3.28ft	39.97in	12in	25.4mm	2.54cm

Fig.2.2.3: Conversion Table

It is possible to measure in one unit and convert it to any desired unit of measurement.

For example:

$$1 \text{ inch} = 2.54 \text{ cm}$$

$$\text{So, } 5 \text{ inches} = 5 \times 2.54 \text{ cm} = 12.7 \text{ cm}$$

Similarly,

$$1 \text{ cm} = 10 \text{ mm}$$

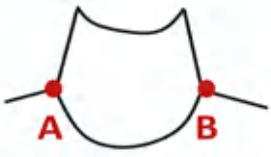
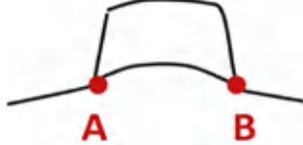
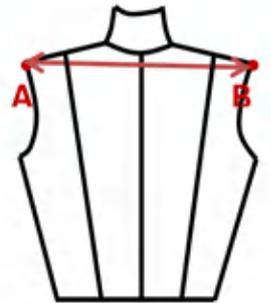
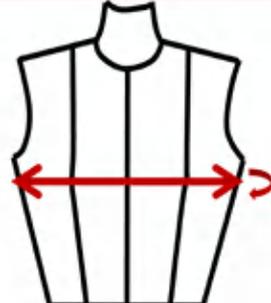
$$\text{So, } 2 \text{ cm} = 2 \times 10 \text{ mm} = 20 \text{ mm}$$

The reverse is also true,

$$30 \text{ mm} = 30 / 10 \text{ cm} = 3 \text{ cm}$$

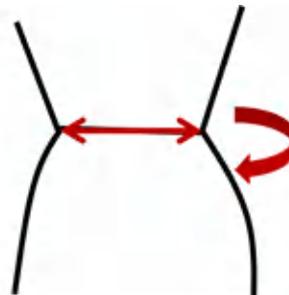
2.2.2 Dress form Landmark Measurement

Dress form Landmark Measurement

<p>Shoulder Length: Lay the measuring tape flat along the shoulder line. Measure from the high shoulder point to the shoulder tip (Measure from A to B as shown)</p>	
<p>Front Neck: Start from the high point of the shoulder and guide the tape along the front neck curvature to reach the other high point shoulder (Measure from A to B as shown)</p>	
<p>Back Neck: Start from the high point of the shoulder and guide the tape along the back neck curvature to reach the other high point shoulder (Measure from A to B as shown)</p>	
<p>Neck Around: Lay the tape flat along the neck line. Start from the neck point in the front and guide the tape to follow the neckline through the nape and come back to the neck point</p>	
<p>Half Neck Around: Sum of length of the half of front neck and half of the back neckline. Start from the neck point from the front and guide the tape along the curve to reach the nape at the back of the neck. Alternatively you can take the measurement of around the neck, and divide it by 2 to get the half neck around measurement</p>	
<p>Shoulder Length: Lay the measuring tape flat along the shoulder line. Measure from the high shoulder point to the shoulder tip (Measure from A to B as shown)</p>	
<p>Bust/Chest Around: Run a measuring tape around the bust level through the apex points. The tape should lay flat and parallel to the ground when the measurement is being taken. (Run a tape around the body along the shown line)</p>	

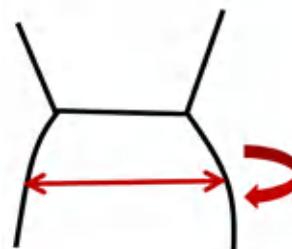
Half Chest Around: Sum of length of half of front chest and half of back chest. Start from the centre front line at the bust level, run the tape flat along the bust level and reach the centre back line. The tape should lay flat and parallel to the ground when the measurement is being taken. Alternatively you can take the measurement of around the chest, and divide it by 2 to get the half chest around measurement

Waist Around: Run a tape around the waistline. The tape should lay flat and parallel to the ground when the measurement is being taken (Run a tape around the body along the shown line)



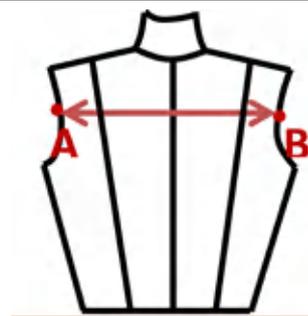
Half waist around: Sum of length of half of front waist and half of back waist. Start from the centre front line at the bust level, run the tape flat along the bust level and reach the centre back line. The tape should lay flat and parallel to the ground when the measurement is being taken. Alternatively you can take the measurement of around the waist, and divide it by 2 to get the half waist around measurement

Hip Around: Run a measuring tape around the hip level through the highest point on the hip. The tape should lay flat and parallel to the ground when the measurement is being taken



Half hip around: Sum of length of half of front hip and half of back hip. Start from the centre front line at the hip level, run the tape flat along the hip level and reach the centre back line. The tape should lay flat and parallel to the ground when the measurement is being taken. Alternatively you can take the measurement of around the hip, and divide it by 2 to get the half hip around measurement

Shoulder blade: Run a measuring tape across the shoulder blade (on the back of the dress form) level from the ridge of one arm plate to the other. Shoulder blade is at the 1/3rd of the total back length (Measure from A to B as shown)



Front length: Run a tape from the front neck intersection, guide it through the centre front line and measure till the waist line (Measure from A to B as shown)



Back length: Run a tape from the back neck intersection or the nape point, guide it through the centre front line and measure till the waist line (Measure from A to B as shown)



Full length: The length of a upper body garment from the high point shoulder to the hem of the garment (Measure from A to the hem of the bottom garment as shown)



Fig.2.2.4: Dress form Landmark Measurement

2.2.3 Leg Form Landmark Measurement

Parts of Leg form front

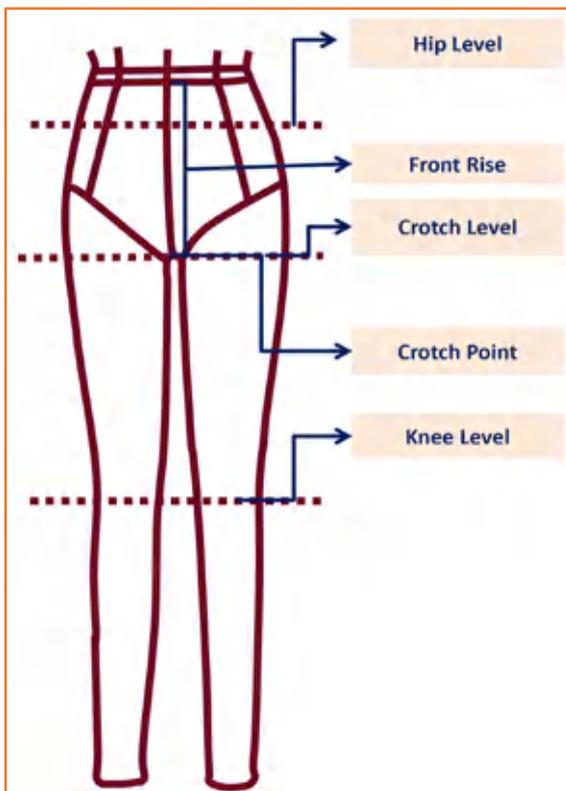


Fig.2.2.5: Parts of Leg form front

Parts of a Leg Form back

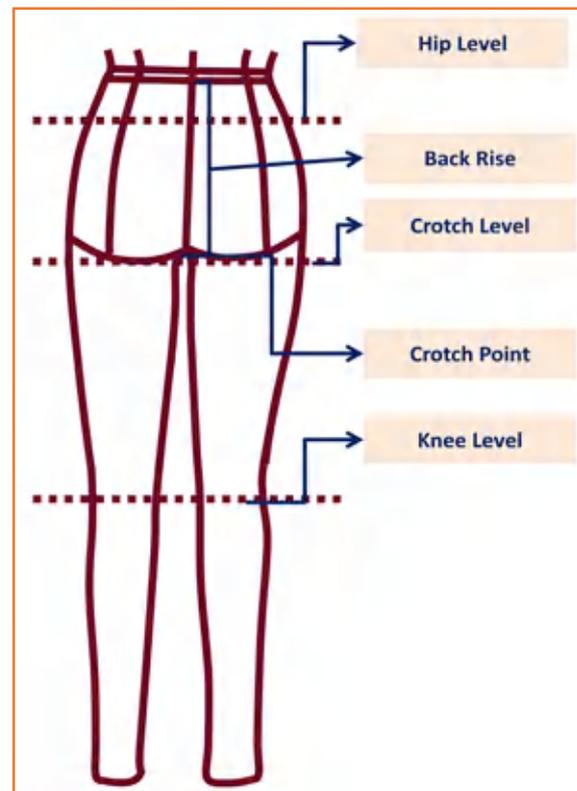
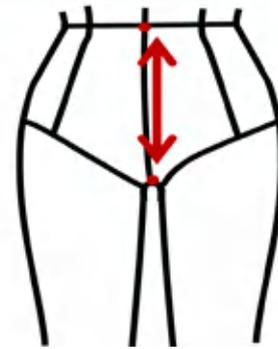


Fig.2.2.6: Parts of Leg form back

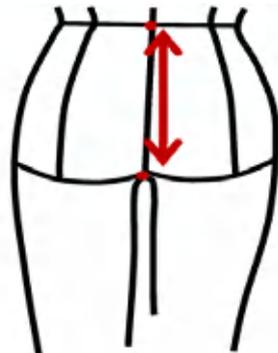
- **Front Rise:** Vertical distance between the front waist intersections at the centre front to the crotch point.
- **Back rise:** Vertical distance between the back waist intersections at the centre back to the crotch point.
- **Crotch level:** Level parallel to the crotch point.
- **Crotch Point:** Point of intersection of front rise and back rise.

Leg Measurement

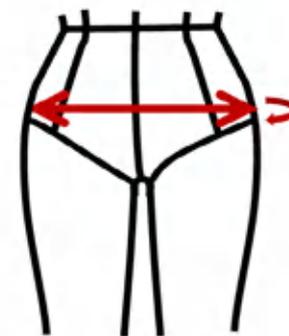
Front Rise: Run a tape from the waist point intersection at the front, guide it through the centre front line and measure till the crotch point (Measure from A to B as shown)



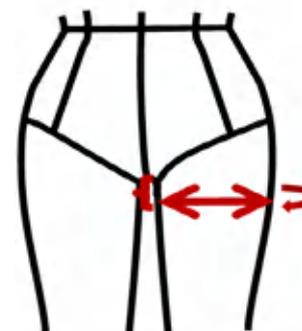
Back Rise: Run a tape from the waist point intersection at the back, guide it through the centre back line and measure till the crotch point (Measure from A to B as shown)



Hip/Seat Girth: Run a measuring tape around the hip level through the highest point on the hip. The tape should lay flat and parallel to the ground when the measurement is being taken. Hip level is typically 7 inches below the natural waistline



Thigh Around: Run a measuring tape around the widest point on the thigh. The tape should lay flat and parallel to the ground when the measurement is being taken. Thigh level is typically 1 inch below the natural waistline



Knee Around: Run a measuring tape around the knee. The tape should lay flat and parallel to the ground when the measurement is being taken. Thigh level is typically 14 inches below the crotch point

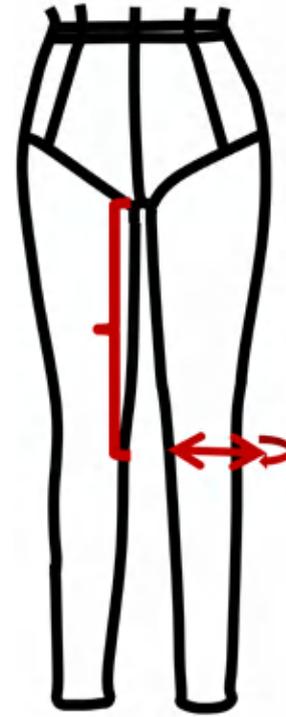


Fig.2.2.7: Leg Form Landmark Measurement

UNIT 2.3: Fabric Understanding

Unit Objectives

At the end of the unit, participants will be able to:

1. Identify different types of fabric.
2. Recognise the basic fabric properties.
3. Identify fabric defects.

2.3.1 Fabric Identification

Textile fiber is a building block used in the making of yarns and fabric. Fiber is a hair-like strand, small in diameter in relation to its length. It can also be defined as any product that is capable of being woven or processed into fabric. These structural materials may be naturally occurring or man-made from naturally existing materials or custom-made from basic organic or inorganic components.

The appeal or personality of any textile structure, end-use product, i.e., its appearance, texture, handle, wear performance, mechanical properties, etc., and is generally influenced by four factors:

- The fiber or blend of fibers used
- Yarn structure or structures - size, twist, etc.
- Fabric structure - weave, knit, non-woven
- Type finish or finishes - color added, chemical and/or mechanical finish

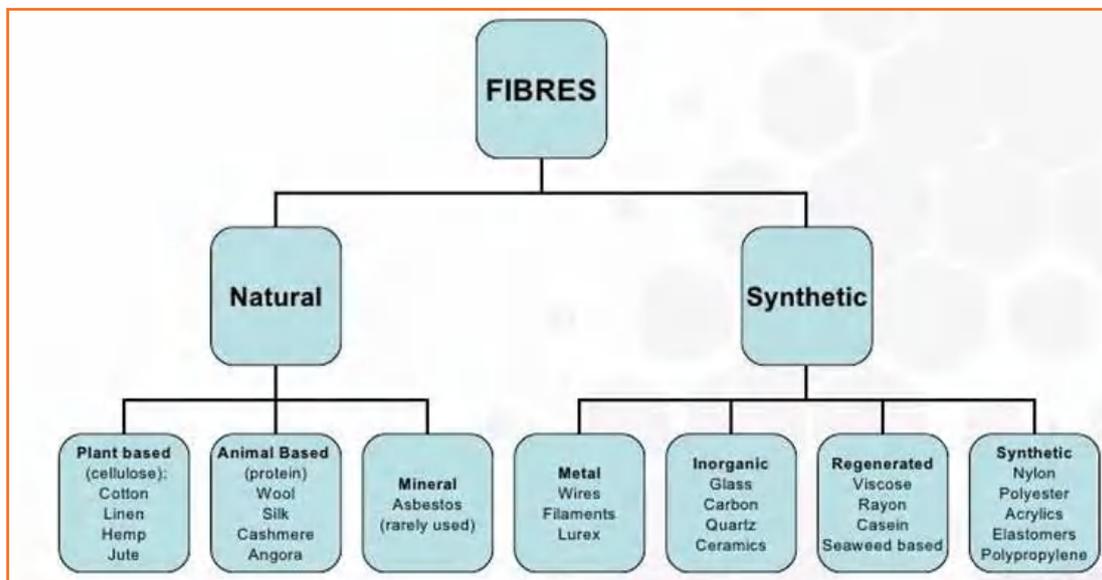


Fig.2.3.1: Different types of fabric

Textile fibres are of two types:

1. **Natural Fibre:** Natural fibres are the fibres that are naturally produced either by plants, animals or through geological processes. They usually have short fibres, called staple fibres. The exception to this is only silk, a natural fibre whose continuous filaments are up to one kilometer in length. Based on their origin natural fibres are further classified into:
 - » Vegetable Fibres: From plants and vegetables
 - » Animal Fibres: From animals
 - » Mineral Fibres: From Minerals Sources of Natural Fibre:
 - » Cotton from the cotton plant
 - » Linen from the flax plant
 - » Wool from sheep
 - » Silk from silkworms
2. **Man made Fibre:** Man-made fibres are made artificially by man, as they are not naturally present. These fibres are also known as manufactured fibres. These fibres have high strength, strong when wet with low moisture absorption property. Rayon, nylon, polyester are some of the examples of man-made fibres. They are continuous filament fibres, which means the fibres are long and do not always have to be spun into yarn.

Sources of synthetic fibre

- Viscose comes from pine trees or petrochemicals.
- Acrylic, nylon and polyester come from oil and coal

Fiber is the basic element used for making of yarns. Thereafter, yarns are interlaced/inter-woven to make fabric. Fiber is a hair-like strand, small in diameter with respect to its length. Fibers may be naturally occurring or man-made from naturally existing materials or custom-made from basic organic or inorganic components. The appeal or personality of any textile structure, end-use product, i.e., its appearance, texture, handle, wear performance, mechanical properties, etc., and is generally influenced by four factors:

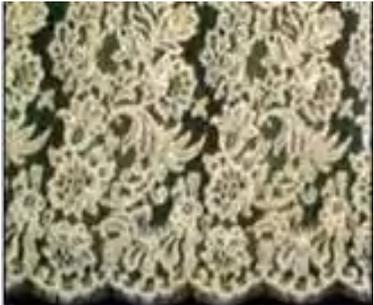
1. The fiber or blend of fibers used
2. Yarn structure or structures - size, twist, etc.
3. Fabric structure - weave, knit, non-woven
4. Type finish or finishes - color added, chemical and/or mechanical finish

2.3.2 Types of Fabrics

There are plenty of fabrics available in the market and a Boutique Manager must know which fabric to choose for which style/order. Below are some fabrics and their properties for better understanding and that are used across the world.

Name	Description	Sample image
Silk Broadcloth	A fine, closely woven silk	
Buckram	Strong, heavy woven fabric used for stiffening	
Chiffon	Sheer, light fabric made out of silk, cotton or synthetic fibres. The twist in the fibres gives it a somewhat rough feel, and the mesh-like weave contributes to its see through properties	
Satin	Characterized with its glossy surface and a dull back	
Georgette	Semi-sheer fabric. Originally made with silk but today majorly produced using synthetic fibres. Its light, crinkly, slightly rough feel is what it's known for, plus the range of colors it is dyed in	

Cotton	Fabric made up of Plant based staple length fibres. Cotton boasts of its comfort when worn and can be blended with a number of natural and man-made fibres to achieve different products	
Corduroy	Napped (directional) fabric which is strong and durable with a surface of rounded cord or rib and the back has a plain or twill weaves. It can be made from several textiles including cotton	
Chambray (or lightweight denim)	A denim look-alike light-weight fabric. Achieved by weaving of white yarns filling out the weft and colored yarns lining the warp	
Denim	Twill weaves fabric that the threads produce that distinctive diagonal ribbing on the underside of the fabric. Traditionally it is dyed indigo	
Gauze	A fine, transparent, plain-weave fabric with open texture. Cotton gauze fabrics are lightweight, airy, breathable and slightly crinkled for a casual look	

Canvas	Stiff, coarse fabric used for needlework	
Lace	Knitted fabric with intricate ornamental designs. These fabric appear to be net-like and are transparent only highlighting the designs that they bear	
Jute	It is made from the cellulose-rich fibers of the jute plant which is native to Asia. Typically used for making mats, burlap and gunny bags	
Jacquard	Fabrics with elaborate woven designs. The woven system can combine a number of color or designs to produce a vibrant appealing fabric	
Linen	Derived from the fibers of flax plant and is highly valued for its fresh, cool feel especially during hot weather	

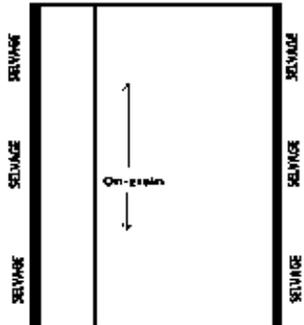
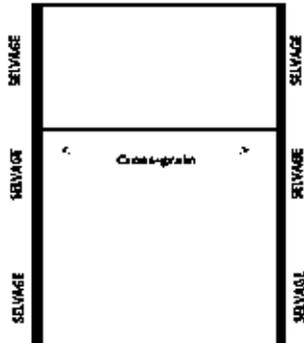
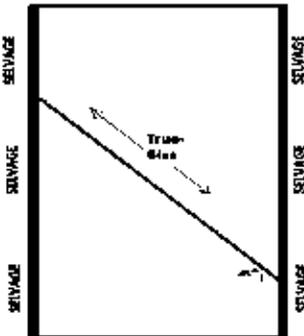
Mesh	Woven, knitted, crocheted, or knotted with open spaces between yarns.	
Muslin	Firm plain-weave cotton found in many weights.	
Polyester	The most commonly used man-made fiber for fabric production. Polyester is the by-products of petroleum and coal, mixed with air and water. It has low water absorbency and is quite flammable	
Poplin	A strong, plain weave cotton fabric	
Silk	Silk is one of the oldest and most luxurious fabrics known to man. This protein fiber is obtained from the cocoons of the mulberry moth	

Rayon	Regenerated cellulose fiber with luxurious look and feel. Other names for rayon are viscose and art silk	
Velvet	It is a woven, tufted fabric, originally made purely of silk but commonly composed of silk and rayon these days. The short, dense piles of cut threads are evenly distributed to give velvet its distinctive feel	
Venise	Venise is a type of damask textile but typically with showy, floral patterns	
Wool	Natural protein fiber derived from the hair and fur of different animals including sheep and goats. The fibers are shorter than those of silk and generally form a looser weave.	
Acetate	Combination of natural and synthetic fiber. The natural element is from the cellulose of wood. A filament fiber made from acetate with a crisp hand and high luster	

<p>Acrylic fibres</p>	<p>Commonly known as man-made wool. Imitates some of the properties of wool. It is a synthetic fiber that has a soft hand and good wrinkle resistance.</p>	
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Fig.2.3.2: Different types of fibres

2.3.3 Grain Line

Description	Line Art
<p>The line of fabric that moves at a right angle to the crosswise grain is the lengthwise grain line. This thread runs the entire length of the fabric and is parallel to the selvage. When you place a pattern on the fabric, you align the pattern's grain line with the fabric's lengthwise grain. Unless otherwise noted, grain or grain line generally refers to the lengthwise grain.</p>	
<p>The line of thread moving from selvage to selvage is called weft. In sewing, the weft is mostly referred to as the crosswise grain line.</p>	
<p>True Bias is an invisible line that's at a 45 degree angle to the crosswise and lengthwise grain. It has a good deal of stretch. When garments are cut on the bias, they hug and move easily with the body. Fabric for spaghetti straps, bias binding and cording are also cut on the bias.</p>	

2.3.5 Fabric Defects

Classification of defects

Certain defects are acceptable to some whereas unacceptable to others. fabric for curtain inner lining might not generally be judged with stringent dealings. Whereas that for top grade dress wear could also be rejected on the idea of a minuscule imperfection.

- Classification is that the categorization of defects into major and minor. Defects are classified relying on many factors. In some cases defects might not be defects within the first place. For instance: Barre in knitting appears within the sort of sequential horizontal lines on the fabric. this might simply be used as a sway and usefully incorporated in product. Laddering will be achieved as a sway by deliberately deactivating a needle within the bed.
- Generally the classification depends on the frequency of the defect. a little hole within the fabric might not cause problems however repeated little holes can clearly be problematic and so a significant defect.

The classification of defects depends on degree of visibility. for example registration problems will be neglected if there is only minor misalignment. Variation in matching of coloured shade is acceptable within bound limits.

1. **Major Defect:** A defect that, if conspicuous on the finished product, would cause the item to be second.
2. **Minor Defect:** A defect that would not cause the product to be termed as a second either because of severity or location.
3. **Second:** A 'Second' is a garment with a conspicuous defect that affects the saleability or serviceability of the item.

These faults have to be reported immediately to the supervisor. In case of not reporting, the defects will not be rectified and result is rework.

There are several defects related to fabrics. It is said that approximately 70% of the apparel industry's cost is spent on getting an excellent or a good quality standard fabric to meet client expectations and market reputation or competition. Commonly found defects are mismatch in threads, or using an incorrect stitching technique, improper creasing of any garment etc, similarly a garment can also be called faulty when it has color defect or size difference. Sizing defect must be handled carefully as it can deteriorate a garment where they can't be repaired and has to send for a re-making of the product which could be time and cost consuming for the industry. Hence it is very important to look for the material carefully. The material to be used should be free from the following faults:



Fig.2.3.3: Abrasion Mark

- **Abrasion Mark:** Abrasion mark is the mark which is formed where the fabric has been damaged on the outside due to friction that has occurred because of damaged operation through which it has been passed.



Fig.2.3.4: Misprinting

- **Misprinting:** misprinting is a common fault found in the making of a garment. It could be that, the garment is misprinted, or partially printed or over-lapped. For e.g. as highlighted in the Fig. on the left, the circles printed are not of the same size and shape hence it's a misprint.

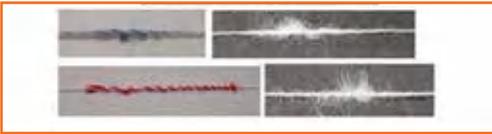


Fig.2.3.5: Double Pick

- **Double Pick:** Double pick can be explained as 2 yarns which are running concurrently, and regularly in the weft yarn. Refer to the image on the left to see the example of two yarns running parallel.

- **Oil Stains:** As shown in the Fig.on the left, oil marks are something that leaves stain on the fabric making it look ugly, and must be treated immediately as the fabric with oil stains can't be left un-attended. It should be sent for the replacement.

Hole or a Bow can be caused due to faulty needles like bent or dull needle, hence make sure to check needles and if there are any bent or rusty, dull needles they should be the first thing to be replaced.



Fig.2.3.6: Oil Stains



Fig.2.3.7: Skew

- **Skew:** Deformation or twist in the construction of the fabric i.e. in yarn that comprise the fabric. The picture shows how skew is identified.
- **Dye Stain:** An area of discoloration which occurs because of unequal absorption of dye hence, always make sure to check that the material you are about use should not have any sort of discoloration. If so, then make sure to get it replaced.

Marker Making Defects

- Size Mixing. Components not correctly labelled in marker.
- Patterns facing incorrect direction on napped fabrics.
- Patterns facing in different direction (either way) on a one-way fabric.
- Garment Components omitted during marker making
- Patterns misaligned with respect to the fabric grain.
- Line definition poor (e.g., too thick chalk, indistinctly printed line) leading to inaccurate cutting.
- Mismatched checks and stripes.



Fig.2.3.8: Marker Making Defects



Fig.2.3.9: Plies misaligned

Common Spreading Defects

Plies misaligned:

- Incorrect tension of plies
- Fabric spread too tight or too loose, causing parts not to fit in sewing and finished garments not to meet size tolerances.
- Spread distorted by the attraction or repulsion of plies caused by excessive static electricity.
- Plies not all facing in correct direction (whether —one way|| as with nap, or —one way either way as with some check designs)
- UnacceptFig.damages situated in garment parts

Common Cutting Defects

- **Inaccurate cutting:** Distorted garment parts. Top and bottom plies of different size
- **Notches:** Misplaced, too deep, or omitted
- **Drill marks:** Misplaced not perpendicular through the spread
- **Frayed edges, fused edges:** Caused by a faulty knife not sharp enough, or rotating at too high a speed
- Marker incorrectly positioned on top of spread
- Slits opened inaccurately or omitted
- Mixed plies resulting in Shaded Garment parts when assembled
- Mixed Size parts resulting in uneven appearance
- Inconsistent Grain and Surface of the Skin



Fig.2.3.10: Cutting Defects

Bundling and Ticketing

Numbering or Pasting of a number sticker on all the components of all the garments. The number acts as the identification of the component and the lot from which the component is cut.

- **Bundling:** Assembling the cut components in small batches of pre-defined number as per the requirements of production system.
- **Ticketing:** The process of attaching a ticket to all the bundles that provides basic information about the bundle and the components in the bundle.

Important Points

- Numbering should be done on wrong side of fabric only.
- Number stickers should be checked for glue
- Numbering of a ply twice or skipping of a ply should not occur
- The information on bundle tickets must be accurate
- Care must be taken to avoid mixing of components of different sizes in a bundle

- Sewn on shade marking tickets falling off, damaging fabric, omitted, misplaced or wrongly numbered
- Adhesive shade marking tickets falling off or sticking too hard , omitted, misplaced, wrongly numbered
- Bundles or boxes not stacked in box, or rolled in correct order in bundles or rolled or folded too tightly causing creases
- Work tickets, coupon payment tickets or progress tickets omitted , misplaced or mixed makes both quality and quality control difficult
- Wrong Size , Wrong Shade, wrong type of trimmings put in Bundle



Fig.2.3.11(a): Unmatched Trimmings



Fig.2.3.11(b): Matched Trimmings

Common Problems of Fusing

- Discoloration after fusing - The temporary or permanent change in shade, color of a fabric caused by the action of heat on certain dyes during fusing.



Fig.2.3.12(a): Normal Fabric



Fig.2.3.12(b): Discoloration after fusing

Strike through

- Strike through means that the adhesive resin appears on the outer face of the fabric being fused



Fig.2.3.13(a): Ideal fusing in fabric



Fig.2.3.13(b): Strike through in a fabric



Fig.2.3.13(c): Interlining shrinking

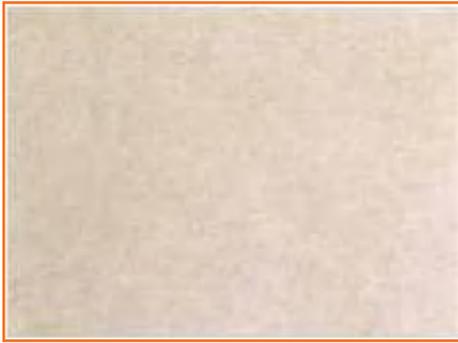
Strike Back

Fig.2.3.14(a): Ideal fusing



Fig.2.3.14(b): Strike Back

Shine / Glazing and Discoloration

- The temporary or permanent change in shade, colour of a fabric caused by the action of heat on certain dyes during fusing.

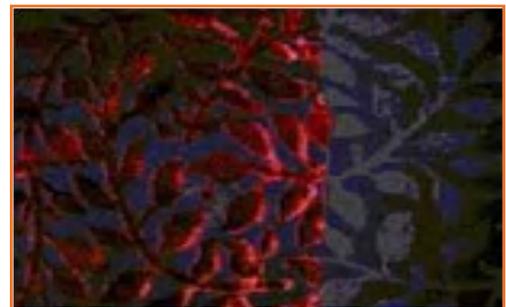


Fig.2.3.15: Glazing and Discoloration



Fig.2.3.16: Fusing distortion

Fusing distortion

- Fusing distortion means garment panels are distorted during the fusing process. This problem should be prevented as distorted garment panel after fusing cannot be corrected other than discarded as waste.

Fusing delamination

- Fusing delamination, sometimes appear as bubbling or rippling is the complete breakdown of bond between fusible interlining and fabric surface. It is normally found after the garment has been dry cleaned or washed.

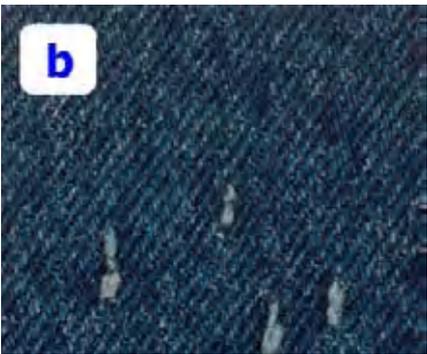


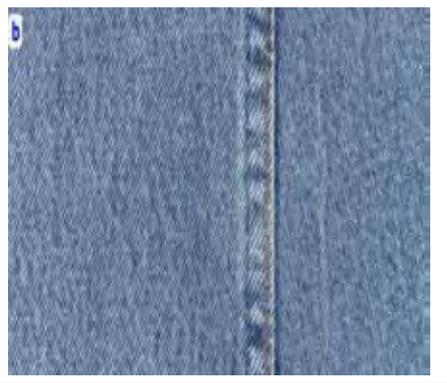
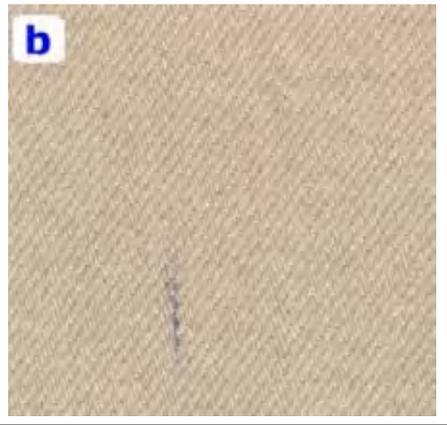
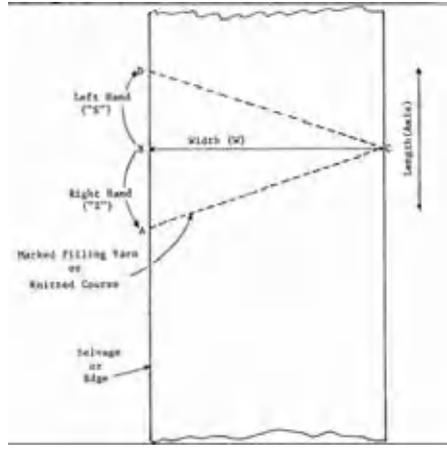
Fig.2.3.17(a): Ideal fusing



Fig.2.3.17(b): Fusing delamination

Common Woven Fabric Defects

Defect	Explanation	Severity	Photograph
Defects of Woven Fabric			
Dropped Pick	Caused by the filling insertion mechanism on a shuttle less loom not holding the filling yarn, causing the filling yarn to be woven without tension. The filling yarn appears as "kinky."	Major	
End Out	Caused by broken yarn and loom continuing to run with left end.	Major	
Slub	Usually caused by an additional piece of yarn that's woven into fabric. It can even be caused by thick places in the yarn. Often is caused by fly waste being spun in yarn in the spinning process.	Major or Minor	
Knots	Caused by tying spools of yarn together	Usually Minor	

<p>Mixed End (Yarn)</p>	<p>Yarn of a different fiber blend used on the wrap frame, resulting in a streak in the fabric.</p>	<p>Usually Major</p>	
<p>Mixed Filling</p>	<p>Caused by bobbin of lightweight yarn or different fiber blend used in filling. Will appear as a distinct shade change</p>	<p>Major</p>	
<p>Soiled Filling or End</p>	<p>Dirty, oil looking spots on the wrap or filling yarns, or on package-dyed yarn</p>	<p>Major</p>	
<p>Askewed or Bias</p>	<p>Condition wherever filling yarns are not square with wrap yarns on woven fabrics or wherever courses don't seem to be square with wale lines on knits.</p>	<p>Major or Minor</p>	

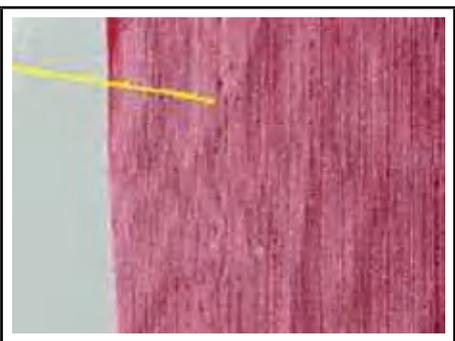
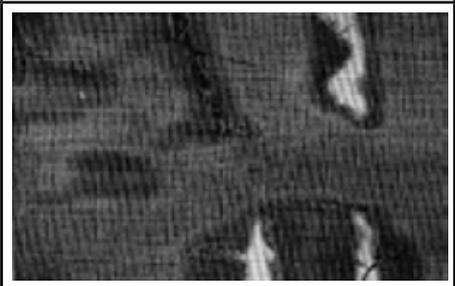
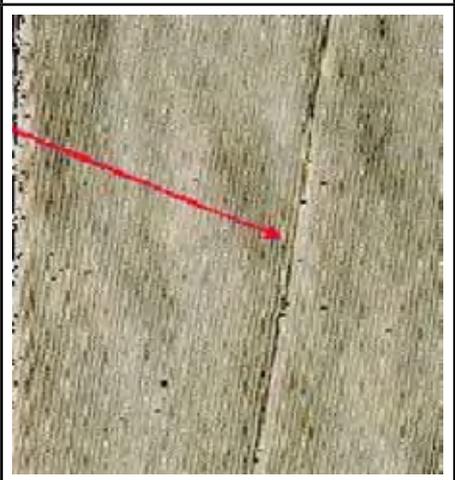
<p>Pin holes</p>	<p>Holes along selvage caused by pins holding fabric while processes through stenter frame</p>	<p>Major if extends into body of fabric</p>	
<p>Straying End</p>	<p>Caused when an end of yarn breaks and loose end strays and is knit irregularly into another area.</p>	<p>Major</p>	
<p>Bowing</p>	<p>Usually caused by finishing in knits ,the course lines lie in an arc across width of goods.</p>	<p>Major on stripes or patterns Minor on Solid color</p>	

Fig.2.3.18: Common Woven Fabric Defects

Accessories Defect

<p style="text-align: center;">Zippers</p>		
<p>Slider defect</p>	<p>Won't Lock: Not apparent without testing by placing Zipper slider in locked position and applying tension.</p> <p>Faulty Dimension: Not readily apparent. May cause either a hard or a loose operating zipper. Either condition may result in zipper failure before garment is worn out.</p> <p>Crushed Slider: May be due to improper garment pressing or due to padding or compensating springs in the presses not being in best condition.</p>	

Tarnished: Does not generally interfere with operating qualities but is a matter of appearance only. Judging" this as a defect depending upon degree of tarnish. Burn or Rough Spots Not immediately apparent. Can cause snagging and early wear on the upper tape. Lock Prong Interferes Indicated by pull-tab not staying in locked position or slider not moving freely after being released from locked position.

Weak Slider Bodies: Can best be determined with correct testing equipment. However, manifests itself by slider becoming compressed or crushed below minimum pressure or becoming distorted enough to form hard operation.

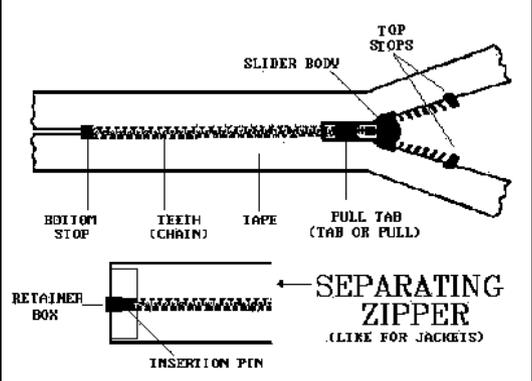


Chain or Teeth Defect

Improper Dimensions: Not always apparent unless slider works with great difficulty or operates too easily. Zipper' may give initial satisfactory operation but fail after only moderate use and especially after laundering or dry cleaning.

Miss meshed and Unmeshed Teeth: Readily visible, particularly in large. Usually results in inoperable zipper. Missing Teeth: Readily visible, will result in early failure of the zipper.



	<p>Misplaced Teeth: This refers to a tooth being out of position, and occasionally may involve two or three teeth. Seriousness ranges from trifling to almost as serious as a missing tooth depending upon the degree of misplacement and general design of zipper.</p> <p>Off color: This defect is quite apparent. Zipper makers usually carry an entire range of tape colours. because of similarity of different colours, one may be mistaken for another. it's also possible, because of color similarities or distinction in dye lots that the {two the 2} halves of the zipper can have two different shades of tape.</p> <p>Humpy Chain: readily noticeable by its waviness. Causes issue at sewing operation and distorts finished garment's look.</p> <p>Cord not attached to Tape: because of skipped stitches during operation of sewing cord to tape. Not readily apparent however under strain, cord and teeth can rip away from tape and render zipper and garment unusable. Length: Improper zipper length for given opening.</p>	 <p>The diagram illustrates zipper components and assembly. The top part shows a zipper with labels: SLIDER BODY, TOP STOPS, BOTTOM STOP, TEETH (CHAIN), TAPE, and FULL TAB (TAB OR FULL). The bottom part shows a SEPARATING ZIPPER (LIKE FOR JACKETS) with labels: RETAINER BOX, INSERTION PIN, and SEPARATING ZIPPER (LIKE FOR JACKETS).</p>
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<p>Top or Bottom Stop Defects</p>	<p>Missing Top or Bottom Stop: Readily apparent and will end in zipper failure. If facilities for attaching a top or bottom stop don't seem to be available, then the complete zipper ought to get replaced. In some instances, bottom stops are hooked up at garment plant. an improperly or poorly attached bottom stop is also result of carelessness on a part of the operator or of improper functioning of the bottom stop machine.</p>	
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Snap Fasteners

<p>Hard Action</p>	<p>In light-weight goods this may result in stud or socket pulling through the material. The snap fastener manufacturer can be of help in recommending proper tension of stud in socket for weight of garment material.</p>	 <p>The image shows two metal snap fasteners. On the left is a smooth, circular stud. On the right is a circular socket with a central hole and a raised rim. The socket has some text embossed on it, including 'MILITARY' and '4'.</p>
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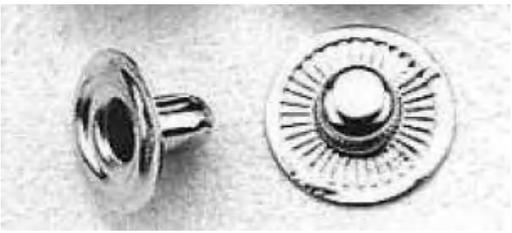
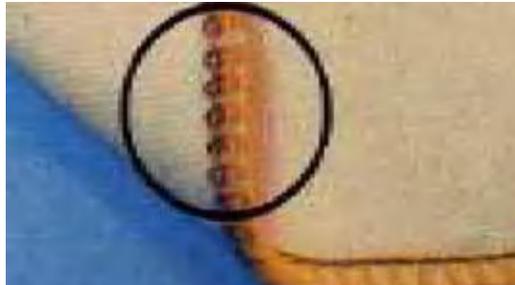
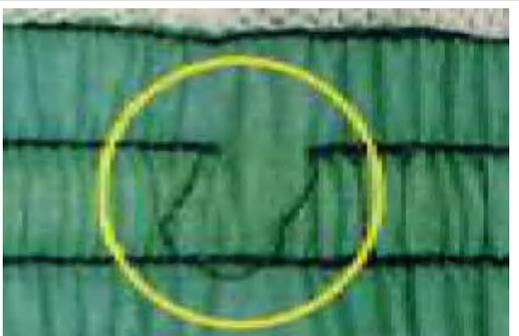
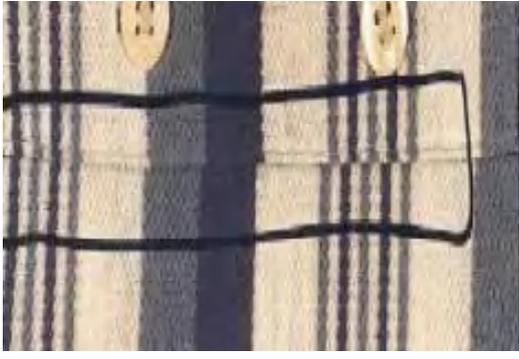
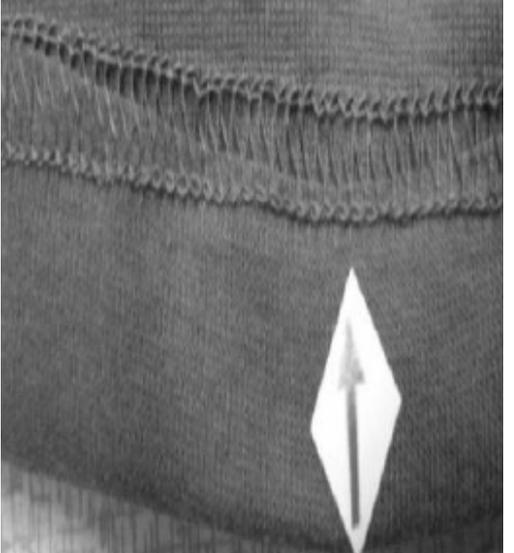
Light Action	Snap fastener does not stay closed because of lack of proper tensions. Same comment applies as for tight closure.	
Hooks & Eyes	<p>Improperly Applied: This is usually caused by a careless operator or improperly adjusted attaching equipment, and corrections are usually simple when apparent.</p> <p>Improper Alignment: Gauges are available for attaching equipment to assure proper alignment in positioning. this can be a necessary if garment is to own a properly tailored look. If the top of the zipper is extended into the waistband of the garment, than the hook and eye ought to be offset to prevent it from hit the zipper material.</p> <p>Poor Finish: May be the result of improper finishing or pocking of the metal surface and, while this defect dose not interferes with the functional operation, it may not leave the desired finished appearance of the garment.</p> <p>Tight/Loose Closure: Attaching equipment bad fitt with an adjustable feature permitting secure application of hook and eye to either light-weight or heavyweight goods. If closures seem too tight, then one should instantly check the attach.ing equipment for correct adjustment.</p>	
Buttons		
Rough or Dull Surfaces	This fault is not so serious except in cases of extreme roughness or poor surface appearance.	
Non-Uniform. Inaccurately Spaced Chipped or Blocked Sew Hole:	This type of defects cannot be noted during the garment manufacturing operation and can slip inspection unnoticed but it frequently causes needle breakage or cut thread.	

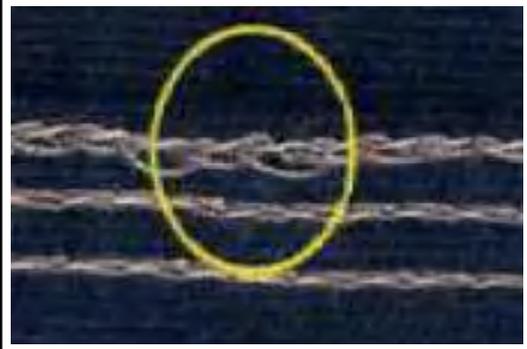
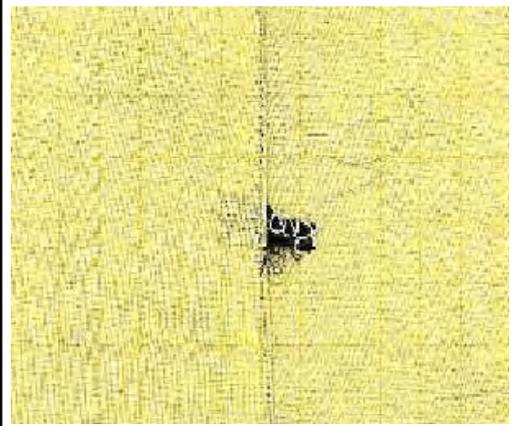
Fig.2.3.19: Accessories Defects

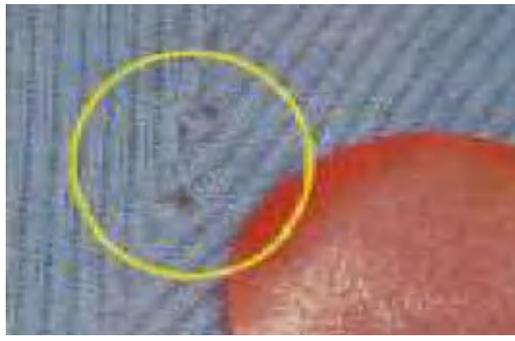
Stitch and Seam Defects

Type of Defects	Description	Photograph
Broken stitches	Caused due to: <ul style="list-style-type: none"> • Too thick/ too thin a thread for the needle • Needle heat • Operator working non-rhythmically • Too tight tension 	
Skipped stitches	Caused due to: <ul style="list-style-type: none"> • Hook irregularly failing to pick up the loop of thread from a needle's eye 	
Seam Grinning	Caused due to: <ul style="list-style-type: none"> • The Seam itself may open and produce a Gap between two pieces of fabric • Arising from too loose a tension or too large stitch length or use of a wrong stitch type. 	
Unbalanced stitch	Caused due to: <ul style="list-style-type: none"> • Arising from unbalanced tension of needle thread and bobbin/looper thread. 	

<p>Improperly formed Stitches</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Bad thread tension • Ill fitting machine components 	
<p>Irregular or incorrect shape of sewing line</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Badly set guide, • Handling error 	
<p>Twisted seams</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Improper alignment of fabric parts, • Mismatched notches, components off grain 	
<p>Mismatched stripes or checks</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Mishandling by operator • Incorrect cutting 	

<p>Insecure stitching back</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Rows do not cover the first row of stitching-Manual error 	
<p>Uneven width of inlay</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Bad handling by operator • Incorrectly set guide, incorrectly set folder 	
<p>Linings too full, too tight.</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Operator twisted or stretched extensively during Sewing 	
<p>Uneven Stitch Density</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Operator causing the machine to snatch and does not allow the machine to control fabric feeding. 	
<p>Wrong Stitch density</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Too high SPI give rise to jamming and rupture of fabric • Too low SPI give rise to weak seams and seam grinning 	

Mismatched seams	<p>Caused due to:</p> <ul style="list-style-type: none"> • Edges of the upper and lower fabric parts not matched during sewing, causing the seams to shift 	
Loose Stitch	<p>Caused due to:</p> <ul style="list-style-type: none"> • Unbalanced seam sewing thread tension not set properly 	
Extraneous part caught in the seam	<p>Caused due to:</p> <ul style="list-style-type: none"> • Handling error 	
Garment parts Cockling, Pleated, Twisted, Showing Bubbles	<p>Caused due to:</p> <ul style="list-style-type: none"> • Handling error • Usage of wrong interlining/fusing under improper conditions 	

<p>Components of features wrongly positioned or misaligned</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Incorrect marking • Incorrect sewing not following the marker 	
<p>Seam Slippage</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Insufficient thread tension • Low count, unbalanced weave and filament yarns. 	
<p>Thread Breakage</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Improper m/c settings • Incorrect threading • Excessive needle heat • Incompatible needle, thread and fabric, damaged machine parts 	
<p>Yarn Severance</p>	<p>Caused due to:</p> <ul style="list-style-type: none"> • Incorrect needle point • Damaged needle • High machine speed 	

Puckering	<p>Caused due to:</p> <ul style="list-style-type: none"> • Tension pucker • Feed pucker • Puckering due to differential shrinkage • Puckering due to structural jamming 	
Ragged Edges	<p>Caused due to:</p> <ul style="list-style-type: none"> • Knives on automatic sewing machine not dipping smoothly. 	
Uncut thread	<p>Caused due to:</p> <ul style="list-style-type: none"> • Operators' negligence • Malfunctioning thread trimmer in automatic machines 	
Oil stains	<p>Caused due to:</p> <ul style="list-style-type: none"> • Malfunctioning machines 	

Fig.2.3.20: Seam defects

Processes to Rectify Few Defects

Defects	Rectification
Restitched Seams / Broken Stitches	<ul style="list-style-type: none"> Using better quality sewing threads Ensure proper machine maintenance
Open Seam- Seam Failure- Stitch	<ul style="list-style-type: none"> Better quality threads Proper size thread for application Proper tension
Seam Slippage	<ul style="list-style-type: none"> Change seam type if possible Increase seam width Optimize the stitches per inch.
Excessive seam Puckering	<ul style="list-style-type: none"> Correct thread type and size. Sew with minimum sewing tension to get a balanced stitch Machine needle, bobbin and threads are set properly according to the fabric to be sewn.
Knits & Stretch woven puckering	<ul style="list-style-type: none"> Set the machine properly according to the fabric Minimum pressure foot pressure
Improper Stitch balance	<ul style="list-style-type: none"> Use quality thread Properly balance the stitch so that the needle and bobbin threads meet the middle of the seam. Always start by checking bobbin tension to make sure it is set correctly, so that minimum thread tension is required to get a balanced stitch.
Raggedged/Inconsistent Edge	<ul style="list-style-type: none"> Make sure the sewing machine knife are sharpened and changed often. The knife should be adjusted in correct form in relationship to the "stitch tongue" on the needle plate to get the proper seam width.
Improper Stitch balance – 504 Overedge Stitch	<ul style="list-style-type: none"> Use Quality thread Balance the stitch properly so that if the looper thread is unraveled, the needle loop lays over half way to the next needle loop on the under side of the seam
Raggedged/Inconsistent Edge	<ul style="list-style-type: none"> Make sure the sewing machine knife are sharpened and changed often The knife should be adjusted properly in relationship to the "stitch tongue" on the needle plate to obtain the proper seam width.

Fig.2.3.21: Rectification of defects

UNIT 2.4: Garments Understanding

Unit Objectives

At the end of the unit, participants will be able to:

1. Identify different components of a garment.
2. Analyse types of Home furnishing products.
3. Identify different types of garments.
4. Recognize different silhouettes.

2.4.1 Classification of Garments

Garments could be classified based on several aspects as there is no standard classification system available. It can be based on the gender as male or female, or age. The garments can be classified based on the following aspects:

- **Type of fabric:**
 - » Knit (T-shirt, sweater)
 - » Woven (shirt, suiting and denim)
 - » Nonwoven (diaper, socks)
- **Season:**
 - » Winter (jacket)
 - » Summer (tank top)
 - » Spring (singlet)
 - » Autumn (shirt)
- **Events:**
 - » Party (fashion wear)
 - » Active (regular wear)
 - » Evening gown (outfit)
- **Application:**
 - » Formal (collar shirt)
 - » Swimwear (bikini, cover ups)
 - » Sportswear (trouser)
 - » Lingerie (inner wear, sleep wear)
- **Method of manufacture:**
 - » Readymade (complete)
 - » Tailored (measurement)
 - » Furnishing (automated)

- **Gender and age:**

- » Women's
- » Men's
- » Kid's

2.4.2 Garment Parts

Various shapes of fabrics are stitched together to form a Garment. A top wear garment typically has front, back, collar and sleeves. A bottom wear typically has front, back and a waistband. In addition to these parts, garments have more functional and aesthetic elements. Parts of some basic garments are detailed below:

Parts of a Men's Formal Shirt



Fig.2.4.1: Front view of a shirt



Fig.2.4.2: Back view of a shirt

Parts of a Cargo Pant

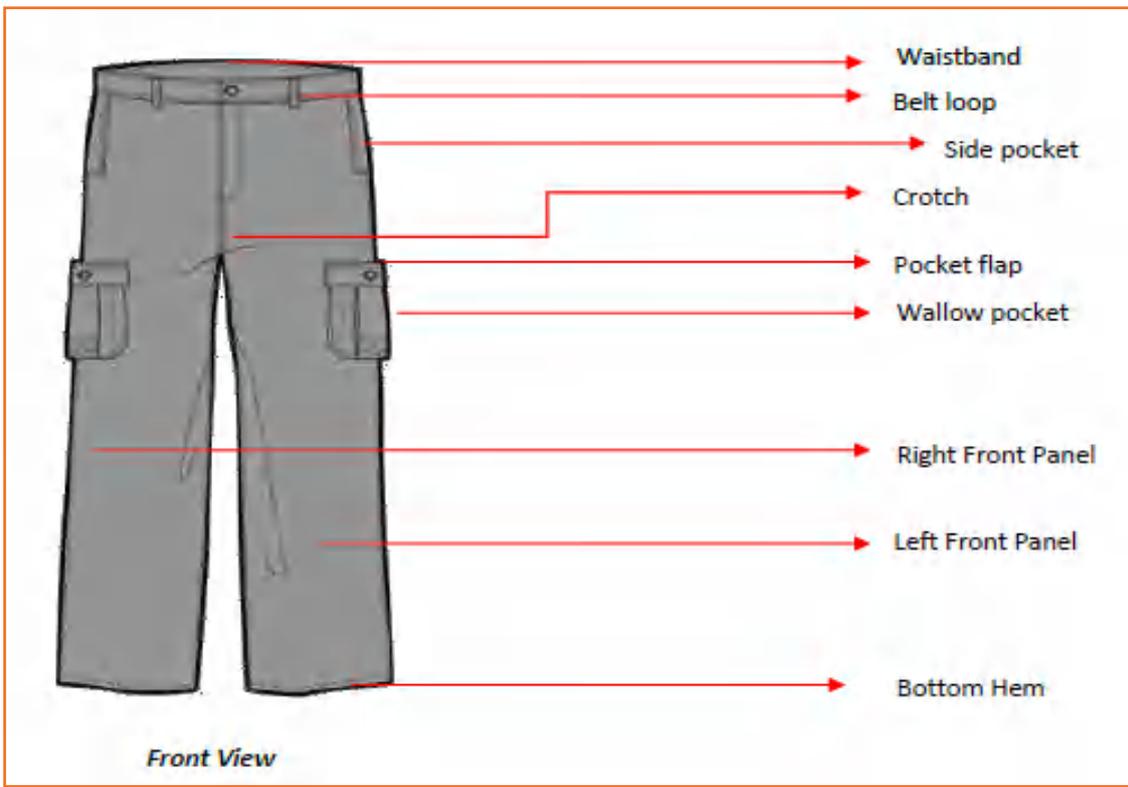


Fig.2.4.3: Front view of a cargo pant

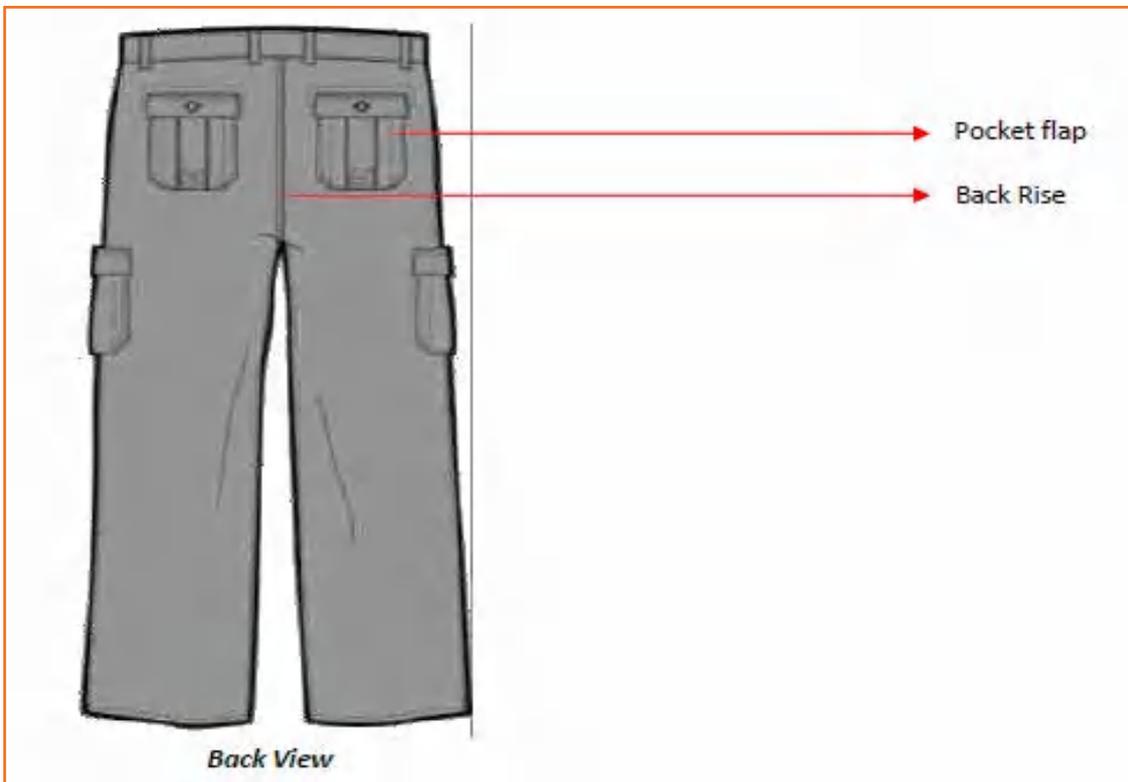


Fig.2.4.4: Back view of a cargo pant

Parts of a Basic 5-Pocket Jeans

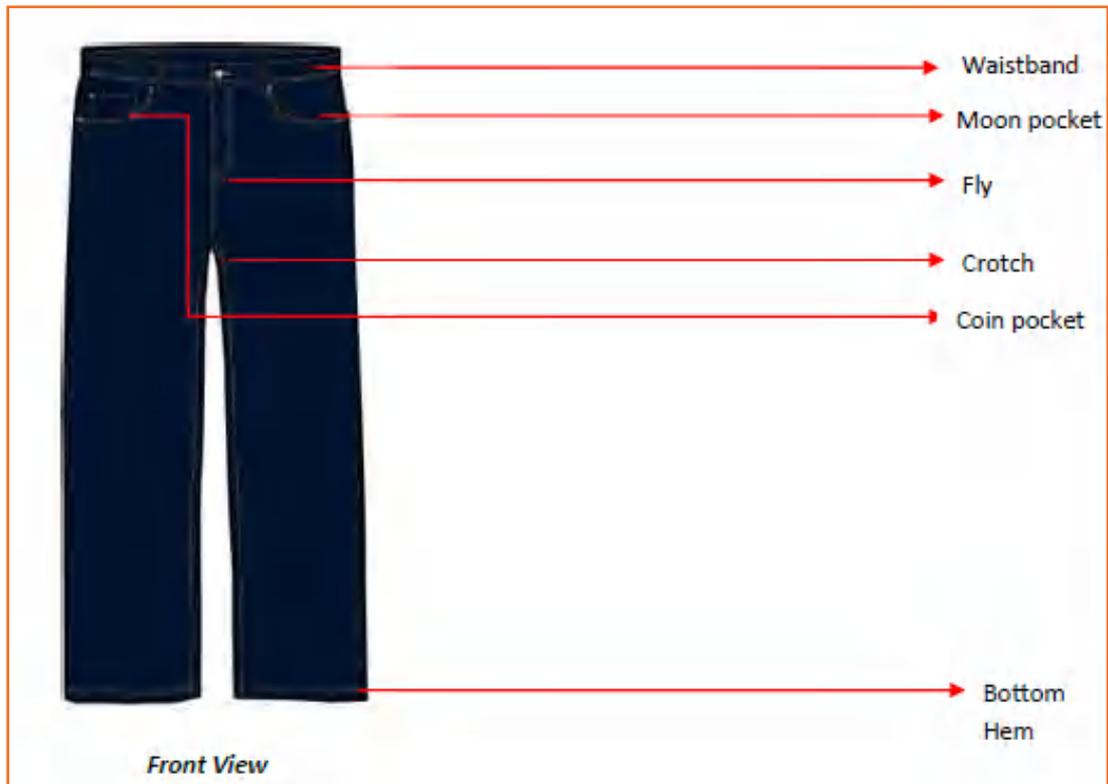


Fig.2.4.5: Front view of a jeans

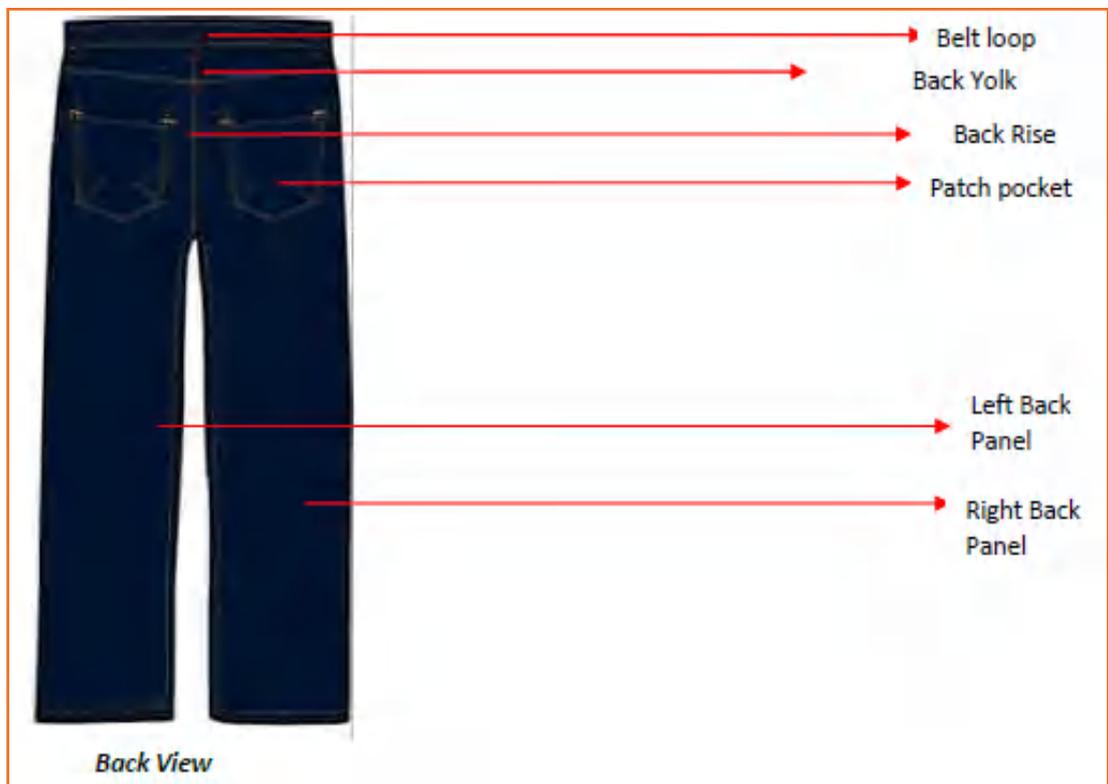


Fig.2.4.6: Back view of a jeans

Parts of a Formal Trouser

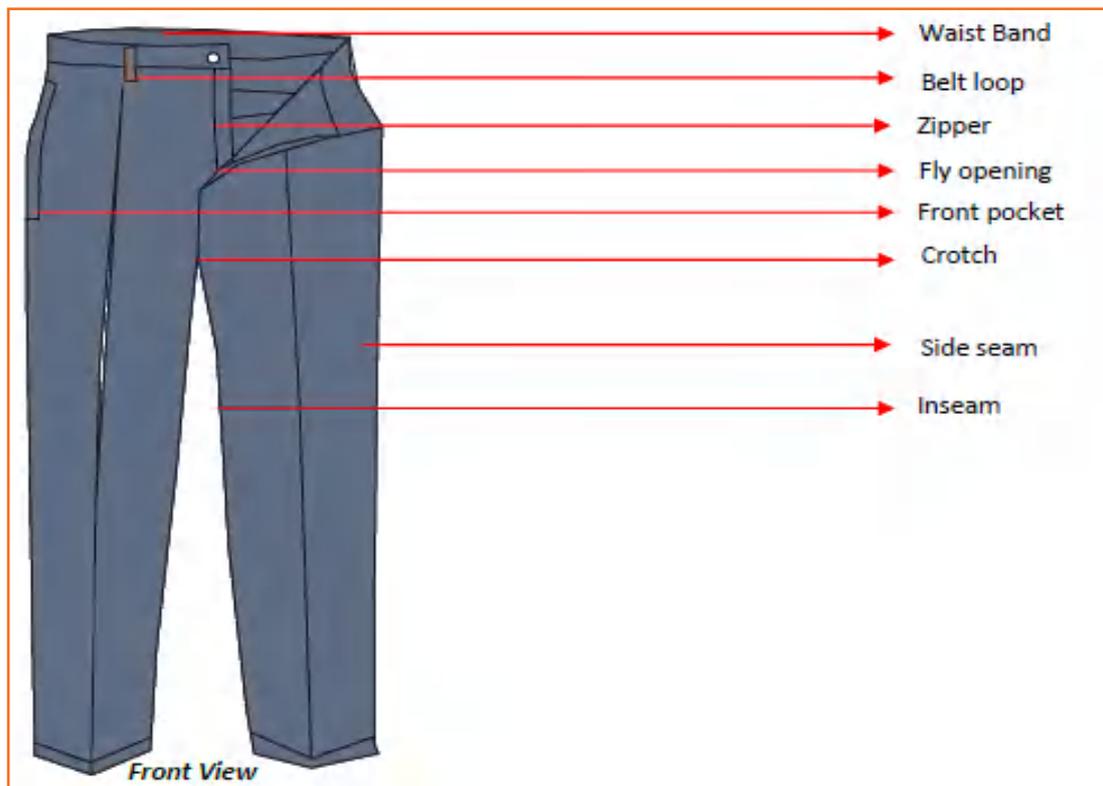


Fig.2.4.7: Front view of a formal trouser

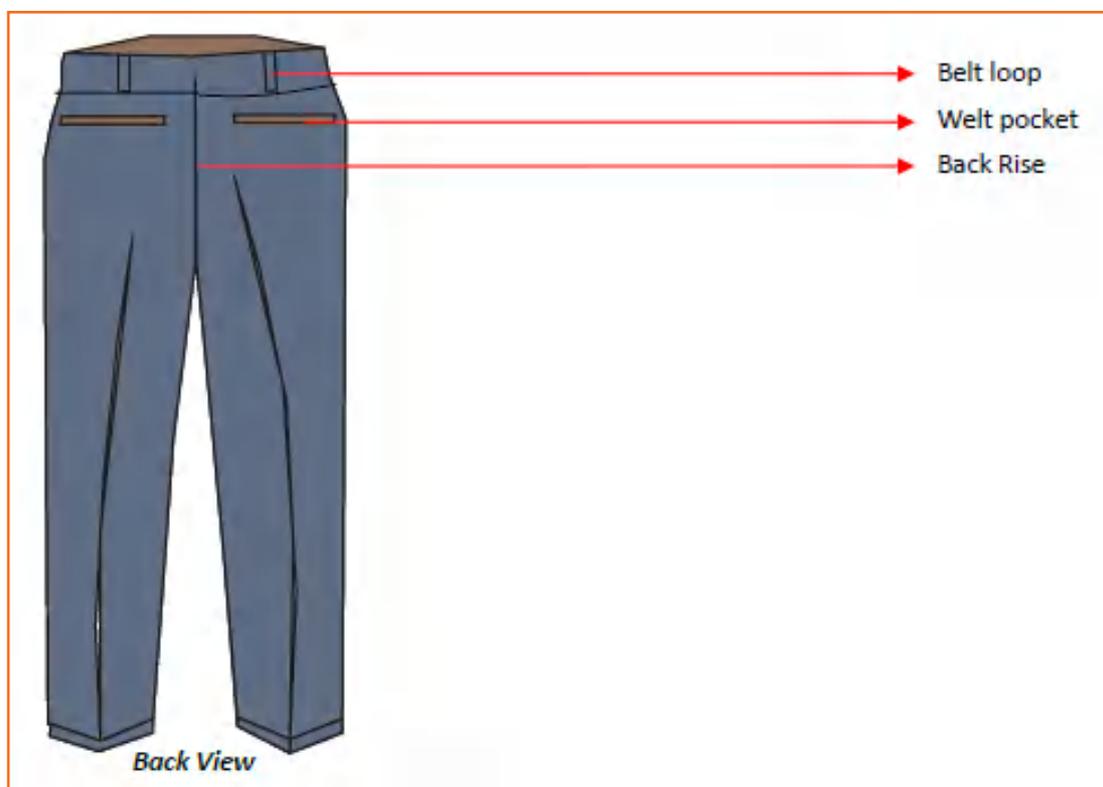


Fig.2.4.8: Back view of a formal trouser

Parts of a T-Shirt

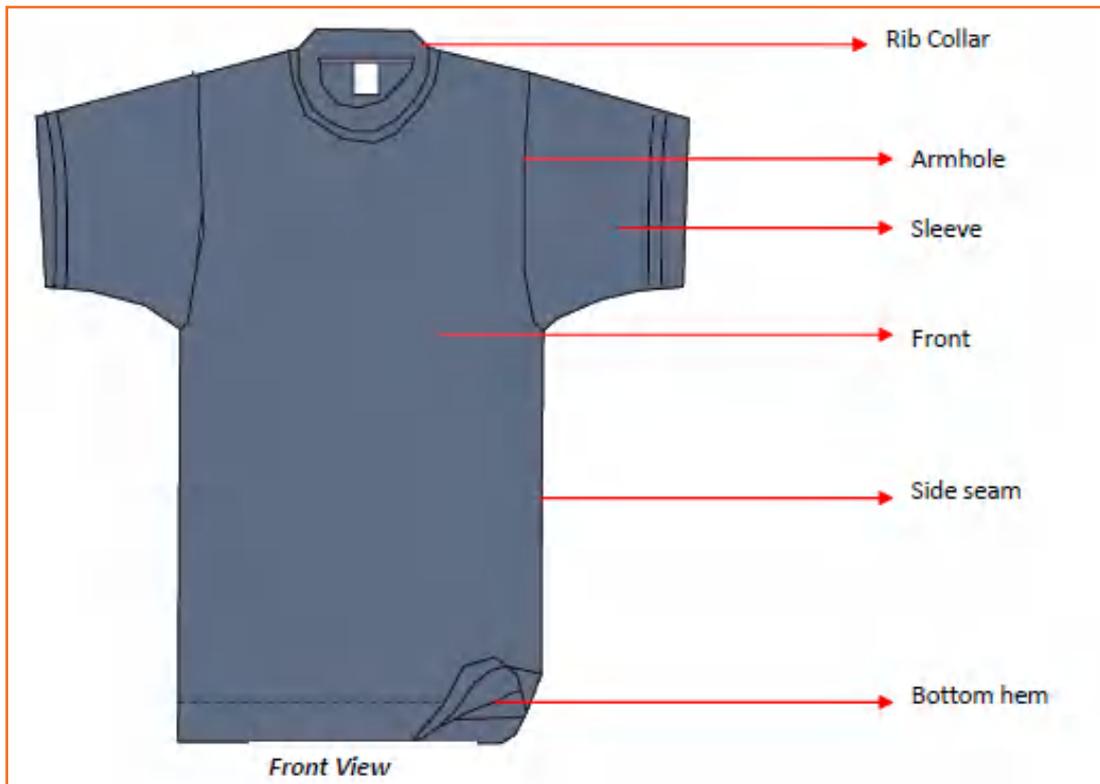


Fig.2.4.9: Front view of a T-shirt

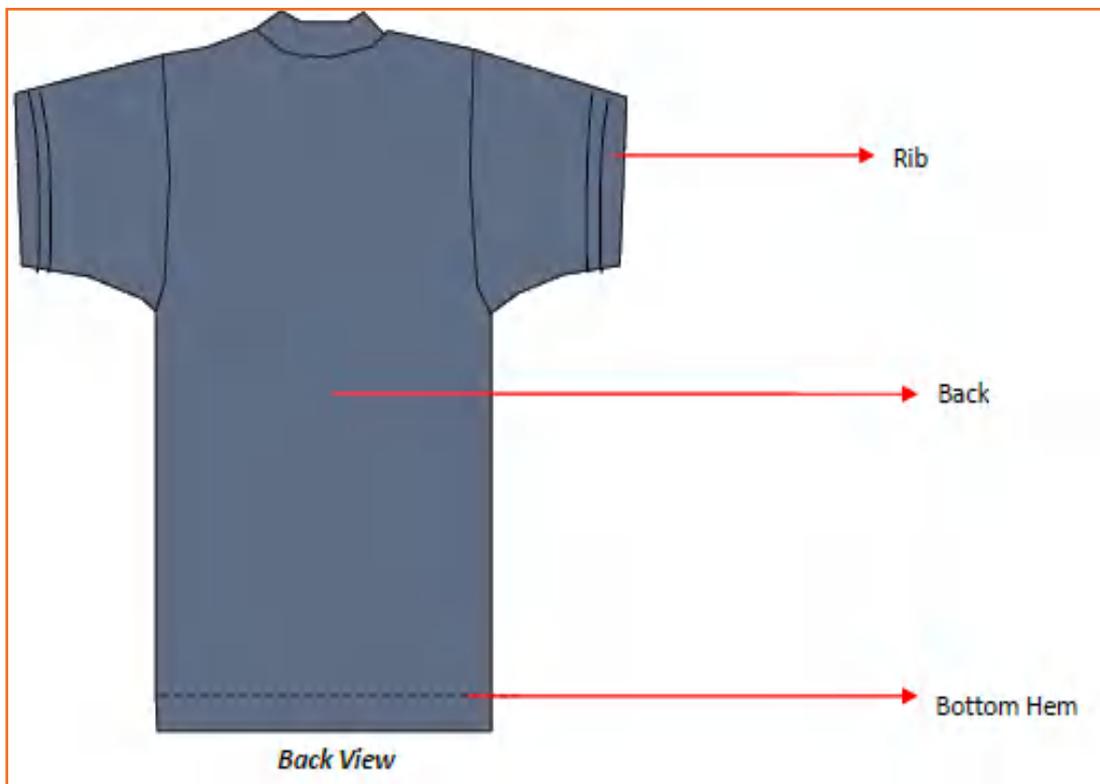


Fig.2.4.10: Back view of a T-shirt

Parts of a Polo T – Shirt

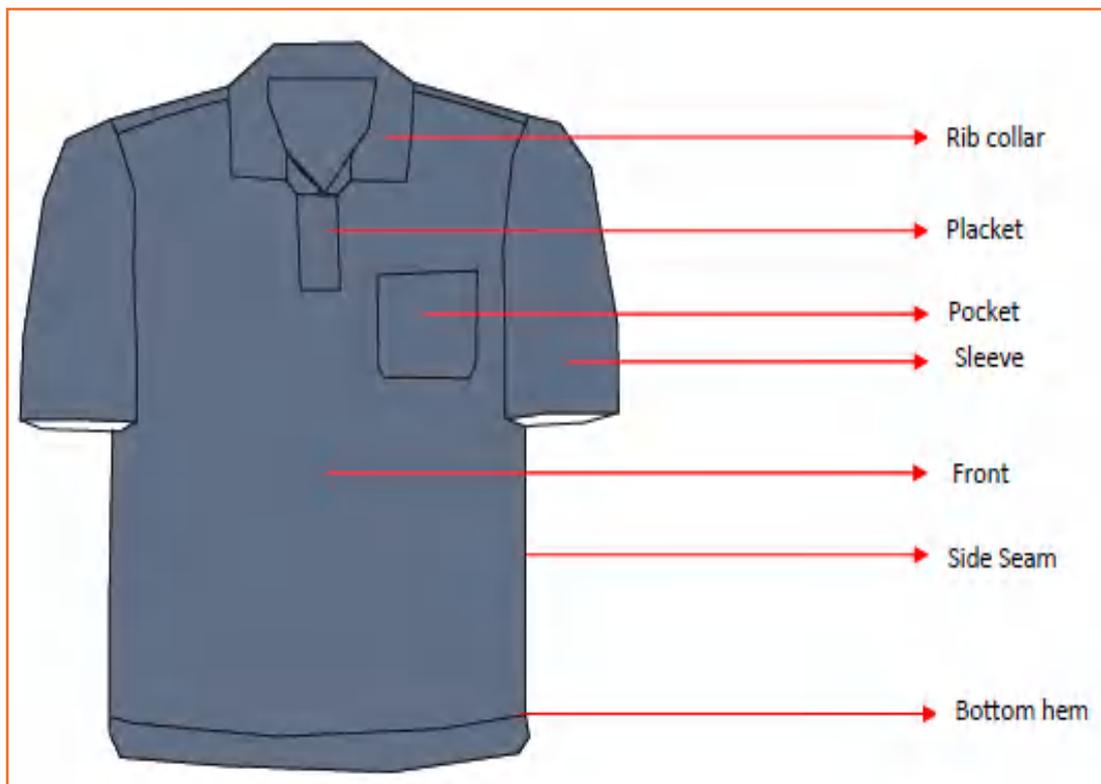


Fig.2.4.11: Front view of a polo T-shirt

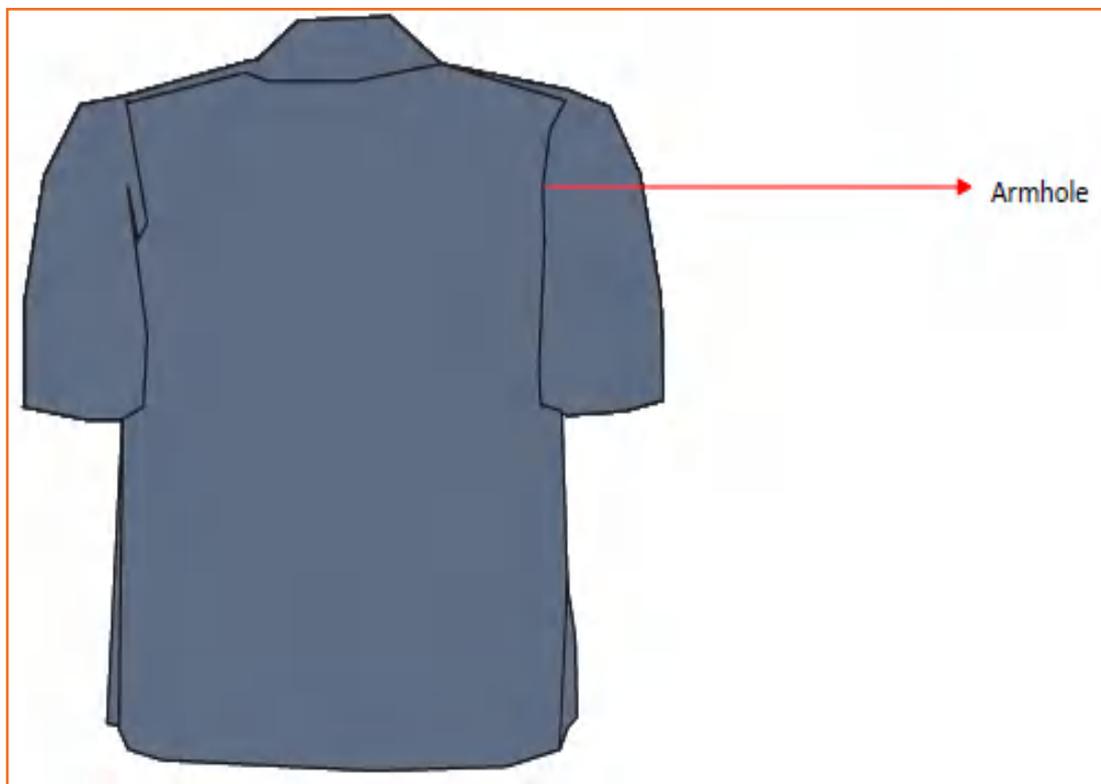


Fig.2.4.12: Back view of a polo T-shirt

2.4.3 Garment Components

Cut components of a Formal Shirt

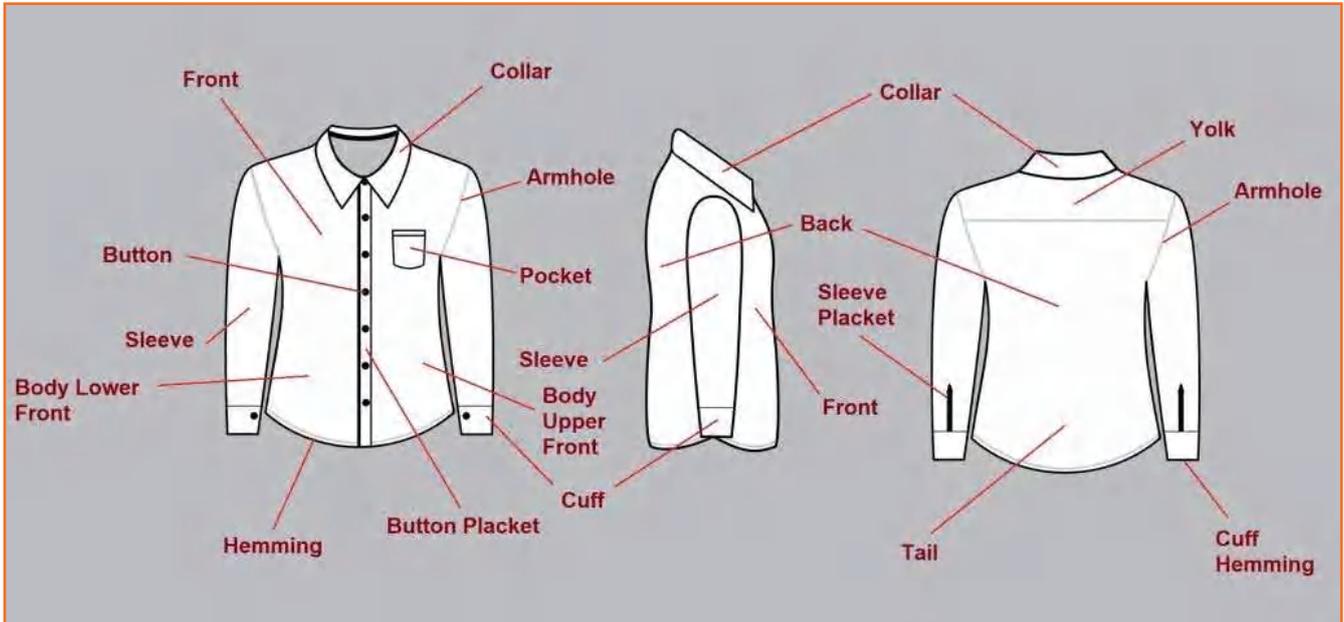


Fig.2.4.13: Cut components of a Formal Shirt

Cut Components of a Formal Trouser

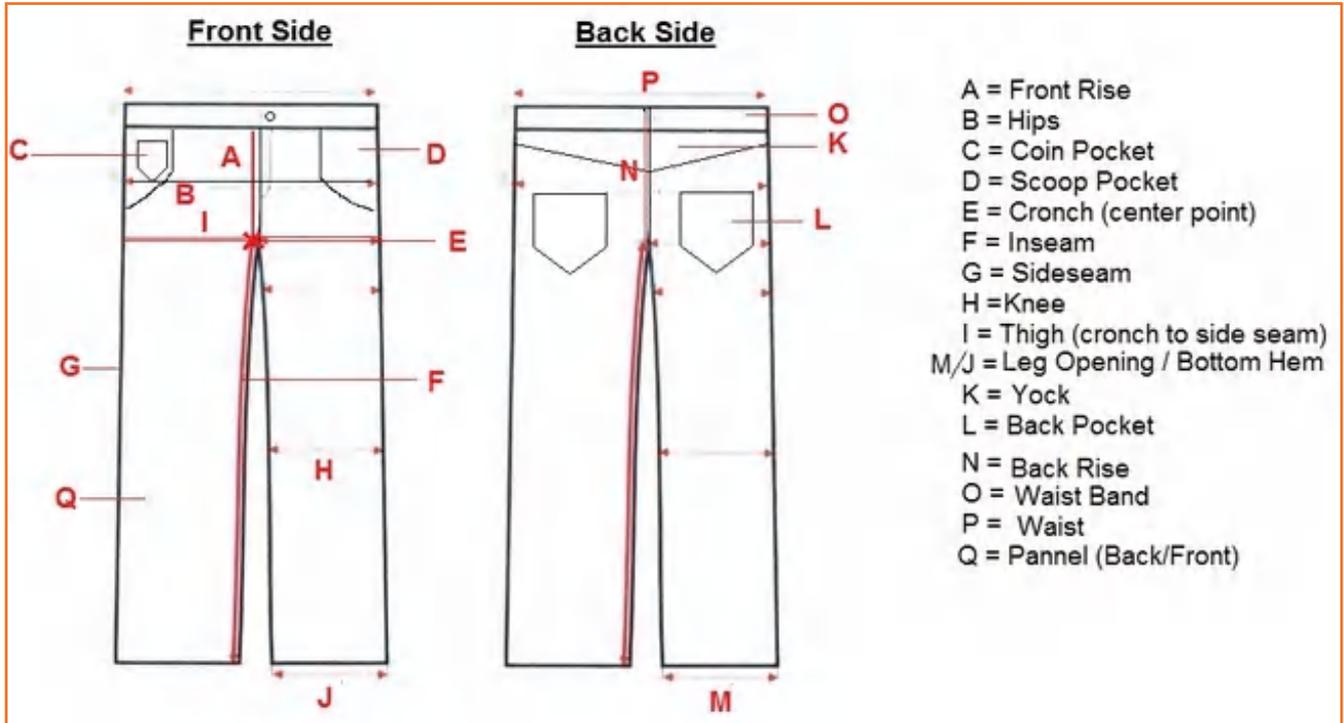


Fig.2.4.14: Cut components of a Formal trouser

Cut Components of a Polo T-Shirt

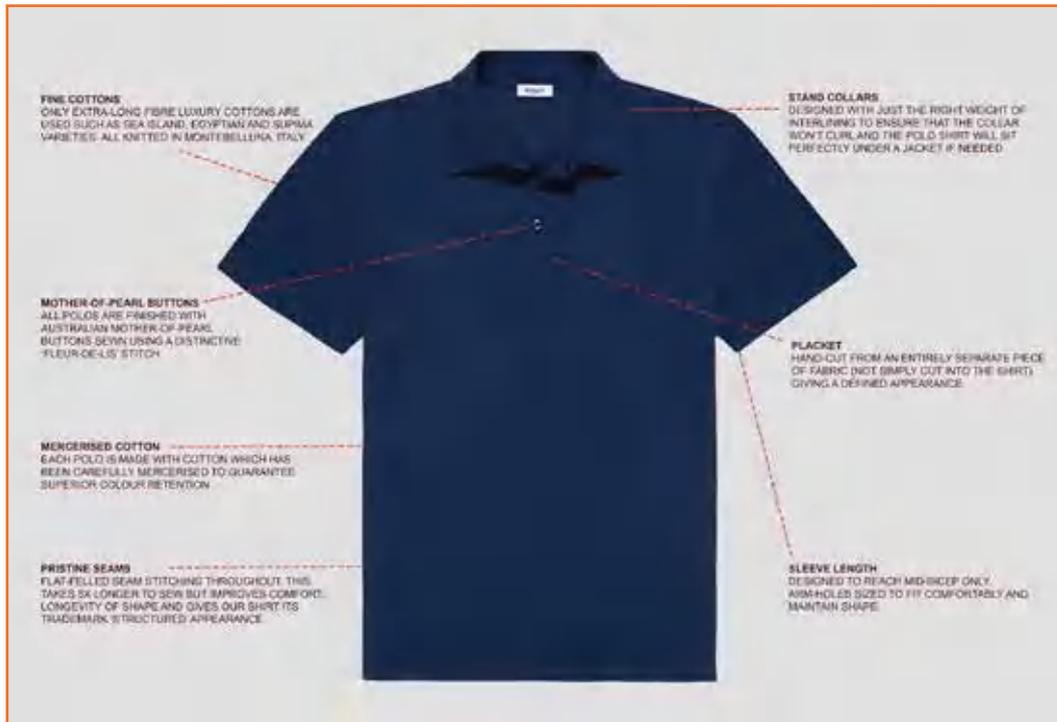


Fig.2.4.15: Cut Components of a Polo T-Shirt

2.4.4 Parts of a Dress Form

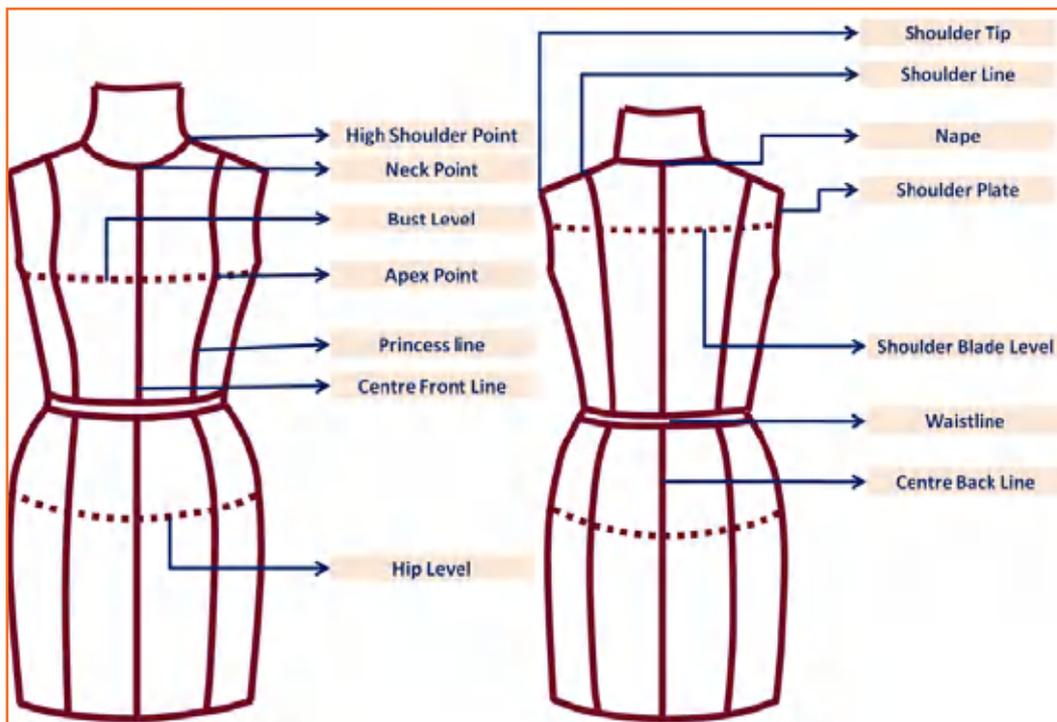
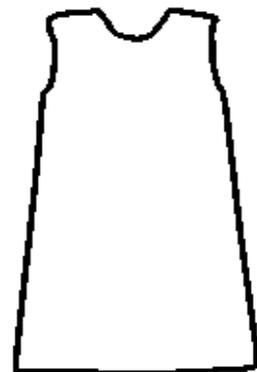


Fig.2.4.16: Parts of a Dress Form

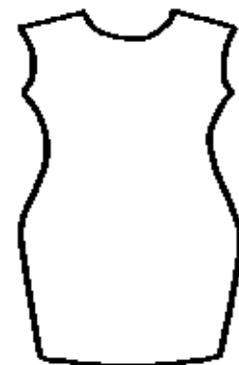
- **Centre Front (CF):** A vertical line that runs throughout the centre dissecting the dress form into halves.
- **Centre Back (CB):** A vertical line that runs throughout the centre dissecting the dress form into halves.
- **Princess Line:** A pair of lines running between CF and SS over the bust level dividing the shoulder into halves.
- **Princess Line:** A pair of lines running between CB and SS throughout the back.
- **Waistline:** A uniform central band.
- **Armhole:** for both the arms.
- **Armhole ridge:** a slightly raised portion where the arm plate and shoulder line join.
- **Arm plate:** Plates attached at the end of each armhole.
- **Side Seam (SS):** Runs laterally on both the sides. It starts from under the armhole throughout the dress form.
- **Apex/ Bust Points (BP):** It is the highest point on the bust line.
- **Neck Band:** also called as neck line encircles the neck.
- **Shoulder Line (SH):** as the name suggests runs from the neckline to the armhole.
- **Horizontal Balance Line (HBL):** These lines run parallel to the floor.
- **Bust Line:** A line running across the bust from over the apex.

2.4.5 Garments Silhouettes

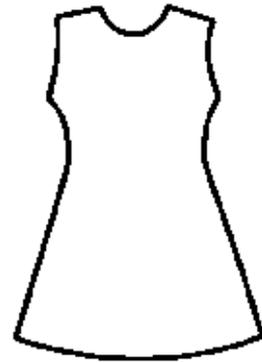
Dress with a columnar cut and no defined waistline



A body fitted dress. Has multiple darts to accommodate bodily curves. Accentuates curves



Fitted bodice through the waist and flows out to the ground, resembling the outline of an uppercase "A."



A loose-fitting dress that is narrow at the shoulders. Flares out from the armhole and has a very wide hem, having no waistline or darts.

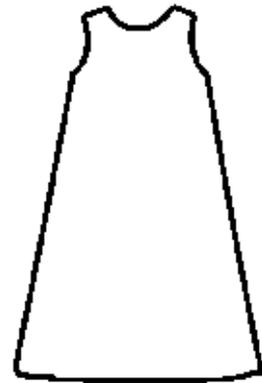


Fig.2.4.17: Garments silhouettes

2.4.6 Types of Sleeve

Types of Sleeve

Sleeves are classified based on the following:

- Stitching style
- Sleeve length
- Sleeve style

Classification based on stitching style

Set-in Sleeve

A sleeve joined to the body of a garment at the shoulder and having a seam along the armhole.



<p>Raglan Sleeve</p> <p>The sleeve is attached to the body from high point shoulder to the armhole point</p>	
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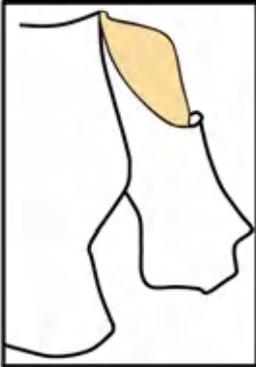
Fig.2.4.18: Classification based on stitching style

Classification based on sleeve length

<p>Short Sleeve</p> <p>Sleeve length up to the biceps</p>	<p>3/4th Sleeve</p> <p>Sleeve coving 3/4th of the hand</p>	<p>Long Sleeve</p> <p>Sleeve coving the full hand</p>
		

Fig.2.4.19: Classification based on sleeve length

Classification based on Sleeve Style

<p>Cold Shoulder</p> <p>The cold shoulder is off-the-shoulder or cut-out just at the shoulder style</p>	
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Dolman/Batman Sleeve

A loose sleeve cut in one piece with the body of a garment

**Bishop Sleeve**

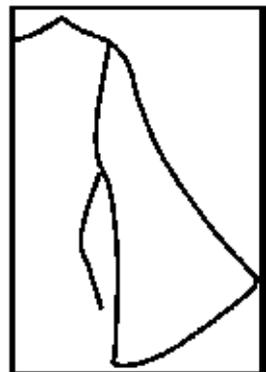
Bishop sleeves has a ballooning effect achieved through giving gather at the sleeve hem

**Cape Sleeve**

Sleeve drape on the hand. There is no inseam

**Bell Sleeve**

The sleeve gives a bell-like appearance



Puff Sleeve

Puffed appearance at the shoulder line

**Cap Sleeve**

An extension that resembles a cap extending from the shoulder or armhole seam over the upper arm

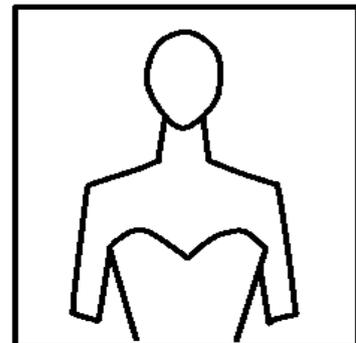


Fig.2.4.20: Classification based on Sleeve Style

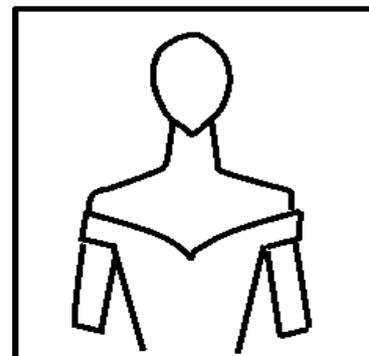
2.4.7 Types of Necklines

Sweetheart

A neckline on a dress or blouse that is low at the front and shaped like the top of a heart

**Off-Shoulder**

Neckline sits below the shoulder

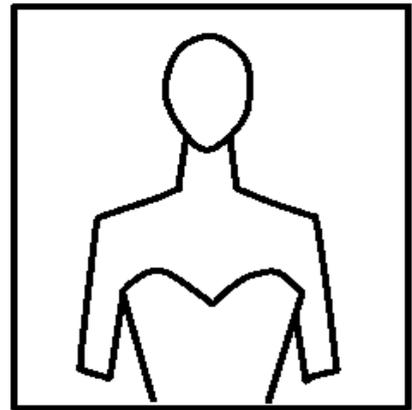


Surplice Neckline

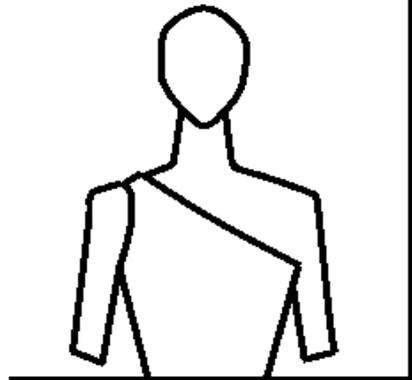
Front closure formed by wrapping one side across the other, and knotting the wrap panels at the waist. This forms a V-shaped neckline and hugs the wearer's curves.

**Boat Neck**

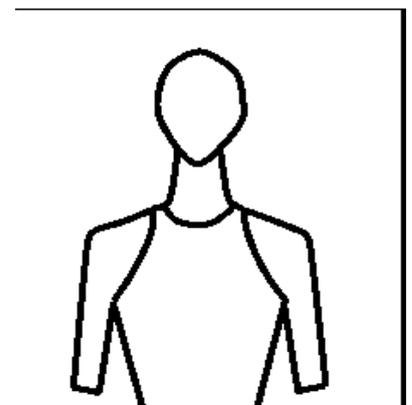
A wide neckline that runs horizontally, front and back, almost to the shoulder points, across the collarbone

**Asymmetrical Neckline**

Asymmetrical necklines are not uniform on both sides from the center front

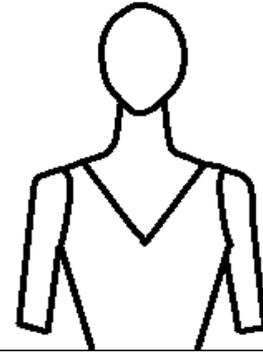
**Halter Neck**

Necklines held up by a strap around the neck



V Neck

Neckline with the shape of a “V”



Scoop Neck

A broad round shaped neckline

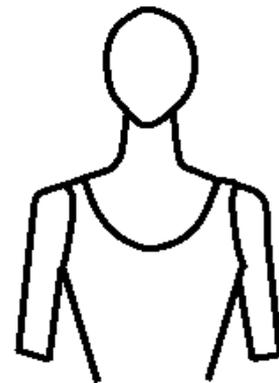


Fig.2.4.21: Types of Necklines

*There can be many other necklines depending upon the shape

2.4.8 Shape of Pocket/ Cuff/Plackets/ Flap

<p>Regular/ Square</p>		
<p>Rounded</p>		
<p>Diamond</p>		

Fig.2.4.22: Shape of Pocket

Types of Collar

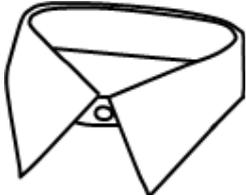
Two-piece collar / Shirt Collar	
Notched Collar	
Shawl Collar	
Sailor Collar	
Peter-pan Collar	
Band Collar/ Chinese collar/ Mandarin Collar	

Fig.2.4.23: Types of collars

UNIT 2.5: Trims and Accessories

Unit Objectives

At the end of the unit, participants will be able to:

1. Analyze various trims and accessories.

2.5.1 Range of Trims

A wide range of trimmings is predominantly used for outfitting pieces of clothing. Some trimming can be seen outside and some can't be seen from outside the articles of clothing.

Types of Trimmings: There are two types of trimming:

1. Visible trimming
2. Invisible trimming

Visible trims can be seen from outside of the garments. For example- interlining.

Uses of Trimming in Apparel Industry: Trimming is used mainly two purposes such as:

1. **Functional purpose:** Example- Zipper, Button, Label etc.
2. **Decoration purpose:** Example- Lace, Braid, Motif etc.

Accessories are the materials that are not attached to the body of garments by sewing. They are used for decorative purposes For e.g. finishing and packing materials.

- Hangtag,
- Tissue paper
- Hanger
- Outer carton
- Inner Carton
- Neck board
- Iron seal
- Pin/Clip

Different Types of Garments Trimming

Sewing thread: Almost all garments produced have one component in common; the sewing thread. Whilst sewing thread is generally relatively a small percentage of the cost of garments, it has an extremely crucial influence on the appearance and durability of the finished product.



Fig.2.5.1: Sewing Thread

Button: A button is a small plastic or metal disc- or knob-shaped, usually round, object generally attached to an article of clothing in order to secure an opening, or for ornamentation. Buttons may be manufactured from an extremely large range of materials, including natural materials like ivory, bone, antler, horn, shell, vegetable ivory, and wood; or synthetics like glass, celluloid, metal, plastic, and bakelite.

- Closing security & flatness to the plackets.
- Garment styling, aesthetic appearance.
- To reduce the strain on the shell fabric.
- Provides some space to accommodate the thickness of the fabric.



Fig.2.5.2: Button

Types of buttons

Buttons can be classified in various types; some are mentioned below.

According to line no: Line is the measuring unit of button diameter. To measure the outer diameter of button we use line number. The different sizes of buttons are:

- 16L
- 18L
- 24L
- 12L
- 28L
- 32L
- 36L

Other three types of buttons are:

1. 2-hole button
2. 4-hole button
3. Special button:
 - » Shank button
 - » Snap button
 - » Decorative button used in sleeve.

According to material: According to the manufacturing material there are the following types of button:

1. **Plastic button:** This button is made of polyamide, polyacrylonitrile, polyester, etc. They are inexpensive, not glossy and largely utilized in shirt.
2. **Metal button:** They are utilized in trousers, denim pants, etc.
3. **Wooden button:** They are utilized in functional and decorative purpose.
4. **Horn button:** They are made up of horns of animals utilized in shirt, pants. Artificial horns are also utilized which are made up of additives, plastic and nylon.
5. **Chalk button:** It is utilized to make plastic glossy, utilized in shirt.
6. **Printed button:** They are utilized only in decorative purpose.

Rivets: Rivets are not utilized to close or open the opening parts of garments. They are largely utilized for reinforcement (support) and decorative and purposes of Jeans or Denim garments. It has two parts and needs a suitable device to attach on garments.



Fig.2.5.3: Rivets



Fig.2.5.4: Velcro

Hook and circle latch (Velcro): This item consists of two woven polyamide tapes; one is covered with very fine loops and the other with very fine hooks. When pressed together they adhere (stick) securely to each other. This fastener is also utilized instead of zippers or buttons. Velcro is available in roll form in the market which has most common width of 5/8 to 3/4 inch.

- **Zipper:** A zipper (British English: zip fastener or zip) is a popular device for temporarily joining two edges of fabric. This is one kind of accessories utilized to close and open of some special parts of a garment. It is sometime also utilized for decorative purposes. In making jackets and trouser, this is an important component.

Zipper Construction: A zipper comprises of five Main Parts:

- » Chains
- » Slider
- » Tapes
- » Stops and
- » Pull

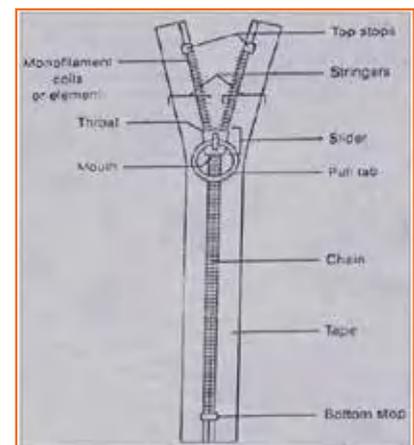


Fig.2.5.5: Parts of Zipper



Fig.2.5.6: Zipper

Types of zipper:

According to manufacturing material there are 3 types of zipper.

1. **Metal zipper:** Metal zipper is used in trousers and shorts.
2. **Polyester zipper:** Nylon or polyester zipper are utilized in jackets. It is made from a continuous filament paced onto narrow fabric tape.
3. **Plastic - molded zipper:** This types of zipper are utilized in pants.

Label: Label is an attached component of garment on which important information regarding the garment are printed or written. No garment can be sold without some kind of label attached to it. Especially, in case of export business label on garment is must. For instance: the size of garment, trade mark, country of origin, type of raw materials, etc. are written on label.

There are mostly three sorts of labels:

- **Main label:** Main label contains brand name or trade name of buyer which is registered by the buyer e.g. Levi's, Polo, Adidas, GAP, Lewis Philippe, etc.
- **Size label:** It indicates the size of the garment i.e. S, M, L, XL, XXL, or collar length of shirt 15, 16, 17, 18, etc.



Fig.2.5.7: Label

- **Care label:** It contains the care instructions of the garment by some internationally recognized signs. It shows the washing, drying, dry-cleaning and ironing conditions of garments.

The all other labels are called sub-label.

Care code label: Due to daily utilization, usually a garment becomes dirty. This garment should be cleaned and ironed prior to further usage. For this caring of garment, some rules or instructions are expressed by some internationally recognized symbols which are called international care labeling code.



Fig.2.5.8: Care code label



Fig.2.5.9: Motif

Motif: The special component which is attached outside of the garment for decorative purpose known as motif. Company name, trade mark or other symbols can be written on the motif.

Lining: Linings are usually functional parts of a garment. They are utilized to maintain the shape of the garment to the hang and comfort by allowing it to slide over other garment. Linings are connected to main garment by sewing and for this motive normal plain sewing machine is utilized. Linings are largely utilized in overcoats, jackets, coats, children wear, pockets, pocket flaps, etc.



Fig.2.5.10: Lining

Interlinings: Interlinings are utilized to support, reinforce and control the shape of some areas of garments such collar, cuffs, waist bands, facings and lapels of coat. They may be sewn into the garment or they may be attached by fusing. Now-a-days sewing interlinings are rarely utilized and the usage of fusible interlining is large.

Interlinings are available in a large variety of weights and constructions to match the base fabric of the garment. They can be either non-woven or woven products.



Fig.2.5.11: Inter Lining



Fig.2.5.12: Shoulder cushion

Shoulder pad: Shoulder pad is a standard item in tailored garments for both men and women. Linings are utilized on the bottom and top of shoulder pad. As a result, the appearance becomes more comfortable, attractive and lasts for a long time. Shoulder pads are utilized for functional purposes and sometimes for decorative purposes.

Snap clasp: A snap fastener (also known as popper, snap, and press stud) is a pair of interlocking discs commonly utilized in place of buttons to fasten clothing.

Benefits of using Snaps;

- Can be utilized instead of buttons on work cloths, sportswear, children's wear, jeans and belts as it gives smoothness.
- Especially suitable for thick garment materials like Leather where buttonhole sewing is undesirable.
- Utilized as an invisible fastening, particularly when a smooth, flat closure is desired.
- Applied to garment parts which have little or no strain during wear like opening of a loose fitting garment or on a detachable garment part.



Fig.2.5.13: Snap clasp



Fig.2.5.14: Hook-and-eye closure

Hook and eye closure: A hook-and-eye closure is a clothing fastener that consists of two parts, each sewn to their respective pieces of cloth, one with a small protruding blunt hook, and the other with a small loop (also called as the "eye" or "eyelet") protruding. To fasten the garment, the hook is slotted into the loop.



Fig.2.5.15: Frog (attaching)

Frog (attaching): A frog (sometimes referred to as a Chinese frog) is an ornamental braiding for fastening the front of a garment that consists of a button and a loop through which it passes.

Interfacing:

- Stiffen or add body to fabric, such as the interfacing used in shirt collars.
- Strengthen a certain area of the fabric, for instance where buttonholes will be sewn.
- Keep fabrics from stretching out of shape, particularly knit fabrics.

Interfacings: Interfacings come in a variety of weights and stiffness to suit varied occasions. Usually, the heavier weight a fabric is the heavier weight an interfacing it will use. Most modern interfacings have heat-activated adhesive on one side. They are affixed to a garment piece using heat and moderate pressure, from a hand iron for example. This type of interfacing is called as "fusible" interfacing. Non-fusible interfacings do not have adhesive and must be sewn by hand or machine.

Bias tape: Bias tape or bias binding is a narrow strip of fabric, cut on the bias (UK cross-grain). The tape's width varies from about 1/2" to about 3" depending on applications. Bias tape is utilized in making binding seams, piping, finishing raw edges, etc. It is most often utilized on the edges of placements, quilts, and bibs, around armhole and neckline edges instead of a facing, and as a simple strap or tie for casual bags or clothing.



Fig.2.5.16: Bias tape



Fig.2.5.17: Cord (sewing)

Cord (sewing): In sewing, cord is a trimming made by twisting two or more strands of yarn together.

Lace: Lace is an openwork fabric, patterned with open holes in the work, created by machine or by hand. Now lace is often made with cotton thread. Manufactured lace may be made of synthetic fiber.



Fig.2.5.18: lace



Fig.2.5.19: Ribbon

Ribbon: A ribbon or rib and is a thin band of flexible material, usually cloth but also plastic or sometimes metal, utilized primarily for tying and binding.

2.5.2 Sewing Threads

A small diameter yarn or twisted strand usually treated with a surface coating or lubricant or both, intended to be used to stitch one or more pieces of material or an object to material are referred to as sewing thread.

Knowledge of Sewing Thread

Natural fibers like cotton and silk has been used in sewing thread before Now a day however, chemical fibre products such as polyester thread, nylon thread, etc. are largely used in accordance with materials and applications

Different types of threads

1. **Rayon:** Rayon is the most popular fiber used for embroidering.



Fig.2.5.20: Rayan Thread



Fig.2.5.21: Polyester Thread

2. **Polyester:** Polyester is a fiber produced from the synthetic processing of polymer resins. It can be made to have a matte finish or a high shine finish, similar to silk as well. Unlike rayon, polyester does not fade or shrink when washed.

3. **Nylon:** This is another synthetically produced thread with good strength.



Fig.2.5.23: Cotton Thread

5. **Wool:** A popular animal fiber, wool has a very soft look when it is stitched.



Fig.2.5.22: Nylon Thread

4. **Cotton:** This is the only 100% natural fiber thread made for high speed machines.



Fig.2.5.24: Wool

Basics of thread construction

All conventional sewing threads begin their production cycle as simple yarns. These basic yarns are produced by twisting together relatively short fibers or fine continuous filaments.



Fig.2.5.25: Basics of thread construction

Some terms used in the context of thread construction are:

- **Twist:** The 'twist' of a thread refers to the number of turns per unit length required to hold the fibers / plies together to give the yarn / thread substance the required strength and flexibility.
- **Twist direction:** Direction of twist is identified as 'S' for left twist and 'Z' for right twist. Most single needle lock stitch and other machines are designed for 'Z' twist threads. 'S' twist thread untwists during stitch formation.



Fig.2.5.26: Ply and Cord of Thread

UNIT 2.6: Tech Pack

Unit Objectives

At the end of the unit, participants will be able to:

1. Use of a tech pack.
2. Identify details in the tech pack.

2.6.1 Sample Tech Pack

A tech pack can go by many different names, such as technical specification, specification pack, spec pack, or GWS (garment work sheet). Essentially it is a document referred to by you or your garment technician and the factory or person making your patterns and manufacturing the clothes. I find a lot of my clients have heard of the term tech pack, but don't really know what it entails or why they need one and often wonder if the factory should do it. This post is to explain what a tech pack is and why you need it.

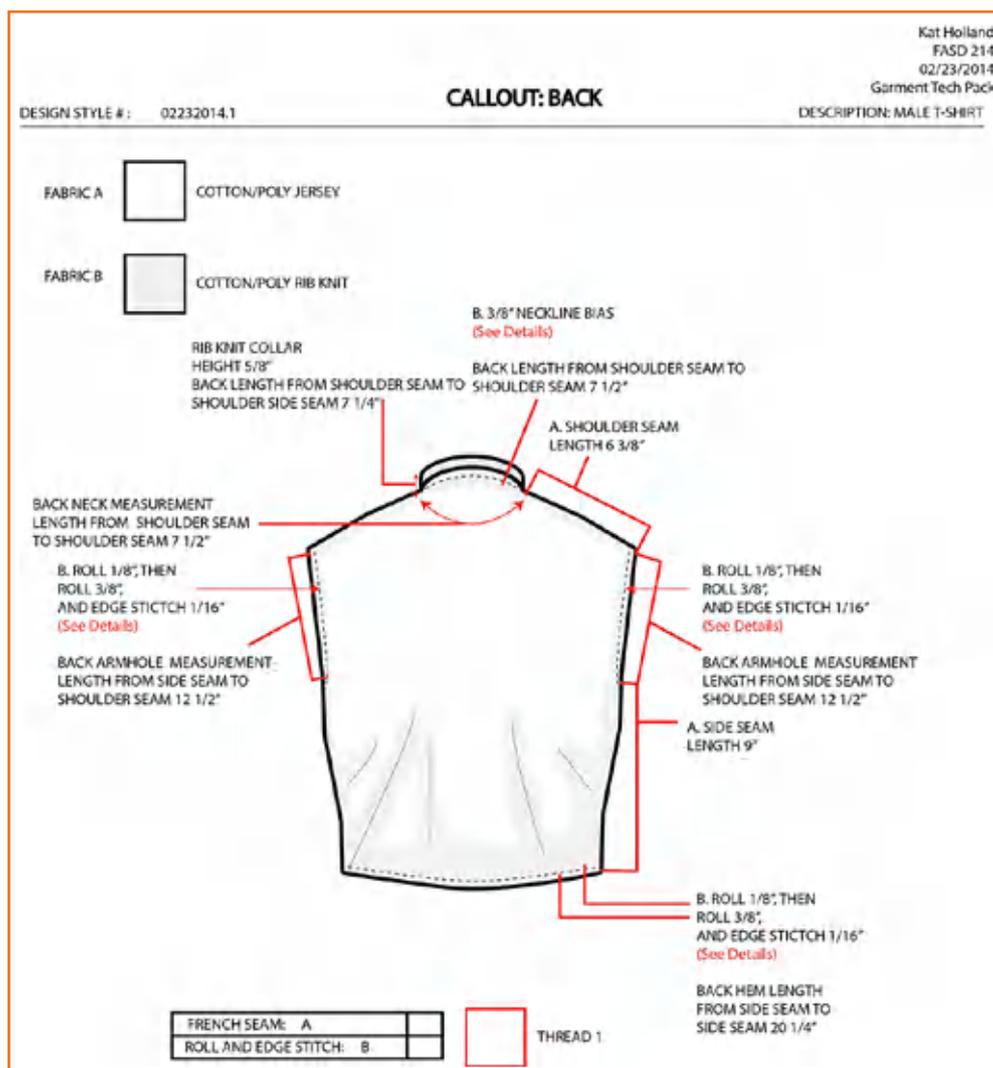


Fig.2.6.1: Sample Tech Pack

Why is a tech pack needed

A tech pack is the starting point of the garment manufacturing process. It provides all of the key information that will determine factors like the cost of the garment, what fabrics and components will need to be sourced and how long it will take the completion of manufacturing. This document gets you to the first stage of production. Tech pack is used by the buyer or brand owners to procure quotations from different manufacturers and give them the opportunity to source the best fabrics and components, prior to making a call on which factory to use. This is beneficial because the factories will often quote a competitive price when competing against others and also because it means that several people are out looking for the fabrics and trims required for the design, making the chances of finding exact commodities better. At the sampling and production stages, the pattern maker uses the measurements chart given in the tech pack to create the pattern and the machinist will refer to the construction notes. The fabric and trims section becomes useful in understanding the exact need of the buyer, and helps in identifying the vendors who can provide the specific items. Tech pack acts as a one point of reference when completing any documentation, or responding to any queries about the product.

Tech pack helps in achieving consistency in fit of garments across the range. We all have encountered such situations where we find garments of our fit in a size 8 in some brands and in a size 16 in another. Well-designed specification sheets allow controlling the measurements of styles and making sure they are relevant to your customer. It may be noted that different companies have different sizing, the sizing of some companies is more generous than others; this is due to companies having a different version of their ideal customer. This is another reason why spec sheets and fit sessions are important, there's no such thing as a 'generic size 16', for instance, in retail and you need to figure out what is suitable for your customer.

The most important reason to have a tech pack is for security. The manufacturer, supplier, vendors all have to abide by what has been written in the tech pack. This means, aside from any slight variances you have previously agreed, the bulk order you receive has to be as per the tech pack. Any variances in fabric, construction, measurements, etc. could mean the factory has to pay a penalty, fix the order at their expense or the order is cancelled, depending on how you want to proceed and what you have included in your contract.

What to look out for in a tech pack

Key information that should be included in a tech pack is:

- **Measurements:** specification sheet of each size
- **Size grading rules:** comprises of the grading factor that has to be incorporated while manipulating a base size to achieve the size set
- **Tolerance:** comprises of notes about accepted deviation from specified measurements at different garment landmarks
- **Construction notes:** comprises of notes on types of seams to be used etc.
- **Fabric:** comprises of detailed specifications about the various fabrics being used in the design comprises of how to measure different landmarks in the garment and the measurement
- **Trim:** comprises of detailed specifications about the materials which are attached to the body of garments for functional purpose.
- **Sample requirements:** comprises of sampling plan for the design being produced.

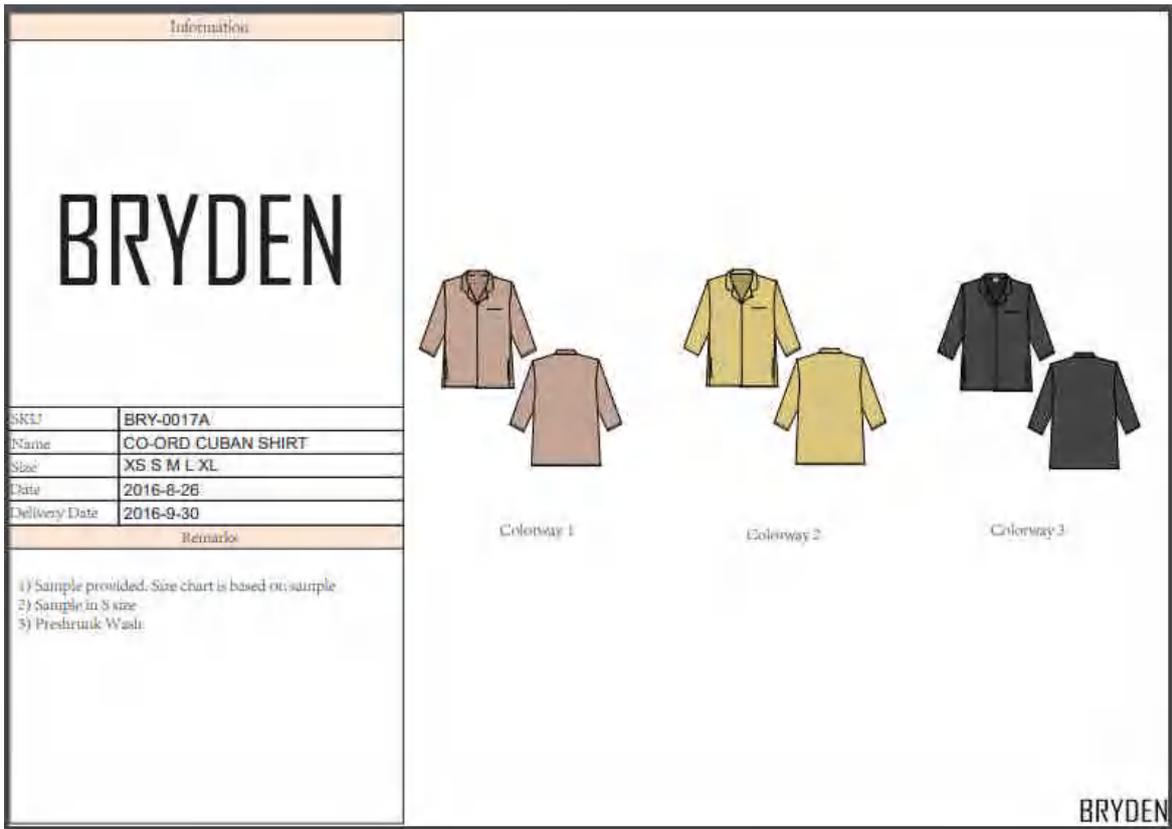


Fig.2.6.2: Colors for a style

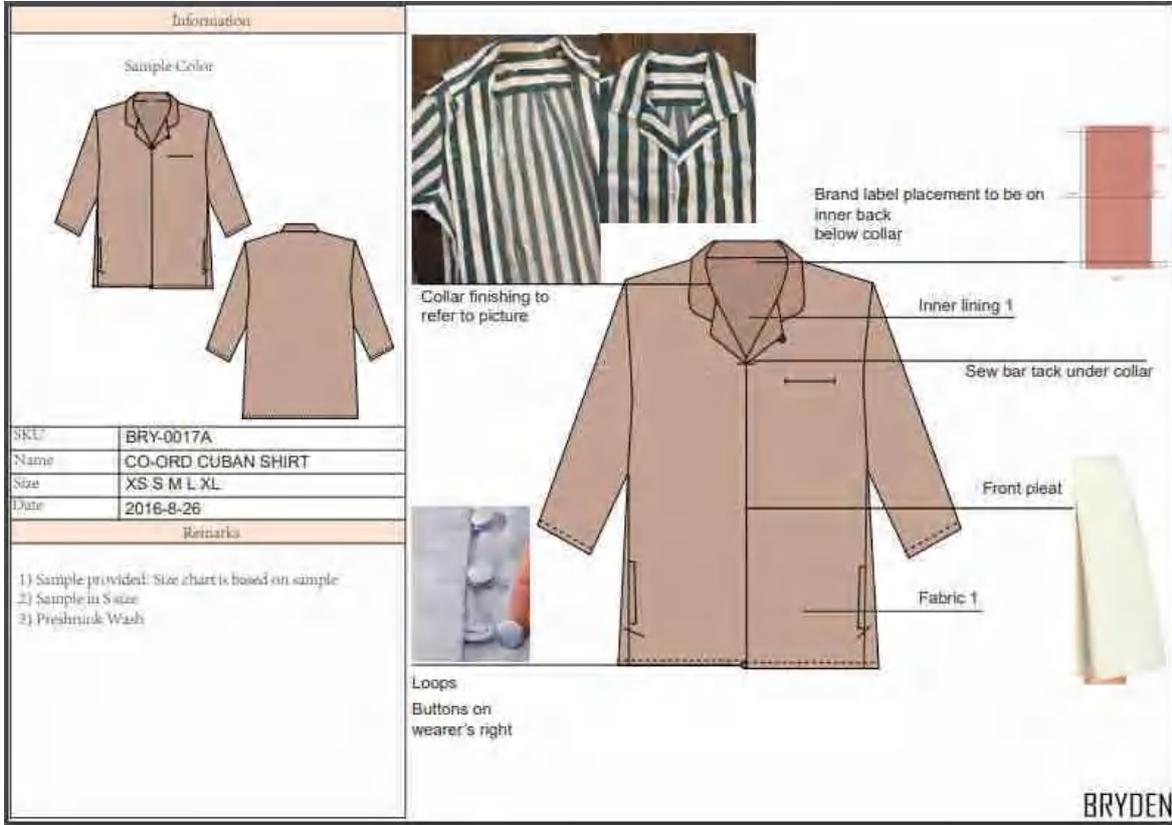


Fig.2.6.3: Construction of the style at the front

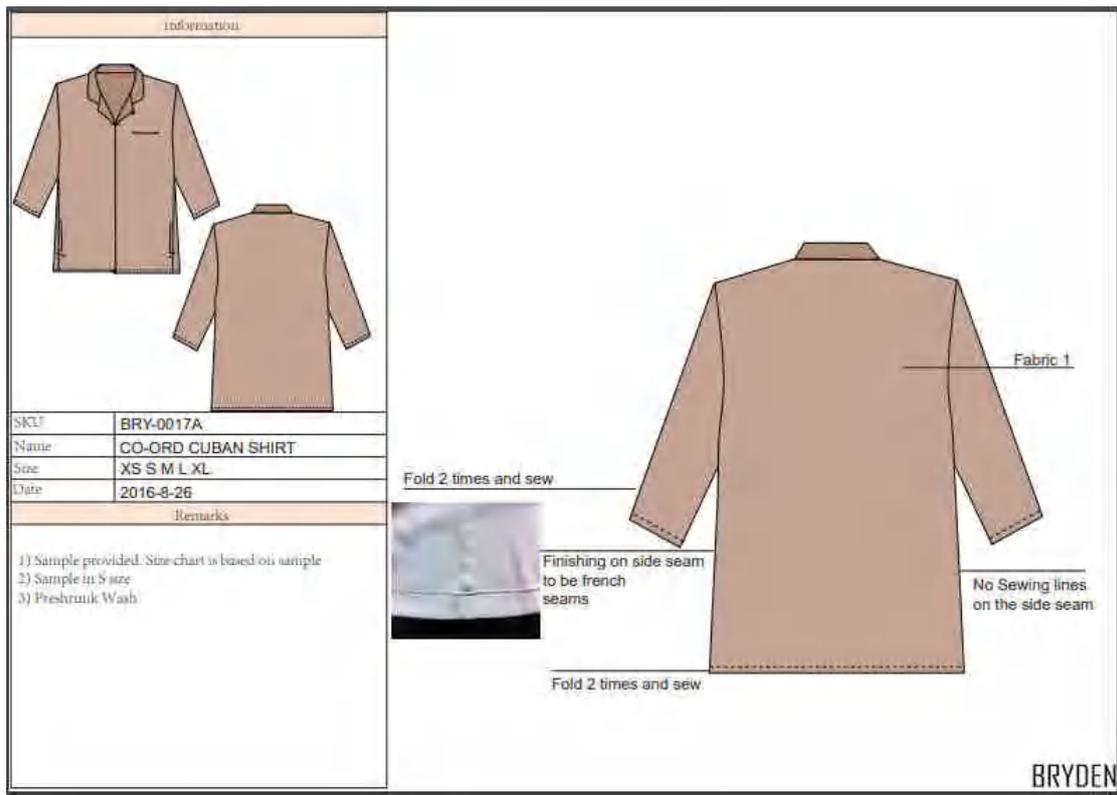


Fig.2.6.4: Construction of the style at the back

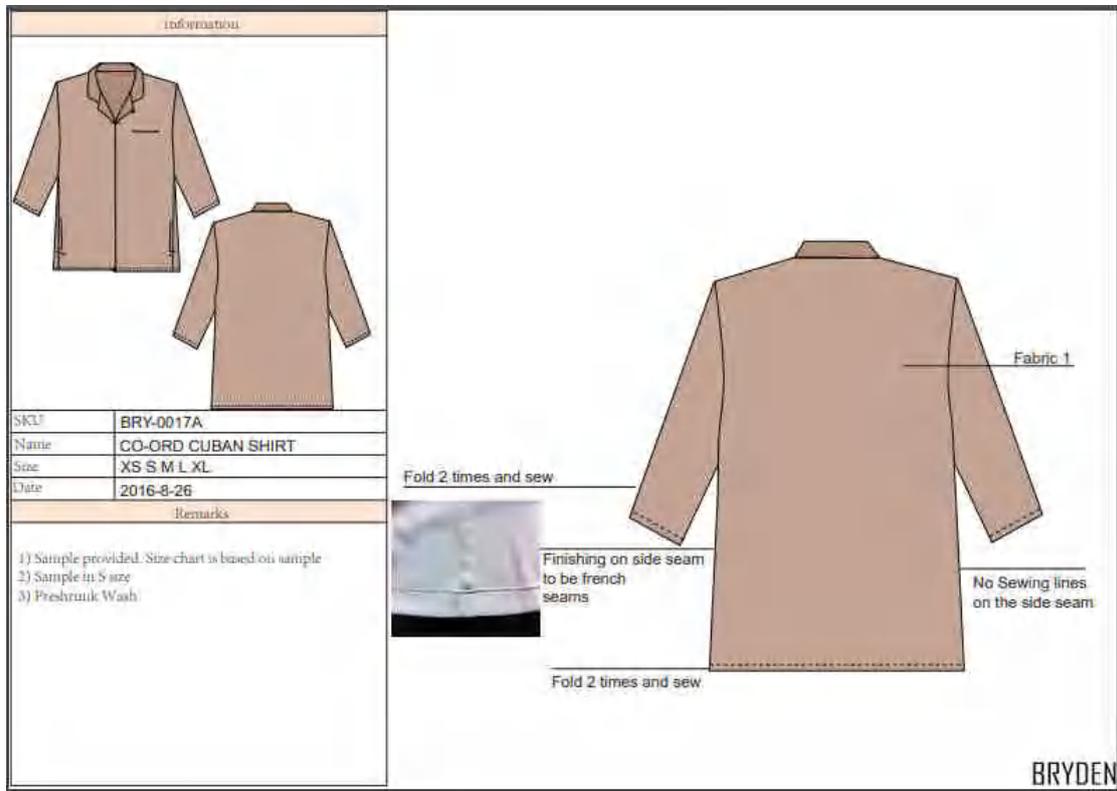


Fig.2.6.5: Measurement chart

Information		面料 / 辅料明细 Fabric Information	
SKU	BRY-0017A		
Name	CO-ORD CUBAN SHIRT		
Designer	Michelle		
Date	2016-8-26		
Fabric Information			
Fabric 1	Era Textile	Fabric 1	
Code	n694	132	
Color 1	5 NUDE PINK	Inner Lining 1	
Inner lining 1	Hui Zhou Yuan	132	
Code	1234		
Color 1	132 NUDE PINK		
Accessories 1	Hua De Li		
Code			
Color 1	14mm WHITE		
Accessories 2	Hua De Li		
Code			
Color 1	12mm WHITE		

Fig.2.6.6: Trim used in the style

2.6.2 Preparing Tech Pack

The more detail you can give your techpack, the less room for mistakes. The clearer you make your requests, the less likely there will be misinterpretations. The more you have in writing, the less likely you'll be financially responsible for fixes. The items included in the techpack are as follows:

Cover Page: The Cover Page contains the essential front and back view of the style. These sketches ought to have a white or transparent fill, and not include shading or print. The sketches can be PC produced, hand-drawn, or photos. A significant idea to be aware of is to ensure that the picture is relative and clean, which means they ought not to be styled.

Inspiration Page: The Inspiration Page contains any image(s) which made the first style. If the processing plant is to be the source of the pattern, the image(s) may enable the industrial facility to make the pattern and achieve the creator's ideal style. Inspiration pictures may contain entire pieces of clothing or detail pictures, for example, close up photographs of a pocket or neckline. Clarification of why the inspiration picture is significant may also be required so the right part of the picture is passed on in the style.

Callouts Page: The Callouts Page is utilized to explain the sort of development and configuration details that ought to be utilized when building the article of clothing. Make certain to utilize arrows to accurately stamp what kind of development is to be utilized where. Additionally, make certain that the plant sees any exceptional expressions or abbreviations that might be utilized to abridge words.

Print-Fabric Placement Page: The Print-Fabric Placement Page is utilized to demonstrate where you might want print and/or fabric. The front and back sketch of the style is shaded in accordance with a shading key at the base of the page. This shading key makes it exceptionally simple to recognize the ideal placement for each sort of

fabric. Prints could likewise be utilized to pass on the placement of fabrics, for example, one fabric being spots, and one fabric being stripes. Simply make a point to accurately label the key.

Colorway Page: The Colorway Page distinguishes the shades which are to be utilized in the structure. The present tab arrangement incorporates a few zones to input shading data, and grids can be effectively reordered to make more data areas. Each shading region contains segments for the shading name, shading number, and shading swatch. The shading number might be the pantone shading number or a unique number. If some other data is required, just alter the arrangement so there are more sections in every data region.

This page may likewise hold print colorways if the structure won't be one solid shade. A consistent with size print out with shading key may likewise/or rather be expected to recognize each shading in the print.

Bill of Materials Page: The Bill of Materials Page; otherwise called the BOM, contains all materials utilized in developing the article of clothing. There are five primary segments contained in this tab, which are as per the following: Fabrics, Trims, Labels, and Packaging.

In each segment there are five kinds of data that can be recognized. This data incorporates Placement (where the material will be utilized or in what position it will be sewn into the piece of clothing), Comments (any additional means that are important to understanding the utilization of the material), Material (the fibre content, recognizable proof number, or substance the material is made of), Supplier (the supplier of the merchandise), Color Number the item shade to be utilized).

Fold Page: The Fold Page depicts how the article of clothing ought to be folded and packed. This pack will at that point be transported to the ideal place. This page ought to contain a chain of sketches demonstrating the step by step procedure of folding and packing a garment. Each sketch has a portrayal for simple directional reference. In the event that sketches can't be produced, a chain of step by step photographs with clarifications would be a viable option. A portrayal with no supporting pictures can likewise be utilized, anyway the clarifications should be exceptionally clear and simple to pursue.

Label Placement Page: The Label Placement Page clarifies the kind of label that will be utilized in the item, and where it ought to be set. Keep in mind, the material and the labels made can be found in the BOM.

Proto Specs Page: The Proto Specs Page shows the estimations to which the pattern and first-fit sample ought to be created. The graph contains five segments of data.

- **The Point of Measure (POM)** shows how each piece of the style should be estimated to guarantee the article of clothing or purse is the right size and fits effectively.
- **The Description** communicates how and what should be estimated in connection to the POM code. It ought to be explicit enough to transfer what and how the point ought to be measured. The abbreviation for 'high purpose of shoulder' (HPS) will be seen often. Most vertical estimations will be estimated from HPS, and ought to be demonstrated in the portrayal.
- **The Requested** demonstrates the actual estimations that the piece of clothing or satchel ought to be created from. If there is any uncertainty of what estimation ought to be, the segment might be left blank and a note is made for the production line to help decide the essential estimation. The spec would then be able to be estimated and filled in at the main fit.
- **The Tolerance (+/ -)** shows the most an estimation is permitted to be finished or under the mentioned estimation. This number is significant during production, with the goal that the specs of the item are in the approved scope of estimations.
- **Comments** are for including significant notes.

UNIT 2.7: Pattern Making

Unit Objectives

At the end of the unit, participants will be able to:

1. Take part in pattern drafting.
2. Identify type of seams and seam finishes.

2.7.1 Pattern Drafting for Bodice

Draft a bodice

Figure 1

- A to B = Full Length, plus $\frac{1}{8}$ ". Draw the line and label
- A to C = across shoulder, less $\frac{1}{8}$ ". Square 3" line down from C line
- B to D = Centre front length. Mark & square out 4"
- B to E = Bust arc, plus $\frac{1}{4}$ ". Square out from B, and then square up 11" from E

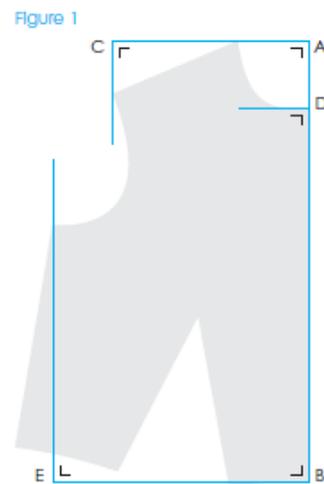


Figure 2

- B to G = Shoulder Slope, Plus $\frac{1}{8}$ ". G touches C line
- G to H = Bust Depth. Mark on the G-B line
- G to I = Shoulder Length. Square down from I to intersect with D line
- J to K = Bust Span, plus $\frac{1}{4}$ ". Square from J at center front through H to K
- D to L = One half of D to J. Mark down from D
- L to M = Across chest, plus $\frac{1}{4}$ ". Square a guideline up and down from M
- B to F = dart placement. Square down $\frac{3}{16}$ " from F

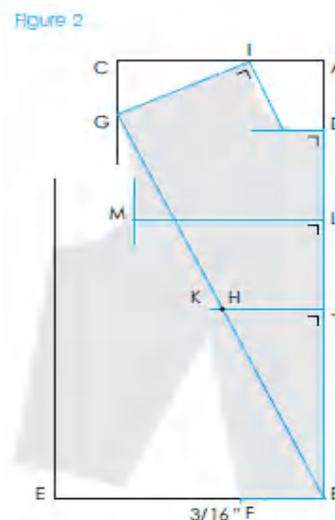


Figure 3

- I to N = New strap, plus $1/8''$. Draw line from I to intersect E line
- N to O= Side length
- N to P= Mark $1 \frac{1}{4}$ inch out from N
- O to P= Side length is directed to P, and ends when equal to N to O. Draw line from P to F

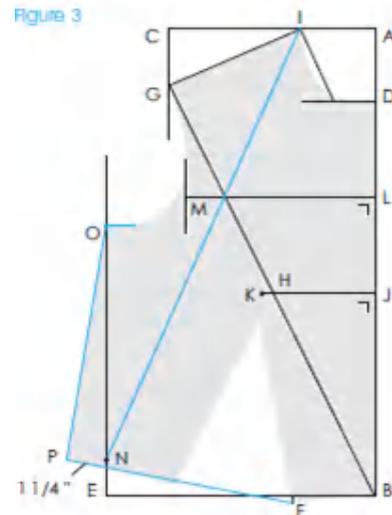


Figure 4

Completing waist measurement

- P to Q= Waist arc, plus $1/4''$ ease, less B to F
- Dart legs: Draw a line from K to F and measure. Draw dart leg from K through Q equal to K to F. Label R
- Dart point: Center a point $5/8$ inch from bust point. Redraw dart legs from this point to F and R
- Draw slight curved lines from B to F and R to P

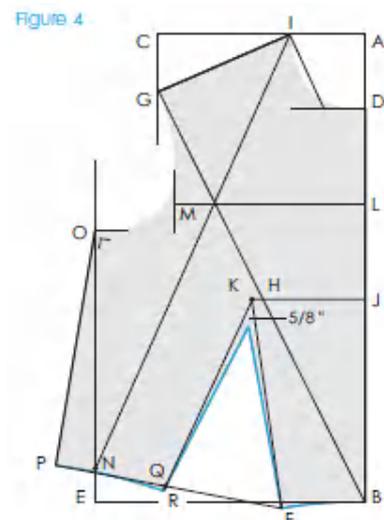


Figure 5

- Armhole: Draw armhole curve with rule touching G, M, and square line. Do not follow curve past square line
- Neckline: Draw curve from I to D passing inside the angle line by $1/8''$

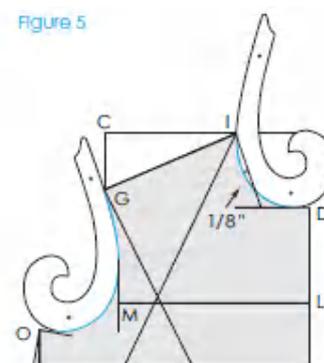
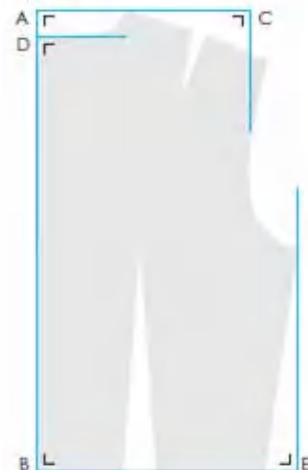


Figure 6

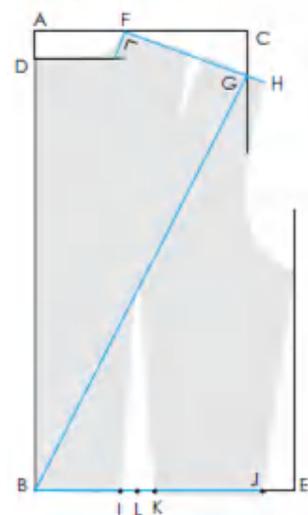
- A to B= Full length
- A to C= Across shoulder. Square 3 inches down from C
- B to D + Center back length. Mark and square out 4"
- B to E = back arc, plus $\frac{3}{4}$ ". Square up from E

Figure 6

**Figure 7**

- A to F = Back neck, plus $\frac{1}{8}$ "
- B to G = Shoulder Slope, plus $\frac{1}{8}$ inch
- F to H = Shoulder length, plus $\frac{1}{2}$ ". Line may pass G. Square down from F to D line
- B to I = Dart Placement
- B to J = Waist arc, plus dart intake of $1\frac{1}{2}$ " and $\frac{1}{4}$ " (ease)
- I to K= Dart intake. Mark center label L

Figure 7

**Figure 8**

- J to M = Square down $\frac{3}{16}$ "
- M to N = Side length
- L to O = Square up from L, 1 inch less than M to N. Draw dart legs for o, $\frac{1}{8}$ " past I to K. Draw slightly curved lines from K to M and from B to I

Figure 8

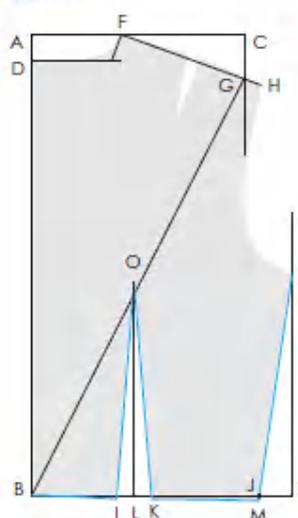


Figure 9

- F to P = One half of F to H. Mark
- P to Q = Draw a 3" line in the direction of point O (indicated by broken line)
- P to R = 1/4". Mark. Draw dart leg from Q 1/8" past R and connect to F. Mark 1/4" from P. Draw other dart leg from Q equal to dart leg Q-R, and connect to H
- D to S = One fourth of D to B. Mark
- S to T = Across back, plus 1/4 inch. Square up and down from T, as shown

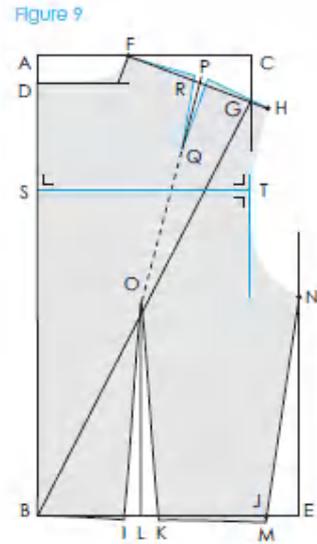


Figure 10

- Armhole: draw armhole with the French curve touching H, T and N. the curve should touch square line.
- Neckline: Draw a 3/8 inch angle line from the corner. Draw neckline from F, angle line and ending close to D

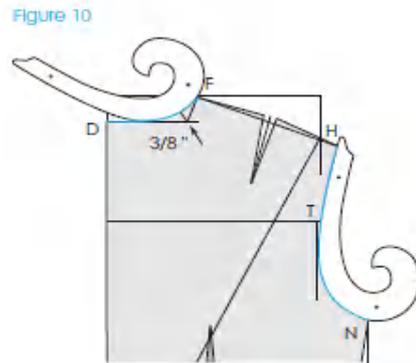


Fig.2.7.1: Draft of a bodice

2.7.2 Pattern Drafting for Skirt

Draft a skirt

Figure 1

- A to B = Skirt length
- A to C = Center front hip depth
- To D= Back hip arc, plus 1/2 inch (ease). Squared out from A, C, and B equal to A to D. Draw center back line F to D. Label E to F
- E to G = Center back hip depth. Cross mark location
- A to H = front hip arc, plus 1/2 inch (ease). Squared out from A, C, and B equal to A to H
- Draw center front line j to H. Label J to I

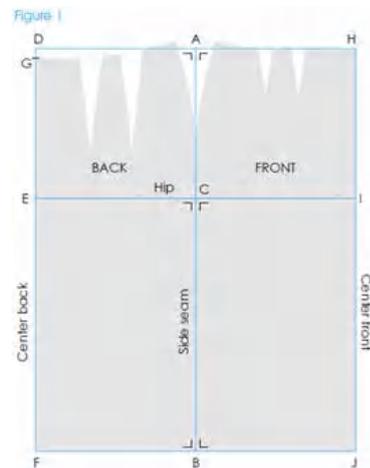
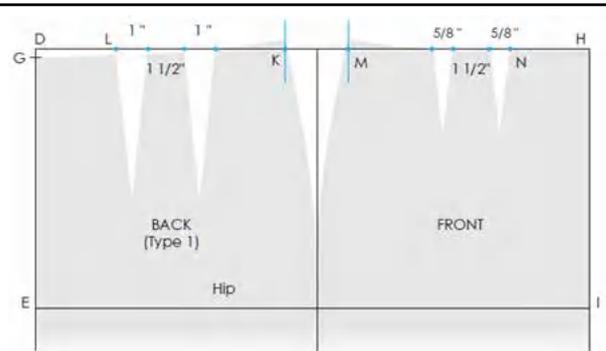
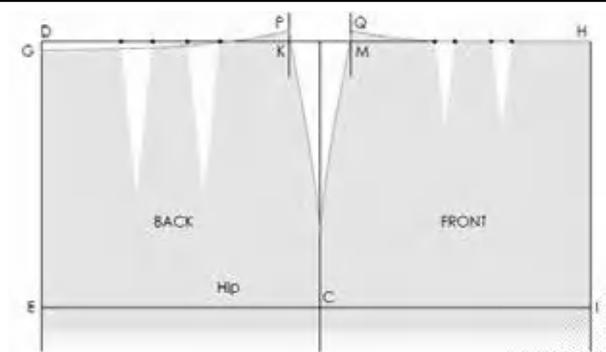


Figure 2

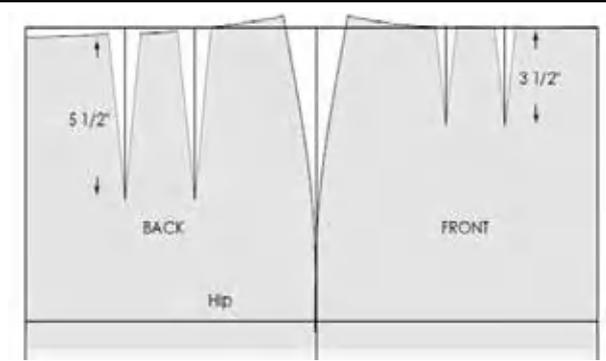
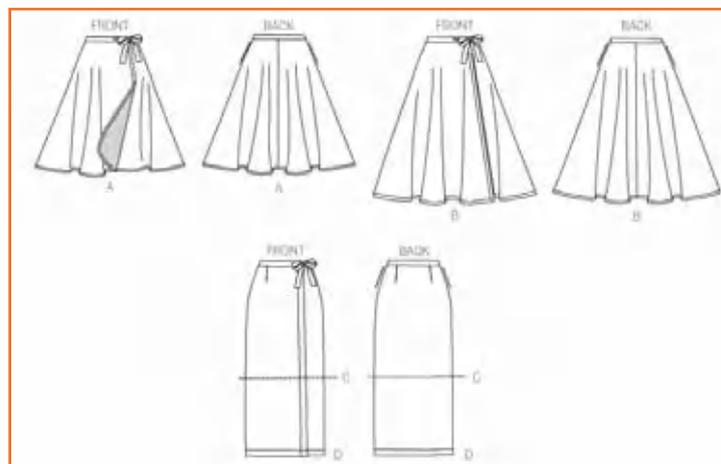
- D to K = Back waist arc, plus $\frac{1}{4}$ inch (ease), and add 2 inches for dart intake
- D to L = dart placement. Mark first dart 1 inch from L. Mark dart space $1\frac{1}{2}$ inches and mark 1 inch for second dart. Square up and down from K
- H to M = Front waist arc, plus $\frac{1}{4}$ inch (ease). And add 1 inch for dart intake.
- H to N = dart placement. Mark first dart $\frac{5}{8}$ inch from N. Mark dart space $1\frac{1}{2}$ inches and mark $\frac{5}{8}$ inch for second dart. Square up and down from M

**Figure 3**

- C to P = Side hip Depth. Draw side seam curve using the skirt curve rule. Shift the rule until the depth measurement touches the front and back guidelines. Label P and Q
- Waistline: draw front and back waistline using the shallow end of the curve ruler from G to P (back) and from H to Q (front)

**Figure 4**

- Back darts: Locate centers of each dart intake and square down $5\frac{1}{2}$ inches. Draw dart legs from dart points to curve line of the waist
- True dart legs by adding to the shorter legs and blend to the curve of the waistline
- Front darts: repeat the process with the dart legs $3\frac{1}{2}$ inches long

*Fig.2.7.2: Draft a skirt**Fig.2.7.3: Drafted skirt*

2.7.3 Types of Seams

The seam is the basic structure element of any garment and so must be formed with care. Thread should be properly matched to the fabric. Most often, right sides of fabrics are placed together, in some instances wrong sides are together.

Open Seam: The open seam or a straight seam is a simple way of joining 2 pieces of fabric together with a single row of stitches. It is suitable for an unlined garment.



Fig.2.7.4: Open seam

French Seam: The French seam is stitched twice, once from the right side and once from the wrong side. A self-neatening seam that is usually used to join sheer fabrics where no stitches show on the right side.

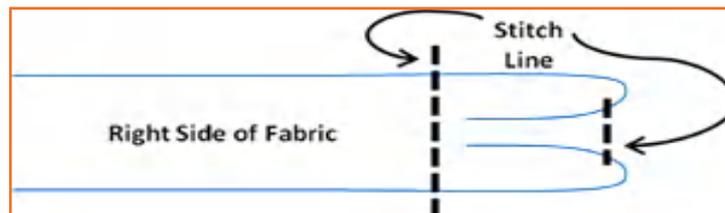


Fig.2.7.5: French seam

Flat-felled Seam: The flat felled seam is very sturdy and so is often used for sports clothing and children's wear. Since it is formed on the right sides, it is also a decorative and care must be taken.

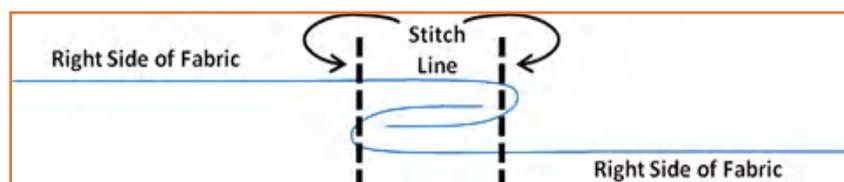


Fig.2.7.6: Flat-felled seam

Bound Seam: Flat seam with ends finished with bias tapes sewn around it.



Fig.2.7.7: Round seam

2.7.4 Seams Finishes

Seam finishes may also be referred to as “edge” finishes, as they may be used in locations other than seam allowances. These locations include hem edges and facings. The method of construction is almost always the same, and the goal is to prevent a raw edge from raveling (woven fabric) or curling (knit fabric).

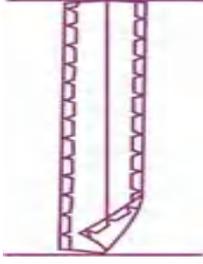
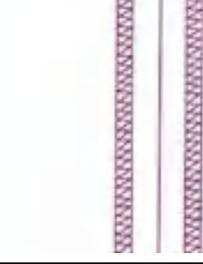
<p>Plain seam: Most common on firm fabrics and lined coats. With right sides together stitch seam and press open.</p>	
<p>Pinked Seam: For non-fray able fabrics – wool, silk, and velvet. After seam is stitched finish edges with pinking shears. Press seams open</p>	
<p>Machine Finish Edges: For non-bulky fabrics that ravel: stitch seam, turned and stitch raw edges, press seam open.</p>	
<p>Double Stitched Seam: For sheer fabrics; stitch an ordinary seam. Make a second row of stitching close to the first. Trim close to second stitching.</p>	
<p>Serge Seam or over lock seam: The raw edges of the fabric ends are secured with a 3 thread- over lock</p>	

Fig.2.7.8: Seam Finishes

2.7.5 Types of Stitches

A Stitch in one unit of conformation of thread resulting from repeatedly passing a strand or strands and/or loop or loops of thread into or through a material at uniformly spaced intervals to form a series of stitches. Stitch classification is based on structure of the stitch and method of formation.

Stitch properties

- **Stitch size** has three dimensions- length, width, and depth.
- **Stitch length** is specified as the number of stitches per inch (SPI) and can be an indicator of quality. High SPI means short stitches; low SPI means long stitches. Generally, the greater the spi, the more the holding power and seam strength.
- **Stitch width** refers to the horizontal span (bight) covered in the formation of one stitch or single line of stitching. Stitches that have width dimensions require multiple needles or lateral movement of thread carriers such as the needle bars, loopers or spreaders.
- **Stitch depth** is the distance between the upper and lower surface of the stitch. It is a factor for blind stitches.

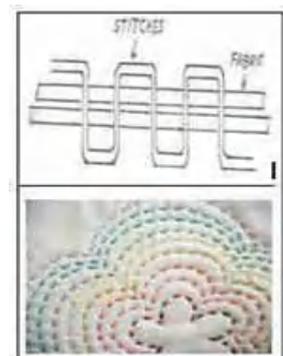
Stitch class-100 (Chain stitch)

- In this stitch, one loop passes through another loop of the same thread.
- Only one needle thread is used for making this stitch.
- The stitching is fast and often used for guiding and stay stitches too.
- If one unit breaks then whole stitch comes off.
- It is also used blind stitch purpose.
- Class-100 (Chain Stitch) has three types- 101, 103 and 104.
- These types of stitches are used in hemming, belt loops, padding operations and felling.



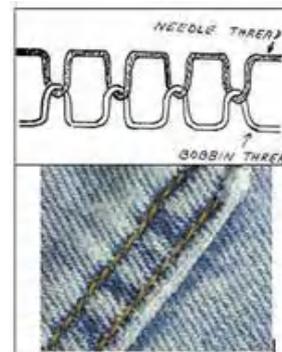
Stitch class-200 (Hand stitch)

- Stitch under this class is produced with single thread.
- This single thread is passed through the fabric from one side to another and the stitch is secured by the single line of thread passing in and out of the garment.
- This stitch cannot be produced for longer length sewing.
- Class-200 has four types- running basting, back stitch, diagonal basting and buttonhole stitch.
- These types of stitches are used for stitching costly dresses, jackets and sample dresses.

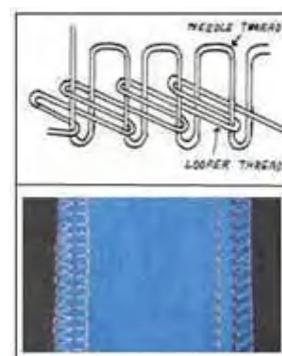


Stitch class-300 (Lock stitch)

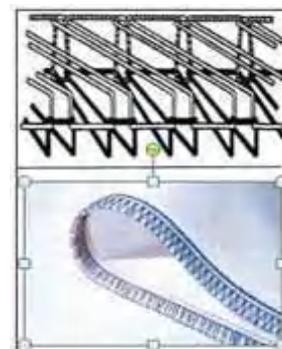
- It required two or more groups of sewing thread.
- Both sides are same.
- Loops of one group are passed through the fabric and are secured by the thread of second group, where one group is referred as needle thread and other as bobbin thread.
- Extensibility is low but strength is quite good.
- Class-300 (Lock Stitch) has four types- 301, 304, 308 and 309.
- These types of stitches are used for stitching underwear, most types and apparels and decorative purposes.

**Stitch class-400 (Multi-thread chain stitch)**

- Two or more group of threads is used.
- One group is called upper thread and another group is called looper thread.
- Security of this stitch is higher than lock stitch about 30%.
- These types of stitches are used to prevent the fraying of yarns.
- Class-400 (Multi Thread Stitch) has three types- 401, 404 and 406.
- These types of stitches are used for setting elastic in waist bands and decorative stitching on belts.

**Stitch class-500 (Over lock or over edge neatening)**

- More than two threads are required for this.
- One group is called upper thread and another group is called looper thread.
- It has good preventing power and edge protection.
- It is also used for decorative purpose.
- It is only used on the edges of the fabric.
- Class-500 (Over Edge Stitch) has three types- 503, 504 and 512.
- These types of stitches are used for edge neatening of knitted fabrics, where extensibility of stitches is important, also used for sportswear and dance wear garments.

**Stitch class-600 (Covering chain stitch)**

- Three or more sewing thread is used to make this stitch.
- Three group of sewing thread are used: needle, looper and covering thread.
- Sewing thread consumption is very high.
- These types of stitches are used to join fabric sidewise without increasing thickness.
- Class-600 (Covering Chain Stitch) has three types- 602, 605 and 607.
- These types of stitches are used for knits, lingerie, binding elastics, decoration, etc.

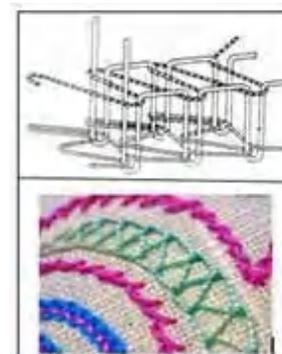


Fig.2.7.9: Types of stitches

UNIT 2.8: Fit and Alterations

Unit Objectives

At the end of the unit, participants will be able to:

1. Explain the importance of basic elements of garment fitting.
2. Carry out fitting inspection.
3. Recognize the common fitting error and their solutions.

2.8.1 Basic Elements of Garment Fitting

A well-fitted garment is very important to reach the satisfaction level of a client who wears tailored attire. Every detail has to be attended to, when a tailor does fittings. If the fittings are improper the look and design of the garment completely destroyed.

A good fit is based on 5 classic elements

1. **Grain:** For a good fit the garment should be cut on the right grain. If the costume is off-grain, the seam lines may twist or hang crooked. Imprecise cutting or stitching may result in deviation in the grain line.
2. **Set:** Is when the garment fits perfectly without any undesirable wrinkles. Wrinkles usually occur because the garment is too large or too small for the customer.
3. **Line:** Refers how the lines of the garment are in alignment with the natural lines of the body. Poor design or construction can result in an out of line garment
4. **Balance:** occurs when the garment is in equilibrium. The garment should appear symmetrical, when viewed from any angle.
5. **Ease:** Is how fitted or airy the fittings of the garment is. A good fitted garment will give some room to breathe and won't be too fitted or tight.



Fig.2.8.1: Basic Elements of Garment Fitting

2.8.2 Carrying Out Fittings Inspection

A tailor must check the following details when he checks the fittings of a garment

Shoulders

- Seam should lie on the edge of the shoulder.
- The shoulders should be wide enough to ensure that the sleeves hang comfortably into position.
- The shoulder slope of the garment should go in sync with the shoulder slope of the wearer



Fig.2.8.2: Shoulders

Chest/Bust

- The tip of the dart should end about an inch before the fullest part of the curve of the bust.
- Incorrect positioning of the dart will make the garment too fitted around the bust area

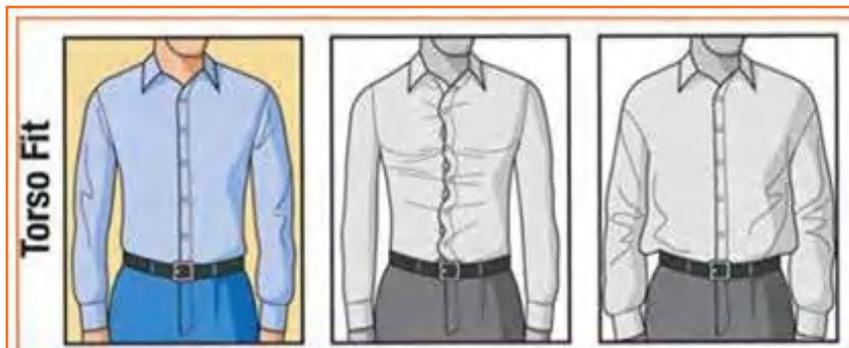


Fig.2.8.3: Chest or bust

Neckline

- The front of the normal neck line should be always larger than the neckline at the back
- Neckline should not be too large or too small.

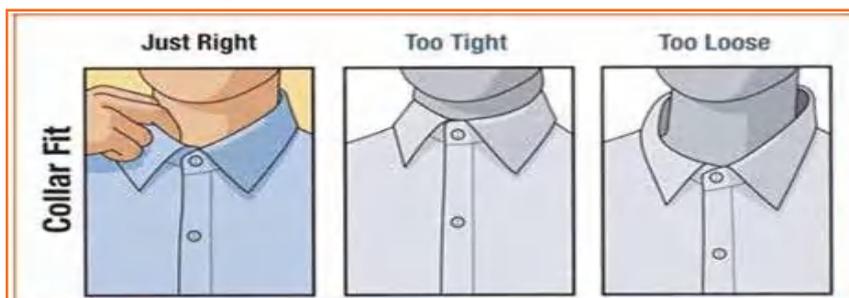


Fig.2.8.4: Neckline

Collar

- The circumference of the collar should be at least 1/4th of an inch bigger than that of the neckline.
- You should be able to slip a finger in between your neck and the shirt at any point without struggling or forcing.
- The collar should neither be too tight nor too loose

Sleeves

- The crosswise grain at the bicep should lie parallel to the floor.
- The sleeve should not be too fitted and should hang comfortably.
- The sleeve should begin from the edge of the shoulder seam. If it is too high the sleeve would pull.

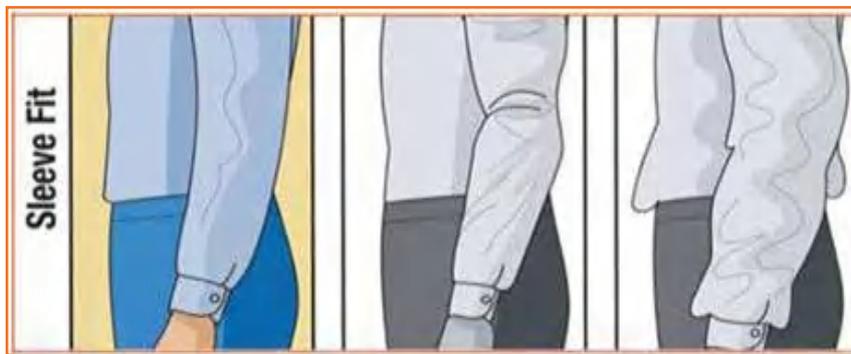


Fig.2.8.5: Sleeves

Waistline

- The waistline should not be too fitted or too loose as both can cause discomfort.
- The narrowest part of the garment should fall at the wearer's waist.

Hips

- Garments should have enough room around the hip area.
- Garment should not have excess ease in hip or thigh area as it will result in vertical folds

Crotch/seat

In order to incorporate comfort and durability, trousers and other bifurcated garments require a well-fitted crotch for. A properly tailored crotch doesn't cut or bind the wearer amid the legs and adapts to the shape of the buttocks. There should be slight ease in the crotch area. Crotch length has one inch of ease in the crotch area. The back of the crotch seam should be lengthier and more deeply curled than the anterior as the behind of the buttocks are more curved than the front. Bigger sizes require longer and deeper curved crotch lengths at the back. Oblique wrinkles radiating from the crotch area is because crotch curve isn't left long enough to allow the size of the buttocks.

Diagonal wrinkles in the front may also be due to the wearer's big abdomen. Wrinkles coming upward from the crotch area indicate a too tight and high crotch, causing to chafng and discomfort. Wrinkles coming downwards from the crotch area shows a low and loose crotch; it stacks and drops, restricts walking and has increased probability of ripping from strain of movement. If the rise may be elongated or reduced, the waistband should also be raised or lowered. Rise should not be lengthened or shortened in the crotch length as the same may lead to problems where none existed.

2.8.3 Why and How to Fit?

To have a good fit of a garment, accurate calculations and design corrections is not enough. They can only provide an approximation of one's figure needs. The other points to be considered to have a good fit are:

- The stylishness of the attire whether it suits oneself or not
- The sufficient ease in the garment
- The posture and the individual figure of the wearer

Only on a fabric test fit, these can be evaluated. Since only minor changes can be made once the garment has been cut on the fabric. Hence a test fit can save lot of waste. There are times when test fit is not necessary, those are when one is sure of the style, know from experience how to adjust the pattern, have sufficient material to recut if necessary and have adequate seam allowances to borrow in crises. But if one has any doubts whatsoever, then test fitting is a must.

Usually used test material is muslin, bleached or unbleached. It should be used in a similar weight to that of the final fabric. Any other solid colored plain weave fabric like poplin in a similar weight to final fabric would do. A plain surface is recommended as this clearly shows all seams, darts and other style details. Layout the pattern cut and mark your test fit fabric with equal amount of care as you would your final garment fabric. The fastest way to get the outcome of the finished garment without actual stitching is to overlay and pin all the seams lines. Pinning gives the same result and information, that one wants without going to the machine. It is so faster to unpin and then re-pin. After that to rip stitching and re-stitching.

Pins must be placed at the right angle to the seam line, as in, this method there is least amount of straining or pull on the seam, and it does not gape. When test-fitting trousers remember to baste stitch the crotch seam. Check the test fit muslin and make alteration till fully satisfied. Mark all the rectifications and the same should be relocated on the pattern for it is the paper pattern that one should use to cut the final fabric and not the test fit muslin. Mark new notches as the old ones may not hold good after the alterations. Check the lengths of two corresponding seams to ensure that the alterations have not created more problems, e.g. if you have corrected the dart intake of side seam dart in the front, check to ensure that both the side seams are still equal or not and if vital make the necessary changes.

2.8.4 Methods of Fit

The first test fit is done on muslin at the time when the design is made. A basic test fit is done to cross check, the pattern fitting; the pattern is cut with relevant seam allowances and pinned in place for test fitting. Make sure that seams and darts are in place. This fitting is done from the right side of the garment. These corrections become the new seam lines for the garment. Check the garment for ease and fullness. It is important to mark buttons and buttonholes at right places in this fit.

The second is after the garment has been stitched before final finishing. Stitch the garment with relevant interfacing/ or underlining in place press it well and test fit to check the position of darts, seams, puckers if any and find the position of outer seams. This sort of fitting improves the fit of the attire. Other times when refitting happens, if the garment has been purchased readymade from the market some alterations may be required for it to be fitted to an individual's size and also if there are changes in the body size. The methods by which each pattern seam or area is to be corrected or reformed depends on the type of problems and nature of the fitting defect. The major problem areas have been previously recognized and thoroughly explained. There are areas that require minor modifications those have been explained and those that require some pattern manipulation have been shown with figures and explained briefly.

Given below are some of the fitting problems that would necessitate pattern alterations.

Waist alterations

- **Thick waists:** Thick waists reduce the size of the darts and or add at the side seam.
- **Slim waists:** Slim waists upsurge the size of the darts and take some at the side seam. If alteration is a small amount then the changes may be made in either in the darts or on the side seam. But in case the amount is adequately large than half of it should be altered in the dart and half in the side seam.

Shoulder alterations

Since the clothes hang from the shoulder their correct fit begins the lines and shaping of the rest of the garment.

- **Narrow shoulders:** On front and back pattern; draw L-shaped slash lines from mid shoulder to notches on the armhole. Slash and overlap the pattern at shoulder to the needed amount. Redraw the shoulder line.
- **Square armholes:** On front and back pattern, draw slash lines from neck to armhole edges. Slash and spread the pattern at armhole edges to the needed amount. Raise the armhole curve by the correction amount. Redraw the pattern on a new sheet or add paper to fill the gap
- **Broad shoulders:** On front and back pattern draw L-shaped slash lines from mid shoulder to notches on the armhole. Slash and spread the pattern at shoulder to the needed amount. Redraw the pattern or insert paper in the gap. Correct the shoulder lines.
- **Sloping shoulders:** On front and back pattern draw slash lines from neck to armhole edges. Slash and overlap the pattern at armhole edges to the needed amount. Pin the pattern piece or scotch- tape it to the required position. Redraw the armhole curves, lowering them at underarm by the same amount that you have taken in for corrections.
- **Round armholes:** On front and back pattern, draw slash lines from neck to armhole edges. Slash and overlap the pattern at armhole edges to the needed amount. Redraw the armhole curves, lowering them at underarm by the same amount that you have taken in for corrections.

Sleeve alterations

The sleeve hangs from the shoulder and setting of the sleeve starts at the shoulder. Check that the armhole is neither too tight nor too loose otherwise a sleeve will not set in properly.

- **Wrinkling, pulling, straining, binding:** This may be due to insufficient width across the sleeve cap, across the chest or back. Unpin the sleeve. Use some of the sleeve seam allowances at the armhole and sleeve cap for more width.
- **Tight armhole:** Drop the armhole by requisite amount. Add width at both the armhole and sleeve edge. Use some of the under arm seam allowances at sleeve and side seam.
- **Short sleeve stands out at the hem:** This is due to insufficient length of the sleeve cap. Draw a slash line across the cap. Slash and spread to the needed amount. Correct the armhole curve.
- **Sleeve cap wrinkles across the top of the sleeve:** This indicates too much length at sleeve cap. Draw a slash line across the cap. Slash and overlap to the needed amount. Correct the armhole curve.
- **Heavy arm:** Draw an upturned slash line on each side of the sleeve opening at under arm to the lower edge of the sleeve. Slash and spread the pattern to half the needed amount to each side at the underarm and tapered to nothing at the lower edge. Make identical changes in the armhole seam of the front and back bodice. Draw a slash line from the underarm to waistlines in front and back bodice. Slash and spread the pattern to the same amount as that added on each side of the sleeve, starting at the underarm and tapering to nothing at the lower edge.
- **Tight upper arm:** Slash the sleeve at the centre from shoulder point to the lower edge. Spread at the cap the essential amount tapering at the lower edge.

Bust alterations

Since the bust area is the most difficult to fit being the rounded part of the body. Check the garment; it should be neither too tight nor too loose. Big alterations are not very effective in this area especially for closer fitting garments.

- **Bust with a large cup:** As you know, women with the same bust size have different cup sizes. These causes the garment to be tight over the bust area. Draw a upright slash line from the shoulder passing through the bust point to the other edge of the pattern, passing through the waistline dart. Draw a vertical line to this line at the bust point from centre front to the side seam. Slash on all lines and spread the pattern adding at the bust area without increasing at the shoulder. The added width at the side seam and waistline should be taken in a dart. If the dart intake is very big it is advisable to convert it into two darts.
- **Bust with a small cup:** Draw a vertical slash line from the shoulder passing through the bust point to the other edge of the pattern, passing through the waistline dart. Draw a perpendicular to this line at the bust point from centre front to the side seam. Slash on all lines and overlap

Hip pattern alterations

Fitting problems in this are manifest themselves in wrinkling, pulling, sagging and uneven hemlines

- **Small hips:** Draw a vertical slash line from the waist to the hem of the skirt pattern. Draw a horizontal line from centre back to the side seam passing through the fullest part of the hip. Slash the pattern on both the lines and overlap width wise to remove excess without loosing at the waist, unless the dart intake can be taken out for ease. Overlap length wise to remove excess without loosing at the side seam. True the seam lines.
- **Large hips:** Draw a vertical slash line from the waist to the hem of the skirt pattern. Draw a horizontal line from centre back to the side seam passing through the fullest part of the hip. Slash the pattern on both the lines and spread width wise to fullness; the added ease may be taken in the dart intake. Spread length wise to add fullness without adding at the side seam. True the seam lines.

Given below are some of the common fitting problems that would necessitate pattern alterations with illustrated solutions by draping method.

Problem	Solution
Folds below the bust dart	Undo the dart and part of the side seam. Lift shoulder a little, re-pin a bigger dart and pin the side seam to take out the excess fabric.
Low waist	Tie a band around the waist and remark the waistline. Remove and re-pin the skirt to new waistline.
Baggy below the hip	Raise the skirt at back only and re-pin
Gaping armhole	Undo dart and pin a bigger dart. Making sure that it points towards the bust point. One may need to lift shoulder seam at the armhole.
Low neckline gapes	Lift at the front shoulder seam. Lower the dart point if necessary
Folds in the dress below the waist	Undo the side seam from below the armhole and ease out until the garment hangs smoothly.
Tight neck or armhole	Slash and snip seam allowance to release tension. If it is not enough, mark a new seam line that is lower than
Neckline stands away and folds below	Release shoulder seam and let it out at the armhole edge.

Shoulder seam lies towards the front of the shoulder	Undo shoulder seam and release front seam allowances only.
Folds across sleeve at the top	Mark a new fitting line below the existing one to reduce cap height
Sleeve hangs towards the back	Remove the sleeve and re-pin by moving the notch at the centre of the sleeve toward the back so that the sleeve may hang towards the front
Wrinkles and creases around the upper arm	Release the underarm seam allowance and add the ease.
Sleeve pulls at the back armhole.	Unpin the sleeve and release the seam allowance on both the armholes of sleeve and bodice.
Trousers are loose at waist, hip or leg. Creases on leg and trousers stands away at waist	Take excess fabric at side and pin at original seam lower down. For larger hip increase the dart intake. Pin the excess towards the outer seam.
Trousers tight below the waist, crease around abdomen.	Release darts and reduce their width and length, also release some ease on the outer seams and re-p"

Fig.2.8.6: Common problems and their solutions

Resources

Scan the QR code or click the link to access the videos or e-book.

Description	QR Code
Tools and Equipment Required in Sampling Tailoring	 https://youtu.be/N30Ae83Jbp4
Measurement	 https://youtu.be/WjIKMrSsCeE
Fabric Types	 https://youtu.be/Vi6RPMbau98

Categorization of garment defects	 https://youtu.be/SPtD6mAZ0GU
Categorization of garment defects	 https://youtu.be/SPtD6mAZ0GU
Different Parts Name of a Basic Shirt	 https://youtu.be/cAyiRpm4AZo

Exercise

1. A number of fractions namely; $1/16$, $1/8$, $1/4$, $1/2$ etc. are used in garment measurements.
 - a) True
 - b) False
2. Linings are utilized to support, reinforce and control the shape of some areas of garments such collar, cuffs, waist bands etc.
 - a) True
 - b) False
3. Chiffon fabric can be made from many different types of materials like cotton, synthetic fiber, silk or rayon but usually is associated with silk or nylon.
 - a) True
 - b) False
4. Measuring tape is a flexible form of ruler.
 - a) True
 - b) False
5. Single needle lock stitch machines are intended for 'S' twist threads otherwise it untwists during stitch formation.
 - a) True
 - b) False

6. Denim is a plain weave fabric.
 - a) True
 - b) False
7. A sampling tailor is someone who produces custom clothing items.
 - a) True
 - b) False
8. _____ is a three dimensional form.
 - a) Fabric
 - b) Garment
 - c) Yarn
 - d) Fibre
9. One inch = _____.
 - a) 24.4 mm
 - b) 25.4 mm
 - c) 24.5 mm
 - d) 25.5 mm
10. A garment _____ comprises of various information of the garments.
 - a) Label
 - b) Packing
 - c) Sub label
 - d) Care label
11. _____ are specifications of the accessories and trim samples that are used in the garments.
 - a) Trim cards
 - b) Spec sheet
 - c) Quality flag
 - d) Swatch card
12. A sharp curved edge for opening/ripping and cutting seams called.
 - a) Needle threader
 - b) Seam Ripper
 - c) Thread remover
 - d) Shears
13. The materials used to ornament or enhance garments are called _____.
 - a) Fabric
 - b) Apparel
 - c) Trims
 - d) Cloth
14. Which of the followings are the types of Fabrics and Yarns.
 - a) Silk
 - b) Polyester
 - c) Leather
 - d) All of the above

15. -----are used to compress the lay-up and prevent shifting or movement during cutting.
- Air Flotation table
 - End Catcher
 - Fabric splicer
 - Vacuum tables
16. _____ is measured from the front waist down through the legs and back up to the back waist.
- Crotch length
 - Seat
 - Crotch depth
 - Inseam length
 - All the above
17. Choose which is used for decorative and reinforcement purpose of garments.
- Label
 - Velcro
 - Shoulder pad
 - Rivet
18. ----- is the only 100% natural fiber thread made for high speed machine.
- Linen
 - Silk
 - Jute
 - Cotton
19. ----- provides all of the key information including the cost of the garment, fabrics and trims details etc.
- Bill f materials
 - Costing
 - Spec
 - Tech pack
20. A well-fitted garment can increase the satisfaction level of a client who wears tailored attire.
- True
 - False
21. Most common ----- on firm fabrics and lined coats is plain seam.
- True
 - False
22. Seams Finishes is to prevent a raw edge from raveling on woven fabric or curling on knit fabric.
- True
 - False
23. Stitches per inches the abbreviation of SPI.
- True
 - False

24. The garment should appear symmetrical, when viewed from any angle.
- True
 - False
25. Shoulder Seam should lie on the edge of the shoulder.
- True
 - False
26. The first test fit is done on muslin at the time when the design is made.
- True
 - False
27. To get sufficient fit of the garment ease plays a crucial role.
- True
 - False
28. Straight seam is not suitable for an unlined garment.
- True
 - False
29. Stitch under this class ----- is produced with single thread.
- 500
 - 400
 - 300
 - 200
30. ----- is self-neatening seam that is usually used to join sheer fabrics where no stitches show on the right side.
- Run and fell
 - Flat seam
 - Bound seam
 - French seam
31. In 500 stitch class more than ----- threads are required for this.
- 5
 - 2
 - 3
 - 4
32. In order to get a good fit, the garment should be cut on the.
- Off grain
 - Bias grain
 - Right grain
 - 120 degree grain
33. The circumference of the collar should be at least -----bigger than that of the neckline.
- 3/4th of an inch
 - 1/2th of an inch
 - 1/4th of an inch
 - 1 inch

3. Carry Out Fabric Cutting Operations for Preparing Garment Sample



Unit 3.1 - Fabric Laying Procedure

Unit 3.2 - Fabric Cutting Procedure



Key Learning Outcomes

At the end of the module, participants will be able to:

1. Well verse with fabric spreading process.
2. Follow terms and processes associated with fabric spreading.

UNIT 3.1: Fabric Laying Procedure

Unit Objectives

At the end of the unit, participants will be able to:

1. Well verse with fabric spreading process.
2. Follow terms and processes associated with fabric spreading.

3.1.1 Fabric Spreading

Fabric spreading is a method where piles of fabric or single layer are spread a specific length and width wise according to the garment marker measurement. Multiple layers are required if more than two garments are to be made but only one layer is required if only one garment is to be made. A proper fabric spreading process in garments may affect productivity, quality, and cost of the production. Fabric spreading is very important task to maintain proper shape of fabric before cutting of garments. Though a Sampling Tailor does not require to cut the garment panels but he should have basic fabric cutting knowledge. It may help him in the process of making a garment if required.

A sampling tailor broadly performs below operations for cutting if it is required.



Fig.3.1.1: Fabric Laying



Fig.3.1.2: Tracing



Fig.3.1.3: Cutting

Now let's discuss about the process of fabric spreading a sampling tailor needs to know.

Types of Lay Plan

1. **Half Garment Lay** includes only half of the garment pieces, for example, one side left or right. Generally used for tubular fabrics
2. **Whole Garment Lay** includes garment pieces, left and right sides. Generally used for Open width fabrics
3. **Single Size Lay** is used using all garment pieces of one single size. But it has a disadvantage, the consumption of fabric is higher in this.

Types of Lay

- **Single Ply:** Single Ply is a single layer of fabric generally to make samples
- **Multiple Ply:** A multiple Ply is a number of fabric layers stacked on one top of other
- **Stepped Lay:** Stepped Lay is multiple lays in which groups of layers have different lengths generally used for getting best utilization and consumption of fabric.

Spreading of the fabric helps in Smoothing fabric. During spreading it is important to open out any unnecessary folds, and to avoid 'bubbles' caused by uneven tension in softer fabrics.

One can check fabric defects when he spreads out the fabric. He can check if the fabric is free from Skewing (Skewing is a condition where the fabric is angled across the course) and Bowing (Bowing is created when the cross-grain weft bends additionally down the table in the centre of the fabric which is difficult to minimize).

For smooth and proper spreading process in garments below factors must be considered during fabric spreading:

- **Fabric Length and Weight:** During fabric spreading length and width should equal to marker or pattern length and width. This measurement must be uniform before fabric cutting. Otherwise fabric wastage may be increased or defective garment component may be produced.
- **Fabric Tension:** The tension in fabric lay should be uniform. If the tension is higher than small size actual size. On the other hand, if the fabric lay be loose then it may create problem during fabric cutting and lager size of component may be produced than the actual size.
- **Fabric Splicing:** Another important factor of fabric spreading is fabric splicing. Splicing should be accurate during fabric spreading. Excess splicing may increase faulty area and short splicing may produce faulty component. The lay of the fabric should be maintained according to the fabric construction and splicing methods.
- **Fabric Ply Direction:** The direction of fabric ply should be corrected. Fabric ply direction depends on the type of fabric, Shape of the pattern and construction of fabric. Therefore, ply direction must be checked before laying the ply on cutting table. Otherwise, they may create problem during the sewing section in garments.
- **Stripe and Check Matching:** Stripe and check should be matched with every ply of fabric. Therefore stripe and check matching are done very carefully during fabric spreading process in garments. Otherwise that will be created problem during the sewing section in garments.
- **Fabric Faults Removing:** There are different types of fabric faults are found in fabric inspection section. They are such as hole, missing end, broken end, thick end, Reedy fabric, broken pattern, double pick, slub, snarl, thick and thin places, temple marks etc. Before fabric spreading those faults must be identified and also remove from fabric.

3.1.2 Fabric Spreading Modes and their Applications

Face up in a single direction spreading mode

All the plies are spread with their face side up and in one direction. After a ply is laid, it is cut from the fabric roll across its width. This is the most commonly used spreading mode.

There are several reasons for its wide application:

- Most types of textile materials can be spread in this manner.
- The rejection of fabric faults can be carried out during the spreading process.
- Styles with asymmetrical components that can be cut as pattern pieces in a marker are also placed with their face side up.



Fig.3.1.4: Face up in a single direction spreading mode

'Face up in one direction' spreading cannot be used for fabrics with a short-cut pile (velvet, corduroy, plush, artificial fur) as the plies are likely to slip over each other.

Face up in both directions spreading mode

All the plies are spread with their face side up and in both directions. After a ply is laid, it is cut from the fabric roll across its width. To ensure the face side is upwards in all plies, the fabric roll has to be turned through 180° at the end of every ply.



Fig.3.1.5: Face up in both directions spreading mode

In contrast to the 'face up in a single direction' mode, there is no need for 'dead heading' in this mode. However, additional time is needed to turn the fabric roll at the end of every ply. This spreading mode cannot be used in the following situations:

- If the fabric has a nap or pile.
- If the fabric has a pattern in one direction only and its location in a style is strictly determined.

Face down in a single direction spreading mode

All the plies are spread with their face side down in a single direction. After a ply is laid, it is cut from the fabric roll across its width. This spreading mode is used for knitted fabrics where the cut edges will roll. It is difficult to fix the ply ends if face side up spreading is used.



Fig.3.1.6: Face down in a single direction spreading mode

This spreading mode cannot be used in the following situations:

- Where a style has asymmetrical components and the pattern pieces in a marker are placed with their face side up.
- Where the rejection of fabric faults has to be carried out during the spreading process.

Face to face in a single direction spreading mode

The first material ply is spread with its face side up. The ply is laid and then cut from the fabric roll across its width. After or during the 'dead heading' procedure, the fabric roll is turned through 180° and the next ply is spread in the same direction with its face side down.

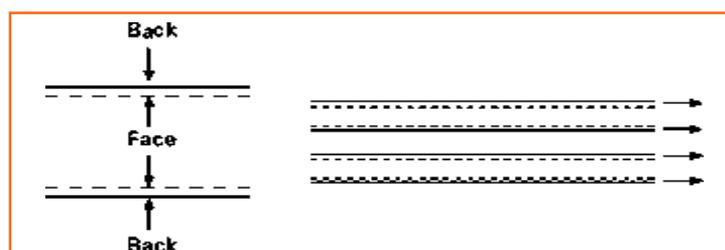


Fig.3.1.7: Face to face in a single direction spreading mode

This spreading mode is used for materials with a short-cut pile (velvet, corduroy, plush, artificial fur) to prevent the plies from slipping during the spreading and cutting processes.

Face to face in both directions and zig-zag spreading mode

The fabric is spread in both directions. At the end of each ply, the fabric is folded and spreading continues in the opposite direction. So, the first ply has its face side up, the second ply has its face side down and the third ply is again face side up. 'Zig-zag' spreading may be used for different fabrics. It does not require the fabric plies to be cut, thus saving time. It is also possible to save material as there is no need for safety allowances at the end of a spread. If required, folded material plies may be also separated by shears or a knife.

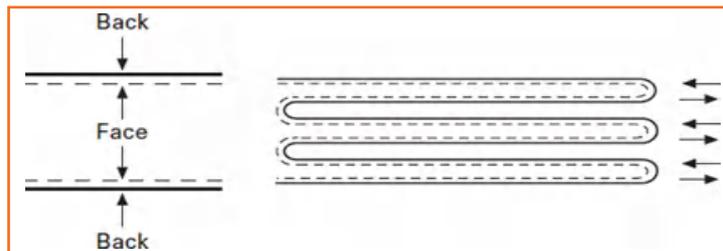


Fig.3.1.8: Face to face in both directions and zig-zag spreading mode

UNIT 3.2: Fabric Cutting Procedure

Unit Objectives

At the end of the unit, participants will be able to:

1. Demonstrate the fabric cutting procedure.

3.2.1 Fabric Cutting Procedure

Cutting is one of the toughest and decisive process in garments production because once the fabric has been cut, few option to be appeared for rectification if a serious mistake happens It is extremely important to take utmost care while cutting a sample because approval for bulk production depends on the sample submitted to the client.

Cutting is an important part of the garment industry. For Bulk, cutting section does their job as per production plan but for samples a sampling tailor may need to do this cutting part but not necessarily.

Sampling tailor may need to cut size set also so below points should be kept in mind.

Size set cutting

- Fabric should collect from the material department as per material list for 50-100 pieces.
- Should receive the trim card, worksheet, and assortment.
- Prepare to cut each size two pieces and arrange issue to the production line.
- After size set making, it is sent for client's approval. Production starts only after a factory receives approval on size set.

3.2.2 Cutting Techniques

Sampling involves cutting of single or few garments only so a fabric scissor is sufficient for the process. Cutting is one of the toughest and decisive process in garments production because once the fabric has been cut, few option to be appeared for rectification if a serious mistake happens.

While cutting the fabric you must keep below points in mind:

- Before preparing fabric layer on cutting table for cutting a particular style, one should check material swatch card, color shade band carefully and collect original sample or tech pack to check all part of garment's item in marker paper.
- Need to be checked cut quantity/size assortment/colour breakdown.
- Carefully check-ply quantity, fabric item, color name, ticket number etc. on the table to prevent any misunderstanding. Defect point must mark on roll paper- not to be use -if any serious issue that is crease mark, fold mark, end roll especially coated fabric.
- If any special instruction for the same style especially sizes ratio, must check the marker with hard pattern. Also, check two-way and one-way marker before start layering.
- To be confirming color shade, shading, item name, item face- back, shrinkage percentage, roll width, marker width, and style category before start layering. Above checkpoint has to follow 100% for ensuring smooth production.

Layer inspection

While layer spreading you have to examine fabric physically then compare with approved color card. If found any discrepancy between approved fabric swatch with bulk production fabric roll at once hold and inform concern's persons. After physical checking by all concern parties and considering all related QC report/documents then allow cutting.

Face/Back

During spreading fabric, you must ensure correct face-side compare with approval cutting color.

Cut Panel Inspection

Check the cut panel if cut proper and it is then ready for stitching.

Resources

Scan the QR code or click the link to access the videos or e-book.

Description	QR Code
Fabric Spreading	 https://youtu.be/S2guBz1B6_8
Fabric Cutting Procedure	 https://youtu.be/gvzM2SoVMaA

Exercise

- Single Ply is a number of fabric layers stacked on one top of other.
 - True
 - False
- Tubular knitted fabric is utilized for the manufacture of garments like underwear, sports shirts and t-shirts.
 - True
 - False
- In spreading process least care should be given with the tension maintenance so that we can save time.
 - True
 - False

4. Tight selvages generally lead to fullness in the central area of the spread.
 - a) True
 - b) False
5. Skewing is a condition where the fabric is angled across cross grain.
 - a) True
 - b) False
6. In Face up spreading mode: All the plies are spread with their face side up and in one direction.
 - a) True
 - b) False
7. Laser jet cutting machine suitable for single ply cutting.
 - a) True
 - b) False
8. Rotary cutters are suitable for small parts cutting, trimming, slicing, scoring etc.
 - a) True
 - b) False
9. _____ is an arc shaped line lie across the width of the fabric.
 - a) Barre
 - b) Bowing
 - c) Drop stitch
 - d) Skewing
10. _____ is an excellent device for cutting large radius curves and straight lines in the apparel industry.
 - a) Shears
 - b) Straight knife
 - c) Round knife
 - d) Rotary knife
11. To get accurate cutting of smaller part, like piping, loops etc the commonly used machine in RMG industry is _____.
 - a) Shears
 - b) Straight knife
 - c) Rotary
 - d) Die cutting
 - e) Band Knife
12. Which cutting tool is appropriate for cutting curve lines in high lies.
 - a) Straight knives
 - b) Rotary
 - c) Die cutting
 - d) Band Knife

13. _____ tool mainly used to make a hole whenever needs to insert eyelet or other accessories in a particular position of the garment .
- a) Driller
 - b) Rotary
 - c) Die cutting
 - d) Band Knife
14. Which of the following is the Common Cutting Defect?
- a) Bundling
 - b) Drill Marks
 - c) Ticketing
 - d) Piles misaligned
15. _____ the distortion of filling yarns from a straight line across the width of the fabric.
- a) Bowing
 - b) Skewing
 - c) Seeming
 - d) Barre



4. Preparation for Stitching



Unit 4.1 - Type of Sewing Machine

Unit 4.2 - Pre-Sewing Activities



Key Learning Outcomes

At the end of the module, participants will be able to:

1. Identify different types of sewing machine.
2. Explain the features of sewing machine.
3. Adjust the controls in a machine.
4. Make use of bobbin winder.
5. Change a machine needle.

UNIT 4.1: Type of Sewing Machines

Unit Objectives

At the end of the unit, participants will be able to:

1. Identify different types of sewing machine.
2. Explain the features of sewing machine.

4.1.1 Single Needle Lockstitch Machine

Lockstitch is the most common type of stitch made by a Sewing Machine. A lockstitch sewing machine uses two threads, one in the needle and the other in a bobbin.

The motion of the needle and the hook correctly timed makes each stitch to be locked. Lockstitch machines come in many configurations depending on the application and types of fabric.

Features

- Lock stitch is formed by single needle of a plain sewing machine.
- The speed of a lock stitch sewing machine is up to 6000 rpm.
- During stitch formation; the needle thread is interlaced with the bobbin thread by means of a hook.
- Lock stitch machine can be distinguished by the winding device provided for bobbin thread.
- Programmable plain sewing machine is used for sew repetitive operation.



Fig:4.1.1: Lockstitch machine

4.1.2 Flat Lock Machine

Flat lock machines are specialized, high speed machines. These machines are extremely fast and efficient. In this machine the stitch is formed by two or more needle threads passing through the material, inter looping on the underside and interlocking on the upper side.

Features

- It is high speed, and makes seams stretchy, flat and smooth.
- Provides extensibility and flexibility to the seams, with low bulk that can be worn comfortably against the skin.

Multi-Thread Flat Lock: Flat lock stitching is the stitching that looks like over locking on both sides of a seam and is often used in swimwear, sportswear, on baby's clothes, or just as a decorative exposed seam. It creates a seam that is flat and has the same appearance both inside and out.



Fig:4.1.2: Flat Lock Machine

Applications and Seam Appearances

Cover stitch, often called a Flat lock or flat seam stitch is used primarily on knits and lingerie. These stitches are referred to as top and bottom cover stitches and are commonly used to cover both sides of the seam.



Fig:4.1.3: Flat Lock Stitch

4.1.3 Overlock Machine

The over lock machine is designed to stitch over the edge of one or two pieces of fabric to produce neat edging that will not fray. Usually an over locker will cut off the untidy rough fabric edges as they stitch.

An over lock / over edge machine is a high speed sewing machine. This is the quickest performing machine for today's sewer. Its speed far exceeds that of other sewing machine plus it adds a non-fraying finish and sews seams at the same time.



Fig:4.1.4: Over lock / over edge machine



Fig:4.1.5: Three Thread Overlock Machine

Three Thread Overlock Machine

Stitch formed by interaction between vertical of needles and horizontal movement of two loopers. To make a 504 stitch, the needle-thread stitches and flies together when it interlocks with the upper looper thread on the underside and upper looper thread on the top side.

Features of this type of over lock stitch are as follows:

- Stitch looks the same on both sides.
- Used for finishing edges as a narrow, decorative, rolled edge on the napkin and scarves.
- Most useful for sewing knits and woven.
- Used for finishing edges as a narrow, decorative, rolled edge on the napkin and scarves.
- Most useful for sewing knits and woven.
- Stitch type 504, most common over edge stitch

Four Thread Overlock Machine

This machine stitches a chain stitch or a safety stitch and overcasts seams. Four-thread over lock machine has two needles and two loopers and this can be converted to both two and three thread over lock. All 4 threads are necessary to sew a serged seam. This type of machine is used for sewing blouses, shirts, skirts, dresses, pants, lingerie, action wear, swimwear, and even sleepwear.

It stitches chain stitch or a safety stitch as it stitches and overcasts seams.

- Two needles and two loopers.
- This can be converted to both two and three thread over lock.
- All four threads are necessary for sewing a serged seam.
- Suitable for sewing blouses, skirts, shirts, dresses, pants, swim-wears, action-wears, lingerie and even sleep-wear. All kinds of knits.
- It is stitch type 514.



Fig:4.1.6: Four Thread Overlock Machine



Fig:4.1.7: Five Thread Overlock Machine

Five-Thread Overlock Machine

This type of machine is used to stitch a 2-thread chain stitch combined with a 3-thread over lock. This machine has 2 needles and 3 loopers. In this sewing machine the left needle and lower looper form a 2-thread chain stitch. The seam is very durable, particularly for wovens.

A very wide seam width is created when the chain is serged with 2 or 3 thread stitch.

- A two- thread chain stitch combined with a three- thread over lock
- Two needles and three loopers
- The left needle and the lower looper form a 2-thread chain stitch
- The seam is very durable, particularly for woven's
- A very wide seam width is created when the chain is serged with 2 or 3 thread stitch
- This stitch type is 516.

4.1.4 Feed of the Arm Machine

Feed of the arm machine is a chain stitch machine for chain stitch designs working with sew and stitch. It contains looper instead of bobbin. Main features of this machine are:

- By this machine, multi thread chain stitch can be produced on garments.
- Stitch can be produced on heavy fabrics, like denim or jeans; it has opportunity of stitching by folding the fabrics.
- Different sizes of needle and thread dresses should be used in this machine depending on the thickness of fabric.



Fig:4.1.8: Feed of the Arm Machine

Application of Feed of the Arm Machine

- For making garments of heavy fabric.
- Used in long seam of trousers.
- Frequently used for joining lace.
- Used for joining braid and elastic in the garments.

4.1.5 Waistband Attachment Machine (KANSAI)

Kansai special sewing machine is a multi-needle chain stitch sewing machine. Kansai sewing machine is widely used in the Apparel industries in different countries. A lot of types of needle can be used as requirement. Kansai special sewing machine can operate easily and smoothly because kansai sewing machine repair is very easy.

Application of Kansai Machine

- Sewing waist bands of high heavy to heavy material such as jeans pants, woven pants and working pants.
- It is also used for cover long stitch, lap seaming, attaching line tapes, inserting elastic and used in cuff of blazer and suits where more than three lines of thread is required to complete the works.



Fig:4.1.9: Kansai Machine

4.1.6 Other Specialized Sewing Machines

Button attach machine

Clothes are held together by buttons, a button is one of the most basic elements of fashion. Button sewing work requires a machine, which provides flexibility (in terms of button design, fabric variation, thread thickness etc.) as well as a consistently good sewing performance.

- This machine sews on buttons at high speeds, with accuracy thus saving time and fatigue.
- It can be used for attaching neck wraps and labels as well.

Lockstitch button-holing machine

- The machine can be operated with its head positioned horizontally due to hollowed type frame.
- Needle thread tension for sewing parallel and bar tacking sections of buttonholes can be separately controlled through the operation panel.
- With dry-head technology, no lubrication is required except for the hook section.



Fig:4.1.10: Button attach machine



Fig:4.1.11: Button-hole machine

Bar- tacking machine

- Sewing speed of 3,000 rpm. Short total cycle time (reduced approximately 30% compared to our predecessor model: For 42-stitch large bar tacks).
- Needle threads grasping mechanism. The mechanism prevents thread from slipping off from the needle eyelet at the beginning of sewing, from tangling on the wrong side of the material and also being stained during sewing. Sewing area 30mm (length) by 40mm (width).
- Provided as standard with as many as 50 different types of sewing patterns.
- Active tension (electronic thread tension control mechanism).
- An auto-lifter that uses a new stepping-motor system which helps reduces operator fatigue.



Fig:4.1.12: Bar-tack machine

Zigzag stitching machine

- Two different models, one with standard specifications and the other with an anti-material slip capability
- Two subclass models, i.e., the minute quantity lubrication type and the "dry-head type
- Newly-developed operation panel, the IP-100, easily establish settings for stitch shapes and stitches, as well as conduct setup changing
- Provided as standard with fourteen different basic zigzag stitching patterns grouped into eight different types.



Fig:4.1.13: Zigzag machine

Double chain stitch machine

- Thread spreading mechanism and an adjustable needle guard to prevent stitch skipping.
- Safety stitching (condensation stitching) the perfect method of preventing loose stitches, or reverse feed stitching (back-tacking) can be alternated through the simple adjustment of the stopper of the reverse feed lever.



Fig:4.1.14: Double chain stitch machine

UNIT 4.2: Pre-Sewing Activities

Unit Objectives

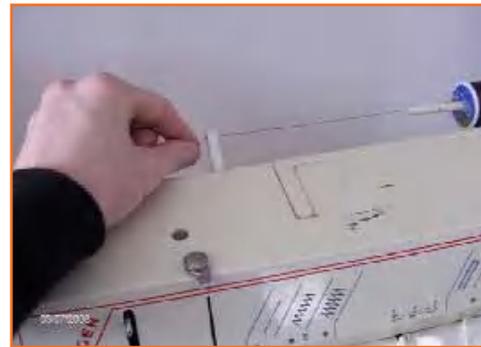
At the end of the unit, participants will be able to:

1. Adjust the controls in a machine.
2. Make use of bobbin winder.
3. Change a machine needle.

4.2.1 Threading a Machine



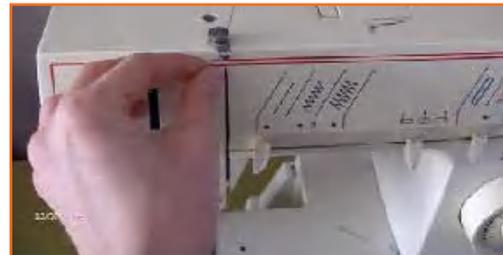
Step 1: This is where the thread goes. If you have a cap or stopper put it on after you put the thread on. Also put the side of the thread with the little cut to the back or bottom.



Step 2: Allow the string to unwind and put it through this hoop. Mine can also snap in from the back but usually with older machines this is a hoop.



Step 3: This can also be a loop but mine slides in through the back.



Step 4: From the tension bring the thread up and from right to left put it through the hole here.



Step 5: Then bring it down from the take up lever into the coiled thread guide.



Step 6: Then into the next thread guide.



Step 7: Then thread the needle front to back or right to left depending on your machine. Pull enough thread through so that it does not pull out when the needle moves 5-10 inches.

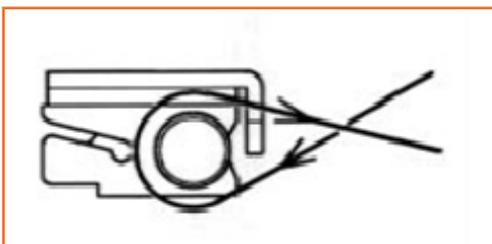


Step 8: Insert the bobbin.

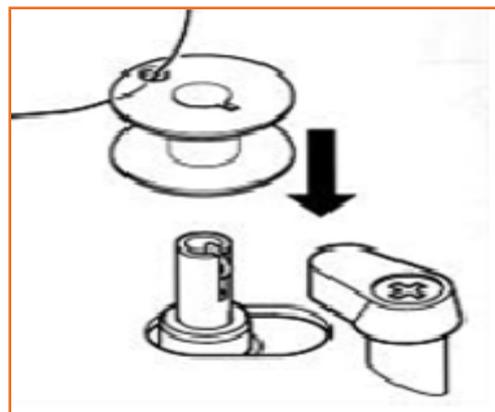


Step 9: Pull the string out tight and set the bobbin into the tray. Insert the thread into the metal notch and pull back.

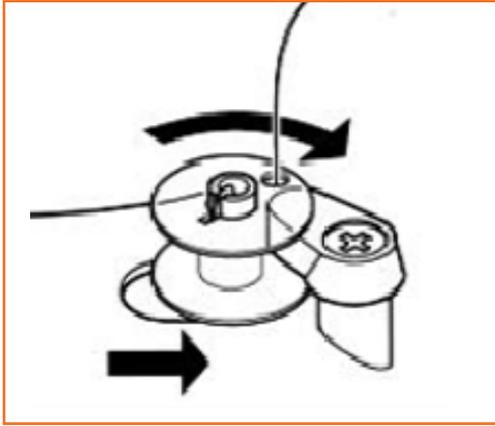
4.2.2 Using the Bobbin Winder



- Step 1:**
- Place spool of thread on spool pin.
 - Slide spool pin holder/cap firmly over rim of spool to prevent thread from tangling.
 - Push bobbin winder pin to far left if it is not already there.
 - Pass the thread from spool through thread guide



Step 2: Pass thread end, from inside, through small hole in rim of bobbin



- Step 3:**
- Place bobbin onto pin.
 - Push bobbin winder pin to the right. This will stop the needle from moving.



- Step 4:**
- Holding thread end, step on speed controller to run machine until desired amount of thread is wound.
 - Cut thread; push bobbin to the left and remove it from bobbin winder pin

Treadles

A treadle is a part of a machine which is operated by the foot to produce reciprocating or rotary motion in a machine such as a weaving loom (reciprocating) or grinder (rotary). Many of the early machines were powered by a treadle mechanism. The treadle was operated by pressing down on it with a foot, or both feet, to cause a rocking movement. This movement spins a large wheel on the treadle frame, connected by a thin leather belt to a smaller driving wheels on the sewing machine.

Tension adjustment

To make a basic adjustment, adjust the bobbin spring; tighter if the bobbin thread shows on the upper layer, and looser if the needle thread shows on the under layer.



Fig.4.2.1: Bobbin Case



Fig.4.2.2: Bobbin

Adjusting the needle

Needle is chosen and adjusted as per the requirement, i.e. it depends on what thread and what material is been used. While selecting and adjusting needle for specific fabric, two things must be considered:

1. Thickness of a needle
2. Point-shape

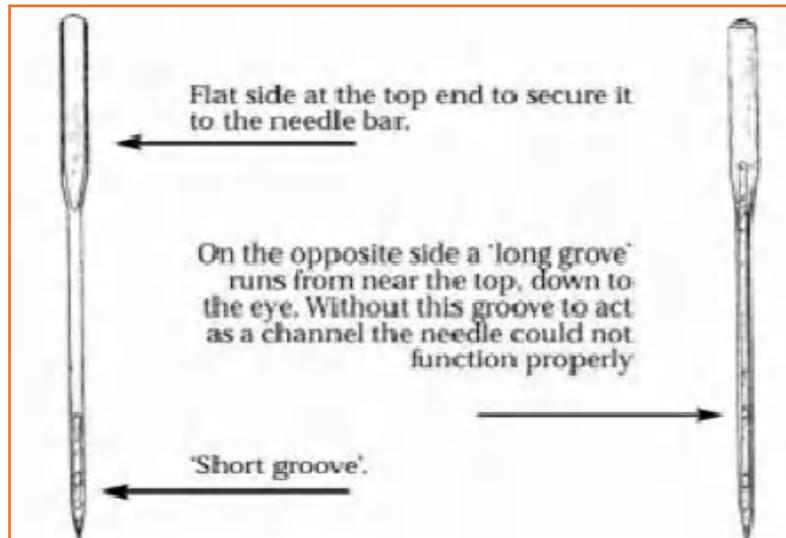


Fig.4.2.3: Adjusting the needle

Choice of needle point

- **Cut Points:** These points have sharp tips to cut through the cloth therefore they are used for stitching leather products and clothes.
- **Cloth Points:** They have slight round shape and can cut through the cloth without damaging it. Suitability of thread and needle is also based on cloth material for e.g. for light weight silk, satin or crepe cloth point needles can be used as they cut through the cloth without providing them any damage.

4.2.3 Replacing a Needle

It always happens. You're pushing that fabric through, pushing that pedal to the grindstone, and it happens. You hear the loud pop and feel a tiny prick against your face or arm. You've broken a needle. But there's no use crying over a broken needle. They're fast and easy to replace, as long as you have some back up needles around. Nowadays, sewing machines use universal needles, which will fit just about every machine.



Step 1: Hold the needle with your left hand and undo the screw at the top of the needle with your right hand.



Step 2: Remove the needle by pulling down and away from the needle clamp.



Step 3: With the flat side towards the back, push the new needle up inside the needle clamp as high as it will go.



Step 4: Use your fingers initially and then your tool of choice to tighten the needle clamp screw. The tighter you can make this, the better. A loose clamp may leave the needle down in the fabric you are sewing.



Step 5: Re-thread your needle, pushing the thread from front to back.

4.2.4 Pre-sewing Activities

Before sewing a garment, the sewing machine operator should.

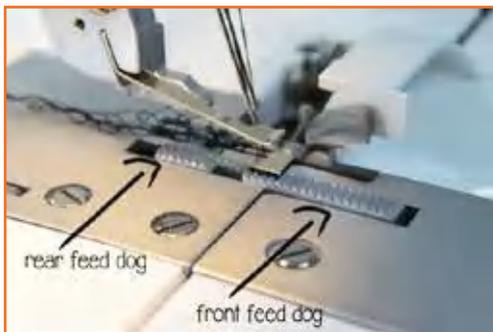
- Check that equipment is safe and set up in readiness for use. Perform a machine, needle and spool check. Do a sample run to check thread tension.
- Check that the materials to be used are free from faults. Go through all the material required for constructing the garment. Do fabric, thread and trims checking before sewing.
- Ensure the materials used meet the specification matching. Go through the spec sheet and make sure the materials meet the specifications provided by the buyer.

4.2.5 Perform a Test Run

Perform a test run if the sewing machine is running smoothly and with full efficiency. If not, then check the following and adjust the machine:



Step 1: **Cleaning and oiling:** Check if the machine is been cleaned and oiled properly. With the presser foot up, try to run the machine at full speed for one minute. If you hear a noticeable discrepancy in speed then the machine surely needs some lubrication. Remove the top cover (if machine has one.)If not, you should be able to find holes on top of it. Apply only a drop of SEWING MACHINE OIL (not 3 in 1 oil or any other kind of oil or rust inhibitor). Next, reach the bottom of your machine. After removing any dust, lint, broken needles debris and straight pins, apply a drop of oil to each moving part. By turning the hand wheel slowly (always towards you for 98% of them), you will see all the moving parts joints that needs to be oiled. Many parts already have a small hole especially for oiling.



Step 2: **Check feed dogs:** Remove the feed dog, clean the feed dogs. Try to pass a rag under them and with an old needle or narrow tool, remove the lint inside the feed channels. Put back the needle plate. If your machine is equipped with a FEED DROP, be sure the feeds are set at UP position. By turning the hand wheel (towards you), check to see if the feeds make their movement.



Step 3: **Look for upper tension:** Most sewing machine problems are caused by thread tension. Learn this basic principle right now: the upper tension determines your UNDER stitch. And the bobbin (bottom) tension determines your UPPER stitch. Unless you are experimented to dismantle the upper tension unit or if it's explained in your manual, follow this simple technique. Tension discs are often disrupted by pieces of broken thread, lint and dust. This cause a gap between the tension discs and no pressure is applied to the thread resulting of thread loops underneath. Take an 8" length of thread and make 3 to 4 knots in it (as pictured below). Thread your tension system with this piece of thread a few times in all directions. This will remove any lint residue between the tension discs. Try it for the first time with the presser foot UP and then with the presser foot DOWN. When the presser foot is down and the tension dial set at number 4, you should be able to feel a tension when pulling the thread. If so, the upper tension system is working properly.



Step 4: The bottom bobbin: Check also for the condition of the bobbin winder rubber tire. If you can see cracks and worn flat surfaces, replace it. This very popular item is available at any sewing shop for a dollar or so. When winding a bobbin, check to see if the thread winds evenly from each side of the bobbin. Then check the bottom of your bobbin case. Remove any lint pancake. Install your bobbin in it. By pulling the thread, you should feel a very soft tension on the thread. If not, some clogged lint may be laying between the small tension spring and the bobbin case itself.

Now perform the test run (Again) and must experience the following observations to make sure the machine is working properly.

- Firstly, run the machine at medium speed for the first stitch row.
- Check underneath: the stitch should be identical to the top one. No loops, only a tight stitch. If any loops are found underneath, raise the upper tension slightly and make a second stitch row.
- Try also the reverse stitch a few times while sewing (do not stop to engage the reverse). Make sure the thread does not break. Check also for loops underneath on the stitches made with the reverse.
- If everything is good so far, run the machine at full speed making a few stitch rows. If your machine is equipped with the zigzag, try it. The zigzag stitch should be the same on top and bottom.

Resources

Scan the QR codes or click on the link to watch the related videos.

Descriptions	QR Codes
Maintenance of single needle sewing machine	 https://youtu.be/6iE2DT6LVpg



5. Stitching Operations

Unit 5.1 - Garment Construction

Unit 5.2 - Attachments for the Sewing Machine



AMH/N0703

Key Learning Outcomes

At the end of the module, participants will be able to:

1. Recognize the different parts of a trouser.
2. Stitch a trouser.
3. Identify the different parts of a shirt.
4. Sew a shirt.

UNIT 5.1: Garment Construction

Unit Objectives

At the end of the unit, participants will be able to:

1. Recognize the different parts of a trouser.
2. Stitch a trouser.

5.1.1 A Stitching a Trouser

Parts of a trouser

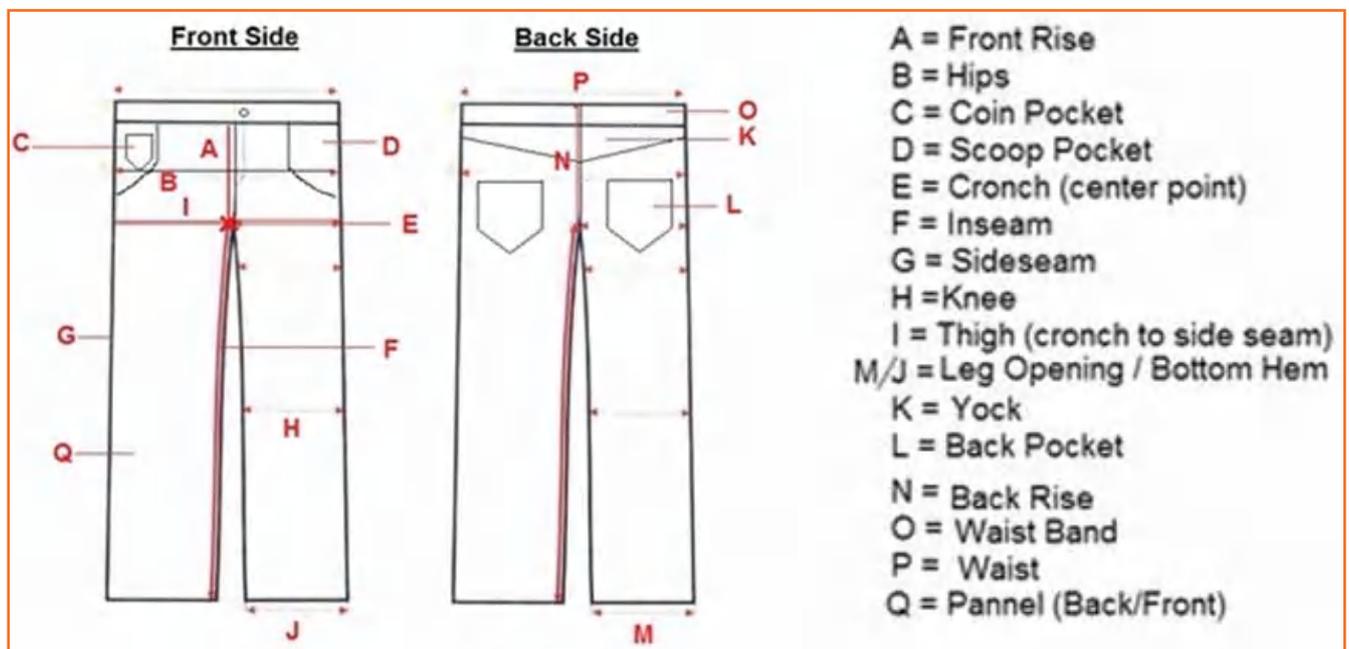
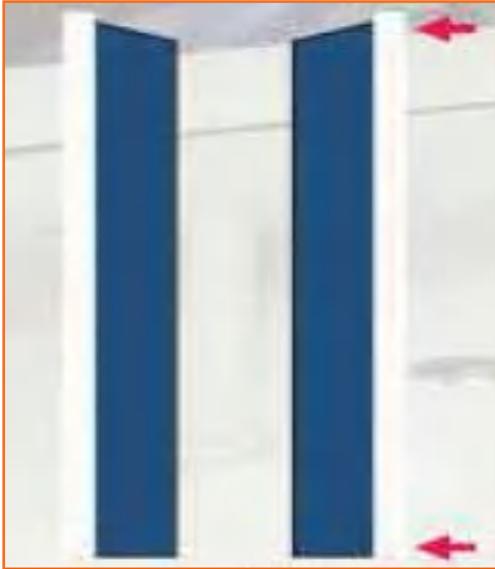


Fig.5.1.1: Parts of a trouser

5.1.1.1 Preparation of Pocket Bag (front)



Step 1: Take both the upper facing pieces and put overlock stitch on the longer straight sides. Make sure the face side of the pieces is on top.



Step 3: Take both of the pocket bag pieces and both upper facing pieces. Keep the upper facing piece over the pocket bag in such a way that the overlock part is facing inside and the stitch is facing upwards.

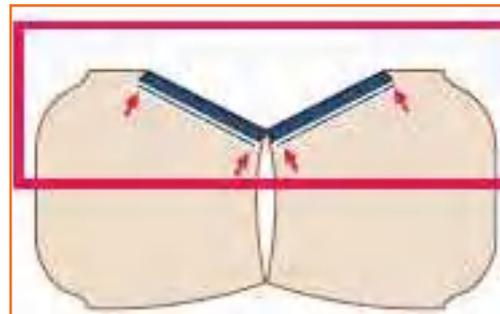


Step 5: Take both the lower facing pieces and keep them over the other side of the pocket bag.



Step 2: Take both the lower facing pieces and put overlock stitch on the curved sides. Again, make sure that the face side of the pieces are on the top.

- Note the notch marks on the lower facing pieces.
- Note that the overlock stitch is on the curved side.



Step 4: Put lockstitch at the edge of the overlock stitch.

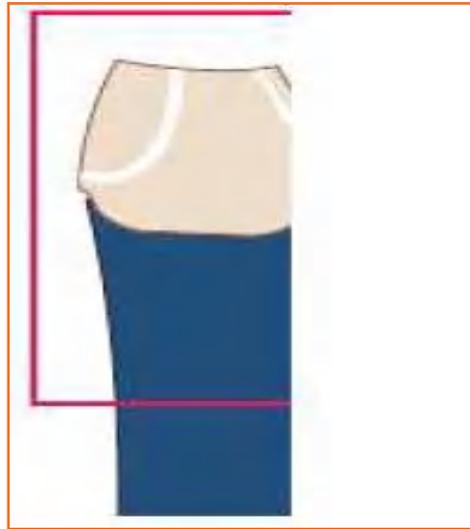


Step 6: Put the lockstitch at the edge of the overlock curved stitch.

5.1.1.2 Pocket Attaching (front)



Step 1: Take the two front pieces and keep them on the sewing Fig. with the face side up.



Step 2: Take the pocket bag and place it over the left front piece aligning with the mouth of the pocket.



Step 3: Put 6 mm stitch taking $\frac{1}{4}$ line on throat plate as guide, starting from the top to bottom.



Step 4: Turn the piece and put 4 mm stitch at the mouth of the pocket.



Step 5: Match the lower facing and upper facing at the notch marks.



Step 6: Put 2 mm stitch starting from the waistline to the outer side of the left front piece.

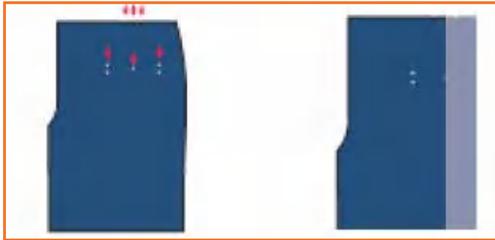


Step 7: Put 5 thread overlock stitches on the curved portion of the pocket bag.

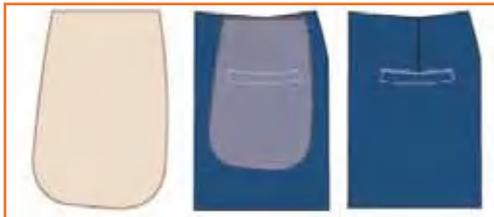
Step 8: Take the other pocket bag and place it over the right front piece aligning with the pocket bag (face to face).

Step 9: Repeat steps 3-7 for the right hand side pocket.

5.1.13 Pocket Attaching (Back)



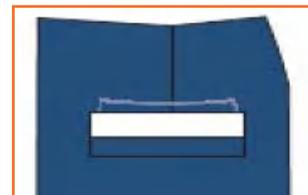
Step 1: Take a note of the notch marks and the pocket marking on the back piece.



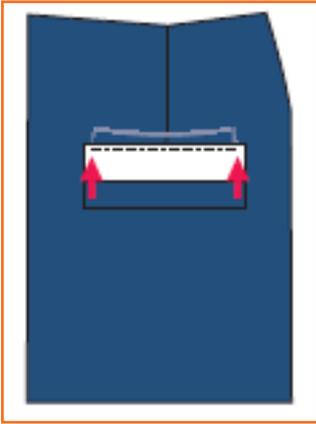
Step 3: Take one of the back pocket bags. Place it below the back piece in such a way that the top end of the back piece and the pocket bag are perfectly aligned. Make sure that pocket bag is aligned centrally to the dart.



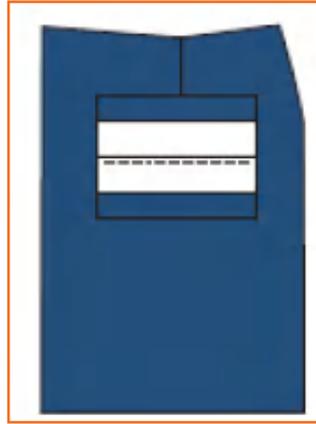
Step 2: Fold the fabric at the centre notch mark and make a dart by starting to stitch on the notch mark till the centre marking.



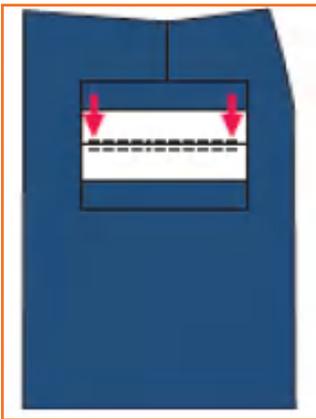
Step 4: Take one of the fused bone pieces and place it over the pocket markings in such a way that the top marks are visible and the bottom marks are covered by the bone pieces and are at equal distance from both sides.



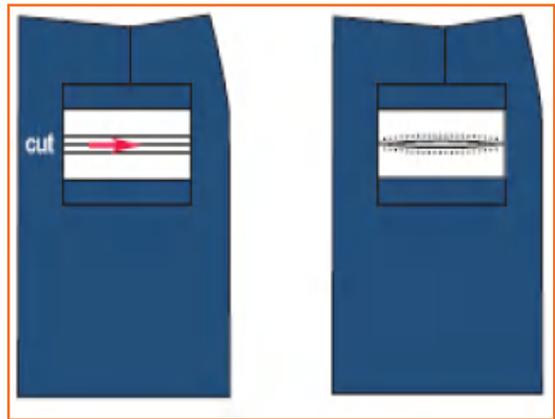
Step 5: Now put a 6 mm stitch starting from back rise side towards the side seam side. The first stitch should be at the notch mark side. Put back tack, both at the beginning and end of the stitch.



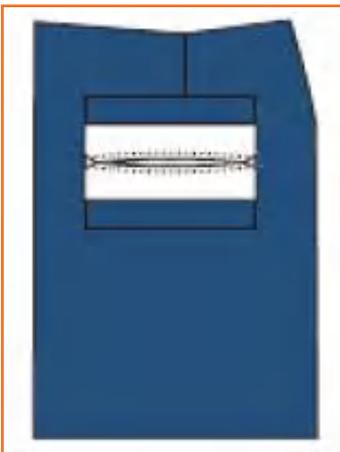
Step 6: Take the second fused bone piece and place it next to the stitched bone piece on the waist side.



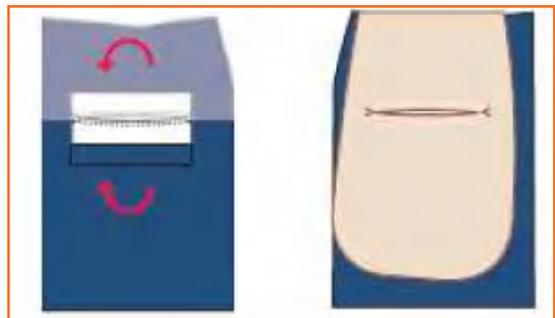
Step 7: Put 6 mm stitch starting from the side-seam side towards the back rise side.



Step 8: Cut the fabric between the two bones leaving 10–12 mm on both sides.



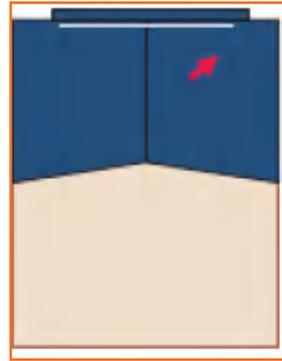
Step 9: Put 6 mm stitch starting from the side-seam side towards the back rise side.



Step 10: Cut the fabric between the two bones leaving 10–12 mm on both sides.



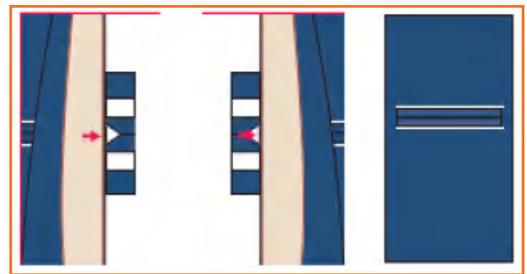
Step 11: Put a stitch on the edge of the folded portion next to the stitched portion.



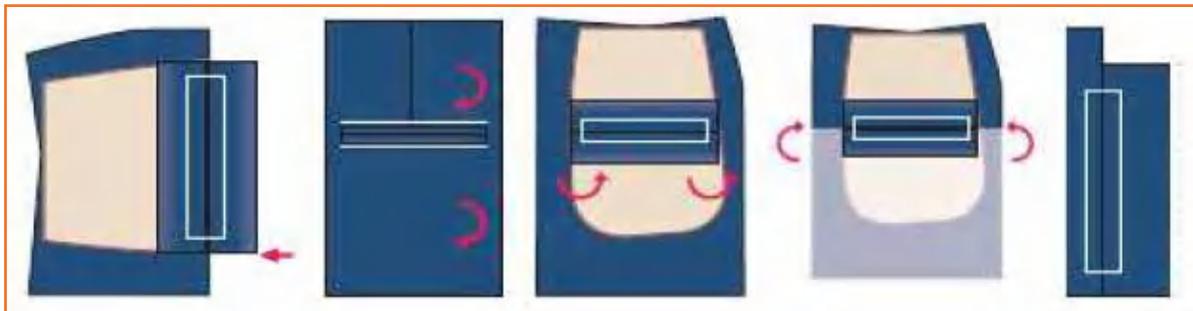
Step 12: Repeat steps 10 and 11 for the other bone.



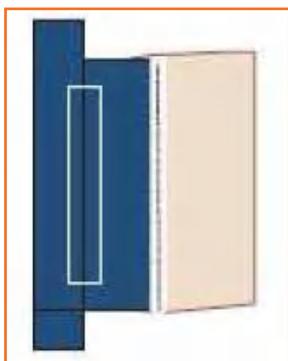
Step 13: Push the balance fabric inside.



Step 14: Put a stitch at the end of the cut portion.



Step 15: Put overlock stitch at the loose end of the bottom bone piece.



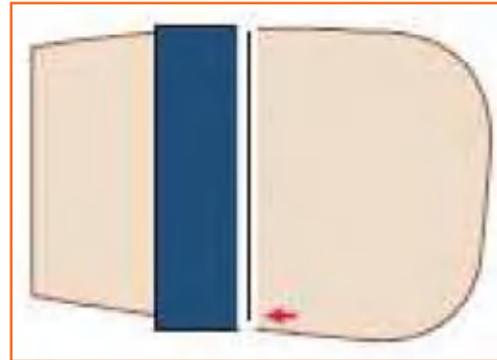
Step 16: Attach bone piece with the pocket bag using lockstitch.



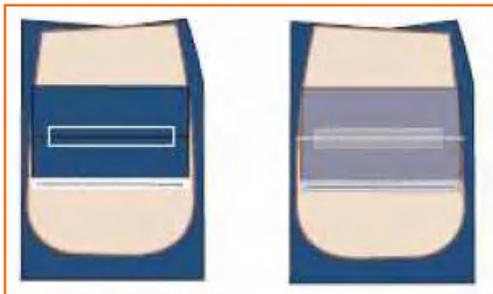
Step 17: Put overlock stitch on the back pocket facing.



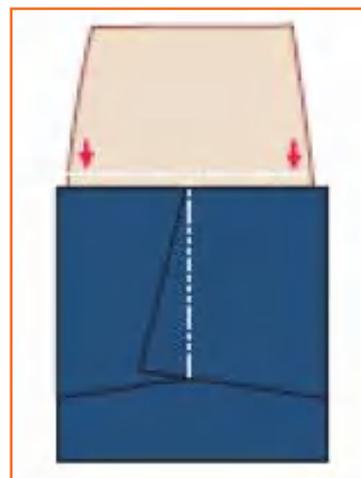
Step 18: Take the other piece of the pocket bag. Place the back pocket facing on top of the pocket bag at a distance of 2½ inches from top of the pocket bag.



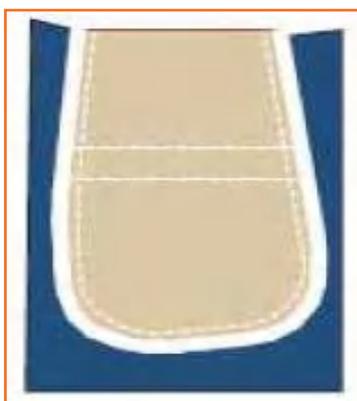
Step 19: Put a lockstitch over the overlock portion.



Step 20: Take the first pocket bag, which is already sewn to the back piece. Place the other pocket bag over it. Both the bags should match perfectly.



Step 21: Now put a stitch at the inner side to join the two pocket bags together.



Step 22: Put 5-thread overlock stitches starting from right (back rise side) to the left side.

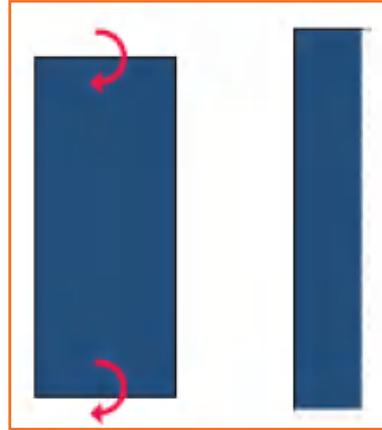


Step 23: Put 3 mm lockstitch at the waistline, starting from the left towards the right, to stitch the loose top end of the pocket bag with the fabric.

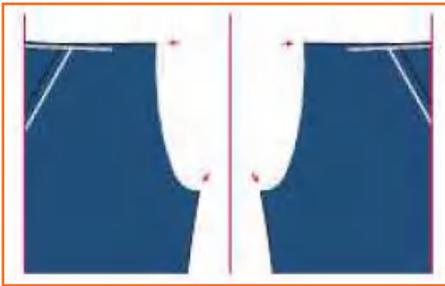
5.1.1.4 Fly Making and Attaching



Step 1: Take the fused J-fly piece and put overlock stitch on the face side of the fabric starting from bottom of the curved side till the top.



Step 2: Take the fly supportive part. Fold it into two equal parts and put over lock stitch on the long open side and one on the short open sides.



Step 3: Take the fused J-fly piece and put overlock stitch on the face side of the fabric starting from bottom of the curved side till the top.



Step 4: Take the left front piece and place the J-fly piece over the left front piece. Align the straight end of the J-fly with the front rise along with the backside of the J-fly facing up.



Step 5: Put a 6 mm lockstitch starting from the bottom to the top (waist line).



Step 6: Turn the J-fly piece and put an edge stitch on top of the fly from bottom to top. Make sure that the raw edges are facing towards the fly.

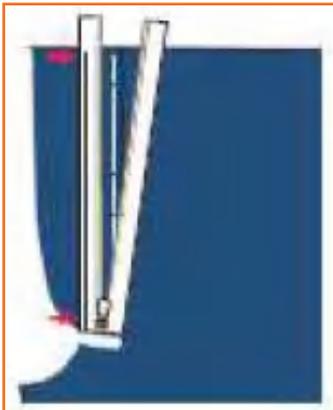
5.1.1.5 Zipper Attaching



Step 1: Take the zipper, open it and bring the slider down.



Step 2: Place the zipper with slider facing down over the fly piece at 8 mm from the straight edge at the top and 6 mm at the bottom. Align the bottom edge of the zipper with the curved portion of the fly piece.



Step 3: Put an edge stitch on the left side of the zipper from top to bottom.

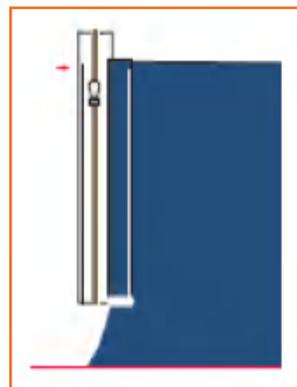
Step 4: Close the zipper and turn the piece 180o clockwise.



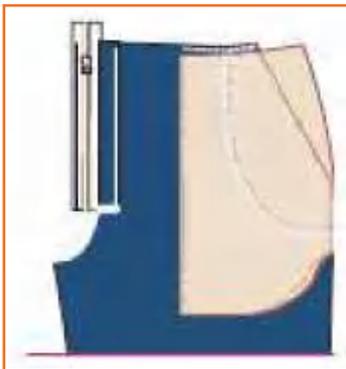
Step 5: Now put a 4 mm stitch starting from bottom to top.



Step 6: Take the fly supportive part. Place the zipper with slider facing up on the fly supportive part. Properly align the zipper end and the overlock side of the fly supportive part.



Step 7: Turn the fabric and put edge stitch on the zipper starting from bottom to top.



Step 8: Take the right front piece and place the front rise side over the zipper. Make sure that the waistlines of both the left and right front pieces match.



Step 9: Put 6 mm stitch starting from bottom to the top.



Step 10: Turn the stitched panels and bring the face side up.



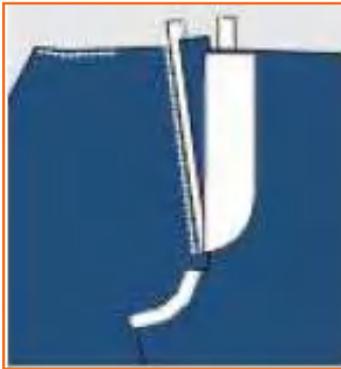
Step 11: Leave a gap of 1 mm between the zipper teeth and the edge of the fabric and put top-stitch.



Step 12: Open the zipper.



Step 13: Turn the left side front piece from the zipper side at the point of stitch.



Step 14: Place the ready pattern of J-fly over the left front piece on the front rise side.



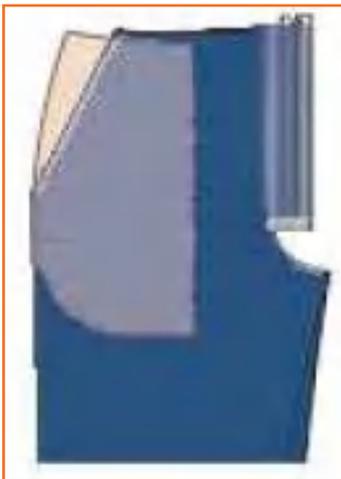
Step 15: Put lockstitch along the ready pattern starting from top to the bottom.



Step 16: Close the zipper and complete the J-stitch along the J-pattern.



Step 17: Put a top-stitch on the edge of the finished J-piece starting from bottom to top.



Step 18: Reverse the fabric and put 6 mm stitch on the curved portion of the front rise.



Step 19: Turn the piece so that the front side of the fabric is facing up. Put an edge stitch on front rise starting from bottom till the end of J-stitch.

5.1.1.6 Back Rise Attaching



Step 1: Take both the left and right back pieces. Match them face-to-face.



Step 2: Put 1 cm stitch at the back rise starting from top to bottom with back tack at both the top and bottom.



Step 3: Now put overlock stitches at the back rise starting from top to bottom.



Step 4: Turn the raw edges towards the left side and put top-stitch at the edge of the back rise.

5.1.1.7 Front and Back Piece Attaching



Step 1: Place front and back pieces in such a way that the face sides of both pieces face each other.



Step 2: Put 1 cm stitch throughout the right side starting from top to bottom.



Step 3: Turn the raw edges towards the back. Put topstitches at the edge starting from top to bottom for the right side and bottom to top for the left side.

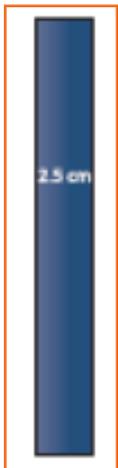


Step 4: Align the back and front rise seams and the open sides of the front and back.



Step 5: Put 5-thread overlock stitches starting from bottom to finish at other bottom side.

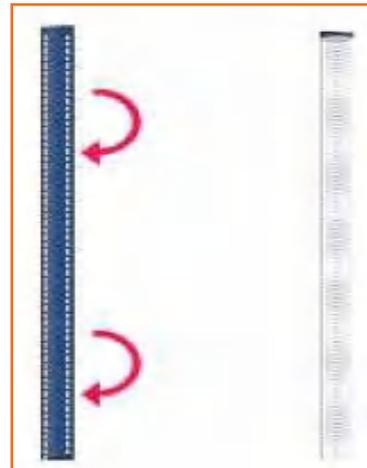
5.1.1.8 Belt Loop Making



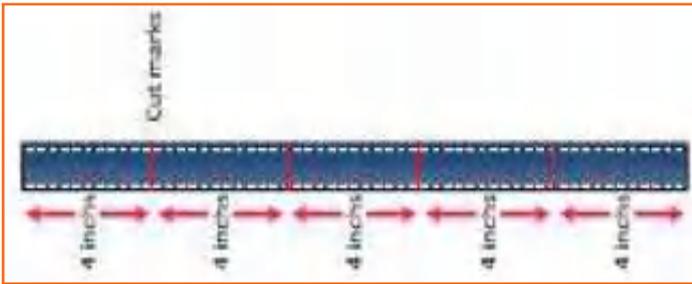
Step 1: Take a long strap, 2.5 mm wide, of the fabric used in body.



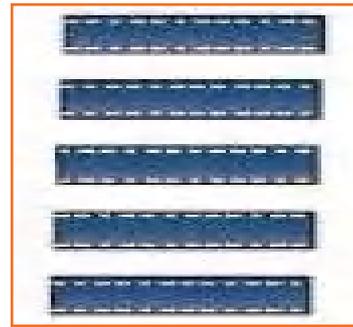
Step 2: Turn the raw edges towards the left side and put top-stitch at the edge of the back rise.



Step 3: Start sewing and feeding the fabric properly.

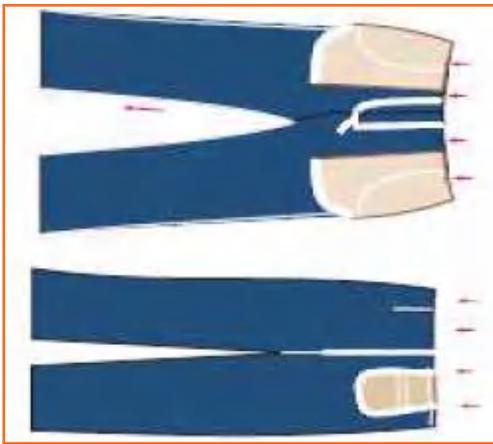


Step 4: Put the marking on the strap for the required length.



Step 5: Cut the strap of desired length.

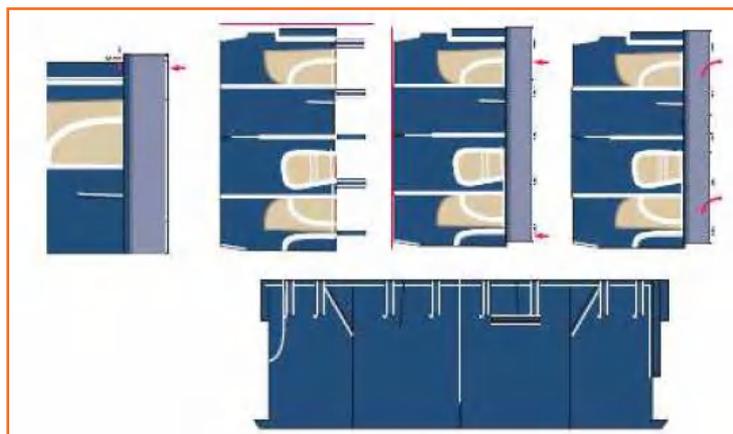
5.1.1.9 Belt Loop Attaching



Step 1: Mark the positions on the waistline where the loops are to be attached.

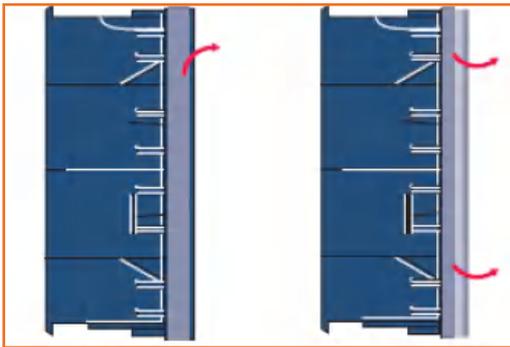


Step 2: Place the belt piece, with the folded side up on the backside of the right side front. Belt band should be extended by $\frac{1}{2}$ inch.

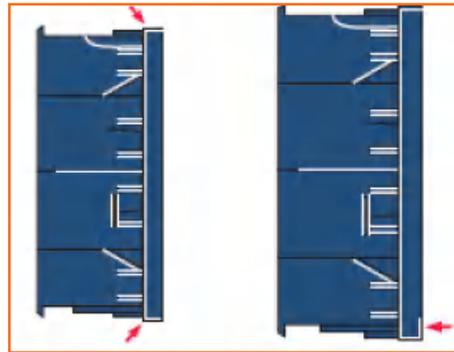


Step 3:

- Put a lockstitch adjacent to the folded part of the belt piece.
- Place the loop with the side facing the fabric and continue to stitch till the end by placing other loops at required positions.

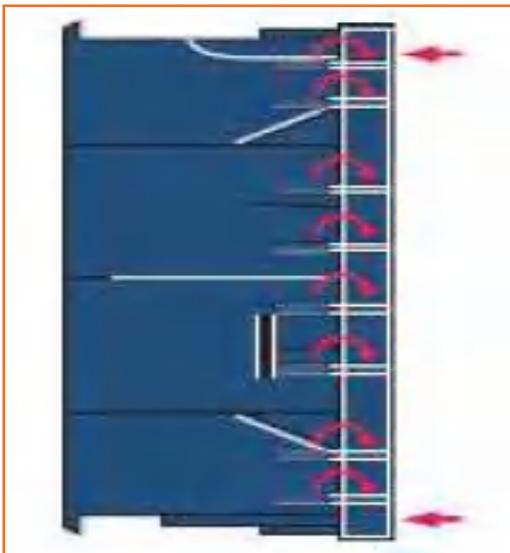


Step 4: Turn the belt piece in such a way that the fused side is up.

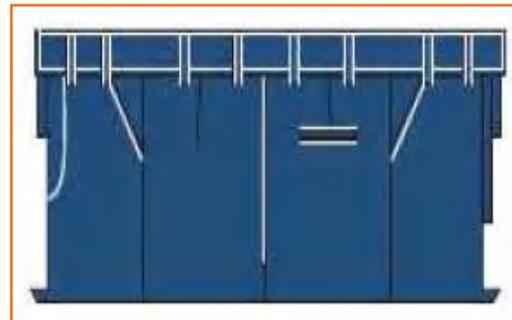


Step 5:

- Stitch the open vertical end on both sides starting with back tack.
- Now again turn the belt piece so that the face side is facing up.

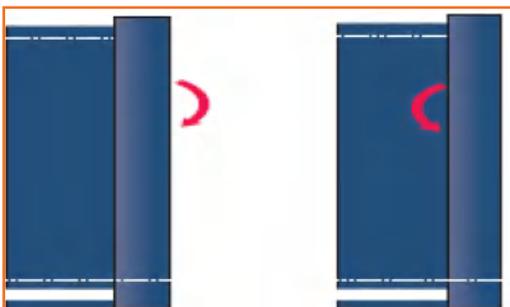


Step 6: Now put edge stitches throughout the length of the belt on the bottom side.

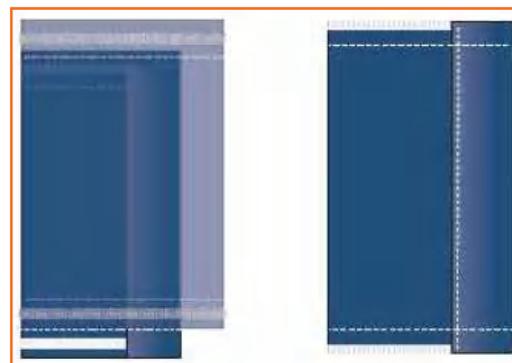


Step 7: Finally put edge stitches throughout the top side of the belt and stitch the loops at appropriate positions.

5.1.1.10 Bottom Hemming



Step 1: Fold the fabric as per the design requirement.

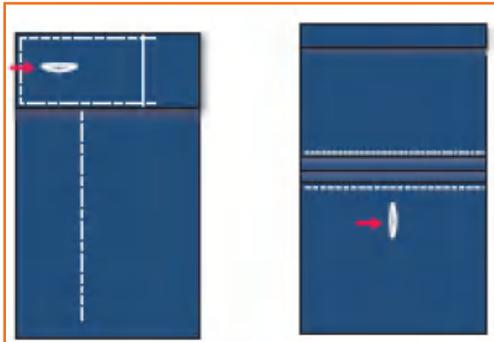


Step 2: Start putting the edge stitch from the inseam and finish at inseam. Repeat steps 1 and 2 for the other leg.

5.1.1.11 Bottom Hemming Using Folder

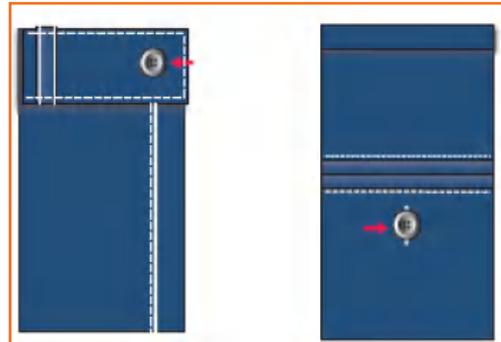
- Step 1:** Fold the bottom of right trouser leg 1 cm inside. Again fold the fabric to the required width and put 2 or 3 stitches.
- Step 2:** Place the attachment in such a way that the folded portion is fitted into the groove of the folder and then start stitching. Feed the fabric properly.
- Step 3:** Repeat steps 1 and 2 for the other leg.

5.1.1.12 Button Holing



- Step 1:** Make the buttonhole on the left hand side belt as per design requirement. Make another buttonhole on the back pocket.

5.1.1.13 Button Attaching

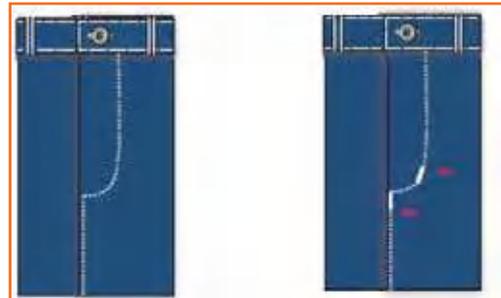


- Step 1:** Sew the button on the right hand side belt as per the design requirement and sew one button at the back pocket.

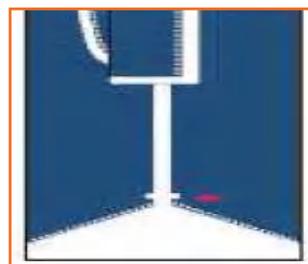
5.1.1.14 Bartacking



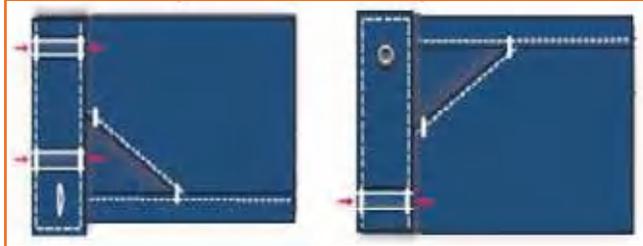
- Step 1:** Put bartack as per design requirement. Normally bartacks are put at both ends of left and right front pocket mouth and at the end of the front and back pocket joints.



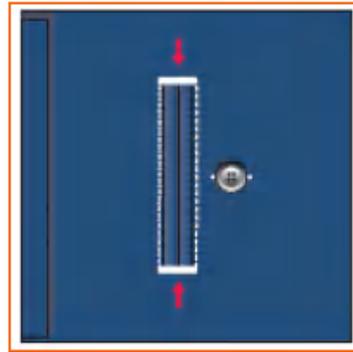
- Step 2:** Put the bartack at the end of the J-fly and at the curve of the J-fly.



- Step 3:** Put the bartack at the joining of front and back rise.



Step 4: Put the bartack at the top and bottom of each belt loop.



Step 5: Put the bartack at both ends of the back pocket.

5.1.2 A Stitching a Traditional Shirt

Parts of a Shirt

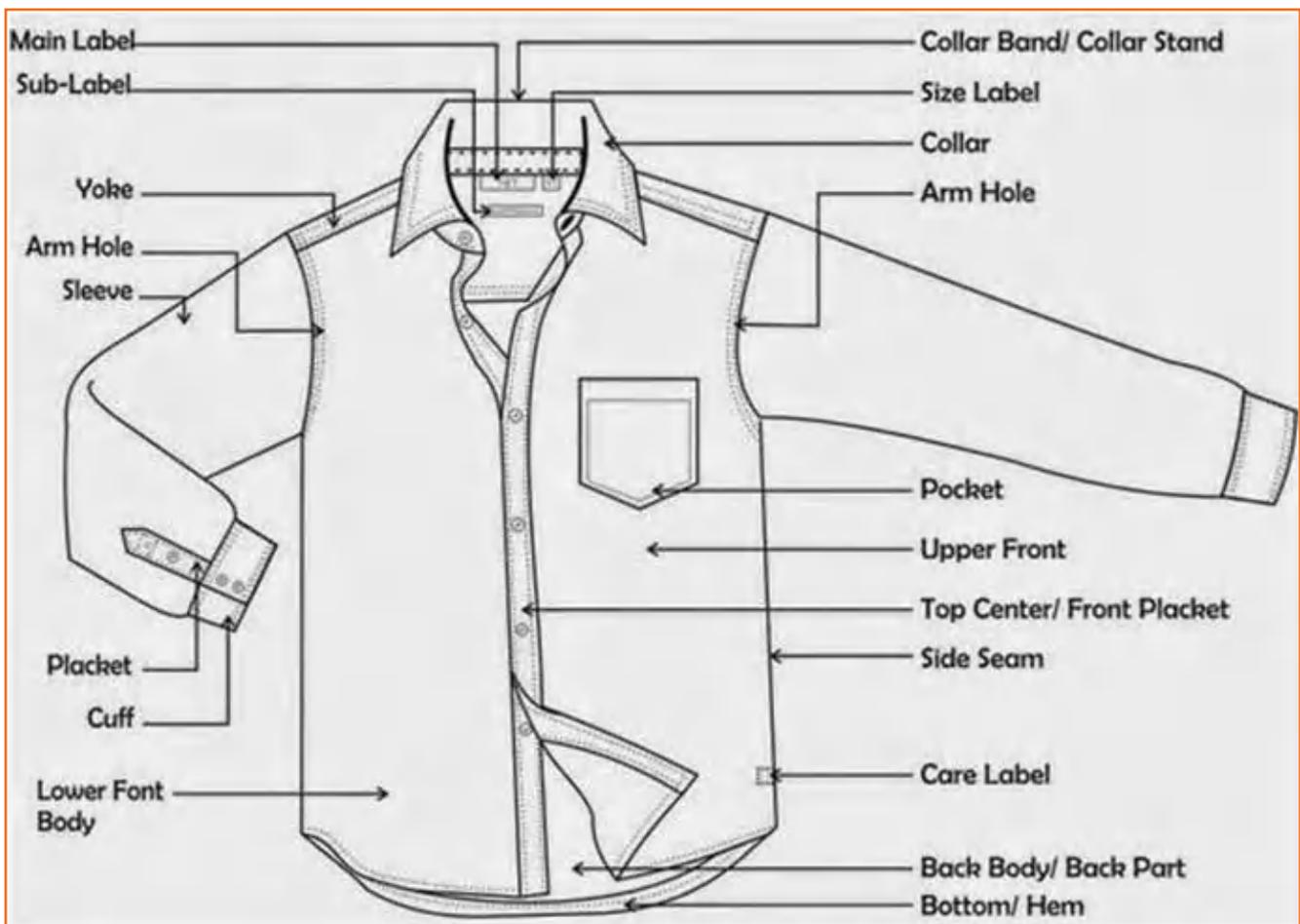
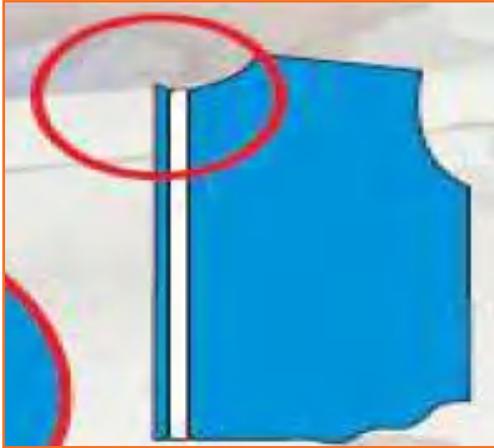
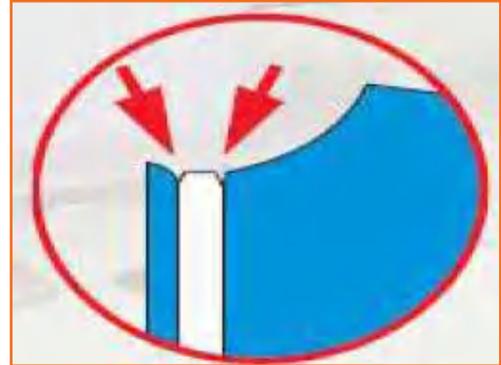


Fig.5.1.2: Parts of a Traditional Shirt

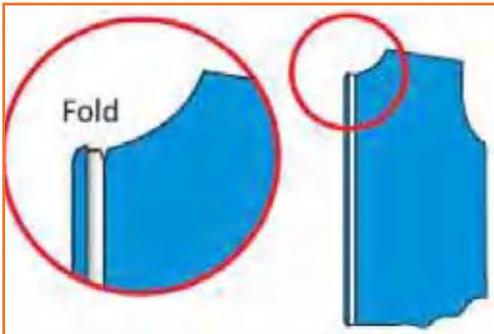
5.1.2.1 Left Hand Side Placket



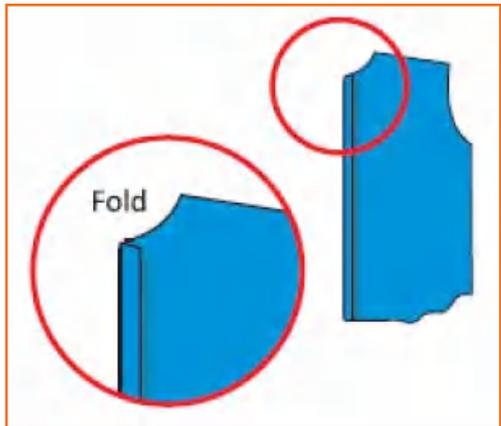
Step 1: Take the fused left hand side placket.



Step 2: Locate the two notch marks. There is one at 1.5 cm and the other at 5.5 cm from the edge.



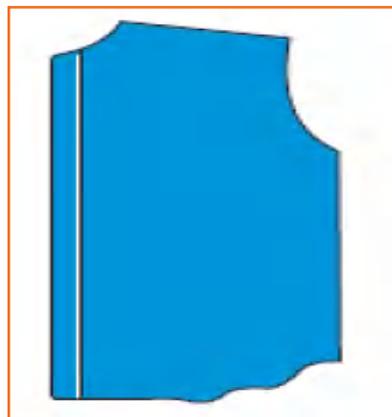
Step 3: Now, fold the fabric 1.5 cm till the first notch mark and press the folded part with an iron.



Step 4: Now, fold the fabric 4 cm to the second notch mark. The placket should be 4 cm wide.



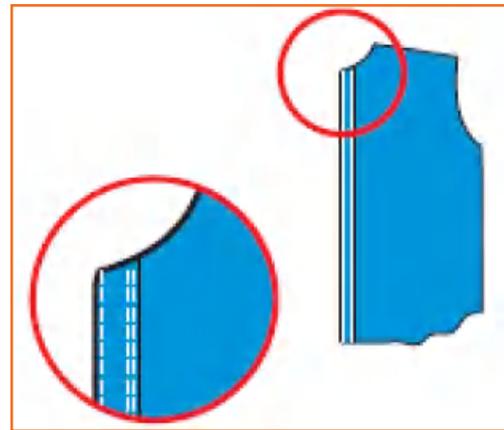
Step 5: Now, crease the folded part again with an iron.



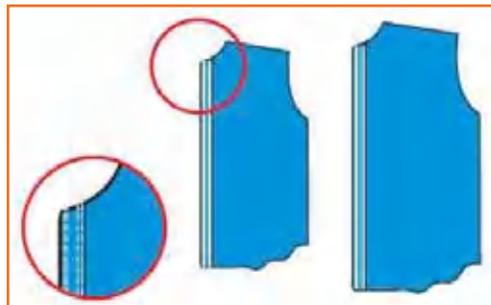
Step 6: Start from the bottom and stitch the inner side of the placket using edge stitch.



Step 7: Again from the bottom, stitch the outer side of the placket using edge stitch.

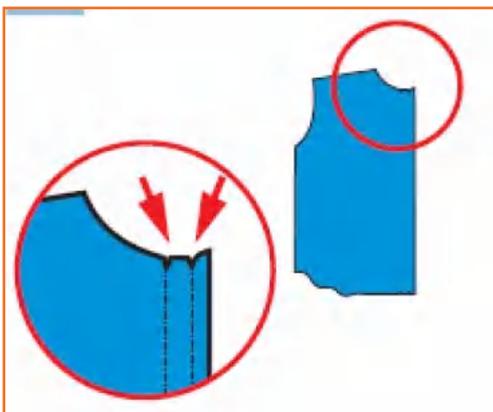


Step 8: Identify the reference mark on the throat plate and put a 4 mm stitch on the outer side of the placket from the bottom.



Step 9: Put a 4 mm stitch on the inner side of the placket from the top.

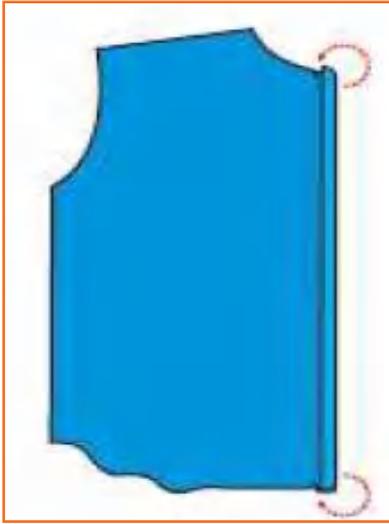
5.1.2.2 Right Hand Side Placket



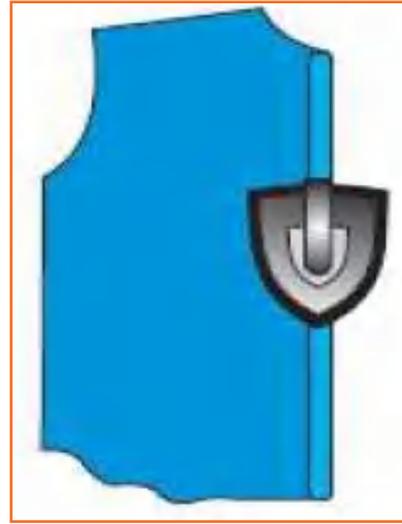
Step 1: Identify the notch marks on the back side of the fabric.

Step 2: Fold the fabric 1cm towards the notch mark or the neck, on the back of the fabric.

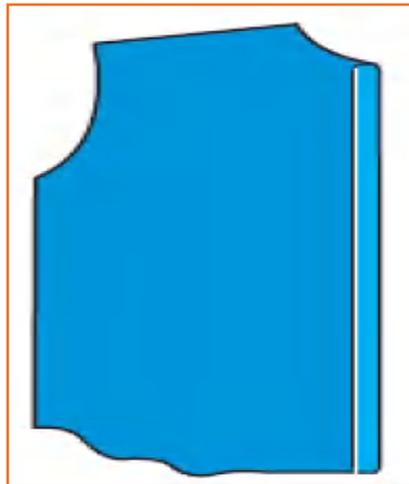
Step 3: Crease folded part.



Step 4: Now, fold the fabric 2.5 cm till the second notch mark.



Step 5: Crease the fold with an iron again like in Step 3.

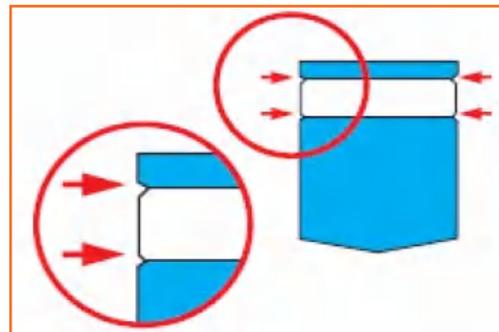


Step 6: Start from the top and stitch the inner side of the placket using an edge stitch.

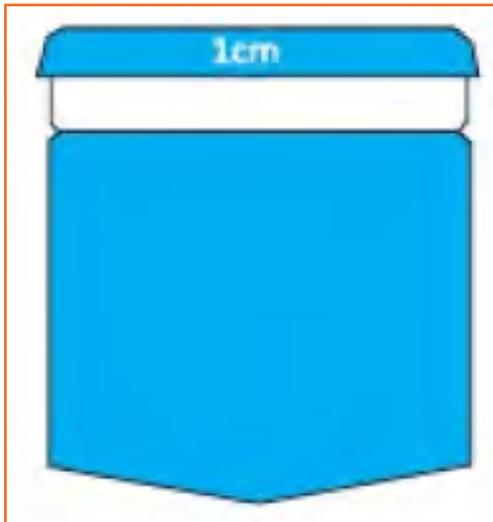
5.1.2.3 Pocket Making and Stitching



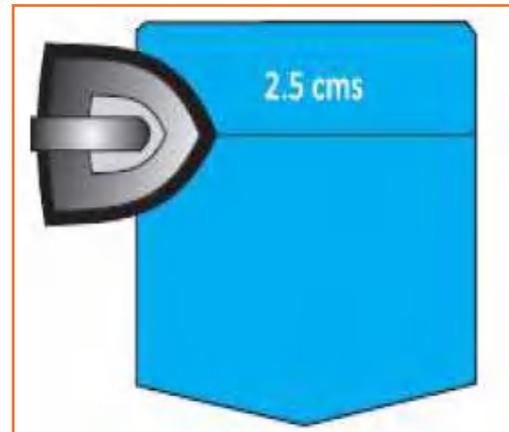
Step 1: Take the fused pocket piece.



Step 2: Locate the notch marks.

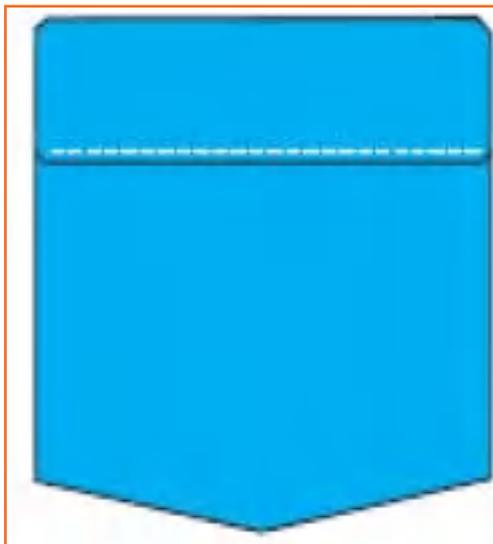


Step 3: Now, fold the top part of the fabric 1cm till the first notch mark and press the folded part with an iron.

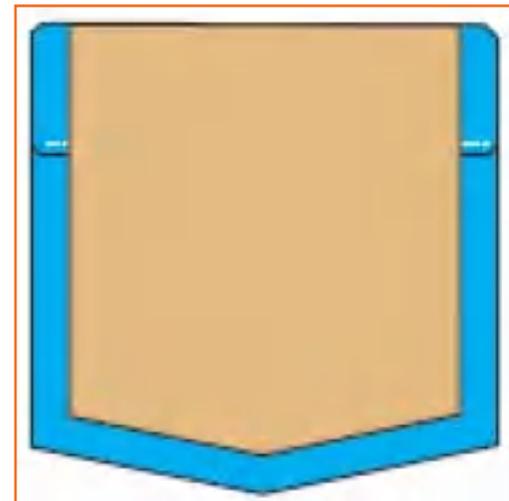


Step 4:

- Now, fold the fabric 2.5 cm to the second notch mark.
- Now, crease the folded part again with an iron.



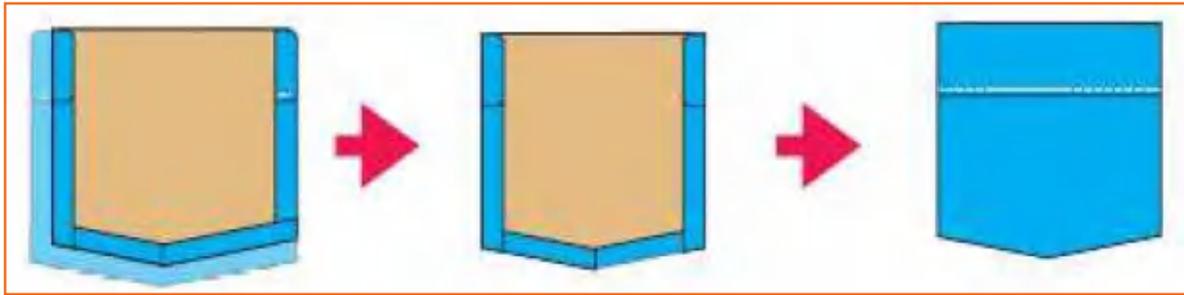
Step 5: Stitch the inner side of the pocket mouth using edge stitch.



Step 6: Take the ready pattern given and place it over the pocket.

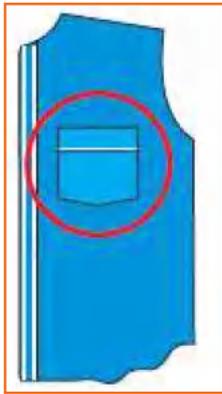


Step 7: Now, fold the three sides 1 cm each and crease them as you fold.

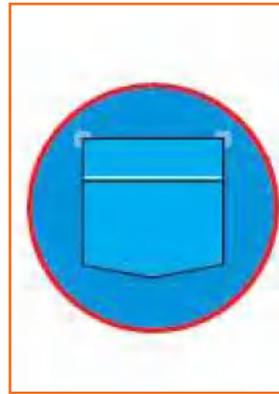


Step 8: The pocket is now ready to be attached.

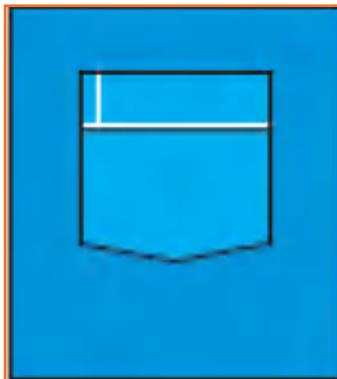
5.1.2.4 Attaching the Pocket



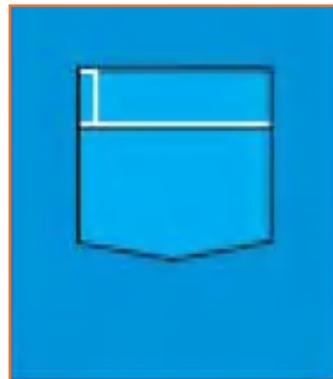
Step 1: Place the pocket piece on the left half of the shirt front.



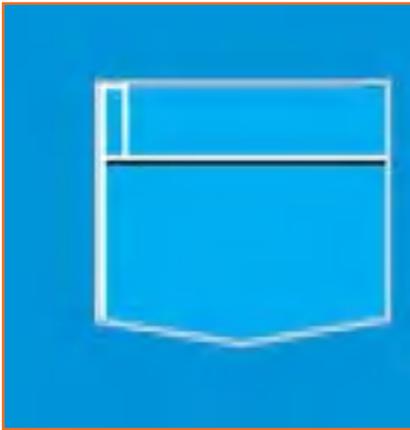
Step 2: Match the right side of the pocket with the markings on the front of the fabric.



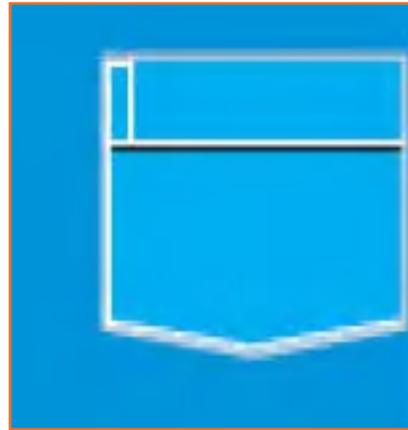
Step 3: Sew the pocket from the placket side. Put 4 stitches followed by a back tack.



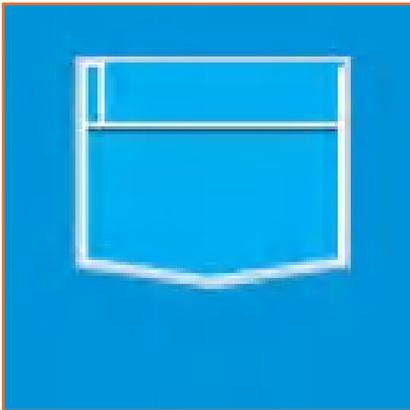
Step 4: Now, sew till the top using 4 mm stitch.



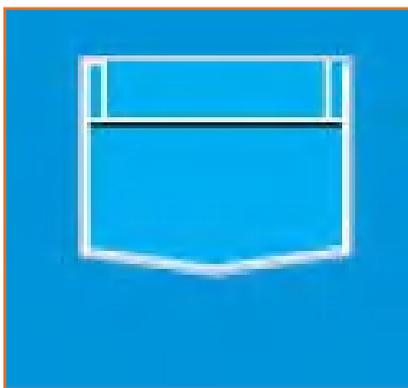
- Step 5:**
- Turn the fabric in a clockwise direction. Keep the needle in the fabric.
 - Stitch at the edge of the pocket till the end.



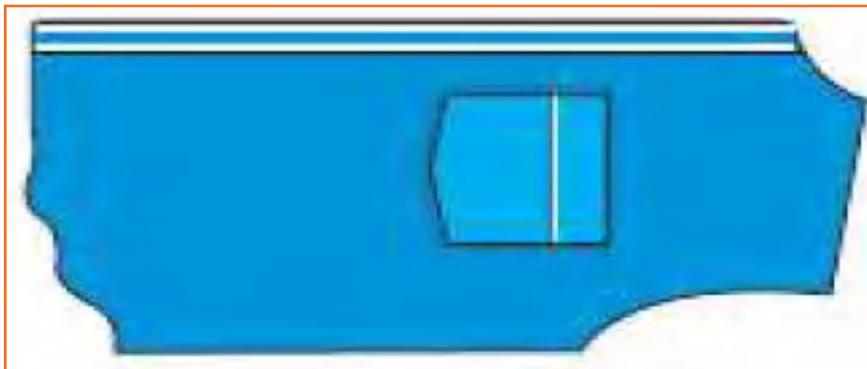
- Step 6:**
- Again, turn the fabric clockwise.
 - Put the stitch at the edge till the end.



- Step 7:**
- Again, turn the fabric clockwise. Stitch the edge of the bottom part of the pocket.
 - Step 10: Turn the fabric clockwise and stitch the edge of the other side of the pocket.

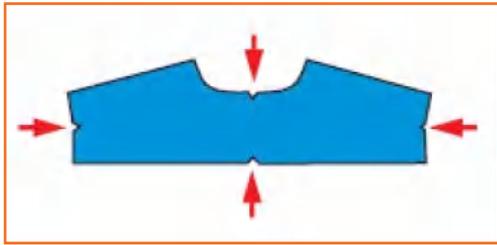


- Step 8:**
- Again, turn the fabric clockwise and stitch up to 4 mm.
 - Turn the fabric. Stitch up to the pocket mouth and put a back tack.



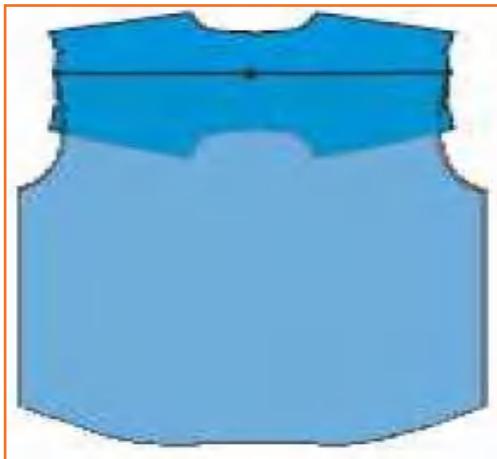
- Step 9:** Now, the pocket is fully attached.

5.1.2.5 Attaching Yoke



Step 1: First, check for the following notches:

- One notch at the centre of the back piece of the shirt.
- 4 notches in the yoke piece:
 - » One at the centre of the reverse side of the yoke piece.
 - » One at the centre of the neckline.
 - » One at the centre of the left armhole.
 - » One at the centre of the right armhole.



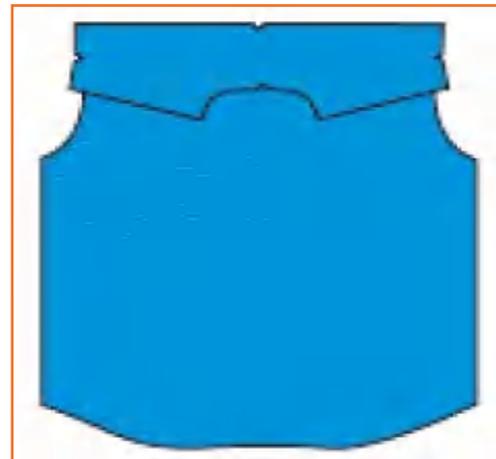
Step 4: The right side of the inner yoke piece should face the reverse side of the back piece of the shirt. Take the other yoke piece and place it on top of the back piece of the shirt and align with the notch.



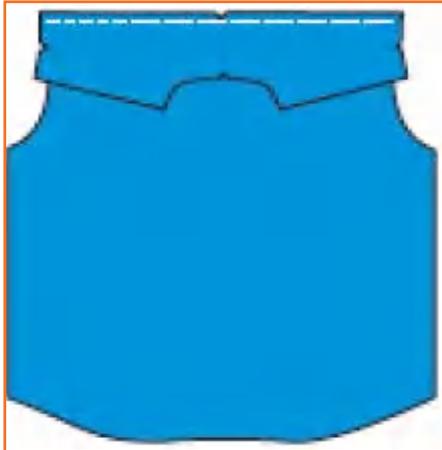
Step 2: Keep one piece of the yoke on the sewing Fig.



Step 3: Place the back piece of the shirt on top of the yoke in alignment with the two notches.



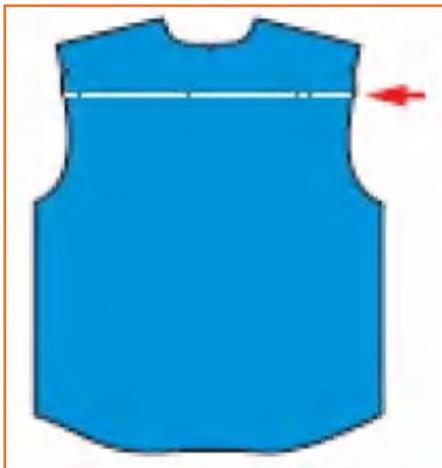
Step 5: The alignment should be such that the right side of the outer yoke piece faces the right side of the back piece of the shirt.



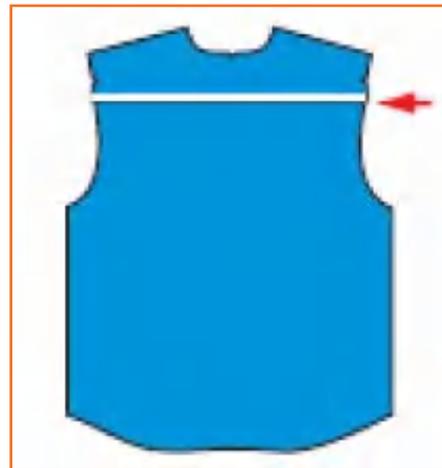
Step 6: Put a stitch of 1cm on the edge of the 3 pieces—2 yoke pieces and the back piece of the shirt.



Step 7: Turn the yoke and crease it with your fingers.



Step 8: Now, put a top-stitch at the edge first.

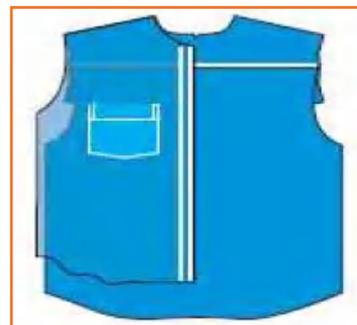


Step 9: Finally, put a 4 mm stitch from the edge.

5.1.2.6 Attaching Yoke to the Front



Step 1: Keep the front side of the back piece of the shirt on the top.



Step 2: The alignment should be such that the right side of the outer yoke piece faces the right side of the back piece of the shirt.



Step 3: The pieces are stitched at a distance of 1 cm from the edge leaving the bottom-most ply of the yoke.



Step 4:

- The right side of the front and the right side of the back piece of the shirt are placed together by matching the yoke. The placket should be towards the centre.
- Repeat Step 3 for right side.



Step 5: Hold the edge of the yoke from the armhole side in one hand and the unstitched yoke piece in the other hand.



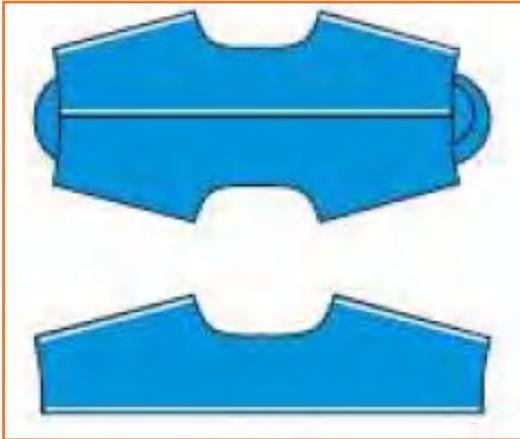
Step 6: Turn and match the unstitched yoke piece to the stitched yoke piece.



Step 7: Roll the body fabrics and insert it between the two yoke pieces.



Step 8: Put a 1 cm stitch throughout.



Step 9: Hold the front and the back pieces and stretch them.



Step 10: Put a top-stitch at the edge on both sides.

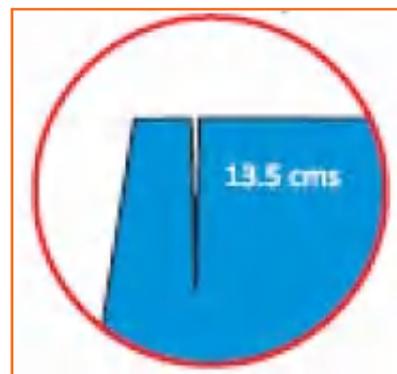


Step 11: Finally, put a 4 mm stitch on both sides.

5.1.2.7 Upper Sleeve Placket Preparation



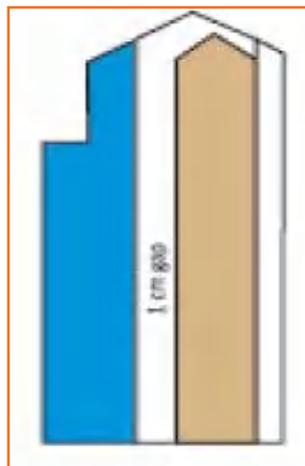
Step 1: Take the two sleeve pieces and identify the notch marks on the armhole side in each one of them.



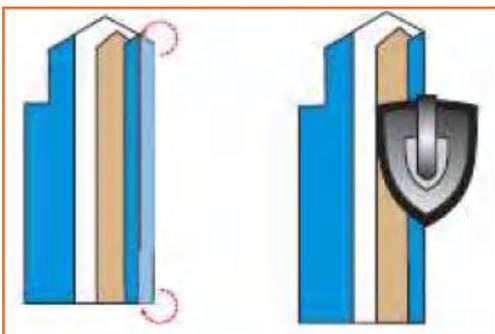
Step 2: Look at the reverse side of the sleeve and ensure that there is a cut of 13 cms or 5 inches at the bottom.



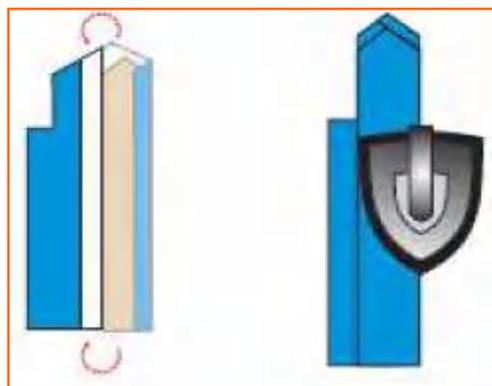
Step 3: Keep the two sleeve plackets with their straight sides facing each other.



Step 4: Take the ready pattern. Leave a gap of 1 cm and place it over the longer side of the placket.



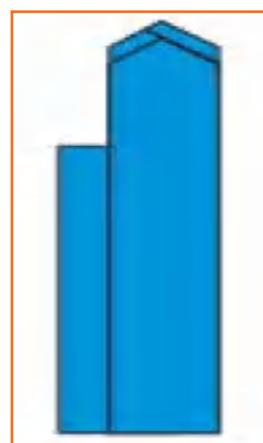
Step 5: Use the pattern and fold the longer side of the placket 1 cm and iron it.



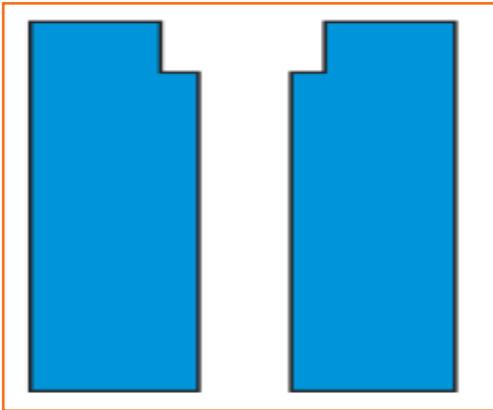
Step 6: Again, using the pattern, fold the longer side 3.5 cm and iron it.

Step 7: Use the pattern and fold the upper portion of the placket in a V-shape. Iron it well to form crease.

Step 8: Use the pattern and fold the upper portion of the placket in a V-shape. Iron it well to form crease.

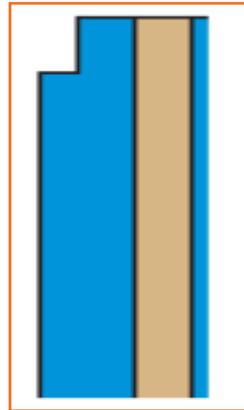


5.1.2.8 Lower Sleeve Placket Preparation



Step 1: Keep both the lower sleeve plackets on the Fig.

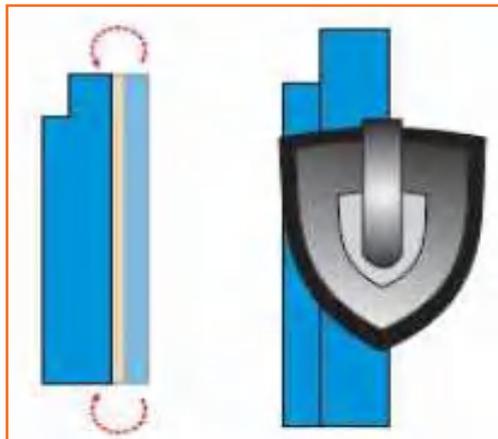
They are unfused and shorten in length than upper sleeve plackets.



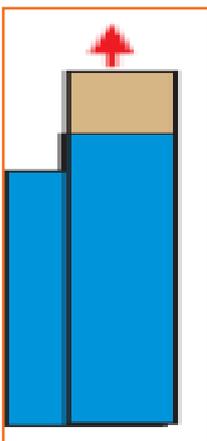
Step 2: Place the ready pattern on the placket.



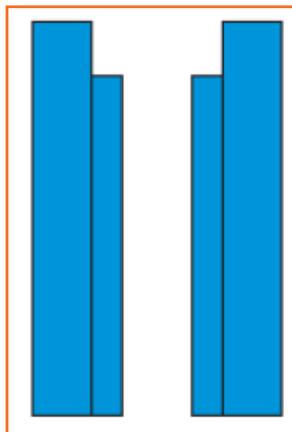
Step 3: Use the pattern and fold 1 cm. Use the iron to crease it.



Step 4: Again, use the pattern and fold 2 cm. Use the iron to crease it.



Step 5: Remove the ready pattern.

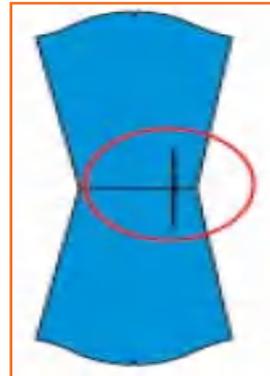


Step 6: Repeat Steps 2 to 5 for the other placket.

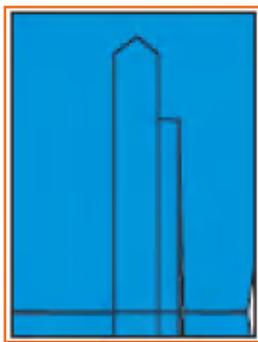
5.1.2.9 Attaching Plackets to the Sleeve



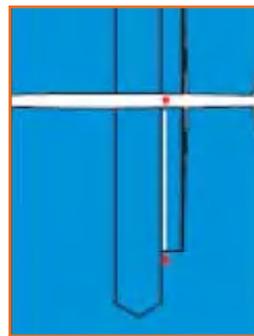
Step 1: Place the two sleeves on top of each other and align the cut sides.



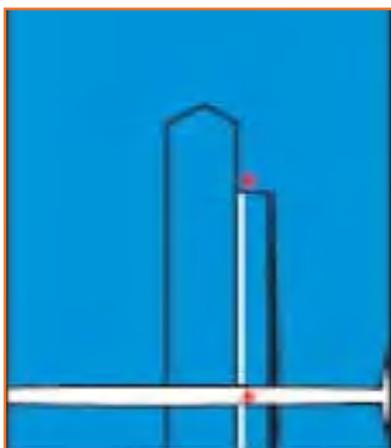
Step 2: Take the two upper sleeve plackets and place them on the longer cut side of the sleeves. Ensure that the folded side is on top.



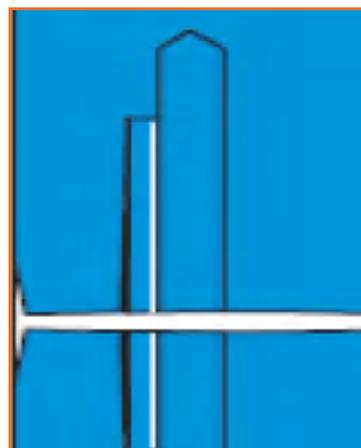
Step 3: Take a set of sleeve placket and sleeve. Align the edges of the sleeve placket with the longer cut part of the sleeve.



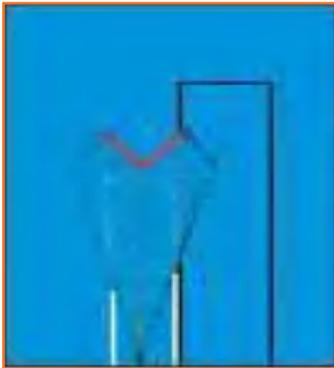
Step 4: Stitch the placket edge. Take the other set of sleeve and sleeve placket. Stitch the placket edge.



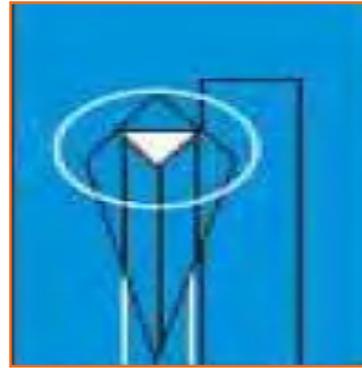
Step 5: Turn the fabric such that the cut part of it faces you.



Step 6: Now, place the lower placket on the shorter cut part of the fabric and stitch the edge along the length. Repeat Step 3 and Step 6 for the other set of sleeve plackets and sleeves.

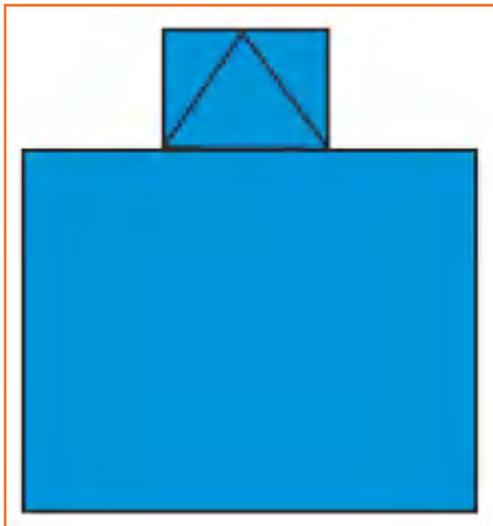


Step 7: Make two v-shape cuts on the top part of the placket-stitch.

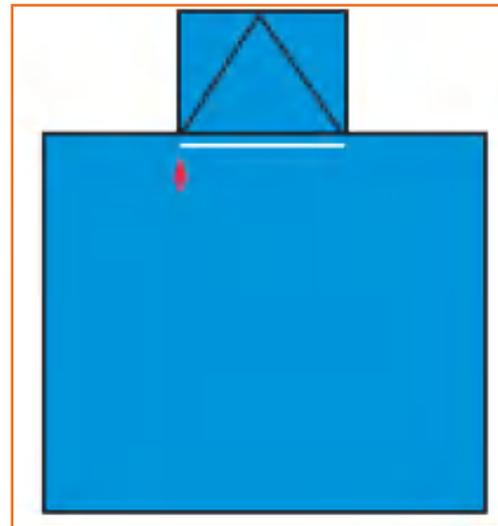


Step 8:

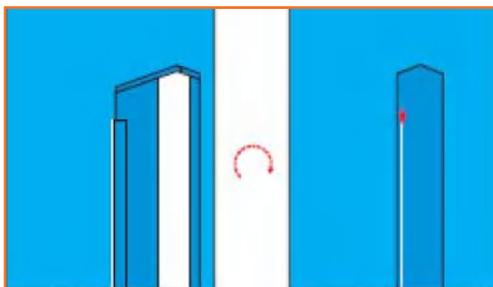
- Smoothen the lower placket and turn it to the reverse side.
- Stitch the edged side of the lower placket till the end.
- Turn the v-shaped cut to the upper side.



Step 9: Place the placket on top of the v-shaped cut.

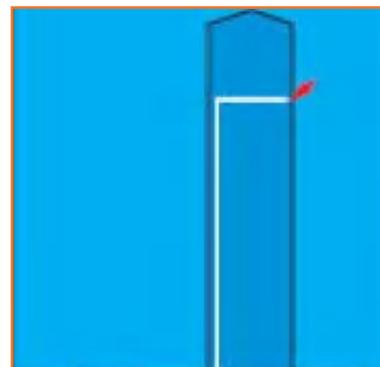


Step 10: Hold the placket and the cut, together and put a stitch at the bottom of the cut.

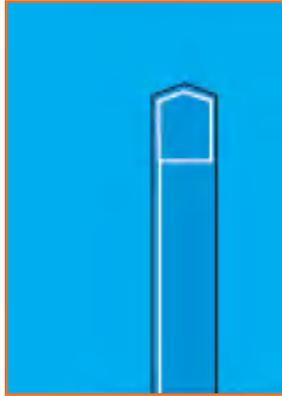


Step 11:

- Turn the upper placket over and put an edged stitch till the end.
- Turn the fabric clockwise. Align the upper and lower plackets.

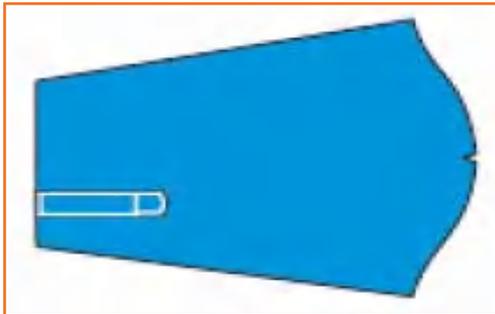


Step 12: Stitch till the end of the plackets.

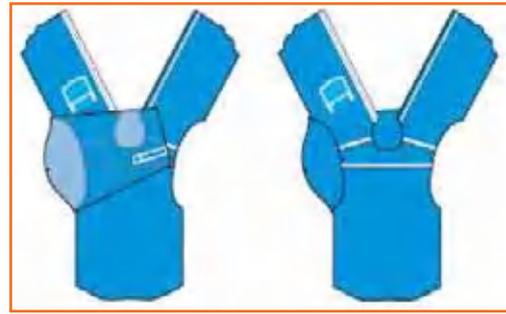


- Step 13:**
- Turn the fabric counter-clockwise. Put an edgestitch on all the edges of the box of the placket.
 - Repeat Step 9 to Steps 7-13 for the other sleeve plackets.

5.1.2.10 Attaching the Sleeve



- Step 1:** Take the sleeve piece. Ensure the armhole faces you. Also, the longer cut edge should be on the right hand side. The sleeve should be attached to the left hand side armhole.



- Step 2:** Match the left front piece with the armhole. Place the shirt front above and the sleeve piece below.



- Step 3:** Attach the left front with the left sleeve with a 1 cm stitch.



- Step 4:** Take the right sleeve and place it on the machine. Ensure that the longer cut portion is to the left and facing away from you.



Step 5: Match the notch marks and attach the sleeve armhole with the body armhole by putting a 1 cm stitch.



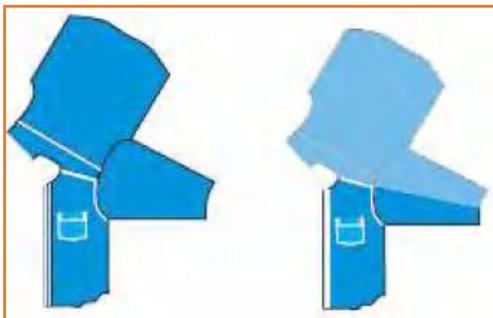
Step 6: Put an over-lock stitch at both the armholes. If top-stitch is required on the armhole, the sleeve should be kept up and the body part of the shirt should be kept down while putting the over-lock stitch. In case top-stitch is not required, the body part of the shirt should be kept up and the sleeve down.



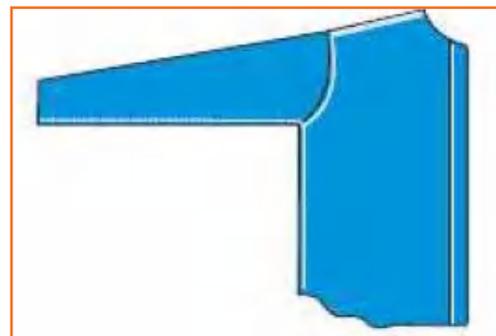
Step 7:

- While putting top-stitch, keep the margin towards the body. Put an edge stitch followed by a 4 mm top-stitch.
- Repeat the above steps for the other sleeve piece.

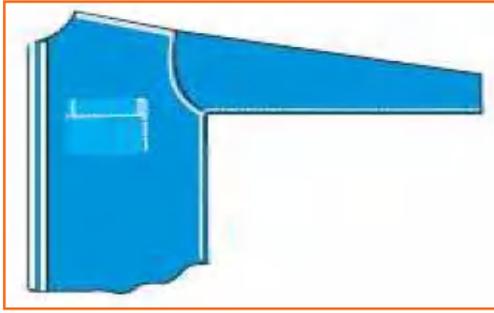
5.1.2.11 Side Seam



Step 1: Match the armhole and align the loose ends.

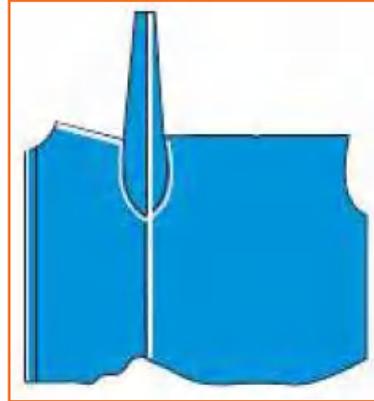


Step 2: Take the right hand sleeve. Stitch 1 cm from the sleeve bottom and continue till side bottom.



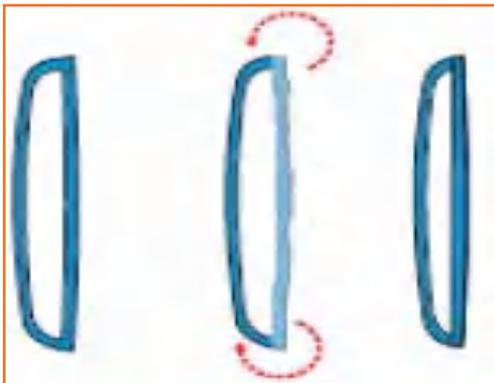
Step 3: Take the left hand sleeve. Stitch 1 cm from the sidebottom up to the sleeve bottom.

- Turn the fabric margin towards back side and sew the top-stitch by first sewing edge stitch and then 4 mm stitches on both the sides.

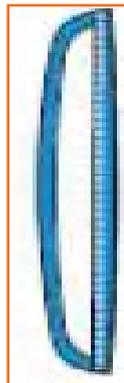


Step 4: • Put the overlock stitch on both sides, keeping the front part on the top.

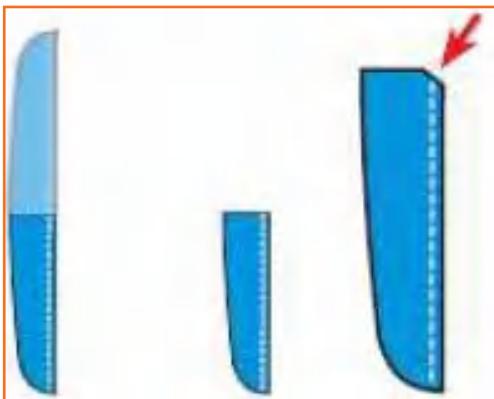
5.1.2.12 Collar and Neckband Preparation



Step 1: Take the fused neckband piece. Turn the bottomend of the piece with your hand.



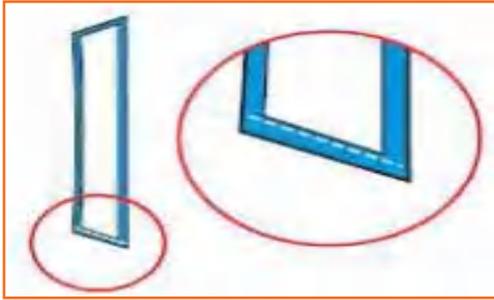
Step 2: Turn the fusing side down. Put a 4 mm stitch at the top.



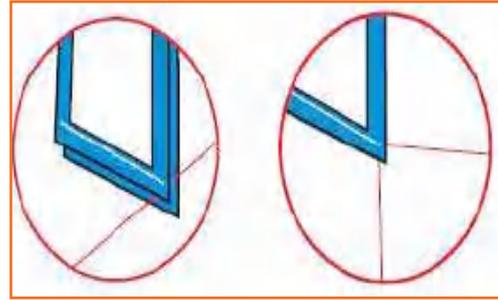
Step 3: Fold the neckband and cut a notch at the centre of the upper side.



Step 4: Take the fused collar piece and place it on the collar piece that is not fused. The right side of the fused collar should face the right side of the unfused collar.



Step 5: Start stitching at a gap of 1 mm from the fusing material from the collar base side.



Step 6: Stop the sewing machine one stitch before the collar point with the needle down. Insert an extra thread between the two fabric layers touching the needle.

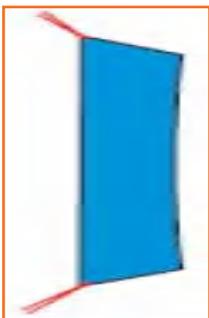


Step 7:

- Put one stitch and stop the sewing machine with the needle down. The thread will be at the back of the needle side.
- Hold both ends of the thread and bring it towards the other side of the collar.
- Put stitches at a distance of 1mm from the fused material on the remaining collar.
- Repeat steps 6, 7, 8, and 9.

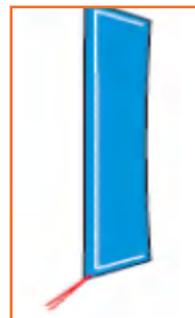


Step 8: Now, put stitches at a distance of 1 mm from the fused material.

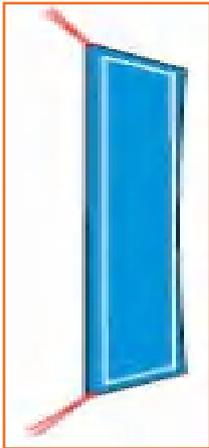


Step 9:

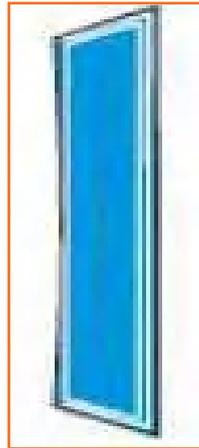
- Put back tack stitch at both the ends.
- Cut both the collar points and turn the collar.
- Stretch the threads to give proper shape to the collar.



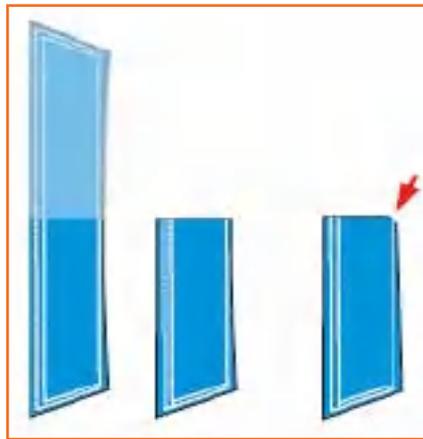
Step 10: Put a 4 mm stitch on all three sides of the collar. Keep the lower fabric stretched to avoid wrinkles.



Step 11: Put a 2 mm stitch on the open side of the collar.

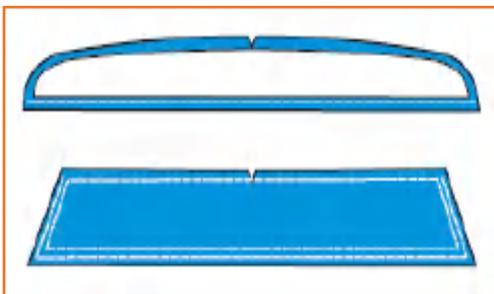


Step 12: Put edge stitch on the three sides of the collar.



Step 13: Fold the collar and put a notch mark at the centre.

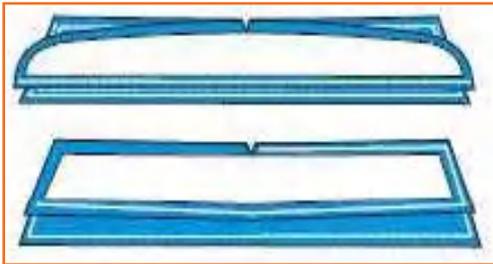
5.1.2.13 Collar and Neckband Attachment



Step 1: Place the neckband and collar face to face.



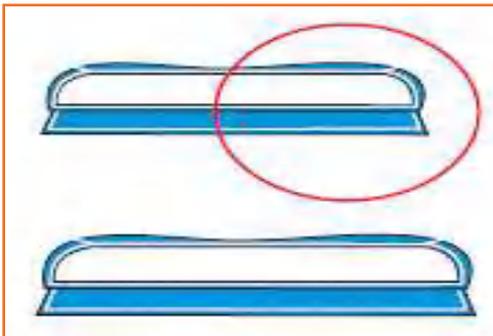
Step 2: Align the notch and the band of the collar.



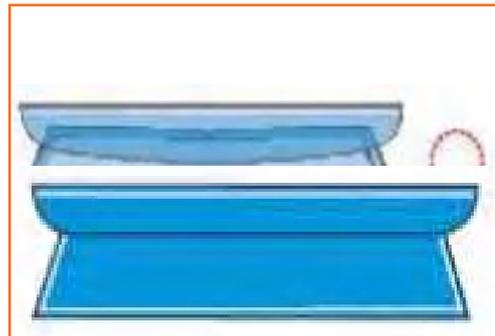
Step 3: Start stitching from the notch point leaving a gap of 1 mm. Repeat this stitch from the notch point to both ends.



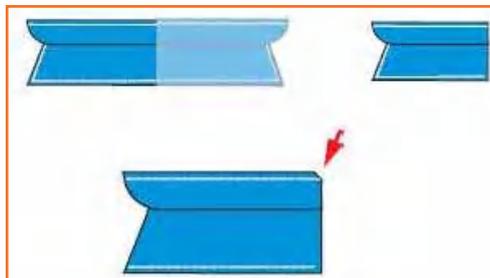
Step 4: Take the other neckband piece without fusing. Place it below the ready neckband collar piece.



Step 5: Now, start stitching from the neckband bottom portion, till the other end.



Step 6: Turn the neckband piece.



Step 7: Fold the piece and put a notch at the centre. The folded part is now refolded and another notch is put.

5.1.2.14 Collar Attachment to Body



Step 1: Match the three notches on the neckband with the two shoulder seams of the body and the centre notch.



Step 2: Keep the left hand side with face up on the Fig. Match the edge of the front placket with the edge of the collar band.



Step 3: Put the stitch just below the fused portion of the band till the end.

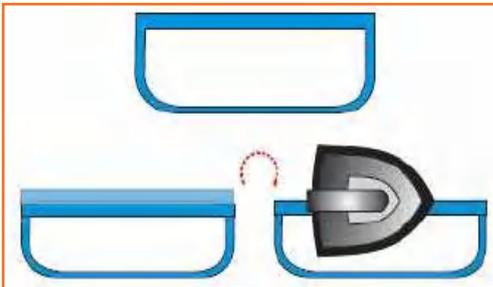


Step 4: Starting from the neckband's centre, put edge stitch towards the right side.

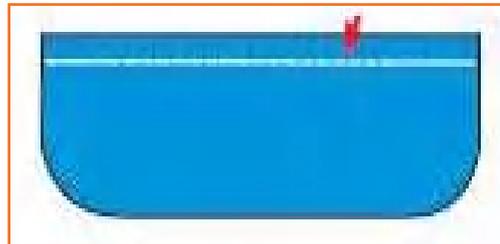


Step 5: Turn and continue to put edge stitch till the other end.

5.1.2.15 Cuff Preparation



Step 1: Fold the fabric edges on the straight side of the cuff and iron it.



Step 2: Put a 4 mm top-stitch.



Step 3: Take the unfused piece of the cuff and place it below the fused cuff .



Step 4: Stitch the two curved and one straight side by leaving a 1 mm gap.



Step 5: Turn the cuff .

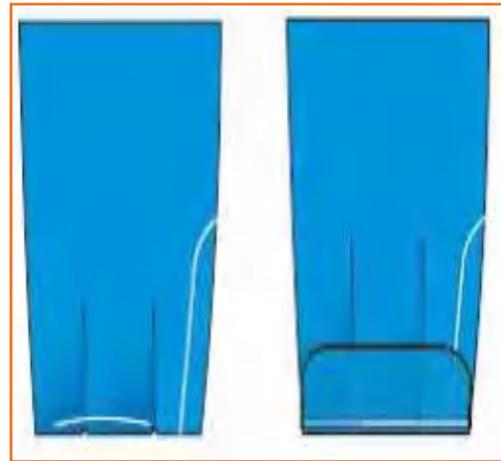


Step 6: The unfused cuff fabric should be 1 mm extra.

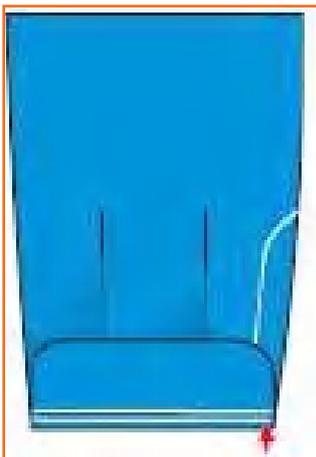
5.1.2.16 Cuff Attachment to Sleeve



Step 1: First, check that there are 4 notches for sleeve pleats and one notch at the centre of sleeve bottom.



Step 2: Make sleeve pleats by overlapping the notches and stitching it in such a way that the pleats remain open from the edges.

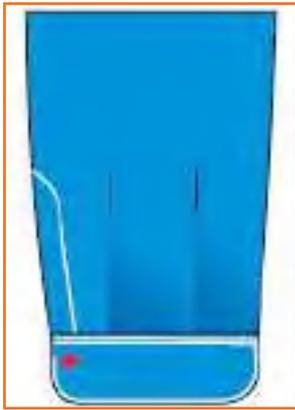


Step 3:

- Place the cuff with fused side up on the inner side of the sleeve.
- Stitch just below the edge of the cuff .



Step 4: Straighten the cuff . Put the excess fabric inside the cuff and put stitches at the edge.



Step 5: Now put the edge stitch throughout the cuff.

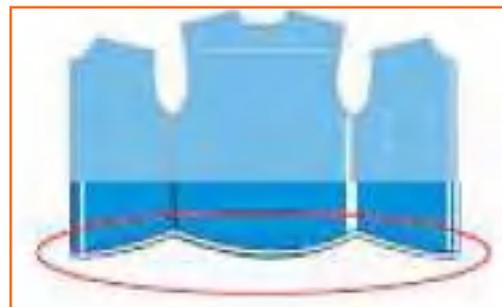


Step 6: Now put 4 mm stitch throughout the cuff. Repeat Steps 1 to 7 for the second cuff.

5.1.2.17 Bottom Hemming



Step 1: Match the collar band tip to bottom.



Step 2:

- Fold the bottom (as per requirement) and put edge stitch from the left front side to the right side.
- Close the two ends.

5.1.2.18 Button-holing



Step 1:

- Take the left hand side placket.
- Make one button hole on collar band parallel to the band at the centre and about 1 cm from the edge.



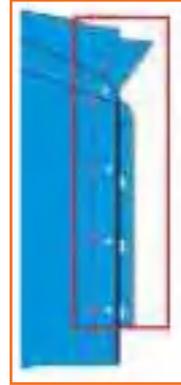
Step 2:

- Along the centre of the placket width, mark the button holes at a distance of 9 cm from each other from the collar band button hole.
- In case of cuff, mark button hole at the centre of the cuff on upper placket side.
- Make button holes using buttonhole machine. The marking should come in the middle of the buttonhole.

5.1.2.19 Button Attaching



Step 1: Keep the left hand and right hand plackets on top of each other. They should be properly aligned.



Step 2: Put a mark at the centre of the button-hole using a chalk.



Step 3: Attach buttons at the marked positions using the button sew machine.



Step 4: Repeat the same procedure for the cuff.

5.1.3 Some Common Factors That may Affect Stitching Quality

- In densely woven fabrics, the space in between yarns is too small for sewing threads to pass through. Such fabrics create a wavy seam when sewed threads are used to join fabric plies. In these circumstances, yarn displacement may occur.
- High thread tension: When sewing, excessive thread tension can cause seam puckering.
- Inconsistent ply feeding: The majority of seams are created by sewing two plies together. If fabric plies are not fed uniformly when sewing, puckering will develop on the seam. This reason.
- If shrinkage of sewing thread is high may result in puckering.
- Material type, Weight, Density Weaving Strength and abrasion resistance of fabric.
- Material, weight, density, number of plies, strength, and abrasion resistance of the thread.

UNIT 5.2: Attachments for The Sewing Machine

Unit Objectives

At the end of the unit, participants will be able to:

1. Familiarize with various attachments used on the sewing machine.
2. Analyze how work aids ease the work load and increase productivity while stitching.

5.2.1 Work Aids

The mechanical attachments used on sewing machines are commonly called Work aids. These are additional sewing machine components that can increase worker productivity. It can be simply added to the machine based on a specific sewing activity during the stitching process. It aids the operator in directing, positioning, folding, and controlling the materials. Attachments are intended to place, fold, or guide the contents. It makes sewing more easily formed. Mainly used attachments are:

- Guides
- Positioning attachments
- Folding devices
- Hemmers
- Cloth Pullers
- Specialized presser feet
- Binders

Purpose of work aids

- To increase effectiveness
- Reduce operator fatigue
- Enhance or sustain quality
- Accurate alignment
- Increase the accuracy, and consistency of the fabric's placing and stitching

Types of work aids

Folder: This type of attachments enables the stitching more efficient production and boosts output. It consists of sewing machine spare components that are utilised at various stages and for various reasons. Folding tools are typically used when fabric needs to be folded before sewing. There are several distinct kinds of folders, however they can be categorised into three primary categories as follows: A) fold the garment's component components; B) fasten the component parts; C) attach other materials to the garment.

Folders must meet the following criteria:

- They fold one or more materials into the required configuration.
- To sew the fabric by folding, a trained operator is required.
- It could be positioned in the center or in front of the pressure foot.

Hemmers: Hemmers that are adjustable, wide, and narrow are available. They are suitable for both open and closed activity. Tubular garment components are hemmed using open action hemmers. It enables the operator to quickly position another garment section after releasing the first.

Cloth pullers: During the stitching operation, it supports the feed mechanism and moves the heavy materials.

Specialized presser feet: A presser foot is an attachment used to hold fabric, as it is fed through the machine and stitched. Presser foot selection should be done on the basis of the style requirement. We can have various presser feet designed for specialized uses, such as:

- **Zipper foot:** This presser foot allows the needle close to the zipper teeth.
- **Concealed zipper foot:** This foot is used to insert a concealed zipper.
- **Pin tucks foot:** It is used to create even pin tucks.
- **Quarter inch seam foot:** This foot helps to sew a ¼ inch seam.
- **Zig Zag foot:** It is used for zigzag or straight stitch.
- **Button sewing foot:** This foot hold the buttons in place while sewing.
- **Button hole foot:** It is used to sew button holes.
- **Embroidery foot:** This one is used to create machine embroidery.
- **Sequin foot:** By this we can apply sequins.
- **Beading foot:** To insert beads.

Gathering Foot: This is an attachment to acquire gathers on material by controlling the length of stitch and tension

Adjustable Cording Foot: This foot is used to permit a heavy material (such as a zipper) to ride close to a stitching without the danger of needle bending or breaking the needle. This attachment can be placed either to right or left of machine needle by loosening its screw.

Quilting Foot: Quilting guide is used to act as an exact guide for stitching where accuracy in stitching is needed especially when consecutive rows are used for decoration.

Binders: An attachment known as a "binder" . It is used to create bound edges using tapes, etc.

Resources

Scan the QR codes or click on the link to watch the related videos.

Descriptions	QR Codes
Types of sewing machines	 https://youtu.be/_2ZLtGfBJrY
Types of sewing machines	 https://youtu.be/nwQLVcOCd18
Types of stitching	 https://youtu.be/NtmiZU1dkZM
Sewing a pant	 https://youtu.be/Q3Y5Q_iW1Ao
Attaching belt in a pant	 https://youtu.be/7Biev39gR2k

Sewing a shirt


<https://youtu.be/g7AA-gfAKes>

Industry Visit

The purpose of visiting an apparel manufacturing unit is to get hands on knowledge about various processes involved in the work of an sampling tailor. During the visit you have to interact with sampling tailor and supervisors to understand how work is done in industry. Make sure that you keep a notebook handy and note down any important points that come up during your interaction at the apparel manufacturing unit. When you go to an apparel manufacturing unit, you should:

- Recognize the different parts of a shirt.
- Analyze how an sampling tailor makes and attaches the left and right hand side placket, pocket, yoke, placket to sleeve, sleeve, side seam, collar and neckband, cuff and bottom hemming etc.
- Also see how he makes button holes and attaches the buttons to shirt.
- Ask questions to sampling tailors/supervisors if you have any query.

Exercise

1. Full name of SNLS machine is _____
 - a) Single Needle Latch Step Machine
 - b) Super Needle Lock Step Machine
 - c) Single Needle Lock Stitch Machine
 - d) All the above
2. In SNLS machine thread comes from
 - a) Bobbin
 - b) Hook
 - c) Needle
 - d) A & C Both
3. _____ is a flat bed machine ?
 - a) Single needle Lock Stitch Machine
 - b) Feed off the Arm Machine

- c) Overlock Machine
 - d) None of above
4. Feed dogs are used to run _____ through machine
- a) Fabric
 - b) Thread
 - c) Both A & B
 - d) None of above
5. Superimpose seam is used for
- a) Neck Finishing
 - b) Pocket attach
 - c) Side seam
 - d) None of above
6. Seam class IV is
- a) French seam
 - b) Flat seam
 - c) Decorative Seam
 - d) Bound Seam
7. Stitch 101 is made by using
- a) 1 Thread
 - b) 2 Threads
 - c) 3 Threads
 - d) 4 Threads
8. Stitch class 300 is
- a) Lock Stitch
 - b) Chain Stitch
 - c) Overedge chain stitch
 - d) None of above
9. Fold the bottom of right trouser leg 1 cm inside. Again fold the fabric to the required width and put 2 or 3 stitches, this is the last step of Bottom Hemming using Folder.
- a) TRUE
 - b) FALSE
10. Patch pocket is a part of a formal trousers ?
- a) TRUE
 - b) FALSE

11. Notches are used to align 2 pieces of garment components
 - a) TRUE
 - b) FALSE
12. Which of the followings are the steps of Pocket Making and Stitching:
 - a) Locate the notch mark
 - b) Stitch the inner side of the pocket mouth using edge stitch
 - c) Take the ready pattern given and place it over the pocket
 - d) All the above
13. Main lable is stiched on _____ in format shirts ?
 - a) Sleeve
 - b) Back Yoke
 - c) Side Seam
 - d) Pocket
14. Feed off the arm machine used to finish _____ of shirts
 - a) Cuffs
 - b) Back Yoke
 - c) Side Seam
 - d) Collar
15. In men's shirt right front overlaps the left front
 - a) TRUE
 - b) FALSE

6. Contribute to Achieve Sample Quality in Stitching Operations



Unit 6.1 - Contribute to Achieve Product Quality in Stitching Operations



Key Learning Outcomes

At the end of the module, participants will be able to:

1. Familiarize with the product quality.
2. Coordinate with seniors and others.
3. Understand the sewing process flow.
4. Learn about the production system.
5. Inspect stitched products against specifications & required quality standards.
6. Identify, mark and place rejects in the designated locations.
7. Carry out alterations.
8. Sew and apply trims by hand and machine.
9. Maintain workflow and meet production target.
10. Familiarize with the quality department and its role in production.

UNIT 6.1: Contribute to Achieve Product Quality in Stitching Operations

Unit Objectives

At the end of the unit, participants will be able to:

1. Familiarize with the product quality.
2. Coordinate with seniors and others.
3. Understand the sewing process flow.
4. Learn about the production system.
5. Inspect stitched products against specifications & required quality standards.
6. Identify, mark and place rejects in the designated locations.
7. Carry out alterations.
8. Sew and apply trims by hand and machine.
9. Maintain workflow and meet production target.
10. Familiarize with the quality department and its role in production.

6.1.1 Product Quality

What is quality? If a product fulfills the customer's expectations, the client are happy and consider that the merchandise is acceptable or even prime quality. If his or her expectations are not fulfilled, the client will consider that the merchandise is of low quality. This means that the quality of a product may be outlined as "its ability to fulfill the customer's desires and expectations".

Quality has to be outlined first off in terms of parameters or characteristics, that vary from product to product. For example, for a mechanical or electronic product these are performance, reliability, safety and appearance. For pharmaceutical merchandise, parameters such as physical and chemical characteristics, medicinal impact, toxicity, taste and period of time may be vital. For a food product they will embrace taste, nutritional properties, texture, shelf life and so on.

Fixing product specifications

A specification is the minimum demand according to that a producer or service supplier makes and delivers the product and service to the client. In setting specification limits, the following ought to be considered:

- The user's and/or customer's needs.
- Requirements relating to product safety and health hazards provided for in the statutory and regulatory requirements. Requirements provided for in national and/or international standards.
- The competitor's product specifications, in order to achieve selling advantages.



Fig.6.1.1: Product quality process

- In planning the merchandise, the capability of processes and machines ought to be kept in mind.
- It is additionally necessary to keep up a balance between cost and value realization. The clearer the specification, the higher the possibility of making and delivering quality merchandise.
- The specifications and drawings created by the designer should show customary} standard demanded by the client or marketplace in clear and precise terms.
- Every dimension ought to have realistic tolerances and alternative performance necessities.
- Product quality ought to have precise limits of acceptability so the production team will manufacture the product strictly per specification and drawings.

To achieve the above, those accountable for design, production and quality ought to be consulted from the sales negotiation stage onwards. The general design of any product is created from several individual characteristics. For example these could be:

- Dimensions, like length, diameter, thickness or space.
- Physical properties, like weight, volume or strength.
- Electrical properties, like resistance, voltage or current.
- Look, like end, color or texture; practical qualities, like output or metric linear unit per liter.
- Effects on service, like style, feel or noise level.

Manufacturing drawings and specifications are prepared by the designers and these ought to illustrate to the production team exactly what quality is needed and what raw materials ought to be used. Preparation for manufacture once the design, together with the producing drawings, has been reviewed and finalized, it is time to plan for manufacture.

This will include the following steps:

1. **Preferring the strategy of manufacture:** ways should be devised that let the operators and processes to make the merchandise within the fastest, best and most foolproof approach, as well as preparation of producing instructions, putting in procedures, listing numerous operations then on.
2. **Providing the mandatory machines, plant, tooling and alternative equipment:** Everything that's needed for manufacture should be elect, taking care that each one the weather are capable of achieving the quality of quality demanded.
3. **Getting satisfactory raw materials:** nobody will build a decent product from unsatisfactory raw materials,so each material should have a particular written shopping for specification in order that the business department will buy precisely what's needed. Typically purchasers are expected to shop for from suppliers United Nations agency are assessed and approved by them and once provides arrive the products ought to be checked before acceptance into stores. Quality necessities and producing processes ought to be mentioned with the suppliers, also because the inspection activities to be dole out by the client on the products on arrival.
4. **Getting and coaching operators:** Operators United Nations agency are willing and ready to do the add a satisfactory manner must be chosen and given no matter coaching they have.
5. **Designing review and work quality control:** Plans for review activities ought to be ready, proper work places provided for review employees, written review.

6.1.1.1 Guidelines

A guide for small and medium-sized enterprises procedures ready, inspection instrumentality provided, checking and calibration of examination instrumentality planned for, inspection personnel selected and trained and prepilot and pilot runs carried out. One ought to never conceive to solve a high quality drawback by closing additional inspections.

The producing will begin only if coming up with [the look] and planning are completed. If the look is carried out systematically, things ought to run smoothly. During manufacture the subsequent are the foremost common factors that can affect quality:

- **Set-up:** Some processes, like punching, cutting, printing and labelling, are thus consistent that, if the initial set-up is correct, the entire ton can change to the specifications. However, the initial set-up should be checked by carrying out first-piece inspection.
- **Machines and tools:** From time to time changes will occur in machine or tool settings, which may then cause defects. Processes of this kind include machining, resistance welding and filling. Here it is necessary to carry out periodic checks by patrol inspection.
- **Operator:** There are some processes wherever the result depends on the ability and a focus of the operator, such as welding, hand fastening and painting processes. For such processes it is necessary at the manufacture planning stage for the operator's operating strategies to be determined upon.
- **Materials and components:** it is vital to ensure the standard of raw materials and components by undertaking regular checks on the suppliers' processes and additionally wherever necessary by carrying out incoming inspection.

The following are obvious possibilities:

- The shop-floor operators had no clear plan what standard of quality was needed.
- The method was such that it was terribly difficult to induce the work right, but very simple to induce it wrong.
- The machine and instrumentality were incapable of achieving the tolerances needed.
- The incoming materials and components were unacceptable.
- The operators were untrained and not up to the job; Shop-floor internal control was either not properly planned or not properly executed, or both.

6.1.1.2 Coordination

It is obvious from the on top of steps that everyone in the company, that is, the salesmen, designers, purchasing, stores and strategies employees, plant engineers, jigs and tool personnel, production planning and production employees, operators, inspection and testing employees, packaging, dispatch and so on, square measure answerable for product quality. Indeed, quality is everybody's business. Unfortunately, if care is not taken, it winds up being nobody's business. It is so necessary to ensure that everybody is quality-conscious which all of them work along on matters related to quality.

6.1.2 Sewing Department

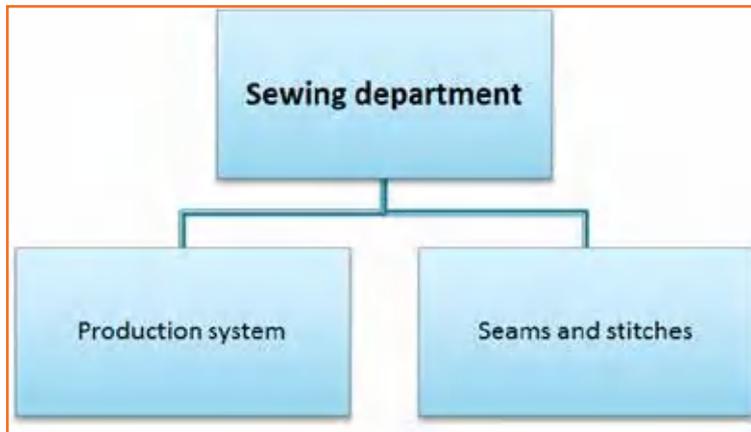


Fig.6.1.2: Sewing Department

6.1.2.1 Sewing Process Flow

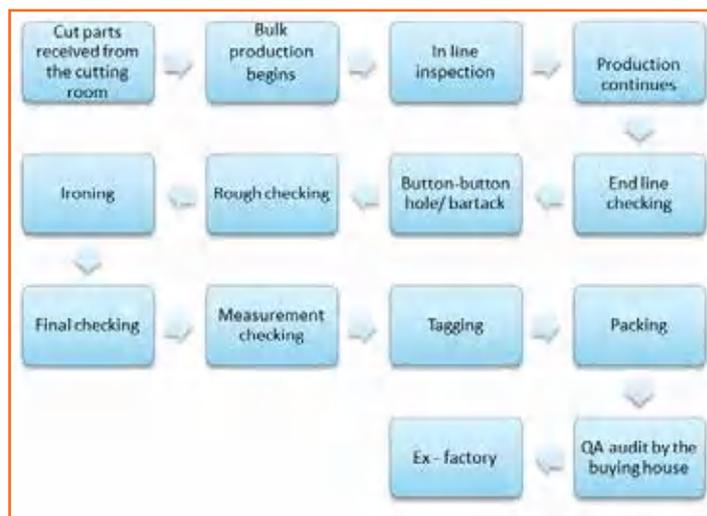


Fig.6.1.3: Sewing process flow

6.1.3 Ensure Stitched Products meet Specification

It is essential to analyse the meet specification in terms of labels and trimmings. There should be various quality check points and before sending the product for final finish it should be thoroughly crosschecked that it has correct labels them. The stitched products should be checked in sewing section and well as printing, labeling or finishing section as well.

Trimmings & labels play an important role in making a good quality garment. Usually trims are randomly inspected. It is usually inspected against standards on the following parameters. Please note that these parameters may differ in other trims.

- **Matching Shade:** It's essential that the trims' color ought to match with base fabric instead of color code or pantone card. Also, the trims those are with Dye to Match demand is checked when attaching trims on the fabric swatch. Check shade of the trims whether or not shade is matched or not. This check is usually needed for shade matching of stitching threads, embroidery threads, etc.
- **Shrinkage:** If the shrinkage percentage of the trims differs from the fabric's (base material) shrinkage percentage, then it is definitely going to cause a defective garment. Trims such as tapes, laces should be tested for its shrinkage percentage.
- **Color bleeding:** bleached trims like Buttons, stitching threads, bleached tapes and laces are checked for color hemorrhage. In this test, trim samples (one by one) are washed with white cloth for variety of cycles as mentioned in testing methods. If the white cloth is got tainted with trims color then these trims should not be used in production. Prior to use, trims should be processed for color fixing to stabilize the colour.
- **Width & Thickness:** live width of the trims such as tapes, elastics, laces etc. It might be good if you're taking measure when wash.
- **Size & Numbers:** Thread numbers, button size, length of zippers etc. need to check against standards.

Labels and tags

Texts printed in the trims for e.g. hang tags, price tags, brand labels, case labels etc. play a vital role. It is very important to make sure that all the information and details must match with the fabric type, the fabric type and the label should not mismatch. Also, the content or text used should be only the one which is approved by the concerned authority. Also, the fibre content printed in care label must match with test report made for fibre content.

6.1.4 Principle of Inspection (Inspection Loop)

Inspection can be defined as the visual examination or review of raw materials, partially finished components of the garments and completely finished garments in relation to some standards, specifications, or requirements, as well as measuring the garments to check if they meet the required measurements.

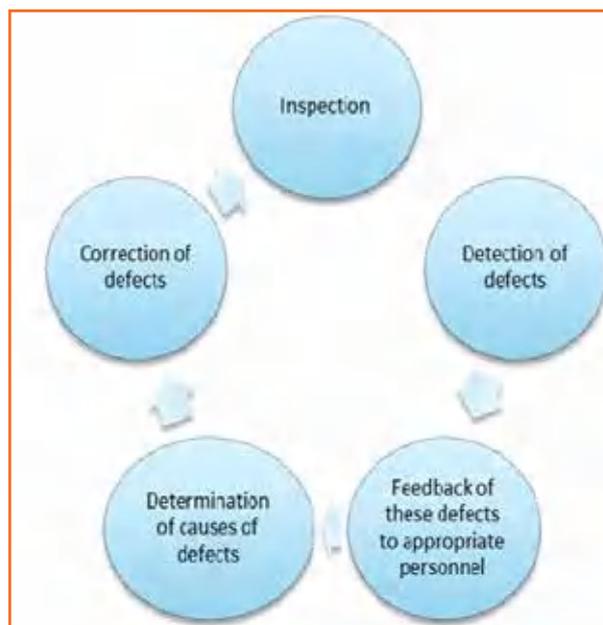


Fig.6.1.4: Inspection Process

How much to examine ?

- No inspection
- 100% inspection
- Spot checking- inspecting random shipments
- Capricious sampling-10% sampling
- Statistical sampling or acceptance sampling-flexibility with reference to the number of inspection to be performed

Inspection terms

- **Sample:** A sample consists of one or more units of a product drawn from plenty or batch, the units of the sample being chosen at random without regards to their quality. the quantity of units of a product within the sample is the sample size.
- **Lot or batch:** suggests that 'Inspection lot' or 'Inspection Batch', that is a collection of units of a product from that a sample is to be drawn and inspected.
- **Lot or batch size:** The lot or batch size is the number of units of a product in a lot or batch:

$$\text{Percent defective} = \frac{\text{Number of defectives} \times 100}{\text{Number of units inspected}}$$

Make sure to check the garment thoroughly

- There should be no stain like oil stain, or any other stain on the fabric.
- Always assure and check that the finest quality of thread for embroidery (if needed) is used.
- The product should have proper finish, there should be no loose or uneven threads or any other faults should be there in the stitching of the fabric.
- Make sure to look promptly that everything is in the place labels, tags, warning tags, instructions or price tags.
- There shouldn't be any non-conformity in the stitching in context with particular measurements if any, replace the product if it is not matching the given (suggested) dimension or if the fitting is not accurate in context with notches or unmatched seams i.e. armhole, sleeve head or neck band etc.
- Look for any sort of distorted grading .
- Look for any puckering, shrinkage seams.
- Make sure there isn't any shade defect in the stitched fabric, if there isn't the color matching the base fabric then it should be sent for replacement. There should be no skipped stitches, uneven stitches or shrinkage.

6.1.5 Identify Mark and Place Rejects in the Designated Locations

1. Always examine your working surroundings and then the work station where you are working. Inspect if there are any unwanted hazardous materials scattered around your work station or the work area.
2. Keep the work area clean and tidy all the time, once this is accomplished look for any unwanted or faulty item.

3. While looking for a faulty item make sure to identify it properly, mark it clearly and label it promptly as rejected.
4. Always check the raw-materials to identify if there are any signs of discoloration or if there are any other defective signs present in the raw material, if yes label it as reject and take it to the designated location for all rejects and place it there.
5. Place the fabric or other rejected items which are torn, damaged broken, stained etc in the rejection box (designated area) of the work-place.
6. Examine garments at different stages of production for correct positioning of parts appearance.
7. If we talk about garments in particular then it can be said that the garment can be rejected after been tested and declared failed in terms of conformance and specifications
8. Tag items as rejected items so that if possible, they can be reworked on.
9. Items tagged as rejects, should be disposed if they can't be re-worked on.
10. Place the rejected item in the assigned or designated locations only.
11. Always maintain inspection records to compute level of quality control achieved.

6.1.6 Carry out Alterations

Making a product which is of customer's choice and expectations is one of the best ways to run the business or any industry successfully. Hence, it is important to make sure that the material used for making a product should be compatible with that product's specification. Product's accuracy and finishing always depends on what materials are been used on it, what quality fabric is it and are these matching the product's specification or not? This defines the brand.

Make sure to carry out alterations if they are not meeting the specification as per the customer requirements. Many a times alterations are required when the fabric is not been stitched properly i.e. it contains missing stitches also known as skipped stitches or staggered stitches etc. below, some of the common issues discussed where the alterations might be required if they are not meeting the customer's requirements.

Some of the common defects which are found during the stitch are as - Puckering, Seam Grin, Seam Slippage, Skipped Stitches, Unbalanced Stitches, Uneven SPI. After identifying the defects it is important to carry out alterations, without a delay. Reworking on the defects is important however it is more important to understand why the defects occurred, so that it can be avoided in future.

Skipped Stitches: Skipped Stitches are usually caused due to needle defects like bent needle or incorrect sewing tension in the needle or under thread or poor loop formation hence it can be avoided by using a reinforced needle, also make sure to check needle clearance and reset the needle guard. Adjust thread tension to avoid problems occurred due to needle defects.

Staggered Stitches: They are caused when the needle isn't working properly, i.e. if the needle is side-tracked or not sharp enough to work. Or size of the needle & thread are not compatible with one another.

CAUSES	SOLUTIONS
Needle vibrating or deflecting	<ul style="list-style-type: none"> • Increase needle size • Use reinforced needle
Incorrect or blunt needle point	<ul style="list-style-type: none"> • Change needle
Incorrect needle-to-thread size relationship	<ul style="list-style-type: none"> • Change needle thread size to appropriate size

Unbalanced or variable stitches: Incorrect sewing tensions or incorrect threading path can lead to unbalanced or uneven stitches on the cloth. One should check for the right thread path and do the stitching according. Before starting to stitch always check for the needle points, thread and the spring, make sure that everything is set up accurately in its place and then the stitching shall begin.

CAUSES	SOLUTIONS
Incorrect sewing tensions	<ul style="list-style-type: none"> • Adjust top or bottom thread tension as necessary for balanced stitches
Incorrect threading	<ul style="list-style-type: none"> • Check for correct thread path
Variable thread tension	<ul style="list-style-type: none"> • Check for correct thread path • Make sure spring is properly set • Check thread lube consistency

6.1.7 Pass the Stitched Item to the Next Stage after Validation

Once the garment is been stitched and prepared it is necessary to send it further for manufacturing process once it is been validated. Usually, after the garment is been stitched and completely prepared it checked for fabric quality like no loose threads or uneven stitches and labelling (or tags). It is important to have all tags in place i.e. price tag, warranty tag (if any) washing instructions, brand label etc. should all in intact and be at their specific place. The content displayed should be the one approved by the concerned authority, there should be no false statement or mismatch in the language or misprinting. Once they are checked, confirmed and validated then the garment is been sent for the finishing-process of the garment where it is washed, cleaned, pressed. Any activities related to the garment was left un-finished in the previous process i.e. left or missed by any chance it is done at this stage. After finishing it is packed, and distributed to their respective retail stores through the appropriate logistics system and network.

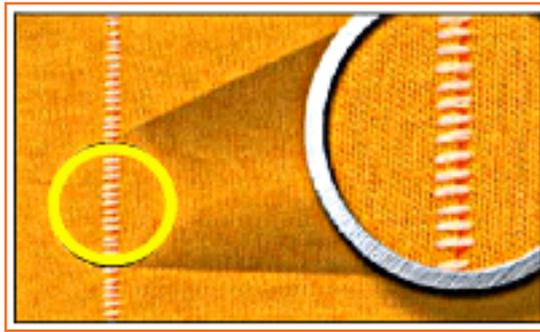
6.1.8 If Stitching Items do not Meet Production Specification

While stitching, many a times there are unwanted and unknown faults which are not good for garments. Hence they are also needed to be rectified so that the garments can be sold or displayed flawlessly. Here are some of the faults which are found while stitching.

Seam Grin: Seam Grin is when two pieces of fabric are pulled at right angles to the seam, a gap is revealed between the two pieces of fabric revealing the thread in this gap. As shown in the image below.



Fig.6.1.5: Seam Grin



Now as shown in the above picture, there is a gap between the two pieces of fabric however this can be avoided by taking the corrective measures. I.e. if you will increase stitching tensions and use a higher stitch rating seam grin in the garments can be avoided.

Seam Slippage: Seam slippage could be a material connected issue that occurs in fabrics that are with low number of warp and pick yarns. The fabric on either side of the seam distorts as the fabric yarns slide away leading to the permanent gap as shown in the image below. Once you increase seam allowance, use a better stitch density and prefers lapped fell seam.

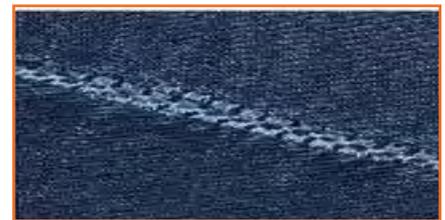


Fig.3.1.6: Seam Slippage

Paste your text here and click on "Next" to look at this text rewriter do it's thing. have no text to check? have no text to check? Click "Select Samples".

Seam Pucker:

Bad tension, Bad feet, Fabric, Thread instability

- Uneven shrinkage throughout finishing
- Thread bloat from laundry Structural jamming/ inherit pucker
- Tight weaving doesn't have enough space between yarns for thread
- Stitching caused yarns to be pushed out of place

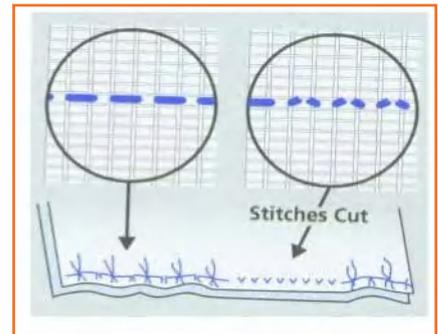


Fig.6.1.7: Seam Pucker

As shown within the pictures on top of, seam pucker usually happens when artificial threads are used. Once stitching the threads pass though the stretched state propulsion the material with it. This will be avoided if thread tensions are unbroken.

Feed Pucker: Feed pucker usually takes place while very fine fabrics are sewed. The piles of fabric tend to slip over each other which results in uneven feed hence it leads to pucker. The image below shows Normal and correct pattern of a stitch. However feed pucker can be avoided by opting for advanced types of feed systems like compound.

Shrinkage Pucker: Shrinkage pucker occurs during the process of washing the thread in the seam, shrinks, pulling the fabric with it. Usually it takes place while using cotton threads. Shrinkage Pucker can be avoided by using threads with low shrinkage properties.

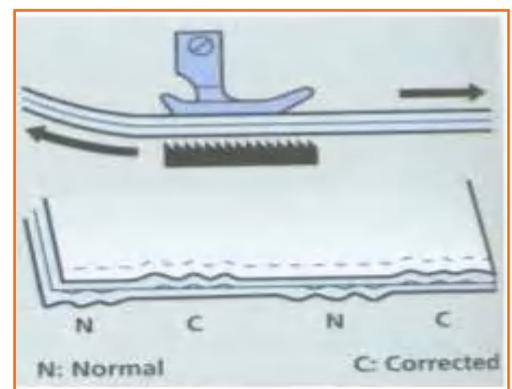


Fig.6.1.8: Feed Pucker



Fig.6.1.9: : Shrinkage pucker occurs during the

6.1.9 Sew and Apply Trims by Hand and Machine

Trims can be applied either by hands or by machines however it is important to check when to use hand trim for e.g. for fixing a button or to use a machine trim for e.g. modifying the stitch.

- Always choose the right method of repairing the production and make sure to re-make it as per the requirement and specification of the customer and of a company.
- Check if the machines are set up and are in good working conditions. To attain production targets machines should be working efficiently all the time.
- Sometimes, Hand sewing is required when there is a need repairing re-welting or piece welting. You need to know whether the repair is to be made by hand or machine, the main equipment used and their capabilities and what problems may occur when undertaking the repair and how to prevent/ rectify them. As adhesives will be used you need to know how to use and store them safely.

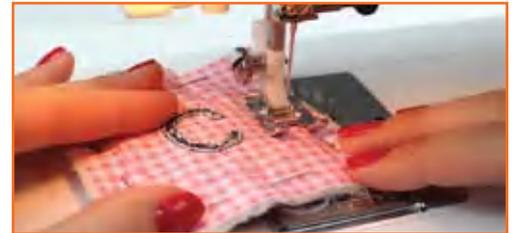


Fig.6.1.10: Seam Pucker

Resources



Scan the QR codes or click on the link to watch the related videos.

Descriptions	QR Codes
Categorization of garment defects	 https://youtu.be/SPtD6mAZ0GU

7. Maintain health, Safety and Security in the Finishing Department with Gender & PwD Sensitization



Unit 7.1 – Maintain Health, Safety and Security at Work Place

Unit 7.2 – First Aid & CPR

Unit 7.3 – Sensitivity towards People with disability and Gender Equality



Key Learning Outcomes

At the end of the module, participants will be able to:

1. Comply with health and safety related instructions applicable to the workplace.
2. Use and maintain personal protective equipment as per protocol.
3. Maintain a healthy lifestyle and guard against dependency on intoxicants.
4. Follow environment management system related procedures.
5. Identify and correct if possible) malfunctions in machinery and equipment.
6. Report any service malfunctions that can not be rectified.
7. Store materials and equipment in line with manufacturer's and organizational requirements.
8. Safely handle and move waste and debris.
9. Minimize health and safety risks to self and others due to own actions.
10. Seek clarifications, from supervisors or other authorized personnel in case of perceived risks.
11. Monitor the workplace and work processes for potential risks and threats.
12. Carryout periodic walk-through to keep work area free from hazards and obstructions, if assigned.
13. Report hazards and potential risks/threats to supervisors or other authorized personnel.
14. Participate in mock drills/ evacuation procedures organized at the workplace.
15. Undertake first aid, fire-fighting and emergency response training, if asked to do so.
16. Take action based on instructions in the event of fire.
17. Follow organization procedures.
18. Analyze the First Aid & CPR.
19. Follow Covid 19 Safety protocol.
20. Understand the Sensitivity towards people with disability (PwD) and its need.
21. Know the importance and need of gender equality at workplace and in personal life.
22. Understand policies for gender equality and PwD.

UNIT 7.1: Maintain Health, Safety, and Security at Work Place

Unit Objectives

At the end of the unit, participants will be able to:

1. Identify methods to be vigilant for potential risks and threats associated with the workplace.
2. Handle tools and equipment in work area.
3. Check the workplace and work processes for risks like fire, electric shocks, etc.
4. Demonstrate the use of personal protective equipment.
5. Analyze sanitary facility in work place.
6. Analyze the work related facilities and benefits.
7. Explain about safety sign in working area.
8. Follow Covid 19 Safety protocol.

7.1.1 Introduction

Features in garment industry that could be improved to prevent injuries include; communication, involvement of employees in decision making, education and training of employees and management on prevention strategies, and the ergonomic conditions at the plant.

The clothing industry is usually considered as a safe place to work. Compared to other industries, there are fewer serious risks in clothing factories. The hazards in clothing industry are different from others. The major health risks in this industry come from more subtle hazards whose effect build up over time.

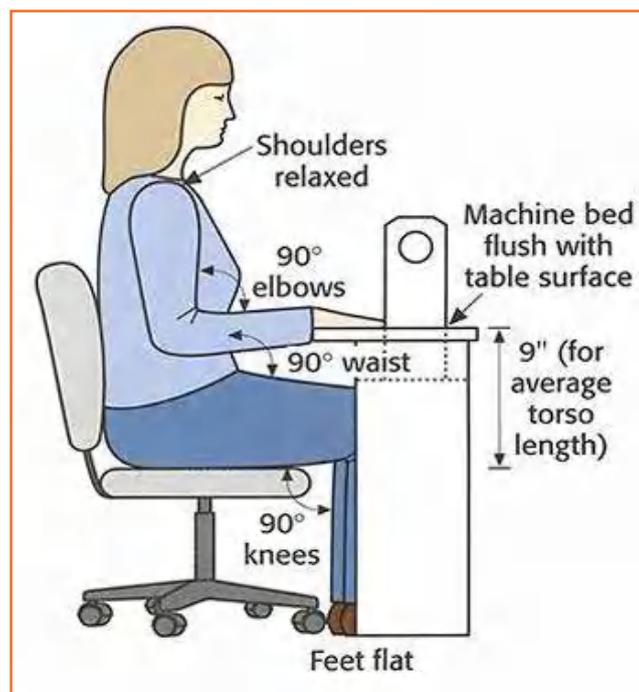


Fig.7.1.1: Body Posture

Workers in this industry face a substantially higher risk of muscle pain and injury than workers in other jobs. Studies also show that frequency of neck and shoulder injuries increases with years of employment. These injuries have a long-term effect on workers' health.

The physical requirements of a job are an important risk factor related to muscle pain and injury. The risks for Pressman have been linked to conditions such as improper work area design, including sitting arrangements.



Fig.7.1.2: Body Posture

Factors like repeated motions, force, body-posture are associated with higher risks and rate of injury. There are other factors are linked to injuries. Some of these factors include improper height of work pace, excessive workload, lack of support from co-worker, overall work environment etc. The factors that lead to reduction in injury rates include empowering workforce, following safety protocol, good housekeeping practices and increased support from top management.

7.1.2 The 'Ergonomics'

Ergonomically-designed job ensures that an employee who is tall is given a comfortable space in or near his/her workspace so that the work efficiency is not hindered. Similarly, an employee who is shorter is able to reach all of his or her tools and products without upsetting comfort and safe assortment.

Workers are usually compelled to work in the confinement of the job or workstation that previously was designed with no dynamism or change when they are hired. This leads the workforce to work in difficult postures and positions, all of which may result in work-related injuries/disorders.

The work-place related injuries often start as minor aches and pains but can develop into incapacitating injuries that affect everyday activities. Ergonomics aims at preventing injuries by monitoring the risk factors such as force, repetition, posture and vibration that can cause injuries to develop.

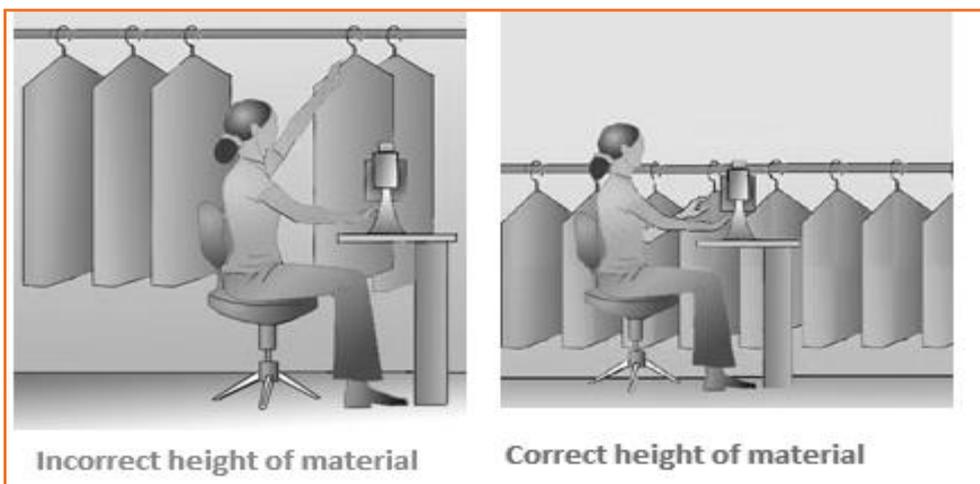


Fig.7.1.3: Situating the material

Injuries and illnesses among textile and apparel workers

- 81% complained CTDs to the wrist.
- 49% of workers is suffering from neck pains.
- 35% report obstinate lower back pain.
- 25% have suffered a compensable increasing trauma disorder.
- 14% reported CTDs to the elbow.
- 5% reported CTDs to the shoulder.
- Absenteeism increases as working conditions worsens.
- High employee turnover is associated with detrimental working conditions.
- Embroidery tasks are associated with pain in the shoulders, wrists, and hands.
- Ironing by hand is associated with elbow pain.
- Fitting fabric in frames like of work, are associated with CTDs of the hands and wrists.

Some fundamental ergonomic principals that should be followed in our workplaces are:

- **Proper tools:** Tools and equipment provided at work place should be appropriate for the specific tasks being performed. The apparatus should allow the workers to keep their hands and wrists straight – the position they would be in if they were droopy relaxed at your side. The workers should bend the tool– not the wrist. The tool should fit easily into the hand. If the grip size is too large or too small, it will be uncomfortable and will increase the risk of injury. Tools should not have sharp edges.
- **Keep repetitive motions to a minimum:** Workstations can be restructured to avoid the number of health hazards which chances due to repetitive motions that must be performed. Using a power-driven screwdriver or tools with a notch device can decrease the number of twisting motions with the arm. Work stations should have enough space for the given tasks and provide proper chairs. For deterrence of ergonomic injuries, the labour force should be encouraged to change work and take frequent but short breaks. Some tasks can be mechanical or reformatted to eliminate musculoskeletal injuries. Manufacturing tools and equipment should integrated ergonomic design codes and should not require an extreme amount of force to operate.
- **Avoid awkward postures:** The industry is such that the workforce’s job should not require you to work with your hands above shoulder height on a regular basis. Arms should be closer to the body and not raised too high. Bending of their wrists, back and neck should be avoided.
- **Use safe lifting procedures:** The employee should avoid lifting objects that are too heavy. Use more than one person or a mechanical device to reduce the load. The workstation should not require lifting objects above the head or twisting his/her back while lifting. One must keep the load close to his body. Heavy and often lifted objects should be kept between knee and shoulder height and not on the floor or above the head level.
- **Get proper rest:** It is imperative to take frequent breaks to rejuvenate the body and mind so that they don’t get injured. The workforce should be groomed to understand that they should take a break from the work not just mentally but physically too. If a person has errand which doesn’t allow him to sit, he must take intervals from his work to relax his leg muscles. If he is doing a sitting job, he must go for a walk whenever his work permits.



Fig.7.1.4: Cleaning the Tools

For example, if you stand all day, while performing your job you should sit down to rest your legs and feet during your breaks. If you sit down, when working you should stand up and walk around during your breaks to give your back a rest and to increase circulation in your legs. By doing this the musculoskeletal injuries can be prevented.

- **Other things to consider:** Chemicals also have a part in garment manufacturing. Dyes, enzymes, solvents and other chemicals are used to create different fabric finishes and provide durability to the product. Proper ventilation and personal protective equipment are important for protection of workers engaged in chemical processing. Similarly, for workers who handle the finished material and may be exposed to excess chemicals and off-gassing, protective equipment should be used.



Fig.7.1.5: Do's and Don'ts in material handling

7.1.3 Environmental Control Measures

Hazardous substances in one form or another can be found in almost all small and medium-sized enterprises. The garments industry generates a lot of dust from fabrics being cut and sewn. Some fabrics release chemicals which saturate the air causing difficulties in breathing and eye irritation. Solvents used for cleaning fabrics and garments may cause fatigue, headache and dizziness. Dust and solvents, when breathed, can lead to lung diseases and are very dangerous. Not only will this affect the well-being of your workers, it will also result in a reduction of productivity and product quality, increased absenteeism and turnover of staff. High levels of dust interfere with efficient production and require cleaning operations that may spoil materials and finished products. Improved conditions usually mean increased output, higher productivity and quality. There are simple and inexpensive ways to control most of the environmental problems. Improvements often result in cost savings, productivity benefits and increased safety of workers. The following rules provide a series of low-cost measures for sound environmental control.

7.1.3.1 Clean Regularly and Properly - Don't Spread Dust

Dust originates from fabrics and threads, from cutting and sewing to packing operations. Thus, it is very common to see small clothing enterprises with ceilings and walls full of dusty cobwebs. Even machines which are not regularly cleaned could be full of dust which may cause them to break down.

Dust increases wear and tear on machinery, necessitating more maintenance. It also negatively affects the quality of raw materials and finished products. Dust entering the respiratory system can damage the worker's lungs. Some dust can also cause allergies. Dust should be removed regularly and eliminated from the source. More comprehensive cleaning should be carried out as often as necessary. This cleaning should also include walls, ceilings, storage racks and other areas where dust accumulates. Dust on windows, walls and lamps will significantly reduce the lighting in the workplace.



Fig.7.1.6: Cleaning the Shop Floor

One low-cost cleaning method is sweeping the floor carefully with an appropriate broom and accompanying dust pan to prevent dust from spreading. Spraying water on the floor before sweeping will avoid dust remaining airborne. When dust is moistened it can be easily removed with a broom. More effective methods of controlling dust include using a vacuum cleaner or a wet mop.

7.1.4 Make Local Ventilation Cost-effective

Local ventilation should only be considered as a means of reducing chemical hazards when other means have failed. There are cost-effective ways of improving ventilation.

Use proper fans

Apart from those used for ventilating workstations, fans may be utilized to remove dangerous substances from the workplace. Contaminated air can be pushed or blown outside by having more open windows. A few points should be considered:

- There should be no obstacles between the fan and opening. Anything in the way significantly reduces the desired effect.
- The air speed should be low to reduce turbulence. In the garment industry, different fans are used; some use industrial fans or wall fans as shown in Fig. There are advantages and disadvantages for these types of fans. Industrial fans are so powerful that workers near them may be affected. Ceiling fans of the rotary type may lift the cloth being sewn, hence speed should be controlled.
- Contaminated air should not be blown in the direction of other workers on the way to the opening.



Fig.7.1.7: Using Fans

- Care should be taken that air expelled from the workplace does not affect people outside the enterprise.
- A fan may not be sufficient to remove vapours from hazardous fumes such as those sometimes used in silkscreen printing. Extractor systems to remove dust and hazardous chemicals should be installed. These systems may be quite expensive and it may be more economical to replace the hazardous chemicals.

7.1.5 Good Lighting for Quality Products

Good lighting does not mean more light bulbs and more use of electricity. Natural lighting is usually a better option than the bulbs. But if there is a difficulty in arranging for a natural lighting through windows and ventilators, its important that the bulbs and other elements of artificial lights should be well-maintained. A good lighting arrangement is directly proportionate to an efficient workforce.

80% of the absorption of information from our surroundings are from our eye as a sense organ. Bad lighting means wrong or lesser absorption of information, leading to lower productivity. Eye strain in low light can lead to head ache and again decreases the productivity level of the worker.

It is imperative to understand the ways in which we can arrange for a good lighting without increasing the electricity bills. First of all one has to identify if at all you need to work upon the existing brightness level in the work place. Lighting requirements are reliant on three main features:

- The environment of the working area
- The nature of the task
- The sharpness of the worker's eyesight

A sewer needs focused light at needle point, so needle lights should always be fitted. A worker packing garments requires more largely lighting. In many situations, packers work on special tiered work tops, where lights are built into the station. The age group of the workforce is also important factor to determine this. Which means, an older worker may need twice as much light as a younger one. Another way to identify the gap, in lighting problem is going around the workplace, observing the workers and asking them about their visual problems. The plan of improvements may not have much impact if the workers' eyesight is insufficient. An eyesight test for all employees should be carried out. Even if some workers do not follow advice about obtaining glasses. One will be aware of the problem and a possible reason for low efficiency and decreased productivity.

7.1.5.1 Use of Daylight

It is very unfortunate that many corporations undermine the fact that natural light is the best and the cheapest source of illumination. One had to gauge the surface area of the work area and measure the windows and skylights. Ideally the open space that includes the windows, ventilation windows and door should be one-third of the total area of work.

However a determinant of choosing the natural light is the heat that is emitted in the work place.



Fig.7.1.8: Use of daylight

If there is too many machinery omitting heat, it isn't a great idea to allow the natural heat to come in and add up to the temperature.

The higher the window, the more light is in. Skylights can double the light of a low light but if made in a lower level, it faces obstacles and is blocked by the machineries and storage containers. If the factory doesn't have a skylight, one must consider to replace the opaque roofs with translucent or transparent plastic rooftops.

It is important to paint the walls in lighter shades which not just give a sense of space to a room, but the workstation would look illuminated. It enhances the visual conditions and a pleasant cheerful environment is encouraged.

The matt finish of whitewash is a great idea. Many enterprises are implementing white tile ceilings. To avoid harmful glare, one should avoid gloss paint for walls. Pale colours are better than white. A slightly dimmer colour below eye level is accommodating. But one should maintain cleanliness, since lack of regular cleaning can result in the loss of at least 10 to 20 per cent of light. Special care should be taken to clean skylights, which are sometimes difficult to reach.

These colours are much better than the black formerly used for the bodies or chrome finish for the Figs, which reflect more glare. An unsatisfactory circulation of natural light over the work area, particularly in embroidery rooms, is a problem. Considering the fact, one must change the layout of benches and machines in order to minimize shadow zones. Workstations with high lighting requirements should be moved closer to the windows and possibly be assembled together for the provision of additional lighting. However, if the workstation layout

responds well to your production needs, you may instead reorganize the delivery and height of the lamps or add needle lights which are good options.



Fig.7.1.9: Sunlight in the Shop Floor

7.1.6 Reporting an Accident and an Incident

Your responsibility requires you to be aware of potential hazards and correct reporting processes. If you notice a potentially hazardous situation, eg: a client expressing violent behavior, it is important that you report it immediately to management and fill out the appropriate forms as legally required of you.

If you are injured at work you must:

- Report the injury to management as soon as possible, and certainly within 24hours.
- Seek proper treatment for your injury.

7.1.6.1 Accidents

Always work in a safe manner to prevent accidents from occurring in the first place. Make sure that you have been given adequate information and on-the-job training about the first aid facilities and services available in your workplace, including:

- Where to find first aid kits.
- Location of first aid rooms.
- Complete, up-to-date contact details of trained first aid officers in the workplace procedures for critical accidents – such as who should be responsible for calling.
- The ambulance/doctor/nurse and what is the best method of contact, measures for evacuation of the injured person/s.
- Emergency procedure for the elimination of life-threatening chemicals commonly used in the workplace.
- Universal precautions for the control of infection.
- Who to contact for debriefing/psychological support.

Reporting of incidents and accidents is required under the Work Health and Safety (WHS) legislation. Workplaces tend to have well developed reporting procedures in place, which aim to fully understand the accident/incident and prevent any future occurrences through investment in injury prevention, based upon accurate data. Reporting and recording should also facilitate costing and associated financial loss.

Always report an accident to management immediately. There should be a form at each workplace that you (or the person involved) and any witnesses can fill out, where possible, otherwise. The form should cover the following areas:

- **Description of the occurrence:** What was the event that occurred, which required this report to be completed?
- **Nature of injury or disease:** Select the most appropriate description from a range of options. What injury or disease happened as a result of the occurrence?
- **First aid, medical treatment or hospital admission:** This section asks for a description of what was done to treat the injury or disease.
- **Part of the body affected:** Tick off which part or parts of the body were affected as a result of the occurrence.
- **Source of injury:** What actually caused the person to be injured or acquire a disease? This could be a piece of machinery or other hazardous materials for example.
- **Probable cause or causes of injury:** How was the source listed above actually responsible for the injury?
- **Investigation:** This asks a series of questions that seek to find out why the person has been injured or has acquired a disease.
- **Notification checklist:** This checklist makes sure that everyone who should have been contacted regarding the matter has been contacted and asks whether appropriate action has been taken by the authorities.
- **Preventative action:** This asks whether or not any action has been taken to prevent the occurrence from happening again.
- **Witness details:** This part is to be filled out if someone saw the occurrence happen. It is essential if any sort of legal action is to be taken.

7.1.7 Mock Drills/ Evacuations

Fire safety and evacuation plans sketch staff duties and accountabilities in time of emergency. Continuing training is required to help safeguard that the employees are conscious of those duties and responsibilities. Fire fighting trainings serve as an prospect for staff members to validate, under replicated fire conditions, that they can perform those duties and responsibilities safely and efficiently. It's also a time for them to demonstration that they are aware of defend-in-place strategies and can take advantage of your facility's fire protection features and exit facilities to protect the people in their care.

Fire drills are excellent exercise designed to evaluate staff response to a replicated emergency. They are also a test of your facility's fire safety/evacuation strategies and staff training programs. It is not essential that all fire drills run smoothly. That's okay, so long as staff and the organization learns from them and correct mistakes made. It's vital, therefore, that there be a analysis of each drill so that any problems met can be addressed. Perhaps the problems are due to unfinished or outdated fire safety/emigration plans. Perhaps there's a need for additional staff training.

The two essential components of a fire preparedness plan are the following:

1. An emergency action plan, which details what to do when a fire occurs.
2. A fire prevention plan, which describes what to do to prevent a fire from occurring.



Fig. 7.1.10: Fire Safety

7.1.8 Low-cost Work-related Welfare Facilities and Benefits

Work-related welfare conveniences and facilities are never given heed to. Who cares about toilets, first-aid kits, lunch rooms or lockers? What do they have to do with the hard authenticities of production? One answer is that workforces care. During each working day, workers need to drink water or some other beverage, eat meals and snacks, wash their hands, visit a lavatory, and rest to recover from fatigue. This can be difficult or easy, unpleasant or comfortable, a health risk or an aid to hygiene and nutrition. The essential facilities in the factory show if you care about employees more or the machines.

Another good reason is that extra efforts for better facilities are often appreciated far beyond the time and money capitalized, Work-related facilities benefit workers to overcome problems which are important to them. Let workers express their priorities for improvements and give their feedback. You may be surprised at the results. Giving a hygienic and wel-maintained workplace is indirectly showing yur employees how much you care for them.

A small enterprise can be a community where workers are loyal, with good industrial relations and high morale, It can also be a place where workers look for the first chance to leave and care little about the owner's success. Which kind of initiative do you want? The series of low-cost facilities that trails will help to retain the best staffs.

7.1.8.1 Essential Facilities

Drinking water

Drinking water is indispensable for all workers; if this is not provided, they become thirsty and gradually dehydrated. This greatly increases fatigue and lowers productivity, especially in a hot environment. Place water vessels near each group of workers, or provide taps or cascades with clean water in a central place. This will minimize the time lost in going to get a drink. However, drinking water should not be placed in washrooms or toilets, near dangerous machines or other hazards, nor in places where it can be contaminated by dust, chemicals or other substances.

If there is any doubt about contamination, water must be thoroughly boiled or properly filtered or treated. Unhealthy water will lead to illness and therefore absenteeism from work. Before starting to use a new water source for drinking purposes, it is advisable to have it tested to make sure it conforms to the national standard for drinking water. The design, construction and operation of deep wells for the extraction of ground water should be subjected to the provisions of existing water codes. Piped water should only be used when a hygienic water supply is guaranteed. A clear distinction between potable and non-potable water taps should be made and a "Safe Drinking Water" sign should be put up near to each tap.

Drinking water vessels should be made from materials that can easily be cleaned, Even if the vessels are filled with fresh water, the water inside, if kept for even a short time, can become unhygienic. It should therefore be different frequently. It is also imperative to make sure that drinking water is cool. If a water cooler is too luxurious, the water vessels can be placed in the coolest place in the factory. It will facilitate the water to remain cool throughout the day. They should not be left uncovered, under the sun or in a hot place. Drinking fountains for production areas are very advantageous from a hygienic point of view. They can be fitted with a jet or bubbler outlet and/or goose-neck or other outlet for filling drinking cups. The fountain should be free from sharp angles and designed to prevent unnecessary splashing. Water outlets should be above the rim of overflow level so that they will not be contaminated with waste water. The water outlet should be shielded to prevent the lips of a drinker from being placed on it. Drinking water containers should be attended by a designated person. Containers should be made of impermeable materials. A cooling device would be an advantage. (Unglazed pottery can be used, due to its unique cooling effect, in dust-free places.) Containers should be provided with suitable covers, and kept in a cool place protected from the sun. The water must be changed frequently.

To avoid the possible spread of infection, it is better to use throwaway cups or to provide separate cups for each worker and to arrange for regular washing. When containers are used, it is important to clean them regularly. Cleaning and other necessary conservation tasks should be assigned to a specific person. In addition, the provision of a competence for boiling water will enable people to make coffee or other hot beverage during breaks. Hot water is required if the enterprise has a childcare facility.

7.1.5.2 Sanitary Facilities

There are several reasons why the provision of washing facilities is important:

- Dirt and grime can be ingested and cause sickness or disease; they are, in any case, unpleasant and demoralizing.
- Washing is a necessity when women have their monthly periods.
- Washing is required for basic hygiene after using the toilet.
- Apart from the obvious basic need, sanitary facilities are required by law. Clienteles often create an impression of an enterprise through the quality of its sanitary facilities.

- There should be a sufficient number of hygienic facilities on the work locations and each should be conveniently located to avoid long walks, waiting and hindrance. The law of the country must be monitored, but the following are the minimum requirements:
- One restroom is required for up to five men; two toilets for six to 40 men.
- One separate restroom for up to five women and two toilets for six to 30 women.
- One wash-basin for every 15 workers.



Fig.7.1.11: Signages

Ideally, there would be a separate toilet for men and women. These should be characterized as follows:

- The toilet bowl must be free from stain or odour and function properly.
- The walls of the toilet must be clean and tiles unstained.
- The ceiling of the toilet must be free from cobwebs and dust.
- Floors must be clean and safe (no broken tiles, nor slippery surface).
- Proper illumination must be provided inside the toilet.
- Toilets must have a continuous supply of water; in case water is limited in the area, water should be stocked in containers and refilled regularly.
- Mirrors and rubbish bins should be provided in the washroom.
- Soap and toilet paper should be provided.
- The washroom should provide complete privacy to users and should be fully ventilated.

7.1.9 Be Ready for Emergencies

Misfortunes can happen even if proper defensive measures are installed. So, always be prepared for emergencies and have readiness for disaster management, like cuts and bruises, eye injuries, burns, poisoning and electric shocks. Every enterprise should maintain a well-stocked first-aid box and assign at least one person from every shift to handle emergencies. First-aid boxes should be clearly marked and situated in a place, so that they are readily reachable in an emergency. They should not be more than 100 metres away from any place on the work site. Ideally, such kits should be near a wash-basin and in good lighting conditions. Their supplies need to be regularly checked and replenished. The contents of a first-aid box are often regulated by law, with variations according to the size and the likely industrial hazards of the enterprise. A typical basic kit may include the following items in a dustproof and waterproof box:

- Sterile bandages, pressure bandages, dressings (gauze pads) and slings. These should be individually wrapped and placed in a dustproof box or bag. Adequate quantities of the different sizes should be available at all times to treat small cuts and burns.
- Cotton wool for cleaning wounds.



Fig.7.1.12: First Aid

Ideally, there would be a separate toilet for men and women. These should be characterized as follows:

- The toilet bowl must be free from stain or odour and utility properly.
- The walls of the toilet must be clean and tiles unstained.
- The ceiling of the toilet must be free from torpors and dust.
- Floors must be clean and safe (no broken tiles, nor slippery surface).
- Proper illumination must be provided inside the restroom.
- Lavatories must have a continuous supply of water; in case water is limited in the area, water should be stocked in containers and refilled regularly.
- Mirrors and rubbish bins should be provided in the washroom.
- Soap and toilet paper should be provided.
- The washroom should give complete privacy to users and should be fully aired.

7.1.10 Safety Signs at Workplace

Safety Signs: Sign providing information or instruction about safety or health at work by means of a signboard, a colour, an illuminated sign or acoustic signal, a verbal communication or hand signal.

Signboard: A sign which provides information or instructions by a combination of shape, colour and a symbol or pictogram which is rendered visible by lighting of sufficient intensity. In practice, many signboards may be accompanied by supplementary text, eg 'Fire exit', alongside the symbol of a moving person. Signboards can be of the following four types:

1. **Prohibition sign:** A sign prohibiting behaviour likely to increase or cause danger (eg 'no access for unauthorised persons').



Fig.7.1.13: Prohibition sign

2. **Warning sign:** A sign giving warning of a hazard or danger (eg 'danger: electricity').



Fig.7.1.14: Warning sign

3. **Mandatory sign:** A sign prescribing specific behaviour (eg 'eye protection must be worn').



Fig.7.1.15: Mandatory sign

4. **Emergency escape, Fire and First-aid signs:** A sign giving information on emergency exits, first aid, or rescue facilities (eg 'emergency exit/escape route').

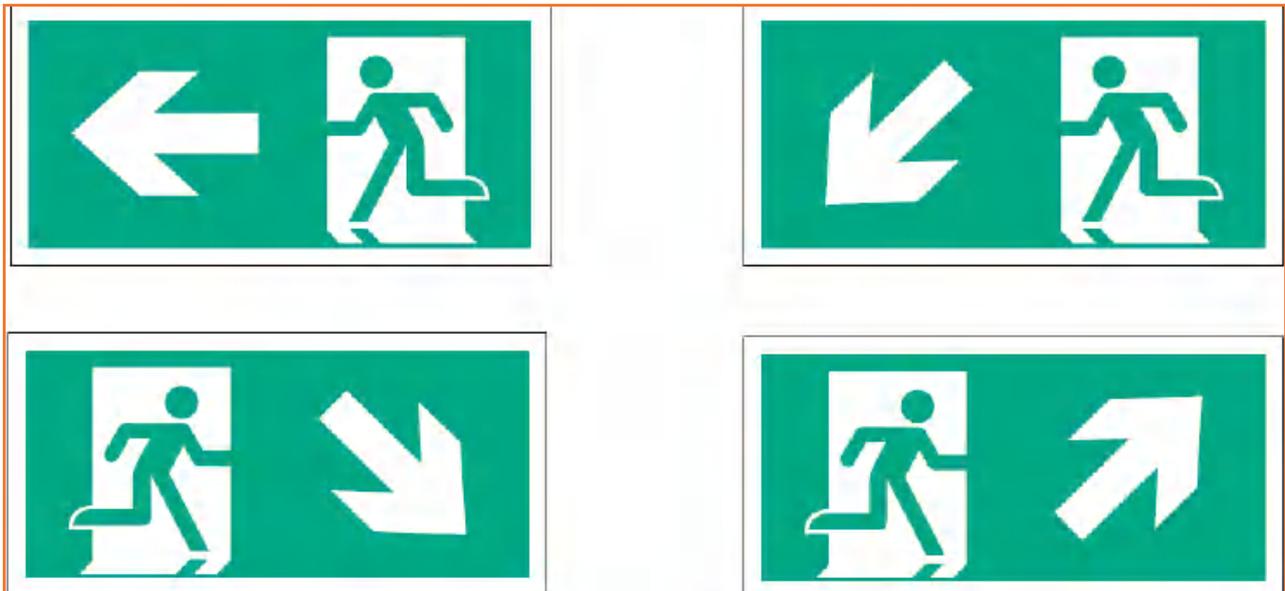


Fig.7.1.16: Emergency escape

Signs for emergency exits

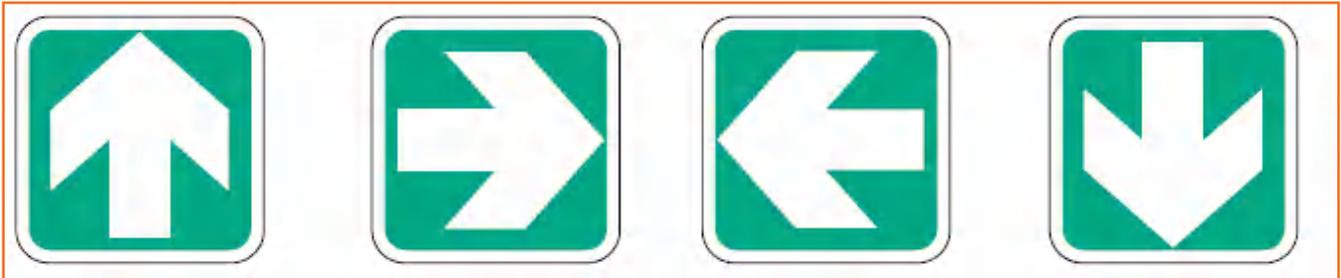


Fig.7.1.17: Signs for emergency exits

Signs for Fire and First Aid



Fig.7.1.18: Signs for Fire

7.1.11 Prevention and Management of Corona Virus

As we all know a new respiratory disease called COVID-19 is spreading across the world. India has also reported cases from states and the government is trying to contain the spread of the disease. We can play a major role in preventing its spread by follow Covid safety guidelines.

COVID-19 is a disease caused by the “novel corona virus”. Common symptoms are Fever, Dry cough, Breathing difficulty, Some patients also have aches and pains, nasal congestion, runny nose, sore throat or diarrhea



Fig.7.1.19: Prevention from COVID-19

COVID-19 spreads mainly by droplets produced as a result of coughing or sneezing of a COVID-19 infected person. To protect yourself from Covid-19, follow below guidelines.

- Maintain a safe distance from others (at least 1 metre), even if they don't appear to be sick.
- Wear a mask in public, especially indoors or when physical distancing is not possible.
- Choose open, well-ventilated spaces over closed ones. Open a window if indoors.
- Clean your hands often. Use soap and water, or an alcohol-based hand rub.
- Get vaccinated when it's your turn. Follow local guidance about vaccination.
- Cover your nose and mouth with your bent elbow or a tissue when you cough or sneeze.
- Stay home if you feel unwell.
- If you have a fever, cough and difficulty breathing, seek medical attention. Call in advance so your healthcare provider can direct you to the right health facility.

This protects you, and prevents the spread of viruses and other infections.

Exercise

1. While working at workplace, your waist should be at:
 - a) 30°
 - b) 60°
 - c) 90°
 - d) 120°
1. We receive _____ per cent of all information through our eyes.
 - a) 75%
 - b) 60%
 - c) 70%
 - d) 80%
2. In case of fire do not use _____.
 - a) Lift
 - b) Stairs
 - c) Ladder
 - d) Window
3. The factors that lead to reduction in injury rates include:
 - a) Empowering workforce
 - b) Following safety protocol
 - c) Good housekeeping practices
 - d) Support from top management
 - e) All of the above
4. Lighting requirements are reliant on:
 - a) The environment of the working area
 - b) The nature of the task
 - c) The sharpness of the worker's eyesight
 - d) All of the above

UNIT 7.2: First Aid & CPR

Unit Objectives

At the end of the unit, participants will be able to:

1. Apply first aid on an injured person.
2. Interpret the procedure of CPR.

7.2.1 First Aid

First aid is the assistance given to any person suffering a sudden illness or injury, with care provided to preserve life, prevent the condition from worsening, and/or promote recovery. It includes initial intervention in a serious condition prior to professional medical help being available, such as performing CPR while awaiting an ambulance, as well as the complete treatment of minor conditions, such as applying a plaster to a cut. First aid is generally performed by the layperson, with many people trained in providing basic levels of first aid, and others willing to do so from acquired knowledge. Mental health first aid is an extension of the concept of first aid to cover mental health.



Fig.7.2.1: First aid Pyramid

There are many situations which may require first aid, and many countries have legislation, regulation, or guidance which specifies a minimum level of first aid provision in certain circumstances. This can include specific training or equipment to be available in the workplace (such as an Automated External Defibrillator), the provision of specialist first aid cover at public gatherings, or mandatory first aid training within schools. First aid, however, does not necessarily require any particular equipment or prior knowledge, and can involve improvisation with materials available at the time, often by untrained persons.

Vital Signs	Good	Poor
Heart Rate	60-100 beats per minute	Less than 60 or greater than 100 beats per minute
Respirations	14-16 breaths per minute	Less than 14 breaths per minute
Skin	Warm, pink and dry	Cool, pale and moist
Consciousness	Alert and orientated	Drowsy or unconscious

Fig.7.2.2: Vital Signs

Awareness	Assessment	Action	Aftercare
<ul style="list-style-type: none"> Observe Stop to Help 	<ul style="list-style-type: none"> Assess what is required to be done Ask yourself, 'Can I do it?' 	<ul style="list-style-type: none"> Do what you can Call for expert medical help Take care of your and the bystander's safety 	<ul style="list-style-type: none"> Once you have assisted the victim, stay with him/her till expert care arrives

Fig.7.2.3: Four A's of First Aid

While delivering First Aid always remember:

- Prevent deterioration.
- Act swiftly, deliberately and confidently.
- Golden Hour – First 60 minutes following an accident.
- Platinum Period – First 15 minutes following an accident.
- Prevent shock and choking.
- Stop bleeding.
- Loosen victim's clothes.
- Regulate respiratory system.
- Avoid crowding/over-crowding.
- Arrange to take victim to safe place/hospital.
- Attend to emergencies first with ease and without fear.
- Do not overdo. Remember that the person giving first aid is not a doctor.

Injury	Symptom	Do's	Don'ts
Fracture	<ul style="list-style-type: none"> Pain Swelling Visible bone 	<ul style="list-style-type: none"> Immobilise the affected part Stabilise the affected part Use a cloth as a sling Use board as a sling Carefully Transfer the victim on a stretcher 	<ul style="list-style-type: none"> Do not move the affected part Do not wash or probe the injured area
Burns (see Degrees of Burn table)	<ul style="list-style-type: none"> Redness of skin Blistered skin Injury marks Headache/seizures 	<ul style="list-style-type: none"> In case of electrical burn, cut-off the power supply In case of fire, put out fire with blanket/coat Use water to douse the flames Remove any jewellery from the affected area Wash the burn with water 	<ul style="list-style-type: none"> Do not pull off any clothing stuck to the burnt skin Do not place ice on the burn Do not use cotton to cover the burn

Bleeding	<ul style="list-style-type: none"> • Bruises • Visible blood loss from body • Coughing blood • Wound/Injury marks • Unconsciousness due to blood loss • Dizziness • Pale skin 	<ul style="list-style-type: none"> • Check victim's breathing • Elevate the wound above heart level • Apply direct pressure to the wound with a clean cloth or hands • Remove any visible objects from the wounds • Apply bandage once the bleeding stops 	<ul style="list-style-type: none"> • Do not clean the wound from out to in direction • Do not apply too much pressure (not more than 15 mins) • Do not give water to the victim
Heat Stroke/Sun Stoke	<ul style="list-style-type: none"> • High body temperature • Headache • Hot and dry skin • Nausea/Vomiting • Unconsciousness 	<ul style="list-style-type: none"> • Move the victim to a cool, shady place • Wet the victim's skin with a sponge • If possible apply ice packs to victim's neck, back and armpits • Remove any jewellery from the affected area • Wash the burn with water 	<ul style="list-style-type: none"> • Do not let people crowd around the victim • Do not give any hot drinks to the victim
Unconsciousness	<ul style="list-style-type: none"> • No movement of limbs • No verbal response or gestures • Pale skin 	<ul style="list-style-type: none"> • Loosen clothing around neck, waist and chest • Check for breathing • Place the victim's legs above the level of heart • If victim is not breathing, perform CPR 	<ul style="list-style-type: none"> • Do not throw water or slap the victim • Do not force feed anything • Do not raise the head high as it may block the airway

Fig.7.2.4: First Aid for different types of injuries

1st Degree Burn	2nd Degree Burn	3rd Degree Burn	4th Degree Burn
<p>Will recover itself in a few days.</p> <p>Action Required: Place under running water.</p>	<p>Serious but recovers in a few weeks.</p> <p>Action Required: Place clean wet cloth over the burnt area.</p>	<p>Very Serious and will require skin grafting.</p> <p>Action Required: Place a clean dry cloth over the burnt area.</p>	<p>Extremely Serious and requires many years with repeated plastic surgery and skin grafting, is life threatening.</p> <p>Action Required: Leave open and prevent infection.</p>

Fig.7.2.5: Degree of Burns

7.2.2 Splints and Aids of Torso

A splint is a bandage that immobilizes a broken bone. Sometimes this is done by using rigid objects such as sticks or boards. For some injuries, however, this isn't possible and the only option is to tie the broken limb to the body.

7.2.2.1 Splints

During the application of a splint, it is important to not attempt to straighten the break. This will lead to more injury and pain for the affected. Instead, the splint should be applied to the break the way it was.

When using rigid material

Always use long enough pieces to reach the joints beyond the break. For example, when splinting a forearm, the material should be long enough to touch both the wrist and the elbow. This helps keep the material in place and prevents too much pressure from being applied to the wound.

- Always put padding between the rigid material and the body to keep the victim comfortable.
- Knots should be tied between the body and the rigid material. This is an easier option when it comes to untying them. However, if this can't be carried out, the knots should be tied over the rigid material.
- Padding should always be used between the body and the rigid material in order to provide a comfortable setting to the affected.



Fig.7.2.6: Splint the Forearm

- Splint the wrist in the same way. The entire forearm should be immobilized.



Fig.7.2.7: splint the Wrist

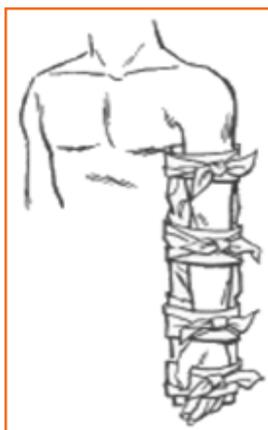


Fig.7.2.8: Splint the Elbow

- To splint the elbow, use enough rigid material to go from the armpit to the hand. The entire arm should be immobilized. Do not attempt to straighten or bend the elbow; splint it in position.
- To splint the upper leg, use long pieces of rigid material that will reach from the ankle to the armpit. Above the hips, tie long straps around the torso to hold the top of the splint in place.



Fig.7.2.9: Splint the Upper Leg

- The pieces used should be long enough to reach the joint beyond the break. For instance, when a forearm is splinted, the material should be long enough in such a way that it includes both the wrist and the elbow. This helps in preventing too much pressure to the wound and also helps in keeping the material in place.



Fig.7.2.10: Splint the Lower Leg

7.2.3 CPR

Basic life support (BLS) is a level of medical care which is used for victims of life-threatening illnesses or injuries until they can be given full medical care at a hospital.

First aid is as easy as ABC – airway, breathing and CPR (cardiopulmonary resuscitation). In any situation, apply the DRSABCD Action Plan.

DRSABCD stands for:

- Danger:** Always check the danger to you, any bystanders and then the injured or ill person. Make sure you do not put yourself in danger when going to the assistance of another person.
- Response:** Is the person conscious? Do they respond when you talk to them, touch their hands or squeeze their shoulder?
- Send for help:** Call ambulance.
- Airway:** Is the person's airway clear? Is the person breathing? If the person is responding, they are conscious and their airway is clear, assess how you can help them with any injury.



Fig.7.2.11: Basic life support chart

If the person is not responding and they are unconscious, you need to check their airway by opening their mouth and having a look inside. If their mouth is clear, tilt their head gently back (by lifting their chin) and check for breathing. If the mouth is not clear, place the person on their side, open their mouth and clear the contents, then tilt the head back and check for breathing.

- Breathing:** Check for breathing by looking for chest movements (up and down). Listen by putting your ear near to their mouth and nose. Feel for breathing by putting your hand on the lower part of their chest. If the person is unconscious but breathing, turn them onto their side, carefully ensuring that you keep their head, neck and spine in alignment. Monitor their breathing until you hand over to the ambulance officers.
- CPR (cardiopulmonary resuscitation):** if an adult is unconscious and not breathing, make sure they are flat on their back and then place the heel of one hand in the centre of their chest and your other hand on top. Press down firmly and smoothly (compressing to one third of their chest depth) 30 times. Give two breaths. To get the breath in, tilt their head back gently by lifting their chin. Pinch their nostrils closed, place your open mouth firmly over their open mouth and blow firmly into their mouth. Keep going with the 30 compressions and two breaths at the speed of approximately five repeats in two minutes until you hand over to the ambulance officers or another trained person, or until the person you are resuscitating responds.
- Defibrillator:** For unconscious adults who are not breathing, an automated external defibrillator (AED) is applied. An AED is a machine that delivers an electrical shock to cancel any irregular heart beat (arrhythmia), in an effort get the normal heart beating to re-establish itself. Please ensure that a trained person is there

to apply the AED. If the person responds to defibrillation, turn them onto their side and tilt their head to maintain their airway.

1. Airway

Once you have assessed the patient's level of consciousness, evaluate the patient's airway. Remember, if the patient is alert and talking, the airway is open. For a patient who is unresponsive, make sure that he or she is in a supine (face-up) position to effectively evaluate the airway. If the patient is face-down, you must roll the patient onto his or her back, taking care not to create or worsen an injury. If the patient is unresponsive and his or her airway is not open, you need to open the airway. Head-tilt/chin-lift technique can be used to open the airway.

Head-tilt/chin-lift technique

To perform the head-tilt/chin lift technique on an adult:

- Press down on the forehead while pulling up on the bony part of the chin with two to three fingers of the other hand.
- Tilt the head past a neutral position to open the airway while avoiding hyperextension of the neck.

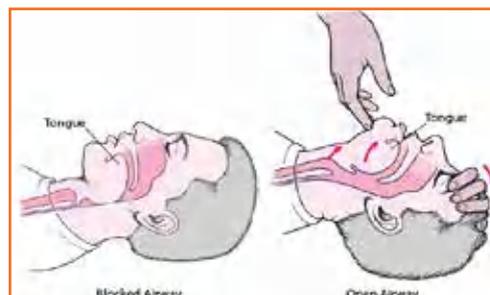


Fig.7.2.12: Airway

2. Cardiopulmonary resuscitation

Cardiopulmonary resuscitation circulates blood that contains oxygen to the vital organs of a patient in cardiac arrest when the heart and breathing have stopped. It includes chest compressions and ventilations as well as the use of an automated external defibrillator.

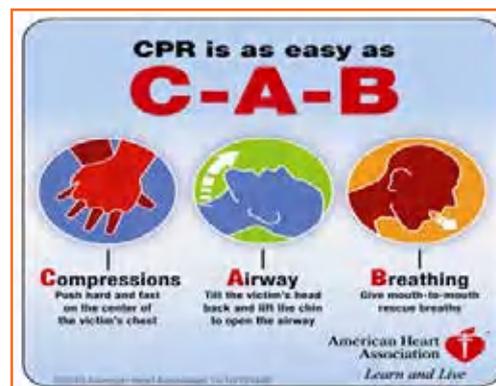


Fig.7.2.13: CAB

- **Compressions:** One component of CPR is chest compressions. To ensure optimal patient outcomes, high-quality CPR must be performed. You can ensure high-quality CPR by providing high-quality chest compressions, making sure that the:
 - » Patient is on a firm, flat surface to allow for adequate compression. In a non- healthcare setting this would typically be on the floor or ground, while in a healthcare setting this may be on a stretcher or bed.
 - » The chest is exposed to ensure proper hand placement and the ability to visualize chest recoil.
 - » Hands are correctly positioned with the heel of one hand in the center of the chest on the lower half of sternum with the other hand on top. Most rescuers find that interlacing their fingers makes it easier to provide compressions while keeping the fingers off the chest.

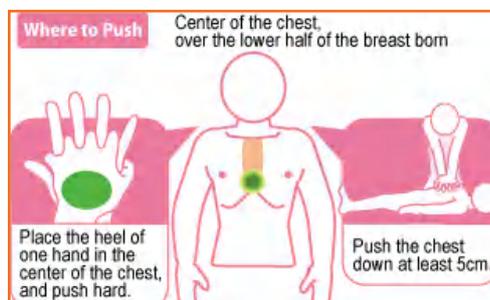


Fig.7.2.14: Compressions

- » Arms are as straight as possible, with the shoulders directly over the hands to promote effective compressions. Locking elbows will help maintain straight arms.
- » Compressions are given at the correct rate of at least 100 per minute to a maximum of 120 per minute, and at the proper depth of at least 2 inches for an adult to promote adequate circulation.
- » The chest must be allowed to fully recoil between each compression to allow blood to flow back into the heart following the compression.
- » For adult co-workers, CPR consists of 30 chest compressions followed by 2 ventilations.
- **Ventilations:** Ventilations supply oxygen to a patient who is not breathing. They may be given via several methods including:

Mouth-to-Mouth

- Open the airway past a neutral position using the head-tilt/chin-lift technique.
- Pinch the nose shut and make a complete seal over the patient's mouth with your mouth.
- Give ventilations by blowing into the patient's mouth. Ventilations should be given one at a time. Take a break between breaths by breaking the seal slightly between ventilations and then taking a breath before re-sealing over the mouth.

Pocket mask

CPR breathing barriers, such as pocket masks, create a barrier between your mouth and the patient's mouth and nose. This barrier can help to protect you from contact with a patient's blood, vomitus and saliva, and from breathing the air that the patient exhales.

- Assemble the mask and valve.
- Open the airway past the neutral position using the head-tilt/chin-lift technique from the patient's side when alone.
- Place the mask over the mouth and nose of the patient starting from the bridge of the nose, then place the bottom of the mask below the mouth to the chin (the mask should not extend past the chin).
- Seal the mask by placing the "webbing" between your index finger and thumb on the top of the mask above the valve while placing your remaining fingers on the side of the patient's face. With your other hand (the hand closest to the patient's chest), place your thumb along the base of the mask while placing your bent index finger under the patient's chin, lifting the face into the mask.

7.2.4 Performing CPR for an Adult

- **STEP 1: Check the scene for immediate danger:** Make sure that you are not compromising your own safety by administering CPR to someone else. Is there a fire? Is the person lying on a roadway? It is important to do whatever is necessary to move yourself and carry the other person to safety.
- **STEP 2: Assess the victim's consciousness:** Gently tap his or her on their shoulder and ask, "Are you OK?" If the person responds in affirmative in a loud or clear voice, CPR is not required. Instead, one should undertake basic first aid and take measures to prevent or treat shock and assess whether there is a need to contact emergency services. If the victim is not responsive, the following steps should be undertaken.
- **STEP 3: Do not check for a pulse:** Unless you're a trained medical professional, odds are you'll spend too much valuable time looking for a pulse when you should be doing compressions.

- **STEP 4: Check for breathing:** Make sure that the airway is not blocked. If the mouth is closed, press with your thumb and forefinger on both cheeks at the end of the teeth and then look inside. Remove any visible obstacle that is in your reach but never push your fingers inside too far. Put your ear close to the victim's nose and mouth, and listen for slight breathing. If the victim is coughing or breathing normally, do not perform CPR.



Fig.7.2.15(a): Performing CPR for an Adult

- **STEP 5: Place the victim on his or her back:** Make sure he or she is lying as flat as possible-this will prevent injury while you're doing chest compressions. Tilt their head back by using your palm against their forehead and a push against their chin.

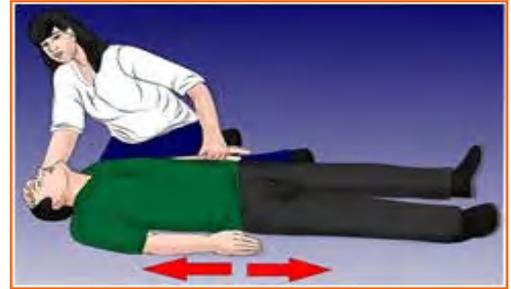


Fig.7.2.15(b): Performing CPR for an Adult

- **STEP 6:** Place the heel of one hand on the victim's breastbone, 2 finger-widths above the meeting area of the lower ribs, exactly in the middle of the chest.



Fig.7.2.15(c): Performing CPR for an Adult

- **STEP 7:** Place your second hand on top of the first hand, Palms-down, interlock the fingers of the second hand between the first.



Fig.7.2.15(d): Performing CPR for an Adult

- **STEP 8:** Position your body directly over your hands, so that your arms are straight and somewhat rigid. Don't flex the arms to push, but sort of lock your elbows, and use your upper body strength to push.



Fig.7.2.15(e): Performing CPR for an Adult

- **STEP 9:** Perform 30 chest compressions. Press down with both hands directly over the breastbone to perform a compression, which helps the heart beat. Chest compressions are more critical for correcting abnormal heart rhythms (ventricular fibrillation or pulseless ventricular tachycardia, heart rapidly quivering instead of beating). You should press down by about 2 inches (5 cm).



Fig.7.2.15(f): Performing CPR for an Adult

- **STEP 10:** Minimize pauses in chest compression that occur when changing providers or preparing for a shock. Attempt to limit interruptions to less than 10 seconds.



Fig.7.2.15(g): Performing CPR for an Adult

- **STEP 11:** Make sure the airway is open. Place your hand on the victim's forehead and two fingers on their chin and tilt the head back to open the airway. If you suspect a neck injury, pull the jaw forward rather than lifting the chin. If jaw thrust fails to open the airway, do a careful head tilt and chin lift. If there are no signs of life, place a breathing barrier (if available) over the victim's mouth.



Fig.7.2.15(h): Performing CPR for an Adult

- **STEP 12:** Give two rescue breaths (optional). If you are trained in CPR and totally confident, give two rescue breaths after your 30 chest compressions. If you've never done CPR before, or you're trained but rusty, stick with only chest compressions.



Fig.7.2.15(i): Performing CPR for an Adult

- **STEP 13:** Repeat the cycle of 30 chest compressions. If you're also doing rescue breaths, keep doing a cycle of 30 chest compressions, and then 2 rescue breaths; repeat the 30 compressions and 2 more breaths. You should do CPR for 2 minutes (5 cycles of compressions to breaths) before spend time checking for signs of life.

7.2.5 CPR Using AED

- STEP 1:** Use an AED (automated external defibrillator). If an AED is available in the immediate area, use it as soon as possible to jump-start the victim's heart. Make sure there are no puddles or standing water in the immediate area.
- STEP 2:** Fully expose the victim's chest. Remove any metal necklaces or underwire bras. Check for any body piercings, or evidence that the victim has a pacemaker or implantable cardioverter defibrillator (should be indicated by a medical bracelet) to avoid shocking too close to those spots. Make sure the chest is absolutely dry and the victim is not in a puddle. Note that, if the person has a lot of chest hair, you may need to shave it, if possible. Some AED kits come with razors for this purpose.
- STEP 2:** Attach the sticky pads with electrodes to the victim's chest. Follow the instructions on the AED for placement. Move the pads at least 1 inch (2.5 cm) away from any metal piercings or implanted devices. Make sure no one is touching the person, when you apply the shock.
- STEP 8:** Press analyse on the AED machine. If a shock is needed for the patient, the machine will notify you. If you do shock the victim, make sure no one is touching him or her.
- STEP 9:** Do not remove pads from the victim and resume CPR for another 5 cycles before using the AED again. Stick on adhesive electrode pads are intended to be left in place.



Fig.7.2.16(a): Performing CPR for an Adult



Fig.7.2.16(b): Performing CPR for an Adult



Fig.7.2.16(c): Performing CPR for an Adult



Fig.7.2.16(d): Performing CPR for an Adult

7.2.6 Chain of Survival

Chain of Survival is a sequential process for providing treatment to victims of SCA outside of a hospital setting. More people can survive SCA if the following steps occur in rapid succession:

- Cardiac arrest is immediately recognized and the emergency response system is activated.
- Early cardiopulmonary resuscitation (CPR) is started with an emphasis on chest compression.
- Rapid defibrillation occurs.
- Effective advanced life support is begun.
- Integrated post-cardiac arrest care is provided.
- Quick execution of each step is critical because the chances of survival decrease 7 to 10 percent with each passing minute.

UNIT: 7.3: Sensitivity towards People with disability and Gender Equality

Unit Objectives

At the end of the unit, participants will be able to:

1. Elaborate the details about PWD Sensitization.
2. Explain gender sensitization and equality.

7.3.1 What is sensitization?

The process of becoming highly sensitive to specific events or situations (especially emotional events or situations) Sensitization doesn't always mean feeling the same pain the other person is feeling. It means knowing that the pain exists and there is a different way of living. Despite how the person lives, he or she has a right to exist in a society. It's an attitudinal change and very much required in current time.

Sensitivity to People with Disability

According to the Oxford Dictionary, a disability could be described as an impairment which can be Intellectual, limitations, cognitive, improvement, sensory, exercise or the mixture of all these. Incapacity impacts a person's activities and may happen at birth. Sometimes, it could happen in adulthood. In the medical model, individuals with certain physical, intellectual, psychological and mental impairments are taken as disabled. According to this, the disability lies in the individual as it is equated with restrictions of activity with the burden of adjusting with environment through cures, treatment and rehabilitation.

People with disabilities are subject to multiple deprivations with limited access to basic services, including education, employment, rehabilitation facilities etc. To work towards an inclusive, barrier free society by raising awareness and policy actions, there is a need to have comprehensive reliable statistics on people with disability and their socio-economic conditions

The Constitution of India ensures equality, freedom, justice and dignity of all individuals including persons with disabilities and mandates an inclusive society for all.

The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation Act, 1995) came into force on February 7, 1996. This was an important landmark and was a significant step in the direction of ensuring equal opportunities for persons with disabilities and their full participation in the nation building. The Act provides for both preventive and promotional aspects of rehabilitation like education, employment and vocational training, job reservation, research and manpower development, creation of barrier-free environment, rehabilitation of person with disability, unemployment allowance for the disabled, special insurance scheme for the disabled employees and establishment of homes for persons with severe disability etc.

In order to give focused attention to Policy issues and meaningful thrust to the activities aimed at welfare and empowerment of the Persons with Disabilities, a separate Department of Empowerment of Persons with Disabilities (Divyangjan) (DEPwD) under Ministry of Social Justice & Empowerment was set up in May 2012.

Empowerment of persons with disabilities is an inter-disciplinary process, covering various aspects namely, prevention, early detection, intervention, education, health, vocational training, rehabilitation and social integration.

The disability community is very diverse. Some individuals with a disability may be employed, while others may rely on public benefits as their main sources of income. Some of the public benefits they receive might have limitations. Income, resource and savings limits often prevent individuals from enhancing their financial wellbeing and self-sufficiency as they concentrate efforts on retaining their benefits

Rather than charities, disabled people need sensitivity of the society and initiatives to make their life easy.. New and existing programs are available to help people with disabilities develop skills in financial management and self-sufficiency. Government keeps trying to support in every possible manner so that they can earn their livelihood.

We learn so many virtues from disabled people like patience, courage, positive thinking etc .Hence; this gives us all the more reasons to have a developmental approach towards them. With so many technological breakthroughs happening all over the world, the Governments have spent in Research and development and innovations which would make the life of disabled people happier and easier.

For example, the invention of artificial limbs caused a revolution. They are available to the most disabled people and they can reap benefits from them.

Also, educating them and giving them jobs based upon their physical condition will make them feel a “sense of achievement” and increase their happiness quotient.

Also, disabled people should be trained by specialists in their fields so that they can try and overcome their shortcomings to the maximum extent possible and lead a life which is satisfactory and happy.

7.3.1.1 Myths and Stereotypes

We are all individuals with commonalities and differences and that is true for persons with disabilities as well. As an instructor, it is important to remember to not show pity or put an individual up on a pedestal – everyone should be treated as equals regardless of one’s abilities. When working with people with disabilities, it is important to avoid stereotypes. To debunk common stereotypes and myths, below are some key items to note about persons with disabilities:

- Persons with disabilities are all ages, come from diverse cultures and financial backgrounds.
- People with disabilities work.
- People with disabilities have families.
- Not all persons with disabilities are on or receive benefits such as ESI, Medicaid, etc.
- People with disabilities have goals and dreams.
- All people with disabilities do not necessarily want or need assistance.
- People who are blind or have low vision may wear glasses.
- People who are deaf may use their voice and may be able to read lips, but not all.
- Not all people who use wheelchairs are completely paralyzed – some may be able to walk short distances.
- Delayed or slow speech is not necessarily a sign of a slowed mental process.
- Persons with learning disabilities can be highly intelligent individuals; they simply have a different way of learning.

7.3.1.2 People's First Language

Positive language empowers people and helps them feel respected and important. When writing or speaking about people who have a disability, it is important to put the person first, usually addressing them by name or including them as a member of a group, such as a student or co-worker. Group designations such as “the blind,” “the retarded” or “the disabled” are inappropriate because they do not reflect the individuality, equality or dignity of people with disabilities.

Here are some general tips to keep in mind:

- **Offer to shake hands when introduced.** People with limited hand use or an artificial limb can usually shake hands and offering the left hand is an acceptable greeting.
- **Treat adults as adults!** Address people with disabilities by their first names only when extending that same familiarity to all others.
- **Ask First.** If you offer assistance (always ask before assisting someone), then wait until the offer is accepted. Then ask the individual with a disability for instructions on how you may assist them.
- **Relax.** Don't be embarrassed if you happen to use common expressions such as, “See you later” or “Did you hear about this?”, that seem to relate to a person's disability
- **Give them respect** as any other individual.

7.3.2 Gender Sensitization

What is Gender?

The socially constructed and culturally defined roles, responsibilities, attributes, and entitlements assigned to people based on their sex assigned at birth in a given setting, along with the power relations between and among the assigned groups.

Gender equality is the concept that all human beings, irrespective of their sex or gender identity, are free to develop their personal abilities and make choices without the limitations set by stereotypes, rigid gender roles, or discrimination.

What is Gender Bias?

- Gender bias is the tendency to make decisions or take actions based on preconceived notions of capability according to gender. People with disabilities have families.
- Not all persons with disabilities are on or receive benefits such as ESI, Medicaid, etc

It is the process of raising awareness and inculcating empathy about one's own and the other gender. Since one of the most common area of discrimination is based on gender, there is a great need to sensitize the youth on gender related issues. This would strongly contribute in ensuring that equal roles, responsibilities, opportunities, and expectations are assigned to both men and women. Training on gender sensitization will help break the stereotypes around job roles, women's participation in particular trades, and would support in equal participation of men and women in the decision-making process.

7.3.2.1 Why is the Need for Gender Sensitivity

Couple communication and decision-making

The role of men and women in household decisions about finances, food consumption, childcare, healthcare or travel often reflect power relations in the home. When power relations are unequal, it results in not only

one sided biased decision but also can increase risky sexual behavior and intimate partner violence. While it is important for women to play a larger role in important household decisions, such as financing, men should also become more involved in healthcare and household decisions around health. Couple communication and joint decision-making have a positive impact on health outcomes.

Access to opportunities and resources

Gender-related factors also affect health outcomes through differential access to opportunities and resources like education, employment and healthcare.

- **Education:** Gender roles often restrict both boys' and girls' access to education which can have long-term effects on health outcomes. For example, more educated women and formally employed women are more likely to use family planning, which reduces the risk of unwanted pregnancy and potentially, the need for abortion
- **Employment:** In many contexts, women's traditional responsibilities are primarily domestic and they do not work outside the home. When they do, they are often part of the informal economy, in lower-paid and less-skilled jobs without opportunities to join unions or trade organizations that advocate for better pay or rights
- **Healthcare:** Women's mobility may limit their access to health services and existing programs intended to increase knowledge of family planning or other health information. Men often do not go to health clinics for their own care or with their partner because pregnancy and child health are seen as a "woman's domain."

Social, cultural and gender norms

Norms related to gender, such as gender preference, masculinity and fertility, also influence health outcomes.

- **Gender Preference:** In India, China, and to a certain extent in some African countries, there is a gender bias in child healthcare. Preference for boys can lead to financial resources for education and other services, like healthcare, being differentially allocated within households. Reasons for this preference vary, and include the perception that boys will financially support their parents when they are older, and that families are obliged to pay dowries when their daughters marry.
- **Fertility:** In many areas, a woman's value is often measured by her ability to have children. This can lead women to put their own health or the health of their family at risk by starting pregnancy too early, when not yet physically matured, and giving birth without proper spacing or having more children than the household can support. For couples facing fertility issues, women often bear the brunt of household and community-level stigma and abuse for failing to conceive.
- **Masculinity:** Masculine ideas associating men with strength, virility, dominance and power may increase the number of sexual partners and inhibit the use of condoms, thereby increasing the risk for unwanted pregnancy or the transmission of STIs or HIV through unprotected sex or sexual violence. These masculine norms also may promote or normalize violence against women

Summary of Need for Gender Sensitization

- To provide balance to the society
- To provide equal opportunities to women and men
- To gauge views of all sections of society
- To distribute resources evenly
- To allow same personal freedom for men and women
- To even out the gender bias present in the society

How to stop gender bias

- Education that helps create attitudinal shifts towards gender bias and activities to spread awareness.
- Continuous efforts towards breaking myths and stereotypes around gender.
- Ensuring State accountability to implement various schemes, policies, laws, constitutional guarantees and international commitments.
- Institutionalizing gender sensitive processes within various systems such as law and programmes.
- Encouraging community ownership in preventing violations based on gender discrimination.

Sexual harassment at workplace is an extension of violence in everyday life and severely affects. Women's right to work in a safe and secure environment. While it is the responsibility of every employer to ensure safety of women at the workplace, it is also important for the trainees, both men and women, to be aware of all aspects of sexual harassment at the workplace. Skill training for both male and female trainees and professionals in the skilling ecosystem is centered around the following issues:

- What constitutes workplace sexual harassment?
- Where can the aggrieved complain about the same?
- What are the rights of the aggrieved?
- What is the redressal mechanism?
- Which are the bodies involved in addressing these complaints?
- What are the possible actions that can be taken against the accused?

Resources



Scan the QR code or click the link to access the videos or e-book.

Description	QR Code
Health related threats in apparel industry and control on them	 https://youtu.be/POIQ27GQZp0
First aid	 https://youtu.be/DQ7JPNgU8Wg

Gender sensitization	
	https://youtu.be/Wi1exdO1lig



Industry Visit

The purpose of visiting an apparel manufacturing unit is to get hands on knowledge about various processes involved in the work of a Pressman. During the visit you have to interact with Pressmen and supervisors to understand how work is done in industry. Make sure that you keep a notebook handy and note down any important points that come up during your interaction at the apparel manufacturing unit. When you go to an apparel manufacturing unit, you should:

- Know about the production system.
- Understand the machine safety and maintenance rules of industry.
- Analyze how Pressmen:
 - » Use and maintain personal protective equipment as per protocol.
 - » Maintain a healthy lifestyle and guard against dependency on intoxicants.
 - » Follow environment management system related procedures.
 - » Identify and correct (if possible) malfunctions in machinery and equipment.
 - » Store materials and equipment in line with manufacturer's and organizational requirements.
 - » Minimize health and safety risks to self and others due to own actions.
 - » Monitor the workplace and work processes for potential risks and threats.
 - » Carryout periodic walk-through to keep work area free from hazards and obstructions, if assigned.
 - » Report hazards and potential risks/threats to supervisors or other authorized personnel.
 - » Participate in mock drills/ evacuation procedures organized at the workplace.
 - » Take action based on instructions in the event of fire.
- Ask questions to Pressmen/supervisors if you have any query.

Exercise

1. Heart rate of a healthy person should be:
 - a) 40-60 beats per minute
 - b) 70-110 beats per minute
 - c) 80-100 beats per minute
 - d) 60-100 beats per minute
1. What is not in Four A's of First Aid:
 - a) Awareness
 - b) Assessment
 - c) Action
 - d) Attitude
2. The symptoms of fracture:
 - a) Pain
 - b) Swelling
 - c) Visible bone
 - d) All of the above
3. Which degree of burn is explained as; Extremely Serious and requires many years with repeated plastic surgery and skin grafting to heal?
 - a) 1st Degree Burn
 - b) 2st Degree Burn
 - c) 3st Degree Burn
 - d) 4st Degree Burn
4. is a level of medical care which is used for victims of life-threatening illnesses or injuries until they can be given full medical care at a hospital.
 - a) Basic life support (BLS)
 - b) CPR
 - c) ABC
 - d) All of the above



8. Follow Regulatory and Company's Rules and Greening of Job Roles



Unit 8.1 - Follow Regulatory and Company's Rules



AMH/N0104

Key Learning Outcomes

At the end of the module, participants will be able to:

1. Carryout work functions in accordance with legislation and regulations, organizational guidelines and procedures.
2. Seek and obtain clarifications on policies and procedures, from your supervisor or other authorized personnel.
3. Apply and follow these policies and procedures within your work practices.
4. Provide support to your supervisor and team members in enforcing these considerations.
5. Identify and report any possible deviation to these requirements.
6. Explain the effect and importance of Greening of Job roles.

UNIT 8.1: Follow Regulatory and Company's Rules

Unit Objectives

At the end of the unit, participants will be able to:

1. Carryout work functions in accordance with legislation and regulations, organizational guidelines and procedures.
2. Seek and obtain clarifications on policies and procedures, from your supervisor or other authorized personnel.
3. Apply and follow these policies and procedures within your work practices.
4. Provide support to your supervisor and team members in enforcing these considerations.
5. Identify and report any possible deviation to these requirements.
6. Explain the effect and importance of Greening of Job roles.

8.1.1 Defining Compliance for Your Organization

According to Merriam Webster the dictionary definition of compliance is as follows:

1. The act or process of complying to a desire, demand, proposal, or regimen, or to coercion.
2. Conformity in fulfilling official requirements.
3. A disposition to yield to others.
4. The ability of an object to yield elastically when a force is applied.



Fig.8.1.1: Regulatory Compliance

Supervisory compliance for industries, world- wide falls under the second definition. There are many managers, general councils, and policy officers that would consent in agreement at any of the other definitions as well. Let's discuss, what is compliance? Whether an organization is confronting an external regulatory compliance from a government agency, or seeks to comply with its own organizational mandates, policies or procedures, compliance in actuality means conforming to requirements and a proof that your organization has done so. This is usually attained by the scheming and development of managerial policies that will map out the projected code of conduct.

From a policy's point of view, there are many aspects that impact an organization's policies, including legislative and regulatory requirements, organizational best practices, and the market demands. If we look at government/ public sector agencies, financial service businesses, and healthcare providers - we find that they are controlled and must develop internal policies in order to ensure compliance. The actual trial comes from the juncture of practice with the laid policy.

After that, they must adopt ways to enforce those policies and measure their effectiveness. Initially this may seem to be an easy and convenient task. But the dilemma is creating a policy – without any mechanism, may it be manual, automated, or third-part, to measure and monitor compliance of the policies is very difficult. In order to build effective policies, we must not only have an understanding of the statutory requirements that will shape

the policy within our organizations, but how these policies relate to the business practices, the workforce, the methodologies of operations and the technologies within the corporation.

Irrespective of the requirements to which an organization must obey, a well-planned model is essential which will be one that assimilates strategies with their people, processes, and technology. This includes education, monitoring, and enforcement. Organizations should look to use machineries and to develop procedures that make it easier to do the right thing or to simply disregard the policy all together. In conducting performance audits, an assessment should be made of compliance with applicable laws and regulations when necessary to satisfy the audit objectives. The auditor should design the audit to provide reasonable assurance of detecting illegal acts that could significantly affect audit objectives. The auditor also should be alert to situations or transactions that could be indicative of illegal acts that may have an indirect effect on the audit results.

8.1.2 Significance of Compliance in Indian Garment Industry

Compliance is the standard for the product which ensures that it is aligned to its industry's qualitative demands. This also includes audits and inspections which are crucial to a proper and formal work environment. Compliance and its demand is rapidly growing in today's industrial scene since globalization of manufacturing standards has also created a demand for ethically created products. This standard of compliance is crucial because of the increase in export of garments from India.

Social Compliance

The treatment of the employees by its business constitutes social compliance. This also includes their environment and their personal perspective on social responsibility as an employee. The treatment of employees regarding wages, work conditions and working hours. A compliance audit is necessary in order to determine if the company meets standard environmental laws.

Compliance Audit

Process Safety Management, Risk Management Programs, and Process Security Management are all organised and provided by audits and assessments. Compliance and its verification is carried out with audits that focus particularly on these policies and procedures. The design and implementation of these audits ensures this compliance. Additionally, all sorts of deficiencies can be addressed and solved through corrective action.

In India, compliance audit consists of a thorough examination of orders, regulations, rules and directions for dealing with prudence, legality, transparency and adequacy. It is the job of auditors to collect information by reviewing documents, visually observing the site and staff interviews. This data is cross checked with applicable regulations and permits to ensure how well the operation is when sieved through applicable and required legalities.

There are three main phases of compliance audit in India:

1. **Pre-audit:** It includes planning and organising the audit; establishing the audit objectives, scope and etiquette; and reviewing the design of the program by inspecting documentation
2. **On-site audit:** It includes conducting personnel interviews, reviewing records, and making observations to assess program implementation
3. **Post-audit:** It includes briefing the management on audit findings, and preparing a final report

Therefore, Indian apparel manufacturers need to follow Government guidelines, and social compliance standards not only within their sphere of operations, but also insist their vendors, distributors, and other collaborators involved in the supply chain to do the same.

8.1.2.1 Core Labour Standards

International labour standards have grown into a wide-ranging system of gadgets on work and social policy, backed by a administrative system intended to address all sorts of complications in their submission at the national level

- Removal of Discernment in Employment and Occupation
- Freedom of Association
- Right to Collective Bargaining
- Elimination of all Forms of Forced or Compulsory Labour
- Effective Abolition of Child Labour

Apparel industry players would ensure that labour contractors don't involve forced labour or child labour and get the supply chain of the suppliers audited. Apparel Export Promotion Council (AEPC), a top organization of Indian apparel exporters, has envisioned a garment factory compliance program 'Disha' -Driving Industry towards Sustainable Human Capital Advancement. The prime objective of this body is to make India a global benchmark for social compliance in apparel Industrial. This Common Compliance Code design will prepare the Indian apparel industry on a mutual platform towards a more social and ecologically compliant industrial atmosphere.

8.1.3 India Adopting Universal Standards on Child Labour

The compliance level of garment factory is very high for Indian exporters. To ensure that all standards are being complied with, the big international companies, mindful of their branding, often generate and follow their own compliance standards. Numerous U.S. companies have incorporated "child labour" in their code of conduct, due to tenacious signal of child exploitation in the industry.

8.1.3.1 Common Compliance Code

There is a compliance exhaustion in the Apparel Industry,. Although they are trading with the global brands, the apparel sellers still don't consent that compliance is an integral management practice. The Indian apparel export industry has been indisputable to implement zero tolerance on child labour and cleanse the supply chain.

"This common compliance code will not only give the opportunity for the industry to negate international claims against child labour promotion in the garment industry, but will also help to improve the image of the industry and win more international businesses," as per PremalUdani, Chairman, Apparel Export Promotion Council (AEPC).

8.1.4 Role of AEPC in Indian Garment Industry

The apparel industry of India is one of the significant export segments. It enjoys a good global ranking because of its quality and price affordability. But there is an emerging need to increase effectiveness in the social domain as the industry faces various labour, compliance and background situations.

Being a labour rigorous industry, social compliance is becoming an integral issue for this sector. The apparel export promotion council of India (AEPC) under the textiles ministry is plateful domestic textile trade to follow the global norms through development and application of tools to help workshops certify, monitor and improve universal standards.



Fig.8.1.2: AEPC Logo

AEPC's assistance to garment exporters

AEPC brings about invaluable backing to Indian garment exporters and also the international buyers who select India as their favoured trading terminus for garments. The body today has grown-up to become the most powerful connotation for promotion and facilitation of garment exports. With an objective of structuring a strong ground for Indian exporters, AEPC is devoted to provide various podiums which would help in increasing garment exports.

Role of Apparel Export Promotion Council in India

In India, the Apparel Export Promotion Council (AEPC) is committed to legal compliance and principled business Practices. It encourages members/exporters to comply with all applicable laws and regulations of the country to meet international compliance standards. Further, the council has designed a garment factory compliance program 'Disha' (Driving Industry towards Sustainable Human Capital Advancement) that aims to spread awareness regarding the importance of compliance among garment exporters.

8.1.5 Indian Garment Industry and Social Responsibility

The apparel industry of India, is one of the biggest segments among the various industries existing. It is also one of the oldest and an eminent industry in terms of output, investment and employment. A sector which has a global market share and has earned reputation for its permanence, worth and magnificence. The industry is growing at a fast pace with change in customer taste and inclinations. There are numerous factors impacting a change in customer preferences. Few of them are here:

- Rise in disposable incomes
- Government policy focused on fast-track growth
- Convenience of shopping at departmental stores and shopping malls
- Increasing demand for branded apparels and fashion accessories
- Boom in the retail industry

8.1.5.1 International Labour Standards

The Indian apparel industry had established itself substantially not just in the domestic but global market too. The improved density from international apparel buyers to comply with labour principles and rights in Indian garment factories has resulted into a vast number of labels and code of conduct.

8.1.5.2 Corporate Social Responsibility

Corporate social responsibility (CSR) fundamentally connotes that the establishment should work in a principled way. It should work in the best interest of the parties associated with it. The notion of social accountability and responsibilities in Indian apparel sector is fastening acceptance. Increasing number of companies are tiresome to work in a mode to defend the interests of the workforce, clients, contractors and the society.

8.1.5.3 Social Responsibility in the Garment Industry

Garment firms have social responsibility associated with workforce and the surroundings. Social responsibility in the global clothing industry gives a deep examination of labour practices and values. But the ways by which the various organisations take up to accomplish their social accountability may be different. A garment factory can fulfil its social responsibility in the following manner:

- By creating and providing a challenging environment to the workforce.
- Creation and provision of fair book of policies for any kind of employee dispute, if any.
- Affirm a safe and positive working environment for the employees.
- Prohibit child labour and abolish any kind of child abuse.
- Provision of equal opportunities to the employees to voice their feedback and have an effective policy for the solution of dispute.
- Ensure ethical recruitment, training, remuneration, appraisal and other policies.

8.1.6 Indian Apparel Trade and Compliance Standards

With the increasing globalisation, a lot of prominence has been placed on global compliance standards in the garment industry. Factories involved in the international trade must keep a proper check of the garment factory compliance at regular interludes. Therefore, every apparel export business needs to have a proper understanding of compliance rules for foreign trade.

8.1.6.1 Why Code of Ethics is Required

The code of ethics is concerned with the quality of the products and services from the workstations along with the working environment that should meet the provisions of audits and assessments. If followed sincerely, these ethics will result into:

- Cumulative national affordability in terms of social compliance.
- Growing competitiveness of small scale industrialists.
- Dropping burden on manufacturers.

Some of the compliance codes in Indian garment industry are listed below.

8.1.6.2 Working Hour & Wage Rate Compliance

- Garment workshops should ensure a confirmation that employees should get minimum wages as per the domestic law and according to their working hours spent by them in the industry.
- Employer should confirm an equal wages to both men and women employees who are performing the same work or work of a similar nature.
- Workforce employed for more than nine hours on any day or for more than 48 hours in any week, shall be qualified to wages at premium legal rates for such overtime work.
- Every employee must be entitled to one holiday in a week. Whenever a worker is required to work on a weekly holiday, he is to be allowed a compensatory holiday for each holiday so lost.

8.1.6.3 Workplace & Work Environment Compliance

- Businesses units should see that they are providing a proper clean, hygienic, well-ventilation, sufficient light and air to provide the workforce with standard work environment. A comfortable workstation with a clean and neat workplace is a mandate.
- Indian garment industries should ensure that the workers are given a comfortable sitting chair with back support and proper leg space.

8.1.6.4 Non-discrimination Compliance

Under federal and state laws, it is in contradiction of the law for proprietors to differentiate staffs and job applicants and/or harassment to occur with their organizations. It is also against the law to treat people unethically or bother them because of the age, disability, homosexuality, marital or domestic status, race, sex or transgender status of any relative, friend or colleague of a job applicant or employee. Employers, managers and supervisors must treat all their job applicants and employees on the basis of their individual merit and not because of irrelevant personal characteristics. They must also do their best to make sure that their employees are not harassing any other job applicant or employee.

8.1.6.5 Social Compliance in India

Religion, community, culture or belief characteristics should never be the basis of distinction among employees by the organisation. All the terms and conditions of employment should be based on a person's ability to do the job. The mandate for social compliance is growing every day. One can accomplish a dynamic and vigorous compliance system only when the workforce is provided with an equal stand to voice their concern and have consultative instrument at the workplace.

The Apparel Export Promotion Council of India (AEPC), a summit framework of Indian apparel exporters, runs all social compliance services to meet international global standards. This council trains and monitors industrial unit to upgrade the factory conditions and labour values and standards.

8.1.7 Health and Safety Compliance in Indian Garment Industry

Apparel industry has won increased attention from consumers, social workers, welfare organisations and trademarked international buyers. Many global players are demanding that their "code of conduct" should be complied to, before entering into an agreement. Nowadays, continuous observance to quality standards and employee contentment have become significant bounds for gauging the company's performance.

Apart from the growing quality of outputs that meet transnationally recognised standards, it is essential for the suppliers to improve safety and health compliance code and provide proper working atmosphere in their work locations.

Numerous overseas countries have established various international compliance standards on safety and health compliance. Exporters should follow these codes to live on in the global market. One should not under-estimate the benefits drawn from regular drilling of compliance codes of conduct which can bring higher price of yields, less employee turnover rate, smooth trade relation as well as global image & status.

8.1.7.1 Need for Compliance Codes

There is prominent impact of social compliance on company's economic outcomes. Companies should adopt compliance code to protect their goodwill and brand name in the market. The Indian apparel industry needs to be hard-hitting on compliance rather than opposing with other developing countries manufacturing low-cost garments.

8.1.7.2 Compliance Code Guidelines

Apparel factories ought to contemplate the below mentioned guidelines when complying with safety and health compliance code standards:

- Trades should comply with international standard code, such as ISO or importing countries standard code to become competitive in international markets.
- It is necessary for workers involved in loading and unloading operations.
- Young adults (between 15 to 18 years) are not allowed to work on any dangerous machine without sufficient training and supervision.
- Ear plugs or muffs should be given in places with excessive sound such as generator rooms and embroidery rooms.
- Factories should have effective fire extinguisher with proper usage instructions.
- Eye-wear and face shields should be a must, providing in areas with danger of flying objects, sparks, glare, hazardous liquids and excessive dust.

Code to protect their goodwill in the market

This industry needs to be tough on compliance rather than challenging with other developing countries manufacturing inexpensive garments. In India, the Apparel Export Promotion Council (AEPC) is committed to legal compliance and ethical business practices and encourages members/exporters to comply with all applicable laws and regulations of the country to meet international compliance standards.

The council has designed a garment factory compliance program 'Disha' (Driving Industry towards Sustainable Human Capital Advancement) that aims to spread awareness regarding the importance of compliance among apparel exporters.

8.1.8 Compliance Code Guidelines for Indian Garment Industry

The Indian apparel industry supports considerably to India's export earnings. India has industrialised as a major following destination for various buyers. The USA and the EU endure to be the most domineering markets for Indian apparel industry, bookkeeping for about two-third of India's textiles exports. These countries have been demanding upon compliance to certain social, environmental and safety standards and norms by the manufacture units involved in export business. Corporate codes of conduct that discourses labour standards vary from corporation to corporation and location to location. Some of the common Indian Garment industry compliance code guidelines are:

- Exporters must not be intricate in unfair labour practices but limited to interferences in matters regarding freedom of association.
- Exporters shall recompense workforce for all hours operated. Workers on a piece rate payment scheme or any other incentive scheme should be paid according to that.

- Exporters shall not illogically restrain the liberty of movement of workers, including movement in canteen during breaks, using toilets, accessing water, or to access necessary medical attention, as a means to maintain work discipline.
- Exporters are about to offer workers with paid annual leaves as required under local laws, guidelines and processes. Exporters shall not impose any undue limitations on workers' use of annual leave or taking any type of sick or maternity leave.
- There shall be no alterations in workers remuneration for work of equal value on the basis of gender, race, religion, age, nationality, sexual orientation, social political opinion, disability or ethnic origin.
- Exporters shall not threaten female workers with firing or any other employment conclusion that adversely distresses their service status in order to avert them from getting married or becoming pregnant.
- Exporters shall confirm that proper ventilation systems are installed within their premises to prevent airborne exposures which may affect the health of workers.
- Members shall not custom any form of physical or mental, emotional violence, threats, harassment, or abuse against workers seeking to form organisations or participating in union activities, including strikes.
- Workers shall be permitted to at least 24 successive hours of rest in every seven-day period. If workers must work on a rest day, another successive 24 hours rest day must be provided.
- Exporters shall pay workers at least the legal minimum wage or the usual industry wage, the one that is Higher. This indeed is the most essential code of compliance for Indian Industry.
- Garment exporters must ensure that the minimum age requirement to unsafe employment shall not be less than 14 years. This is the most significant concern in the country. Each worker has the right to enter into and to terminate their employment freely. Indian apparel makers need to follow all the compliance rules to comply with global standards. Often companies adopt industry compliance codes to project a positive image and protect their goodwill in the market. The Indian garment industry needs to be strong on compliance instead of competing with other developing countries manufacturing inexpensive garments.

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8.1.9 India Complying with International Standards on Child Labour

Child labour has been a grave crime in India. It still exists. Children are in poverty, ignorance, and corruption due to illiteracy. Child labour superfluties under many conditions such as discernment (based on gender, ethnic, or religious issues), inaccessibility of educational and other substitutes, weak enforcement of child labour laws, etc. Large global firms, conscious of their image, often set up their own compliance standards for the exporters to ensure that all standards are being complied with.

Various companies of U.S originality have included child labour in their code of conduct, due to tenacious evidence of child exploitation in the industry. In worldwide market, the buyer's compulsory requirement is to have an audit. As India is a leading garment exporter, the level of garment factory compliance is very high for Indian exporters. The child labour issue is one of the very important aspect that the audit checks. Therefore, all the export units must be highly compliant on issues related to child labour.

8.1.6.1 Code of Conduct for Garment Exporters

- Garment exporters must safeguard that the bottom limit of the age requirement to non-hazardous employment should not be less than 14 years. Moreover, all young workers (between 14 to 18 years) must be sheltered from doing any work that is likely to be dangerous or that may be injurious to their health and physical, mental, social, or moral development. Exporters must detect all legal necessities for work being performed by lawful young workers.
- Further, the trainees or occupational students shall not be under the legal age for employment (as provided under the applicable laws). They cannot be used on regular production lines as long as they are trainees and unless their pay and other benefits are at par with the regular workforce.
- A proper process is followed for checking the age of the workers. The minimum certification and credentials required to be maintained shall include- proof of age certificates by registered/ licensed dentists, birth certificate, school leaving certificate, national identity like passport, driving license, voter card etc. or any other document required under the applicable laws.

Apparel industry players would now make sure that labour contractors don't engage child labour and get the supply chain of the suppliers audited. Apparel Export Promotion Council (AEPC) has intended a garment factory compliance program 'Disha' (Driving Industry towards Sustainable Human Capital Advancement) to make India a global benchmark for social acquiescence in apparel manufacturing and export. This Common Compliance Code project will prepare the Indian apparel industry on a mutual platform towards a more social and environmentally accommodating industrial environment.

8.1.10 Green Jobs

"Green jobs' are defined as jobs that reduce the environmental impact of enterprises and economic sectors, ultimately to levels that are sustainable."

Green jobs can produce goods or provide services that reduce environmental impact, such as green buildings or clean technology adoption. An important section of green jobs lies in sustainable or clean manufacturing. India has already begun preparation towards a green transition by institutionalizing capacity buildings for green jobs through jobs, including legal regulations and skill mapping. The country is accelerating the expansion of green jobs in large industries like automotive, textile, brick manufacturing, power sector, and green buildings. It is gradually expanding its coverage to hard-to-abate sectors such as steel, thermal power plants, and manufacturing SMEs.

India will soon be the most populous country in the world – and home to one of the youngest populations. India is the world's third-largest energy consuming country, with 80 per cent of demand met by coal, oil and solid biomass. Despite its efforts, India is predicted to be among the top three emitters by 2030. Millions of Indian households are set to buy new appliances, air conditioning units and vehicles.

Rapid growth is expected in building stock, other infrastructure, and construction materials. In recent years, India created a massive expansion in renewable energy. India's efforts at promoting LED lighting are a huge success story. Over 367 million LED bulbs, 7.2 million LED tube lights and 2.3 million energy efficient fans have been distributed. This has brought big savings in power use, greenhouse gas emissions and household bills.



Fig.8.1.3: Diversified green jobs

India has also taken steps to control plastic pollution, including bans on single-use plastic and strengthening extended producer responsibility. India has also committed to restoring 26 million hectares of degraded land by 2030. But India, like every nation, must do more. And doing more is in the best interests of the entire nation. A recent World Economic Forum estimate suggests that India's decarbonization journey represents a USD 15 trillion economic opportunity by 2070. This journey could create as many as 50 million net new jobs.

About sustainability and sustainable workplace

Sustainability, greening the corporation, environment management are gradually becoming a part of the corporate vocabulary. The way the natural resources are extracted and consumed from earth, it is going to be very difficult to replenish them timely. It is often discussed in various forums that for generating the resources we spend in one year; earth takes around 1.5 years for the re-generation. Hence, it can be assumed that there will a requirement of the capacity of almost two Earths by 2030 to keep pace with the present natural resource consumption, and the requirement will be of three planets by 2050.

The current requirement is towards developing long-term, meaningful relationships, and self-discipline for attaining effective results. Thus, the design of the workplace is such that supports the basic and core idea in a more accommodating and comprehensive manner.

A Green workplace is an eco-friendly and focused organisation and leans towards the adoption of business practices that are justifiable in nature, energy efficient, and well suited to the complex as well as the ever changing world of business. It advocates the model based on 3Rs — reduce, reuse, recycle. It encompasses green competencies, green attitude, and green behaviour, which is combined synergistically to help the organisation become green or sustainable. Values are the essential characteristic that both employees and organisations uphold and operate at multiple levels (societal, organisational and personal), thus playing a fundamental role in shaping the organisation's culture with regard to a shift towards greater sustainability.

The idea of introducing green initiatives into the workplace can feel a little daunting at first. And while it may feel overwhelming trying to figure out where to start, there are actually lots of ways we can be more green in the office without bringing the whole forest inside, without huge cost implications and with long-term benefits to the company, employee well-being and future spend. Implementing a few simple changes for a more sustainable, green workplace can be really effective in reducing your business' impact on the environment.

Sustainability is now counted as one of the major pillars of apparel export business and a growth tool. Though its key areas involve saving of energy, water, more greenery in the factories, maximum use of natural resources, green factories, there are many other initiatives which are being taken by various companies as per their need, priorities, and with the changing sustainability landscape, bench marks and issues are also evolving. All these efforts are generating great results, bringing buyers closer to them and creating a sense of profitability and responsibility amongst the companies towards the people and the planet.

A Few Green workplace initiatives

1. Discourage food and water wastage.
2. Switch off the lights or power when not in use.
3. Switch off the sewing machine when not in use.
4. Use eco friendly fabrics in designing.
5. Minimise fabric waste.
6. Design out of fabric waste.
7. Stop using Single use Plastic.
8. Segregate waste as per waste management/disposal policy.

9. Any sort of wastages like empty glasses/bottles/plastics/containers etc should be kept in a specific area to be recycled.
 10. Throw waste only in the allocated basket or trolley.
 11. Minimise use of paper.
 12. Use of LED lights.
 13. Installation of solar panels.
- Encourage similar practice at home also.





9. Soft Skills

Unit 9.1 - Introduction to the Soft Skills

Unit 9.2 - Effective Communication

Unit 9.3 - Grooming and Hygiene

Unit 9.4 - Development of Interpersonal Skill

Unit 9.5 - Social Interaction

Unit 9.6 - Group Interaction

Unit 9.7 - Time Management

Unit 9.8 - Resume Preparation

Unit 9.9 - Interview Preparation



Key Learning Outcomes

At the end of the module, participants will be able to:

1. Interpret the basic meaning of Soft Skills, their components and their benefits.
2. Interpret Work Readiness and its significance.
3. Explain communication process.
4. Explain about verbal and non- verbal communication.
5. Explain about the barriers in communication process.
6. Maintain cleanliness and hygiene.
7. Identify specific uniform guidelines
8. Maintain positive body language while speaking.
9. Interpret good eating habit and their impact on health.
10. Develop a positive attitude and behavior.
11. Explain team dynamics.
12. Explain how to manage relations.
13. Learn about Stress and anger management skills.
14. Learn to develop leadership qualities.
15. Explain about what is social interaction and what are social interaction behaviors.
16. Practice Self introduction in public.
17. Participate in group discussions in the class.
18. Identify the importance of team building and team work.
19. Explain about the time management.
20. Develop time management skills.
21. Learn about effective time planning.
22. Interpret the importance of resume.
23. Learn how to prepare a resume.
24. Explain the procedure of interview.
25. Practice mock interview.
26. Identify how to present themselves during an interview.

UNIT 9.1: Introduction to the Soft Skills

Unit Objectives

At the end of the unit, participants will be able to:

1. Interpret basic meaning of Soft Skills, their components and their benefits.
2. Explain the components and their benefits.

9.1.1 What is a Soft Skill?

Soft skills are personal attributes that describes an individual's ability to interact with others. Soft skills is a term often associated with a person's EQ, the cluster of personality traits, social graces, communication language, personal habits, friendliness and optimism that characterise relationship with other people. Soft Skills complement hard skills which are occupational requirements of a job and many other activities. They are related to feelings, emotions, insights and an inner knowing.

Soft skills have more to do with who we are than what we know. As such soft, skills encompasses, the character traits that decide how well one interact with others and are usually a definite part of one's personality.

According to a survey the long term success in job is 75 % due to soft skills and 25 % due to technical knowhow. Soft skills also determine how satisfied and happy one remains in professional and personal situations.



Fig.9.1.1: Soft skills

9.1.2 Components of Soft Skills

- Adaptability
- Emotional Strength
- Leadership Quality
- Team Playing Ability
- Decision Making
- Interpersonal Communication
- Negotiation Skills

7.1.3 Benefits of Soft Skills

Some of the benefits of Soft Skills are as:

- Increased credibility with customers.
- Increased customer satisfaction.
- More productive employees.
- Out service the competition.
- Recognition from the industry, employer and peers.
- New employment opportunities.
- Increased ability to perform on the job.

UNIT 9.2: Effective Communication

Unit Objectives

At the end of the unit, participants will be able to:

1. Explain the meaning of Communication and process of communication.
2. Elaborate about the types of communication.
3. Identify the barrier in effective communication.

9.2.1 Introduction

In the information age we have to send, receive and process huge number of messages everyday. But effective communication is more than just exchanging information, it also about understanding the emotion behind the information. Effective communication can improve relationship at home, work, and in social situations by deepening our connections to others and improving teamwork, decision making and problem solving.

Effective communication skill is a learned skill, it is more effective when it's spontaneous than formula.

9.2.2 The Communication Process

The process of conveying information through the exchange of thoughts, ideas, feelings, intentions, attitude by speech, gesture, writing etc. is known as communication. It is the meaningful exchange of information between two or more participants.

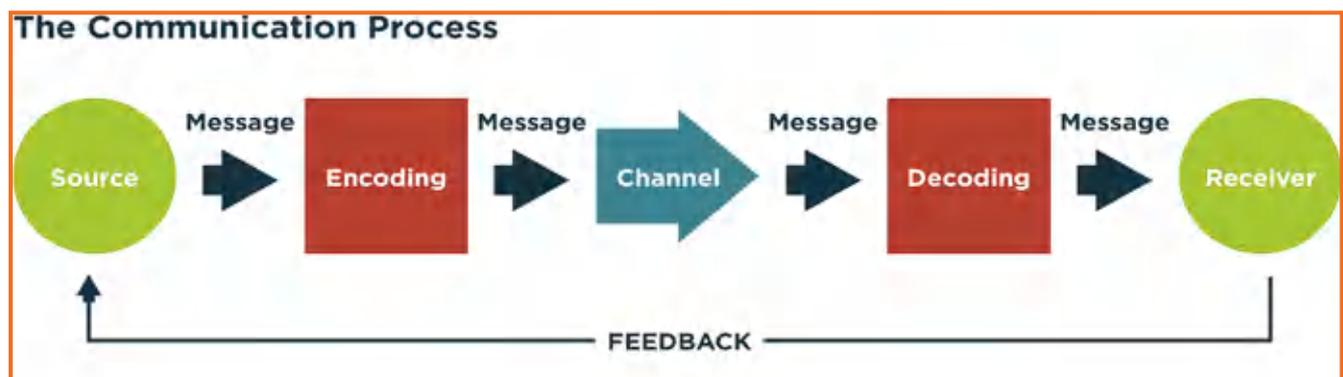


Fig.9.2.1: The Communication Process

Communication requires a sender, a message, a medium and a recipient. Communication process is complete only when a receiver understands the sender message.

Communication with other involves three steps:

1. **Message:** First information exists in the mind of the sender. It can be a concept, idea, formation and feeling.
2. **Encoding:** A message is sent to the receiver in words or other symbols.
3. **Decoding:** Lastly the receiver translates the words or symbols into a concept or information that a person can understand.

9.2.3 Verbal and Non-Verbal Communication

Communication can be categorized into three basic types. These include:

1. **Verbal Communication:** It means you listen to a person to understand their meaning. Verbal communications have the advantage of immediate feedback, are best for conveying emotions and can involve storytelling and crucial conversations.
2. **Written Communication:** letters, books, newspapers are printed messages in which you read their meaning. They are asynchronous, can reach many readers and are best for conveying information.
3. **Nonverbal Communication:** It means you observe a person and infer meaning. Both verbal and written communications convey nonverbal communication and are also supported by body language, eye contact, facial expression, posture, touch and space.

9.2.4 Communicating Effectively Identifying Barriers

There are many reasons why communications fail. These failures are the result of barriers in communication which may occur at any stage in the communication process. Barriers may lead to one's message becoming distorted and therefore risk wasting both time and money by causing confusion and misunderstanding. Effective communication involves overcoming these barriers and conveying a clear and concise message.



Fig.9.2.2: Barriers in Communication

A skilled communicator must be aware of these barriers and try to reduce their impact by continually checking understanding or by offering proper feedback.

Dealing with Barriers

- Use simple, easily understood word. Over complicating makes things confusing
- While speaking in other language always prepare beforehand
- Always give or take feedback to ensure the effectiveness of communication
- Be alert to cues
- Listen, listen, listen ...

9.2.5.1 Some Tips for Active Listening

- Concentrate what the person is talking about and not on noise or other external distractions.
- Understand his emotions and you get it all right. Is the speaker angry, happy or plainly inquisitive?
- When the speaker is saying or telling something, don't break the chain of his thoughts.
- Don't avoid completing sentences of the speaker. Let them speak and speak only after they finish.
- It's alright if you haven't understood at first chance. Request to repeat the information.
- Practice makes a man perfect. Listen intently, focus and ignore other noises. Listen more and talk when required.

It takes a lot of concentration and determination to be active listener. Old habits are hard to break and if you're listening habits are not good then you have to break those. Start listening deliberately and remind yourself frequently that your goal is to hear truly what the other person is saying.

UNIT 9.3: Grooming and Hygiene

Unit Objectives

At the end of the unit, participants will be able to:

1. Maintain cleanliness and hygiene.
2. Keep their dress clean and tidy.
3. Maintain positive body language while speaking.
4. Enable to perform more of the do's than the don'ts.
5. Avoiding bad things such as gutkha and alcohol.

9.3.1 Personal Grooming

Personal Grooming is the term for how people take care of their body appearance. Once you enter your store/ department you need to be dressed in full uniform as per company norms, and also properly groom yourself as per the service standards.

Personal grooming not only makes us presentable to other people but good personal hygiene is essential for good health. Habits that are considered personal grooming include, bathing, dressing, applying makeup, hair removal and taking care of one's teeth and skin.

9.3.2 Positive Body Posture and Language

- Clean hands at all times as they mostly will be handling merchandise and customers.
- Avoid biting nails on the floor.
- Manage body odour & bad breath to be under control as they are offensive to the customer.
- Maintain straight & upright posture on the shop floor.
- Slouching on the floor, hands in pockets, hands on the hips are not courteous to the customer.
- Keep your hands out of your pocket
- Don't Fidget. Fidgeting is a clear sign of nervousness
- Keep your eyes forward. This indicates that you are interested in communication with other.
- Stand up straight with your shoulders back. It communicates confidence.
- Don't cross your arms when meeting other persons.

9.3.3 Personal Hygiene

Personal Hygiene is the set of practices to follow to preserve one's health. Maintaining a high level of personal hygiene will help to increase self-esteem while minimizing the chances of developing infections. Poor personal hygiene can have significant implications on the success of job applications or chances of the promotion.

9.3.4 Physical Fitness

Apart from following these hygienic practices, one should also be physically fit. Physical fitness is an outcome of regular exercise. Exercise may be of many different forms. Jogging, morning-walk, weight-lifting, gym, swimming, cycling, yoga and many more.

Things to be avoided

There are certain habits that have severe ill-effects on one's health. Such habits should be avoided for a healthy life.

- Alcoholism
- Tobacco / Smoking
- Gutkha

UNIT 9.4: Development of Interpersonal Skill

Unit Objectives

At the end of the unit, participants will be able to:

1. Develop a positive attitude and behaviour.
2. Describe the goal setting.
3. Motivate for team participation at work.
4. Practice relations and stress management at work.
5. Develop leadership qualities.

9.4.1 Introduction

Interpersonal skill development is the blend of different traits of day to day life that play an important role in creating our impression in other's mind. It starts from inside. The role of interpersonal skill development is to help us understand how to make choices about our attitudes and actions.

These include various traits like:

- Positive Attitude
- Motivation
- Goal Setting
- Team Work
- Managing Relations
- Etiquette
- Stress and Anger Management
- Conflict Resolution

9.4.2 Goal Setting

Goal setting is a powerful process for thinking about your ideal future. The process of setting goals helps you to choose where you want to go in life.

Goal setting involves establishing specific, measurable, achievable, and realistic and time targeted goals. Goal setting helps people work towards their own objectives. Goals are a form of motivation that sets the standard for self-satisfaction with performance. Achieving the goal one has for oneself is a measure of success and being able to meet job challenges is a way one measures success in the workplace.

1. Financial
2. Education
3. Family
4. Health
5. Public Service

9.4.3 Team Dynamics

A team comprises a group of people associated for a common purpose. Teams are especially appropriate for conducting complex tasks. A team is a special instance of a group in which shared goal is the common thing. This creates a dynamic between team members and because they are dependent on each other for success. For example a sports team wins or loses as a whole.

Factors of Team Dynamics

- Tolerance and Cooperation
- Set aside feelings of caste, creed, profession
- Put up with each other
- Identify strengths of each
- Who can do what

9.4.4 Managing Relations

We all have different personalities, different wants and needs, and different ways of showing our emotions which affects people around us.

70% of the workplace learning is informal, when people talk to each other at work they actually are learning to do their job better. Friendlier workers are effective communicators, more productive and trusted more by employers and co-workers.

Stress and Anger Management

Anger is a normal and a healthy emotion. Managing anger can be a problem for some people who find it difficult to keep their anger under control. There are many health issues related to a unresolved anger such as high blood pressure, heart attack, depression, anxiety, colds and flu and problems related with digestion.

Always remember:

- Avoid unnecessary stress, learn to say no and take control of your environment.
- Express your feelings instead of boiling them up.
- Accept the things you can't change.
- Learn to forgive.
- Don't react immediately.
- Post pone for a few seconds whatever you wish to say or do.
- Take a deep breath.
- Speak when you have calmed down.

9.4.5 Etiquette

Etiquette are the customs or rules governing behaviour regarded as correct or acceptable in social and official life. It includes:

- Making Positive Impression
- How you treat with people
- Communicating at Workspace
- Work Ethics
- Discipline
- Commitment to work:
- Punctuality
- Ownership and responsibility
- Striving to excel:

9.4.6 Conflict Resolution

What is a Conflict?

A problem or a situation that may be difficult to understand or to deal with.

Why do we need to resolve conflicts?

- If a problem is not solved or addressed at the right time it may blow out of proportion
- An unsolved problem can be like Cancer which spreads and translates itself into all other areas in life
- Unsolved problems may lead to increased levels of bitterness and frustration
- It may foster bad habits like back-biting, gossiping, etc.
- Persons involved in conflict may lose focus and target each other's character instead of the specific behavior to be modified.

How to work out Conflicts?

- **STOP** - before you lose control of your temper and make the conflict worse.
- **SAY** - what you feel is the problem. What is causing the disagreement? What do you want?
- **LISTEN** - to the other person's ideas and feelings.
- **THINK** - of solutions that will satisfy both of you.

If you still can't agree, ask someone else to help you work it out.

9.4.7 Leadership Skills

The ability to lead effectively is based on a number of key skills. These skills are highly sought after by employers as they involve dealing with a number of people in such a way as to motivate, enthuse and build respect. Some of the qualities that every good leader should possess are:

- Honesty

- Ability to delegate
- Ability to take initiative
- Good communications skills
- Confidence
- Commitment
- Positive Attitude
- Creativity
- Be decisive
- Focus on the big picture

UNIT 9.5: Social Interaction

Unit Objectives

At the end of the unit, participants will be able to:

1. Analyze the social interaction.
2. Define duties and responsibility.
3. Explain about the team work.

9.5.1 Social Interaction

Social interaction is the process by which we act and react to those around us. It includes those acts people perform toward each other and responses they give in return. Social interaction includes a large number of behaviours. They are:

- Exchange
- Competition
- Cooperation
- Conflict
- Coercin

9.5.2 Self- Introduction

Everyone in their lifetime, have to introduce themselves to the audience or a class. It is a speech which lies around 3 minutes to 5 minutes. It is very important that it gives the first impression to other about us. It has a great impact on your self-esteem and self-confidence. It's helpful in:

- Feeling better about yourself
- Boosting your confidence
- Building your self esteem
- Making friends
- Feeling in control

Points for Self Introduction

- | | |
|-----------------|-------------------------------|
| • Wishes | • Location |
| • Purpose | • Hobbies/Habits |
| • Name | • Life Aim |
| • Father's Name | • Achievements |
| • Family | • Favourite Person's or Ideal |
| • Profession | • Your Strengths and Weakness |

9.5.3 Cooperation

Cooperation is the process of groups of organisms working or acting together for their mutual benefit. Cooperation among family members, friends and peers is very common and healthy. It is the backbone of any society.

Family cooperation provides an avenue for a family to come closer. It increases coping skills and decision making.

Experiential Knowledge: contributes to solving problems and improving quality of life.

- **Emotional support:** Esteem, attachment and reassurance
- **Instrumental Support:** Material goods and services.

How to be a cooperative person

For being a cooperative person following things needs to be done:

- Listen carefully to others and be sure you understand what they are saying.
- Share when you have something that others would like to have.
- Take Turns when there is something that nobody wants to do, or when more than one person wants to do the same thing.
- Compromise when you have a serious conflict.
- Do your part the very best that you possibly can. This will inspire others to do the same.
- Show appreciation to people for what they contribute.
- Encourage people to do their best.
- Make people needed. Working together is a lot more fun that way.
- Don't isolate or exclude anyone. Everybody has something valuable to offer, and nobody likes being left out.

UNIT 9.6: Group Interaction

Unit Objectives

At the end of the unit, participants will be able to:

1. Participate in group discussions in the class.
2. Give speech in the public.
3. Paraphrase the importance of team building and team work.

9.6.1 Group Interaction

Every day we meet with groups of people socially and professionally. How we interact plays a large role in the impressions we create. Interaction that occurs while a group completes a cooperative task describes how the group works.

Everything you do in a group setting makes an impression on everyone in the group. Don't ever think something doesn't matter. Everything matters. Take every opportunity to take part in informal and formal group interactions. Start by making small contributions to discussion, prepare a question to ask or agree with another person's remark. Ask for other persons opinion.

Dos and Don'ts of Group Interaction

Do's	Don't
<ul style="list-style-type: none"> • Speak pleasantly and politely to the group. • Respect the contribution of every speaker. • Remember that a discussion is not an argument. Learn to disagree politely. • Think about your contribution before you speak. How best can you answer the question/ contribute to the topic? • Try to stick to the discussion topic. Don't introduce irrelevant information. • Be aware of your body language when you are speaking. • Agree with and acknowledge what you find interesting. 	<ul style="list-style-type: none"> • Lose your temper. A discussion is not an argument. • Shout. Use a moderate tone and medium pitch. • Use too many gestures when you speak. Gestures like finger pointing and table thumping can appear aggressive. • Dominate the discussion. Confident speakers should allow quieter students a chance to contribute. • Draw too much on personal experience or anecdote. Although some tutors encourage students to reflect on their own experience, remember not to generalize too much. • Interrupt. Wait for a speaker to finish what they are saying before you speak.

Fig.9.6.1: Dos and Don'ts of Group Interaction

9.6.2 Teamwork

Teamwork is a very important part of working life. They can have a big impact on:

- The profitability of an organisation
- Whether people enjoy their work
- Staff retention rates
- Team and individual performance

Importance of Team Building

Team building activities not only boost morale of the team members, but it can also increase the success rate of the teams. Team building is an important activity as it:

- Facilitates better communication
- Motivates employees
- Promotes creativity
- Develops problem-solving skills
- Breaks the barrier

UNIT 9.7: Time Management

Unit Objectives

At the end of the unit, participants will be able to:

1. Describe the concept of time management.
2. Develop time management skills.
3. Explain effective time planning.

9.7.1 Time Management

Time management is the act of process of planning and exercising conscious control over the amount of time spent on specific activities, especially to increase effectiveness, efficiency or productivity. It is an activity with the goal to maximize the overall benefit of a set of activities within the boundary condition of a limited amount of time.

Some effective time management

- Delegate tasks.
- Identify time wasters.
- Combine activities – Plan for them.
- Break down big tasks down to the smallest task possible.
- Accomplish them one by one.
- At the end of the day conduct a simple analysis to see which activity took time.

9.7.2 Pareto Analysis

- According to this 80% of the tasks can be completed in 20% of the time. The remaining 20 % of the tasks take 80 % of your time. And the task which should fall in first category should be given a higher priority.
- Time also depends on the method adopted to complete the task. There are always simpler and easier ways to complete the task. If one uses complex ways then it will be time consuming. One should always try to find out alternate ways to complete a task.

Urgent Important Matrix

1. The Urgent and Important Tasks	2. The Non Urgent but Important Tasks
DO NOW <ul style="list-style-type: none"> • Emergencies, complaints and crisis issues • Demands from superiors • Planned tasks or project work now due • Meetings with superiors/colleagues 	PLAN TO DO THEM <ul style="list-style-type: none"> • Planning, preparation • Scheduling • Designing, testing • Thinking, creating, modelling the data

3. The Non Important but Urgent Tasks	4. The Non Important and non-Urgent Tasks
<p>REJECT AND EXPLAIN</p> <ul style="list-style-type: none"> • Trivial requests from others • Apparent emergencies • Misunderstandings appearing in work • Pointless routines or activities 	<p>RESIST AND CEASE</p> <ul style="list-style-type: none"> • Comfort' activities, computer • Games, net surfing, excessive • Cigarette breaks • Chat, gossip, social • Communications • Reading irrelevant and useless material

Fig.9.7.1: Urgent Important Matrix

This matrix helps you understand:

- What should be done
- What should be planned
- What should be resisted
- What should be rejected

The simplest method of managing time is to create a general to do list. Prioritize the task list:

- A daily list of things to do, numbered in the order of their priority
- Start with the most unpleasant and difficult task first latter will completed easily and quickly.
- Map out everything while making a task list
- Learn to say “No” to unimportant things
- Strikeout the things completed so that you are familiar what have been completed and what needs to be completed.

Prioritize the above mentioned activities in the following heads.

Important Tasks	Unimportant Tasks	Urgent Tasks	Not Urgent Tasks

UNIT 9.8: Resume Preparation

Unit Objectives

At the end of the unit, participants will be able to:

1. Explain the importance of resume.
2. Discuss basic steps for the preparation of a resume.

9.8.1 Introduction

A resume is a self-advertisement that, when done properly shows how your skills, experience and achievements match the requirement of the job you want. The resume is a tool with one specific purpose to win an interview. It convinces the employer that you have what it takes to be a successful in the new career or position.

It also establishes you as a professional person with high standards and excellent writing skills based on the fact your resume is written well. It also helps you clarify your direction, qualifications and strengths, boost your confidence or to start the process of committing to a job or a career change.

One must know about a resume that:

- Your resume is to get you an interview not a job
- Your resume will be screened by an employer for just 15-20 seconds. That's all the time your resume has to make an impact.

There are different sections on the resume in the same order as mentioned under:

Section	What is the employer looking for
Header	Your identity and to contact you
Objective	To check if their requirement and your objective match
Education	To check if you have the basic qualification for the job/ internship you are applying for
Practical Experience/Projects	To see if you have done anything that reflects your potential capability. Also to see how different you are from your peers.
Skills	How equipped you are in terms of your personality traits as well as occupational skills
Interests	Professional aspects apart, how meaningful is your life?
Other	Is there anything else significant and relevant you want to showcase, that will add value to your resume.

Fig.9.8.1: Different sections on the resume

9.8.2 Points to Remember

- Make sure that the length of your resume does not exceed 2 pages.
- Do a thorough recheck and make sure there are absolutely no errors in your resume. No grammatical errors, no spelling mistakes, no punctuation errors.
- Run through your resume time and again for to make improvements and wording sentences better.
- Choose a professional font in a size 11 or 12. You can use multiple fonts for different parts of resume, but try to limit it maximum of two fonts. Instead changing between fonts, try making specific sections bold or italicized instead.
- The font size of your header and the introduction to a section may be a size 14 or 16.
- Your text should always be printed in solid black ink. Make sure to deactivate any hyperlinks so that they don't print in blue or other contrasting colour.
- Your page should have one inch margin all the way around with 1.5 or 2 point line spacing. The body of your resume should align left and your header should be centred at the top of the page.

UNIT 9.9: Interview Preparation

Unit Objectives

At the end of the unit, participants will be able to:

1. Explain the procedure of an interview.
2. Prepare for interview.

9.9.1 Interview

An interview is a conversation between two or more people (the interviewer(s) and the interviewee) where questions are asked by the interviewer to obtain information from the interviewee. An interview is the first and last hurdle you need to cross in order to get a job.

Common Types of Interview

1. **Traditional HR Interview:** Most interviews are face to face. The most traditional is a one-on-one conversation with the HR Executive where the candidate's focus should be on the person asking question. You are advised to maintain good eye contact, listen keenly and answer promptly.
2. **Panel Interview:** In this situation, there is more than one interviewer. A panel ranging from two to ten members may conduct this part of the selection process. This is an ideal chance for you to display group management and group presentation skills.
3. **Technical interview:** The objective of this interview is to basically evaluate technical knowledge. Majority of the questions will be based on the skills sets mentioned in the candidate's resume.
4. **Telephone Interview:** Telephone interviews may also be used as a preliminary interview for candidates who live far away from the job site.

Before going for an interview, it is important to have clarity of the role you are applying for. It's also important that you know where you are applying and who will you be talking to. Your answers should tell the employer that you are the match they are looking for.

This requires you to do a small research on the following fields:

- Company & Field
- Job Description
- Yourself (Skills, Values & Interests)
- Resume (Experience)

It is important that you dress professionally. It is a proven fact that the way we dress makes a huge difference in the way we are perceived. 90% of the way you communicate with other people is through body language (gestures, expressions, etc.) and the first Impression we make. It is very simple to make a great first impression.

For a good first impression it is important those we:

- Smell good
- Have a professional appearance

- Pay attention to your grooming
- Make eye contact
- Know what and how you speak
- Our overall personality contributes to our complete perception.

How to dress for Interview

Men	Women
Long-sleeved buttoned shirt (clean and pressed)	Conservative pump, no stilettos
Dark shoes (cleaned and polished) and dark socks	Jewellery -One set of earrings (preferably knobs)
Get a haircut (short hair is always best)	No bangles
No Jewellery (chains, earrings, piercing)	Minimal use of makeup
No beards or Tattoos	

Fig.9.9.1: Dress for Interview

9.9.2 The Do's and Don'ts in an Interview

Some of you might have faced an interview and some of you might not have. However, by now, you definitely have a better understanding what are the accepted standards of a professional behaviour. Read the sentences given and mark them as do's or don'ts, in relation to an interview:

Sentence	Do's	Don'ts
Be yourself		
Burp while talking!!!		
Just out from a 'powder factory' (worn too much make-up)		
Reach just about the right time for the interview		
Just barge in the cabin/ office		
Forget to greet the receptionist/ don't respond		
Think before you speak		
Do your homework- Visit the company website		
Take time to think (TTTT)		
Wear bright colour clothes on the D-day		
Emphasis on your strengths		
Argue/ Debate with the interviewer		
Chew gum during the interview.		
Review your educational and work experiences		
See your documents flying out of the file (Being clumsy)		
Thank the interviewer		
Have the 'they need me' attitude		

Maintain eye contact and good body language		
Only give monosyllabic answers(depends on the kind of questions asked...in-between)		
Carry a copy of your resume		

Fig.9.9.2: Do's and Don'ts in an Interview

9.9.3 During the Interview

- Be confident, not arrogant
- Sell yourself - Keep your energy up
- Maintain your posture
- Be positive, don't complain
- Know your resume and accomplishments.

It isn't sufficient to have ideas. They have to be expressed effectively in the interview. The parameters that the candidates are assessed on during the interview are very simple. These are the parameters that this training program has prepared you for.



10. IT Skills

Unit 10.1 - Introduction to Computer

Unit 10.2 - MS Word

Unit 10.3 - MS Power-point

Unit 10.4 - MS Excel

Unit 10.5 - Internet Concepts



Key Learning Outcomes

At the end of the module, participants will be able to:

1. Familiarise with computers.
2. Identify and use basic uses of a computer.
3. Familiarise with a computer operating system.
4. Use Microsoft Word, Excel and Powerpoint.
5. Familiarise with Internet and use e-mails.

UNIT 10.1: Basic Computer Knowledge

Unit Objectives

At the end of the unit, participants will be able to:

1. Define the computer.
2. Recognise its various parts.
3. Differentiate the advantages and disadvantages of computer.
4. Explain the web, email services.

10.1.1 What are Computers?

Computer is the greatest technology of all times. An innovative electronic device that takes raw data as input from the user and processes these data under the control of set of instructions which is called program, to give the result the output. The first fully electronic computers, announced in the 1940s, were huge machines. The computer of today's time is thousands of times faster and in any size you want. They can fit on your desk, on your lap, or even in your pocket. Computers work through an interface of hardware and software.

Computers work through an interaction of hardware and software.

- **Hardware = Internal Devices + Peripheral Devices:** All concrete parts of the computer (or everything that we can touch) are known as hardware. The most significant piece of hardware is a tiny quadrangular chip inside the computer called the central processing unit (CPU), or microprocessor. It's the "brain" of the computer—the part that interprets instructions and performs calculations. Hardware items such as your monitor, keyboard, printer, mouse and other components are often called hardware devices.
- **Software = Programs:** Software provides "intelligence" to the computer. Software refers to the instructions, or programs, that tell the hardware what to do. A word-processing program that you can use to write letters on your computer is a type of software. The operating system (OS) is software that manages your computer and the devices linked to it. Windows is a well-known operating system.

10.1.2 Advantages of Computers

Compared to conventional systems, computers offer many notable benefits. The main benefits offered by computers are as follows:

- High Accuracy
- Superior Speed of Operation
- Large Storage Capacity
- User-friendly Features
- Portability
- Platform independence
- Economical in the long term

What can you do with computers?

In the workstation, many people use computers to keep chronicles, records, analyze data, do research, and manage projects. At home, you can use computers to find information, track finances, store pictures and music, play games, and connect with others—and those are just a few of the opportunities. You can also use your computer to link to the Internet, a network that associates computers around the world. With Internet access, you can interconnect with people all over the world, communicate with them and find a vast amount of information. Some of the most prevalent things we can do with computers are cited in this chapter.

10.1.3 The Web

The World Wide Web is an enormous warehouse of information. The web is the most prevalent part of the Internet, partly because it exhibits most information in a visually pleasing format. Headlines, text, and images can be combined on a single web page—along with sounds and animation. A website is a collection of interconnected web pages. The web contains millions of websites and billions of web pages.

Surfing the web means reconnoitering or exploring it. You can find information on the web about almost any topic possible. For example, you can read news stories and movie reviews, check airline schedules, book a hotel, find places to dine, see street maps, search the route to reach a place, get the weather forecast for your city, or research a health condition.



Fig.10.1.1: A Microsoft Web Platform

10.1.4 E-mail

Who writes letters these days? Email which is a short form for electronic mail, is the most appropriate way to communicate with others to date. When you send an e mail message, it arrives almost instantly in the receiver's email inbox. You can send email to many people at the same time and you can save, print, and forward email to others. You can send almost any type of file in an email message, including documents, pictures, and music files.

10.1.5 Instant Messaging

Instant messaging is like having a real-time conversation with another person or a group of people. When you type and send an instant message, the message is instantly visible to all participants. Unlike an email, all participants have to be online (connected to the Internet) and in front of their computers at the same time. Interaction by means of instant messaging is called chatting.

10.1.6 Pictures, Music and Movies

If you have a digital camera, you can move your images from the camera to your computer. Then you can print them, create slide shows, or share them with others by e mail or by posting them on a website. You can also listen to music and watch movies on your computer. Computer has become a prominent source of entertainment.

UNIT 10.2: MS Word

Unit Objectives

At the end of the unit, participants will be able to:

- Learn the concept of and practice MS-Word.
- Format a document.
- Print a document etc.

10.2.1 Creating a Word Document

Concepts of word processing - MS Word

Most people who use a computer daily use word processing skills. Word processing skills enable us to prepare text documents like letters, memos, and different correspondence. Most up-to-date word processing software package permits us to create text documents that embody photos and drawings.



Fig.10.2.1: MS Word Icon

Once the document that has opened, type a short paragraph of why you are taking this mini- session. For example, are you new to Microsoft Word 2007 or are you up your software your skills? Keep in mind to purposely misspell some words. Later in the session you'll use this paragraph to learn the way to spell check and use basic Word 2007 functions.

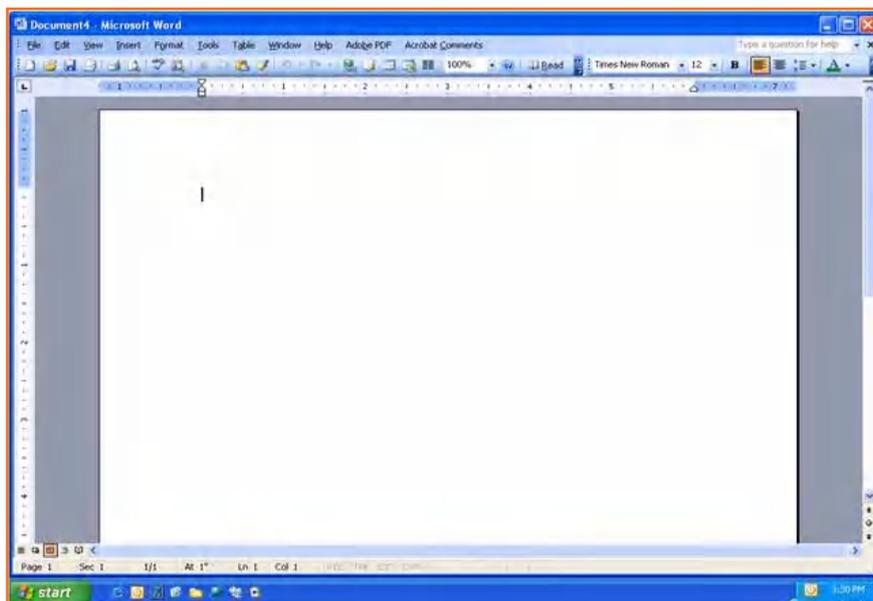


Fig.10.2.2: MS Word Window

The above image shows components of the Word window, that also contains a document in the window. This view displays rulers at the top and along the left aspect that indicate the size of the page.

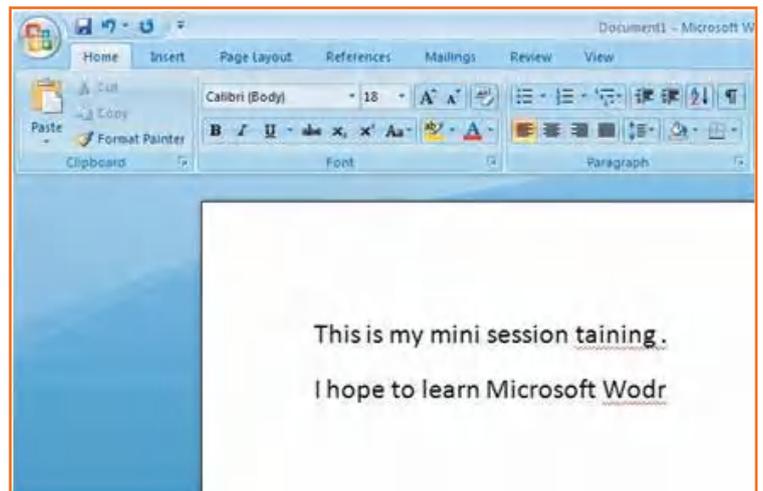


Fig.10.2.3: Writing Text in MS Word

10.2.2 Saving a Document

A Command is used for a first-time save or if you have created revisions to a document and want to replace the previous version with the new revised document. Use the 'Save as' command to save a revised document to a new name, so keeping the original as it was before revisions or to save a copy of a document in a different folder.

- **Step 1:** Save your document in the "My Documents" folder.
- **Step 2:** In the 'File Name' box enter the document name.
- **Step 3:** Check to make sure in the 'Save As Type' box the word document is (*.docx)*.



Fig.10.2.4: Saving a Document

10.2.3 Change Font Type and Size

As shown within the image below, the document that you have just created, you are currently going to format the font size and type different fonts and sizes can offer character to words in your document i.e. once you are creating your resume, you use bold as an 'eye-catcher' also, font size affects word characteristics.

1. **Step 1:** Highlight the text you wish to change the font and size for; in this practice highlight your name.
2. **Step 2:** Click on the font menu, select Theme font for e.g. Arial Black and then select the size of the font (let's say 16) as shown in the image below.

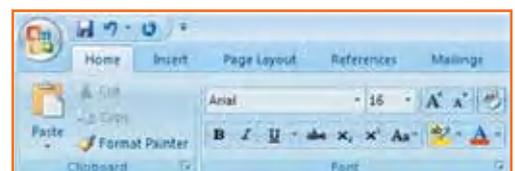


Fig.10.2.5: Change Font Type and Size

- Step 3:** Now click on SAVE in the Quick Access Toolbar to save your document (Refer to the second picture below, for saving your document).

10.2.4 Create Headers and Footers by Inserting Texts

Headers and Footers in the word document are needed to insert information like text, page numbers and date. Information on either header or footer can appear in all current document pages by default, you don't have to re-type in the header or the footer column once you add a new page to your current document. The header information appears at the top of the page whereas the footer information appears at the bottom of the page.

Follow to the simple steps and refer to the image below to make it work:

- Step 1:** Click on the option 'insert' right next to 'Home' from the bar above the word page and select 'Header'.
- Step 2:** Choose a style you like, (for now use blank).
- Step 3:** Let's use your last name to fill it; now hit enter.
- Step 4:** Add today's date and then highlight your last name and date.
- Step 5:** Click on the Home tab from the menu.
- Step 6:** Now select 'Home' from the bar and then click on 'left justification button'.
- Step 7:** finally click 'close Header and Footer'.

NOTE: the Header Menu will close and return you to your document to continue typing.

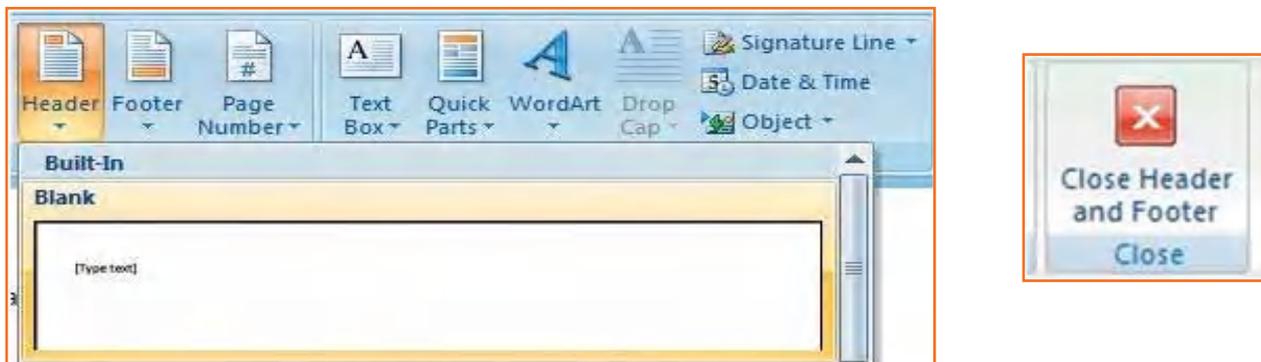


Fig.10.2.6: Headers and footers



Fig.10.2.7: Formatting

10.2.5 Indents and Spacing

Spacing your word document in a right way!

To prepare project reports which needs paragraphs in double line spacing so it is very important to understand how you would be able to change the space between lines and paragraphs by doing the following:

1. **Step 1:** Select the paragraph or paragraphs you wish to change.
2. **Step 2:** Click on the Home Tab then click 'Paragraph' Dialog Box.
3. **Step 3:** Click the 'indents and spacing' Tab.
4. **Step 4:** In the 'Line Spacing' section, adjust your spacing accordingly.
5. **Step 5:** The image below shows visual version of how your page would like.

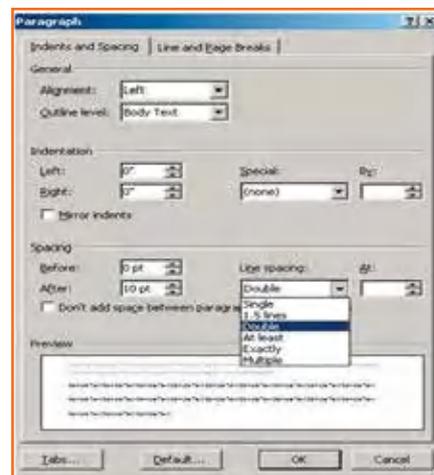


Fig.10.2.8: Indents and Spacing

10.2.6 Modifying Margins

MS-Word 2007 allows you to preview how your paper will look if the margins are modified. The page margins can be modified through the following steps:

- **Step 1:** Click the 'page layout' tab from the bar.
- **Step 2:** Now select 'Margins' from there.
- **Step 3:** Click a default margin Or,
- **Step 4:** Click custom margins and complete the dialog box.

NOTE: As you roll over each Margin preset, it will show you how the document will look when it is modified.



Fig.10.2.9: Modifying Margins

10.2.7 Lists

Lists enable you to format and organize text with numbers, bullets, or in an outline. Instead of using numbers for steps, an outline list is used to show an example of a type of number lists.

10.2.7.1 Bulleted and Numbered Lists

Bulleted lists have bullet points, numbered lists have numbers, and outline lists combine numbers and letters depending on the organization of the list.

How to add list to the existing text?

1. **Step 1:** Select the text you wish to make a list.
 2. **Step 2:** Click a bulleted or numbered lists button from the paragraph tab on the home tab.
- Now, to create a new list in your document, place your cursor where you want the list to begin. Click a bulleted or numbered lists button and start typing.

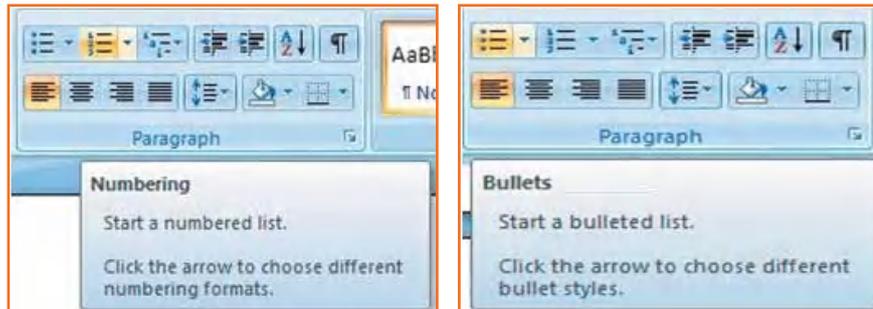


Fig.10.2.10: Bulleted and Numbered Lists

10.2.7.2 Formatting Lists

- **Step 1:** The bullet image and numbering format can be changed by using the bullets or numbering dialog box.
- **Step 2:** Select the entire list to change all the bullets or numbers, or place the cursor on one line within the list to change a single bullet.
- **Step 3:** Right click once.
- **Step 4:** Click the arrow next to the bulleted or numbered list.
- **Step 5:** Now, select a bullet or numbering style.

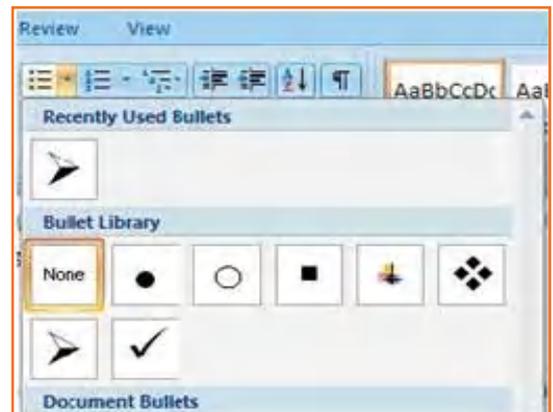


Fig.10.2.11: Formatting Lists

10.2.8 Spelling and Grammar

There are many features in Ms-Word 2007 to help you proof-read your document these features include:

- Spelling and Grammar
- Thesaurus
- AutoCorrect
- Default Dictionary
- Word Count

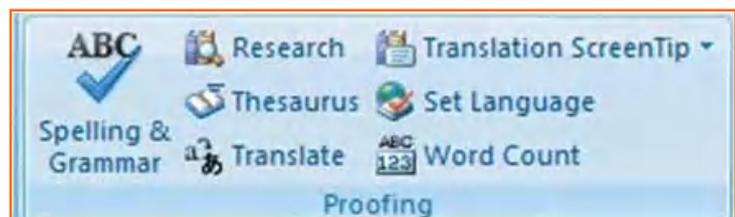


Fig.10.2.12(a): Spelling and Grammar

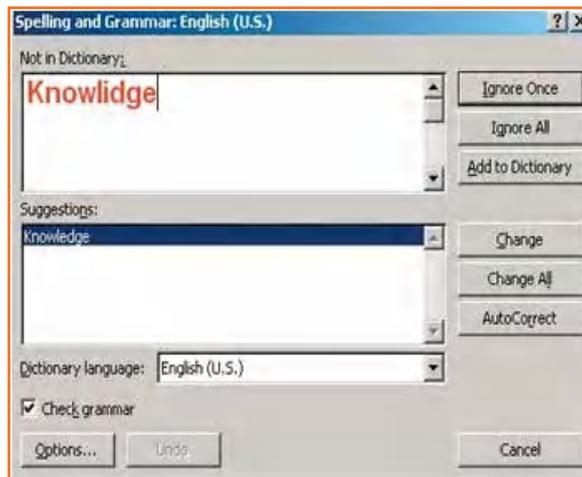


Fig.10.2.12(b): Spelling and Grammar

The most common feature used is the spelling and grammar checker tool. To check the spelling and grammar of your document:

1. **Step 1:** Place the cursor at the beginning of the document or the beginning of the section that you want to check.
2. **Step 2:** Click the 'Review' Tab on the Ribbon.
3. **Step 3:** Click 'Spelling & Grammar' on the Proofing Group.

Note: Any errors will display a dialog box that permits you to choose a additional appropriate spelling or phrasing. Go through the spelling and grammar checker to correct any spelling errors you may have created in your document. Once the spelling and grammar checker has completed, you will see a dialog box that notifies you 'The spelling and grammar check is completed'.

10.2.10.1 Word Count

To count words in one selection, you can select the words you want to count. The status bar displays the number of words in the section for e.g. 50/1,200 means that the section accounts for 50 words out of the total number of 1200 in the document.

Note: To select the sections of text that are not next to each other, select the first section and press hold down CTRL (from the keyboard) and select the additional section.



Fig.10.2.13(a): Word Count

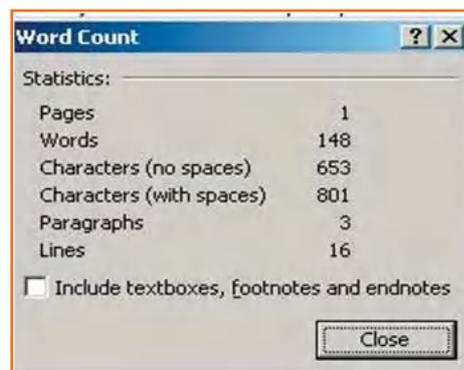


Fig.10.2.13(b): Word Count

10.2.9 Different Editing Modes in Word

Insert mode and an overtype mode. When insert mode (default) is active, the data you can type is inserted at the insertion point where as when over-type mode is active the information is active it isn't inserted however; it replaces text as you sort. To modify between the two modes double click o the OVR letters on the standing bar.

Another interesting fact about the word document is that it's not just a document to write things however you can add expression to your document by inserting pictures with the document, currently let's see however this will be done. Invariably bear in mind to not use any copyright image if you are using any pictures from the Internet.

The insert picture method supports graphics that may be are too large to fit on the clipboard. The default setting for inserting or pasting pictures is "In Line With Text." The Advanced Word options, located in the office Button Commands Gallery, allow you to change the default settings to any of the available text wrapping styles.



Fig.10.2.14: Sample Image

10.2.10 Inserting an Image and Table

1. **Step 1:** Place the insertion point at the location where the image has to be placed In the document.
2. **Step 2:** Select Insert tab>> illustrations gallery.
3. **Step 3:** Now select *Insert picture*.
4. **Step 4:** Navigate to the appropriate location where the image is stored.
5. **Step 5:** Now select the appropriate image which you want to insert in the document by doing a double click on the image.

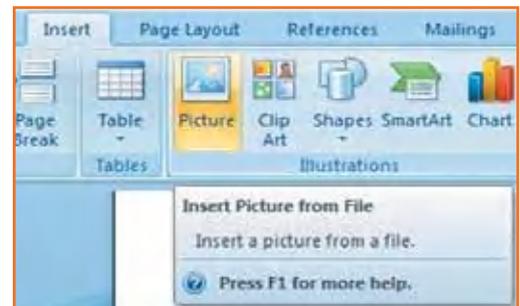


Fig.10.2.15 Inserting an Image

Similarly, now let's see how to insert a table in a word document

The table feature can be used to organize data into rows and columns without having to set tabs. Tables can even be used to produce forms and side by side paragraphs. A table consists of vertical columns and horizontal rows, the inter-section of these rows and columns produce cells. A cell is every individual square in which you'll be able to enter text. The tab key advances the pointer to next cell (Shift + tab) it moves the pointer backward within a table.

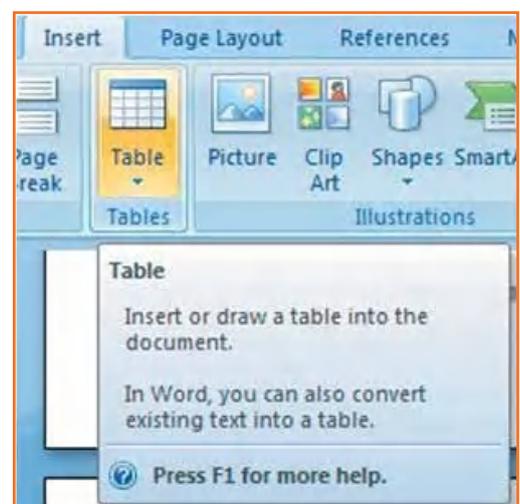


Fig.10.2.16(a): Inserting an Table

Steps below would make it much easier for you to understand how to create a table:

1. **Step 1:** Place the insertion point at the desired location on your word document.
2. **Step 2:** From the bar select Insert tab>>tables gallery.
3. **Step 3:** Now select insert table.
4. **Step 4:** Enter desired numbers of columns and rows at insert table dialog box.
5. **Step 5:** Now select AutoFit behavior.
6. **Step 6:** Click OK.



Fig.10.2.16(b): Inserting an Table

10.2.11 Inserting a Blank Page

The blank page command permits you to manually insert a blank page at the required location. When you fill a page with text or graphics, Microsoft office Word inserts an automatic page break and starts a new page. However, you'll manually add pages or delete pages by adding page breaks or deleting page breaks. Refer to the image given.

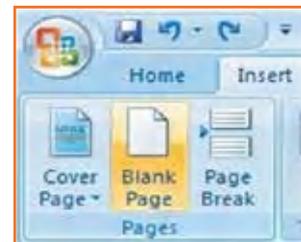


Fig.10.2.17: Inserting New Page

10.2.12 Inserting a Page Break

You can insert a page break anywhere in the document, or you can specify wherever Microsoft Word positions automatic page breaks. If you insert manual page breaks in documents that are quite many pages in length, you might have to frequently re-break pages as you edit the document. To avoid the difficult of manually re-breaking pages, you can set choices to control where word positions automatic page breaks. Refer to the image given.



Fig.10.2.18: Inserting Page Break

10.2.13 Inserting a Cover Page

- **Step 1:** From the insert Tab, select Cover Page, the cover page drop down menu will be displayed.
- **Step 2:** Select from the pre-formatted options under Cover Page.
- **Step 3:** To insert a blank page or a page break, position your insertion point at a desired location.
- **Step 4:** Now, from the insert tab, select blank page or page break as shown in the image below.

Now, once the document is ready let's focusing on learning how to get the document in a hard copy.

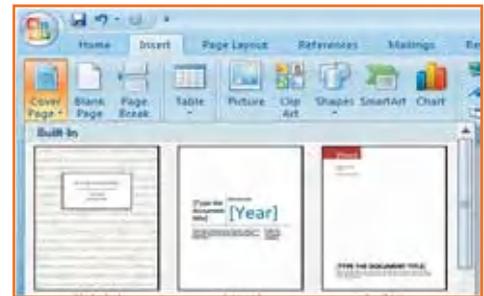


Fig.10.2.19: Inserting Cover Page

10.2.14 Printing the Word Document

1. **Step 1:** Click the 'Home' key, select 'Print', and then 'Print' again.
2. **Step 2:** Choose the printer you will be printing from (Black & White, or Color printer).
3. **Step 3:** Once you have selected the printer of your choice, reassure to check if you have selected the right and the complete document for printing.
4. **Step 4:** Once all above steps are performed, select 'OK' to print your work.
5. **Step 5:** Now that your document is ready and has been printed as well, let's see how can we close and exit this word document completely.

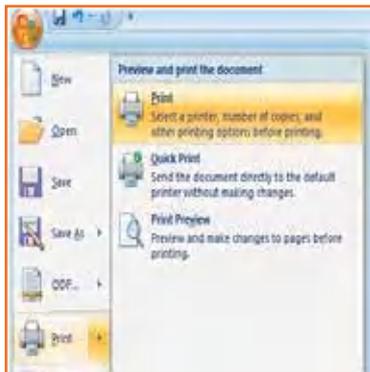


Fig.10.2.20: Printing the Word Document



Fig.10.2.21: Print Dialog Box

10.2.15 Closing and Exiting Microsoft Word

It's always good to reassure that your word file has been saved before closing or exiting the word.

Note: Closing word would only close the current document however the word would remain open.

Exiting word would exit the program completely. (You may not have to follow this, it basically depends on what MS word you are having in the system).



Fig.10.2.22(a): Closing and Exiting Microsoft Word



Fig.10.2.22(b): Closing and Exiting Microsoft Word

UNIT 10.3: MS PowerPoint

Unit Objectives

At the end of the unit, participants will be able to:

- Practice MS-Power-point.
- Make a new presentation.
- Format a slide as well

Power-point is the presentation graphics software in the Microsoft Office suite. PowerPoint has predefined layouts, themes, and templates to create dynamic and professional presentations.

10.3.1 Opening PowerPoint

To open Power-point in Windows, click on the:

Step 1: Start button --> Programs --> Microsoft Power-point. *OR*

Step 2: Double-click on the Power-point icon on the desktop.

When PowerPoint is opened, by default a blank Title slide appears as the first slide in your new presentation. However, to change the layout of an open slide, click on the Layout button in the Home tab.



Fig.10.3.1: PowerPoint Icon

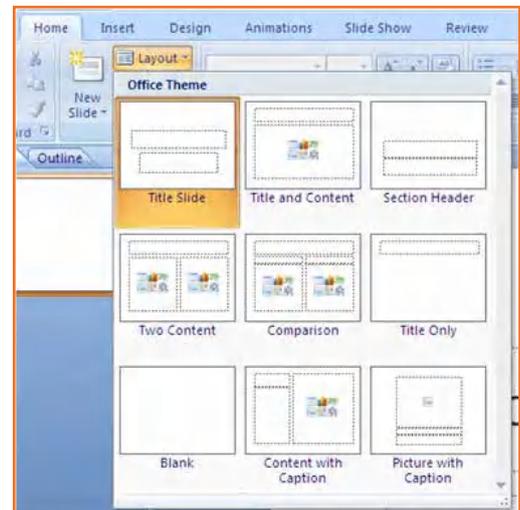


Fig.10.3.2: Layouts in Power-point



Fig.10.3.3: New Document in Power-point

If the Power-point is already open, to begin a new presentation, click on the office button on the top left corner of the screen and choose New.

The New Presentation window can appear. Blank presentation is chosen by default. You wish to click create and a new presentation can open in the Powerpoint window.

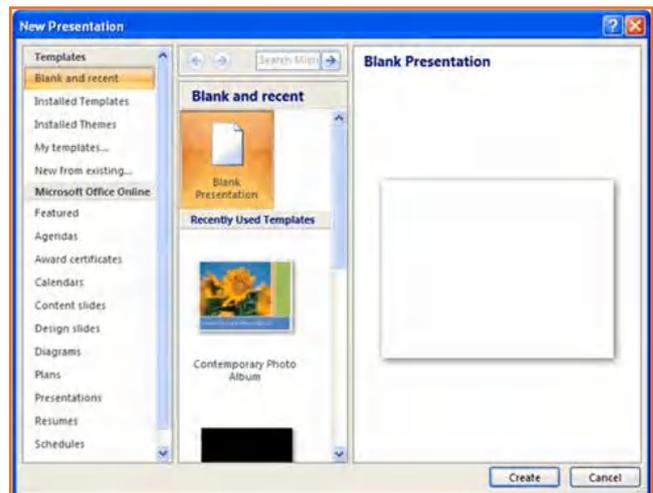


Fig.10.3.4: Create new PowerPoint

10.3.2 Power-point – Understanding the screen

- **Office Button:** It contains the main File Functions: New, Open, Save, Save as, Print, Print Preview, etc.
- **Ribbon Tabs:** Each Ribbon Tab displays a Ribbon that provides a set of Tool Groups. Click on the arrow to open a dialogue box with more options.
- **Command Tabs:** Office 2007 applications automatically open to the Home command tab, which contains formatting options needed to create a basic document. Specialized features can be accessed from other command tabs.
- **Slide and Outline Tabs:** The Slides tab shows thumbnail images of your slides, allowing you to rearrange, add, delete, hide slides and view set transitions as you work. The Outline tab shows the content of your slides, making it easy to rearrange your text.
- **Slide:** In this area you enter the content of your slides. Slides contain placeholders (enclosed by dotted borders) containing text, pictures, and charts.
- **Notes Panel:** This is where you can enter notes. If you wish to enter longer notes, you can go to the View tab and select Notes Page.
- **View Buttons:** These three buttons include:
 - » Normal View - shown here.
 - » Slide Sorter - This allows you to shuffle your slides.
 - » Slide Show - This shows the slides as viewed during presentation.
- **Zoom Slider:** This allows you to zoom in and out on the Slide Panel.

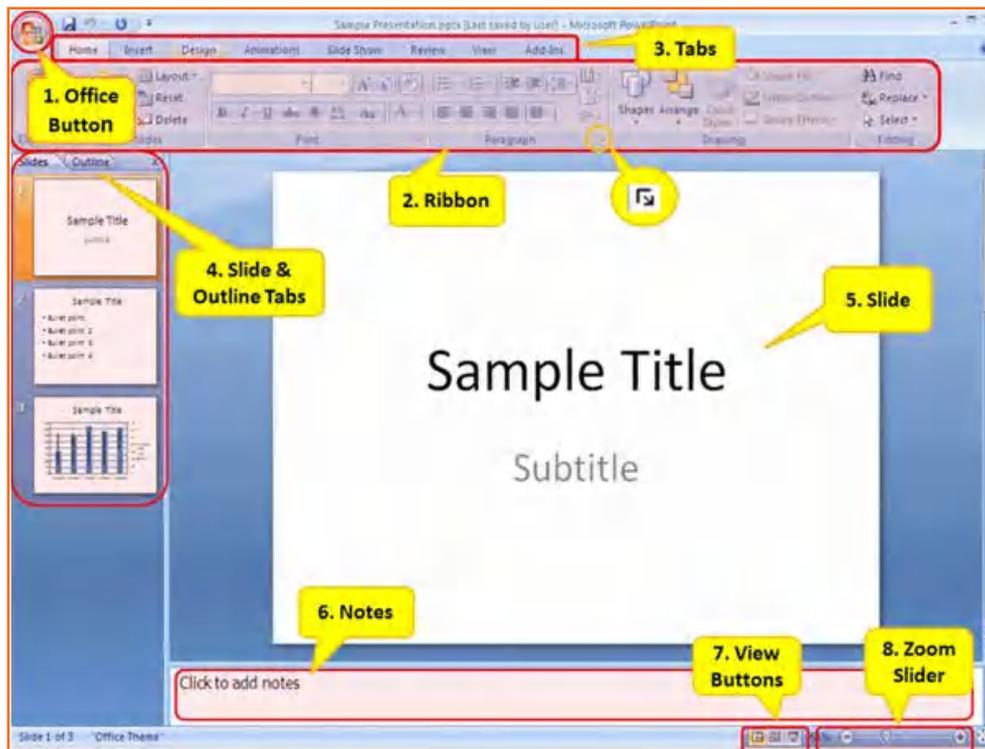


Fig.10.3.5: Power-point screen

10.3.3 Saving a Power-point

- Click the *Save* button on the *Quick Access toolbar*.
- OR
- Click the *Microsoft Office Button* , and then click *Save As*.

In the File name box, enter a new name for the presentation, or do nothing to accept the suggested file name.

In the Save as type list, select the file format that you want, and then click *Save*.



Fig.10.3.6: Save Icon

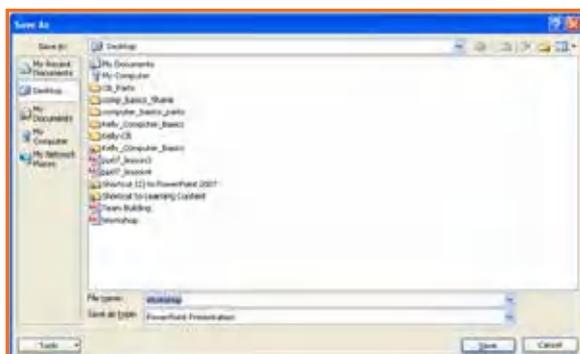


Fig.10.3.8: Save As Dialog Box



Fig.10.3.7: Save As Option

10.3.4 Working with Slides

Insert a New Slide

- **Step 1:** Click the New Slide command in the Slides group on the Home tab. A blank slide will be inserted after your active slide.
- **Step 2:** If you wish to choose the layout while creating your new slide, click the  on the New Slide button and choose a theme.

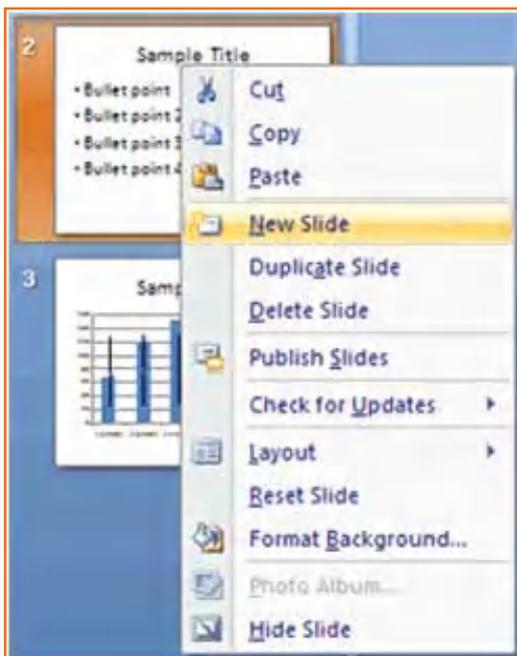


Fig.10.3.10: Insert new slide in PowerPoint



Fig.10.3.9: Insert new slide in PowerPoint

To insert a new slide using the Quick Menu, in the Slides panel right click the slide after which you want a new slide inserted and select New Slide.

Copy and paste a slide

- **Step 1:** Select the slide you want to copy.
- **Step 2:** Click the Copy command on the Home tab.
- **Step 3:** Click inside the Slides tab on the left task pane. A horizontal insertion point will appear.
- **Step 4:** Move the insertion point to the location where you want the copy of the slide to appear.
- **Step 5:** Click the Paste command on the Home tab. The copied slide will appear.
- **Step 6:** You can use the keyboard shortcut Ctrl+C to copy the slide and Ctrl+V to paste it.

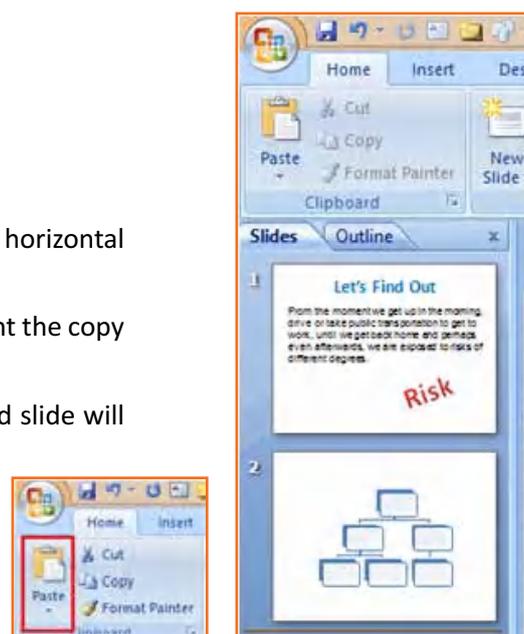


Fig.10.3.11: Copy paste of slide

Delete a slide

- **Step 1:** Select the slide you want to delete and click the Delete command in the Slides group on the Home tab.

Move a slide

- **Step 1:** On the Slides tab in the left task pane, select the slide you want to move.
- **Step 2:** Click and drag the slide to a new location. The insertion point will appear.
- **Step 3:** Release the mouse button.
- **Step 4:** The slide will appear in the new location.

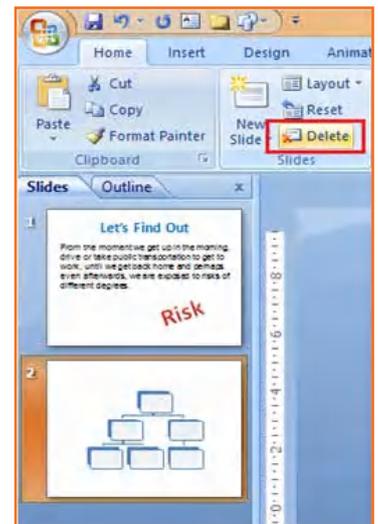


Fig.10.3.12: Delete a slide

10.3.5 View Tabs

Different views allow you to manage different aspects of your presentation.

- **Step 1:** Normal View is the default view. It splits the window into Slide Frame, Notes, and the left frame where you can choose either Slides Thumbnails or Outline.
- **Step 2:** Slide Sorter is thumbnails view of all the slides in the presentation. The slides are displayed horizontally and lets you see the big picture.
- **Step 3:** Slide Show plays the presentation from the beginning with animation.

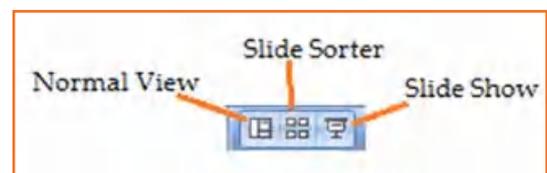


Fig.10.3.13: View Tabs

10.3.6 Animating Text and Images

In PowerPoint, you can add animation to text and objects to draw the audience's attention and add flair to your presentation.

- **Step 1:** Select the object or text box you wish to animate.
- **Step 2:** In the Animations tab under the Animations group, select an option from the Animate drop-down menu. As you hover your mouse over each choice PowerPoint will preview the effect on your slide.

NOTE: Remember that animations are applied only to the article or the text box selected. For adding animation across many slides you may need to add them to every.

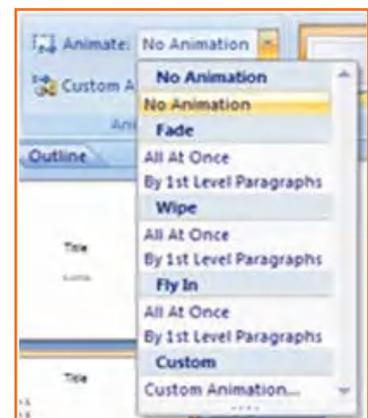


Fig.10.3.14: Animating Text and Images

To apply a custom animation effect:

- **Step 1:** After you select the text or object on the slide you want to animate, select the Animations tab.
- **Step 2:** Click Custom Animation in the Animations group. The Custom Animation task pane will appear on the right.
- **Step 3:** Click Add Effect in the task pane to add an animation effect to the selected text or object.



Fig.10.3.15: Adding Animation in PowerPoint

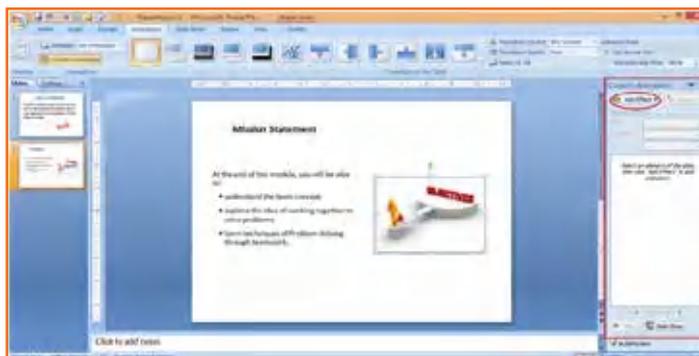


Fig.10.3.16: Animation in Power-point

- **Step 4:** Select Entrance, Emphasis, Exit, or Motion Path to display a sub-menu of animation effects for the category.
- **Step 5:** To customize the speed, properties and timing of your animation, on the Custom Animation Pane click on the effect you wish to modify.
- **Step 6:** To modify an animation, use the options in the Modify: [Effect] section of the Custom Animation Pane. These options will change depending on the effect selected.

Hint: If the button on the Custom Animation Pane says "Change" instead of "Add Effect" click outside the object to deselect it and then click on it again.

10.3.7 Removing Animations

There are two methods:

1. Animations group (remove all at once):
 - » Select the slide and then the object with the animation you would like to remove.
 - » In the Animations tab under the Animations group click on the Animate pull-down menu and select No Animation.
2. Custom Animation Pane (remove one by one):
 - » Select the slide with the animation you would like to remove.
 - » If the Custom Animations pane is not visible, click on the Custom Animation button in the Animations group on the Animations tab.
 - » In the Modify: [Effect] list select the animation to be removed.
 - » Click Remove.

10.3.8 Working with Charts

A chart is a tool you can use to communicate your data graphically.

Chart elements

Let's familiarize with different chart element:

- **Titles:** There are two types of titles:
 - » Chart Title placed above the chart (default).
 - » Axes Titles placed besides the axes (The vertical axis is referred to as the Y axis, while the horizontal axis is referred to as the X axis.)
- **Legend:** The chart key, which displays captions (and/or color coding) to the series on the chart.
- **Data:** This is the range of cells (displayed in excel) that make up a chart. The chart is updated automatically whenever the information in these cells changes.

Inserting Charts

- **Step 1:** Select the Insert tab.
- **Step 2:** Click the Insert Chart command to open the Insert Chart dialog box.
- **Step 3:** Click a chart to select it.
- **Step 4:** The chart will appear on your slide, and Excel will open as a split screen with dummy data already filled in.
- **Step 5:** You add your data and labels to the Excel spreadsheet and the chart will be automatically updated on your slide.

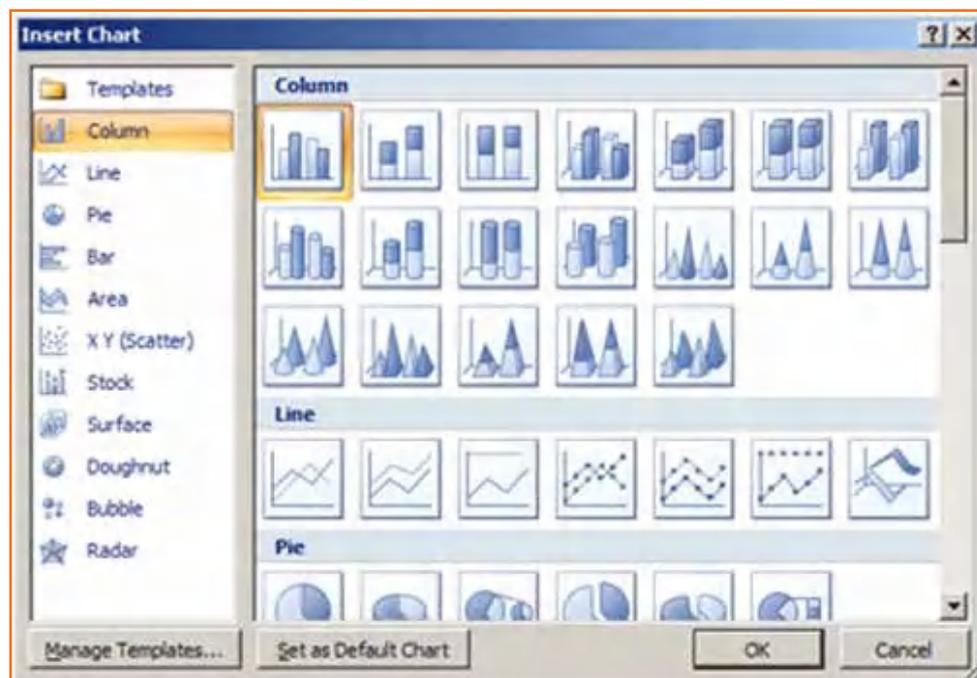


Fig.10.3.17: Inserting Charts

- **Step 6:** When finished, click the Close Window in the upper right hand corner of Excel to close the worksheet.

Changing To a Different Chart

- **Step 1:** You can change your present chart to a different format by right-click on the chart and select Change Series Chart Type. This opens the Change Chart Type dialog.
- **Step 2:** Make a selection and press OK.



Fig.10.3.18: Edit source data

Edit source data

- **Step 1:** Select the chart.
- **Step 2:** Select the Design tab.
- **Step 3:** Click the Edit Data command. An Excel spreadsheet with the current source data will appear.
- **Step 4:** After you edit the data in the spreadsheet, the changes will appear on the slide.
- **Step 5:** Close Excel without saving the spreadsheet.

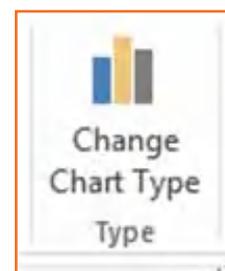


Fig.10.3.19: Change Chart Type

Modifying the chart layout

- **Step 1:** Select the chart.
- **Step 2:** Click on the Design tab.
- **Step 3:** Scroll through the options in the Chart Layout group, or click the More drop-down arrow to see all available chart layout options.
- **Step 4:** Select a chart layout by clicking on it. The chart layout will change on the slide.



Fig.10.3.20: Chart Layouts

Modify specific areas of the chart layout

- **Step 1:** Select the chart.
- **Step 2:** Select the Layout tab.
- **Step 3:** Locate the Labels group.
 - » Chart Title: Add, remove, or re-position the chart title.
 - » Axis Titles: Add, remove, or re-position the text used to label each axis.
 - » Legend: Add, remove, or re-position the chart legend.
 - » Data Labels: Click this command to display or hide data values next to each chart element.
 - » Data Table: Adds a table summarizing your data to the chart.



Fig.10.3.21: Modify Chart

UNIT 10.4: MS Excel

Unit Objectives

At the end of the unit, participants will be able to:

- Work on MS-Excel.
- Format cells and cell content.
- Use formulas.
- Make Charts and Pivot Table.

MS surpass stands for - Microsoft excel is one of the foremost common electronic spreadsheet applications supported by both Mack and computer platforms. As with a paper spreadsheet, you'll be able to use excel to prepare your data into rows and columns and to perform mathematical calculations.

MS Excel helps in:

- Managing data online
- Creating visually persuasive charts, and thought-provoking graphs.
- Creating and expense reports.
- Building formulas and editing them.
- Balancing a checkbook.



Fig.10.4.1: MS Excel Icon

This tutorial teaches you how to create an Excel spreadsheet.

Before you start making spreadsheets in excel, you will need to line up your excel setting and become familiar with many key tasks and options like a way to minimize and maximize the Ribbon, configure the quick Access toolbar, switch page views, and access your excel choices.

10.4.1 Exploring the Excel Environment

The tabbed Ribbon menu system is however you navigate through excel and access the assorted excel commands. If you have used previous versions of excel, the Ribbon system replaces the traditional menus. on top of the Ribbon in the upper-left corner is the Microsoft office Button. From here, you'll access important options like New, Save, Save As, and Print. By default, the short Access Toolbar is pinned next to the Microsoft office Button and includes commands like Undo and Redo.

At the bottom-left space of the spreadsheet, you will notice worksheet tabs. By default, 3 worksheet tabs appear each time you create a new book. On the bottom-right space of the spreadsheet you will find page view commands, the zoom tool and the horizontal scrolling bar.

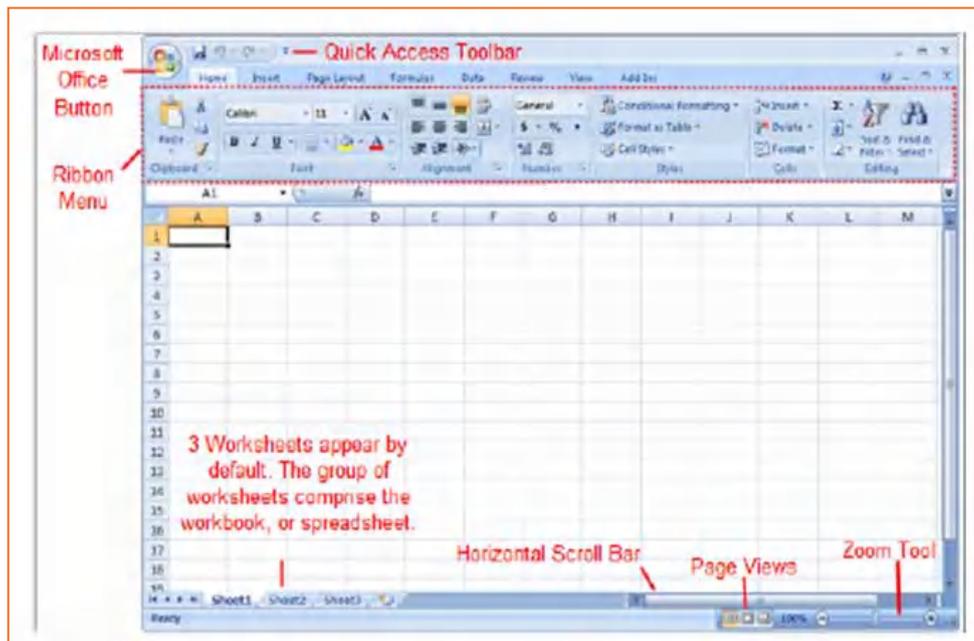


Fig.10.4.2: Excel screen

10.4.2 Zoom In and Out

- **Step 1:** Locate the zoom bar in the bottom-right corner.
- **Step 2:** Left-click the slider and drag it to the left to zoom out and right to zoom in.

To Scroll Horizontally in a Worksheet:

- **Step 1:** Locate the horizontal scroll bar in the bottom-right corner.
- **Step 2:** Left-click the bar and move it from left to right.

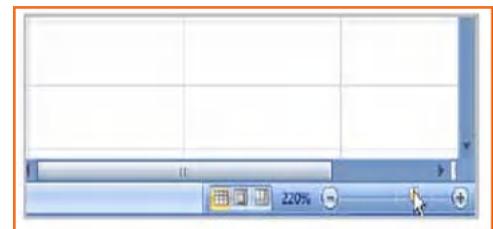


Fig.10.4.3: Zoom In and Out

10.4.3 Page Views

- **Step 1:** Locate the Page View options in the bottom-right corner. The Page View options are Normal, Page Layout, and Page Break.
- **Step 2:** Left-click an option to select it.

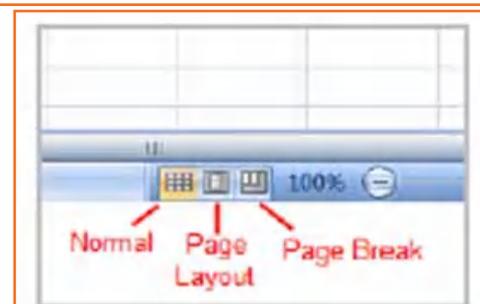


Fig.10.4.4: Page Views

10.4.4 Add Commands to the Quick Access Toolbar

- **Step 1:** Click the arrow to the right of the Quick Access toolbar.
- **Step 2:** Select the command you wish to add from the drop-down list. It will appear in the Quick Access toolbar.

The Save, Undo, and Redo commands appear by default in the Quick Access toolbar.



Fig.10.4.6: The Microsoft Office Button

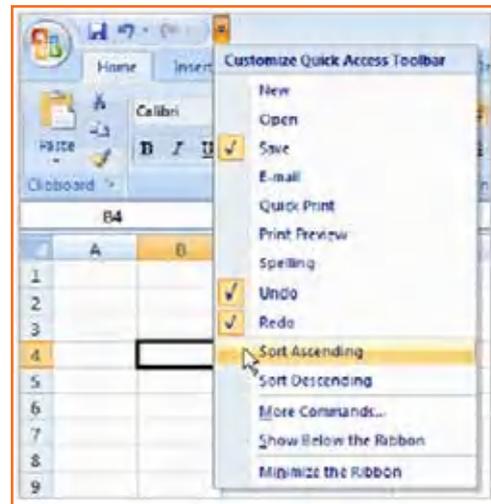


Fig.10.4.5: Quick Access Toolbar

The Microsoft Office Button

The Microsoft office Button appears at the top of the stand out window. Once you left-click the button, a menu appears. From this menu, you'll be able to produce a new spreadsheet, open existing files, save files in a type of ways and print. You'll be able to also add security features, send, publish and close files.

10.4.5 Change the Default Excel Options

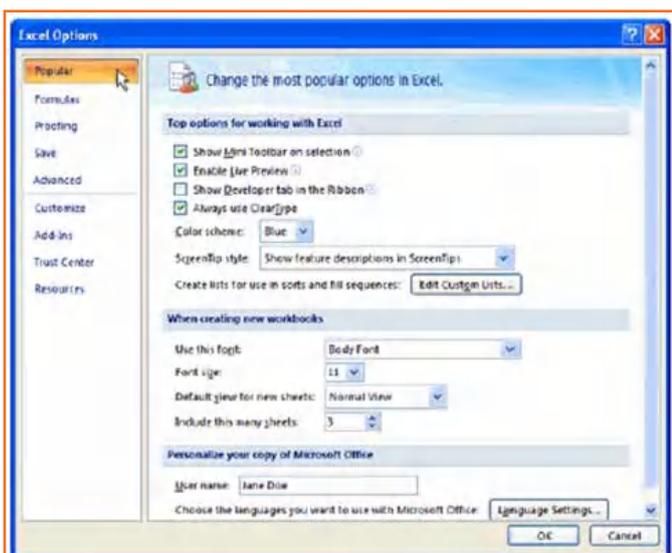


Fig.10.4.7: Default Excel Options

- **Step 1:** Click the Excel Options button. A dialog box will appear.
- **Step 2:** Select a category on the left to access different Excel options.
- **Step 3:** Modify any of the default settings.
- **Step 4:** Click OK.

You will have to be compelled to skills to insert text and numbers into excel workbooks to be ready to use it to calculate, analyze, and organize data. During this lesson, you will learn how to create a new workbook, insert and delete text, navigate a worksheet and save an excel workbook.

10.4.6 Create a New Blank Workbook

- **Step 1:** Left-click the *Microsoft Office Button*.
- **Step 2:** Select *New*. The New Workbook dialog box opens, and Blank Workbook is highlighted by default.
- **Step 3:** Click *Create*. A new, blank workbook appears in the window.

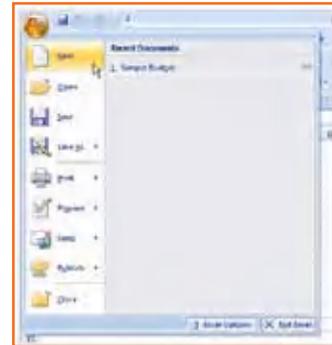


Fig.10.4.8: New Blank Workbook

10.4.7 Insert Text

- **Step 1:** Left-click a cell to select it. Each rectangle in the worksheet is called a cell. As you select a cell, the cell address appears in the Name Box.
- **Step 2:** Enter text into the cell using your keyboard. The text appears in the cell and in the formula bar.

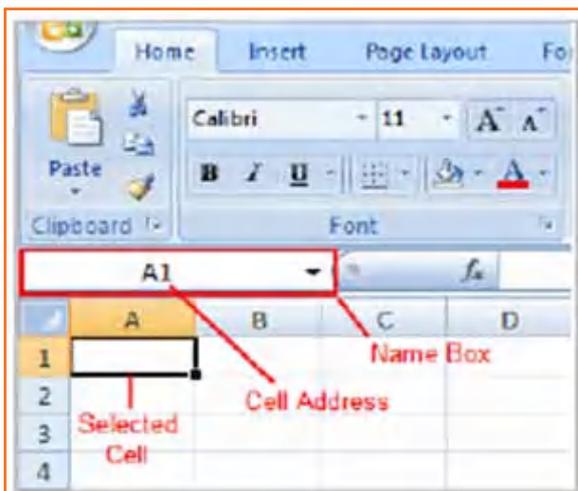


Fig.10.4.9(a): Different Areas on Worksheet

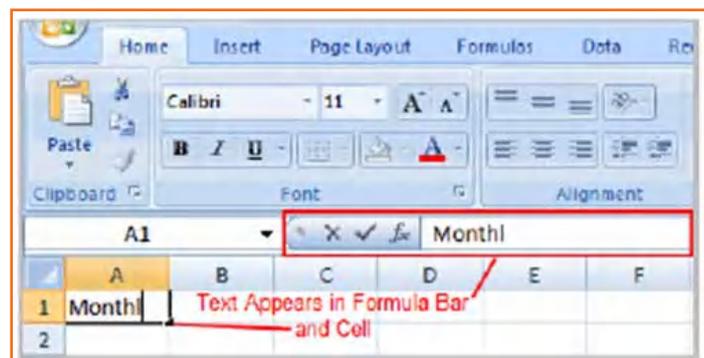


Fig.10.4.9(b): Different Areas on Worksheet

10.4.8 Cell Addresses

Each cell contains a name, or a cell address, based on the column and row it is in. For example, this cell is C3 since it is wherever column C and row 3 intersect.

You can also select multiple cells at the same time. A group of cells is known as a cell range. Instead of a single cell address, you will refer to a cell range using the cell addresses of the first and last cells in the cell range, separated by a colon. As an example, a cell range that included cells A1, A2, A3, A4, and A5 would be written as A1:A5.

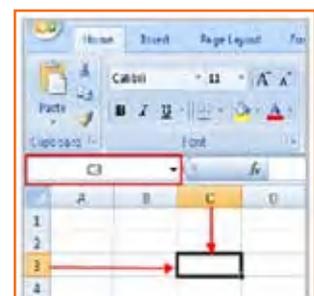


Fig.10.4.10: Cell Address

Edit or Delete Text

- **Step 1:** Select the cell.
- **Step 2:** Press the Backspace key on your keyboard to delete text and make a correction.
- **Step 3:** Press the Delete key to delete the entire contents of a cell.

You can also make changes to and delete text from the formula bar. Just select the cell and place your insertion point in the formula bar.

10.4.9 Move across a Worksheet Using the Keyboard 

- **Step 1:** Press the Tab key to move to the right of the selected cell.
- **Step 2:** Press the Shift key and then the Tab key to move to the left of the selected cell.
- **Step 3:** Use the Page Up and Page Down keys to navigate the worksheet.
- **Step 4:** Use the arrow keys.

To Save the Workbook:

- **Step 1:** Left-click the Microsoft Office Button.
- **Step 2:** Select Save or Save As.
- **Step 3:** Save As allows you to name the file and choose a location to save the spreadsheet. Choose Save As if you'd like to save the file for the first time or if you'd like to save the file as a different name.
- Select Save if the file has already been named.

You can save a workbook in many ways, but the two commonest are as an excel workbook, that saves it with a 2007 file extension, and as an excel 97-2003 workbook, that saves the file in a compatible format therefore those who have earlier versions of excel can open the file.

When you open a new, blank workbook, the cells, columns, and rows are set to a default size. you do have the ability to alter the size of each, further as to insert new columns, rows, and cells as needed.

To Modify Column Width:

- **Step 1:** Position the cursor over the column line in the column heading and a double arrow will appear.
- **Step 2:** Left-click the mouse and drag the cursor to the right to increase the column width or to the left to decrease the column width.
- **Step 3:** Release the mouse button.

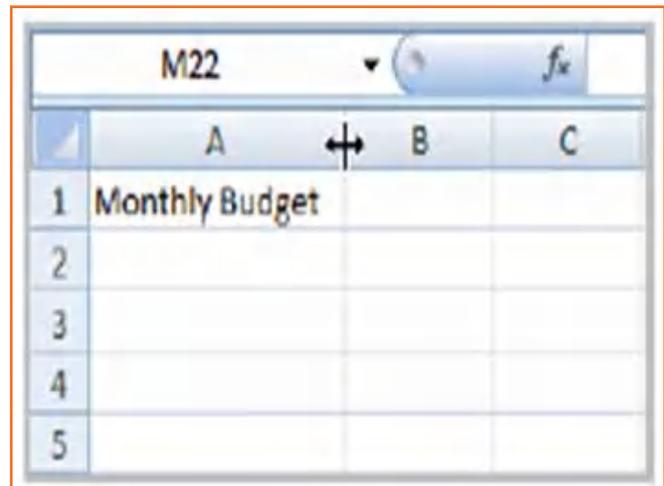


Fig.10.4.11: Modify Column Width

To Modify the Row Height:

- **Step 1:** Position the cursor over the row line you want to modify, and a double arrow will appear.
- **Step 2:** Left-click the mouse and drag the cursor upward to decrease the row height or downward to increase the row height.
- **Step 3:** Release the mouse button.

To Insert Rows:

- **Step 1:** Select the row below where you want the new row to appear.
- **Step 2:** Click the Insert command in the Cells group on the Home tab. The row will appear.
- **Step 3:** The new row always appears above the selected row.

Make sure that you choose the complete row below where you wish the new row to appear and not just the cell. If you select simply the cell and then click Insert, only a new cell can appear.

To Insert Columns:

- **Step 1:** Select the column to the right of where you want the column to appear.
- **Step 2:** Click the Insert command in the Cells group on the Home tab. The column will appear.

The new column continually appears to the left of the selected column. For example, if you wish to insert a column between September and October, choose the October column and click on the Insert command.

Make sure that you select the complete column to the right of where you want the new column to appear and not just the cell. If you choose simply the cell and then click Insert, only a new cell can appear.

To Delete Rows and Columns:

- **Step 1:** Select the row or column you'd like to delete.
- **Step 2:** Click the Delete command in the Cells group on the Home tab.

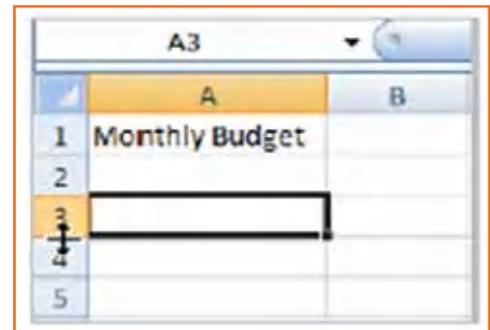


Fig.10.4.12: Modify the Row Height

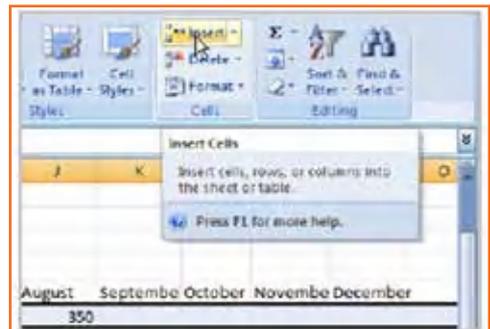


Fig.10.4.13: Insert Rows

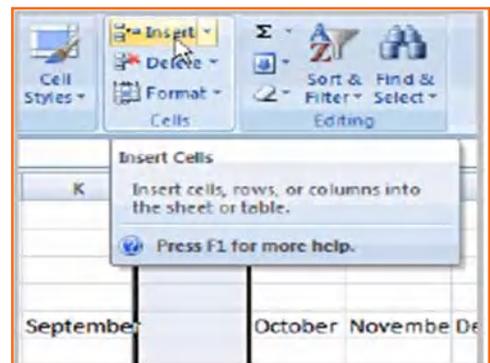


Fig.10.4.14: Insert Columns

10.4.10 Formatting

Once you have entered information into a spreadsheet, you will need to be able to format it.

To Format Text in Bold or Italics:

- **Step 1:** Left-click a cell to select it or drag your cursor over the text in the formula bar to select it.
- **Step 2:** Click the Bold or Italics command.

You can select entire columns and rows, or specific cells. To select the entire column, simply left-click the column heading, and the entire column can appear as selected. To select specific cells, simply left-click a cell and drag your mouse to select the opposite cells. Then, release the mouse button.

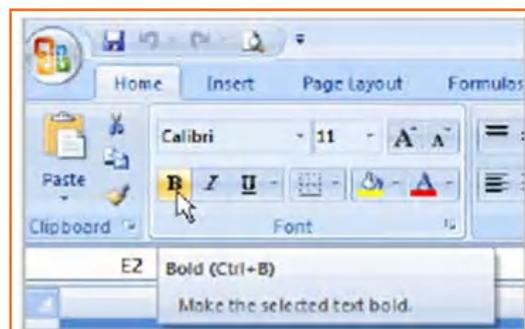


Fig.10.4.15: Format Text in Bold or Italics

To Format Text as Underlined:

- **Step 1:** Select the cell or cells you want to format.
- **Step 2:** Click the drop-down arrow next to the Underline command.
- **Step 3:** Select the Single Underline or Double Underline option.



Fig.10.4.16: Format Text as Underlined

To Change the Font Style:

- **Step 1:** Select the cell or cells you want to format.
- **Step 2:** Left-click the drop-down arrow next to the Font Style box on the Home tab.
- **Step 3:** Select a font style from the list.

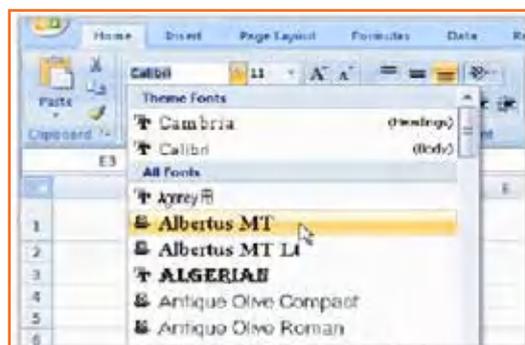


Fig.10.4.17: Change the Font Style

To Change the Font Size:

- **Step 1:** Select the cell or cells you want to format.
- **Step 2:** Left-click the drop-down arrow next to the Font Size box on the Home tab.
- **Step 3:** Select a font size from the list.

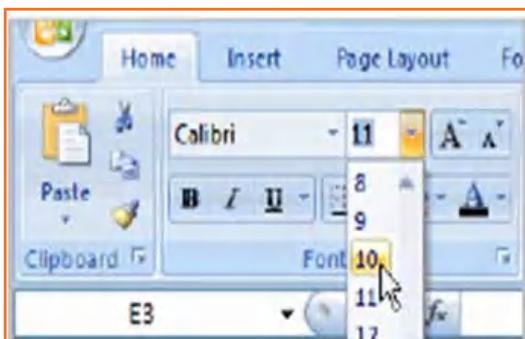


Fig.10.4.18: Change the Font Size

To Change the Text Color:

- **Step 1:** Select the cell or cells you want to format.
- **Step 2:** Left-click the drop-down arrow next to the Text Color command. A color palette will appear.
- **Step 3:** Select a color from the palette.

OR

- **Step 1:** Select More Colors. A dialog box will appear.
- **Step 2:** Select a color.
- **Step 3:** Click OK.



Fig.10.4.19: Change the Text Color

To Add a Border:

- **Step 1:** Select the cell or cells you want to format.
- **Step 2:** Click the drop-down arrow next to the Borders command on the Home tab. A menu will appear with border options.
- **Step 3:** Left-click an option from the list to select it.

You can change the line style and color of the border.

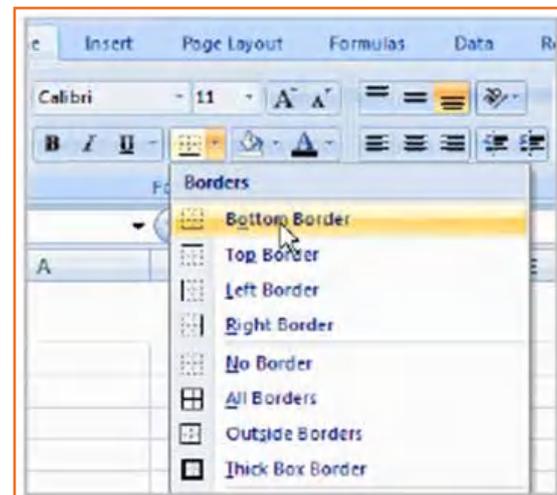


Fig.10.4.20: Add a Border

To Add a Fill Color:

- **Step 1:** Select the cell or cells you want to format.
- **Step 2:** Click the Fill command. A color palette will appear.
- **Step 3:** Select a color.

OR

- **Step 1:** Select More Colors. A dialog box will appear.
- **Step 2:** Select a color.
- **Step 3:** Click OK.

You can use the fill color feature to format columns and rows, and format a worksheet so that it is easier to read.



Fig.10.4.21: Add a Fill Color

To Format Numbers and Dates:

- **Step 1:** Select the cell or cells you want to format.
- **Step 2:** Left-click the drop-down arrow next to the Number Format box.
- **Step 3:** Select one of the options for formatting numbers.

By default, the numbers appear in the General category, which means there is no special formatting.

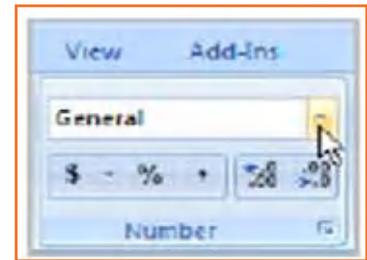


Fig.10.4.22: Format Numbers and Dates

10.4.11 Calculations and Analysis

Excel could be used to calculate and analyze numerical data; however, you need to know how to write formulas to maximize Excel's strength. A formula is an equation perform a calculation using cell values in the worksheet.

To Create a Simple Formula that Adds Two Numbers:

- **Step 1:** Click the cell where the formula will be defined (C5, for example).
- **Step 2:** Type the equals sign (=) to let Excel know a formula is being defined.
- **Step 3:** Type the first number to be added (e.g., 1500).
- **Step 4:** Type the addition sign (+) to let Excel know that an add operation is to be performed.
- **Step 5:** Type the second number to be added (e.g., 200).
- **Step 6:** Press Enter or click the Enter button on the Formula bar to complete the formula.

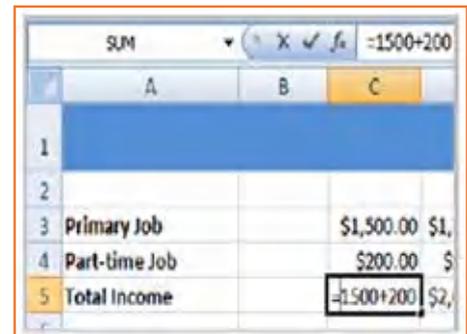


Fig.10.4.23(a): Creating Formulas

To Create a Simple Formula that Adds the Contents of Two Cells:

- **Step 1:** Click the cell where the answer will appear (C5, for example).
- **Step 2:** Type the equals sign (=) to let Excel know a formula is being defined.
- **Step 3:** Type the cell number that contains the first number to be added (C3, for example).
- **Step 4:** Type the addition sign (+) to let Excel know that an add operation is to be performed.
- **Step 5:** Type the cell address that contains the second number to be added (C4, for example).
- **Step 6:** Press Enter or click the Enter button on the Formula bar to complete the formula.

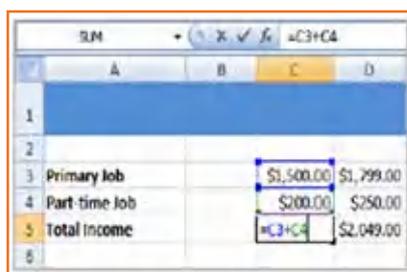


Fig.10.4.23(b): Creating Formulas

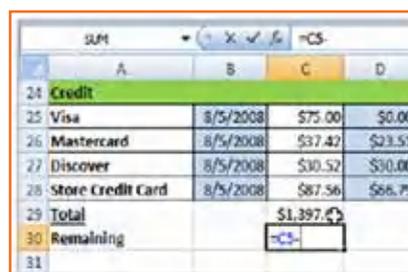


Fig.10.4.23(c): Creating Formulas

To Copy and Paste Cell Contents:

- **Step 1:** Select the cell or cells you wish to copy.
- **Step 2:** Click the Copy command in the Clipboard group on the Home tab. The border of the selected cells will change appearance.
- **Step 3:** Select the cell or cells where you want to paste the information.
- **Step 4:** Click the Paste command. The copied information will now appear in the new cells.

To select more than one adjoining cell, left-click one of the cells, drag the cursor until all the cells are selected, and release the mouse button.

The copied cell will stay selected until you perform your next task, or you can double-click the cell to deselect it.

To Cut and Paste Cell Contents:

- **Step 1:** Select the cell or cells you wish to cut.
- **Step 2:** Click the Cut command in the Clipboard group on the Home tab. The border of the selected cells will change appearance.
- **Step 3:** Select the cell or cells where you want to paste the information.
- **Step 4:** Click the Paste command. The cut information will be removed from the original cells and now appear in the new cells.

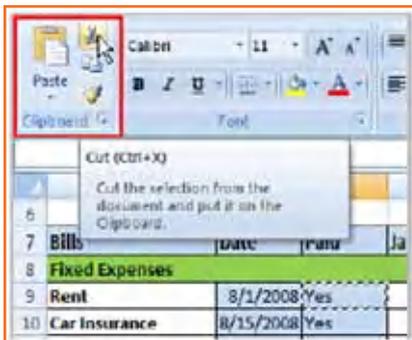


Fig.10.4.24(a): Cut and Paste Cell Contents

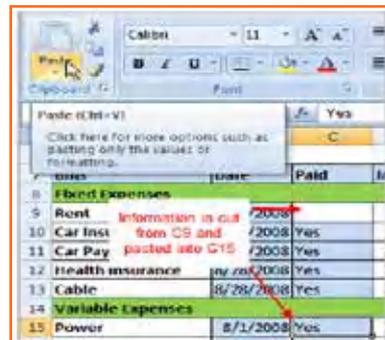


Fig.10.4.24(b): Cut and Paste Cell Contents

To View the Spreadsheet in Print Preview:

- **Step 1:** Left-click the Microsoft Office Button.
- **Step 2:** Select Print.
- **Step 3:** Select Print Preview. The spreadsheet will appear in Print Preview view.

Click the Close Print Preview button to return to the Normal View.

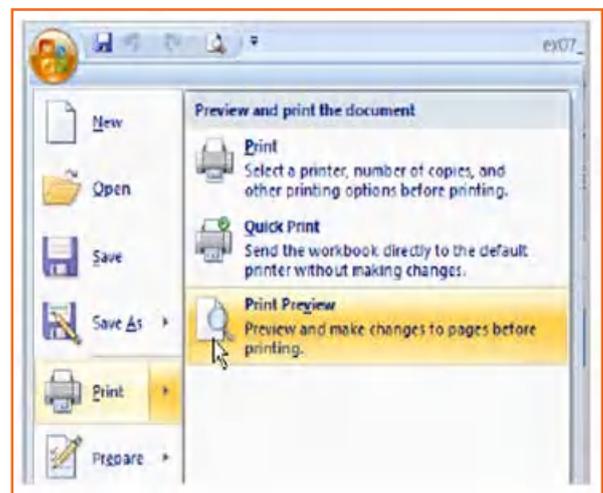


Fig.10.4.25(a): Print Preview Option

Exploring Print Preview:

If you are in Print Preview, you can use many of the same features that you can from the Ribbon; however, in Print Preview you can see how the spreadsheet will appear in hard form.

To Modify Margins, Column Width, or Row Height While in Print Preview:

- **Step 1:** Click the Print Preview command on the Quick Access toolbar, or select Print Preview from the Microsoft Office Button menu. The spreadsheet opens in print preview mode.
- **Step 2:** However your cursor over one of the black margin markers until a double arrow appears.
- **Step 3:** Left-click and drag the marker to the desired location. The change will be reflected in the spreadsheet.

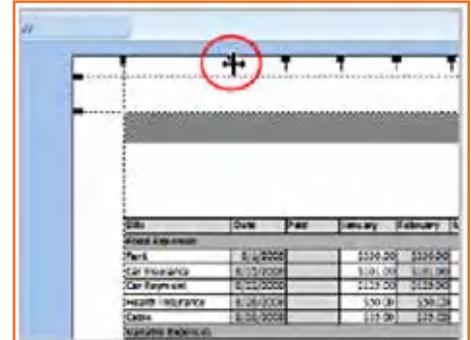


Fig.10.4.25(b): Print Preview Option

To Modify Margins:

- **Step 1:** Select the Page Layout tab.
- **Step 2:** Left-click the Margins command.
- **Step 3:** Choose one of the predefined settings or enter custom margins.

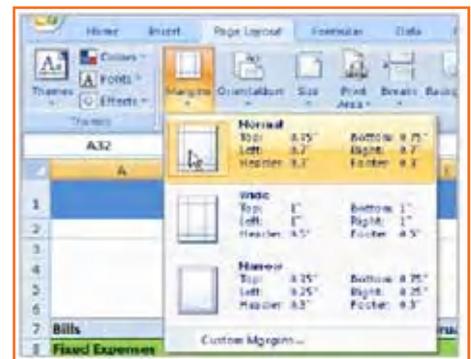


Fig.10.4.26: Modify Margins

10.4.12 Change Page Orientation

- **Step 1:** Select the Page Layout tab.
- **Step 2:** Left-click the Orientation command.
- **Step 3:** Select either Portrait or Landscape.

Portrait gets the page oriented vertically, while Landscape orients the page horizontally.



Fig.10.4.27: Page Orientation

To Change the Paper Size:

- **Step 1:** Select the Page Layout tab.
- **Step 2:** Click the Size command.
- **Step 3:** Select a size option from the list.

To Print from the Microsoft Office Button:

- Left-click the Microsoft Office Button.
- Select Print. The Print dialog box appears.
- Select a printer if you wish to use a printer other than the default setting.
- Click Properties to change any necessary settings.
- Choose if you want to print specific pages, the whole worksheet, a selection, the active sheet or the complete workbook.
- Select the number of copies you'd like to print.
- Click OK.

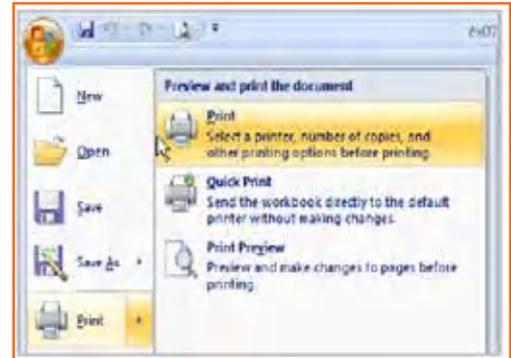


Fig.10.4.28: Print from the Microsoft Office Button

10.4.13 Excel's Different Functions

There are many different functions in Excel 2007. Some of the more common functions include:

Statistical Functions:

- SUM - Used to add a range of cells together.
- AVERAGE - This formula can calculate the average of a range of cells.
- COUNT - Used to count the number of chosen data in a range of cells.
- MAX - We can identify the largest number in a range of cells with it.
- MIN - Used to identify the smallest number in a range of cells.

Financial Functions:

- Interest Rates
- Loan Payments
- Depreciation Amounts

Date and Time functions:

- DATE - Converts a serial number to a day of the month.
- Day of Week.
- DAYS360.
- TIME - Returns the particular time.
- HOUR - Converts value to an hour.
- MINUTE - Converts value to a minute.
- TODAY - Returns value to today's date.
- MONTH - Converts value to a month.
- YEAR - Converts value to a year.

You don't have to memorize the functions but should have an idea of what each can do for you.

To Calculate the Sum of a Range of Data Using AutoSum:

- **Step 1:** Select the Formulas tab.
- **Step 2:** Locate the Function Library group. From here, you can access all the available functions.
- **Step 3:** Select the cell where you want the function to appear. In this example, select G42.
- **Step 4:** Select the drop-down arrow next to the AutoSum command.
- **Step 5:** Select Sum. A formula will appear in the selected cell, G42.
- **Step 6:** This formula, =SUM(G2:G41), is called a function. AutoSum command automatically selects the range of cells from G2 to G41, based on where you inserted the function. You can alter the cell range, if necessary.
- **Step 7:** Press the Enter key or Enter button on the formula bar. The total will appear.

To Edit a Function:

- **Step 1:** Select the cell where the function is defined.
- **Step 2:** Insert the cursor in the formula bar.
- **Step 3:** Edit the range by deleting and changing necessary cell numbers.
- **Step 4:** Click the Enter icon.

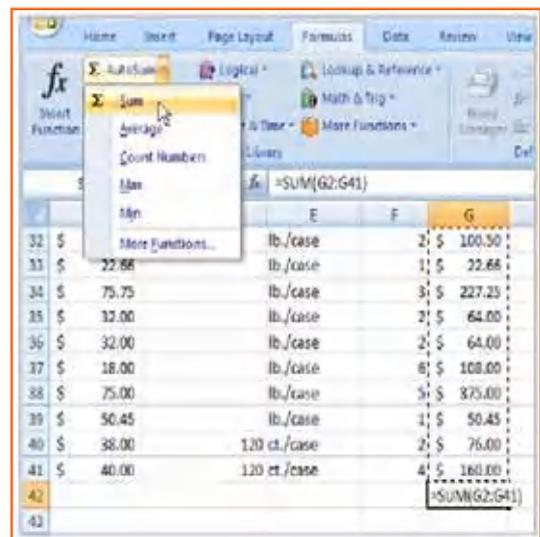


Fig.10.4.29: Using AutoSum

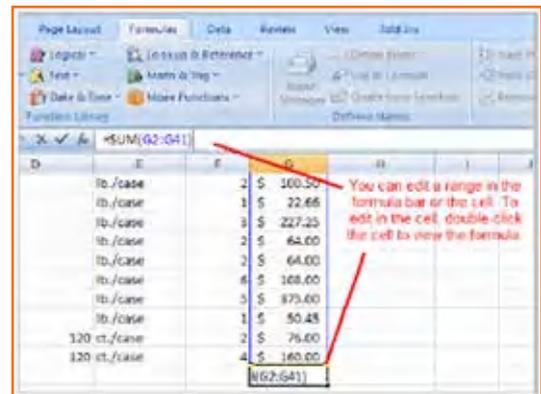


Fig.10.4.30: Edit a Function

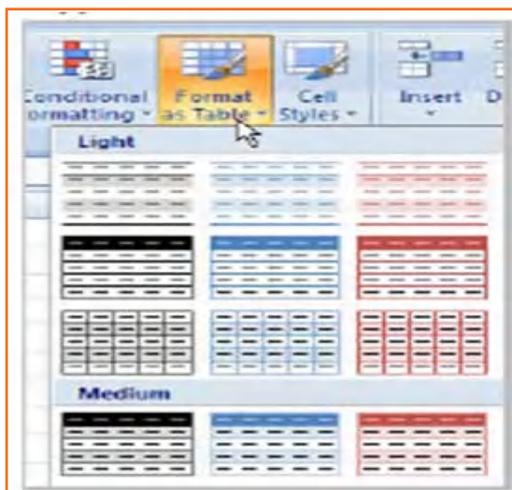


Fig.10.4.31: Format Information

To Format Information as a Table:

- **Step 1:** Select any cell that contains information.
- **Step 2:** Click the Format as Table command in the Styles group on the Home tab. A list of predefined tables will appear.
- **Step 3:** Left-click a table style to select it.
- **Step 4:** A dialog box will appear. Excel has automatically selected the cells for your table. The cells will appear selected in the spreadsheet, and the range will appear in the dialog box.

- **Step 5:** Change the range listed in the field, if necessary.
- **Step 6:** Verify the box is selected to indicate your table has headings, if it does. De-select this box if your table does not have column headings.
- **Step 7:** Click OK. The table will appear formatted in the style you chose.

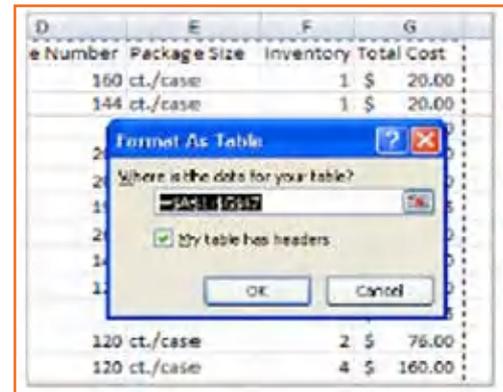


Fig.10.4.32: Format as Table

10.4.14 Aligning Text

Excel 2007 left-aligns text (labels) and right-aligns numbers (values). This makes data easier to read, but you do not have to use these defaults. Text and numbers can be defined as left-aligned, right-aligned, or centered in Excel.

To Align Text or Numbers in a Cell:

- **Step 1:** Select a cell or range of cells.
- **Step 2:** Click on either the Align Left, Center, or Align Right commands on the Home tab.
- **Step 3:** The text or numbers in the cell(s) take on the selected alignment treatment.

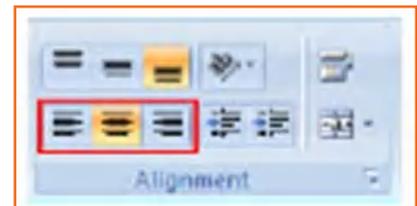


Fig.10.4.33: Align Text or Numbers

Left-click a column label to select the entire column or a row label to select an entire row.

Changing Vertical Cell Alignment:

You can also define vertical alignment of a cell. In Vertical alignment, information in a cell can be located at the top of the cell, middle of the cell, or bottom of the cell. The default is bottom.

To Change Vertical Alignment from the Alignment Group:

- **Step 1:** Select a cell or range of cells.
- **Step 2:** Click the Top Align, Center, or Bottom Align command.

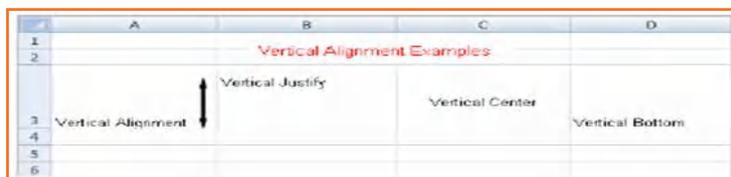


Fig.10.4.34: Vertical Cell Alignment

Changing Text Control:

- **Step 1:** Text Control allows you to control the way Excel 2007 presents information in a cell.
- **Step 2:** There are two common types of Text control: Wrapped Text and Merge Cells.

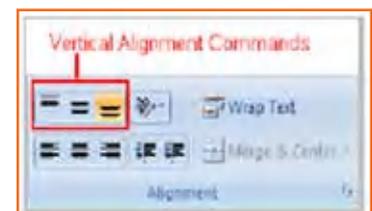


Fig.10.4.35: Text Control

- **Step 3:** The Wrapped Text wraps the contents of a cell across several lines if it's too large than the column width. It increases the height of the cell as well.
- **Step 4:** Merge Cells can also be applied by using the Merge and Center button on the Home tab.

To Change Text Control:

- **Step 1:** Select a cell or range of cells.
- **Step 2:** Select the Home tab.
- **Step 3:** Click the Wrap Text command or the Merge and Center command.



Fig.10.4.36: Text Control

To Name a Worksheet:

Right-click the sheet tab to select it.

- **Step 1:** Choose Rename from the menu that appears. The text is highlighted by a black box.
- **Step 2:** Type a new name for the worksheet.
- **Step 3:** Click off the tab. The worksheet now assumes the descriptive name defined.

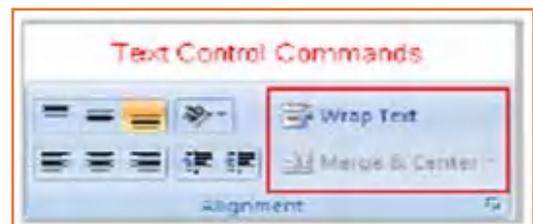


Fig.10.4.37: Wrap Text

To Insert a New Worksheet:

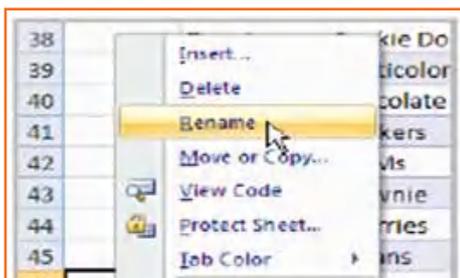


Fig.10.4.38(a): Name a Worksheet

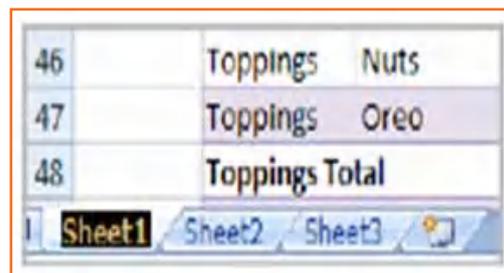


Fig.10.4.38(b): Name a Worksheet

- **Step 1:** Left-click on the Insert Worksheet icon. A new worksheet appears. It will be named Sheet 4, Sheet 5, or whatever the next sequential sheet number may be in the workbook.

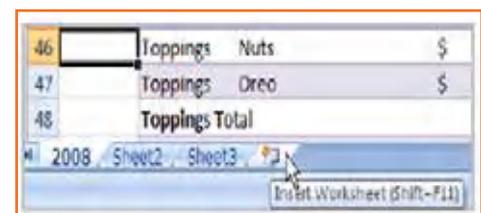


Fig.10.4.39: Insert a New Worksheet

To Delete One or More Worksheets:

- **Step 1:** Click on the sheet(s) you want to delete.
- **Step 2:** Right-click the sheet(s) and a menu appears.
- **Step 3:** Select Delete.

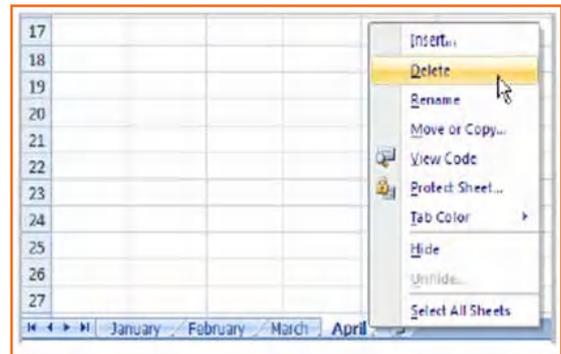


Fig.10.4.40: Delete One or More Worksheets

Exercise 

1. What are the things that MS Excel helps in?

2. How does one Zoom out in MS Excel?

3. The Save, Undo, and Redo commands appear by default in the Quick Access toolbar.
 - a) True
 - b) False
4. What can the Microsoft Button help with?

5. Calculate the average range of cells is a statistical function in MS Excel?
 - a) True
 - b) False
6. What is a financial function in MS Excel?
 - a) Adding the SUM of all cells
 - b) Convert a serial number to a minute
 - c) Calculate interest rates

UNIT 10.5: Internet Concepts

Unit Objectives

At the end of the unit, participants will be able to:

- Understand internet concepts.
- Recognise the different types of URLs.
- Use MS-Outlook.

10.5.1 URL Concepts

The full form of url is Uniform Resource Locator. It is the worldwide address of documents and other resources on the world wide web. The URL is divided into two different elements. The primary part of the URL is called a protocol identifier as it helps us distinguishing what protocol to use. The second part of the URL is called a resource name and it indicates the ip address or the domain name where the resource is located. The protocol identifier and the resource name are separated by a colon and two forward slashes it is more clearly understood by looking in to the following example: the two URLs below purpose two different files at the domain pcwebopedia.com. Here the primary one specifies an executable file that should be fetched using the FTP protocol; the second specifies a web page that should be fetched using the HTTP protocol:

1. `ftp://www.pcwebopedia.com/stuff.exe`
2. `http://www.pcwebopedia.com/index.html`

10.5.1.1 Different Kinds of URLs

There is a wide range of URLs, as well as different terms to describe what a URL looks like. Let's have a better understanding of various URLs and their types with an example:

- **Messy:** Such URL has many distorted and jumbled numbers, letters on it that makes slight organizational sense i.e.
`http://www.example.com/woeiruwoei909305820580.`
- **Dynamic:** Dynamic URLs are the end result of database queries that provide content output based on the result of that query. The URL ends up looking quite mangled, alias "messy", which usually consist of the characters like: `?`, `&`, `%`, `+`, `=`, `$`. Dynamic URLs are often found as part of consumer-driven websites: shopping, travel, or anything that requires changing answers for many different user queries.
- **Static:** A static URL is the opposite of a dynamic URL. The URL is "hard-wired" into the Web page's HTML coding. Static URL does not alter or adjust; it cannot be compromised; depending on what the user requests.
- **Obfuscated:** Obfuscated, or hidden, URLs are mostly used in phishing scams. Basically, a familiar URL is distorted in some way to make it seem legitimate. As soon as the user clicks on the obfuscated URL redirected to a malicious website.

There are a lot of clues and information that you can garner from a simple URL, including:

- What kind of server the Web page is hosted on.
- What kind of organization the Web page belongs to.
- Where the Web page is located in the world.
- The names of the directories on the website.

By carefully looking at the different parts of any Web address, you can quickly determine quite a bit of useful information. In addition, by simply deleting parts of the URL, you can learn more about the website than what might be actually publicly accessible. For example:

- **http://www.widget.com/blog/music/:** This points to a resource online, and the URL tells you that yes, indeed, it does point to an online resource. Let's go further back.
- **http://www.widget.com/blog/:** By moving backwards in the URL from right to left, we can see that we're now at the blog section of this publication.
- **http://www.widget.com:** The home page of the website.

Of course, this is a very simple example. However, by dissecting complex URLs one step at a time, quite a bit of information can be uncovered.

10.5.2 How to create Your E-mail account (Outlook)

You can create a new or additional Outlook account by following the same account creation wizard. You can follow the steps listed below to configure your Microsoft Outlook Express email client to work with your email account:

- **Step 1:** Open Outlook Express and select Tools E-mail Accounts from the main menu. The E-mail Accounts wizard will appear.
- **Step 2:** Click Add a new e-mail account. Click Next.
- **Step 3:** Select the server type. Most ISPs and webmail services use POP3 servers. Click Next.
- **Step 4:** Enter your Name.
- **Step 5:** Enter your E-mail Address.
- **Step 6:** Enter the incoming mail server and outgoing mail server information you obtained from your ISP or webmail service.
- **Step 7:** Enter your user name if it is different from the user name that automatically appears in the wizard form.
- **Step 8:** Enter your password.
- **Step 9:** Click Test Account Settings to test the information you entered in the wizard and confirm that it is valid.
- **Step 10:** Click Next.
- **Step 11:** Click Finish.

Note: If you do not have an Outlook email account, you can select Microsoft Office Outlook from your computer's Start menu. The wizard will open, and you can follow the steps above to create an Outlook account.

Fig.10.5.1: Creating E-mail Account in Outlook

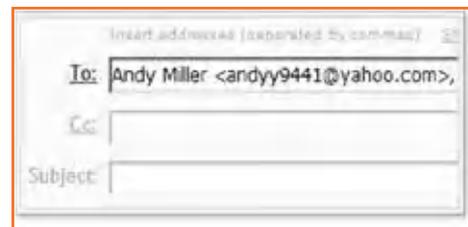
Congratulations you have successfully configured your e-mail account!!

10.5.3 Sending an Email

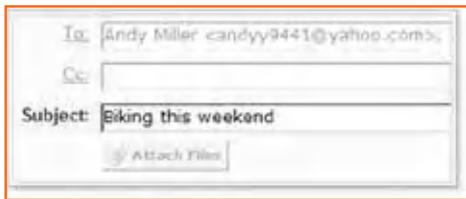
The following page will make it easy for you to understand how easily and swiftly you can send an E-mail, just follow these simple steps and refer to the each image given below.



STEP 1: Open Outlook. Now click on Compose button.



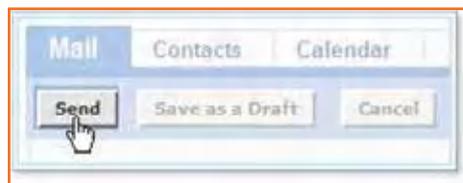
STEP 2: As you click on the Compose button, a new page would open.



STEP 3: In the To box, (refer to the image below) type the email address of the person you want to send an e-mail to.



STEP 4: Now, In the Subject box as shown in the image; type the subject of the message, a few words to give the receiver an idea of what the email is all about.



STEP 5: In the large box under the tools, compose the body of an email as shown in the image. Once the writing and addressing your email is done, click the Send button.

Mail has successfully sent your email to your wishing recipient.

10.5.4 Reading Emails

Outlook takes care of all email under mail folders. Initially, all of your incoming emails messages arrive in your Inbox folder (except suspected spam which goes directly into your Spam folder). To read an email message, open a mail folder and then click on email's subject.

- **Step 1:** Select the Inbox in the navigation pane.
- **Step 2:** If you see Inbox is in bold, it indicates that you have unread messages.
- **Step 3:** The number of unread messages is indicated by the number to the right of the word Inbox in parentheses.
- **Step 4:** Click a message in the inbox once, and Outlook will display it in the reading pane (if that feature is turned on).
- **Step 5:** You need to double-click a message, to open the message in a new window.

NOTE: Unread messages are display in bold text in order to make it easy for a reader to identify how many mails are new or still unread.

Now, to open and read an email, click on email's subject (bold or not) in the Subject column and you will be able to read your email.

10.5.2 Replying E-mails

Often, it is seen that once the mail is read, viewer looks for the option of reverting to that email to the sender or to add more recipient. Well! This can be done in two separate ways with Outlook i.e. there are two options as given below:

- **Reply:** It allows you to respond to the sender only.
- **Reply all:** Reply all, allows responding to the sender and everyone else who received the message. This includes all email addresses listed in the To box and the Cc box, except your own email address.
- Now, Open the your email and click the drop down arrow given at the Reply button, then opt for Reply to reply to the sender only or Reply All to reply to all recipients of the email message.

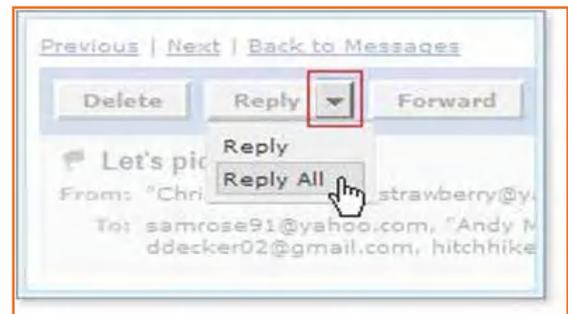


Fig.10.5.2: Replying E-mail

NOTE: To reply to the sender only, you can also click the Reply button and not the arrow.

- **Step 1:** Click Reply on the Standard toolbar while viewing the message you want to reply to. Outlook will create a pre-addressed reply form to the email address the original email came from.

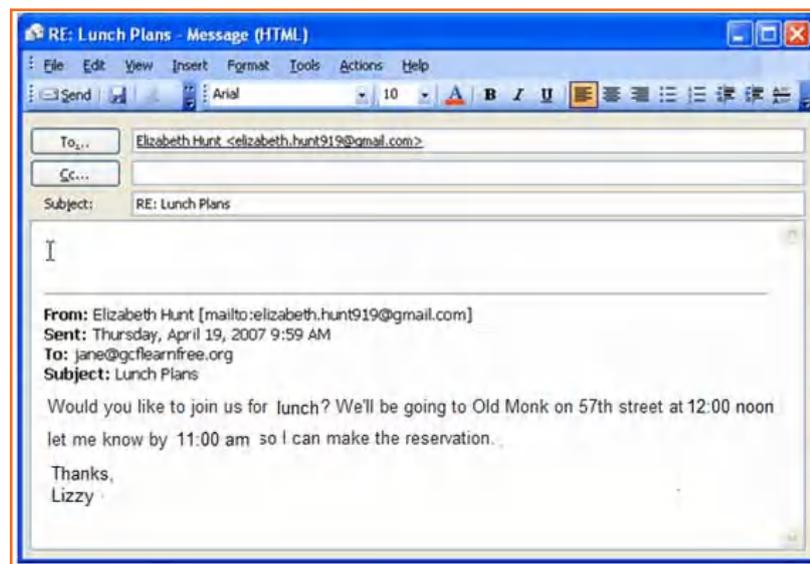


Fig.10.5.3: Composing Mail

- **Step 2:** Enter text into the body of the form.
- **Step 3:** Click the Send button when you're ready to send your email message.

Tip: Original email which you received from the sender will always be included when you are replying to the sender however, this original text, is editable, you can type your reply anywhere in the text box. In fact, some of the information or whole mail can be deleted in the original message. Different colors can be used (if required) to differentiate between your reply followed by the original text in the same image.

Exercise

1. What is the full form of URL?
.....
.....
2. The second part of the URL is called a resource name and it indicates the IP address or the domain name where the resource is located.
 - a) True
 - b) False
3. Choose a URL example from the below list
 - a) Messy
 - b) Straight
 - c) Constant
4. Initially all mails arrive in the inbox in outlook?
 - a) True
 - b) False
5. 'Reply' allows you to reply ONLY to the sender?
 - a) True
 - b) False



11. Employability Skills



Unit 11.1 - Employability Skills – 60 Hours



Key Learning Outcomes

At the end of this module, participants will be able to:

1. Explain employability skills.
2. Paraphrase constitutional values for citizen.
3. Become a professional in the 21st century.
4. Demonstrate the basics English skills.
5. Demonstrate the communication skills.
6. Recognise the essential digital skills.
7. Identify the diversity and inclusion.
8. Interpret financial and legal literacy.
9. Illustrate the career development and goal-setting.
10. Understand the customer service.
11. Get ready for apprenticeships and jobs.

UNIT 8.1: Employability Skills – 60 Hours

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain employability skills.
2. Paraphrase constitutional values for citizen.
3. Become a professional in the 21st century.
4. Demonstrate the basics English skills.
5. Demonstrate the communication skills.
6. Recognise the essential digital skills.
7. Identify the diversity and inclusion.
8. Interpret financial and legal literacy.
9. Illustrate the career development and goal-setting.
10. Understand the customer service.
11. Get ready for apprenticeships and jobs.

8.1.1 Employability Skills

To read the e-book on Employability Skills scan the QR Code below.



Employability Skills



11. Annexure - Resources



Module No.	Unit No.	Name of Subject	URL	QR Code
1. Introduction and Orientation	Unit 1.1 - Introduction to Apparel Sector	Apparel industry in India	https://youtu.be/tN5oLGSjepQ	
1. Introduction and Orientation	Unit 1.2 - Role and Responsibilities of Sampling Manager	Role and Responsibilities of Sampling Tailor	https://youtu.be/bwSQVC7YHjl	
2. Prepare for Sampling	Unit 2.1 - Tools and Equipment Required	Tools and Equipment Required in Sampling Tailoring	https://youtu.be/N30Ae83Jbp4	
2. Prepare for Sampling	Unit 2.2 - Measurement	Measurement	https://youtu.be/WjlKMrSsCeE	
2. Prepare for Sampling	Unit 2.3 - Fabric Understanding	Fabric Types	https://youtu.be/Vi6RPMbau98	
2. Prepare for Sampling	Unit 2.3 - Fabric Understanding	Categorization of garment defects	https://youtu.be/SPtD6mAZ0GU	
2. Prepare for Sampling	Unit 2.6 - Tech Pack	Different Parts Name of a Basic Shirt	https://youtu.be/cAyiRpm4AZo	

3. Carry Out Fabric Cutting Operations for Preparing Garment Sample	Unit 3.1 - Fabric Laying Procedure	Fabric Spreading	https://youtu.be/S2guBz1B6_8	
3. Carry Out Fabric Cutting Operations for Preparing Garment Sample	Unit 3.2 - Fabric Cutting Procedure	Fabric Cutting Procedure	https://youtu.be/gvzM2SoVMaA	
4. Preparation for Stitching	Unit 4.1 - Type of Sewing Machines	Maintenance of single needle sewing machine	https://youtu.be/6iE2DT6LVpg	
4. Preparation for Stitching	Unit 4.1 - Type of Sewing Machines	Types of Industrial Sewing Machines	https://youtu.be/nwQLVcOCd18	
4. Preparation for Stitching	Unit 4.1 - Type of Sewing Machines	Parts of a sewing machine	https://youtu.be/aI_hc7DoKXk	
5. Stitching Operations	Unit 5.1 - Garment Construction	Types of stitching	https://youtu.be/NtmiZU1dkZM	
5. Stitching Operations	Unit 5.1 - Garment Construction	Sewing a pant	https://youtu.be/Q3Y5Q_iW1Ao	

5. Stitching Operations	Unit 5.1 - Garment Construction	Attaching belt in a pant	https://youtu.be/7Biev39gR2k	
5. Stitching Operations	Unit 5.1 - Garment Construction	Sewing a shirt	https://youtu.be/g7AA-gfAKes	
6. Contribute to Achieve Sample Quality In Stitching Operations	Unit 6.1 - Contribute to Achieve Product Quality in Stitching Operations	Categorization of garment defects	https://youtu.be/SPtD6mAZ0GU	
7. Maintain a Healthy, Safe and Secure Working Environment with Gender and PwD Sensitization	Unit 7.1 - Maintain Health, Safety and Security at Work Place	Health related threats in apparel industry and control on them	https://youtu.be/POIQ27GQZp0	
7. Maintain a Healthy, Safe and Secure Working Environment with Gender and PwD Sensitization	Unit 7.2 - First Aid & CPR	First aid	https://youtu.be/DQ7JPNgU8Wg	
7. Maintain a Healthy, Safe and Secure Working Environment with Gender and PwD Sensitization	Unit 7.3 - Sensitivity towards People with Disability and Gender Equality	Gender sensitization	https://youtu.be/Wi1exdO1lig	



<https://youtu.be/bwSQVC7YHjl>
Scan QR code to access e-book



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