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INDUSTRIAL GARMENT EXPERT

LEARNER GUIDE

National Vocational Certificate Level 3

Version 1 - April, 2019

NAVTTC

Implemented by
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Published by
National Vocational and Technical Training Commission
Government of Pakistan

Headquarter
Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan
www.navttc.org

Responsible
Director General Skills Standard and Curricula, National Vocational and Technical Training Commission
National Deputy Head, TVET Sector Support Programme, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Layout & design
SAP Communications

Photo Credits
TVET Sector Support Programme

This document has been produced with the technical assistance of the TVET Sector Support Programme, which is funded by the European Union, the Federal Republic of Germany and the Royal Norwegian Embassy and has been commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in close collaboration with the National Vocational and Technical Training Commission (NAVTTC) as well as provincial Technical Education and Vocational Training Authorities (TEVTAs), Punjab Vocational Training Council (PVTC), Qualification Awarding Bodies (QABs)s and private sector organizations.

Document Version
April, 2019
Islamabad, Pakistan

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Introduction

Welcome to your Learner's Guide for the Industrial Garment Expert Level-3 "Industrial stitching machine expert". It will help you to complete the program and to go on to complete further study or go straight into employment.

The Industrial Garment Expert program is to engage young people with a program of development that will provide them with the knowledge, skills and understanding to start this career in Pakistan. The program has been developed to address specific issues, such as the national, regional and local trends, markets, the manpower availability within the country, and meeting and exceeding the needs and expectations of their employers / customers.

The main elements of your learner's guide are:

- **Introduction:**
  - This includes a brief description of your guide and guidelines for you to use it effectively
- **Modules:**
  - The modules form the sections in your learner's guide
- **Learning Units:**
  - Learning Units are the main sections within each module
- **Learning outcomes**:
  - Learning outcomes of each learning units are taken from the curriculum document
- **Learning Elements:**
  - This is the main content of your learner's guide with detail of the knowledge and skills (practical activities, projects, assignments, practices etc.) you will require to achieve learning outcomes stated in the curriculum
  - This section will include examples, photographs and illustrations relating to each learning outcome
- **Summary of modules**:
  - This contains the summary of the modules that make up your learner's guide
- **Frequently asked questions**:
  - These have been added to provide further explanation and clarity on some of the difficult concepts and areas. This further helps you in preparing for your assessment.
- **Multiple choice questions for self-test**:

These are provided as an exercise at the end of your learner's guide to help you in preparing for your assessment.

INDUSTRIAL GARMENT EXPERT

Module-1

LEARNER GUIDE

National Vocational Certificate Level 3

Version 1 - April, 2019

Modules

Module 1: Prepare prototype

Objective of the module: This competency standard covers the skills and knowledge required to make prototype according to buyer's requirement and get approval for final production.

Duration: 100 hours **Theory:** 20 hours **Practical:** 80 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Interpret order sheet	**The trainee will be able to:** Evaluate spec sheet for sample making. Arrange fabric, trims and accessories as per spec sheet.	Knowledge of Spec Sheet for Sampling Understanding the trims, accessories required as per spec sheet.	Computer Calculator
LU2. Make garment pattern	**The trainee will be able to:** Collect size set details from spec sheet. Develop pattern according to the spec sheet Control the measurement and the matching of the pattern pieces Develop the cutting pattern including all allowances e.g. shrinkage %age, seam as per product sketch, notches and drills	Knowledge of different sizes of product. Knowledge of pattern making and cutting techniques as per spec sheet and importance of allowances. Ensuring the measurement of different patterns. Importance of pattern making and its types. Applying seam allowances, shrinkage %age, notches and drills. Types of notches, drills and their uses.	Pattern sheet Measurement tape 60" L-scale French curve Scissor Pencil Rubber Sharpener 25c Stapler Hole Punch Set square

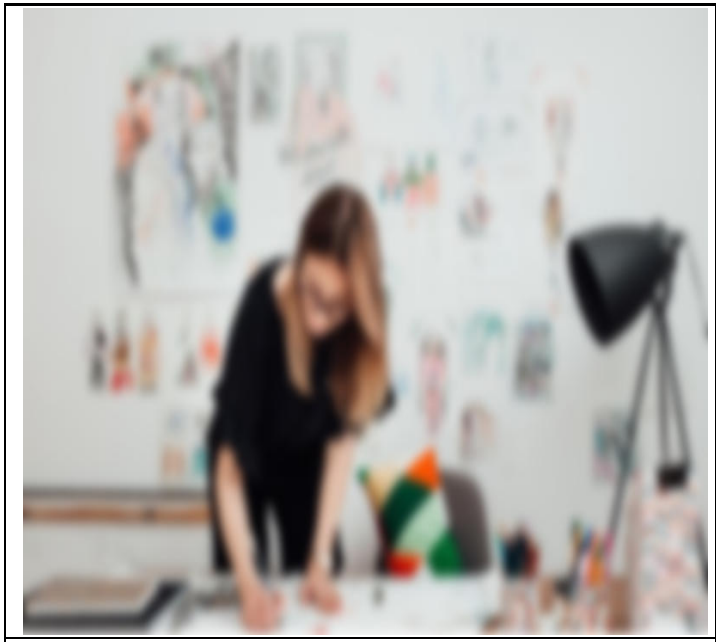
	Add nomenclature (pattern piece name, size, model name, grain line and cut information)	Knowledge of shrinkage %age. Knowledge of pattern grading.	Marker pen Scotch tape 1” Tracing wheel Curve stick Yard scale
LU3. Perform fabric cutting	**The trainee will be able to:** Apply Personal Protective Equipment (PPEs) as per job requirement. Identify and select fabric for prototype. Place pattern on fabric and mark as per requirement. Control placement of the pattern Cut fabric sample on marking for stitching including all notches and drills	The importance of Personal Protective Equipment (PPEs) and their uses at workplace. Identifying tools used in cutting and their purpose Selecting of fabric for prototype Ensuring the grain line on fabric Knowledge of different types of cutting techniques and machines.	Fabric Scissor pearl Pins Tailor chalk Metal Gloves Mask Apron First Aid box Round knife cutting machine 6”
LU4. Perform stitching on fabric	**The trainee will be able to:** Prepare machine for sewing. Arrange material for product as per spec sheet. Select sewing needle and sewing thread according to the sewing operation and the fabric in use	Knowledge of different types sewing machines and it uses Knowledge of different Sewing machine operations Identifying different types of needles	Different Sewing machines Thread cones Different Needles for different machines Bobbin Bobbin case Clipper

	Sew product as per requirement. Check sewing result according to the requirement. Take corrective measure for faults occur during sewing if required.	Describe stitch types and classes Explaining SPI (Stitches per inch) and its importance. Identifying different seam types & classes and their purpose Analyzing different types of defects (fabric/ sewing/ processing/ handling/pressing) and its remedies	Scissor Steam Iron Fusing Stitch opener
LU5. Perform finishing on product.	**The trainee will be able to:** Perform cropping, checking and pressing as per SOP. Perform folding and packing as per requirement. Prepare Quality Control (QC) report.	Knowledge of finishing procedures Applying Clockwise checking method Ensuring Standards Operating Procedures (SOP) Knowledge of different types of folding and tagging Knowledge of preparing QC Report Knowledge of accessories use for finishing to make prototype like zip, button, adhesive, lining) Importance and proper uses of packing accessories like hang tag, price tag, poly bag etc)	Clippers/Scissors Checking table Measurement tape Steam Iron Tag machine Tag pins Poly bag

LU6. Obtain approval from supervisor	**The trainee will be able to:** Examine stitched sample as per spec sheet / standards. Review QC report for final approval.	Ensuring of all kinds of samples (i.e. measurements, Trims, accessories, Fabric, Pressing, folding, tagging, packing etc)	

How to Create Your First Apparel Sample

Creating your first apparel product can be a daunting task. Especially if you don't know where to start. Before you can "officially" make your product in a factory, you will need to create a production-ready sample for factories to replicate. You can hire someone to do all the ground work for you but if you are looking to build a fashion business from your product idea, then you will have to start thinking strategically BEFORE you finalized your apparel product designs with a manufacturer or technical consultant.Here are some action items to take so that you will save money and time in apparel product development with professionals at:
https://www.weebly.com/inspiration/apparel-sample/



Operate or tend sewing machines to join, reinforce, decorate, or perform related sewing operations in the manufacture of garment or non-garment products.

Place spools of thread, cord, or other materials on spindles, insert bobbins, and thread ends through machine guides and components.

Position items under needles, using marks on machines, clamps, templates, or cloth as guides

Guide garments or garment parts under machine needles and presser feet to sew parts together.

Remove holding devices and finished items from machines.

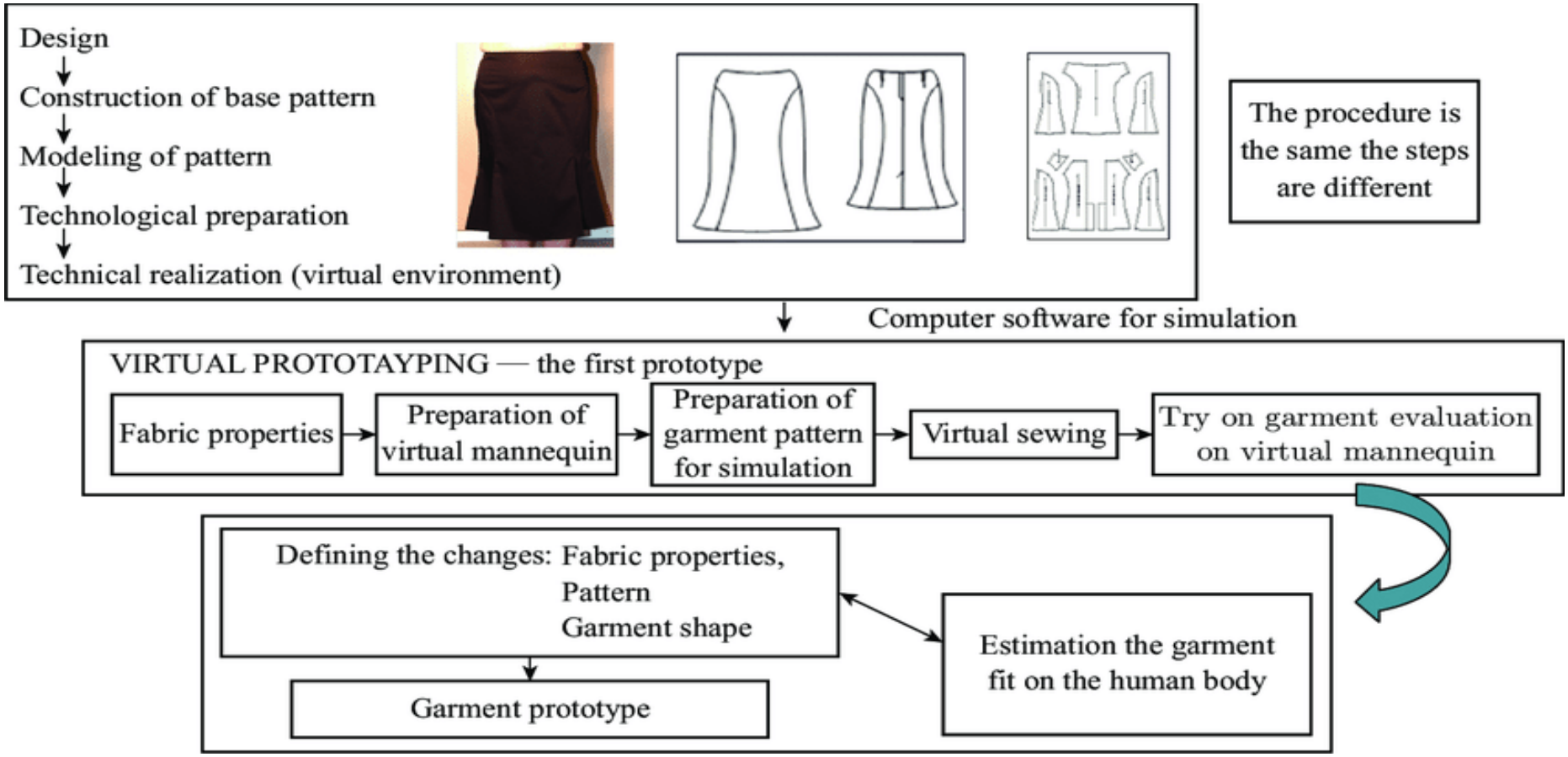
Match cloth pieces in correct sequences prior to sewing them, and verify that dye lots and patterns match.

Fold or stretch edges or lengths of items while sewing to facilitate forming specified sections.

Cut excess material or thread from finished products.

Select supplies such as fasteners and thread, according to job requirements.

Examine and measure finished articles to verify conformance to standards, using rulers.

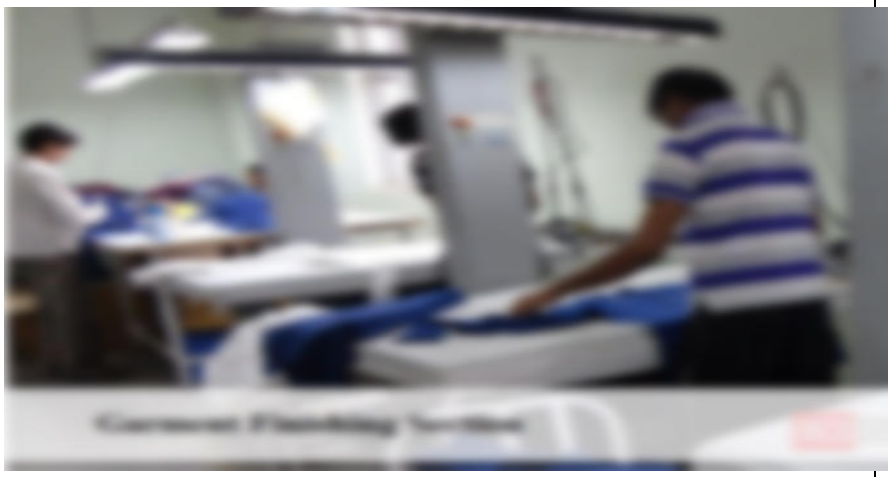


How To Make A T-Shirt From Design To Manufacturing Process

For more details plz visit for video: https://www.youtube.com/watch?v=subeIZgLquI

Pattern Making for prototype

Fabric Cutting for prototype

 SIRUBA		

Layout plan for basic shirt

1. Front part (right & left) + back part attached by 2 needle chin stitch machine (2pcs).
2. Pocket attach by lock stitch machine (1pcs).
3. Sleeve join with front and back part by 1 needle chain stitch (2pcs).
4. Front and back attaching with shoulder by 1 needle lock stitch machine (2pcs).
5. Front (right & left) + back + shoulder join with collar stand by lock stitch machine.
6. Collar stand + collar join by lock stitch machine (2pcs).
7. Cuff join with sleeve by 1 needle lock stitch machine (4pcs).
8. Placket joins with sleeve by 1 needle lock stitch machine (2pcs).
9. Gain ball join with sleeve by 1 needle lock stitch machine (2pcs).
10. Top center join with front (left) by Kansai machine (2-needle 2 looper).
11. Button stand join with front (right) by lock stitch machine.
12. Button attaching join by button attaching machine.
13. Button holding by button holding machine.

Source: Garment Analysis of a Basic Shirt @

https://fashion2apparel.blogspot.com/2017/03/garment-analysis-basic-shirt.html

INDUSTRIAL GARMENT EXPERT

Module-2

LEARNER GUIDE

National Vocational Certificate Level 3

Version 1 - April, 2019

Module 2: Verify Fabric Quality

Objective of the module: This competency standard covers the skills and knowledge required to verify fabric quality by using different quality standards and equipment to maintain the product quality as per requirement.

Duration: 140 hours **Theory:** 28 hours **Practical:** 112 hours

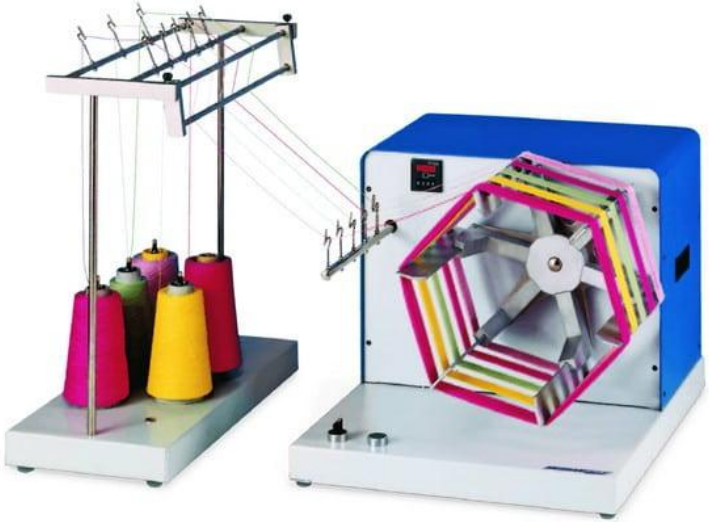
Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. **Perform fabric lab testing**	**The trainee will be able to:** Collect sample as per job requirement. Perform following tests as per requirement: - Count of yarn - Construction of fabric - GSM of fabric - Shrinkage %age of fabric - Blend Ratio - Shade variation - Tear strength - Color fastness tests etc. Document the test result.	Knowledge of AATCC/ISO/ASTM standard manual with related test standards. Knowledge of yarn Count, construction of fabric, GSM, Shrinkage %age of fabric, Blend Ratio, Shade variation, Tear strength etc. Knowledge of fastness tests such as color, rubbing, perspiration, light etc with importance of rating awarded to the tested fastness through blue scale and grey scale. Preparing report of tests result.	Fabric, Gray scale Blue scale GSM cutter Light Box Standards manual Computer set Measurement Tape Calculator Dustbin Scissor Beakers Pick glass Weighing scale Yarn count tester HT machine Automatic washing machine

			Tensile strength tester Crock meter
LU2. **Inspect fabric**	**The trainee will be able to:** Identify and select fabric for inspection. Calculate lot size as per job requirement. Perform fabric inspection as per requirement (4 point system / 10 point system). Measure fabric width of every roll / than at-least three times (@start/ mid/ end) during inspection. Check skew and bowing of every roll. Check fabric weight (GSM) as per requirement. Document test results	Checking Fabric quality as per required parameters. Knowledge of 4 point / 10 point system for inspection Ensuring Lot sizes Knowledge of Skew and bowing Knowledge of Fabric GSM and GSM cutter Generating inspection report	Light box GSM cutter Computer set Calculator Fabric Measurement tape Weighing scale Inspection frame
LU3. **Verify fabric shade**	**The trainee will be able to:** Cut at-least two samples from start and end of every roll for checking Start End (SE) / left-center-right (LCR) shade variation. Analyze cut samples in lab as per standards and note down shade change (Start/end, LCR, roll to roll) by using gray scale)	Knowledge of shade variation and roll to roll variation Knowledge of LCR and its disadvantages. Importance of light source to check shade of the color on fabric such as D65, TL84, F, UV. Importance of shade checking at three points of	Light Box Grey scale

	Prepare fabric blanket for roll to roll variation.	the roll as; Start, Centre and End. Knowledge about preparing fabric blanket for checking the roll to roll shade variations.	
LU4. Prepare fabric inspection report	**The trainee will be able to:** Prepare detailed fabric inspection report on given format. Obtain approval from supervisor.	Generating fabric inspection report and get approval from supervisor	Test report format Computer set Calculator

GSM Cutter

GSM means grams per square meter of a knit, woven or non woven fabric. It is essential to know the weight of the fabric before manufacturing and after getting the finished fabric. It needs to measure the weight of the fabric to be sure about the finished weight of the fabric. This test can be carried out in different ways but it is very easy to know the weight of the fabric by cutting the fabric with the **GSM** cutter.



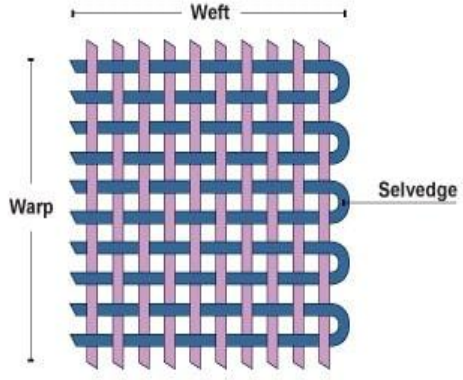
Yarn Count

Count is a numerical value, which express the coarseness or fineness (diameter) of the yarn and also indicate the relationship between length and weight(the mass per unit length or the length per unit mass)of that yarn. Therefore, the concept of **yarn count** has been introduced which specifies a certain ratio of length to weight.

The fineness of the yarn is usually expressed in terms of its linear density or count. There are a number of systems and units for expressing yarn fineness. But they are classified as follows.

Types of Yarn Count:

1. Direct Count System
2. Indirect Count System



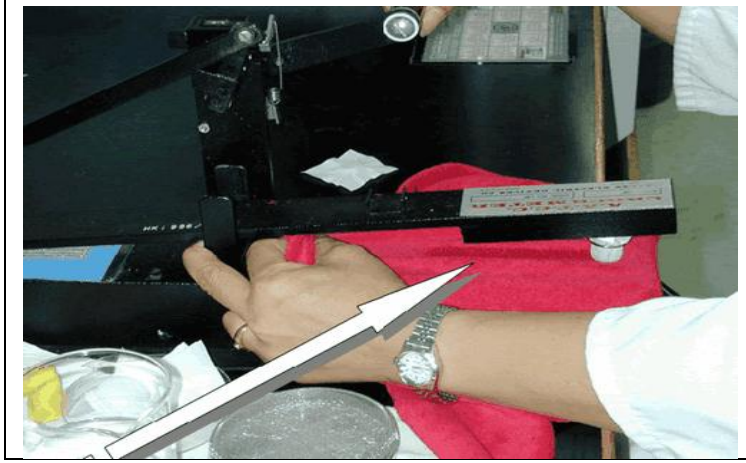
Fabric Construction

What is Fabric?

The term fabric can be defined as a planner structure produced by interlaced/interlooped yarns or **fibers**and felts made by interlocking fibers. It is a manufactured assembly of fibers and /or yarns that has substantial surface area in relation to its thickness and sufficient mechanical strength to give the assembly inherent cohesion. Basically, there are three methods by which fabrics are made. They are:

1.Weaving Process
2. Knitting Process
3. Non-woven Process

For more information please visit: https://textilelearner.blogspot.com/2012/07/what-is-fabric-warp-weft-fabric.html



Color Fastness:

Color fastness is one of the important factors in case of buyers demand. The outstandingly important property of a dyed material is the fastness of the shade of color. Color fastness refers to the resistance of color to fade or bleed of a dyed or printed textile materials to various types of influences e.g. water, light, rubbing, washing, **perspiration** etc. to which they are normally exposed in textile manufacturing and in daily use. We have written a lot of articles on color fastness.

https://textilelearner.blogspot.com/2012/11/different-color-fastness-tests.html

Fabric Quality Inspection:

Inspection in reference to the apparel industry can be defined as the visual examination or review of raw materials (like fabric, sewing threads, buttons, trims, etc). It is an important aspect followed prior to garment manufacturing to avoid rejects due to fabric quality and facing with unexpected loss in manufacturing.

The quality of a final garment depends on the quality of a fabric when it is received as a roll. Even the most outstanding manufacturing methods cannot compensate for defective materials. Normally, we inspect 10% of the rolls we receive and evaluate them based on a four-point system. This way, we can avoid fabric related quality problems before it is put into production. Normally four system are used for **inspection of finishedgarments.**

1. 4 point system
2. 10 point system
3. Graniteville "78" system.
4. Dallas system.

https://textilelearner.blogspot.com/2012/12/apparel-garment-quality-inspection.html

Colour is one of the most fundamental aspects of textile design which contributes greatly to the overall visual effect of a finished fabric. Colour matching is a vital process in ensuring continuity of colour from the master standard to all subsequent production batches.

A variety of conditions affect how a color looks

1.Light- source difference
2.Observer Difference
3.Size Difference
4.Background Difference
5.Directional difference

How to Ensure Effective Color in Today's Manufacturing Processes?

The three components of colour matching

There are three components involved in colour viewing,which are LIGHT, VISION and OBJECT. If any omponent changes, the actual perception of colour will also change.

It is important to keep the conditions (as mentioned above) constant when viewing colors.

Colour matching requires the use of a standard light box which has several illuminants

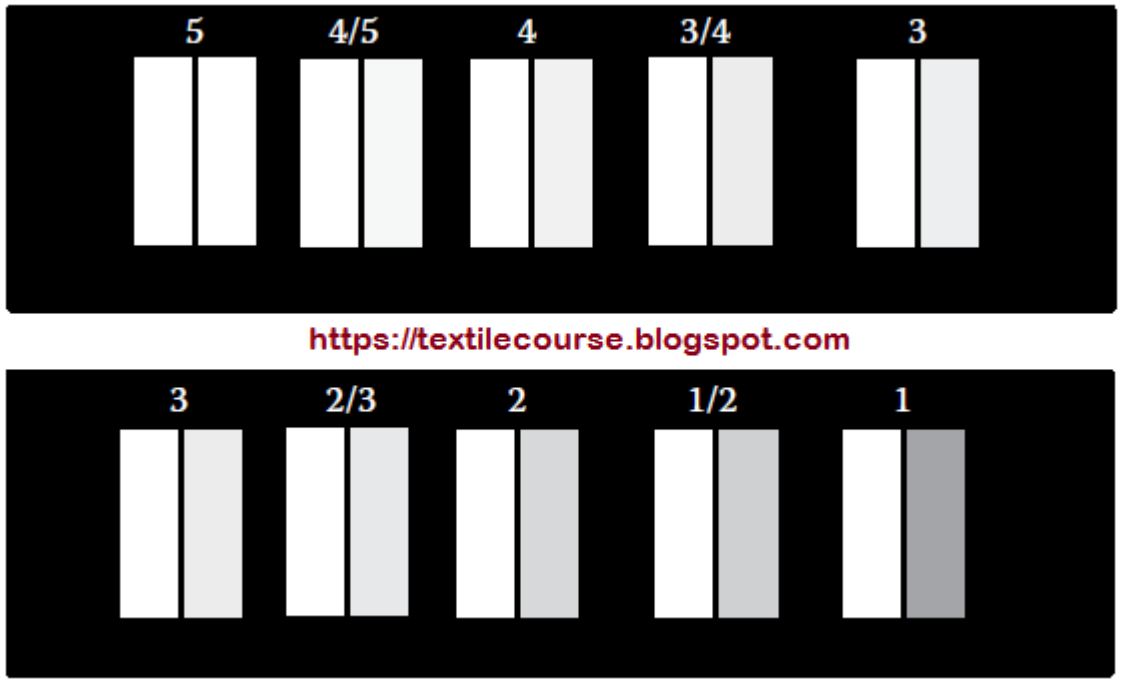
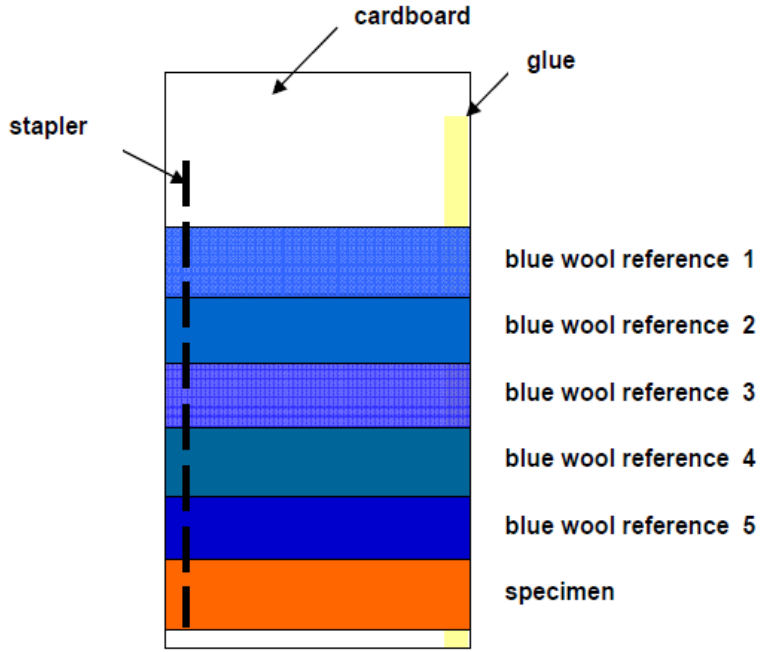
Source: http://dyeingworld1.blogspot.com/2010/02/color-matching-in-textiles.html

Videos:

	Fabric GSM Round Cutter and GSM Tester Manufacturers For Video please visit: https://www.youtube.com/watch?v=RQKlCHjvJYA Duration: 00:02:12
	yarn count & lea formation For Video please visit: https://www.youtube.com/watch?v=QQgUoeprR4I Duration: 00:01:52
	Presentation on All About Textiles: Fabric Construction https://www.youtube.com/watch?v=7P_xy8Jioo0 Duration: 00:02:15
	Shrinkage Testing https://www.youtube.com/watch?v=3xhqKNTbLOk Duration: 00:10:22

Knits Fabric Inspection Measuring Machine 4-point System

https://www.youtube.com/watch?v=6JkkYK3eV44
Duration: 00:01:26

Grey Scale	Blue Scale
	

Module 3: Perform fabric cutting for production

Objective of the module: This competency standard covers the skills and knowledge required to set the marker on lay and perform fabric cutting for production. It also covers spreading the fabric, cutting, bundling and making cutting report as per requirement.

Duration: 80 hours **Theory:** 16 hours **Practical:** 64 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Requied
LU1. Perform fabric spreading	**The trainee will be able to:** Select fabric for spreading as per order sheet. Mark range length as per marker on cutting table. Spread calculated plies and remove rejected panels.	Determining relaxation time after spreading Ensuring the Lay height limit as per fabric quality Understanding the fabric defects and its identification with possible remedies. Types of spreading and machines used for spreading & calculations of plies. Knowledge of End cutter machine.	First Aid Box Spreading table 2 Calculator Scissors Clamp & Rod (1 set) Measurement tape Spreading machine
LU2. Perform range cutting	**The trainee will be able to:** Use PPEs as per job requirement. Place and set marker on lay. Prepare cutting machine for cutting. Operate cutting machine as per marker.(including notches and drills) Collect, segregate and store waste as per organization's policy. Prepare cutting report	Ensuring Personal Protective Equipment (PPEs) to avoid any unwanted accident. Knowledge of range cutting Knowledge and Types of cutting machines Determining range cutting Types of drilling & notches and its advantages. Knowledge of Grain line information Determining waste storage policies.	Cutting machine Drill machine First Aid Box Metallic gloves PPEs Cutting Table Calculator

		Generating reports of cutting department.	
LU3. Perform bundling	**The trainee will be able to:** Verify all size-wise body parts on bundling table. Mark numbering on garment components (Ready cut) according to size. Bundle and sort with tagging. Replace rejected panels as per SOP.	Types and uses of bundling as company policy Knowledge of marking, numbering and tagging Understanding the fabric defects and its identification and replacement Types of fabric defects and its remedies.	First Aid Box PPEs Bundling Table Numbering machine Calculator
LU4. Prepare fabric cutting report	**The trainee will be able to:** Develop fabric cutting report as per given format by supervisor. Calculate fabric rejection %age and waste %age. Collect, segregate and dispose off waste as per company's policy.	Knowledge of report formation as per given format Calculations for waste %age. Generating fabric inspection report and get approval from supervisor	

Fabric Spreading:

This is a preparatory operation for **cutting** and consists of laying plies of cloth one on top of the other in a predetermined direction and relationship between the right and wrong sides of the cloth. The composition of each spread i.e. the number of plies of each color is obtained from the cut order plan. Number of plies depends on:

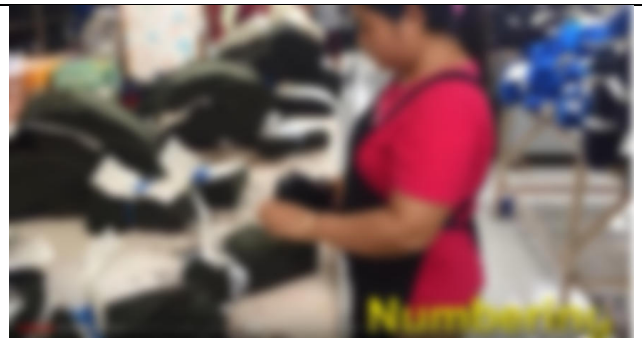
1. Capacity of the cutting machine
2. Volume of production
3. Type of fabric itself (rough or slippery)
4. Thickness of fabric

For more information: https://textilelearner.blogspot.com/2012/07/fabric-spreading-types-of-fabric.html

Fabric Cutting in Garment Manufacturing

Cutting is the process which cut out the pattern pieces from specified fabric for making garments. Using the markers made from graded patterns and in accordance with the issue plan, fabrics are cut to prepare garment assembly. This is the major operation of the cutting room, of all of the operations in the cutting room this is the most decisive because once the fabric has been cut, very little can be done to rectify serious mistakes.

For more information: https://www.textileschool.com/459/fabric-cutting-in-garment-manufacturing/



Preparation of Cut Work for Sewing Room:

The essential preparatory activities for sewing are bundling, shade separation, indicating the face side of the fabrics and work ticketing.

Bundling:

Most of the sewing rooms use the bundling system, where small batches of garments move from one workstation to another in a controlled manner. In order to prepare the cut work, it is essential for operators to be able to identify each pile. This is the function of the marker, if used, as the style number, the size and the part identification will be part of the plot. If markers are not used, a top-ply labelling system is required.

For more information: https://clothingindustry.blogspot.com/2018/01/cutting-department-garment-industry.html

Videos:

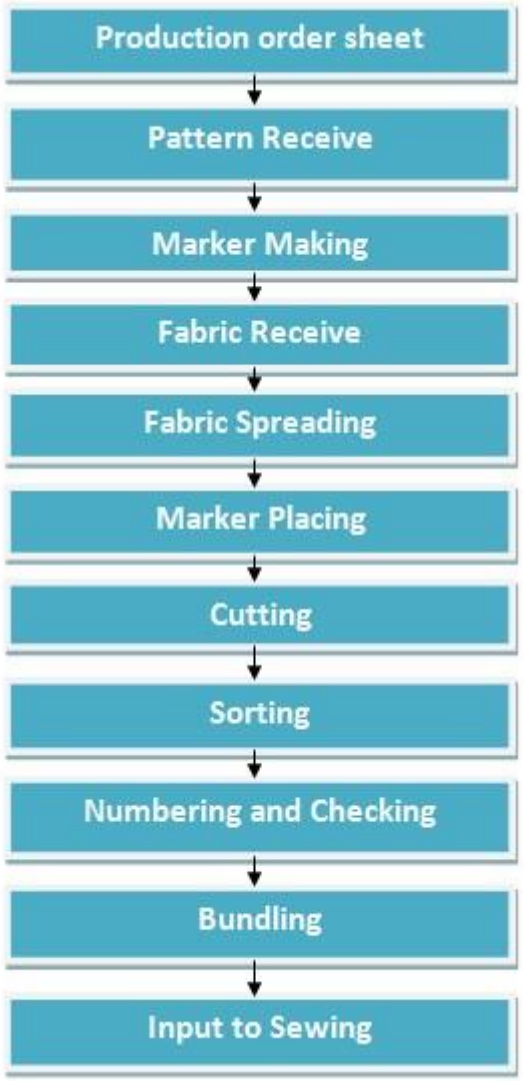
Fabric spreading machine REXEL UL-3

https://www.youtube.com/watch?v=3XMW_G7ewYU

Duration: 00:01:55

	Fabric Cutting Process https://www.youtube.com/watch?v=CWpbfn93Lyw Duration: 00:02:50

	Production Bundling https://www.youtube.com/watch?v=-yGGGRBYnc0 Duration: 00:00:43



Flowchart of Garment Cutting Section

Cutting room is an extremely important section in the garment manufacturing process which has a major impact on the profitability of the business. It is therefore important to an efficient management of the cutting room in garment manufacturing process.

Garment production starts with the cutting process. In this process, fabric is being cut into components (shapes or patterns of different garment parts, i.e. front, back, sleeve, collar shapes etc.). In mass production multiple layers of fabrics are laid on a table and large number of garments is being cut at a time. The laid fabric stack is called as lay. The cutting process includes number of sub-processes and flow of the processes is as following. Each process is briefly explained at http://textilefocus.com/cutting-room/

INDUSTRIAL GARMENT EXPERT

Module-4

LEARNER GUIDE

National Vocational Certificate Level 3

Version 1 - April, 2019

Module 4: Operate Feed of arm chain stitching machine

Objective of the module: This competency standard covers the skills and knowledge required to perform feed of arm chain stitching machine for production of textile garment.

Duration: 140 hours **Theory:** 28 hours **Practical:** 112 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Prepare machine for sewing	**The trainee will be able to:** Prepare workstation for feed of arm chain stitch. Follow safety precautions as per SOP / manual. Check machine parts as per guidelines. Select sewing needle and sewing thread according to the sewing operation and the fabric in use Arrange material for sewing operations. Check Stitch per Inch (SPI) and quality on rough fabric for verifying quality for production.	Importance and setting of workbench Knowledge of seating arrangement as per OH&S practices. Cleaning of machine according to standards for Feed of arm chain stitching machine operations. Knowledge of different parts of machines (Like Disc type tension post , pressure foot l, thread take-up lever and looper) Identifying the needle/needle guides, parts, attachments and folders as required for sewing product. Ensuring the oil level on machine for proper machine running during production. Importance of Stitches per Inch (SPI) and verify it on rough fabric. Problems with equipment, services or surroundings, including equipment not working.	Feed of Arm chain stitching machine Thread Needles Fabric Folder Machine Oil Tweezers First Aid Box Tool box Mask Dust bin L-key
LU2. Perform sewing operation by using feed of arm chain stitching	**The trainee will be able to:** Execute machine control exercise. Perform sewing operations as per requirement. Take corrective measure for faults occur	Operational knowledge of Feed of arm sewing machine for sewing the product with required parameters. Knowledge of machine speed and proper handling of machine according to the type of operations.	Thread Needles Fabric Folder Machine Oil Scissor Tweezers

	during sewing if required. Complete target as per given time. Review sews operation randomly.	 Understanding fabrics and product type Knowledge of Seam types and their importance. Identifying stitch defects during the operations of Feed of arm sewing machine and their remedies. Conducting sewing operation according to requirement Ensuring the quality standards. Determining the preventive action taken to avoid any defective work. Knowledge of production and handling techniques	First Aid box Tool box Mask Dust bin
LU3. Clean workstation	**The trainee will be able to:** Clean machine after closing the job. Cover machine for safety. Collect and store waste as per company's policy. Put all tools in tool box.	Cleaning of machine according to standards for Feed of arm machine and follow OH&S practices. Knowledge of wastage Collecting all tools and put it into Tool box after closing the job	Tool box Machine cover Duster Blower

Introduction:

Feed of the arm machine is actually a chain stitch machine and it works with sew and stitch for chain designs. Feed of the arm machine contains looper instead of the bobbin. Multi-thread chain stitch can be produced by Feed of the arm machine on garments. By Feed of the arm machine, the stitch can be produced on heavy fabric like denim or jeans. In feed of the arm machine, there is an option to stitch by folding the fabrics. Needle size varies in this machine because of the thickness of the garments or fabrics.

Videos:

SERA Side Mudda Feed Off The Arm Sewing Machine

https://youtu.be/EzASFqvIuIg

Duration: 00:00:45

	Feed off the arm double chain stitch machine with pulley AT927 https://www.youtube.com/watch?v=SI6clx2zJKU&app=desktop Duration: 00:02:35

Functions of different patrs of feed of the arm sewing machine :

CONE	HELPS FOR CONTAINING SUPPLY OF NEEDLE THREAD.
Cone Holder	Supports the cone.
Cone Stand	Helps to support the cone and holder.
Tensioner	To control proper tension on sewing thread.
Thread guide	To control the thread path and support the sewing thread.
Needle	Needle carries needle thread and helps in penetration and helps in sewing
Feed dog	To move the fabric along by a pre-determined amount between successive stitches.

Pressure foot	To control the movement of fabric by keeping proper pressure.
Folder	It is a special parts of the feed of the arm machine. By using folder lapped seam can be formed automatically during sewing.
Motor	Motor rpm controls the speed of the machine. The rpm is controlled by the tightening or losing the belt over machine and motor pulley.

Module 5: Operate Waist band stitching machine

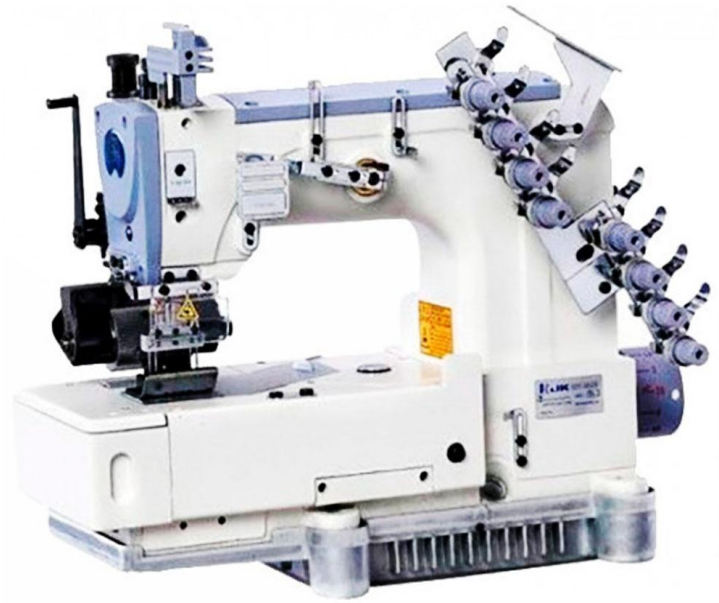
Objective of the module: This competency standard covers the skills and knowledge required to perform waist band stitching machine for production as per requirement.

Duration: 50 hours **Theory:** 10 hours **Practical:** 40 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Prepare machine for sewing	**The trainee will be able to:** Prepare workstation for waist band stitch. Follow safety precautions as per SOP / manual. Check machine parts as per guidelines. Select sewing needle and sewing thread according to the sewing operation and the fabric in use Arrange material for sewing operations.	Importance and setting of workbench Knowledge of seating arrangement as per OH&S practices. Cleaning of machine according to standards for waist band stitching machine. Knowledge of different parts of machines (e.g Tension post, pressure foot , thread take-up lever and looper etc) Identifying the needle/needle guides, parts, attachments and folders as required for sewing	Waist band stitching machine Thread Needles Fabric Folder Machine Oil Scissor Tweezers

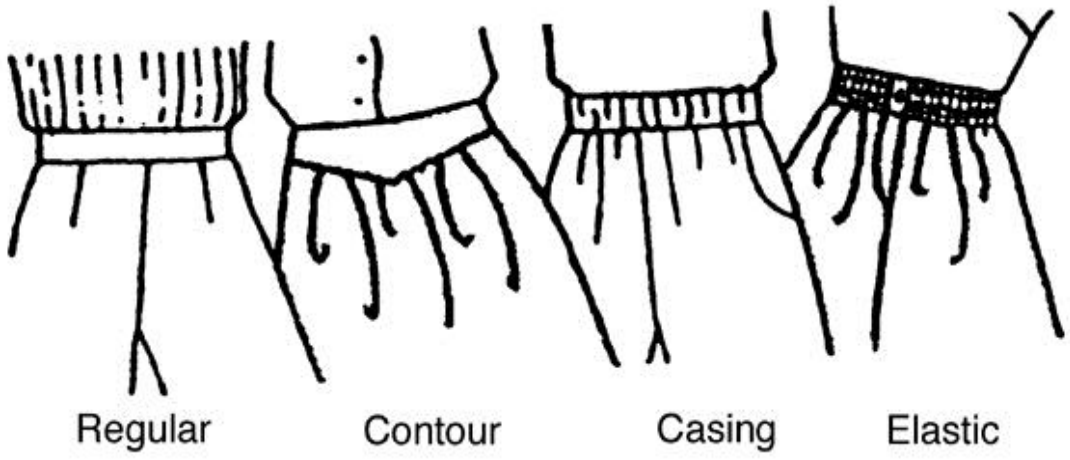
	Check Stitch per Inch (SPI) and quality on rough fabric for verifying quality for production.	product. Ensuring the oil level on machine for proper machine running during production. Importance of Stitches per Inch (SPI) and verify it on rough fabric. Problems with equipment, services or surroundings, including equipment not working.	First Aid box Tool box Mask Dust bin
LU2. Perform waist band stitching	**The trainee will be able to:** Execute machine control exercise. Perform sewing operations as per requirement. Take corrective measure for faults occur during sewing if required. Complete target as per given time. Review sew operation randomly.	Operational knowledge of waist band machine the product with required parameters. Knowledge of machine speed and proper handling of machine according to the type of operations. Understanding fabrics and product type Knowledge of Seam types and their importance. Identifying stitch defects during the operations of waist band machine and their remedies. Conducting sewing operation according to requirement Ensuring the quality standards. Determining the preventive action taken to avoid any defective work. Knowledge of production and handling techniques	Thread Needles Fabric Folder Machine Oil Scissor Tweezers First Aid box Tool box Mask Dust bin
LU3. Clean workstation	**The trainee will be able to:** Clean machine after closing the job. Cover machine for safety.	Cleaning of machine according to standards for Feed of arm machine and follow OH&S practices. Knowledge of wastage	Tool box Machine cover Duster

	Collect and store waste as per company's policy. Put all tools in tool box.	Collecting all tools and put it into Tool box after closing the job	



Waistbands play an important part in the fit and appearance of skirts and pants. Waistbands smoothly encircle your waist, so they need to be made to your measurement.

There are several kinds of waistbands (Figure 1). Select one that is best suited to your fabric and your body curve.



For more detail: https://aces.nmsu.edu/pubs/_c/C234/welcome.html

Videos:

	HOW TO: Sew a waistband https://www.youtube.com/watch?v=OQVp5_Ak-_w Duration 00:09:26
	CGS By ช่างกวง | Waistband Sewing Machine https://www.youtube.com/watch?v=SQ0aEYJH170 Duration: 00:02:19

Different Types of Defects in Garments:

1. Spirality	**2.** Shade difference within a same garment	**3.** Holes
4. Stain	**5.** Puckered seam	**6.** Open seams / Broken seams
7. Broken stitches	**8.** Dropped stitches/Skipped stitches	**9.** Wavy stitches/Staggered stitches
10. Uncut/ loose thread	**11.** Sizing defects	**12.** Poor ironing
13. Seams not aligned at crossing of seams	**14.** Distorted knitting	**15.** Broken buttons
16. Defective snaps	**17.** Defective snaps	**18.** Exposed notches
19. Exposed raw edges	**20.** Fabric defects	**21.** Inoperative zipper
22. Untrimmed thread ends	**23.** Misaligned buttons and holes	**24.** Missing buttons
25. Needle cuts / chews	**26.** Incorrect or mixed sew in labels	**27.** Incorrect or mixed swing tickets/bar codes

28. Pulled / loose yarn	**29.** Oil/ dirt mark on surface	**30.** Unfinished buttonhole
31. Zipper too short		

Garment Defects Causes and Remedies

Spirality:

Causes:

- Yarn twist too high.
- Yarn quality is very poor.
- Bad combination between yarn twist & machine rotation direction.

Remedies:

- Control of yarn twist (yarn twist should never be above 700 try/m).
- Reduction of feeder number.
- Appropriate finishing reduces fabric spirality.

Different shades within the same garment:

Seams appear to be lighter or darker than the other seams surrounding it.

Causes:

- It arises due to improper cutting, bundling and numbering.
- Uneven to batch missing shade.
- Different Batch mixing for same garment.

Remedies:

- After cutting the garment parts must be kept in proper bundle with number.
- One batch fabric shade is used for same garment in every part.
- Shade is marking each part due to fabric cutting.

For more causes and remedies please visit: https://clothingindustry.blogspot.com/2018/01/cutting-department-garment-industry.html

INDUSTRIAL GARMENT EXPERT

Module-6

LEARNER GUIDE

National Vocational Certificate Level 3

Version 1 - April, 2019

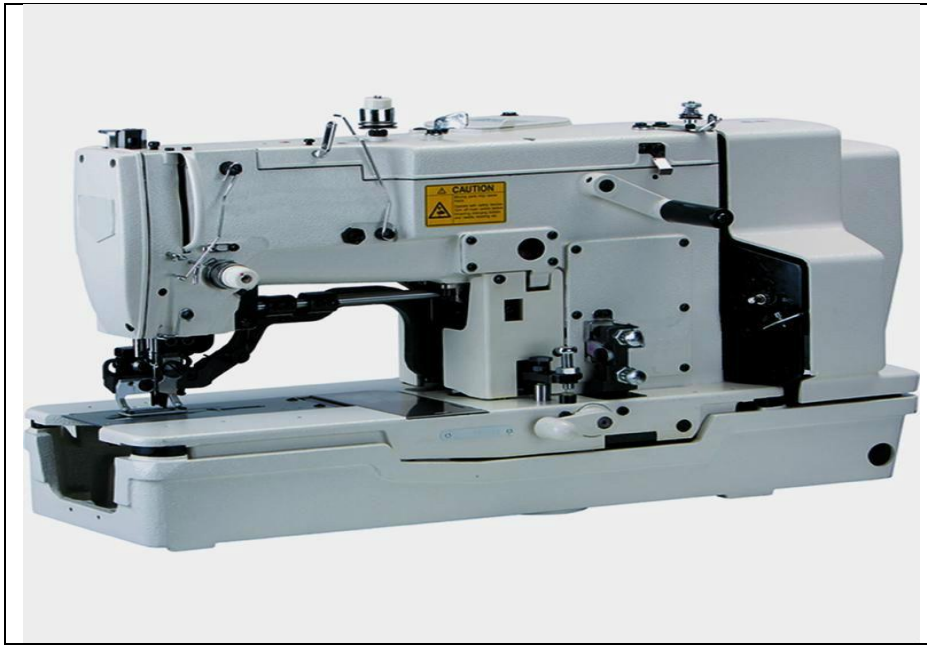
Module 6: Make button holes

Objective of the module: This competency standard covers the skills and knowledge required to perform button holes on garment product for buttons.

Duration: 40 hours **Theory:** 8 **Practical:** 32 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Prepare machine for button hole.	**The trainee will be able to:** Prepare workstation for button hole machine. Follow safety precautions as per SOP / manual. Check machine parts as per guidelines. Select sewing needle and sewing thread according to the sewing operation and the fabric in use Arrange material for sewing operations. Adjust machine according to the fabric in use (thread tension, button hole length, stitch width and number of stitch (SPI)	Importance and setting of workbench Knowledge of seating arrangement as per OH&S practices. Cleaning of machine according to standards for button hole machine. Knowledge of different parts of machines (Like Tensioner, pressure feed lever, thread take-up lever) Knowledge of bobbin and bobbin case and bobbin filling process Identifying the needle/needle guides, parts, attachments as required for product. Ensuring the oil level on machine for proper machine running during production. Knowledge of different types of button hole Problems with equipment, services or surroundings, including equipment not working.	Thread Needles Bobbin Bobbin case Fabric Attachment Machine Oil First Aid box Tool box Mask Dust bin Button hole machine
LU2. Make button holes	**The trainee will be able to:** Execute machine control exercise. Perform button holes as per specifications. Take corrective measure for faults occur	Operational knowledge of Button hole machine with required parameters. Knowledge of machine speed and proper handling of machine according to the type of operations. Knowledge of bobbin and bobbin case and	Thread Needles Bobbin Bobbin case

	during sewing if required. Complete target as per given time. Review button hole operation randomly.	bobbin filling process Identifying defects during the operations of Button hole machine and their remedies. Conducting button hole operation according to requirement Ensuring the quality standards. Knowledge of production and handling techniques	Fabric Attachment Measuring Tape Machine Oil First Aid box Tool box Mask Dust bin
LU3. Clean workstation	**The trainee will be able to:** Clean machine after closing the job. Cover machine for safety. Collect and store waste as per company's policy. Put all tools in tool box.	Cleaning of machine according to standards for Button hole machine and follow OH&S practices. Knowledge of wastage Collecting all tools and put it into Tool box after closing the job.	Tool box Machine cover Duster

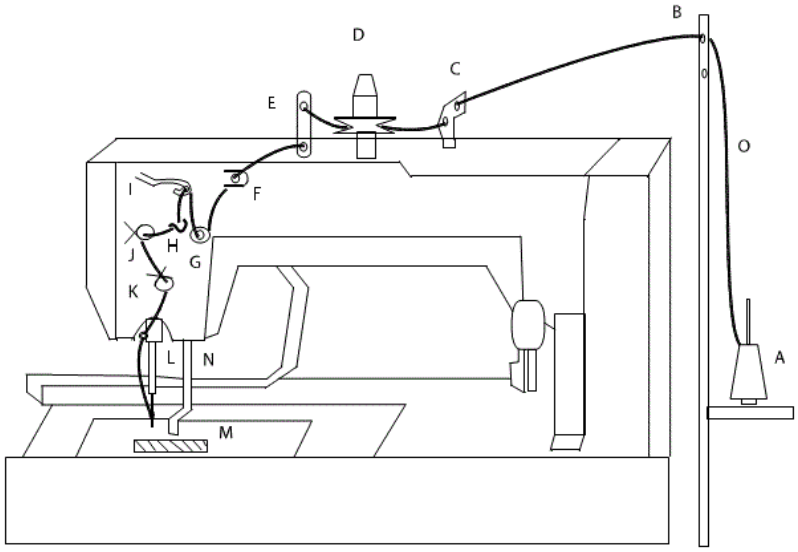
Videos:

	How to Machine-Sew and Custom-sized Buttonhole https://www.youtube.com/watch?v=A6P-TKK3tjg Duration: 00:03:11
	Juki Button hole Machine https://www.youtube.com/watch?v=4C-E-bxOajo Duration: 00:01:16
	Sewing hacks: Sewing machine buttonhole troubleshooting https://www.youtube.com/watch?v=aWboVpzJHKo Duration: 00:14:43

Description of Button Hole Machine:

This machine works in cyclic system i.e. during pressing switch after sewing one complete button hole the machine will stop. In fully automatic button hole m/c more than one i.e. pre-selected no. of button holes can be sewn in pre-selected distance. In this system no mark is needed on cloth for button hole. In button hole m/c there is system to make big or small button hole and also to increase or decrease the stitch density. Usually lock stitch or chain stitch is

used here. Button hole can be made before or after sewing. Both system has some advantage and disadvantage. If hole is made before then the cut edge is closed in sewing and the button hole is seen very good and clean. But the disadvantage is that after starting sewing there is no chance to change the button hole place & cut edge disturbs to sew well due to flagging. But disadvantage is thread of cloth is come out along the sewing line of button hole that looks very bad. Usually for dense woven & coarse cloth before sewing, for thin cloth after sewing button hole is made.



Where,
A=Cone package
B=Guide
C=Guide
D=Spring box tensioner
E=Guide
F=Guide
G=Tensioner
H=Thread cutting ever
I=Take up lever
J=Trimming lever
K=Guide
L=Guide
M=Throat plate
N=Cutting knife

Fig: Industrial Button Hole machine.




https://en.wikipedia.org/wiki/Buttonhole

INDUSTRIAL GARMENT EXPERT

Module-7

LEARNER GUIDE

National Vocational Certificate Level 3

Version 1 - April, 2019

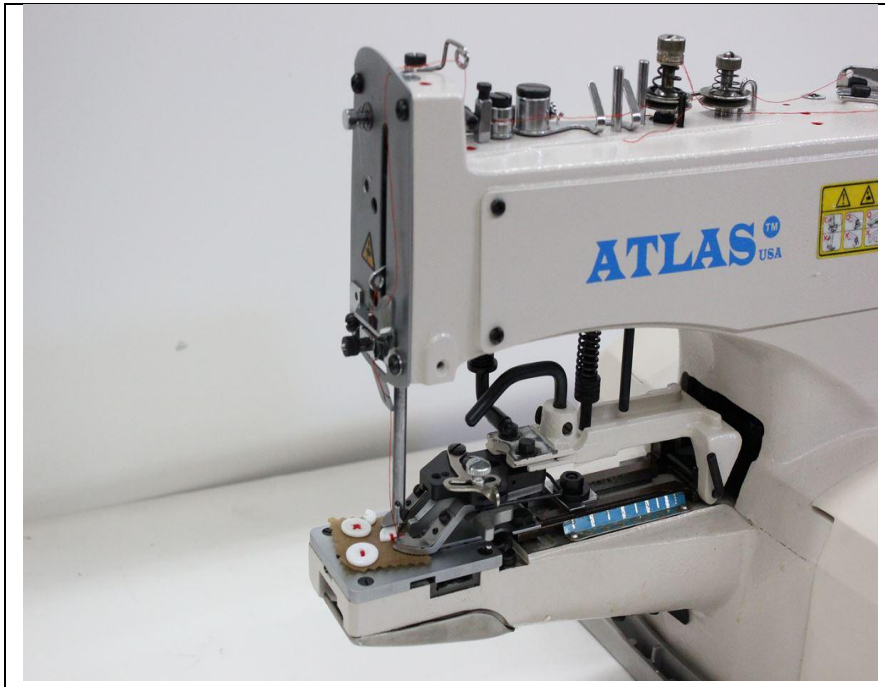
Module 7: Operate button attach machine

Objective of the module: This competency standard covers the skills and knowledge required to perform button attach machine for buttons in garment production.

Duration: 60 hours **Theory:** 12 **Practical:** 48 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Prepare machine for button attach	**The trainee will be able to:** Prepare workstation for button attach machine. Follow safety precautions as per SOP / manual. Check machine parts as per guidelines. Arrange material for sewing operations.	Importance and setting of workbench Knowledge of seating arrangement as per OH&S practices. Cleaning of machine according to standards for button attach machine. Knowledge of different parts of machines (e.g Tension post, pressure foot , thread take-up lever) Identifying the needle/needle guard, parts, attachments as required for button attach . Ensuring the oil level on machine for proper machine running during production.	Thread Buttons Needles Fabric Machine Oil First Aid box Tool box Mask Dust bin Duster Button attach machine
LU2. Perform button attaching by using button attaching machine	**The trainee will be able to:** Execute machine control exercise. Sew button as per requirement. Take corrective measure for faults occur during sewing if required.	Operational knowledge of Button attach sewing machine for sewing the product with required parameters. Knowledge of machine speed and proper handling of machine according to the type of operations. Understanding fabrics and product type	Thread Needles Fabric Measurement Tape Attachment

	Complete target as per given time. Review sew operation randomly.	Knowledge of Seam types and their importance. Identifying stitch defects occurs during the operations of button attach machine and knowledge of machine operations. Ensuring the quality standards. Determining of preventive action taken to avoid any defective work. Knowledge of production and handling techniques	Machine Oil First Aid box Tool box Mask Dust bin
LU3. Clean workstation	**The trainee will be able to:** Clean machine after closing the job. Cover machine for safety. Collect and store waste as per company's policy. Put all tools in tool box.	Cleaning of machine according to standards for Button attach sewing machine and follow OH&S practices. Knowledge of wastage Collecting all tools and put it into Tool box after closing the job	Tool box Machine cover Duster



Safety for Juki Button Stitching Machine:

When using this machine basic safety precautions should always be followed for reducing the risk of fire , electric shock and personal injury, including the followings and other accidental issue. Read the instructions carefully before operating this product and save these instructions.

- Be careful and do not place your fingers inside the machine when placing or lifting the machine head to avoid possible physical injuries.
- Please turn off the power before tiliting the button in machine
- For machine equipped servo motors do not produce noise while the machines at rest. Therefore please turn off the power of this machine to avoid possible accidents due to abrupt start of the machine
- Never operate the button attaching sewing machine after the ground wire is removed to avoid electrical shock hazard.
- Please turn the power switch off before connecting or disconnecting the power plug to prevent possible accidents due to electric shock or damaged electronic components.

ATLASUSA AT1377 HIGH-SPEED BUTTON ATTACH MACHINE

For operational video and information plz visit:
http://www.atlaslevy.com/AtlasUSA-AT1377-High-speed-button-attach-machine_p_4166.html

Juki Button Stitching Machine

For more information please visit:
https://autogarment.com/button-attaching-machine-juki-button-stitching-machine/

Description:

There are different types of button attaching m/c and different types of clamps are needed for different types and sizes of buttons. Especially there may two or three holes in the button. Again button of three holes may be attached by parallel or cross sewing. Buttons may be of different types specially there may be shank below the button or during sewing shank may be made by thread. For sewing button lock stitch, chain stitch or hand stitch machine may be used. When using chain stitch the sewing looks neat below the button but the safety of stitch is low that is the button may be fall out opening the sewing. This will not happen when used lock stitch but it is not as neat as chain stitch. In automatic machine by a hopper and pipe button is fed in button clamp in auto system and button is positioned. Moreover a predetermined number buttons can be attached in a cycle in a predetermined distant in a dress. For more information: @ https://textilelearner.blogspot.com/2012/02/button-attaching-machine-study-of.html.

Parts of Button Stitching Machine:

The general parts of Button attach / stitching machine is listed below –

- Pulley
- Button clamp
- Operation panel
- SD card slot
- Control box
- Work clamp
- Power switch
- Eye guard
- Side cover
- Cone stand
- Thread take up cover
- Finger guard

Common Sewing Problems

Needle Thread Breakage
Bobbin / Looper Thread Breakage
Thread Fusing
Skipped Stitches
Imbalanced / Variable Stitching
Staggered Stitching
Variable Stitch Density
Seam Pucker

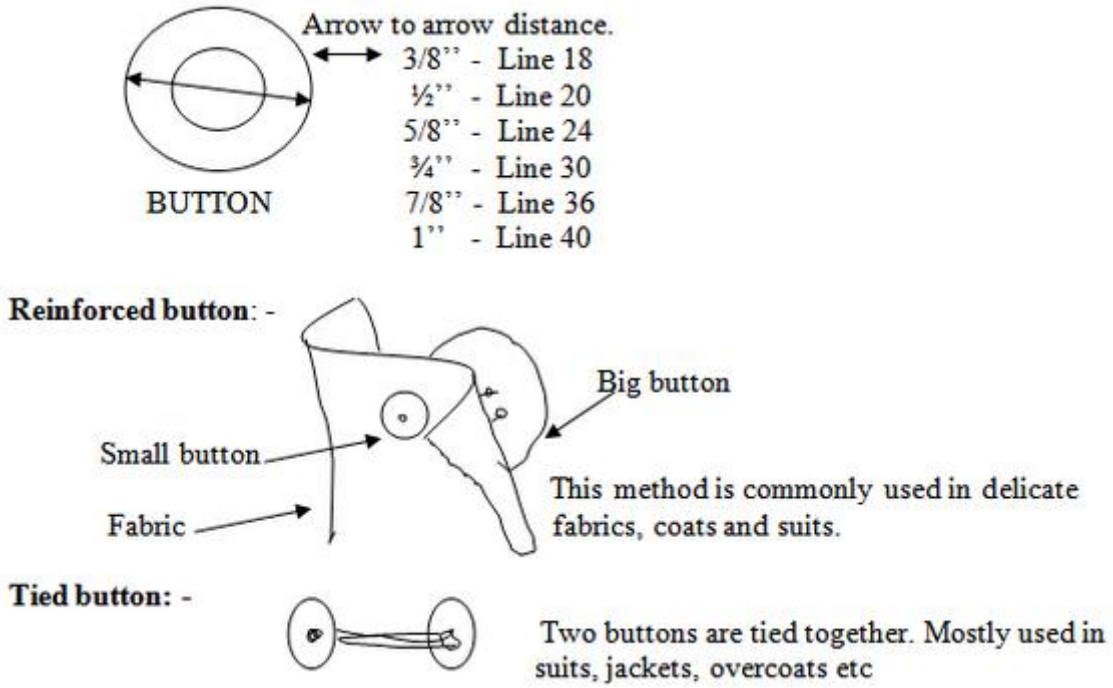
Video for Operational working of Button Attach machine:

AT1377 Button Sew Machine AtlasUSA
https://www.youtube.com/watch?v=PSQM2i7Iyys

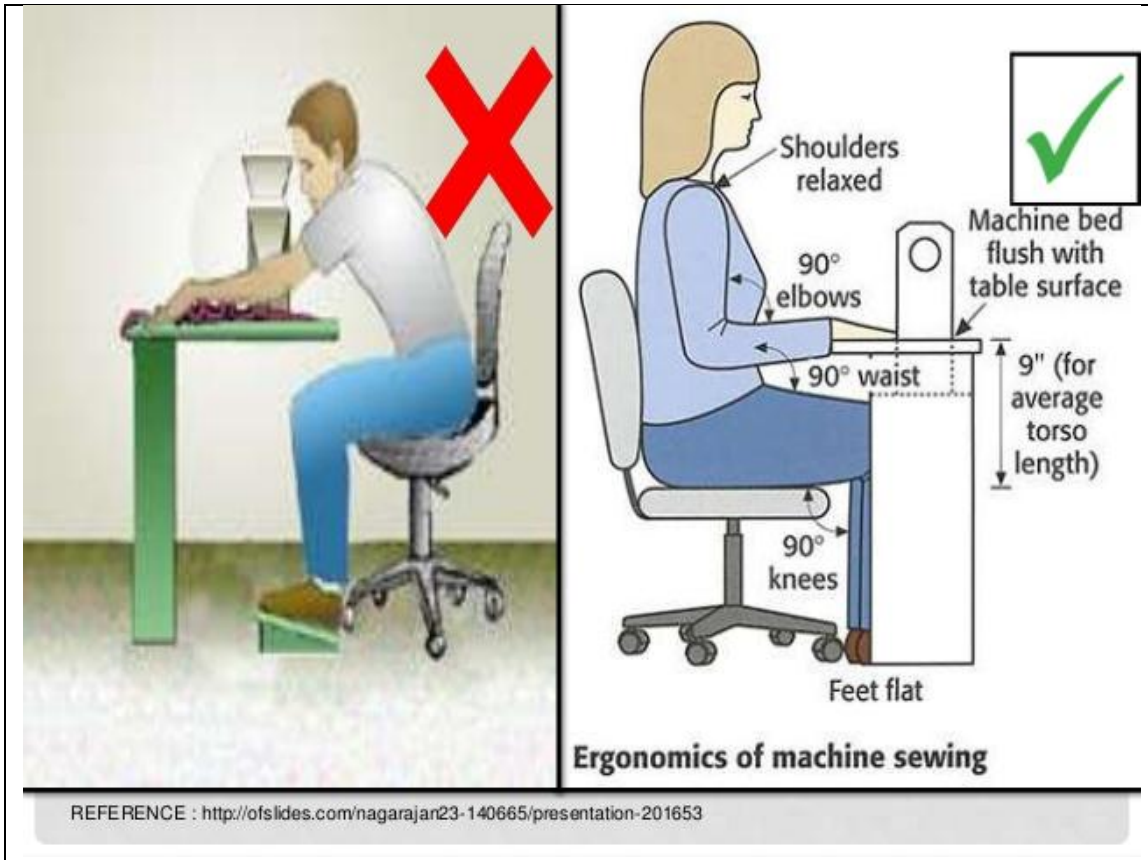
Kind of buttons:

There are enormous kinds of button available. For example sheet button, real (natural) mother of pearl button, laser button (matter engraved), metallic (brass) button, horn button, wood button, coconut button, shank button, fabric covered button, bone button, polyester button etc. Available in plenty of shapes, sizes, matt and shiny finish.

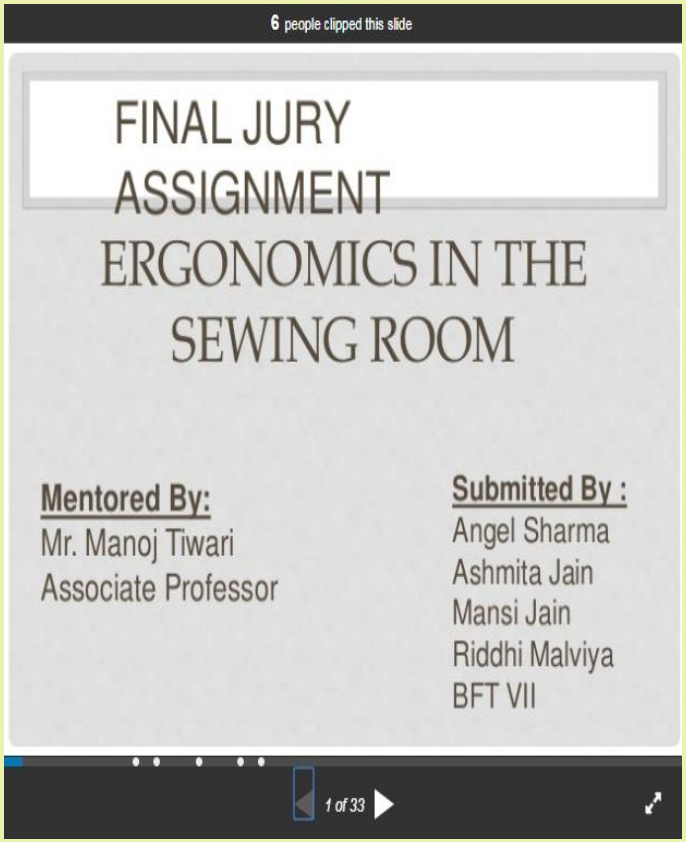
Size table of button



Source: https://textilelearner.blogspot.com/2014/11/button-and-buttonhole-technical-critique.html



Sitting arrangement for a stitching opertaor at garment stitching unit for betterment of his / her own health and Safety.



Presentation @ https://www.slideshare.net/riddhimalviya/ergonomics-in-the-sewing-room

INDUSTRIAL GARMENT EXPERT

Module-8

LEARNER GUIDE

National Vocational Certificate Level 3

Version 1 - April, 2019

Module 8: Operate bar-tack machine

Objective of the module: This competency standard covers the skills and knowledge required to perform bar tack machine for garment production.

Duration: 60 hours **Theory:** 12 hours **Practical:** 48 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Prepare machine for bartack	**The trainee will be able to:** Prepare workstation for bartack machine. Follow safety precautions as per SOP / manual. Check machine parts as per guidelines. Select sewing needle and sewing thread according to the sewing operation and the fabric in use Arrange material for sewing operations. Adjust machine according to the fabric in use (thread tension, bar tacking length, number of stitch (SPI)	Importance and setting of workbench Knowledge of seating arrangement as per OH&S practices. Determining the preparation of workstation Cleaning of machine according to standards for bar-Tack machine. Knowledge of different parts of machines (e.g Tension post, pressure foot, thread take-up lever) Knowledge of bobbin and bobbin case and bobbin filling process Identifying the needle/needle guides, parts, attachments and folders as required for sewing product. Ensuring the oil level on machine for proper machine running during production. Importance of Stitches per Inch (SPI) and verify it on rough fabric. Problems with equipment, services or surroundings, including equipment not working.	Thread Needles Bobbin Bobbin case Product Machine Oil First Aid box Tool box Mask Dust bin Bar tack machine
LU2. Perform bartack	**The trainee will be able to:**	Operational knowledge of bar-Tack machine the product with required parameters. Knowledge of machine speed and proper handling of	Thread Needles

	Execute machine control exercise. Perform bar tack operations as per spec sheet. Take corrective measure for faults occurs during sewing if required. Complete target as per given time. Review bar tack operation randomly.	machine according to the type of operations. Understanding fabrics and product type Knowledge of Seam types and their importance. Knowledge of bobbin and bobbin case and bobbin filling process Identifying stitch defects during the operations of bar-Tack machine and their remedies. Conducting sewing operation according to requirement Ensuring the quality standards. Determining the preventive action taken to avoid any defective work. Knowledge of production and handling techniques	Bobbin Bobbin case product Machine Oil First Aid box Tool box Mask Dust bin
LU3. Clean workstation	**The trainee will be able to:** Clean machine after closing the job. Cover machine for safety. Collect and store waste as per company's policy. Put all tools in tool box.	Cleaning of machine according to standards for Bar-tack machine and follow OH&S practices. Knowledge of wastage Collecting all tools and put it into Tool box after closing the job.	Tool box Machine cover duster

Features of Bar Tack Machine:

- It is simple automatic sewing machine.
- It is used for heavy sewing is small predetermined length.
- It contains 18 to 72 stitches, has option to change stitch density.
- Bartack machine based on lock stitches.
- It is a cyclic operation like hand sewing
- Sewing tools is key factors.

Warning Instruction:

- Pay attention to the following warning advices:
- Working area is dangerous
- Never touch the needle if the machine is still running
- Be careful if you infeed fabric
- Do not insert your finger between needle and feed dog for transportation on fabric
- Movable parts must be enclosed with guard when you operate
- Turn off the power during adjusting , threading, bobbin-changing and needle cleaning

Function of Bar Tack Machine:

Bartack machine is used where the garments in high pressure such as belt loop, pocket corner, at the end of zipper and in that place where more strength is required to support extra load.

bar tack machine

For more details must visit: https://autogarment.com/beautiful-sewing-machine-stitches-made-by-bar-tack-machine/

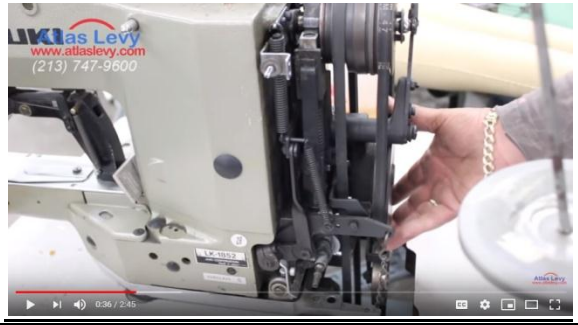
BARTACKING MACHINE

Bartacking is a type of reinforcement stitching that is done using a **Bartack machine**. This technique is used by the fabric and textile industries to fortify stress points in clothing, sporting equipment, uniforms, and a host of other products. The **Bartack sewing machine** stitch is a tight zigzag pattern repeated perpendicularly over itself several times to make sewn products stronger, and resistant to tears or rips in the seams. Stress points that require bartacking are the areas of a garment where normal wear will cause strain on the seams or fasteners.

https://www.iigm.in/Industries/Apparel/Sewing/Bartacking-Machine/Br

Videos:

Bartacking Juki Machine video @ https://www.youtube.com/watch?v=WSXsM1a6fxI

	PFAFF 3588 Workwear EN (HD) https://www.youtube.com/watch?v=hOpxwZsS0Pg Duration: 00:03:56
	Bartacking elements of trousers - Pfaff https://www.youtube.com/watch?v=5kmKhgmT3SE Duration: 00:02:59
	troubleshooting a bartack sewing machine when not sewing https://www.youtube.com/watch?v=d3Oxtchy_4E Duration: 00:02:45

Summary of the module:

Module Title and Aim	Learning Units	Timeframe of modules
Module 1: Prepare prototype **Aim:** This competency standard covers the skills and knowledge required to make prototype according to buyer's requirement and get approval for final production.	**LU1:** Interpret order sheet **LU2:** Make garment pattern **LU3:** Perform fabric cutting **LU4:** Perform stitching on fabric **LU5:** Perform finishing on product. **LU6:** Obtain approval from supervisor	100
Module 2: Verify fabric quality **Aim:** This competency standard covers the skills and knowledge required to verify fabric quality by using different quality standards and equipment to maintain the product quality as per requirement.	**LU1:** Perform fabric lab testing **LU2:** Inspect fabric **LU3:** Verify fabric shade **LU4:** Prepare fabric inspection report	140
Module 3: Perform fabric cutting for production **Aim:** This competency standard covers the skills and knowledge required to set the marker on lay and perform fabric cutting for production. It also covers spreading the fabric, cutting, bundling and making cutting report as per requirement.	**LU1:** Perform fabric spreading **LU2:** Perform range cutting **LU3:** Perform bundling **LU4:** Prepare fabric cutting report	80
Module 4: Operate feed of arm chain stitching machine **Aim:** This competency standard covers the skills and knowledge required to perform feed of arm chain stitching machine for production of textile garment.	**LU1:** Prepare machine for sewing **LU2:** Perform sewing operation by using feed of arm chain stitching **LU3:** Clean workstation	140

Module Title and Aim	Learning Units	Timeframe of modules
Module 5: Operate waist band stitching machine **Aim:** This competency standard covers the skills and knowledge required to perform waist band stitching machine for production as per requirement.	**LU1:** Prepare machine for sewing **LU2:** Perform waist band stitching **LU3:** Clean workstation	50
Module 6: Make button holes **Aim:** This competency standard covers the skills and knowledge required to perform button holes on garment product for buttons.	**LU1:** Prepare machine for button hole. **LU2:** make button holes **LU3:** Clean workstation	40
Module 7: Operate button attach machine **Aim:** This competency standard covers the skills and knowledge required to perform button attach machine for buttons in garment production.	**LU1:** Prepare machine for button attach **LU2:** Perform button attaching by using button attaching machine **LU3:** Clean workstation	40
Module 8: Operate bar tack machine **Aim:** This competency standard covers the skills and knowledge required to perform bar tack machine for garment production.	**LU1:** Prepare machine for bar tack **LU2:** Perform bar tack **LU3:** Clean workstation	60

Test Yourself (Multiple Choice Questions)

Question	Candidate's answer
1. Enlist at-least three name of the trims used for garment?	Threads, buttons, zippers
2. What is the meaning of Spec sheet?	In which all detail of the garment is defined.
3. Define any FIVE parts of body which used for shirt pattern?	Neck, Shoulder, Chest/Bust, Waist, Length
4. Define Seam allowance?	Seam allowance is the area between the fabric edge and the stitching line on two pieces
5. Define grain line?	The line that shows the direction of the warp yarn.

Question	Candidate's answer
6. What are (PPEs) stands for? a) Personal Protective Equipment b) Proper Protective Equipment c) Personal Product Equipment d) Personal Protective Enquiry	Personal Protective Equipment
7. SPI is the abbreviation of? a) Stitches per inch b) Sewing per inch c) Setting per inch d) Sewing cycles per inch	Stitches per inch
8. SNLS stands for? a. Single needle lock stitch b. Single needle loop stitch c. Single nose loop stitch d. Single needle looper sewing	Single needle lock stitch
9. Differentiate between trims and accessories?	Trim are attached and become the part of Garment Accessories attached but did not become the part of garment.

Question	Candidate's answer
10. SOP stands for. a. Standard Operating Procedures b. Stand Outcome process c. Standards Operating Plan	Standard Operating Procedures
11. Define Skew/ Bow?	Bow is defined as the greatest distance, measured parallel to the. selvages, between a filling or course yarn
12. What is GSM stand for?	Gram per Square Meter
13. Define Count of yarn?	Count is a number which indicates the mass per unit length or the length per unit mass of yarn.
14. What is the role of production supervisor?	Direct, plan, and control, the garment production floor to achieve set objectives.

Question	Candidate's answer
15. What is denim?	***A hard wearing cotton twill fabric typically blue and used for jeans and other clothing.***
16. Which fabric inspection system is used for garment industry? a) 4 point / 6 point system b) 4 point / 10 point system c) 5 point / 10 point system	b) 4 point / 10 point system
17. How many times selected roll / than to be inspected? a. One Time b. Three Times c. Five Times	One Time
18. LCR stands for? a. Last Center Report b. Last Control Roll c. Left Center Right	Left Center Right
19. Define Shade Variation?	The difference between actual shade and standard shade.

Question	Candidate's answer
20. ISO stands for? a) International Standard Organization b) International Organization for Standardization c) Industry organized System	International Organization for Standardization
21. Define Spreading?	Fabric spreading is a method where plies of fabric are spread a specific length and width wise according to the garment marker measurement
22. Enlist any TWO types of spreading?	Flat spreads, Stepped spreads
23. Define spreading machines?	1. Manual spreading machines 2. Semi-automatic spreading machines 3. Fully automatic spreading machines
24. Define notches?	Pattern notches are small marks made on the pattern for stitching.

Question	Candidate's answer
25. What is usage of drilling on fabric?	Drilling is used for patches / pocket marking on fabric.
26. Enlist different any two types of cutting machine?	Straight knife cutting machine Round knife cutting machine
27. Round knife cutting m/c is used for? a. Sample cutting b. Production cutting c. Pattern cutting	a
28. Bundling is process used for? **a.** Reassembling cut pieces in garment manufacturing **b.** Reassembling cut pattern pieces pattern making **c.** For making pattern	Reassembling cut pieces in garment manufacturing
29. Enlist any three fabric defects?	Miss-pick Hole Float Fly yarn Broken end

Question	Candidate's answer
30. What is ISO stands for? **a.** International Standard Organization **b.** International Organization for Standardization **c.** Industry organized System	International Organization for Standardization
31. Enlist at-least FIVE machine parts of feed of arm chain stitching machine.	
32. Define SPI and its effect on product quality?	·
33. What is the function of feed of arm chain stitching machine?	·
34. Define any FIVE stitching faults during sewing operations of feed of arm machine?	

Question	Candidate's answer
35. Define types of Seam at feed of arm machine?	
36. Which type of needle used in feed of arm chain stitching machine?	
37. SPI is the abbreviation of? **a.** Stitches per inch **b.** Sewing per inch **c.** Setting per inch **d.** Sewing cycles per inch	
38. Describe threading system of Feed of Arm Chain Stitching Machine?	
39. Describe importance of oil leveling for feed of arm chain stitching machine?	
40. Which of the following statement is true? **a.** Tools of machine should be placed at right side of	

Question	Candidate's answer
the machine **b.** Tools of machine should be placed at tool box.	
41. Enlist at-least FIVE machine parts of waist band stitching machine.	
42. Define SPI and its effect on product quality?	·
43. What is the function of waist band stitching machine?	·
44. Define any FIVE waistband stitching faults during sewing operations?	
45. Define types of Seam for sewing on waistband stitching machine?	

Question	Candidate's answer
46. Which type of needle used in waist band stitching machine?	
47. SPI is the abbreviation of? e) Stitches per inch f) Sewing per inch g) Setting per inch h) Sewing cycles per inch	
48. Describe threading system of Waist Band Stitching Machine?	
49. Describe importance of oil leveling of waistband stitching machine?	
50. Explain preventive action taken during operations of waistband stitching to avoid any defective work?	
Question	**Candidate's answer**

Question	Candidate's answer
51. Enlist at-least FIVE machine parts of button hole machine.	
52. Define SPI and its effect on product quality?	·
53. What is the function of button hole machine?	·
54. Define any FIVE stitching faults during sewing button hole operations?	
55. How many types of buttons and their purposes?	
56. Which type of needle used in button hole machine?	

Question	Candidate's answer
57. SPI is the abbreviation of? i) Stitches per inch j) Sewing per inch k) Setting per inch l) Sewing cycles per inch	
58. Describe threading system of button hole Stitching Machine?	
59. Describe importance of oil leveling of button hole stitching machine?	
60. Explain preventive action taken for button hole machine to avoid any defective work?	
61. Enlist at-least FIVE machine parts of button attach machine.	
62. Describe attachments for button attach machine?	.

Question	Candidate's answer
63. What is the function of button attach machine?	.
64. Define any FIVE faults during button attach operations?	
65. How many types of buttons and their purposes?	
66. Define features of Button attach machine?	
67. SPI is the abbreviation of? m) Stitches per inch n) Sewing per inch o) Setting per inch p) Sewing cycles per inch	
68. Describe safety precaution for operator to operate Button Attach Machine?	

Question	Candidate's answer
69. Describe importance of oil leveling of button attach machine?	
70. Explain preventive action taken to avoid any defective work?	
71. Enlist at-least FIVE machine parts of bar tack machine.	
72. Define relation between machine speed and quality?	·
73. What is the function of bar tack machine?	·
74. Define any FIVE faults during bar tack operations?	

Question	Candidate's answer
75. How many types of bar tack machines and their differences?	
76. Define features of bar tack machine?	
77. SPI is the abbreviation of? q) Stitches per inch r) Sewing per inch s) Setting per inch t) Sewing cycles per inch	
78. Describe safety precaution for operator to operate bar tack Machine?	
79. Describe importance of oil leveling of bartack machine?	
80. Explain preventive action taken at bartack machine to avoid any defective work?	

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