



**Faculty of Engineering**  
**Department of Textile Engineering**

**REPORT ON**  
**Industrial Attachment**  
At  
**H.R. Textile Mills Ltd. (Pride Group)**  
Savar, Dhaka

**Course Title: Industrial Attachment**  
**Course Code: TE-431**

**Submitted By**

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This Report Presented in Partial Fulfillment of the Requirements for  
the Degree of Bachelor of Science in Textile Engineering.

**Advance in Apparel Manufacturing Technology**

**Duration: From October 03, 2018 to November 15, 2018**

# Declaration

We are the Students of Daffodil International University; hereby declare that, the Industrial Attachment Report on “H.R Textile Mills Ltd. (Pride Group)” is an original and authentic work done by us for the fulfillment of the Degree of “B.Sc. in Textile Engineering”, as a part of academic curriculum. It has been not submitted to any university or institutions for any degree or for other similar purposes.

## Submitted By

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# Approval Sheet

This Industrial Report entitled “**Report on Industrial Attachment at “H.R Textile Mills Ltd. (Pride Group)”**At Daffodil International University in December 2018 prepared and submitted by **Md. Amir Hossain (ID: 151-23-4102)** and **Fahim Hassan Apu (ID: 151-23-4145)** In partial fulfillment of the requirement for the degree of BACHELOR OF SCIENCE IN TEXTILE ENGINEERING has been examined and hereby recommended for approval and acceptance.

## Supervisor

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Md. Abdullah Al Mamun  
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# Acknowledgement

At first, gratefulness goes to Almighty Allah who gave us the strength and ability to complete the industrial training and this report. Now we would like to take this excellent opportunity to thank a lot of people who have assisted and inspired us in the completion of our training period.

**Prof. Dr. S. M. Mahbub-Ul-Haque Majumder**, Department of Textile Engineering, our supervisor to whom we are extremely indebted for his tremendous support and guidance throughout our training period. Being working with him we have not only earned valuable knowledge but also inspired by his innovativeness, which helped enrich our experience to a greater extent. His ideas and way of working was truly remarkable.

We would like to thank the management of the **H.R Textile Mills Ltd.** For giving us the opportunity to work on different sections and helping us in every possible way. Our deepest appreciation goes to **Mr. Amirul Islam** (dyeing shift manager), **Mr. Hannan** (dyeing manager), **Mr. Zayeed Iqbal** (knitting senior executive), **Md. Shafiul Alam** (team leader, merchandising dept.) of **H.R Textile Mills Ltd.** Without their permission and help our industrial training would be uncompleted. Special thanks to them for providing the required data and also for guiding in a profound way to complete our industrial attachment.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

# **Dedication**

We dedicate this report to our Parents who give us chance to study in Textile Engineering and support us all time.

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# **1. Executive Summary**

## **1. Executive summery:**

The industrial attachment is the most effective way for textile engineering student to be achieved the knowledge about the practical field of the textile manufacturing. It brings an opportunity to all the learners to enrich their academic knowledge by practicing with the experts of the practical field of textile.

Textile and garments sector is the biggest and fastest growing sector in Bangladesh. Among this sector, knit garment is growing very rapidly due to smaller investment requirement, greater backward linkage facility and higher profit than woven garments. That's why export of knit garments is increasing steadily for last few years and up to now. It is our pleasure that we had an opportunity to complete our two month internship at **H.R Textile Mills Ltd. (Pride Group)**, which is one of the most modern industries of the country.

**H.R Textile Mills Ltd. (Pride Group)** is one of the major knitting and garments manufacturing organization in Bangladesh. This organization increasingly reducing its rejection and rework rate in-process and final garments in order to ensure product quality and delivery time as per buyer requirement and increase profitability. **H.R. Textile Mills Ltd. (Pride Group)** will ensure sufficient training and suitable work to increase productivity and skills for the employee.

Textile education can't be completed without industrial training. Because this industrial training minimizes the gap between theoretical and practical knowledge and make accustomed to industrial environment.

In this report we are trying to cover a short profile of **H.R Textile Mills Ltd. (Pride Group)** and major customers of this industry and their different activities.

## **2. Information of the factory**

## **2.1. Introduction:**

Practical knowledge is very much essential for the education of textile engineering and technology. Practical knowledge makes us capable and perfect to apply theoretical knowledge in practical life. The textile sector has the capability to offer a complete product range for the export textile markets. The goal of the textile sector is to become the preferred partner for sourcing high quality fabrics and clothing from Bangladesh. With highly advanced technology and an emphasis on developing local human resources. That is why B.Sc. in Textile technology course is extruded over four years followed by two months industrial training in mills. It is attached to my study curriculum to achieve adequate practical knowledge and develop adoption power with industrial environment. We prepared this attachment in H.R Textile Mills Ltd. (Pride Group), which is a hundred percent export oriented knit composite industry. It is fully approved by several multinational inspection firms.

## **2.2. History of the factory**

Pride group is a vertical textile group engaged in the manufacture and export is knitwear products to the European Union, the USA and Canada. The group is also engaged in production and marketing of saris, kids wear, ladies' wear, foam furnishing and other textile products through a chain of 66 retail outlets spread all over Bangladesh. As of date, Pride group consists of H.R Textile Mills Ltd, Fashion Knit Garments Ltd, Dacca Textiles Ltd, Pride Ltd, Urban Truth and MODA.

### **Early years**

Pride group began its journey in 1958, when founder Halimur Rahman first established Dacca Textiles, laid the foundation to what would eventually become Pride Ltd. He came to the realization that much of the saris in popular demand at the time, were imported from neighboring countries, and that locally hand-crafted materials were seldom used or appreciated. At the time of Dacca Textiles' inception, Rahman was employed in EPSCIC, and it is from this that he arrived at the idea of establishing a garment factory that would supply locally made saris for the women of Bangladesh.

Pride group was awarded "Brand excellence in retail sector" by the world brand congress in Singapore on 31 July 2014, in recognition for their leading brand, Pride Ltd.

### **H.R Textile Mills Ltd.**

H.R Textile Mills Ltd is a vertical public limited company, engaged in manufacture of knitwear products. H.R Textile Mills is a Lycra assured factory. Zara, Bershka, New Look, Stradivarius, and El Corte Ingles are some of their clients.

Fashion Knit Garments Ltd is engaged in manufacturing knitwear products, consisting of ladies tops, sports and active wear, children outerwear, and mens' innerwear.

### **Pride Ltd**

Pride Ltd, in its present form, started with the setting up of retail outlet at TMC bahaban in 1991. Its professional team now manage 70 outlets that successfully cater to the needs of a client base spread all over Bangladesh. Pride Ltd was previously known as Pride Textiles.

### **Product range**

Urban Truth deals in knitwear, that is manufactured entirely by H.R Textile Mills Ltd. and Fashion Knit Garments Ltd. they also provide woven options, and shoe and jewelry line. They have a total employee of around 2900 people. The current annual revenue is approximate USD 18 million which are being targeting at around USD 24 million after the necessary changes in strategies and structured by 2008

### **2.3. Founder and Directors:**

Mr. Mohammad Abdul Moyeed	Chairman and managing Director
Dr. Mr. Mohammad Abdul Moyeen	Director
Mr. Mohammad Abdul Momen	Director
Professor Dr. A. H. Habibur Rahman	Independent Director
Mrs. Ruhey Rawa	Director
Ms. Sumbal Azwad Momen	Director
Ms. Sama Kainat Moyeen	Director

Table 2.1: Founder and Directors

#### **2.4. General Information about Factory:**

Name: H.R Textile Mills Ltd. (Pride Group) Type: 100% export oriented private industry

Year of establishment: 1990

Total man power: over 3000

Address: 4, karnapara, savar, Dhaka, Bangladesh Production capacity:

Kitting: 8 tons/day (average)

Dyeing: 7.5 tons/day (average)

Sewing: 500000 pcs/day (average)

Main production: basic T-Shirt, tank top, long sleeve, T-Shirt, polo shirt, shorts, ladies item, kids knitwear and all kinds of knit garments and fabrics.

Tel: 880-2-9893747, 880-2-8828911

Fax: 880-2-7643697

Email: [info@hrtextile.com.bd](mailto:info@hrtextile.com.bd) Website: <http://www.pride-grp.com>



## 2.5. Factory layout:

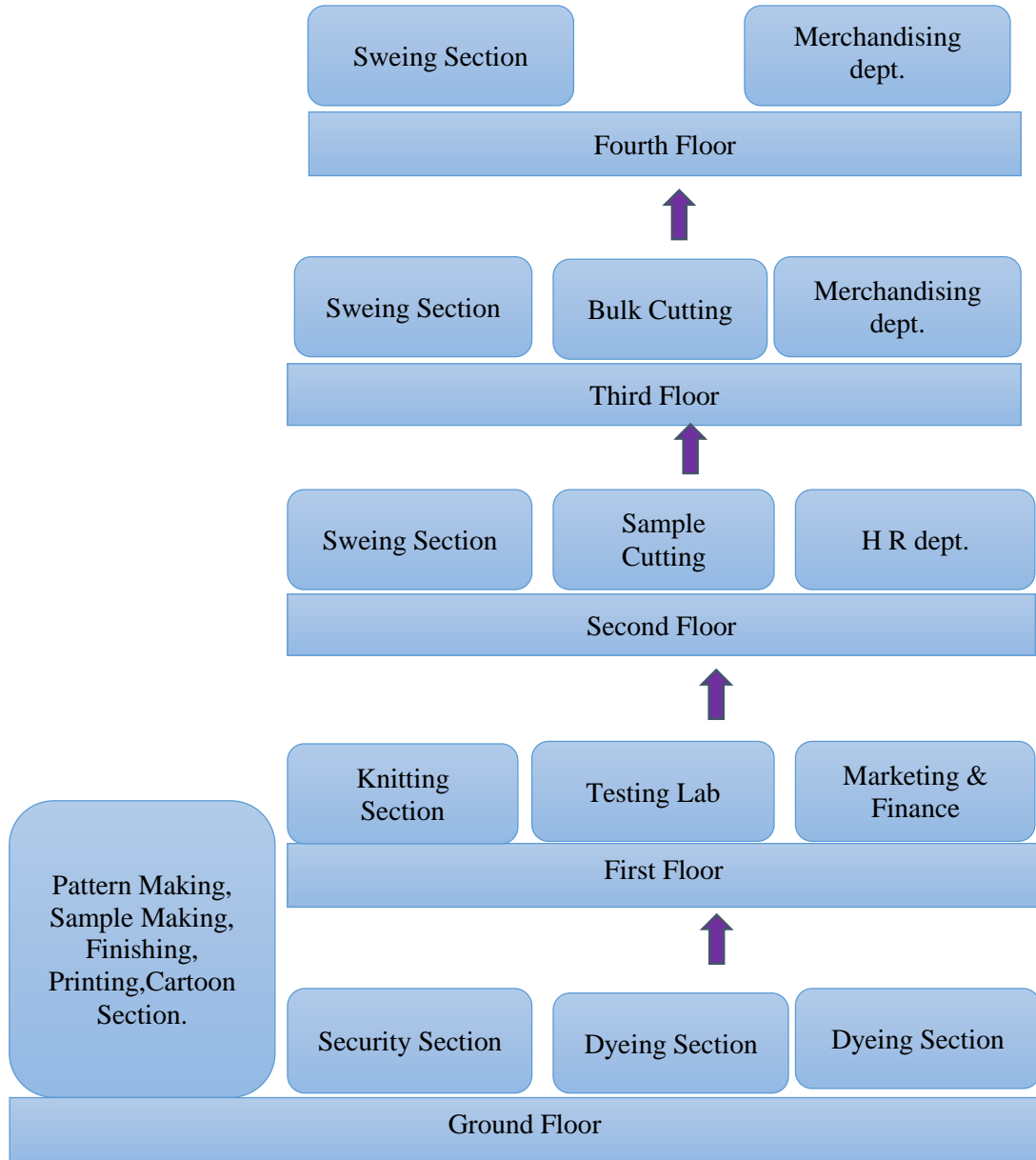


Fig.2.1: Factory layout

2.6. Organogram:

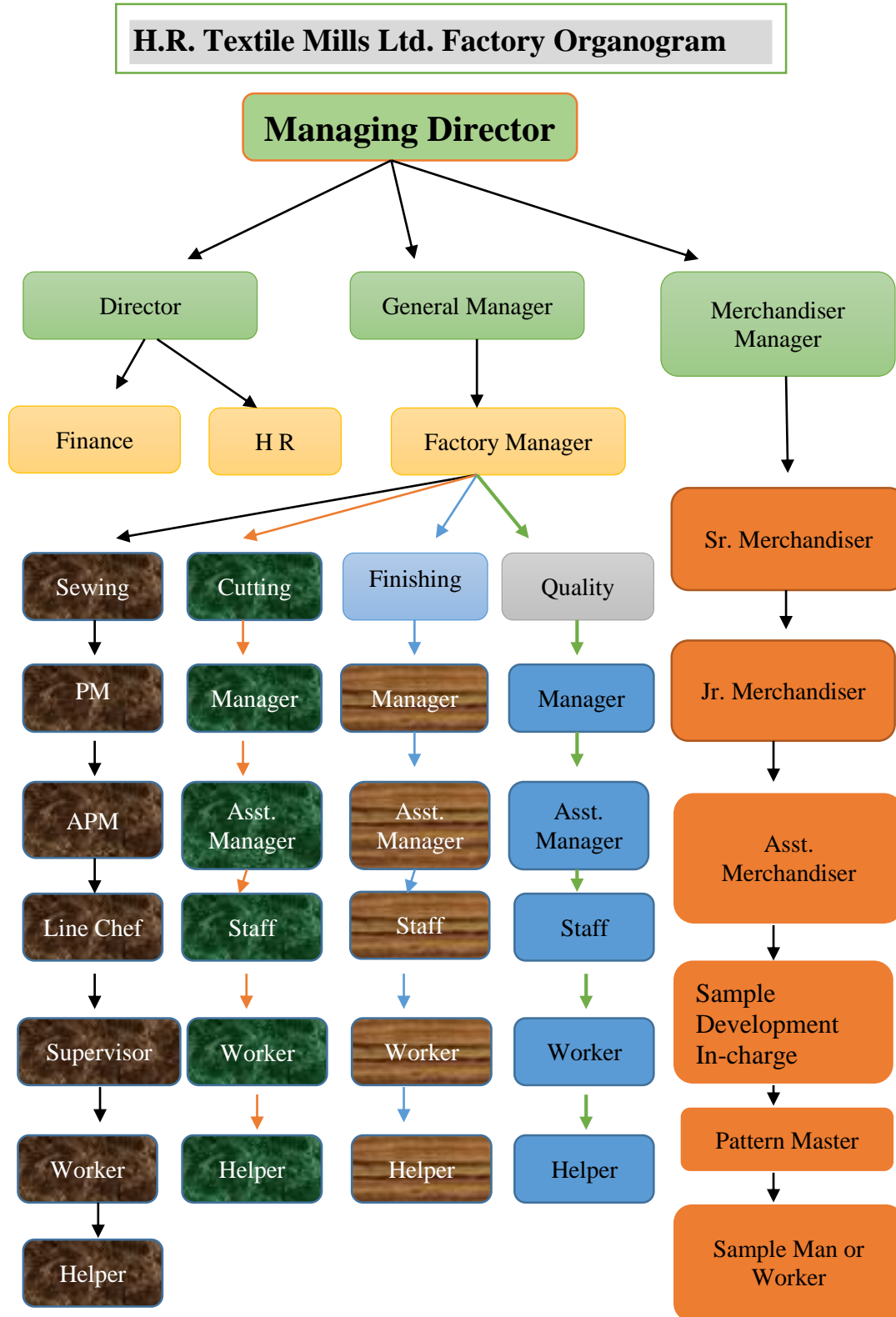


Fig.2.2: Organogram

### **2.7. Main area of export:**

1. France
2. Spain
3. Germany
4. England
5. Italy
6. Some other countries of Europe as well

### **2.8. Major buyers:**

1. ETAM PAP MAG
2. EL CORTE
3. BERSHKA
4. TERRA NOVA
5. ZARA
6. LA HALLI
7. TALI WEIJL

### **2.9. Certification:**

1. ISO 9002
2. DOTS by Cu (Control Union)

### **2.10. Mission & Vission:**

“Be a Caring Company through Enhancing Customer Experiences by Providing Innovative Solutions and Process Excellence” We believe that it is our job to be caring towards the planet and the other stakeholders; and responsiveness to the planet and stakeholders’ needs can only be facilitated by enhancing customers’ experiences by offering them innovative solutions and by achieving process excellence.

“Be an Industry Thought Leader” Thoughts lead to acts! “Thought Leadership” in - spires us to creatively develop extraordinary practic - es i.e., achieve process excellence; so that we may differentiate ourselves from competition by being eco-sensitive, innovative and agile.

### **3. Description of the attachment**

### 3.1. Knitting Section:

Knitting is a method of converting yarn into fabric by a series of intermeshing/interlocking loops, which are formed from a single yarn or from many yarns with the help of needles, is known as knitting. As each row progress a new loop is formed through an existing loop. The active stitches are held on a needle until another loop can be passed through them. This process eventually results in a final product.

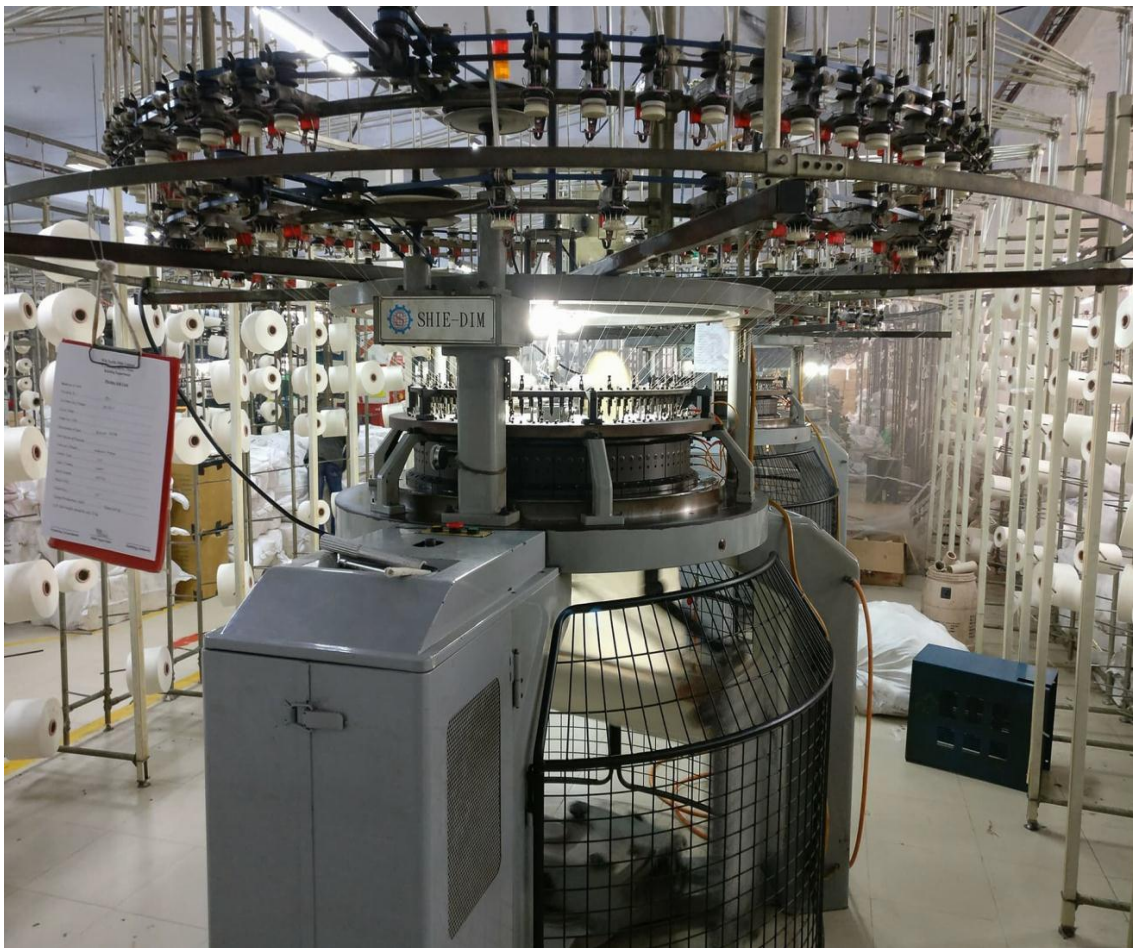


Fig.3.1: Knitting m/c





### 3.1.2. Organogram:

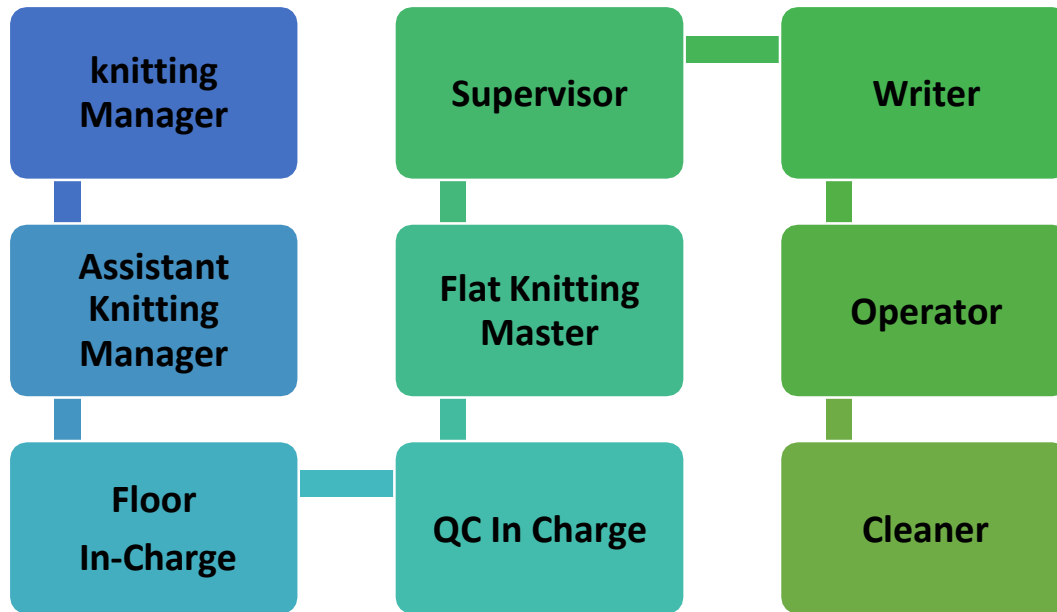
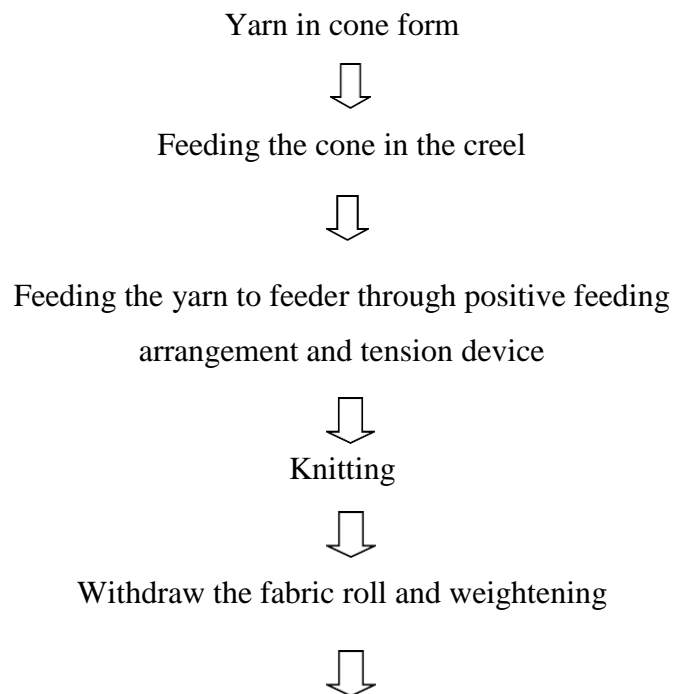


Fig.3.3: Organogram

### 3.1.3. Flow Chart of Knitting Section:



Inspection



Numbering

#### **3.1.4. Raw materials of knitting section and their sources:**

Yarn is used in knitting section as raw material. Different types of yarns are used in this section. Such as:

- I. 100% cotton (compact)
- II. Polyester65% & Cotton35%
- III. Spandex 20D
- IV. 100% viscose
- V. 100% mélange yarn
- VI. 100% cotton carded spun yarn
- VII. 100% cotton slub yarn
- VIII. Blended (60+40) CVC
- IX. Grey mélange ring yarn 10.50% modal +50% cotton Metallic yarn
- X. Rayon 100% vortex.

#### **3.1.5. Sources of yarn for knitting:**

- I. Shirin spinning mills ltd.
- II. Arif knit spin ltd.
- III. CRC textile mills ltd.
- IV. Sportking industries.
- V. Thermax group.
- VI. NRG hometex ltd.
- VII. Maksons spinning mills ltd.
- VIII. Square fashion yarns ltd.
- IX. Ha-meem spinning mills ltd.
- X. Sritex.
- XI. Square yarns ltd.
- XII. NZ textile ltd.
- XIII. Multazim spinning mills lts. Matam spinning mills ltd.
- XIV. Anlima yarn dyeing ltd.
- XV. AA yarn mills ltd.



- XVI. Creora.
- XVII. A.S.F fiber knit limited.
- XVIII. T.k chemical corp.
- XIX. Hanif spinning mills ltd.
- XX. Akij textile mills ltd.
- XXI. Utah spinning mills ltd.

**3.1.6. Product mix in knitting section:**

- I. 100% cotton.
- II. 100% viscose.
- III. Grey mélange.
- IV. CVC.
- V. Lycra.
- VI. Polyester.
- VII. Cotton + Modal (60%+40%)

**Polyester yarn:** India, Indonesia, Korea

**Lycra:** Singapore, Indonesia, Korea, Japan

**Sources of mélange:** Prime group, Thermax group.

**3.1.7. Production calculation:**

- 1. Production/shift in kg 100% efficiency:

$$\text{RPM} * \text{No. of needle} * \text{No. of feeder} * \text{stitch length}$$

---


$$3527.80 * \text{yarn count}$$

- 2. Production/shift in meter:

$$\frac{\text{Course/min}}{\text{Course/cm}}$$

---


$$\text{Course/cm}$$

**3.1.8. Machine specification:**

**Brand:** FUKAHAMA MACHINERY CO. LTD

**Dia:** 23inch **Gauge:** 24

**Feeder:** 69

**Needle:** 1734 **Origin:** Taiwan **Model:** SH- 2BFA



Fig.3.4: Fukahama m/c

**Brand: MAYER & CIE**

Dia: 30inch Gauge: 24

Needle: 2640T

Feeder: 96 Origin: Germany

Model: Relaint 3.2 II



Fig.3.5: Mayer & CIE

**Brand: Jiunn Long M/C Co. Ltd**

Dia: 38 inch Gauge: 24G

Needle: 2880T

Feeder: 114f

Origin: Taiwan



Fig.3.6: Jiunn long m/c

**Brand: Sie-Dim Machinery Co. Ltd**

Dia: 32 inch

Gauge: 20

Feeder: 96

Needle: 2010

Model: TS-F2

Origin: Taiwan



Fig.3.7: Shie- Dim m/c

**Brand: Paolo Orizio Machinery Ltd.**

Dia: 30 inch

Gauge: 18

Needle: 1680

Feeder: 60 Origin: Italy

Model: CMOAN



Fig.3.8: Paolo Orizio

### 3.1.9. Machine Description:

Machine Type	Brand	Origin	Model	Feeder	Dia	Gauge	No. of needles	Total number of m/c
Single Jersey	Fukahama	Taiwan	SH-2XFA	126,120,69,	42,23,25,40	24,25	2864,3014,1763,	07
			SH-2BFA	75,102,108,114	34,36,38		2714,1884,2562,3166	
	Mayer & CIE	Germany	Relanit 3.2II	96	30	24	2640	09
	Jiunnlong m/c	Taiwan	JLS-2 JLS-C	114F,102,108	38,34,16	24	2800,2544,2712	08
	Shie-dim m/c	Taiwan	TS-F2	90,96	30,32	20	1884,2010	04
Double Jersey	Paolorizo	Italy	COMAN	60,72,68	30,36,34	18,16	1680,1500,1716,1920,1740,3616	14
Single Jersey	Donghoi m/c	China	DH-53F	90	30	24	2260	01
Flatbed knitting m/c	Shimaseiki mfg.ltd	Japan	SFF152	4		14	840+840=1680	02

Table.3.1: Machine description

### 3.1.10 Different parts of circular knitting machine and their functions:

**Creel:** Creel is a part of knitting machine. Each yarn package is store there and always ready to feed the machine.



Fig.3.9: Creel

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



Fig.3.10: VDQ pulley

**Pulley belt:** It controls the rotation of the wheel.



Fig.3.11: Pulley belt



**Yarn guide:** It helps the yarn to feed the feeder.



Fig.3.12: Yarn guide

**Positive feeder:** It gives positive feed to the machine.



Fig.3.13: Positive feeder

**Auto stopper:** It is an important part of the machine. It stops the machine instantly when a yarn is break.



Fig.3.14: Auto stopper

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

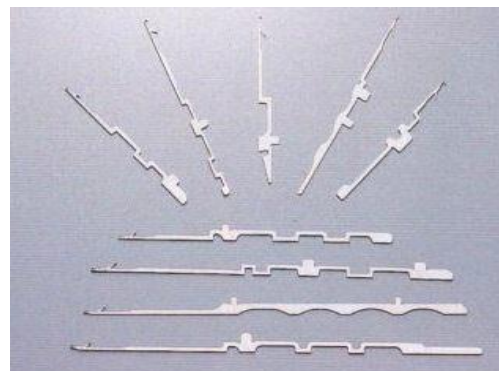


Fig.3.15: Needle

**Sinker:** It is most important element of the machine. It helps to loop forming and knocking over and holding down the loop.



Fig.3.16: Sinker.

**Cam box:** Where the cam are set horizontally.



Fig.3.17: Cam box

**Cam:** Cam is device which converts the rotary motion into reciprocating motion to the needles and other elements.



Fig.3.18: Cam

**Lycra attachment device:** Lycra is attached here and feed to the machine.



Fig.3.19: Lycra attachment device

**Cylinder:** Needle track are situated here.



Fig.3.20: Cylinder

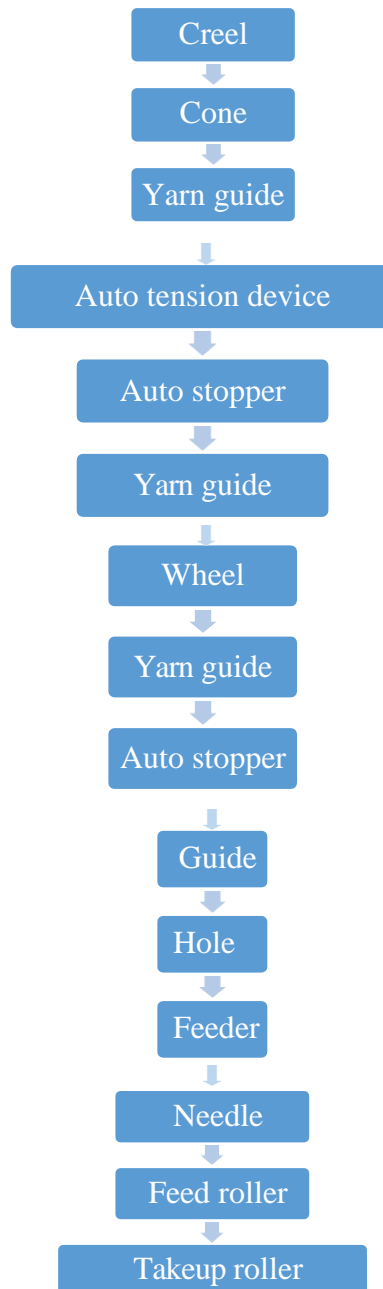
**Air gun nozzle:** To feed the yarn, sometimes it is used for cleaning purpose.



Fig3.21: Air gun nozzle



### 3.1.11. Process path of circular knitting machine:



### 3.1.12. Production process description:

- ✚ Authority takes order from buyer.
- ✚ Merchandising department estimates total amount of fabric production.
- ✚ Knitting manager get production order from the merchandising department.
- ✚ Knitting manager fixes up stitch length and GSM with merchandising department.
- ✚ Operator setup the machine according to the instruction.
- ✚ Fabric is produced according to demand.
- ✚ Supervisor supervises the processes.
- ✚ Fabric is rolled and need to take weight after processing.
- ✚ Fault is checked on inspection table.
- ✚ Report the fault according to grading.

*Delivery Order*

**In House Fabric Work Order**

PO No: 18014/1607  
 PO Date: 15 Oct 2014  
 Currency: USD  
 Delivery Date: 21 Oct 2014

Buyer: El Costa Ingen  
 Style Category:  
 Buyer's Order No: 59104 14 2443

Plant City: 23 00 Pcs  
 Style No: CG-CM-02  
 Lot/PO/Order No:

TO  
 H. R. Textile Mills Limited

**Finish Fabric**

Sl. No	Sub Group	Construction	GSM	Du	Composition	Color	UOM	Current Booking Qty	Rate	Amount	Comments
1	Fabric	Single Jersey	130	60	80% Cotton 20% Modal S-14-2917A 2.5 5m	White	kg	100	13.00	1300.00	100%
2	Fabric	Single Jersey	130	60	80% Cotton 20% Modal S-14-2918A 2.5 5m	White	kg	100	13.00	1300.00	100%
3	Fabric	Single Jersey	130	60	80% Cotton 20% Modal S-14-2917B 2.5 5m	White	kg	100	13.00	1300.00	100%
4	Fabric	Single Jersey	130	60	80% Cotton 20% Modal S-14-2917C 2.5 5m	White	kg	100	13.00	1300.00	100%
5	Fabric	Single Jersey	130	60	80% Cotton 20% Modal S-14-2917D 2.5 5m	White	kg	100	13.00	1300.00	100%
<b>TOTAL</b>										<b>5200.00</b>	

**Terms & Conditions**

Buyer: El Costa Ingen (Formal Invoice)  
 Style: CG-CM-02  
 Sample type: PP & Test

**Remarks**

## P/E follow approved styles  
 ## Mark fab. is approved as fab. in style CG-CM-02  
 ## Mark mention test standard and GSM

Internal Audit: \_\_\_\_\_  
 General Manager: \_\_\_\_\_  
 Executive Director: \_\_\_\_\_  
 Merchandising: \_\_\_\_\_

Fig.3.22: Fabric booking sheet

H.K. Textile Mills Limited  
 KNITTING DEPARTMENT  
 KNITTING PROGRAM

BUYER: TERRANOVA    STYLE # TPTD547SP TU    GMT: 19614-49038+11210-25224+12618    SHIP DATE: 10/01/2015

FABRIC TYPE: SJ ELASTANE    FABRIC GSM: 170    START DATE: 03/12/14    S/B COMPLETED 20/12/14

ORDER/ PO NO	IPO	M/C	F/DIA	YARN DETAILS				Quantity (kg)	Setting	Checked By	REMARKS
				COUNT	Fabrics	Brand	Lot				
13206	14/21664	34"x24G	60(Open)	34S CARDED	SJ ELAS	SAIHAM	58	29.5M	2650		
20/D Elastan											
13202	14/21667	34"x24G	60(Open)	34S CARDED	SJ ELAS	SAIHAM	13	DJC	2035		
20/D Elastan											
13203	14/21665	34"x24G	60(Open)	34S CARDED	SJ ELAS	SAIHAM	14	B/C	5085		
20/D Elastan											
13205	14/21668	34"x24G	60(Open)	34S CARDED	SJ ELAS	SAIHAM	14	DJC	1165		
20/D Elastan											
13207	14/2166	34"x24G	60(Open)	34S CARDED	SJ ELAS	SAIHAM	14	DJC	1310		
20/D Elastan											
<b>TOTAL</b>									<b>12245</b>		

Quality Supervisor: \_\_\_\_\_    Production Supervisor: \_\_\_\_\_    Knitting Authority: \_\_\_\_\_

Fig.3.23: Knitting machine program

### 3.1.13. Fabric inspection system:



Fig.3.24: Fabric inspection system

After finishing the knitting procedure fabric needs to check for any kind of fault according to 4 point grading system. Operator marks the fault with a marker and note down to the record keeping sheet.

<b>FOUR POINT GRADING SYSTEM</b>	
Size of defects	Penalty
3 inches or less	1 point
Over three inch but not 6 inch	2 point
Over 6 inch but not 9 inch	3 point
Over 9 inch	4 point

<b>Acceptance Calculation</b>	
Points	Grade
Up to 20 points	A Grade
21- 30 points	B Grade
31- 40 points	C Grade
Above 40	Rejected

Table.3.2: Fabric inspection system

#### **3.1.14. Faults of knitting:**

- 1.Hole knitting.
- 2.Needle mark.
- 3.Sinker mark.
- 4.Star mark.
- 5.Drop stitches.
- 6.Oil stain.
- 7.Rust stain.
- 8.Pin hole.
- 9.Fly.
10. Yarn contamination.

#### **3.1.15. Quality control:**

Quality control or QC for short term is a process by which entities review the quality of all factors involved in production. Control includes product inspection, where every product is examined visually. If the process is not accurate outcome products may reject from the customers or buyers.

#### **3.1.16. Objects of quality control:**

1. Process control
2. Process development
3. Product development
4. Research

#### **3.2. Dyeing section:**

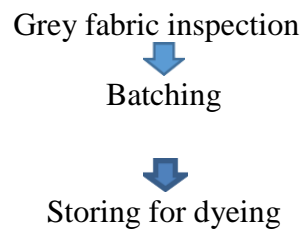
Coloration is the main stage of chemical application for attractiveness or decoration of textile end product. But to get the best result of coloration some preparatory steps are necessary for grey textiles. Dyeing is the process of adding color to textile products like fibers, yarns, fabrics. Wet process steps for a particular fabric are selected according to the specific end use. These are mainly different types of chemical reactions. Wet

processing stages are primarily classified under three heading: Pre-treatment, Dyeing/ Printing, Finishing.

### **3.2.1. Batch preparation:**

Batching is the process to prepare the fabrics which will be dyed and processed for a particular order.

### **3.2.2. Batch process:**



### **3.2.3. Objectives of batch preparation:**

1. Receive the grey fabric roll from knitting section or from the supplier.
2. Prepare the batch for dyeing according to
  - a. Machine selection.
  - b. Types of fabric.
  - c. Order sheet.
  - d. Dyeing recipe.
3. To minimize the washing time and machine stoppage.
4. Can use the maximum capacity for the dyeing.

### 3.2.4. Dyeing organogram:

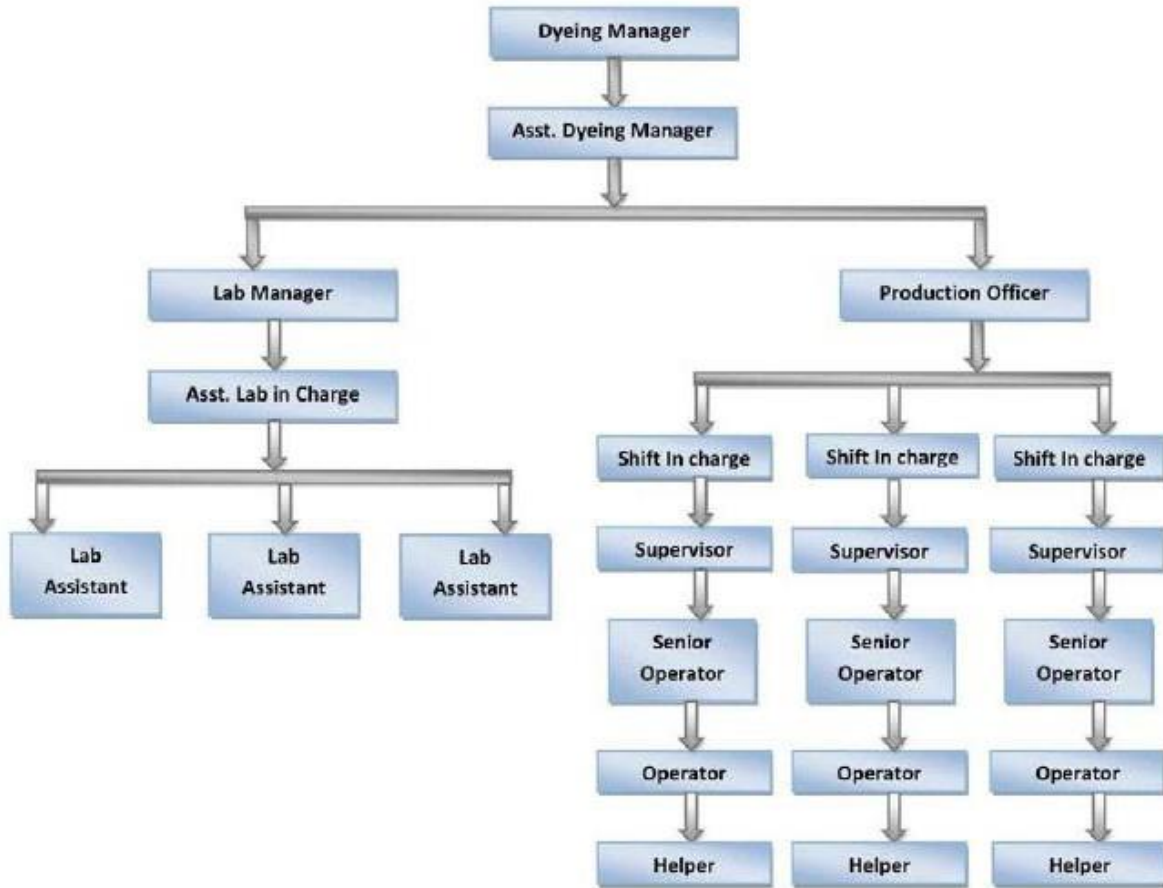


Fig.3.25: Dyeing organogram

### 3.2.5. Fabrics dyed in dyeing section:

- ✓ Single jersey
- ✓ Single jersey with lycra
- ✓ Polo pique
- ✓ Back pique
- ✓ Fleece
- ✓ Fleece with lycra
- ✓ Rib
- ✓ Rib with lycra

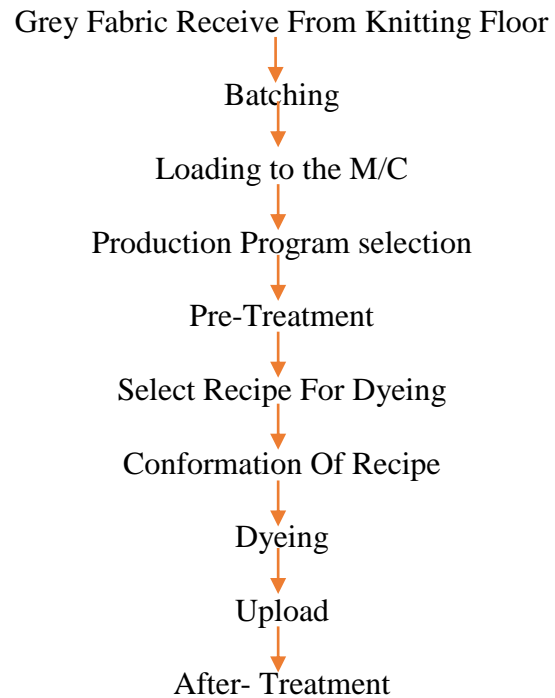
- ✓ 1x2 rib
- ✓ 2x2 rib
- ✓ Single lacoste
- ✓ Double lacoste
- ✓ Different types of collar

### 3.2.6. Percentage of soda and dyes in dyeing section:

Dyeing section	Lab only			Bulk production		
	Salt gm/l	Soda gm/l	Caustic gm/l	Salt gm/l	Soda gm/l	Caustic gm/l
<b>Below 0.2</b>	<b>1.6</b>	<b>2.2</b>	<b>-</b>	<b>20</b>	<b>7</b>	<b>-</b>
<b>0.21-0.5</b>	<b>2.4</b>	<b>3.2</b>	<b>-</b>	<b>30</b>	<b>10</b>	<b>-</b>
<b>0.51-1</b>	<b>-</b>	<b>4.8</b>	<b>-</b>	<b>40</b>	<b>15</b>	<b>-</b>
<b>1.01-2</b>	<b>4</b>	<b>4.8</b>	<b>-</b>	<b>50</b>	<b>15</b>	<b>-</b>
<b>1.01-2</b>	<b>4</b>	<b>1.6</b>	<b>1</b>	<b>50</b>	<b>15</b>	<b>5</b>
<b>2.01-3</b>	<b>4.8</b>	<b>6.4</b>	<b>-</b>	<b>60</b>	<b>20</b>	<b>-</b>
<b>2.01-3</b>	<b>4.8</b>	<b>1.6</b>	<b>1.4</b>	<b>60</b>	<b>5</b>	<b>0.7</b>
<b>3.01-4</b>	<b>5.6</b>	<b>6.4</b>	<b>-</b>	<b>70</b>	<b>20</b>	<b>-</b>
<b>3.01-4</b>	<b>5.6</b>	<b>1.6</b>	<b>1.4</b>	<b>70</b>	<b>5</b>	<b>0.7</b>
<b>4.01-6</b>	<b>6.4</b>	<b>2.2</b>	<b>2</b>	<b>80</b>	<b>7</b>	<b>2</b>
<b>6.01-8</b>	<b>6.4</b>	<b>2.2</b>	<b>2.4</b>	<b>80</b>	<b>7</b>	<b>1.2</b>

Table.3.3: Percentage of soda and dyes in dyeing section.

### 3.2.7. Sequence of dyeing operation:



### 3.2.8. Production parameters:

#### p<sup>H</sup>:

1. During reactive dyeing p<sup>H</sup> 10.5-11.5
2. During disperse dyeing p<sup>H</sup> 4.5-6.0
3. During H<sub>2</sub>O<sub>2</sub> bleaching p<sup>H</sup> 9.2-12

#### Temperature:

1. For cotton scouring: (90-95) °C
2. For cotton cold wash: (30-40) °C
3. For cotton hot wash: (70-80) °C
4. For cotton acid wash: (60-70) °C
5. For cotton dyeing: (60-70) °C
6. Polyester dyeing: (100-300) °C

#### Time:

1. For scouring 60-90 min
2. For disperse dyeing 60-90 min



M:L

1. For reactive dyeing M:L = 1:6 to 1:10

**3.2.9. Machine capacity:**

Floor	Type	Name	Origin	Model	Capacity	Nozzle
Floor 01	Bulk production	Sclavos 01	Greece	Sedomat 5500	720kg	04
		Sclavos 02	Greece	Sedomat 5500	540kg	03
		Fong's 01	China	2800-FC28	1000kg	04
		Fong's 02	China	2800-FC28	750kg	03
		Fong's 03	China	2800-FC28	500kg	02
		Fong's 04	China	2800-FC28	400kg	02
		Fong's 05	China	2800-FC28	400kg	02
		Colorsoft 01	India	2500t	250kg	01
		Fong's 06	China	FC28	750kg	03
		Fong's 07	China	FC28	750kg	03
		Fong's 08	China	FC28	750kg	03
		Colorsoft 02	India	2500t	200kg	01
		Colorsoft 03	India	2500t	150kg	01
		Colorsoft 12	India	2500t	100kg	01
		Colorsoft 09	India	2500t	400kg	01
		Colorsoft 05	India	2500t	400kg	04
		Colorsoft 06	India	2500t	400kg	04
		Colorsoft 07	India	2500t	500kg	04
		Colorsoft 08	India	2500t	500kg	04
		Colorsoft 10	India	2500t	500kg	04

Floor 01	Sample dyeing	Colorsoft 11	India	2500t	350kg	02
		Colorsoft 01	India	2500t	10kg	01
		Colorsoft 02	India	2500t	10kg	01
		Colorsoft 03	India	2500t	10kg	01
		Colorsoft 04	India	2500t	10kg	01
		Colorsoft 05	India	2500t	10kg	01
		Colorsoft 06	India	2500t	10kg	01
		Colorsoft 07	India	2500t	10kg	01
		Colorsoft 08	India	2500t	10kg	01
		Colorsoft 09	India	2500t	10kg	01
		Colorsoft 10	India	2500	50kg	01
		Fong's 11	China	FC-28	60kg	01
		Colorsoft 12	India	2500t	10kg	02

Table.3.4: Machine capacity

### 3.2.10. Dyeing parameters:

Process	pH	Temperature ( C)	Time	M:L Ration
Scouring and bleaching	11	98/105	45/30	1:10
Dyeing	9-11	60/80/98	60	1:8
Hot wash	Neural	90/95	10	1:10
Enzyme	4-5	55	60	1:55
Stripping	11-12	98	40	1:8/1:10
Softening	5.5-6	40	20	1:8
Fixing	5.5-6	40	20	1:8

Table.3.5: Dyeing parameters

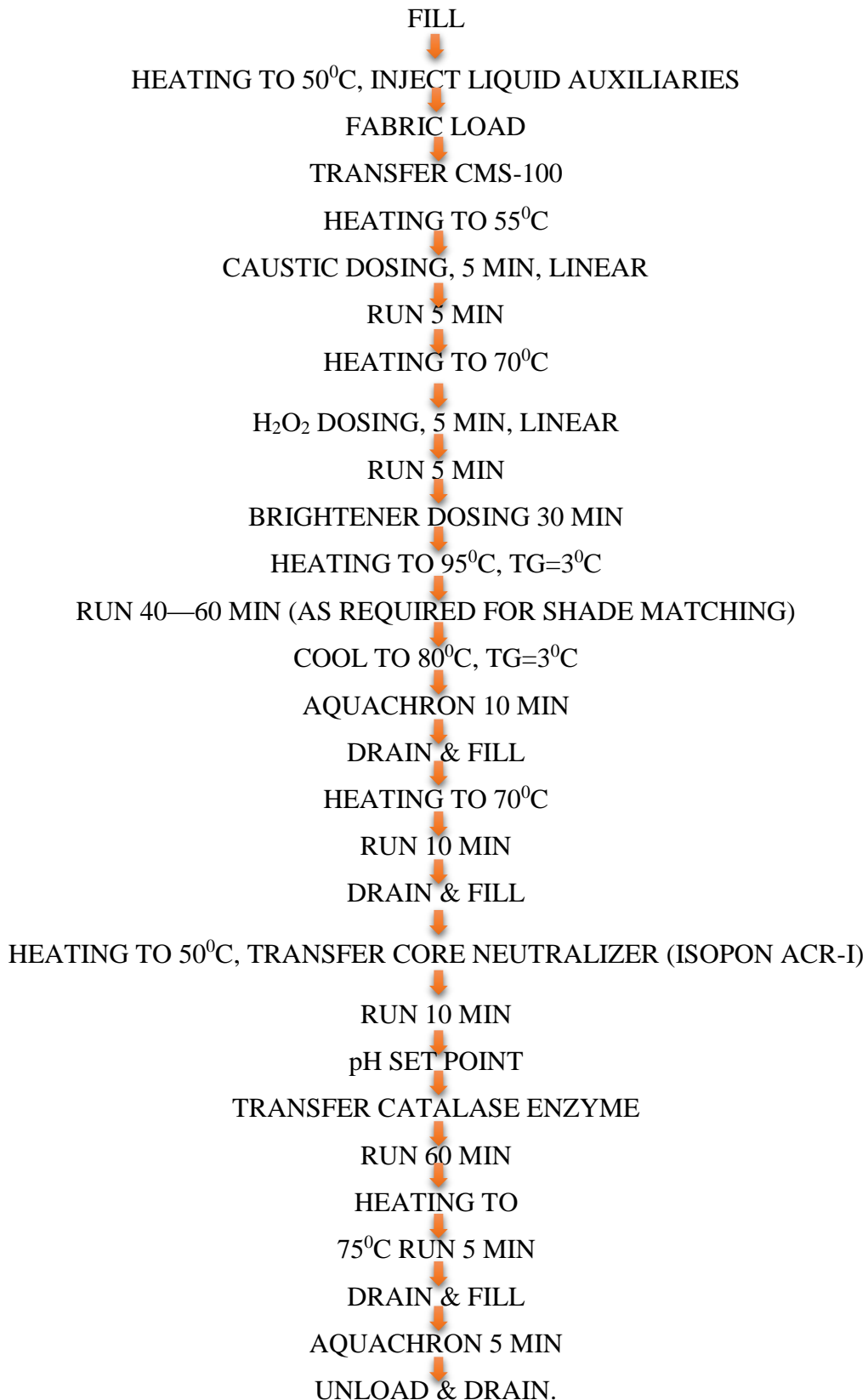
### 3.2.11. Shade check & inspection:

Dyeing supervisors and the respective managers check the shade of the bulk productions. If the production meet the required parameters then it turn into finishing, otherwise stripping or destroy wash is done though the instruction.

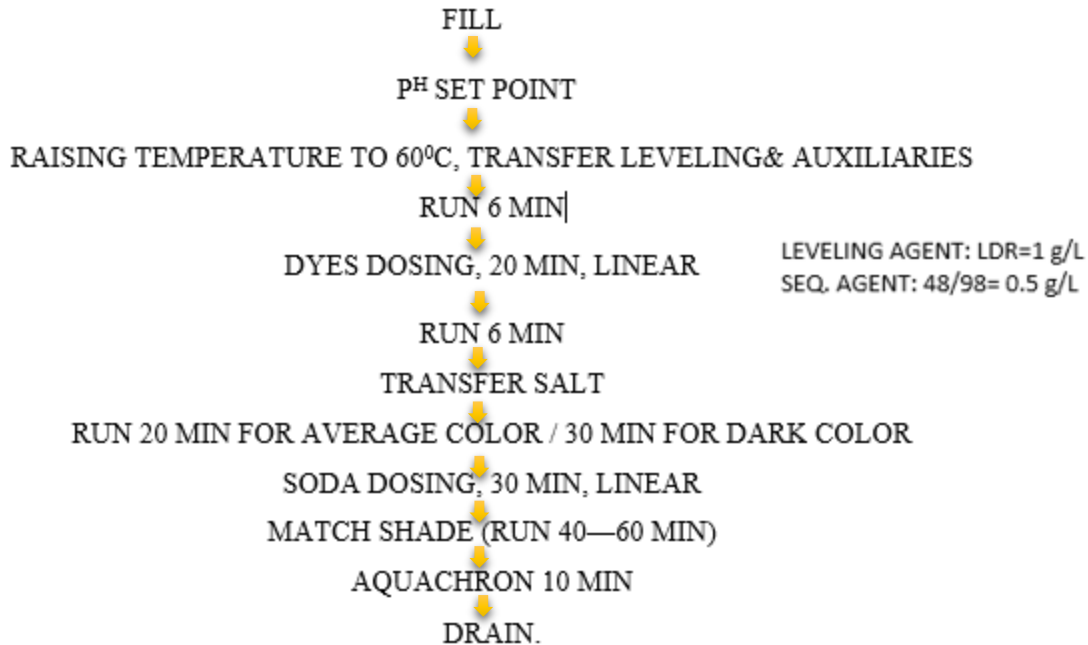


Fig.3.26: Shade check and inspection

### 3.2.12. White Process:



### 3.2.13. Dark Process:



### 3.3. Finishing:

Textile finishing, in a restricted sense, is the term used for a series of processes to which all bleached, dyed, printed and certain grey fabrics are subjected before they are put to market. It's one of the most important operations in knit processing.

#### 3.3.1. Objects of finishing:

- ✚ Improving the appearance, luster, whiteness etc.
- ✚ Improving the feel.
- ✚ Wearing qualities- non-soiling, antistatic, ant shrink, comfort etc.
- ✚ Special properties required for particular uses such as water proofing, flame proofing etc.
- ✚ Covering the faults in the original cloth.
- ✚ Increasing the weight of the cloth.

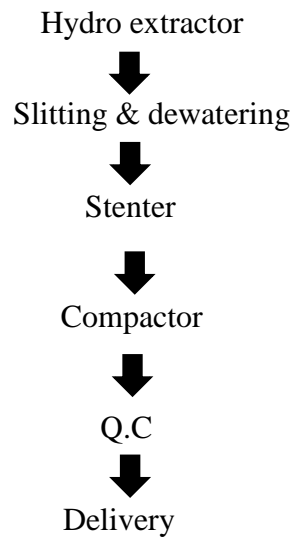
#### 3.3.2. Effects of finishing:

- ✚ Easy care.
- ✚ Crease recovery.

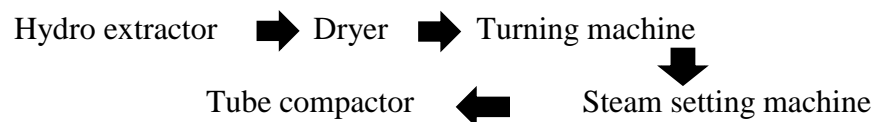
- ✚ Dimensional stability.
- ✚ Good abrasion resistance.
- ✚ Improved tear strength.
- ✚ Good sew ability.
- ✚ Soft or stiff handle.
- ✚ Shine or luster.

Knit fabrics require finishing processes after dyeing. During dyeing all knit fabrics are dyed in tubular form. According to buyers requirement dyed fabrics are finished in either Tubular or Open width form. Depending on which finishing sections are separated into two section Open & Tube section.

### 3.3.3. Open-finish:



### 3.3.4. Tubular-finish:



### 3.3.5. Slitting machine:

Manufacturer: Bianco, Italy

Slitting machine is used to dewater and to give a form for further finishing processes.

- ✓ Slit- cut the tubular fabric through the needle mark.

- ✓ Remove excess water.
- ✓ Prepare the fabric for next operation.



Fig.3.27: Slitting m/c

### 3.3.6. Stenter:

Manufacturer: Brukner, Germany

Function:

- ✚ To dry the fabric.
- ✚ Heat set the synthetic material.
- ✚ Controlling the width of the fabric.
- ✚ Controlling the GSM of the fabric.
- ✚ Bowing controlling of stripe fabric

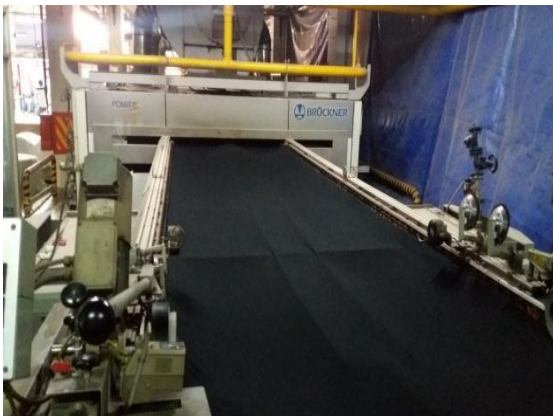


Fig.3.28: Stenter m/c

### 3.3.7. Compactor:

Manufacturer: Lafer, Italy.

Objectives:

- ✚ To compact the fabric.
- ✚ To control the shrinkage.
- ✚ To maintain proper width and G.S.M

**Heating system:** Steam



### Main parts of the machine:

- + Heating chamber
- + Blower
- + Synthetic blanket as conveyor
- + Exhaust fan
- + Unpinning cylinder
- + Belt cylinder
- + Uncurling device
- + Sensor
- + Brush roller

### Additional device:

- + Selvage cutting
- + Selvage safety
- + Pinning safety
- + Selvage unrolling



Fig.3.29: Compactor

### 3.3.8. Dryer:

Manufacturer: Albrecht, Brazil

#### Function:

- + To dry the wet fabric.
- + Control the shade & GSM slightly.

#### Main parts:

- + Feed unit, contain conveyer belt & number of rollers.
- + Drying section.
- + Steam is used for heating.
- + Blower, to spread the steam.
- + Exhaust air ventilator

#### Technical parameters:

- + Temperature: For colored fabric: 140,150,130oC For white fabric: 120 oC
- + Speed : 8-80 m/min
- + Nozzle distance: 35-55 mm

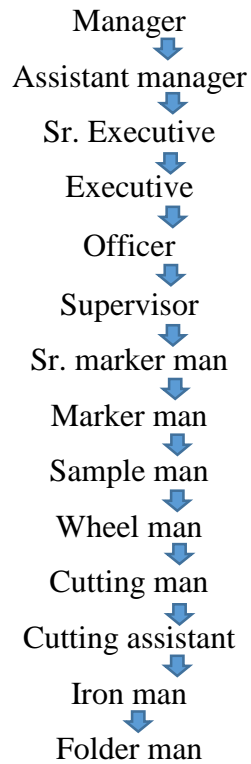


Fig.3.30: Dryer



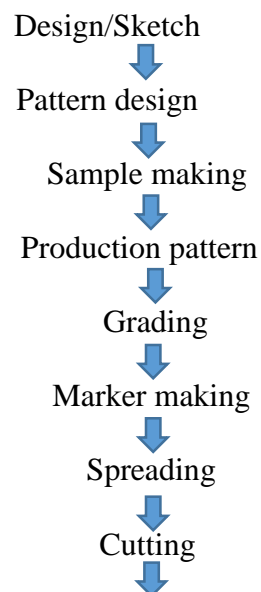
### 3.4. Garments section:

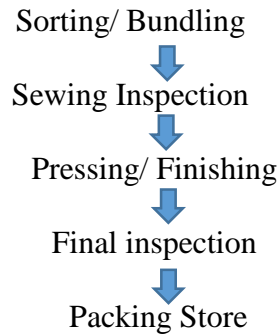
#### 3.4.1. Organogram of Garments section:



In this hierarchy company recruit their manpower based on need. Each position can have several workers by maintaining shift

#### 3.4.2. Garments manufacturing process:





### 3.4.3. Pattern making:

Patterns are hard paper which is made by following each and individual components with all specification.

#### Types of pattern:

Generally pattern can be divided into two types.

- ✚ Production Pattern
- ✚ Working Pattern

Production pattern: The pattern which is used for bulk production that's called production pattern.

Working pattern: The pattern which is used to make sample garment that is called master pattern or working pattern.

### 3.4.4. Marker making:

In this company marker is drawn on a large paper though the help of AutoCAD. Then with the help of this garments are cut.

Marker making procedure-

- ✚ First, sample pattern is drawn.
- ✚ Then with the help of AutoCAD production pattern is made by large thin paper.
- ✚ All the size number, batch number, order number is printed there.



Fig.3.31: Marker Spreading

### Objectives of marker:

- ✚ To save times.
- ✚ To reduce cost.
- ✚ To minimize fabric wastage.
- ✚ To get similarities.

### 3.4.5. Cutting section:

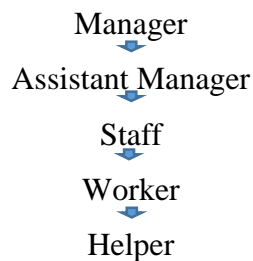
Here, with the help of marker fabrics are on the spreading table. Number plies depend on:

- ✚ Thickness of fabric.
- ✚ Volume of fabric.
- ✚ Cutting machine capacity.
- ✚ Types of fabric.



Fig.3.32: Fabric Cutting

### Organogram of cutting section:



### Fabric spreading:

Fabric spreading can be divided into two types:

- ✚ Flat spreading
- ✚ Stepped spreading



Fig.3.32: Fabric Spreading

**Ideal lay height of cutting:**

Heavy weight	4-5 inch.
Medium weight	3-4 inch.
Light weight	2.5-3 inch.

Table.3.6: Ideal lay height of cutting

**Cutting tools:**

1. Scissors
2. Straight knife
3. Band knife
4. Round knife
5. Die cutter
6. Automated knife cutter
7. Laser cutter
8. Drill machine



Fig.3.34: Cutting Machine

**Cutting defects:**

1. Numbering mistake
2. Incorrect cutting
3. Cut mark (up-down)

### 3.6. Printing Section:

#### 3.6.1. Organogram of printing section:

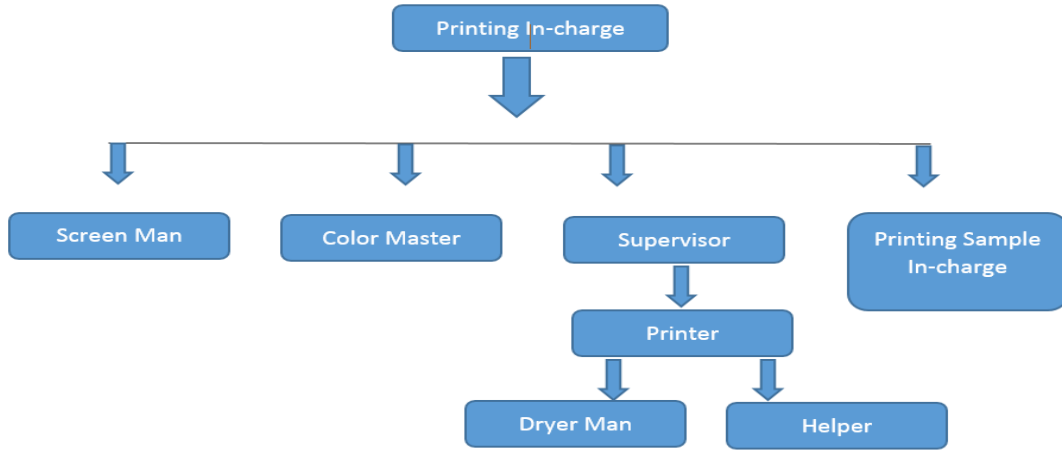


Fig.3.35: Organogram of printing section



Fig.3.36: Fabric Printing m/c



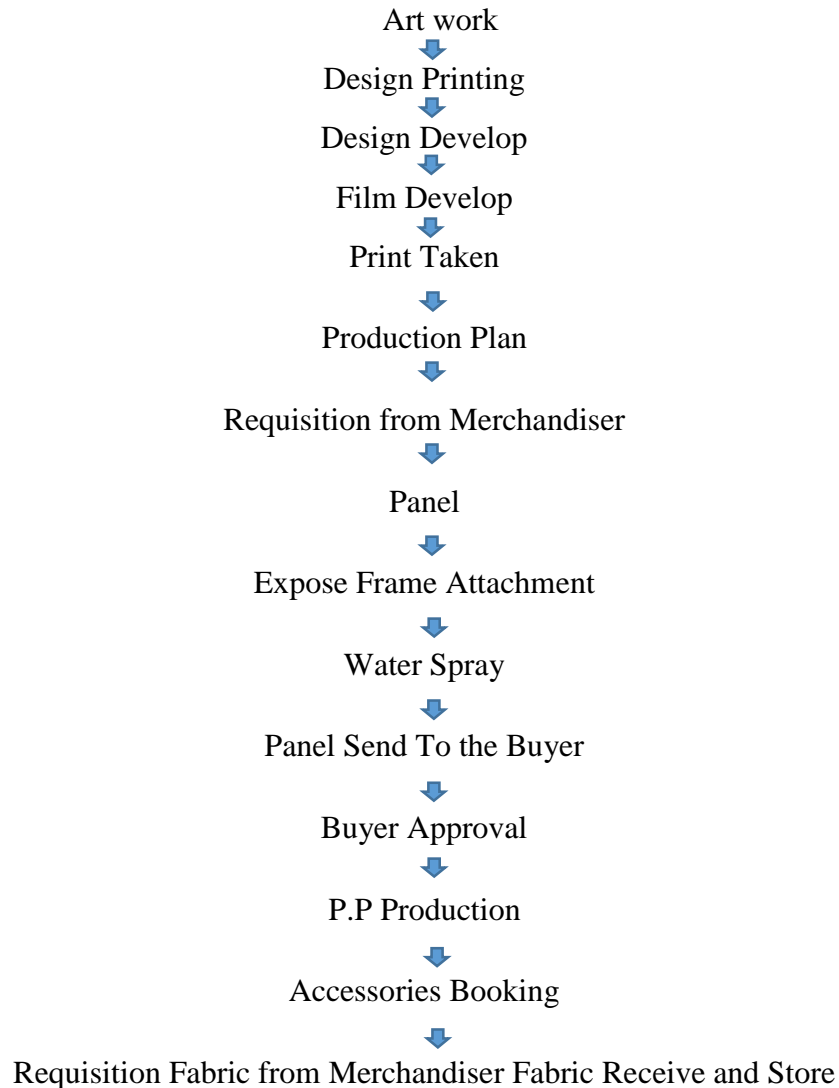
Fig.3.37: Fabric Printing

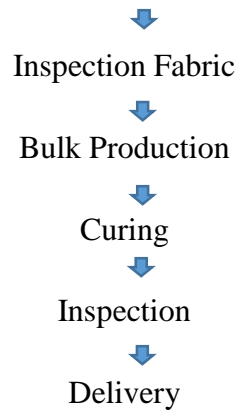




Fig.3.38: Curing m/c

### 3.6.2. Printing Flowchart:





### 3.6.3 Printing Faults:

- ✚ Miss fit
- ✚ Wicking
- ✚ Shade
- ✚ Color bleeding
- ✚ Color cracking

### 3.6.4. Types of Printing:

- ✚ Discharge printing
- ✚ Rubber printing
- ✚ Transfer printing
- ✚ Foil printing
- ✚ Pigment printing
- ✚ Burnout printing
- ✚ Flock printing
- ✚ Photo printing
- ✚ Reactive Printing
- ✚ Spot Printing
- ✚ Process Printing
- ✚ Sublimation Printing

### 3.7. Embroidery Section:

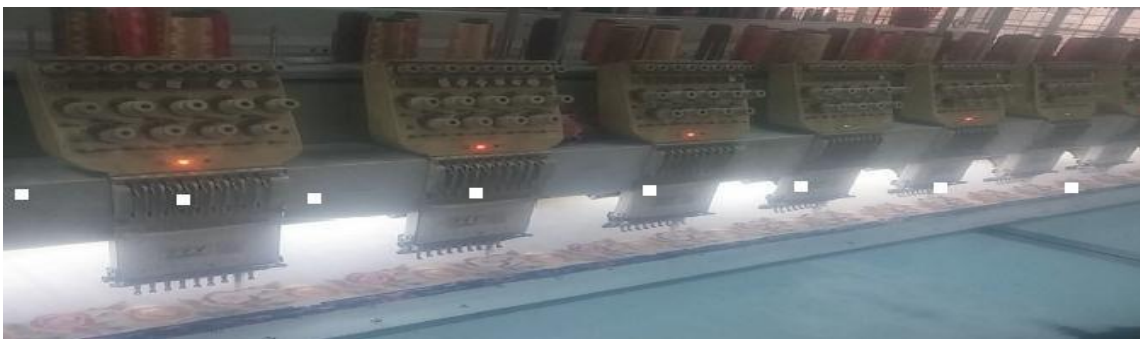


Fig.3.39: Embroidery m/c

Two types of threads are used in embroidery machine.

1. Polyester thread
2. Sewing thread

### 3.7.1. Machine Specification:

Machine name	YUEMEI
Brand name	Mag Enterprise Ltd
Country of origin	China
M/C rpm	850
No of head	15
No of needle	09
No of bobbin	15

Table.3.7: Machine Specification

### 3.7.2. Embroidery Faults:

- ✚ Needle hole
- ✚ Incorrect measurement
- ✚ Thread break
- ✚ Uneven embroidery
- ✚ Uneven applique

### 3.8. Sewing Section:

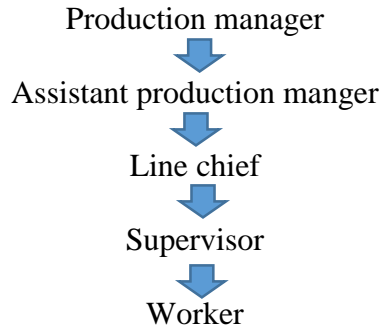


Fig.3.40: Sewing section



In sewing floor different types of Sewing is used to join different parts of a garment. In a garment all parts are joined combined position by the help of many workers. Different parts of the garment are attached by different operators. After making this finished garments are checked for final approaching. They are ready for packing, given tag, precaution tag and packed in plastic paper for avoiding different types of dust and giving a charming look.

### 3.8.1. Organogram of Sewing Floor:



### 3.8.2. Machine Specification:

Machine Type	Brand	Amount	Origin
Single Needle Lock Stitch	JUKI	4500	JAPAN
Over lock 4 Thread	JUKI	240	JAPAN
Over Lock 4 Thread Top Down	JUKI	3	JAPAN
Over Lock 4 Thread Back Latch	JUKI	12	JAPAN
Over Lock 4 Thread Cylinder Bed	JUKI	9	JAPAN
Over Lock 6 Thread	JUKI	6	JAPAN
Cylinder Bed Flat Lock	PEGASUS	93	JAPAN
Flat Bed Flat Lock	PEGASUS	47	JAPAN
Feed Of The Arm	YAMATO	9	JAPAN
Button Hole	JUKI	15	JAPAN
Button Stitch	JUKI	3	JAPAN
Bertack	JUKI	7	JAPAN
Pickuting	KANSAI	3	JAPAN

Table.3.8: Machine Specification

### 3.8.3. Description of different types of sewing machine:

#### Plain Machine:

##### Application:

- ✚ Pocket joint
- ✚ Zipper joint
- ✚ Belt joint
- ✚ Flap joint stitch
- ✚ Flap top stitch
- ✚ Loop tack stitch



Fig.3.41: Plain Machine

#### Over Lock Machine:

##### Application:

- ✚ Blind stitch
- ✚ Sleeve attach
- ✚ Garments edge
- ✚ Side seam



Fig.3.42: Over lock Machine

#### Flat Lock Machine:

##### Application:

- ✚ Hem joint (bottom, sleeve, pocket)
- ✚ Neck binding
- ✚ Top stitch



Fig.3.43: Flat lock Machine

**Button Attach Machine:**

**Application:**

- ✚ To attach button in garments.



Fig.3.44: Button Attach Machine

**Button Hole Machine:**

**Application:**

- ✚ To make eye late hole in garments.



Fig.3.45: Button Hole Machine

**Back Tape Machine:**

**Application:**

- ✚ Shoulder to shoulder tape joint

**Thread Re-coining Machine:**

**Application:**

- ✚ Thread transfer cone to cone.

**Kansai PMD:**

**Application:**

- ✚ Belt gathering with elastic.

**Single Needle Vertical machine:**

**Application:**

- ✓ Rib sewing and cutting

**3.8.4. Defects of Sewing:**

- ✓ Button insecure
- ✓ Poor ironing
- ✓ Needle mark
- ✓ Open seam
- ✓ Needle hole
- ✓ Placket unbalance
- ✓ Sleeve edge unbalance
- ✓ Incorrect side shape
- ✓ Insecure shoulder stitch
- ✓ Double stitch
- ✓ Stitch missing
- ✓ Broken stitch
- ✓ Thread breaking
- ✓ Bottom hem bowing
- ✓ Cross labels

**3.8.5. Measurement Deviation:**

In this process the garments measurements are compared to the customer measurements.

Here, some of the measurements are given below:

- + Arm hole
- + Shoulder lengths
- + Body widths
- + Garment opening
- + Neck widths
- + Neck openings
- + Collar widths
- + Hemming widths
- + Sleeve lengths
- + Placket lengths
- + Placket widths
- + Arm opening

**3.8.6. Standard Minute Value Calculation:**

Standard minute value or SMV plays a vital role in garments industry. Generally, SMV refers to total time taken to make garment. It is expressed in minute. For proper shipment procedure a merchandiser need to adopt with SMV and the supplier or buyer can calculate time for final product.

SMV= Basic time + Allowance Where,  
Basic time = Observed time \* Rating/100

### 3.8.7. Required SMV For Different Garments:

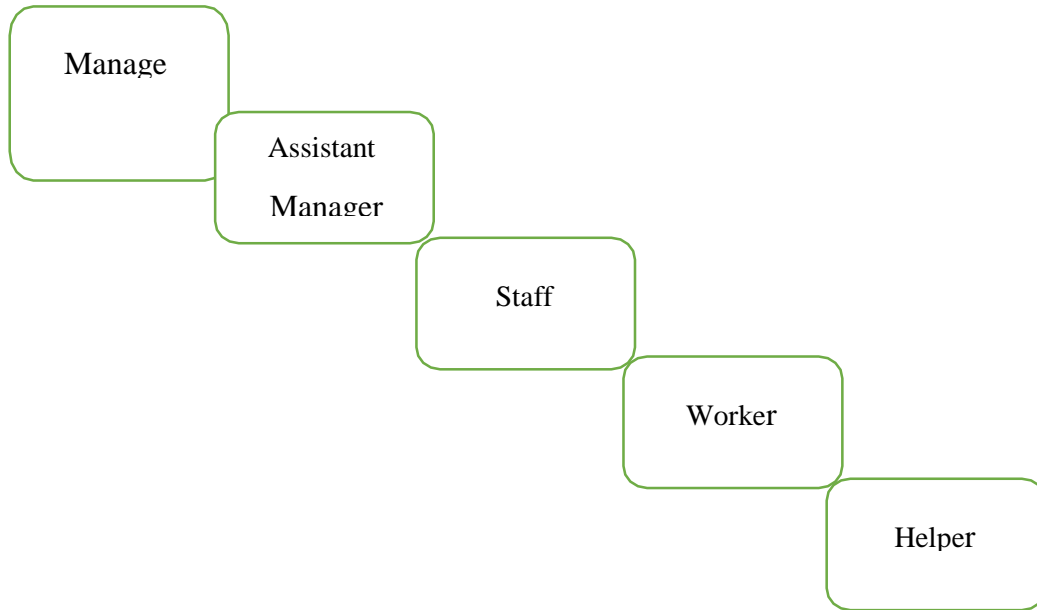
S/L	Garments	SMV
1.	Jeans pant	12-15 min
2.	Men's polo shirt	12-15 min
3.	Full sleeve shirt	16-20 min
4.	V-neck T-shirt	4-5 min
5.	Women's top	3-4 min
6.	Ladies T-shirt	5-6 min

### 3.9. Finishing Section:



Fig.3.46: Finishing section

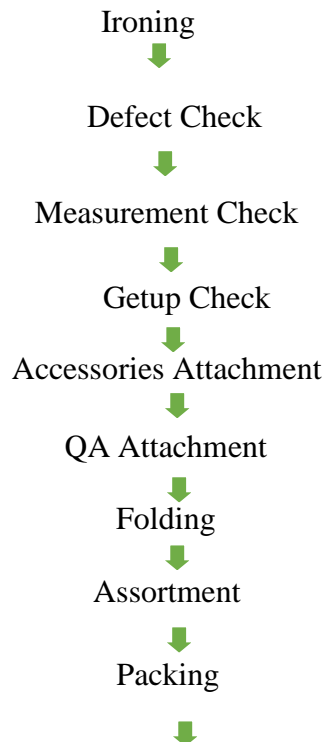
### 3.9.1. Organogram of Finishing Section:



### 3.9.2. Process of Garment Finishing:

Garment finishing is the last step of garments making. The main procedures are packing, folding, calendaring and so on.

### 3.9.3. Flow Chart of Garment Finishing:



Quality Supervision



Metal Detection



Cartooning



Shipment

### 3.9.4 Garment Pressing:



Fig.3.47: Pressing

### 3.9.5. Folding:



Fig.3.48: Folding

### 3.9.6. Packing:



Fig.3.49: Packing

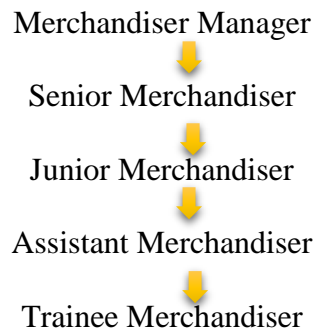


A tag and barcode is attached with the garment according to buyers demand. Sorting the specific amount of garment for cartooning and it goes through metal checking such as broken needle, zipper and button.

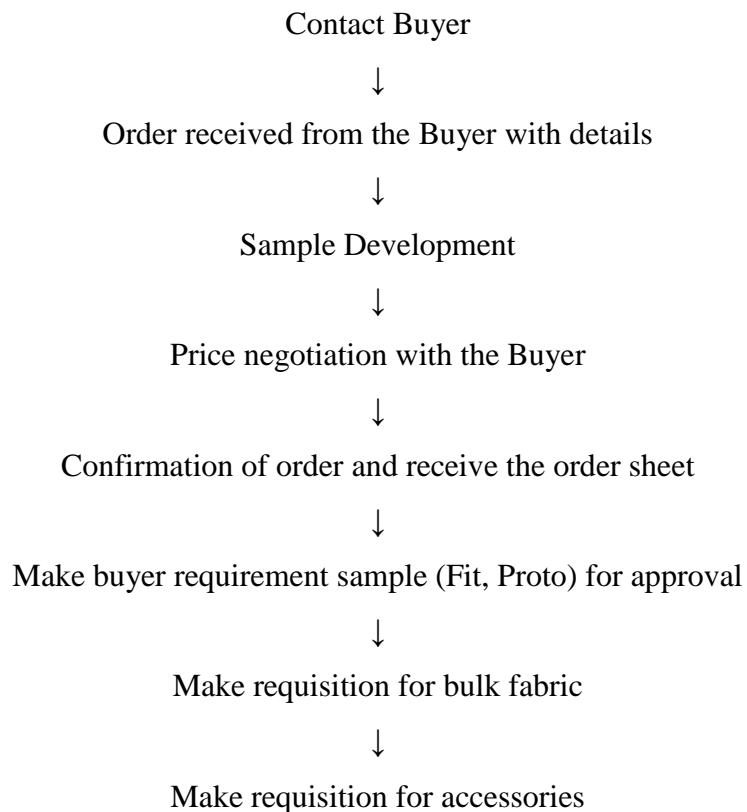
### 3.10. Merchandising:

Merchandising department plays an important role for the development of any factory. They are the key role persons who conduct with buyers and instruct factory for the required delivery.

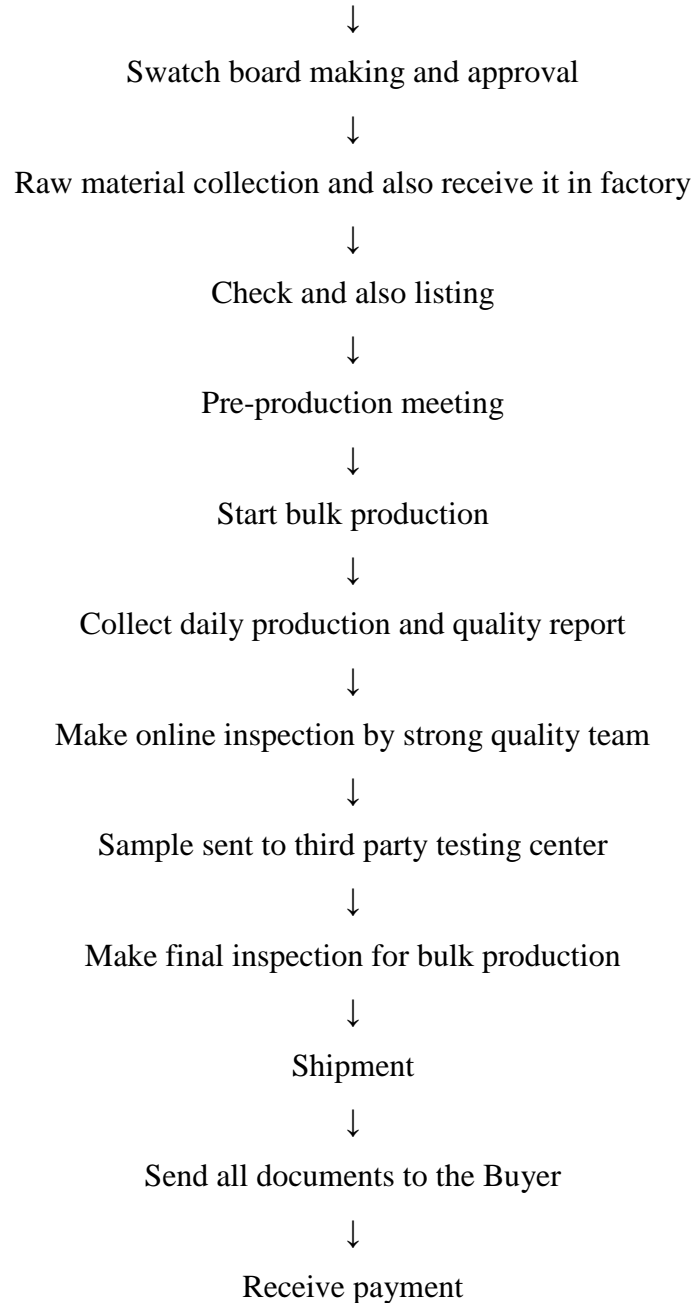
#### 3.10.1. Organogram of Merchandising Department:



#### 3.10.2. Flow Chart of Merchandising Department:







Authorized merchandiser order the knitting, dyeing, finishing, cutting department to develop the sample for buyer requisition. After getting the final approval from the byer it goes to bulk production.

## **4. Impact of internship**

#### **4.1. Knitting Section:**

- ✚ Learned about different parts of machine.
- ✚ Learned about different kinds of knit fabrics.
- ✚ Learned about knitting procedures.
- ✚ Learned about knitting order and requirements.
- ✚ Learned about machine maintenance.

#### **4.2. Dyeing Section:**

- ✚ Learned about the dyeing processes.
- ✚ Learned about the dyeing machine maintenance.
- ✚ Learned about the faults occurred during dyeing.
- ✚ Learned about the re-matching of color.

#### **4.3. Finishing Section:**

- ✚ Learned about the functions of Stenter, Compactor and Dryer machine.
- ✚ The objectives of finishing.
- ✚ Learned about the chemicals used in finishing.

#### **4.4. Cutting Section:**

- ✚ Learned about different types of cutting machine.
- ✚ Faults occurred during cutting.
- ✚ Cutting precautions.
- ✚ Learned about fabric layout.
- ✚ Understood how numbering and bundling is done.

#### **4.5. Printing Section:**

- ✚ Learned about different types of printing.
- ✚ Learned about different chemicals operation.

#### **4.6. Sewing Section:**

- ✚ Learned about different types of sewing machine.
- ✚ Different types of sewing.
- ✚ Learned about working procedures of sewing floor.

#### **4.7. Garments Finishing Section:**

- ✚ Learned about garments packing.
- ✚ Learned about garments inspection.
- ✚ Observed different procedure in washing and drying

#### **4.8. Merchandising Section:**

- ✚ Learned about enquiry sheet.
- ✚ Learned about order sheet.
- ✚ Learned about TNA.
- ✚ Learned about fabric consumption & costing

## **5. Conclusion**

## **5. Conclusion:**

Almighty Allah has allowed us to complete our internship report successfully, Alhamdulillah. Industrial attachment serves the learning opportunity to raise the inquisitiveness of our consciousness to proceed to the real life. H.R Textile Mills Ltd. (Pride Group) is a renowned industry in the textile field of Bangladesh. Administration, chain of command all are well maintained. The industry is loaded with modern day technology and machineries which are ahead of the time and also safe to work with. The working environment is superb. The rapport between the higher authorities of the industry to the bottom level is so nice. They all are adherent to meet the customer assertion by their activities. The industry is running with a number of proficient textile engineers, skillful technical and non- technical individuals. They are very sincere, co-operative and adjuvant. All the information about H.R Textile Mills Ltd. (Pride Group) in this report is so practical that one can get the desired information about the industry.