



REPORT ON

Industrial Attachment

At

NORTHERN TOSRIFA GROUP

Tongi, Gazipur

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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 September 10, 2018 to October 24, 2018

Declaration

I attest that this report is totally my own work, except where I have given fully documented references to the work of others and that the materials contained in this report have not previously been submitted for assessment in any formal course of study. If I do anything, which is going to breach the first declaration, the examiner/supervisor has the right to cancel my report at any point of time.

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This industrial attachment prepared and submitted by **Md. Safin Reza, ID: 151-23-4195** 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.

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Assistant Professor

Acknowledgement

All pleasure goes to the Almighty Allah to give us strength and ability to complete my 36 days long industrial attachment at Northern Tosrifa Group Bangladesh Ltd. It was a great opportunity for me to complete the industrial attachment with the assistance of persons employed in **Northern Tosrifa Group Bangladesh Ltd.**

I feel grateful to my academic supervisor, **Md. Abdullah Al Mamun, Assistant professor,**

Department of Textile Engineering, Faculty of Science and Information Technology, Daffodil International University as well as to **Arafath Rahman, Deputy, Manager (Central IE), Tosrifa industry limited.** My factory supervisor and **Md. Amdadul Haque, Sr. Executive, Merchandising, of Fashion Asia Limited** for his continuously guiding me about the development and preparation this industrial training report. They have enriched me with sharing necessary theoretical and practical ideas and supervised me to complete this report on time.

While preparing the report I have taken help from various references so my cordial thanks to them. Finally I hope that the report will help in understanding the knitting, finishing, cutting, embroidery, sewing, production, quality, packing in apparel industry in a clear and concise way. My thanks go to the Supervisors, Technicians, Operators and all other staffs of Northern Group Bangladesh Ltd, who were most cordial and helpful to me.

Finally I wish to avail ourselves of this opportunity, express a sense of gratitude and love to my beloved parents and my friends for their mental support, strength and help and everything.

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1. EXECUTIVE SUMMERY

The purpose of the Industrial Training is to provide me exposure on practical engineering fields. Through this exposure, I will have better understanding of engineering practices and sense of frequent and possible problems. This training is part of the learning process. So, the exposure that uplifts the knowledge and experience needs to be properly documented in the form of a report. Textile Engineering can't be completed without industrial training. Because this industrial training minimizes the gap between theoretical and practical knowledge and make me accustomed to industrial environment.

I got an opportunity to complete **36 days** long industrial training from **10th September to 24th October** , in **NORTHERN TOSRIFA GROUP** which is exporting the knit apparels all over the world, especially in the European market. The group is enlisted with BGMEA, BTMA & EPB. Each of the individual company Northern Tosrifa Group is one of them. During this period I saw many types of machinery in knitting, sample, CAD, cutting, sewing and lab section. I observed the function of these machineries very carefully. It also provide me sufficient practical knowledge about production management, work study, efficiency, industrial management, purchasing, utility and maintenance of machinery 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 make me reliable to be accustomed with the industrial atmosphere and improve courage and inspiration to take self-responsibility.

2. Information of the Factory



FIGURE 2. 1: FRONT VIEW OF NORTHERN TOSHRIFA GROUP (NTG)

2.1 Company Overview

Company Name : Northern Tosrifa Group

Corporate Office :

Holding No 4/2 A, Plot - 49 & 57 135 Gopalpur, Munnu Nagar, Tongi, Gazipur, Bangladesh

- Phone: 880 2 9817461-63
- FAX: 880 2 9817743
- Email: info@ntg.com.bd

Finance Office :

Plot#91, 4th & 5th Floor, Suhrawardy Avenue, Block# K, Baridhara, Dhaka-1212, Bangladesh

- Phone: 880 2 9882516-7, 880 2 9882607
- FAX: 880 2 9882610
- Email: info@ntg.com.bd

2.2 Organogram

- | | |
|-----------------------|---------------------------|
| 1. Mr.Mohim Hasan | - CEO |
| 2. Md.Sharifur Rahman | - Chairman |
| 3. Md.Naim Hasan | - Director |
| 4. Md. Hasibuddin | - Executive Director |
| 5. Md.Zillur Rahman | - CFO (company secretary) |
| 6. Eng.M.Saif Uddin | - GM,M & PD |
| 7. Md.Armanul Azim | - M,Admin & HR |
| 8. Kazi Moazzem Haque | - DGM |
| 9. Md.Ataur Rahman | - DGM |
| 10. Md.Hayder Ali | -DGM (Finance) |

- | | |
|--------------------------|------------------------------|
| 11. Habibur Rahman | - D.G.M.- |
| 12. Mr. Khorshed Alam | A.G.M.- |
| 13. Md.Abul Kalam Azad | - Mgr.Compliance |
| 14. Mizanur Rahman | - Mgr.H.R. |
| 15. Md.Shakhawat Hossain | -Dep.Mgr.(Admin &Compliance) |

2.3 Sister Concerns of Northern Toshrafa Group (NTG)

Northern Toshrafa Group has some other group and industries whose profile are given bellow-

2.3.1 Northern Corporation Ltd

The group's journey begins with Northern Corporation Limited, a composite knit apparel items manufacturing unit. From a very humble beginning, Northern Corporation Ltd now employs more than 1800 people and has annual turnover of more than 2million US dollars. Situated just minutes away from Dhaka International Airport, NCL is well equipped to produce 12 tons of finished fabric per day and has a sewing capacity of 4 million minutes per month. As a sign of NCL's continuing success the company has several international certificates including ISO 9001:2000, OEKOTEX 100 and Organic Exchange.

2.3.2 Fashion Asia Ltd.

In order to keep track with the buyers' increasing demands for quality and efficient garment manufacturing facilities, Fashion Asia Limited was created in the year 2000. From the very beginning the company has been highly successful in producing T-shirts, polo shirts, tank tops, dresses, leggings and various kinds sportswear for multiple buyers in Europe. The team of 600 enthusiastic, skilled and competent employees has managed to push the annual turnover to USD \$9 million. Short lead time and efficient lean manufacturing is what drives Fashion Asia forward.

2.3.3 Toshrafa Industries Ltd.

With a combination of hard earned experiences from Northern Corporation and Fashion Asia, Toshrafa Industries Limited was formed in 2002. Situated on 4 acre parcel of land TIL is the flag

ship of the group. The company has all the latest technology and is focused to produce best quality knit apparel items. Along with the usual BSCI and OEKOTEX 100 standard certificate, TIL is well on its way towards receiving the ISO 14000: Environmental Management Certificate. The factory operates with 1600 hard working employees producing 10 tons of grey fabric per day and 3.3 million sewing production minute per month with an annual turnover of USD 12 million.

2.3.4 Printers And Printers Ltd.

With the production capacity of the group increasing over the years, Printer and Printers Limited was established to meet the growing demand for printing and embroidery. From transfer prints to sublimation, Printers and Printers can provide the buyers with a complete printing and embroidery solution. The company is able to print and embroider 25000 and 2000 pieces per day respectively.

2.3.5 Environ Pac Ltd.

This poly, carton and accessories factory has been set up to strengthen the backward linkage capacity of Northern Tosrifa Group. The group has been planning to be completely vertically integrated and thus Environ Pac Ltd was established with this mission in mind. Enviro Pac not only caters to the requirements the group but also supplies accessories to different other established and renowned garment factories. With the capability of producing 66 tons of poly bags per month, this company is focused to produce all major types of garment accessories.

2.3.6 Hung Tak Northern Garments Ltd.

Northern Tosrifa Ltd understands the need to expand its business horizon on a regular basis. With that in mind Hung Tak Northern Garments Ltd, a joint venture company between Northern Corporation Ltd. and Hung Tak Garment Ltd of Hong Kong, was started. This gave Northern the opportunity to enter into the ever growing woven garments manufacturing market. Hung Tak's vast knowledge in manufacturing shirt in China and Vietnam.

2.4 Certification:

- ✦ ISO9001:2008 & ISO 14001 & SA8000 (under process)
- ✦ OEKO-TEX standard 100
- ✦ BSCI
- ✦ CTPAT/GSV approved unit

2.5 List of Buyer

- LINDEX
- KAPPAHI
- MATALAN
- ORIGINAL MARINES
- MQ
- SPORTS MASTER
- ELCORTE INGLES
- DIBER

2.6 Vision:

1. To be one of the best leading composite mill in Bangladesh
2. To build a true marketing led enterprise with motivated workforce, innovative vision & more value added product portfolio, customer satisfaction & understanding of global market.

2.7 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 employees, our customers, our business associates, our fellow, citizens.

2.8 Medical facility:

Trained team of medical are formed in case of any emergency.

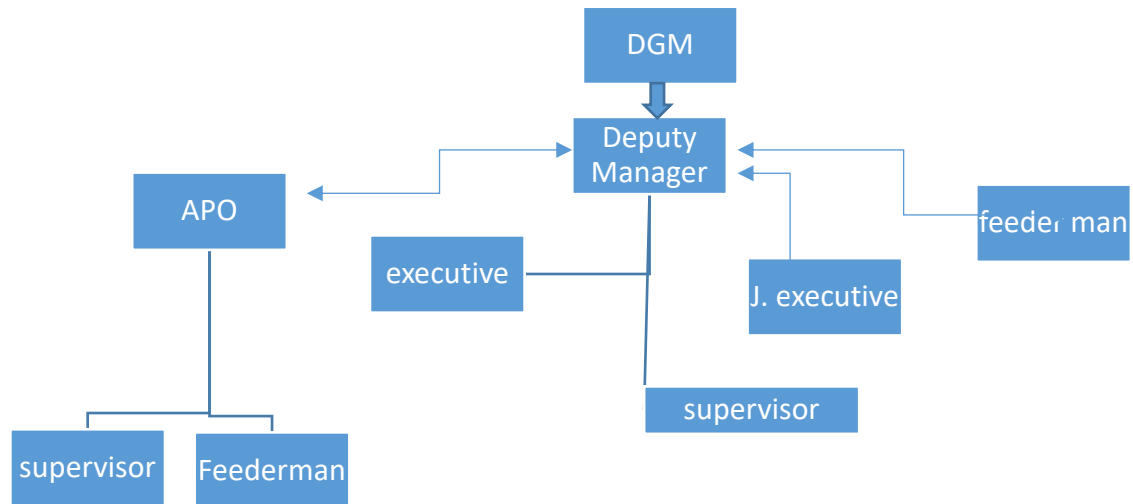
2.9 Working environment:

An excellent working environment exists in the factory with proper ventilation & light. No child labor work in the factory

3 DESCRIPTION OF THE ATTACHMENT

3.1 Knitting Department of NTG

3.1.1 Organogram of Knitting Section:

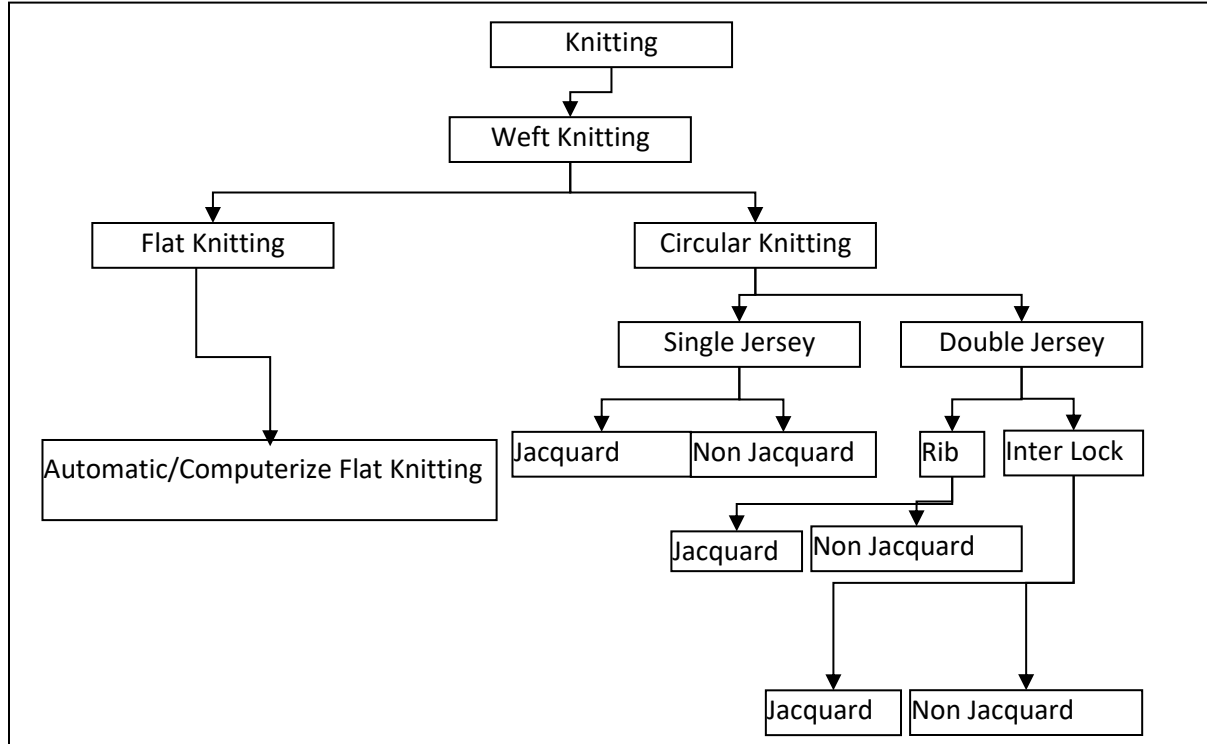


3.1.2 Knitting layout

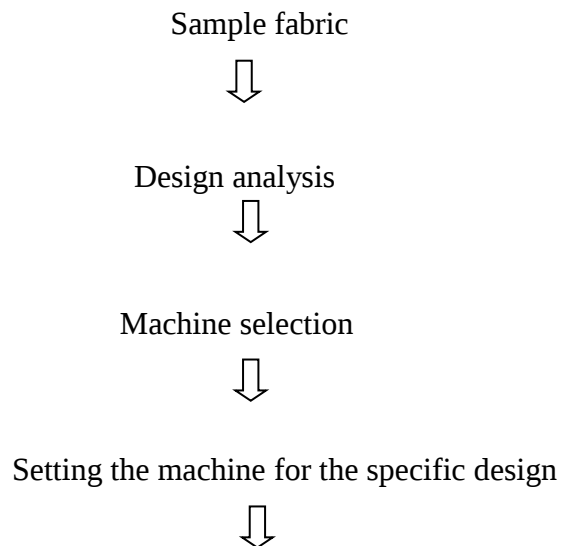


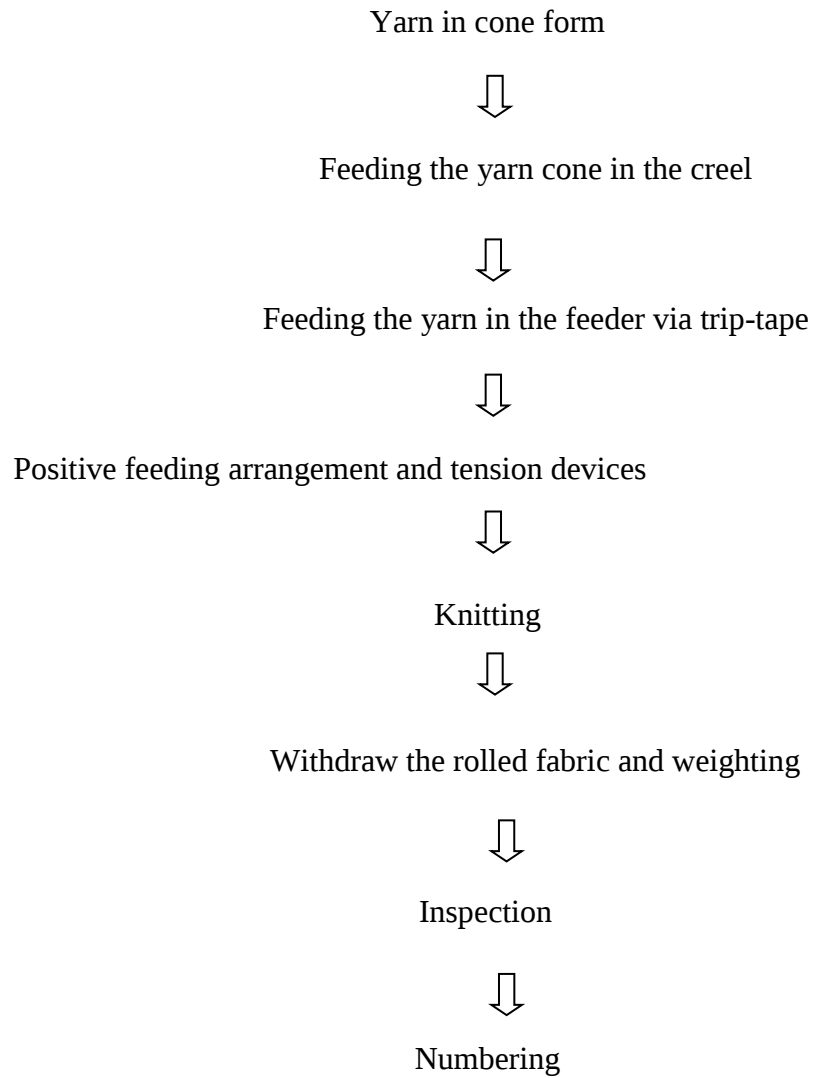
FIGURE3. 1 KNITTING LAYOUT

3.1.3 Knitting classification in NTG



3.1.4 Process Flow Chart of Knitting in NTG





3.1.5 Yarn types:

100% cotton

- Carded

- Combed

Man made

- Polyester

- Lycra

Blended

- CVC (Cotton + Polyester)
- PC (Polyester + Cotton)
- Grey Mélange (Cotton + Viscose)

3.1.6 Commonly used yarn count:

- Carded yarn – 18, 20,24,26,30,32,34,36 Ne
- Combed Yarn – 20,22,24,26,28,30,32,34,36,40 Ne
- Polyester yarn – 75,100,150 Denier
- Lycra yarn – 20, 30,40,50,70 Denier

3.1.7 Machine specification:

Machine Type	No. of Machine	Brand Name	Dia * Gauge	No. of Needle (Dia*Gauge*3.1416)
Single Jersey	01	KEUM YONG	34*28	2562
	02	KEUM YONG	34*28	2989
	03	KEUM YONG	34*28	2562
	04	KEUM YONG	30*24	2562
	05	MONARCH	30*28	2637
	06	MONARCH	30*28	2637
	07	MONARCH	30*28	2989
	13	KEUM YONG	30*24/28	2260
	24	MAYER AND CIE	38*24	2863
	26	MAYER AND CIE	36*24	2712
Fleece/s/j	16	LISKY	30*20/24	2260
	17	LISKY	30*20/24	2260
	20	LISKY	30*20/24	2260
	21	LISKY	30*20/24	1884
	22	LISKY	30*20/24	2260
	23	LISKY	30*20	1884

	25	MAYER AND CIE	30*20/24	2260
Rib/Interlock	14	MAYER AND CIE	32*18/24	1808
	15	MAYER AND CIE	34*24	2562
	27	MAYER AND CIE	30*24/18	1922
	28	MAYER AND CIE	34*24	1921
	31	FUKUHARA	30*18/24	1752
Fleece	11	LISKY	20*24	1884
	35	LISKY	30*24	1884
	36	LISKY	30*24	1884
Rib	29	MAYER AND CIE	30*18	1752
Interlock	08	KEUM YONG	34*24	2562
	09	KEUM YONG	34*24/28	2989
	10	KEUM YONG	34*24	2562

	30	KEUM YONG	36*24/28	2260
	32	FUKUHARA	30*24	2260
S/J,E-Stripe	33	FUKUHARA	30*20	1884
	34	FUKUHARA	30*28	2637
Flat belt (semi jacquard)	1	MATSUYA	80*14	1120
	2	MATSUYA	80*14	1120
	6	MATSUYA	80*14	1120
	7	MATSUYA	80*14	1120
	8	MATSUYA	80*14	1120
	12	MATSUYA	80*14	1120
	13	MATSUYA	80*14	1120
	114	MATSUYA	80*14	1120
	15	MATSUYA	80*14	1120
	16	MATSUYA	80*14	1120
	17	MATSUYA	80*14	1120
	18	MATSUYA	80*14	1120
	19	MATSUYA	80*14	1120
	20	MATSUYA	80*14	1120
	21	MATSUYA	80*14	1120
	22	MATSUYA	80*14	1120
	23	MATSUYA	80*14	1120
	3	SHIMA SEIKI	68*14	952
	10	SHIMA SEIKI	68*14	952

	11	SHIMA SEIKI	68*14	952
Flat belt (Full jacquard)	4	MATSUYA	48*14	672
	5	MATSUYA	48*14	672

TABLE 3. 1: KNITTING MACHINE SPECIFICATION

3.1.8 Feeder Stripe and Engineering Stripe

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

✦ Feeder Stripe

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

✦ Engineering Stripe

The stripe can be produced on auto stripe machine with any depth of stripes. Fabric structure may be single jersey or double jersey. Auto stripper unit is used at each feed for selection of color. The facility of yarn changing by stripping finger selection, which can

provide a choice of one from four or five or six yarns at a particular feed point during each machine revolution.

3.1.9 Production Calculation

Production/shift in kg at 100% efficiency =

$$\frac{RPM \times \text{No. of Feeder} \times \text{No. of Needle} \times SL(mm)}{3527.80 \times \text{Yarn count}}$$

Number of needle for single jersey = $\pi \times D \times G$

Number of needle for rib = $2 \times \pi \times D \times G$

Production/Shift in meter =

$$\begin{aligned} &= \frac{\text{Course / min .}}{\text{Course / cm}} \\ &= \frac{RPM \times \text{No. of Feeder}}{\text{Course / cm} \times 100} \end{aligned}$$

Fabric Width in meter =

$$\begin{aligned} &= \frac{\text{Total no. of wales}}{\text{Wales / cm} \times 100} \\ &= \frac{\text{Total no. of Needles used in knitting}}{\text{Wales / cm} \times 100} \end{aligned}$$

3.1.10 Production Parameter

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

Machine running efficiency

3.1.11 Considerable Points to Produce Knitted Fabrics in NTG

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

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

3.1.12 Methods of Increasing Production of NTG:

By the following methods the production of knitted fabric can be increased –

1. By increasing m/c speed:

Higher the m/c speed faster the movement of needle and ultimately production will be increased. But it has to make sure that excess tension is not imposed on yarn because of this high speed.

2. By increasing the number of feeder:

If the number of feeder is increased in the circumference of cylinder, then the number of courses will be increased in one revolution at a time.

3. By using machine of higher gauge:

The more the machine gauge, the more the production is. So by using machine of higher gauge production can be increased.

4. By imposing automation in the m/c:

- a) Quick starting & stopping for efficient driving system.
- b) Automatic m/c lubrication system for smoother operation.
- c) Photo electric fabric fault detector.

5. By imposing other developments:

- a) Using creel-feeding system.
- b) Applying yarn supply through plastic tube that eliminates the possibilities of yarn damage.
- c) Using yarn feed control device.

3.1.13 End Products of Knitting Machine in NTG:

Single Jersey M/C:

- a) S/J Plain
- b) Single lacoste
- c) Double lacoste
- d) Single pique
- e) Double pique
- f) Terry

Interlock M/C:

- a) Interlock pique
- b) Eyelet fabric
- c) Mash fabric

Rib M/C:

- a) 1X1 Rib fabric
- b) 2X2 Rib fabric

3.1.14 Knitting Faults, Their causes and Remedies of NTG

A defect in the knitted fabric is an abnormality, which spoils the aesthetics i.e. the clean & uniform appearance of the fabric & effects the performance parameters, like; dimensional stability etc.

There are various types of defects which cause a great harm to the knitted fabric. Some defects may cause the rejection of the fabric. Some important Knitted fabric faults are follows-

- ✧ Drop Stitches or Holes
- ✧ Barriness
- ✧ Snarling
- ✧ Contaminations
- ✧ Spirality
- ✧ Needle Lines
- ✧ Broken Needles
- ✧ Sinker Lines
- ✧ Oil Lines or Stains
- ✧ Broken or Missing Ends
- ✧ Fabric Press Off
- ✧ Surface Hairiness & Piling
- ✧ Stains
- ✧ Fold Marks
- ✧ Crease or Rope Marks
- ✧ GSM Variation
- ✧ Width Variation
- ✧ Measurements

Drop Stitches (Holes)

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

Major Causes:

- ⦿ High Yarn Tension
- ⦿ Yarn Overfeed or Underfeed
- ⦿ High Fabric Take Down Tension
- ⦿ Obstructions in the yarn passage, due to the clogging of eyelets, yarn guides & tension discs, with wax & fluff etc.
- ⦿ Defects like; Slubs, Neps, Knots etc.
- ⦿ Incorrect gap between the Dial & Cylinder rings.

Remedies:

- Ensure uniform yarn tension on all the feeders, with a Tension Meter.
- Rate of yarn feed should be strictly regulated, as per the required Stitch Length.
- The fabric tube should be just like a fully inflated balloon, not too tight or too slack.
- Eyelets & the Yarn Guides, should not have, any fibers, fluff & wax etc. stuck in them.
- The yarn being used, should have no imperfections, like; Slubs, Neps& big knots etc
- The gap between the Cylinder & the Dial should, be correctly adjusted, as per the knitted loop size.

Barriness

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

Major Causes:

- ⦿ High Yarn Tension
- ⦿ Count Variation

- ⦿ Mixing of the yarn lots
- ⦿ Package hardness variation

Remedies:

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

Snarls

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

Major Causes:

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

Remedies:

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

Contaminations

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

Major Causes:

- ⦿ Presence of dead fibers & other foreign materials, such as; dyed fibers, husk & synthetic fibers etc.
- ⦿ Dead Fibers appear in the fabric, as a result of the, presence of excessive immature Cotton fibers, in the Cotton fiber crop.

- ⦿ Dead fibers do not pick up color during Dyeing.
- ⦿ Presence of the foreign materials, in the, staple fiber mixing
- ⦿ (Kitty, Husk, Broken Seeds, dyed fibers & fibers like Poly Propylene, Polyester, Viscose etc)
- ⦿ Dyed & other types of fibers flying from the adjacent Knitting machines cling, to the yarn being used for knitting & get, embedded in the Grey Fabric.

Remedies:

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

Spirality

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

Major Causes:

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

Remedies:

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

Needle Lines

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

Major Causes:

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

Remedies:

- Inspect the grey fabric on the knitting machine for any Needle lines.
- Replace all the defective needles having, bent latches, hooks or stems.
- Remove the fibers accumulated in, the Needle tricks (grooves).
- Replace any bent Needles, running tight in the tricks.
- Check the Needle filling sequence in the Cylinder / Dial grooves (tricks).

Broken Needles

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

Major Causes:

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

Remedies:

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

➤ **Sinker Lines**

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

Major Causes:

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

Remedies:

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

Oil Lines

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

Major Causes:

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

Remedies:

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

Broken Ends

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

Major Causes:

- ⦿ High Yarn Tension
- ⦿ Yarn exhausted on the Cones.

Remedies:

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

Fabric Press Off

Fabric press off appears, as a big or small hole in the fabric, caused due to the interruption of the, loop forming process, as a result of the yarn breakage, or closed needle hooks.

Press off takes place, when the yarn feeding to both the short butt & long butt needles, suddenly stops, due to the yarn breakage.

At times, complete fabric tube can fall off the needles, if the needle detectors are not functioning, or are not properly set.

Major Causes:

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

Remedies:

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

GSM Variation

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

Major Causes:

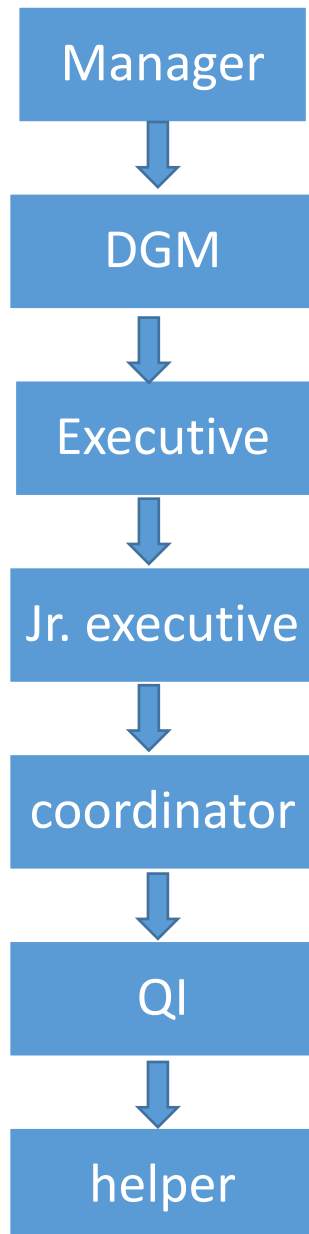
- ⦿ Roll to roll variation in the, process parameters, of the fabric, like; Overfeed & Widthwise stretching of the dyed fabric, on the Stenter, Calander& Compactor machines.
- ⦿ Roll to roll variation in the fabric stitch length.

Remedies:

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

3.2 Store Department of NTG

3.2.1 Organogram



3.2.2 Store layout



FIGURE 3.2 STORE LAYOUT

3.2.3 Working Procedure of Store:

Challan wise all accessories physical inventory then Received



Buyer wise sent to rack



Store requisition wise accessories physical inventory Received



All stationary items Received as per Challan wise



All stationary items issue as per SR wise



All Fabric Challan wise physical way then received our store



All fabric QC check then sent to fabric rack



SR wise fabric issue to cutting floor

3.2.4 Store Stationary:

SL	Description	Rack
1	Auto Cutter poly	C-54
2	A-4 Normal Paper	A-39
3	Aatt-Regester	A-10
4	Arrow Sticker	A-39
5	Attendance Card	A-39
6	Balanchine Powder	A-20
7	Basket	C-48
8	Clamp File	A-16
9	Clip Board	A-3
10	Clip File	A-3
11	Computer Toner(05)	A-9
12	Computer Toner(80A)	A-9
13	English Chalk(production)	A-4
14	Fax Roll	A-39
15	Finial	A-20
16	Finish	A-20
17	Garments Powder	A-6
18	Gum Boot	A-7
19	Gum Tape(Production)	A-50
20	Hand Wash	A-20
21	Harpick	A-20
22	Office File(Sample)	C-02
23	Oven Fabric	C-204
24	Office File(Production)	A-02
25	Ledger Book	A-04
26	Legal Size Paper	A-39
27	Marker Chalk	A-39
28	Marker Paper	C-63

29	Magazine File	A-16
30	Merchandisers File	A-20
31	Numbering MC	A-04
32	Numbering Sticker	A-09
33	Pattern Board	C-207
34	QC Sticker	A-06
35	Spray Gum	A-13
36	Worker File	A-15
37	Wheel Powder	A-20
38	Vanish Chalk	A-20
39	Vim Powder	A-20

TABLE 3. 2: STORE STATIONARY

3.2.5 Trims & Accessories used in NTG:

SL	Trims	SL	Accessories
1	Label (Name, Size, Care, Bar Code, Main, Sub)	1	Poly bag
2	Button (Natural, Metal, Logo, Slap, Eyelet, Plastic)	2	Elastic bag
3	Zipper (Plastic, Metal)	3	Mini poly bag
4	Padding	4	Master carton
5	Interlining	5	Inner carton
6	Down	6	Size clip
7	Elastic	7	P.P. band
8	Thread (Polyester = 20/2, 30/2, 50/2. Flamed = Core spun yarn, Mono flamed, Multi flamed, Parallels flamed, Twisted flamed. Elastic = 2cm, 2.5cm, 3cm, 5cm, 5mm.)	8	Tag pin
9	Twill tape	9	Brass pin

10	Stopper	10	Collar stand
11	String/ Draw Cord	11	Safety pin
12	Piping cord	12	Gum tape
13	Emblem	13	Arrow sticker
14	Logo print	14	Scotch tape
15	D-link	15	Barcode sticker
16	Swivel hook	16	Defect Indicator
17	Eyelet/ Grommet	17	Tissue paper
18	Collar Stay	18	Back board
19	Cord Bell	19	Neck board
20	Cotton Threads	20	Size tag

TABLE 3. 3: TRIMS & ACCESSORIES

3.2.6 List of types of goods in yarn store of NTG:

- ✚ Cotton yarn
- ✚ Polyester yarn
- ✚ Slub yarn
- ✚ Single plied yarn
- ✚ Double plied yarn
- ✚ Lycra yarn
- ✚ Filament yarn
- ✚ Monofilament yarn
- ✚ Multifilament yarn

3.2.7 Types of Fabric produce in NTG:

- ✚ Single Jersey
- ✚ Rib

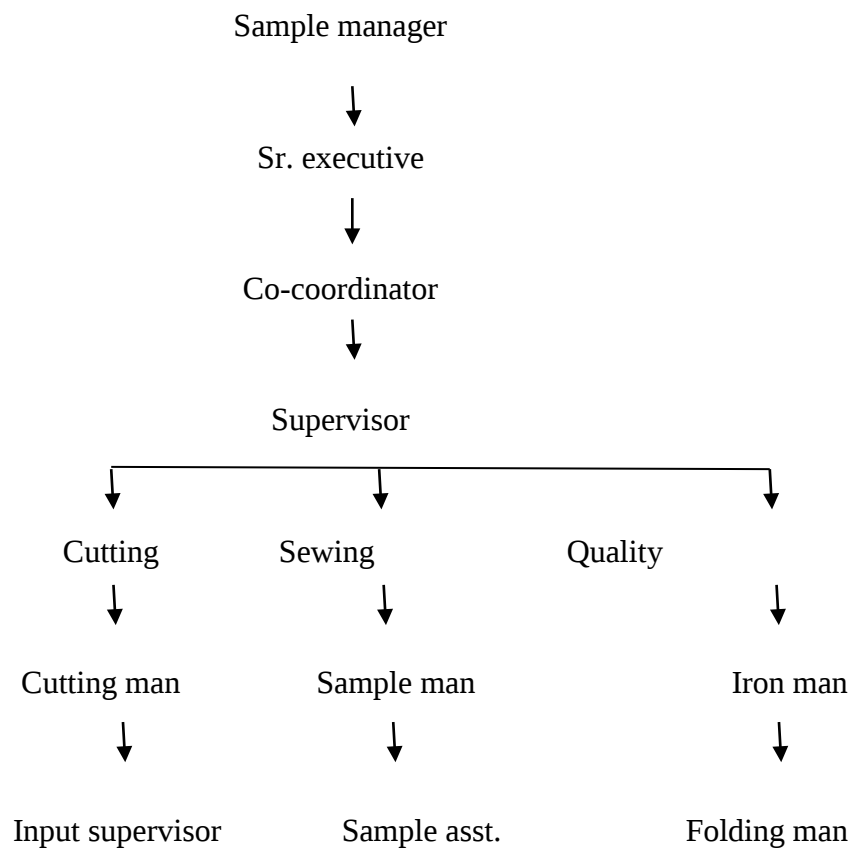
- ✚ Lacost
- ✚ Interlock
- ✚ Fleece
- ✚ Woven
- ✚ Oxford Weave
- ✚ Pique

3.3 Sample section:

Garment samples are inevitably important and are developed tested before starting the bulk production. It means making a sample of the garment/fabric which requires to be sold.

Sampling is one of the main processes in Garment industry and it has a vital role in attracting buyers. Because the buyers generally places the order after they are satisfied with the quality of the samples.

3.3.1 Organogram of sample:



Total manpower-39

Sample production capacity-100 pcs

Average SMV-9

3.3.2 Sample & CAD section layout:



FIGURE3. 3 SAMPLE AND CAD SECTION LAYOUT

3.3.3 Sample keeping standard operation procedure (SOP):

Step: 1	Development Sample/Proto /Fit/First Sample	After developing any new style sample hanging on hanger with a body.
Step: 2	Second Sample	After sending the Photo/Fit/First Sample We keep this sample in the hanger and the development sample we keep in a mentioned buyer box with a poly.
Step: 3	Size set Sample	After sending the size set Sample. We keep this sample in the hanger and Photo/Fit/First Sample we keep in a mentioned buyer box with a poly.
Step: 4	Photo Sample	After sending the Photo Sample. We keep this sample in the hanger and the size set sample we keep in a mentioned buyer box with a poly.
Step: 5	Counter Sample	After sending the Counter/QSI Sample. We keep this sample in the hanger and the photo sample we keep in a mentioned buyer box with a poly.
Step: 6	Pre Production Sample	. After sending the Pre production Sample We keep this sample in the hanger and the Counter/ QSI Sample. We keep in a mentioned buyer box with a poly.

TABLE 3. 4: SAMPLE SOP

3.3.4 Buyer wise sample:

BUYER NAME-	ORIGINAL MARINE	SPORT MASTER	MQ	MATALAN	DAIBER
	Salesman sample	1 st sample	Proto sample	Development sample	Development sample
	Photo sample	2 nd sample	Counter sample	Red seal sample	Styling sample
	Preproduction sample	Preproduction sample	Photo sample	Photo sample	Size sample set
			Preproduction sample	Gold seal (production) sample	Photo sample
					Preproduction sample

TABLE 3 .5: BUYER WISE SAMPLE

3.3.5 Working Procedure of Sample Section in NTG:

Step 1: Sample department receive requisition and tech pack from merchandiser.

Step 2: Sample department prepare daily as well as weekly plan for sample submission. As per merchandiser required data.

Step 3: Sample department collect pattern from CAD department.

Step 4: Sample department make one piece mock up for style review meeting. **Step 5:** Sample department handover mock up sample for style review meeting to IE department than central IE department arrange style review meeting any change come than discuss with merchandiser to manage that changes then buyer approved that then go for first sample.

Step 6: After receive of fabric register fabric quantity in the register books. Also do the fabric relax 24 hours before cutting.

Step 7: Do the fabric wash before cutting if buyer required garment wash or garment dye and take final approval from merchandiser.

Step 8: After received accessories test wash and others prepare trim card and get approval from merchandiser.

Step 9: Before cutting- check body +collar +neck rib shade and get approval from merchandiser. After getting approval then go for cutting and keep the documents in daily cutting production file.

Step 10: After cutting complete 100% check the cut panel and If required print/ embroidery than sent for print/ embroidery factory.

Step 11: After receive print/ embroidery part check it very carefully and we keep the documents in print/ embroidery check file. Regarding print/ embroidery wash test approval get from merchandiser.

Step 12: Ready input in input box after received the print/ embroidery part and kinds of accessories and keep the documents in the daily ready input file.

Step 13: Before make any sample do the meeting with sample man, supervisor, and sample quality.

Step 14: After do the meeting get for sample making and keep the documents in the daily sewing production file.

Step 15: After sewing complete check sample and send washing factory for wash if buyer required garment wash or garment dye.

Step 16: After wash complete go for check and finish the sample and kept the documents in daily production file.

Step 17: After finishing complete send the sample individually to merchandiser and CAD with check list and measurement list and keep the documents in the sample delivery register book.

3.3.6 Sewing machine used in NTG sample section:

Types of M/C	No of M/c (TIL)
SND	15
Over lock	14
Flat lock	8
B.A	1
BHL	1
BTK	1
Total	40

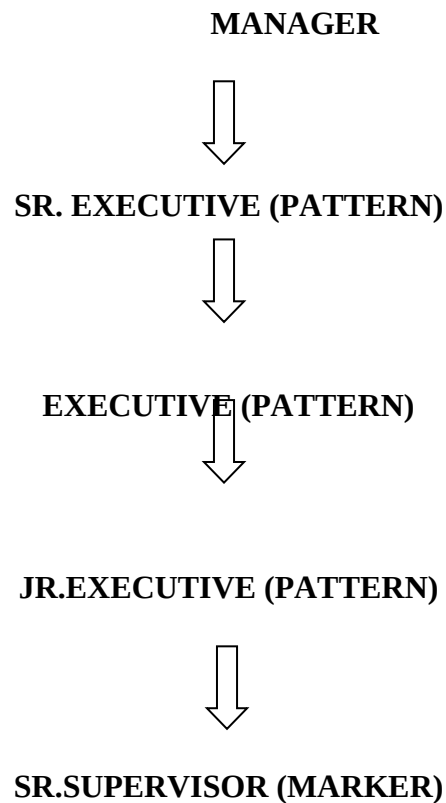
- ✚ Sewing thread stand - capacity **TIL 432 cone**
- ✚ Iron table **3 pcs**
- ✚ Folder keeping box **2pcs**
- ✚ Cabinet for supervisor **2 pcs**
- ✚ Measurement table **2 Pcs**
- ✚ Total line **3**

3.3.7 Finishing:

- ✚ Q.I table **4 pcs**
- ✚ Folding table **2 pcs**
- ✚ Finish QC table **1 pcs**
- ✚ Sample hanging on the rack.

3.4 CAD section of NTG

3.4.1 Organogram of CAD:



Elaboration of CAD = Computer Aided Design

3.4.2 Strength of CAD section in NTG:

We have plotter M/c one is head & another is 2 head which brand name is –BOK.

Also have one pattern cutting M/C brand name is –BOK

3.4.3 Name of software used in NTG:

3types of software on CAD section:

- † OPTITEX
- † GEMINI

3.4.4 Use of OPTITEX Software:

- † Create patterns on the computer screen quickly and easily.
- † Facilitate special operations such as: darts, pleats, splices, button markings, cutouts and hems. All with absolute precision.
- † Immediately transfer modifications made on the base pattern to all sizes.
- † Prepare markers in just a few minutes and obtain maximum yield.
- † Create markers with various fabric widths and different grades
- † Before plotting, the system warns if there are superimposed pieces or if the marker is incomplete.
- † Save time, raw material and money
- † Program a list of markers to be calculated during intervals when your computer is idle
- † Simulate production by calculating costs, consumption and time
- † Generates reports and output data in the standard format defined by the automatic spreaders

- ✚ Defines various solutions for a single order, compares them and uses that judged to be most suitable for production
- ✚ Calculate fabric dia, fabric weight, body sits per lay and fabric per roll etc.

3.4.5 Advantage of CAD software:

- ✚ Save 60% of manpower and time.
- ✚ Save 30% of cardboards. Efficiency is 4 times as traditional fixed cutting machine.
- ✚ Advanced floating blade technology.
- ✚ Extraordinary blades handle adjustment function.
- ✚ Electric box, easy maintenance
- ✚ Tools for easy insertion of marks and notches
- ✚ Worldwide patent pending

3.4.6 Pattern:

A pattern is the template from which the parts of a garment. Pattern is usually made of paper, and is sometimes made of sturdier materials like paperboard or cardboard.

Types of pattern:

- ✚ Block pattern
- ✚ Production pattern
- ✚ Grading pattern

✚ Finish pattern

3.4.7 Marker:

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

Types of marker:

There are various types of marker we use on our factory. It's depends on fabric construction on fabric construction, design art work, fabric finishing process etc.

✚ One garment one way

✚ All garments one way

✚ Group marker/Block

✚ Normal marker

3.4.8 Marker efficiency:

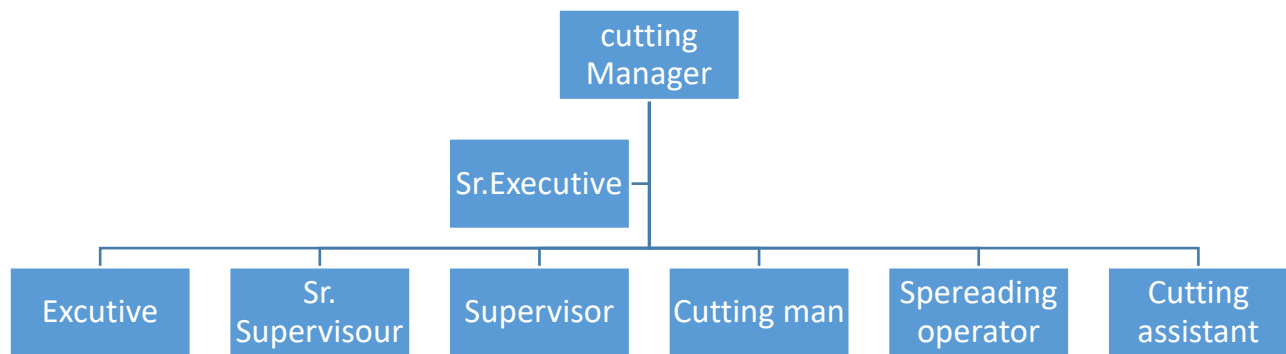
$$\text{Marker efficiency} = \frac{\text{Total area of each pattern of a marker}}{\text{Total area of marker}} \times 100\%$$

Fabric consumption calculation:

$$\text{Fabric consumption} = \frac{\text{Length} \times \text{Width} \times \text{GSM} \times 12}{100 \times 100 \times 1000 \times \text{No. of pcs}}$$

3.5 Cutting Department

3.5.1 Organogram



3.5.2 Cutting department layout:

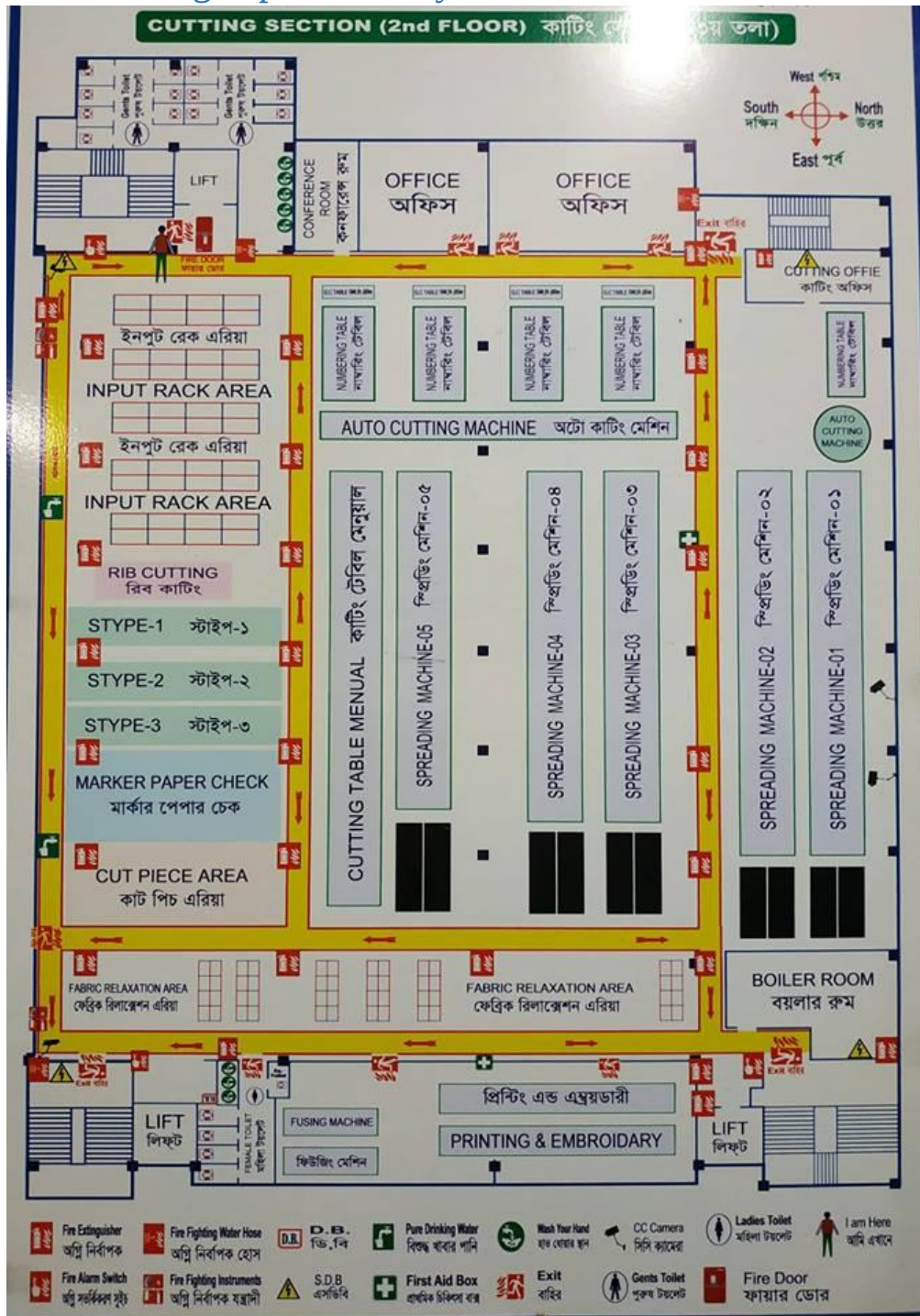
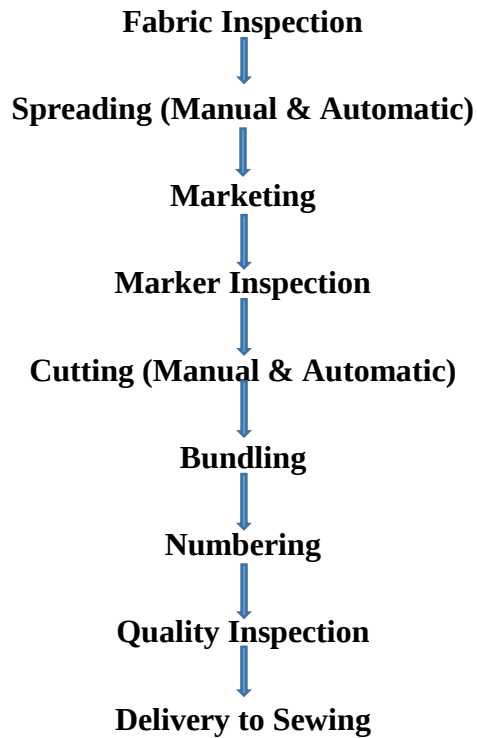


FIGURE3. 4 CUTTING DEPARTMENT LAYOUT

3.5.3 In Northern Tosrifa Group cutting process schedule is given below-



3.5.4 Man Power of cutting section

In Northern Tosrifa Group cutting department manpower is in total 135.

Cutting Department	Cutting Department-Quality
Stuff: 13	Marker Checker: 4
Manager: 1	Quality Bundle man:7
In charge: 2	Block Checker: 8
IE: 1	Manual Cutter Man: 9
Co-ordinator: 1	Numbering Man: 8
Supervisor: 2	Numbering Print Checker: 16

Marker Man: 2	Yarn Dye Block Checker: 2
Cutting Man: 3	Spreading Stripe: 2
Fabric receiver: 2	Fusing Man: 6
Cutting assistant: 2	
Bundle Writer: 4	
Bundle Man: 4	
Number/Sticker Man: 2	
Input Man: 2	
Spreading man: 24	

TABLE 3.6 MAN POWER OF CUTTING SECTION

3.5.5 Machine Specification of NTG

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

✓ Straight Knife Cutting Machine

Name : Km
 Model : KS-AUV
 Speed : 3000/3600
 Origin : Japan
 No. of Machine: 14
 Knife Height : 8'' and 10''

✓ Automatic Cutting Machine

Name : TopcutBullmer

No. of Machine: 1

Ply Height : 8-10 cm

Daily Cutting : 20000-25000 pcs.

Time for big Pattern: 2-3 min.

Time for small pattern: 70-80 sec.

3.5.6 Cutting Table Measurement of NTG

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

A list is given below about the measurement of cutting tables-

Table Number	Length (cm)	Width (cm)	Height (cm)
1	2207	202	92
2	2207	202	92
3	2207	202	92
4	2207	202	92
5	2207	214	80
6	2207	239	84
7	247	155	84
8	247	155	84
9	244	122	77
10	536	203.5	90

11	716	203	86
12	716	203	86
13	716	203	86

TABLE 3 .7: CUTTING TABLE MEASUREMENT

3.5.7 Relaxation of fabric:

When the fabric comes from the dyeing and finishing, the fabric remains a slightly hot. In dryer and compactor heat is applied on fabric .So moisture is removed from the fabric and it is not actual condition. But if we keep the fabric in normal temperature and pressure for a certain time, the fabric absorbs moisture from the atmosphere and regains its original nature. This process is called fabric relaxation.

Fabric relaxation is performed for a certain period. This time is varied from fabric to fabric. But the minimum time of relaxation is twelve (12) hours. This time also may vary according to the buyer's recommendation. Here a little amount of fabric is cut and sewed in sewing section. Then the garments are compared with the approved sample. Sewing allowance and other measurements are also observed. If everything is ok, then the approval is given and the fabric is ready for bulk production.

3.5.7.1 Fabric Relaxation Time:

Single Jersey.....12 hours
 Lycra Single Jersey.....18 hours
 Pique.....18 hours
 Lacost Pique.....24 hours
 Terry.....36 hours
 Fleece36 hours

3.5.8 Fabric Spreading:

With the help of spreading machines, fabric is stacked on one another in reaches or lays that may go over 100 ft (30.5 m) long and hundreds of plies (fabric pieces) thick.

- The fabric is spread face to back.
- The width of the fabric or lay is defined by the fabric diameter as developed by the knitting department in correspondence with some predetermined calculation by the Merchandising department, which is done with repeat to the order specifications as given by the buyer.
- Even the lay length is not fixed & it is done or calculated while laying the fabric by the trial and error method.

Requirements of fabric spreading of NTG:

- ✚ Alignment of fabric ply.
- ✚ Correct ply tension
- ✚ Fabric must be flat.
- ✚ Elimination of fabric flaws.
- ✚ Correct ply direction and stability.
- ✚ Matching checks and stripes.
- ✚ Easy separation of cut lay into bundles.
- ✚ Avoidance of fusion of plies during cutting

3.5.9 Cutting:

The fabric is then cut with the help of cloth cutting machines suitable for the type of the cloth. These can be band cutters having similar work method like that of band saws; cutters having rotary blades; machines having reciprocal blades which saw up and down; die clickers similar to die or punch press; or computerized machines that use either blades or laser beams to cut the fabric in desired shapes.

3.5.10 Sorting/Bundling of NTG:

After complete the cutting; the fabric is tagging by the sticker. The sticker tagging is an important part in this section. Due to fabric numbering or batching the sticker is tag on the cutting fabric surface. After cutting the fabric lay and tagging the sticker, all the garments components in stack form is shorted out as per size and color. To avoid mistake in sorting, it is better to use code number on each pattern. Sorting, Bundling are complete, all the garment components are sending to the sewing section. The sorter sorts the patterns according to size and design and makes bundles of them. This step requires much precision because making bundles of mismatched patterns can create severe problems. On each bundle there are specifications of the style size and the marker too is attached with it.

Like in bundle A there is first 25 piece of pocket like this. So each worker complete each bundle and pass the bundle to second worker.

A- 1 to 25

B- 26 to 50

C- 51 to 75

D- 76 to 100

3.5.11 Lay Quality used in NTG

According to knitted fabric type fabric lay should have a minimum length which is necessary to maintain during spreading and cutting.

$$\text{Ply Height} = \frac{\text{Length (L)} \times \text{Width (W)} \times \text{GSM}}{100 \times 100 \times 100} \text{ cm}$$

A list is given below which indicates some lay quality according to fabric type.

Fabric Type	Lay Quality
Fleece	40-60

Polo Pique	60-100
Single Jersey	80-100
Lycra Single Jersey	60-80
Stripe	50
1x1 Rib	60-80
2x2 Rib	60-80
Mesh	80-100

TABLE 3. 8: LAY QUALITY

3.5.12 Machine specification

SL No.	M/C name	Brand/Model	Origin	Total m/c Qty
01	SPREADING M/C	OMRON	JAPAN	5
02	STRAIGHT KNIFE	MACK	JAPAN	14
03	AUTO CUTTER M/C	MEHALA	JAPAN	1
04	SCISSOR			20
05	NUMBERING M/C	METO	MALAYSIA	12
06	CUTTING GLOVES	EASTMAN		15

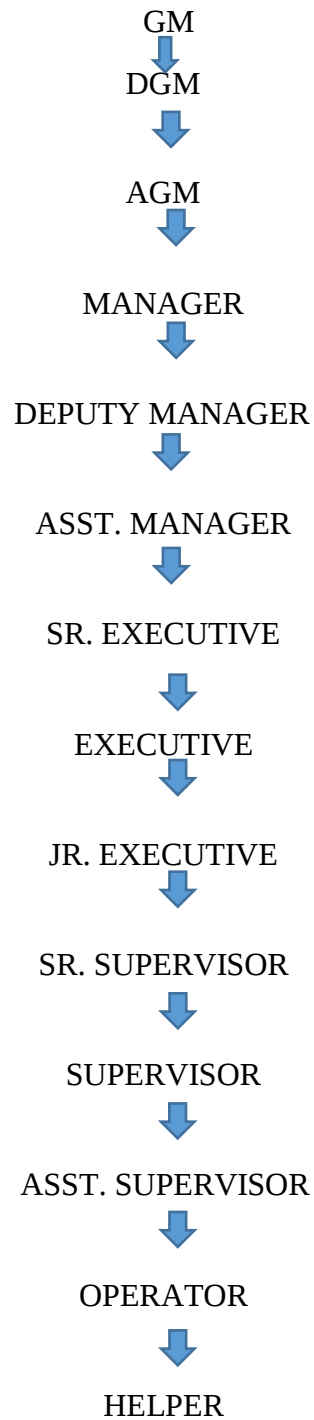
TABLE 3. 9: CUTTING SECTION MACHINE SPECIFICATION

3.6 SEWING SECTION

Overview

Sewing is an important section as well as an important task for garment production. After getting fabric and accessories it is necessary to attach all the parts according to buyer's given sample, style and order. In northern Tashrifa Group there are 3 sewing floors named Tashrifa Industries Limited, Fashion Asia Limited and Modular Floor

3.6.1 Organogram of Sewing Section:



3.6.2 Sewing, Finishing and Packing section layout



FIGURE3. 5 SEWING, FINISHING AND PACKING SECTION LAYOUT

3.6.3 Types of Machine in Sewing Section:

S/L	TYPE OF MACHINE	BRAND	PCS
1	SINGLE NEEDLE LOCK STITCH	JUKI	50
2	SINGLE NEEDLE LOCK STITCH	SUNSTAR	65
3	SINGLE NEEDLE LOCK STITCH	BROTHER	15
4	OVER LOCK	JUKI	60
5	OVER LOCK	PEGASUS	15
6	FLAT LOCK	PEGASUS	20
7	FLAT LOCK	JUKI	35
8	FLAT LOCK	CIRUBA	15
9	FEED OF THE ARM	YAMATO	1
10	BUTTON HOLE	JUKI	8
11	BUTTON ATTACH	JUKI	8
12	BARTACK	JUKI	8
13	FUSING MACHINE	HASHIMA	1
14	RIB CUTTER	CALIFORNIA	1
15	LABEL CUTTER		2

TABLE 3 .10: MACHINE IN SEWING SECTION

3.6.5 Types of sewing threads used in NTG:

- Soft Cotton
- Mercerized cotton
- Viscose
- Filament
- polyester

3.6.6 Types of Sewing Defects:

- Stain
- Oil spot
- Hole
- Needle Damage
- Fabric Fault
- Fly Yarn
- Drop Stitch
- Uneven Stitch
- Shedding

3.6.7 Manpower

Manpower list in Northern Toshirifa Group is given below-

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

3.6.8 Utilization Factor

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

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

Here, SPI = Stitch Per Inch

S.L = Stitch Length

RPM = Rotation Per Minute

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

❖ Utilization Factor of Neck Joint

$$\begin{aligned} \text{U.F} &= \frac{80 \times 12 \times 7.1}{3000 \times 60} \times 100 \\ &= 3.79\% \end{aligned}$$

❖ **Utilization factor of Neck Top Stitch**

$$\begin{aligned} \text{U.F} &= \frac{80 \times 12 \times 13.5}{3000 \times 60} \times 100 \\ &= 7.2\% \end{aligned}$$

3.6.9 Production study

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

3.6.10 Some important formula in sewing section

SMV:

basic time + allowance

Basic time:

$$\frac{\text{observed time} \times \text{observe ratting}}{\text{standard rating} \times 60}$$

Capacity :

$$\frac{AVG\ cycle\ time}{60(hour)}$$

Target :

$$\frac{man\ power \times working\ hour \times 60}{SMV}$$

Per hour capacity:

$$\frac{target}{capacity}$$

3.7 Sewing Quality Department

3.7.1 In Line Quality

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

3.7.2 End Line Quality

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

3.7.3 Barrier/ Process Quality

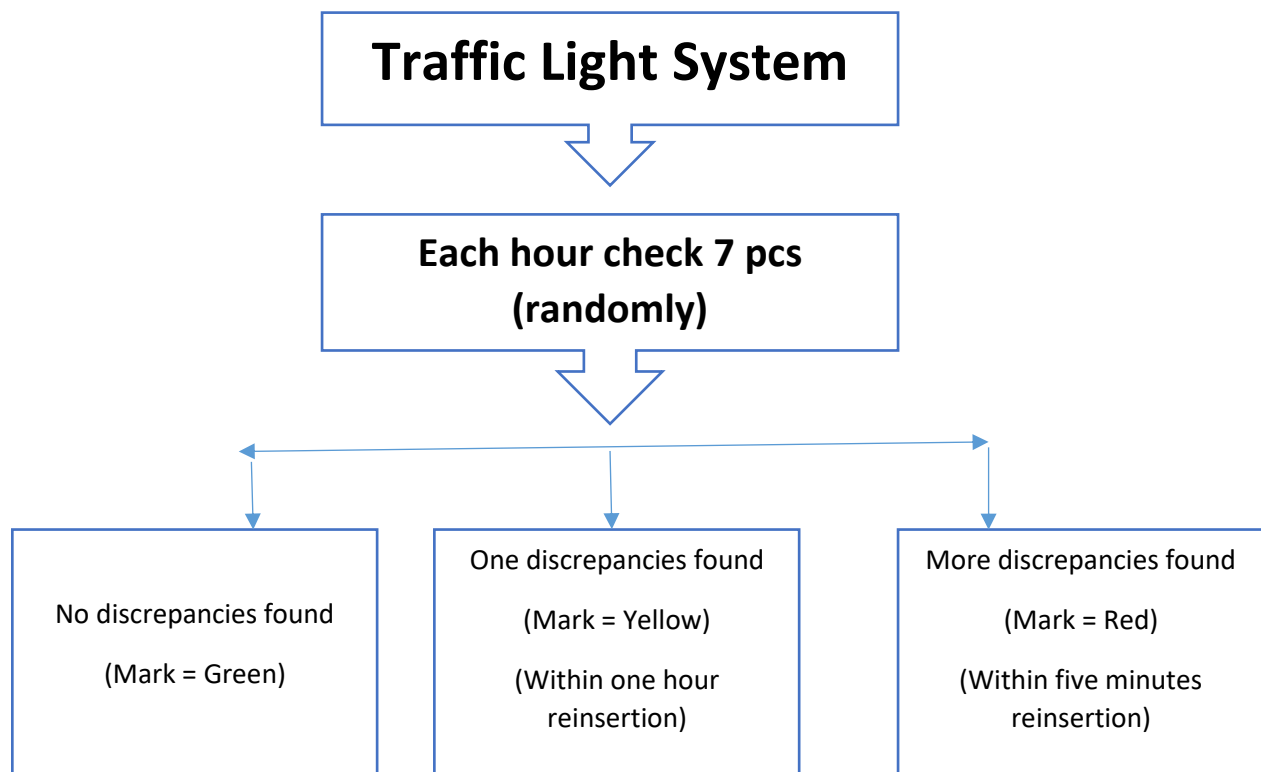
There are some arrangements to check the quality of some of the process in a line of a garment production. Usually critical processes are checked after its completion and if there found any wrong then it will go to the operator for rework.

3.7.4 Quality Audit

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

3.7.5 Traffic Light System of NTG

Traffic light system chart is given below



3.7.5 Total Quality Checking Procedure in :

- **Fabric Inspection:** Using the 4 point system. At least 20% of the quality being received. Prepare a shade continuity / card for shade checking.
- **Trims Received / Inspection:** Inspection of all trims & accessories received using AQL 2.5.
- **Cutting / Spreading Inspection:** Checking procedure carried out during spreading of fabric during cutting / laying. Check for ply height, uneven sizes, matching plies, matching with the markers, loose or tight laying etc.
- **Cut Panel / Block Checking:** Checking procedure carried out after cutting which is done by checking some cutting blocks whether it matches with the pattern. Check also for rugged cutting, folded sides & crooked shapes, W/C does not conform to the pattern shapes.
- **100% Cut Panel Inspection:** Checking of all panels (front / back) to assure that fabric defects will be sorted out prior to input to sewing line. (Defect Points: Hole, Contamination & other Knitting & dyeing defects)
- **In – Line:** Inspection for Measurement – A random checking of measurement for all the sizes that's running in the sewing line. It is conducted after 2 hours covering all the sizes available in the production floor. **In-line process Inspection:** A checking process carried out on every sewing operation / process. A dedicated line quality inspector will be checking 7 pcs of a bundle using AQL 2.5. In the event that one piece defect would be found out of the 7pcs, then entire.
- Bundle will be rechecked together with production supervisor.
- **End Line Table Inspection:** A 100% inspection of all garments finished / output from the sewing line. An inspection that covers all points of defects that needs to be inspected. (Styling, trims, placement, workmanship etc.)

- **100% Measurement Checking:** A 100% inspection of all garments after ironing.
- **Get-up / Presentation checking:** An inspection carried out after ironing that covers – checking for garments appearance & get-up after ironing.
- **Daily Lot Audit:** An audit carried out every day on whatever packed quality using 2.5 AQL. A dedicated auditor conducts the audit.
- **Pre-Final Audit:** An audit carried out on whatever ready PO's / order prior to offer for final inspection to the buyer. A dedicated pre-final auditor conducts the audit using 2.5 AQL.
- **In-house Garments wash test:** A garments wash test carried out on whatever running styles or Po's in the production line. The test is conducted following the washing instruction on the care label & so also with the washing procedure of every buyer.

3.7.6 Acceptable Quality Level (AQL):

A statistical measurement of the maximum number of defective goods considered acceptable particular sample size.

Critical Defects: are those that render the product unsafe or hazardous for the end user.

Example: Sharp Rivet, presence of insect, Needle, etc.

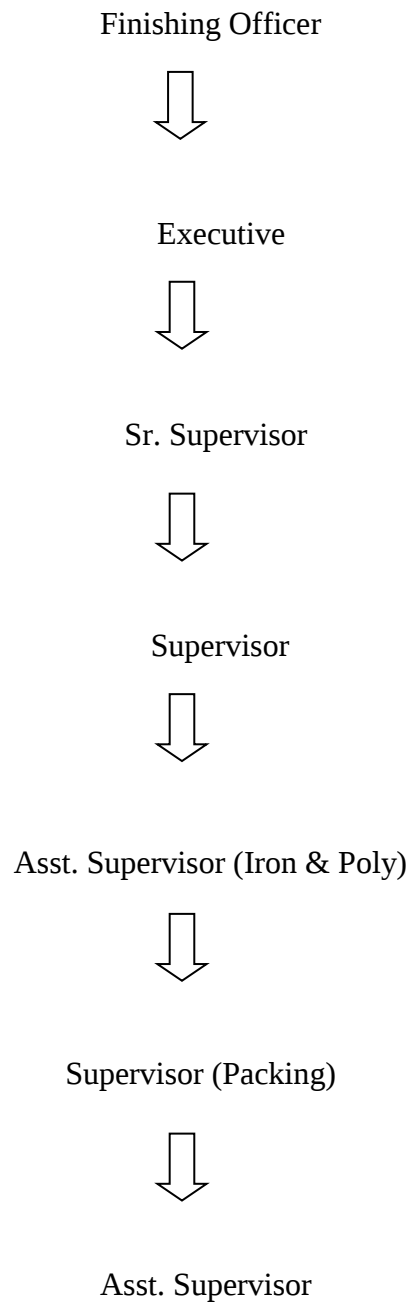
Major defects: can result in the product's failure, reducing marketability, usability. Example Broken stitch, hole, etc.

Minor Defects: do not affect products marketability or usability but represents workmanship defects that make the product fall short of defined quality standard. Example: negligible stain.

In NTG they used 1.5 AQL level

3.8 Finishing & Packing

3.8.1 Organogram of Finishing Section:



3.8.2 Finishing Working Process:

Size Wise finishing process
receive

Thread sucking

Goods rack

Iron

Final inspection

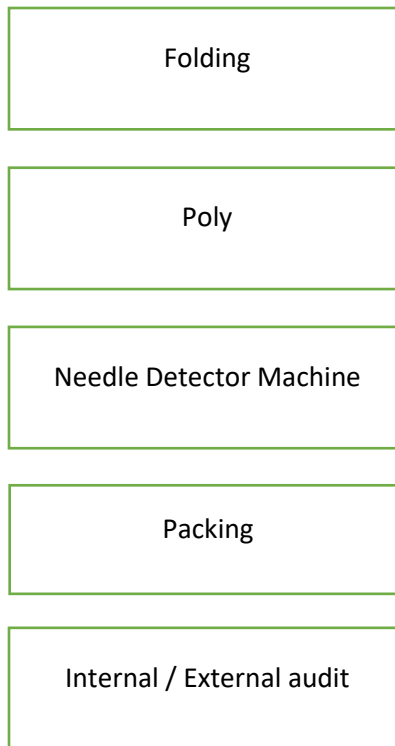
Get up

4 Point check

Size set

Measurement Check

Hang tag attach



3.8.3 Machine or Instruments used in Finishing Section of NTG

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

3.8.4 Table Measurement

- ❖ Finishing Table: 5
 - Length- 840 cm
 - Width- 130 cm
 - Height- 90 cm
- ❖ Iron table: 24
 - Length- 120 cm

Width- 80 cm

Height- 90 cm

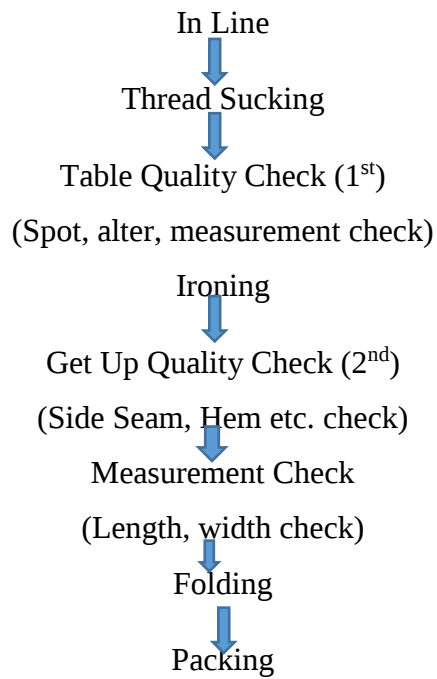
❖ Extra iron table: 2

Length- 160 cm

Width- 120 cm

Height- 90 cm

3.8.5 Finishing Layout of NTG



3.8.6 Different types of Label & Hangtags & Accessories used in NTG:

✚ Material & Care Labels.

✚ Main / Size Labels.

✚ Badge Labels.

- ✚ Security / Origin Labels.
- ✚ Hangtags.
- ✚ Patch Label.
- ✚ Care & Size Label.
- ✚ Button Stopper.
- ✚ Eyelet.
- ✚ Zipper.
- ✚ Cord draw.
- ✚ Velcro.
- ✚ Thread.
- ✚ Piping.
- ✚ Hidden Snap button.
- ✚ Chalk Button.
- ✚ Tag Pin.
- ✚ Folder.
- ✚ Lining.
- ✚ Interlining.
- ✚ Elastic Band.
- ✚ Embroidery equipment.
- ✚ Printing equipment

3.8.7 Documentation papers:

- ✚ Inspection Report
- ✚ Finishing Report.
- ✚ Packing list.
- ✚ Tag Pins / Broken needle Record. Shipment document follow-up report sends to the planning & commercial department.
- ✚ Order quantity sheet.
- ✚ Metal detector Report.
- ✚ Finishing check Report – Spot/Alter/Rejection/Basket/Defect.

3.8.8 Labeling:

Labels are the sources of identification for garments. The four kinds of labels are:

- ✚ Main label is a design or brand name. The main label is usually made on satin or twill ribbon and sewn inside the center back neck, inside the waistband, or somewhere on the inside of the garment. It has even become fashionable to put labels on the outside of sportswear garments.
- ✚ Labels of fiber content, care instructions, and country of origin. This information is usually on a separate small label under the brand label or on an inside seam.

3.8.9 Three Kinds of Folding used in NTG

- ✚ Board folding
- ✚ Half folding

- ✚ Hanger folding

3.8.10 Two Kinds of Poly used in NTG:

- ✚ Single poly
- ✚ Master poly

3.8.11 Three Kinds of Carton used in NTG:

- ✚ Five ply carton
- ✚ Seven ply carton
- ✚ Three ply carton

3.8.12 Four Kinds of Assortment used in NTG:

- ✚ Assort color assort size
- ✚ Assort color solid size
- ✚ Solid color solid size
- ✚ Solid color assort size

Color			Size		
	S	M	L	XL	XXL
Black	2	2	4	2	2
White	1	2	6	2	1
Blue	1	3	4	3	1

3.8.13 Chemical used in finishing sector in NTG

- Spot lifter
- Thinner
- Detergent

3.8.14 CBM calculation:

CBM=Type equation here.

$$\frac{(length \times width \times hight)cm}{100 \times 100 \times 100}$$

4. Impact of Internship

4.1 Knitting section:

1. Acquainted with machines used in knitting section.
2. Knew how to operate of those machines.
3. Knew work culture of knitting section.
4. Idea of layout Section.
5. Knew about flow process this section.
6. Know about of different Knitting Defects.

4.2 Store Section

1. Acquainted with machines used in store section.
2. Knew how to operate of those machines.
3. Knew work culture of store section.
4. Idea about the layout.
5. Recognized different trims and accessories.
6. To know about different types of fabric.

4.3 Sample Section

1. Acquainted with machines used in sample section.
2. Knew how to operate of those machines.
3. Knew work culture of sample section
4. I have learnt about different types of sample.
5. Buyer wise sample demand.
6. Idea about the standard operating procedure.

4.4 CAD Section

1. Acquainted with machines used in CAD section.
2. Knew how to operate of those machines.
3. Knew work culture of CAD section
4. Knew about pattern and marker making.
5. Idea about the software used in CAD.

4.5 Cutting Section:

1. Acquainted with machines used in cutting section.
2. Knew how to operate of those machines.
3. Knew work culture of cutting section
4. Learned the process of fabric spreading.
5. Observed the process of fabric cutting according to the marker.
6. Understood different process of fabric lay.
7. Realized the use and importance of metal gloves for fabric cutting process through different cutting machines.
8. Observed the panel check process for different type of fabric of different style and design.
9. Understood how numbering and bundling is done.

4.6 Sewing Section:

1. Acquainted with machines used in sewing section.
2. Knew how to operate of those machines.
3. Knew work culture of sewing section

4. Understood the role of input man in the industry
5. Learned about different parts of a T-shirt
6. Observed different sewing or joining process of different body parts of a T-shirt .

4.7 Quality Section:

1. Acquainted with machines used in quality section.
2. Knew how to operate of those machines.
3. Knew work culture of quality section
4. Idea about the fabric inspection procedure.
5. Different types of fault removing system.
6. Idea about AQL chart.
7. Idea about 4 point system.

4.8 Finishing & packaging:

1. Acquainted with machines used in finishing & packing section.
2. Knew how to operate of those machines.
3. Knew work culture of finishing & packing section
4. Realized the importance of Dept. of IE in raising the efficiency of production in a sewing floor.
5. Observed various type of finishing process after sewing and washing.
6. Learned about various types of accessories used to attach to the garment (i.e. Security alarm, Hang tag, Price tag, Barcode label etc.)

Chapter 5

Conclusion

I have completed my training in Northern Tosrifa Group successfully by the grace of Almighty Allah.

This train sends me to the expected destiny of my professional life in textile sector. After completing train period, I have known that Northern Tosrifa Group is one of the large textile groups with its huge garment production.

During my training I got all kind of help from every department and I give thanks to all of those people who really helped me during my work.

Though it is very tough to get every knowledge from knitting, finishing, cutting, embroidery, sewing, production, quality, packing in this factory. I learned about the machines and operations, working culture etc. I hope my report has already shows the overall training period overview.

I am enough fortunate that I got an opportunity of having a training in this factory. During the training period I got co-operation and association from the authority full & found all man, machines & materials on appreciable working condition. By doing this I got my goal.

Limitation of the Report:

- Because of secrecy act, the data on costing and marketing activities has not been supplied & hence this report excludes these chapters.
- I have a very limited time in spite of my willing to study more details it was not possible to do so.
- Some of the points in different chapter are not described as these were not available.
- The whole process is not possible to bind in such a small frame as this report, hence my effort spent on summarizing them.