Daffodil Int. University
Department of Textile
Engineering Faculty of SIT

An Industrial Attachment Report – 2011

About Ananta Garments Limited

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Acknowledgement

At first we would like to thank Almighty Allah for giving us Strength to complete this report by this short period of time. We faced lot of problems to prepare this assignment paper because of lack of information and short time.

Than we would like to thank I would like to know thanks and grateful my honorable supervisor Asst. Prof. Mr. Mohammad Abdullah Al Mamun, who encourage us to prepare this report properly. Really it's a good way to increase our efficiency, skill, and knowledge about the Production, productivity & productivity improvement by watching different department of the organization.

We would like to thank our honorable Dr. Md. Mahbubul Haque, Prof & Head, Dept. of Textile Engineering, Daffodil International University, Dhaka, Bangladesh.

We would also like to thank Ms. Kakoly, Sr. GM, HR, Ananta Garments ltd. who gave us the chance to execute our internship at her organization. And we are very much thankful to Mr. Debabrata Bose, Jr. officer, HRD, Ananta Garments ltd. who supervised & instructed us in a decent way.

Than thanks to our friends who also acted attentively and responsibly together and all the members of every departments of Ananta Garments Ltd. they have been a real help in the time of our internship.

Objective of Internship program

The main Objective of study of this internship program is to achieve practical knowledge. We have need of practical knowledge about textile as well as specific departmental work such as Quality Control in various departments. An assignment can helps us to achieve this kind of knowledge. Only theoretical knowledge doesn't give the clear concept about the departmental activity. That is why we need practical knowledge.

We get huge knowledge to complete this assignment. We think the main Objective of this study is that to get earn practical knowledge about textile and overview of different machinery and equipment and their improvement practices of various companies and our textile industries and observe the overall activity of Ananta Group which is the one of the biggest garments factory in Bangladesh.

Internship program also gives us the idea of the working conditions of the industries of Bangladesh. This program also makes a student ready and capable of working inside the work flow of an organization. It creates responsibility in the students and makes them better as member of an organization.

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About Ananta Group

Ananta Garments Ltd. was established in the year 1992. Since then this company is playing a vital role in the country‘s economy. _Ananta‘ is a Bengali word refers to unlimited in english, this embraces the spirit of global trade. The company is dedicated to excellence in merchandising, product development, production and logistics. They have earned a reputation throughout the global apparel industry as one of the foremost factories in Bangladesh for their commitment to quality, timely delivery and total value. Through their extensive sourcing network, they have the ability to effectively procure the best materials. Customers rely on them to deliver the best quality products and superb service which enables them to successfully compete in the emerging market place. They are now one of the leading 100% export oriented garment industry of Bangladesh.

Fig1.01: Ananta Garments Ltd, Ashulia Factory

Ananta has a wide range of product development capabilities. Ananta utilizes progressive tools such as CAD-CAM to meet specific price points and achieve quality. Their management team has an extensive understanding of the needs of companies in

the West as well as production capabilities of firms in the East, making overseas sourcing easier. The Ananta companies, known as the ―Ananta family‖ focus entirely on the clothing Industry. The three production units and two marketing-sourcing-quality control units are Located in Dhaka, Bangladesh and Dallas, Texas. The plants have over 2,800 modern machines for total production capacity of between 52,000 to 54,000 dozen garments per month depending on items and style. 5,000 members of both production and management teams are dedicated to achieving the Clients‘ production goals.

All prospective customers are welcome to visit and evaluate the factories firsthand.

The Company at a Glance

COMPANY PROFILE

- Company Name : Ananta Garments Ltd.
- The Board of Directors : Amin Khan, Chairman
  E-mail: amin@bimpex.com

  Inam Khan, Managing Director
  E-mail: inam@ananta.com.bd

  Sajed Karim, Director.
  E-mail: sajed@ananta.com.bd
- Head Office Address : House no. 12, Road no. 12, Sector no 1,
  Uttara Dhaka 1230, Bangladesh
  Tel: (+880 2) 8923543, 8918386, 8918111,
  8913006 & 8912962
  Fax: (+880 2) 8912350
  Email: info@ananta.com.bd; sajed@ananta.com.bd
  Contact: Sajed Karim/ Inam Khan
  Cell: 01711-532282
- Factory address : Nischintapur, Ashulia, Depz road, Savar,
  Dhaka 1341 Bangladesh
  Tel: (+880 2) 7788318, 7789788 & 778084
  Fax: (+880 2) 7788319
  Contact: Sajed Karim, director
  Email: info@ananta.com.bd;

sajed@ananta.com.bd Cell: 01711-532282

- Established : 1992
- Ownership : Limited Company
- Bank : Islami Bank Bangladesh ltd.

Islami Bank Tower

40, Dilkusha C/A

Dhaka - 1000

Bangladesh

Tele: (02) 95630409560099, 9567161, 9567162, 9569417

- Production Capacity : 35,000-38000 pcs of 5 pockets denim per day
  52,000 to 54,000 dozen garments per month
- Markets : USA, Canada & 100% Europe
- Categories : Men‘s, ladies and children

- Product : Trousers, shirts, unlined jackets, overall/short all and school-wears.
- Factory Space : Total area of 4, 00,000 sft. and 9 production floor each of 40,000 sft.

Machinery

- Sewing : 3000
- Cutting : 15
- Fusing : 6
- Washing : 49
- Generator : 3 Diesel Generator

CUSTOMERS

Ananta customers are typically the top brand importers and retailers from the United States to the Western European countries, with year-round programs. Some programs are direct from stores while others are through importers for major retail chains.

Sample customers include:

Fig1.02: Ananta`s Buyers

USA : GAP International, Dickies, Sears, Khols, Hagger, Ivory International

Canada : Wal-mart Canada, Gloria Venderbilt, Loblows (JM&A)

Sweden : H&M

U K : Adams, George-Asda Store (Wal-mart), Woolworth, TU (Sainsburrys), Minimode, Crew Clothing

Netherlands : M & S Mode, Low Land Neevia

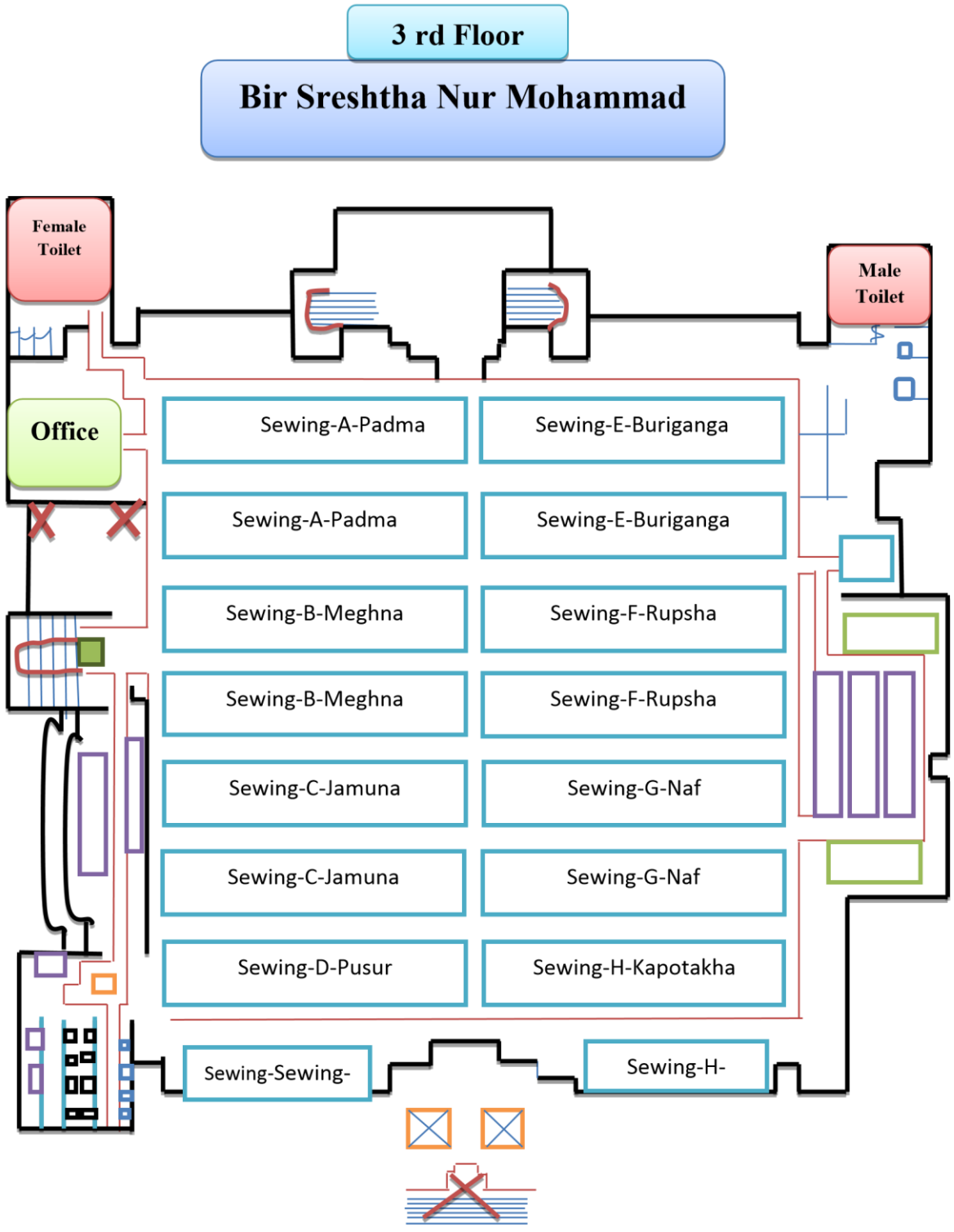
docConverter Asia : Lee & Fung

Ananta Garments Ltd. Achievement:

Fig 1.03: United Registration Certificate

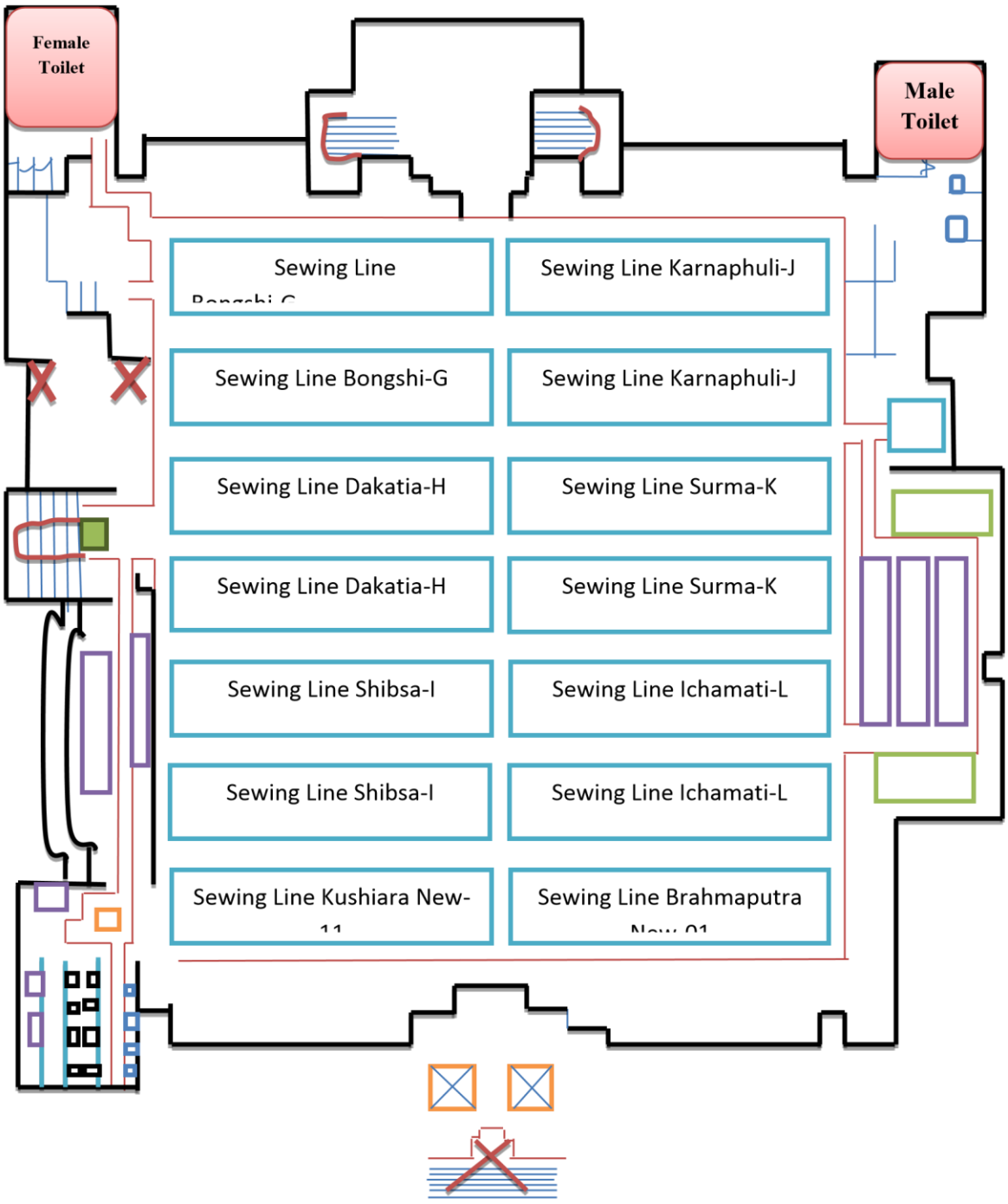
Fig 1.04: 19th BATEXPO'08 Award

Floor wise layout of Ananta Garments Ltd.:



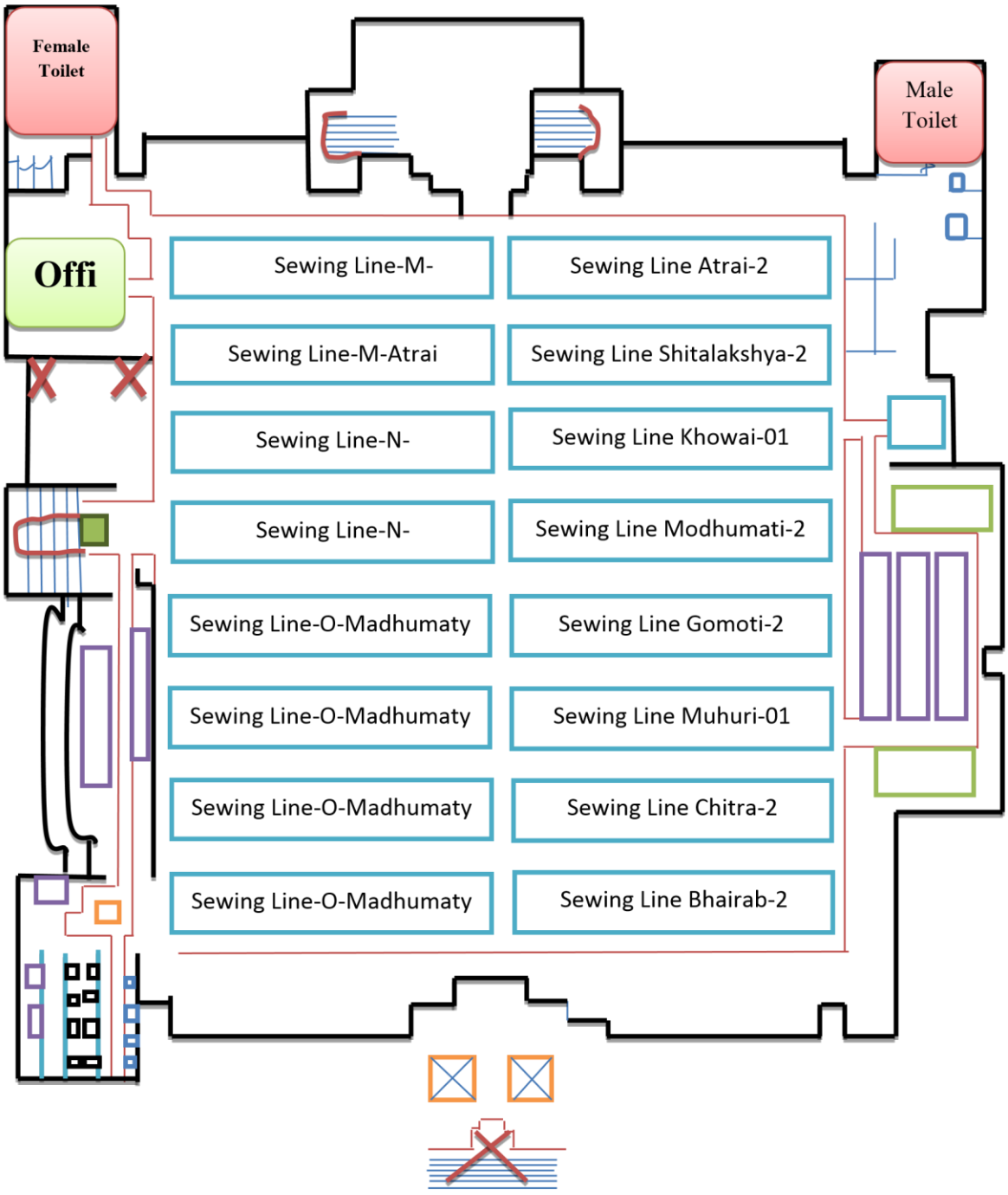
4th Floor

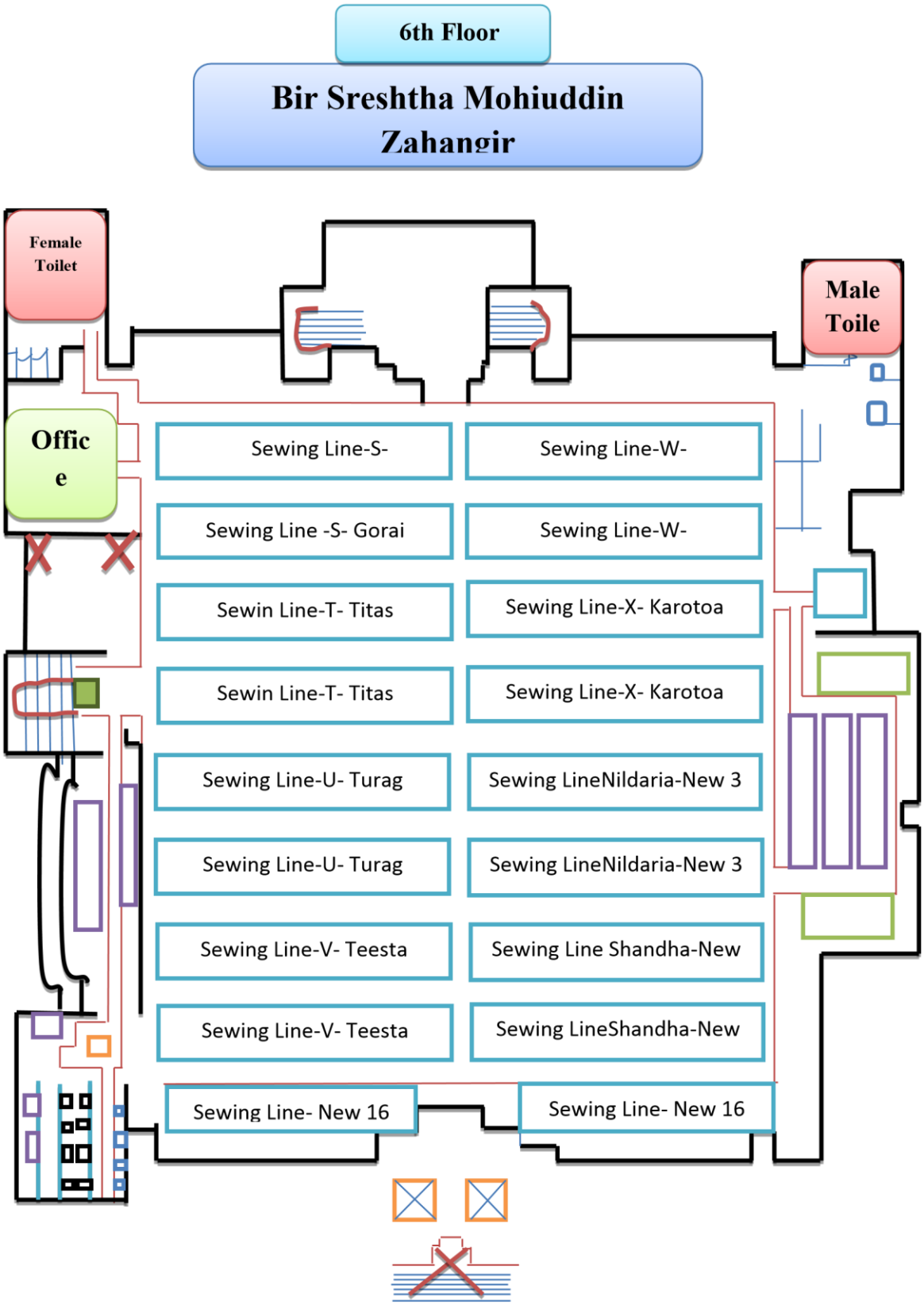
Bir Sreshtha HamidurRahman



5th Floor

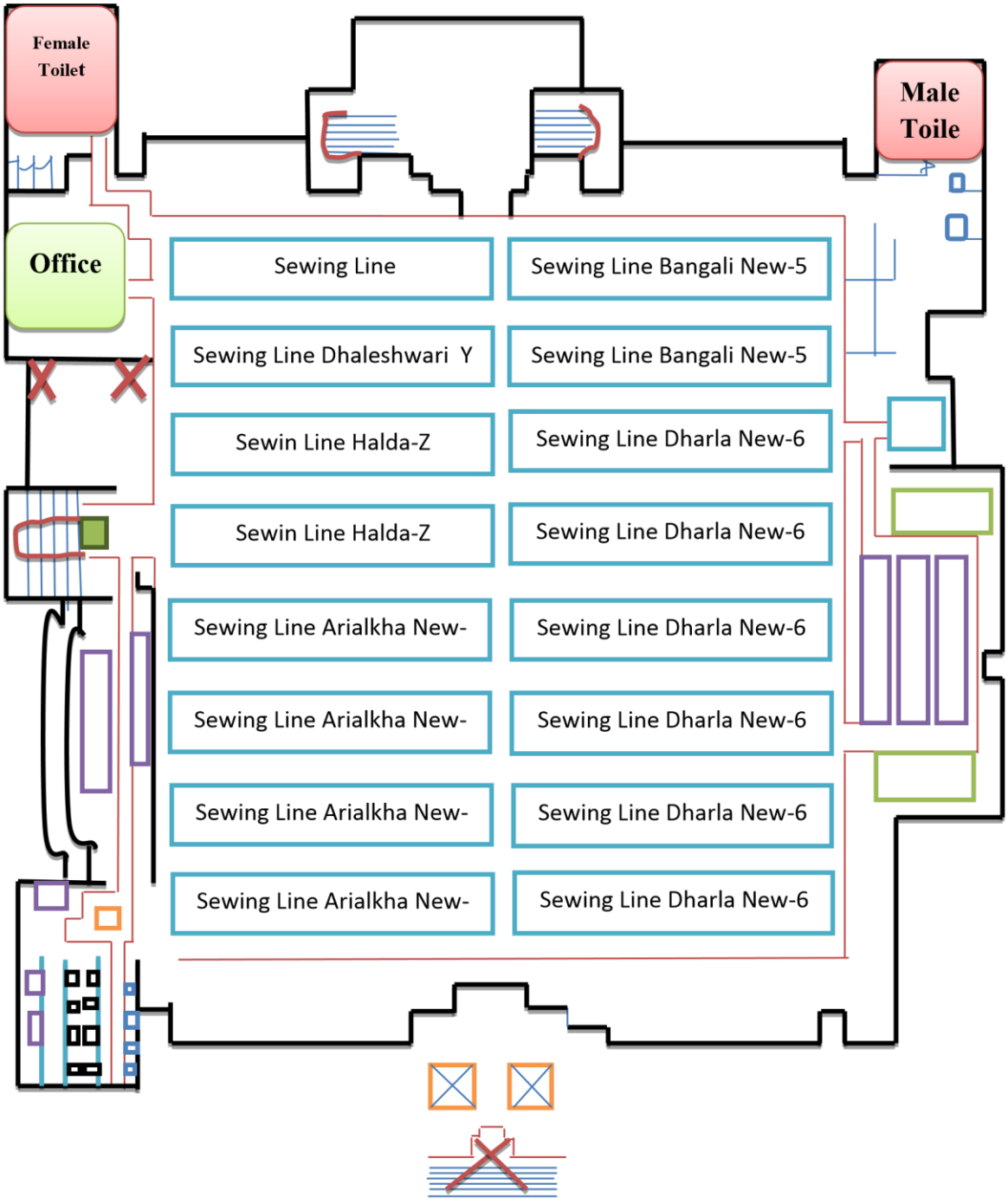
Bir Sreshtha Ruhul Amin

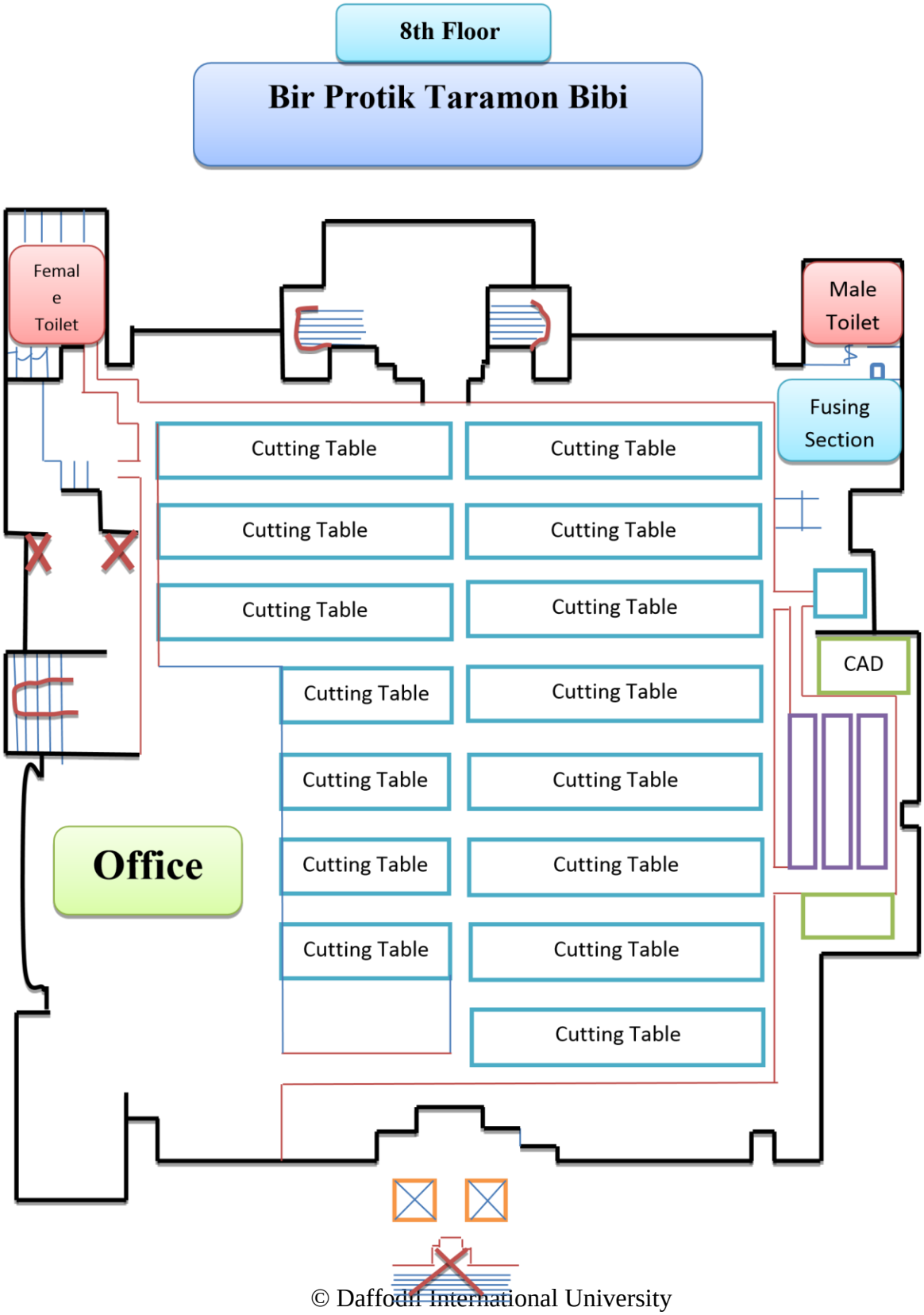


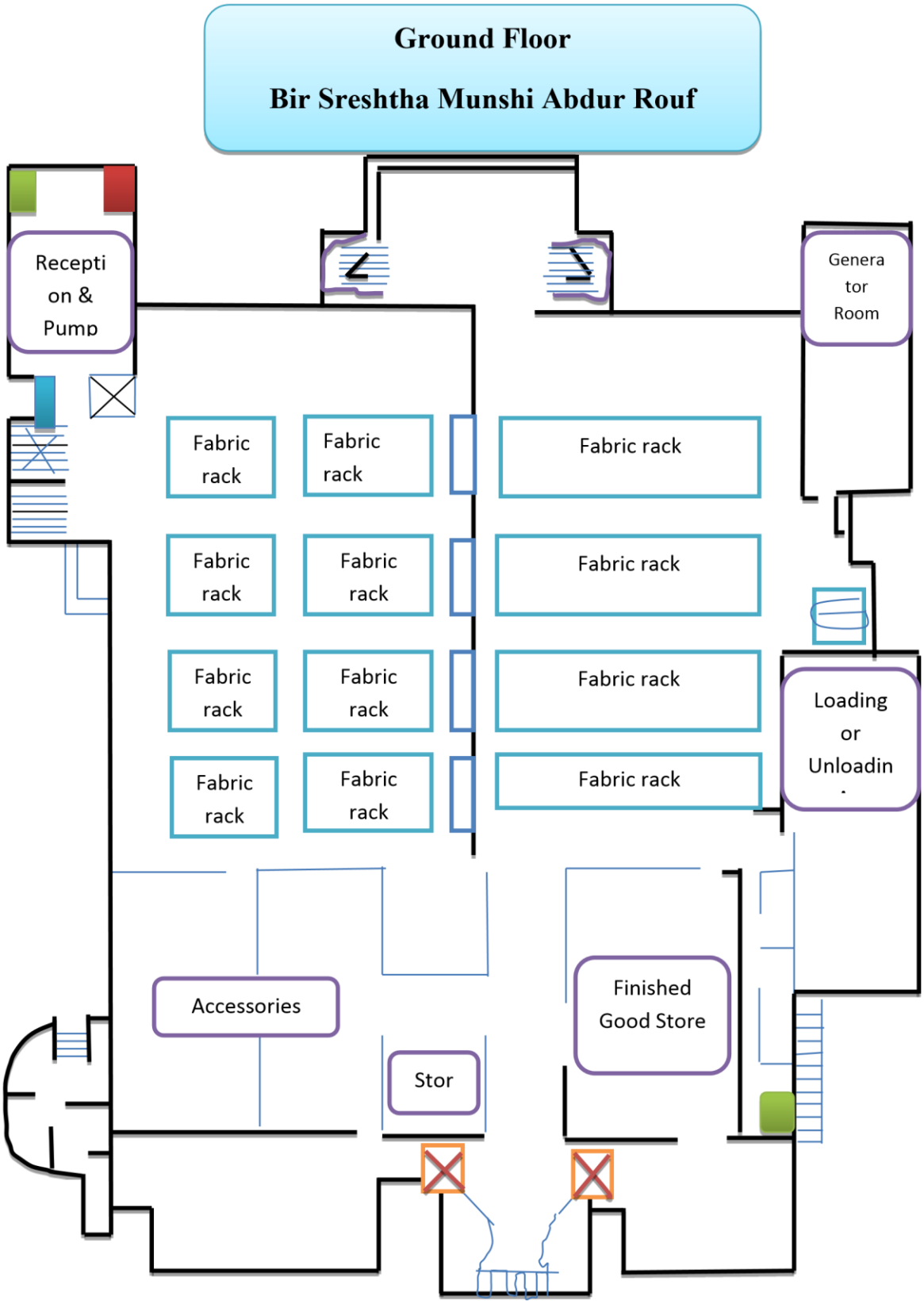


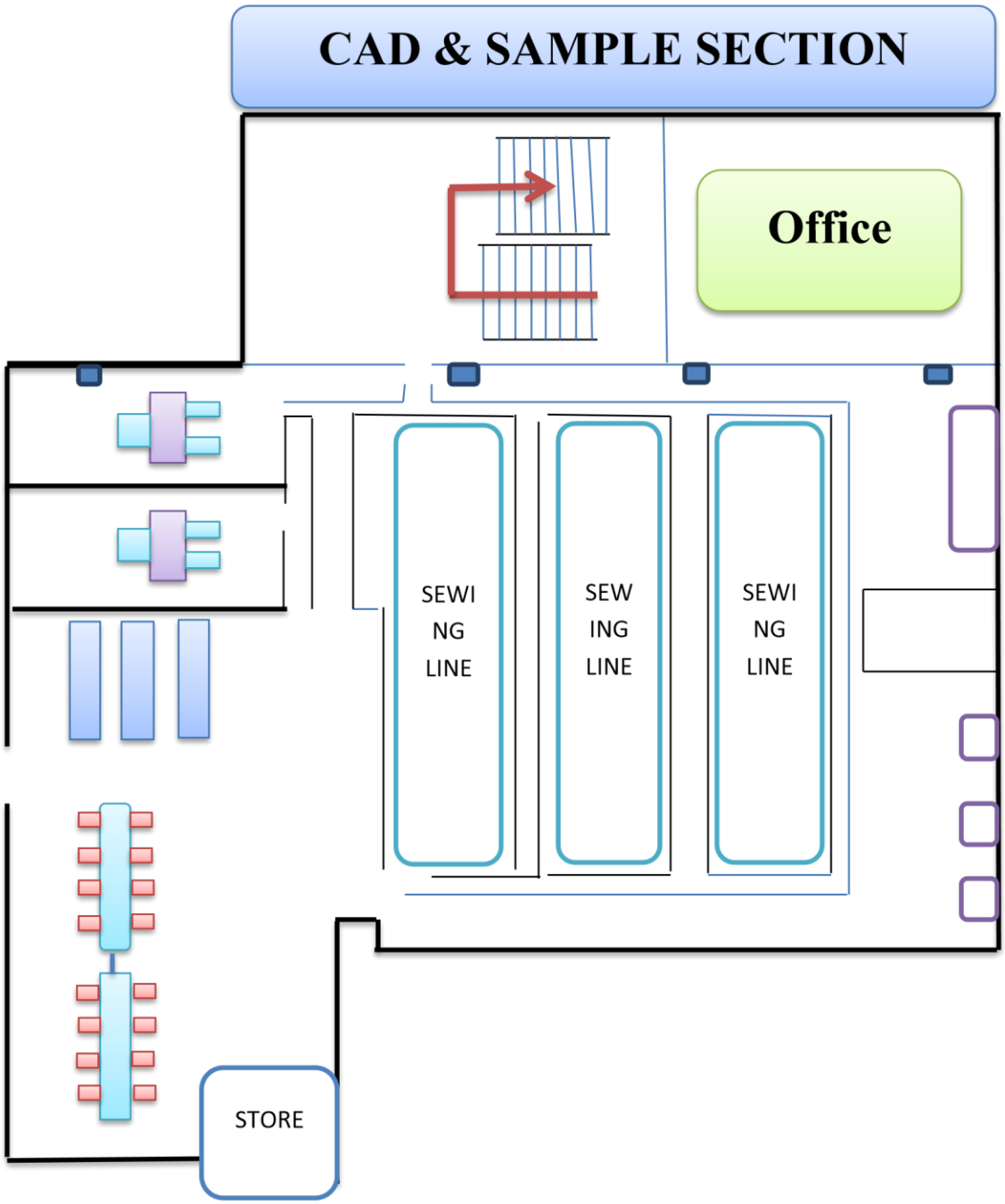
7th Floor

Bir Protik Setara Begum









About RMG sector of Bangladesh

Bangladesh, a country of 170 million people. Once she was the proud producer of world famous muslin fabric. Bangladesh was the best in producing muslin. Our muslin was world famous form the beginning of the 17th century, however history fades away like many other things we lost our capability of muslin production. Then came jute the

golden fiber, contributed a lot to our economy. Form the late 70s Bangladesh started producing and exporting ready-made garments to Europe. Now we are one of the leading suppliers of ready-made garments of the world.

RMG, the large scale production of readymade garments is a relatively new phenomenon in Bangladesh. The hundred percent export-oriented RMG industry experienced phenomenal growth over the years. In 1978, there were only 9 export-oriented garment manufacturing units, which generated export earnings of hardly one million dollar. Some of these units were very small and produced garments for both domestic and export markets. Within a short period, Bangladeshi entrepreneurs acquired the expertise of mobilizing resources to export-oriented RMG industries. Foreign buyers found Bangladesh an increasingly attractive sourcing place. To take advantage of this cheap source, foreign buyers extended, in many cases, suppliers' credit under special arrangements. In some cases, local banks provided part of the equity capital. The problem of working capital was greatly solved with the introduction of back-to-back letter of credit, which also facilitated import of quality fabric, the basic raw material of the industry. Till the end of 1982, there were only 47 garment manufacturing units. The breakthrough occurred in 1984-85, when the number of garment factories increased to 587. The number of RMG factories shot up to 4740 in 2007-2008. The industry has grown at the rate of 59% comparing from 1998-1999 to 2007-2008. In 2007-2008, the export earning of the RMG sector was $10.70 billion with 16.18 % growth than the previous year.

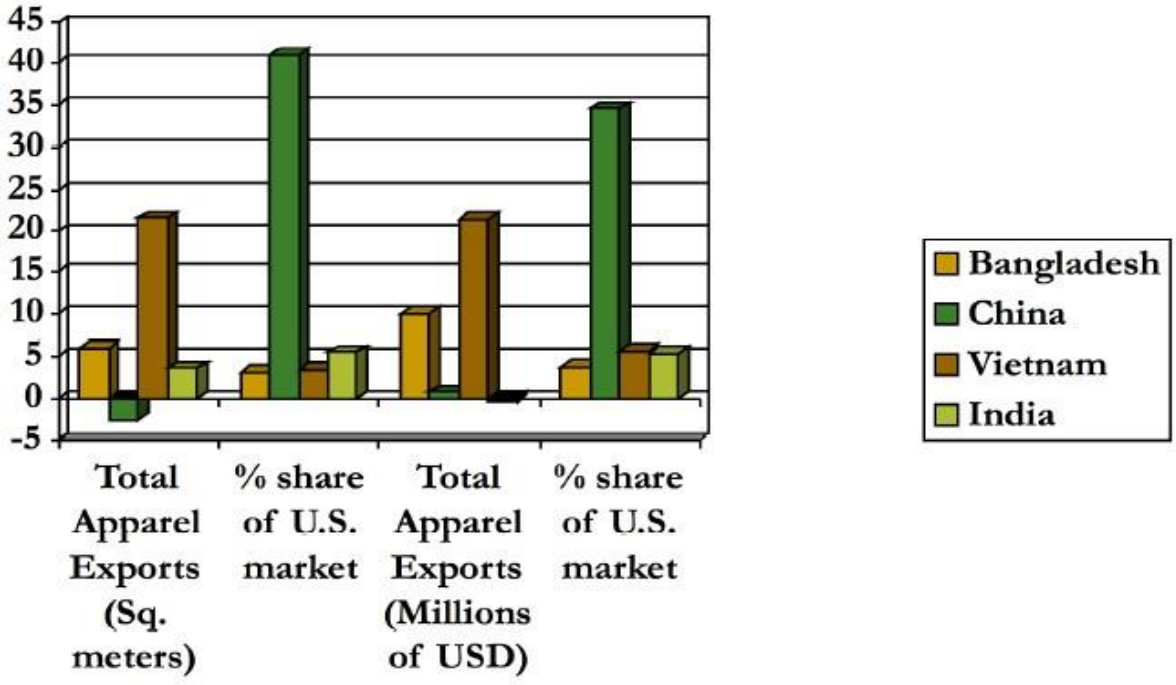


Fig1.05: Percentage change in exports to the U.S. between 2007-2008 of Bangladesh and its competitors (Data from the U.S. Dept. of Commerce, Office of Textiles and Apparel)

Export Destinations

Although Bangladesh exports garments to some 30 countries, its exports are highly concentrated in two major markets, the USA and EU. The USA as the largest importer country imported RMG products worth 3225.66 million USD from Bangladesh in 2007-08.

On the other hand Bangladesh exported RMG in the EU countries worth 6490.65 million USD.

Of the individual members of the EU, Germany is the largest importer of RMG (2057.75 Million USD) from Bangladesh and it is followed by the UK and the Netherlands.

Export Volume

Since the late 1970s, the RMG industry started developing in Bangladesh primarily as an exportoriented industry although; the domestic market for RMG has been increasing fast due to increase in personal disposable income and change in life style.

The sector rapidly attained high importance in terms of employment, foreign exchange earnings and its contribution to GDP.

Bangladesh's RMG Export to major destinations (FY 05-06, FY06-07 and FY 07-08)									
Million US$	Woven			Knit			Total		
	July-June	July-June	July-June	July-June	July-June	July-June	July - June	July - June	July - June
	2005-06	2006-07	2007-08	2005-06	2006-07	2007-08	2005-06	2006-07	2007-08
EU	1796.97	2012.44	2279.44	2910.54	3439.08	4211.21	4707.51	5451.52	6490.65
Growth	-	11.99	13.27	-	18.16	22.45	-	15.80	19.06
Canada	179.67	207.90	235.38	188.55	200.70	232.40	368.22	408.60	
Growth	-	15.71	13.22	-	6.44	15.79	-	10.97	14.48
USA	2012.77	2284.84	2418.38	618.51	762.39	807.28	2631.28	3047.23	3225.66
Growth	-	13.52	5.84	-	23.26	5.89	-	15.81	5.86

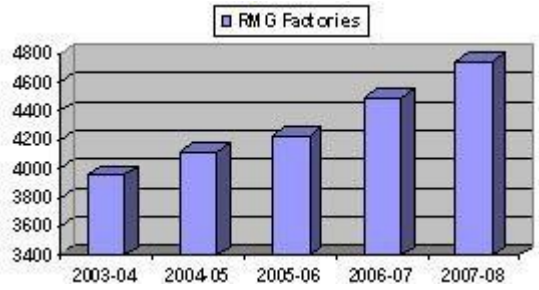
Contribution to the economy

Bangladesh‘s RMG export earning stood at 10.70 billion US dollars in FY 2007-2008. In 20072008 this sector contributed 76.6% of the total Bangladesh export. At present the local value addition by the RMG sector is estimated to be about 70%.

Trend in Bangladesh‘s RMG growth rate (1998-99 to 2007-08)

Period	No. of RMG units
2003-04	3957

2004-05	4107
2005-06	4220
2006-07	4490
2007-08	4740



Employment:

In 1998-99, the industry employed directly more than 1.5 million workers, about 80% of whom were female. With the growth of RMG industry, linkage industries supplying fabrics, yarns, accessories, packaging materials, etc. have also expanded. In addition, demand for services like transportation, banking, shipping and insurance has increased. All these have created additional employment. In the year 2007-08 the total direct employment of the RMG sector reached up to 2.5 million workers with a growth rate of about 66 %. The total indirect employment created by the RMG industry in Bangladesh is estimated to be some 10 millions of workers.

The readymade Garment Industry has been building the fate of the nation over the last 3 decades. It has brought a dramatic change in the lifestyles of the people of Bangladesh. RMG industry has created a base for the rootless people providing employment. The most significant contribution of this sector is the empowerment of women. It has succeeded to bring out the women from the veil and engage them in the workplace. Garment industry has transformed the burden of excess population into skilled manpower. A good number of skilled RMG workers are going abroad every year adding value to the inflow of foreign remittance. A significant socio-economic

change has been created in the country by this sector. At present the RMG sector is considered to be the back bone of the national economy.

Corporate Social Responsibility as a management style, the example of Ananta Ananta production site in the suburbs of Dhaka, the place doesn‘t look much different from any other modern factory: a succession of large, well-lit rooms where hundreds of sewing machines, operated by mostly women, are lined up with great discipline among colorful piles of garments. On the freshly painted white walls, larger posters remind workers of internal regulations and basic safety procedures. In a corner of the room, however, one wall seems to be dedicated to more personal notices. Several posters inform workers about activities offered by the company itself. Workers are encourage to express and develop their talents in singing and dancing classes, to join the soccer team, or to try some gardening as part of a natural resource management awareness activity. They can also take first aid or fire safety training, and they can donate blood for local hospitals. Whether it is personal development, professional training or social activities, the more than 7000 workers at the company have an abundance of activities to pick from. Other opportunities offered by the company to its workers include savings plans, emergency funds, and a collective transportation program. Ananta is not a community center, a training facility or an NGO. It is a successful, profitable company that has expanded rapidly over the last few years, and hopes to expand further. The company exports to the U.S. and E.U. markets, and counts among its clients the most famous international brands. What differentiates Ananta from many other companies we visited in Bangladesh is the commitment of its owners and managers to improving the quality of work and the quality of life of its employees as a way to boost productivity and product quality. Workers are continually trained and tested to improve their performance; they are kept informed about safety and health issues, and they are provided with services such as day care and transportation to help them concentrate on their tasks. Management explains this somewhat paternalistic system both as a commitment to business ethics, and as a very pragmatic approach to better business. ―Running your business ethically doesn‘t mean you won‘t make money,‖ explains the manager, ―and it is not because we are making money that we are doing all of this. It is because we are doing all of this for our workers that we make money.‖ This awareness that good labor conditions and compliance make good business sense seems to be gaining ground in Bangladesh. As the owner states it, ―All of this effort in improving labor conditions is for business. At the end of the day, if it is not for business, it is useless for all of us.‖

On the way out, a large bright poster hanging across the hall catches the eye. Large golden letters express the support of the company and its workers for a smiling young man. This young worker at Ananta is also a talented singer, a finalist in a TV contest. Not only does Ananta‘s implementation of Corporate Social Responsibility give it a

competitive advantage that contributes to its development and profitability, it also nurtures new talent for the country.

DESCRIPTION OF THE WORK FLOW OF ANANTA GARMENTS (Department wise)

In this repot we strived to provide information about the work flow of different departments of Ananta Garments Ltd. . Their descriptions are given in the following paragraphs. It is obvious to mention that we followed the flow of the raw materials within the industry. And described the departments according to the flow of the material. As we started our description form the inhouse of fabric and ended with the finishing, packing and delivery of the finished goods.

Available departments of Ananta:

- Admin Dept
- HR Dept
- Merchandising Dept
- Store Dept
- Testing
- Sample Dept
- CAD Dept
- Work study Dept
- Cutting Dept
- Sewing Dept
- Washing Dept

- Finishing Dept
- QC
- QA

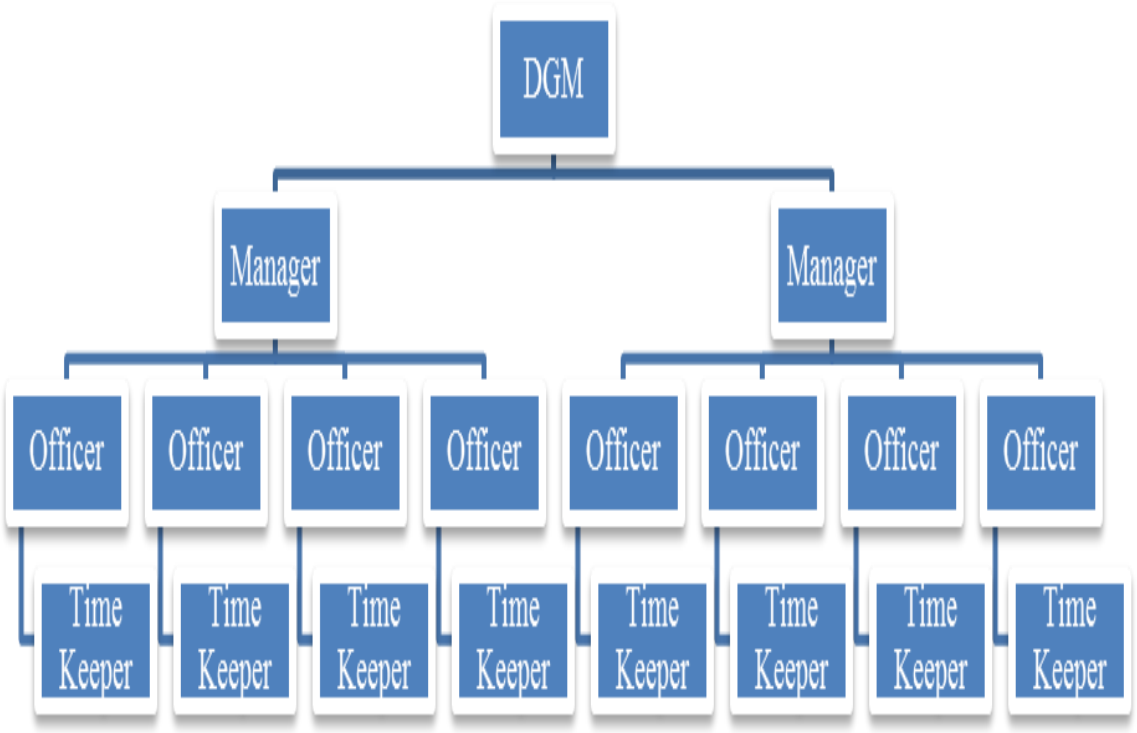
Administration Department

The administrative offices associated with a garment manufacturing facility are typically proportional to the size of the manufacturing operation (i.e. larger factories require more administrative support). Administrative staff manages corporate description such as human resources, finance and accounting, billing, health and safety, and environmental compliance. Offices are equipped with basic technologies and amenities, such as computers, facsimile machines, printers, filing equipment, desk space, and meeting rooms. In some instances, retail customers may also maintain on-site administrative space for quality assurance personnel.

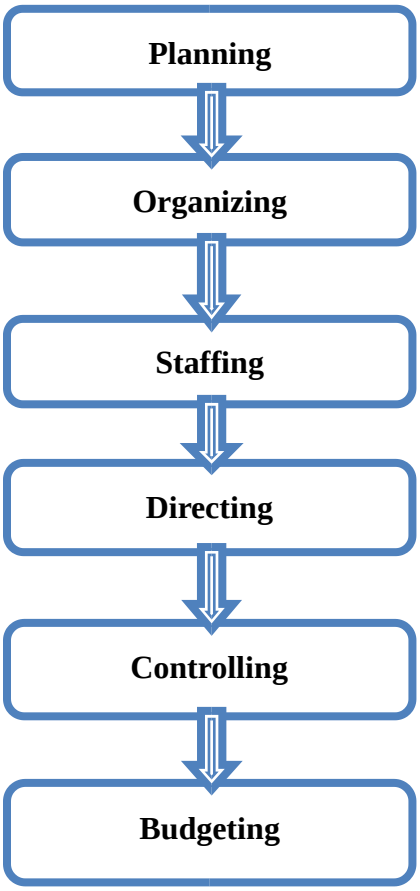
Functions:

- Processing order and preparing invoices
- Conducting marketing and sales
- Managing human resources

Administration Department organogram:



Work Flow of Administration Department:



Planning:

Planning is deciding in advance what to do? How to do? When to do? The planning function involves establishing goals & arranging them in a logical order.

Organizing:

Organizing involves identifying responsibilities to be performed groping responsibilities into department or divisions & specifying organizational relationships.

Staffing:

Staffing means filling job positions with the rights people at the right time. It involves determining staffing needs, screening people to fill the positions.

Directing:

Directing is loading people in a manner that achieves the goals of the organization. Directing requires exceptional inter personal skills the ability to motivate people.

Controlling:

Controlling is a function that evaluates in all areas & detects potential or actual deviations from the organization plan. Controlling includes information management, measurement of performance institution of corrective actions.

Budgeting

Budgeting, exempted from the list above, incorporates most of the administrative functions, beginning with the implementation of a budget plan through the application of budget controls.

Rules of Admin:

Admin department have to maintain 10 rules there are-

- Closing register
- Access control register
- New receipted worker register
- Lefty register
- Resign worker register
- Temporary is issue register
- Floor cleaning check register
- Is card issue card
- Contract letter issue register
- Service Book Issue registers.

Function of Admin:

- To monitoring the attendance sheet of the worker.
- To monitoring the register book where reported workers attendance & overtime.
- Following the rules of the company to new recruited workers.
- Recruited new workers by following the rules of the company.
- Checking the varies kinds/ types of Bills.
- Prepare salary sheet after end of the month.
- To ensure ID Card.
- Help to collect the Tiffin & other expense cash sheet.
- After ending the month before they have to submit the report to the admin manager about attendance card.
- Helping to make the report of each manpower and as per requirement to appointed.
- These tools are used for personal safety they have to ensure that.
- Doing gate pass issue.
- They observed of the working hour of the workers remarks the admin department of is well equipped. They play vital roles in a company.
- To ensure the cleaning of the floor.
- To ensure the safety of floor.
- They control hardly various kinds of bills
- They follow up the functions of mechanical & Electrical section.
- They ensure the leave of the worker.
- They helping compliance department they maintain.
- The rules of the company in all stages of the workers etc.

Human Resource (HR) Department

Human factor is a vital element in manufacturing industry. It is one of the key dependent factors which drive the company‘s business towards profitability and growth. In order to ensure the maximum output of the people involved in the business, companies formulate **“Human Resource”** Policies.

Human Resource Policy includes innovative approaches to compensation, pay for performance, flextime, benefits, stock plans, legal compliance and training of company‘s employees and related people.

The key areas to Human Resource policies include recruitments, training, salaries and benefits, compensations, performance measurements, promotions, work duties and responsibilities, rewards, holidays etc.

The Human Resource policy aims to create a balance between employee job satisfaction and corporate growth. The policy also formulates the powers exercised by employers in this scenario. Once defined, the Human Resource policy is supposed to be implemented for a long period of time without excessive changes so as to yield maximum output.

Every organization or industry is not only made by brick, cement or wood but it builds by 4 m‘s i.e.

- Men
- Machines
- Material
- Money

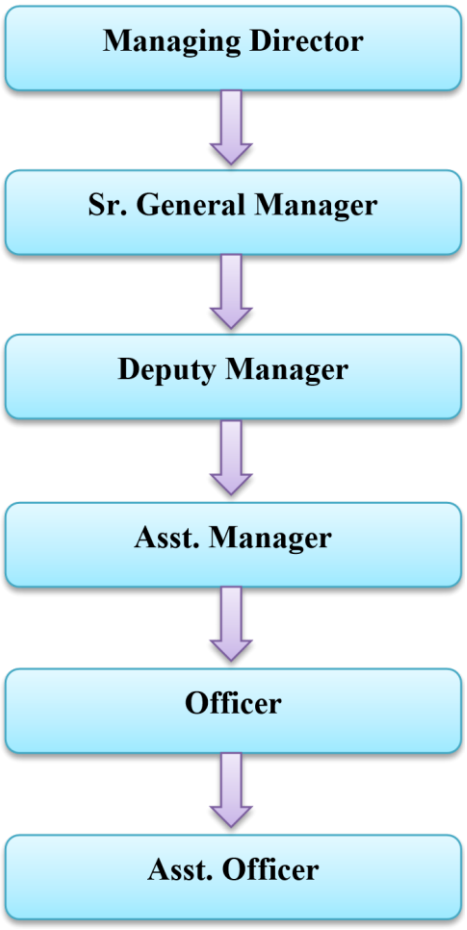
The man is ultimate resources of the organization because they think, speck, so that utilization of this resource is very critical. Every success of origination is depending on

efficient and effective man power. Human Resource starts when a man enters in the organization and its end, when he leaves the organization .Human Resource deals with the human dimension. Ananta Garments Ltd. understands the value of **"Human Resource"**. They are conscious about their human resource this why they maintain an organized Human Resource department.

Location of the Department

―Ananta Garments‖ has it Human Resource department located at the 8th floor of the factory building. This floor is titled as **"Bir Protik Taramon Bibi Floor"**.

Human Resource Department organogram



Role of Human Resource Management

The role of human resource management in organization is at counter stage. Managers are aware that Human Resource Management is a function that must play a vital role in the success of organization. It is an active participant in charting the strategic course an organization must take place to remain competitive, productive and efficient. Its focal point is people; people are the life blood of the organization. The uniqueness of Human Resource Management lies in its emphases on the people in work setting and its concerns for the well living and comfort of the human resources in an organization. The Human Resource Management function is much more integrated and strategically involved. Human Resource Management and every other functions must work together to achieve the level of organization. Effectiveness required competing locally and internationally.

It is the action oriented, individual oriented, globally oriented and future oriented. It focuses on satisfying the needs of individual at work.

Functions and businesses need to integrate for effecting customer service.

The approach to Human Resource Management differs from organization to organization depending on how much it is valued by the management Technological change, innovation and heightened competition drive to increase the skill of employees. Competitive challenges motivate to companies to use their human resources effetely.

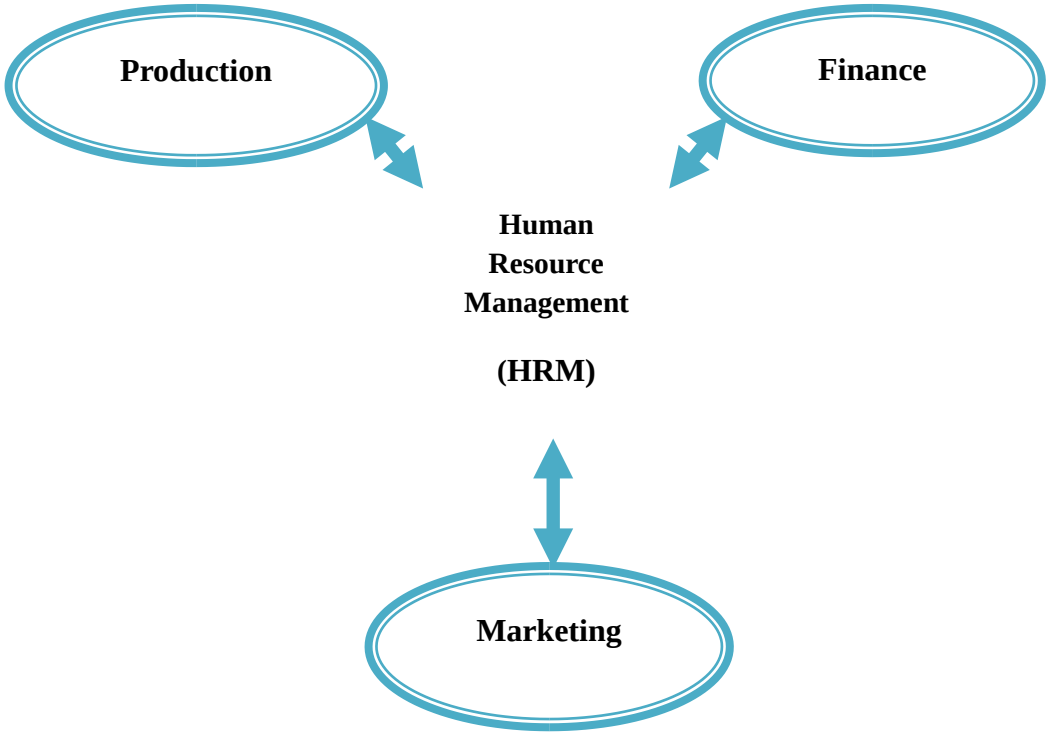
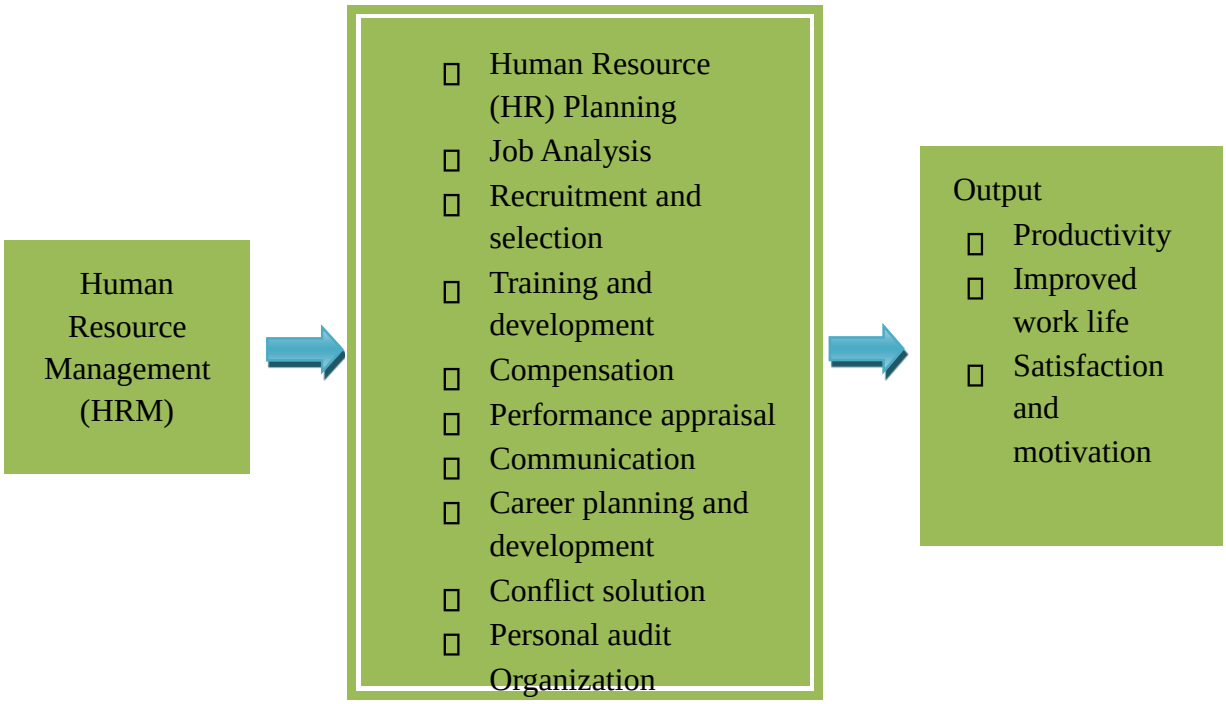


Fig 4.01: Integration of Department

Contribution Human Resource Management to organization

- Helping the organization to search its goal.
- Employing the skills and the activities of the workforce efficiently.
- Providing the organization with well trained and well-motivated employee.
- Increasing to the fullest the employee‘s job satisfaction.
- Developing and maintaining quality of work life Communication
- Helping to other department and function



Human Resource Management includes the very Interesting phenomena that is Human Resource Development (HRD). Human resource development (HRD) is phenomenal for the manufacturing and service industry. HRD deals with up gradation of skills for labors and executives, planning and allocation of work, monitoring and assessment of

performance. One of the most important tasks is upgrading the skills and knowledge of the human resource from time to time in tandem with the development of technology and trade. This up gradation is done through training and workshop/seminars. Collectively, HRD activities result in increased productivity, reduced cost and wastage, rightsizing of labor and staffs at the organization, organizational stability and flexibility to adapt to future changes.

Function

Human Resources may set strategies and develop policies, standards, systems, and processes that implement these strategies in a whole range of areas. The following are typical of a wide range of organizations:

- Maintaining awareness of and compliance with local, state and federal labor laws
- Recruitment, selection, and on boarding (resourcing)
- Employee record-keeping and confidentiality
- Organizational design and development
- Business transformation and change management
- Performance, conduct and behavior management
- Industrial and employee relations
- Human resources (workforce) analysis and workforce personnel data management
- Compensation and employee benefit management
- Training and development (learning management)
- Employee motivation and morale-building (employee retention and loyalty)

Activities of Human Resource Department of Ananta Garments Ltd.

- Staffing
- Training development & utilization
- Maintains retention

- Motivation & empowerment
- Separation

Description of the activities:

Staffing

- Human Resource planning
- Guidance placement
- Job analysis
- Recruitment selection

Training development & utilization

- Organization development
- Development
- Training

Maintains retention

- Labor management relation
- Communication
- Health & safety
- Counseling

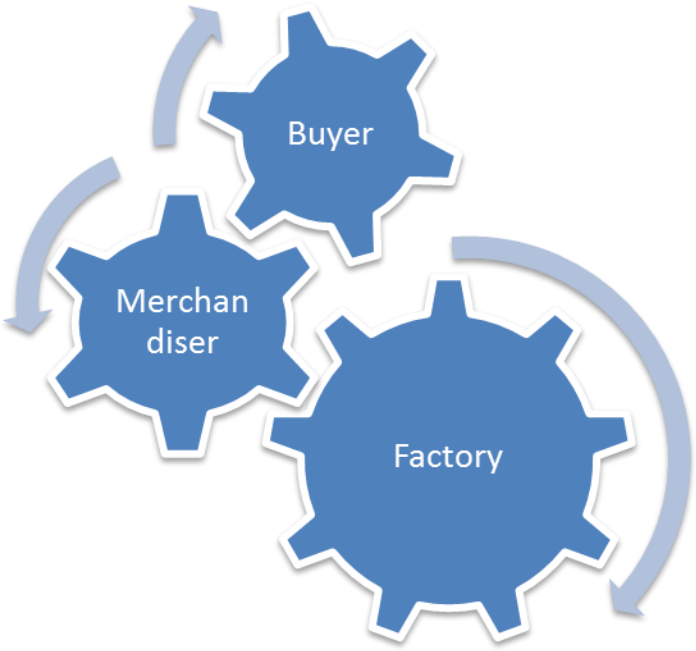
Motivation & empowerment

- Employee benefits
- Labor welfare
- Motivation & job satisfaction
- Payment of salary & wage determination

Merchandising Department

An apparel merchandiser, also known as a fashion merchandiser, is the person who conceives and implements merchandising displays in retail environments focused on the sales of clothing and accessories. She may dress mannequins, create fashion-focused scenes in store windows and design promotional graphics for in-store promotions. This position normally involves much more than merchandising. An apparel merchandiser is often the pulse of the retail environment, the person depended upon to predict fashion trends and incorporate his vision into the store‘s inventory. A large part of his job is to keep himself educated on the latest fashion fads and styles around the world and make sure her store is the first to carry cutting-edge clothing and accessories

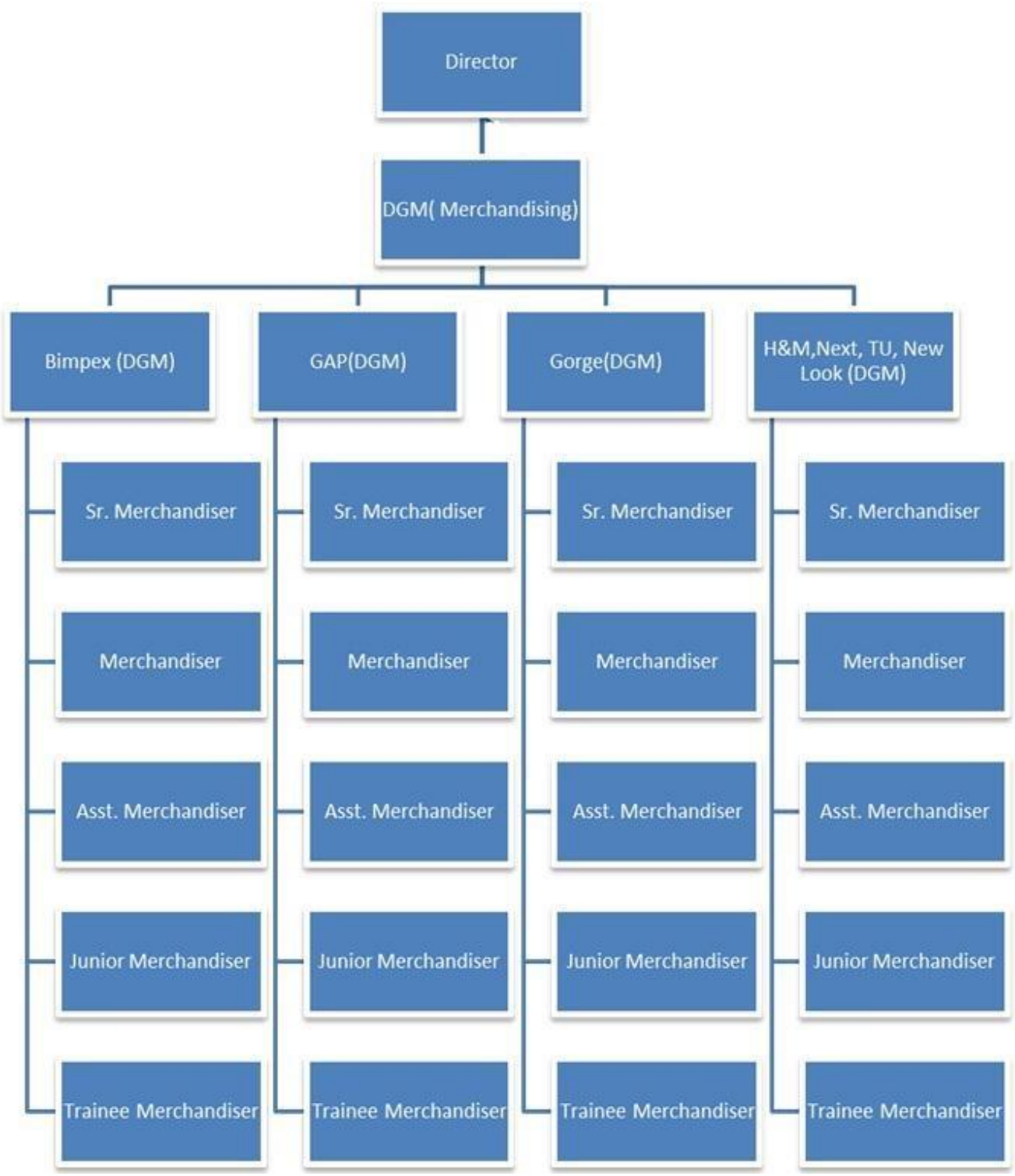
Being leading apparel manufacturing industry Ananta Garments Ltd. have its own merchandising department. This dept. acts as a buying house for the company. Scouring foreign buyers and collecting production order is the main function of this dept. Following up production, purchasing fabric ,trims & accessories, costing of production , determining profit of the company are also the jobs of this dept. This dept. works as a bridge between the Buyer and the factory. Its basic duty is to book orders from the Buyers and make it sure that the orders are executed according to the Buyer‘s requirements in terms of style, construction, quality and quantity.



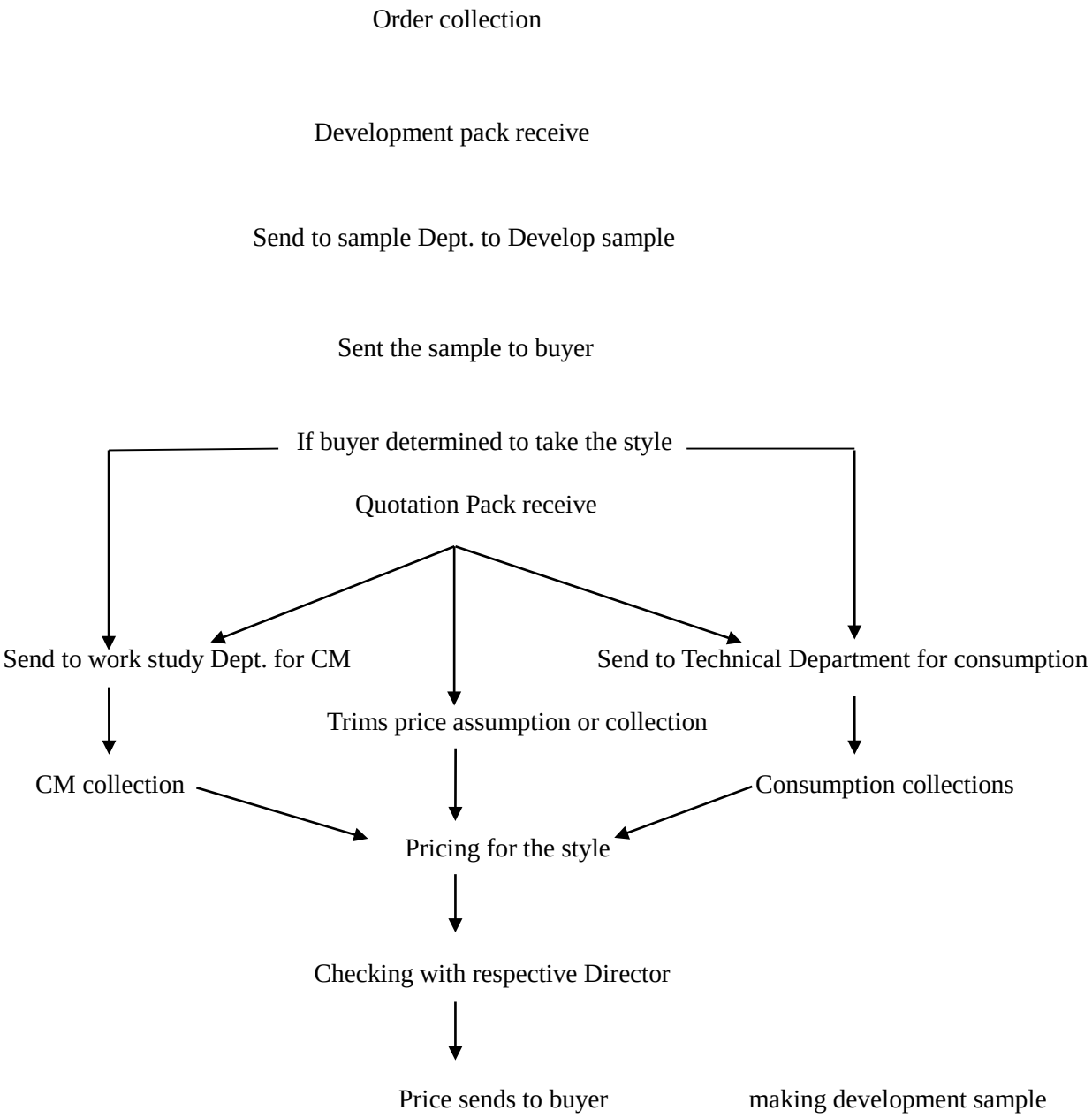
Location of the Department

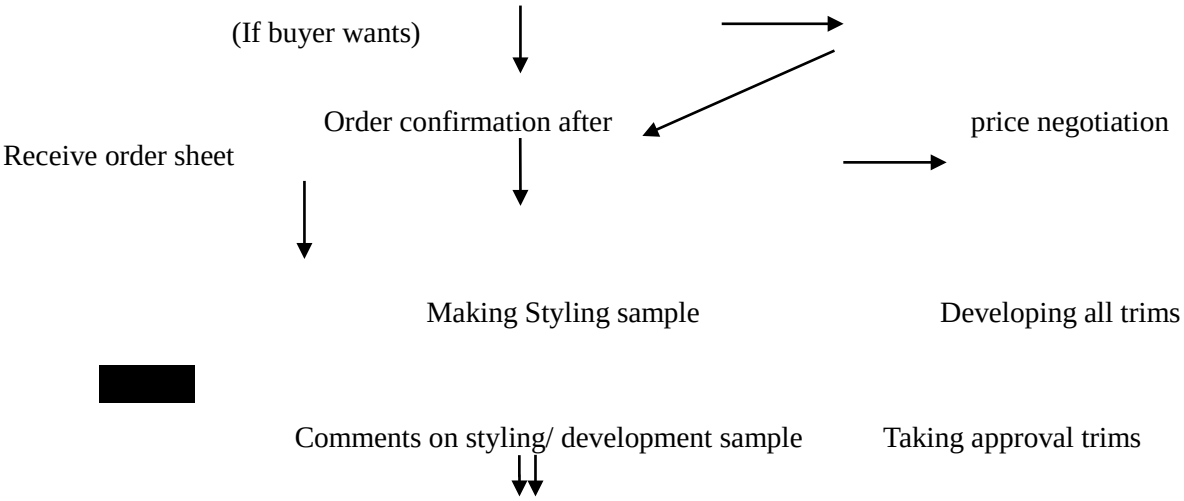
This dept. is located outside of the main factory building. For better communication and other facilities this dept. is now located at the head office of the group. Which is in House no. 12, Road no. 12, Sector no 1, Uttara Dhaka 1230, Bangladesh.

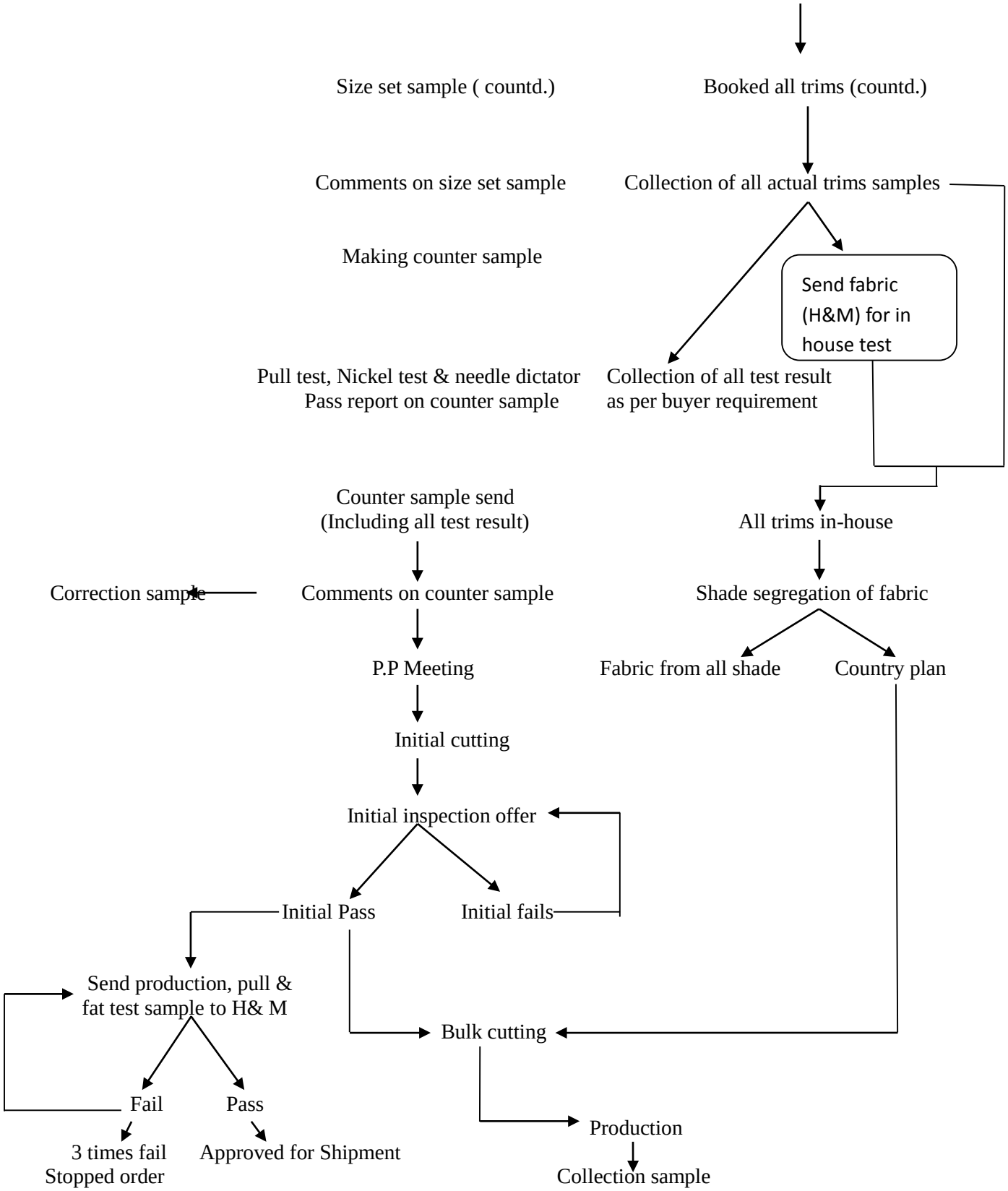
Merchandising Department organogram:



Work flow of the Department:







Basic working procedure of the Department:

- **Order collection**

It is the main function of this dept. this dept. works as a buying house for the industry. They collect order form overseas buyers, mainly form countries like USA, Germany, and Sweden. They have separate merchandising DGMs to deal with buyers of different zone of the world.

- **Sample making & costing**

The Buyer provides the designs to merchant and asks for the costing. Sometimes Buyer asks for various designs which are developed by merchant through sampling. Large sampling is done and styles are finalized from the developed samples after considering the design and costing for the garment. The Buyer also sends to specification sheet to the merchandiser which contains all the required detailed about the style specification CMT (cut, make, trim) cost is estimated by W/study head. The mark-up (profit per piece) and the overheads are decided by the merchant of company. Mark-up and overhead distribution varies according to Buyer and order size.

- **Negotiation & Order conformation**

Tension between a buyer and seller is inevitable. A buyer wants the most house for his money on the other hand a seller wants the most money for his house. Merchandising dept. negotiates with the buyer about price, shipment date & other necessary things in favor of the company. The calculated cost is then negotiated against the cost set by the Buyer and final price is decided by mutual agreement. After the costing and the style of a garment is finalized then Buyer sends the purchase order

- **Pre-production meeting**

After the order is finalized the file is transferred to production department. Merchandiser consults production manager, quality manager for the ease of production of style. In this meeting they determines about the production schedule, shipment date etc.

- **Fabric & trims booking**

After the order is conformed & consumption of the fabric and trims is also done, the merchandiser contacts with the supplier and books fabrics & all the other trims needed for that order. This booking is generally done against an L/C.

- **Following up production**

Production of that order is followed up by the merchandiser. The entire test related with that order are scheduled and supervised by the merchandiser. This includes tests like pull test, fat test etc. they also inspects the status of production activates and also arrange inspection schedule for buyer.

The Role of the Merchandiser

- Work closely with Buyers to determine ranges of goods when to buy, price and how presented
- Produce financial plans on a seasonal basis:
  - Sales and stock level
  - Gross/net margins
  - Gross profit
  - Space planning
  - Mark up/downs
- Monitoring the performance of these measurable targets on a weekly basis
- Working within the buying team ensuring suppliers deliver on time
- Monitoring the allocation & distribution of stock **Skills and Qualifications required of Merchandiser**

- Sound judgement
- Decisiveness and maturity
- Ability to cope under pressure
- Tough, business-like approach
- Absolute integrity
- Excellent communication skills
- Negotiation skills
- Eye for detail
- Excellent numerical skills
- Ability to interpret data and figures and make commercial decisions based on them
- Good I.T. skills
- A degree or HND qualification
- Be self-motivated
- Have the ability to rise to a challenge

Things to know for a Merchandiser

A merchandiser should have knowledge about the following things

- International transaction
- Shipment of goods
- Sound concept about garment production
- Sound concept about fabric & trims
- Sound concept about costing & consumption
- Sound concept about

Consumption Calculation:

Costing (or cost-benefit analysis) is the process of analyzing the costs and benefits of different options to determine, what approach should be taken to a particular conflict and what solution or resolution should be chosen once various options are being considered. Thus, costing happens early on in the process as parties decide whether they should respond at all, and if so, how; and later on once settlement possibilities have been identified.

Consumption calculation for woven basic pants:

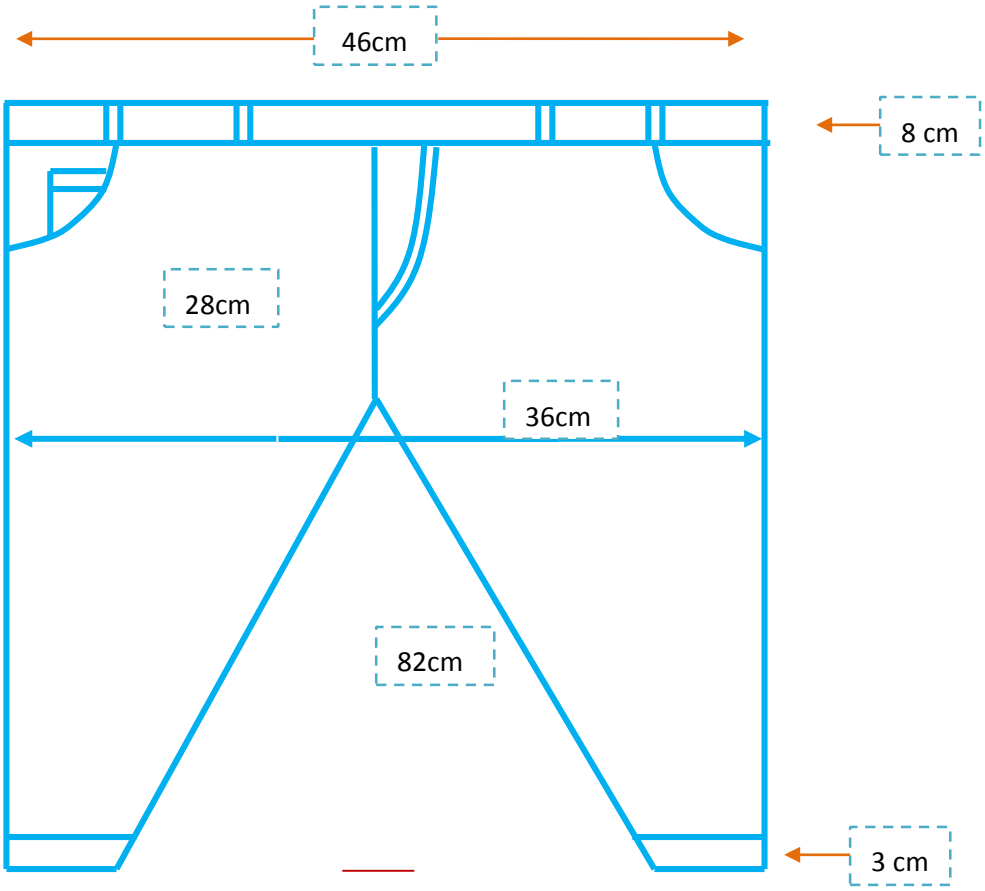


Fig 5.01: Woven Basic Pant

Here,

Fabric width =59″

½ waist circular =46cm + 8 (Seam allowance) = 54cm

Front rise = 28cm (Including waist belt) + 8 (Seam allowance) = 36cm

½ Thigh circular = 36cm + 6 (Seam allowance) = 42cm

Inseam length = 821cm + 3 (Seam allowance) = 85cm

$$\textbf{Consumption formula} = \frac{(½\ waist\ cir. \times\ Front\ rise)\ \times\ 2\ +\ (½\ Thigh\ cir. \times\ Inseam\ length)\ \times\ 4}{36\ \times\ 59} + Waste\ \%$$

Consumption = (54 × 36) × 2 + (42 × 85) × 4 ÷ 36 ÷ 59 + 5%

= 3888 + 14280 ÷ 6.45 ÷ 36 ÷ 59 + 5%

= 1.33 + 0.05

= 1.38 yds / pcs

Per dz= 1.38× 12

= 15.84 /dz (ypd) + 5%(wastage)

= (15.84 × 5/ 100) + 15.84

= 0.792 + 15.84

= 16.63 yds

If the price for the fabric is $0.95 per yds. The cost for the garment will be

Cost per dozen (Fabric) = .95 x 16.63

= $ 15.80

Accessories: cost /dz = US $ 6.00 (1 piece all time $ .15)

CM /dz = US $ 10.00

Subtotal = US $ 31.80

Transport cost from factory to sea or airport (.5%) = US $ 0.20

Clearing and forwarding cost (2%) = US $ 0.90

Overhead cost (.5%) = US$ 0.20

Net cost price = US$ 33.10

Profit (10%) = US $ 4.2

Net FOB price = US$ 37.30

Freight (4%) = US$ 2.00

Net C & F price = US$ 39.30

Insurance (1%) = US$ 0.48

Net CIF price = US $ 49.12

Costing of long sleeve shirt (woven)

For a long sleeve shirt: - (measurement chart)

Part	Dimension
	Collar 16"
	Chest 48"
Center back length	**31"**
Sleeve length	**34.5"**
Drop shoulder	**21"(yoke)**
Arm hole depth (1/2)	**0.5"**
	Cuff 9"
	Pocket 6" × 5.5"
Yoke is all time	**4"**

Back part

The part of a garment, which covers the back part of human body.

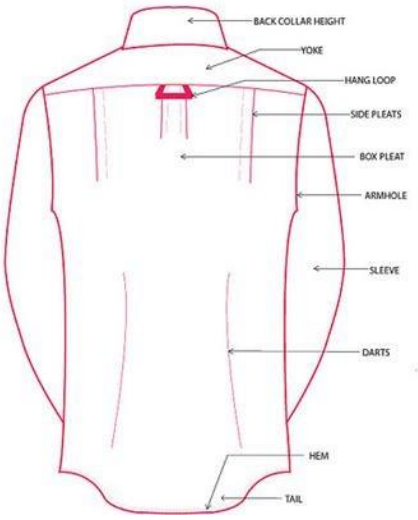


Fig 5.02: Back part

Formula:

$$Required\ fabric = \frac{(Center\ back\ length\ +\ allowance)\ \times\ (½\ chest\ +\ allowance)\ /36}{44}$$

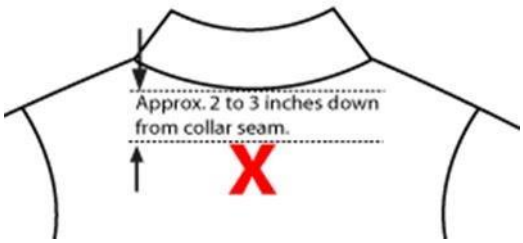
$$= \frac{(31" + 2") \times (24" + 2")\ /36}{44}$$

$$= 0.541yds$$

Yoke

A shaped piece fabric in a garment, fitted about or below the neck and shoulders, from which the rest of the garment hangs. It can be split in two, called the ―splityoke.‖

Fig 5.03: Yoke



Formula

$$Required\ fabric\ = \frac{(Yoke\ length\ +\ allowance)\ \times\ (yoke\ width\ +\ allowance)\ /\ 36}{44}$$

$$= \frac{(21" + 4") \times (4"+ 1") / 36}{44}$$

$$= 0.079yds$$

Front part

The front part of a shirt.

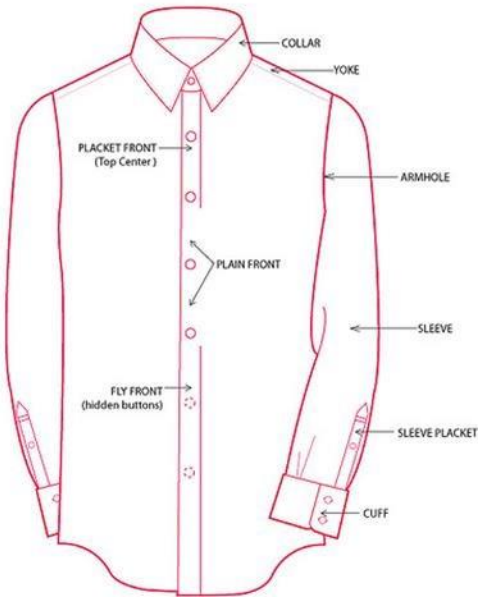


Fig 5.04: Front

Part **Formula**

$$Required\ fabric\ = \frac{(Body\ length\ +\ allowance)\ \times\ (¼\ chest\ +\ allowance)\ \times\ 2\ /36}{44}$$

$$= \frac{[\{31"- 1\ ¼" + 1"\} \times \{12" + 2\ ½"\}]\ 2"\ /36}{44}$$

$$= \ 0.562\ yds$$

Sleeve

The part of a garment that covers the arm and is usually cut wider than the cuffs. Most sleeve lengths fall between 32 and 36 inches.

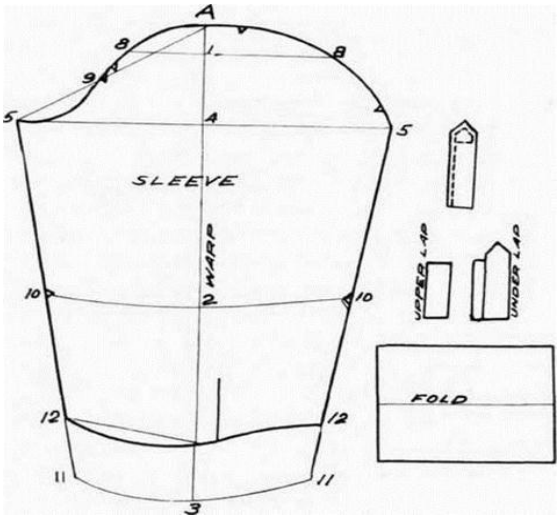


Fig 5.05 : Sleeve

Formula:

$$Required\ fabric = \frac{(Sleeve\ length\ +allowance) \times (arm\ hole\ depth\ full\ +\ allowance) \times 2}{44 \times 36}$$

$$= \frac{\{sleeve\ length - (½\ drop\ shoulder\ +\ ½") \times (arm\ hole\ depth\ +\ allowance)\} \times 2}{44 \times 36}$$

= [{34 ½" - 11"} +1"] × {21" +1"} × 2 /36

44

= 0.68yds

Cuff

A fold or band serving as a trimming or finish for the bottom of a sleeve. Some cuff styles include: French Cuffs and Barrel Cuffs.

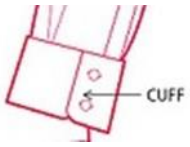


Fig 5.06: Cuff

Formula:

$$Required\ fabric\ = \frac{(Cuff\ length\ +\ allowance) \times (cuff\ width\ +\ allowance) \times 2}{44 \times 36}$$

= (9" + 3") × (2 ½" + ½") ×2 /36

44

= 0.05yds

Pocket

Formula:

$$Required\ fabric\ = \frac{(Pocket\ length\ +\ allowance) \times (pocket\ width\ +allowance)}{44 \times 36}$$

= (6" +2") (5½" +1") /36

44

= 0.032yds

Collar

The part of a shirt that encompasses the neckline of the garment, often so as to fold or roll over. Comes in various shapes, depending on the face shape and occasion.

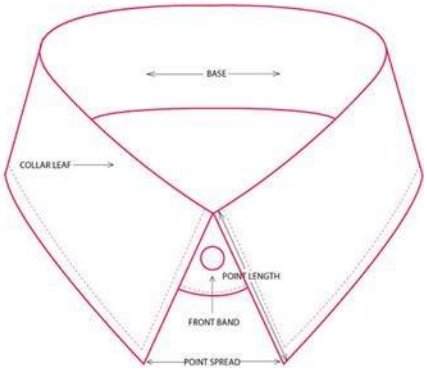


Fig 5.07 : Collar

Formula:

$$Required\ fabric\ = \frac{(Collar\ length\ +\ allowance) \times\ (collar\ width\ +\ allowance)\ \times\ 4}{44 \times 36}$$

= (16" + 5") × (2" +1") × 4/36

44

= 0.159yds

Total consumption for one garment

= 0.541+0.079+0.562+0.68+0.05+0.159+0.032

= 2.100yds/ per garment

Per dz = 2.100 ×12

= 25.20/dz (ypd) + 5%(wastage)

= {25.20 ×5 / 100} + 25.20

= 1.26 + 25.20

=26.46yds

If the price for the fabric is $0.95 per yds. The cost for the garment will be

Cost per dozen (Fabric) = .95x 26.46

= $ 25.14

Accessories: cost /dz = US $ 6.00 (1 piece all time $ .15)

CM /dz = US $ 10.00

Subtotal = US $ 41.14

Transport cost from factory to sea or airport (.5%) = US $ 0.20

Clearing and loading cost (2%) = US $ 0.90

Overhead cost (.5%) = US$ 0.20

Net cost price = US$ 42.44

Profit (10%) = US $ 4.2

Net FOB price = US$ 46.64

Freight (4%) = US$ 2.00

Net C & F price = US$ 48.64 Insurance (1%)
= US$ 0.48

Net CIF price = US $ 49.12

Documents Maintained By Merchandisers of Ananta:

- Sample status file
- Trims approval
- Testing requirement for fabric and trims

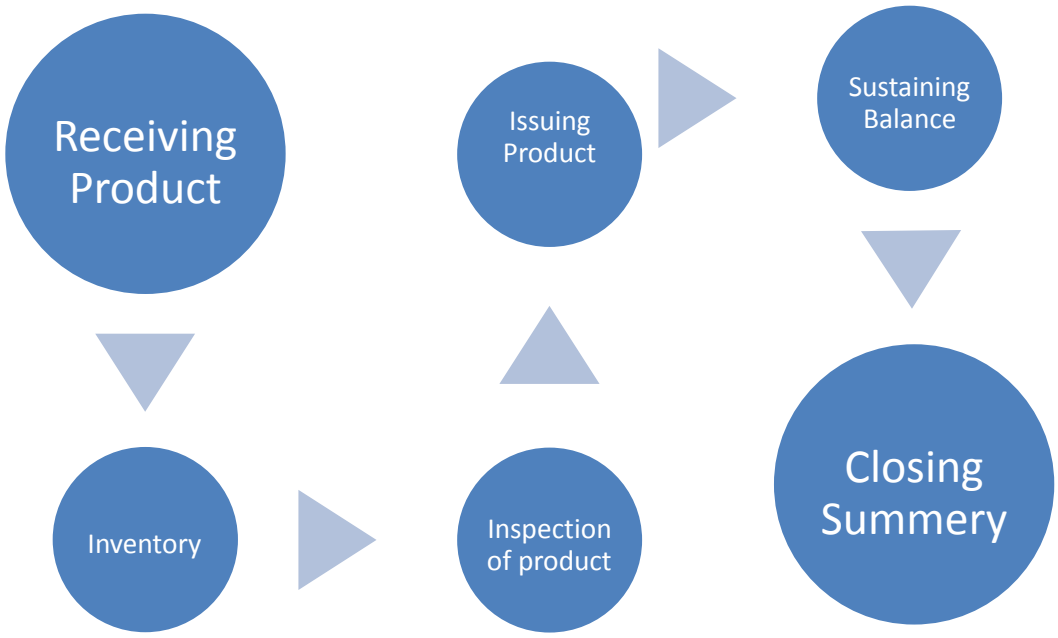
- Lab approval
- Costing sheet
- Purchase order for fabric and trims
- Fit comments
- Maintaining swatch card
- Maintaining style requirement sheet
- Time and action plan
- Production status
- Shipment documents
- Final audit report
- File of trim status
- File for job work outside factory (if required)

Store Department

For a bulk production industry it is essential to maintain a well-organized & well equipped inventory system. Being a bulk production industry **"Ananta Garments"** maintains an organized store Department. This department is located at the ground floor of the 9 storied main factory building. The floor is named after one of our hero freedom fighter **"Bir Shershtha Munshi Abdur Rouf".** The main responsibility of this department is to store all the raw material necessary to produce garments. This department is sub divided into three sections.

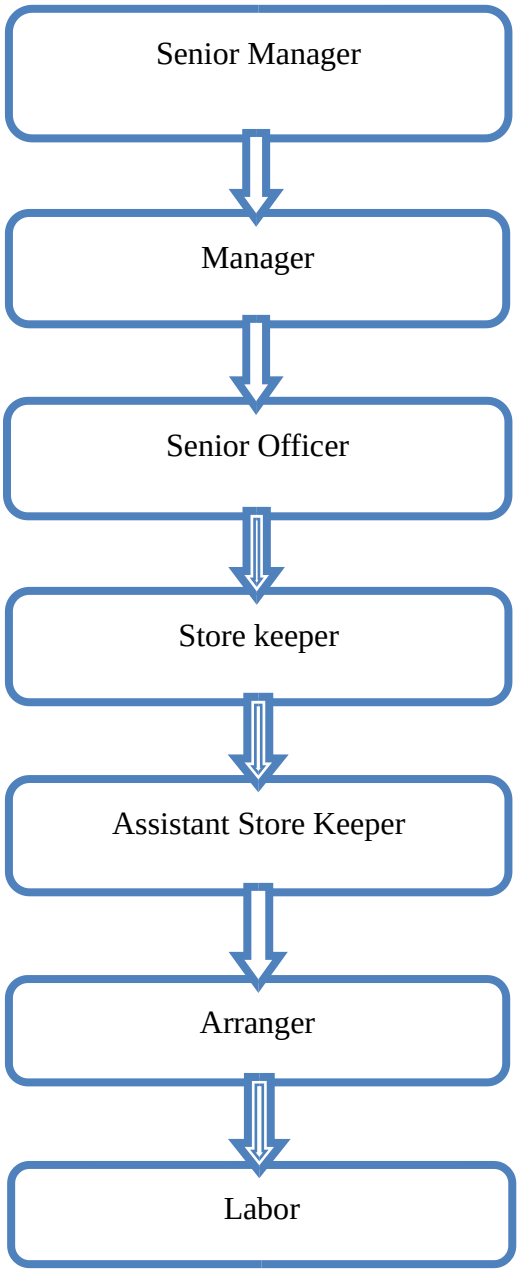
General Work Flow of Store Department:

The store dept. of Ananta Garments is a well-organized one. They follow a strong and appropriate working procedure. Their work process flow is given below:



Store Department Organogram:

Ananta`s store is maintained by a team of well-trained officials. The position of the manpower of store is given bellow in an order depending on the position



Allocation:

	Position	Manpower
Sr. Manager	01	
Manager	01	
Sr. Officer	02	

Store Keeper	01
Asst. Store Keeper	02
Arranger	01
Labor	11

Subsections of Store Department:

Ananta`s Store Department is subdivided into the followings

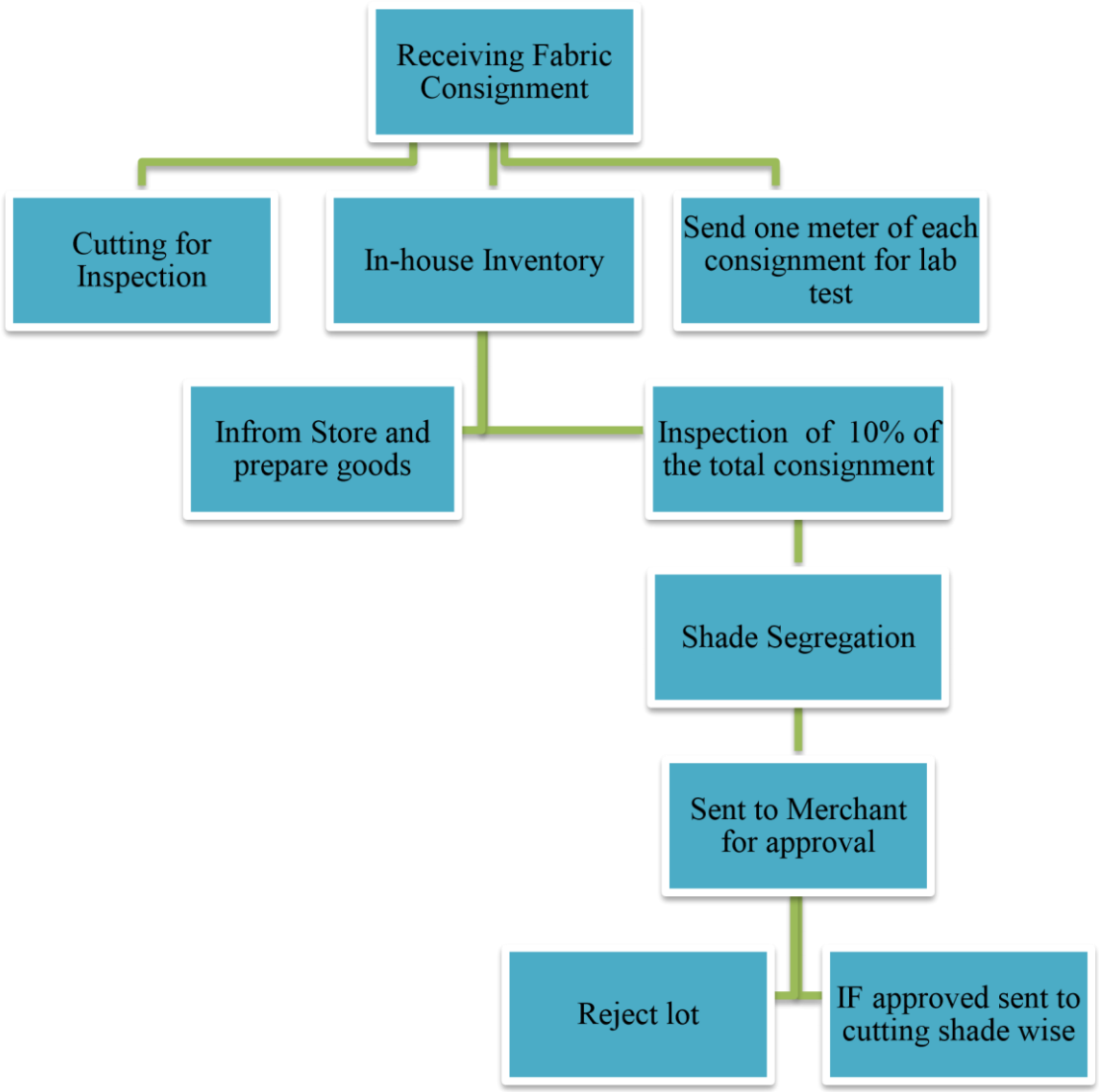
1. Fabric inventory
2. Accessories Store
3. Spare parts / Stationary

Fabric Inventory

Main responsibility of this department is to receive and store fabrics which are to be used in production.Fabric inspection is also done in a separate section within the fabric inventory. In this section fabric inspection such as fabric fault detection, shade segregation is done.

Fig 5.01: Fabric Inventory Room

Work Flow of Fabric Store Department:



Working Procedure:

Function of the inventory system is given bellow

- **Receiving Fabric roll**

Woven fabrics are supplied in roll package. Once these rolls of fabric are delivered the store in-charge receives the incoming consignment. This is the first phenomenon which is done in fabric store.

- **In-house Inventory**

Once these rolls are received, the store in-charge matches the packing list of the fabric consignment with the original quantity of the fabric rolls (i.e. fabric width, fabric length). He also keeps the all the record in a log book. This inventory maybe done alone by the store incharge or with the presence of a representative of the fabric supplier.

- **Cutting for inspection**

At the time of inventory a piece of fabric is cut form every roll. The piece is of full width of the fabric and of a length depending on buyer (i.e. for H&M 22 inch of length, for others 12 inch of length). These cut piece is send for inspection tests like shrinkage, blanket making for shade segregation. **Fabric Inspection system:**

In this particular industry every incoming rolls of fabric are inspected. The main objects of inspection are

1. Investigation of various fabric defects.
2. Check the length & width of fabric.
3. Segregate fabric according to shade also called shade segregation.
4. Inspect shrinkage of the fabrics.

Fig 5.02: Missing Yarn

Fig 5.03: Fabric Inspection

Fabric inspection method

4 point grading system is used here for fabric inspection. This system is mostly used by the garments. The 4-Point System assigns 1, 2, 3 and 4 penalty points according to the size and significance of the defect. Points are assigned according to the following criteria:

Fabric Inspection“4” point system

Defect Size (Length)	Penalty points
Up to 3 Inch	1 points
3 inch to 6 inch	2 points
6 inch to 9 inch	3 points
Over 9 inch	4 points
Hole size less than 1 inch or equal	2 points
Hole size more than 1 inch	4 points
(A Maximum of four points is charged to one linear yard)	

(Allowance point 40 per 100 square yards)

4-Point System Defect Evaluation

Size of Defects	Assigned Points	Indication

0-3 inches	1	**Yellow**
3-6 inches	2	**Green**
6.-9 inches	3	**Navy**
Over 9 inches	4	**Red**
Holes of any diameter	4	**Red**

- No more than 4 penalty points can be assigned for any single defect.
- No linear yard or meter can contain more than 4 points, regardless of the number of defects within that yard or meter.
- A continuous running defect which exceeds 9 inches (23 cm) should be assigned 4 points. In the event there is an additional defect within the same linear yard or meter it should be considered as a separate defect and assigned defect point accordingly.
- Any continuous defect (i.e., roll to roll shading, narrow or irregular width, creasing, uneven finish, barre‘, skew, etc.) should be assigned a maximum of 4 points for every yard or meter within a shipment.
- Each full width defect should assign 4 points.
- Obvious, noticeable and severe defects are to be assigned 4 points for each yard or meter in which they occur, regardless of size.

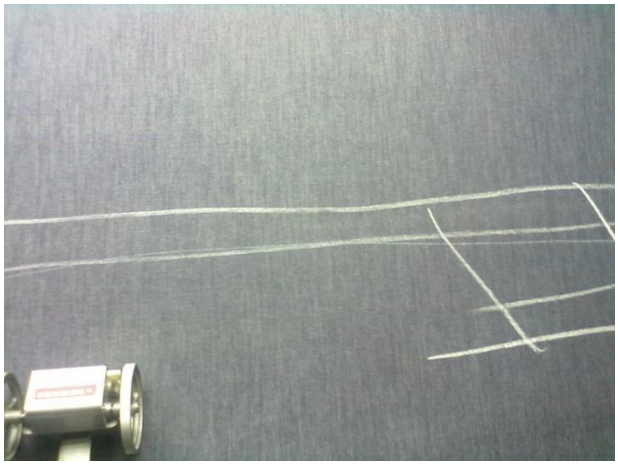


Fig 5.04: Fault Inspections

Major woven fabric defects such as slubs, holes, missing yarn, conspicuous yarn variation, end out, soiled yarn, and wrong yarn.

Final Inspection AQL- 2.5			
Total Order Quantity	Sample Quantity	Accept Quantity	Reject Quantity
90-150	20	1	2
151-280	32	2	3
281-500	50	3	4
501-1200	80	5	6

1201-3200	125	7	8
3201-10000	200	10	11
10001-35000	315	14	15
35001-50000	500	21	22

Bowing and Skewing

Check for skewed, bowed and biased fabric. For this purpose check the bowing and Skewing at every 10 meters. The bowing and skewing are calculated as follows:

Bow is defined as the greatest distance, measured parallel to the selvages, between a filling or course yarn, stripe, or dominant line and a straight line perpendicular to the selvages. A bow may have different forms:

Single Bow%= Dip of the Bow (Maximum deviation from perpendicular line) × 100 ½ Width of the fabric

Double Bow%= Dip of the Bow (Maximum deviation from perpendicular line) ×100 ¼ Width of the fabric

Method of Measurement for Bow

- Lay at least three yards of fabric, without tension, on a horizontal surface.
- Place a straight edge across the fabric perpendicular to the selvages at a point where a filling or course yarn, stripe, or dominant line begins at the selvage.
- Measure the greatest distance between the perpendicular line and the yarn, stripe, or dominant line at any point across the width of the fabric (see Figure).
- Repeat this procedure at least three places along the length of the fabric and report the average maximum bow along with the location of the occurrence.

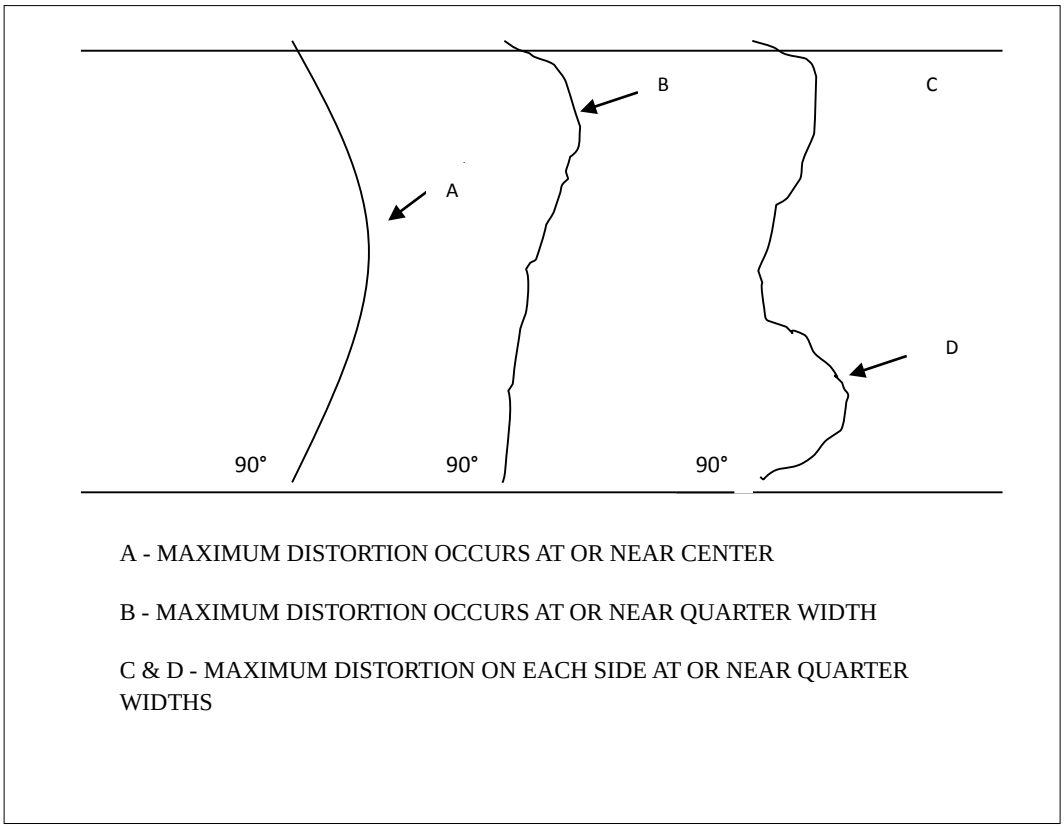


Fig 5.05: Method of Measurement for Maximum Distortion due to Bow.

Skew (bias) is defined as the distance measure parallel to and along a selvage between the point at which a filling or course yarn, stripe, or dominant line meets the other selvage.

Skew%= Dip of the Skew (Maximum deviation from perpendicular line) × 100 Width of the fabric

If the average Bowing or Skewing for a roll is more than 2-3%, reject the roll.

Method of Measurement for Skew (Bias)

- Lay the fabric, without tension, on a horizontal surface at least three yards long.
- Place a straight edge across the fabric perpendicular to the selvages at a point where a filling or course yarn, stripe, or dominant line begins at the selvage.

- Measure the distance parallel to and along a selvage between the point at which the yarn, stripe, or dominant line meets this selvage and the perpendicular line to the selvage form the point at which the same yarn, stripe, or dominant line meets the opposite selvage (See Figure 5.06). Repeat this procedure at least three places along the length of the fabric and report the average maximum bias.

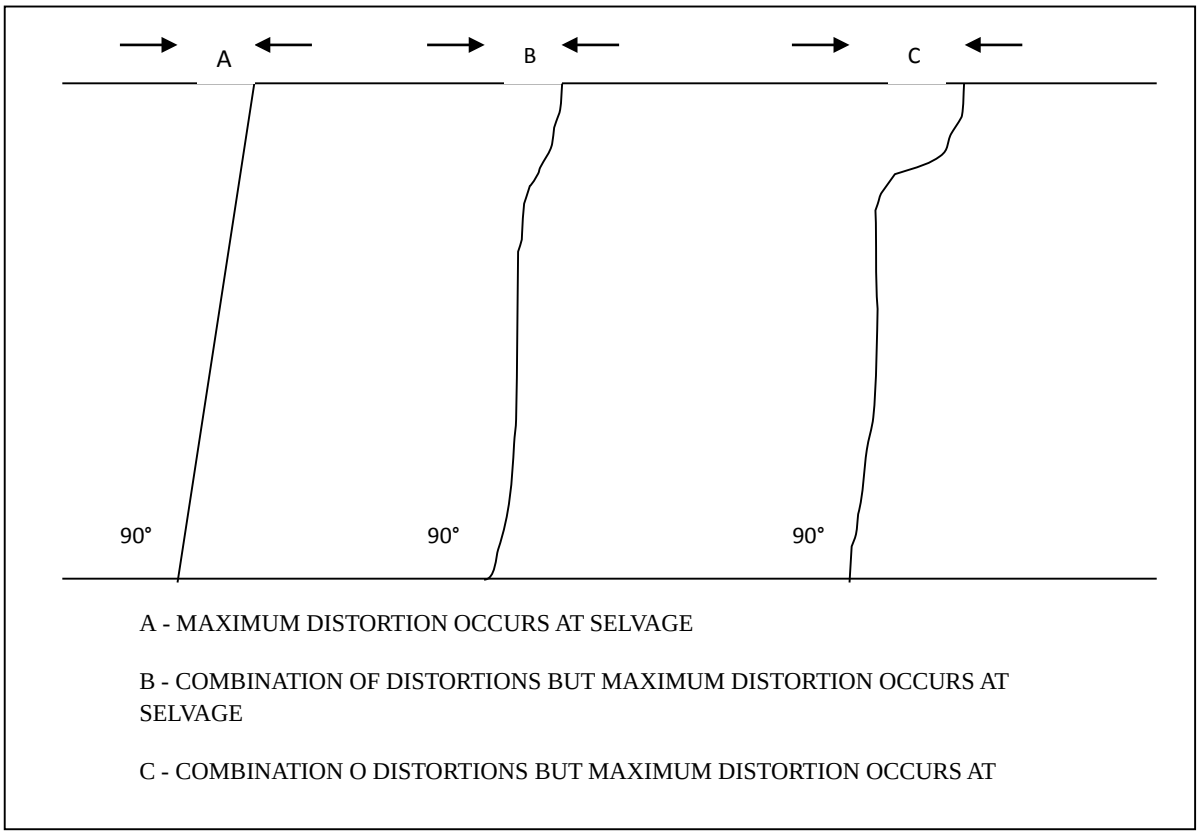


Fig 5.06: Method of Measurement for Maximum Distortion due to Skew (Bias).

Other considerations for rejection: Any noticeable shading within the roll off shade fabric

- Hands feel not to standard.
- Critical defects running for more than 2 meters.
- All major defects running for more than 2 meters in the fabric need to be cut out.
- Pattern repeat not up to standard or unacceptable variations.
- Appearance not up to standard or objectionable

Point calculation

For an individual roll

$$\text{Points per 100 Square Yards} = \frac{\text{Total points for the roll} \times 3{,}600}{\text{Inspected Yards} \times \text{Cuttable Fabric width(inch)}}$$

$$\text{Points per 100 Square Meters} = \frac{\text{Total points for the roll} \times 10{,}000}{\text{Inspected Yards} \times \text{Cuttable Fabric width(mm)}}$$

The format to be used for piece good inspection is explained below:

- Date, Inspected by, Fabric supplier, Purchase Order, Total Rolls Received, Total □ Yards Inspected: All self-explanatory.
- Style: As all orders are tracked through style number it is important to mention the Style number, this continues through the entire order processing.
- Total penalty points: Summation of the total points assigned for each roll; total points are the frequency of the number of defects multiplied by penalty points depending on the length/diameter of defect.
- Points per hundred square yards: Average number of points per hundred square yards of fabric checked; calculated with the formula at bottom of format.
- Accept/Reject Shipment: Mark according to the desired quality standards.
- Roll Number: Number of roll being inspected, selection of rolls needs to be made as explained above.
- Color: Color of roll being inspected at least two hundred yards or ten percent, whichever is more, needs to be inspected in each color.
- Width: Width of the roll ordered and maximum and minimum width of the rolls inspected (measured at regular intervals).
- Length: Length of the roll as marked on the roll by the supplier and actual length as observed during the inspection in yards.
- Shade Difference: Marked as yes if there is a shade variation in the roll from either start to end or from selvedge to selvedge.
- Defect Marking: Each defect when observed on the fabric is measured and then a code of the defect as mentioned on the bottom of the format is marked on the corresponding column classified by length of defect.

Shade

While all denim is blue, every mill offers its own specific cast or hue, which is generally referred to as shade. Shade can be affected by where indigo dye was purchased, size of dye vats, whether sulfur was mixed with indigo, etc. Because of this, every denim quality will wash down differently depending on the mills dye recipe. In order to give customers a vast range of wash options, it is important to buy cloth in a variety of shades (pure indigo, blue/black, sulfur top, sulfur bottom, etc). If you start with only one denim shade, the range of possible washing is limited. Shading control is very important for the mills since the manufacturers of jeans need to know that they do not have too many shades – which will spoil their collections.

Shade batching

The process of selecting batches of fabrics into homogeneous shade lots to obtain consistent color continuity in garment making.

Shade blanket

Where fabric is cut from each roll of fabric, sewn together, with roll numbers on the back of each pad to allow manufacturers to wash and identify all shade colors of each roll. This is an important tool in cutting apparel made from denim to ensure you cut garments from the same shade group. Fig 5.07: Shade Blanket

Shade Variation

- **Shade Variation within a Single Roll**

The color and shade of any upholstery fabric shall not vary within the roll. Variation of color or shade from selvage is not permissible. Streaking, striation, or any other visual inconsistencies in color or shade are not acceptable or permissible.

When a roll of upholstery fabric contains more than one piece, each piece within the roll shall come from the same dye lot or production lot.

- **Shade Variation from Roll to Roll**

Roll to roll shade matching shall conform to commercial tolerances established between buyer and seller. Inordinate difficulties in shade control should be communicated to the fabric purchaser by the fabric manufacturer at the time of original agreement to purchase.

- **Shade Variation in Pile Fabrics**

Since "direction of lay" of pile fabrics can create apparent shading problems, finishing and handling procedures shall be such that the direction of lay of the pile is consistent within the roll and from roll to roll. Packaging, storage, shipping, and handling of pile fabrics shall be such that pile distortion within a roll is at a minimum. No curling or wrinkling should occur in any direction when the fabric is spread, without distortion, on the cutting table.

Visual Shade Evaluation

The following items are critical in Visual Shade Evaluation:

- **Observer:** It is strongly recommended that the person making shade judgments have a normal color vision.

- **Light:** Although there are numerous light sources available, when comparing standards to production it is best that the light source be consistent. However, in resolving issues of color difference between buyer and seller, it is recommended that the same flight source be used by both parties. It is important that the quantity of light be sufficient. For instance, dark colors require more light to detect differences than light shades.

- **Viewing Area:** The viewing area and surround will influence the apparent color difference between standard and sample. The viewing area and surround needs to be painted a medium gray color to have the least influence on the fabric being reviewed. The undesirable effects of extraneous light and/or color from other fabrics or clothing should be avoided.

- **Standards and Specimens:**

  Standards – All standards should be kept in a controlled location free from contamination such as gas fumes, light and dust.

  Specimens – The area of the specimen being compared should be representative of that same area in the standard.

Shade Segregation

For shade segregation following procedure are used

First a predetermined length is cut form the full width fabric roll (This length depends on buyer i.e. for H&M 22 inch of length, for others 12 inch of length)

↓

Then a predetermined sq. pice of the fabric is cut form every pice and all of them are sewn togather to make a blanket. This process is called blanket making.

↓

This Blanket is then sent to wash. (Depending on the type of wash required by the buyer)

↓

After wash this pices are separated and examined visually under proper light (1000 lux.). While doing shade segregation, color matching done by using paramount matching cabinet which is provided with D-65, TL-84, UV, INCA light sources.

↓

Different shades are mentiond like shade-A,B,C etc. sometimes shade groups are also made if shades are to close. And Shade bands are made

↓

The shade bands are then sent to inform merchandiser and cutting authority for approval and references.

↓

Then shades are mentioned on each fabric roll and sent to cutting shade wise as required.

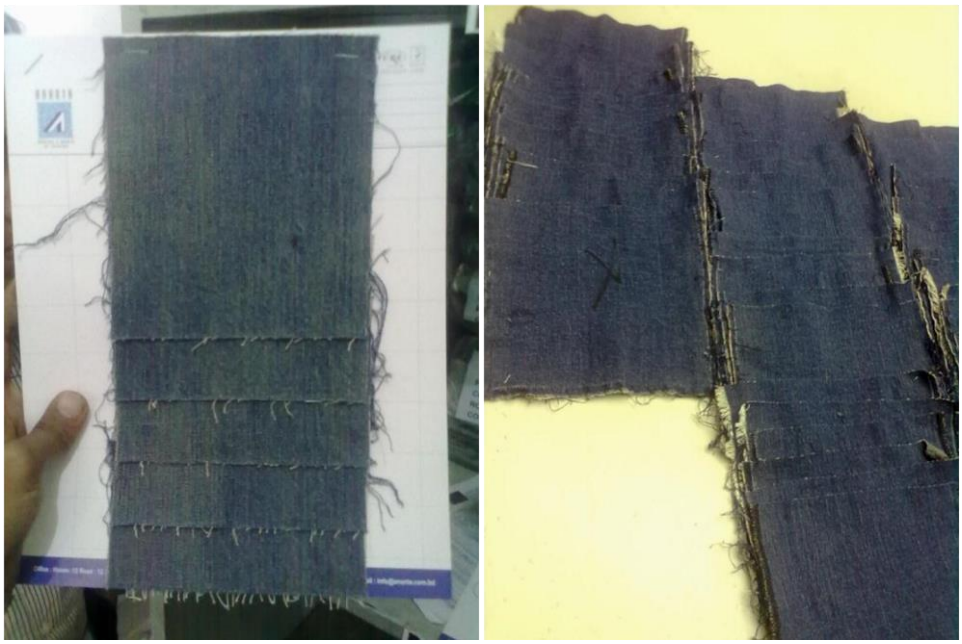


Fig 5.08:Shade segrigation

Color Matching Cabinet

Model: SpectraVision (LCD Display)

To access the colour matching of Yarns & dyed or printed fabrics or any material anyway coloured.Feather touch Control Panel with LCD Dispaly. Supplied complete with 45° angle viewing table. Supplied with Inspection & Calibration certificates. Supplied with Inspection & Calibration certificates.

Fig 5.09: SpectraVision Light Matching Cabinet

Llight sources: CWF, D 65, TL 84, UVB and INCA. Natural matt colour sunmica is used inside the cabinet that strictly adheres to the International standards.

Supplied with Inspection & Calibration certificates.

Weight: 28 Kgs. (61 lbs)
Dimension:

Length	Depth	Height
710 mm	470 mm	575mm
285 inch	18.5 inch	22.6 inch

Related Standards

ISO 3664,BS 950, DIN 6173, ASTM D 1729, and JIS Z 8723

Accessories store

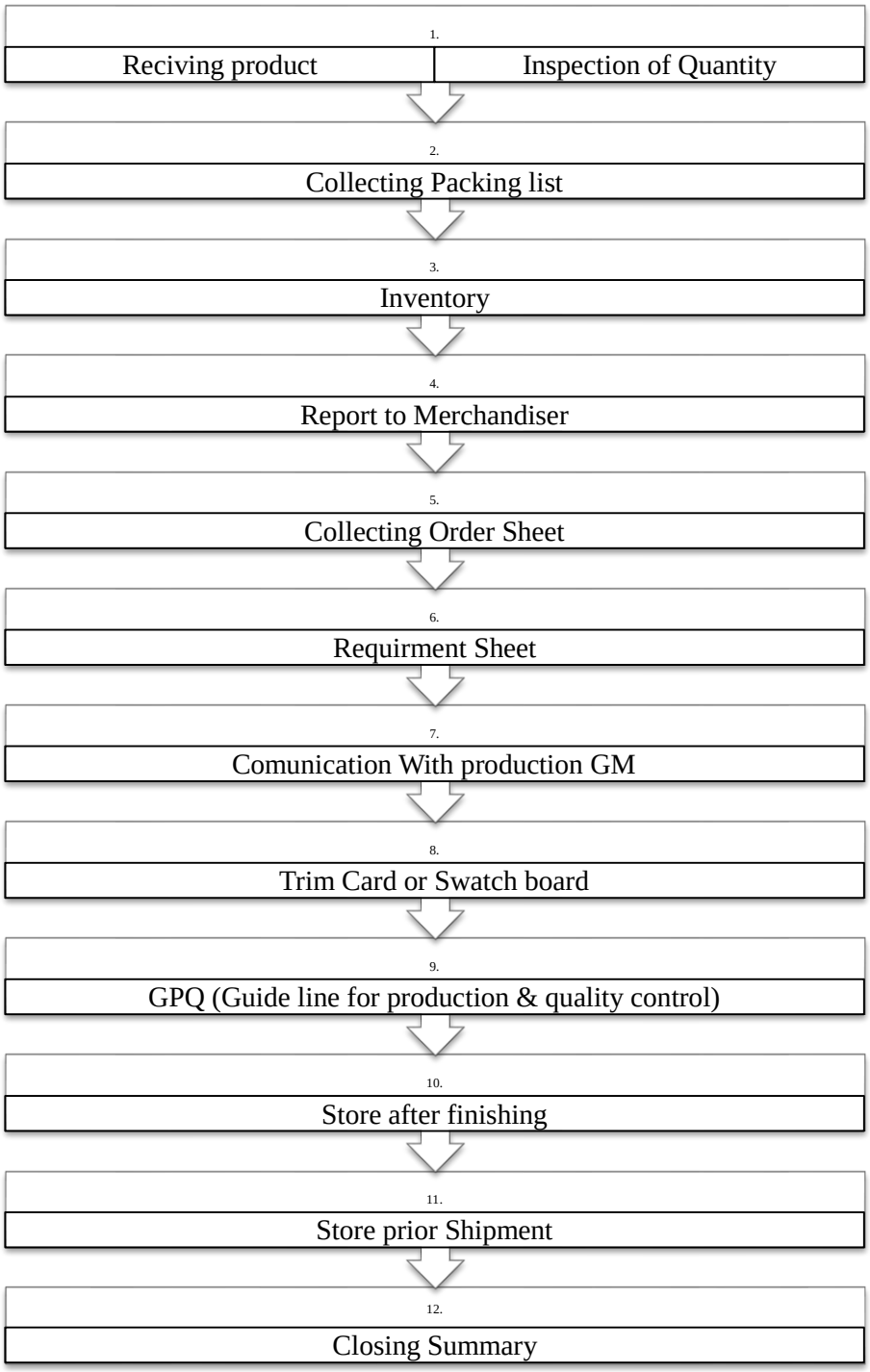
The accessories store department is responsible for keeping all the accessories & trims in order & in suitable condition for being used in sewing or production. They are in charge of accepting raw materials into the store. They keep record data for whatever they sustain. And these functions are done by coordinating with the merchendiser.

The raw materials used in sewing room other than fabrics this are trims.Such as Threads,Buttons Labels,Zippers etc.

The materials which are used to make a garment attractivee for sale and packing,other than fabrics and trims this are accessories.such as Label,Zipper,Button,Hang tag,Hanger,poly,carton etc.

Fig 5.10:Accessories section

Work Flow of Accessories Section



Different types of Accessories Working Procedure

Fig 5.11: Different types of accessories

Working procesure of the accessories dept of ananta garments is given bellow

- At first this department receives a copy of p/o form the merchandiser via email. Form this p/o they get to know about the date of material arrival. Also the types, quantites and other specifications about the incoming materials.
- Once the materials reaches the store on ETA a the concerned persion verifies the materials with the delivary report or challan and packing list . this packing list is supplied to them by the merchandiser. In this way in house inventory is done.
- After the inventory has been made the dept. also perform quality inspection on the recived goods. The method of inspection may vary on buyer types as different buyer may require different method. However the company have a standard AQL level for the inspection of all the materials. And all the repots about the material receiving and inspection is sent to the merchendiser.
- Then they collect order sheet and requirment sheet. They make trim card which is basically a reference of all the accessories which are to be used in production. This card contains sample of all the original trims & accessories for that particular order.
- They are also responsibale for the supply of the materials to the sewing floor. They supply the trims and accessories to the sewing floor according to the requirment of the production.

Spare Parts store

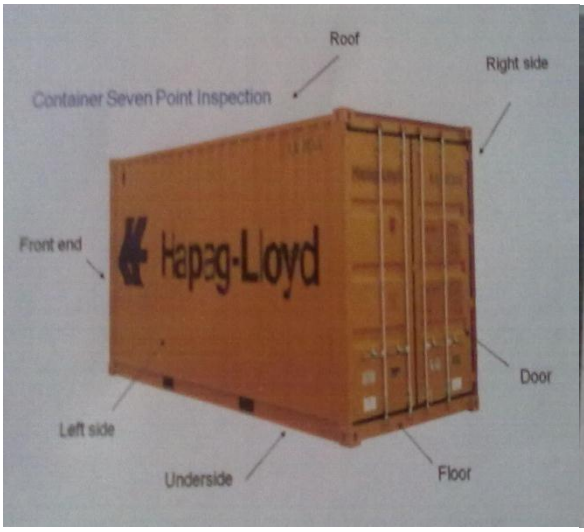
This store is responsible for storing new and old stationary and spare parts needed for the industiy. This small section is run by a manpower of 2.

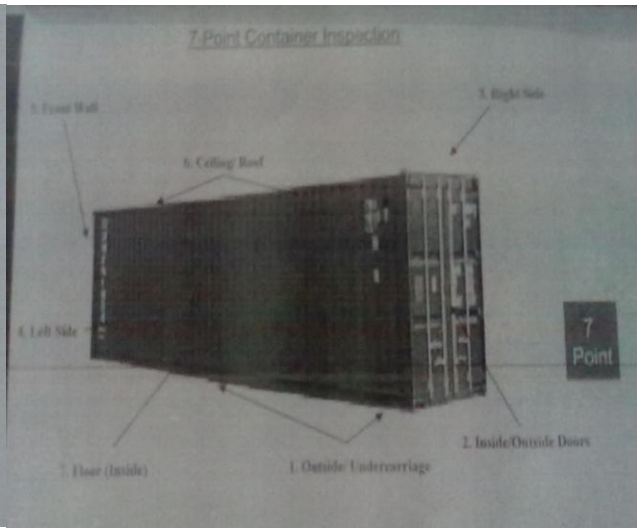
Working procedure

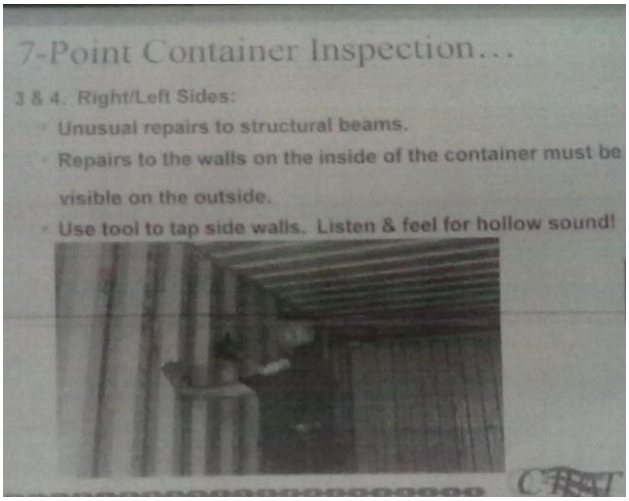
- Store officer keeps the stationary & spare parts in store & makes a list of those.
- If they are short of any item they makes requisition to the maintanace manager.
- Maintenance manager gives requisition to head office. Head office imports spear parts form abrod or local market as per requirement.
- As new items arrive to store, the store officer he receives and catalogues them.

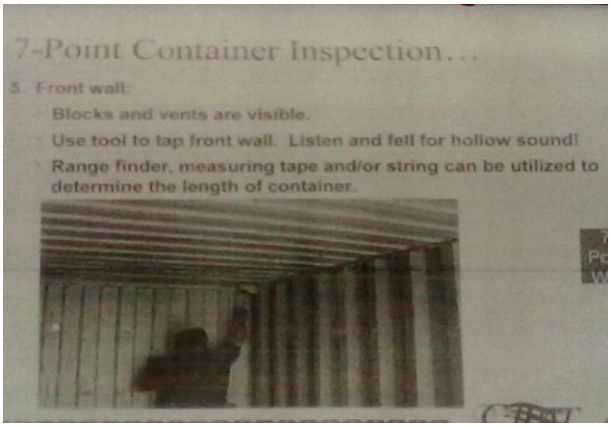
- He supplies the accessories as per requirement records the date, type of material, quantity & section in which supplied in his register book**.**

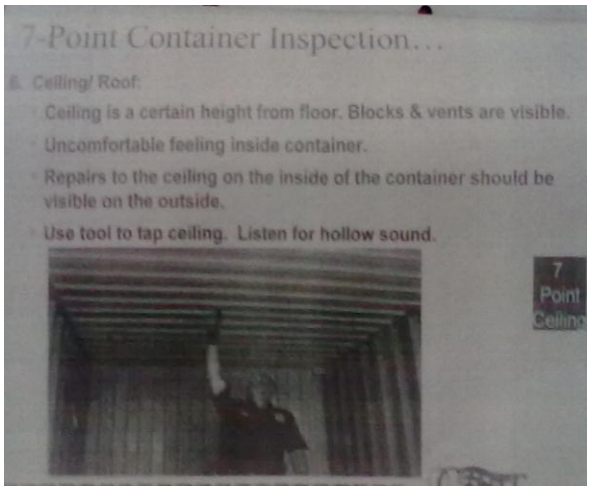
7 point container Inspection:

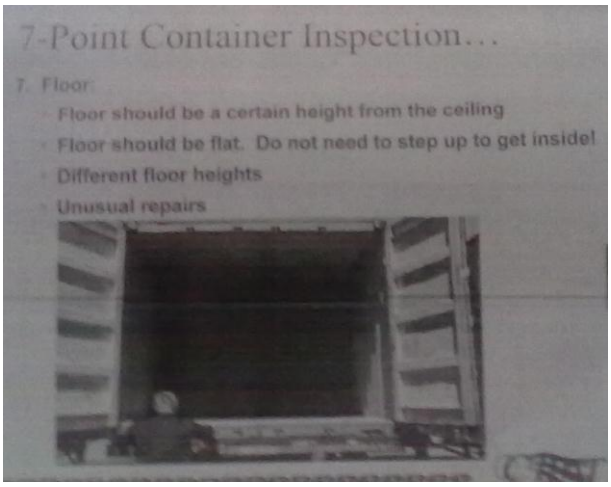












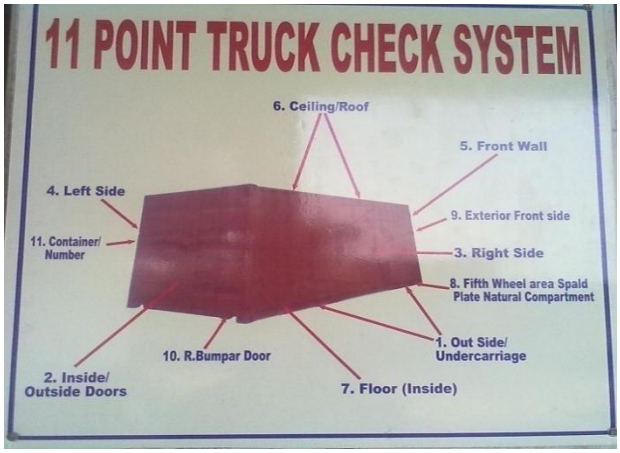


Fig 5.12: 7 point container Inspection and 11 point Truck check system

Testing Lab

The testing of textile product is an expensive business. A laboratory has to be set up and furnished with a range of test equipment. Testing is needed for all the costs are nonproductive and therefore add to the final cost of the product.

"Ananta Garments Ltd." has testing lab for test the samples from buyer's specification. It's maintained by the quality assurance dept.

Location of the Department:

Testing is done in the lab by various testing equipment. Testing Lab is situated in the 1st floor of the factory.

Main steps for textile testing

- Checking raw material Monitoring production
- Assessing the final product
- Investigation of faulty material
- Product development and research

Ananta In-house Test Laboratory

- Dimensional stability/shrinkage
- Twisting
- Color fastness to staining
- Color fastness to dry & wet rubbing
- Color fastness to saliva
- Color fastness to perspiration
- Color fastness to changing
- Color fastness to cross staining
- Color fastness to water
- Appearance after laundering
- P^H
- Fibre analyze

- GSM

Dimensional stability/shrinkage

The dimensional stability of a fabric is a measure of the extent to which it keeps its original dimensions to its manufacture shrinkage is a problem that hampers the dimensional stability of a fabric. Fabric shrinkage can cause problems in two main areas-

- During garment manufacture
- During subsequent laundering by the ultimate customer

At these factory for shrinkage test used per body 10 gm detergents by normal washing. Time duration for washing H&M buyer 40 minute and the others buyer 20-40 minute.

Color fastness to dry & wet rubbing

Rubbing fastness is the resistance to fading of dyed textiles when rubbed against a rough surface. The fastness to crocking or rubbing is widely used on a variety of fabric to evaluate the transfer of surface dye from the test fabric when it is applied surface friction or rubbed against a rough surface.

Two types of rubbing test are done-

- Dry
- Wet

Equipment

- Crock master
- Grey scale staining

Crock master

Crock master is used for testing the transference of color from the surface of one material to another by either wet or dry rubbing.

In addition to color transference tests, the Crock master performs scuffing, wet / dry abrasion, flexing, powdering, dry-cleaning, ink abrasiveness, and other tests. Test conditions are controlled and reproducible through the use of standard pressure and motion.

Features of Crock master:

- To determine the Color Fastness of Textiles.
- The equipment consists of a counter.
- It is provided with a flat peg.
- It also consists of an operating handle.
- Tests the color fastness of the textile in a very accurate manner. It gives not only accurate but quick results also.

For force on the finger 9N is used.

Fig 10.01: Crockmaster

- Smooth, precision-engineered mechanism
- Built-in, digital counter (battery-operated)
- Guaranteed accuracy of loading and stroke length
- Easy-to-use, polycarbonate specimen clamp
- Compliant with: EN ISO 105 X12, AATCC 8 and M&S C8

Color Fastness to wet Rubbing

Current criterion

"The color fastness to wet rubbing shall be at least level 2-3. A level of 2 is nevertheless allowed for indigo dyed denim. This criterion does not apply to white products, products that are neither dyed nor printed, or to curtains or similar textiles intended for interior decoration.

Test method: ISO 105 X12. Test report required on application.‖

Changes to the criterion

This level should be at least 3 (2-3 for denim), and it should also apply to interior decorations as there are examples, where products with such low levels have stained themselves during washing. A number of comments during the revision work recommended, however, keeping the existing level. The exceptions regarding curtains and textiles intended for interior decorations are deleted, resulting in the following formulation: "The color fastness to wet rubbing shall be at least level 2-3. A level of 2 is nevertheless allowed for indigo dyed denim. This criterion does not apply to white products or products that are neither dyed nor printed."

Assessment and verification: The applicant shall provide test reports using the following test method: ISO 105 X12.

Color fastness to Dry Rubbing

Current criterion

—The color fastness to dry rubbing shall be at least level 4. A level of 3-4 is nevertheless allowed for indigo dyed denim. This criterion does not apply to white products or products that are neither dyed nor printed, or to curtains or similar textiles intended for interior decoration.

Test method: ISO 105 X12. Test report required on application.‖

Changes to the criterion

The criterion has not been questioned or subject to other suggestions. It therefore remains unchanged, except for assessment and verification, with the following wording: The color fastness to dry rubbing shall be at least level 4. A level of 3-4 is nevertheless allowed for indigo dyed denim. This criterion does not apply to white products or products that are neither dyed nor printed, or to curtains or similar textiles intended for interior decoration.

Assessment and verification: The applicant shall provide test reports using the following test method: ISO 105 X12.

Color fastness to saliva

This test is used for baby garments.

Chinese standard GB/T 18886-2002

Preparation of saliva solution

- 3.0 g/l Lactic acid- $CH_3.CH(OH).COOH$
- 0.2 g/l carbamide-$H_2N.CO.NH_2$
- 4.5 g/l sodium chloride-Nacl
- 0.3 g/l potassium chloride-KCl
- 0.3 g/l sodium sulphide-Na_2SO_4
- 0.4 g/l Ammonium chloride-NH_4Cl

Color fastness to perspiration

The garments specially dress materials which come into contact with the body where perspiration is heavy (like neck, under arm etc.) may suffer from serious local discoloration.

Two types of

perspiratio

n- □

Acidic

(around 6)

- Alkali (around8)
- Perspiration meter is used for this test.

Perspirometer is used for determining the resistance of the color of textiles of all kinds and in all forms to the action of human perspiration.

Color fastness of dyed or printed fabrics, against perspiration, is determined by exposing the fabric to the action of both alkaline and acidic reagents, while in contact with undyed adjacent fabrics on both sides. Face side is used 100% cotton fabric and back side is used 100% wool and the temperature range 37°C - 37.5°C.

Features of Perspirometer:

- Can also be used for testing color fastness against sea water and water.
- Made of stainless steel frame.
- A different load for AATCC standards is available on request.
- User friendly and corrosion resistant.
- Smooth precision engineered components for excellent performance.

Fig 10.02: Perspirometer

Recipe

For testing two perspiration solutions are required which can be made as follows-

Chemicals	Acid Solution	Alkali solution
l-histadine monohydrochloride mono hydrate	0.5gm	0.5gm
Sodium chloride(Nacl)	5.0gm	5.0gm
Di-sodium hydrogen orthophosphate-Dihydrate(Na_2HPO_42H2O)	2.2gm	2.5gm
Volume is Distilled water	1000ml	1000ml
PH(adjust with N/10 NaoH)	8	5.8

Process

Dilute the solution up to, liter in a liter volumetric flask using distilled waters the transfer the continent to a 1.5 liter beaker and bring the pH 8.0 with 0.1 mol/l (0.1N) sodium hydroxide (NaoH).

Current criterion

The color fastness to perspiration (acid and alkaline) shall be at least level 3-4 (color change and staining). This criterion does not apply to white products, to products that are neither dyed nor printed, to furniture fabrics, curtains or similar textiles intended for interior decoration.

Test method: ISO 105 E04 (acid and alkaline, comparison with multi-fiber fabric). Test report required on application.

Changes to the criterion

Level 4 should be used here to be sure to avoid consumer complaints. A number of comments during the revision work recommended, however, keeping the existing level.
—The color fastness to perspiration (acid and alkaline) shall be at least level 3-4 (color change and staining).

This criterion does not apply to white products, to products that are neither dyed nor printed, to furniture fabrics, curtains or similar textiles intended for interior decoration.

Assessment and verification:

The Perspirometer applies a specified pressure to a package of test specimens separated by acrylic or glass plates. The spring loaded mechanism ensures the correct pressure is maintained when the loading Weight is removed. Two loading Weights are available to accommodate the requirements of the ISO and AATCC test methods.

Manufactured from high grade stainless steel, the Perspirometer is rigid and corrosion resistant. The Incubator provides, and accurately maintains, the controlled environmental conditions for the duration of the test specified by the standards.

ISO Certificates of Calibration are available which provide validation of instrument performance and specification.

Color Fastness to Perspiration

To test color fastness to perspiration, specimens (fabric, yarn or fibre) in contact with Multifibre Adjacent Fabric, are treated in two different solutions containing histidine, one alkaline and one acidic.

The specimens are subsequently drained and placed under constant pressure between separator plates in the Perspirometer. Up to 20 test specimens can be accommodated.

The units are then placed in an Incubator for 4 hours at 37˚C (body heat).

After drying, change in color of the specimens and staining of the adjacent fabrics are assessed with Grey Scales.

Separate Perspirometer units must be used for alkaline and acidic tests to avoid chemical interaction.

ISO 105 E04 – Color Fastness to Perspiration.

AATCC 15 – Color Fastness to Perspiration

Color fastness to water

Purpose and Scope

This test method is designed to measure the resistance to water of dyed, printed, or otherwise colored textile yarns and fabrics.

Distilled water or deionized water is used in this test method because natural (tap) water is variable in composition.

Principle

The specimen, backed by multifiber test fabric, is immersed in water under specified conditions of temperature and time, and then placed between glass or plastic plates under specified conditions of pressure, temperature and time. The change in color of the specimen and the staining of the attached multifiber test fabric are observed.

Terminology

colorfastness, .the resistance of a material to change in any of its color characteristics, to transfer of its colorants to adjacent materials or both, as a result of the exposure of the material to any environment that might be encountered during the processing, testing, storage or use of the material.

Apparatus and Materials

- AATCC Perspiration Tester, Perspirometer or equivalent device (plastic or glass plates are available with the equipment) Drying oven convection.
- Multifiber test fabric.
- AATCC Chromatic Transference Scale
- AATCC Gray Scale for Color Change and Gray Scale for Staining

Test Solution

Freshly boiled distilled water or deionized water from an ion-exchange device.

ISO 105 E01 – Color Fastness to Water

AATCC 107 – Color Fastness to Water

PH

pH value is to test the acid and alkali contents remained in apparel fabrics. Apparel fabrics which can directly contact with the skin has a relatively higher requirement on P^H value. P^H value will not make the skin itchy if controlled between weak acid or neutrality.

Fabric suppliers should emphasize the treatment on printing and dyeing process to avoid the excessive P^H value. Exportoriented textile and garment companies should focus on the product quality during the production and strictly control the fabric

inspection to ensure the garment quality to reach the requirement of security, sanitation and environmental protection.

Fig 10.04 P^H Meter

Test to indicate the efficiency of washing operation after various wet treatment either bleaching or scouring.

Apparatus

- Conical flask150ml, with stopper-15 pieces
- Digital PH meter with electrode-01 piece
- Electric balance, accurate to 0.01g001piece Buffer solution that PH4.0, 7.0, 10.00.
- Measuring flask 100ml, 500ml, 1800ml.
- Mechanical shaker

Reagent

Distilled water potassium chloride (KCl)

Solid-Analytical grade

Potassium chloride solution (KCl) in concentration 0.1M

By adding 7.5 gm KCl solid to1000 m

water prepare 0.1 M KCl solution

P^H Test

Make first 3M KCl solution by adding 223.7 gm KCl solid to 1000ml distilled water, then prepare 0.1 M KCl solutions (P^H test solution) by diluting 33 ml 3M KCl solution to 967 ml distilled water to make 1000 ml P^H test solution.

Test procedure

2 gm small pieces samples in one conical flask ⟶ Add 100 ml 0.1 M KCl solution ⟶ Prepare three conical flasks in same samples is same way ⟶ Keep this solutions for 15 hour or shake for 2 hours ⟶ Measure with P^H meter.

Calculating the result

First measured will be skipped and the average value of second and third measures of one sample is calculated.

Fibre Analyze

For fibre analyze No chemical is used. Firstly, 1 gram square cutting fabric for testing. Then weft yarns are counting. After completing weft yarn twisting opened. Then separate the fibre and weighting this fibre to finished fibre analyzing process.

GSM

"GSM" means Gram per square Meter.i.e; weight of 1 square meter fabric in gram. It is a measurement of fabric weight. It can be controlled by-

- Yarn count (40 Ne, 7 Ne, 20 denier etc)
- Thread density (EPI, PPI, WPI, and CPI)

EPI (End per Inch) ; PPI (Picks per Inch) ;WPI (Wales per Inch); CPI (Course per Inch)

GSM cutters are used to determine accurately the GSM (Grams per square meter) of any type of fabrics. With outmost precision and care and manufactures a wide assortment of GSM cutters, using quality raw material. Being easy to operate and proved to provide accurate results.

This GSM Cutter is circular fabric sample cutter with which uniform circular fabric is cut without measuring. The specimen which is cut with the help of fabric GSM cutter is 100 cm2 areas. The instrument is equipped with a set of four replaceable blades and normal cutting pads.

Features of GSM Cutter:

- Reliable rapid, and easy to use.
- 100 Square Centimeters cutting area.
- Depth of cutting up to 5mm.
- Special finishes for contacting surfaces to avoid of specimen slippage.

It can be measured by GSM cutter machine in the most convenient way. In this process GSM can be finding out by using this formula-

Fig 10.05: GSM Cutter

GSM= Sample weight × Dia constant of the GSM cutter (Cutting by GSM cutter machine)

Sample Department

Garment samples are inevitably important and are developed tested before starting the bulk production. It means making a sample of the garment or fabric which requires to be sold. Sampling is one of the main processes in Garment Industry and it has a vital role in attracting buyers. Because the buyers generally places the order after they are satisfied with the quality of the samples.

The garment which is need for bulk production is called sample garments. According to specification sheet the sample which is approved by Buyer is called approved sample & the sample which is followed by approved sample is called counter sample. For smooth production it is necessary.

"Ananta Garments Ltd." has separate sample section which is located in the 7th and 8th floor in the 9 storied building. The 7th floor is named after our hero freedom fighter **"Bir Protik Setara Begum"** which is included in this floor has Sewing, Time Section, Admin room, GM production,

Mechanical room, Development sample, Buyer's corner and the 8th floor is named after another of our hero freedom fighter **"Bir Protik Taramon Bibi"** which is included Cutting unit1, 2; Development sample, Time section Admin room, Mechanical room, CAD room office.

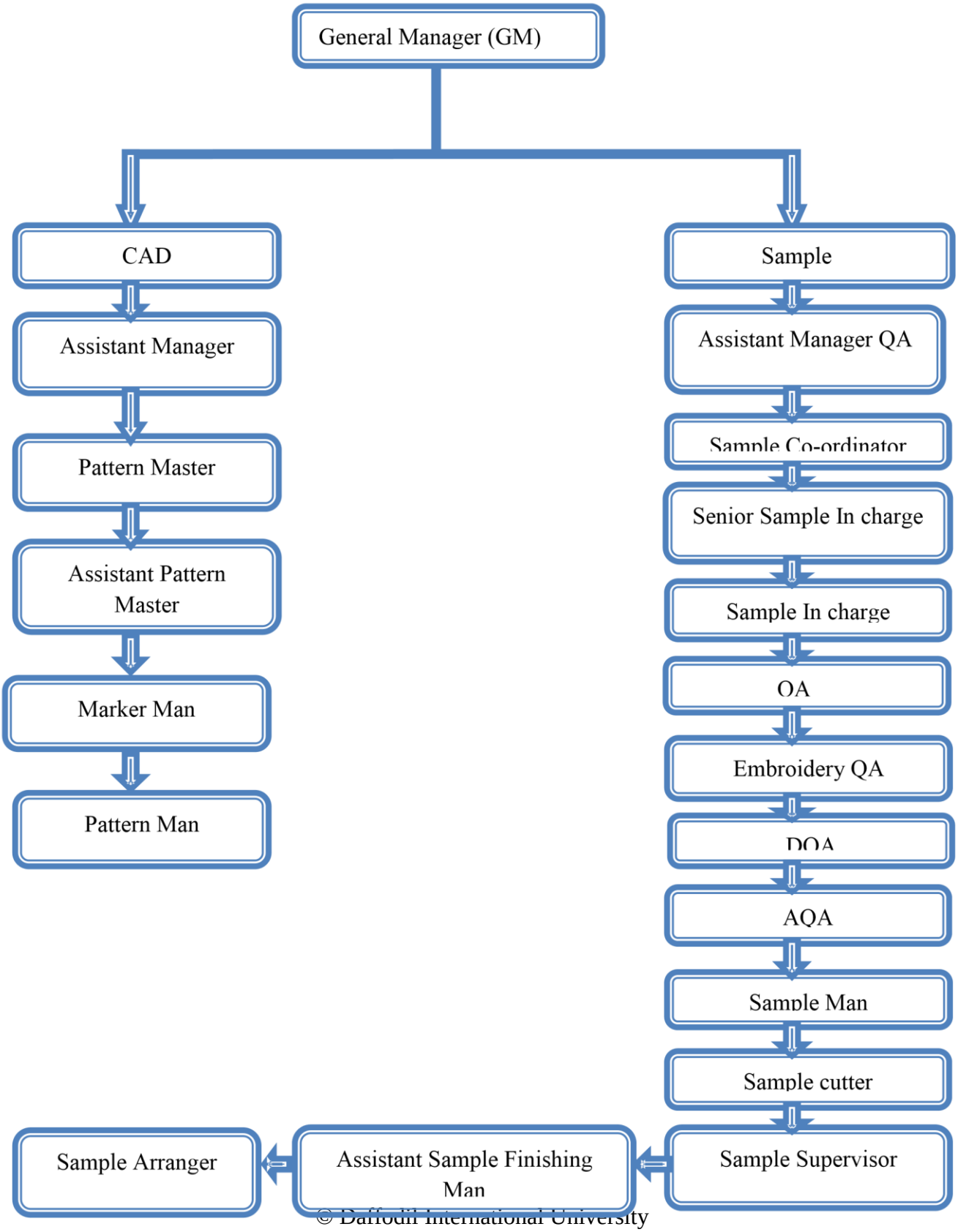
The Details Attached to the Garment Sample

After the confirmation of order, each sample sent to the buyer has the following details attached to it, with the help of a tag. It contains the details, what the buyer has demanded and what supplement fabric/trim etc. they have used (if applicable).

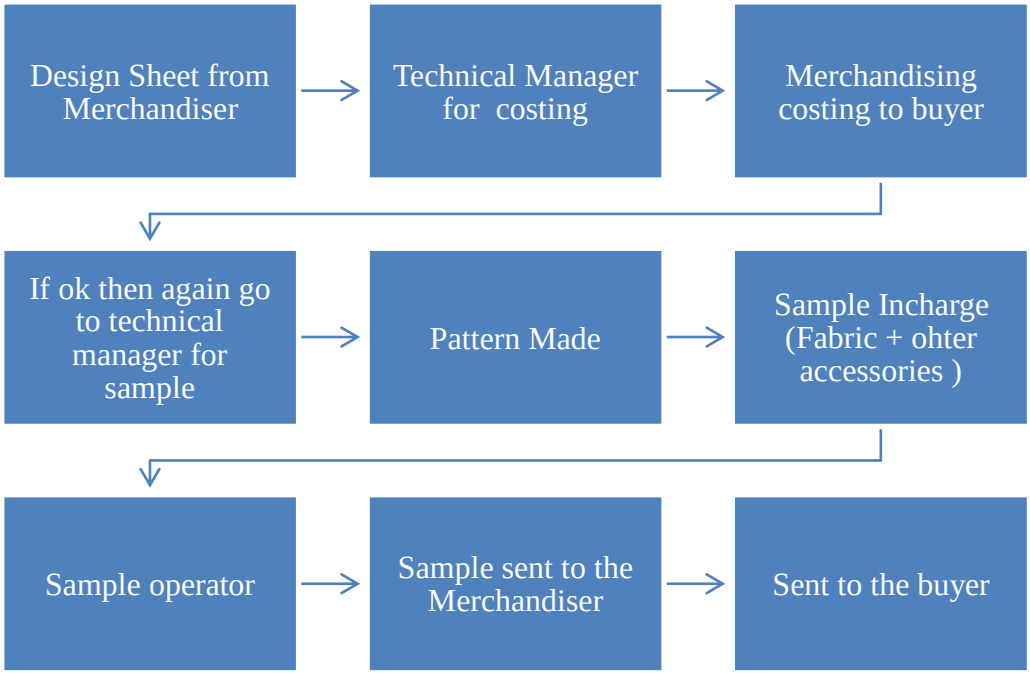
- Reference Number
- Color
- Fabric
- Composition
- Description

- Quantity
- Style Number / Size
- Store

Sample Department Organogram



General work flow of sample Department



Types of sample

- Salesmen samples or promotional samples
- Proto samples or fit samples
- Counter samples or reference samples or approval samples
- Wash test samples
- Photo samples
- Fashion show samples
- Pre-production samples
- Production samples
- Shipment samples

Salesmen samples or promotional samples

The sample is done usually on all size in all color combinations. Buyers record his customer‘s response on the order quantity as per color and size etc. After that buyer give the order to the manufacturer.

Proto samples or fit samples

These types of samples are to be made after getting the order sheets from the buyer. These samples are needed to check the measurements, style and fit. So they can be made in available similar fabrics; but in the actual measurements and specifications. Based on these samples, buyers may do some changes in measurements, style and fit.

Counter samples or reference samples or approval samples

These samples are to be made in actual fabrics with actual trims. If the order is for 3 colors, buyer may need samples in any one color and swatches (fabric bits) in other colors. These samples should be strictly as per the specifications in the order sheets. So have to get the approval for these samples from the buyer before starting production.

After getting the approval, the approved samples should be followed in production. Sometimes, buyer may comment on fabric, measurements, making, etc. Some buyer will mention that the order sheets subject to the approval of counter samples. So these samples are very important.

Wash test samples

These types of samples are to test the shrinkage, color fastness, measurements, dimension stability and spiraled of garments after washing. If these samples are sent before starting production and if get some remarks or comments on these samples, correct them in production. But some buyers will need to send these samples from

production before shipment. In this case, these samples may be considered as _shipment samples‘. If these samples are rejected due to some complaints, then will not have any excuse.

Photo samples

These types of samples are to be needed according to the buyer requirement. Some buyers use to sell their garments by creating a catalogue furnishing all details like style, colors, sizes and important measurements of garments including photos. These buyers need these samples for taking photographs. If the buyer wants print the photos of garments on photo inlays, packing box, hang tag, etc. These types of samples usually needed for local advertisement or buyer‘s promotional occasions.

Fashion show samples

Some chain stores buyers will need these samples. They will need these samples in all colors covering all sizes. Usually they need 2 or 3 samples in each size in each color. These samples can be sent from production. The buyers will pay the cost of these samples.

Pre-production samples

These types of samples are almost like approval samples. These types of sample have to be made in actual production fabric with actual bulk trims. Much of production will be like these samples.

Production samples

These samples are to be sent before shipment to get the buyer‘s confirmation for shipment. Hence these samples are needed to be perfect in all manners. Buyer may

check these samples for everything or anything. Sometimes, they may do wash test also. When the buyer finally comments _OK' then only sent to ship the goods and can be sure of getting payment. So these samples are to be sent with more and more care.

Shipment samples

These samples are to be sent after shipment. These types of samples should be sent in actual packing with all labels, tags, etc.

Sample making procedure

Sample making process includes the following stages

- Studying working sketch, specifications, and construction details of the garment to be made.
- Material selection and making the first pattern.
- Sewing the first sample garment or prototype – proto sample to see if a design is successful; sending sample to the buyer.
- Solving construction problems according to buyer's comments; fabric changing if needed.
- Sewing the first fit sample; fitting the garment on a model or a dummy, and sending the first fit sample to the buyer.
- Making pattern correction based on buyer's comments.
- If the first fit sample is rejected the garment must be remade with all the necessary corrections done.
- After the fit sample is approved by a buyer, the pre-production sample must be made using all the actual fabrics and trims.
- Once the pre-production sample is approved by a buyer, the sealed sample must be sent to the garments production factory along with graded pattern and CAD marker. Embroidery or print placement must be marked.
- Sewing the lab test sample and sending it to an independent laboratory (test house). The sample garment must meet minimum performance standards to ensure the product is suitable for customers use.
- Sewing the production size-set sample using all the actual fabrics and trims. If there is embroidery or print on the garment, approved artwork design must be followed strictly.
- **Specification sheet** is a record of finished garment measurements for all the sizes in which the garment will be made. It is used by pattern master, supervisor, sample operator, and quality controller to ensure that the garment meets company standards.

Different types of sample Buyer wise

GAP / Old Navy

- NYPD sample / Develop sample / LA sample
- Fit / JSS sample
- Wash Sample
- Add Sample
- GPT Sample
- GCR Sample
- Sealer Sample / Yellow tag sample
- P.P Sample
- Formal dyed Sample

H&M

- Development sample
- Quotation sample
- Size set sample
- Photo sample
- Fashion show sample
- Production sample
- Counter sample
- Wash reference sample

NEXT

- Develop sample
- White seal sample
- Size set sample
- Gold seal sample

MILES

- Develop sample
- Size set sample
- P.P sample
- Photo sample

Work of Sample Room

Make different types of sample. Basically step sample making depends on buyer. Sample making processes of different buyer are totally different. The main job in sample room is to make sample as per measurement, and also as per buyer comments.

Fig 8.01: Sample Making Section

Importance of sample room

Sample Room is the most vital section in garment industry. Because without sampling buyer doesn‘t place any order. Before conforming the order buyer wants sample, in different steps. A Garments Manufacturer confirms an order when they get the sample approval from buyer. Any kinds of design its may very critical or easy at first make in sample room then it‘s going to production floor for much production. There is a lot parts in one garments, so any kinds of mistake can happen during pattern making or cutting or sewing period. It is very tough to overcome the mistake, if it happens in

much production time. For any mistake buyer can cancel the order, as so company will be loser. So to produce guiltless product there is no alternate option without sampling. Any kind of problem can solve very easily and quickly in sample room. So it is very easy to imagine the Importance of sample room in Garment Industry.

Responsibility of sample stuff

Sample room In charge: Sample room In charge is one of the most responsible people. Because sample men make the sample by following his instruction. The job of Sample room In charge is;

- Receive buyer order sheet from merchandiser.
- Follow the instruction of buyer.
- Make a work plan.
- Make understand work planning the Supervisor
- Check sample room machineries before starting the work.
- Time to time maintain everything and cooperate with another stuffs.
- Make sure the skilled operator.
- Make sure the better facility in sample room for sample man.
- He will responsible for failure of sample.
- He will ensure that all sample man are perfectly trained.
- He will install a right management system in sample room.

Sample Supervisor: Actually the job of sample supervisor is to supervising everything in sample room. He understands of all work from Sample In charge and gives order to sample man to make sample. And he always maintains all crises. If any sample man fall in problem, they cooperate with Sample supervisor at first. He will give the solution.

Sample man: The duty of sample man is to make sample only.

Process of sample developing

1st sample: The processes of 1st sample are given in bellow:

- Receive spec sheet of garments from buyer.
- Make pattern as per measurement.
- Check the pattern which has made.
- If necessary Check shrinkage, twisting, bowing before pattern making Cutting fabric as per pattern.
- Collect accessories.
- Start sewing.
- M/C specified.
- Check the sample to ensure it, ok.
- Actual size required.
- Actual fabric construction.
- Send it to buyer for approval.

Development sample:
After approving of 1st sample, the work of development sample is start. The process of Development sample is given in bellow.

- Make pattern as per measurement, if buyer change the measurement to observe the counter sample.
- Actual size required
- Check the pattern which has made.
- Collect actual color fabric. G.S.M should be ok.
- Cutting fabric as per pattern.
- Collect actual accessories.
- Start sewing.
- M/C specified.
- Check the sample to ensure it, ok
- Send it to buyer for approval

Counter sample: As per buyer demand this sample should make.

Color way: Make sample of each color wanted by buyer. For this actual G.S.M, size, and accessories required

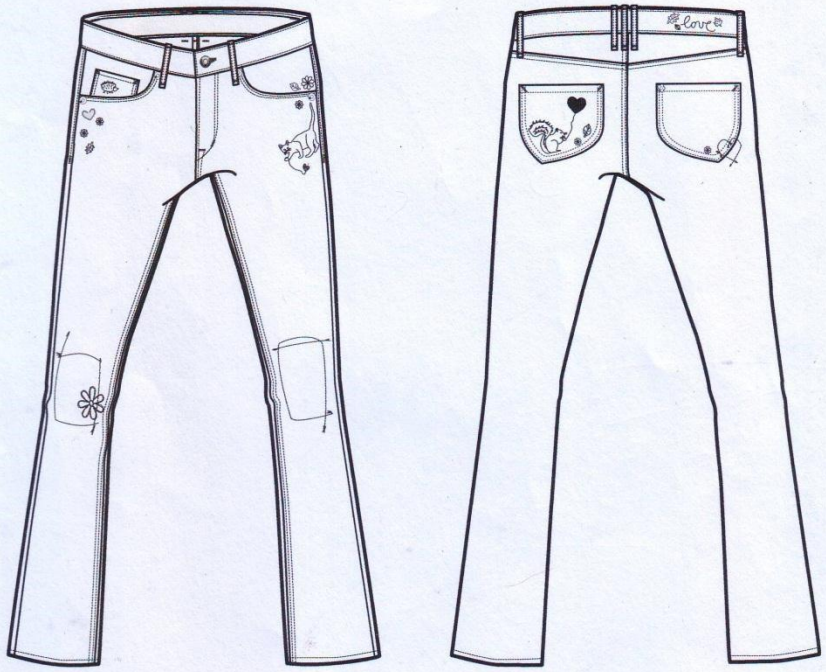
Size set sample: Make sample per size. If buyer mentioned the quantity of sample of each size, make as per buyer demand. If not mentioned make 1 piece per size.

Pre production sample: Before production which sample send to buyer for approval that is called Pre production sample. Pre production sample is the most vital sample for much production. Without approve Pre production sample much production can‘t happen. For this actual G.S.M, measurement, fabric color and accessories required. After approve this sample much production will run.

Example of a Garment Specification Sheet

COPYRIGHT NOTICE !THIS IS AN H&M DESIGN.

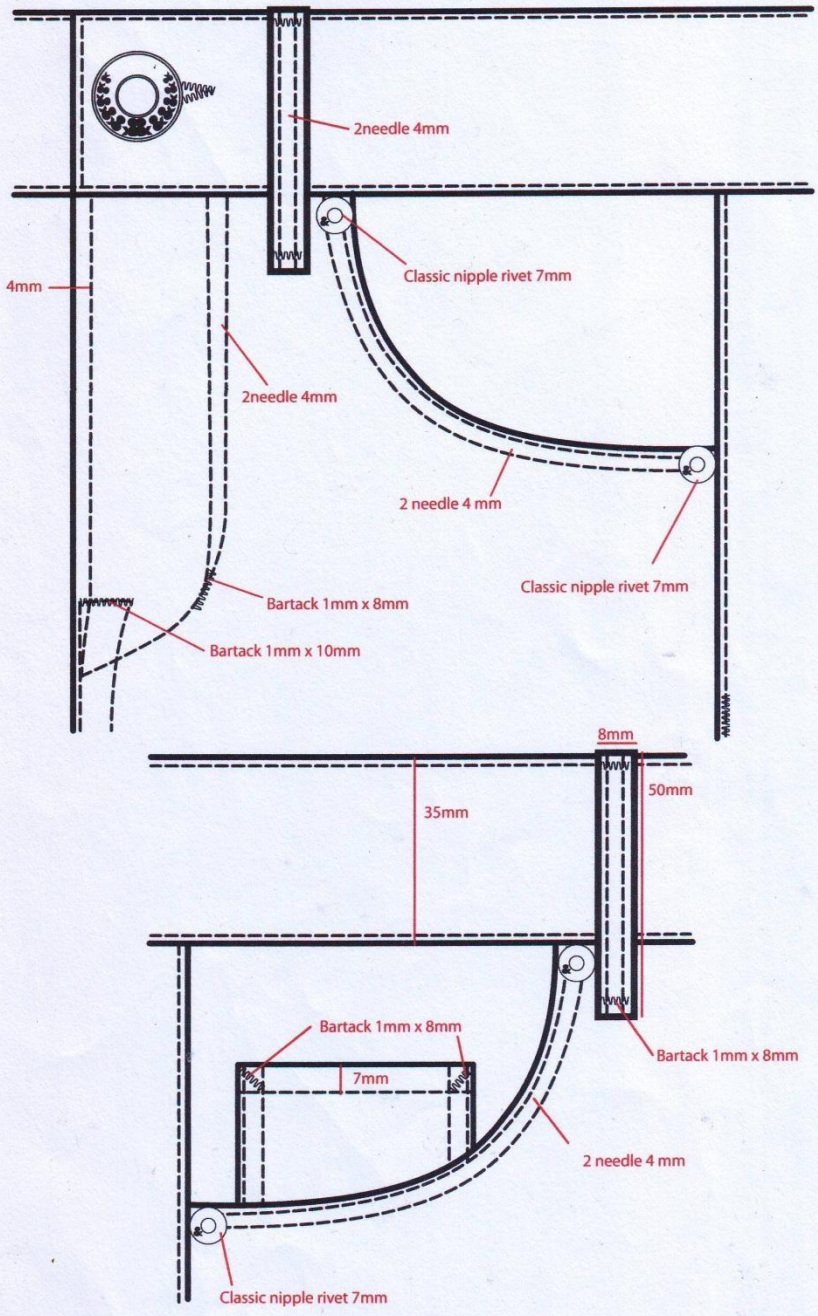
6mm 2 needle at yoke, back rise and inseam wrapseam
Hem 9mm
Handicraft deco front and back
All bartacks 1mm in width
Red contrast twill fabric in 49-001 used here: inside waistband, beltloop CB
Self fabric denim patch in heart shape on front right attached w handicraft stitching.
Pls note: no extra pocket on back right



STYLE: STAR Kelly Dark
DENIM KIDS **SEASON:** 4
DESIGNER: MD
DATE OF CREATION: 251010
DATE OF REVISION: 280111

FRONT

Correct size for size 104. Please grade according to measurement list



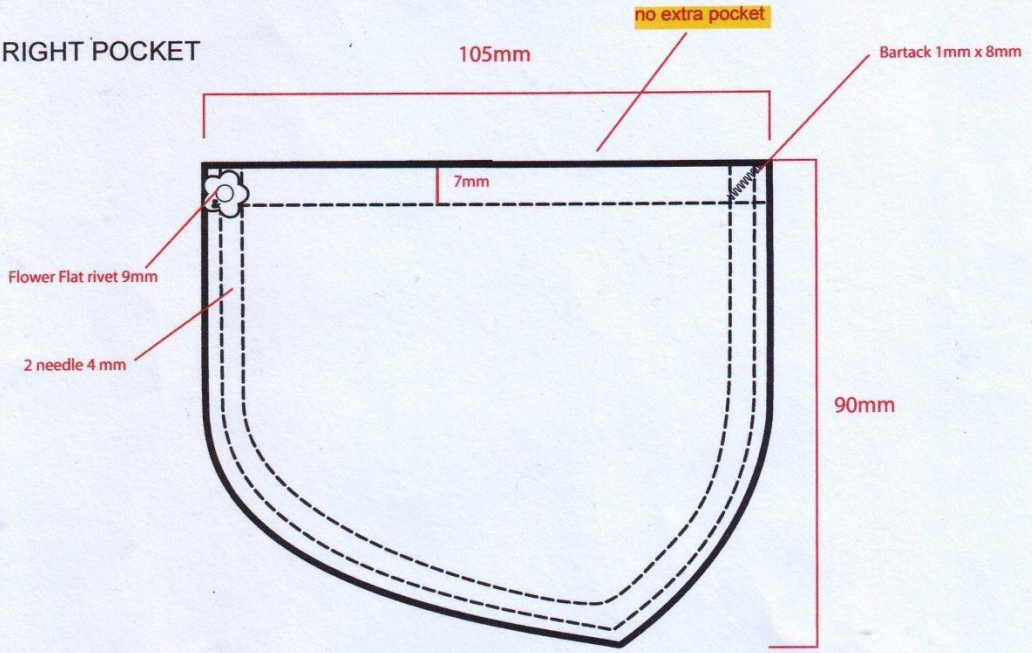
STYLE: STAR Kelly Dark **DATE OF CREATION:** 251010

& DENIM KIDS **SEASON:** 4 **DESIGNER:** MD **DATE OF REVISION:** XXXXXX

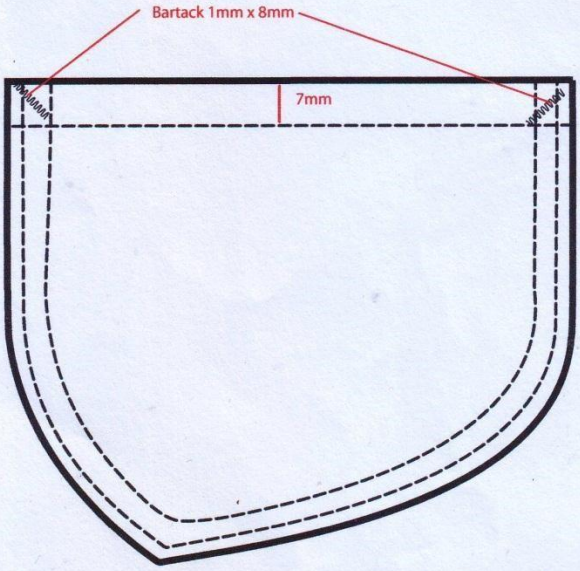
BACK POCKETS

Correct size for size 104. Please grade according to measurement list

RIGHT POCKET



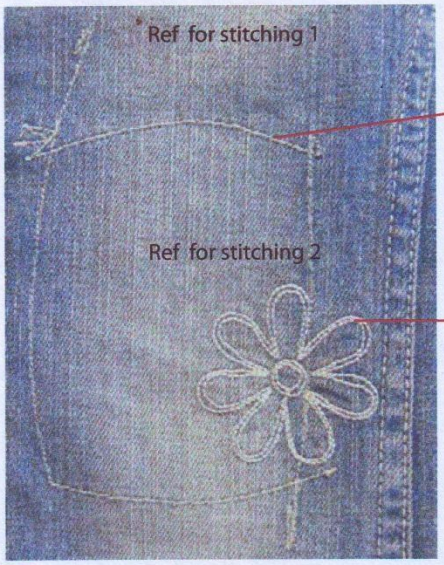
LEFT POCKET



STYLE: STAR Kelly Dark **DATE OF CREATION:** 251010

& DENIM KIDS **SEASON:** 4 **DESIGNER:** MD **DATE OF REVISION:** 280111

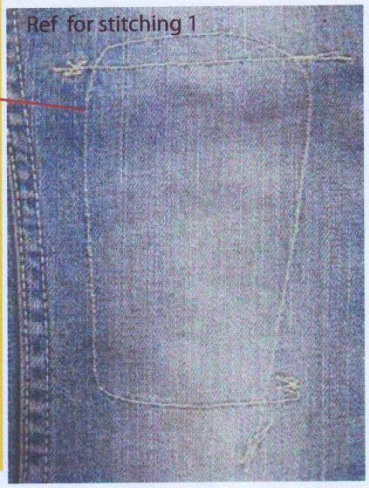
DECO DETAILS - at Front Knee



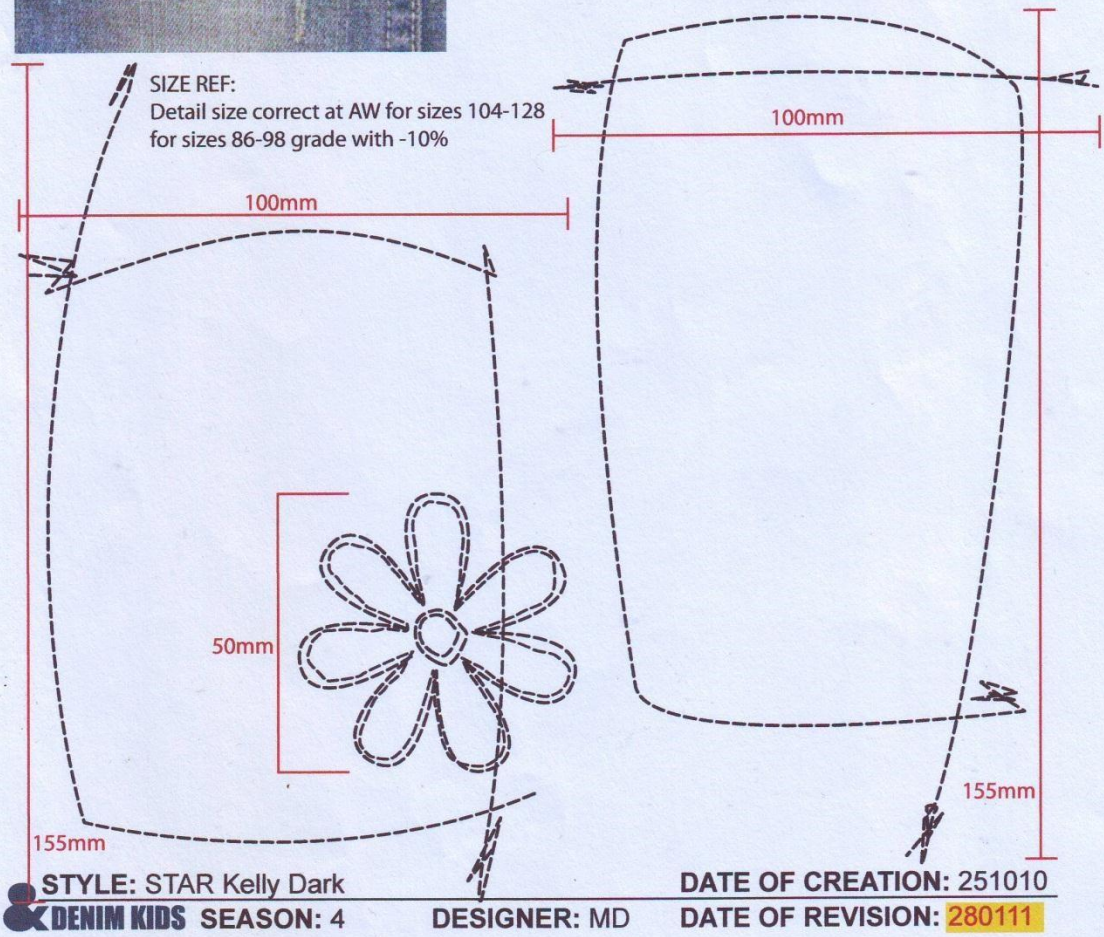
PLs note: two different kinds of stitchings:

- stitching 1: on rectangular stitching pls use normal sewing thread in C9173 (Silver White)
SPI - 16
TEX - 40

- stitching 2: on flower pls use embroidery thread w 4 threads like you used on little flower on right back pocket



SIZE REF:
Detail size correct at AW for sizes 104-128
for sizes 86-98 grade with -10%

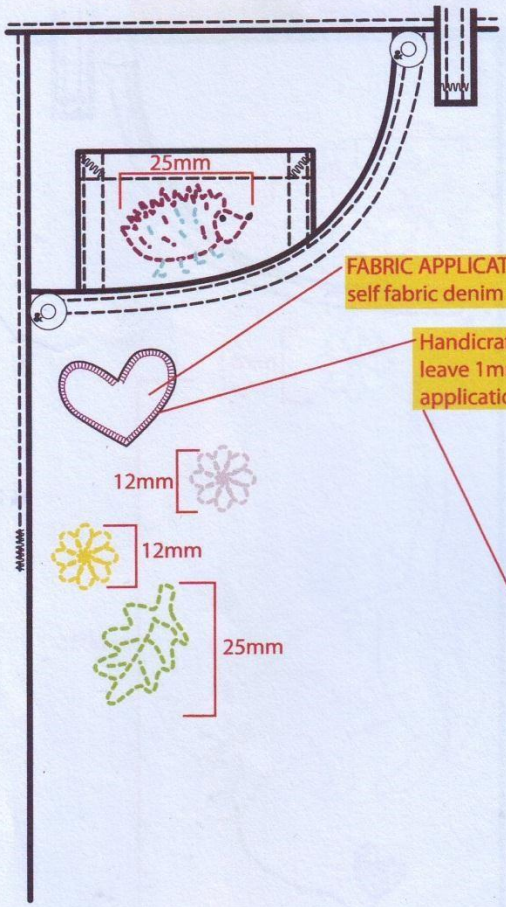


STYLE: STAR Kelly Dark
DENIM KIDS **SEASON:** 4 **DESIGNER:** MD **DATE OF CREATION:** 251010
DATE OF REVISION: 280111

H&M

DECO DETAILS - Front Right

Embroidery size correct at AW for sizes 104-128 for sizes 86-98 grade with -10%

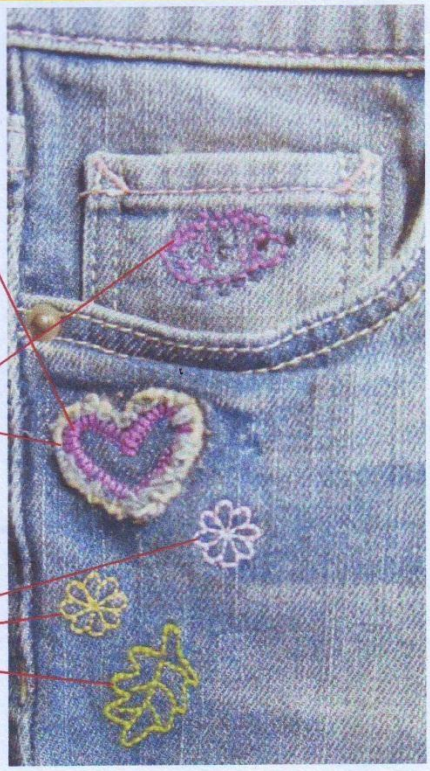


THREADS
3 types of embroidery thread:
1) 2 threads
2) 4 threads
3) 1 thread

FABRIC APPLICATION
self fabric denim w raw edge

Handicraft technique for stitching around heart.
leave 1mm raw edge outside decostitch.
application should look worn.

REFERENCE for type of stitching, not clr or size



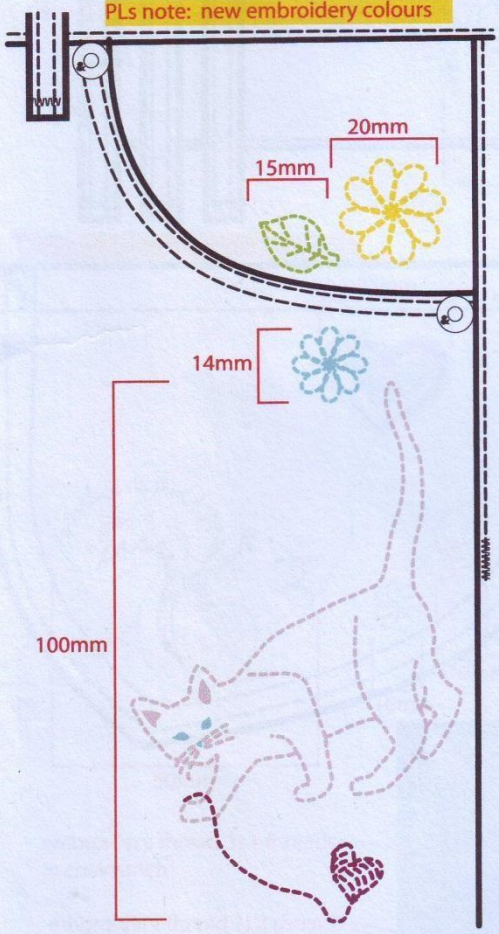
STYLE: STAR Kelly Dark
&DENIM KIDS **SEASON:** 4 **DESIGNER:** MD **DATE OF CREATION:** 251010 **DATE OF REVISION:** 280111

H&M

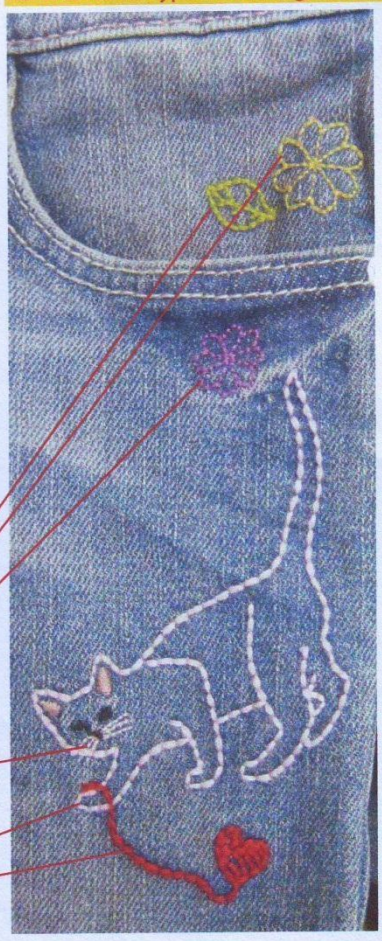
DECO DETAILS - Front Left

Embroidery size correct at AW for sizes 104-128 for sizes 86-98 grade with -10%

PLs note: new embroidery colours



REFERENCE for type of stitching, not clr or size



embroidery thread 1) 2 threads

whiskers in embroidery thread 1) 2 threads

embroidery thread 2) 4 threads

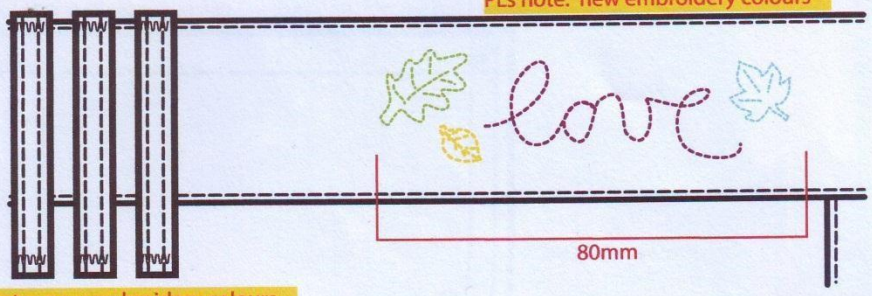
STYLE: STAR Kelly Dark
DENIM KIDS **SEASON:** 4
DESIGNER: MD
DATE OF CREATION: 251010
DATE OF REVISION: 280111

DECO DETAILS Embroidery size correct at AW for sizes 104-128 for sizes 86-98 grade with -10%

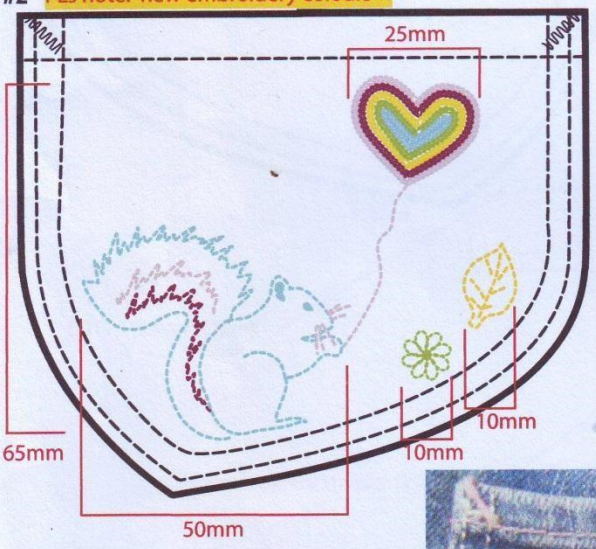
BACK

PLs note: new embroidery colours

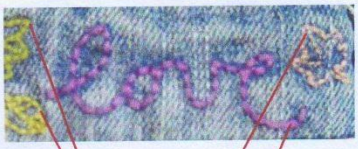
#1



#2 PLs note: new embroidery colours



REFERENCE for type of stitching, not clr or size



embroidery thread 1) 2 threads

embroidery thread 2) 4 threads

REFERENCE for type of stitching, not clr or size

embroidery thread 3) 1 threads in chainstitch

embroidery thread 1) 2 threads

whiskers in embroidery thread 1) 2 threads

embroidery thread 2) 4 threads

STYLE: STAR Kelly Dark

& DENIM KIDS SEASON: 4

DESIGNER: MD

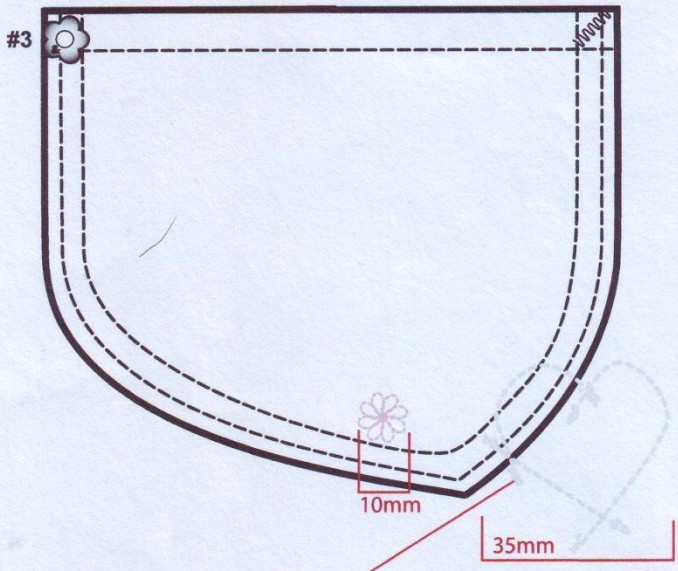
DATE OF CREATION: 251010

DATE OF REVISION: 280111

H&M

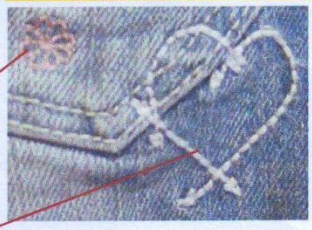
DECO DETAILS - right pocket BACK

Embroidery size correct at AW for sizes 104-128 for sizes 86-98 grade with -10%



C9173 (Silver White)

REFERENCE for type of stitching, not clr or size



embroidery thread 1) 2 threads

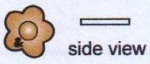
embroidery thread 2) 4 threads

EMBROIDERY COLOURS

C 3902 | C 1458 | C 5355 | C 9548 | C 3332 | C 9173

STYLE: STAR Kelly Dark
&DENIM KIDS SEASON: 4 **DESIGNER:** MD **DATE OF CREATION:** 251010 **DATE OF REVISION:** 280111

TRIMS

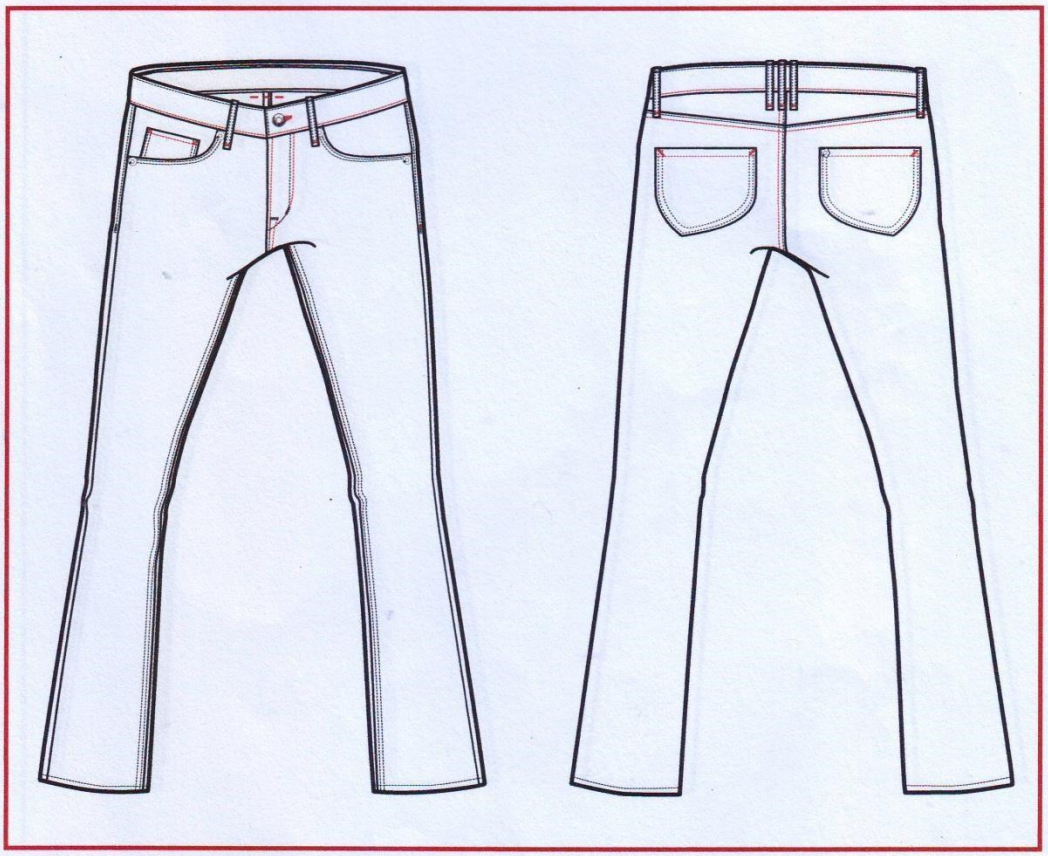
Buttons/Rivets:		Finishing:
	*Sizes: 86-128* Laurel Leaf pressbutton LLPB Size 27L	LLPB-RC Rose Copper
	Classic Nipple Rivet 7mm	CNR-RC Rose Copper
 side view engraved text and ring	Flower Flat rivet 9mm	FR-RC Rose Copper
	&Denim zipper	Z-AB Antique Brass

STYLE: STAR Kelly Dark **DATE OF CREATION:** 251010
&DENIM KIDS **SEASON:** 4 **DESIGNER:** MD **DATE OF REVISION:** 180311

H&M

THREAD COLOURS

COATS	VIEW	CODE
C2333 (bronze)		
C3902 (plum)		
x		
X		
X		

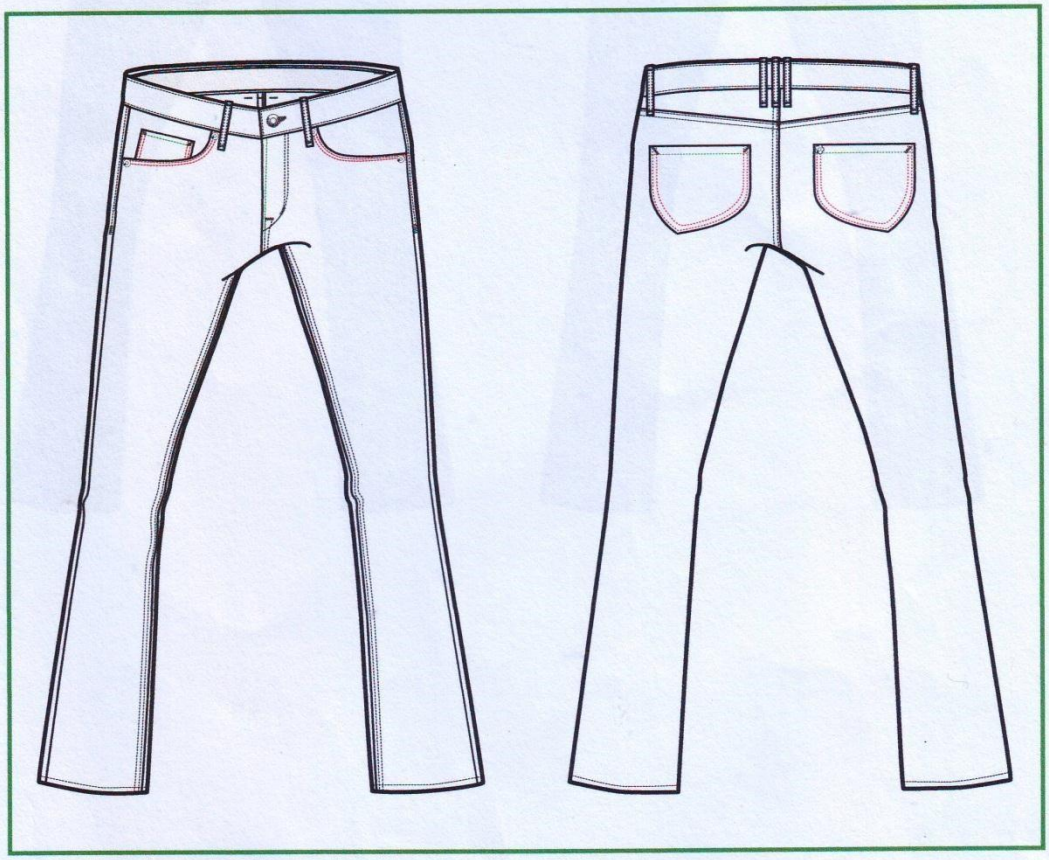


STYLE: STAR Kelly Dark
&DENIM KIDS SEASON: 4
DESIGNER: MD
DATE OF CREATION: 251010
DATE OF REVISION: xxxxxx

THREAD SPI AND TEX

THREAD QUALITY: X

SPI	TEX	VIEW	CODE
8	90		
10	90		
10	60		
x	x		
x	x		



STYLE: STAR Kelly Dark

&DENIM KIDS **SEASON:** 4 **DESIGNER:** MD

DATE OF CREATION: 251010

DATE OF REVISION: xxxxxx

H&M

STYLE: STAR Kelly Dark
DATE OF CREATION: 251010

& **DENIM KIDS** **SEASON:** 4 **DESIGNER:** MD **DATE OF REVISION:** 280111

Computer Aided Design (CAD) Department

CAD is an acronym for the **"Computer-Aided Design"** software used in art, architecture, engineering, and manufacturing to assist Computer. The uses of computers to design and manufacture a product. The product is designed on a computer (using a CAD program) and then built or assembled using computers designed specifically for that process.

"Ananta Garments Ltd." has its own CAD **(Computer Aided Design)** department. They use 2 software for making marker and pattern. These software names are **—LECTRA‖** and **—TUKA‖.**

Functions of Computer Aided Design (CAD) Room:

CAD department is responsible for the following functions.

- Determining cutting average for costing
- Making the most efficient cutting marker
- Development is Alteration of patterns
- Development of size set pattern by grading.
- Embroidery graphics making
- Digitizing the pattern

Objectives of Computer Aided Design:

- Make guiltless pattern.
- Save the time factor.
- Reduce wastage.
- Make marker planning in best way.

- Maximum output in a short time.
- No need to do hard work

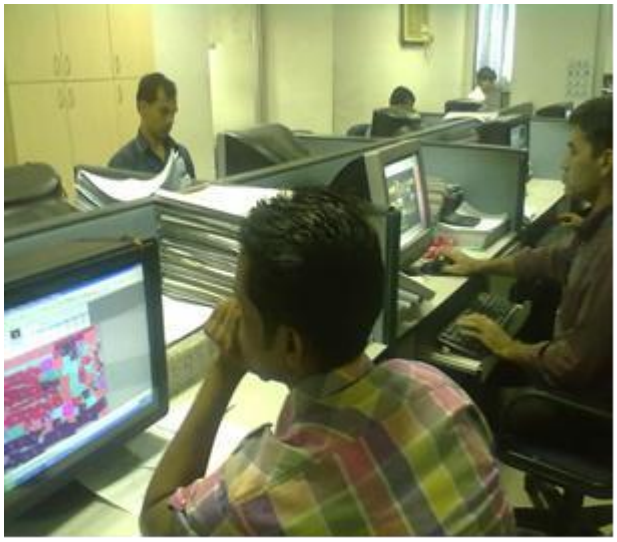
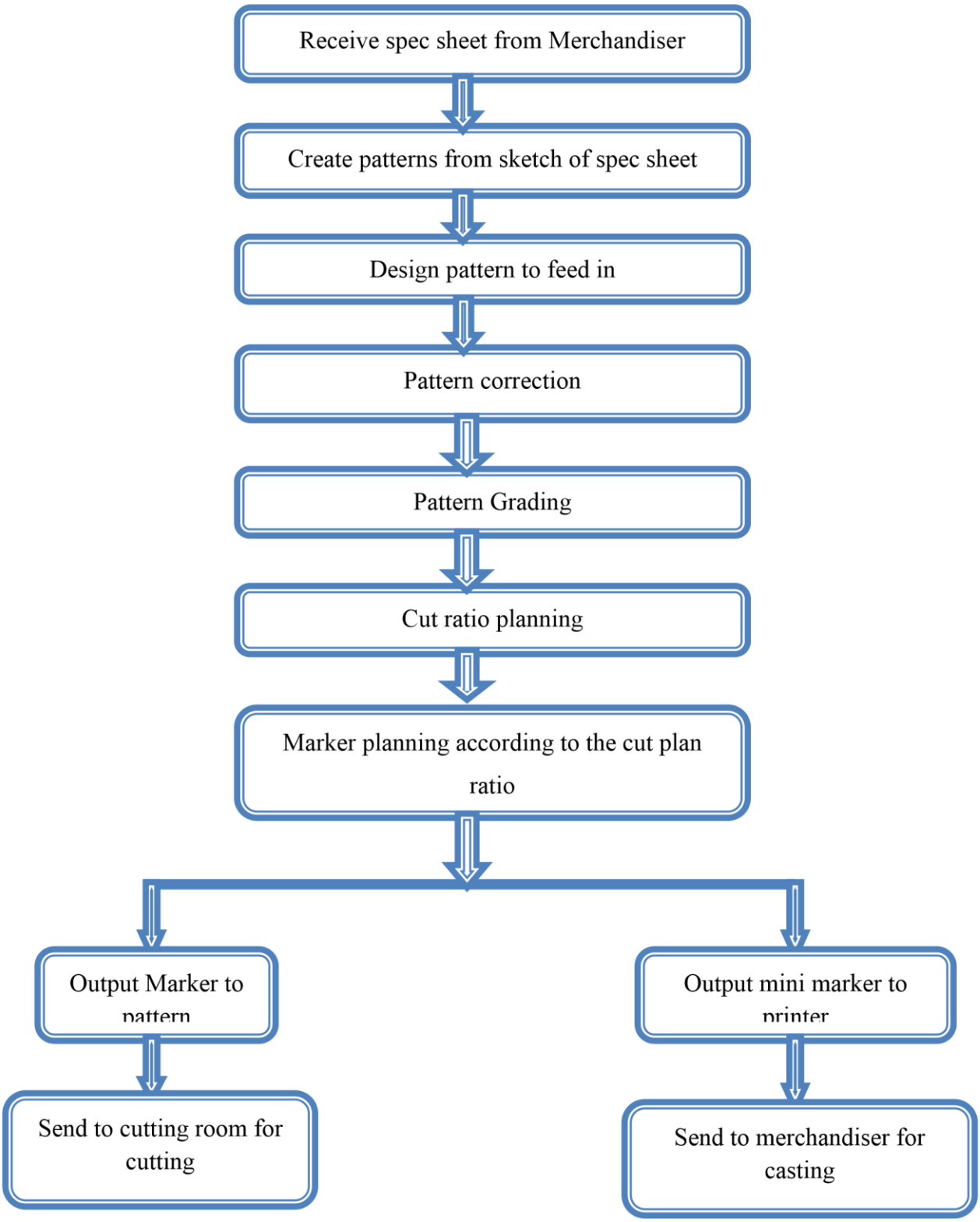


Fig 6.01: Computer Aided Design Room

Work flow of Computer Aided Design Department



Importance of Computer Aided Design (CAD)

To ensure that the procedures are being adhered to and that their scope, purpose, and content are still appropriate. Procedures must be recognized as a means to an end and not seen as an end in them. Procedures are time-consuming to prepare and maintain, but they are vital to the long-term success of any CAD installation program.

Advantage of Computer Aided Design: There is a lot of advantage, but a few points are described in below.

- To make the pattern it is so easier then manual.
- Can get accurate consumption.
- Lots of time can save.
- There is no possibility to do wrong.
- Can be possible to make marker with more than 90% efficiency.
- Can take an action very quickly against the mistake.

Responsibility of Computer Aided Design (CAD) master: The responsibilities of CAD master are addressed in below:

- CAD master must be expert in pattern.
- He must have better idea to make pattern of new generated design, or any critical design.
- He must have sound skill in English.
- He must be expert to work in computer.
- He must be energetic in work.
- Better idea about fabric consumption.
- Intelligence.

How to make marker plan: Actually the size and ratio of style are help to make a marker plan. Better implementation of different sizes pattern can make a better marker. Some idea must be known for making marker, which is addressed in bellow:

- Better idea about fabric consumption.
- Dia of fabric
- Should know the size and ratio of garments.
- Should know the grain line of fabric.

Fig 6.02: Plotter/ Marker Printing Machine

- Ensures the way of pattern. 1 body 1 way or 1 body 2 ways.

Advantage of marker: Marker can make in two ways; one is manually and another is automatically. Manually means making by hand, at first make a pattern on a hard paper and directly apply on the laid fabric to make marker. And automatically means, make maker by the help of computer. For that need software, which is named as CAD. The Advantage of marker is described in below:

Advantage of manual marker: Actually the making process of manually marker is very old. There is no update version to work smoothly and easily. Some time a lots of wastage is happen for wrong placement. For manual marker need a lot of time, this is not suitable for better productivity. So advantage is not more for the manual marker. But after all these, maximum Garments Industry is doing the marker manually.

Advantage of Computer Aided Design (CAD) marker:

Although CAD is an expensive thing, after that there is a lot of advantage in CAD marker such as:

Fig6.03: Pen Plotter Machine

- Easy to make.
- Less time required.
- Many markers can produce within a short time.
- Mistake will not happen if CAD master is expert.
- Less wastage will happen, which really very few.
- Wrong marker can‘t produce, because wrong Placements of pattern do not accept this software.
- Day by day update version of this software are producing so that works will more high quality able and smooth finish.
- Can make best consumption to use CAD.
- Day by day users are increasing, and try to enjoy the better facility of these modern inventions.

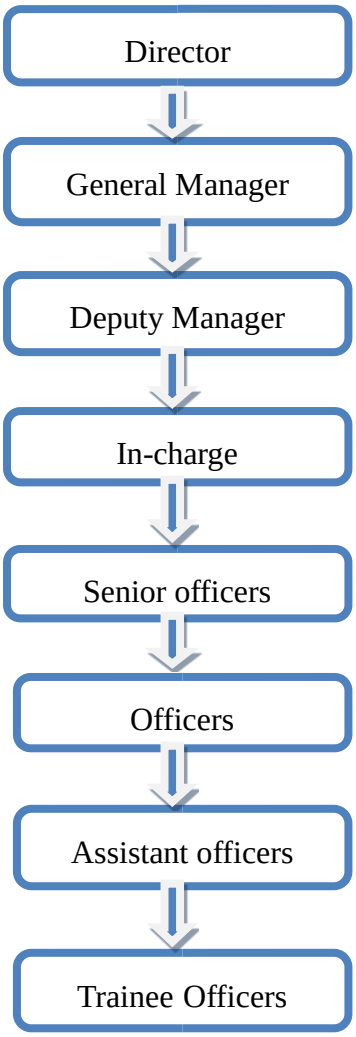
Work Study Department

According to the International Labor Organization (ILO) Hand Book, it is a term used to embrace the techniques of method study and work measurement, which are employed to ensure the best possible use of human and material resources in carrying out a specified activity. It is an essential part for the mass production industries. **“Ananta Garments Ltd.”** understands the need of work study and has set up an independent department of work study. In some other industries this dept. is called IE or **“Industrial Engineering”.**

Location of the Department:

This dept. is located at the 4th floor of the main factory building of Ashulia. And is named after our hero freedom fighter **“Bir Sreshtha Hamidur Rahman”** floor.

Work study Department Organogram:



Allocation:

Position	Manpower
Director	01
General Manager	01
Deputy Manager	01
In charge	02
Senior Officer	05
Officers	15

Assistant Officers	09
Trainee Officer	01
Computer Officer	03

Function of the Department:

Work study department has to work with many other departments as this department gives the entire idea of the garment construction the thread & trims consumption criteria. And also provides layout for sewing, finishing etc.

The different department with which the IED works is as follows.

Work study department helps the planning department to know the time required for the production of that particular style of the garment by calculating the SMV value for it & they also help in knowing the capacity of factory based on which the planning department takes a decision if they have to proceed with the item or no.

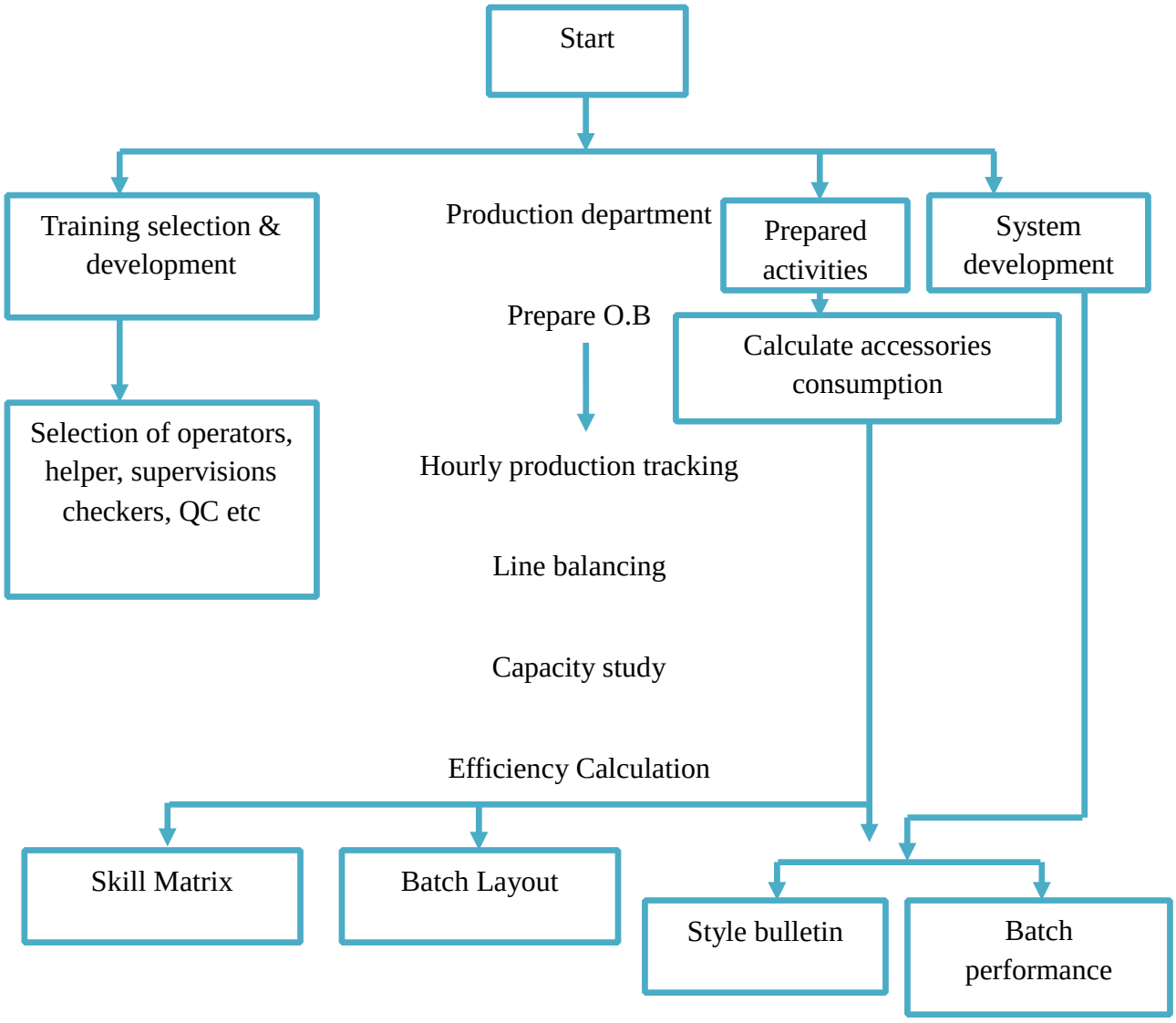
Work study calculates the SMV value the garment the productivity of the given style for the initial casting also counts the accessories consumption by the style.

This department will analyze estimate the man power their skill level which is required for the production of the garment they also set a target to the batch for an hour, for a shift for a month which help them to maintain their outputs.

After setting the targets for a batch also for each operator then they will calculate the efficiency this efficiency is purely based on the daily output of the batch as well as the single operation then come up with the monthly output by the particular batch.

$$\textbf{Efficiency} = \frac{SMV \times Prd}{Manpower \times Workhr \times 60} \times 100$$

Work flow of the Department:



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Detail activities of work study:

- Style details collect
- SMV make

- Lay out make
- M/C arrange
- After production planning meeting
- First week production plan
- Line feeding
- Work aid arrange
- Method study (Innovation) take video
- Time study
- Line capacity find out
- Bottle neck operation find out
- Individual follow up bottle neck operation try to increase production Capacity efficiency wish target setting try to achievement housing daily
- Loss time record.
- Loss time record

Objectives of work study:

To assist the management to obtain the optimum use of the human and material resources available to the organization for the accomplishment of the work for which, it is engaged.

- It helps in the optimum use of plant, equipment, manpower and material.
- It helps in establishing the standard of performance. It helps in developing efficient work methods.
- It helps in establishing the most efficient and effective utilization of human effort.
- It helps in synchronizing various resources like men and machine.
- It helps in the evaluation of human work

- It helps in efforts towards productivity improvement.
- It helps in the elimination of wasteful efforts, useless material handling, etc.
- It helps in job-simplification and work standardization.
- It is helpful in developing plant safety schemes, equipment utilization, plant layout, and conductive work environment.

How to Improve?

- Effective use of plant and equipment
- Effective use of human effort
- Evaluation of human work to make it more convenient

Principles of Work Study:

- Being an instrument of progressive management responsibility for its use, the conviction of its value and the drive to apply it must come from the top echelons of the management.
- As it is bound to affect the jobs of many people in the organization, these people must be made aware of the objectives and the need of the exercise.
- Method study must precede work measurement

The two steps of work study are very much distinct in spite of being interdependent. Method study is the process wherein existing and proposed ways of doing a work are systematically examined so as to develop and apply better methods of doing the same. Work measurement is the technique of establishment of time standards for a qualified worker to perform a specific job at a defined level of performance.

Method Study:

Method study is the process of subjecting work to systematic, critical scrutiny to make it more effective and/or more efficient. It is one of the keys to achieving productivity improvement.

It was originally designed for the analysis and improvement of repetitive manual work but it can be used for all types of activity at all levels of an organization.

Steps in Method Study:

Select – Select the work to be studied. It involves taking account of economic, technical and human considerations.

Record – Record all the relevant facts of the present (or proposed) method by direct observation.

Examine – Examine the facts critically in sequence, using special critical examination sheets.

Develop – Develop the best method, i.e., the most practical, economic and effective method, under prevailing circumstances.

Install – Install that method as standard practice.

Maintain – Maintain that standard practice by regular routine checks.

Select

Work selected for method study may be an identified problem area or an identified opportunity. It may be identified through a systematic review of available data, normal monitoring or control processes, high levels of dissatisfaction and complaint or as part of a change in management policy, practice, technology or location, and usually because it meets certain conditions of urgency and/or priority.

Define

Before any method study investigation is begun, it is necessary to establish clear terms of reference which define the aims, scale, scope and constraints of the investigation. This should also include an identification of who "owns" the problem or situation and ways in which such ownership is shared. This may lead to a debate on the aims of the project, on reporting mechanisms and frequencies, and on the measures of success. This process is sometimes introduced as a separate and distinct phase of method study,

as the "Define" stage. It leads to a plan for the investigation which identifies appropriate techniques, personnel, and timescale.

Record

The Record stage of method study involves gathering sufficient data (in terms of both quality and quantity) to act as the basis of evaluation and examination. A wide range of techniques are available for recording; the choice depends on the nature of the investigation; the work being studied; and on the level of detail required. Many of the techniques are simple charts and diagrams, but these may be supplemented by photographic and video recording, and by computer based techniques.
Especially with "hard" (clearly defined) problems, method study often involves the construction and analysis of models, from simple charts and diagrams used to record and represent the situation to full, computerized simulations. Manipulation of and experimentation on the models leads to ideas for development.

Examine

The recorded data are subjected to examination and analysis; formalized versions of this process are critical examination and systems analysis. The aim is to identify, often through a structured, questioning process, those points of the overall system of work that require improvements or offer opportunity for beneficial change.

Develop

The Examine stage merges into the Develop stage of the investigation as more thorough analysis leads automatically to identify areas of change. The aim here is to identify possible actions for improvement and to subject these to evaluation in order to develop a preferred solution.

Sometimes it is necessary to identify short-term and long-term solutions so that improvements can be made (relatively) immediately, while longer-term changes are implemented and come to fruition.

Install

The success of any method study project is realized when actual change is made 'on the ground' - change that meets the originally specified terms of reference for the project. Thus, the Install phase is very important. Making theoretical change is easy; making real change demands careful planning - and handling of the people involved in the situation under review. They may need reassuring, retraining and supporting through the acquisition of new skills. Install, in some cases, will require a parallel running of old and new systems, in others; it may need the build-up of buffer stocks, and other planning to manage the change. What matters is that the introduction of new working methods is successful. There is often only one chance to make change!

Maintain

Sometime after the introduction of new working methods, it is necessary to check that the new method is working, that it is being properly followed, and that it has brought about the desired results. This is the Maintain phase. Method drift is common - when people either revert to old ways of working, or introduce new changes. Some of these may be helpful and should formally be incorporated; others may be inefficient or unsafe.

Areas of Application of Method study:

- Improved layout of office, working areas of factories
- Improved design of plant and equipments
- Improved use of materials, plant, equipments and manpower
- Most effective handling of materials
- Improved flow of work

- Standardization of methods and procedures
- Improved safety standards
- Better working conditions

Important Terms in Work Measurement:

- **Standard performance** – Optimum rate of output achieved by a qualified worker as an average per working day/shift, due allowance being made for the necessary time required for rest.
- **Qualified worker** – One who has the necessary physical attributes, intelligence and education, and has acquired the necessary skill and knowledge to carry out the work in hand to the satisfactory standards of safety, quantity and quality.
- **Element** – A distinctive part of a specialized job selected for convenience by observation, measurement and analysis. There are eight types of elements – repetitive, occasional, constant, variable, manual, machine, governing and foreign.
- **Work cycle** – The sequence of elements which are required to perform a job or yield a unit of production.
- **(Observed) Worker Rating** – The assessment of a worker‘s rate of working relative to the observer‘s concept of rate corresponding to the standard pace.
- **Standard rating** – It is defined as the rate of output which qualified workers will naturally achieve as an average output for a given period of time. This rating is denoted as 100 or 100%.
- **Rating factor –** It is the multiplying unit to the standard rating which gives the observed rating. For e.g., if the observed rating is 100, rating factor is 1; if observed rating is 90, the rating factor is 0.9 and so on.
- **Basic (Normal) time** – It is defined as the time taken by a qualified worker to do a piece of work at the standard rate of performance.

$$\text{Basic time} = \frac{\textbf{Observed time} \times \textbf{Performance rating}}{\textbf{100}}$$

- **Relaxation allowance** – The additional time that is allowed to a worker for a specified work over and above the basic time, counted as a percentage of basic time and taken into account several factors depending upon the job.

- **Work content** – It consists of work plus allowances for rest, personal needs, and any other allowance for additional work.
- **Standard time** – The total time in which a job should be completed at standard performance.

Standard time = Basic time + (Basic time x Allowance)

- **Allowed time** – A time allowed for payment purposes to the factory worker where the standard time is increased appropriately by a factor representing a bonus and / or policy.
- **Standard minutes** – A standard minute (SM) expresses a unit of work in terms of the 100 BS scale. Standard performance is recognized as being 60 SMs an hour. It is different from standard time, in that the latter includes ineffective and occupied time.

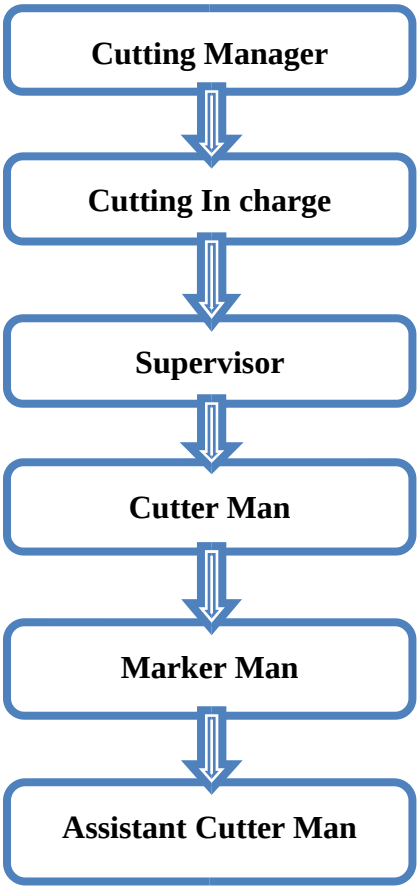
Cutting Department

Definition of cutting is moderately complex. For garments industries cutting can be defined as ―Fabric is cut from the lay and spreading with accuracy and properly which is termed as fabric cutting‖. It is basically the process by which different garments parts are cut out form the fabric lay with the help of a marker (cutting

template) and a cutting machine. **"Ananta Garments Ltd."** has it cutting department located at the 8th floor of the factory building. This floor is titled as **"Bir Protik Taramon Bibi Floor".** This department is equipped with 15 cutting table, 23 straight knife cutting machine one bend knife, 15 lay cutter machine, 90 tokay machine, 4 fusing machine. Total area of this section is about 40,000 square feet.

Cutting Department organogram:

Ananta`s cutting department is divided into 2 units. Both of them are maintained by a team of well-trained officials. The organogram for both the departments are:



Allocation:

For Unit-1

Position	Manpower
Cutting Manager	01
Cutting in charge	02
Supervisor	06
Cutter man	11
Marker man	02
Asst. Cutter man	82

For Unit-2

Position	Manpower
Cutting Manager	01
Asst. Manager	01
Supervisor	06
Cutter man	12
Marker man	02
Asst. Cutter man	90

Working Flow of Cutting Department:

Work Order sheet from production manager

↓

Fabric According to order & sample

↓

Cut sample to check

↓

Require checking of fabric width

↓

Send to CAD for sample wise marker

↓

Marker checking

↓

1st size set cutting

↓

Measurement

↓

Measurement correction by the CAD

↓

Received marker for test cutting

↓

Test cutting

↓

Require changes

↓

Job issued

↓

Cut plan

↓

Bulk cutting

↓

Numbering according to the size

↓

Bundling

↓

Inspection per pieces (100%)

↓

Store

↓

Classification wise supplying to the sewing section

Objectives of cutting:

The objective of cutting is to convert fabric into suitable size & shape to make a garment. It is the first step of making a garment. in other words cutting is to separate fabric parts from the spread of lay according to the dimension of the marker for the purpose of garments making according to the pattern pieces.

Cutting Markings:

Cutting Line (single size): The outer line of the pattern piece provides a guide for cutting the fabric. The line sometimes has an illustration of tiny scissors on it.

Cutting line (multi-size): Multi-size patterns have several sizes printed on the same tissue and are sold in one envelope. Sometimes the multiple cutting lines are all solid, in which case it helps to highlight your size before cutting, and sometimes each cutting line is a slightly different line configuration.

Cutting line within the body of the pattern: When the design has a shorter view, there is often a cutting line for the shorter length within the pattern.

Requirements of Cutting:

To achieve the objectives of cutting mentioned earlier, some requirements must be fulfilled. The requirements are

- Precision of cut
- Clean edge
- Infused edge
- Consistency in cutting
- Support of the lay

Fabric Relaxing

―Relaxing‖ refers to the process that allows material to relax and contract prior to being manufactured. This step is necessary because the material is continually under tension throughout the various stages of the textile manufacturing process, including weaving, dyeing, and other finishing processes. The relaxing process allows fabrics to shrink so that further shrinkage during customer use is minimized.

Garment manufacturers perform the relaxing process either manually or mechanically. Manual fabric relaxing typically entails loading the bolt of fabric on a spinner and manually feeding the material through a piece of equipment that relieves tension in the fabric as it is pulled through. Mechanical fabric relaxing performs this same process in an automated manner.

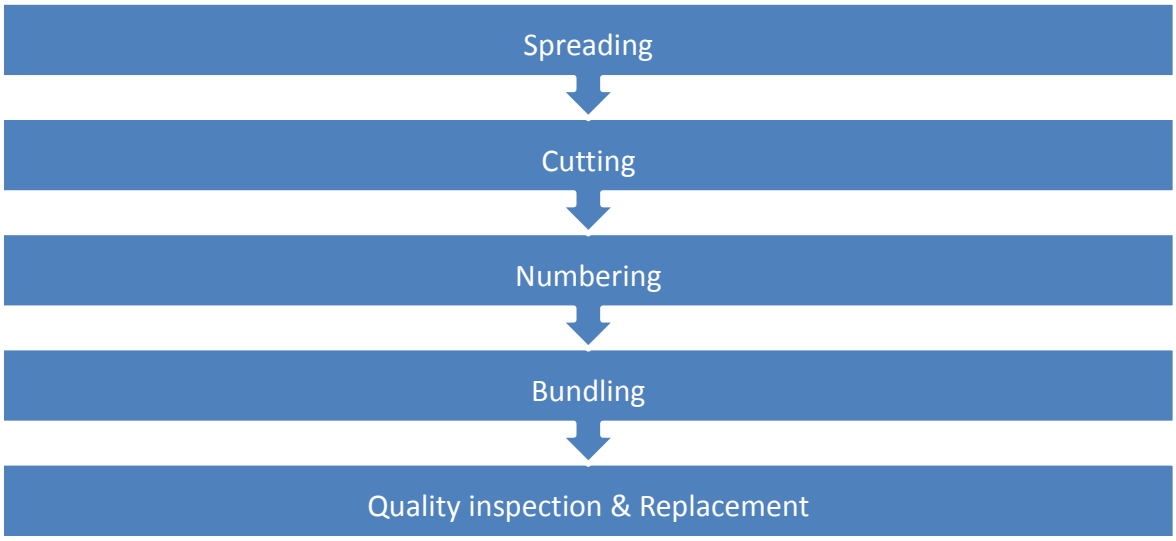
Many garment manufacturers will also integrate quality assurance into this process to ensure that the quality of the fabric meets customer standards. This step is performed by manually spotchecking each bolt of fabric using a backlit surface to identify manufacturing defects such as color inconsistency or flaws in the material. Fabrics that fail to meet customer standards are returned to the textile manufacturer.

Working Procedure:

The procedure of cutting is mentioned shortly bellow

Cutting process

Cutting of fabric is accomplished through the following activities



Spreading or Laying

Spreading means the smooth laying out of the fabric in superimposed layers of specific length. At ―Ananta Garments Ltd.‖ spreading is carried out by the manual method. Fabrics are laid directly from the roll on the table. The operation begins by the laying of first fabric lay on a brown sheet previously laid on the cutting table. This total operation is done manually by hand. The length of the lay depends upon the quality of

the fabric and length of the marker as specified by the CAD. The height of the lay depends on the quality and thickness of the fabric and also on the condition of the table and cutting table. After required length of fabric is laid on the table it is cut by a knife attached with the table. The smoothness of the lay is kept by pressing the fabric with the help of a rod. After required number of fabric ply is laid the thin marker paper is laid on the top of the lay. This ends the operation of spreading.

Fig 7.01: Spreading or Laying

Types of Lay Plan

- **Half Garment Lay** includes only half of the garment pieces for example one side left or right. Generally used for tubular fabrics.
- **Whole Garment Lay** includes garment pieces, left and right sides. Generally used for Open width fabrics.
- **Single Size Lay** is used using all garment pieces of one single size. Disadvantageous as the consumption of fabric is higher.

Types of Lay

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

Forms of Spreading

- **One Way Cutting** is when fabric is laid the same way up with grain or print pattern running in the same direction. Fabric has to be cut at the end of each ply.

- **Fact to Face Cutting** is when the plies are laid in pairs face to face. The grain or pattern runs in the same direction.

- **Two Way Cutting** is when plies are laid continuously from left to right and right to left without cutting at the end. Most Efficient method of spreading. Cannot be used with grain restrictions or one directional printed fabric.

Cutting

Cutting is the operation by which fabric lay is cut with accuracy and properly to be used as different parts of garments. The company provides straight knife and bend knife for cutting. Fabric lay are cut rendering the outline of the parts drawn on the marker by the straight knife. Bend knifes are used to cut more sharp corner parts like collars and cuff. Sometime hand scissors are used for cutting when some parts are missing or lack in quality.

Fig 7.02: Cutting

Numbering

After cutting the cut pieces are shorted out size and shade wise. All the components of the same size are brought together. And they are numbered with ―Tokai machine‖ or ―Numbering machine‖. This numbering process is an important factor. As it prevents the garments parts form mix up.

Fig 7.03: Numbering

The sorted pieces are now ticketed. Ticketing is the process of marking the cut components for shade matching precision and sequence identification.

Quality Inspection & Replacement

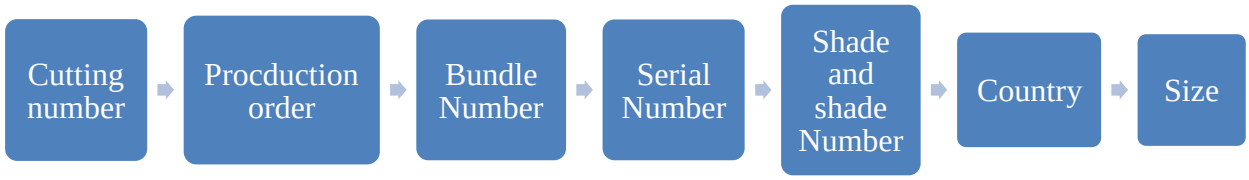
The numbered and ticketed parts are then passed to the quality inspection area. Here the parts are inspected by the quality inspectors, under required conditions. Every cut parts are inspected and the rejected ones are replaced by new fresh one. If it is possible to repair them they are repaired by hand scissors.

Bundling

The checked components of one styles and in one size are now clubbed and bundled using ties. The size of bundle depends upon the requirement of the production plant. Each bundle contains pieces of the same style and same size only.

Fig 7.04: Bundling

Bundle chart procedure:



Cutting Machine Specification:

As mentioned earlier Ananta`s cutting is equipped with 15 cutting table, 23 straight knife cutting m/c one bend knife, 15 lay cutter m/c , 90 tokay machine, 4 fusing m/c. Their specifications are given bellow

KM Cutting m/c

Country of origin- Japan
Speed- 3000/3600
Volt- 220
Cycle- 50-60 Hz
Length of knife-10”-13”
Blade width -1.5cm -3cm
Blade thickness - 1mm.

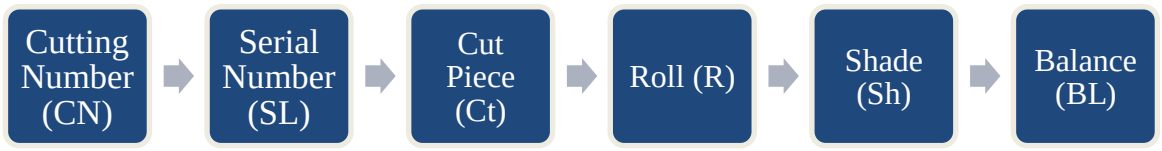
Blue Streak-II Cutting m/c

Country of origin- Taiwan
Speed- 2850
Volt- 220
Cycle- 50Hz
Length of knife-10”-13”
Blade width -1.5cm -3cm
Blade thickness - 1mm.

Fig 7.05: Cutting Machine

Cutting table specification:

- Length of the spreading table: 40 meter
- Height of the spreading table : 3 feet 36‖
- Table type : Plain, Card board type
- Spreading mode : face to face map one way
- No of clamps : 14
- Two air channels on the bottom side of the table surface, along with 12 air nozzle per square metered
- TSC laid cutter machine with each table. With round knife.



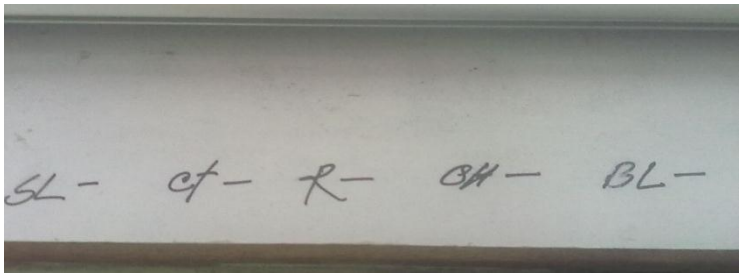


Fig 7.06: Cutting table specification

Lay making

Lay are made manually by hand. Following factors are ensure while lay making

- Shade mention
- Shrinkage of fabric
- Way direction for cord fabric & twill fabric
- Check matching for check & stripe fabric

Fig 7.07: Lay making

Marker

Marker is basically a thin paper which contains all the pattern pieces for all sizes for a particular style of garments. Marker is basically the following types

- Solid Marker or Vertical Marker
- Block Marker
- Selvedge Marker
- Way marker

Fig 7.08: Marker

Responsibility of cutting stuff:

- **Cutting Manager:** The job of Cutting manager is to make a daily cutting plan that, how many pieces need to cutting in daily. And make it clear to the Cutting supervisor. Another responsibility is to receive fabric from fabric receiver, and also send it to the Cutting supervisor as per cutting requirement.

- **Cutting in charge r:** Cutting in charge select of the work of supervisor the follow the order of manager. Every cutting in charge have to maintain all the activities on their order sheet or (Cutting table activities)

- At first understand the work planning from cutting manager. Then set table leader in per table. And make him (table leader) understand the work planning and also give the per day cutting target. At last cutting supervisor give fabric to table leader.

- **Table leader:** The responsibility of a table leader is to synchronize from the fabric lying to bundling. That means a table leader should observe the job of lay man, marker man, cutter man, seizure man, sticker man, and bundle man. Are they doing their work properly, are they facing any problem in working time, table leader should observe everything. Because

if any mistake will be happen or mark in the working period for the lack of

coordinating of table leader, he will responsible for all kinds of problem.

- **Cutter man:** The job of cutter man is, cutting the fabric as follow as marker. A cutter man should be expert in cutting, because cutting is one of the vital thing to increase productivity. If cutter man cut the fabric in wrong way, if he doesn‘t follow the marker line, if he has no idea about the cutting allowance, if he can‘t operate the cutting machine in properly, if he is not aware during the cutting period, ultimately productivity will go down. So a cutter man should be serious and expert. A cutter man is a vital person to improve productivity.

- **Lay man:** Lay man control the lay after spreading the fabric. So that fabric cannot be misplaced.

- **Writer man:** The job of writer man is to write chart and card as follow the fabric roll, lot, style and buyer.

- **Sticker man:** The duty of sticker man is to place sticker on the cutting part. Sticker men always follow the chart and size. Sticker man starts his/ her duty after cutting while writer man gives him the chart.

- **Bundle man:** Bundle man bundling the cutting part. While he starts his job he must follow the chart, bundling card, sticker serial, and size. Otherwise everything will be hampered.

SMV Factor	
Quantity	**Factor**
00 to 199	2.75
200 to 499	2.25
500 to 999	2.00
1000 to 1999	1.50

2000 to 4999	1.15
5000 to 9999	1.00
10000 to 14999	0.90
15000 to 30000	0.80
More Than 30000	0.75

Production capacity of the Department:

Capacity of unit 1: 20,000 to 25,000 cut pieces per day

Capacity of unit 2: 20,000 to 25,000 cut pieces per day

Total capacity : 40,000 to 50,000 cut pieces per day

Monthly Table wise cutting summary:

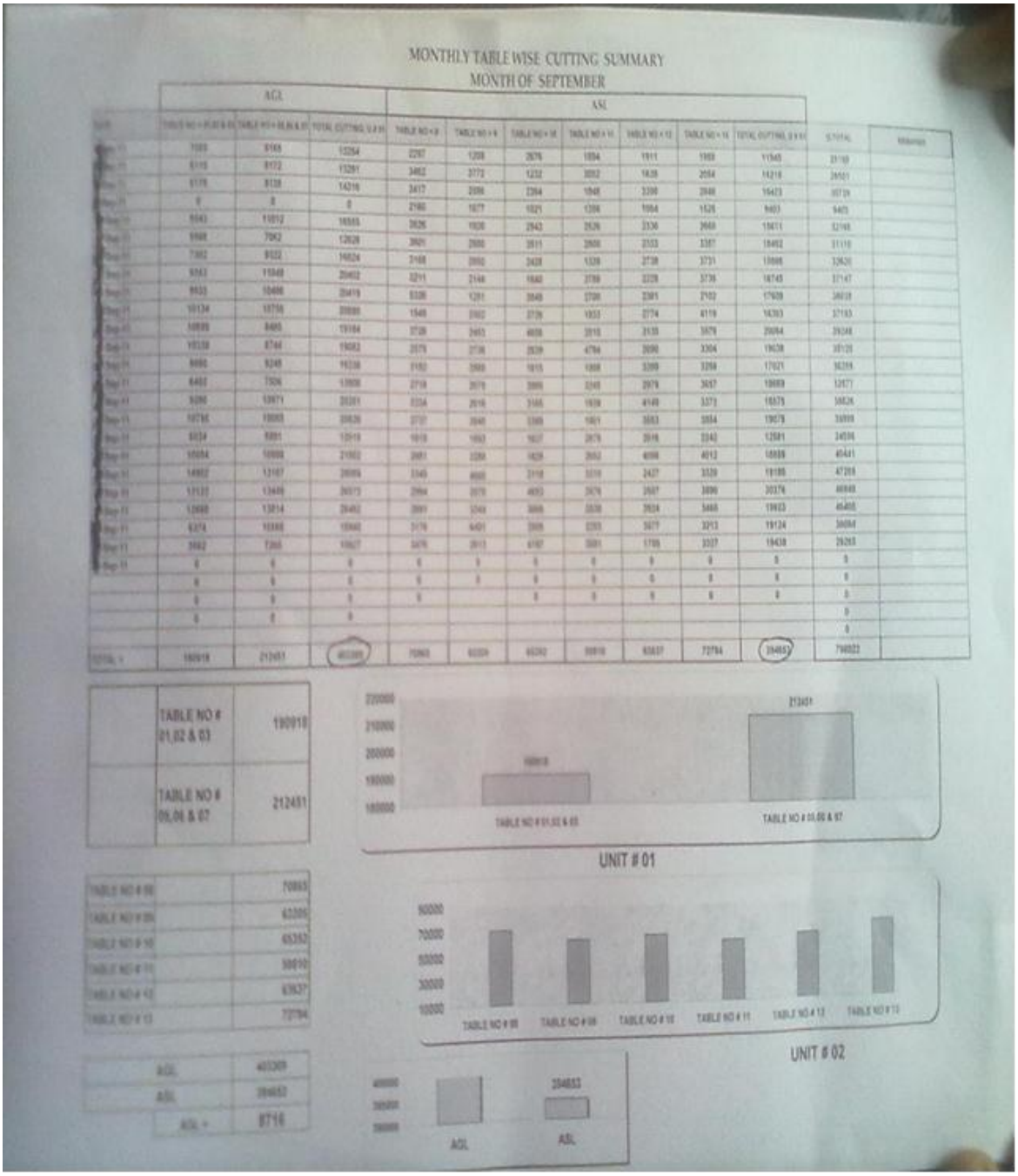
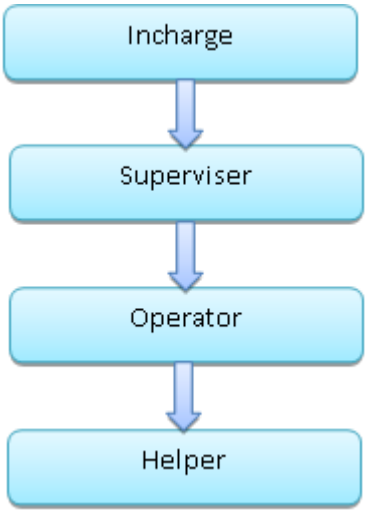


Fig 7.09: Monthly Table wise cutting summary

Fusing

Fusing is a joining process that is used in industrial applications, in manufacturing processes, and in hobby use. Manufacturers frequently use fusion to meld glass, metal, and plastics. Several fusion methods are used, such as laser, kilns, and electric arc. The interling which could be fixed with the garments by applying heat and presure for certain time.As an alternative method of joining of fabrics fusing is the widely used method. It is mostly used to attach interlining. At first the part of garment which is to be fused spreader and then the resonated interlining surface is placed on it and applied required pressure and temperature smoothly. Resin on coating of interlining is melt by heat into the fabric under pressure. When it becomes cool & hard both the fabric and interlining are attached. This method is only used for joining of interlining by fusing but cannot used for normal sewing.

Fusing section organogram:



Factor of fusing machine:

Heating system

The heating elements are connected with the heating plate over the whole area and thus obtain a uniform distribution of heat. The heating plate is flexibly hinged so that even

heavy fabrics can be fused without any problems as set temperature does not drop. The extensive insulation is not only energy-saving but also protects the operators from heat.

Pressure generation
Pressure generation is effected mechanically and can be infinitely adjusted up to 50 N/cm^2 for all types of top cloths and interlinings. The silicone-coated pressure rollers assure a safe and gentle fusing.

Computer control
Modern control devices with large displays guarantee the maximum on easy operation and reliability. They can optimally be set and controlled by the personnel.

Teflon belts
The machine is open at one side which allows fusing of partial interlinings onto fabrics being wider than the heating zone. The endless Teflon belts have a secure forced guidance preventing any misalignment or tearing and thus assuring long durability. Belts can be changed within some minutes, if necessary.

Fusing machine and specification:

Fusing is fused to fabric items with special machine. Heat and pressure are the main elements in these machines. It is very important to have people with lots of experience to work with these machines. The appropriate temperature, pressure, timing, type of fusing and fabric are the combination of factors that the experienced personal have in mind while working with fusing items.
Owing to our rich expertise in manufacturing Fusing Machine, we have carved niche in the market as one of a reputed Fusing Machine Suppliers and Exporters in the global market. Our Fusing Machine is made up of premium grade raw materials which ensure for robust construction that ultimately results in high performance.

Type available:
3001 & 3501(Wheel Type)
801 & 2001(Wheel Type)
5001 & 5501(Deluxe Model)

5001 (Hydraulic)

7501 (Automatic Gear Box)

Propelled by: Electric

Capacity: Depends on Model

Performance rate: Can Fuse 15-20 Collar Cuff in Seconds

Attributes: Sophisticated design

Easy to operate

Takes less time in production

Low maintenance

Anti-corrosive

Fig 7.10:Continous Fusing Machine

Number of machine: 4 pieces

Origin of this machine: Japan

Company name: Hasima fusing machine5 piece fused in 14 secondPaper lining: 140^0c-143^0c

Denim lining: 10 sec. 2kg, 160^0c

Cotton lining: 170^0c

Tricot lining: 1kg, 12sec, 149^0c

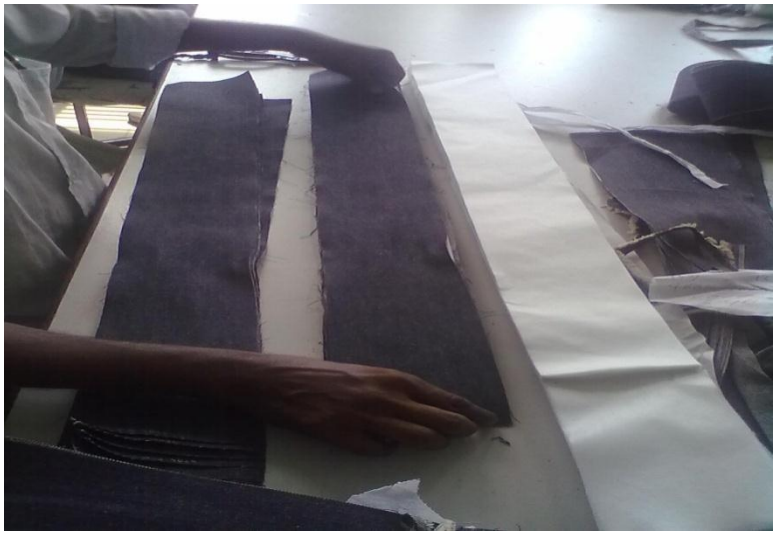


Fig 7.11: Fusing Insert

Operator and maintenance friendly:

- Loading belt approximately 600 mm
- Large displays
- Fusing parameters can be set easily
- Diagnosis lamps for quick error detection
- Casing with lateral doors
- Fold-away covers
- Scrapers can be fixed for quick cleaning
- Reliable belt cleaning system
- Tubular heating elements with Quick-Change
- Low-maintenance bearings, easily changeable

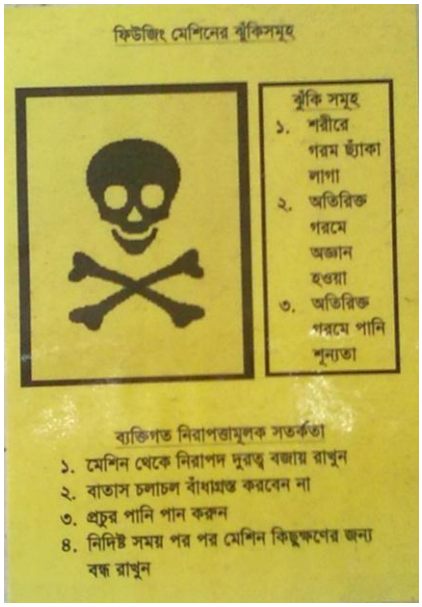


Fig 7.12: Pre-caution

Purpose and used for Interlining:

Fusing Fault Swatch:

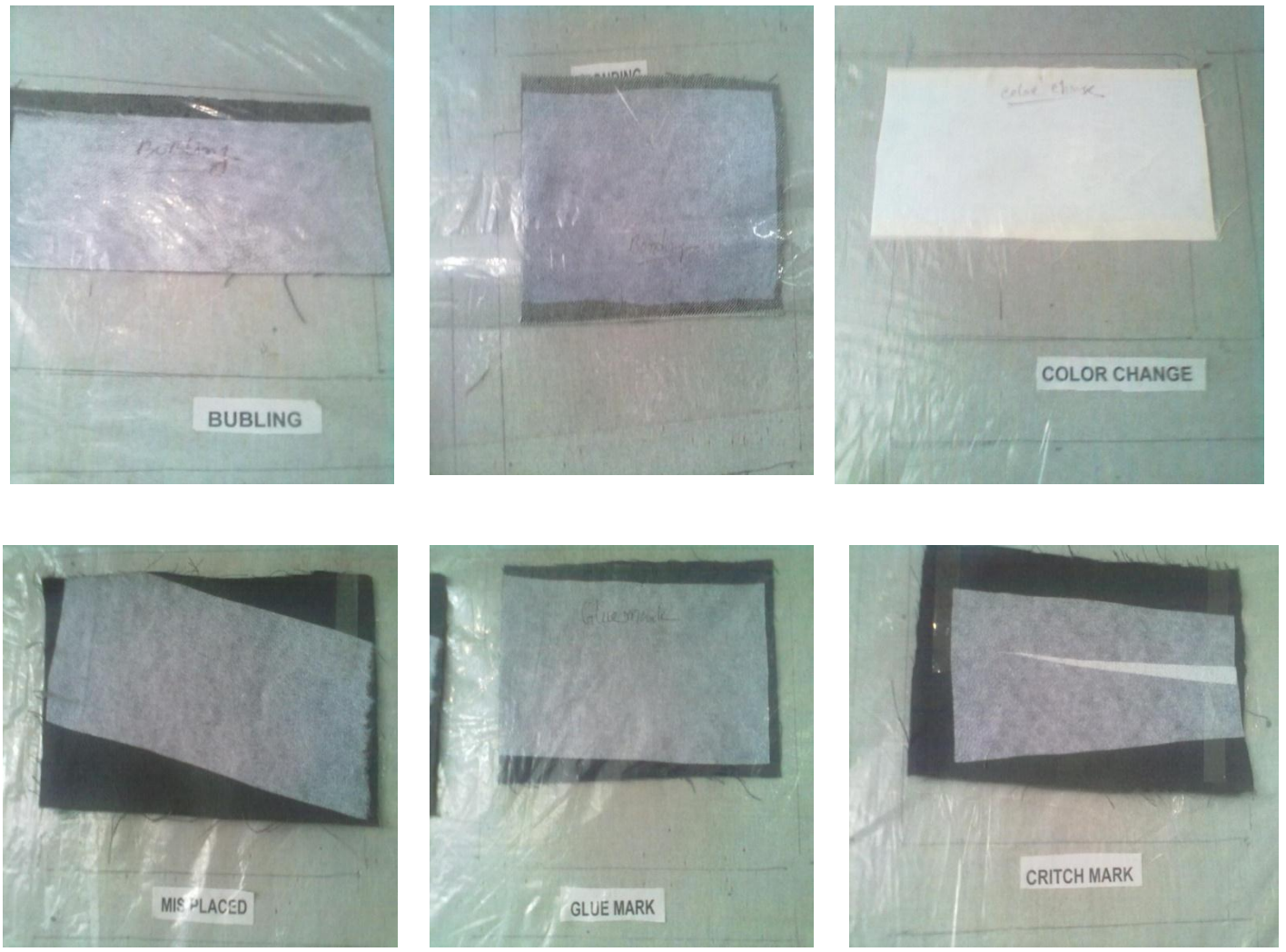


Fig 7.13: Different types of Fusing Fault

- To Make Sewing Easier and To Increase Production

  - Because of the speed of industrial sewing machines, the material must be in perfect shape before sewing so that the machine operator does not have to try to reshape the piece before or during the sewing item. If before sewing, interlining is fused onto the material, it keeps it shape, therefore saving time and labor.
  - Previously the process of tailoring had to be done by hand and was only a job for skilled people, now days with the fusing process. Anybody can create the same erect as a skilled tailor, with only one layer of interlining, and no previous skills.

- Retaining Shape and Improving Materials Appearance

  - The use of interlining helps the garment material‘s appearance while at the same time. Retaining the garments shape.

Fig 7.14: Fusing Tester Machine

Fig 7.15.: Fusing Testing

With the development of interlinings and better Fusing press machines, the permanent fusing process was developed. With this process, garments keep their shape no matter how often they are worn or washed

- Making a Functional, Lasting ,Easy to Wear Product

Using the Permanent press technique, everyone from the producers and designers to the consumers is satisfied. The people in production find the garments easier to sew, the clothing designers can achieve shape and long term performance can achieve shape and long term performance, while the consumers get a good quality product that is easy to care for, looks good and is easy to wear.

The basic aim of pressing is to make the garment look better for longer periods of time. While still being comfortable. Interlining reduces the occurrence of stretching, creasing and wear.

Buyer wise fusing testing specification:

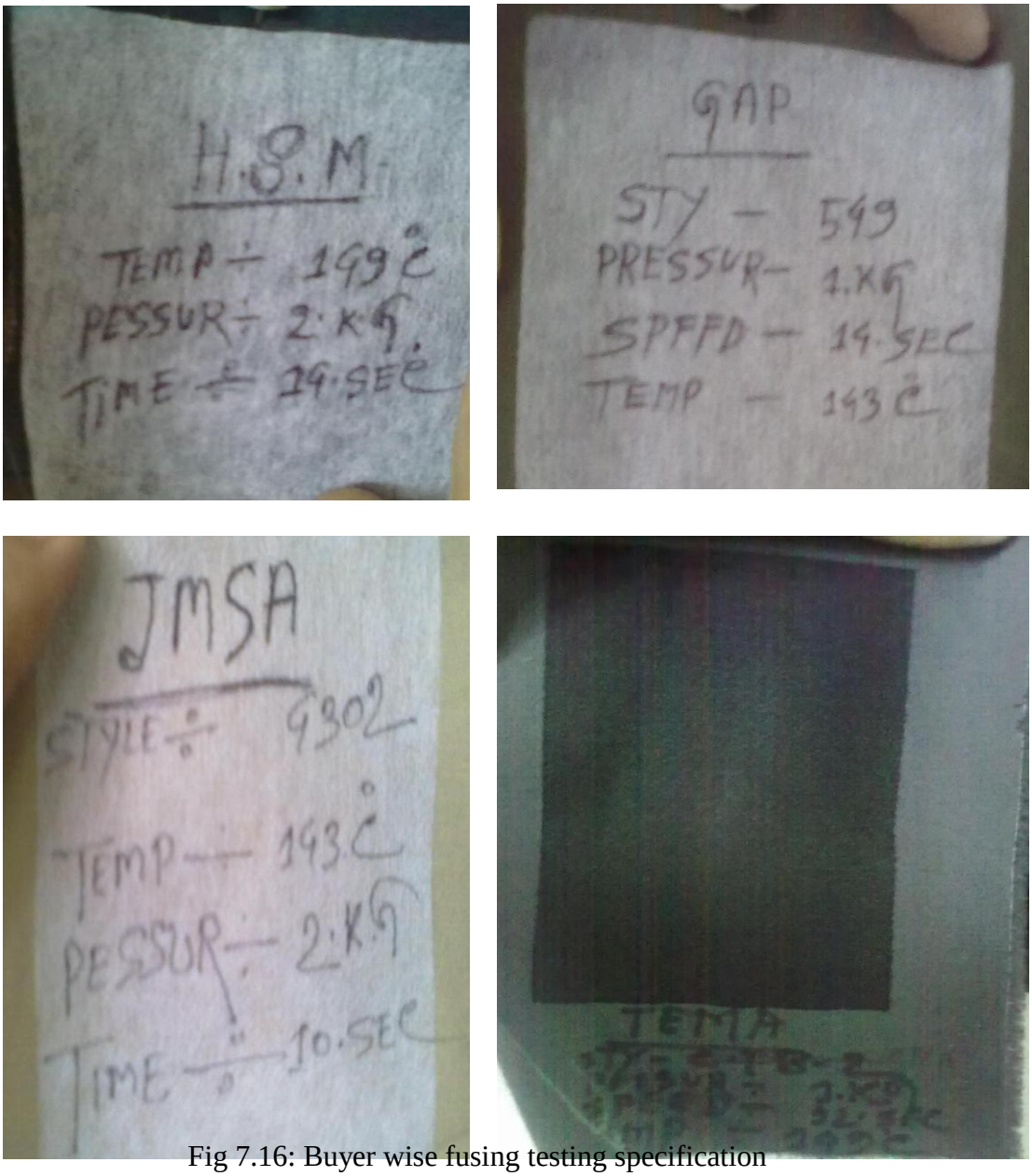


Fig 7.16: Buyer wise fusing testing specification

Sewing Department

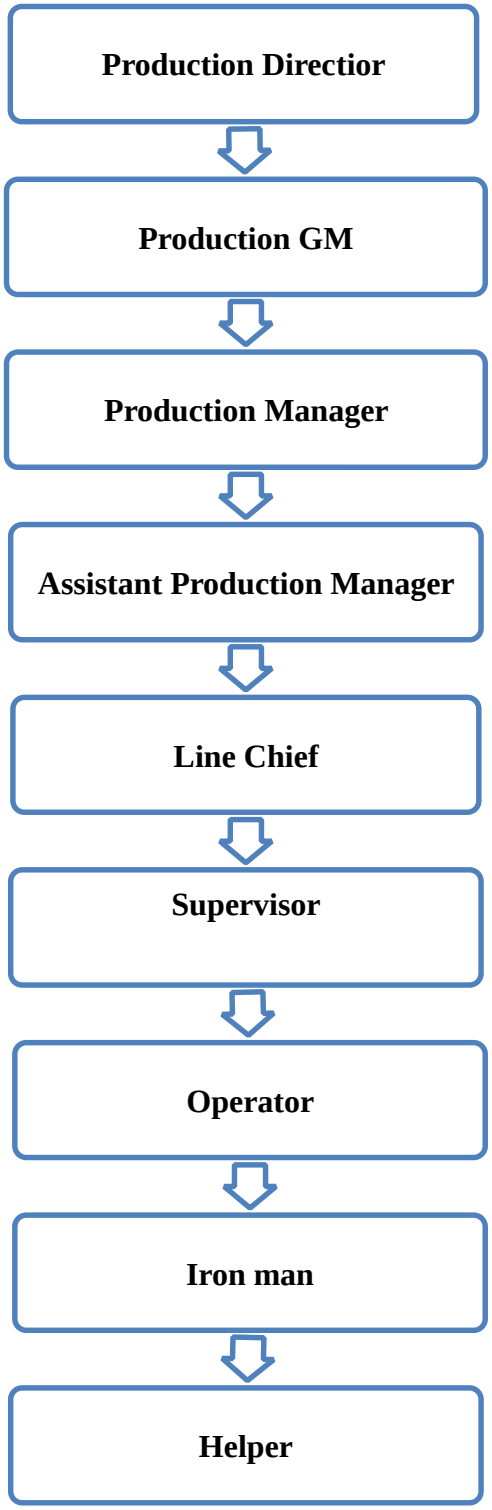
Sewing is the main function of garment production. Sewing can be defined as the joining of fabric parts with thread by means of needle. **"Ananta Garments Ltd."** has sate of the art sewing section. Sewing section of this garment is divided into two units. 5 floor of the main factory building is allocated for the function of sewing. Each floor

has an area of 40,000sqare feet, referring to a gross total of 200,000sqare feet area for sewing. There are a total of 42 functional sewing lines in the factory.

Fig 9.01: A sewing operation

The sewing unit-1 is located at the 3rd floor **"Bir Sreshtha Nur Mohammad"**, 4th floor **"Bir Sreshtha Hamidur Rahman"** & half of the 5th floor **"Bir Sreshtha Ruhul Amin"** of the main factory building. Unit-2 is located at half of the 5th floor, 6th floor **"Bir Sreshtha Mohiuddin Zahangir"** and 7th floor **"Bir Protik Setara Begum"**. The company maintains proper condition & environment for the better quality of production.

Sewing Department organogram:



Line Allocation:

Unit – 1

3rd Floor to 5th Floor

Unit	Line	Floor
LA	Padma	3rd Floor "Bir Sreshtha Nur Mohammad"
LB	Meghna	
LC	Jamuna	
LD	Rupsha	
LE	Buriganga	
LF	Naf	
New 2	Kapotakkho	
New 10	Posur	
LG	Bongshi	4th Floor "Bir Sreshtha Hamidur Rahman"
LH	Dakatia	
LI	Sibsha	
LJ	Karnaphuli	
LK	Surma	
LL	Ichamoti	
New 1	Brahmaputra	
New 11	Kushiyara	

LM	Atrai	**5th Floor** **"Bir Sreshtha Ruhul Amin"**
LN	Shitalakshya	
LO	Madhumati	
New 12	Khuai	
New 15	New 15	

Unit – 2

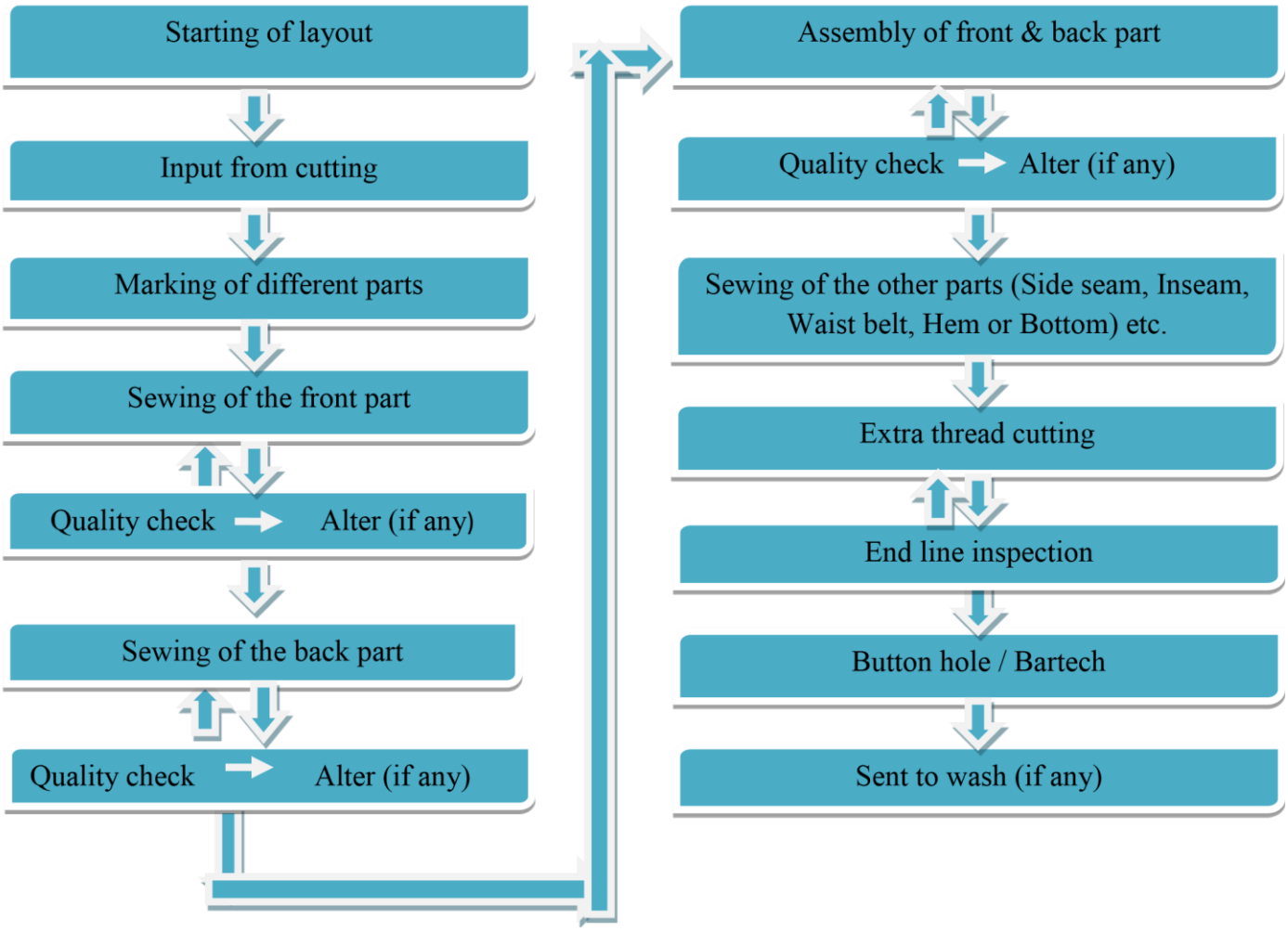
5th Floor to 7th Floor

Unit	Line	Floor
LP	Bhairab	**5th Floor** **"Bir Sreshtha Ruhul Amin"**
LQ	Chitra	
LR	Gomoty	
New 8	Muhuri	
LS	Gorai	**6th Floor** **"Bir Sreshtha Mohiuddin Zahangir"**
LT	Titas	
LU	Turag	
LV	Teesta	
LW	Mohananda	
LX	Karotoa	
New3	Nildaria	
New9	Shandha	
New16	New16	
LY	Dhaleshwari	

LZ	Halda	**7th Floor** **"Bir Protik Setara Begum Floor"**
New4	Arialkha	
New5	Bangali	
New6	Dharla	
New7	Bhola	
New13	Kirtonkhola	
New14	Payra	

Work Flow of the sewing Department:

Work flow of the sewing department of **"Ananta Garments Ltd."** is given bellow:



** Please note: This flow of operation may vary depending on the style of the garment or buyer requirement.

Allocation:

Location: Unit-01 (3rd floor; 4th floor and half of the 5th floor)

Unit-02 (Half of the 5th floor; 6th floor; 7th floor) **Total Sewing Line: 42**

Position	Manpower
Production Director	01
Production GM	02
Production Manager	07
Assistant production Manager	08
Line Chief	42
Supervisor	123
Operator(per table)	65
Iron Man (per table)	20
Helper (per table)	20

Sewing machines of Ananta Garments Limited:

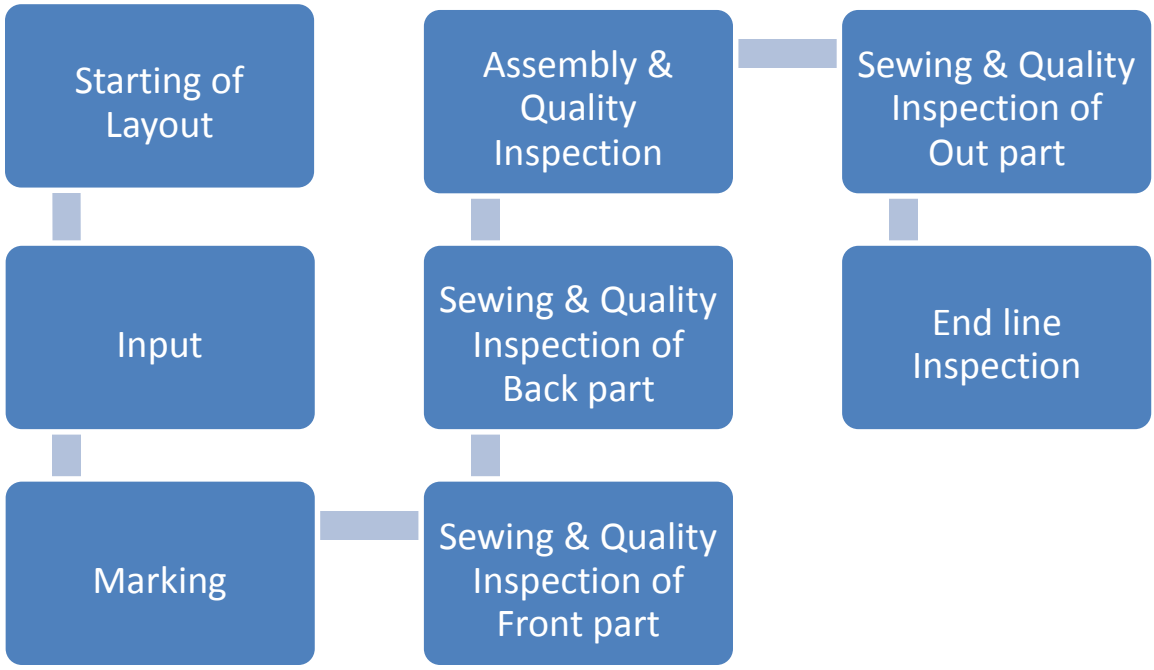
Ananta Garments Ltd. Contains an up-to-date section. Their sewing section is equipped the following types of sewing machines

- Single Needle Machine
- Edge Trimming Machine
- Double Needle Machine (lock Stitch)
- Double Needle (Chain Stitch)
- Over Lock Machine
- Kansai Special Machine
- Feed of the Arm Machine
- Flat Lock
- Blind Stitch
- Zigzag Sewing Machine
- Heming Machine
- CVR Stitch
- Eyelet Hole
- Thread cutting machine
- Pocket Attach Machine
- J Stitch Machine
- Iron Machine

- Double Needle (SLIT Bar) Stone Attach Machine
- Slender Feed Machine.

Working Procedure of sewing Department:

Sewing is an operation by which the fabric cut panels are joined together by thread and gets the shape of a garment. Main responsibility of this department is to stitch fabric together in a standard way that it meets the needs of a buyer as a garment. As mentioned earlier this garment industry contains 42 sewing lines. These production lines are equipped with sound sewing machines. All the lines are functional and executing the function of sewing. Each line`s general structure is more or less like bellow



This procedure may differ with the change of product style & buyer requirement. However for a particular style the working procedure of sewing is given bellow.

At first the production dept. receives some documents. They are:

- The style or the garment
- Number of operators required of the batch for which the style has to be installed.

- Any extra kinds of m/c s that are to be used for the particular style, target for each day.
- Breakup of the production quantity.

Input from cutting & store

After receiving all these details they send a request for the cut parts from the cutting & sorting section & the request is sent to the accessory stores for all the accessories that are required for the particular style then they start the production for the new style.

Starting of layout

Before starting the proper production the production floor does a process of batch setting for the floor which is training the operators for the new style that has to be produced bulk, this teaching session will go on for about 3-4 days maximum. After this batch setting process the production for the next day starts with a smaller commitment i.e. may be for 50 pieces for the entire day then the production gradually increases from 50—100-150 & so on, this will make the operators team slowly & precisely about the processes that has to be carried out for the particular style.

In process quality control Sewing:

During the swing ―In process quality control‖ is done by the line QC‘s through 7 pieces inspection system. For critical operations 100% process inspection are carried out.

The following parameters are also checked in sewing process –

a) Machine check.
b) Tension.
c) Stitch per Inch (SPI) checks
d) Needle check.
e) Cleanness.
d) Table inspection.
f) Inspection before wash.

Sewing

Once the cut parts are received from the cutting & store section then the parts are prepared & assembled according to the line that is planned. After the assembling of the parts is done then there will be a line checking where the shade matching the measurements are checked sent.

Sewing Needle

A sewing needle is a long slender tool with a pointed tip. The needle must be able to penetrate the material being sewn, by pushing the yarns aside according to the application, without damaging it. Modern needles are manufactured from high carbon steel wire, nickel or gold plated for corrosion resistance.

Needle Points

Needles are manufactured with a wide variety of needle points appropriate for the different properties of materials which have to be sewn. The needle point can be located wither centrally or eccentrically. There are two basic classes of points:

- Round points
- Cutting point

Slim Set Point Needles – can be penetrate the yarns of the material being sewn through its sharp point and is ideal for all woven fabrics because it helps to produce an even stitch and causes a minimum of fabric puckering. They are used for Blind stitches and for fine densely woven fabrics. These points are not suitable for knitted fabrics.

Set Cloth Point – Needles are slightly rounded to displace yarns of the material being sewn without damaging them. This is most commonly used point.

Heavy Set Point – Needles are strongly blunted. These are used for button sewing machines.

Ball Points – Light Ball Point is used for sensitive fabrics such as knits to prevent damage to the loops. This is crucial for maintaining the fabric‘s elasticity. Medium ball point and heavy ball point are used for fabrics containing stretchable yarns. While sewing the threads are displaced not pierced. The needle pushes between the fabric yarns rather than ―cutting rough‖ the yards.

Cutting Points – Cutting points are used for sewing leather, coated or laminated fabrics. These are classified and named according to the position of the cutting edge and its shape. The shapes are named with regard to the form of the cutting edge for example spear point, triangular point, diamond point etc. The shape of this needle will create a slit (rather than a large hole) through which the thread will pass.

Needle sizes

Suitable sewing needle type is one of the most important parameters for ensuring the effective and fault free sewing process it will depend on the characteristics of the needle type, needle point, needle fineness, fabric material, the size of sewing thread, the seam type and stitch type.

It is important to use correct needle size for the type of fabric being used. The metric size ―Nm‖ of a needle defines the diameter of the blade (in 1/100 mm) at a point just above the scarf. Fine needles are around Nm 70, medium needles are abound Nm80-Nm90 while thicker needles are around Nm100. The convention for sizing is that the length and thickness of a needle increases as the size number decreases. Delicate fabrics such as silk, chiffon, voile, fine lace and organdie would need a fine ―size 9‖ needle. Lightweight fabrics such as synthetic sheers, taffeta, velvet, stretch fabric and

tricot would need a ―size 11‖ needle. Medium weight fabrics such as poplin, linen, chambray, wool crepe, flannel, knits, jersey, wool and satin would need an s ―size 14‖ needle. Medium-heavy weight fabrics such as sail cloth, gabardine and tweed fabrics would need a ―size 14-16‖ needle. Heavy fabrics such as denim, upholstery and canvas fabrics would need a ―size 16-18‖ needle. Most readily available machine needles are sized from 9 to 18. The smaller the number, finer the needle.

Good Practices

- Skip stitches are caused at seam cross sections and thick material parts
- Needle Breakage is due to high penetration forces and strong needle deflection
- Needle point damage is generally caused due to poor adjustment with lopper causing contact with hardened lopper
- Thread breakage is caused by poor loop formation and in sufficient space between thread and needle for picking up by lopper
- Use Threading Air Needle for faster threading the needles to avoid wasting time
- Advantages of using correct needle can give straight un-staggered seams less skip stitch problems, fabric damage, less puckering, less needle breakage and higher productivity, optimum protection of Hook point, reduced machine load, reduced thread loss, and reduced production cost.

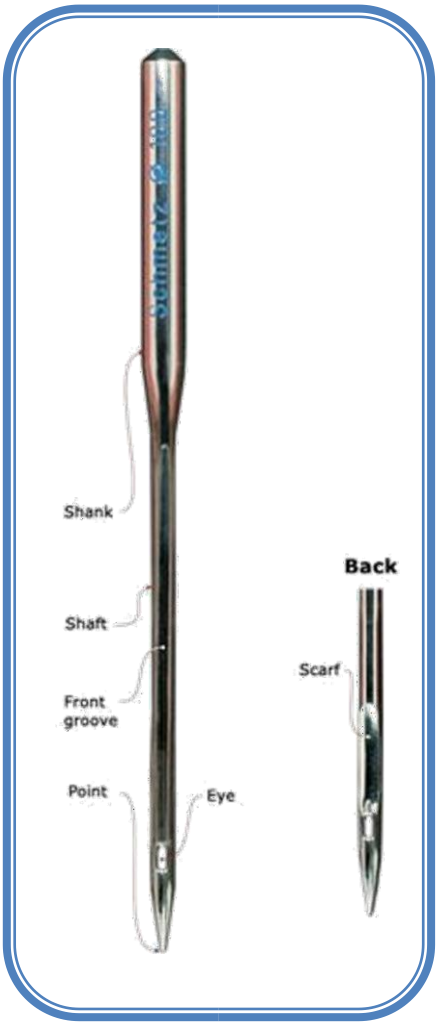
Trouble Shooting

Seam Puckering in Stretchable fabrics

- Use smallest size of needle and smallest thread size
- Use smaller ball Point needle
- Use minimum pressure on presser foot
- Tension of needle thread and bobbin or lopper thread must be minimal
- Use feed dog with finer teeth
- Do not use bigger SPI (stitch per inch)

- Check needle for wear or damage at point area. Stitch skipping and thread breakage while sewing synthetic fabrics.
- Always use special finish needles with special coating to reduce friction and overheating
- Decrease needle temperature by using special lubricants or pre-lubricated sewing threads for smoothness and reduced friction
- By cooling needles using stream of air through blower
- By reducing revolution of sewing machine causing lower generation of heat on sewing needle.

Basic Features of Sewing Needle



Shank locates the needle in the needle bar. Shank is following types:

- Shanks with a circular section
- Shanks with a flat side which serves to locate the needle in a specific position in the needle bar
- Shank thickness is maintained all the way down to needle blade. These kinds are used in speciality needles.

Blade of needle runs from the end of shoulder to the beginning of the eye. Blade increases in thickness from eye to shoulder to increase stiffness. Curved blade needles are used for Blind stitch machines.

Groove is the threading side of needle. Its function is to guide the thread while forming the stitch and to protect it against excessive friction.

Eye is the hole before needle point for sewing thread. The shape of eye is always extended in its length as the needle thread has

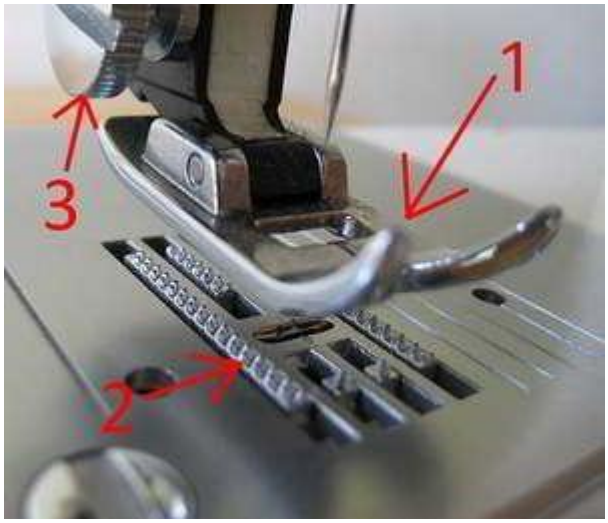
to pass diagonally through the needle in the length direction. Fig 9.02: Needle

Introduction Feeding Systems

Material feed means the controlled movement of the material being sewn from one stitch position to the next. Moving the material through the sewing pint is what converts a series of stitches into seam. The fabric material can be moved in any horizontal direction; in most cases it is only forwards or backwards.

Usually the fabric is moved just after the needle point is raised clear of the surface and stops just at is about to re-enter, therefore accurate control of plies of material being sewn is essential for satisfactory stitching, affecting appearance, pucker and seam strength.

1. The presser foot, 2. The feed dog, 3. Thumbscrew for removing the presser foot



Material feed is achieved by the feed dog which contains several rows of serrated teeth. The feed dog is moved upwards and forwards through slits in the throat plate to engage with the underside of material being sewn and to advance it by a distance of one stitch length. Contact between feed dog and material is controlled by the spring loaded presser foot. The feed dog is then lowered and move back to its starting position.

Various types of feed dogs, presser foot and throat plate are used according to the type of material being sewn and the particular sewing operation. Feed dogs can have different shapes and types of teeth.

Fig 9.03: (1) Presser foot; (2) Feed dog; (3) Thumbscrew

Combined Feed Systems

Compound Feed is a combination of synchronized drop feed and needle feed. Feeding occurs while the needle is still in the material by combined motion of needle bar and the feed dog. Since needle holds the plies of material in registration of feeding this reduces pucker and slippage between the plies of material. Used mainly for edge stitching, checks and stripes.

Variable Top and Bottom Feed (before the needle) is a feed mechanism where the feeding foot similar to presser foot is provided with two rows of teeth and acts alongside the presser foot.

The strokes of the feeding foot and the feed dog can be adjusted independently.

Variable Top and Bottom Feed (after the needle) – mechanism is when the feeding foot operates behind the needle to deliver especially smooth seams.

Alternating Compound Feed – This system involves a combination of three types of feeding; feed dog, needle feed and feeding foot. In this process fabric cannot be gathered. This application is used when sewing multiple plies and sewing bulky seams in heavy fabrics.

Puller/Roller Feed is an auxiliary feed using a wheel or roller positioned behind normal feed mechanism. This roller operates either continuously or intermittently. This is suitable for long straight seams without causing puckering.

Reverse Feed is the feed used in majority of Lockstitches to move the fabric material away from need towards sewer for bar tacking. Chain stitch machines rarely have this bar tacking feed mechanism.

Special feeding devices - like Clamp Feed are used for automatic sewing machines like button hole, bar tack and small parts making machine using Jig. The jig is driven automatically and guides the material under the needle according to the required pattern.

Type of feed systems

Feed systems usually work on the underside of the material but can also operate above or from both sides at the same time, depending on the need to avoid particular problem in sewing.

Drop Feed is basic material feed system where the feed alternately engages and disengages with the underside of material and is suitable for general sewing operations on any material which has no particular sewing problems.

Differential Drop Feed is a differential feed which utilizes two independently driven feed dogs. The stroke of each feed dog can be adjusted separately. If the stroke of front feed dog is greater than the fabric may stretched to provide a more stretchable seam.

Sewing layout

Buyer: Gorge
Style: 1098/6011
Line name: New-2

Front part

Operation	Machine	Operator no.

Seam mark & Back pocket mark	Manually with chalk	2
Back pocket & coin pocket rolling	Plain machine	2
Coin pocket joining	TN machine	1
Same, double ply, facing & coin pocket over lock	Over lock machine	2
Same joining	Plain machine	2
Pocket facing joining	Plain machine	2
Pocket over lock	Over lock machine	2
Pocket top stitch	plain machine	1
Front raise o/l & single ply attach	Over lock machine	1
Single ply top stitch	Plain machine	1
Front pocket joining	Plain machine	1
Front pocket top stitch J stitch marking & trimming	Plain machine	1
Zipper joining	Manually	2
J stitch	Plain machine	1
Double ply join	Plain 2 needle machine	2
Double ply top stitch	Plain machine	1
Front rise tuck	Plain machine	1
Front / high close tuck	Plain machine	1
High top stitch	Plain machine	1
Loop make & tuck In	Plain machine	1
line QC		1

Back part

Operation	Machine	Operator no.
Back pocket marking	Manually by hand	2
Back pocket rolling	Plain machine	1
Back yoke over lock	Over lock machine	2
Back yoke top stitch	Plain machine	1
Back raise over lock	Over lock machine	2
Back raise & yoke joining	2 needle feed of the arm	1
Size, main, shade care & line label join	Plain machine	2
Pocket iron	Steam iron	1
Pocket number matching	Visually	1
Back pocket join	Plain machine	2
Back pocket top stitch	Plain machine	2
Inline QC	Visually	1

Assembly

Operation	Machine	Operator name
Inseam over lock	Over lock machine	2
Inseam top stitch	Plain machine	2
Side seam over lock	Over lock machine	1
Side seam top stitch	Plain machine	1
Loop joint	Vertical machine	1
Waist belt matching	Manually	1
Waist belt joint	Kansai special (3 needle)	1
Inline QC	Visually	1

Other part

Operation	Machine	Operator no.
Waist belt mouth closing	Plain machine	2
Mouth top stitch	Plain machine	1
	Plain machine	2

Loop tuck	Plain machine	1
Bottom hem	Scissor	2
Thread cutting	Visually	2
End line inspection Bartech	Bartech machine	2

Sewing Quality Control (QC)

During the process of garment making there exists two type of checking,

they are In process checking

 Ending checking here there exists both AQL audited normal checking

The garments making is divided in to three different stages at these three stages the checking is done.

The flow of material in the production floor is through the bundle system & each operator gets a bundle containing similar pieces & there will be about 15-20 pieces in each bundle the operator completely finishes the job sends it to the next operator to do the next operation on them. Each bundle will contain same component of different garments the movement of the materials within the operators in the batch line is generally zigzag motion which is followed the checking person will be present at a position where the garment is partially finished it is as mentioned checked thrice in the line & some time than three this depends on the Buyer as well as number of components present in the garments.

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

Some sewing operation:

Fig 9.04: Some sewing operation

Fig 9.05: Ananta Group LEAN Project

Washing Department

The technology which is used to modify the appearance, outlook comfort ability & fashion of the garments is called garment wash. **"Ananta Garments Ltd."** has independent washing unit, Paradise washing plant. This department is responsible for washing the garments in required way.

Garment's washing is important for fabrics softness, contrast, one of a kind looks and preshrink. And also removes dust, dirt, oil spot, size materials, and starch present in the garments.

Once the garment has been finished with all the operations then they are sent to the washing department for the washing that has to be done for that particular style according to the buyers specification and hence it plays a vital role in the final feel and texture of the garment which has to match the specifications of the buyer 100%.

Fig 11.01: Paradise Washing Plant

Types of wash

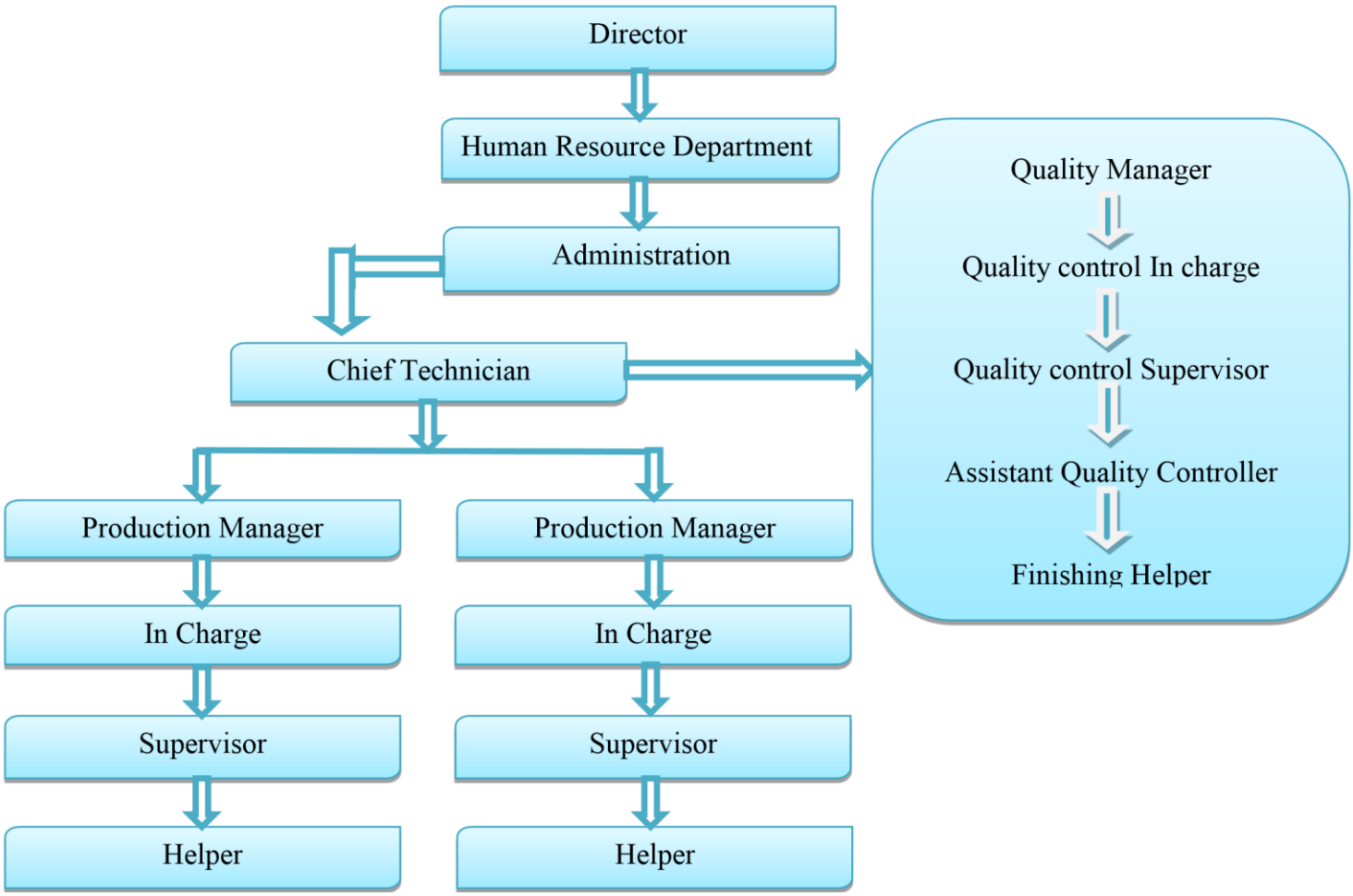
Wet process

- Rinse wash
- Enzyme wash
- Bleach wash
- Stone Enzyme wash
- Caustic soda wash
- Over Dyeing wash

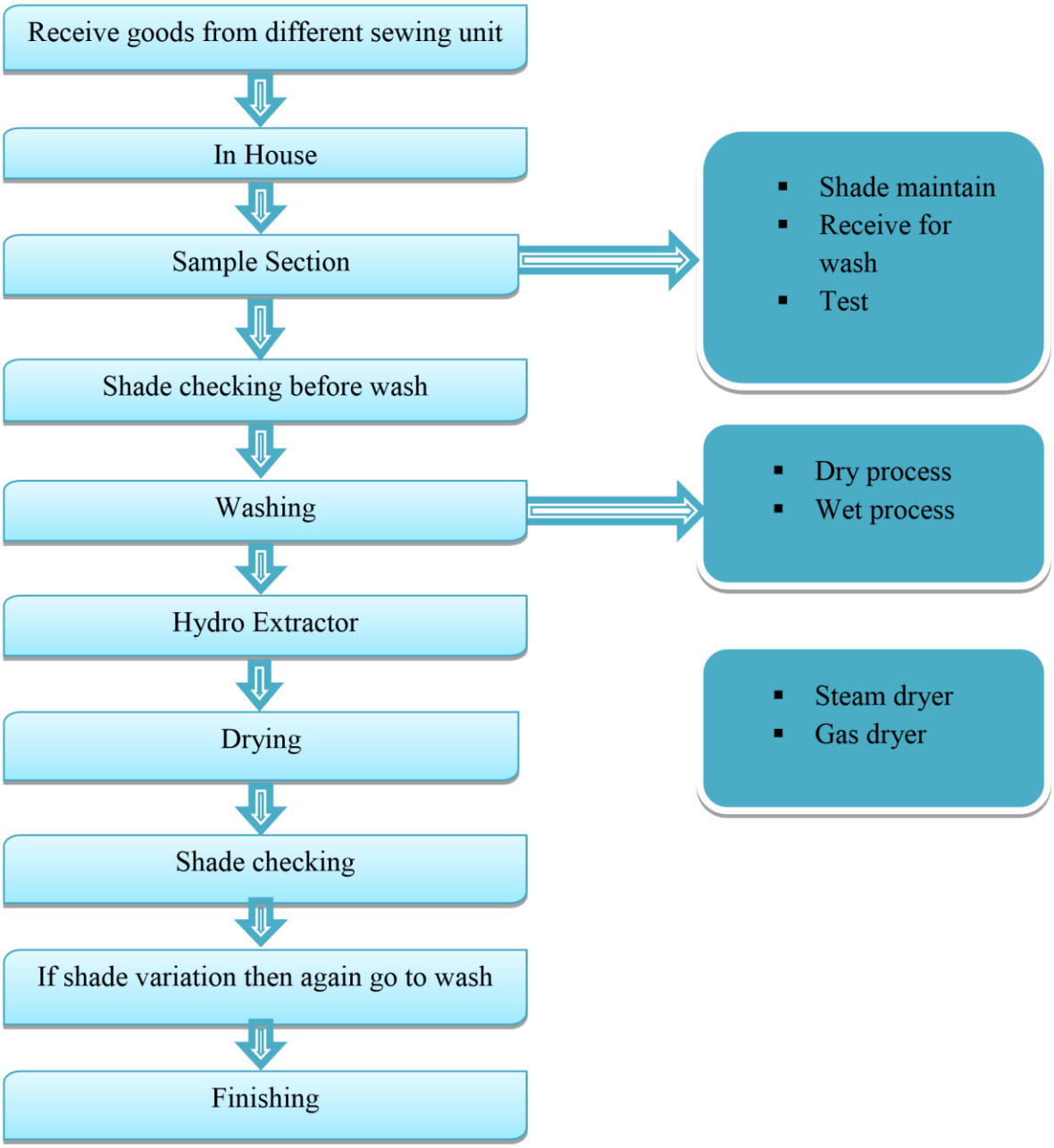
Dry Process

- Hand whickering
- P.P spray
- Tagging
- Grinding
- Wrinkle

Washing Department organogram:



Washing Department work flow:



Allocation:

Position	Manpower
Chief Technician	01
Production Manager	02
In charge	04
Supervisor	06
QC(Quality Controller)	36
HRD	26
Sample section	12
E.T.P(Effluent Treatment Plant)	07

Allocation for wet process

Position	Manpower(In 2 shift)
Wash operator	36
Hydro extractor operator	10
Dryer machine operator	06
Wash helper	36
Hydro extractor helper	10
Dryer helper	06

Allocation for Dry process

Position	Manpower(In 2 shift)
Hand whickering	65
P.P(Potassium Permanganate) spray	14
P.P helper	30

Hand brushing	40

Activities of the Department:

The merchandiser after getting the sample done, they bring the original sample that will be sent to the merchants by the buyer and they also get the sample done in the factory.

The washing units check the garment for the different aspects like-

- Type of the material.
- The texture that is under demand.
- Types of labels that are been used in the garment.
- Types of threads used for in sewing.
- Types of chemicals that should be used to get the desired finishing.
- The sequence of the process.
- Temperature at which garments has to be treated.

Washing Machinery:

Washing Machine

For sample- 04 pieces

For production- 19 pieces

Hydro extractor machine-06 pieces

Drying Machine

Gas Dryer-04 pieces

Steam Dryer for production 13 pieces & for sample 01 piece.

Light Box- 02 pieces

Duration of the treatment:

At first they segregate the garments based on shade wise, job wise and unit wise, suppose the garments which in color and which have to be treated in the similar manner then such styles are clubbed together irrespective of their styles.

After this segregation washing is carried out as per the buyer‘s specifications. In this washing there are two types.

1. Wet processing
2. Dry processing

First the dry processing is carried out and then the wet processing is been followed. In the dry processing there are different types they are-

Dry Process

- Hand whickering
- P.P spray
- Tagging
- Grinding
- Wrinkle

After the dry processing the next main thing which has to be done is wet processing.

Washing process: There are different types of washing procedures involved and they are classified as follows:

Wet process

- Rinse wash
- Enzyme wash
- Bleach wash
- Stone Enzyme wash
- Caustic soda wash
- Over Dyeing wash

Fig 11.02: Washing Unit

After the entire process is done then it followed by the hydro extraction where is specified lot of garments are put into the hydro extracting machine depending on the tumbler capacity and then the excess of water which had accumulated in the previous stages will be extracted by compressing the garment with the optimum pressure that has to be for that particular style / garments.

Then the garments are dried using the dryer. After the garments are dried they are inspected by the quality inspector and the inspection here is random it does not invoke any organized way any garment from the entire lot is randomly selected and inspected according to the criteria that will be specified to them by the merchandiser.

Once the inspection is over the garments are sent to the finishing and the packing section or sometimes if the garments has to be attached with some accessories or trims after the washing and dyeing stages then such styles are send to the production floor to finish the left over job on them and then sent to the finishing and the packing department.

Dry Processes:

Hand whickering

A process of whickering on denim/ canvas/ Twill/ Corduroy garment is deserved below:

- Manually created rubber board is used for hand whickering
- Specific design is created on rubber board
- Then rubber board is placed inside the garments

Fig 11.03: Hand Whickering

- Sand paper taken then rubbing on front side of garment over pattern
- Garment will be fade
- Then washing needed

Tagging

- Tagging is done on garments for fashion and value added fashion wear.
- Tagging is done by using needle & thread by manually.
- After wash upper portion of garment occurs crease marks & inside of tagging occurs dark shade.

Grinding

- Grinding is done on garment for mainly old/used look appearance & fashion.
- Grinding is done on hem, pocket edge, waist belt, pocket opening and pocket flap of garments.

Fig 11.04: Grinding Machine

Destroy

Destroy is a new fashion on garments. Destroy is done by manually. For destroying Grinding machine is used at the paradise washing plant Ltd.

P.P spray

P.P spray is done on denim, Twill, Poplin.Courduroy before wash & sometimes middle off wash i.e.; after enzyme wash, stone enzyme wash. Done on particular areas on the garments. Select the

P.P spray which is chemically reaction.

For P.P spray on garments need dry air which is supplied from screw compressor and P.P stock solution tank. P.P sprays on garments need on chamber, different types of dummy and exhaust fan. After P.P spray need to neutralize the garment by sodium metasulphite, then whiting effect done on respective areas of garments. P.P spray is done by nozzle and has a switch to start and stop.

Wet Processes:

Washing process of Normal / Garment wash:

Normal wash is required for the following reasons:

- To remove dust, dirt, oil, spot, impurities from the garments.
- To remove size materials from the garments.
- To remove starch presents on the garment fabrics.
- For soft feeling to wear the garments after purchasing.

Washing process of normal wash:

The normal washing process for a batch of 70 kg Twill / Canvas garments are described below:

First step:

- Lot size ……. 70 kg Garment
- Add water (L:R)= 1:8-10…… 560-700 litres ➢ Machine running
- Add detergent (0.5 gm / litre)……... 280-350 gm
- Temperature…… Cold or 40^0cto 60^0c
- Time……... 5 to 10 minutes
- Drop the liquor
- Cold wash

Second wash:

- Add water (L:R) = 1:6 ……. 420 litres ➢ Washing machine running
- Add Flax softener (0.6gm / litre) …….. 252 gm
- Add Acetic Acid (0.5 gm / litre) …… 210 gm
- Time ……... 5 to 10 minutes
- Drop the liquor

Third step:

Hydro extractor machine

- To remove excess water from the garments it is used.

Fourth step: Steam dryer or Gas dryer

- Load on steam dryer …….. 50 kg
- Temperature ……... 60^0c – 70^0c
- Time ……... 40 – 50 minutes for dry
- Time ……... 10 – 15 minutes for cold dry

Or

- Load on gas dryer …….. 50 kg
- Running the machine
- Temperature ……... 70^0c – 85^0c
- Time ……... 30 – 35 minutes for dry

- Time …… 10 – 15 minutes for cold dry

Fifth step:

After drying it will go for quality checking and good quality garments will be delivered to garments factory.

** Note: Flax softener (cationic or nonionic) diluted with hot water then uses it in the machine.

Enzyme wash

Enzyme washing is a laundering process which uses enzymes to clean clothing or to finish fabric, especially in the case of jeans and other garments with a worn-in look. Various enzymatic cleaners are available from stores which specialize in laundry supplies, and can also be special ordered. For regular cleaning, enzymes carry numerous economic and environmental benefits. On an industrial scale, enzyme washing has replaced laborious laundering techniques such as stonewashing, saving money and environmental impact for companies.

Enzymes are proteins produced by living organisms. All organisms produce a wide range of enzymes to accomplish necessary biological tasks. Some enzymes can also be replicated in the lab, or engineered to perform in a particular way. One of the reasons that enzyme washing is so ecologically friendly is the natural origins of enzymes, which biodegrade, rather than lingering in the water supply. Enzyme washing products are also much more potent than other laundry products, requiring people to use far less, in terms of volume.

Different types of enzymes are suitable for different stains. In all cases, the enzyme washing process breaks the stain down into smaller molecules which can be removed with water or conventional soap. Amylases will remove starch based laundry stains, while proteases break down protein chains, making them suitable for protein stains. Lipases work very well on grease and oil, and celluloses are excellent general cleaners.

Bleach Wash

Bleach wash or light stone wash refers to light blue shades of denim. The additional step is bleaching to stone wash. This bleaching is usually carried out by strong oxidizing agents. In industry, most widely used chemicals are sodium hypo-chlorite, calcium hypo-chlorite, hydrogen per oxide and potassium permanganate. Other than that many products with different brand names are available in market.
Distinction of Light stone wash to stone wash is the additional extensive oxidation/bleaching process. This gives garment a more used look and brighter complexion. Furthermore in heavy Bleach wash other effects are more merged and diffused as compare to Medium Stone Wash.

In light wash of denim, strength of fabric is always on risk. Lighter shades are associated with more damage inside fabric. Bleaches/oxidative are very harsh to cotton fiber by nature so light shades in pure cotton denim is not recommended. It is more successful in poly denim articles.

An Oxidation is always coupled with neutralization. Different neutralizers are used in respect of nature and character of bleaching agent. The choice of neutralizer is very critical it affects the tone color of garment.

It is very important to completely remove the oxidative form garment. In case of partial removal or incomplete neutralization, the remaining quantity of bleach/oxidative will keep on damaging the fabric and it will lose its strength in short period. It also affects the shade of the garment and will change it to yellower from whitish.

Acid Wash

This is the oldest of fashion washes in denim after stone wash. The name acid wash is in reference to the acids used for this wash in old recipes. In new methods it is done with oxidation. Use of bleach/oxidative is very safe and economical in comparison to acids. Different chemicals are used and among them potassium permanganate ($KMnO_4$) and sodium hypochlorite are mainly used.

Acid wash is typically done by soaking pumic stone in hypochlorite. Sometime $KMnO_4$ is used in replace of bleach. Selection of oxidant is very important and mainly

depends on the type of fabric. When it is done with pumic stone the washer and garment should not contain any water. Dry garment is much suitable for this process then a damp one. Pumic stones are soaked in bleach and left it to open for little time so they get only damp rather than wet. Then they are processed in machine with garments. The extent of effect is controlled with process time, concentration of oxidant solution and quantitative ratio of garment to stone.

Garment must be stone washed before going for acid wash. It is more prominent and uniform on medium stone wash than dark or light washes. KMnO4 cannot be used with cotton balls/ribbons. It is only possible with hypochlorite. Black sulfur is not process able with hypochlorite as sulfur reacts vigorously with sulfur and pace of process cannot be controlled.

One important thing about acid wash is that the process is without water so the effect will be more random and variation will to a larger extent than regular washes. So by keeping the batch size minimum this variation can be controlled. The simple relation is larger is the batch size greater is the variation in result.

Stone Wash / Enzyme Wash

Stone wash sometime referred as **Enzyme wash** is most common in denim wearing. Typical in denim, due to its unique fabric construction gets antique look with time passing. An old jean is famous for the white and blue texture that appears on warp and weft of garment. In fashion it is required on fresh articles and enzyme wash is designed to create this effect on garments.

As the name implies, freshly dyed jeans are loaded into large washing machines and tumbled with stones. Adding pumice stones gives the additional effect of a faded or worn look. The pumic abrades the surface of the jeans like sandpaper, removing some dye particles from the surfaces of the yarn. Pumice has been used since the introduction of stone washed jeans in the early eighty.

A Stone washing with pumic has some disadvantages. The intensity of the abrasion process is difficult to control. Small will not give the desired look. Too much can damage the fabric, mostly at the hems and waistbands. The effect in a load of jeans is never consistent, with a noteworthy percentage always getting bust by too much abrasion. The process is also non-selective. Everything in the washing machines gets abraded, including the metal buttons and rivets on the jeans as well as the drum of the washing machine. This significantly reduces the quality of the products and the life of the equipment, and increases production expenses. Environmental regulations have put severe stress on the textiles industry to control pollution by wastewater treatment and disposing of the slush (used pumic).

Mercerization

A process of treating a cotton yarn or fabric, in which the fabric or yarn is immersed in a caustic soda solution and later neutralized in acid. The process causes a permanent swelling of the fiber, resulting in an increased luster on the surface of the fabric, an increased affinity for dyes, and increased strength.

Sanforizing

Sanforizing denim is a method of stretching and manipulating the cloth in the factory prior to any washing so that any shrinking during future washes will be minimalized. It is important to note if your raw jeans are Sanforized or not before determining what size to buy; non-sanforized jeans will shrink 7-10%, while Sanforized jeans will shrink 1-5 %(except shrinkage in the stretch jeans where it can be higher in some cases). Normally all denim is Sanforized.

E.T.P (Effluent Treatment Plant)

ETP mean **"Effluent Treatment Plant"**. It is most important for environment. ETP is the most important factor in any washing plant. Paradise washing plant has an effluent treatment plant which is a biochemical ETP.

There are 12 tanks for fully process is done for ETP.

The function of the plant is given bellow:

Tank No.	Tank Name	Capacity	Chemical Status	Ratio	Function
01	Equalization	10,60,789 L	Nil		
02	Flush Mixing	16669 L	Ferrous sulphate Lime stone powder	Water 1500L: Chemical 25 kg+40 Kg	
03	Flocculation	31,175 L	Poly electro light	Water1000L:Chemical 500gm	
04	Tube settler	1,95,447 L	Nil		
05	PH Correction	2,162 L;	Hydrochloric acid	Water 750 L: Chemical 30kg	
06	Biological Reactor	8,17955 L	Di Ammonium Phosphate, Urea fertilizer	Water 1000 L: Chemical 05 kg+ 10 Kg	
07	Filter feed sump	1,02,586 L	Nil		Receive Treatment water
08	Multimedia filter	5000 L	Nil		Filtering
09	Sludge sump	1,14,04 L	Nil		Receive sludge
10	Sludge setting	27,028 L	Nil		Receive sludge by pump
11	Sludge Drying Bed-1,2,3	244 CFT	Nil		Sludge drying

12	Sludge storage	854 CFT	Nil	Sludge storage

Chemical List Chemical list for washing:

Chemical Name	Chemical Name	Chemical Name
Cool BD	Sodium Meta Bisulphite	Sulphur Black
Texzyme 3000 L	Pilever-100	Stone 2/3 (White)
Anticrease-256	Ran fix LF	Genesoft-150
Rexzyme USP	Fix.Lt Cons.	Genesoft-100
Ecozyme-18L	Sida Softener	Pil soft lC
Lanzene TA super	Velvetol-Rst	Scour KDSR
Lanzene TA-200	Denires U Tear	Syno White 4 BK
Max-R	Denires Cube	Phosphoric Acid
Ecozyme V Max-8	RanfixRf	Potassium Permanganate
Soda Ash Light	Formal Free	Green Pol Zbs-E powder
Caustic Soda Flakes	Toner Yellow	Jet powder
Rossacid-N-Liquids	Toner Red	Veivetol-8

Oba Blue	Toner Blue	Product NBL-35
Oba Red	Salt(Common)	Softener AWS
Hydrogen Peroxide	Black V.S.F. 600%	Genzym SL
Bleach Singion	Brown G.T.L	La Casse 909
Bleach KCI	Red BWS	Sodium(Solid)
Sodium ThioSulphate	Yellow RL	

Chemical List for (E.T.P)

Chemical Name	**Phunt Sholgng Bhuta(Lime Stone)**
	Ferrous Sulphate Hepta Hyorate
	Urea
	Polly Electon Light
	Hydro chloric Acid

Paradise Washing Plant Ltd.

123,Kabi Jashim Uddin, Pagar, Tongi, Gazipur.

Daily Production Report.

Date :-18.10.2011. | Date:-19-10-2011

SL NO	Factory Name	Buyer Name	Style No	Item Name	Order Quantity	Dry Process Day	Dry Process Night	Day Shift Production Denim	Day Shift Production Twill	Night shift production Deni	Night shift production Twill	18/10/11 Received	18/10/11 Delivery	Morning Delivery	Total Received	Total Delivery	Balance	Wash Complet.	Total Wash Complet.	Un-Wash Balance	
1	Ananta Garments	GAP	581796	D.Trouser	Orbendu								16		2380	2330	50	0	2330	50	
2	Ananta Garments	GAP	581795	D.Trouser	Orbendu					240		1500	100	160	13074	1443	11631	200	1643	11431	
3	Ananta Garments	GAP	581801Dk	D.Trouser	New								894	117	106251	106241	10	0	106241	10	
4	Ananta Garments	George	6012	D.L.P				200		1780		2400	1550	280	9699	3935	5764	200	4135	5564	
5	Ananta Garments	George	1432	D.L.P	15,774	250									28873	17551			17551	0	Mar.Problem
6	Ananta Garments	George	1434	D.Trouser				1200				1760	940	450	18859	17536	1323	200	17736	1123	
7	Ananta Garments	George	6010	D.L.P		34		100		600		200	250	507	10641	890	9751	200	1090	9551	
8	Ananta Garments	George	1433	D.L.P						2467		2160	2810	600	28205	23445	4760	300	23745	4460	
9	Ananta Garments	George	1444	D.Over all				150				460	910		6840	6830	10	0	6830	10	
10	Ananta Garments	George	6013	D.L.P						600			1280	142	9061	5550	3511	200	5750	3311	
11	Ananta Garments	George	1431	D.Trouser		855		600				820		810	4921	3934	987	200	4134	787	
12	Ananta Garments	George	6011	D.L.P						2640		2300	1900	70	11200	7180	4020	500	7680	3520	
13	Ananta Garments	George	1510	D.Skirt				820				1720	860	910	9060	7320	1740	800	8120	940	
14	Ananta Garments	Tema	Marky Navy	T.Trouser								1220		580	2160	150	2010	2010	2160	0	
15	Ananta Garments	Tema	Reks Navy	T.Trouser								1880			2020		2020		0	2020	Not Approved
16	Ananta Garments	Tema	Nispet Pink	T.Skirt					400		520	900	730		5820	5528	292	292	5820	0	
17	Ananta Garments	Tema	Puket	D.Dress									825		5834	5794	40	0	5794	40	
18	Ananta Garments	Tema	City Beige	T.Trouser					120			304	480		26553	26257	296	296	26553	0	
19	Ananta Garments	Tema	City Navy	T.Trouser											19574	19567	7	7	19574	0	
										Total		17624	13545	4626	321025	261481		5405			
1	Jeans Wear	New Look	Skiny Jeans Lt	D.L.P		93	951	555					1580	610	25683	21704	3979	1000	22704	2979	H/B Ananta
2	Jeans Wear	Tema	Addison	D.S.P		2,966	620	2785		805		770	420	2380	10490	2410	8080	500	2910	7580	
3	Jeans Wear	Tema	Marky BE Navy	T.Trouser								50			4020	50	3970		50	3970	Mar.Pro.Not Approved
4	Jeans Wear	Tema	Marky BE M.Grey	T.Trouser									140		5600	5505	95	95	5600	0	
5	Jeans Wear	Tema	Reks Navy	T.Trouser							100	40			1210	200	1010		200	1010	Not Approved
6	Jeans Wear	Tema	Reks Anthracite	T.Trouser							90	30			640		640		0	640	Not Approved
7	Jeans Wear	Tema	Amble Grey	T.Trouser											4880	4875	5	0	4875	5	
8	Jeans Wear	Tema	Rani-A	T.Trouser					200			160	160	4	8535	8530	5	0	8530	5	
9	Jeans Wear	Tema	Action	D.L.P		143	1,031	1260		1173		880	440	780	6120	2310	3810	500	2810	3310	
10	Jeans Wear	Tema	Kampania Pink	T.S.P		301					1167	2040	1060	750	5950	2910	3040	1000	3910	2040	
										Total		3970	3800	4524	73128	48494		3095			
1	Tunic Fashion	Tema	City Anthracite	T.Trouser					4600		2500	6820	3740	3580	41985	34672	7313	7313	41985	0	
2	Tunic Fashion	Tema	Pehin	D.S.P						280		280	230	260	4680	3877	803	200	4077	603	
3	Tunic Fashion	Tema	City Black	T.Trouser								220	1740		11540	10125	1415	1415	11540	0	
4	Tunic Fashion	Tema	Saradunya Navy	T.Trouser							320		160		1920	1876	44	44	1920	0	
5	Tunic Fashion	Tema	Saradunya Grey	T.Trouser								320	1300		1950	1390	560	560	1950	0	
6	Tunic Fashion	Tema	Klips	D.Skirt											99		99		0	99	Not Approved
										Total		7640	7170	3840	7421	7388		9532			
1	A.B.M Fashion	Tema	Marky Navy	T.Trouser											320		320	320	320	0	
2	A.B.M Fashion	Tema	Marky Grey	T.Trouser					2150			1100	180	730	1790	180	1610	1610	1790	0	Del.AJL
										Total		1100	180	730	12244	12229		1930			
1	Venix Bangladesh	JM&A	WS12WT2218 Mid	D.Shirt											6122	6101	21	0	6101	21	
2	Venix Bangladesh	JM&A	1704	D.Dress										5	3160	3140	20	0	3140	20	
3	Venix Bangladesh	JM&A	BGS2DR 3201	D.Skirt			30					360			1880		1880		0	1880	Not Approved
4	Venix Bangladesh	JM&A	TGS2BT 1708	D.L.P								480			1160		1160		0	1160	Not Approved
5	Venix Bangladesh	JM&A	BBS2BT 2402 Grey	T.L.P											20		20		0	20	Not Approved
6	Picard Bangladesh	Picard		L.Bag											979	979	0	0	979	0	
										Total		840	0	5	4078	4064		0			
1						4,642	2,632	7670	7470	10585	4697	31174	24695	13725	872255	691687	88121	19962	711649	68159	

2	Style	Re-Wash		Total
1	Style#Sumsun		120	Pcs
2	Style#Skinny		50	Pcs
3	Style#1795		80	Pcs
4	Style#6013		100	Pcs
5	Style#Action		160	Pcs
6	Style#1433		430	Pcs
7	Style#801			Pcs
	Total		940	Pcs
	This Month Position Re -Wash		Total=9,434.95	Pcs

Chemical Cost = 7,274 Pcs

Tk=615.85

Tk=6,638.05

Today Production & Chemical Cost: 15140 Pcs | 15282 Pcs | 30,422 Pcs | Tk=53,388.73

THIS MONTH PRODUCTION D -2,41,653pcs T -1,61,1037Pcs | Total=4,02,690 Pcs

THIS MONTH TOTAL CHEMICAL COST | Tk=8,27,729.85

		Remarks
1)Gas Problem	21:20	
2)Oil Fire	21:20	This Month Production Dry Process-71,923Pcs
3)Electricity Problem	0:00	

Rasel (Asstt.Store Officer)
Pre-pared By

Md.Abdul Wadud
Manager ,Admin

Finishing Department

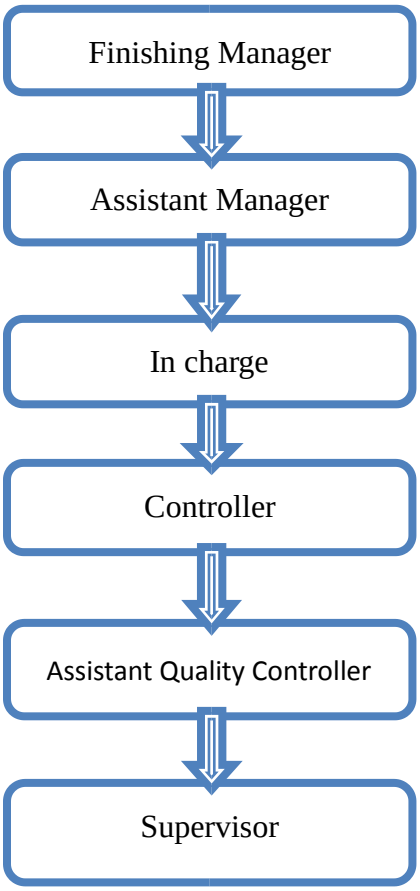
Finishing is an area which is generally overstaffed being the last link of the value chain all the problems from the previous stages have to be sorted out here. This department is located at the 1st floor and the 2nd floor of the 9 storied building. The 1st floor is named after one of our hero freedom fighter **"Bir Sreshtha Mostafa Kamal"** and the 2nd floor is named another freeedomfighter **"Bir Sreshtha Matiur Rahman"**. Finishing unit 1-8 of factory unit-1 and the unit 10-18 of factory unit-2. The term garments finishing mainly applies to pressing, folding and packing of garments. After completing pressing the garments have to be folded. After completing pressing, the garments are folded with a predetermined area. Garments are folded according to the direction of Buyers requirements or in a standard area. A finishing process in which a desired quality or qualities are imparted to fabric in order to improve the appearance to affect stiffness weight, elasticity or softness, to facilitate are or to protect the wearer.

―Finishing‖ is the addition of special detailing such as pleats, embroidery and screen printing to a garment. This includes hand stitching (unseen handwork done inside collars and lapels to give them shape) and its automated substitutes. This may also include adding buttons, hooks, eyes, or trims, as well as clipping loose threads. All finishing of moderate- and lower-priced garments is done by machine.

The finishing department is the department which comes after all the department and it plays an equally important role in the final appearance of the garment. This department includes major of the following steps.

Fig 12.01: Finishing Department

Finishing Department organogram:



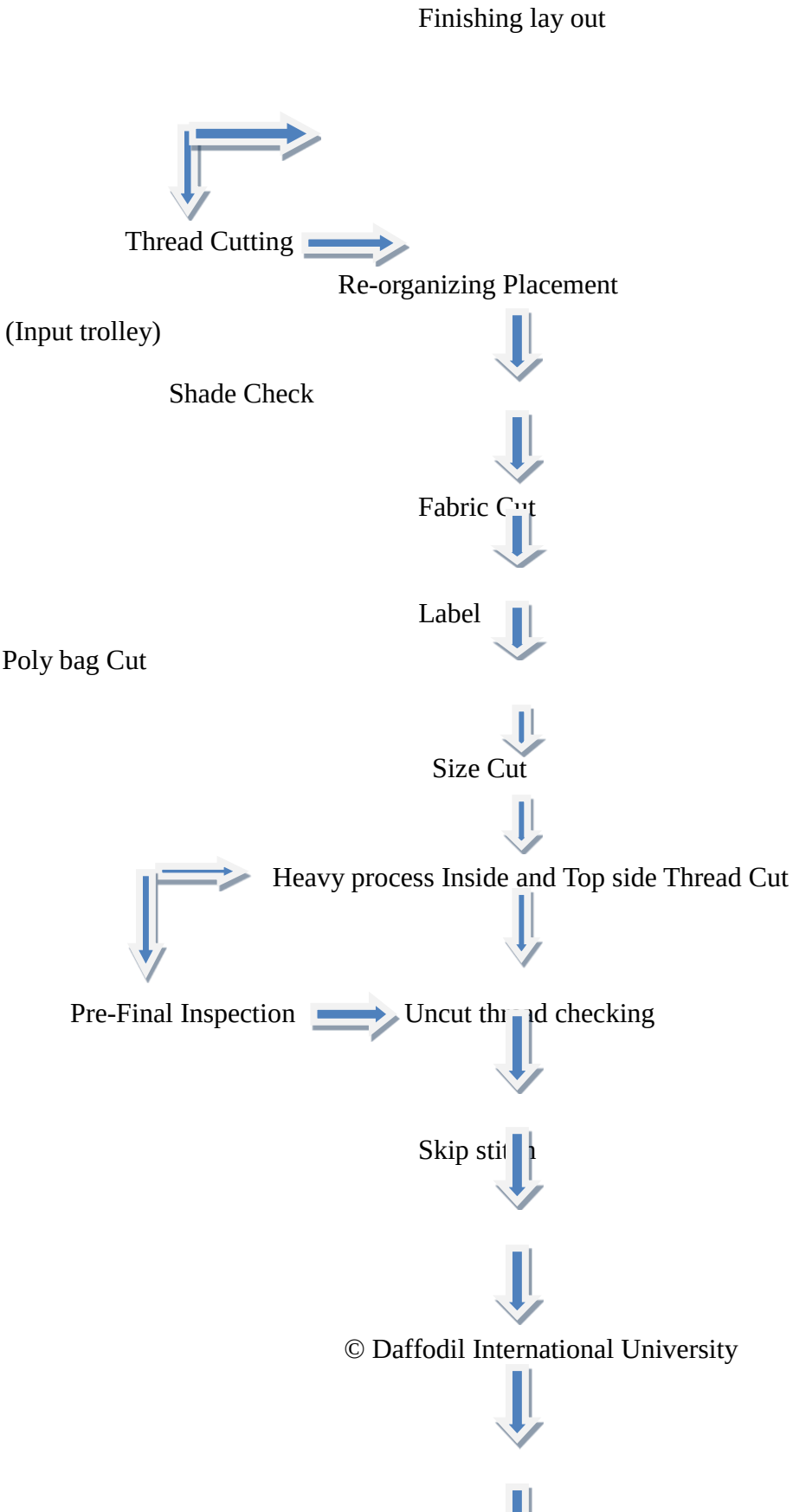
Allocation:

Total Unit: 18

Location: 2nd floor (9); 1st floor (8); 4th floor (1)

Position	Manpower
Finishing Manager	2(Quality) & 2 (Finishing)
Assistant Manager	
In charge	10
Controller	10
Assistant Quality Controller	10
Supervisor(per Line)	4
Worker(Per line)	68

General Work flow of Finishing Department:



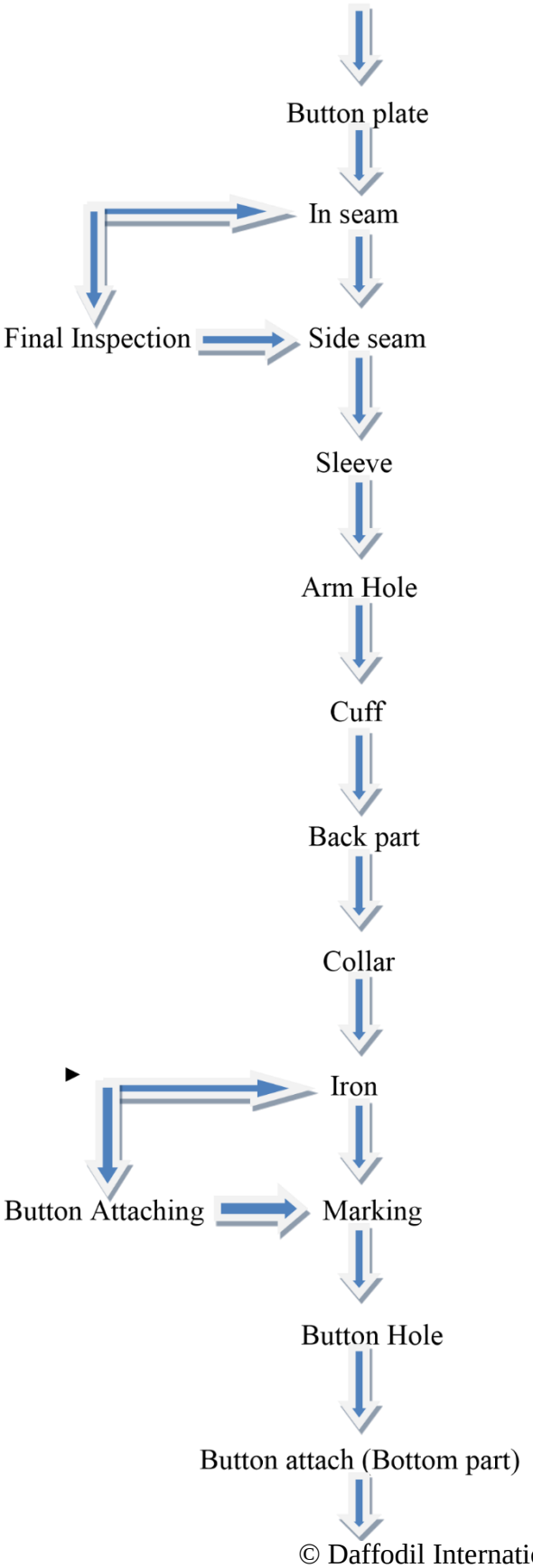
Broken stitch

Raw edge out

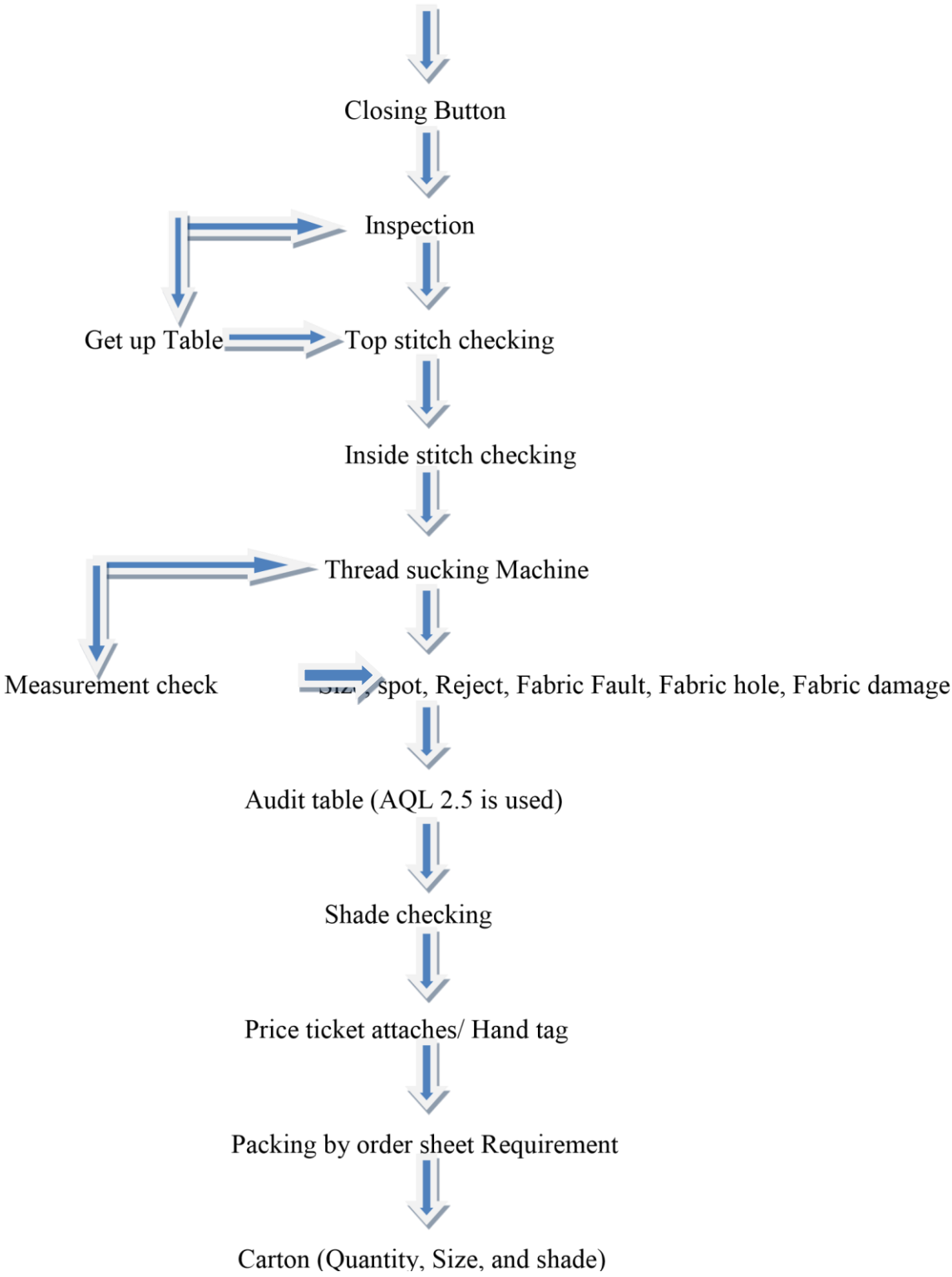
Puckering

Gathering stitch

Box plate



Button attach (Top Part)



Critical fault in the finishing Department:

These faults are very important. If one critical fault is found in the shipment, the buyer can cancel the whole shipment. So it‘s very important for the manufacturer to deal these faults carefully that they don‘t occur. The faults are

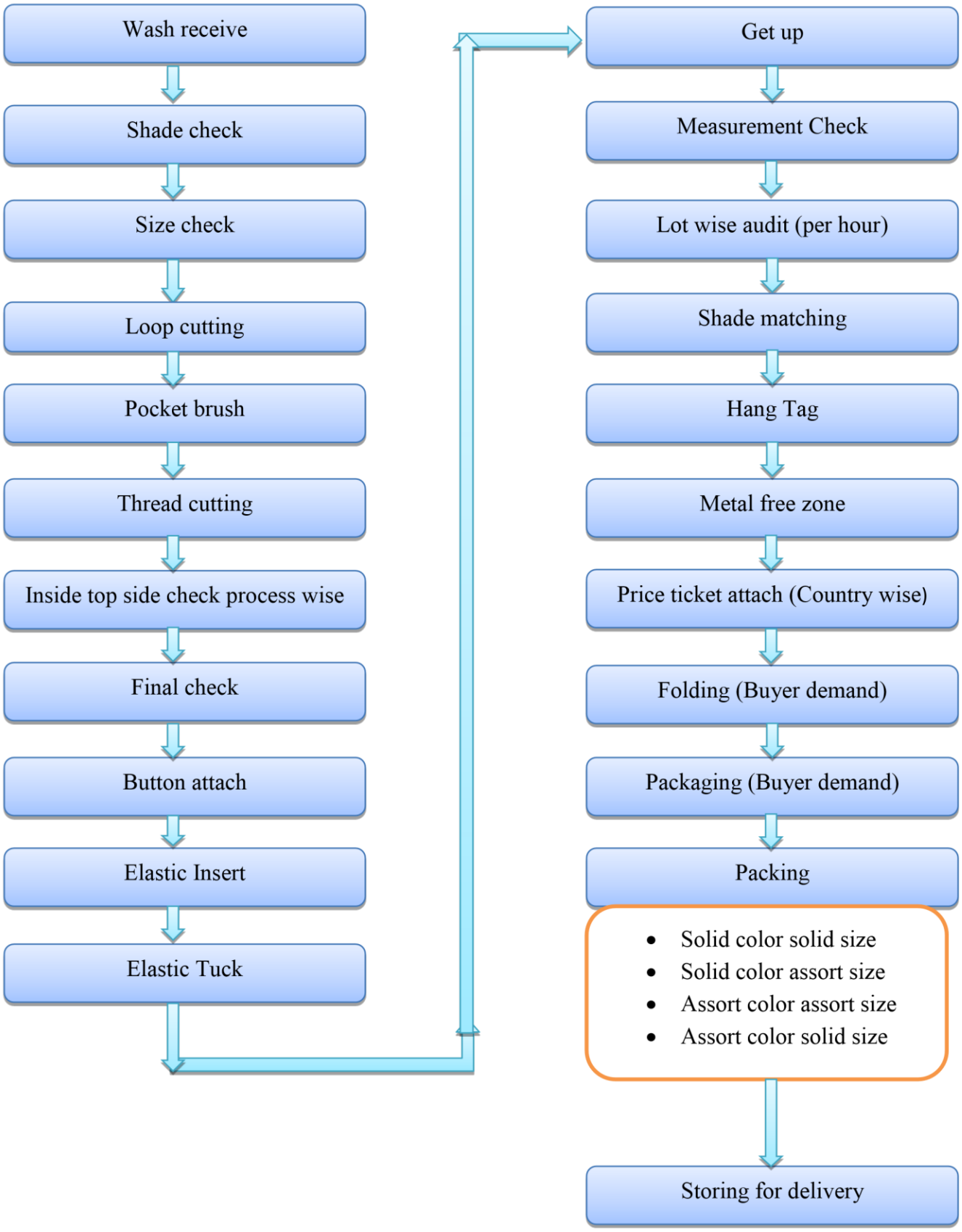
- Button sharp edge
- Uneven foundation of button
- Pull test fail (insecure button)
- Size, hang tag, ratio mix-up
- Insect or other unhygienic things in CTN

Fig 12.02: Button strength pull testing machine

Responsibility:

The main Responsibility of the finishing department is that after washing garments received from the washing department. Then these garments are lying in the table to style wise, size wise, shade wise. After laying garments check the style number, Buyer name, Country to the delivery. After checking the garments are ready to thread cutting, pre-final inspection, Final inspection, ironing to the buyer wise. After Ironing garments taking to the Button machine to attach the button and after completing button attaching

the garments are ready for Get up table to check the overall sewing checking. If any garments are not complete then the garments are sent to alter that mean to complete the garments. After completing all requirements for each garments then passing metal zone to check any metal parts included in the garments.



The activities of the finishing department:

The activities carried out by the finishing departtment of Ananta garments Ltd. are described shortly bellow

Trimming

This involves the removal of the extra threads form the garment at the stitched area. This operation is done by scissors. Workers stand around the table and cut extra threads form every part of the garments. They works in groups, different groups cut thread of different area of the garments. After cutting of extra thread the lose threads & other impurities are sucked off by a sucker machine.

Inspection

The inspection is carried out according to the AQL 2.5 system and also some time depends on the buyer‘s specification. This includes the inspection of measurement, shade, color, accessories, uncut thread, button placement etc.

Fig 12.03: Some activities

Final Inspection AQL- 2.5			
Total Order Quantity	Sample Quantity	Accept Quantity	Reject Quantity
90-150	20	1	2
151-280	32	2	3
281-500	50	3	4
501-1200	80	5	6
1201-3200	125	7	8
3201-10000	200	10	11
10001-35000	315	14	15
35001-50000	500	21	22

Buttons

All buttons must be in accordance with the relevant fabric performance standard and the care instructions selected for the garment. Each button must be securely attached to garments with at least 16 stitches. Fast dye all buttons to prevent dye from running.

Buttonholes

Stitch density of buttonholes must have full edge cover with no fraying. Cleanly cut buttonholes and trim all threads. Tie off and secure stitches, where using a single thread chain-stitch buttonhole. Do not use slip stitches in the side bars. Position buttonholes correctly to prevent unfastening, dragging and gaping.

Buttons and buttonhole positioning

Buttonholes must be the correct size for the button. Position buttons for horizontal buttonholes in the end closest to the edge of the garment. Position buttons for vertical buttonholes central to the buttonhole. Align buttons and buttonholes to match from the top to the bottom of the garment.

Fig 12.04: Buttons and Buttonholes positioning

Semi-pressing

This happens when a garment is difficult to inspect in the crushes manner as if comes from the washing department hence, they do a partial pressing for the garments and then inspect it and trim it and trim it and send it to the complete pressing process.

Pressing

The pressing is done after the garments have been completely inspected and the garments are pressed on the basis of how they will be folded during packing.

Ticketing and Bar-Coding

Increasingly, retailers request that manufacturers supply them with ―hanger ready‖ garments; in other words, the garments must be pre-ticketed with bar-coded price tags

attached and hung on the hangers the retailers will use. Previously, retailers were responsible for ticketing, but retailers have shifted this burden to manufacturers. A contractor or a distribution warehouse routinely handles the ticketing.

Needle & Metal detection

After the attachment of all the accessories & trims, and all the other activities like pressing the garments are ready for packing. They are then sent to metal free packing zone. Needle detector machines are used to check the garment if they carry metal. The machine works at 9 points principal. Ananta has 4 needle detectors m/c, all of them are under the finishing department.

Fig 12.05: Metal Detection Machine

Packaging

In the last steps of making a product retail-ready, garments are folded, tagged, sized, and packaged according to customer specifications. Also, garments may be placed in protective plastic bags, either manually or using an automated system, to ensure that the material stays clean and pressed during shipping. Lastly, garments are placed in cardboard boxes and shipped to client distribution centers to eventually be sold in retail stores. At Ananta packing is done according to the packing list. This packing list prepared by the merchandiser according to the requirement of buyer.

There are generally two kinds of packing the garments

i. The garment is individually packed in the poly bag whose design will be specified by the Buyer i.e. - either with the hanger attached or plain poly bag packing and then the entire garments.
ii. The other method is that the garments are just folded and arranged in the carton boxes without putting them in the poly bag the packing followed in

each carton box is already mentioned is done in different ways which is an follows.

Fig 12.06: Packing

Fig 12.07: Packaging

Solid color Solid size: Refers to packing in such way that one cartoon will contain garments of only one shade & size.

Solid color Assort size: Refers to packing in such way that one cartoon will contain garments of only one shade but of different size. These assort size may be arranged by ratio as wanted by buyer. For example: in a cartoon of 24 pieces S: M: L: = 5:7:7:5
Assort color Assort size: Refers to packing in such way that one cartoon will contain garments of different shade & different size. These assort color or shade & size may be arranged by ratio as wanted by buyer.

Assort color Solid size: Refers to packing in such way that one cartoon will contain garments of different shade but of only one size. These assort color may be arranged by ratio as wanted by buyer. For example: in a cartoon of 24 pieces A: B: C: = 5:7:7:5 (A, B, C refers to shade of garments)

Garment Inspection Elements

Following four elements must be checked on each order. Failure to meet any of the elements could cause the order to be rejected. Prior to final inspection following paperwork shall be provided to the onsite auditor to facilitate inspection of packed goods.

- Order quantity
- Packaging
- Labeling
- Styling
- Accessories
- Approved bulk / trim swatches
- Measurement Specification sheet

Quantity: The quantity available for inspection accords to the order quantity.

Packaging and Folding: The style is boxed, packaged and folds as per specification in the contract.

Garment Styling: The garment should include all features as approved in the sealer / preproduction sample. Be correct in

- Styling
- Quality of fabric
- Quality of trims and accessories

Visual Defects: Visual and functional defects will be evaluated using the parameters set forth in this section.

Measurements: Garment measuring is included in the inspection. If measurements are not within tolerances, the order will fail and then will be rejected.

Labeling and Ticketing: All labels and tickets will be evaluated based on the specifications outlined in Labeling section for correct brand name, fibre content, care instruction and country of origin and its

Store for delivery

After the packing is done, the garment cartoons are kept is suitable place for the buyer (Quality Control) to check. They also keep the products until the delivery is done. The work flow of this department ends with the packing and storing of the products

Fig 12.08: Storing

Production capacity of the Department:

Ananta`s finishing department is divided into two units the production capacity of both the units are given bellow

- Unit 1 : unit 1 can ploy 26,000 to 30,000 pieces garments daily
- Unit 2 : unit 2 can ploy 15,000 to 20,000 pieces garments daily

ANANTA SPORTSWEAR LTD.

Supplier Name	Ananta Sportswear Limited
Factory Name	Ananta Garments Limited
Factory Address	Nischintapur, Ashulia, DEPZ Road, Savar, Dhaka-1341-Bangladesh.

PACKING LIST FOR *WAL-MART* ORDER

Date Inspection		Order Qty Pcs	4865 Pcs
P.O Number	84016	Ship Qty Pcs	4865 Pcs
Style#	1443	Excess Qty Pcs	0 Pcs 0.00%
Ship & cxl Date		Short Qty Pcs	0 Pcs 0.00%
Dept #	882	Order Qty CTN	101 ,Ctn
Item Discription	TR RIB W/BAND SKT	Ship Qty CTN	101 Ctn
Retail Country	U.K		
Delivery No	**1**		

Carton Number	Order Ctn	Ship Ctn	Color	WM ITEM	SKU#	Barcode	Size & Ratio 9-12	1-1.5	1.5-2	2-3	3-4	4-5	5-6					Total Pcs Qty	Gross WT	NET WT
1 - 4	4	4	DENIM	003352503	478546	5052765237073	55											220	10.40	8.90
5 - 13	9	9	DENIM	003352517	478547	5052765237080		53										477	10.40	8.90
14 - 27	14	14	DENIM	003352545	478549	5052765237103			51									714	10.40	8.90
28 - 51	24	24	DENIM	003352531	478548	5052765237097				49								1176	10.55	9.05
52 - 75	24	24	DENIM	003352559	478550	5052765237110					47							1128	10.55	9.05
76 - 91	16	16	DENIM	003352573	478551	5052765237127						45						720	10.60	9.10
92 - 101	10	10	DENIM	003352587	478552	5052765237134							43					430	10.60	9.10
Total Pack	**101**	**101**					**220**	**477**	**714**	**1176**	**1128**	**720**	**430**					**4865**	**1063**	**911.3**
Order Qty							220	477	714	1176	1128	720	430					4865		
Ex/Short							0	0	0	0	0	0	0					0		
%							0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%					0.00%		

Packing Description	SOLID COLOR SOLID SIZE
Carton Shipping Mark	
Carton Main Mark	ASAD STORES LTD. C/O ELITE FORWARDERS LTD BRAMLEY, LEEDS LS13 4UD.UK CARTON NO 1 OF 101
CARTON SIDE MARK	PURCHASE ORDER NO DISCRIPTION TR RIB W/BAND SKT SUPPLIER NAME IDENT 1614-30085-1443-019 WEIGHT
Inner Box Marking	
Box Measurement, CBM, & Weight	CTN Meas: 60x29x39 CM. Total CBM 6.85386 CBM Total Gross WT 1062.80 KGS Total Net Wt 911.30 KGS
Remarks	
Authorized Signature & Seal Factory Respresentative	

Split Information

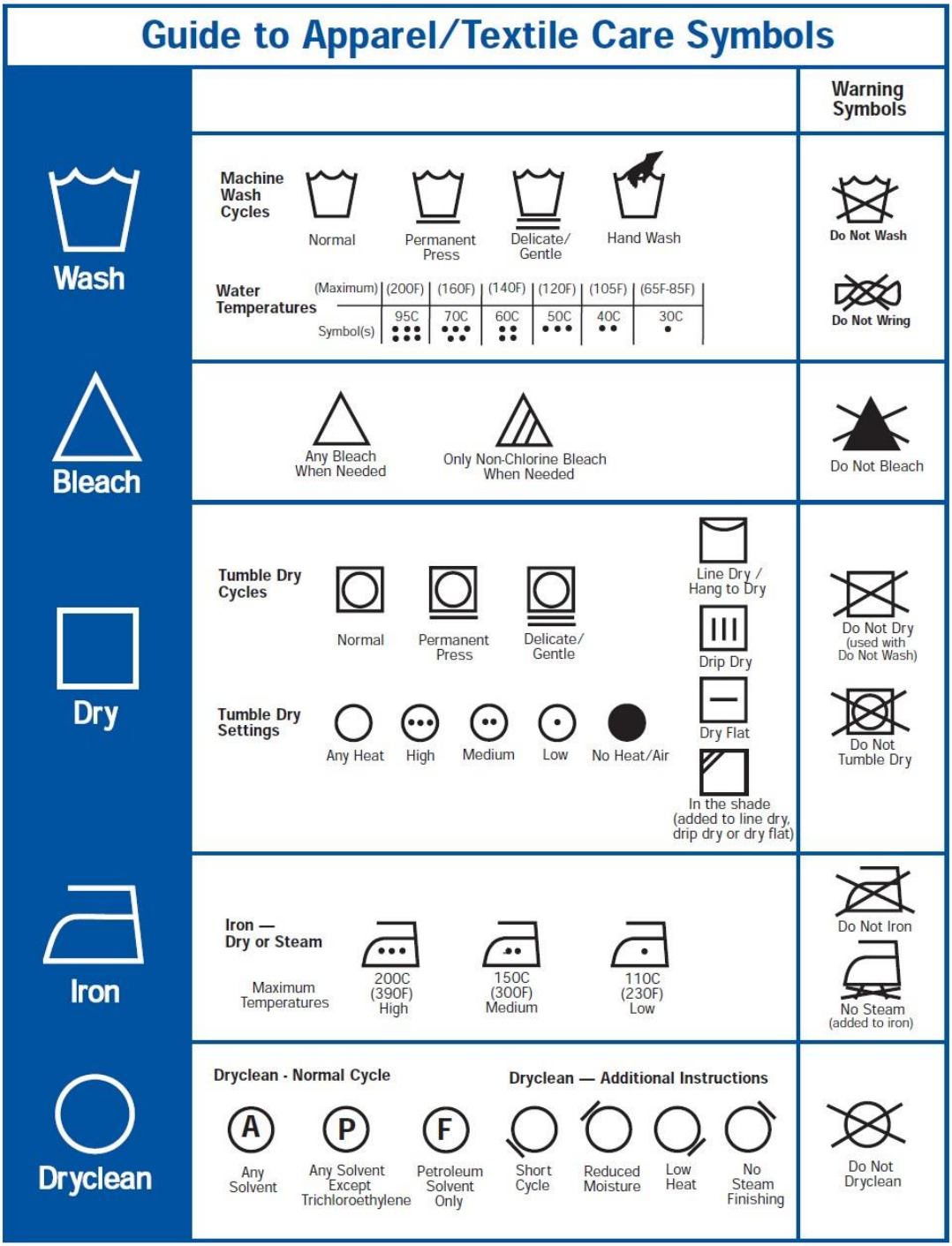
WM ITEM	Size	Total Ctn Qty	Split-A Qty (CTN)	Split-A Qty (PCS)	Split-B Qty (CTN)	Split-B Qty (PCS)	Split-C Qty (CTN)	Split-C Qty (PCS)	Total Pcs Qty
003352503	9-12	4 CTN		0 PCS		0 PCS		0 PCS	0 Pcs
003352517	1-1.5	9 CTN		0 PCS		0 PCS		0 PCS	0 Pcs
003352545	1.5-2	14 CTN		0 PCS		0 PCS		0 PCS	0 Pcs
003352531	2-3	24 CTN		0 PCS		0 PCS		0 PCS	0 Pcs
003352559	3-4	24 CTN		0 PCS		0 PCS		0 PCS	0 Pcs
003352573	4-5	16 CTN		0 PCS		0 PCS		0 PCS	0 Pcs
003352587	5-6	10 CTN		0 PCS		0 PCS		0 PCS	0 Pcs
Total		101 CTN	0 CTN	0 PCS	0 CTN	0 PCS	0 CTN	0 PCS	0 Pcs

Manager (Finishing)

19/10

Fig 12.09: Packing List Care Label Symbols

As of July 1,1997, care labels may come with a new feature — symbols or pictures. These symbols will quickly help you determine how to clean your clothes. Through 1998, the care label must include written instructions with the option of using symbols as well. After 1998, either written instructions or symbols must be provided, but not always both. Below is a quick guide to help you learn the new symbols.

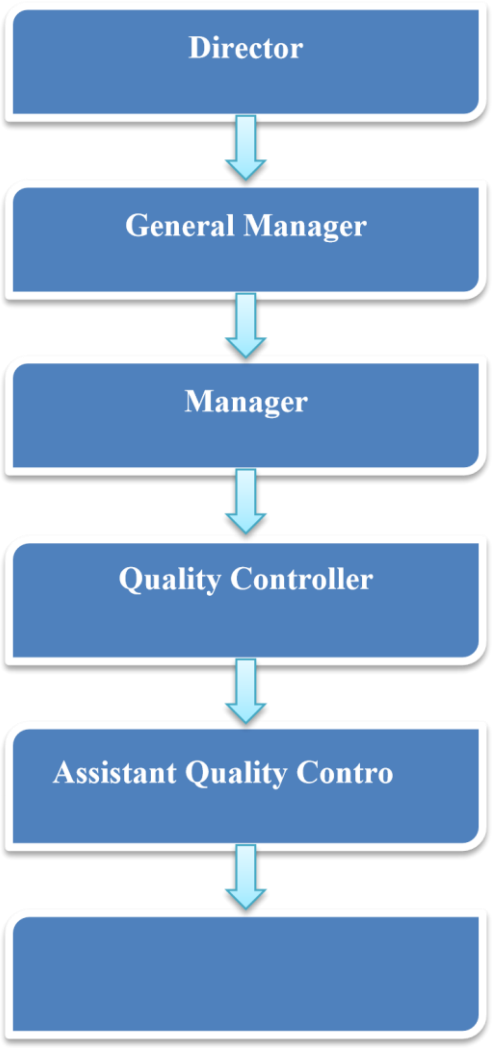


Quality Control Department

"The systems required for programming and co-ordinating the efforts of the various groups in an organization to maintain the requisite quality" As such Quality Control is seen as the agent of Quality Assurance or Total Quality Control. Ananta Garments Ltd.

has an independent quality control department. Their job is to control the quality of the production activities as well as the quality of the products.

Quality Control Department organogram:



Allocation: Quality Control Department

Position	Manpower
Director	01
General Manager	01
Manager	09
Quality Controller (per floor)	03
Assistant Quality Controller (per line)	01
Quality Inspector(per line)	06

Definitions of Quality:

"Quality" is defined as that combination of design and properties of materials of a product which are needed for the intended end use and level of the market in which it is sold.

"Requisite Quality" is defined as the design and composition of a product, which has been thoroughly proved by adequate development work, in order to establish its reliability under the conditions to which it will be subjected in use and to avoid producing too high a grade of product for the intended market. Aims of quality control as the instrument of quality assurance or total quality control.

To ensure, at minimum practicable cost, that the requisite quality of product is being achieved at every stage of manufacture from raw materials to boxed stock.

This means six things:

- Checking the suitability of raw materials
- Checking the manufacturing capability of the production undertaking
- Monitoring production; feeding back information; responding to that information; and so getting defects removed at source
- Reduction of the fault rate
- Saving costs

- Maintenance of product consistency

All of these factors increase the possibility of developing further business and the competitiveness of the company, and is therefore to the benefit of the company; Quality control thus becomes a positive -benefit.

A further point stems from one aspect of Quality Control continually monitoring production and deciding whether, in any part of the manufacturing chain, materials, machines or workmanship need attention to effect a reduction in the fault rate. It is very easy to "pass the buck" that is for production personnel to blame materials or to say that it is the responsibility of QC, and so relax any endeavor on their part to avoid faults. In fact, quality cannot be inspected into goods; it is to direct attention and effort towards the most effective areas for avoiding faults and to maintain product consistency.

The Activities of the Quality control Department as per Allocation / Designation of Ananta:

- Quality Inspectors check the particular part of a garment.
- Asst. quality controller solve the problem of Q.1 & they audit of per lot
- Quality controllers are working at all different production departments.
- Make same the operators workers do understand & takes responsibility for their operator (including the quality)
- Write reports
- Report directly to quality manager
- Quality Manager maintains their responsibility from store to shipments activities.
- Quality GM Follow up the total quality departments advantage & DM advantage they arrange meeting to the Buyer the Bargaining with them for their job facilities.
- It any person of the quality department cannot solve their problems they go to the quality director & discus with win fabric input to shipment all the problem they handle.

Activities in every Department of Quality Control:

Fabric & accessories in house to garments carton shipment

In store

When fabric & other accessories are received by store in fabric inventory the manpower of Quality Control department follow it. (Such as how much fabrics are per roll, where it will be placement etc.)

Quality control Fabric

Objectives

- To identify and mark fabric faults on the fabric.
- Decision to cut the fabric lot or not.
- Increased productivity of the cutting department.
- Even the most outstanding manufacturing methods cannot compensate for defective material. This section provides recommendations to help you create an aggressive piece goods quality control program and eliminate many quality problems before the manufacturing process begins.

Inspection Guidelines

- The fabric manager needs to always inspect fabric as soon as it reaches his facility. The fabric needs to always be stored in clean and moisture free environment.
- As soon as the fabric arrives, a swatch needs to be submitted to laboratory for checking whether the fabric adheres to fabric performance standards.
- Many companies prefer to do fabric checking while spreading though the fabric needs to be checked beforehand as a separate operation. This is because while spreading, a spreader is concerned primarily with spreading the fabric and not with inspecting the quality of the fabric.

Postponing piece goods inspection till the fabric is on the cutting table could have the following effects:

- **Delay:** This is due to the fact that if fabric inspection is done at the cutting stage and then fabric is found to be defective, the time lost between fabric receipt and inspection (Spreading) would be additional delay in the lead-time of the order.

- **Loss of Time and Effort:** The decision to accept or reject the fabric would be taken only once the entire fabric has been checked; in other words spread. In case the fabric is found to be defective and has to be rejected, not only the effort and time of spreading this fabric is wasted; but also the time and effort of rolling the fabric again to be returned is wasted. The blockage of the cutting table and the time of the cutting master wasted during the process of spreading and then putting the fabric back into rolls or folds needs to also be considered.

Quality control spreading and cutting

Objectives

- To ensure that all garment parts are cut as per the pattern.
- Decision to re-cut the garment parts.
- Increased productivity of the sewing room.

Cutting department Quality Control system are divided two part such as

- Spreading Quality Control
- Cutting Quality Control

Spreading Quality Control

There are 12 points in spreading Quality Control Such as-

- Table marking
- Ends
- Leaning
- Tension
- Narrow Goods

- Remnants
- Counts
- Marker planning
- Ply height
- Marker check

Spreading Inspection Guidelines

Spreading though not considered an important operation in garment manufacturing and is normally carried out manually without supervision of the cutting master, is a critical checkpoint. The post- sewing measurement defects found in a garment can in most cases be attributed to in correct spreading and cutting. While spreading, the quality assurance inspector is to check the fabric lay for the following defects:

- In case of a marker always compare the marker with the original pattern.
- **Marker making:** To make sure that all parts of a particular garment appear on the marker, check for the smaller parts [collars/cuffs] and their presence in pairs.
- **Marker Placement:** To check that the marker is placed on the spread with the edge parallel to the selvedge of the piece goods. Also to ensure that all cut pieces are complete.
- **Table Marks:** To check the table for all table marks. Allow no minus tolerance for splicing (a minimum of one inch of overlap).
- **Markers:** To ensure that the marker is not creased, damaged, or has overlapped parts.
- **Marker Blueprint:** To make a random check of some measurements in the marker. Some times while making a blueprint of the marker, unknowingly the marker gets pulled and the sizes get distorted.
- **Spread Height:** To ensure that the height of the spread is at least two inches less than the cutting blade knife. In case of knits, to ensure that the ply height is stable.
- **Narrow Goods:** After completion of the spread, check the far edges of the spread to see that all piles extend beyond the marker line.
- **Tension and Creasing:** To ensure that there is no artificial/excessive tension due to a very tight‘ spread. Also to check randomly for any creasing of the fabric.
- **Leaning:** To check that one edge of the fabric is square to the table- top. Visually inspect to ensure the alignment of the edge with the tabletop.
- **Count:** To check the count after completion of spreading, and before cutting. Count all plies at both ends. There is no tolerance for this.

Cutting Quality Control

Cutting quality control are divided in two parts

- Block Check
- Bundle check

Block check:

It has 5 points

- Pattern check
- Miss cut
- Ragged cutting
- Notches
- Matching Plies

Cutting Inspection Guidelines

- Always try and inspect without disturbing the cut block. This is essential in case the particular piece has to be re-cut.
- Do not disturb the order of the cut pieces as they have yet not been numbered.
- Sometimes manufacturers in order to save time, pass on a decision of re-cutting in the cutting room to ―trimming‖ or ―snipping‖ in the sewing room. Such a practice, leads to added cost in the sewing room for trimming of each and every piece instead of it being cut in bulk in the cutting room.
- The cutting department needs to give ―ready cut‖ pieces to the sewing room at all times. This refers to all parts being cut exact as per the marker.
- Fabric faults must be marked and defective parts replaced.
- Pattern pieces must be correctly placed on the fabric.
- Provision must be made for matching stripes.
- All pieces must be correctly identified by style and size.
- Parts must be fully marked within the defined lay width.
- Line definition must be satisfactory (neither too thin nor too thick).
- Defective parts must be replaced.
- In case of fusing, check for bubbles, incorrect fusing etc.
- Bundling needs to be checked (sampled) for bundle nos., style nos., etc.

In sewing section Quality Control

- Check the each part of the body
- Check the activities of operation
- Quality Controller working on the production both inline end of line.

When problem occur-

- Identity the problem
- Find the source
- Stop the process
- Solve the problem
- Prevent it from recurring
- Write reports

Inspection guidelines

The sewing defects begin and end with the operator. It has been noticed that in most cases the operator is not aware of what is required from him/her in terms of stitching quality. It is thus imperative that:

- One sealed sample (Sample as per order; correct fabric, trims etc.) be available and easily accessible to all operators at the shop floor.
- In case of certain garment parts that require a skillful operation or for a critical operation, the operator needs to be given a sample of the same for their ready reference.
- The broad objective of this is that there needs to never be any legitimate reason for someone not knowing what is happening.

Washing Quality Control

It is recommended that 100% inspection and an audit be carried out either after washing or finishing. In case the wash process is rigorous or a special wash is being done, it is advisable to check all garment after washing. It is recommended that the garments be slightly ironed and then inspection be carried out.

Objective:

- To identify defects that occurs after washing.

Inspection Guideline:

- Emphasis needs to be on those areas that are affected by washing e.g. button attachment, fraying of collar etc.
- Inspection could be combined with thread trimming in case of normal washes. It is recommended that the garments be ironed lightly (—a quick iron‖) before inspection. This eases out the creases from the garment and aids the inspectors in identifying defects.

Finishing Quality Control

Trimming

Final trimming must be done in the finishing area before packing. All trimmed loose threads must be permanently removed.

Final Control

All products must be checked carefully before packed. The final control must include:

- Overall appearance and general quality
- Measurements, based on approved C/S and latest measurement list
- Size label, hangtag, price tag and care label containing correct information

Packing

The BUYER Supplier is required to:

- Do an audit of the packing at an early stage of production
- Keep records

Needle Detection

All babies' and children's products, adult's underwear, swimwear plus all products for Japan must pass through a needle detector twice. Exception for baby‘s and children's wear for Japan that must pass through a needle detector three times. Information

regarding needle and sharp object control can be found in Buyer Guideline for Needle and Sharp Object Control at Buyer Supplier website.

Principles of Quality Control

The essential requirements for producing a reliable product has been stated as follows:-

- A satisfactory design of product, thoroughly proved by adequate development testing in order to establish its reliability under the conditions to which it will be subjected in use. This is the Requisite Quality of the product.
- A full specification of the requirements of this quality, which must be clearly understood by everyone concerned with the production of the constituent parts and of the complete end product.
- Confirmation that the manufacturing processes are capable of meeting these requirements.
- Full acceptance, by all those concerned with production, of the responsibility for meeting the standards set by the specification.
- Checks on the product at every stage of manufacture to detect any departures from the specification.
- Record essential information derived from these checks to provide accurate evidence for action.
- Establishment of lines of communication, - i.e. Feedback to Production, - to ensure that this action is taken to effect the appropriate adjustments to materials, process and operatives to maintain future production within the specification.

The role of Quality Control

- In a total quality control scheme, the total involvement of all personnel is required as a philosophy.
- The staff concerned in all duties must be given authority to carry out their functions. These functions should be defined.
- Lines of communication and responsibility should be established to carry out an effective policy. Horizontal communication at all levels of personnel between Quality Control, Production and other departments is needed. Also there must be vertical lines, which follow the lines of responsibility and authority. In order to achieve this aim, the terms of reference under which staff work, must be established. This is, perhaps, best accomplished by job descriptions.

- It is the job of Quality Control to establish the correct information concerning a quality situation, and present this clearly to their colleagues.
- Persons outside Quality Control must be authorized to make the commercial decisions involved from a pre-established series of options, the consequences of each being fully understood.
- Payment schemes should be re-examined where necessary to reward quality as well as production, in a balanced way, since both are commercially important.

Quality Control Records

The above data, immediately on being generated, is automatically entered on records as continuity charts, either in tabular, graphical or computerized form. This action takes very little time, and enables the current data to be compared with previous data and with other related Quality Control data. The visual impact of the presentation is immediate and creates rapid feedback of vital information to production and other interested management personnel.

Quality Control Function

Test Properties of Yarn

- If routine checks are carried out on yarn choose a delivery of average tex (count, denier).
- If incoming yarn is not checked then check the tex (count, denier) of the delivery intended for samples and only use if it is within acceptable limits.
- Carry out other appropriate tests on yarn e.g. crimp nylon-Crimp Rigidity test. Knit a small sample and check that dye is fast to light, washing and perspiration etc.
- Record details of yarn type, supplier, tex (denier, count) etc. and pass information to knitting room.

Knitting Specification

- Record all details required to produce the fabric or garment blanks including chain set out, stitch length and any instrument measurements.
- Record all details of making the trimmings
- Note any difficulties encountered e.g. stitch pattern causing occasional drop stitches. Pass information to making-up room.

Making-up Specification

- Record all details of making-up, including the type and count of the sewing thread, and the order of seaming the parts.
- Note any difficulties encountered e.g. difficult operation to attach collar.

Test for Physical Properties of Garments

- Record the dimensions of the garment as soon as it is completed
- For a fiber of high moisture regain find the weight in correct condition.
- Wash garment and recheck the measurements. Liaison of Quality Control with Cost Department.
- On completion, supply cost department with all information.
- For the correct tex (count, denier) of yarn, costing may be made directly on sample. For a count which is above or below the average (although within an acceptable tolerance) make an appropriate adjustment to yarn costs and weight.
- Make an allowance for any anticipated extra difficulties, or a higher than normal rate of seconds.

Subsequent Alteration

- Make any necessary alterations required by firm or by buyers.
- Record changes at each stage.

Quality Assurance Department

QA(Quality Assurance) is the systematic monitoring and evaluation of the various aspects of a project, service or facility to maximize the probability that standards of

quality are being attained by the production process. Quality Assurance cannot absolutely guarantee the production of quality products.

Two principles included in Quality Assurance are:

- "Fit for purpose", the product should be suitable for the intended purpose, and "Right first time", mistakes should be eliminated.

Quality Assurance includes regulation of the quality of raw materials, assemblies, products and components, services related to production, and management, production and inspection processes.

Quality is determined by the product users, clients or customers, not by society in general. It is not the same as 'expensive' or 'high quality'. Low priced products can be considered as having high quality if the product users determine them as such.

Ananta Garments Ltd. provides the assurance of the quality of their products. Ananta is committed to providing the highest quality products. All garments pass through strict quality control checkpoints at every stage of production. Corporate quality auditors oversee production, work independently from floor management and report to the Director and M.D. of the company.

Ananta follows the acceptable quality level of 2.5. Every quality inspection of any kind of operation is inspected by this method

Function of the Department:

Quality is the major criteria for any product and the same rule applied even to garment industries also. In order to maintain quality the quality assurance departments has split up their job into different stages of manufacturing and there are classified into four major groups which are as follows.

- **Pre-production audit:**

In this stage auditing is mainly done for the stages which come before the production and that is the sampling stage. Here the auditing is done for all sample sand precisely for the size set samples and also for the pilot production garments. The size set samples

are given importance to because they are mainly asked by the buyer for checking the dimensions of the garment hence an extra stress is given to these samples and the auditing for them is mainly done for the measurements of the garment and the measurements are checked at all the critical areas in the garment.
For example: if it is a trouser then the measurements are checked at the areas like the length of the trouser, waist measurements, inseam measurements, the distance of the belt loops, etc. For the pilot run production also the garments are checked for the dimensions and also for the placement of the accessories and trims for example, the label attachment areas, etc.

- **Cutting audit:**
  In the cutting stage, which is the critical stage of the garment production the auditing is further divided into many other departments which are,

1. Spreading
2. Relay cut
3. Band knife
4. Shade
5. Hard pattern

- **Sewing audit:**
  In sewing process the inspection is done in two areas, they are

In line audit: Here the garments are checked during their different stages of manufacturing. Here the entire manufacturing process for a particular garment is split into the required number of parts may be two ± three and then at the end of each stage the inspection is carried out by the person whose main job is auditing.

For example if the garment that is being manufactured is a shirt then the entire manufacturing process is broken down into stages like, the finish of front, finish if back, sleeve attach finish and then the entire shirt. In this case the shirt is being checked at each stage and the auditing personnel will be provided by certain

specifications and also the tolerance limits based on which he checks the garment. Here every single garment is checked.

End line audit: Here the garments are checked after the entire process is over and the specifications are mainly based on the dimensions of the garment at the critical positions and then the placements of the labels.

- **Button/button hole:**

In this area the auditing is mainly done by the operator himself as the job is limited, it is just button attachment that has to be done and the operator does it himself as and when he finishes his part of the job with the garment and the operator will be given or taught about the specifications for the garment to attach the button/ making the button holes .After the auditing is done in each and every stage the defects, findings and other related information will be recorded by the concerned departments in their own formats and they will be sent to the respective departments for rectification.

Finishing Quality Audit

Daily Quality audits are recommended to ensure consistency in quality. It is acceptable to inspect a small number of garments thoroughly. However, under no circumstance needs to the audit be missed or its results overlooked. Finishing Quality audit is an examination of small number of garments passed by the Checkers from finished stock. These are taken as representative of the finished quality going to customers as ―firsts‖.

Objective

- To check the other parts of the system.
- To obtain figures that can be compared with figures of 100% final inspection giving comparisons of the effectiveness of the above system.
- To look at the garment from the customer‘s viewpoint and analyze results.

AQL (Acceptable Quality Label) Chart:

Lot size	1.5	2.5	4	6.5

	Inspect	Accept	Inspect	Accept	Inspect	Accept	Inspect	Accept
Less than -151	8	0	5	0	13	1	8	1
151-280	8	0	20	1	13	1	13	2
281-500	32	1	20	1	20	2	20	3
501-1200	32	1	32	2	32	3	32	5
1201-3200	50	2	50	3	50	5	50	7
3201-10000	80	3	80	5	80	7	80	10
10001-35000	125	5	125	7	125	10	125	14
35001-150000	200	7	200	10	200	14	200	21
150001-500000	315	10	315	14	315	21	200	21
Over-500000	600	14	500	21	315	21	200	21

Utility Department

At the Ananta Garments Ltd. utility department run the whole factory by the Electric power source , Boiler for steam the Gas source, to run the factory whole mechanism part like as Generator, Compressor, Motor , Pump etc.

Generator

Mainly Diesel Generator is used in the factory. A **diesel generator** is the combination of a diesel engine with an electrical generator (often called an alternator) to generate electrical energy. Diesel generating sets are used in places without connection to the power grid, as emergency power-supply if the grid fails, as well as for more complex applications such as peak-lopping, Grid Support and export to the power grid. Sizing of diesel generators is critical to avoid lowload or a shortage of power and is complicated by modern electronics, specifically non-linear loads.

Outsource- R.E.B

At the factory has 3 Generator

550 KVA

800 KVA

800 KVA

Compressor

An **air compressor** is a device that converts power (usually from an electric motor, a diesel engine) into kinetic energy by compressing and pressurizing air, which, on command, can be released in quick bursts.

Motor

Motor-53 K.W

Motor capacity- 9.769 m^3/min

Rated- 7 kg/cm^2

Electricity power source from Electrical substation from Ashulia power supply station.

CONCLUSION:

Production planning and controlling is an exploding field, both in research and in practice. Major international consulting firms have developed large practices in the supply chain field, and the number of research papers in the field is growing rapidly. Our treatment covered twelve areas often seen in supply chain research and practice. These areas appear to be somewhat disparate, but they are all linked by the integrated nature of the problems at hand. Firms operate in global environments, deal with multiple suppliers and customers, are required to manage inventories in new and innovative ways, and are faced with possible channel restructuring. The field promises to continue growing as the research advances and as firms continue to apply new

knowledge in their global networks. Finally, as the Internet changes fundamental assumptions about business.

Today we need organized Merchandising Management in Our Industry. The Time & action calendar is very essential now for effective management system. We can use the software technology for evolution our daily work in the factory. Software helps also for the future forecasting & directs the path of work, which is essential in this important moment. Some software automatically shows the red & blue signal for alarming the condition of the order. Merchandiser is the controller of the specific order. So merchandiser monitors the working progress & other responsibility in accurate time. For effective merchandising management we need very skill human resources. This resources can we develop from the education Institute & give them chance for experience through in new skill & observing process. Today the world market is change is very fast. So merchandiser should concentrate e in the International marketing for communicate the new Buyer for the business. He also should know the new style, trends & fashion element which is very customer oriented in the fashion world.

Supply chain management is an exploding field, both in research and in practice. Major international consulting firms have developed large practices in the supply chain field, and the number of research papers in the field is growing rapidly. Our treatment covered twelve areas often seen in supply chain research and practice. These areas appear to be somewhat disparate, but they are all linked by the integrated nature of the problems at hand. Firms operate in global environments, deal with multiple suppliers and customers, are required to manage inventories in new and innovative ways, and are faced with possible channel restructuring. The field promises to continue growing as the research advances and as firms continue to apply new knowledge in their global networks. Finally, as the Internet changes fundamental assumptions about business,