

DAFFODIL INTERNATIONAL UNIVERSITY



INDUSTRIAL ATTACHMENT

AT

NOMAN TEXTILE MILLS LIMITED

(An Enterprise of Noman Group)

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

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Finally, we must acknowledge our Parents with due respect for their constant support, patients and believe on our ability which drives us in the successful completion of this report.

ABSTRACT

This report is titled “**Report on Industrial Attachment at Noman Textile Mills Limited**”. By achieving practical knowledge from the industrial attachment it is possible to apply the theoretical knowledge in the technical field.

For any technical education, practical experience is almost equally necessary in association with the theoretical knowledge. The industrial attachment is the most effective process of achieving the practical experiences. It provides us sufficient practical knowledge about Production Management, Productivity, Evaluation, Work Study, Efficiency, Industrial Management, Production Planning & Controlling, Utilities and Maintenance of Machineries and their Operation Techniques etc.

Noman Textile Mills Limited is a modern textile industry based on knit garments production.. Our approach was to know and work with all the parameters of each section and practice with technical experts. As our academic advance study was in Weaving Technology our emphasis was in understanding and learning of Weaving.

Industrial attachment is an essential part of four years B.Sc. in Textile Engineering course of **Daffodil International University**. We had the opportunity to perform the industrial attachment with **Noman Textile Mills Limited** *During 2 Months long attachment*, we studied the Man, Machine, Material and Planning, Grey Fabric Inspection, Finished Fabric Inspection,

According to our studies in the whole chain of the factory we have prepared the following report and would like to present as our internship report. B.Sc. in Textile Engineering is the combination of theoretical knowledge and the practical experiences. The main objective of this training is to comprehend our theoretical knowledge along with the practical knowledge. It also enabled us to orient ourselves with the practical environment which is our place of future work.



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W E L C O M E

Chapter - 01

INTRODUCTION

INTRODUCTION

For any technical education, practical experience is almost equal important in association with the theoretical knowledge. By means of practical knowledge it's not possible to apply the theoretical knowledge in the practical field. Industrial attachment is the first step to professional life of student, especially of technical side. It's an indispensable part of study a practically running processing technology of an **industrial unit for** a student. University education provides us vast theoretical knowledge as well as more practical attachment, in despite of all these industrial attachment helps us to be familiar with technical support of modern machinery, skillness about various processing stages.

It also provides us sufficient practical knowledge about production management, work study, efficiency, industrial management, purchasing, utility and maintenance of machineries and their operation techniques etc. the above mentioned cannot be achieved successfully by means of theoretical knowledge only. This is why it should be accomplished with practical knowledge in which it is based on. Industrial attachment makes us reliable to be accustomed with the industrial atmosphere and improve courage and inspiration to take self responsibility.

We got an opportunity to complete eight weeks long industrial training in **Noman Textile Mill Ltd (A company of Noman Group)**, which is a 100% export oriented Weaving Industry. It has well planned & equipped manufacturing.



Chapter - 02



Project Description



2.1 Project Description

Noman Textile Mills Ltd. is company of Noman Group. Noman Group is the biggest textile group in Bangladesh. About 35 textile mills have this Noman Group. Some of textile name is given below:

- | | |
|--------------------------------|--|
| ▪ □Ismail Spinning Mills Ltd. | Spinning unit with 75,000 spindles |
| ▪ □Yasmin Spinning Mills Ltd. | Spinning unit with 50,000 spindles |
| ▪ □Sufia Cotton Mills Ltd. | Spinning unit with 55,000 spindles |
| ▪ □Talha Spinning Mills Ltd. | Spinning unit with 70,000 spindles |
| ▪ □Zaber Spinning Mills Ltd. | Spinning unit with 50,000 spindles |
| ▪ □Zubaer Spinning Mills Ltd. | Spinning unit with 40,000 spindles |
| ▪ □Artex Fabrics Ltd | Largest warp knitted fabric for curtain and lace |
| ▪ □Marium Textile Mills Ltd. | Producing a variety of synthetic fabrics |
| ▪ □Sufia Fabrics Ltd. | Producing synthetic fabric for curtain and lace |
| ▪ □Noman Textile Mills Ltd. | Weaving unit with 1200 sulzer looms |
| ▪ □Noman Fabrics Ltd. | Dyeing, Printing and finishing unit |
| ▪ □Talha Tex Pro Ltd. | Dyeing, Printing and finishing unit |
| ▪ □Zuber & Brothers Ltd. | Housing & Real Estate |
| ▪ □Zuber & Zubair Fabrics Ltd. | Largest warp knitted fabric for curtain and lace |
| ▪ □Talha Fabrics Ltd. | Weaving unit with 426 air-jet looms |
-

Noman Group is the number one exporter for home textiles. But Talha Fabrics Ltd. produce both design & hometex type fabric. Talha Fabrics Ltd. is the 28th number project of Noman Group. In 2007 the factory construction was started & the production was run in November, 2009. Talha has three modern weaving shed. Here the sizing unit is the largest unit in Bangladesh.

Total manpower at a glance:

- | | |
|-------------------------|-------------|
| ▪ Total Manpower | 2373 |
| ▪ Total Worker | 2300 |
| ▪ Total Stuff | 273 |

2.2 Management

Md. Nurul Islam	Chairman
Md. Abdullah Zubair	Managing Director.
Choton Barua	Project & Admin Manager
Morshed Alam	DGM
Omar Faruk	DGM
Abul Khaier Neyaji	Production Manager (Weaving)
Liaqot Ali	Mechanical Manager
Badrul Islam	Manager (Utility)

2.3 Company Profile

Registered Name of the Company :	Noman Textile Mills Ltd.
Group Name :	Noman Group
Name of Owner :	Md. Nurul Islam (Chairman)
Managing Director :	Md. Abdullah Zubair
Factory Address :	Mulaid,Sreepur,Gazipur.
Head Office :	Adamjee Court, Main Building (5th Floor), 115-120 Motijheel C/A, Dhaka- 1000. Phone:7176207
Year of Construction Start :	2007
Year of establishment :	November, 2009
Type of the Company :	100% Export Oriented weaving company.
Total Area :	About 40 Acres
Total Production Capacity :	About 90,000 Mtrs/Day

2.4 Vision

1. To build a true marketing led enterprise with motivated workforce, innovative vision & more value added product portfolio, customer satisfaction & understanding of global market.

2. To be one of the best leading Home Textile weaving mill in Bangladesh.

2.5 Mission

Each of our activities must benefit and add value to the common wealth of our society. We firmly believe that, in the final analysis we are accountable to each of the constituents with whom we interact namely our business associates, our fellow, citizens



Picture of Noman Textile Mills Ltd.



Chapter - 03



Project Location



3.1 Project location:

Noman Textile Mills Ltd. is a 100% weaving fabric company. This is also a company of Noman Group. This is the 28th number factory or project of Noman Group. The project is located in Maouna, Shreepur under the District of Gazipur, about 40 kilometers distance from the International Airport of Dhaka & about 10 kilometers distance from Gazipur Chowrasta.

The factors of project establishment is given in below:

- Transportation system is high.
- Energy source is available i.e. Gas, Electricity etc.
- Skilled labor is available.
- Land is available.
- Environment is friendly for textile production.
- Buyer is available.
- Communication process is high i.e. Mobile, telephone, internet etc.

3.2 Site Location:

Location description: Noman Textile Mill Ltd is near about 1 kilometre from Mawna Chowrasta Bus stop. Mawna Chowrasta bus stop is in the way of Dhaka Maymansing High way.

There are two easy way to go from Dhaka.

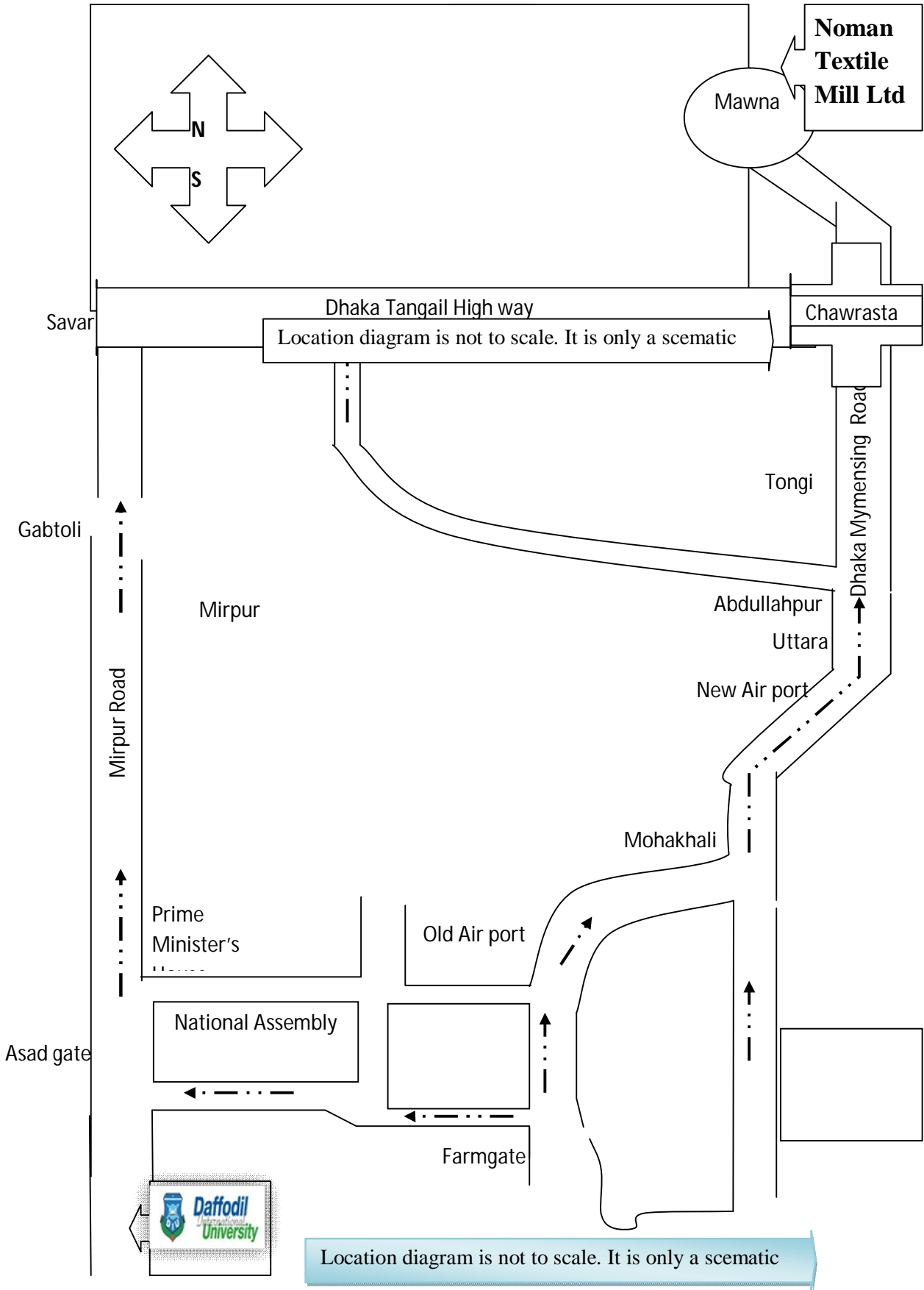
Dhanmondhi → Mohakhali → Uttara → Abdullahpur → Tongi → Joydebpur
Chowrasta → Rajendropur → Mawna chowrasta → **Noman Textile Mill Ltd**

3.3 Transport:

For the general people there are two bus service available:

1. Provati Bonossri.
2. Maymansing route coach service.

These bus's are start from Mohakhali to Maymansing.





Chapter - 04



Management System



4.1 Management System

The organizational chart of the company:

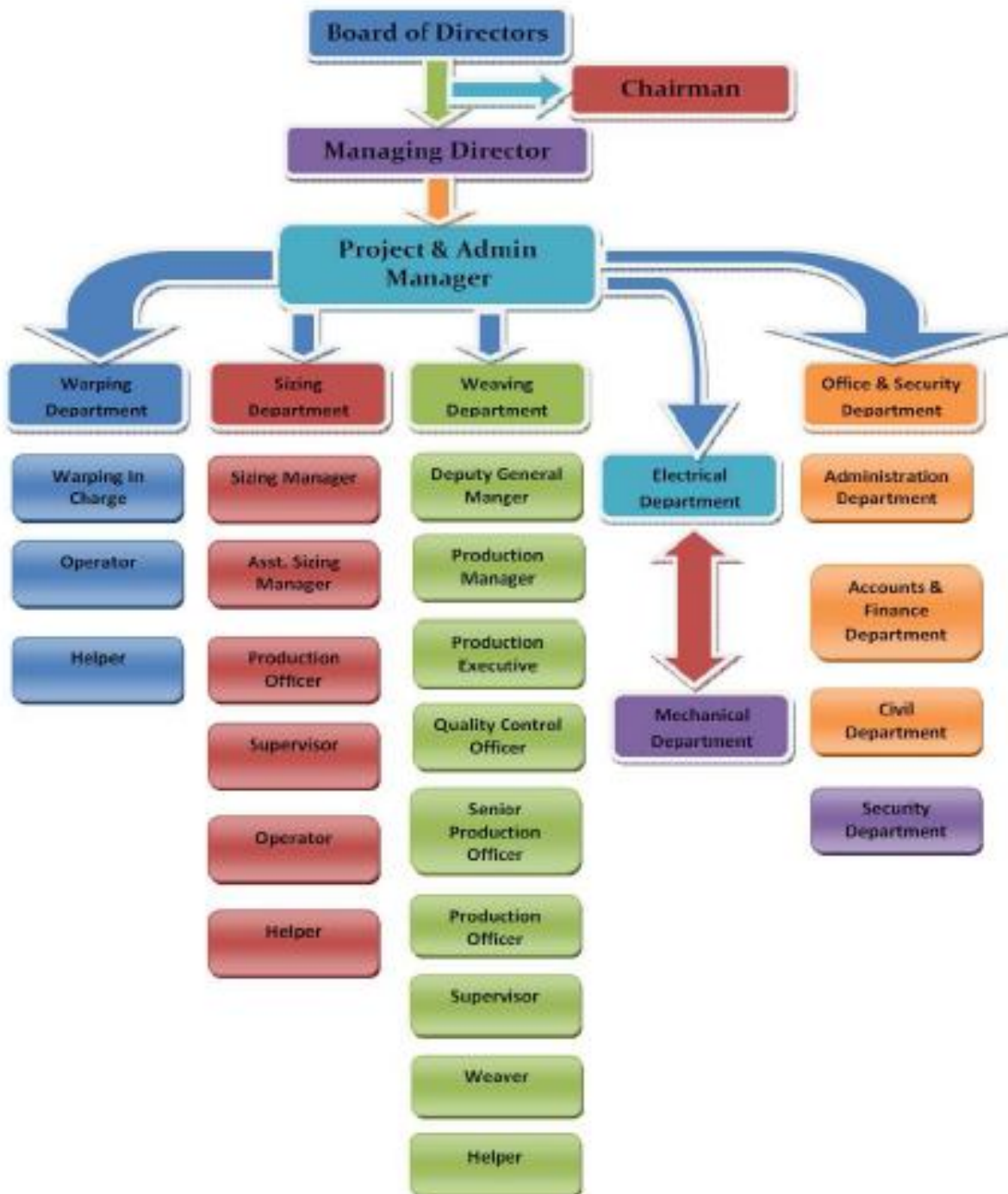


Fig: Noman Textile Mills Ltd.

4.2 Compliance

Factory are obeying and maintaining international and local law's, Human rights, Social compliance, Labor law and other rules and instruction by related department of Government. Initial audit has done by SGS Bangladesh as per BSCI standard and rating is yellow.

4.2.1 Welfare Facilities

- Induction of workers welfare committee aimed at improving workers morale, job satisfaction and
- Attendance.
- Full time free of medical service provide by a professional doctor.
- Accommodation Facility.

4.2.2 Shift change

There are three (03) shifts for operation personnel in this industry. So the shifts are changed at every 8 hours.

The shift timings are as below:

Shift Type	Time Duration
A	06:00am to 02:00pm
B	02:00pm to 10:00pm
C	10:00pm to 06:00am

Note: Administration & Management personnel work on General (G) shift of duration 9:00 am to 6:00 pm and 6 days per week.

4.2.3 Management Medium

- Intercom telephone
- Fax
- E-mail
- Written letters & Papers
- Oral

4.3 Duties & Responsibilities of Production Officer

- To collect the necessary information and instruction from the previous shift for the smooth running of the section.
- To make the junior officer understand how to operate the whole production process.
- To check the production sample with target design.
- To collect the production sample lot sample matching next production.
- To identify disputed fabrics and report to PM/GM for necessary action.
- To discuss with PM about overall production if necessary.
- To sign the store requisition and delivery challenge in the absence of PM
- To execute the overall floor work.
- To maintain loading/ unloading paper.

4.3.1 Duties & Responsibilities of Senior Production Officer

- Overall supervision of weaving section.
- Write loading / unloading time from machine.
- Program making, sample checking.
- Control the supervisor, operator, asst. operator and helper of weaving machine.
- Any other work as and when required.

4.3.2 Duties & Responsibilities of DGM (Production)

- Overall supervision of Weaving section.
- Check the different log books and report to management.
- Check the plan to control the best output.
- To trained and motive the subordinates how to improve the quality production.
- Control the supervisor, operator, asst. operator and helper of weaving machine.
- Maintenance the machinery and equipments.
- Any other work as and when required.



Chapter - 05



Layout Plan



NOMAN TEXTILE MILLS LIMITED

(উইভিং ও সাইজিং সেকশন)

EMERGENCY EVACUATION & FIRE SAFETY PLAN

জরুরী বহির্গমন ও অগ্নি নিরাপত্তা পরিকল্পনা



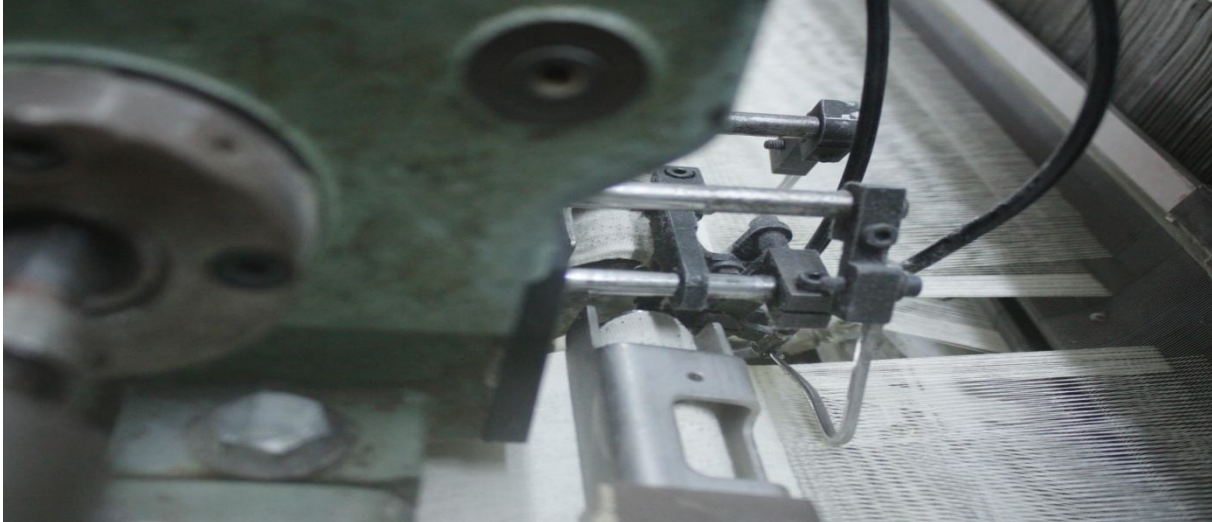
5.1 Sizing M/C



Two Brand Name



5.1.1 Weaving M/C



NOMAN TEXTILE MILLS LIMITED

(সাইজিং ও ওয়ার্পিং বিভাগ)

EMERGENCY EVACUATION PLAN

জরুরী বহির্গমন চিত্র



CO₂ অগ্নিনির্বাপন যন্ত্র
 এটি সাধারণত ইলেকট্রিক ও ইপেইনগি অগ্নি নিভাতে ব্যবহার করা হয়।

ব্যবহার বিধি

- ১। প্রথমে বাম হাতে তলায় ও ডান হাতে হাতল ধরে একটু উপরে উঠিয়ে নিজের দিকে টান দিয়ে নিচে নামাতে হবে।
- ২। তারপর সেক্ষেপে পিনটি টান দিয়ে খুলে ফেলাতে হবে।
- ৩। এখন আগনের যতটা কাছে যাওয়া সম্ভব নিয়ে তেলিভারী হর্ন পাইপটি সরাসরি আগনের দিকে তাক করে ট্রিপার চেপে ধরতে হবে/সেক্ষেপে পিনটি বাম দিকে ঘুরাতে হবে, ফ্রুত ড্রাই CO₂ বেরিয়ে আসবে।

ওয়ার্পার টাইপ অগ্নিনির্বাপন
 এটি সাধারণত কাপড়, কাঠ, বাঁশ, কাগজ ইত্যাদির আগুন নিভাতে ব্যবহার করা হয়।

ব্যবহার বিধি

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Chapter - 06



Raw Materials



6.1 Source of Raw material of yarn for Weaving

- Talha Spinning Ltd.
- Yesmin Spinning Ltd.
- Zubai Spinning Mills Ltd.
- Zaber Spinning Mills Ltd.
- Partex Ltd.
- Purbani Rotor Spinning Ltd.
- Square Textile Ltd.
- Salek Textile Ltd.
- Ashik Composite Textile Mills Ltd.

6.1.1 Buyer Name

1.	VF. Asia	16x12/102x58=61” 16x16/88x55=61” 20x16/120x60=61”	3/1 “S” Twill & 1/1 Canvas
2.	H.M.B	20x16/120x60=61”	3/1 “S” Twill
3.	Hi-Gi	20x16/120x60=61”	3/1 “S” Twill
4.	Tema	30x20/120x56=61” 30x20/114x66=61”	1/1 Canvas & 2/1 “S” Twill
5.	Li/Out	30x30/94x81=61”	1/1 Plain
6.	H & M	30x30/124x70=61”	2/1 “S” Twill
7.	Dotomos	30x30/73x64=64” 40x40/128x65=64”	1/1 CTN & 4/1 Satin
8.	Ikea	24x24/52x48=66.5” 30x30/72x68=66.5”	1/1 Sheeting & 1/1 Plain
9.	E.Boom	20x20/60x56=60”	1/1 Sheeting
10.	M&S	20x20/110x65=62”	3/1 “S” Twill

6.2 Sizing Raw materials

Starch:

***Natural Starch – Tapioca Starch**

Origin: Bangkok, Thailand.

***Modified Starch – Penetrose-50 (Maize [Corn] Starch)**

Origin: Pakistan.

Softener:

***Glisofil Extra Soft**

Origin: Holland.

***Artificial Waxes (Pinitex-K300)**

Origin: Indonesia.

Bonding Agent:

***Polyvinyl Alcohol Resin (PVA-217PK)**

Origin: Singapore.

***Elastex-3040**

Origin: Pakistan.

***Size CA**

Origin: China.

6.3 Design in weaving fabric

- Plain Fabric
- Twill Fabric
- Satin Fabric
- Dobby Fabric
- Check Fabric
- Stripe Fabric
- Poplin Fabric
- Canvas Fabric
- Oxford Fabric.



Chapter - 07



Production Planning & Sequence of Operation



7.1 Production Planning & Sequence of Operation

Fabric Department

Fabric department has following six sub-departments

1. Warping
2. Sizing
3. Drawing & Denting
4. Knotting
5. Weaving
6. Inspection

The factory working flow Chart is given Below

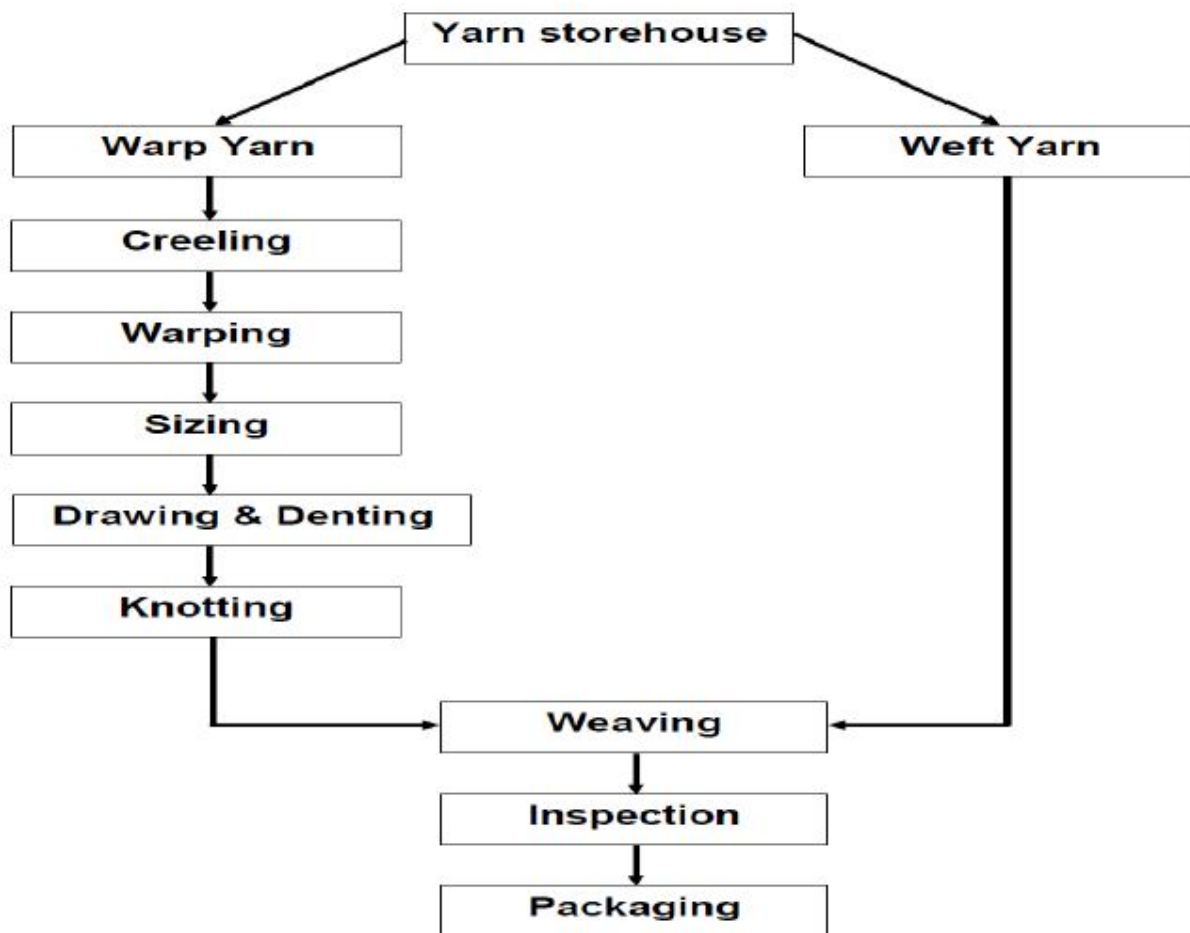


Figure : Weaving Flow Chart



Chapter - 08



Warping Department



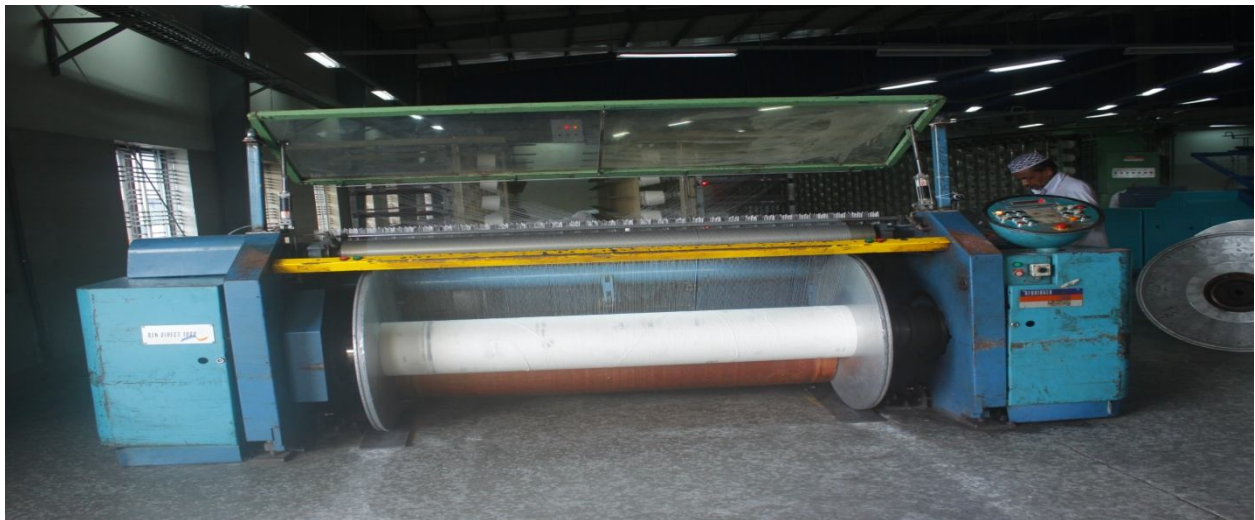
8.1 Warping Department

There are two types of warping is running here in Talha Fabrics Ltd. These are given in below.

1. Direct Warping.
2. Sectional Warping.

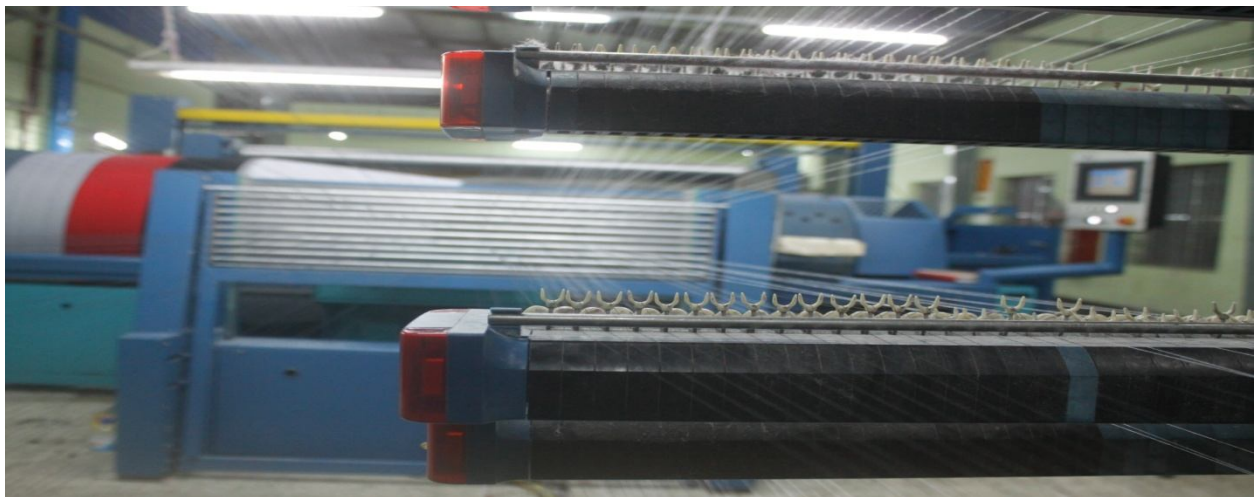
8.1.1 Direct Warping Section

There are two types of Direct Warping Machines. The Machines description are given in below.



01-Picture-Benninger-Direct Warping.

Machine Name	Benninger
Machine Type	Direct warping m/c
No. of m/c	4
Country Origen	Swizerland
M/C RPM	600-1000
Year	1999
Creel Capacity	640
Creel Type	V



02 Picture: West Point (Direct Warping M/C)

M/C Name	Benninger
Model	CH-9240
M/C Type	Sectional Warping m/c
No. of m/c	2
Country Origin	Switzerland
RPM	800-1000
Year	1999
Creel Capacity	770-950
Creel Type	H

8.2 WARPING

In general terms, warping is transferring many yarns from a creel of single-end packages forming a parallel sheet of yarns wound onto a beam or a section beam.

The warp beam that is installed on weaving machine is called the weaver's beam. weaver's beam can contain several thousand ends and for different reasons it is rarely produced in one operation.

There are four types of warping, which are as follows

1. Direct Warping
2. Indirect or Sectional Warping

8.2.1 Direct Warping

In direct warping, the yarns are withdrawn from the single-end yarn packages on the creel and directly wound on a beam.

Direct warping is used in two ways:

- a) It can be used to directly produce the weaver's beam in a single operation. This is suitable for strong yarns that do not require sizing and when the number of warps on the warp beam is relatively small. This is also called direct beaming.
- b) It can also be used to make smaller, intermediate beams called warper's beams. These smaller beams are combined later at the slashing stage to produce the weaver's beam. This process is called beaming.

8.2.2 Indirect or Sectional Warping

In Indirect warping, a section beam is produce first. It is also called band warping or drum warping. The section beam is tapered at one end. Warp yarn is wound on the beam in sections, starting with the tapered end of the beam. Each section has multiple ends that are traversed together slowly during winding along the length of the section to form the angle. Due to the geometry of the yarn sections, the last section on the beam will have a tapered end that will make

the whole yarn on the beam stable. It is important that each layer on the beam contain the same number of yarns. The same length of yarn is wound on each section. After all the sections on the beam are wound completely, then the yarn on the beam is wound on to a regular beam with flanges, before slashing. This process is called rebeaming.

8.3 Creel

It is an arrangement where packages are placed on pegs. Single threads are taken from the packages passed through a tensioner, a guide and then on the front winding head. Function is to place all the threads in a sheet form so that whenever a thread breaks it can be easily traced out. It may be either of the rectangular type or "V" shape. Packages may be stationary or moving. It may be a simple creel or a magazine creel. It is build up of staves that are held vertically by top and bottom boards. The creel is so designed that staves are fixed in a certain order at a given distance and at an angle that yarn goes straight without entangling with the adjacent threads. The number of packages in a creel must be decided on the economic merit of any given situation with warper's bobbin its capacity is from 400 --600 packages; while with cones and cheeses the range is wider, i.e., 600 -- 1000 packages. In deciding about creel size, weight of yarn on supply packages, floor space available and number of beams required must all be considered.

8.3.1 Types Of Creel

Horizontal Creel

V Creel

Single End Creel

Continuous Chain Creel

Truck Creel

Magazine Creel

Automatic Creels

8.3.2 COMPARISON OF H AND V CREEL

H-CREEL	V-CREEL
Parallel warping is used for sectional warping as well as for direct warping.	V-creel is used for only in direct warping.
Needs proper yarn guides.	No need of yarn guide
Suitable for comparatively low speed warping.	Suitable for high speed yarn warping.
Provide low tension on whole beam.	Provide uniform yarn tension across the whole beam.
No free yarn from creel to the warping machine because proper yarn guides are required.	Free yarn run from creel to the warping machine.
More time consumable because of low speed.	Less time consumable.
More space is consumed.	Less space is consumed.

8.4 Beam warping

- 1) The ability to stop the beamer before the ends are buried on the beam is paramount.
- 2) Either the beam must be inched forward to locate the buried end – possibility of locating on the wrong side of an adjacent end – crossed end – slasher stoppages or yarn storage device must be used between the headstock and the creel which permits the beamer to be reversed until the end is uncovered – more satisfactory but requires additional equipment.
- 3) All the latest beam warping m/c are spindle driven, whose speed is controlled with specially programmed invertors
- 4) Drum drives depends on the friction between the drum and the yarn.
- 5) Latest machines required to produce quality beams at speeds as high as 1500m/min are equipped with special breaking system – three hydraulically-controlled disk brakes at the side of the beam and a control is provided to ensure constant braking distance at any wound dia.
- 6) Tension variation between ends from various parts of the creel can have adverse affect on the beaming eff. In most creels the ends at the back have high tension than ends at the front. Hence the ends at the center of the beam normally have less tension



Chapter - 09



Sizing Department



9.1 Sizing Department

Noman Textile Mills Ltd. has one of the largest sizing section in Bangladesh. It has 09 sizing machines. Here in this industry use 03 types of sizing machines. All the sizing machine details & its machines specification are given in below.

9.1.1 Machine-1

Brand	Sucker Muller
M/C Name	Sizing Machine
No. of M/C	2
Country Origin	Switzerland
Year	1996
Total Cylinder	10
Total Size Box	02
Total Beam Creel	16
Beam Diameter	1000
Width	400



From right side ... this m/c .

9.1.2 Machine no. 02

Brand	West Point
Machine Name	Sizing M/C
No. of m/c	01
Country Origin	USA
Year	1997
Total Dryer Cylinder	14
Total Size Box	02



9.2 Sizing Chemical Use

Starch:

***Natural Starch – Tapioca Starch**

Use: For Coarser type yarn.

Origin: Bangkok, Thailand.

***Modified Starch – Penetrose-50 (Maize [Corn] Starch)**

Use: For Finer type yarn.

Origin: Pakistan.

Softener:

***Glissofil Extra Soft**

Use: Make yarn soft & smooth.

Origin: Holland.

***Artificial Waxes (Pinitex-K300)**

Use: Make yarn surface smooth.

Origin: Indonesia.

Bonding Agent:

***Polyvinyl Alcohol Resin (PVA-217PK)**

Use: Increase starch stability with yarn.

Origin: Singapore.

***Elastex-3040**

Use: Increase starch stability with yarn.

Origin: Pakistan.

***Size CA**

Use: Increase starch stability with yarn.

Origin: China

9.2.1 Operation staff for sizing section

- i) Sizing Manager
- ii) Asst. Manager
- iii) Production Officer
- iv) Electrical Engineer
- v) Mechanical Engineer
- vi) Labor
- vii) Helper

9.3 Sizing

The weaving process requires the warp yarn to be strong, smooth and elastic or extensible to a certain degree. To achieve these properties on the warp yarns, a protective coating of a polymeric film forming agent (*size*) is applied to the warp yarns prior to weaving; this process is called slashing or sizing. This size material is later on removed in the finishing operation called desizing.

The main purposes of slashing are

- To increase the strength of the yarns
- To reduce the yarn hairiness that would cause problems in weaving process.

9.4 Sizing Machine

A sizing machine is used to apply the size material to the yarns. The major parts of the sizing are the creel, size box, drying units, beaming and various control devices.

The size box is probably the most important section of the sizing machine. During the sizing process, the sheet of yarns is passed through the size box which contains the hot water solution or mixtures of sizing agents. The yarns pick up the required quantity of size solution in the size box, any excess size is squeezed off as the yarns pass through squeeze rolls. Depending on the size material, warp quality and density, single and double immersion rolls and single squeeze and double squeeze configurations are used. Multiple size boxes can also be employed. In general, single box sizing machines have two squeezing rollers and two box machines have a single roller in each box. It is important that the rollers provide uniform squeezing pressure. The squeezing system determines the degree of size pick up to a large extent. While providing size consistency, the roll pressure should be adjusted to get around 125—130% wet pick up for cotton yarns, 110—115% for poly/cotton and 95—105% for polyester. On average, open-end yarns pick up around 10—15% more wet size than a comparable ring spun yarn. Therefore, about 10% more water should be added to get the same add-on. The bottom rollers are usually made of steel and the top rollers are rubber coated.

The critical parameters to watch in the sizing process are size homogeneity, constant speed of the sizing machine, constant size concentrations and viscosity. Flooding or dry zones should be prevented in the size box. Temperature of the size box is important for proper size pick up. For 100% polyvinyl alcohol (PVA) sizing, a temperature of 70 – 75 °C is recommended. Constant size temperature can be obtained in two ways:

1. Direct heating in which steam is injected into the size.
2. Indirect heating in which steam flows in pipes around the double walled size box.

A cooker is used to prepare the size; powdered size is metered into weight stations and then transferred to the cooker. Size mix is also called size liquor. Liquor concentration and the amount of water absorbed by the warp after the squeezing rollers are measured using a microwave measuring head, which enables the degree of sizing to be calculated. The degree of sizing can be calculated as the absolute degree of sizing or as a relative value. If the measured degree of sizing is different than the set data, then the squeeze pressure in the box is changed with a controller. The squeeze pressure is also adjusted according to speed of the system. Rotor cooker is normally used for size preparation, in a rotor cooker, the size is prepared without pressure. The ingredients are added cold and mixed with a rotor and raking agitator. Additional breaking elements can be used to obtain high shearing effect. The size ingredients are automatically fed-in to the size box. After the size box, the yarns go through the dryer section. The wet yarns are dried by using hot air, infrared radiation or cylinder drying. Cylinder drying is done using steam heated hot rolls which are called drying cylinders. Sometimes, a combination of drying methods is used on the same machine. The drying temperature is critical; excess temperature increases the penetration of size into the yarn, which can lead to excessive hairiness and even yarn breakage. The typical temperature range is 80 – 105°C. In cylinder machines, the evaporation rate can be calculated as the mass of water evaporated per unit contact area between warp and drying cylinder per unit time. A typical evaporation rate in a modern slasher is around 13 kg/hr/m². The maximum recommended machine speed is 120 m/min. Splitting the warps after sizing and separate drying reduces the risk of adjacent yarns sticking together which reduces the number of yarn breaks. For air-jet weaving, a minimum of 75% open space on the dry cans is recommended for any type of yarn.



Chapter - 10



Drawing-in, Denting & Knotting Department



10.1 Drawing-in, Denting & Knotting Department

10.1.1 Introduction

After finished the sizing process, when the weaver beam is completely ready, it is necessary to mount this beam on the loom machine for weaving. There are two methods which are followed to prepared the beam for mounting on the loom.

These are:

- Drawing-in & Denting.
- Warping tying or knotting.

10.1.2 Drawing-in

After sizing, the sized warp beam is prepared further to be placed on the loom. Drawing-in is the entering of yarns from a new warp into the weaving elements of a weaving machine namely drop wires, heddles and reed, starting up a new fabric style. Tying-in the new warp ends to the depleted warp is done when a new pattern is not required.

A drop wire is a narrow metal sheet that is hung in the air by the tensioned warp yarn. If the warp yarn is broken, then the drop wire drops and touches a metal bar that extends along the width of the machine. This contact between the drop wire and metal bar closes an electrical circuit and shuts down the machine immediately. There is a drop wire for each warp yarn.

After drop wire, the warp yarn goes through the heddle eye (there is only one warp yarn per heddle eye). This is done according to a plan called drawing-in-draft, DID. Then, the yarn is threaded through the reed spaces. A reed space is the opening between two dents in a reed. In general, one, two or three warp yarns are passed through one reed space. The reed plan specifies the number of yarns per reed space. The number of yarns depends on the diameter of the yarns

and the dent opening; each yarn should be able to move freely up and down in the reed space independent of the other yarns.

10.1.2 Drawing in process

The operation procedure for drawing in is enumerated under the following points.

- Generally for new quality drawing is done on the machine.
- When article is completed the machine is ready for drawing in.
- As per quality drawing in charge make a program for drawing in.
- After drawing in / denting is complete then all frame reed are set in the machine.
- Then new yarn from the beam pulled and set in the loom with dropper, healds properly positioned and new yarn are tied with the old piece of cloth wrapped around the pressure roller with a small number of knot.

10.1.3 Operation staff for drawing section

- Drawing in charge
- Drawer
- Helper

10.2 Warping tying or knotting

The method has some limitation to used where an exactly same article or quality of fabric is to be made that is already running on the loom before knotting the following points should be consider

- The total number of warp ends should be same as that of already running into the loom.

The count of warp yarn and weave design be same.



Picture: Knotting Process is running.

10.2.1 Warp tying process

The operation procedure for warp tying is enumerated under the following points

- The beam is loaded on to a specific loom and mounted on beam bracket. The tying frame is set in the proper position.
- The ends of the old beam and the ends of the new beam are accurately brushed and gripped by the frame so that older and new ends makes a upper and lower set of yarn placed in proper tension.
- Then warp tying head is mounted over the tying frame .
- Then machine is started, operator will check the correctness of the knot and start again by switch.
- Thus knotting will be completed up to the end of set tying upper set of older yarn with lower set of new warp.

- Thus knotting is completed tying head and frame are removed, the old pieces of knotted yarn is pulled through the frame and thus new warp set is allowed to pass and made reedy for run.

10.2.2 Operation staff for knotting section:

- i) Knotting in charge
- ii) knotter
- iii) Helper

10.2.3 Equipment Used

For Tying a sized and leased beam with the already running beam in the loom. Following typing of machines are used: Knotex warp typing machine for mono color fabric.

10.3 Safety

In order to ensure floor and personal safety are instructed to following the safety guideline given bellow:

- Smokey is strictly prohibited in the department
- Operators are instructed not to touch any rotating or operating parts until the machine comes to complete
- Put a sign on the machine when knotting work are progress.



Chapter - 11



Weaving Department



Weaving Department

Weaving Section

There are 03 weaving sheds are running

Weaving Shed Number	No. of looms
01	272
02	112
03	42

Weaving Loom Types:

All air jet looms are used in Noman Textile Mills. Ltd. There are 04 types of looms are running in this industry. The loom specification details are given in below;



Machine Name	Picanol Omni
Model	OMNI-2-R & OMNI-4-R
Loom Width	190cm or 280cm
Machine Type	Air Jet Loom (Positive Shedding)

Shedding Type	Open Shed
Number of Machines	176
Country Origin	Belgium
Machine RPM	600-850
Color Available	2 Colors or 4 Colors
Year	1993
Shedding Type	CAM Shedding
Machine Pressure	6 to 12 Bar
No. of Harnesses	10
Production Per Day	300-350 Meters Fabric.



02.Picture: Picanol Omni (Air jet Loom-Dobby Shedding)

Machine Name	Picanol Omni
Model	OMNI-2-F & OMNI-4-F
Loom Width	190cm
Machine Type	Air Jet Loom (Negative Shedding)
Shedding Type	Bottom Shed

Number of Machines	100
Country Origin	Belgium
Machine RPM	500-700
Color Available	2 Colors or 4 Colors
Year	1993
Shedding Type	Electronic Dobby Shedding
Machine Pressure	6 to 12 Bar
No. of Harnesses	16
Production Per Day	250-300 Meters Fabric.



03.Picture: TSUDAKOMA-ZAX (Air Jet Loom)

Machine Name	TSUDAKOMA
Model	ZAX
Loom Width	190cm & 380cm

Machine Type	Air Jet Loom (Positive Shedding)
Shedding Type	Open Shed
Number of Machines	120
Country Origin	Japan
Machine RPM	550-800
Color Available	2 Colors
Year	1997
Shedding Type	CAM Shedding
Machine Pressure	6 to 8 Bar
No. of Harnesses	8
Production Per Day	220-300 Meters Fabric.



04.Picture: Toyota – Toyoda (Air Jet Loom)

Machine Name	Toyota - Toyoda
Model	JAT 610
Loom Width	210cm

Machine Type	Air Jet Loom (Negative Shedding)
Shedding Type	Open Shed
Number of Machines	30
Country Origin	Japan
Machine RPM	6000-750
Color Available	2 Colors
Year	2000
Shedding Type	CAM Shedding
Machine Pressure	7 Bar
No. of Harnesses	8
Production Per Day	250-300 Meters Fabric.

Operation staff for drawing section:

- i) Director General Manager
- ii) Production Manager
- iii) Production In charge
- iv) Quality Control Officer
- v) Sr. Production Officer
- vi) Production Officer
- vii) Supervisor
- viii) Weaver
- ix) Labor
- x) Technician
- xi) Cleaner

WEAVING:

The process of producing a fabric by interlacing warp and weft threads is known as weaving. The machine used for weaving is known as weaving machine or loom. Weaving is an art that has been practiced for thousands of years. The earliest application of weaving dates back to the Egyptian civilization. Over the years, both the process as well as the machine has undergone phenomenal changes. As of today, there is a wide range of looms being used, right from the simplest handloom to the most sophisticated loom.

BASIC WEAVE DESIGNS

There are three basic weaves:

- **Plain weave**
- **Twill weave**
- **Satin Weave**

Most of the other weaves are derived from these three basic weaves. The immediate derivatives of these three structures are warp rib, filling rib, and basket weave.

Plain Weave

Plain weave is the simplest of all weaves. It has one-over one-under interlacing for both warp and filling yarns, therefore, the plain weave formula repeats on two warp and two filling yarns. Plain weave requires only two harnesses.

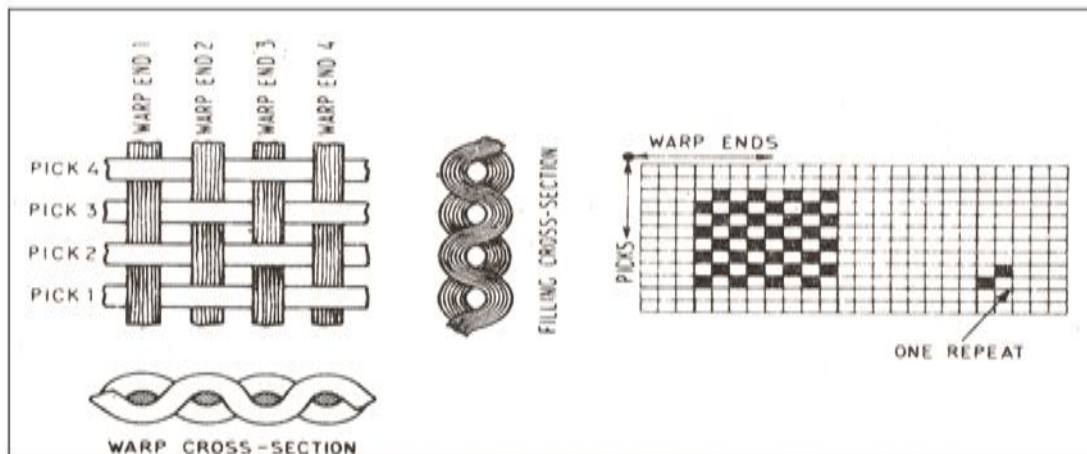


Fig: Plain Weave Structure

Warp Rib

Warp rib formula has 1/1 interlacing in the filling direction and an interlacing pattern different than 1/1 in the warp direction. The result is the ribs across the fabric in the warp direction, caused by the grouping of filling yarns.

The repeat units of all warp ribs have two warp yarns. The first warp follows the formula and the second warp does the opposite. Therefore, any warp rib design requires a minimum of two harnesses. The number of filling yarns in the repeat unit is the sum of the digits in the warp rib formula.

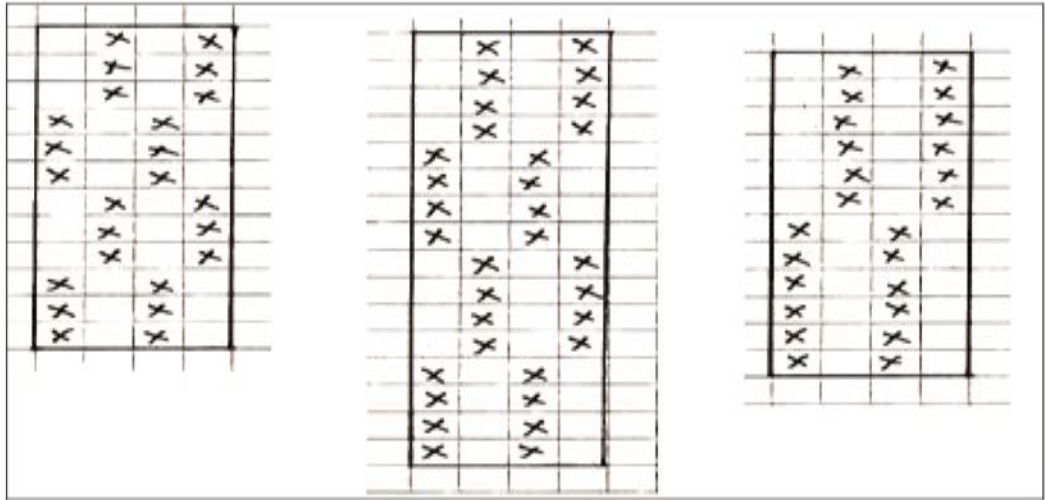


Fig: Warp Rib Weave Structure

Filling Rib

Filling rib formula has 1/1 interlacing in the warp direction and an interlacing pattern different than 1/1 in the Filling direction. The result is the ribs across the fabric in the Filling direction, caused by the grouping of warp yarns.

The repeat units of all Filling ribs have two Filling yarns. The first Filling follows the formula and the second Filling does the opposite. Therefore, any Filling rib design requires a minimum of two harnesses. The number of warp yarns in the repeat unit is the sum of the digits in the filling rib formula.

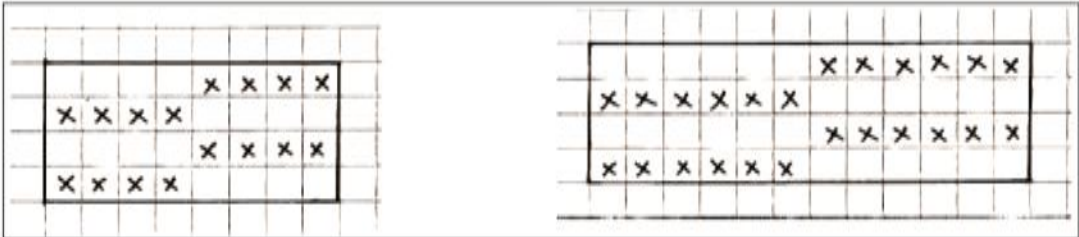


Fig: Filling Rib Weave Structure

Basket Weaves

Combining the warp and filling ribs produces basket weaves i.e. warp and filling yarns are grouped and they interlace together. The number of warp and filling yarns in the unit cell is equal to the sum of the digits in the formula. The basket weaves require a minimum of two harnesses.

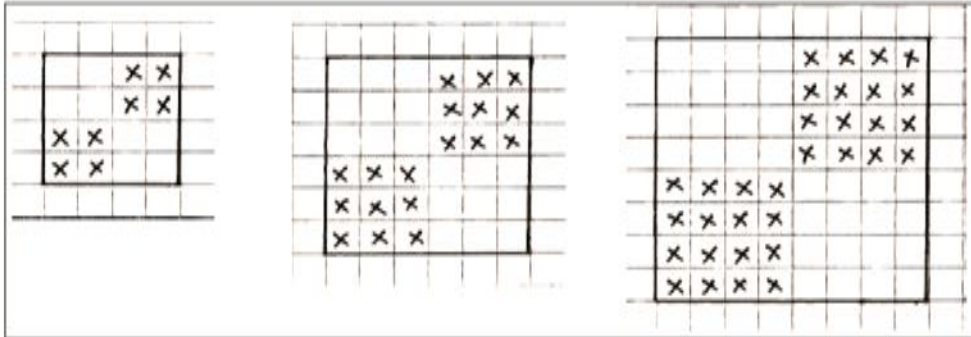


Fig: Basket Weave Structure

Twill Weave

Twill Weave is produced in a stepwise progression of the warp yarn interlacing pattern. The interlacing pattern of each warp yarn starts on a different filling yarn and follows the same formula. These results in the appearance of a diagonal line called twill line in the fabric, which is then characteristic of this design. Depending on the direction of the twill line, the twill weaves are called right-hand or left-hand twills.

The sum of the digits in the formula determines the unit cell of the design, which also gives the minimum number of harnesses, requires weaving the design; at least three harnesses are required for a twill weave.

Common twill, Steep twill, Reclining twill and broken twill are the different variations of the twill weave.

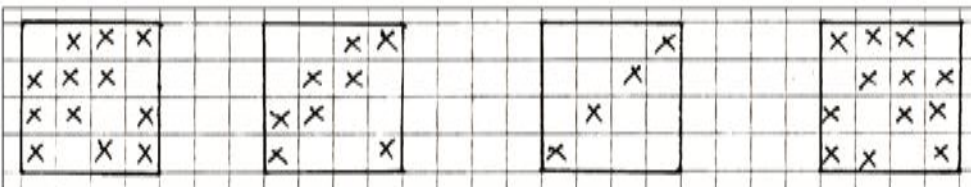


Fig: Twill Weave Structure

Satin Weave

In satin weave, one yarn has a long float over several of the other yarns on one side of the fabric. A yarn is considered to have a float (knuckle) if it stays over or under more than one other yarn. If a yarn is brought to the top surface of the fabric, it is referred to as a 'raiser', if it is brought down to the back of the fabric, it is called "sinker". At least five harnesses are required to for a

satin weave, which is named after the minimum number of harnesses requires making it, e.g., 5-harness satin, 7-harness satin, etc.

Satin waves can be classified as warp faced or filling faced. If the long warp float is on the top surface of the fabric, the design is called warp faced. If the long filling float is on the top, the design is called filling faced or sateen.



Fig: 1/4 Sateen & 4/1 Satin Weave Structure

Shedding Systems

There are four shedding systems used to provide manipulation to the warp yarns:

- 1. Crank Shedding**
- 2. Cam Shedding**
- 3. Dobby Shedding**
- 4. Jacquard Shedding**

Crank Shedding

This is the simplest shedding system. In this system, the crankshaft of the weaving machine provides the harness motion. This system is used only for plain weave and its derivatives.

Cam Shedding

A typical cam system can handle weave patterns with up to 14 different harnesses. Cam shedding mechanisms are relatively simple. A pair of cams is sufficient to weave plain fabric. A cam is a disk that transforms a rotational motion of its own to a reciprocating motion of a follower. The transfer is done by means of the cam's edge or a groove cut in its surface.

Cams with weave pattern profiles rotate to deliver lifting and/or lowering instructions to harnesses. A typical cam system can handle weave patterns with up to 14 different harnesses. Cam shedding mechanisms are relatively simple and inexpensive to design and maintain, they are more reliable for producing fault free fabric and they do not restrict the weaving machine speed. A pair of cams is sufficient to weave a plain fabric. The main disadvantage of the cam shedding mechanisms is their restricted patterning possibilities. Another disadvantage is that, when the weave has to be changed, it is usually necessary to change or rearrange the cams which is time consuming and not practical for frequent pattern changes.



Chapter - 12



Testing Lab Section in Noman Group



12.1 Testing Lab Section in Noman Group

12.1.1 INTRODUCTION

It has a mini testing Lab department but we know that it is part of Noman Group, so they sent for testing their product quality to the ZnZ Fabrics Ltd. The ZnZ Fabrics has one of the best lab in the Bangladesh & this company also a part of the Noman Group. The process lab in ZnZ Fabrics Ltd. is a modern and developed lab in which latest machinery and testing equipment is present to ensure that the products developed are high quality and meet the requirements of customers. The lab is ISO-9000 : 2000 certified.





Some pictures of NTML (LAB)

This lab works for only to make a sample of Noman Textile Mills Ltd.

12.2 RESEARCH AND DEVELOPMENT

- This section of application services works on new chemicals as dyes and different agents marketed by chemical industries. The chemical industries send various newly developed chemicals to the lab where the R & D section tests it for some basic properties.
- New processing techniques are also tested in the department for continuous advancement of technology owned by the mill.
- This department eliminates the problems which may occur during various stages of processes.
- During processing some removable faults as oil stains etc are sent to lab by the production staff where it is tested with various chemicals and the best suited chemical is suggested to the production staff for correction.
- Shade matching is done during running lots and also when a sample is send by customer

12.2.1 TESTING LAB

The testing lab is subdivided as

- Raw Material Testing
 - -At the Yarn lab, physical testing of the yarn purchased from the different Spinning mills is done
- Fabric Testing Services
 - There are number of tests performed on export fabric. The tests to be performed and their specs are specified by customer.

12.2.2 LAB REPORTS

Lab reports of a running lot are constantly maintained. After each process a sample for testing is sent by the production staff usually after many meters of run.

Lab reports contain information about various tests performed according to customer requirements and their results with remarks of responsible staff about the fabric.

12.3 FAULTS OF WARPING

- Stop motion does not work on creel and on warping drum as a result broken ends are not traceable for knotting.
- Chain breakages
- If frictional drum should not be kept in a polished state, then thermal damages occur due to abrasion.
- Brake could be inefficient.
- Sprockets are jammed.
- If comb do not move properly then there is a chance of cutting of comb due to friction with yarn.
- Tension supplied if varied it causes breakages or loosening in yarn.
- If speed of warper increase than yarn sheet may break.

12.3.1 FAULTS IN RAW MATERIAL

- Neps
- Long thick places (in case of non slubs yarn)
- Short thick places (in case of non slubs yarn)
- Thin places
- Weak places
- Count variation
- Hairiness

12.3.2 FAULTS IN PRODUCT

- Misalignment of yarn sheet if the yarn sheet is not properly adjusted
- Uneven package density
- Too soft package winding
- Package could not be in uniform density

12.3.3 FAULTS IN RAW MATERIAL:

The main causes of the dye ability variations in yarn are:

- Immature fibres
- Dead fibres
- Vegetable matter or other foreign matter
- Wrong twist
- Bad splice
- Neps
- Count variations

12.3.4 SIZING FAULTS

- Pressure rolls do not work properly
- Squeezing rollers do not work properly

12.3.5 WEAVING FAULTS

- Dropper will not fall
- Sensors do not work properly
- Problem in electrical panel
- Problem in electronic card
- Wear and tear of temple
- If dust comes in nozzles



Chapter - 13



Inspection Department



13.1 Inspection Department

13.1.1 INTRODUCTION

Quality is ultimate concern; every single yard of the fabric goes through inspection department and rated by a point count system to ensure that quality is up to standard before packing. Defective fabric pieces are rejected and sold as seconds and relatively minor defective points are marked clearly using stickers to alert cutters.

13.1.2 PROCESS

Fabric batcher is set at the back side of machine equipped with rollers which provides fabric unwinding. Inspection table is laminated white to enhance the defect identification. Four tube lights are provided to optimize the lighting. Measuring counter is provided in front of the inspection table for controlling length. It has forward, reverse, start and stop button controls. Inspection is carried out on slanting glass plate table. The cloth is pulled over the glass plate by a variable speed motor and different cloth defects are recorded for quality control purpose. They inspect the fabric according to 4 point system. After inspection fabric is wound on roller.



Inspection Part of NTML

13.1.2 DEFECTS

- Removable defects
- Non-Removable defects

13.1.3 REMOVABLE DEFECTS

Removable defects are those defects which are removed by washing and by cutting.

Defects are:

- * Sizing stains, oil stains
- * Slubs
- * Hole

OIL STAINS

When fabric gets spots of oil lubrication from any part.

SLUBS:

It is the collection of the threads at the surface of the fabric. Similarly fibers present in the form of bunch at the fabric are called slubs. This defect is removed by combing.

HOLE:

When fabric passes through temple it produces holes on the fabric due to its wiry surface.

13.1.4 NON REMOVABLE DEFECTS

Those defects which cannot be removed by mending and these are count in fabric grading

JALA

In warp and weft direction there is a gap, it looks like that some warps or wefts are missed.

CRACKS

During weaving when m/c stops and again starts running then there is a gap between the two wefts. It seems like that the beating is not done properly.

PATTI

It is the dark color or thick weft lines in the fabric.

DOUBLE PICK

The two or more threads are inserted at the same place. It is somewhat embossed and occurs at the full length of the fabric.

BROKEN PICK

If the double or thick yarn is inserted 1/4 or 1/2 width of the fabric then it is known as cut or broken pick.

BROKEN END :

When the warp end is broken.

KNOT:

It comes due

FINGER MARK:

It comes when a person touches the ends.

CREASE MARK:

Creases occur due to improper finishing.

RONG DENTING:

When more yarns are passed through dents.

TIGHT END:

When warp end becomes tight due to tension in dyeing.

COARSE END:

It comes when warp end is coarse.

MISS PICK:

If the weft yarn is missing from any place of fabric then it is known as miss pick.

REED MARKS:

The lines are formed on the fabric due to reed movement and this defect is called reed marks.

STARTING MARKS:

That mark which is due to the beating motion of the loom is called starting mark.

13.2 FABRIC GRADING:

A GRADE FABRIC

If less than 40 points comes in 100 meter fabric then it is considered as A grade fabric.

B GRADE FABRIC

If 41 to 60 points comes in 100 meter fabric then it is considered as B grade fabric.

C GRADE FABRIC

If 61 to 80 points comes in 100 meter fabric then it is considered as C grade fabric.

FOUR POINTS SYSTEM

Size of Defects	Penalty
3 inches or less	1 point
Over 3 but not over 6	2 points
Over 6 but not over 9	3 points
Over 9 inches	4 points

13.2.1 Classification of Inspection Fabric

< 40 points = A
41-60 points = B
61-80 points = C
80 above = Reject

13.2.2 PACKAGING

Each roll or fold of fabric is packed with air-tight heat sealed plastic to protect the roll from possible damages that may be caused during shipment.



Chapter - 14



Maintenance Department



14.1 Maintenance Department

14.1.1 Process definition

Maintenance is a process by which equipment is looked after in such a way that trouble free. Services and increased machine life can be ensured and specific product quality required by the customers is sustained.

14.1.2 Types of maintenance

Maintenance			
Preventive Maintenance		Corrective Maintenance	
Mechanical Maintenance	Electrical Maintenance	Mechanical Maintenance	Electrical Maintenance

14.2 Preventive Maintenance

Preventive Maintenance is a predetermined routine activity to ensure on time inspection or checking of facilities to uncover conditions that may lead to production break downs or harmful depreciation.

14.2.1 Corrective Maintenance or Break down Maintenance

In this case, repairs are made after the equipment is out of order it cannot perform its normal function.

14.3 Maintenance tools & equipments

1. Screw Driver.
2. Mechanical tool box.
3. Cutter.
4. Digital Multi Meter
5. Heating Shoulder
6. Hammer

14.3.1 Remarks

- Maintenance of m/c's is very essential to prolong the m/c life and good maintenance is important for economical consideration.
- In this industry maintenance program is done by expert maintenance team. So very few times production are stopped due to m/c problem.



Chapter - 15



Store & Inventory Control



Store & Inventory Control

Frequency of inventory control:

- ❖ Monthly inventory control
- ❖ Annual inventory control

Scope of inventory control :

- ❖ Raw materials
 - Yarn Store
 - Sizing Chemicals Store
- ❖ Weaving gray fabric
- ❖ spare parts
- ❖ General store
 - Capital equipment
 - Accessories
 - Stationary
 - Maintenance parts.

Inventory system for raw materials:

- ❖ Raw materials partially received from production planning & directly from head office.
- ❖ Material Receiving & Inspection Report (MRIR) is prepared. Received quantity is mentioned & noted down.
- ❖ Submitted to QC department. Some are OK & few rejected.
- ❖ Entry of data of goods in DATA TEX.
- ❖ Goods are arranged according to OK or rejected group.
- ❖ Department gives store requisition to warehouse.
- ❖ As per requisition materials supplied & this record is noted down.

Stages of grey fabric inventory control.

- ❖ After weaving production
- ❖ Grey inspection
- ❖ Folding & packaging
- ❖ Warehouse



Picture: Gray Fabric Ware House



Picture: Internal side view of the warehouse

Remark

- The inventory warehouse has proper space.
- The warehouse has proper ventilation system.
- This industry has 03 separate warehouse.



Chapter - 16



Social and Environmental Compliance



16.1 Social and Environmental Compliance

Noman Group believes in “Business integrated with Social and environmental responsibilities”. Without Social and environmental responsibilities, business is unethical. That is why Noman Group invested a lot to keep the working environment safe and secured. Beside that Group has largest biological Effluent treatment plant in Bangladesh to treat the water. Noman Group believes in Living Wages concept and not in Minimum Wages. In Social Compliance Noman Group has a non-profit social welfare organization named IAWT. In this welfare trust there are so many projects including schooling, Sanitation, Building houses for poor people and giving donation to the poor workers. Noman Group provides living accommodations for poor workers and laborers. The outstanding example is NG provided bank account facilities in Zaber and Zubair fabrics and provided ATM cards to all employees of Z&Z which created a value towards workers and employees and H&M awarded us as “Best example” and also recognized by Customer like IKEA and others. We have medical facility for poor workers who are not able to treat themselves. Day care center for infants and dining facility is provided to the workers. Maternity leaves are given to female workers. We believe in honesty, Dignity and respect. That is why we achieved certificates of ISO: 9001, Okeotex, BRC Global certification and also Certified by IKEA Asda, Wal-mart, H&M, Disney and others.



Biological Effluent treatment plant



Child Day Care center



Medical Facilities for Workers



Health Safety supports for Workers



Chapter - 17



Discussion



Discussion

Noman Group is the biggest textile group in Bangladesh. They have different type of textile mills. Like as spinning, weaving & dyeing-printing & finishing industry. It is a modern weaving industry. It is a company of Noman Group. Talha is the 28th number project of Noman Group. Talha Fabrics Ltd. is committed to the best human workplace practices. Their goal is to continuously improve their Human resource policies and procedures through education, training, communication and employees involvement. Right from inception the policy of the company has been to provide total customer satisfaction by offering quality woven fabric in time. To meet the manufacturing quality and promote delivery, Noman Textile Ltd. decided to integrate the manufacturing process in a planned manner. Over the year the entire process has been integrated by importing sophisticated machinery from world-renowned manufacturers. According to their capacity they have an enriched production team which is very rare in other factories of Bangladesh. The working environment of Noman Textile Ltd. is very cordially & friendly. All of the executives & employees of Noman Textile Ltd. are very much cordial & they always appreciate the learners. The goal of Noman Textile Ltd. is to get high production & to maintain the quality of the product at a minimum cost.

After finished my internship I find out some problem about the Noman Textile Ltd. Here in this factory has no textile laboratory section. So they cannot always test their product. If they install a modern lab section in their industry it is help to increase their product quality. Another problem is in Noman Textile Ltd. they have no quality control team. So the quality controller cannot always properly run the QC of the product. So it is necessary to establish a new QC team for maintain the product quality. And last point is here in this industry has maximum employees are non-textile, so they have no idea about wastage minimizing. So the production wastage is high. If they recruit some of textile experts then it could be possible to minimize the wastage%.



Chapter - 18



Conclusion



Conclusion

Industrial attachment program send us to the expected destiny of practical life. The completion of eight week industrial attachment at Noman Textile Ltd. We have got the impression that the factory is one of the most modern woven fabrics manufacturing projects in Bangladesh. Though it was established only one years ago, it has earned very good reputation for its best performance.

During my industrial attachment program we had tried to our best to done our duty. Our supervising officer also satisfied to us & offer co-operation in every steps. It is completely a new experience in our life, which will be very effective in my service life. During our training period We realized that practical experience is valuable for service life. So thanks again for all the person who help us for our training.

THE END

