INTERNSHIP REPORT

ON

Merchandising Activities in RMG Sector.

A Study of Trouser World Bangladesh Ltd.

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A Study of Trouser World Bangladesh Ltd.

Submitted by:
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BBA Program
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Submitted to:
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Submission Date: July 12, 2014

LETTER OF TRANSMITTAL

July 12, 2014

Professor Dr. Ahmed Fakhrul Alam

Department of Business Administration

Faculty of Business & Economics

Daffodil International University

Subject: Internship report on Merchandising Activities in RMG Sector.

Dear Sir,

With profound respect and honor I would like to inform that, I have completed my Internship Report titled "Merchandising Activities in RMG Sector A study on Trouser World Bangladesh Ltd". This is a partial requirement to fulfill my Bachelor of Business Administration degree.

My paper covers the objectives and scope of the study, methods of collecting information to prepare this paper, the limitations that I had in my preparations and I have attempted with whatever expertise I have, analyze activity and prepare possible recommendations and suggestions as to how it could have been improved. Under this paper I hope that you will find all the necessary information of my study into my findings and analyses. I express my sincere gratitude for your guidance and suggestions in preparing the report. I would be glad to answer any inquiries and offer clarifications if required.

Sincerely yours,

_____

Md. Mohiuddin

Id- 111-11-270

Faculty of Business & Economics,

Daffodil International University.

CERTIFICATE OF APPROVAL

This is to certify that Md. Mohiuddin, Student of BBA Program of our University bearing Id: 111-11-270 has completed the internship report on "Merchandising Activities in the RMG Sector- A study of Trouser World Bangladesh Ltd. In this regard he practically worked in Trouser World Bangladesh Ltd from March 01, 2014 to June 30, 2014 under my supervision and instruction. This report supports the topic title and fulfills the entire requirements. During the program he was sincere, proactive and attentive to his work and I wish him every success in life.

I hereby accept the report as the successful completion of the internship program.

Professor Dr. Ahmed Fakhrul Alam

Department of Business Administration,

Faculty of Business & Economics,

Daffodil International University.

ACCEPTANCE OF THE REPORT

Md.Mohiuddin, student of Marketing program in Daffodil International Univ5ersity, bearing ID – 111-11-270, has submitted the Internship Report titled " Merchandising Activities in RMG Sector, a study of Trouser World Bangladesh Ltd" on July 12, 2014, for the fulfillment of the requirements of BBA degree. He completed industrial training from Trouser World Bangladesh Ltd, under the organization's supervision.

ACKNOWLEDGEMENT

A warm felicitation goes for me to acknowledge the people, who hold the desirability for encouraging, praising, assisting as well as believing me on the tasks of merchandising activities what I have worked through my internship period.

At First, I would like to thank almighty for giving me the opportunity to complete my internship. I also want to thank all the people, who have given their support and assistance and extremely grateful to all of them for the completion of the report successfully. Daffodil International University and Trouser World Bangladesh Ltd. both provided me with enormous support and guidance for my internship program to be completed successfully. Preparing this report was exciting and hard work at the same time. It is for the first time that I have been able to gather real life experience by working on RMG market.

I would like to thank Mr. Md. Riaz Ahmed, Managing Director of Trouser World Bangladesh Ltd. and my reporting boss for his valuable time and constant guidelines and encouragement throughout the internship period.

I would also like to thank my honorable supervisor, Professor Dr. Ahmed Fakhrul Alam for his kind concern, valuable time, advice and constant guideline throughout the internship period and making of the report. He was constantly supporting me with his inspiring personality. I will always be thankful for his extraordinary reinforcement. I would like to take the opportunity to thank Md. Ayub Nabi, General Manager, Merchandising, Trouser World Bangladesh Ltd for being my on-site supervisor & providing me time to time information, suggestion as well as procedures to work with my topic. I also want to thank Mr. Afzal Surya, Manager, Merchandising of Trouser World Bangladesh Ltd for being so cooperative in my work. I also thank Mr. Mozaharul Islam, Assistant Manager, Merchandising, Trouser World Bangladesh Ltd for creating a friendly environment & assist me with the information of my project. I want to thank my team leader, Ms. Sabina Yesmin, Merchandising for helping me to get accustomed with all the activities.

I will show my gratitude to all the Management & Non-Management Staffs who have helped me during the internship period and the entire persons who somehow have impact on me in completing my whole report.

And finally I would like to thank Trouser World Bangladesh Ltd. for providing me with the opportunity to do my internship in the reputed group of organization.

EXECUTIVE SUMMARY

The Readymade Garment (RMG) industry of Bangladesh has emerged as a competent garment producer in global garment business in recent times. This industry has successfully transformed Bangladesh into an export-oriented economy. The RMG industry also became the major foreign currency-earning sector with highest rates of absorption of industrial employment.

The Merchandising department is the most important part of the export oriented business. It increases the opportunity for entrepreneurship development in garment sector. Thus it helps the unemployed people as well as the government to remove unemployment problem and also play an important role in the economic development of the country.

This is a great chance for me to do my internship in trouser world Bangladesh. This is a large factory with all the facilities to composite yarn. Here the production process runs from making yarn to fabric and from fabric to finished garment. In this age, Bangladesh is flourished with RMG sector where this division has its immense contribution.

I have worked there three months as requirement of the internship phase of BBA program under the Business administration. My topic is Merchandising Activities in the RMG Sector in Spider Group as a Case. This Report is originated as a partial requirement of BBA program.

In order to achieve perfect merchandising, one must know about all the activities including purchase of fabrics, sewing, packing, transport, overheads, etc and also about their costs, procedures, advantages and risk factors.

In the whole procedure of exporting garments to the retailer of abroad and to communicate with them, merchandisers have a great influence and responsibilities. When, the order is taken from buyer the duty comes to the floor of merchandisers and before going production they do almost everything to make the business smooth. So, the work starts with the order taking and making business relationship. Then sample making, planning, booking of every single material for samples and getting approval are all the key responsibilities of merchandisers. In case of production, sample goes in bulk so, the responsibilities become huge and it comes to the relation with operation also. I was selected for the buyer Bershka and this team is really supporting from any side I wanted their help. Bershka is full with new styles and different designs which push merchandisers to face huge stress and deal with lots of challenges. Here, these all procedures are tried to be written as the team tried their best to help in preparing this report.

Contents

CHAPTER ONE

Introduction

Introduction:

RMG (Ready Made Garment) is very important and helpful for our Bangladesh. Bangladesh has emerged as a key player in RMG (Ready Made Garment) sector since 1978. Textiles and clothing account for about 85% of total export earnings of Bangladesh. Out of which, 75% comes from the apparel sector which covers the major products of knit and woven shirts, blouses, trousers, skirts, shorts, jackets, sweaters, sports wears and many more casual and fashion items. The sector currently employs approximately 1.5+ million workers, mostly females from underprivileged social classes. I have completed this report on the basis of all the department of RMG sector such as Merchandising Department, Commercial Department, Production Department, Supply Chain Department, Human Resource Department, Compliance Department, MIS Department, and relevant organization like BGMEA, BKMEA, Export Promotion Buru, Yarn suppliers, Chittagong Port, Insurance Company, Shipping Company. So by completing this report I get overall idea about RMG sector, so its carry more value than any books.

Merchandising is an important work in garments sector. So that merchandiser job is essential for every garment. In this job the employer must have need hard working mind, convincing power, instant intelligence, powerful observation, patience etc. Without merchandiser no garments can run smoothly.

Without buyer no garments company can exists. For this reason buyer satisfaction is very important. Buyer means someone who buys the products from any organization. In garments sector buyer means foreign people who come to our country to buy products from our garments. At this time of giving order if buyer satisfied with the help of merchandiser then the buyer will come again. Buyers another condition is delivery the products in due time. Merchandiser take care this condition seriously. Because if buyers do not get products due time then they will not come again that garments. So merchandisers are handling and caring all kinds of work from taking order to delivery products to buyers and always wants to satisfy them because garments or garments sector's welfare depends on buyer's satisfaction.

I have chosen readymade garments industry to do my internship and the name of the company is Trouser world Bangladesh Ltd. It is a private limited company.

Readymade garments are fast growing export sector in Bangladesh. The overall impact of readymade garments export is certainly one of the most significant social and economic developments in contemporary Bangladesh. In order to simulate rapid of the country, particularly through industrialization, the government has adopted an open door policy to attract foreign investment in Bangladesh. As a result there are about 2500 export oriented readymade garments in Bangladesh.

Objectives:

Objective means purpose of the report. The main objective of the study is to determine the merchandising activities of the Garments sector of Bangladesh. The broad objectives are as follows:

- To know detail about RMG sector.
- Getting idea about the shipping procedure.
- To gather knowledge about RMG sector related organizations.
- To know the management Procedure in Garments Industry.
- To achieve idea about garments manufacturing process.
- To know about the process of apparel industry.
- To analyze the causes of labor unrest in the garment industry of Bangladesh.
- To gather knowledge about the merchandising and total production system.

Methodology:

Methodology defines how we go through all the processes of research and how I have proceeded on. Here includes the steps of conducting the report and the explanation of the sources of data.

This report has been prepared on the basis of experience gathered during the period of internship. For preparing the report, Data were collected from two sources, namely,

- Primary data.
- Secondary data., as described below:

Primary Data: I have got the information by what I am seeing in practical in My Internship Period? What I did in practically? What was done by me for achieving my objective? Like, Face to face conversation with the executive of the organization, using a questioner form to know the financial situation of the employee in their practical life, another big opportunity was dealing with the customer, like, fabric and yarn marketing. This opportunity gives me huge idea about the RMG sector.

Secondary Data: Secondary data source is a useful and easy source to collect information on a specific subject. To prepare this report I use several form secondary data. Like, annual report, and catalogue of the Trouser World Bangladesh Ltd, Internet, etc.

Scope:

Scope means how many uses for completing this report space. During my internship program I tried to gather as much as information as possible to illustrate a clear-cut image about the importance of the merchandising and marketing section for the export oriented garments and the value of the merchandiser for the garments industry.

By reading the report we will able to know clear image about the importance of the merchandising and marketing section for the export oriented garments and the responsibilities of a production coordinator.

The overall production process of a garment and about the machineries, accessories and the work forced that is required for a particular garment.

Limitations:

Limitation refers the obstacles I have to face for completing this report and what I could not cover for this limitation. During my internship I have faced some limitations to accomplish my report. I could not get much information from the Trouser World Bangladesh due to their lack of effectiveness. Some major points are listed below,

- Time constraint.
- Merchandiser doesn't have enough time to give the information elaborately.
- Lack of organizational chain of command.
- Due to high employee turnover rate and lack of good reporting practices in the factory, problems with collecting data have been faced.
- No other garment's data has been compared with TWB"s data. There might be some discrepancies with other factories supply chain scenario.
- Due to long distance between the factory and university campus it was very difficult to communicate and meet with the supervisor.

Chapter TWO
Company Profile

Spider Group is one of the giant textile groups in Bangladesh. Spider Group in well-organized textile group which is a 100% export oriented textile factory. Well management and good employees are involved with this factory. As an internee I got a training period of 120 days in Spider Group. I got training from different sectors in this factory and gathered knowledge from there. So as a part of my internship program I need to submit an assignment about my training program.

General information about factory:

Company Name	: Trouser World Bangladesh Ltd.
Corporate Office Address	: House-89 (13th FLR.), Road 28, Sector 7, Uttara, DHAKA-1230. Tel.: 8963544, Fax: 880-2-8961962 E-mail: info@spider-bd.com
Factory Address	: 640, Kunia, Jaydebpur, Gazipur.
Person To be Contacted	: Md. Ayub Nabi Tawhid (Marketing Manager). Md. Ripon Choudhury (General Manager).
Established	: 2002
Ownership	: LIMITED COMPANY.
Membership	: a) BANGLADESH GARMENTS MANUFECTURER & EXPORTErASSOCIATION. b) EXPORT PROMOTION BUREAU OF BANGLADESH. c) BANGLADESH TEXTILE MILLS ASSOCIATION.
Annual Sales	: U.S.$ 9 MILLION (APPX.)
Production Capacity	: 390,000 Dozen Garments per Year.
Categories	: Menes, Ladies, and Children's.
Product	: Knit, T- Shirt, Polo Shirt, Tank Top, Sports Wears.
Production Lead Time	: Sample 7-14 Days, Order 6o-12 Days, Reorder 45-75 Days.
Factory Space	: 45ooo sft.
Number of Worker	: 65o Person

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Mission & Vision

WE ARE IN A MISSION TO:

EXCEED our customer's expectations delivering right products in right time with excel quality and customer service. EMPOWER our Human Resource turning them into our Best Asset. CONTRIBUTE to the enhancement of our Society and Environment. MAXIMIZE Shareholder's Value.

VISION:

We are focused to be the most preferred NAME to our stakeholders - customers, employees, suppliers, society and shareholders.

Certificate:

OEKOTEX Certificate, Certificate of compliance (WARP)

ISO Certificate

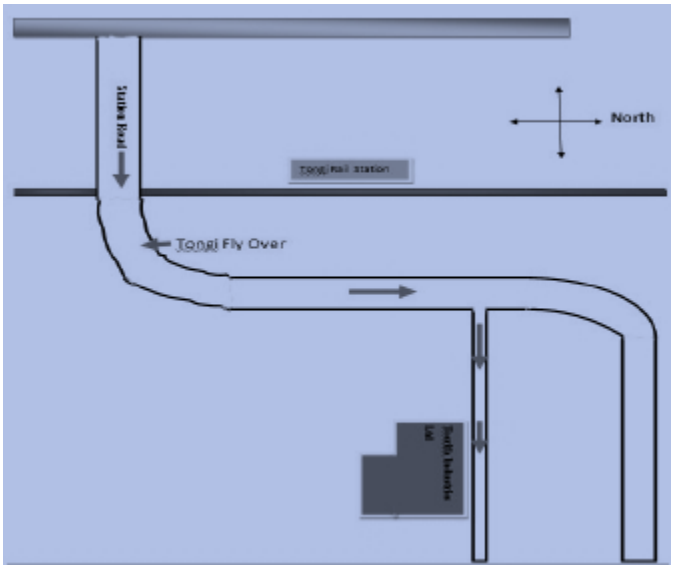
Location of Spider Group:

Spider Group is located at 4/2 A. 135 Gopalpur, Munnu Nagar Tongi, Gagipur, Bangladesh.

Sister Concerns of Northern Spider Group:

Other groups and companies under Spider Group are given bellow-

- **Bottoms Gallery Ltd.**
- **Bottoms Bazaar Ltd.**
- **Knit Bazaar Ltd.**
- **Laundry Gate Ltd.**
- **3R Thread Ltd.**
- **Soider Sourcing Ltd.**



Major buyers with their Logo:

MQ	
Sports Master	
Driver	
Original Marine	
Tesco	
C&A	
Seppala	
Tom And Tailor	
Ginatricot	

THE

MARKETS THEY EXPORT TO:

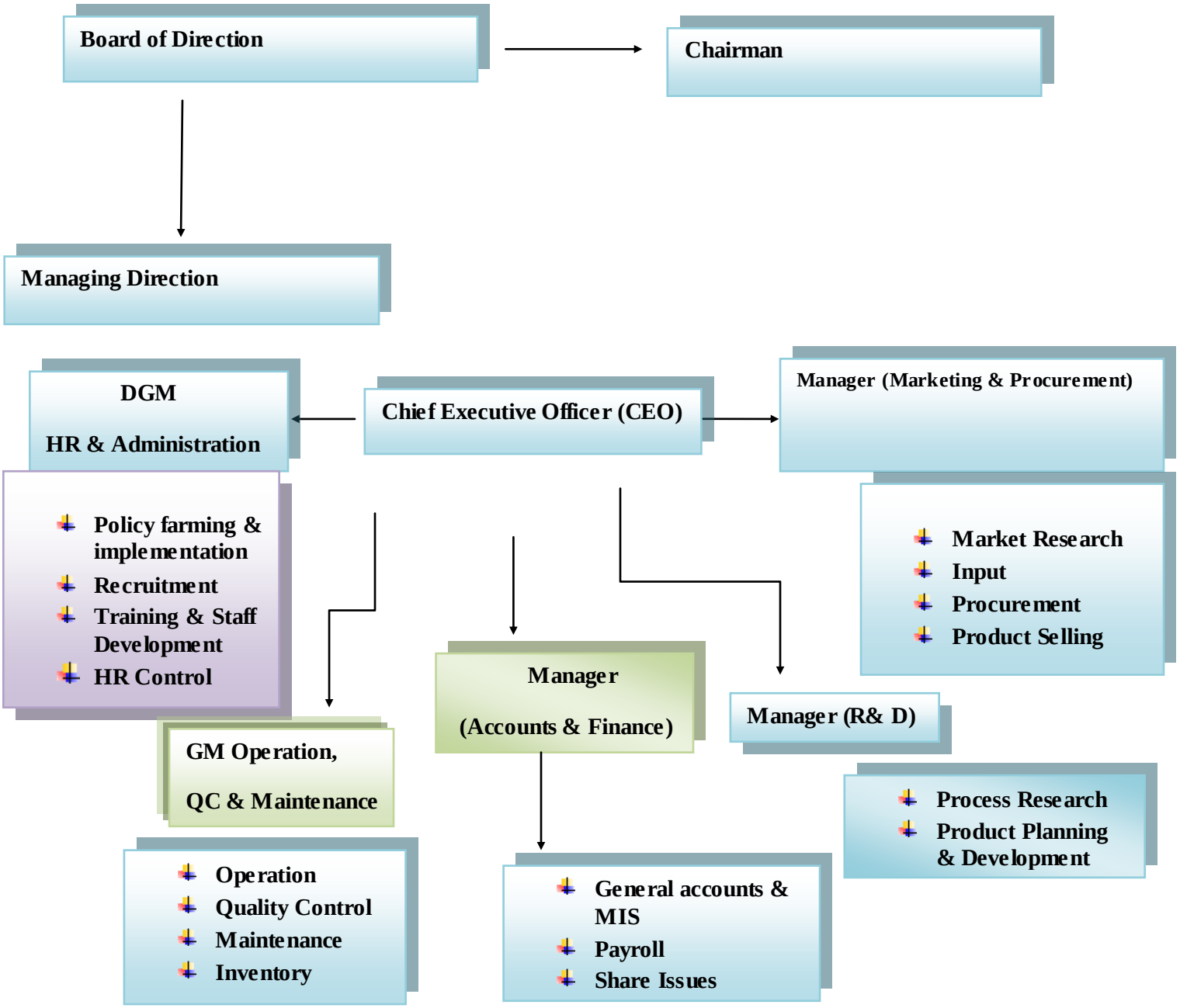
Spider Group can produce wide range of products and they deals with some of world renowned buyers from Europe and USA market some of those are with whom they worked and those whom they are still working.

Products:

- Basic T-Shirt
- Fancy T-Shirt
- Tank Top
- Kids Item
- Jacket
- Polo Shirt
- All Types of Knitwear's.

Company wise organ gram:

Organizational chart of TWBL**:** Organizational chart bearing vital importance for a company, often represented by a schematic diagram. The organizational chart of TWBL. is given below:



Chapter THREE

Knitting Department

SWOT Analysis Of Trouser World Bangladesh:

Strength

- Own Land: Factories of Trouser World Bangladesh Limited are established in its own land.
- Effective Manpower: Factories are well equipped with skilled, expertise and productive manpower. They are doing their level best to deliver timely shipment and exporting 100% quality garments.
- Production of Fabrics: Mostly employees produce fabrics as per buyer's requirement.
- Innovative product line: Product lines are producing a unique & innovative garment which is a very good sign for the industry.
- Proper Management: Employees of Trouser World Bangladesh Limited manages all the paper work quite nicely; supervises the production from start to end and helps to ship the good s as per the requirement of buyers.
- Production capacity: Production capacity of Trouser World Bangladesh Limited is in average woven top 1.5 million per month, woven bottom- 0.45 million per month, knit-0.5 million per month.

Weakness

Eight percent of raw materials are imported from countries like China, Taiwan and Korea. So inventory has maintained very strictly and product costs rises due to problems in the customs and releasing of goods from the port. Lack of skill labor is a serious problem. Whenever any machine gets out of order it has to be fixed by bringing technicians and for this result costs are high.

- Post purchase behavior: After shipment of the products, employees do not collect actual post purchase behavior of buyers which is really a negative sign for the industry.
- Shortage of workers: As the Industry is not so big & the number of employee is limited, sometimes it becomes really difficult to produce all the goods timely & workload of the workers increase to a great extent if there is a large shipment.
- Subordinates absence in policy making: The subordinates do not take any decision or take part in policy making in meeting. The decision always comes from the top management which is de motivating.
- Poor salary structure: As the industry is still in a struggling position, its salary structure is not that much good in compare to the other industries.

Opportunity

Domestic annual readymade garments demand has an increasing trend. More orders are coming from buyers and so its demand is increasing and so price is also increasing. Trouser World Bangladesh Limited has an established market throughout the country and so it enjoys good order quantity through the year. Company had bonded warehouse so can take advantage of export facility and don't have to pay tax for its important of raw materials. Operational efficiency and cost efficiency can be improved further by building more skilled labor and setup of new automated machines.

- Covering UK & USA market: Recently some foreign countries are really interested about making contract with Trouser World Bangladesh Limited which is really good news. Covering more market area of EU & USA will help the industry to establish quickly.
- Diversification: Trouser World Bangladesh Limited can expand their business by establishing the yarn, woven & sweater factories. It will help them to minimize the risk.
- Hiring dynamic & fresh Graduates: Trouser World Bangladesh Limited can hire dynamic, young & fresh Graduates who can generate innovative ideas & can lead to greater profit.
- Attending Trade Fairs: Trouser World Bangladesh Limited can take part in different trade & textile fair to get public attention and can get new ideas related with today's business.

Threats

Recently the price of raw materials has increased dramatically specially fabrics, dying etc. this put an adverse affect on the cost of production and moreover stock raw materials become difficult, as too much working capital is needed. Overall profitability decreases as a whole after the quota system was taken away in 2010. Intense competition within industry becomes another threat for Trouser World. Price was takes place in market. For a small difference in price buyer change their suppliers.

- Absence of Spinning Plant: Trouser World Bangladesh Limited doesn't have any Spinning Plant. For that reason their cost of production is high.
- Competitors' smart move: Competitor industries are constantly offering innovative and substitute a product which is a big threat for this industry.
- Trade barriers: Increased trade barriers and quota system withdrawals are the major threats for the newcomer industries.
- Political imbalance: One of the major threats for Trouser World Bangladesh Limited is the current political instability. Strike, Procrastination etc are hampering the production process quite badly.

The Process of Textiles:

1. Textiles start with Spinning. Spinning means the process of converting Fiber to yarn.

- Like Cotton is a fiber.

2. Second stage is producing fabrics from yarn which is two types:

- Knitting.
- Weaving.

Knitting Department:

- History of Development of Knitwear in Bangladesh:

The RMG business started in Bangladesh in the 70s but it was then merely a casual effort. In 1981-82 the contribution of Woven garments in the total export was 1.10%. Within a decade (10 Years) the contribution of Woven to the export basket became 42.83% (1990-91) and the knitwear sector's contribution was 7.64% (1990-91). Now Knitwear has become the largest export earning sector of Bangladesh contributing 40.01% to national export earnings at the end of 2009-10 (July-June).

- Advantages of Bangladeshi Knitwear Sector:

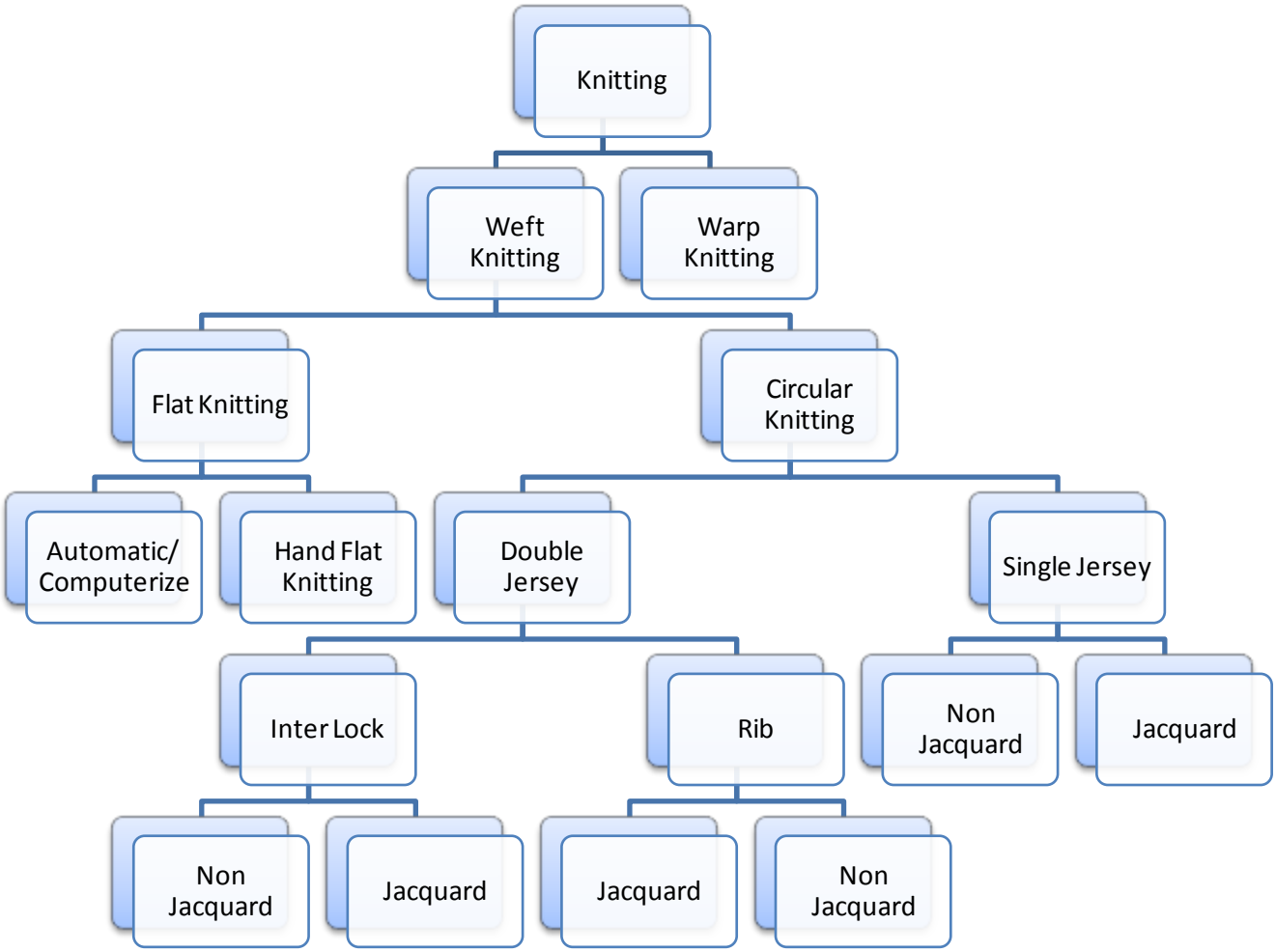
Knitwear is a near self-sufficient sector in all respect. Currently BKMEA members are supplying 90% of the knit fabric requirements of the sector. Local yarn suppliers provide around 75% of the total requirement of the sector. We have more than 250 composite (composite means knitting & wet processing together also called knit dyeing factory) factories; besides the composite units many garments have their own dyeing and finishing units. Bangladeshi Knitwear is exported to about 150 countries in the world. EU and the USA are the major importer. Capacity is increasing at a good rate to cope with the future demand of this sector. Bangladesh provides labor forces unparallel in stitching capability and skill low labor wage. A factory requires separate electric line, compressor (to clean dust from fiber), generator, broiler, gas line, ETP Plant etc.

Knitting:

Knitting is the process to develop a fabric by intermeshing of loops. Basically knitting is the technique of constructing textile structures by forming continuous length of yarn into columns of vertically intermeshed loops. There are basically two types of knitting process and they are-

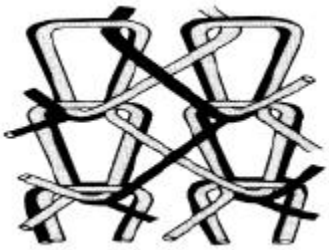
- Warp Knitting.
- Weft knitting.

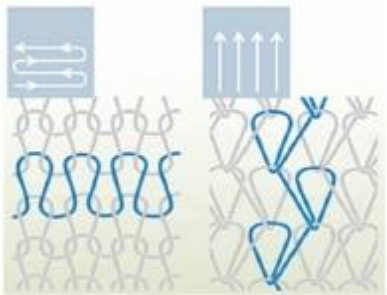
Types of Knitting:



Warp Knitting is method of forming fabric by knitting in which the loops are made in a vertical way along the length of the fabric from each yarn and intermeshing of loops takes place in flat form on a length wise basis.

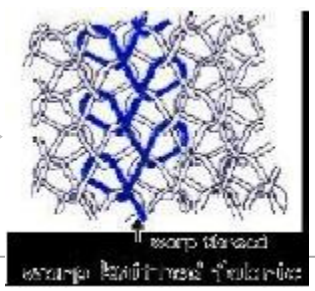
Warp Knitting





Weft & warp knit

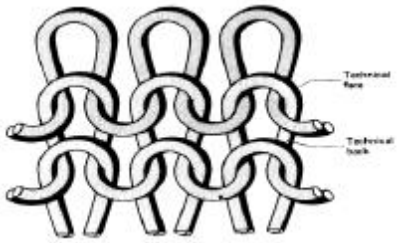
Warp knitted Fabrics



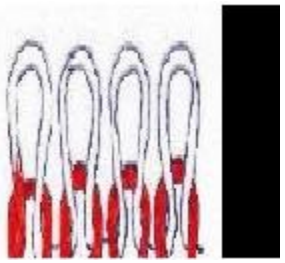
Weft & warp knit:

Weft Knitting is a method of forming fabric by knitting in which the loops are made in a horizontal way from a single yarn and intermeshing of loops takes place in a circular or flat form on a course wise basis.

Weft Knitting



Weft knitted Fabrics



Weft Knitting Machines:

Flat Bed: Sometimes referred to as "Flatbeds" or "V-beds" due to the nature and arrangements of the knitting beds where two opposing needle beds are positioned so that the upper ends form a reversed "V". Needles slide up and down the beds in slots known as "tricks" and in this case the gauge refers to the number of needles per 1 inch.

Flat bed

Circular Knit: There are 2 types of circular knitting machines which produce long lengths of tubular fabric and quite often they are manufactured with very specific end uses in mind. Two types of machine:

- **Single Jersey Machine:** Single Jersey Machine means it is capable to stitch with one set of needles.
- **Double Jersey Machines:** Double Jersey Machine means it is capable to stitch with two set of needles.

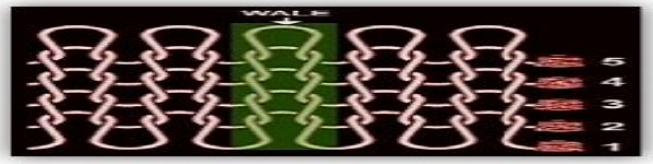
Circular knit

** In weft knitting process there are Wales which are according to width wise of the knitted fabric and courses which are according to length wise of the fabric.

A **Wale** is vertical column of intermeshed needle loops produced by the same needle knitting at successive knitting cycle.

A **Course** is a horizontal row of needle loops produced by the adjacent needle during same knitting cycle.

Basics of KNITTING:



KNITTING: is forming loops through those previously formed. This interloping and the continuous formation of more loops into each other produce the knitted fabric structure.

- Some Important Terminology:

Needle Loop: It is the basic unit of knitted structure. It consists of a head (H) and 2 side legs (L). At the base of each leg is a foot (F), which meshes through the head of the loop formed at the previous knitting cycle. The loop is the fundamental element of all knitted fabrics. It is a basic unit consisting of a loop of yarn meshed at its base with previously formed basic units (stitches).

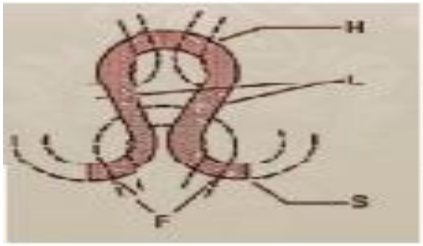
Stitch: The stitch is the smallest dimensionally stable unit of all knitted fabrics. It consists of a yarn loop, which is held together by being intermeshed with another stitch or other loops.

Stitch density: It is the number of stitches per unit area of a knitted fabric (loops / cm2).

Stitch length: It is the length of yarn in a knitted loop.

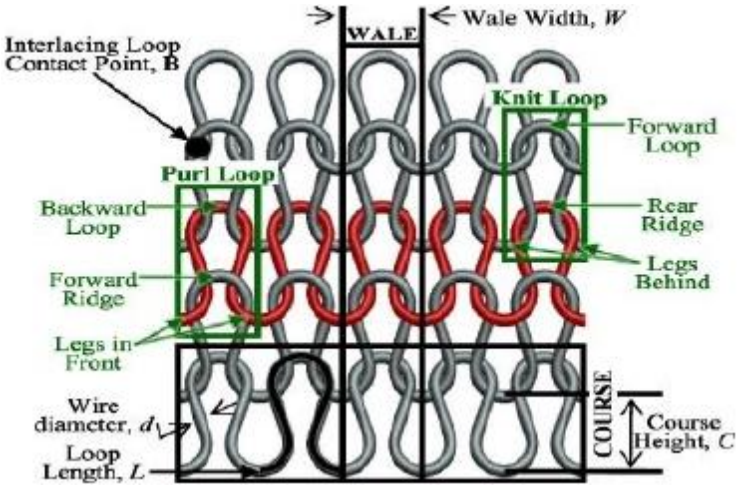
Needle loop: It is one which has been drawn through a previous loop.

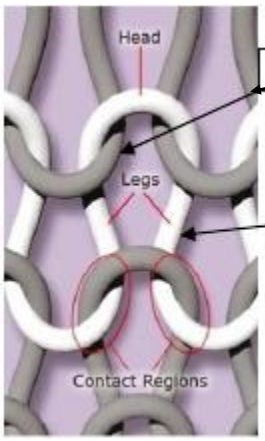
Sinker loop: A sinker loop is one which connects adjacent needle loops.



Face Loop: During loop formation, when the new loop emerges through the old loop from back to the face (or front) side.

Back Loop: If the new loop passes from the face side to the back side of old loop, it is called as back loop.





(The upper part of the loop Needle Loop produced by the needle drawing the yarn is called the needle loop.)

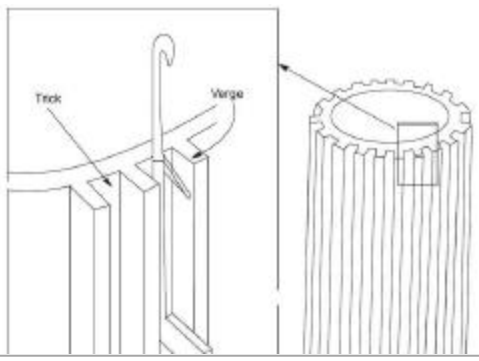
[Sinker Loop The lower part of the knitted loop is technically referred as sinker loop.]

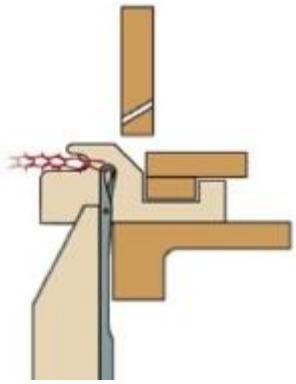
Wale(s): Wale is predominantly vertical column of needle loops produced by same needle knitting at successive knitting cycle. Wale is produced with different yarn but single needle.

Course: Course is a predominantly horizontal row of loops produced by adjacent needles during the same knitting cycle. Course is made with single yarn but various needles.

Course Length: In weft knitting, the term 'course length' refers to the measurement of a straight length of yarn knitted by all or a fraction of the needles in the production of a particular course.

Gauge/ Machine Gauge: Gauge is the term used to describe the needle spacing. It can be defined as the number of needles per unit inch. The gauge is the major factor in determining the fabric density and appearance. How many needles are there in one inch? If m/c gauge is high like 32 then in one inch more loops will be created.

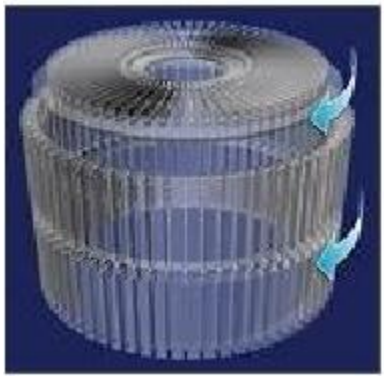




Cylinder: Cylinder is a steel circular bed having grooves/tricks/cuts on its outer periphery into which the needles are mounted. With reference to the tricks, the needles move vertically up and down by their butt being in contact with the cam track. The number of tricks per inch i.e., number of needles per inch decides the gauge of the machine.

Dial: Dial is the upper steel needle bed used in double knit machines. Into the grooves of the dial, the needles are mounted horizontally and are allowed to move radically in and out by their dial cams. The number of grooves per unit space conforms to the cylinder gauge in most of the cases.

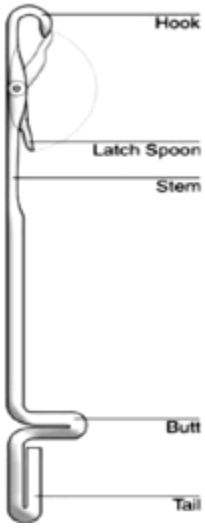
Dialer:



Needle: The needle is the basic element of loop formation. There are three most commonly used types of needle.

Latch Needle, Spring bearded needle, Compound needle.

Latch needle: It consists of a hook portion at the top and a latch riveted at certain distance from the needle head. Latch needles are given sliding movements in individual grooves called tricks of the cylinder.



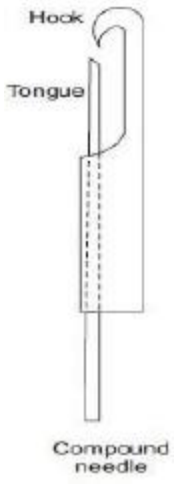
The needle consists of six main parts:

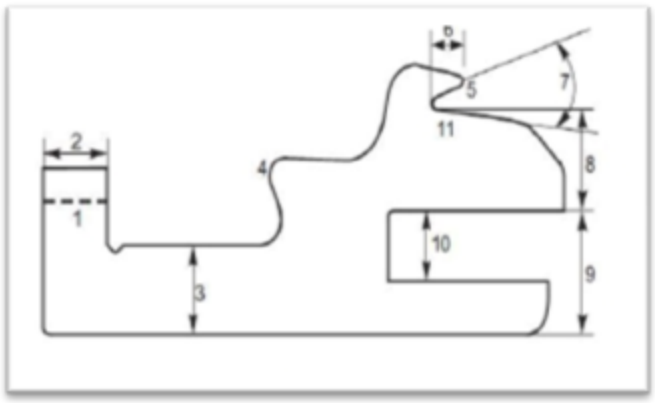
- Stem – Used to hold the course of old loops.
- Hook – The hook is used to catch a thread and form loops.
- Rivet – Holds the latch in place and allows it to pivot.
- Latch – The latch combines the task performed by the presser bar and the beard of the bearded needle.
- Butt – The butt enables the movement of the needle to be controlled by a cam mechanism. A track raises and lowers the needle.
- Tail – Used to provide support to the needle.

Spring bearded needle: This needle consists of a top hook curved downwards with a finished tip and the downward extension is called beard. A small eye or groove is cut in the stem, to receive the point of the needle beard when it is closed. There are five main parts:

- The stem around which the needle loop is formed.
- The head where the stem is turned into a hook to draw the new loop through the old loop.
- The beard which is the curved downwards continuation of the hook that is used to separate the trapped new loop inside from the old loop as it slides off the needle beard.
- The eye or groove cut in the stem to receive the pointed tip the beard when it is passed, thus enclosing the new loop.
- The shank which may be bent for individual location in the machine or cast with others in a metal lead.

Compound needle: Compound needle consists of a hollow steel tube in which a hook-closing element which is also a steel tube is inserted. Compound needle consists of two separately control parts i.e. the hook and closing element. This needle is more complicated than other needles. Its two parts rise and fall as a single unit. But at the top of the rise, the hook moves faster to be opened and at the start of the fall the hook moves down faster to be closed.

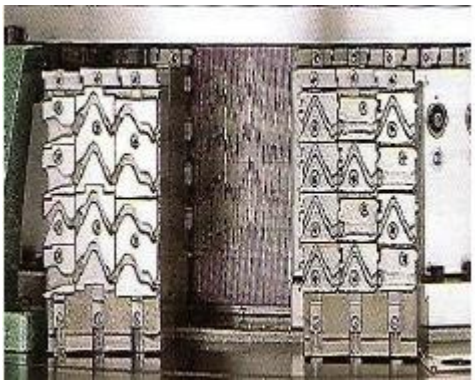




Sinker: The sinker is the second primary knitting element. It is a thin metal plate placed between the two adjoining needles and has a collective edge.

- Loop formation
- Holding down,
- Knocking over.

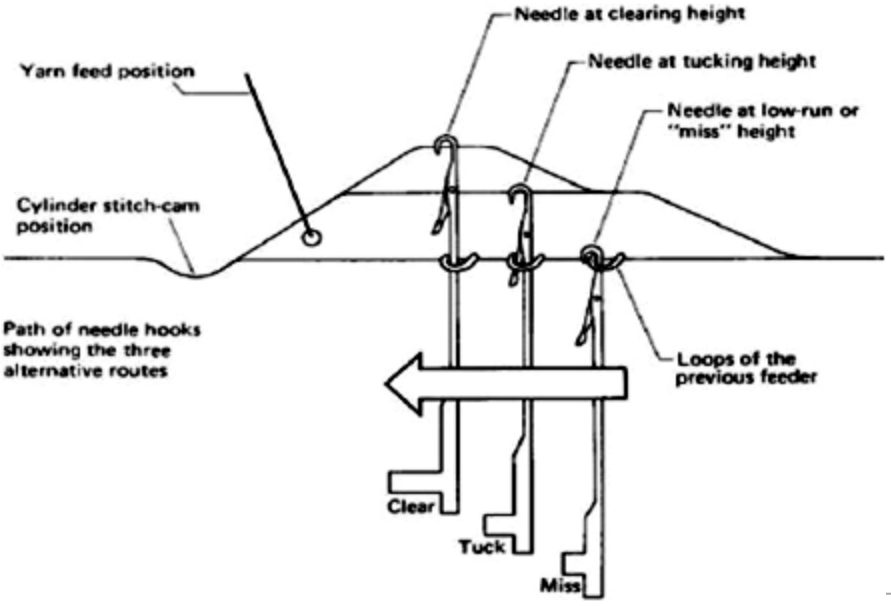
Loop formation: On bearded needle weft knitting machines of the straight bar frame and sinker wheel type, the main purpose of a sinker is to sink or kink the newly laid yarn into a loop, as its forward edge or catch advances between the two adjacent needles.



Holding down: The second and more common function of sinker on modern machines is to hold down the old loops from their hooks.

Knocking over: On latch needles machines and tricot warp knitting machines the upper surface or belly supports the old loop as the new loop is drawn through it.

Knitting Cams/Stitches: The knitting cams are hardened steels and they are the assembly of different cam plates so that a track for butt can be arranged. Each needle movement is obtained by means of cams acting on the needle butts.

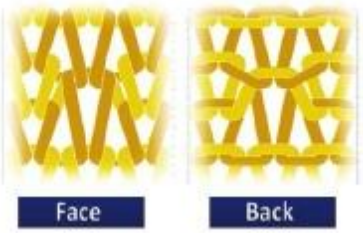


- Yarn Feeding to Needle:

Knitting cam: Knitting is an element which acts directly on to the butts of needles or other elements to produce individual or serial movement. Knitting cams are attached, either individually or in unit form, to a cam plate and depending upon the machine design, are fixed, exchangeable or adjustable. Based on the arrangements knitting stitches are of three types as well as the cams also.

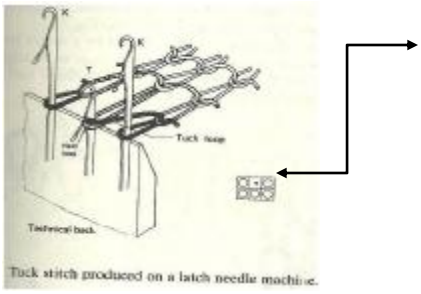
There are three types of cams and as according, three types of Knitted Stitches.

- Knit Cam (Stitch),
- Tuck Cam (Stitch),
- Miss Cam (Stitch).

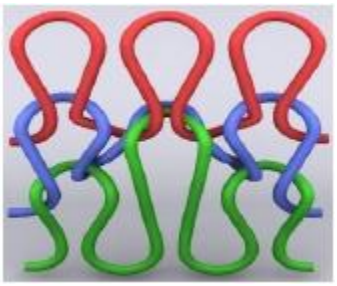


Knit Stitch: The knit stitch is the basic stitch. It is also called the plain stitch. Knit stitch is formed when the needle carries out a complete cycle, reaching the maximum height on the looping plane.

Tuck Stitch: A tuck stitch is formed when a knitting needle holds its old loop and then receives a new yarn. Two loops then collect in the needle hook. The previously formed knitted loop is called the held loop and the loop which joins it is a tuck loop. The tuck loop will always lie at the back of the held loop.

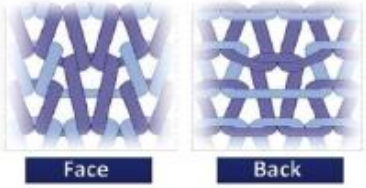


Tuck Stitch

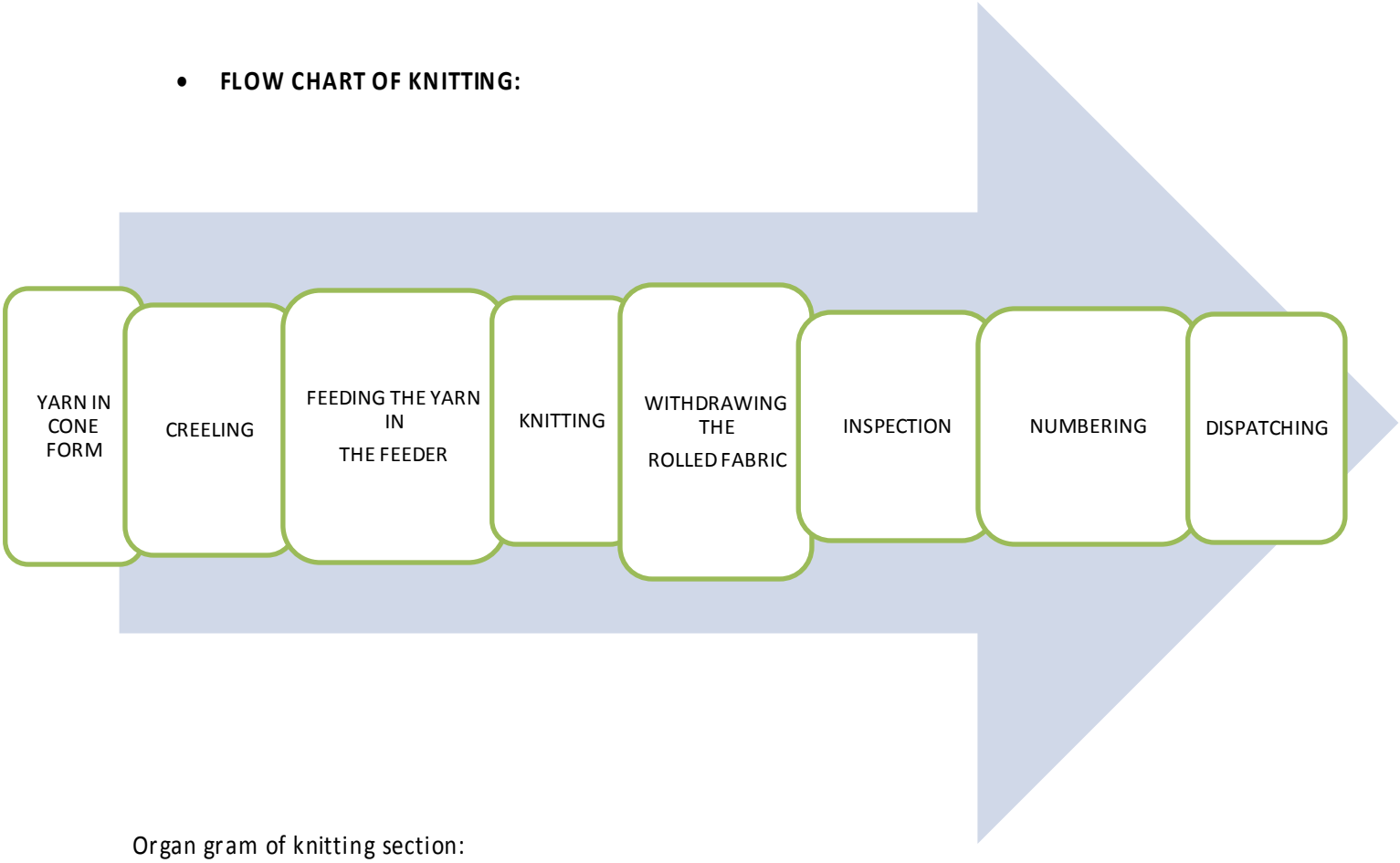


Miss Stitch: A miss stitch is created when one or more knitting needles are deactivated and do not move into position to accept the yarn. The yarn simply passes by and no stitch is formed. The float will lie freely on the reverse side of the held loop, which is the technical back, and in the case of rib and interlock structures it will be inside the fabric.

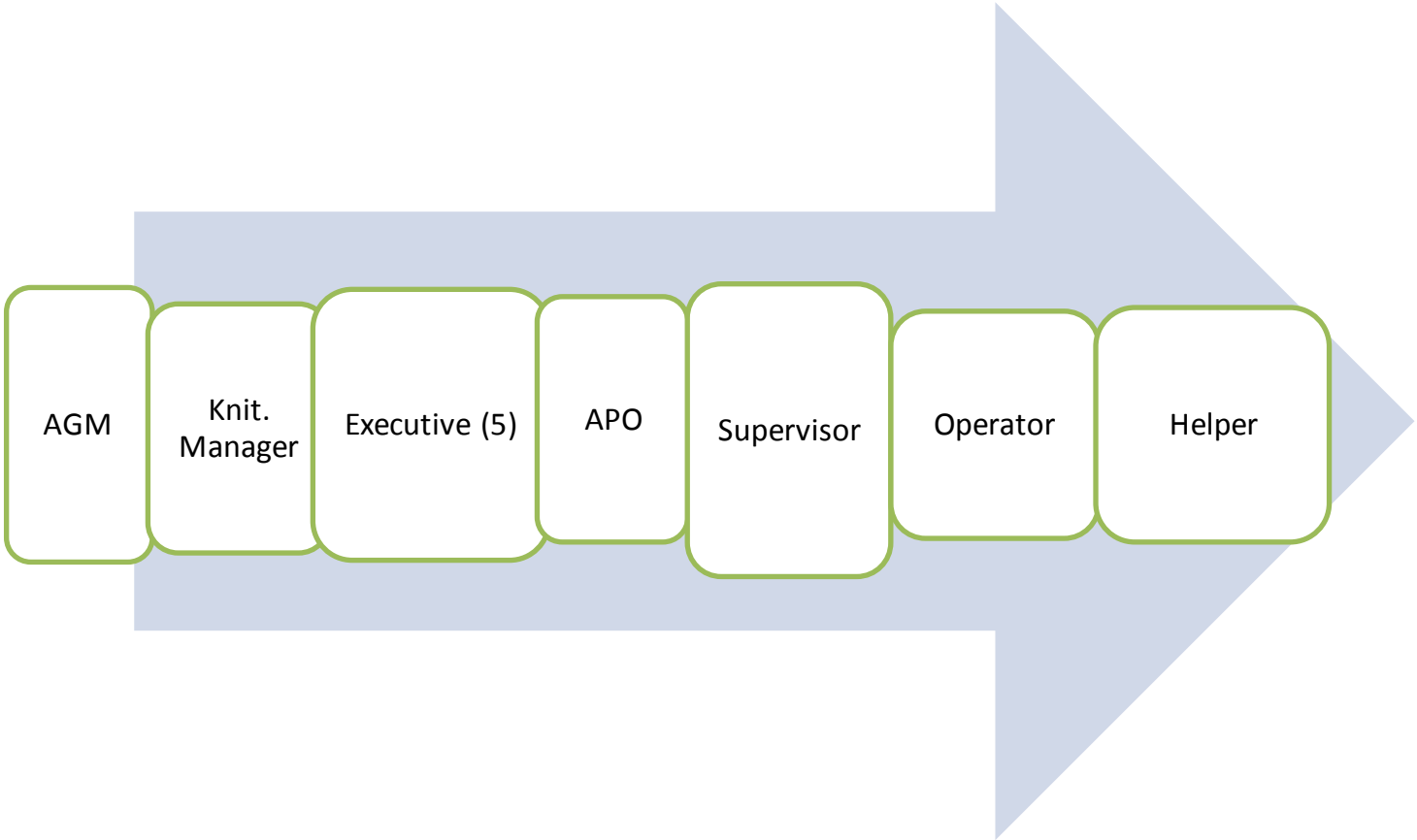
Miss Stitch



- **FLOW CHART OF KNITTING:**



Organ gram of knitting section:



In knitting section of Spider Group following yarns are used for knitting:

- Combed Yarn,
- Carded Yarn,
- PC Yarn,
- Viscose Yarn,
- Polyester Yarn,
- Organic Cotton Yarn,
- Spandex Yarn,
- Nappy Yarn etc.

The difference between carded yarn & comb yarn is given below:

1.The yarn that is obtained without combing is called carded yarn. 2.Quality of carded yarn not better than combed yarn. 3. Short fiber % is high. 4. Combing action is not done here. 5. Less strength. 6. Irregular.	1. The yarn that is obtained by combing is called combed yarn. 2. Quality of combed yarn better than carded yarn. 3. Short fiber % is low. 4. Combing action is done here. 5. Higher strength. 6. Regular.

- Machine Information:
- Total No. of Machines: 54
- Total No. of Circular Knitting Machine: 32
- Single Jersey Machine: 16
- Rib Machine: 14,
- Auto Stripe Machine: 2

Total No. of Flat Knitting Machine: 22

- Shima Seiki Flat Knitting Machine: 18
- Matsuya Flat Knitting Machine: 4

Brand Used for Machines-

Brand	Origin	No. of Machines	Machine Type
FUKUHARA	Japan	24	Circular Knitting Machine
MAYER & CIE	Germany	18	Circular Knitting Machine
KIUM YOUNG	Korea	8	Circular Knitting Machine
MONARCH	England	18	Circular Knitting Machine
MATSUYA	China	4	Flat Knitting Machine
SHIMA SEIKI	Japan	4	Flat Knitting Machine

- Flat Knitting Machine Specification:

In Spider Group, there are total 22 flat knitting machines. All are of two brand of same origin. Basic production of these machines is solid collar, cuff, picot collar, tipping collar etc.

- Different Parts of Circular Knitting Machine:

Circular Knitting Machine has different important parts which are used very much in knitting production. These parts description are given bellow-

Creel:

Creel is a part of a knitting machine. Here yarn packages are store and ready to feed in the machine.

VDQ Pulley:

It is a very important part of the machine. It controls the quality of the product. Altering the position of the tension pulley changes the G.S.M. of the fabric. If pulley moves towards the positive directive then the G.S.M. will decrease. And in the reverse direction G.S.M will increase.

Pulley Belt:

It controls the rotation of the MPF wheel.

Brush:

It cleans the pulley belt.

Tension Disk:

It controls the tension of the supply yarn.

Inlet and Outlet Stop Motion:

It is an important part of the machine. It stops the machine instantly when a yarn is broken.

Yarn Guide:

It helps the yarn to feed in the feeder.

MPF Wheel:

It controls the speed of the MPF. Pulley belt gives motion to the wheel.

MPF:

It is Hemminge positive feed. It is also an important part of the machine. It gives positive feed to the machine.

Feeder Ring:

It is a ring where all feeders are placed together.

Feeder:

Feeder helps yarn to feed into the machine.

Needle:

It is a principal element of the knitting machine. It helps the yarn to create a loop. And by this way fabric is produced. Prior to yarn feeding the needle is raised to clear the old loop from the hook, and received the new loop above it on needle stem. The new loop is then enclosed in the needle hook as the needle starts to descend.

Needle Track:

Here all needles are placed together in a decent design.

Sinker:

It is the most important element of the machine. It helps to form the loop, knocking over and holding down the loop.

Sinker Ring:

Sinker ring is a ring, where all sinkers are placed together.

Cam box:

Here cams are set horizontally.

Cam:

Cam is a device which converts the rotary machine drive into a suitable reciprocating action for the needle and other elements.

Lycra Attachment:

Lycra is placed here and feeding to the machine.

Lycra Stop Motion:

It is one kind of stop motion to stop the machine when the Lycia is broken.

Cylinder:

Needle track are situated here.

Cylinder Balancer:

It helps the cylinder to set in a proper alignment.

Screen:

It is a digital screen which shows all the machine information and we can give command to the machine.

Automatic Oiler:

It gives the machine oil all the time properly and automatically.

Inverter:

It is the heart of the circular knitting machine. It controls the speed of the machine.

Power Switch:

Give the power to the machine.

ON/OFF Switch:

It helps the machine to start and stop.

Manual Drive:

Drive the machine manually.

Machine Motherboard:

All the Electronic parts are placed here.

- Circular Knitting Machine Specification:

In Spider Group, there are total 32 machines of different brands of different origin. These circular knitting machine's specifications are given bellow within a table -

Sl.No.	Mc Dia	Gauge	No.of Feeder	Mc Type	Mc Brand	Model	Origin	Running Direction
1	34	28/24	102	Single Jersey	Keum Yong	KM-3WVX	Korea	Clock wise
2	34	28/32	102		Keum Yong	KM-3WVX	Korea	Clock wise
3	34	28/32	102		Keum Yong	KM-3WVX	Korea	Clock wise
4	30	24/32	90		Keum Yong	KM-3WVX	Korea	Clock wise
5	30	28	96		Monarch(Fukuhara)	ODVXC-3S	England	Clock wise
6	30	28	96		Monarch(Fukuhara)	ODVXC-3S	England	Clock wise
7	30	28	96		Monarch(Fukuhara)	ODVXC-3S	England	Clock wise
8	30	24/28	90		Keum Yong	KM-3WVX	Korea	Clock wise
9	30	24/32	90		Keum Yong	KLM-72AV	Korea	Clock wise
10	34	24/28	108		Mayer & Cie	RELANIT 3.2-II	Germany	Anti clockwise
11	34	24/28	108		Mayer & Cie	RELANIT 3.2-II	Germany	Anti clockwise
12	30	28	96		Terrot	SBF-196	Germany	Anti clockwise
13	30	20/12	96		Terrot	S-296	Germany	Anti clockwise
14	38	24	123		Mayer & Cie	RELANIT 3.2-II	Germany	Anti clockwise
15	36	24	114		Mayer & Cie	RELANIT 3.2-II	Germany	Anti clockwise
16	30	20/24	96		Mayer & Cie	S4-3.2	Germany	Clock wise
Sl.No.	Mc Dia	Gauge	No.of Feeder	Mc Type	Mc Brand	Model	Origin	Running Direction
1	30	20	48	S/j E. Stripe (4 color)	Fukuhara	FX-SDY	Japan	Clock wise
2	30	28	48		Fukuhara	FX-S/Y	Japan	Clock wise
Sl.No.	Mc Dia	Gauge	No.of Feeder	Mc Type	Mc Brand	Model	Origin	Running Direction
1	34	24	82	INTERLOCK	Keum Yong	KLM-72AV	Korea	Clock wise
2	34	24/28	82		Keum Yong	KLM-72AV	Korea	Clock wise
3	34	24/28	82		Keum Yong	KLM-72AV	Korea	Clock wise
4	30	24	72		Keum Yong	KLM-72AV	Korea	Clock wise
5	36	24	102		Fukuhama	FIL-8AE	Taiwan	Anti clockwise
6	30	24	84		Fukuhara	FIL-8AE	Japan	Anti clockwise
7	30	22	84		Fukuhara	FIL-8AE	Japan	Anti clockwise
Sl.No.	Mc Dia	Gauge	No.of Feeder	Mc Type	Mc Brand	Model	Origin	Running Direction

1	34	18/24	72	Rib/Inter Lock	Mayer & Cie	D4-2.2	Germany	Anti clockwise
2	34	18/24	72		Mayer & Cie	D4-2.2	Germany	Anti clockwise
3	32	18/24	68		Mayer & Cie	D4-2.2	Germany	Anti clockwise
4	32	18/24	68		Mayer & Cie	D4-2.2	Germany	Anti clockwise
Sl.No.	Mc Dia	Gauge	No.of Feeder	Mc Type	Mc Brand	Model	Origin	Running Direction
1	30	18	62	RIB	Mayer & Cie	FV-2.0	Germany	Anti clockwise
2	30	18	72		Terrot	UP-472	Germany	Anti clockwise
3	30	18	72		Fukuhara	VLP-J3B	Japan	Anti clockwise

- Common hand tools used in knitting:
- L-key, Wrenge,
- T-key, Hack-saw,
- Knife, Plyer,
- cutting plyer.

- Important Knitting Parameters:

Stitch Length:

Stitch length is the ratio of course length and total no. of needle knitting in the machine. But in factory, stitch length is the linear length of yarn having 100 loops. Usually in single jersey fabric stitch length is 2.80 mm/100 loops. Some important factor related to stitch length are-

- GSM decrease with the increase of stitch length If stitch length increase then fabric width increase and WPI decrease For deep shade of same GSM fabric, stitch length should be higher and vice- versa.

GSM

GSM is the weight of 1 square meter knitted fabric. Basically GSM can be determined by using of GSM Cutter.

Some important factor related to GSM of fabric are-

- Gray GSM should be less than finish GSM increase with increase of stitch length and it is adjusted by VDQ pulley GSM can be changed for using of enzyme level For variation of color, GSM can be varied Suede or non-suede purpose, GSM can be changed If shrinkage increase then GSM increase

Count

Count of a yarn is a numerical expression which indicates its fineness or coarseness. i.e. whether the yarn is thin or thick. There are basically two system of measuring yarn count- Direct System and Indirect System. Some important factor related to yarn count are-

- If count increase then fabric width increase GSM depends on yarn count.

Gauge

Gauge is the no. of needle placed per one inch of the cylinder or dial in a knitting machine. Some Important factor related with Needle Gauge are-

- For finer gauge finer count should be use If machine gauge increase then fabric width decrease If gauge decrease then stitch length increase.

Feeder

Feeder is an important knitting element. In knitting machines, positive and negative feeding system is including. Positive feeding system delivers a predetermined length of yarn to all the needles knitting in one complete revolution of the machine. Negative feeding system exerts no control over the length of yarn which is feed to the needles. Some factor related to feeder are-

- Production increase with increase of feeder no Feeder is settled in case of stripe fabric

Design

A knit fabric has a design which is firstly set on the machine by cam arrangement and needle set out.

Fabric Design needs followings-

- Cam setting.
- Set of needle.
- Size of loop shape.

Feeder Stripe and Engineering Stripe:

In case of stripe knitted fabric there are basically two types of stripe are possible. One is feeder stripe which are done by normal circular knitting machine by using different dyed yarn and another type is engineering stripe which is also named as auto stripe and is produced by using different dyed yarn with the help of auto stripe circular knitting machine.

- Feeder Stripe

By careful arrangement of the packages of the colored yarns on a large diameter multi feeder machine, an elaborate sequence of stripes having a depth that is repeated at each machine revolution is obtained. The depth of stripe may vary dependent on fabric style, total no. of feeder of the machine and stitch length.

- Engineering Stripe

The stripe can be produced on auto stripe machine with any depth of stripes. Fabric structure may be single jersey or double jersey. Auto stripper unit is used at each feed for selection of color. The facility of yarn changing by stripping finger selection, which can provide a choice of one from four or five or six yarns at a particular feed point during each machine revolution.

Following table shows the differences between feeder stripe and engineering stripe -

Feeder Stripe	Engineering Stripe
Less no. of feeders are used.	More no. of feeders are used.
Automatic yarn selection is not	Automatic yarn selection is possible.
No Auto Stripper unit.	Auto Stripper unit is present here.
Stripe size is small.	Stripe size is large.
Less no. of color is used.	More no. of color is used.
No finger selection system.	Automatic finger selection system.

Knitted Fabric:

There are basically two types of weft knitted fabric-

- Single Jersey fabrics are those which are produced in single cylinder circular knitting machines.
- Double jersey fabrics are produced from double cylinder or dial-cylinder circular knitting machines. Weft Knitted Fabrics are divided into four types according to the structure- Plain, Rib, Interlock, and Purl.

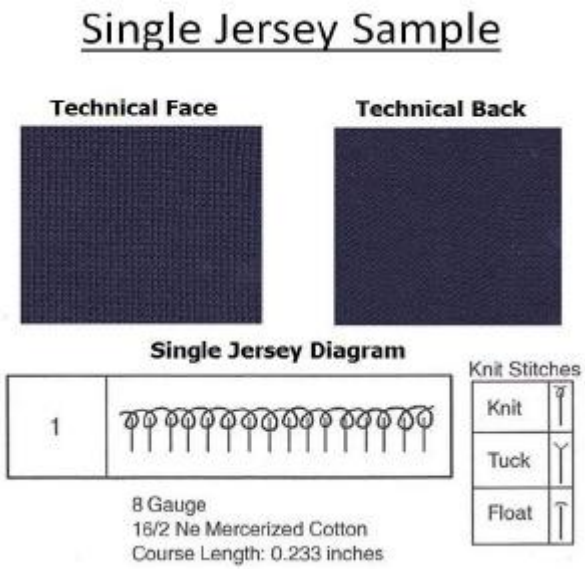
Characteristics of plain single jersey knitted fabric:

Face side and back side of fabric are different. Curl or roll of fabric occurs at the edges. Wales are clearly visible on the face side of the fabric. Extensibility in widthwise is approximately twice than length.

Unraveling of fabric occurs from either side is possible. Thickness of fabric is approximately twice the diameter of yarn used. There is only one series of knitted loop per courses in the fabric.

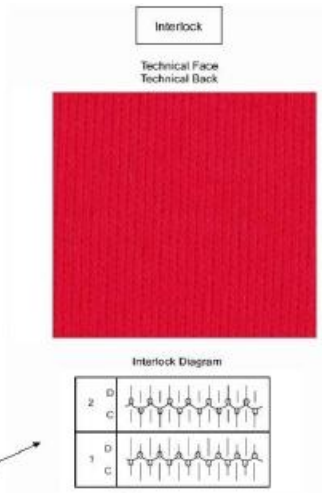
Derivatives of single jersey:

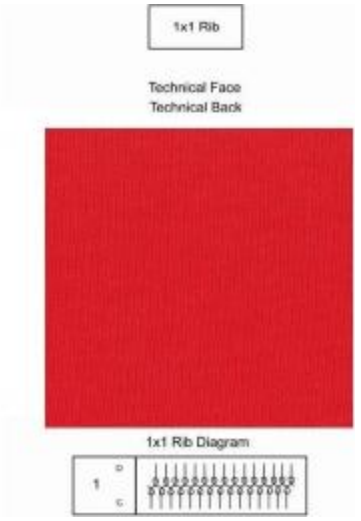
Single Lacoste, Double Lacoste, Single pique, Polo pique/double pique, two thread fleeces, and three thread fleece.



Characteristics of Rib knitted fabric:

The appearance of face and back are identical. Fabric length wise and width wise extensibility is approximately that of single jersey Fabric does not curl at edges Fabric thickness is approximately twice than single jersey There are two series of knitted loops arranged into two parallel in a course Combination of Wales of face loops and back loops are present on the both side of the fabric.





Derivatives of rib:

2x2 rib half cardigan or royal rib Full cardigan or polka rib Swiss double pique French double pique 5x1 Derby rib.

Characteristics of Interlock knitted fabric:

Interlock the technical face of plain on both sides so the appearance of face and back are same The Wales of each side re exactly apposite to each other and are locked together. Widthwise and length elongations are approximately the same as single jersey The fabric does not curl at the edges The fabric can be unraveled from the knitted last Two yarn must be removed to unravel a complete repeat of knitted courses. Fabric thickness is approximately twice than that of single jersey.

Single Jersey Fabric vs. Double Jersey Fabric:

Single Jersey and Double Jersey are of basic weft knitted structures. This two fabrics has some differences and these differences are showing in following table-

Single Jersey Fabric:	Double Jersey Fabric:
Basic single jersey fabric is plain structure.	Basic double jersey fabrics are rib and interlock structures.
1 set needle is used for production of single jersey fabric.	2 set needles are used for production of double jersey fabric.
No. of needle bed used for production of this fabric is only 1.	No. of needle bed used for production of this fabric is 2.
Fewer needles are used only in cylinder.	More needles are used in both dial and Cylinder.
Sinker and sinker cam are used during production of single jersey fabric.	During production of double jersey fabric, no sinker and sinker cam are used.
Larger needle gauge is used.	Smaller needle gauge is used.
Less expensive fabrics.	More expensive fabric.
Single jersey fabric can be pulled out freely from either end.	Double jersey fabric cannot be pulled out freely from either end.
When cut the fabric tends to curl towards the front at the end and towards the back at the sides.	It lies flat without curl when cut the fabric.
Production rate of this fabric is high.	Production rate is low.

Other Fabric Produced in Spider Group:

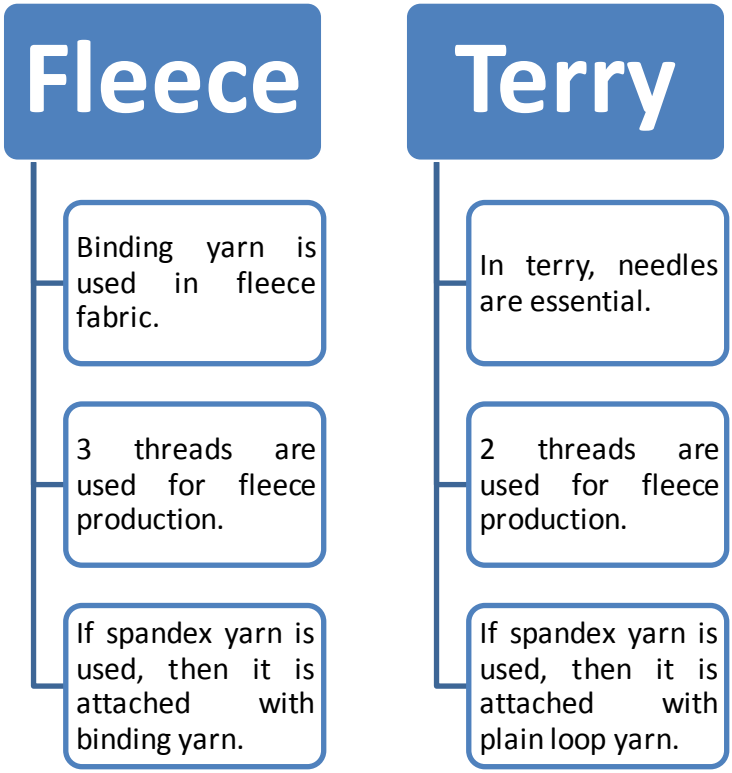
In Spider Group knitting section, almost every day single jersey plain fabric, rib and fleece are produced. But sometimes some derivatives of single and double jersey fabrics are also produced in Spider Group.

Some Single Jersey Derivatives are-: Single Lacoste, Double Lacoste, Polo Pique, Cross Miss, Double Cross Miss, Terry, Fleece etc.

Some Double Jersey Derivatives are-: 1x1 Rib, 2x2 Rib, 5X2 Rib, Flat Back Rib, Waffle, Plaited Interlock etc.

Fleece vs. Terry:

Fleece and Terry both are derivatives of single jersey fabric. These two fabrics are of similar categories but are different for their structure and appearances. The differences between fleece and terry fabric are given bellow-



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Fabric Swatches Produced in Spider Group:

In Spider Group Knitting Section some derivatives of single Jersey, Rib, Interlock fabric are produced, These fabric samples are given bellow with their Swatch, design, Can Arrangements and Needle Set Out.

Here,

X = Knit Loop **K = Knit Cam**

- = Miss Loop **M = Miss Cam**

= Tuck Loop **T = Tuck Cam**

X	X X	X
X	X X	X
X	X X	X
X	X X	X

- SINGLE JERSEY PLAIN FABRIC:

Notation Diagram

Needle Set Out **Cam Arrangement**

1

2

K	K	K	K
K	K	K	K

1

K	K	T	K
T	K	K	K

2

- SINGLE LACOSTE FABRIC:

Needle Set Out

X		X	
X	X	X	X
	X		X
X	X	X	X

Notation Diagram
Cam Arrangement

1

2

- DOUBLE LACOSTE FABRIC:

Needle Set Out Needle Set Out

X		X	
X		X	
X	X	X	X
	X		X
	X		X
X	X	X	X

Notation Diagram

Cam Arrangement

1

2

1X1 INTERLOCK FABRIC:

D	K	M	K	M
	M	K	M	K
C	M	K	M	K
	K	M	K	M

Notation Diagram

Needle Set Out Cam Arrangement

1

2

1X1 RIB FABRIC:

D	K	K	K	K	K	K
	K	K	K	K	K	K
C	K	K	K	K	K	K
	K	K	K	K	K	K

Notation Diagram

Needle Set Out Cam Arrangement

2X2 RIB FABRIC

D	K	K	K	K	K	K
	K	K	K	K	K	K
C	K	K	K	K	K	K
	K	K	K	K	K	K

Notation Diagram

Needle Set Out Cam Arrangement

D	X	X	X	X
	X	X	X	X
C	X	X	X	X
	X	X	X	X

D	1	1		
			2	2
C	1	1		
			2	2

D	X	X	X	X
	X	X	X	X
C	X	X	X	X
	X	X	X	X

D	1	
		2
C	1	
		2

FLEECE FABRIC:

Notation Diagram

Needle Set Out

1

2

3

Cam Arrangement

X	X	X
X	X	X
	-	-
X	X	X
X	X	X
-		-
X	X	X
X	X	X
-	-	

MESH FABRIC:

Cam Arrangement

Dial	**M**	**K**	**M**	**K**	**M**	**M**	**M**	**K**	**M**	**K**	**M**	**K**
	M	**K**	**M**	**K**	**M**	**M**	**M**	**K**	**M**	**K**	**M**	**K**
Cylinder	**K**	**T**	**K**	**T**	**K**	**K**	**K**	**M**	**K**	**M**	**K**	**M**
	K	**M**	**K**	**M**	**K**	**K**	**K**	**M**	**K**	**M**	**K**	**M**
	K	**M**	**K**	**M**	**K**	**K**	**K**	**T**	**K**	**T**	**K**	**T**

Needle Set Out

Dial 1

2

3

Cylinder 2 2

1

K	**K**	**T**	**K**	**K**	**M**	**K**	**K**	**M**
K	**K**	**M**	**K**	**K**	**T**	**K**	**K**	**M**
K	**K**	**M**	**K**	**K**	**M**	**K**	**K**	**T**

Production Calculation:

- Production/shift in kg at 100% efficiency =

RPM No.of Feeder No.of Needle SL(mm)

3527.80 Yarncount

Number of needle for single jersey = xDxG.

Number of needle for rib = 2 x xDxG.

Production/Shift in meter = $\frac{\text{Course / min}}{\text{Course / cm}}$

$$= \frac{\text{RPM} \cdot \text{No . of Feeder}}{\text{Course / cm} \cdot 100}$$

Fabric Width in meter =

$$= \frac{\text{Total no . of wales}}{\text{Wales / cm} \cdot 100}$$

$$= \frac{\text{Total no . of Needles used in knitting}}{\text{Wales / cm} \cdot 100}$$

Production Parameter:

- Machine Diameter.
- No. of feeders in use.
- Machine Gauge.
- Count of yarn.
- Required time (M/C running time).
- Machine running efficiency.

Considerable Points to Produce Knitted Fabrics:

When a buyer orders for fabric then they mention some points related to production and quality. Before production of knitted fabric, these factors are needed to consider. Those are as follows-

- Finished G.S.M.
- Type of Fabric or design of Fabric.
- Yarn count.
- Types of yarn (combed or carded).
- Diameter of the fabric.
- Stitch length.
- Color depth.

Quality Control in Knitting Section:

To produce high quality fabric it is necessary to inspect the fabric roll after receiving from different machine. This is done to assure the quality of the fabric before dying.

Inspection Procedure:

As the fabric is produced by the circular knitting machine it is then collected by the quality inspector and the fabric is thoroughly inspected in m/c. During this inspection the holes, oil marks, sinker marks, needle marks, barred effects etc. are checked. If the fabric is within the acceptance level (by 4 point system) then it is sent to the batch section for dyeing or delivery. Spider Group follows the four point grading system to inspect the body & rib of the fabric. In the 4 point system the faults are founded by inspection and are given points against the fault. Then the total no. is calculated.

Process Flow Chart for Fabric Inspection:

For inspection of the fabric in Spider Group, following flow chart is followed-

Collect yarn test and sample development report before start knitting.

↓

Check all yarn parameters (yarn count, yarn quality, yarn lot for respective buyer).

↓

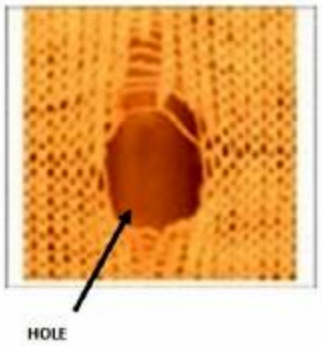
Start knitting as per greige booking i.e.: dia, GSM etc.

↓

On Line System off Line System.	Machine inspection as per 4 point system.
↓	↓
Check stitch length and grey GSM.	Collect the roll from the floor.
↓	↓
Check Knit Card with knitting fault, which can be found during knitting- (As needle mark, Sinker mark etc.)	↓
↓	↓
Process # 01: machine Stop Machine- Cut Fabric Roll Check both part of- Fabric from different angle.	Set the roll in the inspection.
↓	↓
Process # 02: Slow the Machine RPM- per 4 point system. (Inch motion) Watch Fabric running from different angle.	Start the machine and check every meter as.
↓	↓
If found any problem inform Q/C Officer and Production Officer.	Make a report (if OK then deliver to grey store For batching, if not OK then reject and inform manager).

Knitting Faults, Their causes and Remedies:

A defect in the knitted fabric is an abnormality, which spoils the aesthetics i.e. the clean & uniform appearance of the fabric & effects the performance parameters, like; dimensional stability etc. There are various types of defects which cause a great harm to the knitted fabric. Some defects may cause the rejection of the fabric. Some important Knitted fabric faults are follows-



- ***Drop Stitches (Holes):***

Drop Stitches are randomly appearing small or big holes of the, same or different size, which appear as defects, in the Knitted fabrics.

Major Causes:

High Yarn Tension,

Yarn Overfeed or Underfeed,

High Fabric Take Down Tension,

Obstructions in the yarn passage, due to the clogging of eyelets, yarn guides & tension discs, with wax & fluff etc.

Defects like; Slubs, Neps, Knots etc. Incorrect gap between the Dial & Cylinder rings.

Remedies:

Ensure uniform yarn tension on all the feeders, with a Tension Meter.

Rate of yarn feed should be strictly regulated, as per the required Stitch Length.

The fabric tube should be just like a fully inflated balloon, not too tight or too slack.

Eyelets & the Yarn Guides, should not have, any fibers, fluff & wax etc. stuck in them.

The yarn being used should have no imperfections, like; Slubs, Neps& big knots etc The gap between the Cylinder & the Dial should, be correctly adjusted, as per the knitted loop size.

Barrenness

Barrenness defect appears in the Knitted fabric, in the form of horizontal stripes of uniform or variable width.

Major Causes:

High Yarn Tension,

Count Variation,

Mixing of the yarn lots,

Package hardness variation.

Remedies:

Ensure uniform Yarn Tension on all the feeders. The average Count variation in the lot, should not be more than + 0.3 Ensure that the yarn being used for Knitting is of the same Lot / Merge no. Ensure that the hardness of, all the yarn packages, is uniform, using a hardness tester.

Snarls:

Snarls appear on the fabric surface, in the form of big loops of yarn getting twisted, due to the high twist in the yarn (Unbalanced twist yarn).

Major Causes:

High, twist in the, yarn. Hosiery yarns are soft twisted. High, twist in the yarn, is the cause of snarling. (Snarls cause, fabric defects & needle breakages).

Remedies:

Ensure using Hosiery Yarns, of the recommended T.P.M. only. (Hold a few inches of the yarn in both the hands, in the form of a 'U'. The yarn has a balanced twist, if it doesn't tend to rotate or turn, in the form of a snarl. (Such yarn can be used for Hosiery applications.)

Contaminations

Contaminations appear, in the form of foreign matter, such as; dyed fibers, husk, dead fibers etc., in the staple spun yarn or embedded in the knitted fabric structure.

Major Causes:

Presence of dead fibers & other foreign materials, such as; dyed fibers, husk & synthetic fibers etc. Dead Fibers appear in the fabric, as a result of the, presence of excessive immature Cotton fibers, in the Cotton fiber crop. Dead fibers do not pick up

color during Dyeing. Presence of the foreign materials, in the, staple fiber mixing (Kitty, Husk, Broken Seeds, dyed fibers & fibers like Poly Propylene, Polyester, Viscose etc) Dyed & other types of fibers flying from the adjacent Knitting machines cling, to the yarn being used for knitting & get, embedded in the Grey Fabric.

Remedies:

Use rich fiber mixing for the yarns, to be used for Knitting, in order to have less dead fibers, appearing in the fabric. Rigid control measures in the Blow Room, to prevent the mixing of foreign matters in the Cotton mixing. Segregate the Spinning & Knitting Machines, with Plastic Curtains or Mosquito Nets, to prevent the fibers flying from the neighboring machines, from getting embedded in the yarn / fabric.

- ***Spiraled***

Spiraled appears in the form of a twisted garment, after washing. The seams on both the sides of the garment displace, from their position & appear on the front & back of the garment.

Major Causes:

Spiraled is caused, by the Twisting Torque as a result, of the high yarn T.P.M.) Uneven Fabric Take down tension, on the Knitting machine. Unequal rate of Fabric feed on the Stinted, Calendars & Compactor machines.

Remedies:

Use the Hosiery yarns of the recommended TPM level for Knitting (Hosiery yarns are soft twisted, in comparison to the Warp yarns) Fabric pull or the Take Down tension, on both sides of the grey fabric tube, on the knitting machine, should be equal. Ensure uniform rate of feed of the dyed fabric, on both the edges, while feeding the fabric to the Colander, Compactor or Stinted machines.

- ***Needle Lines:***

Needle lines are prominent, vertical lines, along the length of the fabric, which are easily visible in the grey as well as finished fabric.

Major Causes:

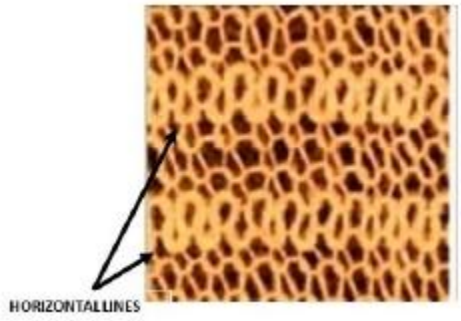
Bent Latches, Needle Hooks & Needle stems Tight Needles in the grooves Wrong Needle selection (Wrong sequence of needles, put in the Cylinder or Dial).

Remedies:

Inspect the grey fabric on the knitting machine for any Needle lines. Replace all the defective needles having, bent latches, hooks or stems. Remove the fibers accumulated

in, the Needle tricks (grooves). Replace any bent Needles, running tight in the tricks. Check the Needle filling sequence in the Cylinder / Dial grooves (tricks).

- ***Horizontal lines:***



Causes:

Fault in bobbin Irregular tension on cams.

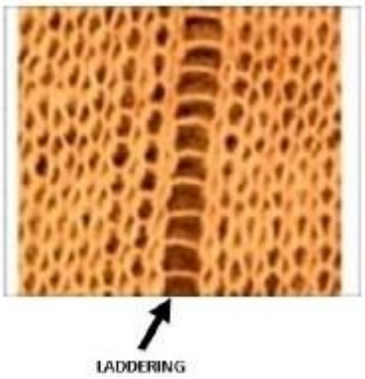
Remedies:

Replace that bobbin.

Check cams positioning.

- ***Broken Needles/Laddering***

Defects caused by the broken needles, show prominently, as vertical lines parallel to the Wales. There are no loops formed in the Wale, which has a broken needle.



Major Causes:

High Yarn Tension Bad Setting of the Yarn Feeders Old & Worn out Needle set

Remedies:

Ensure uniform & the right Yarn tension on all the feeders. Keep the recommended gap, between the Yarn Feeders & the Needles. Periodically change the complete set of needles.

- ***Sinker Lines:***

Sinker lines are prominent or feeble vertical lines, appearing parallel to the Wales, along the length of the knitted fabric tube.

Major Causes:

Bent or Worn out Sinkers being tight in, the Sinker Ring grooves

Remedies:

Replace, all the worn out or bent sinkers, causing Sinker lines in the fabric. Sinker lines are very fine & feeble vertical lines, appearing in the fabric. Remove the fibers, clogging the Sinker tricks (Grooves)

- ***Oil Lines:***

Oil lines are prominent vertical lines, which appear along the length of the knitted fabric tube. The lines become permanent, if the needle oil used is not washable & gets baked, due to the heat, during the finishing of the fabric.

Major Causes:

Fibers & fluff accumulated in the needle tricks, which remain soaked with oil. Excessive oiling of the, needle beds.

Remedies:

Fibers, accumulated in the needle tricks, cause the oil to seep into the Fabric. Some lubricating oils are not washable & cannot be removed during Scouring. Oil lines appear in the fabric, in the lengthwise direction, even after dyeing. Remove all the Needles & the Sinkers of the machine, periodically. Clean the grooves of the Cylinder & Dial of the machine thoroughly, with petrol. Blow the grooves of the Cylinder, Dial & Sinker ring, with dry air after cleaning.

- ***Broken Ends:***

Broken ends appear as equidistant, prominent horizontal lines, along the width of the fabric tube, when a yarn breaks or is exhausted.

Major Causes:

High Yarn Tension Yarn exhausted on the Cones.

Remedies:

Ensure correct yarn tension on all the feeders. Ensure that the Yarn detectors on all the feeders are working properly. Depute a skilled & alert machine operator, on the knitting machine.

- ***Fabric Press Off:***

Fabric press off appears, as a big or small hole in the fabric, caused due to the interruption of the, loop forming process, as a result of the yarn breakage, or closed needle hooks. Press off takes place, when the yarn feeding to both the short butt & long butt needles, suddenly stops, due to the yarn breakage. At times, complete fabric tube can fall off the needles, if the needle detectors are not functioning, or are not properly set.

Major Causes:

End breakage on feeders, with all needles knitting. Yarn feeder remaining in lifted up position, due to which, the yarn doesn't get fed in the hooks of the needles.

Remedies:

Needle detectors, should be set precisely, to detect the closed needles & prevent the fabric tube from completely pressing off. Proper yarn tension should be maintained, on all the feeders.

- ***GSM Variation:***

The fabric will appear to have a visible variation in the density, from roll to roll or within the same roll of, the same dye lot.

Major Causes:

Roll to roll variation in the, process parameters, of the fabric, like; Overfeed & Widthwise stretching of the dyed fabric, on the Stinted, Colander & Compactor machines. Roll to roll variation in the fabric stitch length.

Remedies:

Make sure that all the fabric rolls in a lot, are processed under the same process parameters. The Knitting Machine settings, like; the Quality Pulley diameter etc. should never be disturbed.

Chapter FOUR

CAD Department

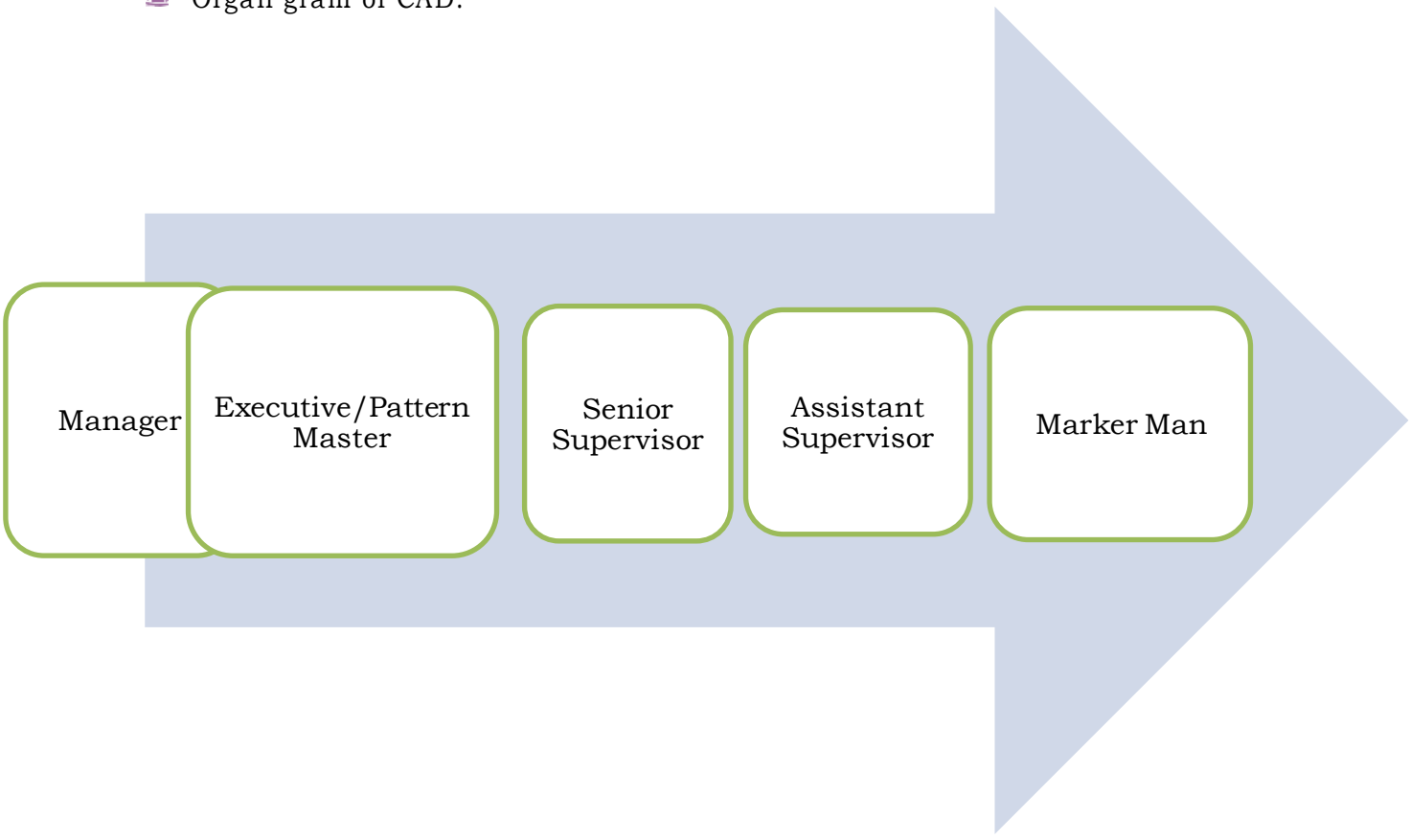
CAD Department:

CAD means Computer Aided Design. CAD and Pattern section is one of the most important sections in RMG sector. In CAD and Pattern section some important activities have done. After getting orders from buyer's CAD section plays an important role from the beginning of a production to the last. CAD department provides fabric consumption as well as garment consumption and also provide pattern and marker which are most important part before production of a garment.

Dyeing &Finishing:

After competition of knitting, a fabric should go to take treatment with dyeing and finishing chemicals to dyeing and finishing sector. It is necessary to take treatment with finishing of a fabric before it goes into sewing production. Finishing parameters should be maintained according to buyer's satisfaction. In Spider Group dyeing section is in Northern Corporation Limited which is some far away distance from the corporate factory. As a management trainee officer, it was necessary to take a look about dyeing and finishing section but it was a misfortune to me that during my training program dyeing and finishing section was not involved in my training schedule.

- Organ gram of CAD:



- Pattern:

Pattern is a hard paper design which is made by following each individual component for a particular style of garment. Patterns are made as a template of the fabric parts which is made on hard paper to represent the fabric parts.

- Types of Pattern:
  - Basic pattern.
  - Block pattern.

Pattern m/c in CAD of NTG.

Marker:

Marker is a thin paper which contains all necessary pattern pieces for all sizes for a particular style of garments in such a way that fabric wastage would be least. Marker making is one very important task which is done to reduce fabric wastage due to cutting necessary fabric according to the sizes of fabric. Generally all the fabric parts of all different size of fabric patterns are placed on a thin paper in such manner so that there will be minimal free space. This marker is used to cut the fabric from the lay.

Marker m/c in CAD of NTG

- Types of Marker:

There are many types of marker used in NTG Available Marker

1 body 1 way.

All body 1 way.

Group marker.

Manpower: In CAD department in Spider Group total manpower list is given below-

Pattern master 5

Marker man 1

Senior Supervisor 1

Assistant Supervisor 1

- Machine used in CAD Section:

Marker machine: BOK (China) 2 set

Pattern Machine: Bok (China)

- Marker efficiency:

Marker efeiciency% = Total area of pattern =100%

Total area of marker

- Fabric Consumption calculation:

Fabric Consumption per dozen =

$$\frac{\text{CBody Length + Sleeve LengthKx ½ Chest Length x 2 x GSM x 12}}{10000000} + W$$

Chapter FIVE

Store & Fabric Department

Store & Fabric Inspection Department:

Store is an important department in RMG sector. In a garment factory store plays a vital role because in store fabric and accessories are stored in a well-managed way. In spider Group store is well-organized with their inventory process, issuing process and receiving process.

Objectives:

- To receive the sample and bulk order sheet from merchandiser.
- To receive the fabric from factory.
- To record the amount of fabric.
- To supply the fabric according to the cutting requirement etc.

Types of store:

a) Main store: All types of accessories & fabric are stored here which come from another factory. Here also kept machine parts, guides, finishing accessories, stationeries, machines etc.

b) Sub store: according to the daily requirements of sewing & finishing department, come from main store by requisition.

c) Fabric store: all type of fabric stored in here regarding to the merchandiser booking.

d) Construction store: all types of construction materials are stored here.

Types of material inventory in store:

1. Raw materials,
   - Dye store.
   - Other chemicals.
   - Grey fabrics.
2. Finished fabric.
3. Spare parts.
4. General store.
   - Capital equipments
   - Accessories
   - Stationary
   - Maintenance parts.

Receiving Process:

- Receiving Purchase Order/ Pro Forma Invoice,
- Receiving memo on customer property from merchandising.

Merchandising Process:

- Receiving ETA information from imported items,
- Does the buyer send fabric specimen?
- Receive fabric trims specimen swatch available,
- Receive goods with relevant documents,
- Verify documents including invoice against purchase order,
- Arrange to verify security inspection of cargo,
- Unload and keep under quantitative status,
- Check corrections and quality of items,
- Enter details in stock database,
- Inform discrepancies to march within 5 days,
- Send fabric/trim swatch for approval,
- Update database,
- Receive approved bulk swatch,
- QC inspection,
- Update store database,
- QC inspection passed.

Issuing Process:

Production Co-ordination:

- Issue fabric and accessories for trim card preparation.
- Issue fabric, accessories and packing materials on receipt of fabric requisition.

Cutting, Sewing & Finishing Process:

- Update fabric register and accessories register,
- Receive monthly requirement sheet, Store and purchase requisition.

Merchandising Process:

- Forward monthly requirement sheet and purchase requisition to marketing dept.
- Issue items as per requisition,
- Raise gate pass for any items sent out,
- Send balance stock report after competition of order,
- Update on loan basis issue register when an item issue.

Inventory Control:

Store is the place where every type of raw materials, spares, finished goods are kept in proper system. Inventory control means the accurate calculation and data of every type of raw materials, spares and finished goods in time to time store. Inventory control in textile mill are necessary because,

1. To know about the required amount of raw material.
2. To be continued the production process.
3. To find out the profit or loss of a company.

Frequency of Inventory Update:

- Monthly inventory control.
- Annual inventory control.

Inventory System for Raw Material:

1. Raw materials partially received from production planning & directly from head office.

2. Material receiving & inspection report is prepared. Received quantity is mentioned and noted down.

3. Submitted to Q.C. Some are OK & few rejected.

4. Entry of data of goods in DATATEX.

5. Goods are arranged according to OK or rejected group.

6. Department gives store requisition to warehouse.

7. as per requisition materials supplied & this record are noted down.

Store for Raw materials:

Different types of fabrics available in the raw materials store like:

- Single jersey,
- Double jersey,
- Rib fabric,
- Fleece,
- Interlock,
- Pique etc.

Store for Accessories:

Trims and accessories are available here:

- Different types of trims.
- Different types of label.
- Sewing thread.
- Tissue paper.
- Poly.
- Tag pin.
- Price sticker.
- Button.
- Zipper.
- Shoulder tape.
- Scotch tape.
- Needles etc.

Stages of Grey Fabric Inventory Control:

- knitting production
- Grey inspection
- Warehouse.
- Batch preparation

Spares: In any textile mill required amount of spears of different machines are stored in the mechanical store room. All the spears are listed in a sheet which is controlled by the mechanical & maintenance personnel. Spares are arranged in the store room according to their size, quantity & requirements. There are shelves in the store room to keep the small spare parts.

Stages of Finished Fabric Inventory Control:

1. Finishing section.

2. Final inspection.

3. Warehouse.

Finished Goods: Any textile mill supplies its finished dyed fabrics to its garments section. So, dyed finished fabrics are stored for short time in the finishing section. All the delivered fabrics are noted on the tally book according to the lot no, quantity, fabrics diameter, buyer's name, Color & considering other technical parameters.

Others: Normally keep a central store at mill. In that store the various types of forms, papers; stationary & other necessary goods are kept.

Manpower list:

Manpower	No. of manpower
Store manager	**1**
Asst. Store manager	**2**
Supervisor	**5**
Checker	**5**
Store officer	**2**
Loader	**1o**
Total	**25**

Inventory Procedure:

- Bin Card,
- Store Requisition,
- Store Ledger Account,
- Daily Inspection & Package Report,
- Monthly Stock & Consumption Report,
- Monthly LIC wise Delivery Report,
- Received Delivery & Balance Stock.

Types of Machineries used in Fabric inspection in TIL

In TIL 4 types of inspection M/c are used. They are:

- Fabric inspection m/c (total number 4).
- GSM cutter (total number 1).
- Weight scale (total number 1).
- Over lock stitch m/c (total number 1).

Equipments:

- Rack.
- Calculator.
- Weight machine.
- Trolley etc.

GSM Cutter

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.

Working Procedure of GSM Cutter:

Taking the sample of fabric from bulk and conditioning for 4.30 to 06 hours

↓

Taking the conditioning fabric for test on the G.S.M. Cutter pad so that no crease or crinkle is formed,

↓

Cutting the fabric with G.S.M. cutter (GSM Cutter Diameter 11.2 cm)

↓

Taking the weight of the cut fabric (Length & Width 11.2 cm) in balance and multiply with 100,

↓

Get the GSM of the fabric in oz/yard.

Measure the GSM of the Fabric by GSM Cutter: It is one type of physical test of the fabric which is known as off line quality assurance system. By the following way we can measure the weight of the fabric.

- Cut the fabric with the GSM cutter (gram per square inch).
- Weight the fabric with the electric balance.
- The cut sample is 100 sq.cm. The weight of the cut sample is multiplied by 100.
- The result is the GSM of that particular fabric.

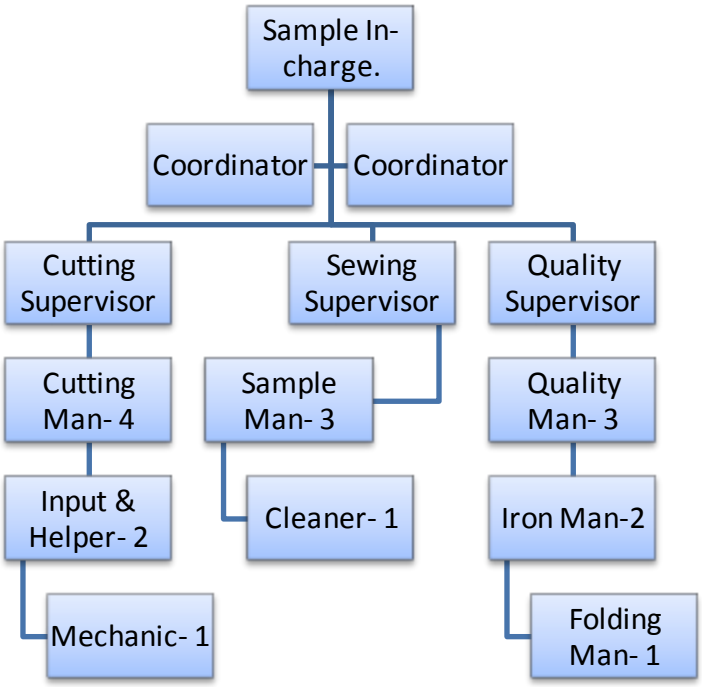
Chapter SIX

Sample Department

Sample Department:

Sample section is one of the most important sections in any garment factory because in sample section samples are produced according to buyer's satisfaction. After completion of making samples according to buyer's satisfaction the product will go to bulk production within certain period of time. So we can say that, before bulk production of a garment it is necessary to produce sample according to buyer's choice and approvals. Sample Production Capacity is 15o per day.

- Organ gram of sample section:



- Working procedure of sample department:

Step: 1) sample department receive requisition & take piece from merchandiser.

Step: 2) sample department prepare daily as well as Likely plan for sample submission. As per merchandiser require date.

Step: 3) sample department collect pattern from CAD department.

Step: 4) sample department make 1 pc mockup for style review meeting.

Step: 5) sample department handover mockup sample for style review meeting to central IE department than central IE department arrange style review meeting any changes come than I discus with merchandiser to manage that changes then if buyer approved that then I go for first sample.

Step: 6) after received of fabric I resister fabric quantity in the resister book. I also do the fabric relax 24 hours before cutting.

Step: 7) I do the fabric wash before cutting if buyer required garments wash or garment dye & I take final approval from merchandiser.

Step: 8) after received accessories I test wash & others I prepare trim card I get approval merchandiser.

Step: 9) before cutting I check body + cuff + neck rib shade & get approval from merchandiser. After getting approval then I go for cutting & keep the document in daily cutting production file.

Step: 10) after cutting complete I 100% check the cut panel & if required print/embroidery then I send for print/embroidery factory.

Step: 11) after receiving the print/embroidery part I check it very carefully & I keep the document in print/embroidery check file. Regarding print & embroidery wash test approval I get from merchandiser.

Step: 12) I am ready to input in input box after received the print/embroidery part & kinds of accessories and keep the documents in the daily ready input file.

Step: 13) before make any sample I do the meeting with sample man, supervisor & sample quality.

Step: 14) After do the meeting I go for sample make & keep in daily sewing production file.

Step: 15) After sewing complete I check sample & send to washing factory for wash if buyer required garment wash or garments dye.

Step: 16) After wash complete I go for check & finish the sample & kept the documents in daily finishing production file.

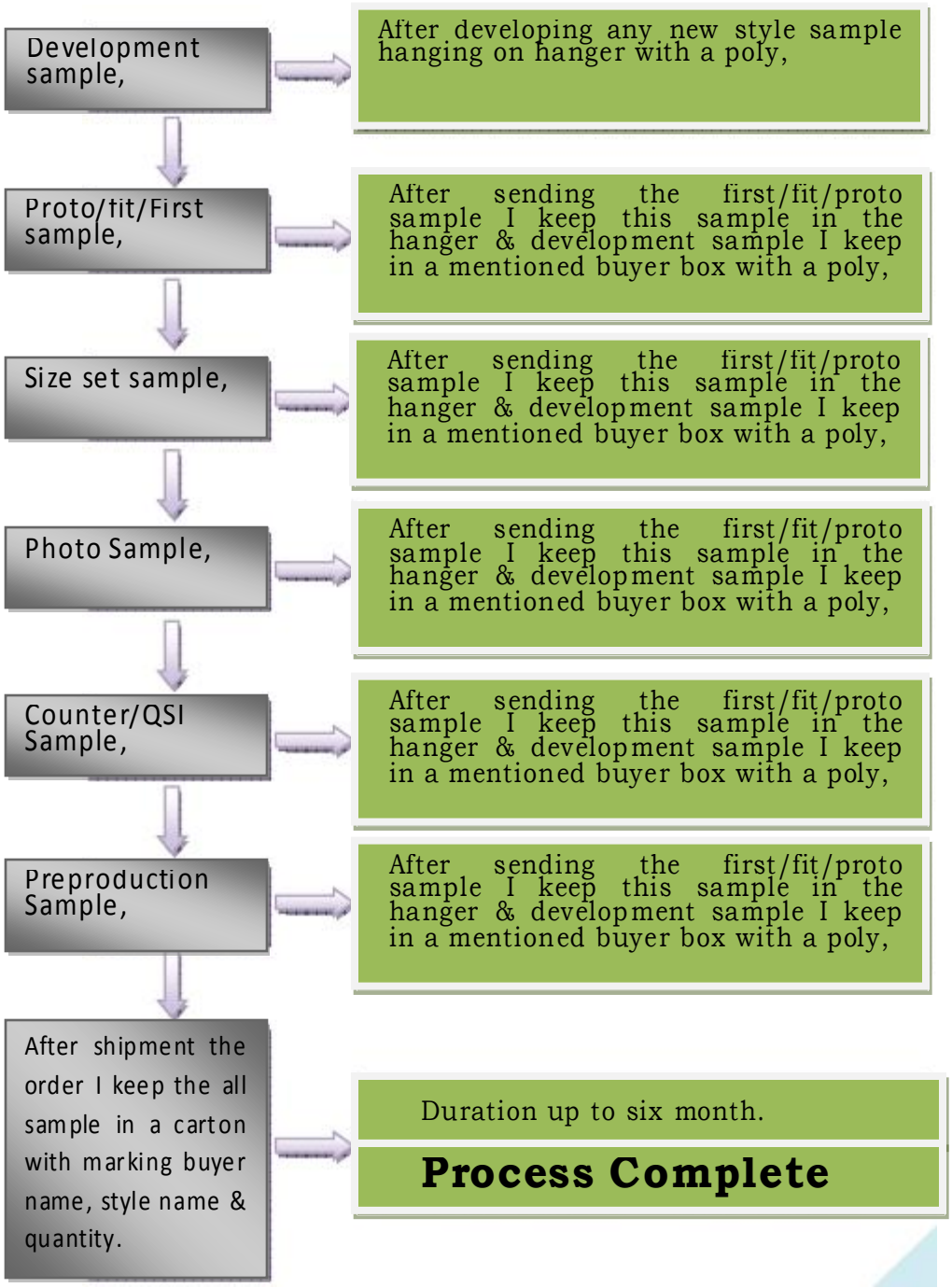
Step: 17) after finishing complete I send the sample individually to merchandiser & CAD with check list & measurement list & keep the documents in the sample delivery resister book.

- Types of Sample:

In sample department for different buyer's lot of samples are produced in sample department. Samples are given below-

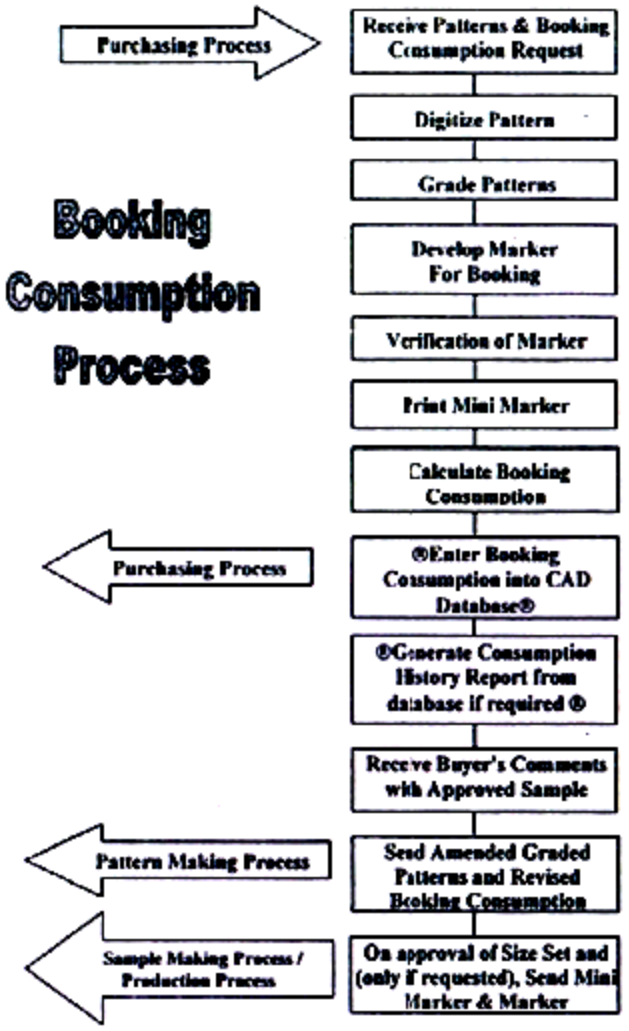
1. Development Sample,
2. Counter Sample,
3. Pre-production Sample,
4. Photo Sample,
5. Proto Sample,
6. Fit Sample,
7. Sales Sample,
8. Sales Sample,
9. Mock up Sample,
10. Sales and Marketing Sample,
11. Rag Tag Sample,
12. Size set Sample,
13. Shipping Sample,
14. Styling Sample,
15. Test Sample,
16. Test Sample,
17. Wash in House,
18. Revision Sample,
19. Pilot runs Sample.

Standard operating procedure (SOP) of sample section



- Booking Consumption Process:

NOTHERN GROUP	PROCESS & PROCEDURE MANUAL		SAPPB.5
	SECTION NO: B	Booking Consumption Process	Page 1 of 1	SAMPLE PROCESS
	Issue No: 01	Revision No:	



Booking Consumption Plan

Item	Booking Consumption
Responsibility	CAD System Executive
Reference Item	Pattern Boards
Input Record	Patterns, Order Details, Booking Consumption Request
In Process Record	Consumption History Report
Output Record	Mini Marker, Marker, Filled Booking Consumption Request, Graded Patterns
Reference Document	None
Interacting Process	Pattern Making Process, Sample Making Process, Purchasing Process
Next Process	Merchandising Process, Sample Making Process, Production Process
Process Measurement	Item B5 of KPI Table
ISO Element:	

Chapter SEVEN

Cutting Department

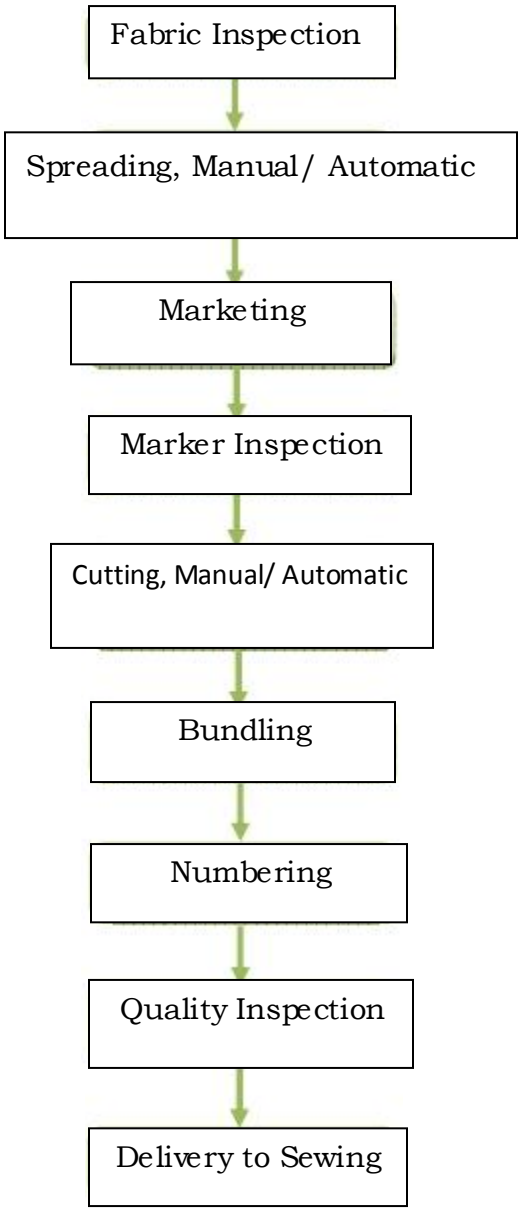
Cutting Department:

Cutting is an important term before sewing a product for shipment. After completion of marker making and getting fabric, fabric should be cut properly according to marker measurement. Marker can be getting from CAD section and after that fabric should be spread out with different lays and then fabric will be cut by cutting machines. Sometimes cutting machines are automatic and sometimes cutting machines are manually handled. In cutting section automatic and manual cutting machine is used whereas fabric spreading is done by automatically by automatic fabric spreader and also manually by human hand. **I**n Spider Group cutting department manpower is in total 135.

- Organ gram of cutting in TIL:

- Cutting process schedule:

In Spider Group cutting process schedule is given below-



PROCESS DESCRIPTION:

- Cutting Planning:

Cutting Room Planning is very important and should be done for every order. Good planning helps in better utilization of available resources and improving cutting room efficiencies. The cutting plan should be made well in advance to allocate resources and check on fabric availability & flow for the planned cutting. Various things that should be kept in mind while making cutting plan are:-

- Requirements of sewing room
- Availability & flow of raw-material i.e. fabric
- Available Manpower
- Constraints of work-place

Cutting Work order:

The planning department issues a cutting work order to the cutting department for commencing cutting for any particular order. The work order states the size wise quantity to be cut in that style and the fabric required for the total quantity mentioned in the work order. The cutting In-charge makes a daily cutting plan for the work order quantity and does the resource allocation. The work order also gives an estimate of the fabric that should be taken from the fabric store.

Fabric Receipt:

The cutting room in charge requests fabric from the fabric store based on the daily cutting plan made by the cutting room executive. The fabric is requested using Fabric Requisition Slip format. The cutting room helper gets the fabric from the stores & transfers it to cutting room with the help of fabric movement trolley. The fabric received is stored in the fabric racks within the cutting-room.

Fabric Relaxation:

The fabric received in the roll form should be relaxed for at least 12 hours under standard conditions before spreading. This is done in order to take out any tension in the fabric imparted during finishing or winding so as to avoid any distortion while spreading or cutting.

Marker Request:

The Cutting Executive requests the marker from the CAD department on a format called CAD Marker Requisition Slip. The details of the fabric (e.g. width) received from fabric store needs to be provided to the CAD room for marker so that the provided marker could be adjusted as per the received fabric to minimize wastage.

Spreading & Marking:

Before Spreading, the lay plan should be prepared & a lay order slip is generated by the cutting executive. The lay order slip provides all relevant details to the spreader for the lay i.e. style, fabric width, no. of plies, marker way, consumption for that lay etc. The spreader has to follow the lay-order slip for considerations during spreading & if she founds any deviations in the actual, it should be reported to the cutting executive. After the spreading is done, the lay should be checked by the QC and a format called Cutting Room Inspection Report is generated. After the lay is cleared by the QC, it goes for next operation i.e. marking. The marking could be done manually by patterns or paper marker could be fixed on top ply to make it ready for manual cutting.

Cutting:

The ready to cut lay is moved onto the area allocated for cutting within the spreading & cutting table. Air-flotation table is used for easy movement of lays. The cutter cuts the lay with the straight-knife along the marker lines. For any small parts or sharp turns, where precision can't be achieved by straight knife, the parts can be taken to band knife after block-cutting. For some styles (e.g. engineered stripes) where lay cutting is not possible due to matching of stripes, single piece cutting is done with the help of scissors.

Numbering & Bundling:

Once the lay is cut the cut parts are numbered, all parts that makes one complete garments are given same number so as to avoid any mismatching of shade. After numbering the pieces are bundled into a group of certain pieces. The size of the bundle is decided by the cutting-room in charge, in discussion with the sewing floor in charge.

Quality Audit:

All bundles need to be audited for quality before issuing to the sewing lines. Quality audit on the bundled garments is done by the cutting-room auditor who checks the bundles for bundle ticket descriptions, correct sequence of ply numbers, presence of all parts etc. as mentioned in the format. The second audit checks for the pieces w.r.t. the shade matching, notch positioning, etc. These audits are conducted following the AQL chart specifications & a format called Cutting Section Bundle Audit is filled.

Issue to the Sewing Line:

The cut bundles are issued to the sewing line on request from sewing line supervisor. Detail for issued pieces is maintained in the Cutting Issue Register. The cutting issue register records the size wise issue to each line for a particular order. Along with the bundles the cutting department also gives to the sewing line a format called Production Issue Slip containing details of the bundles issued like bundle no, size, no of pieces etc.

Machine Specification

In cutting department there are straight knife cutting machines of different length and automatic cutting machine are used for cutting fabric lay after spreading. There are also some fabric spreading machines.

Straight Knife Cutting Machine:

Name : Km

Model : KS-AUV

Speed : 3000/3600

Origin : Japan

No. of Machine: 14

Knife Height : 8'' and 10''

Automatic Cutting Machine:

Name : Topcut Bullmer

No. of Machine : 1

Ply Height : 8-10 cm

Daily Cutting : 20000-25000 pcs.

Time for Pattern : 2-3 min.

Time for small : 70-80 sec.

Automatic Cutting Machine (Topcut

Cutting fabric with straight knife m/c in NTG

Fusing Machine:

This is not sewing machine. But we attach material. Like we attach interlining in polo shirt. Also known as “Backron” These are attaching by heat. There is glue in interlining we call it racing dot.

Cutting Table Measurement:

In cutting department there are total 13 cutting table where fabrics are spread out and after then cutting will be completed. So it is very much necessary to know about the measurement of all cutting tables because to maintain the length and width of the fabric lays before cutting and handling operations during spreading and cutting.

Table Number (cm)	Length (cm)	Width (cm)	Height (cm)
1	22o7	2o2	92
2	22o7	2o2	92
3	22o7	2o2	92
4	22o7	2o2214	92
5	22o7	239	8o
6	22o7	155	84
7	247	155	84
8	247	122	84
9	244	2o3	77
1o	536	2o3.5	9o
11	716	2o3	86
12	716	2o3	86
13	716	2o3	86

Chapter EIGHT

Printing & Embroidery Department

Printing & Embroidery Department:

In Spider Group, there is a printing section named Printers and Printers limited where almost all of the printing work is done. Here every kind of printing is manually screen print. There is no rotary screen print or all over print. In Spider Group there is also a new embroidery department which activities have started yet. After cutting garment pieces the part which is necessary to be printed or is necessary to make a embroidery work on the part will go to printing section and which will needed to put an embroidery work will go to embroidery section. After completing printing and embroidery work the parts will come to cutting department again and then all the part of an order will then go to sewing line as input item for bulk production.




Flow Chart of Printing Section:

Artwork from merchandiser, → Design input, → Design development, → Positive/film, → Print taken, → Requisition by merchandiser,

Panel (cutting fabric parts), → Expose (frame adjusted) → Fila and frame adjusted, → Panel send to buyer, → Buyer approval, → Sale sample,

Counter sample → P P production, → Accessories booking, → Requisition by merchandiser for fabric, → Fabric received → Count the fabric,

Inspection the fabric → Fabric adjusted, → extractor from dryer, → Inspection, → Delivery.

PRINT DEFECTS:

- Color over lap.
- Color run / crock / bleed.
- Color smudged.
- Dye spots.
- Faulty registration.
- Misprint.
- Print Flaw.
- Print shaded from one edge to the other.
- Print shaded within the garment.
- Print shaded within the set.
- Shading between garments [under grey scale rating 4].
- Shading within garment [under grey scale rating 4-5].
- Print off center [greater than 1/4"].

Process Flow of Embroidery:

Embroidery is done according to the following sequence in an industry.

At first designed the buyer design by CAD software.

↓

The design software install into the machine.

↓

The fabric clamped by the clamp board.

↓

Then run the machine until finished the design.

↓

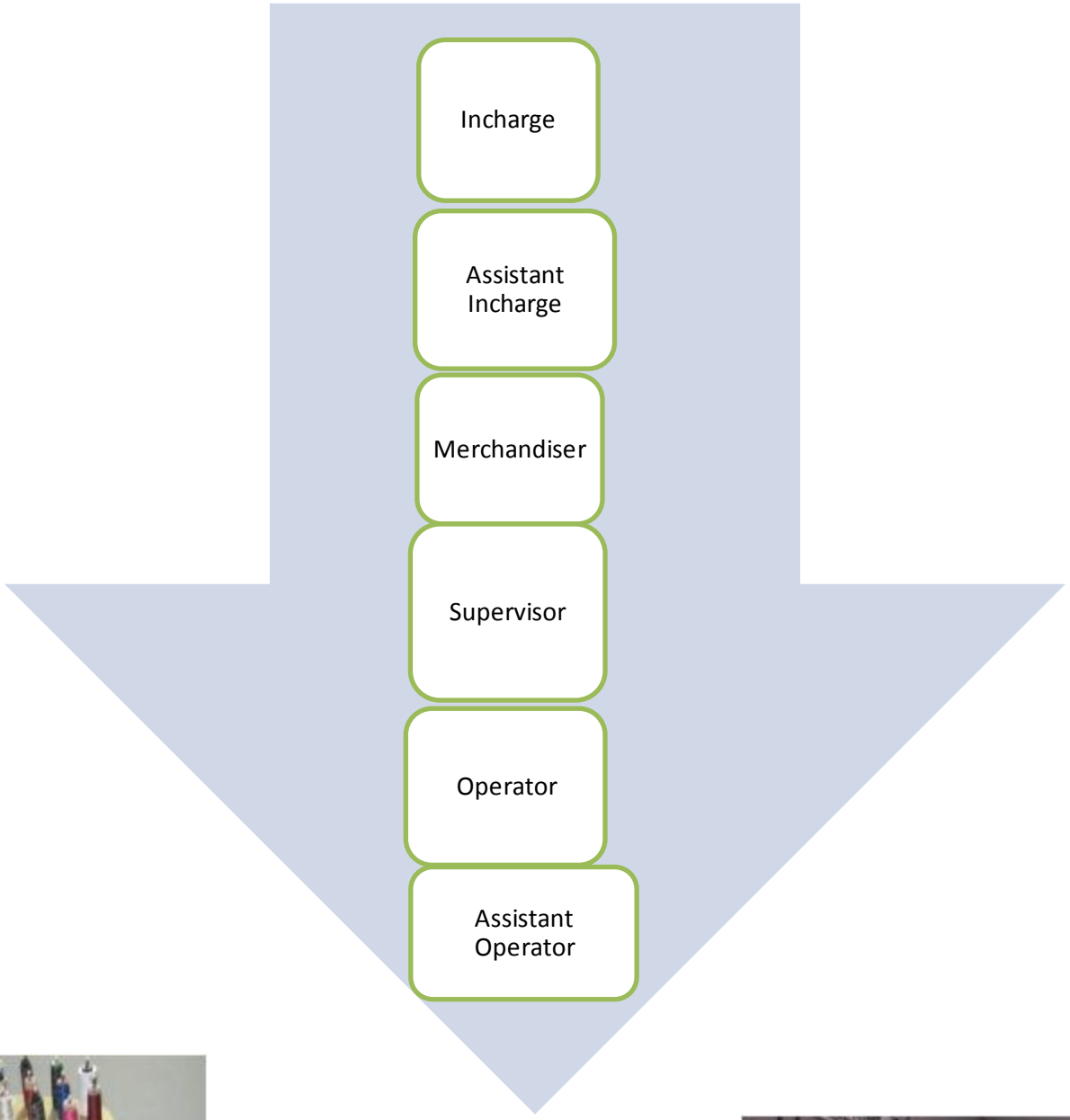
Then the fabric collects for delivery.

Faults in Embroidery

Color mistake	Tension loose	out line	Short
Appliqué out/gap	Tension tight	Measurement (+/-)	Zigzag Stitch out
Bobbin loose	Stitch gap	off side embroidery	Hole

- Organ gram of embroidery section:

Man power of embroidery: 30 people.



- Machine Specification:

Name: Embroidery M/c.

Brand: Tajima.

Origin: Japan.

Assembly: China.

Software use: Wilcom (USA).

Color: 16.

20 pc products can embroidery at a time.

Total: 2 set.

Brand: Amaya.

Origin: USA.

Color: 16.

- Types of embroidery:

Normal embroidery,

Appliqué embroidery,

3D embroidery,

Boring embroidery,

Sequence embroidery,

Ari embroidery.

- Types of stitch:

Tatami Stitch,

Satin Stitch,

Zigzag Stitch,

Program split Stitch,

Motif Stitch,

Counter Stitch, Run Stitch.

Chapter NINE

Sweing Department

Sewing Department:

Sewing is an important section as well as an important task for garment production. After getting fabric and accessories it is necessary to attach all the parts according to buyer's given sample, style and order. In spider Group there are 3 sewing floors named Trouser world Bangladesh Limited, Fashion Asia Limited and Modular Floor. Manpower list in Spider Group is given below-

Sewing section	**Operator: 292**
	Helper: 99
Modular Floor	Operator: 93
Technical Section	Operator: 13
Total	497

- Machine List:

In sewing line there are lots of sewing machines. Their total list are given below-

PLAIN MACHINE	198 Set
OVER LOCK MACHINE	149 Set
FLAT LOCK CYLINDERBED MACHINE	1o1 Set
BACK TAPE / LAPSEAM MACHINE	4 Set
BUTTON HOLE MACHINE	6 Set
BUTTON STITCH MACHINE	6 Set
BARTACK MACHINE	2 Set
KANSAI SPECIAL MACHINE	1 Set
RIB CUTTING MACHINE	3 Set
CLOTH CUTTING MACHINE	8 Set
IRON WITH STEAM BOILER	3o Set
VACUM IRONING TABLE	3o Set
THREAD SUCKING MACHINE	2 Set
SNAP BUTTON MACHINE	2 Set
THREAD TRIMMIING MACHINE	1 Set
FABRIC CHECKING MACHINE	1 Set
SPOT CLEANING MACHINE	2 Set
NEEDLE DETECTION MACHINE	1 Set
Total	**547 Set**

Different Types of Sewing Machine:

- **Single needle Machine/ Plane Machine:** there is only one needle in this machine. Also called plane machine instead of single needle machine. Like house hold M/C but they are heavy duty machine. As these machine can be run 6 days continuously. House hold machine speed is highest 750 SPM (Stitches per Minute). While industrial machine speed is 2800 SPM to 5400 SPM also we get various options like folder, guide, feed etc.

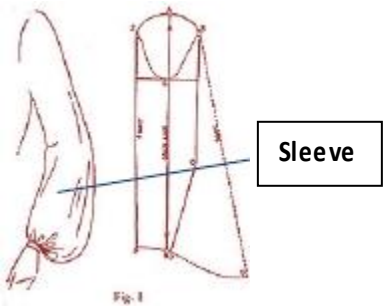
Single Stitch

Double Stitch

- **Double needle Machine:** there are two needles in this machine. Create parallel line of stitches. Productivity increases.

Over Lock Machine: after cutting fabric yarn come out from side of the fabrics, so to prevent it and to increase durability or longevity An over lock stitch sews over the edge of one or two pieces of cloth for edging, hemming or seaming. There are various types of over lock machine which is introduced by its thread. There is one thread over lock machine to six threads over lock machine. Single thread, double thread, three threads to six threads over lock machine. But in garments industry we use three to five thread over lock. We normally don't get order for six threads over lock. 3T & 5T used in woven garments & 4T is used for Knit garments, Undergarments like, vest, underwear, bra, panty, lingering.

Feed of the Arm: Some cylinder type garments require for stitches. Like to stitch full sleeve (sleeve is the part of a garment that covers the arm, or through which the arm passes or slips).



Sleeve

5T over lock stitch at

Multi Needle Machine (Kansai Machine): Kansai Company first brought this type of machine in the market. The machine can use from 1 to 33 needle. This machine is mostly use in trouser factory for west belt. And also for decorative purpose we use this machine. The machine uses less in knit factory and more use in woven factory.

Button Hole Machine: this machine is used to create hole in the button. And attach button to fabric.

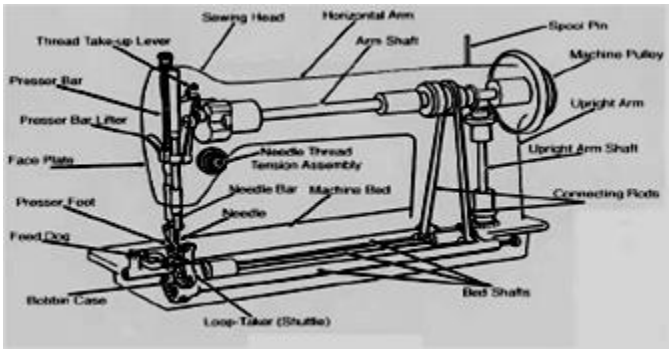
Eyelet Hole Machine: mainly to create hole in pant for button. This hole is called eye hole or key hole.

Flat lock Machine: in knit garments factory two types of machine are very common: Flat lock & over lock Machine. Hemming, top stitching of knitted garments are done by Flat Lock Machine. The machine can be used for the hemming process of the T-shirts, polo shirts and for the covering process.

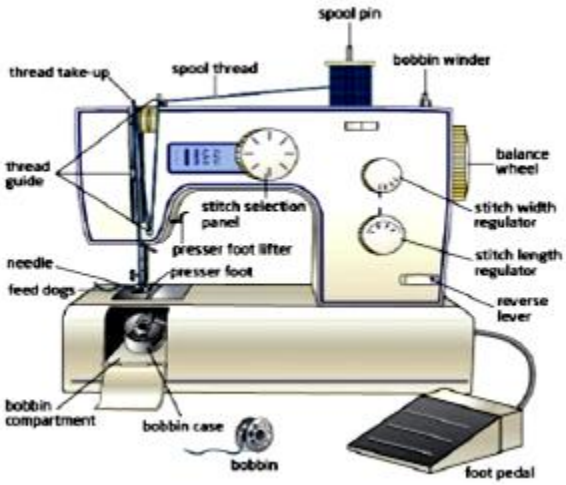
Button Attach/ Button Stitch Machine: we attach button to fabric with this machine.

Metal detector: To detect Metal like broken needle head. We use this machine in sewing section or finishing section.

Dial linking machine: Linking machines main job is to join individual knitting fabrics (such as Front & Back part, Collar, Sleeves etc.) to make design shape. Laski brand Dial Linking machine is manufactured by imported high frequency carbon sheet.



Mechanism of Sewing Machine:



Specifications:

Gauge: 3G, 5G, 7G, 8G, 9G, 10G, 12G, 14G, 16G, 18G, 20G.

Dial section diameter: 356mm(14").

Tack

Linking efficient: 400 needles/min.

Trace type: ingle line linking.

Linking layers: 1~4 layers.

Input power: 90W (1/8HP).

Power source (single phase): 50Hz 220V.

Weight: 30kg.

Number of needles of the linking machine: 3,5,6,8,10,12,1,4,1,6,18,20, 22.

Number of needles of the flat knitting machine: 1,5,3,5,7,9,10,12,14,16,18.

Needle model: 7, 6, 5,4,3,2.

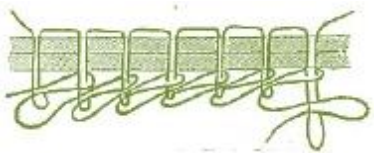
Stitch counts: 20/2~24/2.

Lock Stitch:

In house hold machine there is bobbin & bobbin case. And the stitch that is created by this machine we call it lock stitch. So to get lock stitch we need needle, bobbin & bobbin case.

Chain Stitch: There is other type of sewing machine which doesn't have bobbin & bobbin case. Instead it has lopper. There is no system to deposit thread in lopper. So the threads of lopper come from outside source. The sewing machines which have lopper system instead of Bobbin we get chain stitch. There are various different types of chain stitch. The stitch outlook of the top & bottom of the fabric is different.

There are some basic difference between lock stitch & chain stitch. Lock stitch is stiff, tight, secured, do not loose easily. Lock stitches require less thread than chain stitch. But chain stitch is loose. If pull from one corner than the whole thread will come out. Chain stitch requires more thread than lock stitch. There is single needle lock stitch & also single needle chain stitch. A single needle lock stitch Chinese Juki machine costs around Tk. 12,000/-. A single needle chain stitch Chinese Juki machine costs around Tk. 35,000/-. But chain Stitch is stretchable, it has elasticity. Various parts of our body are stretchable. So we require chain stitch in RGM. Like in west belt we use chain stitch with Kansan multi needle machine. So any sewing machine will have either bobbin or lopper.



Type of Stitches

BSI: British Standard Institute identified that there are six types of stitches:

Class-100 Chain Stitch: Single thread Blind Stitch Machine is used Bottom Hem of trousers, skirt etc.

Class-200 Hand Stitch: RGM sector cannot use hand stitch.

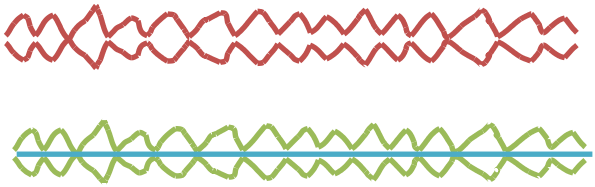
Class-300 Lock Stitch: Single needle lock stitch, double needle lock stitch, bar tuck, button hole, and button stitch machine is used. All type of top stitches, bottom hem, pocket join etc of woven garments.

Class-400 Multi Thread Chain Stitch: Machine: Single Needle Chain Stitch, Double needle chain stitch, feed of the arm, Kansai Multi Needle, Eye/Key whole machine is used Inseam, side seam, waist belt etc of woven fabrics.

Class-500 over Edge Chain Stitch: Machine: Flat Lock Machine, All type of Over Lock Machine is used. Top stitches/bottom hemming of knitted products, all type of joining, edge sewing, for woven & knit garments.

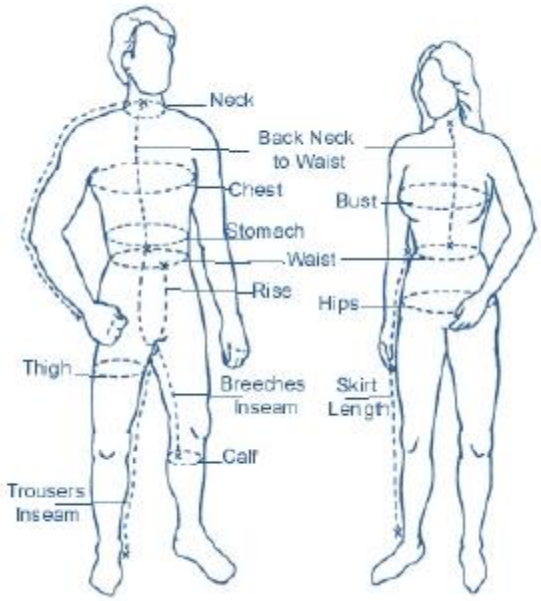
Class-600 Covering Chain Stitch: (according to BSI)/ Zigzag stitch (according to ISO).

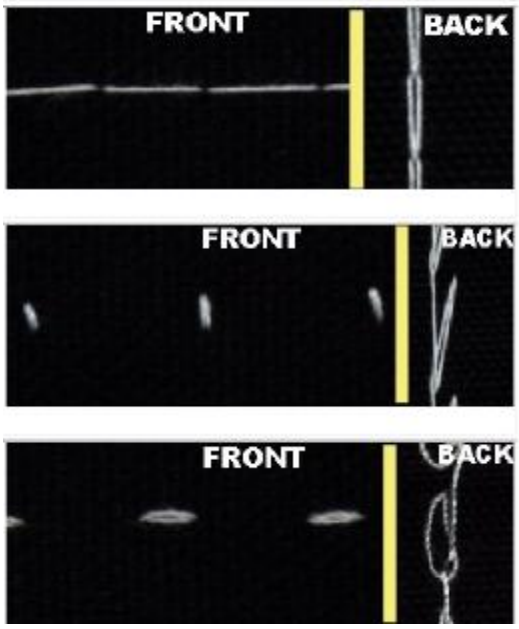
Machine: Flat Lock Machine is used. Usage: top stitches, bottom hemming for knit products, & decoration stitch for woven & knit products.



Thread consumption for different machine:

Machine	Stitch type	1"	Thread length
Free code		1"	1"
Button hole	Lock stitch	1"	15 inches
Button stitch	Lock stitch	1"	2o inches
S/N	Single needle	1"	2.5 inches
S/N	Double needle	1"	5 inches
Feed of the arm	Chain stitch	1"	35 inches
3 thread O/L	Lock stitch	1"	15 inches
4 thread O/L	Lock stitch	1"	17 inches
5 thread O/L	Chain stitch	1"	21 inches
Double thread O/L	Lock stitch	1"	15.5 inches
3 thread F/L	Zigzag	1"	19 inches
5 thread F/L	Zigzag	1"	25.5 inches
Single needle Kanshai	Chain stitch	1"	8 inches
Double needle Kanshai	Chain stitch	1"	16 inches
Bartech	Gathering stitch	1"	20 inches





Stitch Class	Thread Count	Typical Use
100 Class Stitches	Single Thread Chain stitches Using One Needle Thread and One Blind Lopper.	
1o1 Class	One Thread	Basting, or light construction.
1o3 Class	One Thread	Blind stitch for Hemming.
1o4 Class	One Thread	Blind stitch for Hemming.
200 Class Stitches	: Single Thread Hand Sewn Stitches Using One Needle Thread.	
2o2 Class	One Thread	Basting, Tacking or Repairs.
2o5 Class	One Thread	Pick Stitch – Topstitching.
300 Class Stitches:	Two or more Thread Lock Stitches Using Needle Thread(s) and One Bobbin Hook Thread.	
3o1 Class	Two Threads	Seaming Multiple Plies.
3o4 Class	Two Threads	Zigzag Stitch; a stretch lockstitch.
3o6 Class	Two Threads	Blind Stitch.
315 Class	Two Threads	Three Step Zigzag; a stretch lockstitch with more stretch.
400 Class Stitches:	Multi-Thread Chain Stitches Using One or More Needle Threads and One or More Lopper Threads.	
4o1 Class	Two Thread	Seaming Multiple Plies with moderate stretch.
4o4 Class	Two Threads	Topstitching or Seaming with Stretch.
4o6 Class	Three Threads	Bottom Cover Stitch; a (greater) stretch chain stitch.
500 Class Stitches	Multi-Thread over Edge Chain stitches Using Needle Thread(s) and Lopper Thread(s).	
5o1 Class	One Thread	One Needle Over edge stitch for Surging / "Blanket Stitch".
52 Class	Two Threads	One Needle Over edge stitch for Surging.

503 Class	Two Thread	Over edge stitch for Surging with Crossover on Edge of Fabric.
504 Class	Three Thread	Over edge stitch for Serging and Light Seaming.
512 Class	Four Thread	Mock Safety Stitch for Seaming with wide bite and Greater Stretch for Knits.
514 Class	Four Thread	Over edge Stitch for Seaming with wide bite and Greater Stretch for Knits.
515 Class	Four Thread	True Safety Stitch for Seaming with Good Stretch for Woven's and Knits.
516 Class	Five Thread	True Safety Stitch for Seaming with Good Stretch for Woven's and Knits.

600 Class Stitches	Multi-Thread Cover stitches.	
602 Class	Four Thread	Cover Stitch or Seaming Knits.
605 Class	Five Thread	Cover Stitch or Butt-Seams.
607 Class	Six Thread	Wide Cover Stitch or Butt-Seams.

Button Hole Stitches	Chain stitch and Lockstitch Button Hole Stitches	
101 Class	One Threads	Chain Stitch Buttonhole Front View Used for light to medium weight Fabrics.
101 Class	One Thread	Back view.
301 Class	Two Thread	Lock Stitch Buttonhole Front View used for medium weight goods or where higher quality is required.
301 Class	Two Thread	Back view.
101 Class	One Thread	Chain stitch Keyhole Buttonhole With square bar tack used for suits and outerwear.

1o1 Class	One Thread	Chain stitch Keyhole Buttonhole with fly bar narrow bar tack used for suits and outerwear.
3o1 Class	Two Threads	Lockstitch Keyhole Buttonhole used for suits and heavy weight goods where higher quality is Required Variety of Bar tack options available.

Button Sew Stitches	Chain stitch and Lockstitch Button Sew Stitches.	
301 Class	Two Thread	Two Hole Lock Stitch Button sew Front View - Used for medium weight goods or where higher quality is required.

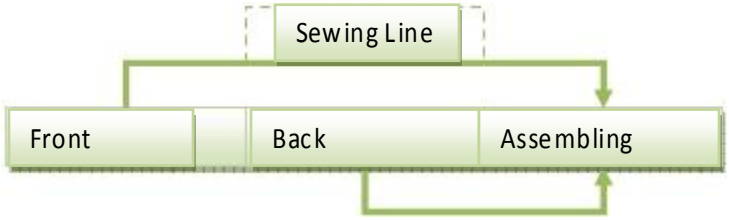
301 Class	Two Thread	Two Hole Lock Stitch Button sew Back View.
101 Class	One Thread	Four Hole Chain stitch Button sew Front View.
301 Class	Two Thread	"X" Stitch, Four Hole Chain stitch Button sew - Front View.
301 Class	Two Thread	Shank button with Wrapping used for suits and heavy weight goods where fabric is thick.

Sewing Layout/ Machine Layout:

I do not follow make through production system in garments industry like tailor shop. As productivity is lost in this system. Now garments industry follows the production system of Toyota. I follow operation breakdown method. At first I make the layout. Running Shade: shade variation of fabric. In one end of the fabric the color is deep, and in other end the color is light. So shading problem will occur if like shirt pocket is cut from other end that is color will not match. So after cutting I provide number to each part of the layer to avoid shading problem. And I pack them in small bundle. Like in bundle A there is first 25 piece of pocket ..... Like this. So each worker completes each bundle and passes the bundle to second worker. This system is called Progressive Bundle System. In the factory I use this PBS system.

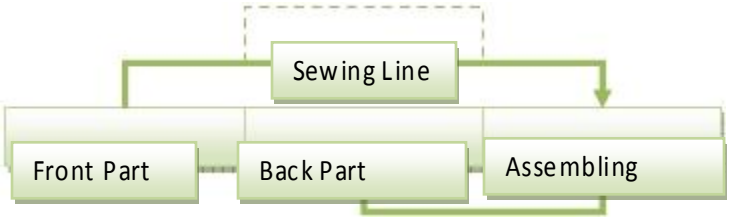
A- 1 to 25 B- 26 to 50

C- 51 to 75 D- 76 to 100



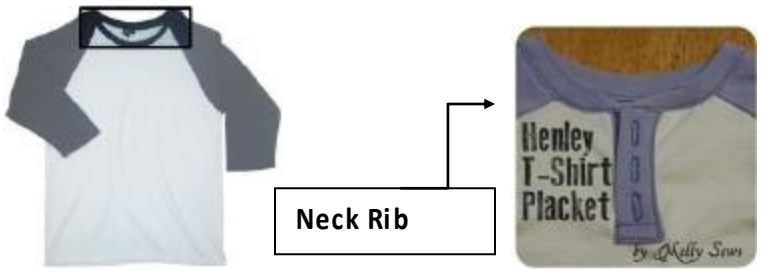
I divide sewing line into three parts under BPS: front part, back part & assembly part. I produce front side of T-shirt in front part, back side of T-Shirt in back part, and send both side of T-Shirt to Assembling part to join the two sides. Arranging operator and machine in a sewing section to complete sewing in a systematic way is called sewing layout or machine layout.

Every factory produce specified product or a range of products. The factory which produce T-Shirt, trouser, polo shirt, tank top, vest etc... they normally don't produce under garments like bra, panty etc. If a firm wants to produce both than they setup separate units and run each unit by separate management. Whatever the product enter into the line, I divide the sewing production line & product into three part: Front Part, Back part, Assembly Part.



I sew front part of T-Shirt in Front part of sewing line, I sew back part of T-Shirt in back part of sewing line. Than sew front and back together of T-shirt into assembly line. Materials of Front part of T-shirt are those parts which are unique, not same as second parts are attached in front part line. Materials of back part of T-shirt are those parts which are unique, not same as front parts of t-Shirt are attached in back part line. And materials which have in both front & back part of T-Shirt are attached in assembly line. Like Neck Rib has both in front & back side of T-Shirt, so neck rib is attached in assembly line. So in front part in sewing line only front panel t-Shirt is sealed. In back part in sewing line only back panel t-Shirt is sealed. Label is sealed inside of neck rib at assembly line. If label would be attached with the back panel than label would be attached in back part of sewing line. Sleeve will be attached in assembly line as sleeves have both in front & back side of t-Shirt. Placket (where button hole is kept) & Button Stand or Loir placket (where button is attached), pocket are attached in Front line of sewing line.

For a simple T-Shirt the sewing start at assembly line, as there is nothing to sew in front & back part of T-Shirt. First join shoulder. We increase the weight of garments step by step, so less weight materials or small or difficult parts are attach first. Large & easy materials are attached later. So after joining shoulders we will sew neck part by folding with over lock machine. Then sew neck top stitch. Next will sew sleeve hem. Then sew side seam & then bottom hem. For a decorative T-Shirt in front part of sewing line we have to sew decorative stitches. In back part of sewing line we have to join different color back part of T-Shirt, and then sew top stitching, then decorative stitch. And transfer all the items to assembly part.



Sewing machine and related Stitch number:

- SNLS (300,)
- DNLS(300),
- Bar Tuck (300),
- Button Stitch (300),
- Button hole (300),
- Flat Lock (300),

- Feed of the Arm (400),
- Kansi Multi needle (400),
- Eye/Key hole (400).

- Utilization Factor:

Utilization factor is an important term in sewing section. It is also known as Needle down Time. Utilization Factor is used or determined to measure the activities time of needle of a sewing machine.

$$\text{Utilization Factor} = \frac{\text{Hourly production} \times \text{SPI} \times \text{S.L} \times 100}{\text{RPM} \times 60}$$

Here,
SPI = Stitch Per Inch.
S.L = Stitch Length.
RPM = Rotation Per Minute.

In my training time I measured some processes utilization factor like Neck Joint, Neck Top Stitch of Style No- AMPS 01.

Utilization Factor of Neck Joint:

$$\text{U.F} = \frac{80 \times 12 \times 7.1}{3000 \times 60} \times 100$$

$$= 3.79\%$$

Utilization factor of Neck Top Stitch:

$$\text{U.F} = \frac{80 \times 12 \times 13.5}{3000 \times 60} \times 100$$

$$= 7.2\%$$

- Production study:

Production Study is another important work to maintain production flow in sewing line. During my training period we did a production study.

Time Study

Time study is another important work to maintain production flow in sewing line. During our training period we did a production study.

Chapter TEN

Finishing & Packing Department

Finishing & Packaging Department:

In finishing and packaging section products are treated with finishing parameters and after that they will be packed with different size poly and cartons against buyer's choice. In Spider Group there are two finishing and packaging sections for two different industries. One is for Bottom Gallery and another is for Trouser world Bangladesh Limited.

Finishing process:

Finishing input (style, color & size wise)

↓

Initial quality check

↓

Spot Removing

↓

Ironing/Pressing

↓

Inspection

↓

Hang tag

Get up change

↓

Folding

↓

Poly

↓

Bar code (buyer wise sticker)

↓

Metal check

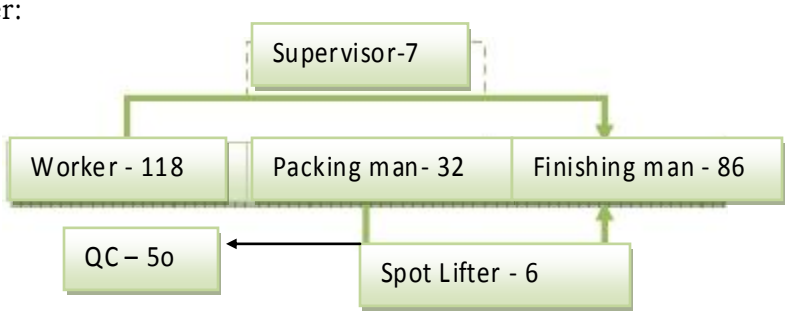
↓

Cartooning/Packaging

↓

Final inspection by buyer

- Man Power:



Machine or Instruments used in Finishing Section:

- Iron machine: 24
- Sucking Machine: 2
- Needle detector Machine: 1

Table Measurement:

Finishing Table: 5	Iron table: 24	Extra iron table: 2
Length- 840 cm	Length- 120 cm	Length- 160 cm
Width- 130 cm	Width- 80 cm	Width- 120 cm
Height- 90 cm	Height- 90 cm	Height- 90 cm

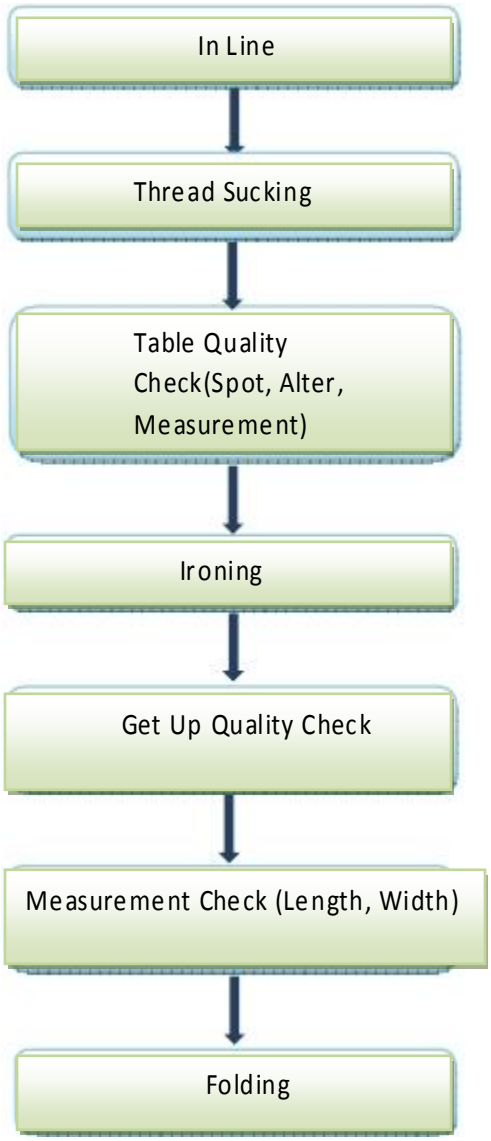
- Needle Detection Control Procedures:

A needle detector must be kept in a permanent location. The equipment must be re-calibrated by the equipment supplier if the detector is moved to another location. The equipment is preferably located in the finishing area such that the only access to the packing section is via the needle detector. This ensures that all garments, including repaired or re-inspected garments are passed through the needle detector to the packing section. This process also ensures rejected garments stay in the finishing area. The operator must ensure that the machine is checked and is in proper working condition before performing the process of garments/parts detection. It is critical that the operator does not fiddle or try to adjust the settings on the needle detector unless he is authorized and train to do so. Any garments/parts checked and to be returned to the sewing floor must be kept separately from the unchecked ones, in a clearly marked trolley to prevent mix up. After a needle fragment is found, the same garment/parts of a garment must be put through the needle detector once more. If it is not rejected, then they said item is returned to the sewing floor. Garments passing through needle detector must tally with the shipped quantity by style. This is made possible with the installation of a counter on the needle detector.

Ways of Packing:

- Assorted Color Assorted Size.
- Solid Color Assorted Size.
- Assorted Color Solid Size.
- Solid Color Solid Size.

Finishing Layout:



- Packing Carton Type:

There are two types of packing carton. They are-

- Inner Carton.
- Master Carton.

Fabric Quality Department:

Four Point Systems for Knit Fabric Quality Measurement

In knit fabric inspection system; most of the companies follow four point systems for measuring the quality of the knit fabric. There are various methods for measuring quality of the knit fabric but among all of the methods four point systems is preferable to the inspector of the quality.

- FABRIC INSPECTION PROCEDURE:

When inspection the fabric the position must be 45 - 30 degree between the eye to fabric checking. Check the lighting before start inspection:

- Over head CWF Lighting.
- Minimum 100 foot candle.
- At least 40 Watt x 4 light tubes.

Inspection using 4 point system

1st Inspection: Check the fabric 10% from each lot's.

2nd Inspection: Check the fabric 20% from each lot's if the 1st inspection is rejecting.

3rd Inspection: Check the actual fabric width and length, than comparing to the label attached on the roll of fabric and put in to the report ½"from fabric pin hole to hole must be to determine wastage (Cut table with). Fabric edge to edge must be measure to match again our fabric request (PO Fabric).

4th Inspection: Check the color lot by lot and comparing with the Fabric approved from the merchandiser. Make the blanket or pillow case if have the problem or special case needed.

Check the printing of fabric:

- Check printing quality.
- Check the size of printing.
- Check the color of printing.
- Check the position design.

Attached the catch eye thread color to the defect fabric (only for Major Point) for easy find when fabric laying in the cutting table. Preparing 2 yards each lot to see the shading color especially for the obvious color example: Red, Navy, Khaki.....etc). Check the shading color with following:

- Check between edge to edge (Width fabrics).
- Check between edges to center.
- Check between ends to Center and pass to the lab department for testing.

- Cut at least 3 yards if any shading color, and pass to the supervisor.

Four (4) – Point system for knitting fault inspection:

During inspection, if the inspector found any knitting faults then he marks it in the fabric and counts it in the sheet. During inspection, following points are considered.

Knitting fault	Points
Slab	1
Any hole	4
Needle or sinker line	4
Needle breakage (up to 10)	4
Press off	4
Thick, thin, dirt, oil sport contamination up to 3" in length	1
Thick, thin, dirt, oil sport contamination up to 6" in length	2
Thick, thin, dirt, oil sport contamination up to 9" in length	3
Thick, thin, dirt, oil sport contamination above 9" in length	4

- POINT CALCULATION:

Once the rolls are inspected, the Points per 100 Square Yards or Meter must be calculated to determine acceptability of the roll and / or shipment. The formulas for the calculations are shown below:

For Individual Roll:

$$\text{Points per 100 Square Yards} = \frac{\text{Total Points for the roll} \times 3600}{\text{Inspected Yards} \times \text{Cut table Fabric Width Cinch K}}$$

$$\text{Points per 100 Square Meters} = \frac{\text{Total Points for the roll} \times 100{,}000}{\text{Inspected Meters} \times \text{Cut table Fabric Width CMMK}}$$

Remark: If the result less than 25 point fabric is acceptable and if over than 25 point fabric is reject / unacceptable.

- Relaxing Fabric:

All fabric must be check and relax in one job Time start / end must be recorded during relaxing the fabric roll by roll Minimum Relaxed is 24 hours and 48 hour's for the spandex. Do not stack too high / rolls relaxed fabric, due giving pressure for below fabric been relax naturally. Don't mix up the fabric with other's style or other's color when relaxing the fabric.

- Fabric grading:

Grading of fabric quality according to penalty points,

Penalty points are based on the length of defects measured in inch,

Fabric inspection is only on one side of fabric and is based on fabric width of 64-66 inches (knitted fabric) four penalty points per linear yarn up to 64/66 inches in width,

The quality shall be expressed in the number of penalty points per 100 yarn length.

Cutting Quality Department:

- CUTTING INSPECTION:

Relaxing Fabric:

Fabric relaxing control, Make sure the batch timing minimum 24 hour's and spandex minimum 48 hours before laying the fabric to the cutting table After the fabric laying in the cutting table must be relaxing again minimum 2 hour's Fixing the thread defect from the fabric inspection. Make sure fabric defect have the replacement before cutting. Make sure fabric laying are aligned from the bottom to the top, especially the fabric with stripe it's must be aligned stripe Checking marker, compared with the hard paper pattern Checking the marker, panel position must be even direction, before cutting. Check if the brush fabrics are laying at one direction. Control spreading high 7 inch maximum 10 inch, depend on the fabric character. Make sure fabric laying are not mix-up lot or mix-up color After cutting, perform visual and measurement before bundling to ensure for wrong size of cut panel been mixed. Check the cutting panel with the hard pattern, on Top / Middle / and Bottom. If any problem call the QC supervisor to settle the problem, or call the QM if needed make taken Action Report if found 5 piece garment with the same problem. After cutting, perform visual and measurement before bundling to ensure for wrong size of cut panel been mixed. Lot / group by group must be inspected by in house cutting QC with record to chop approved on cutting list. Top to bottom ply, hard pattern to cut piece] & against paper pattern Inspection record must state layer no, no of ply, cutting qty, supervisor sign QC will do grouping before bundling. To be considering due too big a group checking if the brush fabrics are laying at one direction. Random inspect cut panel grouping before proceeding to bundling.

Chapter ELEVEN

Quality Department

Printing & Embroidery Quality Department:

Printing Inspection:

Check the design of printing, compare with approval or picture. Match the color of printing, compare with approval. Checking color variations and position of printing compare with approval. Check the size of printing, compare with the approval or spec requirement. Check the position of printing, compared with approval or spec requirement. Check the quality of printing, compare with approval. Checking the quality of paint, make sure the quality is ok Send to laboratory for test the color fastness, every lot's 1 set.

Embroidery Inspection:

Check the design of embroidery, compare with approval or picture. Match the color of embroidery, compare with approval. Checking color variations and position of embroidery compare with approval. Checking the size of embroidery, compare with the approval or spec requirement. Check the position of embroidery, compared with approval or spec requirement. Checking the quality of embroidery, compare with approval. Checking the quality of yarn, make sure the quality is ok.

Sewing Quality Department:

Quality section is the main section for sewing department. After completion of a garment according to its style it is necessary to check the quality of that product. Because if quality is maintained properly order shipment will then be successfully done.

- Manpower:

Manpower list according to line wise is given below-

Audit quality: 2

Line 01: 5 Line 07: 6

Line 02: 7 Line 08: 6

Line 03: 4

Line 04: 6

Line 05: 5

Line 06: 6

In Line Quality:

In line quality check is the best quality check in a garment production line. It is basically the process to check the quality of a product during the products operation. Usually supervisors are involved to check the quality of a product in a line.

- In-Line Inspection Procedure:

In-line Inspection procedure Checking the preparation, make sure are completed in hand:

Pre – production sample + comment from buyer. (Must be Hanging on the top of table end line QC) Worksheet + Sketch and Trim Card sewing accessories completed (Main label, Care label, Thread ...etc) All details must be on the table end line QC. Mock Up must hang in to the operation machine (Exp: Pocket mock up – hanging in machine operator making the pocket) Please make sure the Template must be correct and already prepare before start production. (If needed) Controlling the quality garment and double check the accessories use and placement. Control the properly when starting pilot run and make sure the production in charge understand how to handling. Before start on bulk production monitor individual quality sewing operator progress. Check the SPI and make is correct following buyer request.

If any problem, call the sewing supervisor and the garment technician to solving the problem as soon as possible.

If found the problem QC must be attend in the place until the operator improved (Corrective Action).

After 10 minute from improved time, qc must be check again to ensure is really improved.

If any problem found for the machine call the mechanic to rectify the machine and rectify the garment.

If 10 – 15 minute the machine still not properly working give advice to the mechanic for change the machine immediately. Due to will be effect to the output quantity.

Random check the size component and position is correct.

Random check the accessories using and position are correct.

Make the report minimum 2 times / shift and pass to the supervisor.

If any problem found with the production in charge call the QC supervisor to settle immediately, or call QM and FM if needed.

During preproduction meeting, QC Supervisor has to draw out garment/diagram and identify critical position with description for inline QC & checkers easy understanding.

[Diagram with local language] Inline QC to emphasize control at every critical point and every operation at least 6pc measure operations require specific spec inline QC to follow up with every operation from sewing loading.

Audit operation, by operation [audit more on critical point] until end line / complete garment.

Inline QC, QC supervisor, twice daily to acknowledge audit report To enforce understanding among QA and communication link with supervisor line.

End Line Quality:

After sewing there is process or arrangement of quality check of that product which is known as End Line Quality check. In this process overall quality will be checked after sewing process.

- End-Line Inspection Procedure:

Overall Inspection:

Check the critical measurement 5 point; draw out measurement on the end line table.

Check overall finish garment workmanship.

Random check the sewing accessories and position, make are correct.

Totally ensure the dye lot, and not shading color in 1 garment.

Check the critical point (exp: Button Stitch, Zipper not Sharper...etc.

Check the printing or embroidery quality if needed.

After inspect separate the garment into the zone classification:

- ZONE A = Garment with the good quality.
- ZONE B1 = Garment need repair in the production line.
- ZONE B2 = Garment need repair due to measurement problem.
- ZONE C = Garment need cleaning in the cleaning room.
- Zone D = Garment with defect and can't repair (B Grade).

END-LINE INSPECTION

Measurement Check:

Random check the measurement for all point and if any problem on some point need 100% check for the point problem. (Please refer to the QC / QA Job Scope on Page 5 Quality Product Manual).

Make sure no problem for the critical measurement. (5 critical point)

- TOP:

1. Body Length 2. Neck Width / Minimum Stretched 3. Chest Width 4, Armhole 5. Sleeve Length.

- BOTTOM:

1. Waist Band Width 2. Front / Back Rise 3. Hip 4. Inseam / Out seam 5, Bottom opening

Remark:

End line QC must be helping the In-Line Qc when the 1st start pilot runs or when production starts. Classify the garment by zone with record zone. Make the report 2 times / shift and pass to the supervisor. If any problem found call the QC supervisor to settle immediately, or call QM if needed.

- Barrier/ Process Quality:

There are some arrangements to check the quality of some of the process in a line of a garment production. Usually critical processes are checked after its completion and if there found any wrong then it will go to the operator for rework.

- Quality Audit:

Quality audit is usually done by AQL system checking process where every type of checking is done of a garment. In Spider Group 1.5 AQL is used.

- Audit Inspection:

1. The garment has been finish packing 10% (carton output) from the total qty.

2. The garment has been finish packing 30%.

3. The garment has been finish packing 50%.

4. The garment has been finish packing 80%.

Remark:

1. If the quantity order over than 1000 carton, inspection based on daily finish carton output.

2. Every inspection takes 5 - 10% carton from the quantity finish packing.

3. The grouping carton has been pass audit separate from the new carton added and those no need to again when taken next audit.

4. Check the shipping mark, and all the accessories packing including position.

5. Check the folding as per buyer request or follow the packing approval.

6. Check the assortment size / color as per buyer request.

7. Checking the Ironing quality.

8. Ensure the garments are not dirty, oil stain, poor trimming....etc.

9. Check overall quality for washing.

1o. Check the all accessories and the position.

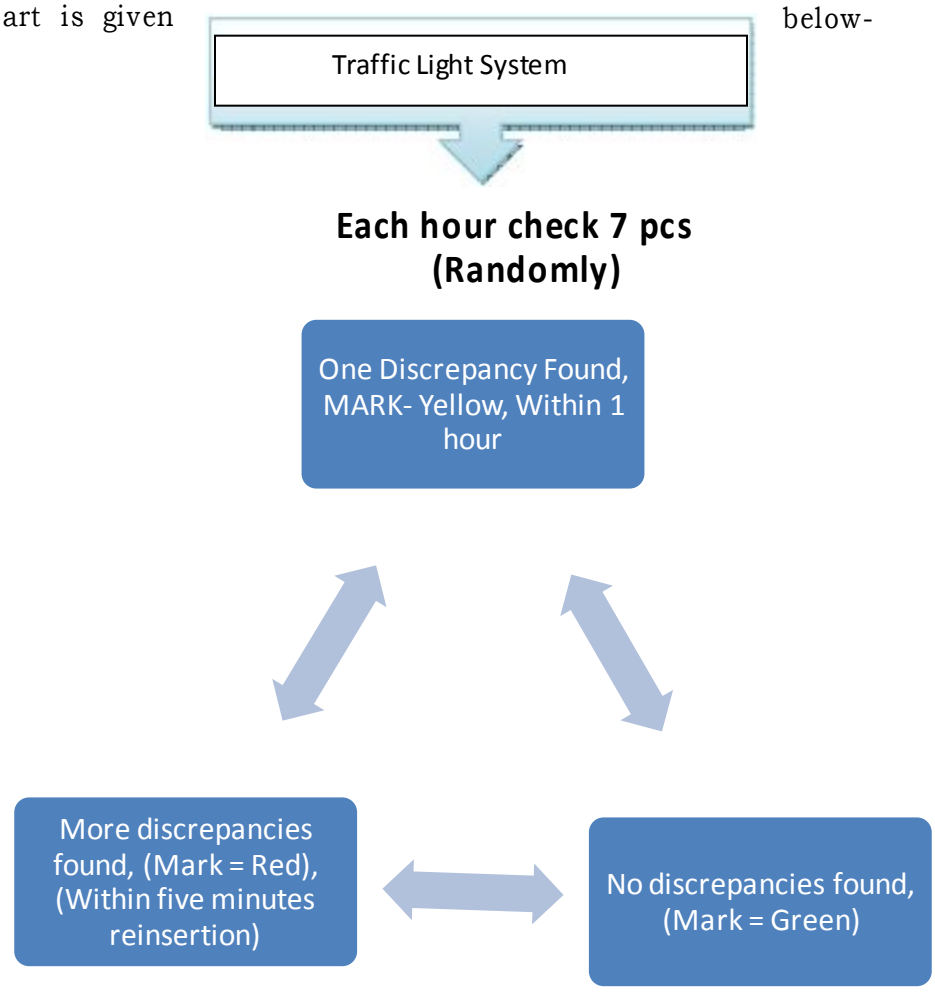
11. Check overall garment workmanship.

12. Check the measurement all point measurement minimum 5 pc / size / color.

13. Inspection using AQL 1.0.

Traffic Light System:

Traffic light system chart is given below-



AQL STANDARD: AQL standard as followed:-

For appraising critical visual defects,

- For OCR / Ticket Defects.
- Or for appraising Major Visual Defects (varies by division).
- For appraising Major Measurement Defect Please refer to Page 26 of Quality Product Manual.
- 2.5 For appraising Minor Visual Defects.

[**Note:** QC does not imply that our product has the right to set any defective allowance].

Definition of Critical Defect:

A critical defect is defined as anything potentially harmful to the product user Sharp points / edges Broken, needles loose components, other foreign items Result of finding a critical defect, the audit automatically fails and the entire lot to be inspected.

Finishing & Packing Quality Department:

- FINISHING-PACKING INSPECTION:

Verify needle control and safety procedures, refer Needle detector calibration log daily Metal contamination detection log per PO While performing the visual audit any defects as follows will be counted as a major defects in the visual audit:-

Check the function ability for on snap button, button and zipper ~ 10%

- Incorrect size strip.
- Incorrect flasher.
- Incorrect [wrong size] of logo label.
- Incorrect non-OCR [bar coded] price ticket.
- Incorrect items are coordinated the size and style.
- Incorrect quantity.
- Carton labeling errors.
- Incorrect previous pack.
- Assortment.
- Amounts.
- Pre pack stickers.
- Carton no as specified [size and construction].
- Crushed or damaged cartons.
- Use of wire or metal strapping to strap cartons.

Chapter TWELVE

Marketing Department

Marketing and Merchandising Department:

The word "Merchandising" means buying, producing and selling of any goods or products or services for the local or international market. If we combine this two English term "Garment Merchandising" then the meaning of "Garment Merchandising" becomes like the following definition-

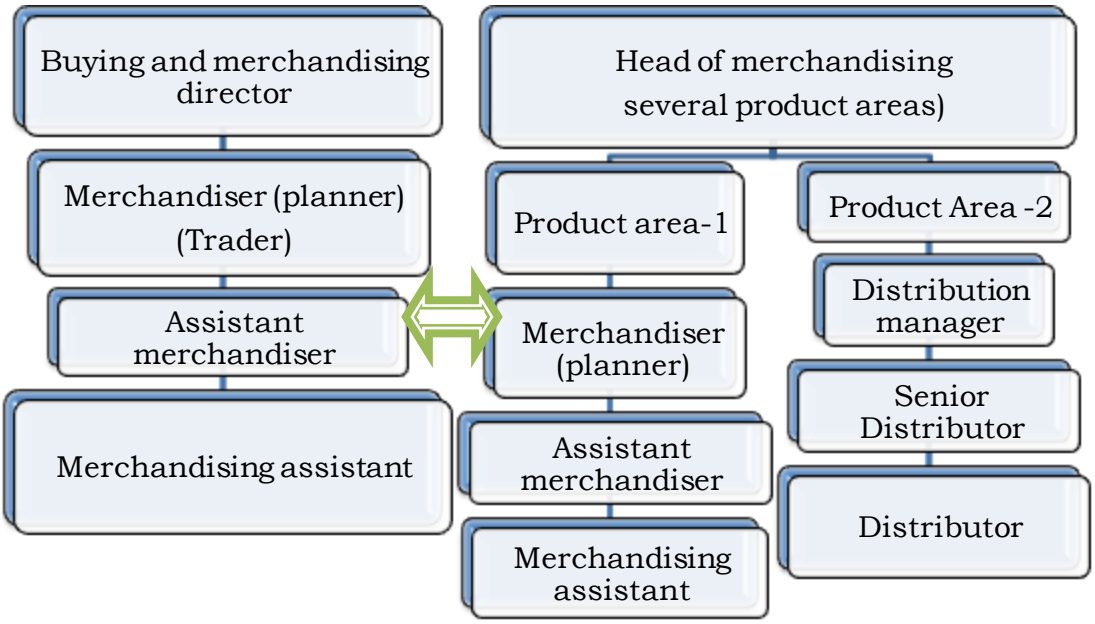
Garments merchandising is a recipe with huge contents. It means all the activities such as getting export order of any garment of any particular design for a specific quantity, analysis the garments to produce, production of those quantity of the garments with specific concentration to standard quality level which is given by the Buyer or Consumer, production scheduling and finally exporting the garments within fixed time frame, is known as "Garments Merchandising". So, from the above definition of "Garment Merchandising" it can be assumed clearly that all the activities which have already mentioned the above is not so easy to handle. But all the above activities are done by a smart and energetic person who is known as a "Garment Merchandiser". The "The Garment Merchandiser" is one of the key people of RMG sector. In this company merchandising is divided into two plans. They are, Marketing Merchandising unit and Factory Merchandising unit. The order confirmation depends on the marketing department. Merchandiser serves as middle man between buyer and manufacturer. Manufacturer are very busy, they don't have time to talk to buyers. So in between merchandiser provide service. Manufacturer face problem during production like strike, hartal, leave or sickness of labors, so production hamper. So Merchandisers have to have very good communication skills. As had to communicate both with Factory and Buyers. Buyers place order to Merchandiser and Merchandiser involve factory to produce goods.

Merchandising means acquiring order from buyer by applying different marketing tools and to execute the order by sourcing different raw materials according to standard of buyer & by following stated production process and maintaining quality within the specified lead time producing the goods & making necessary arrangements to surrender the goods to buyer, by collecting payment & feedback closing the file – is called the merchandising.

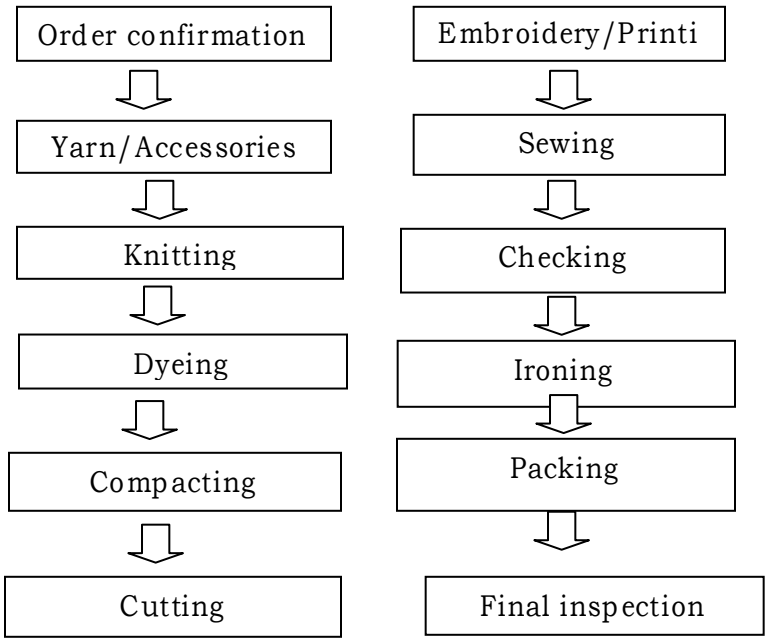
Objectives of Merchandising:

- Increase sales volume.
- Increase revenue.
- Achieve or increase profits.
- Increase or maintain market share.
- Eliminate competition.
- Achieve advantages of mass production.
- Factors influencing price-determination.
- Production and distribution costs.
- Substitute goods available.

- Oregano gram of merchandising department:



- Flow Chart:



General procedure of merchandising and production system in garments:

Order confirmation & preparing TNA calendar: At first the merchandiser takes a sample or sketch & then from that sketch & measurement sheet send to sample room department to develop the sample. Afterward the ready sample send it to the buyer for at first confirm the order. In the mean time the merchandiser have to make a time & action calendar for monitoring the whole order.

Fit sample submission: For the coordination of Sample room & product development department the merchandiser have to submit a Fit sample to the buyer. Fit sample is send it to buyer to check if the fitting of the garment is ok or not only on the dress form but also on model in motion, necessary modification should be done to the pattern & then sample must be prepared to achieve quality & Fit. So satisfy target group. Unusually the Fit sample is made in using alternative fabric & accessories & it is made in mol whichever comes at the middle of the export order sizes. For example: if the export order sizes are S, M & L, the Fit sample will be in M size.

Fit sample approval: After submission of the Fit sample merchandiser have to take approval from the buyer about the fit sample that is also called Fit comment.

Lab-dip submission: Buyer gives the color plate from that color plate merchandiser have to submit a color plate which will match with the color plate given by the buyer. That is called lab-dip submission.

Lab-dip approval: After submission of the Lab-dip merchandiser have to take approval of lab-dip from the buyer.

Receiving the Master L/C: After approvals of the style the buyer comes to negotiate the order price or cost. After the negotiation the merchandiser have to collect the master L/C from the buyer to execute the order.

Yarn/Fabric/Trim booking placement: After getting the master L/C, with in 48 hrs. Merchandiser has to give booking of Yarn/Fabric/Trim from the source of supplier.

L/C opening for Yarn/Fabric/Trim bookings: Than merchandiser have to open the B/B L/C for Yarn/Fabric/Trims for booking confirmation & give the order as per consumption.

PP sample submission: Pre-production sample have to submit to buyer before go for the Bulk production. That means with original fabric & accessories using the PP sample is made. This sample represents the fabric & accessories used in bulk production. PP sample should include all the colors of the style.

PP sample approval: The buyer checks the PP samples & after the buyer gives approval on PP samples then merchandiser execute run for the bulk production of the order. This approval not only for size, fit & workmanship but quality of texture, color, accessories as buyer required.

Trims submission: Trims/Accessories submitted to buyer as per requirement for approvals.

Trims approval: Than merchandiser have to take approval of trims from the buyer.

Yarn/Fabric/Trims in-house date: Than the merchandiser give a dead-line to the suppliers to in-house all the yarn/fabric/trims to the factory as before the bulk production starts.

Inventory of received Yarn/Fabric/Trims: Merchandiser have to send an inventory report to the buyer that all the received yarn/fabric/trims are ok & ready to use for production.

Bulk Fabric/Test reports submission: Merchandiser has to make a test report of the bulk fabric & submitted to buyer before start bulk production.

Bulk Fabric/Test reports approval: Merchandiser has to get approval from the buyer about the bulk fabric test reports to go for the bulk production.

Pre-Production Meeting/Trial Run/Pilot Run: In this meeting everybody concerned with the style sits together to make sure that everybody is on the same page and understands the product. Hence, this meeting has the merchandiser, production in-charge, cutting, finishing, fabric in-charge, line supervisor, pattern master, sample master etc. All tentative problems are discussed and solutions sought to execute the order smoothly. Once pre-production meeting is done the factory does PILOT RUN. Factory cuts 100 – 200 garments based on the order quantity. The pilot run is done on the assembly line and is aimed at ensuring that the operators of the assemble line understand the required quality levels. This is very essential since all samples prior to the pilot run (fit samples, PP & size set) are made in the sampling unit. Once PILOT RUN is approved the factory goes into bulk production. In line and interim inspections are preformed during the production process to ensure that the final product quality meets the required quality level. In the other hand PP meeting can be done between the production manager, planner, merchandiser & buyer. PP meeting is basically for made confirm or negotiation between buyer & the merchandiser & production manager that assuring that the style of this respective volume will be produce in this dead line. If sometime the style is very difficult or critical than the production become slowly in that case if buyer need to hurry about the production than there is some modification comes up. For example there may be some modification on the style, there may some modification on the shipment date, and there may some modification on the production line balancing. All the terms & conditions are considered during the pp-meeting.

But pp- meeting is basically a meeting is for making a solution about the problems on the production. Finally it is a meeting of negotiation with the buyer where the buyer gives the decision or his requirements of shipment with solving the problem of the garment production shipment.

Bulk Production: After the pp-meeting when the merchandiser gives the green signal than the production manager go for bulk production or actual quantity for producing goods.

Test of Production Sample Submission: When the production started on the factory than the merchandiser collect the production sample from the bulk production line & test the production sample that every requirement of the buyer is being fulfilled or not & assure that the garment is producing on the highest mark or not. Than the checked sample merchandiser has submitted to the buyer for production approval & waiting for the comments.

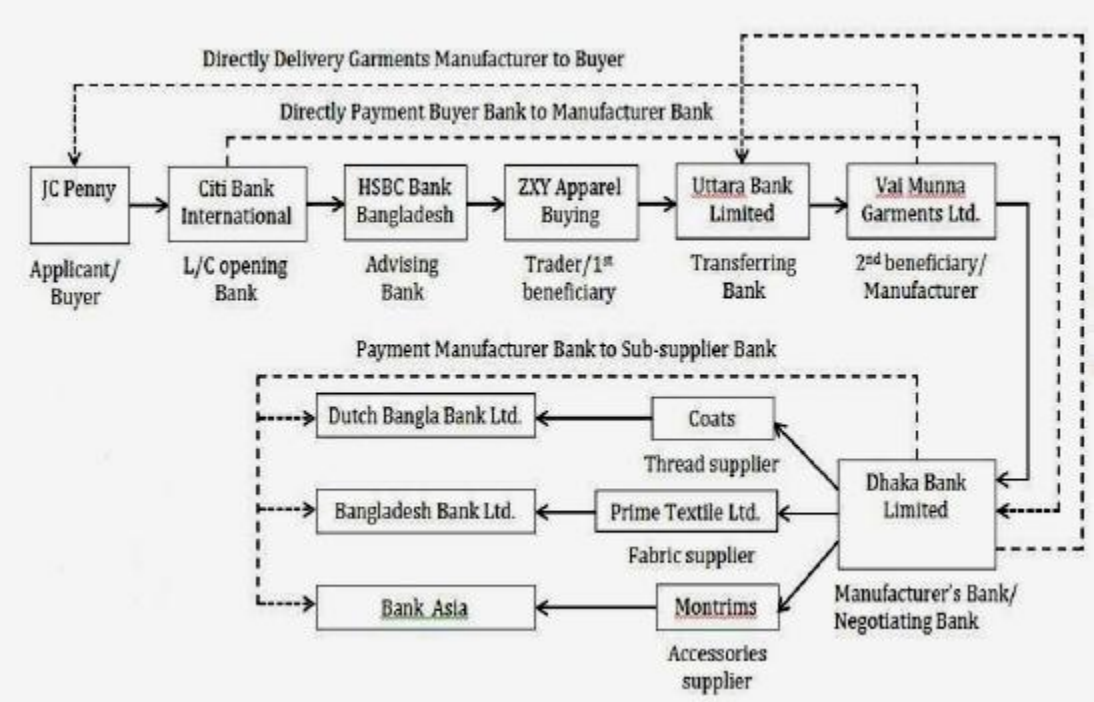
Top Sample Approval: Buyers gives his/her comments or approval on the Test of Production sample.

Final Inspection: When the buyer comes for the final inspection than the merchandiser have to stay with the buyer to assuring & convincing the buyer that the quality of the garments are as per the requirements of the buyer & it is a highest quality garment.

Ex-Factory Date: Ex-Factory date means when bulk production loaded on the container cargo & goes for shipping or on the way to port that is Ex-Factory date.

Cutoff date: Cutoff date means when the ship starts to sail from the port that is called cutoff date.

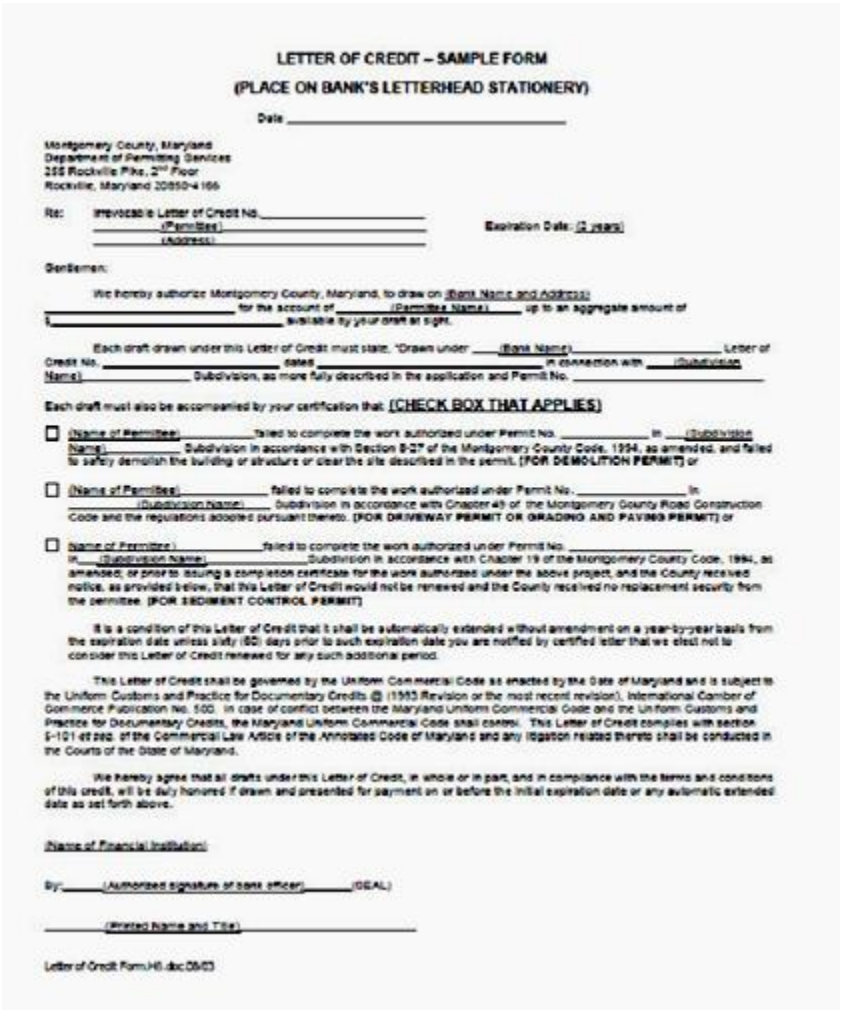
Receipt of Bill of Lading / AWB: For the individual order the merchandiser than collect or receipt of Bill of Lading from the buyer bank to the Beneficiaries bank. That is the last job of the merchandiser of that particular order.



P.O. sent by buyer: Full meaning of P.O is purchase order. It is sent by buyer when order is confirmed. P.O contains order no, date, supplier description, buyer name & address, factory name & address, product description, packing description, terms & conditions, various instructions & enclosed important papers. After receiving P.O, sales contact is written by factory.

Master L/C sent by buyer: It is a document which ensures the payment to the vendor on behalf of consumer for the consignment going to be shipped to the customer. On the other hand, T/T means Telegraphic Transfer. The orders and payments of such big deals are made through banks of corresponding countries. Each banks keeps the responsibility of the guarantee of the buyer and manufacturers purchase and delivery. Letter of credit (L/C) is made to ensure the total cost of the deal.

There are different types of L/C. The L/C that is given from buyer to the supplier is known as master L/C. This master L/C holds total cost of the deal. All other costs that is necessary for completion of the product such as importing raw materials or any other materials for that particular deal is made under that master L/C which is known as back to back L/C and is normally given from the supplier to the sub-supplier. There is sample of L/C is given below:



LETTER OF CREDIT – SAMPLE FORM

(PLACE ON BANK'S LETTERHEAD STATIONERY)

Date _____

Montgomery County, Maryland
Department of Permitting Services
255 Rockville Pike, 2nd Floor
Rockville, Maryland 20850-4166

Re: Irrevocable Letter of Credit No. _____
(Permittee)
(Address)

Expiration Date: (2 years)

Gentlemen:

We hereby authorize Montgomery County, Maryland, to draw on (Bank Name and Address)
_____ for the account of _____ (Permittee Name) _____ up to an aggregate amount of
$_____ available by your draft at sight.

Each draft drawn under this Letter of Credit must state, "Drawn under _____ (Bank Name) _____ Letter of Credit No. _____ dated _____ in connection with _____ (Subdivision Name) _____ Subdivision, as more fully described in the application and Permit No. _____"

Each draft must also be accompanied by your certification that: (CHECK BOX THAT APPLIES)

☐ (Name of Permittee) _____ failed to complete the work authorized under Permit No. _____ in _____ (Subdivision Name) _____ Subdivision in accordance with Section 8-27 of the Montgomery County Code, 1994, as amended, and failed to safely demolish the building or structure or clear the site described in the permit. (FOR DEMOLITION PERMIT) or

☐ (Name of Permittee) _____ failed to complete the work authorized under Permit No. _____ in _____ (Subdivision Name) _____ Subdivision in accordance with Chapter 49 of the Montgomery County Road Construction Code and the regulations adopted pursuant thereto. (FOR DRIVEWAY PERMIT OR GRADING AND PAVING PERMIT) or

☐ (Name of Permittee) _____ failed to complete the work authorized under Permit No. _____ in _____ (Subdivision Name) _____ Subdivision in accordance with Chapter 19 of the Montgomery County Code, 1994, as amended, or prior to issuing a completion certificate for the work authorized under the above project, and the County received notice, as provided below, that this Letter of Credit would not be renewed and the County received no replacement security from the permittee. (FOR SEDIMENT CONTROL PERMIT)

It is a condition of this Letter of Credit that it shall be automatically extended without amendment on a year-by-year basis from the expiration date unless sixty (60) days prior to such expiration date you are notified by certified letter that we elect not to consider this Letter of Credit renewed for any such additional period.

This Letter of Credit shall be governed by the Uniform Commercial Code as enacted by the State of Maryland and is subject to the Uniform Customs and Practice for Documentary Credits @ (1993 Revision or the most recent revision), International Camber of Commerce Publication No. 500. In case of conflict between the Maryland Uniform Commercial Code and the Uniform Customs and Practice for Documentary Credits, the Maryland Uniform Commercial Code shall control. This Letter of Credit complies with section 5-101 et seq. of the Commercial Law Article of the Annotated Code of Maryland and any litigation related thereto shall be conducted in the Courts of the State of Maryland.

We hereby agree that all drafts under this Letter of Credit, in whole or in part, and in compliance with the terms and conditions of this credit, will be duly honored if drawn and presented for payment on or before the initial expiration date or any automatic extended date as set forth above.

(Name of Financial Institution)

By: _____ (Authorized signature of bank officer) _____ (SEAL)

_____ (Printed Name and Title) _____

Letter of Credit Form HS.doc 08/03

- The work of merchandising:

- Studying potential target customer.
- Sourcing information about the customer and his profile.
- Sourcing foreign buyers.
- Negotiating orders, cost calculation, pricing, securing orders through master LC.
- Souring information about product. Its categories, styles, specifications, assortments, size details, etc.
- Study of fashion trend & fashion forecast in association with fashion designer.
- Sourcing fabrics, trims, & accessories. Placing order for the above materials & making regular follow up.
- Getting samples made, making costing & pricing of the same.
- Rectifying samples if necessary.
- Completing the whole sampling procedure as per requirement.
- Getting buyer's approval of the sample.
- Estimating lead time.
- Production & shipment planning.
- Follow up of customer instruction in respect of packing & packaging.
- Arranging product delivery on time. Follow up with the customer respect of shipment and payment against export order.
- Quick response follow-up in respect of any of the buyer's query.
- Product packaging.
- Signage.
- Location in the store.
- Shape, size, color, and other physical characteristics of the display.
- Advertising (in-store and other means).
- Discounts, prizes, or other promotional offers.
- Monitoring production & product quality.
- Making regular relation with customer.

Qualification of a good Merchandiser:

Good command in English and adequate knowledge of technical terms for accurate and efficient communication. Good knowledge of Fiber, Yarn, Fabric, Dying, Printing, Finishing, Dyes, Color fastness, Garments production, etc. Clear conception of the usual potential quality problems in the garments manufacturing. Good knowledge of the usual raw materials inspection system & garments inspection systems Knowledge of the quota system used in each of the producing countries duty rates, customs regulation, shipping and banking documentation etc.

Effective use of Costing in Merchandising:

Cost is the primary issue for most sourcing executive. Cost is the fundamental understanding to realize the profit or loss. Cost is the total amount of dollar invested in a production. Profit or loss of an organization is totally depends on costing. In a cost sheet have total manufacturing costs of producing an apparel product. In the cost sheet has the final calculation in determining the total cost for producing the garments.

Costing factor must be considerate in evaluating inventory such as:

The original cost of goods. The cost of maintaining inventory including interest on borrowed money restricted cash flow. The cost value is added to the original materials of standard materials so; costing is a very important for merchandising job. Moreover, profit and loss of a company depends on costing.

Consumption calculation for knit garment:

Formula,

$$\frac{(\text{Back length} + \text{sleeve length}) \times \frac{1}{2}\,\text{chest} \times 2 \times \text{GSM} \times 12}{10000000}$$

$$= \frac{\{(70+5)+(25+5)\} \times 60 \times 2 \times 145 \times 12}{10000000} \qquad \{\text{B.L} + \text{S.L} \times \text{chest} \times \text{GSM} \times 12\}$$

= 2.28 kg + 7%

= 2.28 kg + 0.159

= 2.439 kg [neck and sleeve are made rib so add 0.10]
All time collar in rib = (350-400)

Cost calculation:

Cost is divided in to:-

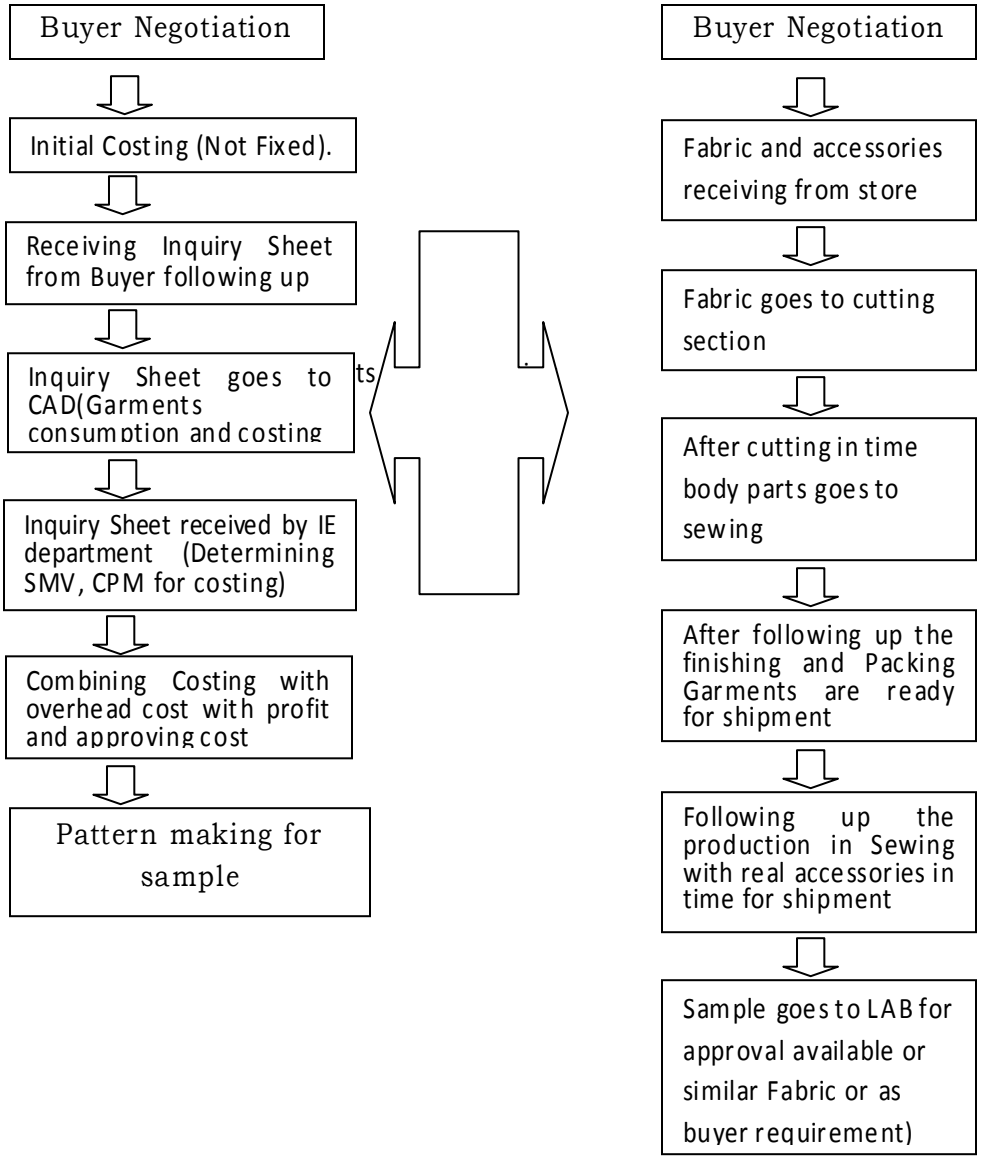
Pre- cost------- merchandiser.

Final costing -------- merchandiser + import section.

Garment: - $ 5.00 = cost.

Garment costing: - $ 5.00 + profit = costing.

Marketing Merchandising & Factory Merchandising:



Sample approved and order confirm And then goes to merchandising department for bulk production)

Promotion of merchandising with marketing:

Stages of a life cycle – Understanding a product life cycle is of major importance, as it tells you, when to market / merchandise effectively.

The stages are discussed below,

- INTRODUCTION STAGE – When a product or service is new. Merchandise it heavily to get the product or service to grow.
- GROWTH STAGE - If a new product is successful it will become accepted and popular with your customers, and enter the growth phase, these products should be merchandised regularly to maintain customer awareness and continue growth to the next stage – maturity.
- MATURITY STAGE - Once demand for a product has leveled out at its peak, it has entered the mature phase. Customers will know the product well enough to ask for it by name now, so you need only merchandise the product occasionally in order to maintain demand. Keeping your products at this phase is important, try to prevent sales erosion by monitoring constantly. Your ambition has to be to get and keep all your products at this stage
- DECLINE STAGE - Once demand for a product starts to decline, you must merchandise your products to establish whether the customer doesn't want your product or whether you have decreased your sales by not merchandising it enough. After merchandising you will know the answer. If your customer no longer requires the product as regularly as before, promote it to clear stocks. If sales are restored through merchandising, then you should treat the product as if it has returned to the growth stage.

Respect & Rapport - in merchandising the product is king, so if you saw Budweiser bunting draped over a radiator, or saw shoes merchandised above hats in a clothes shop, it wouldn't be showing a respect for, or a rapport with, the product itself. This could be reflected in your sales.

Seasonal Merchandising - Use notice boards, poster frames and banners to promote your festive fun using seasonal decorations, posters and color to catch your customer's eye.

Chapter THIRTEEN

Conclutions

Findings

On the basis of analysis and practical experience of internship period the following findings are observed:

Trouser World Bangladesh Limited has not own pattern designer. For this reason they depend on the buying house. It is time consuming matter. Production performance is not always very good. Sometimes they produce low production. Sometimes they delay to transfer the L/C to the buyer. Sometimes it takes more time. Sewing quality is not very good. Training and development program is needed here. Packing quality is not high qualified in all time. Sometimes it's may create problem buyers, satisfaction. HRM division is weak in this garments company. Sometimes merchandisers fail to negotiate. It is create problem sometimes.

Trouser World Bangladesh Ltd. has outstanding reputation in the global market for excellence. It is a composite factory where they have all the sectors of woven and knit item like spinning, knitting, dyeing, printing, embroidery, accessories, and garments production. So, this is huge in case of production and maintenance both. However, this huge organization is not facing profit due to many of reasons what I have observed from the internship period-

- Supply chain or procurement department is not very strong in this company which causes that the merchandisers procure all the raw materials of garments that's why they feel more pressure to complete shipment and some time also over the shipment date then company should pay the extra money for air shipment. So when supply chain department procure all the raw materials then merchandiser can easily shipment the goods within lead time.
- Planning department of operation should be strong and the time management should be followed. Here, productivity is low due to less command of the authority towards the production. It should be increased for the higher productivity.
- Quality assurance system should be modernized because quality is the top priority of all international buyers.
- Working environment should be increased.
- Pay scale is very poor which is needed to be increased because company will lose potential employees due to their policy.

Distribution of power should be well managed and transparency among the workers and the management should be followed.

In this report I examined the relationship between price, advertising and promotion, salary and merchandising performance of the Trouser World Bangladesh Limited. Using regression models, we found a statistically significant relation between price, advertising and promotion, salary with merchandising performance which was consistent with expectations.

Recommendation

Generally I have given the concentration on merchandising activities of Trouser World Bangladesh Limited. I would like to recommend the following areas that should be improved immediately to achieve the desired goals-

Instead of short-term relationship, Merchandisers need to develop long term relationship with the key parties – buyers, buying houses and suppliers etc.

As a newcomer industry, Trouser World Bangladesh Limited should always keep in mind that, customer retention is more important than customer attraction. If they can follow this concept then they will gain more.

Director should clearly share his mission with manager and all the staffs. Because a clear mission statement guides the employee to work independently and to achieve the organizational objectives,

As the industry is in a struggling position; it should frequently measure the annual growth rate through the growth share matrix, BCG (Boston Consulting Group approach) whether business is operating effectively or not.

Consultancy with garments expertise regarding the development strategies will be helpful to get more output.

Trouser World Bangladesh Limited should identify their position based on the product life cycle and the position of competitors so that they take corrective action to compete & stay in the business.

Trouser World Bangladesh Limited can establish their own design section and from there they can create unique and innovative products design for marketing. And in this purpose they can contract with professional fashion designer in Bangladesh and abroad to get the maximum results.

The industry can use internet as an efficient promotional tools for buyer awareness about their business. In this purpose they can develop their own website with detail information about their business.

It should allow its employees to participate in decision making process so that it will help to get more productivity & commitment to work.

The industry should establish a good salary structure & ensure the due time salary & wages.

Conclusion

The RMG sector is expected to grow despite the global financial crisis of 2009. As China is finding it challenging to make textile and foot wear items at cheap price, due to rising labor costs, many foreign investors, are coming to Bangladesh to take advantage of the low labor cost which is really a good sign for Trouser World Bangladesh Limited. Management of merchandising is a big job and is a complex one. The result of the study shows that there are a lot of steps that Trouser World Bangladesh Limited should undertake to improve their merchandising management in order to be successful. The study revealed that Merchandisers are the most valuable human resources for the progress of the organization. For the development of these valuable resources there are many factors involved. So to increase the productivity of an organization effectively, efficient Merchandising management is necessary.

I have completed my training period within 120 days in Spider Group successfully by the grace of Almighty Allah. This training sends me to the expected destiny of my professional life in RMG sector. After completing 120 days training period, I have known that Spider Group is one of the large textile groups with its huge garment production. During my training I got all kind of help from every department and give thanks to all of those people who really helped me during my work. Though it is very tough to get everything knowledge from all sectors in this factory but I tried myself to get all knowledge with my level best. I hope my report has already shows the overall training period overview. I am enough fortunate that I got an opportunity of having a training in this factory. During the training period I got co-operation and association from the authority full & found all man, machines & materials on appreciable working condition. All stuffs & officers were very sincere & devoted with their duties to achieve their goal. In conclusion I can say that this internship report is really essential for every student of business studies to get idea about textile industry. By completing this report I have got overall idea of RMG sector and these may be helpful to know about the technical and management knowledge of garments industry also these sector related organizations. This is a huge sector and yet to discover the whole.

I want to thank my department Head for giving me great opportunity of learning. This Internship program will help me in the further challenges of life. I try my best to make this project enriched with lots of apparel related documents. Spider group is really a good experience for me because every person of there so much helpful and give me the proper methods of practical learning. So, at last, there is a hope of eradicating all the obstacles and become the leader of garment industries in near future.